CYPRUS UNIVERSITY OF TECHNOLOGY

ENGINEERING AND TECHNOLOGY FACULTY

DEPARTMENT OF MECHANICAL ENGINEERING AND SCIENCE AND MATERIALS ENGINEERING

MASTER THESIS

BEHAVIOUR OF PHOTOVOLTAIC PANELS IN CYPRUS WEATHER WITH FORCED AIRFLOW

KONSTANTINOS GIANNAKOU

LIMASSOL (2014 – 2016)

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Dr. POLYVIOS ELEFTHERIOU

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ABSTRACT

An experiment has taken place during the summer season, to examine the photovoltaic's behaviour on efficiency and temperature when air is exerted on the panels by a fan. Several measurements were taken during the summer season which includes morning, midday and afternoon periods.

Measurements have been selected to be inserted in the report depending on the appropriateness of the weather. For the experiment, 4 photovoltaic solar panels were used. Two monocrystalline silicon solar panels of 10W, (By Bioenergy). SunWare 3061 monocrystlline silicon solar panel of 12W and Sunlinq solar panel of 6.5W which it's solar cells are from Copper Indium Gallium Diselenide (CIGD) and includes amorphous silicon. The fan used had 3 speed settings and the solar panels are tested for each one. The efficiency of the PV panels have been calaculated for each IV curve graph which are plotted by Strata-sense Wireless IV Curve Tracker.

The equation used for calculating the photovoltaic's efficiency is n = $\frac{Vmpp\ x\ Impp}{E\ x\ A}$. As indicated by the equation, the factors that play a major role for the photovoltaic's efficiency is the voltage and current at maximum power point, irradiance (E) and area (A) of the panels. The mean temperature of the photovoltaic solar panels was measured by a Lutron Thermometer 947USB which had four thermocouples that were attacthed on solar panels. Also, graphs were plotted of the efficiency against speed of air exerted from fan to observe the behaviour of the PV efficiency as a function of its mean temperature.

Μια πειραματική διαδικασία έχει λάβει μέρος κατά την καλοκαιρινή περίοδο, για να εξεταστείη συμπεριφορά στην απόδοση των φωτοβολταϊκών και η αλλαγή θερμοκρασίας στα πλαίσια όταν ασκείται ροή αέρας από ανεμιστήρα. Έχουν ληφθεί διάφορες μετρήσεις κατά την καλοκαιρινή περίοδο όπου περιλαμβάνουν πρωινές, μεσημβρινές, και απογευματινές ώρες. Οι μετρήσεις που έχουν εισαχθεί στην αναφορά έχουν επιλεχθεί με βάση την καταλληλότητα των καιρικών συνθηκών. Για το πείραμα έχουν χρησιμοποιηθεί 4 φωτοβολταϊκά ηλιακά πλαίσια. Δύο μονοκρυσταλλικά πυριτίου των 10 Watt, ένα εκ των οποίων είναι της εταιρίας Bioenergy. Το SunWare 3061 το οποίο είναι μονοκρυσταλλικό πυριτίου των 12W. Το Sunlinq των 6,5W, όπου τα ηλιακά του κύτταρα είναι από Copper Indium Gallium Diselenide (CIGD) και περιέχει άμορφο πυρίτιο. Ο ανεμιστήρας που χρησιμοποιήθηκε διέθετε τρείς ταχύτητες (τρείς διαφορετικές ροές αέρα) Η απόδοση στα φωτοβολταϊκά πλαίσια έχει υπολογισθεί για την κάθε γραφική παράσταση καμπύλης IV όπου απεικονίζονται με τη βοήθεια του συστήματος Strata-sense Wireless IV Curve Tracker. Η εξίσωση που έχει χρησιμοποιηθεί για τον υπολογισμό της απόδοσης των φωτοβολταϊκών είναι n = $\frac{Vmpp\ x\ Impp}{E\ x\ A}$. Όπως υποδεικνύεται στην εξίσωση, οι παράγοντες που παίζουν σημαντικό ρόλο για την απόδοση των φωτοβολταϊκών είναι η ηλεκτρική τάση και ρεύμα στο σημείο μέγιστης ισχύος, η ηλιακή ακτινοβολία (E) και το εμβαδόν των πλαισίων (A). Ακόμη, έχουν γίνει μετρήσεις και έχει υπολογισθεί η μέση θερμοκρασία των πλαισίων με την βοήθεια του οργάνου Lutron Thermometer 947USB, όπου έχει 4 υποδοχές για θερμοστοιχεία που είναι ενωμένα στα φωτοβολταϊκά πλαίσια. Επίσης, έχουν γίνει γραφικές παραστάσεις της απόδοσης σε σχέση με την ταχύτητα του εξαναγκασμένου αέρα από τον ανεμιστήρα, για να παρατηρηθεί η συμπεριφορά της απόδοσης των φωτοβολταϊκών σαν συνάρτηση της μέσης θερμοκρασίας.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Energy has become an indispensable part of human life. Different energy sources have been discovered over the years, to assist in the survival of the human race. Nowadays, living conditions for mankind require high energy consumption, as humans become dependent on technology. Population growth, pollution of the environment and prices of oil are raised, leaving humans to search for alternative methods for producing energy. The use of photovoltaics is one of these methods.

Solar irradiation is collected from the PV (Photovoltaic) panel which is converted into electricity. Photovoltaic panels can withstand all weather conditions and are designed to be placed on top of buildings, on street light posts and even in the desert for collecting solar energy. However, at high temperatures PV's efficiency drops significantly [J.K. Tonui, 2006].

An experiment will take place at the roof of Dorothea building, in which four PV panels will be examined in terms of efficiency, panel temperature and the correlation between efficiency and velocity with forced airflow.

The upcoming literature review will cover topics such as measuring the solar radiation by reference cells, how the atmospheric parameters affect cell sensitivity and factors that affect efficiency of the photovoltaics. Maximum power point tracker (MPP) will be discussed.

1.2 Purpose of the Experiment

As mentioned above, at high temperatures there is a decrease on photovoltaic's efficiency. So, an experiment will be presented with four different panels to observe the behavior of the photovoltaic efficiency, panel temperature and correlation of efficiency against speed of air exerted by a fan.

For the experiment, four different photovoltaic solar panels were used and are listed below:

1. Monocrystalline Silicon Solar Panel 10 W – Module 8
2. Sunlinq Solar Panel 6.5W – Module 4
3. Monocrystalline Silicon Solar Panel 10 W – Module 3
4. Monocrystalline SunWare 3061 Solar Panel 12 W – Module 5

[Cyprus University of Technology, 2004]

CHAPTER 2

LITERATURE REVIEW

2.1 Measuring Solar Radiation

For the measurement of solar radiation, reference cells have been used over the years which can also set simulator irradiance levels for measurements of photovoltaic performance. The spectral distribution of incidence irradiance affects the performance of solar cells which are wave-length dependent. The calibration of reference cell is obtained by the normal incidence pyrheliometer (NIP) and a collimating tube is used for the corresponding cell. However, the pyrheliometer method presents some problems regarding the direct sunlight that the reference cells receive. It is better for flat-plate terrestrial applications to be used by global sunlight rather than direct sunlight, since the direct normal method is overestimated crystalline-si reference cell's sensitivity and underestimated amorphous-si reference cells. Furthermore, because of its sensitivity to direct sunlight in the atmospheric parameters the assessment of calibration reference cell leads to errors [Yoshihiro Hamakawa, 1986].

Some other methods have been developed to find that there is no need for measuring atmospheric parameters to achieve global calibration for terrestrial reference cells which provide reasonable constraints when sun angle and solar radiation is used. By the use of spectro-radiometer, global sunlight's spectral-irradiance distribution can be measured within a short time [Yoshihiro Hamakawa, 1986].

2.2 Cell sensitivity affected by atmospheric parameters

The equation for cell sensitivity is determined by the spectral and angular solar radiation (E (λ, θ)), the spectral and angular response of solar cells (R (λ, θ)), the zenith angle (θ) and the wavelength of the incident beam (λ) [Yoshihiro Hamakawa, 1986].

Equation: 1 Cell Sensitivity = $$\frac{\int\int R(\lambda,\theta)\, E(\lambda,\theta)\, d\lambda\, d\theta}{\int\int E(\lambda,\theta)\, d\lambda\, d\theta}$$

The atmospheric parameters affects cell sensitivity on global solar irradiance by defuse and direct radiation. Maximum peak of defuse radiation on angular distribution amounts to 50˚ of zenith angle. In **Figure 1** cell sensitivity were calculated of (a) crystalline silicon and (b) amorphous silicon reference cells with respect to air mass, where it is observed the behavior of cell sensitivity under direct normal irradiance [Yoshihiro Hamakawa, 1986].

2.3 Direct Normal Irradiance

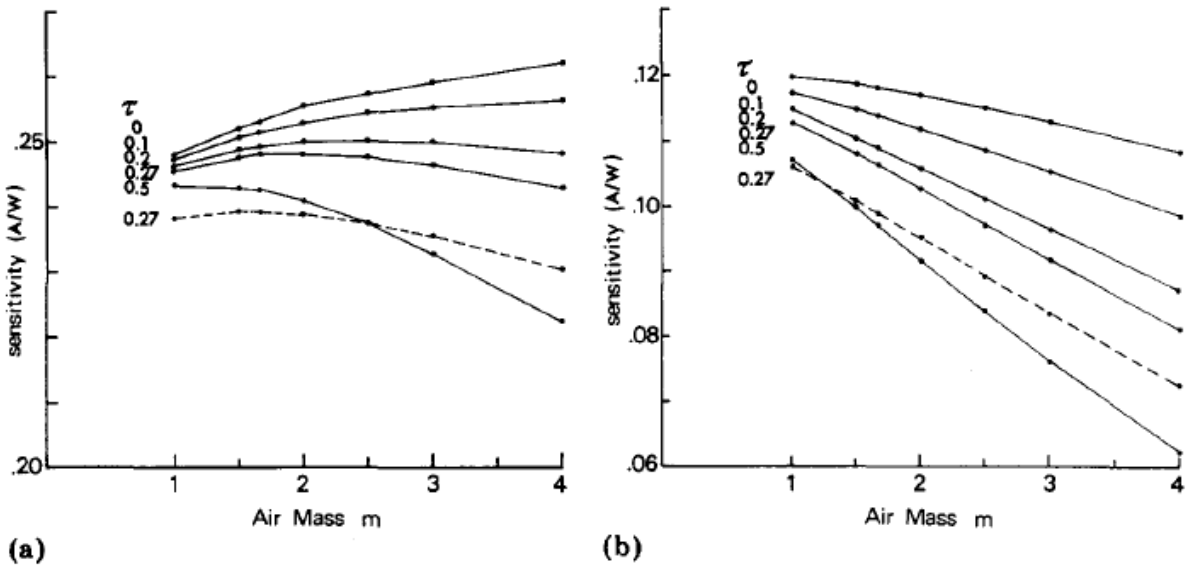


Figure 1: Direct normal irradiance graph - calculated cell sensitivity against air mass [Yoshihiro Hamakawa, 1986]

In graph (**Figure 1**), the decrease of the turbidity (τ (NTU) = Nephelometric Turbidity Units) as the air mass increases on the amorphous-si reference cell is rather apparent. In **Figure 2** the calculation of cell sensitivity was made when there was a global horizontal irradiation. The same data was used for perspective vapor and turbidity where (a) crystalline silicon and (b) amorphous silicon where implemented relative to air mass [Yoshihiro Hamakawa, 1986].

2.4 Global Horizontal Irradiance

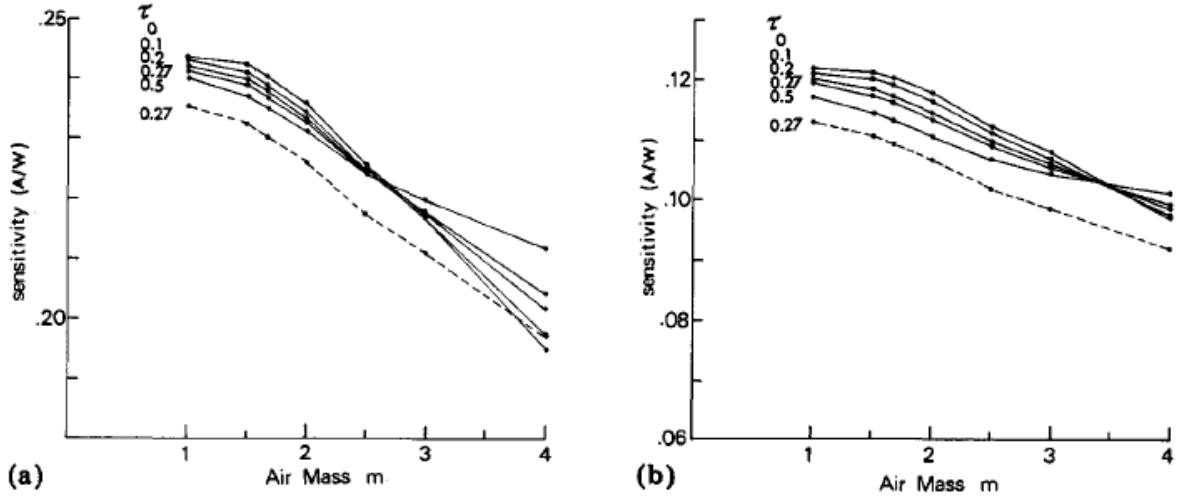


Figure 2: Global horizontal irradiance graph - calculated cell sensitivity against air mass [Yoshihiro Hamakawa, 1986]

The result in **Figure 2** is quite the same as in **Figure 1**, with a decrease of cell sensitivity as the air mass increases. However, the spectral content of the global irradiance has an intensity peak of wavelength of 450 – 500 nm (Blue Wavelength) than direct sunlight because of the largest scattered part is collected as a diffuse radiation. Also the calculated cell sensitivity is plotted against turbidity (**Figure 3**) [Yoshihiro Hamakawa, 1986].

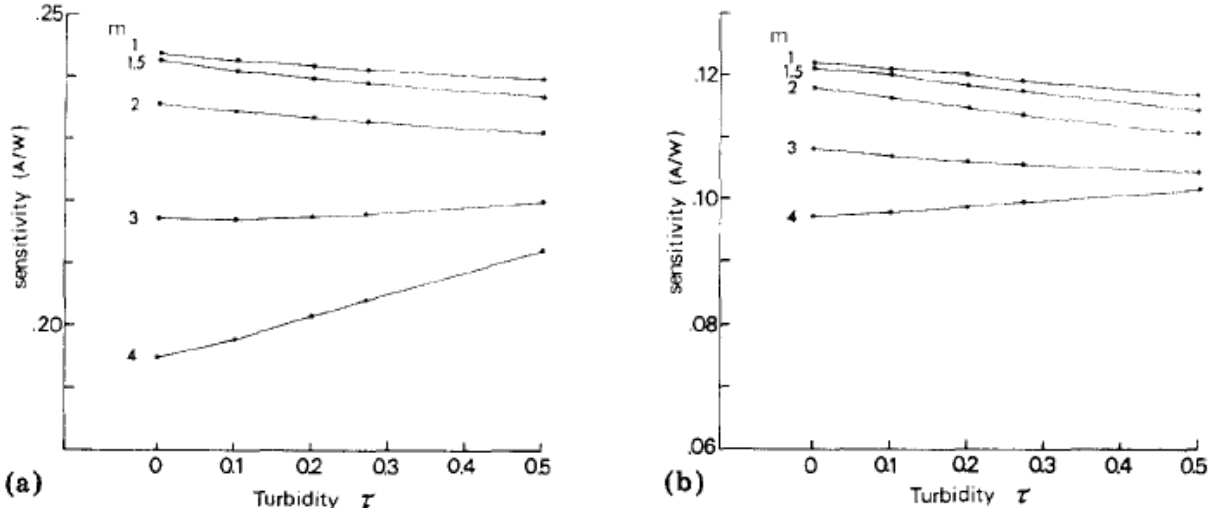


Figure 3: Global horizontal irradiance graph – calculated cell sensitivity against turbidity [Yoshihiro Hamakawa, 1986]

It is observed a decrease in amorphous-si reference cell's sensitivity to m = 1, 1.5, 2 when the turbidity increases where in crystalline silicon, there is an increase in reference cell's sensitivity to m = 3 and 4 as the turbidity increases. For amorphous silicon there is a slight increase to m = 3 and a significant increase to m = 4 at an increase turbidity [Yoshihiro Hamakawa, 1986].

2.5 Factors that affect efficiency

One way to make photovoltaic panels is from silicon solar cells. Silicon solar cells have the ability to perform at air mass 1 instead of air mass 0 because they are not sensitive in low wavelength proportions which are scattered in the atmosphere. In high air mass conditions there is low solar insolation where this arises before 10:00 and after 18:00. Although, when there is low air mass, efficiency on solar cell's output is higher. On the other hand, the increase of the atmospheric thickness changes the spectrum shape which leads to a decrease of the efficiency even for air mass higher than 1.5 [Elias Roumpakias, 2014]. This will have an effect in the upcoming experiment if there is an increase of the atmospheric thickness, since the photovoltaics that are going to be used are from silicon solar cells.

The clearness index K_t must be considered also, since the spectral varies because of the different weather conditions. In clear weather conditions Kt varies from 0.6 to 0.8, as it also can defined by the ratio of the horizontal global irradiance to the corresponding extraterrestrial irradiance which is multiplied by the sinus of sun's height. Anomalous Photovoltaic Effect (APE) or else Bulk Photovoltaic Effect is strongly affected on amorphous silicon PV modules by the increase on average photon energy and decrease of Kt and air mass [Elias Roumpakias, 2014].

2.6 Experimental efficiency measurements

An experiment took place in Volos, Greece aiming to present a realistic efficiency data for photovoltaic parks and panels as function of environmental conditions and air mass. Because the efficiency aggravates when the solar altitude angle is less than 45º, it affects the accuracy of the overall efficiency of the photovoltaic parks and it needs further studies and attention.

The readings of a single photovoltaic panel have been taken in August-September 2010, with latitude 39.3604 ºN and longitude 22.9299 ºE. **Table 1** shows the technical data [Elias Roumpakias, 2014].

Table 1: Shows the readings of a single PV panel [Elias Roumpakias, 2014]

PV module type	KD205GH-2P
Cell technology	Multicrystalline, 54 cells per module
Performance at 1000 W/m^2 (Standard Test Conditions: Air Mass 1.5, cell temp. 25 °C)	
Maximum power [W]	205
Maximum power voltage [V]	26.6
Maximum power current [A]	7.71
Open-circuit voltage (V_{oc}) [V]	33.2
Short-circuit current (I_{sc}) [A]	8.36
At 800 W/m^2 (Normal conditions: AM 1.5, wind speed 1 m/s, ambient temp. 20 °C)	
Maximum power [W]	145
Maximum power voltage [V]	23.5
Maximum power current [A]	6.17
Open-circuit voltage (V_{oc}) [V]	29.9
Short-circuit current (I_{sc}) [A]	6.82
NOCT [°C]	49
Power tolerance [%]	+5/−5
Temperature coefficient of V_{oc} [V/°C]	-1.20×10^{-1}
Temperature coefficient of I_{sc} [A/°C]	5.02×10^{-3}
Temperature coefficient of max. power [W/°C]	-9.43×10^{-1}
Reduction of efficiency (from 1000 to 200 W/m$^{2)}$ [%]	6.0
Length [mm]	1500 (±2.5)
Width [mm]	990 (±2.5)
Weight [kg]	18.5

Using a CMP 3 Pyranometer [Kipp & Zonnen. (1830). CMP3 Pyranometer] which is placed vertical on the upper corner of the photovoltaic panel, the variation of solar radiation has been recorded at the time of autumnal equinox. The incoming solar radiation varies from 400 to 570 W/m^2 at the vertical plane which is in midday (12:00 – 16:00) and with a clear sky. There is a clear correlation between the manufacture's characteristics and the experiment's result regarding efficiency. However, around noon and late in afternoon,

is observed an unstable correlation with the photovoltaic panel's efficiency to be higher and lower respectively, than the prediction of the manufacturer [Elias Roumpakias, 2014].

The variation of the PV panel's efficiency is depended on solar time which can be observed also by the graph in **Figure 4**. From the above experiment a graph is plotted by the measured PV panel's efficiency and the altitude angle of the sun [Elias Roumpakias, 2014].

For the calculation of the solar altitude angle the following equation has been used:

Equation: 2 $\sin a_s = (\cos \theta_s \cos \delta_s \cos \omega_s) + (\sin\varphi \sin\delta)$

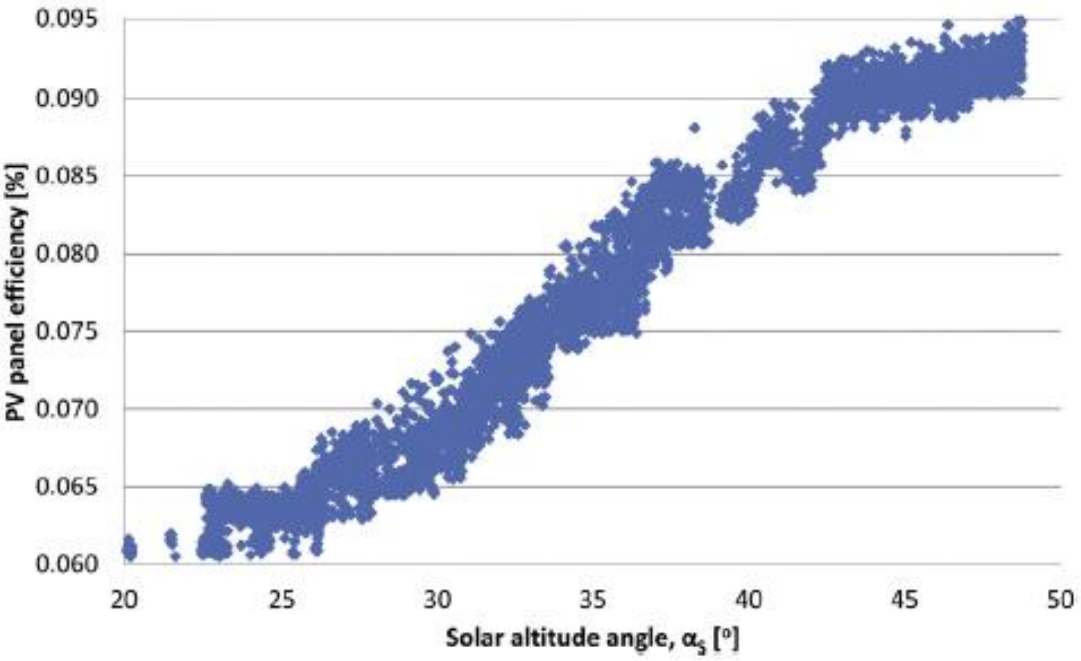


Figure 4: Graph of PV efficiency against solar altitude angle [Elias Roumpakias, 2014]

From the graph (**Figure 4**), it is clearly observed that the efficiency drops when the solar altitude angle is low and rises as the angle of the sun increases up to 48-49 degrees. Factors that affect it, is the present of aerosols in the atmosphere and the differences in solar altitude associated with the difference in real air mass [Elias Roumpakias, 2014].

In the above experiment, air mass has some effects on the PV's efficiency. By the increase of the air mass there is a non-linearly decrease in solar radiation at the collector level. Some other atmospheric factors that contribute to the attenuation of the solar radiation are the aerosol, water vapor and photochemical smog [Elias Roumpakias, 2014].

Some of the readings that have been taken show that when the solar altitude angle is below 25º, the irradiance level reaches 400 W/m^2. As it mentioned before, low solar altitude angle implies low efficiency and the main reason that occur is the absorption of air pollution and aerosol in the solar spectrum of the atmosphere. Also, the high energy spectrum of the gap of the silicon solar cell is attenuated than the average due to the lack of solar irradiation in the morning and late afternoon, thus the PV efficiency drops [Elias Roumpakias, 2014].

2.7 Maximum Power Point (MPP)

MPP is the point on Current – Voltage or Power - Voltage graph where power is at its peak. Maximum Power Point Tracker is the method for tracking operating voltage on PV corresponds to MPP which locks the operating point and extract it at maximum power from the photovoltaic array. Some of the MPPT methods are Offline (Indirect) and Online (Direct) [Palavee Bhatnagar, 2013].

For the Offline control technique, a photovoltaic panels technical data is used to estimate maximum power point. Technical data includes different mathematical models, different climatic conditions and other from the P-V and I-V curves [Palavee Bhatnagar, 2013].

The Online method uses photovoltaic voltage or current readings if necessary and real time for MPP measurement. Temperature and solar radiation are not necessary. The Offline method pays in cost but in performance is less effective than Online method. [Palavee Bhatnagar, 2013]

Photovoltaic's power output is affected by two primary factors, temperature and radiation. Temperature on the PV's solar cells is rising due to the fact of an increase of solar insolation, the energy that is radiated at the infrared wavelength and also solar cell is heated during its own action [Palavee Bhatnagar, 2013].

In **Figure 5** there are plotted two graphs of P-V and I-V, which shows the MPP during constant solar insolation but different temperatures.

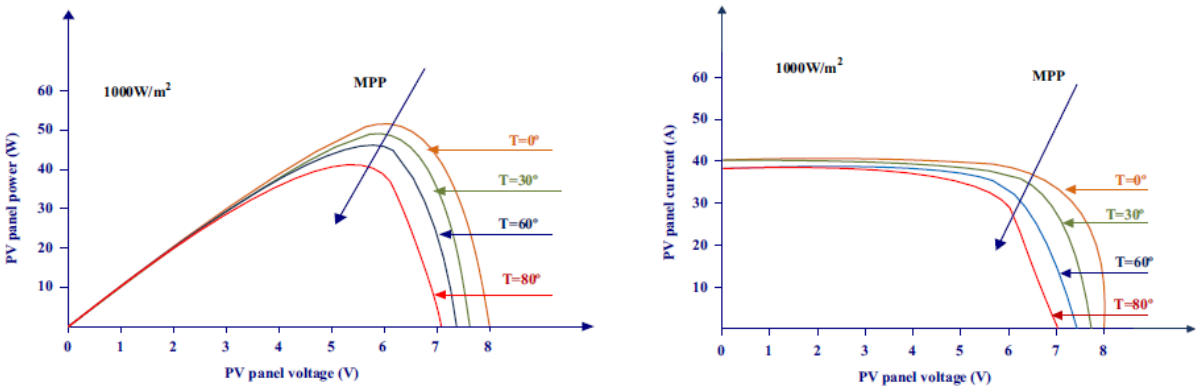


Figure 5: Power against Voltage graph - Current against Voltage graph, both shows MPP, constant solar insolation but different temperatures [Palavee Bhatnagar, 2013]

Both graphs show that with an increase in temperature the power output is decreasing. The short circuit current (I_{SC}) increases slightly whilst the open circuit voltage (V_{OC}) is decreasing linearly by the rise in cell's temperature. [Palavee Bhatnagar, 2013]

In **Figure 6** same graphs are plotted as in **Figure 5**, only this time the temperature is constant but different solar insolation.

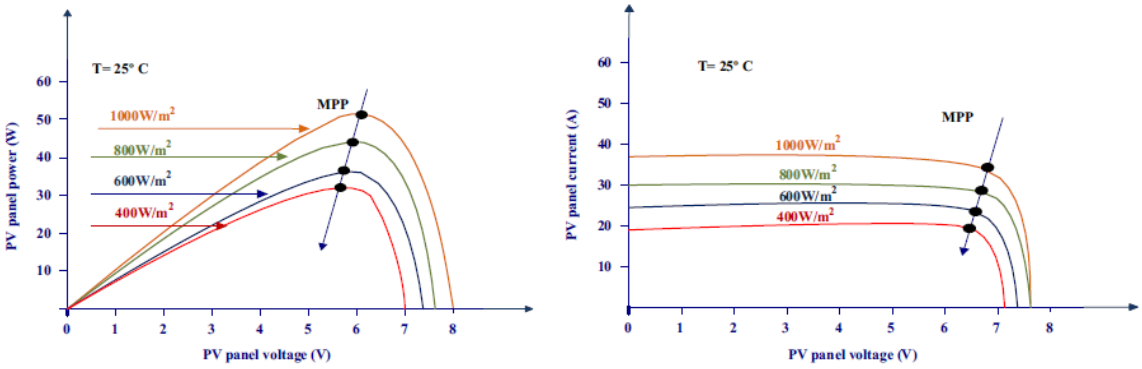


Figure 6: Power against Voltage graph – Current against Voltage graph, both shows MPP, constant temperature different solar insolation [Palavee Bhatnagar, 2013]

In **Figure 6**, it is observed that in ambient radiation, short circuit current has a linear function whist the open circuit voltage increases logarithmically. As the solar insolation increases, current increases also and as a result the power output increases.

2.8 Photovoltaic Phenomenon

In 1983, the french physicist Edmund – Alexander Becquerel discovered the photovoltaic effect. By experimenting with an electrolytic cell which was made up of two metal electrodes, Becquerel discovered that small amounts of electric current occurs when certain materials are exposed to light. The axiom of the solar cells which solar energy is converted into electric energy is called Photovoltaic Phenomenon or Photovoltaic Effect [Encyclopedia Britannica, n.d].

In PV solar panel there are two types of semiconductors.

- N-type Semiconductor: The n stands for negative electrons. In this semiconductor there is a large amount of concentrated negative electrons and a small amount of holes.
- P-type Semiconductor: The p stands for positive electrons. In this semiconductor there is a large amount of concentrated holes and a small amount of electrons.

[Encyclopedia Britannica, n.d]

When direct sunlight falls on the PV solar cell, photons charge the holes which form excitons. Excitons are formed when an electron hole and an electron are attracted to each other by a coulomb force. The holes that are charged are moving to junction n-p (**Figure 7**) [F-Alpha, n.d]. The negative electrons from the n-type semiconductor are moving too to the junction n-p and that creates potential difference (voltage) [Encyclopedia Britannica, n.d].

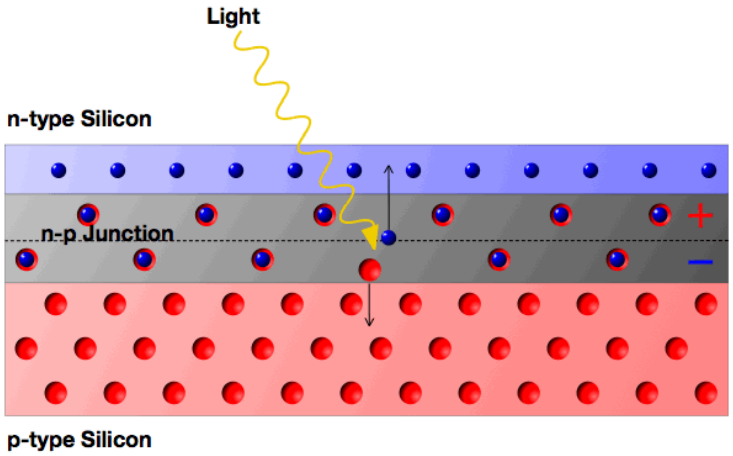


Figure 7: Illustration of Photovoltaic Phenomenon [F-Alpha, n.d]

CHAPTER 3

EXPERIMENTAL SECTION

3.1 Experimental Instruments

The instruments that have been used for the experiment are listed below:

1. Strata-sense Wireless IV Curve Tracker
2. Monocrystalline Silicon Solar Panel 10 W (Module 8)
3. Sunlinq Solar Panel 6.5 W (Module 4)
4. Monocrystalline Silicon Solar Panel 10 W (Module 3)
5. SunWare 3061 Solar Panel 12 W (Module 5)
6. Pyranometer Li-Cor 82139
7. Dimplex Mont Blanc DXMBCF (Cooling Fan)
8. Lutron Thermometer - 947USB
9. Mercury Thermometer
10. Lutron LM-8000

3.2 Features of Experimental Instruments

Below, the experimental instruments are presented with their features:

Table 2: Shows the properties of Strata-sense Wireless IV Curve Tracker and Monocrystalline-Si 10 W (Module 8)

1. Strata-sense Wireless IV Curve Tracker	2. Monocrystalline Silicon Solar Panel 10 W (Module 8)
Easy installation	Peak Power 10 W
Internet connectivity via WiFi, Ethernet or GSM	Voltatge maximum power 17.5 V
4-point accurate electrical connection to panel	Voltage open-circuit 21.5 V
No communicating wiring needed	Current maximum power 0.57 A
Operates with rechargeable AA batteries	Current short-circuit 0.65 A
Ability to charge batteries direct from sunlight while operates	Width-Height-Length: 29 x 2 x 34.1 cm
Transmits IV curves up to 91.44 meters line of sight	Weight 1.3 kg
View IV curves from direct sunlight, temperature, time, Current short-circuit, Voltage open-circuit, Current Maximum Power Peak, Voltage Maximum Power Peak, Peak Power, Fill Factor and Irradiance	Standard Test Conditions (STC): Air Mass 1.5, Temperature 25 ºC, Irradiance 1000 $\frac{W}{m^2}$
Sweeps up to 600 Volts, 20 Amps or 300 Watts	
1% accuration of Voltage and Current readings	

Table 3: Shows the properties of Sunlinq Solar Panel 6.5 W (Module 4) and Monocrystalline-Si 10 W (Module 3)

3. Sunlinq Solar Panel 6.5 W (Module 4)	**4. Monocrystalline Silicon Solar Panel 10 W (Module 3)**
Peak Power 6.5 W	Model Type BIO – 10
Voltage 12 V	Peak Power 10 W
Current 0.43 A	Voltage (mpp) 17.2 V
Unfolded dimensions Width-Height-Length: 22.3 x 0.1 x 70 cm	Voltage (oc) 21.6V
Weight 0.4 kg	Current (mpp) 0.58 A
Ultraviolet resistant and Weatherproof	Current (sc) 0.64 A
Flexible, easy folding and installation even in curved surfaces	Width-Height-Length: 28 x 2 x 33.5 cm
Able to charge rechargeable flash lights, lanterns, cell phones, GPS units, satellite phones, MP3 players and portable games	Weight 1.34 kg
Panels are made of PowerFlex technology which have a polyurethane coating	+3 Tolerance in module power
Copper Indium Gallium Diselenide (CIGD) solar cells including amorphous silicon	STC: Air Mass 1.5, Temperature 25 ºC, Irradiance 1000 $\frac{W}{m^2}$
CIGD material is proven to be stable and have bettter efficiency than other flexible solar cell technologies	
STC: Air Mass 1.5, Temperature 25 ºC, Irradiance 1000 $\frac{W}{m^2}$	

Table 4: Shows the properties of SunWare 3061 12 W (Module 5) and Pyranometer Li-Cor 82139

5. SunWare 3061 12 W (Module 5)	**6. Pyranometer Li-Cor 82139**
Monocrystalline Solar Panel	Sensor range: 0 to 3000 $\frac{W}{m^2}$
Serial No. 248549	Operated Temperature range: -40 ºC to 65 ºC
Peak Power 12 W	Operating Humidity range: 0 to 100 %
Voltage (mpp) 20 V	Diameter-Length: 23.8 x 25.4 mm
Current (mpp) 0.55 A	Weight 28 g
Width-Heght-Length: 23.6 x 0.5 x 47.6 cm	Detector: High-Stability Silicon Photovoltaic
Weight 1.2 kg	Serial No. 82139
Laminated surface	
Weather resistant and durable under extreme UV rays	
STC: Air Mass 1.5, Temperature 25 ºC, Irradiance 1000 $\frac{W}{m^2}$	
Serial No. 248549	

Table 5: Shows the properties of Dimplex Mont Blanc (Cooling Fan) and Lutron Thermometer - 947USB

7. Dimplex Mont Blanc (Cooling Fan)	**8. Lutron Thermometer - 947USB**
Width-Diameter (Base)-Height: 31.3 x 31.3 x 120.9 cm	Type K/J/T/E/R/S, Pt 100 Ohm
Weight 3.1 kg	Show 4 channels display on the LCD at the same time
Power Consumption 40 W	USB Memory stick data record
3 Fan Speed Settings	Datalogger: Auto 1 to 3600 seconds, Manual 1 to 99 position
Oscillating Function	USB Memory Stick 1 GB to 16 GB
Remote Control	Operating Temperature 0 to 50 ºC
Electronic LED control display	Operating Humidity Less than 85 % R.H.
Serial No. 42505210	Heavy duty and compact housing case
	Dimensions: 177 x 68 x 45 mm
	Weight 489 g
	Serial No. 268558

Table 6: Shows the properties of Mercury and Thermometer Lutron LM-8000

9. Mercury Thermometer	**10. Lutron LM-8000**
Classic mercury thermometer for measuring ambient temperature	Anemometer, Humidity meter, Light meter, Type K Thermometer
Measuring temperature -8 to 50 ºC	Anemometer units: m/s, km/h, MPH, knots, ft/min, oC/oF
Width-Height-Length: 8.5 x 1.6 x 25 cm	Anemometer: 0.4 to 30 $\frac{m}{s}$
	Humidity : 10 to 95 % RH, oC/oF
	Light : 0 to 20,000 Lux, 0 to 1,680 Ft-cd
	Type K Thermometer : -100 to 1300 oC, oC/oF
	Serial No. 33366

CHAPTER 4

EXPERIMENTAL PROCEDURE - MEASUREMENTS

4.1 Experimental Set-Up

At first, Dimplex Mont Blanc (instrument serial no. 42505210) has been chosen for cooling the solar panels. The main reason of this choice was because of it oblong shape. Thus, it would help cool, in width the solar panels (**Figure 8**) in a uniform manner. After that, two steel brackets have been placed on wooden base to hold the fan. The wooden base was facing south with a tilt of 30º angle. Lutron Thermometer - 947USB kept track of the temperature on the solar panels. 4 thermocouple wires were attached to the back of the 4 solar panels by thermal insulation tape. Thermocouple wires were connected to the channels on the thermometer. The thermometer was set to K-Type on settings.

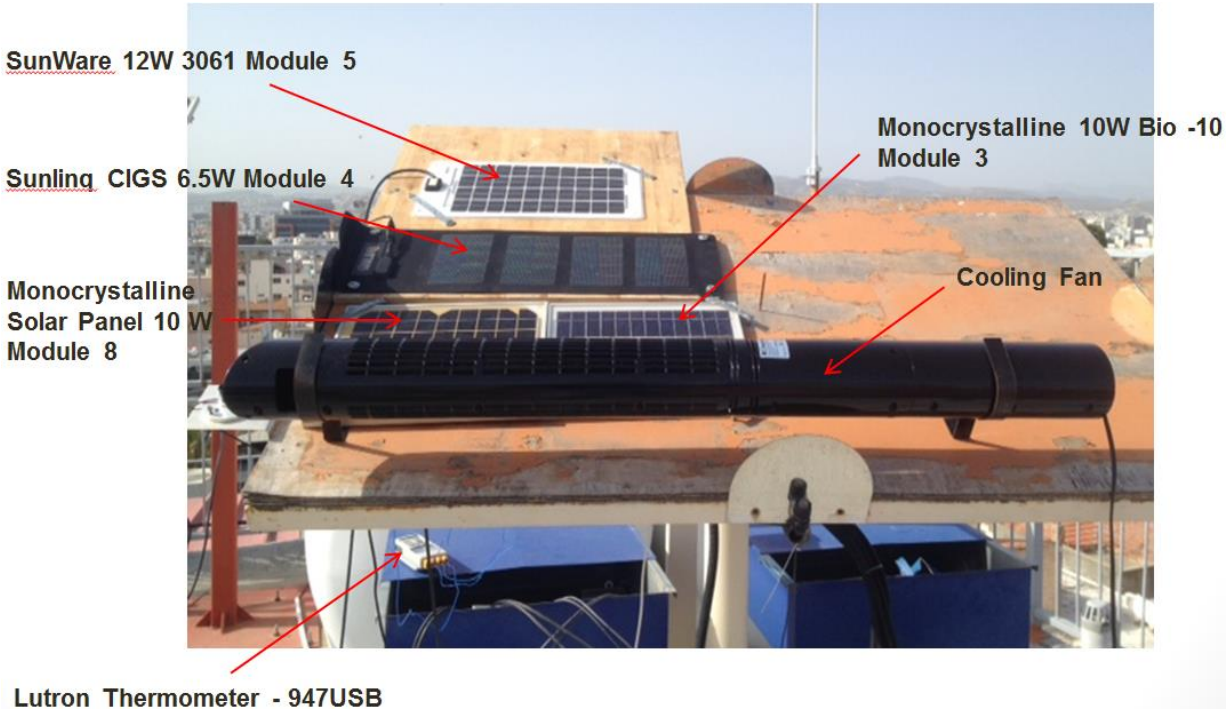


Figure 8: PV stand with four panels and Dimplex Mont Blanc fan

4.2 Experimental Procedure

Measurements were taken morning, midday and afternoon, during the summer season of 2015. For better results, not windy days (0.1m/s – 1m/s) were selected for taking measurements. Unfortunately, because of the high altitude that solar panels were placed some measurements were recorded when the weather was windy, most of them midday and afternoon.

At first, the ambient conditions were recorded, the readings from IV curve tracker and surface temperature of the solar panels were recorded while the fan was off. Recordings were taken 6 times for each panel for IV curves and the surface temperature of the solar panels. After that,the fan was set on speed 1 and waited 5 minutes to cool the panels. Again, IV curves and temperature recordings were taken 6 times for each solar panels. This process was continued until speed 3 on fan was reached. The same procedure was repeted at midday and afternoon.

The mean temperature was measured separately for each speed and fan off, from datalogger on lutron thermometer - 947USB. The efficiency of solar panels was derived for each IV curve (**Table 8**). To calculate the efficiency, the power output was devided by power input ($\frac{Pout}{Pin}$). Power output is the product of Voltage (mpp) times Current (mpp). Power input is the product of Irradiance - E ($\frac{W}{m^2}$) falling on solar panel times the surface Area (m^2) of the panel.

With the aid of an anemometer (Lutron LM-8000) the fan velocity was recorded. The anemometer was placed in the middle of the wooden base centered to the fan and readings of fan velocity were recorded, 6 times for each speed. Then, mean velocity was calculated for each speed (**Table 9**). After that, the graphs were ploted from the mean efficiency against mean velocity for each speed and fan off. This process was done in order to observe linearity of PV's efficiency against velocity of the cooling fan.

Table 8, is an example of temperature and efficiency that have been recorded and calculated on Module 4 (Sunlinq Solar Panel 6.5W).

Date: 1/6/2015 - Morning Measurement

Temperature Ambient: 23 ºC

Fan OFF

Table 8: Shows time, panel temperature, calculated mean temparature and efficicency for Module 4

Time AM	Panel Temperature ºC	Efficiency %
8:17	36,6	2,05
8:19	37	2,05
8:23	37,7	2,05
8:33	41	1,8
8:36	42,1	1,79
9:41	50,5	1,68

Mean Temperature: 40,81 ºC

Equation: 3 Efficiency: $n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ 0.06806692}{428\ x\ 0{,}0671}$ x 100 = 2,05 %

Table 9: Shows the velocity of air in each fan speed and calculated mean velocity

No.	Speed 1 ($\frac{m}{s}$)	Speed 2 ($\frac{m}{s}$)	Speed 3 ($\frac{m}{s}$)
1	2	3,5	3,9
2	2,6	3,3	4,1
3	2,5	3,4	4,4
4	2,6	3,1	3,9
5	2,6	3,2	3,4
6	1,9	3	3,7
	2,3	**3,2**	**3,9**

Mean Velocity on Speed 1 is 2,3 $\frac{m}{s}$, on Speed 2 is 3,2 $\frac{m}{s}$, and on Speed 3 is 3,9 $\frac{m}{s}$.

CHAPTER 5

RESULTS

5.1 Efficiency and Temperature Results

The following measurement was recorded on the 1st of June in the morning when the cooling fan was off and Speed 3, for Module 5 (SunWare 3061, 12 W). Due to similarities of the following multiple graphics, figures weren't insert. The following graphs shows the Voltage (V) against Current (I) (**Figure 9**). All measurements are shown in the appendices (page 41).

Module 5

Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
8:16	35	12,63
8:19	35,6	12,72
8:23	36,4	12,74
8:33	38,8	12,72
9:33	48	12,6
9:40	50	12,58

Mean Temperature: 40,63 ºC

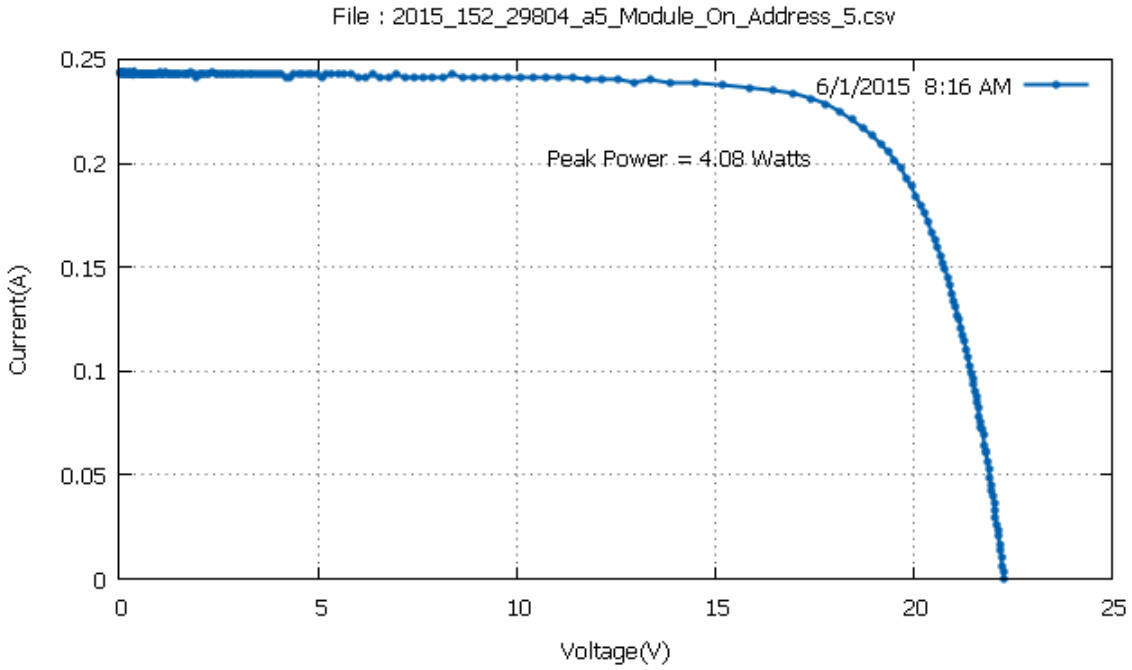
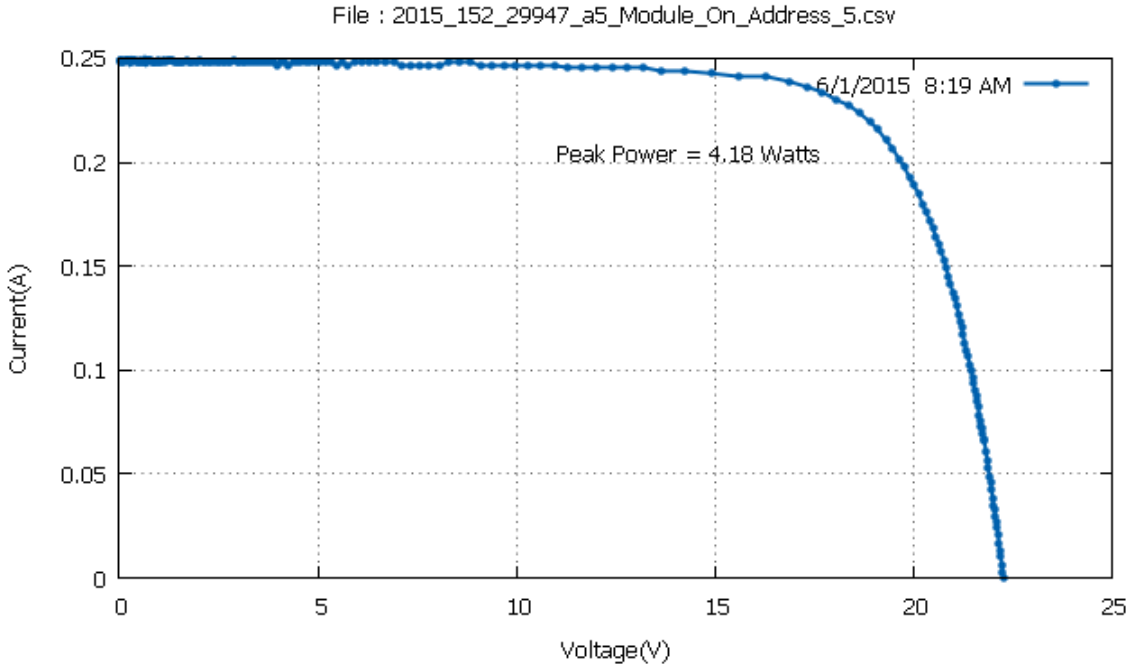
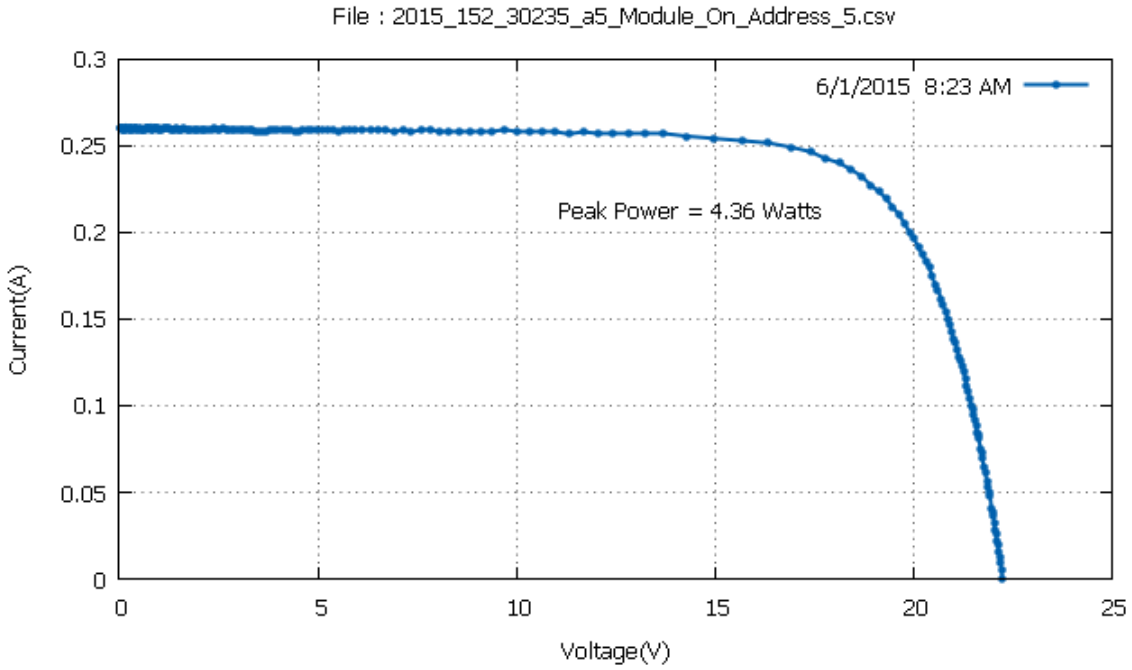


Figure 9: Graph shows Current against Voltage

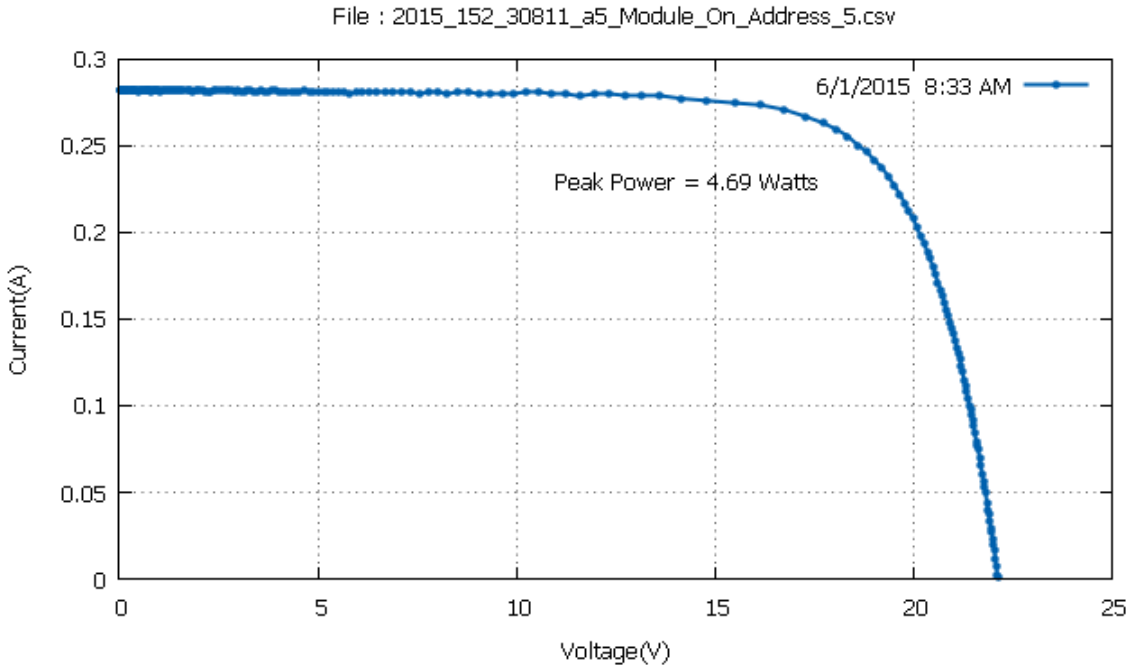
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1532669\ x\ 0.224749267}{427\ x\ 0{,}0756} \text{ x } 100 = 12{,}63\ \%$$



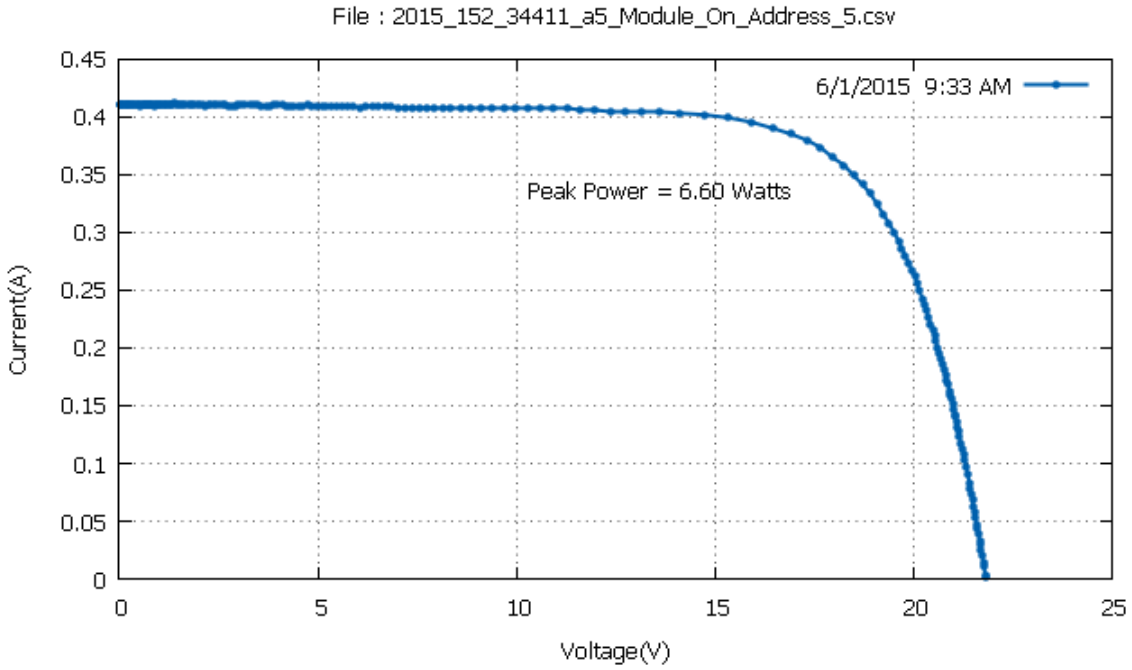
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3852081\ x\ 0.227317825}{434.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



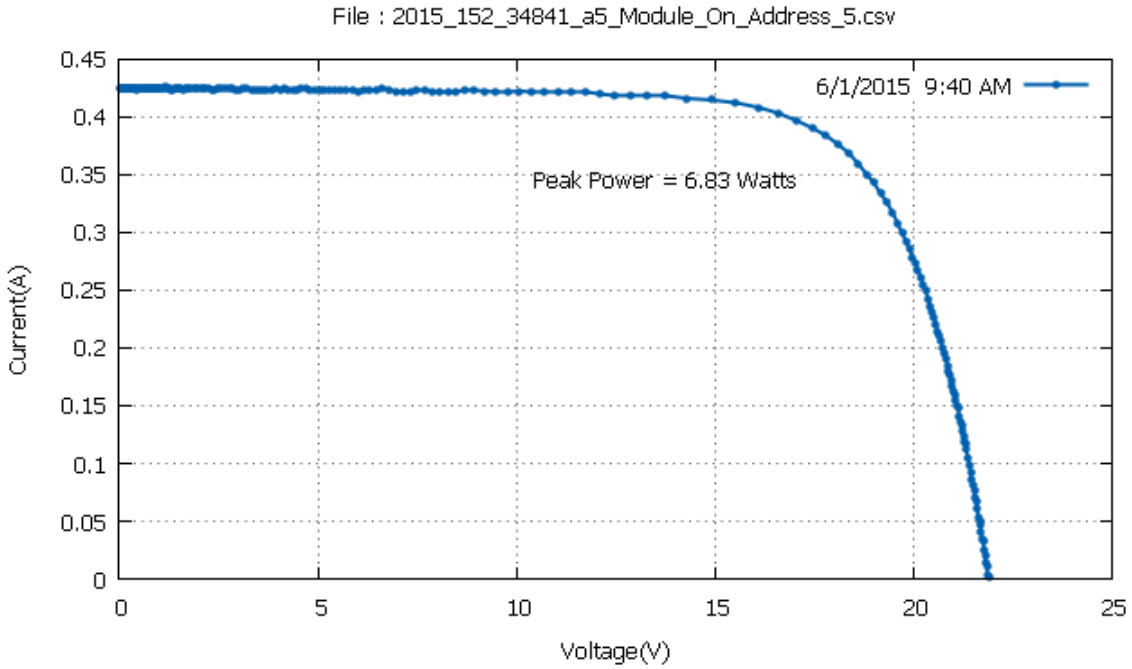
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4315968\ x\ 0.2363078}{452.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0759525\ x\ 0.259424865}{487.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6584587\ x\ 0.373725921}{692.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.384000152}{717.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}58\ \%$$

Module 5

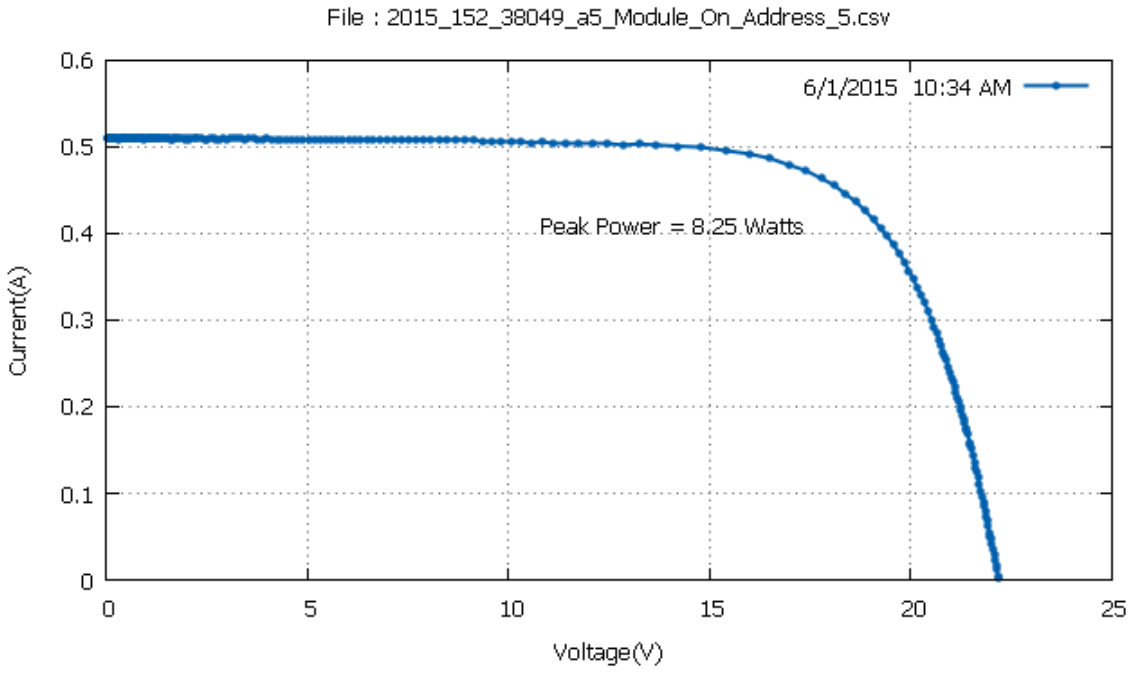
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

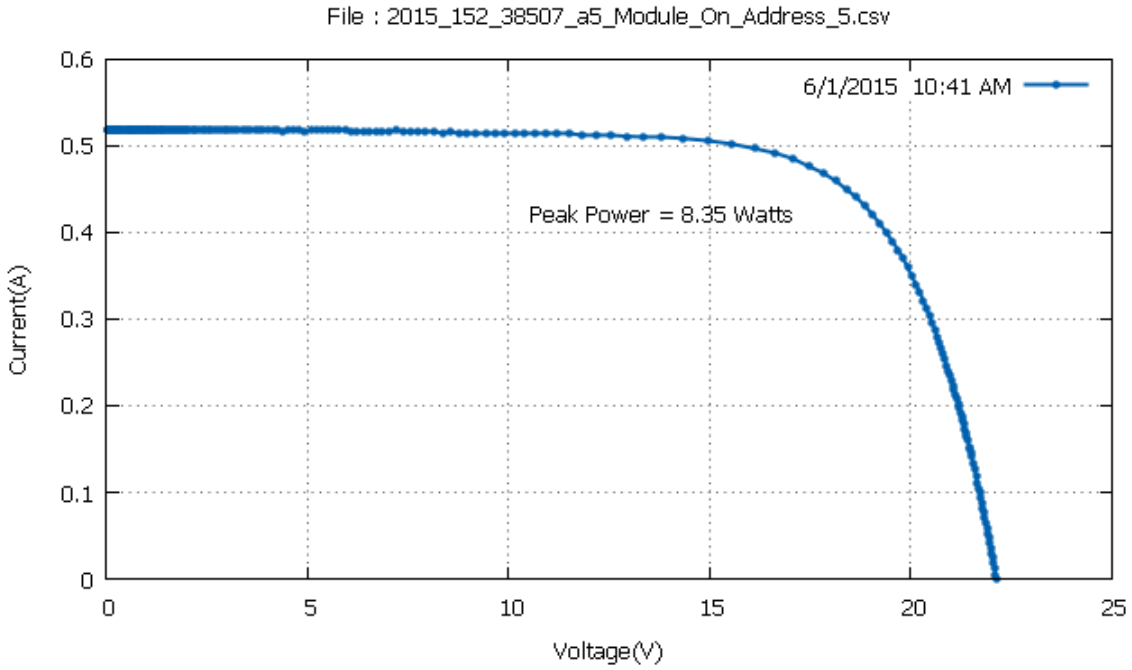
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
10:34	46,5	12,7
10:41	47,1	12,64
10:44	47,5	12,64
10:47	47,9	12,6
10:58	48,5	12,53
10:59	48,3	12,54

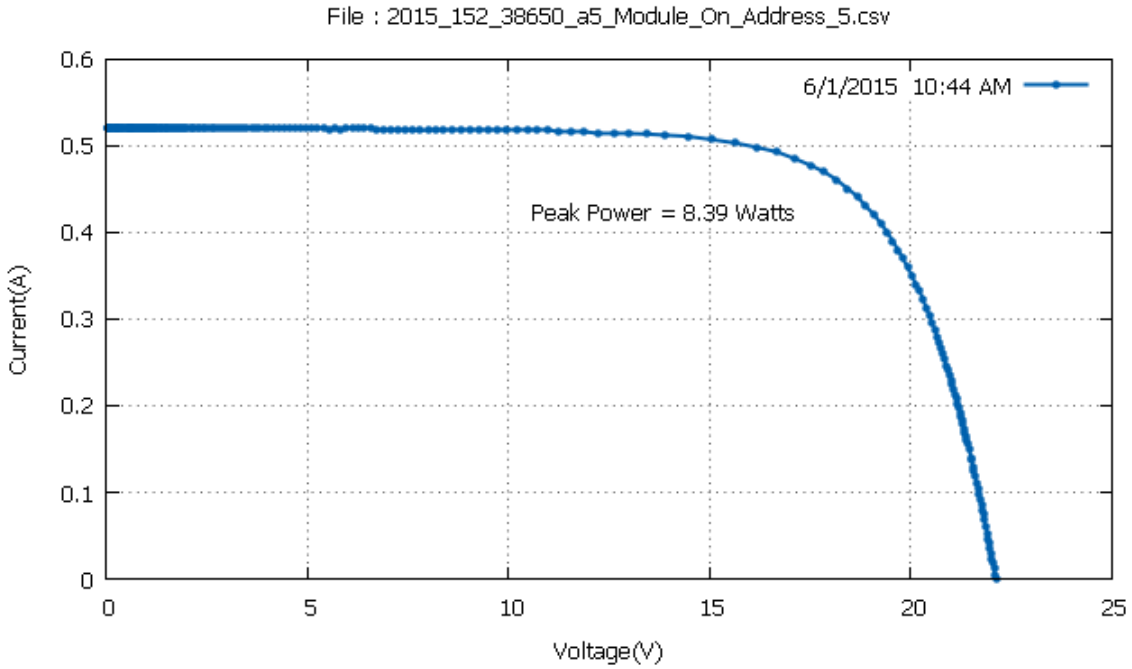
Mean Temperature: 47,63 ºC



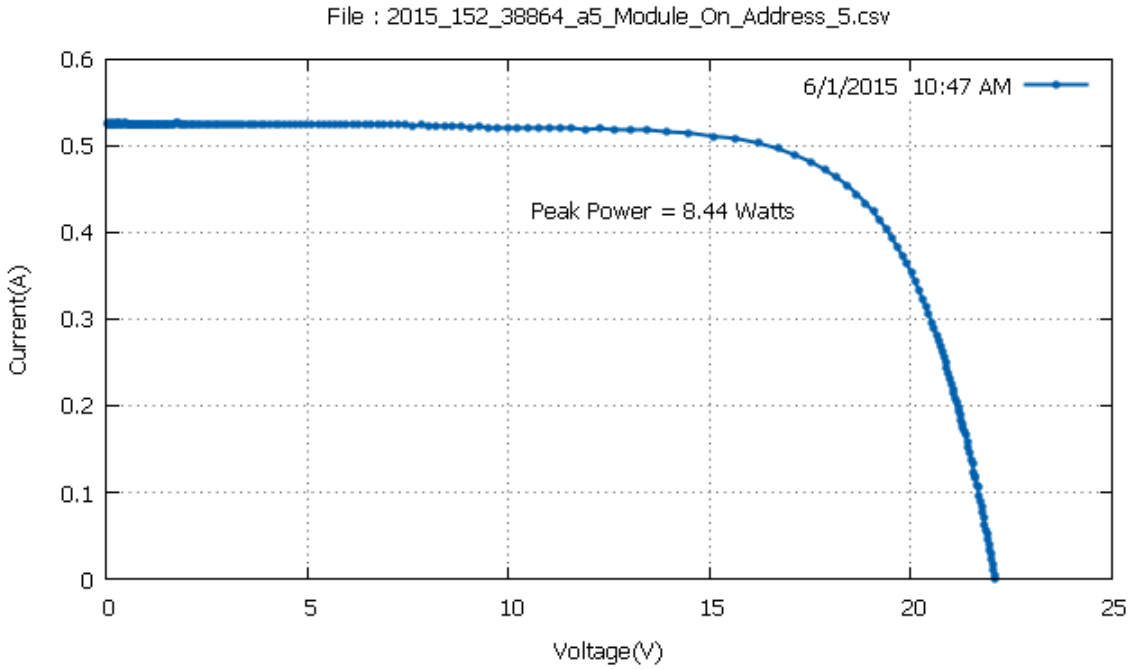
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.455919921}{859.3\ x\ 0{,}0756}$ x 100 = 12,7 %



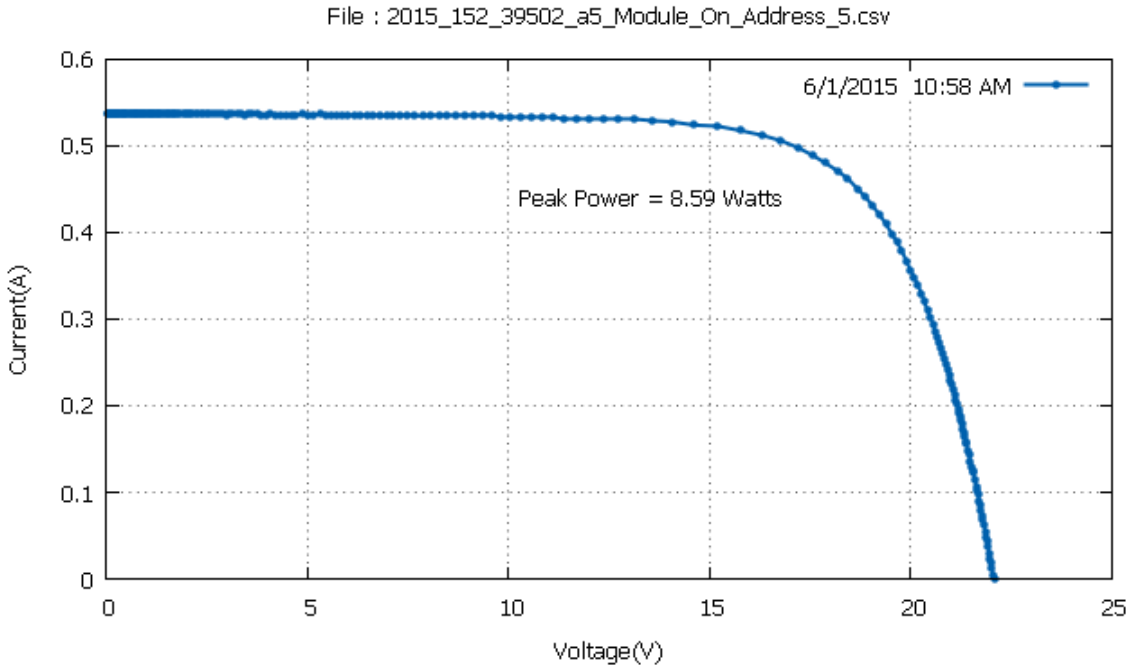
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8130875\ x\ 0.468762755}{873.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}64\ \%$$



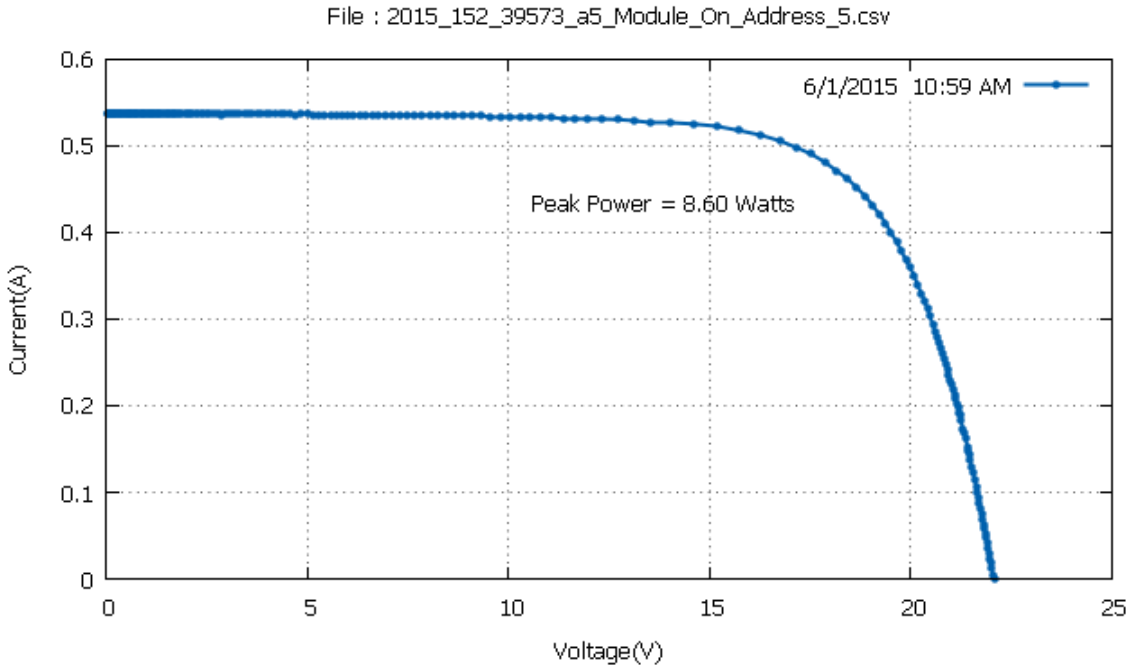
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8440113\ x\ 0.470047027}{877.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}64\%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.4726156}{885.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.489311248}{906.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.48160556}{906.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}54\ \%$$

5.2 Graphs of Efficiency against Velocity

The following graphs show the correlation between the efficiency and the speed of air.

M8 = Module 8 = Monocrystalline-Si Solar Panel 10 W

M4 = Module 4 = CIGD and Amorphus-Si Sunlinq Solar Panel 6.5 W

M3 = Module 3 = Monocrystalline-Si Solar Panel 10 W

M5 = Module 5 = Monocrystalline-Si SunWare 3061 Solar Panel 12 W

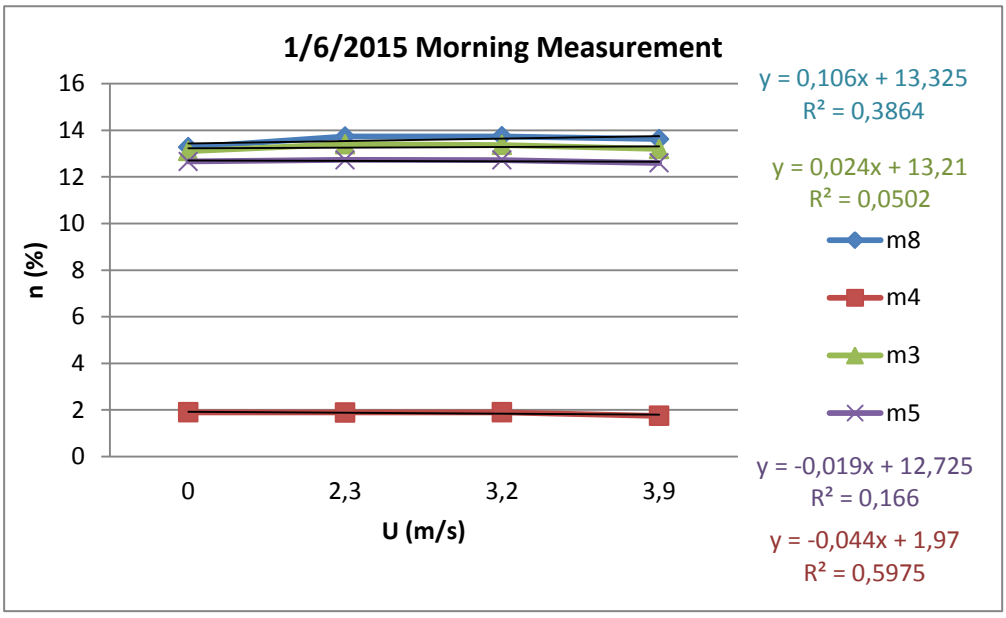


Figure 10: 1/6/2015 Morning Measurement – correlation of efficiency against mean velocity

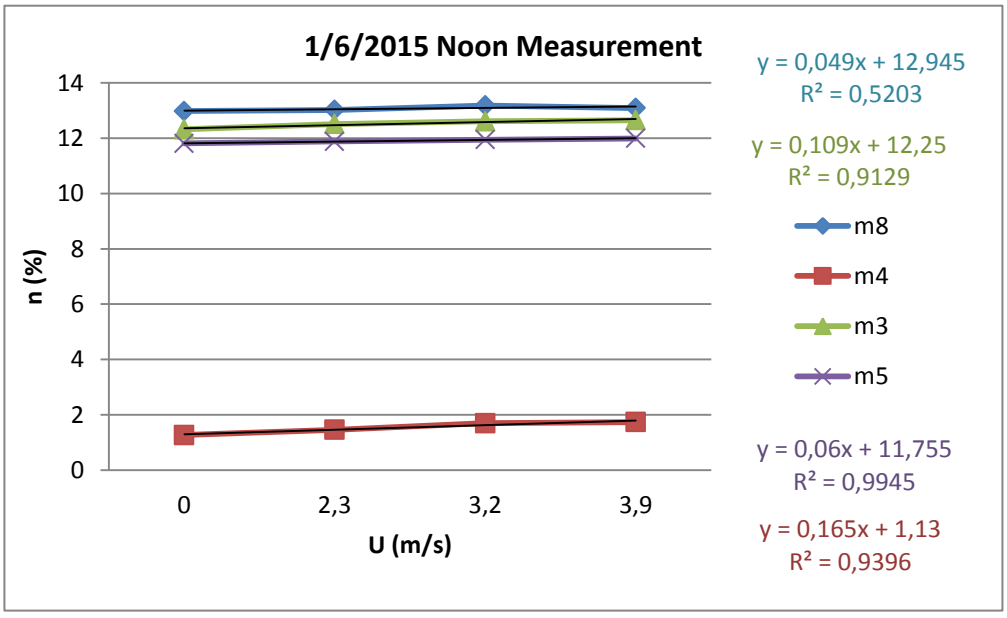


Figure 11: 1/6/2015 Noon Measurement – correletion of efficiency against mean velocity

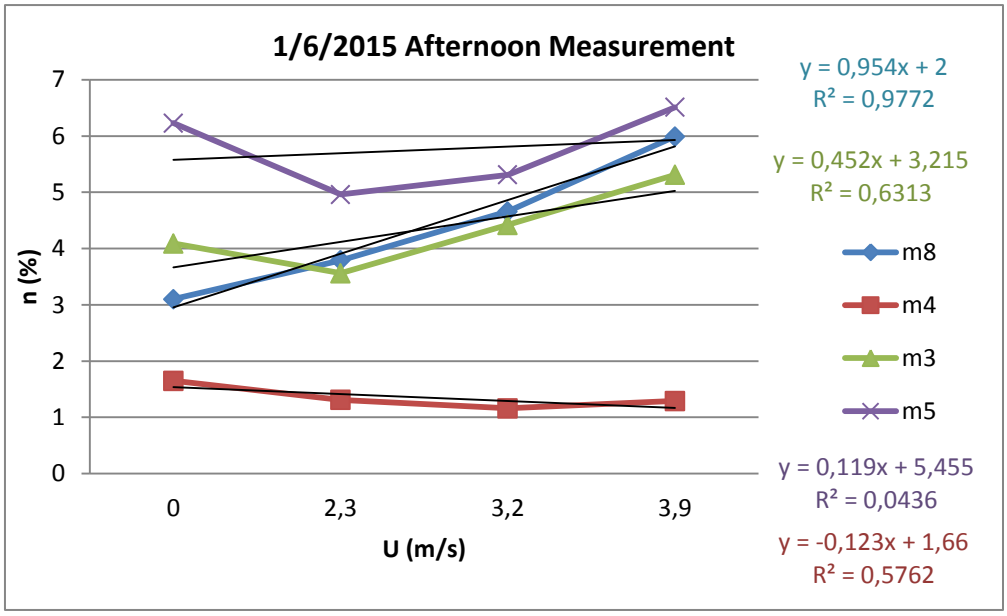


Figure 12: 1/6/2015 Afternoon Measurement – correlation of efficiency against mean velocity

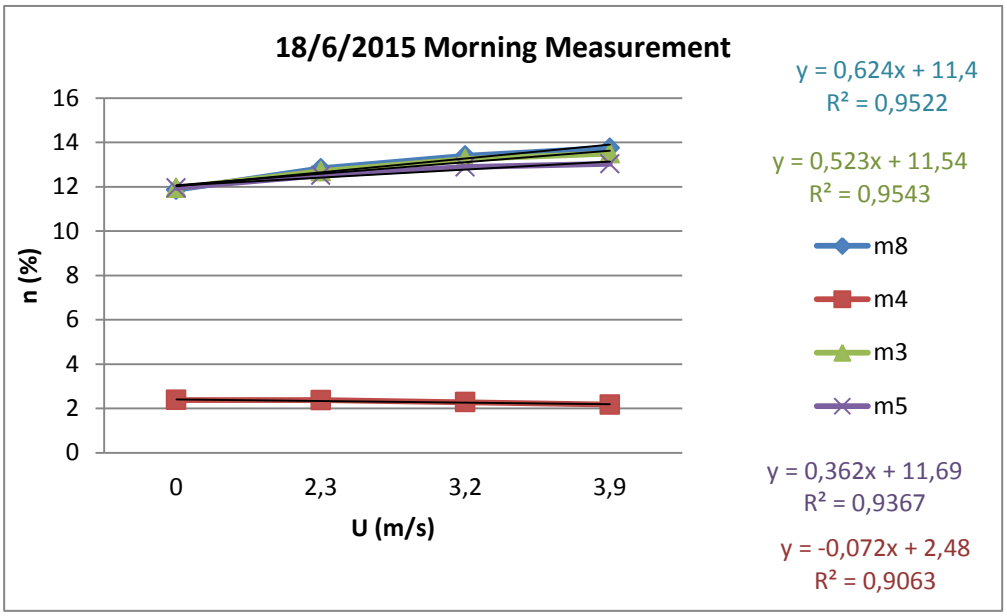


Figure 13: 18/6/2015 Morning Measurement – correlation of efficiency against mean velocity

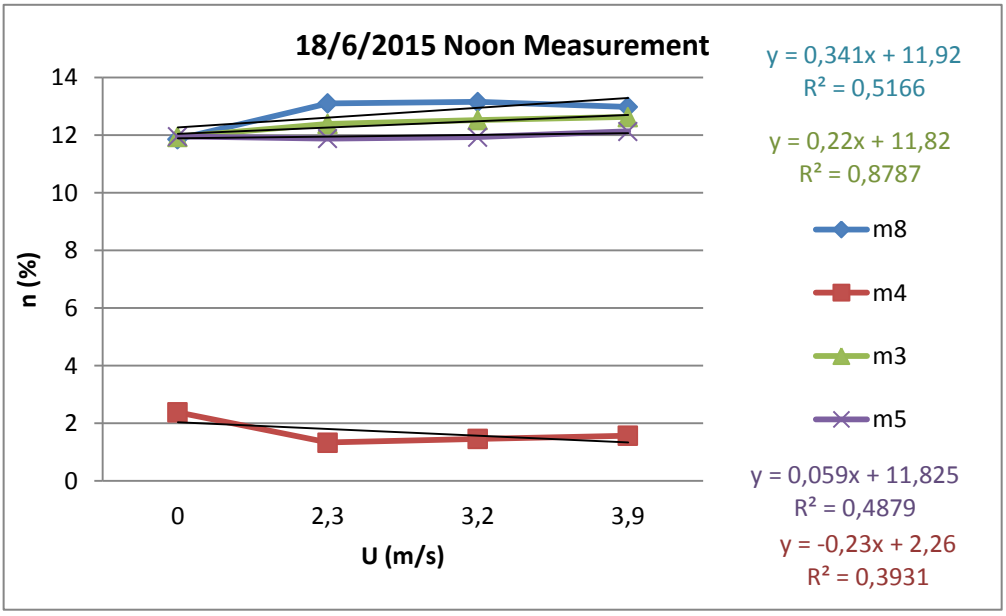


Figure 14: 18/6/2015 Noon Measurement – correlation of efficiency against mean velocity

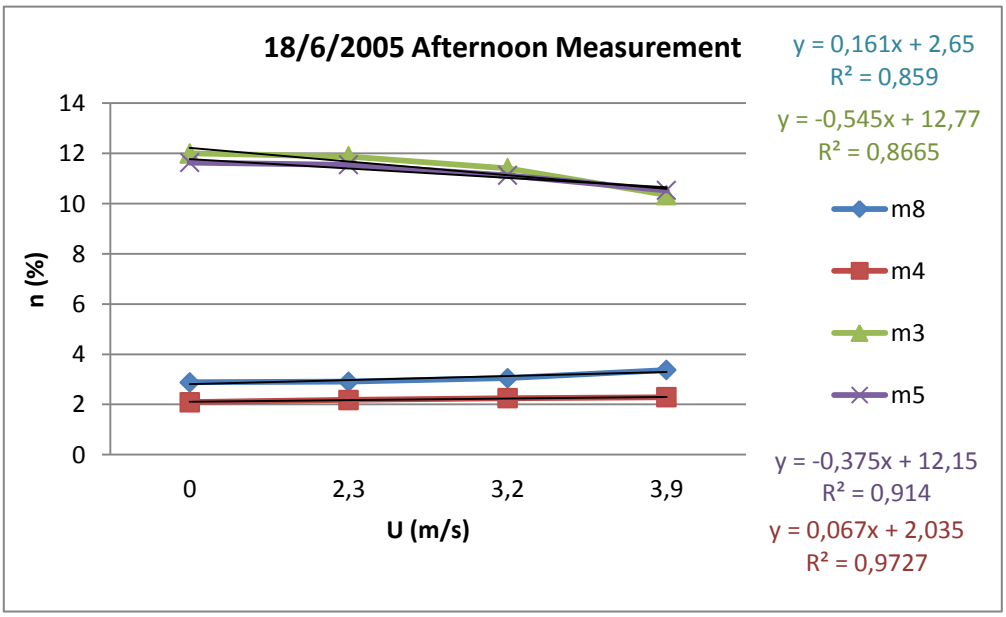


Figure 15: 18/6/2015 Afternoon Measurement – correlation of efficiency against mean velocity

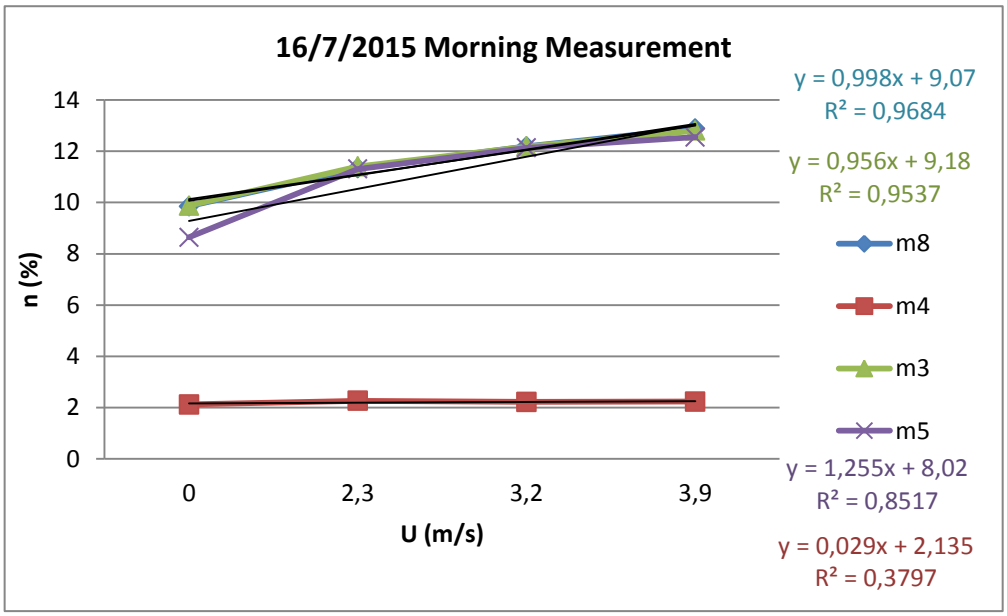


Figure 16: 16/7/2015 Morning Measurement – correlation of efficiency against mean velocity

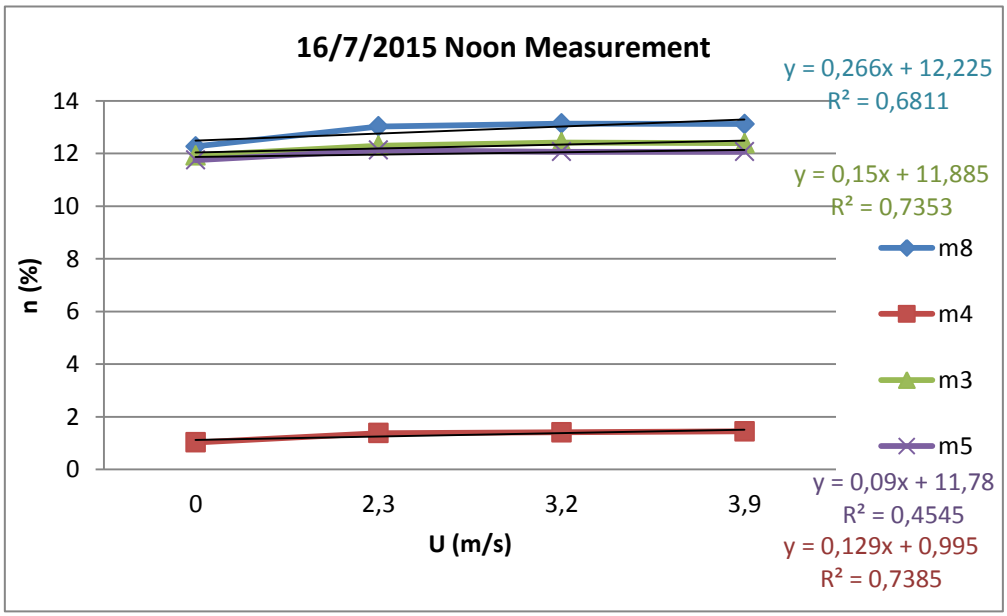


Figure 17: 16/7/2015 Noon Measurement – correlation of efficiency against mean velocity

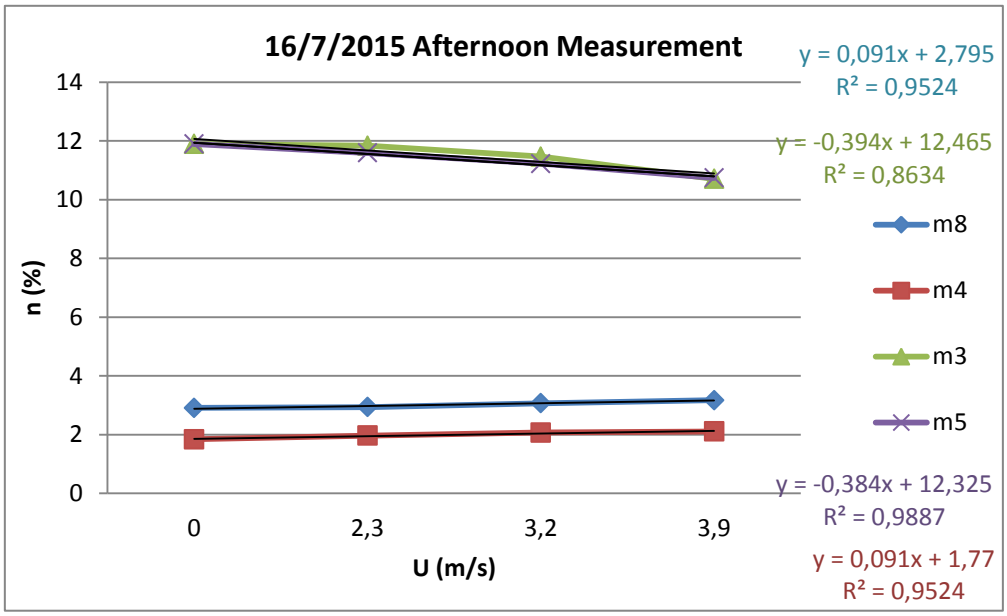


Figure 18: 16/7/2015 Afternoon Measurement – correlation of efficiency against mean velocity

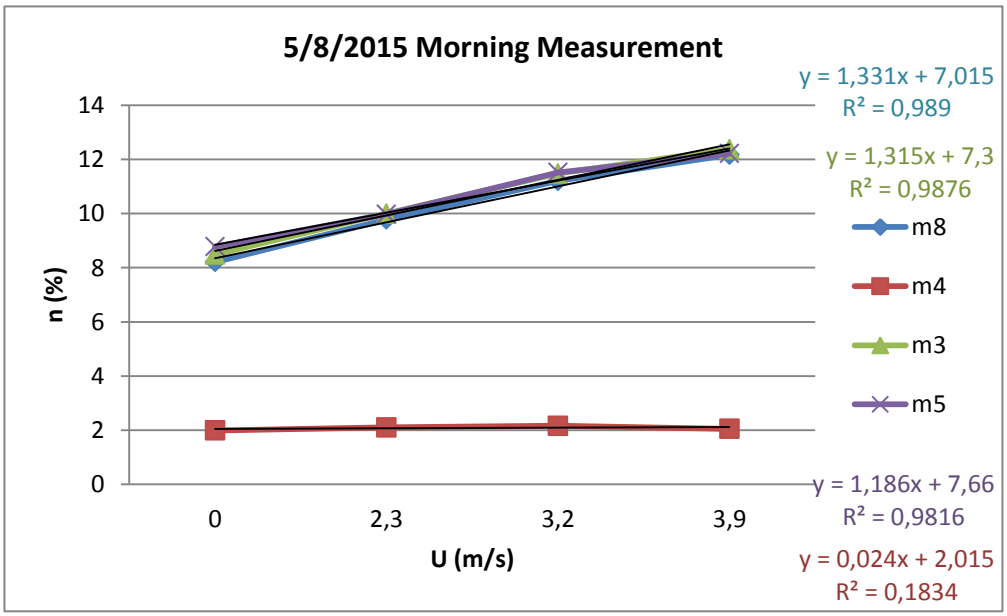


Figure 19: 5/8/2015 Morning Measurement – correlation of efficiency against mean velocity

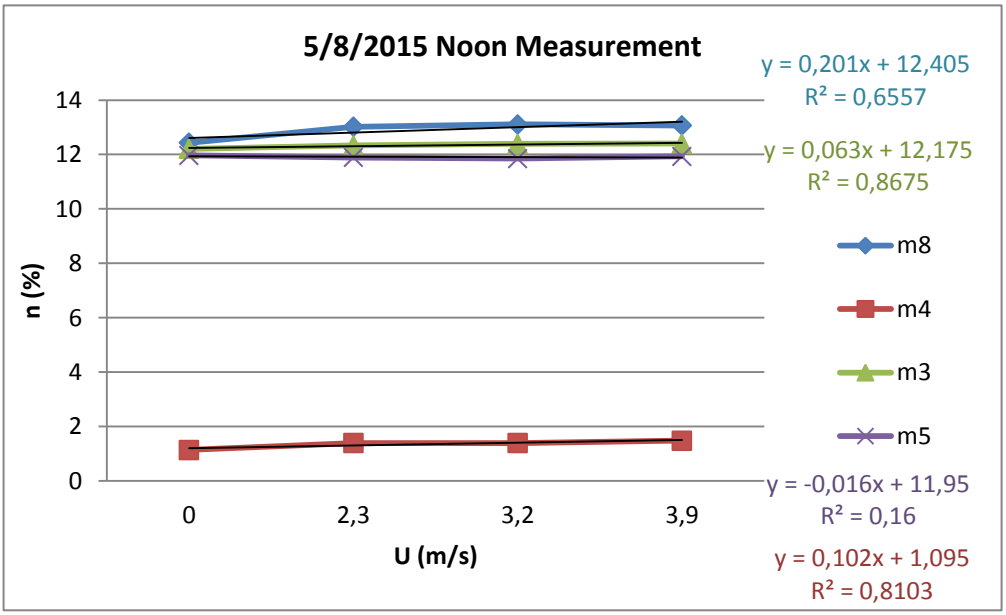


Figure 20: 5/8/2015 Noon Measurement – correlation of efficiency against mean velocity

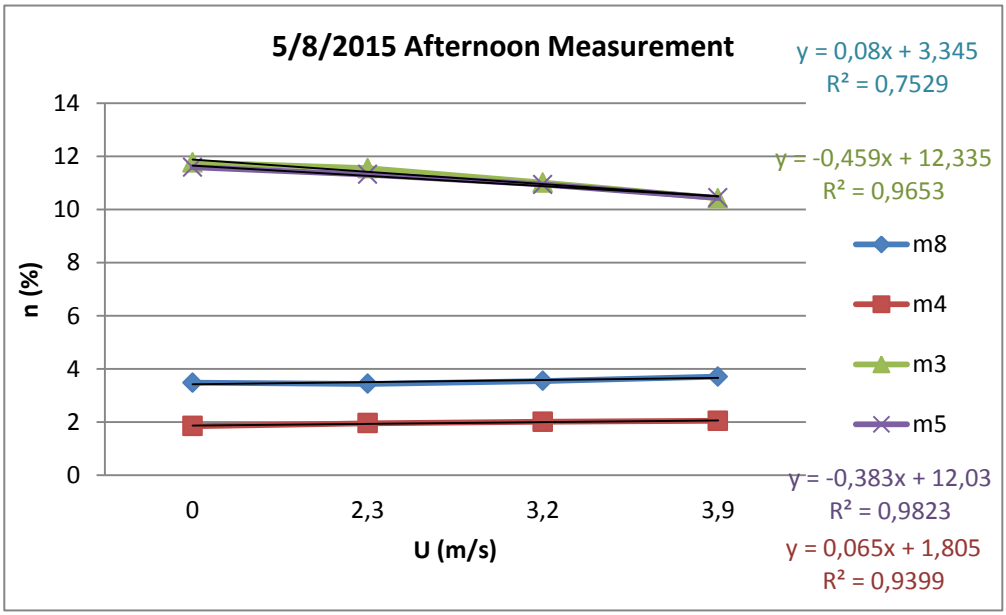


Figure 21: 5/8/2015 Afternoon Measurement – correlation of efficiency against mean velocity

CHAPTER 6

CONCLUSIONS

Observations on the photovoltaic's efficiency and panel temperature have been made when the cooling fan was off and under normal operation. Measurement dates that are reported below were chosen when there was clear weather or was slight windy weather.

6.1 Observations on Efficiency

Morning:

Monocrystalline Solar Panel 10 W (Module 8) had a slight efficiency increase when temperature ambient was 23 ºC (1/6/2015). An efficiency increase of 2%, 3% and 4% were observed when temperature ambient was 31 ºC (18/6/2015), 30 ºC (16/7/2015) and 33 ºC (5/8/2015) respectively.

Sunlinq Solar Panel 6.5W (Module 4) had a slight efficiency decrease when temperature ambient was 23 ºC (1/6/2015). A slight efficiency increase when temperature ambient was 31 ºC (18/6/2015), 30 ºC (16/7/2015) and efficiency stayed the same on 5/8/2015 (T_a = 33 ºC).

Monocrystalline Solar Panel 10 W (Module 3) had a slight efficiency increase when temperature ambient was 23 ºC (1/6/2015) and 31 ºC (18/6/2015). An efficiency increase of 3% and 4% were observed when temperature ambient was 30 ºC (16/7/2015) and 33 ºC (5/8/2015) respectively.

Monocrystalline SunWare 3061 Solar Panel 12 W (Module 5), the efficiency stayed the same at T_a = 23 ºC (1/6/2015). An efficiency increase of 1%, 3% and 3.5% were observed when temperature ambient was, 31 ºC (18/6/2015), 30 ºC (16/7/2015) and 33 ºC (5/8/2015) respectively.

Noon:

Monocrystalline Solar Panel 10 W (Module 8), the efficiency stayed the same at T_a = 26 ºC (1/6/2015), had a slight efficiency increase at T_a = 36 ºC (18/6/2015). An efficiency increase of 1% had on the dates 16/7/2015 (T_a = 38 ºC) and 5/8/2015 (T_a = 40 ºC).

Sunlinq Solar Panel 6.5W (Module 4) had a slight increase of efficiency during noon measurements.

Monocrystalline Solar Panel 10 W (Module 3) had a slight increase of efficiency during noon measurements.

Monocrystalline SunWare 3061 Solar Panel 12 W (Module 5) had a slight increase of efficiency during noon measurements.

Afternoon:

Monocrystalline Solar Panel 10 W (Module 8) had an efficiency increase of 3% at T_a = 24 ºC (1/6/2015). During the following dates of measurement, efficiency was slightly increased.

Sunlinq Solar Panel 6.5W (Module 4), the efficiency had a slight decrease on T_a = 24 ºC (1/6/2015). During the following dates of measurement, efficiency was slightly increased.

Monocrystalline Solar Panel 10 W (Module 3) had a slight efficiency increase at T_a = 24 ºC (1/6/2015). An efficiency decrease of 1.5% were observed on the dates 18/6/2015 (T_a = 32 ºC) and 16/7/2015 (T_a = 37 ºC). An efficiency decrease of 1% were observed when temperature ambient was 39 ºC (5/8/2015).

Monocrystalline SunWare 3061 Solar Panel 12 W (Module 5), the efficiency stayed the same at T_a = 24 ºC (1/6/2015). During the following dates of measurement, efficiency were decreased by 1%.

6.2 Observations on Panel Temperature

Morning time:

During morning time, It is observed in all 4 photovoltaic panels an increase of temperature regardless of whether the fan was working. This occurs due to the fact that during morning time the temperature on the PV panels is low and fan is unable to cool the panels, thus it is observed an increase of the temperature until midday.

Table 10: Shows the temperature for PV panels during noon

Monocrystalline Solar Panel 10W (Module 8)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	25	-3.5
18/6/2015	36	-2
16/7/2015	38	-6
5/8/2015	40	-12
Sunlinq Solar Panel 6.5W (Module 4)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	25	-8.5
18/6/2015	36	-11
16/7/2015	38	-10
5/8/2015	40	-9
Monocrystaline Solar Panel 10W (Module 3)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	25	-9.5
18/6/2015	36	-3
16/7/2015	38	-10
5/8/2015	40	-11
Monocrystalline SunWare 3061 Solar Panel 12 W (Module 5)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	25	-6
18/6/2015	36	-10
16/7/2015	38	-11.5
5/8/2015	40	-3

Table 11: Shows the temperature for PV panels during afternoon

Monocrystalline Solar Panel 10W (Module 8)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	24	-3
18/6/2015	32	-10
16/7/2015	37	-8
5/8/2015	39	-7
Sunlinq Solar Panel 6.5W (Module 4)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	24	-3
18/6/2015	32	-9
16/7/2015	37	-8
5/8/2015	39	-8
Monocrystalline Solar Panel 10W (Module 3)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	24	-3
18/6/2015	32	12
16/7/2015	37	-11
5/8/2015	39	-10
Monocrystalline SunWare 3061 Solar Panel 12 W (Module 5)		
Date	Ta (ºC)	Panel Temperature Change (ºC)
1/6/2015	24	-4
18/6/2015	32	-10
16/7/2015	37	-7
5/8/2015	39	-7

6.3 Observations on Graphs of Efficiency against Velocity

It is observed, during morning measurements the correlation of efficiency against velocity to be linear apart from **Figure 10**. Except that, module 4 observed to be nonlinear on **Figures 16** and **19**.

During noon measurements, all modules tend to be not exact linear, more module 5 tends to be nonlinear in **Figures 14**, **17** and **20**.

At afternoon measurements, all modules tend to be linear, except modules 4, 5 on **Figure 12**.

6.4 General Conclusions

In the literature review of the project, it is mentioned the measurement of solar radiation by using reference cells which are responsible for measuring the performance of the photovoltaics. Some examples have been shown in which the cell sensitivities affected by the atmospheric parameters during direct normal irradiance and global horizontal irradiance. The factors that affect the efficiency of photovoltaics have been mentioned and Maximum Power Point (MPP) has been discused also.

Using a fan to cool the photovoltaic solar panels was observed that there was an increase on the efficiency but not dramatically even when the fan was working at high speed. Moreover, in the afternoon some moments of a decrease on the efficiency on Modules 3 and 5 were observed. The reason is that there wasn't a direct irradiance on solar panels because the stand was fixed and not tracking the sun.

Regarding the temperature on PV panels, it is observed a significant decrease of the temperature in all four panels during the morning and afternoon.

To supplement the results of this experiment, it would be better if the stand of PV panels could track the sun to allow direct normal irradiance for more stable results. Due to bad weather conditions (windy and cloudy) of the summer 2015 and the high altitude where the solar panels were, it was difficult to track a non windy day so it would be better if the photovoltaic solar panels were placed on sea level. Also, to have a more general view regarding the different types of photovoltaics polycrystalline-si should be added. Another thing is worth noted is that, because there were six measurements for each speed and when fan was off, it was time consuming. It needed one hour and fifteen minutes to complete the measurement for each period of day (morning, noon and afternoon), so by the time fan off reached speed 3 the angle of the sun changed dramatically with result not to taken more direct and accurate measurements. Finaly, it would be better if the solar cells were aligned, to be able to have the same distance from the fan but will need another fan.

REFERENCES

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APPENDIX

The following graphs shows Voltage (V) against Current (I) which are given by the system Strata-sense Wireless IV Curve Tracker. Due to the large amount of graphs, figures weren't insert but Figure 9.

Module 4

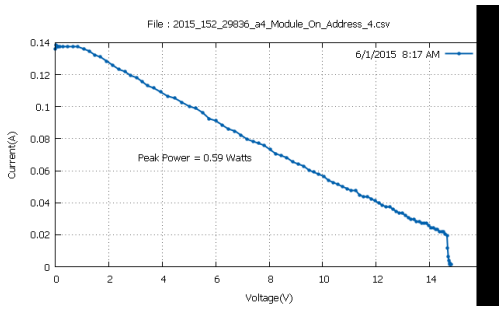
Date: 1/6/2015 - Morning Measurement

Temperature Ambient: 23 ºC

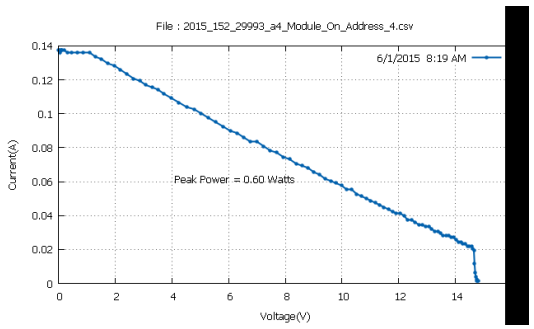
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
8:17	36,6	2,05
8:19	37	2,05
8:23	37,7	2,05
8:33	41	1,8
8:36	42,1	1,79
9:41	50,5	1,68

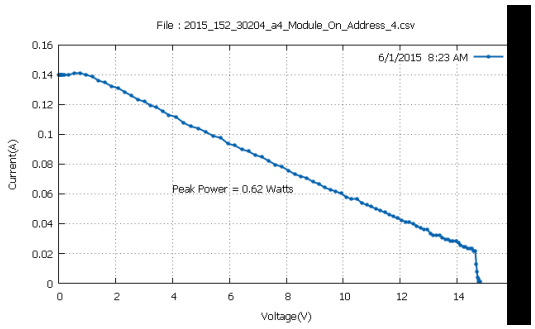
Mean Temperature: 40,81 ºC



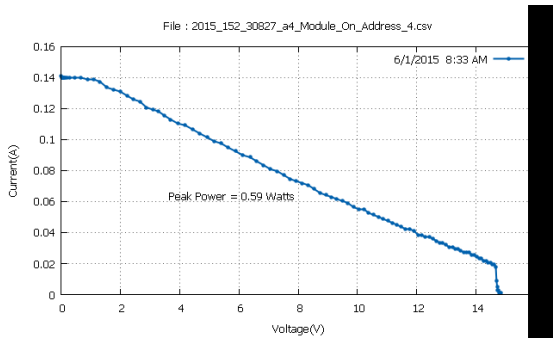
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ \ 0.06806692}{428\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



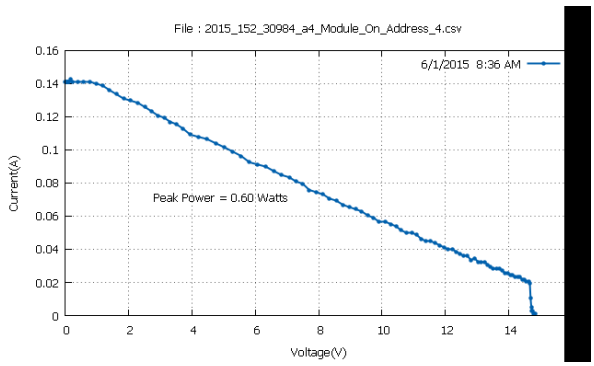
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.9452\ x\ 0.06806692}{435.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



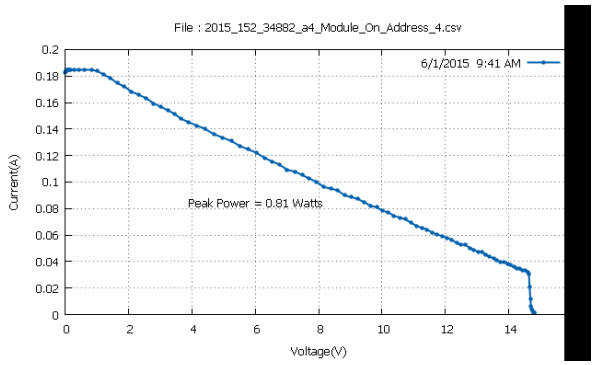
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.07063548}{450.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.334421\ x\ 0.07063548}{487.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.651408x\ 0.06806692}{498.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}79\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.231261\ x\ 0.08733114}{717.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}68\ \%$$

Module 8

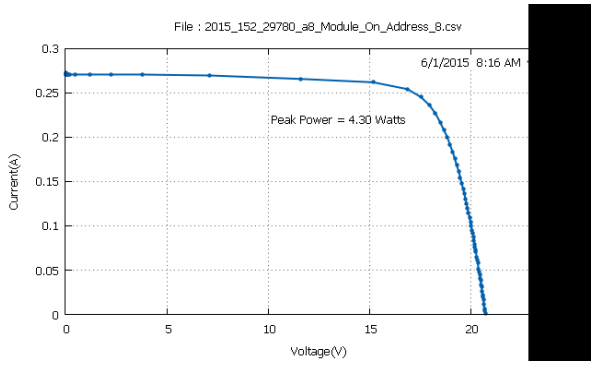
Date: 1/6/2015 - Morning Measurement

Temperature Ambient: 23 ºC

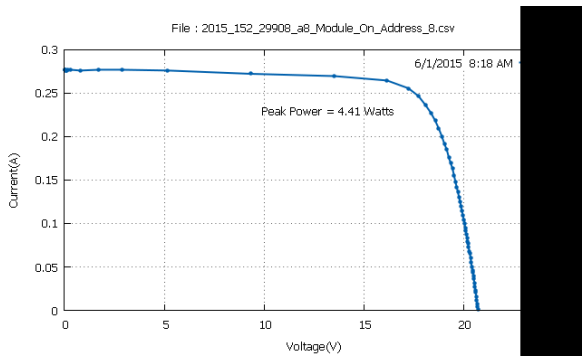
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
8:16	34	13,15
8:18	34,3	13,26
8:20	34,6	13,26
8:33	38,9	13,27
8:35	39,7	13,2
9:39	43	13,49

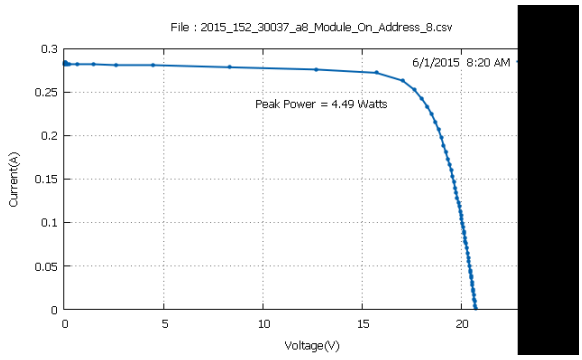
Mean Temperature: 37,41 ºC



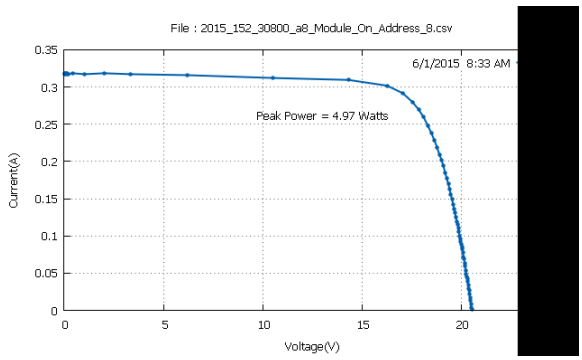
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5424881\ x\ 0.24529776}{425.8\ x\ 0{,}0768} \text{ x } 100 = 13{,}15\ \%$$



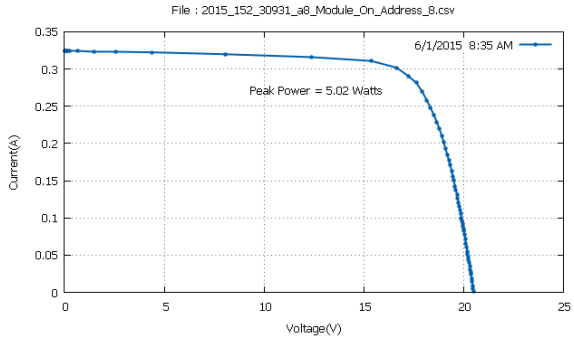
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2409649\ x\ 0.255572021}{433\ x\ 0{,}0768}\ \text{x } 100 = 13{,}26\ \%$$



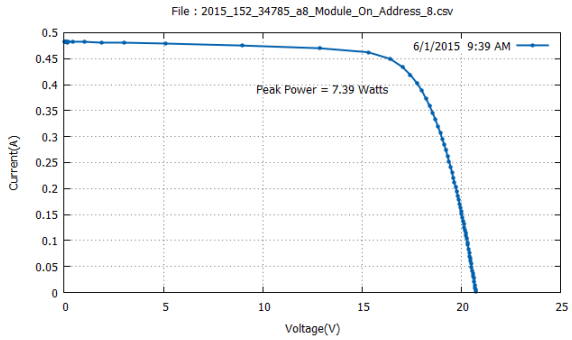
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.2632777}{440.6\ x\ 0{,}0768}\ \text{x } 100 = 13{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0631428\ x\ 0.2915319}{487.4\ x\ 0{,}0768}\ \text{x } 100 = 13{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.645649\ x\ 0.301806152}{495{,}2\ x\ 0{,}0768} \text{ x } 100 = 13{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.032217\ x\ 0.434087157}{713.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}49\ \%$$

Module 3

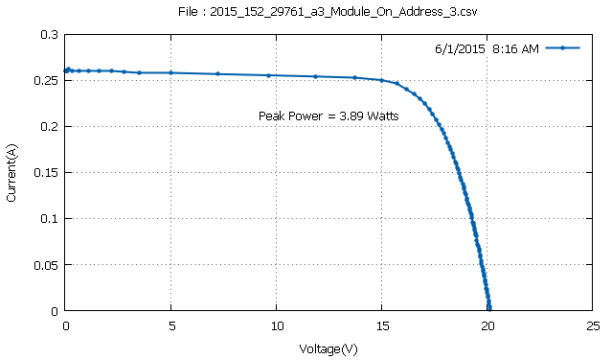
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

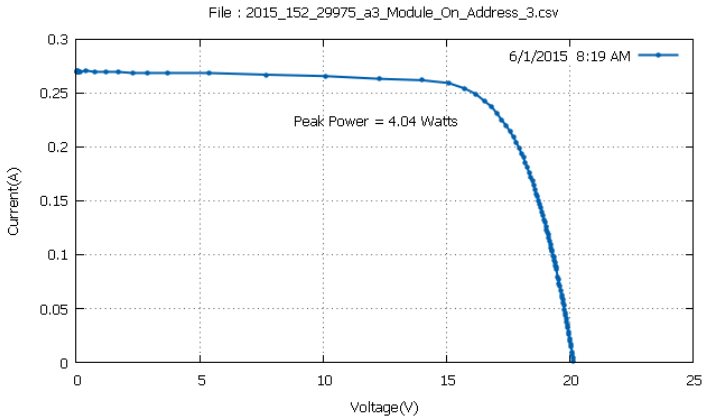
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
8:16	36	12,92
8:19	37,6	13,04
8:32	40	13,08
8:34	41,9	13,3
9:32	46	13,15
9:40	47,9	13,21

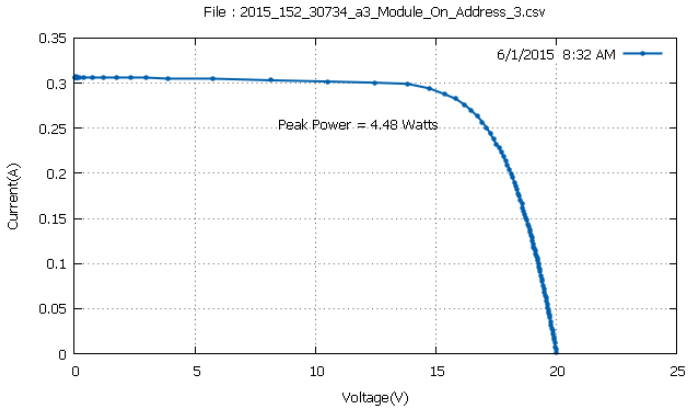
Mean Temperature: 41,56 ºC



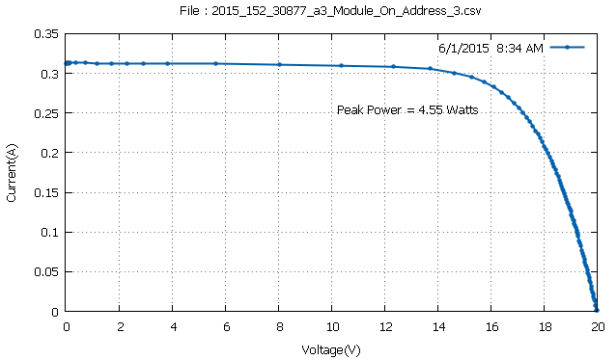
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5606041\ x\ 0.235023513}{424.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}92\ \%$$



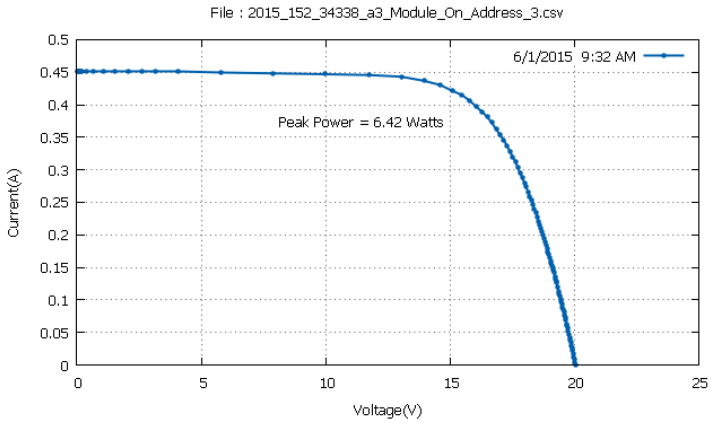
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.19723\ x\ 0.2491506}{436.8\ x\ 0{,}0709} \text{ x } 100 = 13{,}04\ \%$$



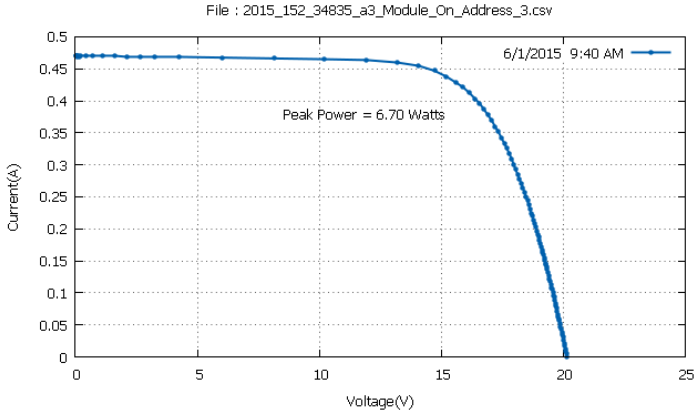
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8415861\ x\ 0.282541931}{482.8\ x\ 0{,}0709} \text{ x } 100 = 13{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.119915\ x\ 0.282541931}{482.8\ x\ 0{,}0709} \text{ x } 100 = 13{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4859428\ x\ 0.414822936}{688.3\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8957052\ x\ 0.421244323}{715.3\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}21\ \%$$

Module 5

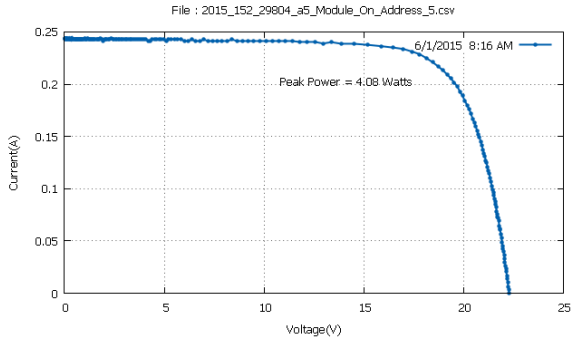
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

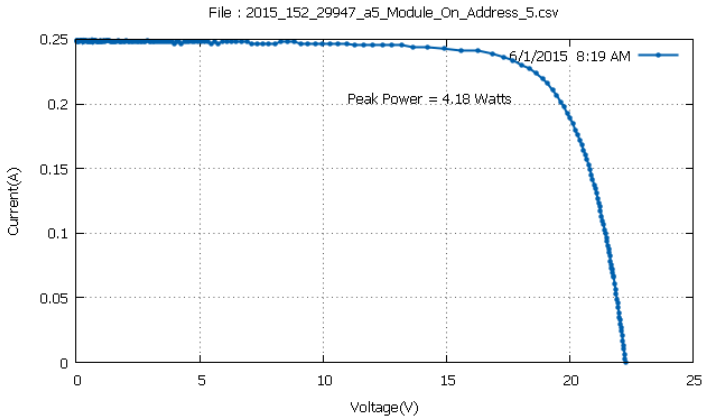
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
8:16	35	12,63
8:19	35,6	12,72
8:23	36,4	12,74
8:33	38,8	12,72
9:33	48	12,6
9:40	50	12,58

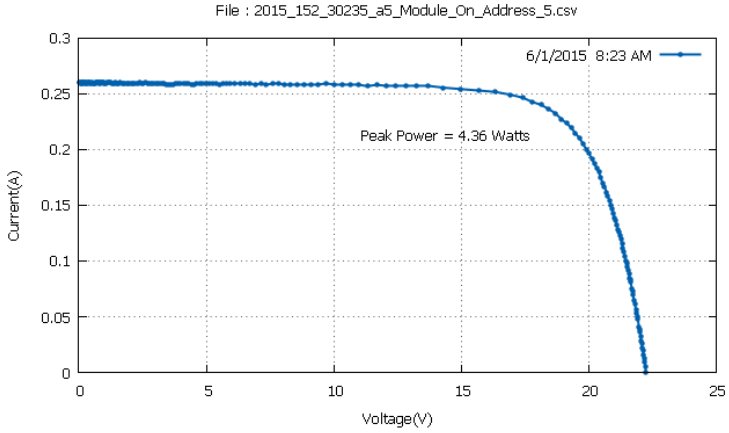
Mean Temperature: 40,63 ºC



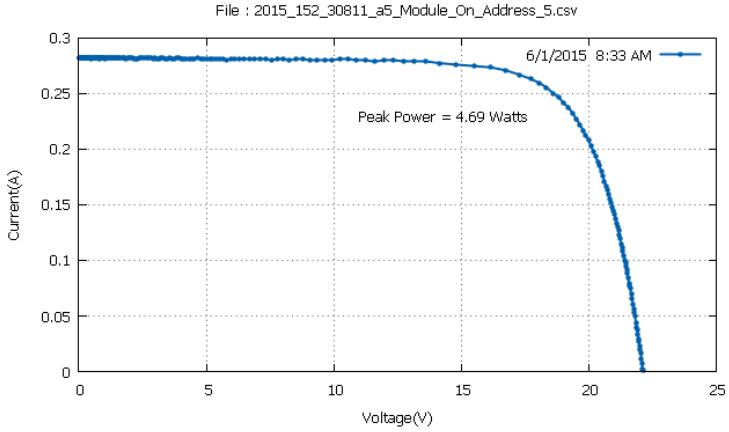
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1532669\ x\ 0.224749267}{427\ x\ 0{,}0756} \text{ x } 100 = 12{,}63\ \%$$



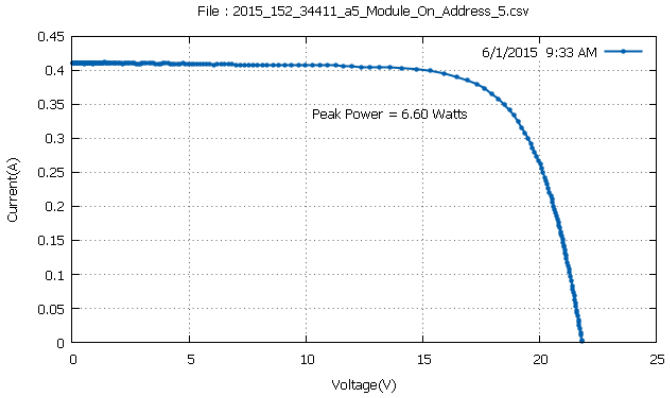
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3852081\ x\ 0.227317825}{434.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



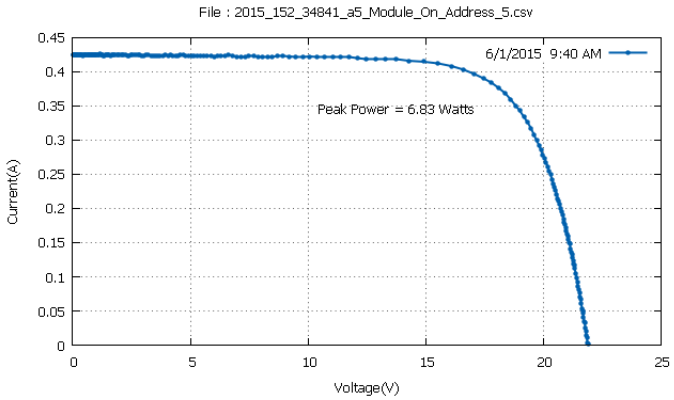
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4315968\ x\ 0.2363078}{452.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0759525\ x\ 0.259424865}{487.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6584587\ x\ 0.373725921}{692.9\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.384000152}{717.7\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}58\ \%$$

Module 4

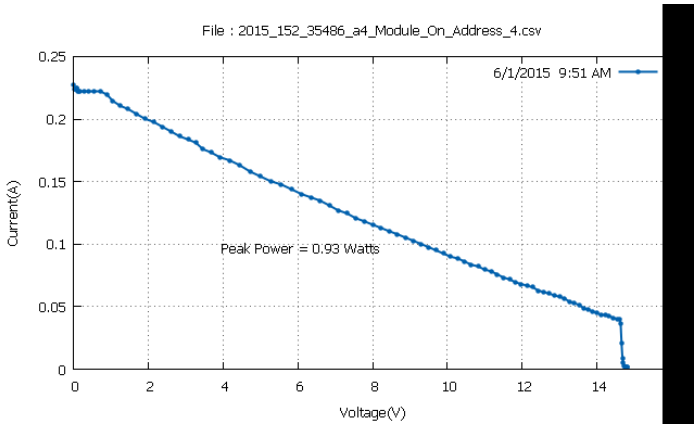
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

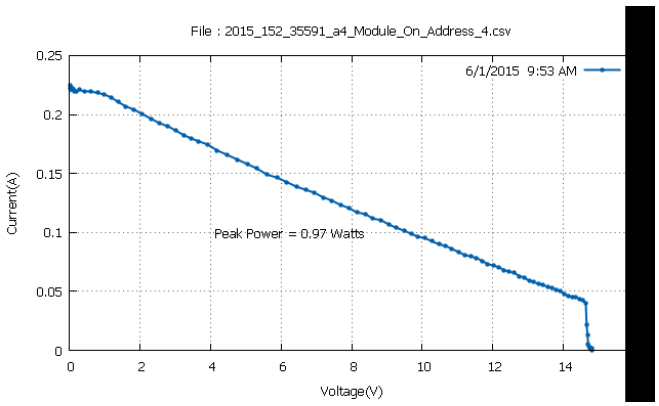
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
9:51	43	1,84
9:53	43,2	1,91
9:54	43,4	1,9
9:57	43,7	1,86
9:58	43,6	1,93
10:00	43	1,93

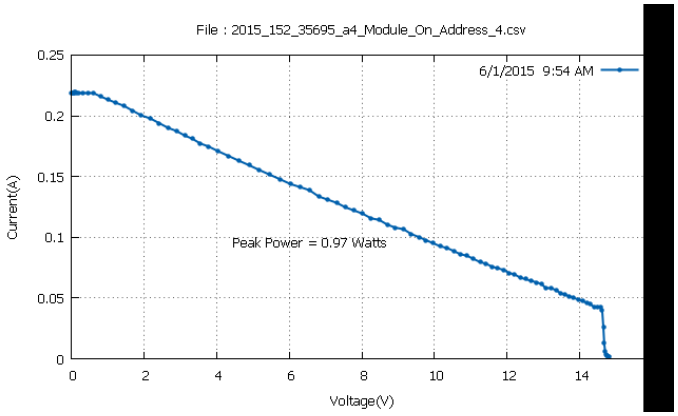
Mean Temperature: 43,31 ºC



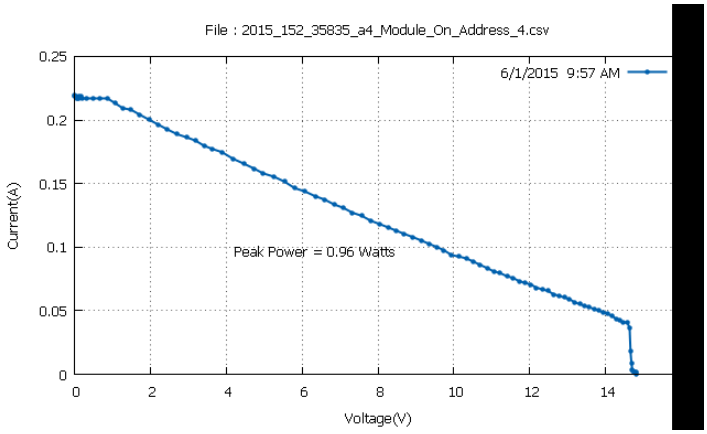
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.77511\ x\ 0.107879646}{751.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}84\ \%$$



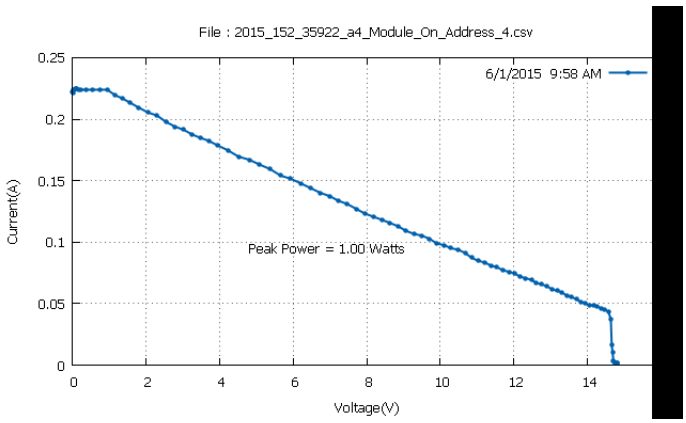
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.829229\ x\ 0.110448211}{756.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}91\ \%$$



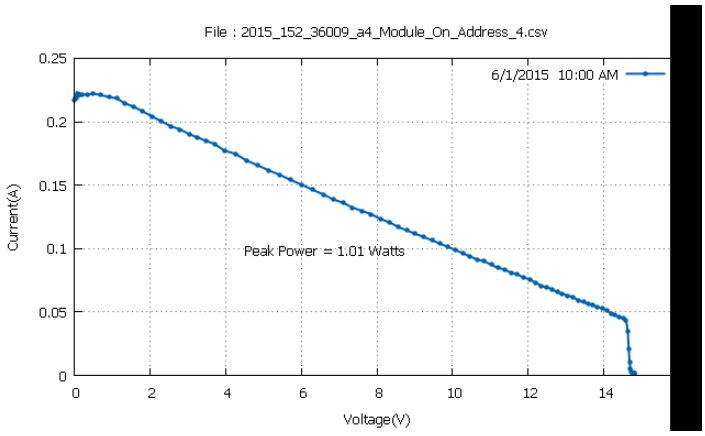
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.146215\ x\ 0.106595367}{760.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.914274\ x\ 0.107879646}{768.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.396273\ x\ 0.119438179}{772\ x\ 0{,}0671} \text{ x } 100 = 1{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.44774\ x\ 0.106595367}{776.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}93\ \%$$

Module 8

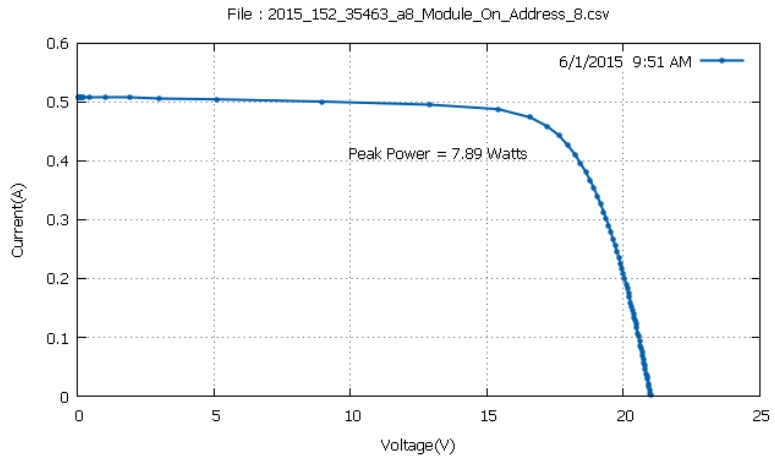
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

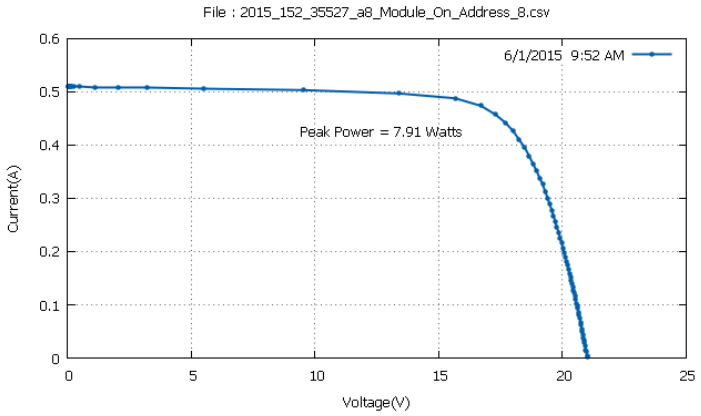
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
9:51	37,1	13,7
9:52	37,6	13,65
9:54	36,7	13,76
9:56	36,1	13,77
9:58	36,1	13,79
10:00	36,6	13,75

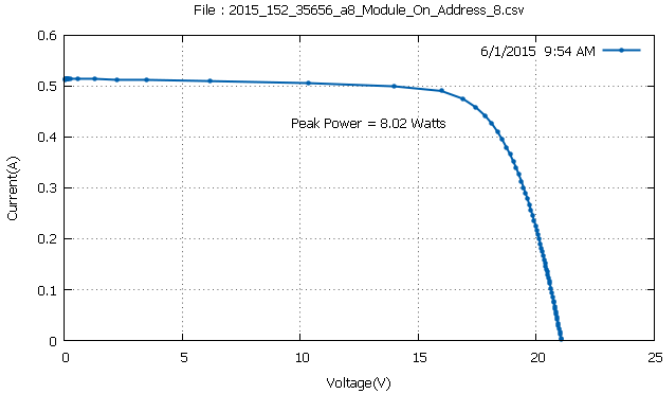
Mean Temperature: 36.7 ºC



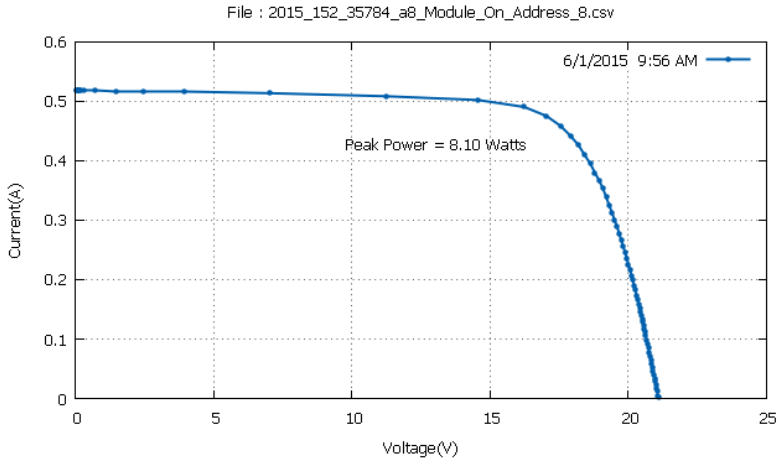
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2177715\ x\ 0.4584885}{750.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}7\ \%$$



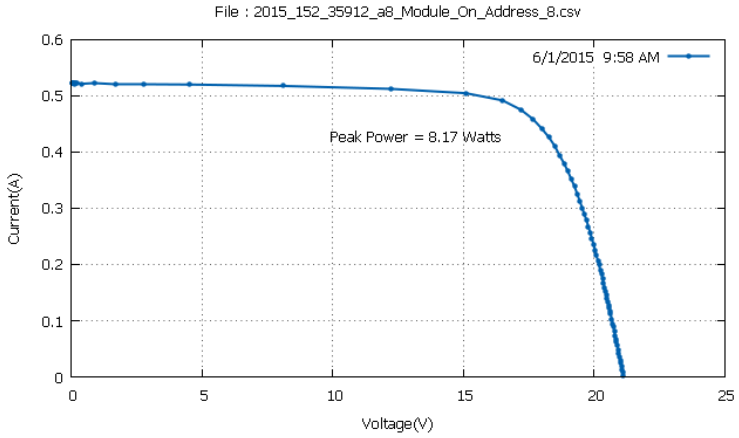
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6997681x\ 0.473899871}{754.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}65\ \%$$



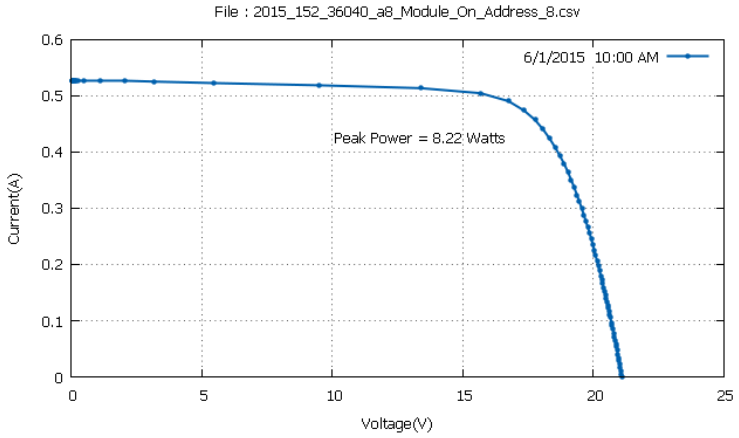
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.88532\ x\ 0.475184143}{758.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.03995\ x\ 0.475184143}{765.8\ x\ 0{,}0768} \text{ x } 100 = 13{,}77\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1945763\ x\ 0.475184143}{771.3\ x\ 0{,}0768}\ \text{x } 100 = 13{,}79\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3414726\ x\ 0.473899871}{778\ x\ 0{,}0768}\ \text{x } 100 = 13{,}75\ \%$$

Module 3

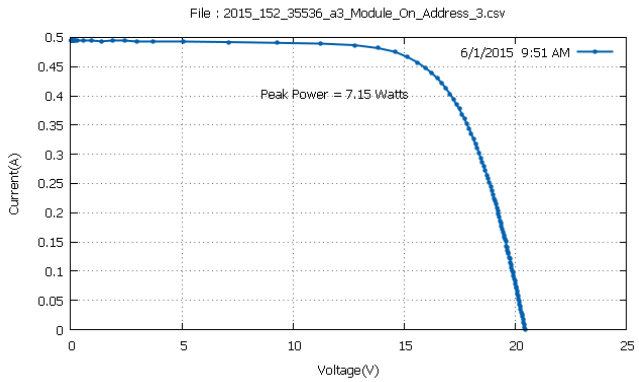
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

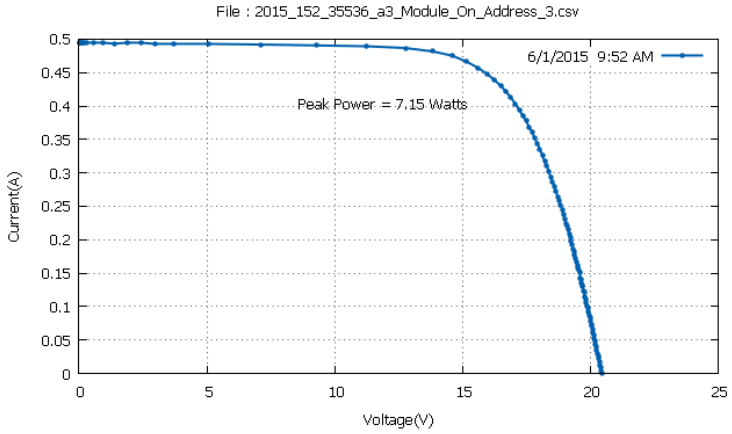
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
9:51	42,1	13,44
9:52	42,6	13,37
9:54	42,3	13,41
9:57	43,2	13,38
9:58	41,4	13,4
9:59	41,4	13,4

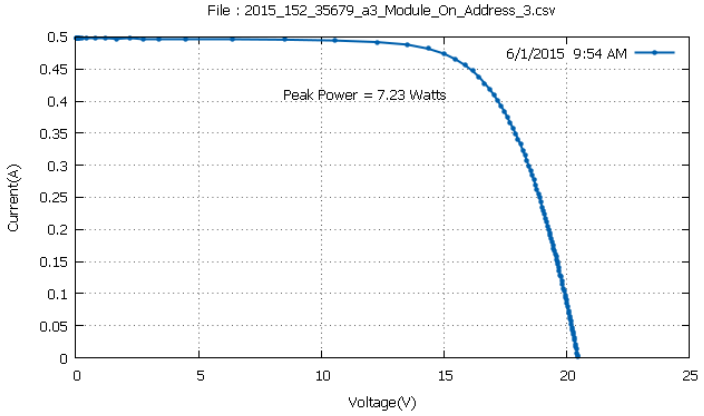
Mean Temperature: 42,16 ºC



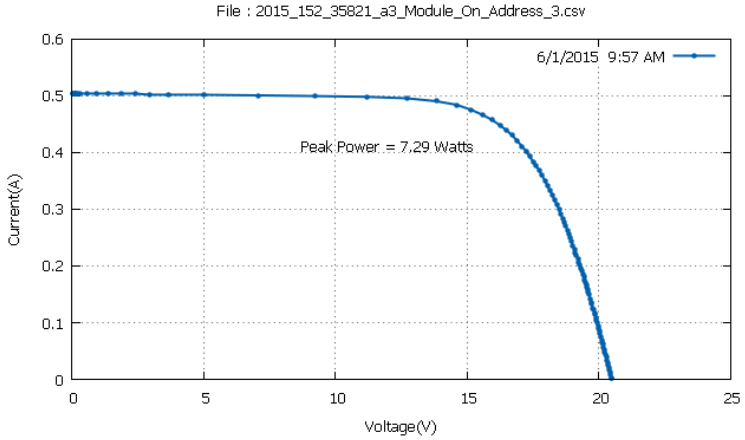
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8957052\ x\ 0.446929961}{750.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}44\ \%$$



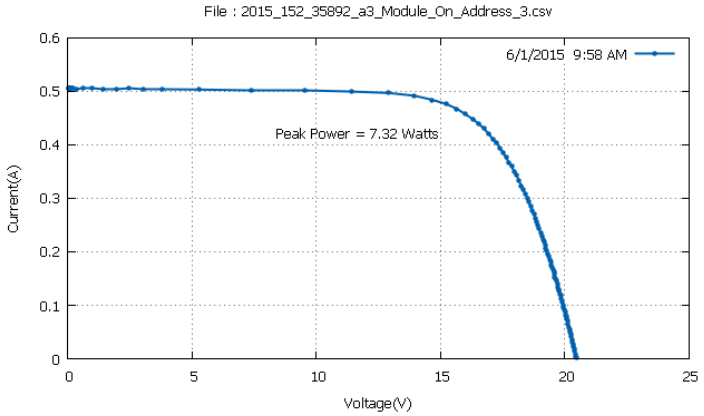
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9498253\ x\ 0.448214233}{753.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}37\ \%$$



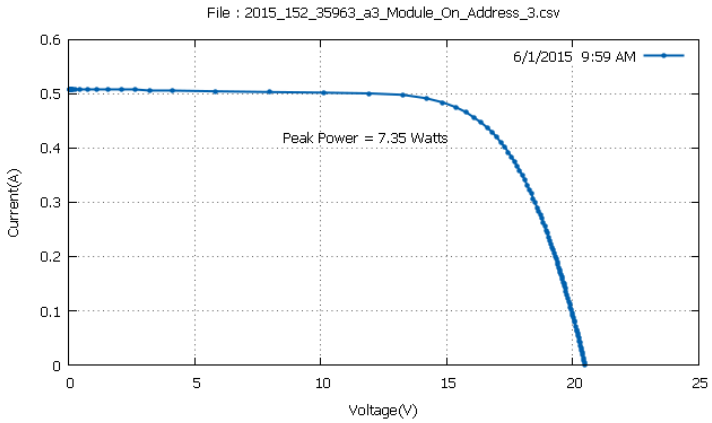
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.86478\ x\ 0.455919921}{760.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9498253\ x\ 0.457204223}{768\ x\ 0{,}0709} \text{ x } 100 = 13{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6483021\ x\ 0.467478454}{770.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7642727\ x\ 0.466194183}{773.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}4\ \%$$

Module 5

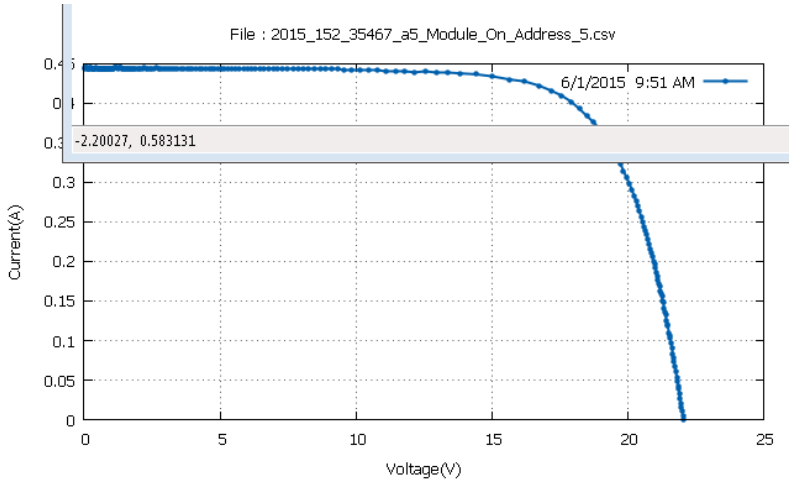
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

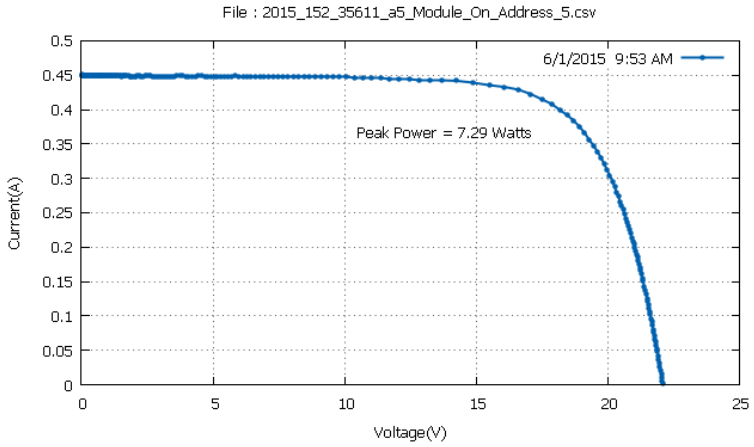
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
9:51	47,2	12,7
9:53	47,3	12,72
9:54	47,1	12,73
9:57	46,6	12,74
9:58	46,4	12,75
9:59	46,4	12,79

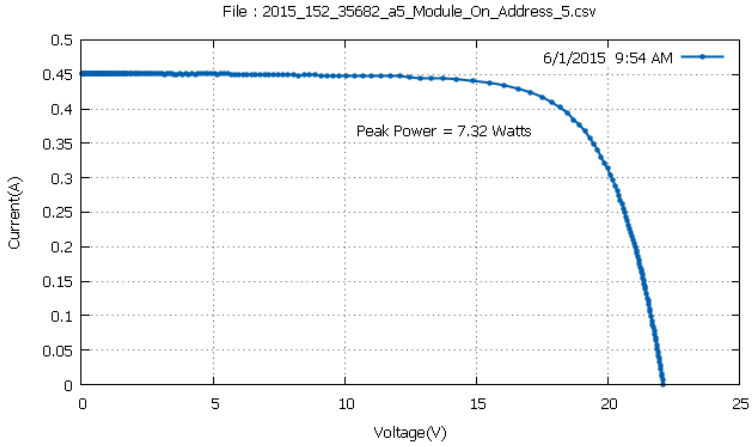
Mean Temperature: 46,83 ºC



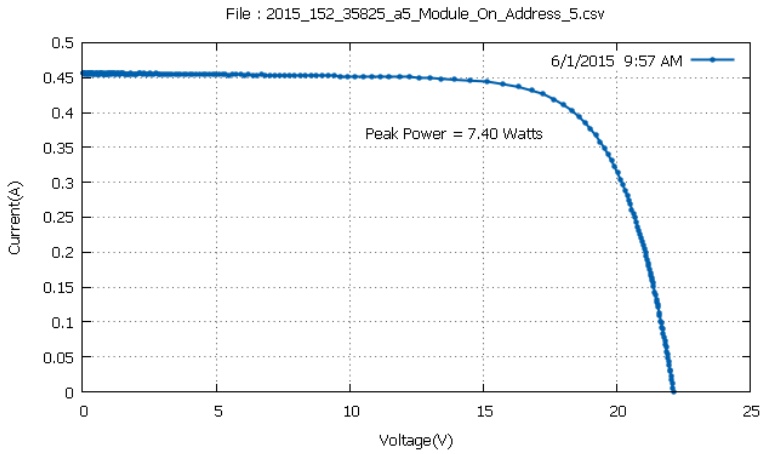
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9213257\ x\ 0.4019801}{750.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}7\ \%$$



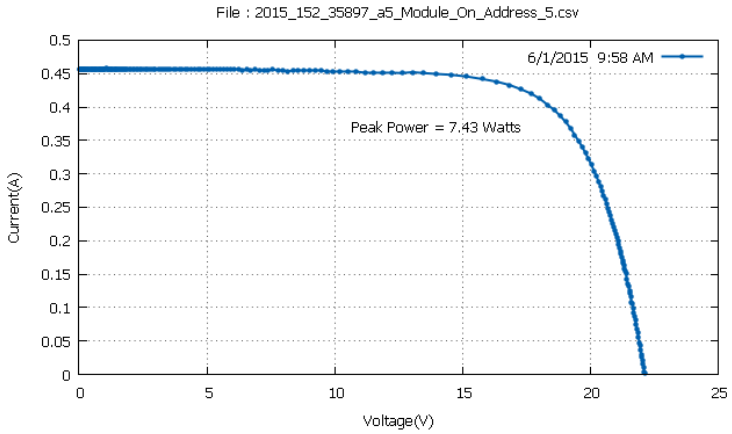
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8594742\ x\ 0.408401519}{757.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



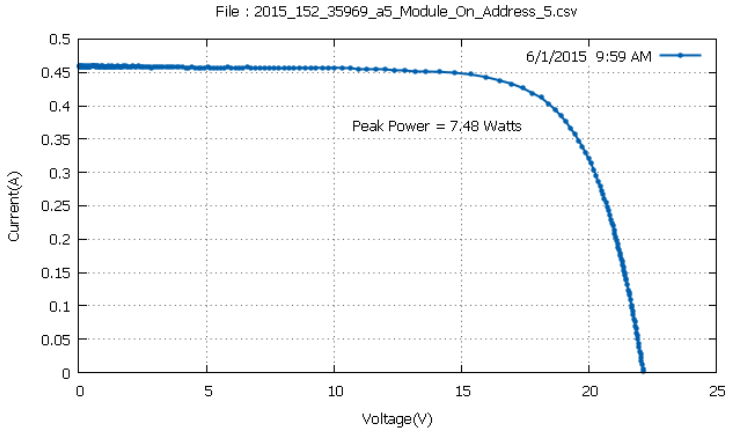
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8594742\ x\ 0.4096858}{760.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.4109701}{768.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0295658\ x\ 0.412254363}{770.4\ x\ 0{,}0756}\ \text{x } 100 = 12{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1300735\ x\ 0.412254363}{773.5\ x\ 0{,}0756}\ \text{x } 100 = 12{,}79\ \%$$

Module 4

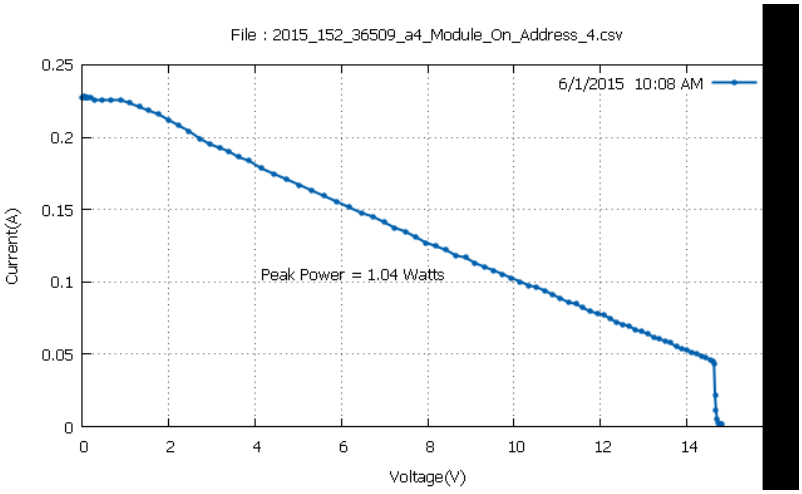
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

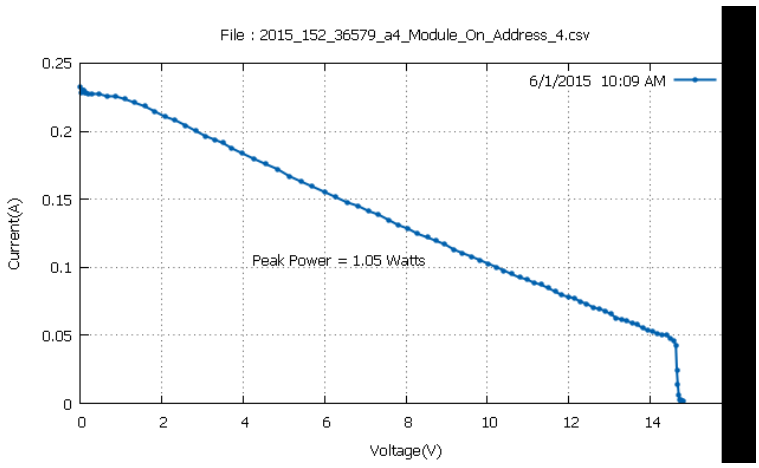
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
10:08	43,2	1,93
10:09	42,9	1,94
10:11	42	1,88
10:13	42,3	1,92
10:17	42,4	1,9
10:19	42,2	1,84

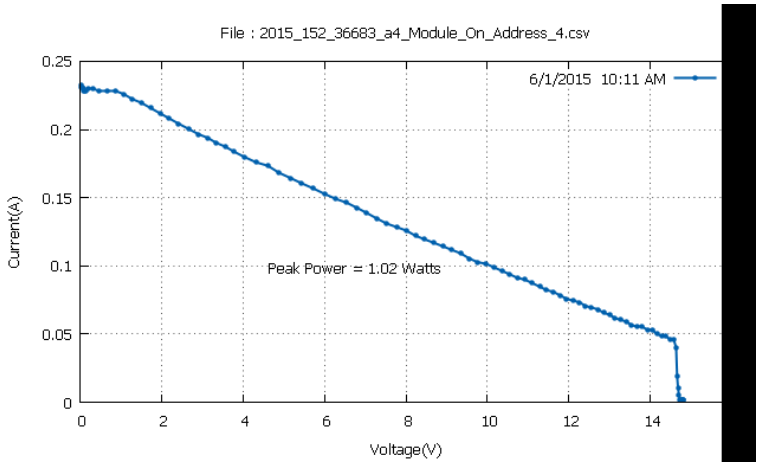
Mean Temperature: 42,5 ºC



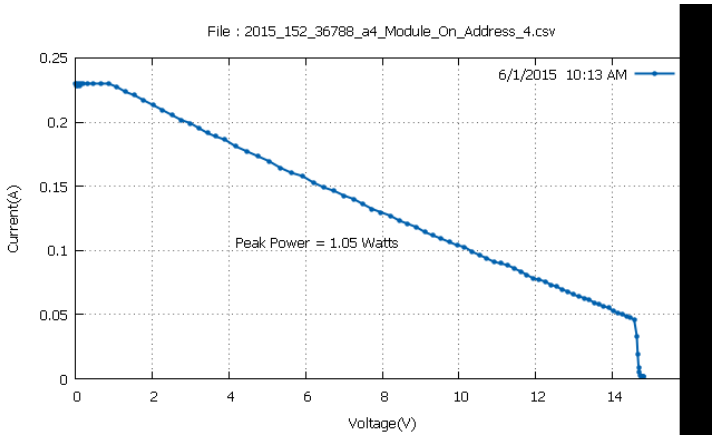
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.867887\ x\ 0.116869614}{800.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}93\ \%$$



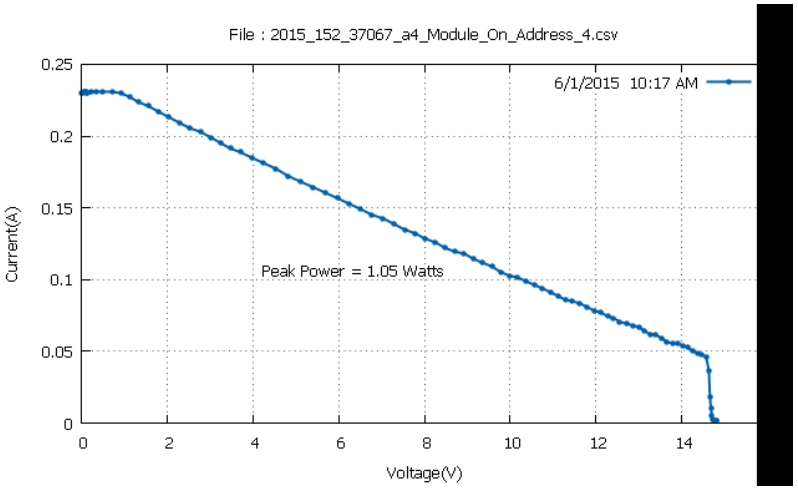
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.671949\ x\ 0.109163925}{803.3\ x\ 0{,}0671} \text{ x } 100 = 1.94\ \%$$



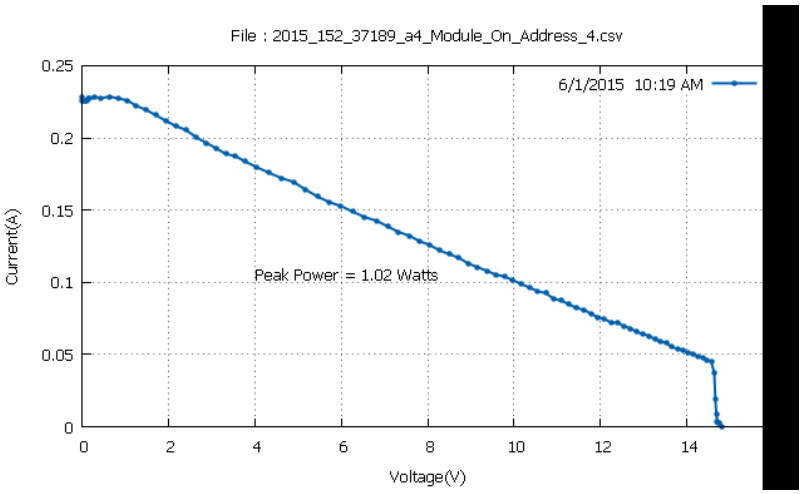
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.3395\ x\ 0.109163925}{806.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.084365\ x\ 0.115585335}{812.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.922006\ x\ 0.1181539}{823.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.116869614}{825.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}84\ \%$$

Module 8

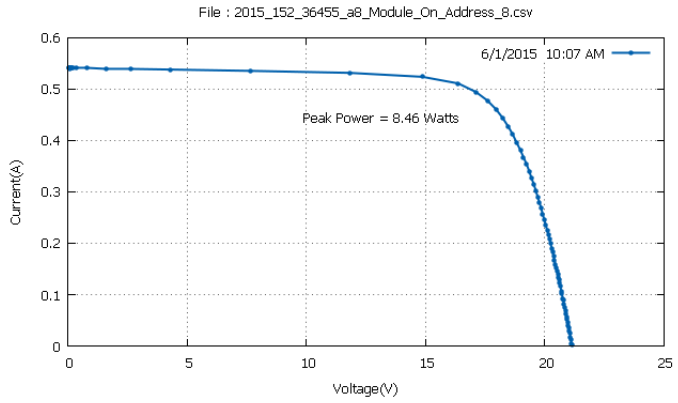
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

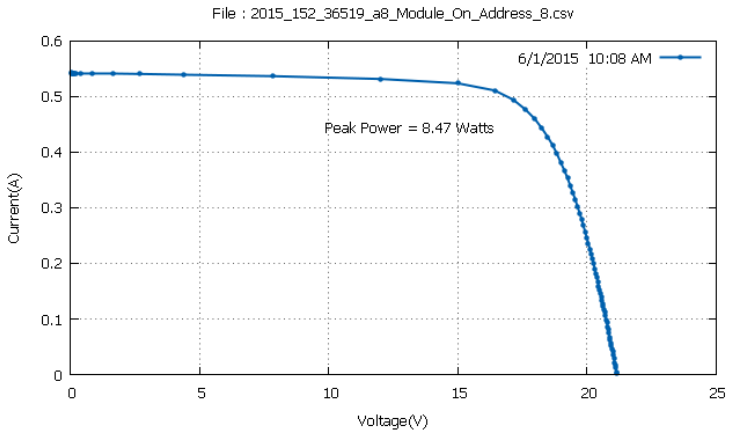
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
10:07	37,1	13,79
10:08	37,5	13,77
10:10	37,7	13,76
10:12	37,5	13,75
10:17	37,6	13,7
10:19	38,7	13,7

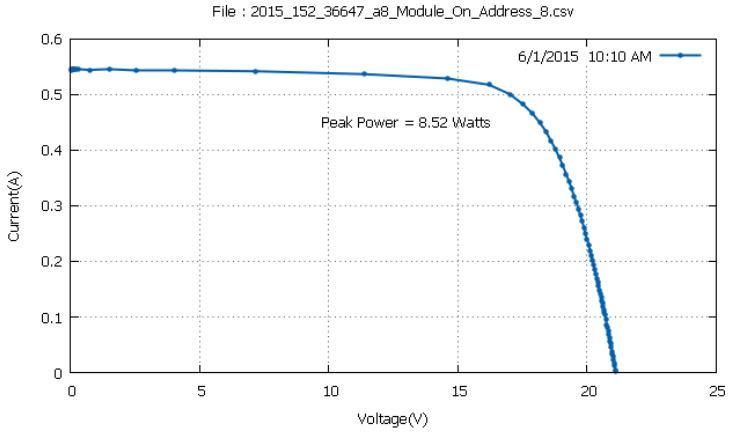
Mean Temperature: 37,68 ºC



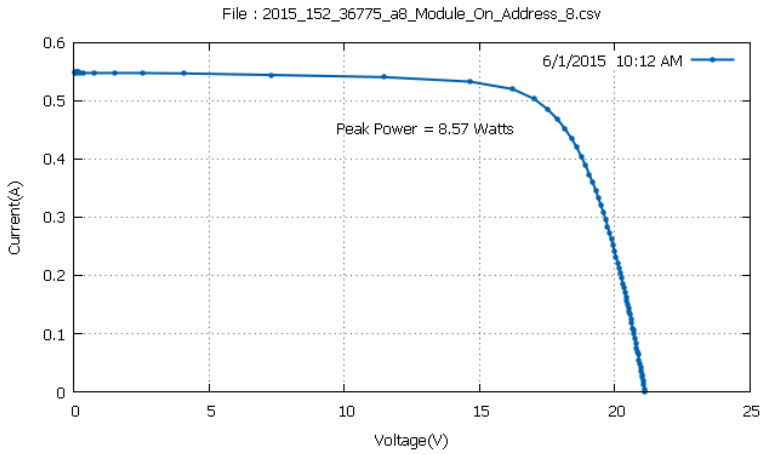
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1095314\ x\ 0.494448364}{798.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}79\ \%$$



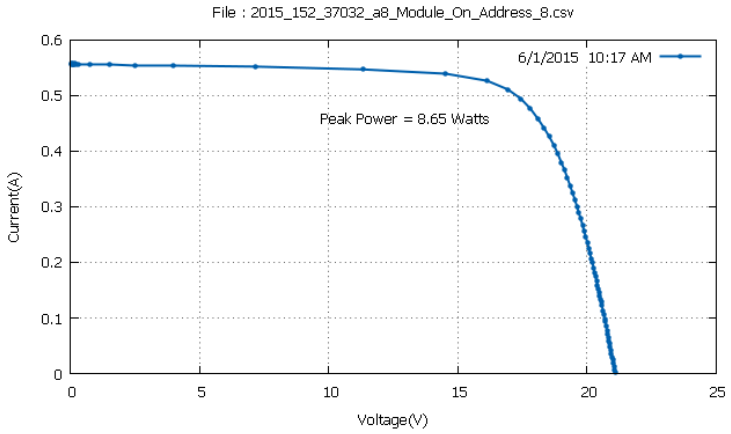
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1404572\ x\ 0.494448364}{800.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}77\ \%$$



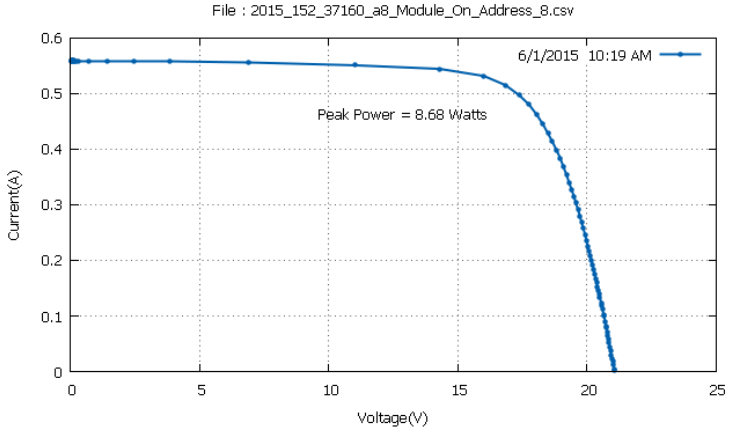
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0012913\ x\ 0.5008698}{806.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0167542\ x\ 0.503438354}{811.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.93171\ x\ 0.511144042}{822.1\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8466644\ x\ 0.5149969}{825.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}7\ \%$$

Module 3

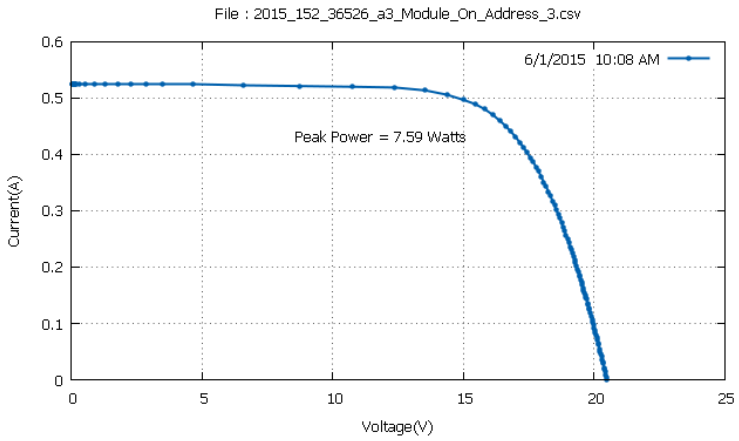
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

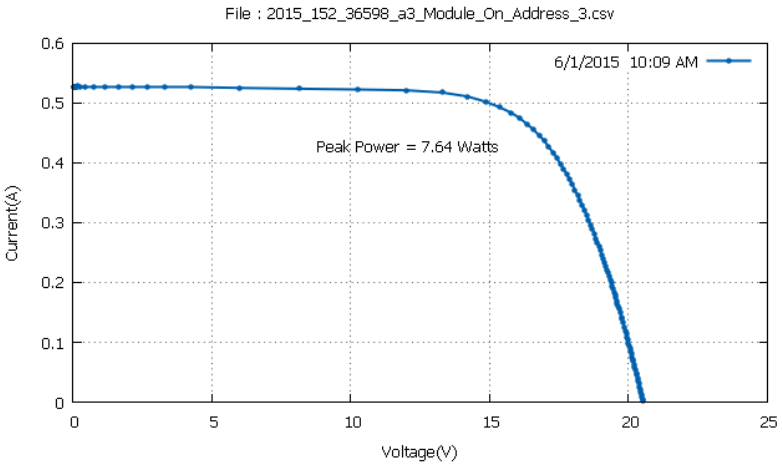
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
10:08	41,9	13,36
10:09	41,9	13,4
10:11	41,5	13,37
10:14	41,4	13,4
10:18	41,5	13,36
10:19	41,6	13,34

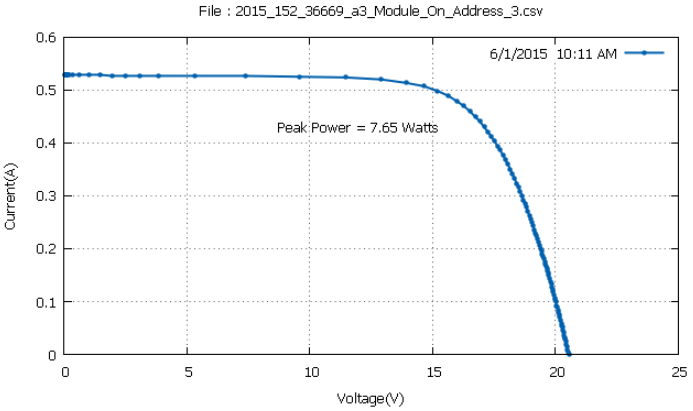
Mean Temperature: 41,63 ºC



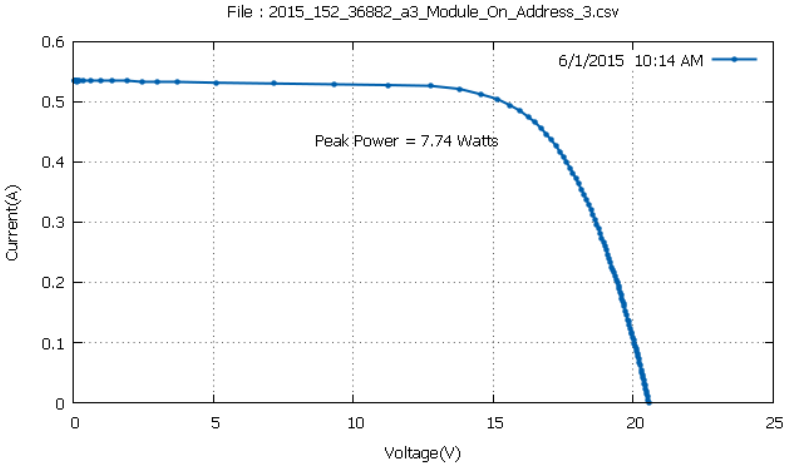
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.81066\ x\ 0.4803213}{800.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}36\ \%$$



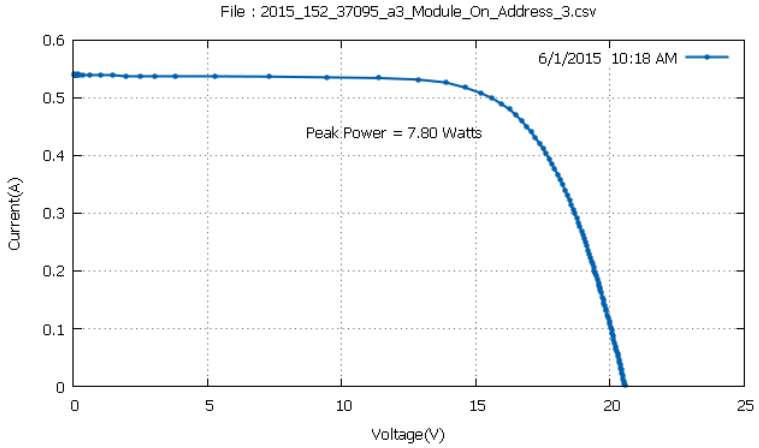
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0735264\ x\ 0.475184143}{804\ x\ 0{,}0709} \text{ x } 100 = 13{,}4\ \%$$



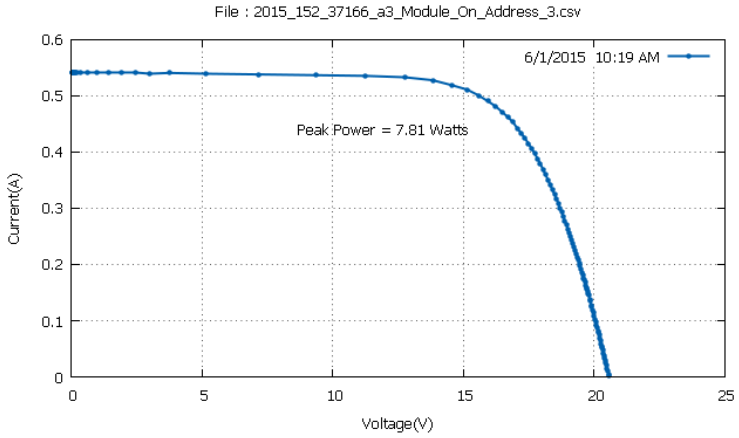
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.980751\ x\ 0.479037}{806.6\ x\ 0{,}0709} \text{ x } 100 = 13{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9420938\ x\ 0.4854584}{814.2\ x\ 0{,}0709} \text{ x } 100 = 13{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9498253\ x\ 0.489311248}{823.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.926631\ x\ 0.49059552}{825.2\ x\ 0{,}0709} \text{ x } 100 = 13{,}34\ \%$$

Module 5

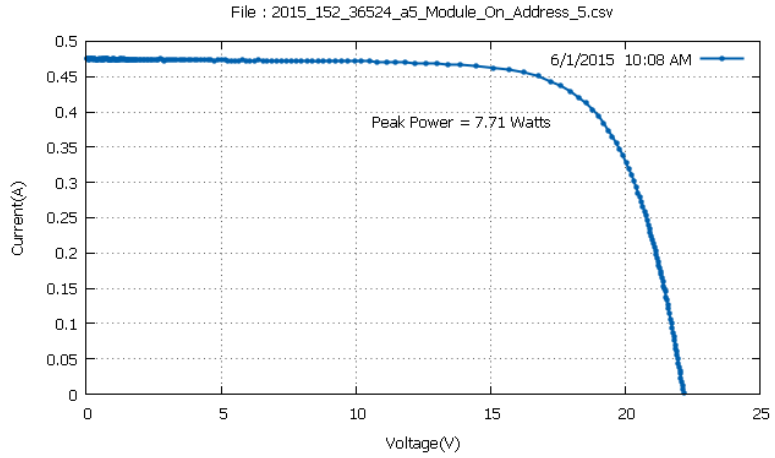
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

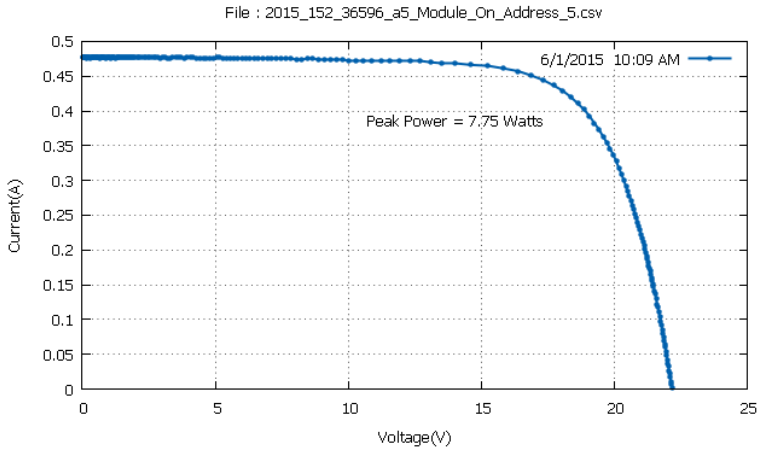
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
10:08	45,9	12,73
10:09	45,9	12,74
10:11	45,8	12,75
10:17	45,8	12,71
10:18	45,9	12,7
10:19	46	12,71

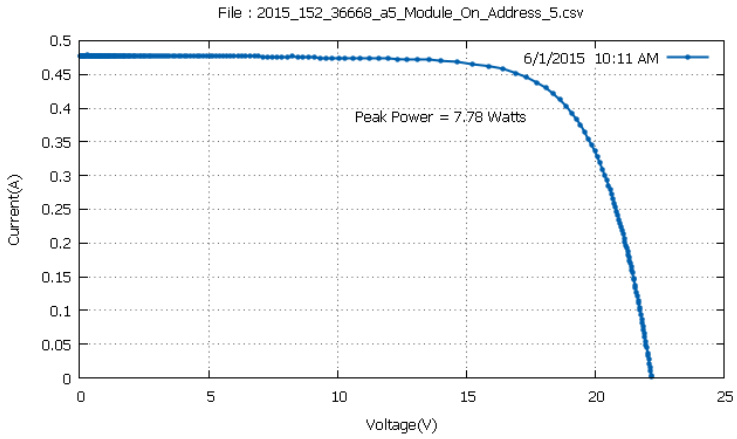
Mean Temperature: 45,88 ºC



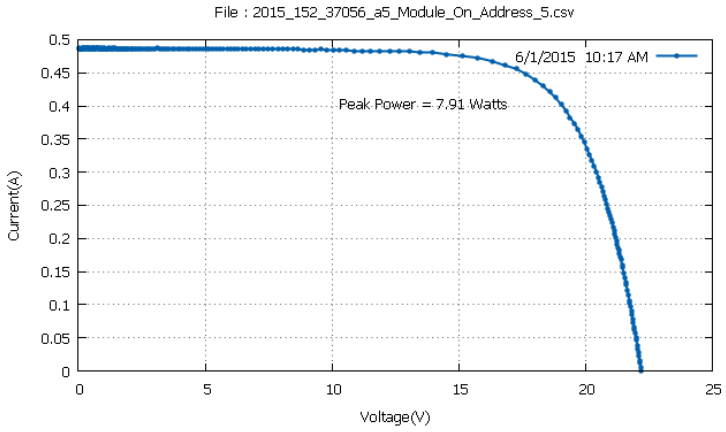
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9677143\ x\ 0.42895}{800.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}73\ \%$$



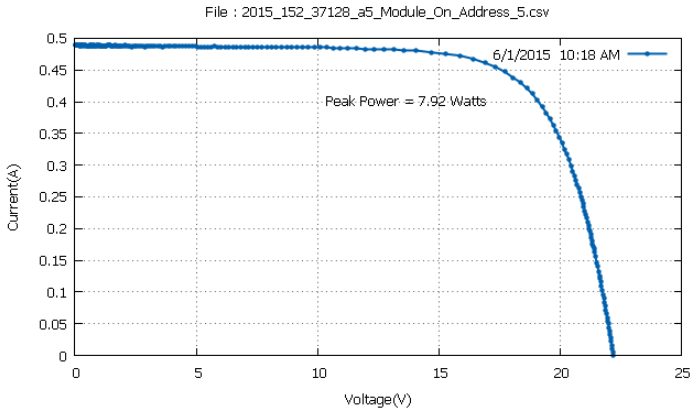
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.068222\ x\ 0.42895}{804.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}74\ \%$$



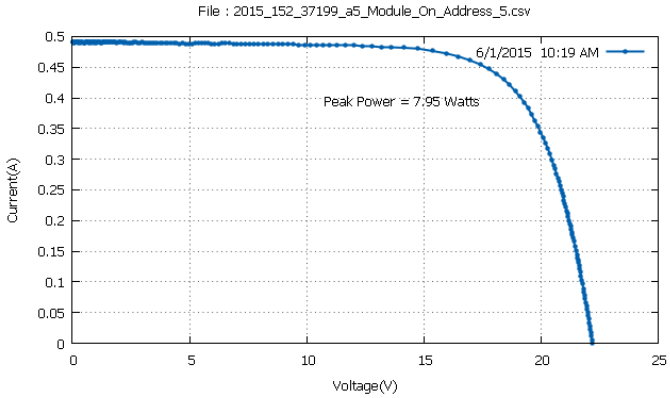
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0836849\ x\ 0.4302343}{806.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6507282\ x\ 0.448214233}{822.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.72804\ x\ 0.446929961}{824.5\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1068783\ x\ 0.439224273}{827.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}71\ \%$$

Module 4

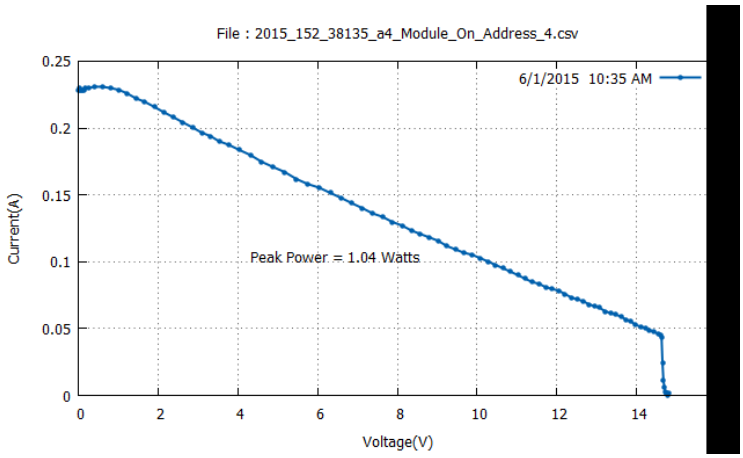
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

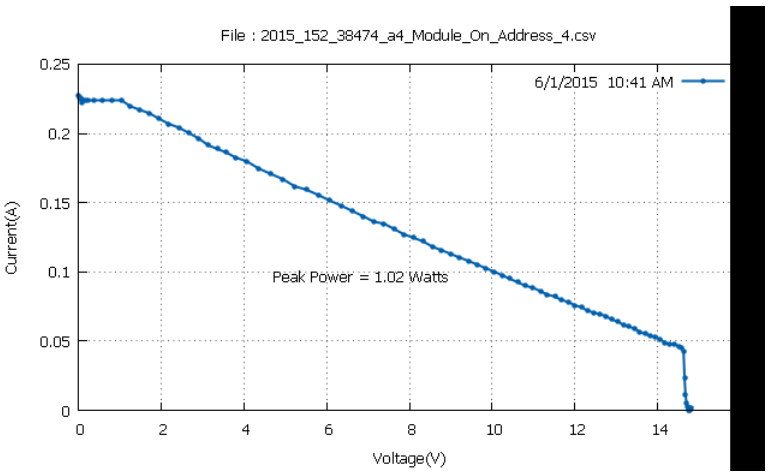
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
10:35	43,3	1,8
10:41	44,3	1,74
10:43	44,9	1,76
10:46	45,4	1,75
10:58	44,7	1,71
10:59	44,3	1,75

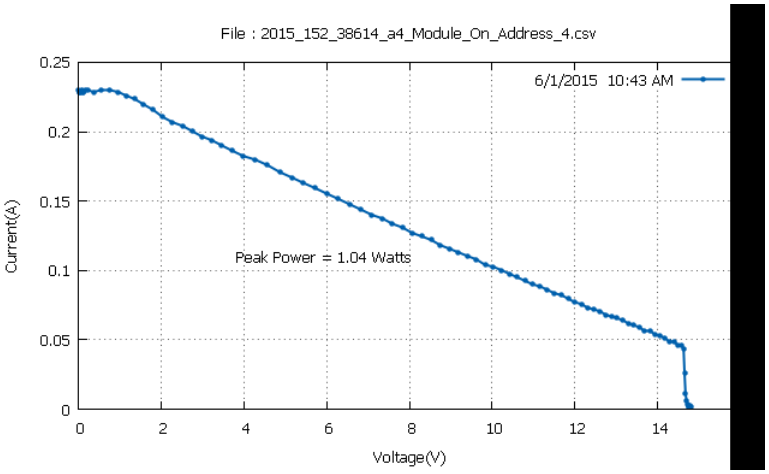
Mean Temperature: 44,48 ºC



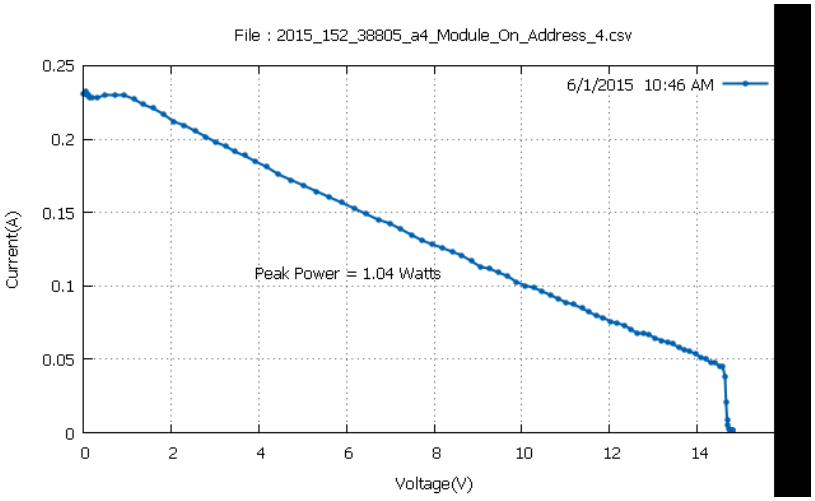
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.331769\ x\ 0.110448211}{860.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}8\ \%$$



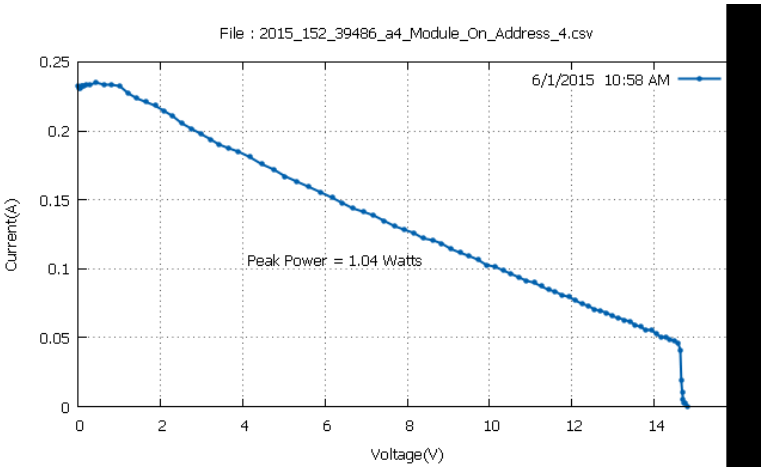
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.208067\ x\ 0.110448211}{872.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}74\ \%$$



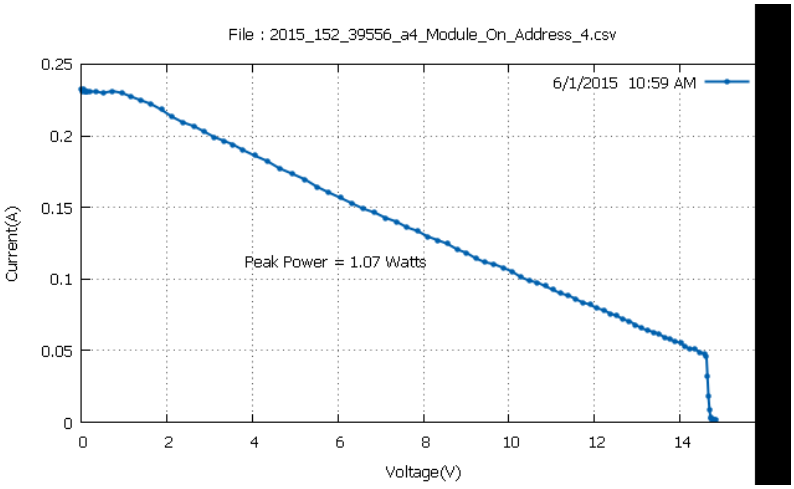
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.519975\ x\ 0.122006744}{877.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.628214\ x\ 0.120722458}{884.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.836961\ x\ 0.1181539}{905.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.558631\ x\ 0.1245753}{907.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}75\ \%$$

Module 8

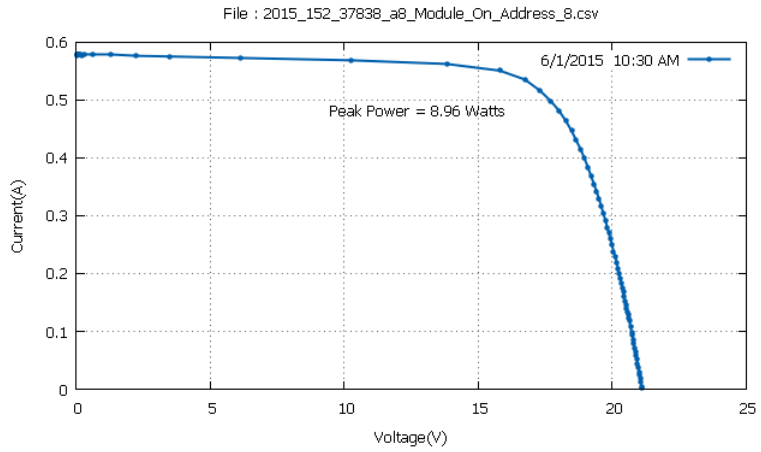
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

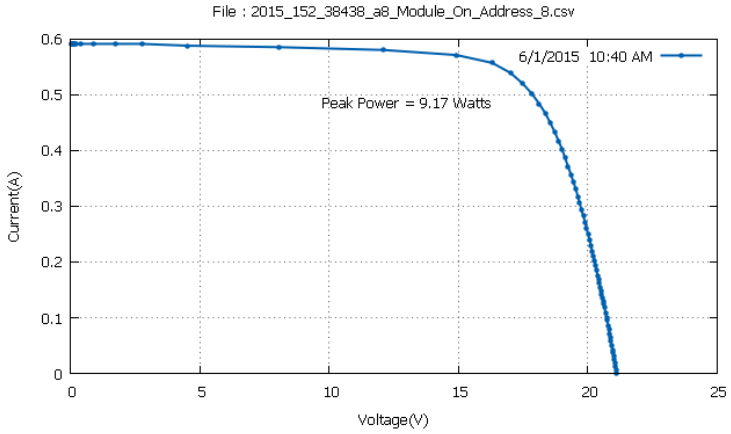
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
10:30	38,1	13,71
10:40	38,5	13,69
10:42	38,5	13,68
10:45	38,8	13,67
10:57	40,4	13,5
10:58	40,6	13,52

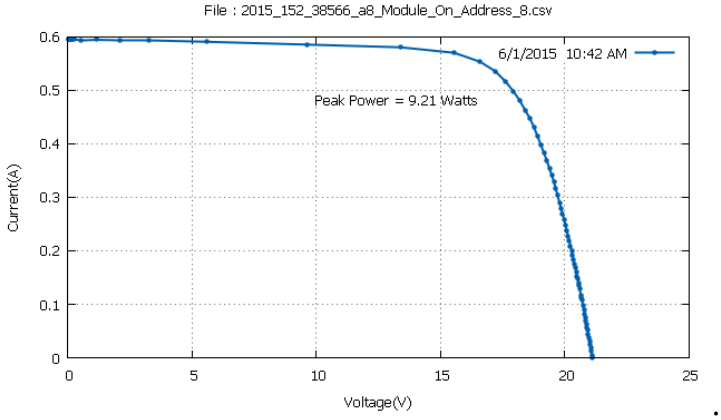
Mean Temperature: 39,15 ºC



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7384262\ x\ 0.5355454}{850.5\ x\ 0{,}0768} \text{ x } 100 = 13{,}71\ \%$$

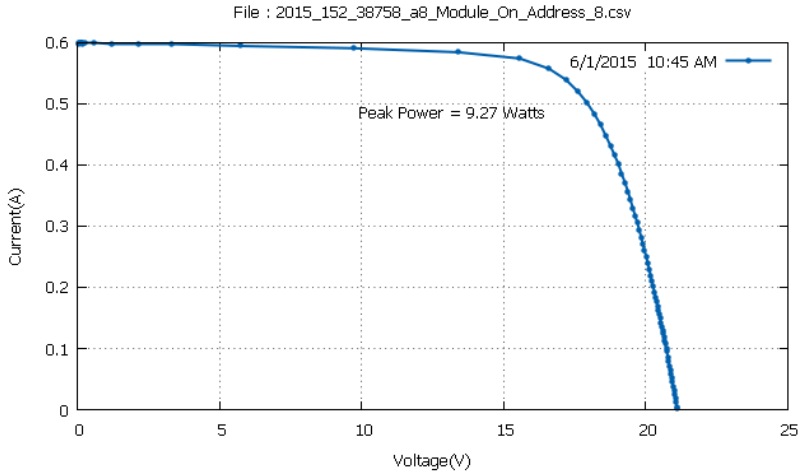


$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0090237\ x\ 0.539398253}{871.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}69\ \%$$

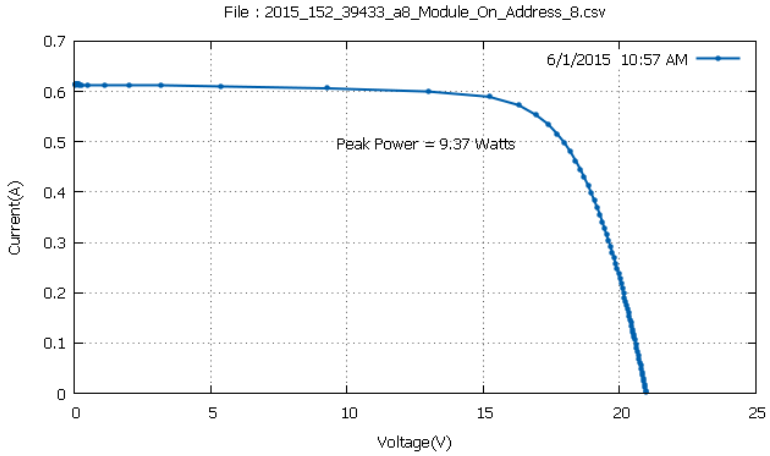


.

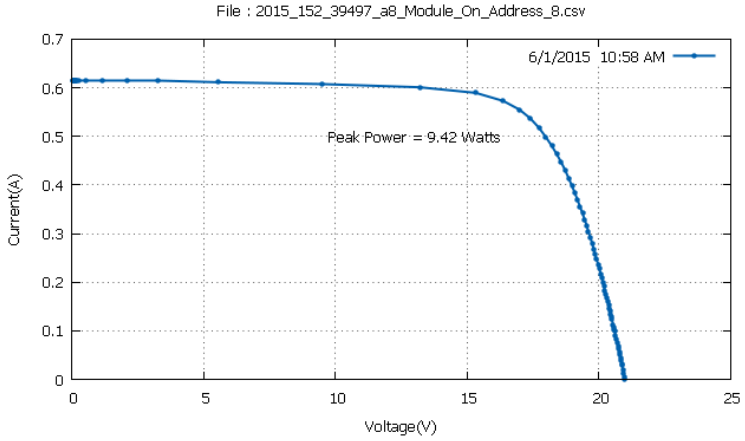
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2023087\ x\ 0.5355454}{876\ x\ 0{,}0768} \text{ x } 100 = 13{,}68\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1868458\ x\ 0.539398253}{882.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9239788\ x\ 0.5535253}{903.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.98583\ x\ 0.55480963}{907\ x\ 0{,}0768} \text{ x } 100 = 13{,}52\ \%$$

Module 3

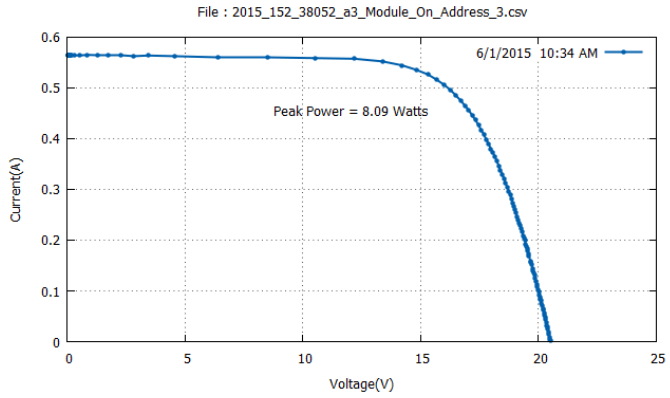
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

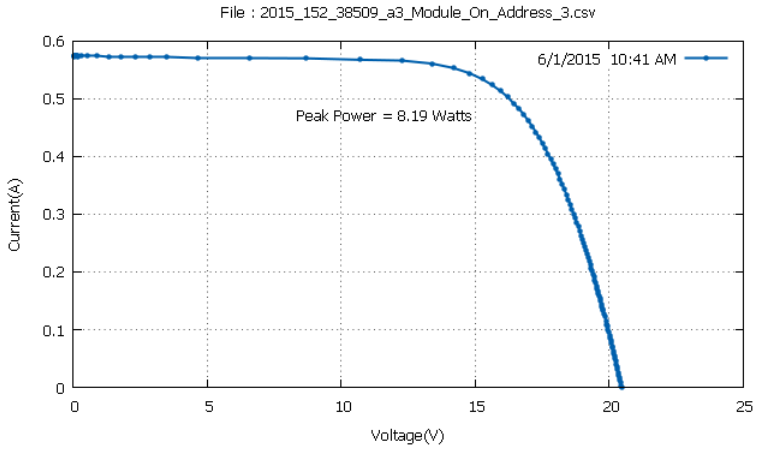
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
10:34	42,7	13,28
10:41	43,2	13,23
10:43	43,7	13,22
10:51	44,2	13,17
10:58	44	13,16
10:59	43,9	13,14

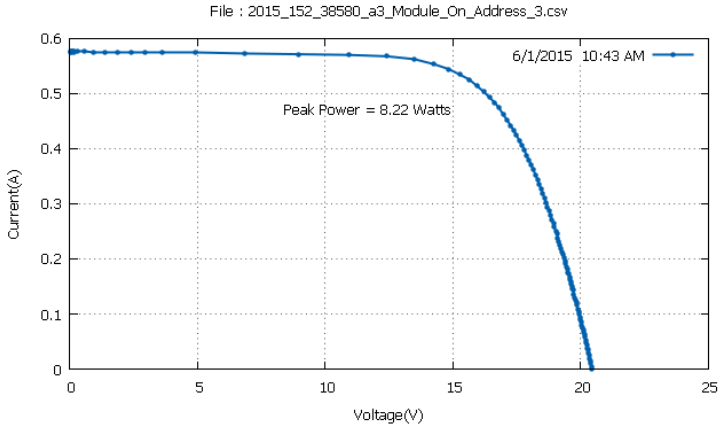
Mean Temperature: 43,61 ºC



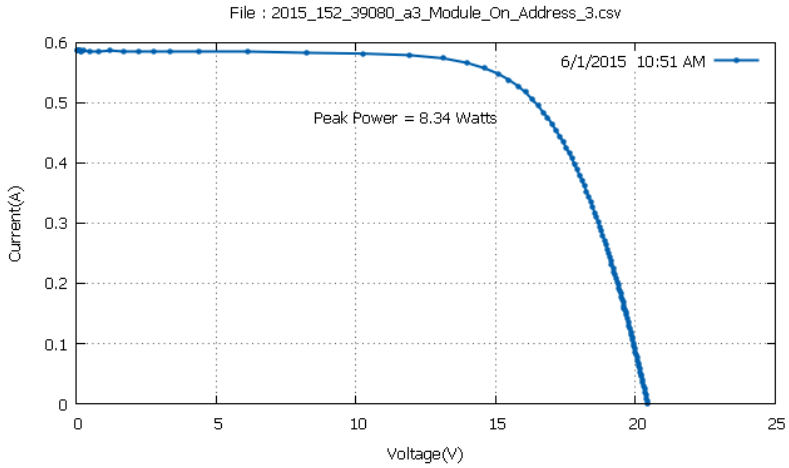
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9962139\ x\ 0.5060069}{859.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}28\ \%$$



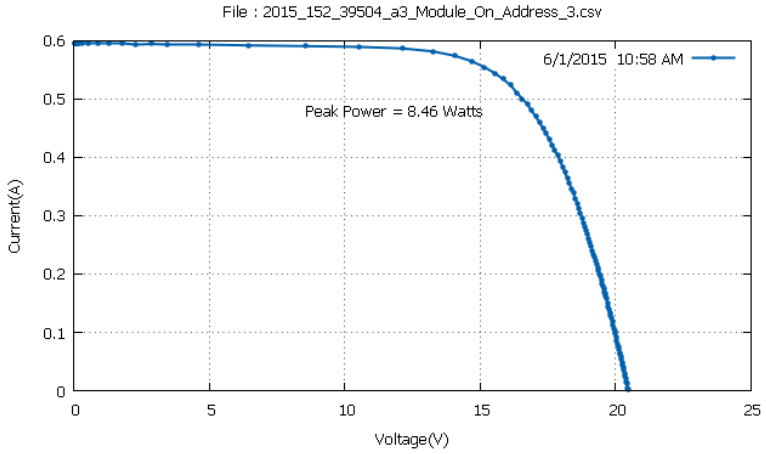
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6251078\ x\ 0.5239869}{873.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}23\ \%$$



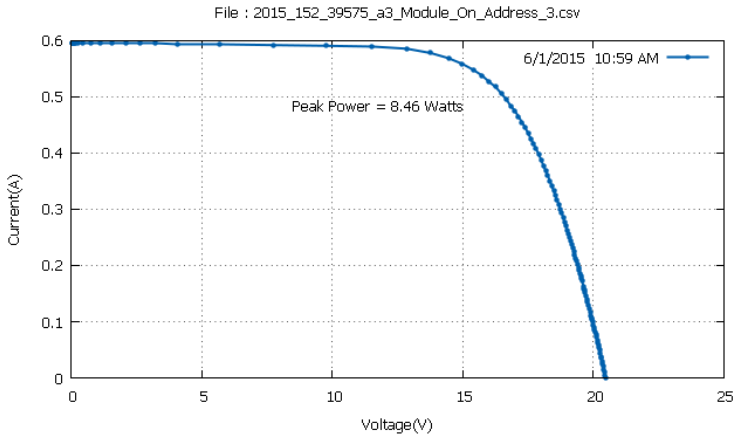
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6405706\ x\ 0.5252711}{876.5\ x\ 0{,}0709} \text{ x } 100 = 13{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.5278397}{892.7\ x\ 0{,}0709} \text{ x } 100 = 13{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8415861\ x\ 0.5342611}{906.5\ x\ 0{,}0709} \text{ x } 100 = 13{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7256155\ x\ 0.538113952}{907.5\ x\ 0{,}0709} \text{ x } 100 = 13{,}14\ \%$$

Module 5

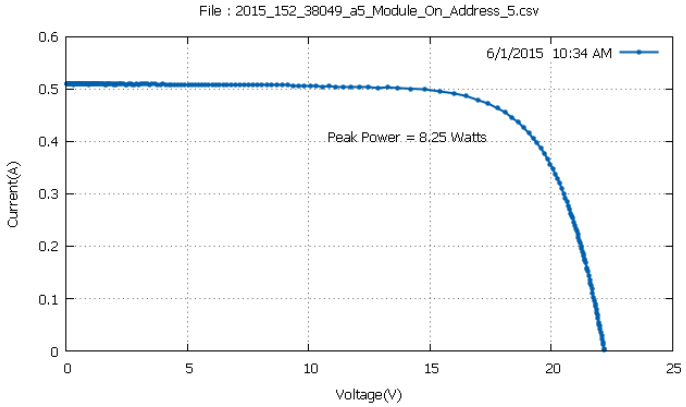
Date: 1/6/2015 – Morning Measurement

Temperature Ambient: 23 ºC

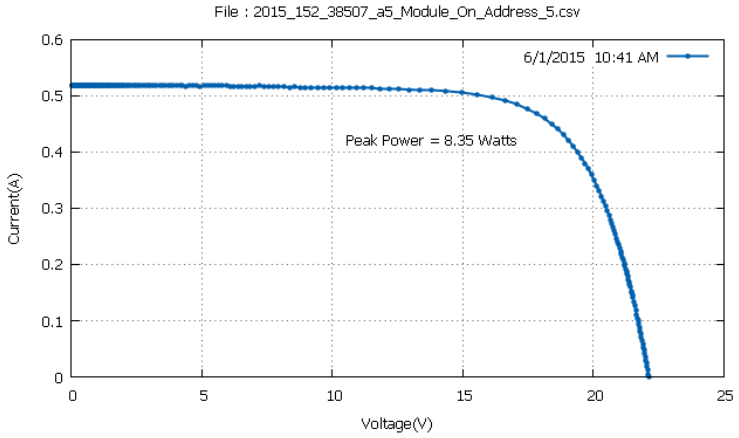
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
10:34	46,5	12,7
10:41	47,1	12,64
10:44	47,5	12,64
10:47	47,9	12,6
10:58	48,5	12,53
10:59	48,3	12,54

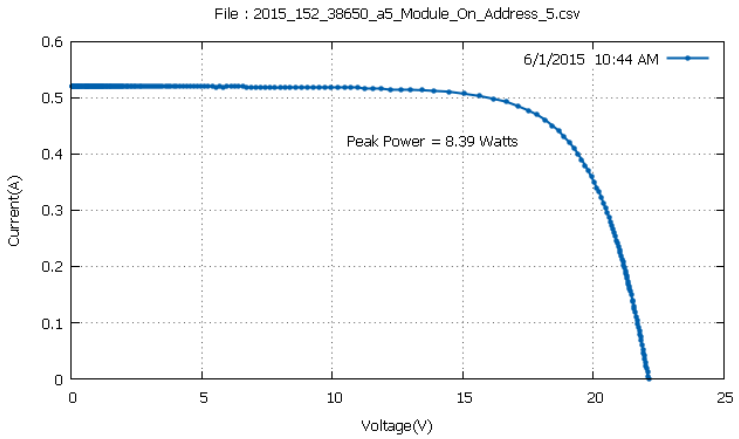
Mean Temperature: 47,63 ºC



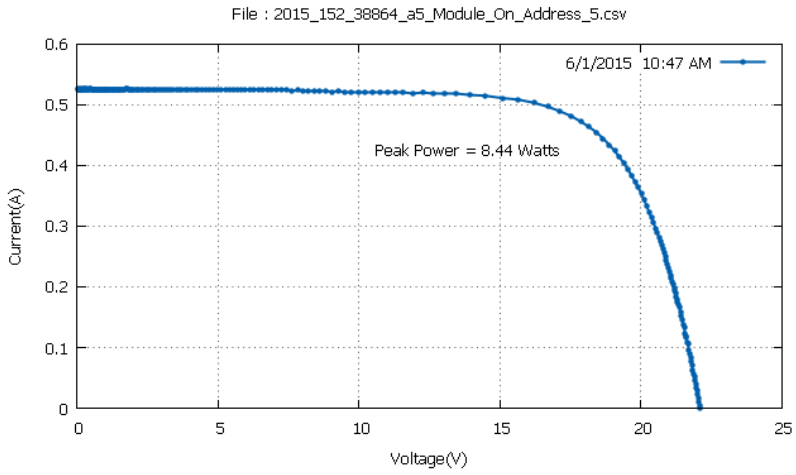
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.455919921}{859.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}7\ \%$$



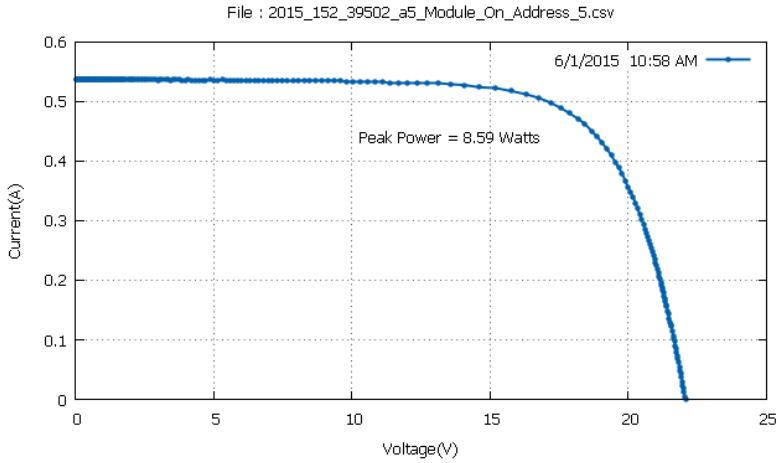
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8130875\ x\ 0.468762755}{873.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}64\ \%$$



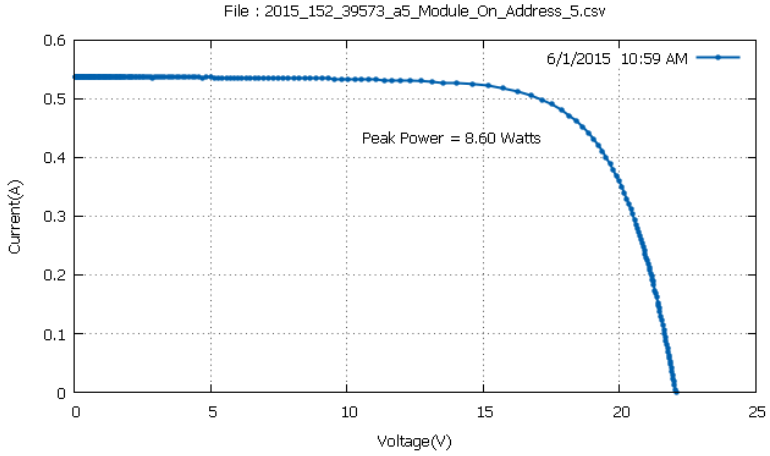
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8440113\ x\ 0.470047027}{877.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}64\%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.4726156}{885.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.489311248}{906.3\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.48160556}{906.7\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}54\ \%$$

Module 4

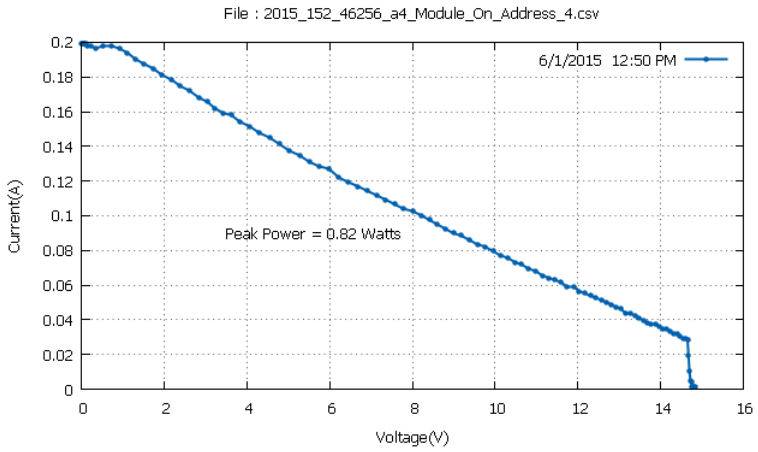
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

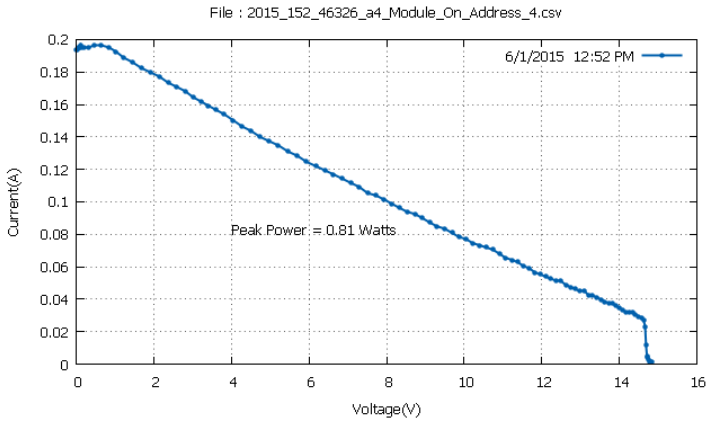
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:50	59,8	1,23
12:52	59,3	1,22
12:53	59,5	1,23
12:54	58,5	1,31
12:56	57,5	1,34
12:59	56,7	1,33

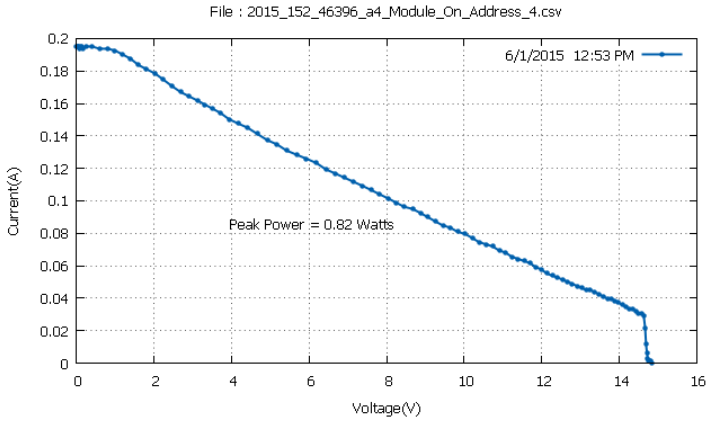
Mean Temperature: 58,55 ºC



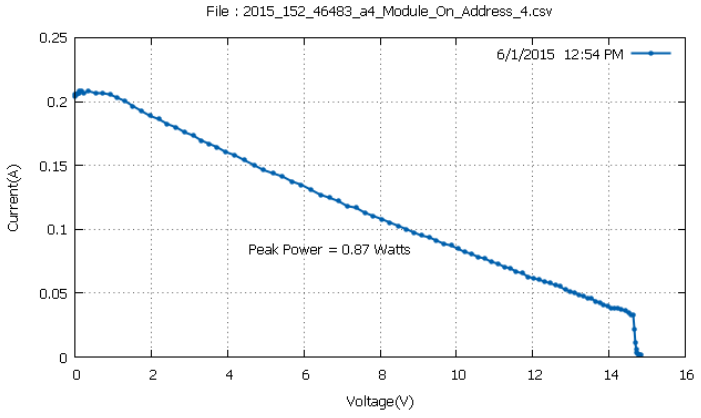
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.087018\ x\ 0.101458237}{989.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}23\ \%$$



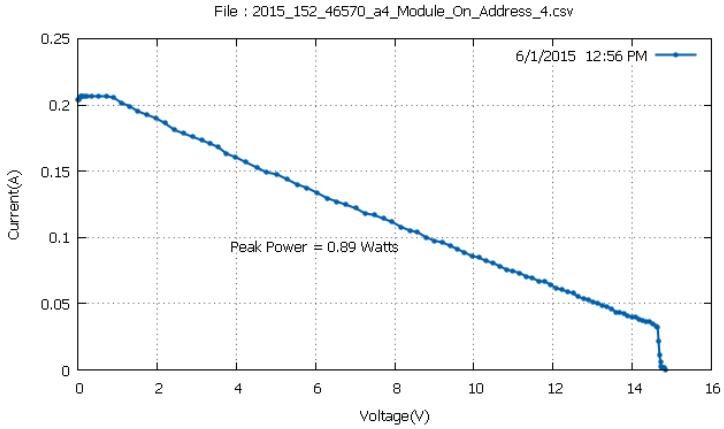
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.10248\ x\ 0.100173958}{989\ x\ 0{,}0671} \text{ x } 100 = 1{,}22\%$$



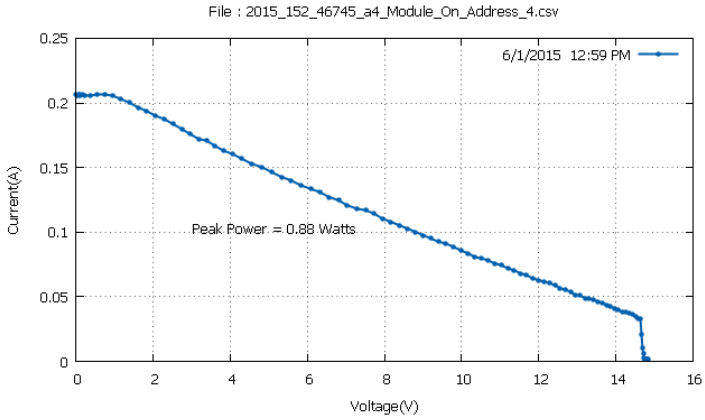
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.071555\ x\ 0.101458237}{989\ x\ 0{,}0671} \text{ x } 100 = 1{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.277649\ x\ 0.09375255}{987.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.574094\ x\ 0.1040268}{987.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.349884\ x\ 0.105311081}{986.6\ \ x\ 0{,}0671} \text{ x } 100 = 1{,}33\ \%$$

Module 8

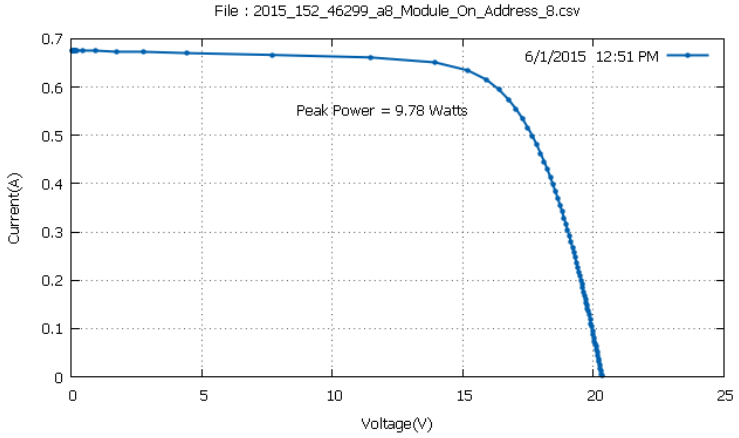
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

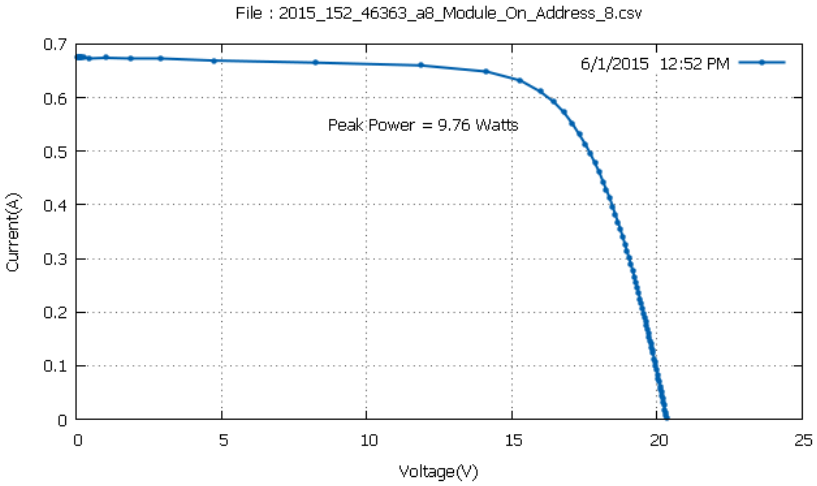
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:51	51,1	12,86
12:52	50,9	12,85
12:54	49,8	13,01
12:55	48,6	13,04
12:59	47	13,08
13:00	47,1	13,07

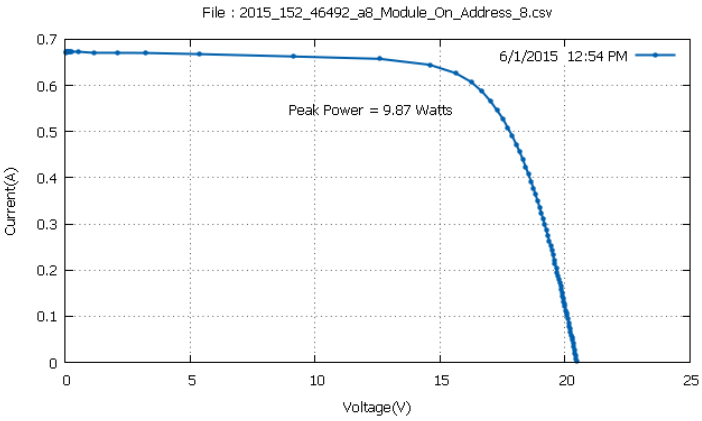
Mean Temperature: 49,08 ºC



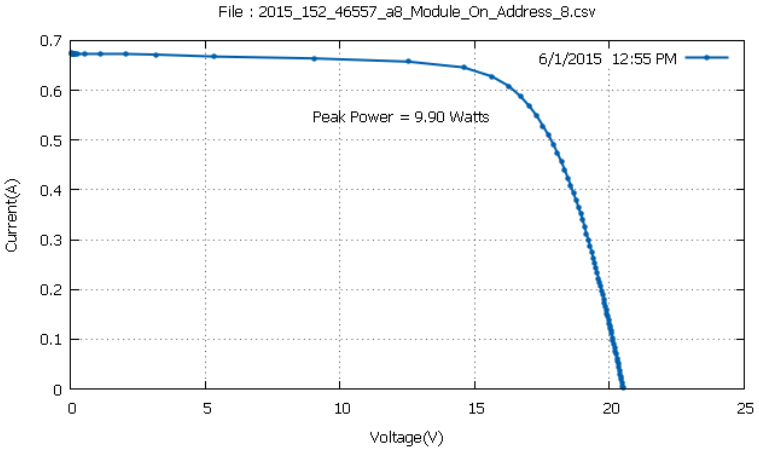
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.615170836}{990\ x\ 0{,}0768} \text{ x } 100 = 12{,}86\ \%$$



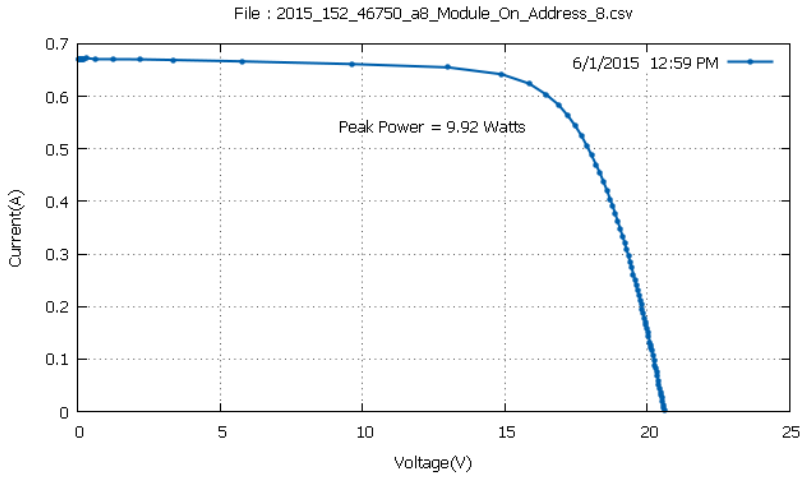
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.97302\ x\ 0.611318}{988.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}85\ \%$$



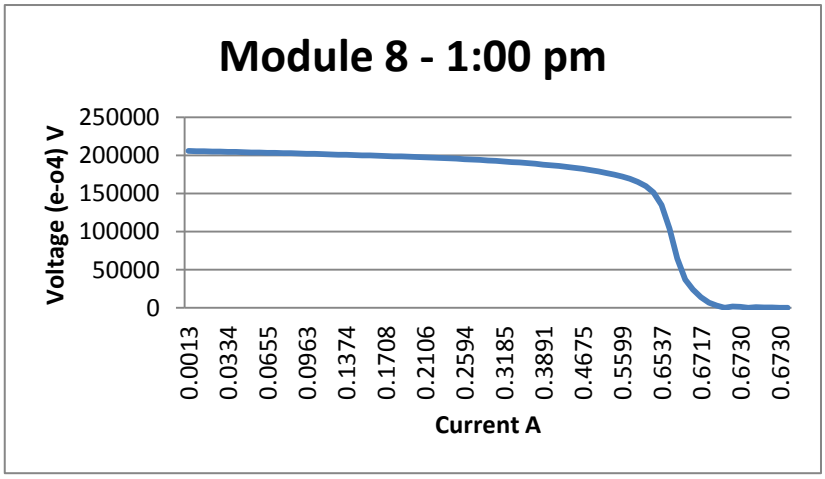
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.071555\ x\ 0.101458237}{987.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.25908\ x\ 0.608749449}{988.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4369011\ x\ 0.6036123}{987.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5219479\ x\ 0.599759459}{987.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}07\ \%$$

Module 3

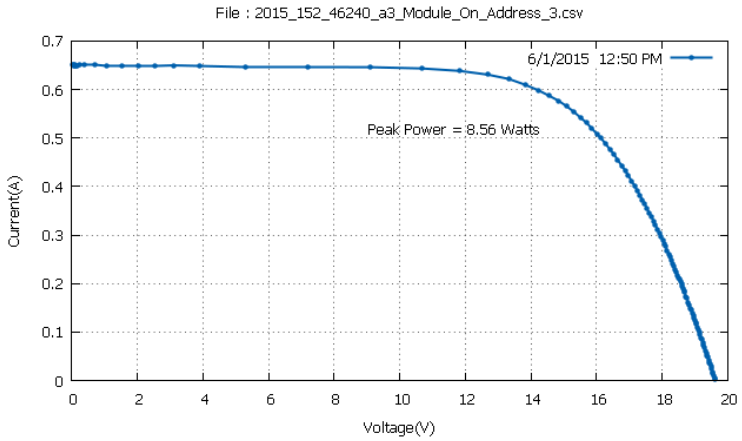
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

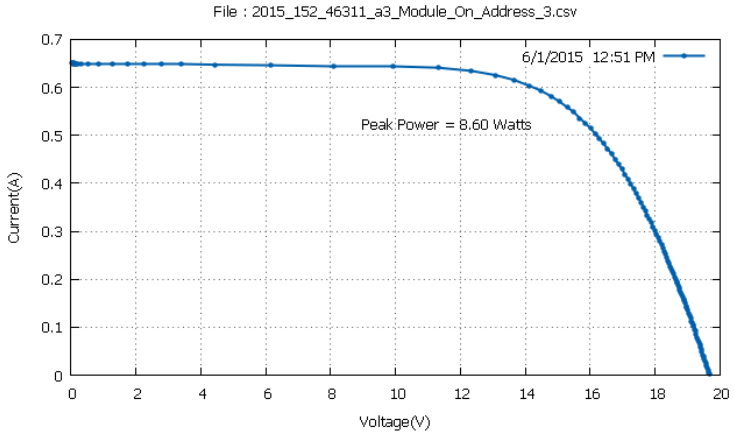
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:50	59,9	12,21
12:51	59,2	12,26
12:53	58,7	12,24
12:55	57,7	12,37
12:56	58,3	12,41
13:00	54,7	12,46

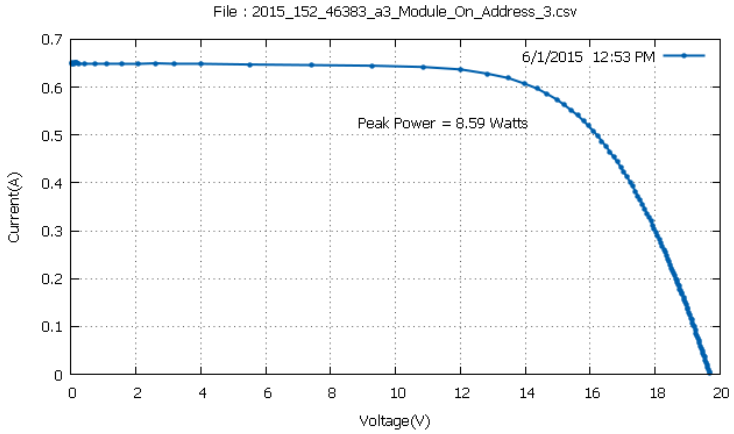
Mean Temperature: 58,08 ºC



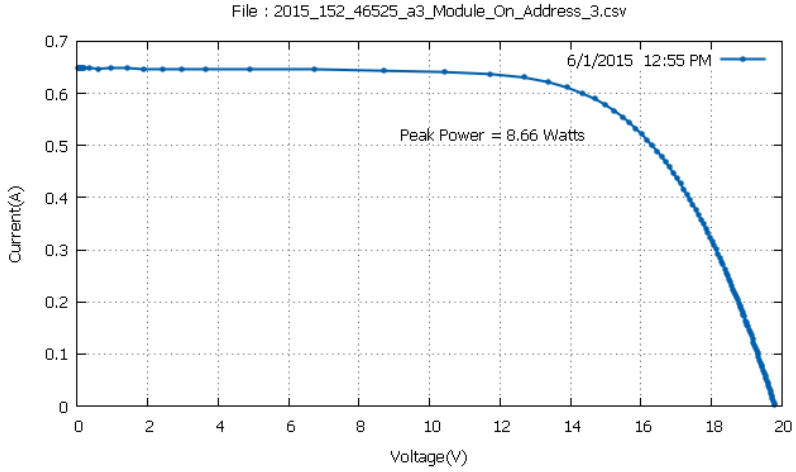
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8442383\ x\ 0.5766424}{988.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}21\ \%$$



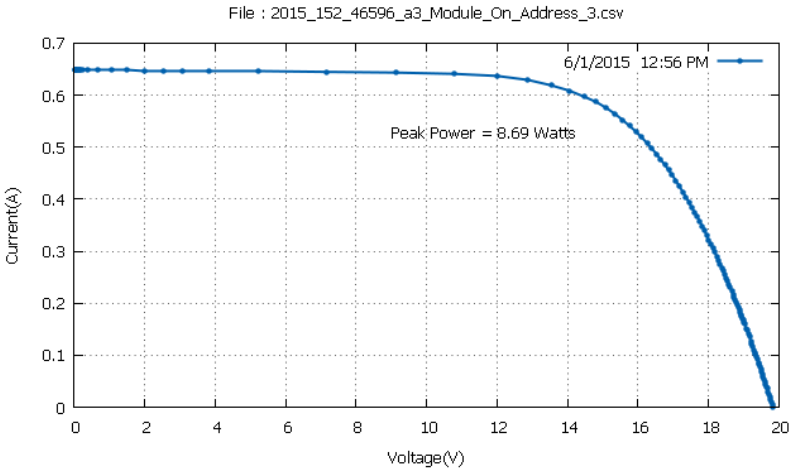
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7823877\ x\ 0.58177954}{989.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}26\ \%$$



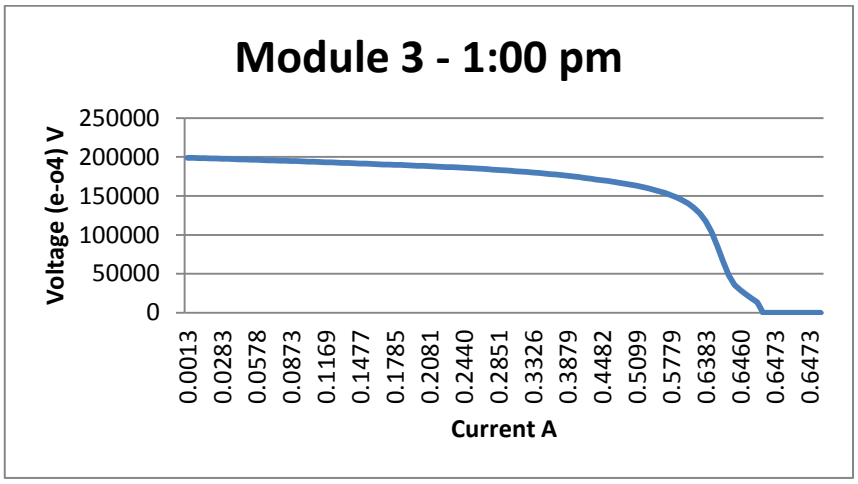
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6741486\ x\ 0.5856324}{989.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9911346\ x\ 0.5779267}{987.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8133135\ x\ 0.5869166}{987.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7978506\ x\ 0.5894852}{987.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$

Module 5

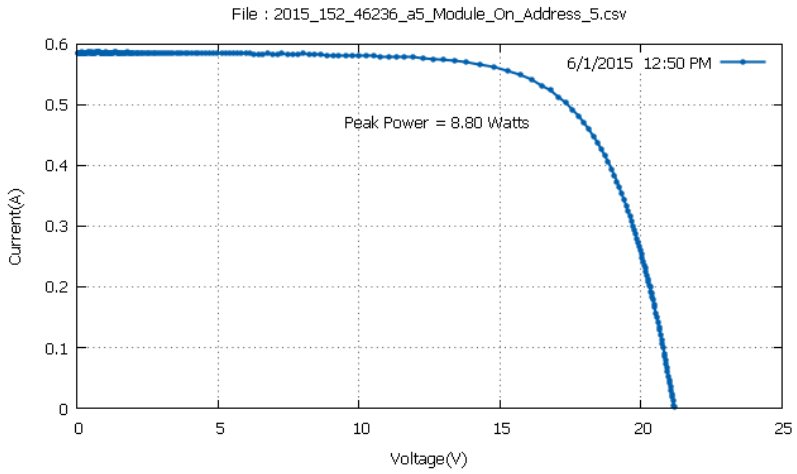
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

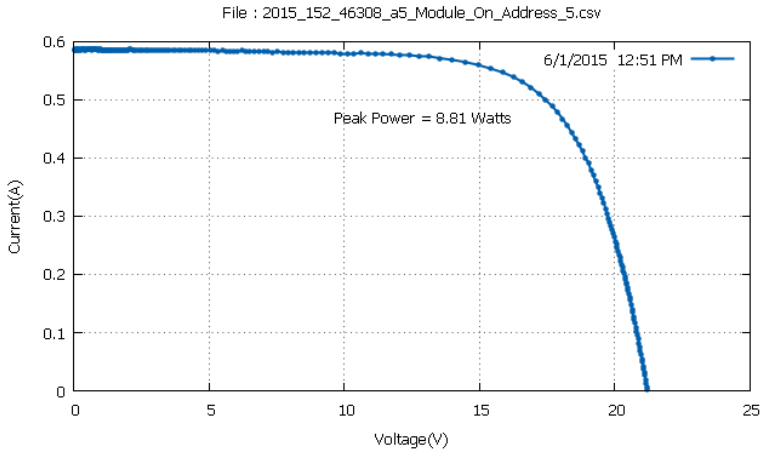
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:50	61,8	11,77
12:51	61,6	11,78
12:52	61,1	11,77
12:55	60,5	11,8
12:56	60,1	11,85
13:00	58,9	11,9

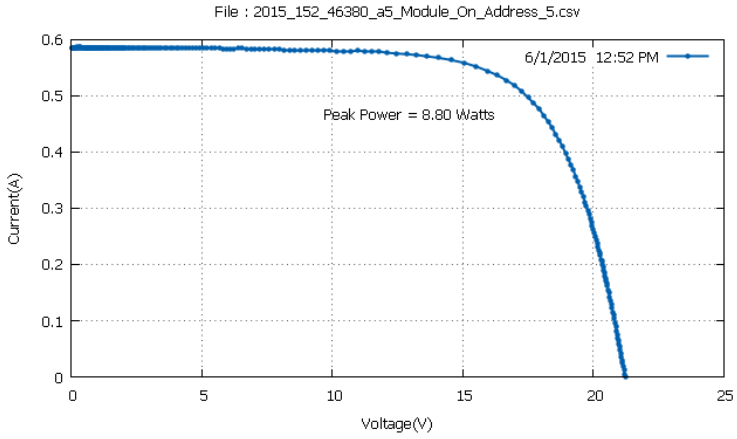
Mean Temperature: 60,66 ºC



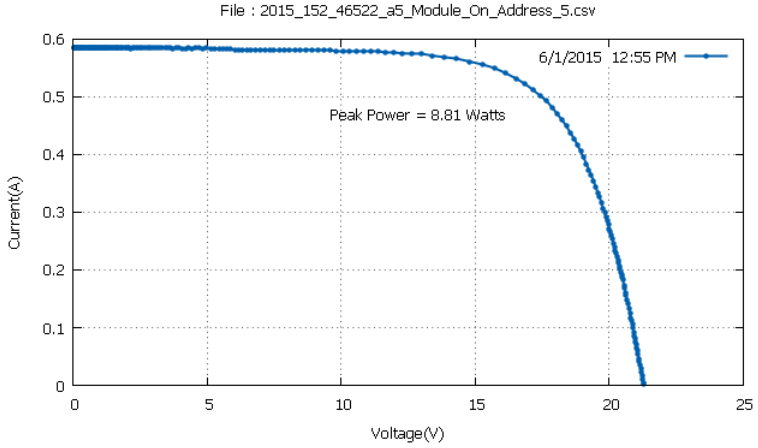
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7848129\ x\ 0.5239869}{988.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}77\ \%$$



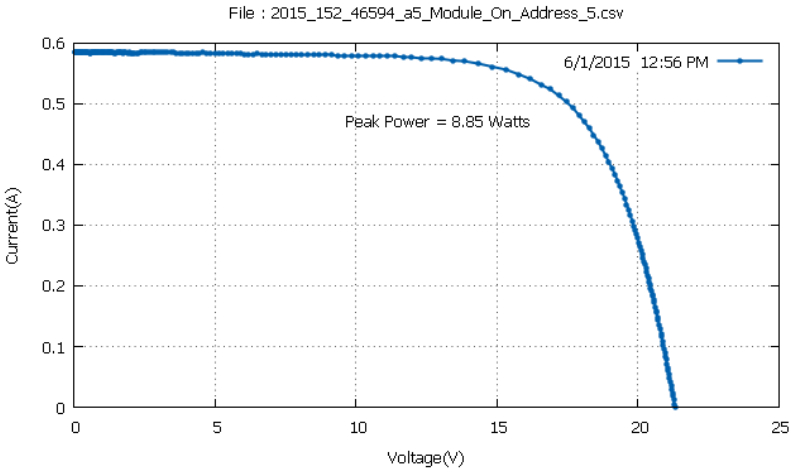
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9007835\ x\ 0.5214183}{989.2\ x\ 0{,}0756}\ \text{x } 100 = 11{,}78\ \%$$



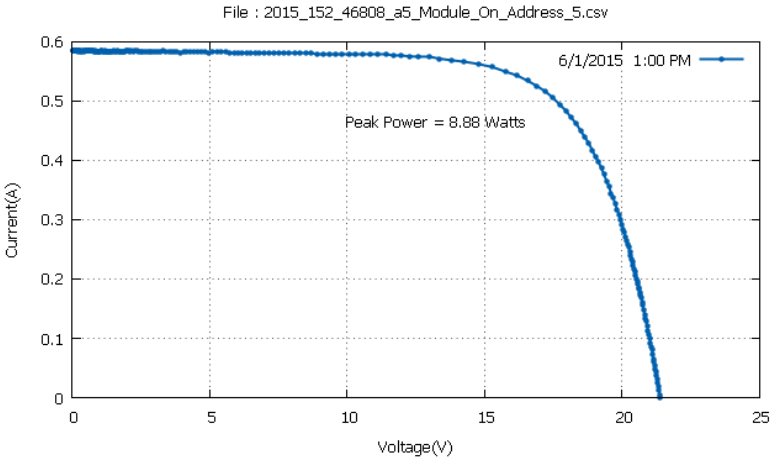
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9703674\ x\ 0.51884973}{988.8\ x\ 0{,}0756}\ \text{x } 100 = 11{,}77\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8466644\ x\ 0.5227026}{987.6\ x\ 0{,}0756}\ \text{x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.88532\ x\ 0.5239869}{987.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2023087\ x\ 0.5162812}{987.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}9\ \%$$

Module 4

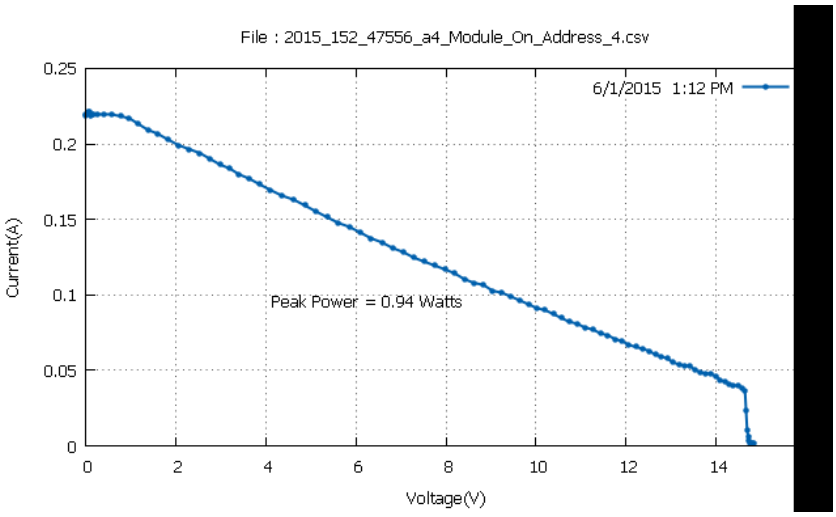
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

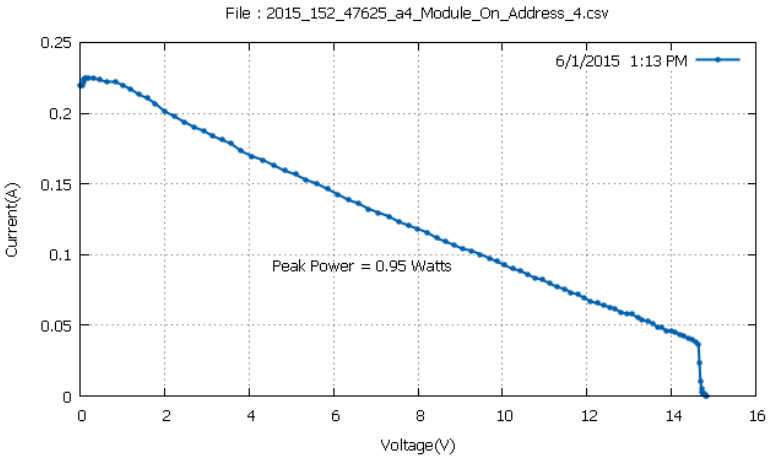
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:12	53	1,42
13:13	52,7	1,43
13:14	53,1	1,47
13:17	52,7	1,47
13:18	52,3	1,47
13:21	52,2	1,52

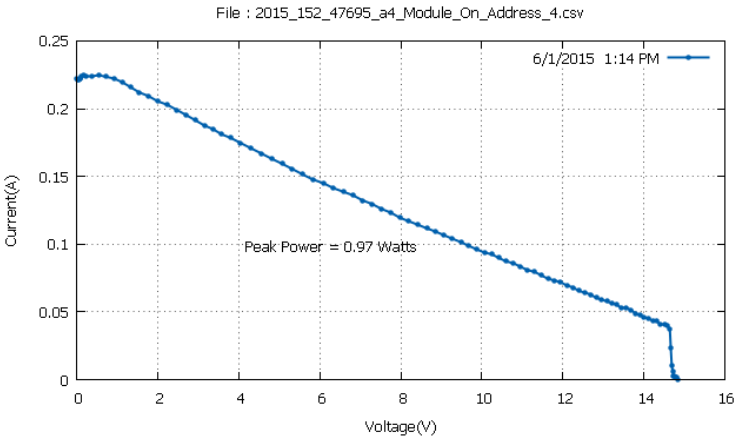
Mean Temperature: 52,66 ºC



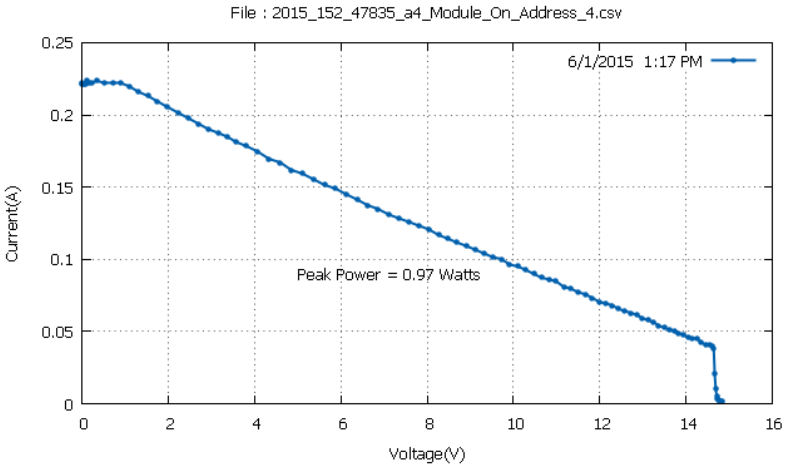
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.81376648\ x\ 0.106595367}{983.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



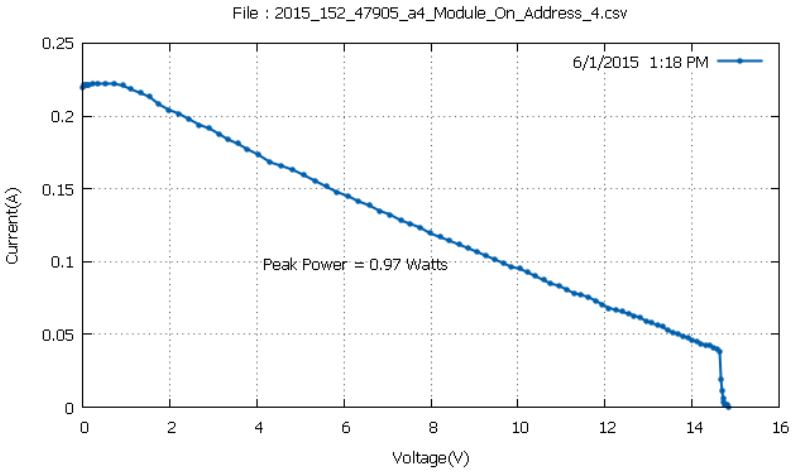
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.26991749\ x\ 0.102742523}{984\ x\ 0{,}0671} \text{ x } 100 = 1{,}43\ \%$$



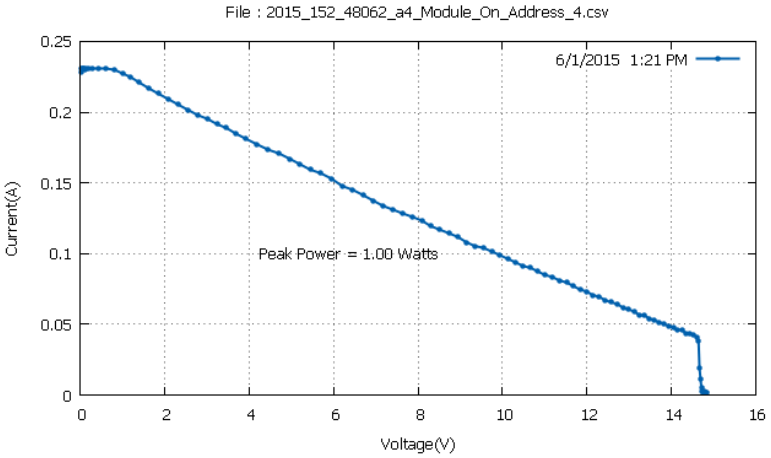
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.860155\ x\ 0.109163925}{982.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.718338\ x\ 0.100173958}{979.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.852424\ x\ 0.109163925}{978.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.99932\ x\ 0.11173249}{979.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}52\ \%$$

Module 8

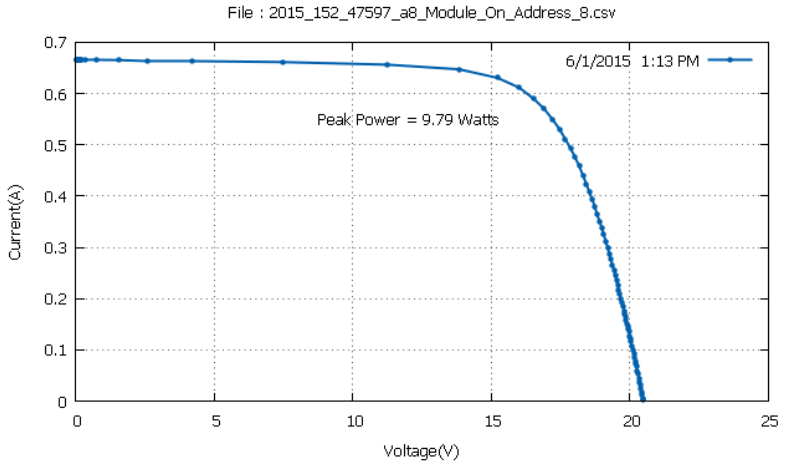
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

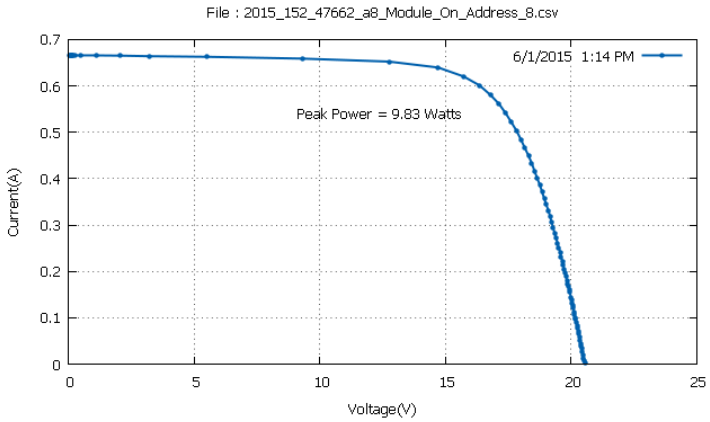
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:13	48,3	12,95
13:14	48,5	13
13:16	47	13,07
13:17	46,6	13,04
13:18	47,5	13,03
13:20	46,4	13,05

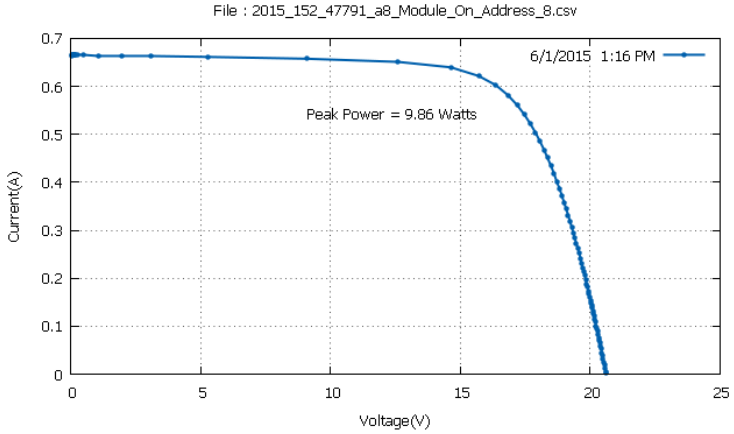
Mean Temperature: 47,38 ºC



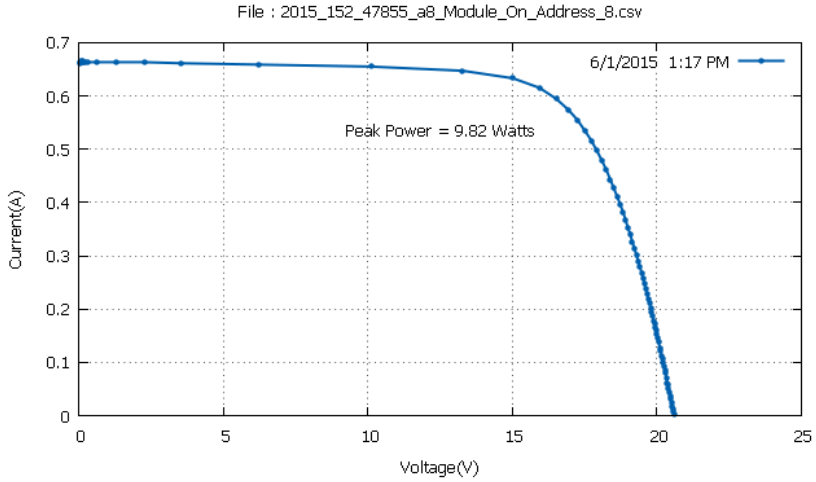
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0116768\ x\ 0.611318}{984\ x\ 0{,}0768} \text{ x } 100 = 12{,}95\ \%$$



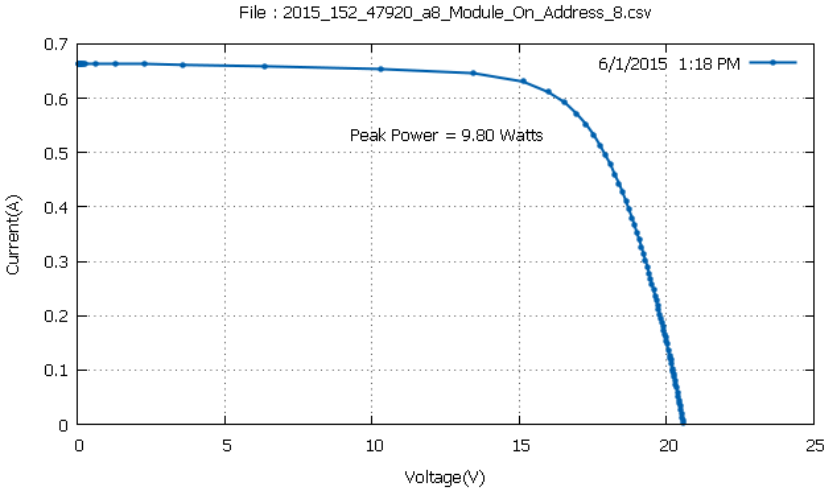
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.601043761}{984\ x\ 0{,}0768}\ \text{x } 100 = 13\ \%$$



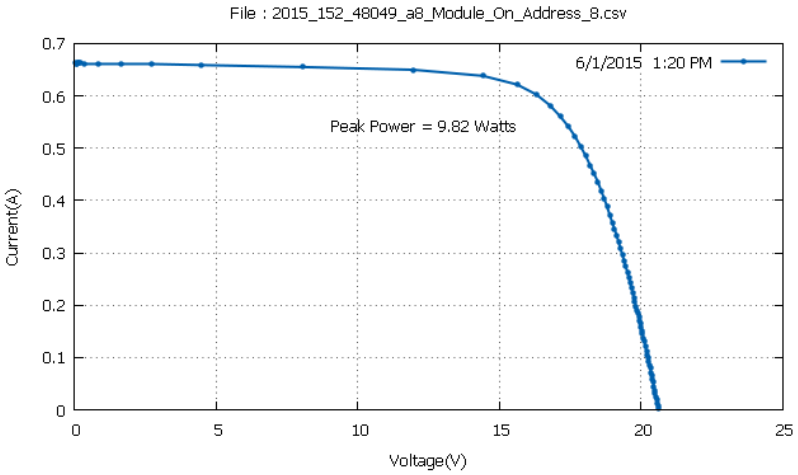
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.602328}{982.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5142155\ x\ 0.5946223}{980.2\ x\ 0{,}0768}\ \text{x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5451412\ x\ 0.5920538}{979\ x\ 0{,}0768}\ \text{x } 100 = 13{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3054676\ x\ 0.602328}{979.5\ x\ 0{,}0768}\ \text{x } 100 = 13{,}05\ \%$$

Module 3

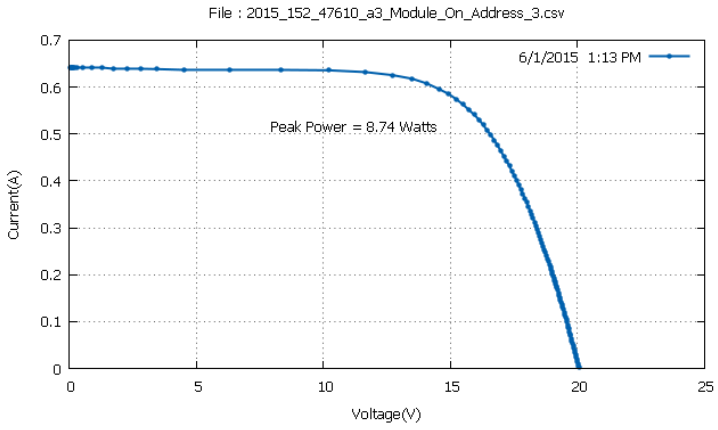
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

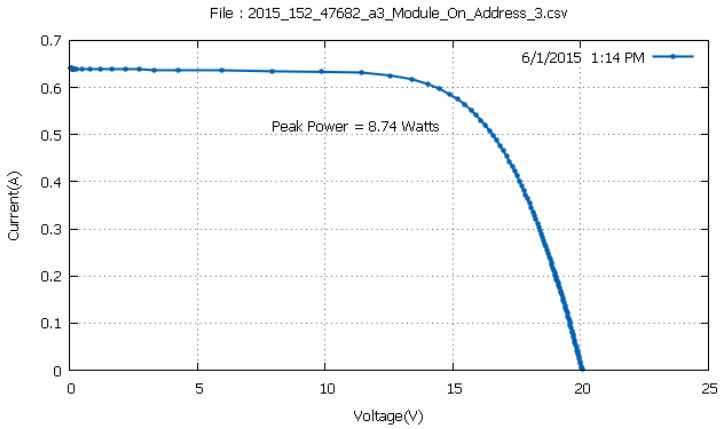
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:13	51,6	12,54
13:14	51,3	12,54
13:17	51,1	12,58
13:18	51	12,56
13:19	50,7	12,58
13:21	50,4	12,27

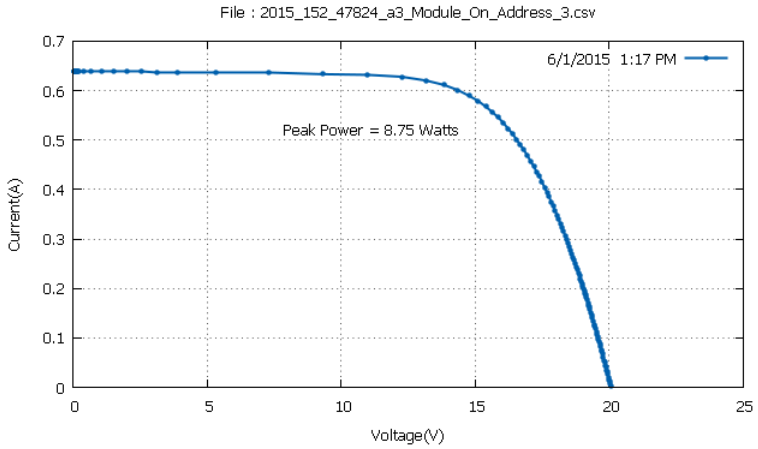
Mean Temperature: 51,01 ºC



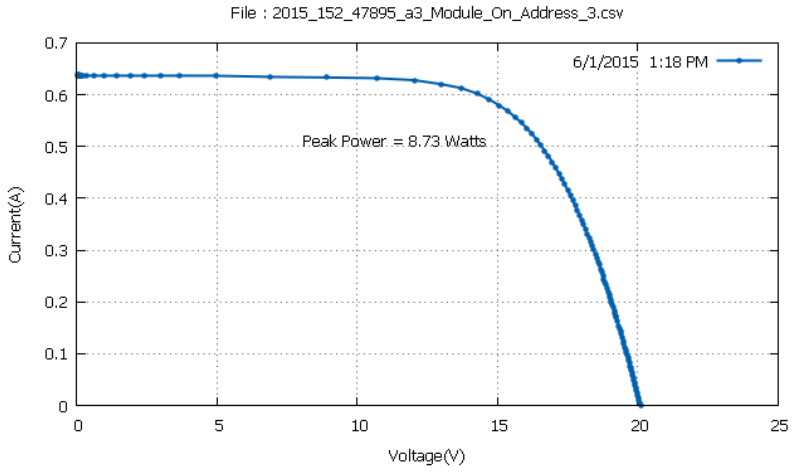
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2230759\ x\ 0.574073851}{982.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}54\ \%$$



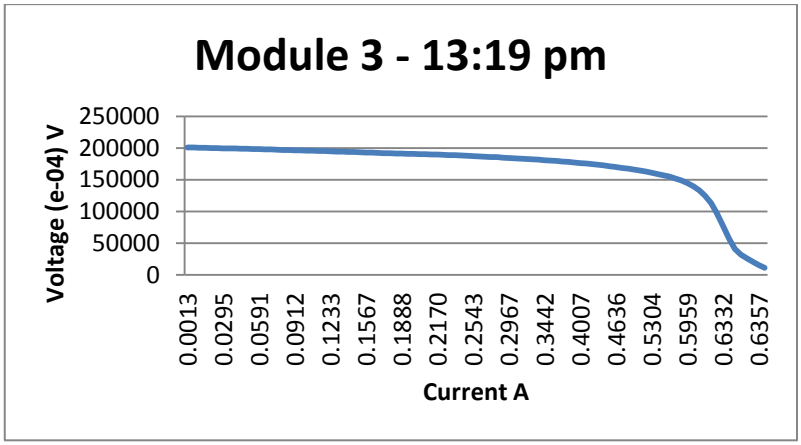
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.18442\ x\ 0.5753581}{982.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}54\ \%$$



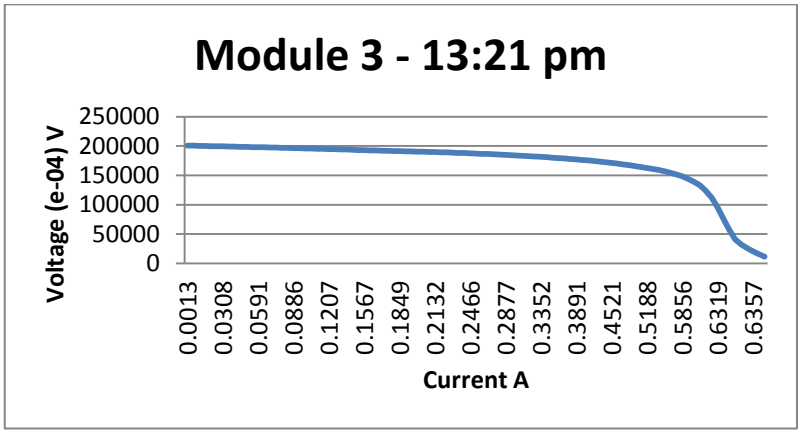
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0993738\ x\ 0.579210937}{980.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3467779\ x\ 0.5689367}{979.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.47821\ x\ 0.5637995}{978.3\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.16122\ x\ 0.575358}{978.5\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}57\ \%$$

Module 5

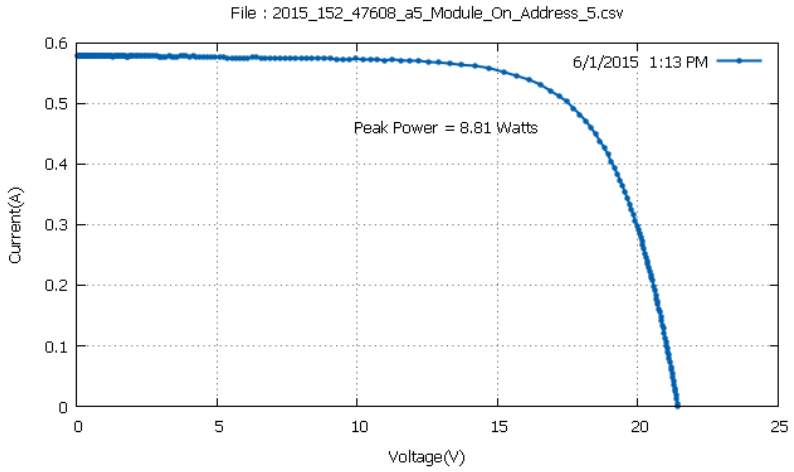
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

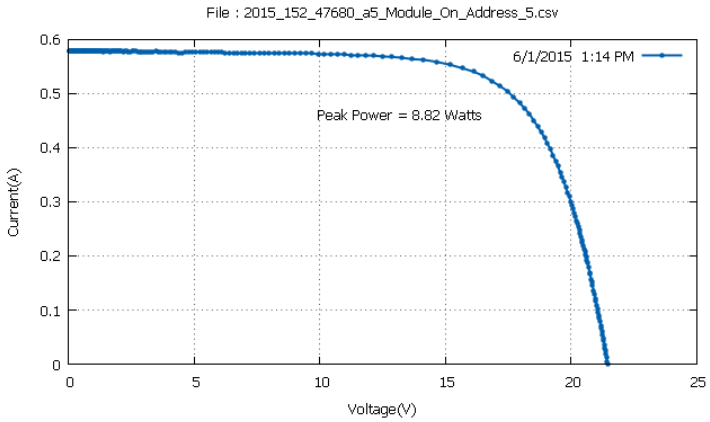
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:13	57,9	11,84
13:14	57,7	11,85
13:17	57,1	11,9
13:18	57,1	11,9
13:19	57	11,91
13:21	56,7	11,88

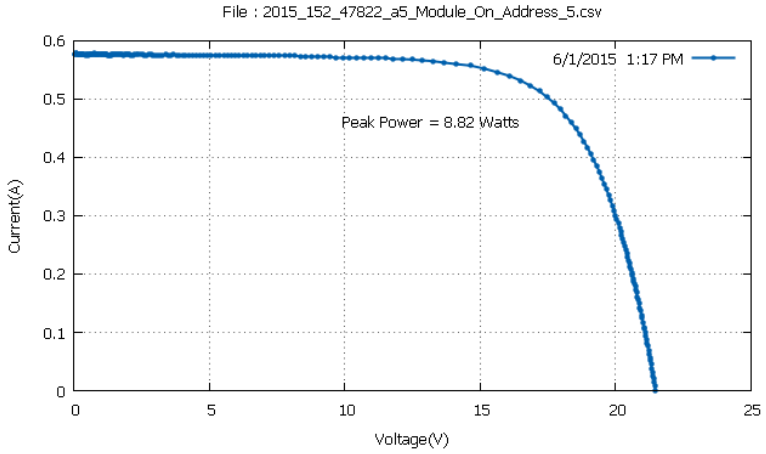
Mean Temperature: 57,25 ºC



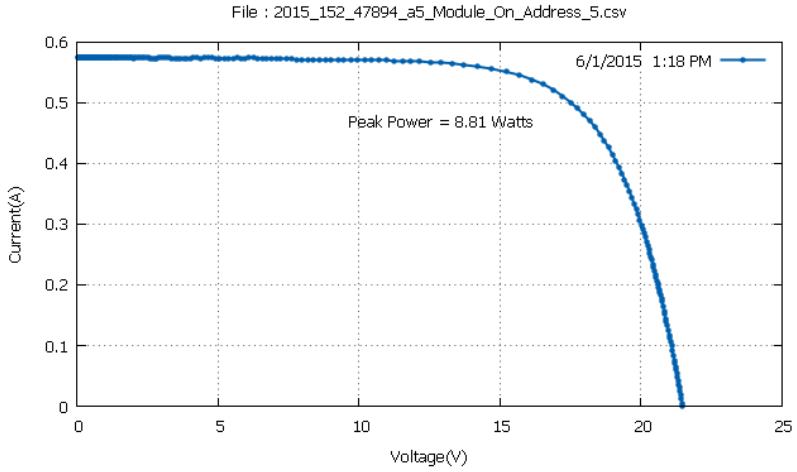
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1868458\ x\ 0.512428343}{984.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}84\ \%$$



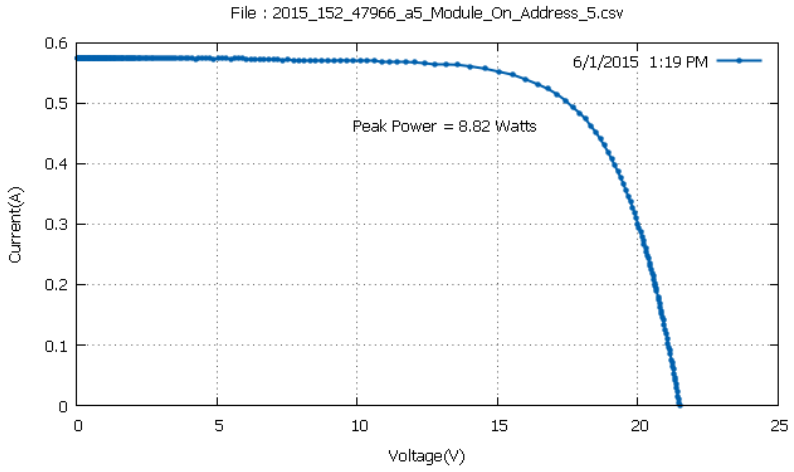
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1713829\ x\ 0.5137126}{983.8\ x\ 0{,}0756}\ \text{x } 100 = 11{,}85\ \%$$



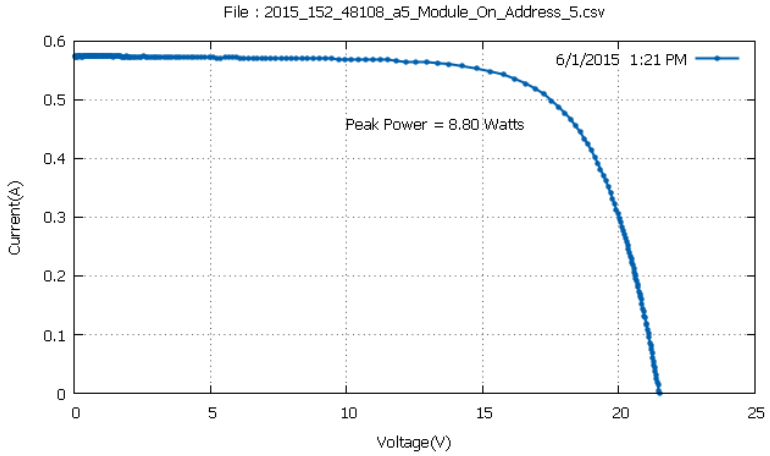
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1791134\ x\ 0.5137126}{979.9\ x\ 0{,}0756}\ \text{x } 100 = 11{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9007835\ x\ 0.5214183}{978.8\ x\ 0{,}0756}\ \text{x } 100 = 11{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1172619\ x\ 0.5149969}{979\ x\ 0{,}0756}\ \text{x } 100 = 11{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2564278\ x\ 0.509859741}{979.2\ x\ 0{,}0756}\ \text{x } 100 = 11{,}88\ \%$$

Module 4

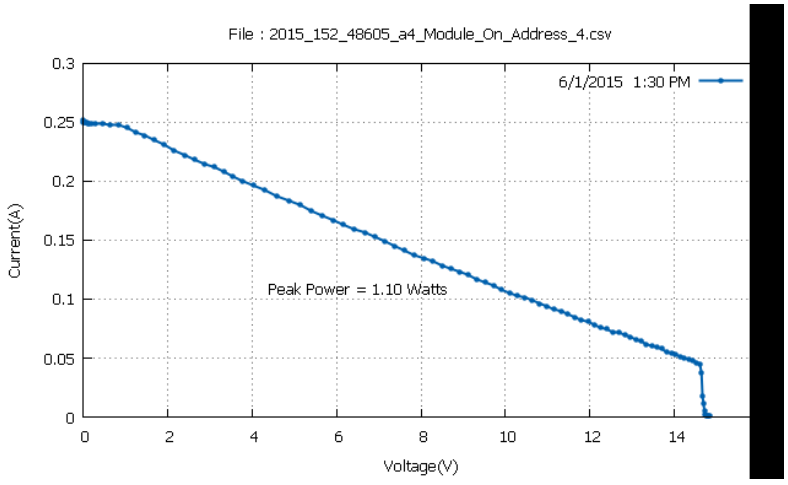
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

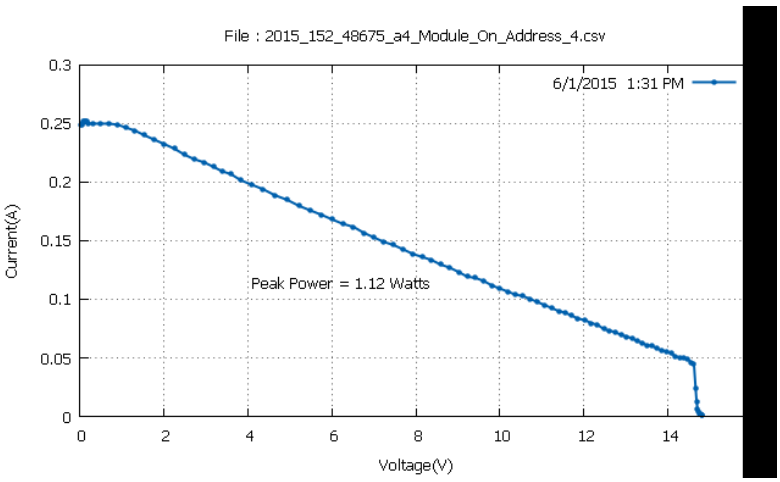
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:30	50,5	1,68
13:31	51,3	1,72
13:32	51,5	1,72
13:34	50,3	1,69
13:35	50	1,7
13:36	50,3	1,7

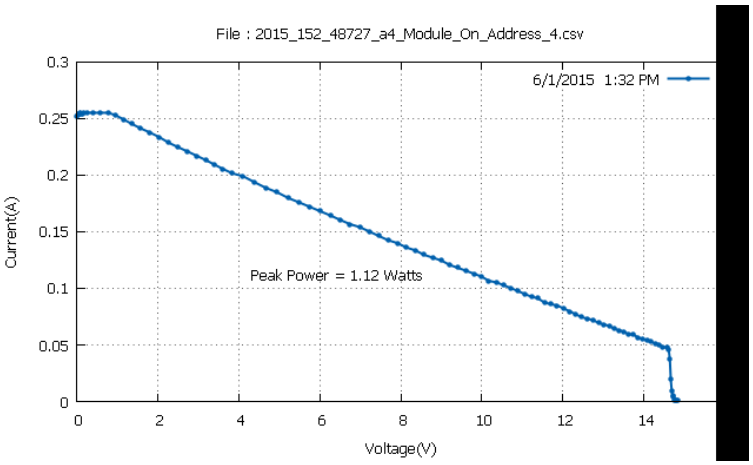
Mean Temperature: 50,65 ºC



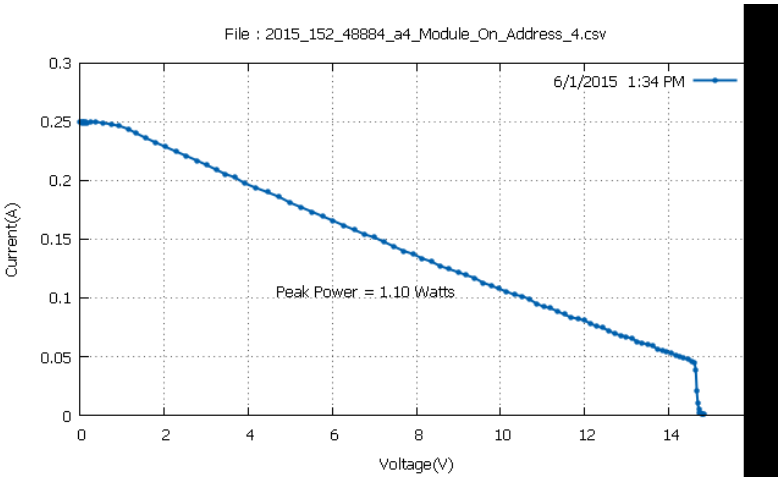
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.643677\ x\ 0.127143875}{970.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}68\ \%$$



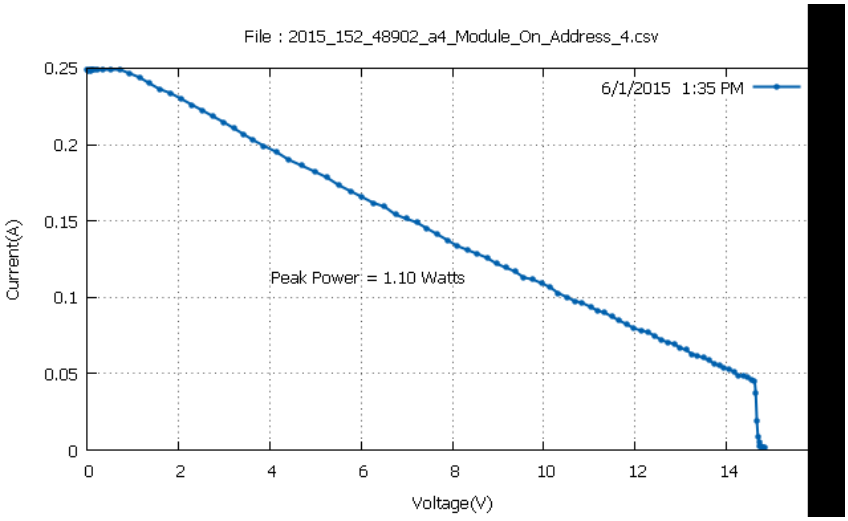
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.798304\ x\ 0.127143875}{970.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



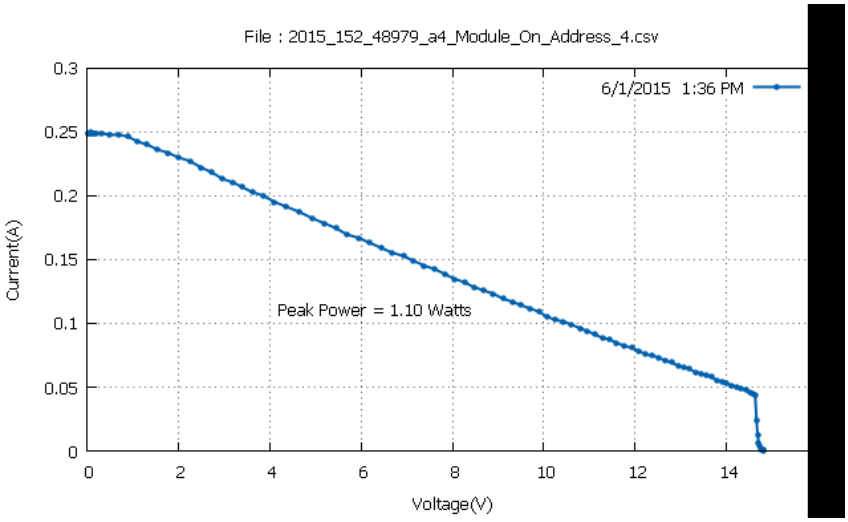
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.99932\ x\ 0.1245753}{969.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.184873\ x\ 0.119438179}{966.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}69\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.751916\ x\ 0.125859588}{962.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.38081\ x\ 0.13228099}{962.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}7\ \%$$

Module 8

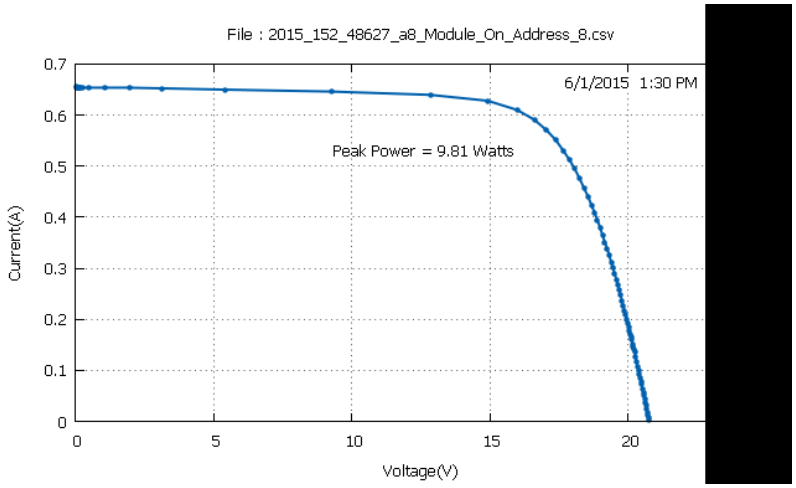
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

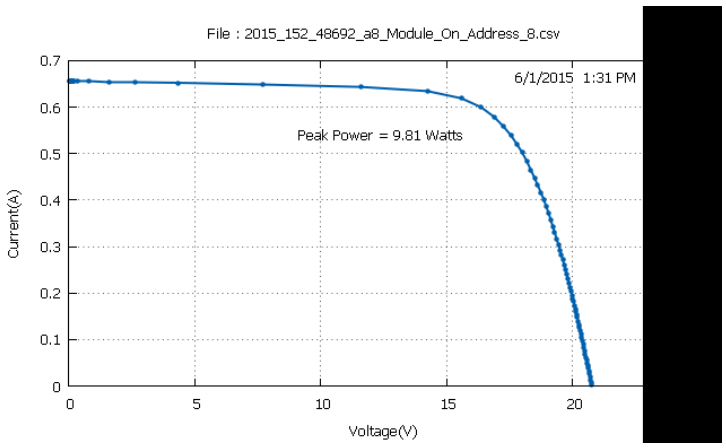
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:30	44,8	13,61
13:31	44,4	13,15
13:33	44,5	13,15
13:34	44,8	13,08
13:35	45,8	13,06
13:43	46,5	13,03

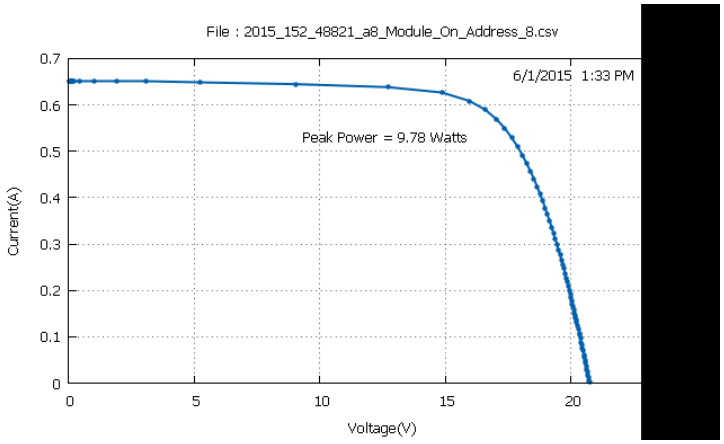
Mean Temperature: 45,13 ºC



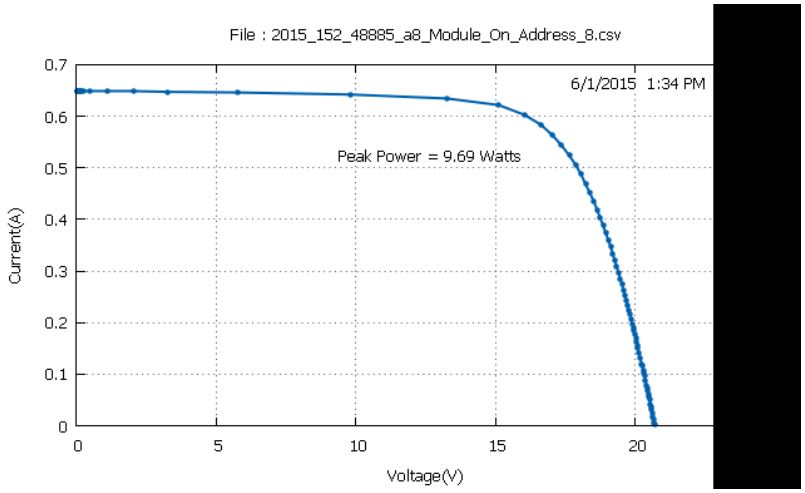
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59926\ x\ 0.59076947}{970.6\ x\ 0{,}0768}$ x 100 = 13,61 %



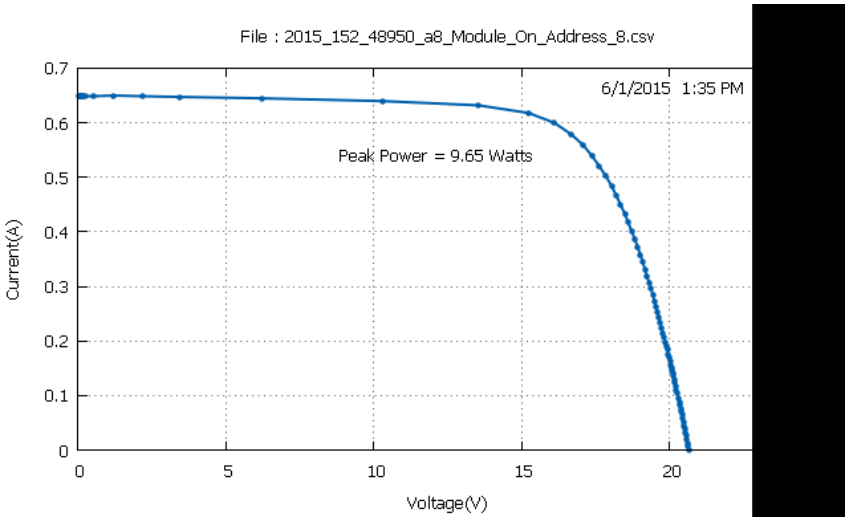
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3595886\ x\ 0.599759459}{970.9\ x\ 0{,}0768}\ \text{x } 100 = 13{,}15\ \%$$



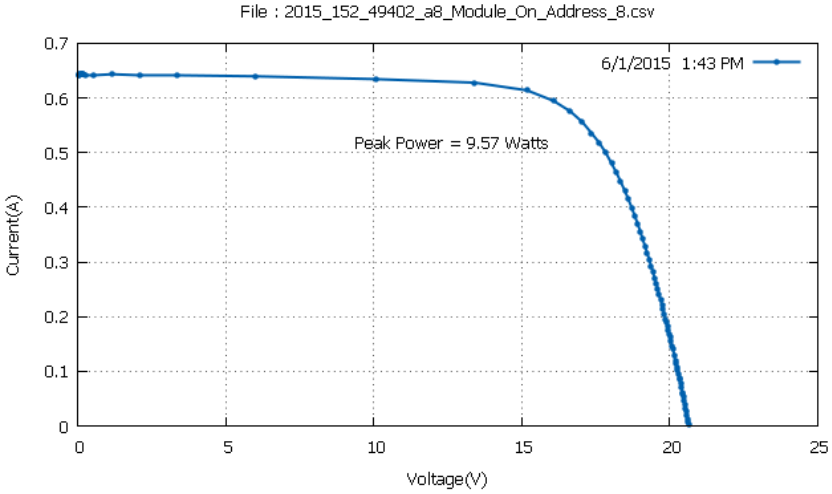
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5837975\ x\ 0.5894852}{968\ x\ 0{,}0768}\ \text{x } 100 = 13{,}15\%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6224556\ x\ 0.5830638}{964.4\ x\ 0{,}0768}\ \text{x } 100 = 13{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.599759459}{962.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6379185\ x\ 0.5753581}{956.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}03\ \%$$

Module 3

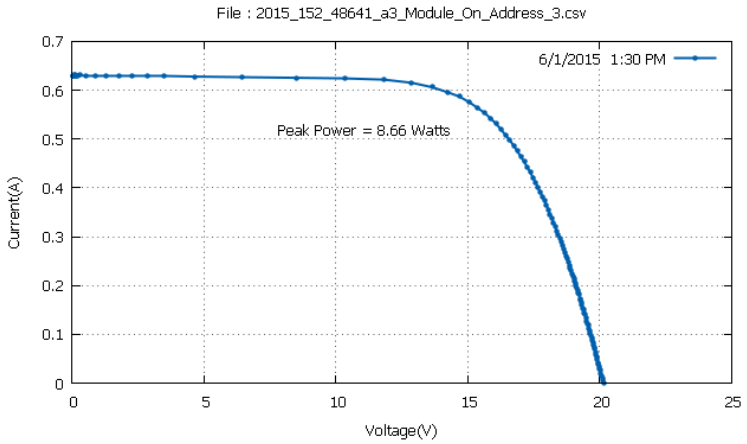
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

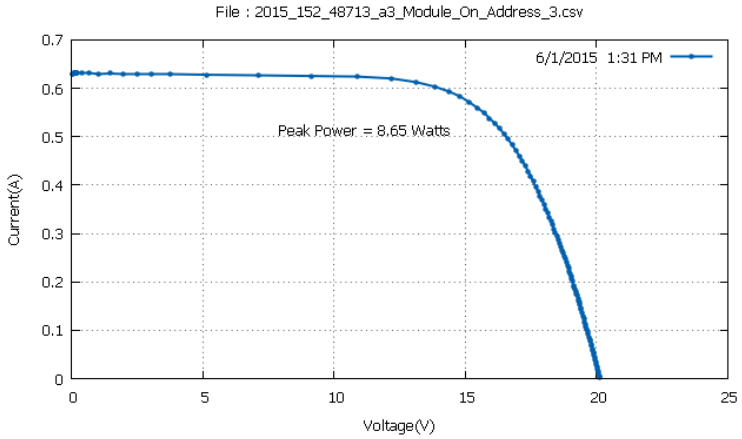
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:30	49,9	12,6
13:31	49,7	12,55
13:34	49,4	12,6
13:35	49,2	12,64
13:36	48,8	12,67
13:38	48,6	12,65

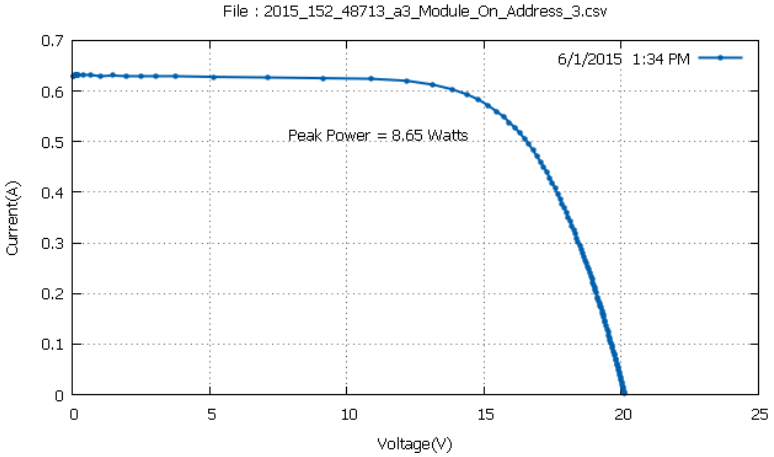
Mean Temperature: 49,26 ºC



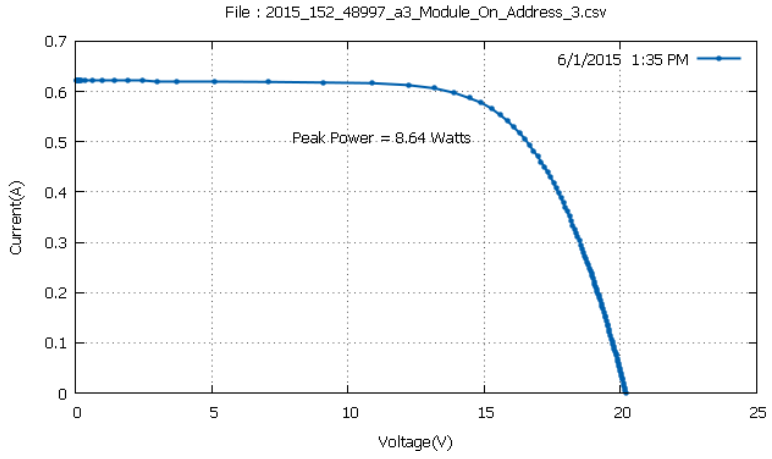
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3622408\ x\ 0.56379956}{969.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}6\ \%$$



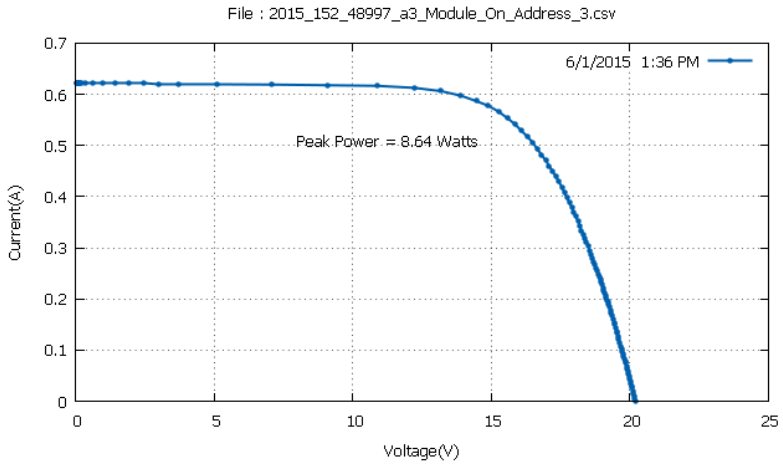
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.138031\ x\ 0.571505249}{971.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}55\ \%$$



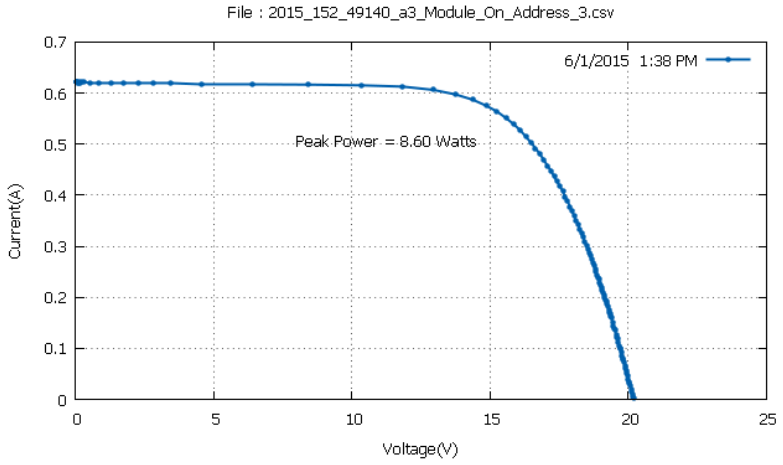
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3931665\ x\ 0.5625153}{967.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4240923\ x\ 0.5599467}{963.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2540016\ x\ 0.566368163}{961.6\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.24627\ x\ 0.56379956}{958.3\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}65\ \%$$

Module 5

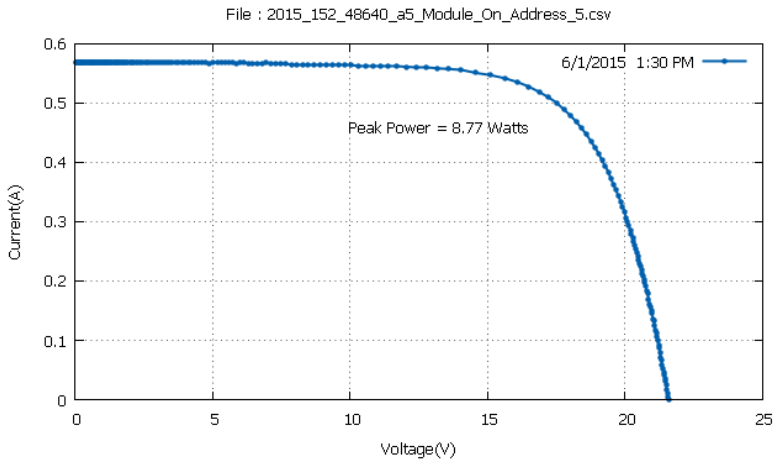
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

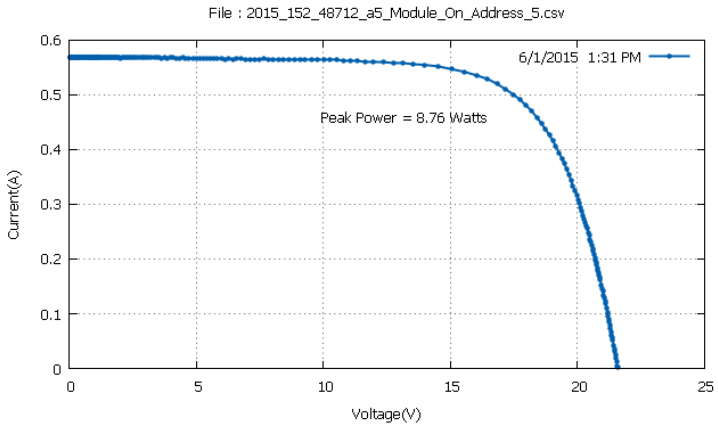
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:30	55,4	11,95
13:31	55,4	11,93
13:34	55,2	11,96
13:35	55,2	11,93
13:40	54,6	11,95
13:41	54,3	11,95

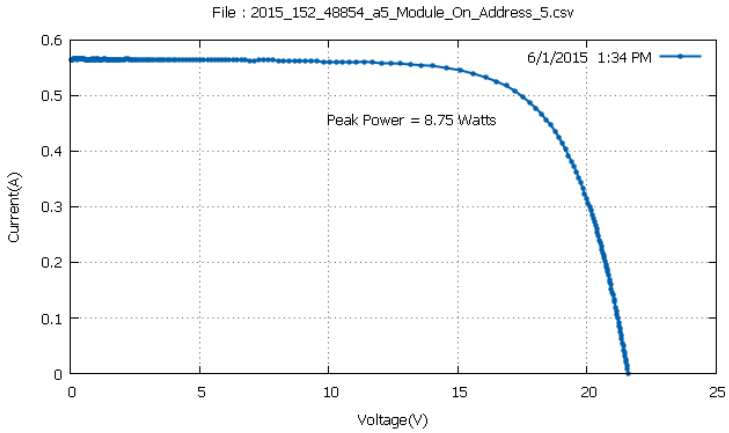
Mean Temperature: 55,01 ºC



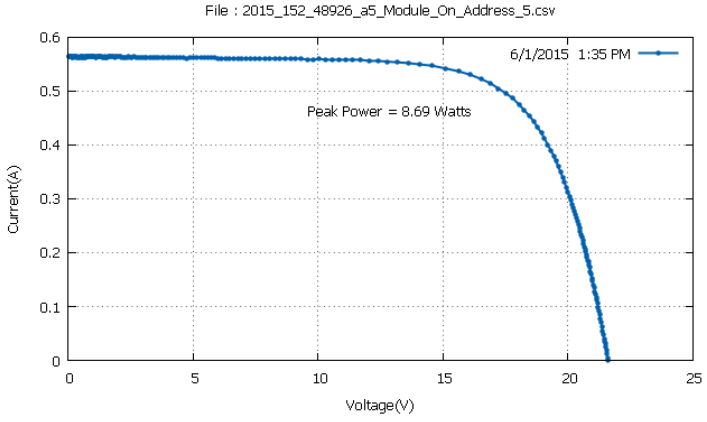
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2023087\ x\ 0.509859741}{970.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$



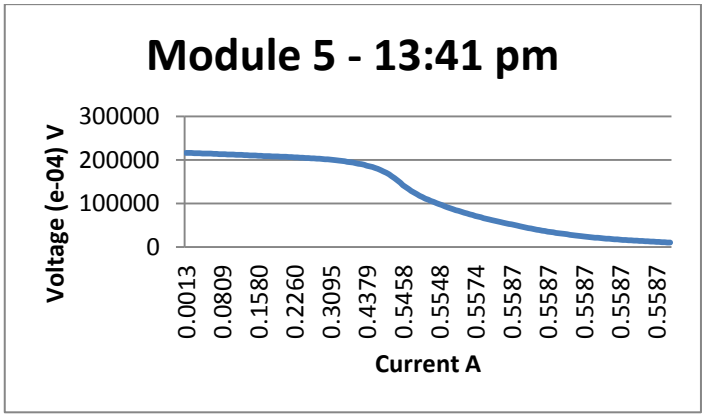
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1713829\ x\ 0.509859741}{971.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}93\ \%$$



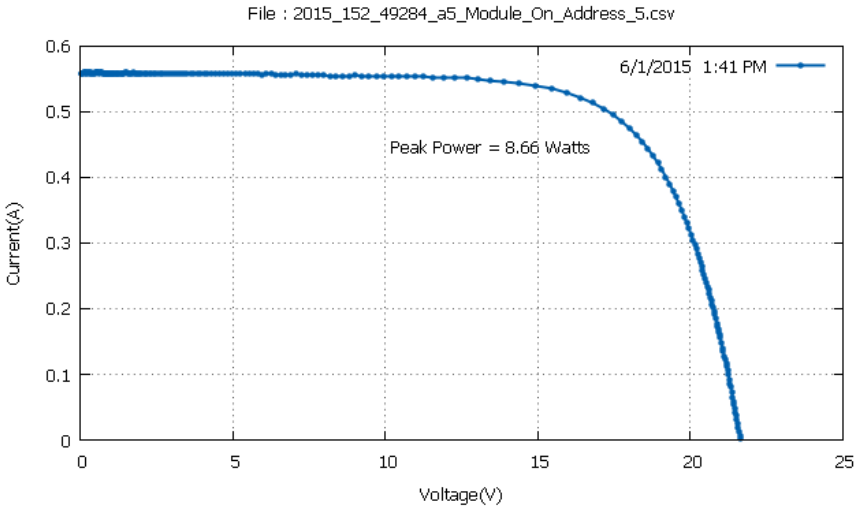
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2023087\ x\ 0.5085755}{967.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.87759\ x\ 0.5149969}{963.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.34147\ x\ 0.499585}{958.3\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4651737\ x\ 0.495732665}{957.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}95\ \%$$

Module 4

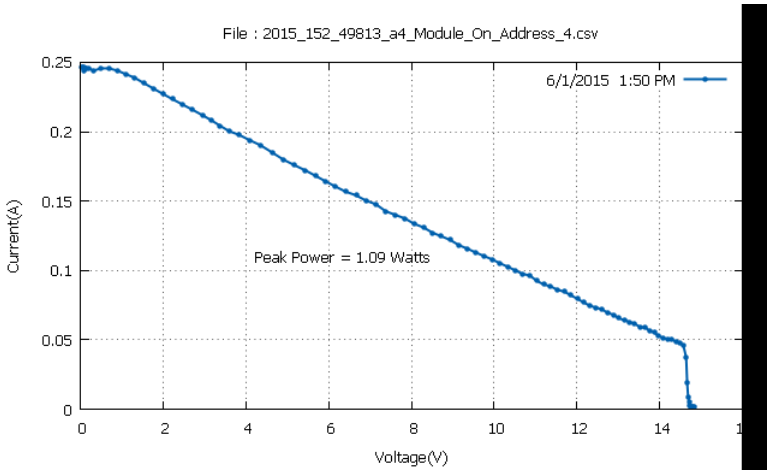
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

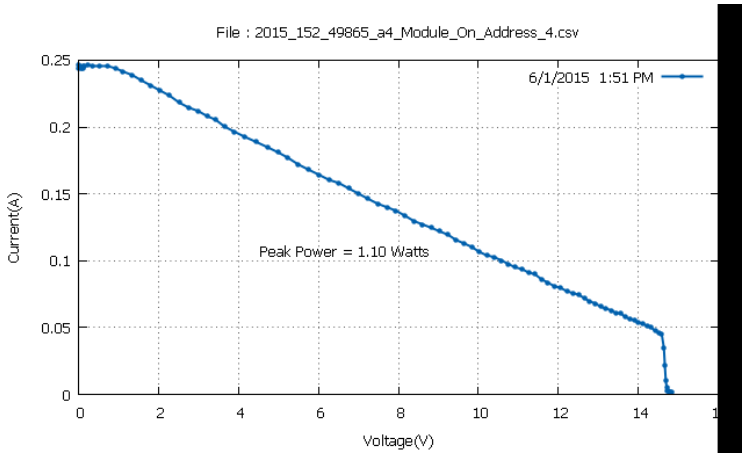
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:50	49,6	1,72
13:51	49,9	1,73
13:52	50	1,76
13:53	49,8	1,74
13:55	50,4	1,73
13:56	50,3	1,76

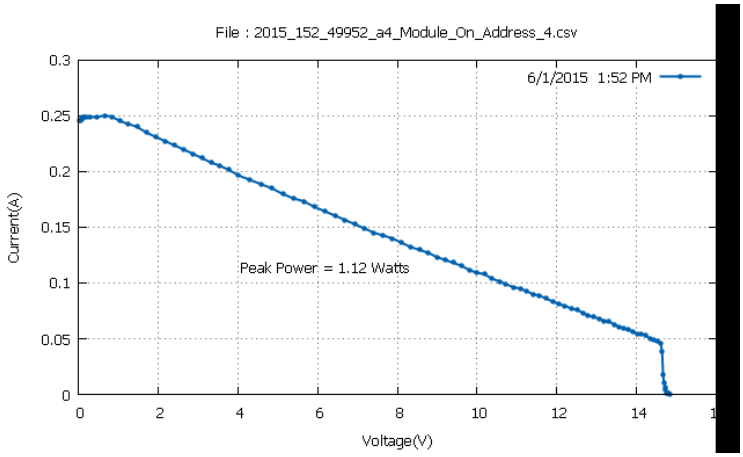
Mean Temperature: 50 ºC



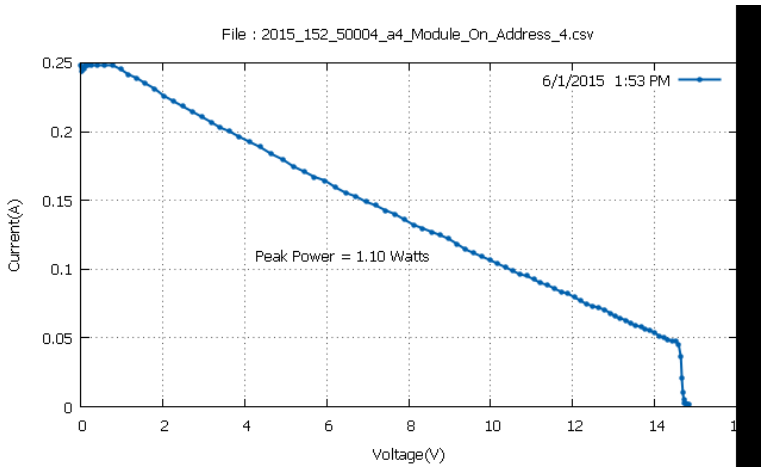
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.929737\ x\ 0.122006744}{944.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



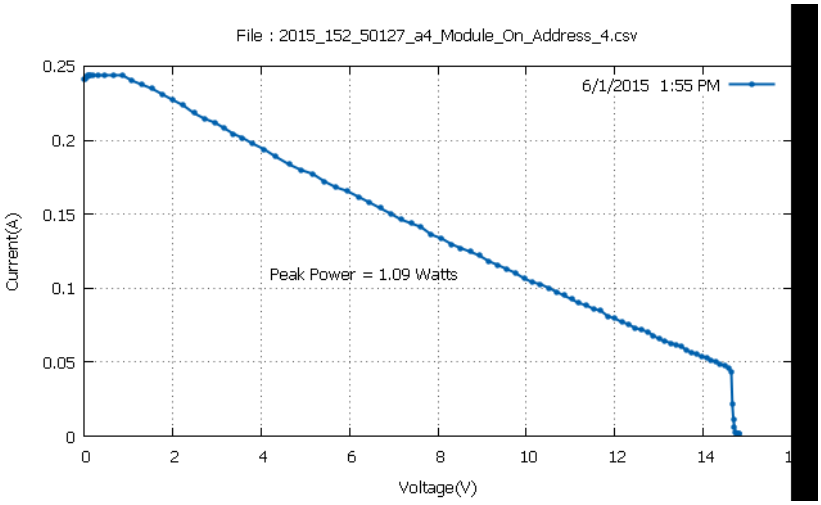
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.099828\ x\ 0.122006744}{945.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}73\ \%$$



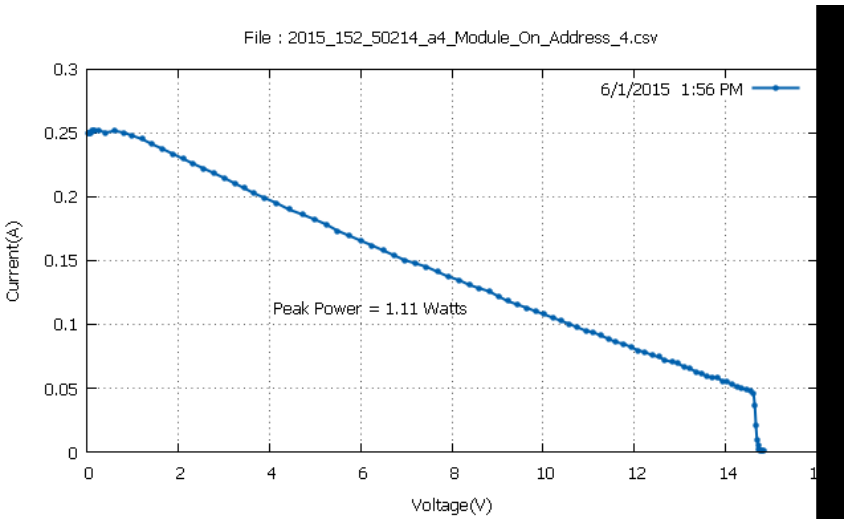
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.566362\ x\ 0.130996719}{943.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.898812\ x\ 0.1245753}{942.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.937469\ x\ 0.122006744}{938.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.81376648\ x\ 0.125859588}{938.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}76\ \%$$

Module 8

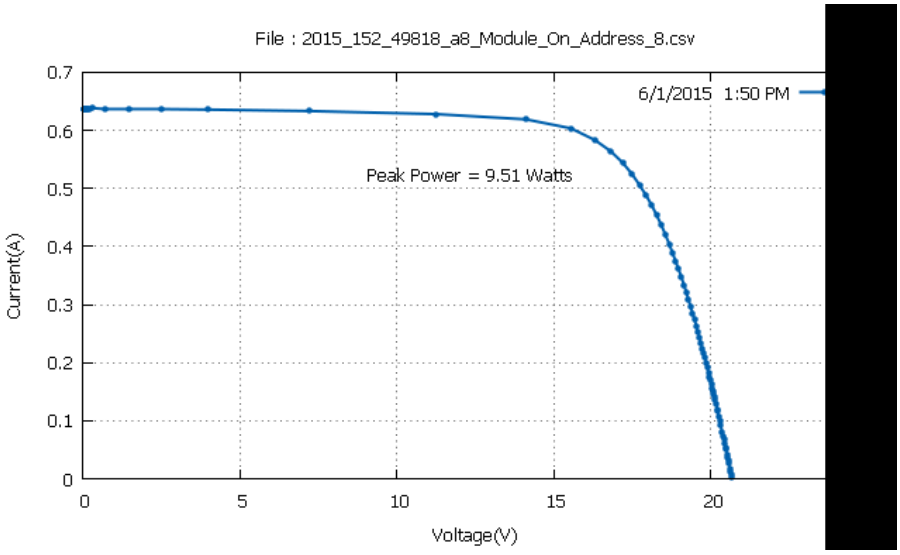
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

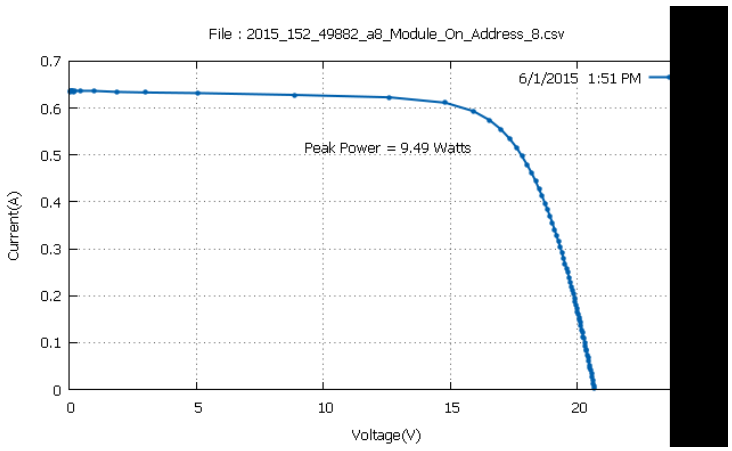
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:50	46	13,09
13:51	46,6	13,06
13:52	46,5	13,1
13:54	46,7	13,1
13:55	46,3	13,14
13:56	46,3	13,08

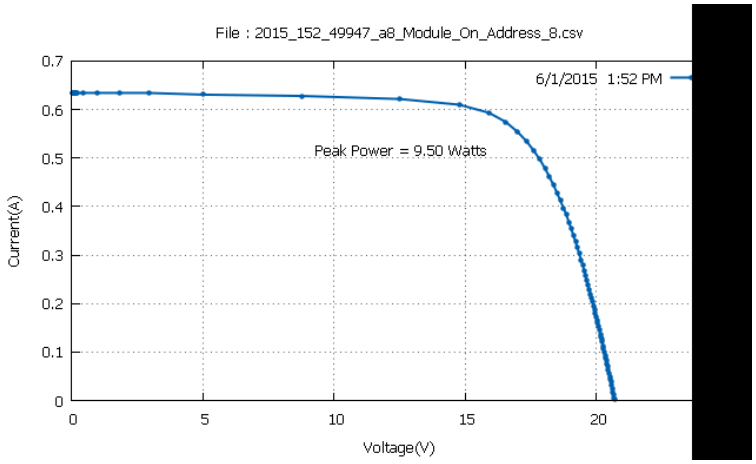
Mean Temperature: 46,4 ºC



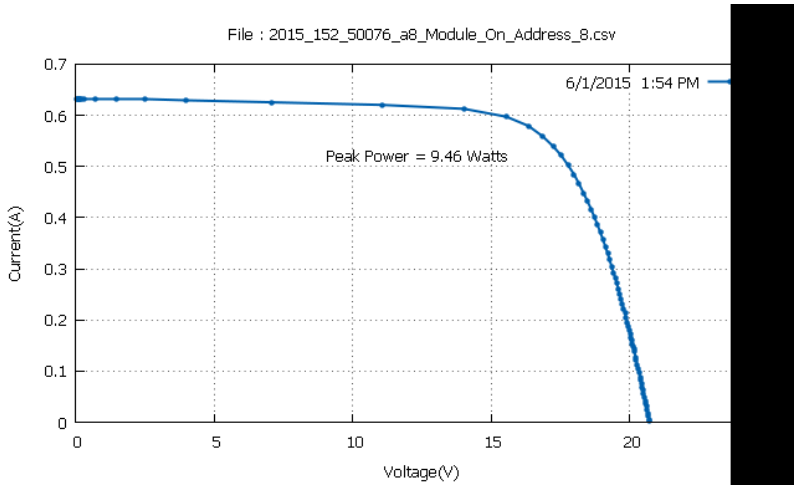
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3054676\ x\ 0.5830638}{945.6\ x\ 0{,}0768}$ x 100 = 13,09 %



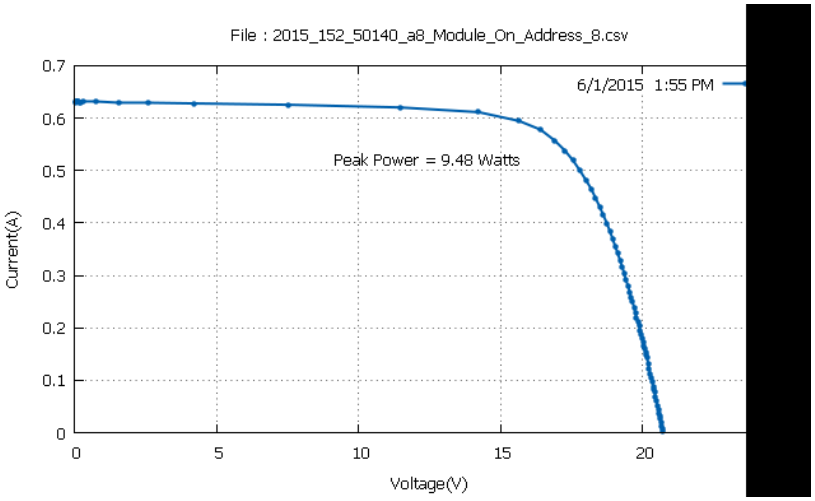
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5374088\ x\ 0.574073851}{945.6\ x\ 0{,}0768}\ \text{x } 100 = 13{,}06\ \%$$



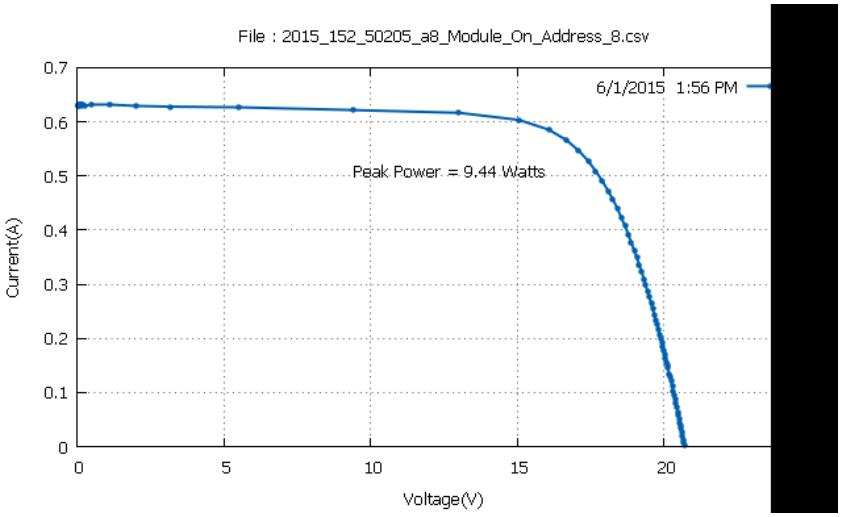
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5451412\ x\ 0.574073851}{943.9\ x\ 0{,}0768}\ \text{x } 100 = 13{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3363934\ x\ 0.579210937}{940.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3982449\ x\ 0.5779267}{938.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6611118\ x\ 0.566368163}{939.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}08\ \%$$

Module 3

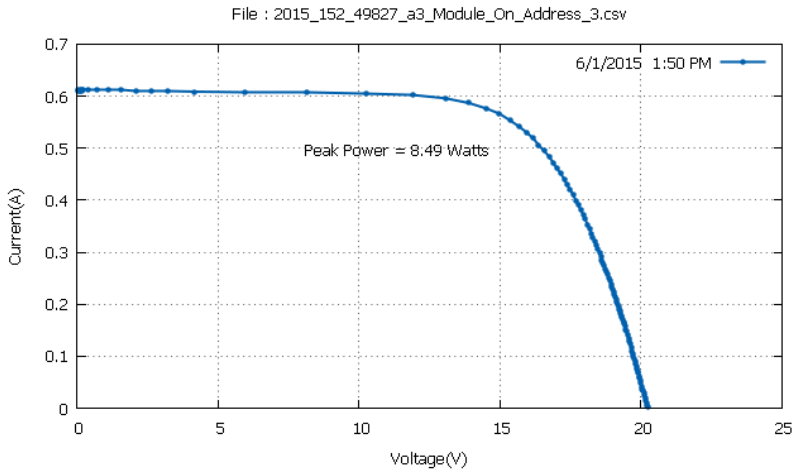
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

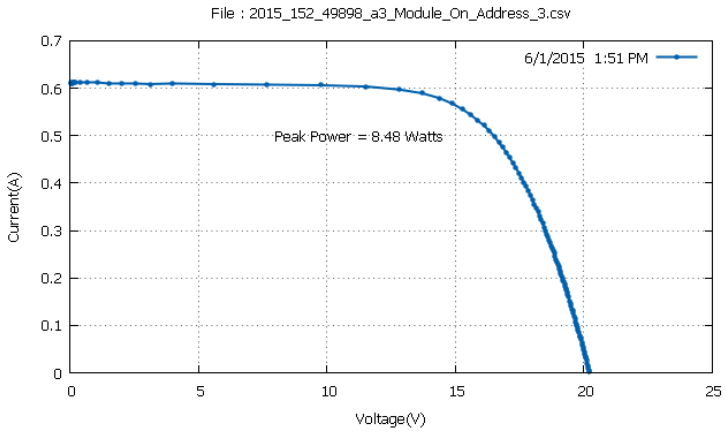
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:50	48,3	12,64
13:51	48,8	12,65
13:52	49,1	12,66
13:55	49,5	12,67
13:56	49,5	12,66
13:57	48,6	12,67

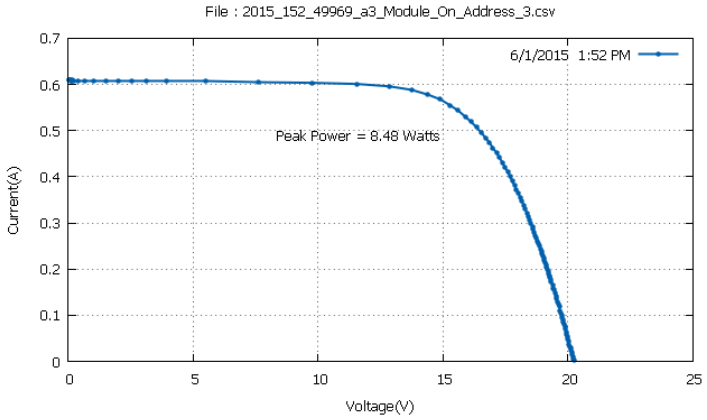
Mean Temperature: 48,96 ºC



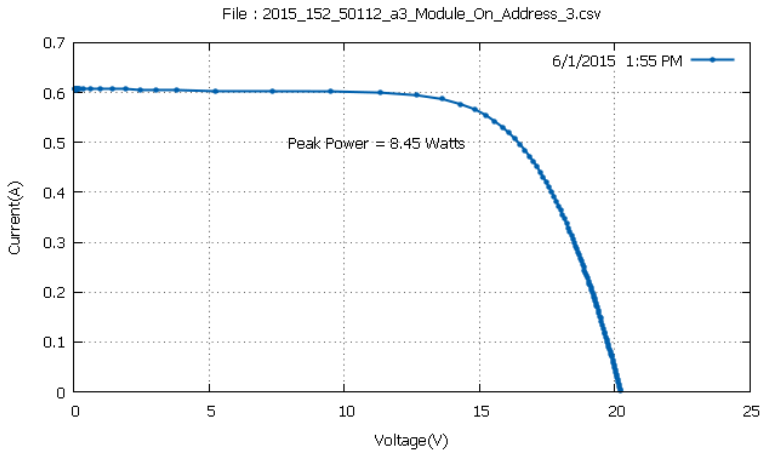
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3467779\ x\ 0.5535253}{946.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}64\ \%$$



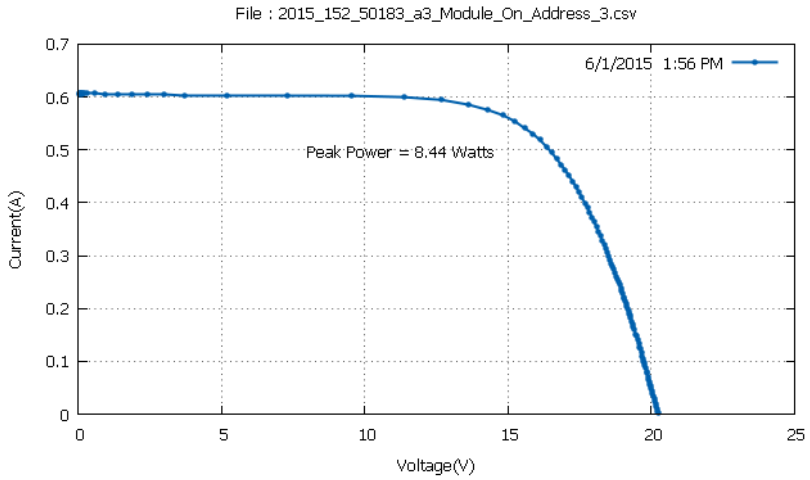
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5787191\ x\ 0.544535339}{945.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}65\ \%$$



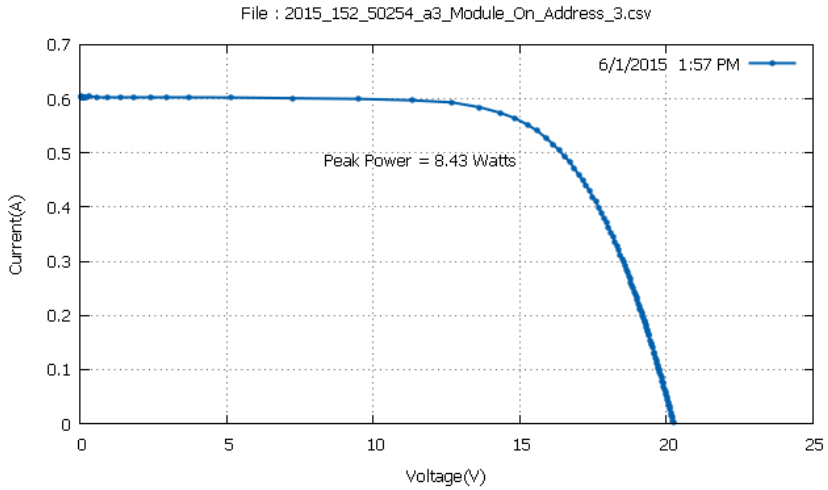
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2771959\ x\ 0.55480963}{944.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2230759\ x\ 0.55480963}{940.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.24627\ x\ 0.5535253}{940.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.594182\ x\ 0.5406825}{938\ x\ 0{,}0709} \text{ x } 100 = 12{,}67\ \%$$

Module 5

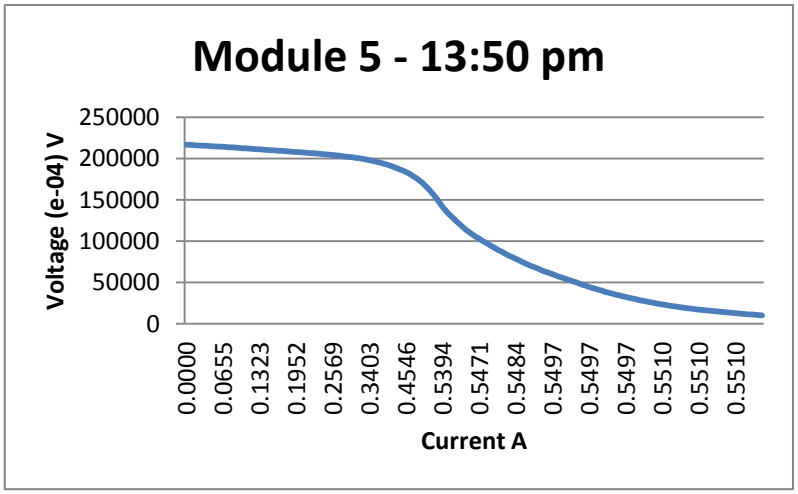
Date: 1/6/2015 – Noon Measurement

Temperature Ambient: 26 ºC

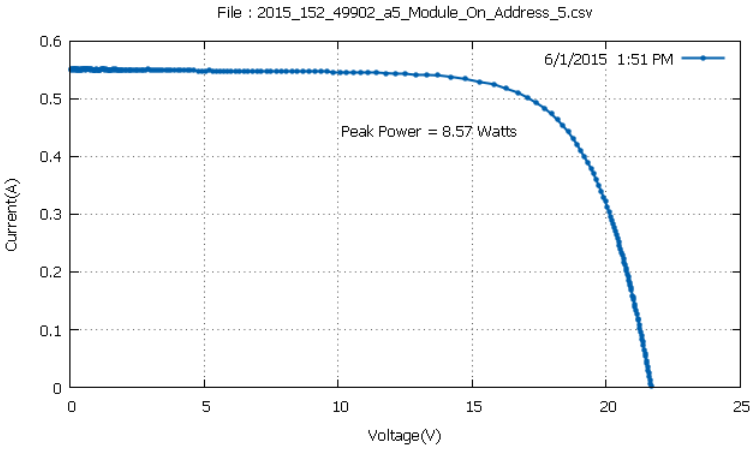
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:50	54,1	12
13:51	54,3	12
13:52	54,5	12
13:55	54,7	11,97
13:56	54,7	12
13:57	54,6	12

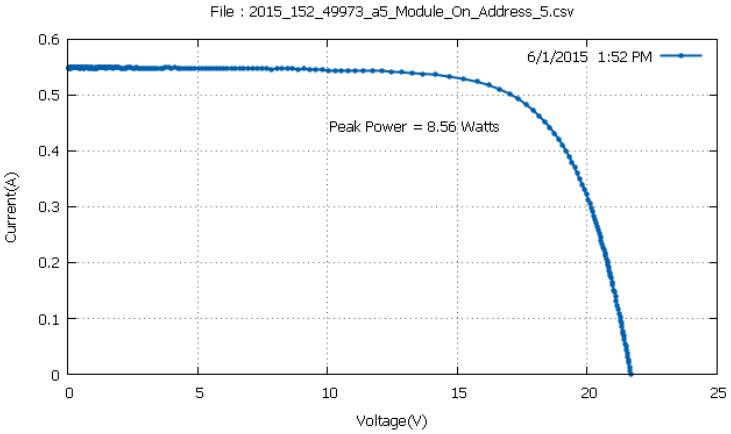
Mean Temperature: 54,48 ºC



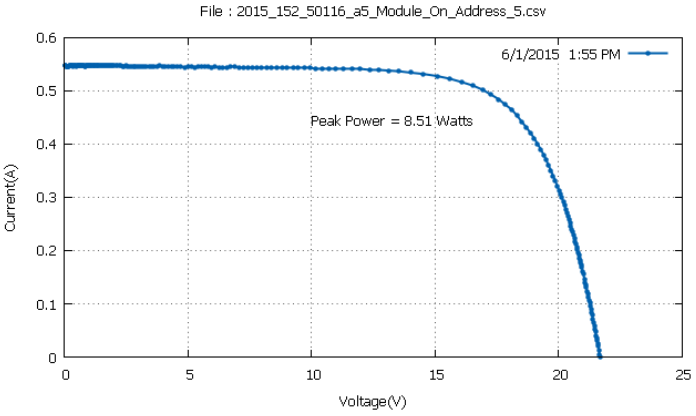
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.37239\ x\ 0.4944483}{946.3\ x\ 0{,}0756} \text{ x } 100 = 12\ \%$$



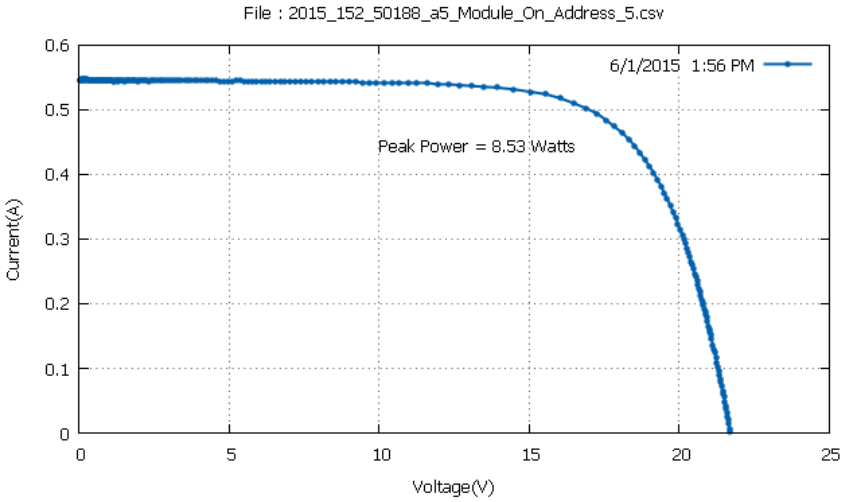
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3801289\ x\ 0.4931641}{945.1\ x\ 0{,}0756}\ \text{x } 100 = 12\ \%$$



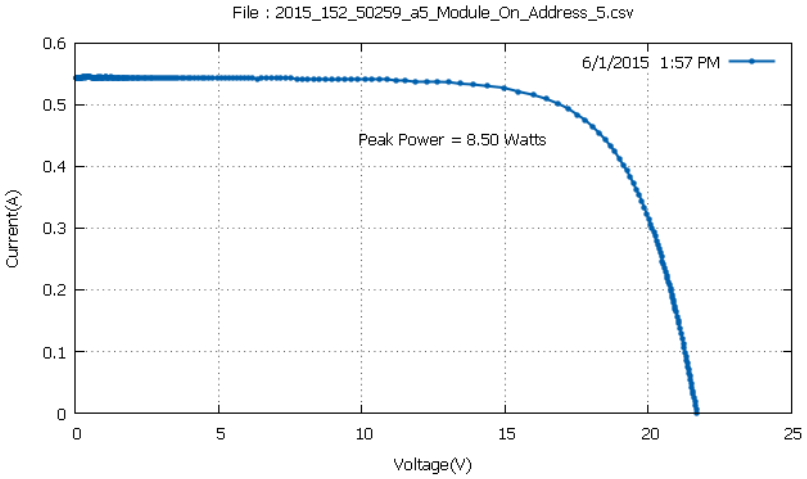
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3492031\ x\ 0.4931641}{943.5\ x\ 0{,}0756}\ \text{x } 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2564278\ x\ 0.4931641}{940.1\ x\ 0{,}0756}\ \text{x } 100 = 11{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2486954\ x\ 0.494448364}{940.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1868458\ x\ 0.494448364}{936.8\ x\ 0{,}0756}\ \text{x}\ 100 = 12\ \%$$

Module 4

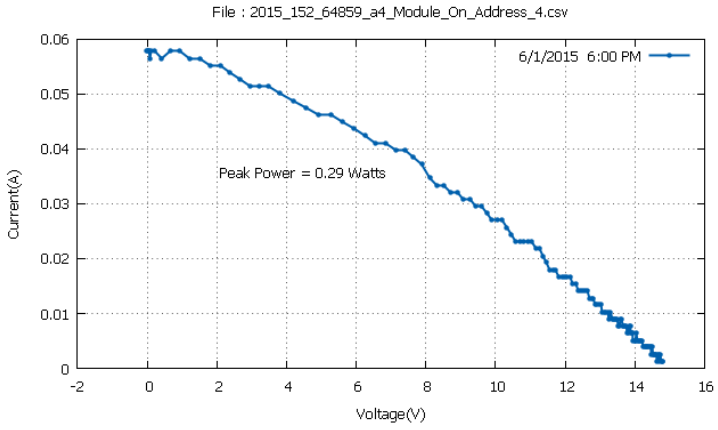
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

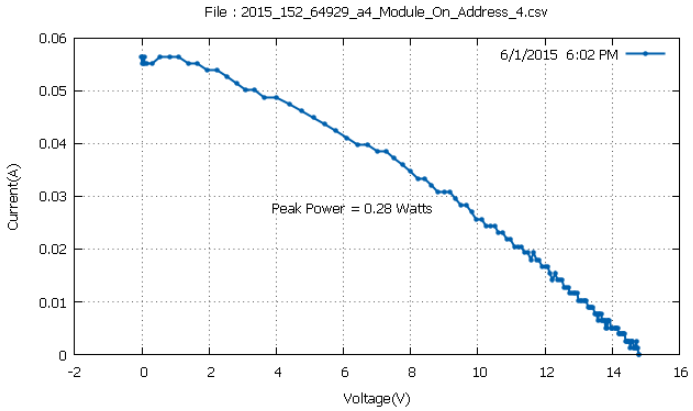
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
18:00	29,4	1,82
18:02	29,1	1,77
18:03	29	1,71
18:05	29	1,62
18:07	28,8	1,57
18:09	28,5	1,41

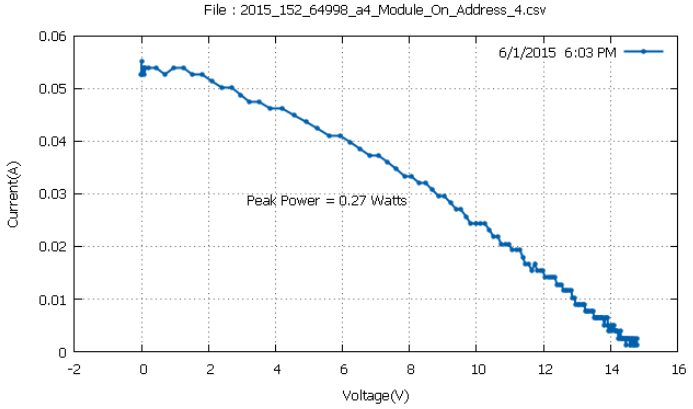
Mean Temperature: 28,96 ºC



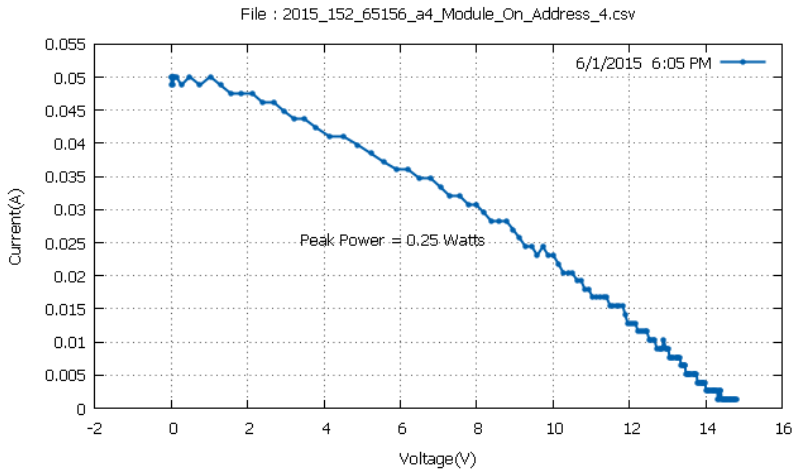
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.638598\ x\ 0.0385284461}{237.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}82\ \%$$



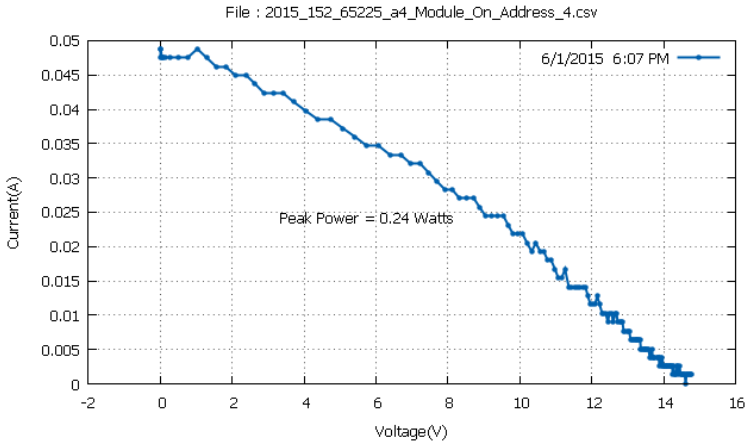
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.16941\ x\ 0.0308227558}{235.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}77\ \%$$



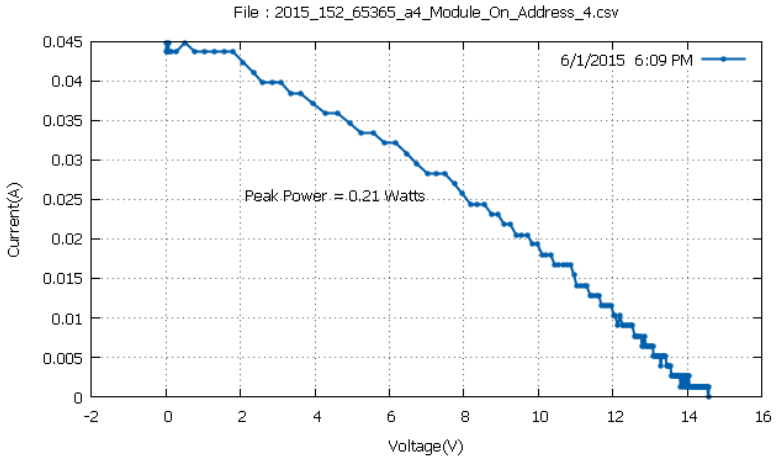
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.473586\ x\ 0.0321070366}{234.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.80095673\ x\ 0.0321070366}{230.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.0269699115}{227\ x\ 0{,}0671} \text{ x } 100 = 1{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.404004\ x\ 0.02568563}{220.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$

Module 8

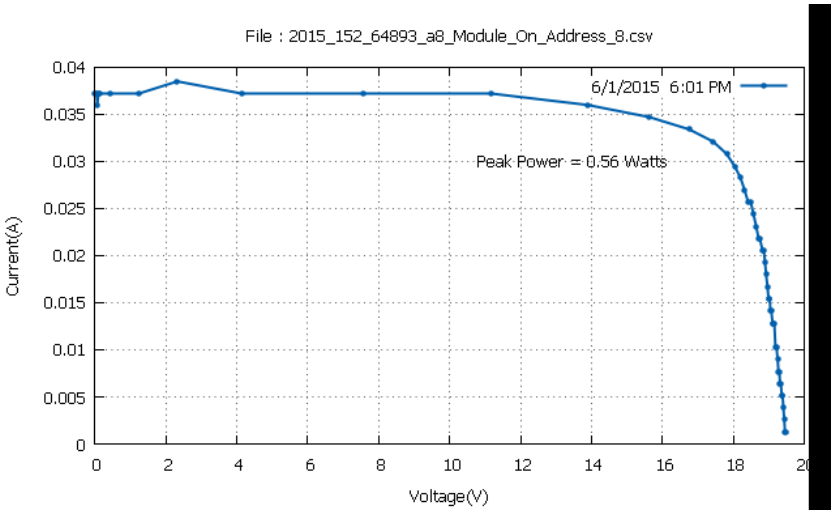
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

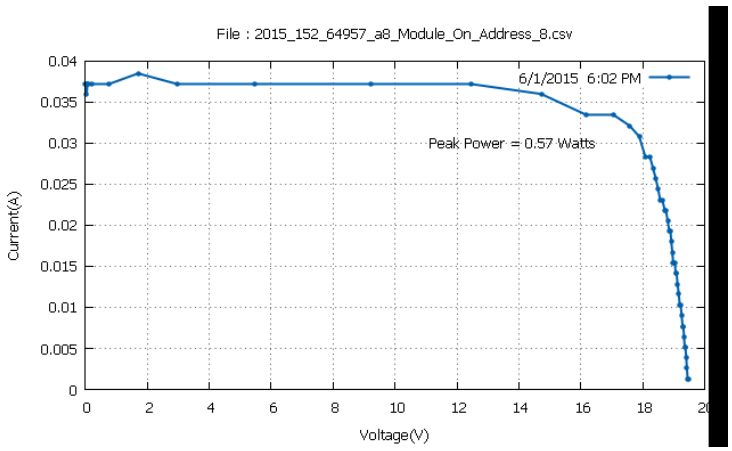
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
18:01	29,6	3,08
18:02	29,5	3,14
18:05	29,1	3,17
18:06	28,9	3,09
18:09	28,6	3,04
18:11	28,3	3,11

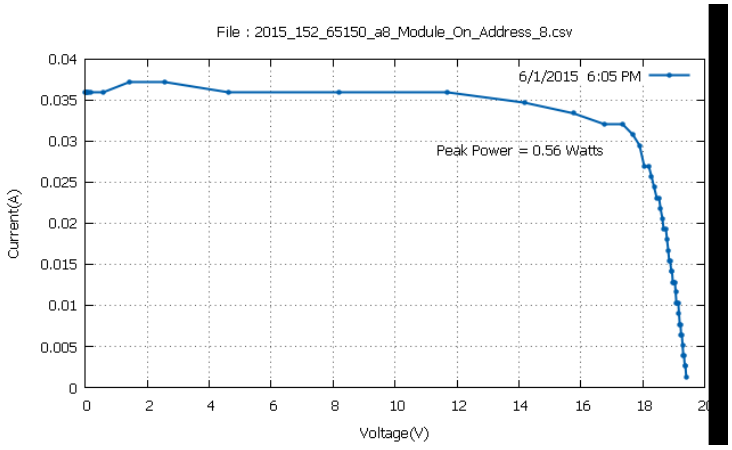
Mean Temperature: 29 ºC



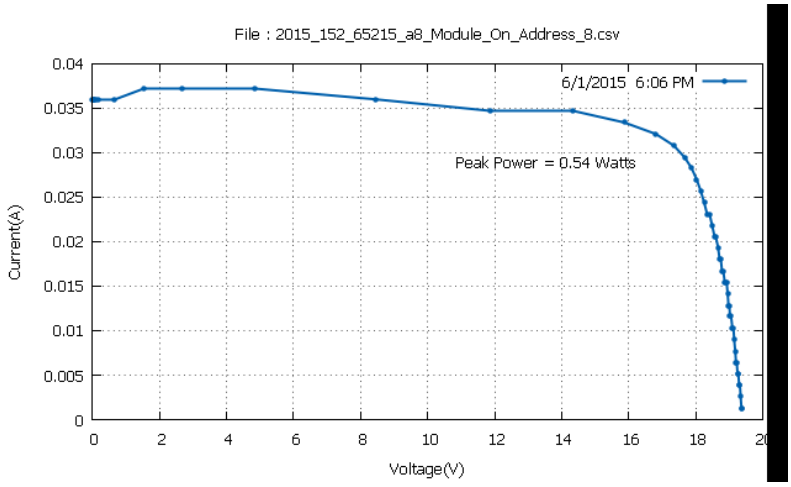
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.43425\ x\ 0.0321070366}{236.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}08\ \%$$



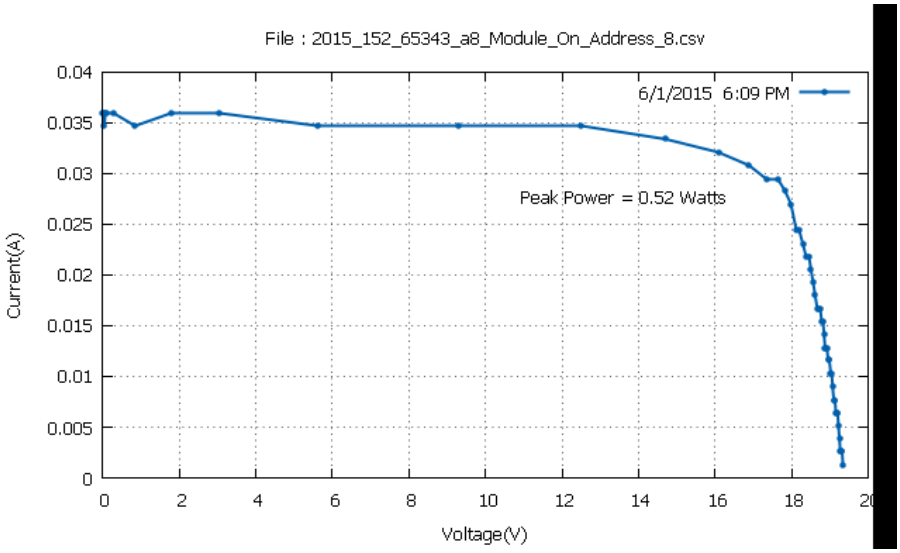
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0708752\ x\ 0.03339132}{235.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}14\ \%$$



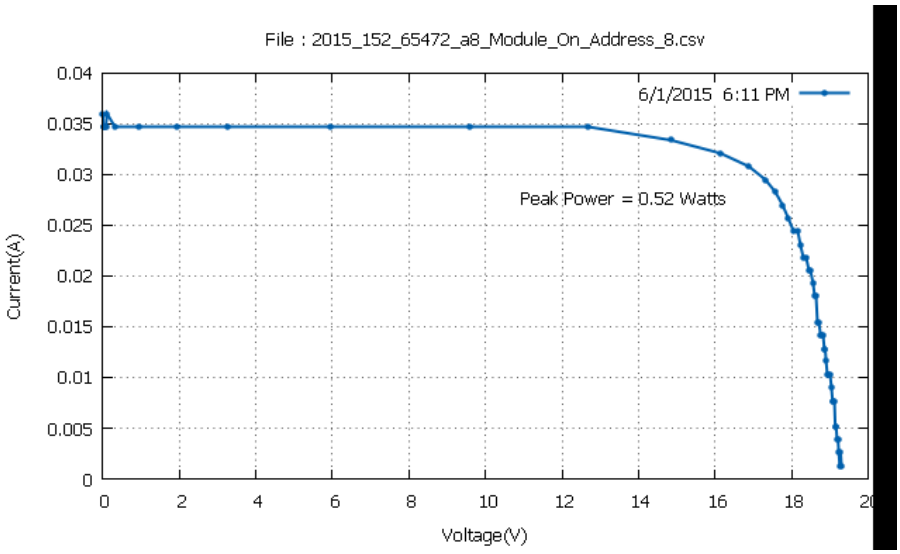
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3492031\ x\ 0.0321070366}{229.4\ x\ 0{,}0768} \text{ x } 100 = 3{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8157387\ x\ 0.0321070366}{227.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}09\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.029538475}{222.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.88532\ x\ 0.0308227558}{217.4\ x\ 0{,}0768} \text{ x } 100 = 3{,}11\ \%$$

Module 3

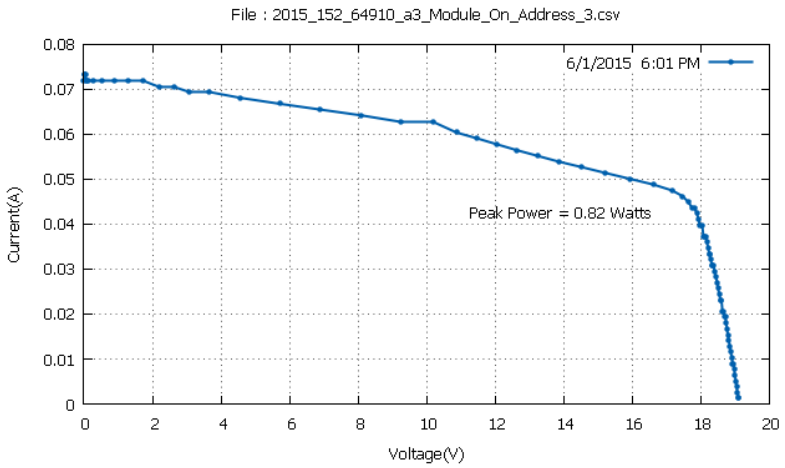
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

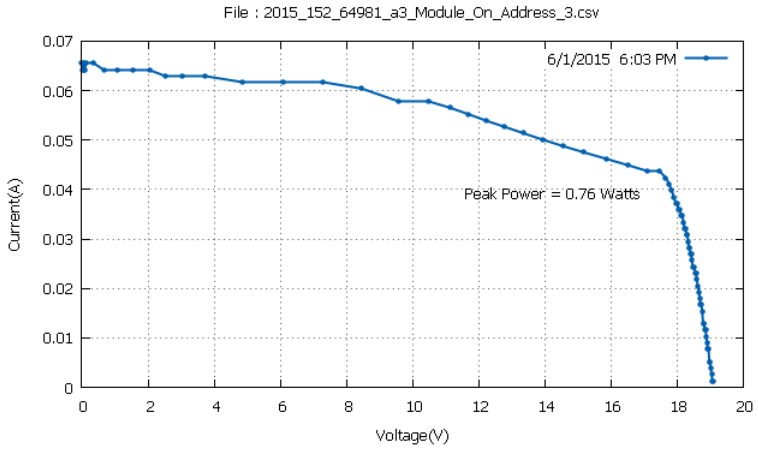
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
18:01	30,3	4,89
18:03	30	4,55
18:05	29,6	3,97
18:06	29,4	3,89
18:07	29,3	3,75
18:10	28,9	3,53

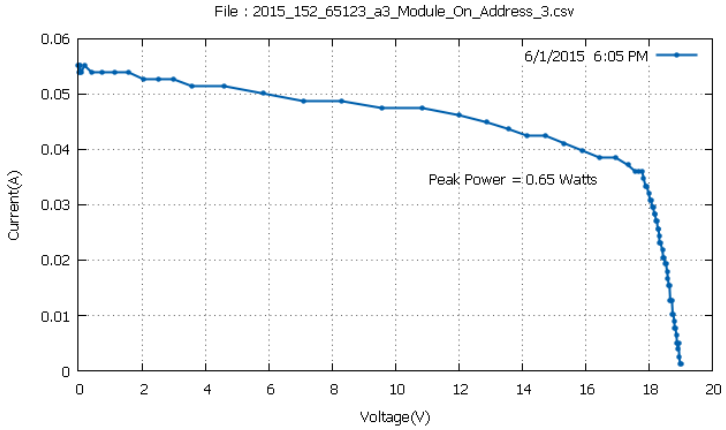
Mean Temperature: 29,58 ºC



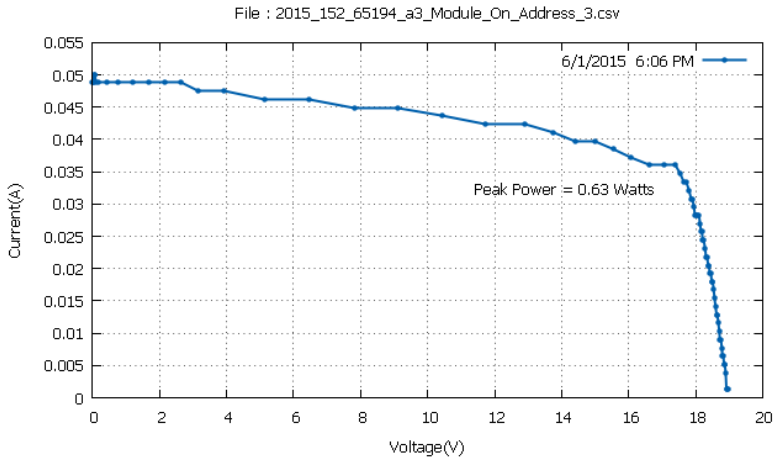
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.16365\ x\ 0.0475184135}{236.5\ x\ 0{,}0709} \text{ x } 100 = 4{,}89\ \%$$



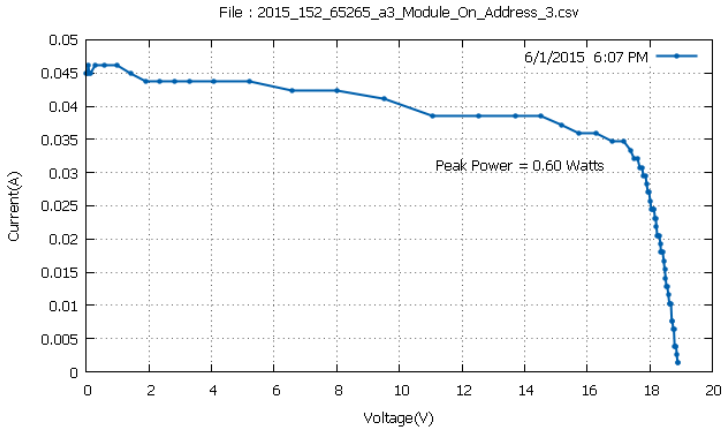
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4651737\ x\ 0.04366557}{235.3\ x\ 0{,}0709} \text{ x } 100 = 4{,}55\ \%$$



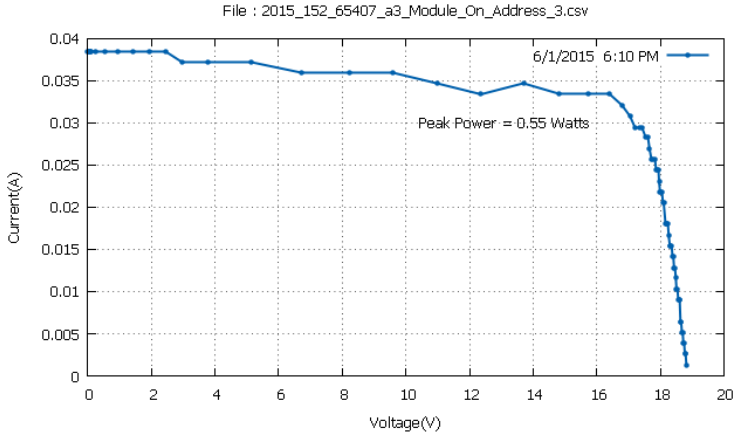
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9549046\ x\ 0.0385284461}{230.8\ \ x\ 0{,}0709} \text{ x } 100 = 3{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3723984\ x\ 0.03595988}{228.4\ x\ 0{,}0709} \text{ x } 100 = 3{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.16365x\ 0.0346756019}{225.6\ x\ 0{,}0709} \text{ x } 100 = 3{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.03339132}{219.8\ \ x\ 0{,}0709} \text{ x } 100 = 3{,}53\ \%$$

Module 5

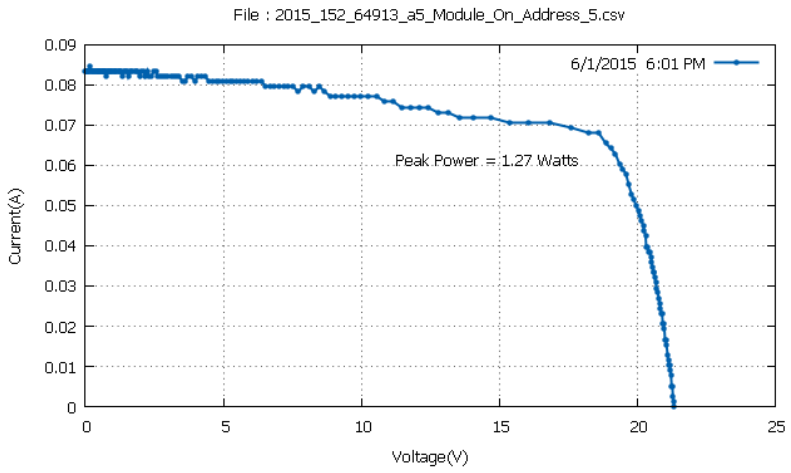
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

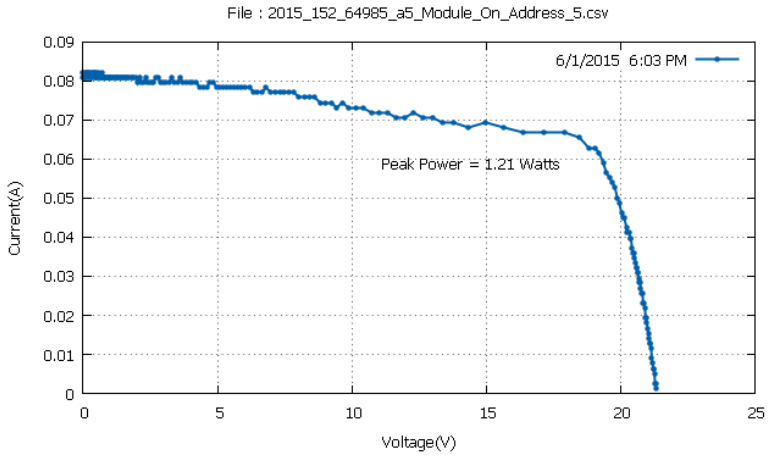
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
18:01	30,4	7,11
18:03	30,2	6,8
18:05	29,9	6,37
18:06	29,8	6,08
18:07	29,7	5,75
18:10	29,3	5,3

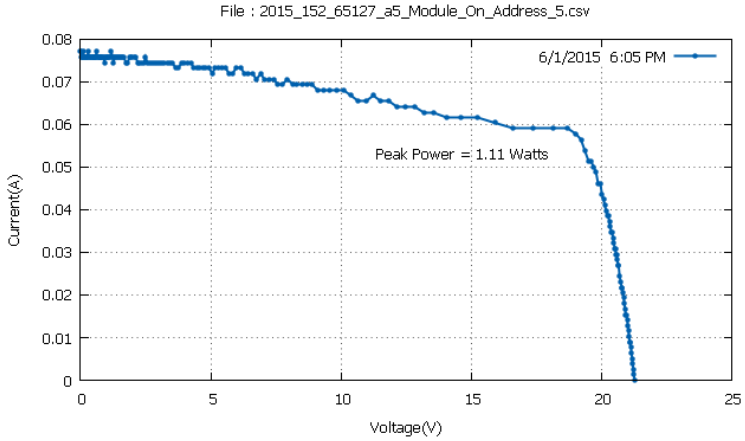
Mean Temperature: 29,88 ºC



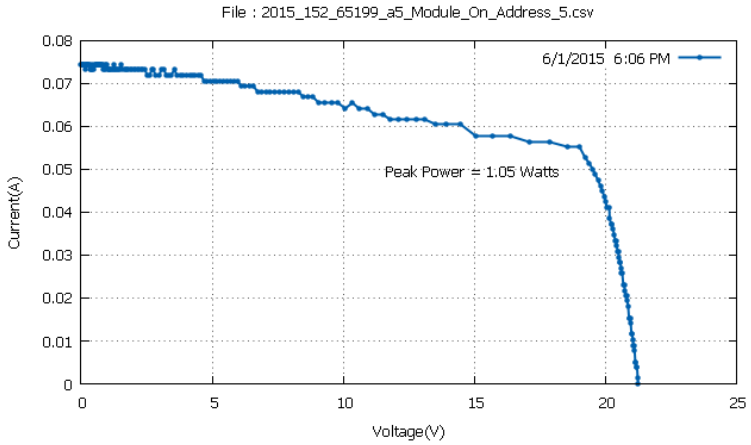
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6094189\ x\ 0.06806692}{236.3\ x\ 0{,}0756} \text{ x } 100 = 7{,}11\ \%$$



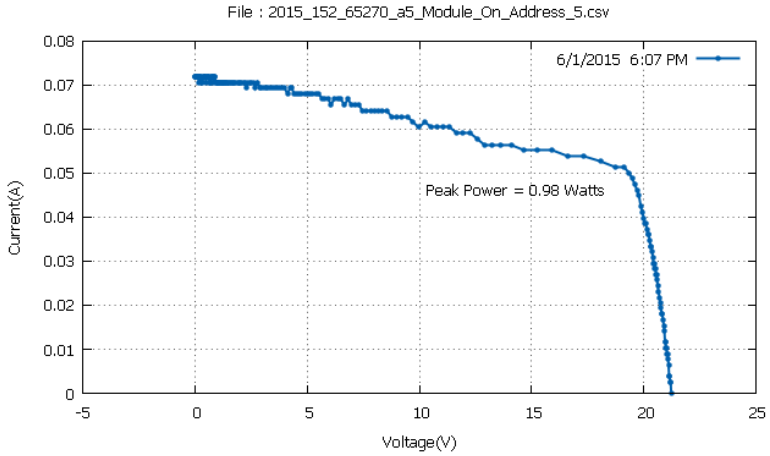
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4779854\ x\ 0.06549836}{235.3\ x\ 0{,}0756} \text{ x } 100 = 6{,}8\ \%$$



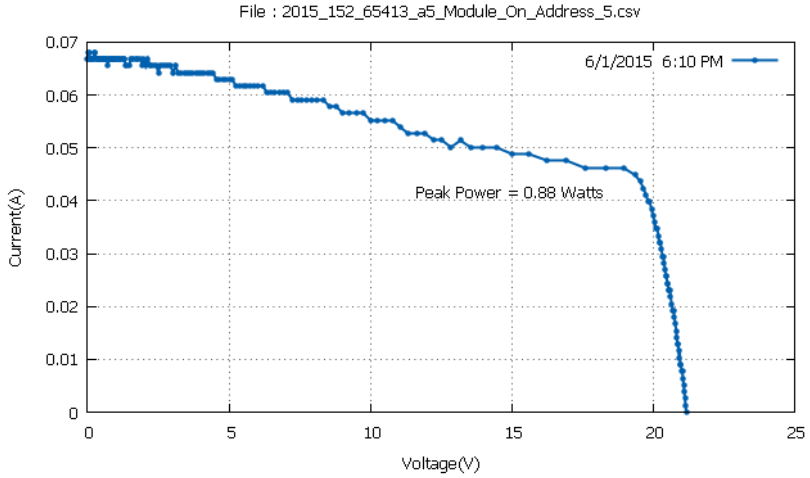
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7021942\ x\ 0.05907695}{230.3\ x\ 0{,}0756} \text{ x } 100 = 6{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9959869\ x\ 0.0552241057}{228.2\ x\ 0{,}0756} \text{ x } 100 = 6{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.13515x\ 0.05137126}{225.3\ x\ 0{,}0756} \text{ x } 100 = 5{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9805241\ x\ 0.0462341346}{219.8\ x\ 0{,}0756} \text{ x } 100 = 5{,}3\ \%$$

Module 4

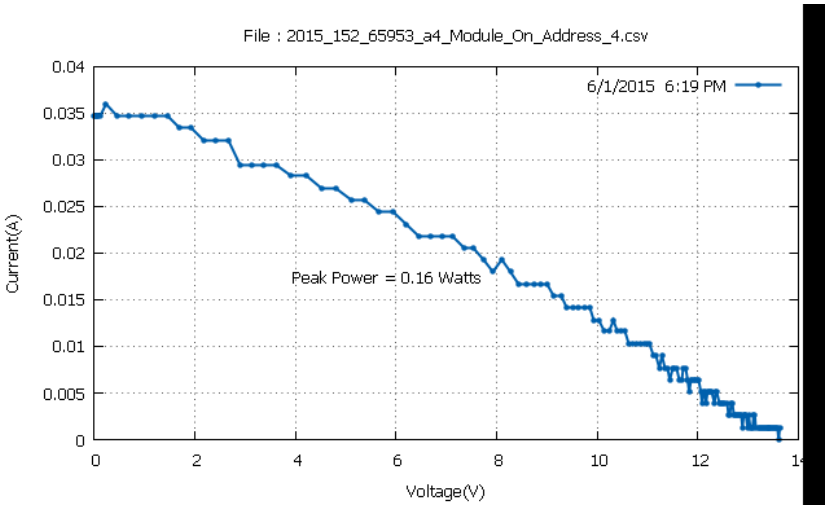
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

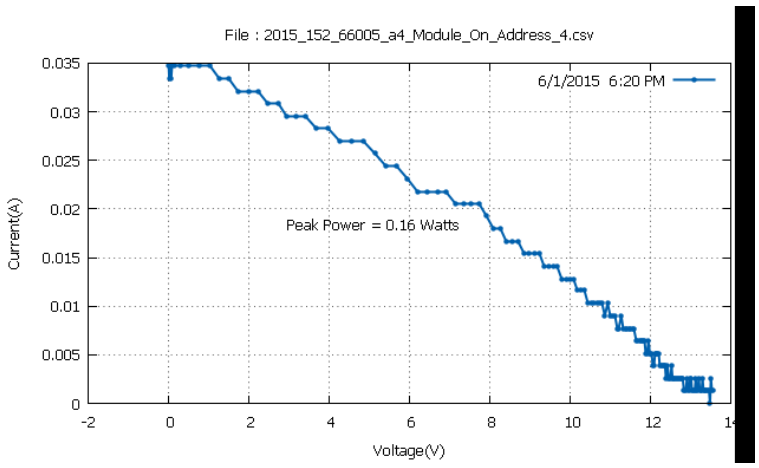
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
18:19	27,8	1,35
18:20	27,8	1,36
18:21	27,8	1,32
18:23	27,6	1,3
18:25	27,5	1,25
18:26	27,5	1,3

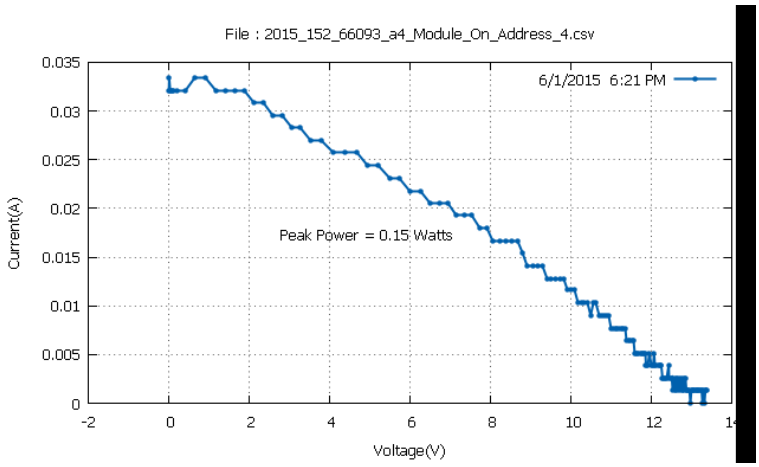
Mean Temperature: 27,6 ºC



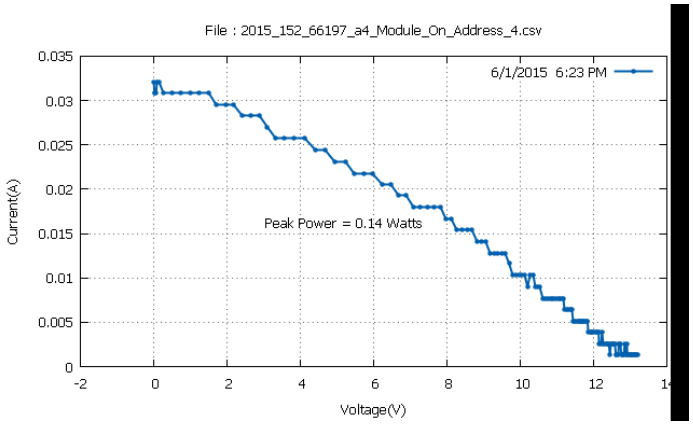
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.59221\ x\ 0.0205485038}{176.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}35\ \%$$



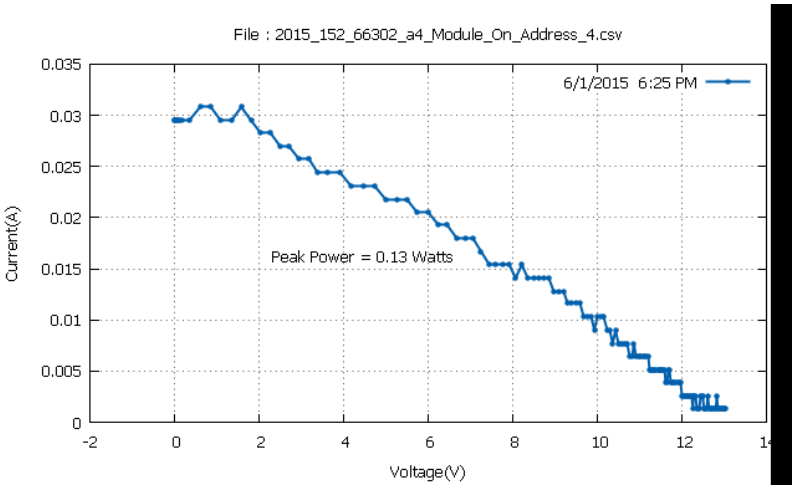
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.009704\ x\ 0.0192642231}{175.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}36\ \%$$



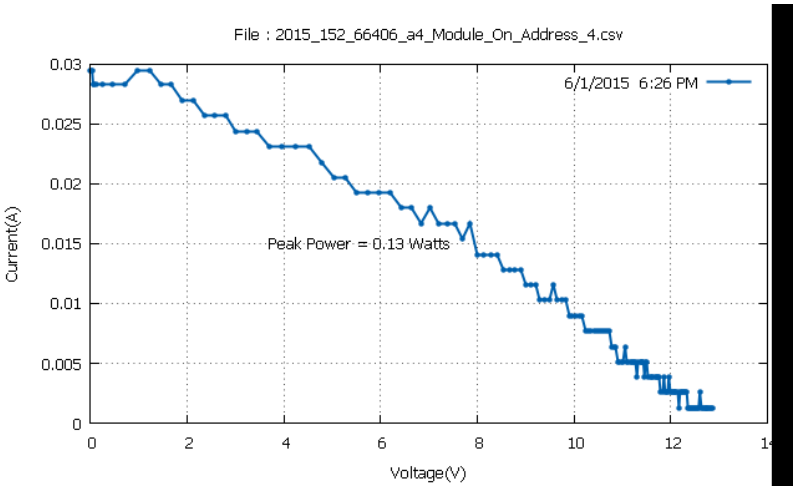
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.53809\ x\ 0.0192642231}{168.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.808688\ x\ 0.01797994}{161.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.058745\ x\ 0.01797994}{155\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.965968\ x\ 0.01797994}{148.5\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}3\ \%$$

Module 8

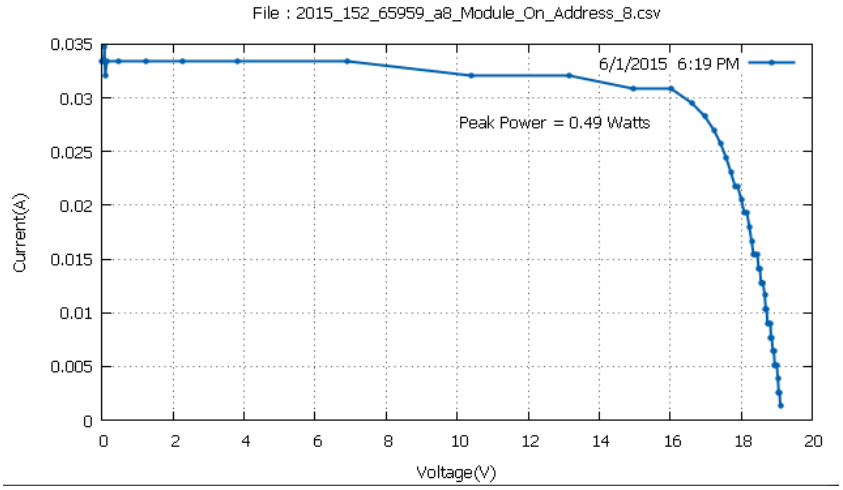
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

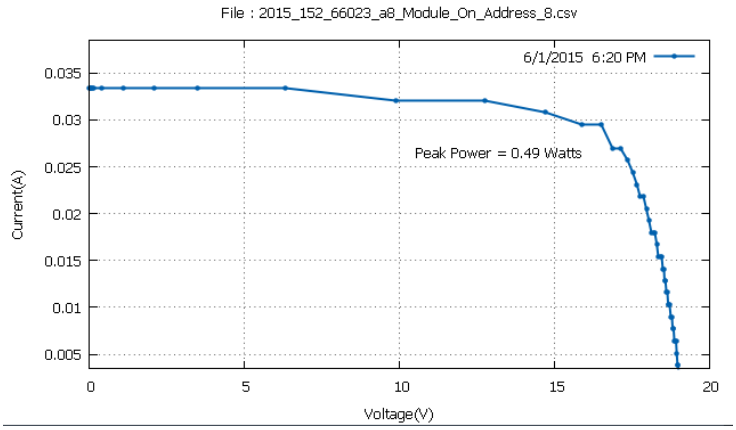
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
18:19	27,8	3,56
18:20	27,8	3,67
18:22	27,7	3,64
18:24	27,6	3,91
18:26	27,5	4,03
18:27	27,4	3,95

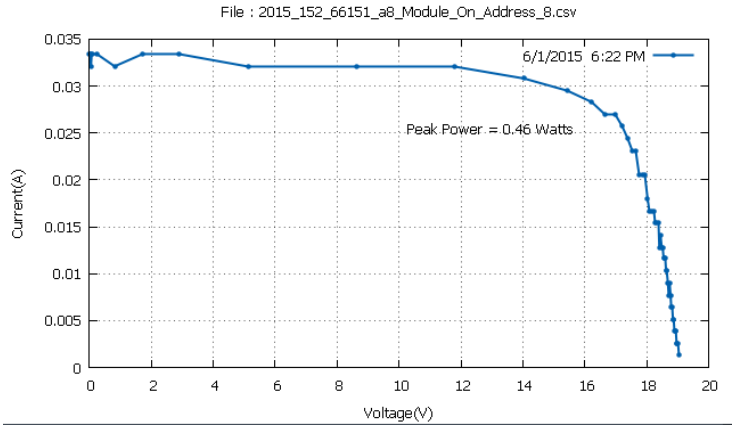
Mean Temperature: 27,63 ºC



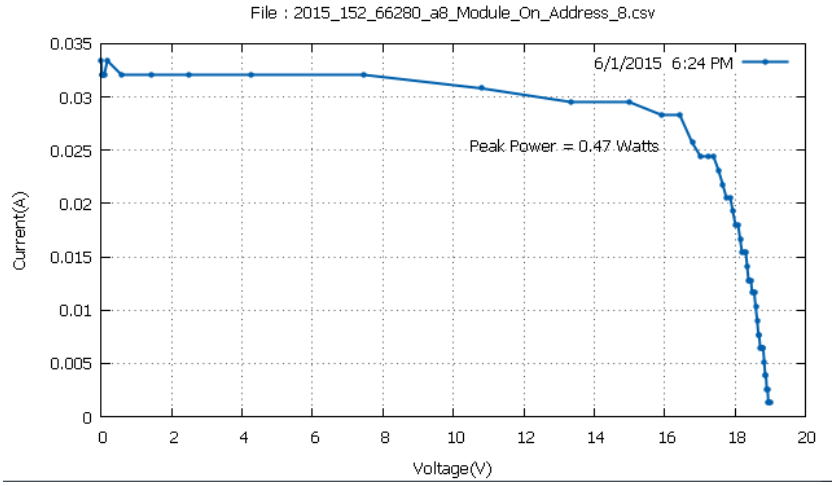
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.0308227558}{179.1\ x\ 0{,}0768}$ x 100 = 3,56 %



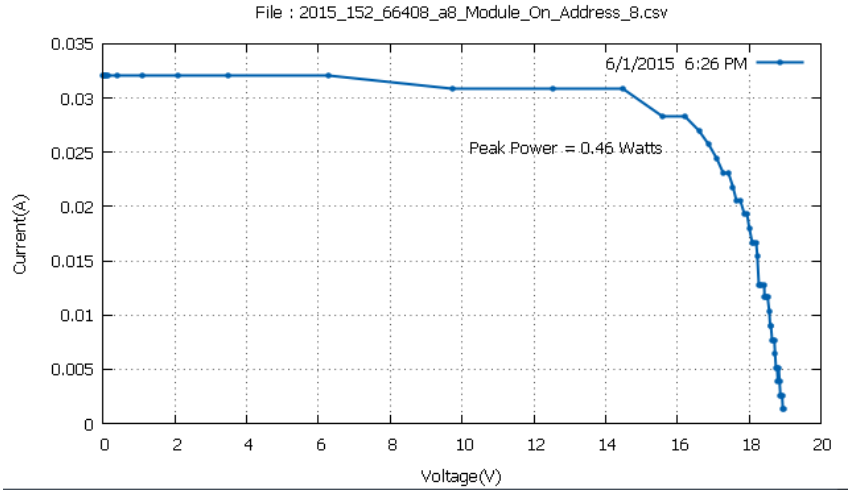
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987526\ x\ 0.029538475}{173.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}67\ \%$$



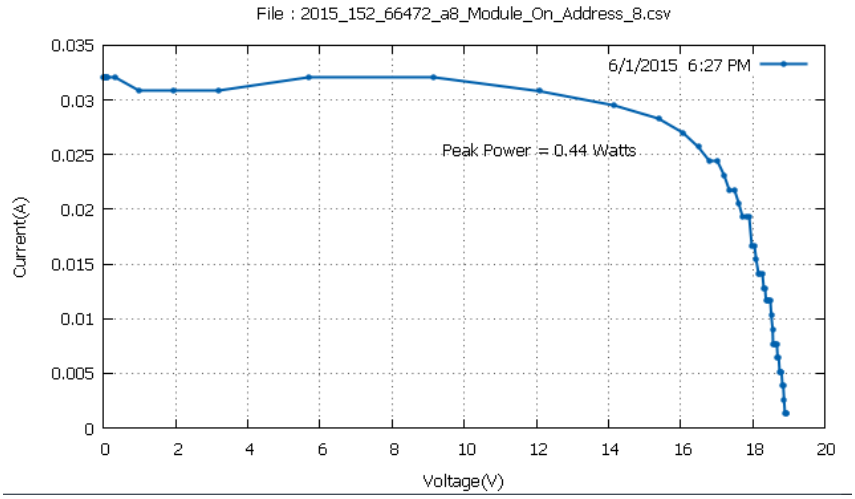
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.0282541923}{164.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4446335\ x\ 0.0282541923}{156.4\ x\ 0{,}0768} \text{ x } 100 = 3{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.0282541923}{148.5\ x\ 0{,}0768}\ \text{x}\ 100 = 4{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3854351\ x\ 0.0282541923}{145\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}95\ \%$$

Module 3

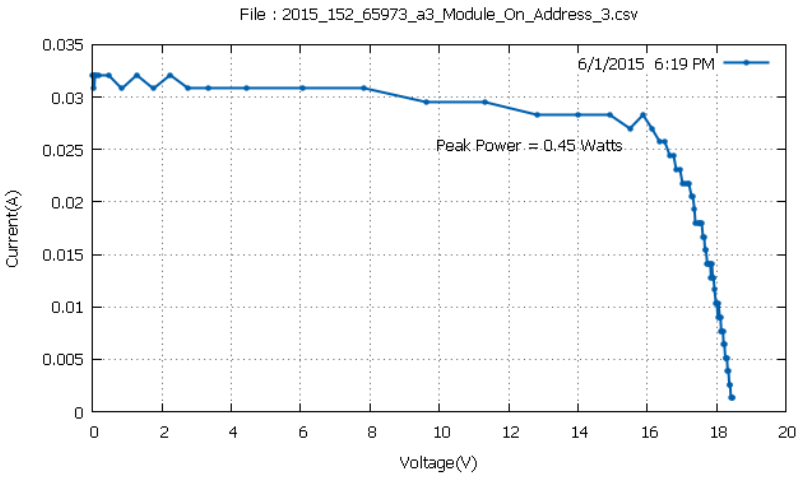
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

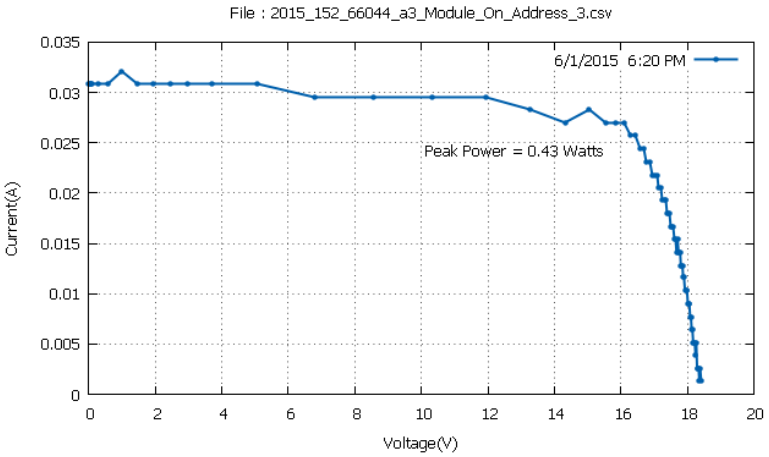
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
18:19	28	3,57
18:20	27,9	3,51
18:23	27,7	3,56
18:24	27,7	3,65
18:25	27,6	3,5
18:27	27,4	3,59

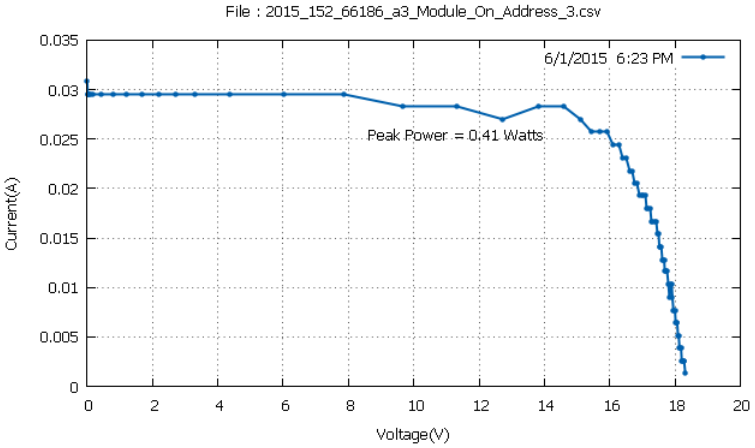
Mean Temperature: 27,71 ºC



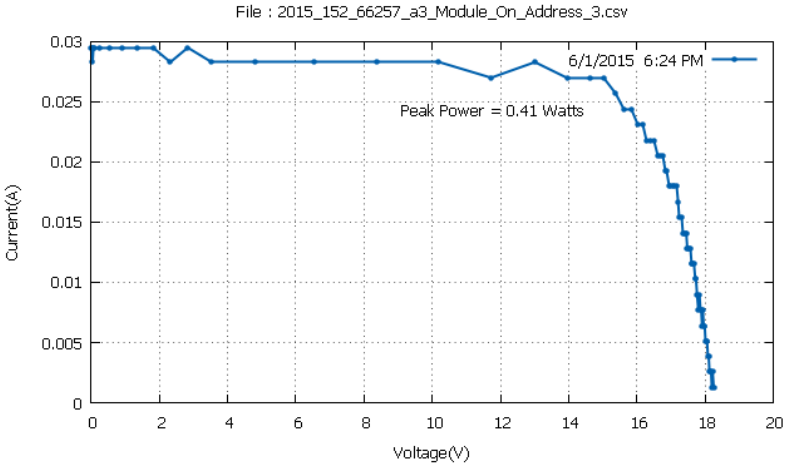
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8802433\ x\ 0.0282541923}{177.6\ x\ 0{,}0709} \text{ x } 100 = 3{,}57\ \%$$



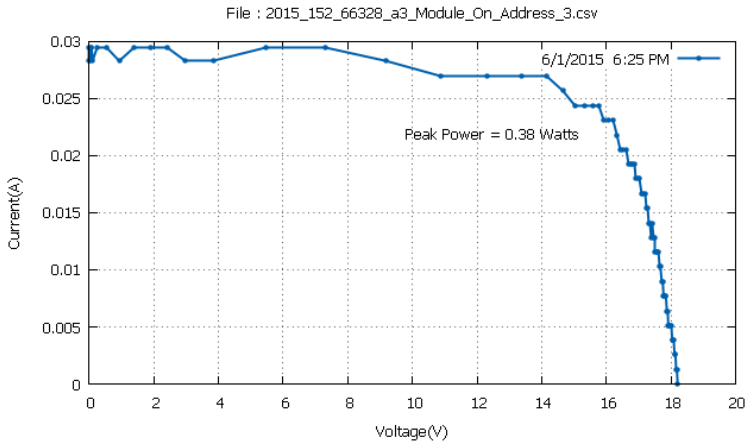
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.0269699115}{172.4\ x\ 0{,}0709} \text{ x } 100 = 3{,}51\ \%$$



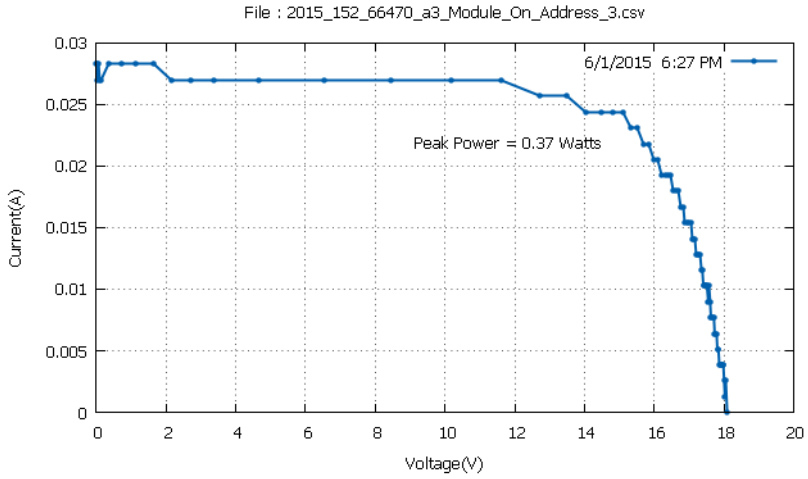
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5891037\ x\ 0.0282541923}{162.4\ x\ 0{,}0709} \text{ x } 100 = 3{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0452547\ x\ 0.0269699115}{158.1\ x\ 0{,}0709} \text{ x } 100 = 3{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7642727\ x\ 0.0244013481}{153.3\ x\ 0{,}0709} \text{ x } 100 = 3{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0993738\ x\ 0.0244013481}{145{,}2\ x\ 0{,}0709} \text{ x } 100 = 3{,}59\ \%$$

\

Module 5

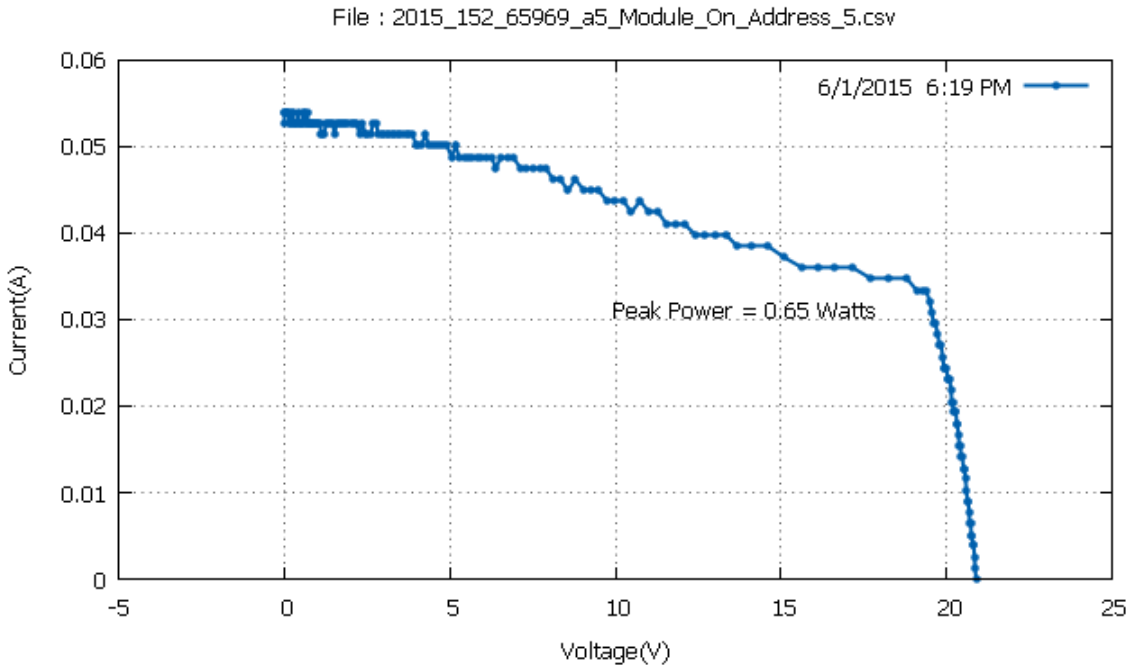
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

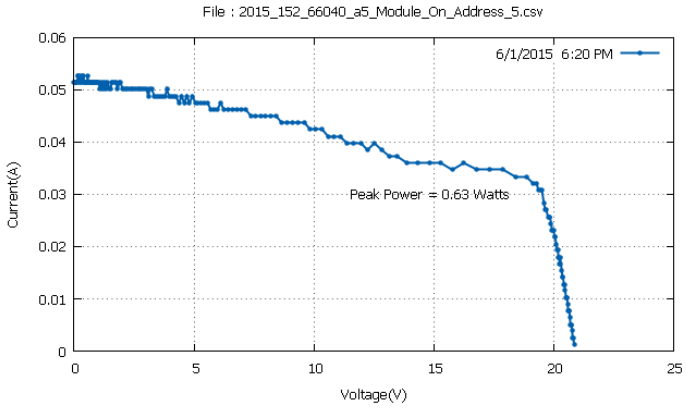
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
18:19	28,6	4,82
18:20	28,5	4,82
18:23	28,3	4,96
18:24	28,3	5,02
18:25	28,2	5
18:27	28	5,19

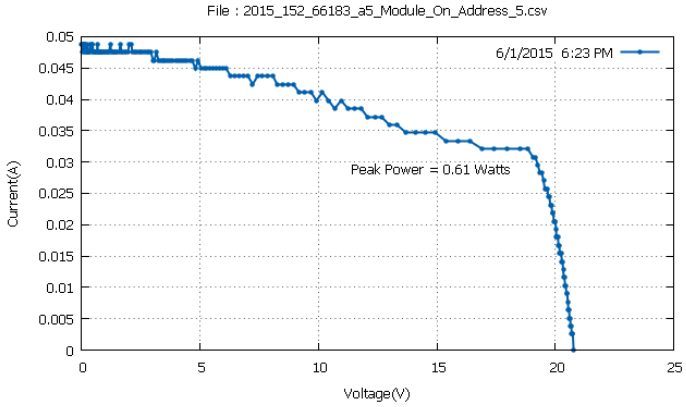
Mean Temperature: 28,31 ºC



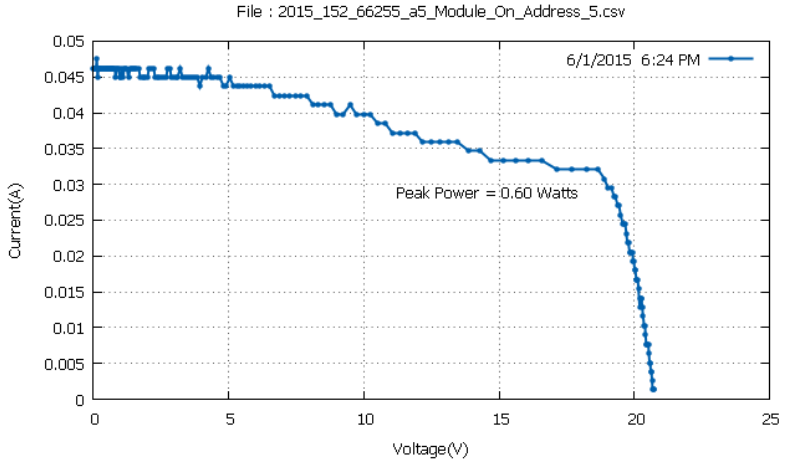
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7717762\ x\ 0.0346756019}{178.1\ x\ 0{,}0756} \text{ x } 100 = 4{,}82\ \%$$



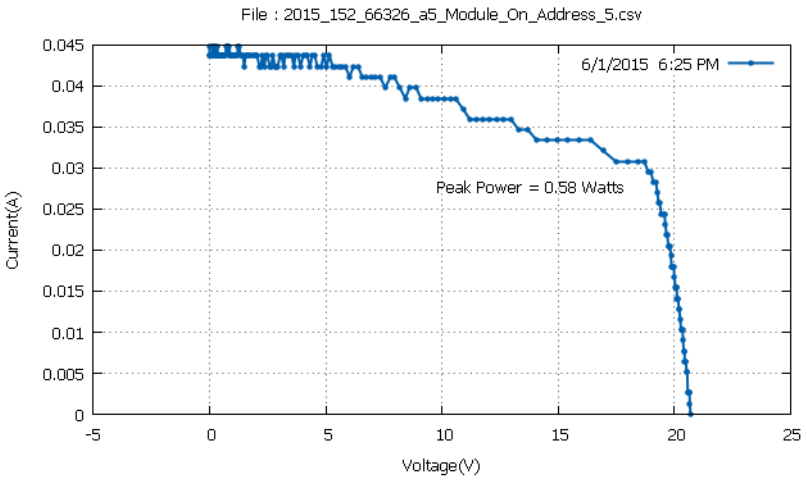
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8722839\ x\ 0.03339132}{172.6\ x\ 0{,}0756}\ \text{x}\ 100 = 4{,}82\ \%$$



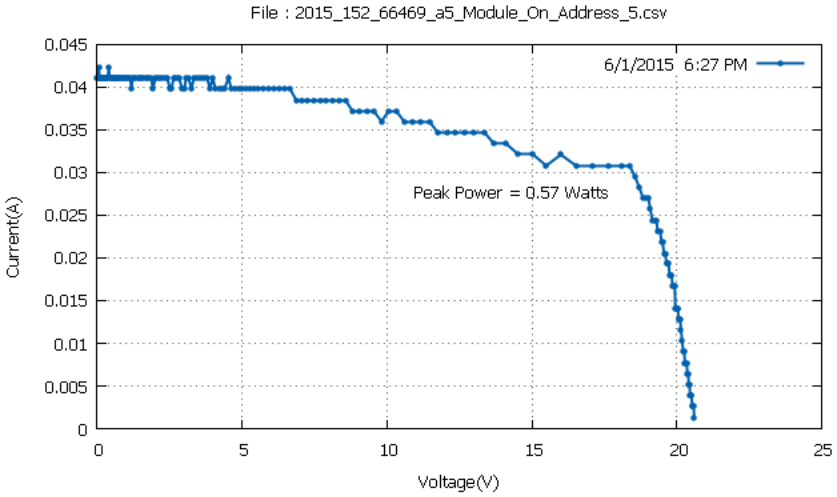
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.856823\ x\ 0.0321070366}{162.6\ x\ 0{,}0756}\ \text{x}\ 100 = 4{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6558056\ x\ 0.0321070366}{158.1\ x\ 0{,}0756}\ \text{x}\ 100 = 5{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.72539\ x\ 0.0308227558}{153.5\ x\ 0{,}0756} \text{ x } 100 = 5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3774776\ x\ 0.0308227558}{145.2\ x\ 0{,}0756} \text{ x } 100 = 5{,}19\ \%$$

Module 4

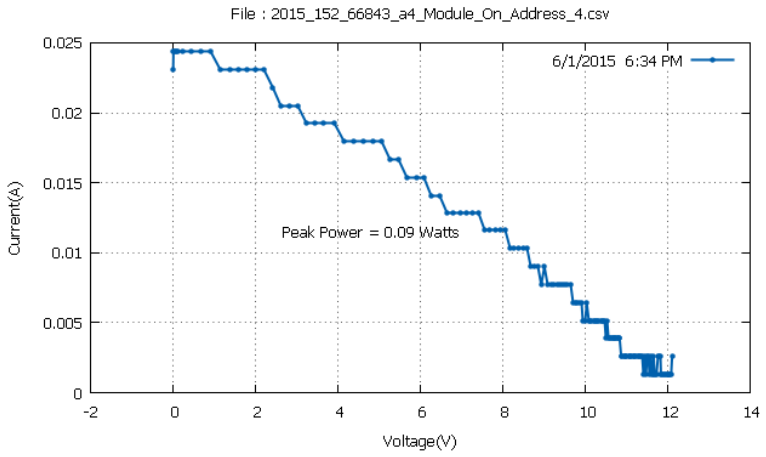
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

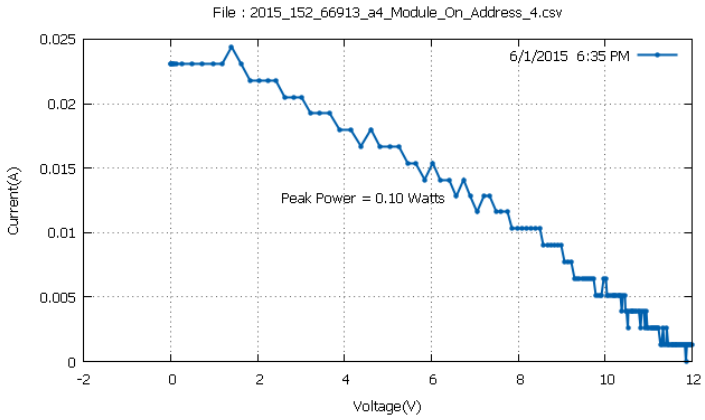
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
18:34	26,7	1,11
18:35	26,7	1,24
18:36	26,6	1,15
18:38	26,4	1,23
18:40	26,3	1,15
18:42	26,1	1,08

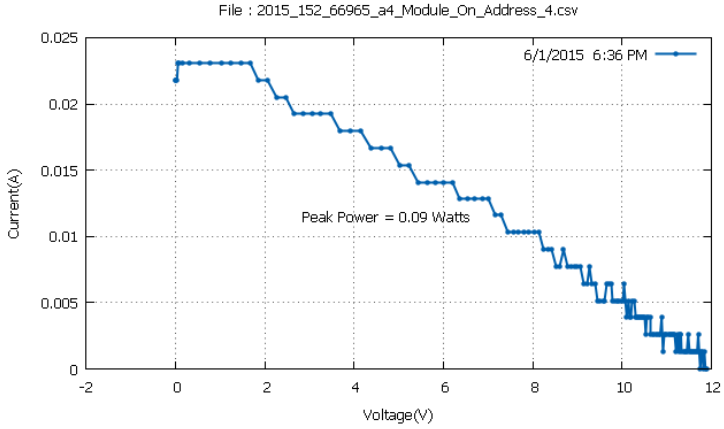
Mean Temperature: 26,46 ºC



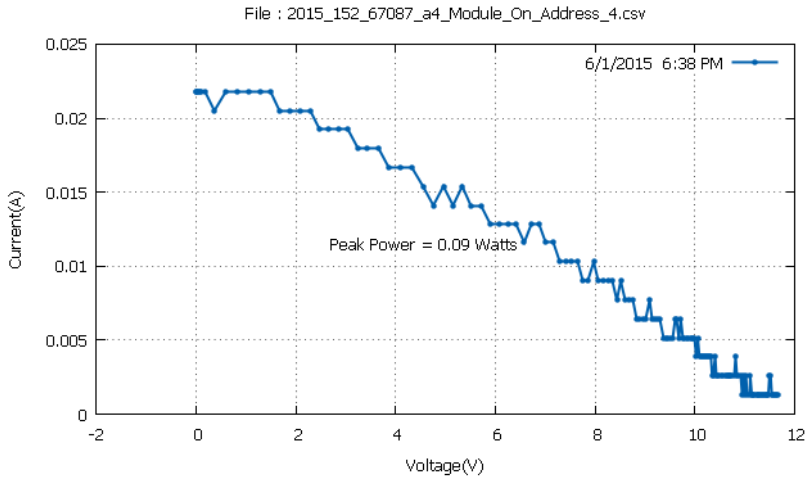
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.414388\ x\ 0.0128428154}{120.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}11\ \%$$



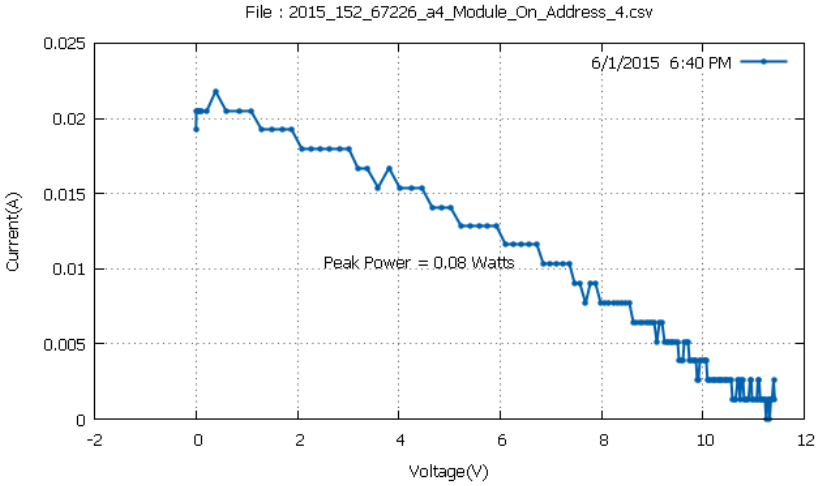
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.74175835\ x\ 0.0141270962}{119.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}24\ \%$$



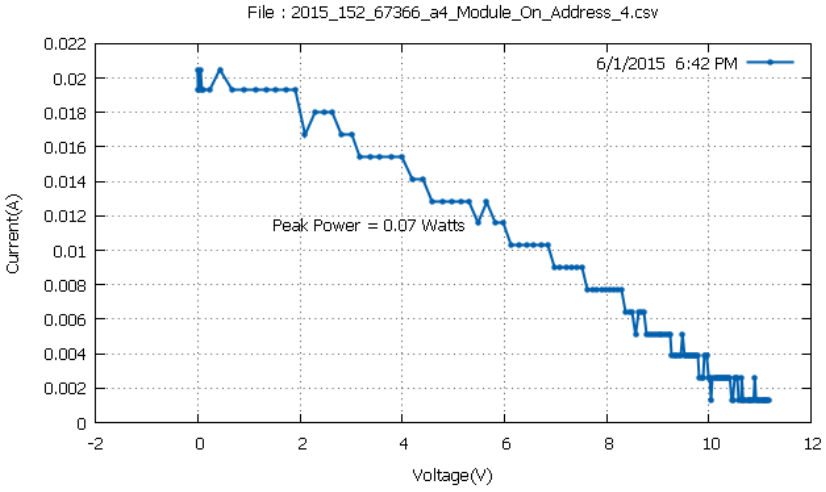
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.01235676\ x\ 0.0128428154}{116.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.811341\ x\ 0.0128428154}{108.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.80360937\ x\ 0.0115585336}{103.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{5.65163469\ x\ 0.0128428154}{96.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}08\ \%$$

Module 8

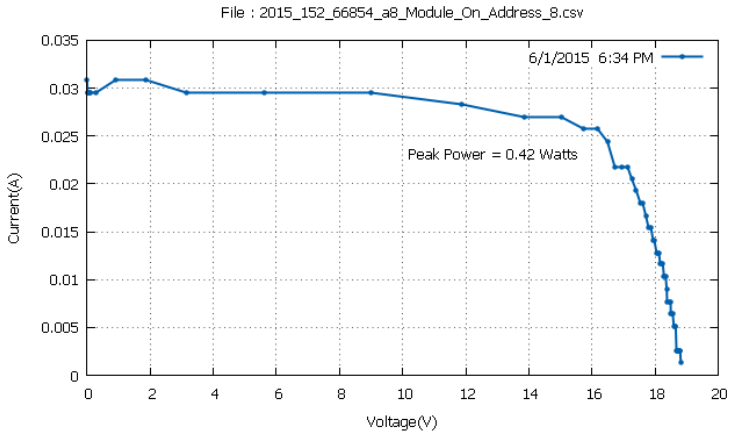
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

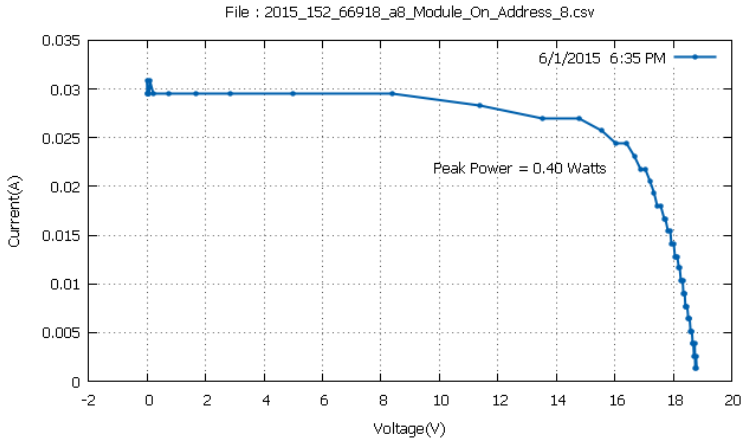
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
18:34	27	4,42
18:35	27	4,35
18:38	26,8	4,7
18:39	26,7	4,68
18:40	26,6	4,95
18:42	26,5	4,87

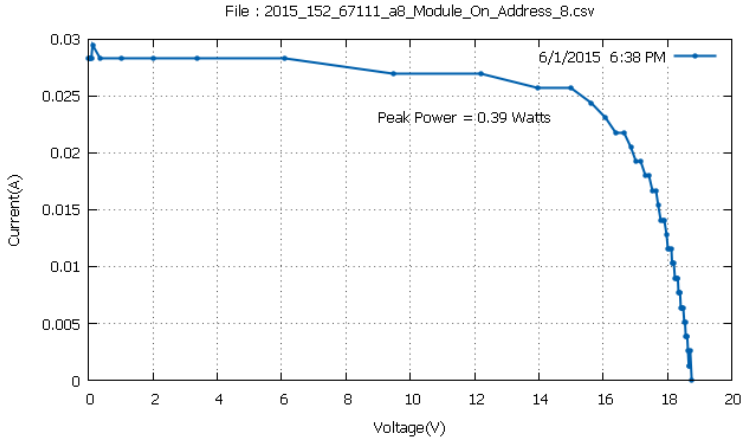
Mean Temperature: 26,76 ºC



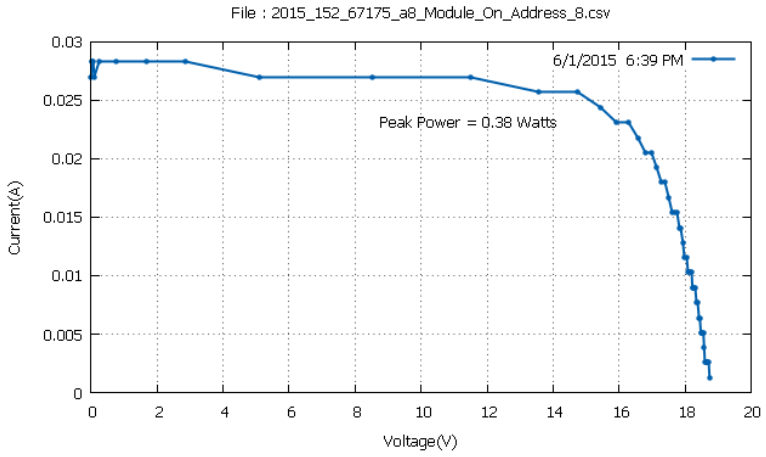
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1585732\ x\ 0.02568563}{123.7\ x\ 0{,}0768} \text{ x } 100 = 4{,}42\ \%$$



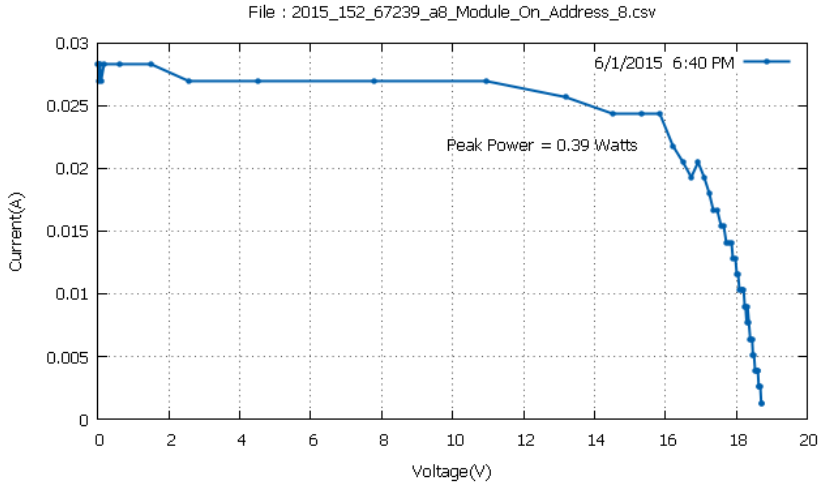
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3982449\ x\ 0.0244013481}{119.5\ x\ 0{,}0768} \text{ x } 100 = 4{,}35\ \%$$



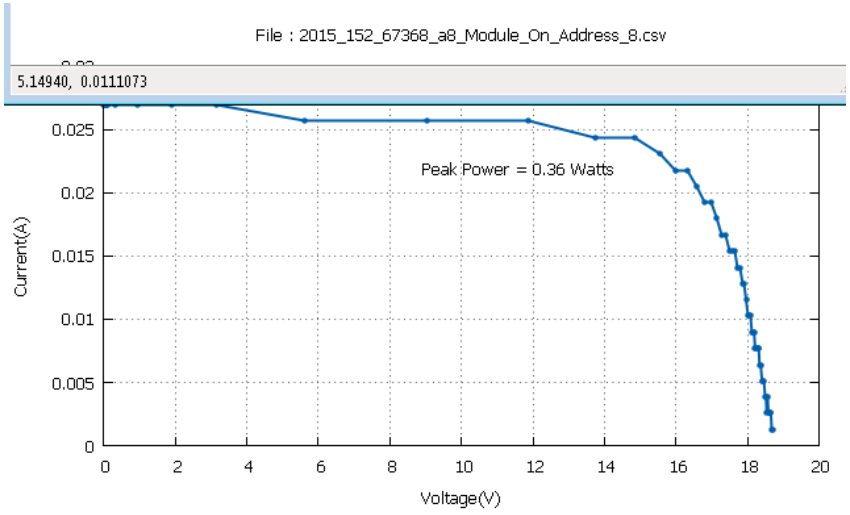
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9834032\ x\ 0.02568563}{108.2\ x\ 0{,}0768} \text{ x } 100 = 4{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7282677\ x\ 0.02568563}{105.6\ x\ 0{,}0768} \text{ x } 100 = 4{,}68\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8415861\ x\ 0.0244013481}{102.5\ x\ 0{,}0768}\ \text{x}\ 100 = 4{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8674326\ x\ 0.0244013481}{96.1\ x\ 0{,}0768}\ \text{x}\ 100 = 4{,}87\ \%$$

Module 3

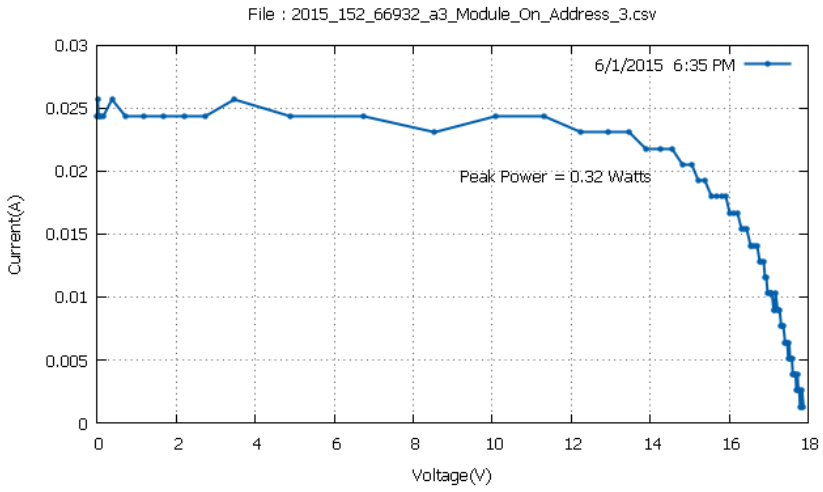
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

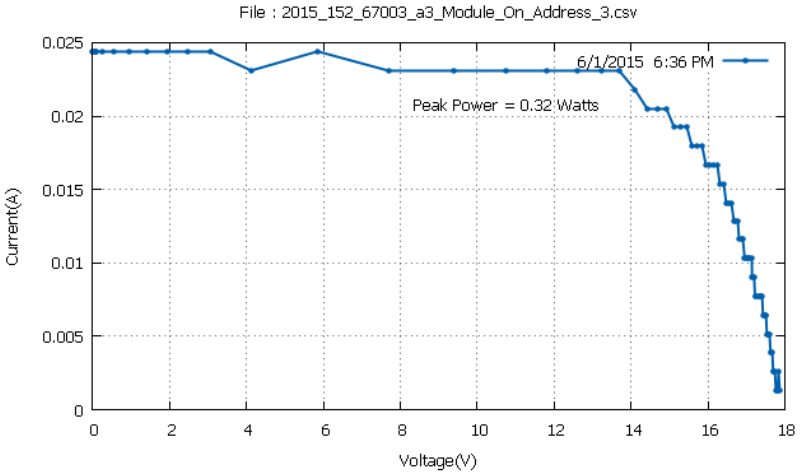
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
18:35	27	3,82
18:36	26,9	3,96
18:39	26,7	3,96
18:45	26,6	4,78
18:46	26,7	4,85
18:48	26,4	5,16

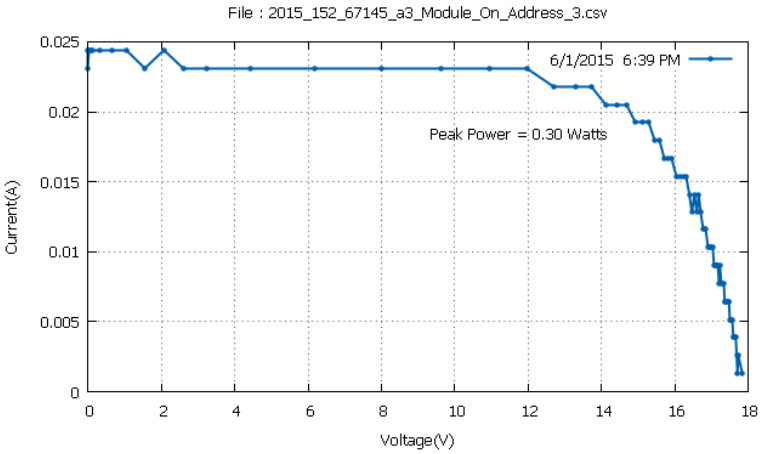
Mean Temperature: 26,71 ºC



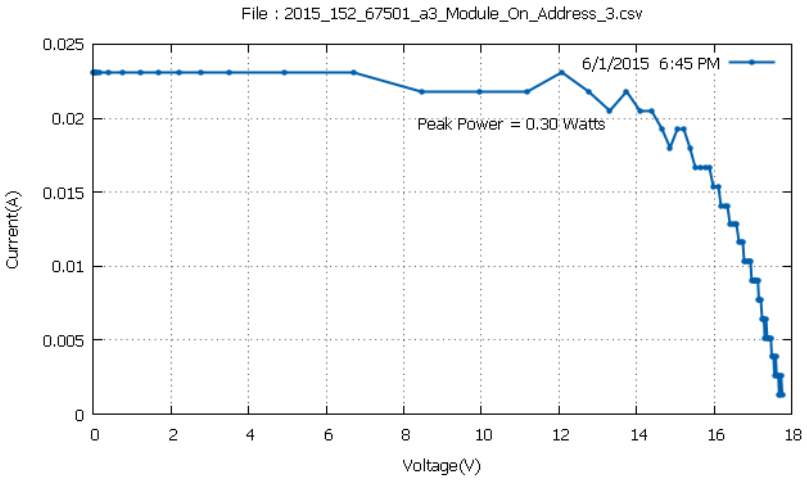
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5659094\ x\ 0.0218327846}{118\ x\ 0{,}0709} \text{ x } 100 = 3{,}82\ \%$$



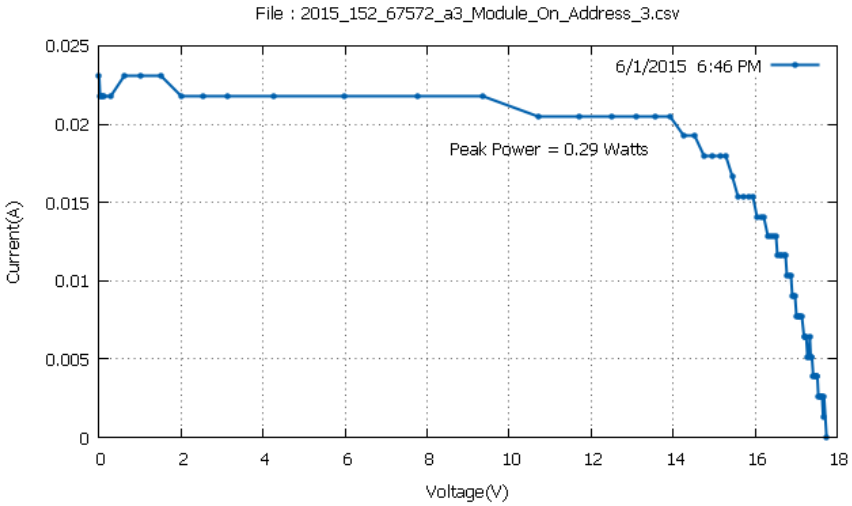
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.7077265\ x\ 0.0231170673}{113.7\ x\ 0{,}0709} \text{ x } 100 = 3{,}96\ \%$$



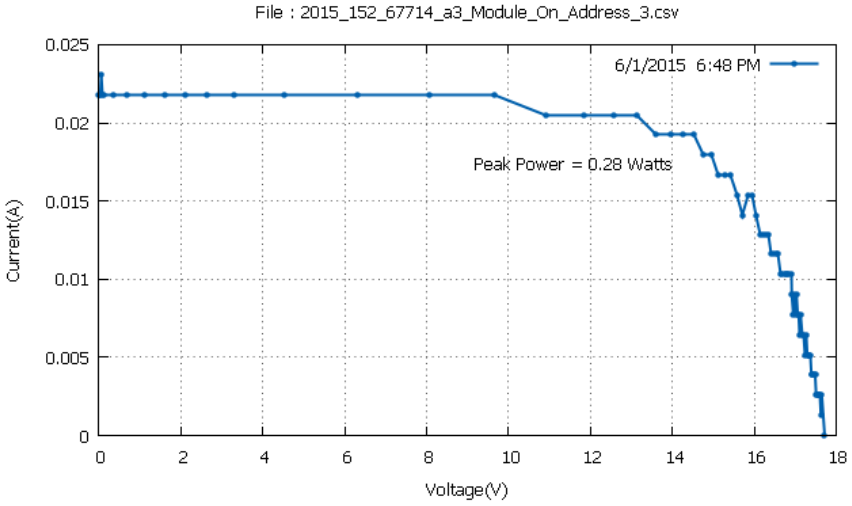
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6896114\ x\ 0.0205485038}{106.8\ x\ 0{,}0709} \text{ x } 100 = 3{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.7463837\ x\ 0.0218327846}{88.5\ x\ 0{,}0709} \text{ x } 100 = 4{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.9396677\ x\ 0.0205485038}{84.2\ x\ 0{,}0709} \text{ x } 100 = 4{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5349836\ x\ 0.0192642231}{76.5\ x\ 0{,}0709} \text{ x } 100 = 5{,}16\ \%$$

Module 5

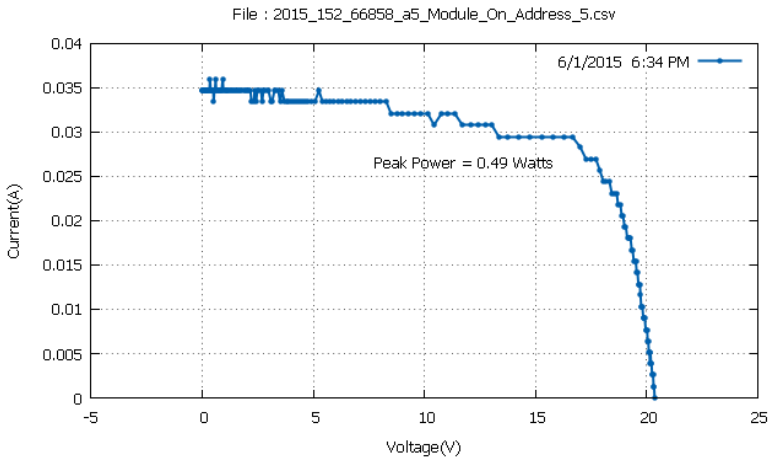
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

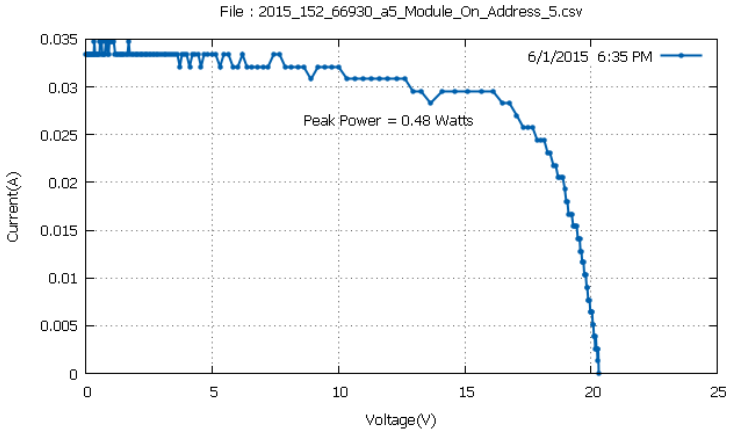
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
18:35	27,4	5,24
18:36	27,2	5,36
18:39	26,9	5,45
18:45	26,5	5,23
18:46	26,4	5,35
18:48	26,3	5,27

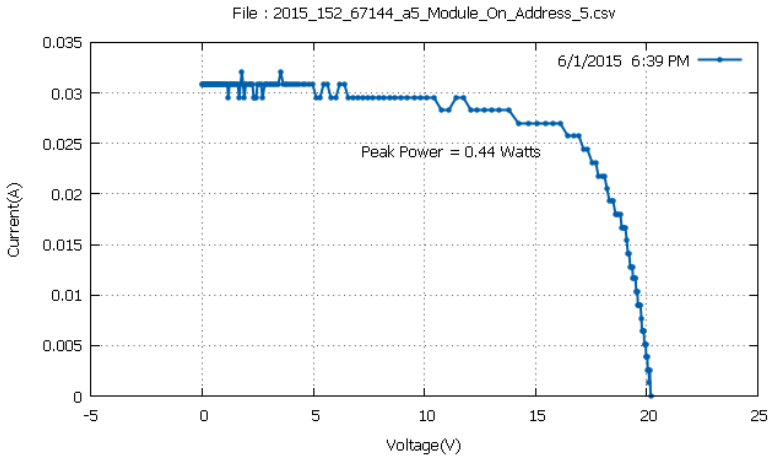
Mean Temperature: 26,78 ºC



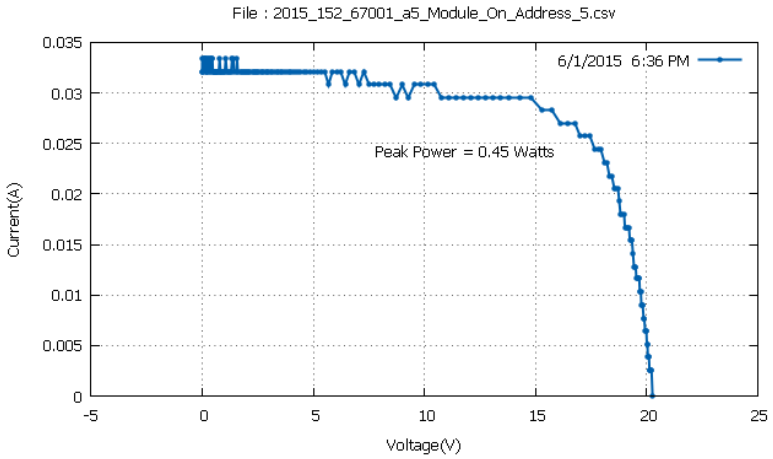
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6920376\ x\ 0.029538475}{123.7\ x\ 0{,}0756} \text{ x } 100 = 5{,}24\ \%$$



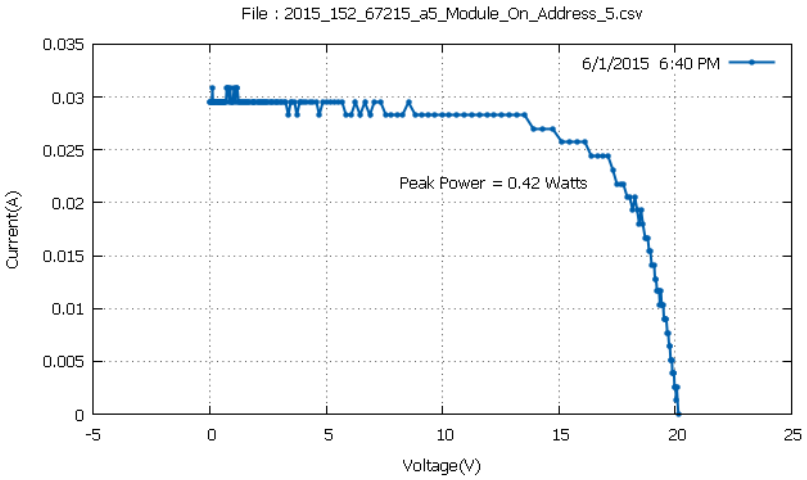
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1121845\ x\ 0.029538475}{118.3\ x\ 0{,}0756}\ \text{x}\ 100 = 5{,}36\ \%$$



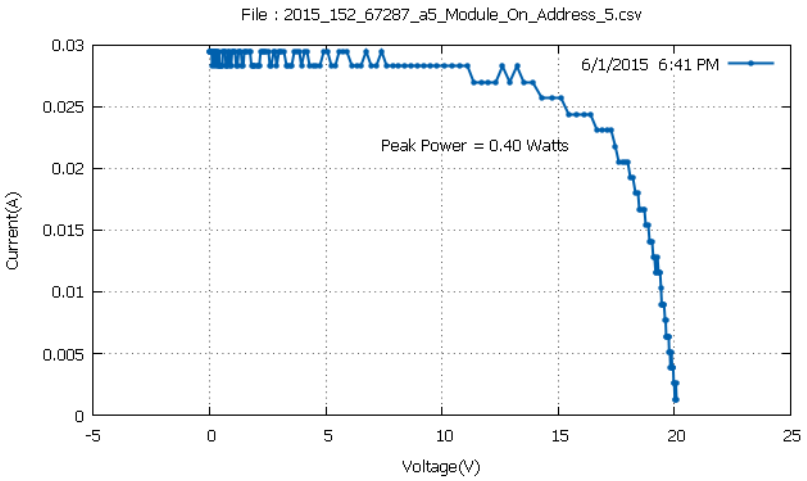
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1353779\ x\ 0.0269699115}{106.6\ x\ 0{,}0756}\ \text{x}\ 100 = 5{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.75389\ x\ 0.0269699115}{113.7\ x\ 0{,}0756}\ \text{x}\ 100 = 5{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1249943\ x\ 0.0244013481}{103.7\ x\ 0{,}0756} \text{ x } 100 = 5{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3905144\ x\ 0.0244013481}{100.4\ x\ 0{,}0756} \text{ x } 100 = 5{,}27\ \%$$

Module 4

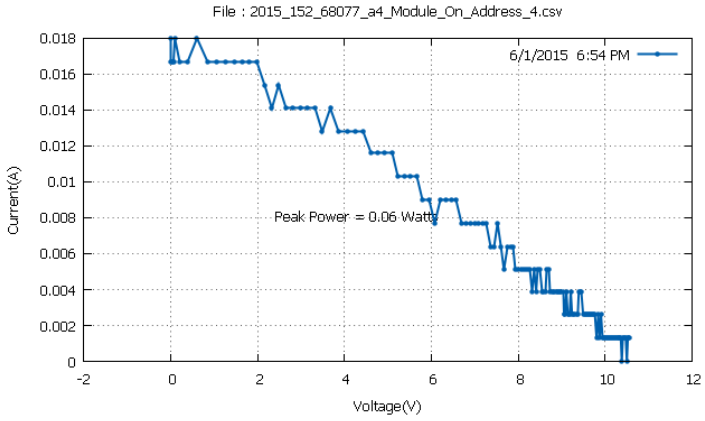
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

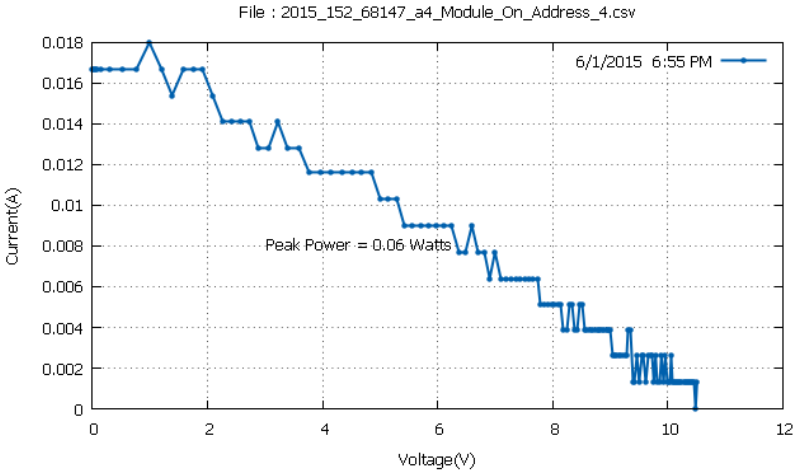
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
18:54	25,9	1,33
18:55	25,8	1,33
18:56	25,8	1,34
18:59	25,7	1,4
19:00	25,7	1,17
19:01	25,7	1,18

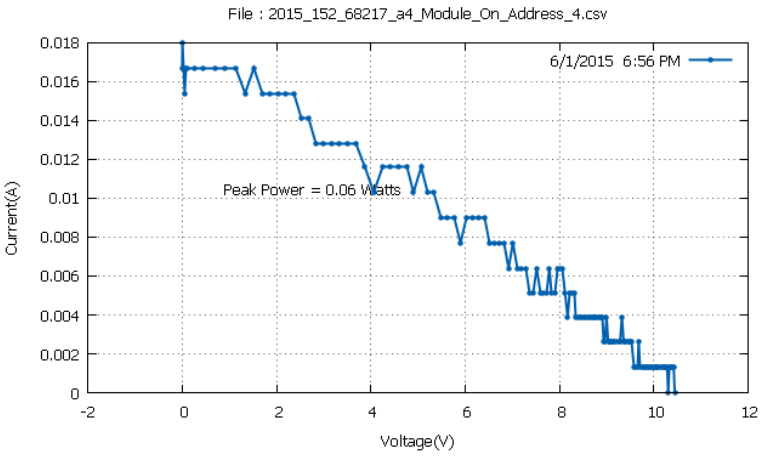
Mean Temperature: 25,76 ºC



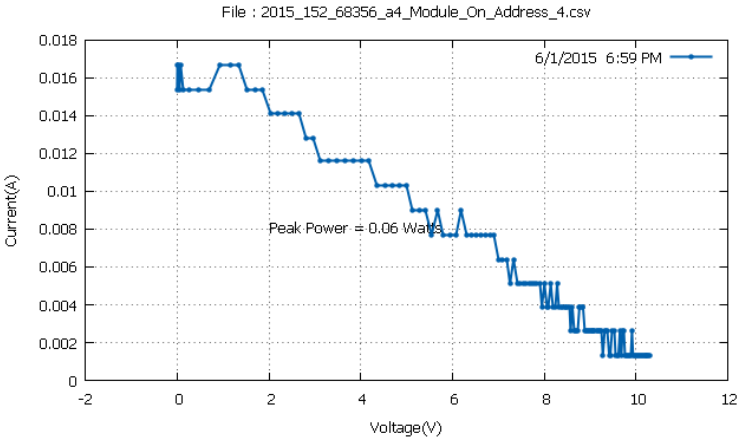
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.57939959\ x\ 0.00898997}{67\ x\ 0{,}0671} \text{ x } 100 = 1{,}33\ \%$$



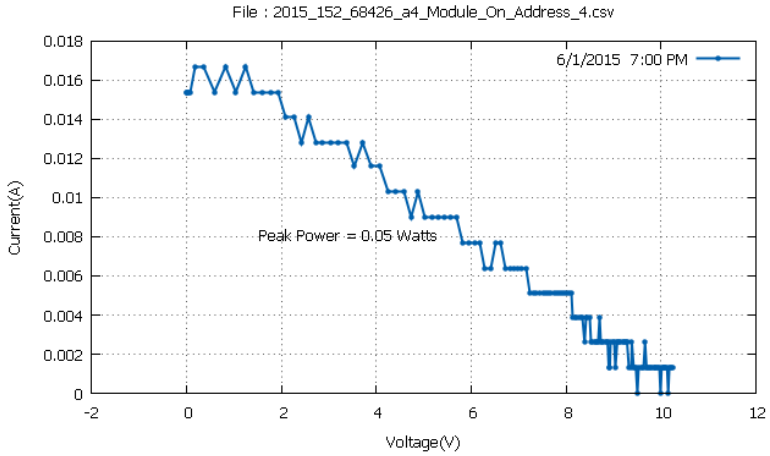
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.53301144\ x\ 0.00898997}{67\ x\ 0{,}0671} \text{ x } 100 = 1{,}33\ \%$$



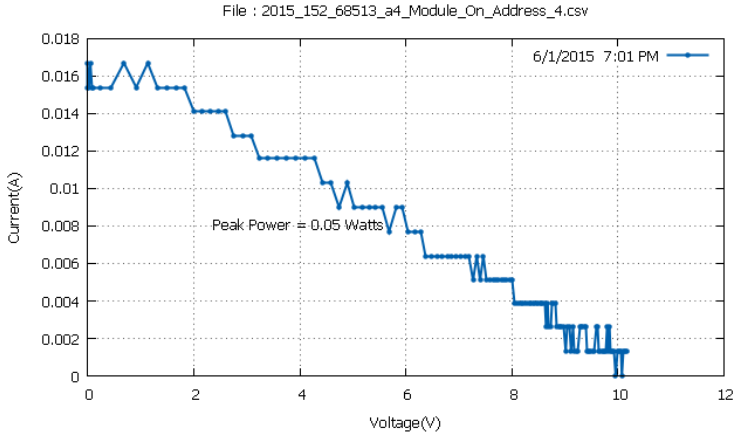
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.4325037\ x\ 0.00898997}{66.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{4.971274\ x\ 0.0115585336}{63.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{5.6902914\ x\ 0.00898997}{63.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{5.929964\ x\ 0.00898997}{63.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}18\ \%$$

Module 8

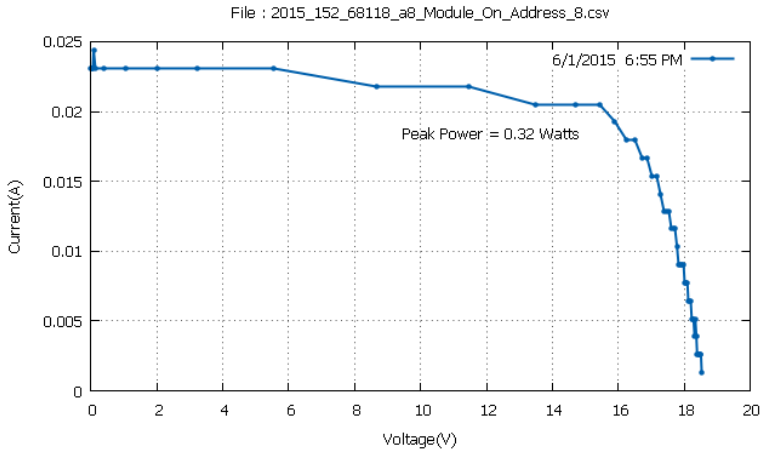
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

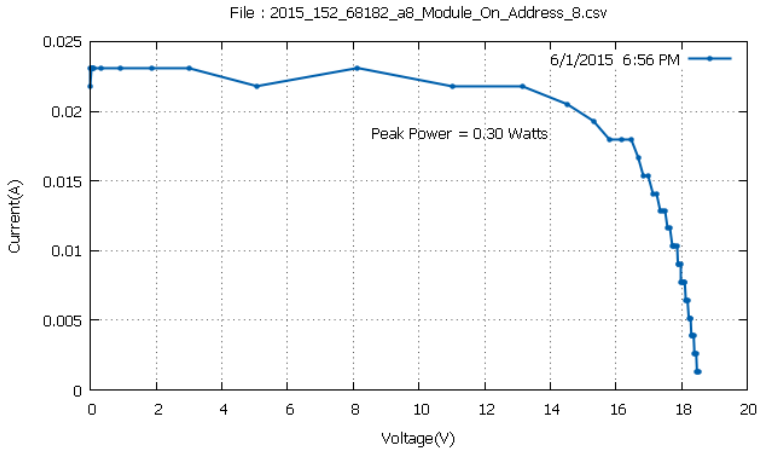
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
18:55	26,1	6,23
18:56	26	5,93
18:58	26	6,06
18:59	26	5,9
19:00	25,9	6,18
19:02	26	5,67

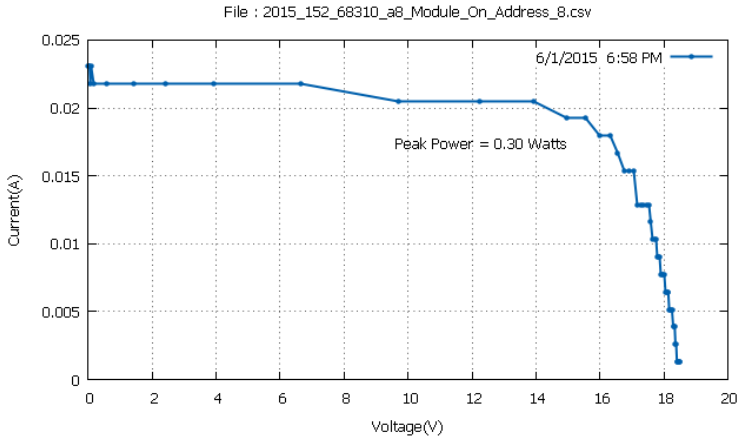
Mean Temperature: 26 ºC



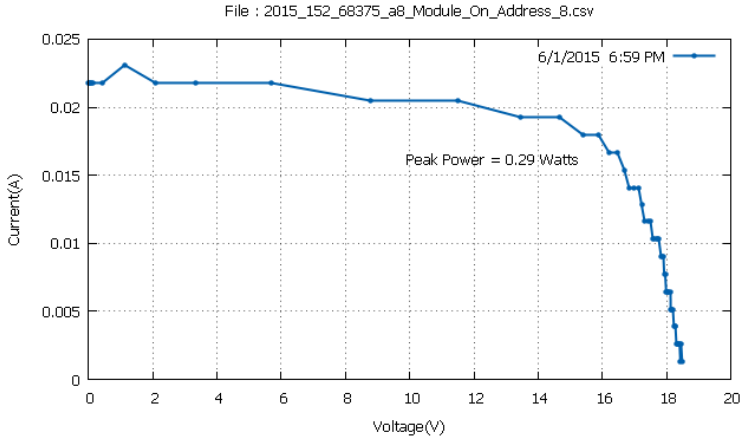
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4240923\ x\ 0.0205485038}{66.8\ x\ 0{,}0768} \text{ x } 100 = 6{,}23\ \%$$



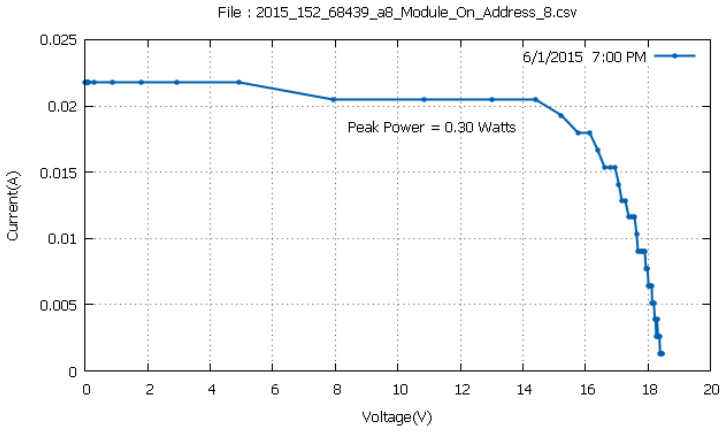
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5195208\ x\ 0.0205485038}{65.8\ x\ 0{,}0768} \text{ x } 100 = 5{,}93\ \%$$



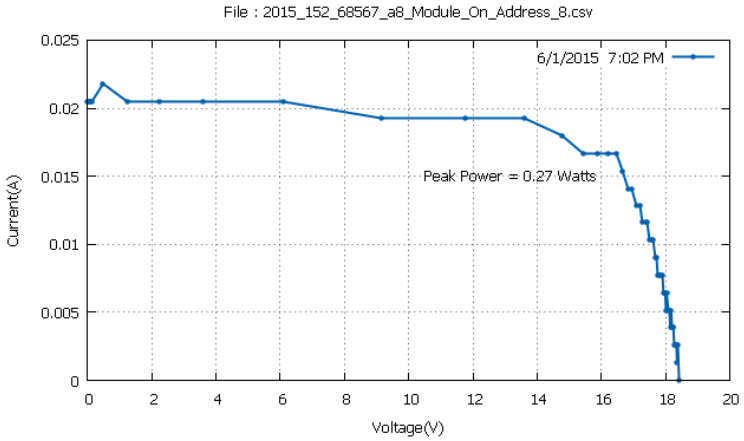
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5632563\ x\ 0.0192642231}{64.4\ x\ 0{,}0768} \text{ x } 100 = 6{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8725119\ x\ 0.01797994}{63.9\ x\ 0{,}0768} \text{ x } 100 = 5{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.40355\ x\ 0.0205485038}{63.2\ x\ 0{,}0768} \text{ x } 100 = 6{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.01669566}{62\ x\ 0{,}0768} \text{ x } 100 = 5{,}67\ \%$$

Module 3

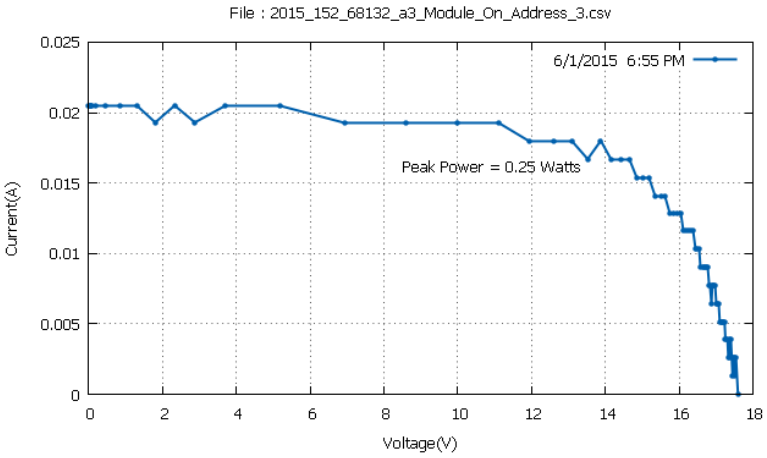
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

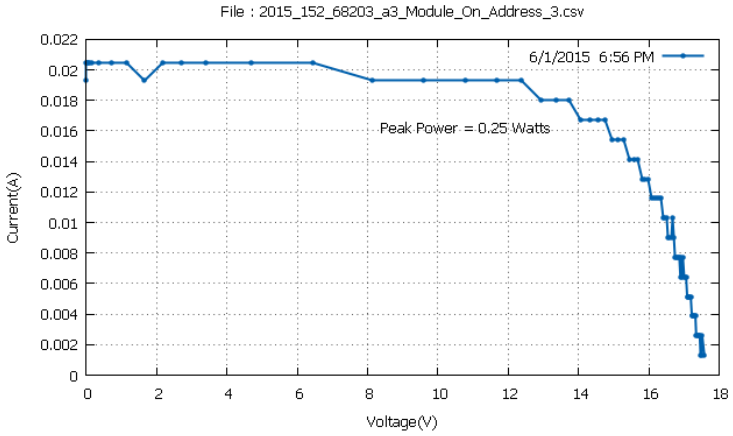
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
18:55	26,4	5,27
18:56	26,3	5,37
18:59	26,3	5,5
19:00	26,2	5,56
19:01	26,3	5,15
19:03	26,4	5,02

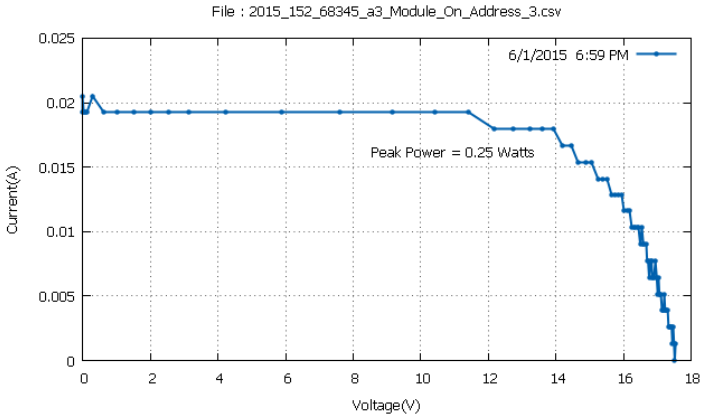
Mean Temperature: 26,31 ºC



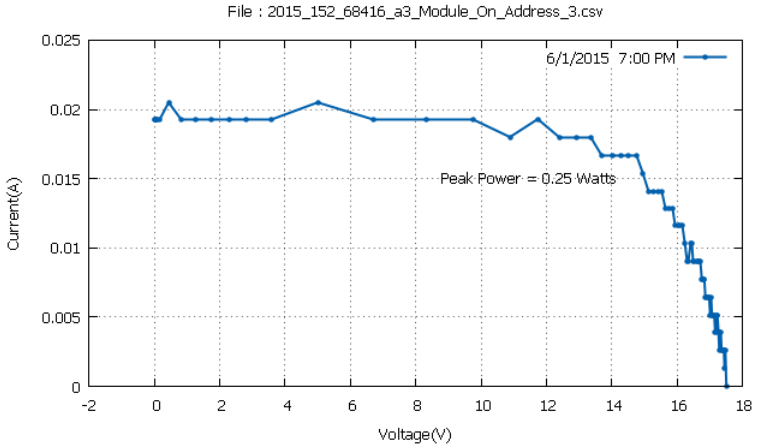
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.8778172\ x\ 0.01797994}{66.8\ x\ 0{,}0709} \text{ x } 100 = 5{,}27\ \%$$



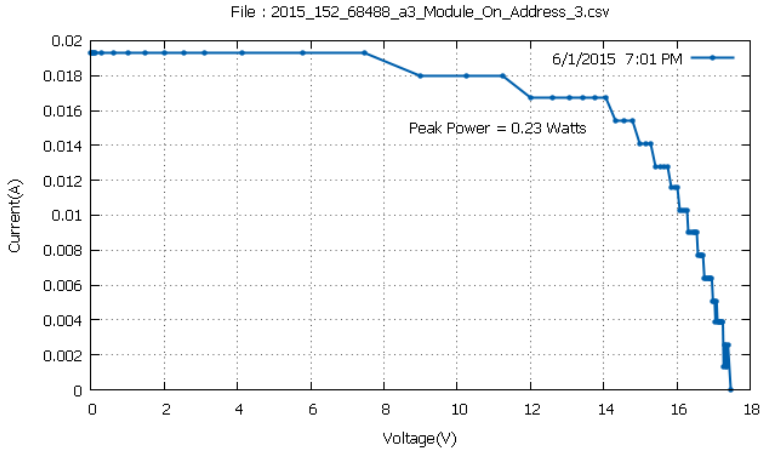
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.7463837\ x\ 0.01797994}{65.6\ x\ 0{,}0709} \text{ x } 100 = 5{,}37\ \%$$



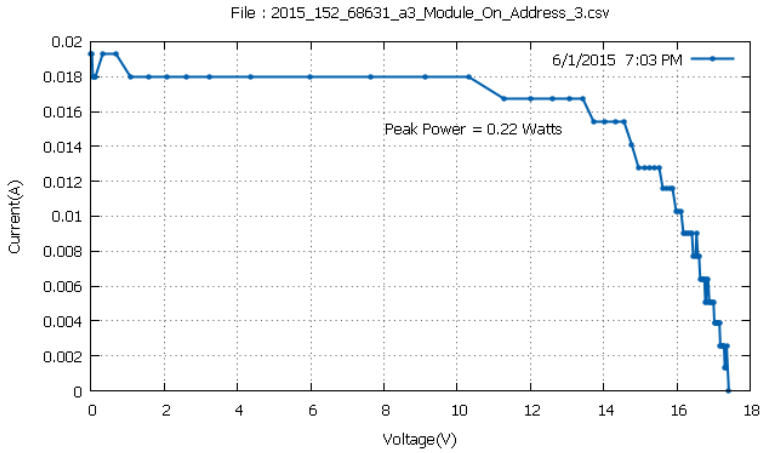
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{13.9242048\ x\ 0.01797994}{64.1\ x\ 0{,}0709} \text{ x } 100 = 5{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.751462\ x\ 0.01669566}{63.4\ x\ 0{,}0709} \text{ x } 100 = 5{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.06337\ x\ 0.01669566}{62.9\ x\ 0{,}0709} \text{ x } 100 = 5{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5581779\ x\ 0.0154113779}{61.8\ x\ 0{,}0709} \text{ x } 100 = 5{,}02\ \%$$

Module 5

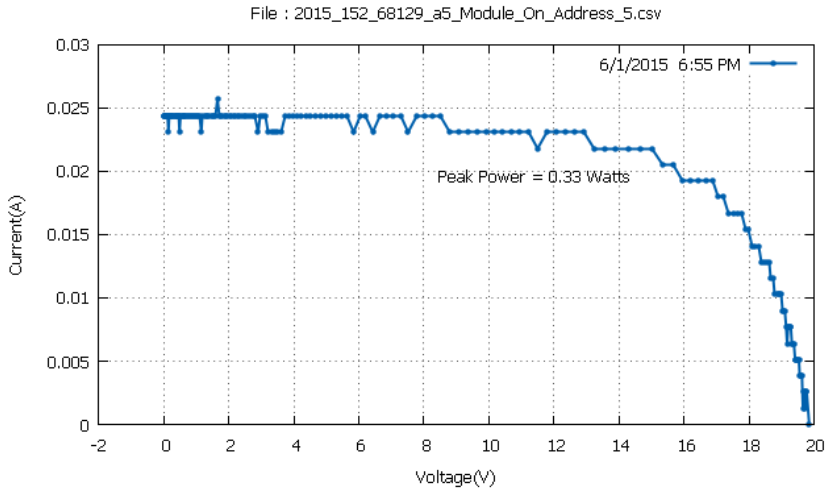
Date: 1/6/2015 – Afternoon Measurement

Temperature Ambient: 24 ºC

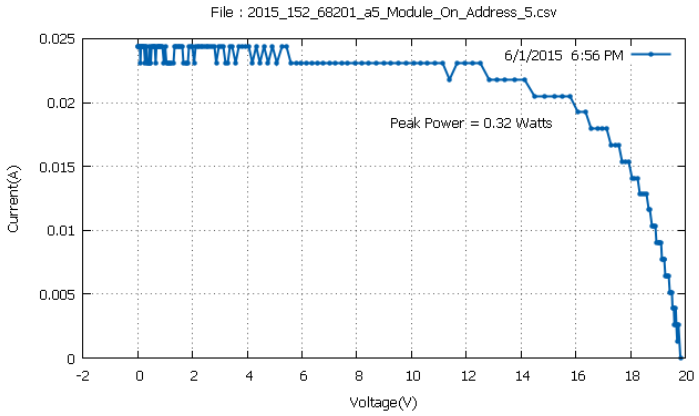
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
18:55	26,1	6,53
18:56	26	6,43
18:59	25,9	6,6
19:00	25,9	6,46
19:01	25,9	6,54
19:03	25,8	6,5

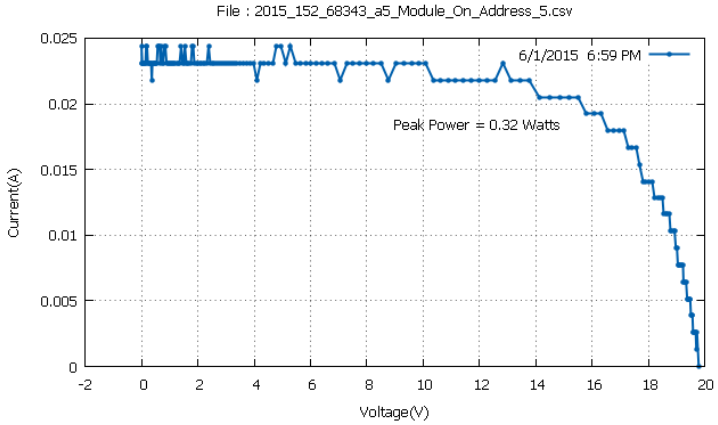
Mean Temperature: 25,93 ºC



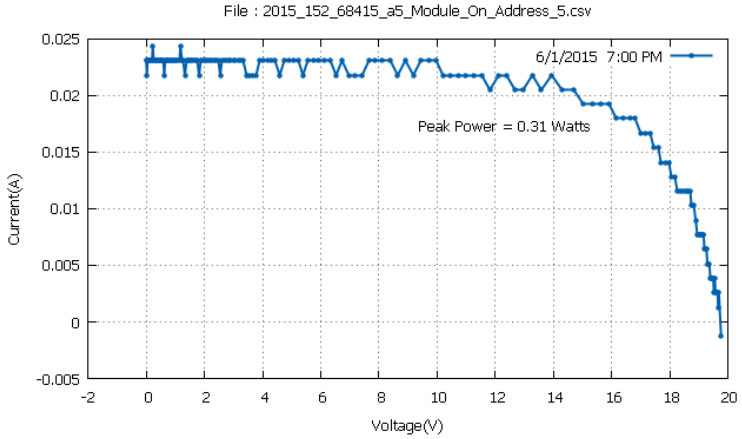
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.014329\ x\ 0.0218327846}{66.8\ x\ 0{,}0756} \text{ x } 100 = 6{,}53\ \%$$



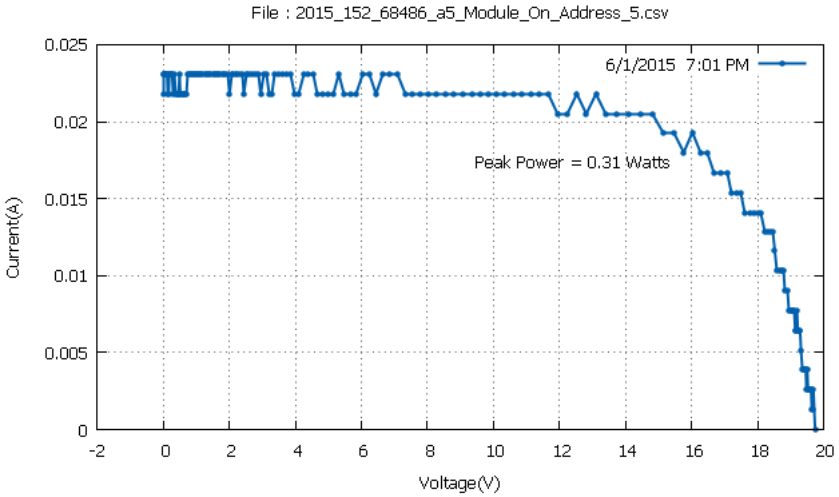
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.81066\ x\ 0.0205485038}{65.8\ x\ 0{,}0756} \text{ x } 100 = 6{,}43\ \%$$



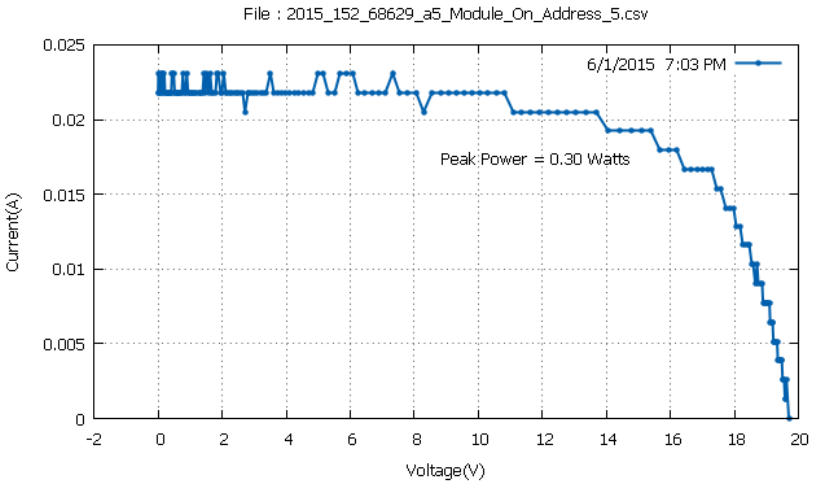
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5168686\ x\ 0.0205485038}{64.1\ x\ 0{,}0756} \text{ x } 100 = 6{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.926631\ x\ 0.0192642231}{63.4\ x\ 0{,}0756} \text{ x } 100 = 6{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.0192642231}{62.7\ x\ 0{,}0756}\ \text{x}\ 100 = 6{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.400898\ x\ 0.0192642231}{61.8\ x\ 0{,}0756}\ \text{x}\ 100 = 6{,}5\ \%$$

Module 4

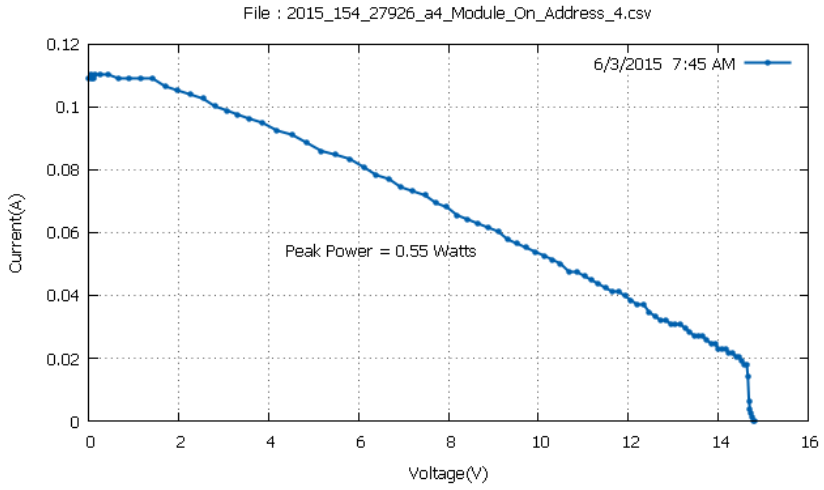
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

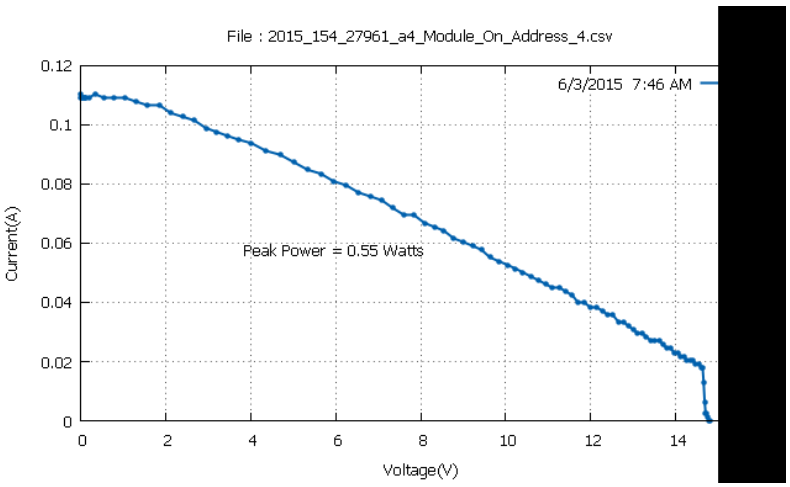
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:45	29.8	2,075
7:46	29.4	2,77
7:47	29,8	2,78
7:49	28.1	2,8
7:50	28.4	2,8
7:52	28.1	2,75

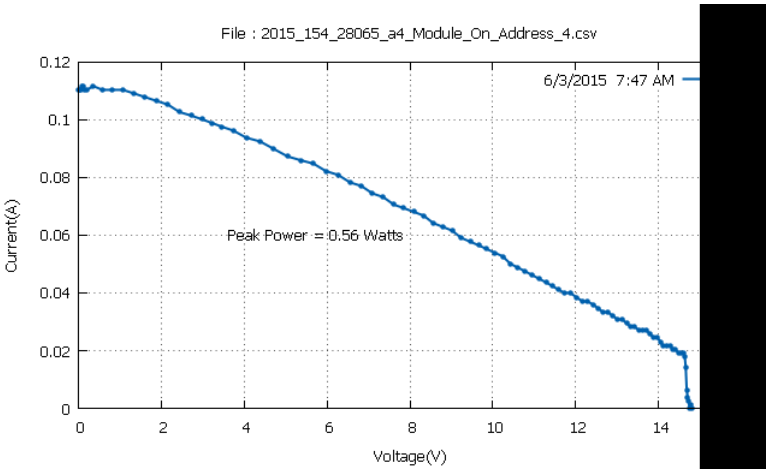
Mean Temperature: 28,93 ºC



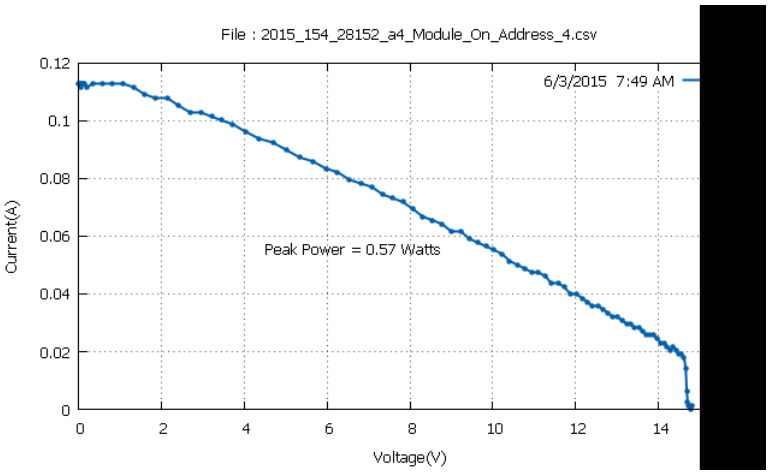
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.099828\ x\ 0.06036123}{297.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}75\ \%$$



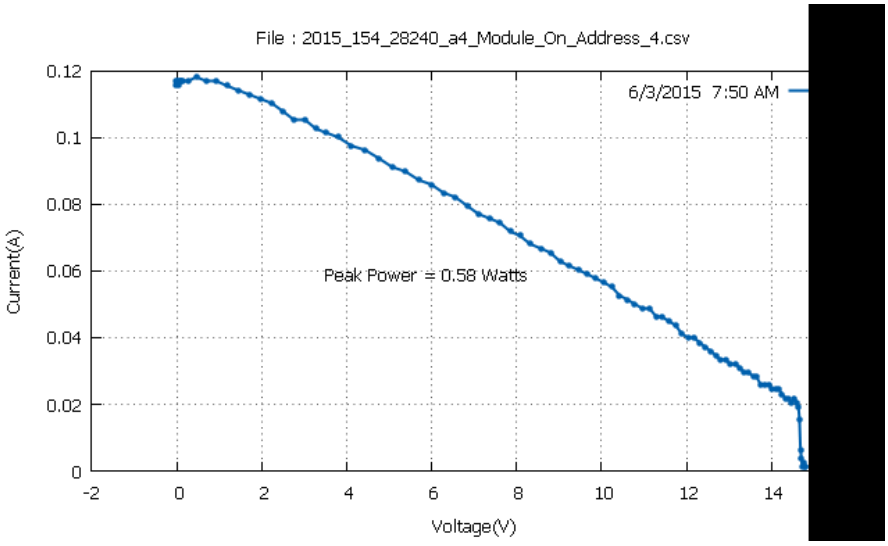
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.543169\ x\ 0.06421407}{295.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}77\ \%$$



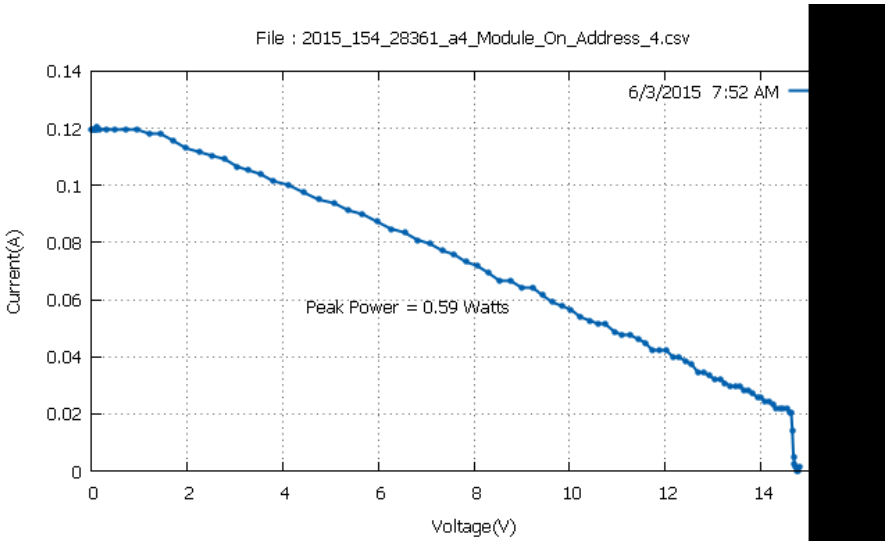
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.32669\ x\ 0.06678264}{299.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.215798\ x\ 0.06164551}{302.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.357615\ x\ 0.0693512037}{307.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.215798\ x\ 0.06421407}{319.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}75\ \%$$

Module 8

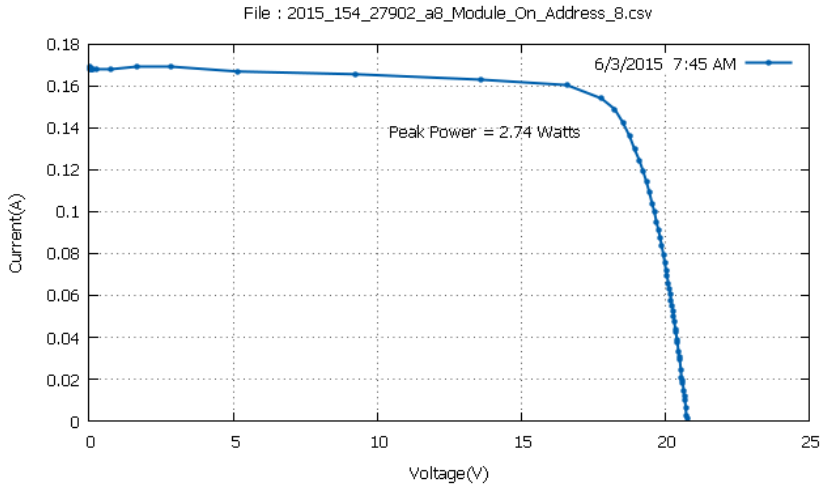
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

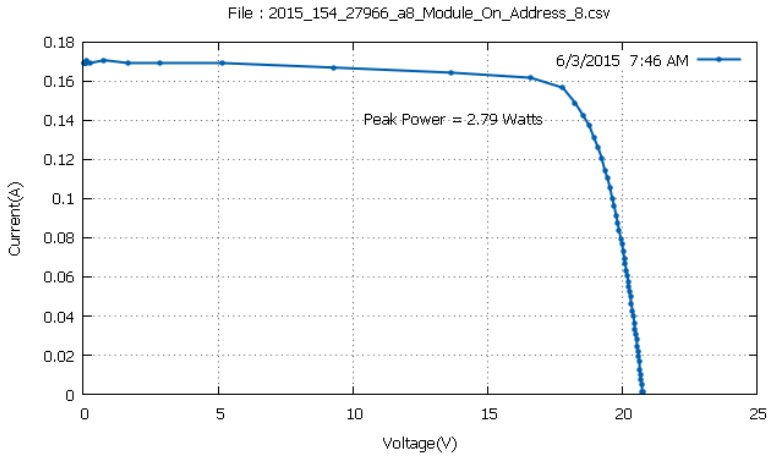
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:45	29.8	12,17
7:46	29.8	12,3
7:47	29.5	12,35
7:49	29.8	12,47
7:51	29.2	12,72
7:54	28.5	12,71

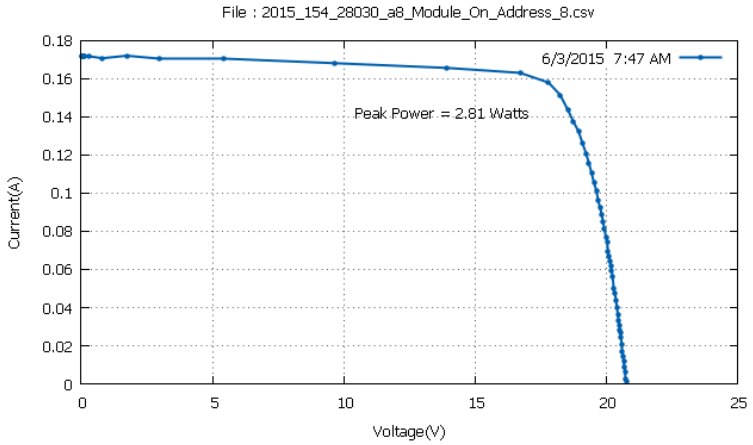
Mean Temperature: 29,43 ºC



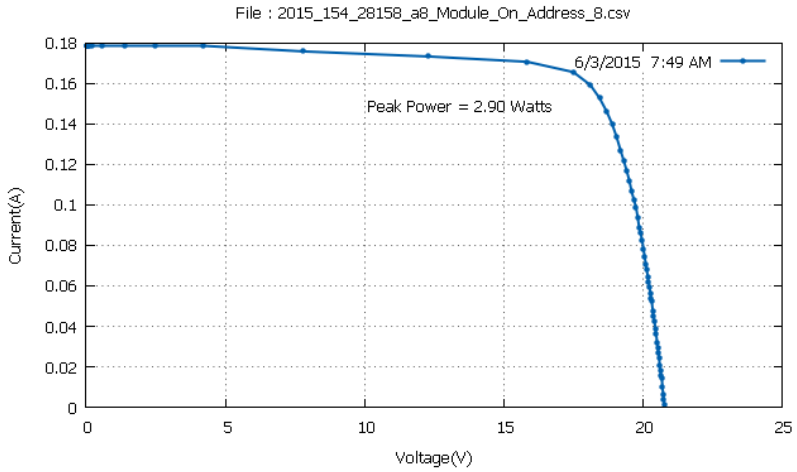
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7898922\ x\ 0.154113784}{293\ x\ 0{,}0768} \text{ x } 100 = 12{,}17\ \%$$



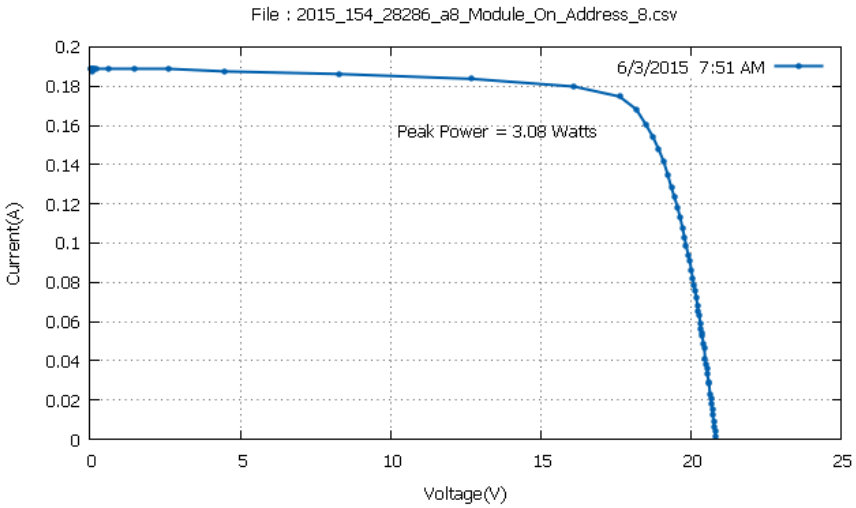
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.156682342}{295.4\ x\ 0{,}0768}\ \text{x } 100 = 12{,}3\ \%$$



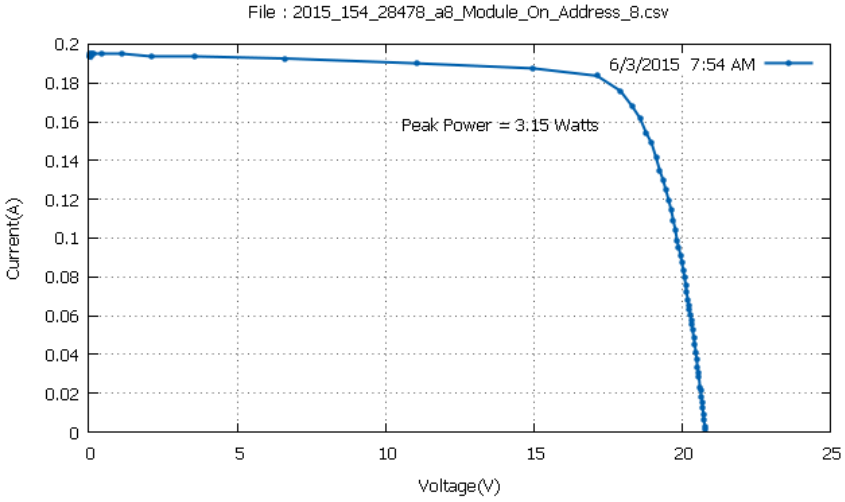
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8053551\ x\ 0.157966629}{296.1\ x\ 0{,}0768}\ \text{x } 100 = 12{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.165672317}{302.6\ x\ 0{,}0768}\ \text{x } 100 = 12{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.627533\ x\ 0.174662277}{315.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9213257\ x\ 0.175946563}{322.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}71\ \%$$

Module 3

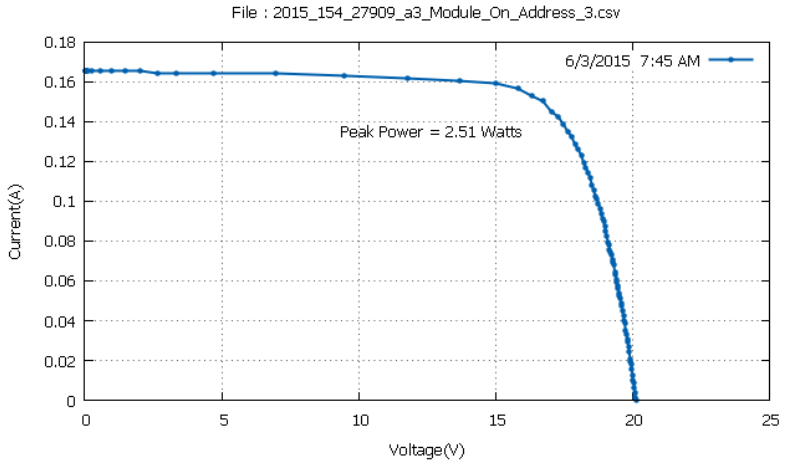
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

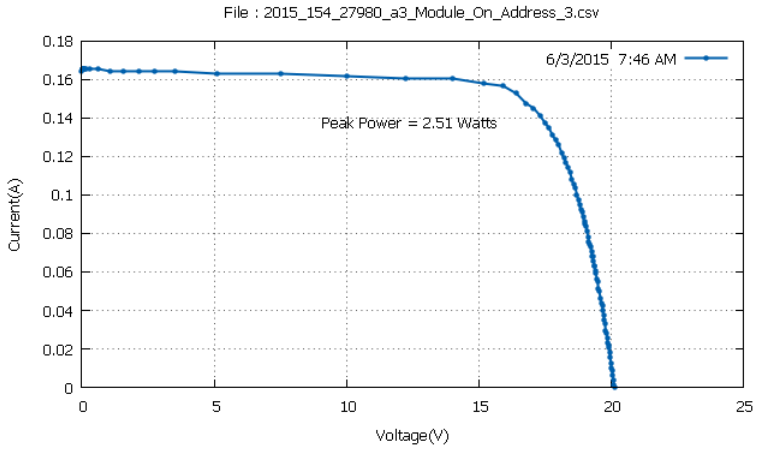
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:45	30,5	12
7:46	30,5	12,06
7:47	29,9	12,16
7:49	29,5	12,41
7:51	29,8	12,47
7:52	30,5	12,51

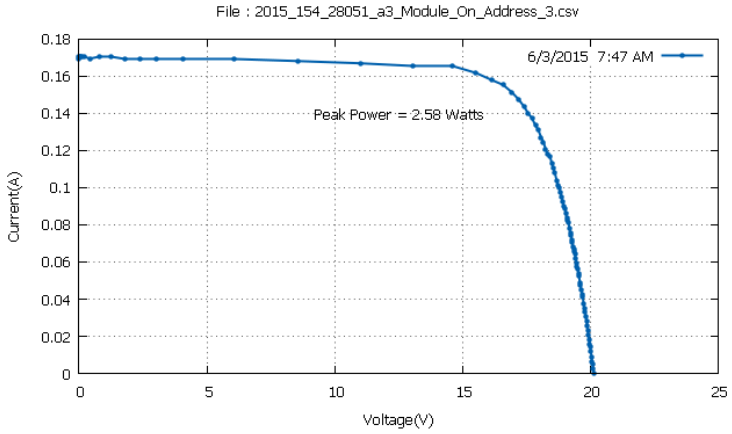
Mean Temperature: 30,11 ºC



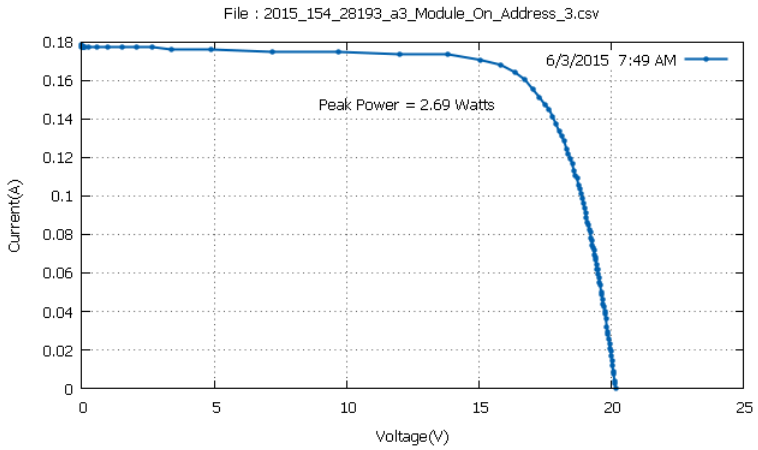
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7306938\ x\ 0.15026094}{294.9\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



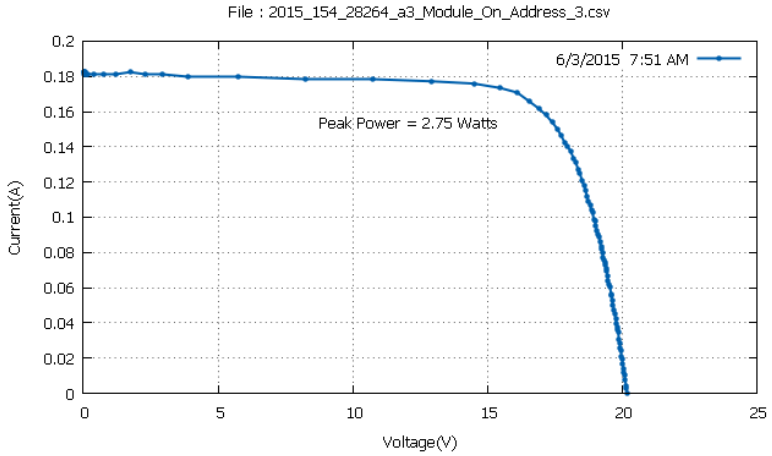
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.1528295}{293.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}06\ \%$$



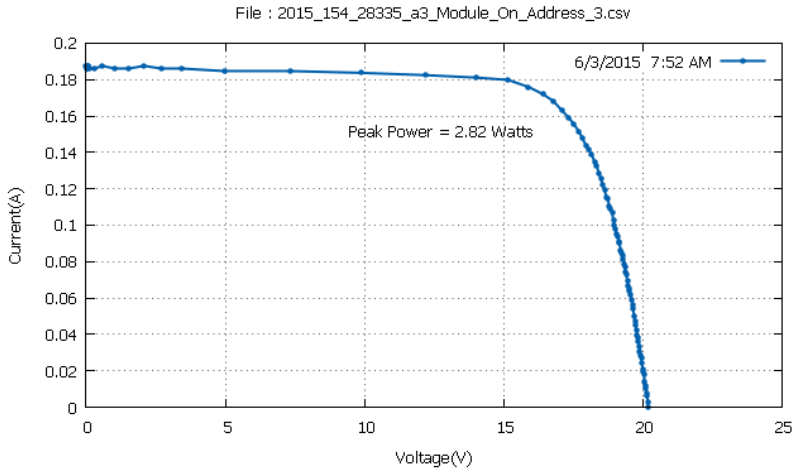
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5837975\ x\ 0.155398056}{299.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3595886\ x\ 0.164388031}{305.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1044521\ x\ 0.170809433}{310.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7848129\ x\ 0.168240875}{317.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}51\ \%$$

Module 5

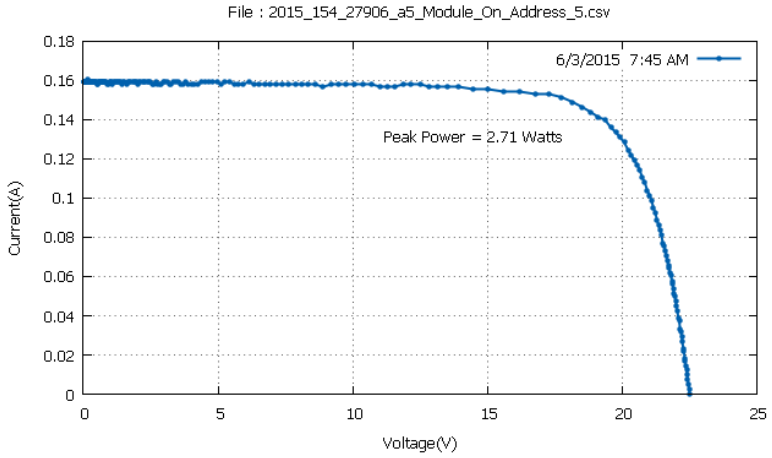
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

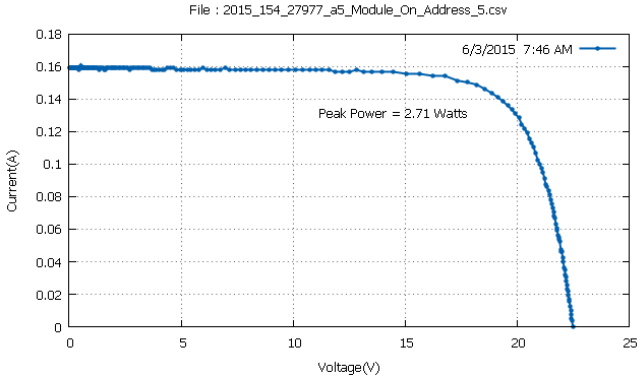
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:45	28.9	12,18
7:46	28.2	12,19
7:47	28.9	12,23
7:49	28.9	12,6
7:51	28.6	12,57
7:52	28.9	12,7

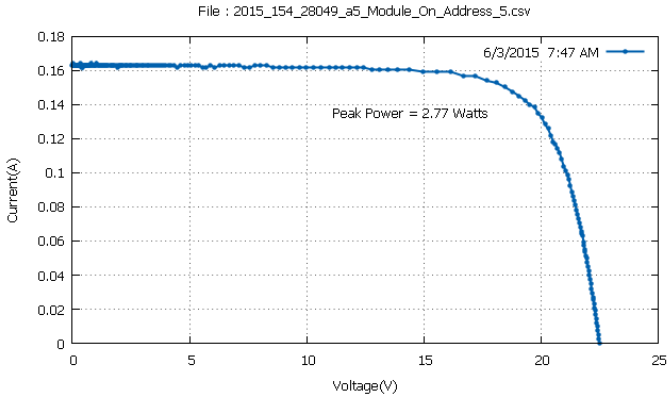
Mean Temperature: 28,73 ºC



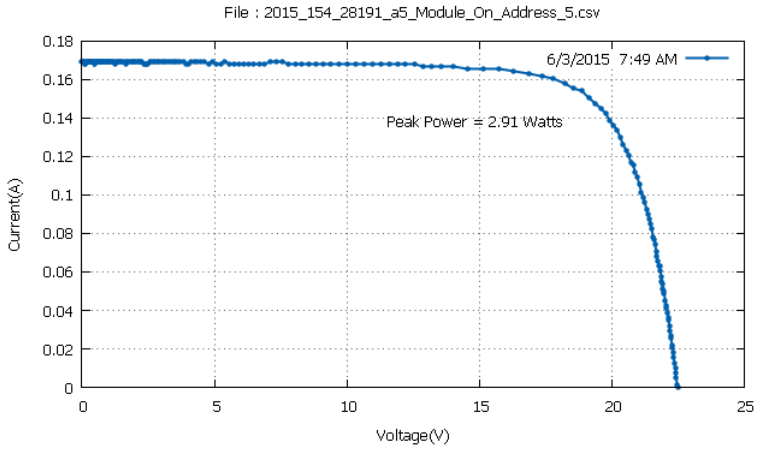
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5243721\ x\ 0.1464081}{294.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}18\ \%$$



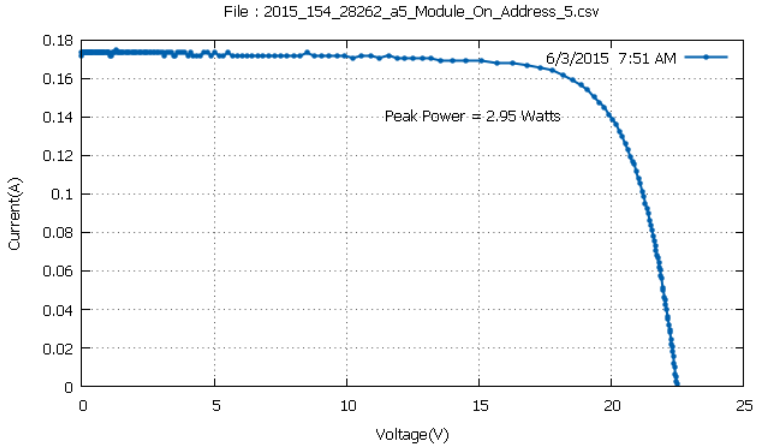
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.539835\ x\ 0.1464081}{294\ x\ 0{,}0756} \text{ x } 100 = 12{,}19\ \%$$



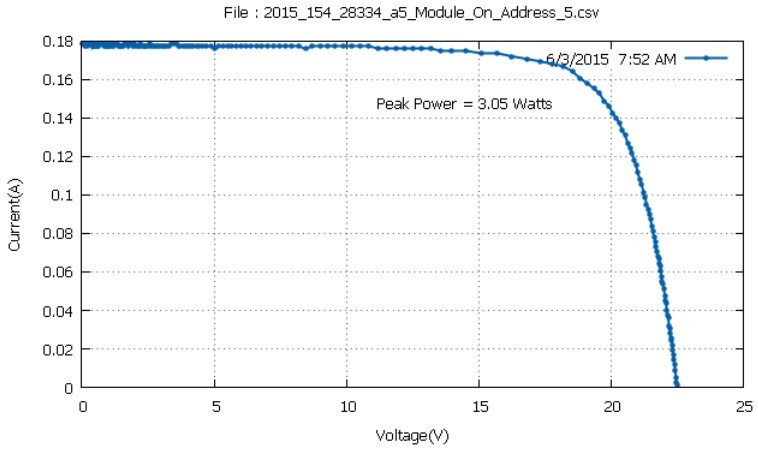
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4625225\ x\ 0.15026094}{299.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8722839\ x\ 0.154113784}{305.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.84909\ x\ 0.156682342}{310.4\ x\ 0{,}0756}\ \text{x } 100 = 12{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5321045\ x\ 0.164388031}{317.6\ x\ 0{,}0756}\ \text{x } 100 = 12{,}7\ \%$$

Module 4

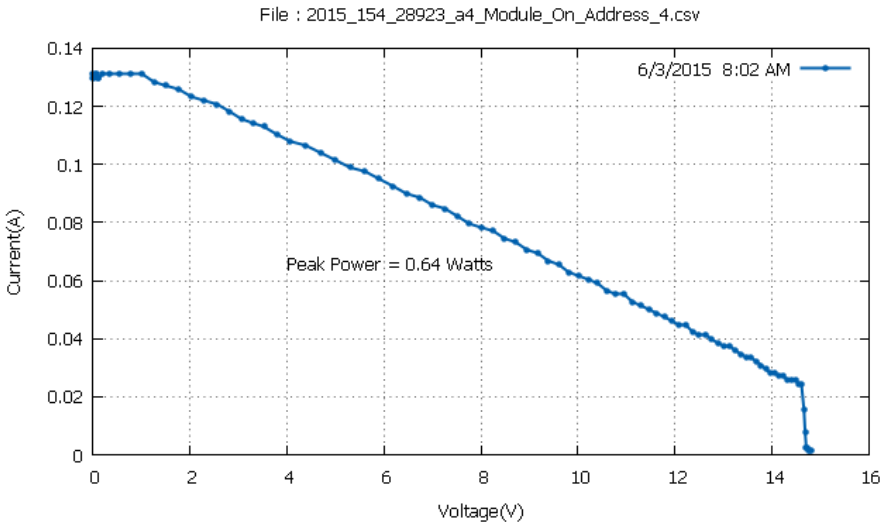
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

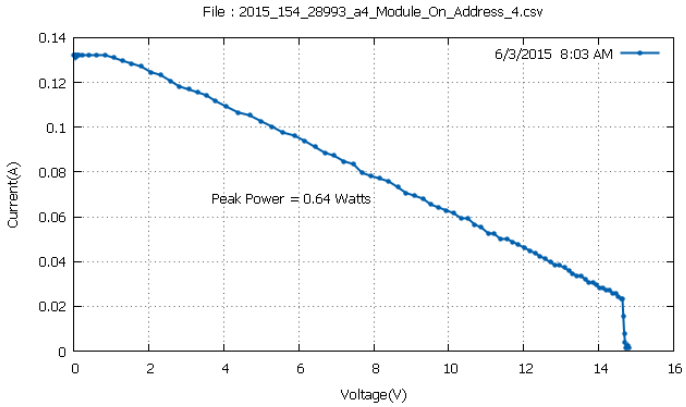
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:02	28.5	2,72
8:03	28,7	2,67
8:06	29	2,66
8:07	29	2,6
8:09	29,2	2,54
8:10	29,5	2,55

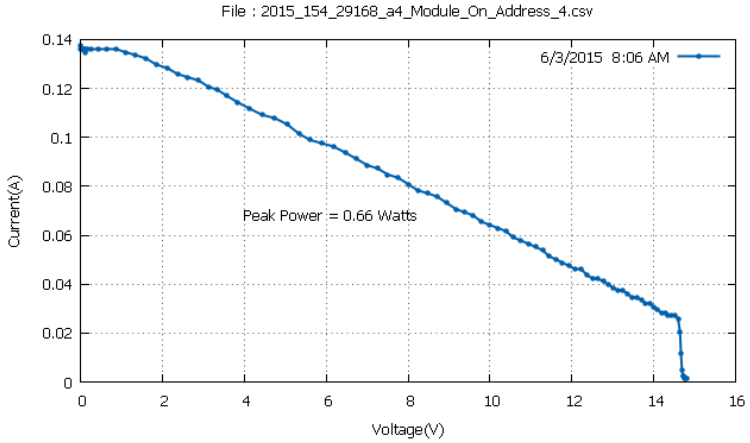
Mean Temperature: 28,98 ºC



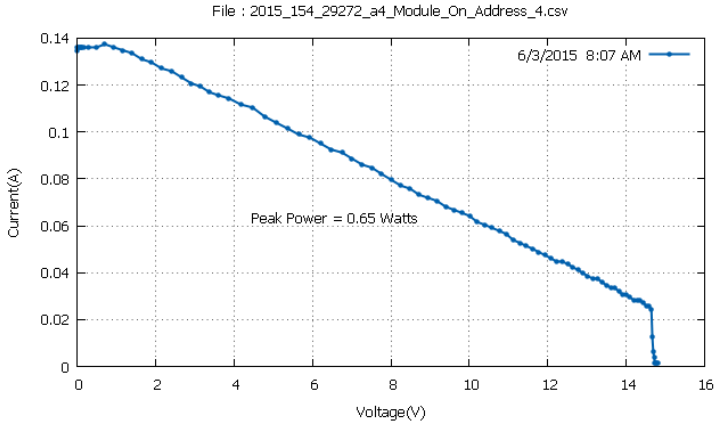
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.713259\ x\ 0.07320405}{350.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}72\ \%$$



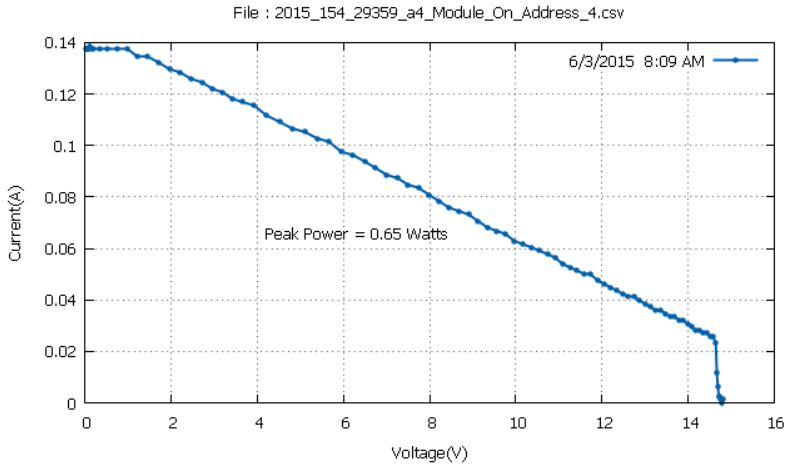
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.123022\ x\ 0.07063548}{356.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}67\ \%$$



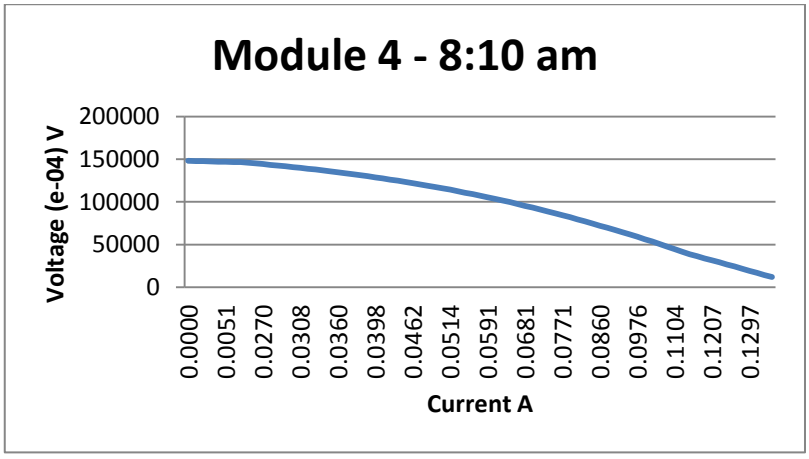
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.0757726058}{369.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.257108\ x\ 0.07834117}{372\ x\ 0{,}0671} \text{ x } 100 = 2{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.674602\ x\ 0.0757726058}{380.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.666\ x\ 0.075772}{383.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}55\ \%$$

Module 8

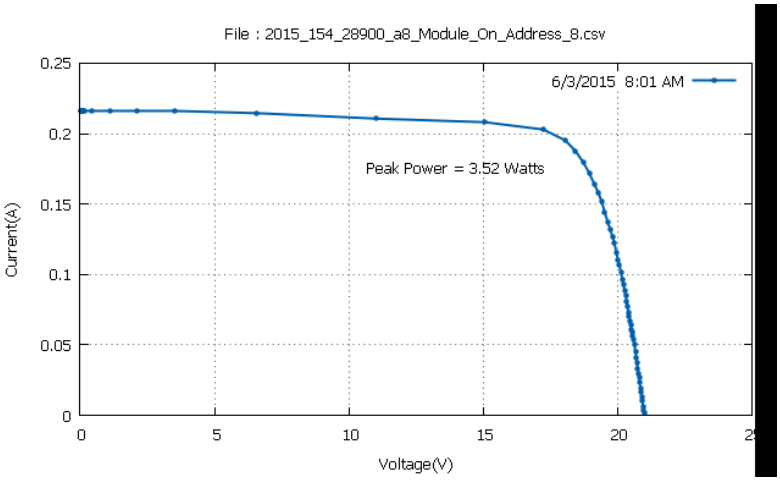
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

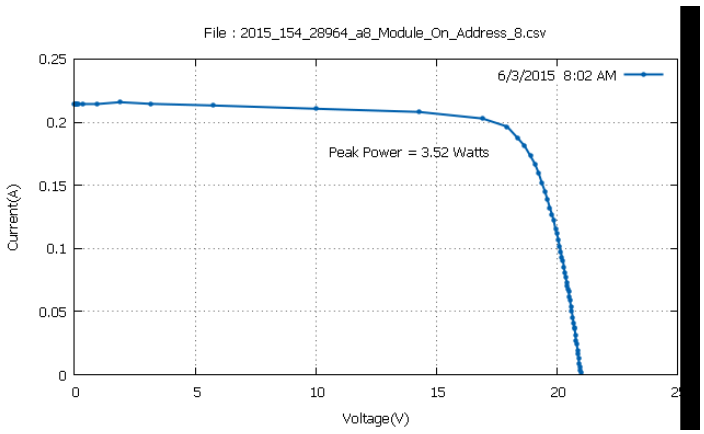
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:01	28,1	13,09
8:02	28	13,17
8:03	27,8	13,24
8:05	28	13,32
8:08	28,3	13,28
8:10	28,6	13,45

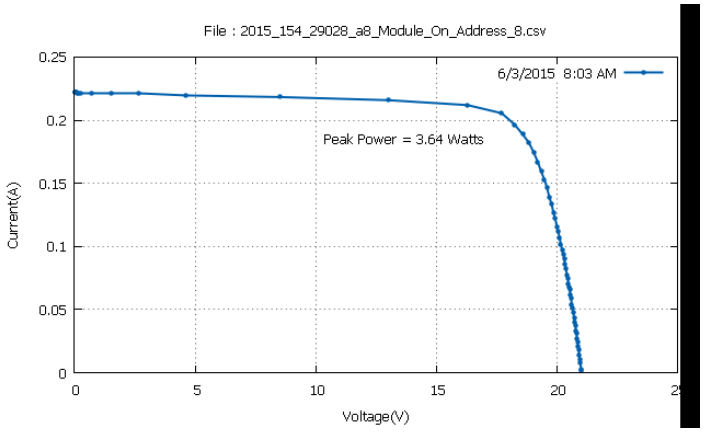
Mean Temperature: 28,13 ºC



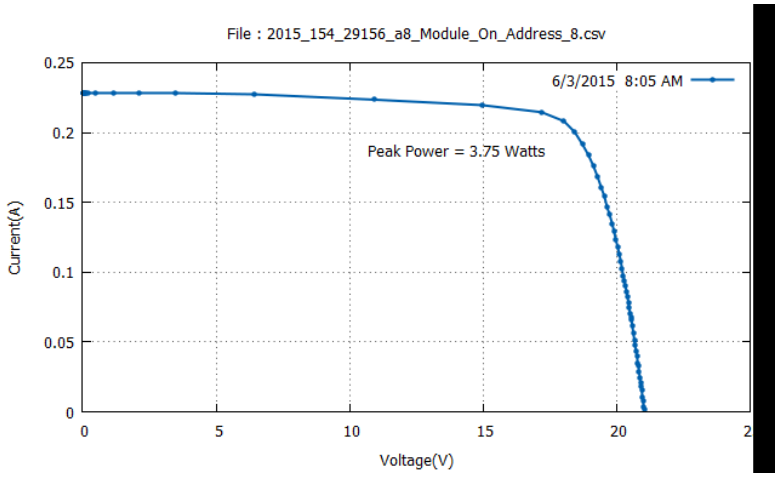
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.05276\ x\ 0.195210785}{350\ x\ 0{,}0768} \text{ x } 100 = 13{,}09\ \%$$



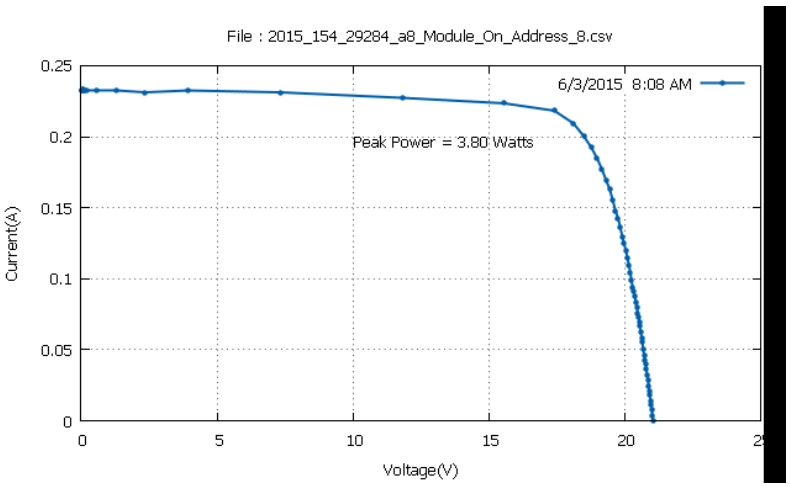
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9367886\ x\ 0.196495071}{347.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}17\ \%$$



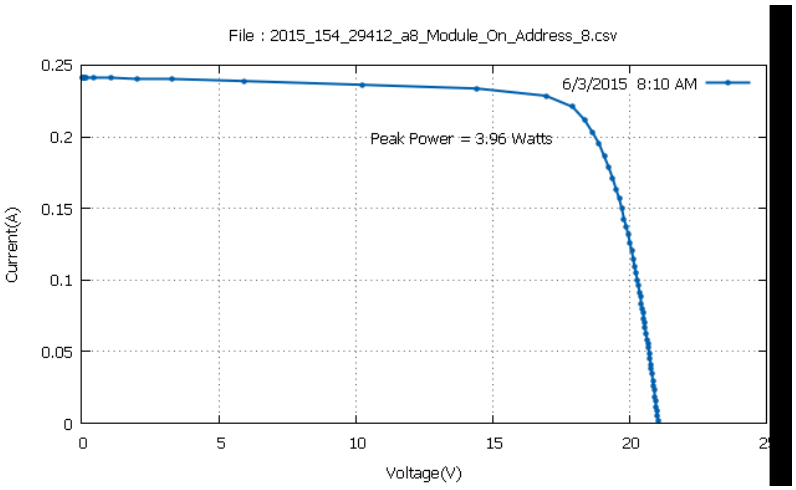
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7125778\ x\ 0.205485046}{357.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0295658\ x\ 0.2080536}{366.5\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4110546\ x\ 0.21832785}{372.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9213257\ x\ 0.220896423}{383.2\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}45\ \%$$

Module 3

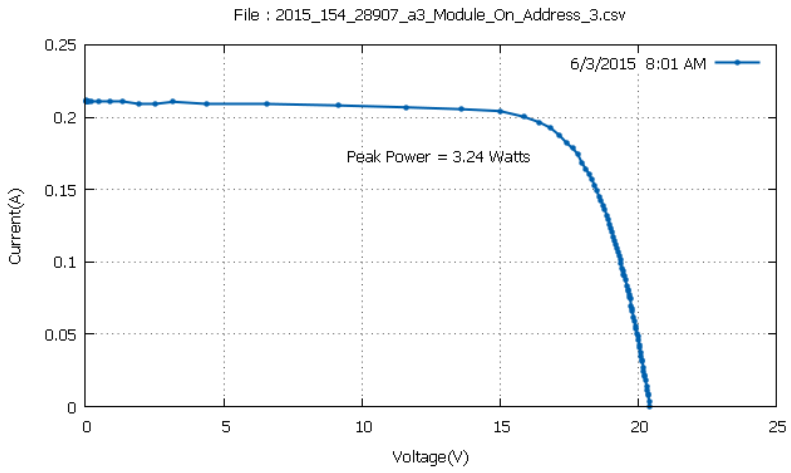
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

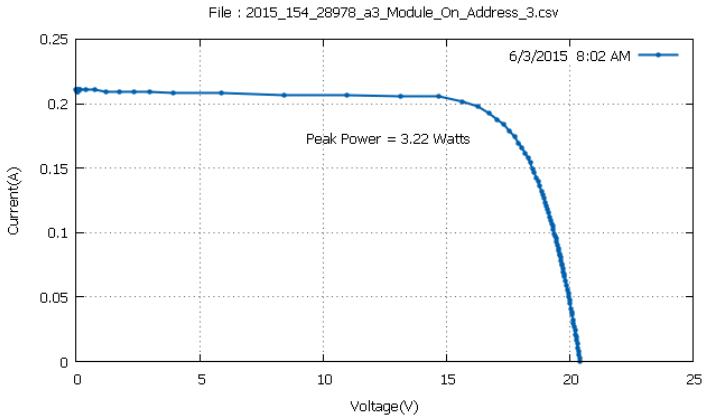
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:01	29,5	13,04
8:02	29,3	13
8:04	29,2	13,18
8:06	29,2	13,2
8:07	29,2	13,2
8:08	29,3	13,33

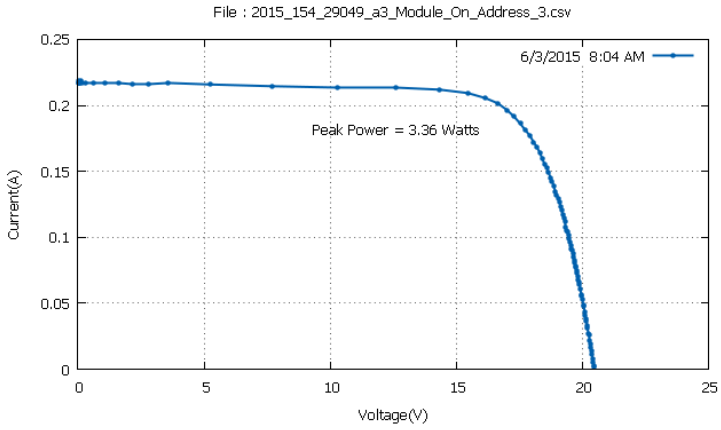
Mean Temperature: 29,28 ºC



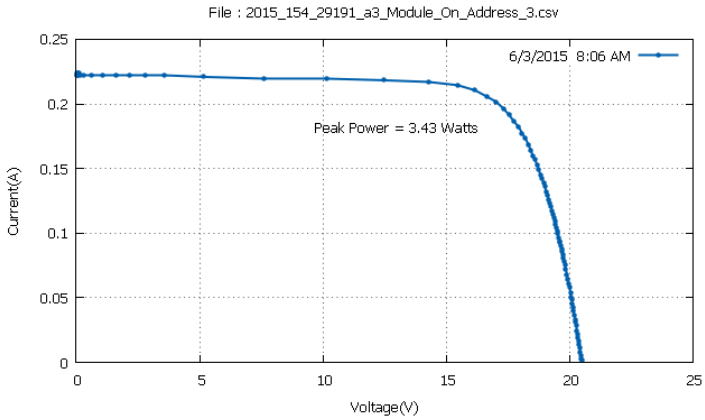
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8312016\ x\ 0.192642227}{350.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}04\ \%$$



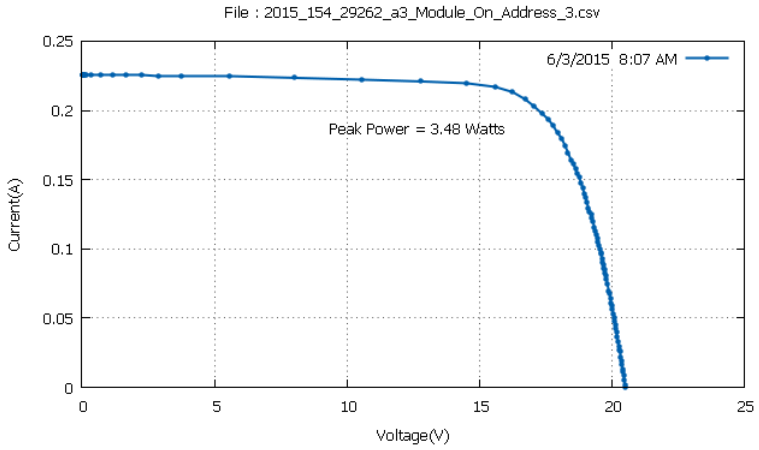
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7229633\ x\ 0.192642227}{349.1\ x\ 0{,}0709} \text{ x } 100 = 13\ \%$$



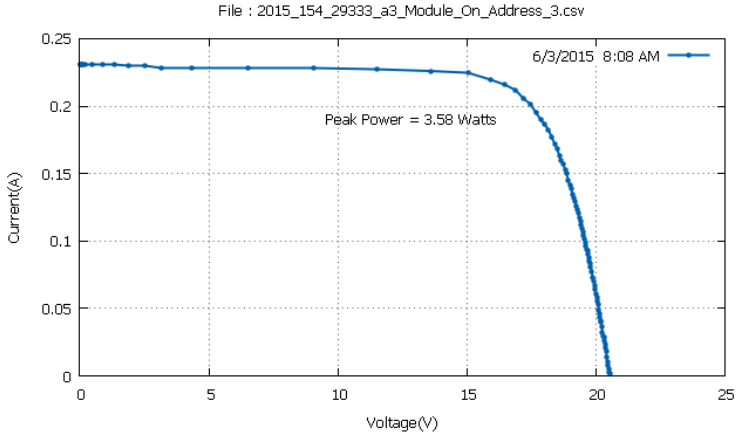
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.645649\ x\ 0.201632187}{359.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0244865\ x\ 0.201632187}{366.7\ x\ 0{,}0709} \text{ x } 100 = 13{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7229633\ x\ 0.2080536}{372\ x\ 0{,}0709} \text{ x } 100 = 13{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.88532\ x\ 0.211906448}{378.6\ x\ 0{,}0709} \text{ x } 100 = 13{,}33\ \%$$

Module 5

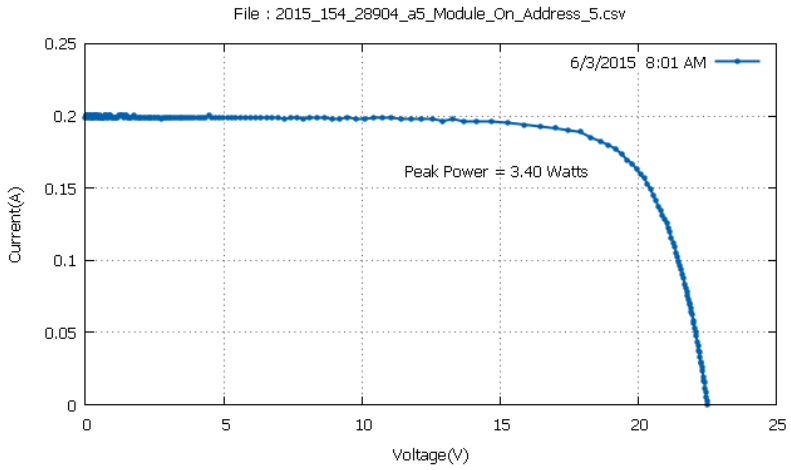
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

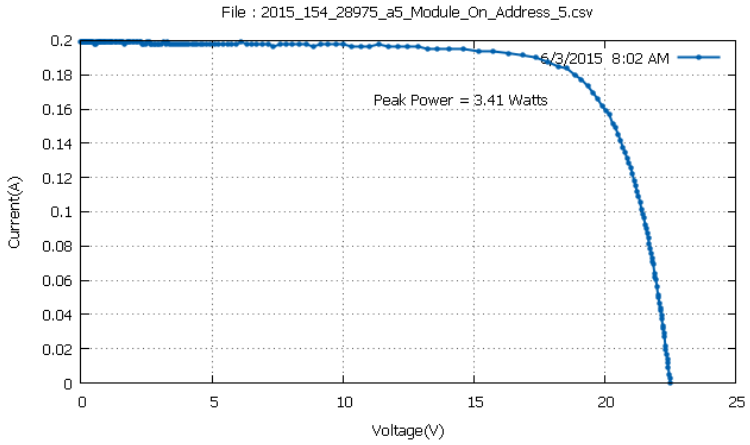
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:01	28,6	12,85
8:02	28,8	12,93
8:04	29,2	12,93
8:06	29,6	12,96
8:07	29,8	13
8:08	30	13,04

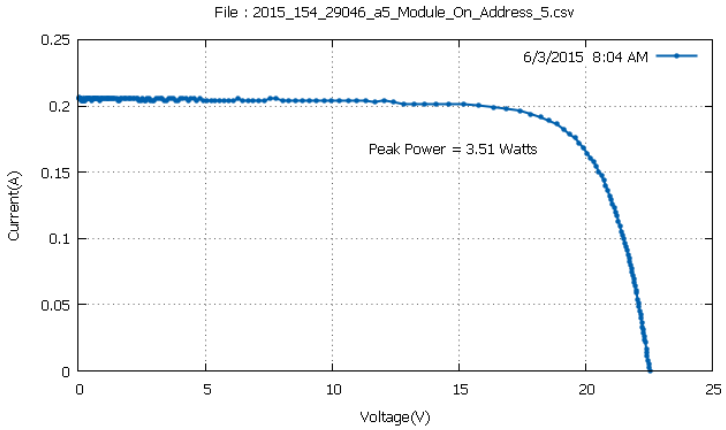
Mean Temperature: 29,33 ºC



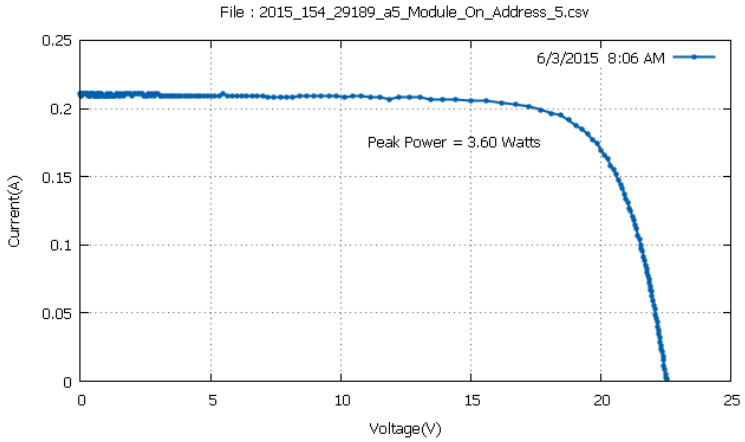
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.926405\ x\ 0.179799408}{350\ x\ 0{,}0756} \text{ x } 100 = 12{,}85\ \%$$



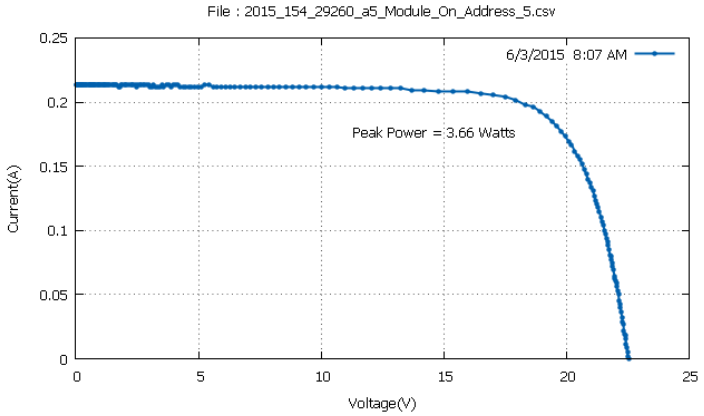
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.56303\ x\ 0.183652252}{348.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}93\ \%$$



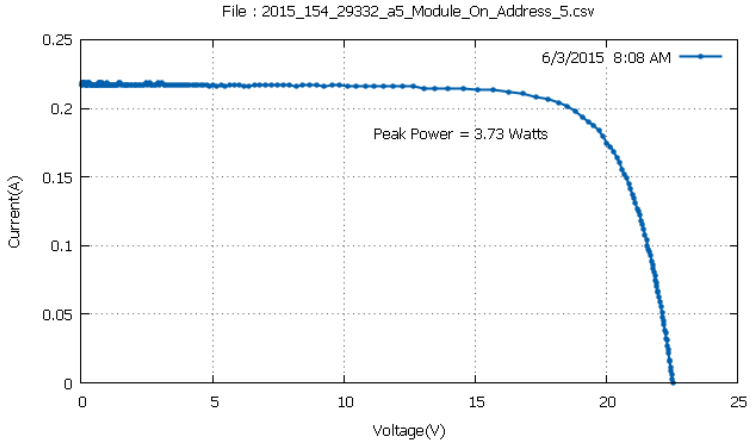
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8645535\ x\ 0.18622081}{358.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.195210785}{367.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6480751\ x\ 0.196495071}{372.2\ x\ 0{,}0756}\ \text{x}\ 100 = 13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5166416\ x\ 0.201632187}{378.2\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}04\ \%$$

Module 4

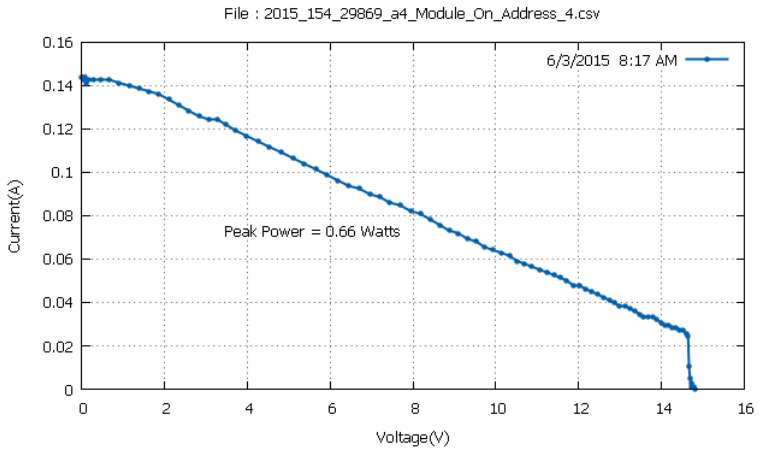
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

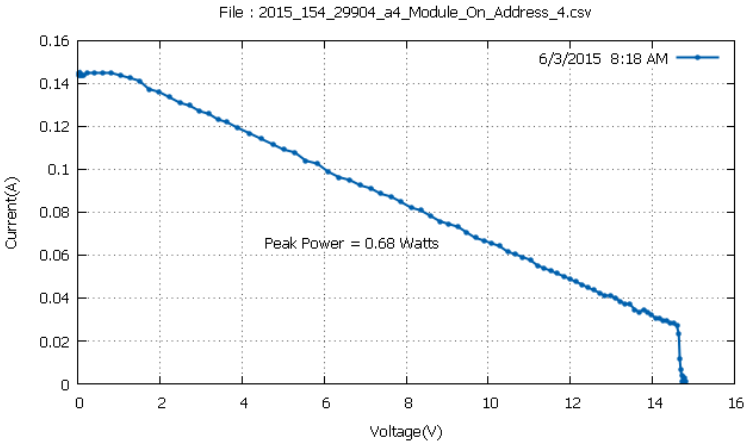
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:17	29,7	2,42
8:18	29,9	2,48
8:20	29,8	2,47
8:23	29,8	2,5
8:24	29,9	2,48
8:28	30,5	2,38

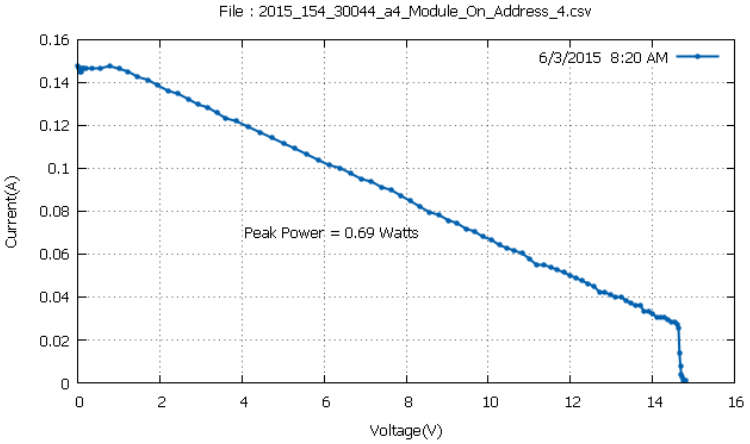
Mean Temperature: 29,6 ºC



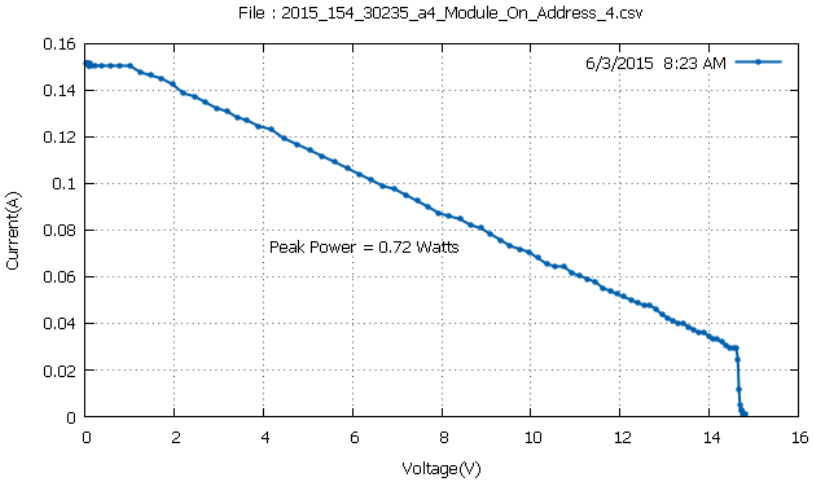
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.914274\ x\ 0.07448833}{406.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



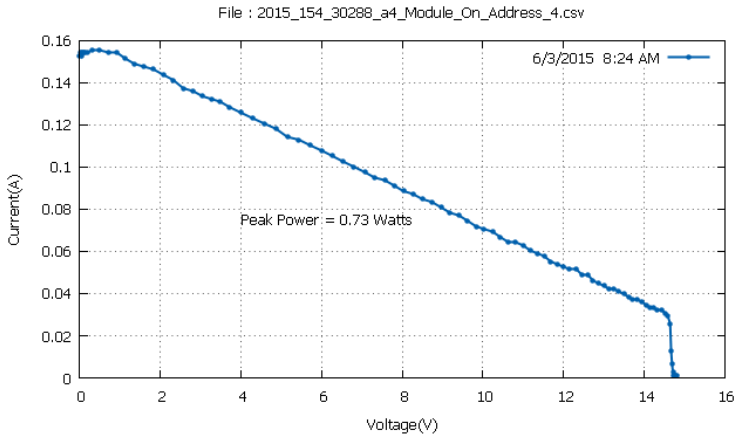
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.262186\ x\ 0.07320405}{408.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}48\ \%$$



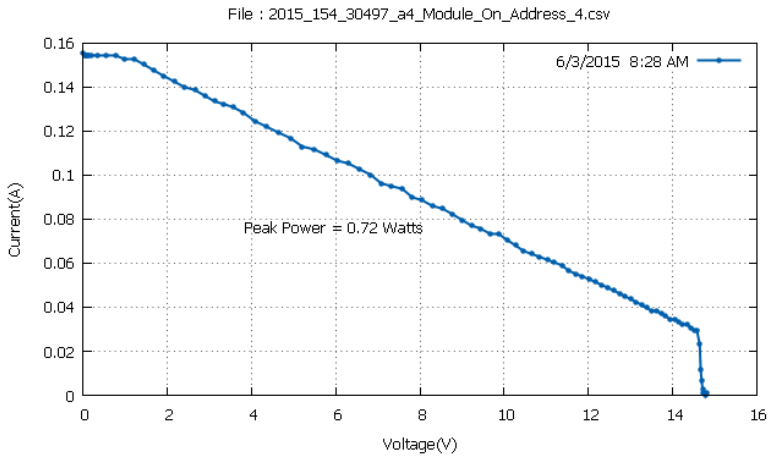
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.790572\ x\ 0.07834117}{414.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.867887\ x\ 0.08090974}{430.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.728722\ x\ 0.0834782943}{437.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.535438\ x\ 0.08476258}{449.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}38\ \%$$

Module 8

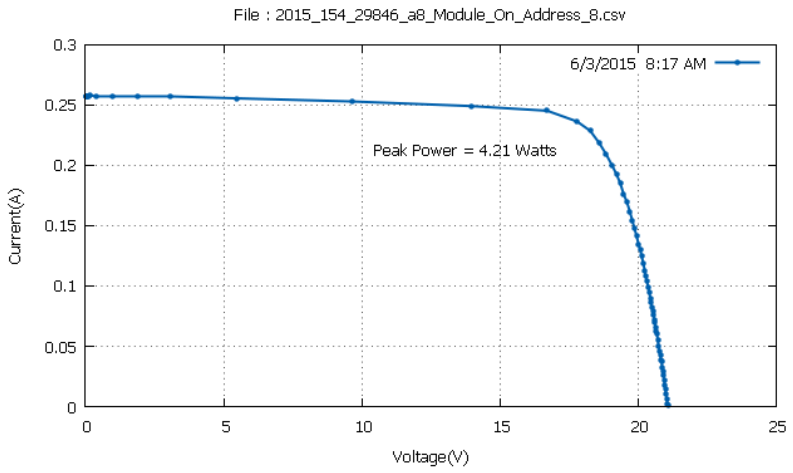
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

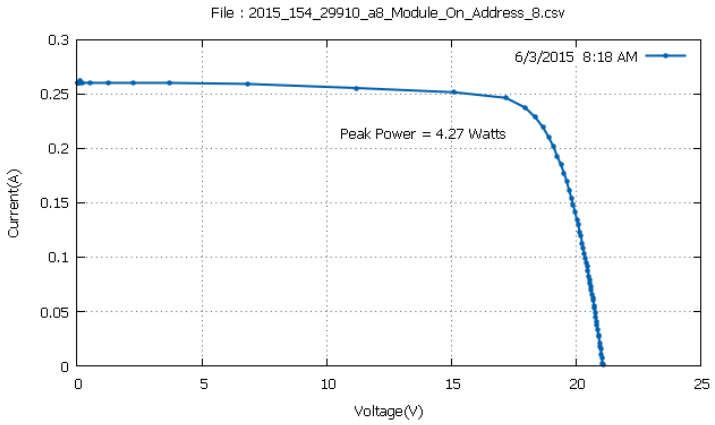
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:17	28,2	13,53
8:18	28,5	13,6
8:19	28,7	13,57
8:23	28,8	13,67
8:27	28,1	13,8
8:28	28,4	13,73

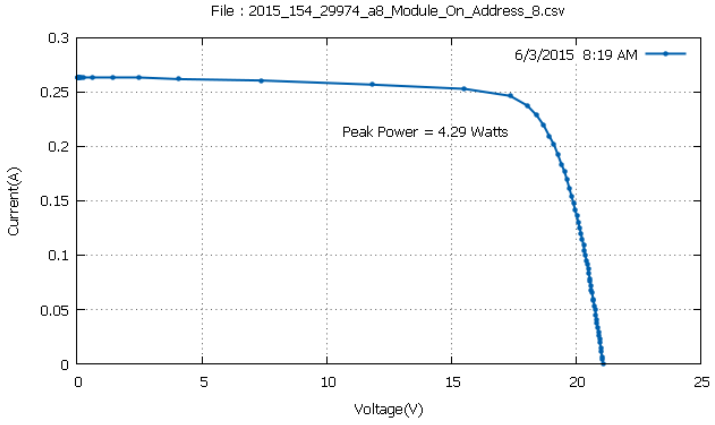
Mean Temperature: 28,45 ºC



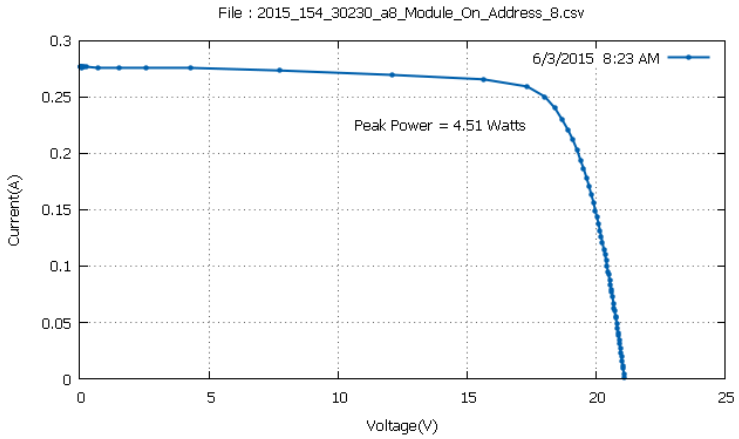
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.2363078}{404.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}53\ \%$$



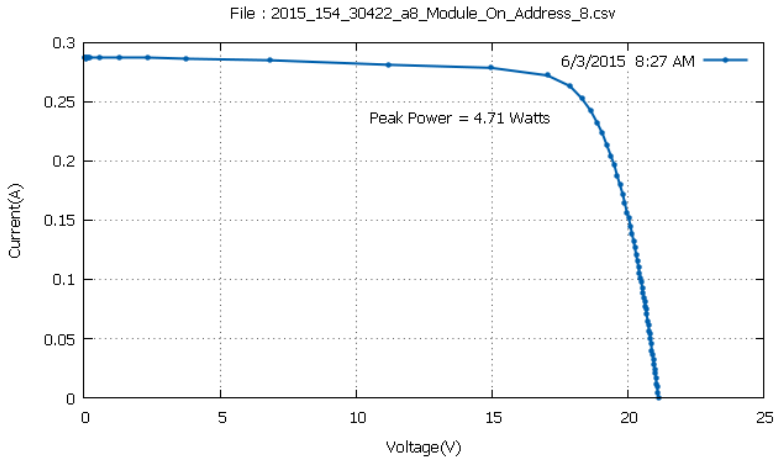
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.237592071}{408.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}6\ \%$$



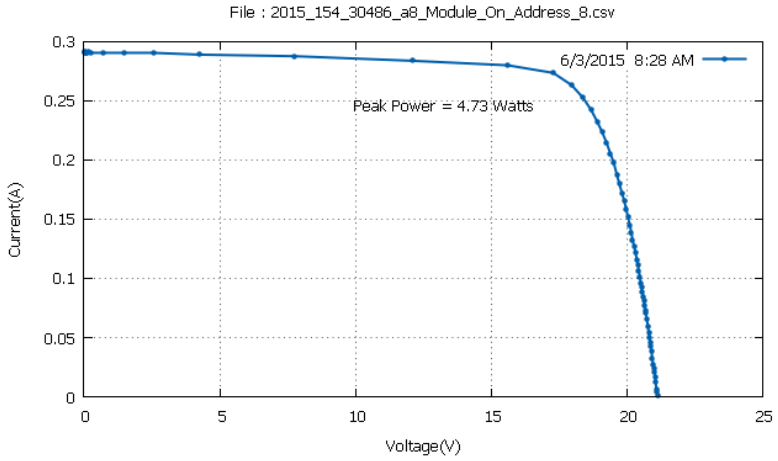
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0450287\ x\ 0.237592071}{411.5\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0218334\ x\ 0.2504349}{429.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8749371\ x\ 0.2632777}{444.2\ x\ 0{,}0768}\ \text{x } 100 = 13{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2873535\ x\ 0.273551971}{448.5\ x\ 0{,}0768}\ \text{x } 100 = 13{,}73\ \%$$

Module 3

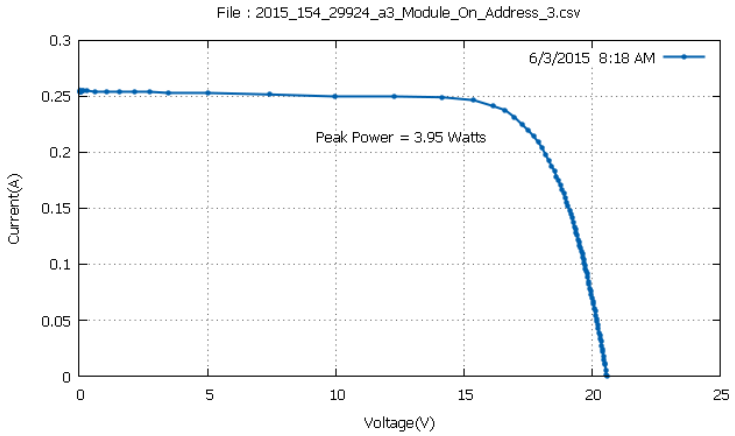
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

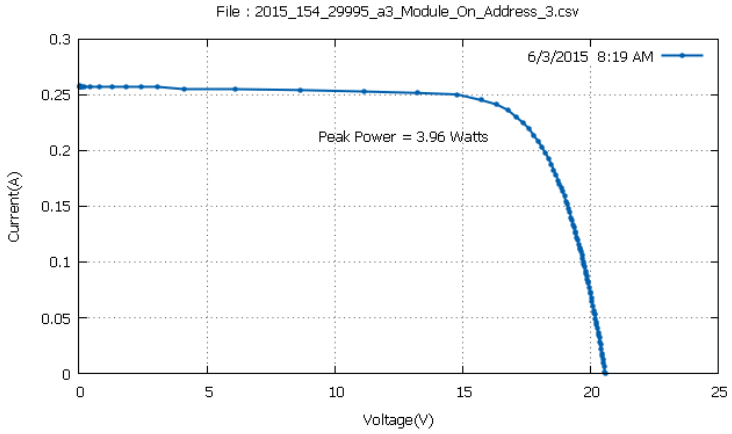
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:18	29,8	13,57
8:19	29,9	13,5
8:22	30,1	13,56
8:23	30,7	13,6
8:31	32,1	13,7
8:34	30,4	13,7

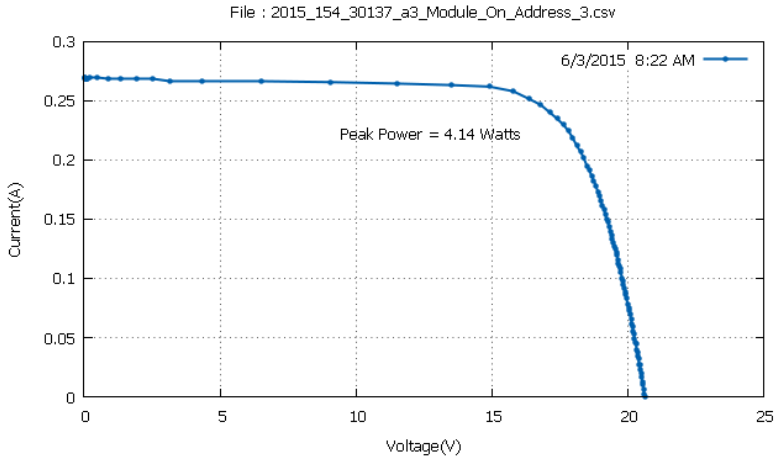
Mean Temperature: 30,5 ºC



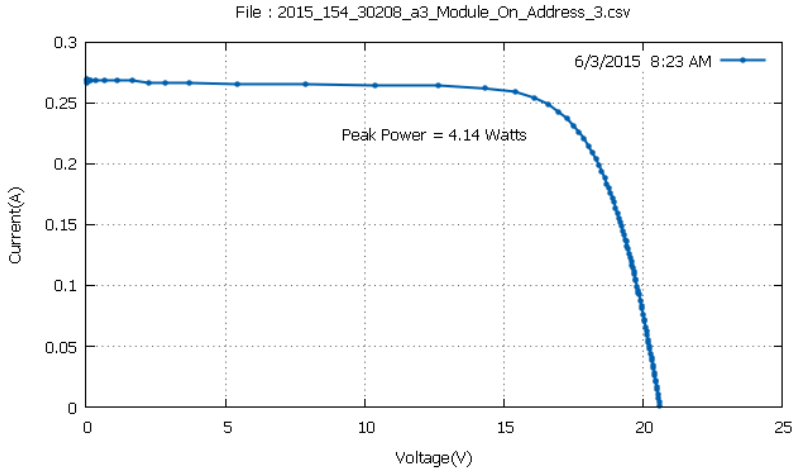
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6224556\ x\ 0.237592071}{410.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}57\ \%$$



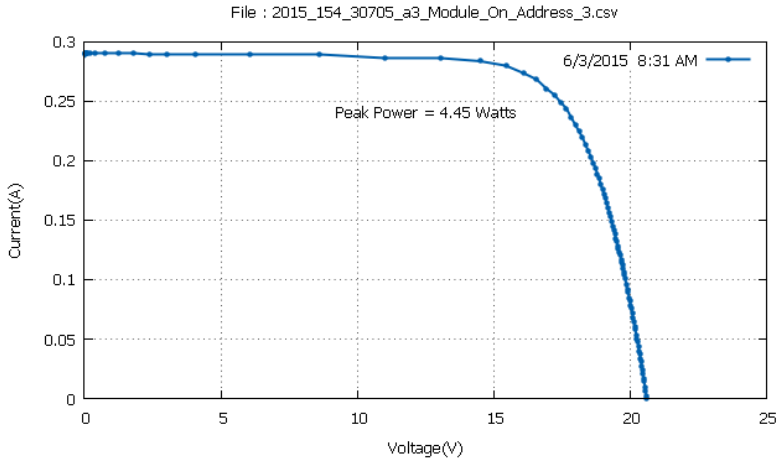
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7770824\ x\ 0.2363078}{413.7\ x\ 0{,}0709} \text{ x } 100 = 13{,}5\ \%$$



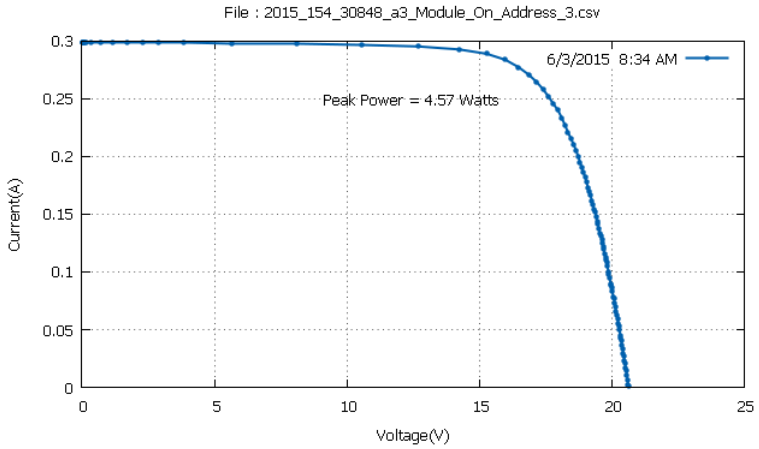
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8002758\ x\ 0.246582046}{430.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59926\ x\ 0.2491506}{429.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.576067\ x\ 0.268414825}{458\ x\ 0{,}0709} \text{ x } 100 = 13{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.48329\ x\ 0.277404815}{470.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}7\ \%$$

Module 5

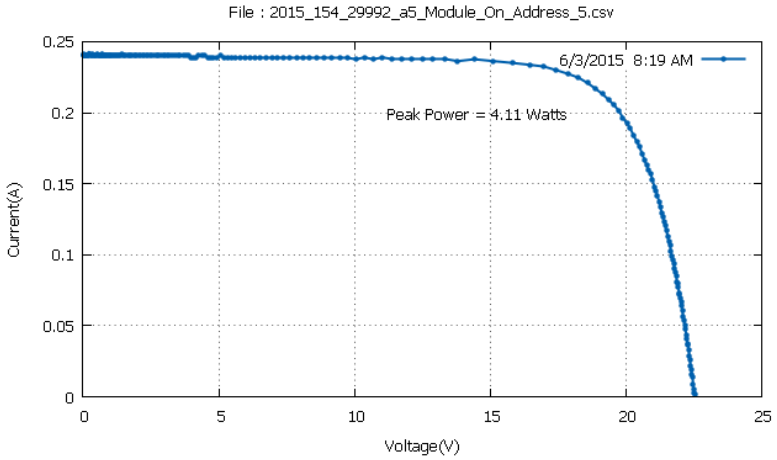
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

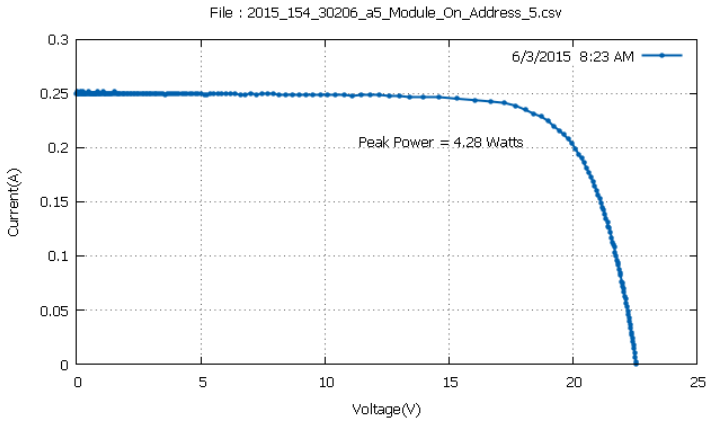
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:19	31,2	13,15
8:23	31,6	13,17
8:24	31,6	13,23
8:27	32	13,18
8:28	32,2	13,24
8:29	32,3	13,18

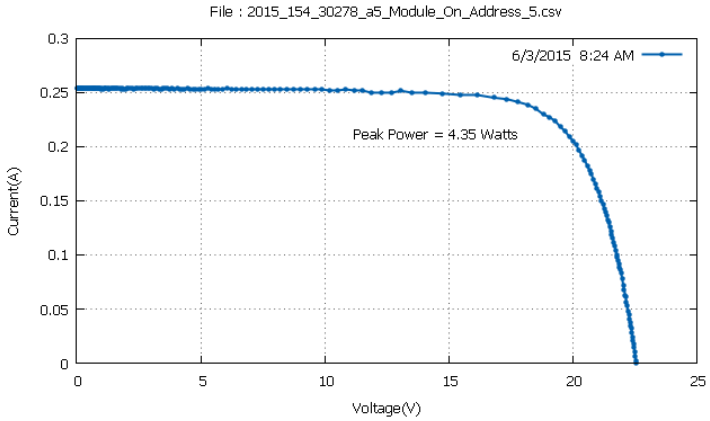
Mean Temperature: 31,81 ºC



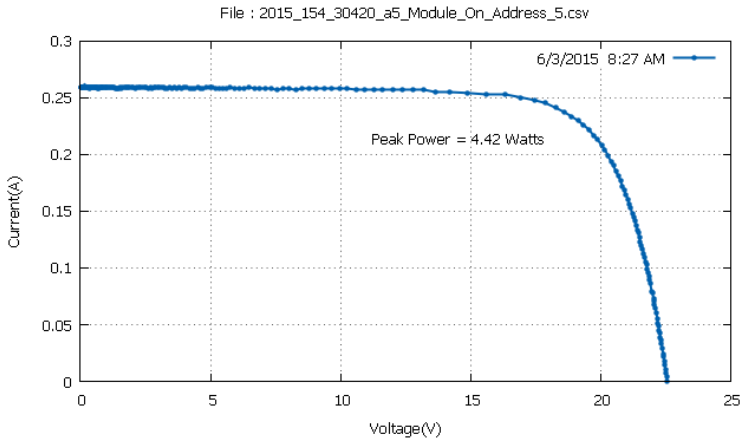
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5862236\ x\ 0.220896423}{413.2\ x\ 0{,}0756} \text{ x } 100 = 13{,}15\ \%$$



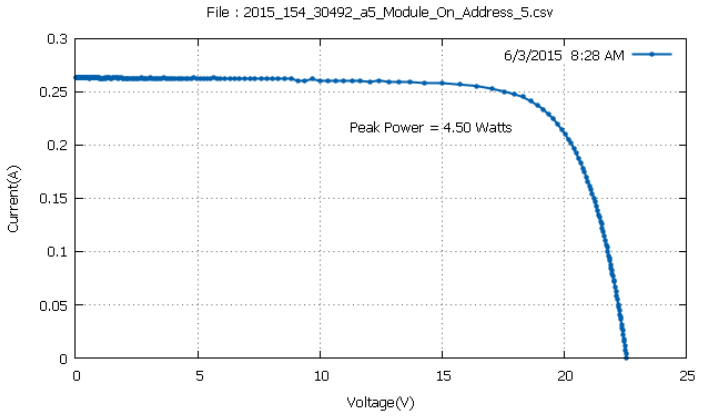
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7408524\ x\ 0.228602111}{429.7\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}17\ \%$$



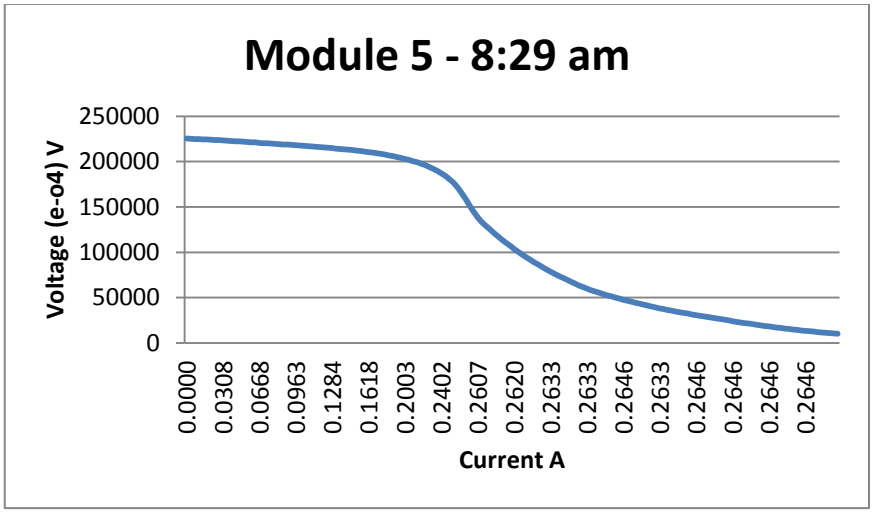
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5166416\ x\ 0.235023513}{434.9\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5862236\ x\ 0.237592071}{443.5\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6248817\ x\ 0.241444916}{449.4\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7099266\ x\ 0.240160644}{451.6\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}18\ \%$$

Module 4

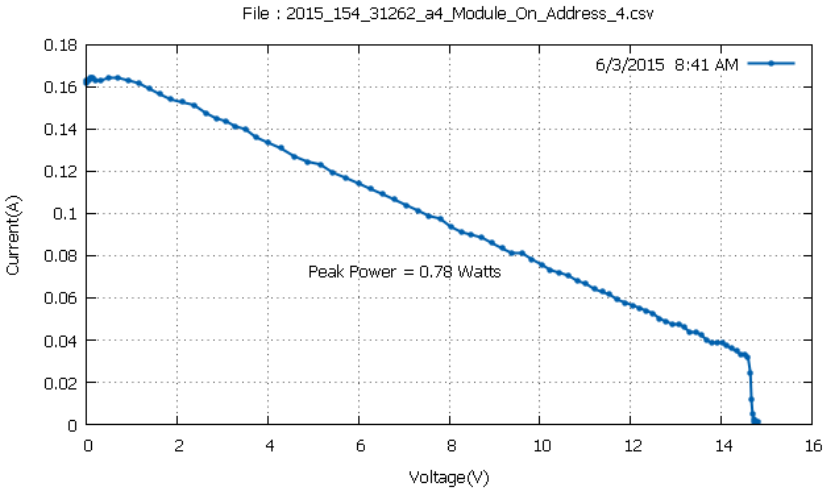
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

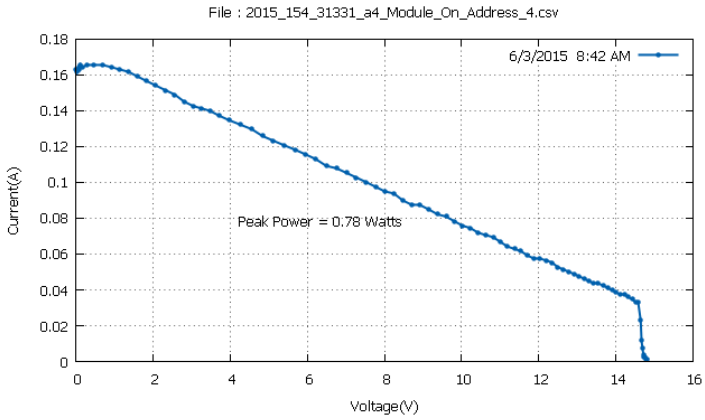
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:41	31,9	2,34
8:42	32,2	2,32
8:44	32,4	2,3
8:45	32,5	2,3
8:46	32,7	2,28
8:50	33,3	2,22

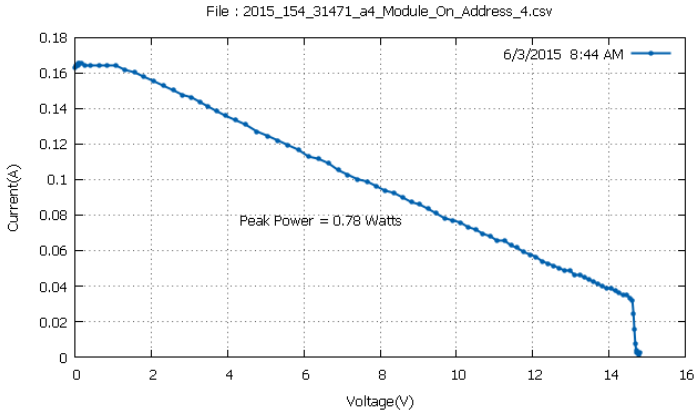
Mean Temperature: 32,5 ºC



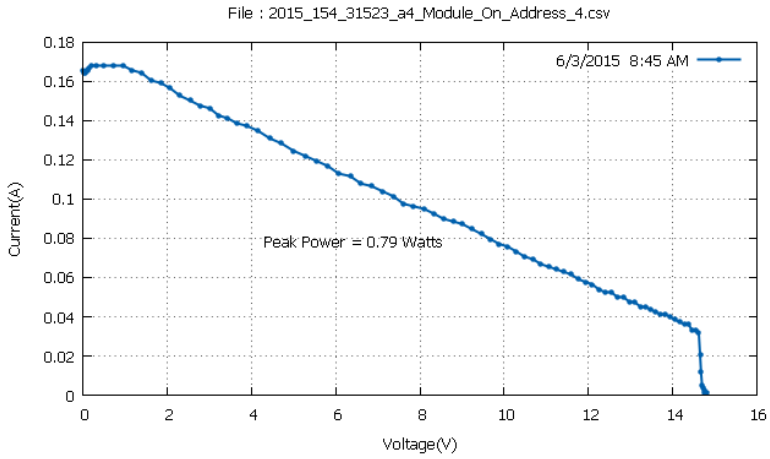
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.610098\ x\ 0.08090974}{495.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$



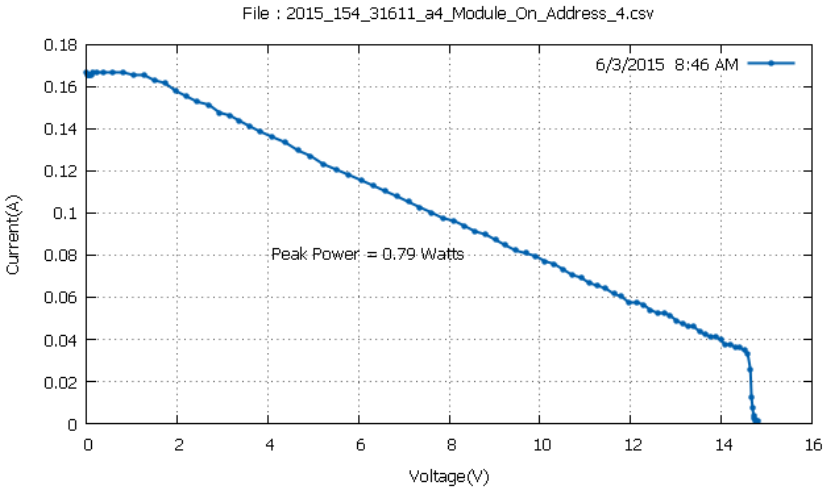
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.922006\ x\ 0.08733114}{499.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}32\ \%$$



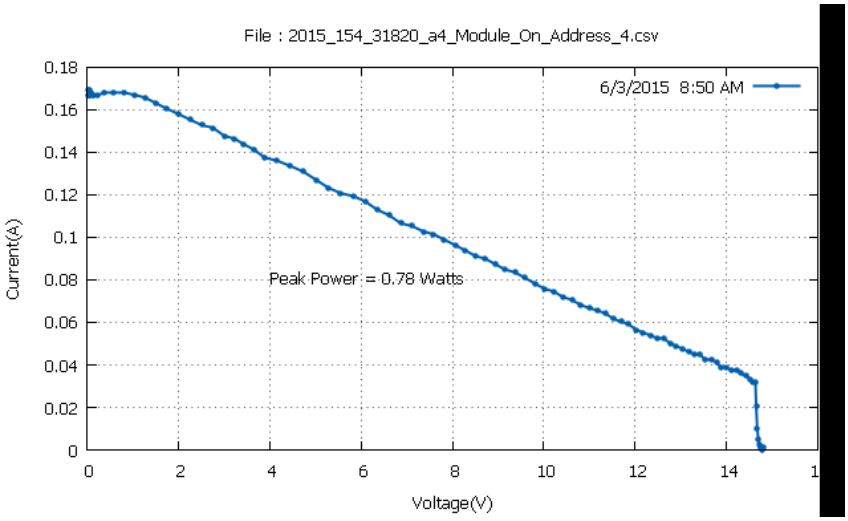
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.030245\ x\ 0.08604686}{506.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.99932\ x\ 0.08733114}{511.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.192604\ x\ 0.08604686}{515.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.3395\ x\ 0.0834782943}{523.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$

Module 8

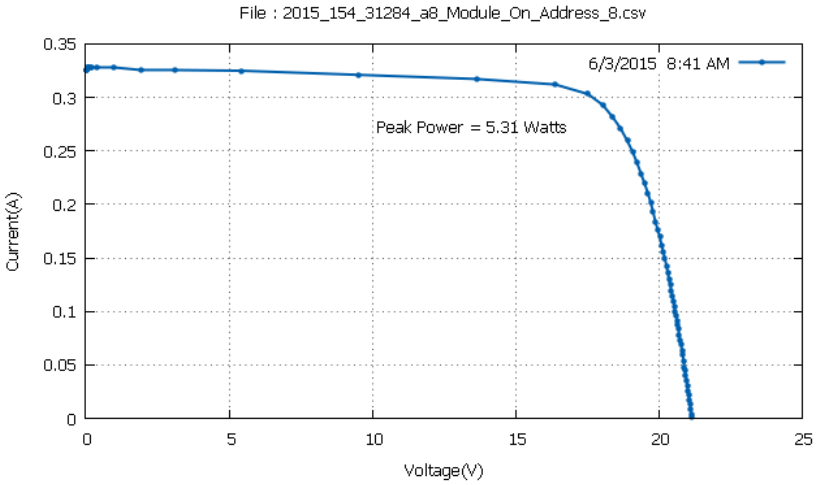
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

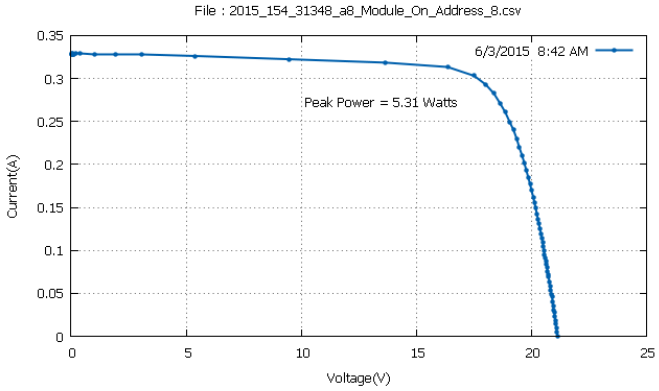
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:41	30,2	14
8:42	30,3	13,84
8:44	31,5	13,86
8:45	31,4	13,91
8:46	31,5	13,86
8:49	32,9	13,91

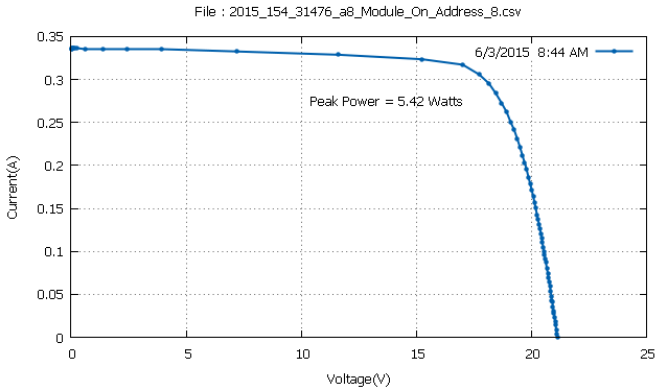
Mean Temperature: 31,3 ºC



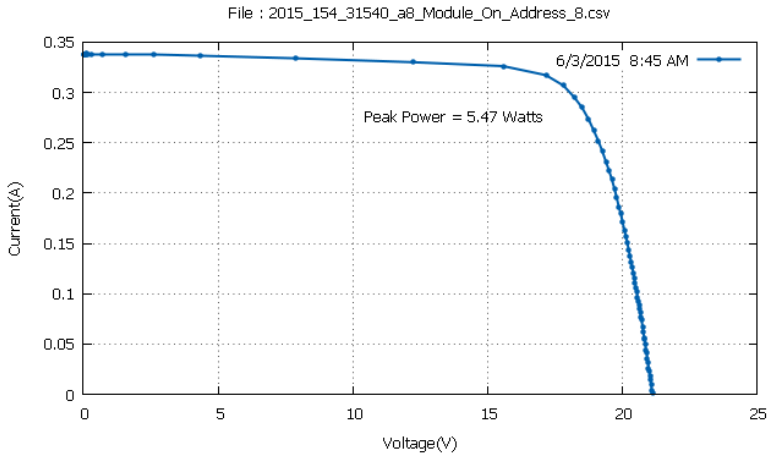
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5270252\ x\ 0.303090423}{497.4\ x\ 0{,}0768} \text{ x } 100 = 14\ \%$$



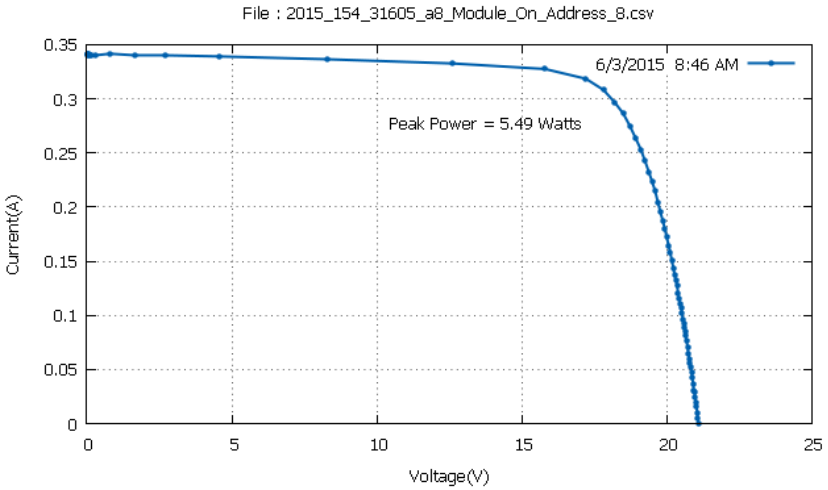
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5115623\ x\ 0.303090423}{499.3\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}84\ \%$$



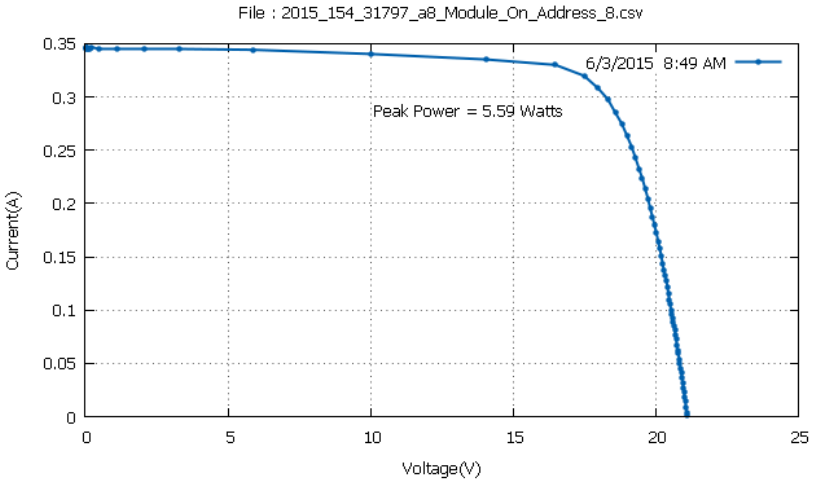
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7357731\ x\ 0.305659}{509\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8208179\ x\ 0.306943268}{511.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8130875\ x\ 0.308227569}{515.7\ x\ 0{,}0768}\ \text{x } 100 = 13{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.488369\ x\ 0.3197861}{523.1\ x\ 0{,}0768}\ \text{x } 100 = 13{,}91\ \%$$

Module 3

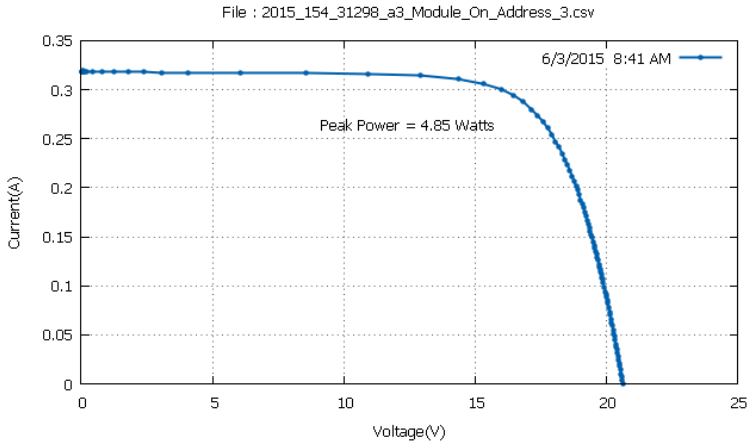
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

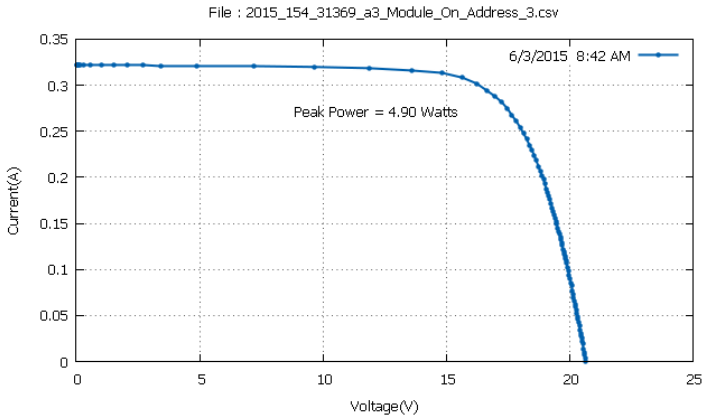
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:41	32	13,74
8:42	32	13,74
8:45	32,7	13,8
8:46	32,8	13,75
8:51	33,8	13,8
8:52	34,1	13,84

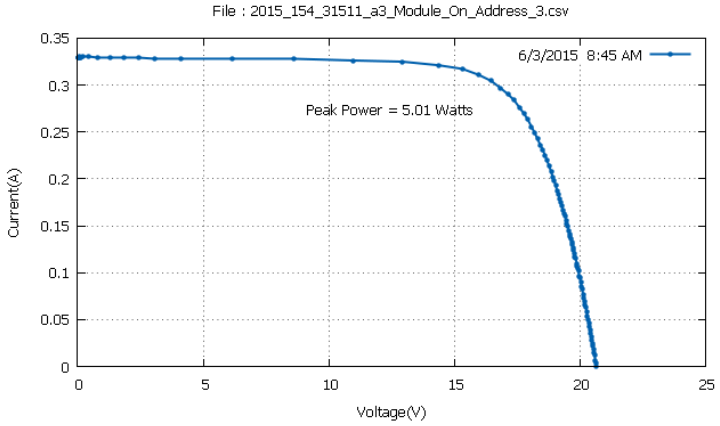
Mean Temperature: 32,73 ºC



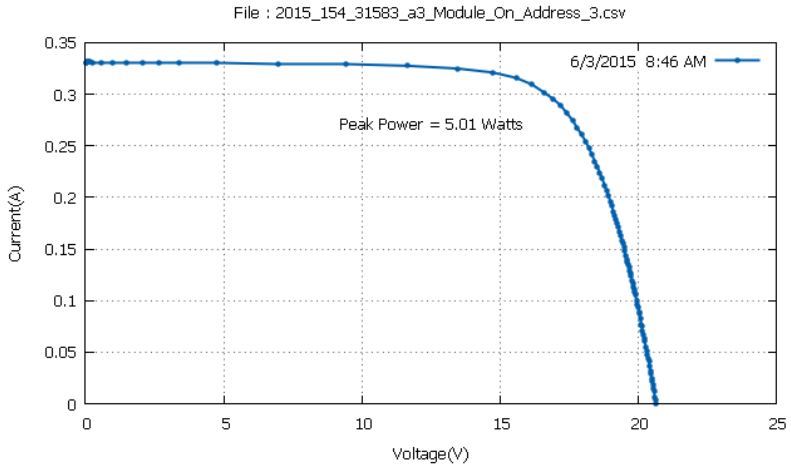
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.48329\ x\ 0.294100463}{497.8\ x\ 0{,}0709} \text{ x } 100 = 13{,}74\ \%$$



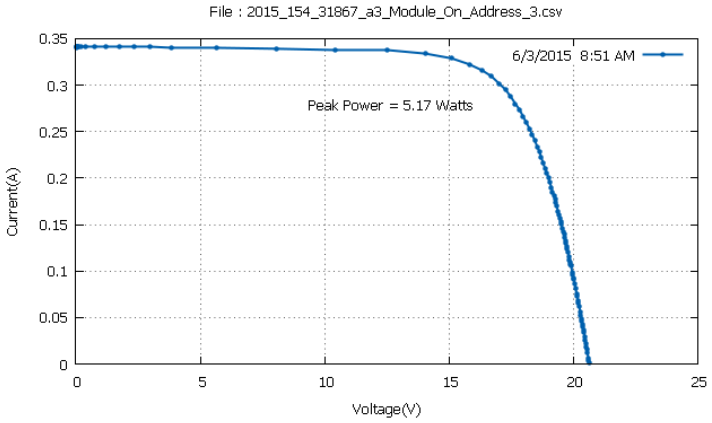
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2358856\ x\ 0.301806152}{502.8\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}74\ \%$$



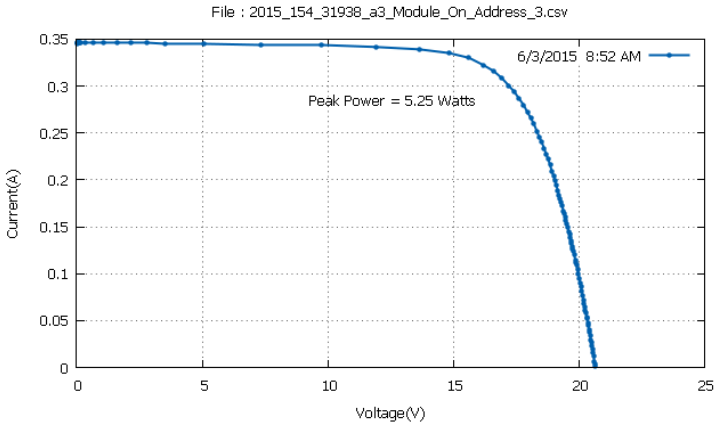
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4678268\ x\ 0.304374725}{511.9\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59153\ x\ 0.301806152}{513.6\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7075\ x\ 0.30951184}{528.1\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6069927\ x\ 0.315933257}{535\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}84\ \%$$

Module 5

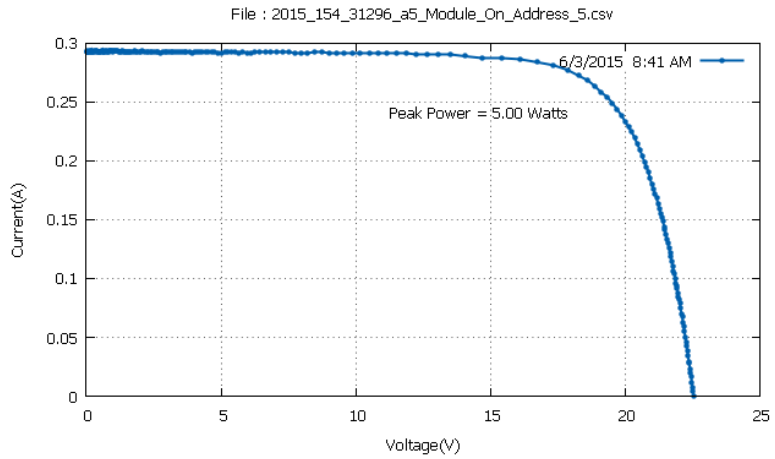
Date: 3/6/2015 - Morning Measurement

Temperature Ambient: 25 ºC

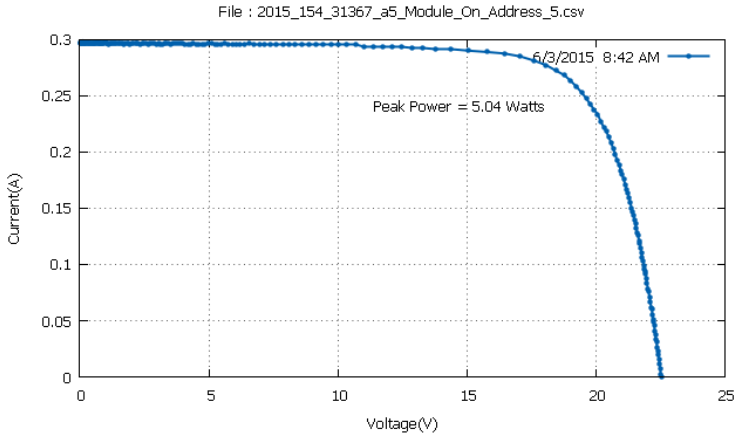
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:41	33,9	13,3
8:42	34	13,26
8:45	34,8	13,25
8:46	34,8	13,23
8:47	35,2	13,22
8:49	35,7	13,25

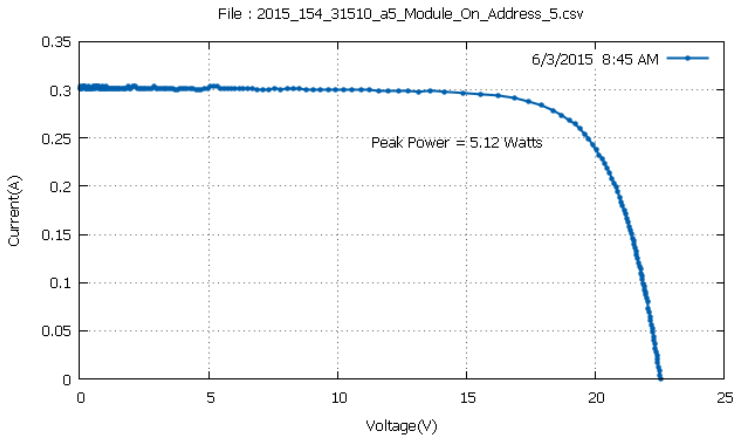
Mean Temperature: 34,73 ºC



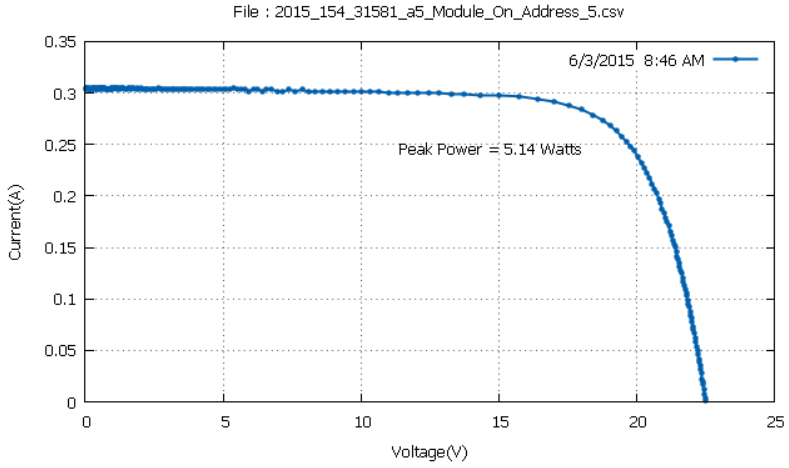
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.61715\ x\ 0.268414825}{497.4\ x\ 0{,}0756} \text{ x } 100 = 13{,}3\ \%$$



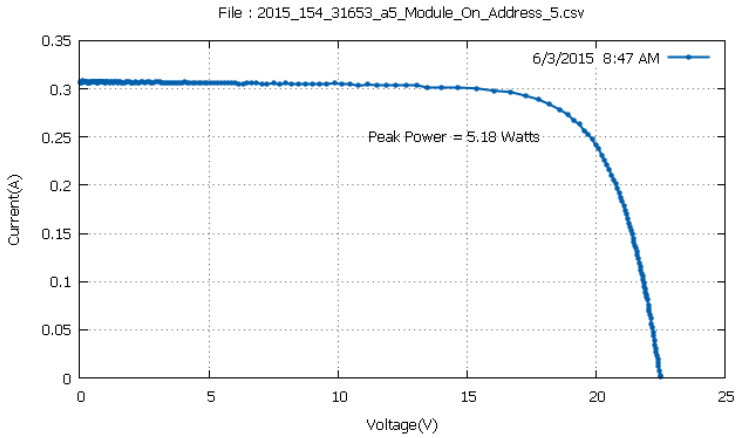
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7795086\ x\ 0.268414825}{502.6\ x\ 0{,}0756} \text{ x } 100 = 13{,}26\ \%$$



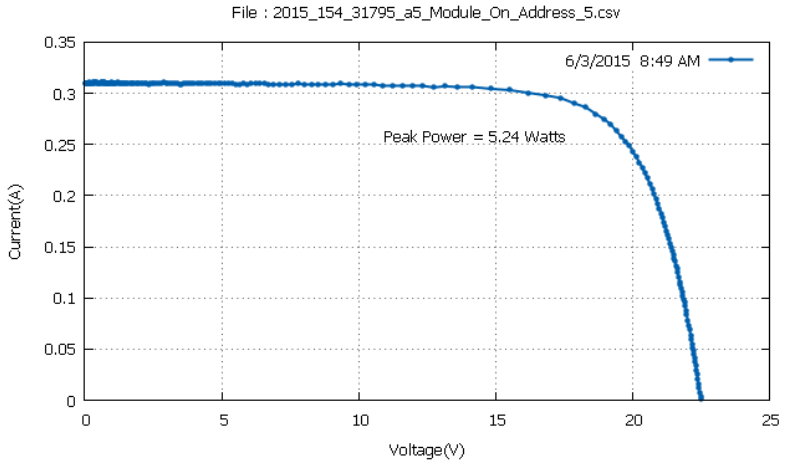
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7099266\ x\ 0.273551971}{511\ x\ 0{,}0756} \text{ x } 100 = 13{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7717762\ x\ 0.273551971}{513.6\ x\ 0{,}0756} \text{ x } 100 = 13{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5784931\ x\ 0.2786891}{518.1\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.29243\ x\ 0.286394775}{522.9\ x\ 0{,}0756}\ \text{x}\ 100 = 13{,}25\ \%$$

Module 4

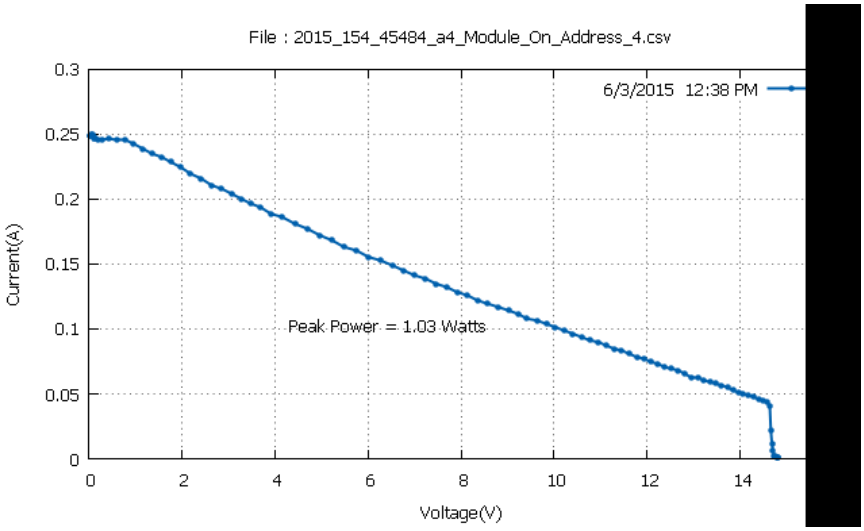
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

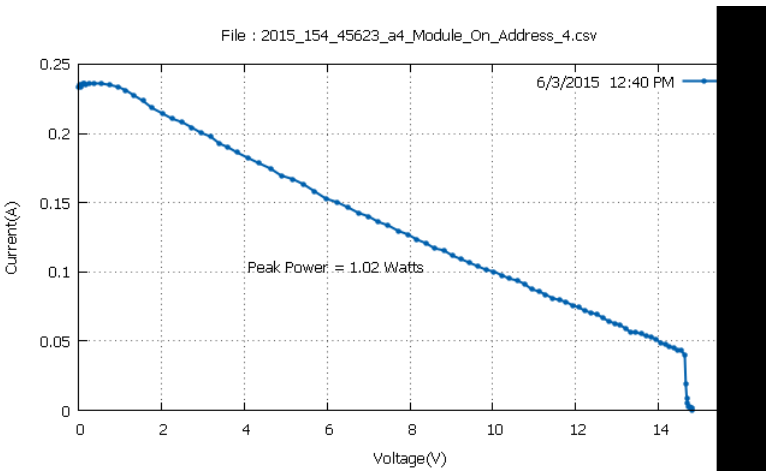
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:38	50,8	1,57
12:40	50,6	1,55
12:41	51	1,6
12:43	48,7	1,66
12:44	49	1,74
12:47	50,2	1,61

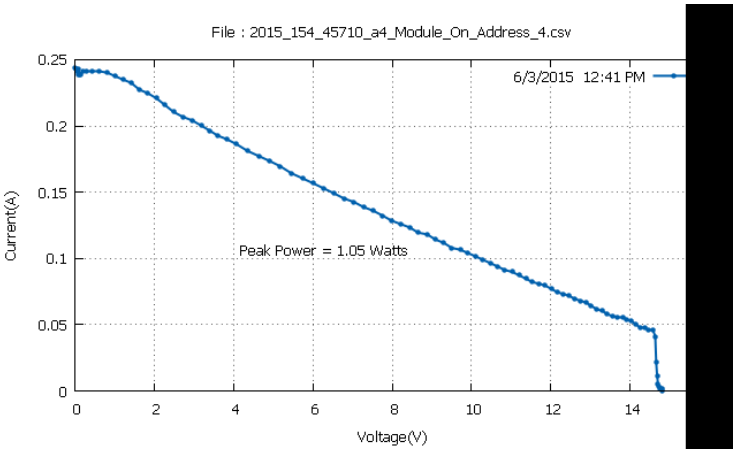
Mean Temperature: 50,05 ºC



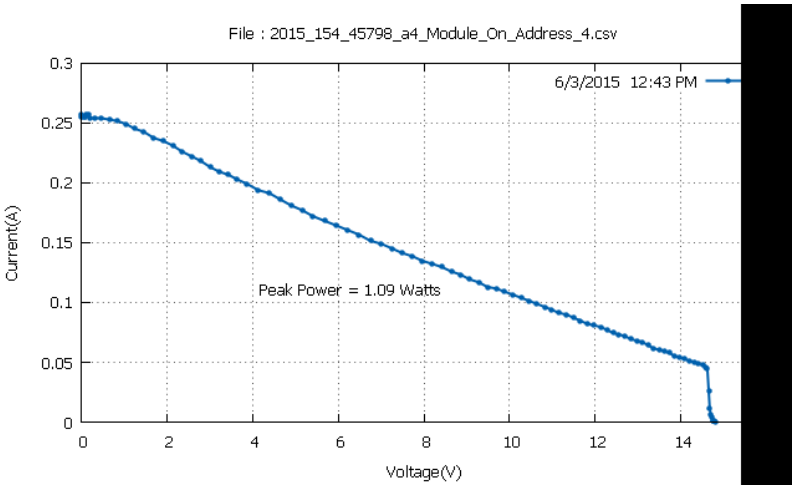
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.014783\ x\ 0.114301056}{976.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}57\ \%$$



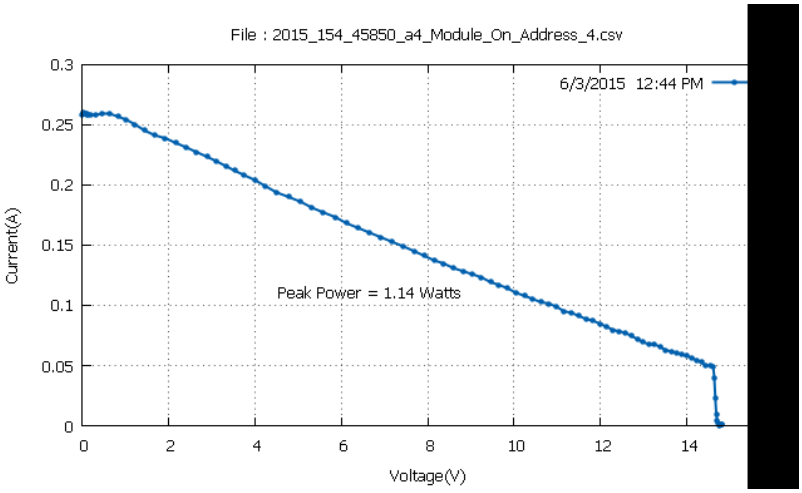
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.81376648\ x\ 0.115585335}{975.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}55\ \%$$



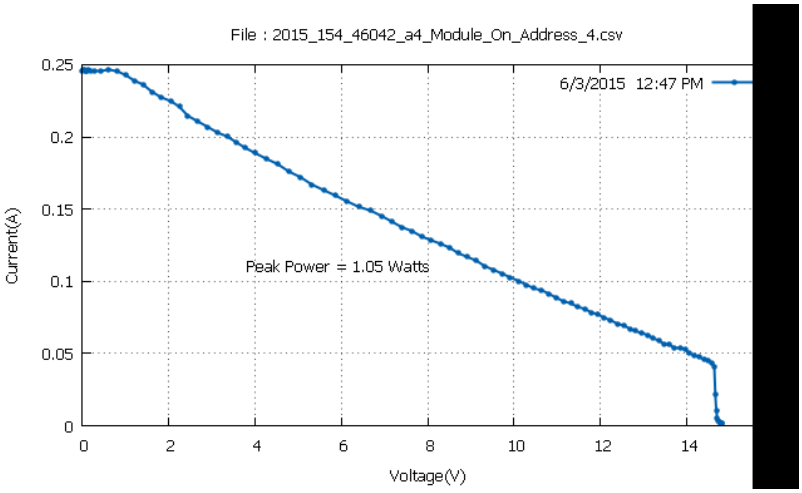
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.875618\ x\ 0.1181539}{977.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.852424\ x\ 0.123291023}{975.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.238993\ x\ 0.123291023}{974.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.504512\ x\ 0.123291023}{969.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}61\ \%$$

Module 8

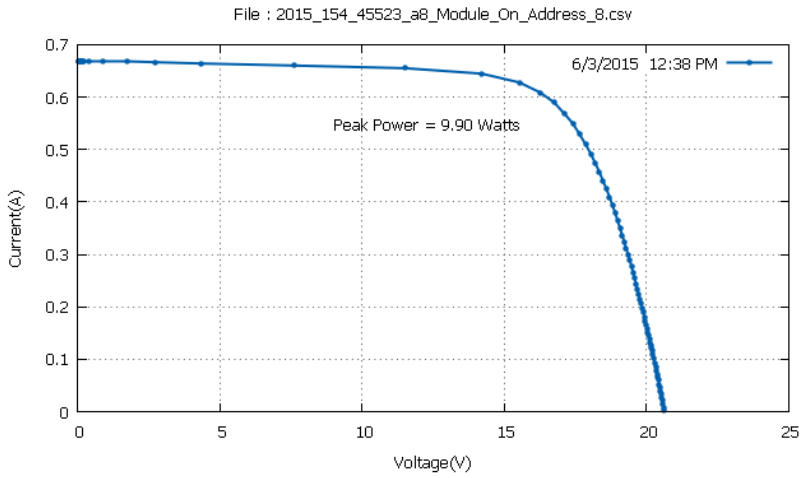
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

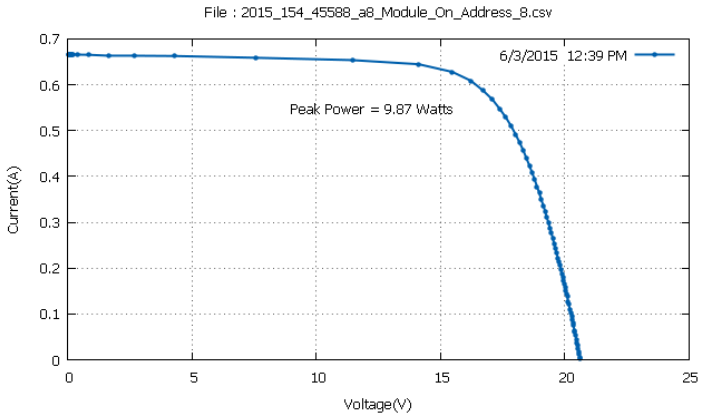
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:38	50,7	13,17
12:39	50,3	13,19
12:41	50,2	13,26
12:43	49,4	13,27
12:44	49,2	13,3
12:47	48,8	13,24

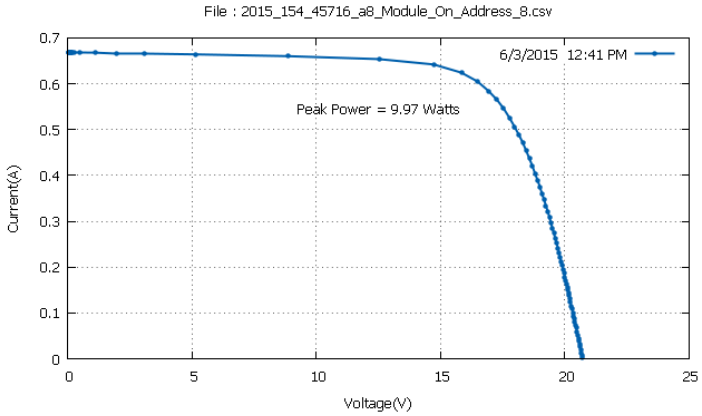
Mean Temperature: 49,76 ºC



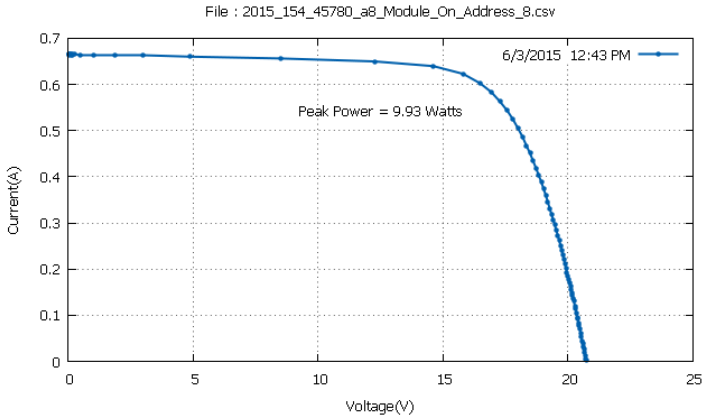
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.25908\ x\ 0.608749449}{978.5\ x\ 0{,}0768} \text{ x } 100 = 13{,}17\ \%$$



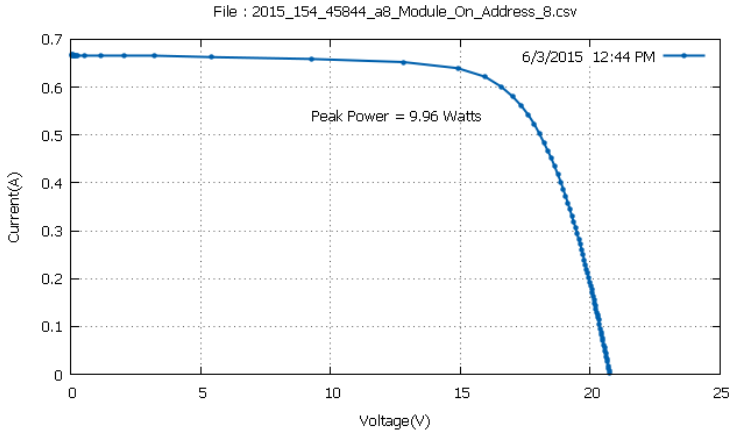
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.608749449}{974\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}19\ \%$$



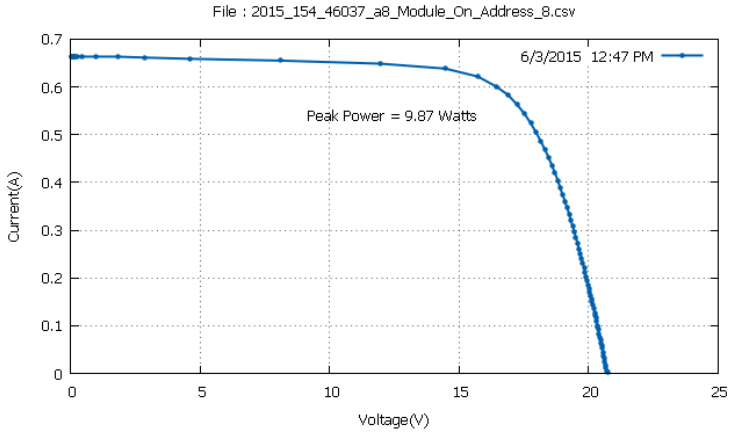
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.48329\ x\ 0.6048966}{978.3\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.48329\ x\ 0.602328}{973.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5683346\ x\ 0.601043761}{975.4\ x\ 0{,}0768}\ \text{x } 100 = 13{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.601043761}{970.6\ x\ 0{,}0768}\ \text{x } 100 = 13{,}24\ \%$$

Module 3

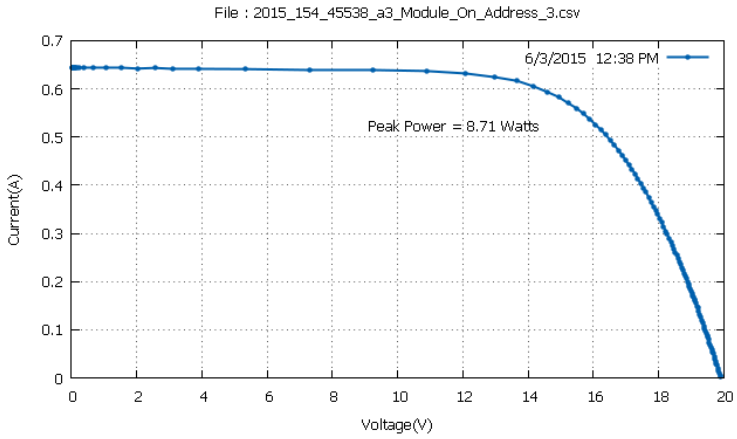
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

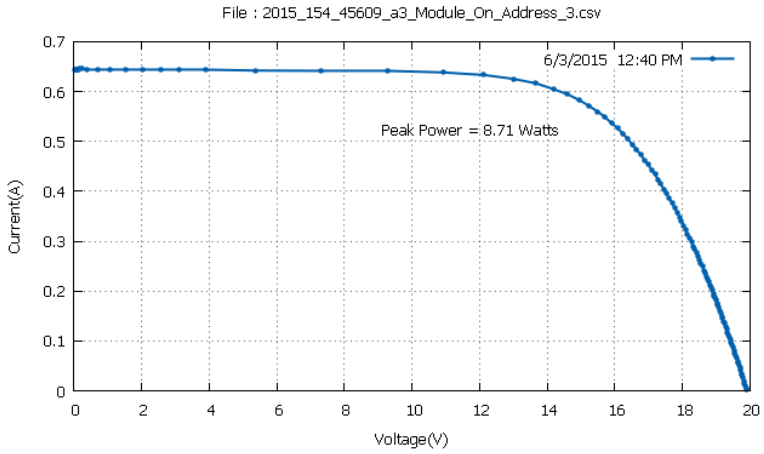
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:38	55	12,57
12:40	54,9	12,57
12:42	54,4	12,72
12:47	53,4	12,65
12:48	53,2	12,65
12:49	53,1	12,61

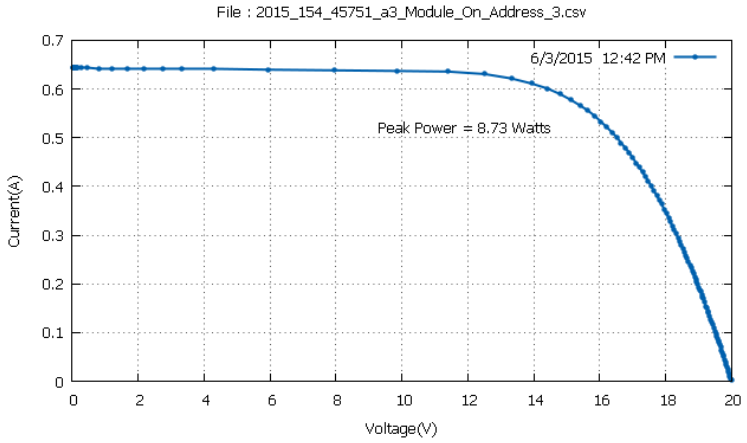
Mean Temperature: 54 ºC



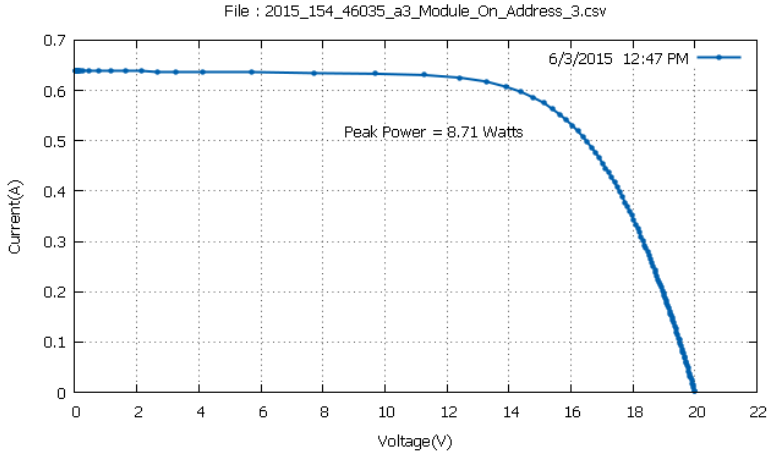
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9292841\ x\ 0.5830638}{976.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}57\ \%$$



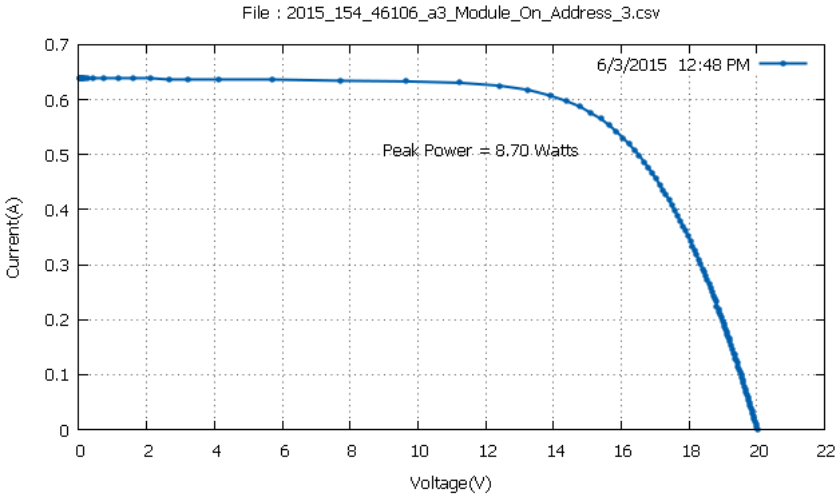
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9370155\ x\ 0.5830638}{977.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}57\ \%$$



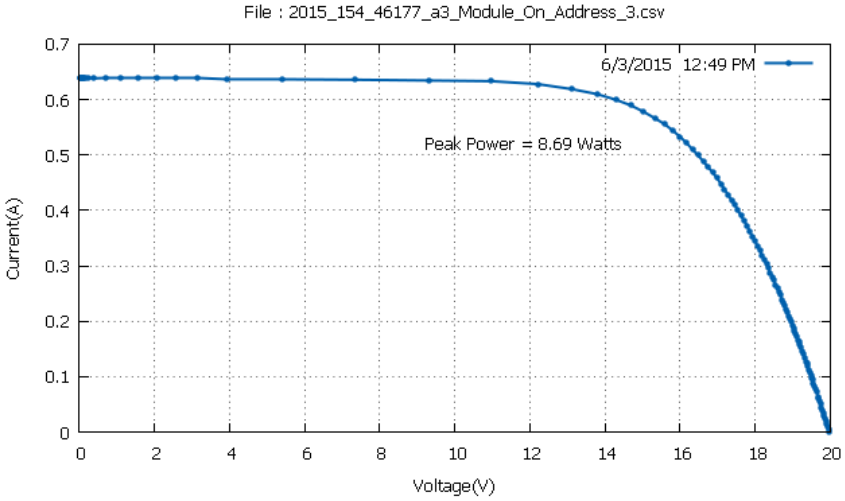
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1148367\ x\ 0.5779267}{975.9\ x\ 0{,}0703} \text{ x } 100 = 12{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1303\ x\ 0.5753581}{970.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.400898\ x\ 0.565083861}{969.9\ x\ 0{,}0709}\ \text{x } 100 = 12{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0297918\ x\ 0.5779267}{971.8\ x\ 0{,}0709}\ \text{x } 100 = 12{,}61\ \%$$

Module 5

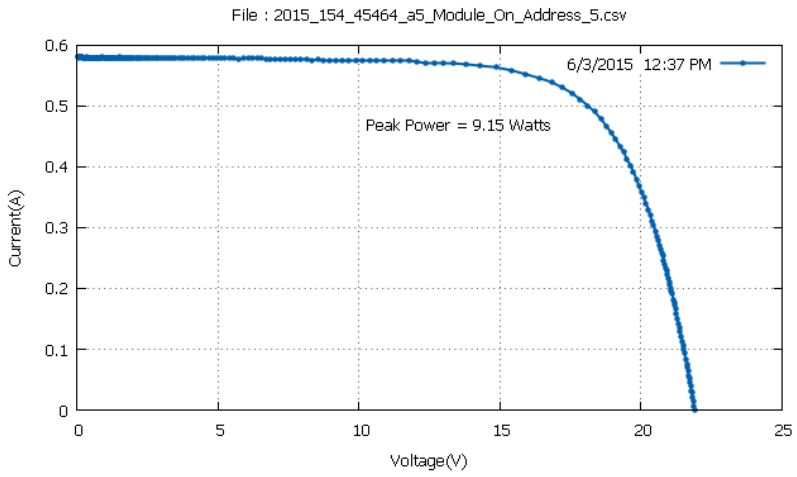
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

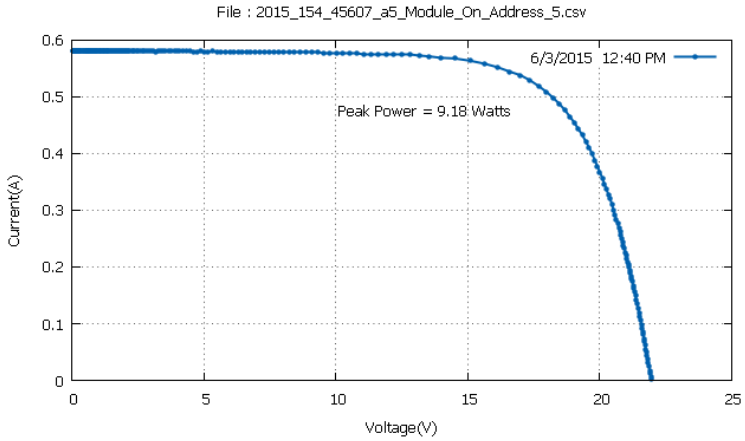
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:37	52	12,41
12:40	51,3	12,43
12:43	49,9	12,54
12:44	49,8	12,53
12:49	50	12,43
12:53	51	12,47

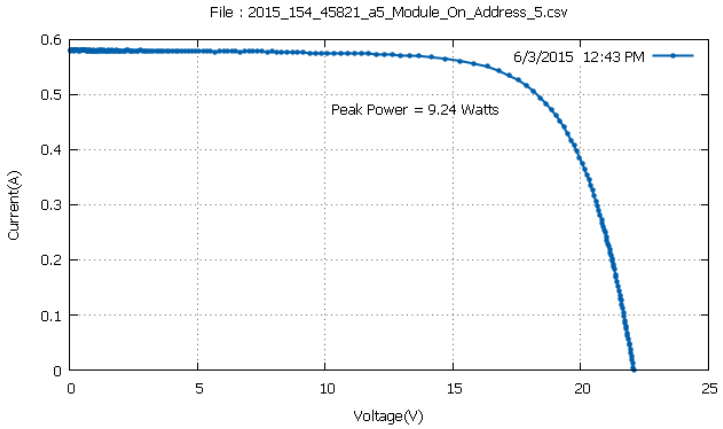
Mean Temperature: 50,66 ºC



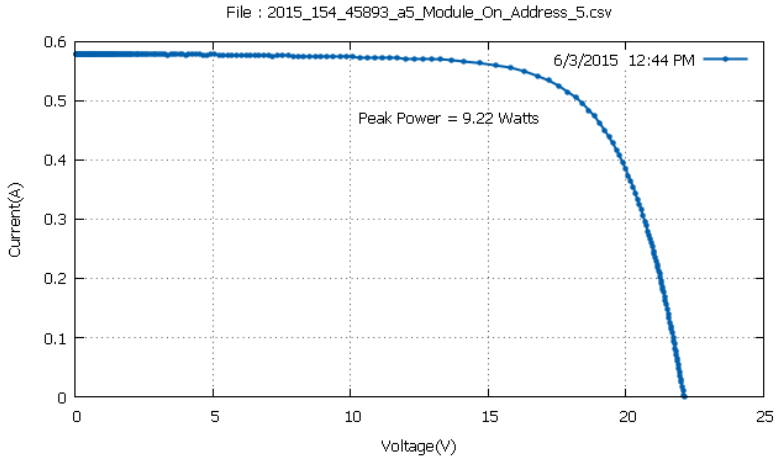
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5424881\ x\ 0.5214183}{974.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}41\ \%$$



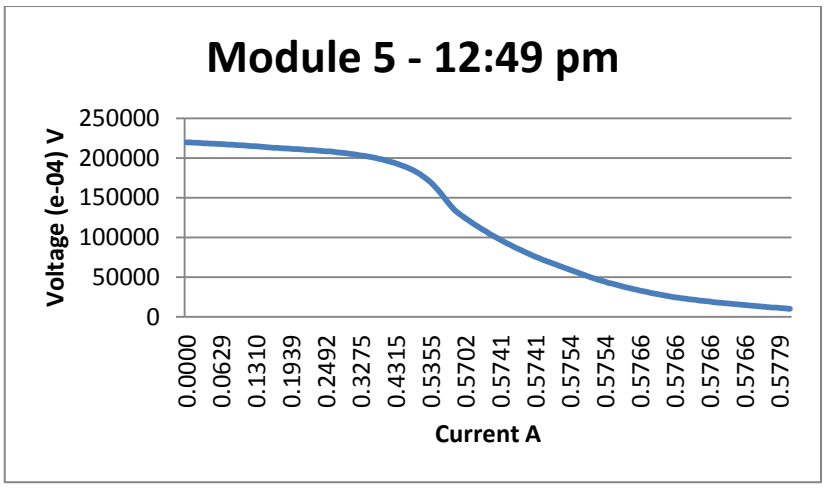
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3569355\ x\ 0.529123962}{976.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}43\ \%$$



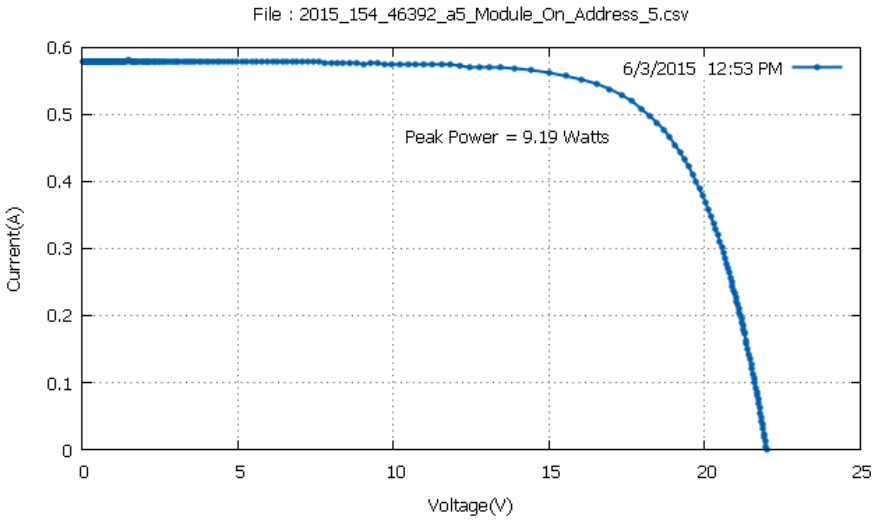
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.5265554}{974.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.557951\ x\ 0.5252711}{972.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6584587\ x\ 0.5175654}{971.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6661911\ x\ 0.520134032}{974.2\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}47\ \%$$

Module 4

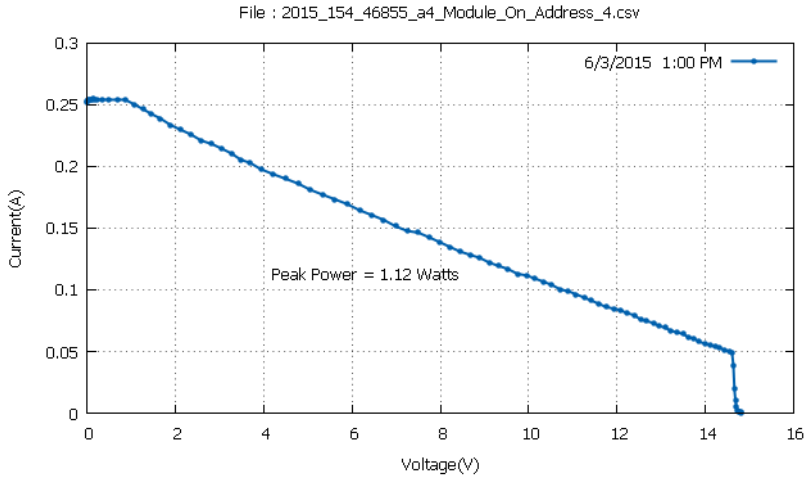
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

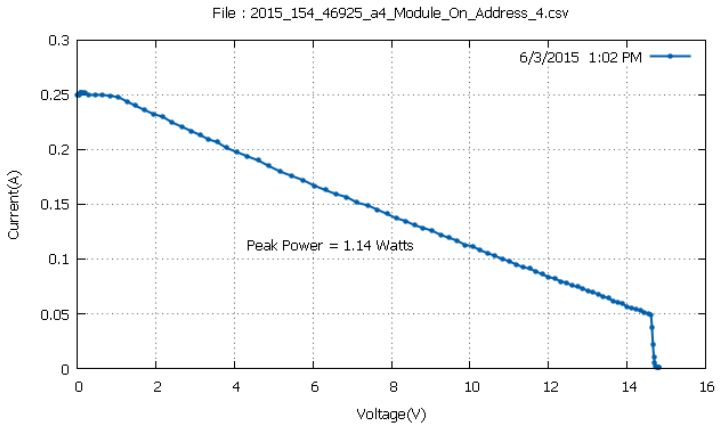
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:00	49,4	1,72
13:02	48,1	1,75
13:03	48,7	1,66
13:05	47,9	1,78
13:06	47,8	1,81
13:11	48,2	1,7

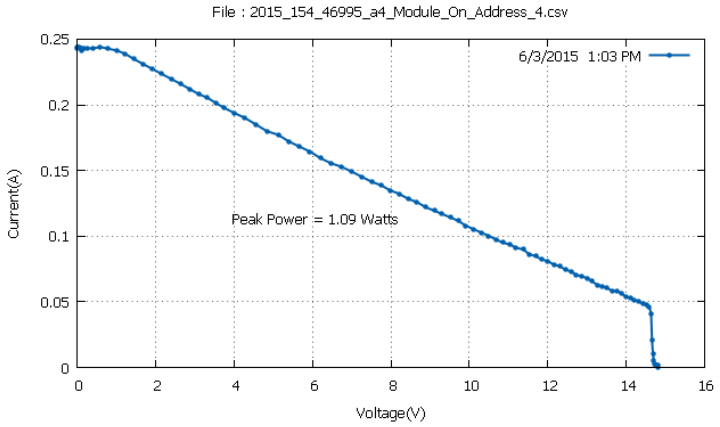
Mean Temperature: 48,35 ºC



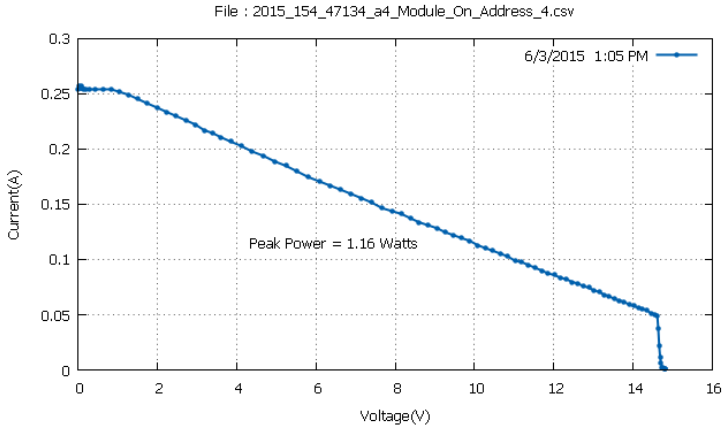
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.891081\ x\ 0.125859588}{968.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



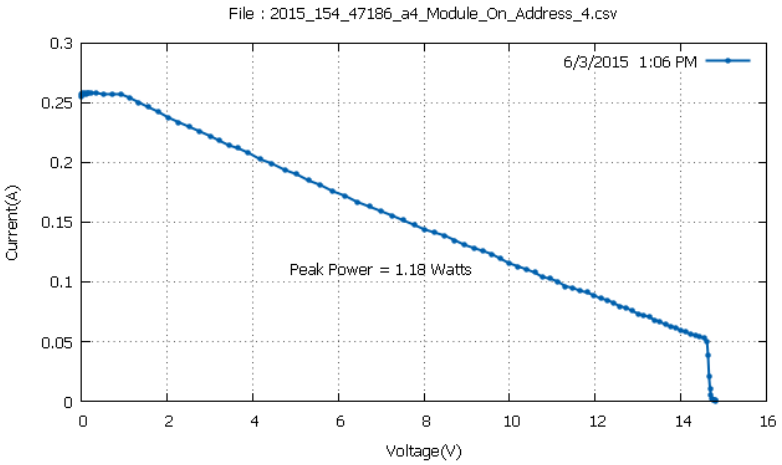
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.030245\ x\ 0.125859588}{968.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}75\ \%$$



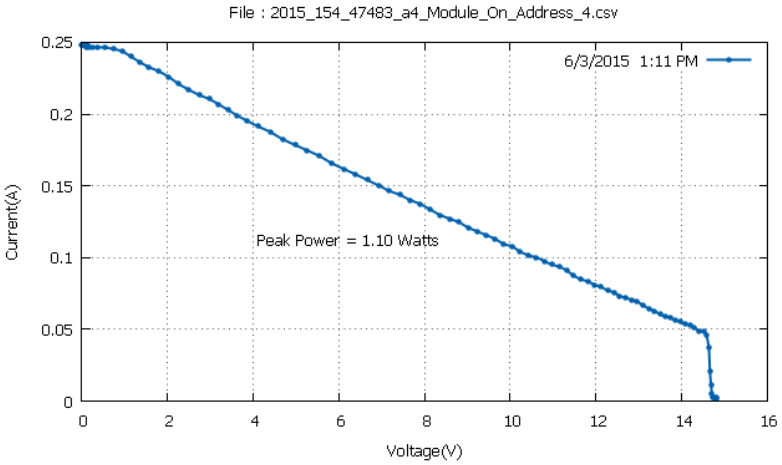
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.65914\ x\ 0.125859588}{974.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.045708\ x\ 0.128428146}{967.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.579173\ x\ 0.123291023}{969.7\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}81\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.300843\ x\ 0.1181539}{961.8\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}7\ \%$$

Module 8

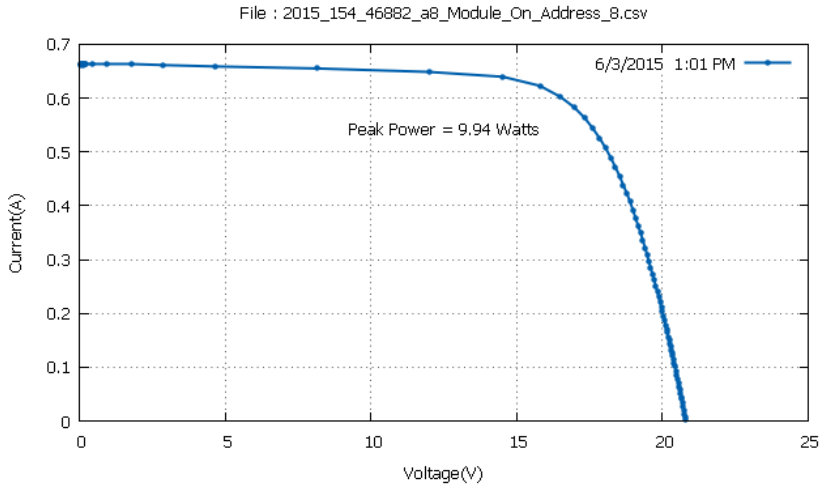
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

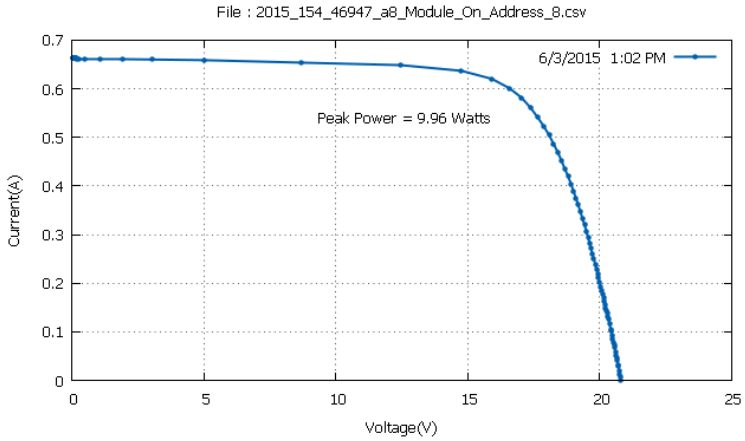
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:01	47,9	13,3
13:02	47,5	13,33
13:04	47,3	13,33
13:05	47,2	13,34
13:09	47,8	13,28
13:11	47,6	13,3

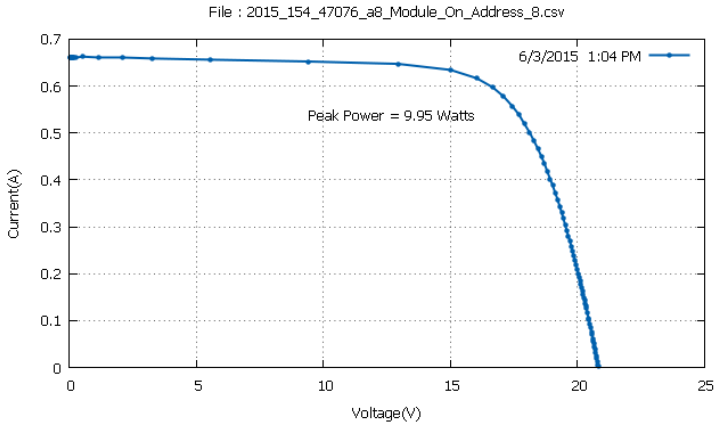
Mean Temperature: 47,55 ºC



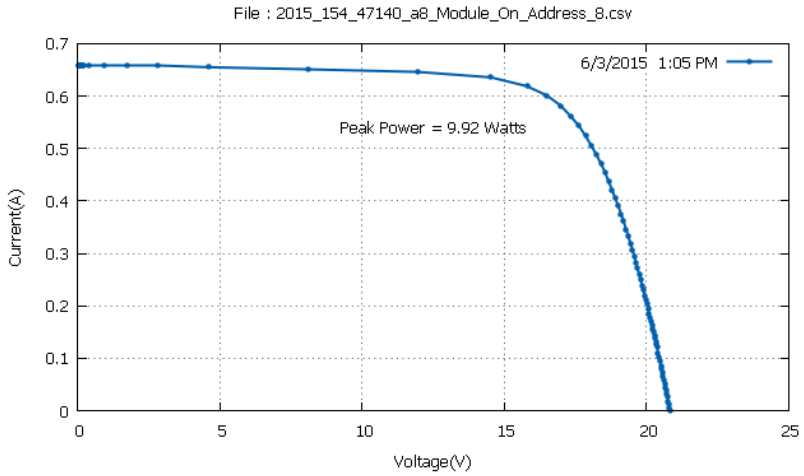
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987526\ x\ 0.602328}{973.5\ x\ 0{,}0768} \text{ x } 100 = 13{,}3\ \%$$



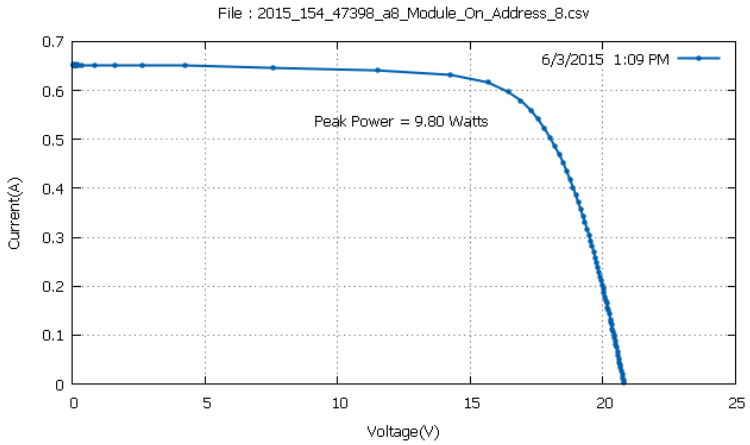
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.576067\ x\ 0.601043761}{972.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}33\ \%$$



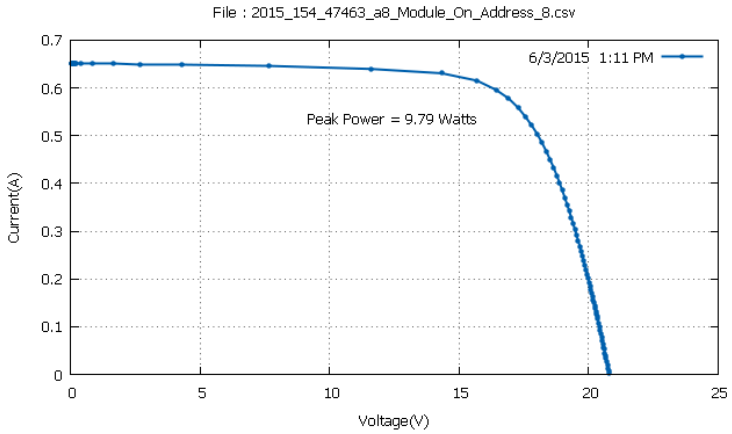
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6611118\ x\ 0.5971909}{971.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}33\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987526\ x\ 0.601043761}{968\ x\ 0{,}0768} \text{ x } 100 = 13{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4137077\ x\ 0.5971909}{960.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.5959066}{959\ x\ 0{,}0768} \text{ x } 100 = 13{,}3\ \%$$

Module 3

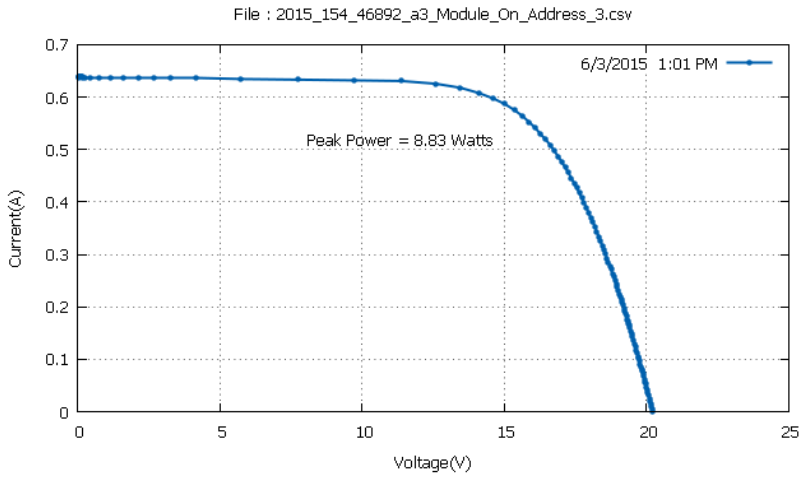
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

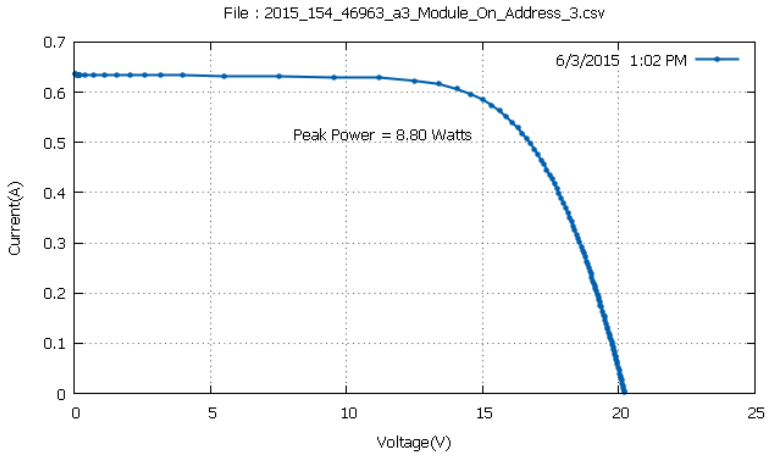
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:01	50,3	12,8
13:02	49,8	12,8
13:09	48,6	12,81
13:10	48,7	13
13:12	48,3	12,84
13:14	48,3	12,84

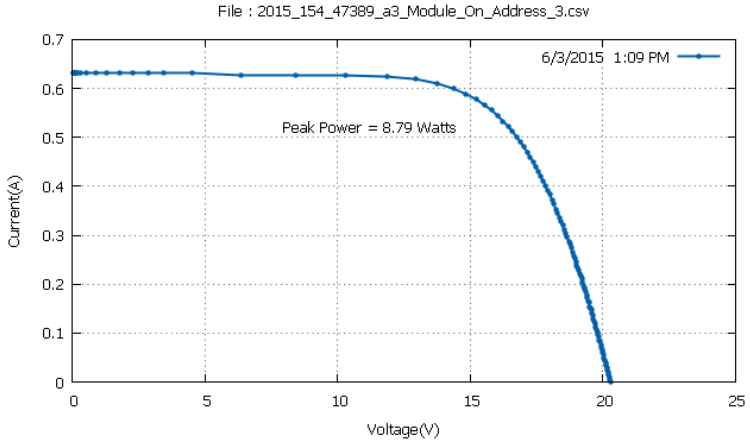
Mean Temperature: 49 ºC



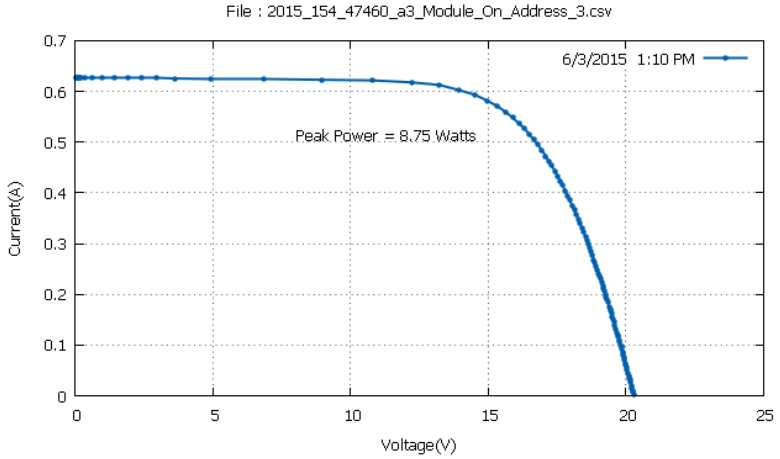
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3467779\ x\ 0.5753581}{972.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}8\ \%$$



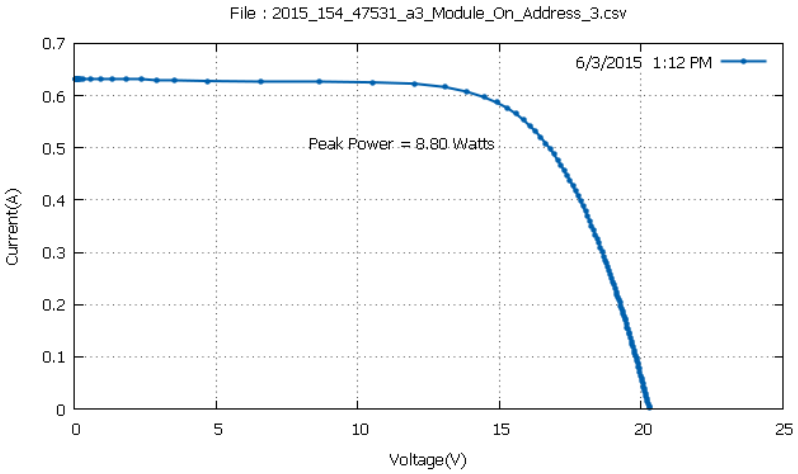
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.331315\ x\ 0.574073851}{969.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}8\ \%$$



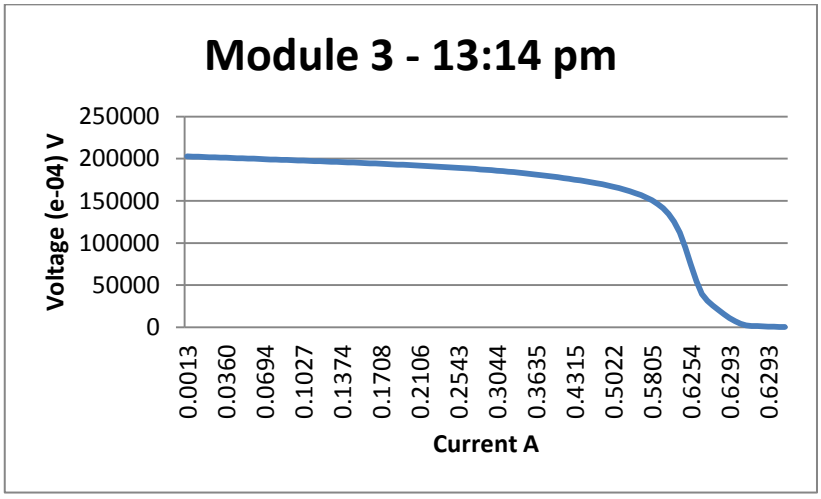
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2153444\ x\ 0.5779267}{967.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}81\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3081217\ x\ 0.571505249}{959.7\ x\ 0{,}0709} \text{ x } 100 = 13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5787191\ x\ 0.565083861}{966.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3931665\ x\ 0.570221}{963\ x\ 0{,}0709} \text{ x } 100 = 12{,}84\ \%$$

Module 5

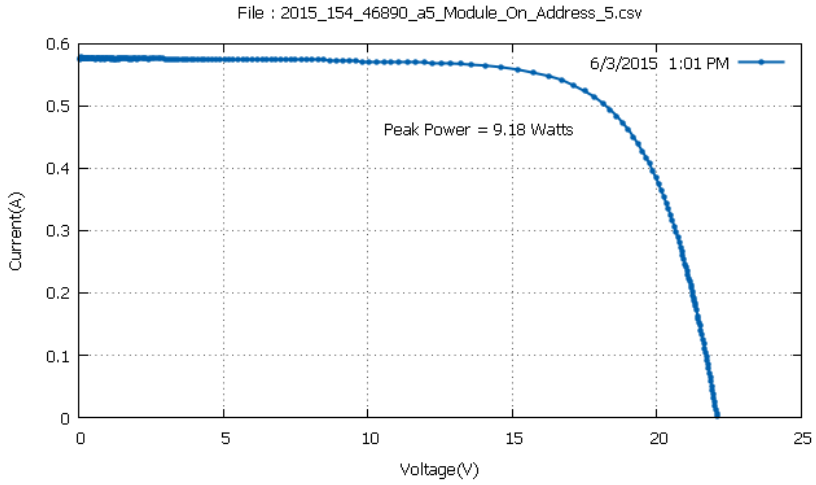
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

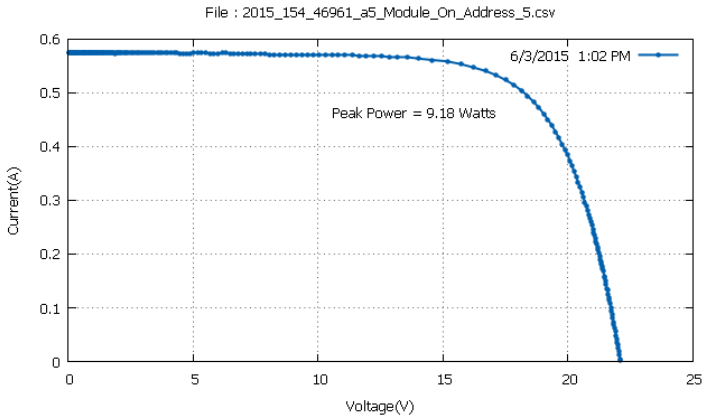
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:01	50	12,5
13:02	49,4	12,53
13:05	48,9	12,53
13:06	48,9	12,53
13:14	50,2	12,41
13:15	50,7	12,33

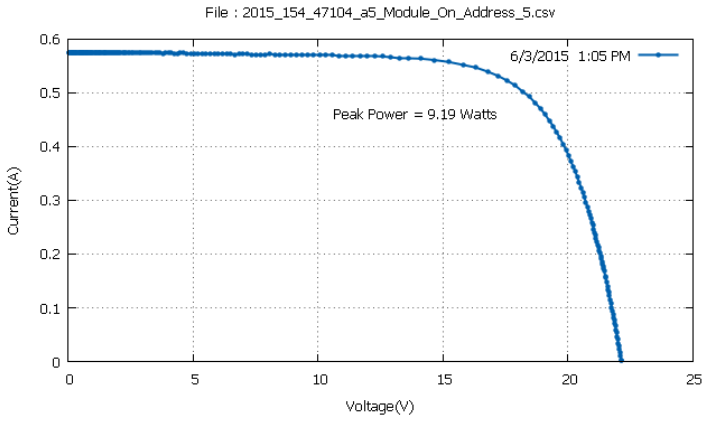
Mean Temperature: 49,68 ºC



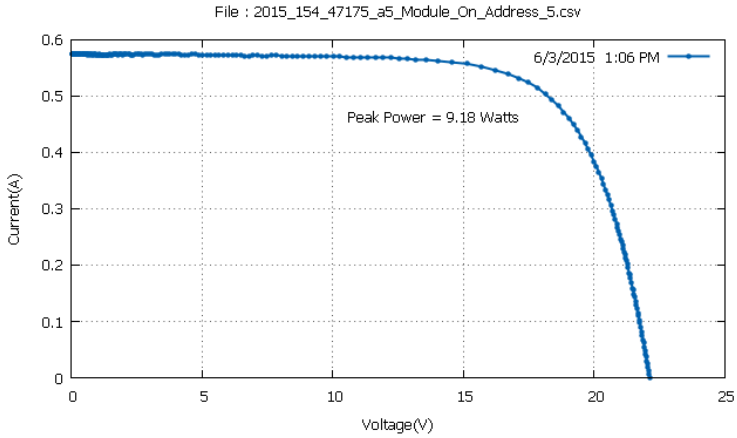
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.5149969}{971.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}5\ \%$$



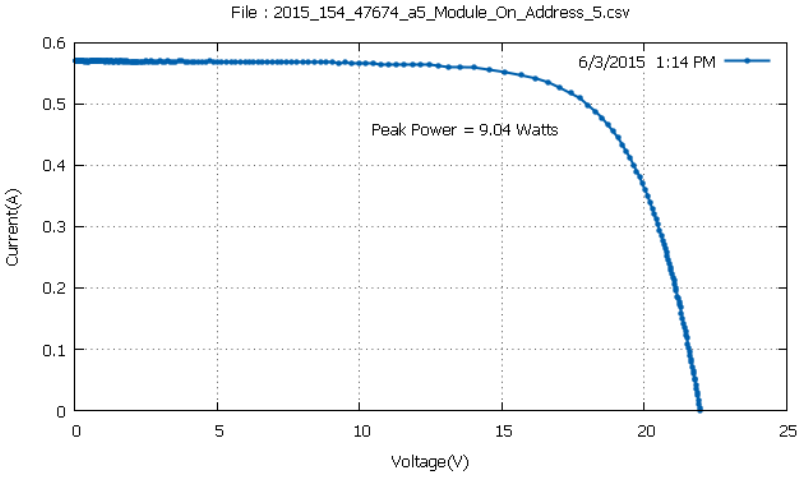
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.5149969}{969\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}53\ \%$$



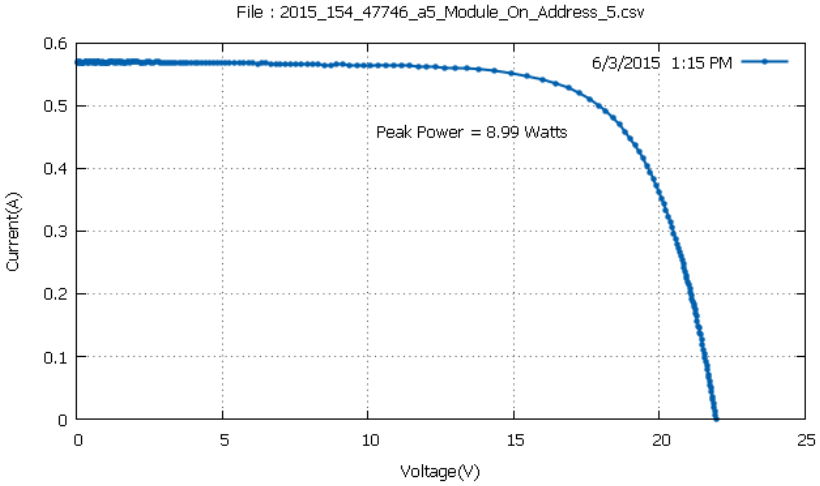
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.5137126}{969.5\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.5149969}{968.7\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.72804\ x\ 0.509859741}{962.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5966072\ x\ 0.511144042}{964.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}33\ \%$$

Module 4

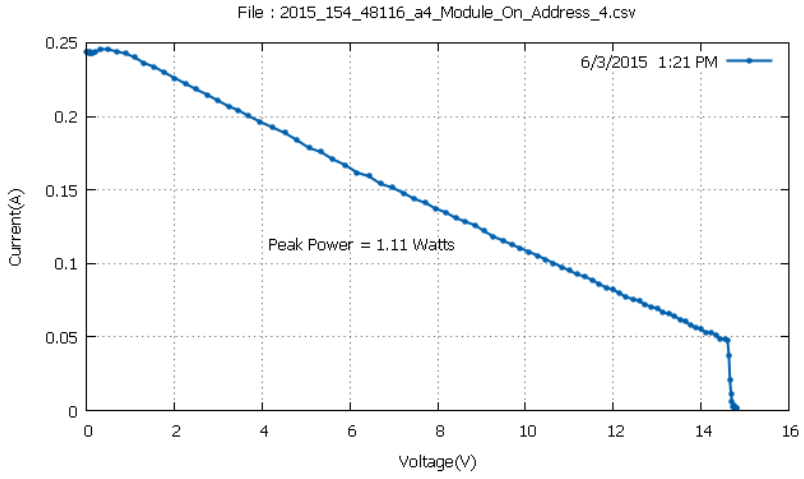
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

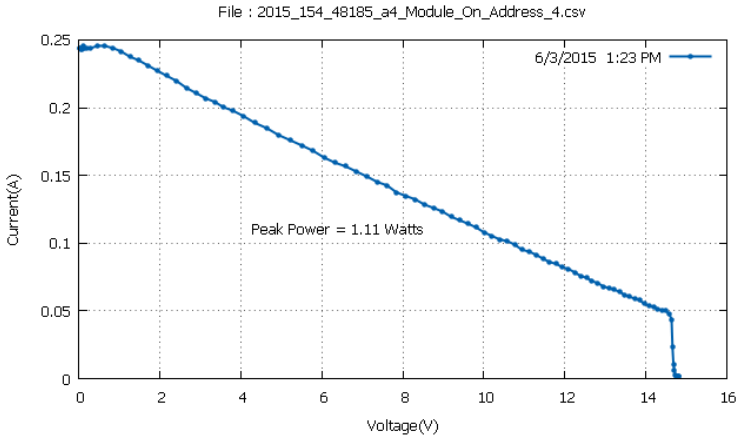
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:21	47,6	1,72
13:23	48,8	1,72
13:26	48,2	1,82
13:27	48,4	1,82
13:28	48,2	1,8
13:30	47	1,8

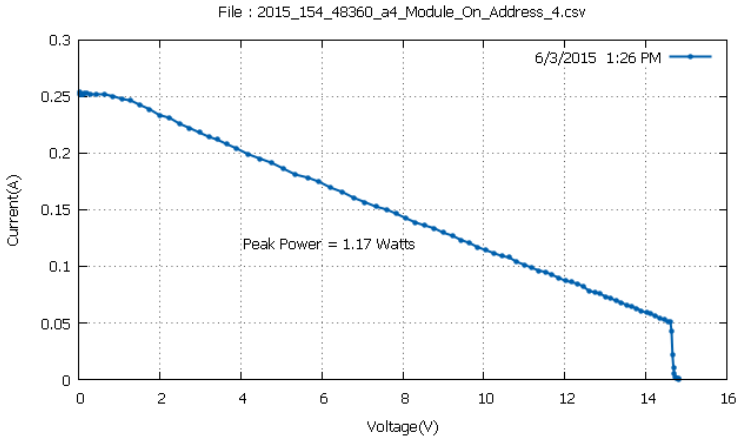
Mean Temperature: 48,03 ºC



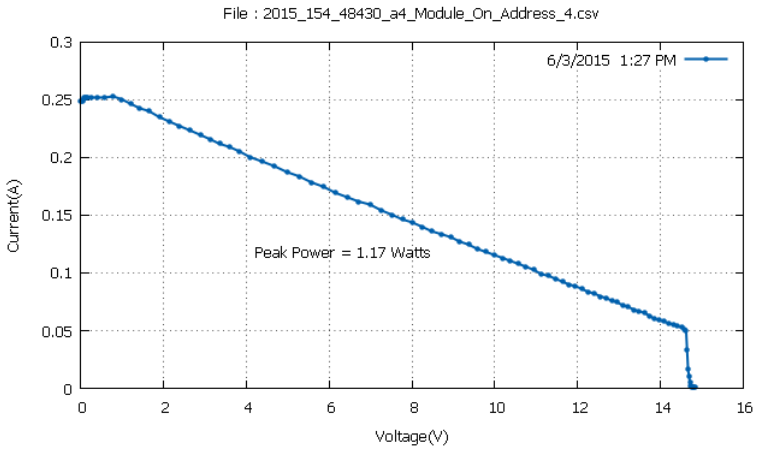
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.852424\ x\ 0.125859588}{960.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



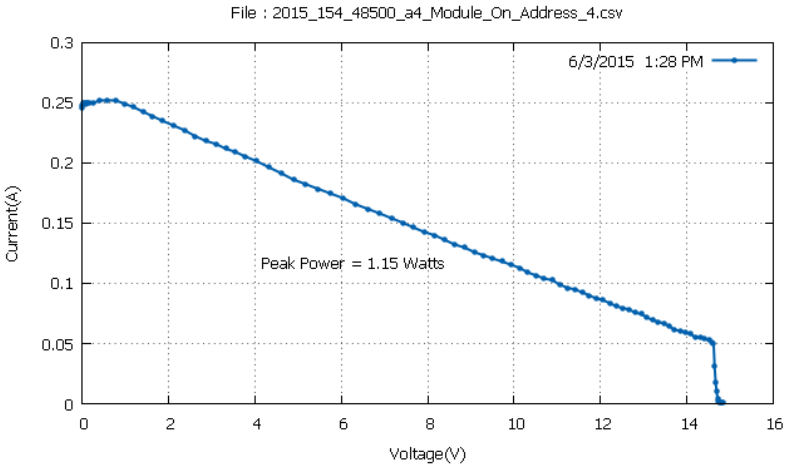
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.976126\ x\ 0.123291023}{957.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



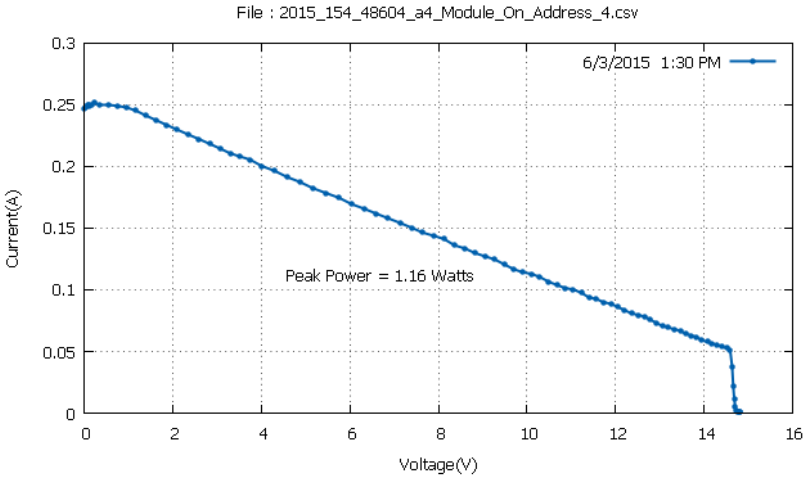
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.22353\ x\ 0.127143875}{955.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.937469\ x\ 0.130996719}{954\ x\ 0{,}0671} \text{ x } 100 = 1{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.852424\ x\ 0.129712433}{952.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.030245\ x\ 0.129712433}{956.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}8\ \%$$

Module 8

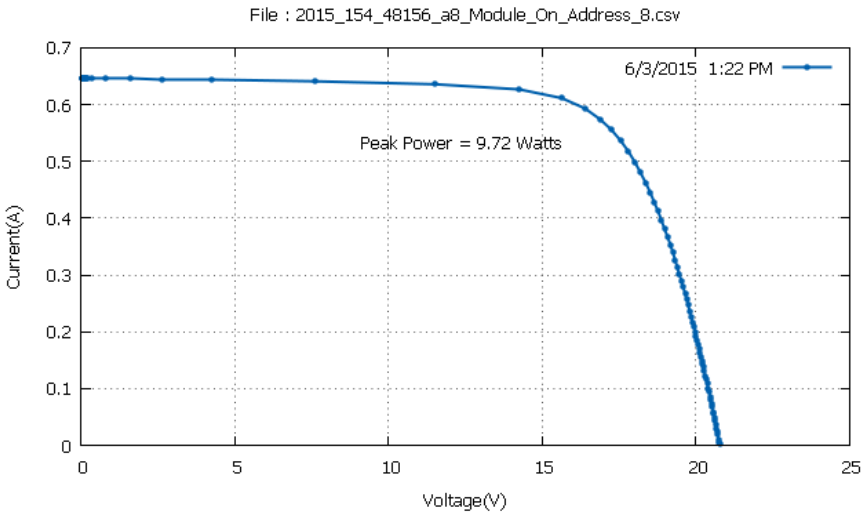
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

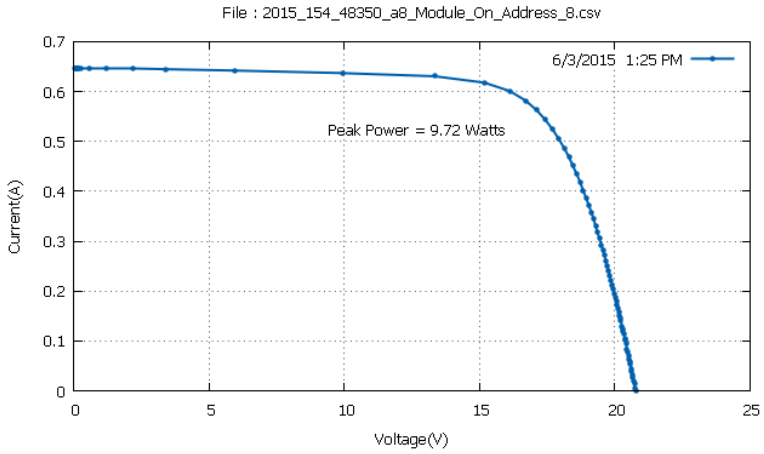
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:22	47,2	13,26
13:25	47,4	13,27
13:26	47,4	13,24
13:27	47	13,24
13:30	47,2	13,26
13:31	47,1	13,27

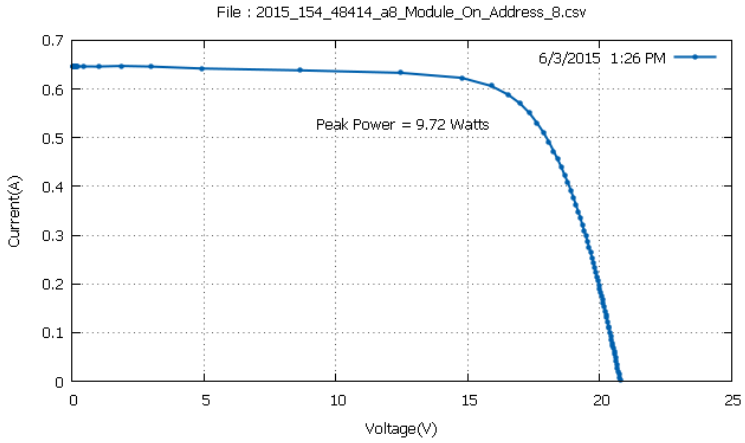
Mean Temperature: 47,21 ºC



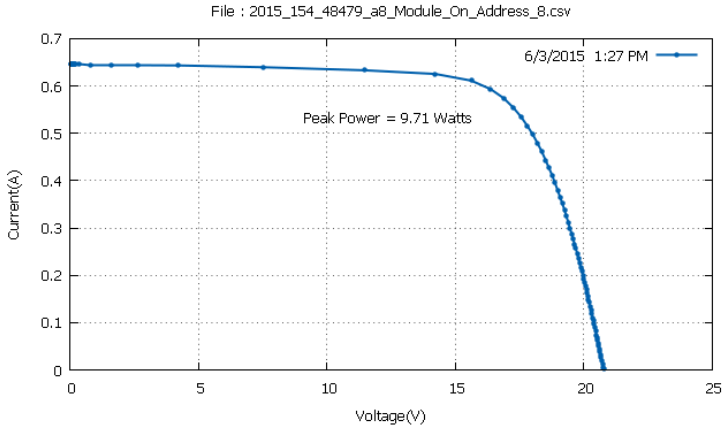
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.5933381}{954.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}26\ \%$$



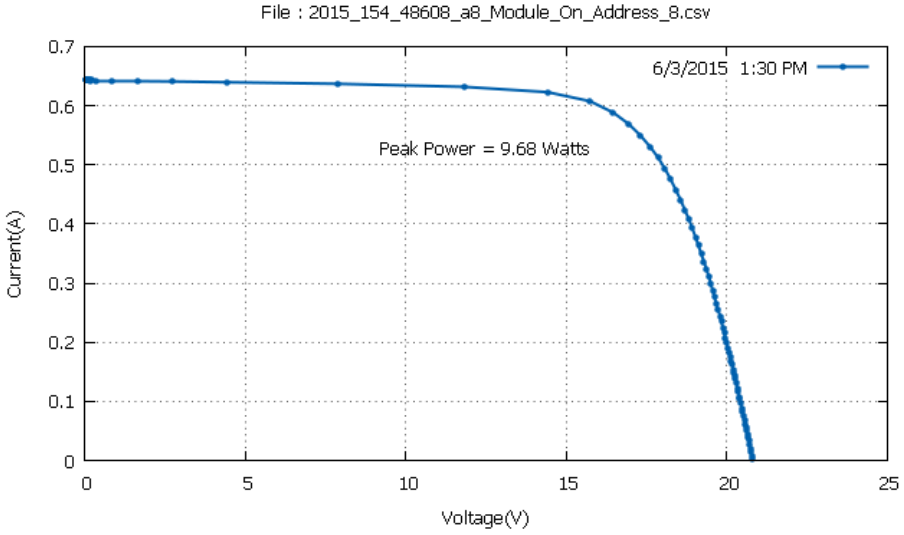
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6997681\ x\ 0.58177954}{953.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}27\ \%$$



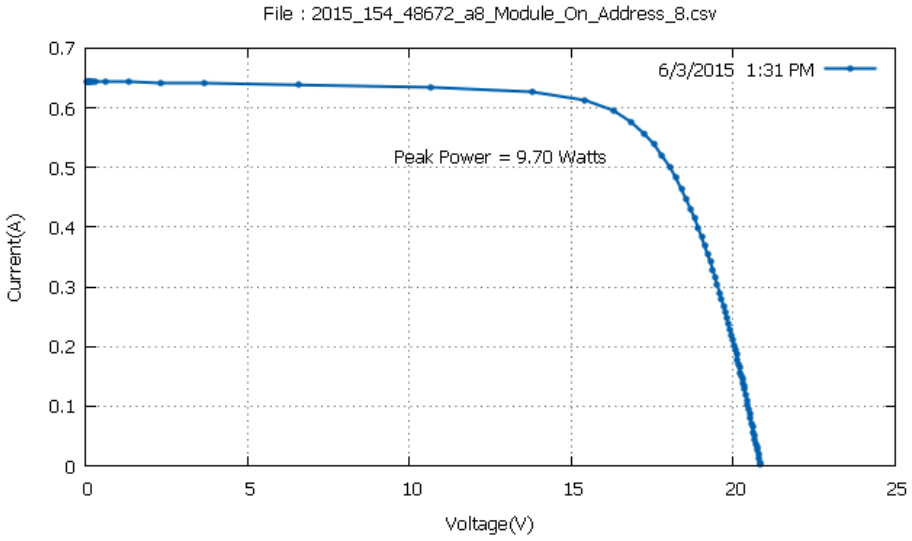
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5296783\ x\ 0.5882009}{955.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.5933381}{954.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4600964\ x\ 0.5882009}{950.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8312016\ x\ 0.5766424}{951.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}27\ \%$$

Module 3

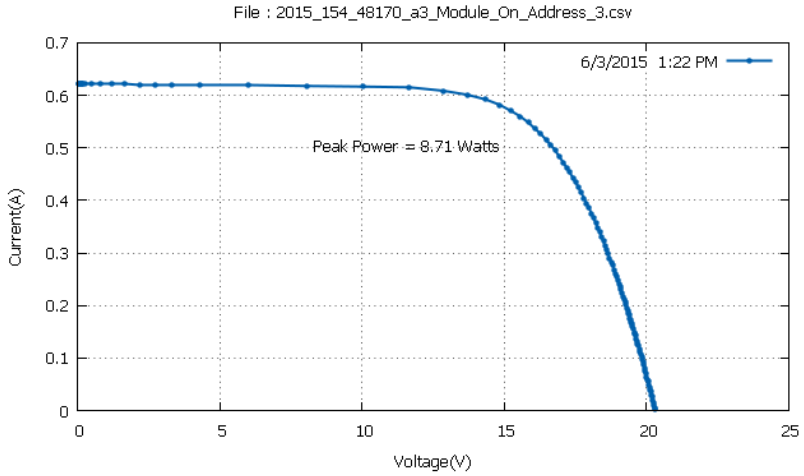
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

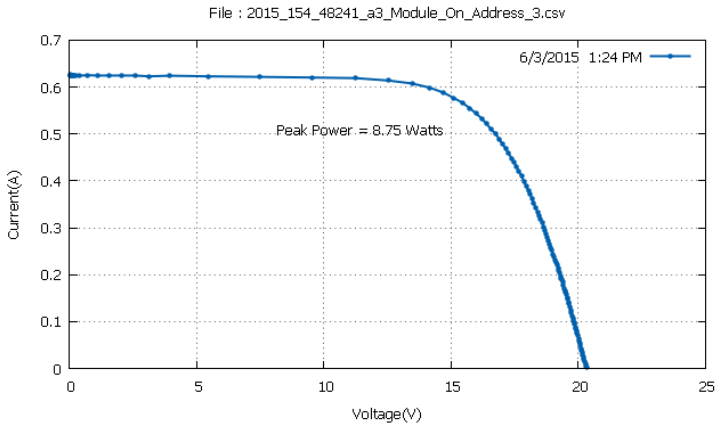
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:22	47,5	12,85
13:24	47,7	12,83
13:26	47,6	12,87
13:27	47,5	12,83
13:28	47,4	12,86
13:35	46,9	12,88

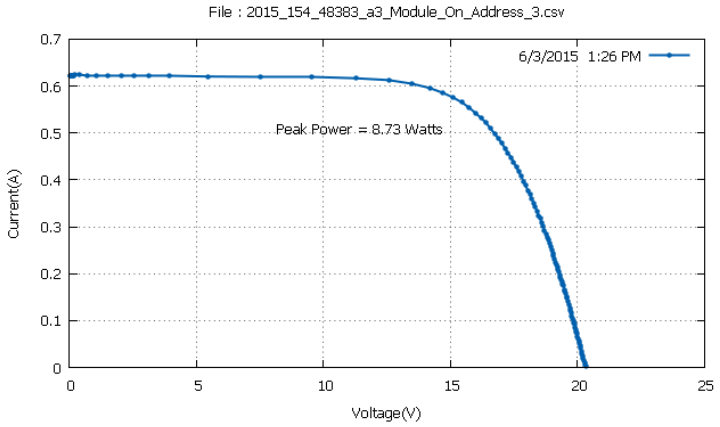
Mean Temperature: 47,43 ºC



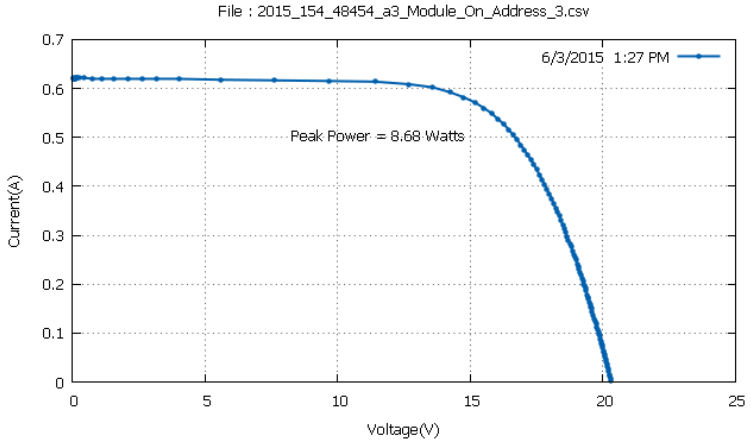
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5555248\ x\ 0.5599467}{955.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}85\ \%$$



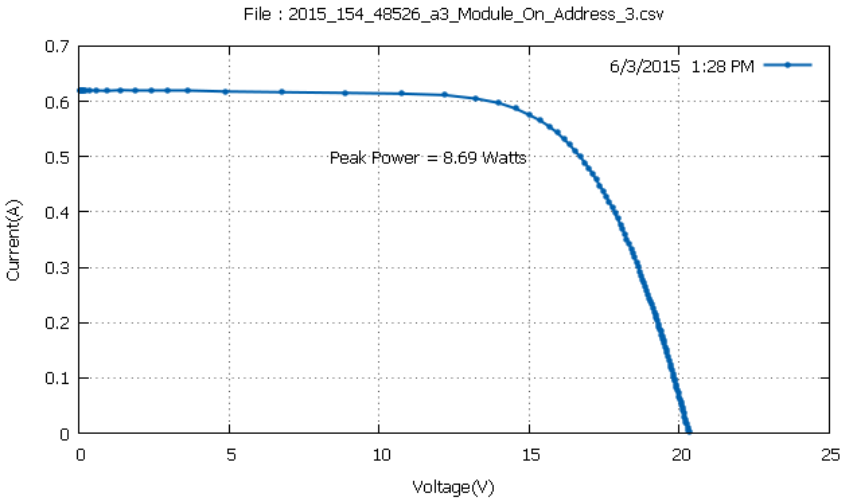
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4472857\ x\ 0.566368163}{961.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}83\ \%$$



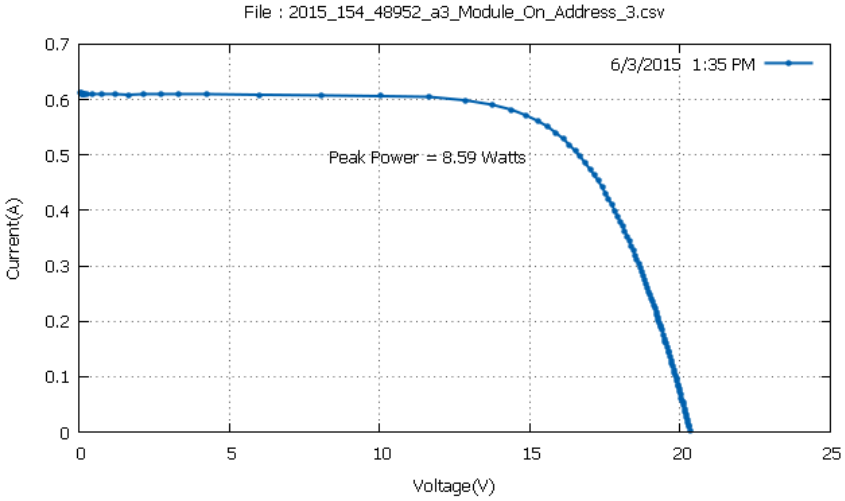
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4472857\ x\ 0.565083861}{956.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}87\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5091372\ x\ 0.5599467}{953.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6560335\ x\ 0.55480963}{952.8\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.594182\ x\ 0.5509568}{940.1\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}88\ \%$$

Module 5

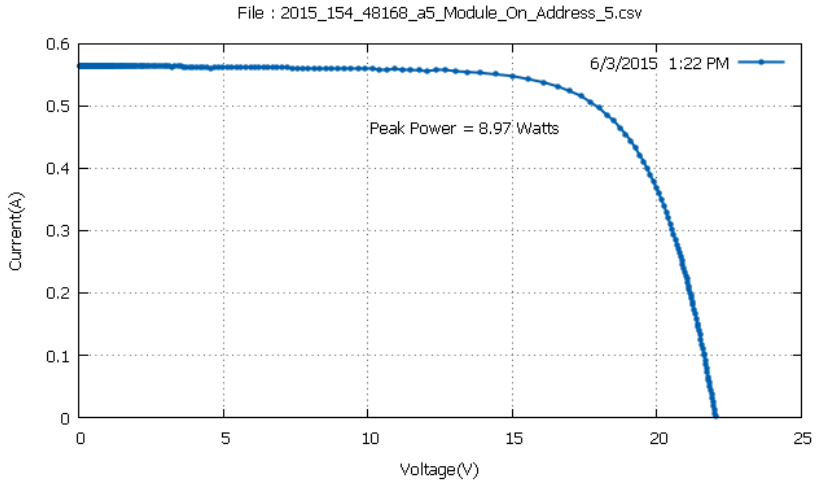
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

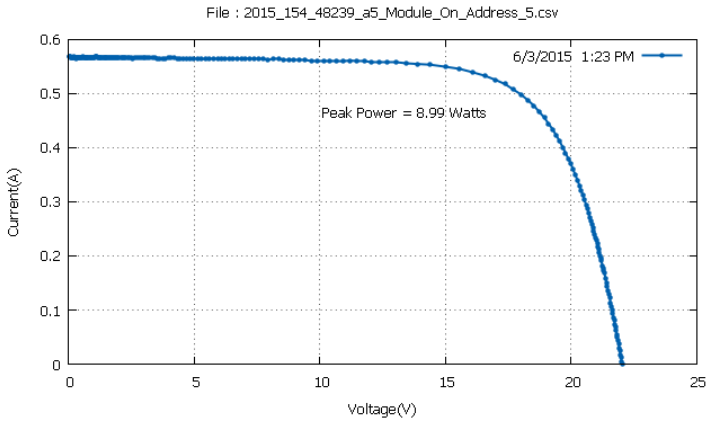
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:22	49,6	12,41
13:23	49,7	12,37
13:26	49,9	12,38
13:27	50	12,36
13:28	50	12,38
13:31	49,3	12,46

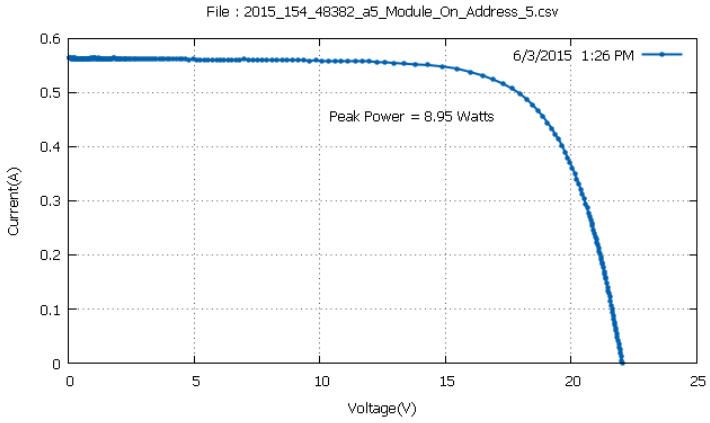
Mean Temperature: 49,75 ºC



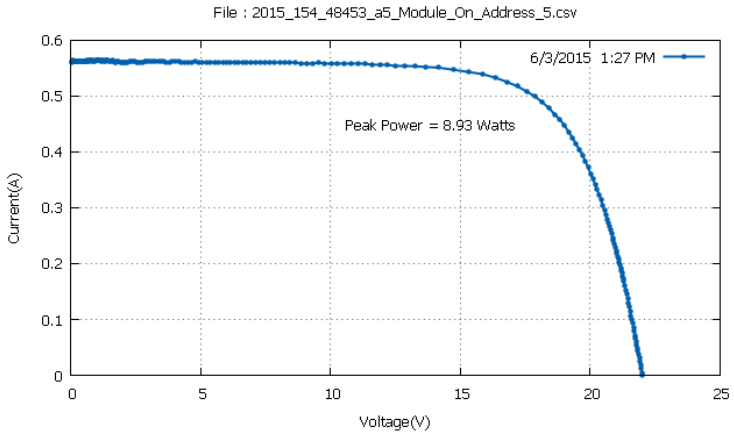
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3723984\ x\ 0.5162812}{955.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}41\ \%$$



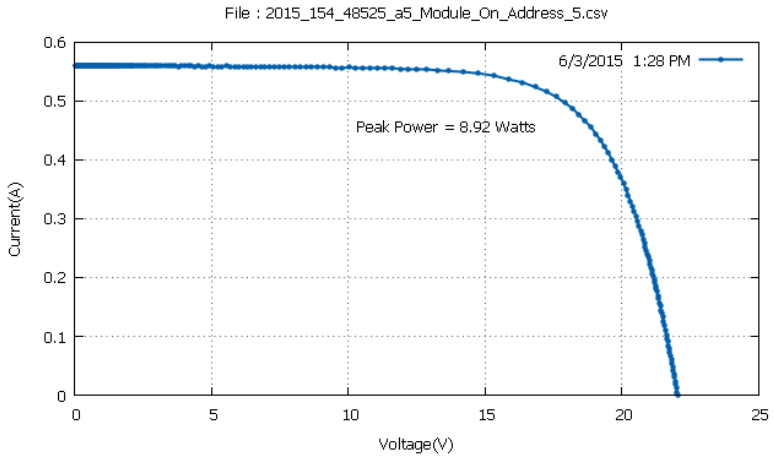
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.364666\ x\ 0.5175654}{960.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}37\ \%$$



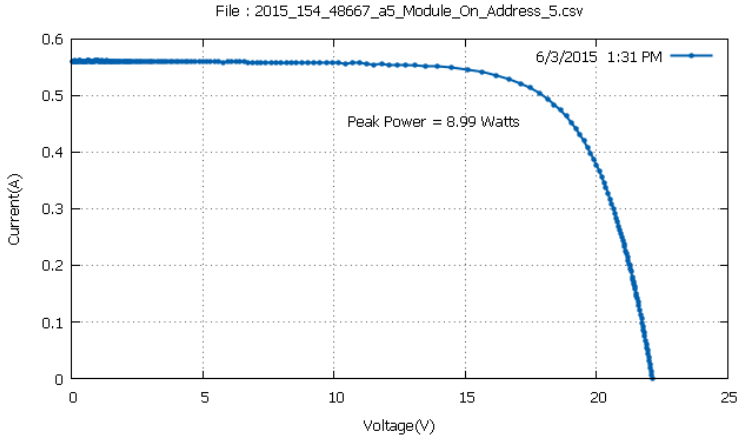
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6507282\ x\ 0.5072912}{956.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8672066\ x\ 0.4995855}{955.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5888767\ x\ 0.5072912}{952.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8130875\ x\ 0.504722655}{954.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}46\ \%$$

Module 4

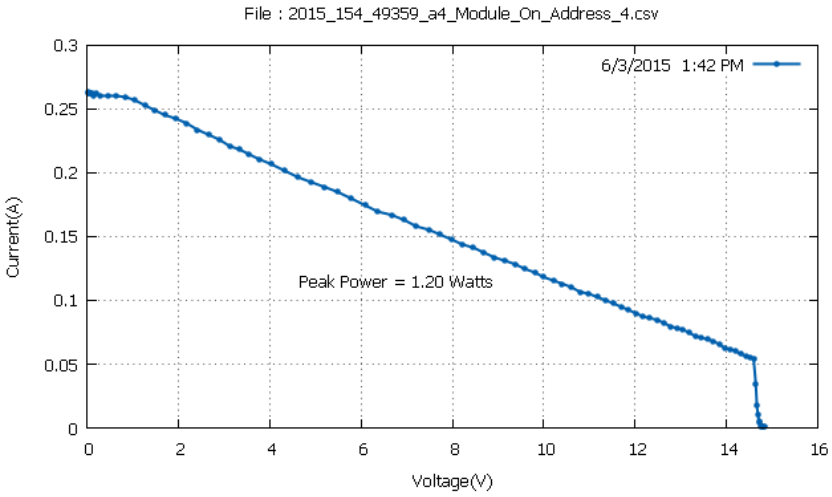
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

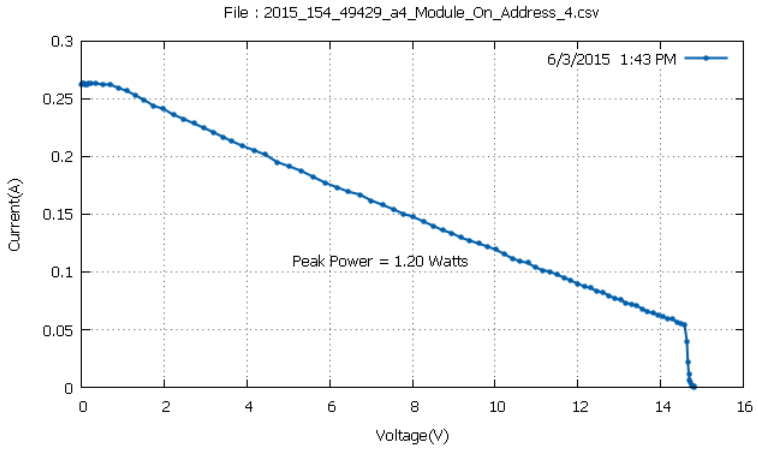
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:42	46,9	1,9
13:43	45,5	1,9
13:44	45,2	1,8
13:47	45,9	1,77
13:48	45,4	1,9
13:49	44,7	1,9

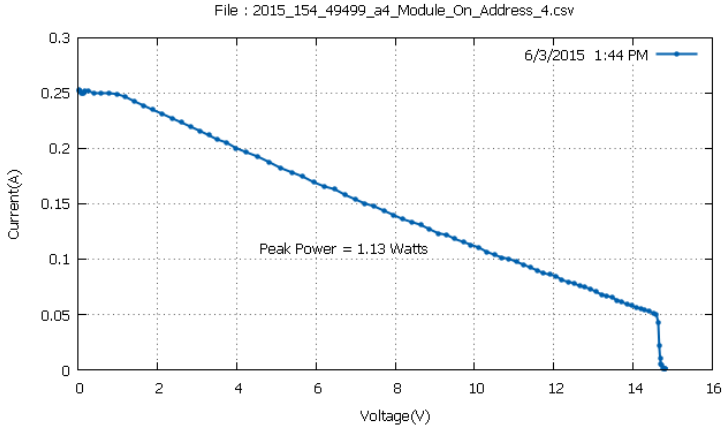
Mean Temperature: 45,6 ºC



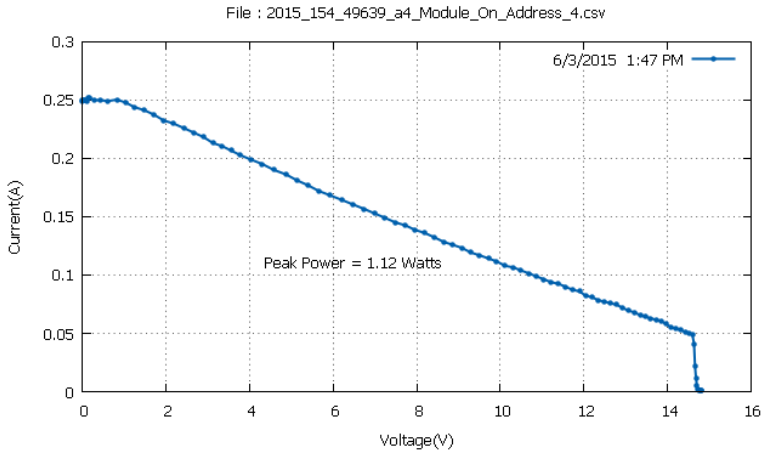
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.370426\ x\ 0.128428146}{940.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



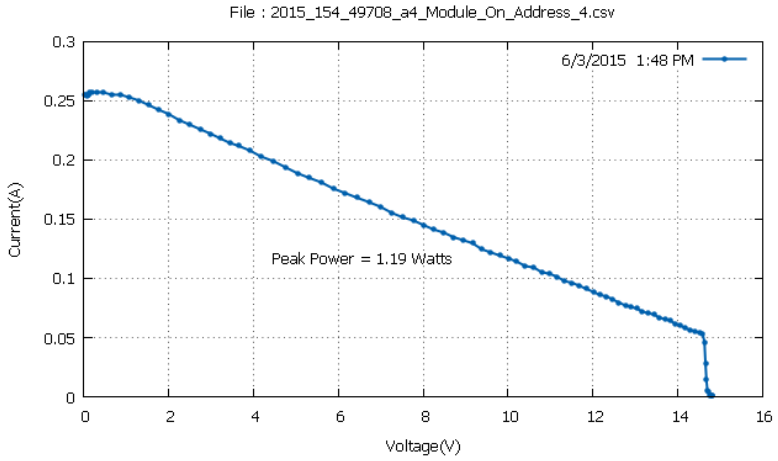
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.811114\ x\ 0.122006744}{942.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



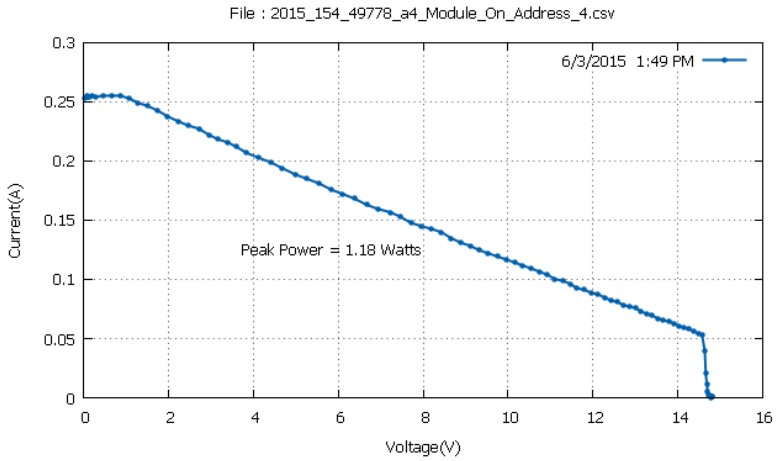
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.293112\ x\ 0.122006744}{935.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.076633\ x\ 0.123291023}{939.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}77\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.161678\ x\ 0.129712433}{929.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.136133835}{927.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$

Module 8

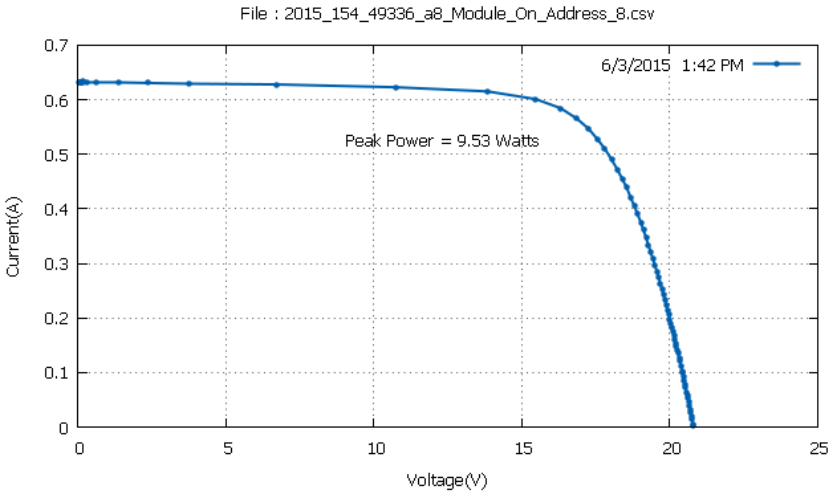
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

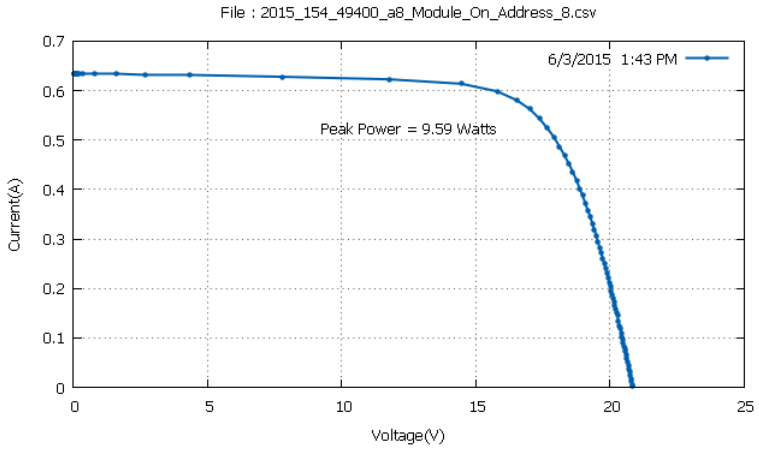
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:42	46,7	13,25
13:43	46,6	13,3
13:46	46,5	13,28
13:47	46,6	13,3
13:48	46,3	13,34
13:50	45,6	13,33

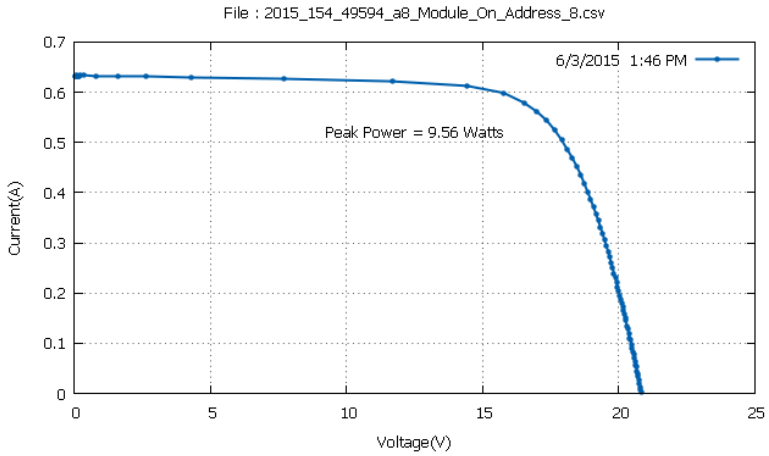
Mean Temperature: 46,38 ºC



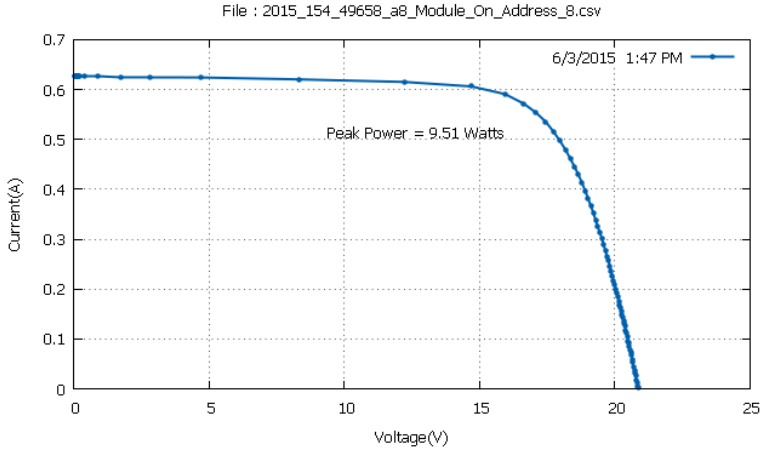
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3132\ x\ 0.5843481}{936.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}25\ \%$$



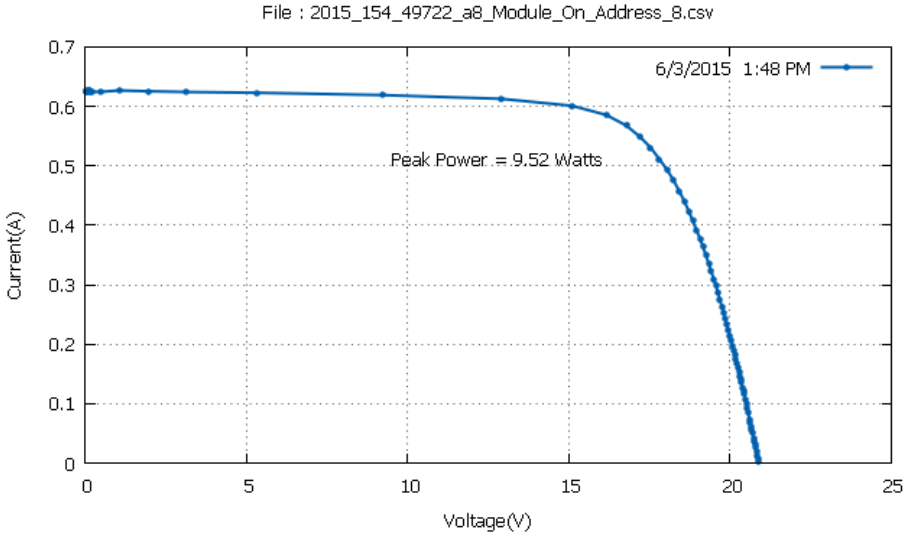
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5219479\ x\ 0.580495238}{939.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}3\ \%$$



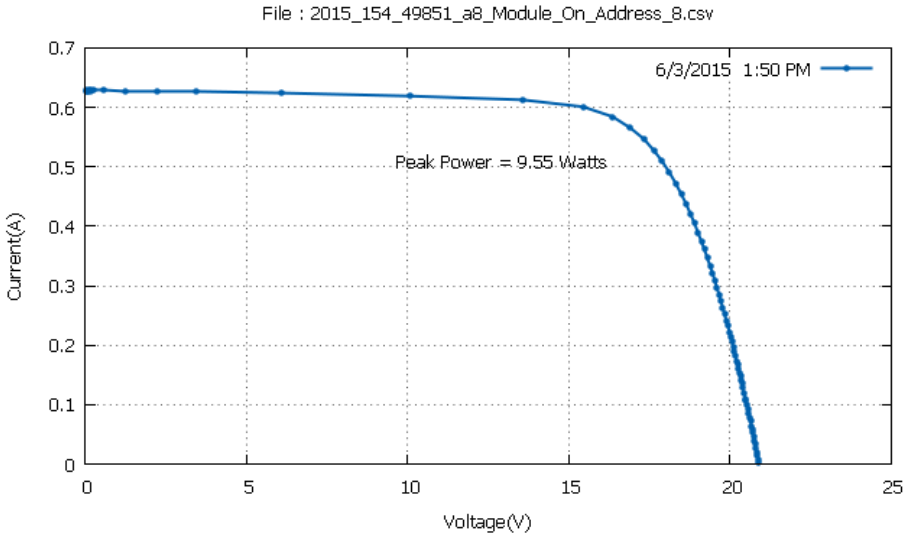
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.506485\ x\ 0.579210937}{937\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6379185\ x\ 0.571505249}{930.6\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7770824\ x\ 0.5676524}{928.9\ x\ 0{,}0768}\ \text{x } 100 = 13{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.5843481}{932.3\ x\ 0{,}0768}\ \text{x } 100 = 13{,}33\ \%$$

Module 3

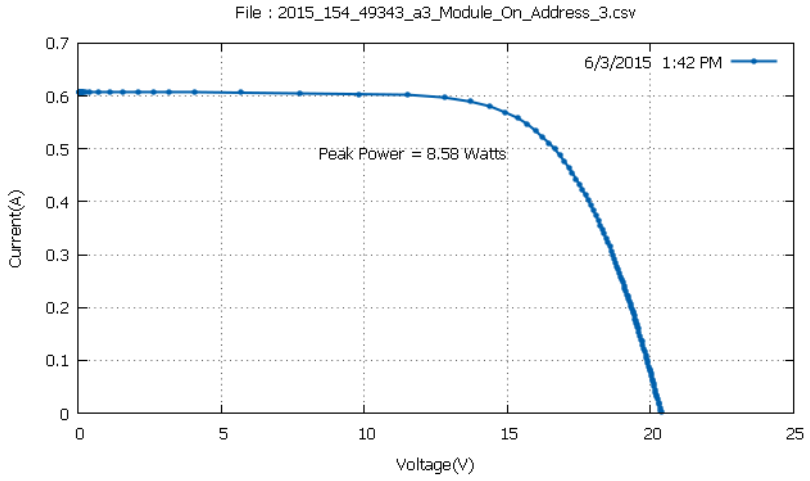
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

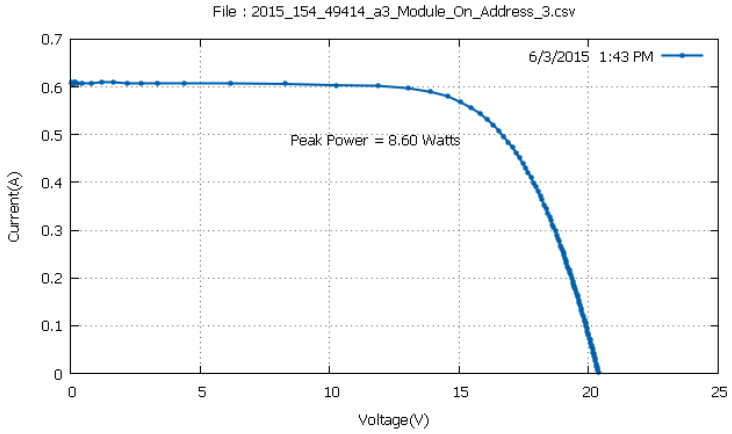
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:42	46,1	12,88
13:43	46,2	13
13:44	46,1	12,91
13:47	46	12,88
13:48	45,8	12,88
13:49	45,8	13,33

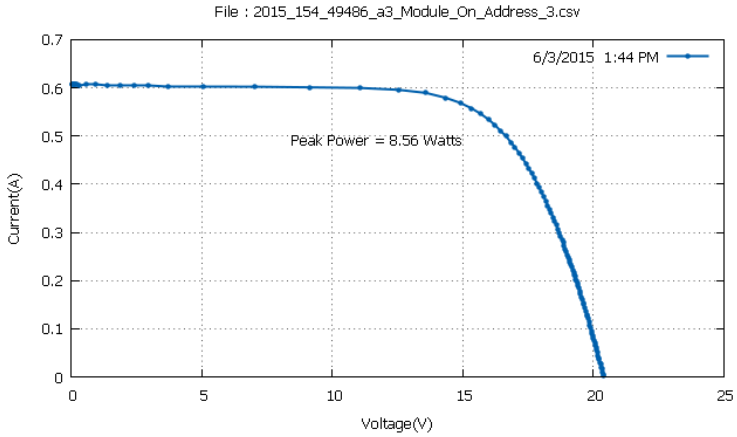
Mean Temperature: 46 ºC



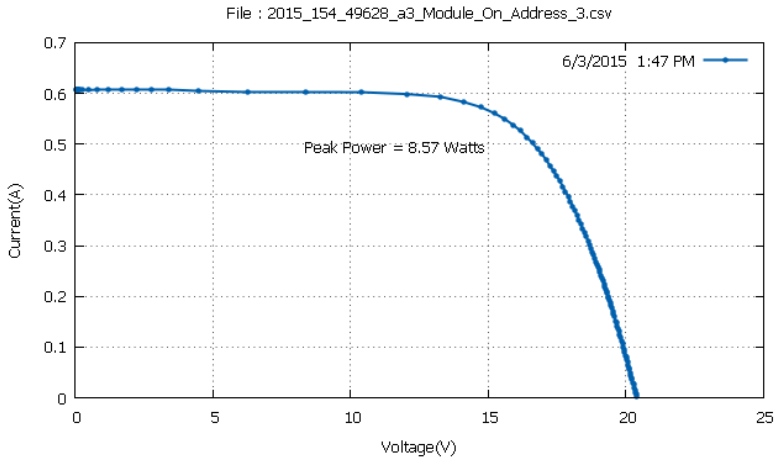
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6869583\ x\ 0.547103941}{938.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}88\ \%$$



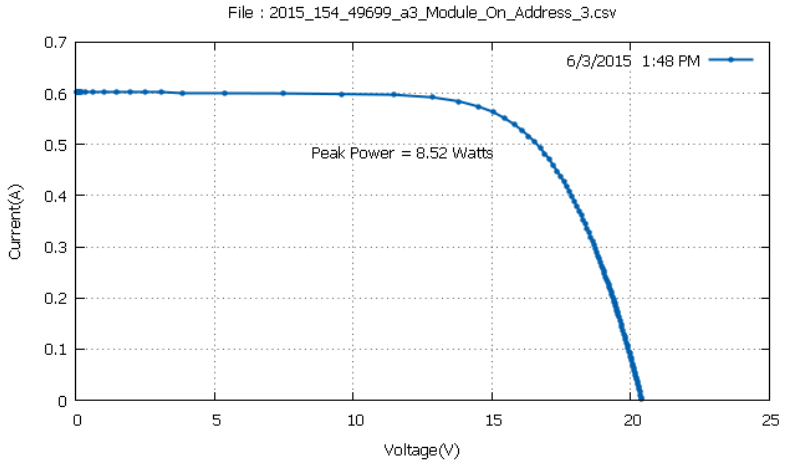
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.544535339}{940.1\ x\ 0{,}0709} \text{ x } 100 = 13\ \%$$



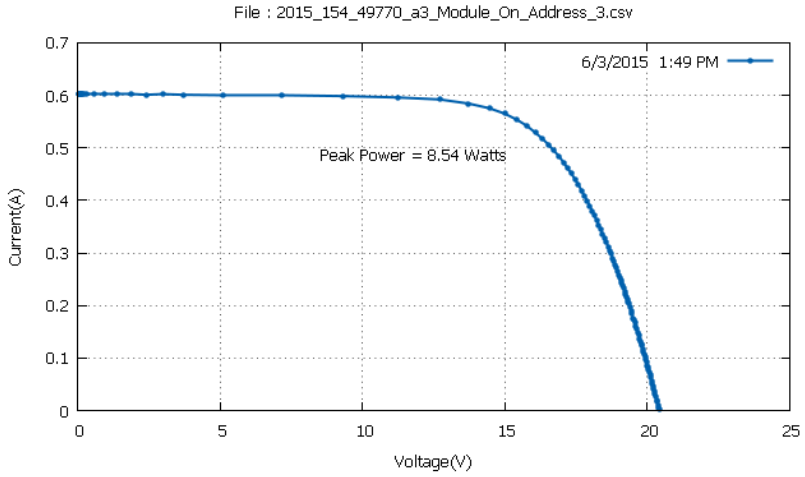
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6869583\ x\ 0.54581964}{934.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5864506\ x\ 0.5496725}{938.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.539398253}{932.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.5843481}{932.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}33\ \%$$

Module 5

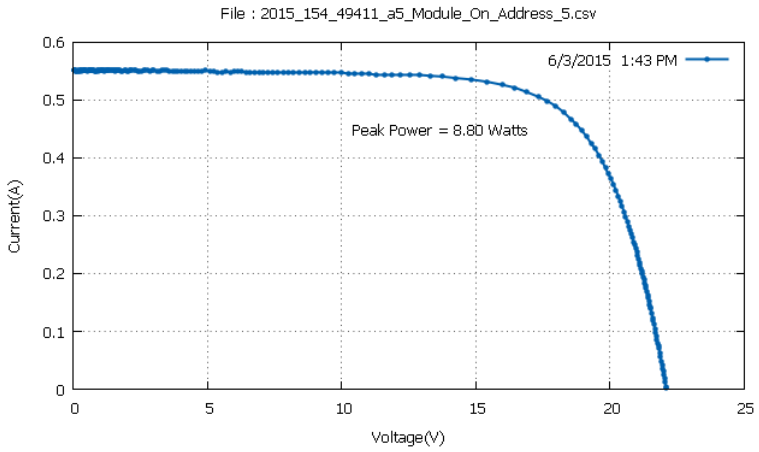
Date: 3/6/2015 - Noon Measurement

Temperature Ambient: 30 ºC

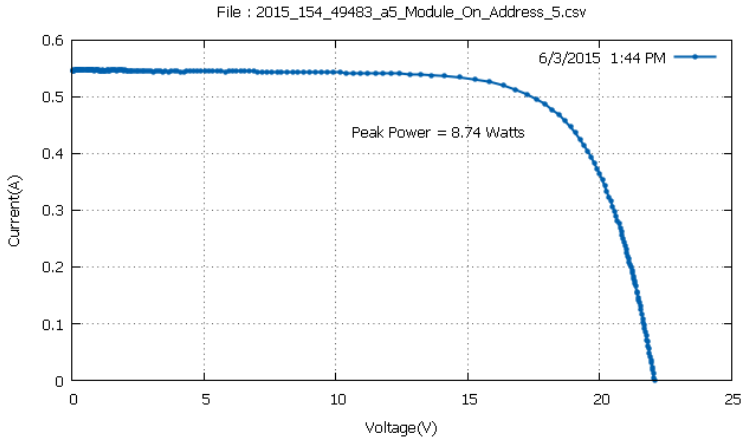
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:43	49,3	12,4
13:44	48,9	12,38
13:47	48,9	12,41
13:48	48,5	12,4
13:49	48,2	12,41
13:51	48,2	12,34

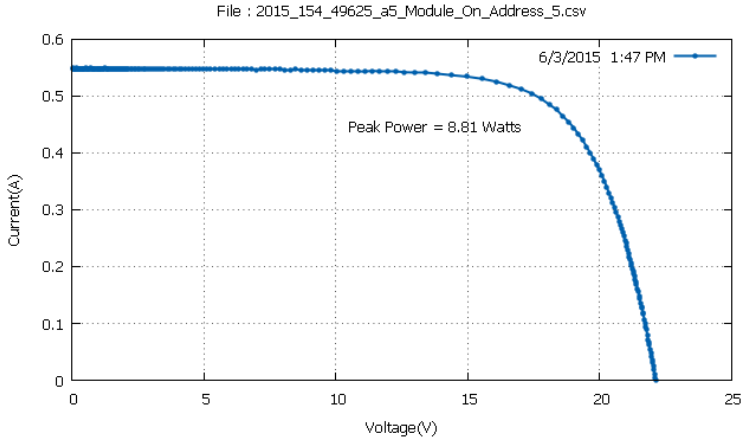
Mean Temperature: 48,66 ºC



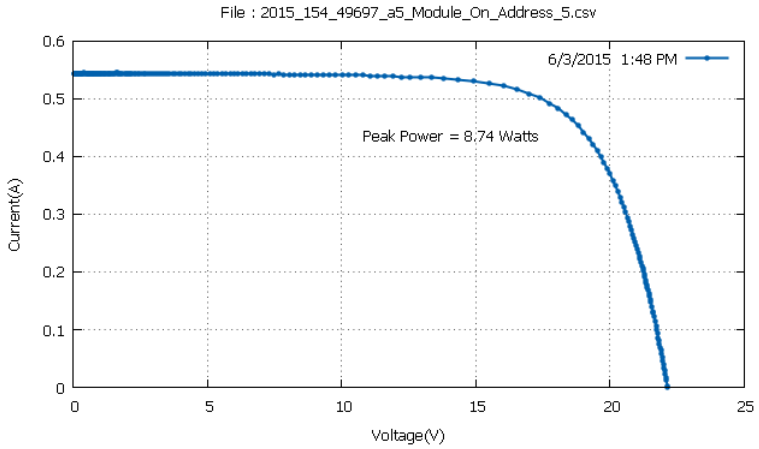
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6661911\ x\ 0.4983012}{939.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}4\ \%$$



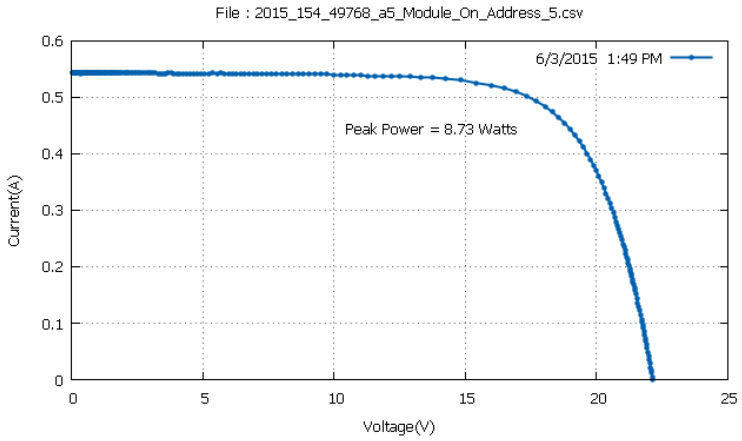
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9135952\ x\ 0.488026977}{933.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}38\ \%$$



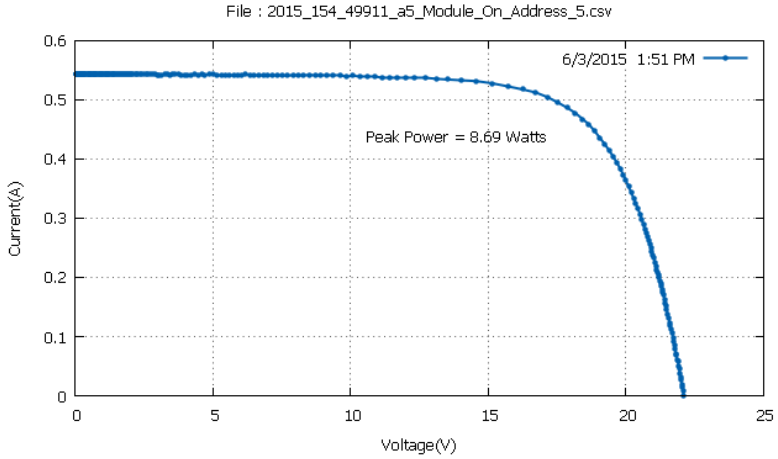
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7666988\ x\ 0.495732665}{938.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.06049\ x\ 0.484174132}{931.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7048473\ x\ 0.4931641}{929.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8594742\ x\ 0.486742675}{930.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}34\ \%$$

Module 4

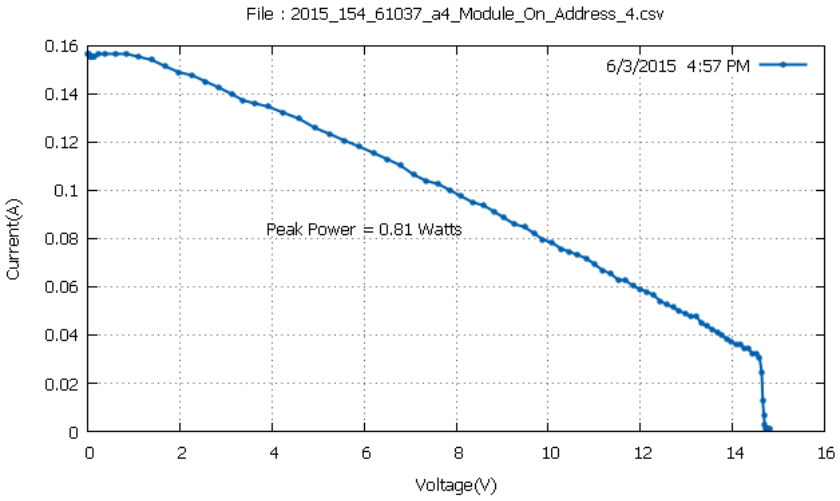
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

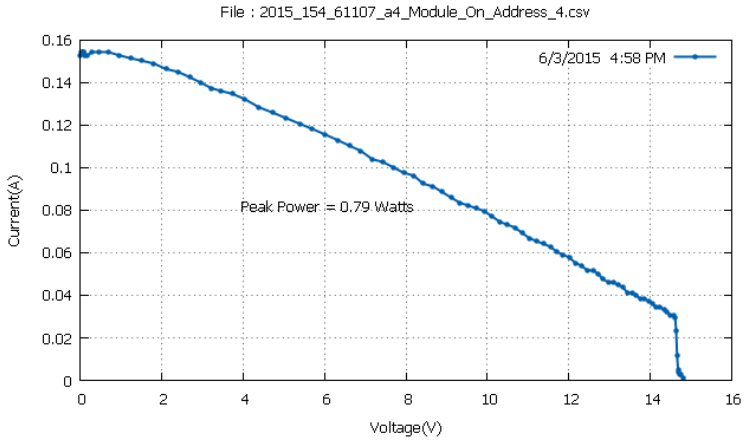
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:57	31,9	2,63
16:58	31,3	2,57
17:00	31,4	2,56
17:02	31,4	2,61
17:03	31,2	2,6
17:04	31,2	2,59

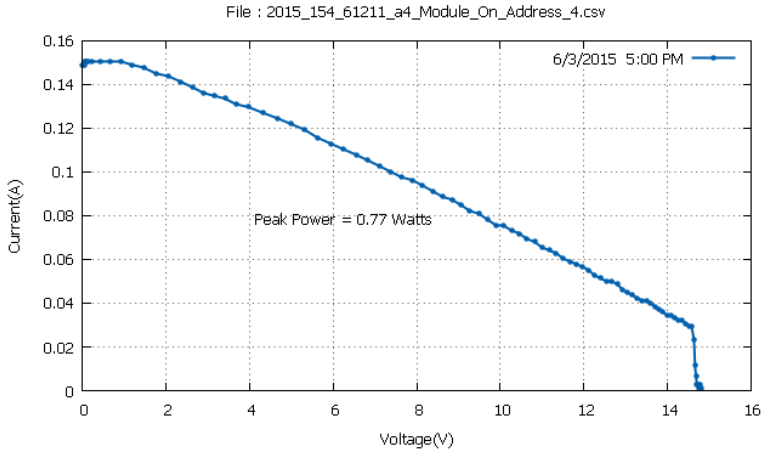
Mean Temperature: 31,4 ºC



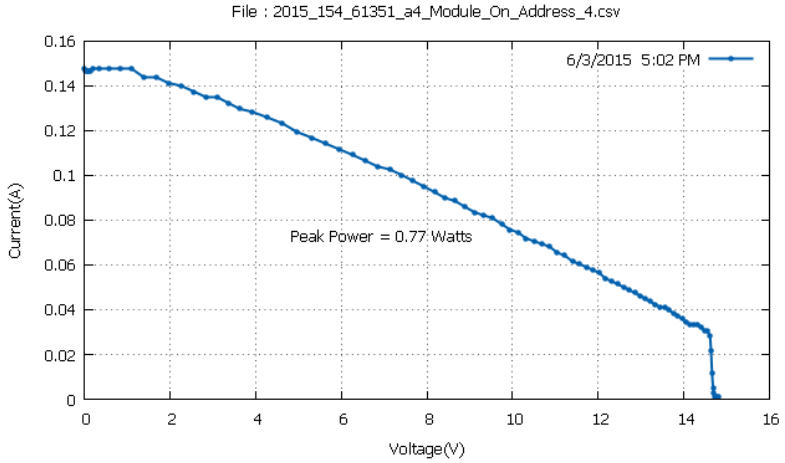
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.589557\ x\ 0.09375255}{459\ x\ 0{,}0671} \text{ x } 100 = 2{,}63\ \%$$



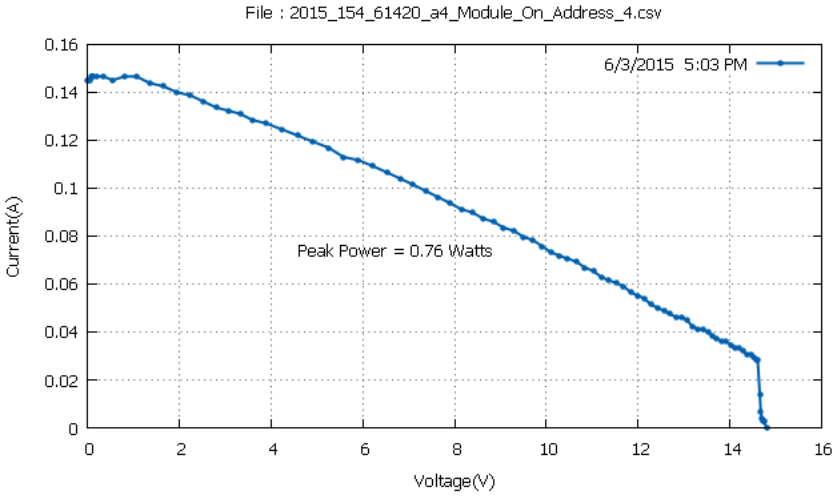
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.713259\ x\ 0.09118398}{456.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}57\ \%$$



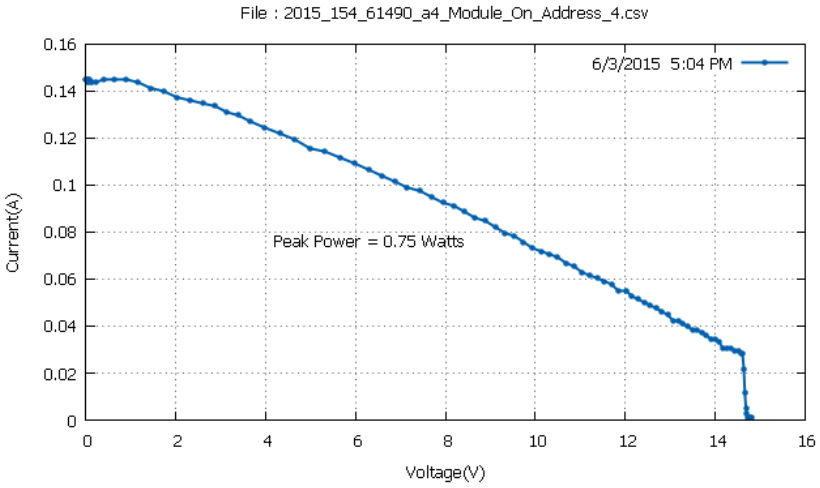
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.844692\ x\ 0.08733114}{447.5x\ 0{,}0671} \text{ x } 100 = 2{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.532784\ x\ 0.08090974}{438.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.293112\ x\ 0.0821940154}{435.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.991589\ x\ 0.0834782943}{431.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}59\ \%$$

Module 8

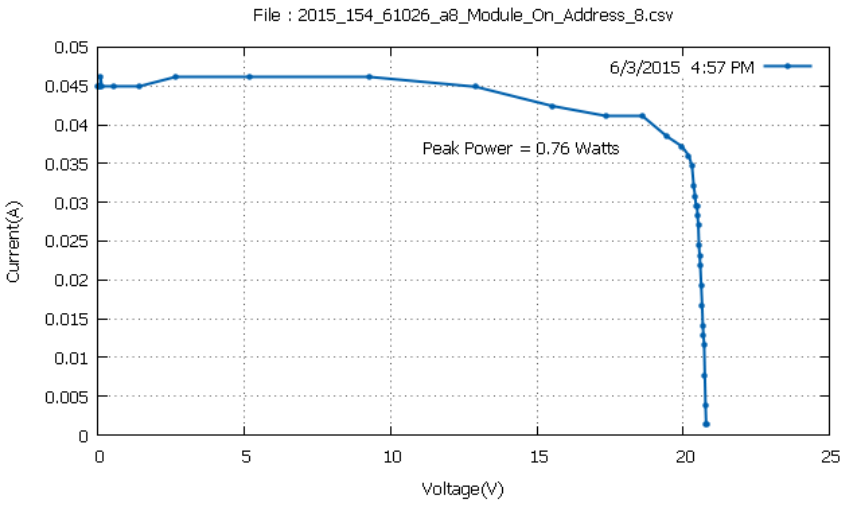
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

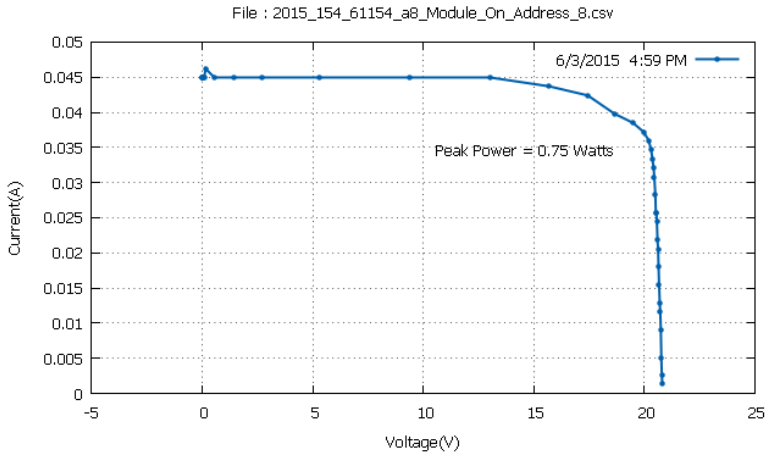
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:57	32,8	2,15
16:59	32,4	2,15
17:02	32,4	2,2
17:03	32,3	2,27
17:06	32,5	2,31
17:07	32,6	2,32

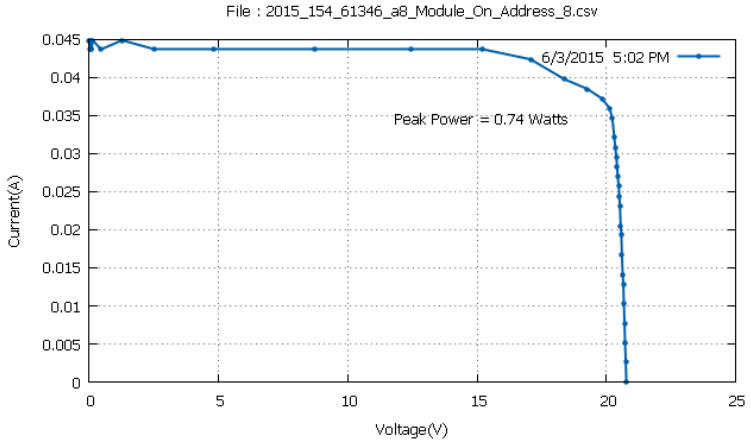
Mean Temperature: 32,5 ºC



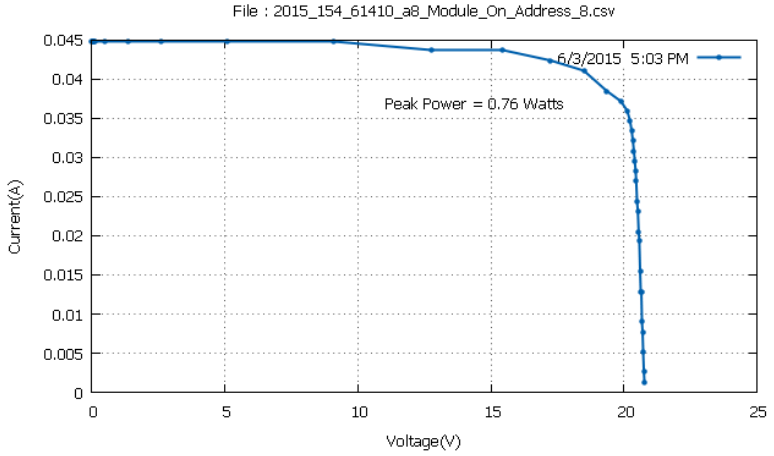
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5862236\ x\ 0.0410970077}{458.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}15\ \%$$



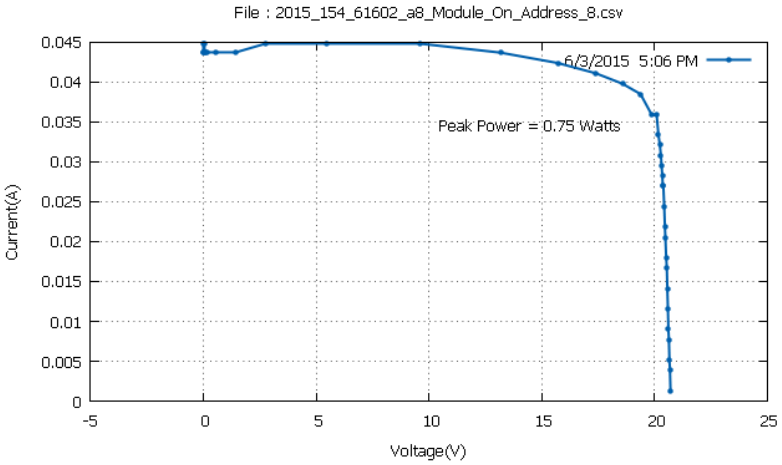
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.4830627\ x\ 0.0385284461}{453\ x\ 0{,}0768} \text{ x } 100 = 2{,}15\ \%$$



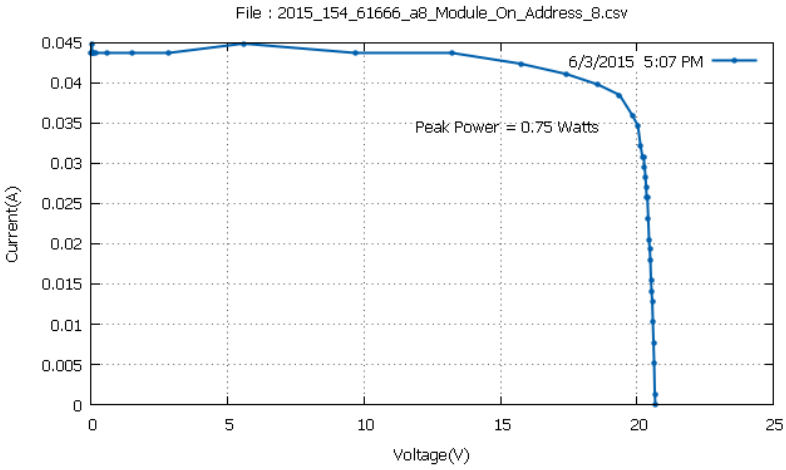
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2743168\ x\ 0.0385284461}{437.8\ x\ 0{,}0768} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4934483\ x\ 0.0410970077}{434.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3748245\ x\ 0.0385284461}{422\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3670921\ x\ 0.0385284461}{419.4\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}32\ \%$$

Module 3

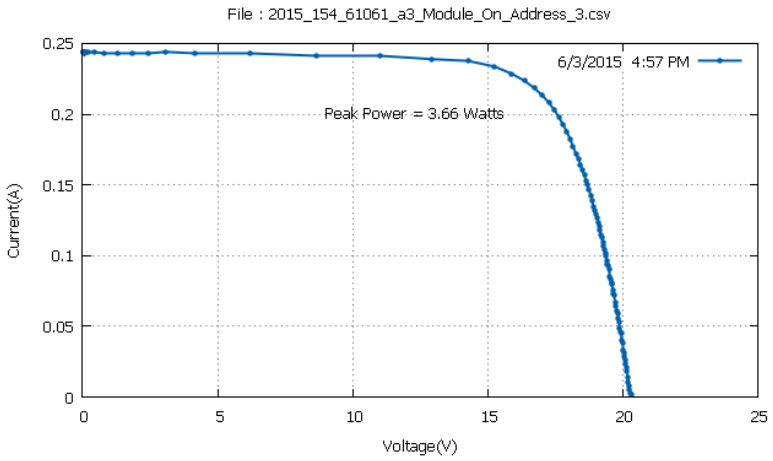
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

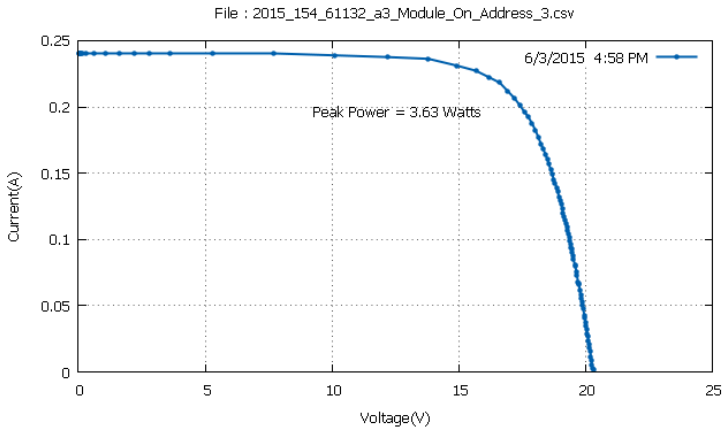
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:57	34,2	11,24
16:58	33,9	11,25
17:00	33,8	11,1
17:07	33,5	10,89
17:09	33,4	10,82
17:11	33,1	10,75

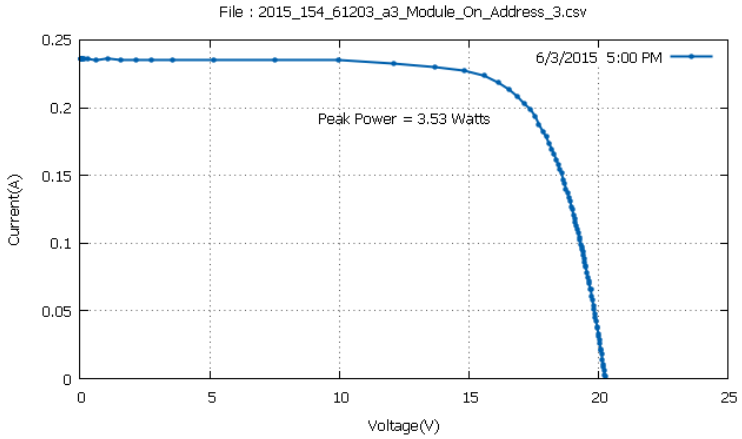
Mean Temperature: 33,65 ºC



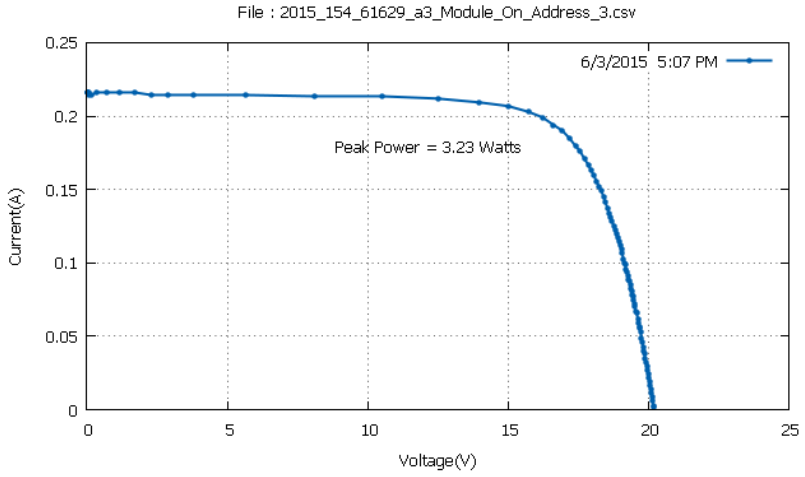
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.223464981}{459\ x\ 0{,}0709} \text{ x } 100 = 11{,}24\ \%$$



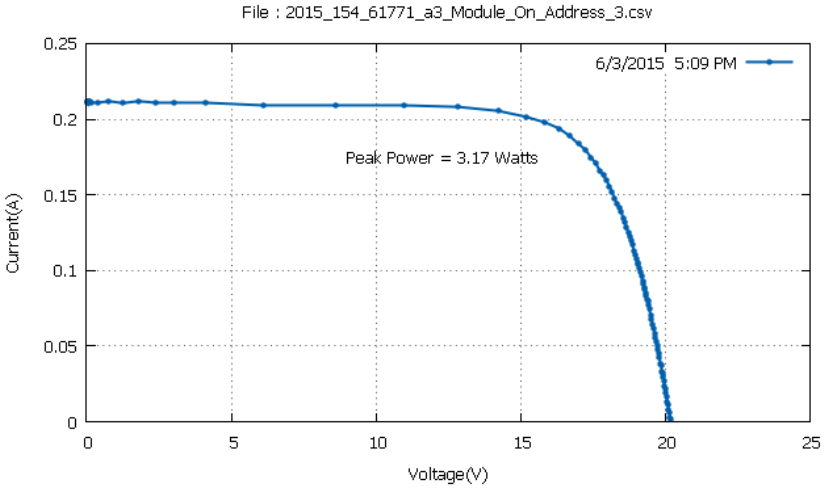
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6147232\ x\ 0.21832785}{454.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}25\ \%$$



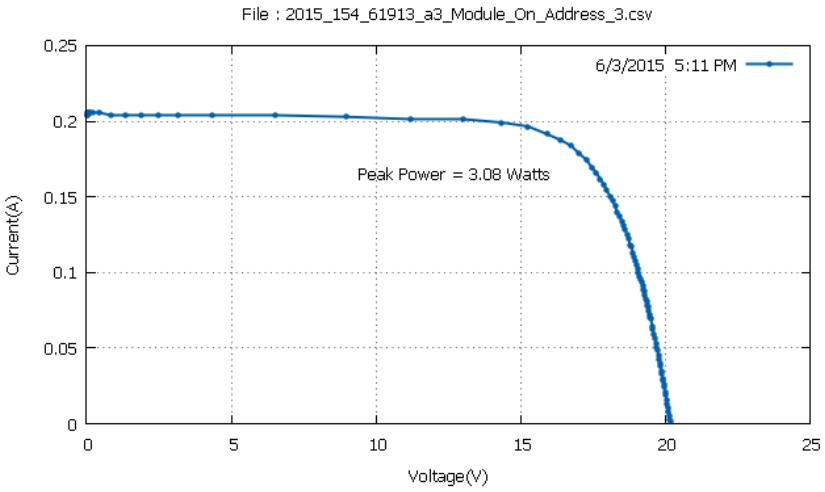
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5683346\ x\ 0.213190734}{448.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2281551\ x\ 0.199063629}{418.2\ x\ 0{,}0709} \text{ x } 100 = 10{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.1939265}{413\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7461567\ x\ 0.183652252}{403.9\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}75\ \%$$

Module 5

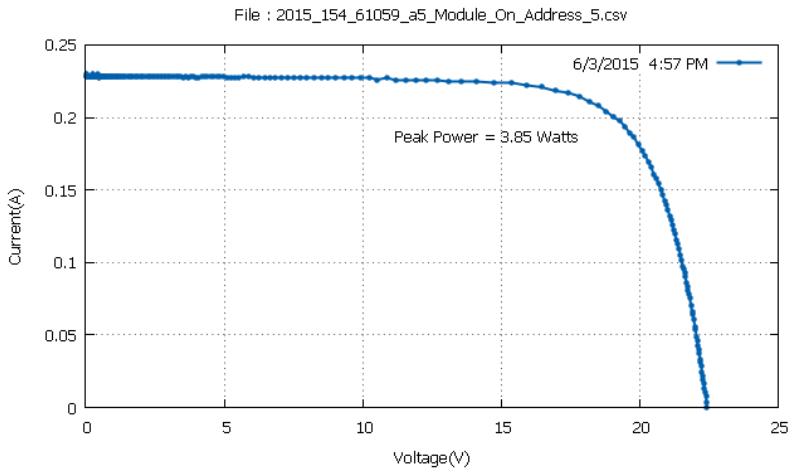
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

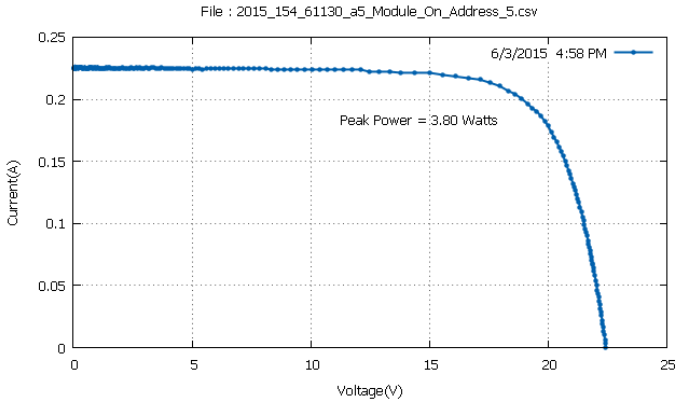
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:57	32,8	11,06
16:58	32,7	11,05
17:00	32,5	11,01
17:02	32,6	10,95
17:03	32,4	10,9
17:04	32,2	10,9

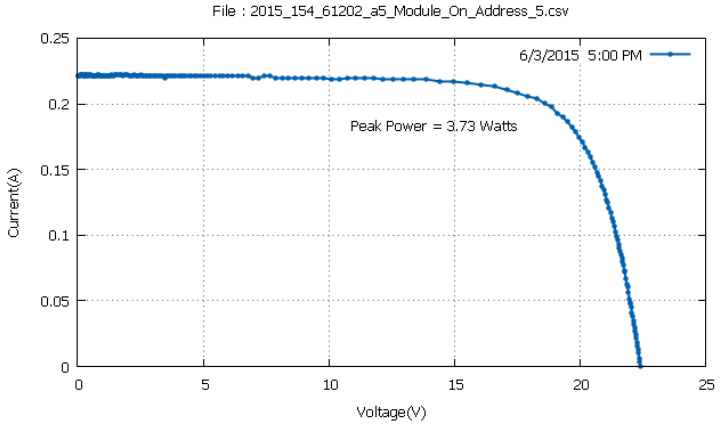
Mean Temperature: 32,53 ºC



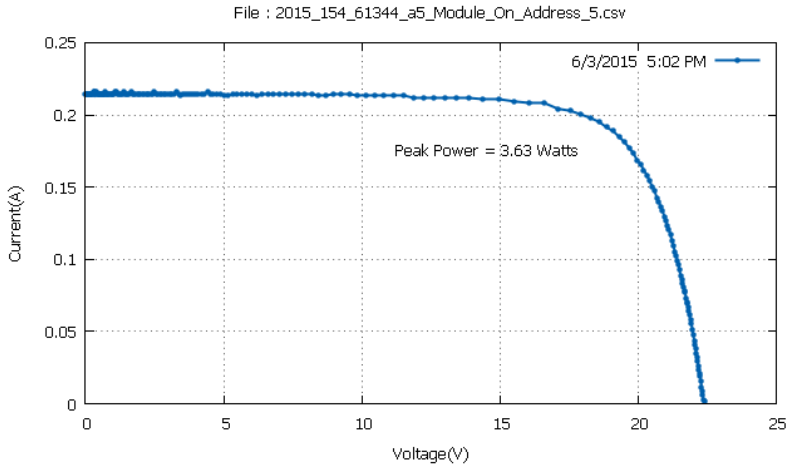
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5089111\ x\ 0.2080536}{460.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}06\ \%$$



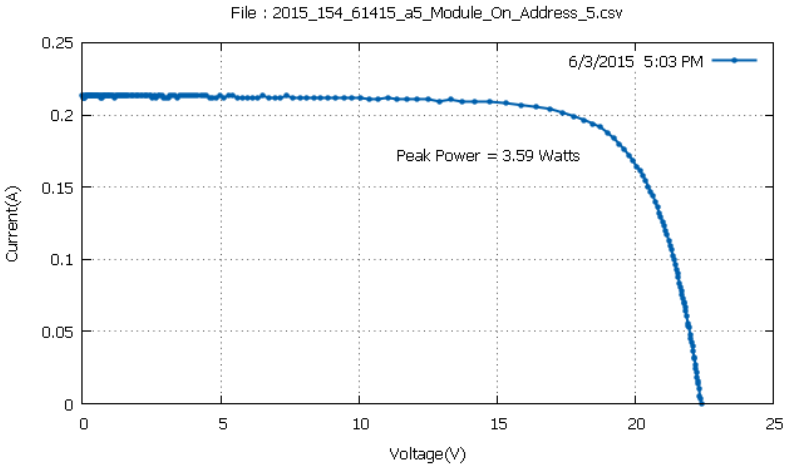
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6094189\ x\ 0.20420076}{454.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}05\ \%$$



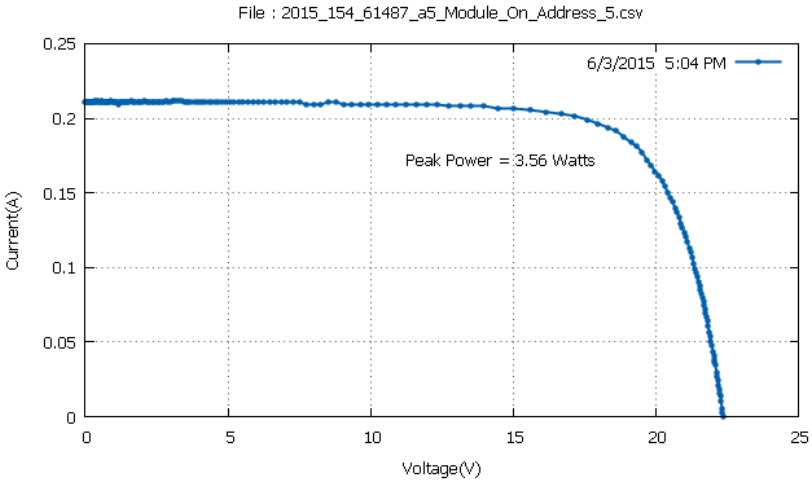
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.27697\ x\ 0.20420076}{448\ x\ 0{,}0756} \text{ x } 100 = 11{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5862236\ x\ 0.195210785}{438.2\ x\ 0{,}0756} \text{ x } 100 = 10{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7563133\ x\ 0.19135794}{435.4\ x\ 0{,}0756} \text{ x } 100 = 10{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.61715\ x\ 0.19135794}{432\ x\ 0{,}0756} \text{ x } 100 = 10{,}9\ \%$$

Module 4

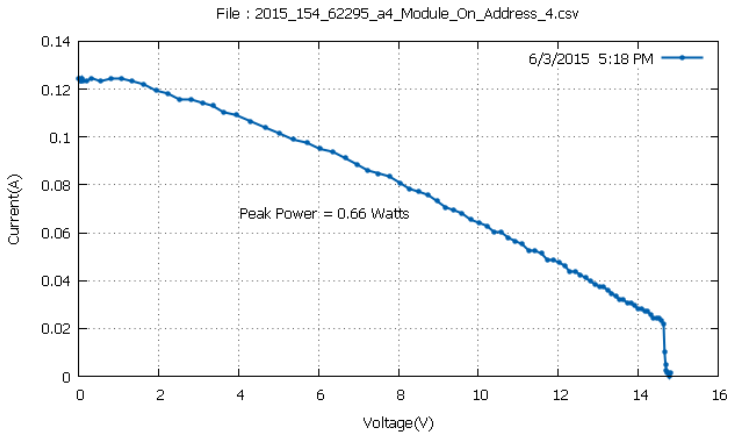
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

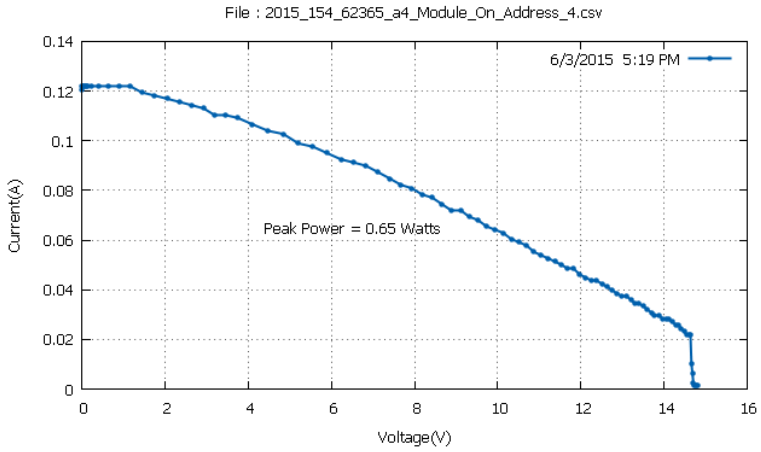
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
17:18	30,5	2,59
17:19	30,7	2,59
17:20	30,5	2,61
17:21	30	2,64
17:23	29,4	2,62
17:25	29,6	2,63

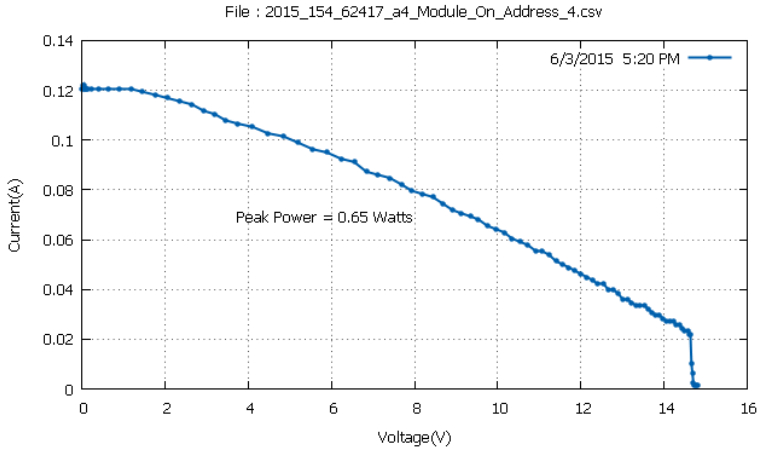
Mean Temperature: 30,11 ºC



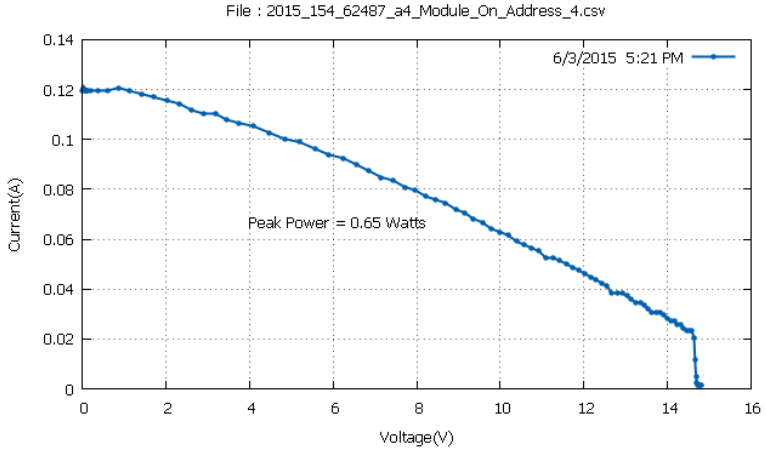
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ 0.0757726058}{378.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}59\ \%$$



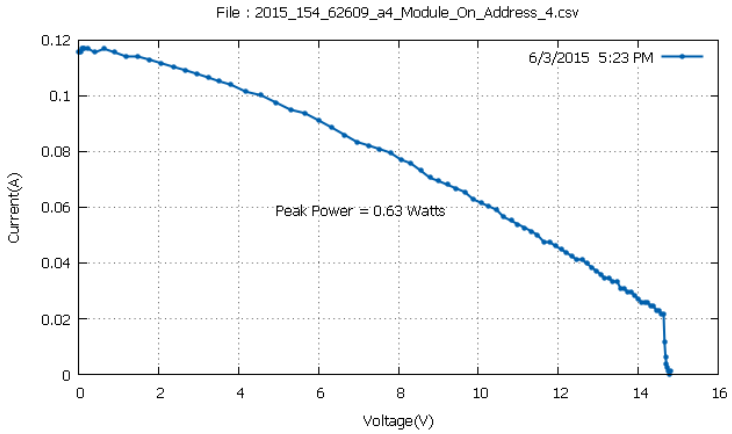
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.099828\ x\ 0.07191976}{372.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}59\ \%$$



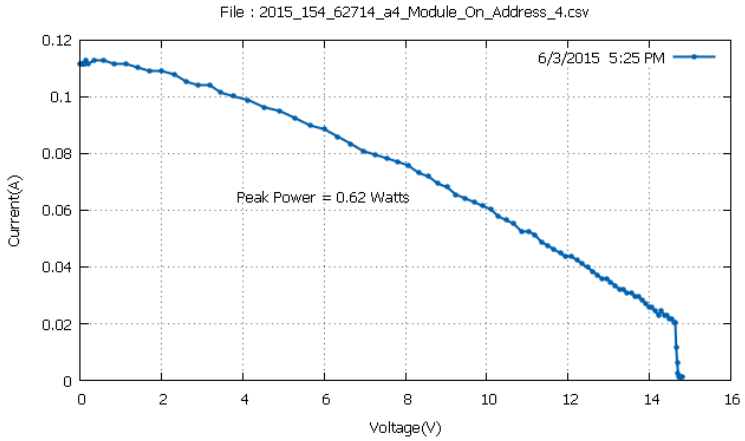
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.347232\ x\ 0.0693512037}{371.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.07448833}{366.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.65648651\ x\ 0.06549836}{357.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.566362\ x\ 0.07191976}{350.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}63\ \%$$

Module 8

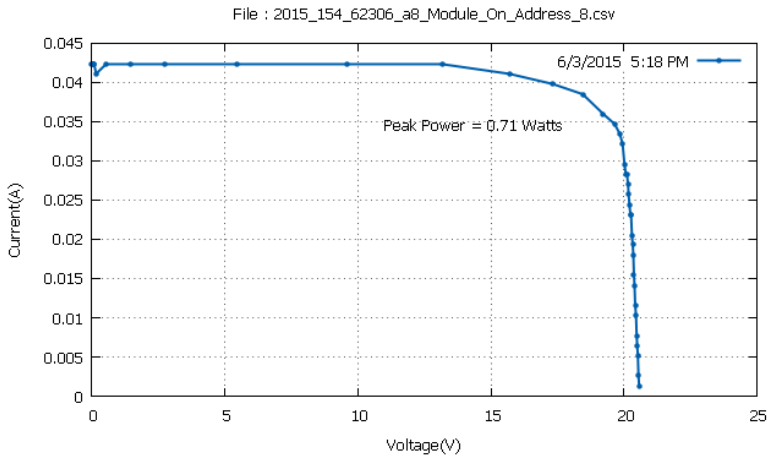
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

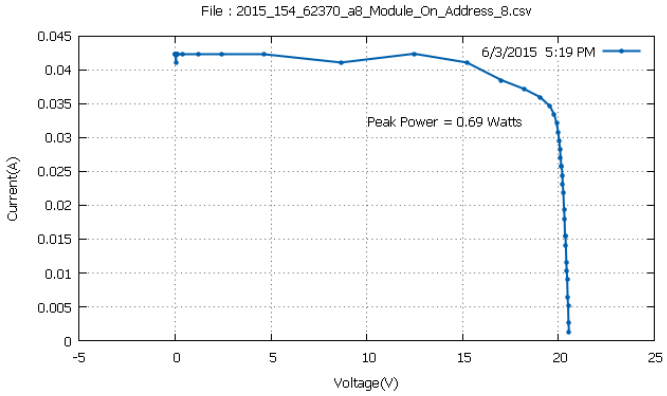
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
17:18	31,4	2,45
17:19	31,3	2,42
17:20	31,2	2,38
17:22	30,8	2,44
17:24	30,5	2,51
17:28	29,8	2,51

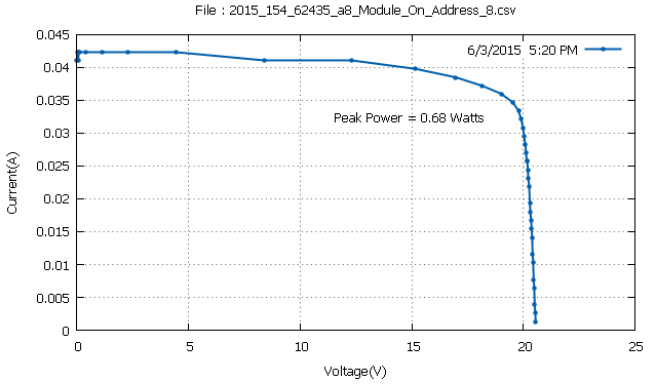
Mean Temperature: 30,83 ºC



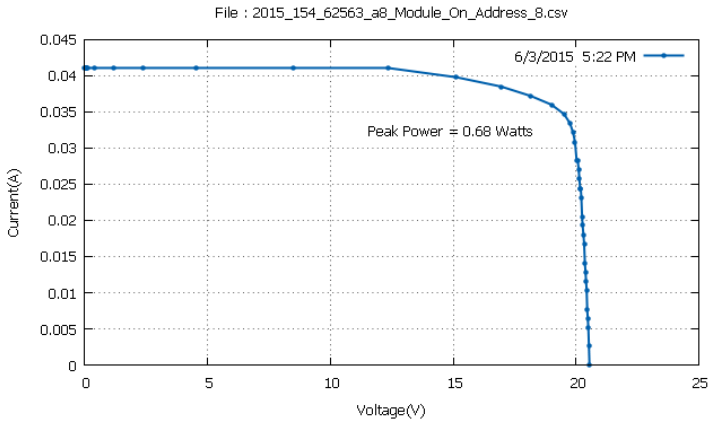
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.0385284461}{376.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}45\ \%$$



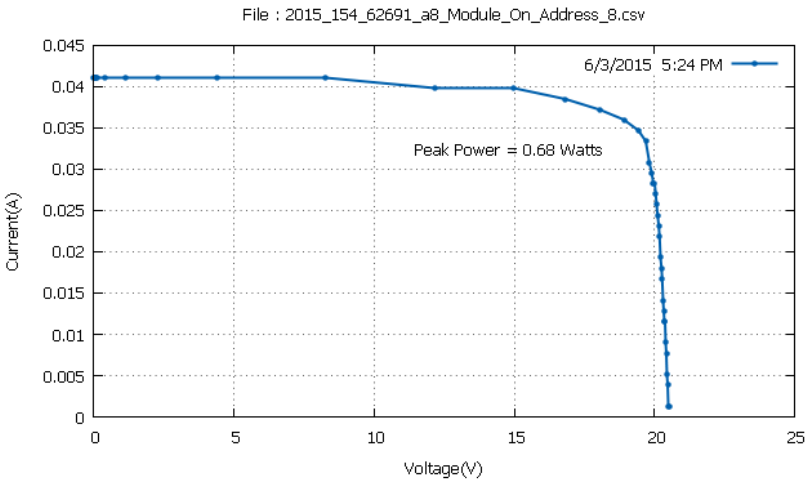
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.0346432\ x\ 0.03595988}{371.2\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}42\ \%$$



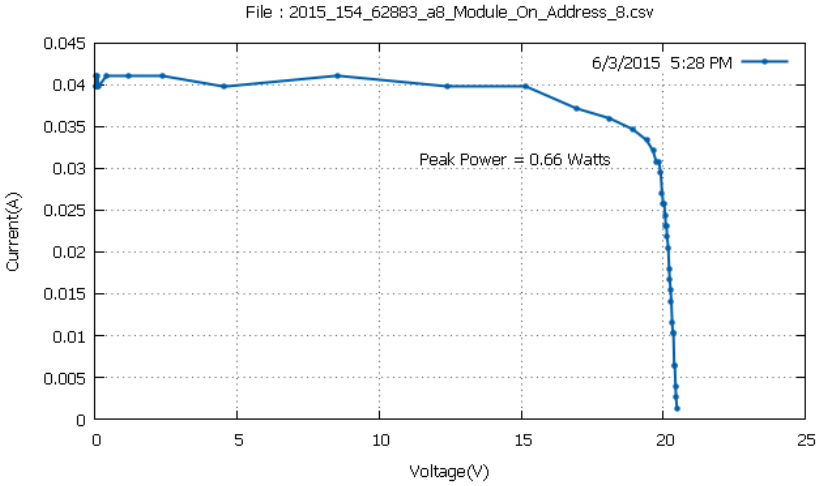
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.0037174\ x\ 0.03595988}{371.5\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.0037174\ x\ 0.03595988}{362.2\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}44\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9109421\ x\ 0.03595988}{352.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.926405\ x\ 0.0346756019}{342.1\ x\ 0{,}0768} \text{ x } 100 = 2{,}51\ \%$$

Module 3

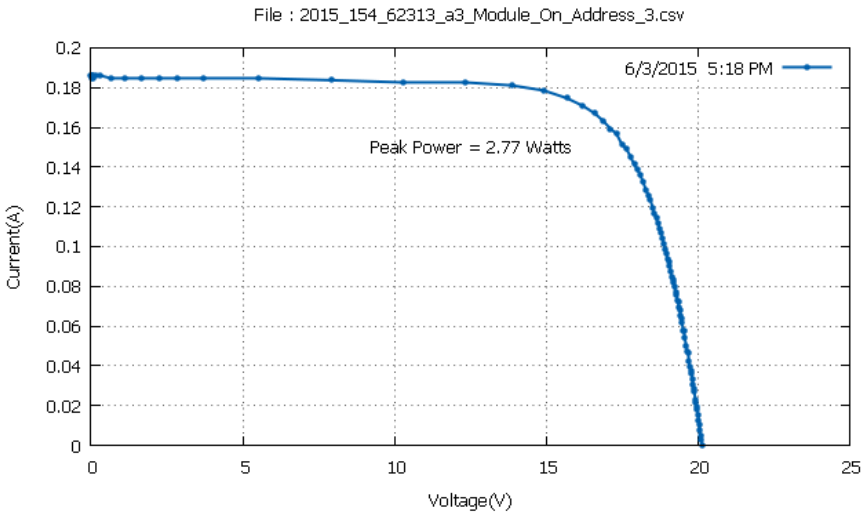
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

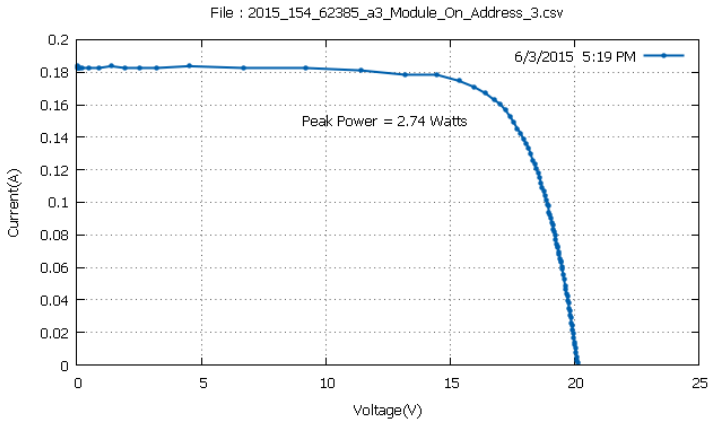
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
17:18	31,7	10,41
17:19	31,6	10,37
17:20	31,4	10,32
17:23	30,8	10,24
17:24	30,6	10,08
17:25	30,5	10

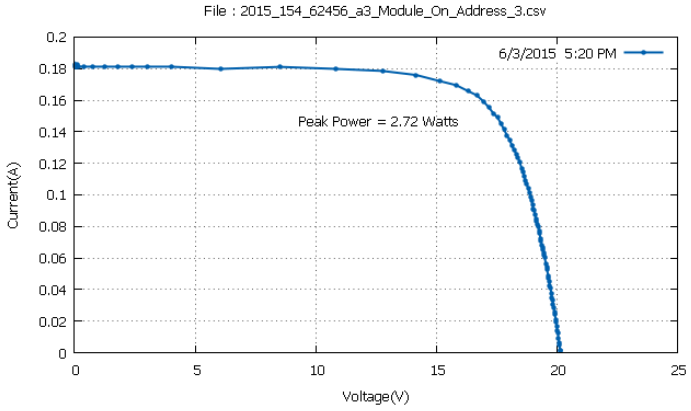
Mean Temperature: 31,1 ºC



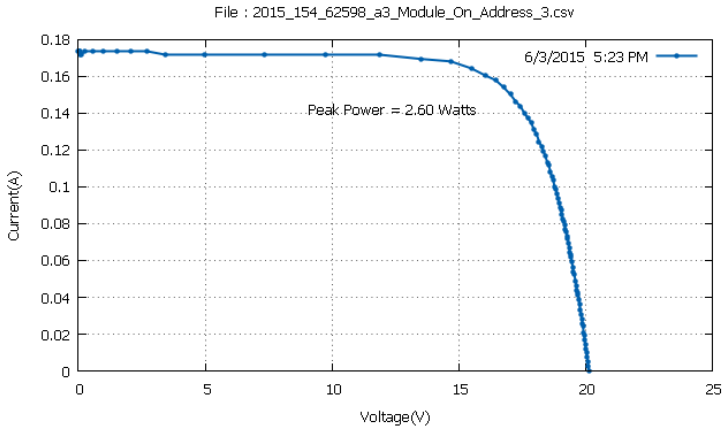
$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59926\ x\ 0.166956589}{375.1\ x\ 0{,}0709}$ x 100 = 10,41 %



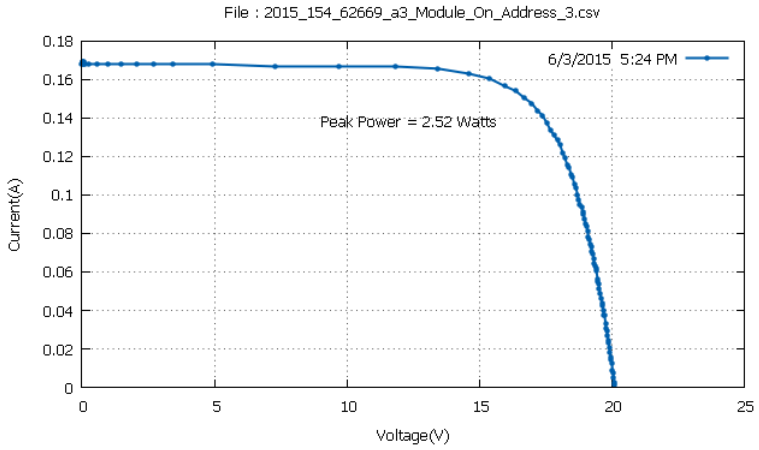
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.42917\ x\ 0.166956589}{372.4\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}37\ \%$$



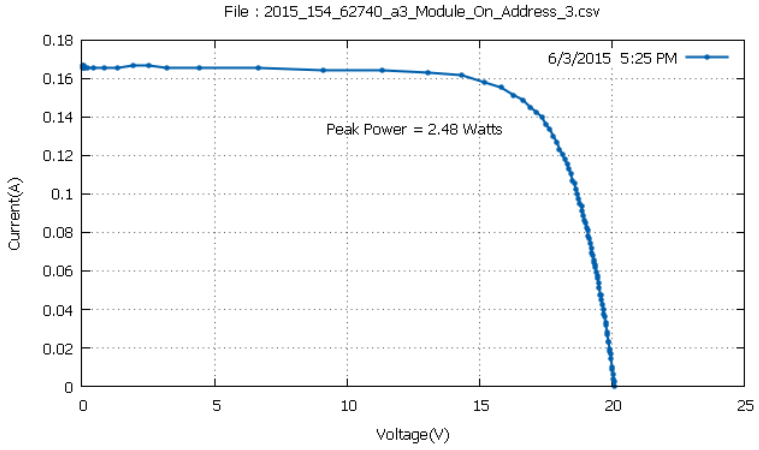
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6765747\ x\ 0.163103744}{371.7\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.157966629}{358.1\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3750515\ x\ 0.154113784}{352.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6379185\ x\ 0.148976654}{349.5\ x\ 0{,}0709} \text{ x } 100 = 10\ \%$$

Module 5

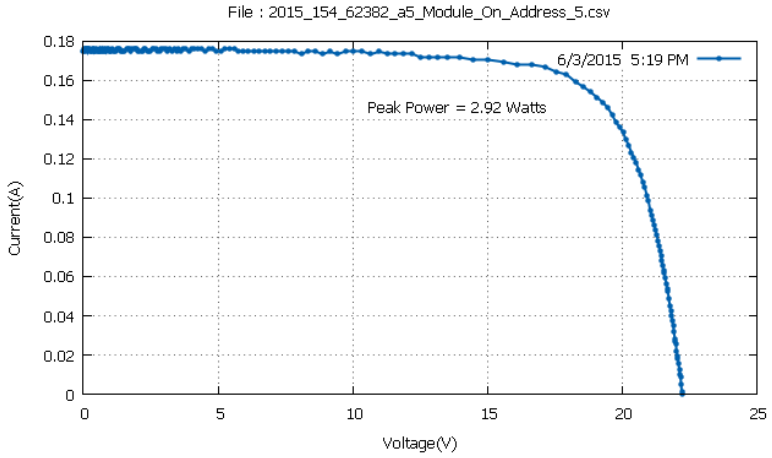
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

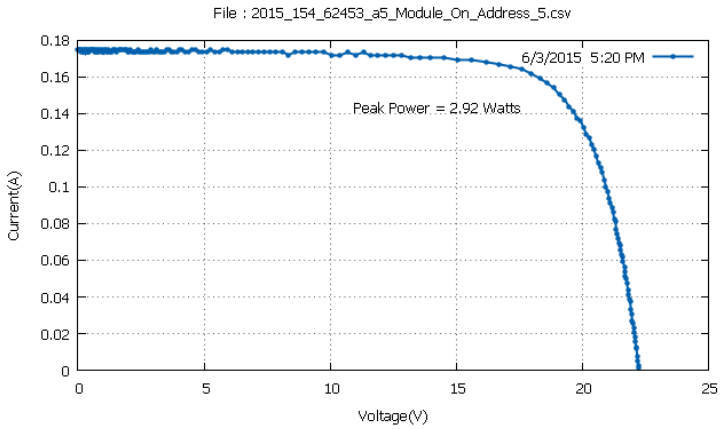
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
17:19	31,3	10,37
17:20	31,4	10,4
17:23	30,7	10,29
17:24	30,6	10,27
17:25	30,5	10,16
17:28	29,9	10,03

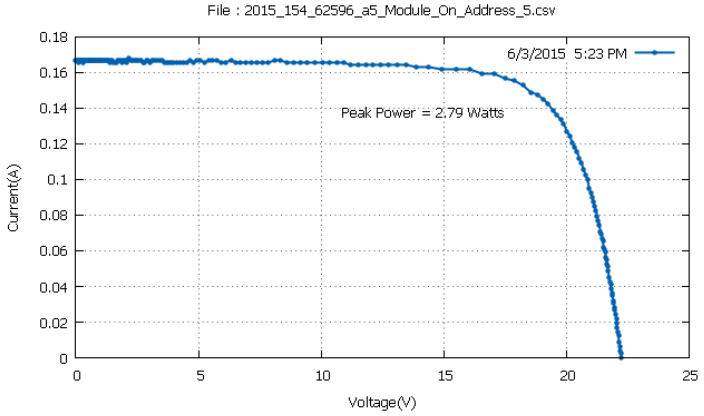
Mean Temperature: 30,73 ºC



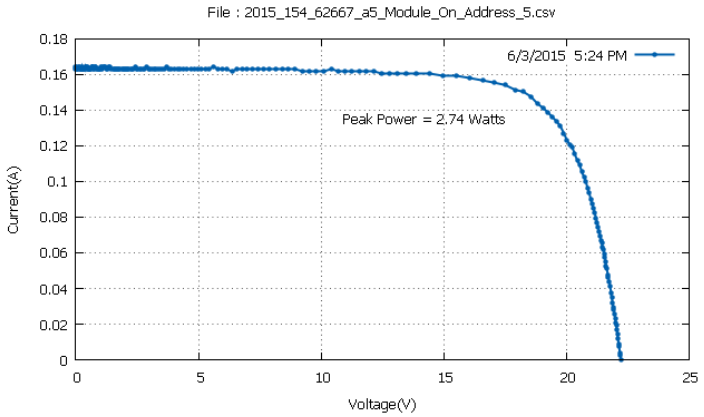
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9290581\ x\ 0.163103744}{372.2\ x\ 0{,}0756} \text{ x } 100 = 10{,}37\ \%$$



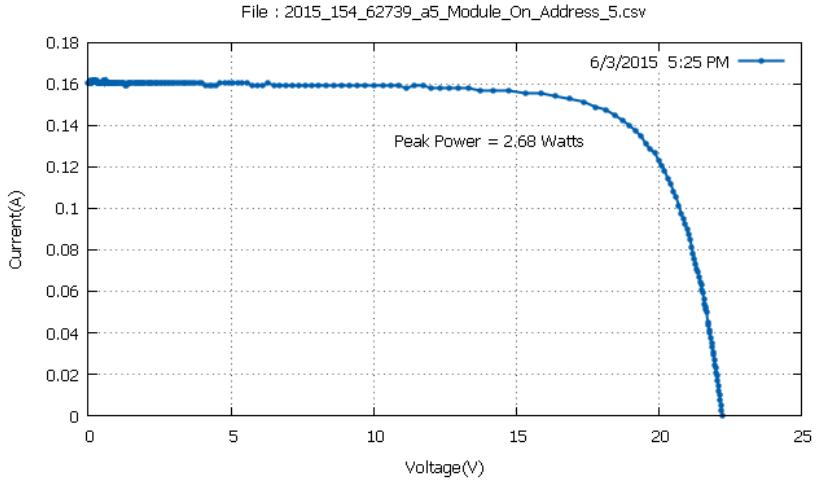
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3156261\ x\ 0.1592509}{371.7\ x\ 0{,}0756} \text{ x } 100 = 10{,}4\ \%$$



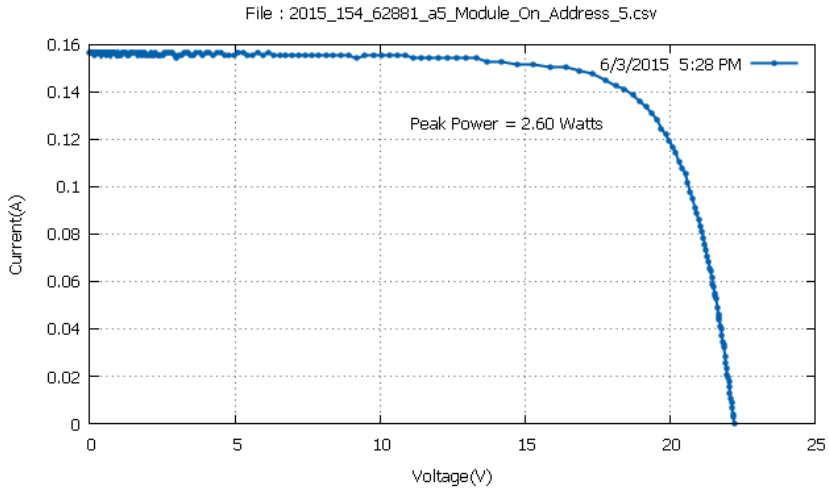
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2305813\ x\ 0.1528295}{358.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}29\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2460442\ x\ 0.15026094}{352.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1300735\ x\ 0.147692367}{348.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4315968\ x\ 0.141270965}{342.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}03\ \%$$

Module 4

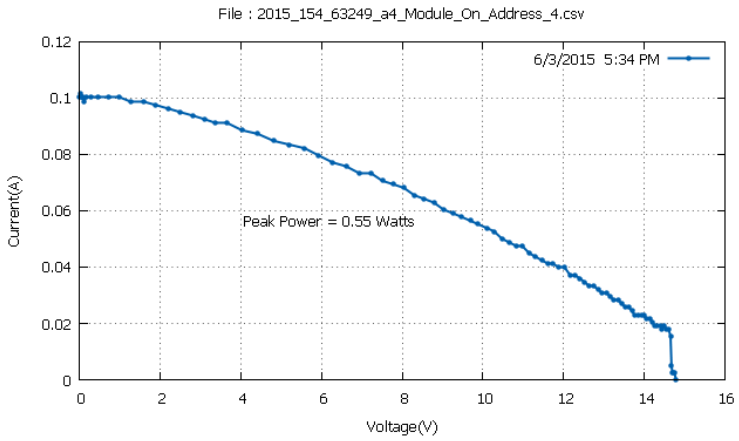
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

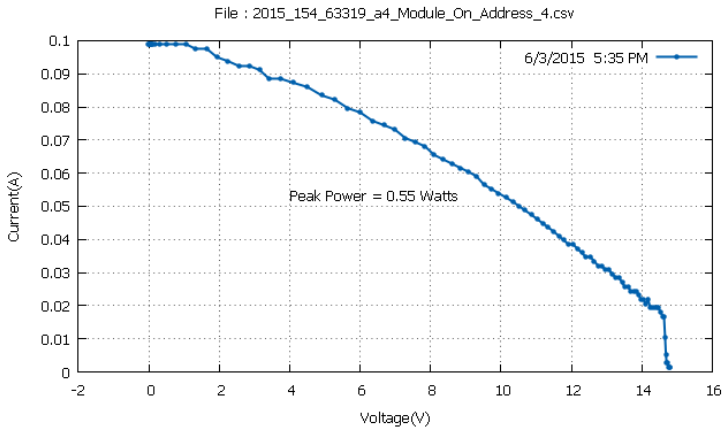
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
17:34	28,5	2,52
17:35	28,6	2,54
17:36	28,4	2,5
17:37	27,9	2,52
17:40	27,1	2,42
17:42	27	2,38

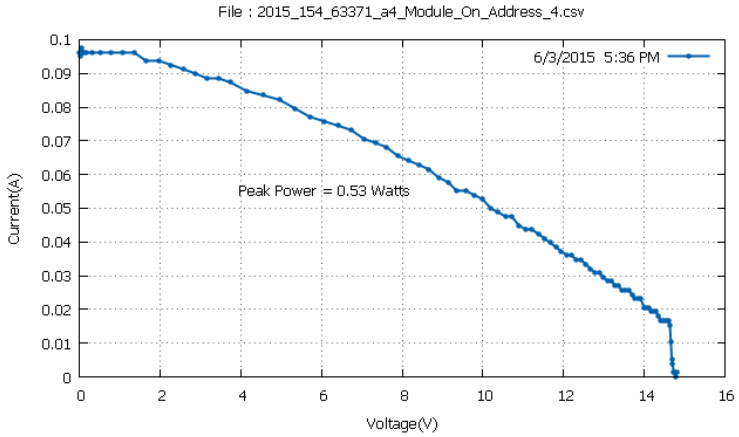
Mean Temperature: 27,91 ºC



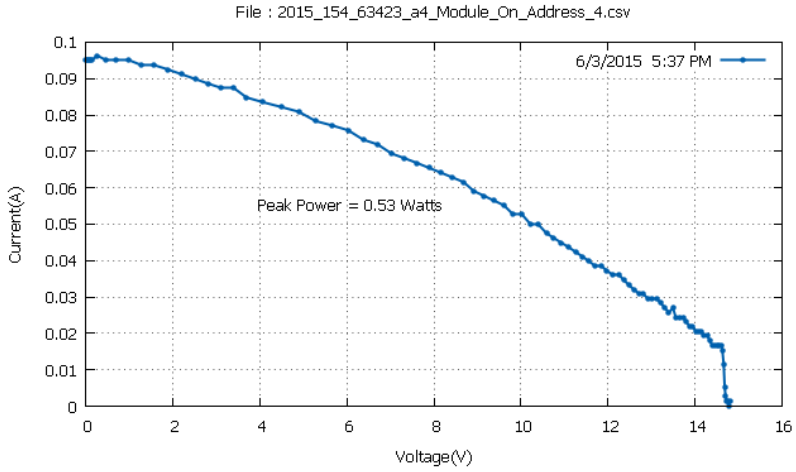
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.782842\ x\ 0.0629297942}{324.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}52\ \%$$



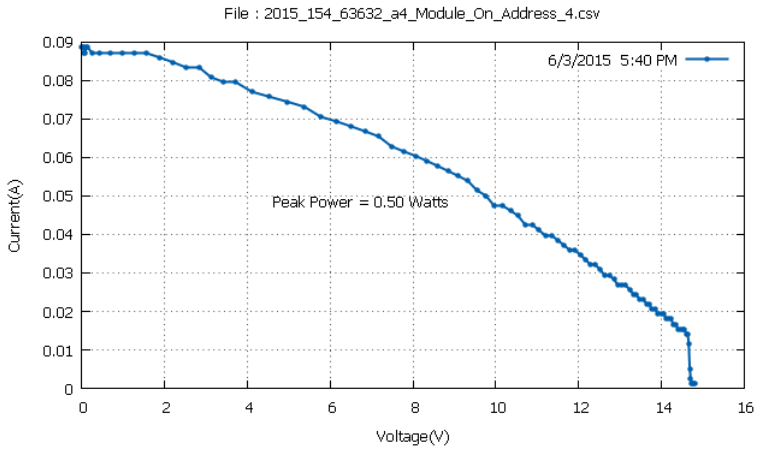
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.300843\ x\ 0.05907695}{321.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}54\ \%$$



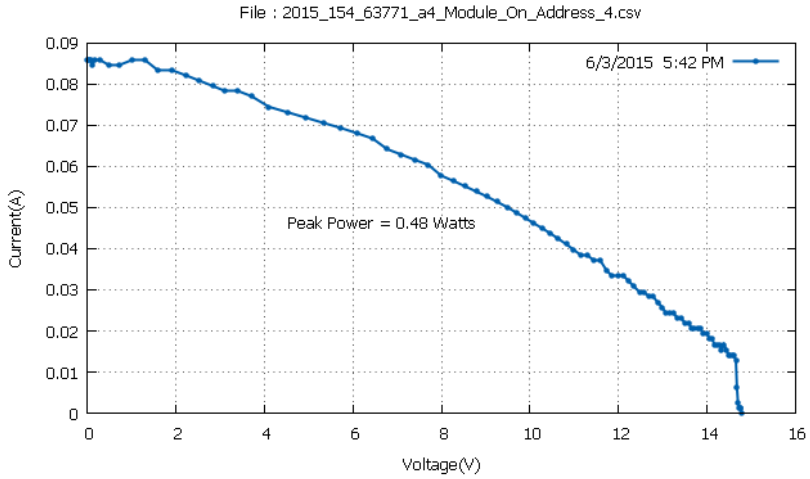
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.651408\ x\ 0.06164551}{316.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.674602\ x\ 0.06164551}{313.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.324038\ x\ 0.0539398231}{306.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.254456\ x\ 0.05137126}{299.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}38\ \%$$

Module 8

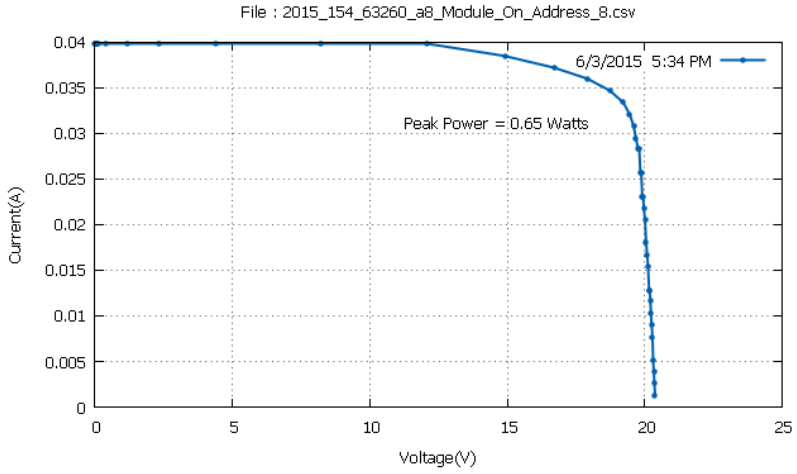
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

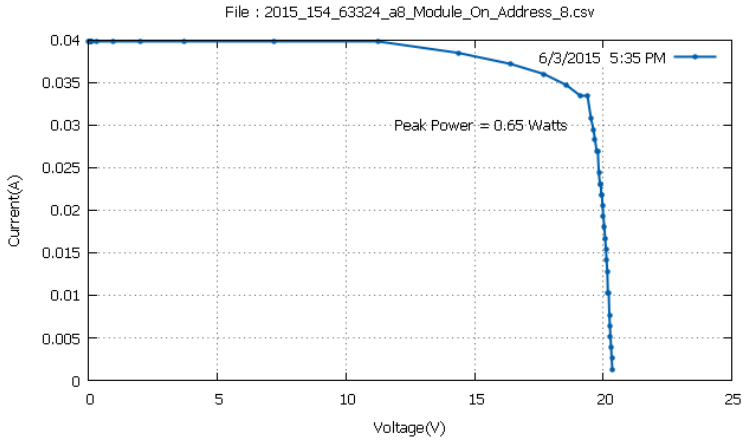
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
17:34	28,9	2,61
17:35	28,9	2,63
17:36	28,8	2,62
17:38	28,6	2,64
17:40	28,3	2,73
17:42	27,9	2,65

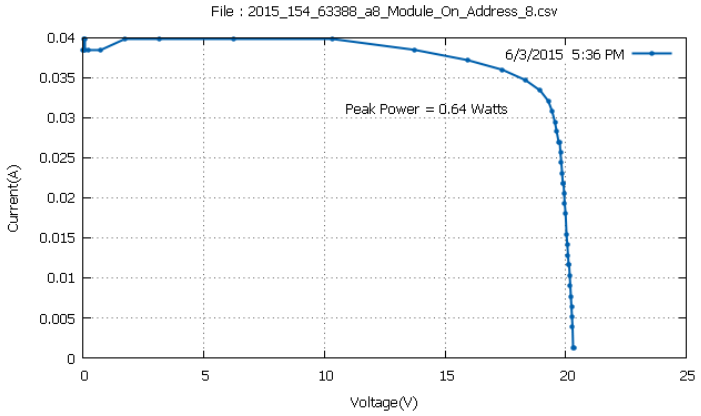
Mean Temperature: 28,56 ºC



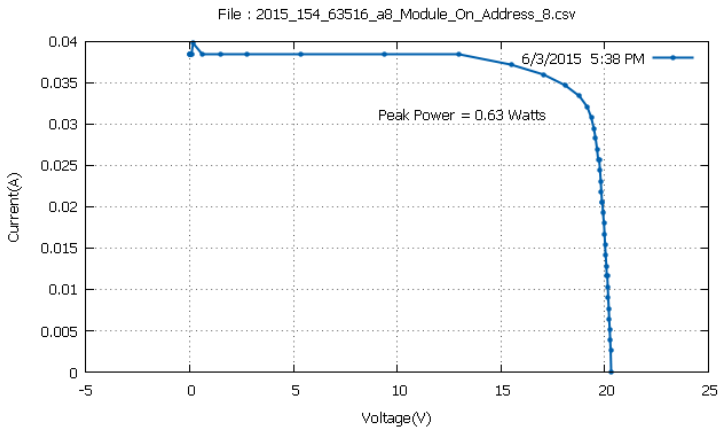
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.73312\ x\ 0.0346756019}{323.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}61\ \%$$



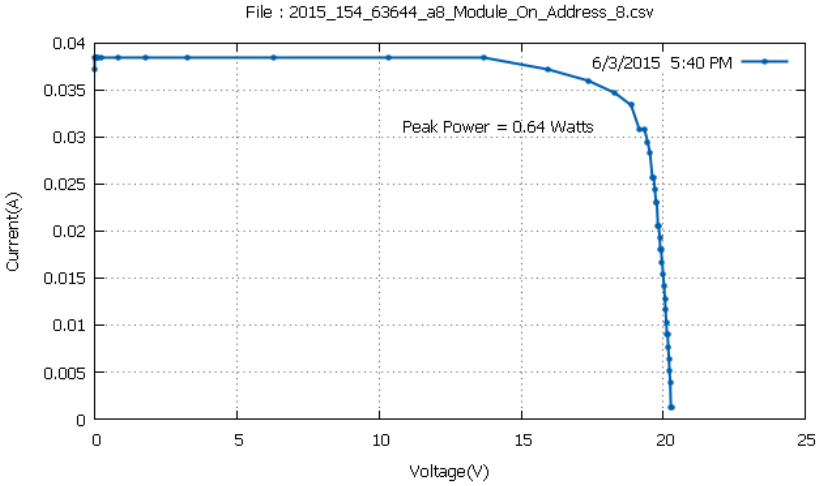
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.382555\ x\ 0.03339132}{321.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}63\ \%$$



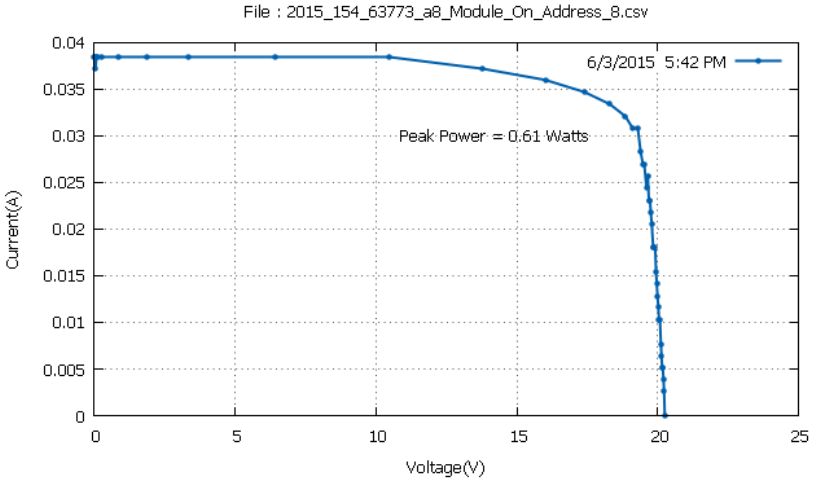
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.33882\ x\ 0.0346756019}{317.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.0346756019}{310.2\ x\ 0{,}0768} \text{ x } 100 = 2{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3001633\ x\ 0.0346756019}{304.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3078938\ x\ 0.03339132}{299.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}65\ \%$$

Module 3

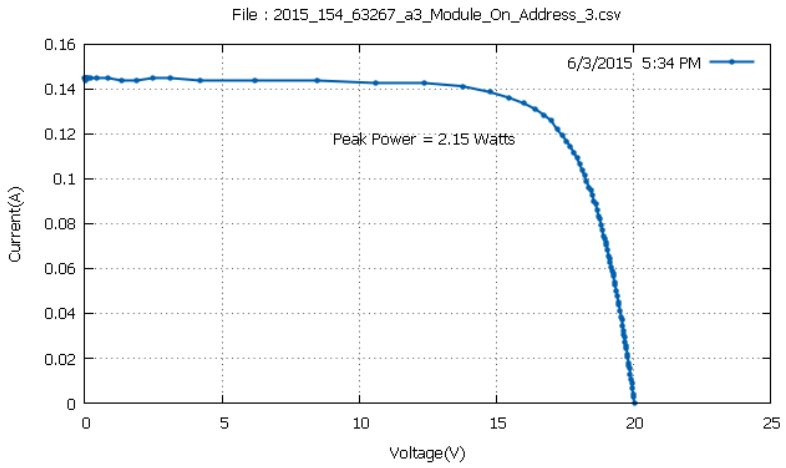
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

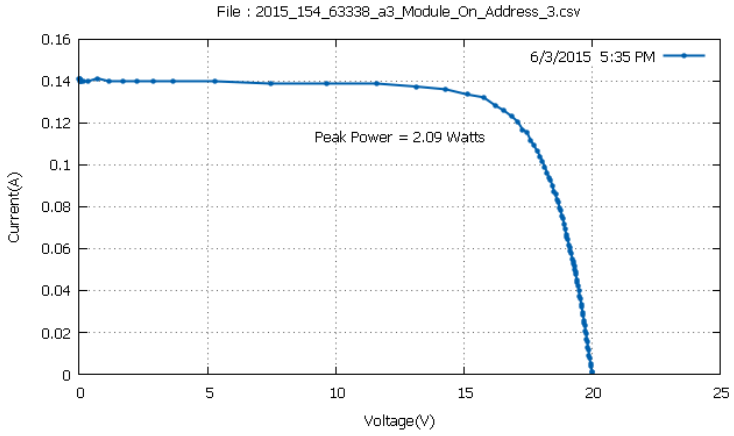
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
17:34	29	9,37
17:35	29	9,24
17:36	28,8	9,11
17:43	27,7	8,43
17:45	27,5	8,25
17:46	27,5	8,16

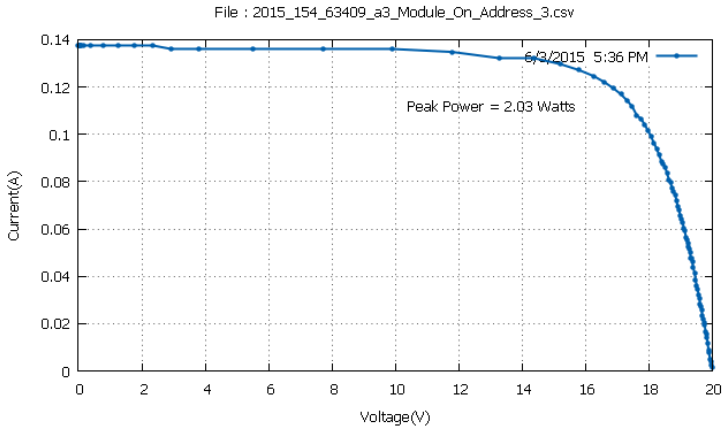
Mean Temperature: 28,25 ºC



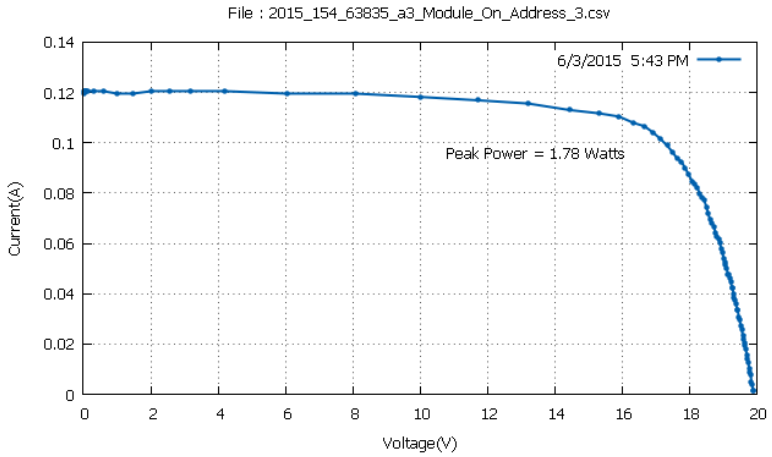
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4369011\ x\ 0.130996719}{323.5\ x\ 0{,}0709} \text{ x } 100 = 9{,}37\ \%$$



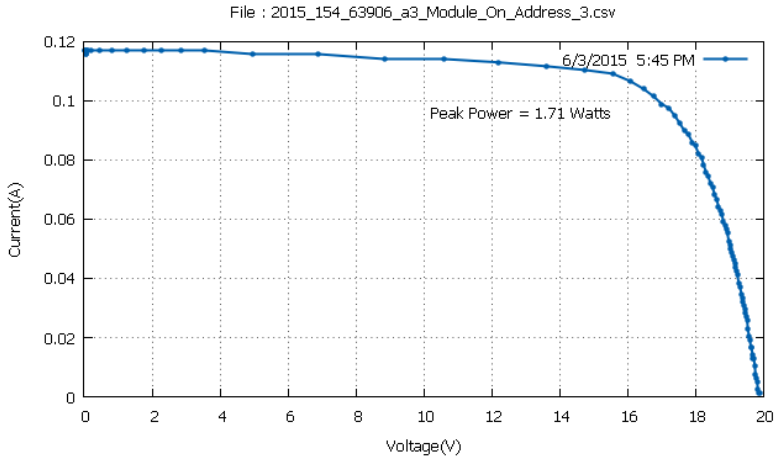
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7720041\ x\ 0.13228099}{319\ x\ 0{,}0709}\ \text{x}\ 100 = 9{,}24\ \%$$



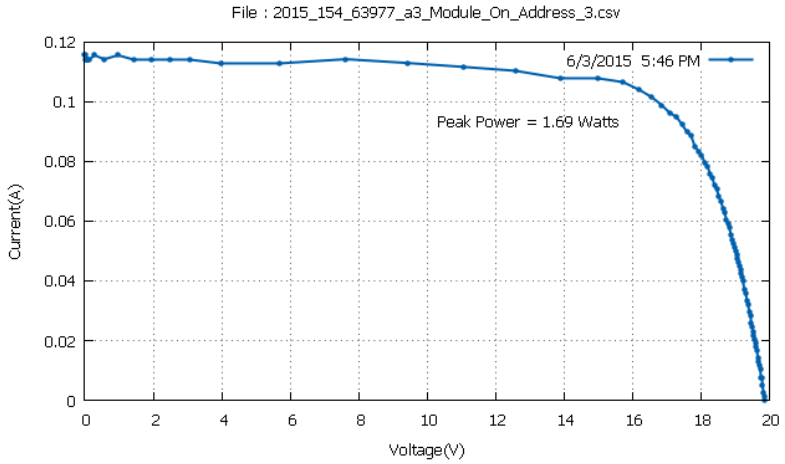
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.25908\ x\ 0.1245753}{314\ x\ 0{,}0709}\ \text{x}\ 100 = 9{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6611118\ x\ 0.106595367}{297.6\ x\ 0{,}0709}\ \text{x}\ 100 = 8{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.106595367}{292.3\ x\ 0{,}0709} \text{ x } 100 = 8{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.1040268}{291.8\ x\ 0{,}0709} \text{ x } 100 = 8{,}16\ \%$$

Module 5

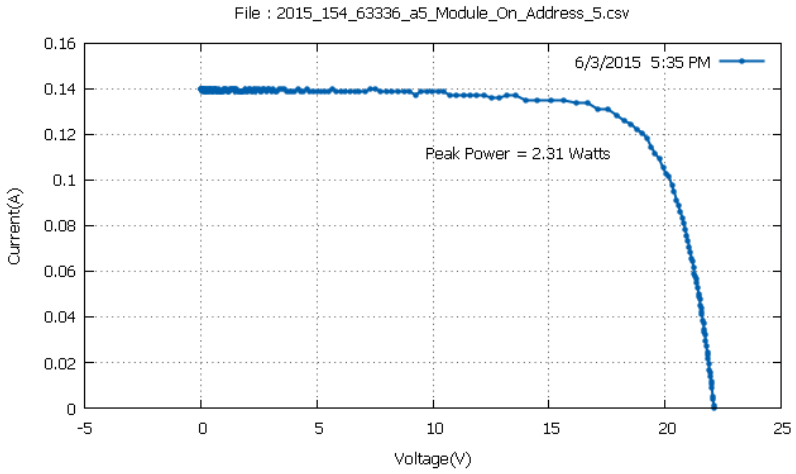
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

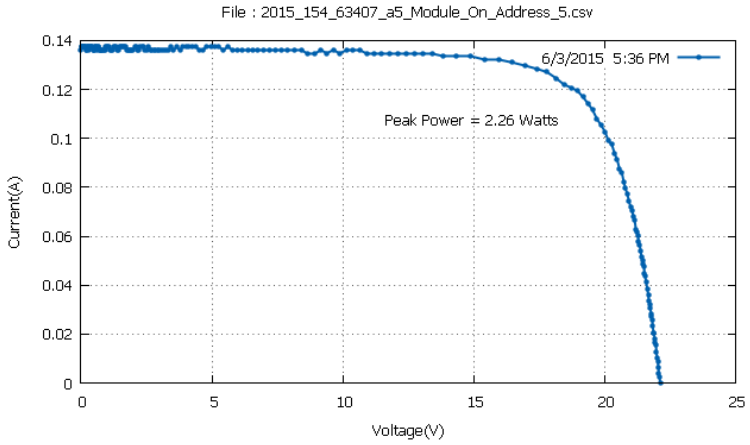
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
17:35	29,2	9,56
17:36	29,1	9,48
17:39	28,6	9,37
17:40	28,3	9,25
17:41	28,1	9,21
17:48	27,4	8,46

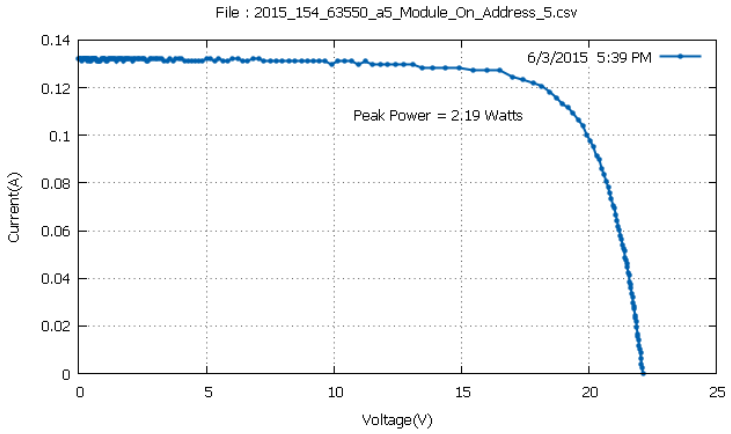
Mean Temperature: 28,45 ºC



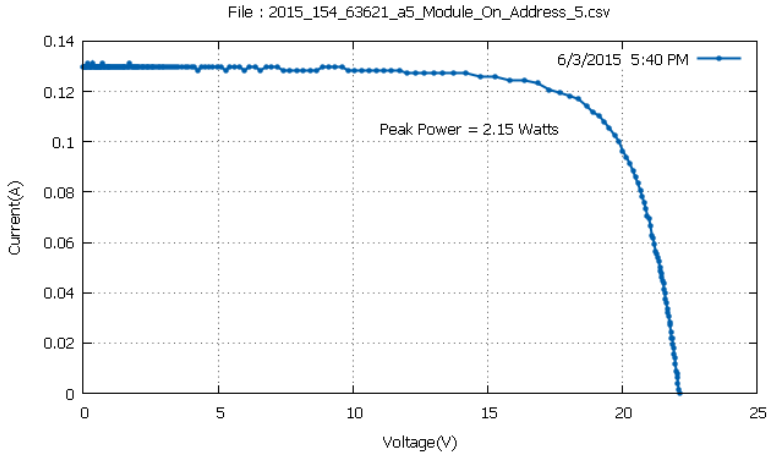
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.539835\ x\ 0.1245753}{319.3\ x\ 0{,}0756} \text{ x } 100 = 9{,}56\ \%$$



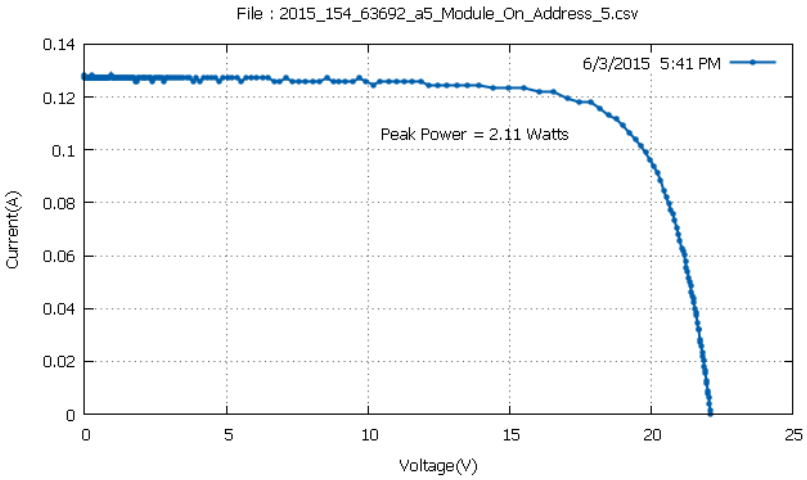
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9650612\ x\ 0.119438179}{315.2\ x\ 0{,}0756} \text{ x } 100 = 9{,}48\ \%$$



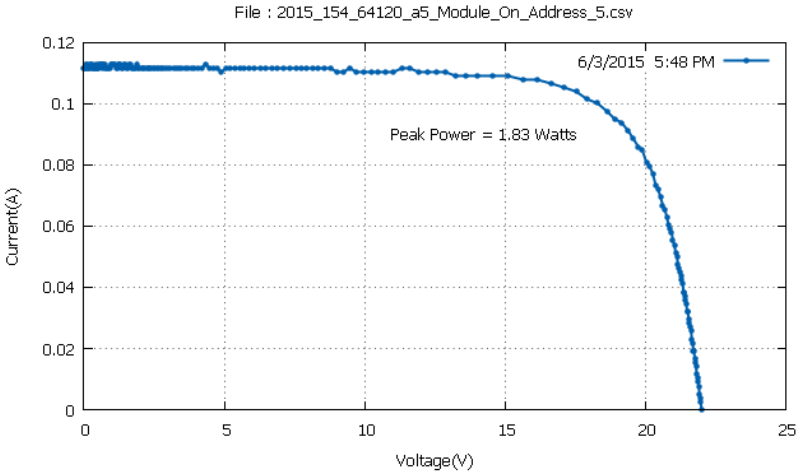
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.120722458}{309\ x\ 0{,}0756} \text{ x } 100 = 9{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3852081\ x\ 0.116869614}{307.3\ x\ 0{,}0756} \text{ x } 100 = 9{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.1181539}{302.8\ x\ 0{,}0756} \text{ x } 100 = 9{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.29243\ x\ 0.100173958}{286.1\ x\ 0{,}0756} \text{ x } 100 = 8{,}46\ \%$$

Module 4

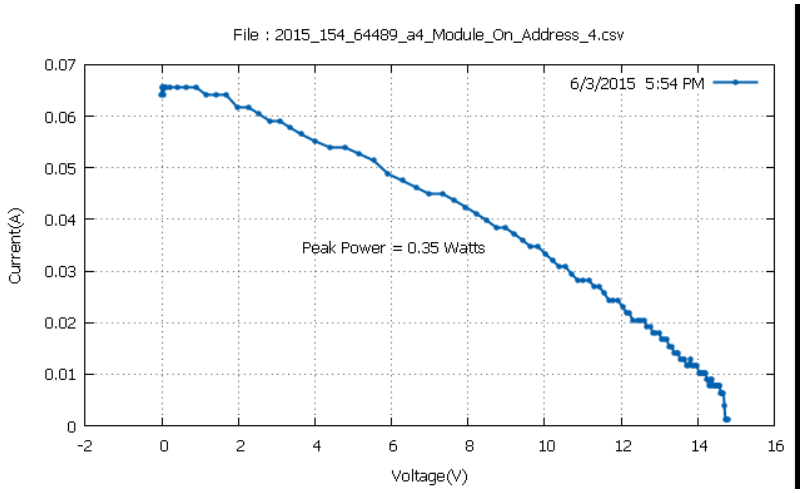
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

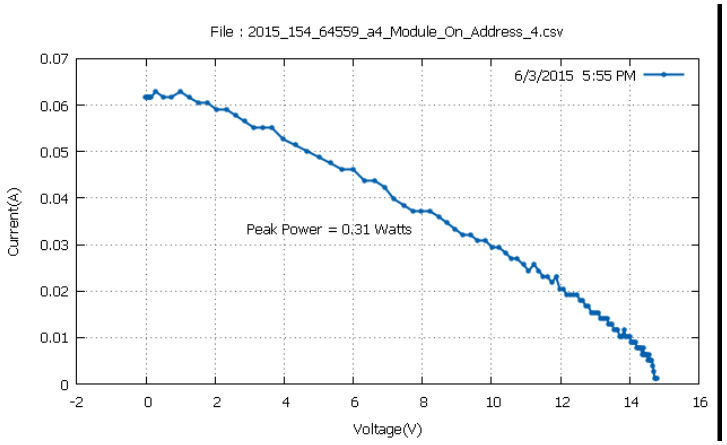
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:54	25,6	1,94
17:55	25,8	1,74
17:56	25,5	1,74
17:58	25,4	1,67
18:00	25,2	1,5
18:05	24,4	1,43

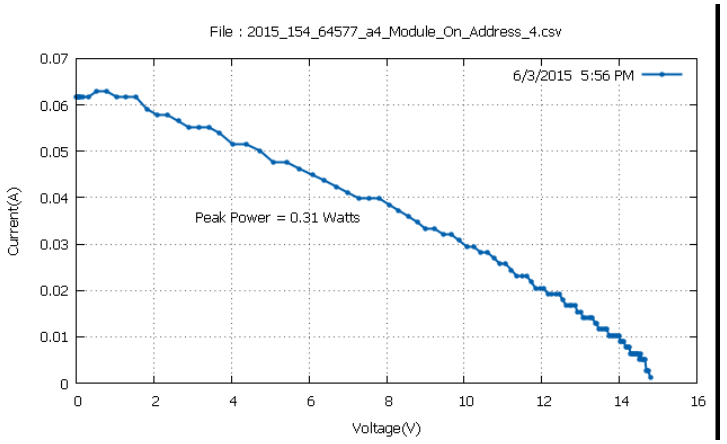
Mean temperature: 25,31 ºC



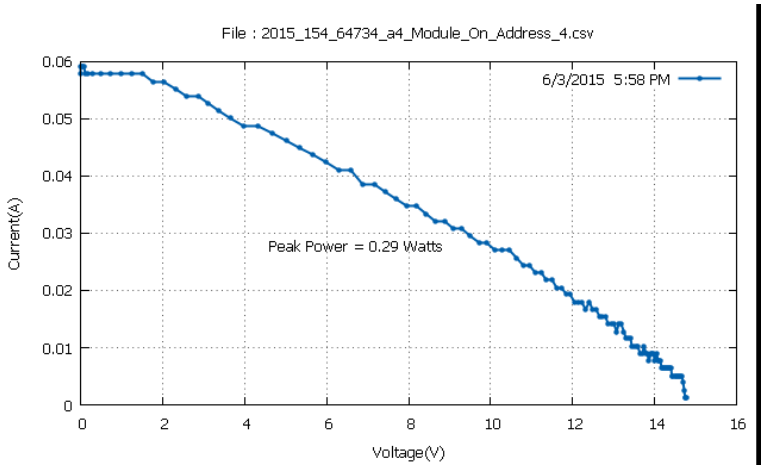
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.976126\ x\ 0.0385284461}{267.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}94\ \%$$



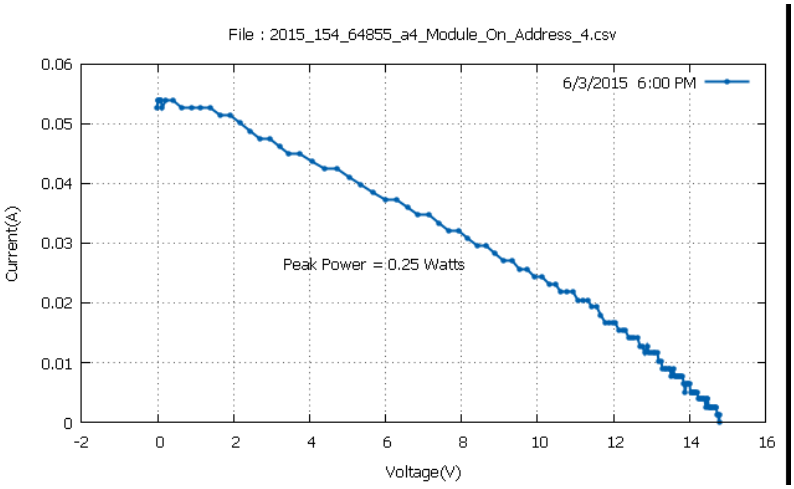
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.226182\ x\ 0.0372441635}{264.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}74\ \%$$



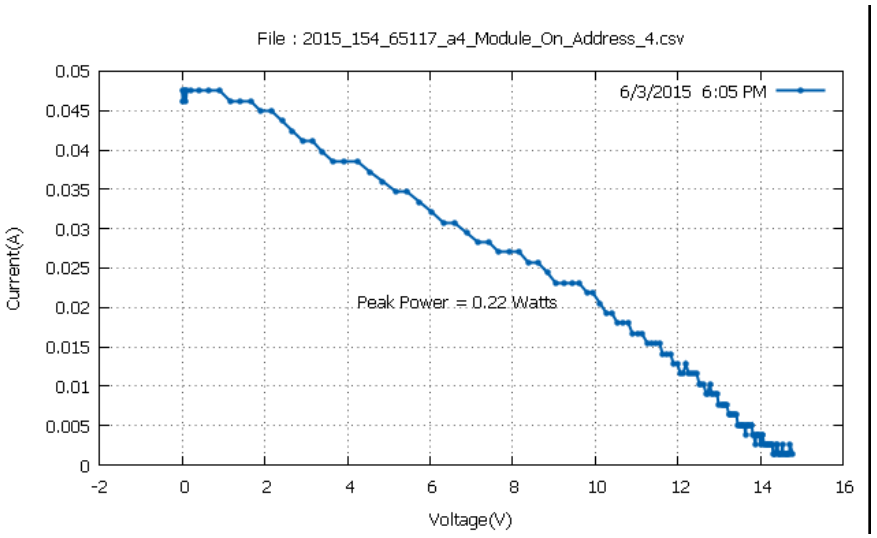
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.80095673\ x\ 0.039812725}{264.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.860155\ x\ 0.03339132}{258.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.643677\ x\ 0.029538475}{246.8\ x\ 0{,}0671}\ \text{x } 100 = 1{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.625561\ x\ 0.0231170673}{227.9\ x\ 0{,}0671}\ \text{x } 100 = 1{,}43\ \%$$

Module 8

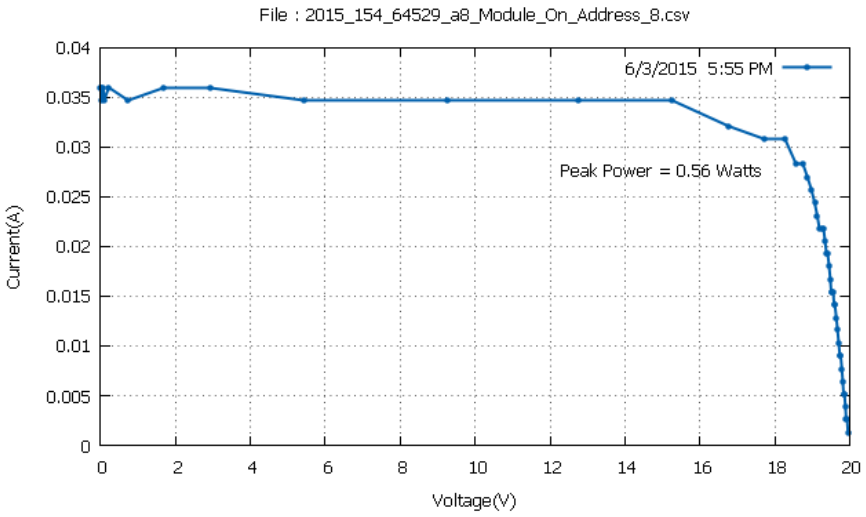
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

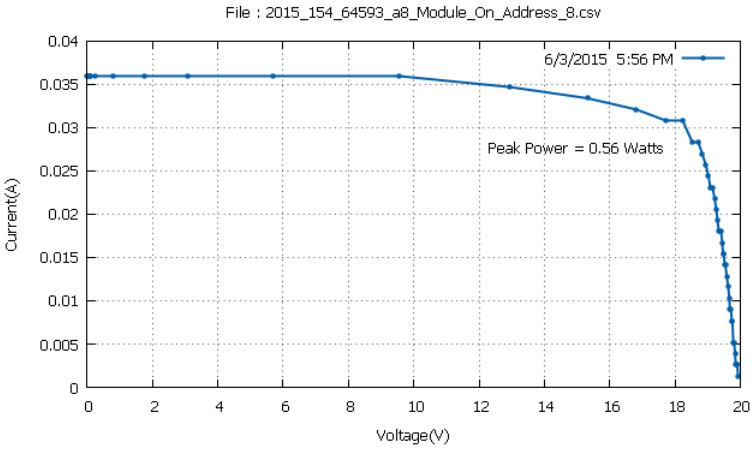
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:55	26,2	2,74
17:56	26,1	2,77
17:58	25,8	2,73
17:59	25,6	2,77
18:00	25,5	2,8
18:05	24,6	2,9

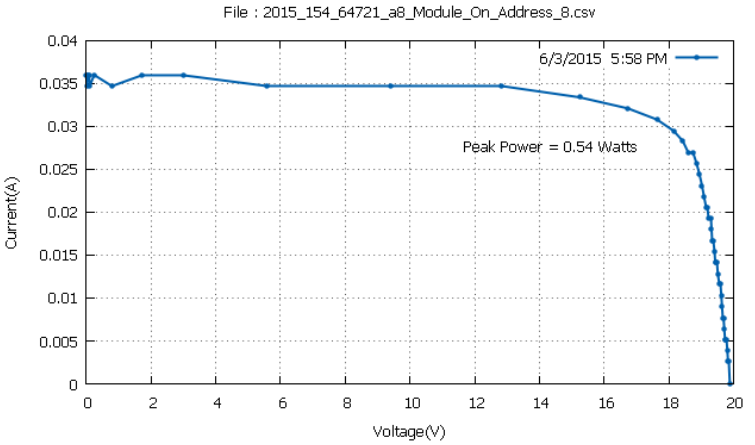
Mean Temperature: 25,63 ºC



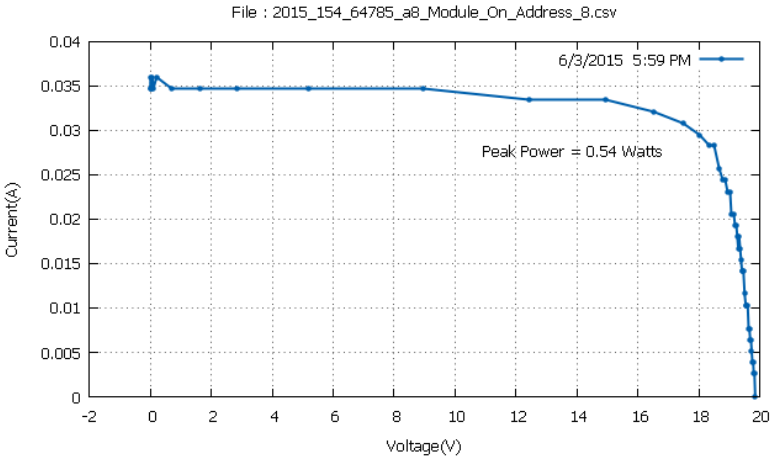
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.261507\ x\ 0.0308227558}{265.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}74\ \%$$



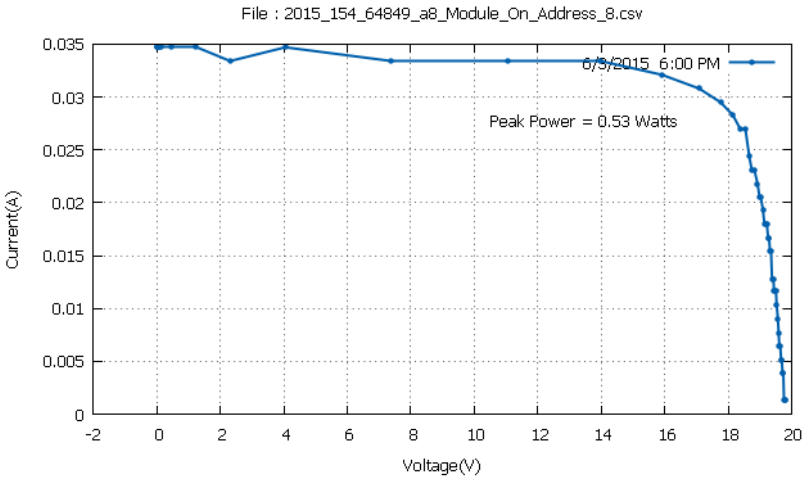
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2383118\ x\ 0.0308227558}{262.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}77\ \%$$



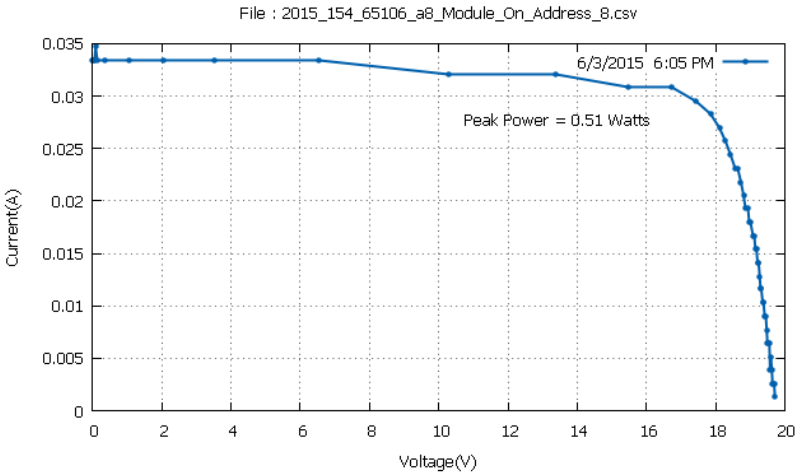
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.0308227558}{257\ x\ 0{,}0768} \text{ x } 100 = 2{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.488369\ x\ 0.0308227558}{253.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}77\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.086338\ x\ 0.0308227558}{246.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.71523\ x\ 0.0308227558}{228.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}9\ \%$$

Module 3

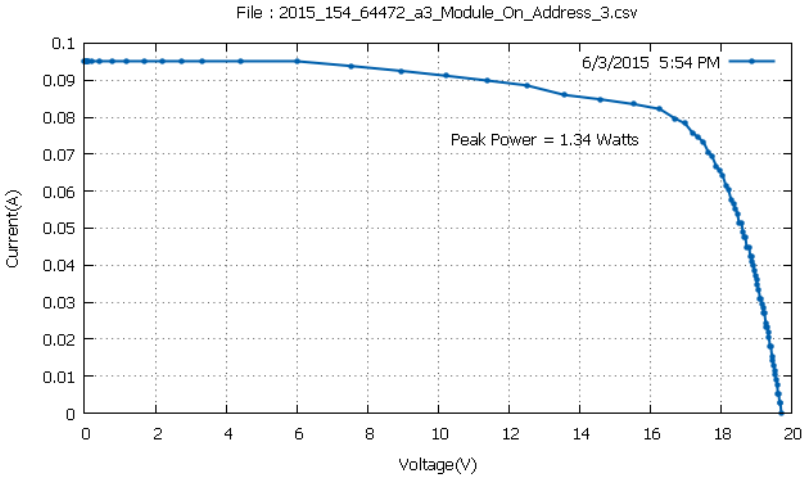
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

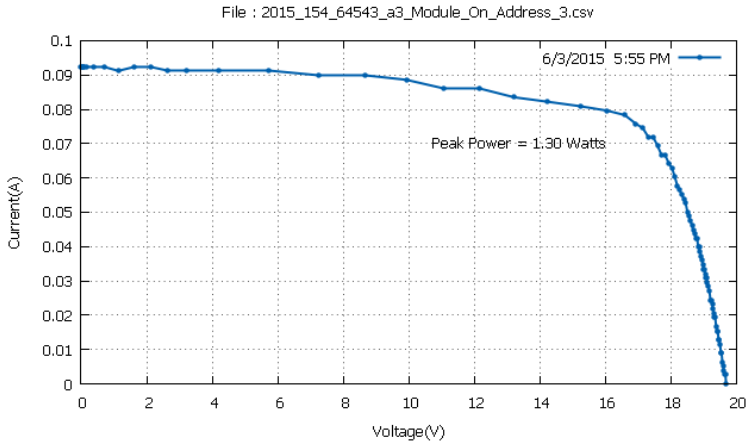
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:54	26,4	7,03
17:55	26,3	6,92
17:56	26,1	6,86
17:59	25,7	6,33
18:06	24,7	3,78
18:08	24,5	3,5

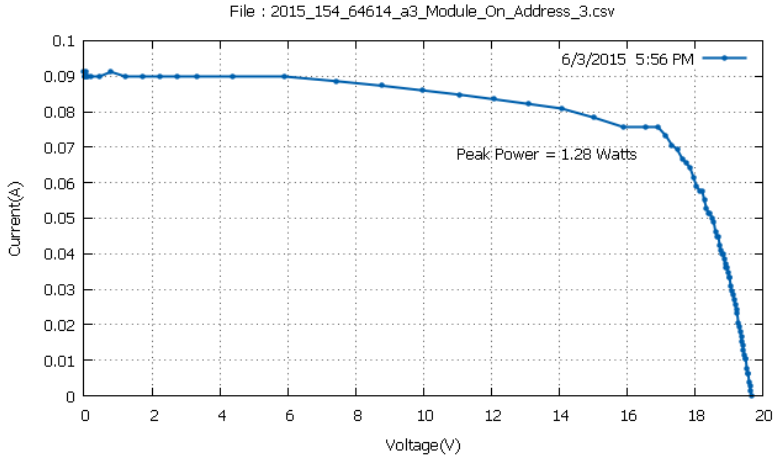
Mean Temperature: 25,61 ºC



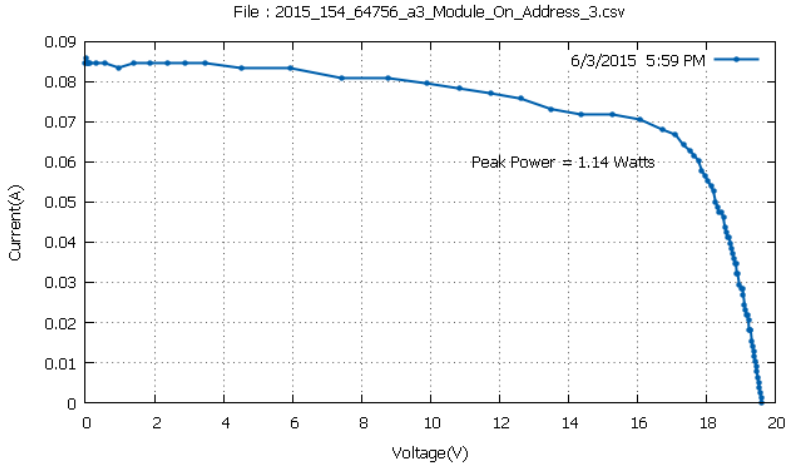
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2745438\ x\ 0.0821940154}{268.7\ x\ 0{,}0709} \text{ x } 100 = 7{,}03\ \%$$



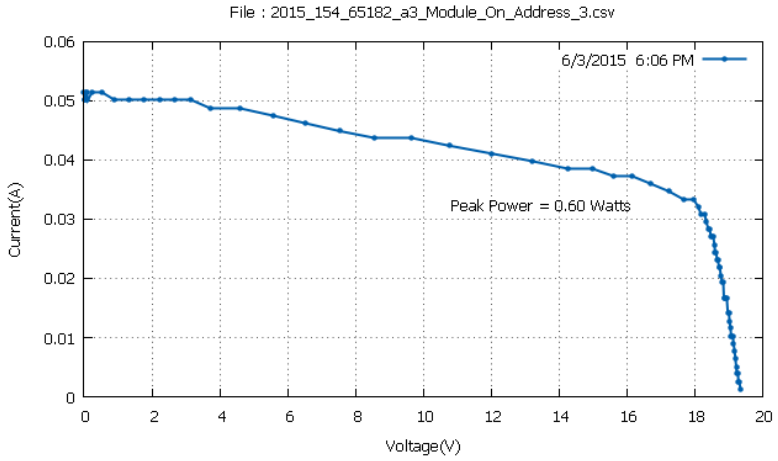
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59153\ x\ 0.07834117}{264.7\ x\ 0{,}0709} \text{ x } 100 = 6{,}92\ \%$$



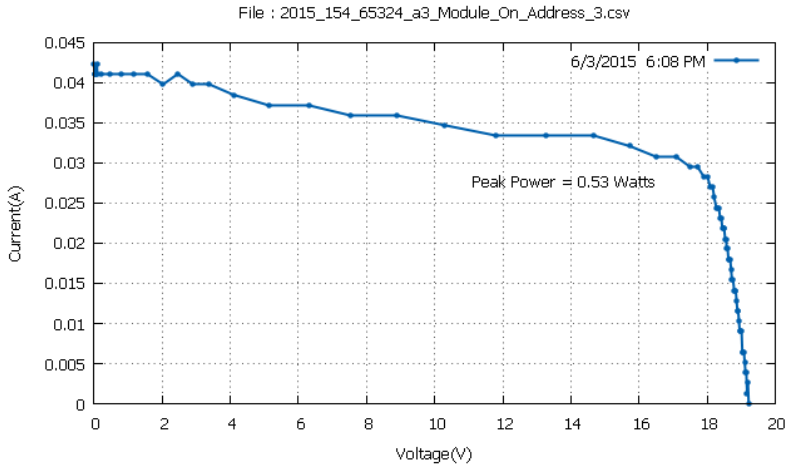
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9085159\ x\ 0.0757726058}{263\ x\ 0{,}0709} \text{ x } 100 = 6{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1095314\ x\ 0.06678264}{253.9\ x\ 0{,}0709} \text{ x } 100 = 6.33\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1585732\ x\ 0.0372441635}{223.9\ x\ 0{,}0709}\ \text{x}\ 100 = 3{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0786057\ x\ 0.0308227558}{213.6\ x\ 0{,}0709}\ \text{x}\ 100 = 3{,}5\ \%$$

Module 5

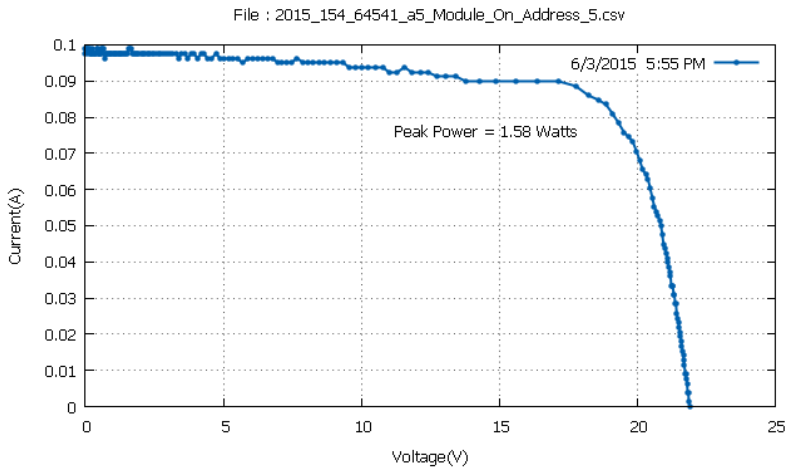
Date: 3/6/2015 – Afternoon Measurement

Temperature Ambient: 23 ºC

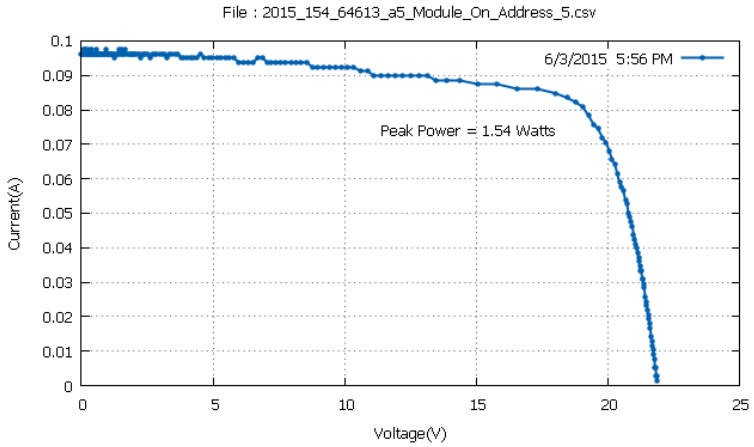
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:55	26,3	7,09
17:56	26,2	7,73
17:59	25,8	7,54
18:00	25,8	7,28
18:01	25,6	7,19
18:09	24,6	5,5

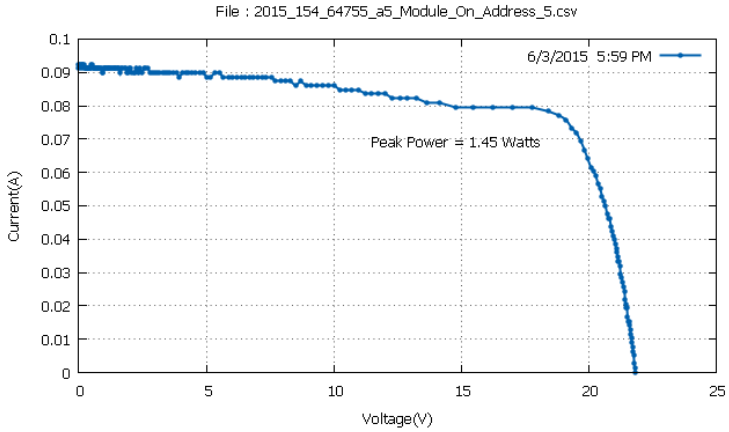
Mean Temperature: 25,71 ºC



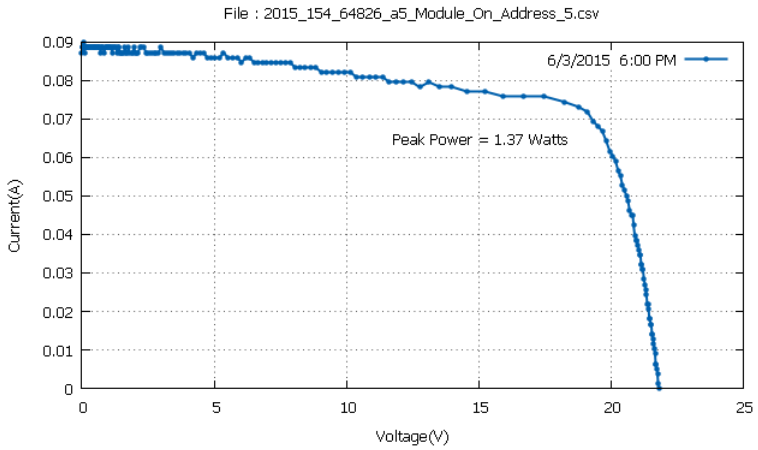
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8645535\ x\ 0.0834782943}{264.7\ x\ 0{,}0756} \text{ x } 100 = 7{,}9\ \%$$



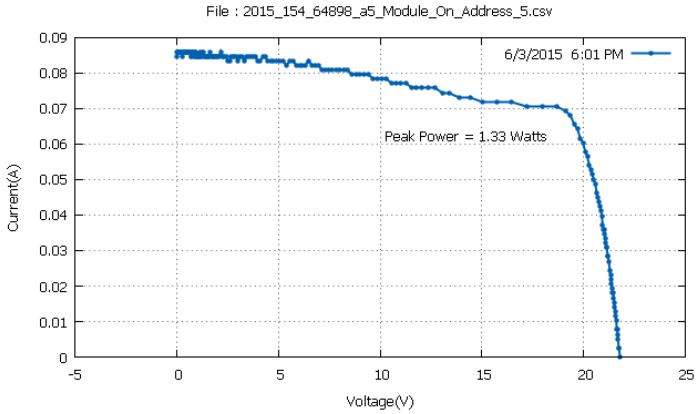
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7795086\ x\ 0.0821940154}{263.5\ x\ 0{,}0756} \text{ x } 100 = 7{,}73\ \%$$



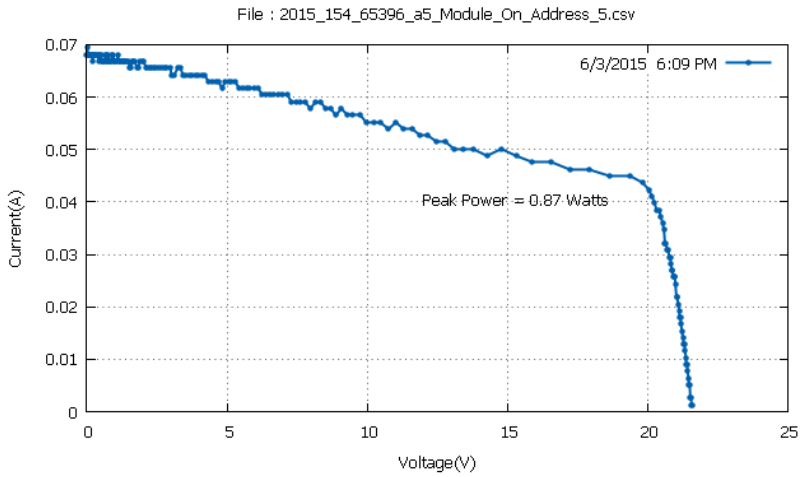
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.84136\ x\ 0.07705689}{254.4\ x\ 0{,}0756} \text{ x } 100 = 7{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1042252\ x\ 0.07191976}{248.9\ x\ 0{,}0756} \text{ x } 100 = 7{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.0964947\ x\ 0.0693512037}{244.4\ x\ 0{,}0756} \text{ x } 100 = 7{,}19\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3593616\ x\ 0.0449498519}{209.1\ x\ 0{,}0756} \text{ x } 100 = 5{,}5\ \%$$

Module 4

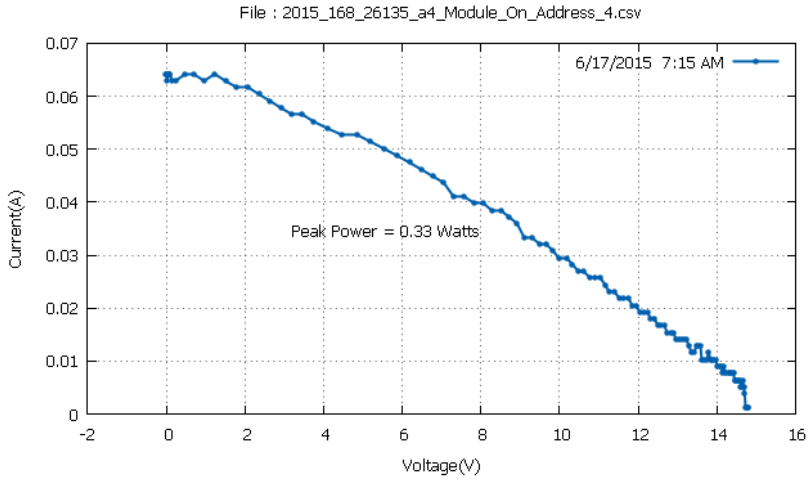
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

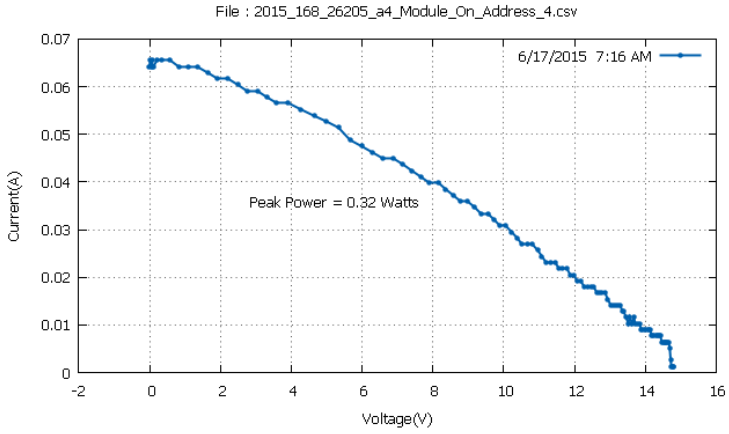
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:15	26,6	2,62
7:16	26,8	2,5
7:18	27,2	2,5
7:21	27,5	2,41
7:22	27,8	2,43
7:25	28,1	2,51

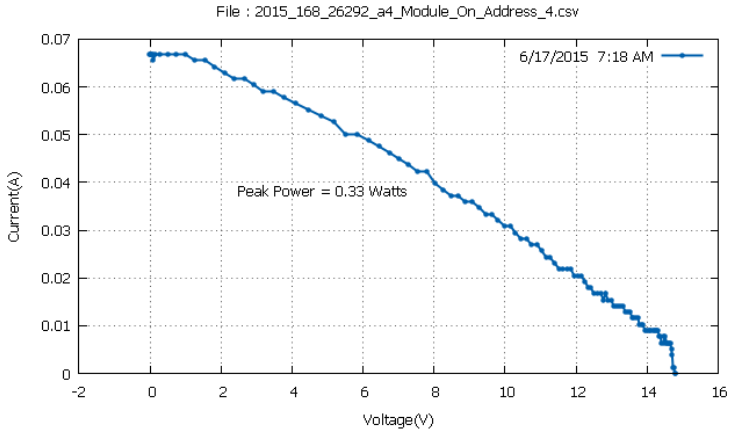
Mean Temperature: 27,33 ºC



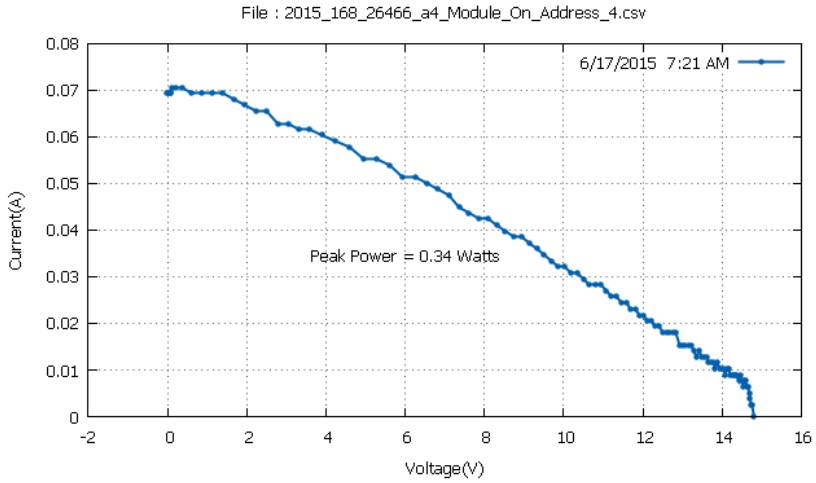
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.49678\ x\ 0.0385284461}{187.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}62\ \%$$



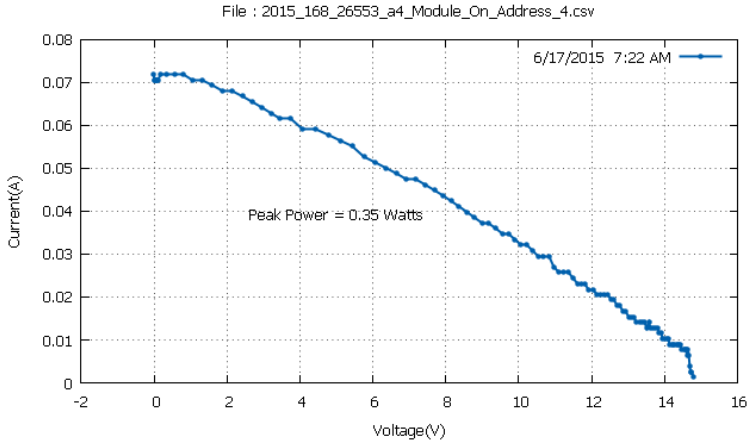
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.141137\ x\ 0.039812725}{191.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}5\ \%$$



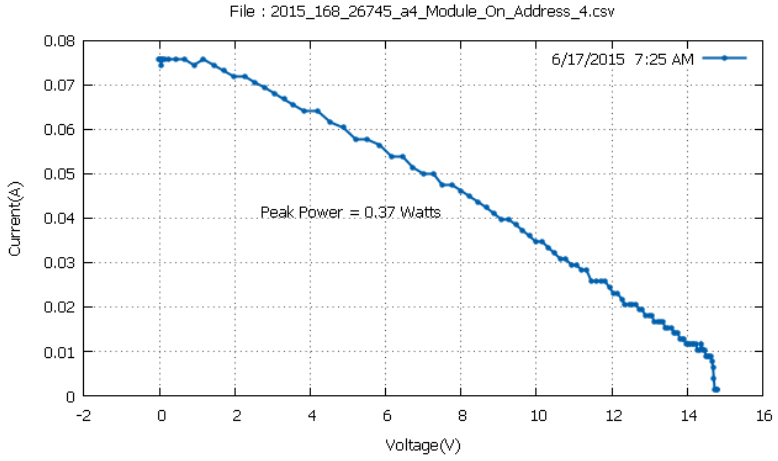
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.785494\ x\ 0.04238129}{196.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.937469\ x\ 0.0385284461}{210.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.566362\ x\ 0.0410970077}{214.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.001972\ x\ 0.0462341346}{219.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}51\ \%$$

Module 8

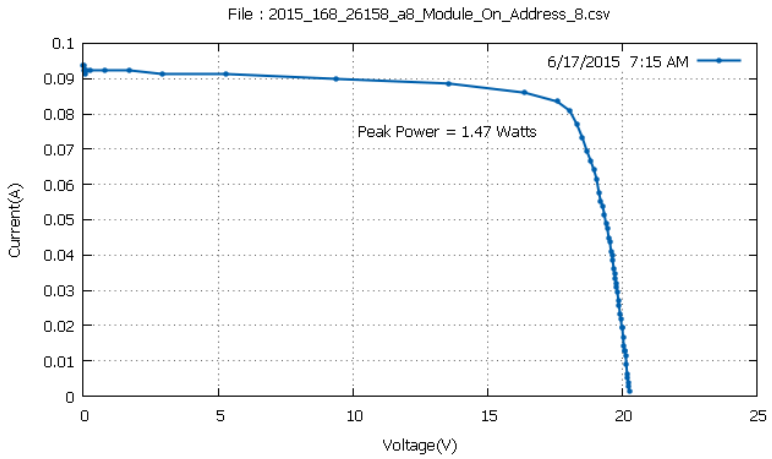
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

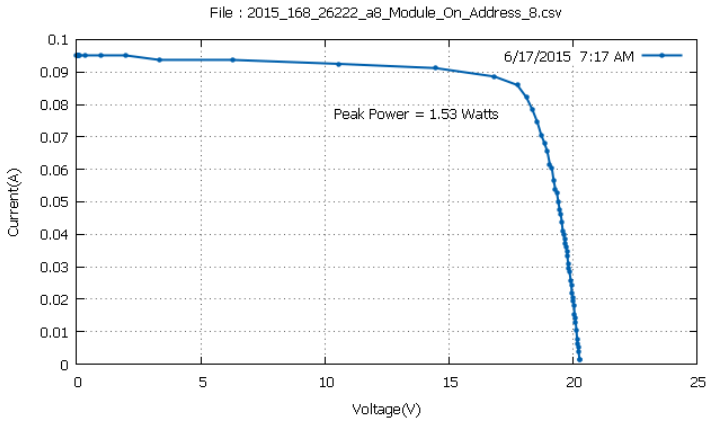
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:15	26	10,16
7:17	26,3	10,36
7:19	26,6	10,36
7:21	26,5	10,18
7:24	26,8	10,66
7:25	26,8	10,87

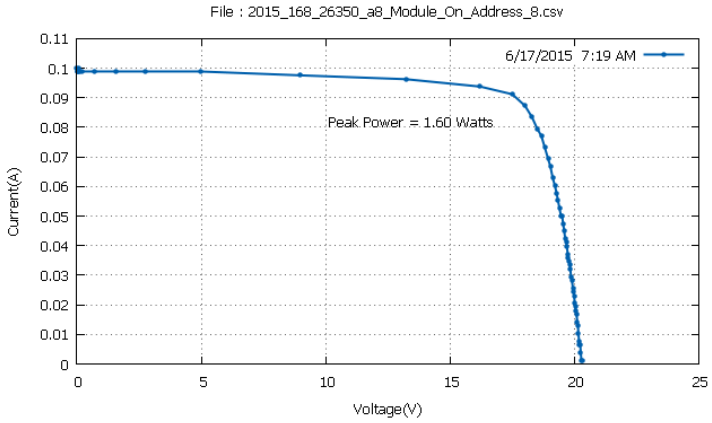
Mean Temperature: 26,5 ºC



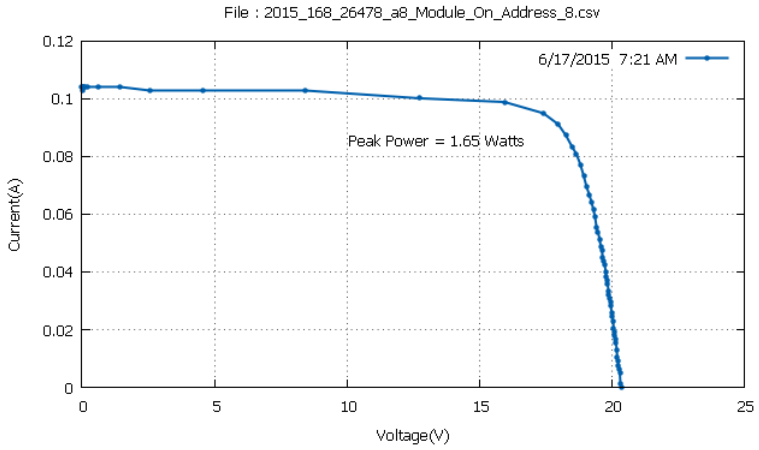
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5888767\ x\ 0.0834782943}{188.4\ x\ 0{,}0768} \text{ x } 100 = 10{,}16\ \%$$



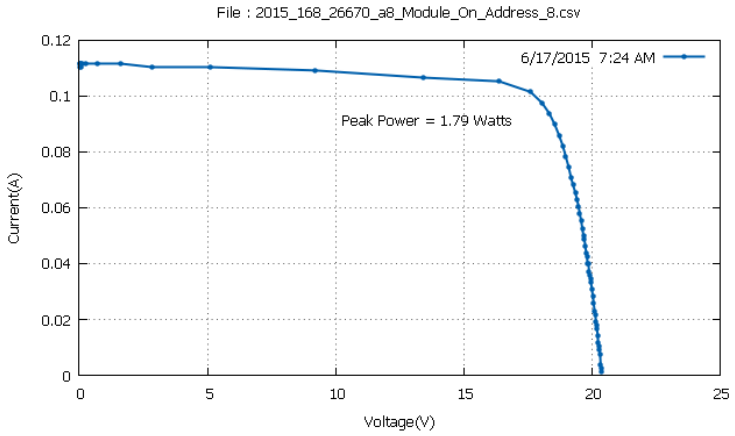
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7589664\ x\ 0.08604686}{192.2\ x\ 0{,}0768} \text{ x } 100 = 10{,}36\ \%$$



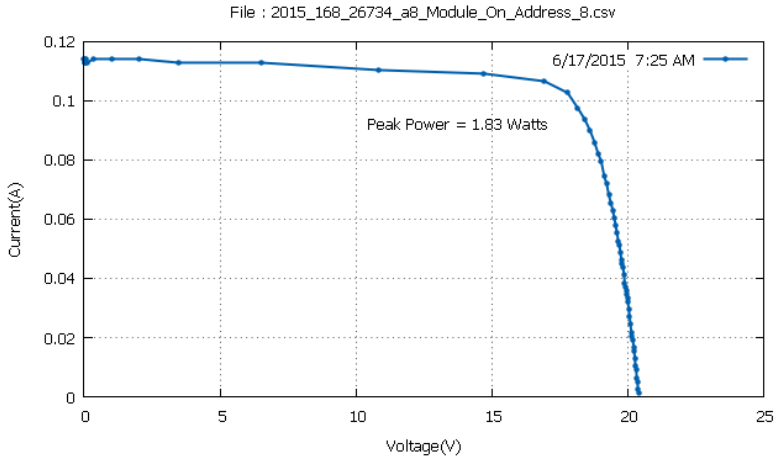
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.09118398}{201\ x\ 0{,}0768} \text{ x } 100 = 10{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.418787\ x\ 0.09503683}{211\ x\ 0{,}0768} \text{ x } 100 = 10{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.60434\ x\ 0.101458237}{218.6\ x\ 0{,}0768}\ \text{x}\ 100 = 10{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7898922\ x\ 0.102742523}{219.1\ x\ 0{,}0768}\ \text{x}\ 100 = 10{,}87\ \%$$

Module 3

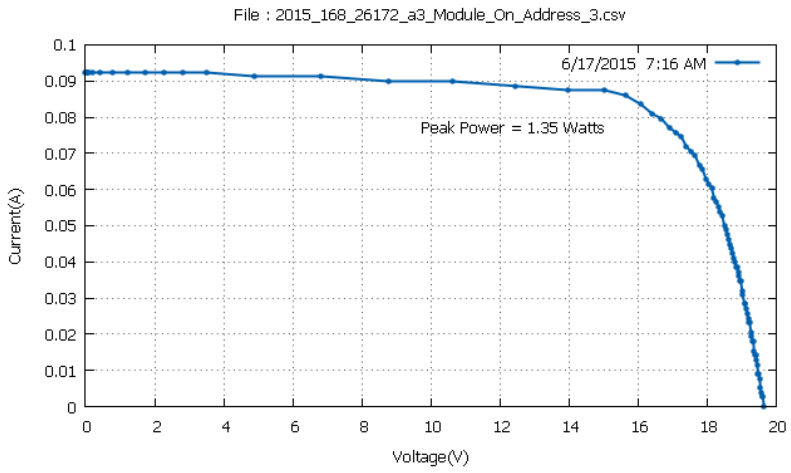
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

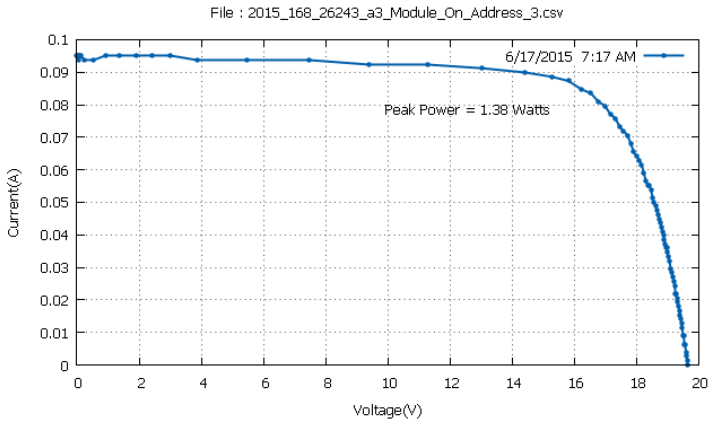
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:16	26,4	10,05
7:17	26,6	10,05
7:19	27	10,11
7:20	27	10,1
7:22	27,3	10,07
7:29	28,6	10,23

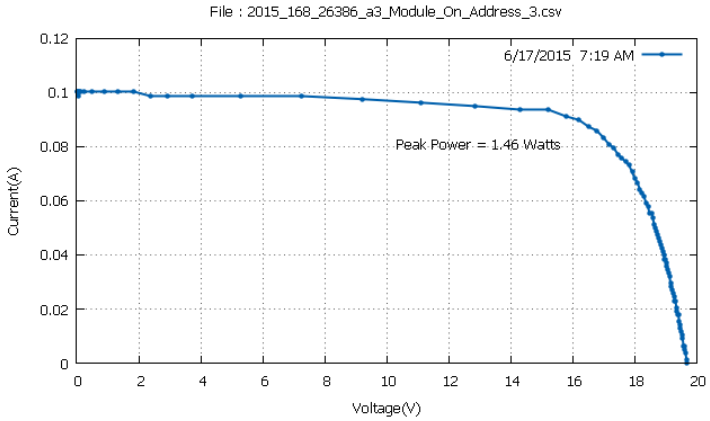
Mean Temperature: 27,15 ºC



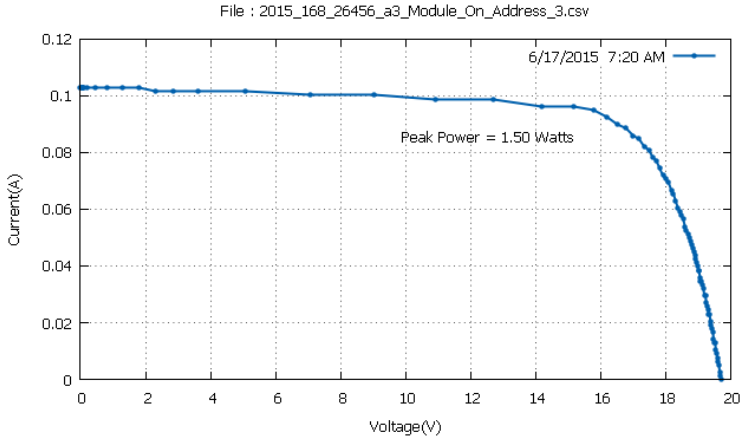
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6405706\ x\ 0.08604686}{189.3\ x\ 0{,}0709} \text{ x } 100 = 10{,}05\ \%$$



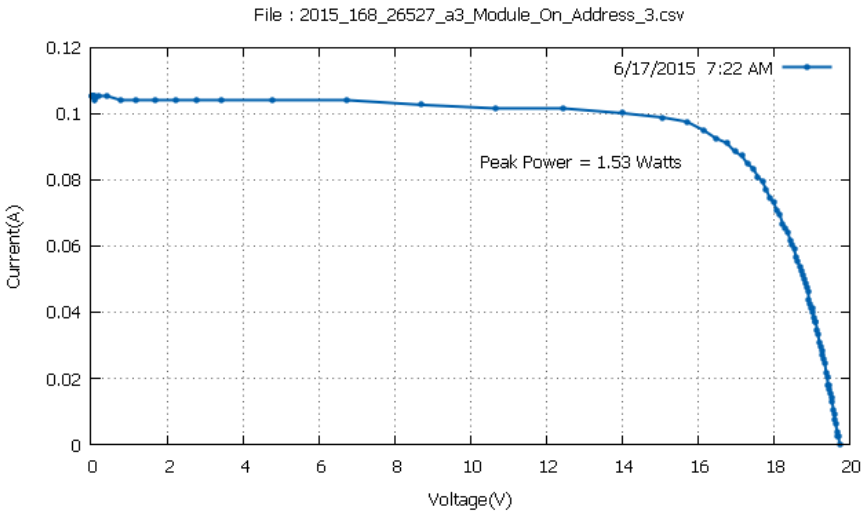
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.81066\ x\ 0.08733114}{193.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}05\ \%$$



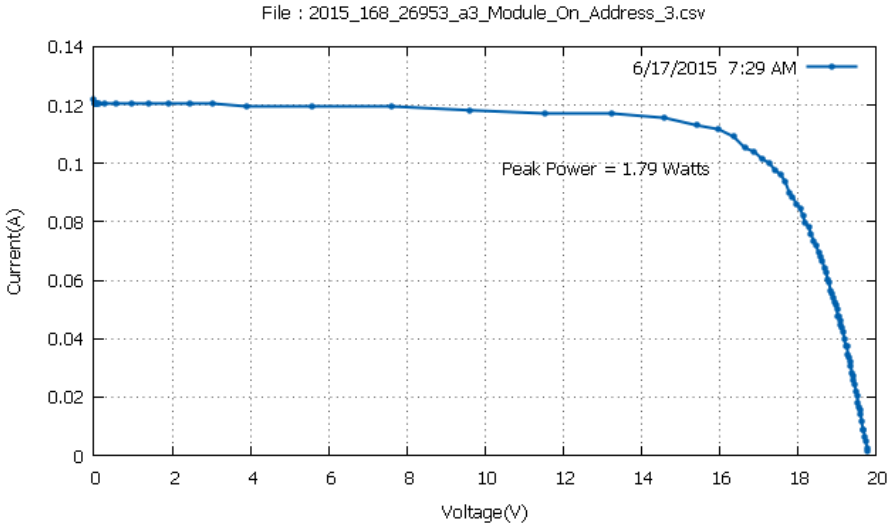
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.19723\ x\ 0.0898997039}{203.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7797346\ x\ 0.09503683}{209.3\ \ x\ 0{,}0709} \text{ x } 100 = 10{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.15084\ x\ 0.09503683}{214.3\ x\ 0{,}0709} \text{ x } 100 = 10{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3595886\ x\ 0.109163925}{224.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}23\ \%$$

Module 5

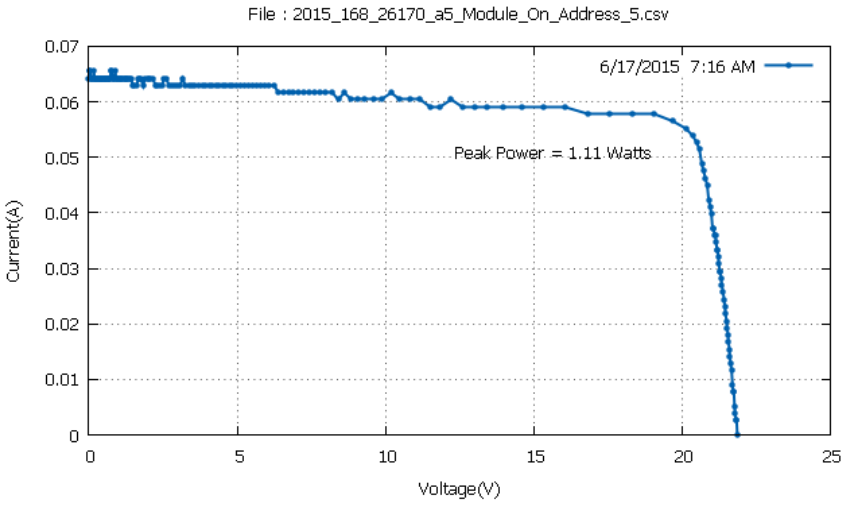
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

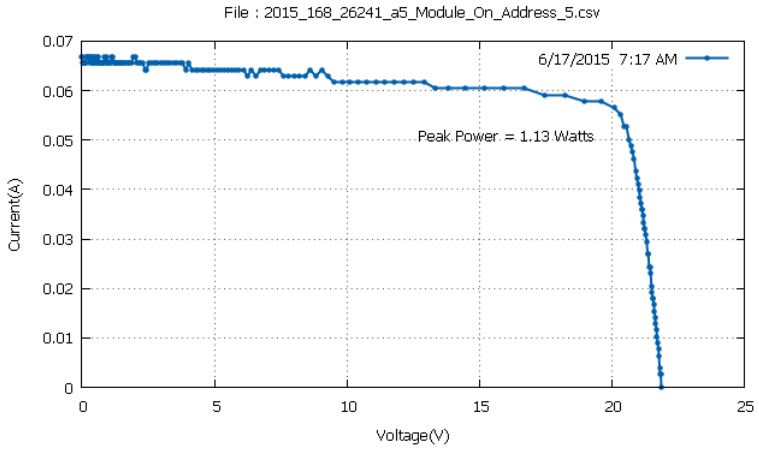
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:16	25	7,76
7:17	25,2	7,72
7:19	25,7	7,8
7:20	25,8	7,83
7:22	26,2	8,03
7:24	26,6	8,41

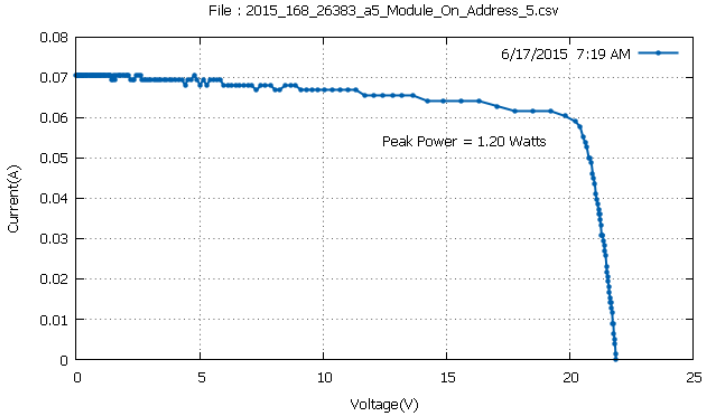
Mean Temperature: 25,75 ºC



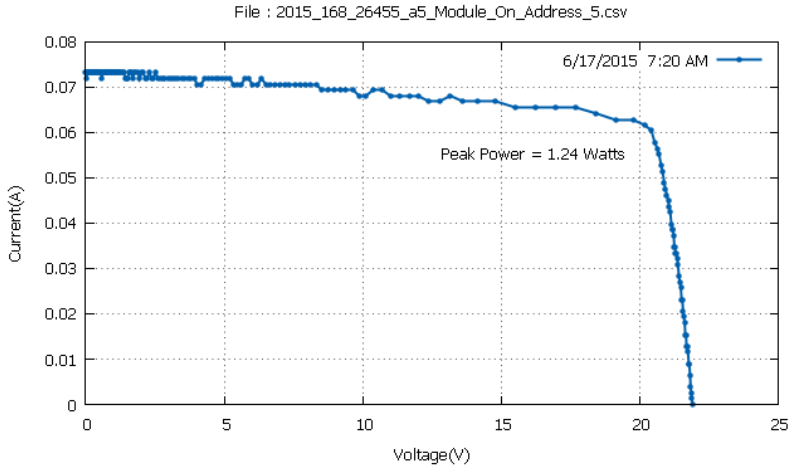
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.69181\ x\ 0.0565083846}{189.1\ x\ 0{,}0756}$ x 100 = 7,76 %



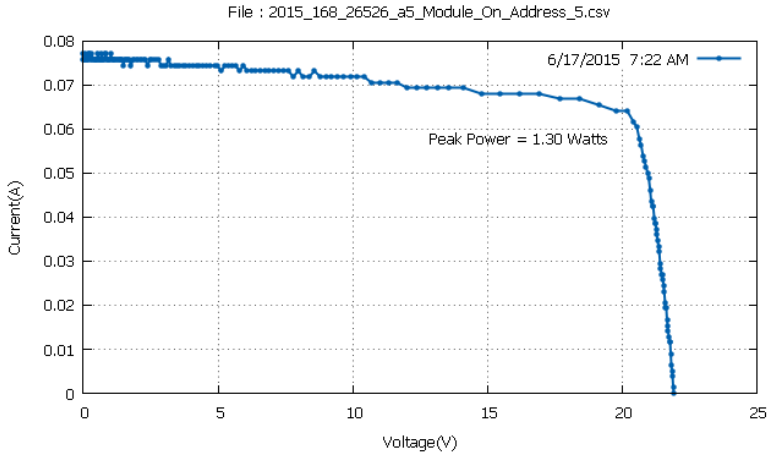
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{20.0783787\ x\ 0.0565083846}{193.4\ x\ 0{,}0756} \text{ x } 100 = 7{,}72\ \%$$



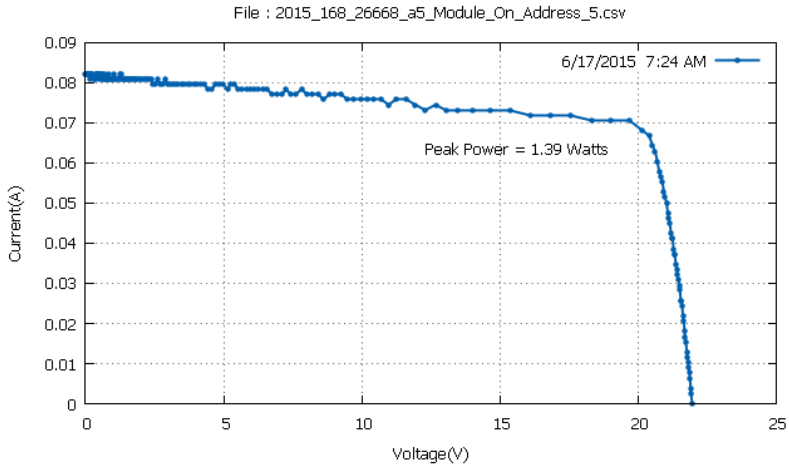
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.8232441\ x\ 0.06036123}{203.6\ x\ 0{,}0756} \text{ x } 100 = 7{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{20.19435\ x\ 0.06164551}{209.3\ \ x\ 0{,}0756} \text{ x } 100 = 7{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{20.2020817\ x\ 0.06421407}{214.1\ x\ 0{,}0756} \text{ x } 100 = 8{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.6840782\ x\ 0.07063548}{218.4\ x\ 0{,}0756} \text{ x } 100 = 8{,}41\ \%$$

Module 4

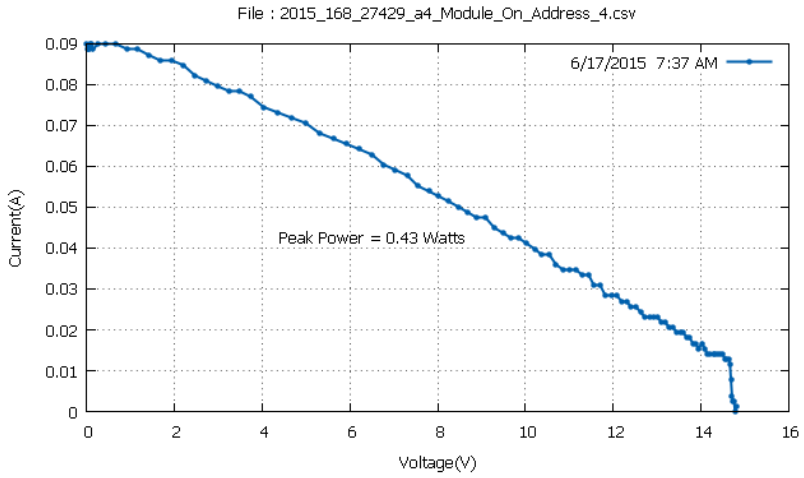
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

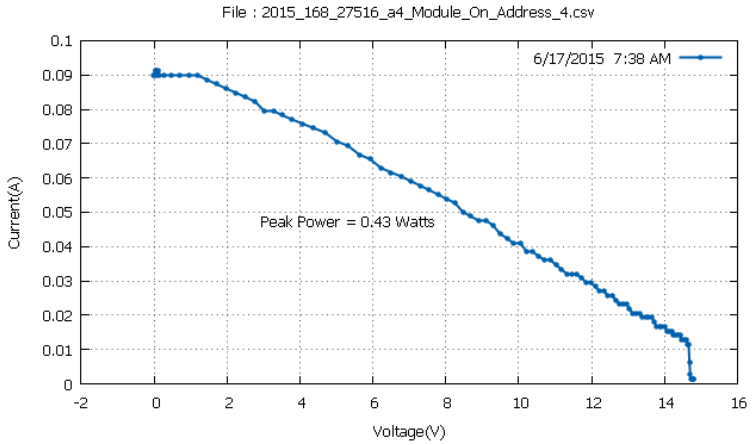
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:37	28,3	2,58
7:38	28,3	2,53
7:40	28,4	2,54
7:42	28,6	2,52
7:44	28,8	2,42
7:46	29	2,53

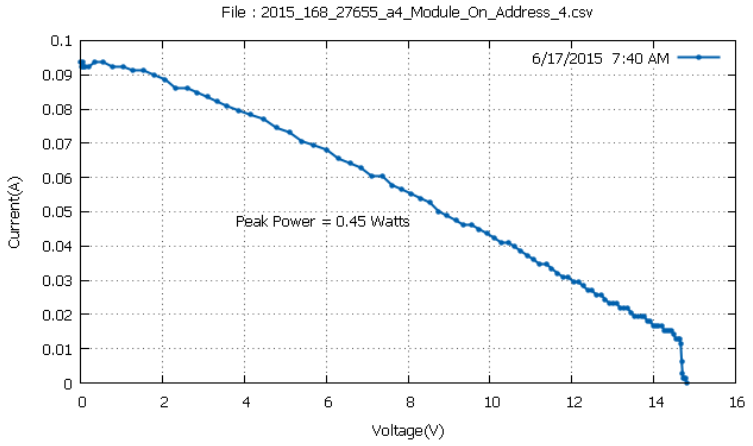
Mean Temperature: 28,56 ºC



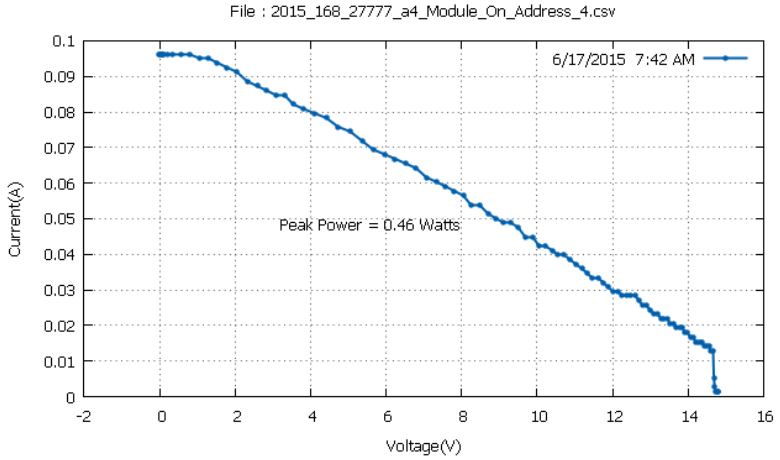
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.092096\ x\ 0.0475184135}{248.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}58\ \%$$



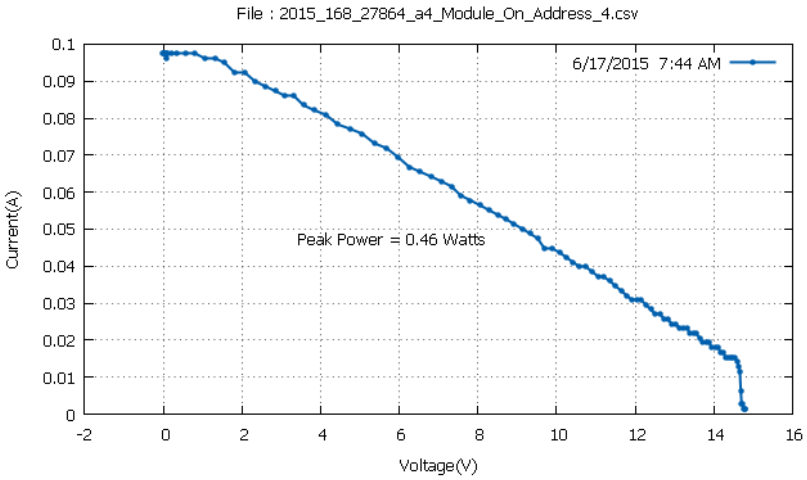
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.262186\ x\ 0.0462341346}{252.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}53\ \%$$



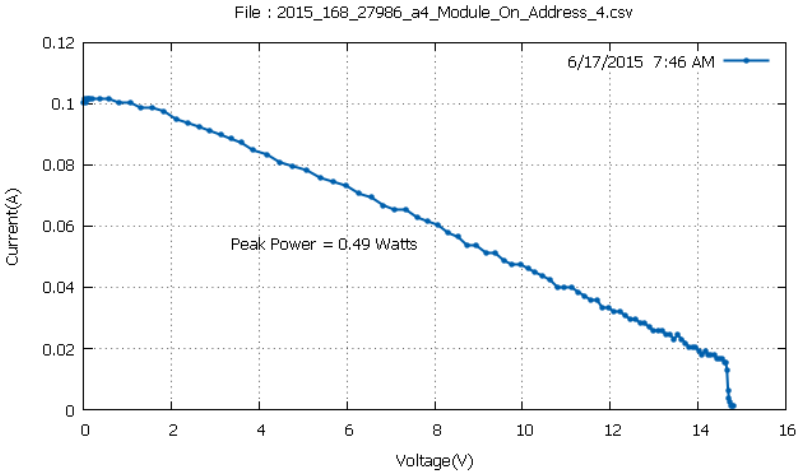
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.847345\ x\ 0.0577926673}{263.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.349884\ x\ 0.0552241057}{271.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.713259\ x\ 0.05265554}{283.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.071555\ x\ 0.06036123}{288\ x\ 0{,}0671} \text{ x } 100 = 2{,}53\ \%$$

Module 8

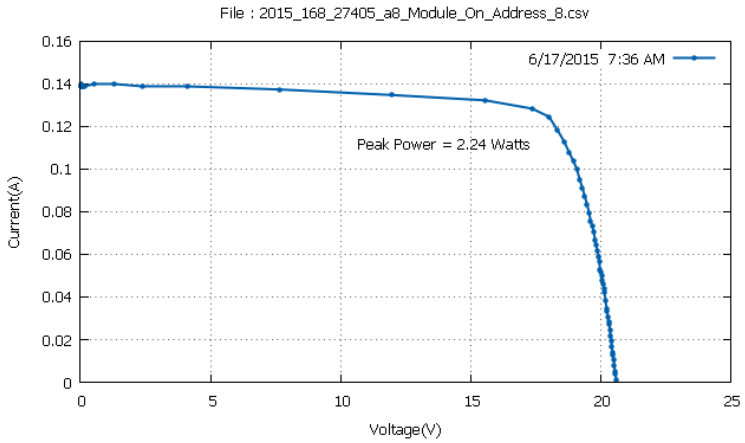
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

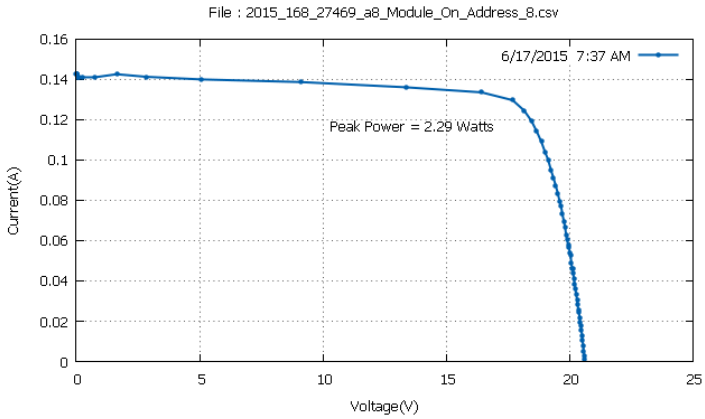
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:36	26,9	11,81
7:37	27	11,87
7:41	26,9	11,96
7:43	27,1	11,8
7:45	27,1	11,82
7:46	27,2	12,03

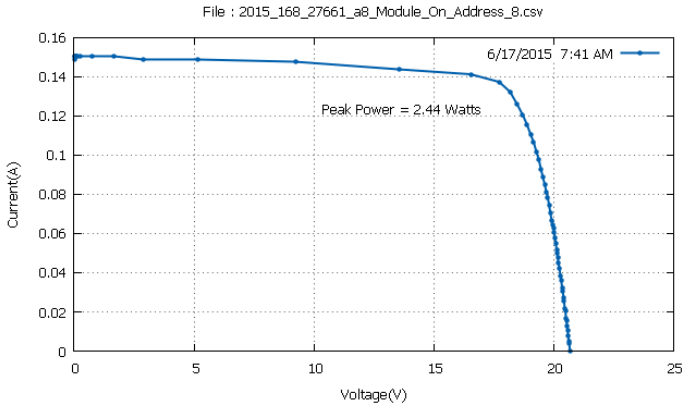
Mean Temperature: 27,03 ºC



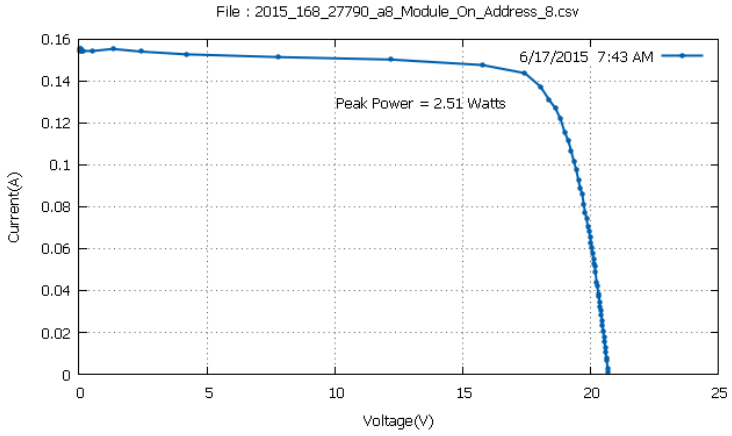
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0141029\ x\ 0.1245753}{246.8\ x\ 0{,}0768}$ x 100 = 11,81 %



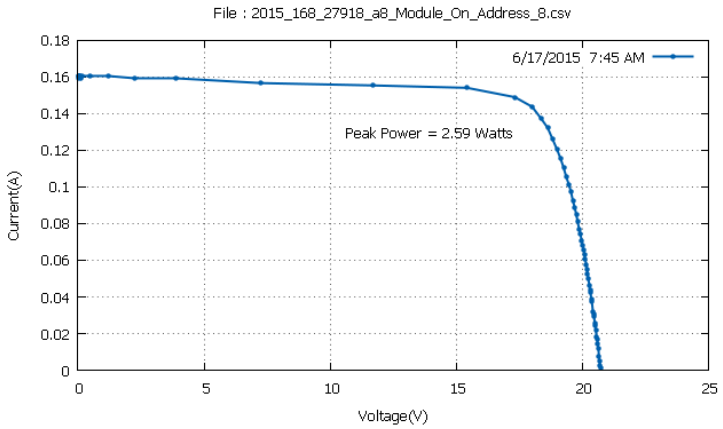
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6893845\ x\ 0.129712433}{251.1\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}87\ \%$$



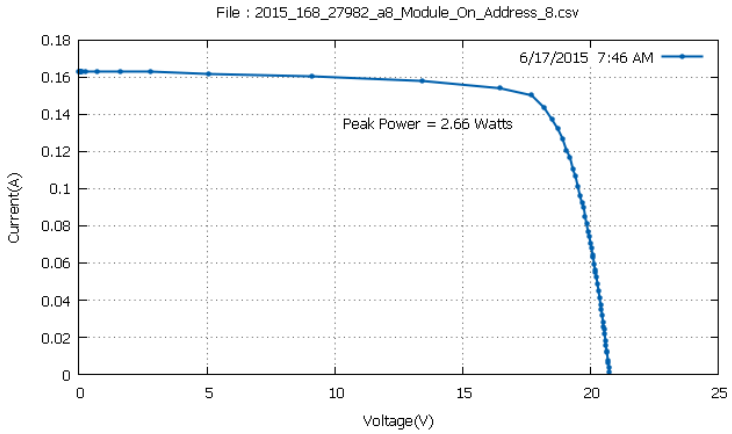
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.72804\ x\ 0.137418121}{265.6\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.44198\ x\ 0.143839523}{277.1\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.143839523}{285.2\ x\ 0{,}0768} \text{ x } 100 = 11{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7048473\ x\ 0.15026094}{287.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}03\ \%$$

Module 3

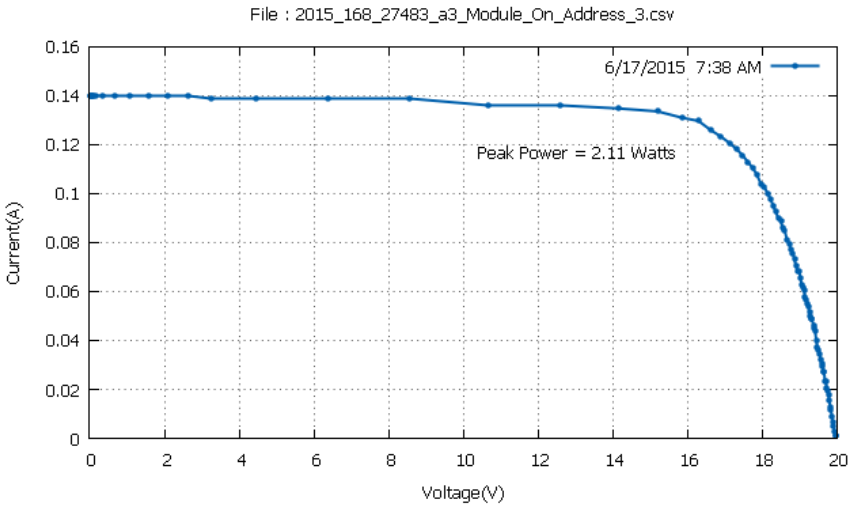
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

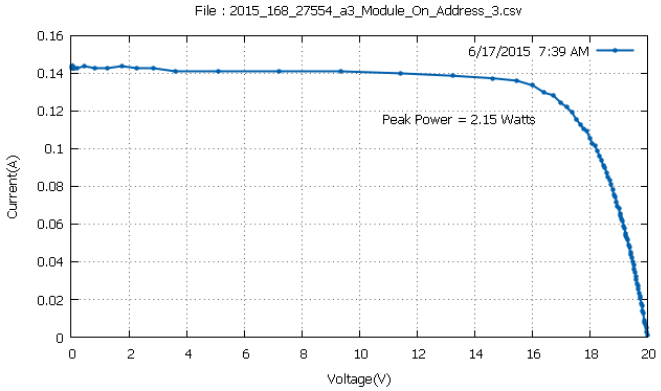
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:38	27,9	11,81
7:39	27,9	11,8
7:41	28	11,72
7:42	28	11,7
7:48	28,6	12,21
7:51	29	12,43

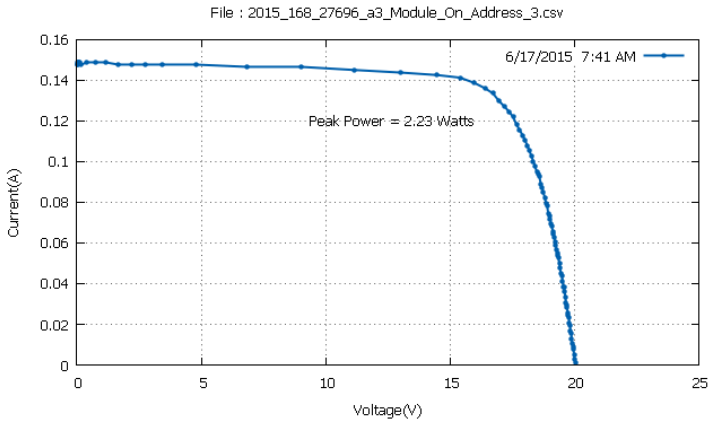
Mean Temperature: 28,23 ºC



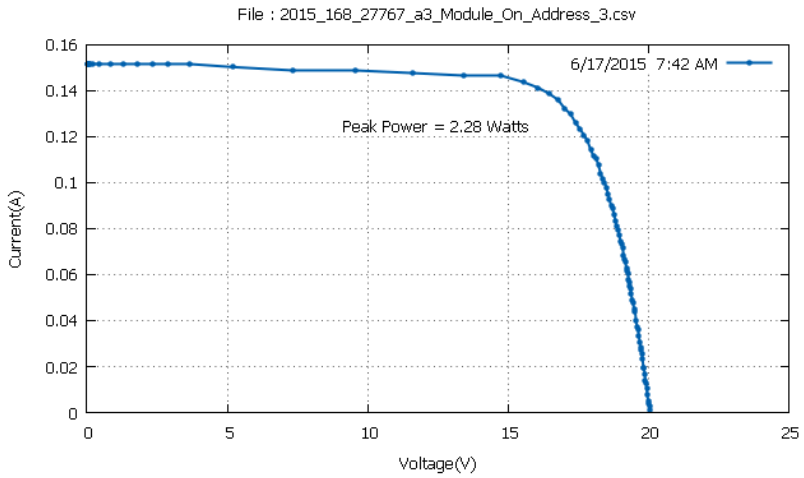
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2900066\ x\ 0.129712433}{251.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}81\ \%$$



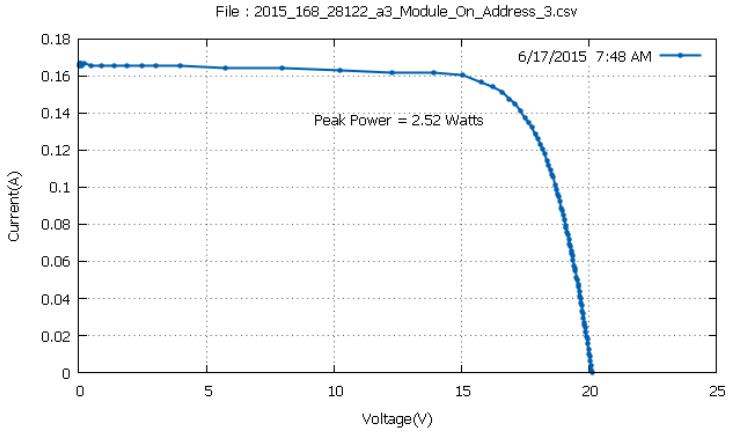
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7229633\ x\ 0.128428146}{256.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$



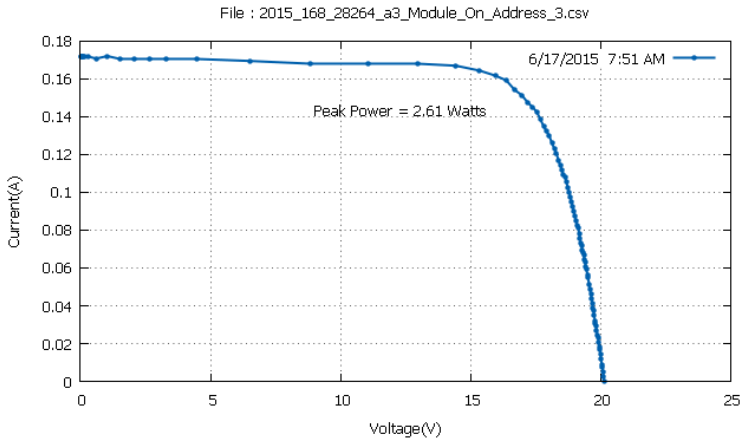
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7229633\ x\ 0.133565277}{268.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4678268\ x\ 0.138702407}{274.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6069927\ x\ 0.151545212}{290.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.1592509}{296.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$

Module 5

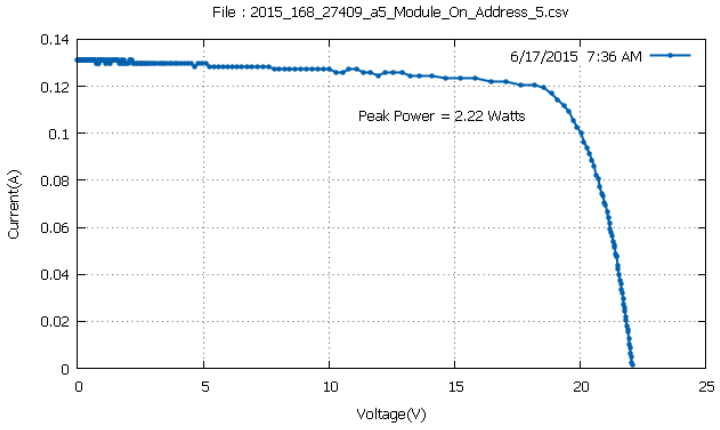
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

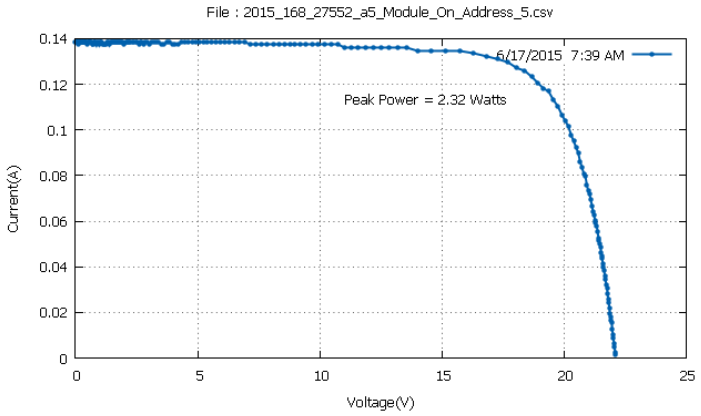
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:36	28,1	11,9
7:39	28,3	11,96
7:41	28,5	11,93
7:42	28,6	11,74
7:43	28,7	11,8
7:46	29	12

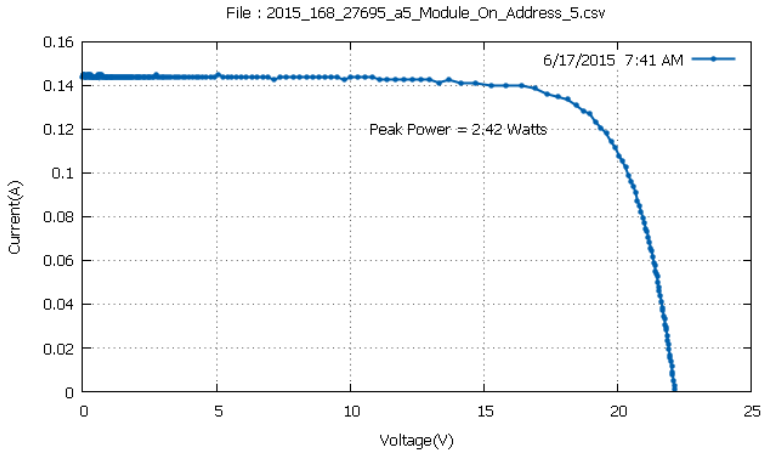
Mean Temperature: 28,53 ºC



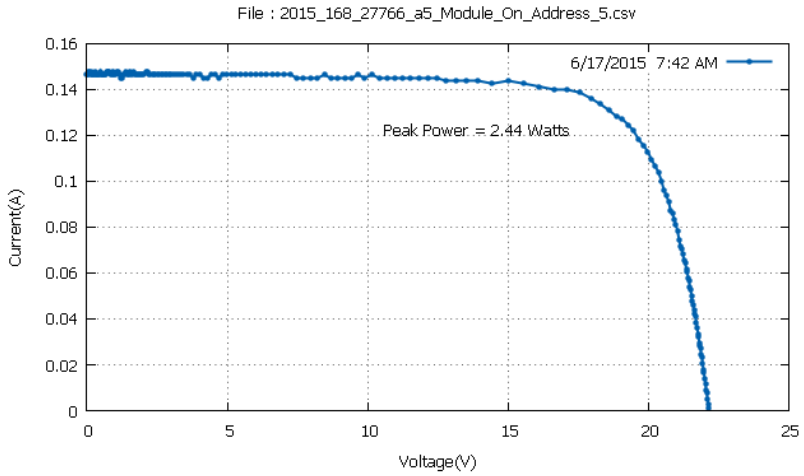
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.56303\ x\ 0.119438179}{246.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}9\ \%$$



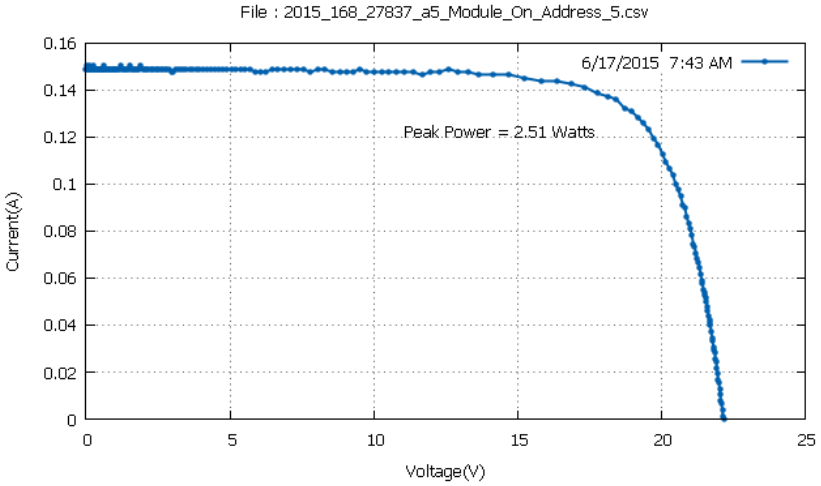
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.39294\ x\ 0.125859588}{256.6\ x\ 0{,}0756}\ \text{x } 100 = 11{,}96\ \%$$



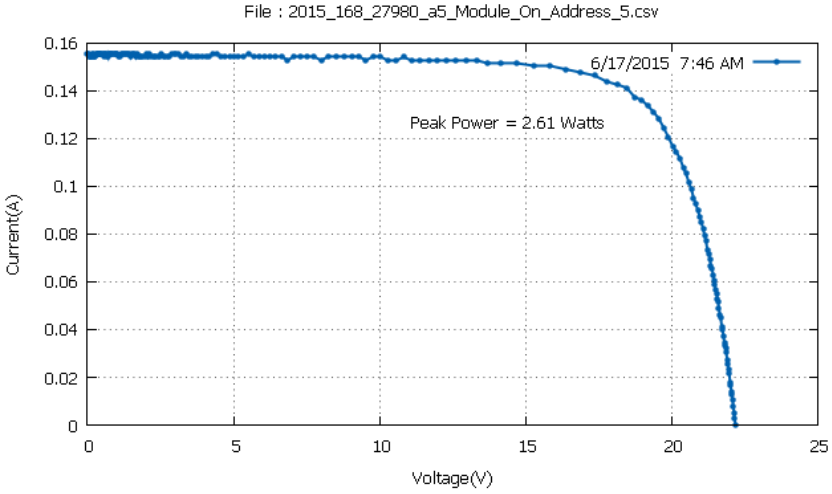
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1300735\ x\ 0.133565277}{268.2\ x\ 0{,}0756}\ \text{x } 100 = 11{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.136133835}{274.9\ x\ 0{,}0756}\ \text{x } 100 = 11{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4393272\ x\ 0.136133835}{281.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.141270965}{287.5\ x\ 0{,}0756} \text{ x } 100 = 12\ \%$$

Module 4

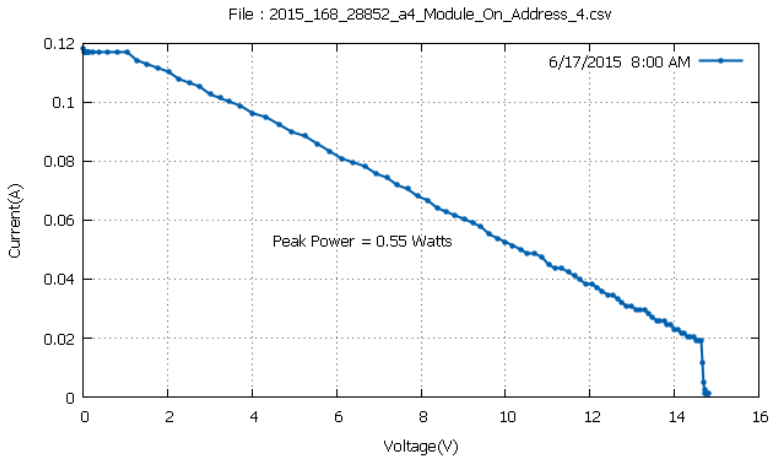
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

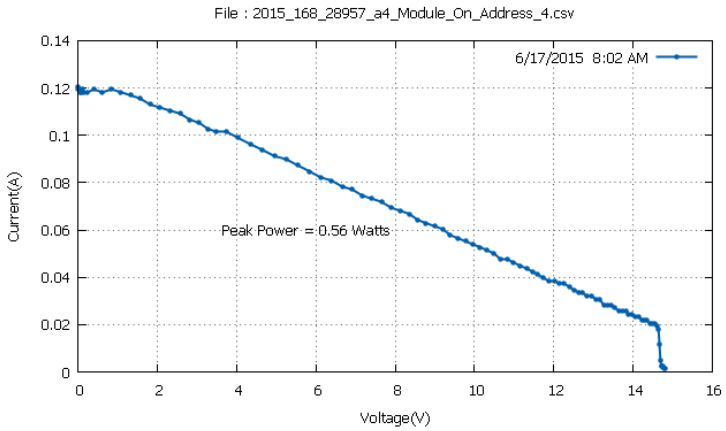
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:00	30,6	2,53
8:02	30,7	2,54
8:03	30,9	2,5
8:05	31,3	2,48
8:07	31,5	2,56
8:09	31,6	2,52

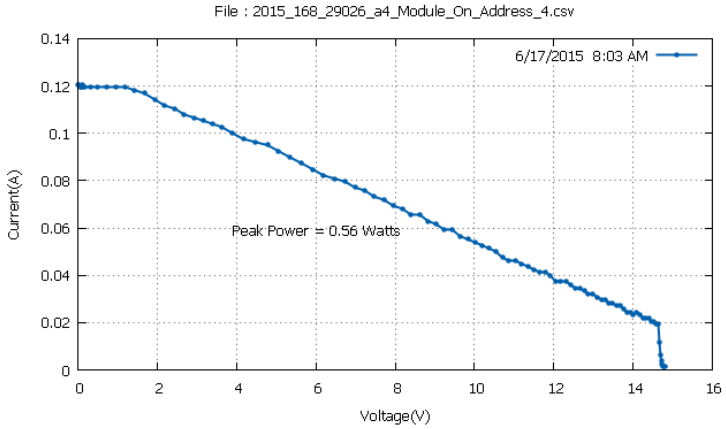
Mean Temperature: 31,1 ºC



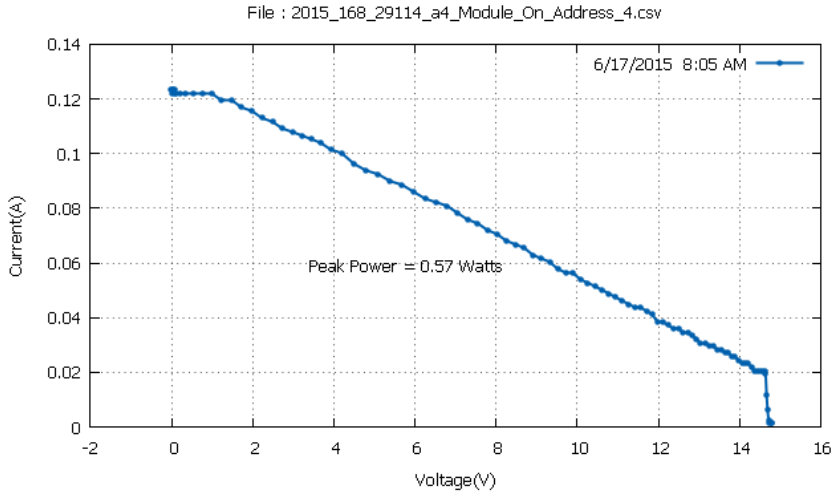
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.22353\ x\ 0.05907695}{323.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}53\ \%$$



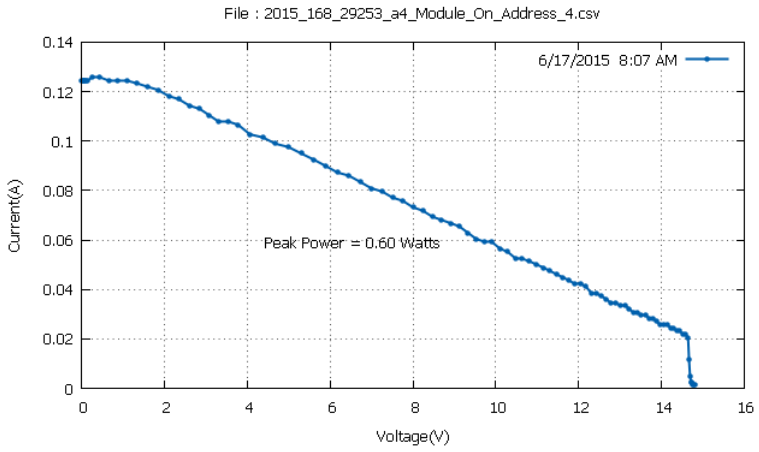
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.875618\ x\ 0.0629297942}{328.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}54\ \%$$



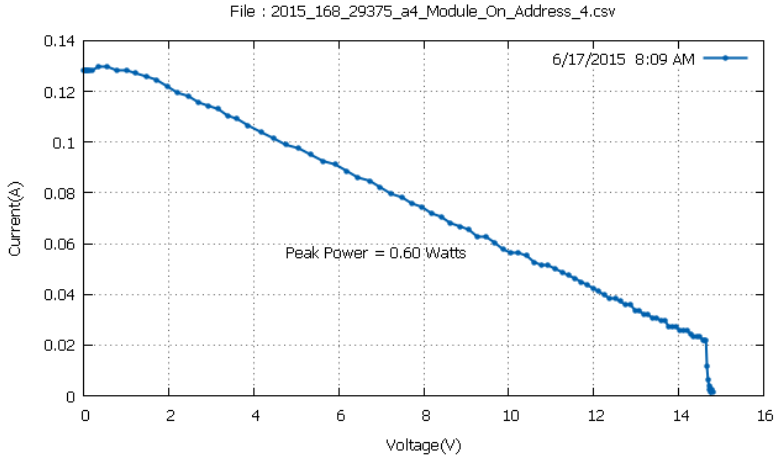
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.790572\ x\ 0.06421407}{333.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.06549836}{341.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.037976\ x\ 0.06549836}{348.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.470934\ x\ 0.0629297942}{354.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}52\ \%$$

Module 8

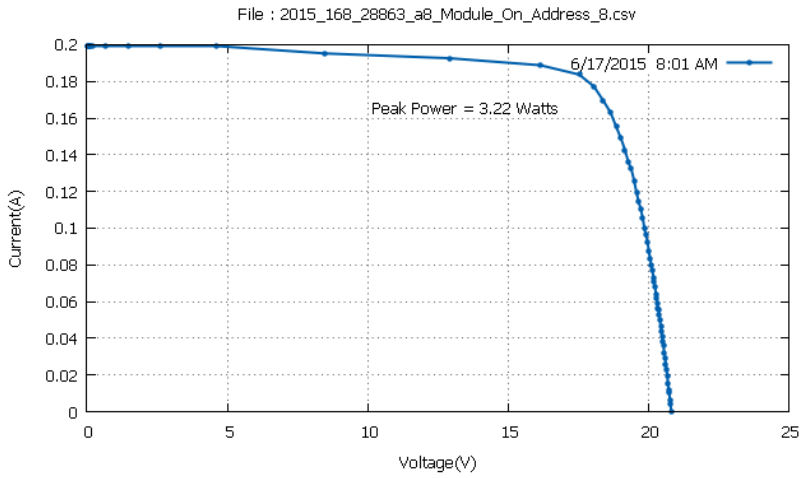
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

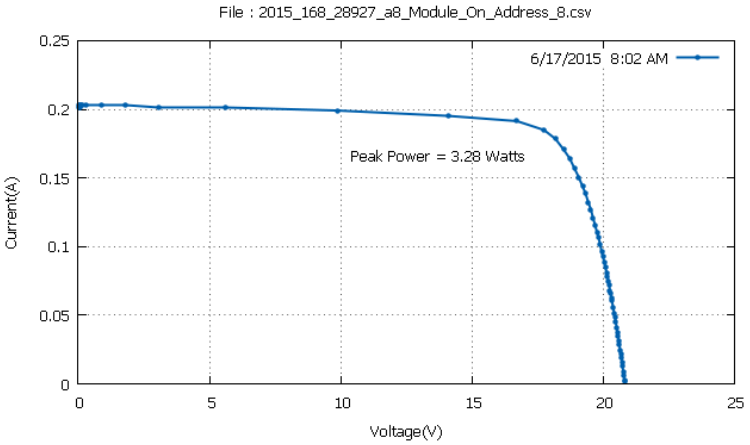
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:01	28,6	12,94
8:02	28,8	12,98
8:03	28,9	12,97
8:05	29	13,02
8:07	29,2	13,05
8:09	29,4	13,15

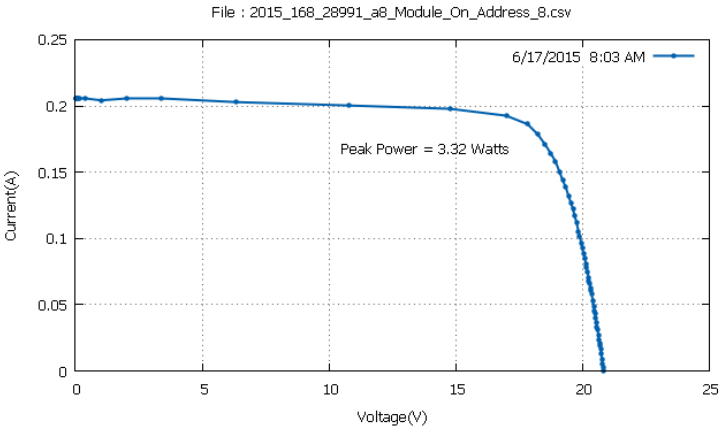
Mean Temperature: 28,98 ºC



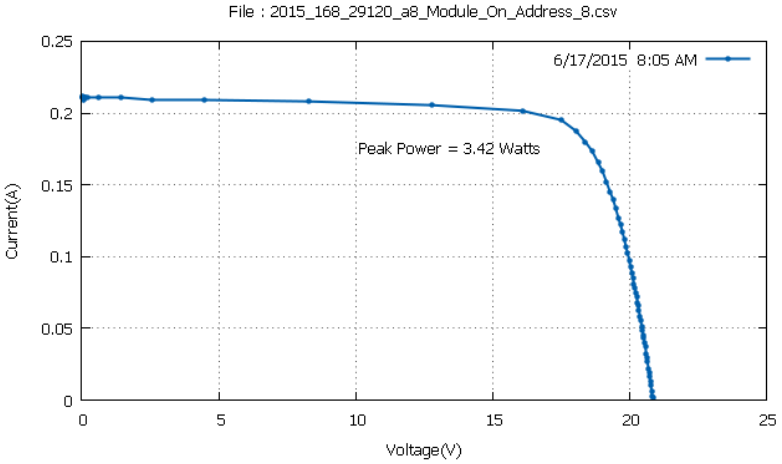
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5347576\ x\ 0.183652252}{324\ x\ 0{,}0768} \text{ x } 100 = 12{,}94\ \%$$



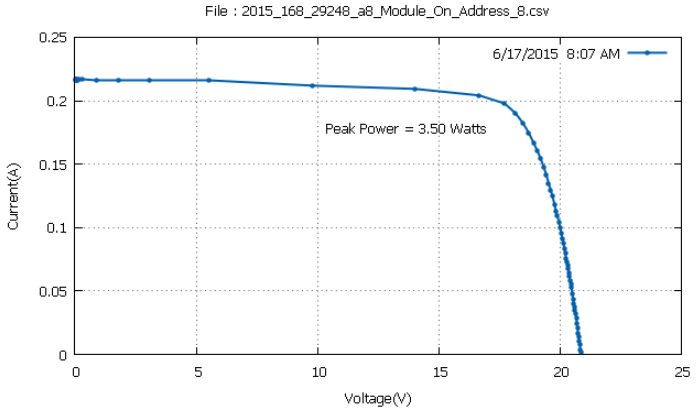
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7435036\ x\ 0.184936538}{328.8\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}98\ \%$$



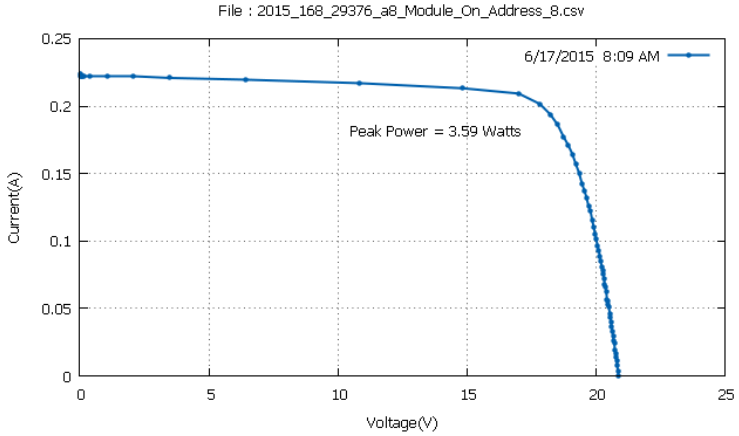
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.1862208}{333.1\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.19521078}{341.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7125778\ x\ 0.197779343}{349.1\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.201632187}{355.5\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}15\ \%$$

Module 3

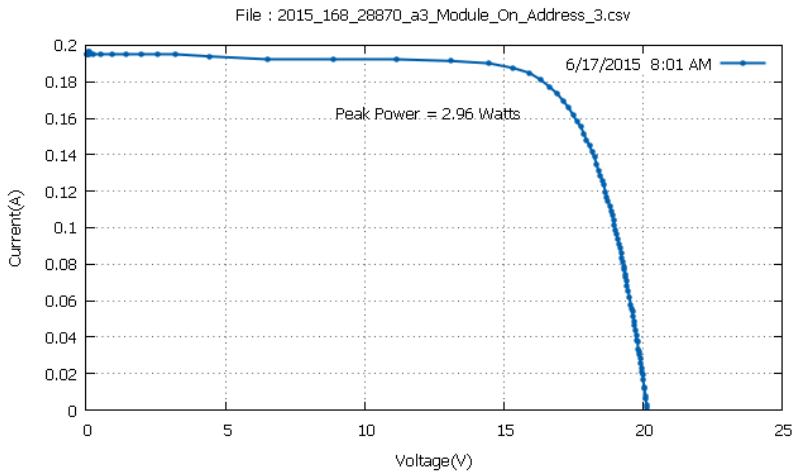
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

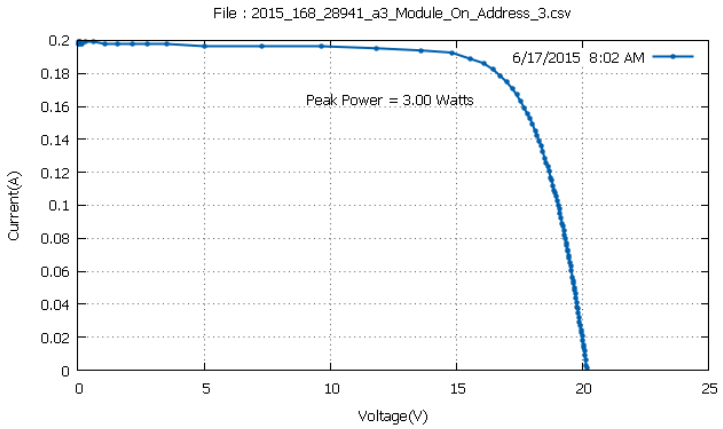
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:01	30,3	12,84
8:02	30,5	12,84
8:03	30,6	12,84
8:05	30,9	12,89
8:13	31,9	13,13
8:16	32,6	13,07

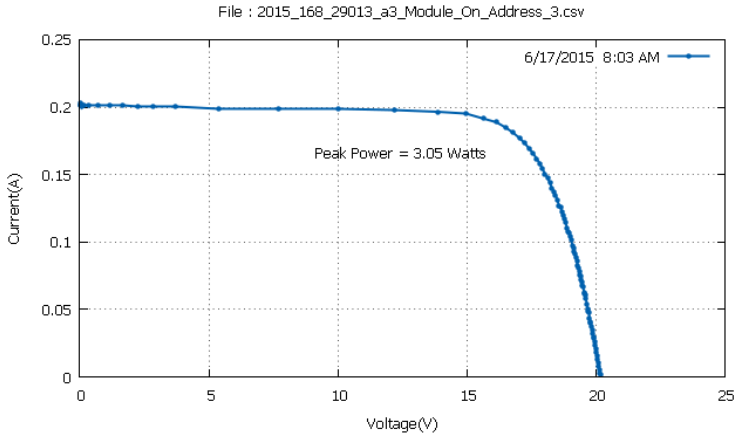
Mean Temperature: 31,13 ºC



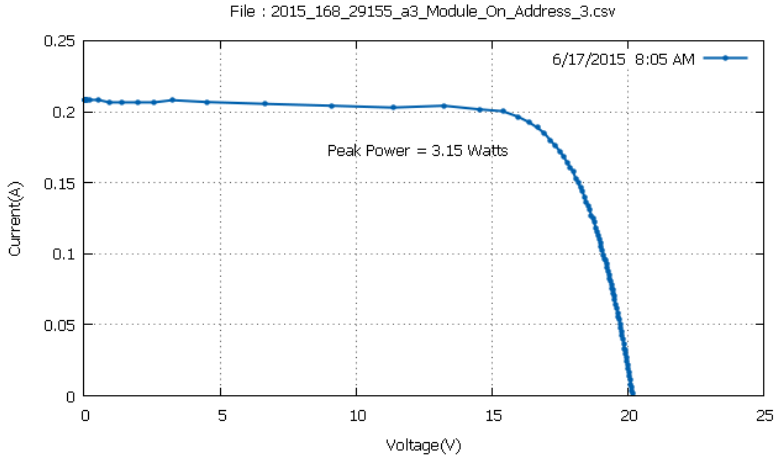
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.1810837}{325\ x\ 0{,}0709} \text{ x } 100 = 12{,}84\ \%$$



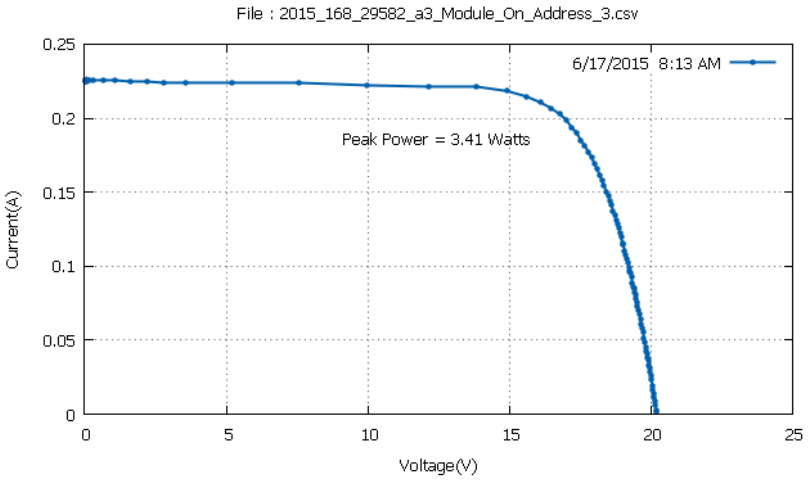
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.182367966}{329.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}84\ \%$$



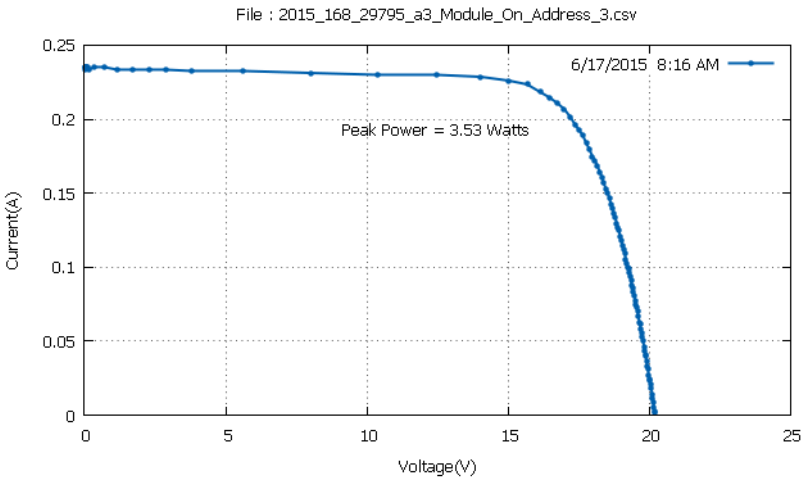
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987526\ x\ 0.184936538}{334.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.192642227}{344.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4678268\ x\ 0.206769317}{366.2\ x\ 0{,}0709} \text{ x } 100 = 13{,}13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.47556\ x\ 0.214475}{380.8\ x\ 0{,}0709} \text{ x } 100 = 13{,}07\ \%$$

Module 5

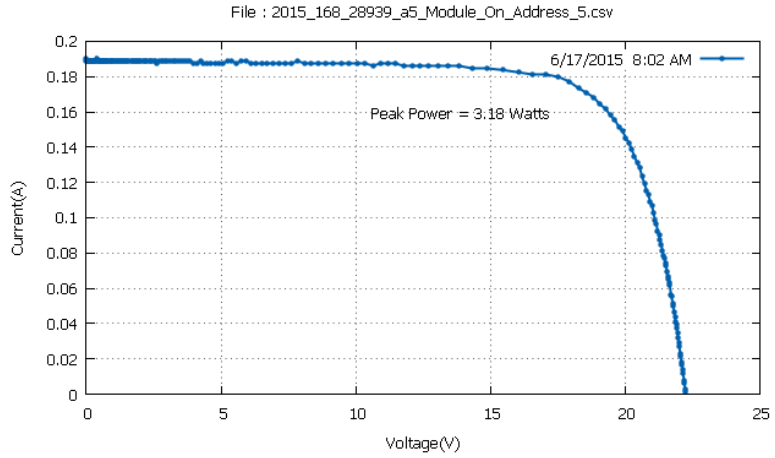
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

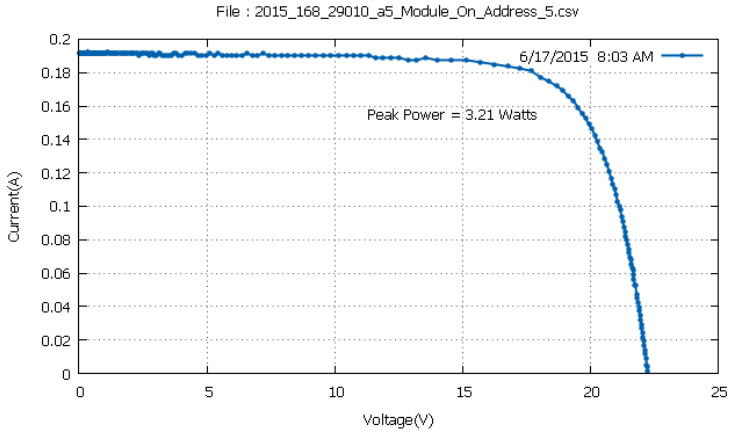
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:02	31	12,75
8:03	31,1	12,7
8:05	31,5	13,6
8:07	31,7	12,77
8:08	31,8	12,8
8:10	32	12,95

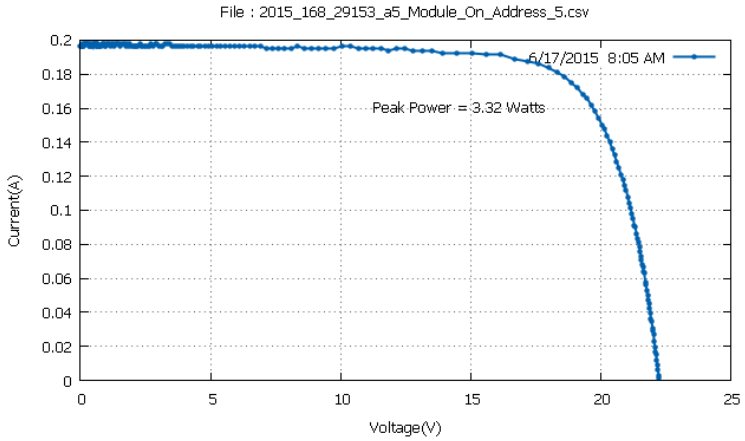
Mean Temperature: 31,51 ºC



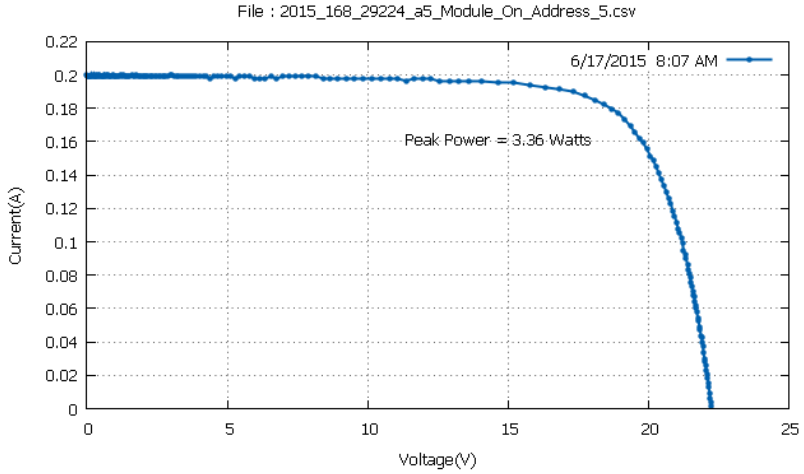
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9213257\ x\ 0.17723085}{329.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}75\ \%$$



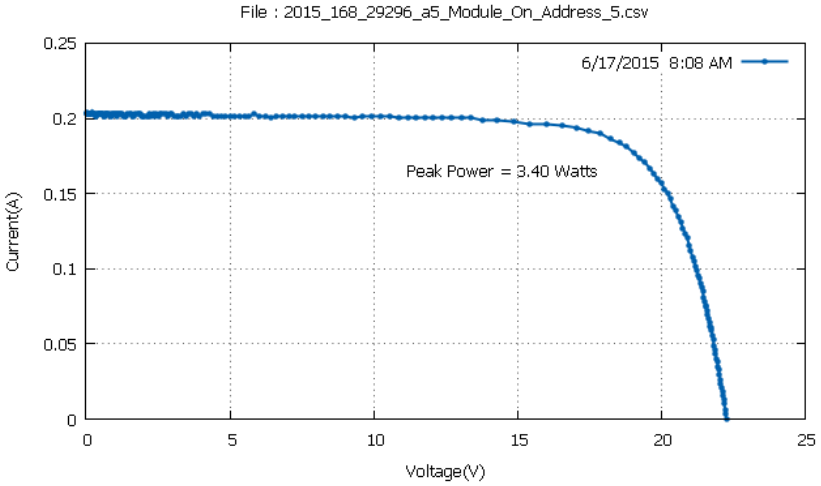
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6712685\ x\ 0.172093719}{334.3\ x\ 0{,}0756}\ \text{x } 100 = 12{,}7\ \%$$



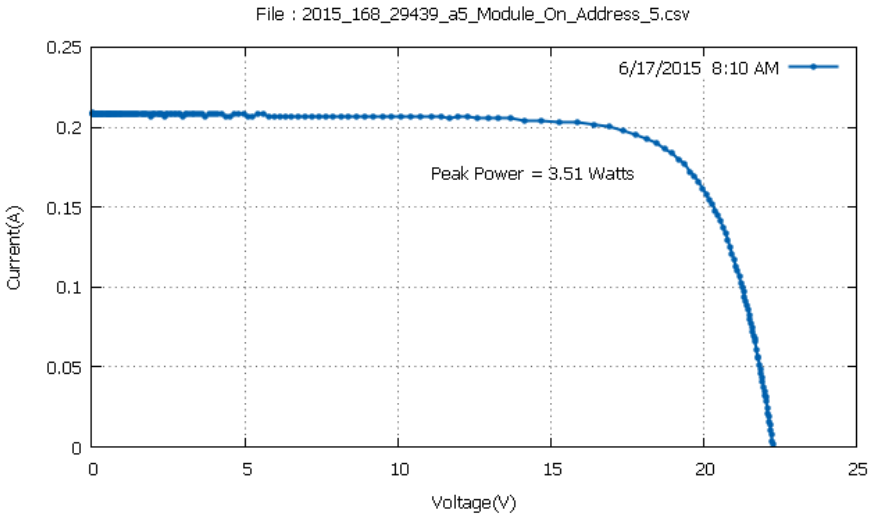
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.61715\ x\ 0.178515121}{344.5\ x\ 0{,}0709}\ \text{x } 100 = 13{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6944637\ x\ 0.179799408}{347.9\ x\ 0{,}0756}\ \text{x } 100 = 12{,}77\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7949715\ x\ 0.1810837}{351.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4625225\ x\ 0.190073654}{358.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}95\ \%$$

Module 4

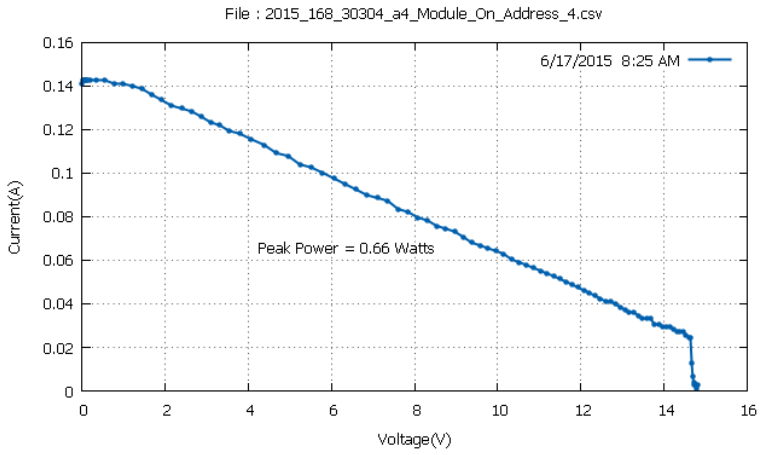
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

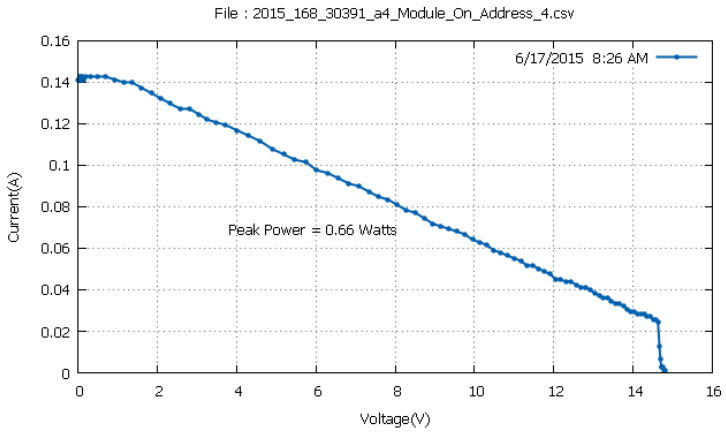
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:25	34,4	2,42
8:26	34,7	2,4
8:28	35,1	2,4
8:30	35,2	2,37
8:32	35,7	2,34
8:34	35,7	2,27

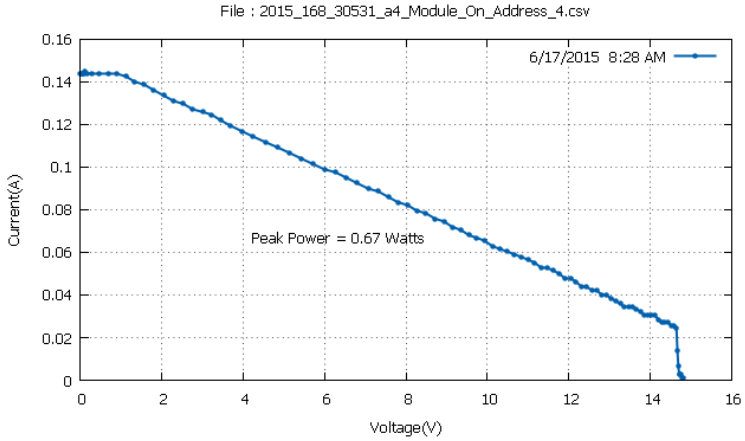
Mean Temperature: 35,13 ºC



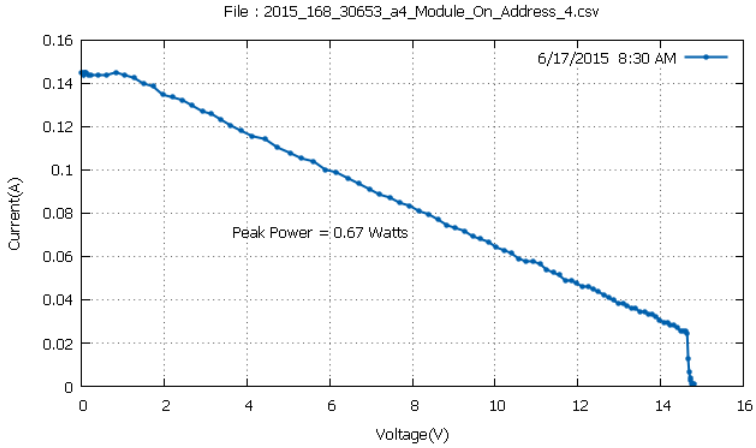
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.014783\ x\ 0.07320405}{405.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



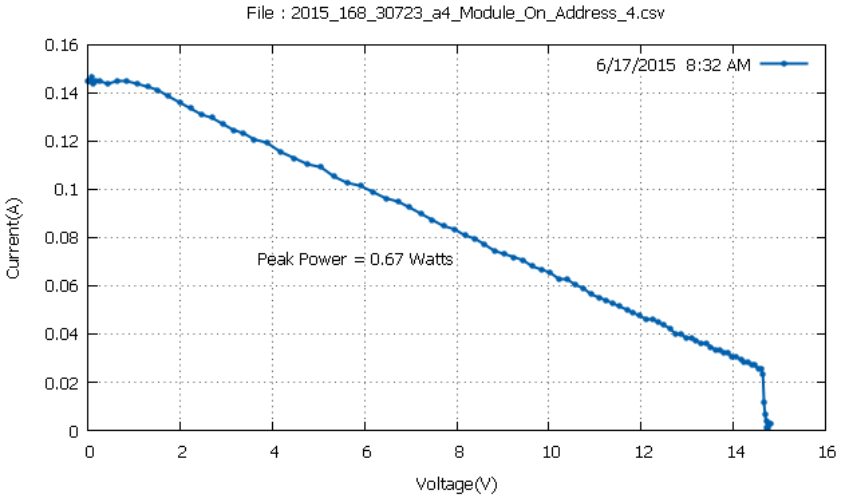
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.032898\ x\ 0.0821940154}{410.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}4\ \%$$



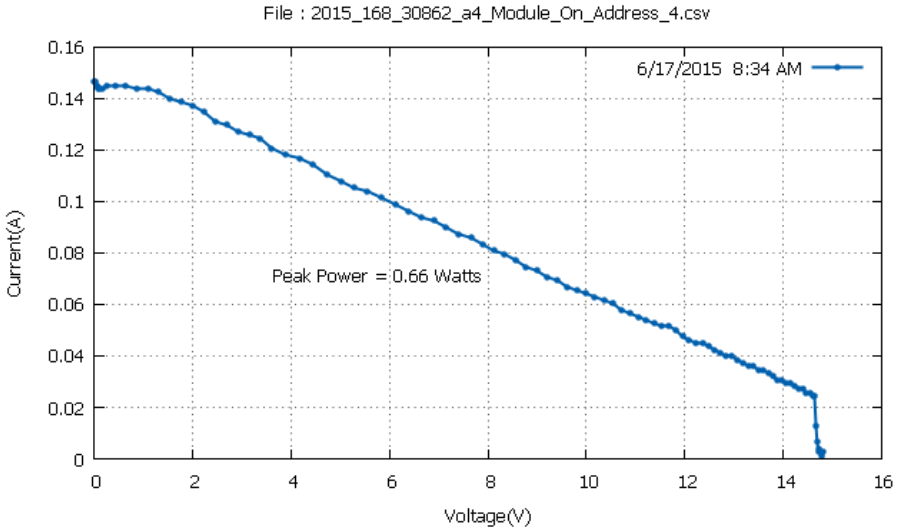
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.929737\ x\ 0.07448833}{414.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.38081\ x\ 0.07962545}{421.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.388541\ x\ 0.07962545}{425.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.334421\ x\ 0.07962545}{432.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$

Module 8

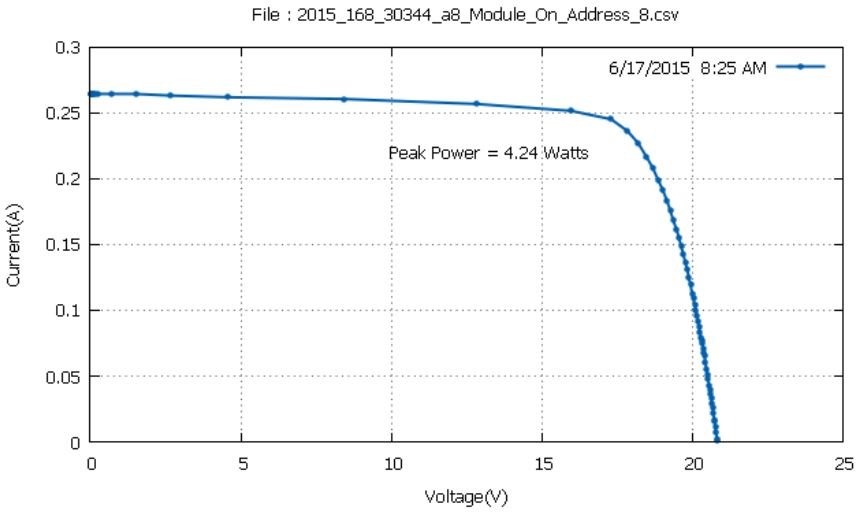
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

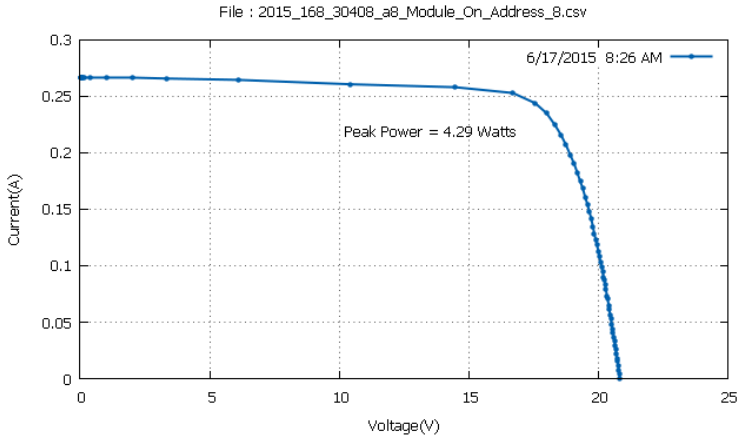
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:25	32,3	13,55
8:26	32,4	13,61
8:28	32,7	13,6
8:31	33,2	13,63
8:33	33,4	13,7
8:34	33,5	13,64

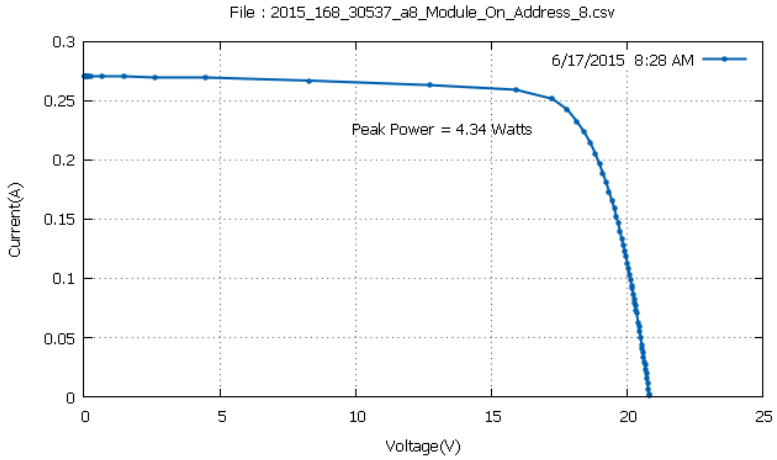
Mean Temperature: 32,91 ºC



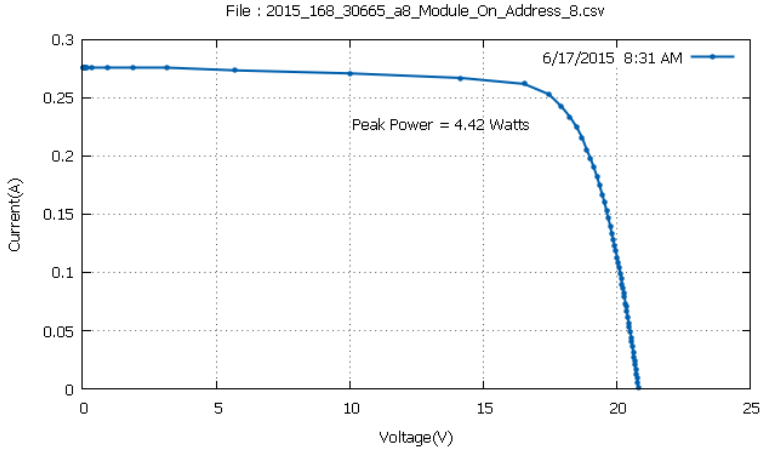
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3028164\ x\ 0.24529776}{407.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}55\ \%$$



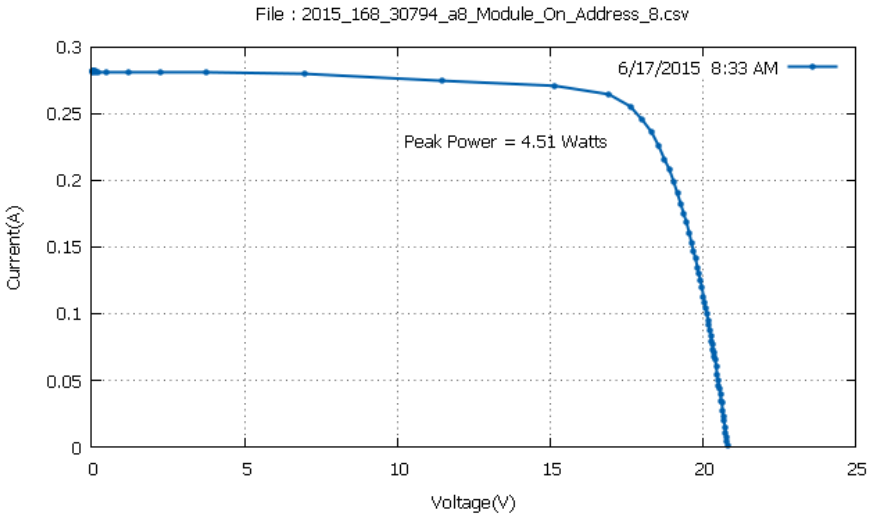
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5656834\ x\ 0.244013488}{410.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}61\ \%$$



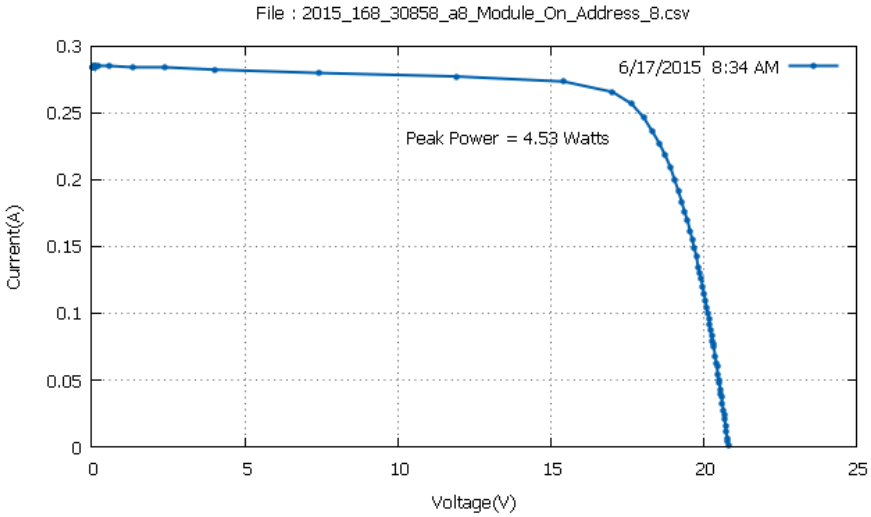
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2564278\ x\ 0.251719177}{415.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4729061\ x\ 0.253003448}{422\ x\ 0{,}0768} \text{ x } 100 = 13{,}63\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.627533\ x\ 0.255572021}{428.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6507282\ x\ 0.2568563}{432.3\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}64\ \%$$

Module 3

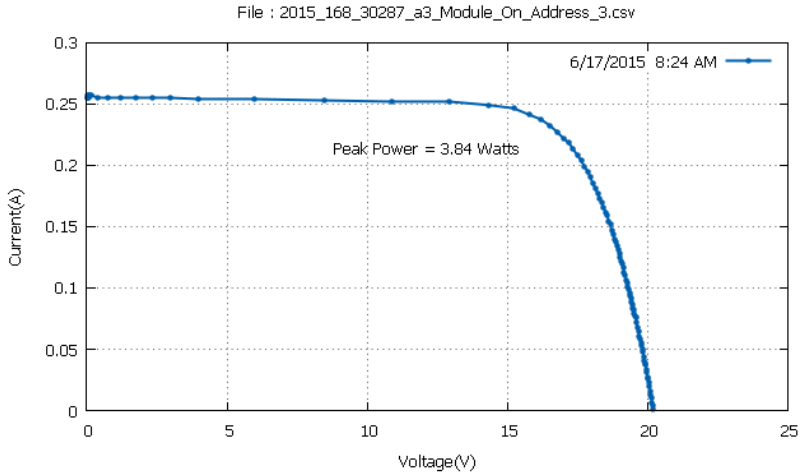
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

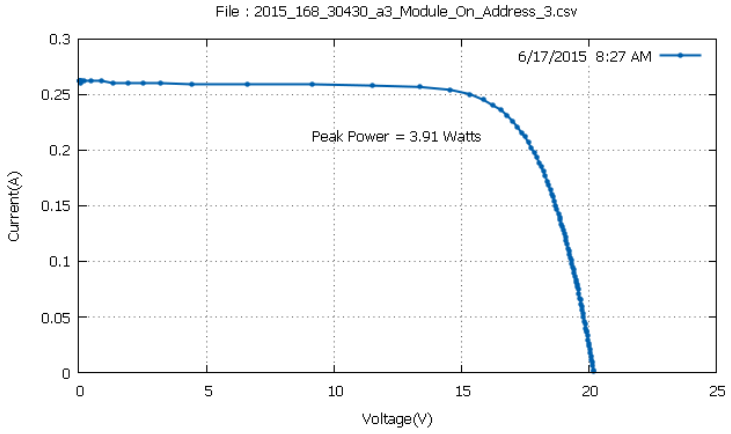
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:24	33,8	13,4
8:27	34,3	13,41
8:29	34,8	13,45
8:30	34,8	13,45
8:31	35	13,48
8:39	36,7	13,57

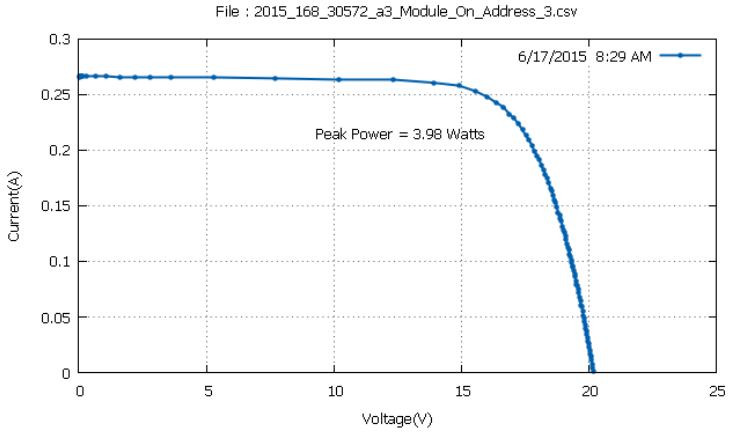
Mean Temperature: 34,9 ºC



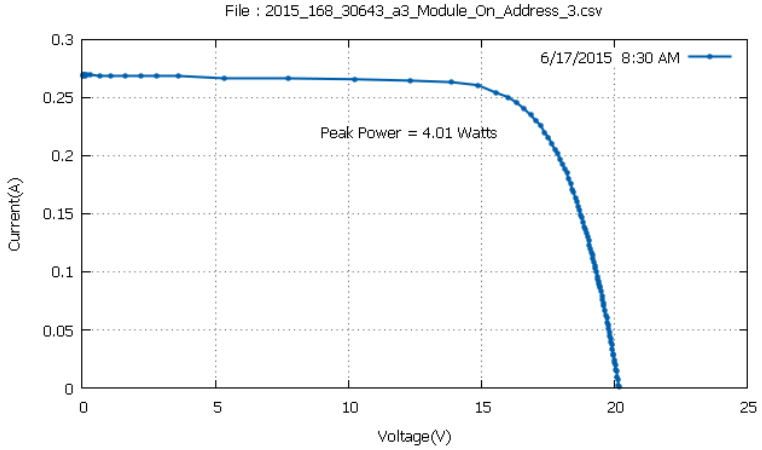
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1817665\ x\ 0.237592071}{403.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}4\ \%$$



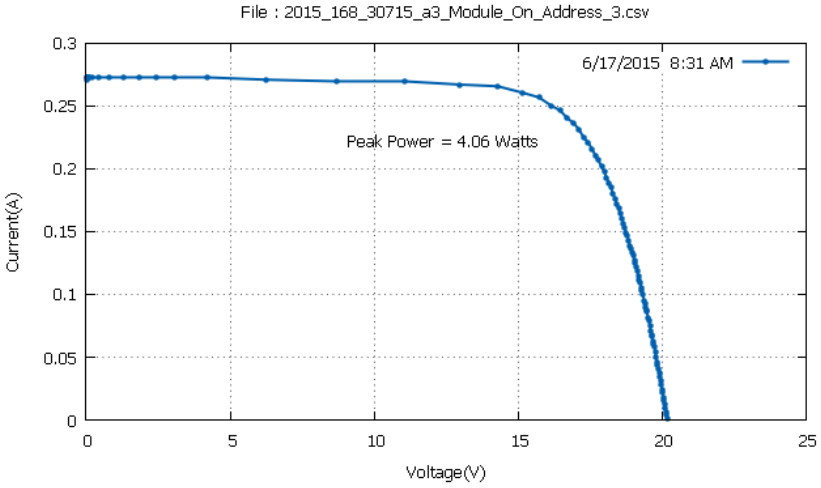
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5528717\ x\ 0.2363078}{411.1\ x\ 0{,}0709} \text{ x } 100 = 13{,}41\ \%$$



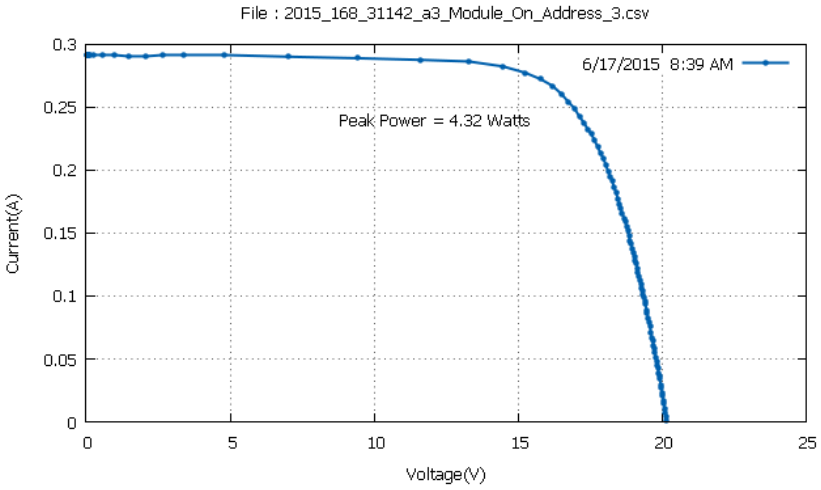
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.65338\ x\ 0.238876358}{417.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.24529776}{420.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.246582046}{424.6\ x\ 0{,}0709} \text{ x } 100 = 13{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.189497\ x\ 0.267130554}{449\ x\ 0{,}0709} \text{ x } 100 = 13{,}57\ \%$$

Module 5

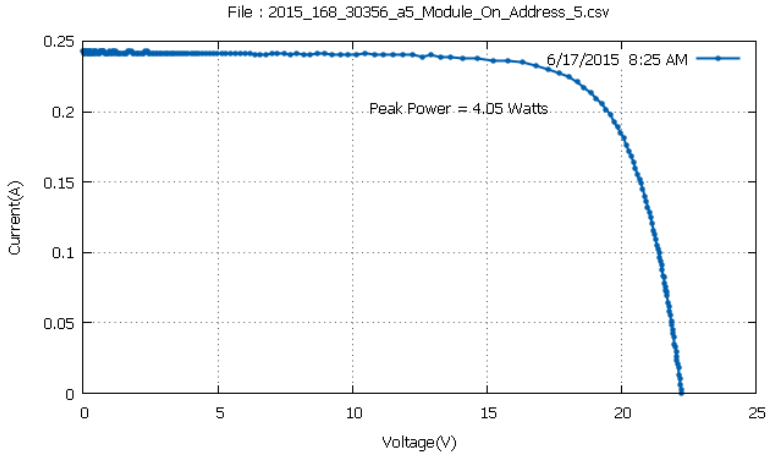
Date: 17/6/2015 – Morning Measurement

Temperature Ambient: 25 ºC

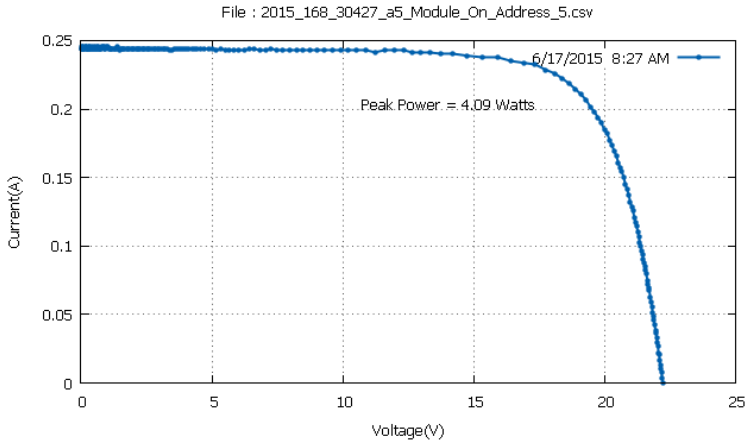
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:25	34,6	13,14
8:27	34,9	13,17
8:29	35,4	13,18
8:30	35,5	13,21
8:31	35,7	13,21
8:34	36,3	13,2

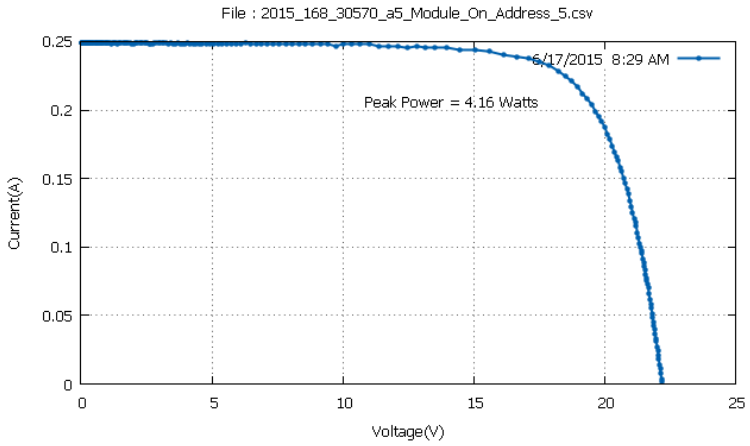
Mean Temperature: 35.4 ºC



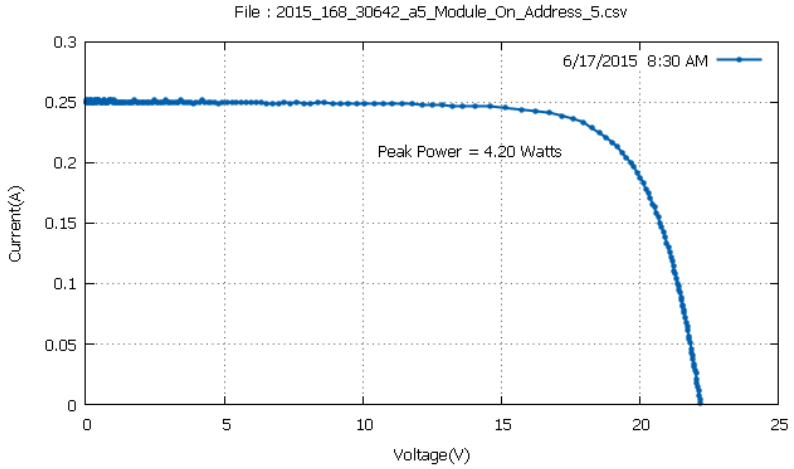
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0450287\ x\ 0.224749267}{407.7\ x\ 0{,}0756} \text{ x } 100 = 13.14\ \%$$



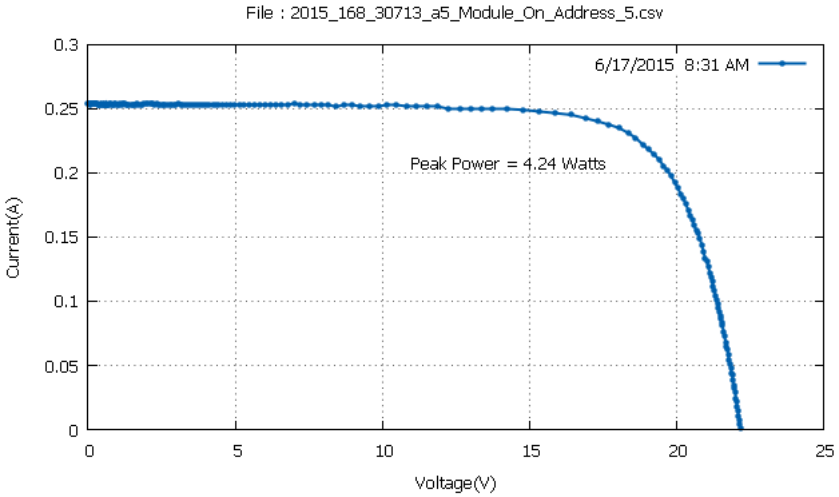
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.226033539}{410.8\ x\ 0{,}0756} \text{ x } 100 = 13{,}17\ \%$$



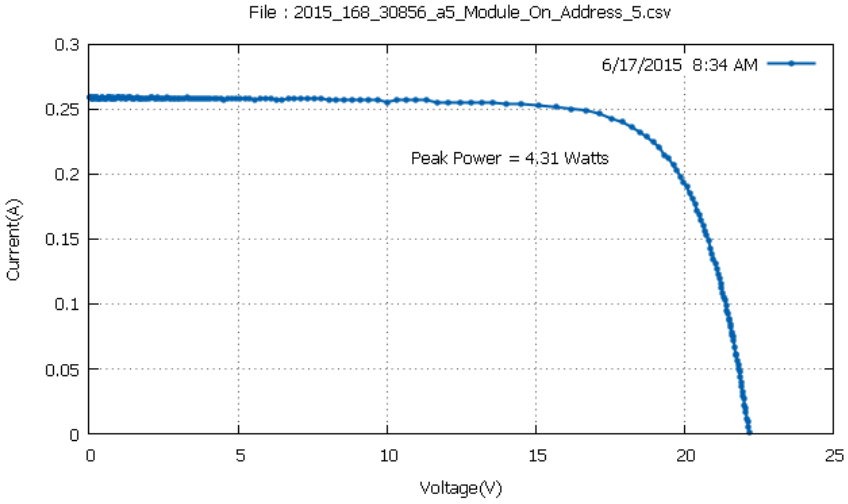
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2151184\ x\ 0.228602111}{417.5\ x\ 0{,}0756} \text{ x } 100 = 13{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.23373922}{420.4\ x\ 0{,}0756} \text{ x } 100 = 13{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3542824\ x\ 0.231170669}{424.4\ x\ 0{,}0756}\ \text{x } 100 = 13{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2228489\ x\ 0.2363078}{431.8\ x\ 0{,}0756}\ \text{x } 100 = 13{,}2\ \%$$

Module 4

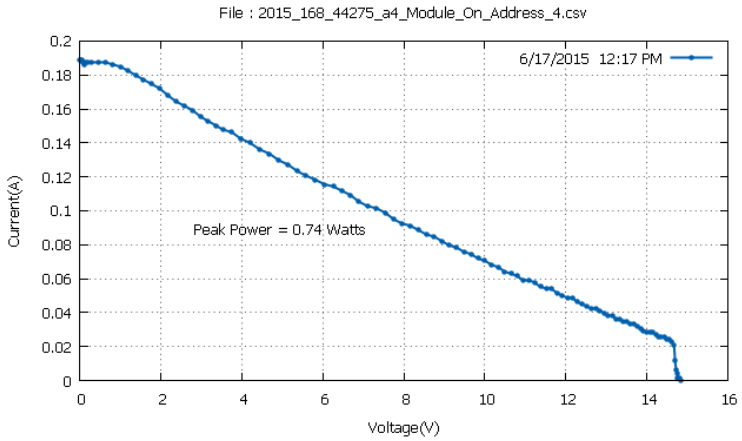
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

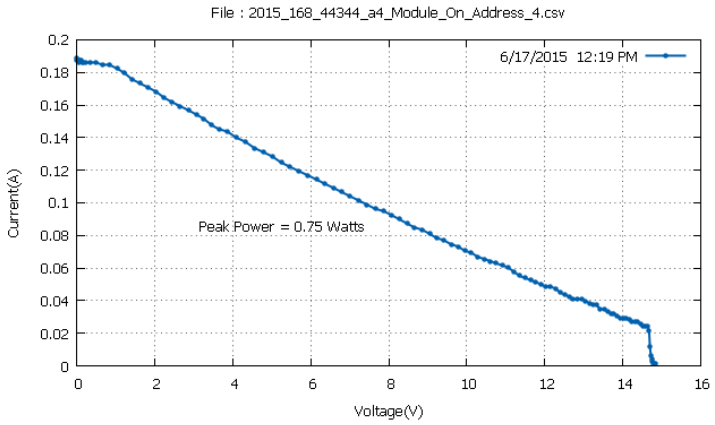
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:17	63,9	1,18
12:19	62,6	1,19
12:21	61	1,26
12:23	60,5	1,3
12:24	61,6	1,3
12:29	62,2	1,33

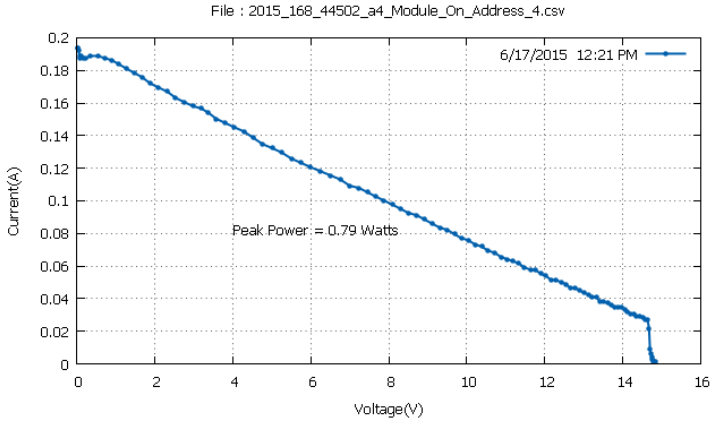
Mean Temperature: 61,96 ºC



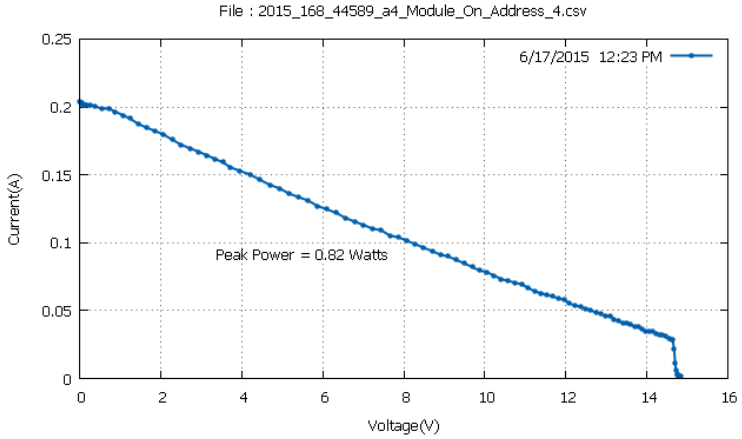
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.530359\ x\ 0.09888967}{933.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}18\ \%$$



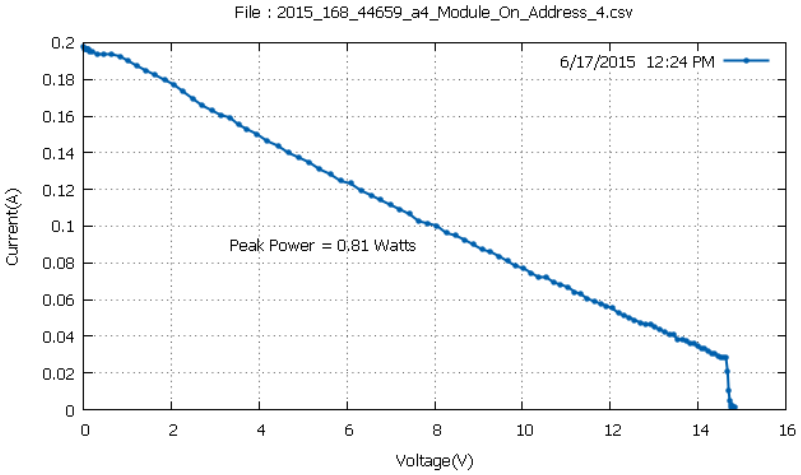
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.85507631\ x\ 0.09503683}{933.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}19\ \%$$



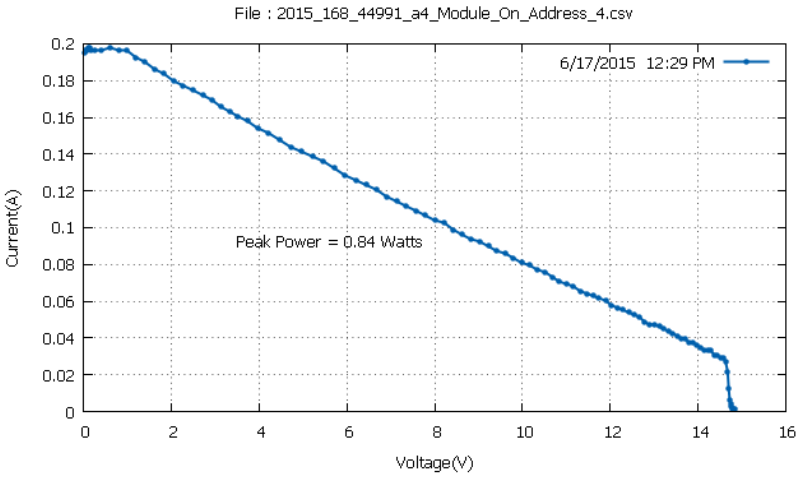
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.713259\ x\ 0.09118398}{933.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.071555\ x\ 0.101458237}{934.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.782842\ x\ 0.0924682}{934.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.349884\ x\ 0.100173958}{940.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}33\ \%$$

Module 8

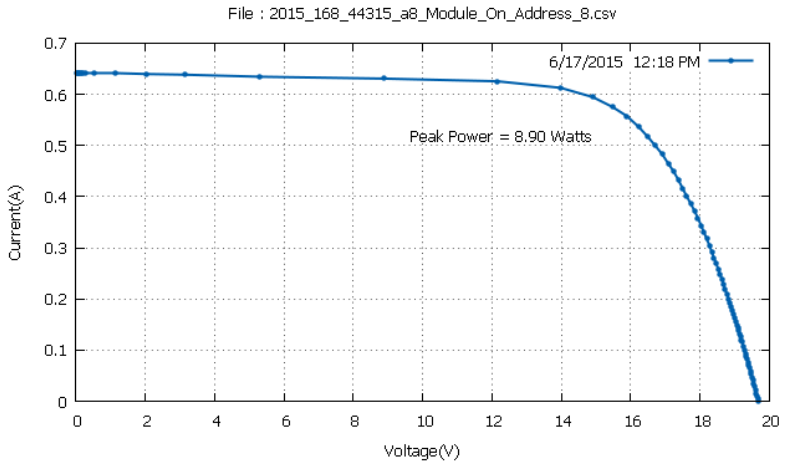
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

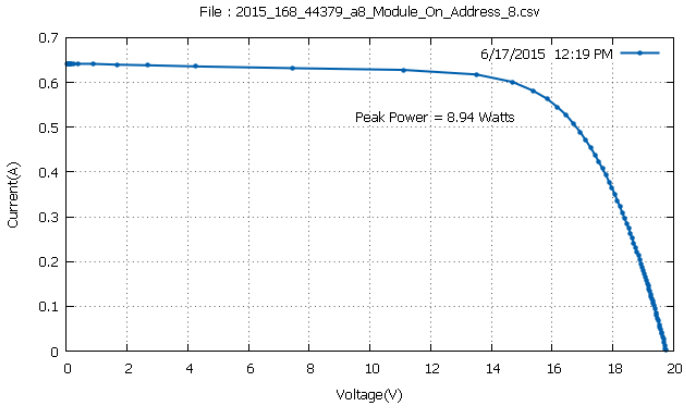
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:18	59,3	12,41
12:19	58,2	12,46
12:21	55,4	12,6
12:23	54,5	12,7
12:28	56,2	12,63
12:30	57,1	12,55

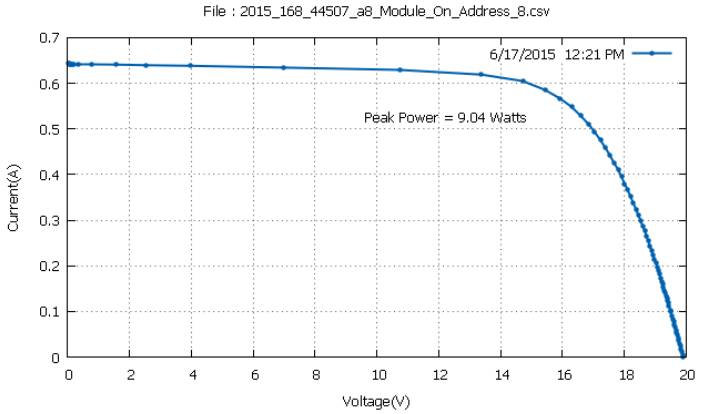
Mean Temperature: 56,78 ºC



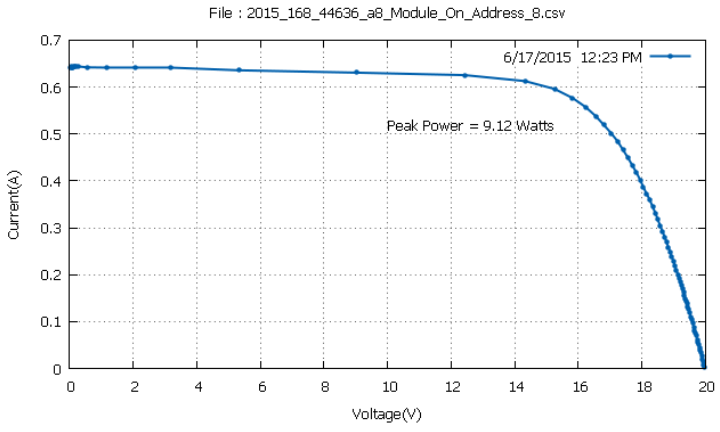
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.47048\ x\ 0.5753581}{933.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}41\ \%$$



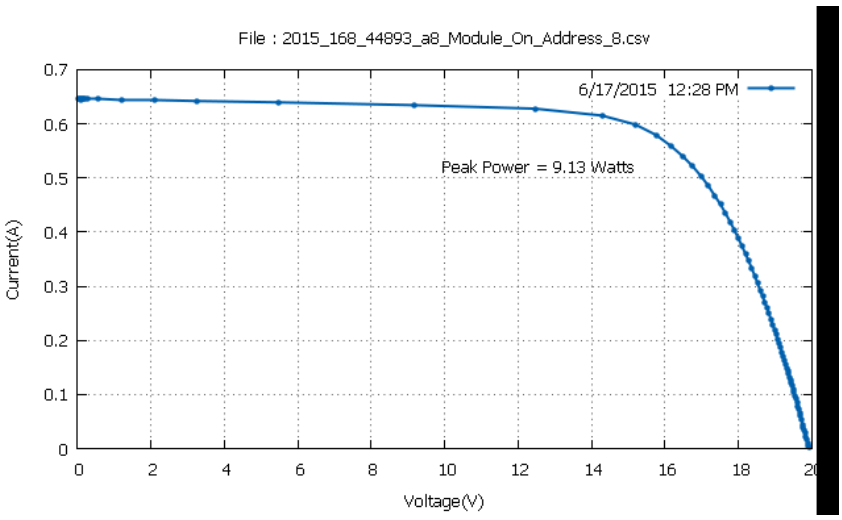
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3622408\ x\ 0.58177954}{933.9\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}46\ \%$$



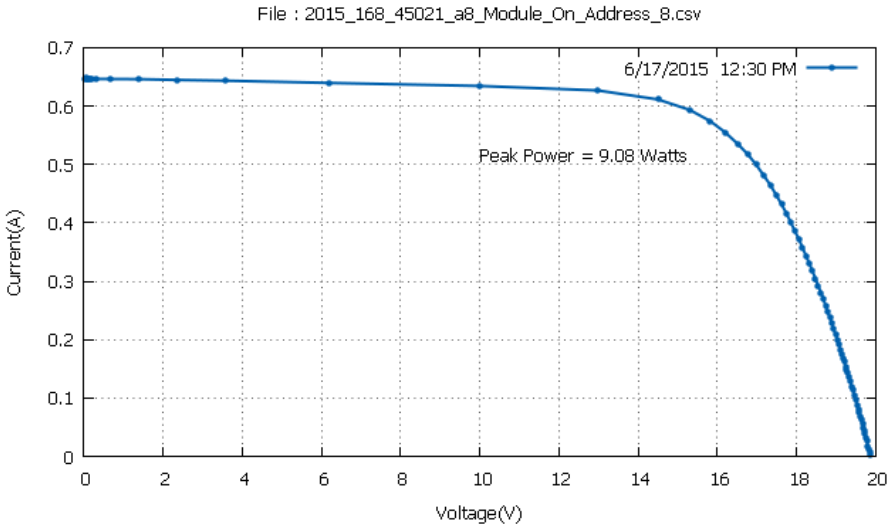
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4318228\ x\ 0.5856324}{934.9\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8183918\ x\ 0.5766424}{935.1\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7565413\ x\ 0.579210937}{941.1\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}63\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8183918\ x\ 0.574073851}{941.8\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}55\ \%$$

Module 3

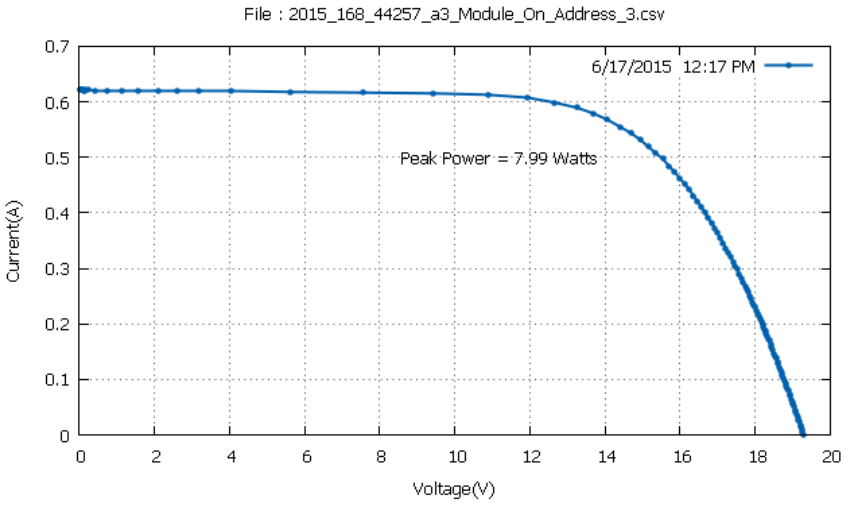
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

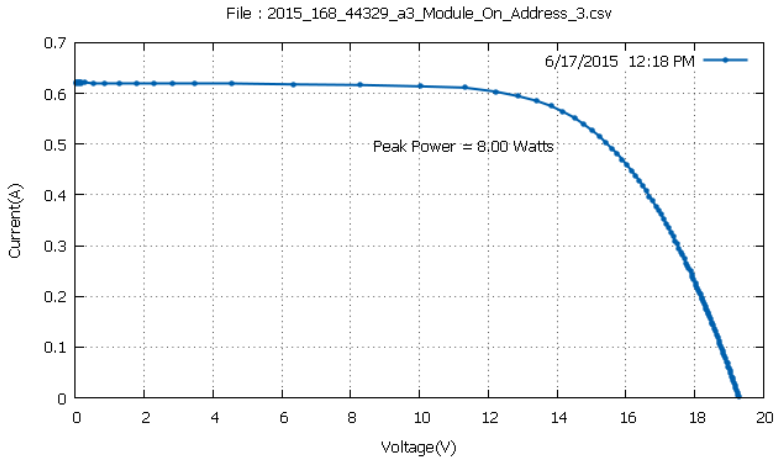
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:17	63,1	12,06
12:18	63,2	12,07
12:22	61,1	12,22
12:23	60,7	12,28
12:24	60,7	12,28
12:29	61,1	12,25

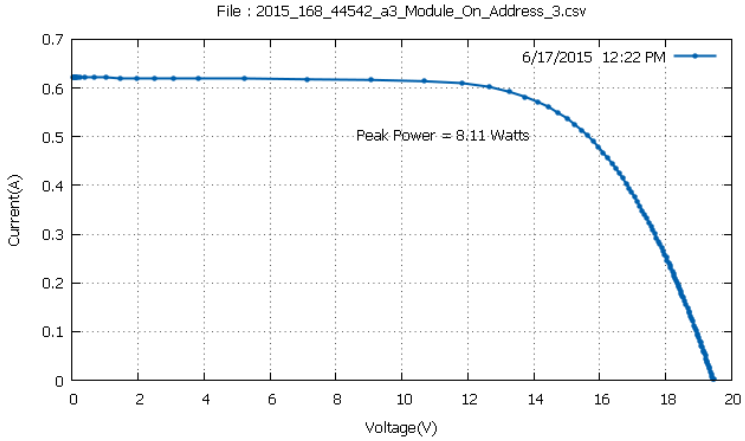
Mean Temperature: 61,65 ºC



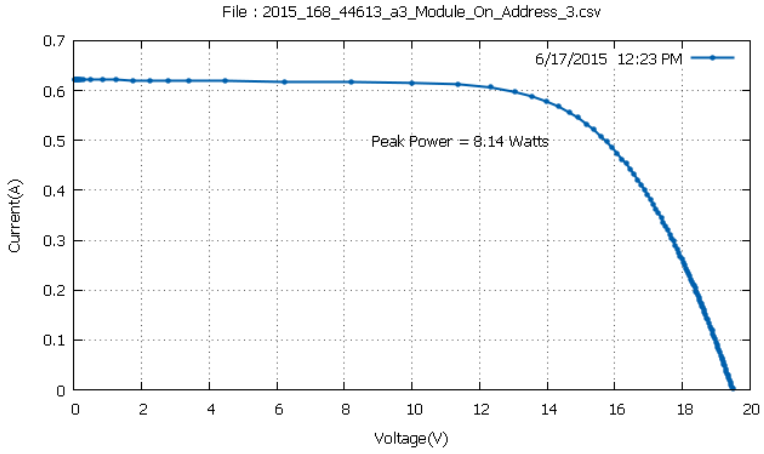
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.40355\ x\ 0.55480963}{934.2\ x\ 0{,}0709}$ x 100 = 12,06 %



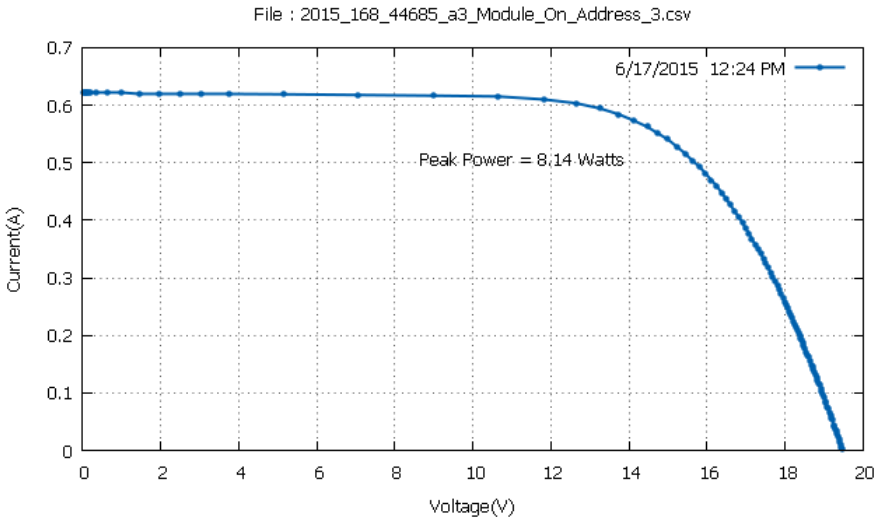
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.4963264\ x\ 0.552241}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}07\ \%$$



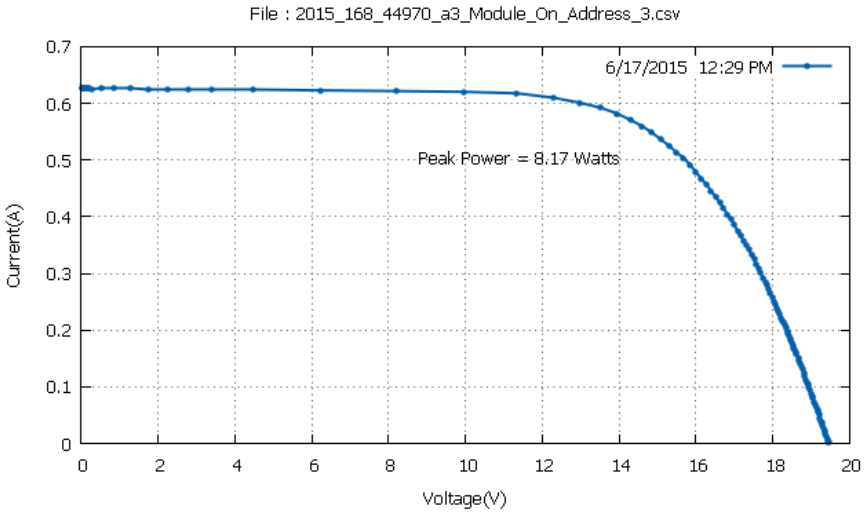
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.4499388\ x\ 0.561231}{935.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6432228\ x\ 0.5560939}{934.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.4654016\ x\ 0.5625153}{934.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5968351\ x\ 0.5599467}{940.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}25\ \%$$

Module 5

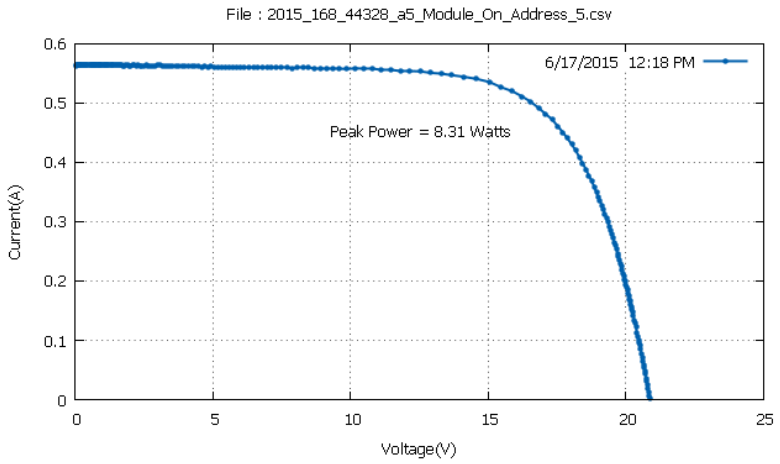
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

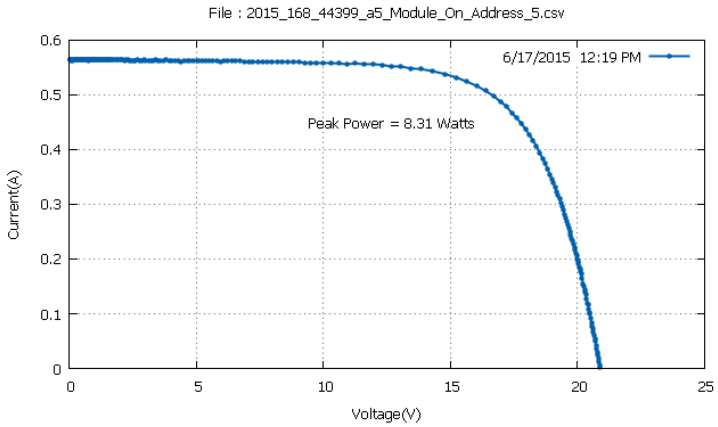
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:18	65,3	11,77
12:19	65	11,76
12:27	63,6	11,86
12:28	63,7	11,84
12:29	63,8	11,85
12:31	64	11,81

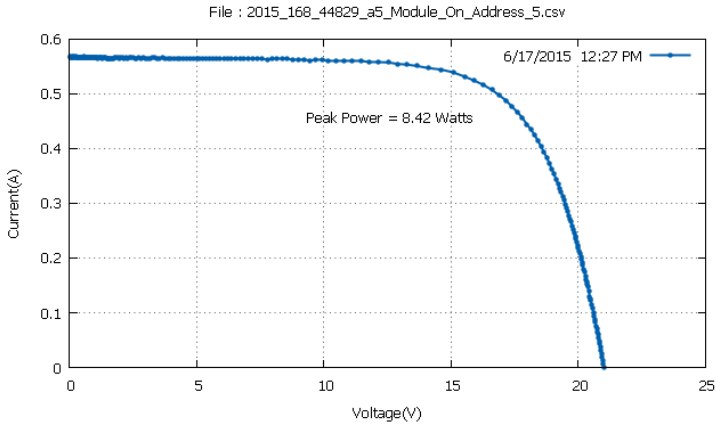
Mean Temperature: 64,23 ºC



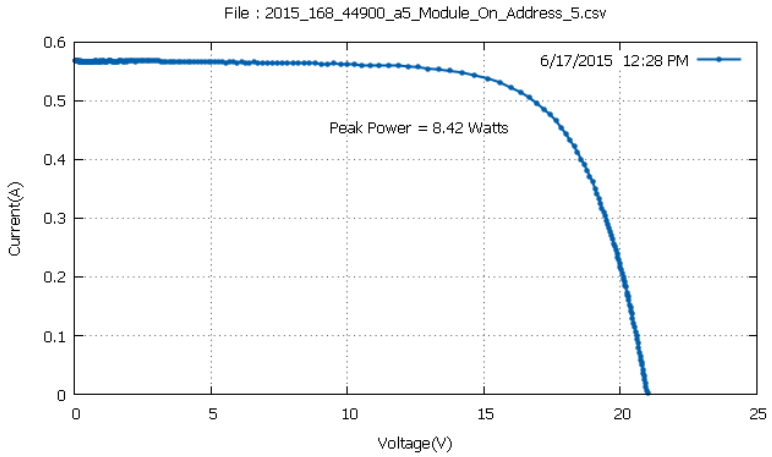
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5374088\ x\ 0.502154052}{933.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}77\ \%$$



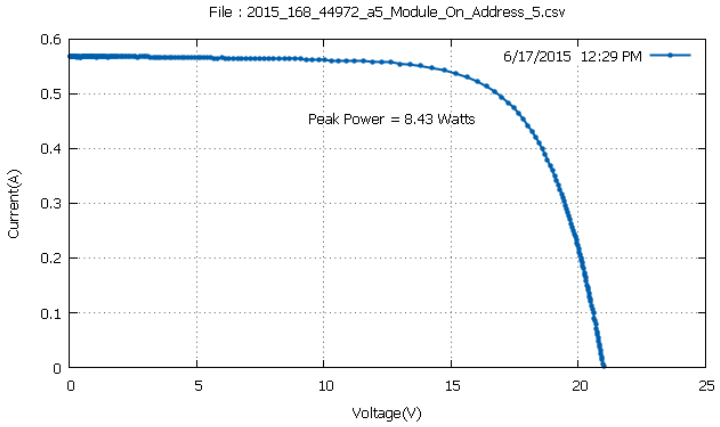
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6843052\ x\ 0.4983012}{934.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}76\ \%$$



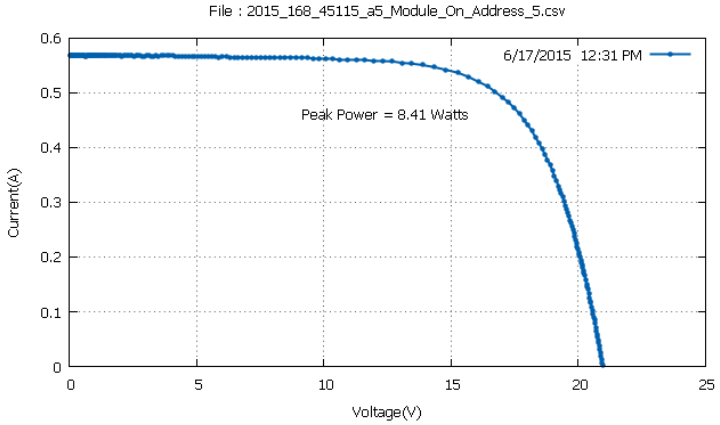
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59926\ x\ 0.5072912}{938.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.645649\ x\ 0.5060069}{940.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6997681\ x\ 0.504722655}{940.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.512428343}{941.6\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}81\ \%$$

Module 4

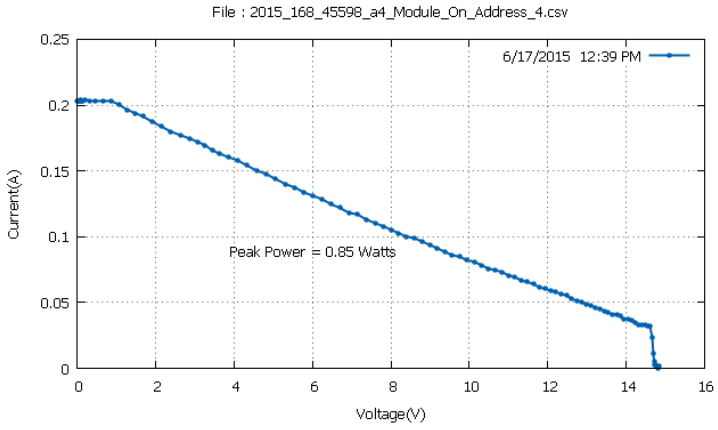
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

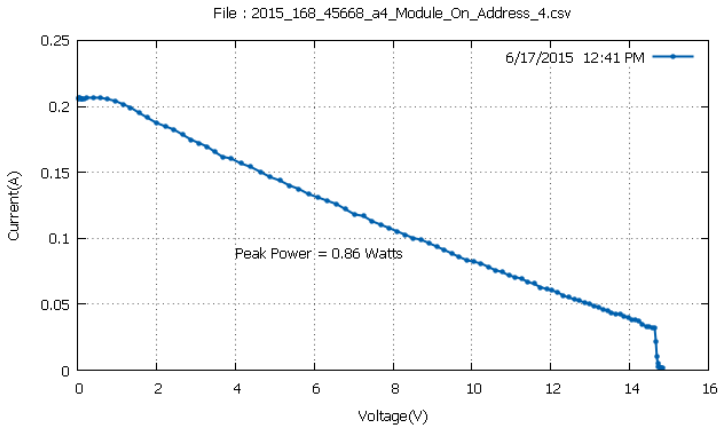
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:39	57,5	1,34
12:41	56,2	1,36
12:42	55,8	1,42
12:44	56,9	1,4
12:45	56,5	1,41
12:49	55,9	1,48

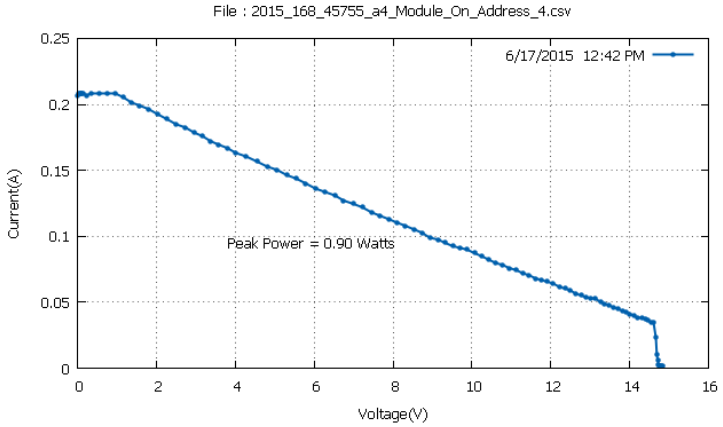
Mean Temperature: 56,46 ºC



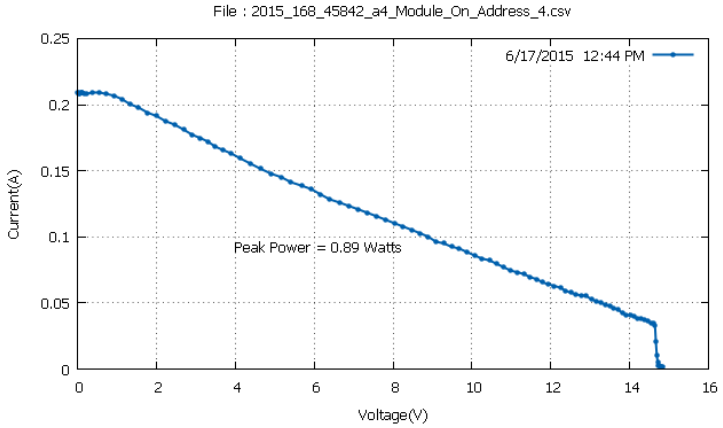
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.009704\ x\ 0.106595367}{942.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}34\ \%$$



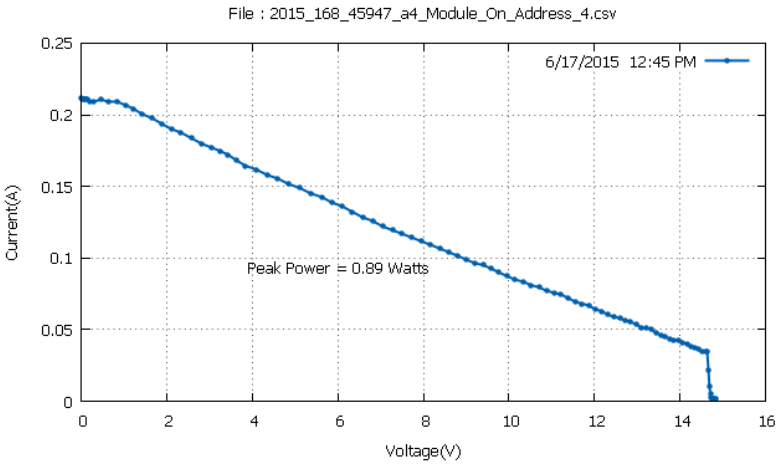
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.713259\ x\ 0.09888967}{942.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}36\ \%$$



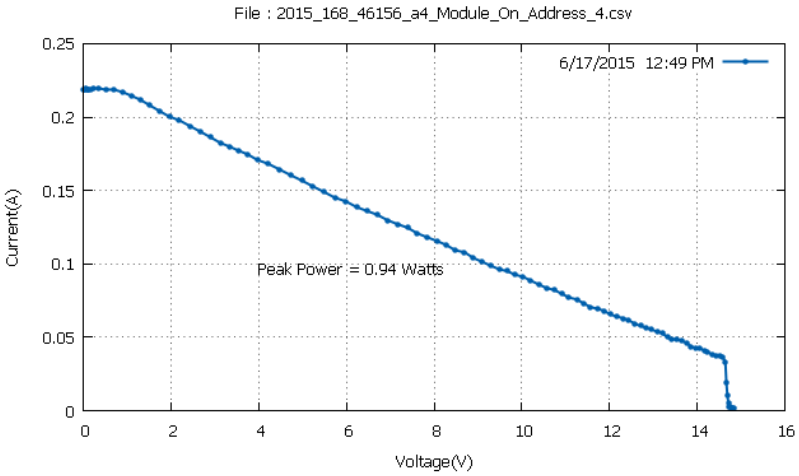
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.2003355\ x\ 0.09632111}{940.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.682333\ x\ 0.102742523}{941.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.597288\ x\ 0.1040268}{940.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.107879646}{941.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}48\ \%$$

Module 8

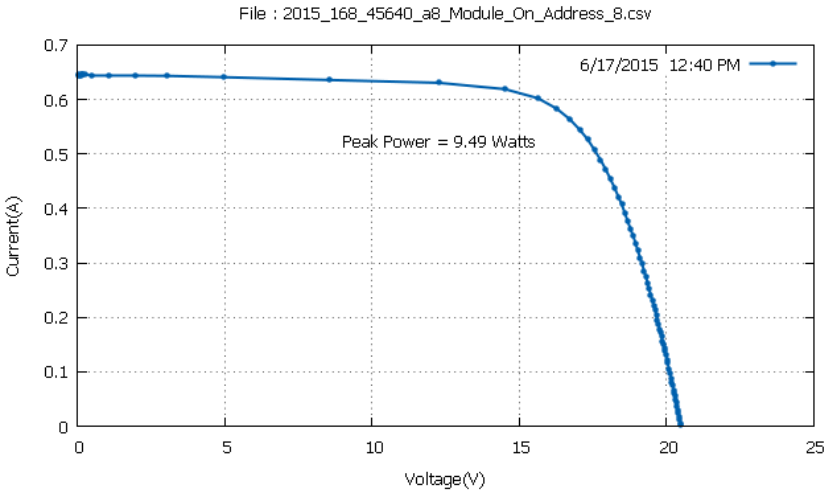
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

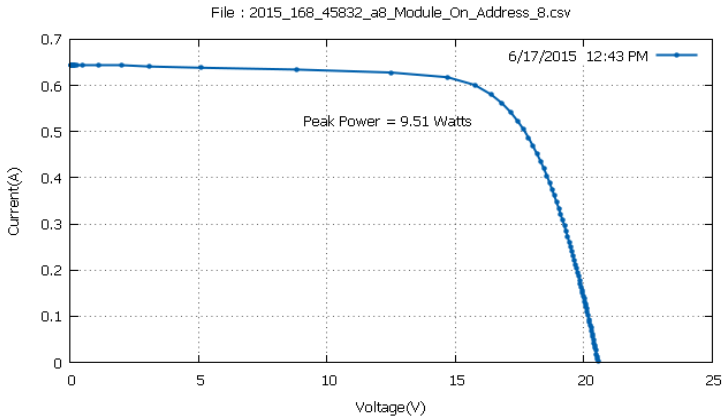
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:40	48,2	13,12
12:43	47,9	13,15
12:44	47,7	13,17
12:48	47,3	13,17
12:46	47,9	13,23
12:49	46,9	13,2

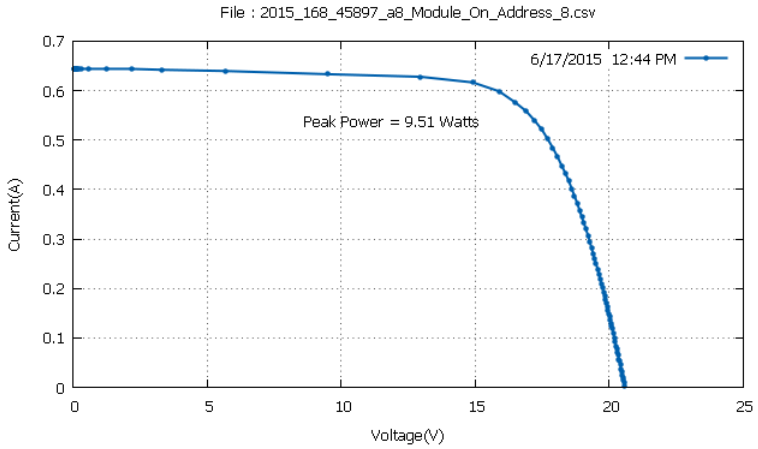
Mean Temperature: 47,65 ºC



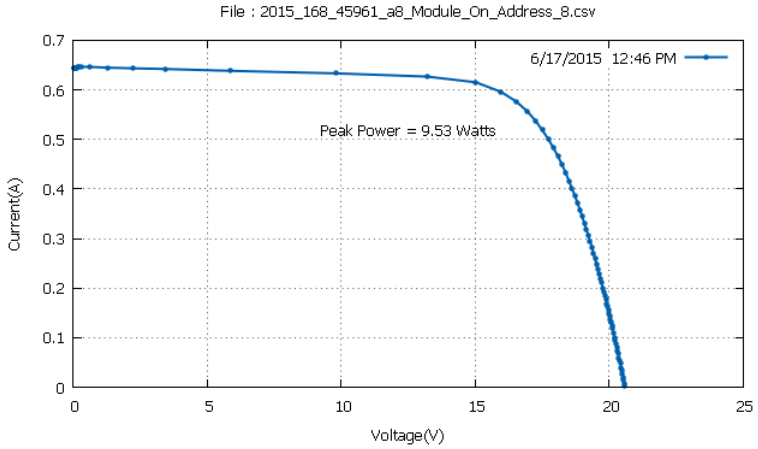
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2668114\ x\ 0.5830638}{941.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}12\ \%$$



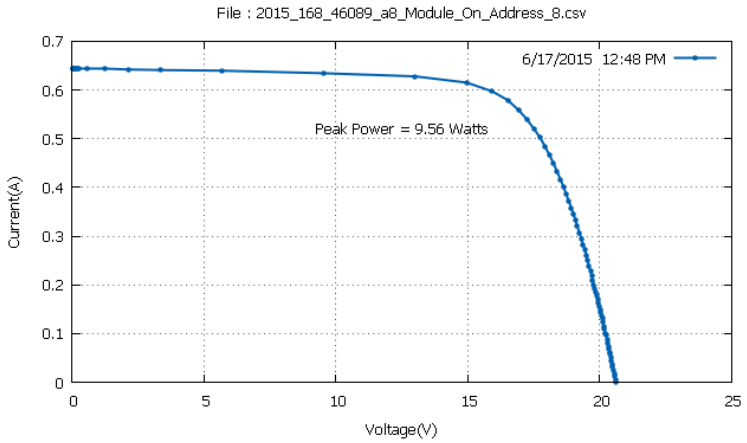
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.580495238}{941.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}15\ \%$$



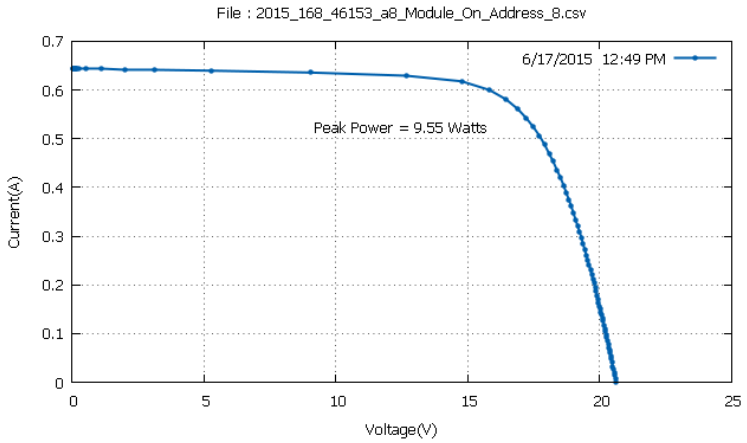
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8879747\ x\ 0.598475158}{939.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5219479\ x\ 0.5766424}{941.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.506485\ x\ 0.579210937}{940.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.580495238}{942.5\ x\ 0{,}0768} \text{ x } 100 = 13{,}2\ \%$$

Module 3

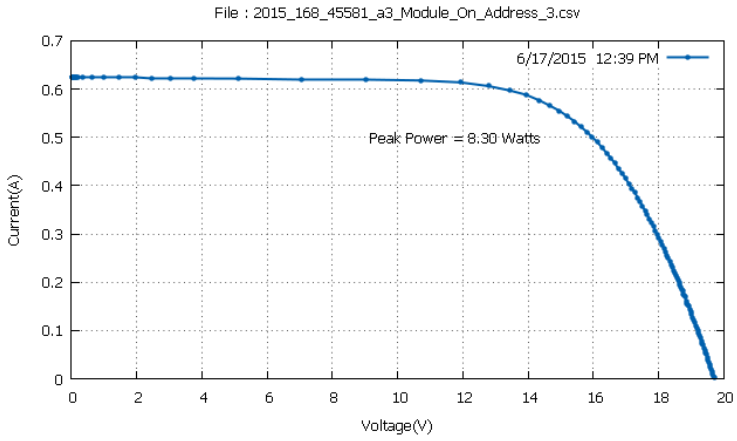
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

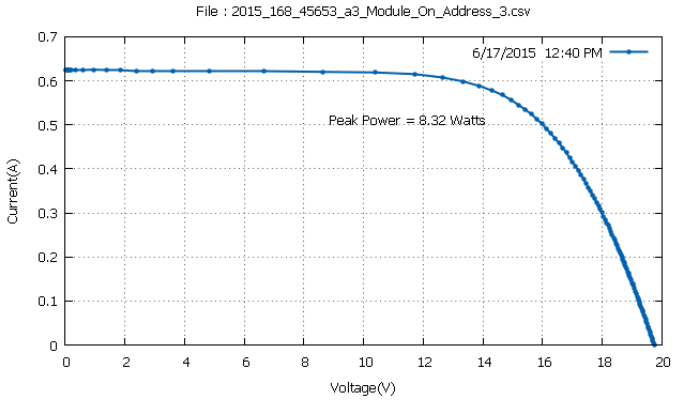
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:39	55,8	12,41
12:40	55,5	12,46
12:42	54,8	12,43
12:44	56	12,45
12:45	56	12,47
12:51	55,9	12,46

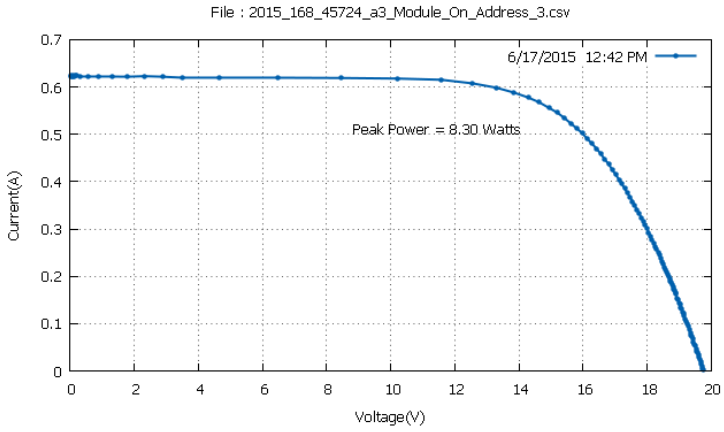
Mean Temperature: 55,66 ºC



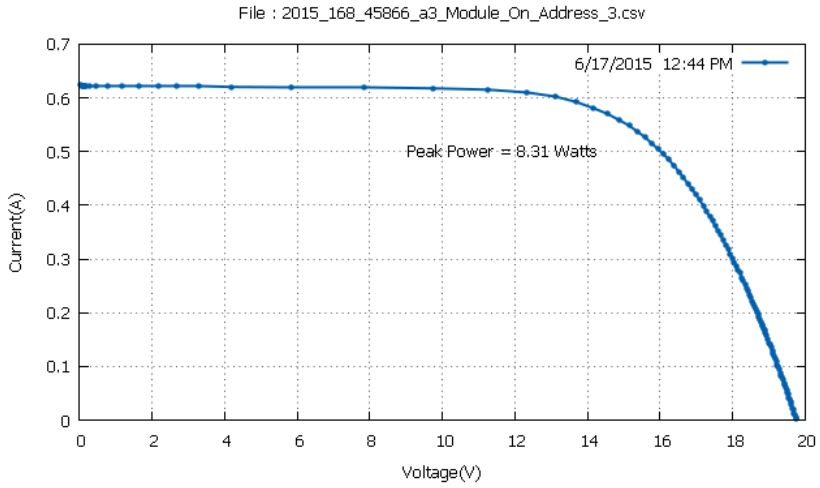
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.96021\ x\ 0.55480963}{943\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



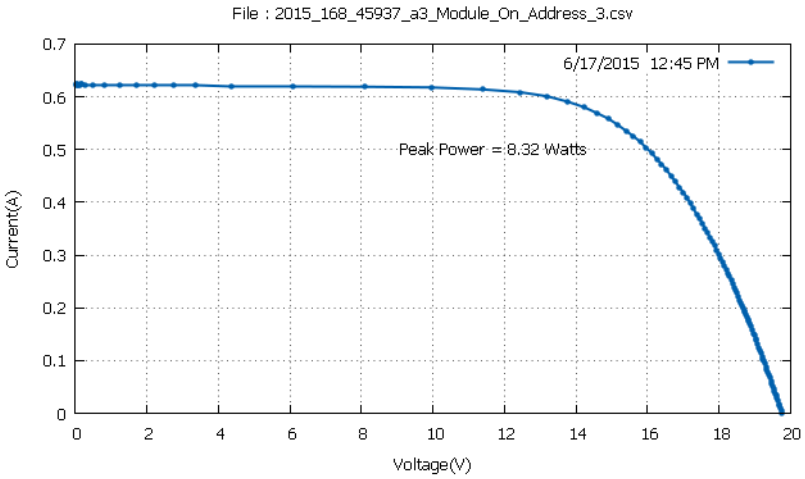
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6586857\ x\ 0.5676524}{941.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$



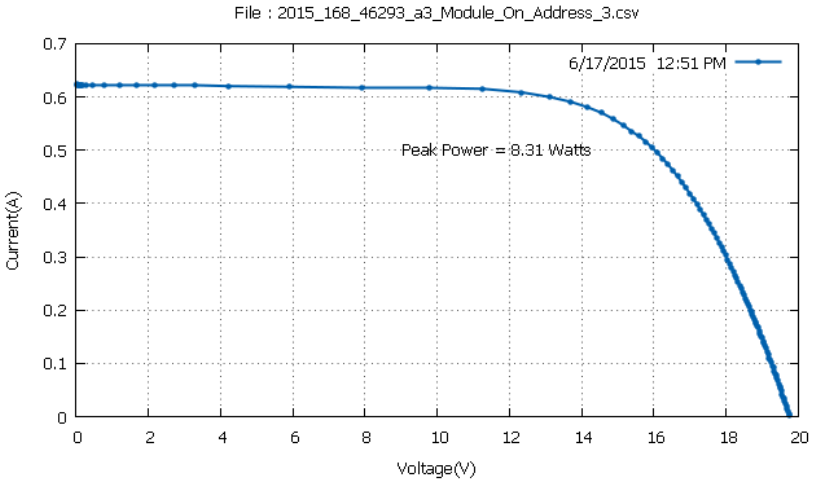
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.62776\ x\ 0.5676524}{941.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8674326\ x\ 0.5586625}{941.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8983583\ x\ 0.5586625}{940.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8674326\ x\ 0.5586625}{940.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$

Module 5

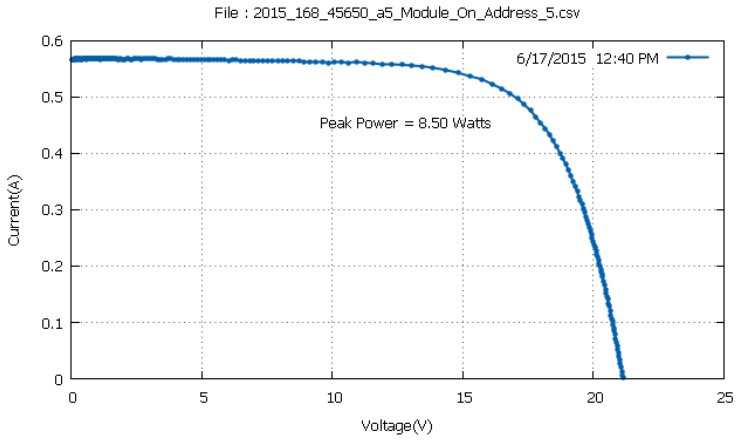
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

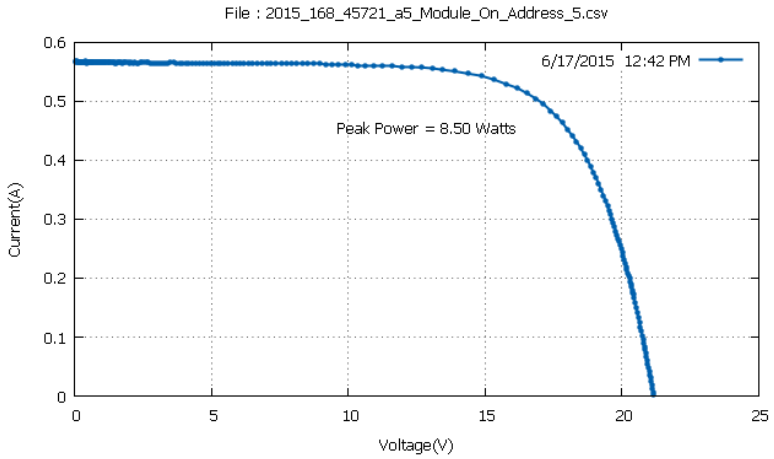
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:40	61,7	11,94
12:42	60,9	11,95
12:44	61	11,95
12:45	60,8	11,96
12:46	60,7	11,92
12:49	60,3	11,96

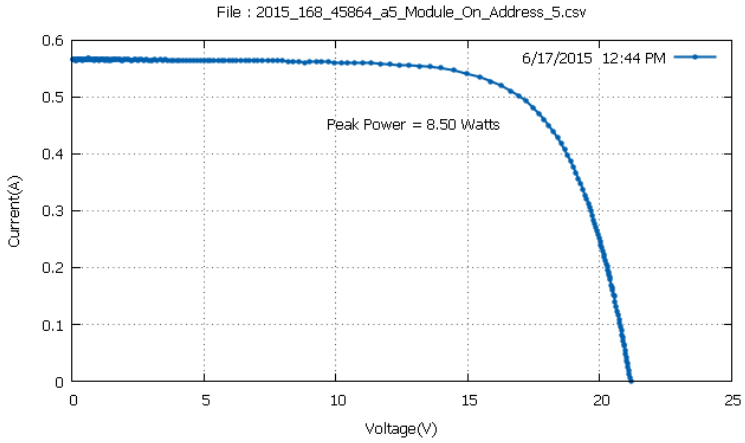
Mean Temperature: 60,9 º



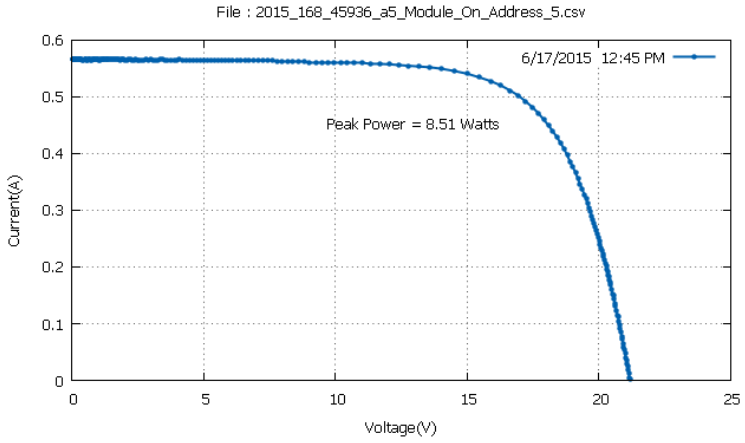
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8080082\ x\ 0.5060069}{941.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}94\ \%$$



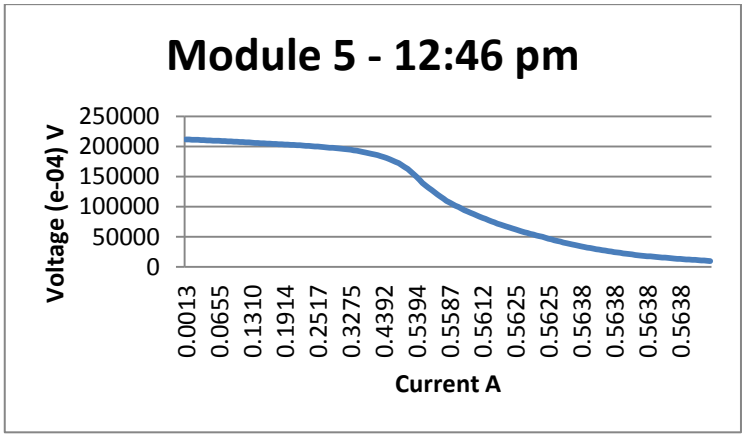
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8466644\ x\ 0.504722655}{940.6\ x\ 0{,}0756}\ \text{x } 100 = 11{,}95\ \%$$



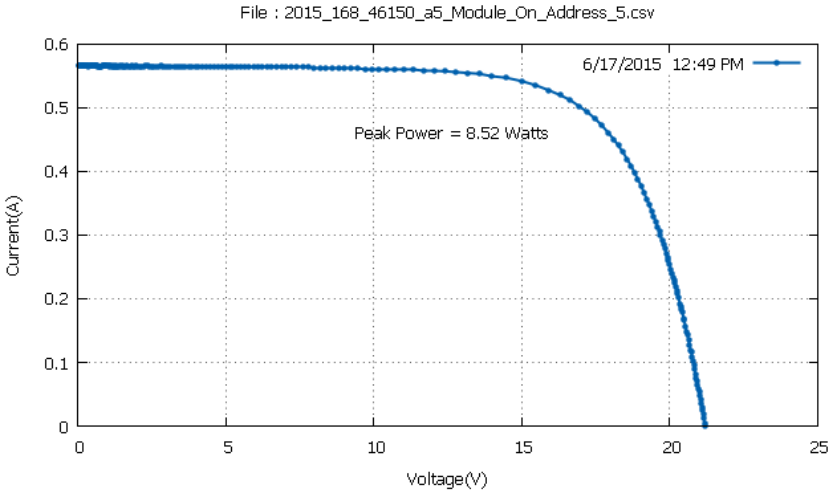
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.93171\ x\ 0.502154052}{940.6\ x\ 0{,}0756}\ \text{x } 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9394417\ x\ 0.502154052}{940.6\ x\ 0{,}0756}\ \text{x } 100 = 11{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.92397\ x\ 0.5}{940.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6224556\ x\ 0.512428343}{942\ x\ 0{,}0756} \text{ x } 100 = 11{,}96\ \%$$

Module 4

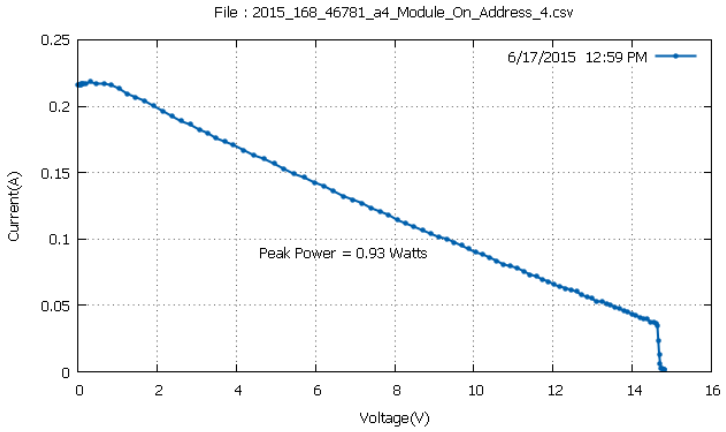
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

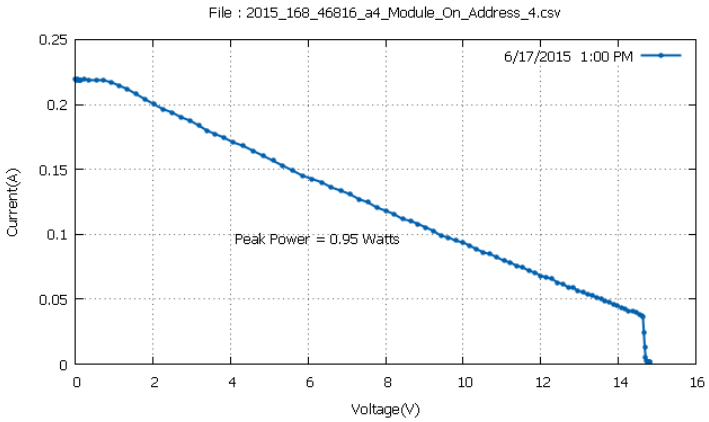
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
12:59	54,5	1,47
13:00	54,2	1,5
13:01	54,6	1,53
13:03	53,4	1,52
13:04	53,1	1,54
13:06	54,3	1,52

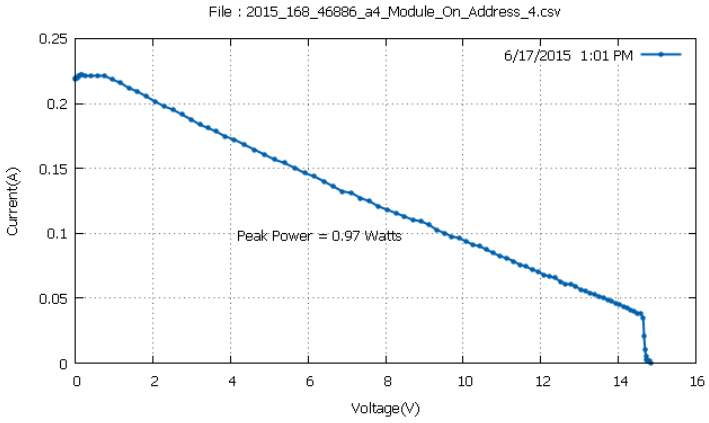
Mean Temperature: 54,01 ºC



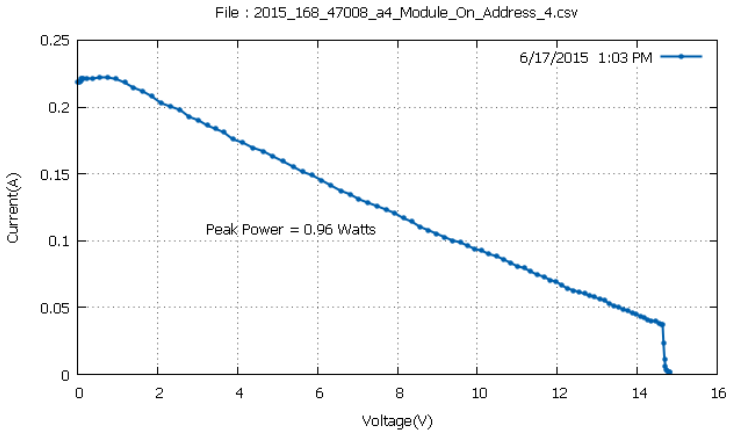
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.308575\ x\ 0.100173958}{940.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



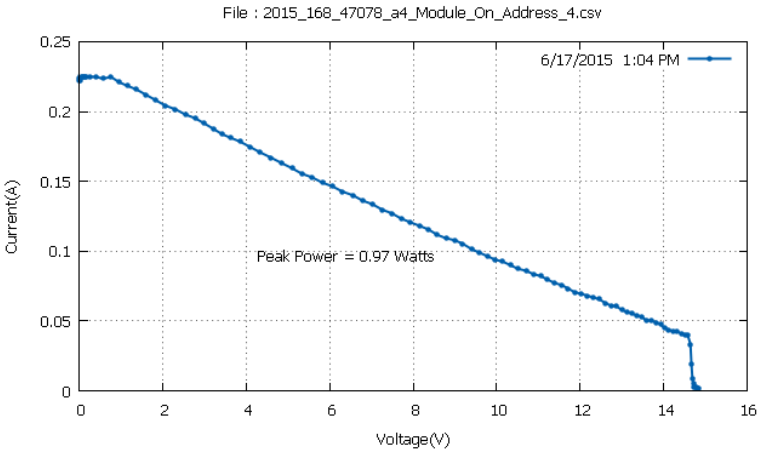
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.635945\ x\ 0.110448211}{941.3\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}5\ \%$$



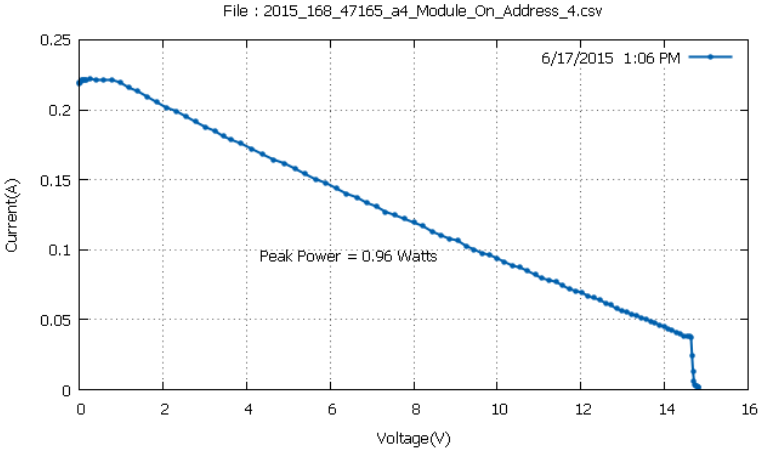
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.906544\ x\ 0.109163925}{941.3\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.331769\ x\ 0.102742523}{938.2\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.983857\ x\ 0.10787964}{937.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.045708\ x\ 0.106595367}{937\ x\ 0{,}0671} \text{ x } 100 = 1{,}52\ \%$$

Module 8

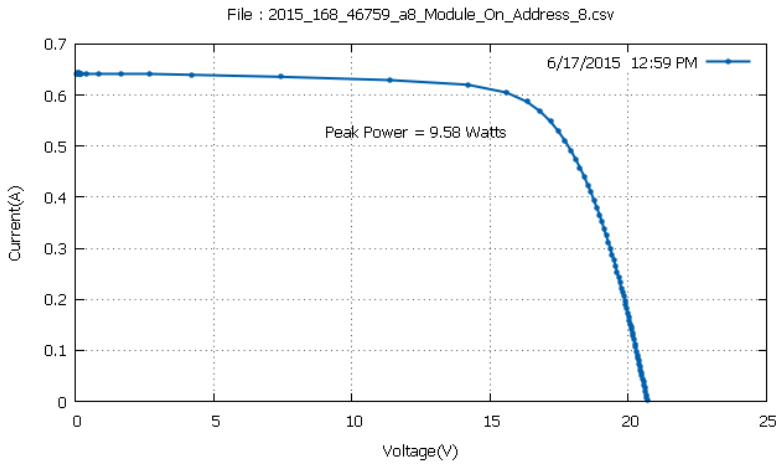
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

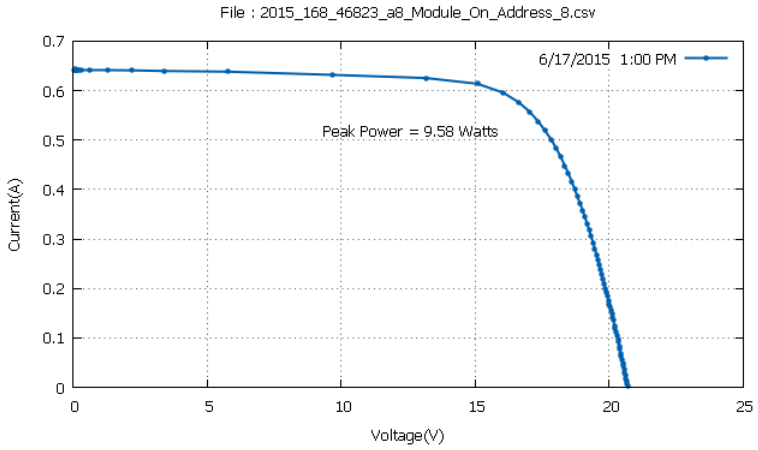
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
12:59	46,6	13,26
13:00	46,3	13,25
13:01	46,3	13,28
13:03	45,8	13,24
13:04	45,9	13,28
13:06	45,9	13,23

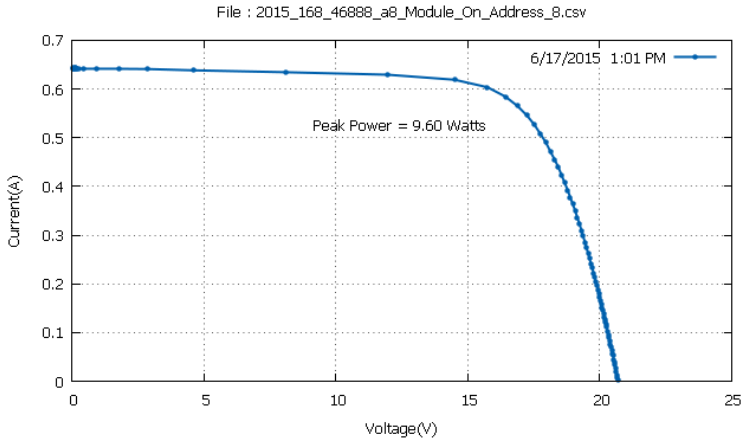
Mean Temperature: 46,13 ºC



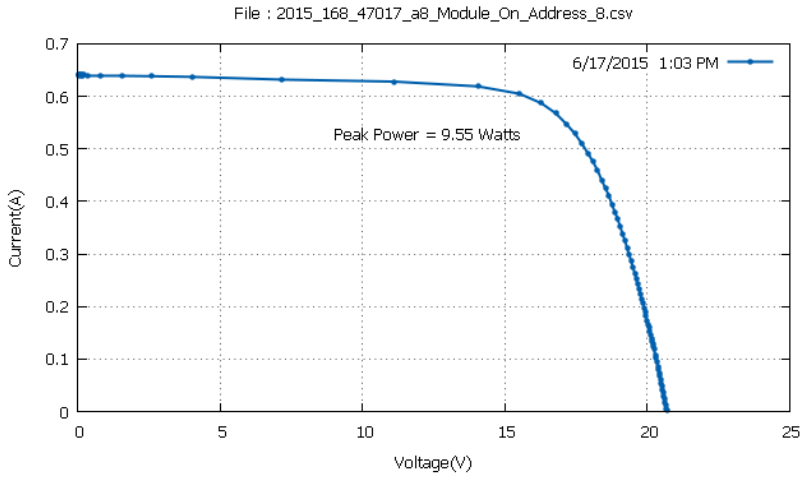
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.5869166}{940.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}26\ \%$$



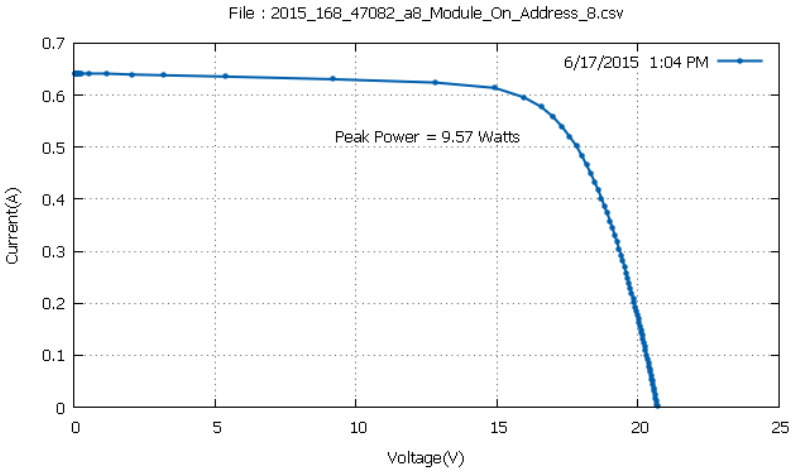
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6147232\ x\ 0.5766424}{940.8\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}25\ \%$$



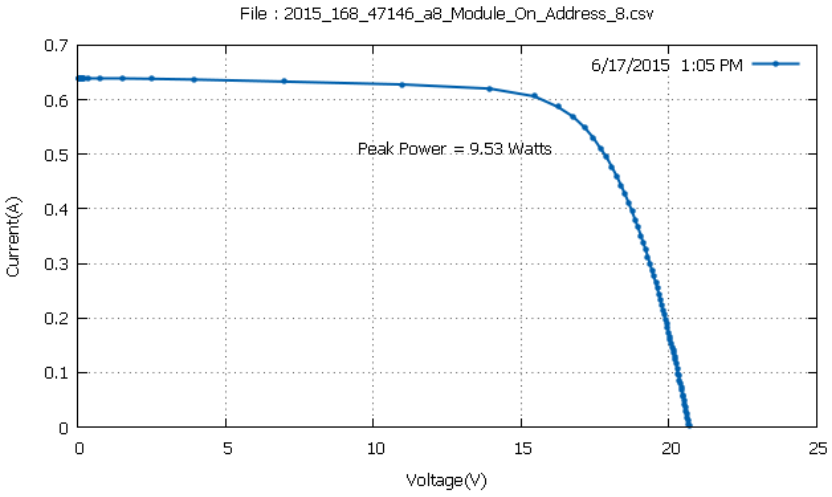
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.5843481}{940.8\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2745438\ x\ 0.5869166}{938.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5528717\ x\ 0.5779267}{938\ x\ 0{,}0768} \text{ x } 100 = 13{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.75389\ x\ 0.5689367}{937.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}23\ \%$$

Module 3

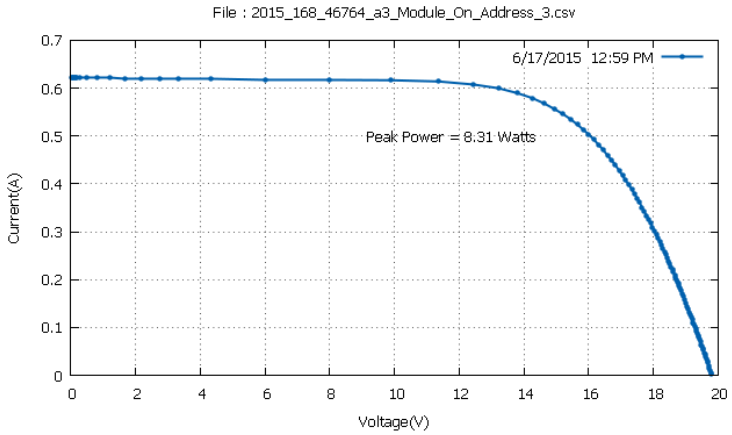
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

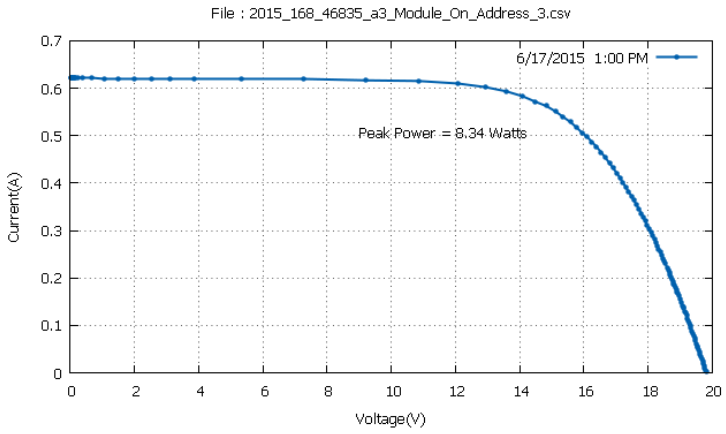
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
12:59	54,6	12,47
13:00	54	12,51
13:01	54,2	12,47
13:06	53,4	12,48
13:08	54,4	12,48
13:10	55,1	12,44

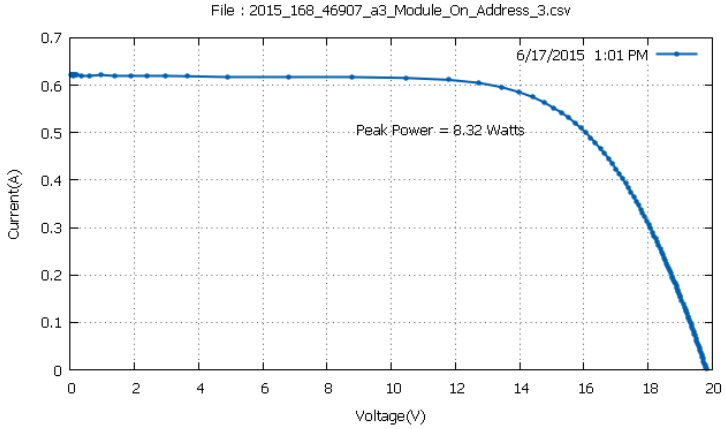
Mean Temperature: 54,28 ºC



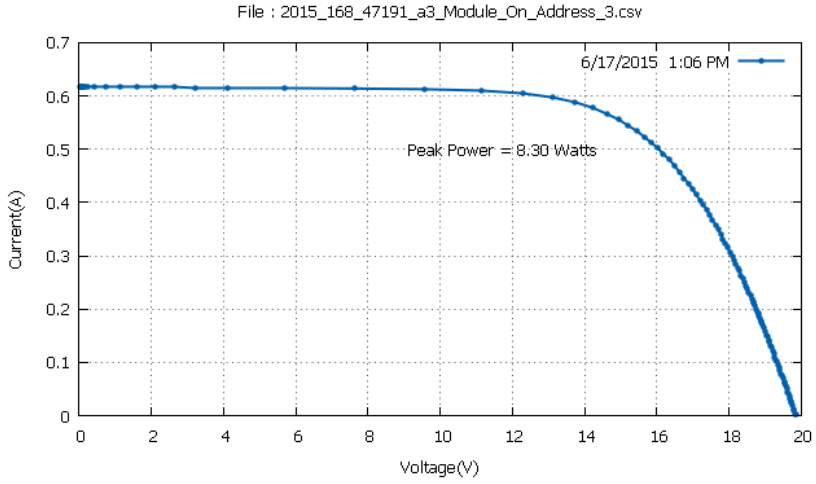
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.944747\ x\ 0.5560939}{939.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}47\ \%$$



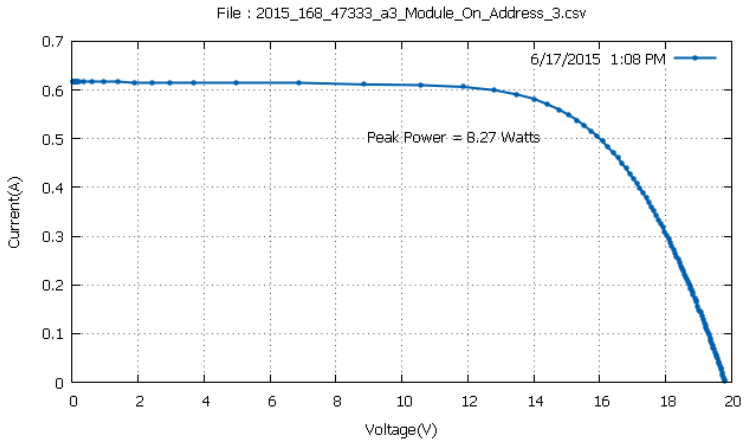
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8287764\ x\ 0.5625153}{940.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}51\ \%$$



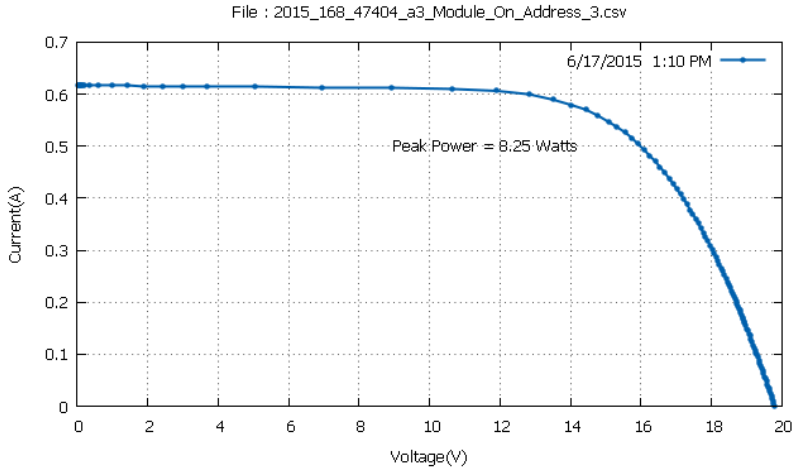
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7591934\ x\ 0.56379956}{940.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9292841\ x\ 0.5560939}{937.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7669249\ x\ 0.5599467}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7746563\ x\ 0.5586625}{935.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$

Module 5

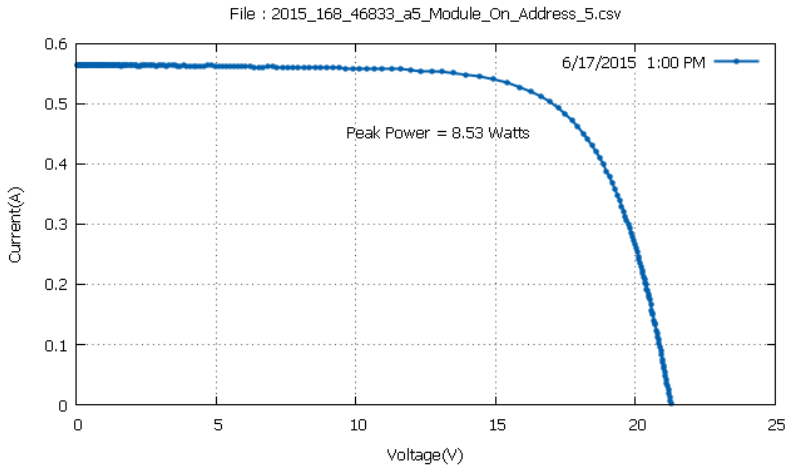
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

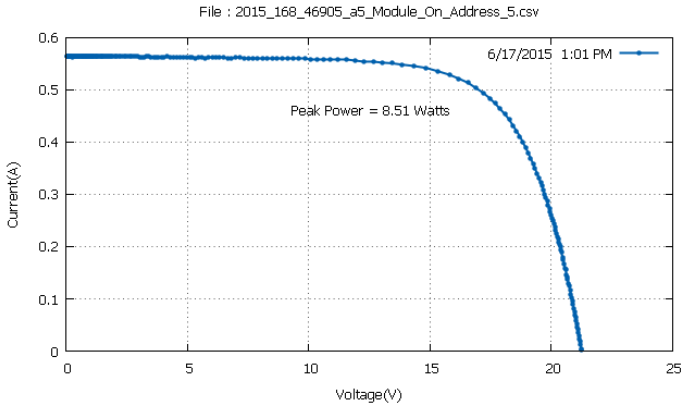
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:00	59,1	12
13:01	59,2	11,96
13:04	58,5	11,98
13:05	58,1	12,02
13:06	58,6	11,98
13:08	59,2	11,95

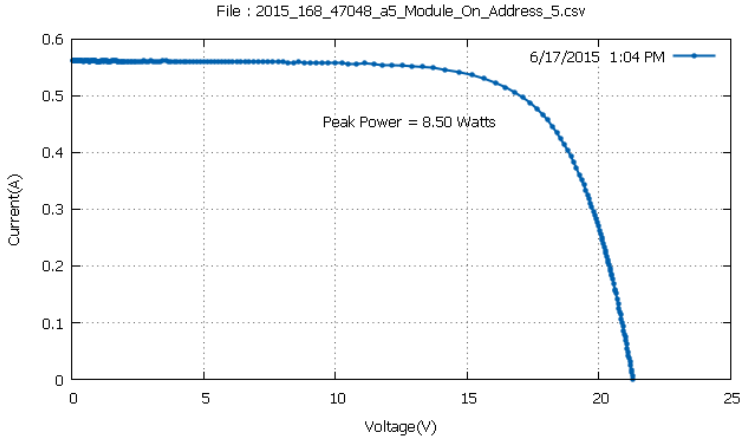
Mean Temperature:



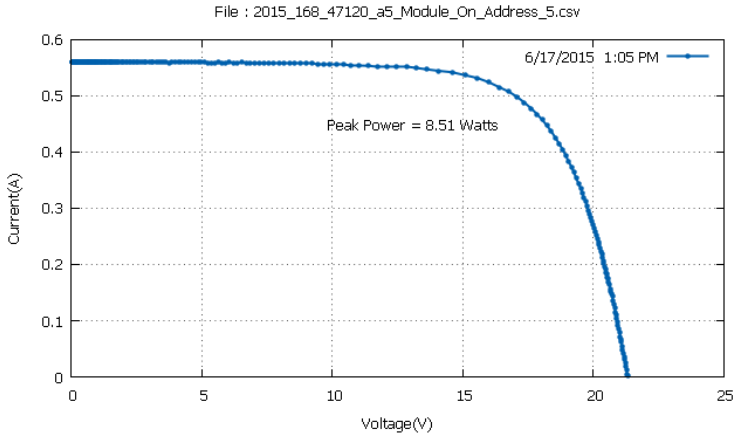
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9394417\ x\ 0.503438354}{940.8\ x\ 0{,}0756} \text{ x } 100 = 12\ \%$$



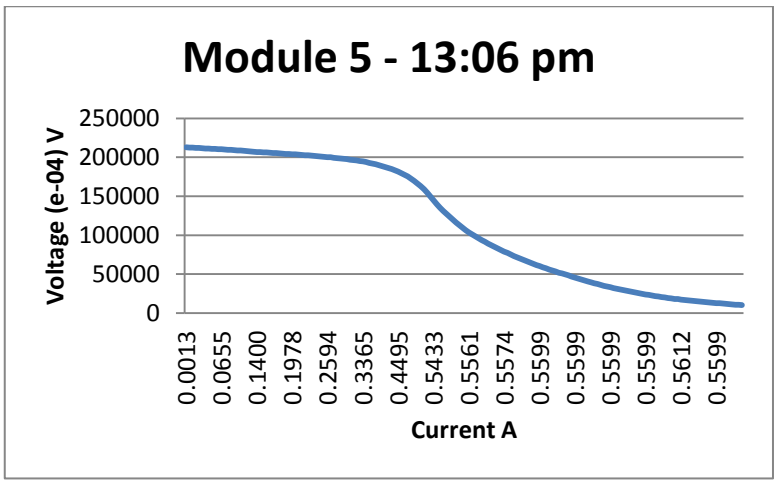
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5606041\ x\ 0.5137126}{941.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}96\ \%$$



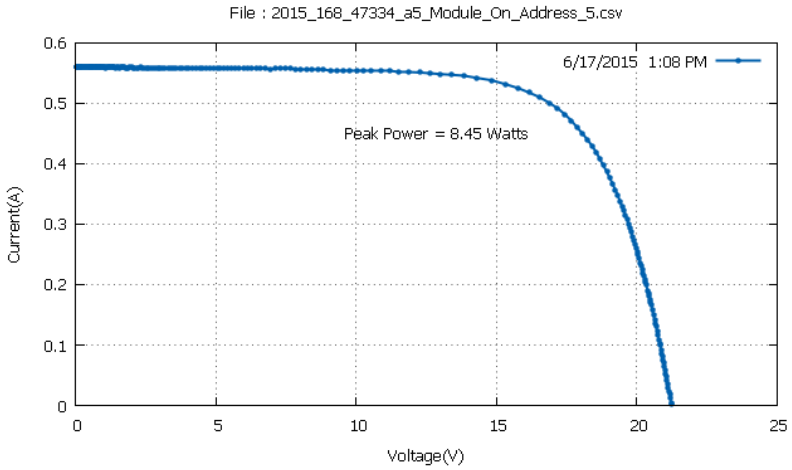
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8080082\ x\ 0.5060069}{938.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0708752\ x\ 0.4983012}{936.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.985\ x\ 0.49958}{937\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.86986\ x\ 0.5008698}{934.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$

Module 4

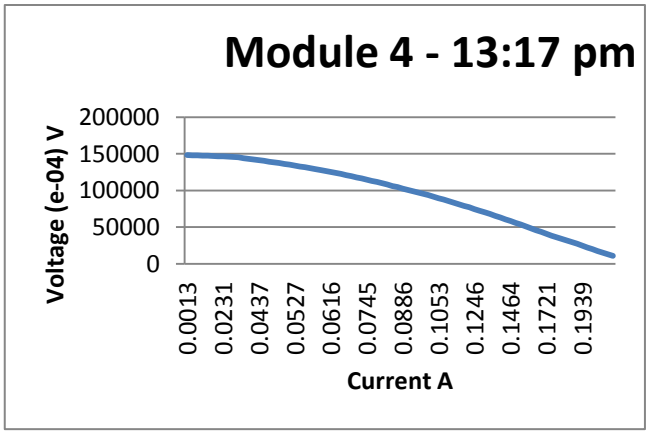
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

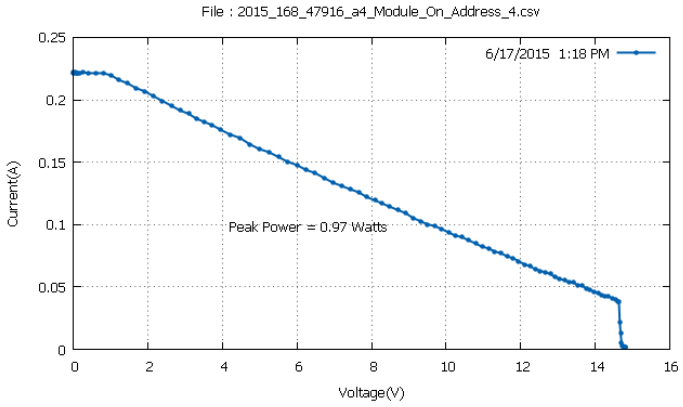
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:17	53,7	1,52
13:18	53	1,54
13:19	53	1,55
13:21	52,4	1,57
13:23	51,7	1,63
13:24	51,1	1,65

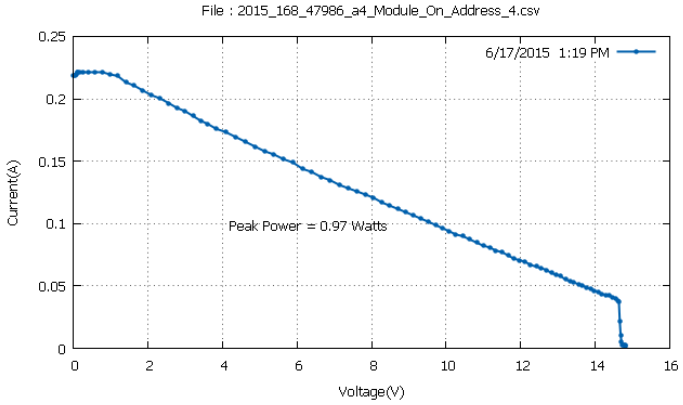
Mean Temperature: 52,48 ºC



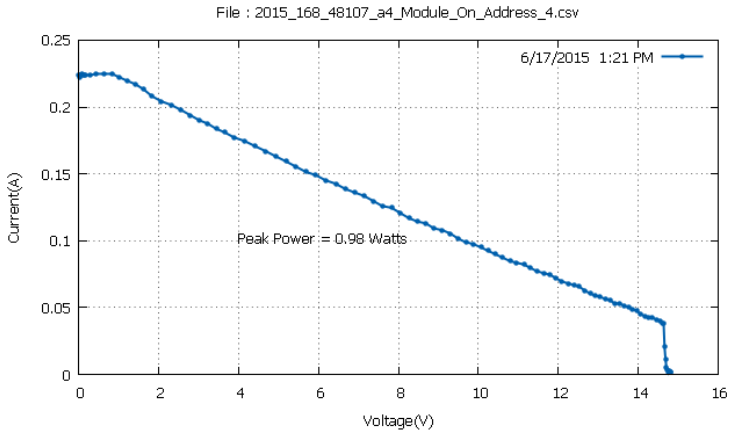
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.161\ x\ 0.104026}{934.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}52$$



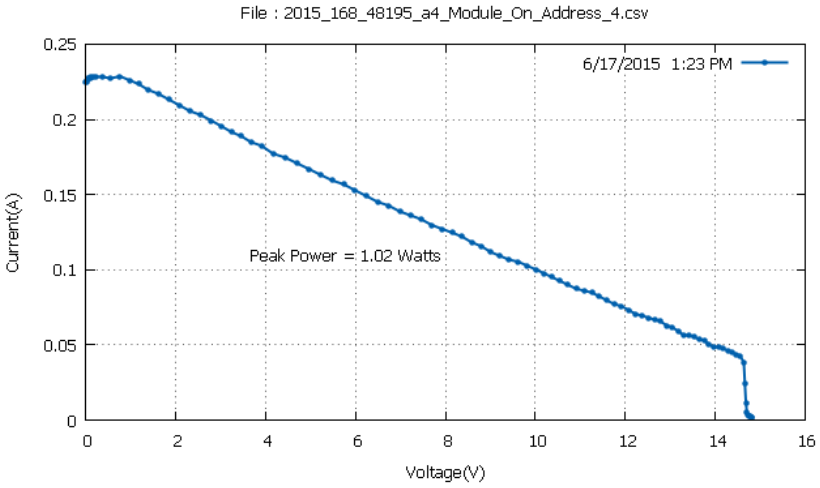
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.906544\ x\ 0.109163925}{933.7\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}54\ \%$$



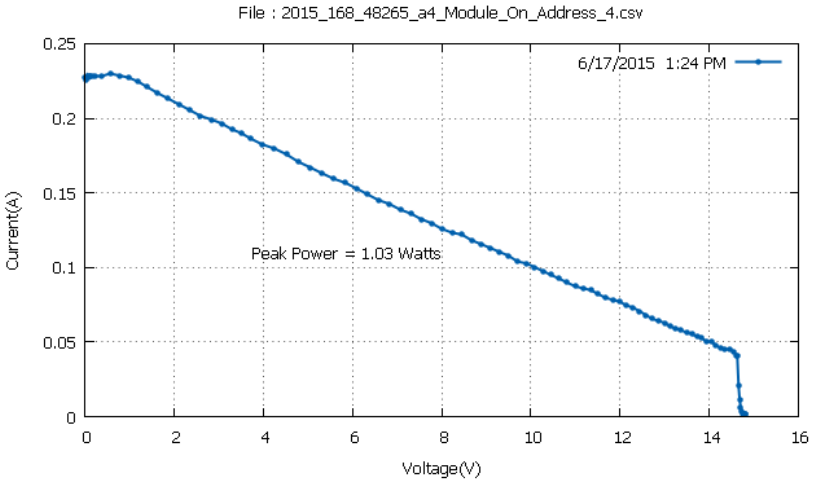
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.11173249}{932.3\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}55\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.682333\ x\ 0.113016769}{929.4\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.365347\ x\ 0.122006744}{928.4\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}63\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.122006744}{928.7\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}65\ \%$$

Module 8

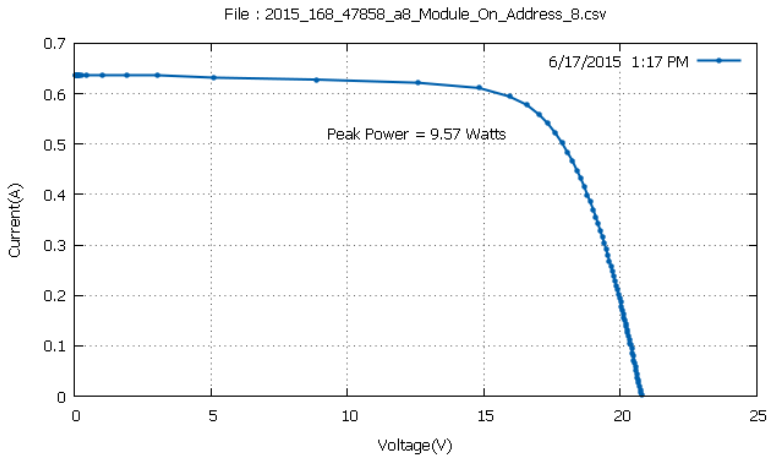
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

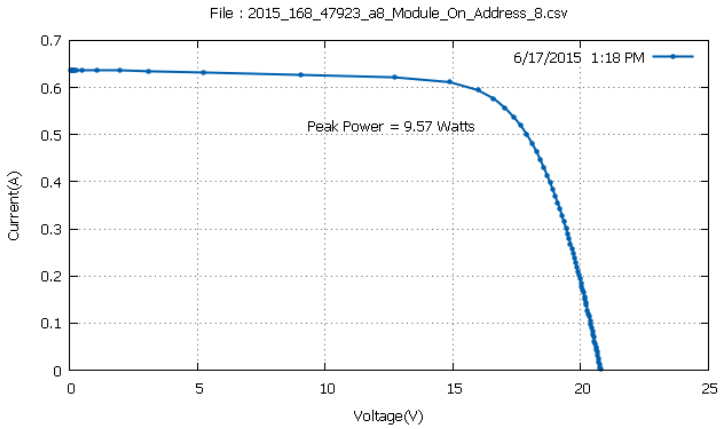
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:17	45,5	13,33
13:18	45,5	13,35
13:19	45,6	13,3
13:21	45	13,3
13:23	45,1	13,32
13:24	44,9	13,33

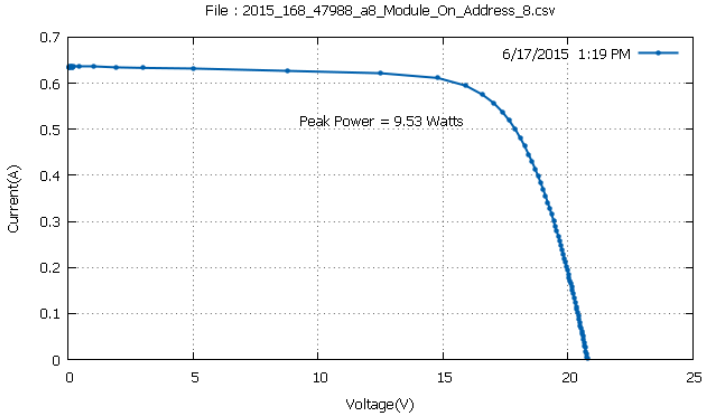
Mean Temperature: 45,26 ºC



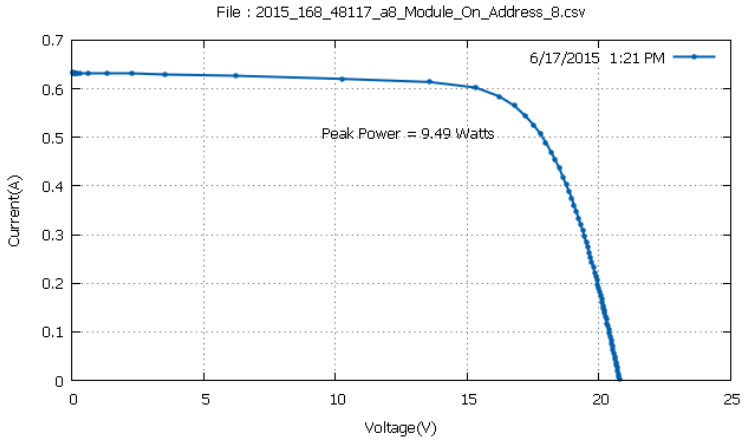
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5683346\ x\ 0.5779267}{934.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}33\ \%$$



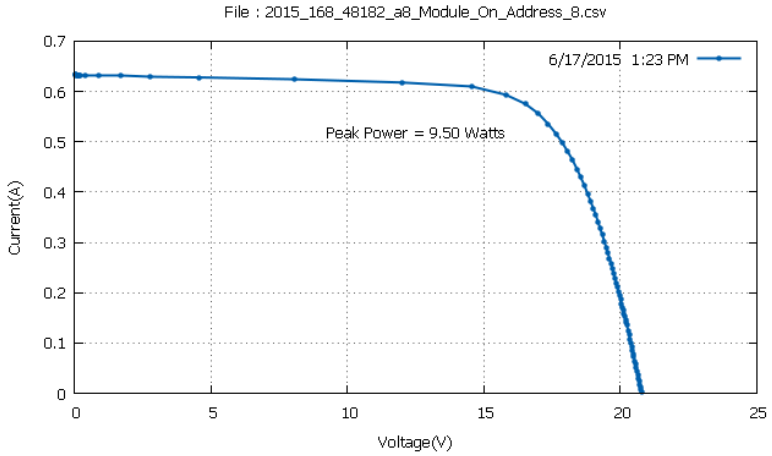
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.59153\ x\ 0.5766424}{933\ x\ 0{,}0768} \text{ x } 100 = 13{,}35\ \%$$



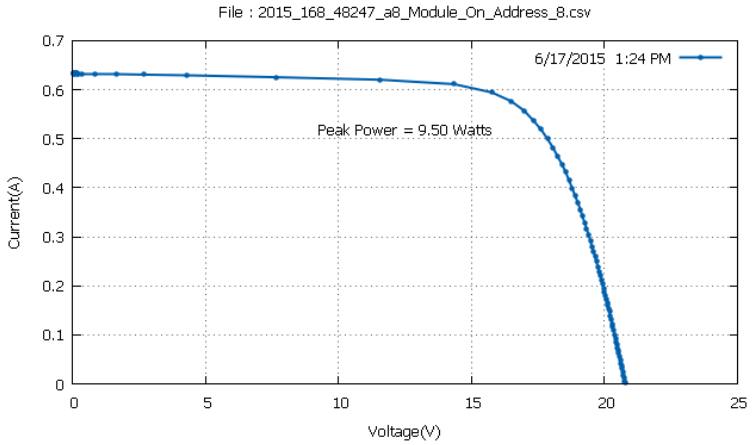
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5683346\ x\ 0.5753581}{932.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7848129\ x\ 0.565083861}{928.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5142155\ x\ 0.5753581}{928.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.48329\ x\ 0.5766424}{928\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}33\ \%$$

Module 3

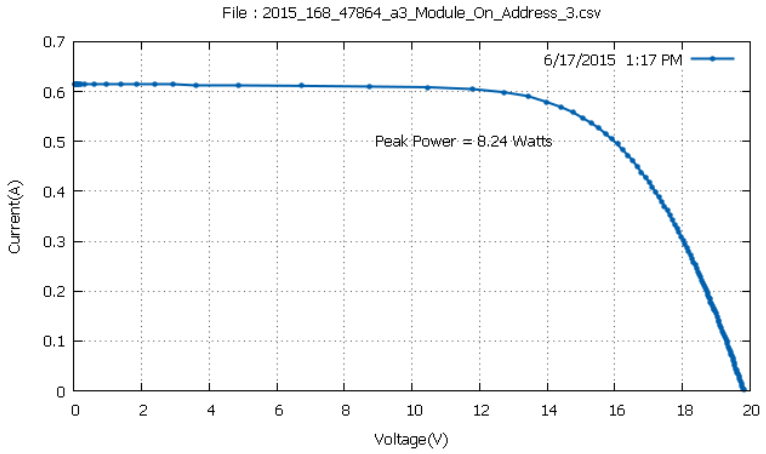
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

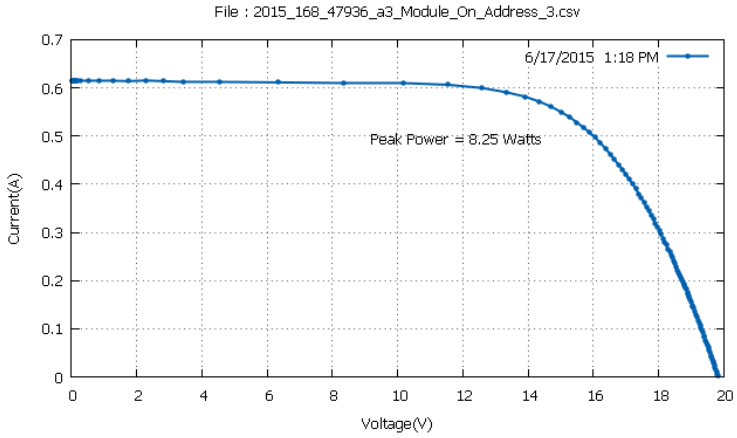
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:17	54,8	12,43
13:18	54,4	12,46
13:20	53,5	12,46
13:22	53,1	12,45
13:27	50,3	12,54
13:29	50,1	12,56

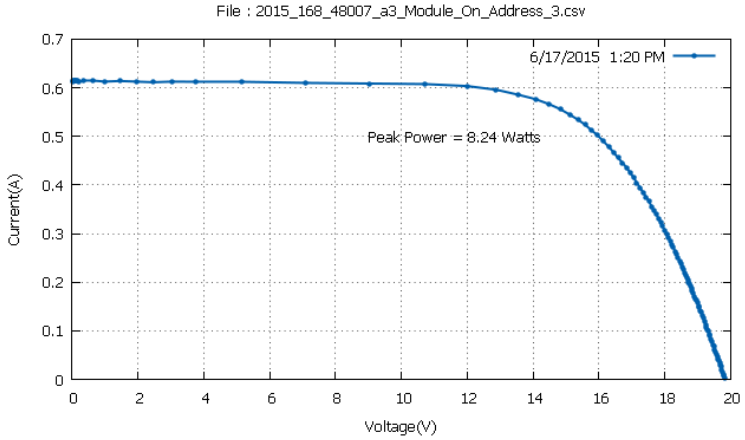
Mean Temperature: 52,7 ºC



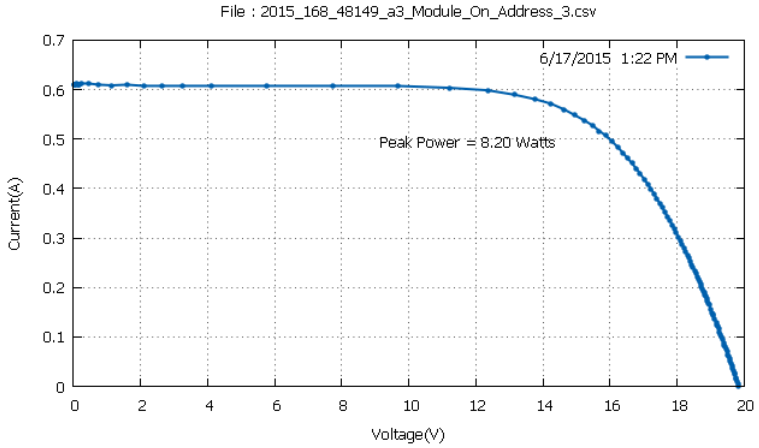
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.751462\ x\ 0.5586625}{934.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



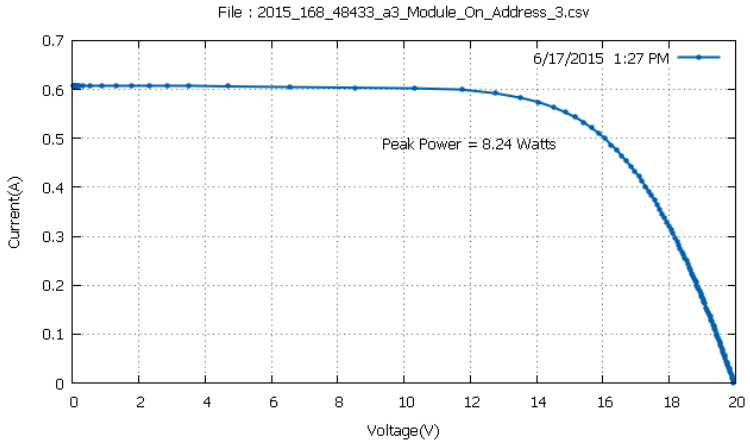
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0065975\ x\ 0.5496725}{933.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$



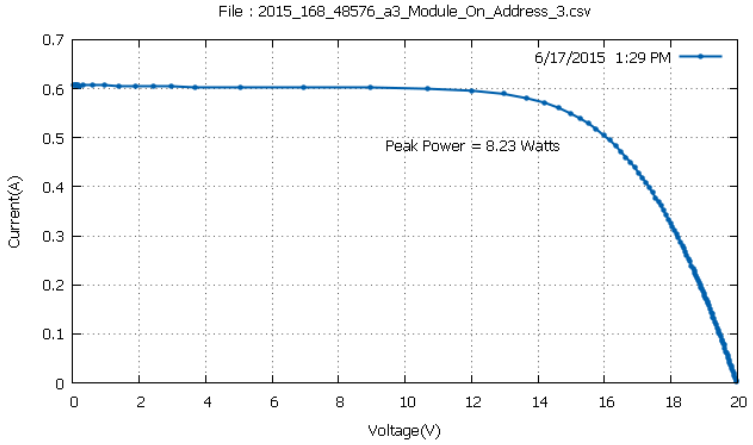
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8210449\ x\ 0.5560939}{932.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.944747\ x\ 0.548388}{928.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1612253\ x\ 0.5432511}{926.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2617331\ x\ 0.539398253}{924.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}56\ \%$$

Module 5

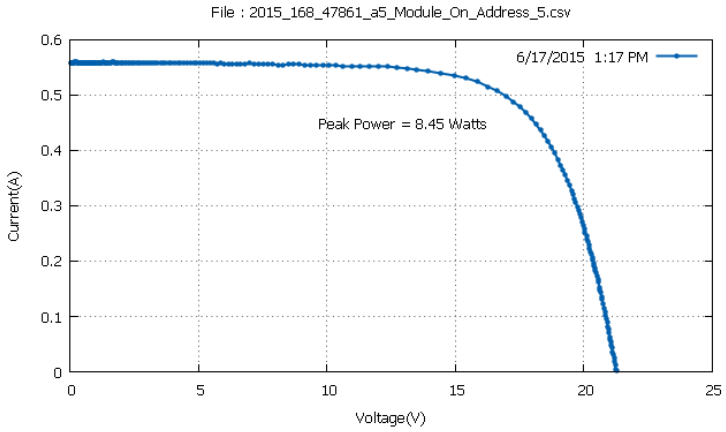
Date: 17/6/2015 – Noon Measurement

Temperature Ambient: 32 ºC

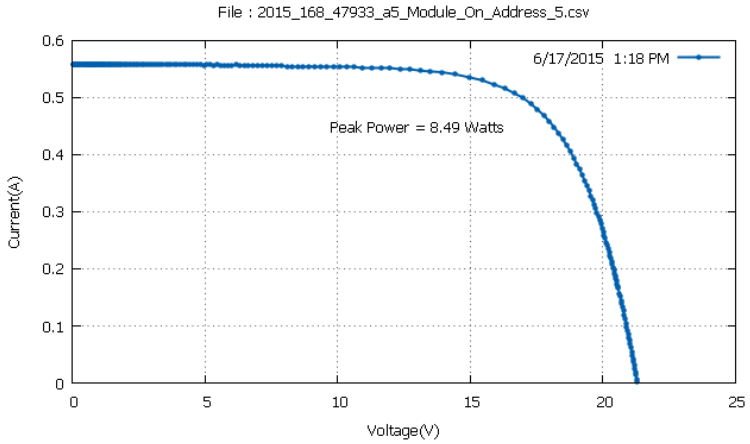
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:17	58,9	11,95
13:18	58,5	12,01
13:20	58	12,01
13:22	57,6	11,98
13:27	55,8	12,05
13:29	55,6	12,07

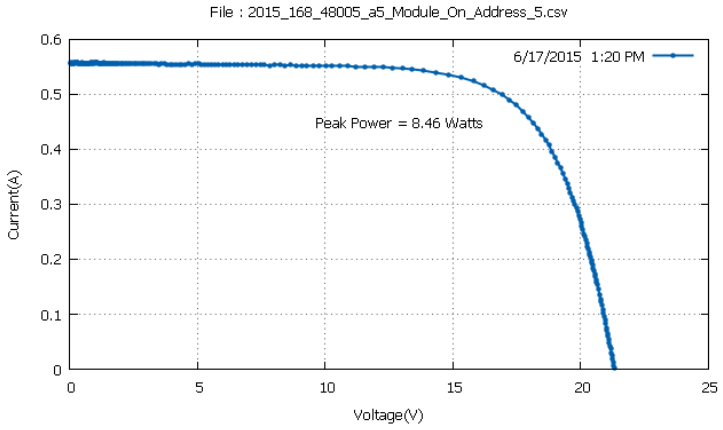
Mean Temperature: 57,4 ºC



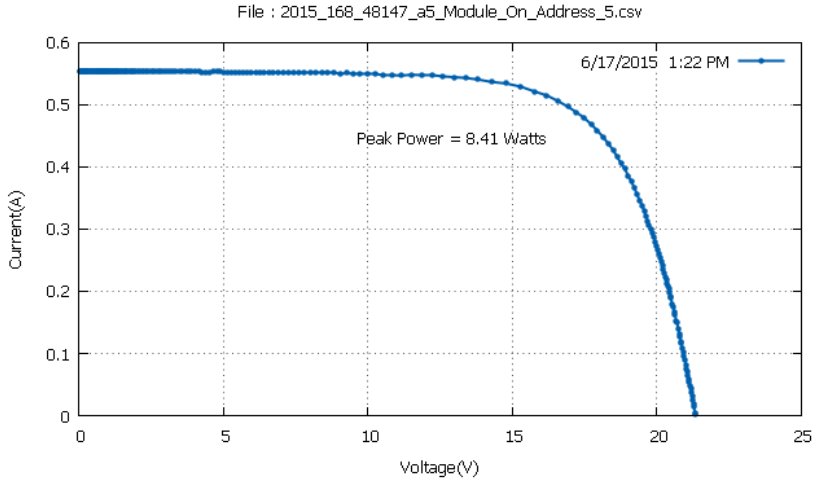
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.962635\ x\ 0.4983012}{934.9\ x\ 0{,}0756}$ x 100 = 11,95 %



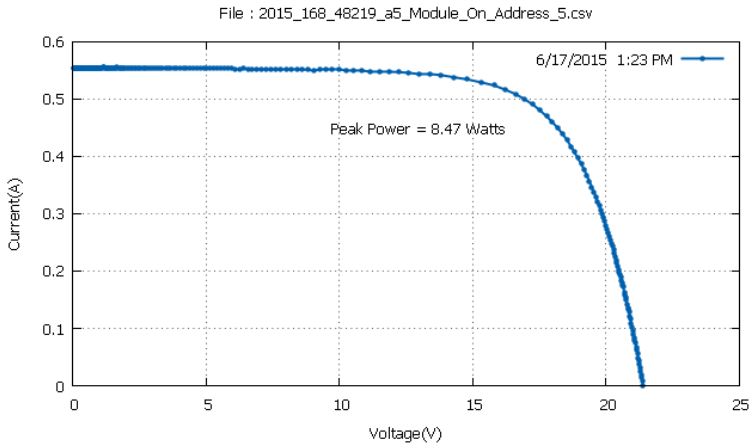
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.98583\ x\ 0.4995855}{934.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}01\ \%$$



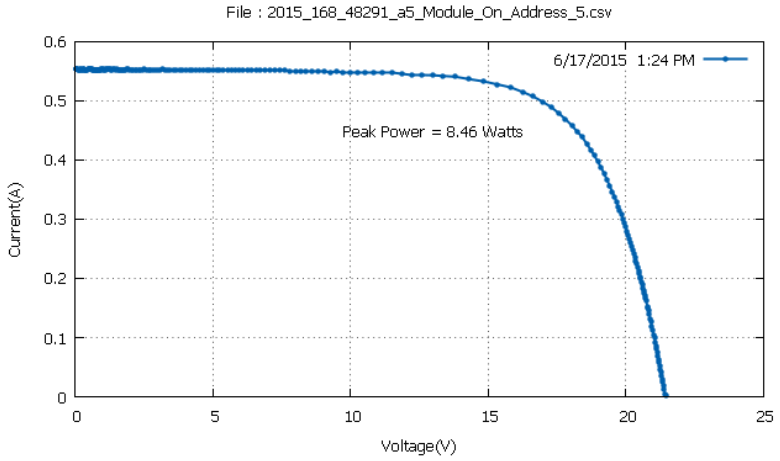
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9239788\ x\ 0.4995855}{931.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9162464\ x\ 0.497016937}{928.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9471722\ x\ 0.4995855}{929.4\ x\ 0{,}0756}\ \text{x } 100 = 12{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9780979\ x\ 0.4983012}{926.8\ x\ 0{,}0756}\ \text{x } 100 = 12{,}07\ \%$$

Module 4

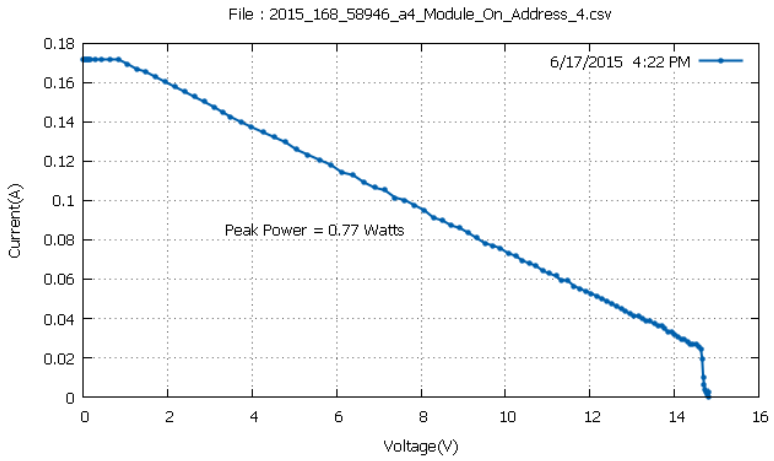
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

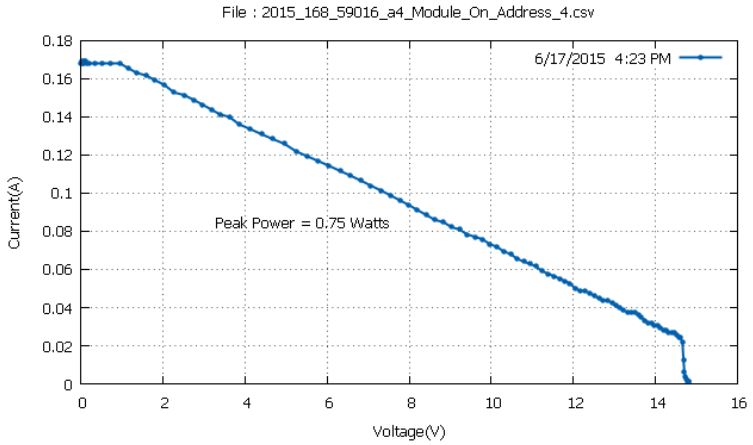
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:22	44,3	2,1
16:23	45,3	2,07
16:25	45,7	2,08
16:27	46,1	2,11
16:28	45,8	2,12
16:32	44,7	2,11

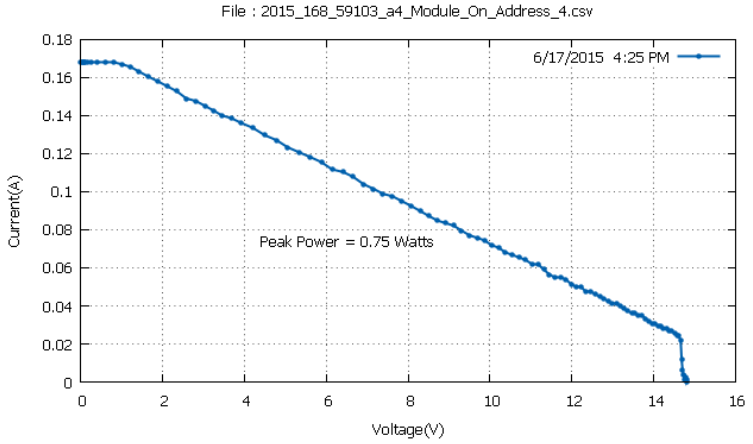
Mean Temperature: 45,31 ºC



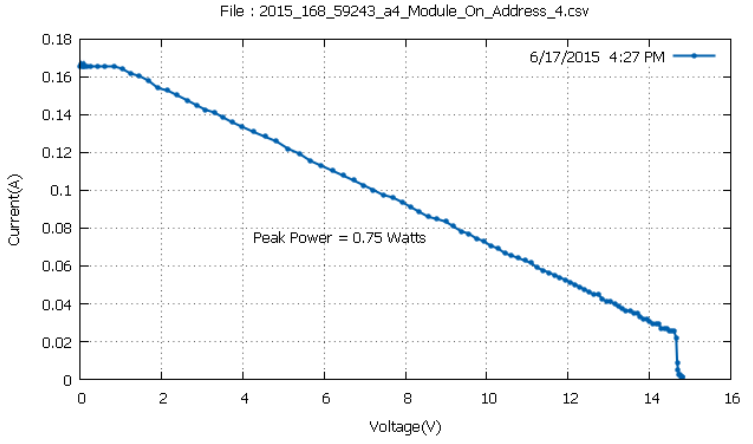
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.079287\ x\ 0.09503683}{544.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$



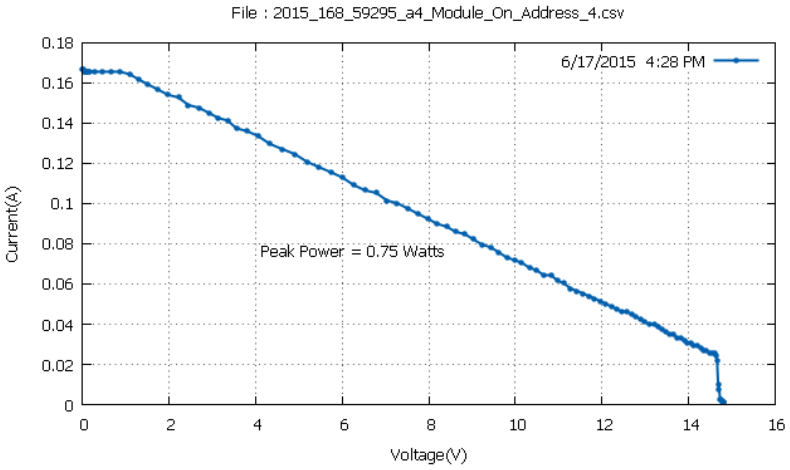
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.98651\ x\ 0.09375255}{539.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}07\ \%$$



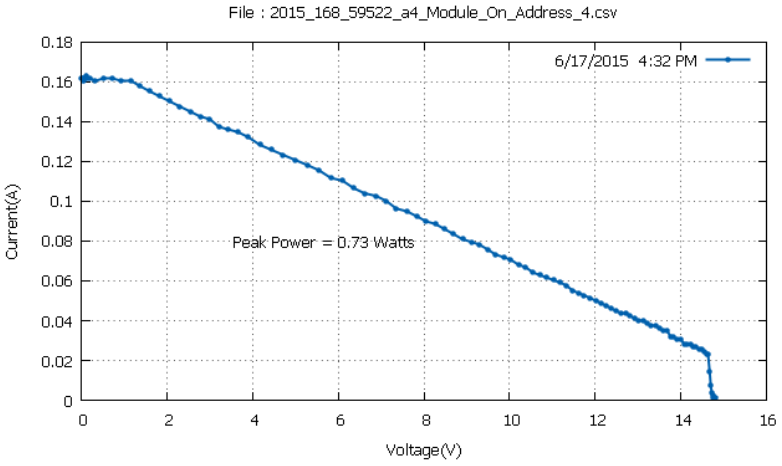
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.107559\ x\ 0.0821940154}{536.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.28803349\ x\ 0.09118398}{529.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.829229\ x\ 0.08476258}{527.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.264839\ x\ 0.08861542497}{515\ x\ 0{,}0671} \text{ x } 100 = 2{,}11\ \%$$

Module 8

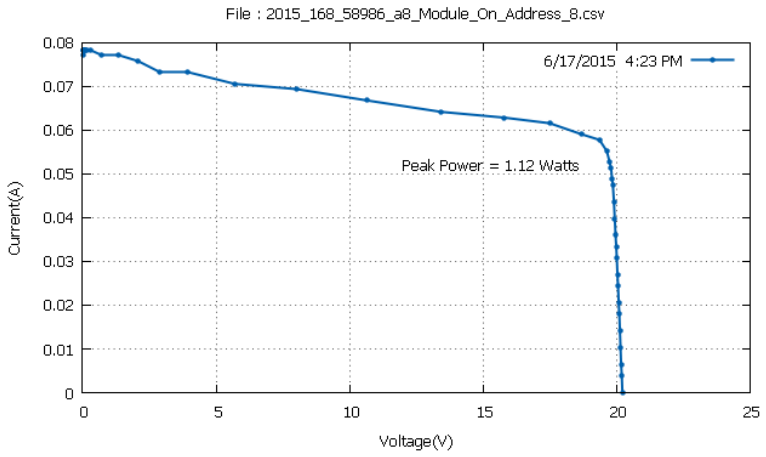
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

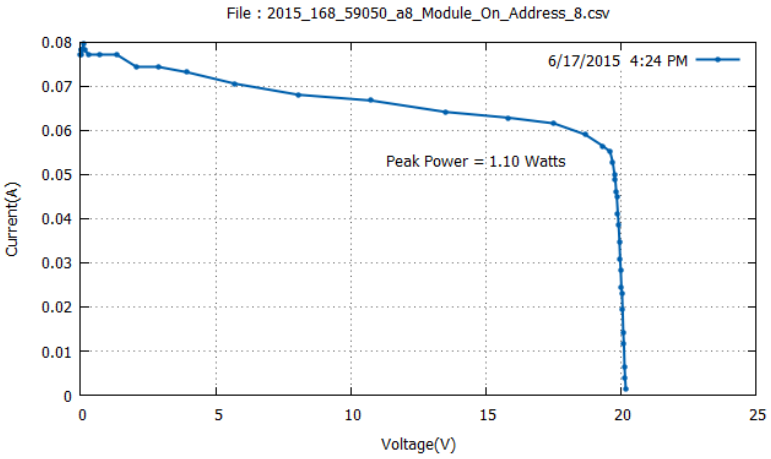
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:23	44	2,7
16:24	44,5	2,65
16:26	43,8	2,67
16:28	45,2	2,7
16:30	45,3	2,68
16:31	44,8	2,7

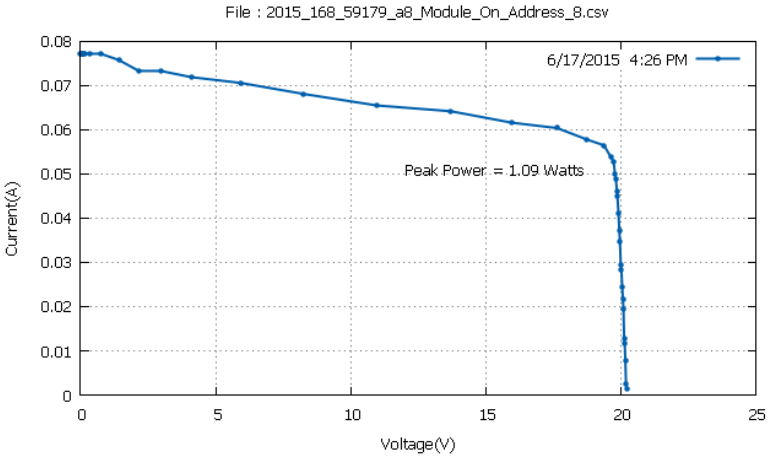
Mean Temperature: 44,6 ºC



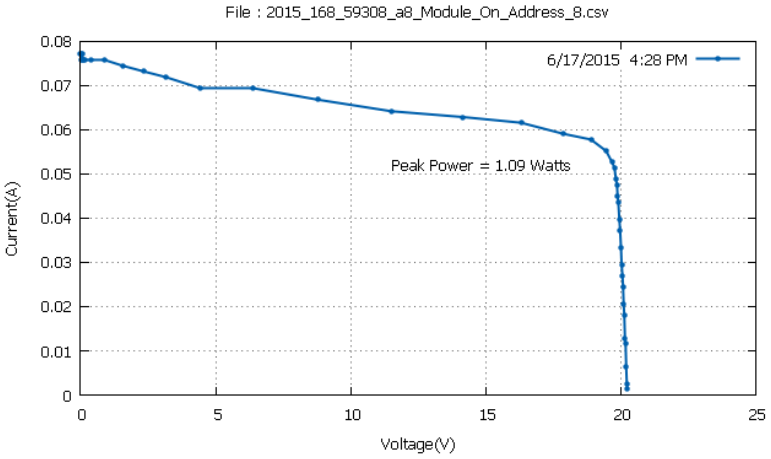
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3593616\ x\ 0.0577926673}{542\ x\ 0{,}0768} \text{ x } 100 = 2{,}7\ \%$$



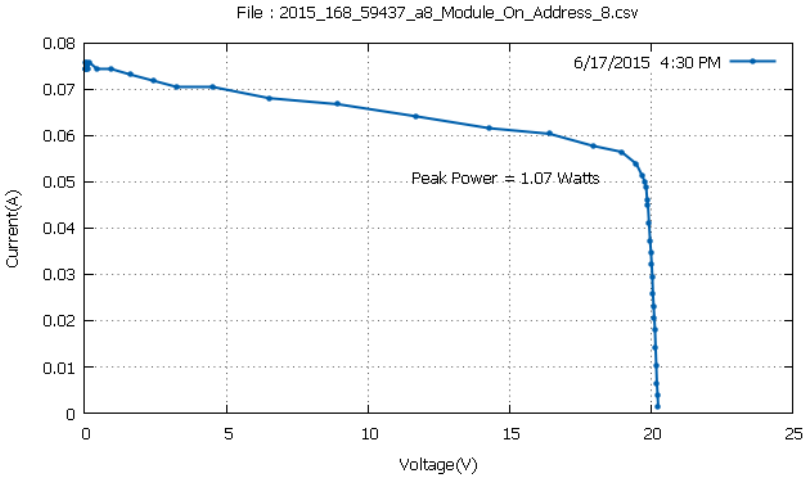
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.679\ x\ 0.05907695}{540\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}65\ \%$$



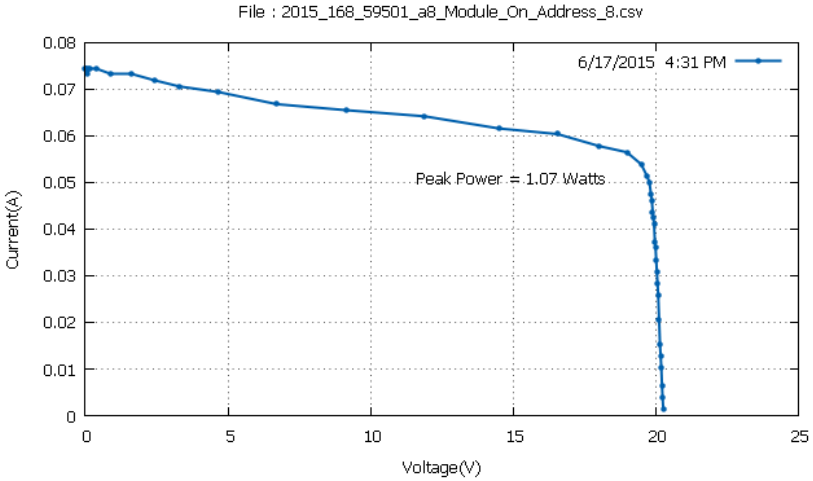
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3748245\ x\ 0.0565083846}{530.7\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.89548\ x\ 0.0577926673}{527.4\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.95733\ x\ 0.0565083846}{520\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}68\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9882545\ x\ 0.0565083846}{516.4\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}7\ \%$$

Module 3

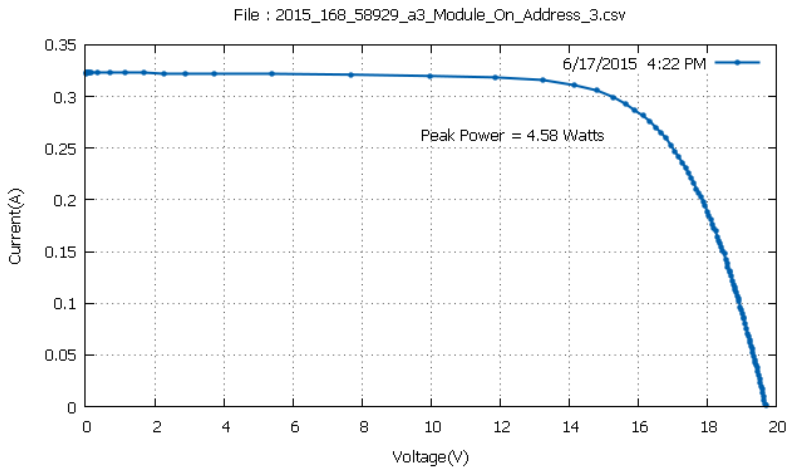
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

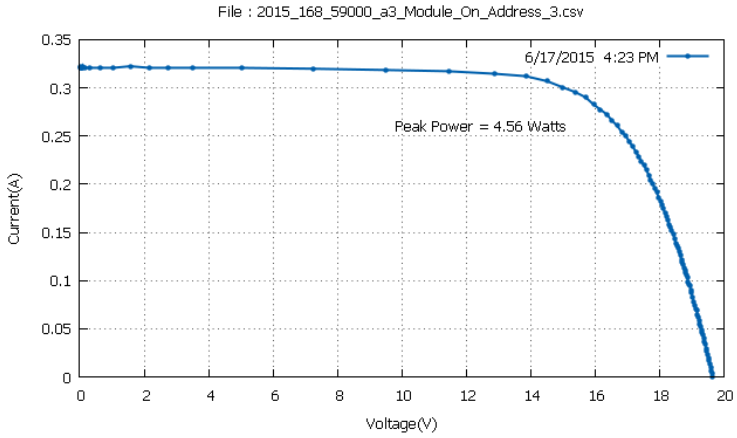
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:22	44,8	11,9
16:23	45,3	11,89
16:24	45,6	11,82
16:29	45,4	11,84
16:31	44,6	11,8
16:32	44,1	11,76

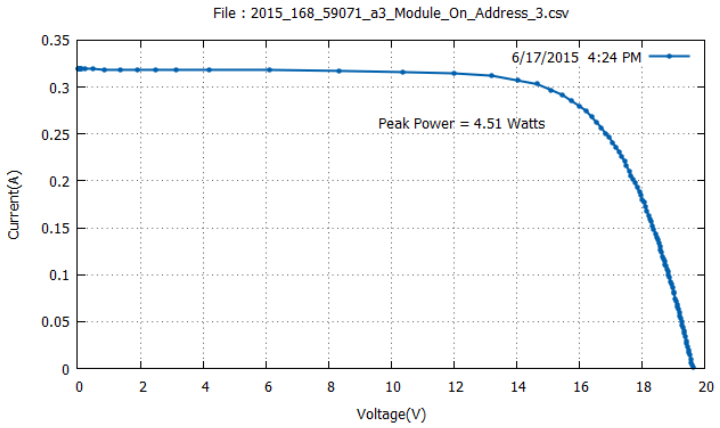
Mean Temperature: 44,96 ºC



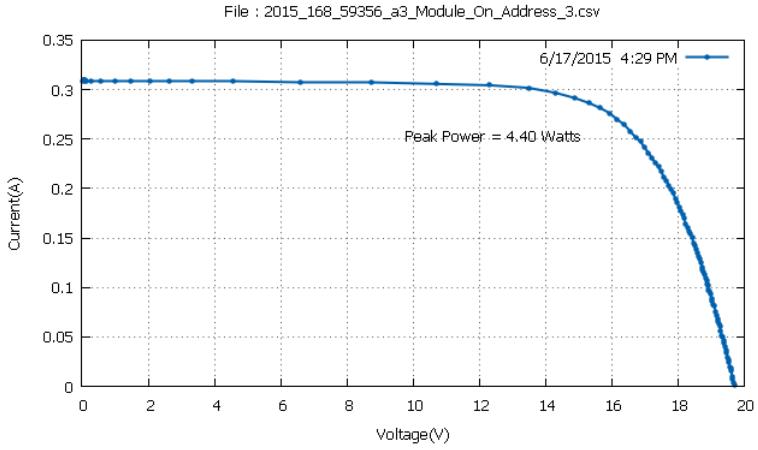
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6405706\ x\ 0.2928162}{542.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}9\ \%$$



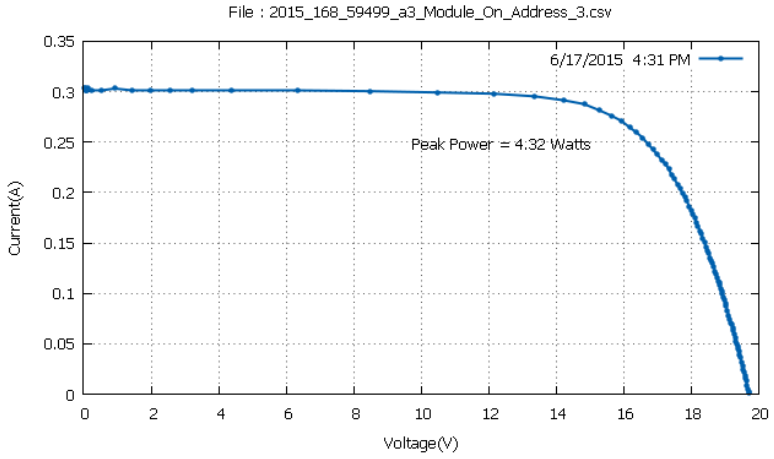
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7024212\ x\ 0.290247619}{540.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}89\ \%$$



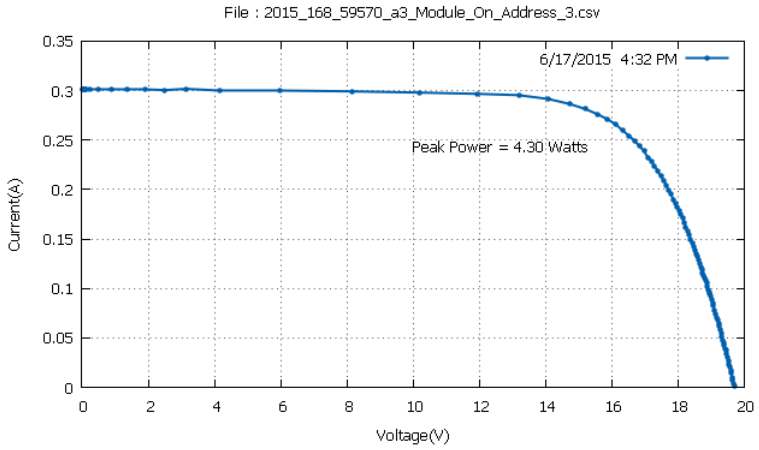
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.47048\ x\ 0.2915319}{537.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6560335\ x\ 0.281257659}{523.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6405706\ x\ 0.2761205}{516.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8725119\ x\ 0.2709834}{515.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}76\ \%$$

Module 5

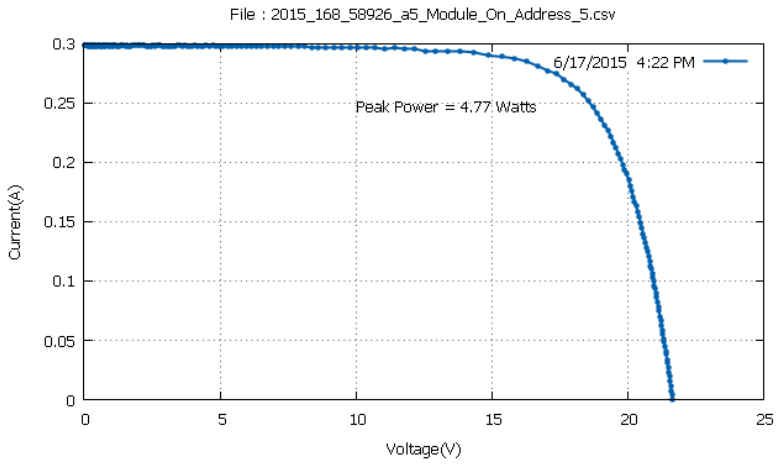
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

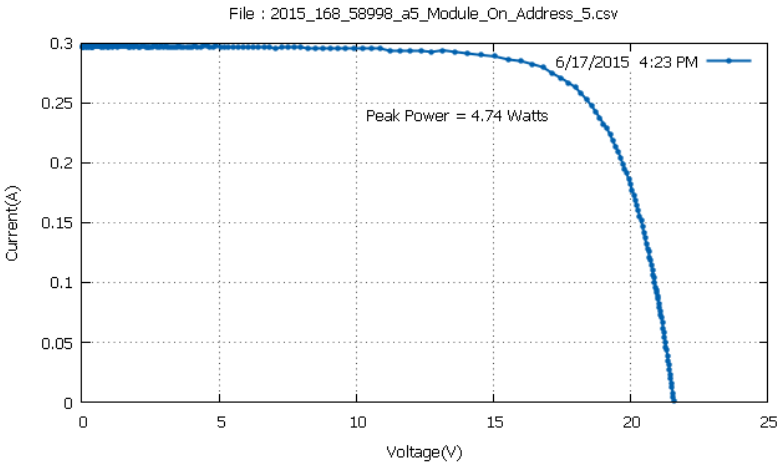
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:22	45,9	11,62
16:23	46,3	11,58
16:24	47	11,58
16:26	47,6	11,55
16:28	47,6	11,51
16:32	46,8	11,47

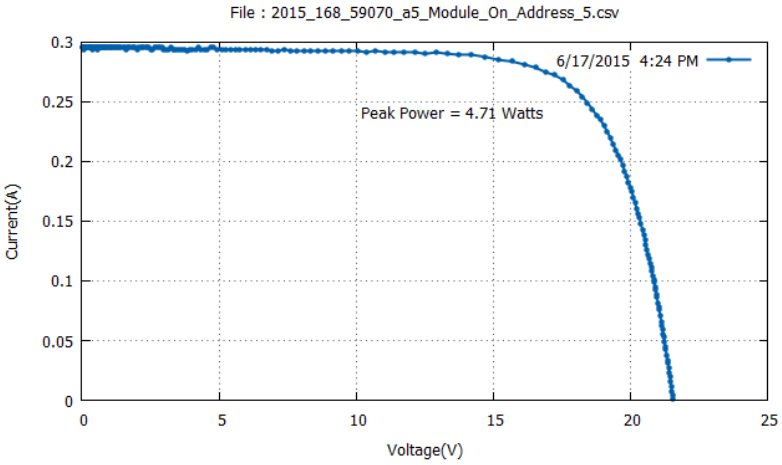
Mean Temperature: 46,86 ºC



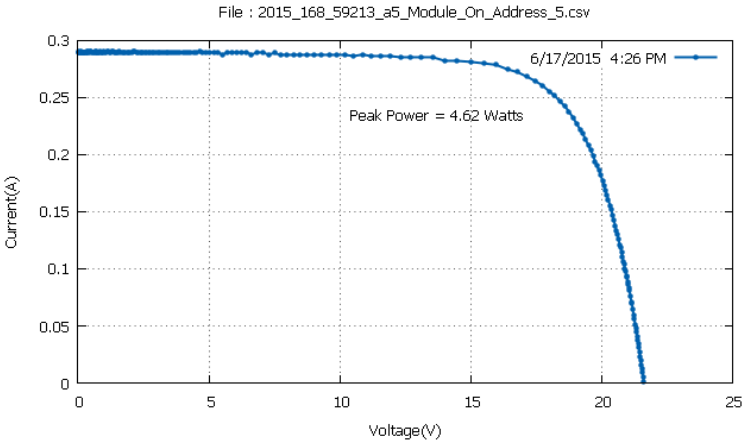
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3723984\ x\ 0.274836242}{542.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}62\ \%$$



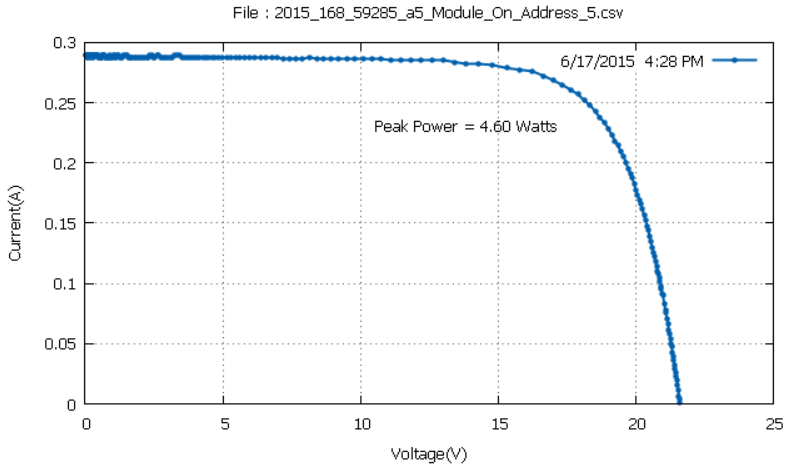
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7435036\ x\ 0.267130554}{541\ x\ 0{,}0756}\ \text{x } 100 = 11{,}58\ \%$$



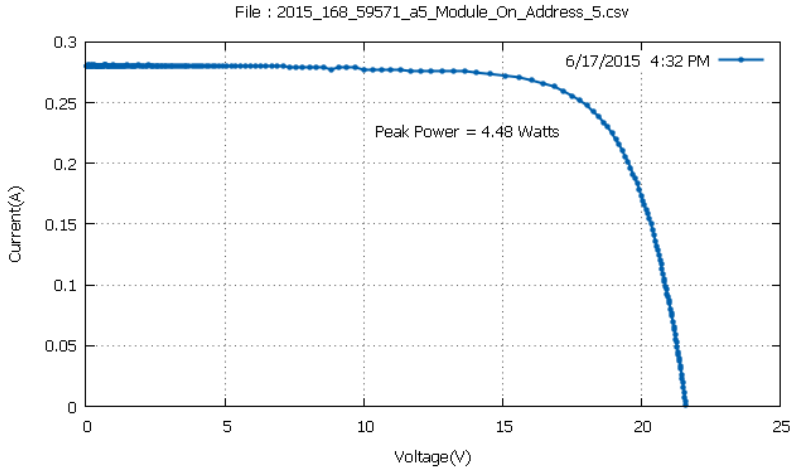
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.268414825}{537.9\ x\ 0{,}0756}\ \text{x } 100 = 11{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7357731\ x\ 0.260709137}{529.1\ x\ 0{,}0756}\ \text{x } 100 = 11{,}55\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6429958\ x\ 0.260709137}{528.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.251719177}{516.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}47\ \%$$

Module 4

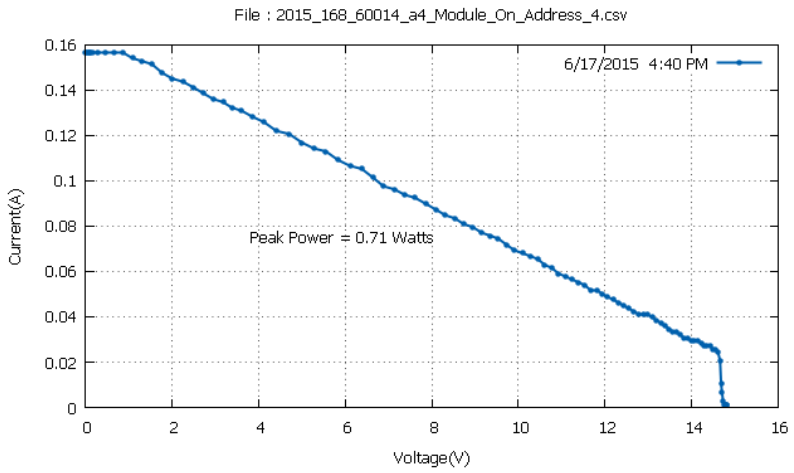
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

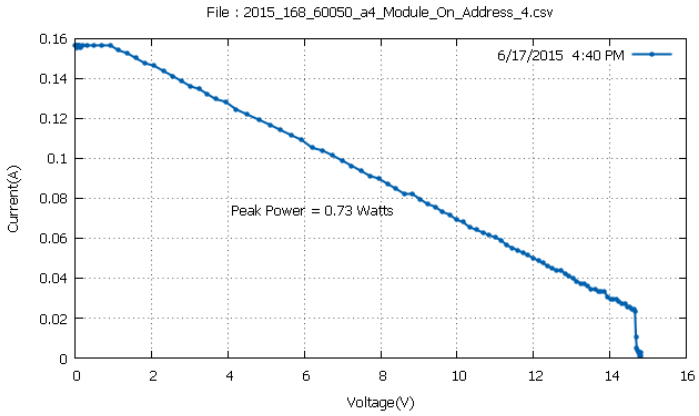
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:40	42	2,15
16:40	42	2,22
16:41	41,6	2,19
16:43	41,1	2,2
16:44	40,9	2,17
16:45	40,7	2,2

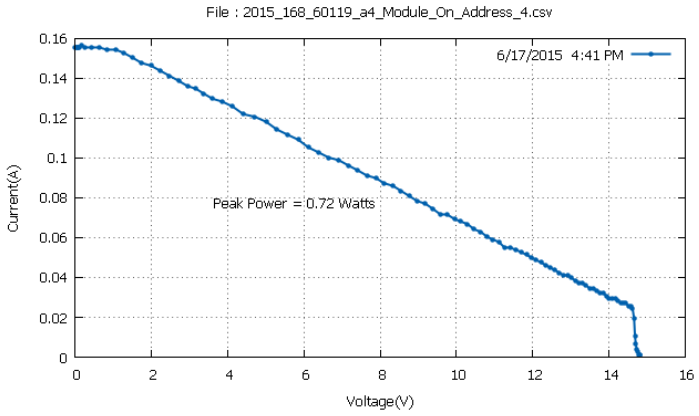
Mean Temperature: 41,38 ºC



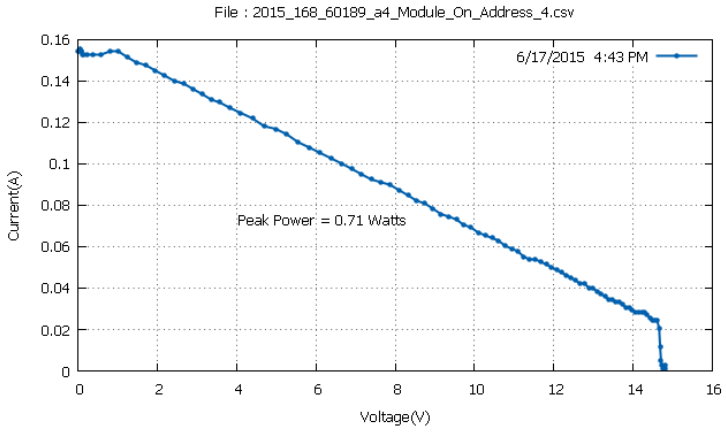
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.9452\ x\ 0.07962545}{491.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}15\ \%$$



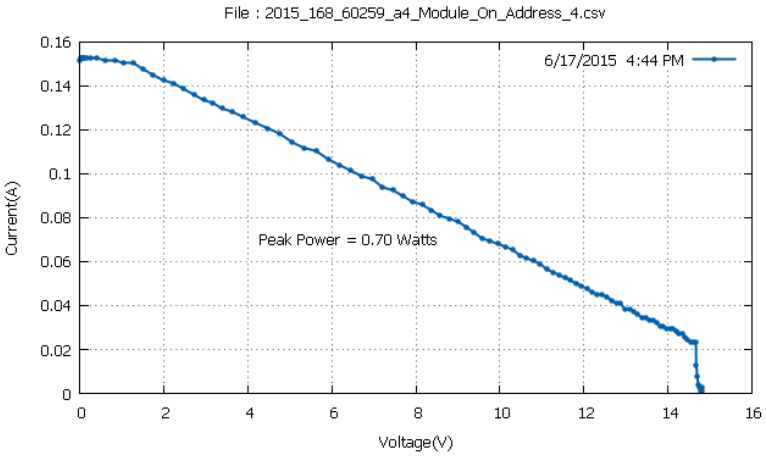
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.821498\ x\ 0.0821940154}{489.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



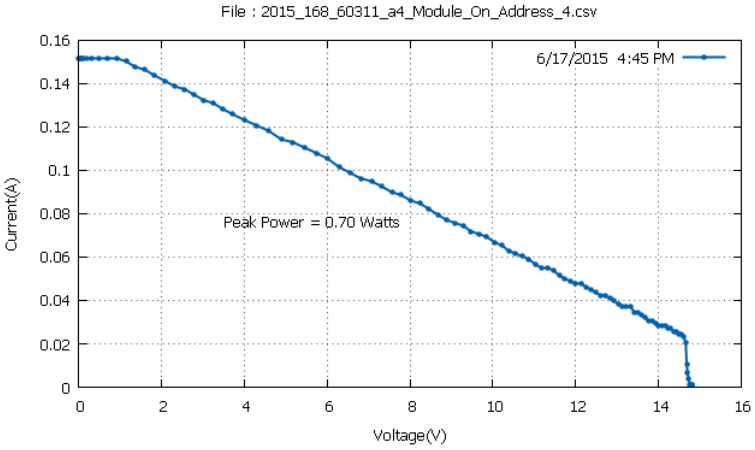
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ 0.0821940154}{488.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}19\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.08090974}{480.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.08090974}{480.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.233913\ x\ 0.08476258}{474.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$

Module 8

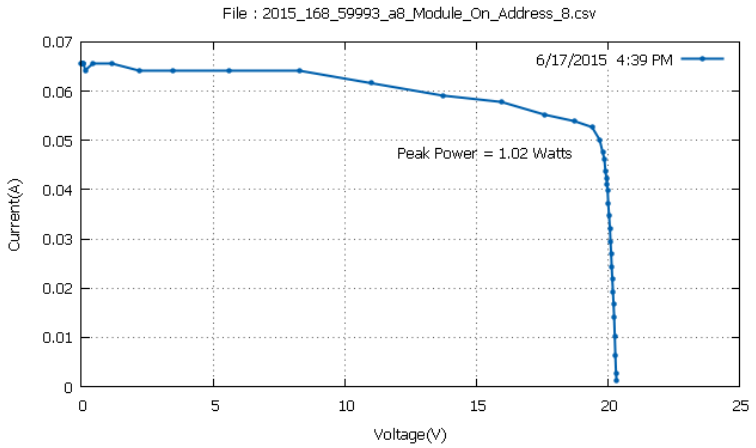
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

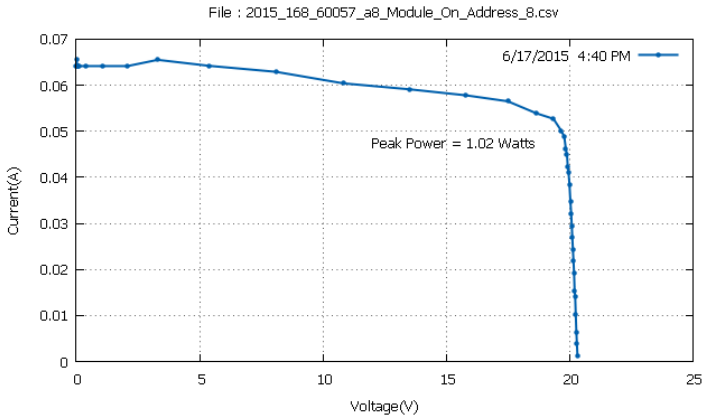
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:39	42,3	2,7
16:40	42,5	2,71
16:42	41,1	2,72
16:44	40,4	2,74
16:45	40,2	2,71
16:46	39,9	2,71

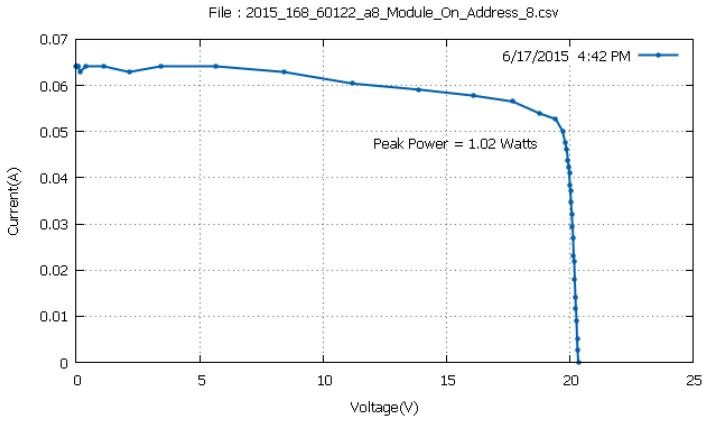
Mean Temperature: 41,06 ºC



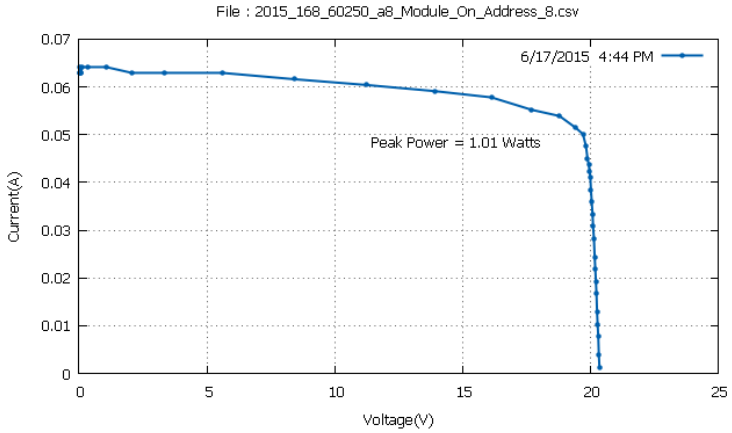
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3980179\ x\ 0.05265554}{493.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}7\ \%$$



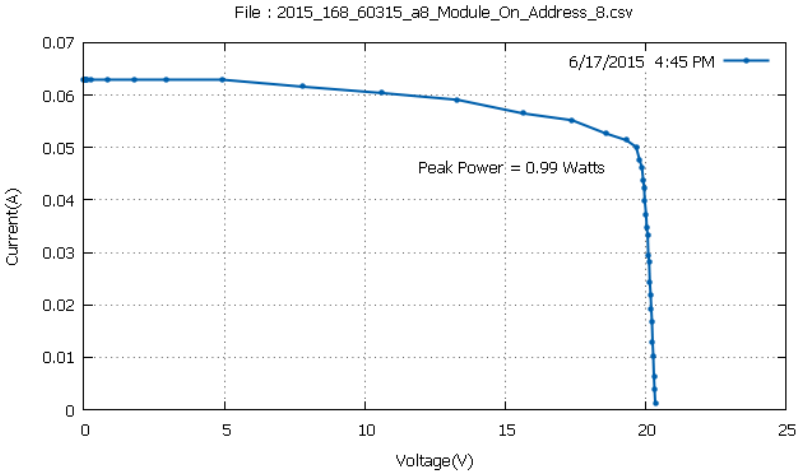
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3438988\ x\ 0.05265554}{488.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}71\ \%$$



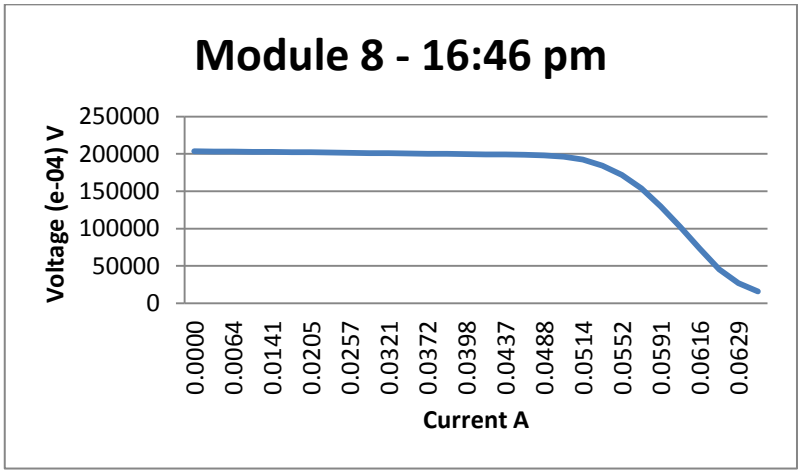
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.436676\ x\ 0.05265554}{486.9\ x\ 0{,}0768} \text{ x } 100 = 2{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7949715\ x\ 0.0539398231}{479.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3207054\ x\ 0.05137126}{474.2\ x\ 0{,}0768} \text{ x } 100 = 2{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2433\ x\ 0.051371}{473.59x\ 0{,}0768} \text{ x } 100 = 2{,}71\ \%$$

Module 3

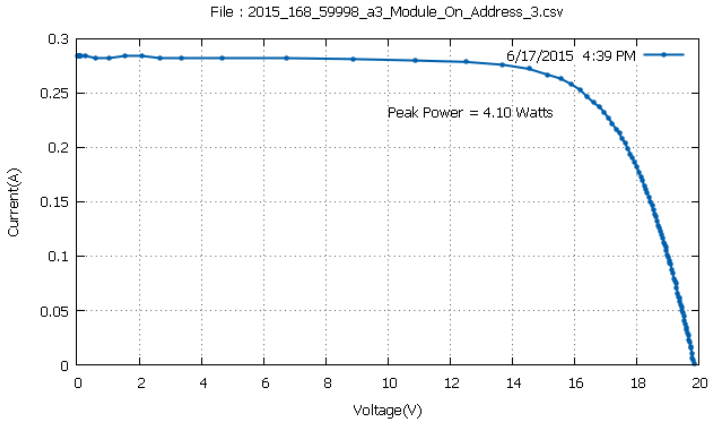
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

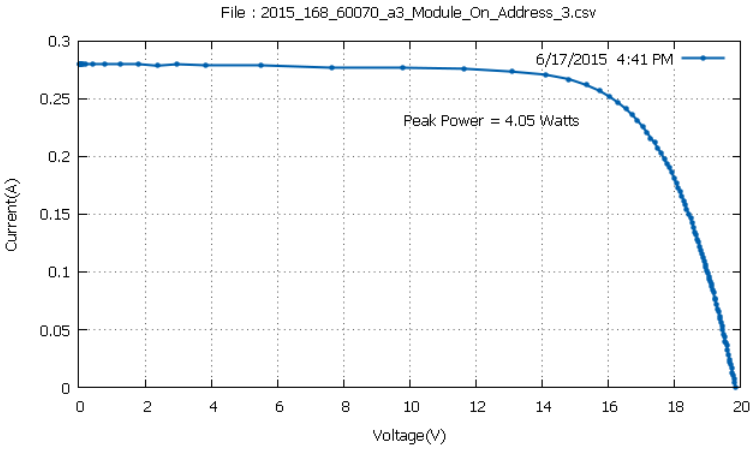
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:39	42,3	2,7
16:41	41,6	2,71
16:42	41,3	2,72
16:44	40,7	2,74
16:45	40,5	2,71
16:47	40,4	2,71

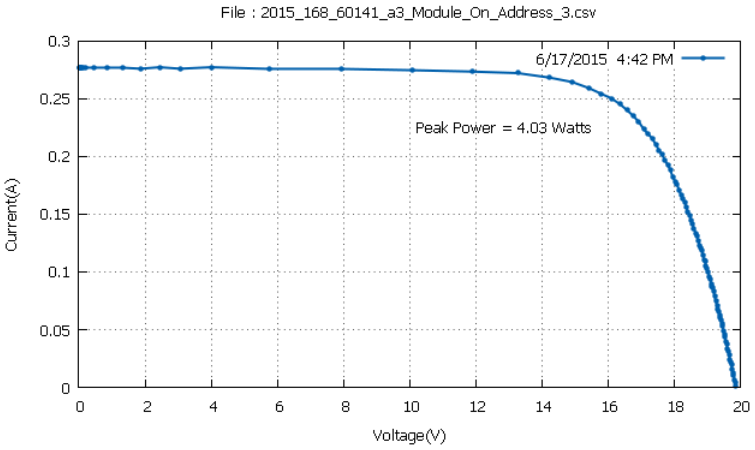
Mean Temperature: 41,13 ºC



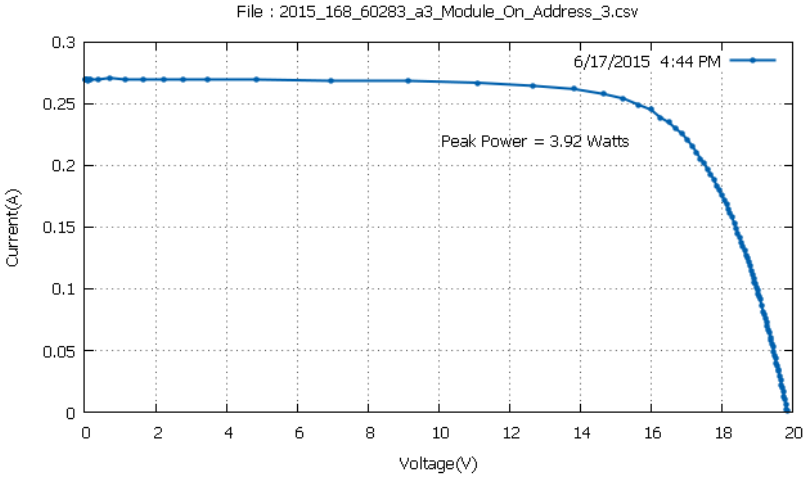
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.2581406}{493.1\ x\ 0{,}0709}$ x 100 = 11,72 %



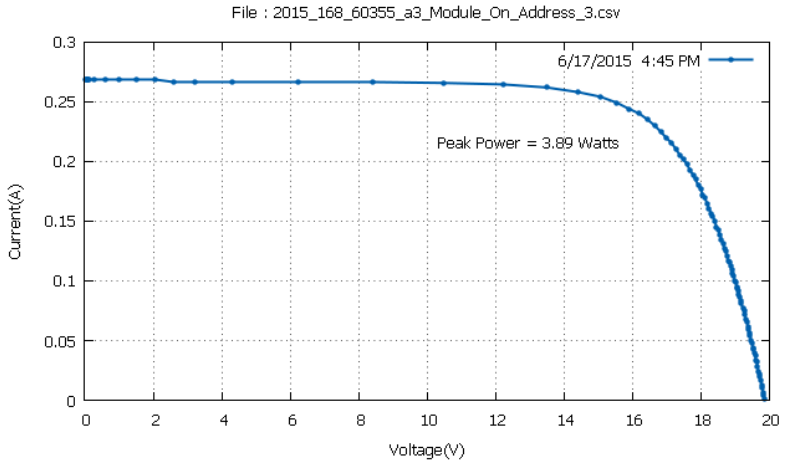
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.74881\ x\ 0.2568563}{488.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}7\ \%$$



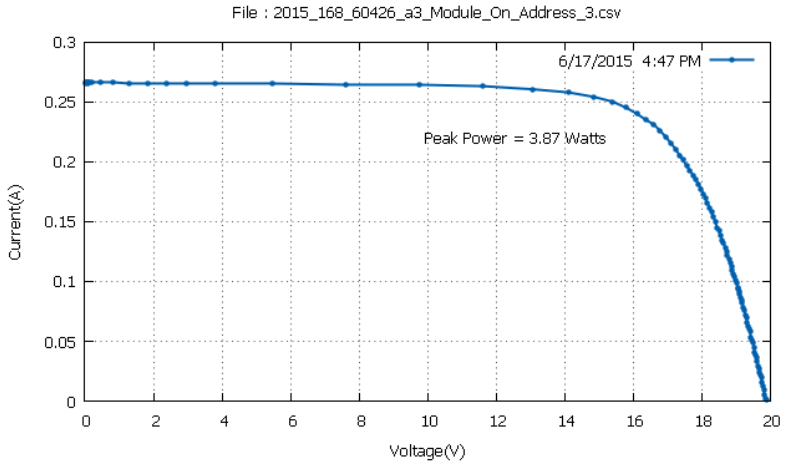
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1044521\ x\ 0.2504349}{485.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9962139\ x\ 0.24529776}{474.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.19723\ x\ 0.240160644}{473.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.24529776}{472.6\ x\ 0{,}0709} \text{ x } 100 = 11{,}55\ \%$$

Module 5

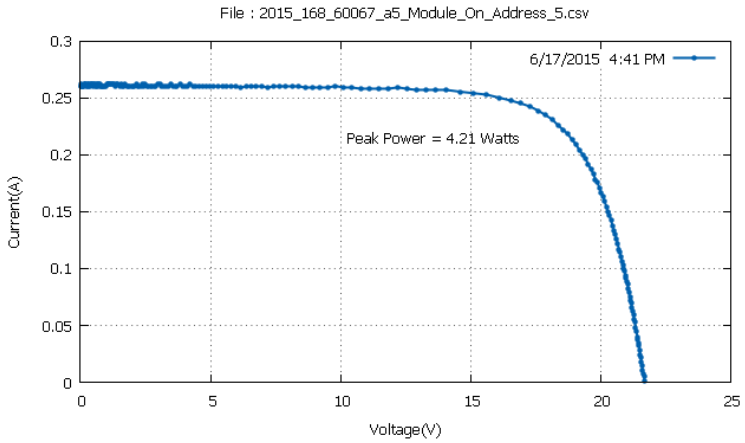
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

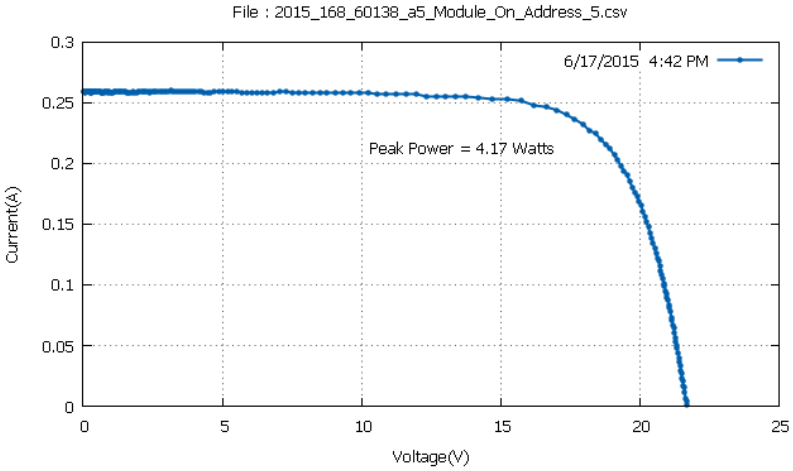
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:41	43,7	11,4
16:42	43,6	11,34
16:44	43,3	11,3
16:45	43,1	11,3
16:47	43	11,26
16:49	42,6	11,25

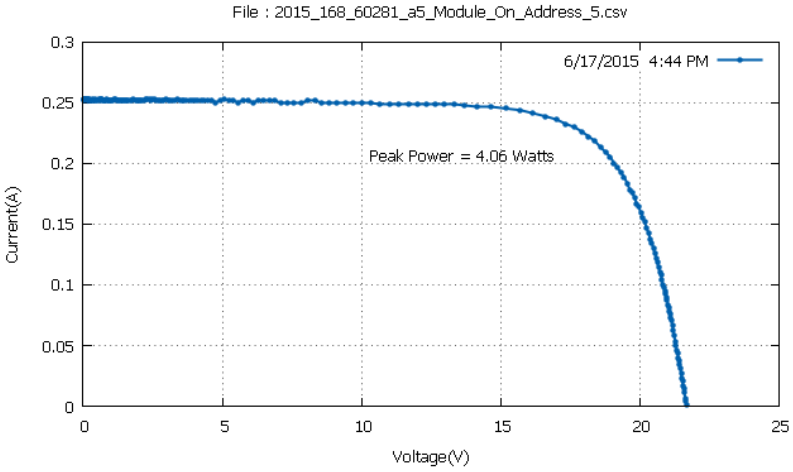
Mean Temperature: 43,21 ºC



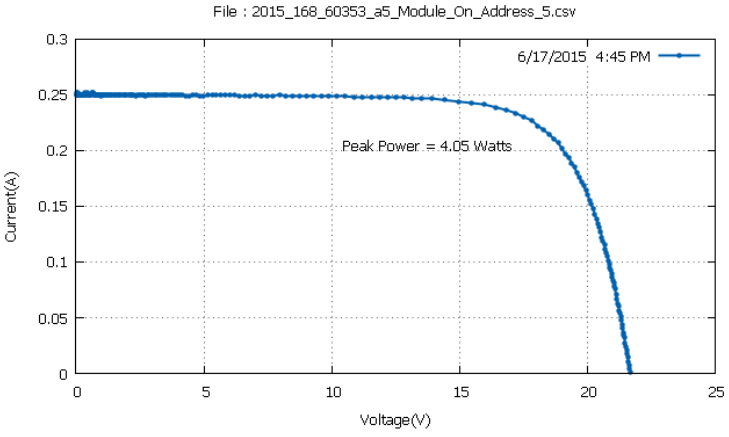
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.60434\ x\ 0.238876358}{488.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}4\ \%$$



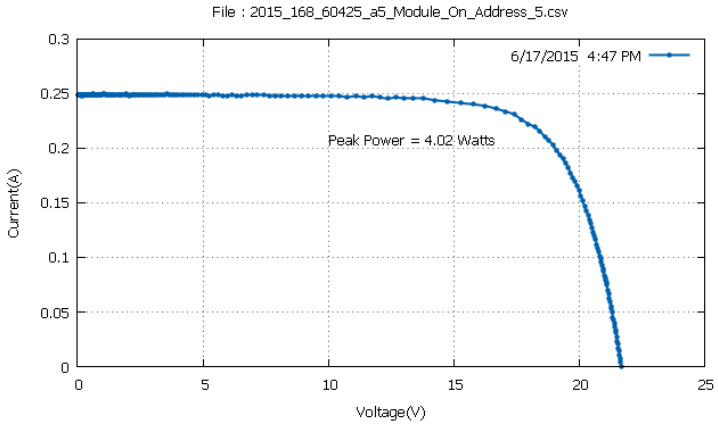
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6661911\ x\ 0.2363078}{486.4\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}34\ \%$$



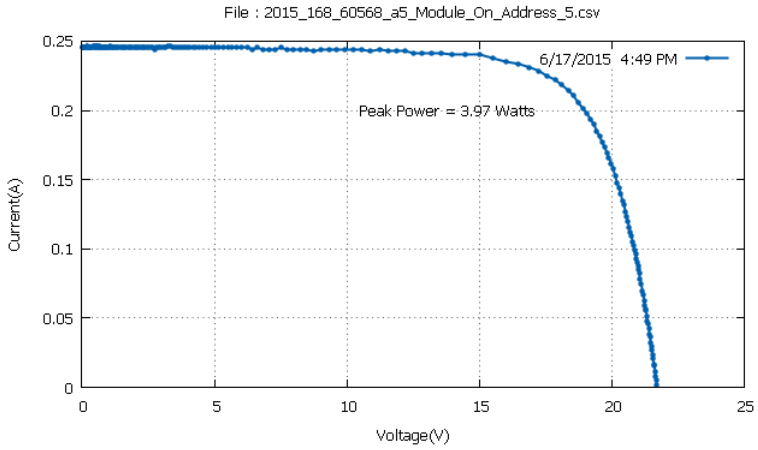
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6584587\ x\ 0.229886383}{475\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8130875\ x\ 0.227317825}{473.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4033241\ x\ 0.231170669}{472.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.2221807}{466.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}25\ \%$$

Module 4

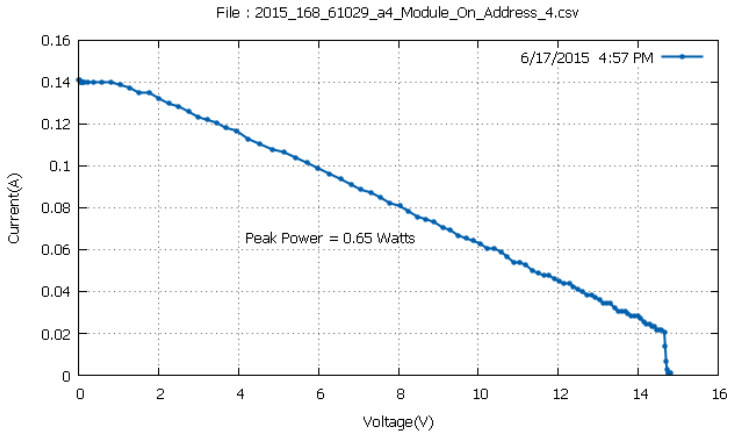
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

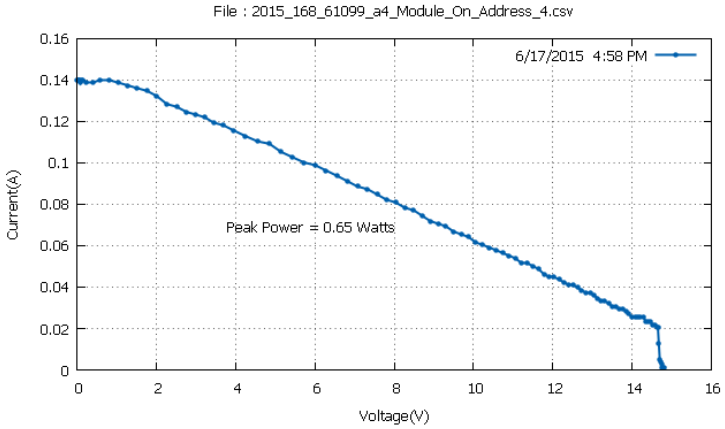
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:57	38,9	2,21
16:58	38,8	2,22
16:59	38,6	2,22
17:01	38,4	2,23
17:02	38,3	2,21
17:05	37,6	2,23

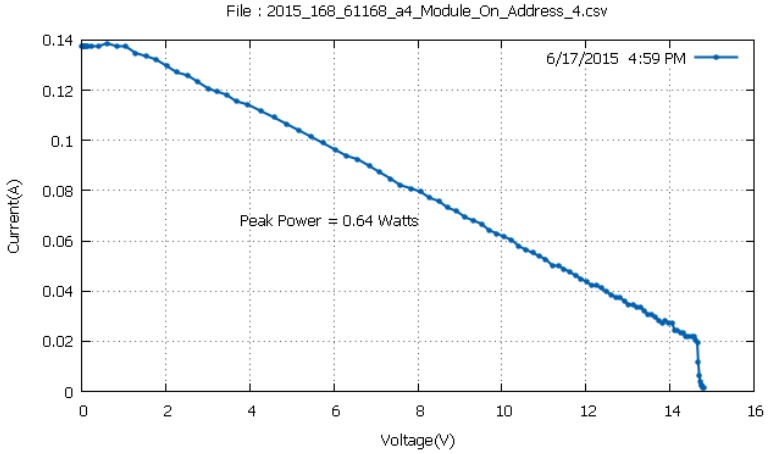
Mean Temperature: 38,43 ºC



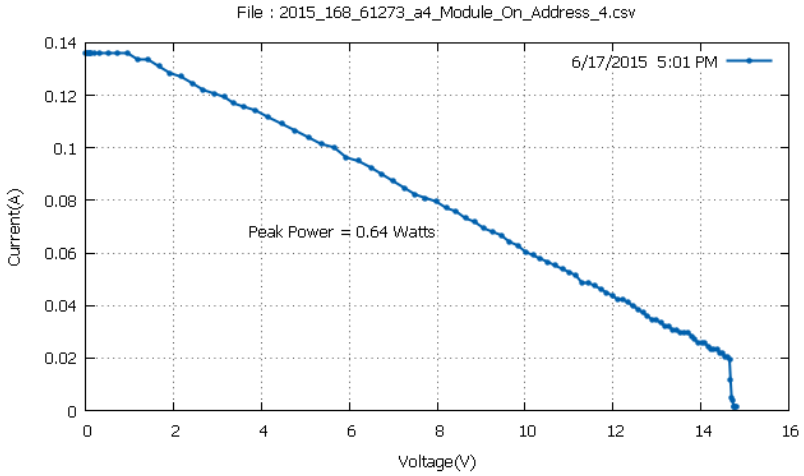
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.89108\ x\ 0.07320405}{437\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



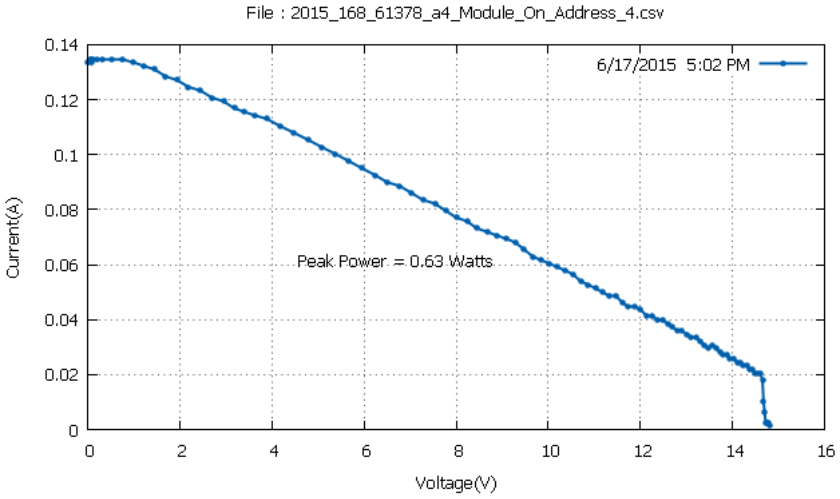
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.489049\ x\ 0.07705689}{435.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



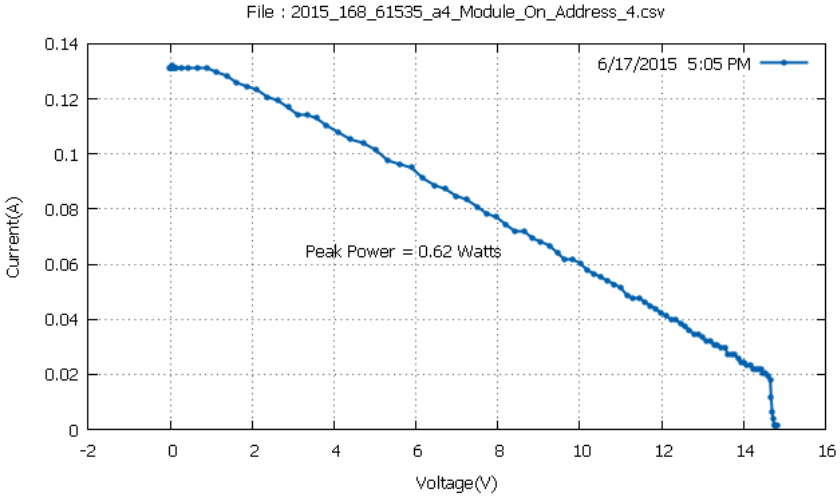
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.49678\ x\ 0.0757726058}{429.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.42719\ x\ 0.0757726058}{427.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.566362\ x\ 0.07448833}{424.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.782842\ x\ 0.07063548}{414.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}23\ \%$$

Module 8

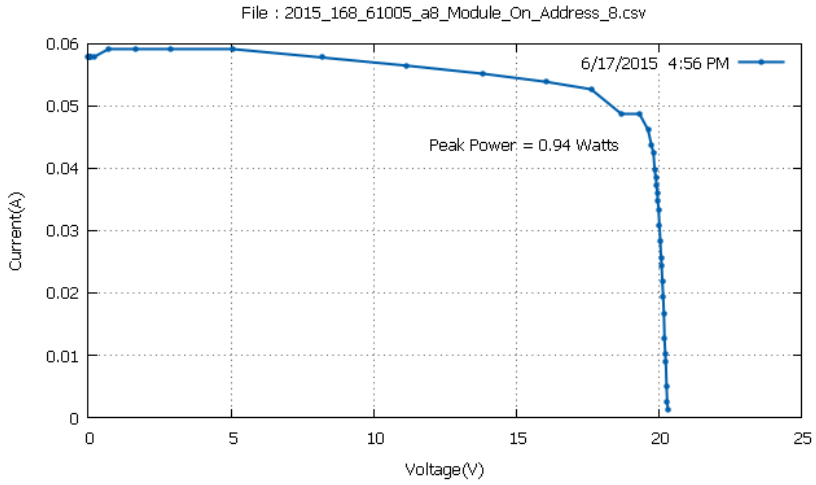
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

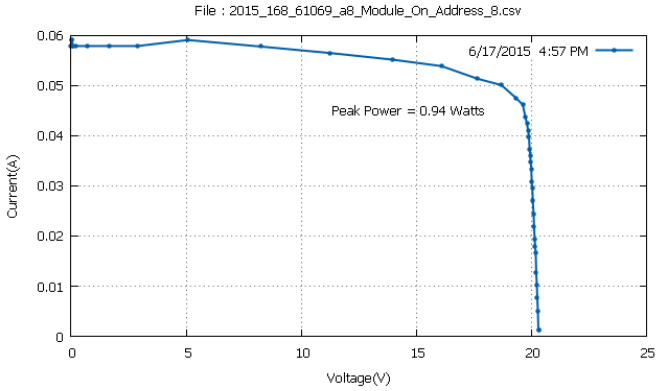
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:56	39,8	2,8
16:57	39,5	2,81
16:58	38,8	2,75
17:01	37,7	2,82
17:03	37,6	2,83
17:05	36,5	2,86

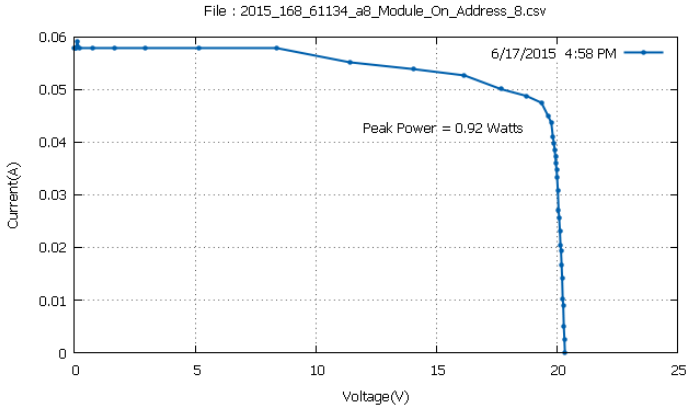
Mean Temperature: 38,31 ºC



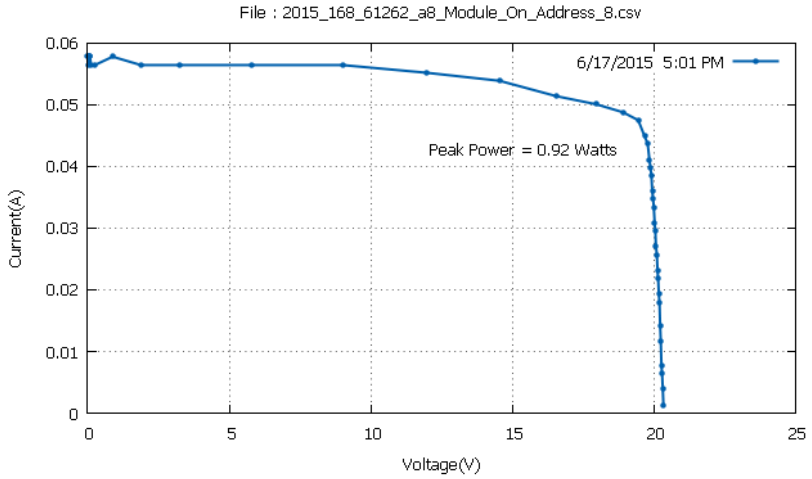
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3361664\ x\ 0.0488026962}{438.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}8\ \%$$



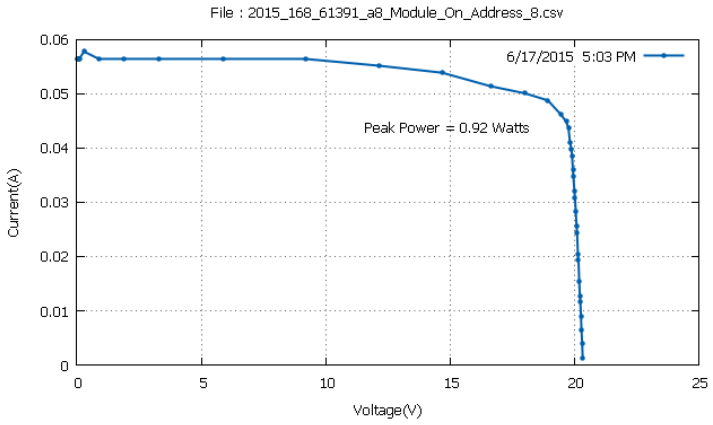
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7021942\ x\ 0.05008698}{435.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}81\ \%$$



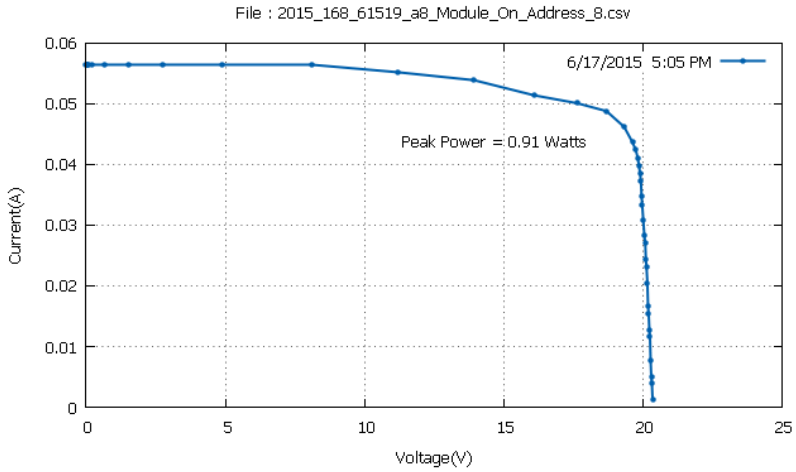
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3593616\ x\ 0.0475184135}{435.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9959869\ x\ 0.0488026962}{424.2\ x\ 0{,}0768} \text{ x } 100 = 2{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9341354\ x\ 0.0488026962}{422.3\ x\ 0{,}0768} \text{ x } 100 = 2{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6944637\ x\ 0.0488026962}{413.9\ x\ 0{,}0768} \text{ x } 100 = 2{,}86\ \%$$

Module 3

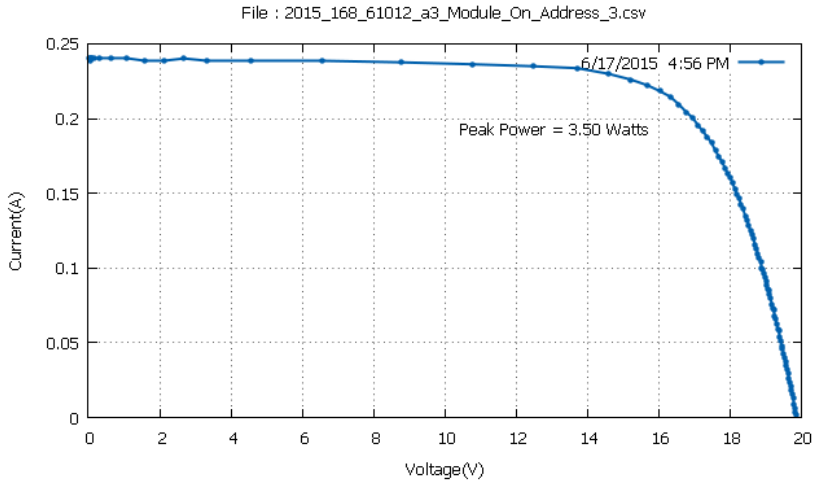
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

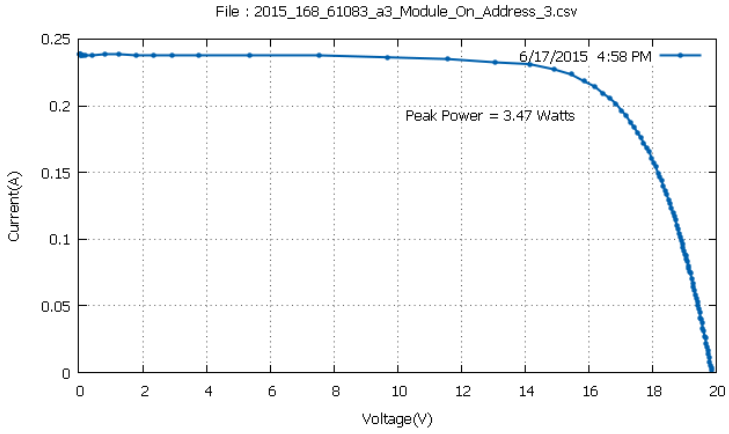
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:56	39,3	11,27
16:58	38,9	11,21
16:59	38,7	11,12
17:06	37,6	10,93
17:08	37,5	10,82
17:11	37,2	10,81

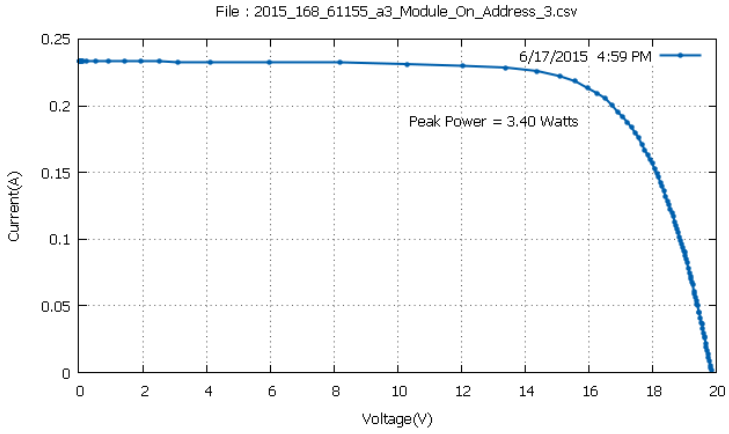
Mean Temperature: 38,2 ºC



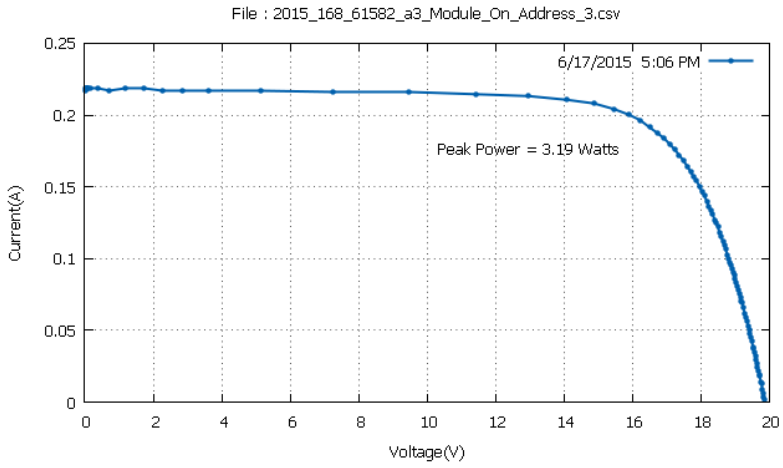
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.214475}{437.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}27\ \%$$



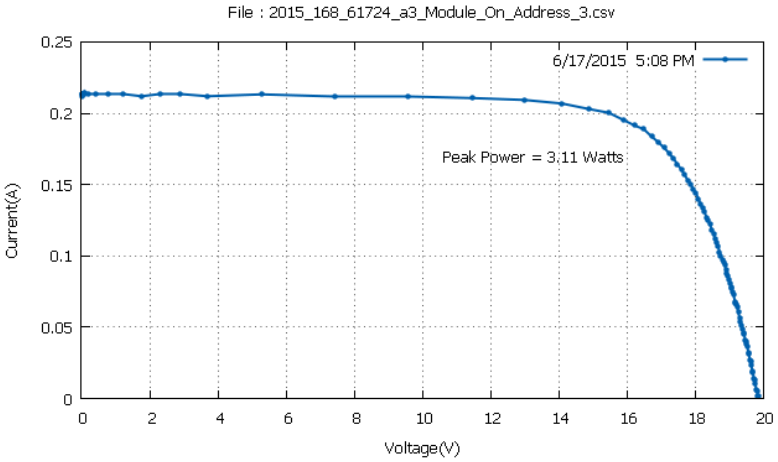
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1817665\ x\ 0.214475}{436.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}21\ \%$$



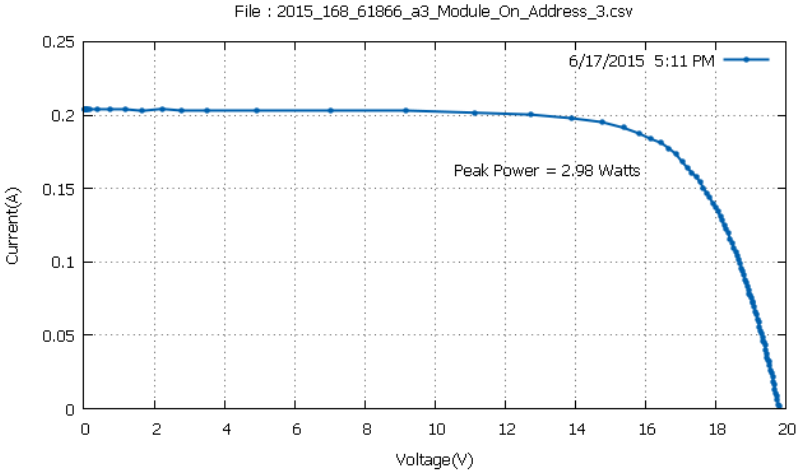
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2668114\ x\ 0.20933789}{431.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.196495071}{411.5\ x\ 0{,}0709} \text{ x } 100 = 10{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4910221\ x\ 0.188789383}{405.1\ x\ 0{,}0709} \text{ x } 100 = 10{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4446335\ x\ 0.1810837}{388.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}81\ \%$$

Module 5

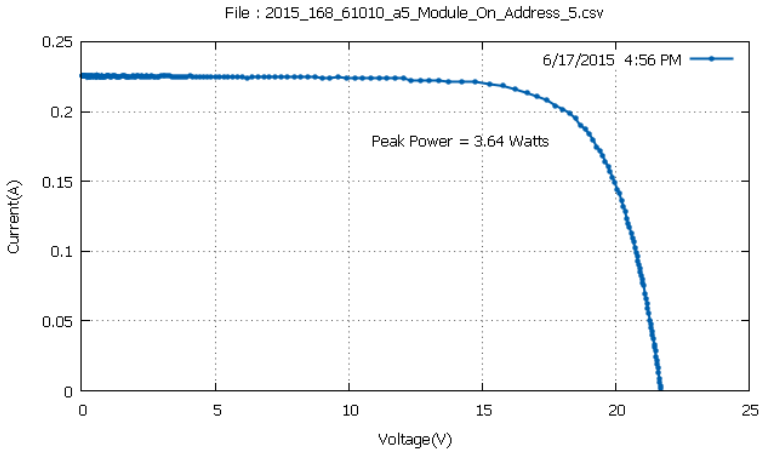
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

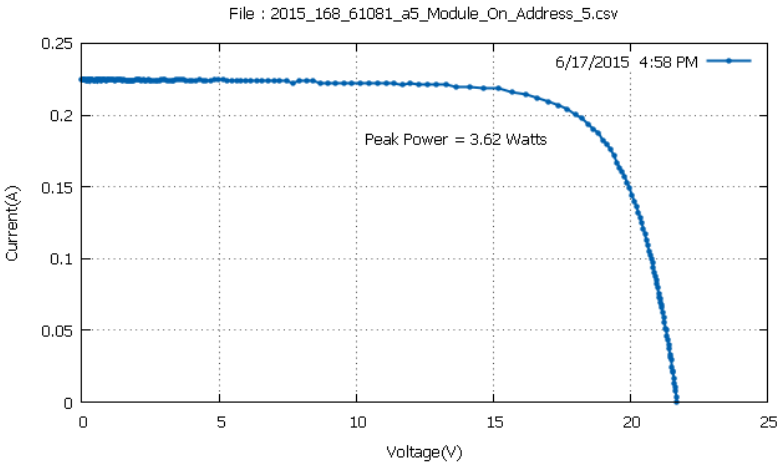
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:56	41,5	11
16:58	41,1	10,96
16:59	40,9	10,96
17:01	40,7	10,89
17:02	40,5	10,86
17:07	39,7	10,8

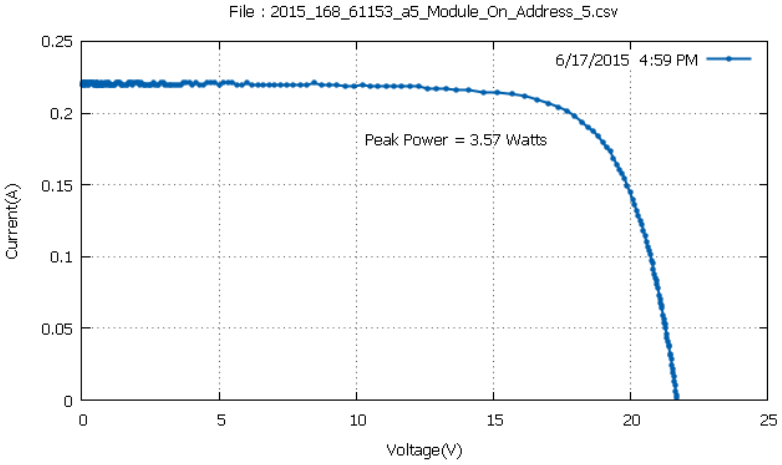
Mean Temperature: 40,73 ºC



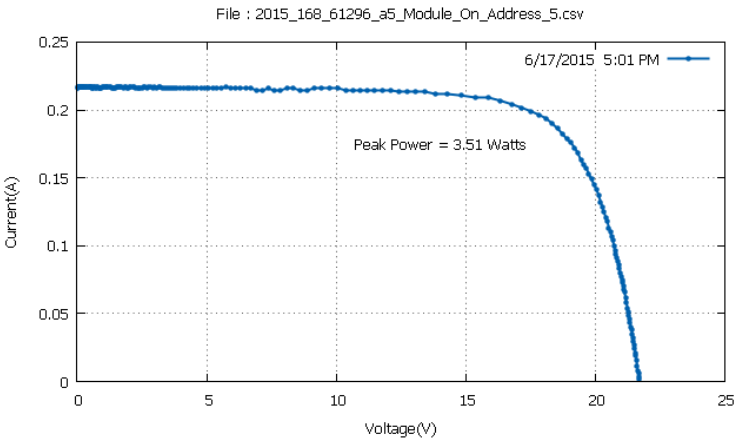
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.261507\ x\ 0.199063629}{437.5\ x\ 0{,}0756} \text{ x } 100 = 11\ \%$$



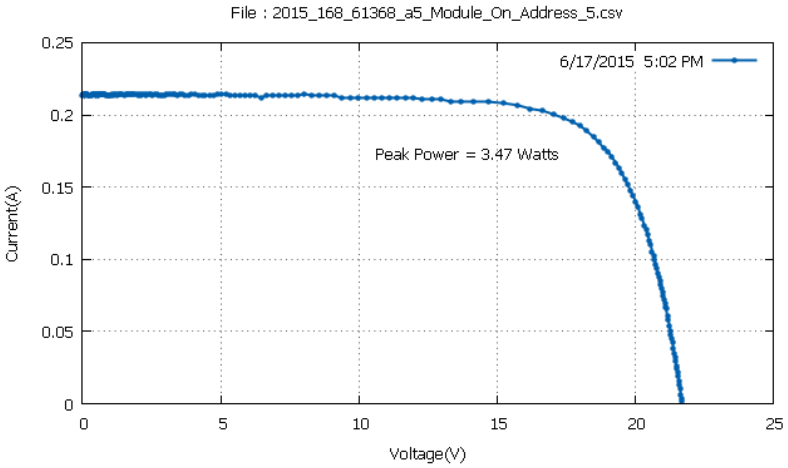
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7048473\ x\ 0.20420076}{436.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}96\ \%$$



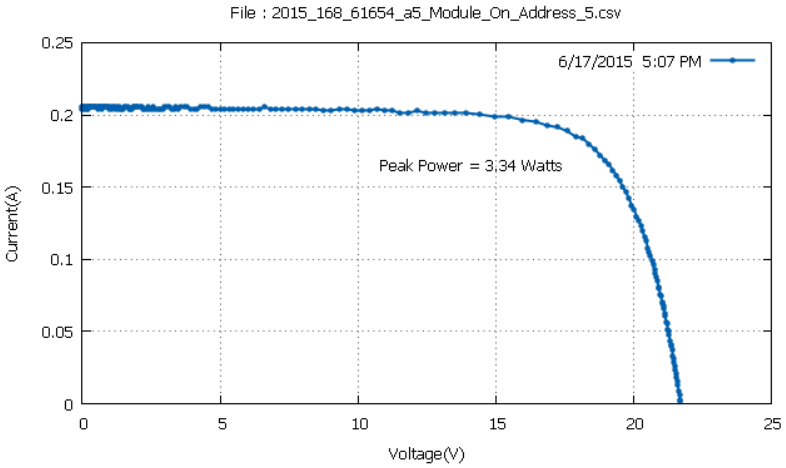
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6971149\ x\ 0.20163218}{430.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.1939265}{426.1\ x\ 0{,}0756} \text{ x } 100 = 10{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.192642227}{422.5\ x\ 0{,}0756}\ \text{x } 100 = 10{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.18365225}{409.4\ x\ 0{,}0756}\ \text{x } 100 = 10{,}8\ \%$$

Module 4

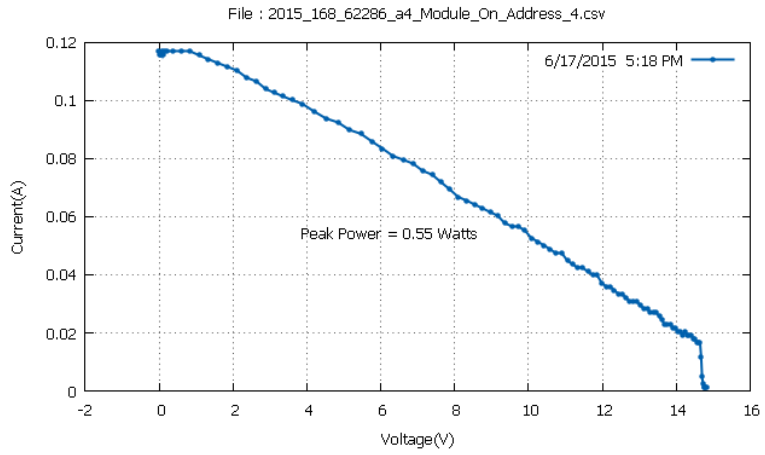
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

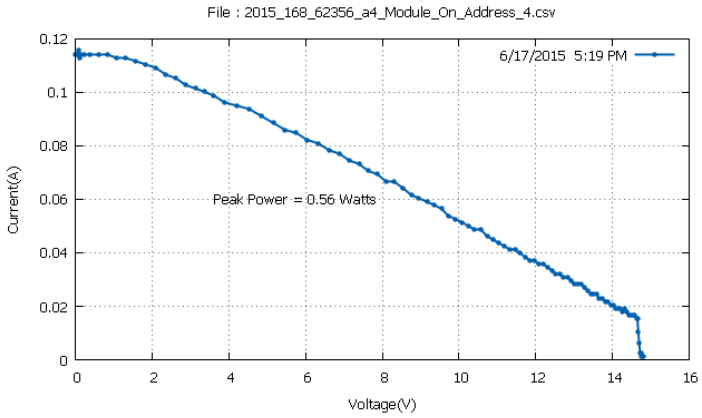
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:18	36	2,23
17:19	35,8	2,3
17:20	35,5	2,23
17:21	35,5	2,24
17:24	35	2,24
17:28	34,7	2,28

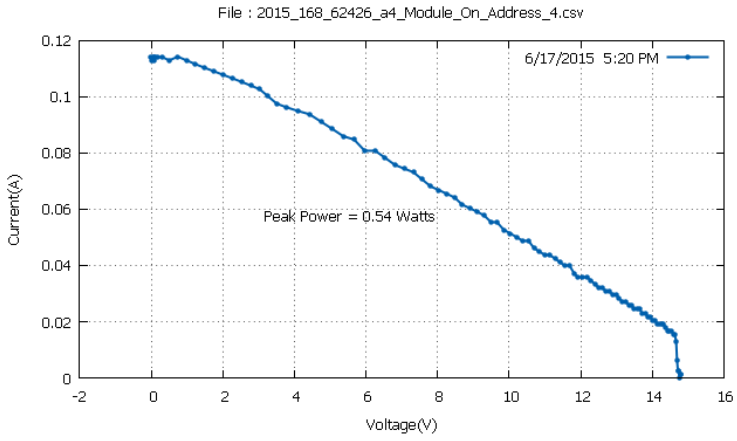
Mean Temperature: 34,41 ºC



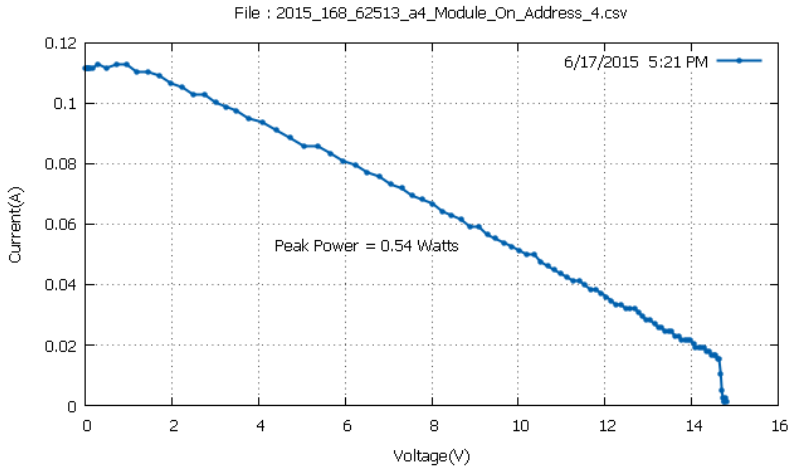
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.161678\ x\ 0.06036123}{366.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}23\ \%$$



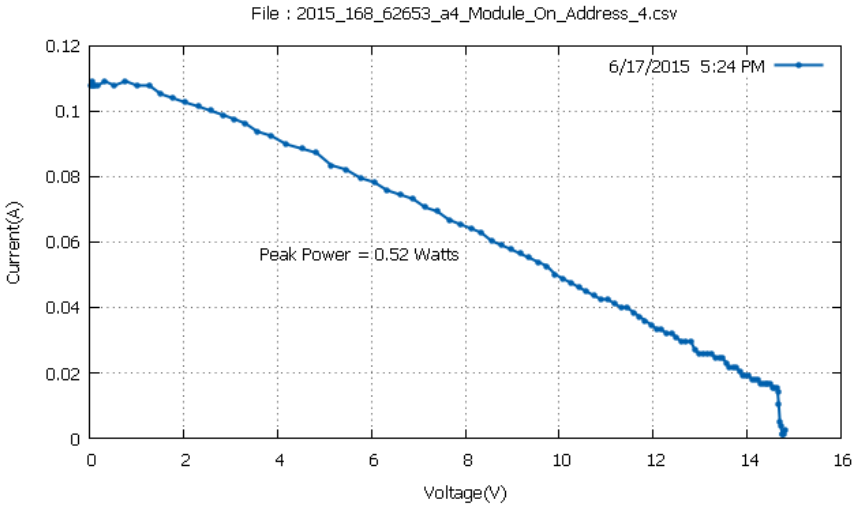
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.311228\ x\ 0.06678264}{361.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



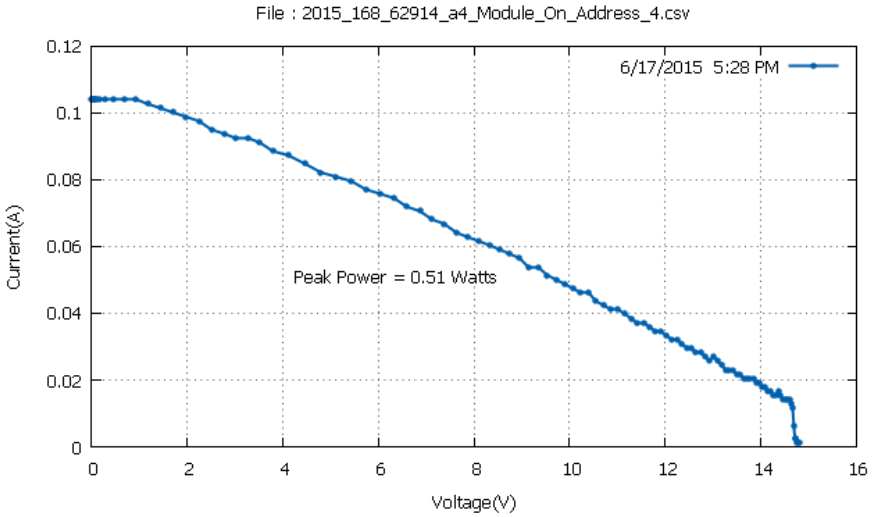
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.473586\ x\ 0.06421407}{360\ x\ 0{,}0671} \text{ x } 100 = 2{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.257108\ x\ 0.06549836}{358.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.334421\ x\ 0.0629297942}{345.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.952931\ x\ 0.0565083846}{332.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}28\ \%$$

Module 8

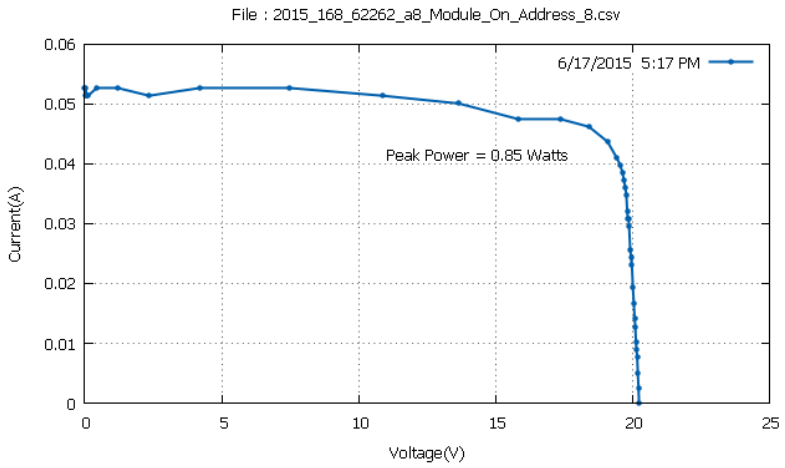
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

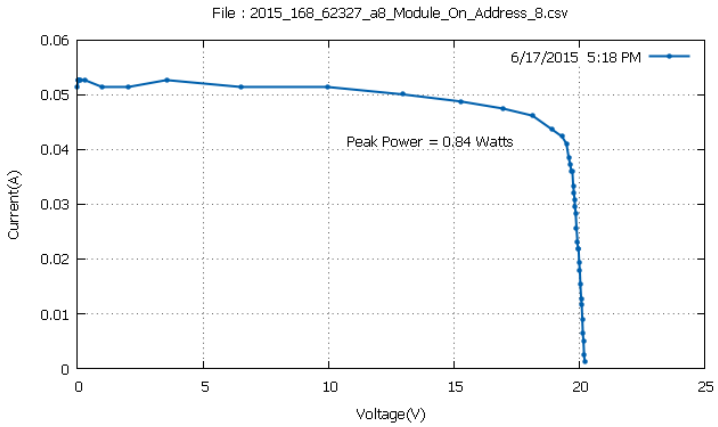
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:17	35,5	3,01
17:18	35,4	3
17:19	35,1	3
17:21	35,4	2,96
17:24	35,8	3,01
17:28	35,2	3,21

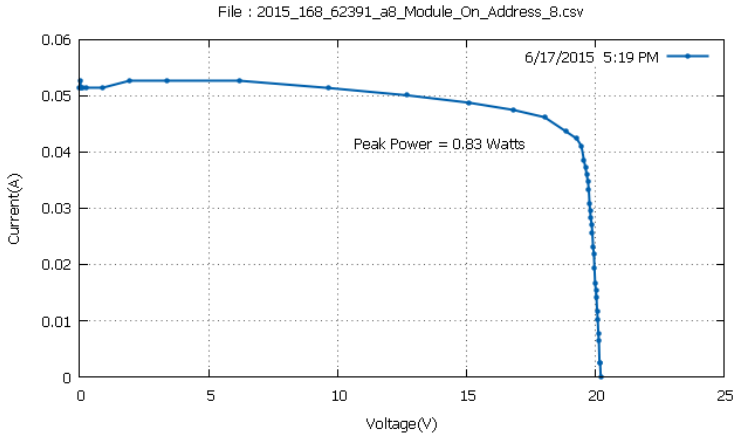
Mean Temperature: 35,4 ºC



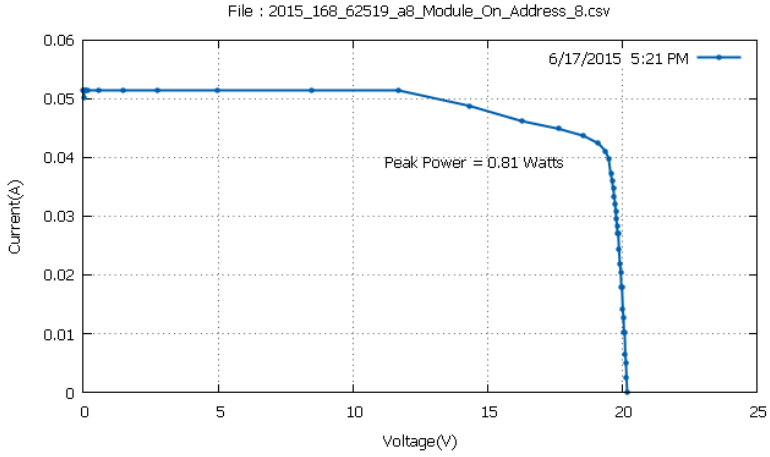
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4161339\ x\ 0.046234134}{366.9\ x\ 0{,}0768} \text{ x } 100 = 3{,}01\ \%$$



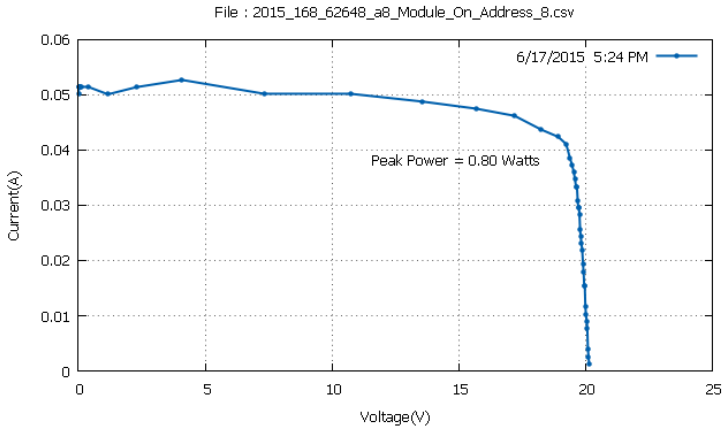
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.137804\ x\ 0.0462341346}{364.1\ x\ 0{,}0768} \text{ x } 100 = 3\ \%$$



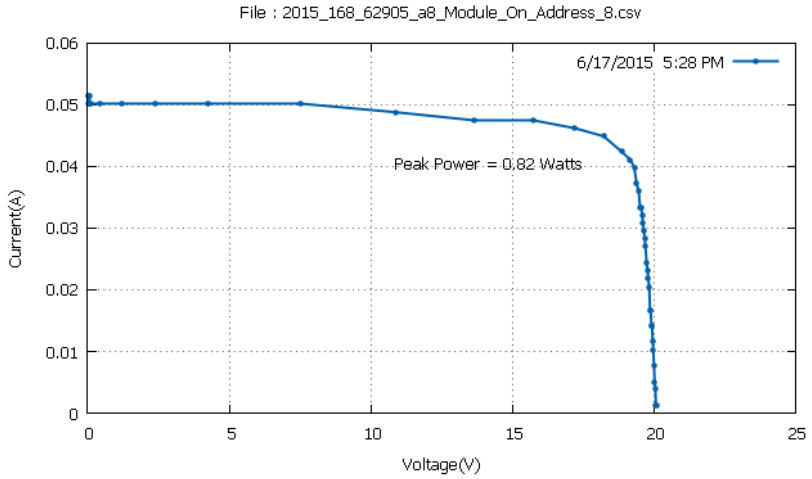
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0372963\ x\ 0.0462341346}{361\ x\ 0{,}0768} \text{ x } 100 = 3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.56303\ x\ 0.04366557}{355.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9186726\ x\ 0.04238129}{345.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2228489\ x\ 0.0449498519}{332.4\ x\ 0{,}0768} \text{ x } 100 = 3{,}21\ \%$$

Module 3

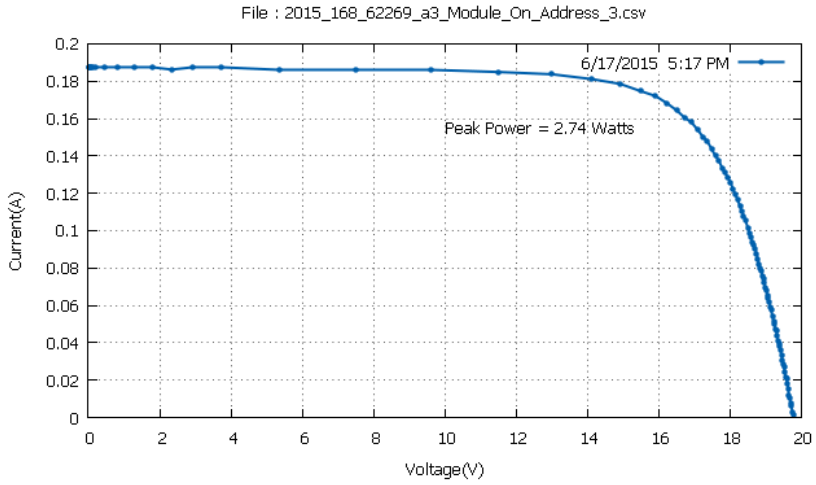
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

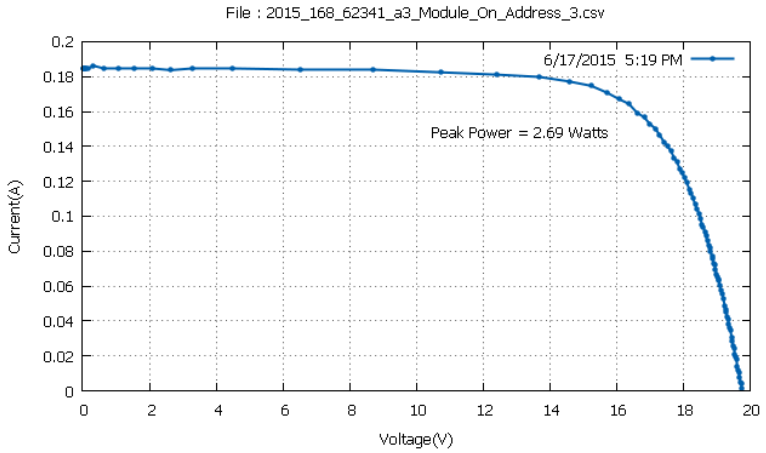
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:17	36,3	10,52
17:19	36	10,43
17:20	35,8	10,44
17:27	34,8	10,08
17:28	34,7	10
17:29	34,6	9,93

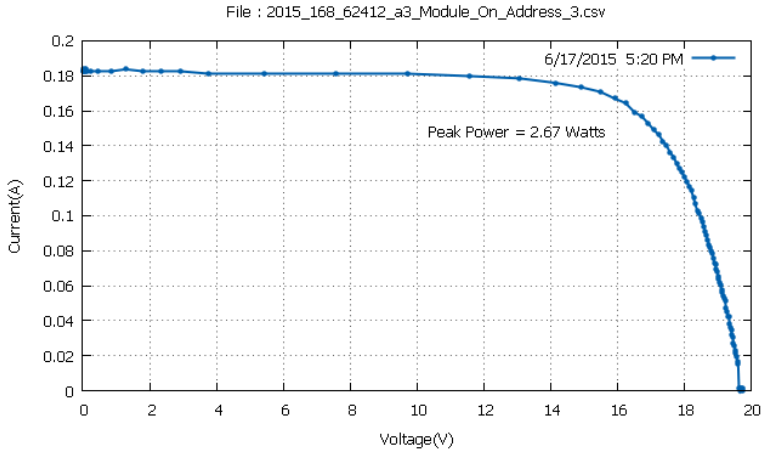
Mean Temperature: 35,36 ºC



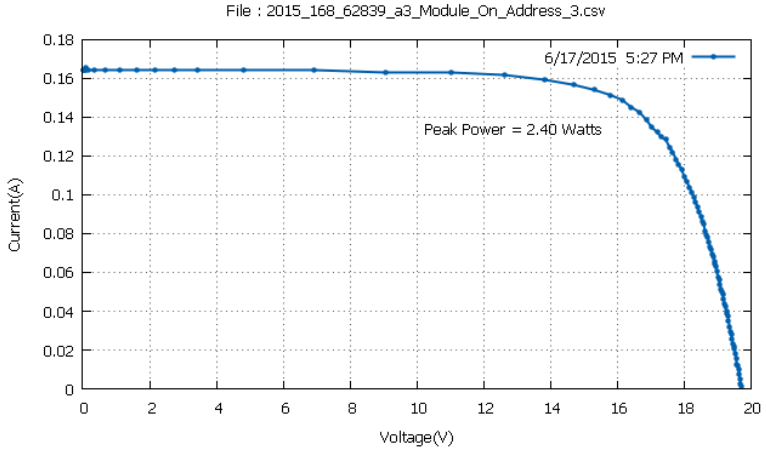
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.172093719}{367.2\ x\ 0{,}0709} \text{ x } 100 = 10{,}52\ \%$$



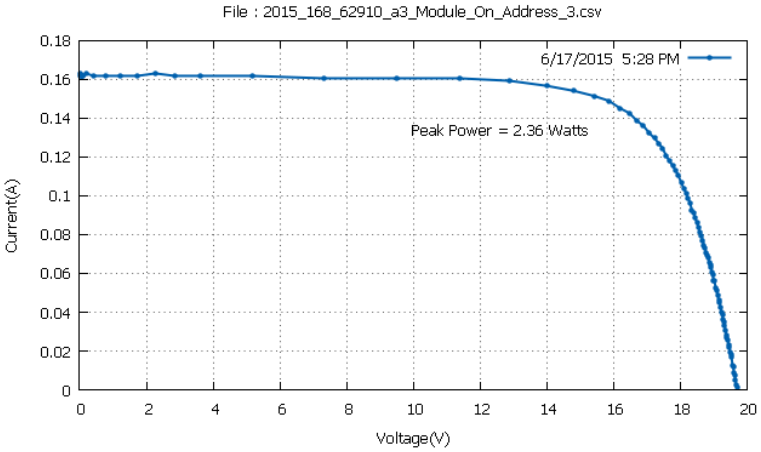
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.16438803}{363.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}43\ \%$$



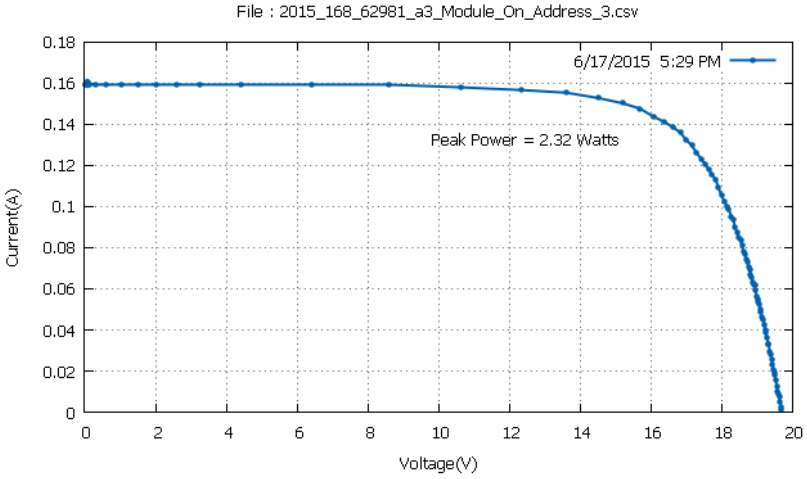
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.243618\ x\ 0.16438803}{360.7\ x\ 0{,}0709} \text{ x } 100 = 10{,}44\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.135377\ x\ 0.148976654}{335.5\ x\ 0{,}0709} \text{ x } 100 = 10{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.857049\ x\ 0.148976654}{332.6\ x\ 0{,}0709} \text{ x } 100 = 10\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6869583\ x\ 0.147692367}{329.3\ x\ 0{,}0709} \text{ x } 100 = 9{,}93\ \%$$

Module 5

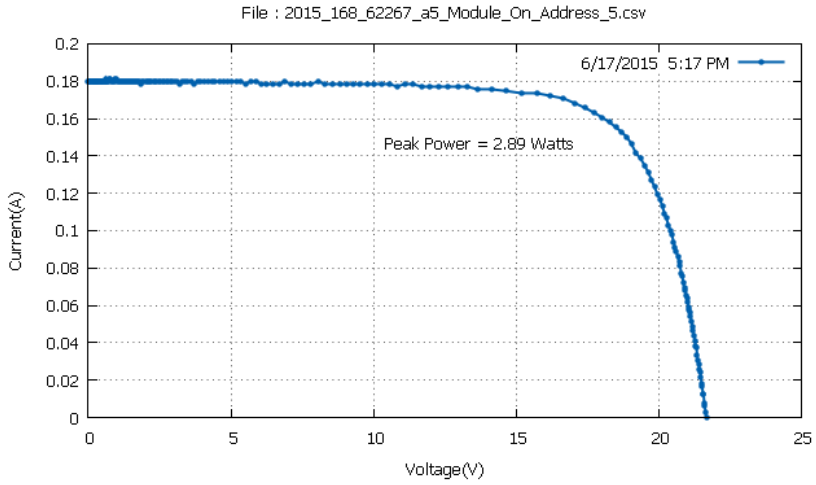
Date: 17/6/2015 – Afternoon Measurement

Temperature Ambient: 34 ºC

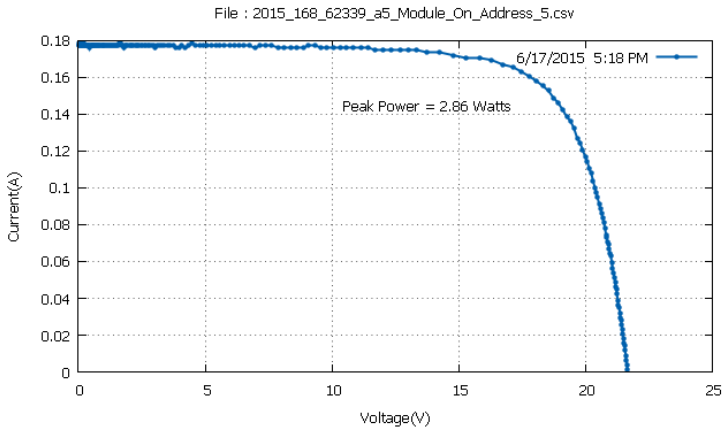
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:17	38,1	10,42
17:18	38	10,4
17:20	37,6	10,38
17:22	37,4	10,35
17:23	37,3	10,27
17:28	36,5	10,2

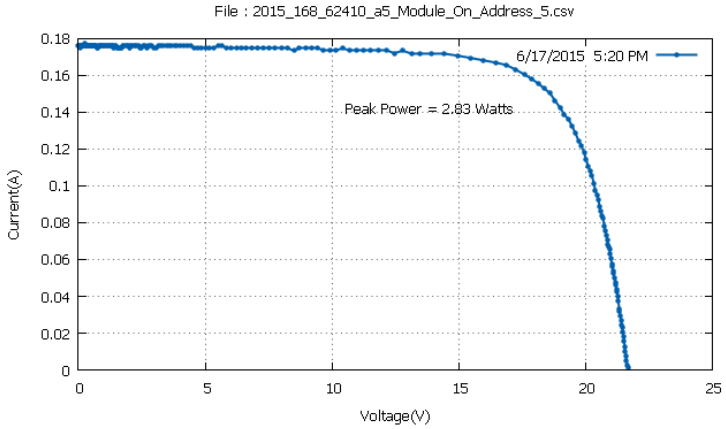
Mean Temperature: 37,48 ºC



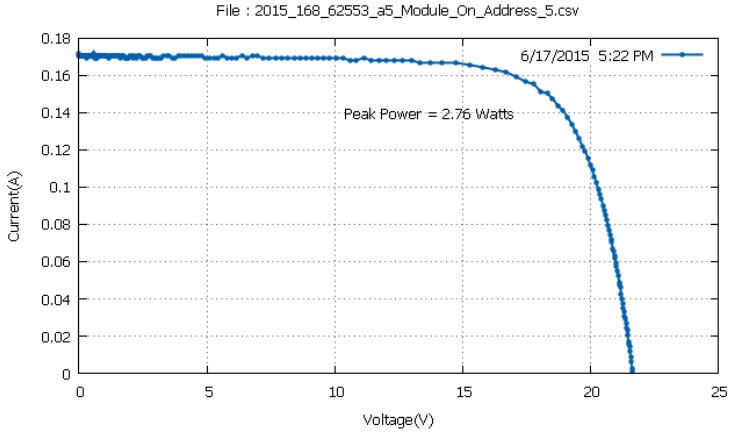
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0218334\ x\ 0.160535187}{366.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}42\ \%$$



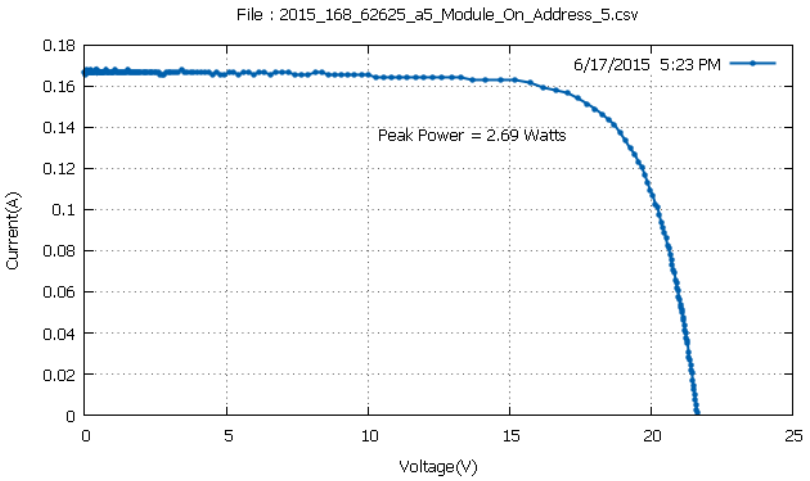
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7898922\ x\ 0.160535187}{363.6\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}4\ \%$$



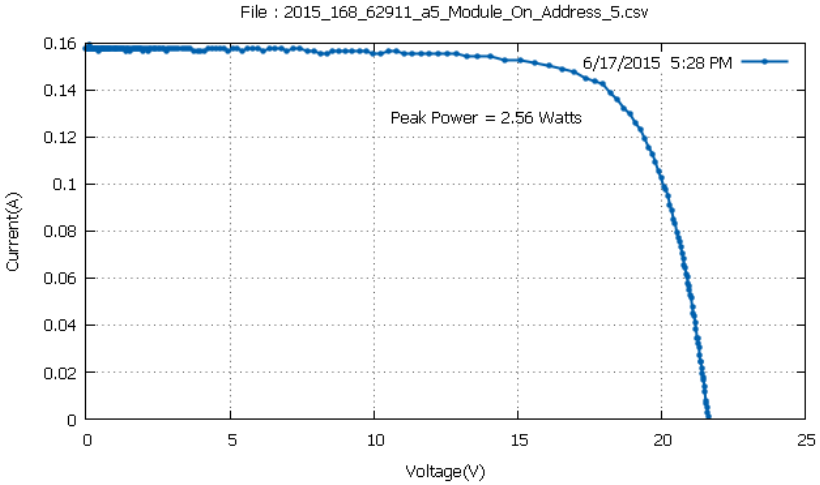
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.157966629}{360.5\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.77443\ x\ 0.155398056}{352.6\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7435036\ x\ 0.151545212}{346.4\ x\ 0{,}0756} \text{ x } 100 = 10{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9677143\ x\ 0.142555252}{331.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}2\ \%$$

Module 4

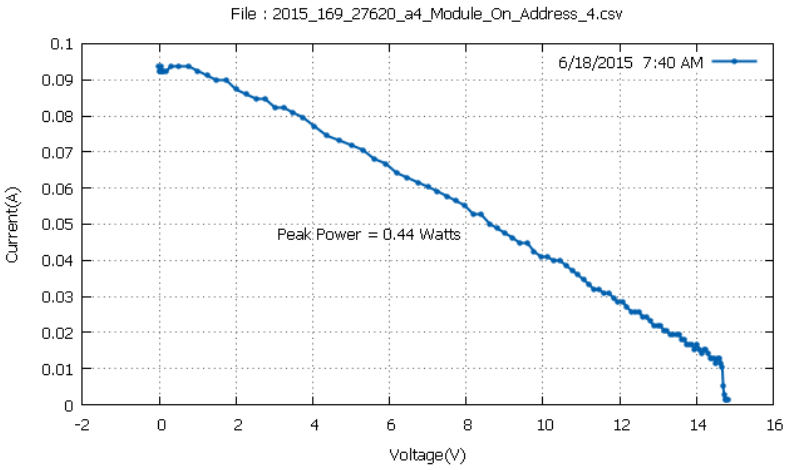
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

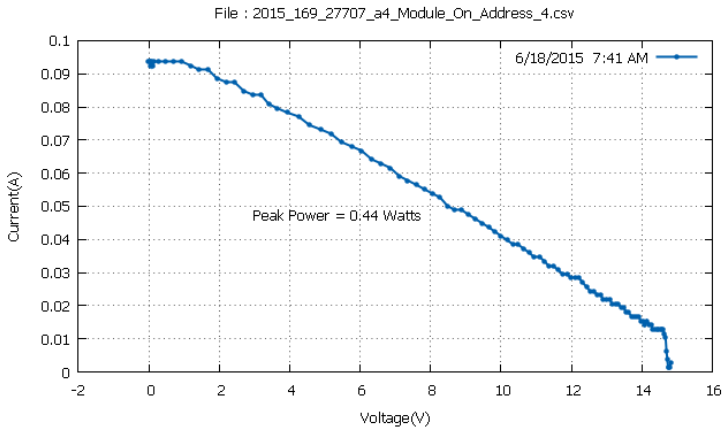
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:40	32,4	2,41
7:41	32,9	2,4
7:44	33,2	2,35
7:45	33,5	2,42
7:46	34	2,4
7:50	34,6	2,31

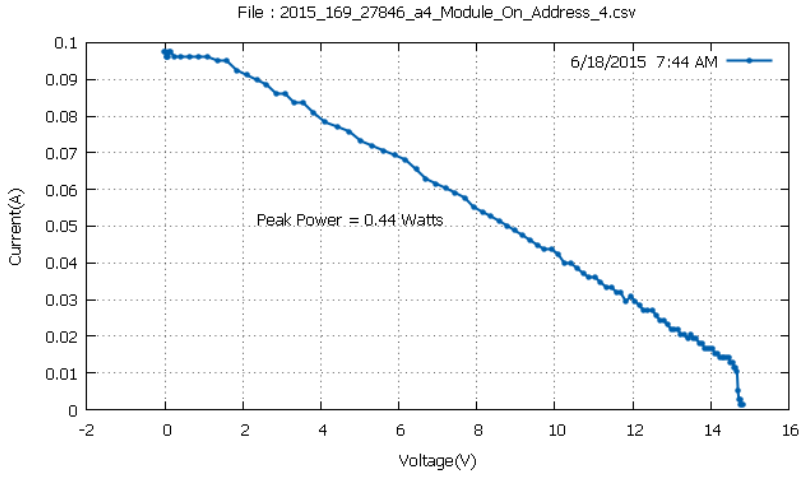
Mean Temperature: 33,43 ºC



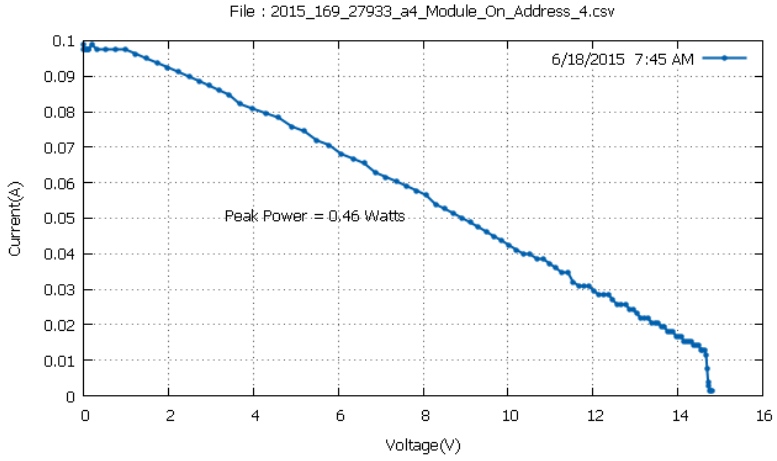
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.396273\ x\ 0.05265554}{271.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}41\ \%$$



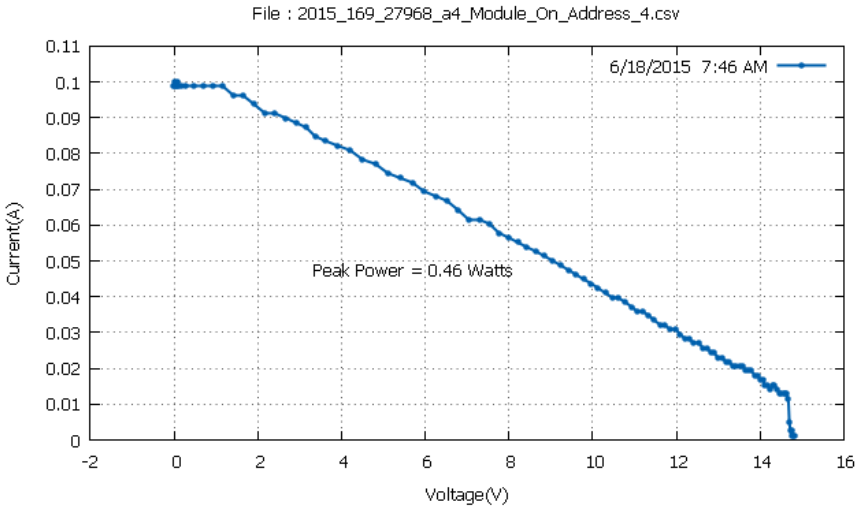
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.264839\ x\ 0.05265554}{272.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}4\ \%$$



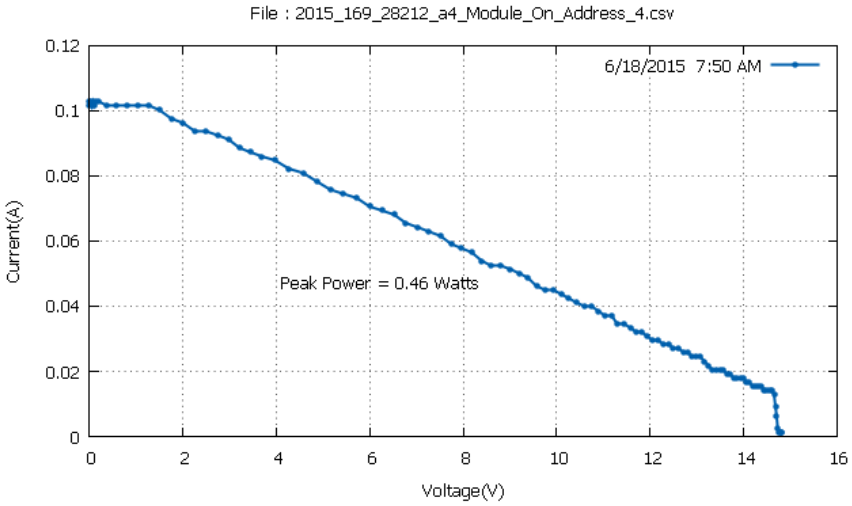
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.684986\ x\ 0.0577926673}{278.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.063824\ x\ 0.0565083846}{282.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.65914\ x\ 0.05265554}{285.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.806035\ x\ 0.05265554}{295.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}31\ \%$$

Module 8

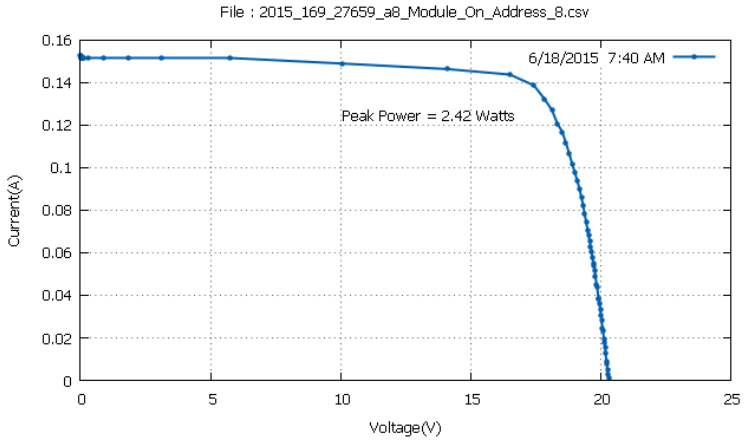
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

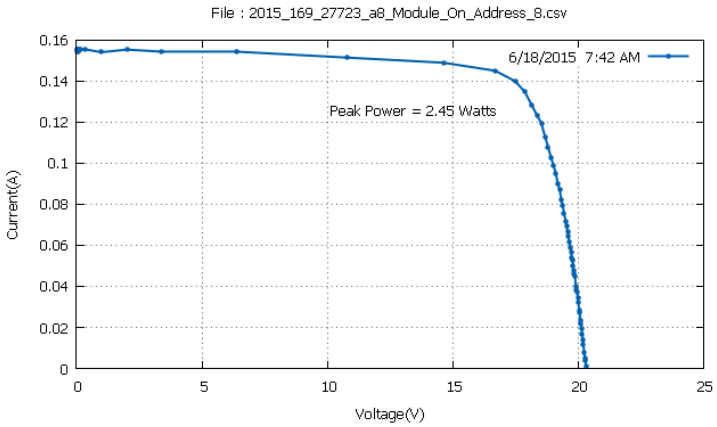
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:40	32	11,58
7:42	32,5	11,67
7:44	32,8	11,82
7:45	33	11,92
7:46	33,3	11,97
7:50	34,3	12,25

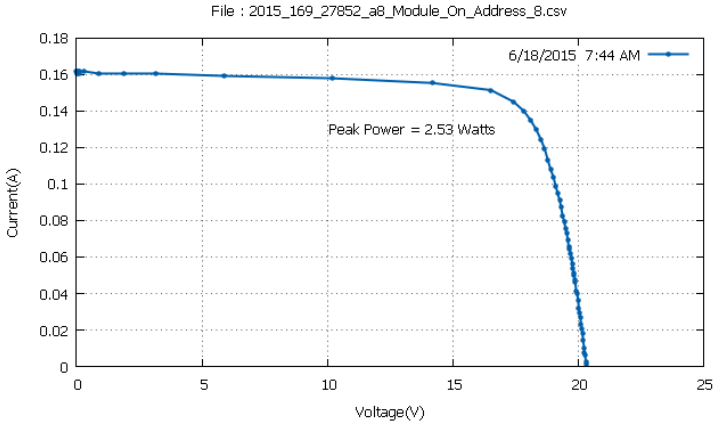
Mean Temperature: 32,98 ºC



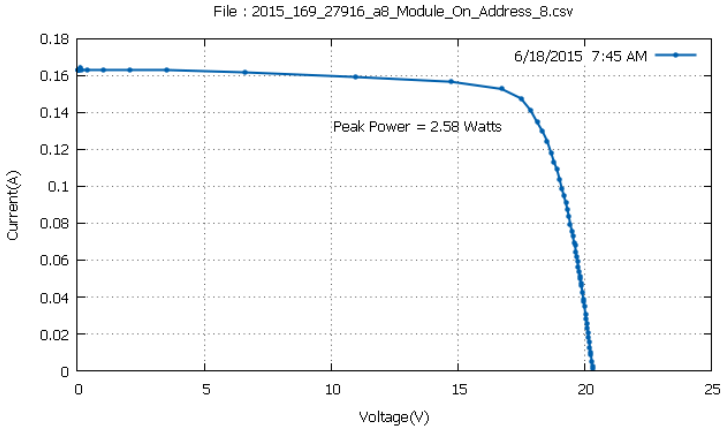
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.43425\ x\ 0.138702407}{272\ x\ 0{,}0768} \text{ x } 100 = 11{,}58\ \%$$



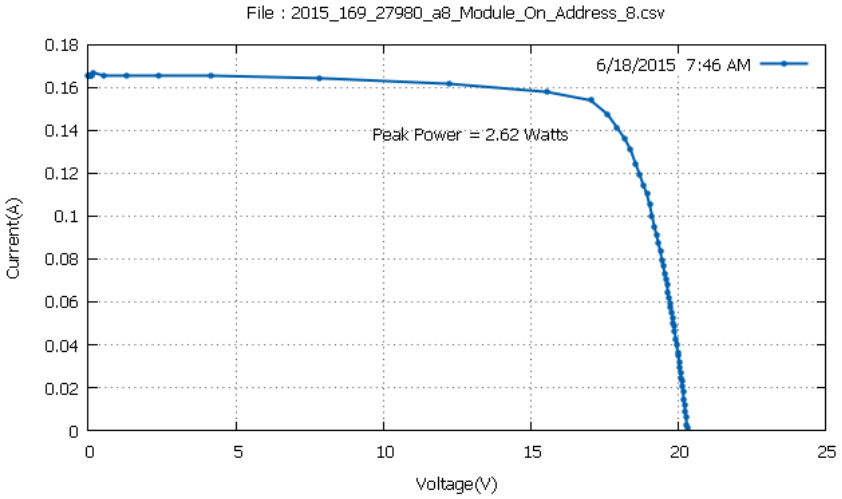
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.488369\ x\ 0.139986679}{273.2\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}67\ \%$$



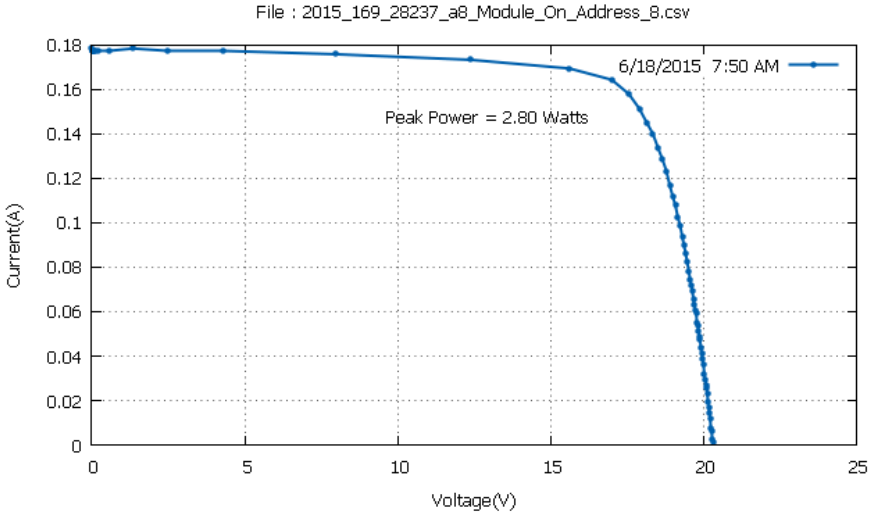
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4265175\ x\ 0.14512381}{278.7\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.488369\ x\ 0.14769236}{281.6\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.032217\ x\ 0.154113784}{284.9\ x\ 0{,}0768} \text{ x } 100 = 11{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0012913\ x\ 0.164388031}{297.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}25\ \%$$

Module 3

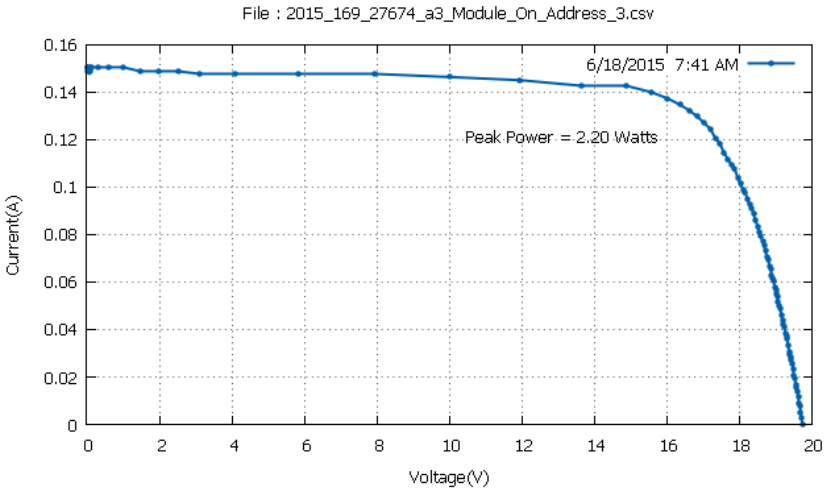
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

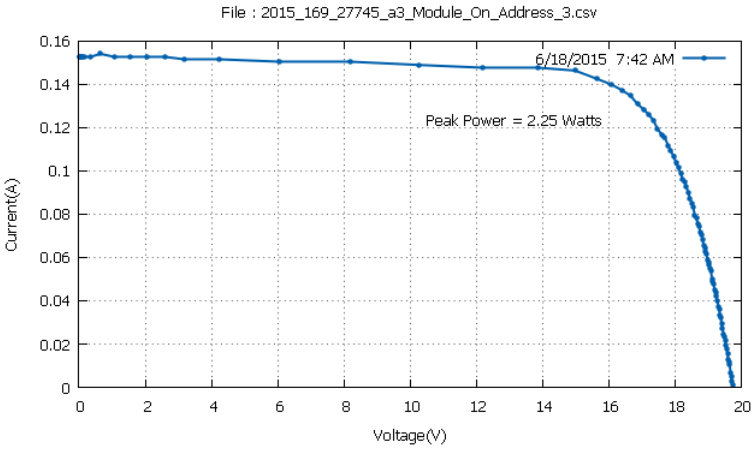
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:41	32,9	11,4
7:42	33	11,6
7:49	34,4	12,06
7:50	34,6	12,16
7:51	34,7	12,2
7:54	35,1	12,24

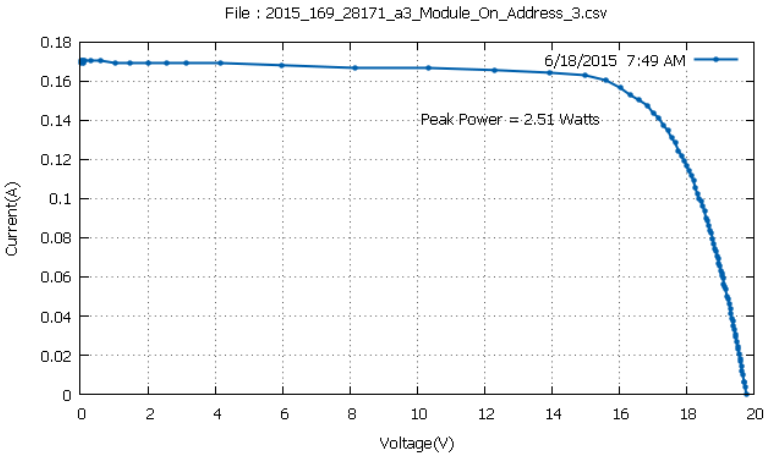
Mean Temperature: 34,11 ºC



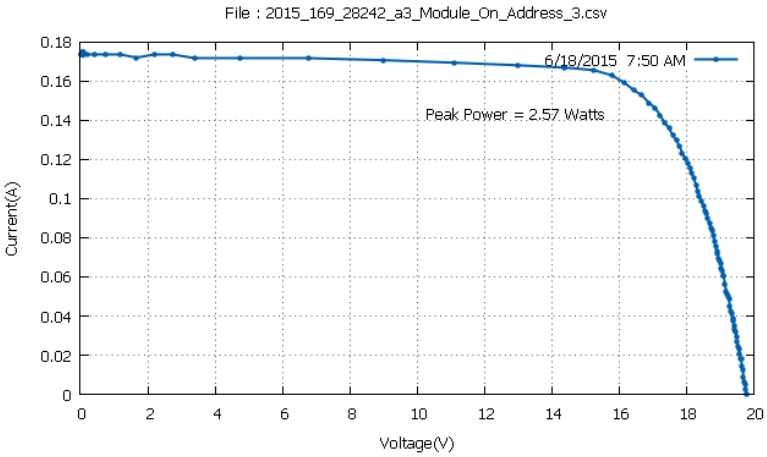
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.134849563}{272\ x\ 0{,}0709} \text{ x } 100 = 11{,}4\ \%$$



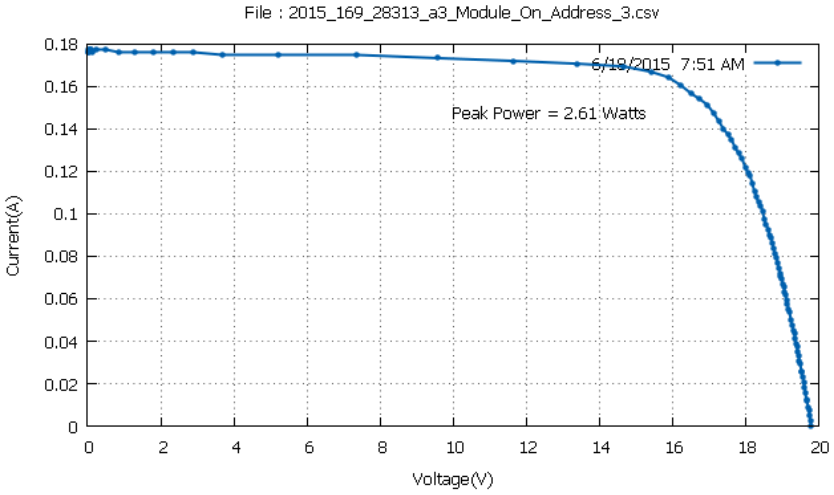
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3905144\ x\ 0.13741812}{273.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}6\ \%$$



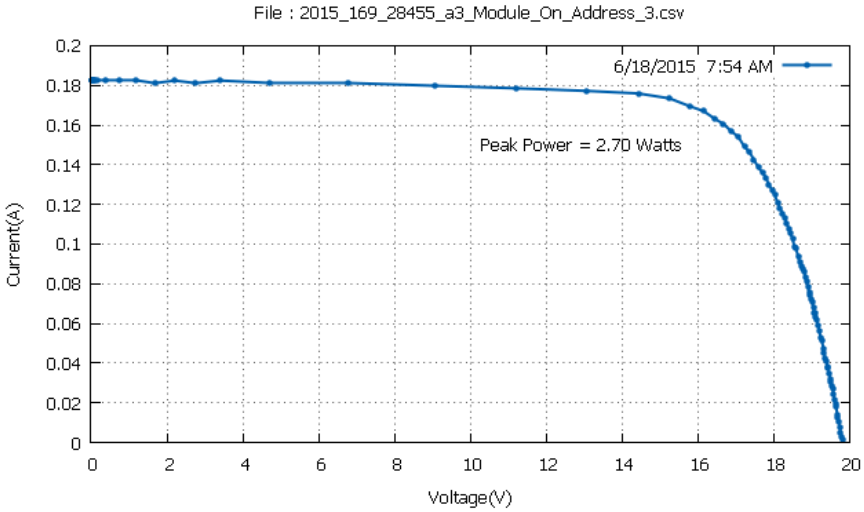
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.156682342}{293.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7720041\ x\ 0.163103744}{298\ x\ 0{,}0709} \text{ x } 100 = 12{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8879747\ x\ 0.16438803}{301.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.15084\ x\ 0.166956589}{310.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}24\ \%$$

Module 5

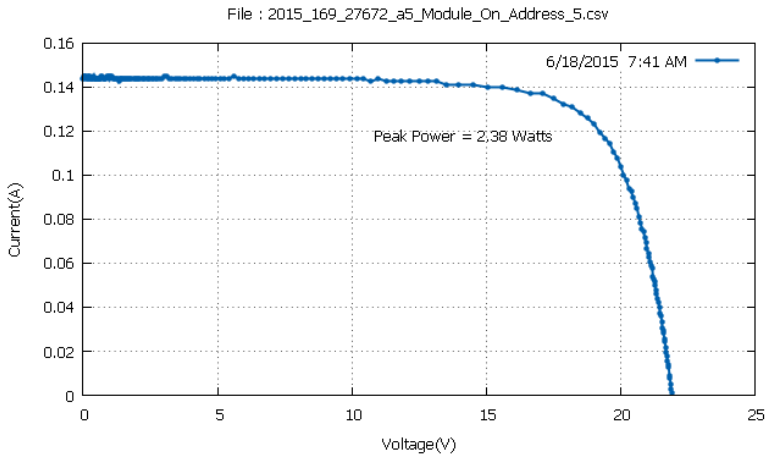
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

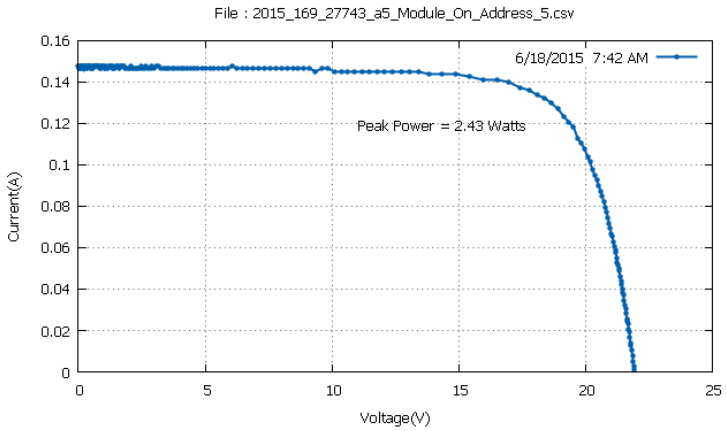
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:41	31,3	11,57
7:42	31,5	11,74
7:44	31,8	11,92
7:45	32	12,01
7:50	33,1	12,2
7:51	33,1	12,26

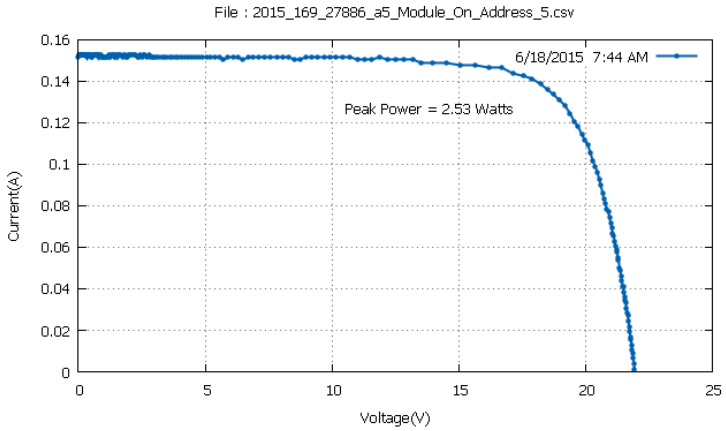
Mean Temperature: 32,13 ºC



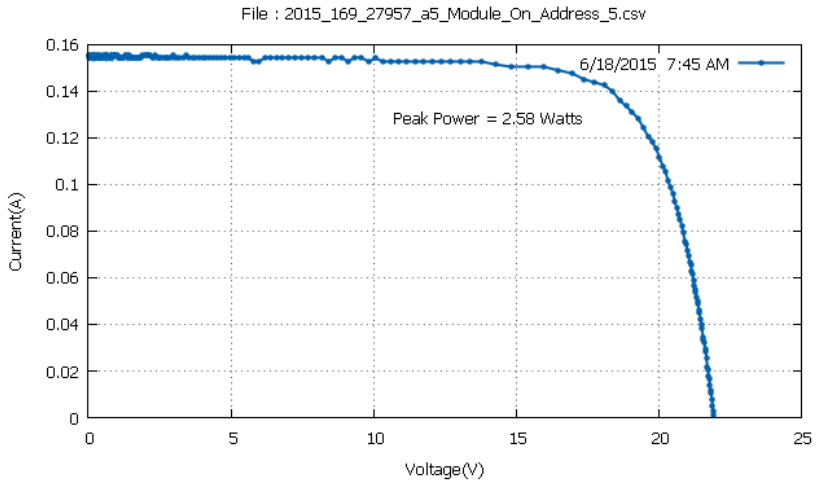
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1919231\ x\ 0.130996719}{272\ x\ 0{,}0756} \text{ x } 100 = 11{,}57\ \%$$



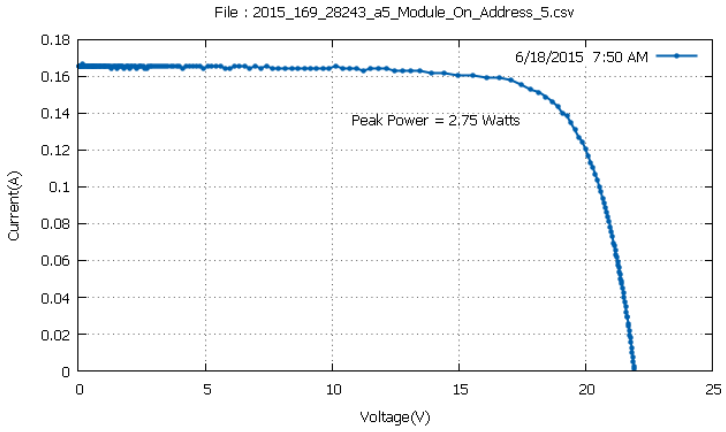
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.39294\ x\ 0.13228099}{273.7\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}74\ \%$$



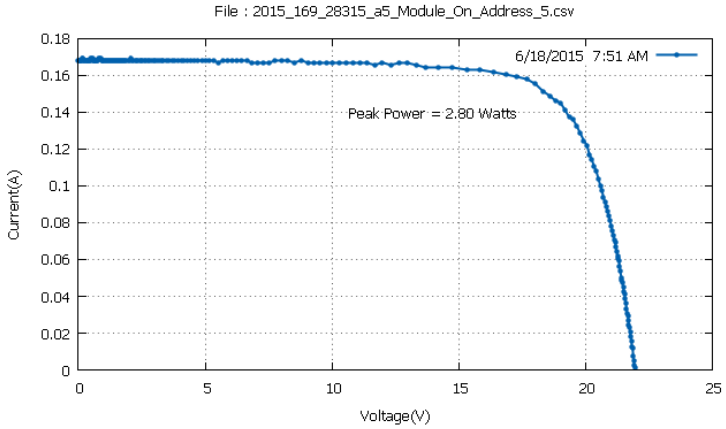
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.141270965}{280.6\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0914154\ x\ 0.142555252}{284\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.151545212}{298\ x\ 0{,}0756}\ \text{x } 100 = 12{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0218334\ x\ 0.155398056}{302.1\ x\ 0{,}0756}\ \text{x } 100 = 12{,}26\ \%$$

Module 4

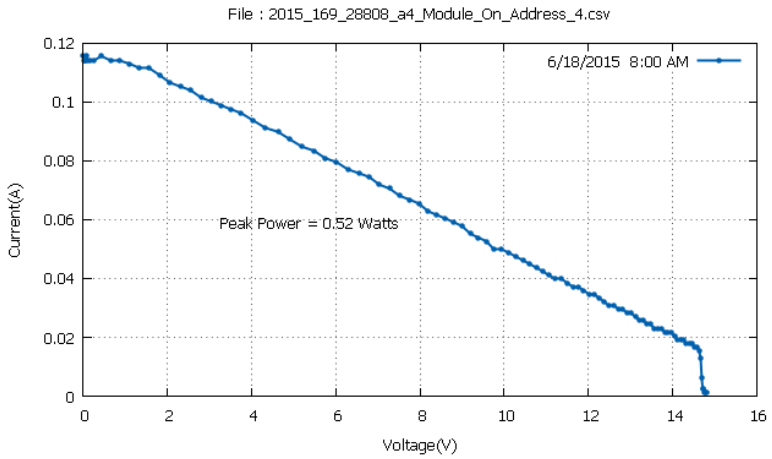
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

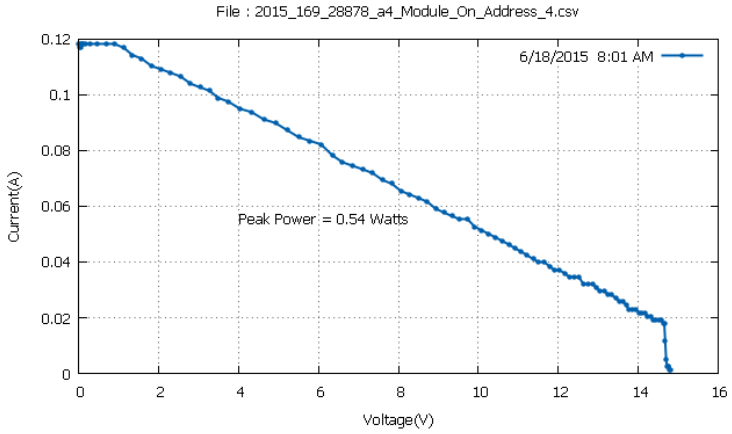
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:00	33,7	2,34
8:01	33,7	2,42
8:02	33,8	2,43
8:05	34	2,37
8:06	34,2	2,35
8:07	34,1	2,34

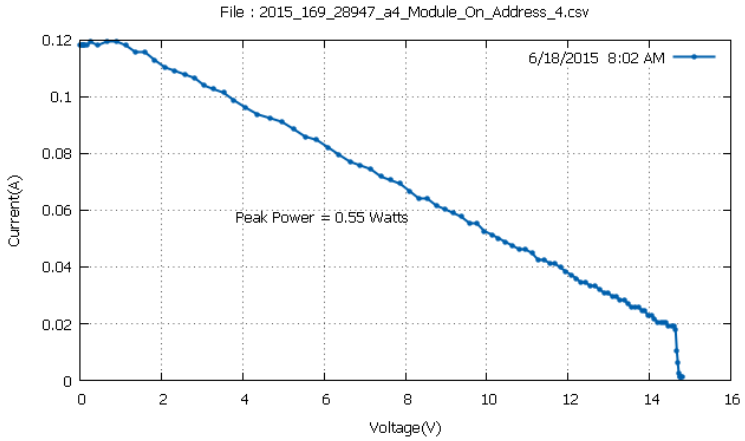
Mean Temperature: 33,91 ºC



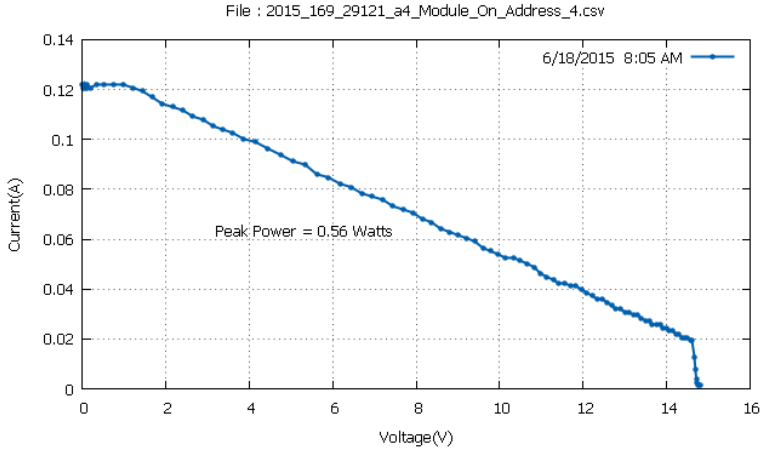
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.117943\ x\ 0.06421407}{330.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$



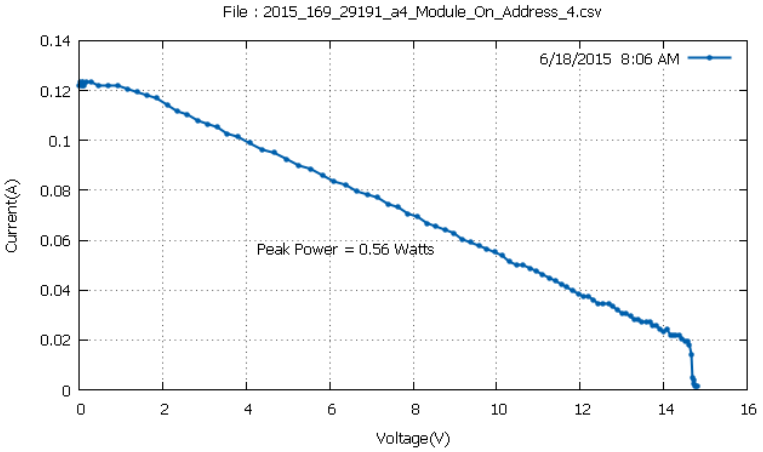
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.16941\ x\ 0.05907695}{332.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}42\ \%$$



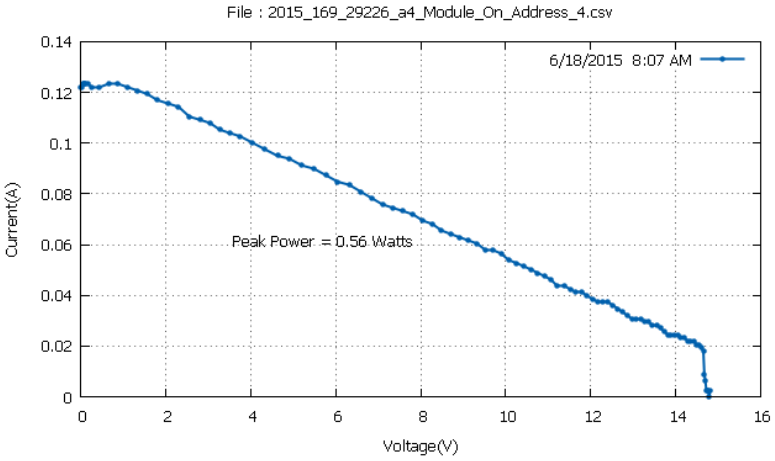
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.891081\ x\ 0.06164551}{337.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.77511\ x\ 0.06421407}{351.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.968394\ x\ 0.0629297942}{354.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.272571\ x\ 0.06806692}{356.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$

Module 8

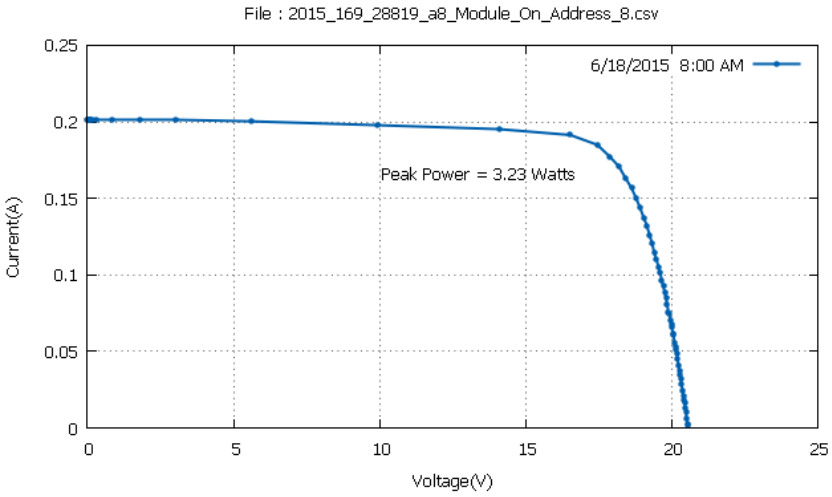
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

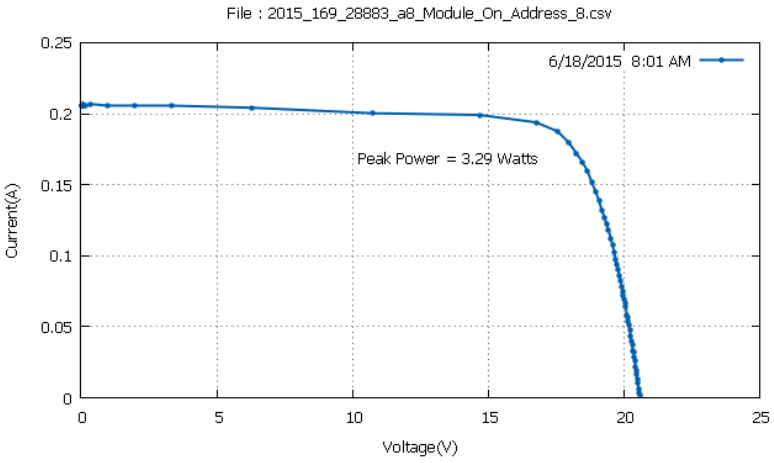
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:00	32,2	12,75
8:01	32	12,82
8:04	32,1	12,88
8:05	32,2	12,84
8:06	32,4	12,78
8:08	32,4	12,96

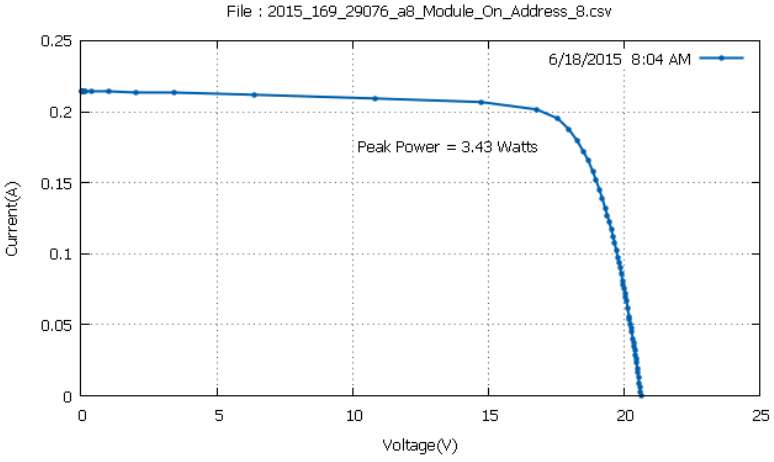
Mean Temperature: 32,21 ºC



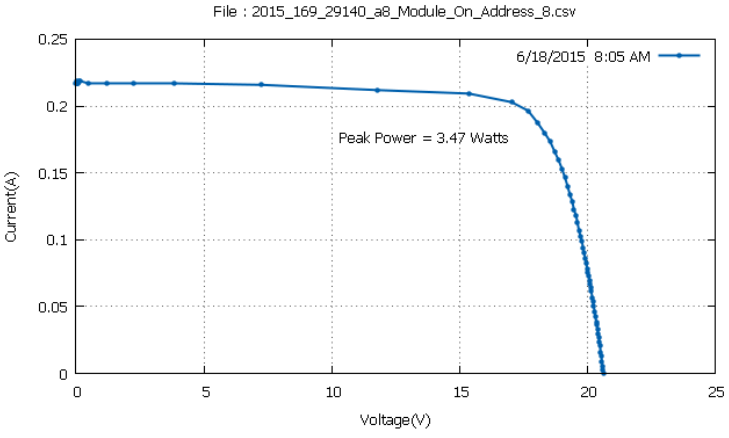
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4574432\ x\ 0.184936538}{329.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}75\ \%$$



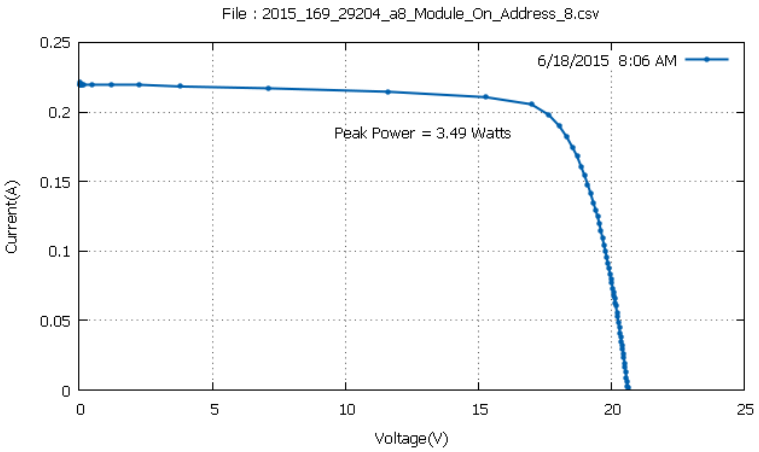
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.557951\ x\ 0.1875051}{334\ x\ 0{,}0768} \text{ x } 100 = 12{,}82\ \%$$



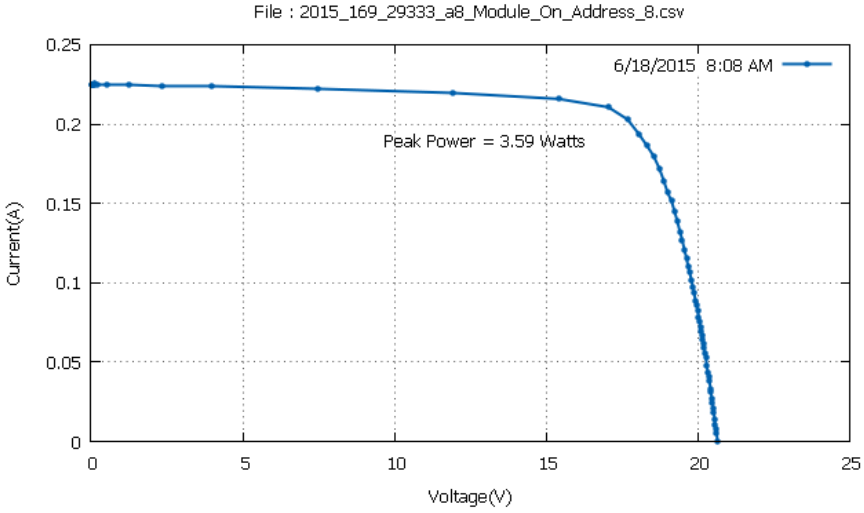
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5656834\ x\ 0.195210785}{346.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.681654\ x\ 0.19649507}{351.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0012913\ x\ 0.205485046}{355.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.210622162}{360.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}96\ \%$$

Module 3

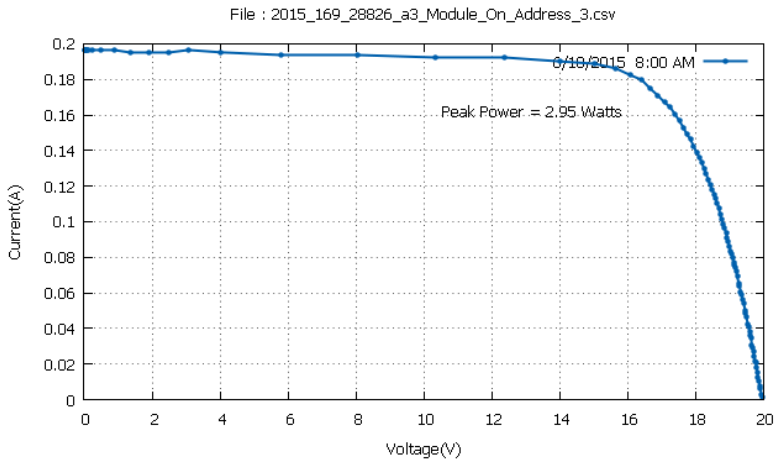
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

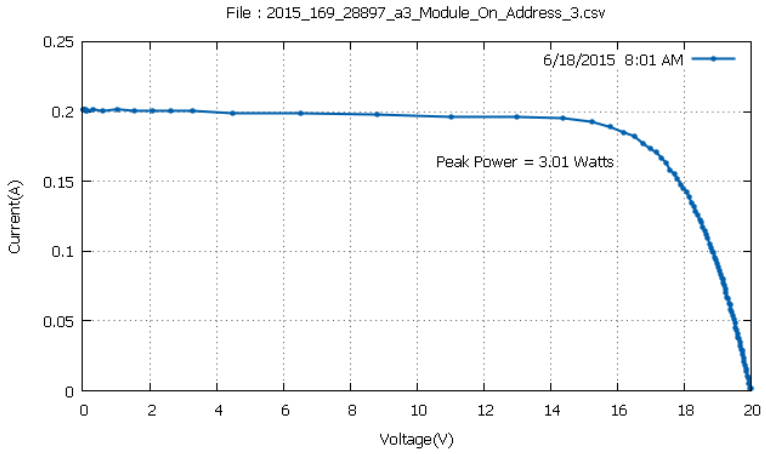
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:00	33,6	12,6
8:01	33,4	12,65
8:02	33,3	12,74
8:05	33,5	12,7
8:06	33,6	12,71
8:07	33,6	12,8

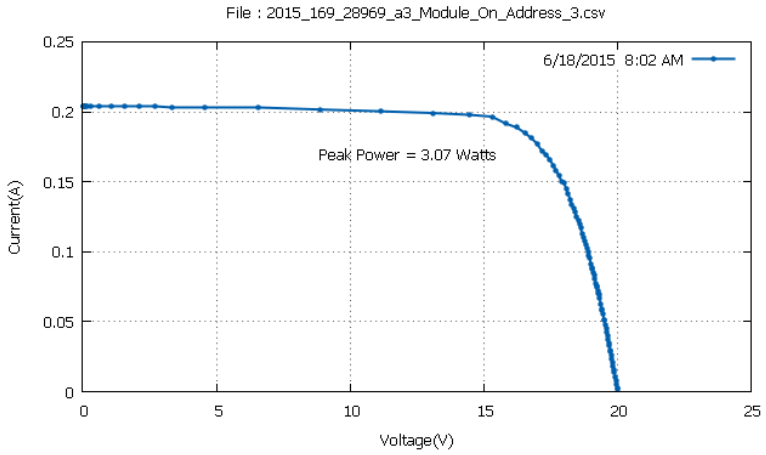
Mean Temperature: 33,5 ºC



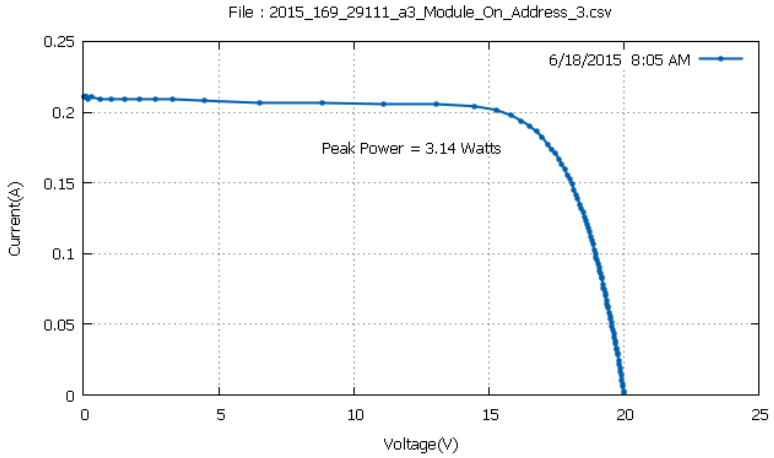
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4059772\ x\ 0.179799408}{330.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}6\ \%$$



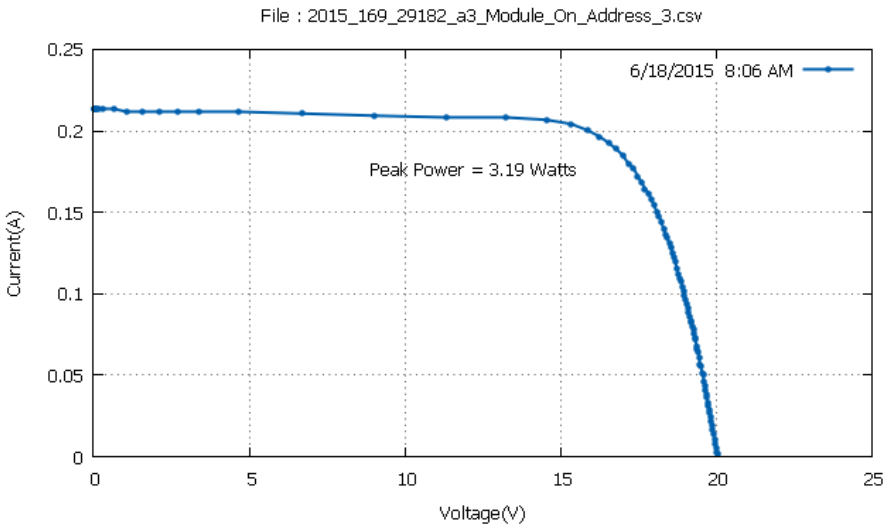
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987526\ x\ 0.182367966}{335.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}65\ \%$$



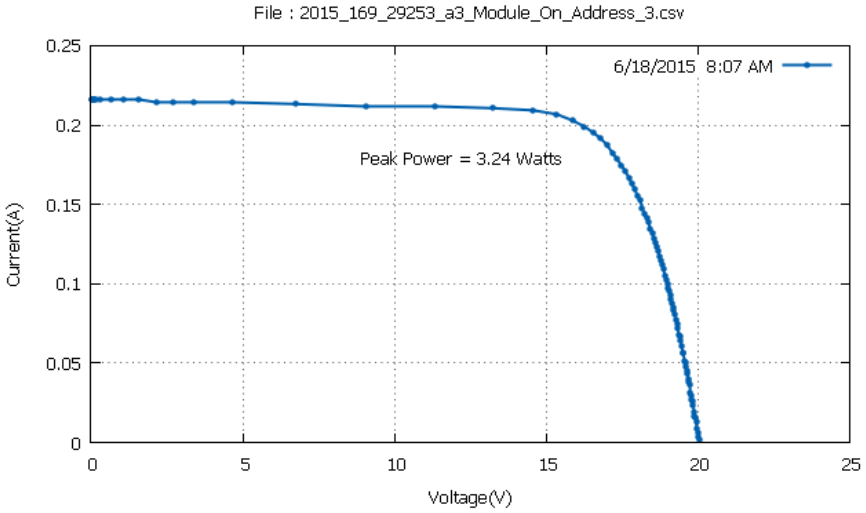
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2358856\ x\ 0.188789383}{339.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2126923\ x\ 0.193926}{348.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.196495071}{353.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.199063629}{357.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}8\ \%$$

Module 5

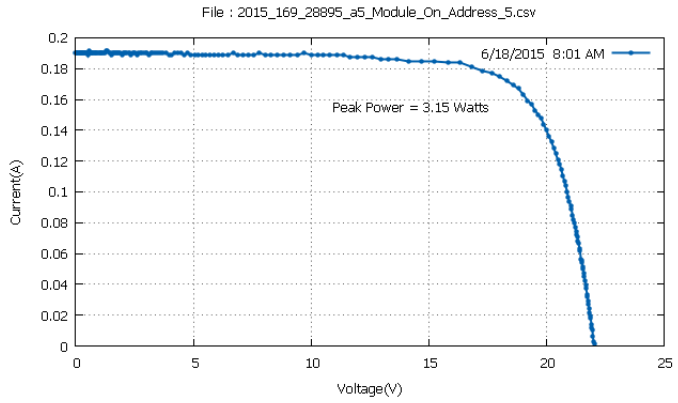
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

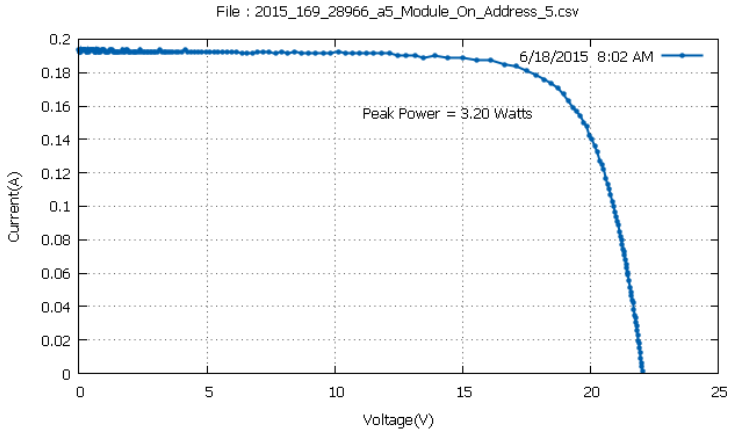
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
8:01	33,9	12,43
8:02	33,9	12,45
8:05	34,2	12,54
8:06	34,4	12,51
8:07	34,5	12,54
8:09	34,8	12,64

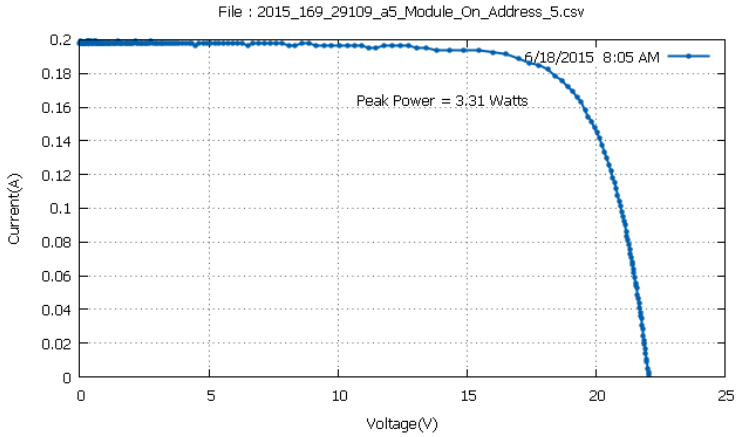
Mean Temperature: 34,28 ºC



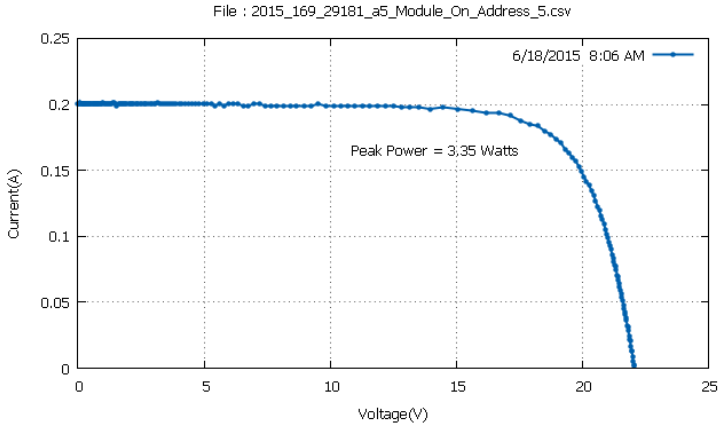
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3156261\ x\ 0.172093719}{335.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}43\ \%$$



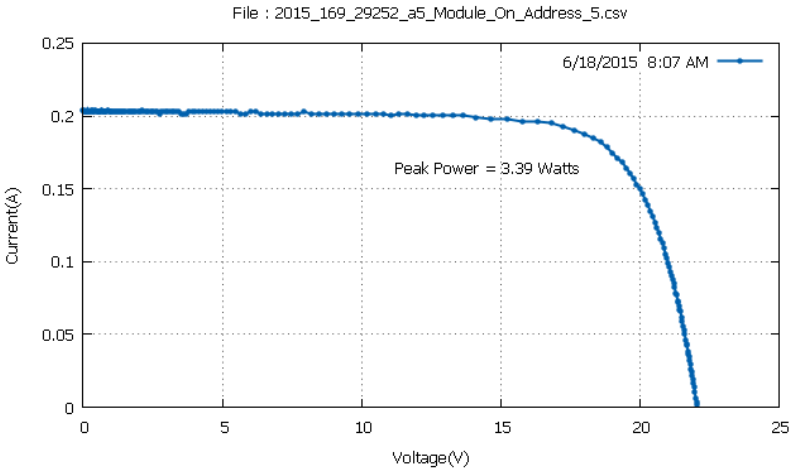
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4779854\ x\ 0.173378}{339.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}45\ \%$$



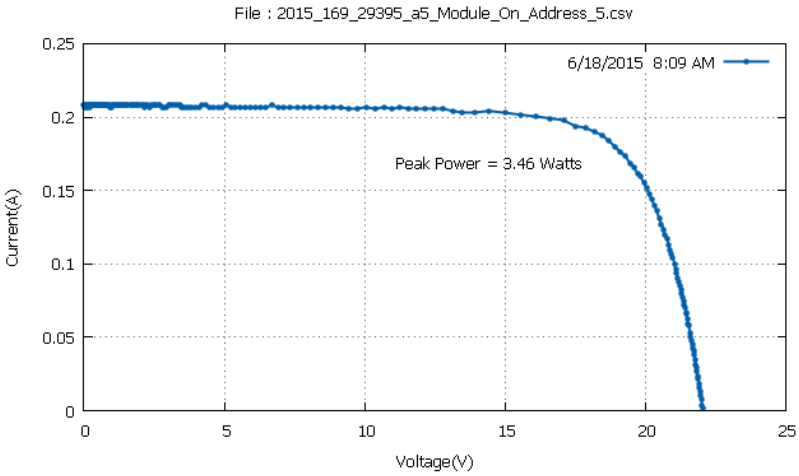
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1300735\ x\ 0.182367966}{349.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2305813\ x\ 0.183652252}{354.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5784931\ x\ 0.182367966}{357.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4625225\ x\ 0.1875051}{362.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}64\ \%$$

Module 4

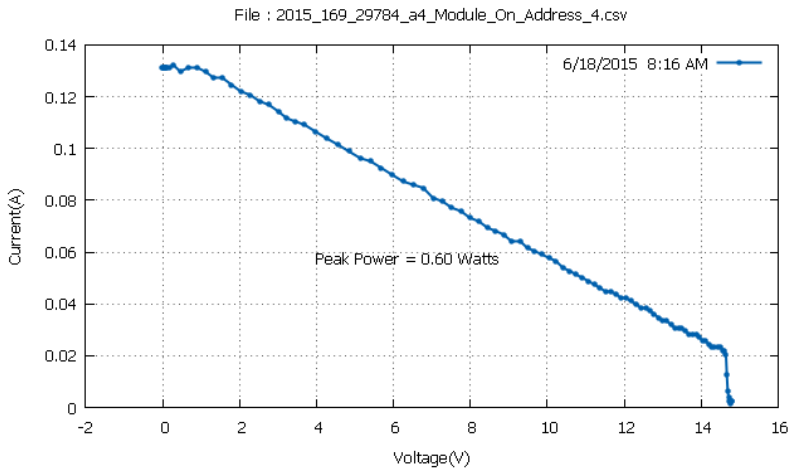
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

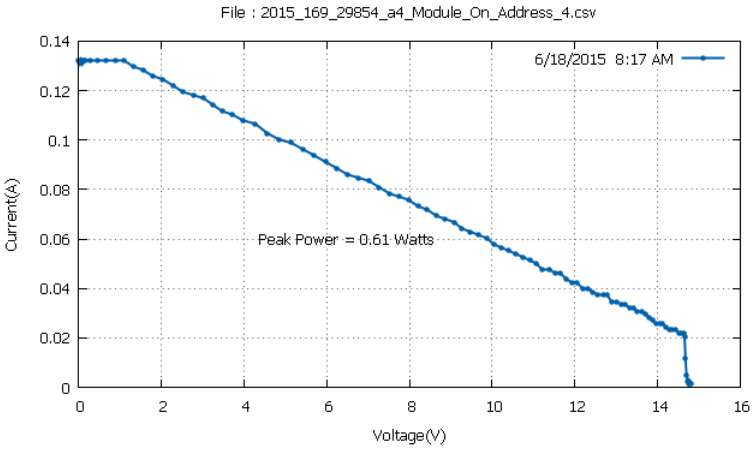
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:16	35,1	2,34
8:17	35	2,36
8:18	35	2,34
8:20	35,6	2,33
8:23	36	2,31
8:25	35,9	2,05

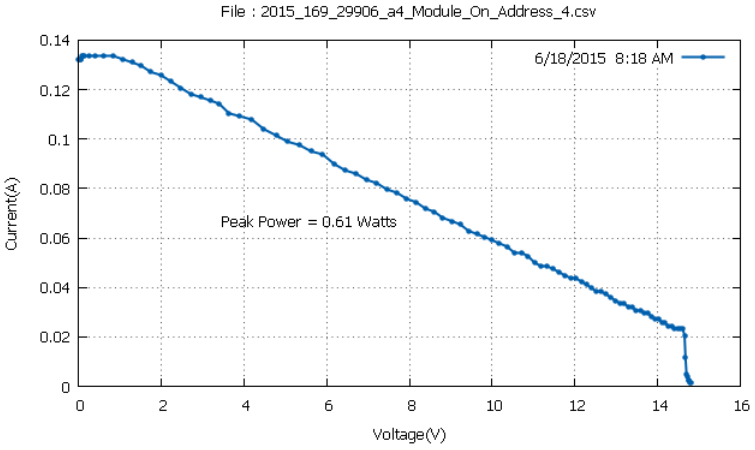
Mean Temperature: 35,43 ºC



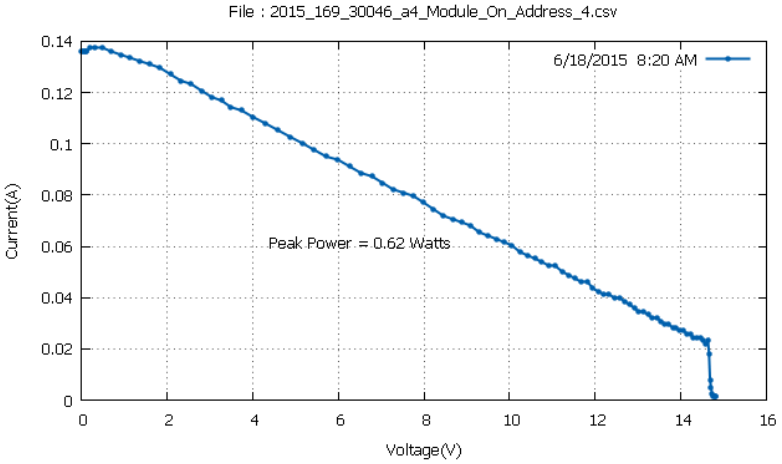
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.26991749\ x\ 0.06421407}{381.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$



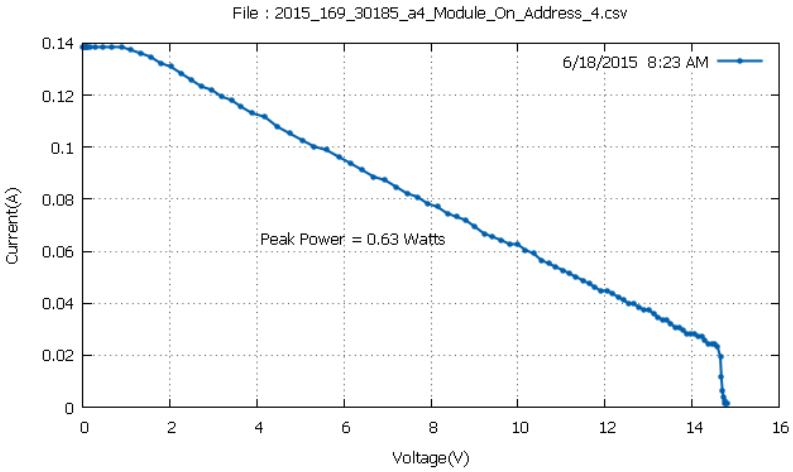
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.49678\ x\ 0.07191976}{384.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}36\ \%$$



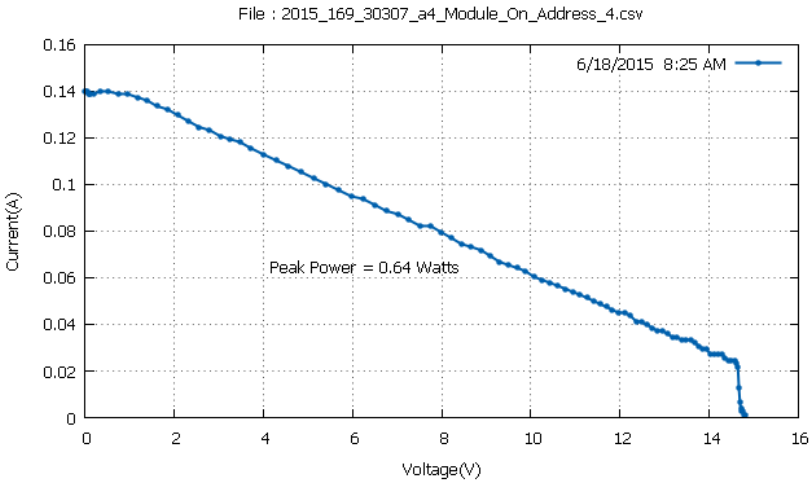
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.195257\ x\ 0.07448833}{388.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.470934\ x\ 0.06549836}{395.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}33\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.213190734}{405.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.875618\ x\ 0.07191976}{412.7\ x\ 0{,}0756} \text{ x } 100 = 2{,}05\ \%$$

Module 8

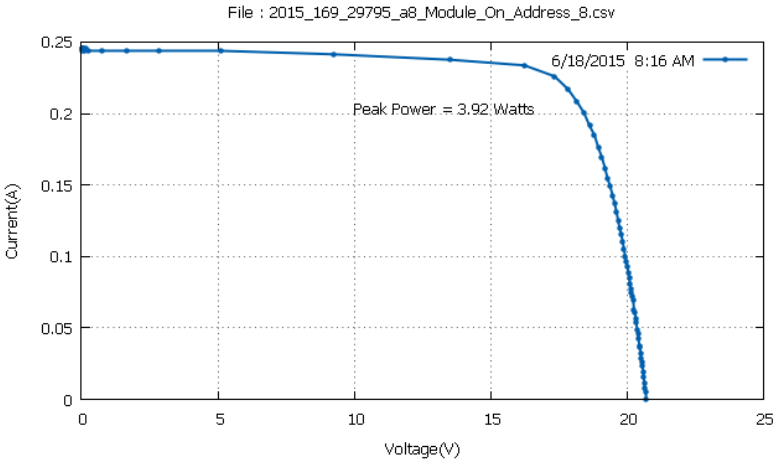
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

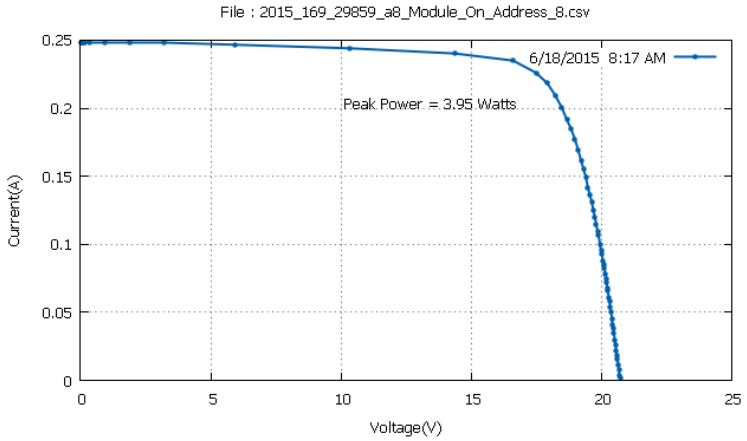
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:16	32,7	13,33
8:17	32,8	13,32
8:18	33	13,32
8:20	33	13,47
8:23	33,2	13,5
8:25	33,3	13,46

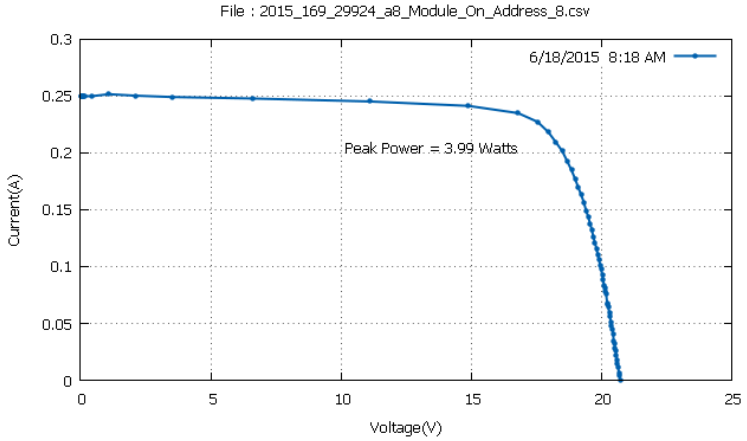
Mean Temperature: 33 ºC



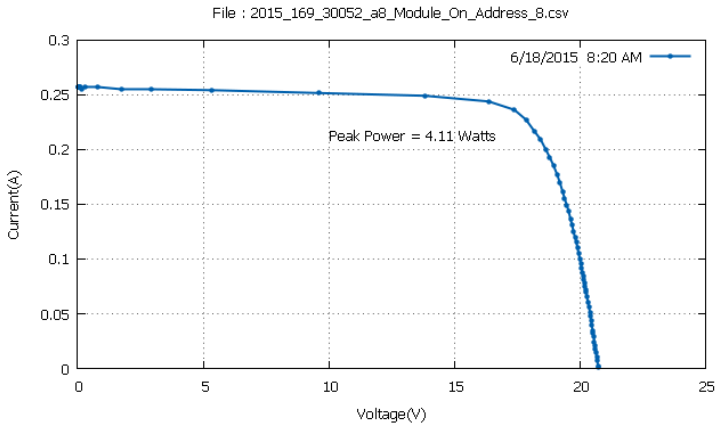
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3414726\ x\ 0.226033539}{382.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}33\ \%$$



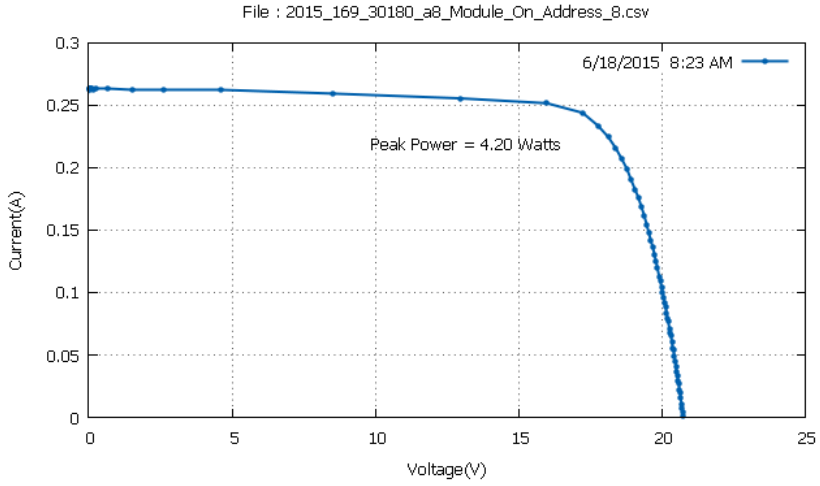
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.488369\ x\ 0.226033539}{386\ x\ 0{,}0768} \text{ x } 100 = 13{,}32\ \%$$



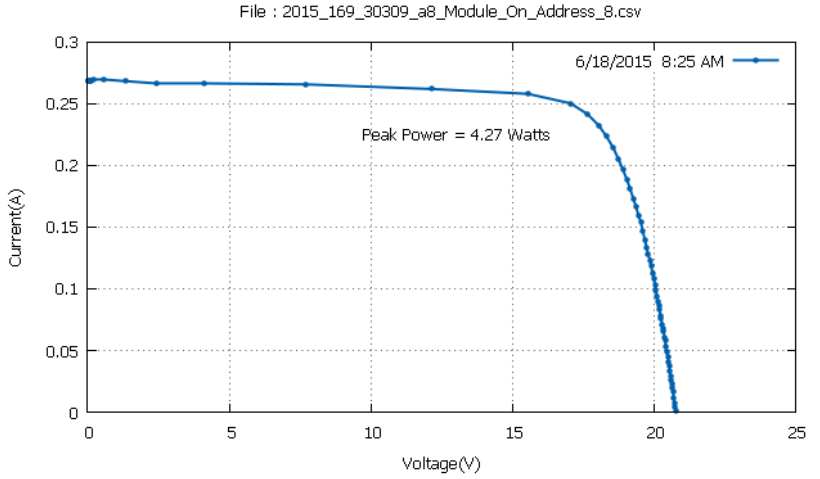
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.227317825}{389.8\ x\ 0{,}0768} \text{ x } 100 = 13{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3878613\ x\ 0.2363078}{397.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2332325\ x\ 0.244013488}{405.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0554123\ x\ 0.2504349}{413\ x\ 0{,}0768} \text{ x } 100 = 13{,}46\ \%$$

Module 3

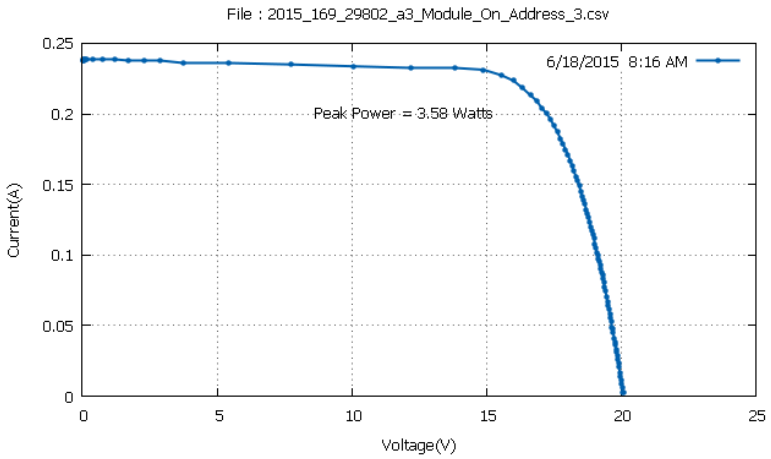
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

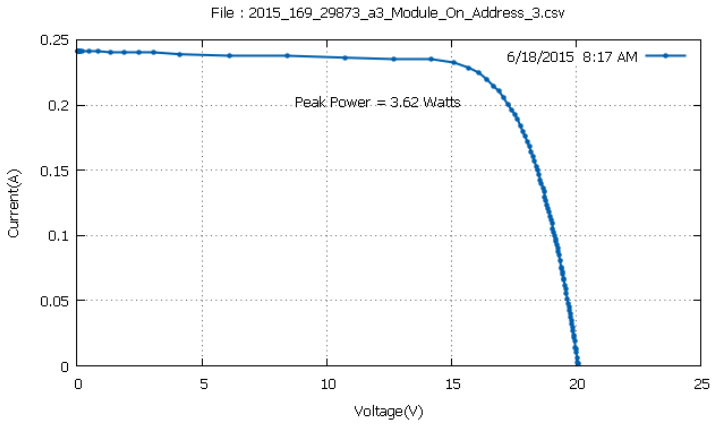
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:16	34,4	13,17
8:17	34,6	13,18
8:19	34,7	13,15
8:21	35,1	13,31
8:27	35,9	13,36
8:28	36,3	13,37

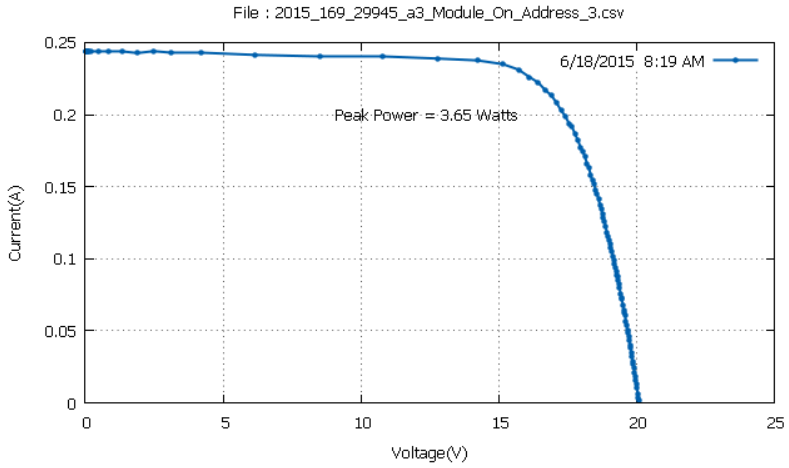
Mean Temperature: 35,16 ºC



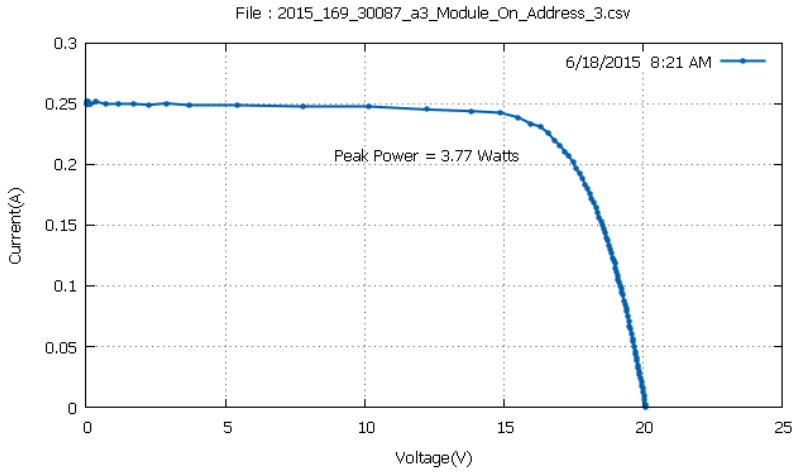
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0039444\ x\ 0.223464981}{383.2\ x\ 0{,}0709}$ x 100 = 13,17 %



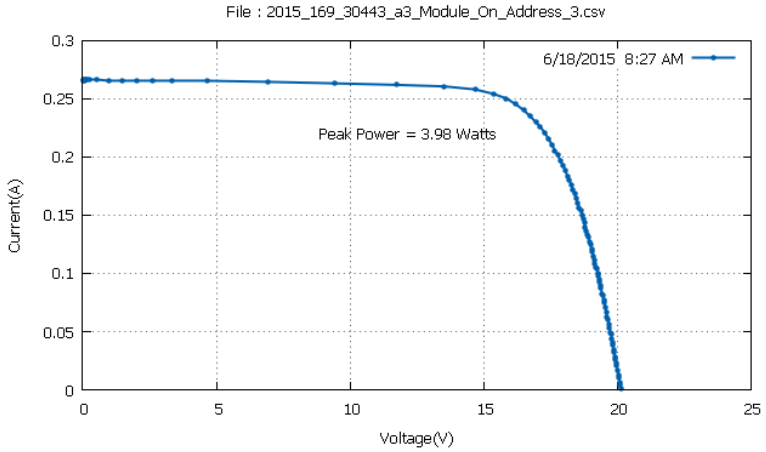
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1121845\ x\ 0.224749267}{387.2\ x\ 0{,}0709} \text{ x } 100 = 13{,}18\ \%$$



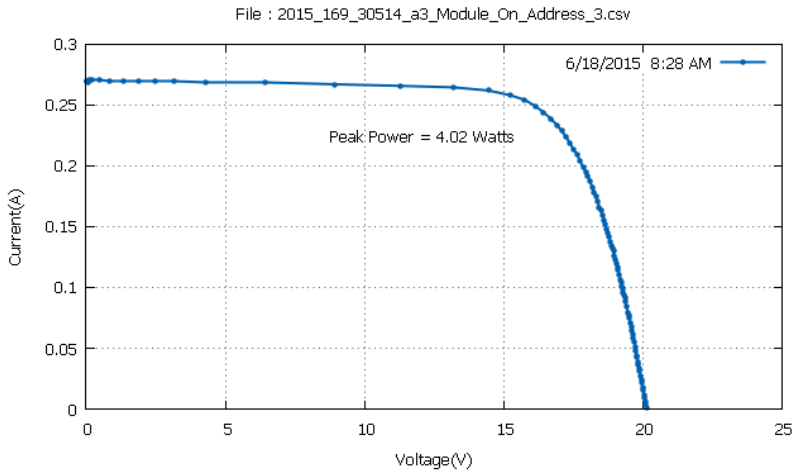
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4369011\ x\ 0.2221807}{391.3\ x\ 0{,}0709} \text{ x } 100 = 13{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3132\ x\ 0.231170669}{399.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.24529776}{419.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1353779\ x\ 0.2491506}{423.9\ x\ 0{,}0709} \text{ x } 100 = 13{,}37\ \%$$

Module 5

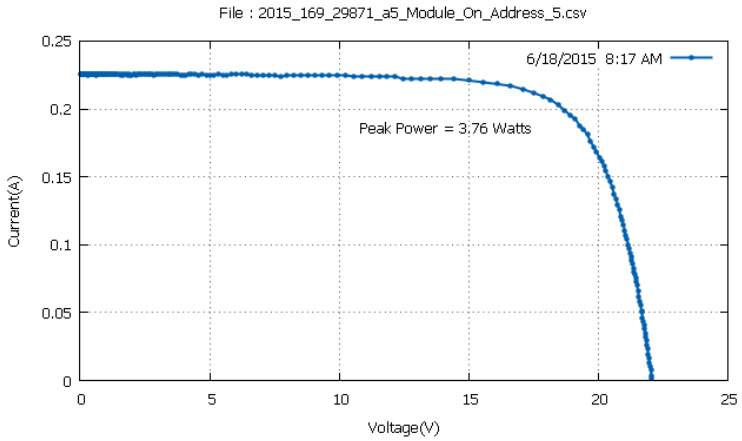
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

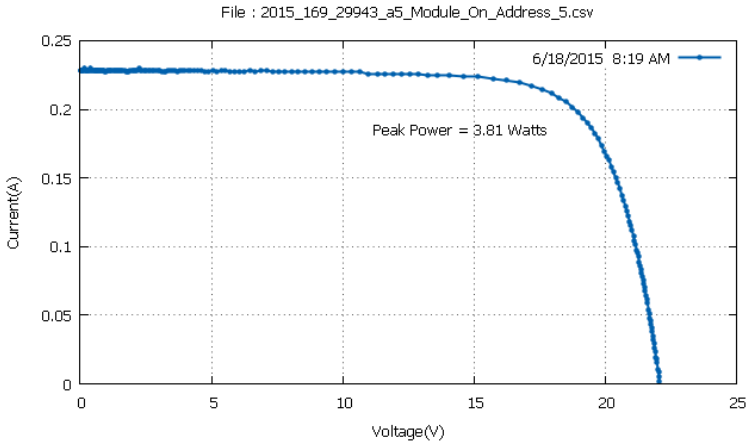
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:17	35,5	12,85
8:19	35,7	12,89
8:21	36,2	12,89
8:22	36,3	12,87
8:23	36,5	12,93
8:28	37,5	12,96

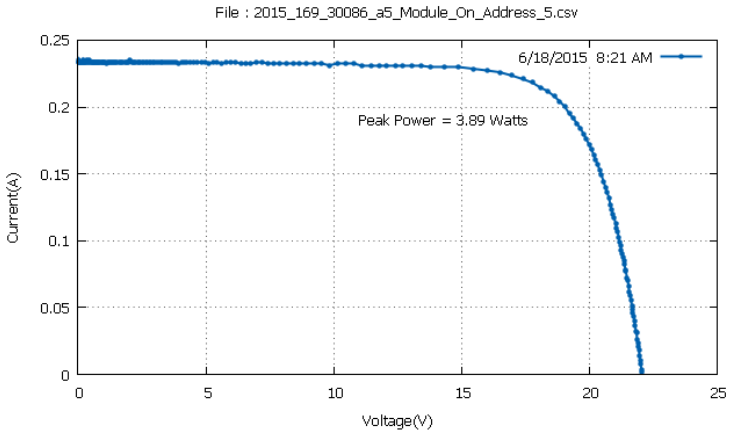
Mean Temperature: 36,28 ºC



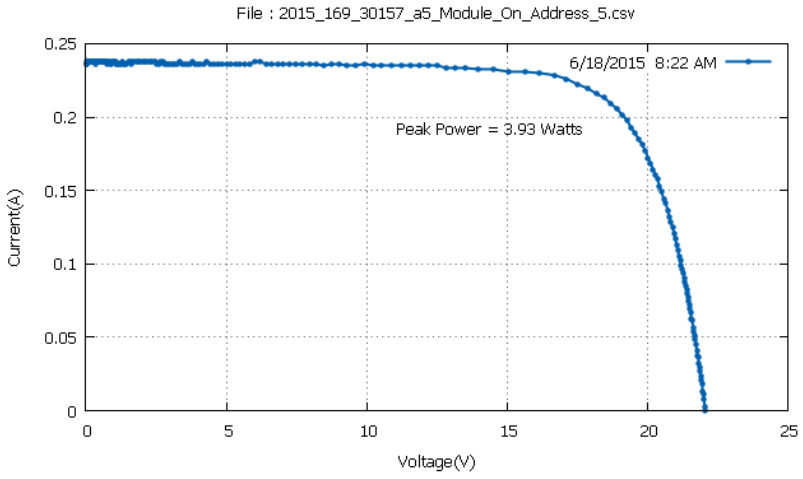
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.16873\ x\ 0.206769317}{387\ x\ 0{,}0756} \text{ x } 100 = 12{,}85\ \%$$



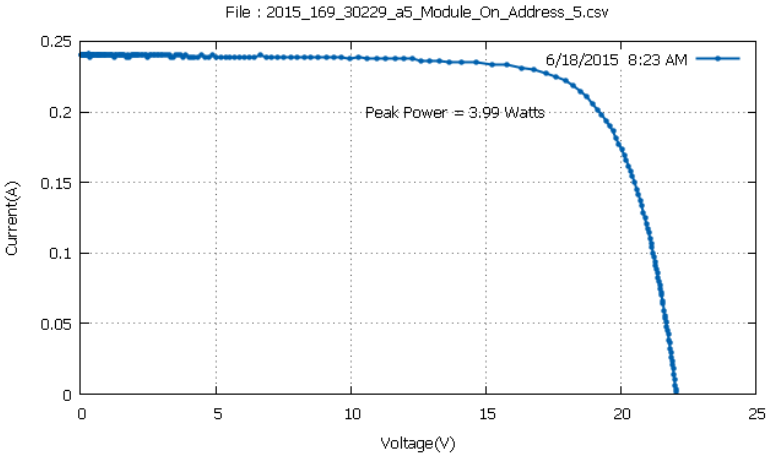
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5166416\ x\ 0.205485046}{390.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}89\ \%$$



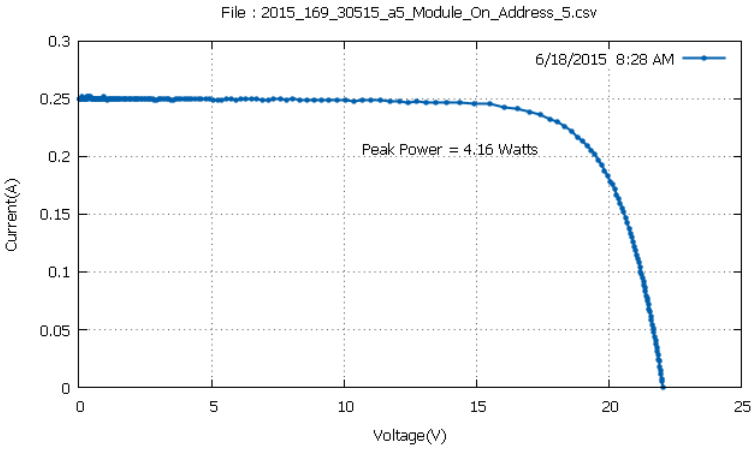
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3697453\ x\ 0.211906448}{399.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.213190734}{403.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}87\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.2221807}{408\ x\ 0{,}0756} \text{ x } 100 = 12{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0759525\ x\ 0.229886383}{424.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}96\ \%$$

Module 4

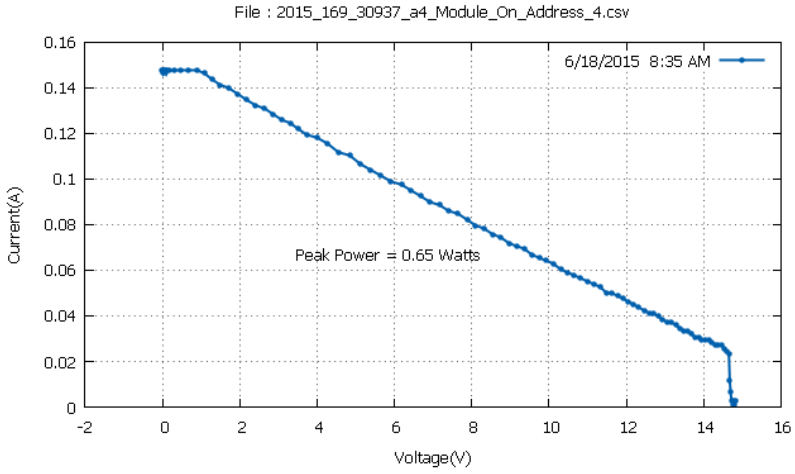
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

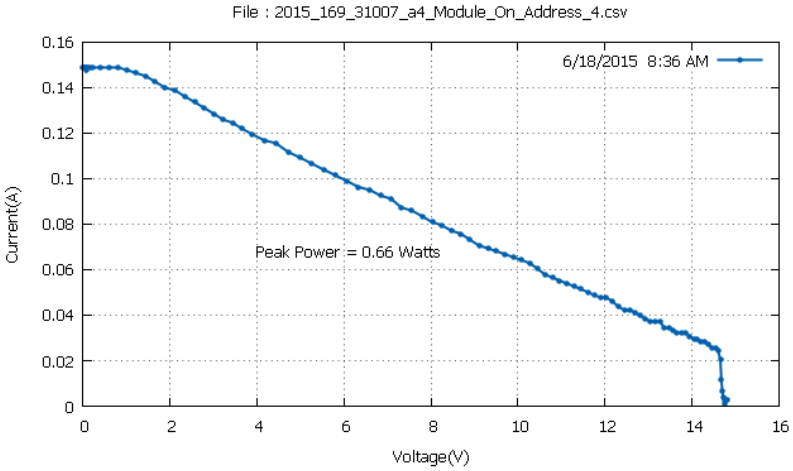
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:35	37	2,17
8:36	37	2,18
8:37	37,5	2,2
8:39	37,4	2,2
8:42	38,7	2,12
8:45	38,6	2,16

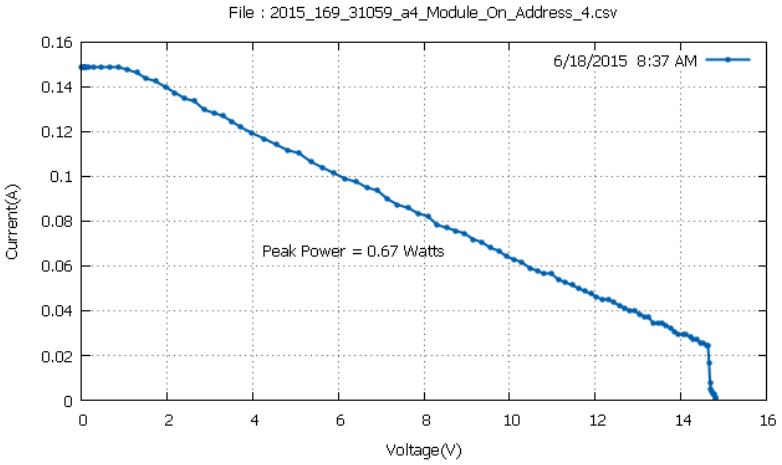
Mean Temperature: 37,7 ºC



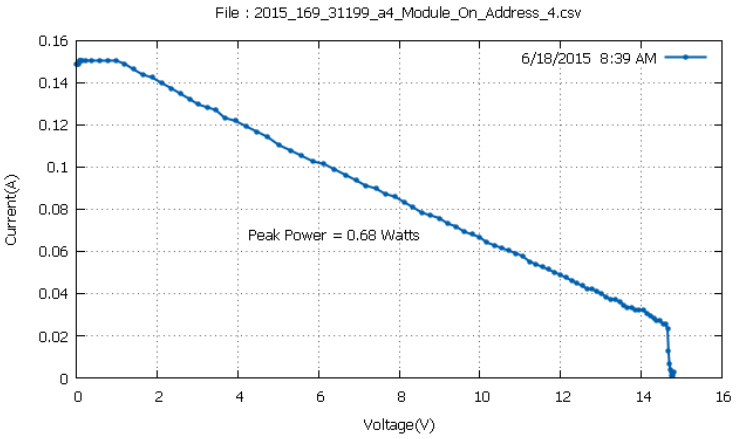
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.535438\ x\ 0.07705689}{446.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



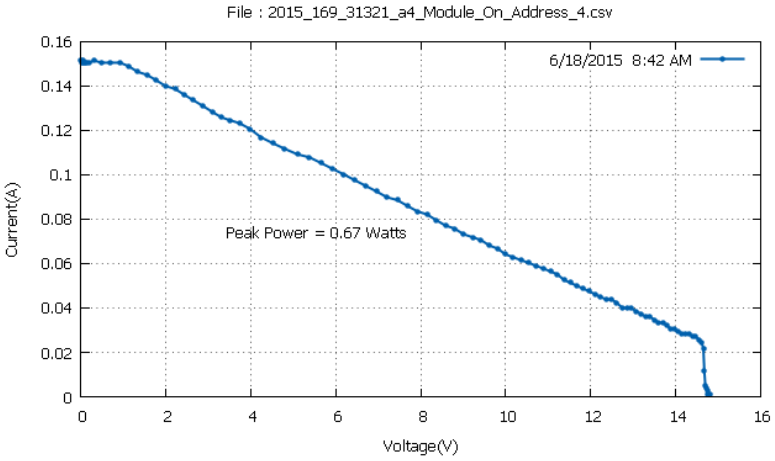
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.50959\ x\ 0.0693512037}{450.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}18\ \%$$



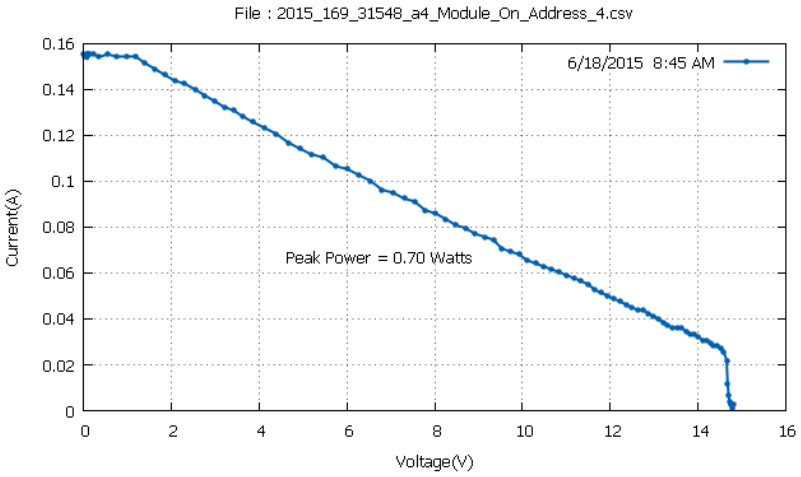
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.9452\ x\ 0.07448833}{455.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.867887\ x\ 0.0757726058}{461.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.141137\ x\ 0.0821940154}{470.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.929737\ x\ 0.07834117}{482.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$

Module 8

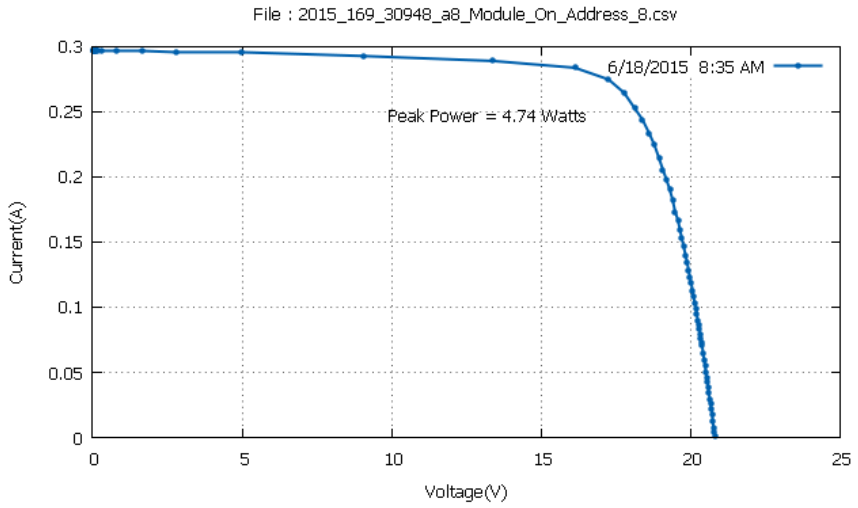
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

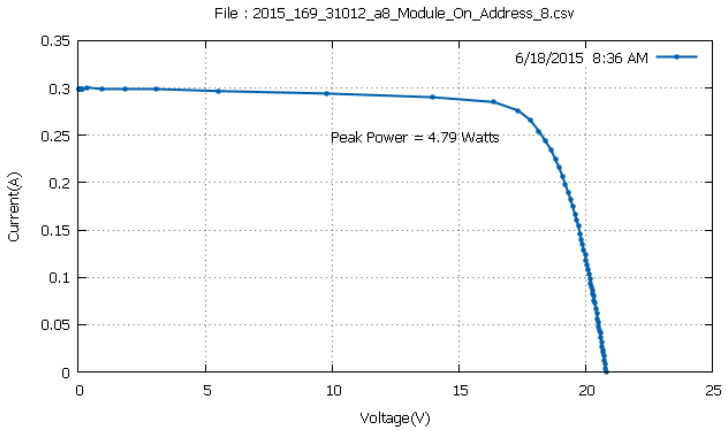
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:35	34,1	13,72
8:36	34,2	13,76
8:37	34,3	13,71
8:40	34,6	13,72
8:42	34,7	13,8
8:46	35,1	13,8

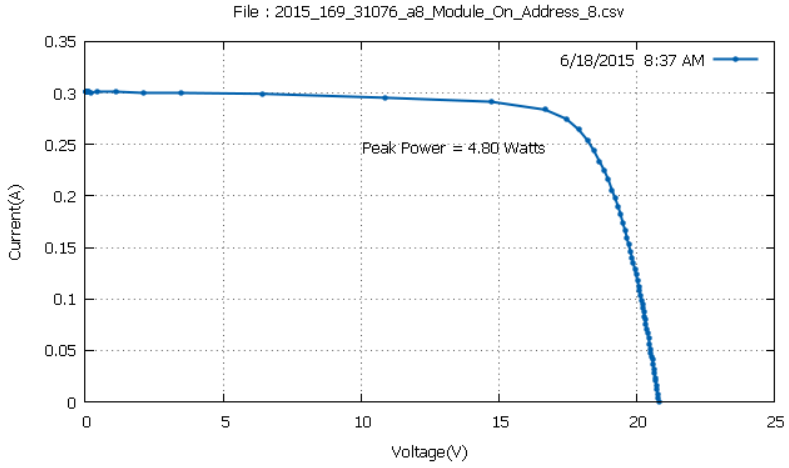
Mean Temperature: 34,5 ºC



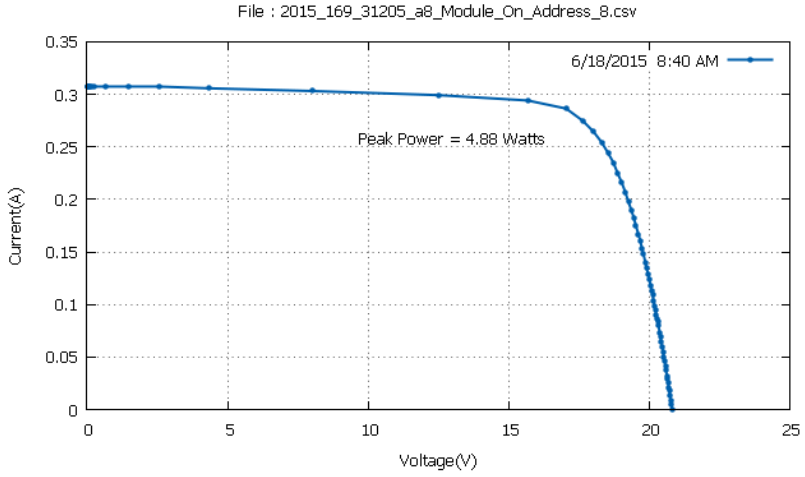
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2564278\ x\ 0.27483624}{449.7\ x\ 0{,}0768}$ x 100 = 13,72 %



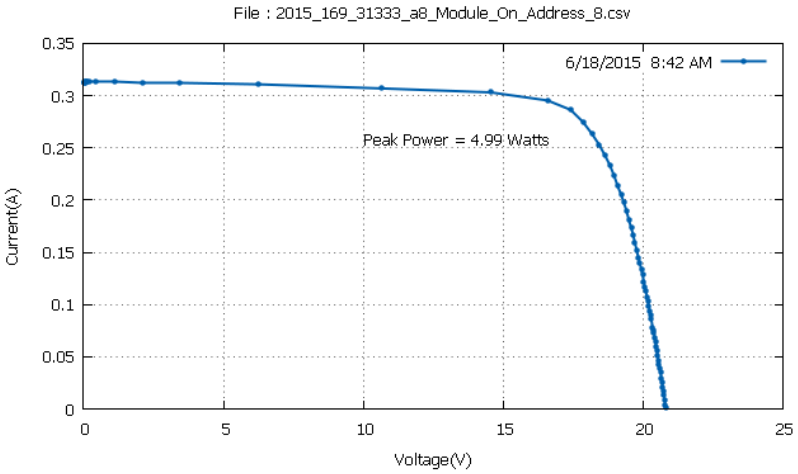
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3492031\ x\ 0.2761205}{453\ x\ 0{,}0768} \text{ x } 100 = 13{,}76\ \%$$



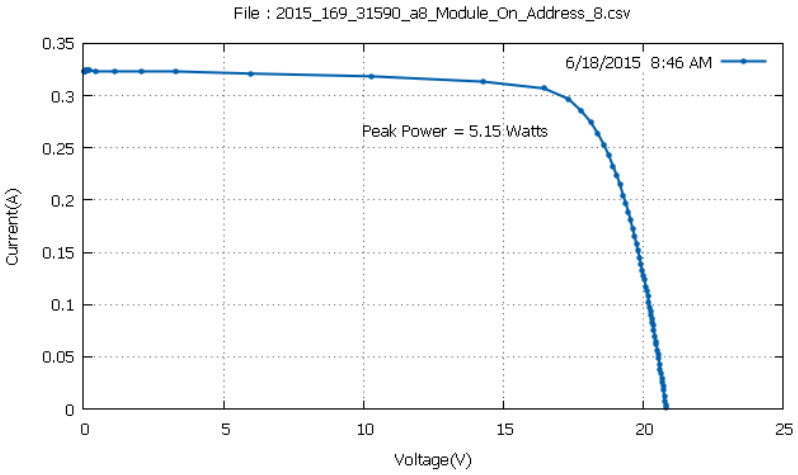
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4574432\ x\ 0.27483624}{455.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.286394775}{463\ x\ 0{,}0768} \text{ x } 100 = 13{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4110546\ x\ 0.286394775}{470.7\ x\ 0{,}0768}\ \text{x } 100 = 13{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3414726\ x\ 0.296669036}{485.9\ x\ 0{,}0768}\ \text{x } 100 = 13{,}8\ \%$$

Module 3

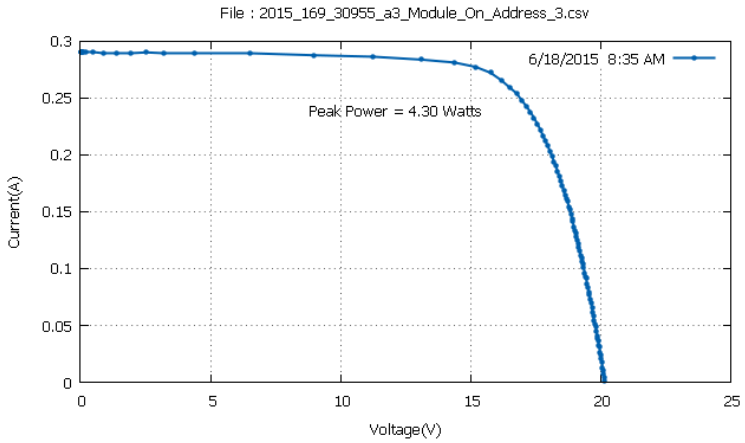
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

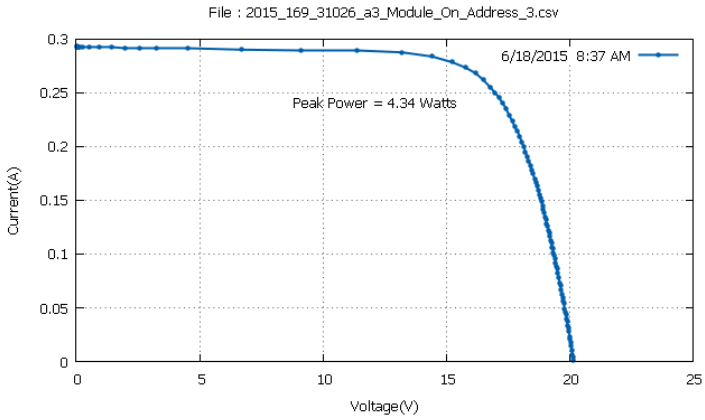
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:35	36,6	13,48
8:37	36,7	13,5
8:38	36,8	13,47
8:40	36,9	13,51
8:41	37,1	13,51
8:46	38	13,55

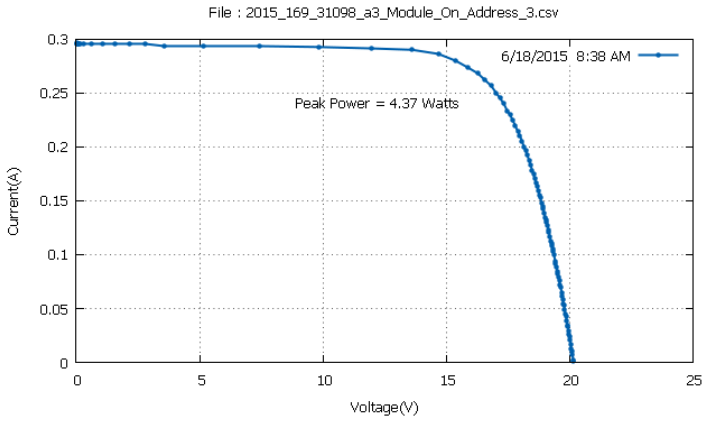
Mean Temperature: 37,01 ºC



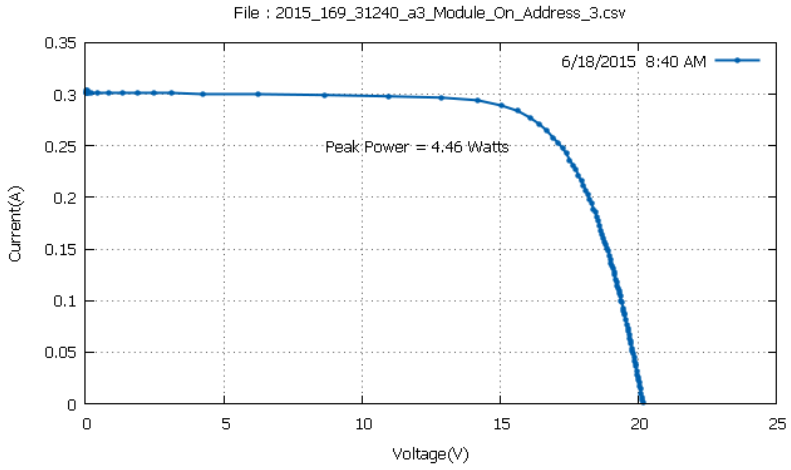
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.174036\ x\ 0.265846282}{449.7\ x\ 0{,}0709} \text{ x } 100 = 13{,}48\ \%$$



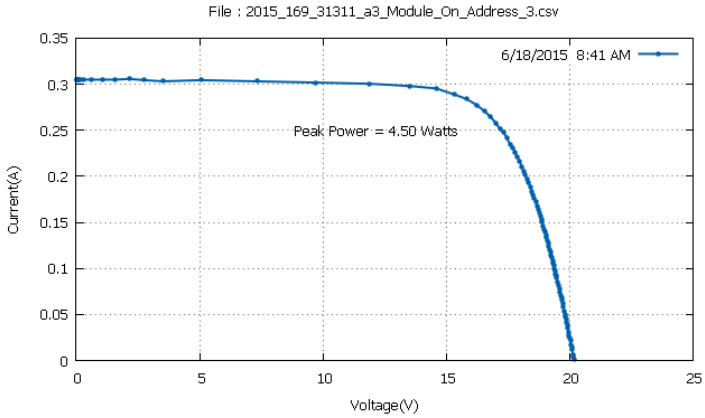
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1817665\ x\ 0.268414825}{453.5\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}5\ \%$$



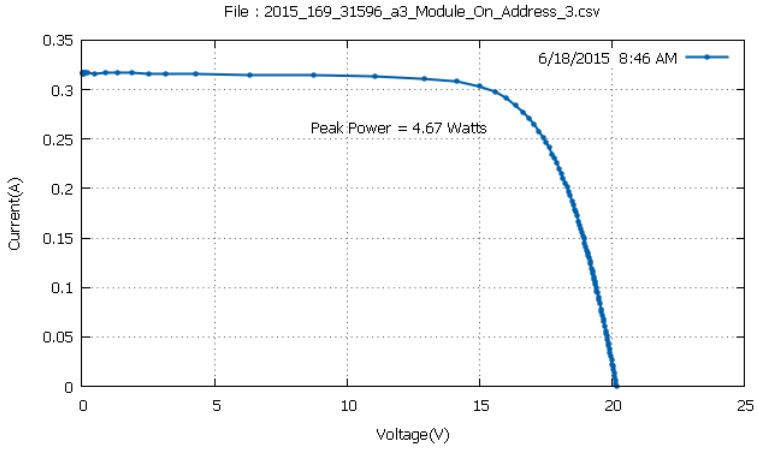
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2745438\ x\ 0.268414825}{457.3\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.277404815}{465.4\ x\ 0{,}0709}\ \text{x}\ 100 = 13{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2281551\ x\ 0.277404815}{469.5\ x\ 0{,}0709}\ \text{x } 100 = 13{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194073\ x\ 0.2915319}{485.9\ x\ 0{,}0709}\ \text{x } 100 = 13{,}55\ \%$$

Module 5

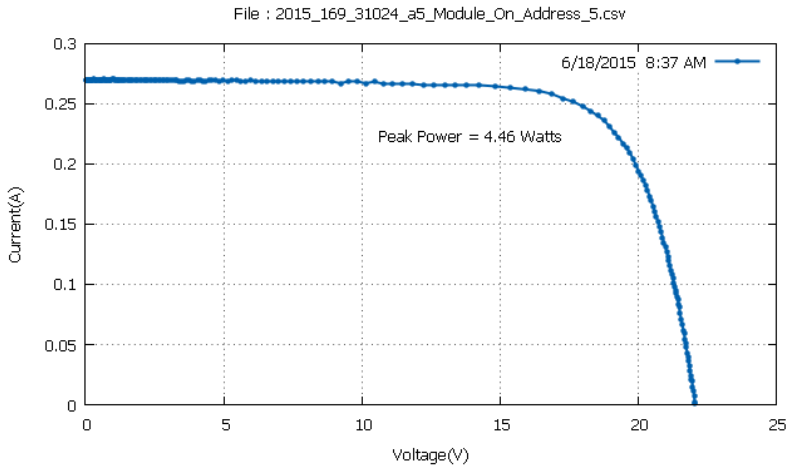
Date: 18/6/2015 – Morning Measurement

Temperature Ambient: 31 ºC

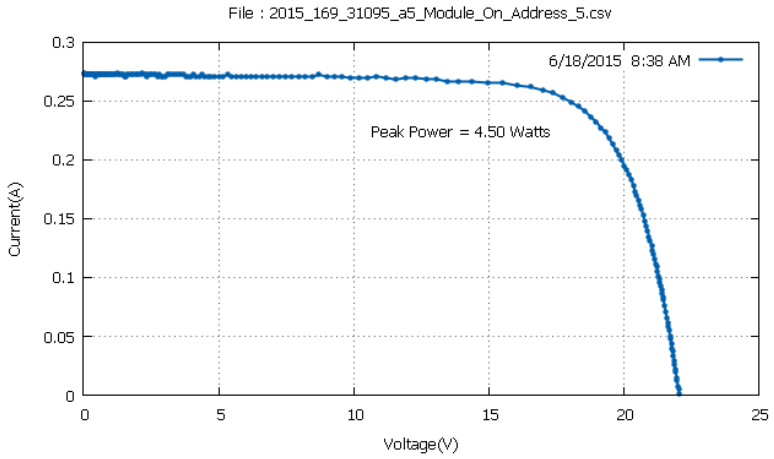
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:37	38,5	13
8:38	38,6	13,03
8:40	38,8	13,04
8:41	39	13,04
8:43	39,6	13,06
8:50	39,9	13,03

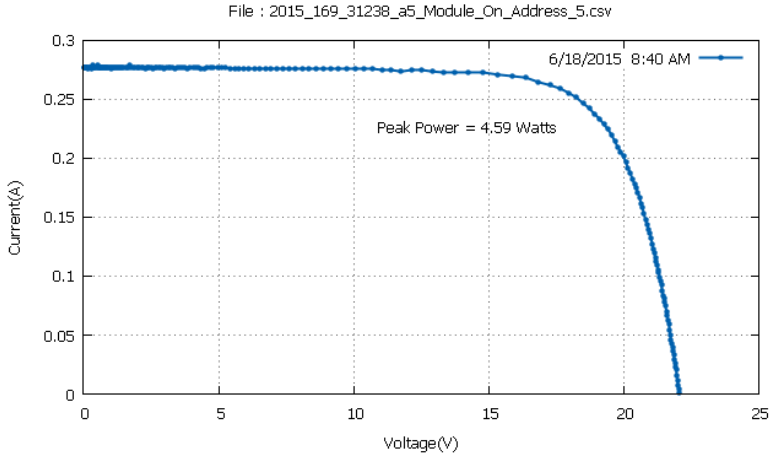
Mean Temperature: 39,06 ºC



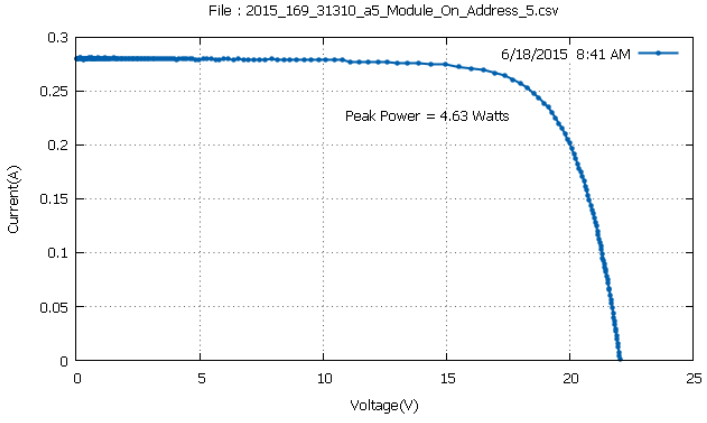
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2847\ x\ 0.244013488}{453.5\ x\ 0{,}0756} \text{ x } 100 = 13\ \%$$



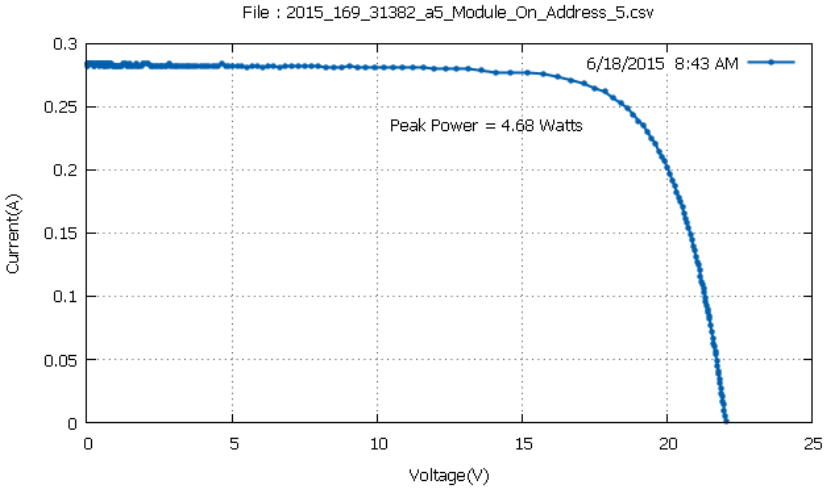
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0450287\ x\ 0.2491506}{456.8\ x\ 0{,}0756} \text{ x } 100 = 13{,}03\ \%$$



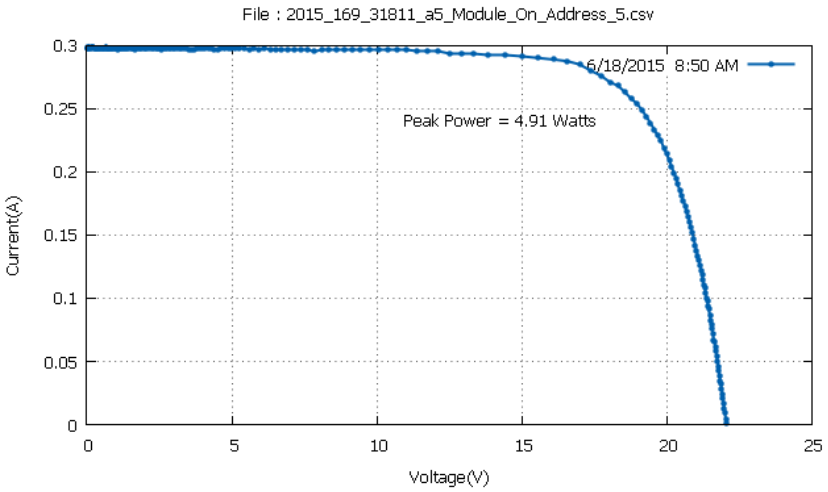
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2383118\ x\ 0.251719177}{465.4\ x\ 0{,}0756} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3001633\ x\ 0.253003448}{469.5\ x\ 0{,}0756} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.261993438}{474\ x\ 0{,}0756}\ \text{x } 100 = 13{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3078938\ x\ 0.268414825}{498.1\ x\ 0{,}0756}\ \text{x } 100 = 13{,}03\ \%$$

Module 4

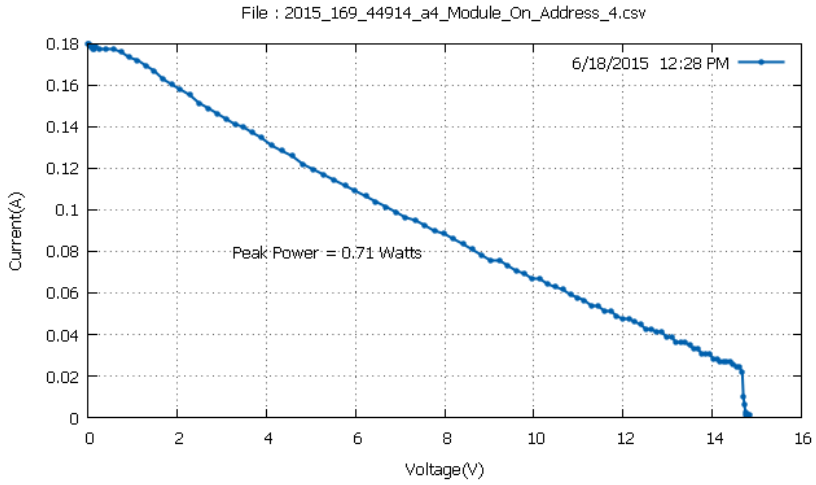
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

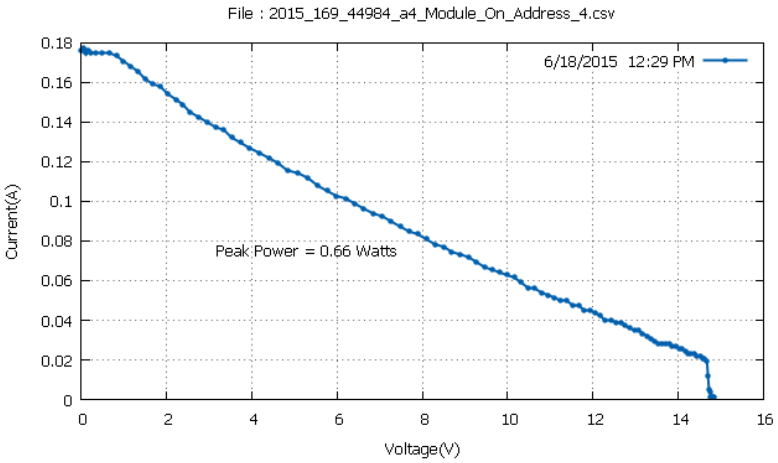
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:28	61,9	1,11
12:29	63,8	1,04
12:30	64,3	1,08
12:32	61,6	1,04
12:34	62,2	1,1
12:36	62,9	1,14

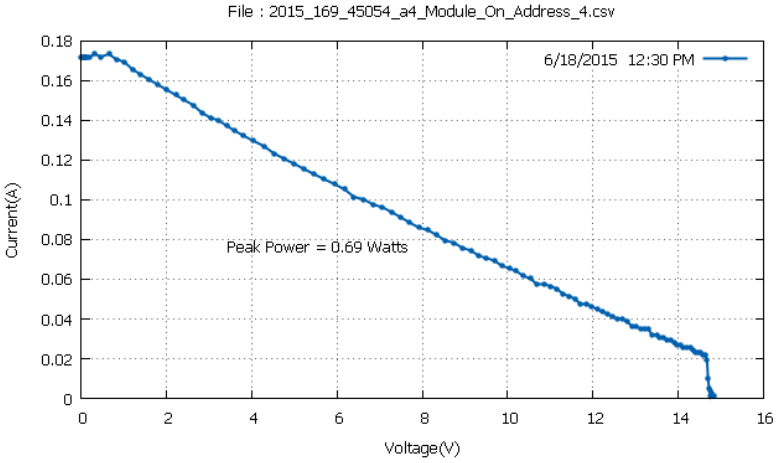
Mean Temperature: 62,78 ºC



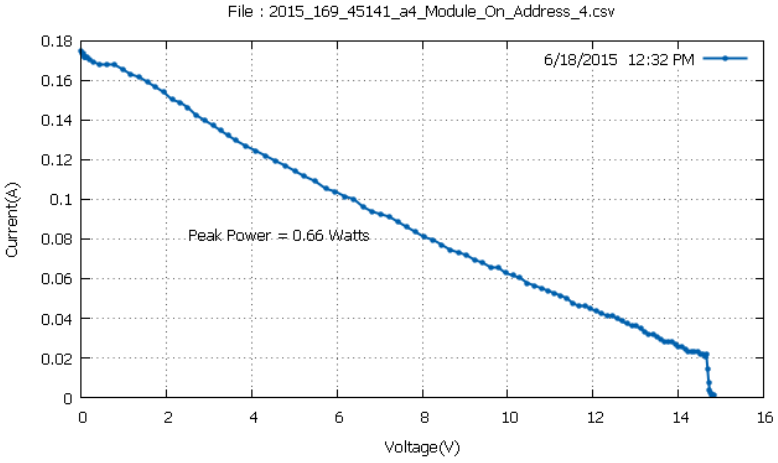
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.32669\ x\ 0.0886154249}{945.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}11\ \%$$



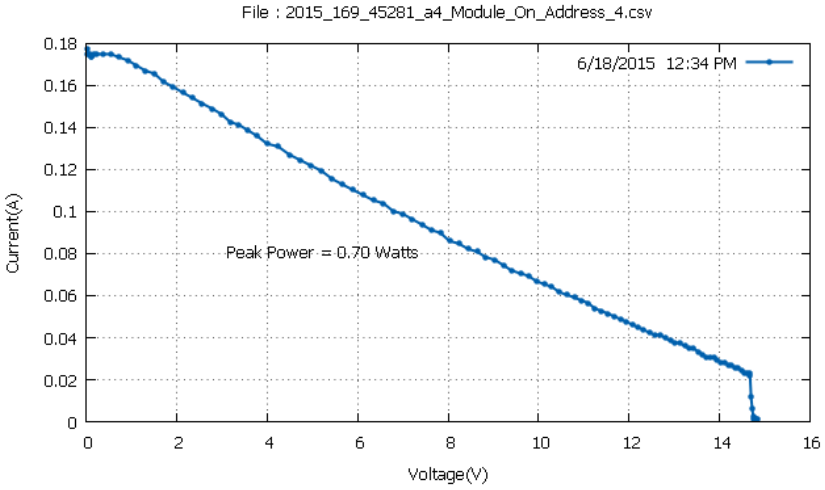
$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{7.886002\ x\ 0.0834782943}{946.6\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}04\ \%$$



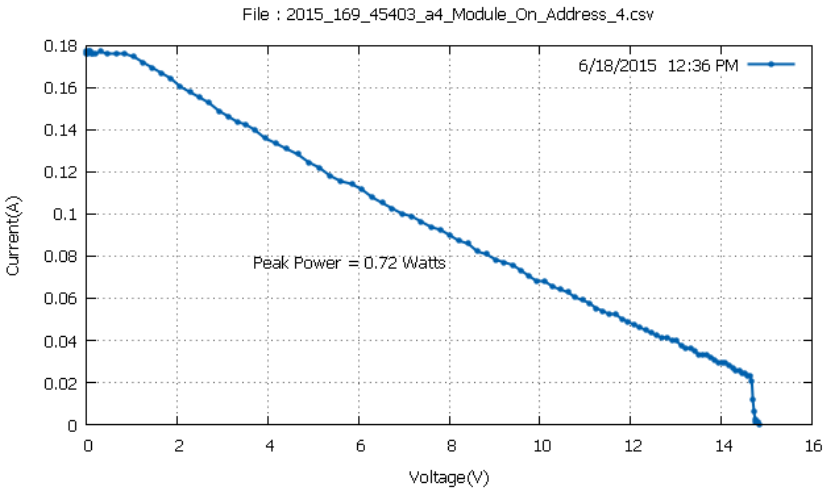
$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{8.241645\ x\ 0.0834782943}{945.1\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}08\ \%$$



$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{7.228835\ x\ 0.09118398}{943.2\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.0821940154}{943.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.411736\ x\ 0.08604686}{940.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}14\ \%$$

Module 8

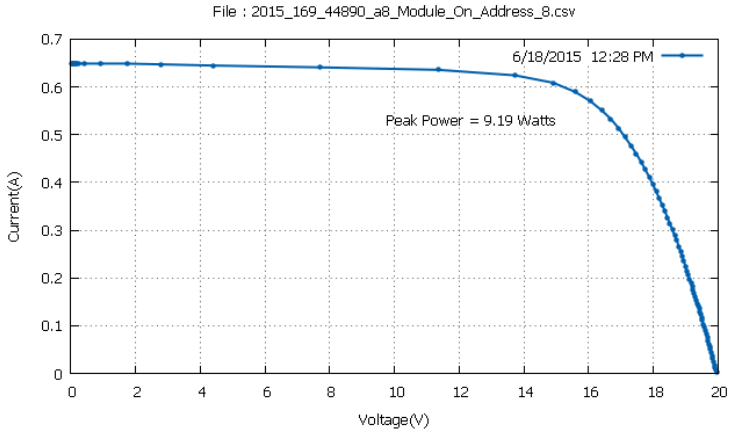
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

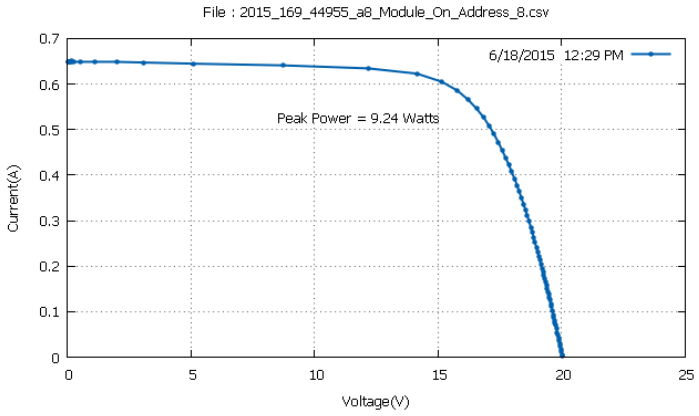
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:28	53,5	12,62
12:29	54,2	12,71
12:30	55,3	12,6
12:32	54,2	12,62
12:34	52,3	12,73
12:36	52,7	12,73

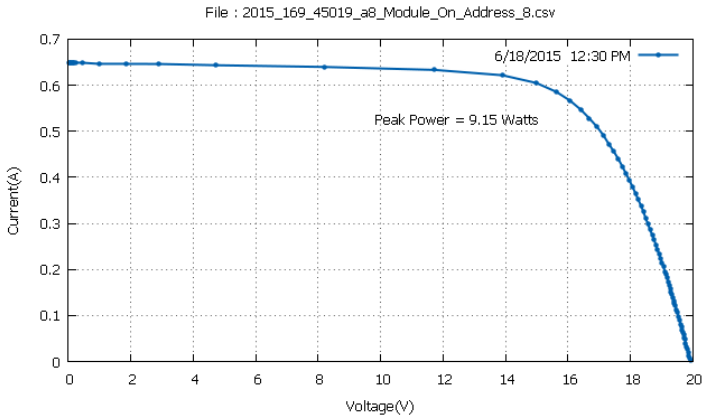
Mean Temperature: 53,7 ºC



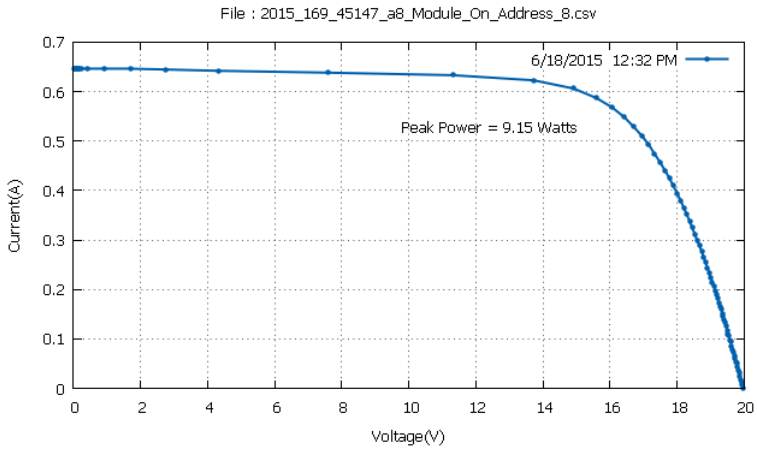
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5864506\ x\ 0.5894852}{947.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}62\ \%$$



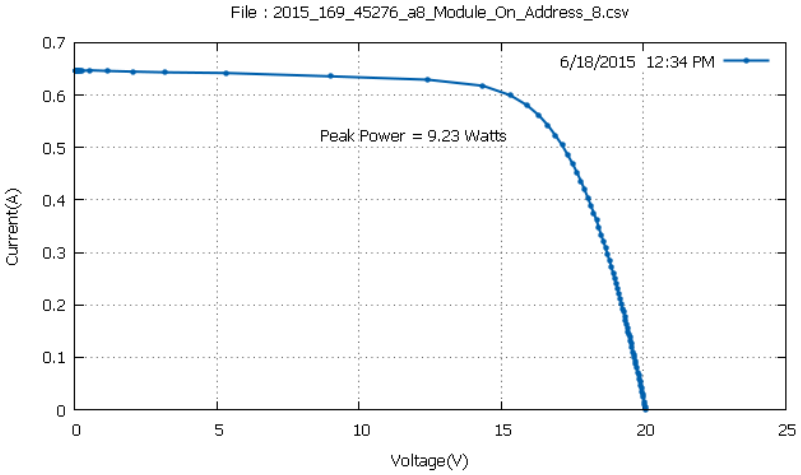
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7797346\ x\ 0.5856324}{946.3\ x\ 0{,}0768} \text{ x } 100 = 12{,}71\ \%$$



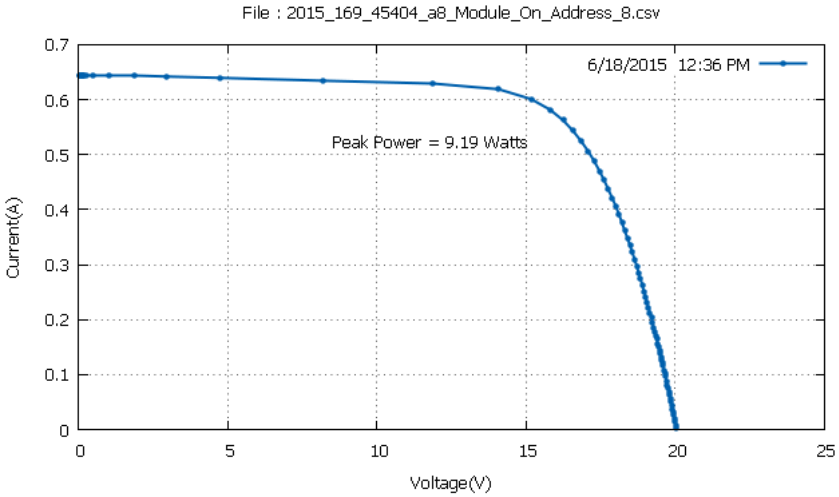
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6251078\ x\ 0.5856324}{945.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.594182\ x\ 0.5869166}{943.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.580495238}{943.5\ x\ 0{,}0768}\ \text{x } 100 = 12{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.58177954}{939.9\ x\ 0{,}0768}\ \text{x } 100 = 12{,}73\ \%$$

Module 3

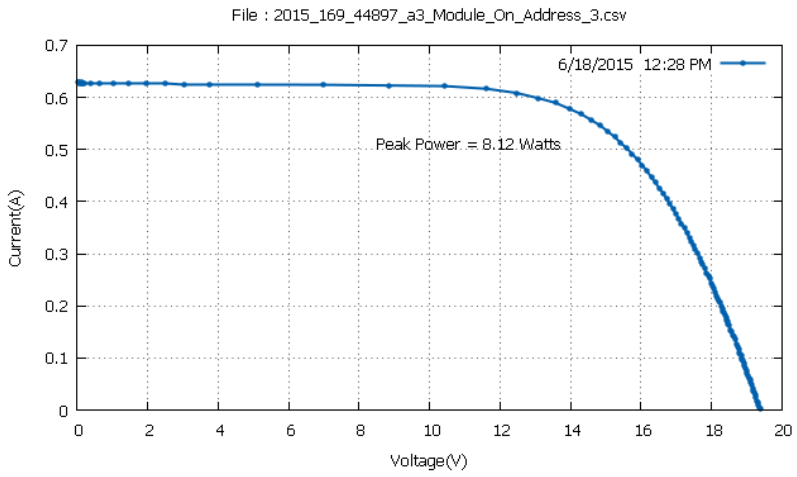
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

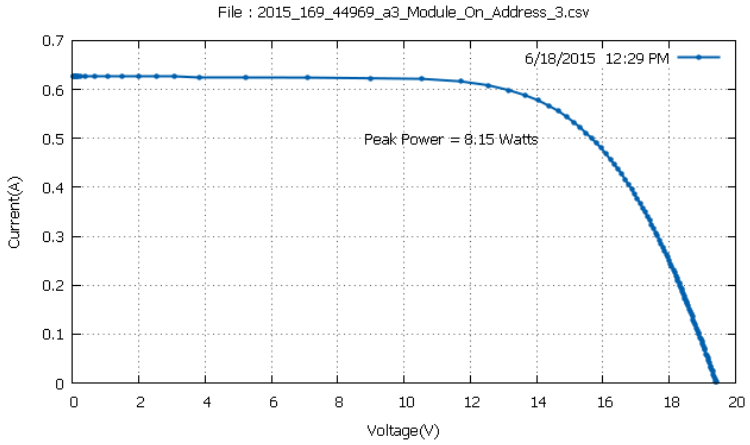
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:28	53,5	12,62
12:29	54,2	12,71
12:30	55,3	12,6
12:37	54,2	12,62
12:38	52,3	12,73
12:40	52,7	12,73

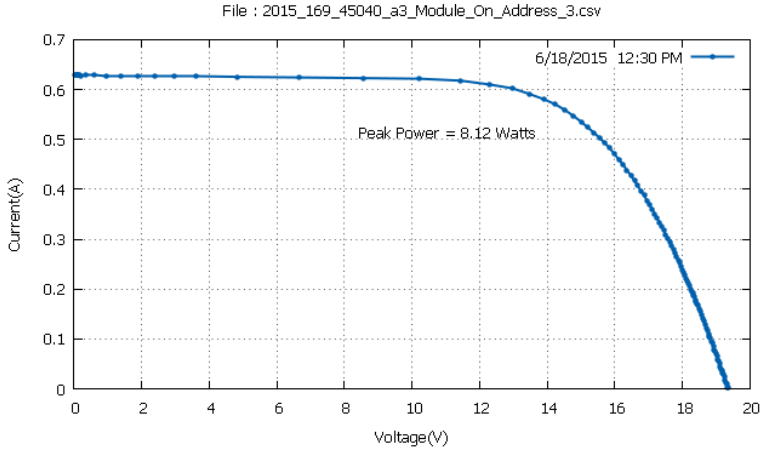
Mean Temperature: 53.7 ºC



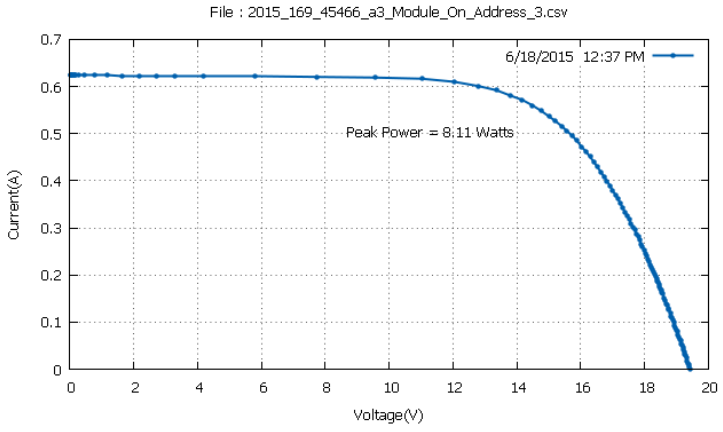
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.3107738\ x\ 0.5676524}{945.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}1\ \%$$



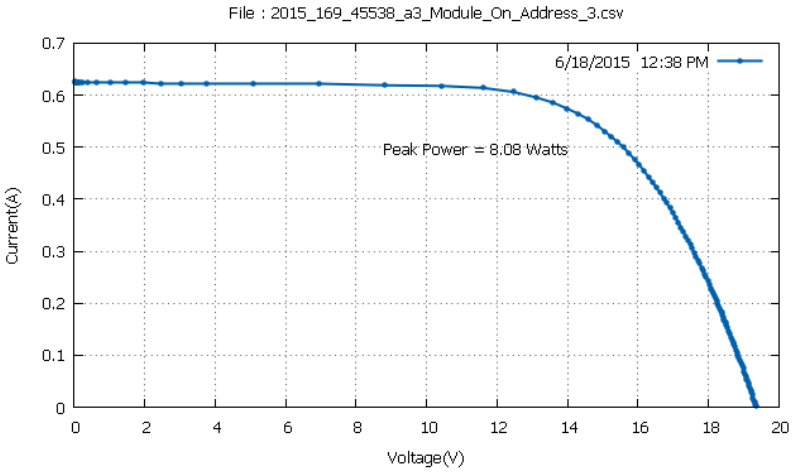
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6509542\ x\ 0.5560939}{947.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}13\ \%$$



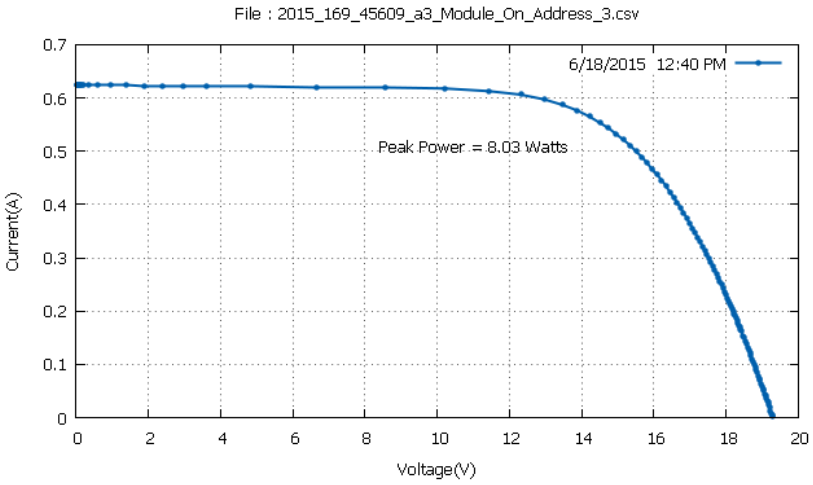
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.2411919\ x\ 0.570221}{948\ x\ 0{,}0709} \text{ x } 100 = 12{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.488596\ x\ 0.5599467}{941.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5891037\ x\ 0.5535253}{942.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.2102661\ x\ 0.565083861}{942.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}01\ \%$$

Module 5

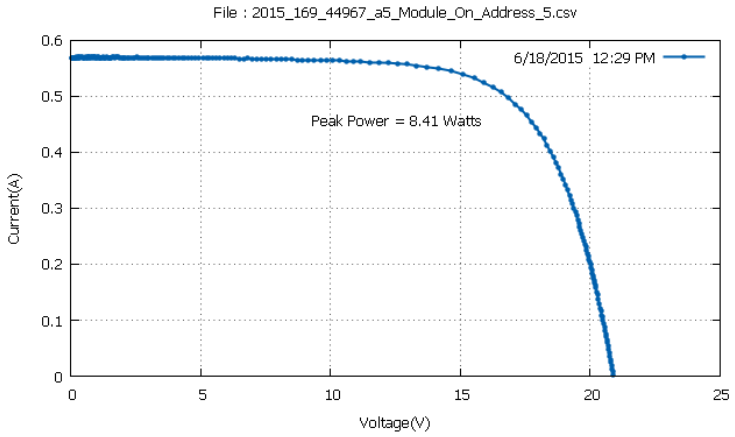
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

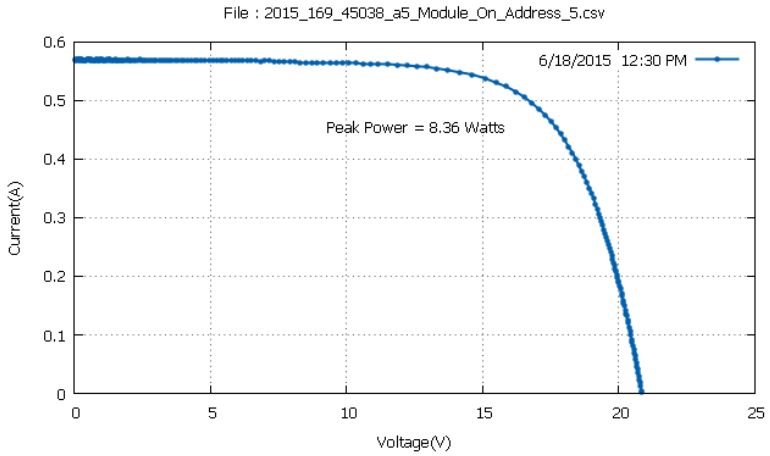
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:29	64,5	11,74
12:30	65	11,66
12:33	64,5	11,73
12:34	64,3	11,73
12:40	65,4	11,62
12:42	66,1	11,57

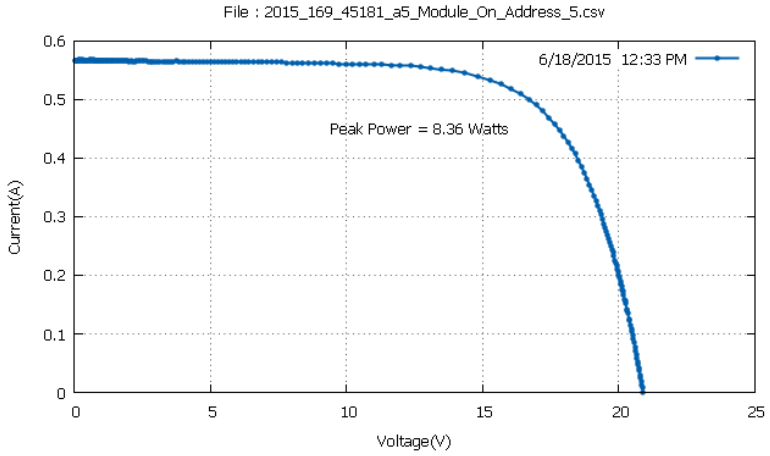
Mean Temperature: 64,96 ºC



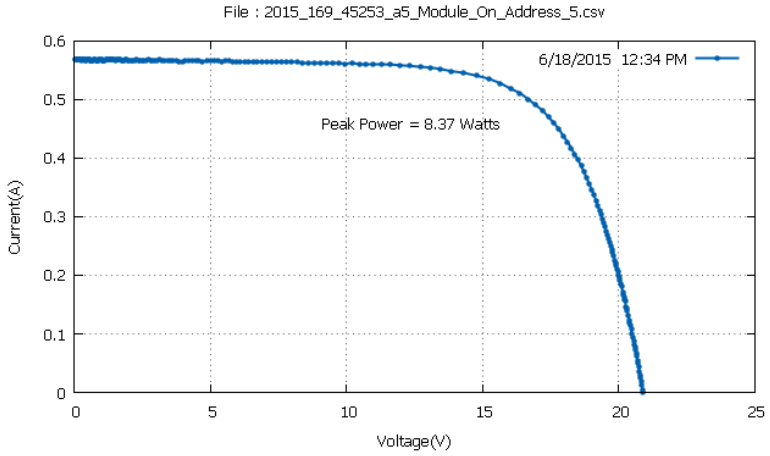
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5683346\ x\ 0.5072912}{947\ x\ 0{,}0756} \text{ x } 100 = 11{,}74\ \%$$



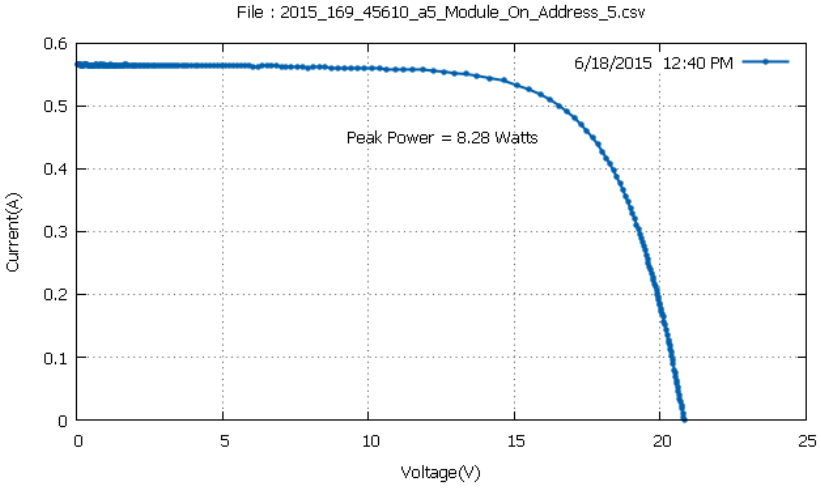
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5296783\ x\ 0.5060069}{947.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}66\ \%$$



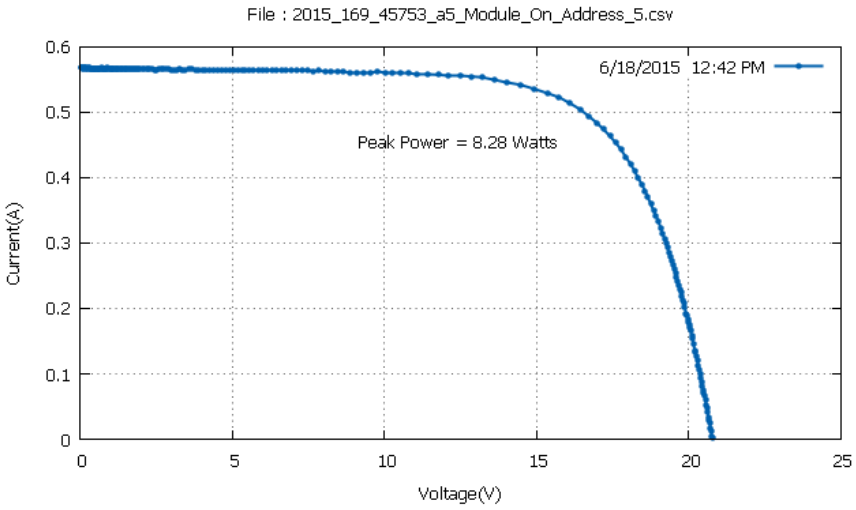
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6843052\ x\ 0.5008698}{942.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.511144042}{943.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5296783\ x\ 0.5008698}{942.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4137077\ x\ 0.504722655}{945.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}57\ \%$$

Module 4

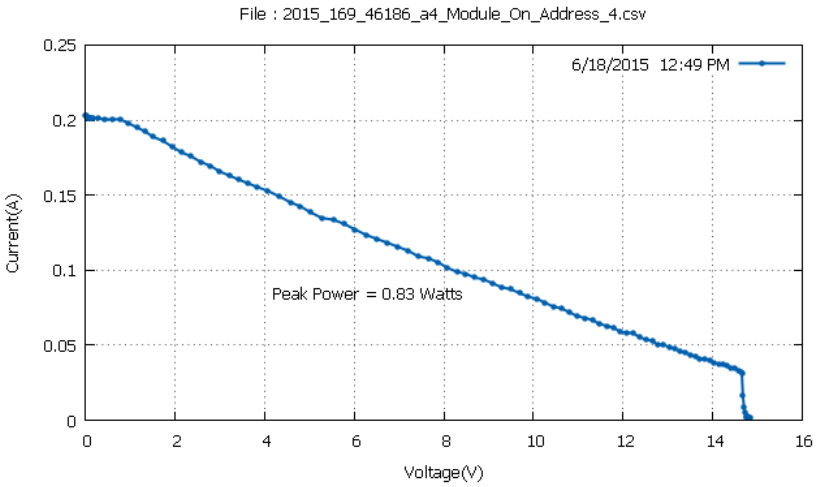
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

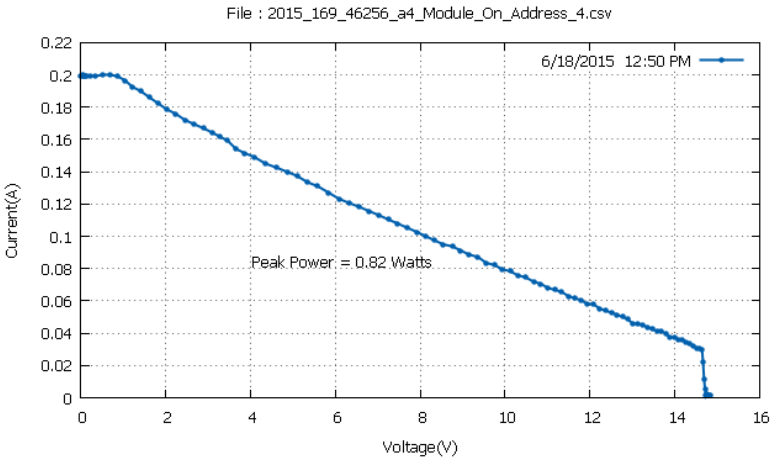
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:49	54,7	1,3
12:50	55,5	1,3
12:52	56,1	1,32
12:54	55,2	1,34
12:56	54,8	1,34
12:57	54,9	1,4

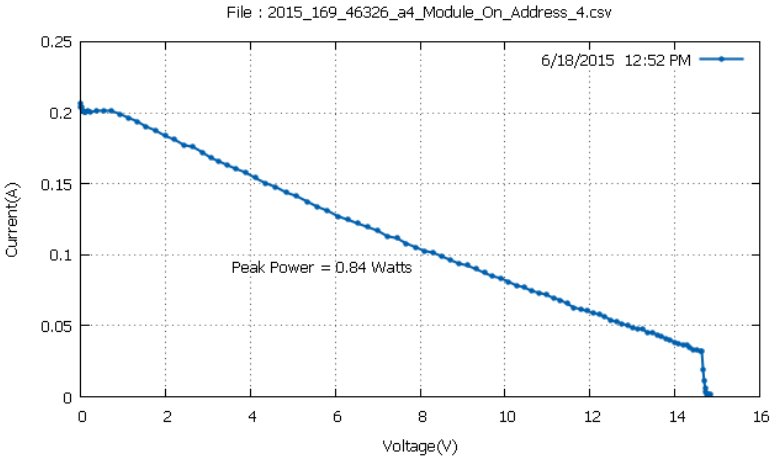
Mean Temperature: 55,2 ºC



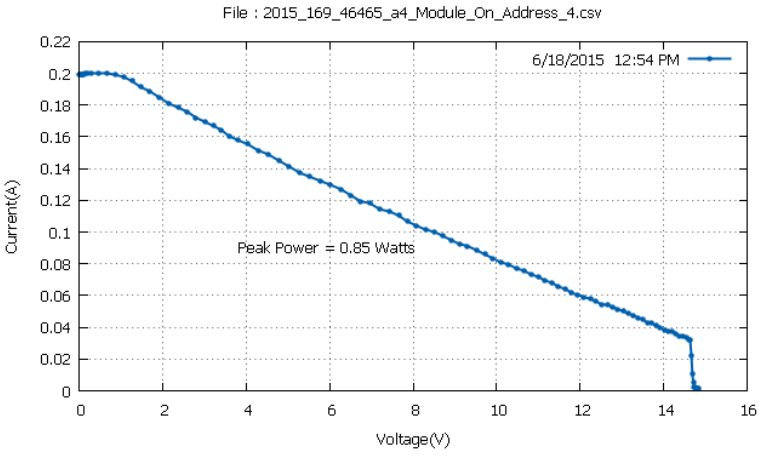
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.891081\ x\ 0.09375255}{946.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}3\ \%$$



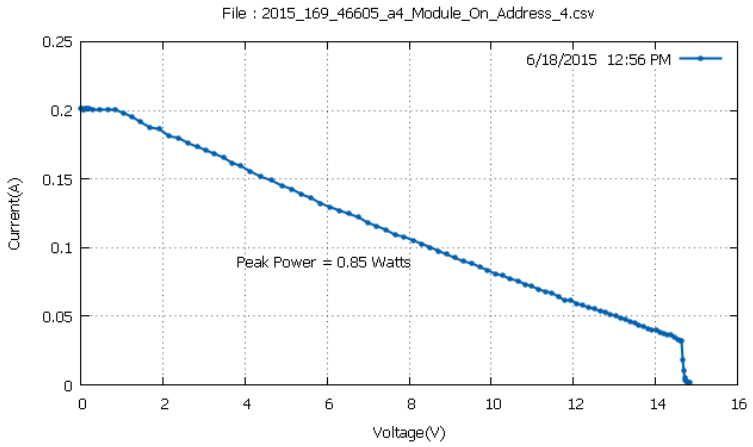
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.751916\ x\ 0.09375255}{943.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}3\ \%$$



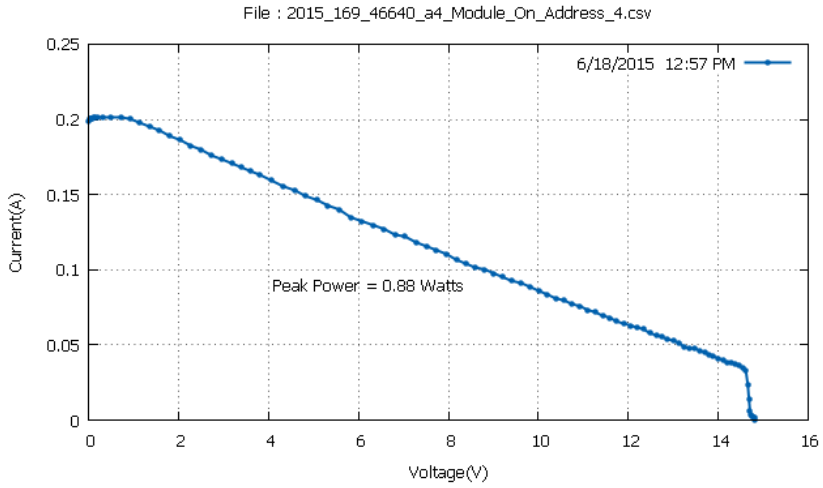
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.295765\ x\ 0.101458237}{942.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.504512\ x\ 0.100173958}{943\ x\ 0{,}0671} \text{ x } 100 = 1{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.303496\ x\ 0.102742523}{943\ x\ 0{,}0671} \text{ x } 100 = 1{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.349884\ x\ 0.105311081}{943\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$

Module 8

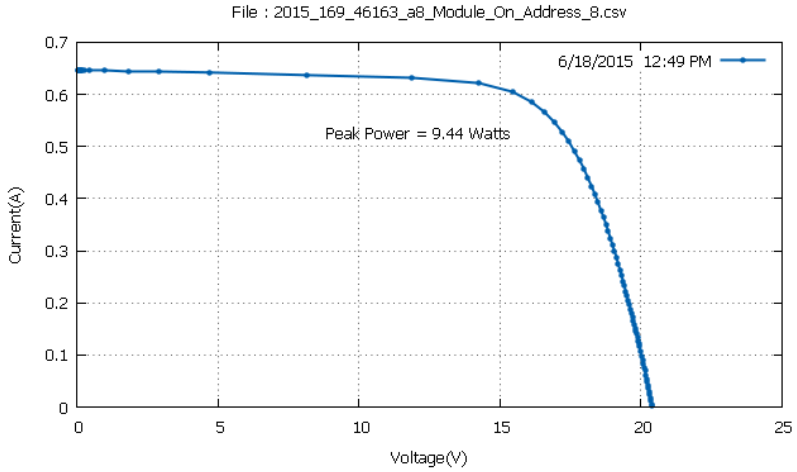
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

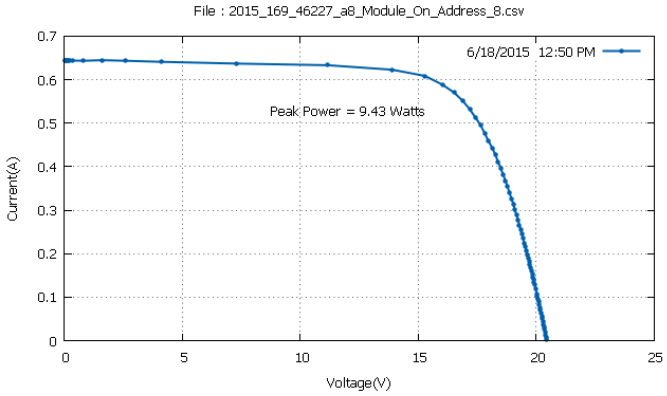
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:49	48,2	13
12:50	47,6	13
12:53	46,4	13,12
12:55	46,3	13,18
12:57	46,1	13,21
12:59	46,5	13,11

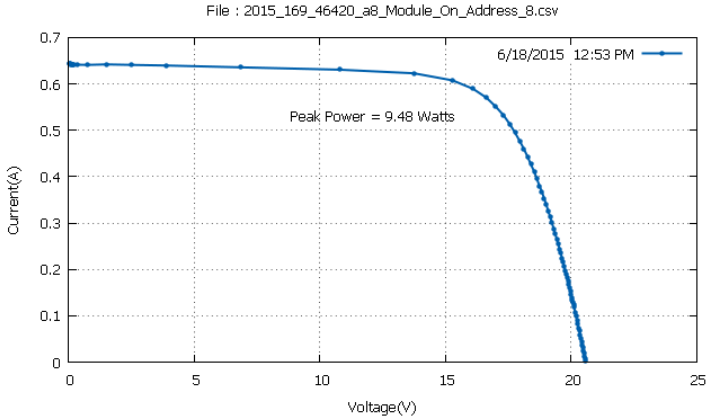
Mean Temperature: 46,85 ºC



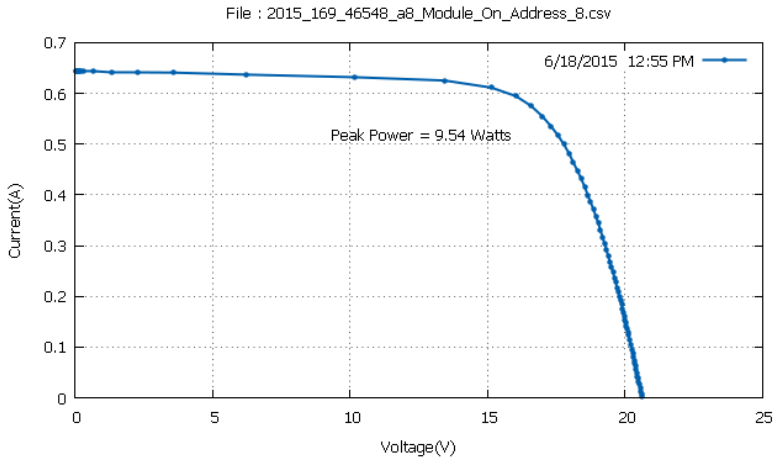
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1121845\ x\ 0.5856324}{945.4\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$



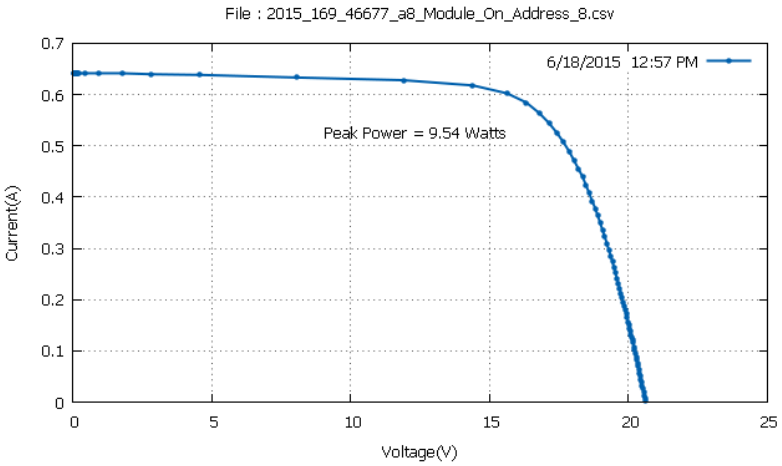
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.5882009}{944.2\ x\ 0{,}0768}\ \text{x}\ 100 = 13\ \%$$



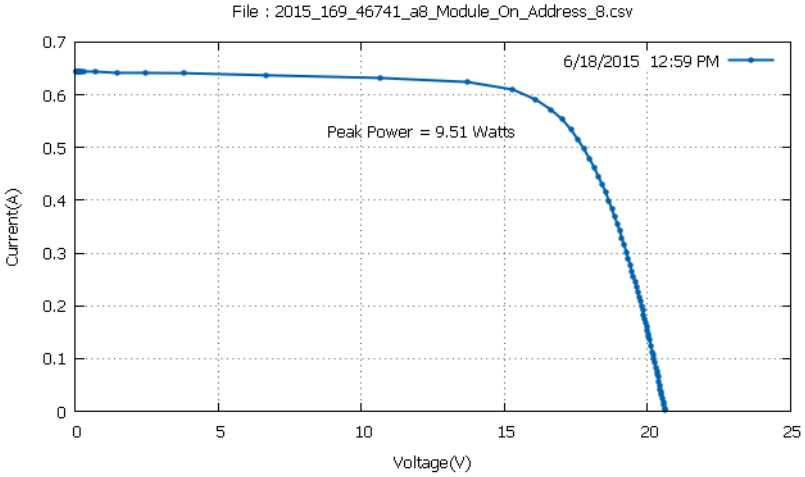
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.08899\ x\ 0.5894852}{940.6\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.576067\ x\ 0.5753581}{942\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.32093\ x\ 0.5843481}{940.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.59076947}{944.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}11\ \%$$

Module 3

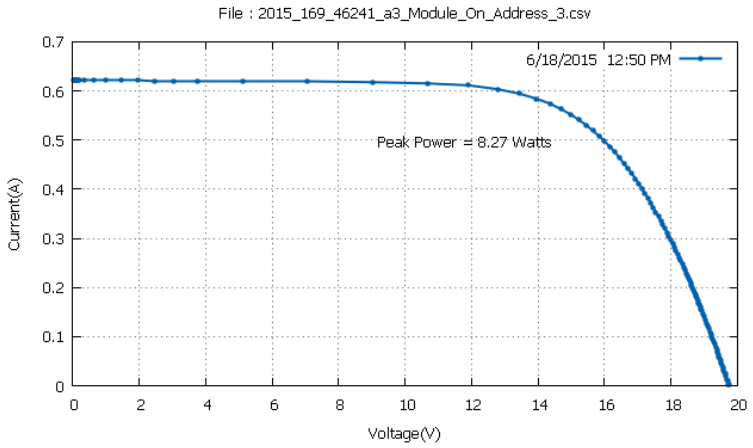
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

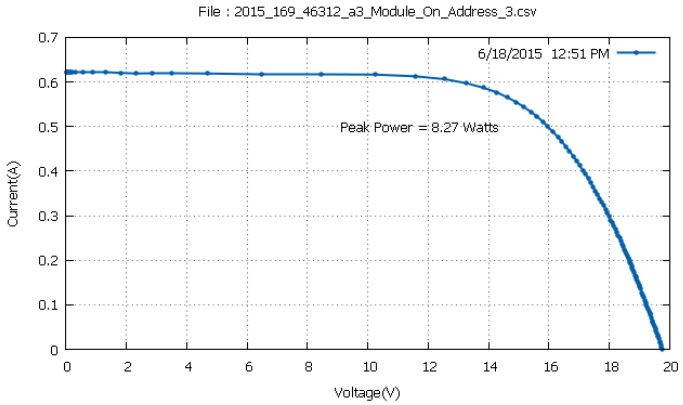
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:50	53	12,35
12:51	53,1	12,37
12:54	53,5	12,4
12:58	52,9	12,4
13:00	52	12,42
13:01	52,2	12,44

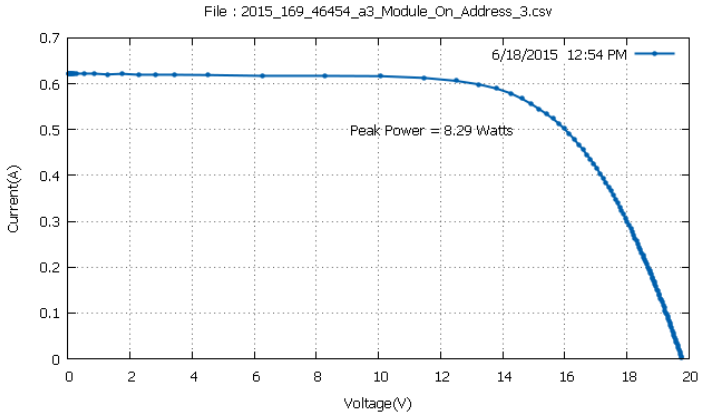
Mean Temperature: 52,78 ºC



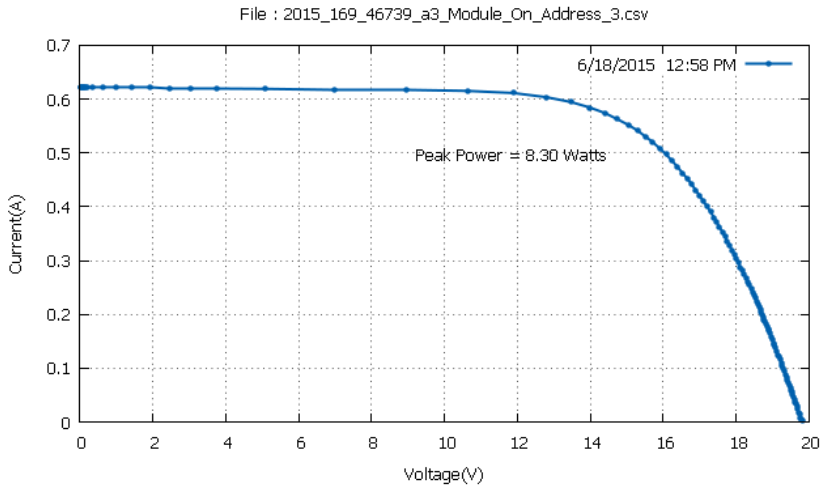
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.983403\ x\ 0.552241}{943.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}35\ \%$$



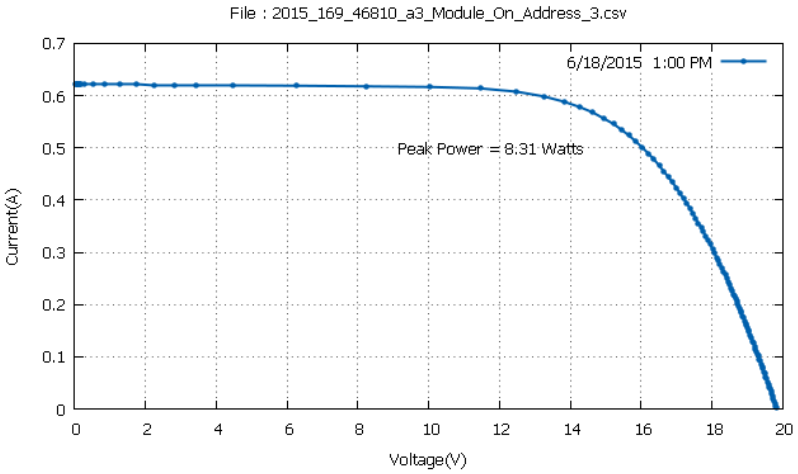
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9138212\ x\ 0.55480963}{942.5\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}37\ \%$$



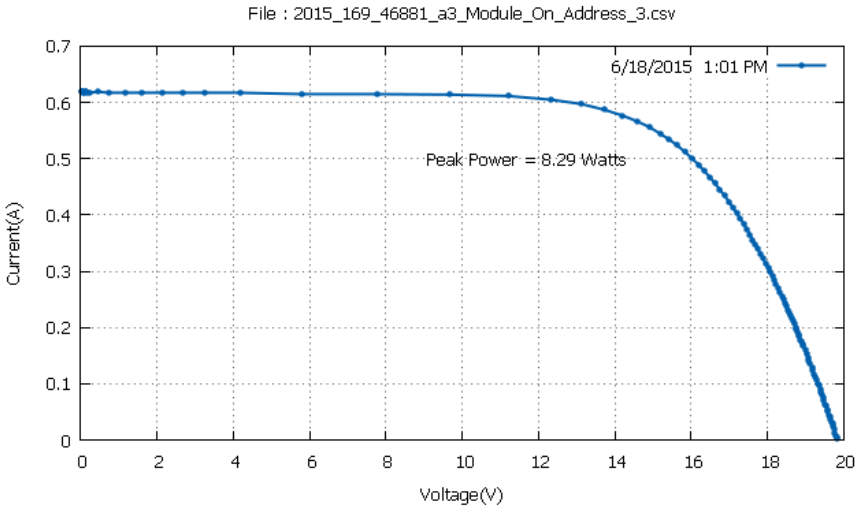
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9138212\ x\ 0.5560939}{942.5\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0375233\ x\ 0.552241}{943.9\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.944747\ x\ 0.5560939}{943.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.90609\ x\ 0.5560939}{939.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$

Module 5

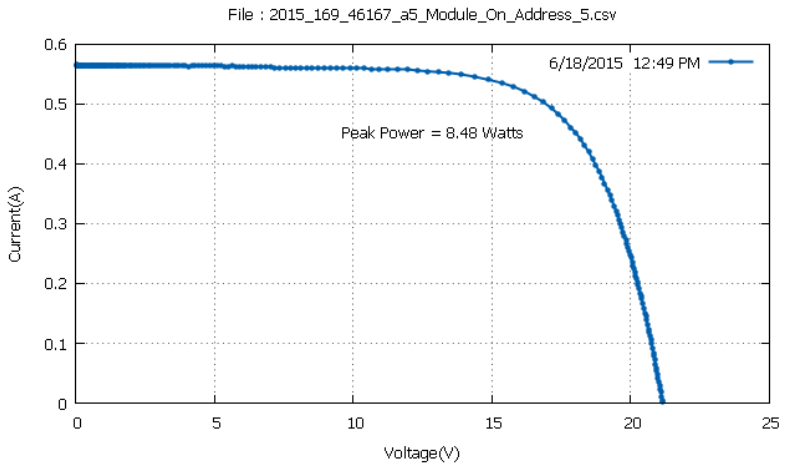
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

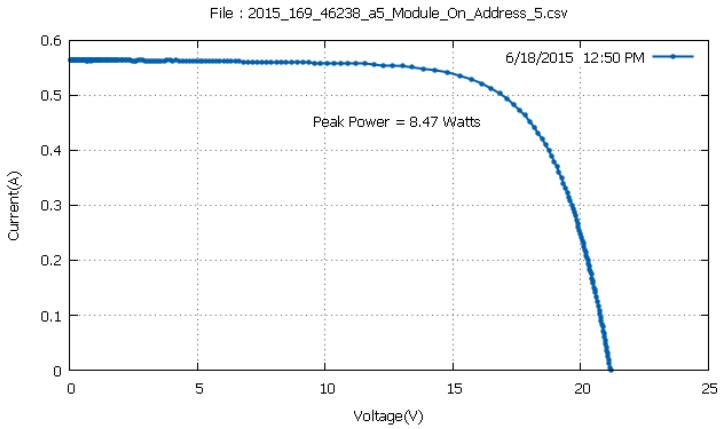
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:49	60,7	11,87
12:50	60,3	11,86
12:51	60,5	11,86
12:54	60,2	11,9
12:55	60	11,89
12:56	59,7	11,92

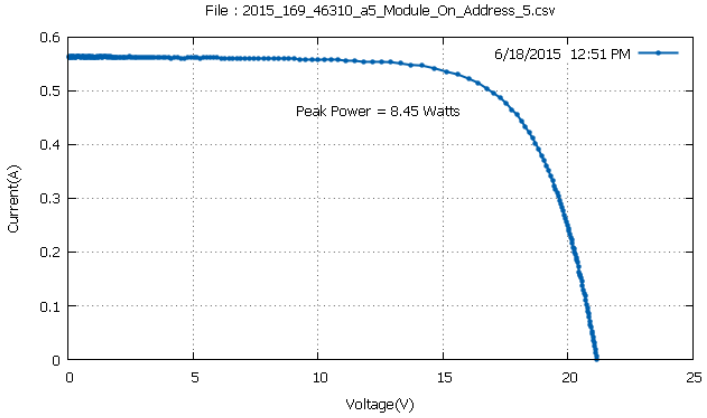
Mean Temperature: 60,23 ºC



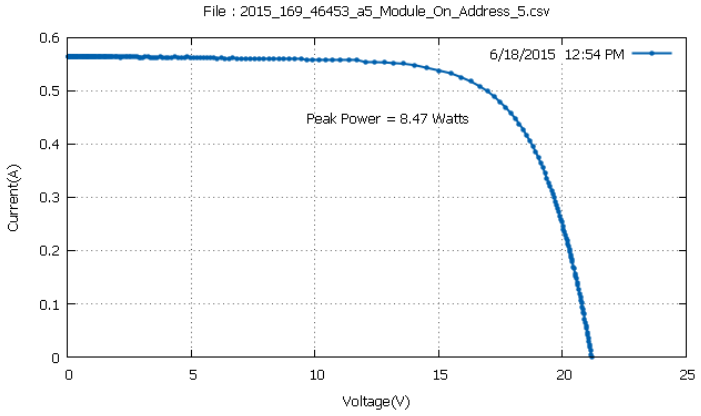
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8466644\ x\ 0.503438354}{944.4\ x\ 0{,}0756}$ x 100 = 11,87 %



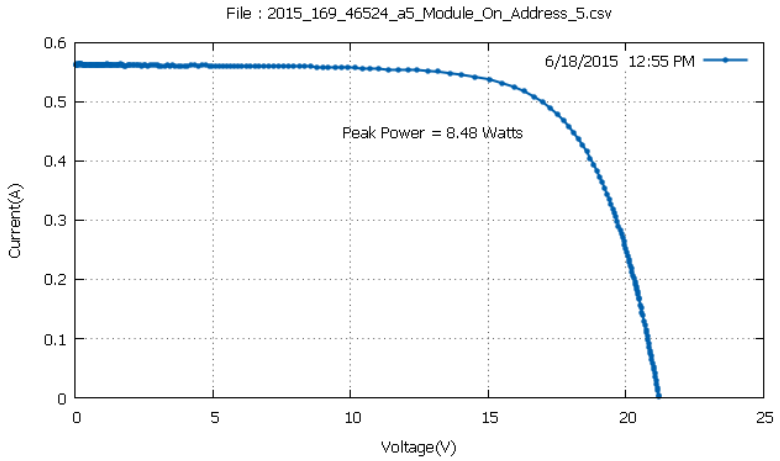
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8234711\ x\ 0.503438354}{944.2\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}86\ \%$$



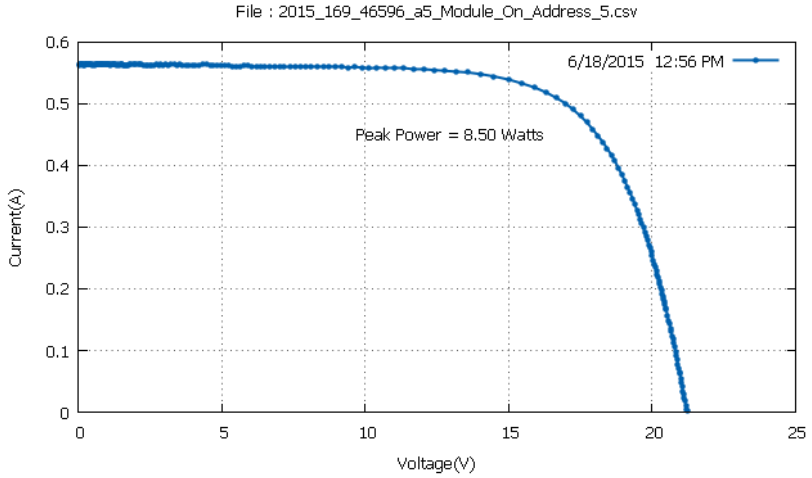
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3982449\ x\ 0.5149969}{942.3\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.962635\ x\ 0.4995855}{942\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}9\ \%$$



$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{16.9780979\ x\ 0.4995855}{942.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}89\ \%$$



$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{16.9703674\ x\ 0.5008698}{942.5\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}92\ \%$$

Module 4

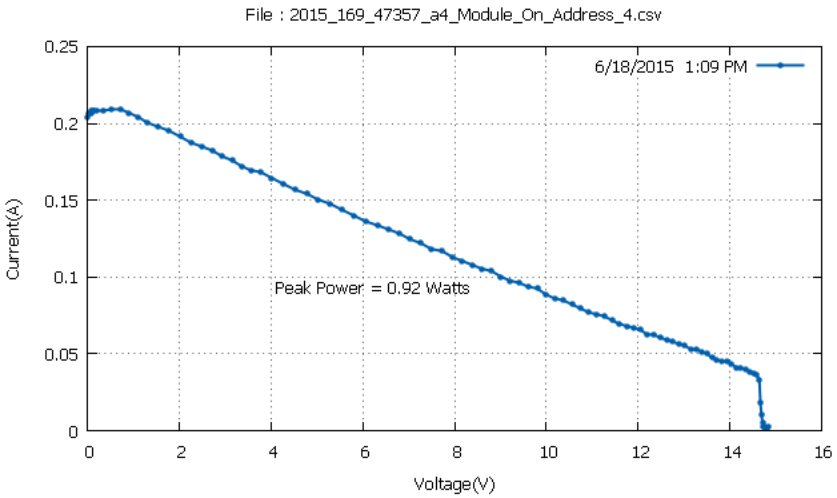
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

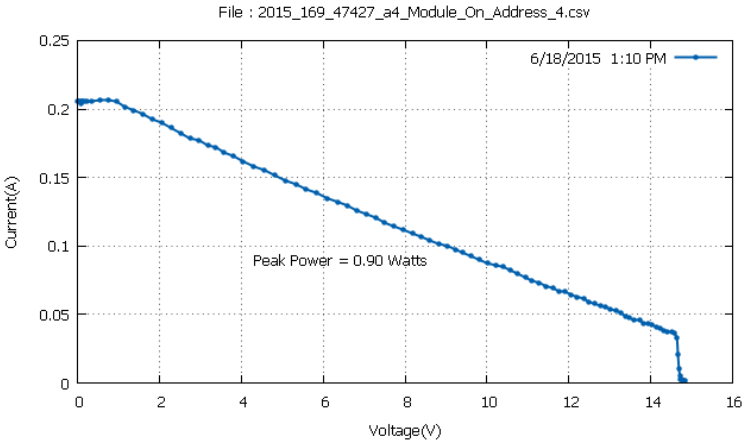
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:09	53,7	1,46
13:10	53,6	1,43
13:11	52,9	1,47
13:13	52,4	1,47
13:15	52,6	1,5
13:15	52,7	1,48

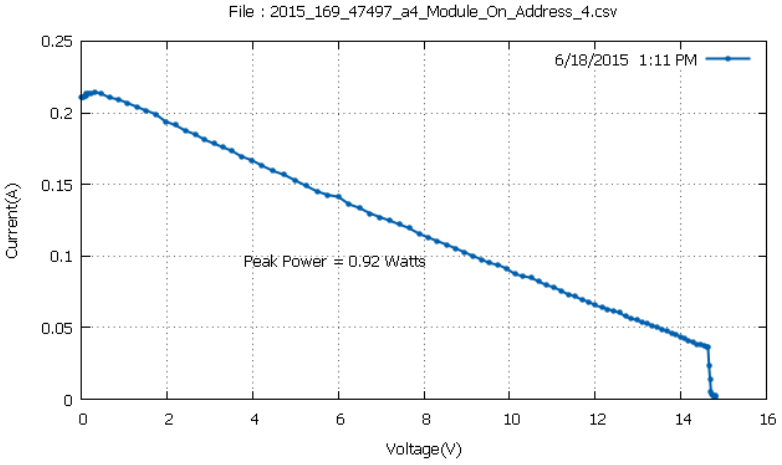
Mean Temperature: 52,98 ºC



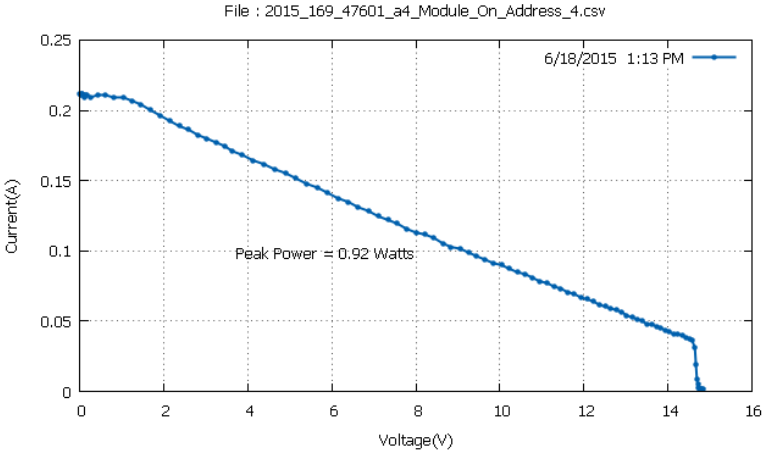
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.798304\ x\ 0.1040268}{934.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}46\ \%$$



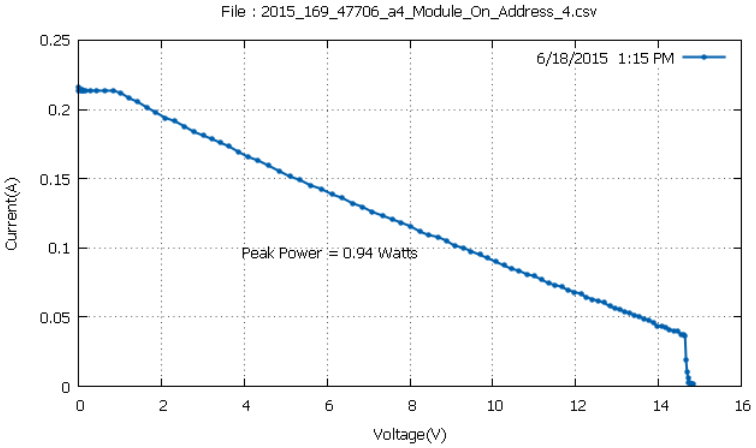
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.022514\ x\ 0.100173958}{933.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}43\ \%$$



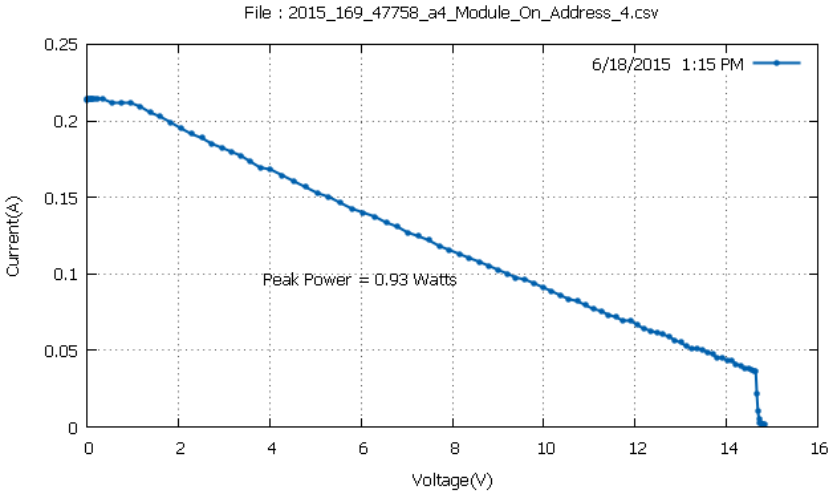
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ 0.105311081}{931.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.427198\ x\ 0.109163925}{929.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.666871\ x\ 0.107879646}{931.1\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.666871\ x\ 0.107879646}{931.1\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}48\ \%$$

Module 8

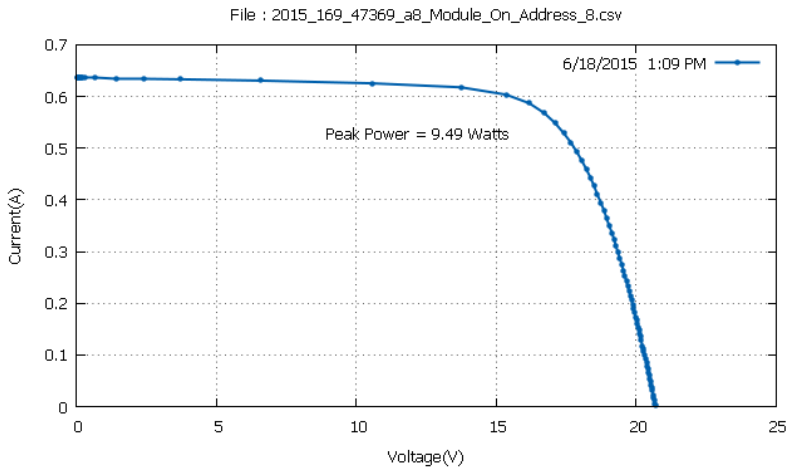
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

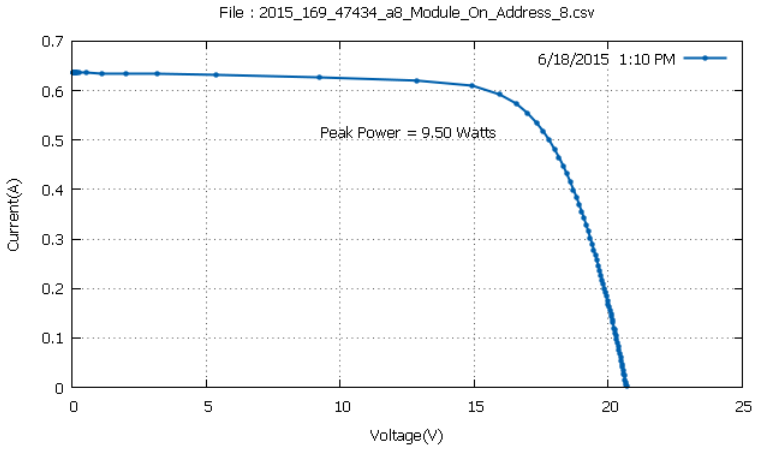
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:09	45,3	13,22
13:10	45,3	13,23
13:11	45,4	13,18
13:13	46,7	13,15
13:14	47,2	13,11
13:15	48	13,04

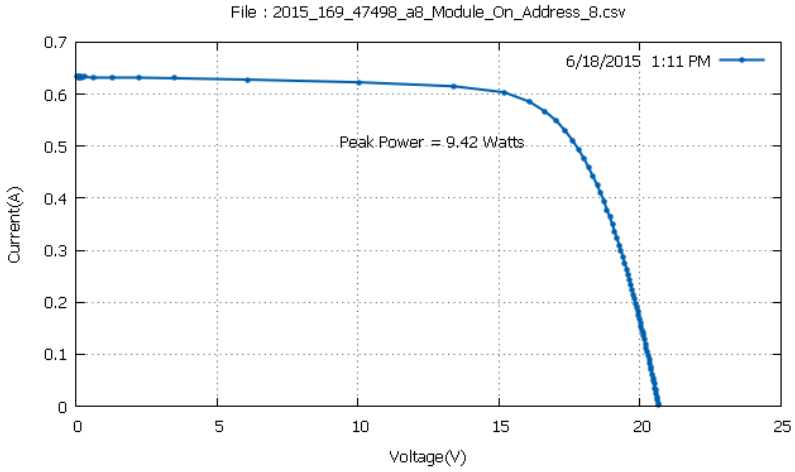
Mean Temperature: 46,31 ºC



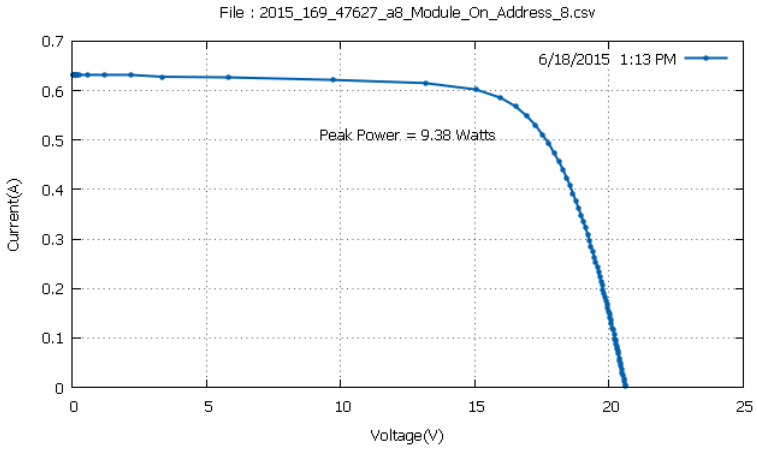
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.174036\ x\ 0.5869166}{934.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}22\ \%$$



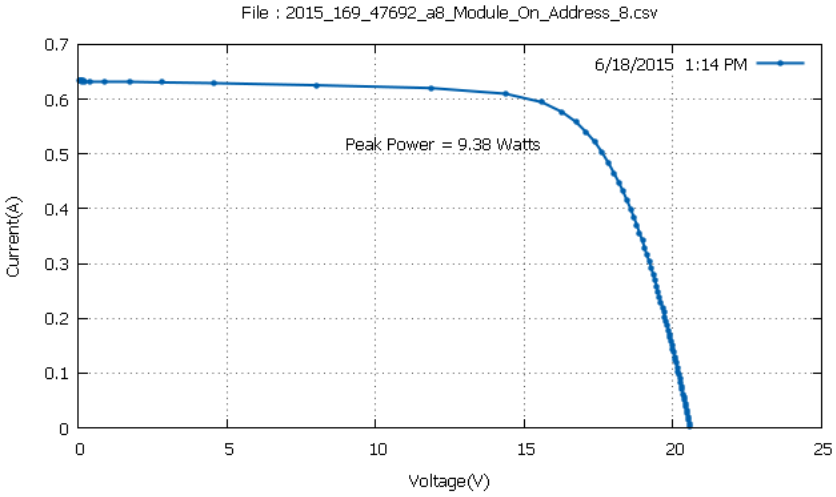
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5528717\ x\ 0.574073851}{934.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}23\ \%$$



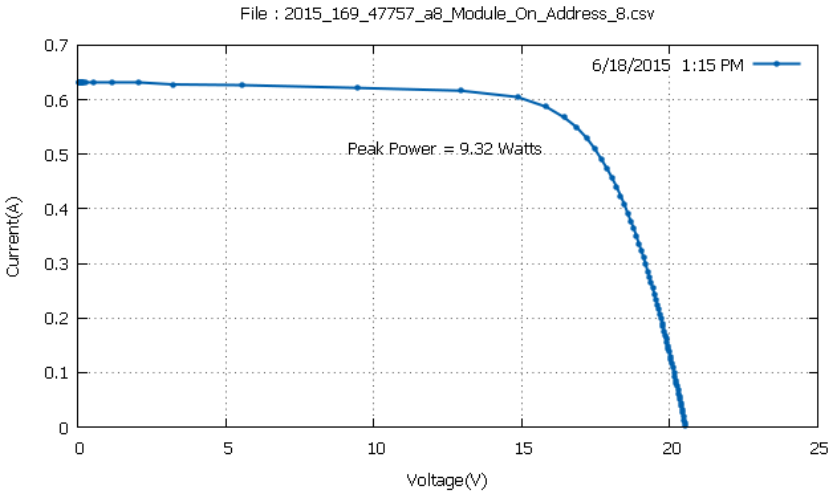
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6379185\ x\ 0.566368163}{930.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5219479\ x\ 0.5676524}{928.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2668114\ x\ 0.5766424}{931.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4214382\ x\ 0.5676524}{930.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$

Module 3

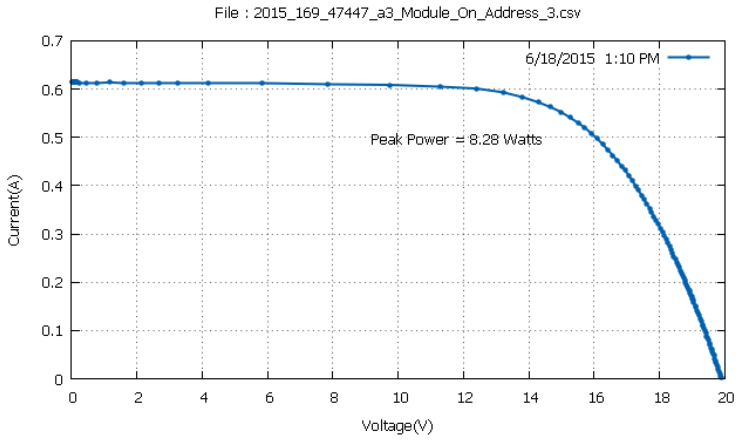
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

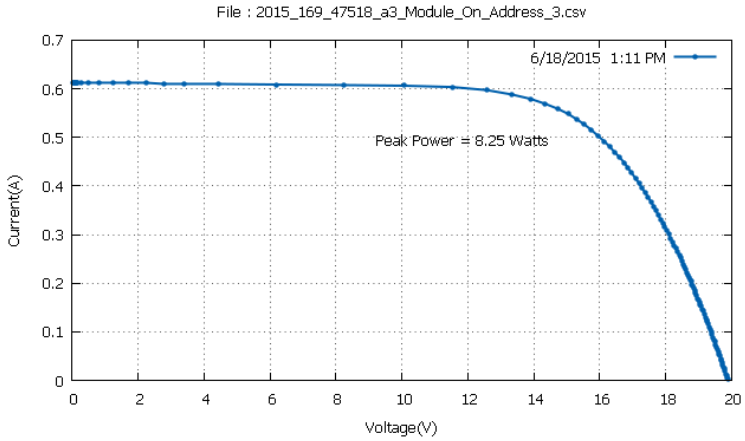
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:10	51,7	12,5
13:11	51,1	12,45
13:14	51	12,53
13:15	51	12,51
13:21	51,2	12,55
13:25	51,1	12,58

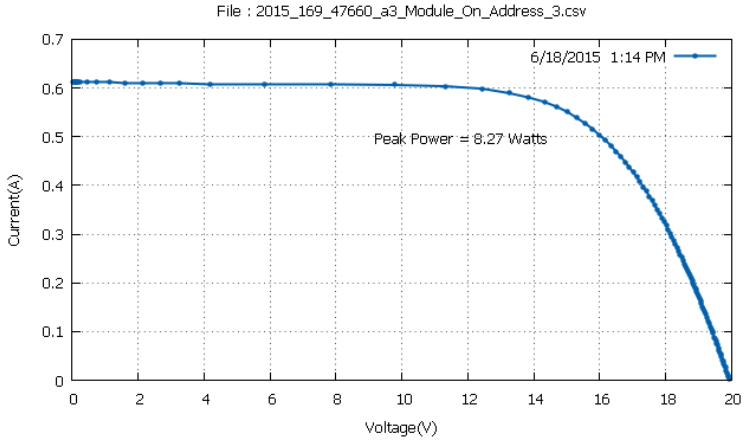
Mean Temperature: 51,18 ºC



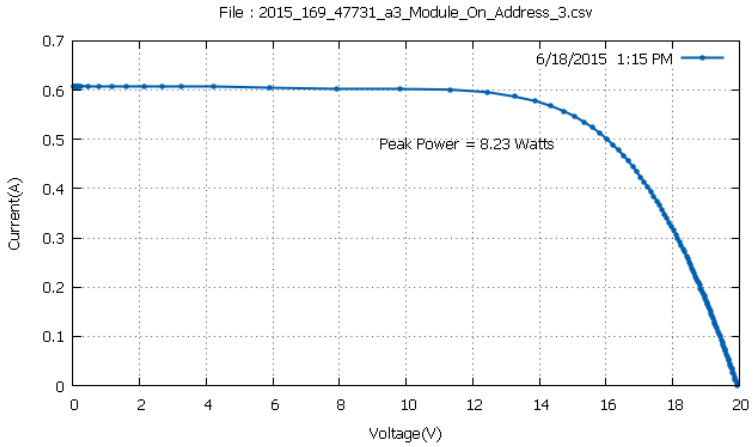
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9911346\ x\ 0.552241}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}5\ \%$$



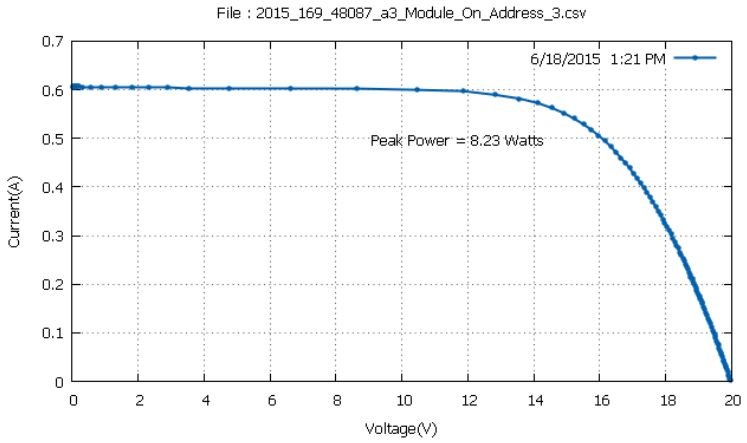
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9911346\ x\ 0.552241}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



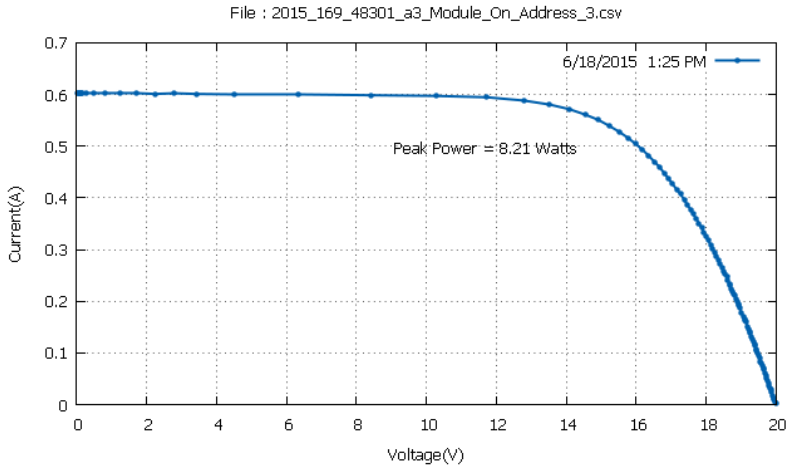
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.014329\ x\ 0.5509568}{930.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0452547\ x\ 0.547103941}{927.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.90609\ x\ 0.552241}{924.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}55\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.90609\ x\ 0.5509568}{919.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}58\ \%$$

Module 5

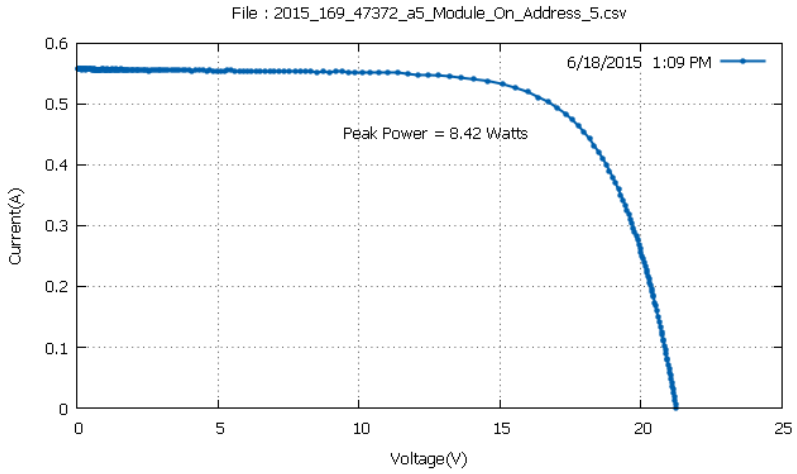
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

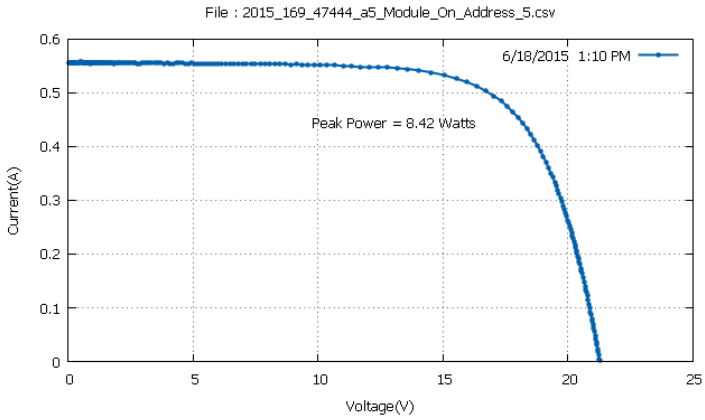
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:09	59,3	11,92
13:10	59,2	11,92
13:11	58,5	11,91
13:14	58	11,96
13:15	58	11,95
13:16	57,9	11,96

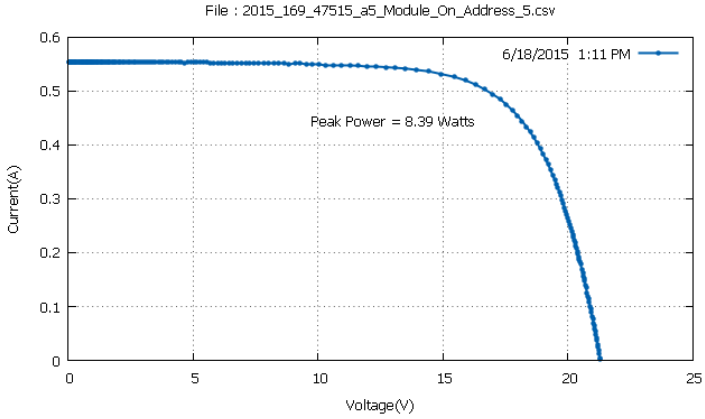
Mean Temperature: 58,48 ºC



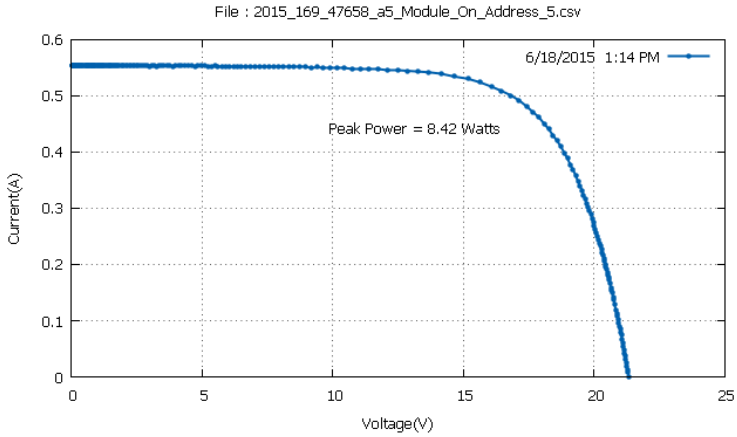
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7229633\ x\ 0.503438354}{933.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}92\ \%$$



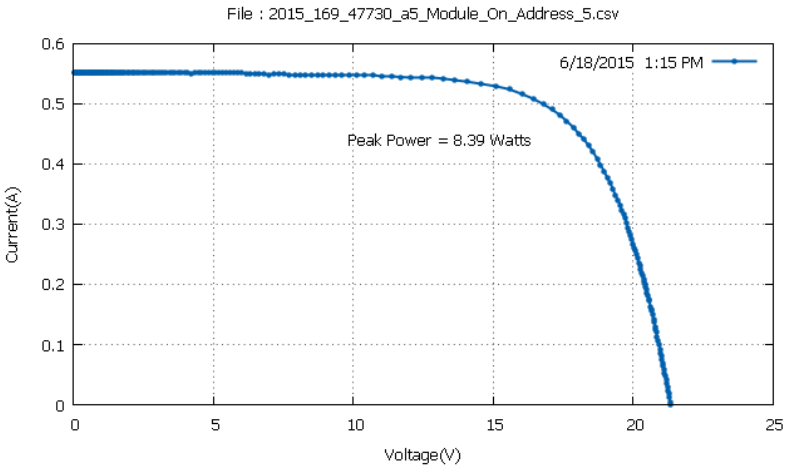
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0244865\ x\ 0.494448364}{934.2\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}92\ \%$$



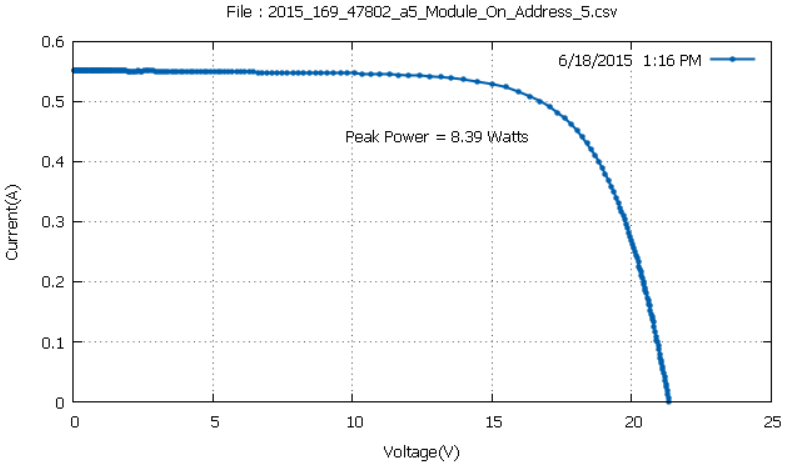
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9780979\ x\ 0.494448364}{931.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1249943\ x\ 0.491879821}{930.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0940685\ x\ 0.49059552}{928.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.491879821}{927.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}96\ \%$$

Module 4

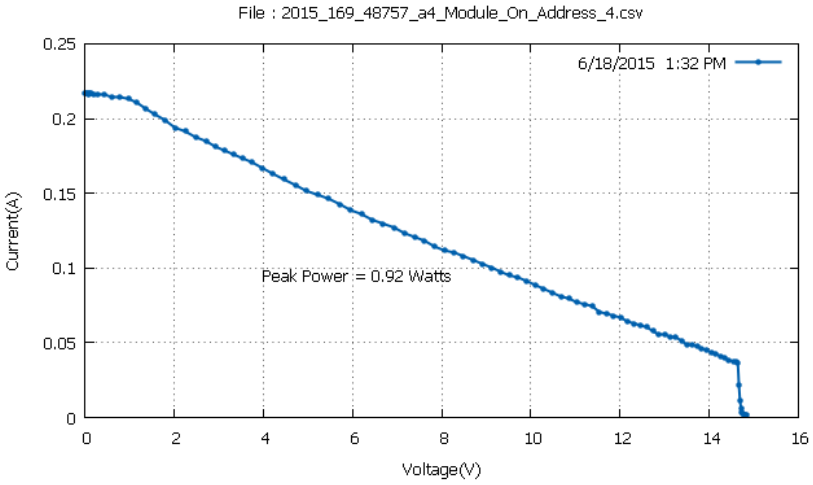
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

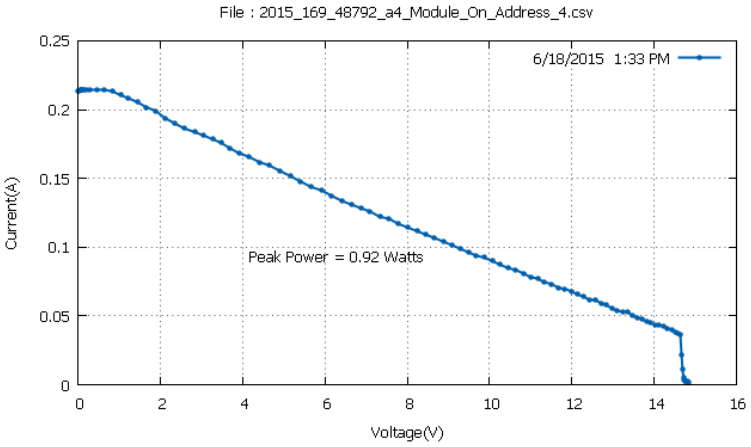
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:32	51,3	1,5
13:33	51,5	1,49
13:34	51,7	1,58
13:37	50,7	1,61
13:38	50,9	1,62
13:39	50,5	1,62

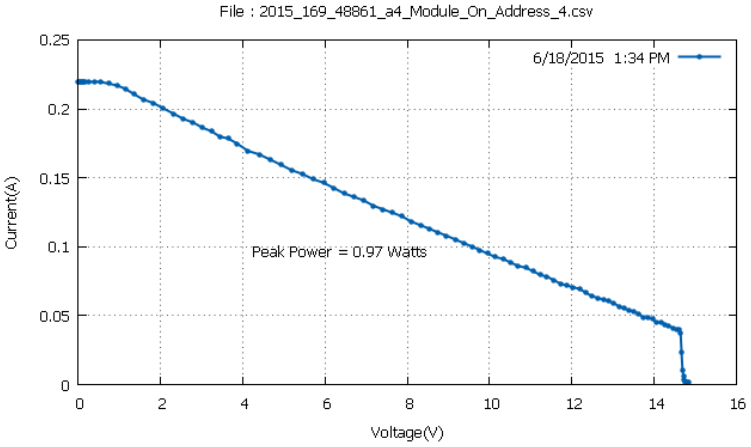
Mean Temperature: 51,1 ºC



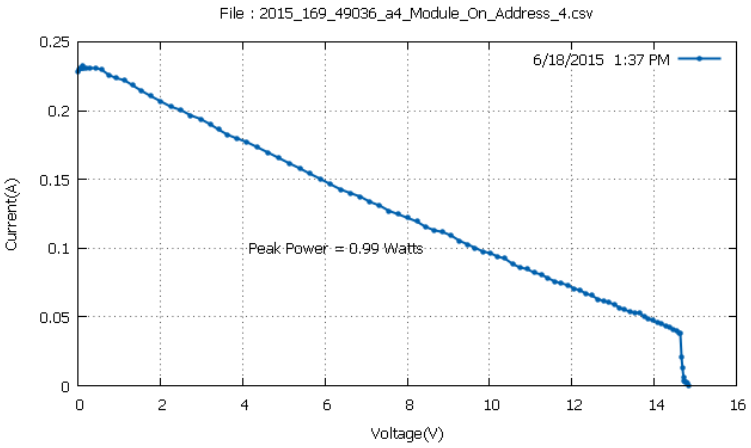
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.231261\ x\ 0.100173958}{917.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}5\ \%$$



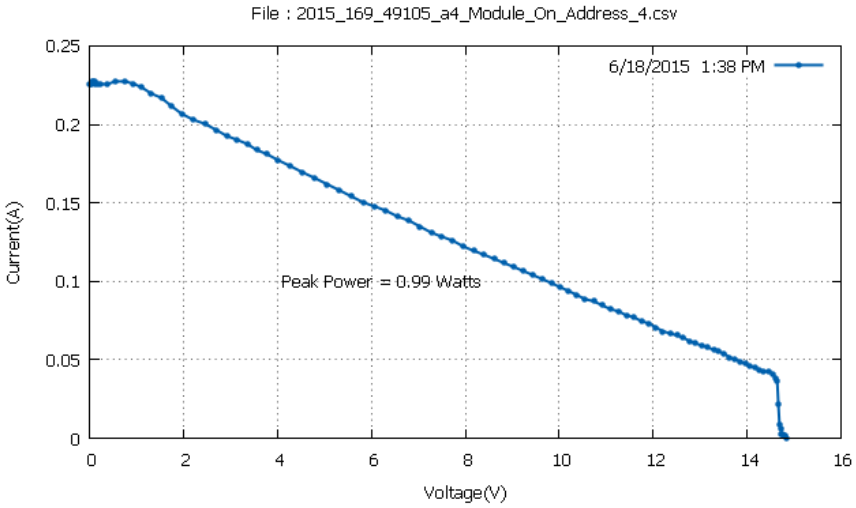
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.875618\ x\ 0.1040268}{920.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}49\ \%$$



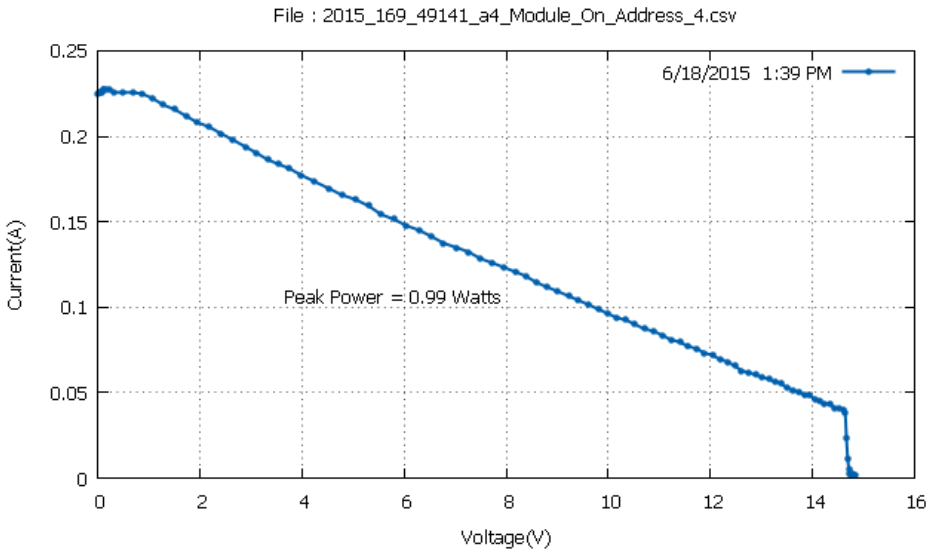
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.952931\ x\ 0.107879646}{915.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.860155\ x\ 0.11173249}{913.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.821498\ x\ 0.11173249}{909.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.38081\ x\ 0.1181539}{909.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}62\ \%$$

Module 8

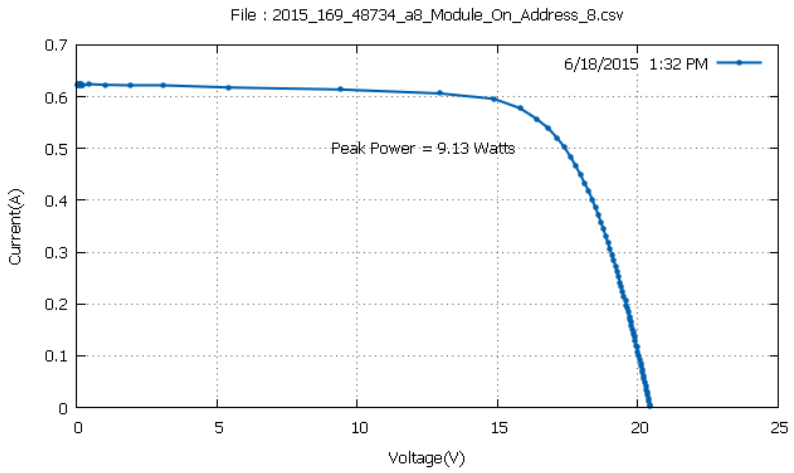
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

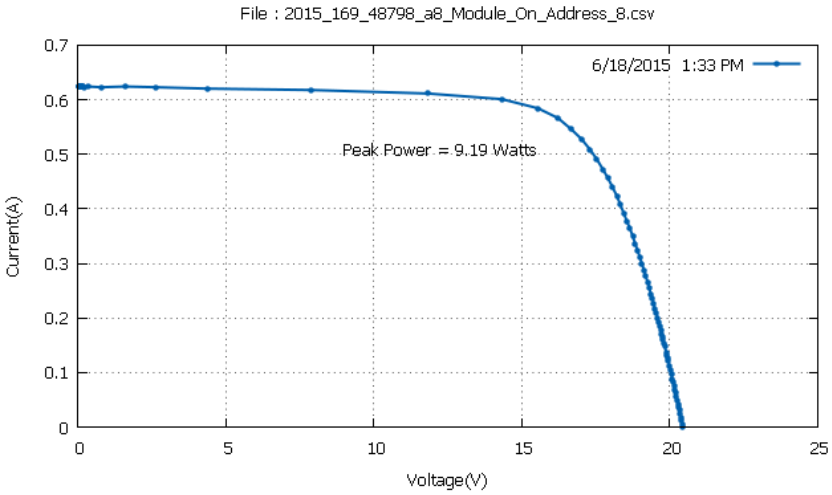
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:32	51,3	12,94
13:33	51,6	13
13:34	51,8	12,97
13:36	51,7	13
13:37	51,4	13,03
13:38	51,7	12,98

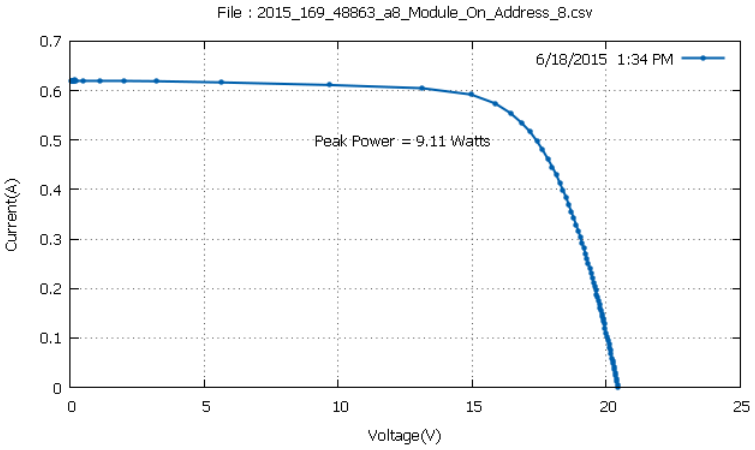
Mean Temperature: 51,58 ºC



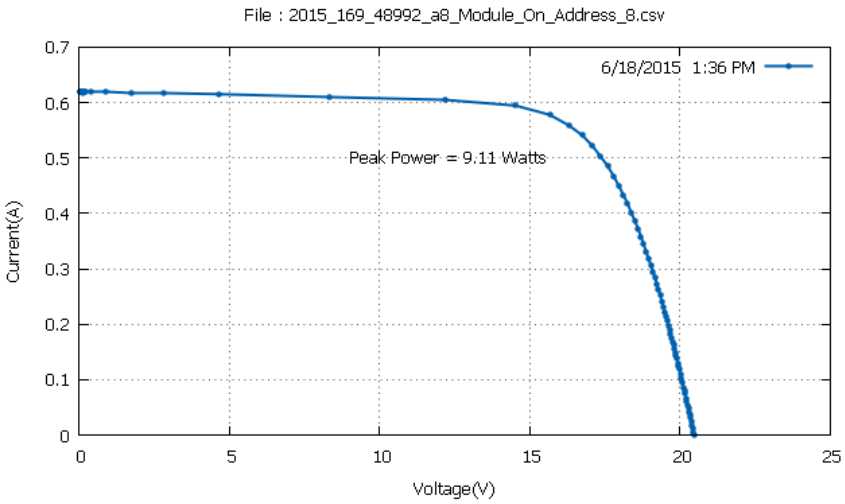
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.5573782}{918.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}94\ \%$$



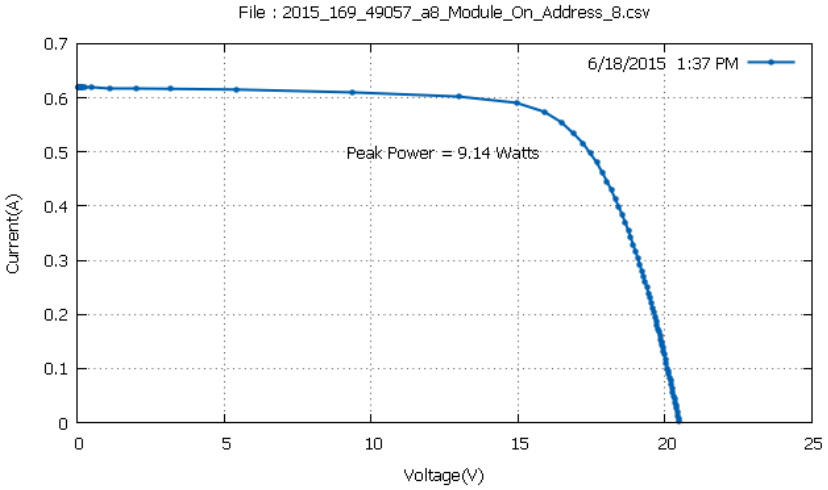
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.56636816}{920.1\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$



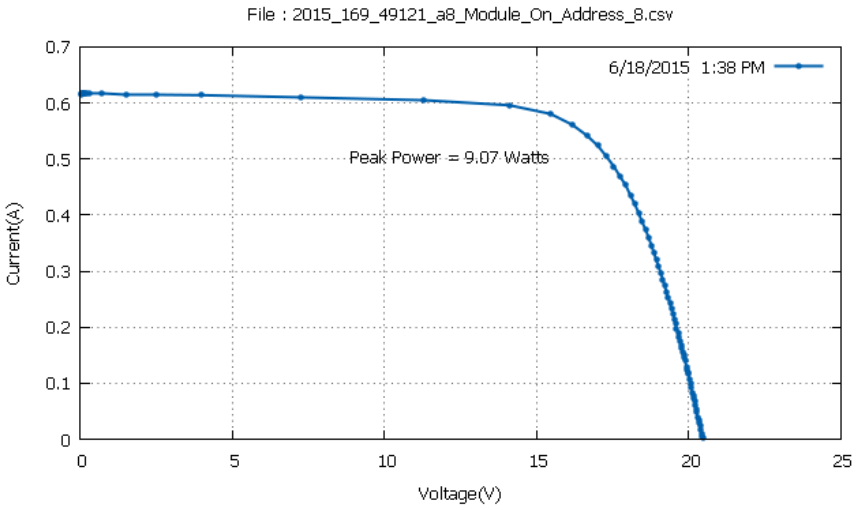
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4137077\ x\ 0.55480963}{913.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2977371\ x\ 0.5586625}{911.8\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4678268\ x\ 0.55480963}{912.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1663036\ x\ 0.561231}{909.4\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}98\ \%$$

Module 3

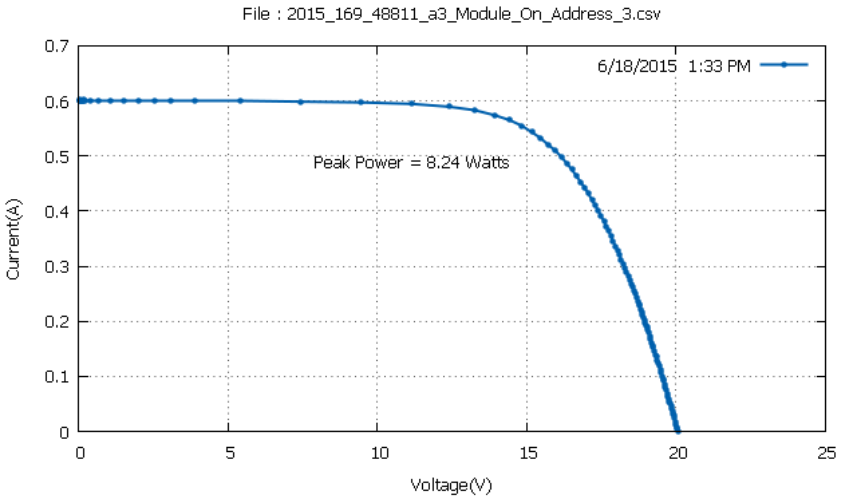
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

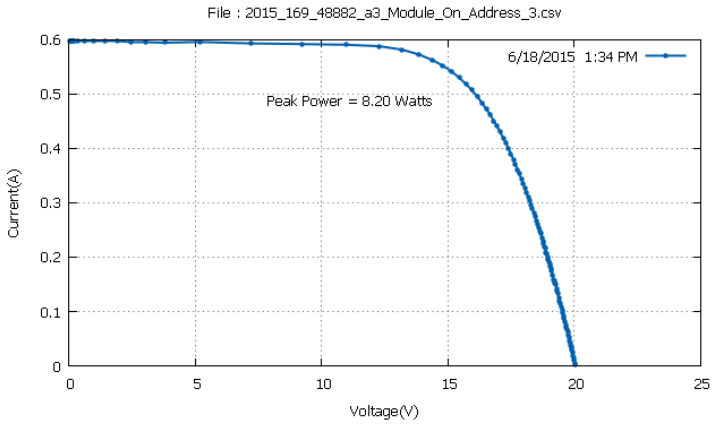
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:33	50,1	12,63
13:34	50,2	12,64
13:37	50,1	12,61
13:38	49,7	12,67
13:48	49	12,66
13:51	48,9	12,6

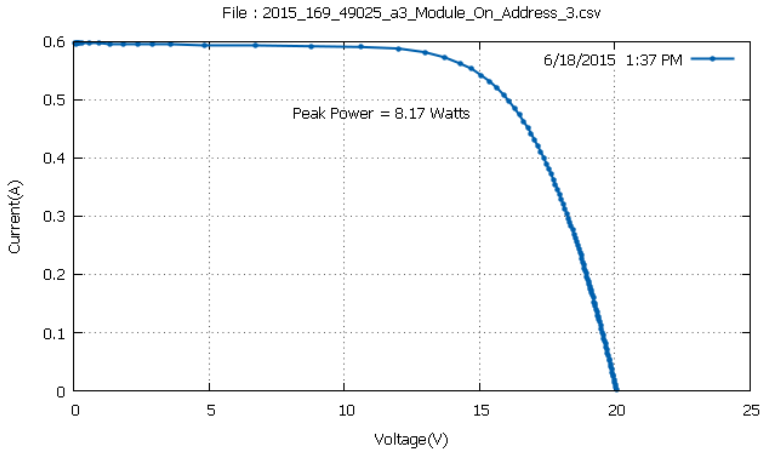
Mean Temperature: 49,66 ºC



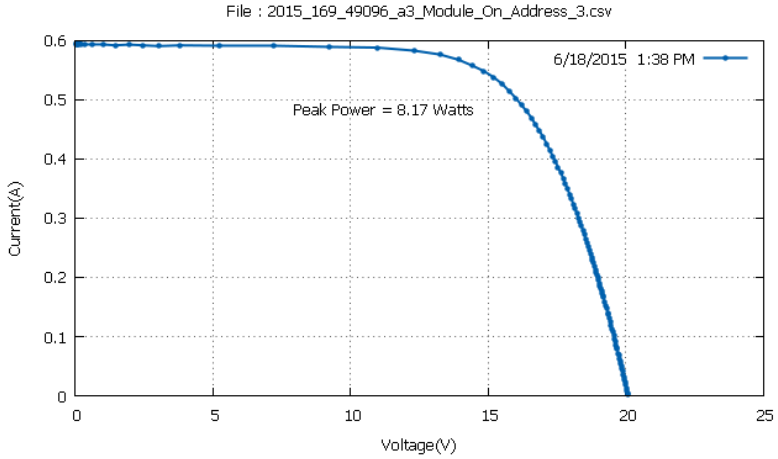
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.161225\ x\ 0.543251}{920.1\ x\ 0{,}0709}$ x 100 = 12,63 %



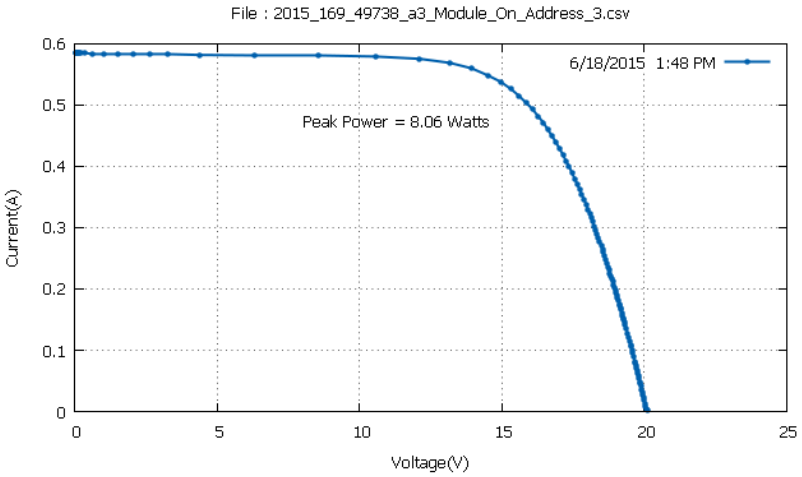
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1303\ x\ 0.5419668}{914.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}64\ \%$$



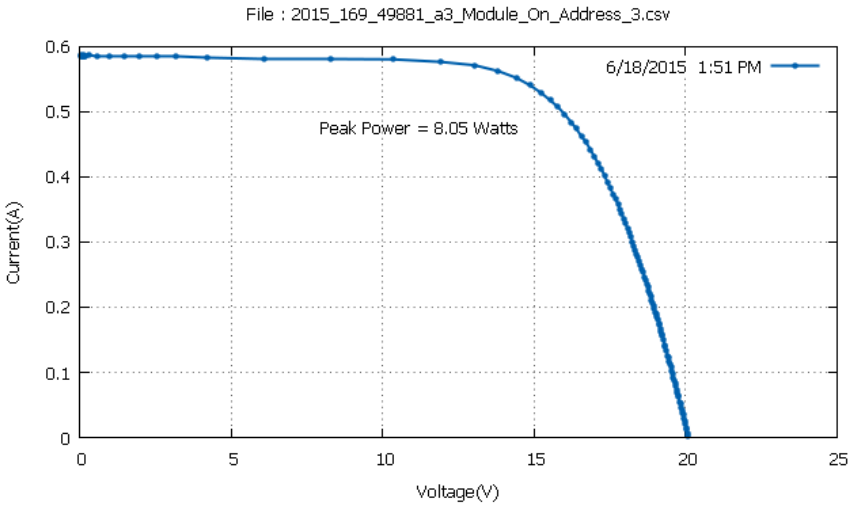
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3699722\ x\ 0.531692564}{913.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1921511\ x\ 0.538113952}{909.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.30039\ x\ 0.5265554}{897.9\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}66\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.223075\ x\ 0.529123962}{901.7\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}6\ \%$$

Module 5

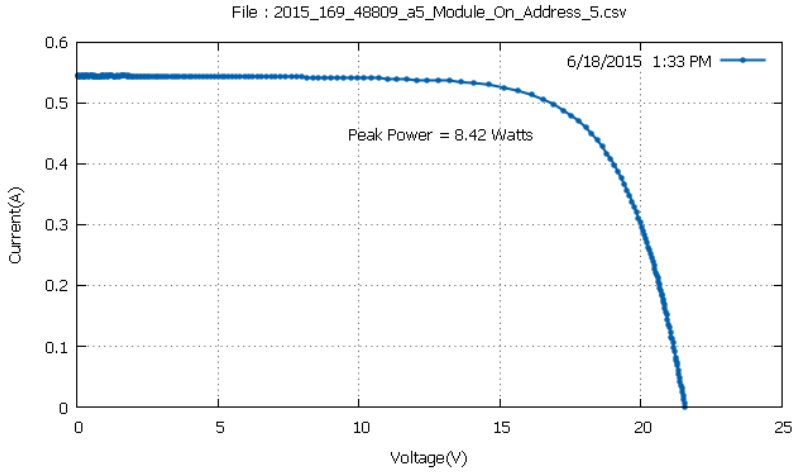
Date: 18/6/2015 – Noon Measurement

Temperature Ambient: 36 ºC

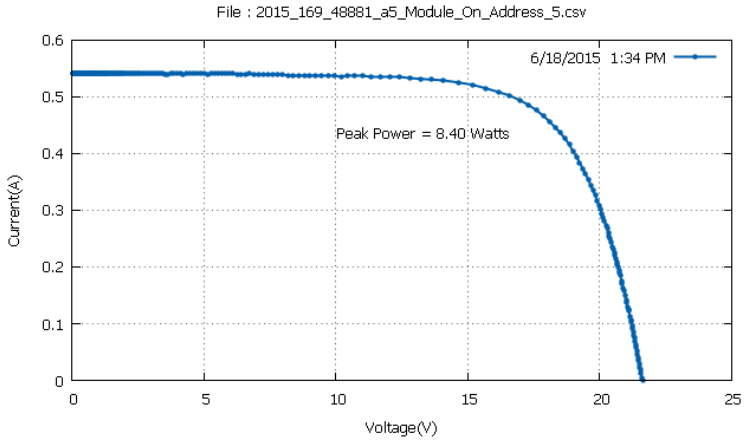
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:33	55,4	12,1
13:34	54,9	12,15
13:37	54,2	12,15
13:38	54,5	12,13
13:39	54,6	12,14
13:41	54,5	12,11

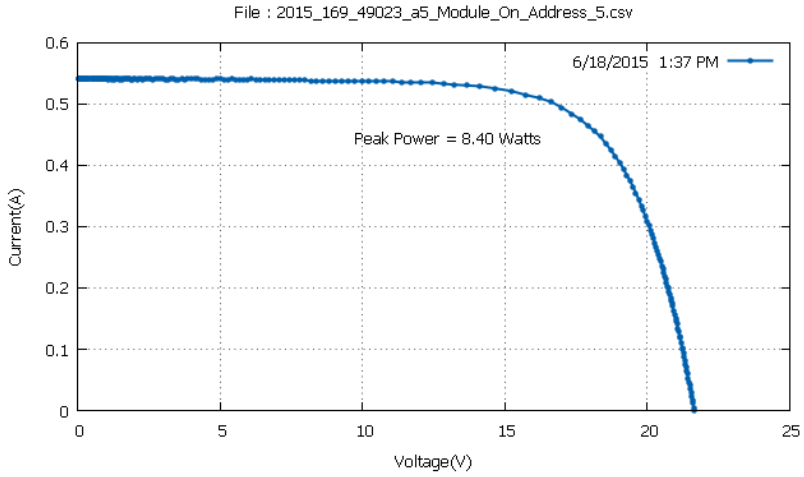
Mean Temperature: 54,68 ºC



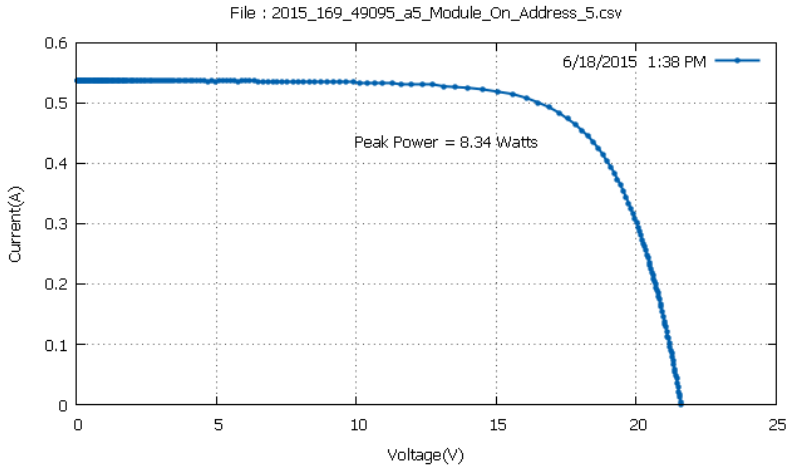
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9007835\ x\ 0.4983012}{920.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}1\ \%$$



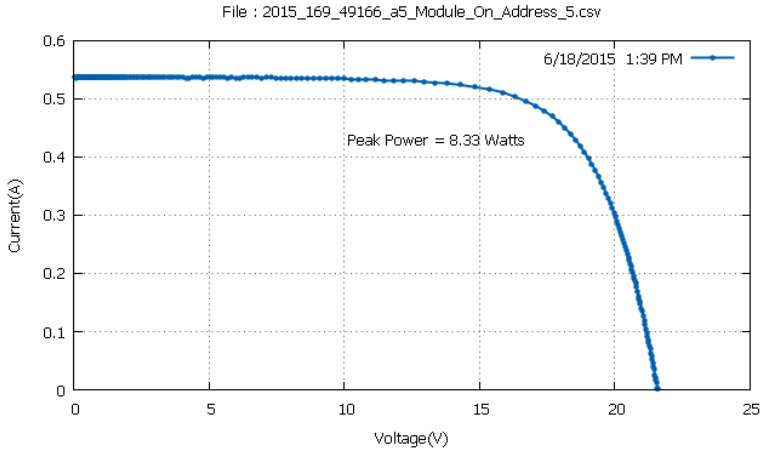
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3028164\ x\ 0.4854584}{913.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}15\ \%$$



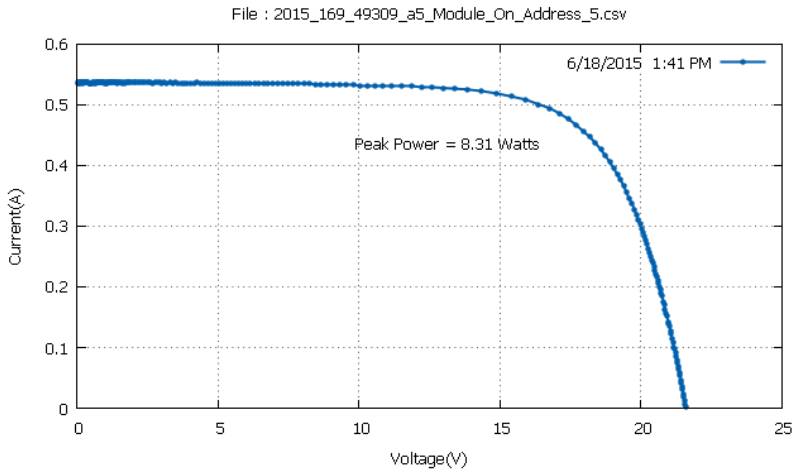
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.99356\ x\ 0.494448364}{914.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.225502\ x\ 0.484174132}{909.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3955917\ x\ 0.479037}{907.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1172619\ x\ 0.4854584}{907.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}11\ \%$$

Module 4

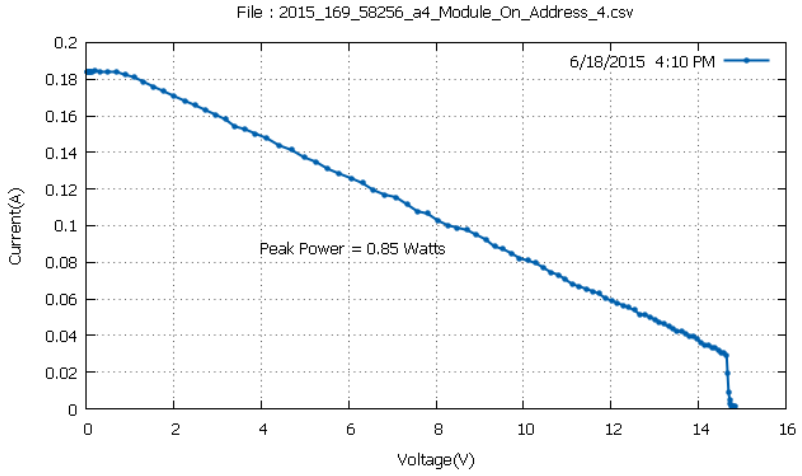
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

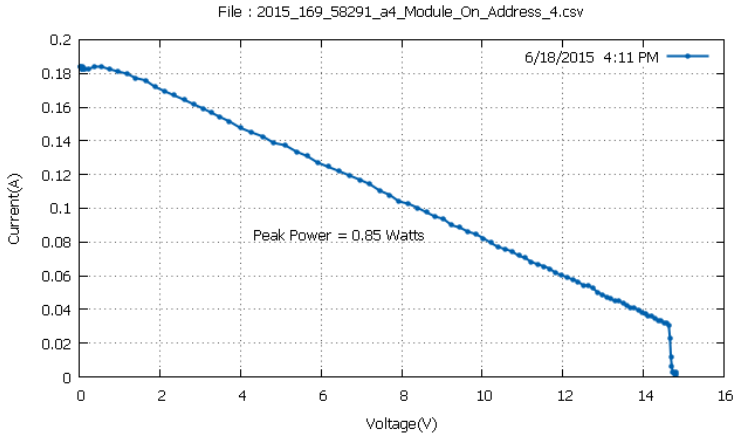
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:10	43,3	2,17
16:11	42,6	2,17
16:12	44,4	2,05
16:15	42,4	2,08
16:15	42,8	2,12
16:16	44,4	2

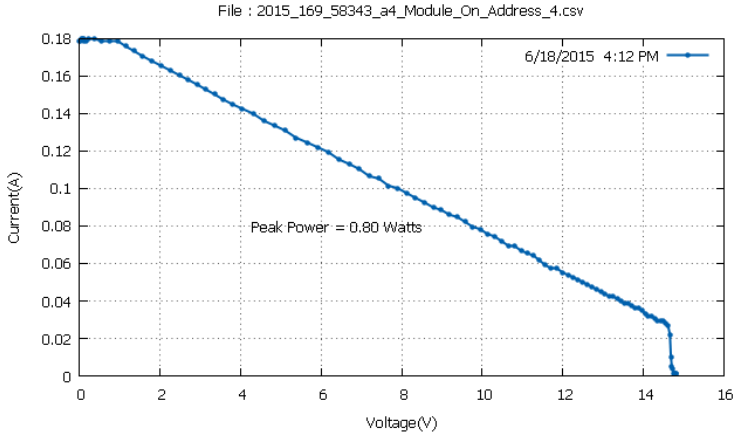
Mean Temperature: 43,31 ºC



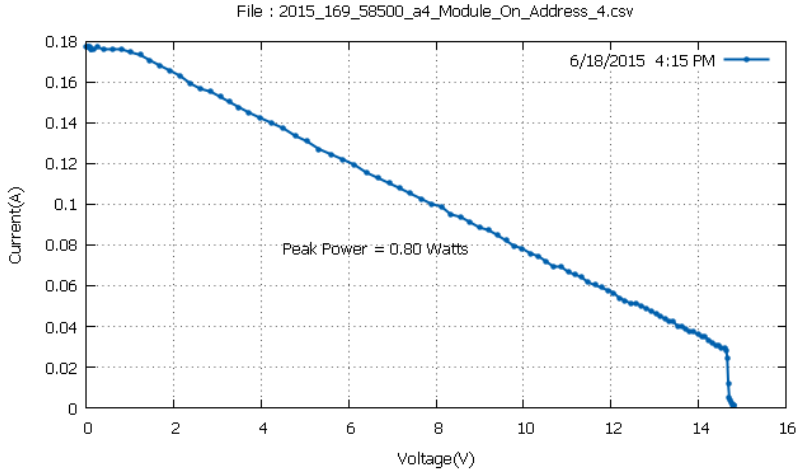
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.09760539}{582.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



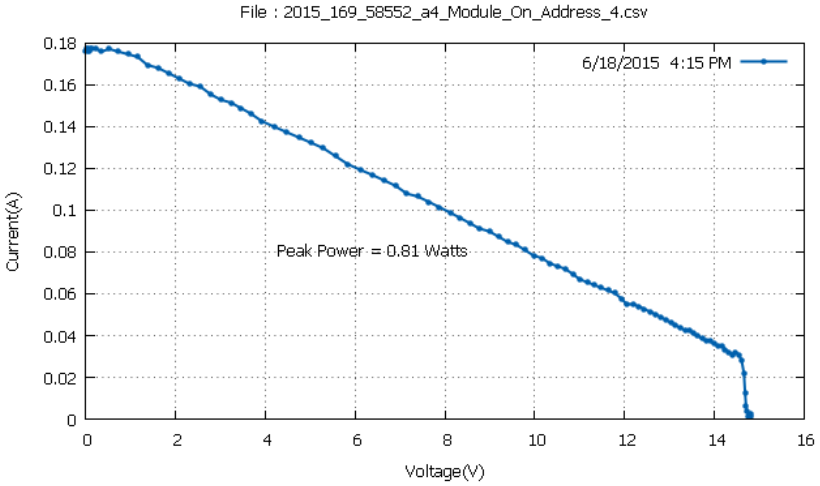
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.100173958}{581.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



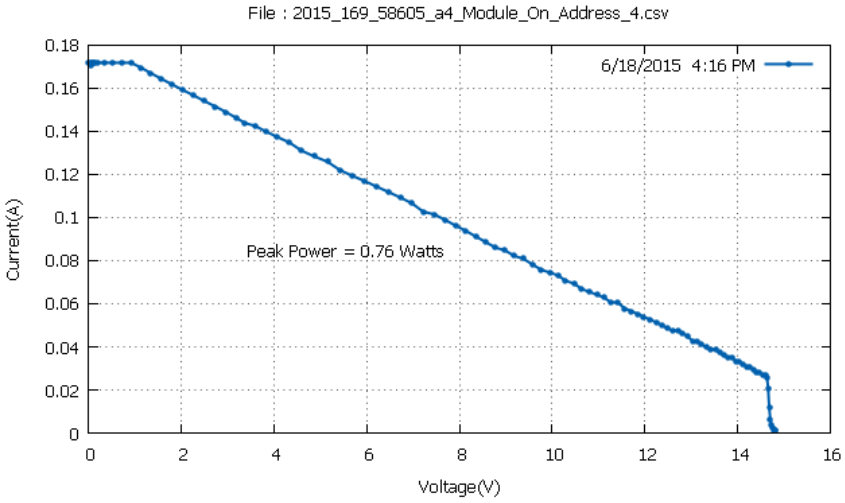
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.922006\ x\ 0.09118398}{580.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.2003355\ x\ 0.08733114}{571\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.983857\ x\ 0.0898997039}{569.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.133406\ x\ 0.09375255}{564.6\ x\ 0{,}0671} \text{ x } 100 = 2\ \%$$

Module 8

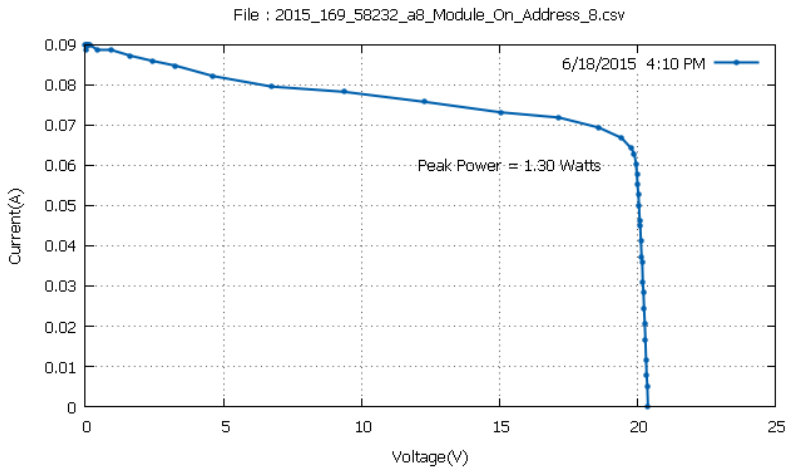
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

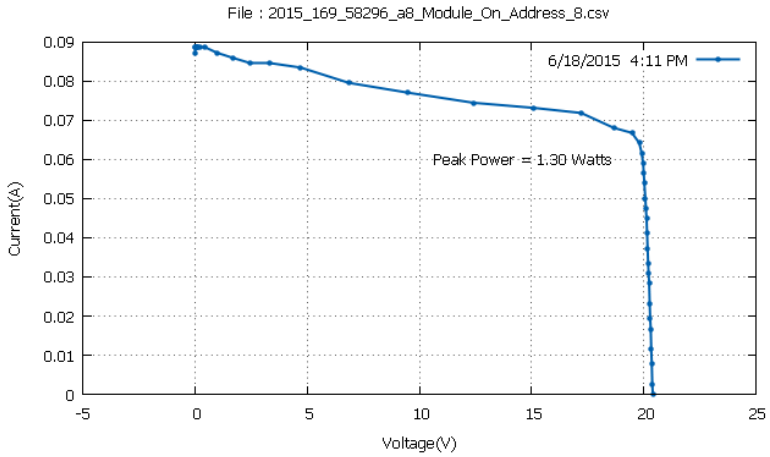
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:10	44,7	2,9
16:11	44,6	2,9
16:12	45,2	2,89
16:14	45	2,89
16:15	44,8	2,85
16:16	44,9	2,87

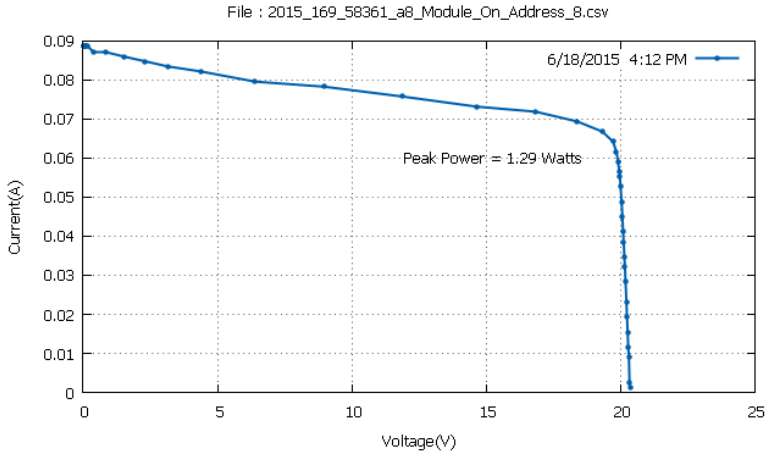
Mean Temperature: 44,86 ºC



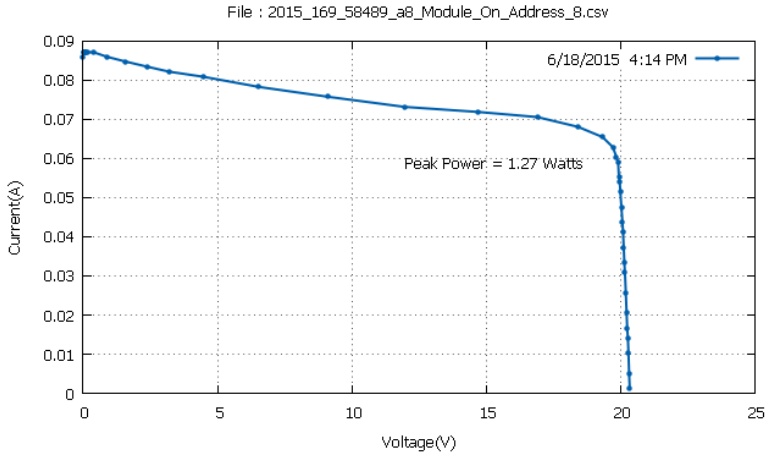
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.436676\ x\ 0.0667826}{583\ x\ 0{,}0768} \text{ x } 100 = 2{,}9\ \%$$



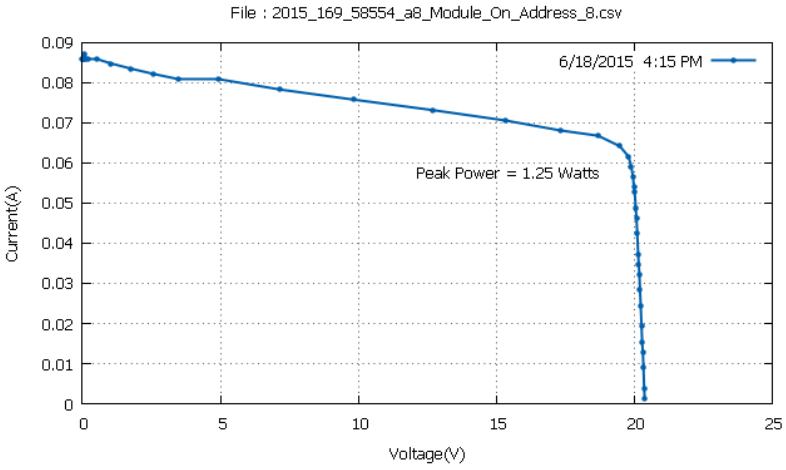
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.4753323\ x\ 0.06678264}{581.8\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}9\ \%$$



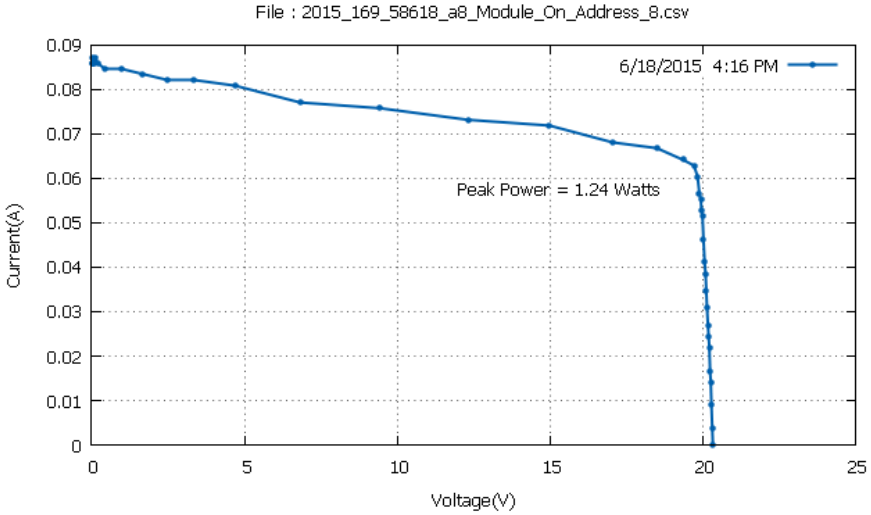
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3207054\ x\ 0.06678264}{580.1\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3284359\ x\ 0.06549836}{571.5\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.475332\ x\ 0.06421407}{569.1\ x\ 0{,}0768}\ \text{x } 100 = 2{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.35163\ x\ 0.06421407}{562.5\ x\ 0{,}0768}\ \text{x } 100 = 2{,}87\ \%$$

Module 3

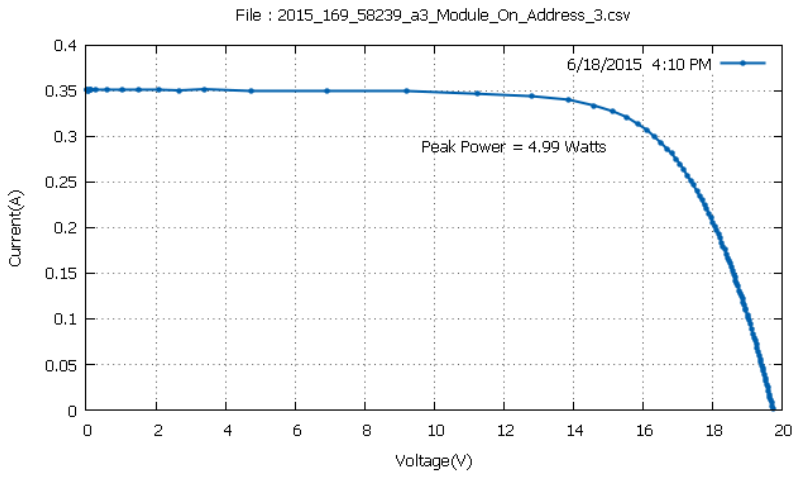
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

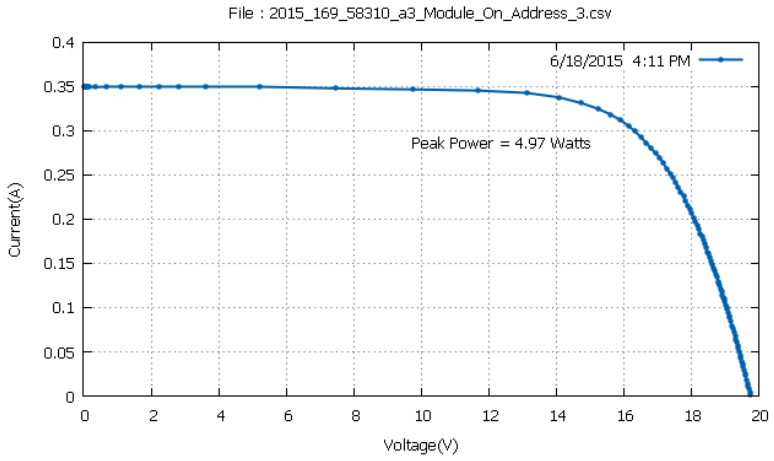
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:10	47,1	12,07
16:11	47,1	12,05
16:13	47,6	11,98
16:20	46,6	11,98
16:21	46,4	11,95
16:22	46,2	12

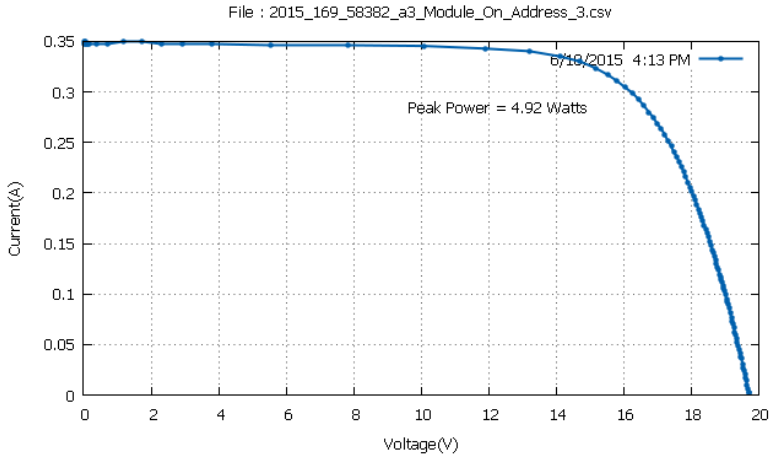
Mean Temperature: 46,83 ºC



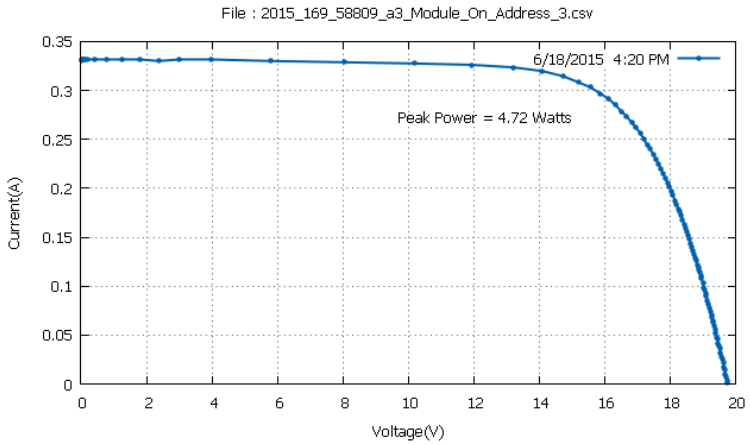
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5477934\ x\ 0.321070373}{582.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}07\ \%$$



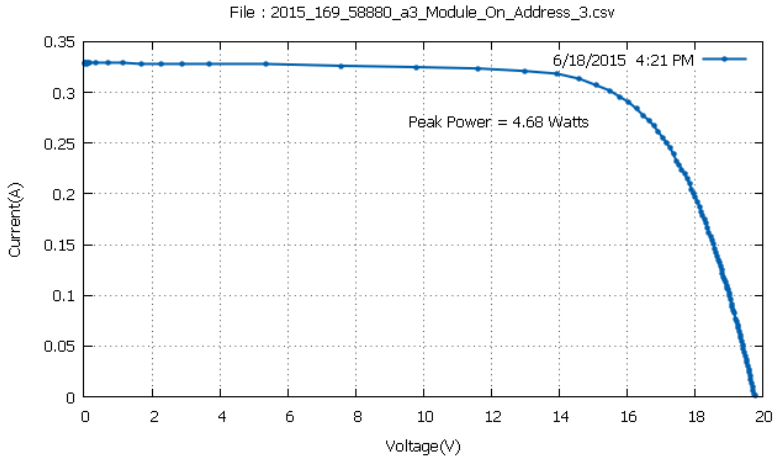
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6096449\ x\ 0.3185018}{581.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}05\ \%$$



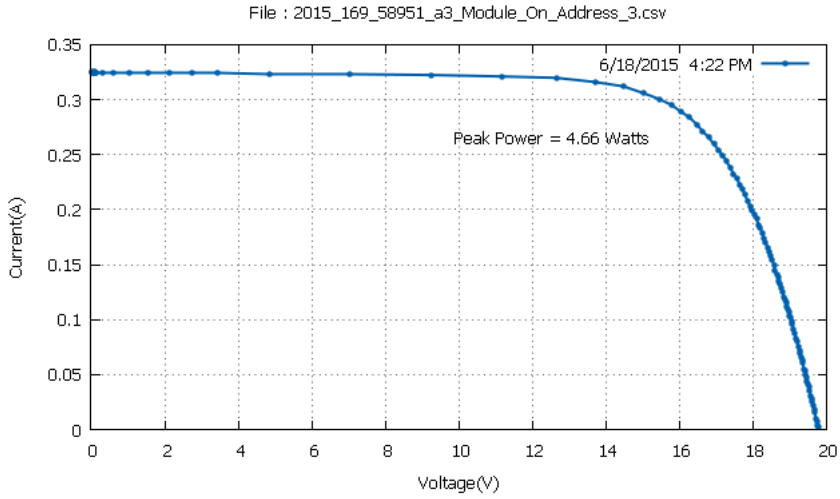
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5168686\ x\ 0.31721752}{578.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5709877\ x\ 0.303090423}{555.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4936743\ x\ 0.301806152}{552.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7720041\ x\ 0.295384735}{547.9\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$

Module 5

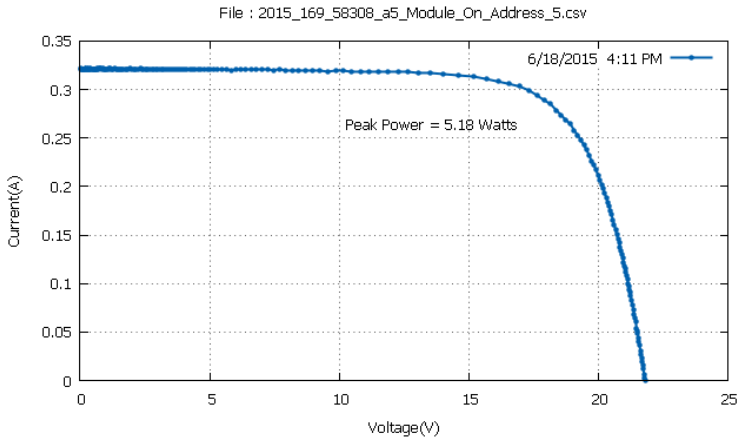
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

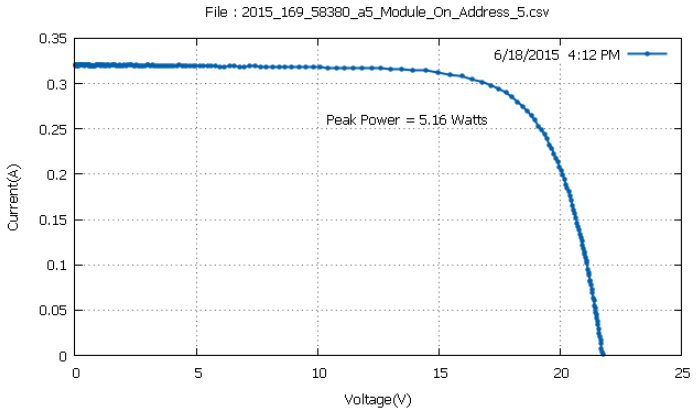
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:11	44,7	11,08
16:12	45,1	11,8
16:15	44,8	11,75
16:16	44,9	11,78
16:17	44,9	11,74
16:22	43,9	11,74

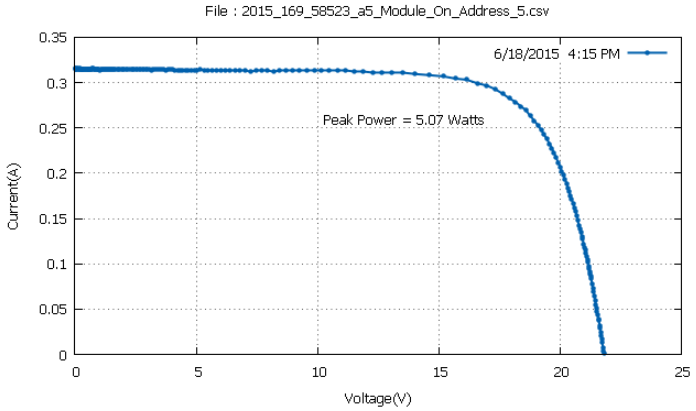
Mean Temperature: 44,71 ºC



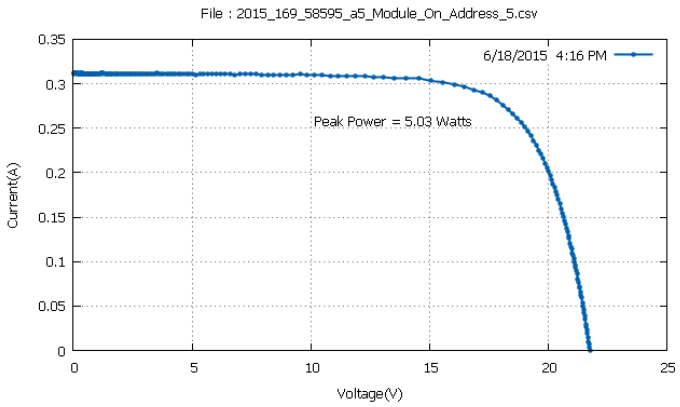
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.627533\ x\ 0.294100463}{580.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}8\ \%$$



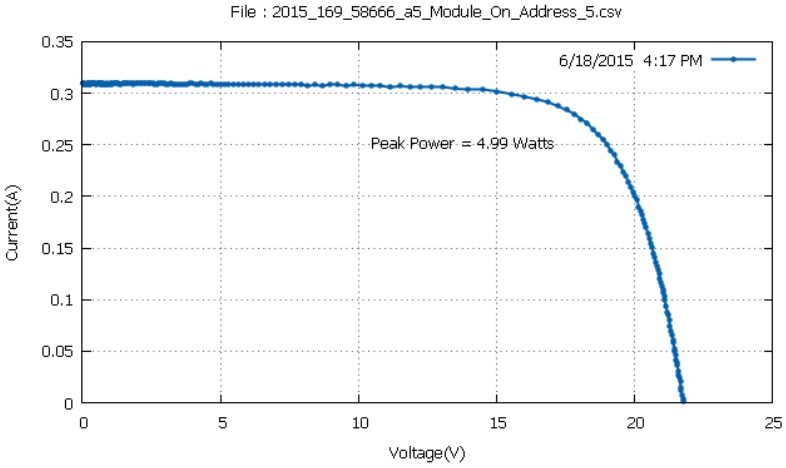
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7666988\ x\ 0.290247619}{578.4\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}8\ \%$$



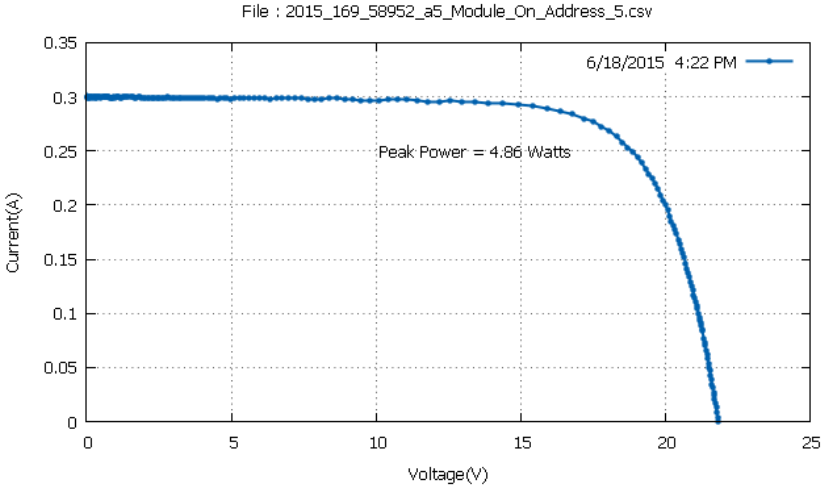
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.287679046}{570.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.286394775}{564.6\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8285484\ x\ 0.279973358}{562\ x\ 0{,}0756}\ \text{x } 100 = 11{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.277404815}{547.2\ x\ 0{,}0756}\ \text{x } 100 = 11{,}74\ \%$$

Module 4

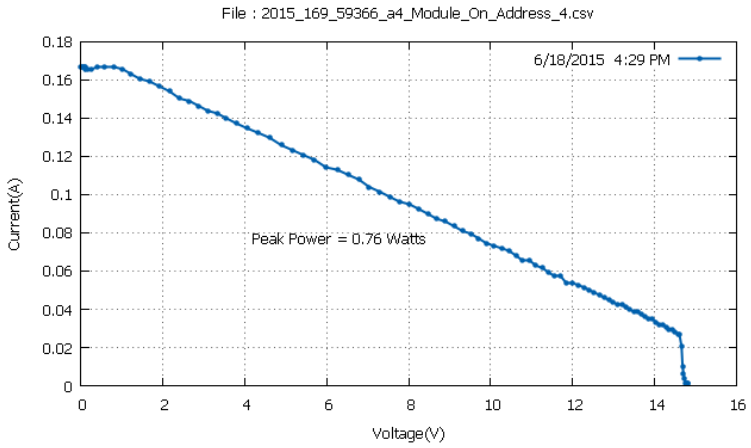
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

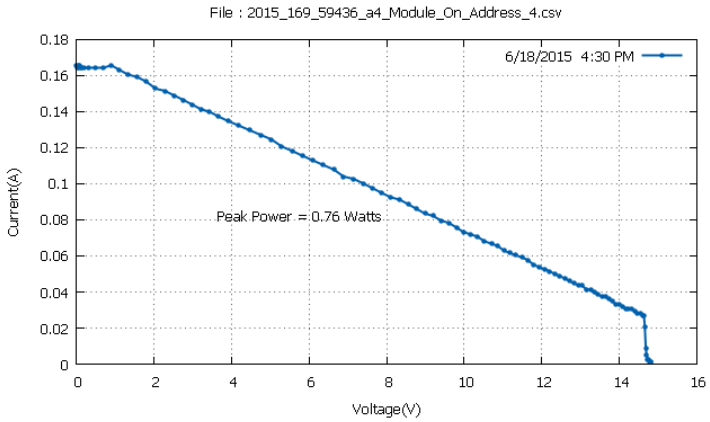
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:29	41,6	2,14
16:30	41,6	2,16
16:31	41,5	2,2
16:33	41,1	2,17
16:36	40,3	2,2
16:38	39,7	2,22

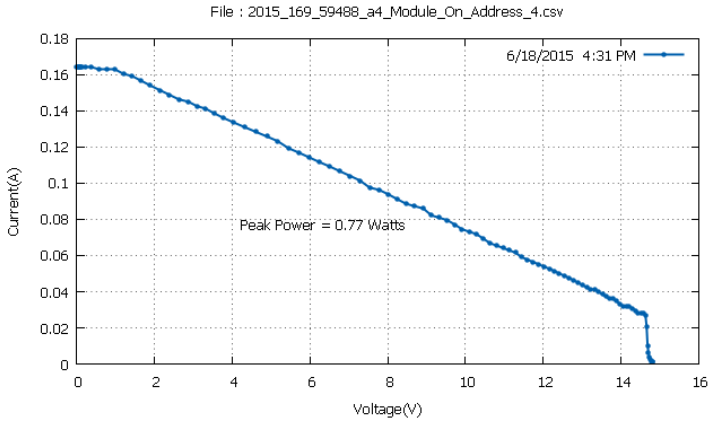
Mean Temperature: 40,96 ºC



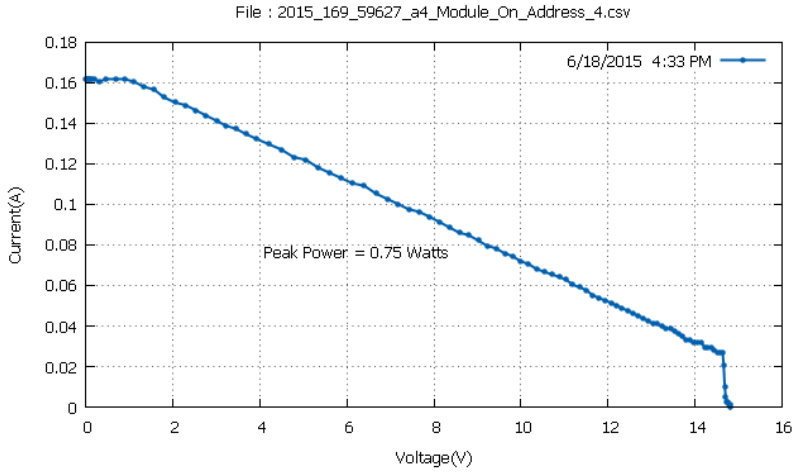
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.153947\ x\ 0.0834782943}{527.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}14\ \%$$



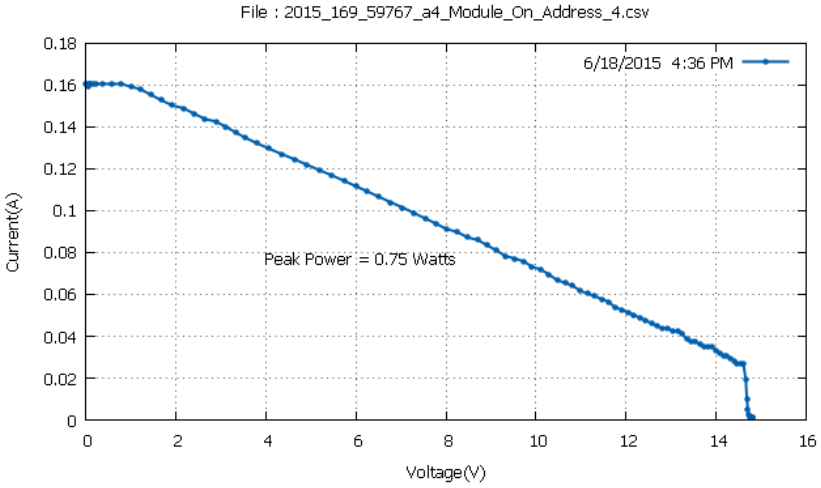
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.628214\ x\ 0.0886154249}{523.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$



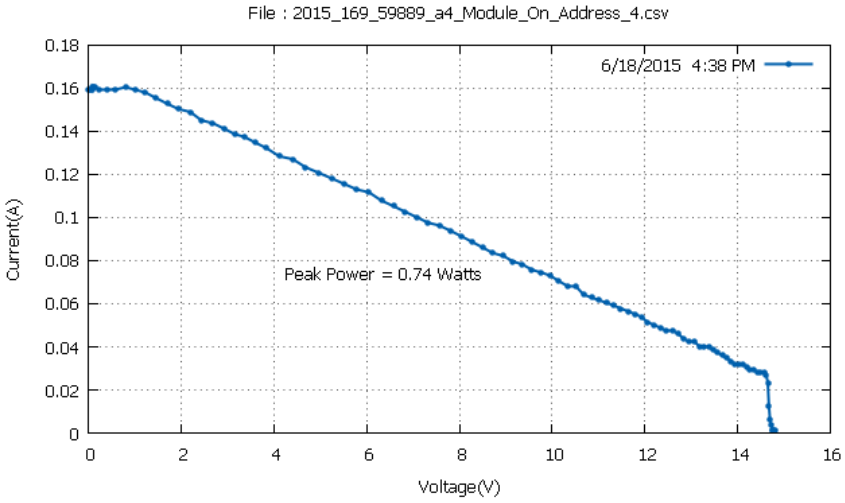
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.914274\ x\ 0.08604686}{521.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.581825\ x\ 0.08733114}{513.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.697796\ x\ 0.08604686}{506.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.728722\ x\ 0.08476258}{495.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$

Module 8

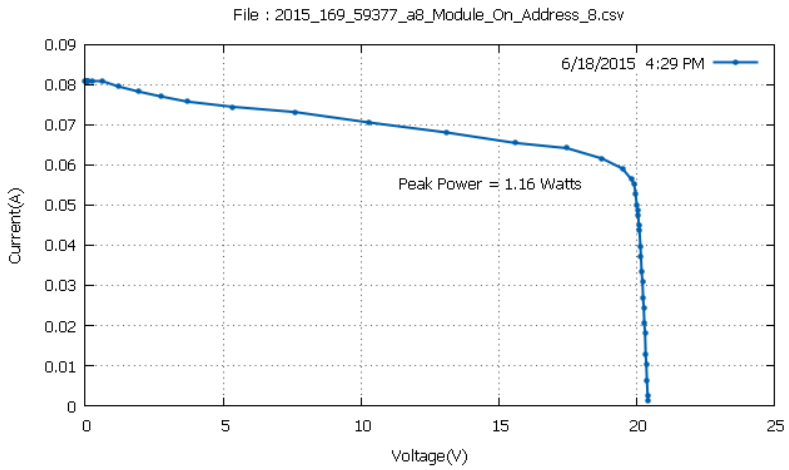
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

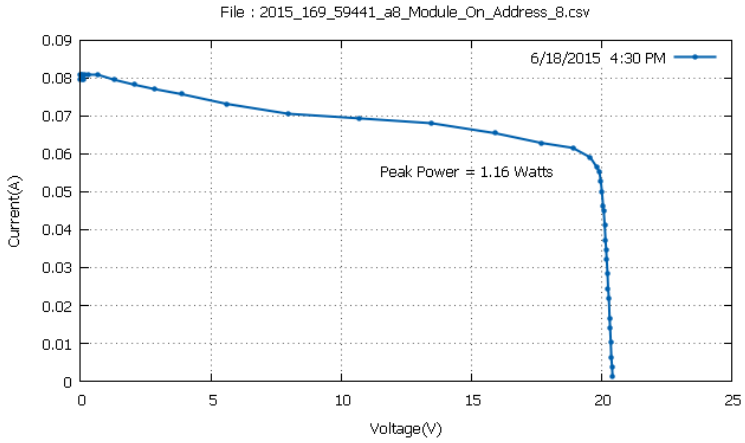
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:29	42,5	2,86
16:30	42,7	2,88
16:31	42,6	3
16:33	42,2	2,93
16:36	41,7	2,88
16:38	41,4	2,95

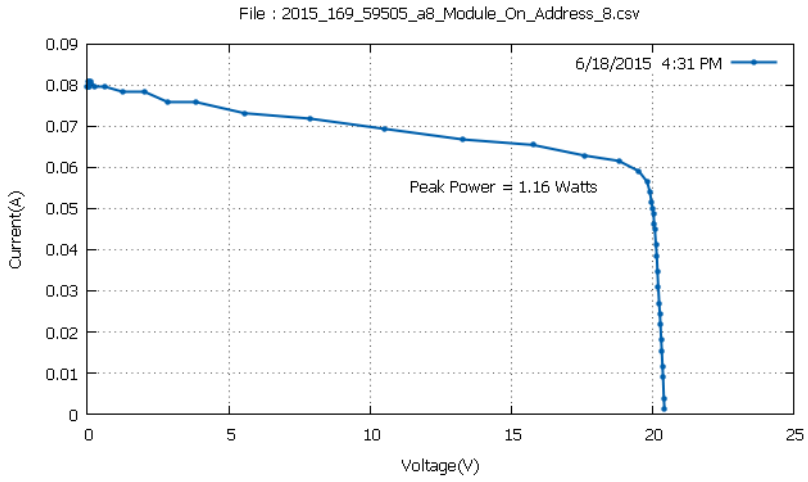
Mean Temperature: 42,18 ºC



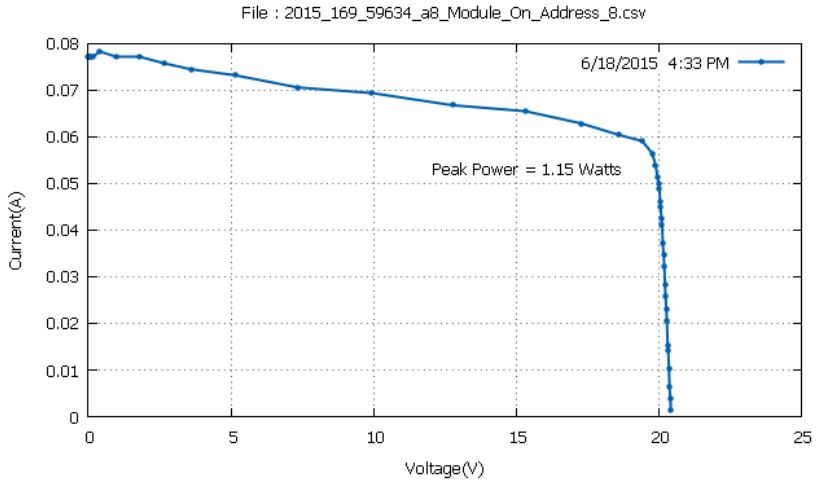
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7563133\ x\ 0.06164551}{526.9\ x\ 0{,}0768} \text{ x } 100 = 2{,}86\ \%$$



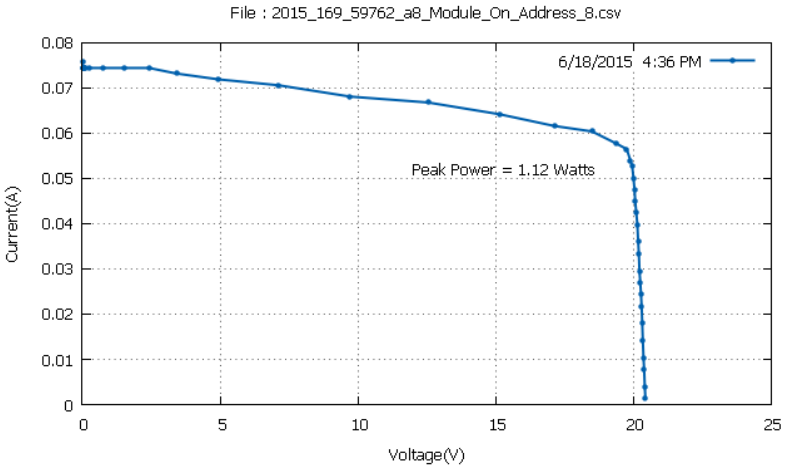
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.89548\ x\ 0.06164551}{524.1\ x\ 0{,}0768} \text{ x } 100 = 2{,}88\ \%$$



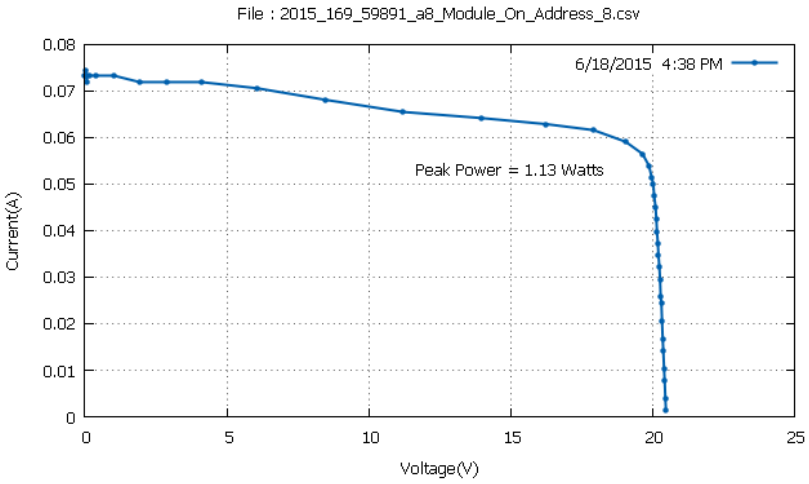
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8104343\ x\ 0.06164551}{519.3\ x\ 0{,}0768} \text{ x } 100 = 3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.4212132\ x\ 0.05907695}{511\ x\ 0{,}0768} \text{ x } 100 = 2{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.35163\ x\ 0.0577926673}{505.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.050106\ x\ 0.05907695}{497.1\ x\ 0{,}0768} \text{ x } 100 = 2{,}95\ \%$$

Module 3

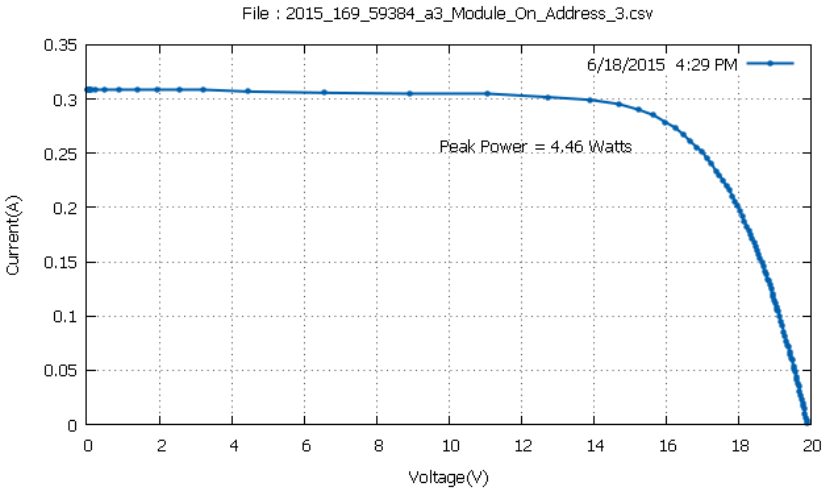
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

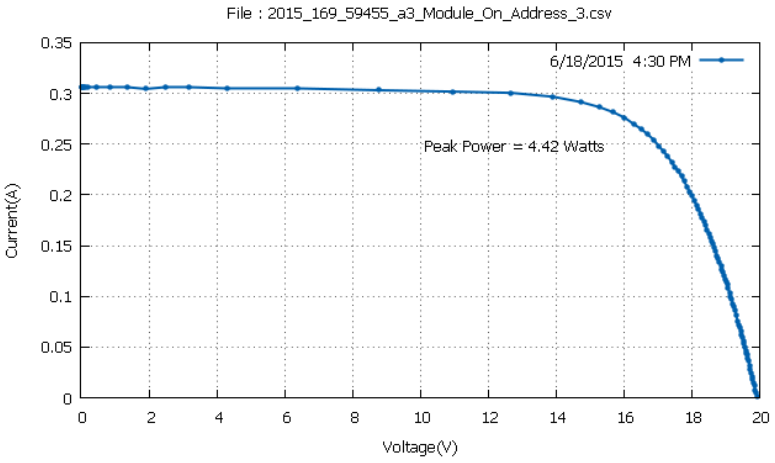
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:29	42,8	11,95
16:30	42,7	11,93
16:32	42,2	11,92
16:34	41,7	11,86
16:39	40,7	11,83
16:40	40,5	11,81

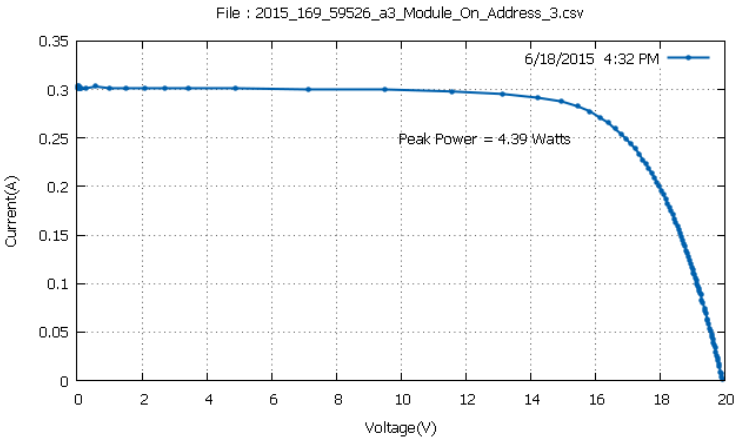
Mean Temperature: 41,76 ºC



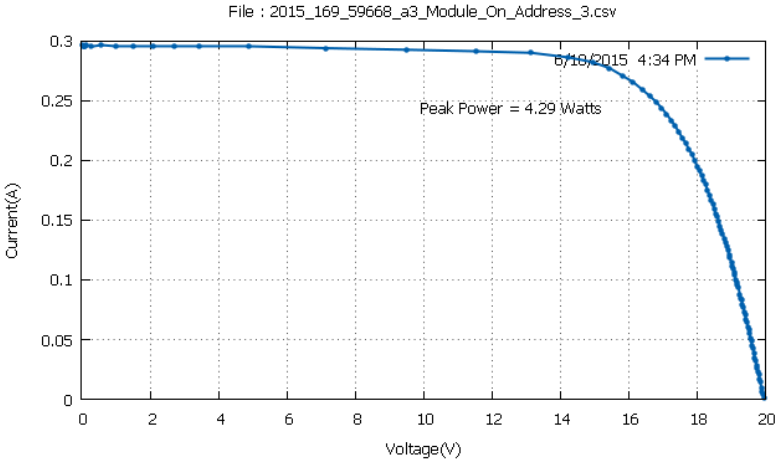
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6560335\ x\ 0.2851105}{526.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}95\ \%$$



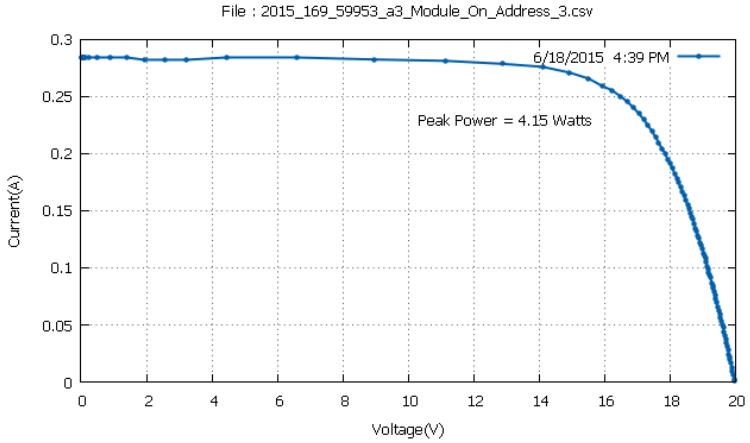
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194073\ x\ 0.2761205}{522.6\ x\ 0{,}0709} \text{ x } 100 = 11{,}93\ \%$$



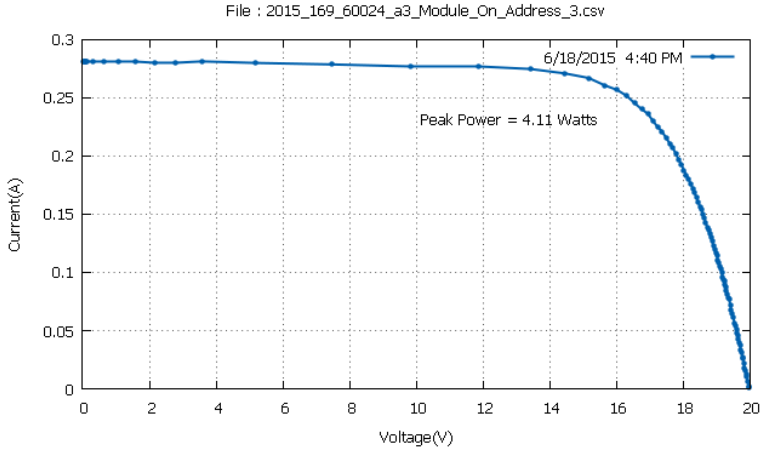
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8415861\ x\ 0.277404815}{519.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1276474\ x\ 0.265846282}{510\ x\ 0{,}0709} \text{ x } 100 = 11{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.255572021}{494.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0116768\ x\ 0.2568563}{490.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}81\ \%$$

Module 5

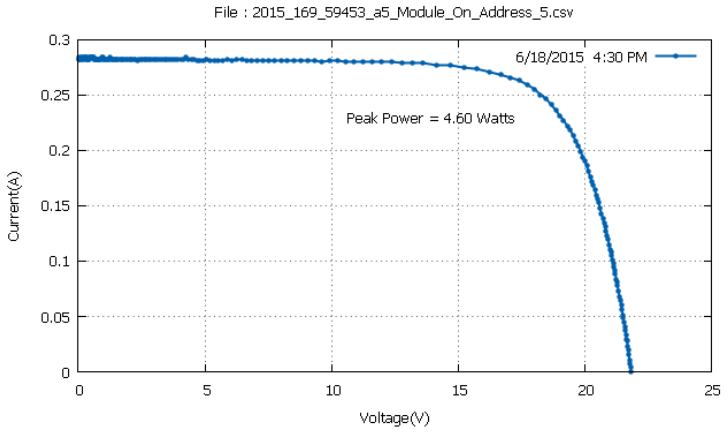
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

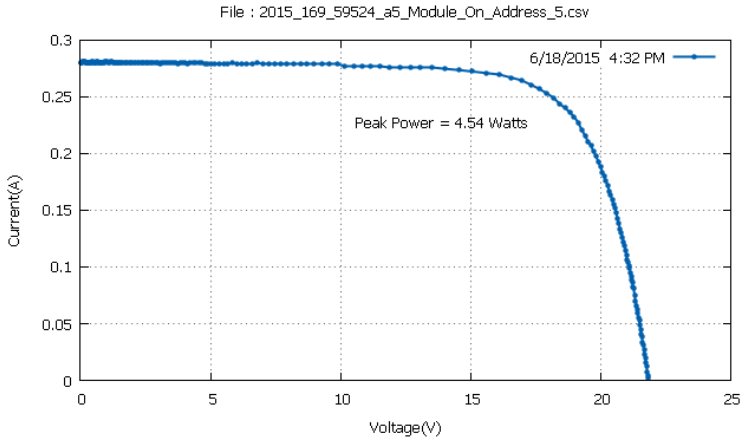
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:30	43,3	11,63
16:32	42,9	11,57
16:34	42,9	11,58
16:35	42,7	11,54
16:36	42,1	11,53
16:43	41,1	11,46

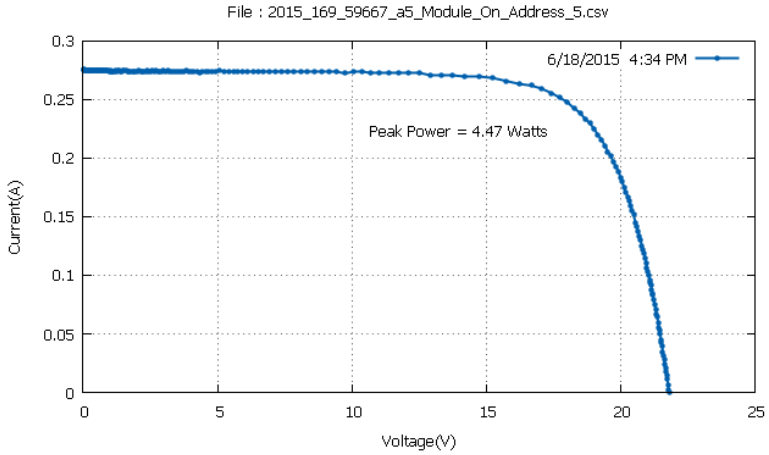
Mean Temperature: 42,5 ºC



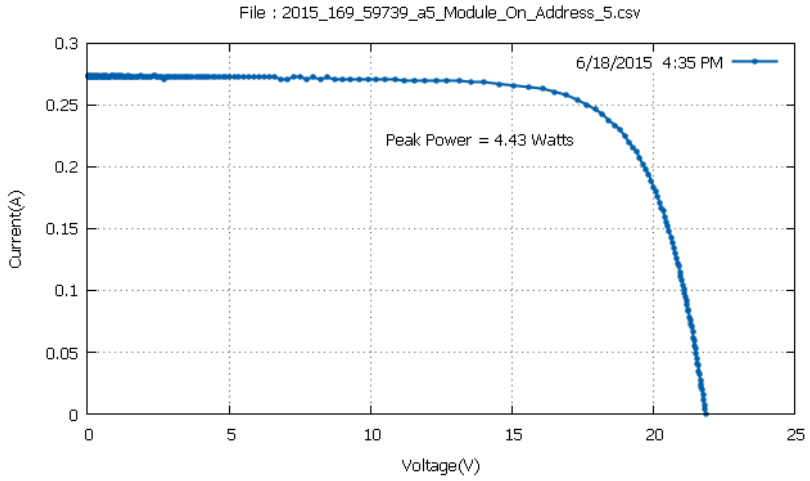
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.255572021}{522.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}63\ \%$$



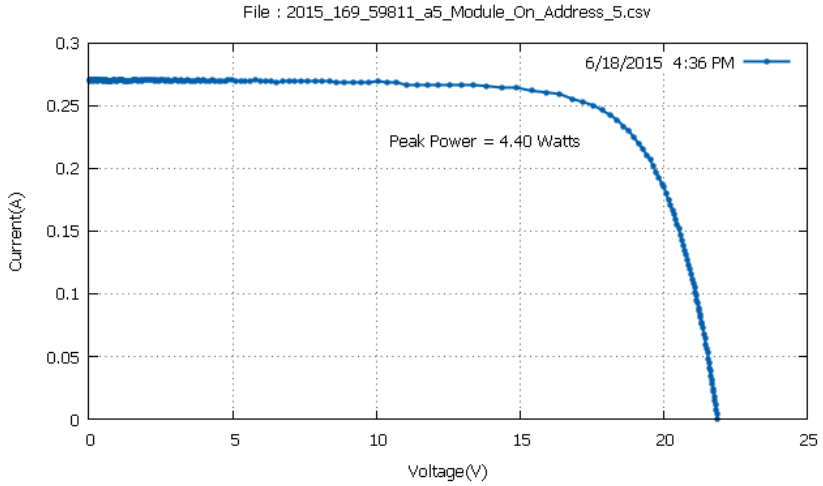
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9367886\ x\ 0.253003448}{518.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}57\ \%$$



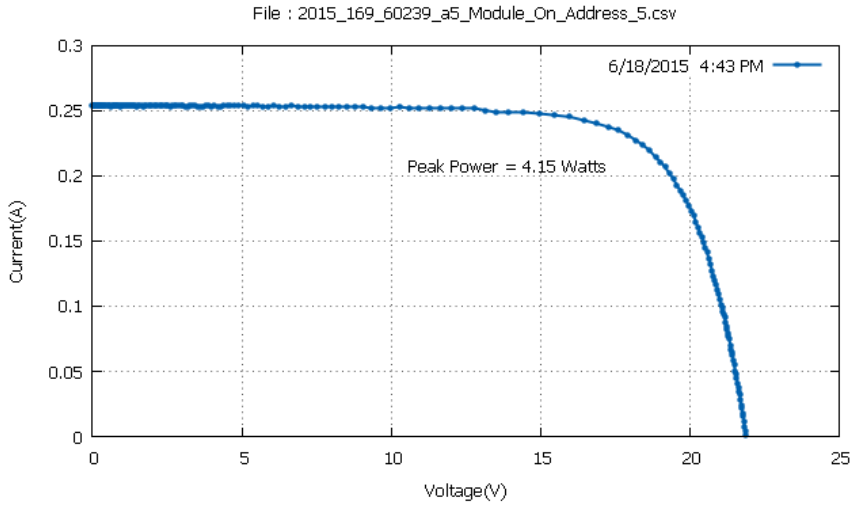
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0141029\ x\ 0.24786633}{510.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.944519\ x\ 0.246582046}{507.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8594742\ x\ 0.246582046}{504.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9290581\ x\ 0.231170669}{478.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}46\ \%$$

Module 4

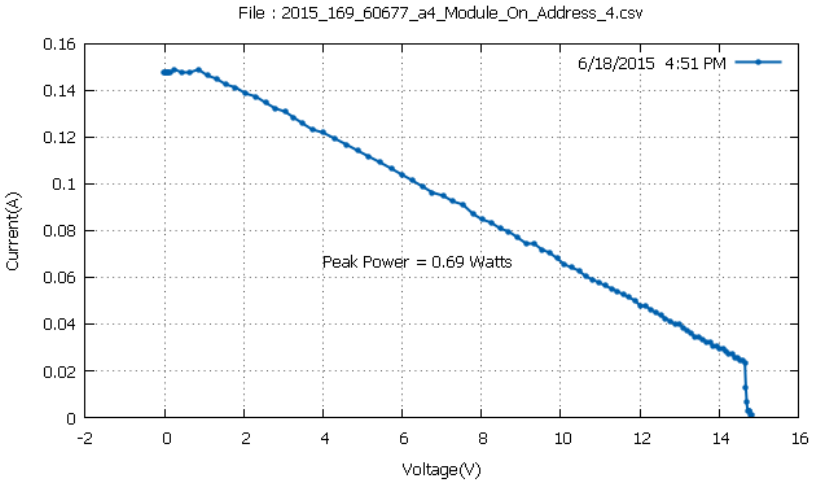
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

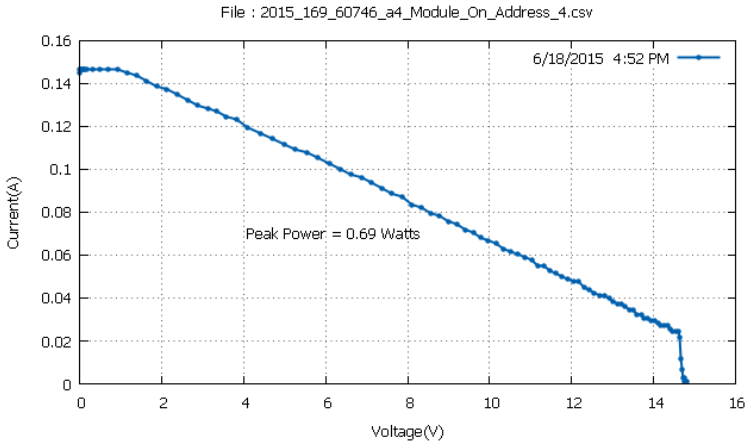
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:51	37,7	2,25
16:52	37,8	2,27
16:53	37,6	2,25
16:55	37,6	2,26
16:57	37,6	2,22
17:00	36,5	2,27

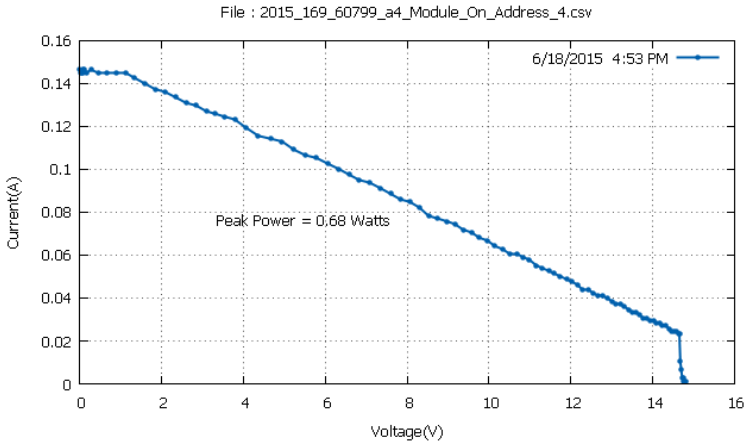
Mean Temperature: 37,46 ºC



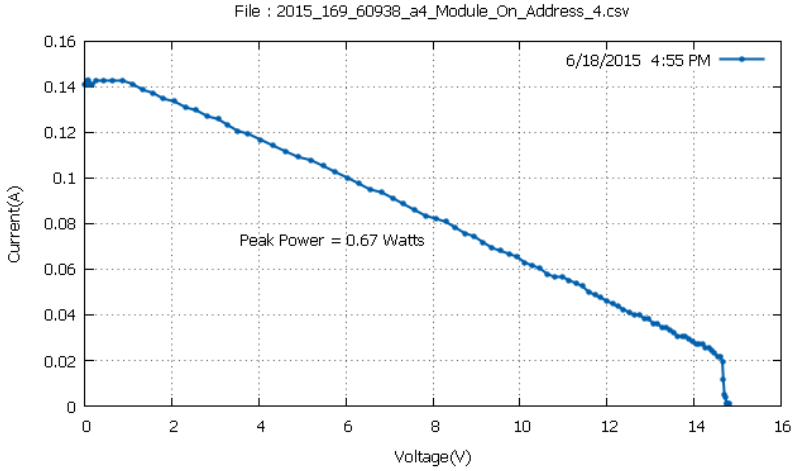
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.161678\ x\ 0.0757726058}{456.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$



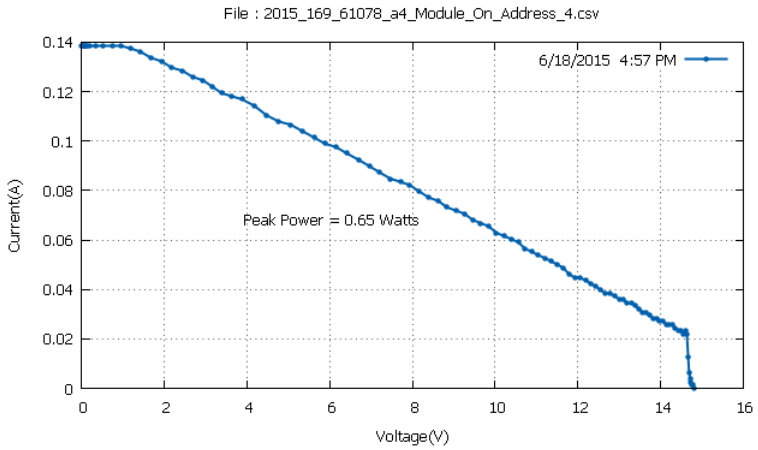
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.844692\ x\ 0.0783411}{452.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$



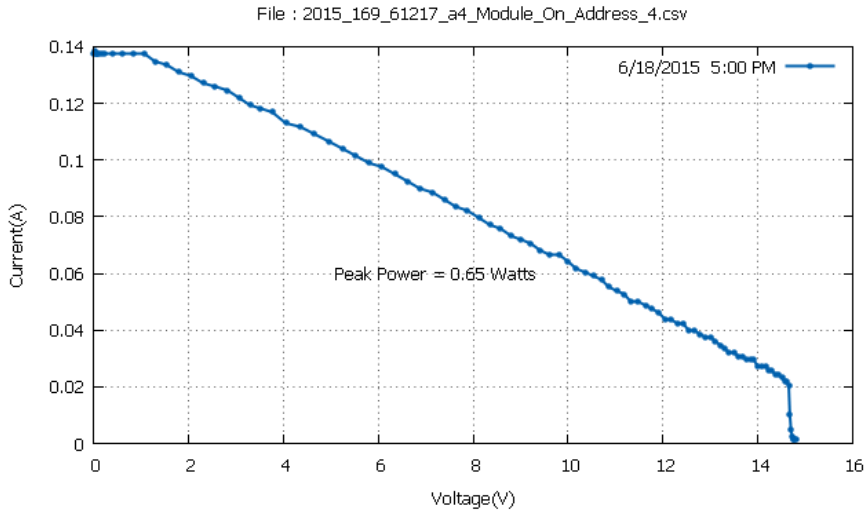
$$n = \frac{Pou}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.07834117}{449.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.28803349\ x\ 0.08090974}{440.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.38081\ x\ 0.0783411}{434.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.349884\ x\ 0.07834117}{425.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$

Module 8

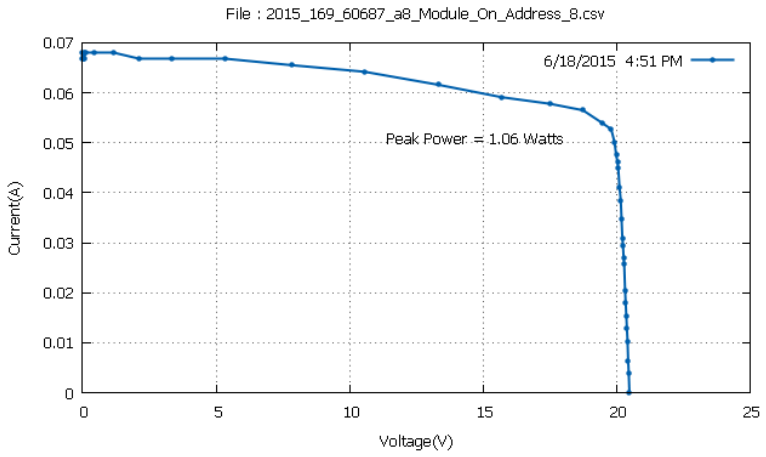
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

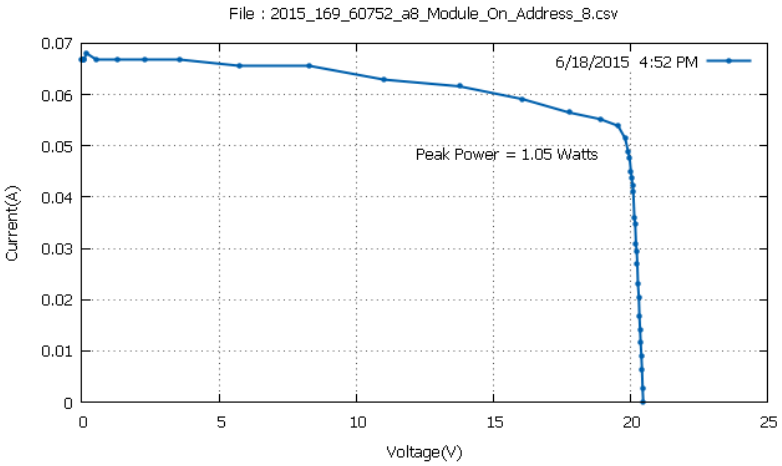
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:51	38,8	3,03
16:52	38,8	3,03
16:53	38,6	3,06
16:55	38,4	3,04
16:57	38,1	3,06
17:00	37,8	3,12

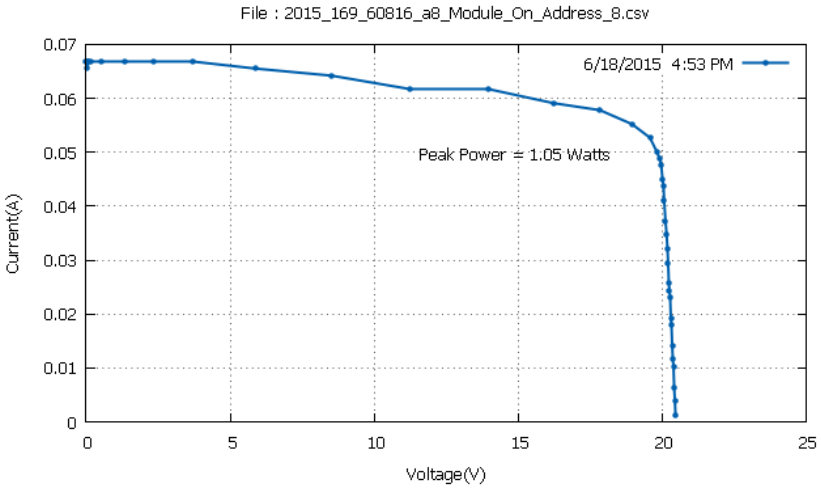
Mean Temperature: 38,41 ºC



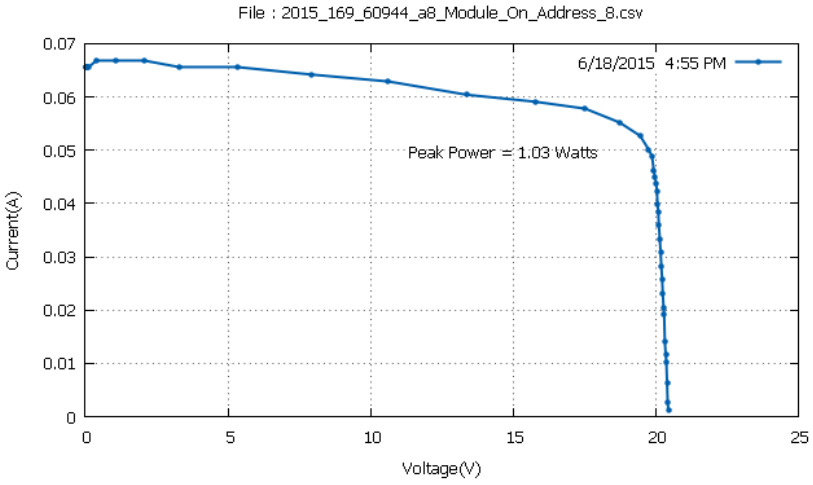
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7408524\ x\ 0.0565083846}{455.6\ x\ 0{,}0768} \text{ x } 100 = 3{,}03\ \%$$



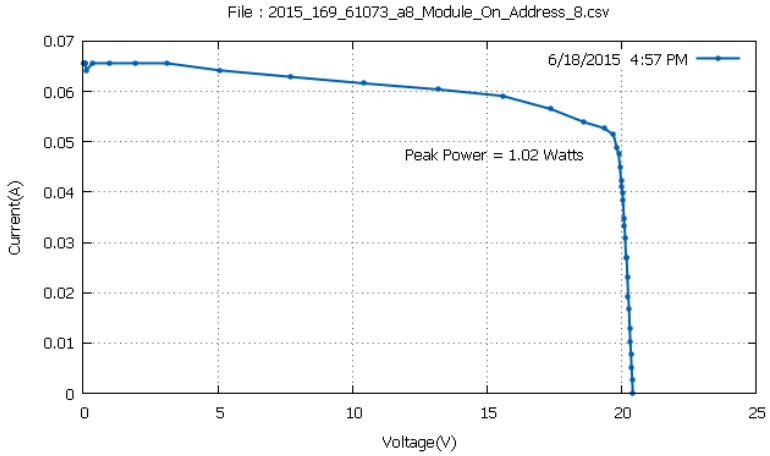
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.5526466\ x\ 0.0539398231}{450.9\ x\ 0{,}0768} \text{ x } 100 = 3{,}03\ \%$$



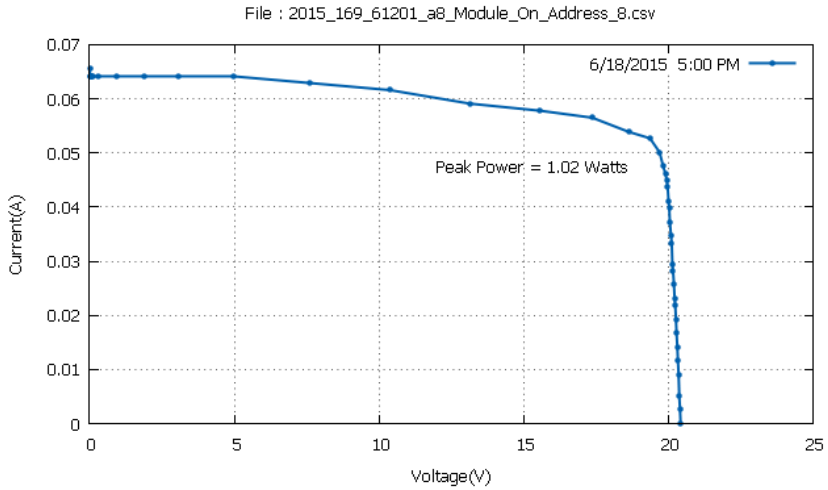
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.95733\ x\ 0.0552241057}{445.9\ x\ 0{,}0768} \text{ x } 100 = 3{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.73312\ x\ 0.0552241057}{440.6\ x\ 0{,}0768} \text{ x } 100 = 3{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3593616\ x\ 0.05265554}{433.7\ x\ 0{,}0768} \text{ x } 100 = 3{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.367092\ x\ 0.0526555}{425.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}12\ \%$$

Module 3

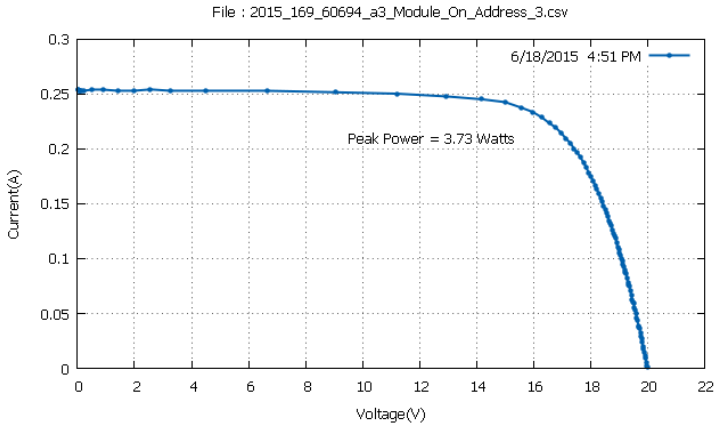
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

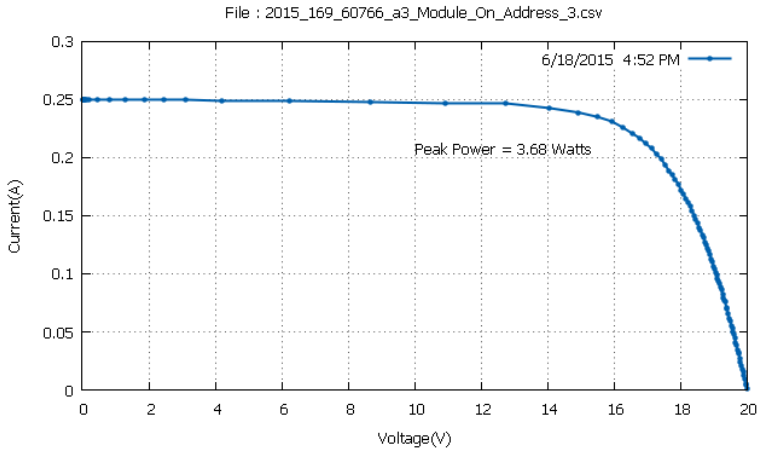
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:51	38,4	11,56
16:52	38,3	11,53
16:53	38,2	11,54
16:56	37,8	11,45
17:01	37,3	11,27
17:02	37,1	11,16

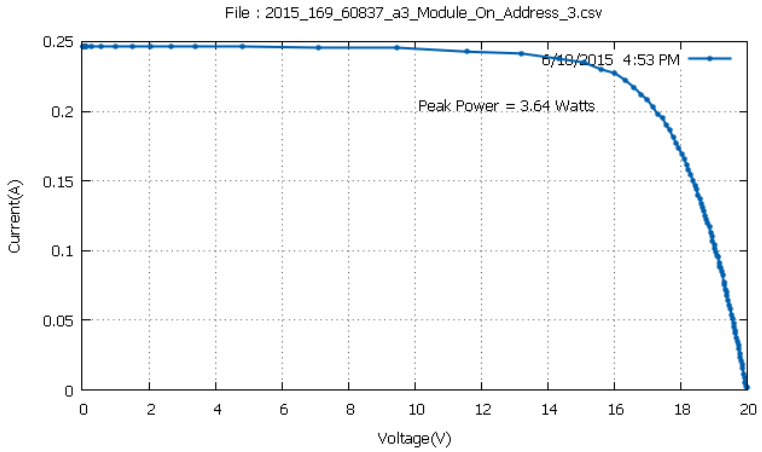
Mean Temperature: 37,85 ºC



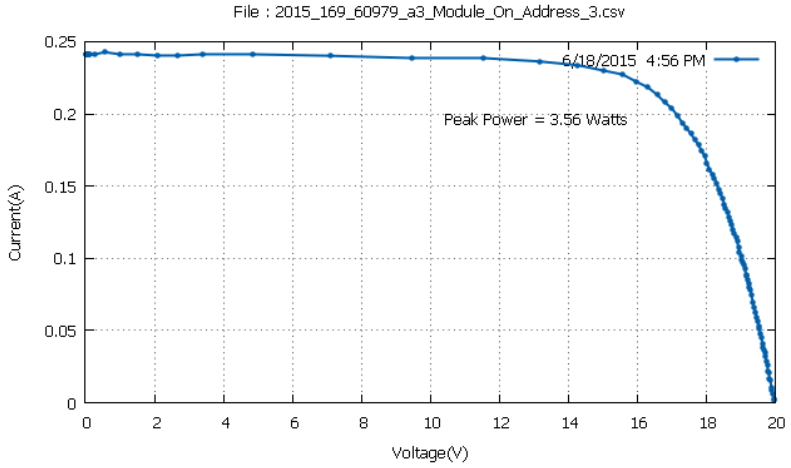
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.97302\ x\ 0.233739227}{454.9\ x\ 0{,}0709}$ x 100 = 11,56 %



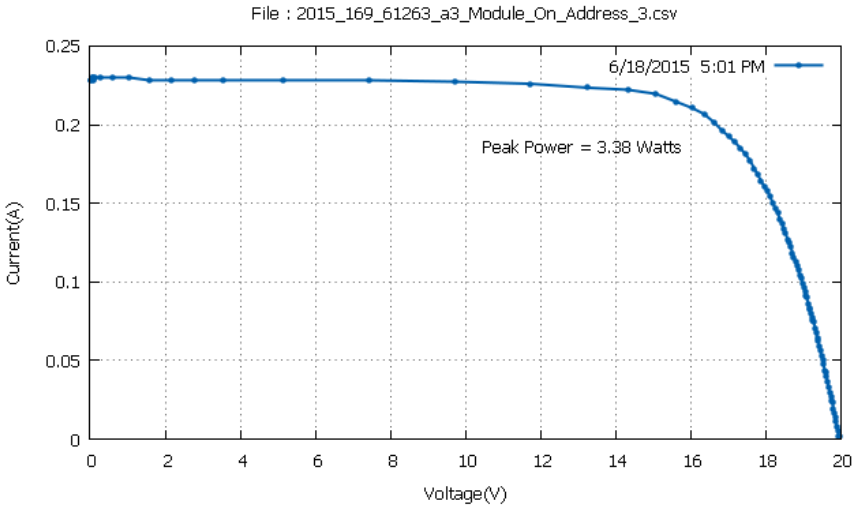
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.926631\ x\ 0.231170669}{450.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}53\ \%$$



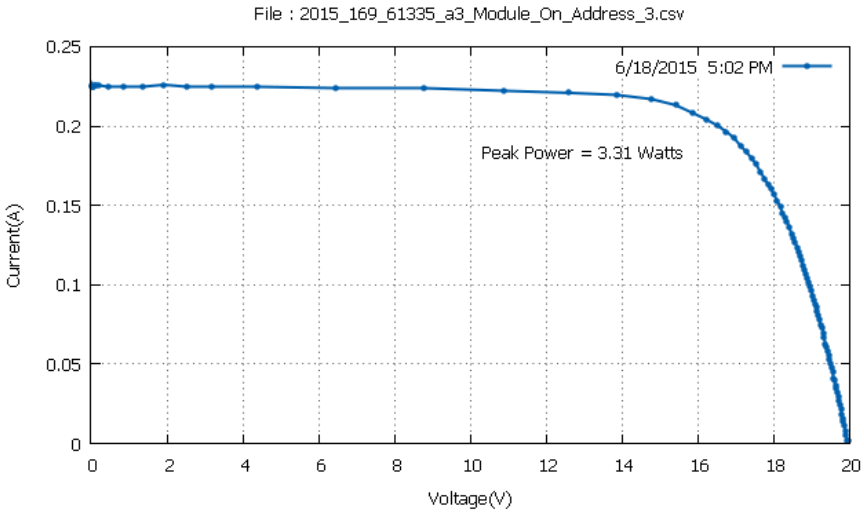
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194073\ x\ 0.227317825}{444.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3132\ x\ 0.21832785}{438.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.206769317}{422.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.220422\ x\ 0.2042007}{418\ x\ 0{,}0709} \text{ x } 100 = 11{,}16\ \%$$

Module 5

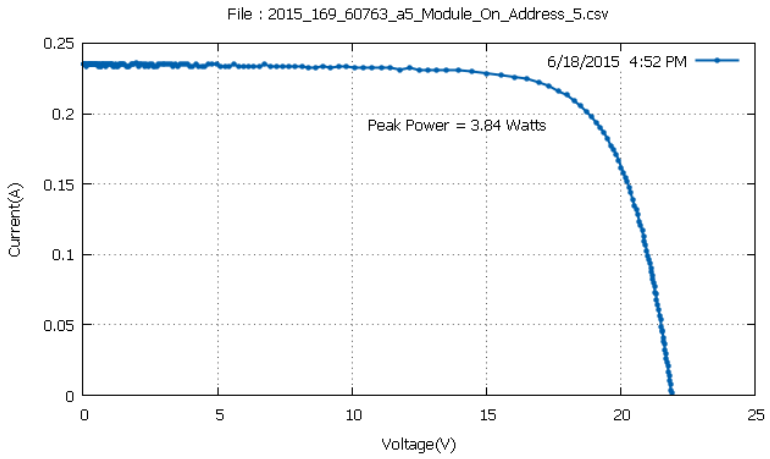
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

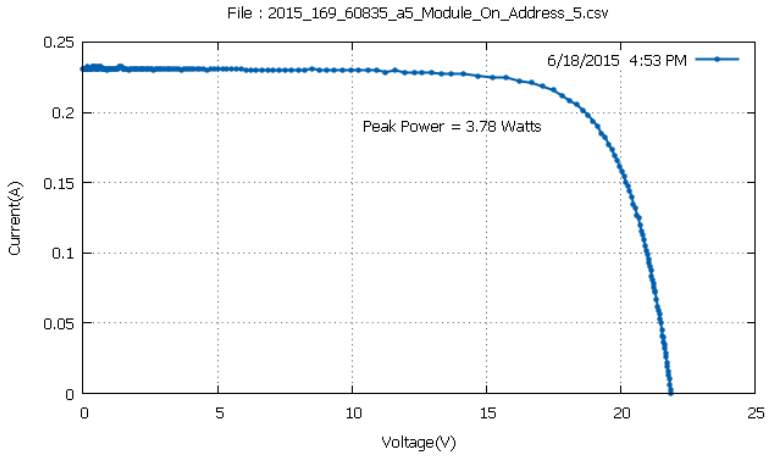
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:52	39,7	11,26
16:53	39,6	11,23
16:56	39,3	11,16
16:57	39,3	11,14
16:58	39,2	11,11
17:05	38	10,93

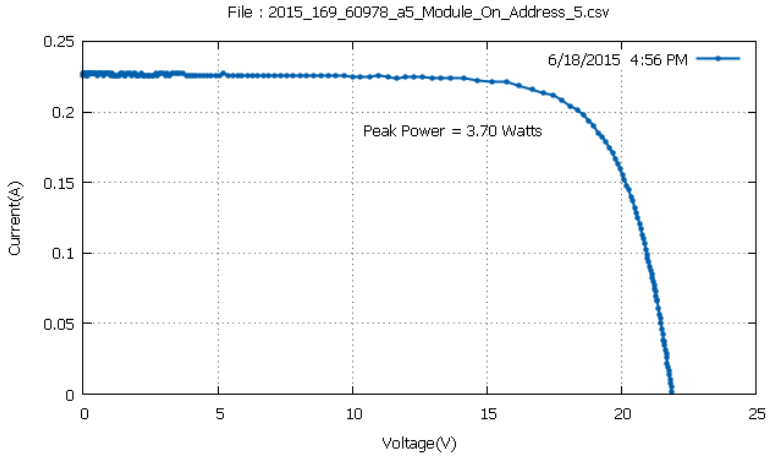
Mean Temperature: 39,18 ºC



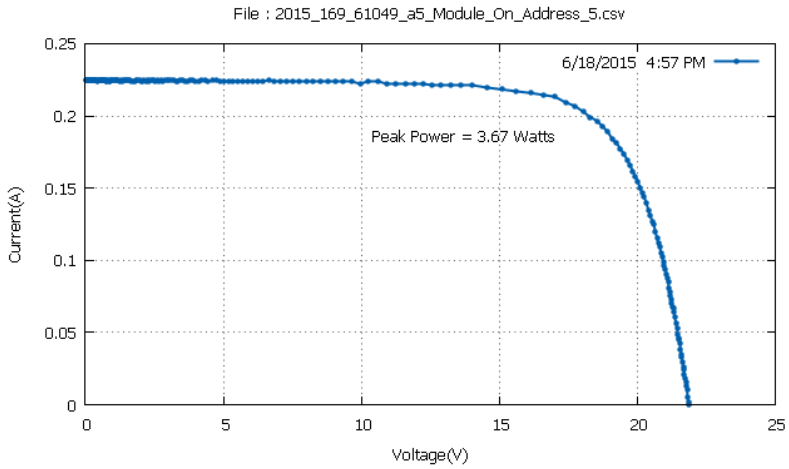
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.99864\ x\ 0.213190734}{450.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}26\ \%$$



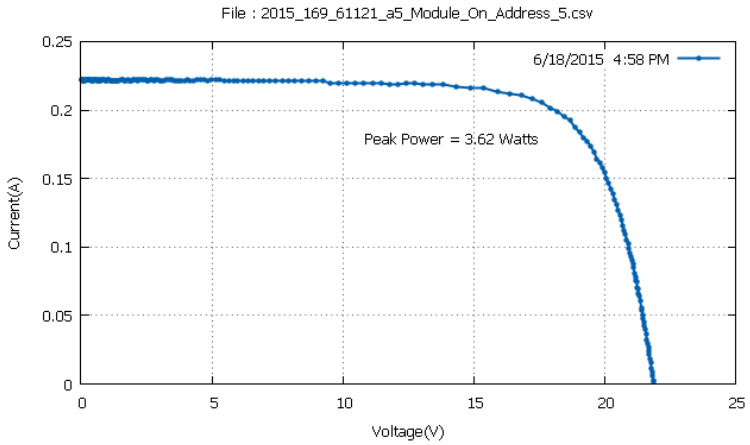
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8208179\ x\ 0.211906448}{444.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}23\ \%$$



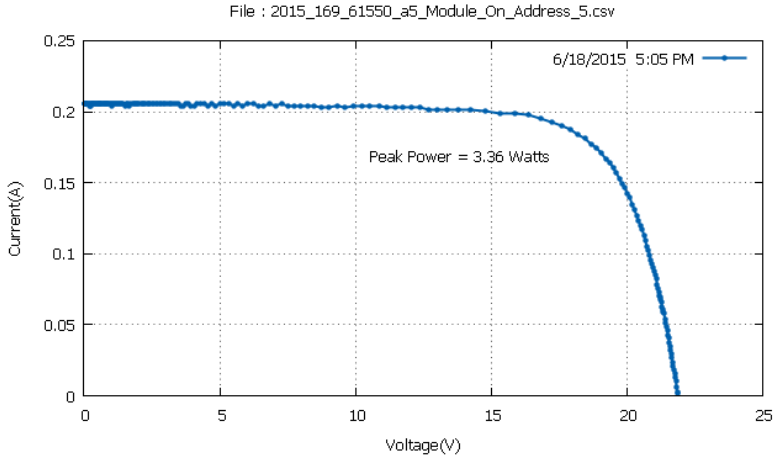
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.2080536}{438.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7435036\ x\ 0.206769317}{435.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1919231\ x\ 0.199063629}{430.8\ x\ 0{,}0756}\ \text{x } 100 = 11{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.913595\ x\ 0.1875051}{406.5\ x\ 0{,}0756}\ \text{x } 100 = 10{,}93\ \%$$

Module 4

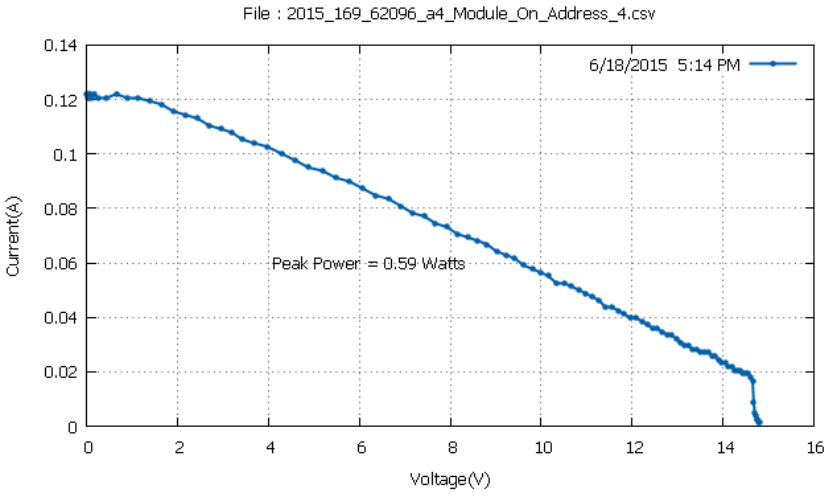
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

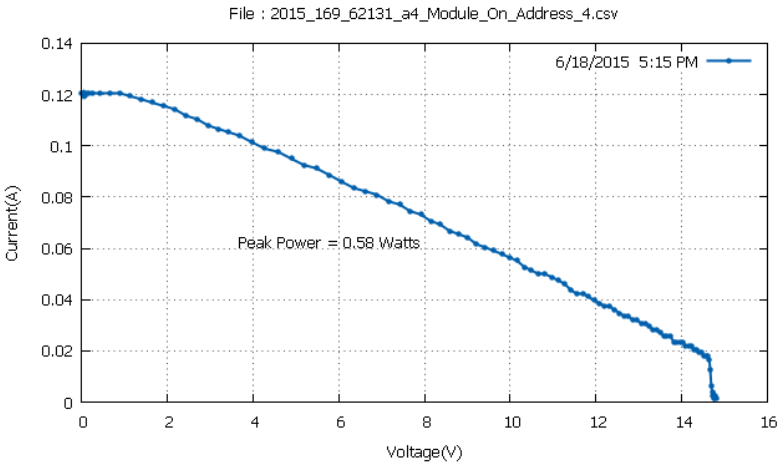
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:14	35,1	2,3
17:15	35	2,29
17:16	34,9	2,29
17:18	34,5	2,26
17:20	33,7	2,3
17:23	33,7	2,32

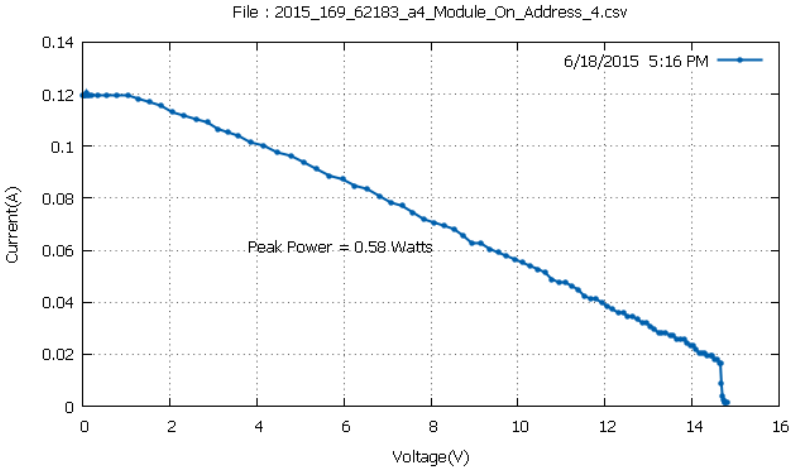
Mean Temperature: 34,48 ºC



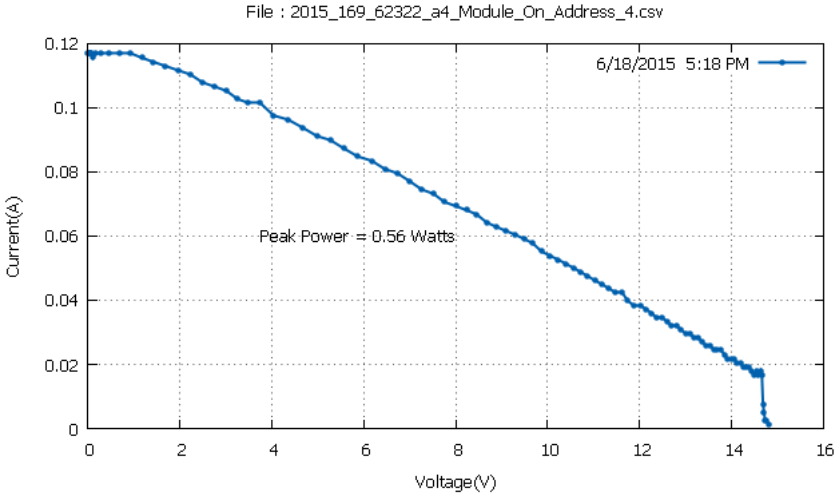
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.5509\ x\ 0.0693512037}{382\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



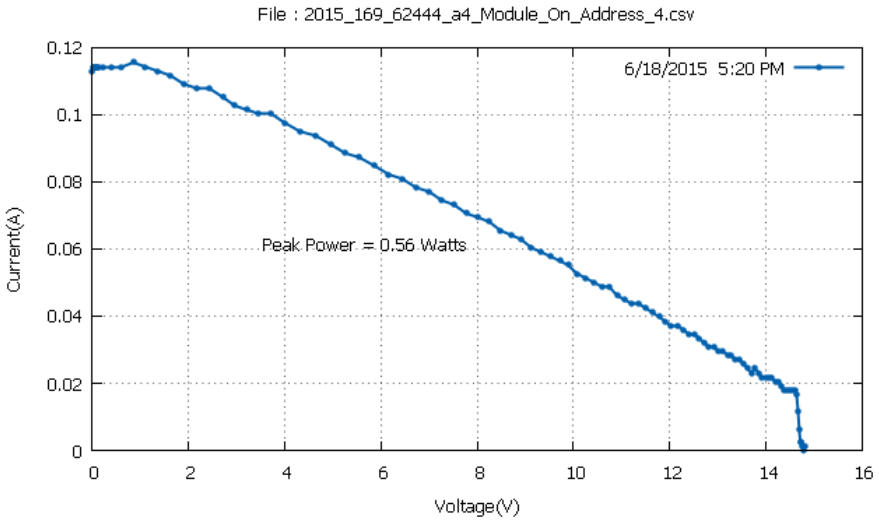
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.357615\ x\ 0.0693512037}{377.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}29\ \%$$



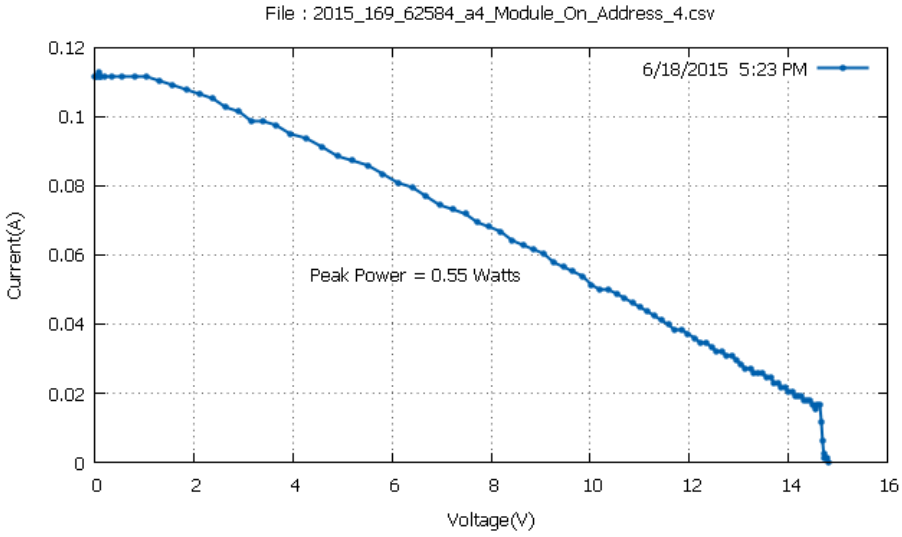
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.519975\ x\ 0.06806692}{377\ x\ 0{,}0671} \text{ x } 100 = 2{,}29\ \%$$



$$n = \frac{Pout}{P\square n} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.597288\ x\ 0.06549836}{369.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.123022\ x\ 0.06164551}{362.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.061171\ x\ 0.06036123}{353.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}32\ \%$$

Module 8

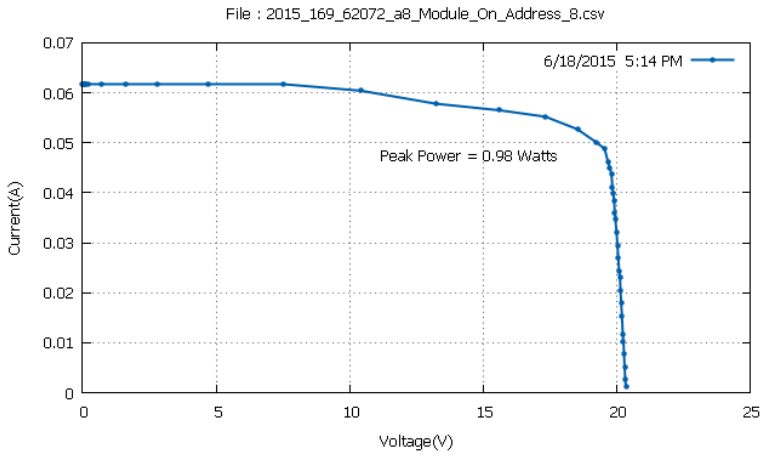
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

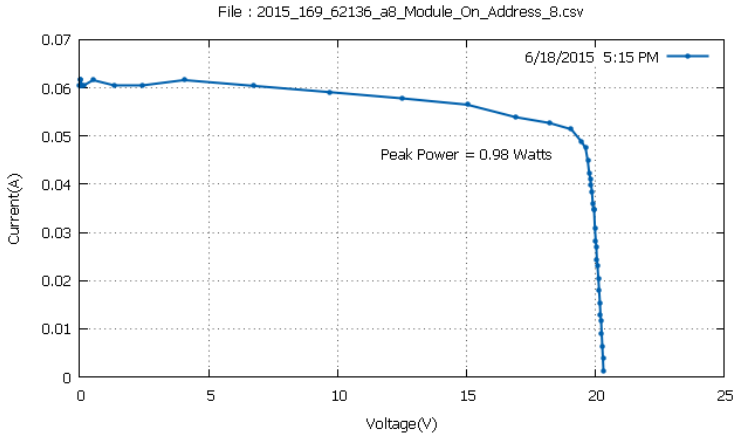
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:14	35,6	3,34
17:15	35,7	3,38
17:16	35,7	3,29
17:18	35,5	3,39
17:20	35,2	3,43
17:23	34,7	3,39

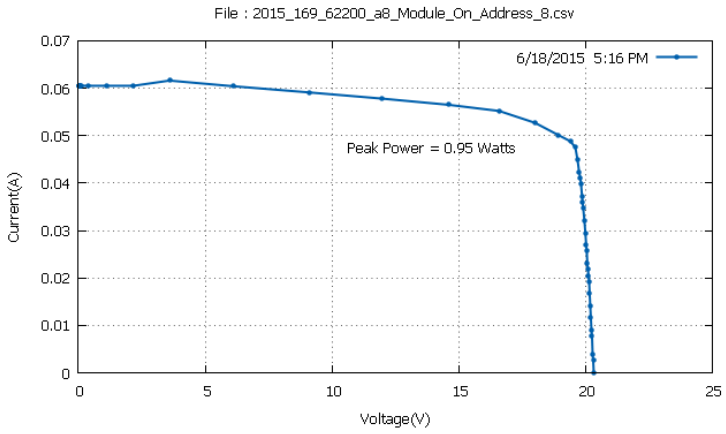
Mean Temperature: 35,4 ºC



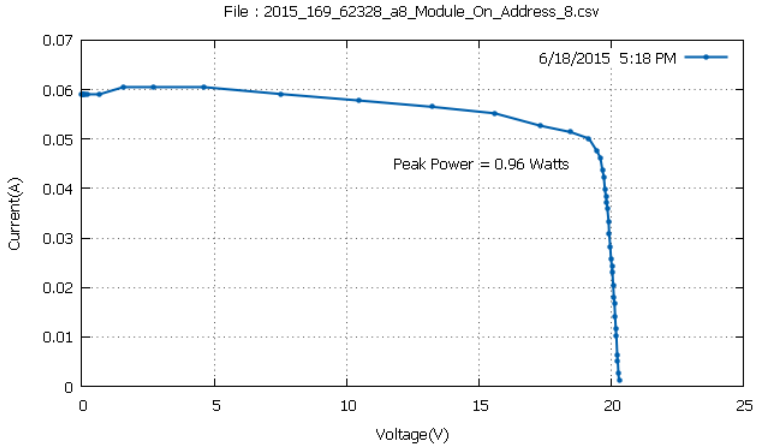
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5321045\ x\ 0.05265554}{381.2\ x\ 0{,}0768} \text{ x } 100 = 3{,}34\ \%$$



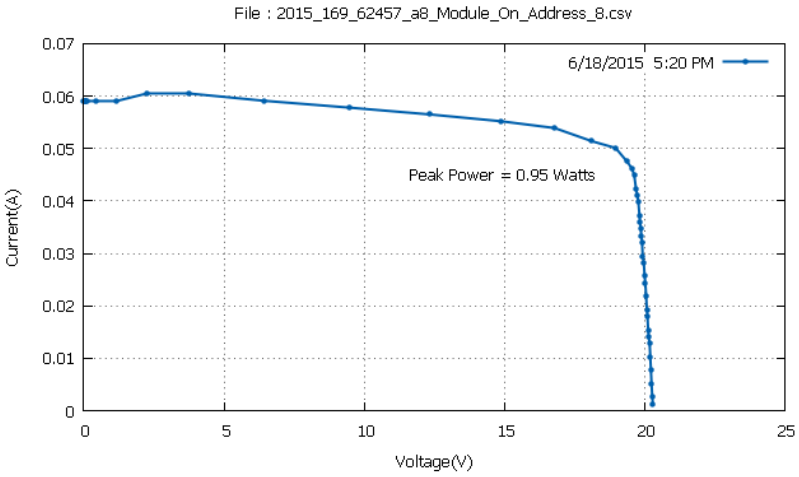
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.0733013\ x\ 0.05137126}{377.4\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}38\ \%$$



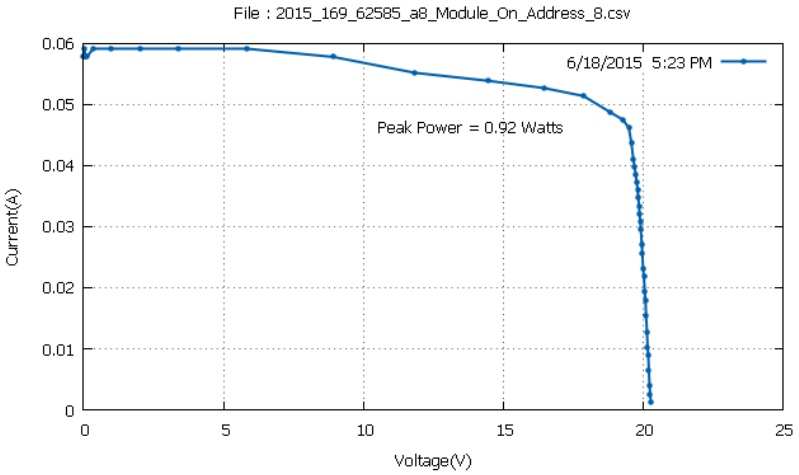
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9341354\ x\ 0.05008698}{375.1\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}29\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1660767\ x\ 0.05008698}{367.9\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}39\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9650612\ x\ 0.05008698}{359.8\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8749371\ x\ 0.05137126}{352.9\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}39\ \%$$

Module 3

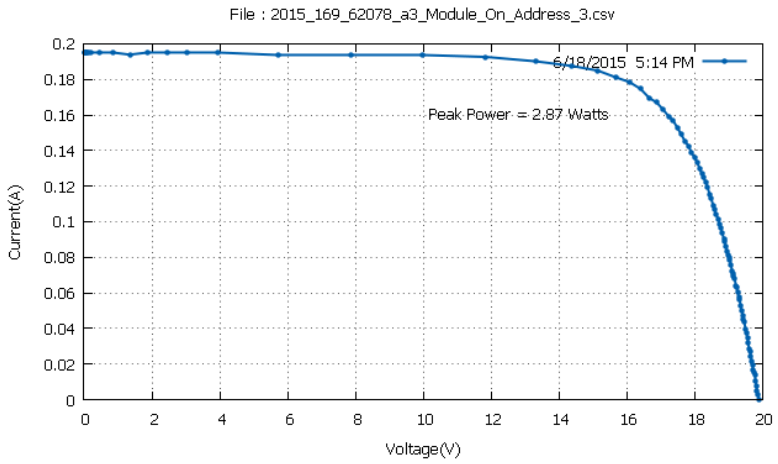
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

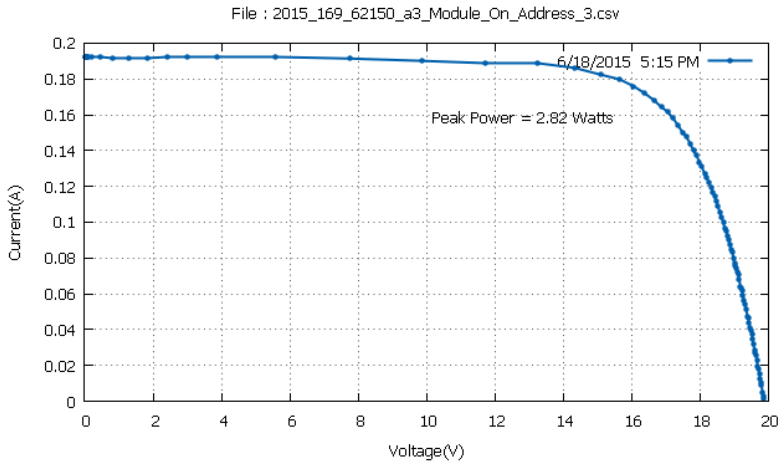
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:14	35,5	10,63
17:15	35,4	10,57
17:17	35,3	10,51
17:25	34	10,19
17:26	33,9	10,12
17:28	33,6	10,04

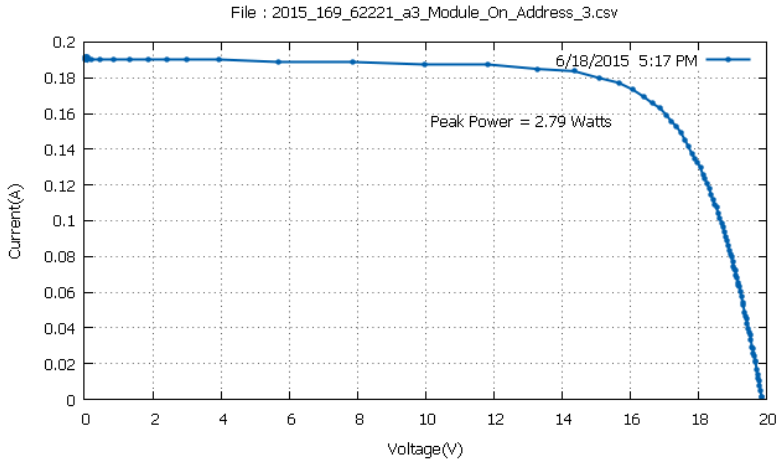
Mean Temperature: 34,61 ºC



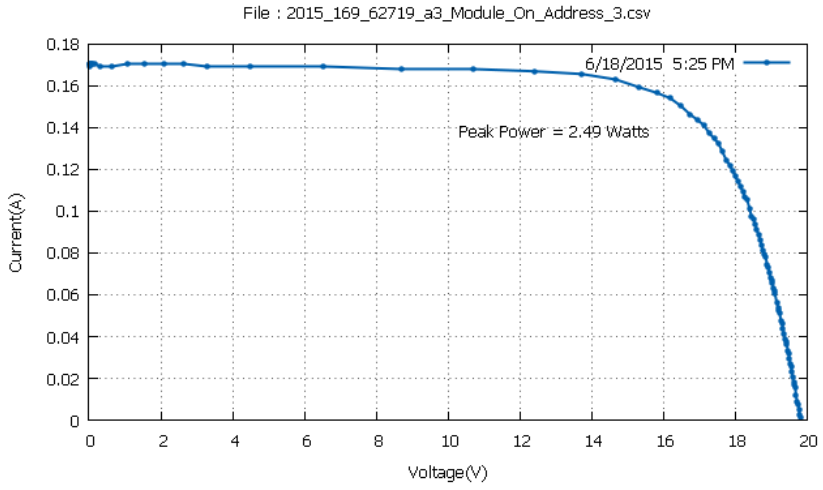
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0735264\ x\ 0.178515121}{380.8\ x\ 0{,}0709} \text{ x } 100 = 10{,}63\ \%$$



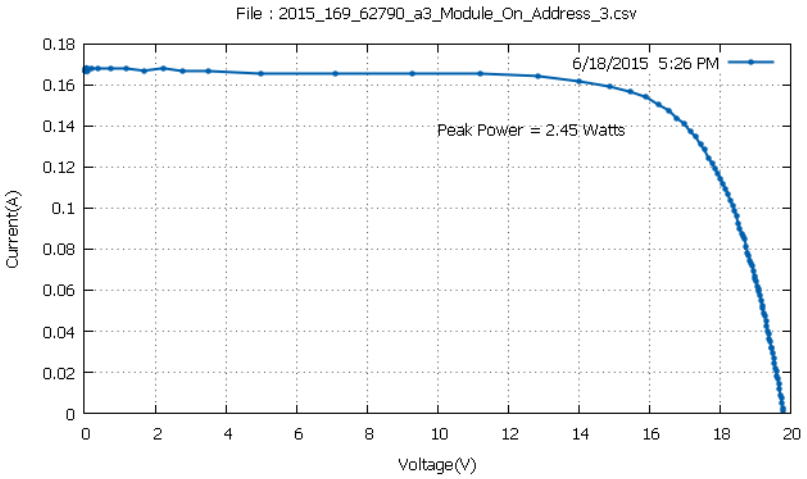
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0580654\ x\ 0.175946563}{376.2\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}57\ \%$$



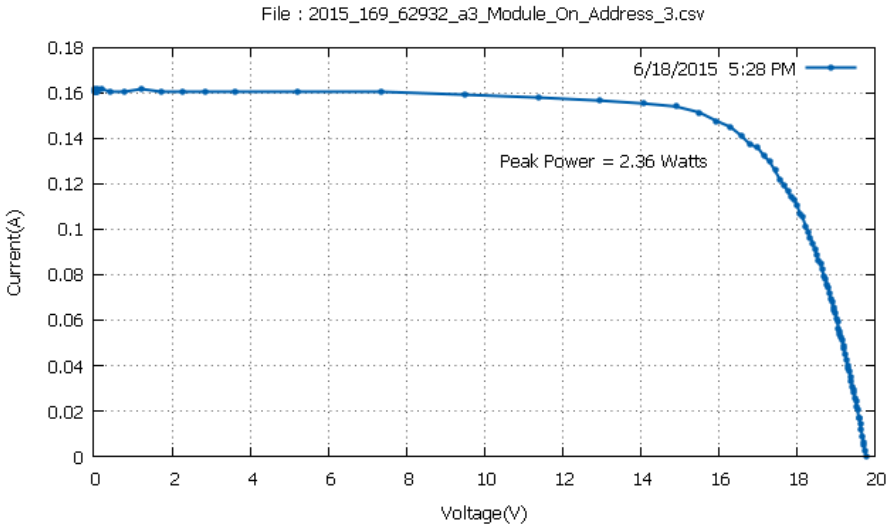
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Imp}{E\ x\ A} = \frac{16.0735264\ x\ 0.173378}{374.3\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.189497\ x\ 0.154113784}{344.5\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}19\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9111681\ x\ 0.154113784}{341.4\ x\ 0{,}0709} \text{ x } 100 = 10{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2977371\ x\ 0.14512381}{331.4\ x\ 0{,}0709} \text{ x } 100 = 10{,}04\ \%$$

Module 5

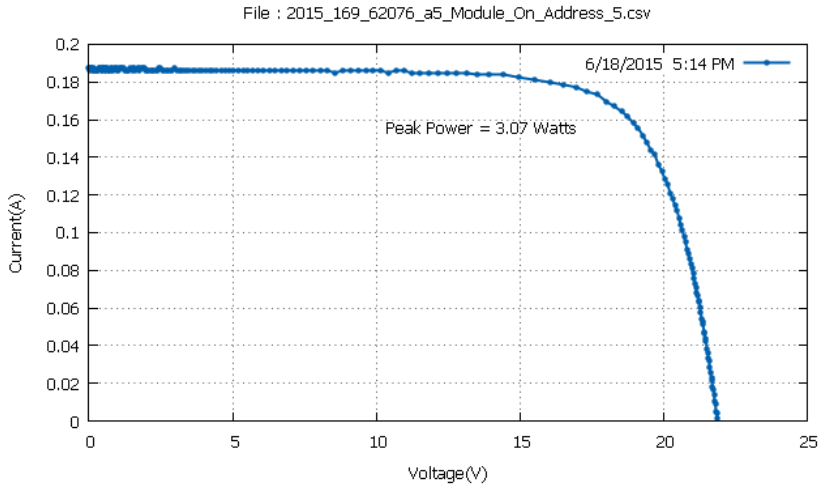
Date: 18/6/2015 – Afternoon Measurement

Temperature Ambient: 32 ºC

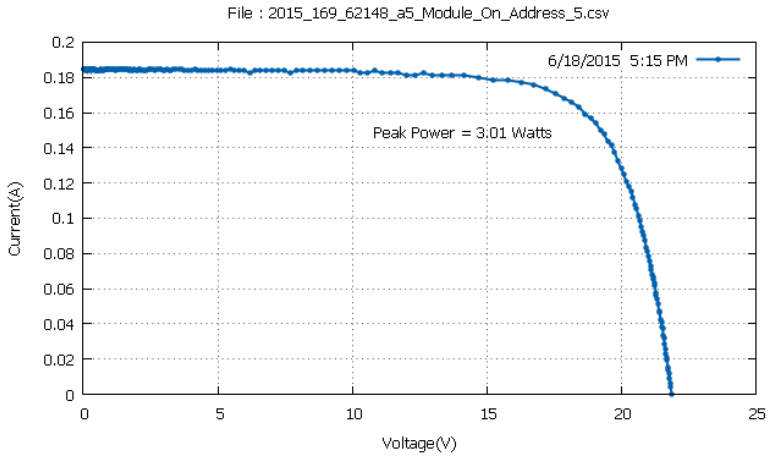
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:14	36,3	10,67
17:15	36,1	10,56
17:19	35,6	10,51
17:20	35,4	10,47
17:24	34,8	10,69
17:26	34,7	10,3

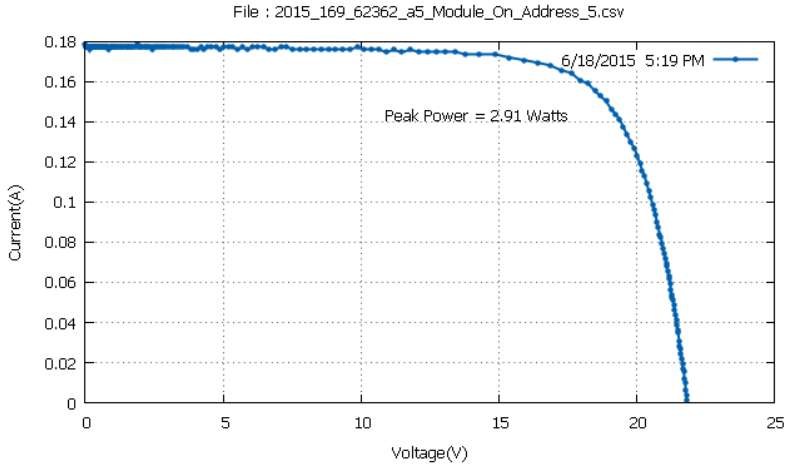
Mean Temperature: 35,48 ºC



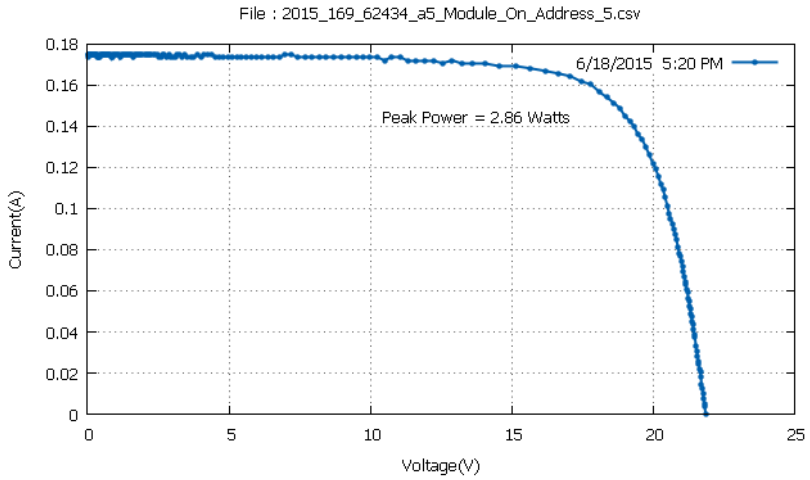
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.697114\ x\ 0.173378}{380.3\ x\ 0{,}0756} \text{ x } 100 = 10{,}67\ \%$$



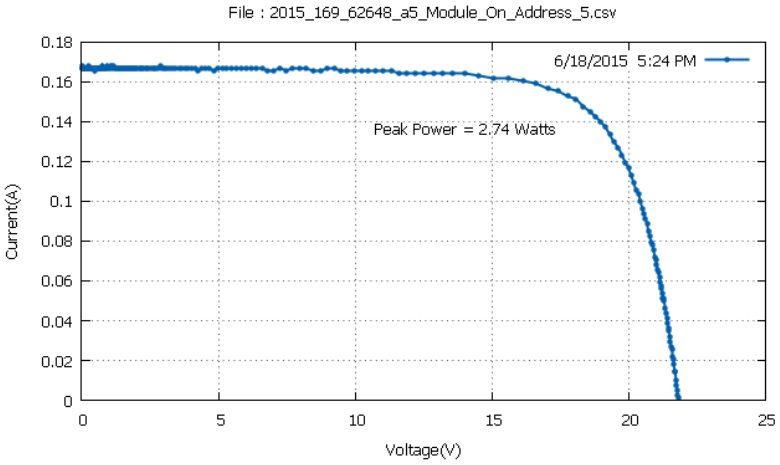
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.16873\ x\ 0.165672317}{377\ x\ 0{,}0756} \text{ x } 100 = 10{,}56\ \%$$



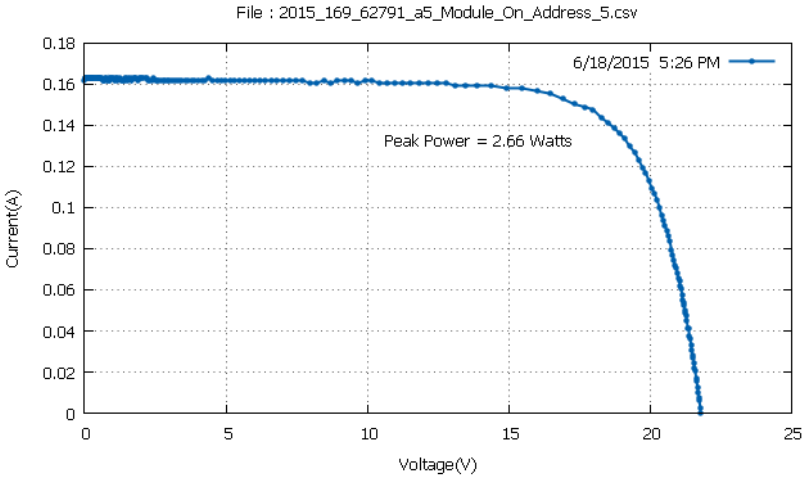
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2383118\ x\ 0.1592509}{366\ x\ 0{,}0756} \text{ x } 100 = 10{,}51\ \%$$



$$n = \frac{Pou}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7976246\ x\ 0.160535187}{361.2\ x\ 0{,}0756} \text{ x } 100 = 10{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9111681\ x\ 0.154113784}{349.3\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}69\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9831772\ x\ 0.147692367}{341.4\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}3\ \%$$

Module 4

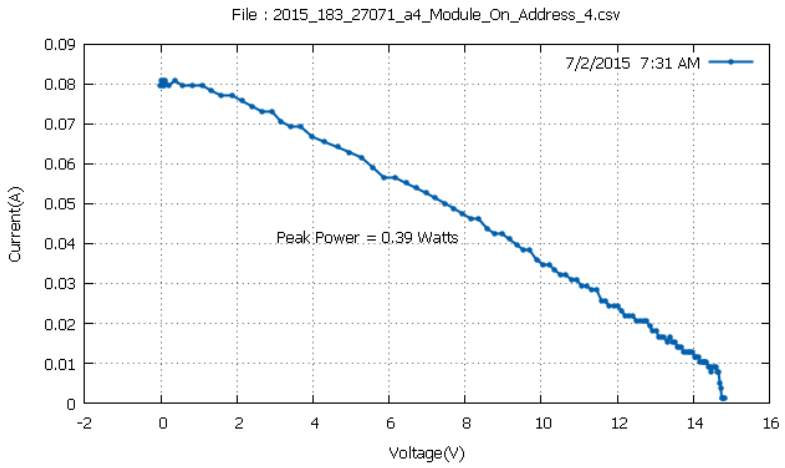
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

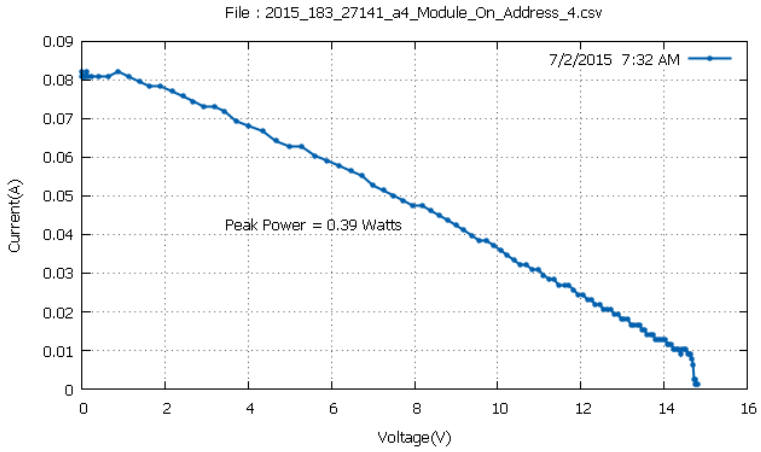
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:31	31	2,41
7:32	31,1	2,38
7:33	31	2,36
7:35	31,5	2,38
7:36	31,6	2,35
7:37	31,7	2,38

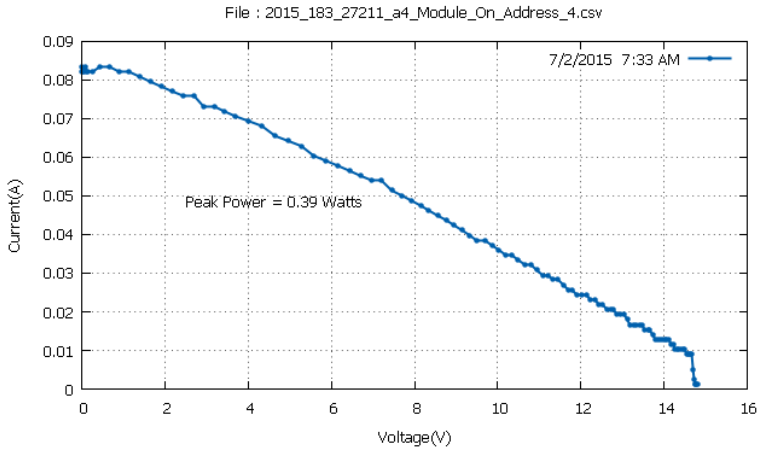
Mean Temperature: 31,31 ºC



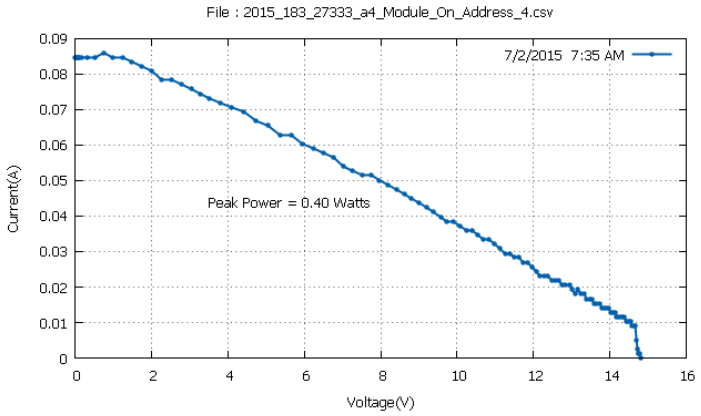
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.365347\ x\ 0.0462341346}{240.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}41\ \%$$



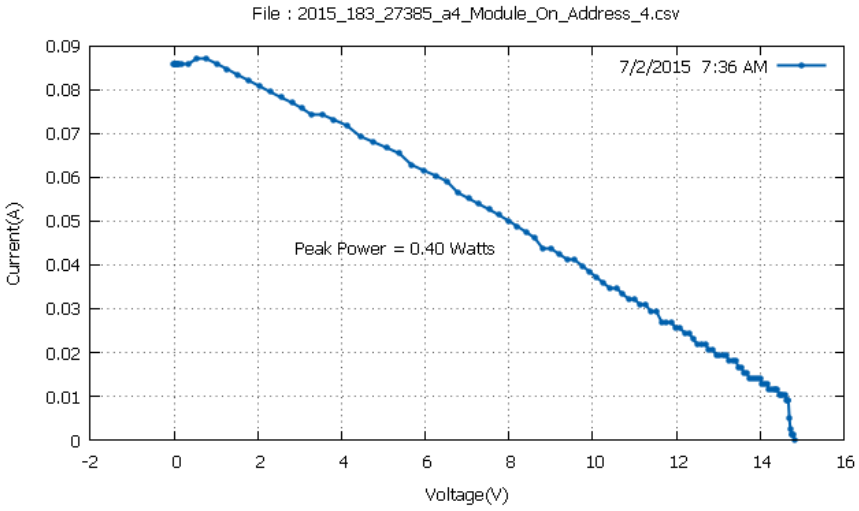
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.172063\ x\ 0.0475184135}{243.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}38\ \%$$



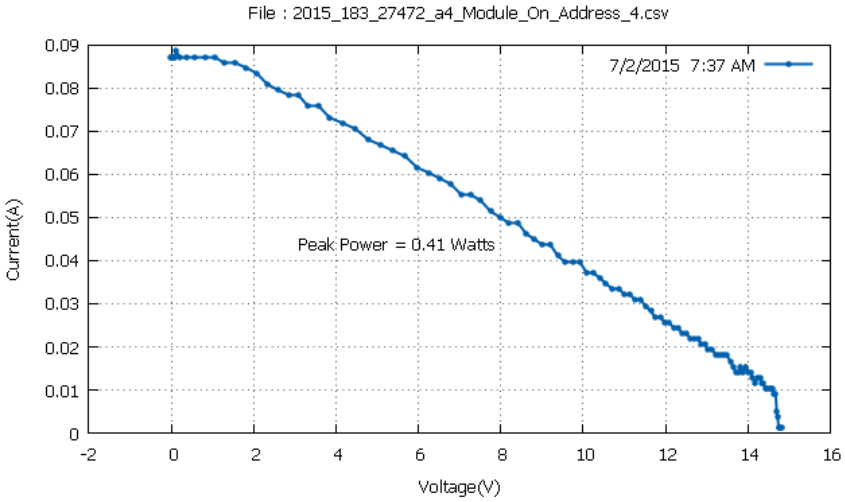
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.205641\ x\ 0.0539398231}{245.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.43493\ x\ 0.0475184135}{250.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.202989\ x\ 0.0488026962}{253.7x\ 0{,}0671} \text{ x } 100 = 2{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.97104\ x\ 0.0513712}{256.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}38\ \%$$

Module 8

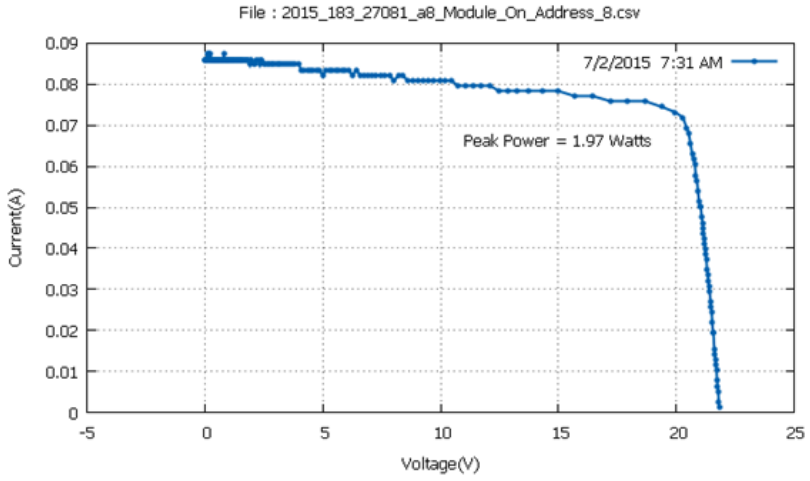
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

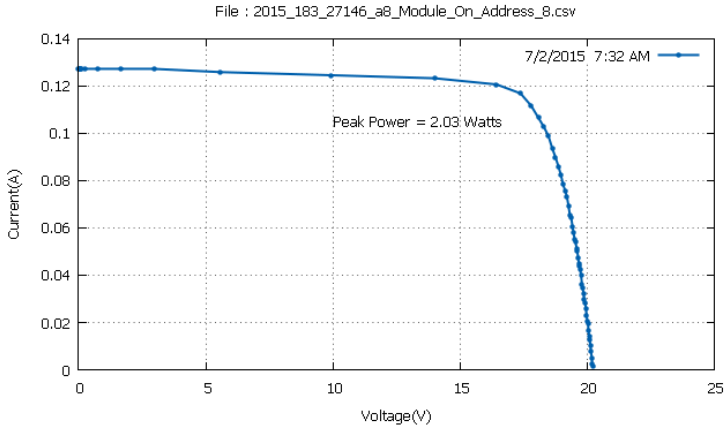
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:31	30,5	10,63
7:32	30,7	10,86
7:33	30,8	10,97
7:35	31,1	11,16
7:36	31,3	11,2
7:37	31,4	11,32

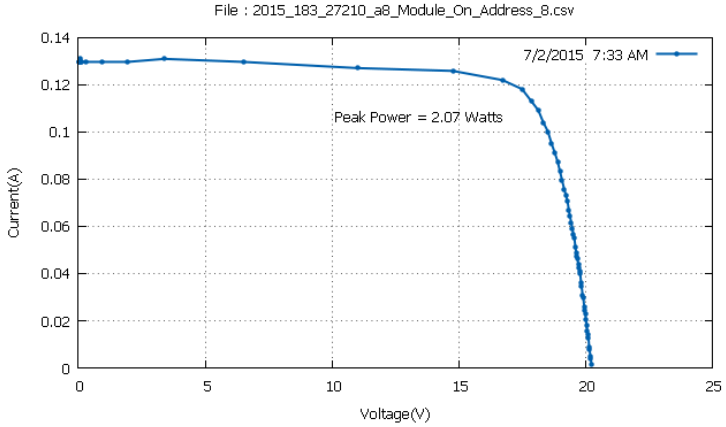
Mean Temperature: 30,96 ºC



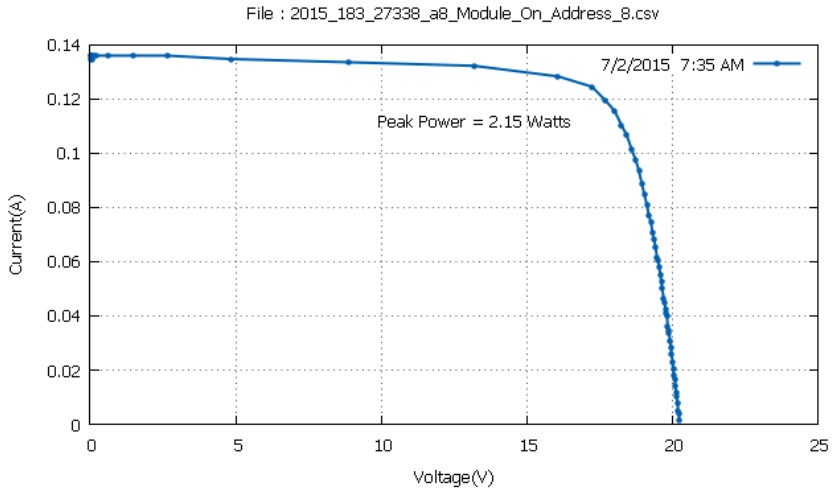
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2486954\ x\ 0.114301056}{241.3\ x\ 0{,}0768} \text{ x } 100 = 10{,}63\ \%$$



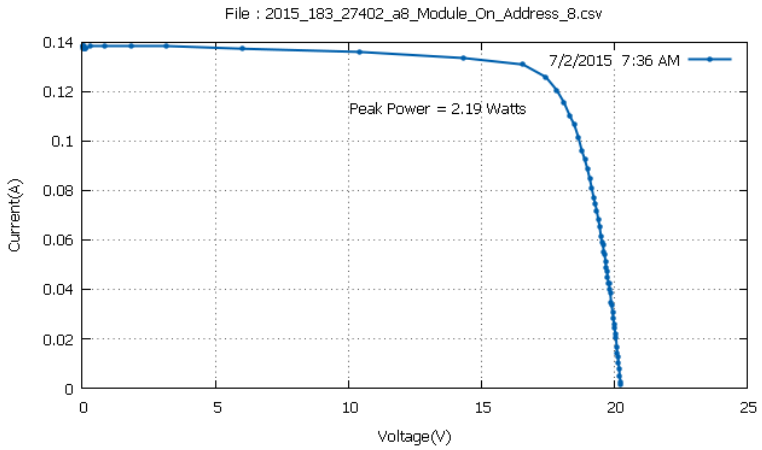
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3801289\ x\ 0.116869614}{243.4\ x\ 0{,}0768} \text{ x } 100 = 10{,}86\ \%$$



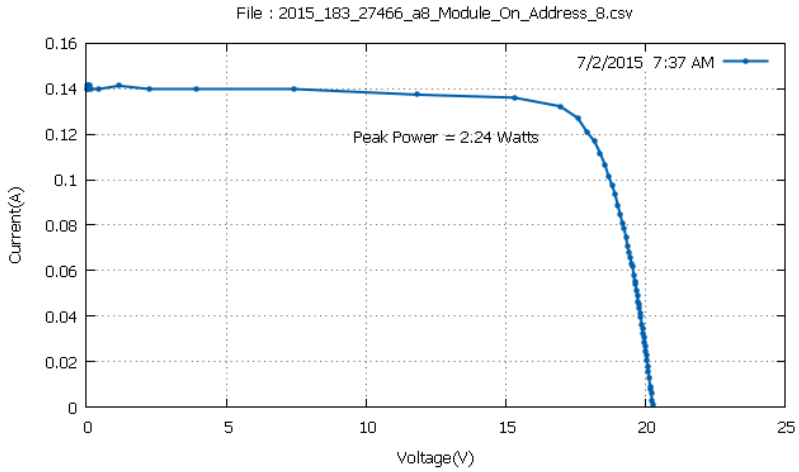
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4961\ x\ 0.1181539}{245.6\ x\ 0{,}0768} \text{ x } 100 = 10{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2409649\ x\ 0.1245753}{250.8\ x\ 0{,}0768} \text{ x } 100 = 11{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.43425\ x\ 0.125859588}{254.4\ x\ 0{,}0768}\ \text{x } 100 = 11{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9549046\ x\ 0.132281}{257.5\ x\ 0{,}0768}\ \text{x } 100 = 11{,}32\ \%$$

Module 3

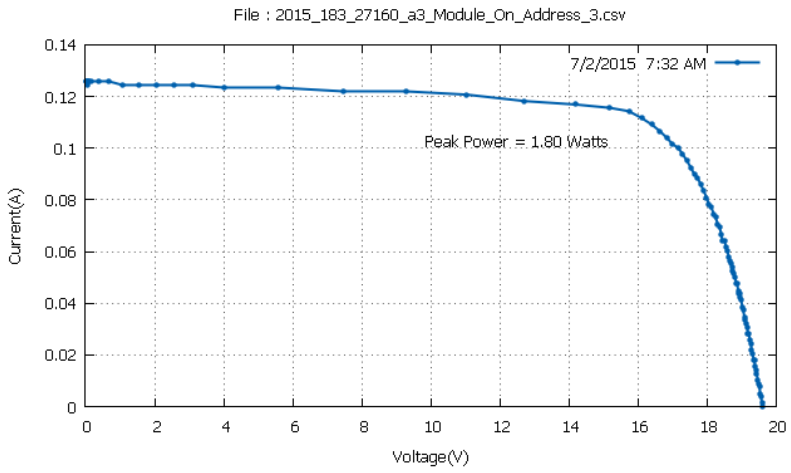
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

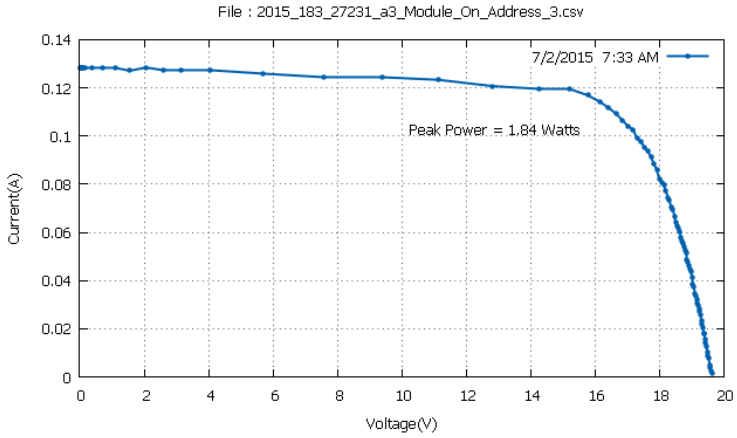
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:32	31	10,41
7:33	31,1	10,53
7:37	31,6	10,93
7:38	31,8	11,03
7:40	32	11,17
7:42	32,5	11,28

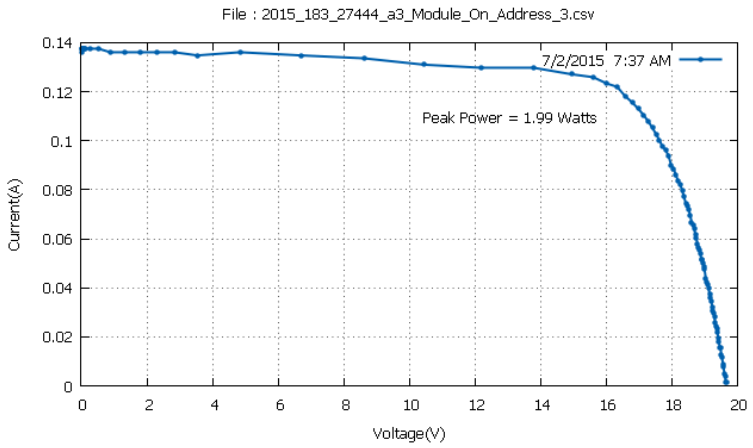
Mean Temperature: 31,66 ºC



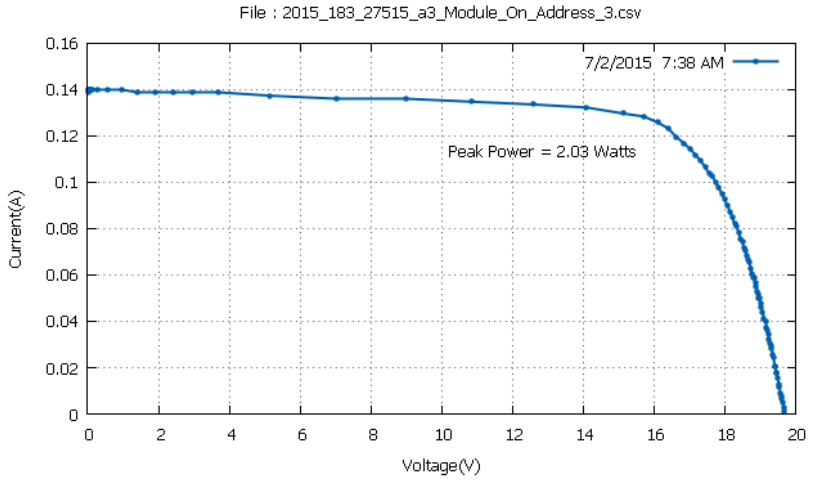
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.11173249}{243.9\ x\ 0{,}0709} \text{ x } 100 = 10{,}41\ \%$$



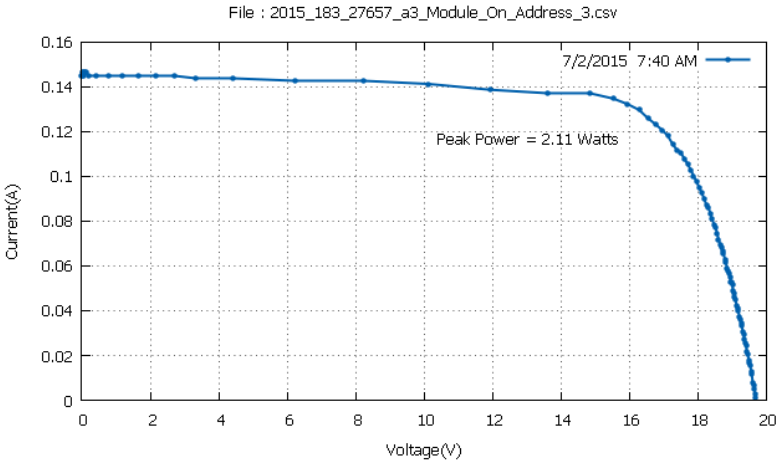
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1353779\ x\ 0.114301056}{246.3\ x\ 0{,}0709} \text{ x } 100 = 10{,}53\ \%$$



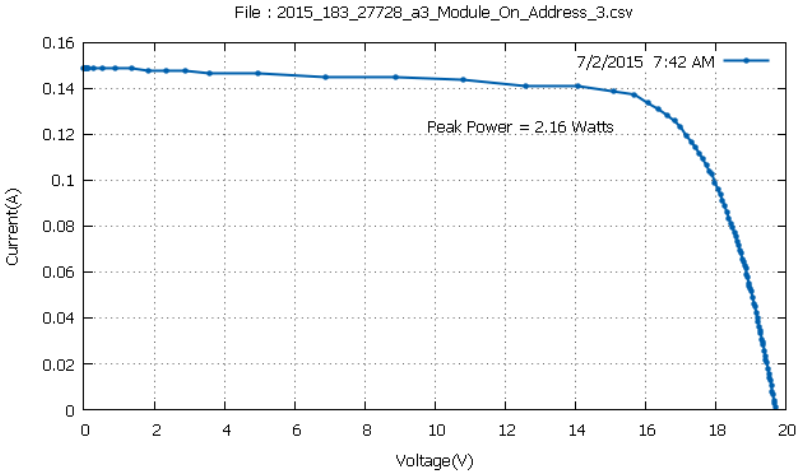
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.122006744}{256.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.125859588}{259.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.282274\ x\ 0.12971243}{266.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.686958\ x\ 0.137418121}{270.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}28\ \%$$

Module 5

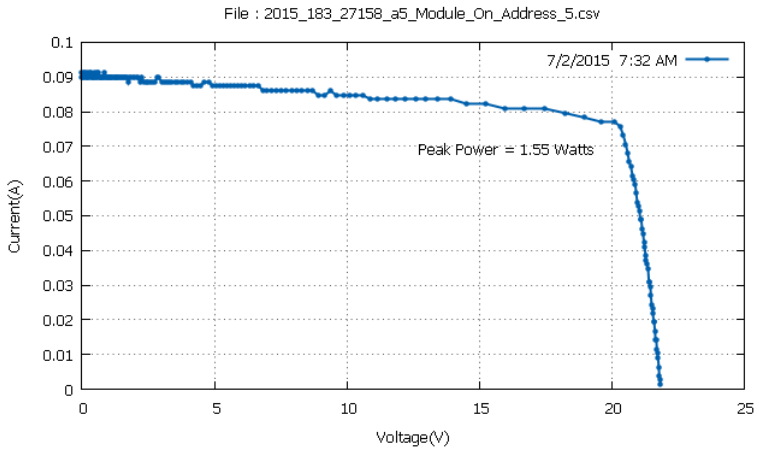
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

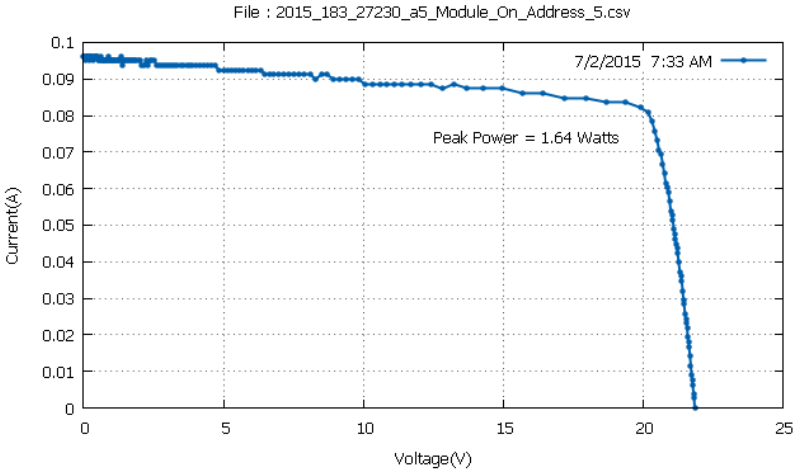
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:32	29,3	8,4
7:33	29,5	8,8
7:36	30,1	9,68
7:40	30,5	11,46
7:42	31	11,65
7:43	31,3	11,6

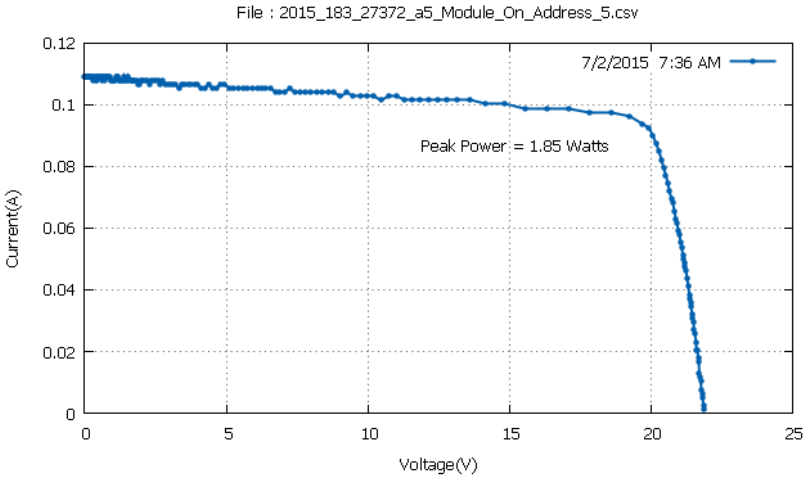
Mean Temperature: 30,28 ºC



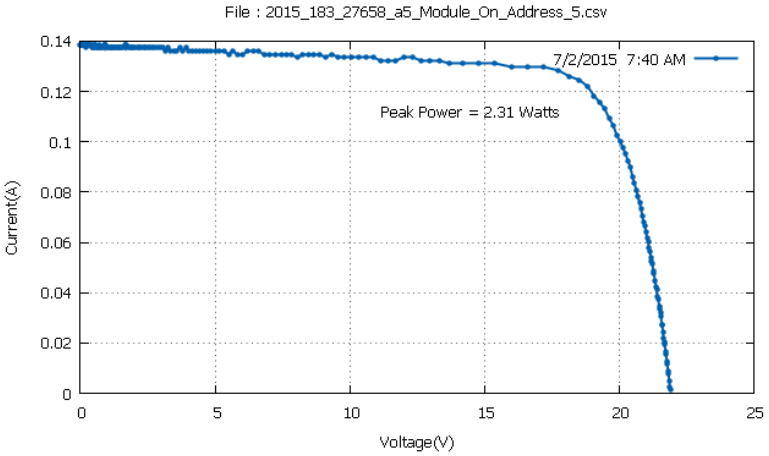
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{20.0783787\ x\ 0.07705689}{244.2\ x\ 0{,}0756} \text{ x } 100 = 8{,}4\ \%$$



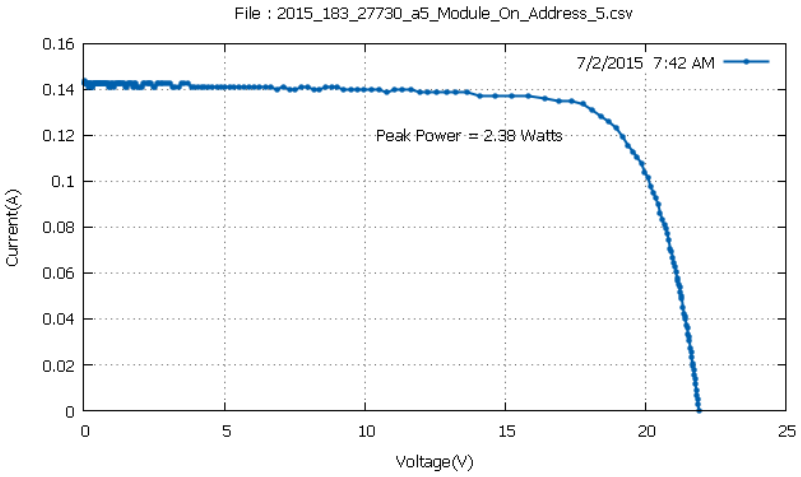
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.9005585\ x\ 0.0821940154}{246.3\ x\ 0{,}0756}\ \text{x}\ 100 = 8{,}8\ \%$$



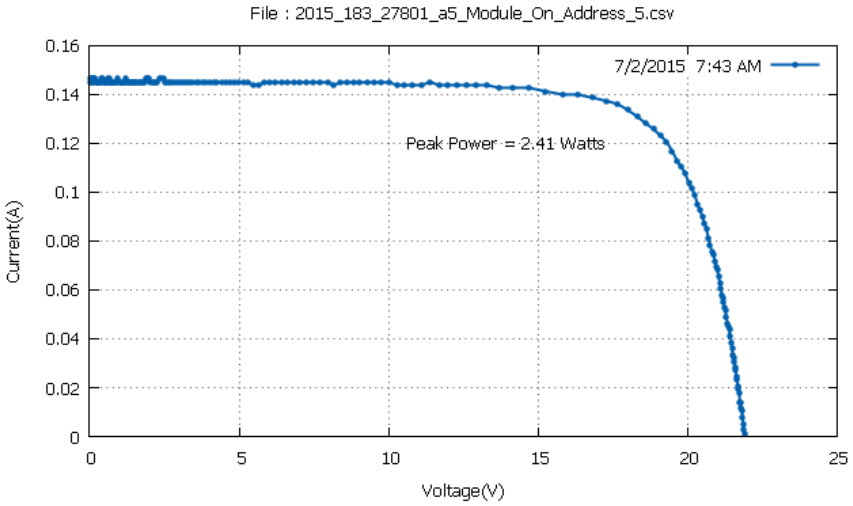
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2511215\ x\ 0.09632111}{252.7\ x\ 0{,}0756}\ \text{x}\ 100 = 9{,}68\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5243721\ x\ 0.1245753}{266.6\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7821617\ x\ 0.133565277}{270.1\ x\ 0{,}0756}\ \text{x } 100 = 11{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.133565277}{274.7\ x\ 0{,}0756}\ \text{x } 100 = 11{,}6\ \%$$

Module 4

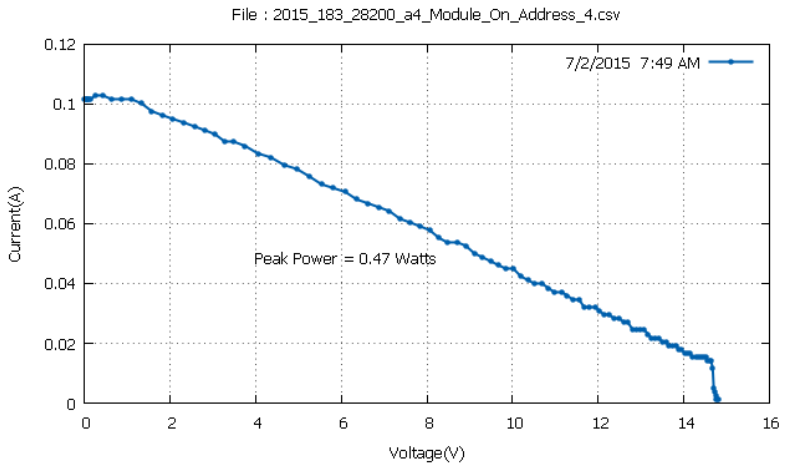
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

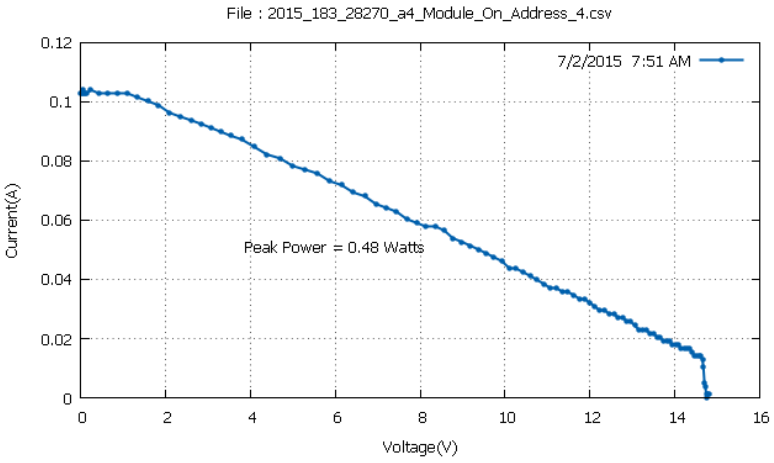
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:49	32,2	2,28
7:51	32,4	2,27
7:52	32,4	2,24
7:54	32,9	2,27
7:56	33	2,35
7:59	33,3	2,31

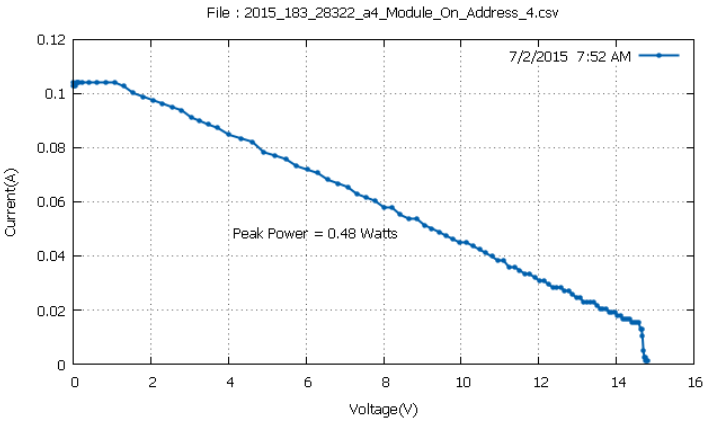
Mean Temperature: 32,7 ºC



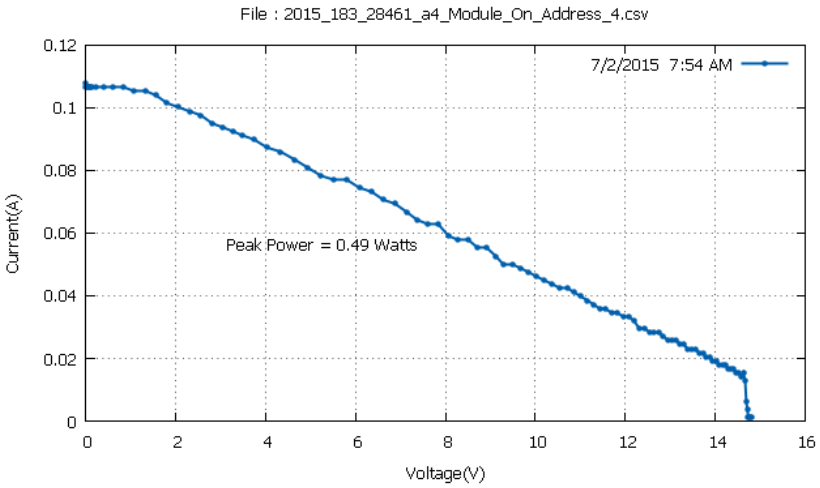
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.272571\ x\ 0.0565083846}{305.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}28\ \%$$



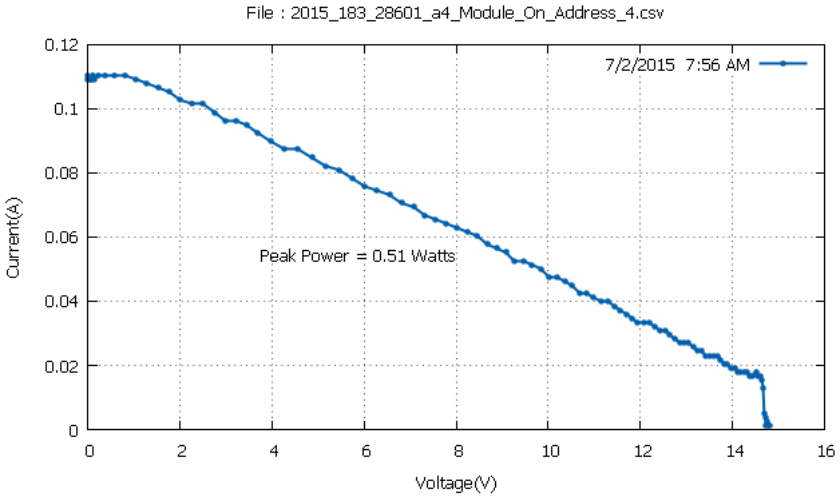
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.566362\ x\ 0.0565083846}{314\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$



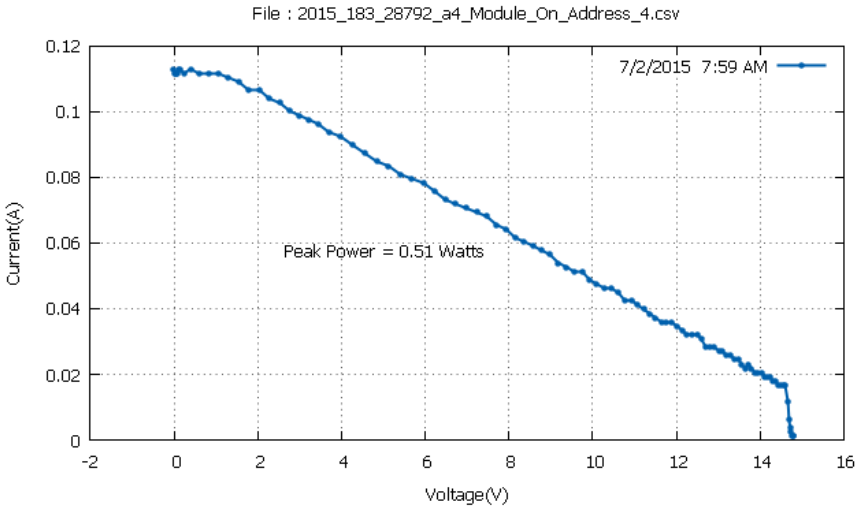
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.65914\ x\ 0.0552241057}{318.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.83961344\ x\ 0.0629297942}{320.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.06036123}{323.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.411736\ x\ 0.06164551}{327.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}31\ \%$$

Module 8

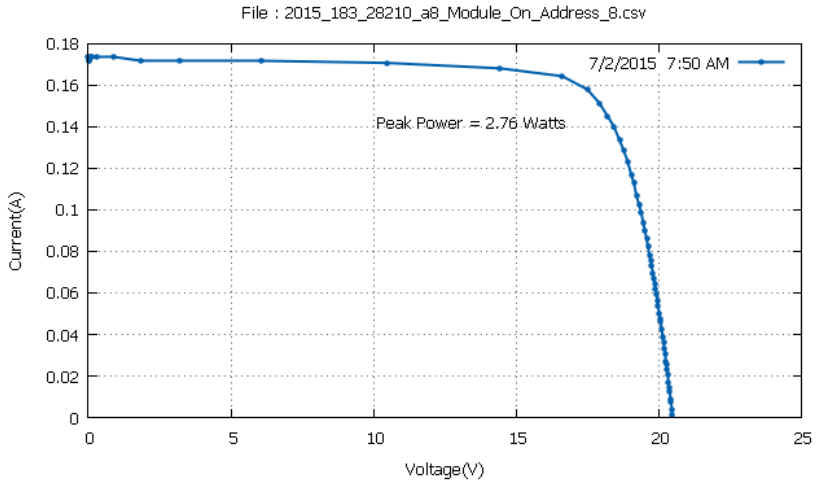
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

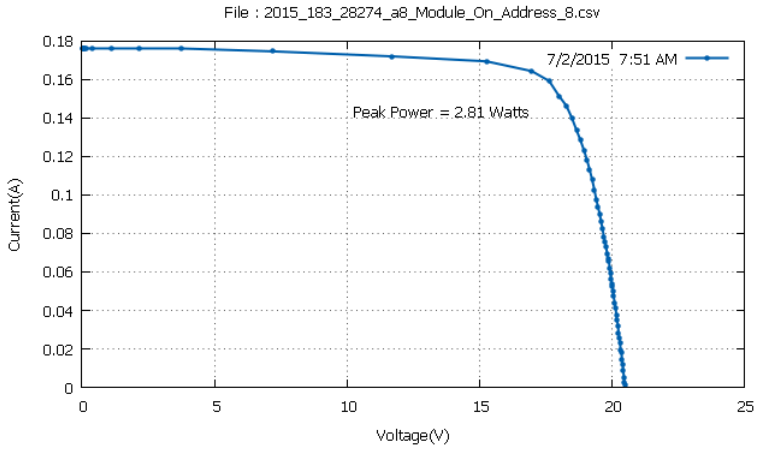
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:50	31,3	11,65
7:51	31,3	11,62
7:52	31,3	11,74
7:54	31,4	11,95
7:56	31,4	12,23
7:59	31,5	12,63

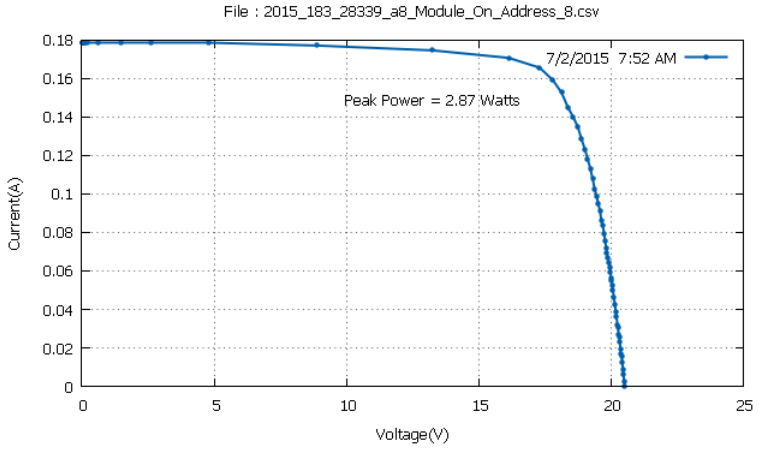
Mean Temperature: 31,36 ºC



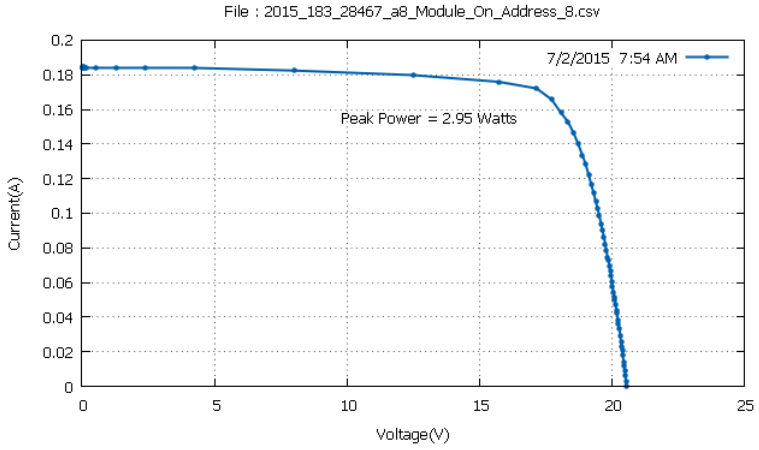
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4961\ x\ 0.157966629}{308.5\ x\ 0{,}0768} \text{ x } 100 = 11{,}65\ \%$$



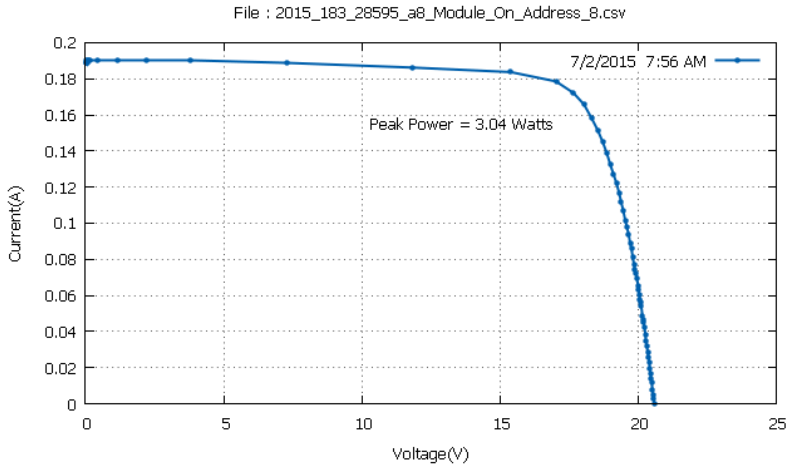
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.1592509}{314.7\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}62\ \%$$



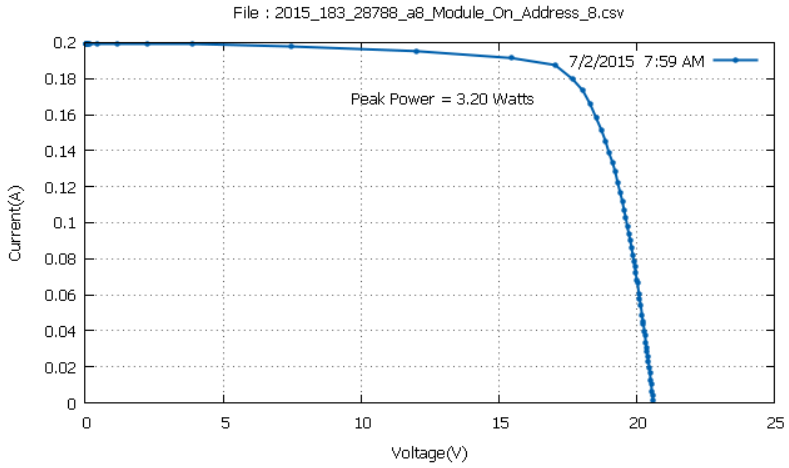
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3028164\ x\ 0.165672317}{318.3\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.16365\ x\ 0.172093719}{321.2\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.032217\ x\ 0.17851512}{323.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.1875051}{329.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}63\ \%$$

Module 3

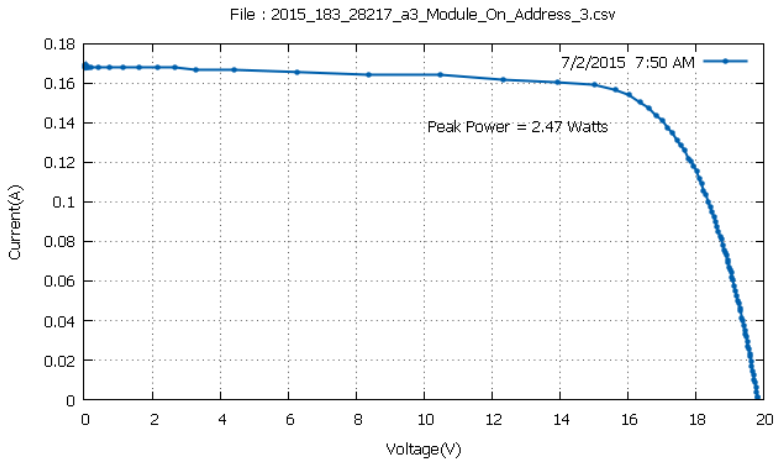
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

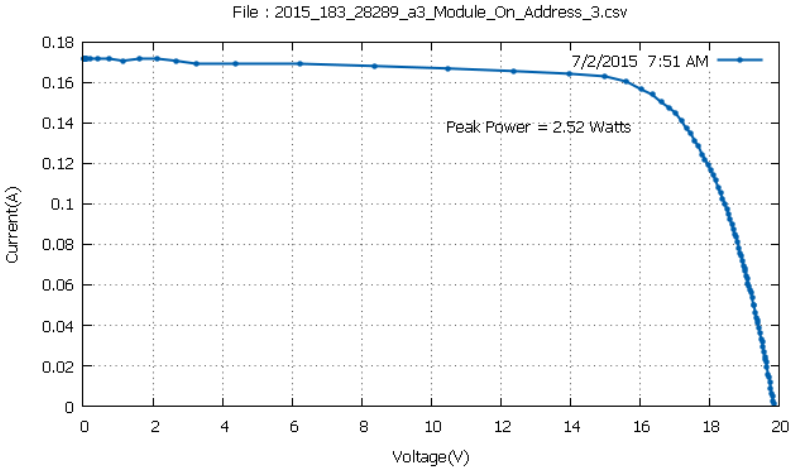
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:50	32,5	11,27
7:51	32,5	11,25
7:52	32,5	11,36
7:57	32,9	12
7:59	33,2	12,18
8:00	33,1	12,26

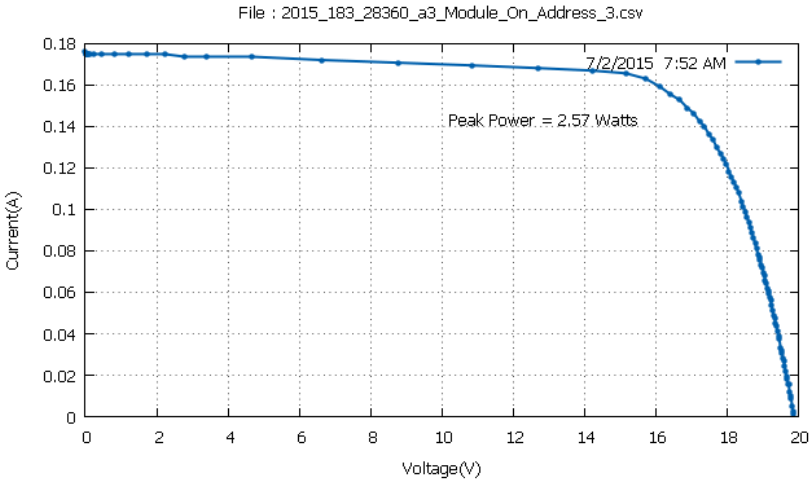
Mean Temperature: 32,78 ºC



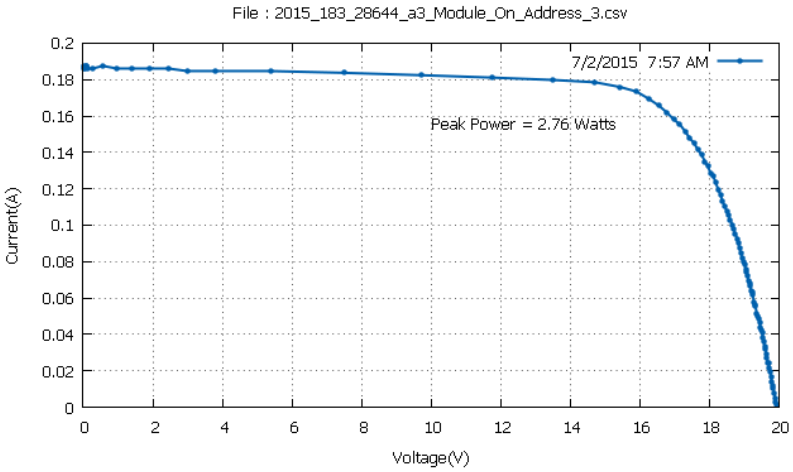
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.03487\ x\ 0.154113784}{309\ x\ 0{,}0709} \text{ x } 100 = 11{,}27\ \%$$



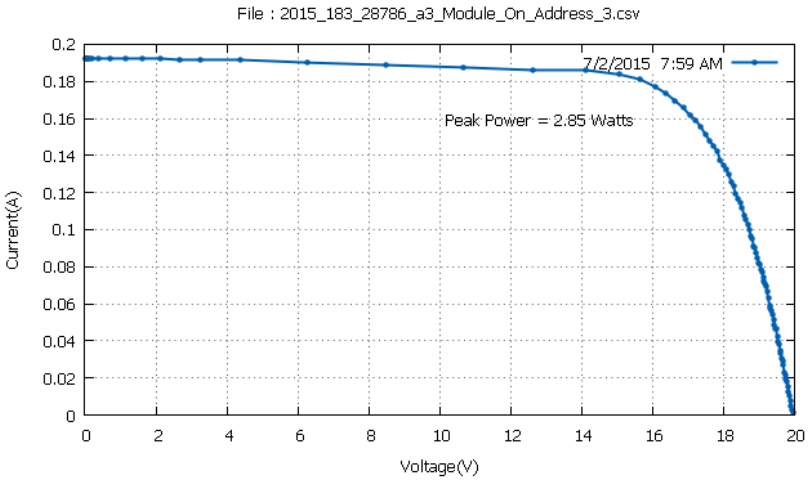
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.154113784}{315.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}25\ \%$$



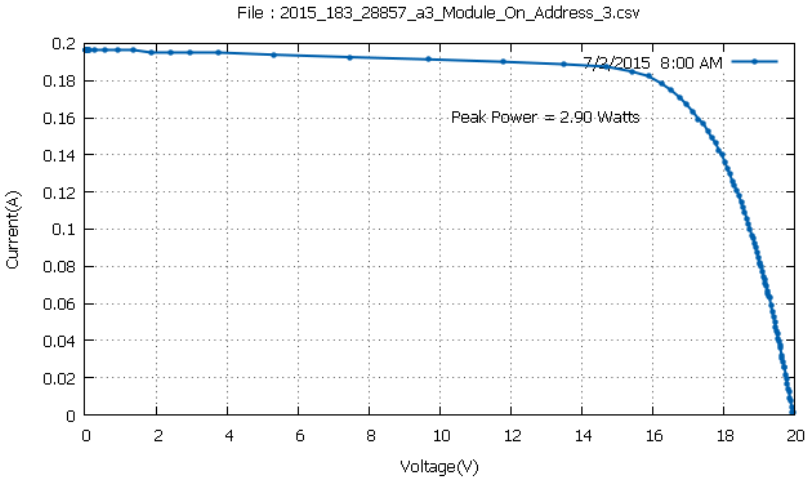
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1121845\ x\ 0.1592509}{319\ x\ 0{,}0709} \text{ x } 100 = 11{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.173378}{324.5\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0657959\ x\ 0.17723085}{330\ x\ 0{,}0709} \text{ x } 100 = 12{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.243618\ x\ 0.178515121}{333.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}26\ \%$$

Module 5

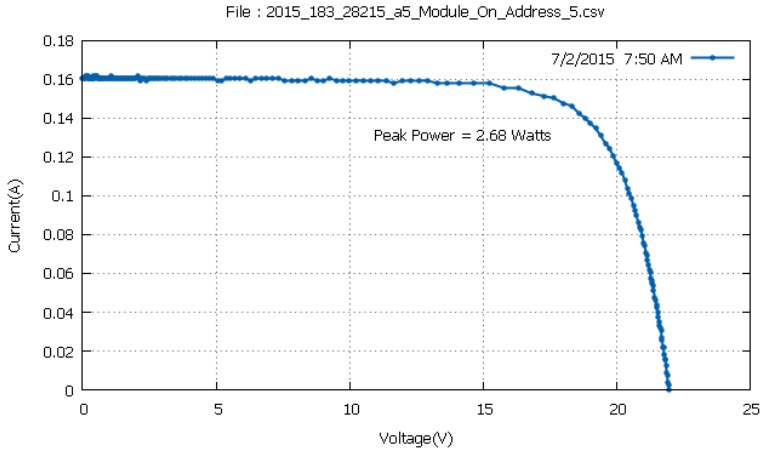
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

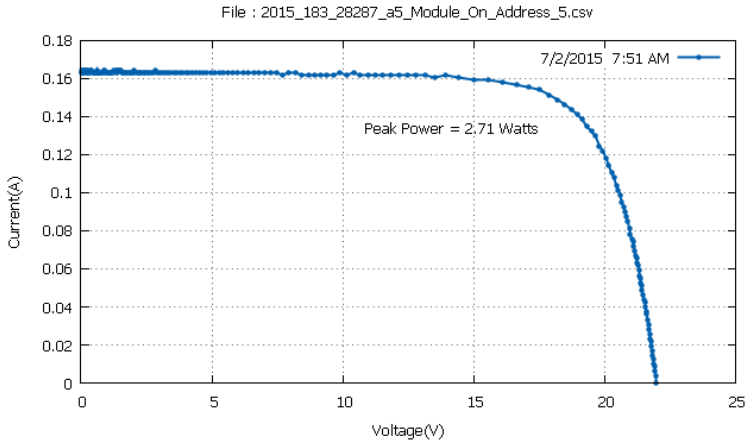
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:50	32,1	11,48
7:51	32,2	11,36
7:52	32,4	11,43
7:55	32,7	11,72
7:56	33	11,84
8:00	33,3	12,25

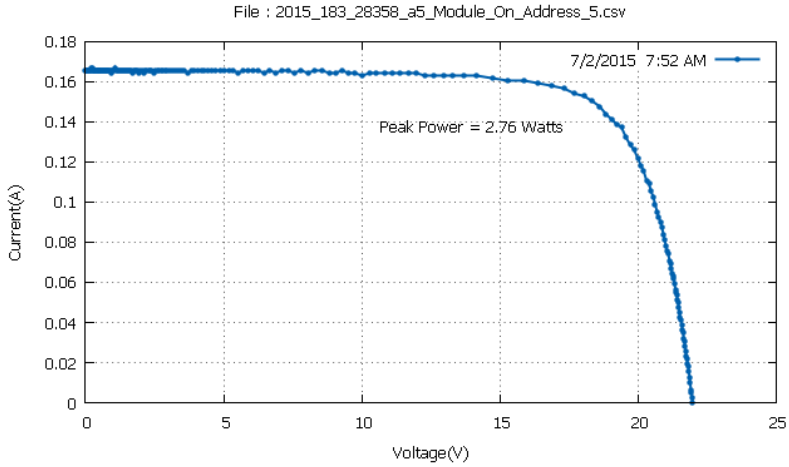
Mean Temperature: 32,61 ºC



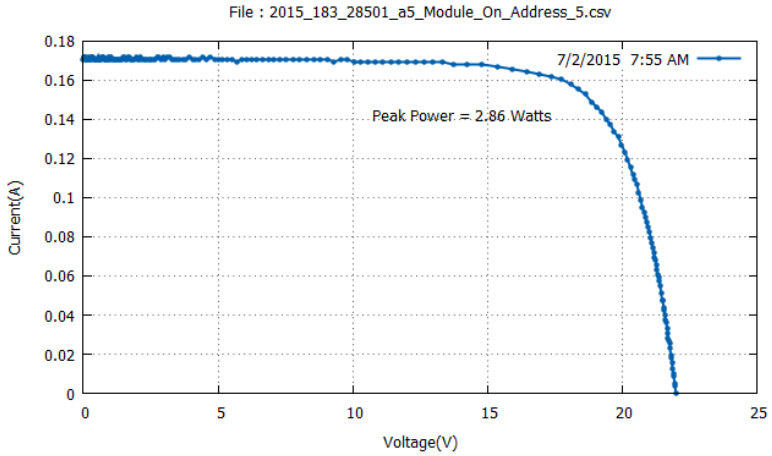
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3156261\ x\ 0.1464081}{308.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}48\ \%$$



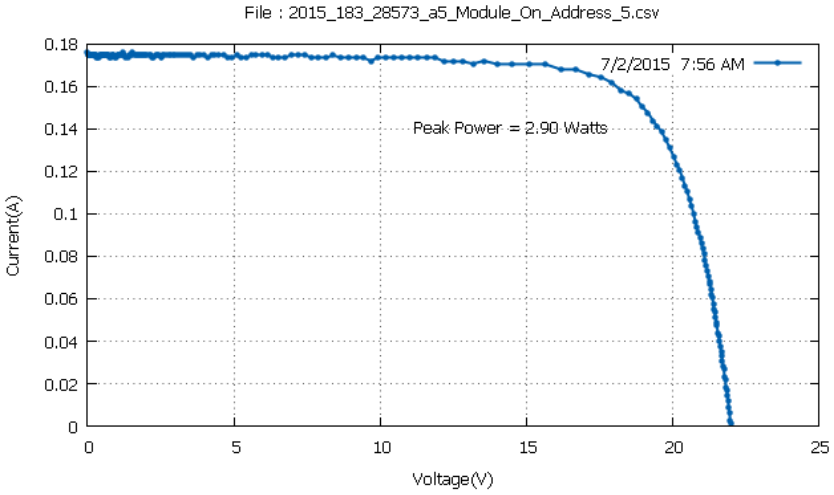
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1919231\ x\ 0.148976654}{315.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}36\ \%$$



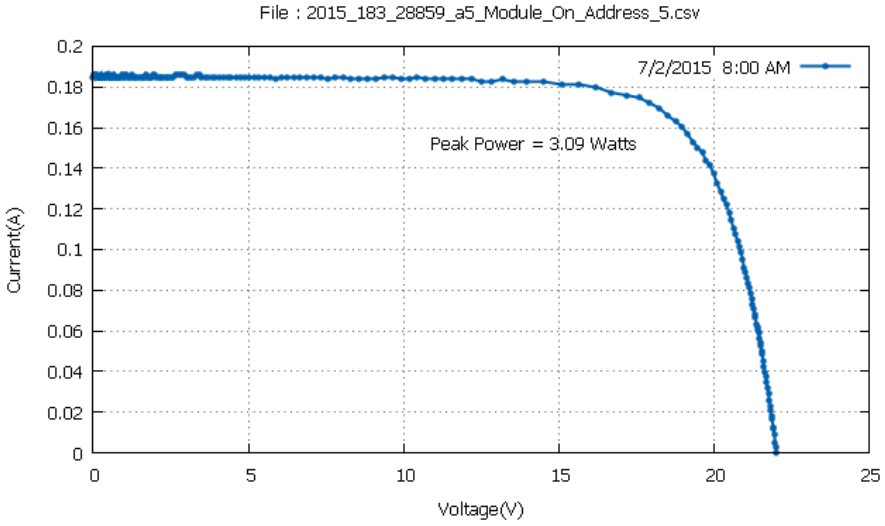
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.05276\ x\ 0.1528295}{319.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0836849\ x\ 0.157966629}{322.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.936788\ x\ 0.161819473}{323.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2460442\ x\ 0.169525161}{333.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}25\ \%$$

Module 4

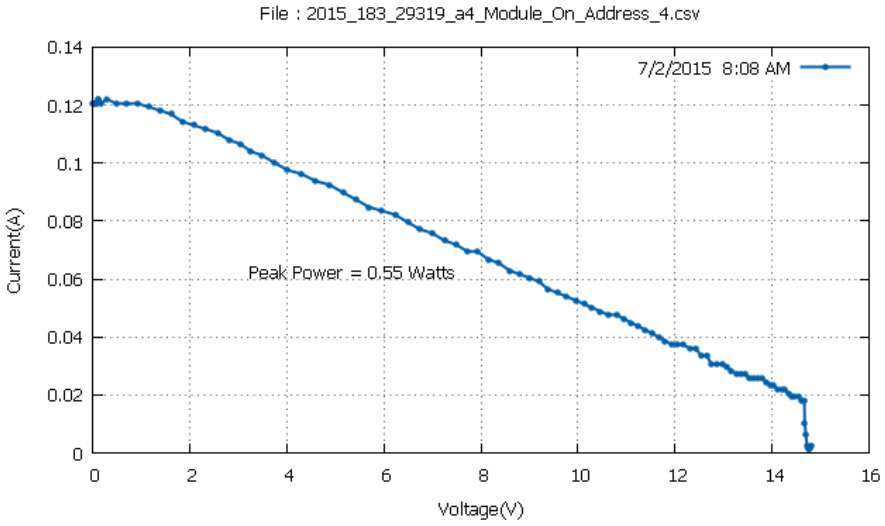
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

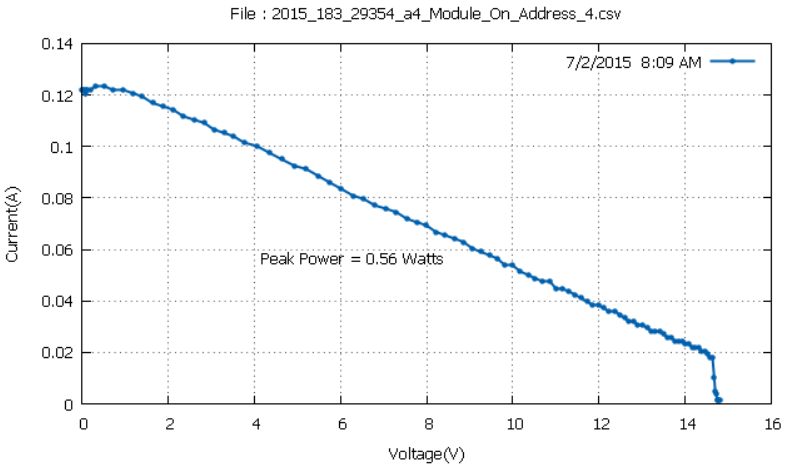
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:08	33,7	2,2
8:09	33,9	2,22
8:10	34	2,21
8:12	34,7	2,21
8:13	34,8	2,2
8:14	35,1	2,18

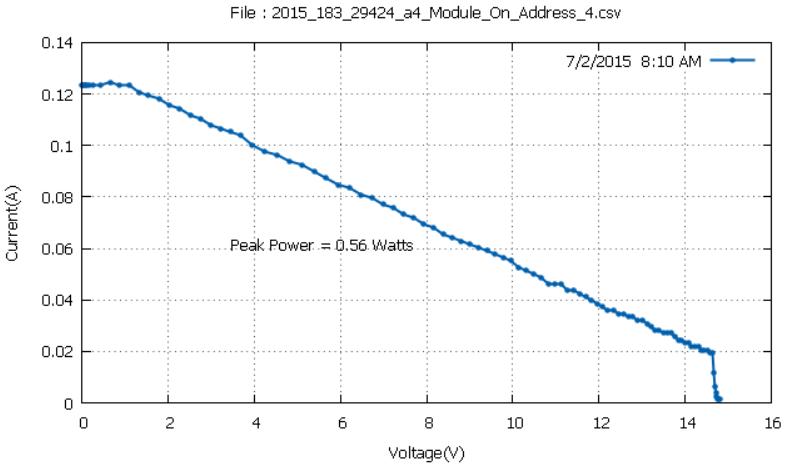
Mean Temperature: 34,36 ºC



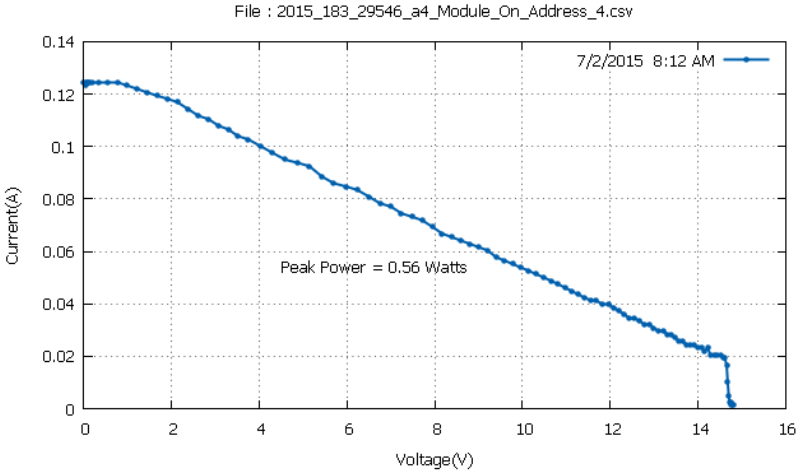
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.93239\ x\ 0.0693512037}{372.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



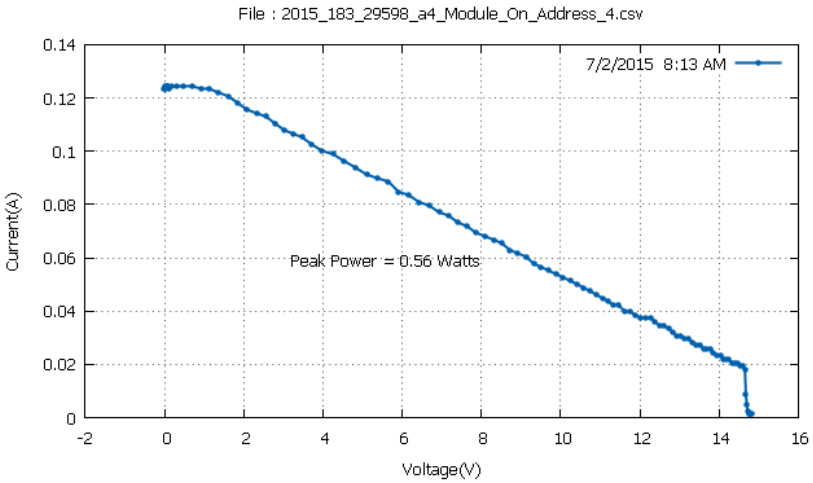
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.852424\ x\ 0.0629297942}{374.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



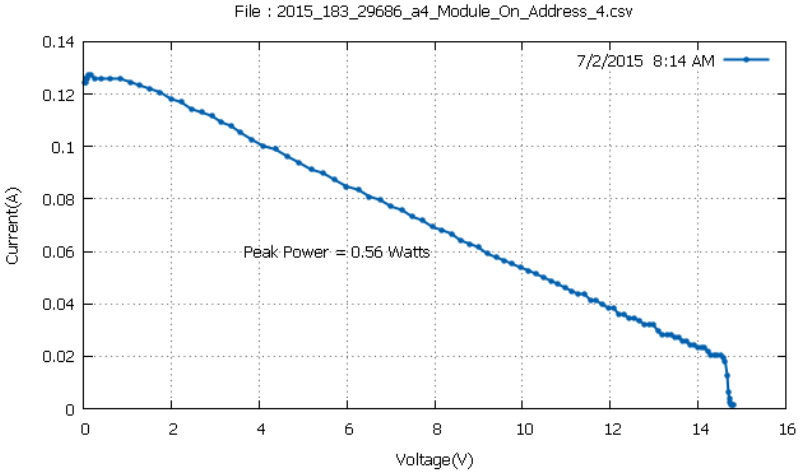
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.373078\ x\ 0.06678264}{376.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.635945\ x\ 0.06549836}{377.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.971047\ x\ 0.07063548}{380.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.94785261\ x\ 0.07063548}{382.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}18\ \%$$

Module 8

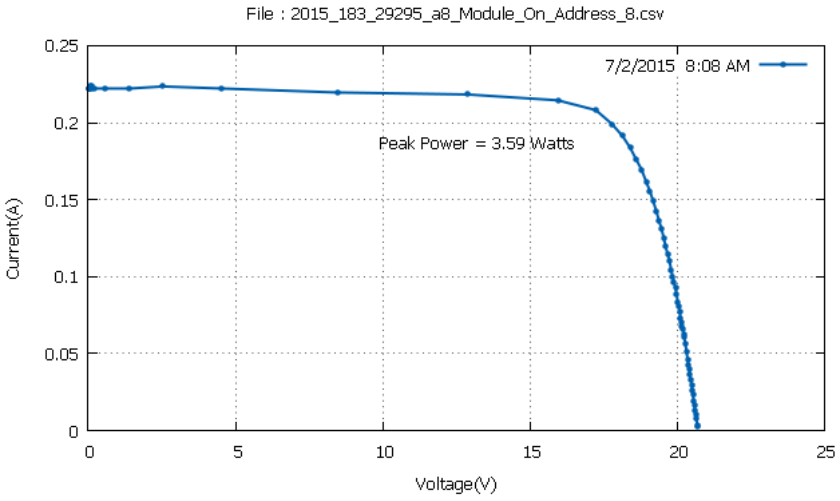
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

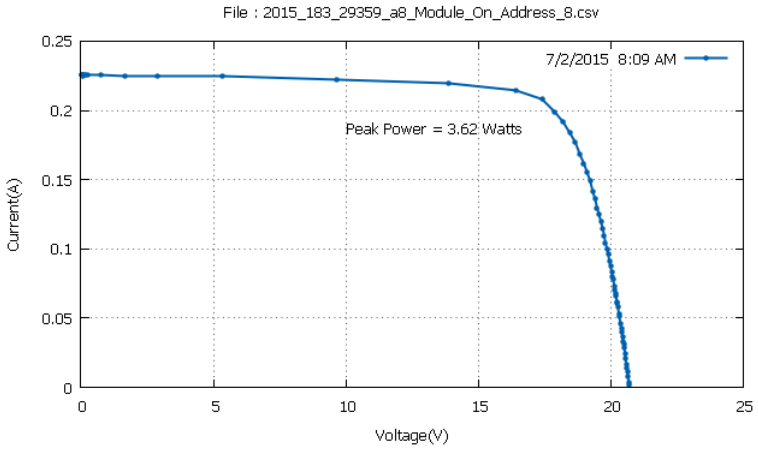
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:08	31,9	12,58
8:09	32,1	12,57
8:10	32,2	12,67
8:12	32,2	12,85
8:13	32,3	13,01
8:14	32,2	13,03

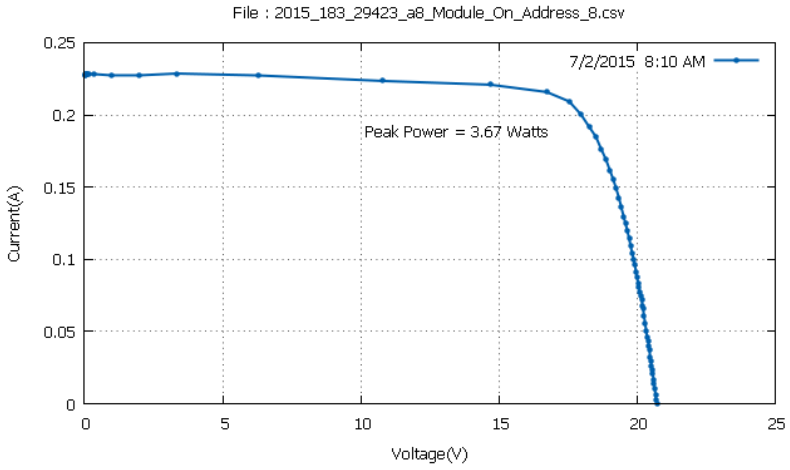
Mean Temperature: 32,15 ºC



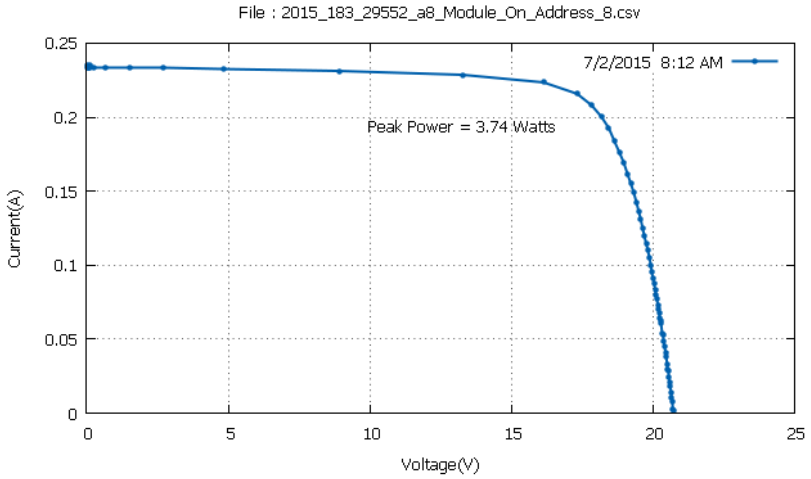
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2409649\ x\ 0.2080536}{371.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}58\ \%$$



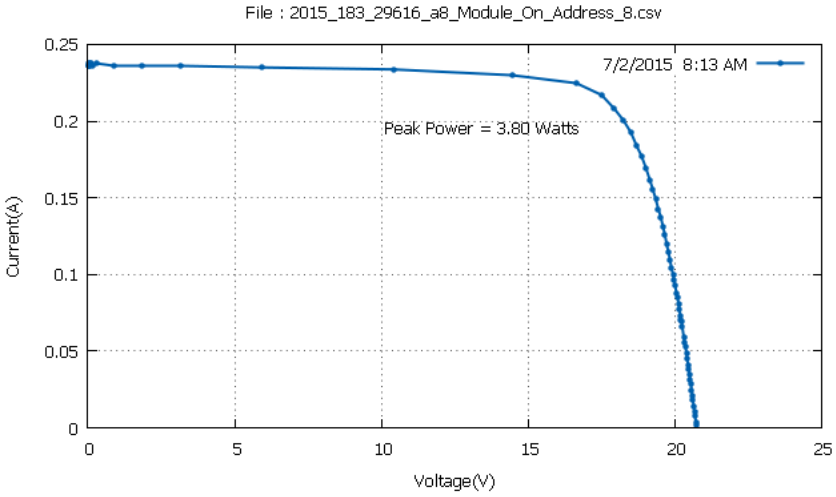
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4033241\ x\ 0.2080536}{374.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}57\ \%$$



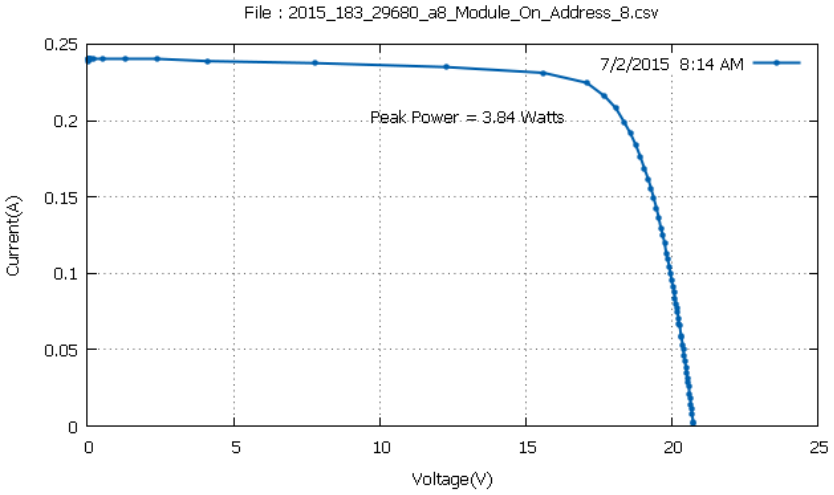
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5424881\ x\ 0.20933789}{377\ x\ 0{,}0768} \text{ x } 100 = 12{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.31828\ x\ 0.215759292}{378.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.217043579}{380.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0940685\ x\ 0.224749267}{383.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}03\ \%$$

Module 3

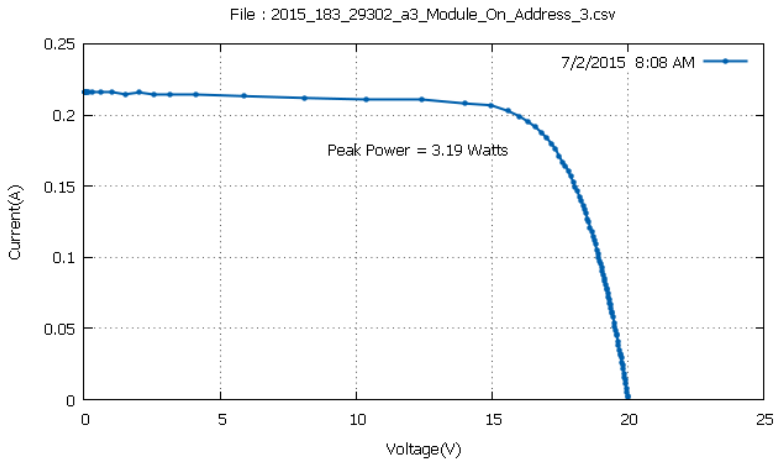
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

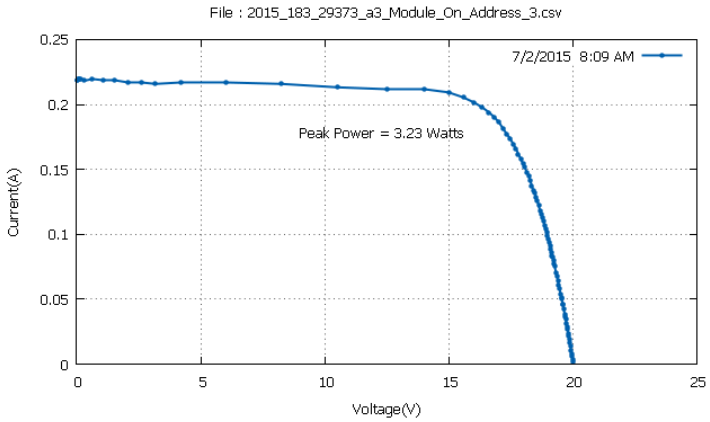
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:08	33,9	12,08
8:09	34,1	12,11
8:10	34,1	12,27
8:14	35,1	12,65
8:15	35,4	13,64
8:17	35,7	12,5

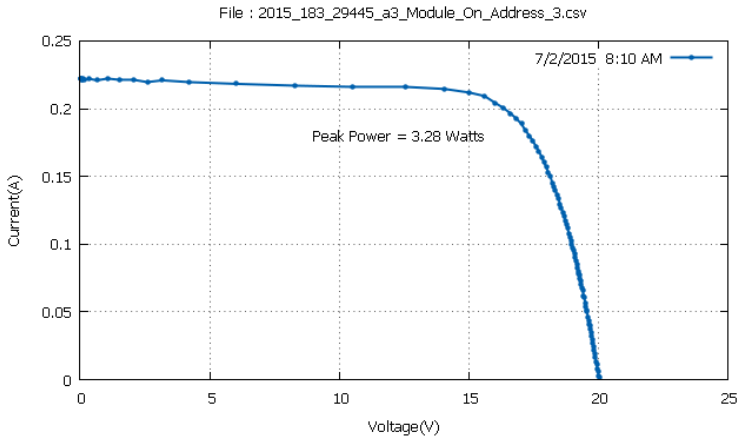
Mean Temperature: 34,71 ºC



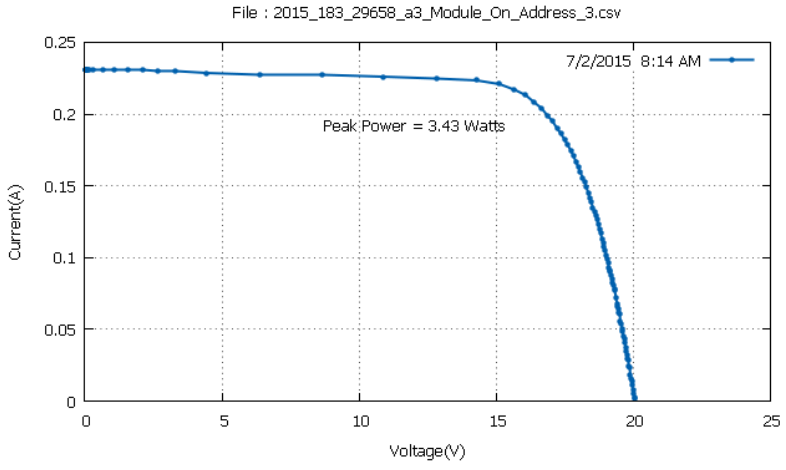
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3363934\ x\ 0.195210785}{372.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}08\ \%$$



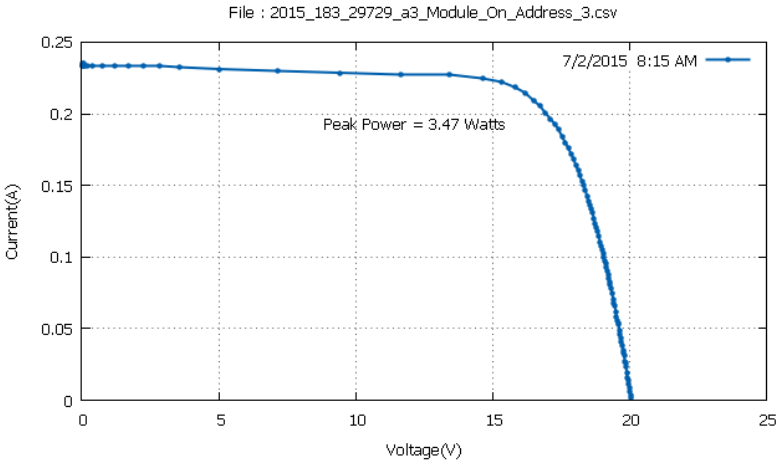
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3441257\ x\ 0.19777934}{376\ x\ 0{,}0709} \text{ x } 100 = 12{,}11\ \%$$



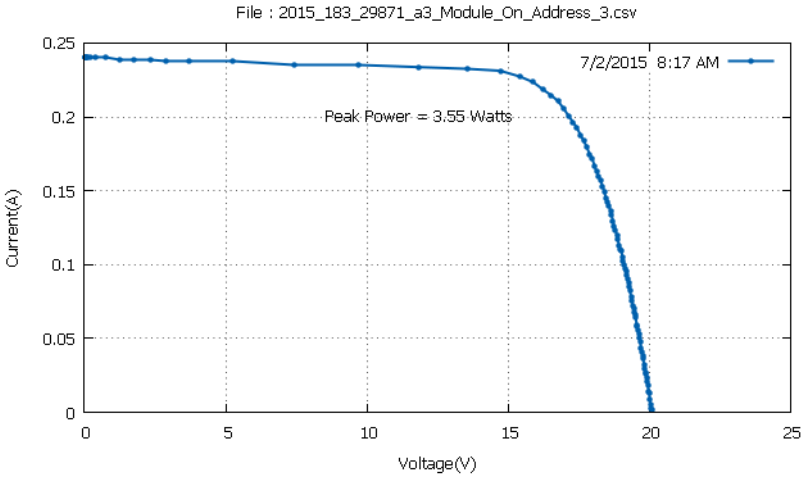
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.200347915}{377\ x\ 0{,}0709} \text{ x } 100 = 12{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0735264\ x\ 0.213190734}{382.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.19723\ x\ 0.214475}{387\ x\ 0{,}0709} \text{ x } 100 = 12{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8879747\ x\ 0.223464981}{400.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}5\ \%$$

Module 5

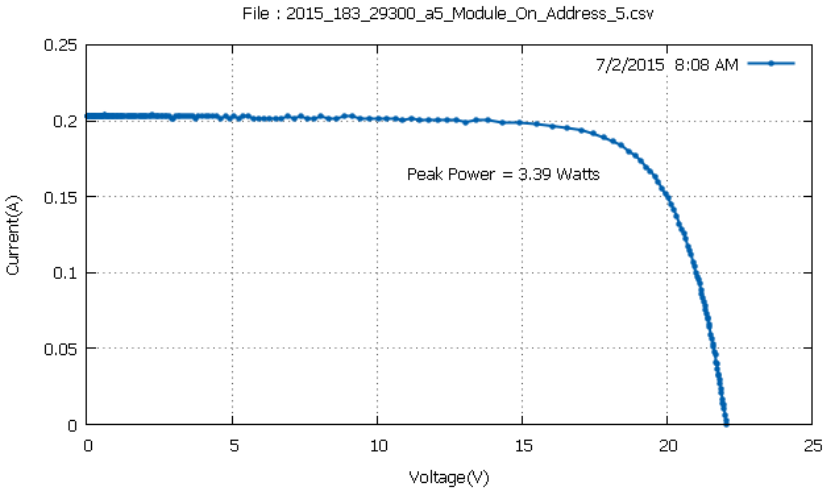
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

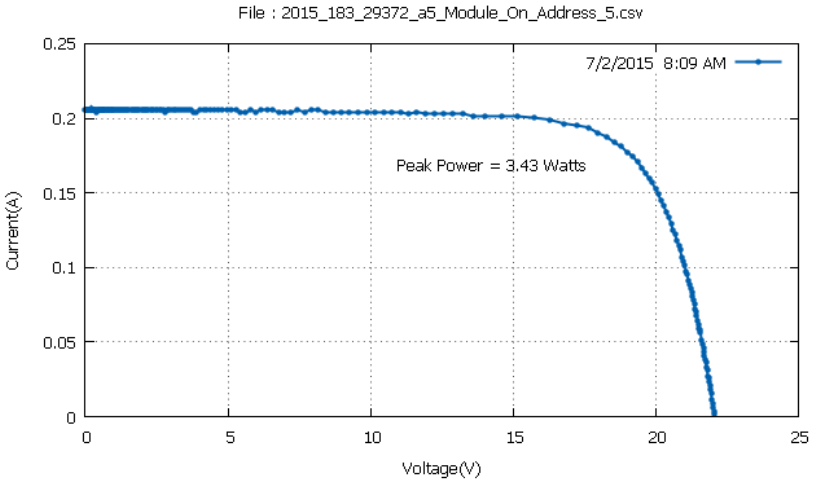
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
8:08	34,3	12,05
8:09	34,5	12,06
8:10	34,5	12,21
8:13	35,2	12,4
8:17	36	12,35
8:19	36,3	12,3

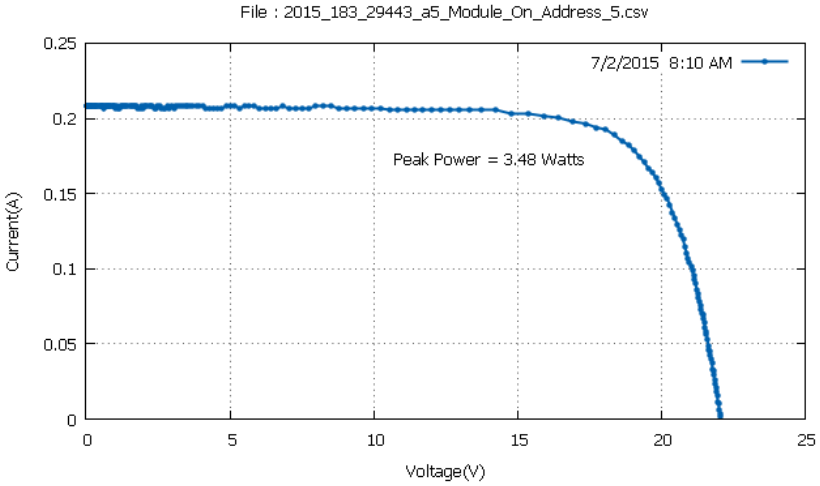
Mean Temperature: 35,13 ºC



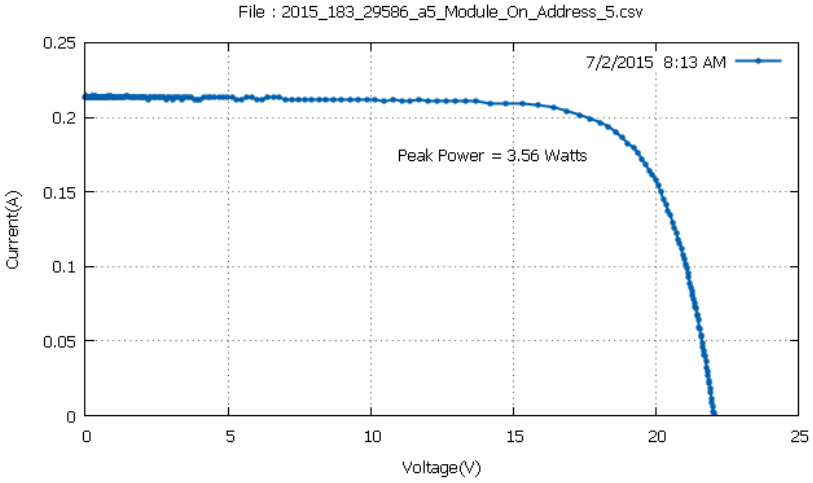
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4393272\ x\ 0.183652252}{372\ x\ 0{,}0756} \text{ x } 100 = 12{,}05\ \%$$



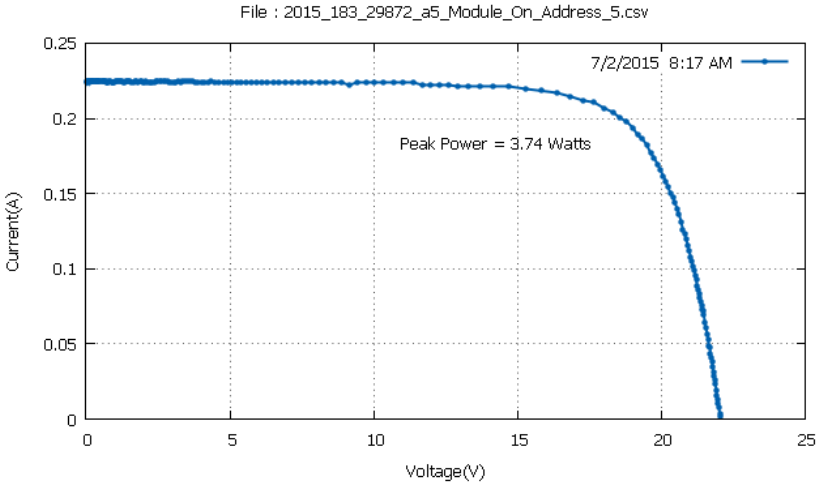
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2847\ x\ 0.1875051}{376.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}06\ \%$$



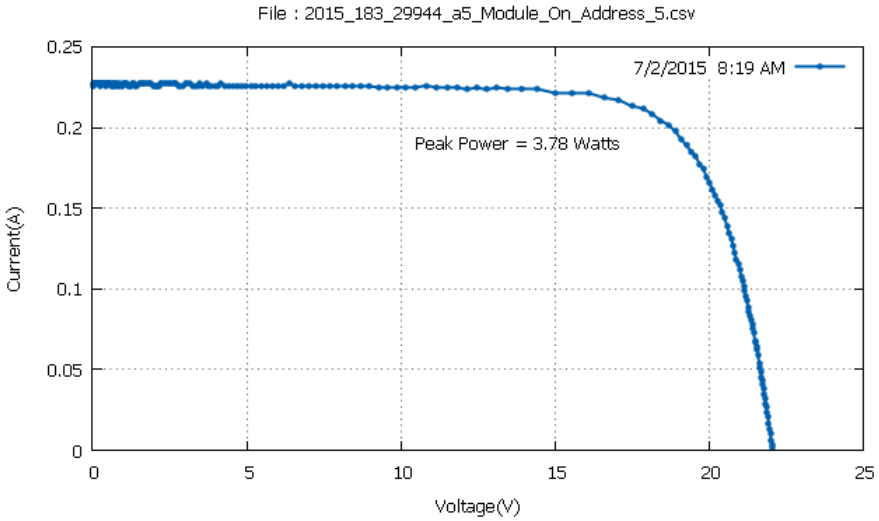
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0759525\ x\ 0.19264222}{377\ x\ 0{,}0756} \text{ x } 100 = 12{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.33882\ x\ 0.1939265}{379.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3078938\ x\ 0.2042007}{400.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8517437\ x\ 0.211906448}{406.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}3\ \%$$

Module 4

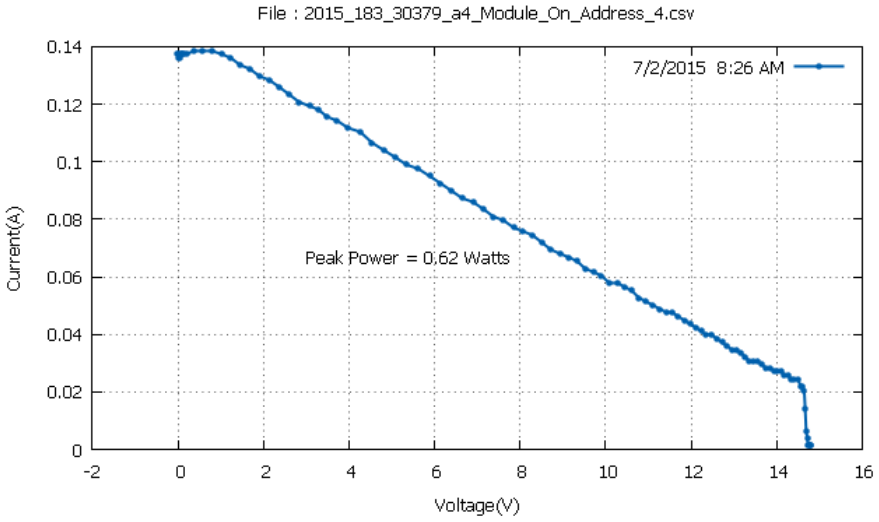
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

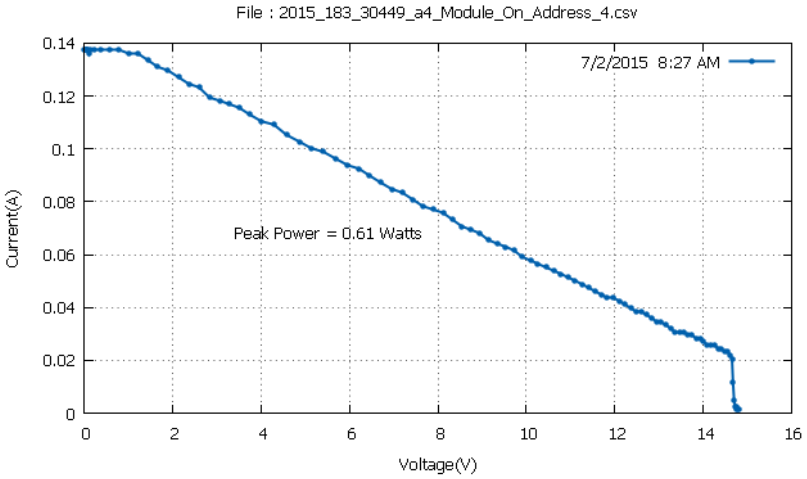
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:26	35,4	2,17
8:27	35,3	2,13
8:28	35,5	2,21
8:30	35,4	2,22
8:31	35,5	2,24
8:32	35,6	2,2

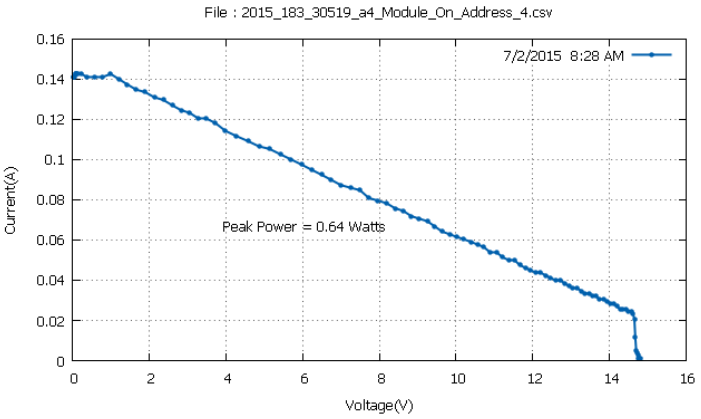
Mean Temperature: 35,45 ºC



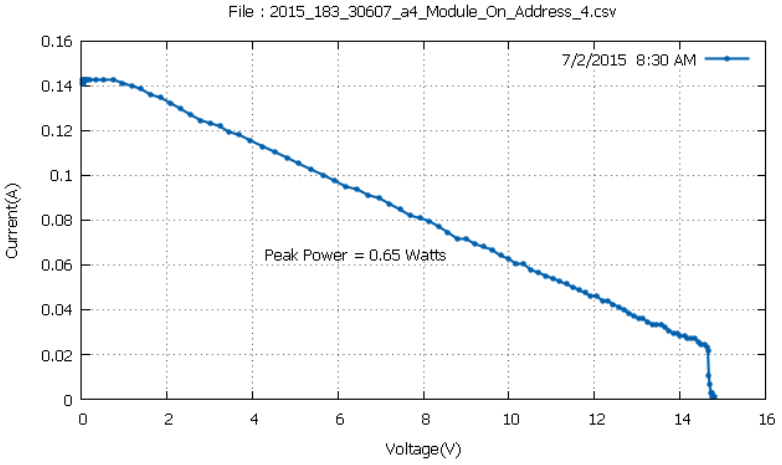
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.07320405}{424.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



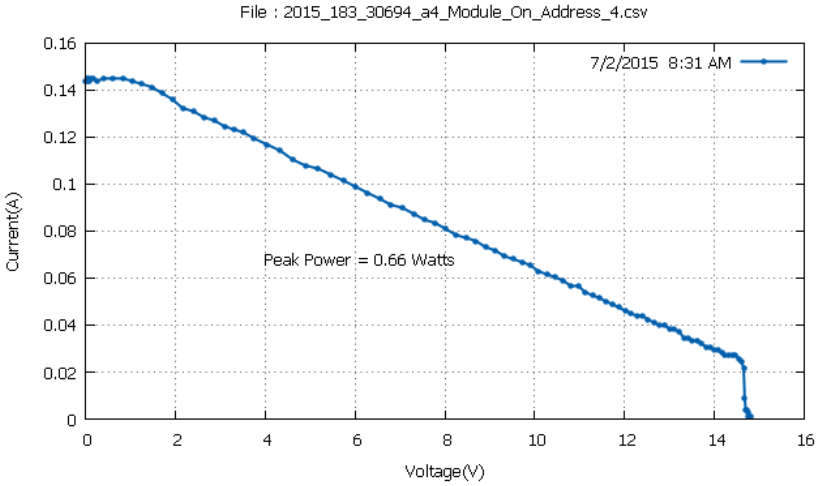
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.110211\ x\ 0.0757726058}{426.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}13\ \%$$



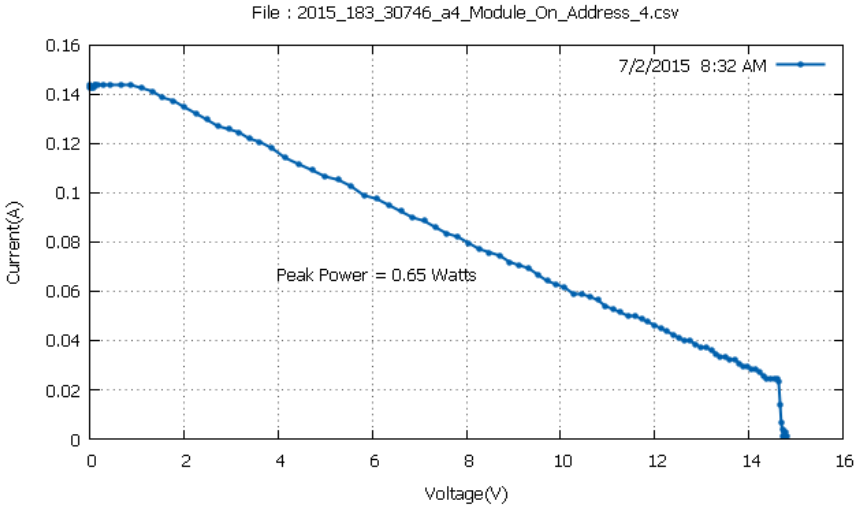
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.620482\ x\ 0.07448833}{430.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.419467\ x\ 0.07705689}{435.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.0757726058}{438.7\ x\ 0{,}0671}\ \text{x}\ 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.914274\ x\ 0.07320405}{439.9\ x\ 0{,}0671}\ \text{x}\ 100 = 2{,}2\ \%$$

Module 8

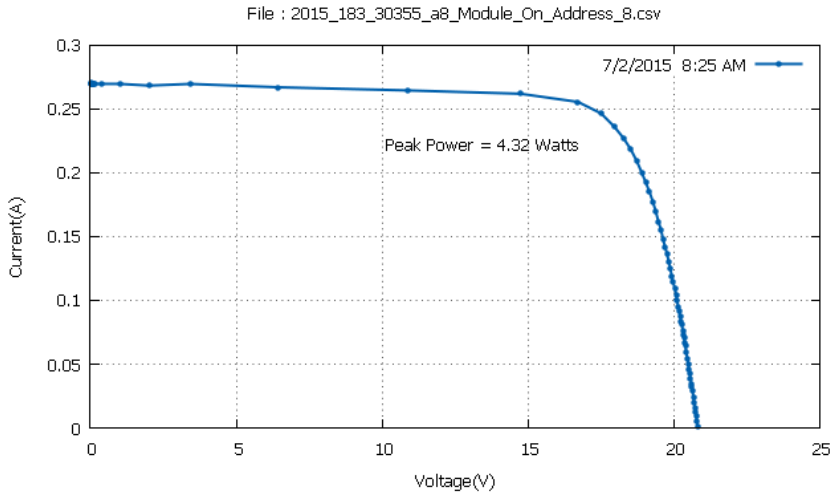
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

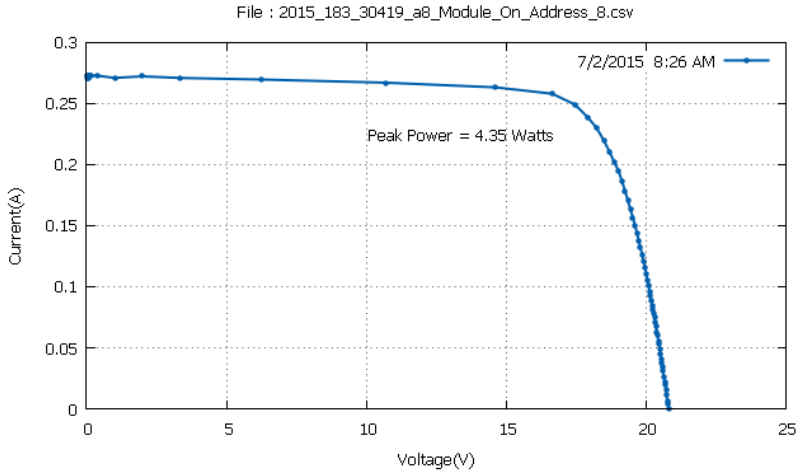
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:25	32,8	13,3
8:26	33,1	13,32
8:28	33,5	13,31
8:30	33,5	13,38
8:31	33,7	13,45
8:32	33,8	13,41

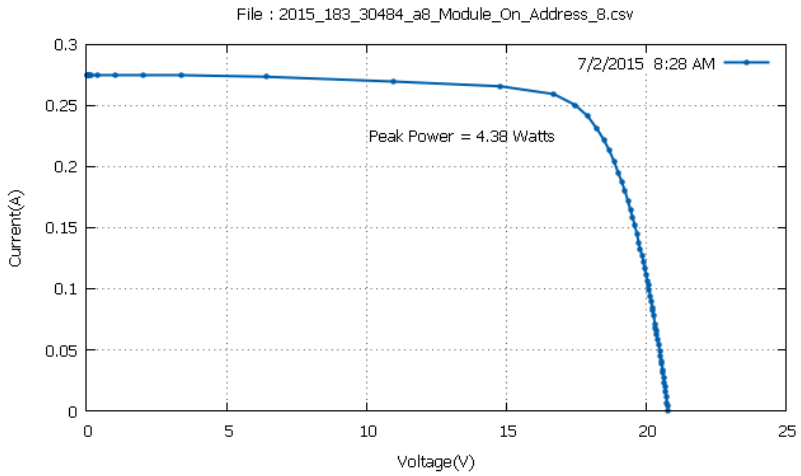
Mean Temperature: 33,4 ºC



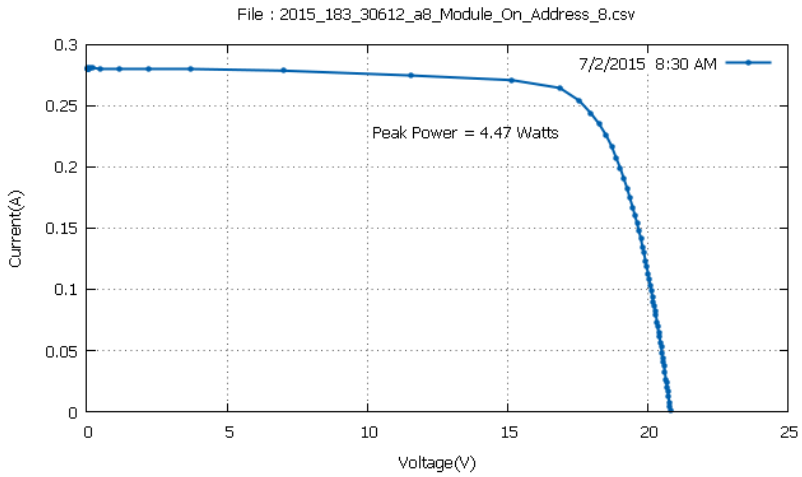
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5038319\ x\ 0.246582046}{422.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}3\ \%$$



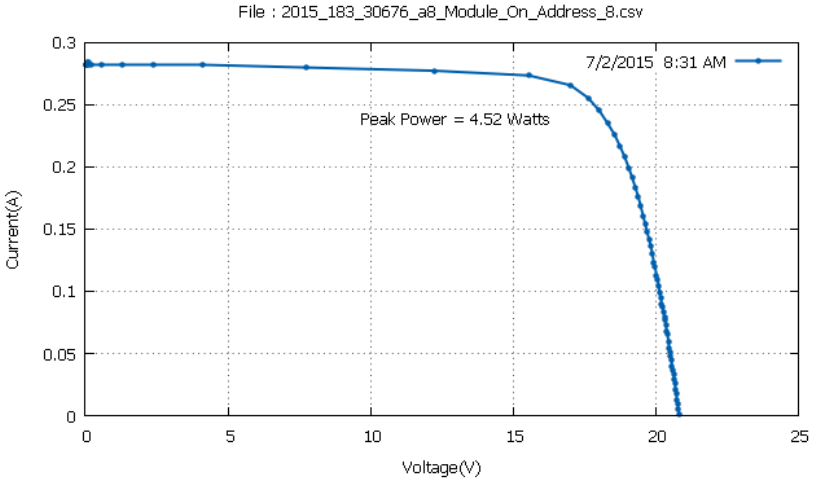
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4574432\ x\ 0.2491506}{425.1\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}32\ \%$$



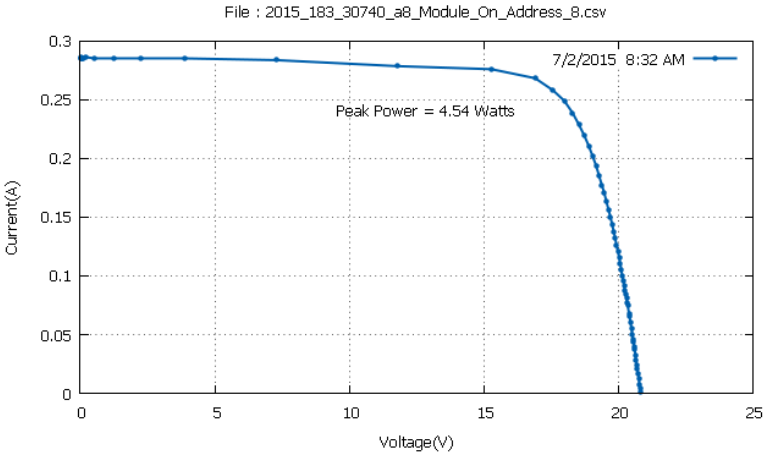
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4729061\ x\ 0.2504349}{428.2\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.557951\ x\ 0.25428775}{434.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0090237\ x\ 0.265846282}{437.5\ x\ 0{,}0768} \text{ x } 100 = 13{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9085159\ x\ 0.268414825}{440.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}41\ \%$$

Module 3

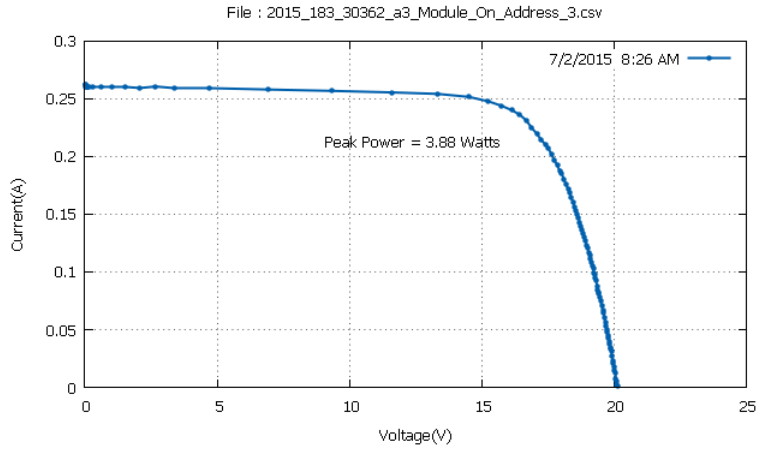
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

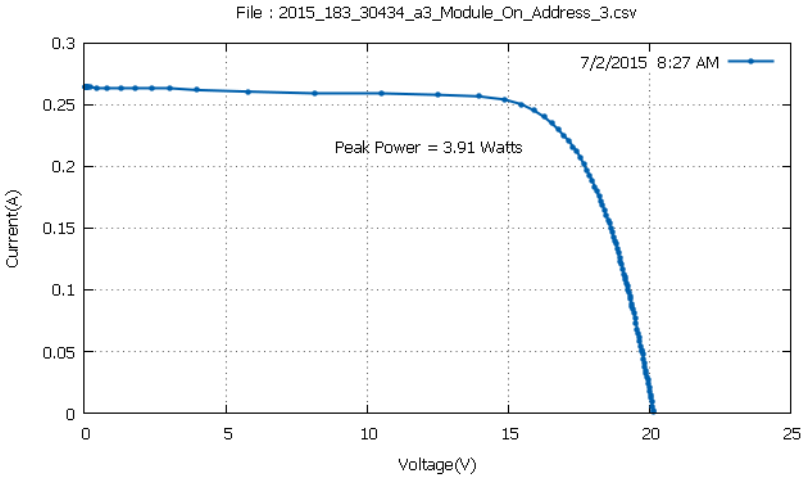
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:26	35,6	12,93
8:27	35,3	12,93
8:28	35,3	13,04
8:35	36,5	13,12
8:36	36,4	13,13
8:37	36,3	13,19

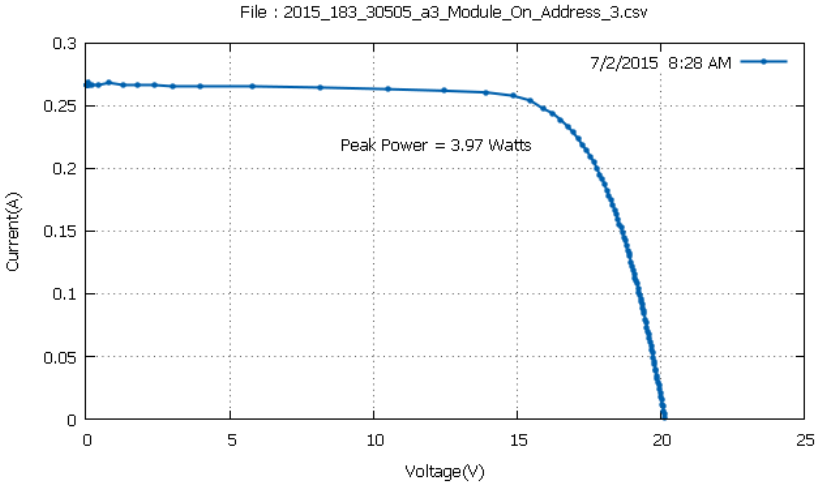
Mean Temperature: 35, 9 ºC



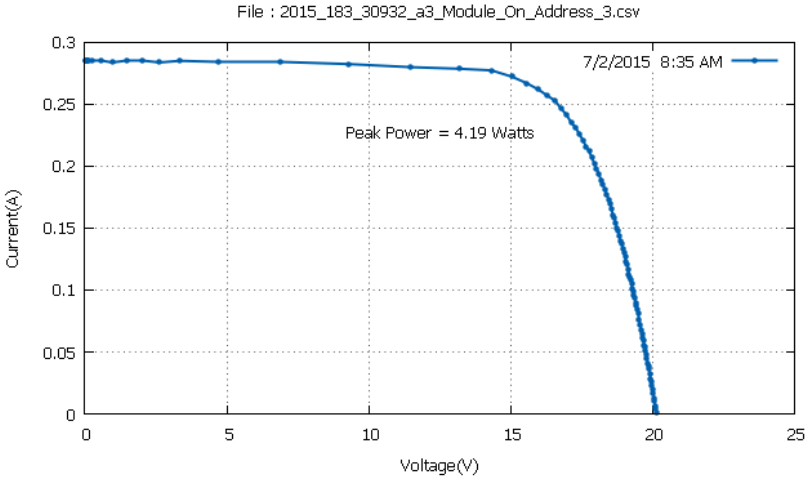
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4369011\ x\ 0.2363078}{423\ x\ 0{,}0709}$ x 100 = 12,93 %



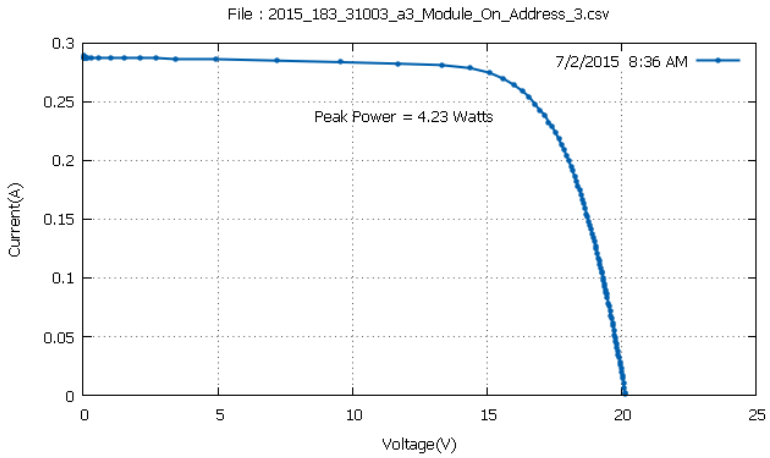
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2745438\ x\ 0.240160644}{426.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}93\ \%$$



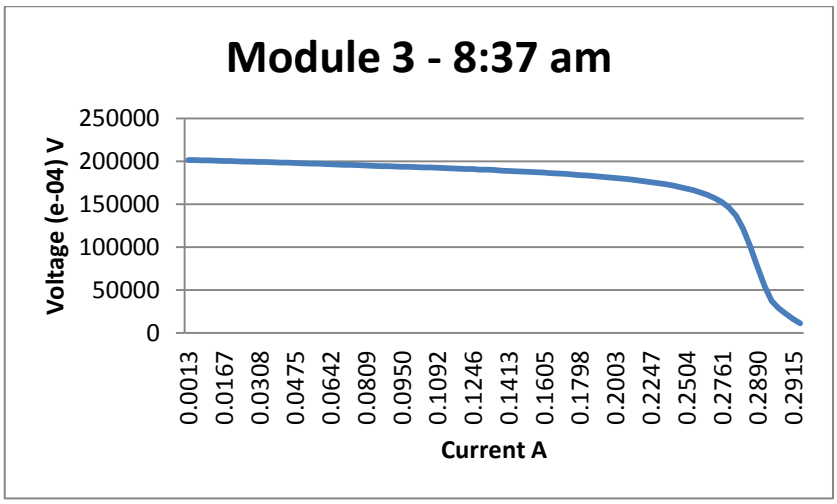
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.24401348}{429.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5606041\ x\ 0.253003448}{450.4\ x\ 0{,}0709} \text{ x } 100 = 13{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3132\ x\ 0.259424865}{454.2\ x\ 0{,}0709} \text{ x } 100 = 13{,}13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.261993438}{458.5\ x\ 0{,}0709} \text{ x } 100 = 13{,}19\ \%$$

Module 5

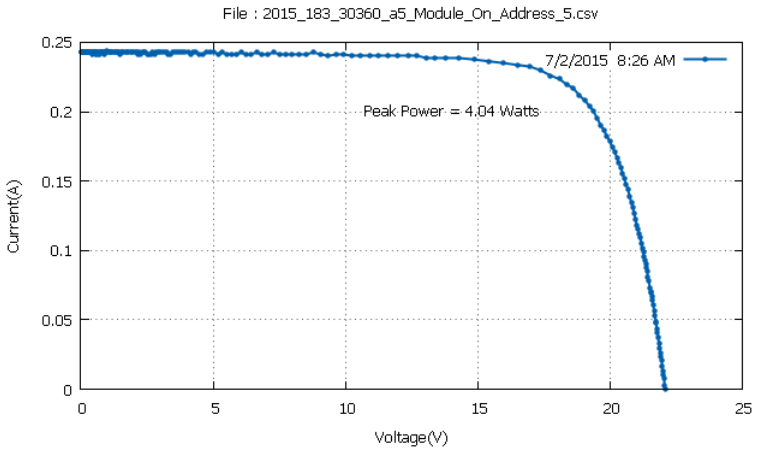
Date: 2/7/2015 – Morning Measurement

Temperature Ambient: 29 ºC

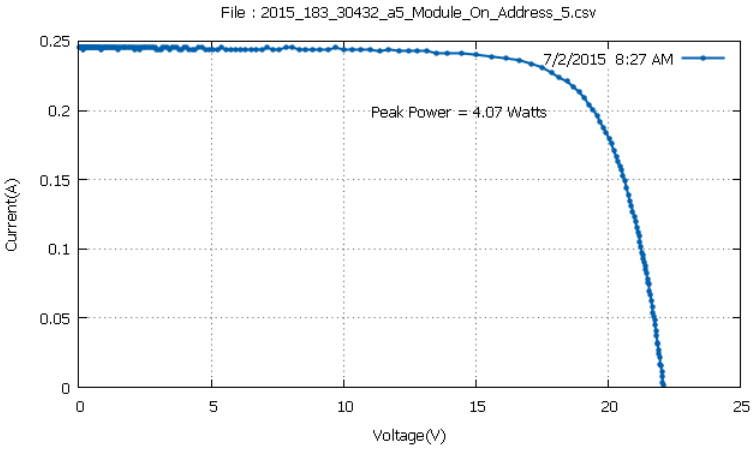
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:26	37	12,64
8:27	36,9	12,63
8:28	36,8	12,72
8:30	36,6	12,78
8:33	36,8	12,84
8:37	37,1	12,92

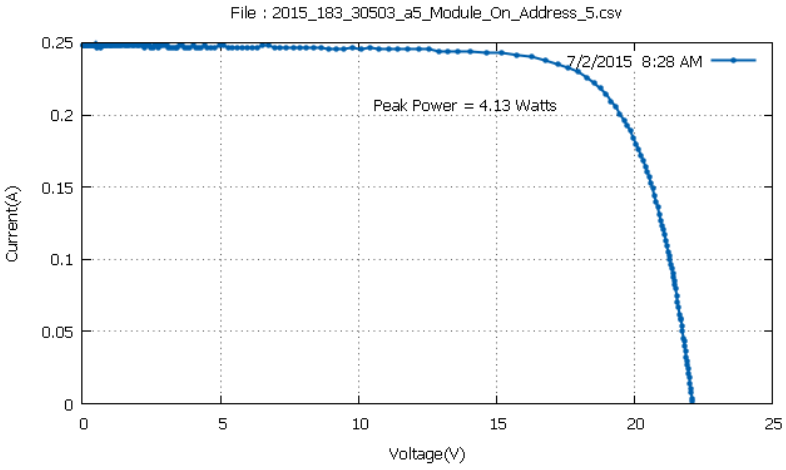
Mean Temperature: 36,86 ºC



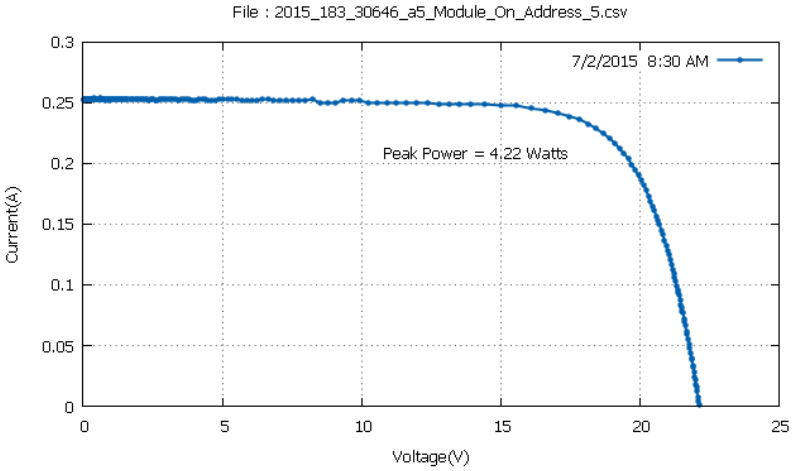
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0836849\ x\ 0.223464981}{422.7\ x\ 0{,}0756}$ x 100 = 12,64 %



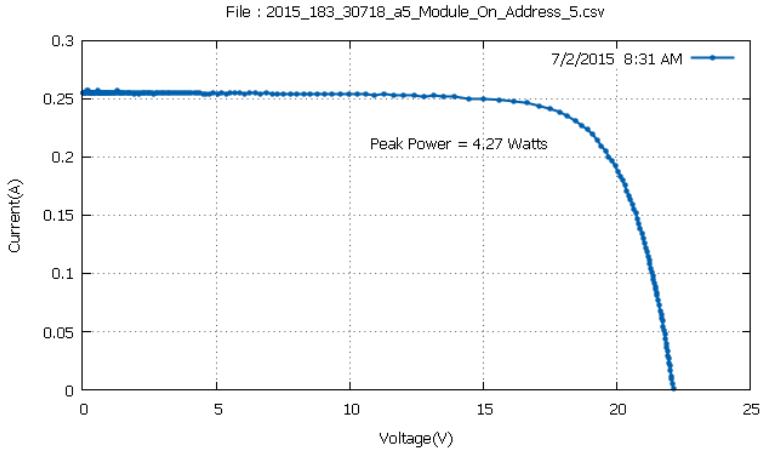
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.44706\ x\ 0.22089642}{426.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}63\ \%$$



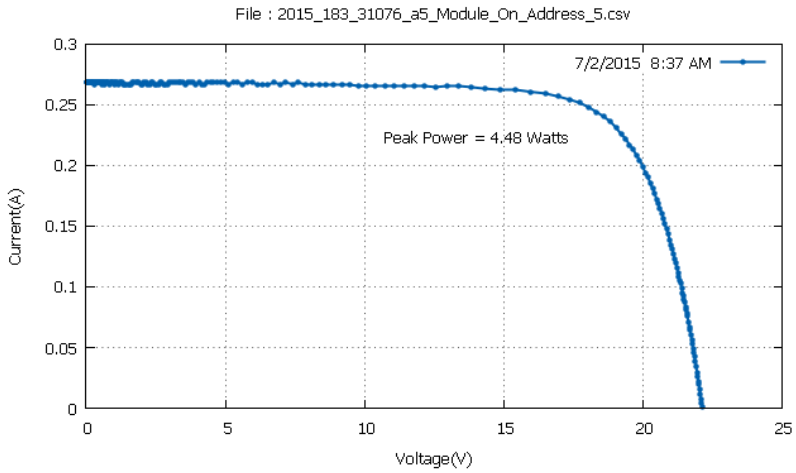
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2692375\ x\ 0.22603353}{429.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.232454956}{436.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}78\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.16873\ x\ 0.235023513}{439.9\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3465519\ x\ 0.244013488}{458.5\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}92\ \%$$

Module 4

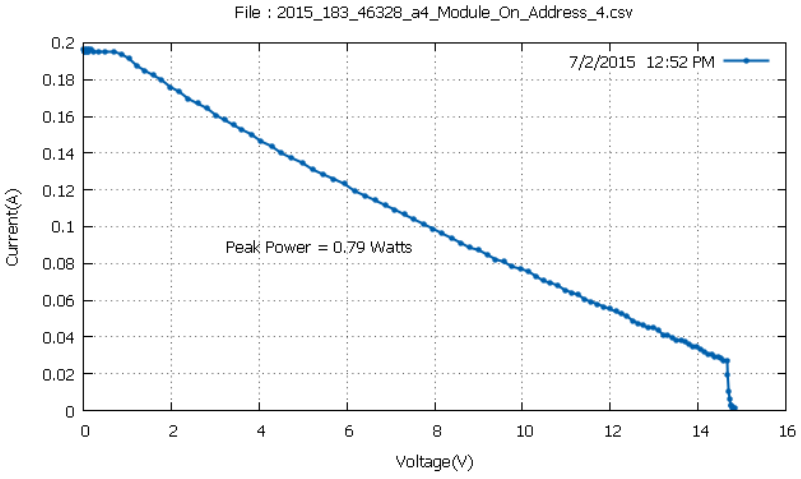
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

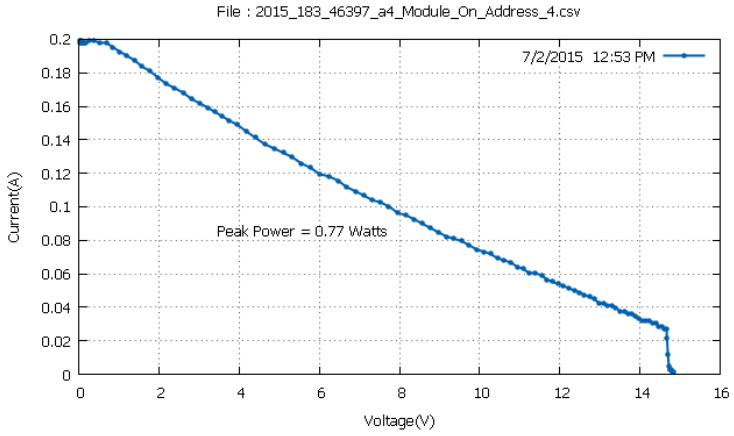
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:52	58,4	1,22
12:53	57,4	1,19
12:55	54,2	1,42
12:56	54,7	1,29
12:59	56,4	1,41
13:00	58,3	1,26

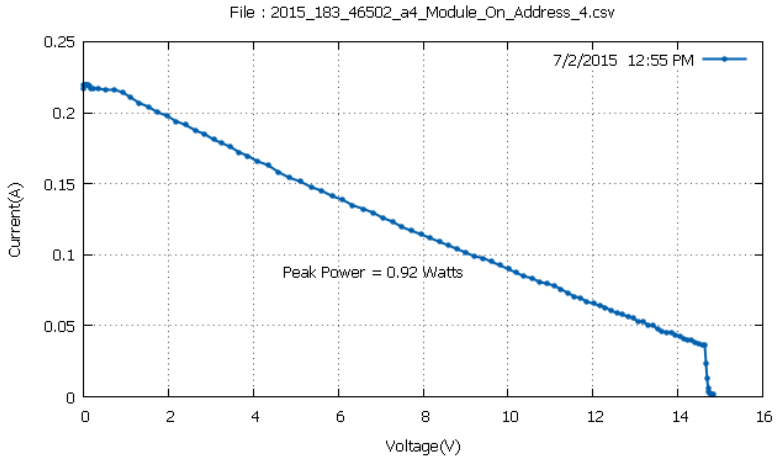
Mean Temperature: 56,56 ºC



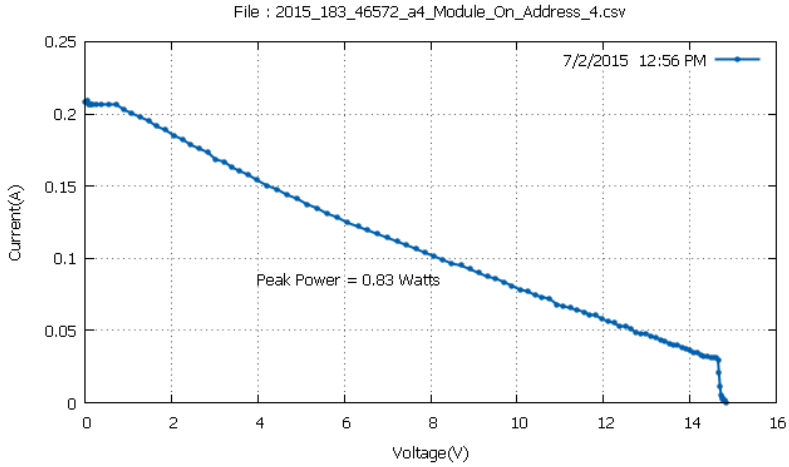
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.357615\ x\ 0.0950368}{959.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}22\ \%$$



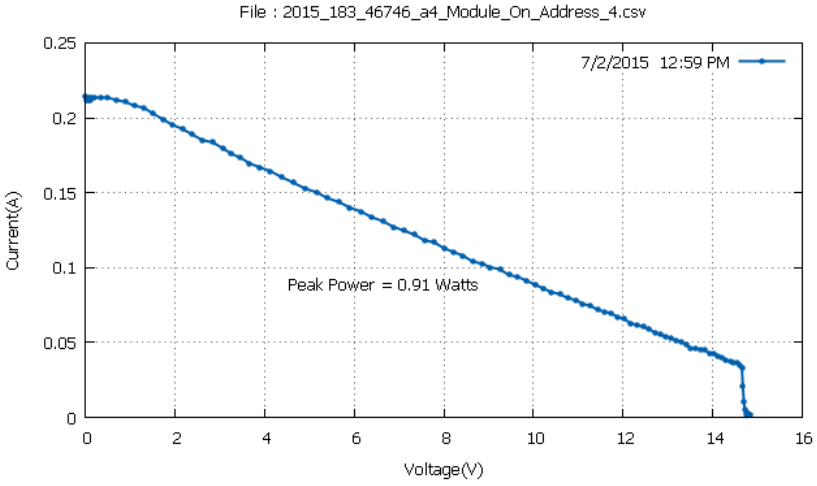
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1566\ x\ 0.09503683}{959.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}19\ \%$$



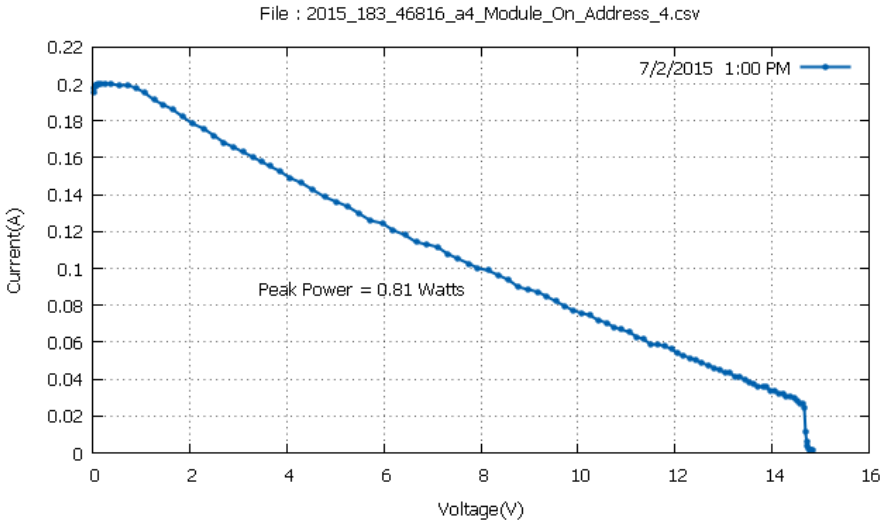
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.416814\ x\ 0.09760539}{961.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.829229\ x\ 0.09760539}{959\ x\ 0{,}0671} \text{ x } 100 = 1{,}29\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.246724\ x\ 0.0988896}{958.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.148869\ x\ 0.09888967}{955.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}26\ \%$$

Module 8

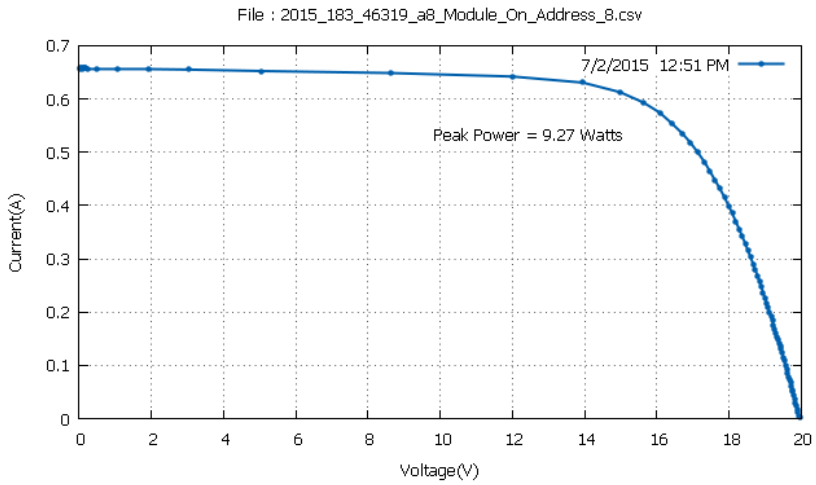
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

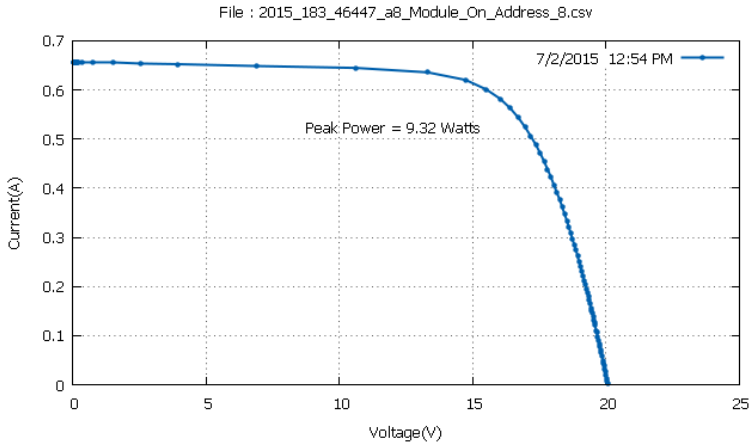
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:51	58,8	12,55
12:54	57,9	12,63
12:55	57,1	12,7
12:56	56,8	12,71
12:58	57,1	12,67
12:59	57,2	12,68

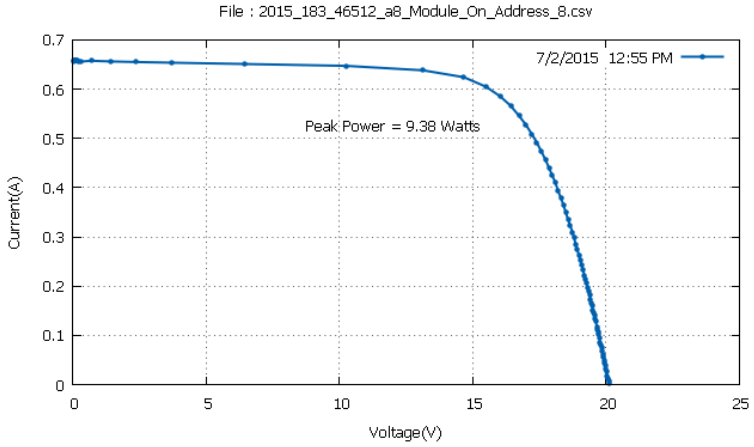
Mean Temperature: 57,48 ºC



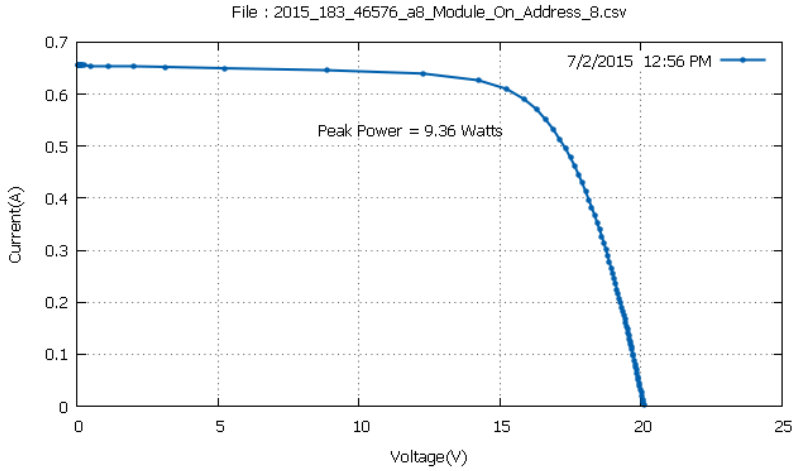
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6251078\ x\ 0.5933381}{961.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}55\ \%$$



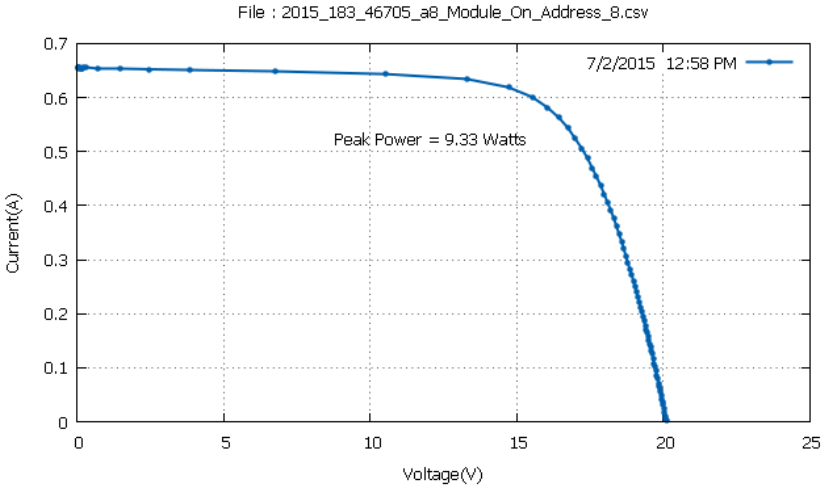
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.58177954}{960.4\ x\ 0{,}0768} \text{ x } 100 = 12{,}63\ \%$$



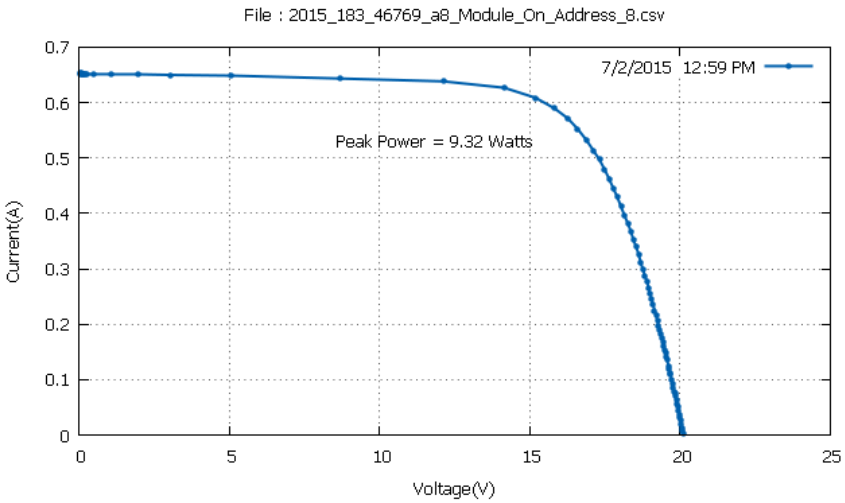
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194073\ x\ 0.5856324}{961.4\ x\ 0{,}0768} \text{ x } 100 = 12{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ \square\ A} = \frac{15.8415861\ x\ 0.59076947}{958.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.03487\ x\ 0.5817795}{958.7\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8183918\ x\ 0.5894852}{957.1\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}68\ \%$$

Module 3

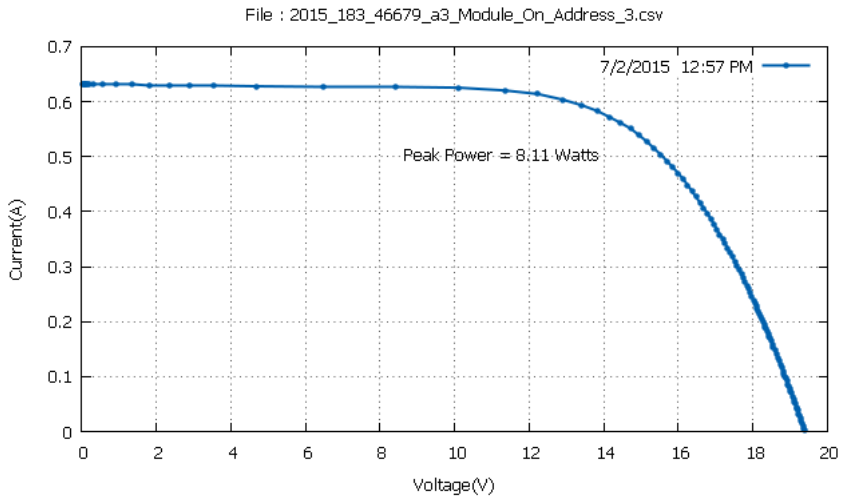
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

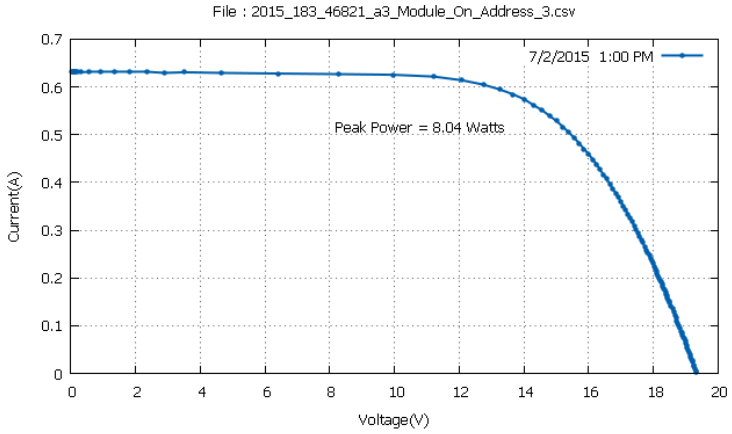
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:57	61,7	11,94
13:00	61,8	11,84
13:01	61,9	12
13:05	60,3	12
13:06	59,7	12,1
13:07	59,6	12,1

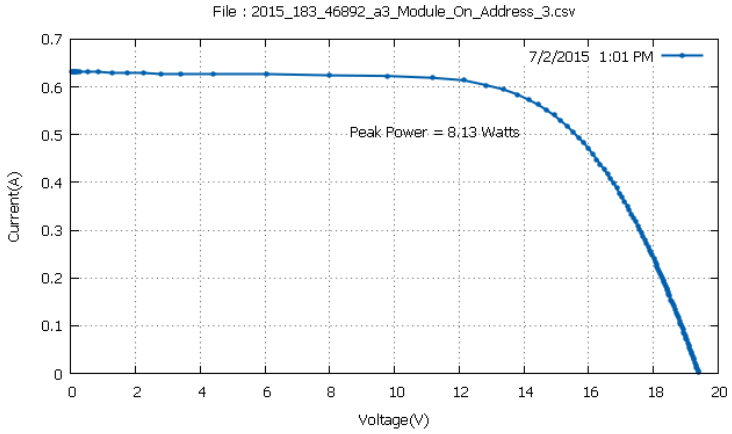
Mean Temperature: 60,83 ºC



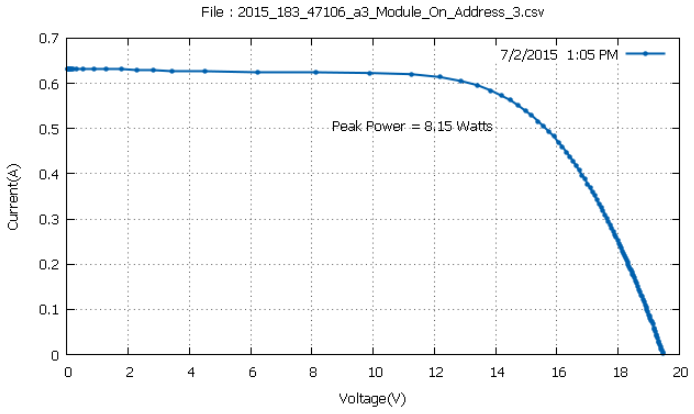
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.45767\ x\ 0.561231}{957.5\ x\ 0{,}0709}$ x 100 = 11,94 %



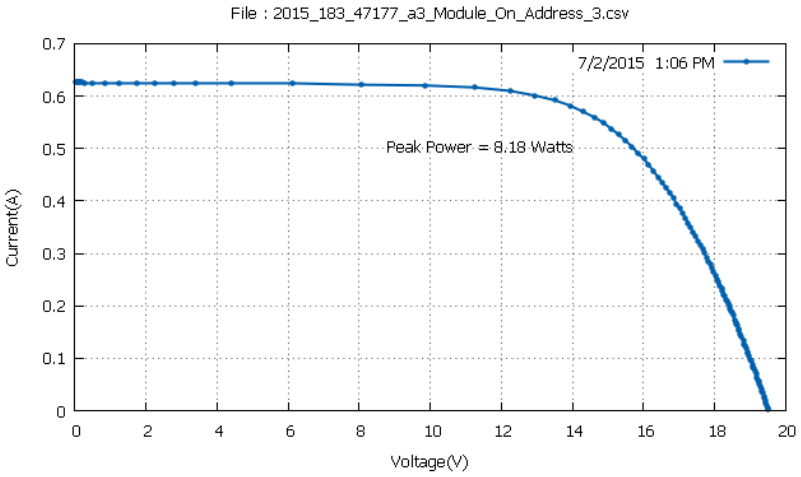
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.0092506\ x\ 0.574073851}{957.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}84\ \%$$



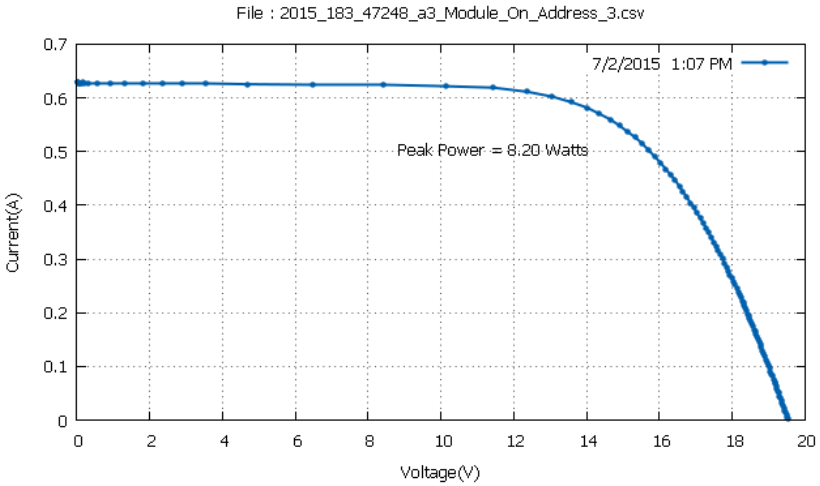
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.4499388\ x\ 0.5625153}{955.4\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.488596\ x\ 0.5625153}{957.8\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6045666\ x\ 0.5599467}{953.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6432228\ x\ 0.5599467}{955.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}1\ \%$$

Module 5

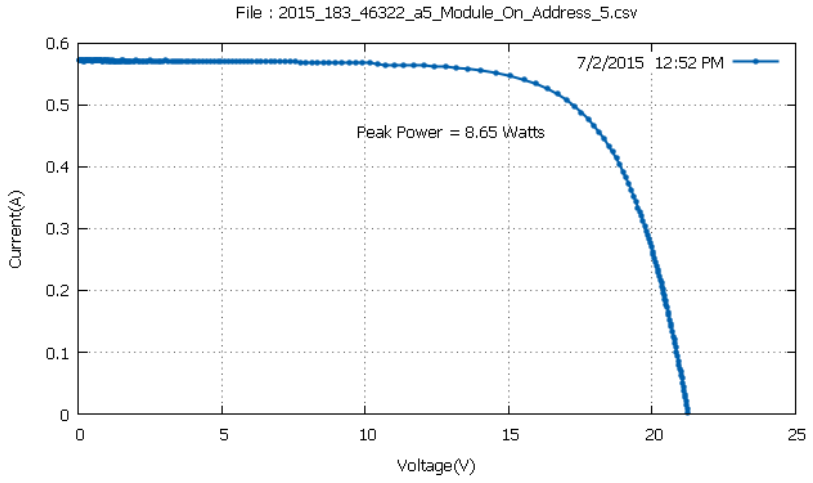
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

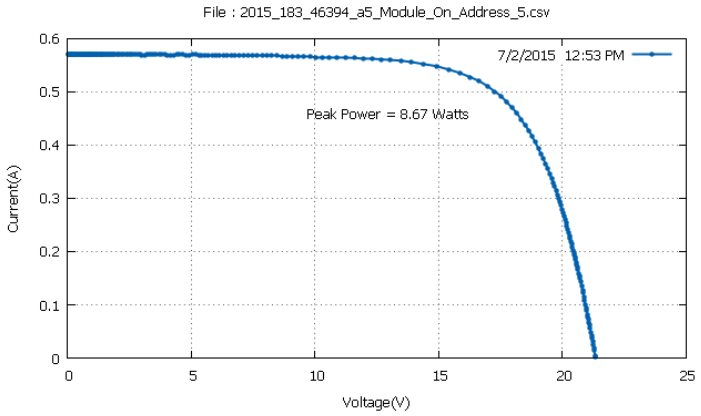
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:52	59,3	11,89
12:53	59,3	11,95
12:56	57,3	12
12:58	57,8	12,02
13:00	58,1	11,9
13:01	58,4	11,98

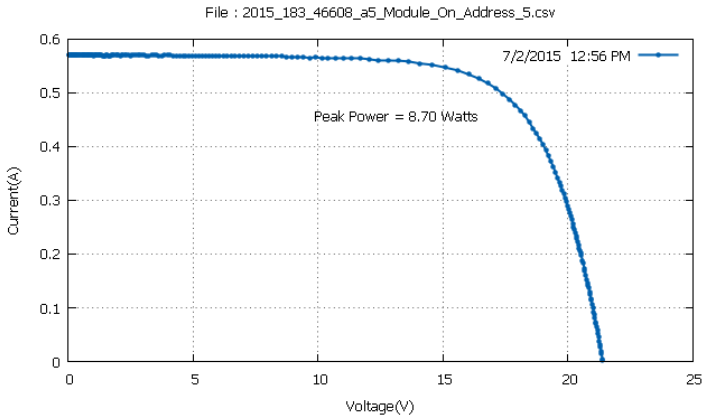
Mean Temperature: 58,36 ºC



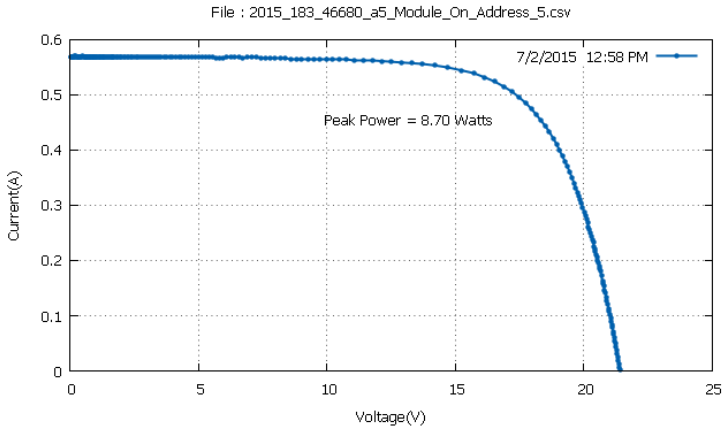
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.009023\ x\ 0.5085755}{961.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}89\ \%$$



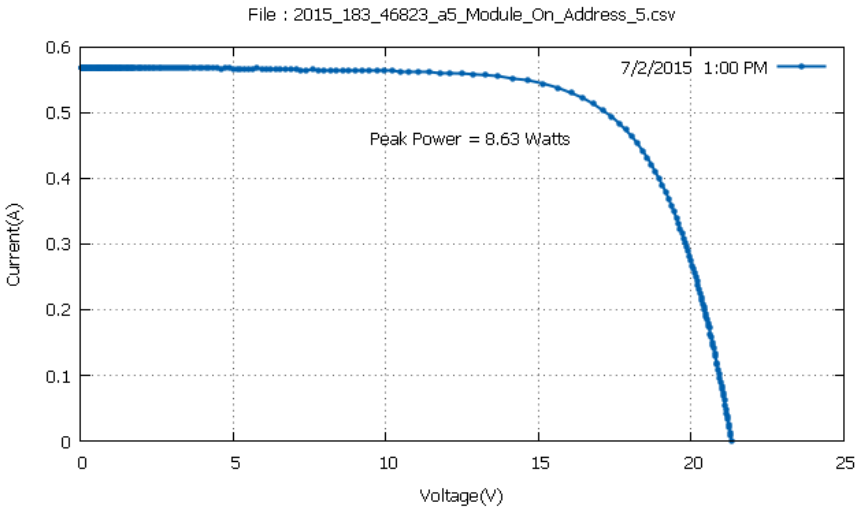
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.962635\ x\ 0.511144042}{959.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$



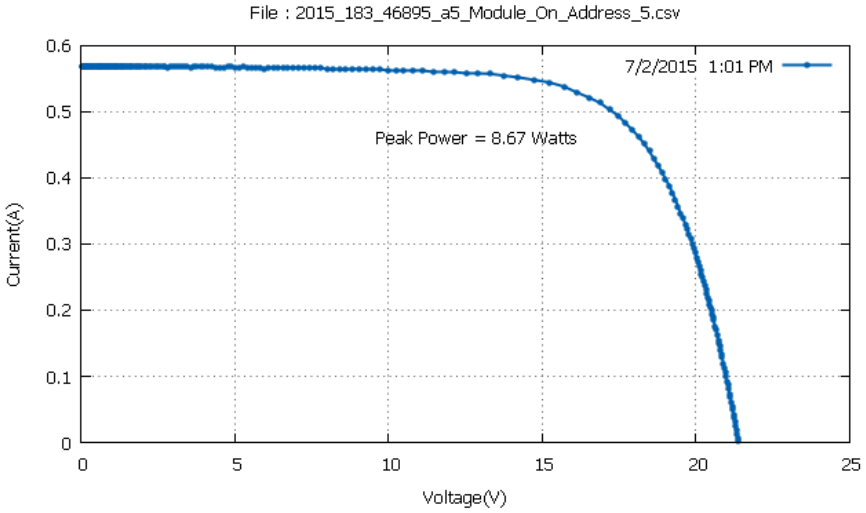
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1095314\ x\ 0.5085755}{959.4\ x\ 0{,}0756} \text{ x } 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1945763\ x\ 0.5060069}{957.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.792545\ x\ 0.5137126}{958.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.86986\ x\ 0.5137126}{956.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$

Module 4

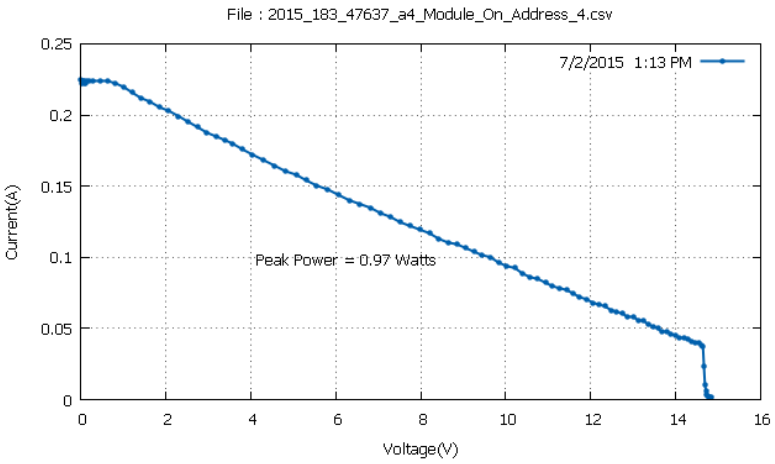
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

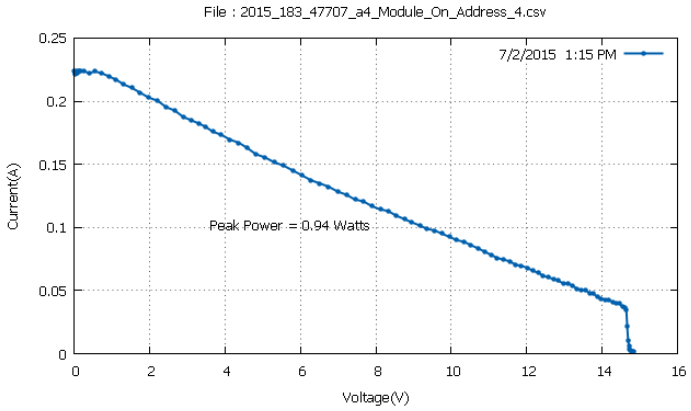
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:13	54	1,5
13:15	54,3	1,46
13:16	53,8	1,46
13:19	53,9	1,47
13:22	52,8	1,51
13:23	53,1	1,56

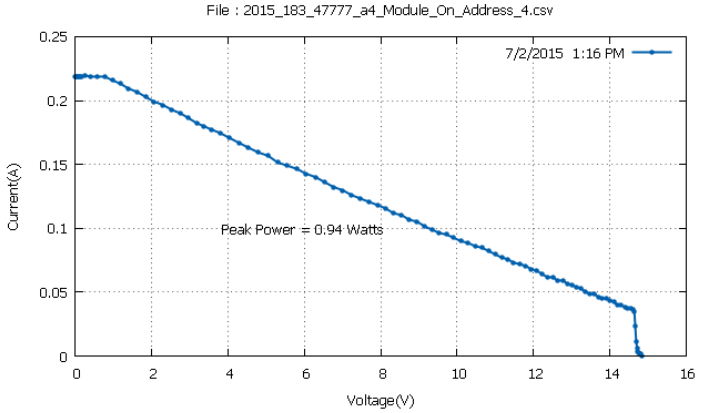
Mean Temperature: 53,65 ºC



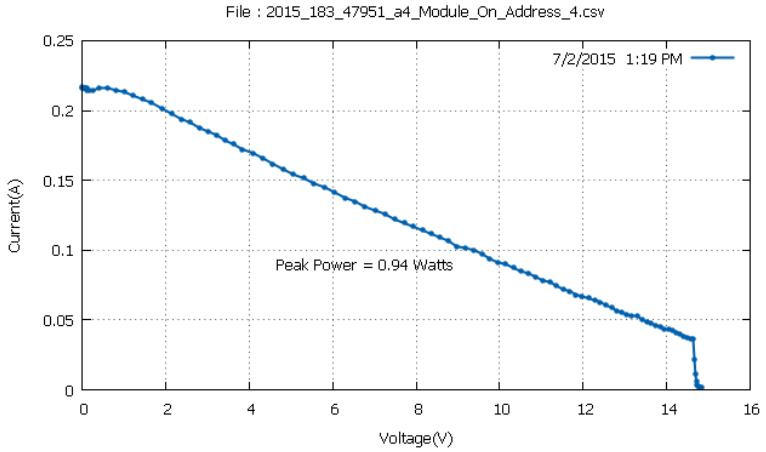
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.844692\ x\ 0.109163925}{959.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}5\ \%$$



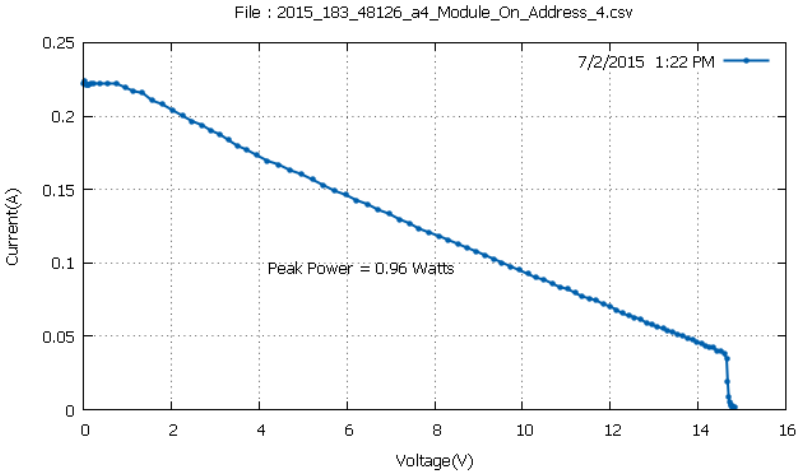
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.318959\ x\ 0.113016769}{959.7\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}46\ \%$$



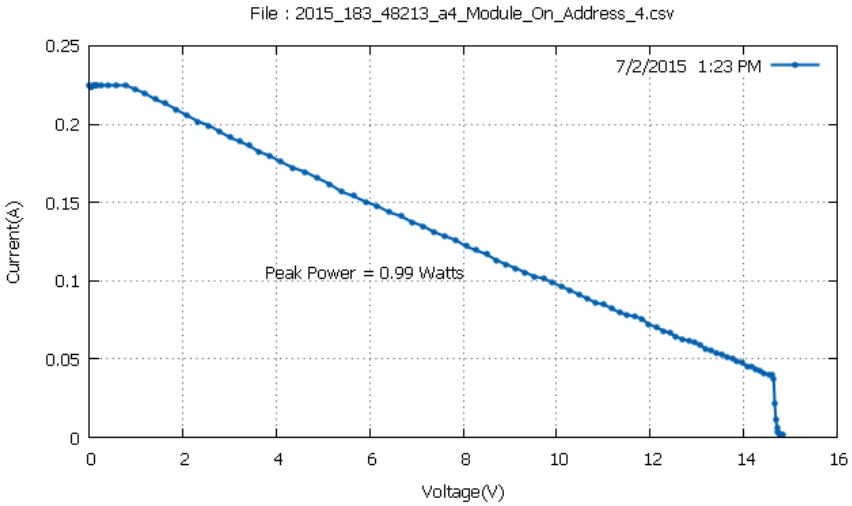
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.543169\ x\ 0.110448211}{954\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.362695\ x\ 0.100173958}{952.8\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.937469\ x\ 0.107879646}{945.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.49678\ x\ 0.116869614}{944.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}56\ \%$$

Module 8

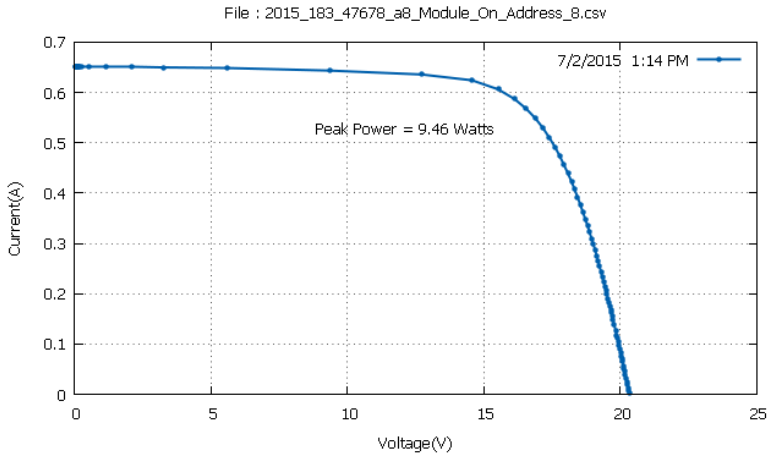
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

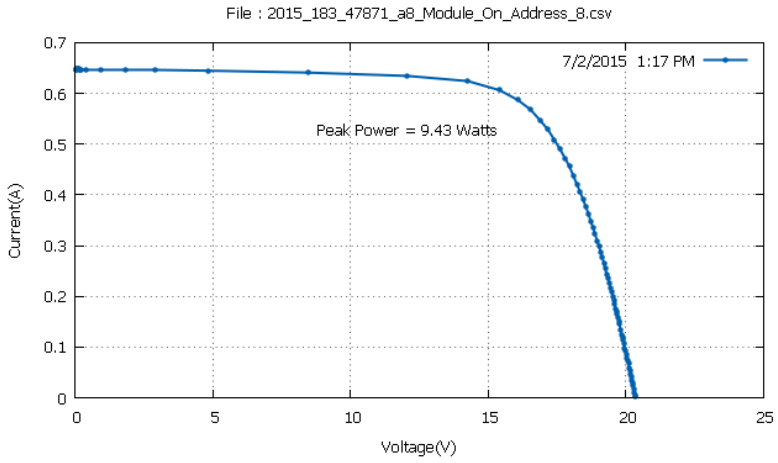
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:14	53,4	12,85
13:17	53,1	12,91
13:18	53,2	12,9
13:20	53,1	12,87
13:22	53	12,9
13:23	53	13

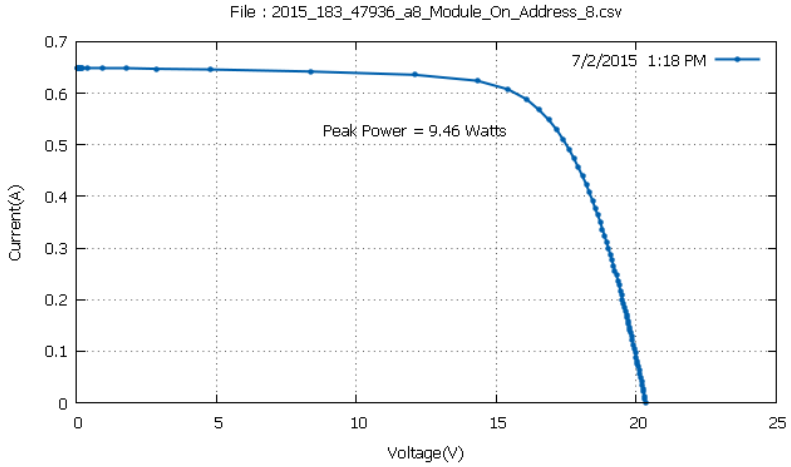
Mean Temperature: 53,13 ºC



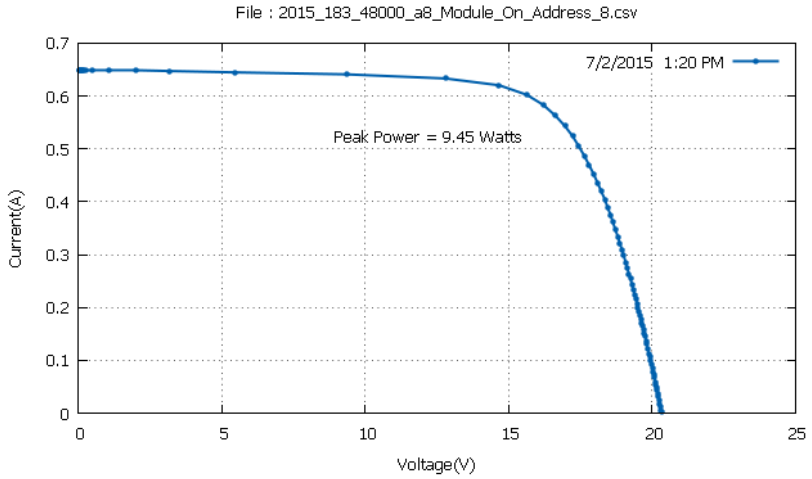
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.119915\ x\ 0.5869166}{958\ x\ 0{,}0768} \text{ x } 100 = 12{,}85\ \%$$



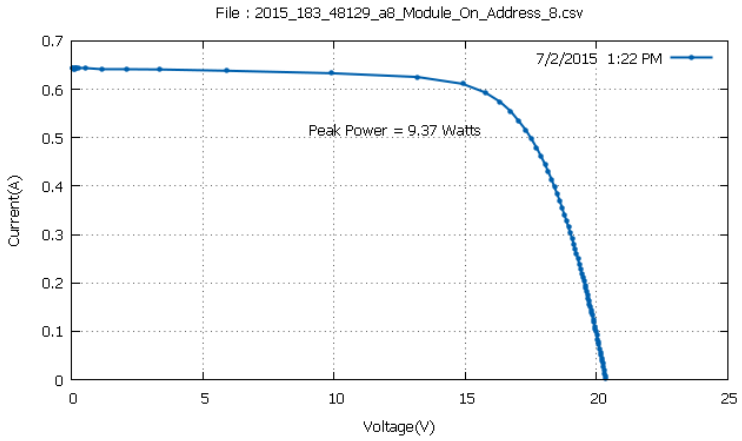
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0735264\ x\ 0.5869166}{950.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}91\ \%$$



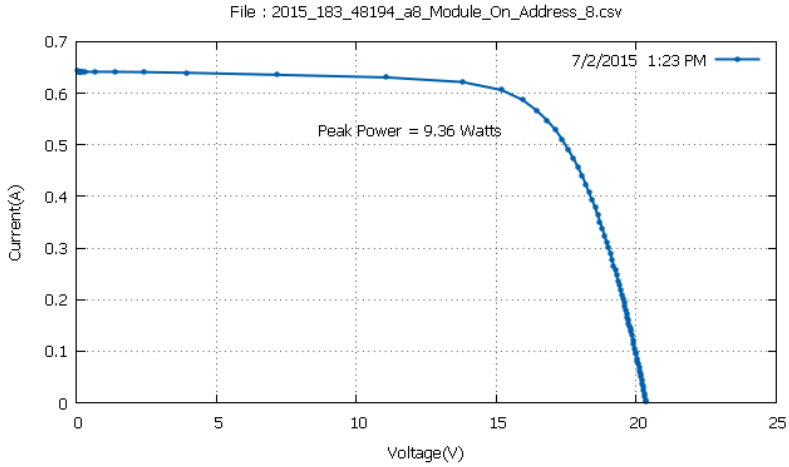
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ \square\ 0.5882009}{954.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.5830638}{956.1\ x\ 0{,}0768} \text{ x } 100 = 12{,}87\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.32093\ x\ 0.57407385}{945.1\ x\ 0{,}0768} \text{ x } 100 = 12{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9420938\ x\ 0.5869166}{944.4\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$

Module 3

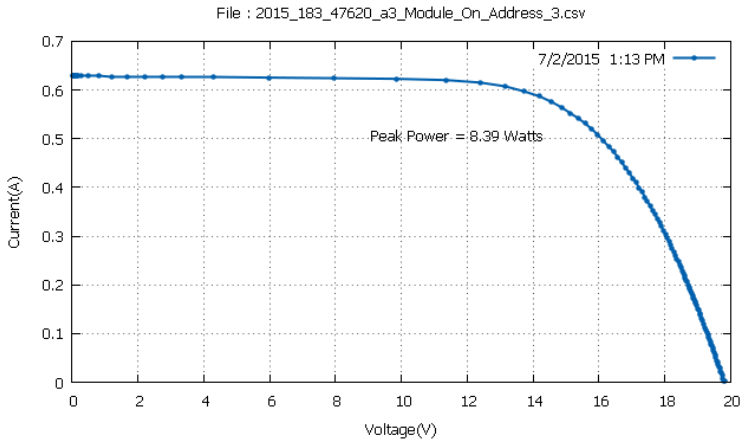
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

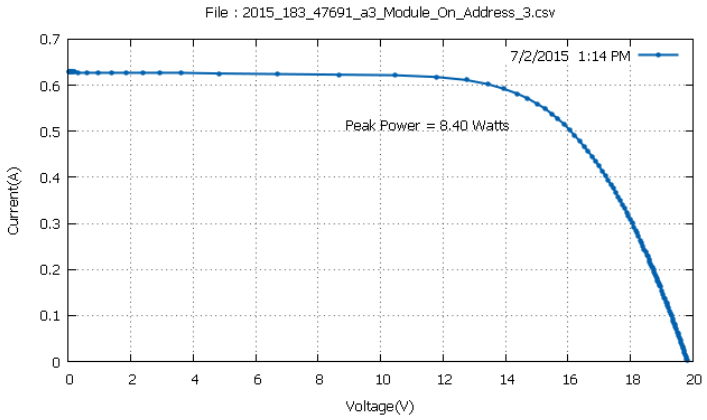
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:13	54,7	12,32
13:14	54,2	12,35
13:16	53,9	12,35
13:23	52,7	12,45
13:24	52,5	12,41
13:25	52,2	12,44

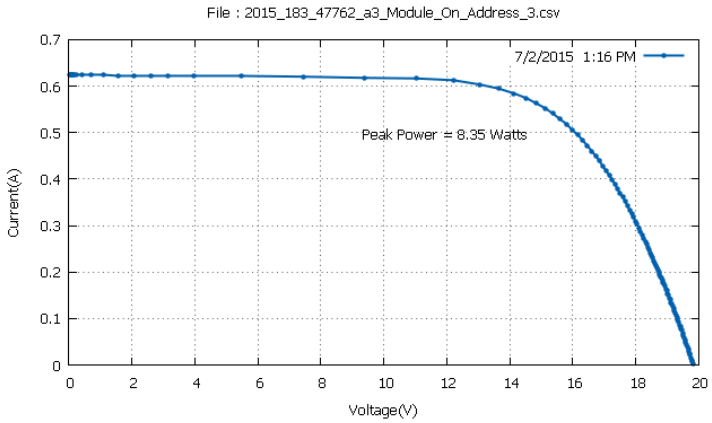
Mean Temperature: 53,36 ºC



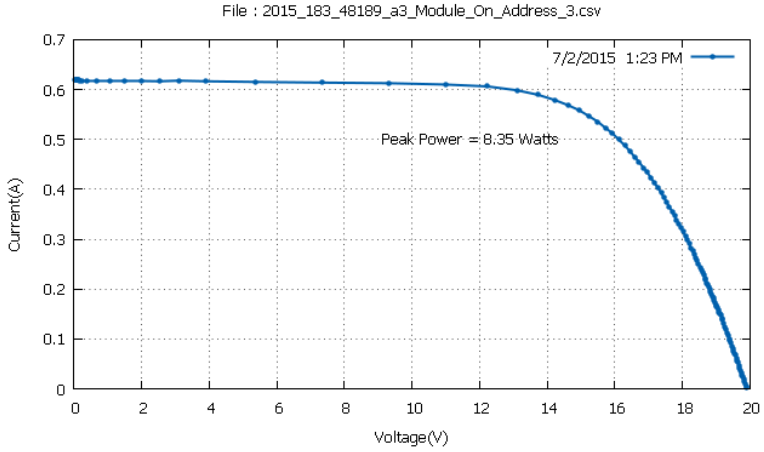
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.875164\ x\ 0.56379956}{960.2\ x\ 0{,}0709}$ x 100 = 12,32 %



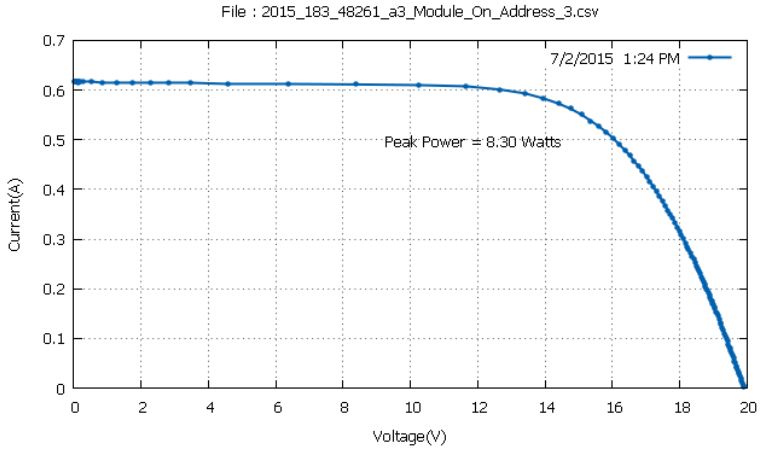
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7050743\ x\ 0.571505249}{959.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}35\ \%$$



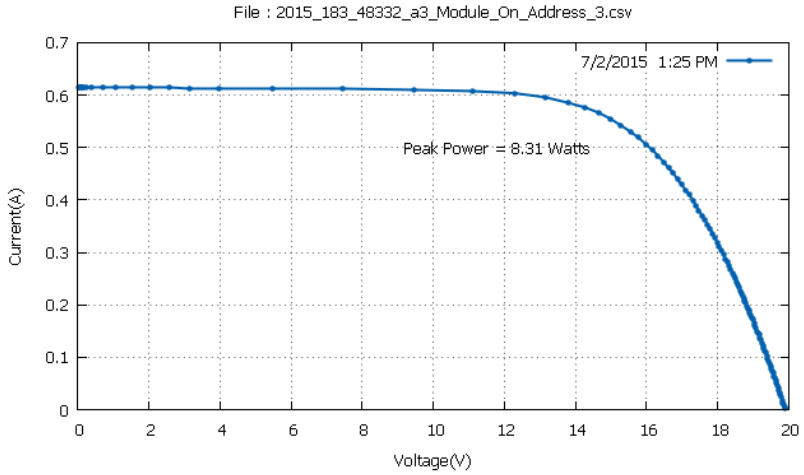
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1303\ x\ 0.55224}{953.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9370155\ x\ 0.5586625}{945.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.068449\ x\ 0.5509568}{943.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9834032\ x\ 0.55480963}{941.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$

Module 5

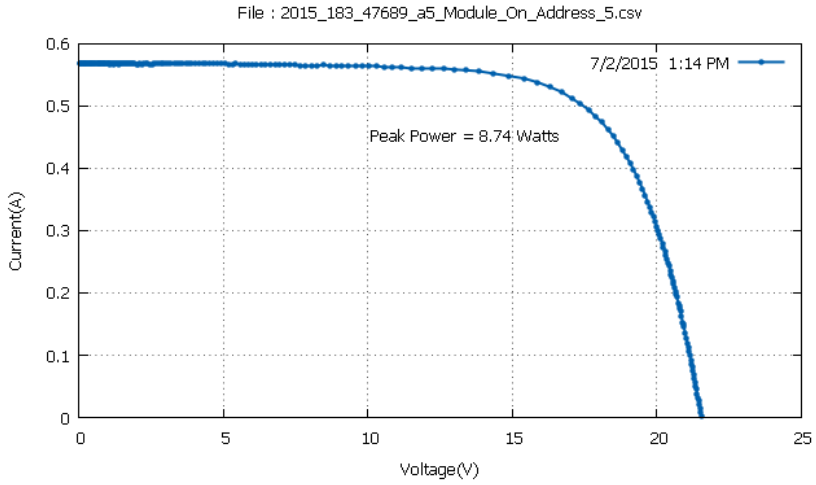
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

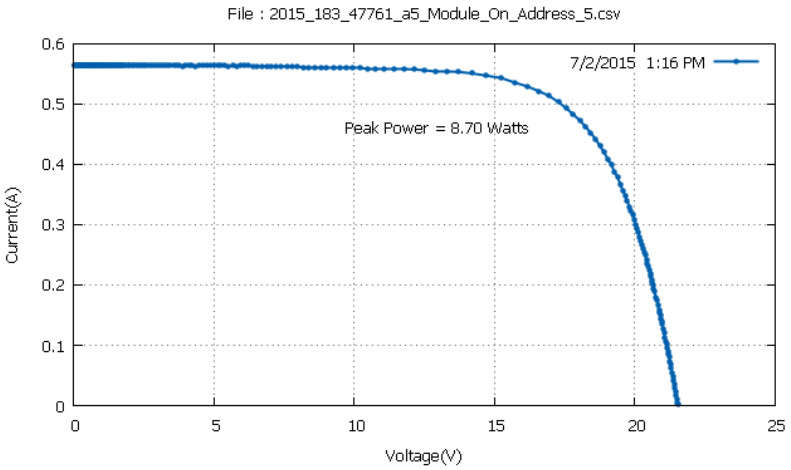
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
13:14	56,4	12,05
13:16	56	12,07
13:18	55,9	12
13:19	56,3	12
13:24	56	12,05
13:25	56	11,98

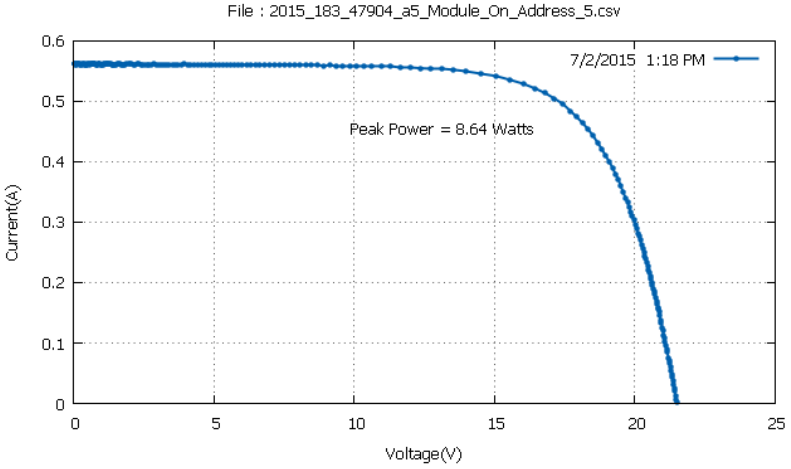
Mean Temperature: 56,1 ºC



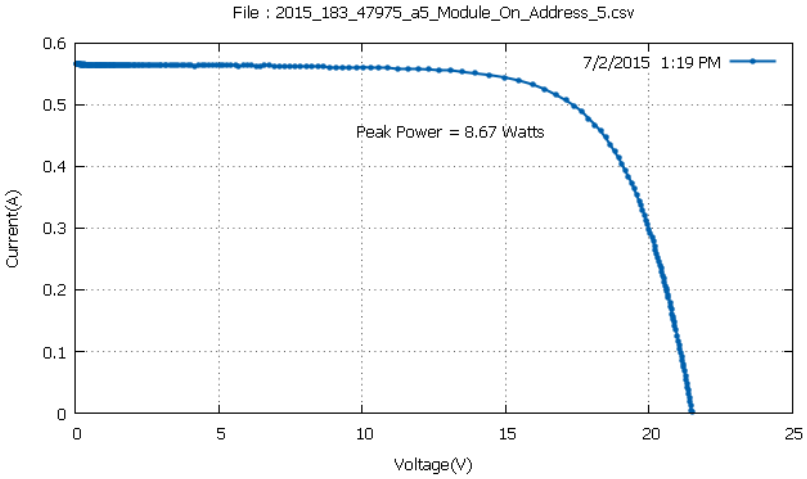
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3569355\ x\ 0.503438354}{959.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}05\ \%$$



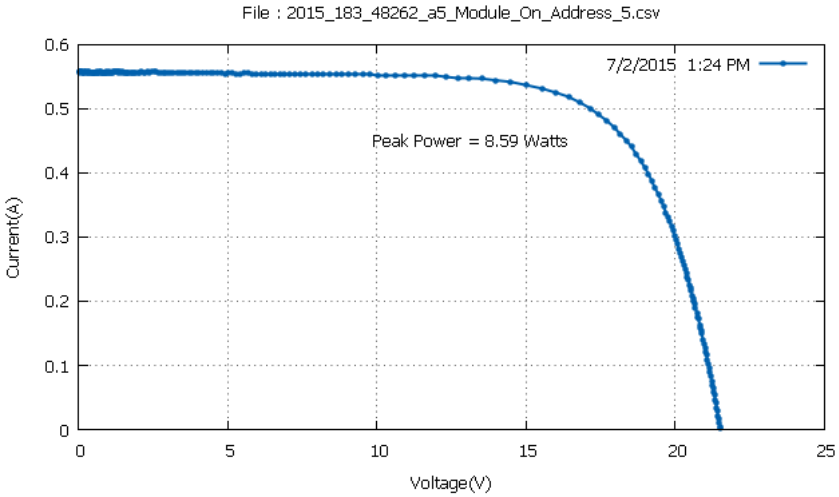
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7050743\ x\ 0.571505249}{953.5\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}07\ \%$$



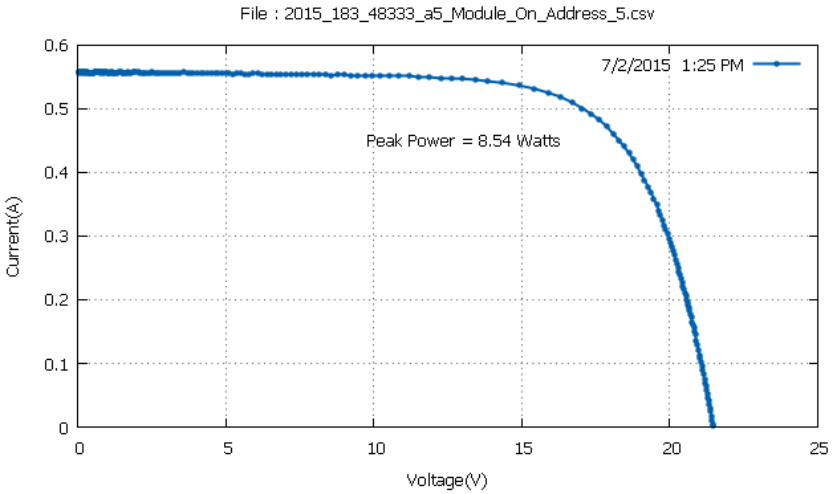
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.124994\ x\ 0.50472265}{953\ x\ 0{,}0756}\ \text{x}\ 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0940685\ x\ 0.5072912}{956.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.140457\ x\ 0.5008698}{942.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.03995\ x\ 0.5008698}{942.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$

Module 4

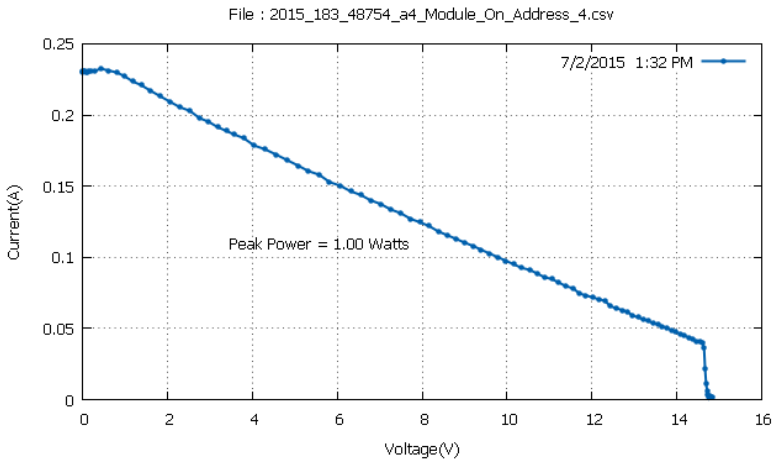
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

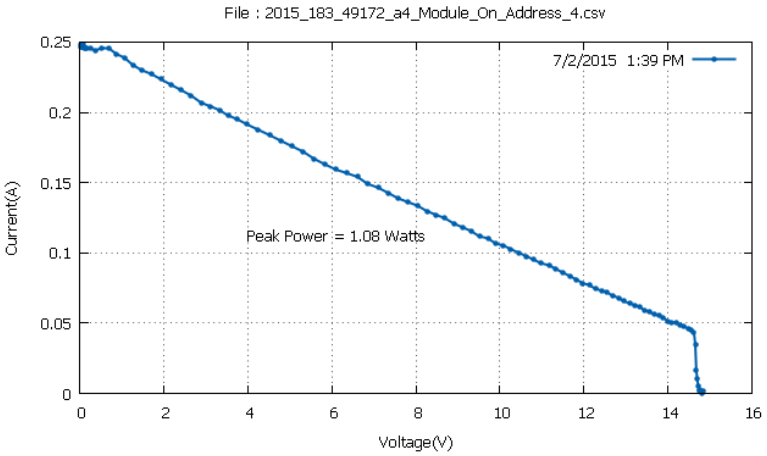
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:32	52,6	1,58
13:39	51,3	1,72
13:40	50,7	1,75
13:41	51,1	1,71
13:43	51,2	1,68
13:45	51,3	1,73

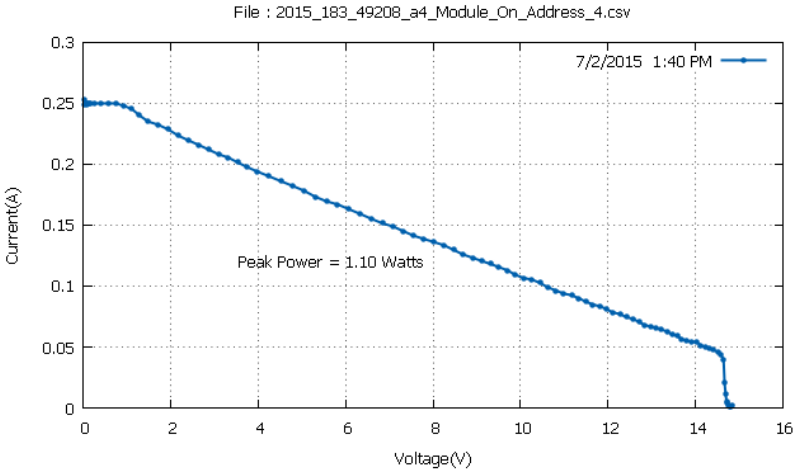
Mean Temperature: 51,36 ºC



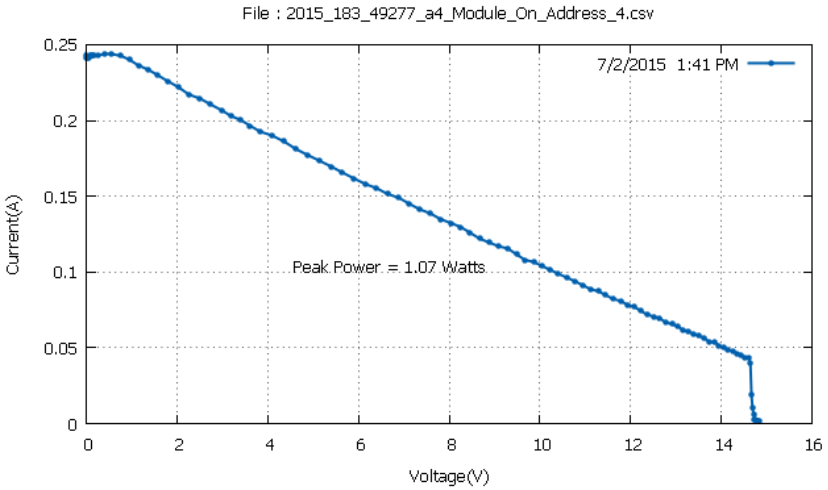
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1566\ x\ 0.122006744}{939.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}58\ \%$$



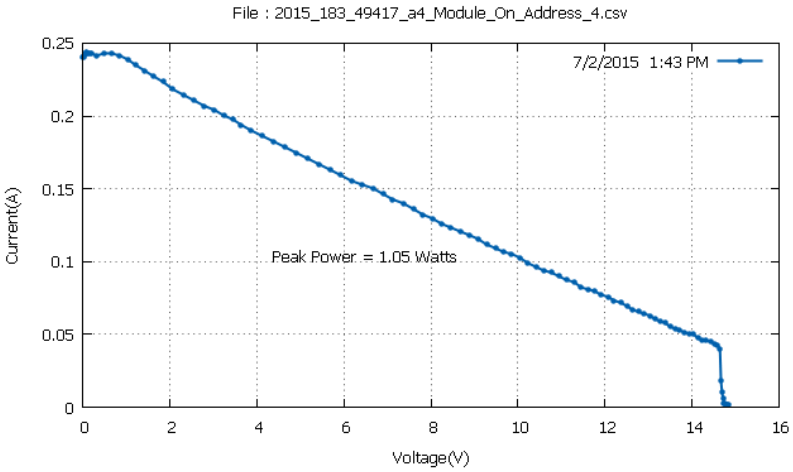
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.1245753}{935.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}72\ \%$$



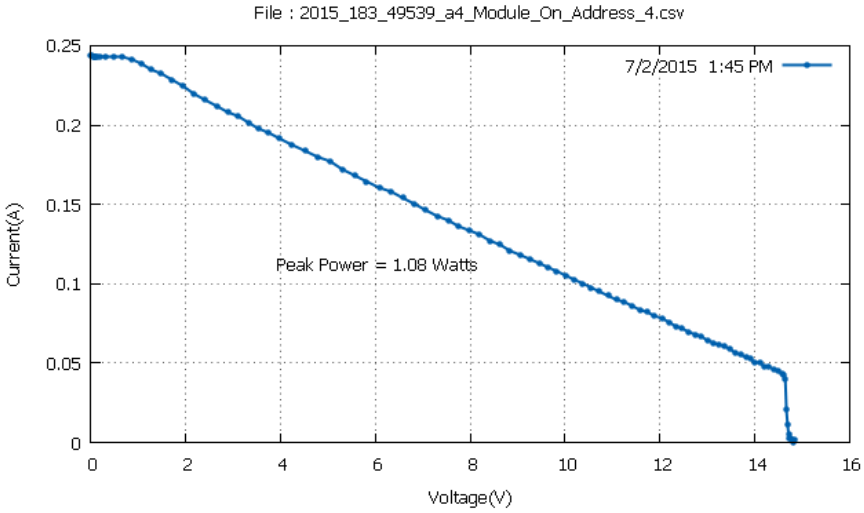
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.241645\ x\ 0.133565277}{935.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.2853\ x\ 0.11558533}{931.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.860155\ x\ 0.1181539}{927.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}68\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.628214\ x\ 0.1245753}{926.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}73\ \%$$

Module 8

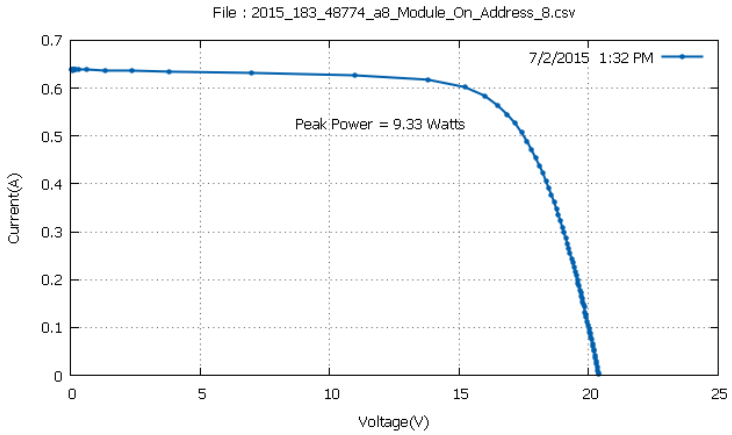
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

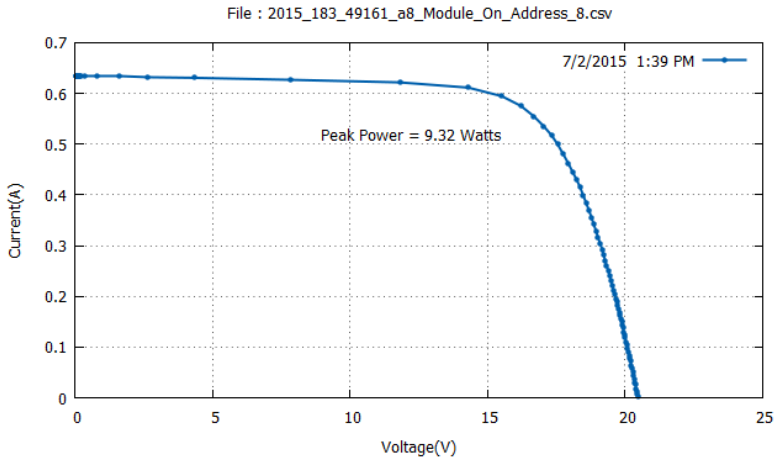
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:32	52,4	12,91
13:39	51,2	12,97
13:40	51,2	12,95
13:41	51,2	12,96
13:43	51,2	12,98
13:45	51,1	12,94

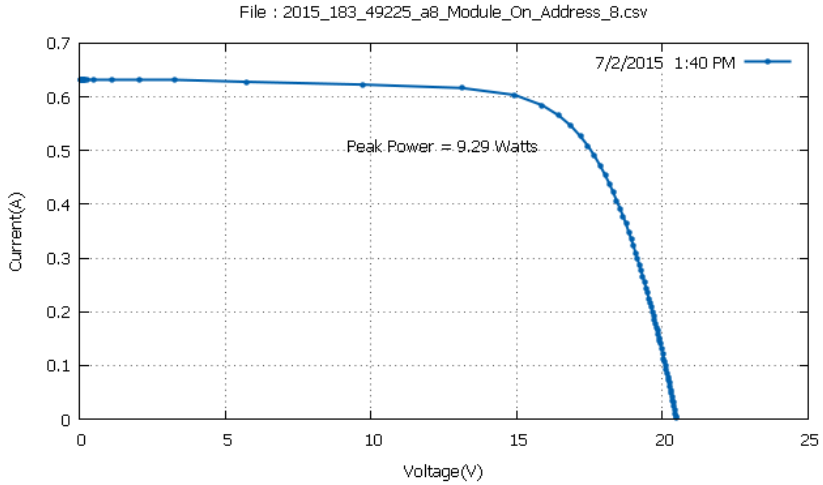
Mean Temperature: 51,38 ºC



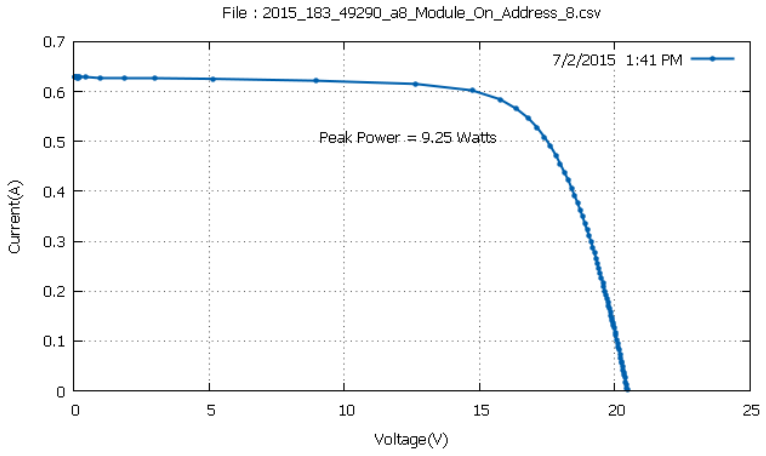
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.97302\ x\ 0.584348}{940.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}91\ \%$$



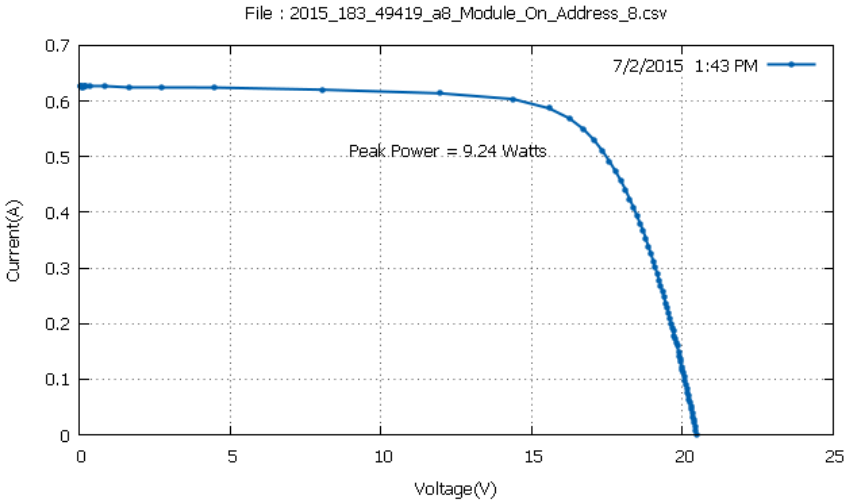
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.575358}{935.4\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}97\ \%$$



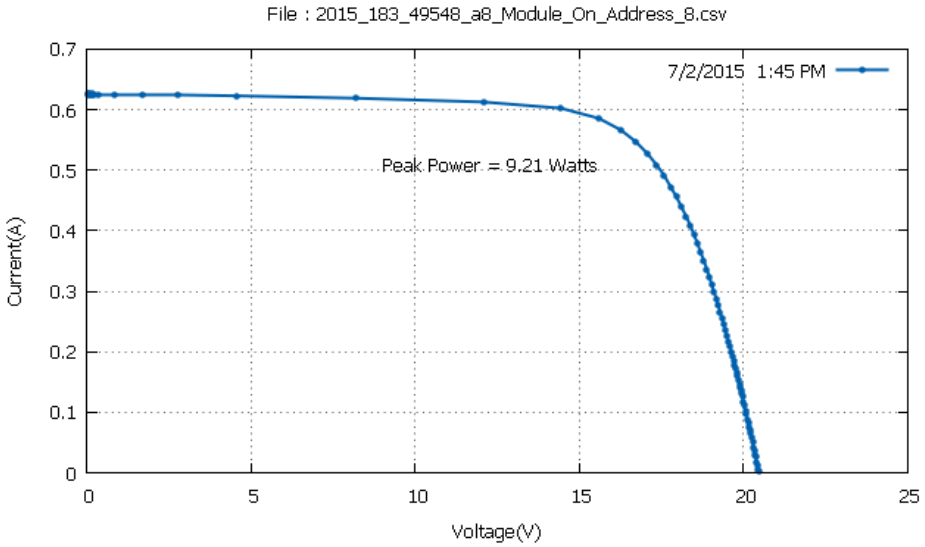
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4446335\ x\ 0.565083861}{933.7\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.36732\ x\ 0.565083861}{928.9\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.243618\ x\ 0.5689367}{926.3\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.25908\ x\ 0.566368163}{926.5\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}94\ \%$$

Module 3

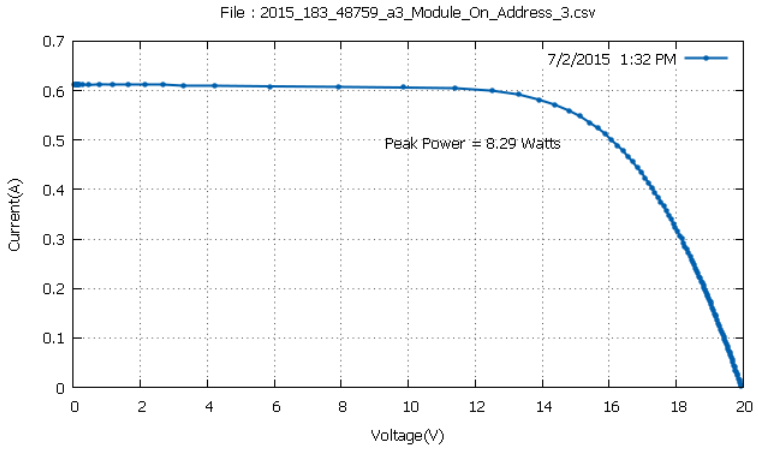
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

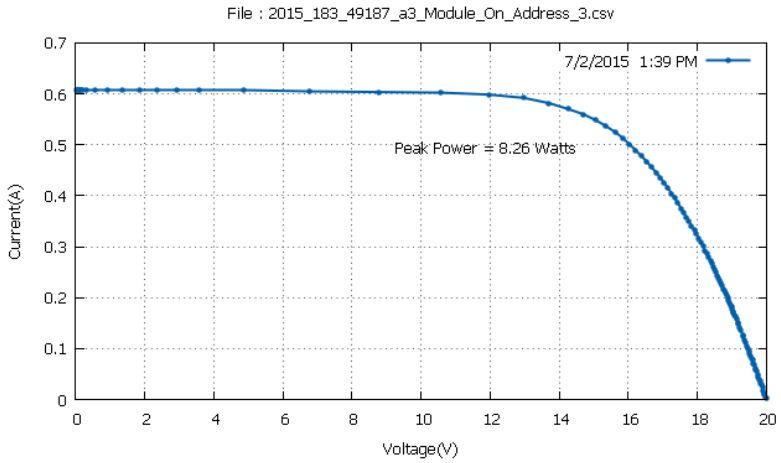
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:32	51,6	12,44
13:39	51,1	12,45
13:43	51,1	12,47
13:44	51	12,43
13:46	50,8	12,48
13:48	50,6	12,5

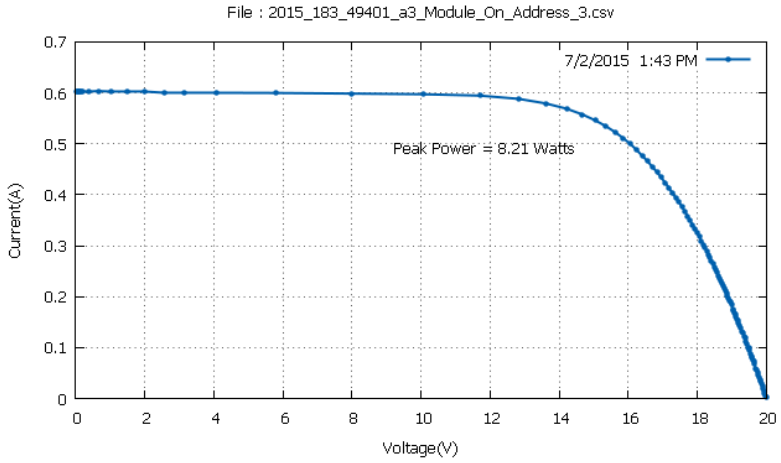
Mean Temperature: 51,03 ºC



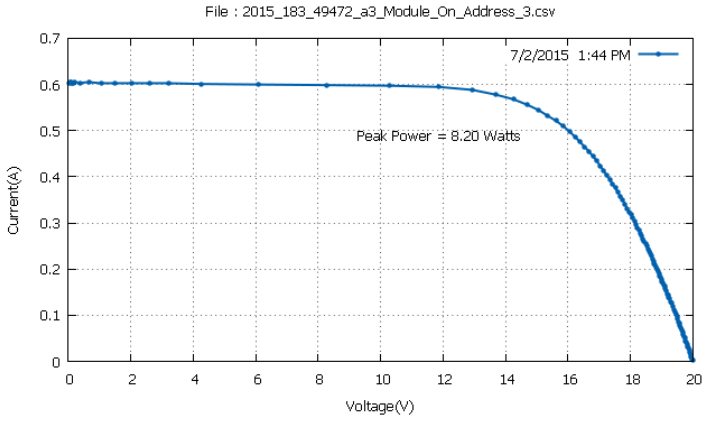
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.122568\ x\ 0.5483882}{939.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$



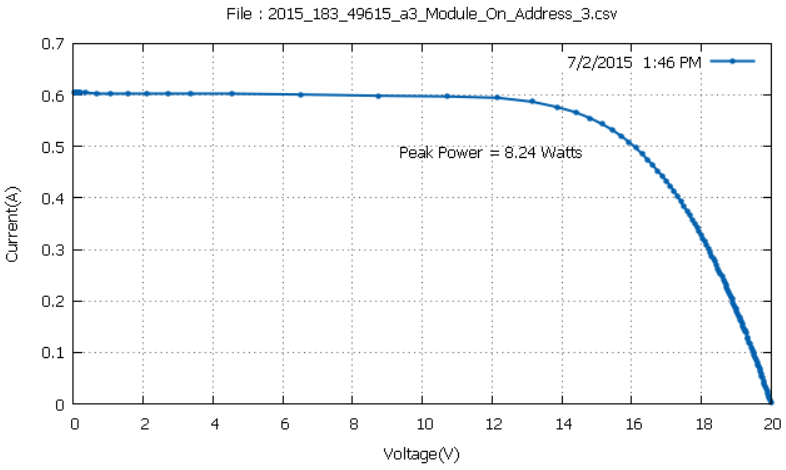
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.052986\ x\ 0.5483882}{935.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



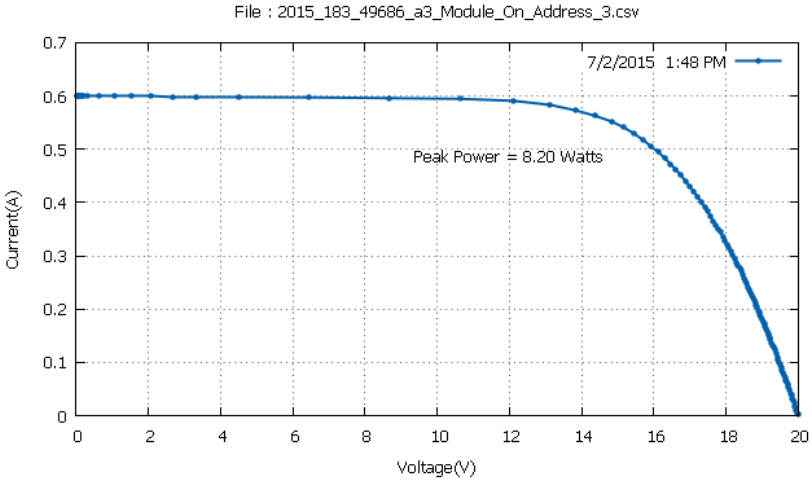
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0452547\ x\ 0.54581964}{928\ x\ 0{,}0709} \text{ x } 100 = 12{,}47\ \%$$



$$n = \frac{Po\square t}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.052986\ x\ 0.544535339}{929.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1612253\ x\ 0.5432511}{930.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ \square} = \frac{15.168956\ x\ 0.5406825}{925.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}5\ \%$$

Module 5

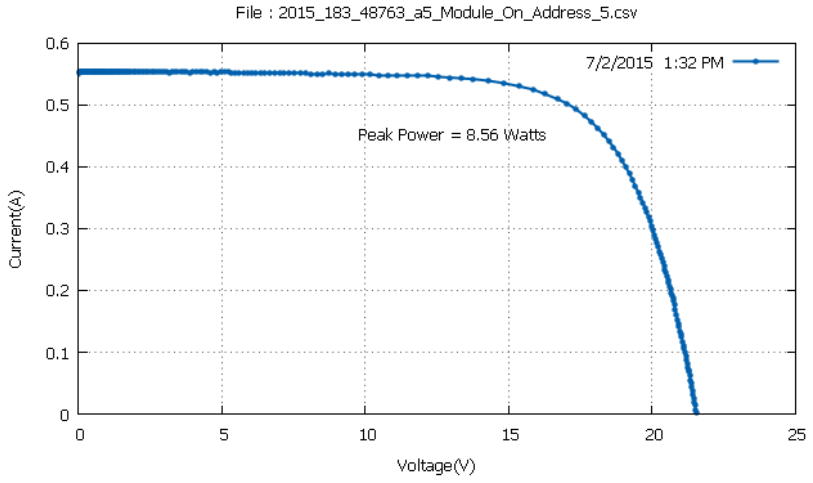
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

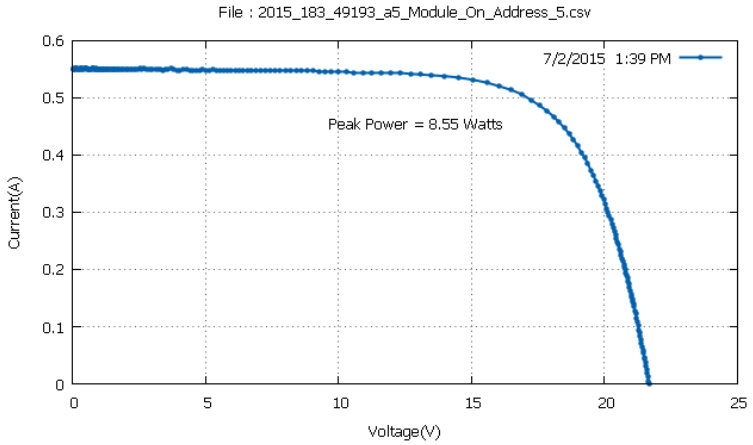
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:32	55,6	12,04
13:39	54,5	12,1
13:42	54	12,11
13:43	54	12,1
13:44	54,1	12,08
13:47	54,3	12,07

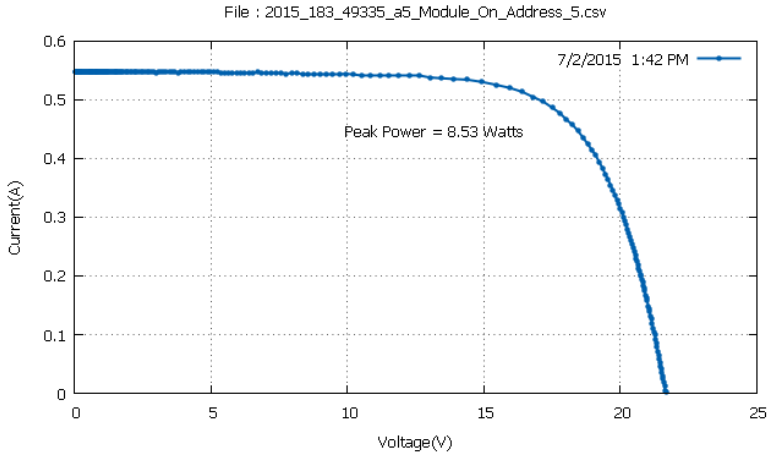
Mean Temperature: 54,41 ºC



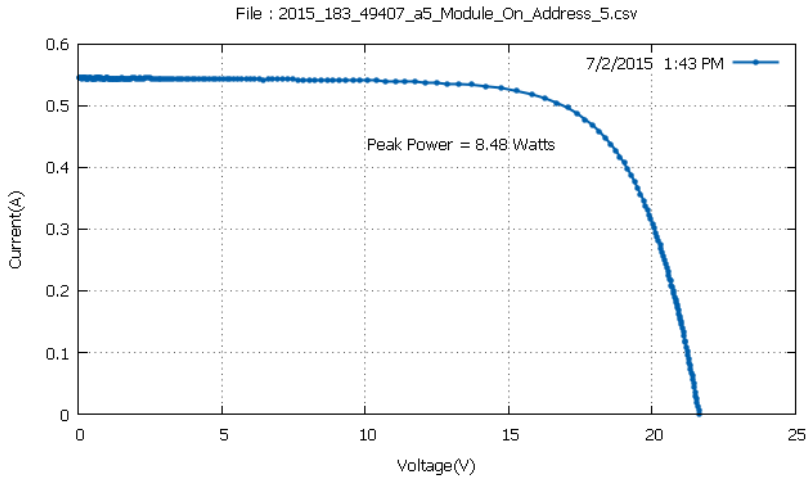
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.03995\ x\ 0.502154052}{939.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}04\ \%$$



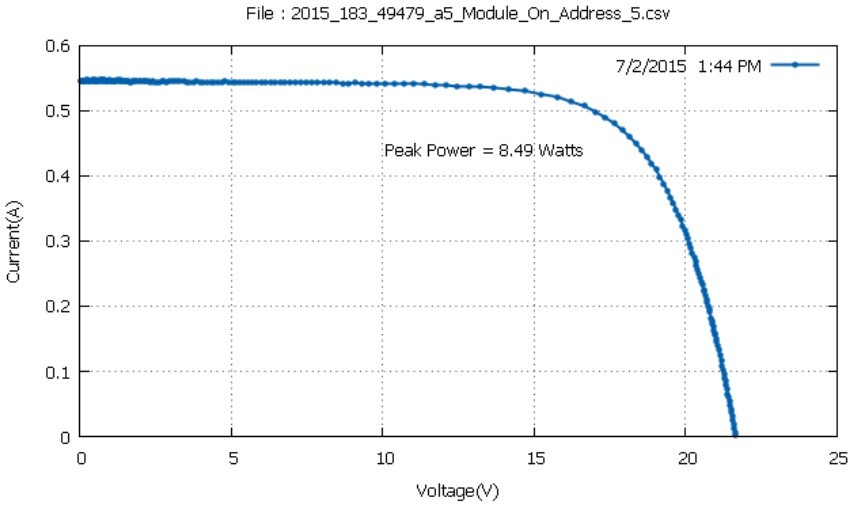
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9007835\ x\ 0.5060069}{934.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}1\ \%$$



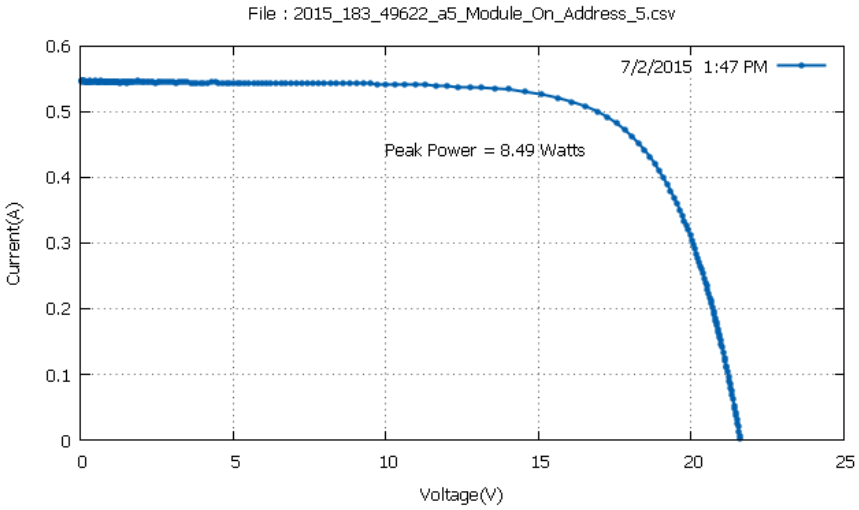
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1713829\ x\ 0.49701693}{931.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3723984\ x\ 0.488026977}{926.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3569355\ x\ 0.489311248}{929.6\ x\ 0{,}0756} \text{ x } 100 = 12{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2564278\ x\ 0.491879821}{929.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}07\ \%$$

Module 4

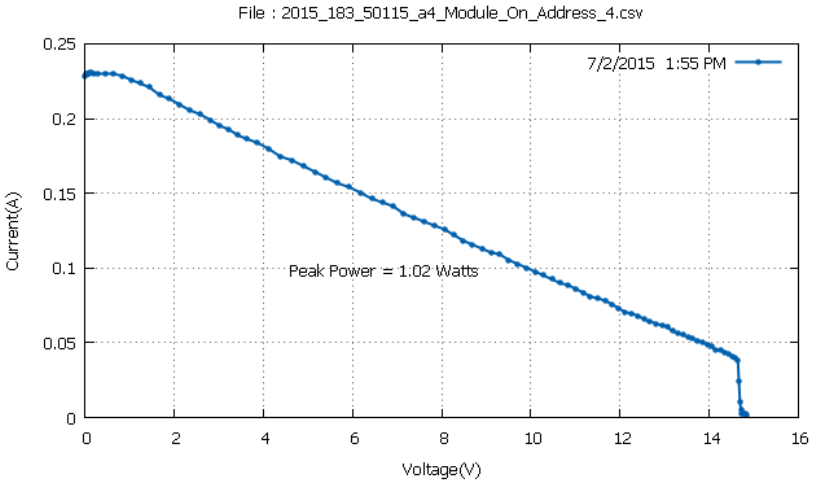
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

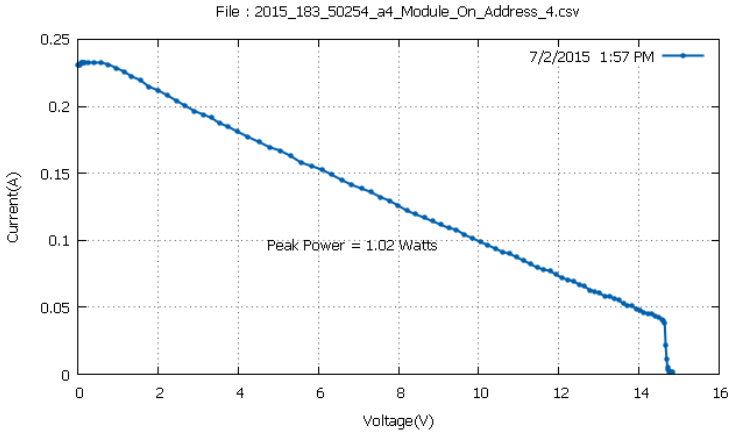
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:55	52,1	1,65
13:57	51,7	1,66
13:58	52,3	1,65
14:00	52,2	1,63
14:02	51,2	1,73
14:03	52	1,69

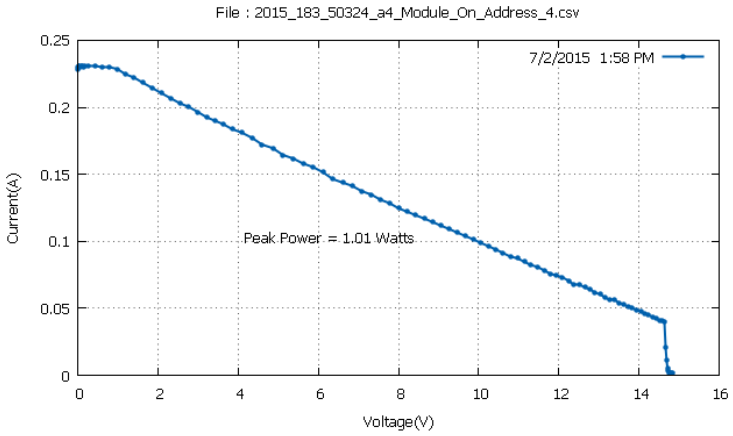
Mean Temperature: 51,91 ºC



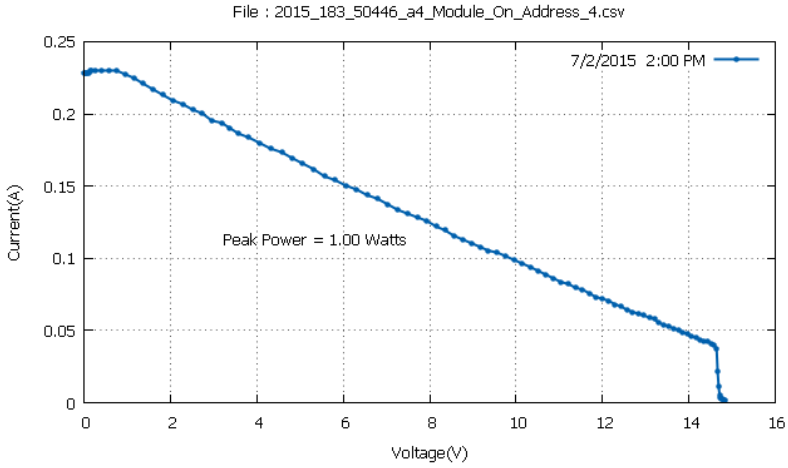
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.300843\ x\ 0.109163925}{919.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}65\ \%$$



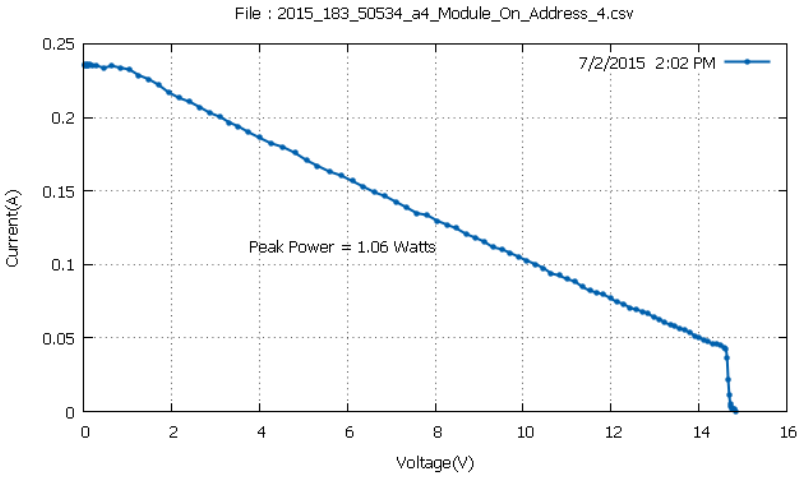
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.440008\ x\ 0.107879646}{914.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}66\ \%$$



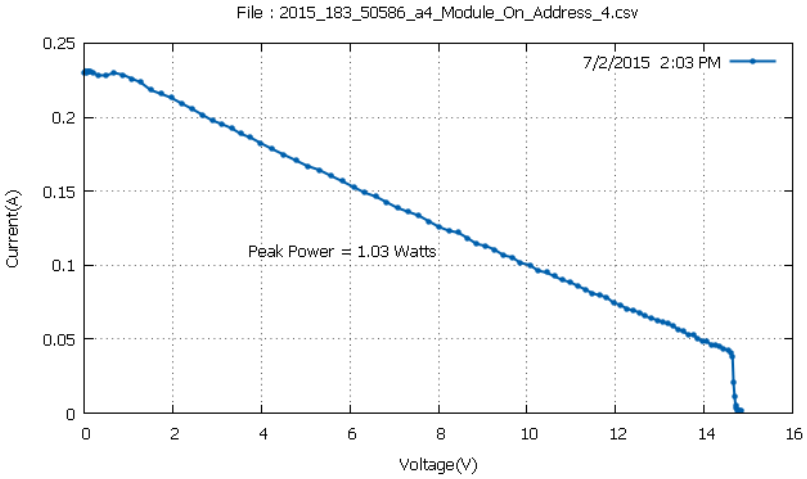
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.535438\ x\ 0.1181539}{911.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.66687\ x\ 0.114301056}{913.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}63\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.473586\ x\ 0.1245753}{910.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.44266\ x\ 0.122006744}{908.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}69\ \%$$

Module 8

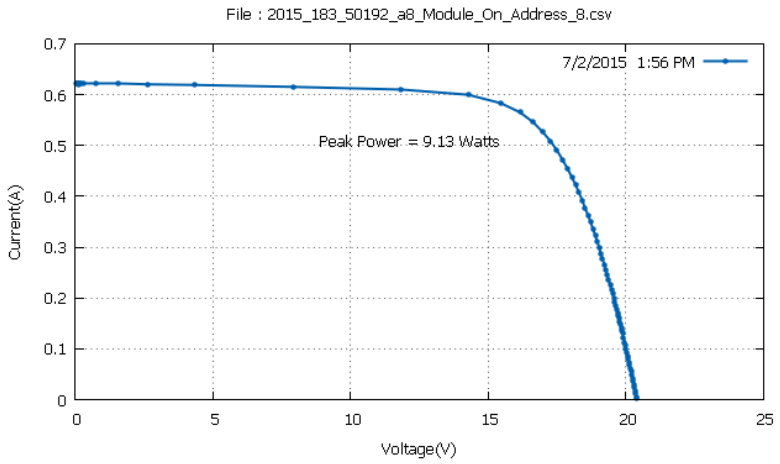
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

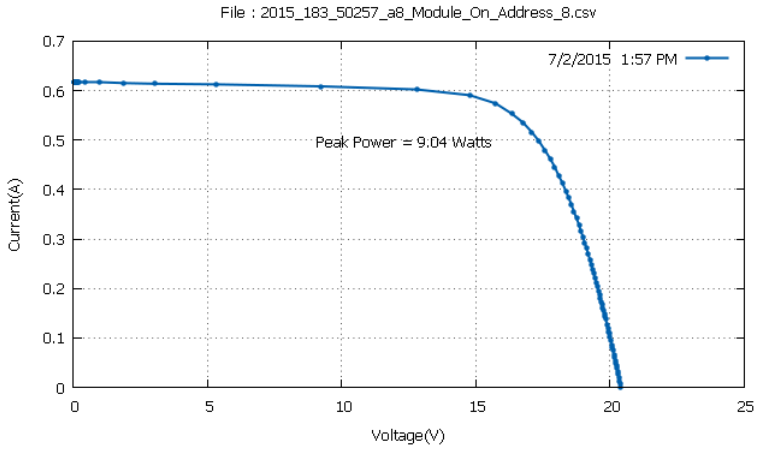
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:56	51,2	12,88
13:57	51,4	12,87
13:58	51,9	12,88
14:00	52,4	12,86
14:01	52,1	12,9
14:02	51,9	12,9

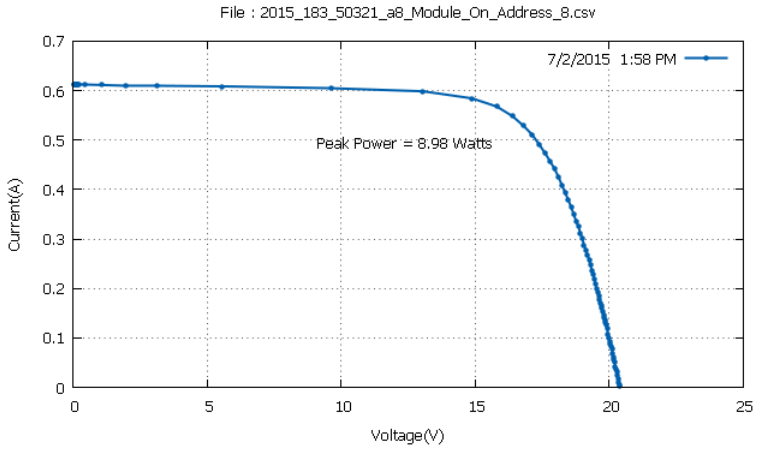
Mean Temperature: 51,81 ºC



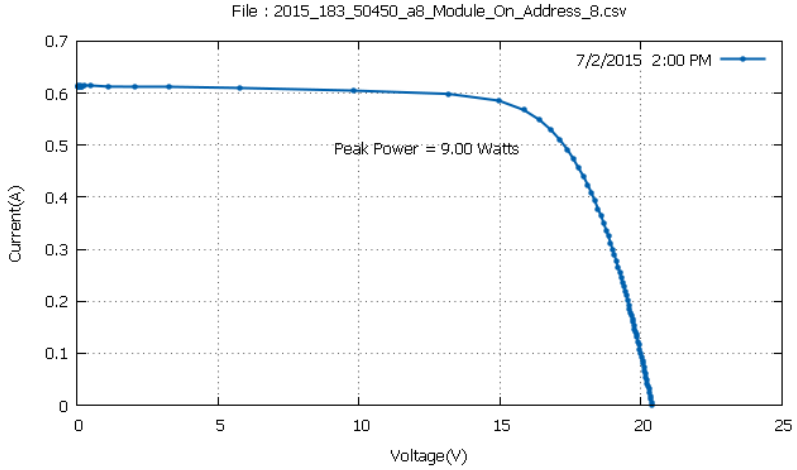
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.15084\ x\ 0.565083861}{922.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}88\ \%$$



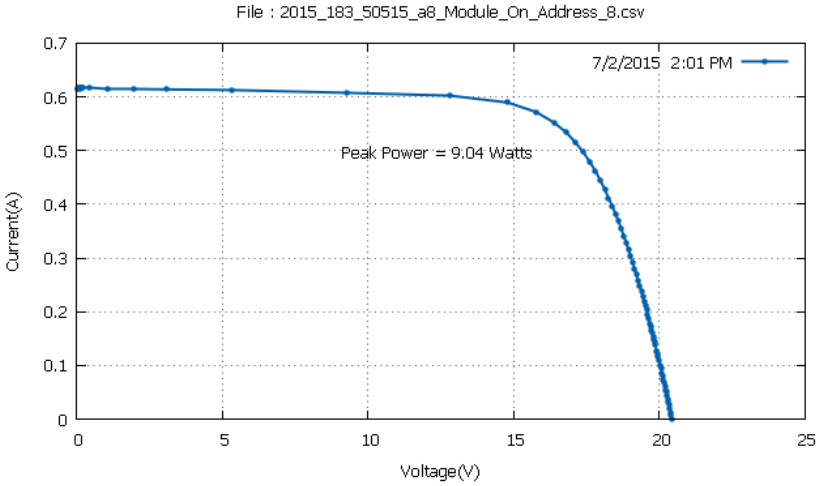
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3286629\ x\ 0.5535253}{914.4\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}87\ \%$$



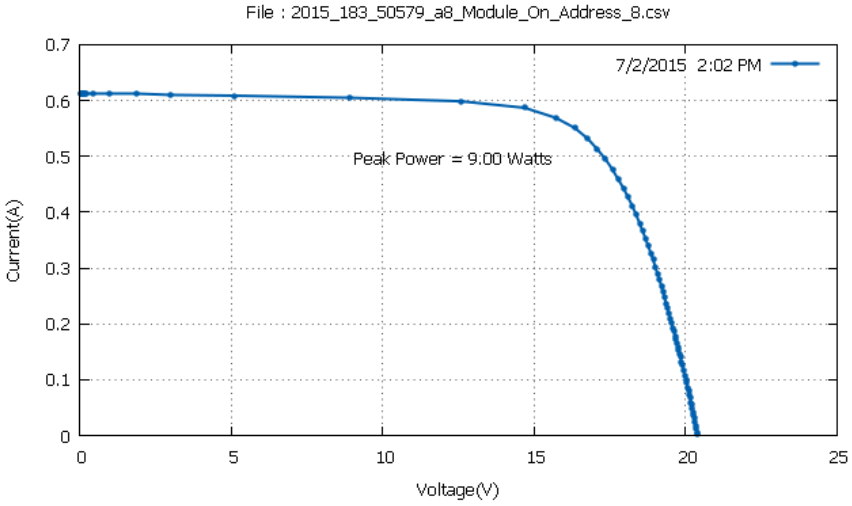
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.38278\ x\ 0.5483882}{907.2\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4059772\ x\ 0.548388}{910.8\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3750515\ x\ 0.552241}{912.9\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.328662\ x\ 0.5509568}{908.2\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}9\ \%$$

Module 3

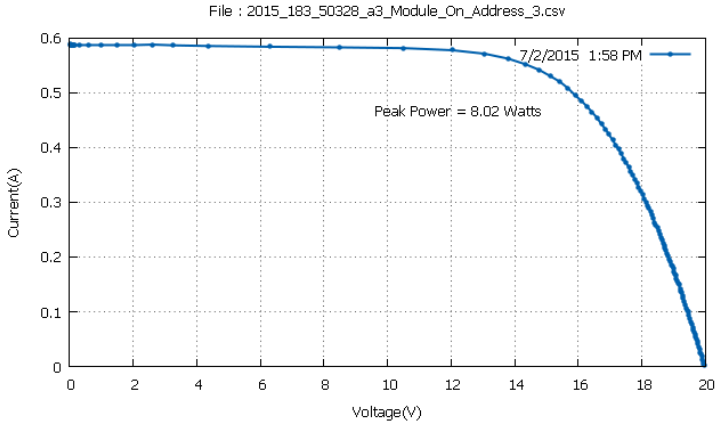
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

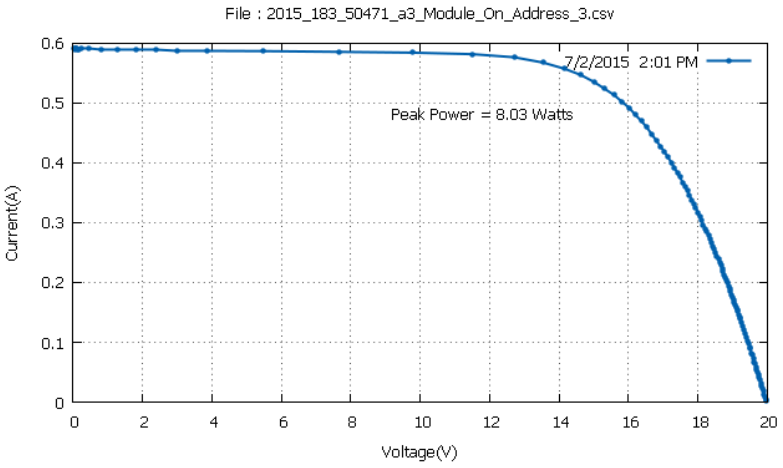
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:58	50,8	12,43
14:01	50,7	12,41
14:02	50,9	12,44
14:03	50,9	12,44
14:05	50,4	12,42
14:07	50,2	12,48

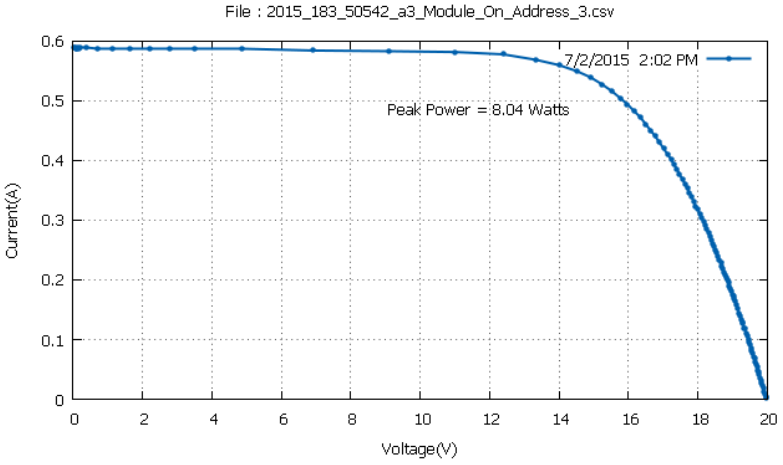
Mean Temperature: 50,65 ºC



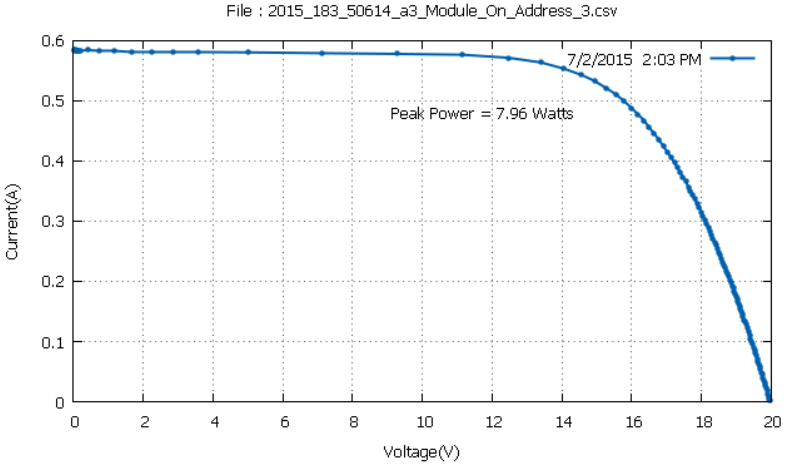
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4240923\ x\ 0.520134032}{909.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



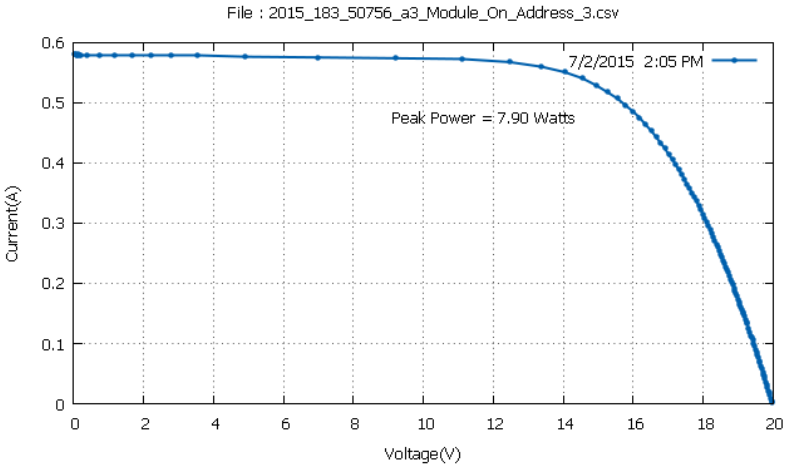
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9988661\ x\ 0.5355454}{912.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



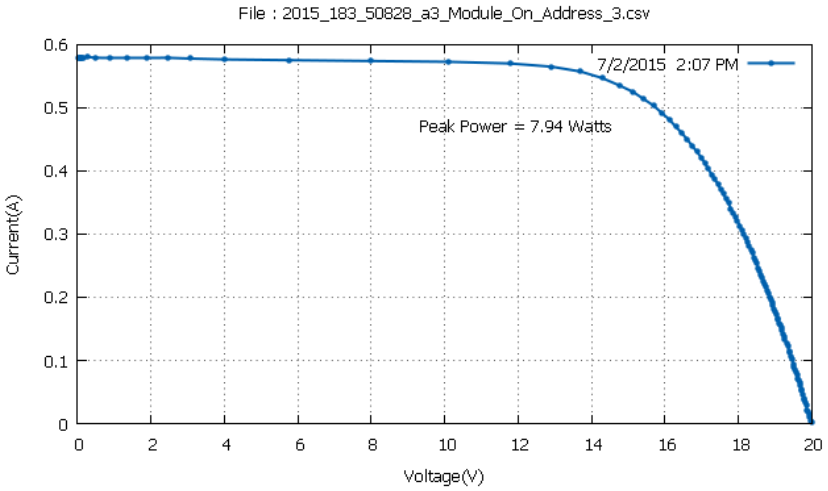
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.90609\ x\ 0.53939825}{911\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9370155\ x\ 0.5329768}{902.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}44\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.937015\ x\ 0.52912396}{897.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.122568\ x\ 0.5252711}{896.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}48\ \%$$

Module 5

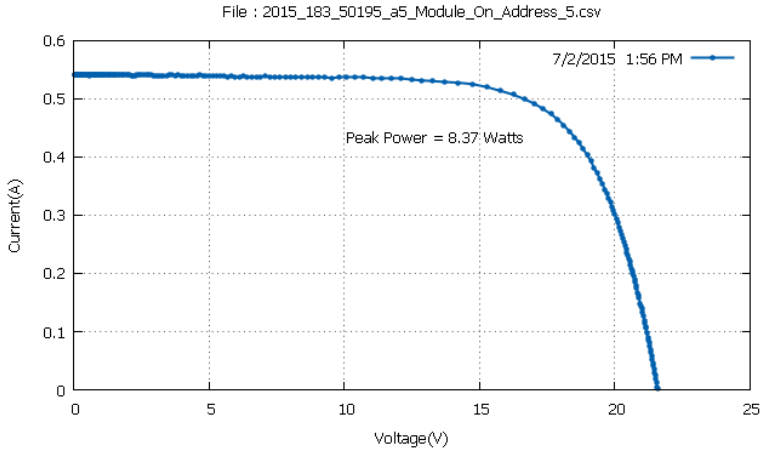
Date: 2/7/2015 – Noon Measurement

Temperature Ambient: 33 ºC

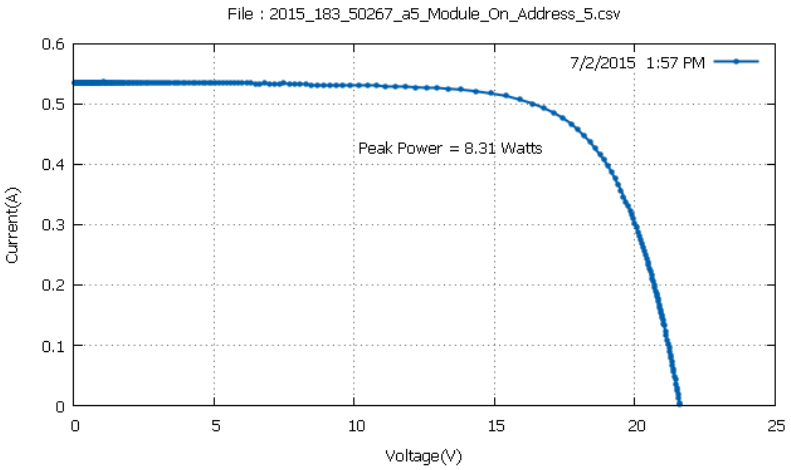
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:56	54,5	12
13:57	54,6	12,03
13:58	54,2	12,06
14:01	54,1	12,03
14:02	53,6	12,1
14:03	53,3	12,08

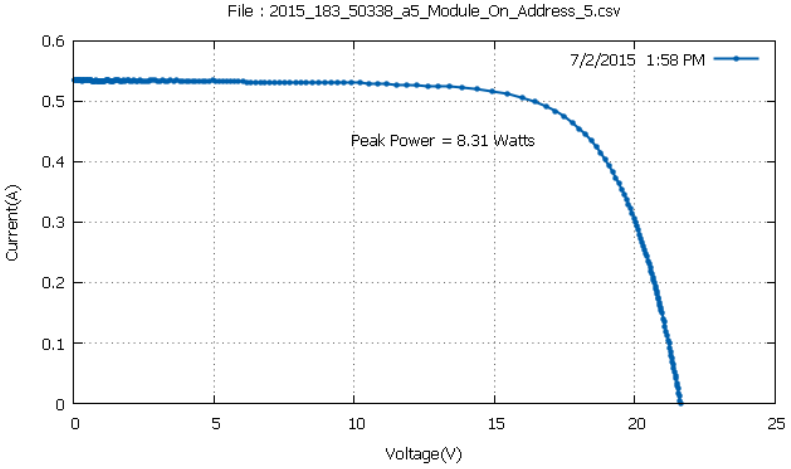
Mean Temperature: 54,05 ºC



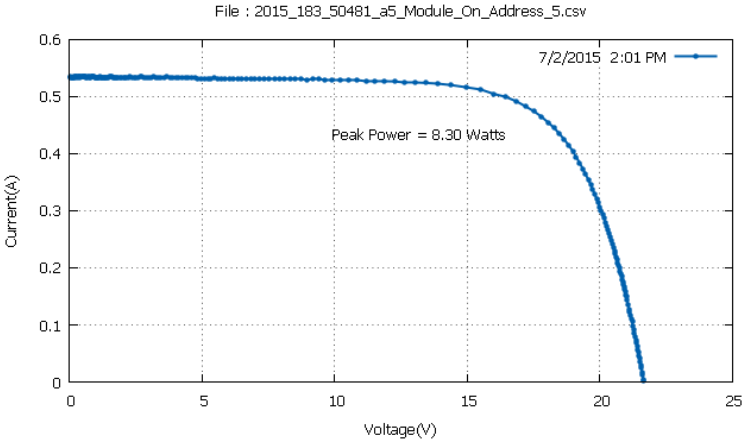
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3414726\ x\ 0.482889831}{923\ x\ 0{,}0756}$ x 100 = 12 %



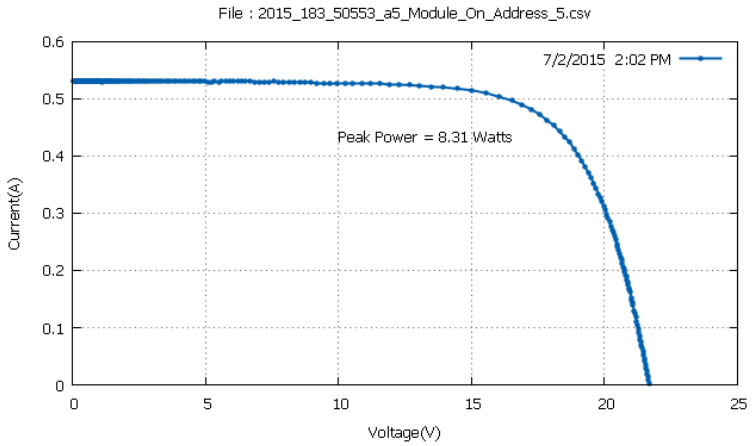
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.44198\ x\ 0.476468444}{913.4\ x\ 0{,}0756}\ \text{x } 100 = 12{,}03\ \%$$



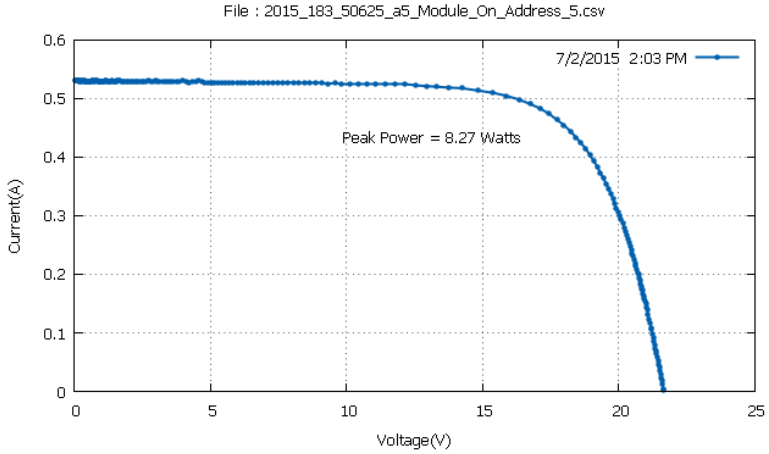
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1713829\ x\ 0.484174132}{911.5\ x\ 0{,}0756}\ \text{x } 100 = 12{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1945763\ x\ 0.482889831}{912.2\ x\ 0{,}0756}\ \text{x } 100 = 12{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2486954\ x\ 0.48160556}{908.7\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4419\ x\ 0.47389987}{905.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}08\ \%$$

Module 4

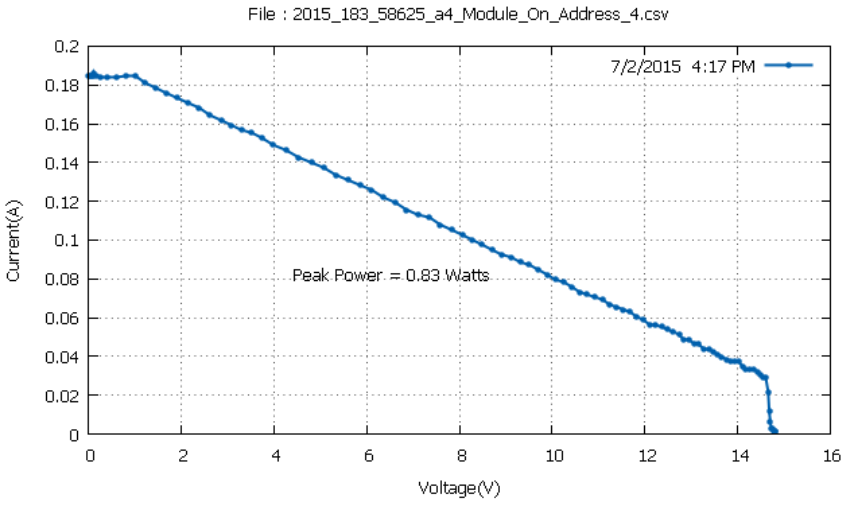
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

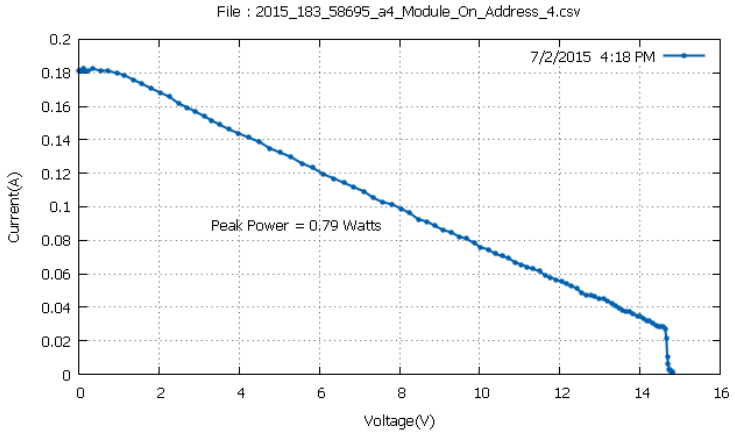
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	43,9	2,1
16:18	44,5	2,01
16:20	44,3	2,1
16:22	44,2	2,11
16:25	44,4	2,08
16:27	43,7	2,04

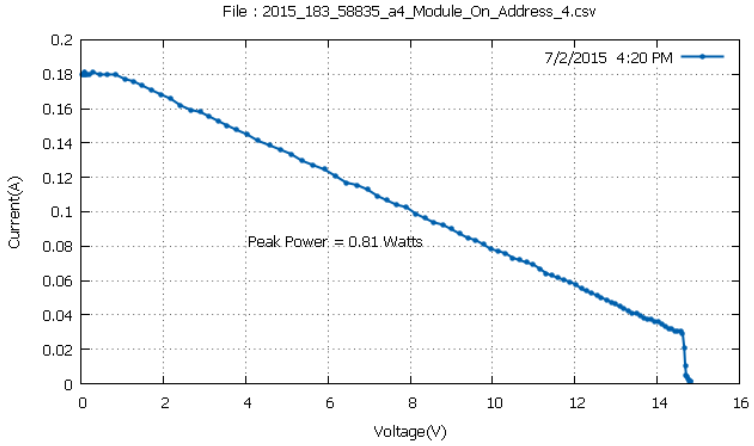
Mean Temperature: 44,16 ºC



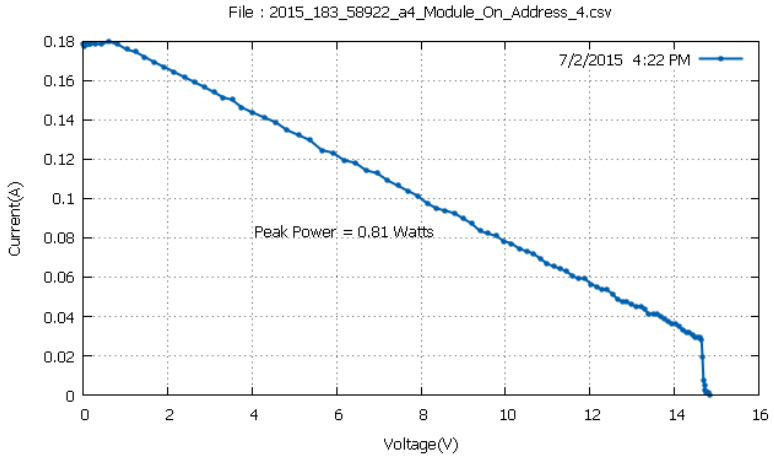
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.115291\ x\ 0.09118398}{587.5\ x\ 0{,}0671}$ x 100 = 2,1 %



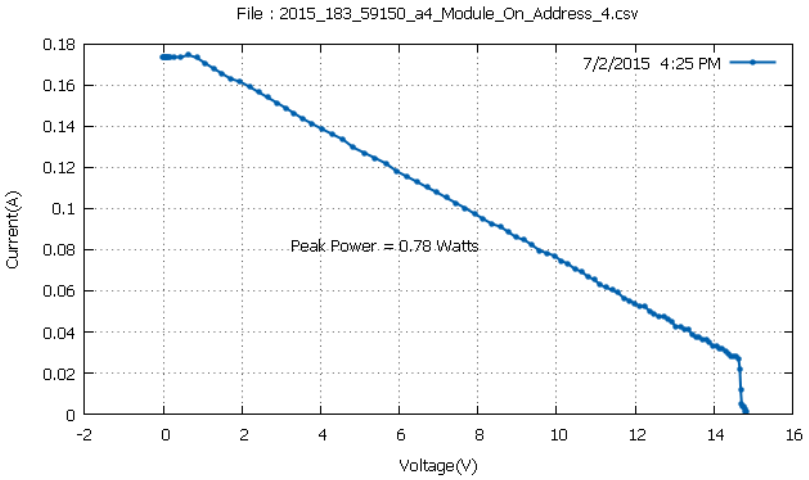
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.249376\ x\ 0.09632111}{585.3\ x\ 0{,}0671}\ \text{x}\ 100 = 2{,}01\ \%$$



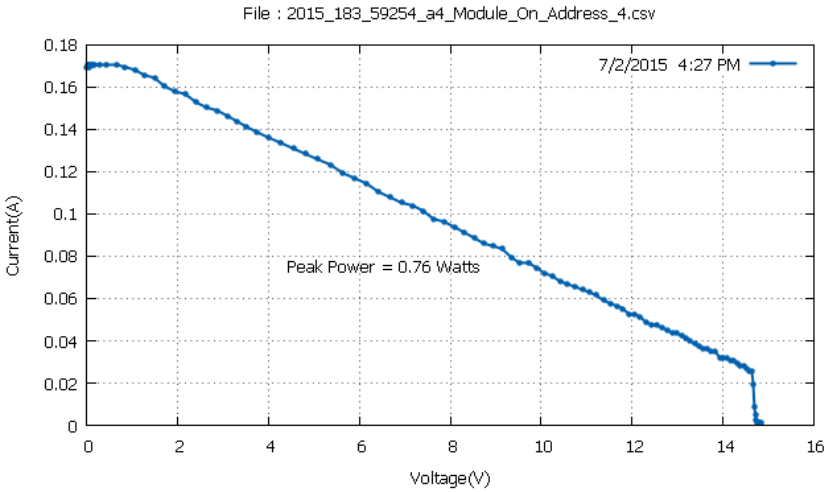
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.94012165\ x\ 0.102742523}{575.3\ x\ 0{,}0671}\ \text{x}\ 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.790572\ x\ 0.09246827}{570.3\ x\ 0{,}0671}\ \text{x}\ 100 = 2{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.5509\ x\ 0.09118398}{556.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.821498\ x\ 0.08604686}{554.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}04\ \%$$

Module 8

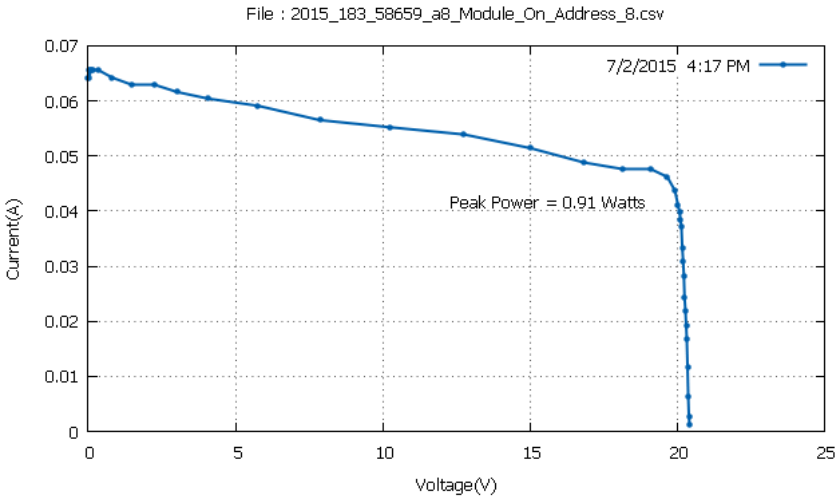
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

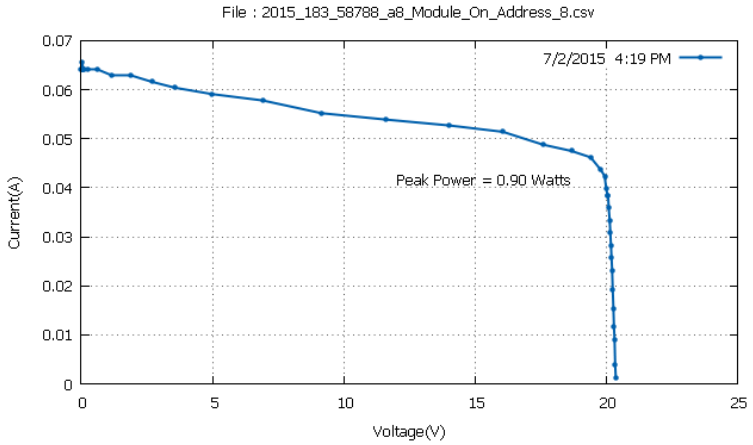
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	45,1	2,02
16:19	45,3	2,02
16:20	45,3	2
16:21	45	2,03
16:26	44,4	2
16:28	44,8	2,03

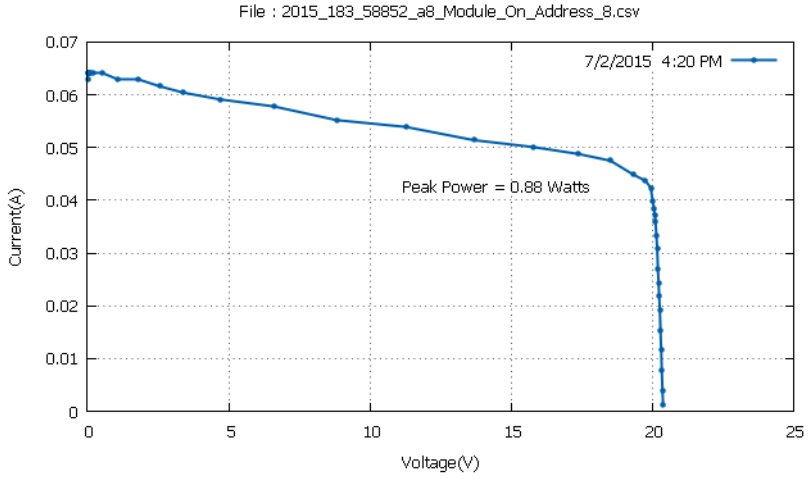
Mean Temperature: 44,98 ºC



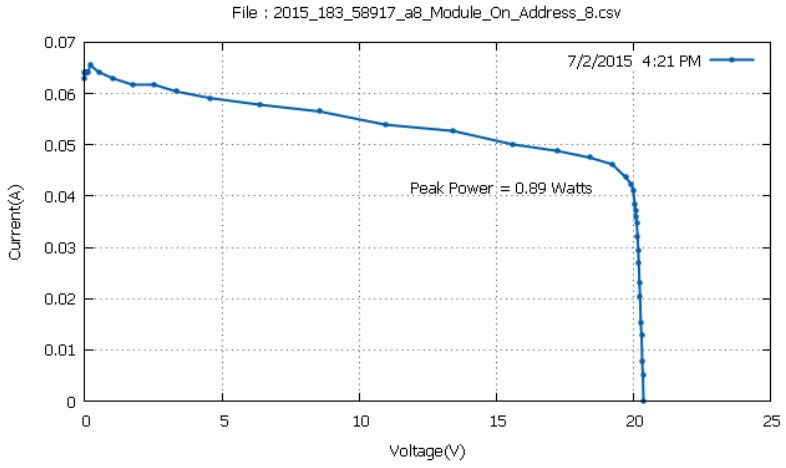
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.660884\ x\ 0.0462341346}{586.3\ x\ 0{,}0768} \text{ x } 100 = 2{,}02\ \%$$



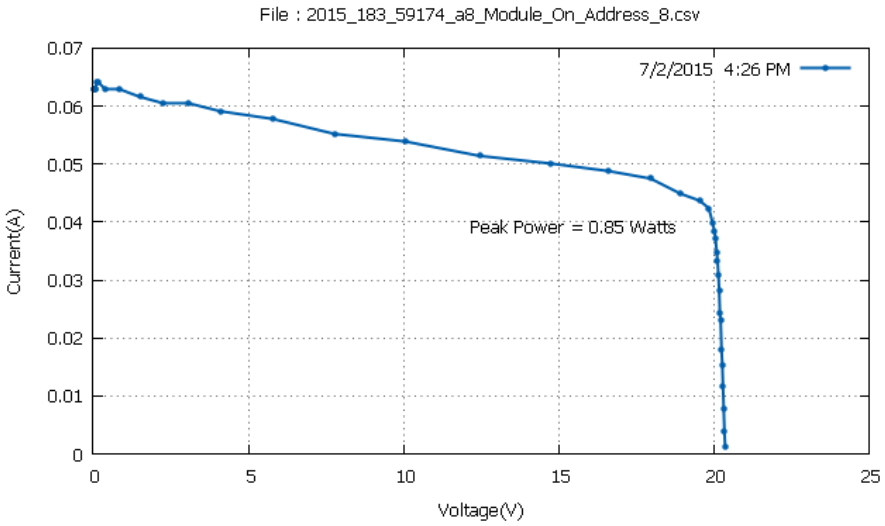
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.40575\ x\ 0.0462341346}{579.1\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}02\ \%$$



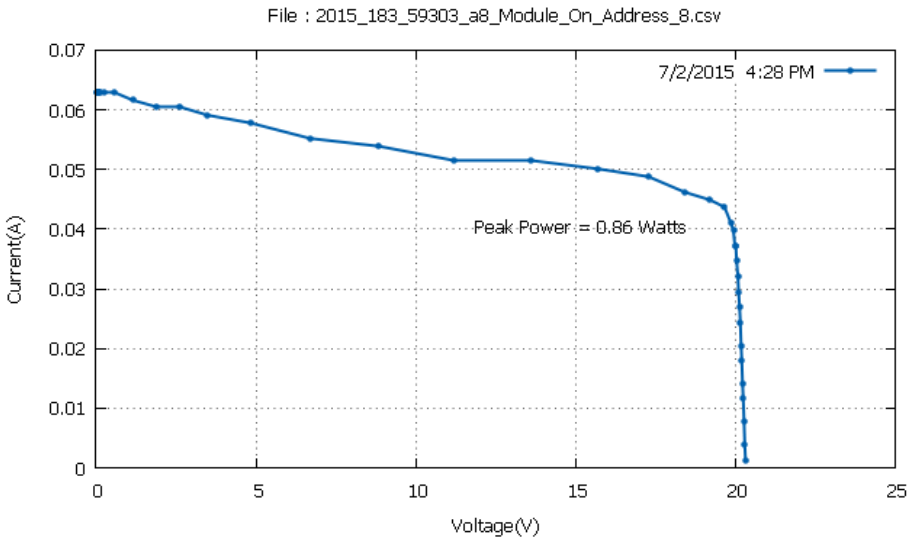
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5166416\ x\ 0.0475184135}{575.3\ x\ 0{,}0768}\ \text{x}\ 100 = 2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2356586\ x\ 0.046234134}{570.3\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.0475184135}{555.8\ x\ 0{,}0768} \text{ x } 100 = 2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2047348\ x\ 0.0449498519}{551.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}03\ \%$$

Module 3

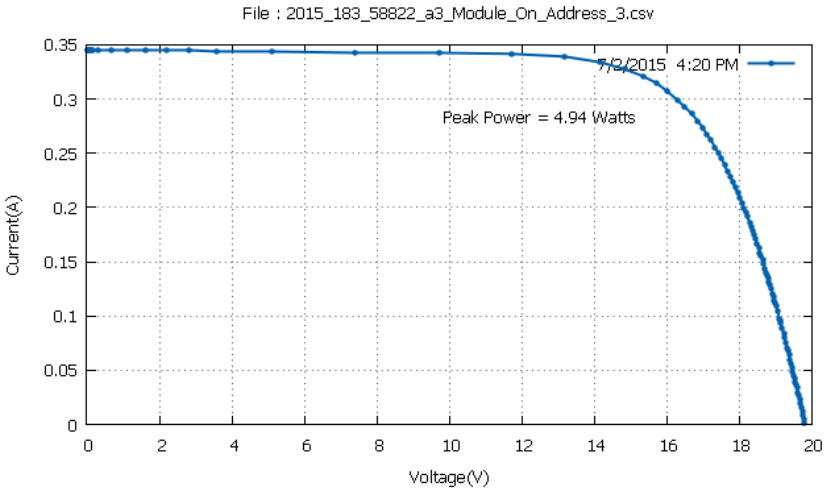
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

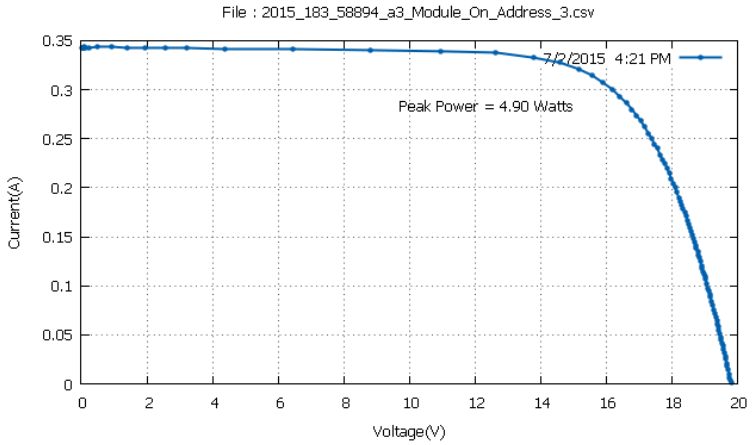
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:20	46,9	12,1
16:21	46,7	12,08
16:22	46,6	12,06
16:25	46,2	12,03
16:26	46,1	12,06
16:27	46,2	11,92

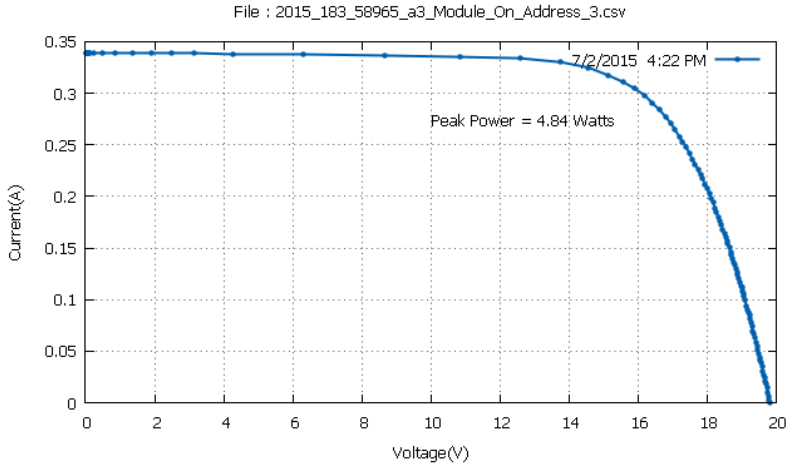
Mean Temperature: 46,45 ºC



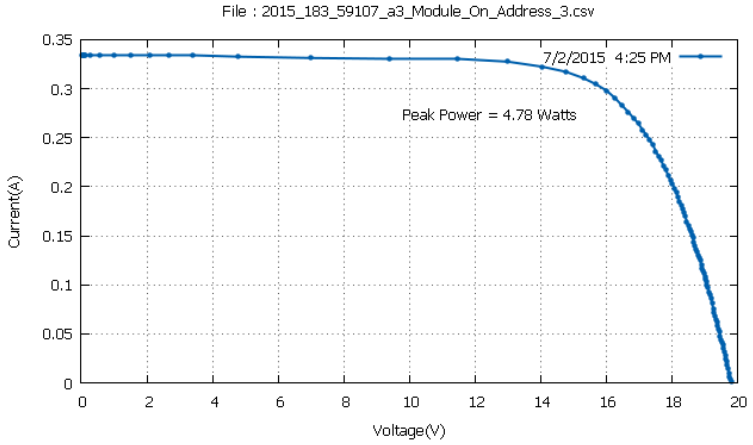
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.717884\ x\ 0.31464895}{576\ x\ 0{,}0709} \text{ x } 100 = 12{,}1\ \%$$



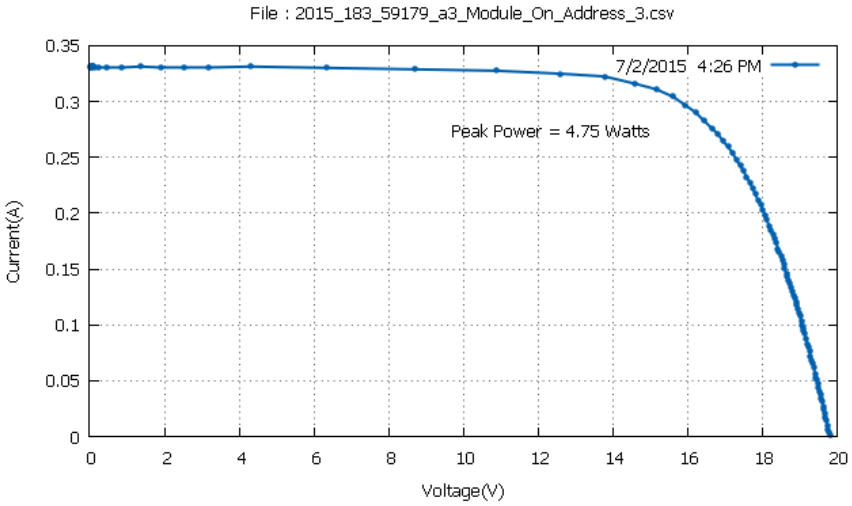
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5709877\ x\ 0.31464895}{572\ x\ 0{,}0709} \text{ x } 100 = 12{,}08\ \%$$



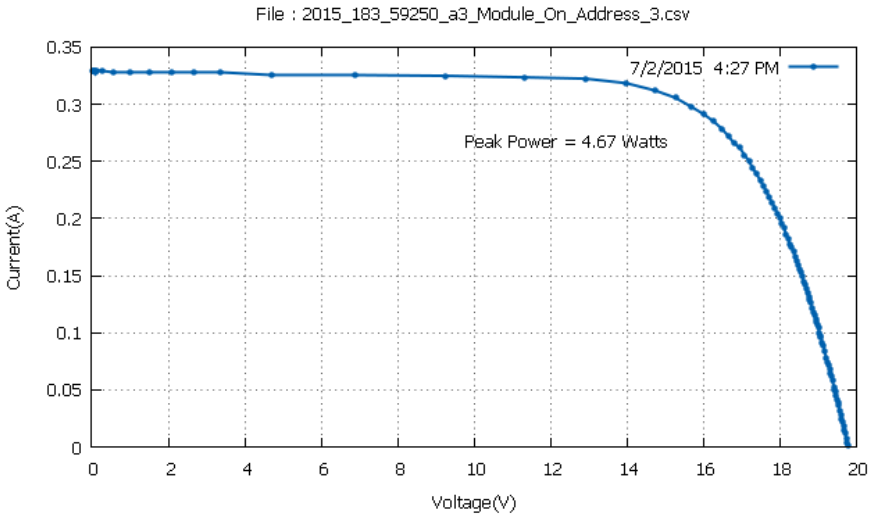
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9111681\ x\ 0.304374725}{566\ x\ 0{,}0709} \text{ x } 100 = 12{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.69469\ x\ 0.304374725}{560.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.601913\ x\ 0.304374725}{555.3\ x\ 0{,}0709}\ \text{x } 100 = 12{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6714954\ x\ 0.2979533}{552.4\ x\ 0{,}0709}\ \text{x } 100 = 11{,}92\ \%$$

Module 5

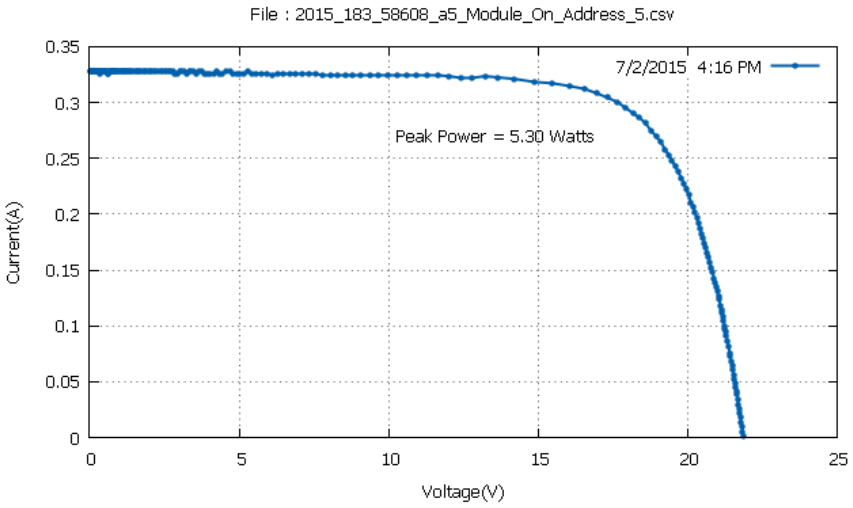
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

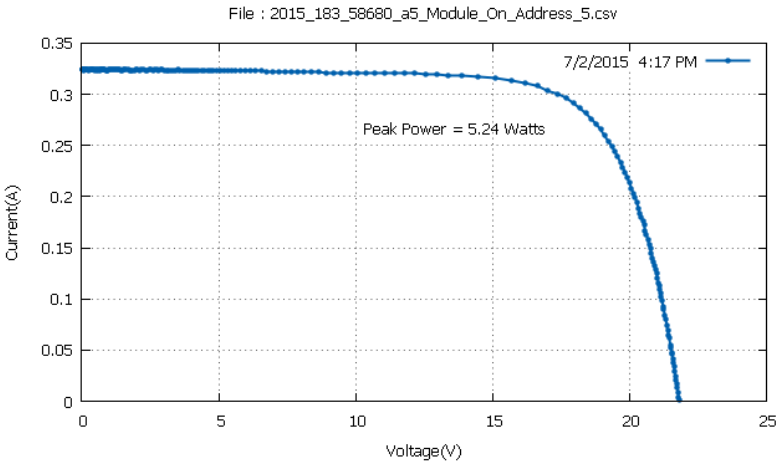
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:16	45,2	11,86
16:17	44,9	11,83
16:22	45	11,82
16:25	44,7	11,72
16:26	44,6	11,76
16:27	44,5	11,68

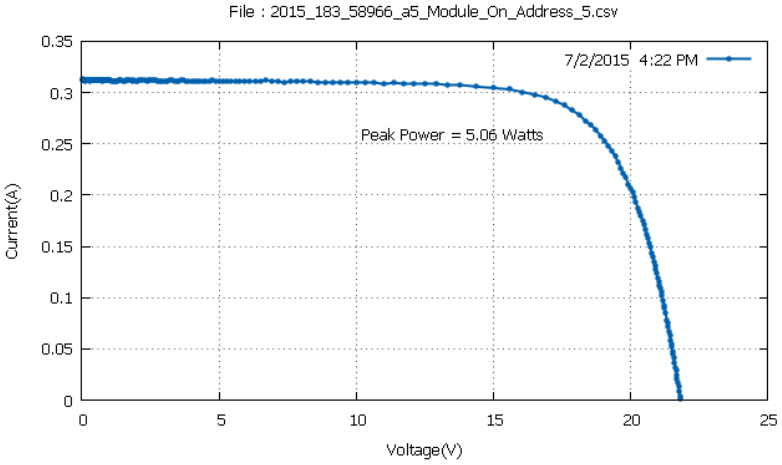
Mean Temperature: 44,81 ºC



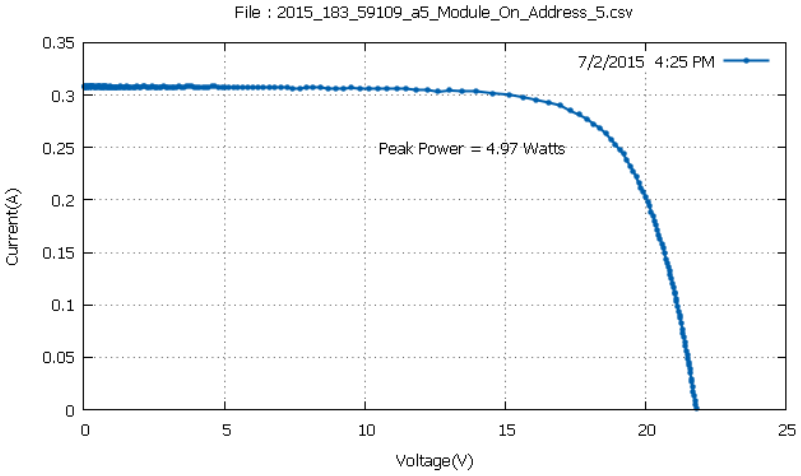
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.3005218}{590.8\ x\ 0{,}0756}$ x 100 = 11,86 %



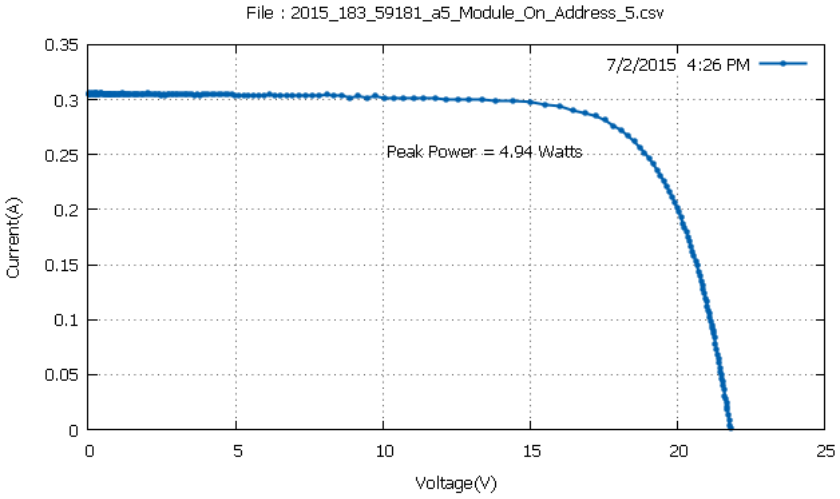
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.673921\ x\ 0.296669036}{585.6\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}83\ \%$$



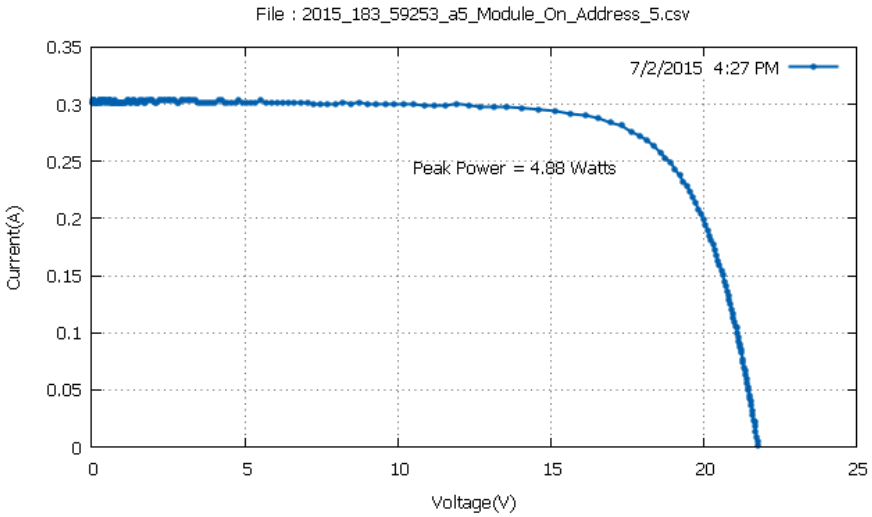
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5966072\ x\ 0.287679046}{566.3\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9058628\ x\ 0.277404815}{560.5\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}72\ \%$$



$$n = \frac{Pout}{Pi\square} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.55022\ x\ 0.281257659}{555.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9135952\ x\ 0.272267669}{552.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}68\ \%$$

Module 4

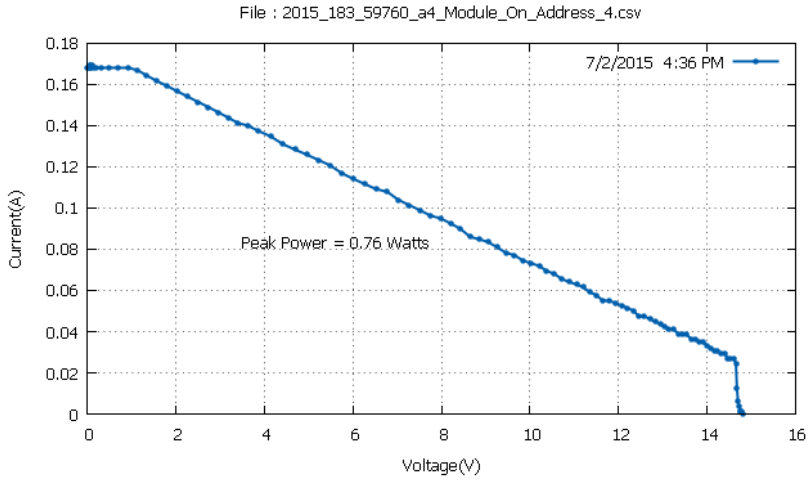
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

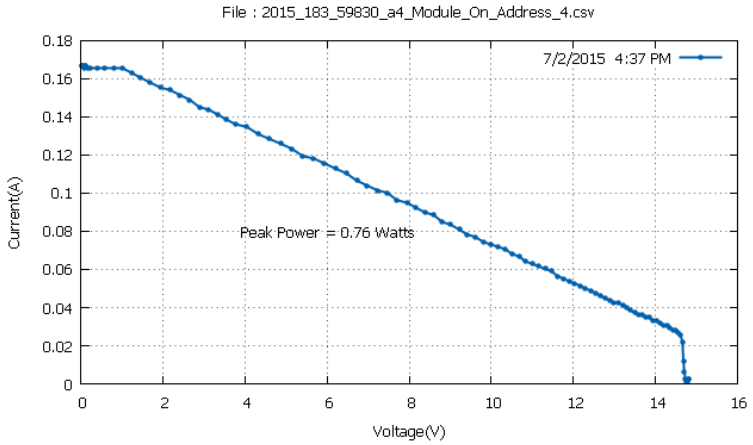
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:36	41,3	2,15
16:37	41,3	2,17
16:39	40,6	2,16
16:40	41,2	2,16
16:42	40,7	2,17
16:43	41	2,16

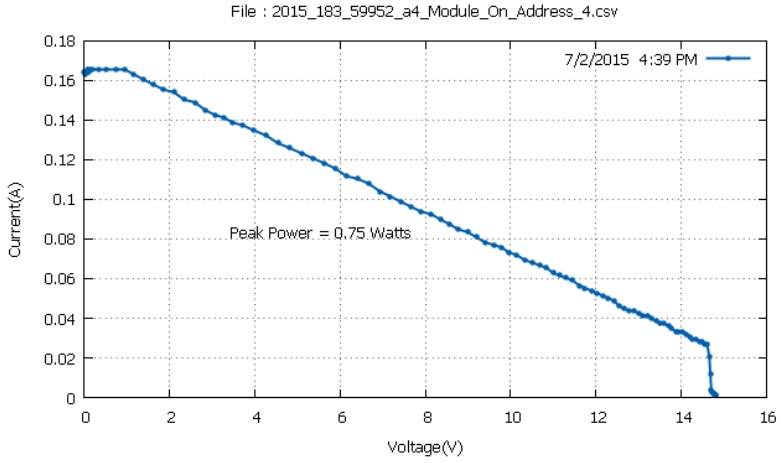
Mean Temperature: 41,01 ºC



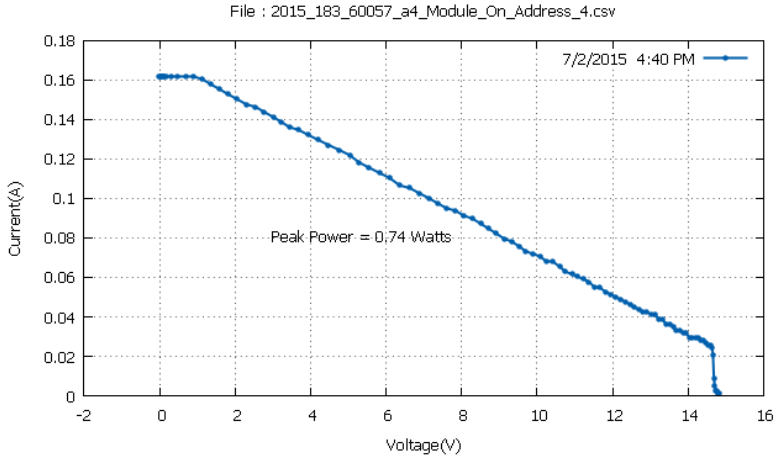
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.202989\ x\ 0.0924682}{525\ x\ 0{,}0671} \text{ x } 100 = 2{,}15\ \%$$



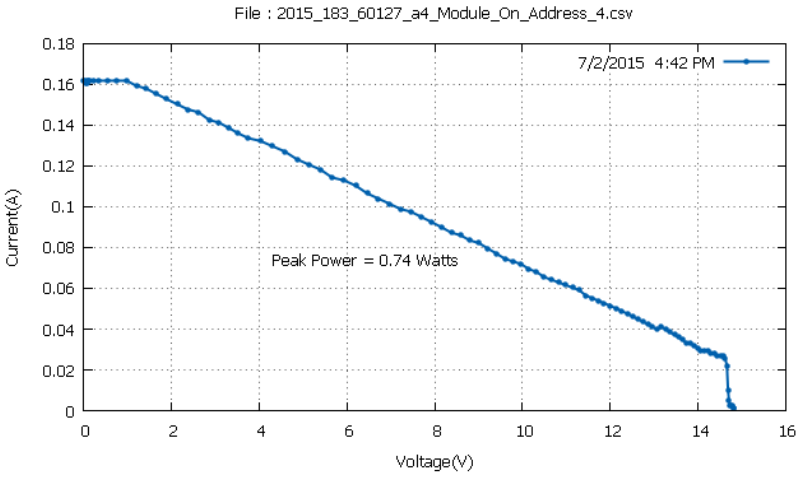
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.589557\ x\ 0.0886154249}{520.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



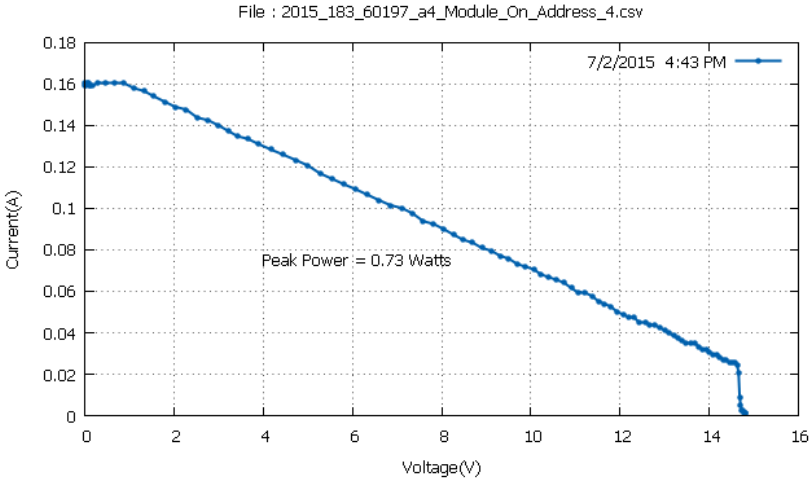
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.133406\ x\ 0.09246827}{516.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.867887\ x\ 0.0834782943}{508.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.007051\ x\ 0.0821940154}{506.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.937469\ x\ 0.0821940154}{503.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$

Module 8

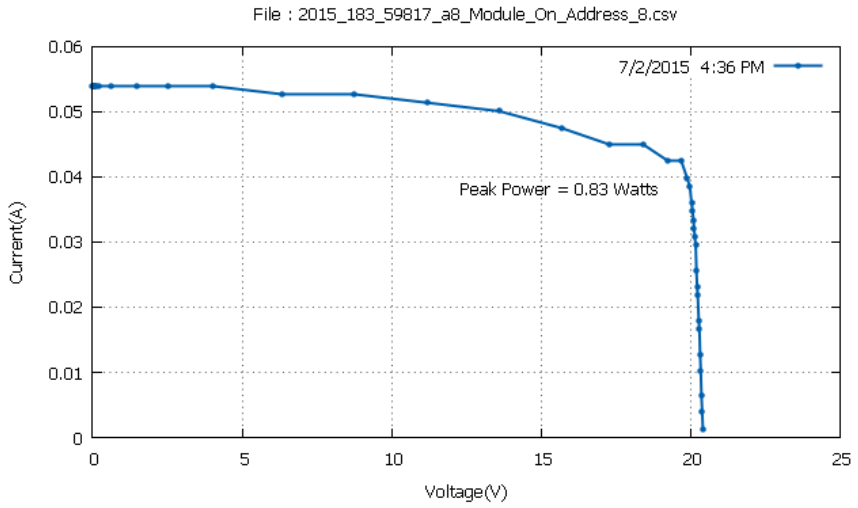
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

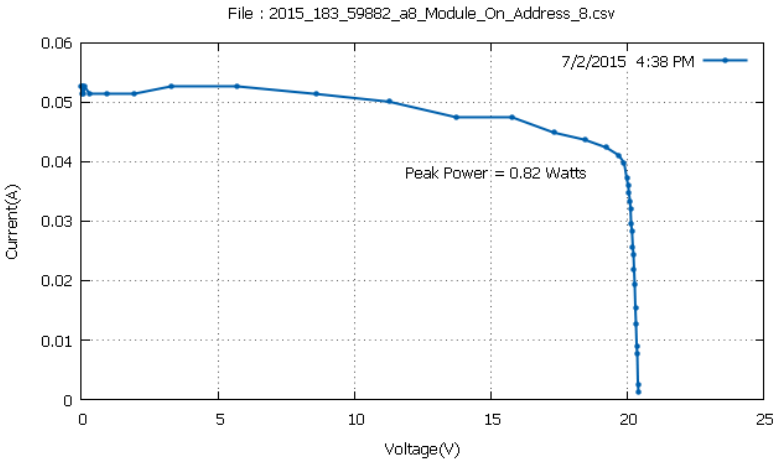
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:36	43,1	2,07
16:38	42,5	2,35
16:39	42,3	2,06
16:41	42,2	2,1
16:42	42,2	2,1
16:43	42,2	2,04

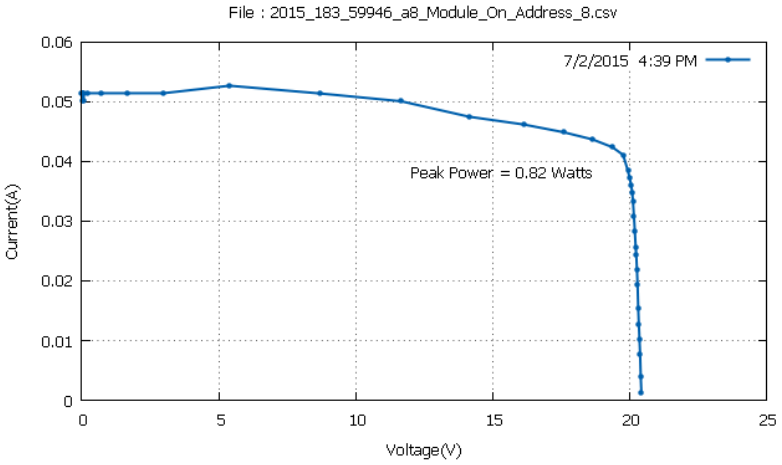
Mean Temperature: 42,41 ºC



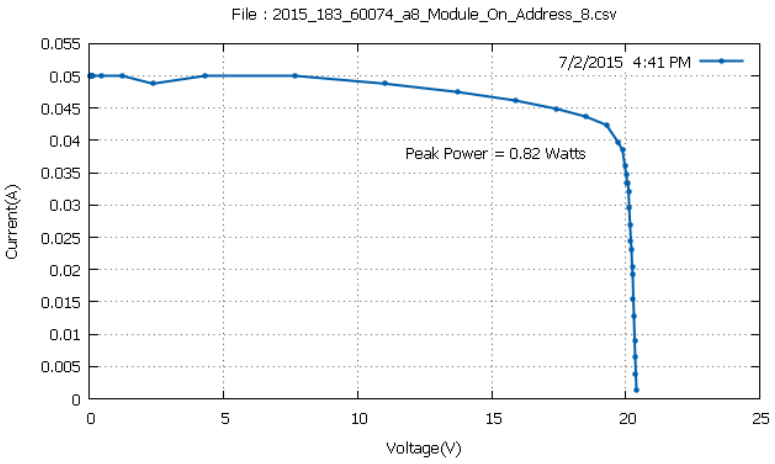
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.684078\ x\ 0.04238129}{521.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}07\ \%$$



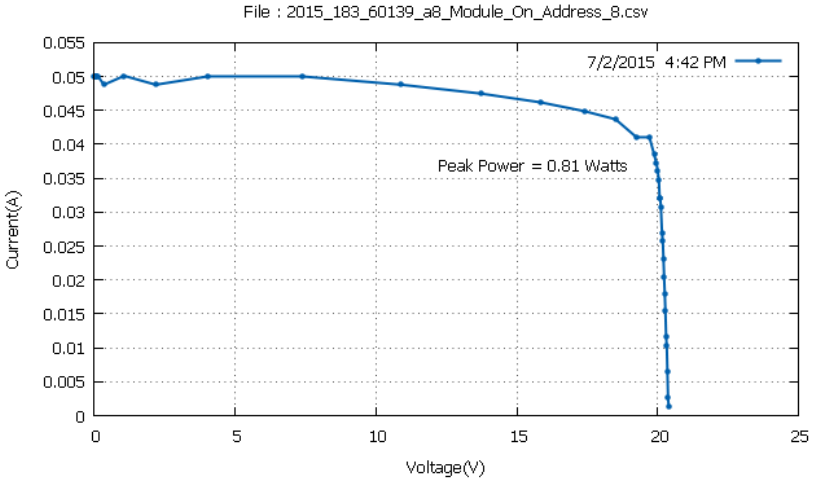
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2356586\ x\ 0.04238129}{518.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}35\ \%$$



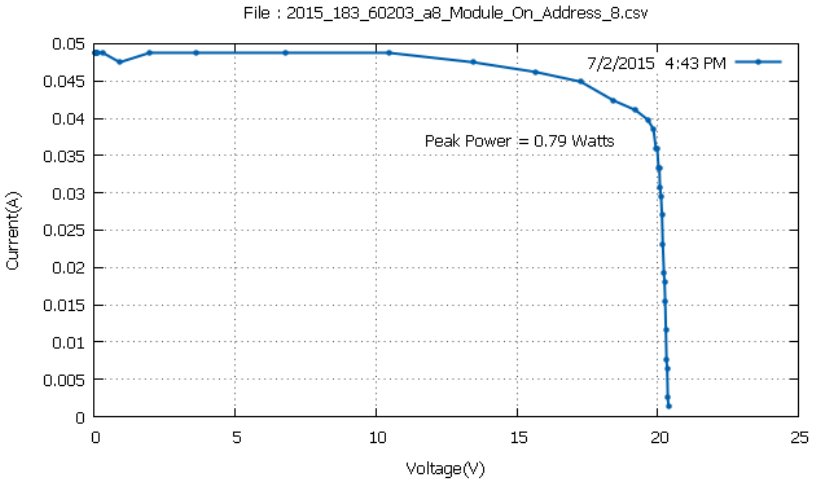
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.374824\ x\ 0.0423812}{516.4\ x\ 0{,}0768} \text{ x } 100 = 2{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2820473\ x\ 0.04238129}{507.6\ \square\ 0{,}0768} \text{ x } 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.69181\ x\ 0.0410970077}{504.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2124653\ x\ 0.0410970077}{502.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}04\ \%$$

Module 3

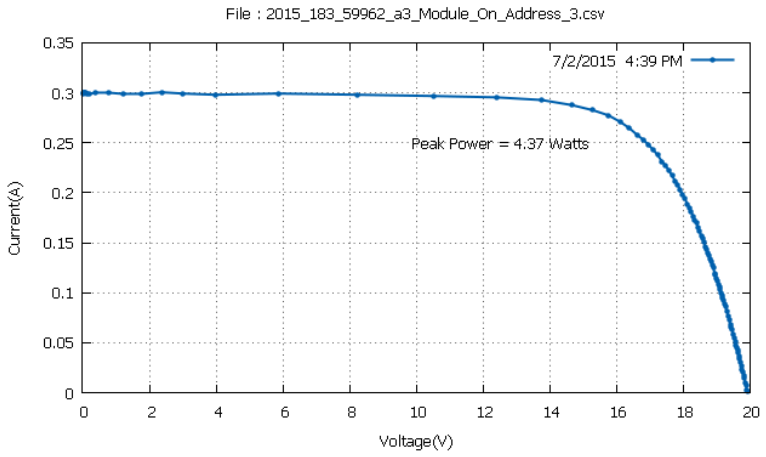
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

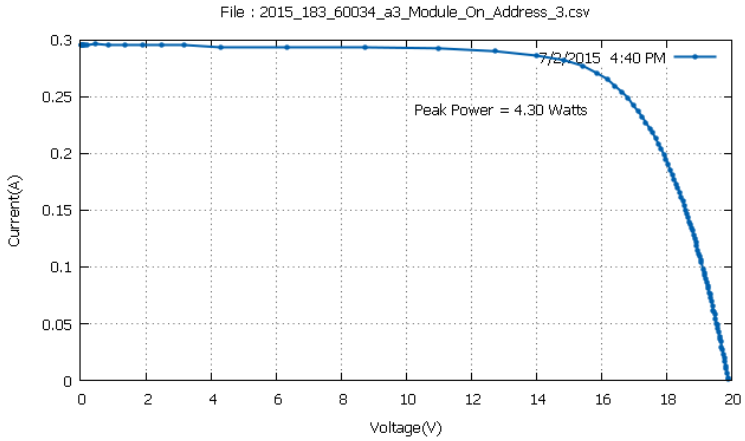
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:39	42,5	11,95
16:40	42,4	11,9
16:41	42,1	11,88
16:44	41,7	11,8
16:45	41,7	11,82
16:46	41,6	11,75

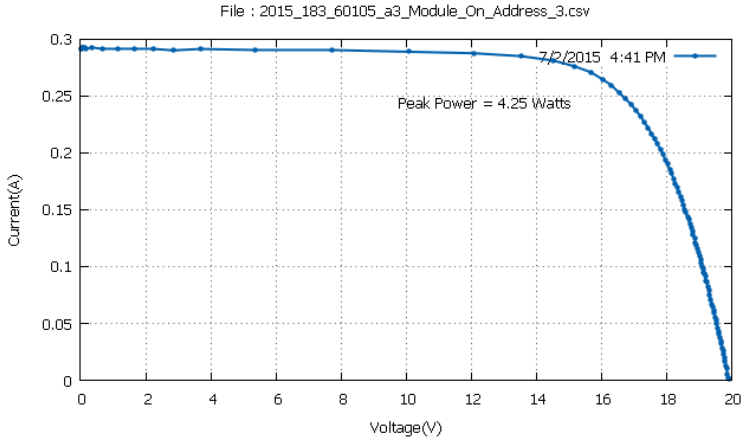
Mean Temperature: 42 ºC



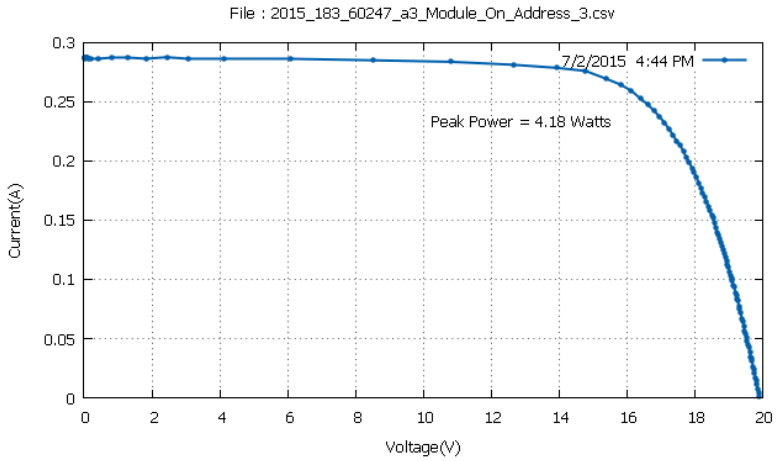
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.756541\ x\ 0.277404815}{515.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}95\ \%$$



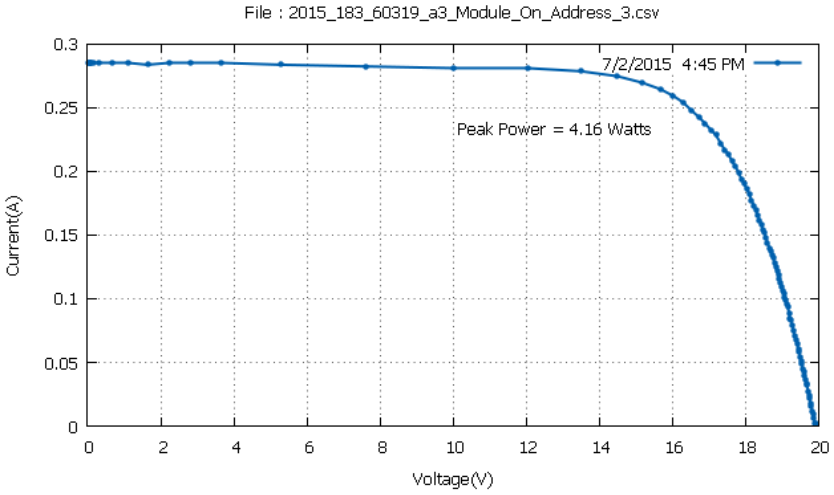
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.174036\ x\ 0.265846282}{509.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}9\ \%$$



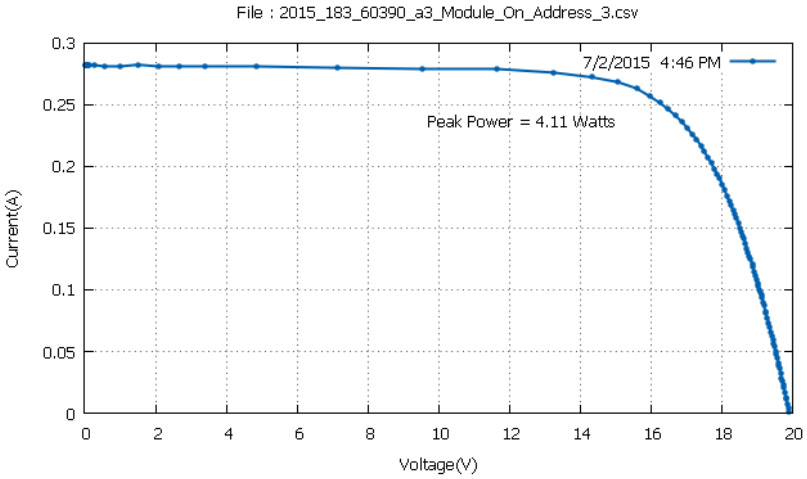
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6714954\ x\ 0.2709834}{504.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1276474\ x\ 0.259424865}{499.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194073\ x\ 0.259424865}{496.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}82\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.594182\ x\ 0.2632777}{493.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}75\ \%$$

Module 5

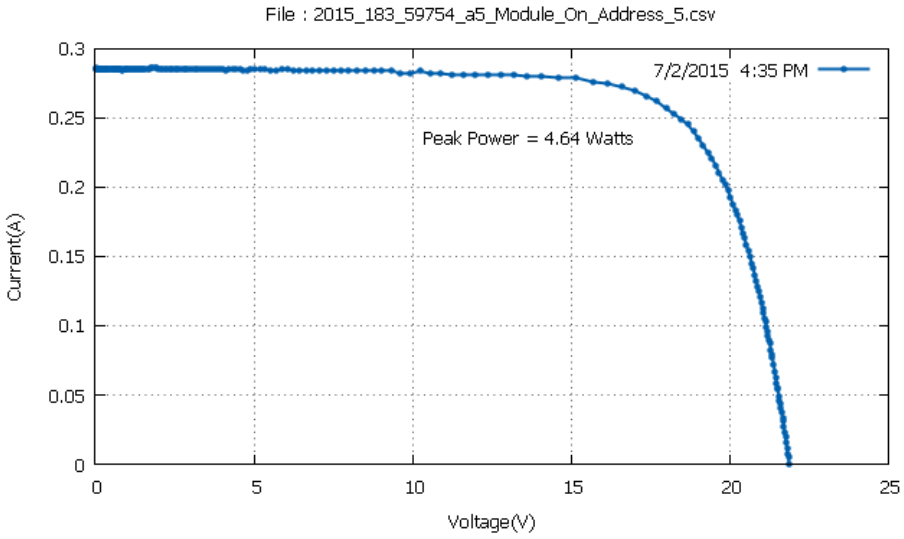
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

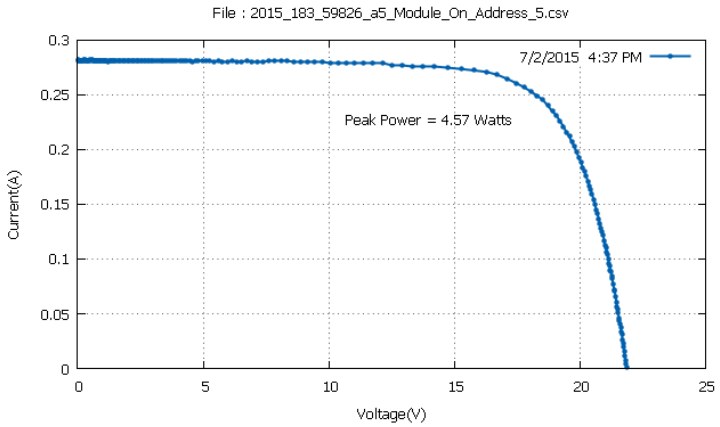
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:35	43,4	11,62
16:37	43	11,6
16:40	42,5	11,52
16:41	42,5	11,56
16:44	42,2	11,46
16:45	42,1	11,48

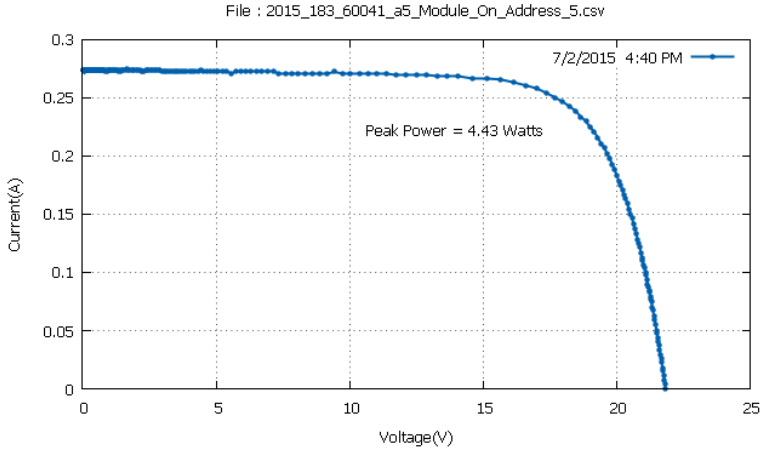
Mean Temperature: 42,61 ºC



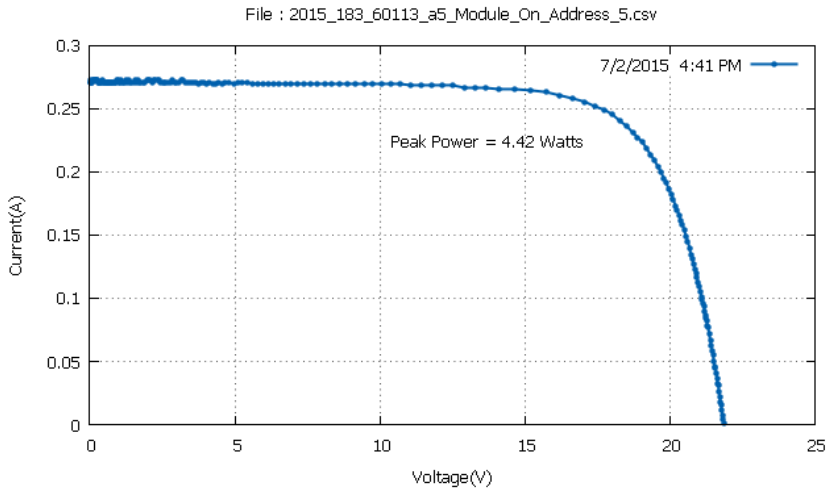
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7048473\ x\ 0.261993438}{528.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}62\ \%$$



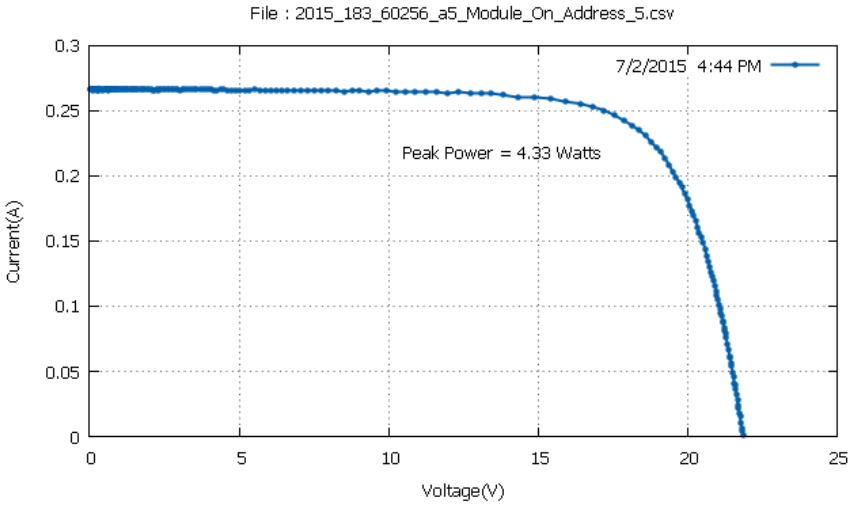
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.05276\ x\ 0.253003448}{521\ x\ 0{,}0756} \text{ x } 100 = 11{,}6\ \%$$



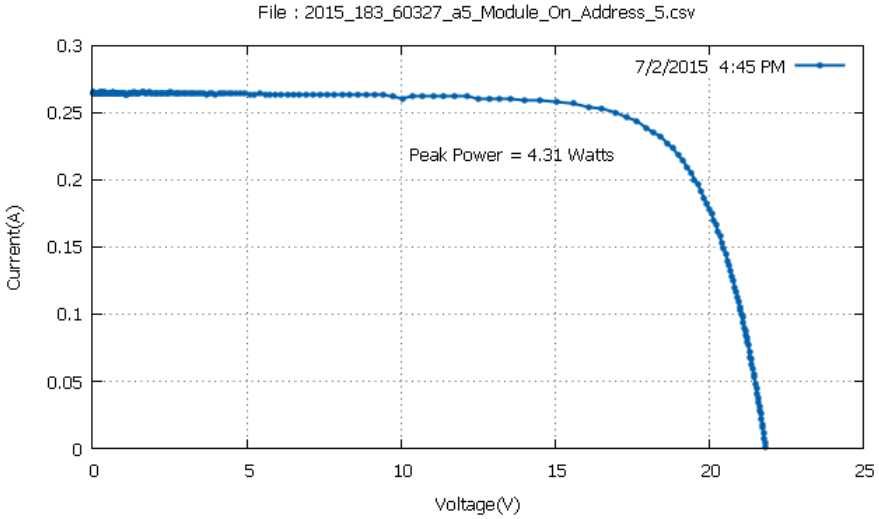
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9831772\ x\ 0.246582046}{508.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{\square mpp\ x\ Impp}{E\ x\ A} = \frac{17.751236\ x\ 0.2491506}{505.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8594742\ x\ 0.2427292}{499.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6507282\ x\ 0.24401348}{496.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}48\ \%$$

Module 4

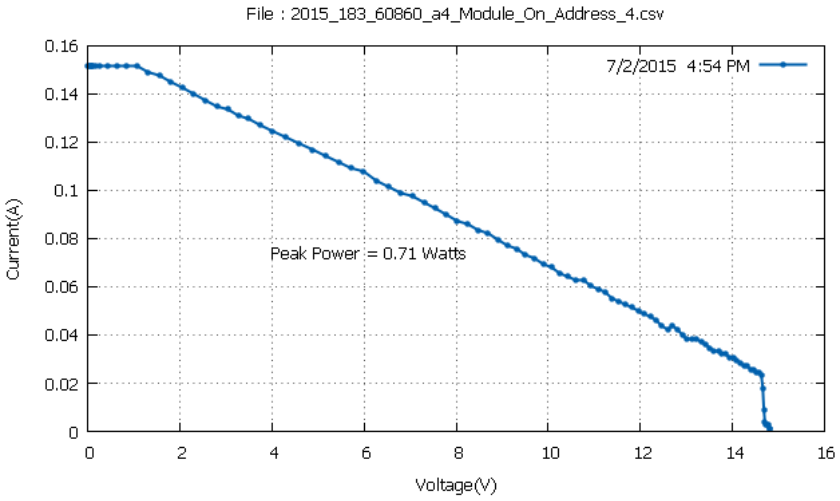
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

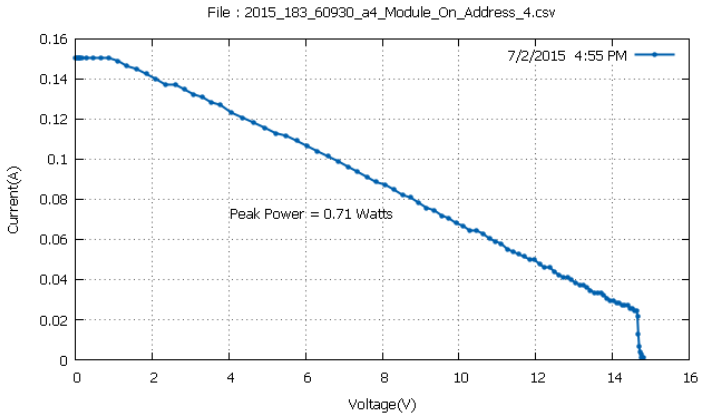
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:54	39,3	2,27
16:55	39,2	2,3
16:56	39,1	2,3
16:58	38,8	2,26
16:59	38,9	2,26
17:00	38,6	2,27

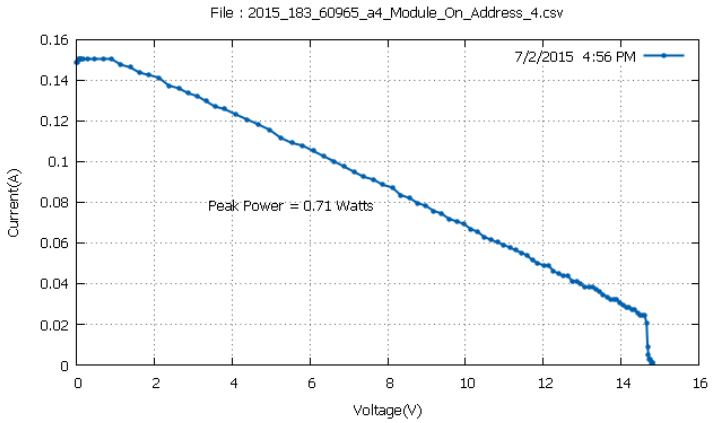
Mean Temperature: 38,98 ºC



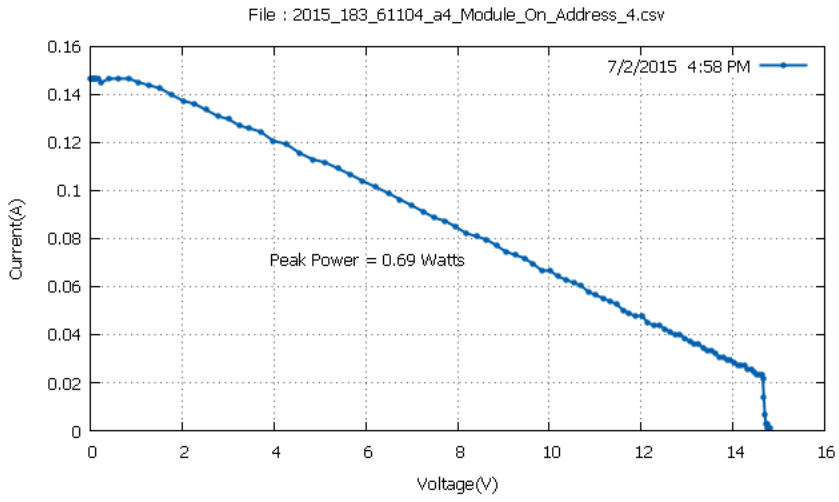
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.082194015}{465.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$



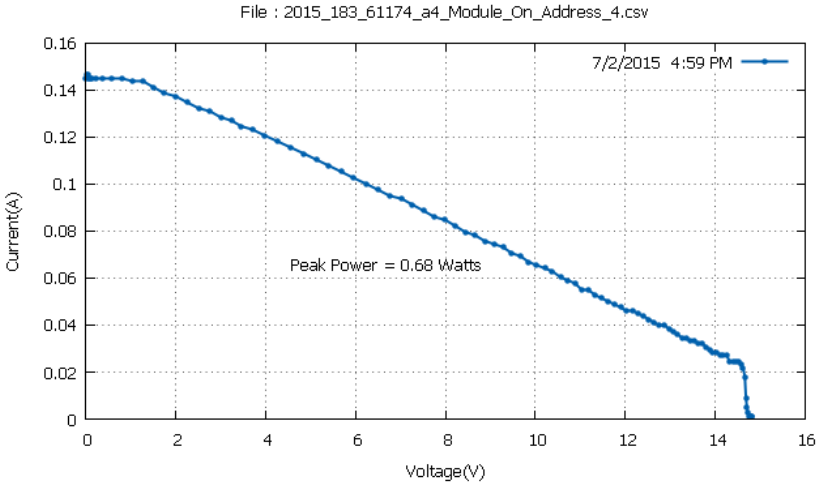
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.736453\ x\ 0.0809097}{461.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



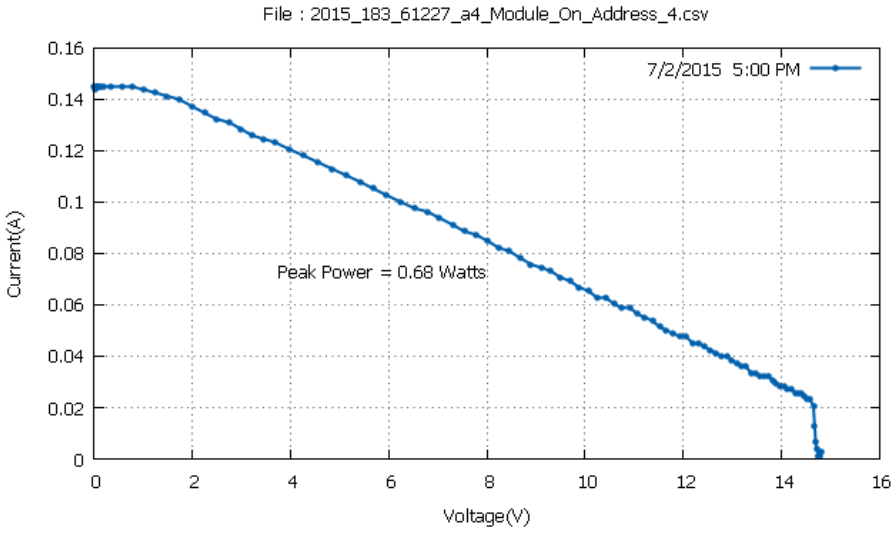
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.110211\ x\ 0.08733114}{459.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.914274\ x\ 0.07705689}{453.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.277649\ x\ 0.07320405}{448.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.705527\ x\ 0.07834117}{446.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$

Module 8

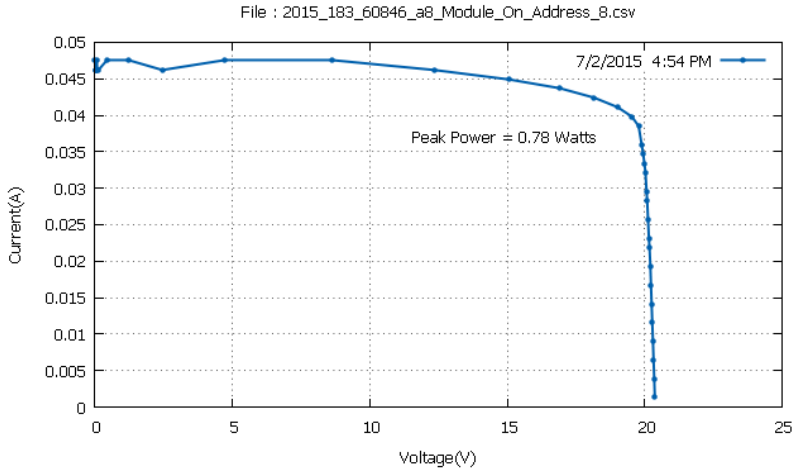
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

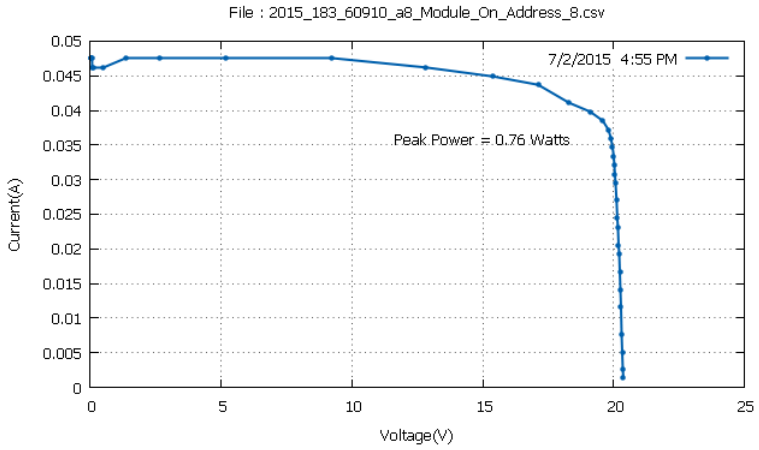
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:54	40,7	2,27
16:55	40,6	2,3
16:56	40,3	2,3
16:58	40,1	2,26
16:59	40,1	2,26
17:00	39,9	2,27

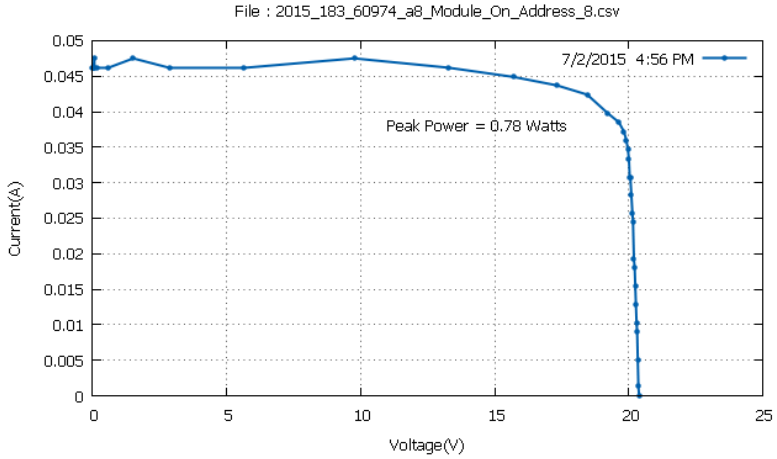
Mean Temperature: 40,28 ºC



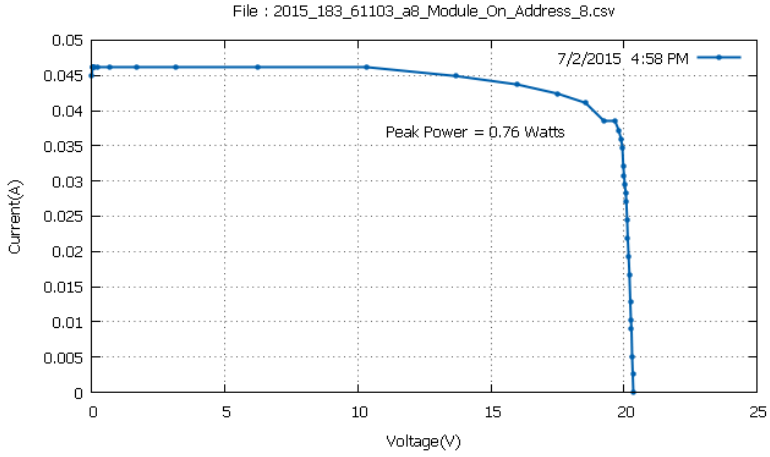
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.01918\ x\ 0.0410970077}{465.9\ x\ 0{,}0768} \text{ x } 100 = 2{,}18\ \%$$



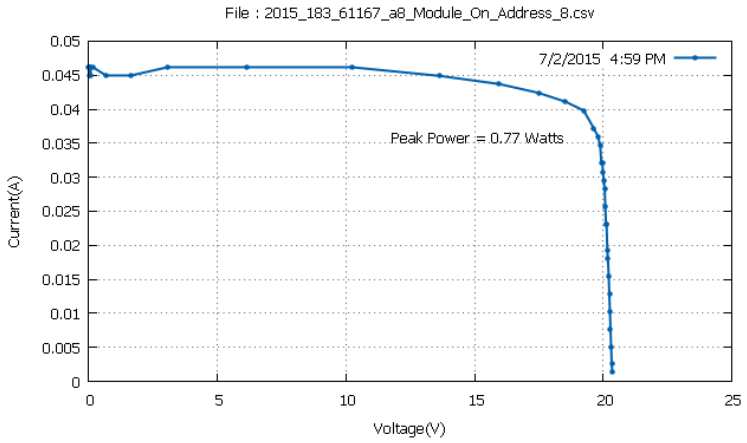
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1119576\ x\ 0.039812725}{462.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}14\ \%$$



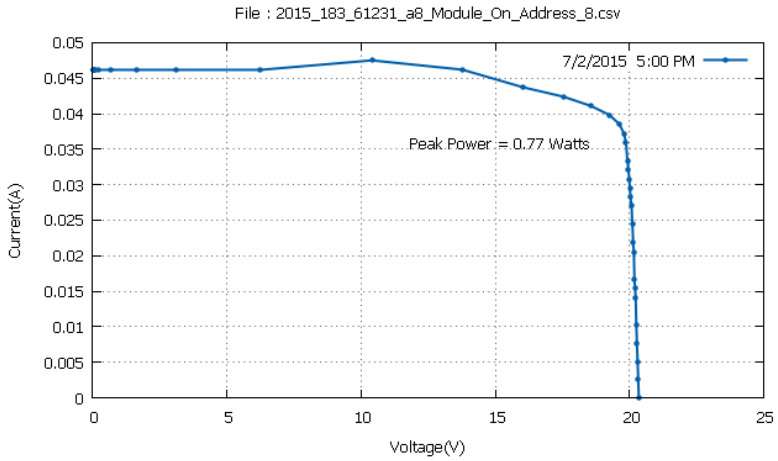
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.45479\ x\ 0.04238129}{458.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5552979\ x\ 0.0410970077}{452.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.243391\ x\ 0.039812725}{448.7\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}23\ \%$$



$$n = \frac{Po\square t}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2588539\ x\ 0.039812725}{445.9\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}24\ \%$$

Module 3

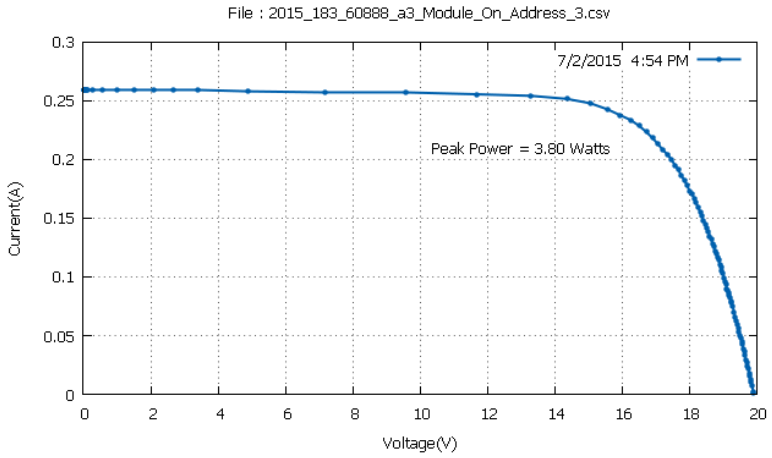
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

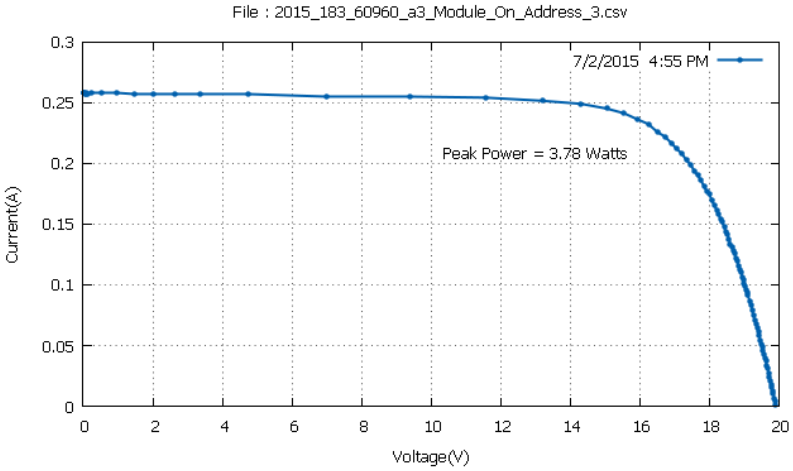
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:54	40,4	11,57
16:55	40,2	11,58
16:58	39,7	11,5
16:59	39,6	11,4
17:03	39	11,27
17:04	39	11,18

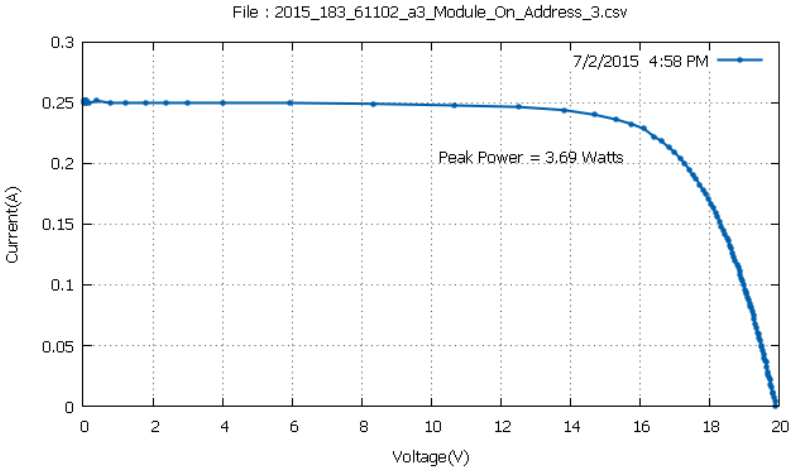
Mean Temperature: 39,65 ºC



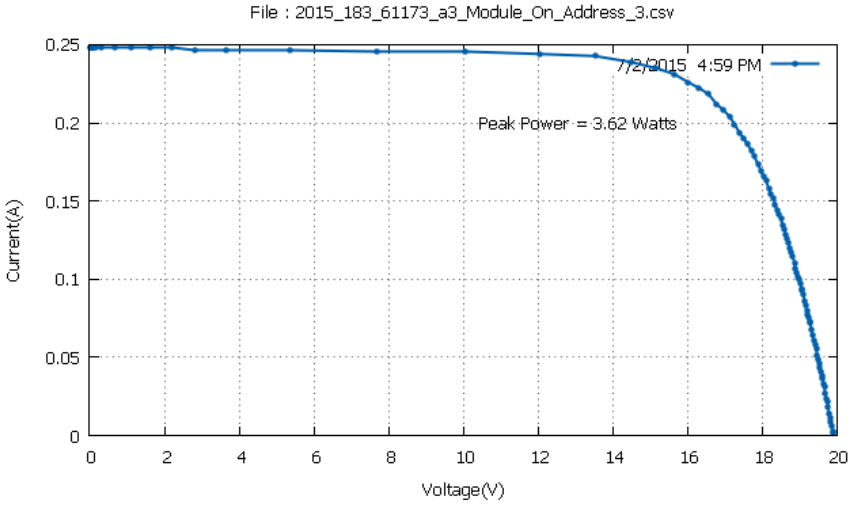
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.233739227}{463\ x\ 0{,}0709} \text{ x } 100 = 11{,}57\ \%$$



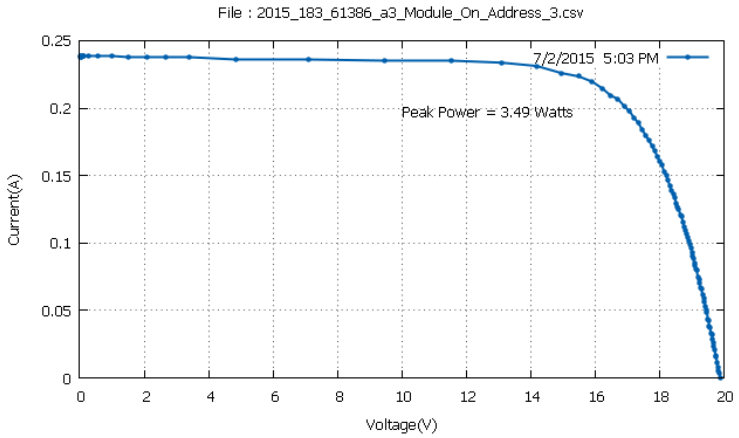
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.243618\ x\ 0.232454956}{460.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}58\ \%$$



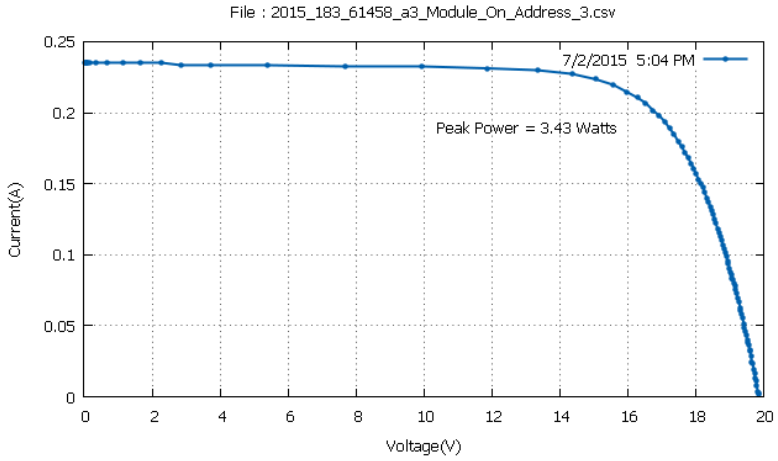
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.119915\ x\ 0.228602111}{452.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}5\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3132\ x\ 0.2221807}{448.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9111681\ x\ 0.219612136}{436.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.282274\ x\ 0.210622162}{432.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}18\ \%$$

Module 5

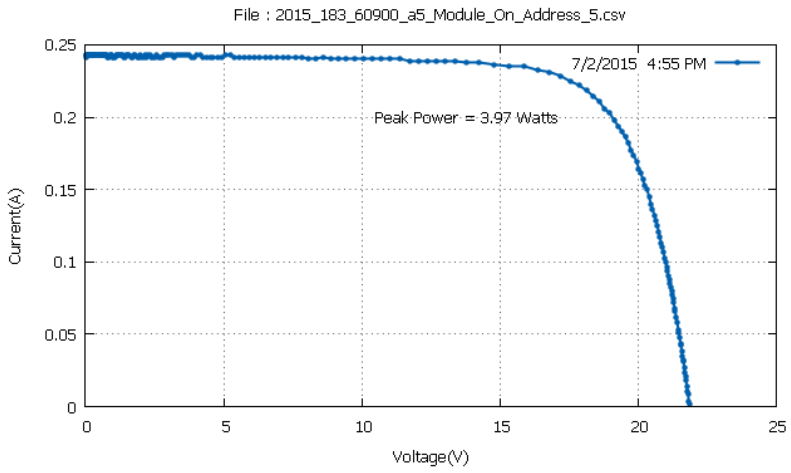
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

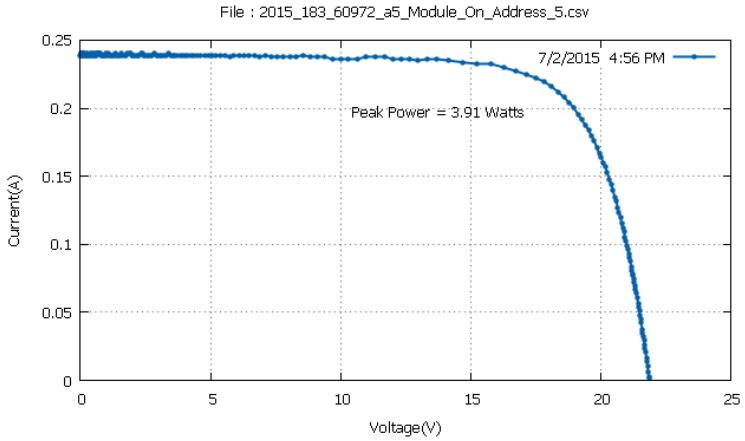
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:55	40,8	11,33
16:56	40,6	11,26
16:58	40,1	11,21
16:59	40,1	11,16
17:00	39,9	11,15
17:03	39,7	11

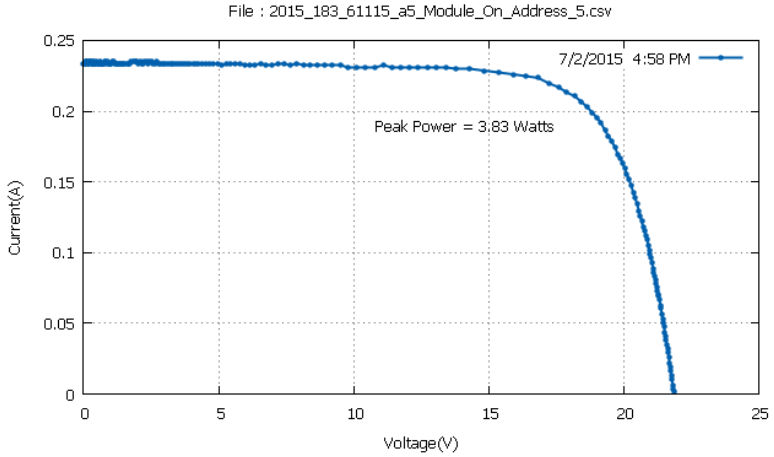
Mean Temperature: 40,2 ºC



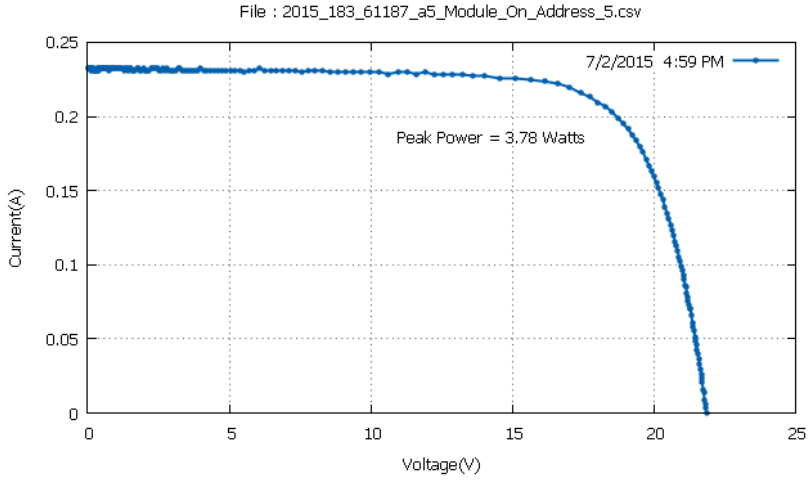
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.859474\ x\ 0.2221807}{463.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}33\ \%$$



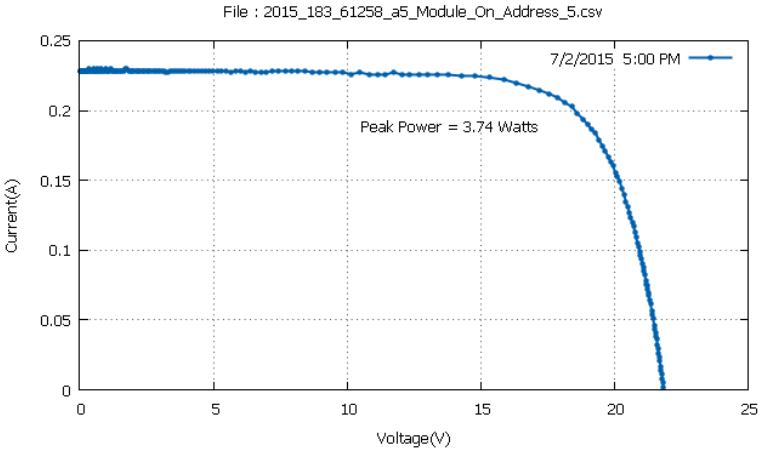
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8208179\ x\ 0.219612136}{459.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}26\ \%$$



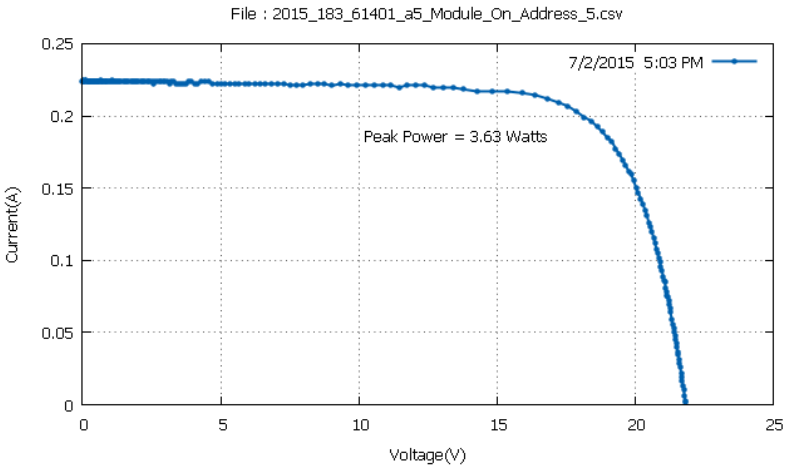
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1764\ x\ 0.210622162}{451.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.29243\ x\ 0.20676931}{448\ x\ 0{,}0756} \text{ x } 100 = 11{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8749371\ x\ 0.20933789}{443.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5656834\ x\ 0.206769317}{436.3\ x\ 0{,}0756} \text{ x } 100 = 11\ \%$$

Module 4

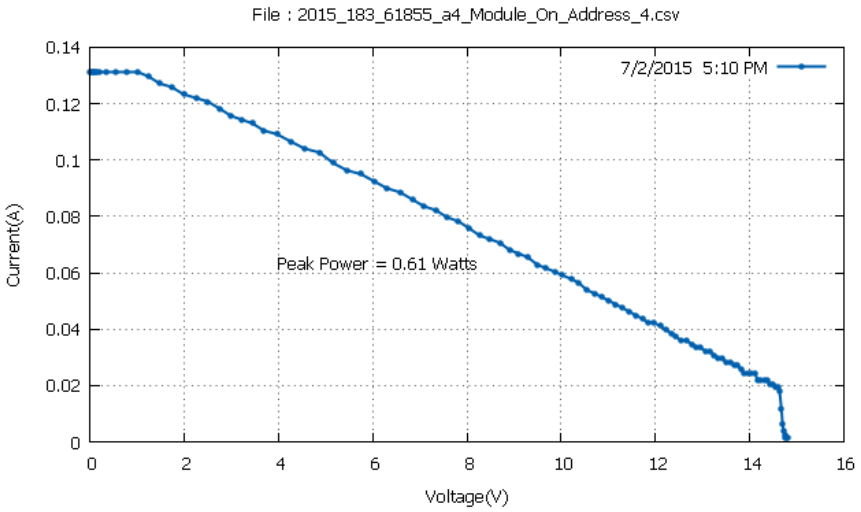
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

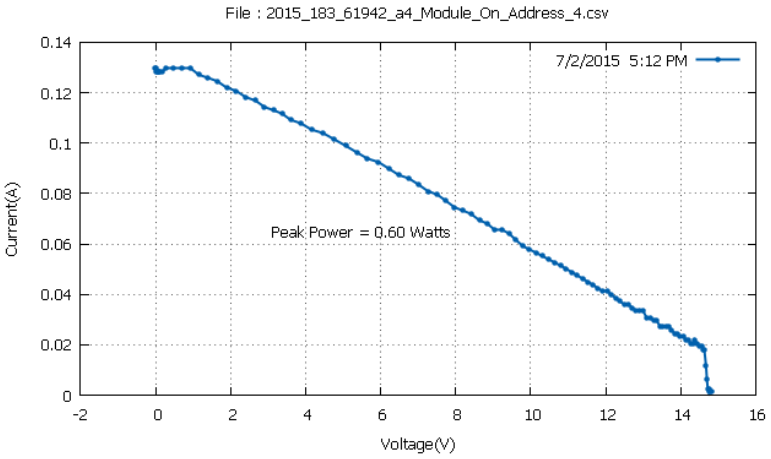
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:10	37,8	2,2
17:12	37,5	2,19
17:13	37,4	2,21
17:15	37	2,26
17:16	37,1	2,24
17:19	36,3	2,25

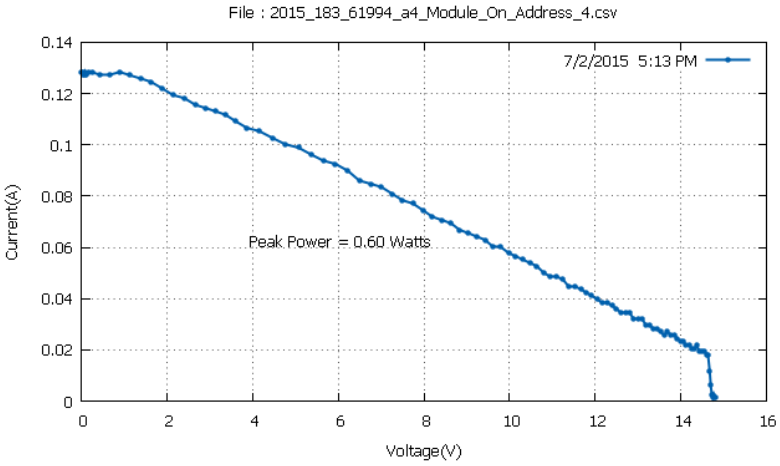
Mean Temperature: 37,18 ºC



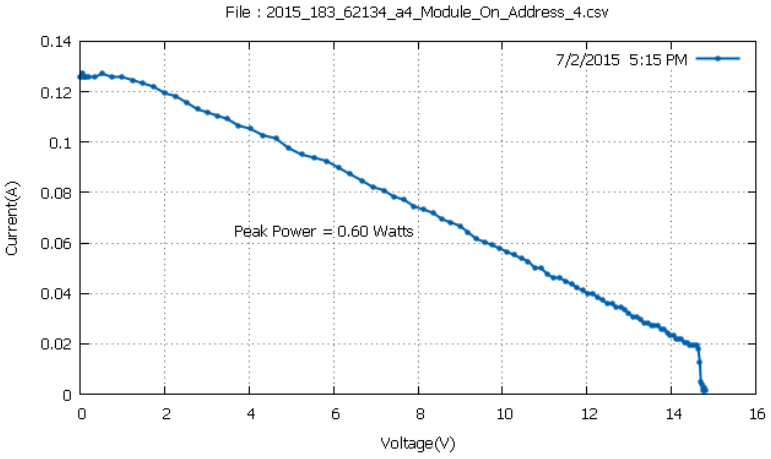
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.0947485\ x\ 0.0757726058}{413\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



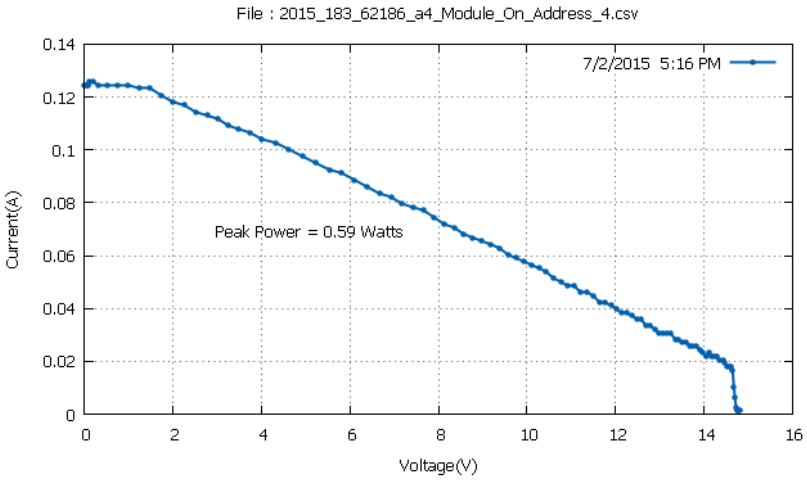
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.465855\ x\ 0.0719197}{408\ x\ 0{,}0671} \text{ x } 100 = 2{,}19\ \%$$



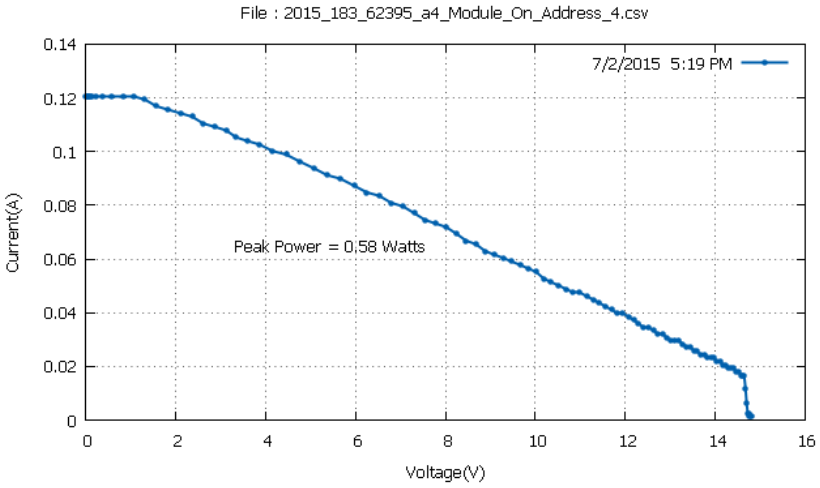
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.628214\ x\ 0.069351203}{404.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.798304\ x\ 0.06806692}{395.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}26\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.661792\ x\ 0.07705689}{392\ x\ 0{,}0671} \text{ x } 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.172063\ x\ 0.07191976}{384.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$

Module 8

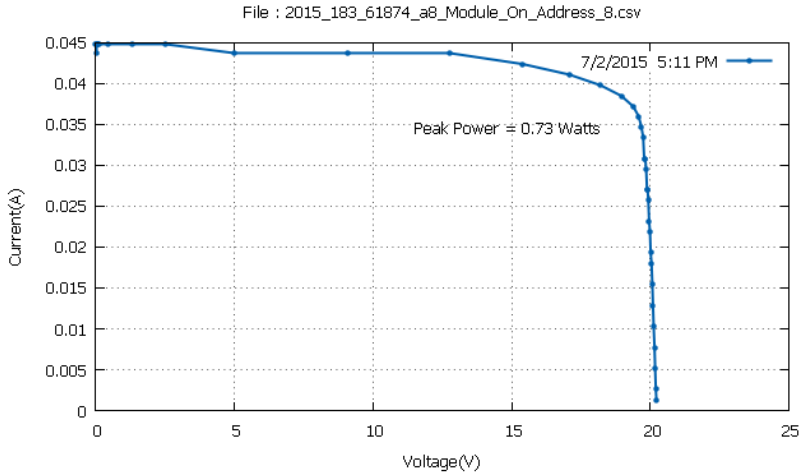
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

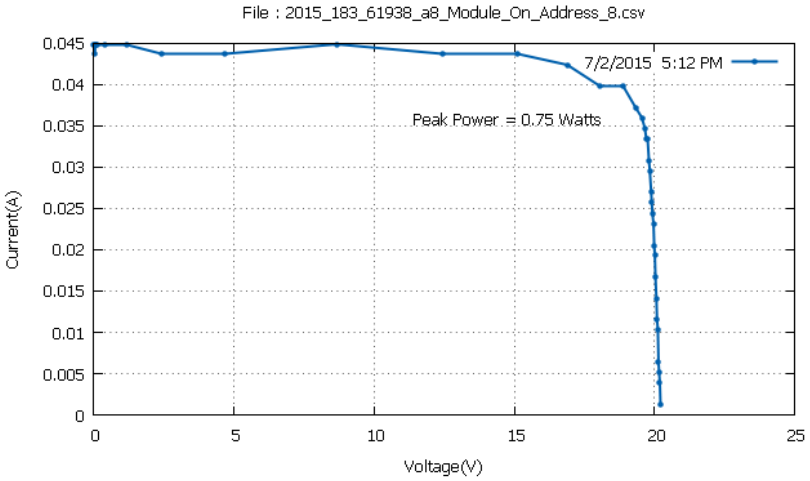
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:11	39,1	2,3
17:12	39	2,4
17:13	38,7	2,32
17:15	38,4	2,4
17:16	38,3	2,35
17:17	38	2,37

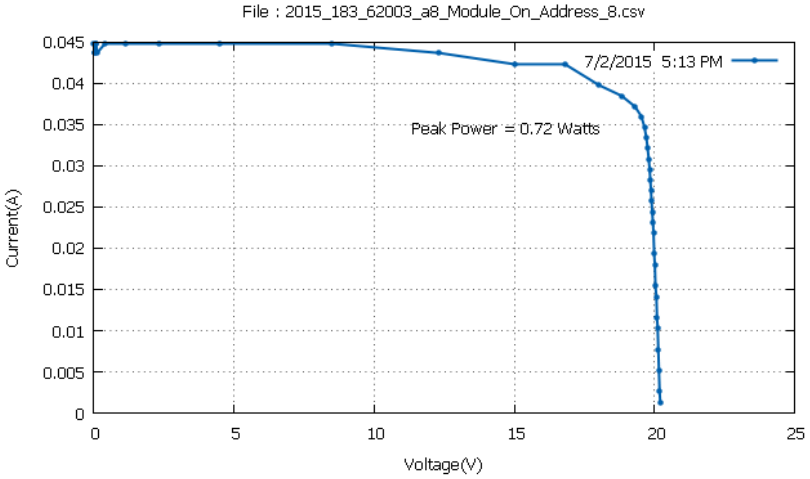
Mean Temperature: 38,58 ºC



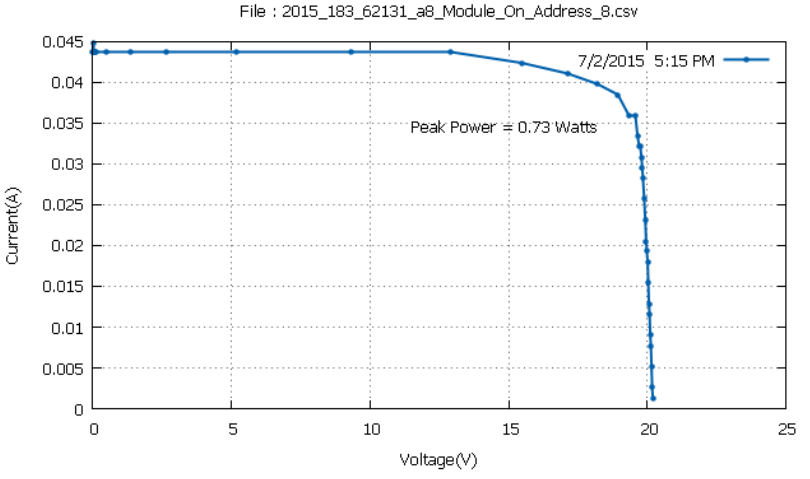
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.95733\ x\ 0.0385284461}{412\ x\ 0{,}0768} \text{ x } 100 = 2{,}3\ \%$$



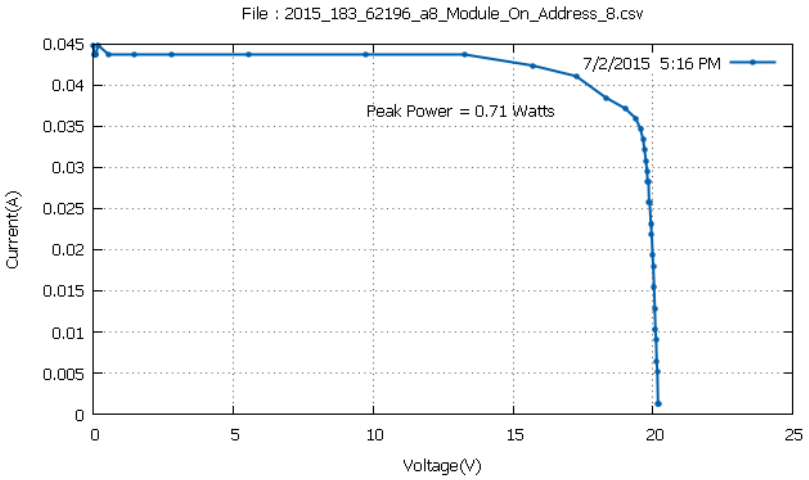
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8645535\ x\ 0.039812725}{406.5\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}4\ \%$$



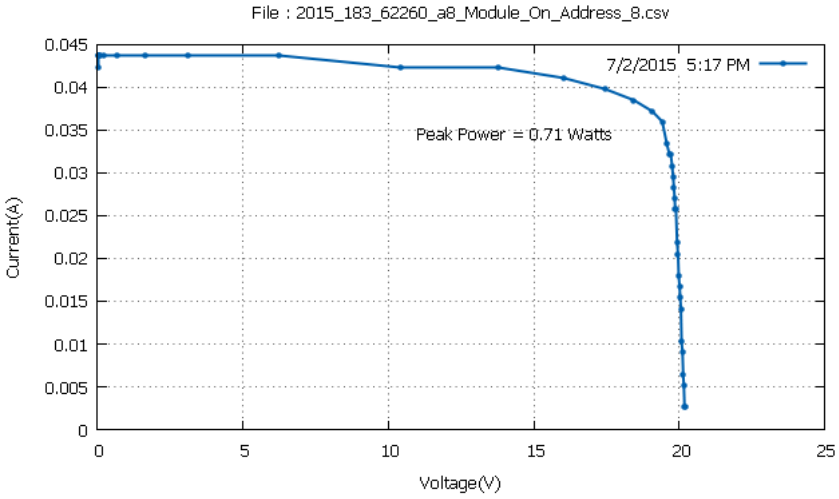
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8258972\ x\ 0.038528446}{402.9\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9418678\ x\ 0.0385284461}{396\ x\ 0{,}0768}\ \text{x}\ 100 = 2{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.2641582\ x\ 0.0410970077}{393.2\ x\ 0{,}0768} \text{ x } 100 = 2{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.44706\ x\ 0.038528446}{388.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}37\ \%$$

Module 3

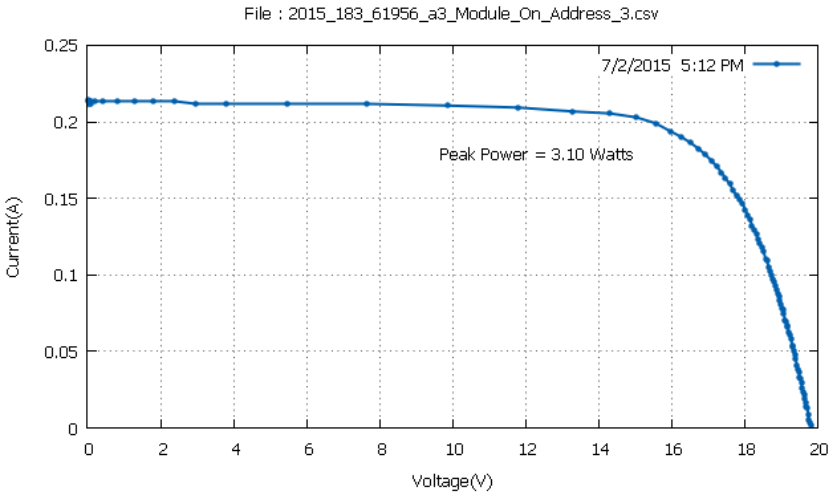
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

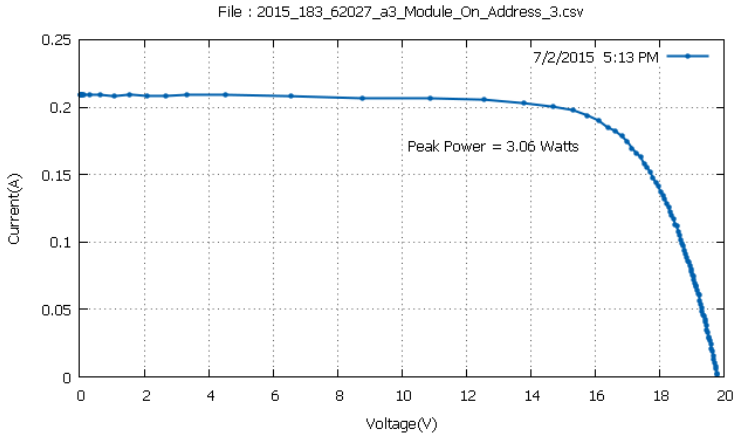
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:12	38,1	10,77
17:13	37,8	10,75
17:14	37,8	10,74
17:17	37,4	10,64
17:18	37,1	10,6
17:19	37,1	10,48

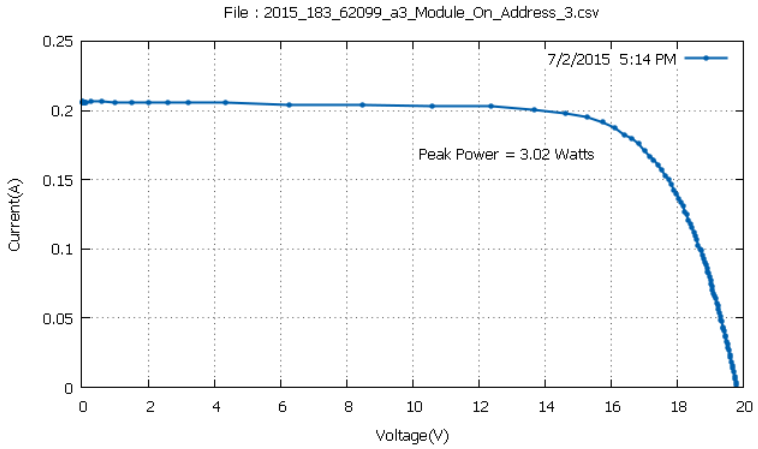
Mean Temperature: 37,55 ºC



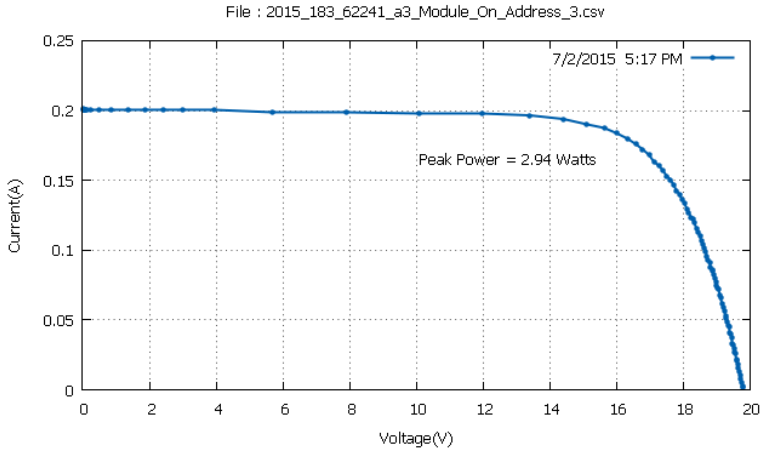
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5555248\ x\ 0.19906362}{406\ x\ 0{,}0709} \text{ x } 100 = 10{,}77\ \%$$



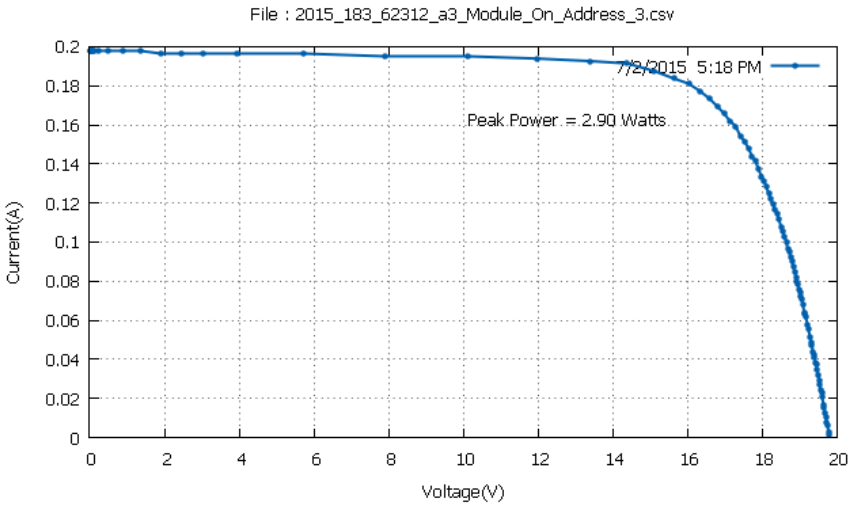
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1044521\ x\ 0.190073654}{401.5\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}75\ \%$$



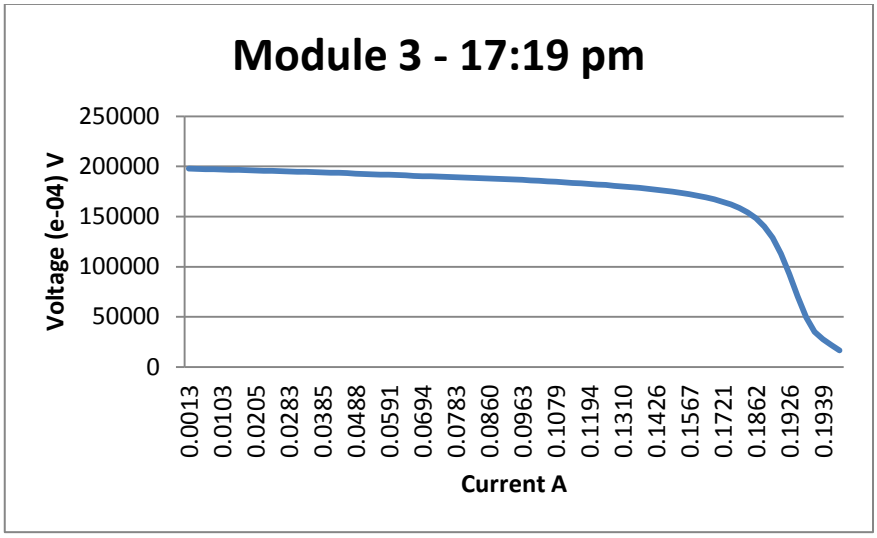
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1044521\ x\ 0.1875051}{396.5\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0039444\ x\ 0.183652252}{389.4\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}64\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.02714\ x\ 0.1810837}{385.8\ \square\ 0{,}0709} \text{ x } 100 = 10{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4755\ x\ 0.172093}{381.5\ x\ 0{,}0709} \text{ x } 100 = 10{,}48\ \%$$

Module 5

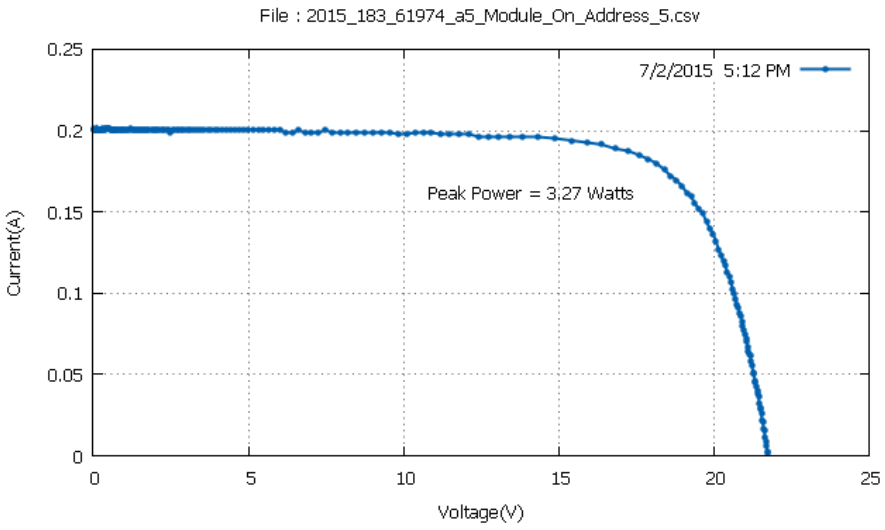
Date: 2/7/2015 – Afternoon Measurement

Temperature Ambient: 31 ºC

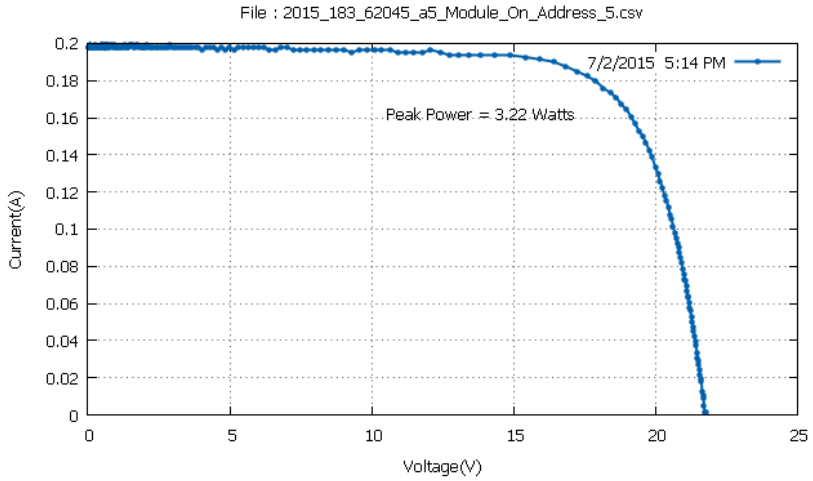
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:12	39,1	10,7
17:14	38,8	10,62
17:15	38,5	10,58
17:18	37,8	10,56
17:20	37,3	10,57
17:22	37,1	10,44

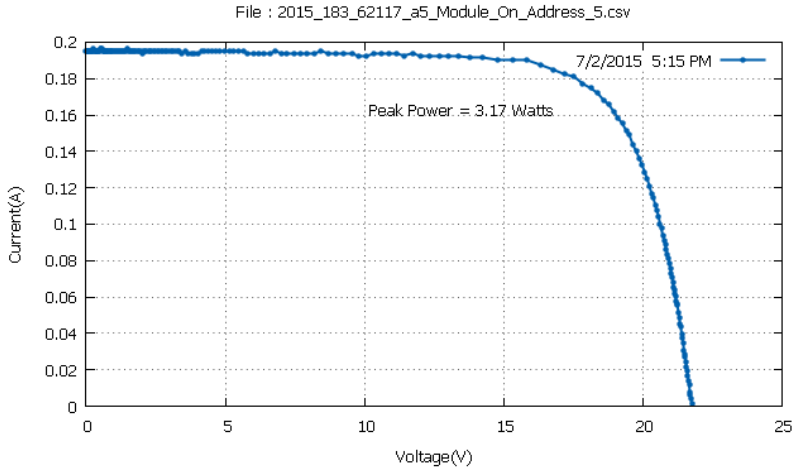
Mean Temperature: 38,1 ºC



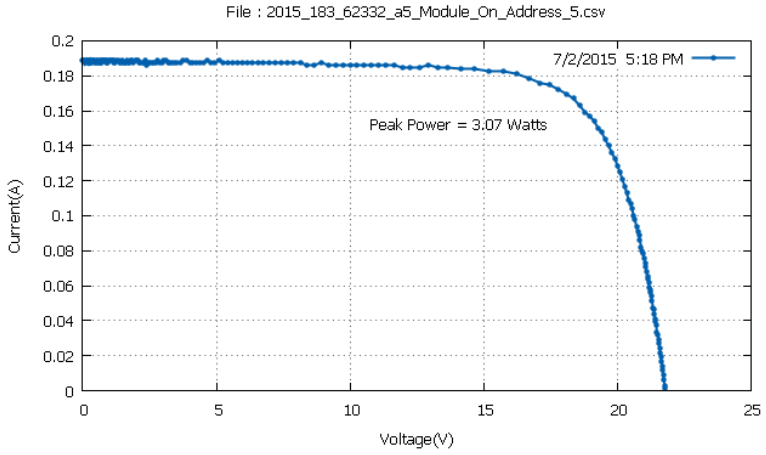
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.179799408}{404.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}7\ \%$$



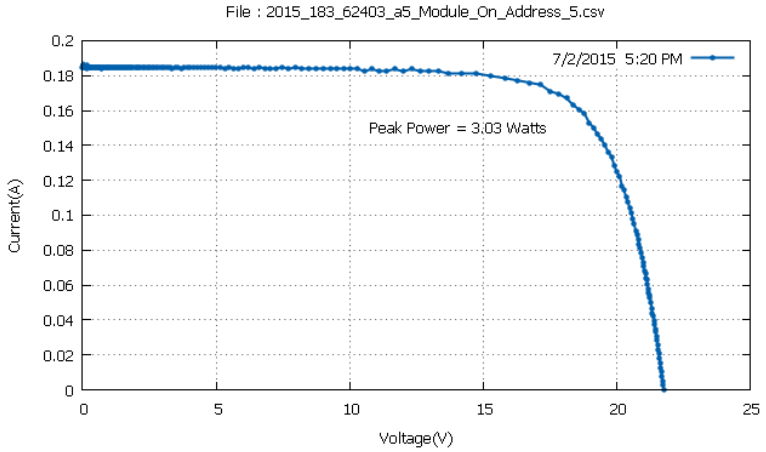
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.179799408}{400.8\ x\ 0{,}0756} \text{ x } 100 = 10{,}62\ \%$$



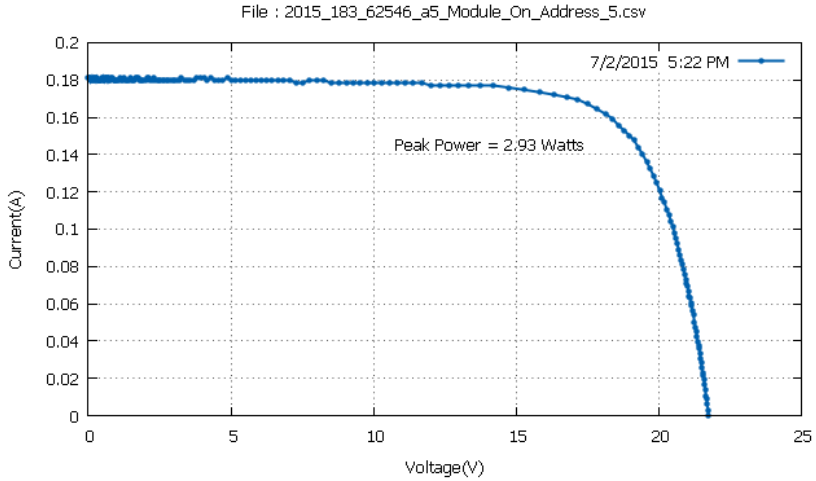
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5270252\ x\ 0.1810837}{396\ x\ 0{,}0756} \text{ x } 100 = 10{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vm\square p\ x\ Impp}{E\ x\ A} = \frac{18.1068783\ x\ 0.169525161}{384.3\ x\ 0{,}0756} \text{ x } 100 = 10{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.122341\ x\ 0.166956589}{378.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1300735\ x\ 0.16181947}{371.2\ x\ 0{,}0756} \text{ x } 100 = 10{,}44\ \%$$

Module 4

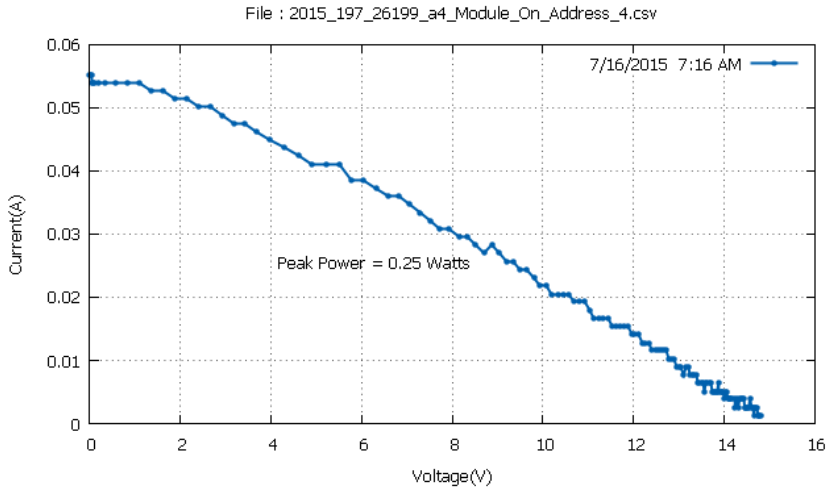
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

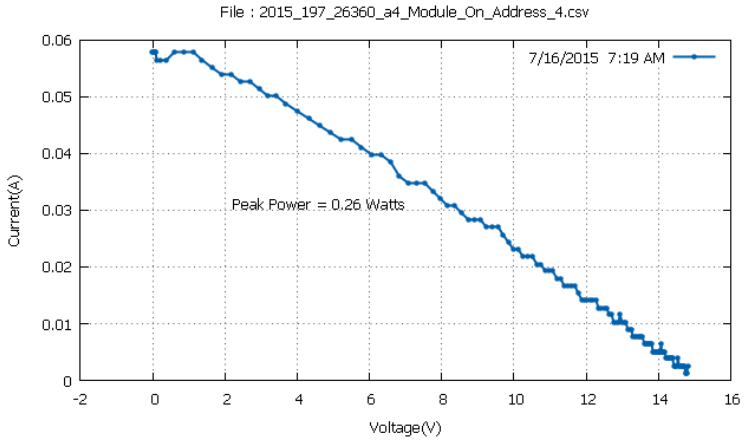
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:16	29,2	2,17
7:19	29,7	2,16
7:23	30,6	2,1
7:25	30,9	2,1
7:27	31,4	2,12
7:28	31,5	2,1

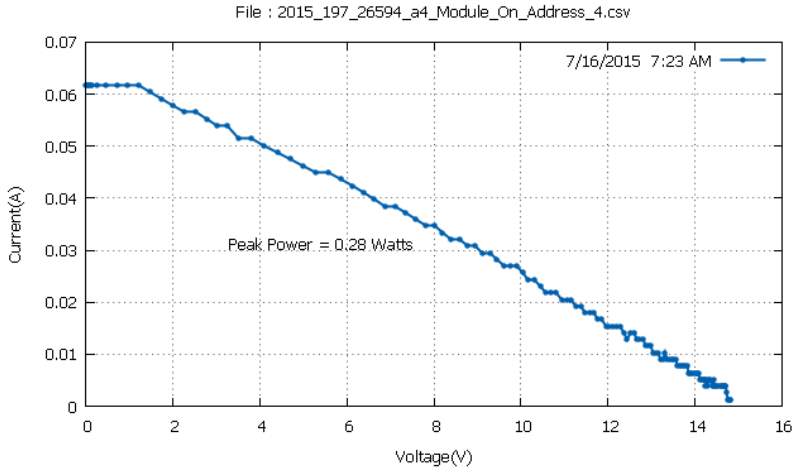
Mean Temperature: 30,55 ºC



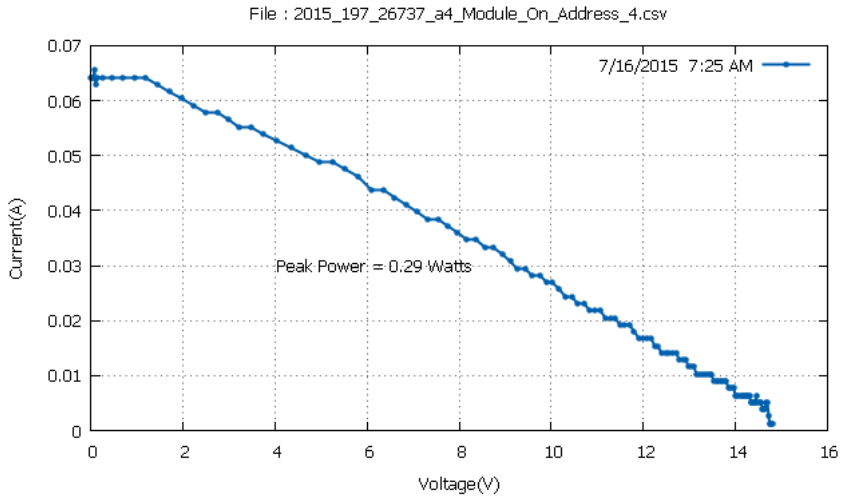
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.86788\ x\ 0.0282541923}{171.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



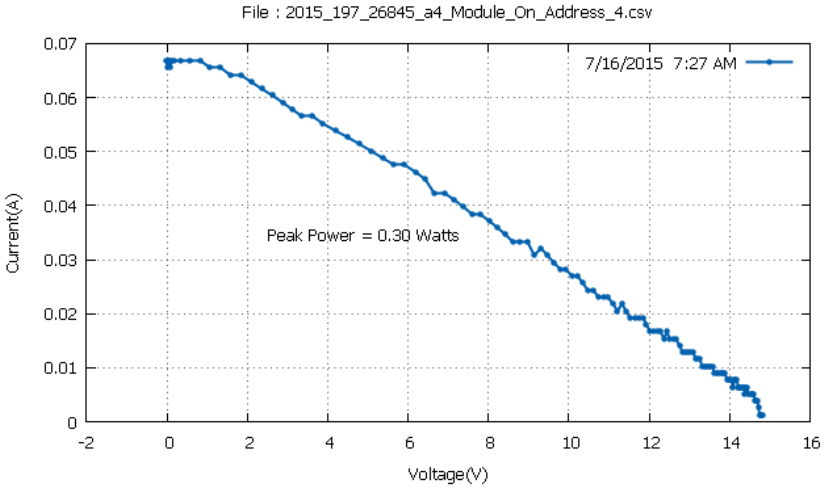
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.527706\ x\ 0.0308227558}{179.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$



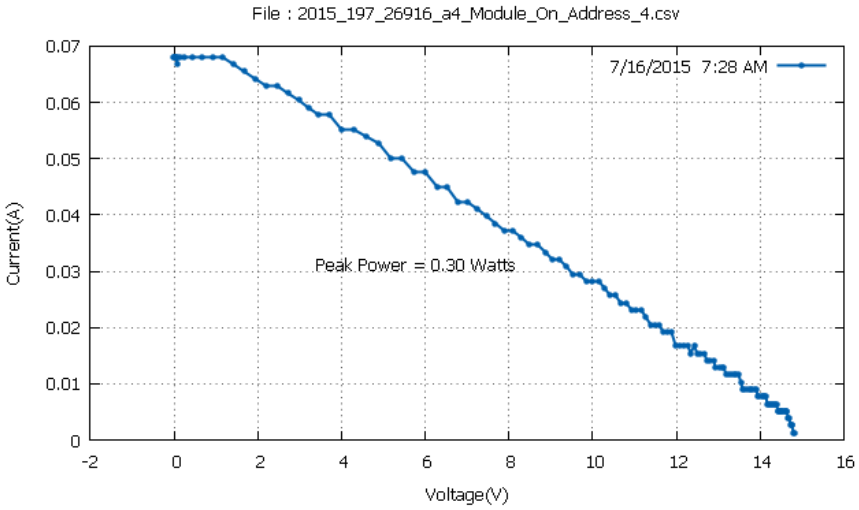
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.017435\ x\ 0.0346756019}{198.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.74418449\ x\ 0.03339132}{205.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.8009567\ x\ 0.0385284461}{210.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.63086653\ x\ 0.039812725}{212\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$

Module 8

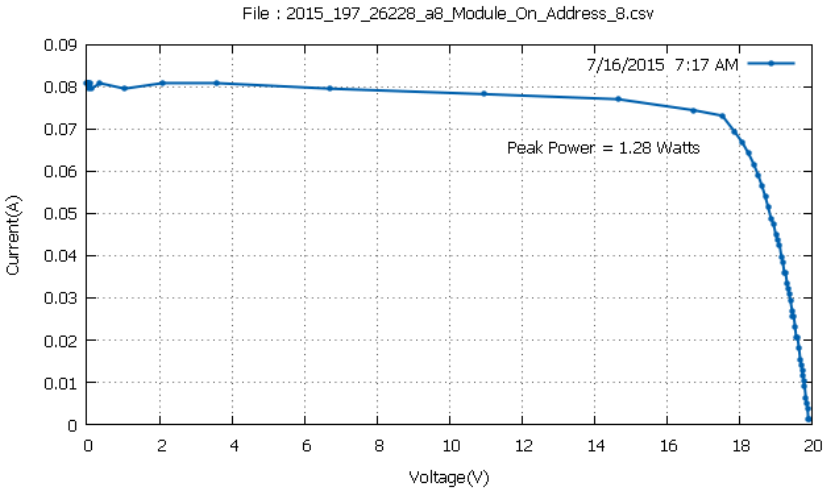
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

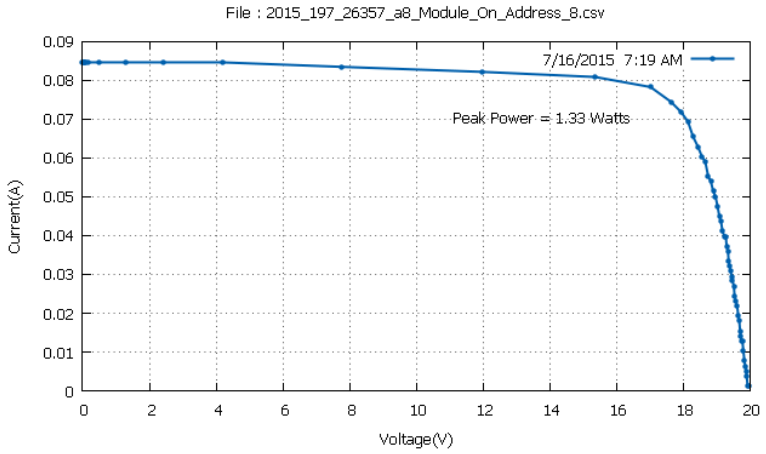
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:17	28,5	9,64
7:19	28,8	9,6
7:23	29,6	9,74
7:25	29,9	9,83
7:27	30,3	9,97
7:28	30,4	10,33

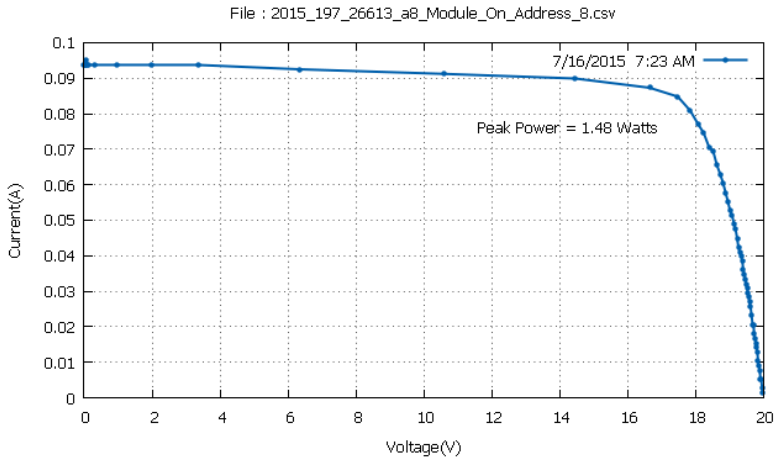
Mean Temperature: 29,58 ºC



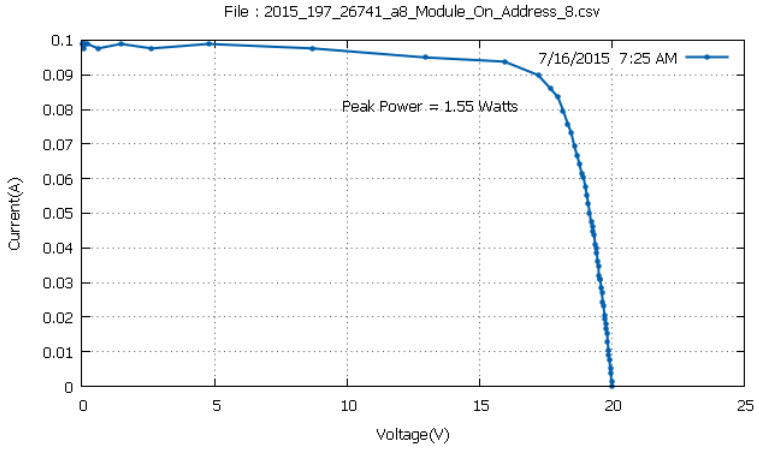
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5270252\ x\ 0.07320405}{172.9\ x\ 0{,}0768} \text{ x } 100 = 9{,}64\ \%$$



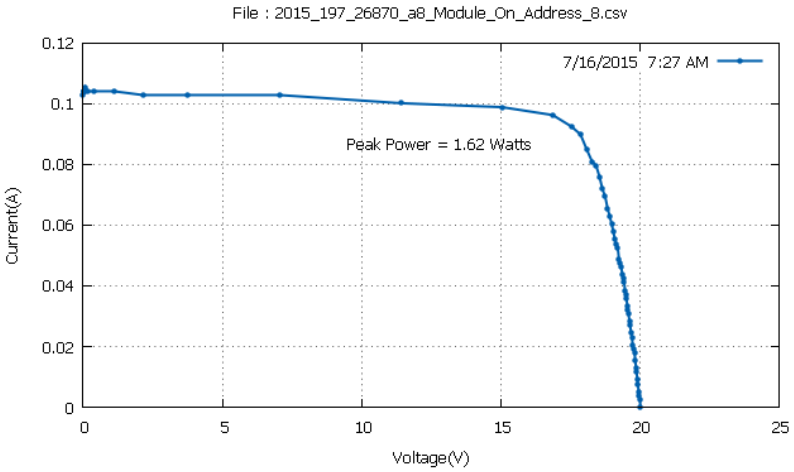
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0167542\ x\ 0.07834117}{180.3\ x\ 0{,}0768}\ \text{x}\ 100 = 9{,}6\ \%$$



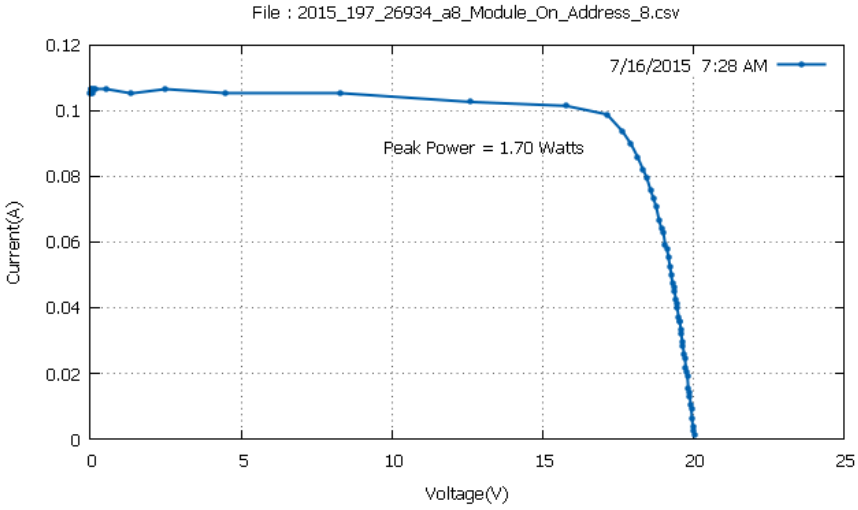
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4729061\ x\ 0.08476258}{197.7\ x\ 0{,}0768}\ \text{x}\ 100 = 9{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.217771\ x\ 0.089899703}{205.3\ x\ 0{,}0768}\ \text{x}\ 100 = 9{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.86986\ x\ 0.0963211}{211.5\ x\ 0{,}0768} \text{ x } 100 = 9{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.140457\ x\ 0.0988896}{214.3\ x\ 0{,}0768} \text{ x } 100 = 10{,}33\ \%$$

Module 3

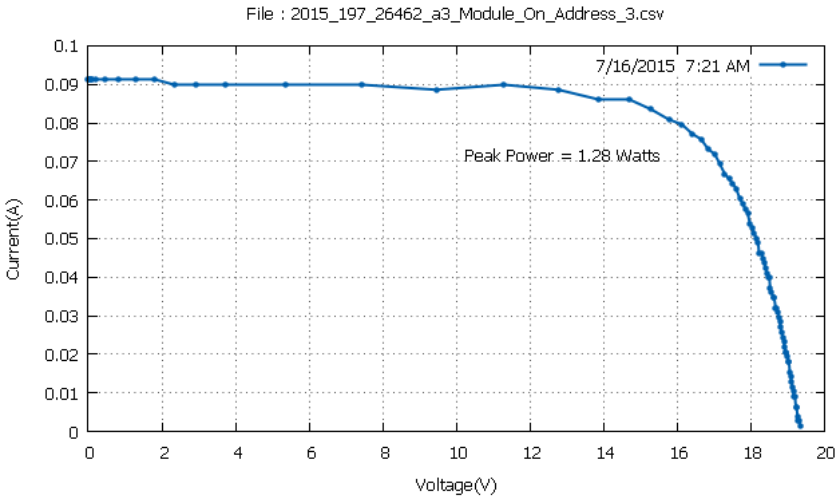
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

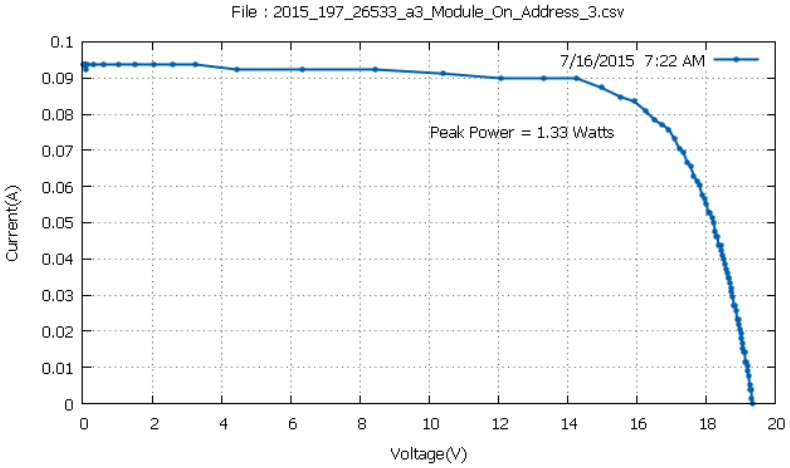
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:21	29,7	9,62
7:22	29,9	9,76
7:24	30,3	9,74
7:25	30,5	9,81
7:26	30,6	10,06
7:29	31,2	10,3

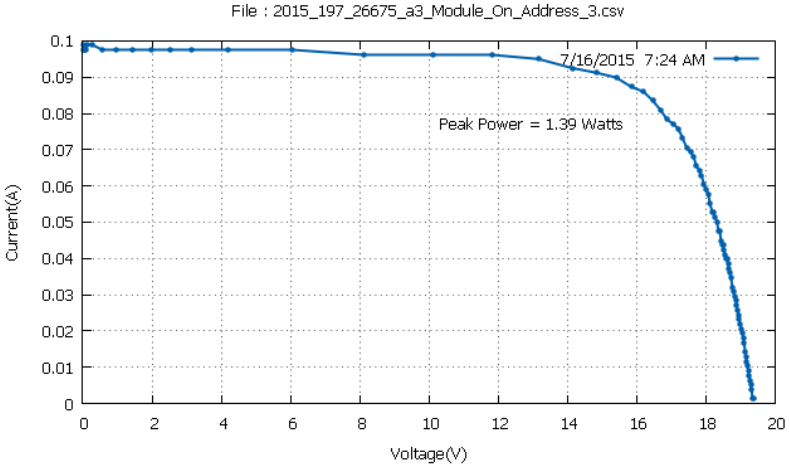
Mean Temperature: 30,36 ºC



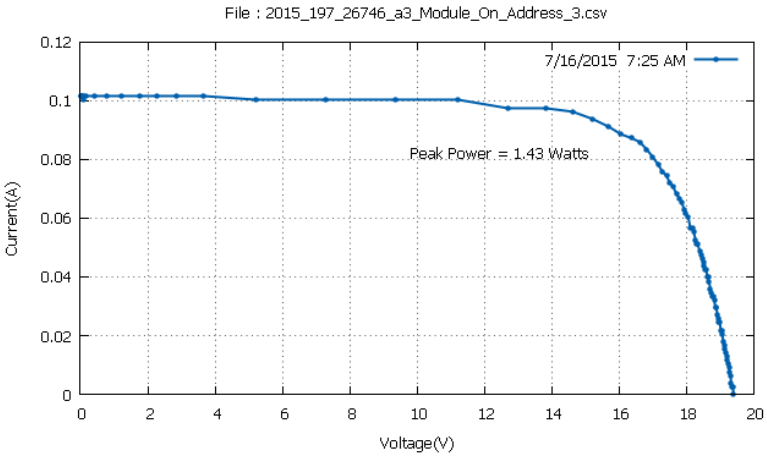
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1276474\ x\ 0.07962545}{187.6\ x\ 0{,}0709}$ x 100 = 9,62 %



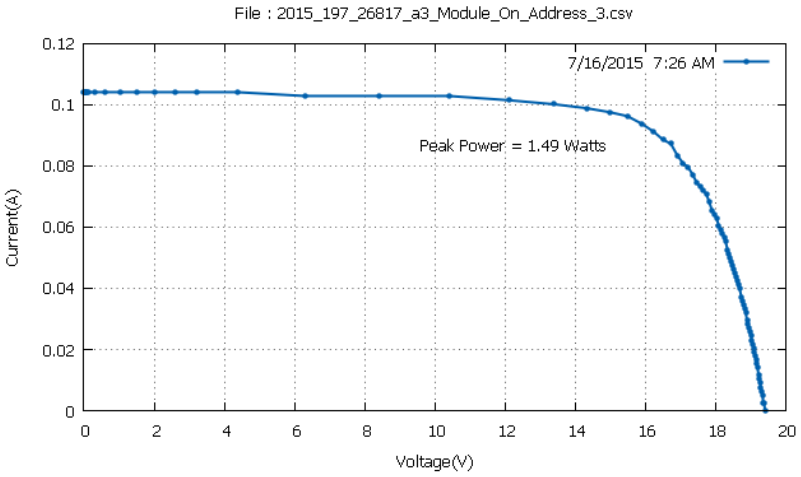
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9343624\ x\ 0.0834782943}{192.2\ x\ 0{,}0709} \text{ x } 100 = 9{,}76\ \%$$



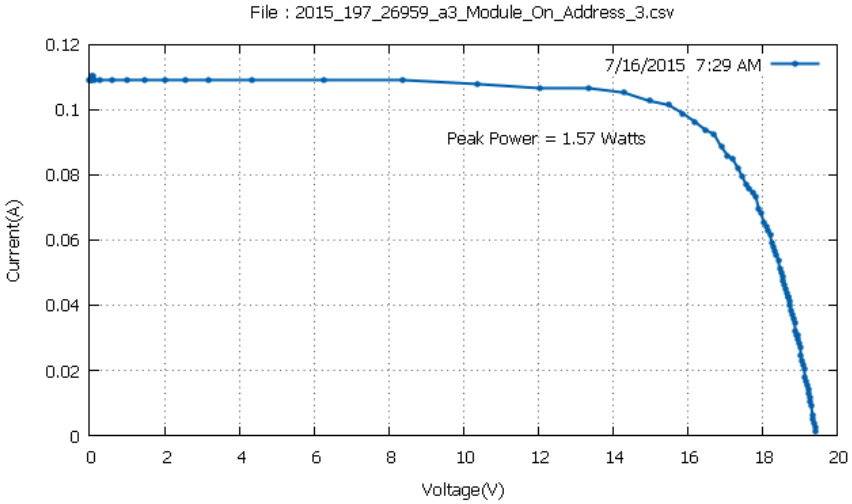
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.19723\ x\ 0.08604686}{201.2\ x\ 0{,}0709} \text{ x } 100 = 9{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.686958\ x\ 0.0911839}{205.5\ x\ 0{,}0709} \text{ x } 100 = 9{,}81\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4859428\ x\ 0.09632111}{208.9\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4859428\ x\ 0.101458237}{215.1\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}3\ \%$$

Module 5

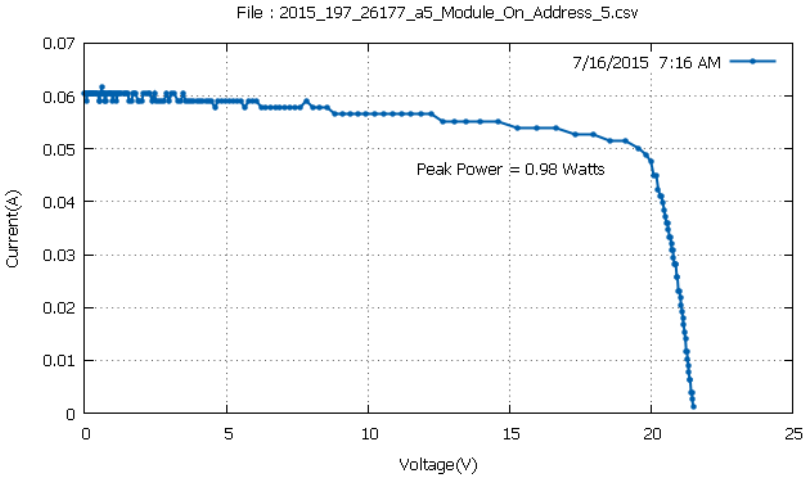
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

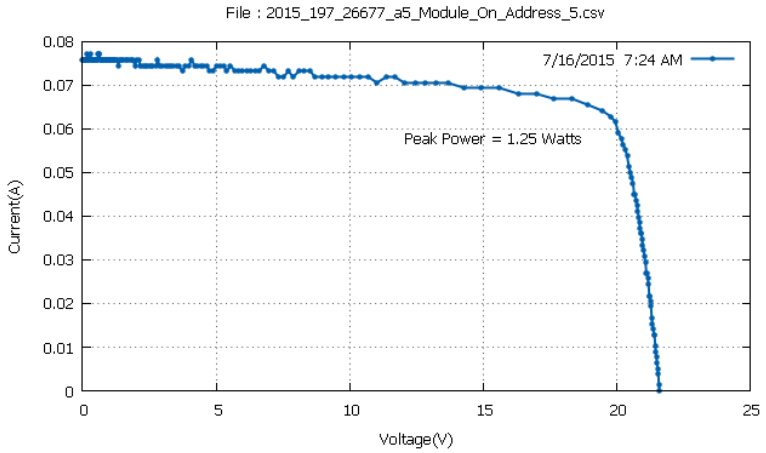
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:16	27,3	7,59
7:24	28,4	8,21
7:25	28,7	8,54
7:26	28,8	8,85
7:29	29,4	9,25
7:30	29,6	9,44

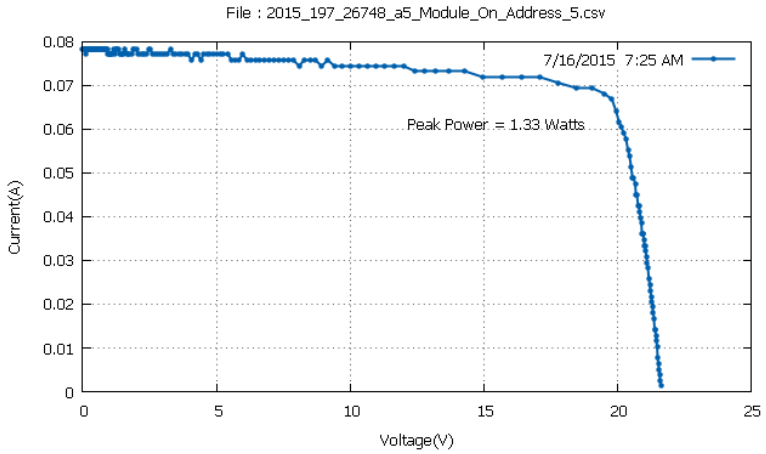
Mean Temperature: 28,7 ºC



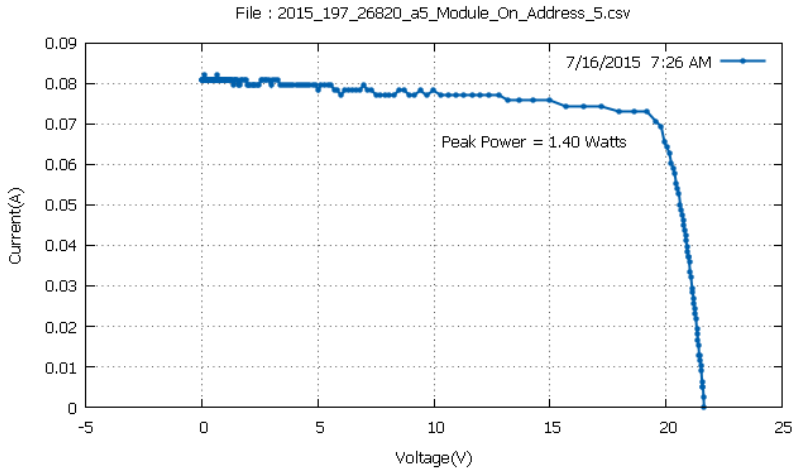
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1119576\ x\ 0.05137126}{170.7\ x\ 0{,}0756} \text{ x } 100 = 7{,}59\ \%$$



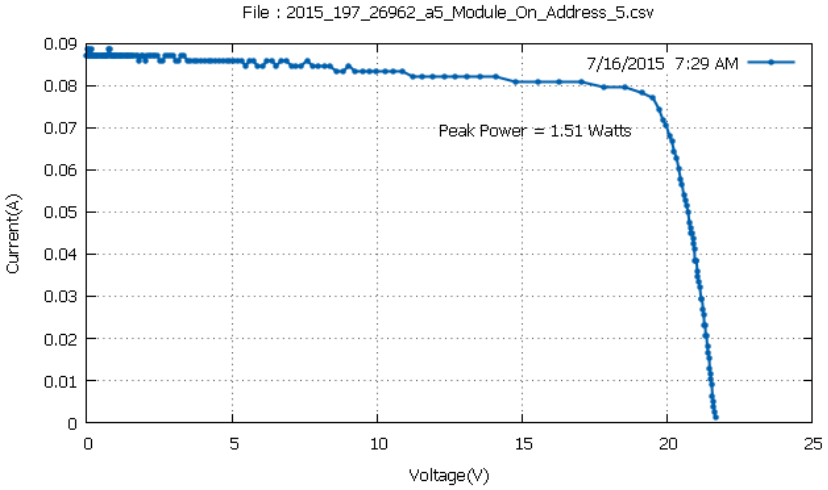
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.452137\ x\ 0.06421407}{201.2\ x\ 0{,}0756}\ \text{x}\ 100 = 8{,}21\ \%$$



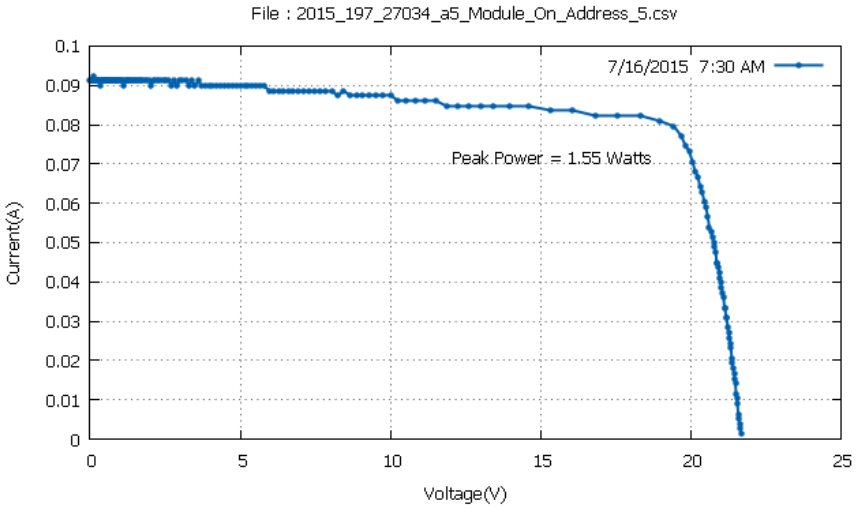
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.5294514\ x\ 0.06806692}{205.8\ x\ 0{,}0756}\ \text{x}\ 100 = 8{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.18154\ x\ 0.07320409}{209.1\ x\ 0{,}0756}\ \text{x}\ 100 = 8{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E \square A} = \frac{19.52172\ x\ 0.07705689}{215.1\ x\ 0{,}0756} \text{ x } 100 = 9{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.436676\ x\ 0.07962545}{217\ x\ 0{,}0756} \text{ x } 100 = 9{,}44\ \%$$

Module 4

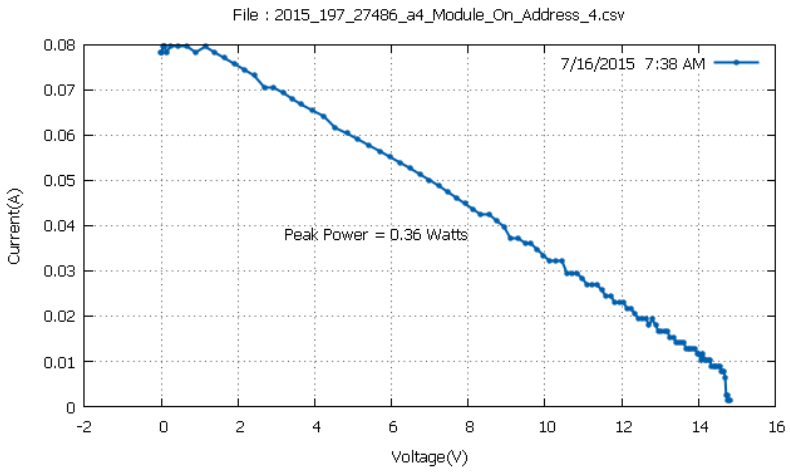
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

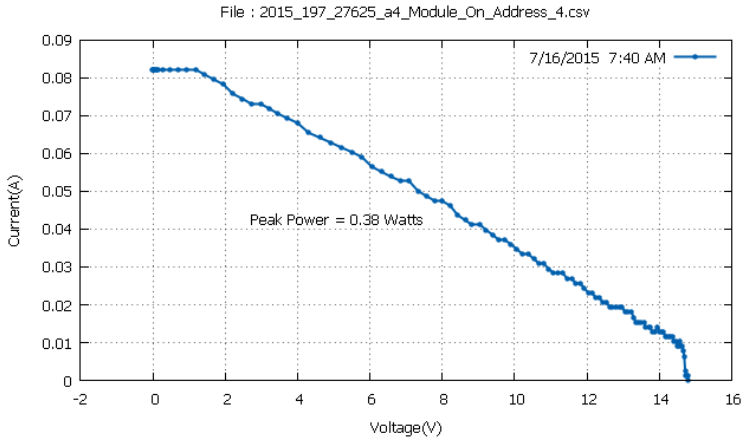
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:38	30,9	2,27
7:40	31,1	2,32
7:41	31,3	2,3
7:42	31,4	2,31
7:45	31,7	2,25
7:46	31,7	2,15

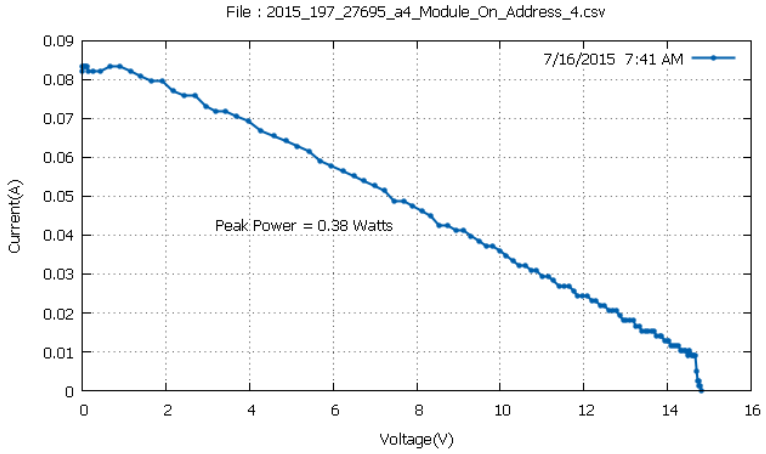
Mean Temperature: 31,35 ºC



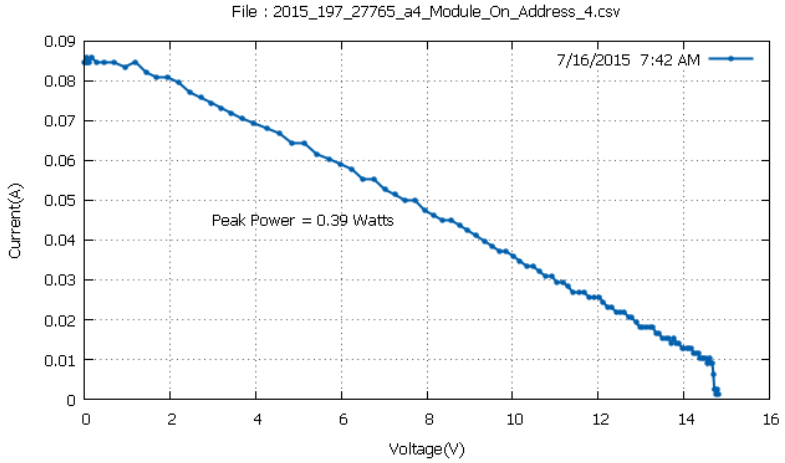
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.535438\ x\ 0.04238129}{235.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}27\ \%$$



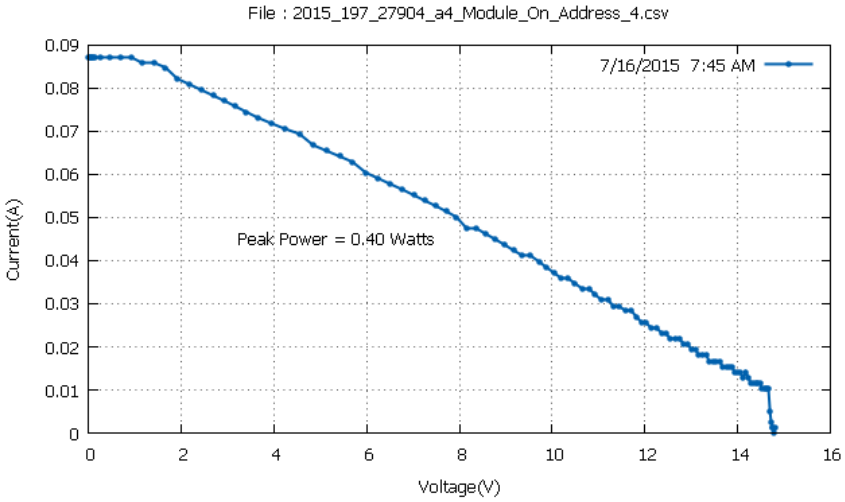
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.001972\ x\ 0.0475184135}{243.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}32\ \%$$



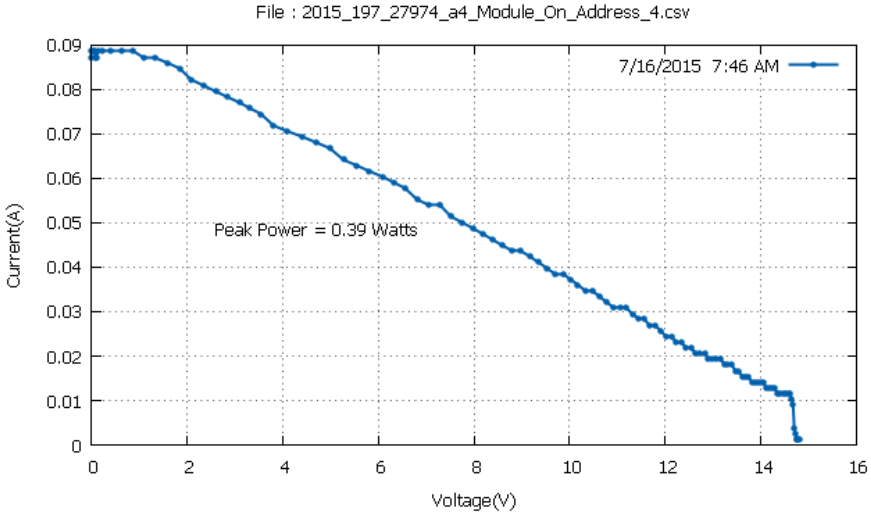
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.22353\ x\ 0.041097007}{245.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1566\ x\ 0.0475184135}{250.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.36534\ x\ 0.047518413}{264.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.290686\ x\ 0.0539398231}{269.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}15\ \%$$

Module 8

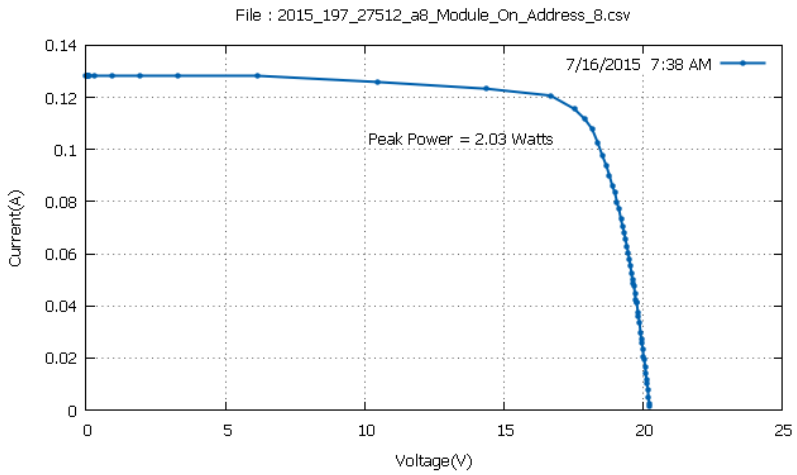
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

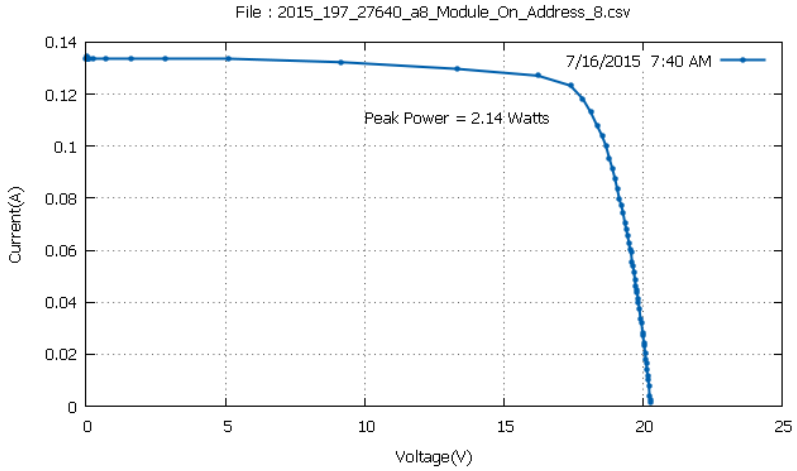
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:38	30,3	11,14
7:40	30,4	11,4
7:41	30,5	11,35
7:42	30,6	11,37
7:44	30,7	11,31
7:46	31	11,42

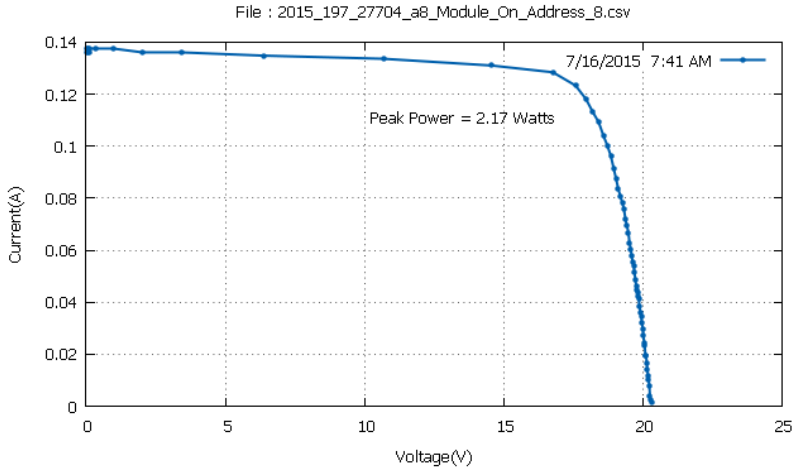
Mean Temperature: 30,58 ºC



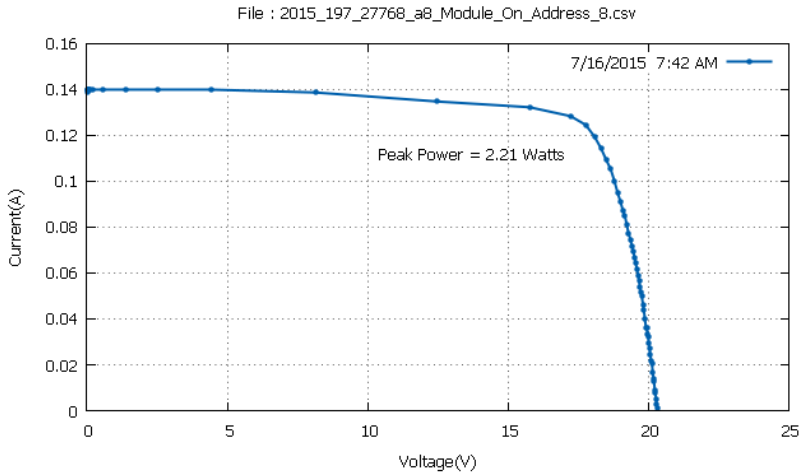
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5347576\ x\ 0.115585335}{237.2\ x\ 0{,}0768}$ x 100 = 11,14 %



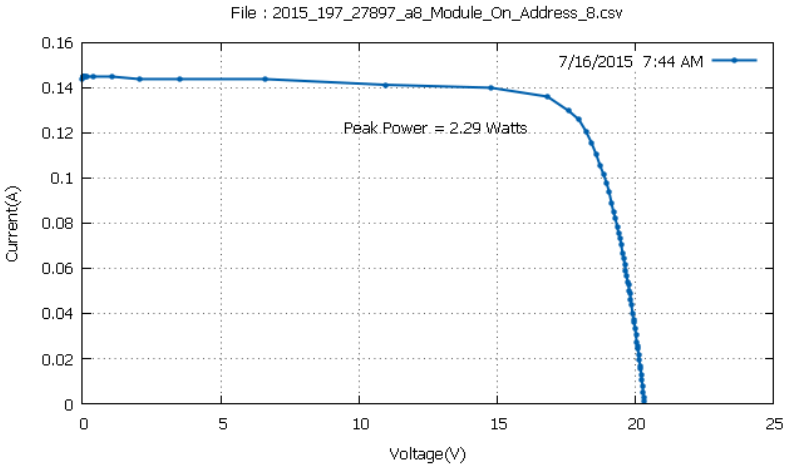
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3955917\ x\ 0.123291023}{244.6\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}4\ \%$$



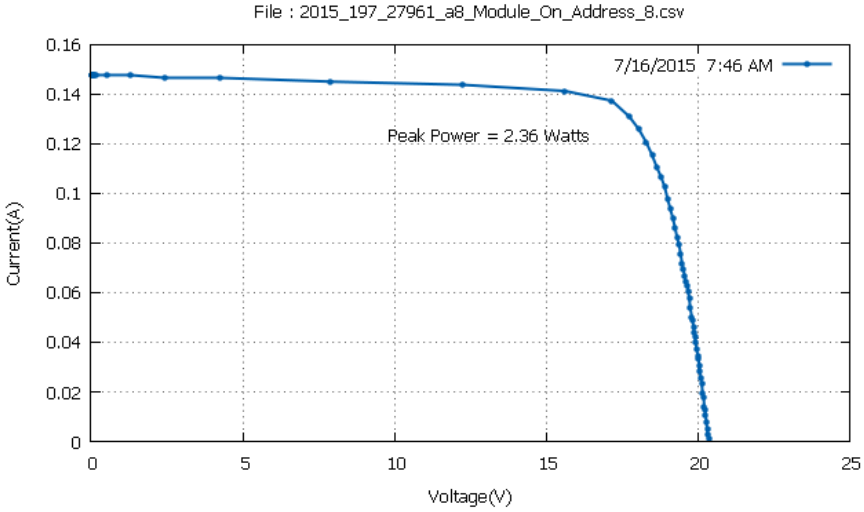
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5811443\ x\ 0.123291023}{248.9\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7666988\ x\ 0.1245753}{253\ x\ 0{,}0768}\ \text{x}\ 100 = 11{,}37\ \%$$



$$n = \frac{P\square ut}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8312016\ x\ 0.136133835}{263.5\ x\ 0{,}0768}\ \text{x } 100 = 11{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1636\ x\ 0.13741812}{268.9\ x\ 0{,}0768}\ \text{x } 100 = 11{,}42\ \%$$

Module 3

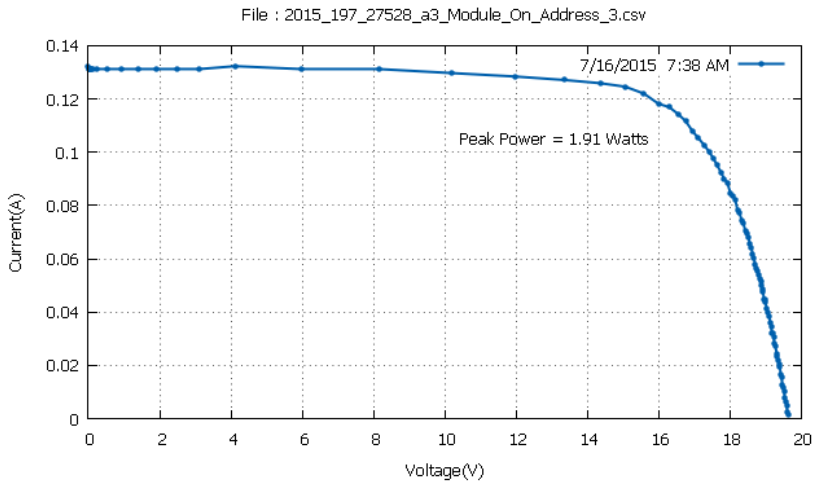
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

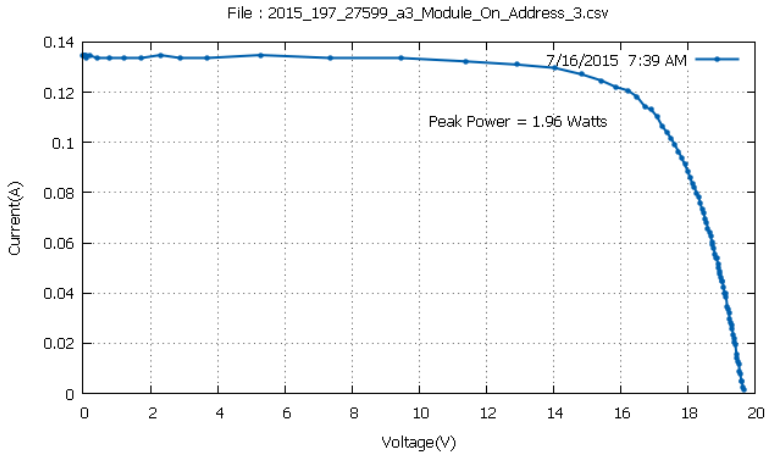
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:38	30,9	11,32
7:39	31	11,41
7:41	31,1	11,46
7:43	31,4	11,51
7:44	31,6	11,46
7:45	31,8	11,35

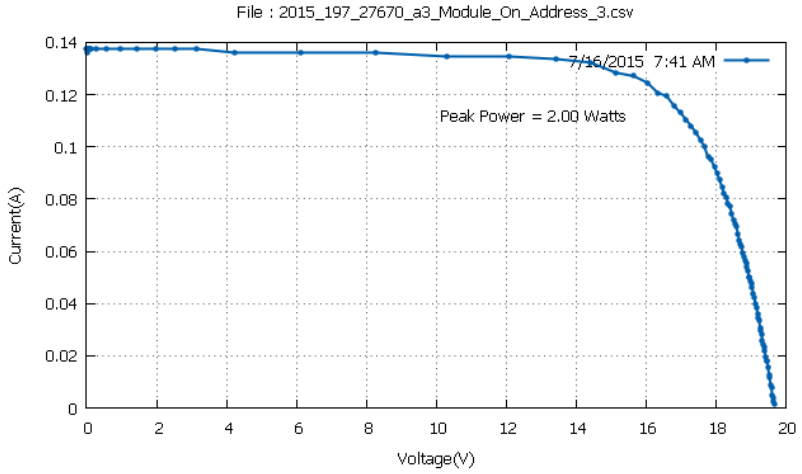
Mean Temperature: 31,3 ºC



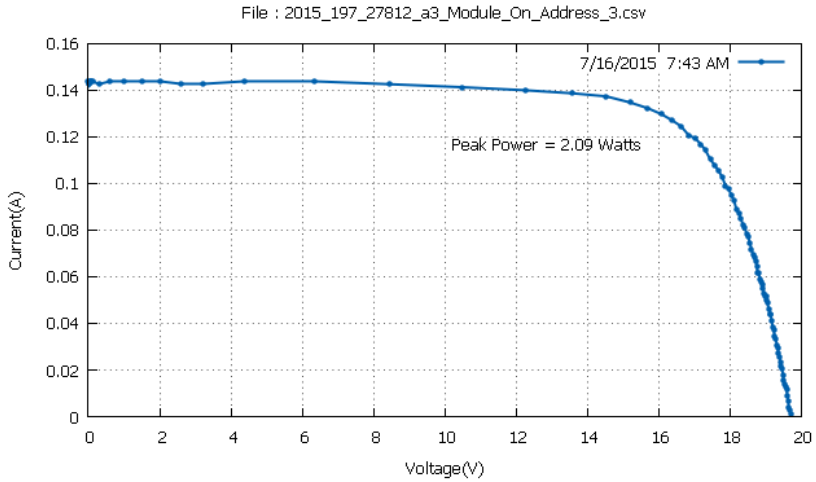
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.297737\ x\ 0.11686961}{238\ x\ 0{,}0709} \text{ x } 100 = 11{,}32\ \%$$



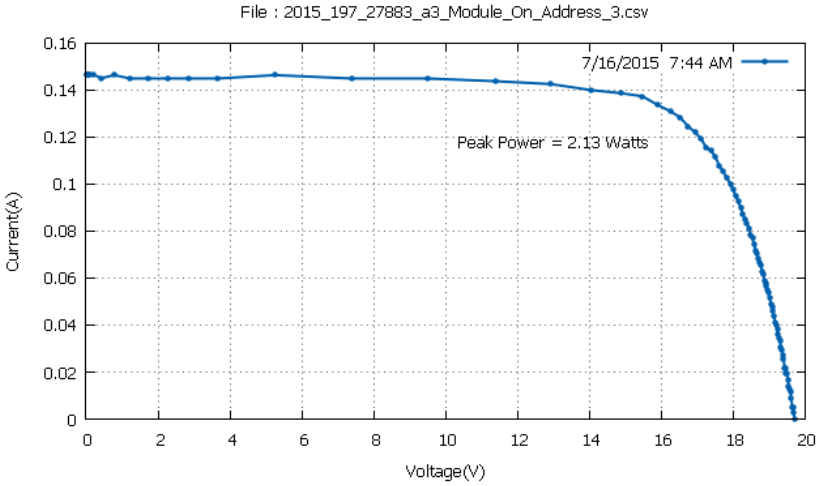
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2204227\ x\ 0.120722458}{242.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}41\ \%$$



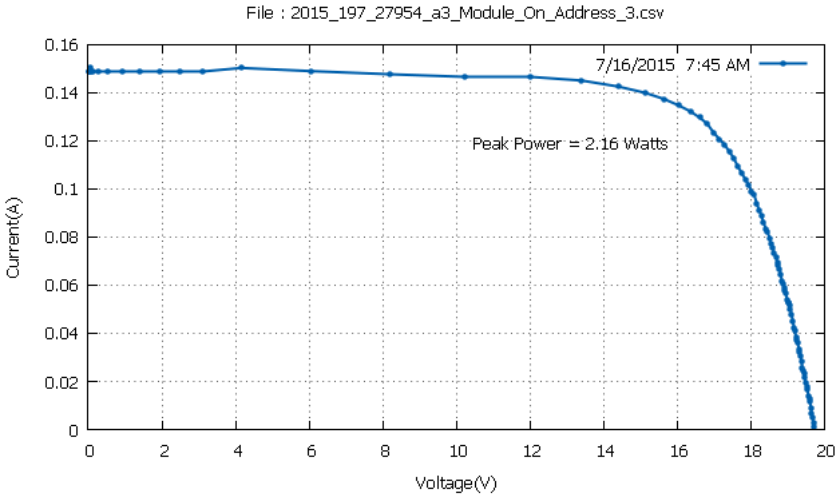
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.03487\ x\ 0.1245753}{246.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.129712433}{256.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.130996719}{262\ x\ 0{,}0709} \text{ x } 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3518562\ x\ 0.1322809}{268.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}35\ \%$$

Module 5

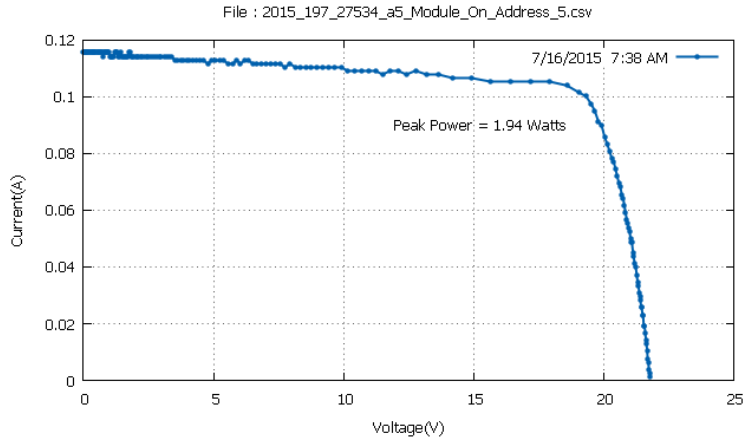
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

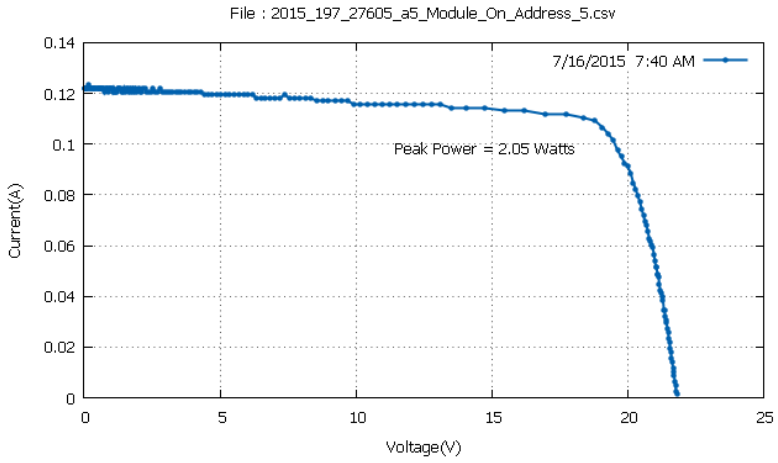
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:38	30,5	10,77
7:40	30,7	11,18
7:41	30,8	11,43
7:43	31	11,53
7:44	31,2	11,46
7:46	31,5	11,54

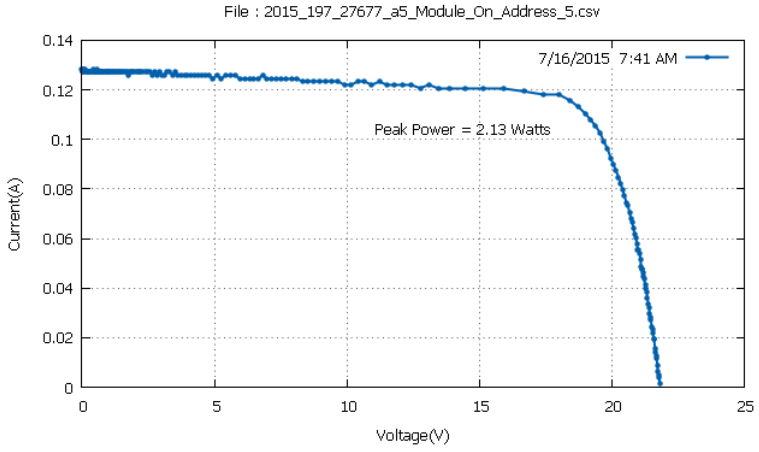
Mean Temperature: 30,95 ºC



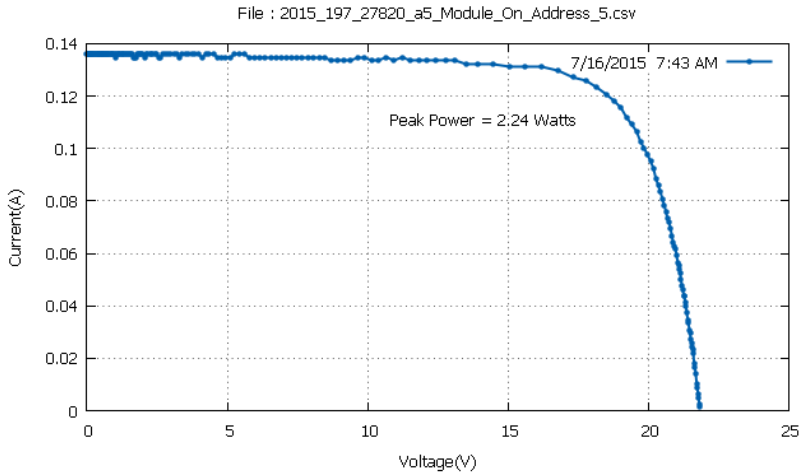
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.3207054\ x\ 0.100173958}{238.2\ x\ 0{,}0756} \text{ x } 100 = 10{,}77\ \%$$



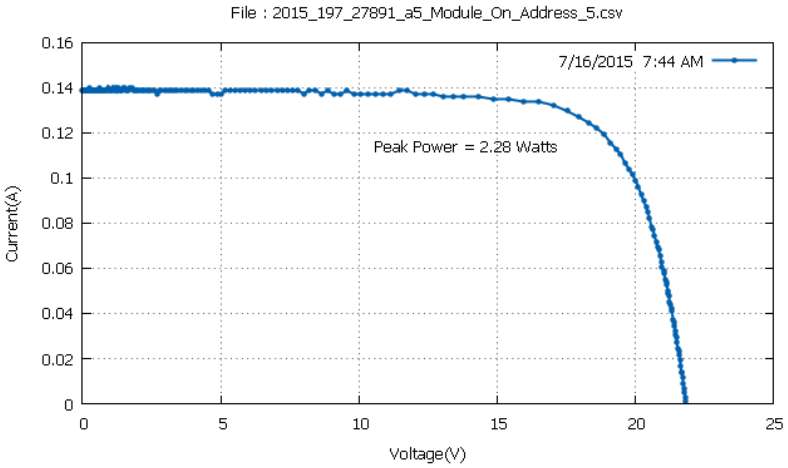
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.802702\ x\ 0.10916392}{242.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}18\ \%$$



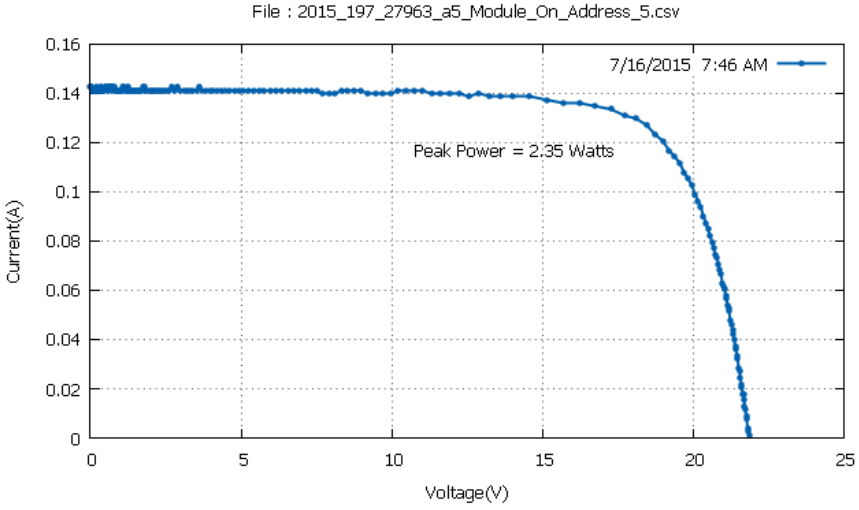
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4393272\ x\ 0.115585335}{246.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.161\ x\ 0.123291023}{256.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}53\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9522514\ x\ 0.127143875}{263\ x\ 0{,}0756}\ \text{x } 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.11461\ x\ 0.12971243}{269.2\ x\ 0{,}0756}\ \text{x } 100 = 11{,}54\ \%$$

Module 4

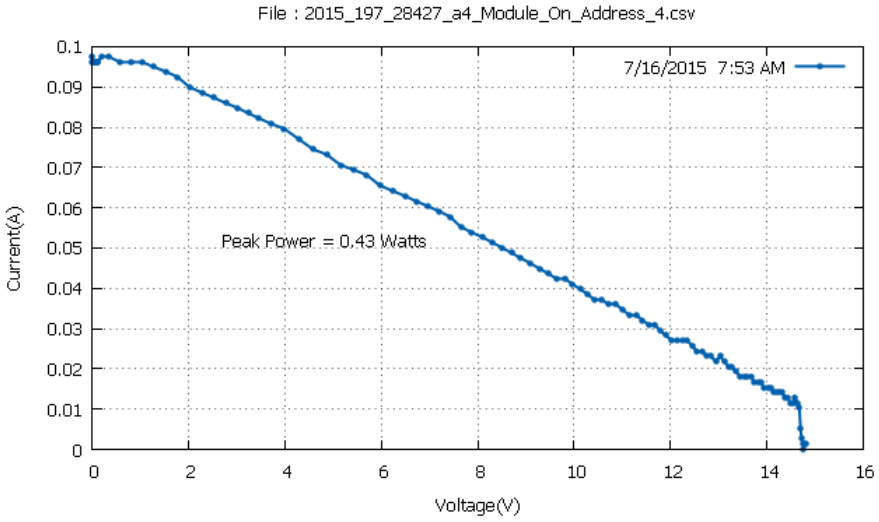
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

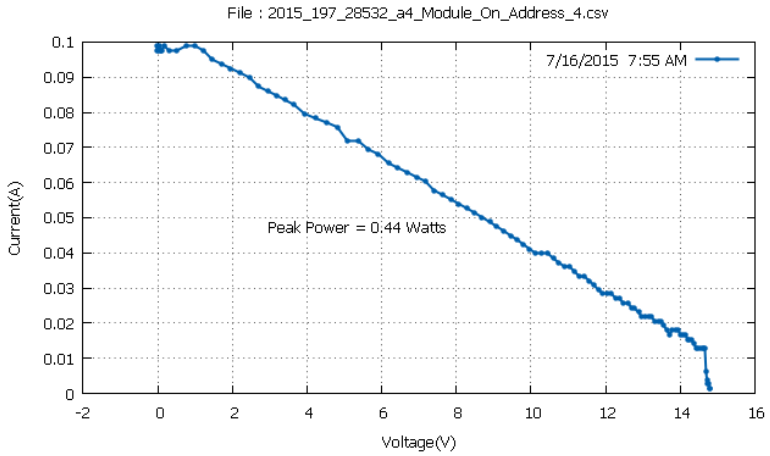
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:53	32,4	2,2
7:55	32,6	2,21
7:57	32,7	2,22
7:58	32,8	2,24
8:00	32,9	2,25
8:01	33	2,22

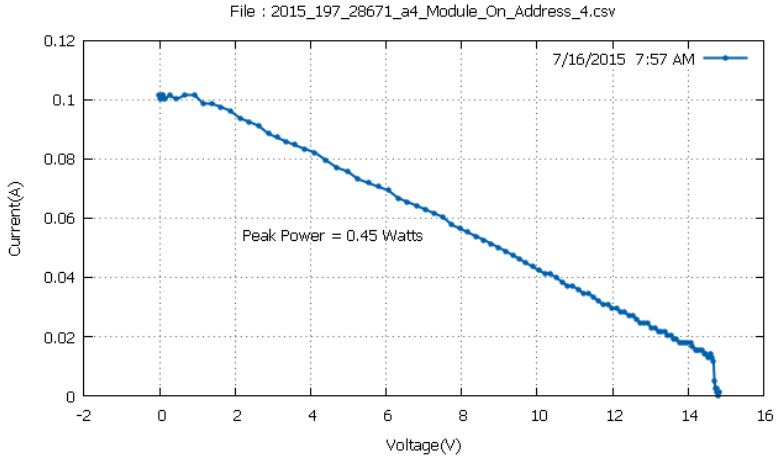
Mean Temperature: 32,73 ºC



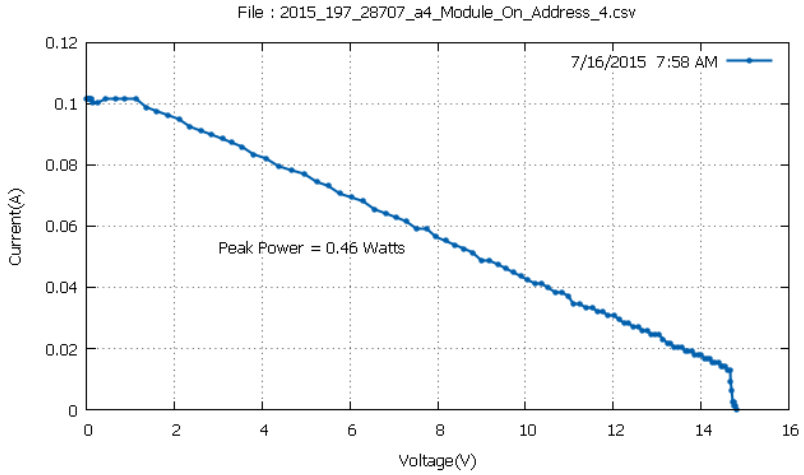
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.30084\ x\ 0.0462341346}{290.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



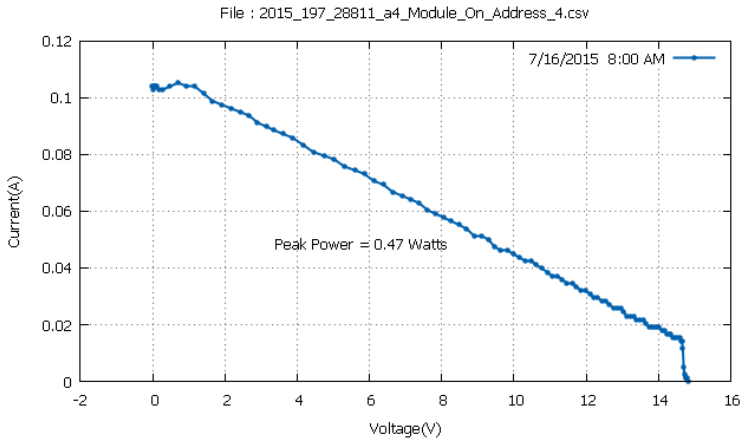
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.836961\ x\ 0.05008698}{296.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



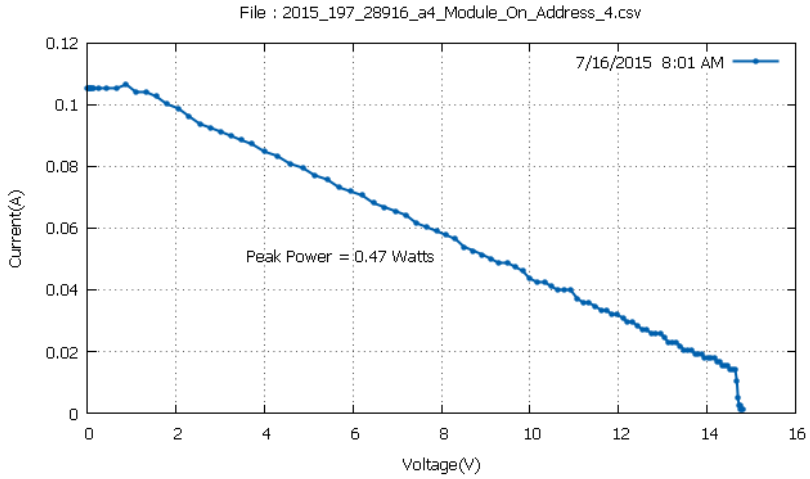
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.32669\ x\ 0.0539398231}{301.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.7391057\ x\ 0.05907695}{305\ x\ 0{,}0671} \text{ x } 100 = 2{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.682333\ x\ 0.0539398231}{310.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.922006\ x\ 0.05265554}{314.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}22\ \%$$

Module 8

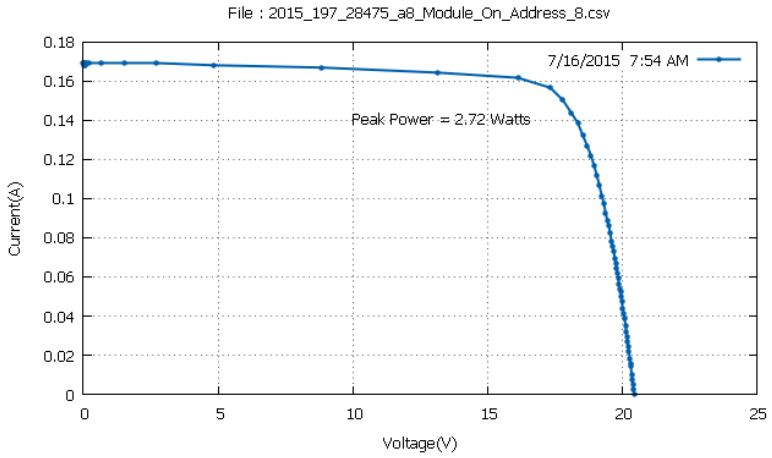
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

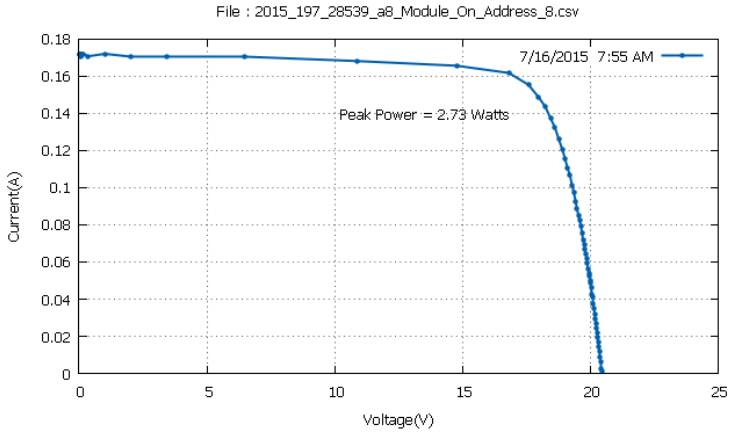
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:54	31,5	12,07
7:55	31,6	12,01
7:57	31,6	12,16
7:58	31,7	12,23
7:59	31,7	12,4
8:02	32	12,3

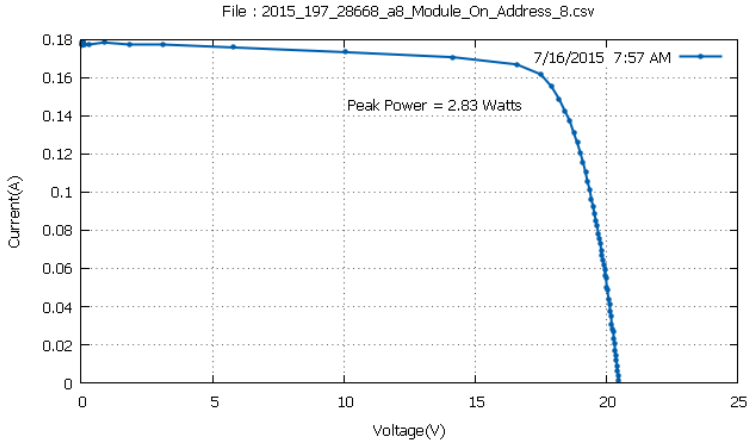
Mean Temperature: 31,68 ºC



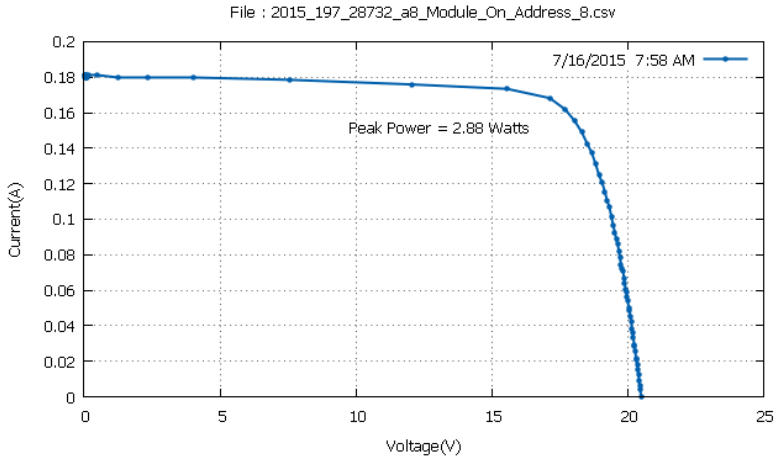
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3337421\ x\ 0.156682342}{293.3\ x\ 0{,}0768} \text{ x } 100 = 12{,}07\ \%$$



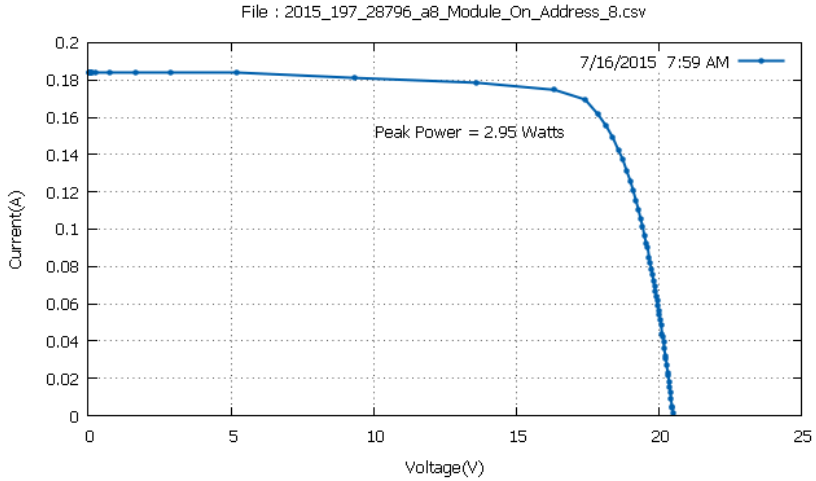
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5811443\ x\ 0.155398056}{295.9\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}01\ \%$$



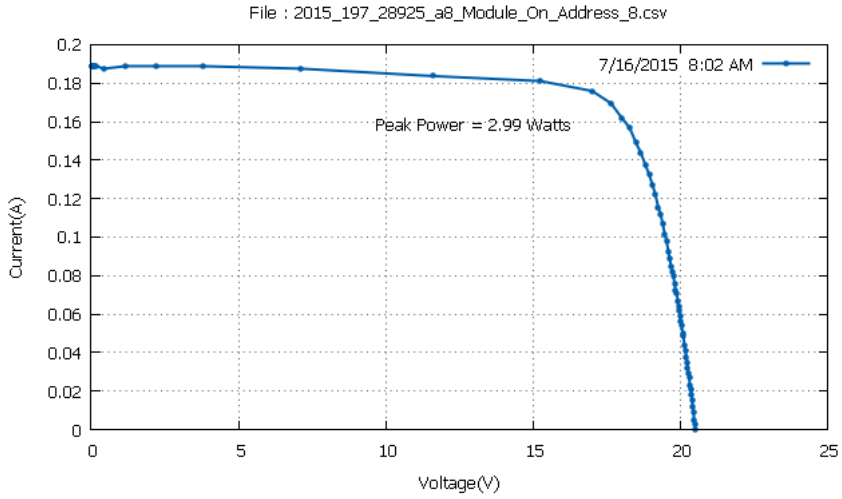
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5115623\ x\ 0.161819473}{303\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.132724\ x\ 0.168240875}{306.4\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.418787\ x\ 0.169525161}{309.7\ x\ 0{,}0768}\ \text{x } 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0090237\ x\ 0.175946563}{316.4\ x\ 0{,}0768}\ \text{x } 100 = 12{,}3\ \%$$

Module 3

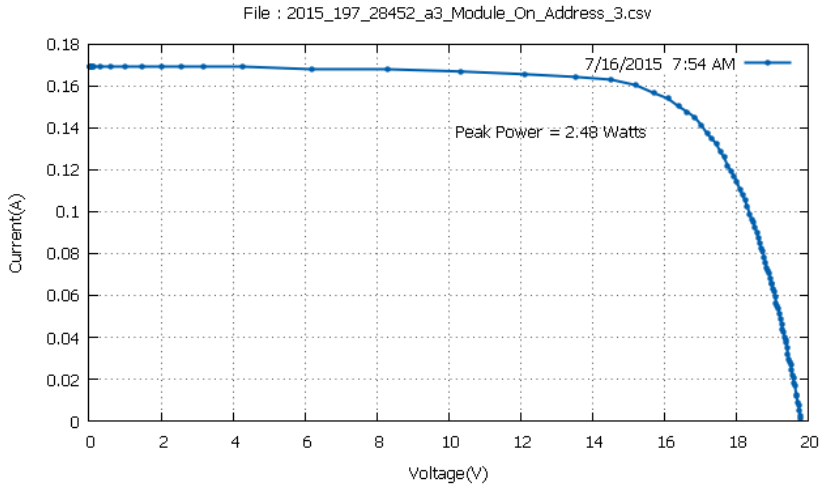
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

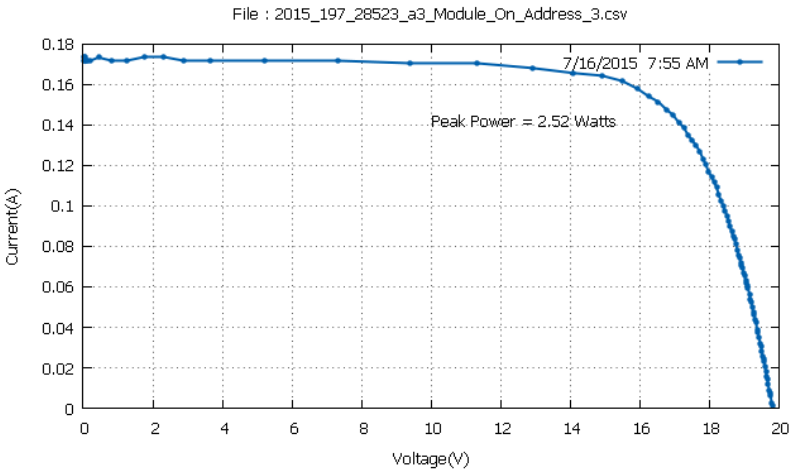
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:54	32,7	11,96
7:55	32,8	12,03
7:57	32,8	12,13
7:58	32,8	12,28
8:00	32,9	12,27
8:02	33,1	12,42

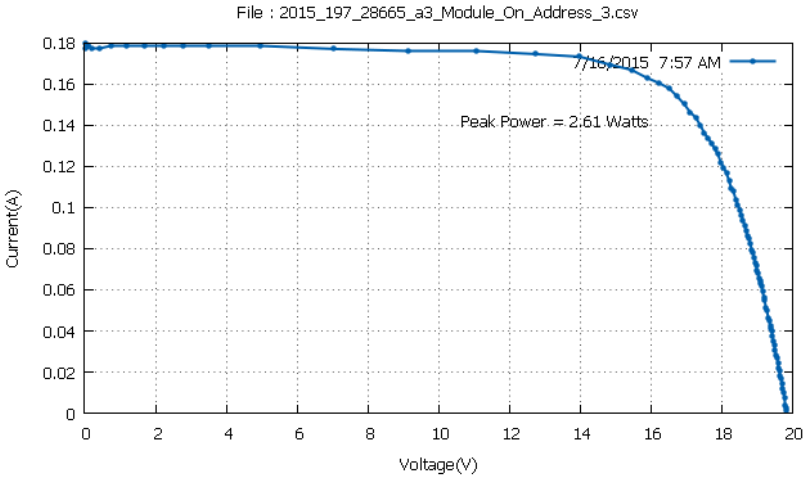
Mean Temperature: 32,85 ºC



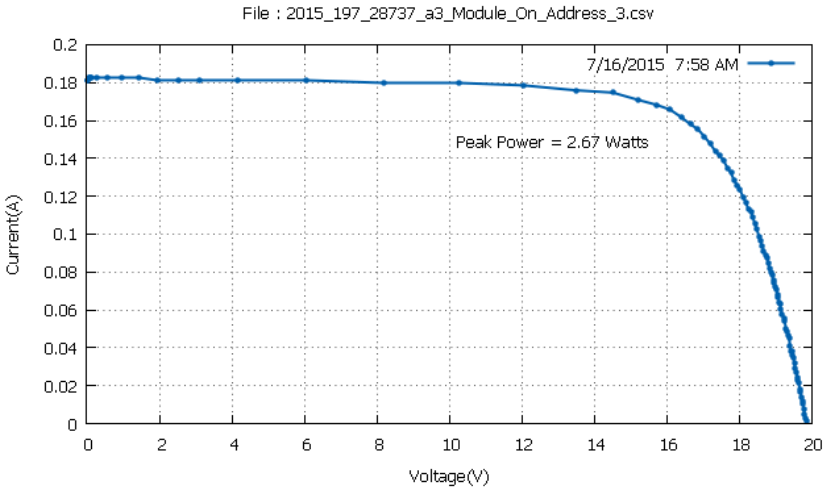
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967216\ x\ 0.154113784}{292.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}96\ \%$$



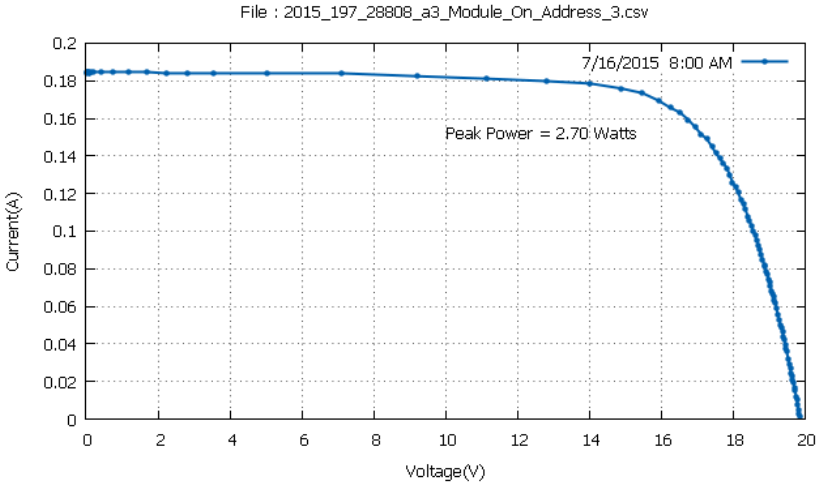
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.926631\ x\ 0.157966629}{295.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}03\ \%$$



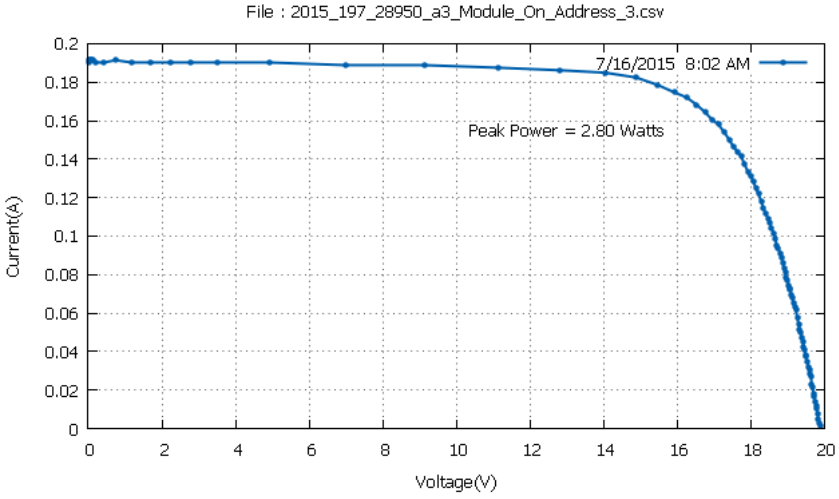
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5142155\ x\ 0.157966629}{303.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.08899\ x\ 0.165672317}{306.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.918\ x\ 0.16952516}{310.2\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}27\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2513485\ x\ 0.17209371}{317.8\ x\ 0{,}0709}\ \text{x}\ 100 = 12{,}42\ \%$$

Module 5

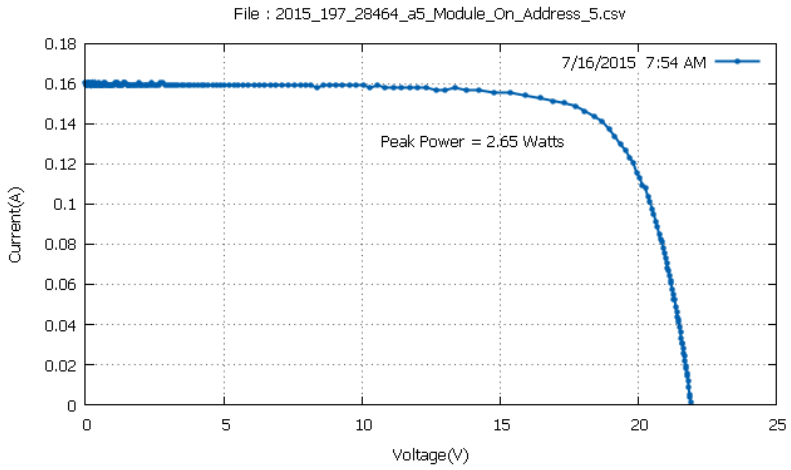
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

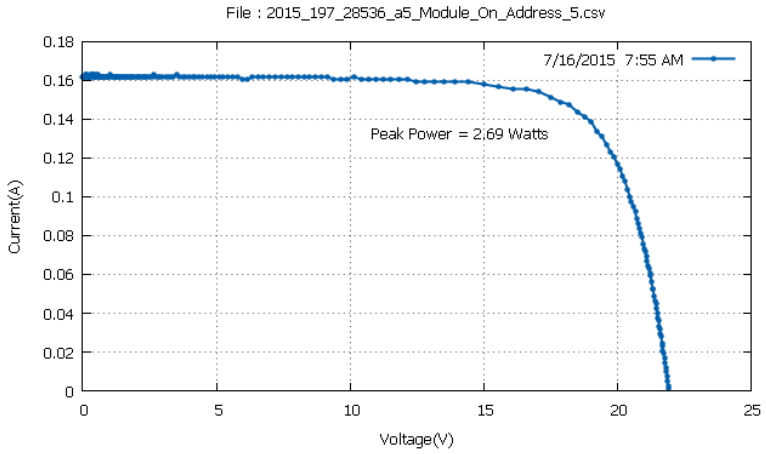
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:54	32,5	11,98
7:55	32,6	12,03
7:57	32,7	12,1
7:59	33	12,18
8:00	33,1	12,25
8:02	33,3	12,24

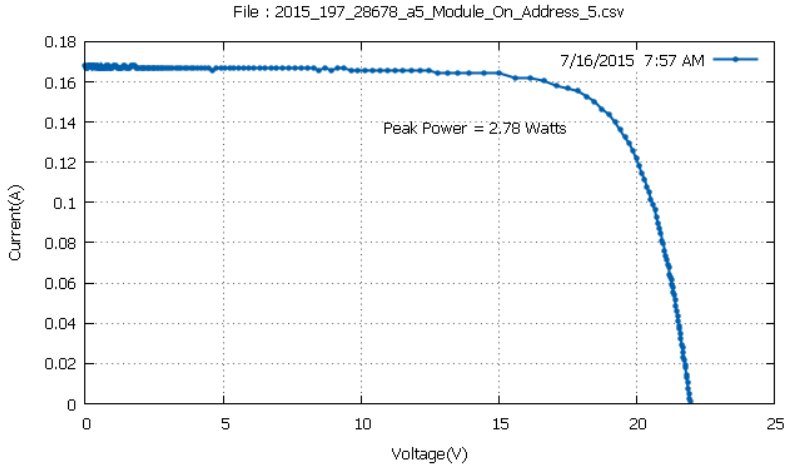
Mean Temperature: 32,86 ºC



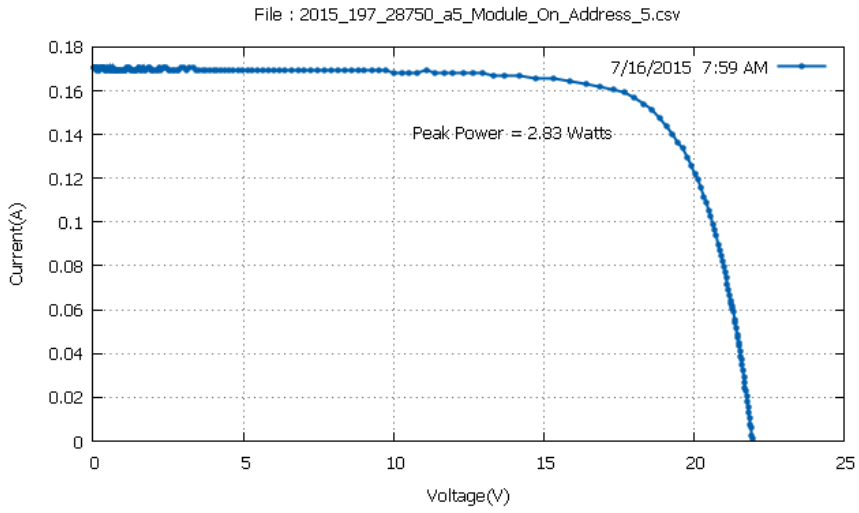
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.400671\ x\ 0.143839523}{292.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



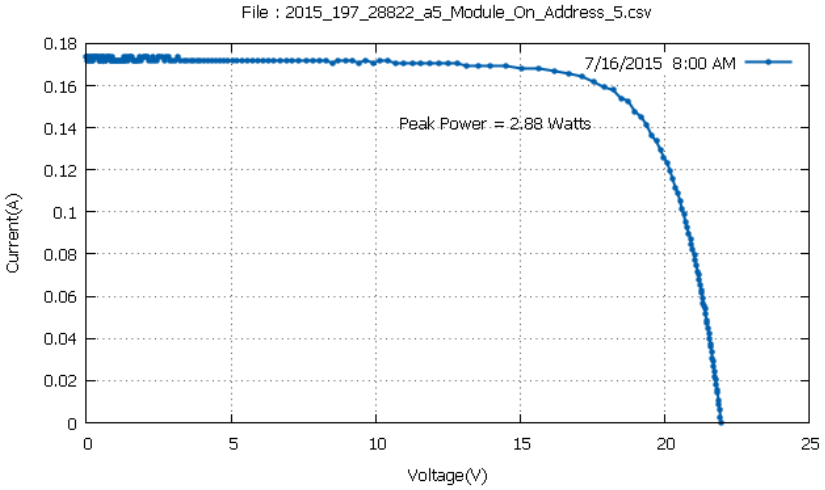
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.1841927\ x\ 0.147692367}{295.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}03\ \%$$



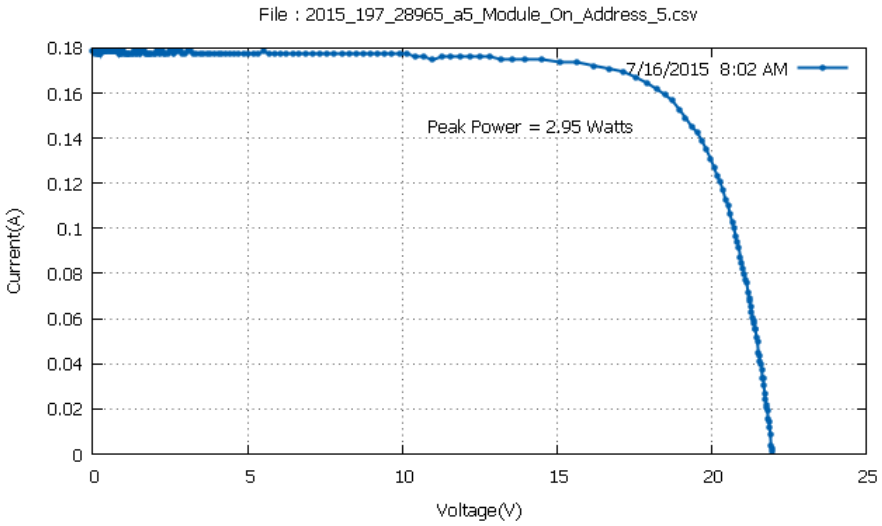
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.191923\ x\ 0.1528295}{303.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.331089\ x\ 0.154113784}{307.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}18\ \%$$



$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{18.2151184\ x\ 0.157966629}{310.9\ x\ 0{,}0756}\ \text{x } 100 = 12{,}25\ \%$$



$$n=\frac{Pout}{Pin}=\frac{Vmpp\ x\ Impp}{E\ x\ A}=\frac{18.230581\ x\ 0.16181947}{318.8\ x\ 0{,}0756}\ \text{x } 100 = 12{,}24\ \%$$

Module 4

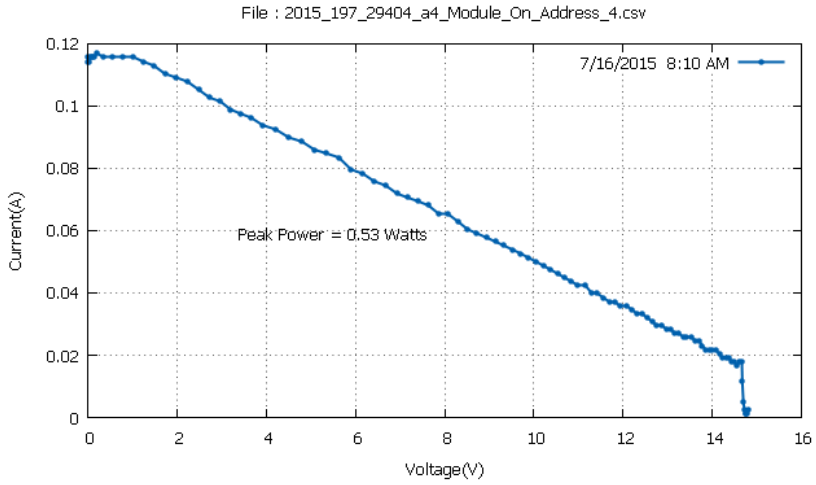
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

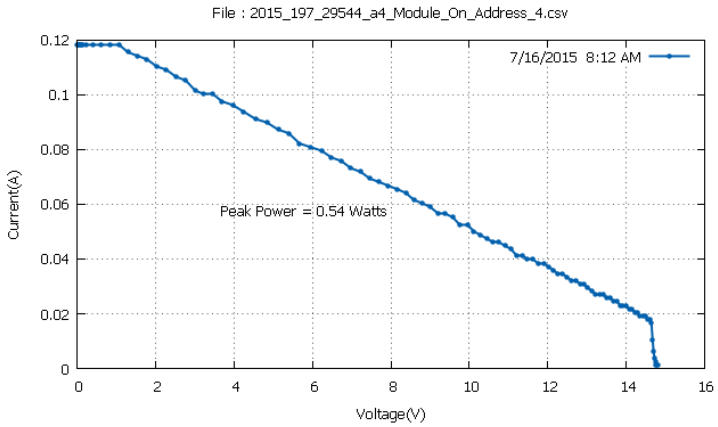
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:10	33,5	2,28
8:12	33,9	2,28
8:13	33,9	2,23
8:14	33,9	2,2
8:17	34,1	2,17
8:19	34,3	2,25

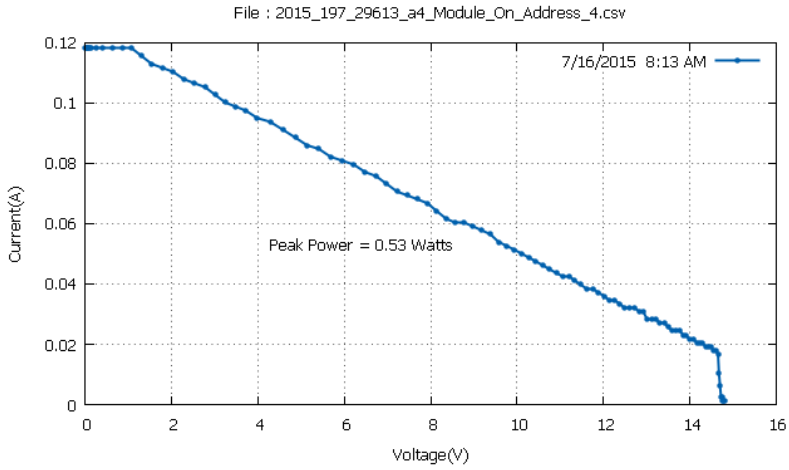
Mean Temperature: 33,93 ºC



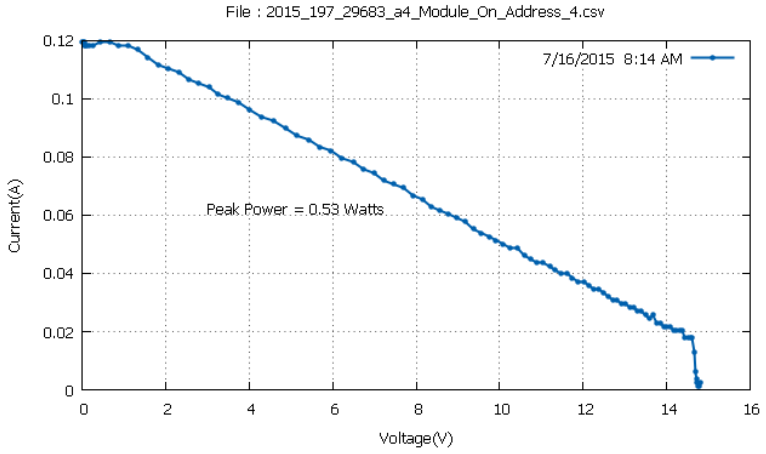
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.079287\ x\ 0.06549836}{345.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}28\ \%$$



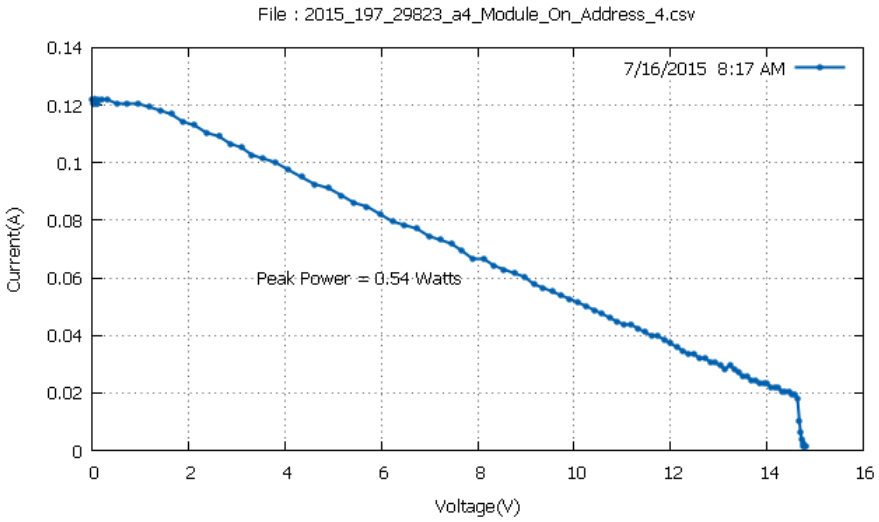
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.373078\ x\ 0.06421407}{352.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}28\ \%$$



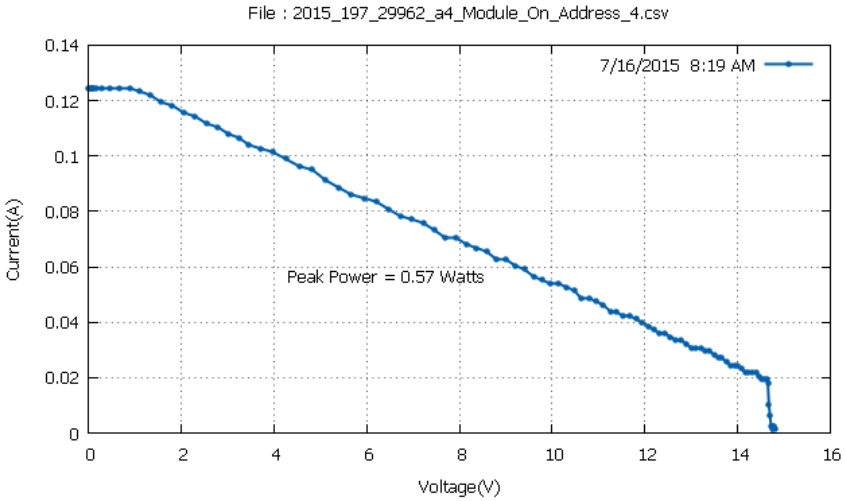
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1024\ x\ 0.0654983}{354.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.69271755\ x\ 0.0693512037}{359.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.125674\ x\ 0.06678264}{369.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.99932\ x\ 0.0629297942}{376.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}25\ \%$$

Module 8

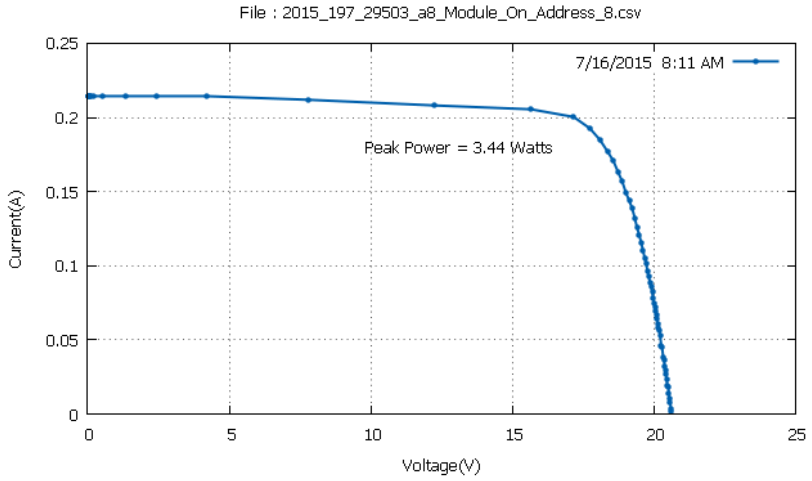
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

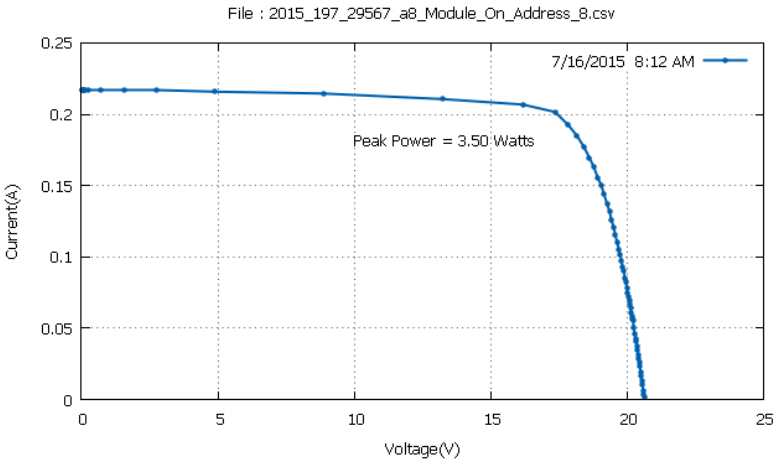
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:11	32,3	12,77
8:12	32,3	12,9
8:14	32,4	12,89
8:16	32,7	12,89
8:17	32,8	12,89
8:19	33	13

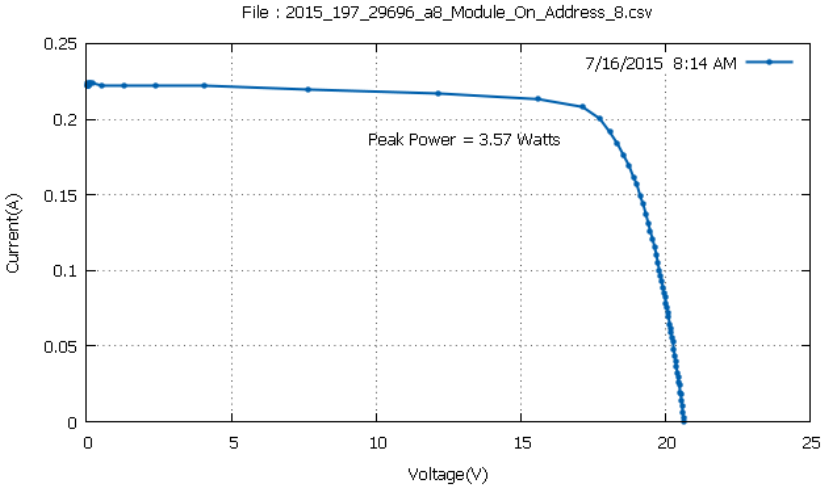
Mean Temperature: 32,58 ºC



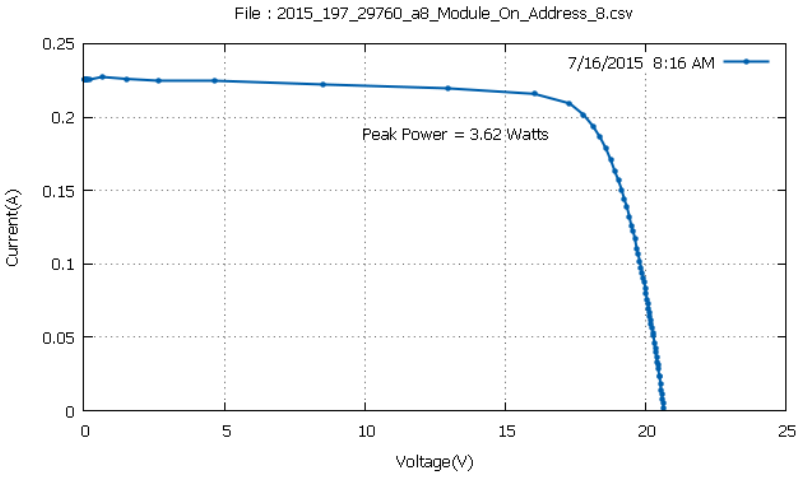
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.16365\ x\ 0.20034791}{350.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}77\ \%$$



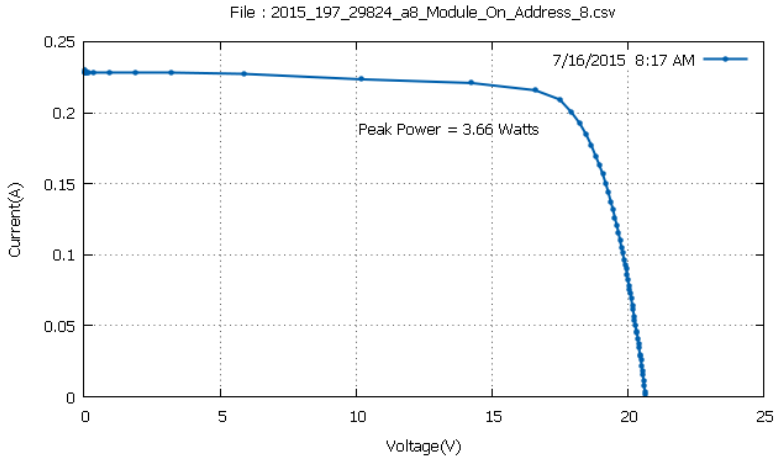
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3569355\ x\ 0.201632187}{353.1\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}9\ \%$$



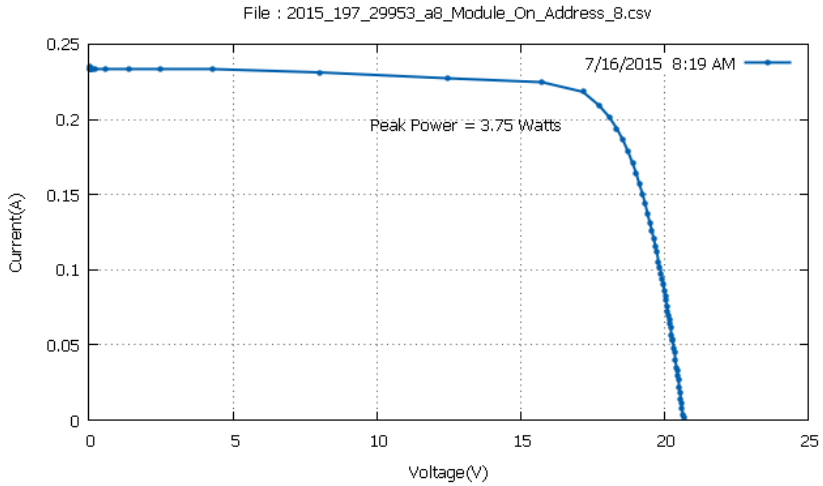
$$n = \frac{Pout}{P\square n} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1404572\ x\ 0.2080536}{360.5\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3028164\ x\ 0.20933789}{365.5\ x\ 0{,}0768}\ \text{x}\ 100 = 12{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.496\ x\ 0.2093378}{369.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1713829\ x\ 0.2183278}{375.8\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$

Module 3

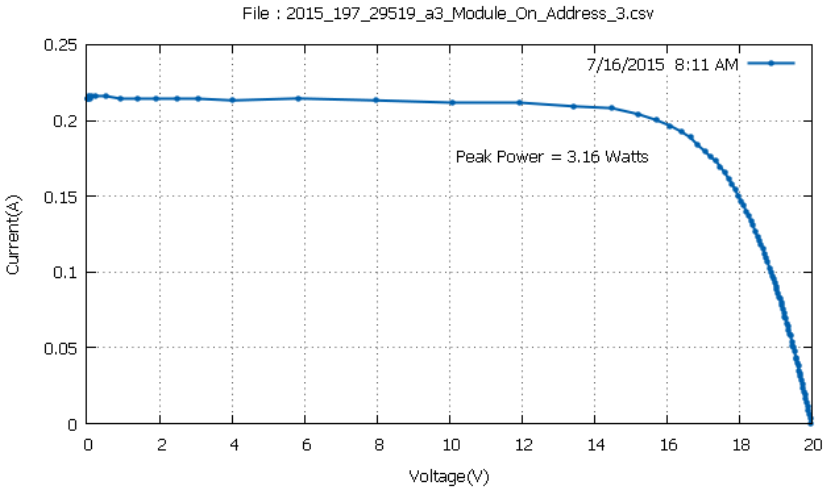
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

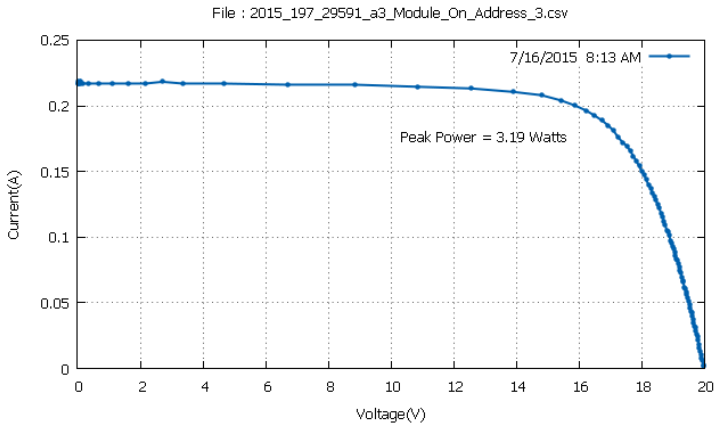
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:11	33,5	12,7
8:13	33,8	12,71
8:14	33,8	12,75
8:16	34	12,81
8:19	34,2	12,94
8:21	34,3	12,97

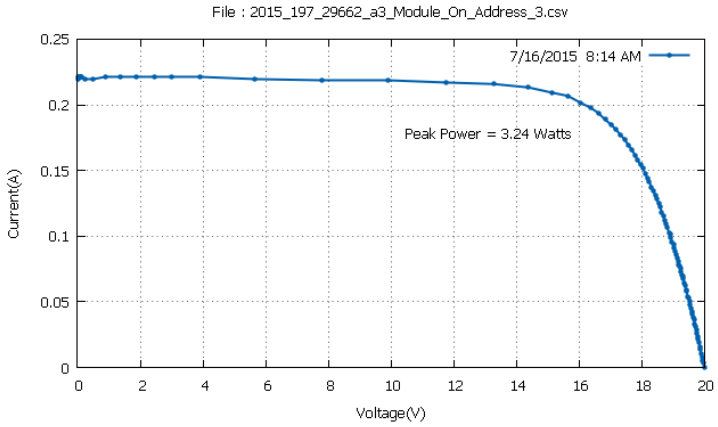
Mean Temperature: 33,93 ºC



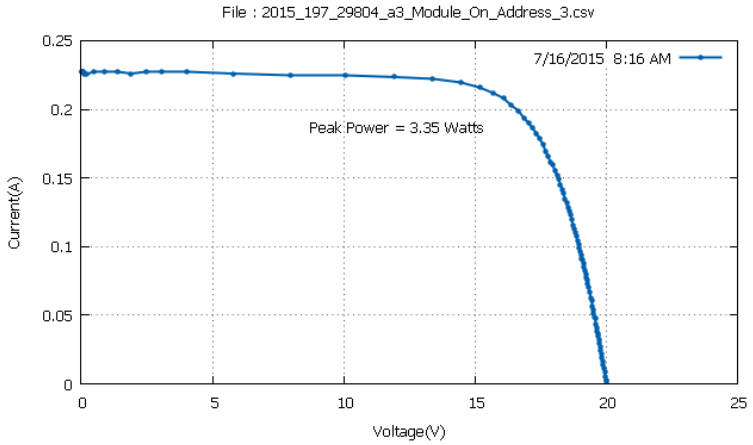
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.08899\ x\ 0.196495071}{351.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}7\ \%$$



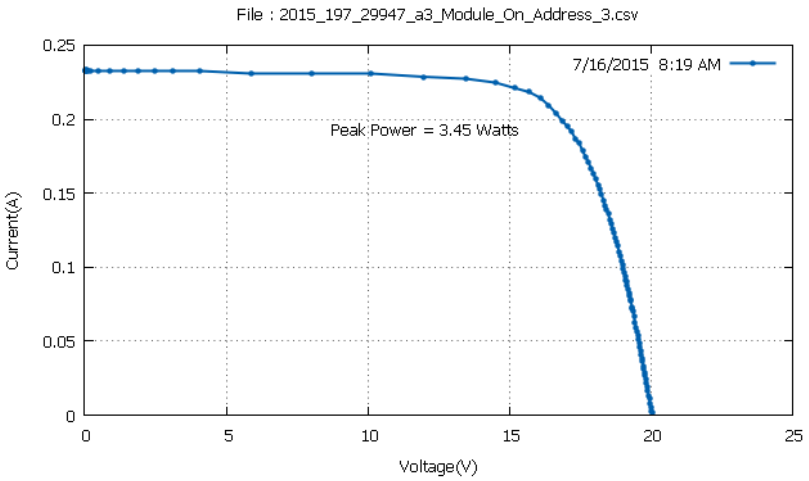
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.212692\ x\ 0.196495071}{353.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}71\ \%$$



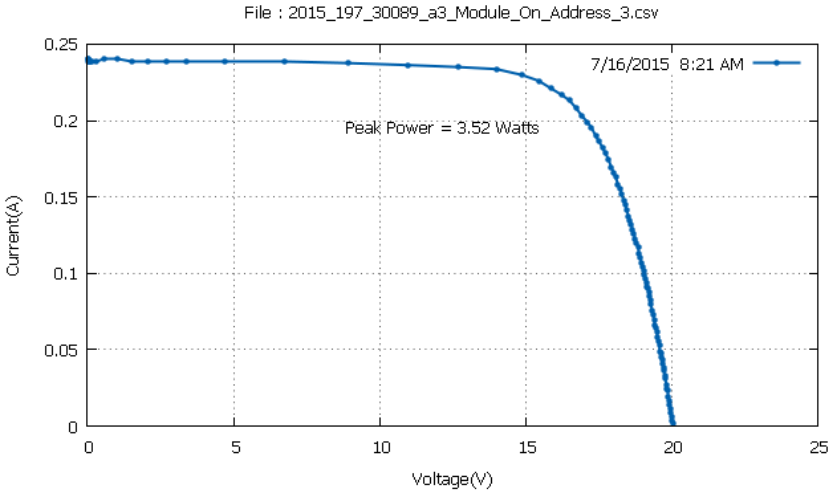
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.359588\ x\ 0.19777934}{358.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}75\ \%$$



$$n = \frac{\square out}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.2080536}{368.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}81\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.21447}{376\ x\ 0{,}0709} \text{ x } 100 = 12{,}94\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ \square} = \frac{16.2204227\ x\ 0.217043579}{382.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}97\ \%$$

Module 5

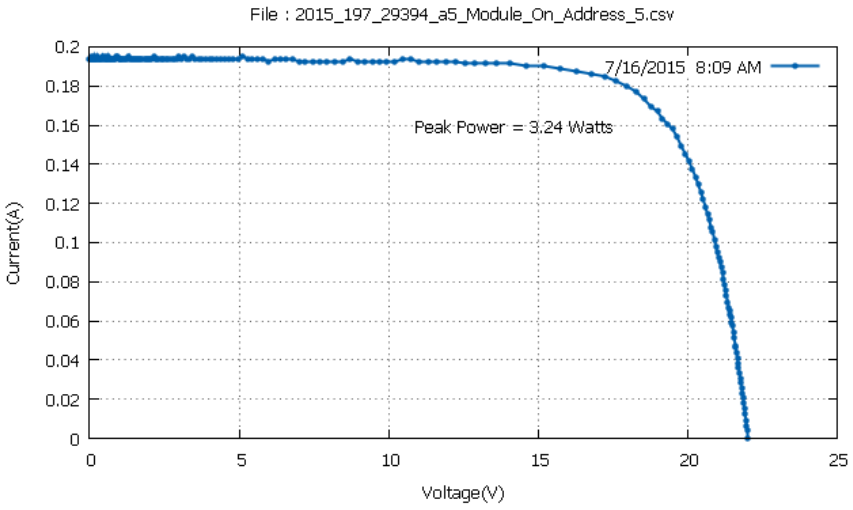
Date: 16/7/2015 – Morning Measurement

Temperature Ambient: 30 ºC

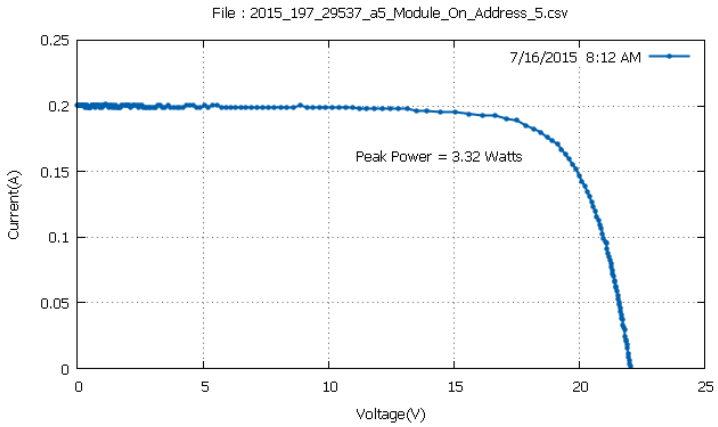
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
8:09	33,9	12,4
8:12	34,3	12,48
8:13	34,3	12,62
8:14	34,4	12,6
8:18	34,7	12,55
8:19	34,9	12,67

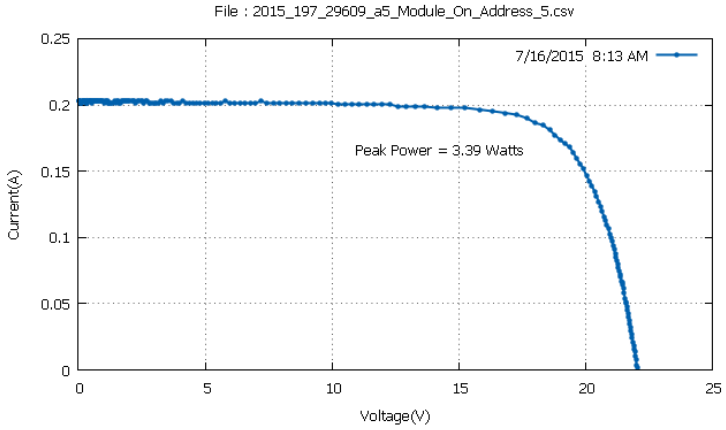
Mean Temperature: 34,41 ºC



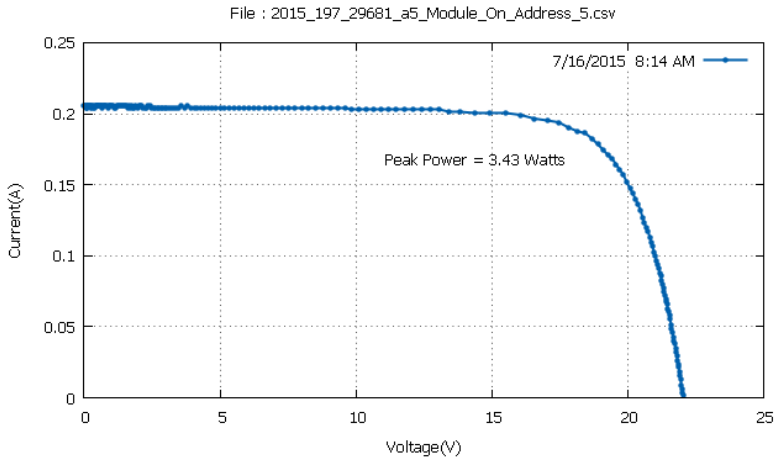
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2692375\ x\ 0.17723085}{345.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}4\ \%$$



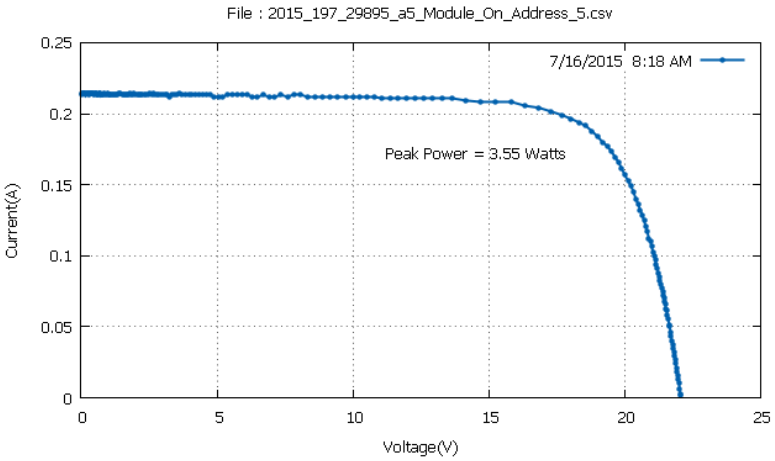
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4779854\ x\ 0.179799401}{351.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}48\ \%$$



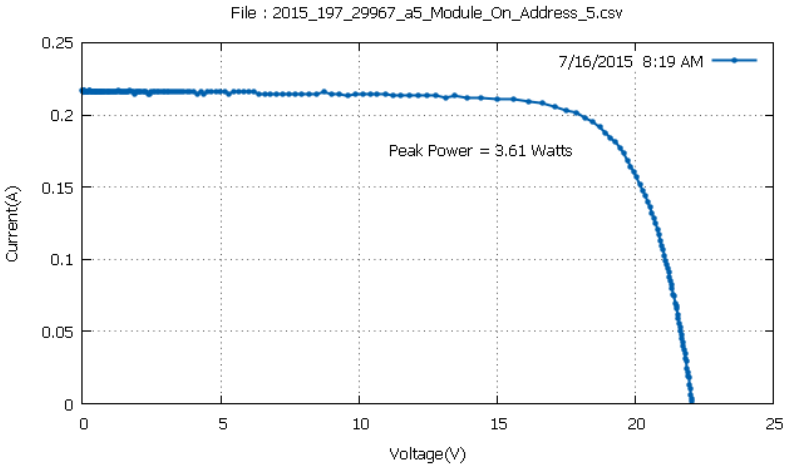
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.315626\ x\ 0.18493653}{355.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4393272\ x\ 0.18622081}{359.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.57076\ x\ 0.19135794}{373.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}55\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.88267\ x\ 0.2016321}{376.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}67\ \%$$

Module 4

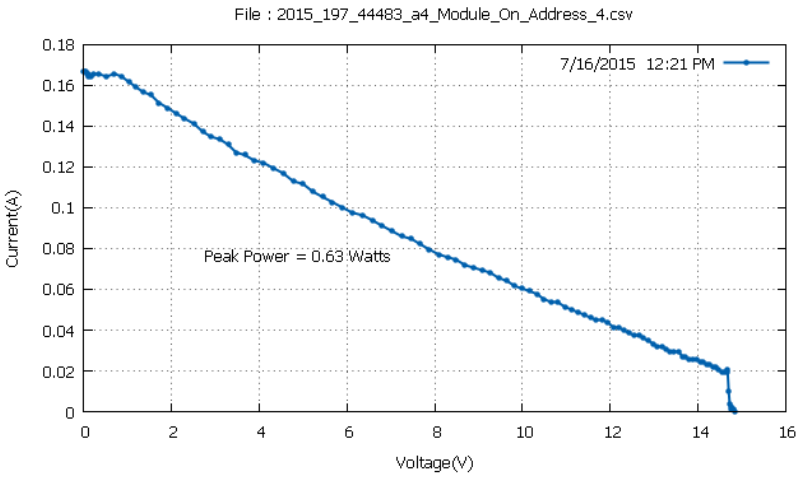
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

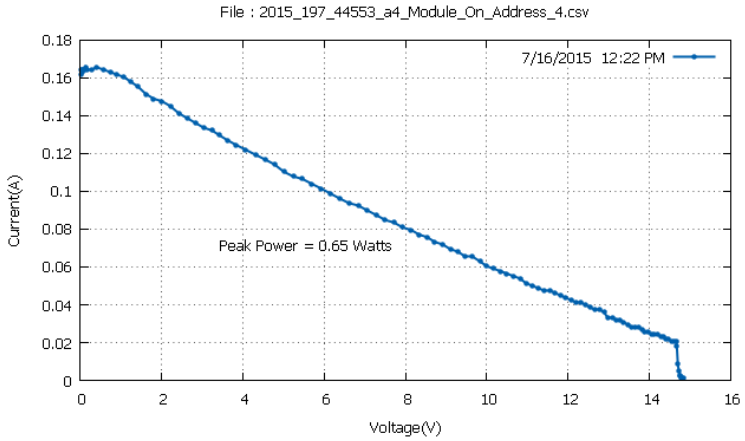
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:21	62,6	1
12:22	62,6	1,03
12:24	62,8	1,06
12:26	63	1,06
12:28	62,8	1,03
12:30	63,6	1,01

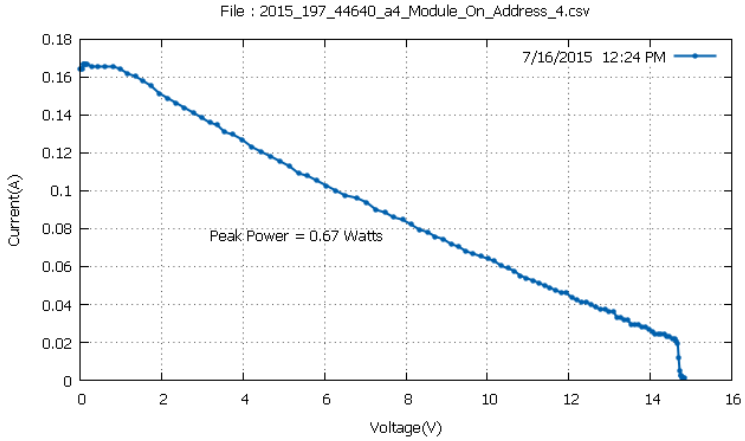
Mean Temperature: 62,9 ºC



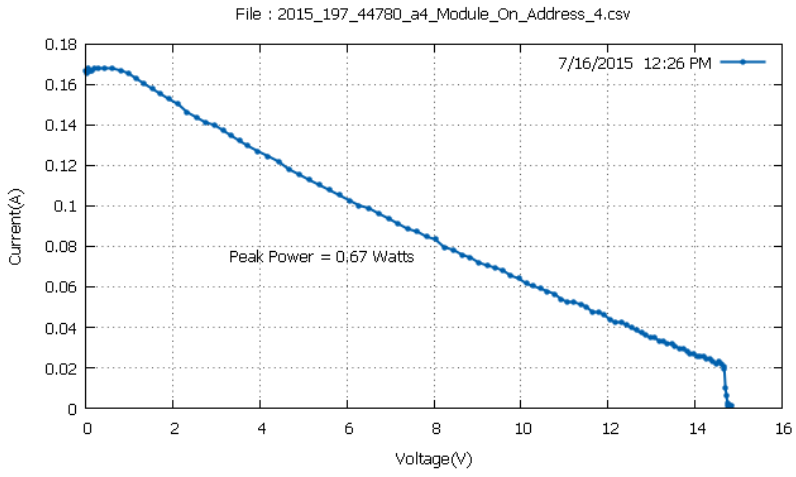
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.46077633\ x\ 0.0847625}{937.3\ x\ 0{,}0671} \text{ x } 100 = 1\ \%$$



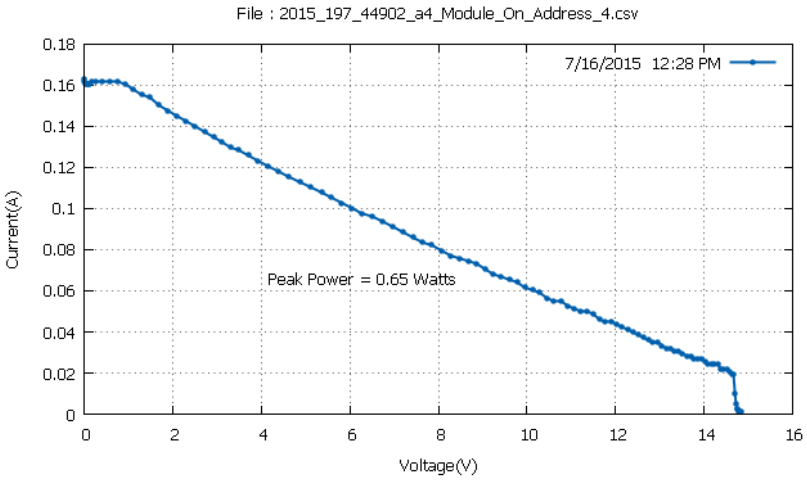
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.955584\ x\ 0.082194015}{938\ x\ 0{,}0671} \text{ x } 100 = 1{,}03\ \%$$



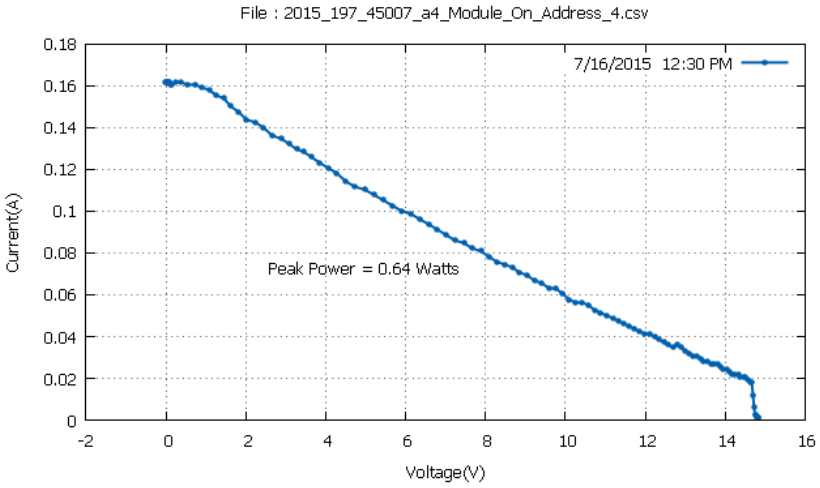
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.909196\ x\ 0.08476258}{936.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.025166\ x\ 0.08347829}{937.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.507164\ x\ 0.08733114}{940.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.8782706\ x\ 0.08090974}{937.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}01\ \%$$

Module 8

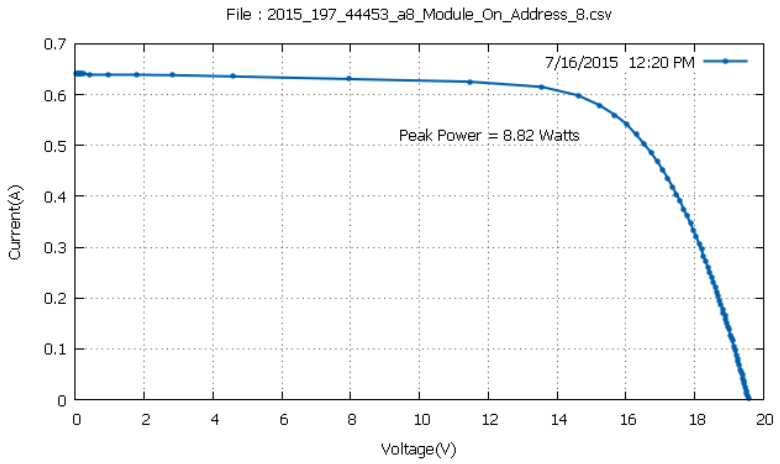
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

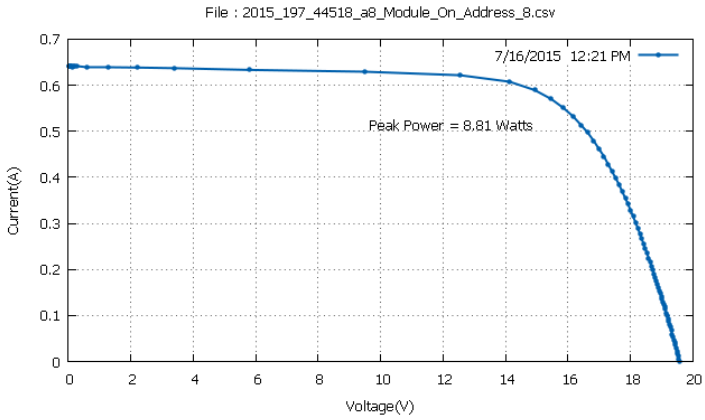
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:20	62,5	12,25
12:21	62,2	12,23
12:24	61,4	12,31
12:26	61,1	12,3
12:28	61,5	12,3
12:30	61,9	12,25

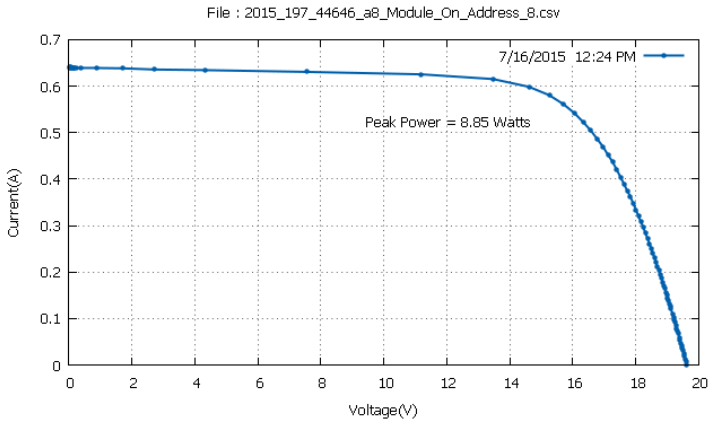
Mean Temperature: 61,76 ºC



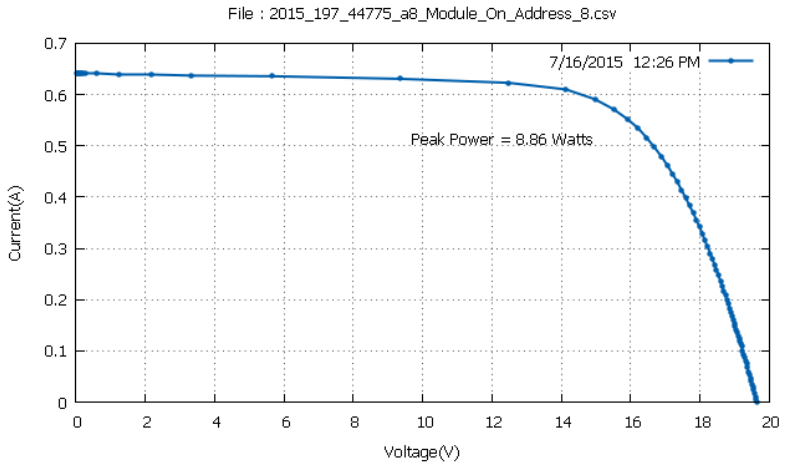
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2308073\ x\ 0.579210937}{937.3\ x\ 0{,}0768} \text{ x } 100 = 12{,}25\ \%$$



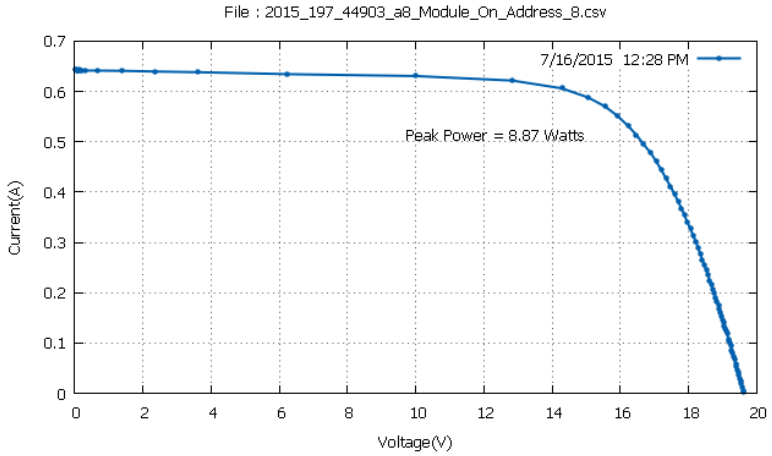
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4550171\ x\ 0.570221}{937.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}23\ \%$$



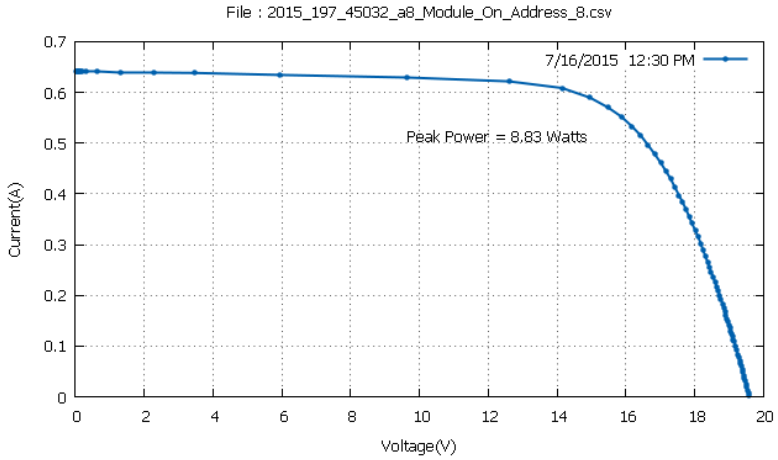
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2540016\ x\ 0.580495238}{935.6\ x\ 0{,}0768} \text{ x } 100 = 12{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5014057\ x\ 0.571505249}{938.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5477934\ x\ 0.57022}{939.4\ x\ 0{,}0768} \text{ x } 100 = 12{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4782114\ x\ 0.570221}{938.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}25\ \%$$

Module 3

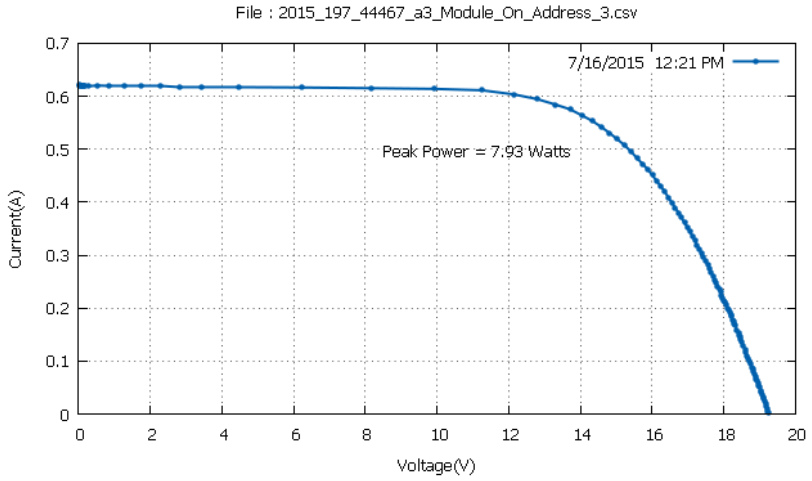
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

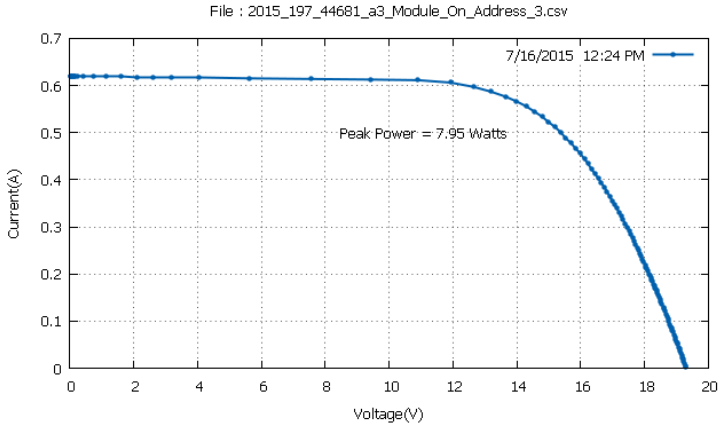
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:21	63,2	11,92
12:24	62,5	11,96
12:25	62,4	11,93
12:29	62,6	11,93
12:31	62,8	11,9
12:34	62,7	11,95

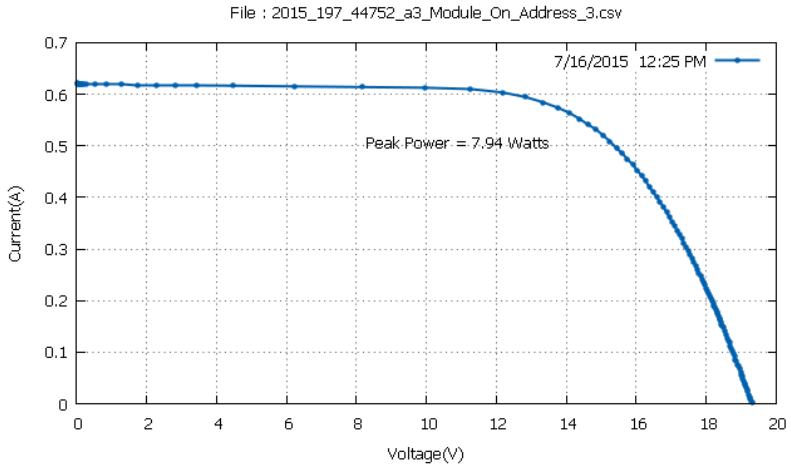
Mean Temperature: 62,7 ºC



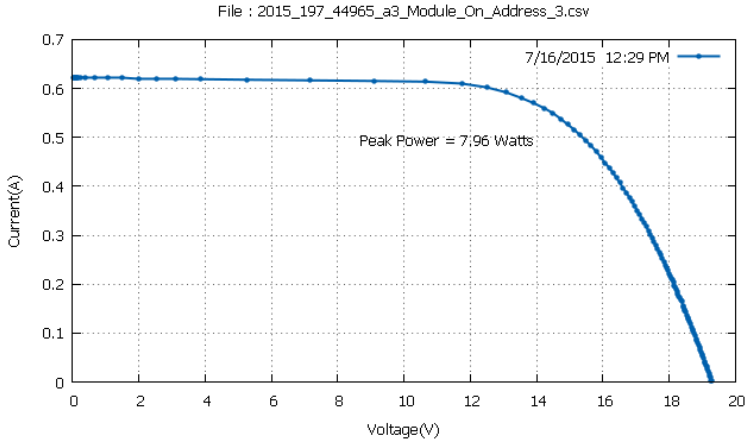
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.3262367\ x\ 0.5535253}{937.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}92\ \%$$



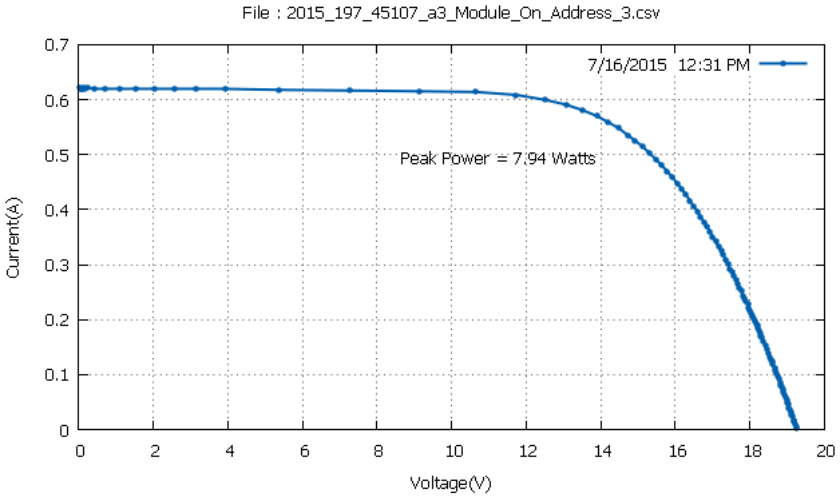
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.28758\ x\ 0.5560939}{937.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}96\ \%$$



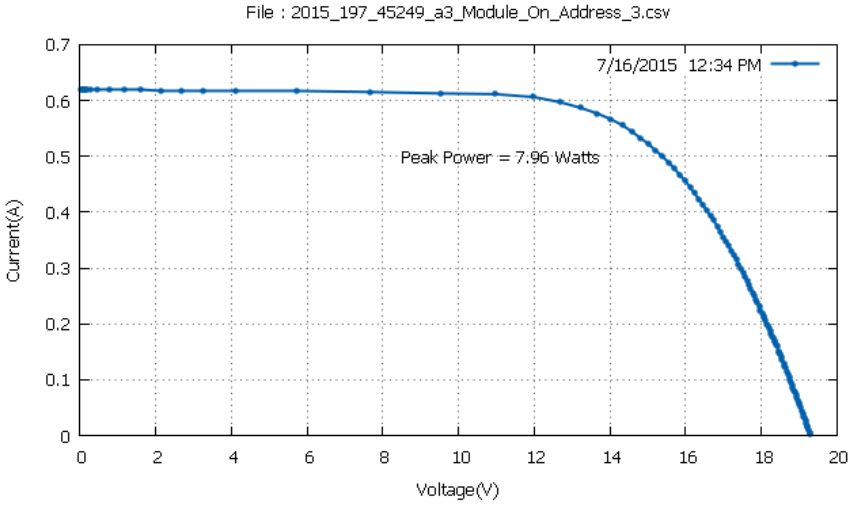
$$n = \frac{Pout}{\square in} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.0865641\ x\ 0.5637995}{938.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.488596\ x\ 0.549672}{941.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}93\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.473133\ x\ 0.5483882}{940.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}9\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.318505\ x\ 0.5560939}{939.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}95\ \%$$

Module 5

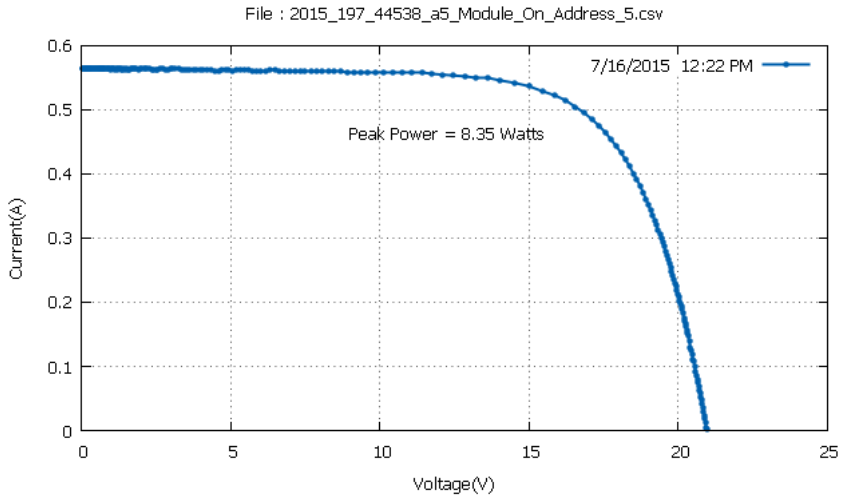
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

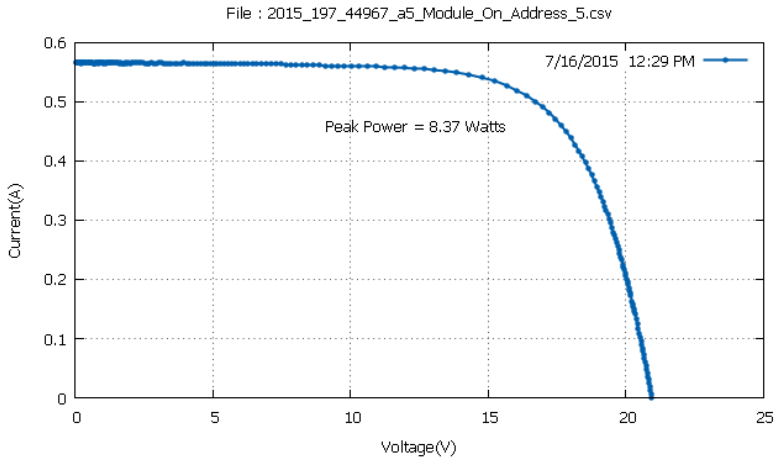
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:22	64,5	11,8
12:29	64,6	11,76
12:30	64,8	11,76
12:31	64,9	11,72
12:34	64,9	11,74
12:35	64,8	11,74

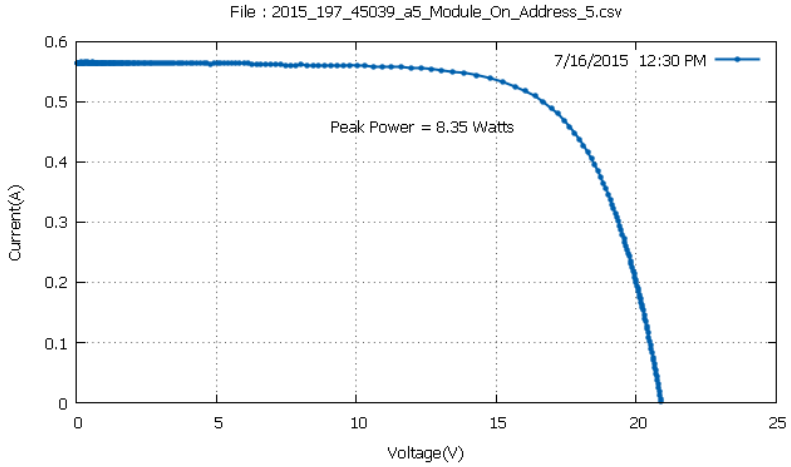
Mean Temperature: 64,75 ºC



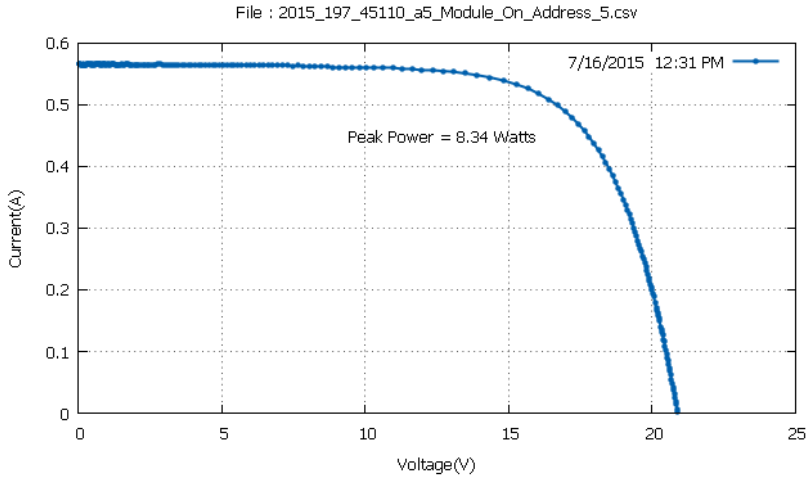
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.212692\ x\ 0.514996}{936.3\ x\ 0{,}0756}$ x 100 = 11,8 %



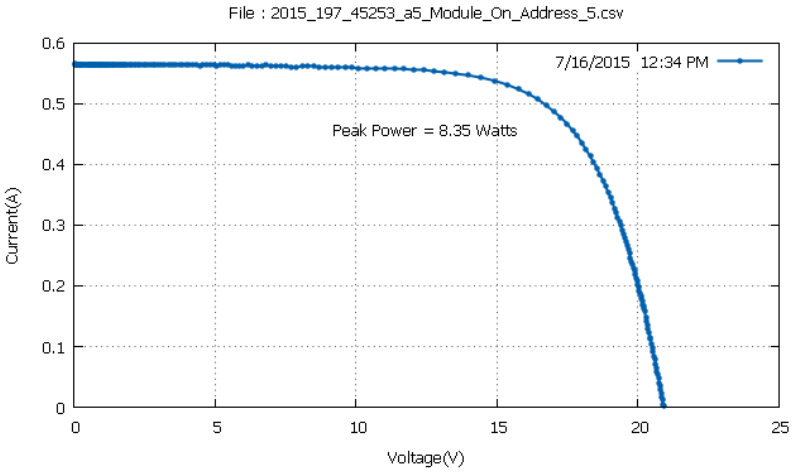
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382782\ x\ 0.51114404}{941.3\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}76\ \%$$



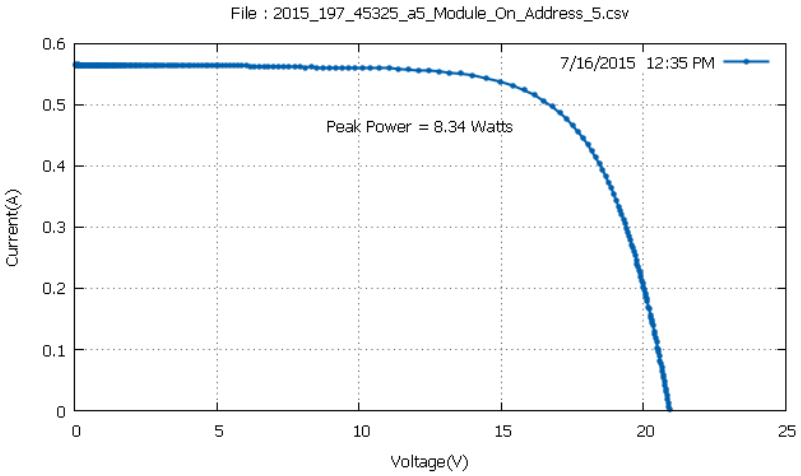
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.375051\ x\ 0.5098597}{939.2\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6920376\ x\ 0.4995855}{940.8\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.452364\ x\ 0.507291}{940.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.158573\ x\ 0.516281}{939.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}74\ \%$$

Module 4

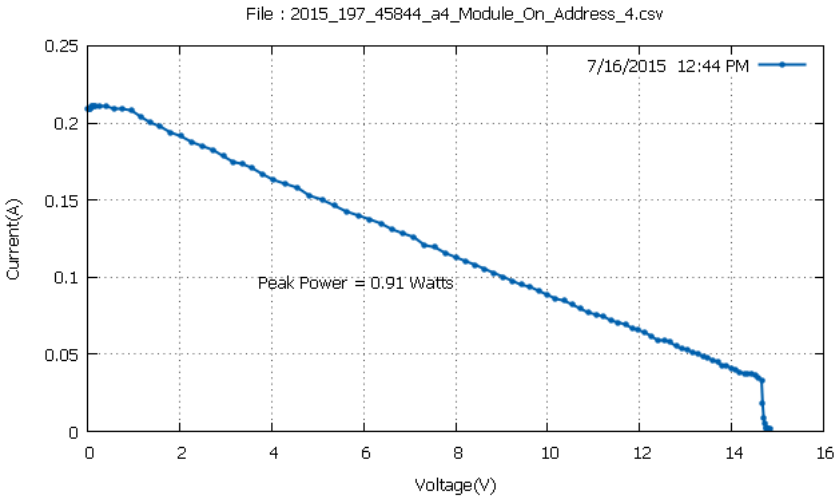
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

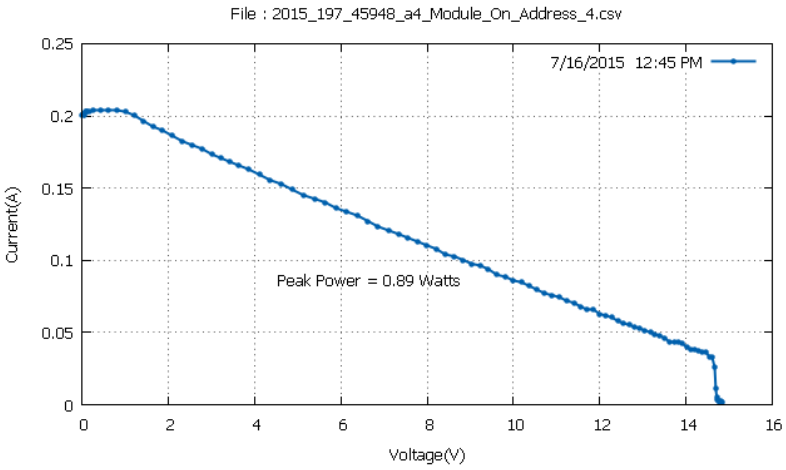
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	57,3	1,44
12:45	56,6	1,41
12:46	56,1	1,36
12:48	55,8	1,42
12:49	56,8	1,35
12:51	57,1	1,35

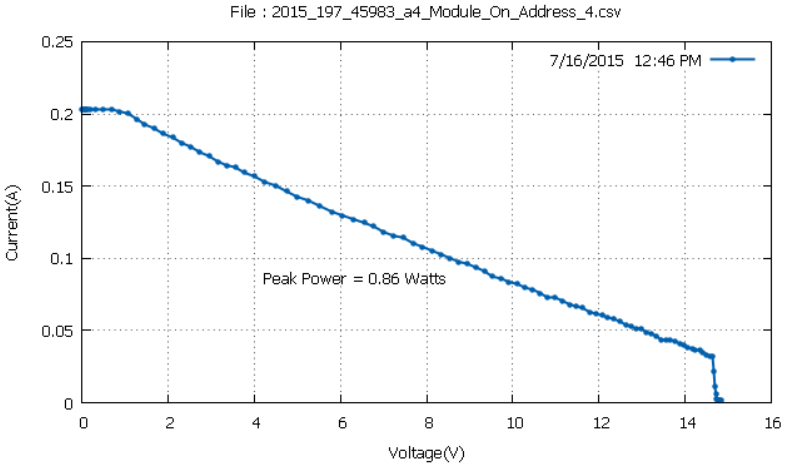
Mean Temperature: 56,61 ºC



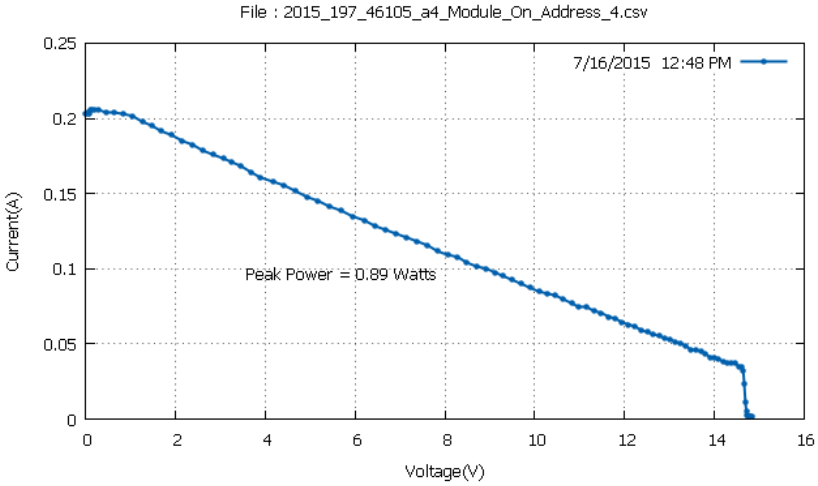
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.427198\ x\ 0.10787964}{937.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}44\ \%$$



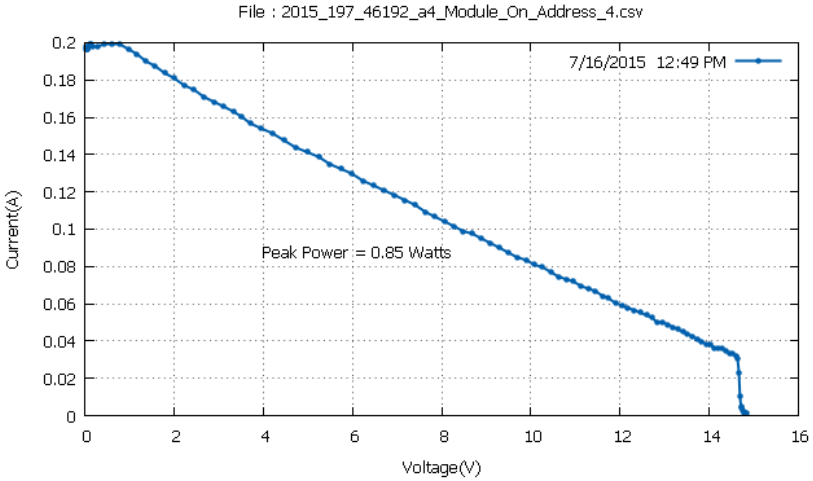
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.23126\ x\ 0.0963211}{936.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$



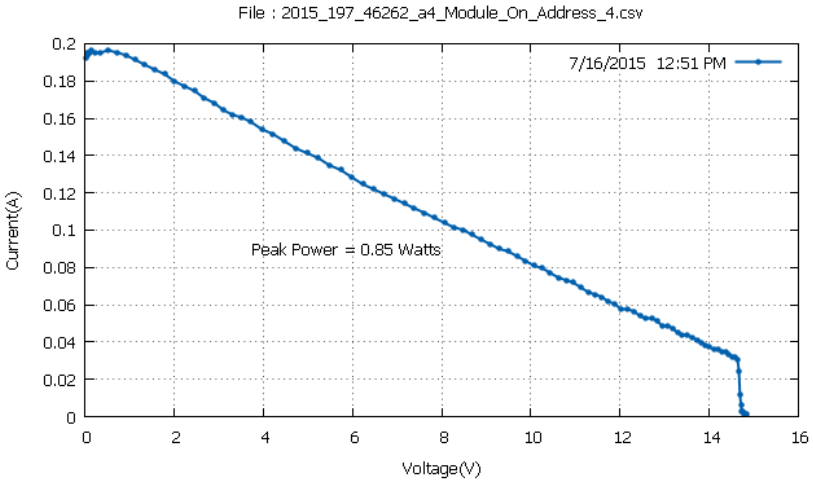
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.929737\ x\ 0.09632111}{936.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.272571\ x\ 0.107879646}{933.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.682333\ x\ 0.09760539}{935.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.465855\ x\ 0.100173958}{937.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}35\ \%$$

Module 8

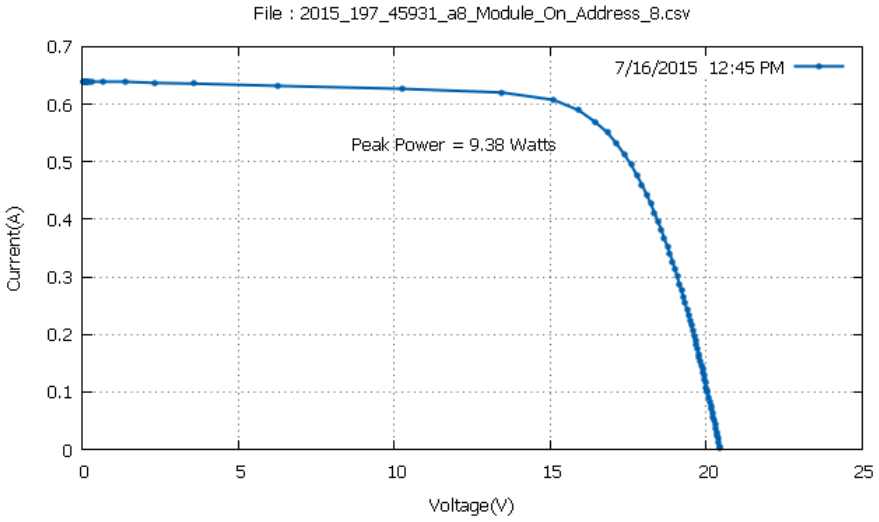
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

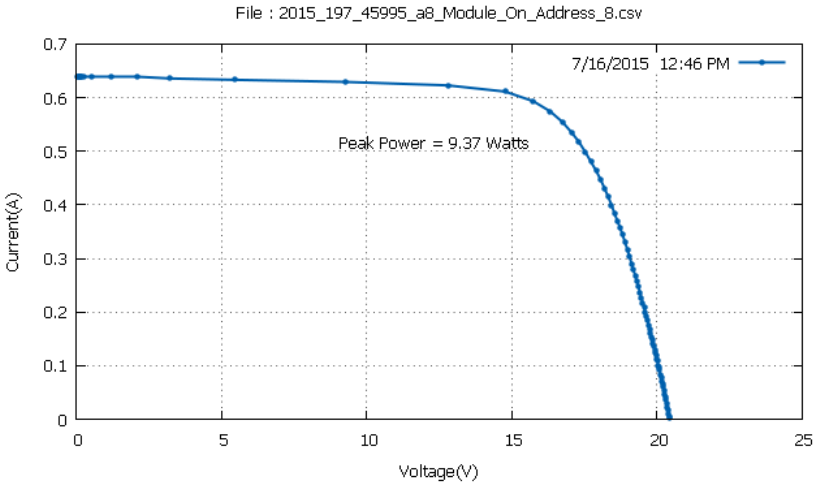
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:45	49,4	13,02
12:46	49,5	13,03
12:47	49,5	13,03
12:49	49,1	13,06
12:50	49,2	13,03
12:51	49,1	13,06

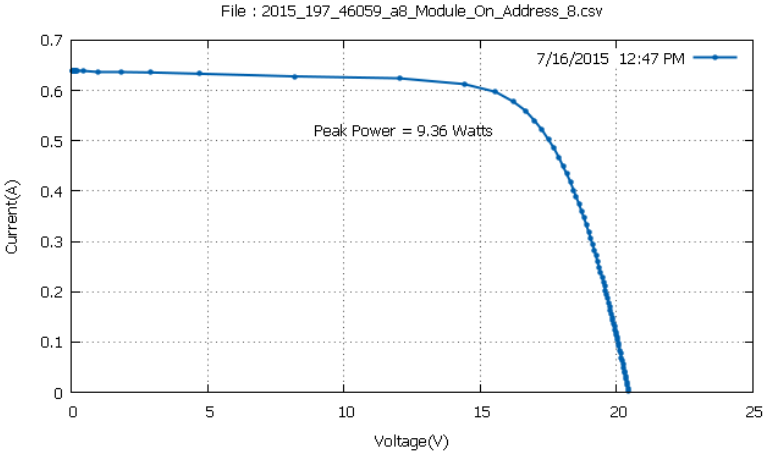
Mean Temperature: 49,3 ºC



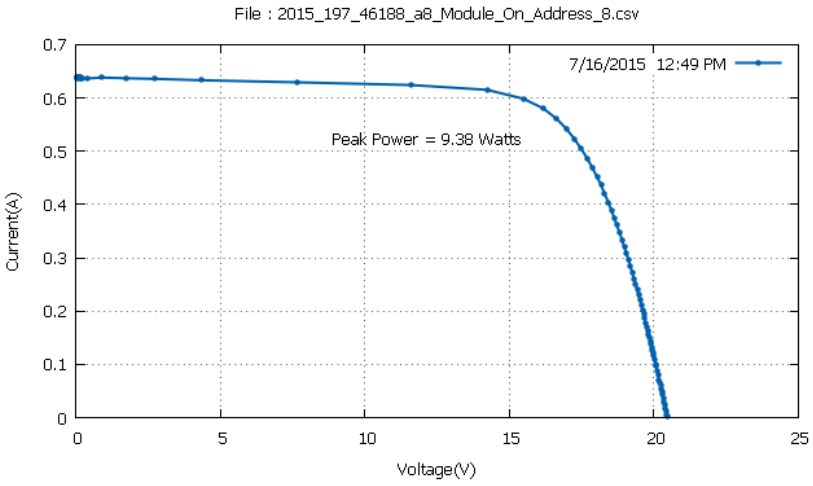
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9111681\ x\ 0.5894852}{938\ x\ 0{,}0768} \text{ x } 100 = 13{,}02\ \%$$



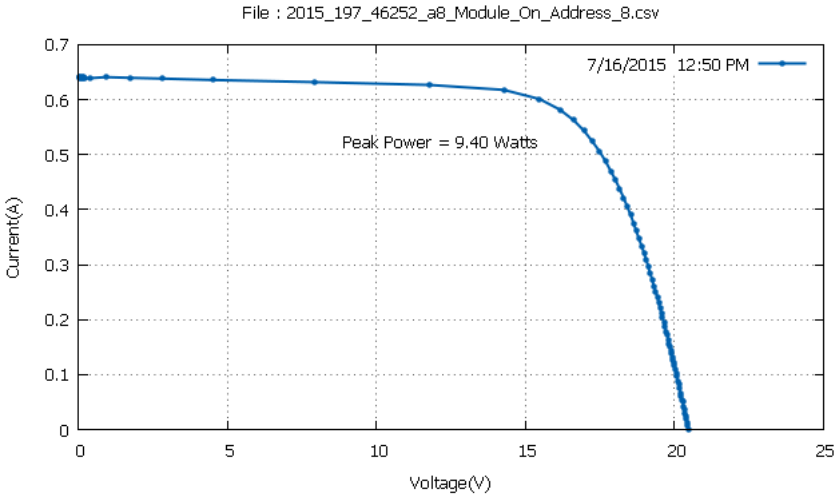
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.32093\ x\ 0.57407385}{935.8\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}03\ \%$$



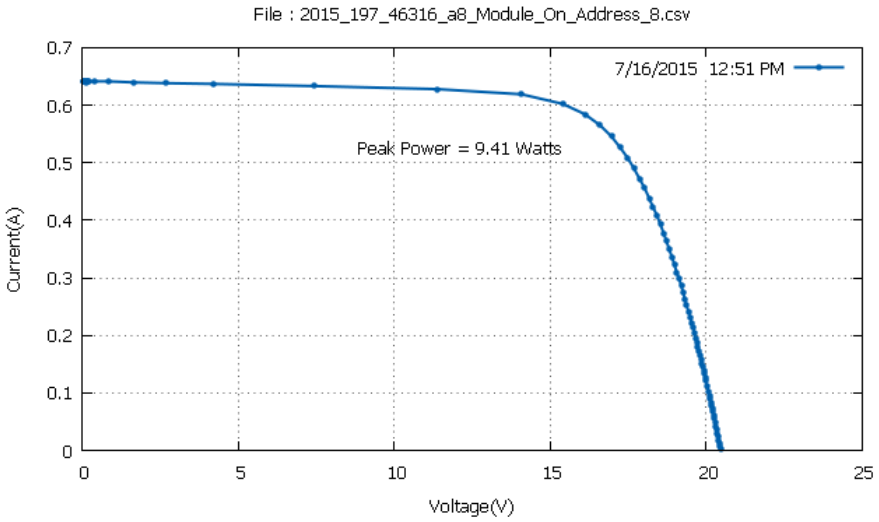
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.5779267}{935.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1663036\ x\ 0.58049523}{934.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1508\ x\ 0.5817795}{938.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1044521\ x\ 0.5843481}{938.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}06\ \%$$

Module 3

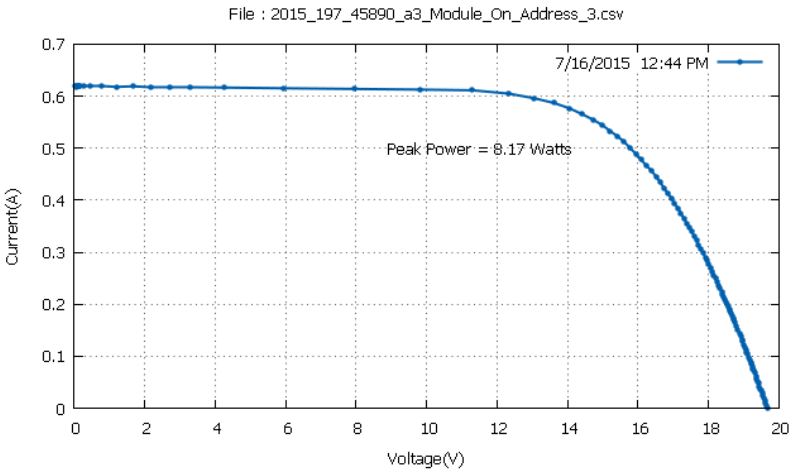
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

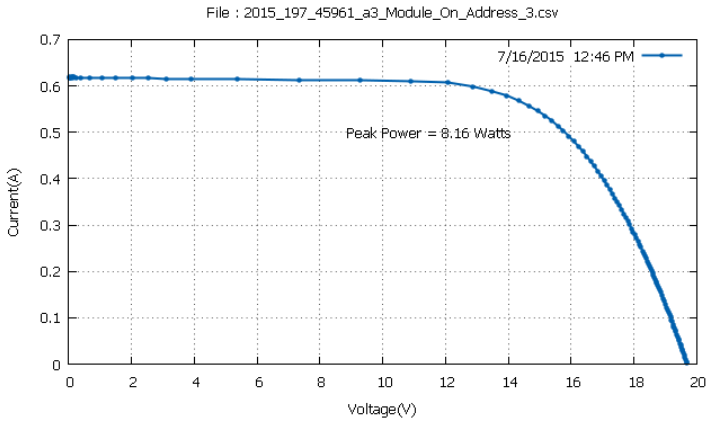
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	57,8	12,28
12:46	56,9	12,3
12:48	55,4	12,31
12:49	55,2	12,32
12:53	56	12,31
12:54	55,8	12,3

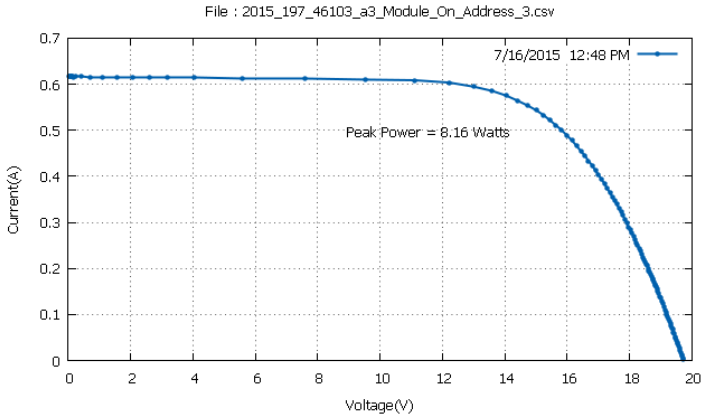
Mean Temperature: 56,18 ºC



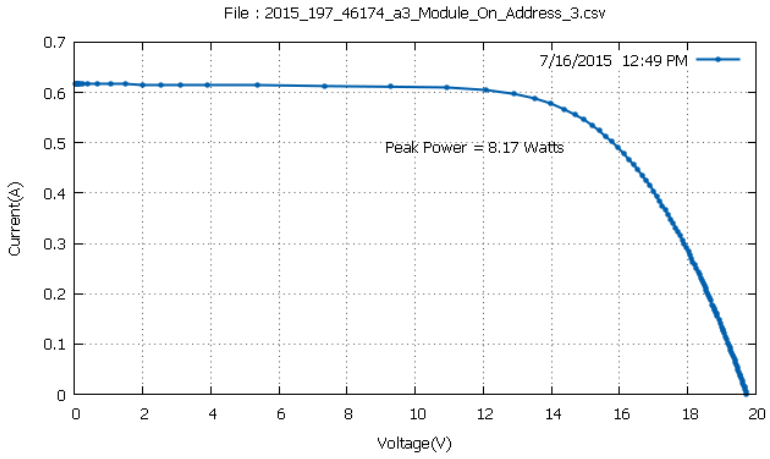
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7205372\ x\ 0.55480963}{938.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}28\ \%$$



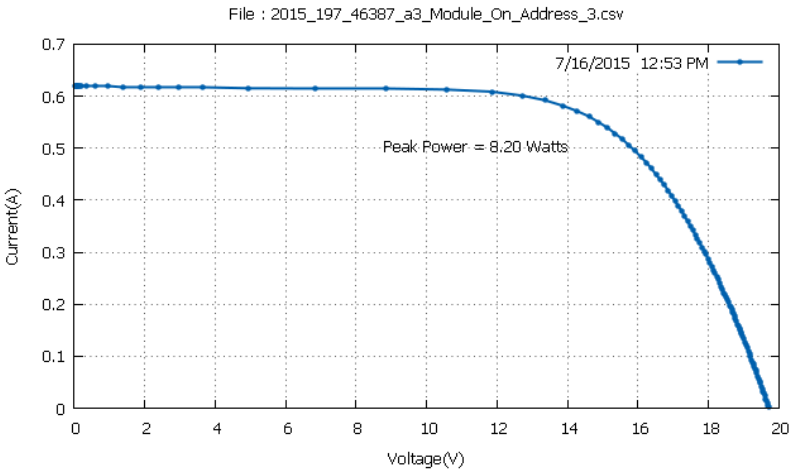
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6741486\ x\ 0.5560939}{935.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}3\ \%$$



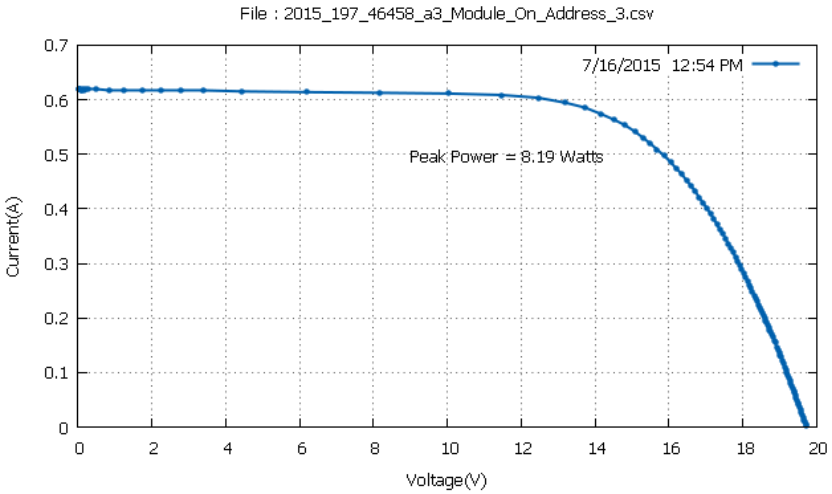
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7359991\ x\ 0.5535253}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.96021\ x\ 0.54581964}{935.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}32\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6045666\ x\ 0.561231}{939.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}31\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8055\ x\ 0.553525}{938.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}3\ \%$$

Module 5

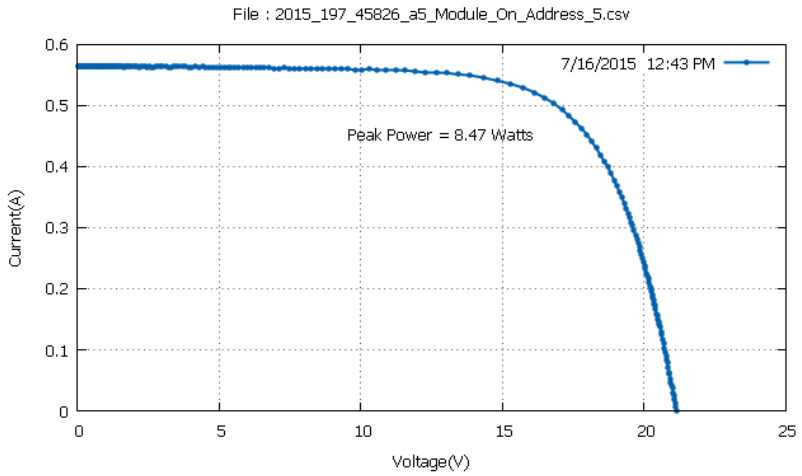
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

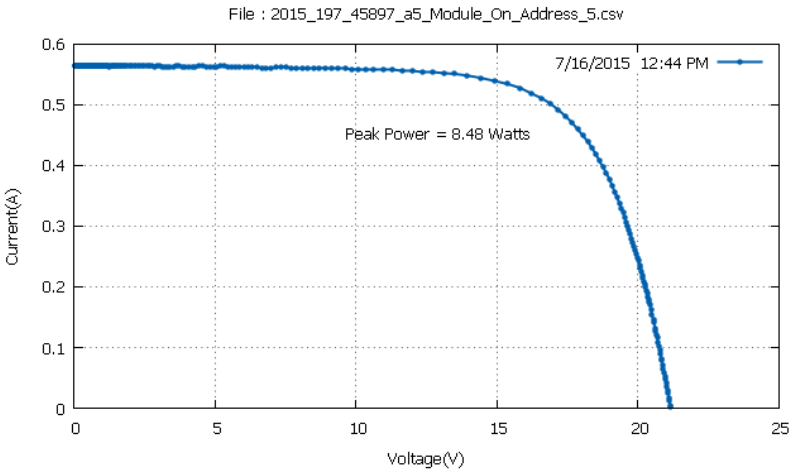
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:43	62	11,96
12:44	61,5	11,95
12:46	60,9	11,98
12:48	60,4	12,02
12:49	60,4	11,95
12:50	60,5	11,95

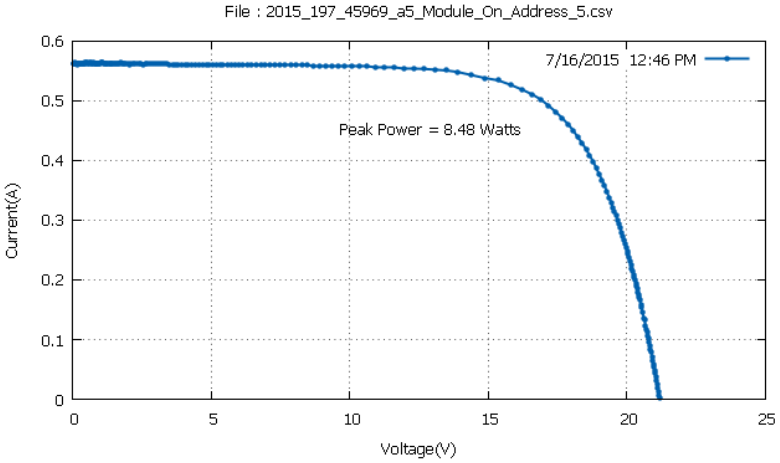
Mean Temperature: 60,95 ºC



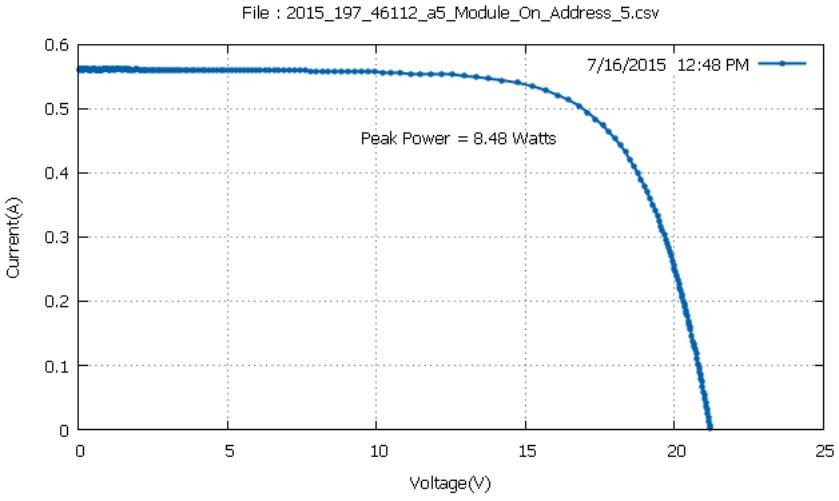
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8157387\ x\ 0.503438354}{936.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}96\ \%$$



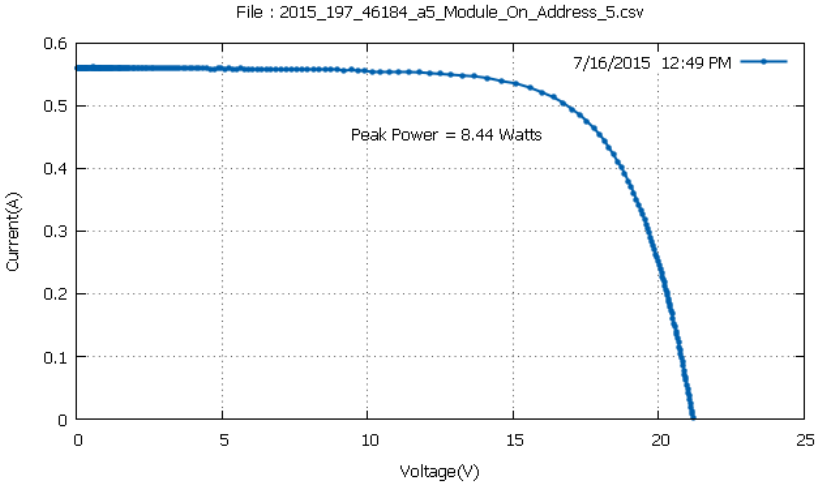
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.88532\ x\ 0.502154052}{938.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$



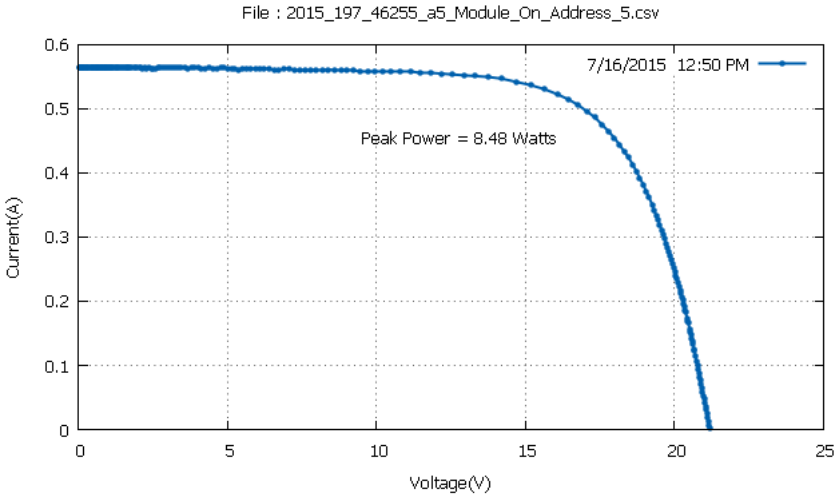
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8930531\ x\ 0.502154052}{935.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.792545\ x\ 0.50472265}{933.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.722963\ x\ 0.50472265}{933.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.7616\ x\ 0.5060069}{938.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}95\ \%$$

Module 4

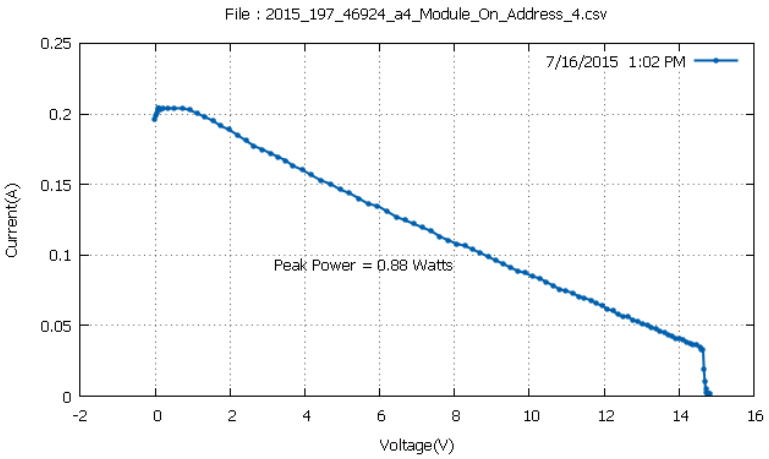
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

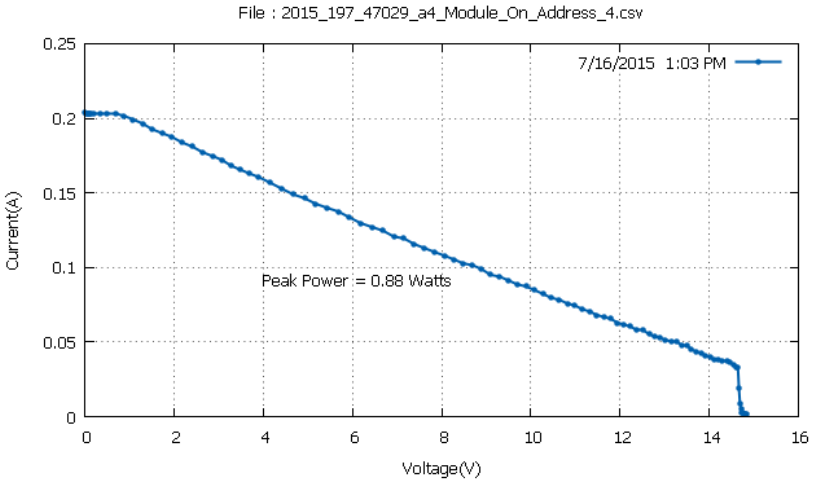
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	53,8	1,4
13:03	54	1,4
13:04	54	1,42
13:07	54	1,42
13:08	53,5	1,43
13:09	53,5	1,42

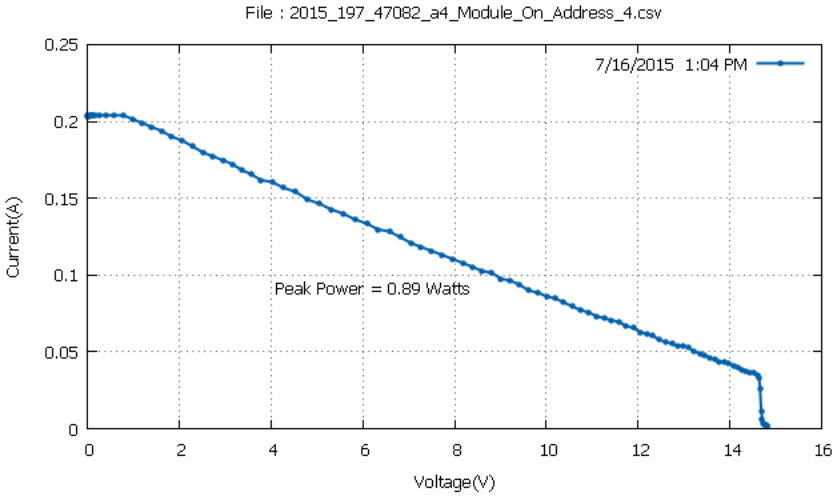
Mean Temperature: 53,8 ºC



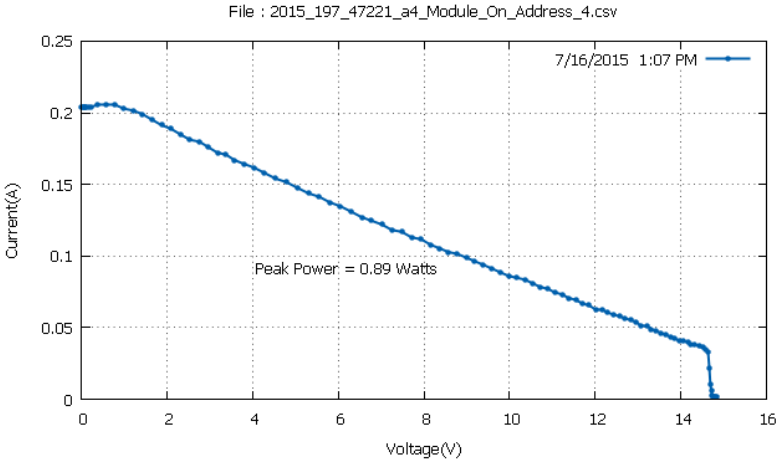
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.4813175\ x\ 0.104026}{934.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



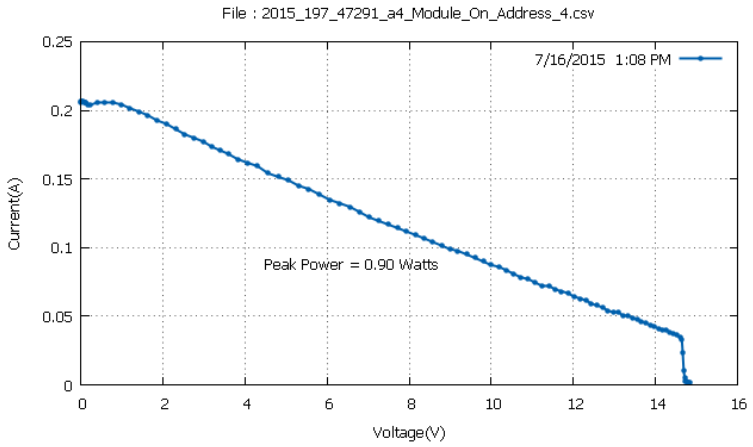
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.690064\ x\ 0.101458237}{932.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



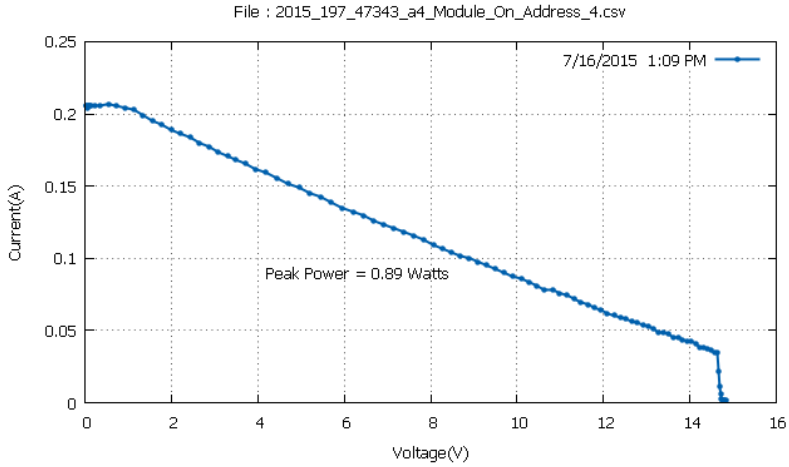
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.806035\ x\ 0.101458237}{933.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.77511\ x\ 0.1014582}{933.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.184873\ x\ 0.09760539}{934.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.891081\ x\ 0.100173958}{930.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$

Module 8

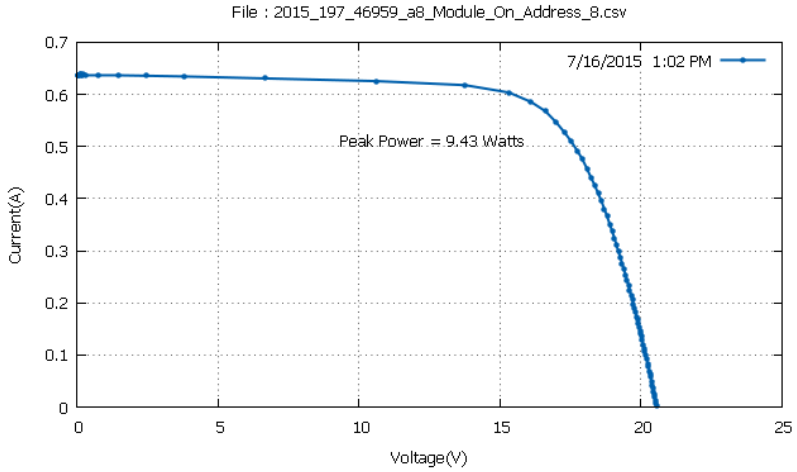
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

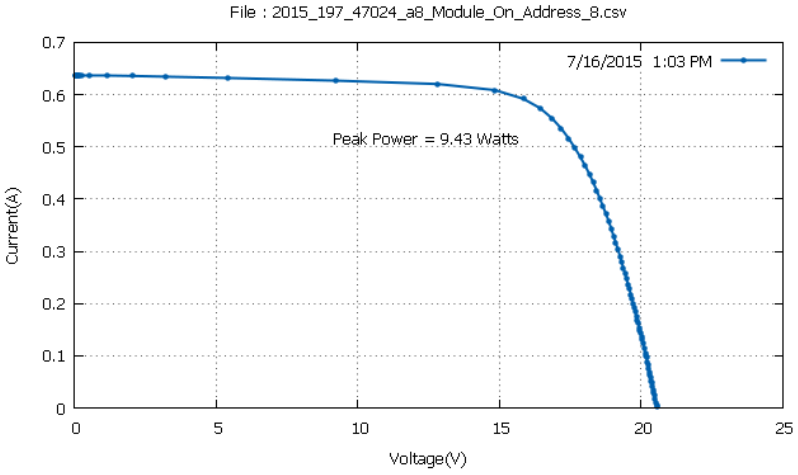
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	47,8	13,13
13:03	47,7	13,14
13:04	47,5	13,14
13:06	47,2	13,13
13:08	47,5	13,15
13:09	47,3	13,16

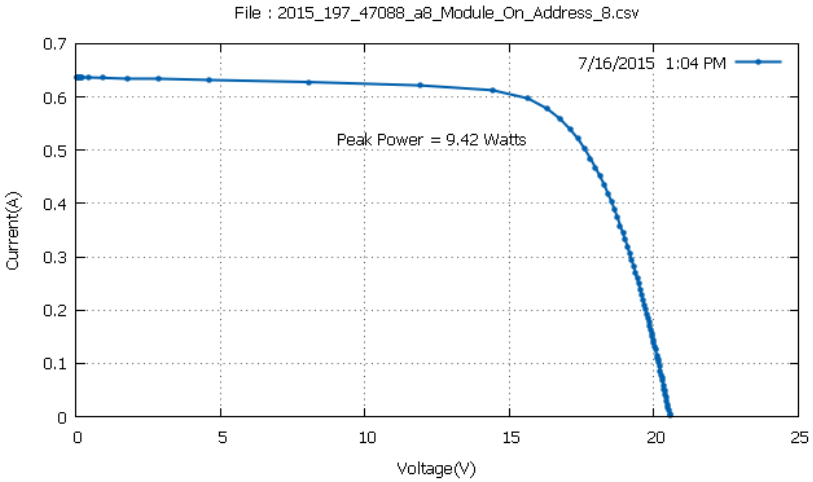
Mean Temperature: 47,5 ºC



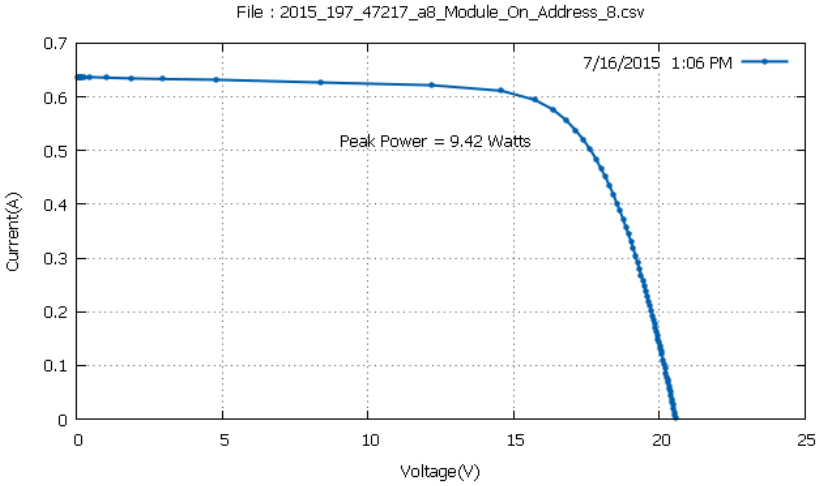
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.606992\ x\ 0.5676524}{934.9\ x\ 0{,}0768} \text{ x } 100 = 13{,}13\ \%$$



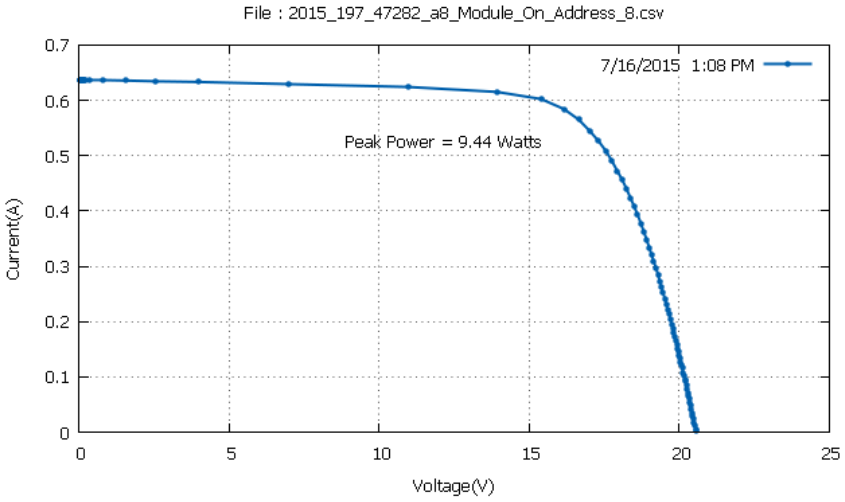
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.42917\ x\ 0.574073851}{934.4\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}14\ \%$$



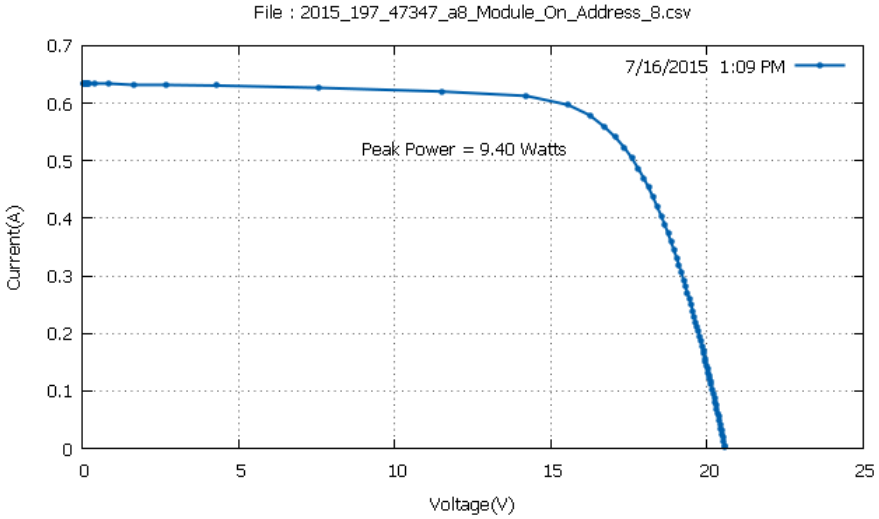
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3054676\ x\ 0.577926}{933.5\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.344125\ x\ 0.576642}{933.9\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1508\ x\ 0.5843481}{934.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2358856\ x\ 0.57921093}{929.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}16\ \%$$

Module 3

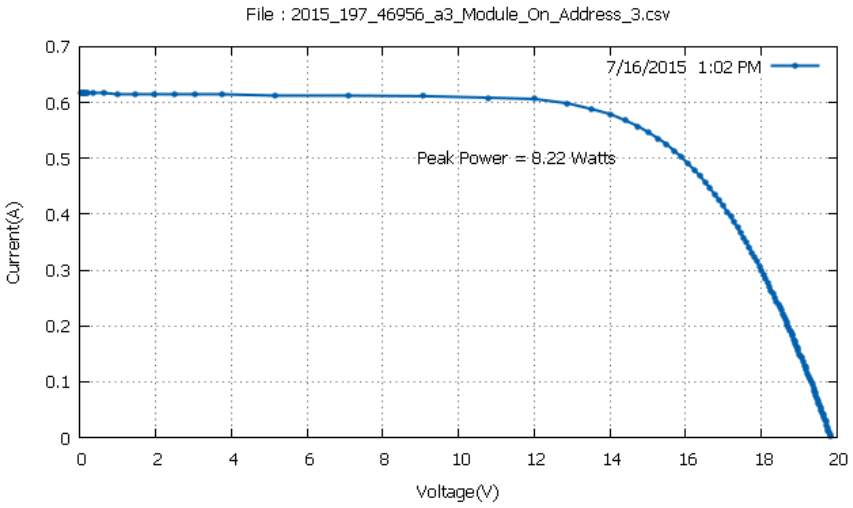
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

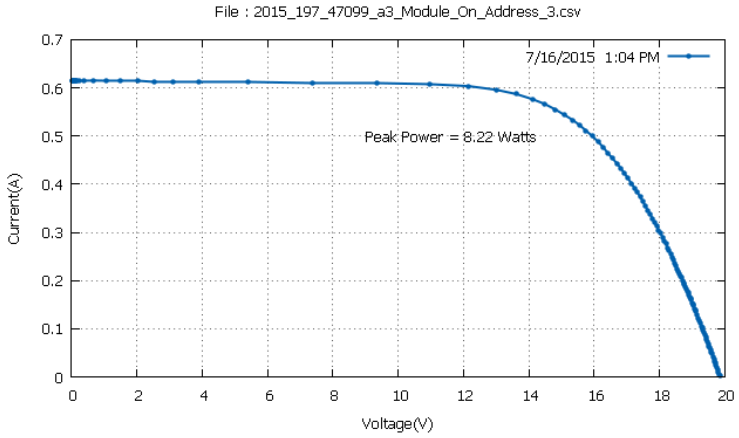
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	53,5	12,41
13:04	53,5	12,42
13:07	53,7	12,41
13:08	53,7	12,46
13:09	52,9	12,43
13:12	52,7	12,4

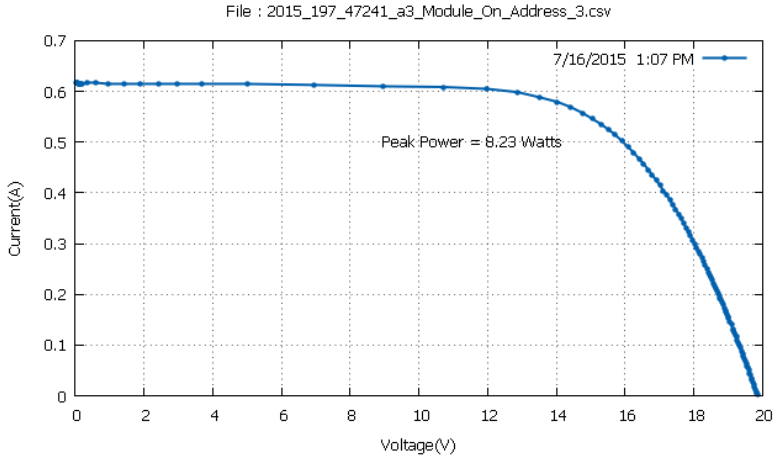
Mean Temperature: 53,33 ºC



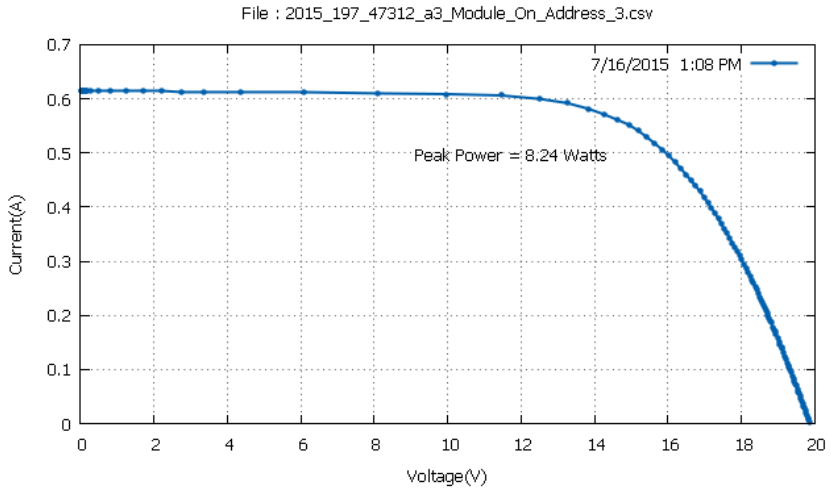
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0375233\ x\ 0.54581964}{933.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



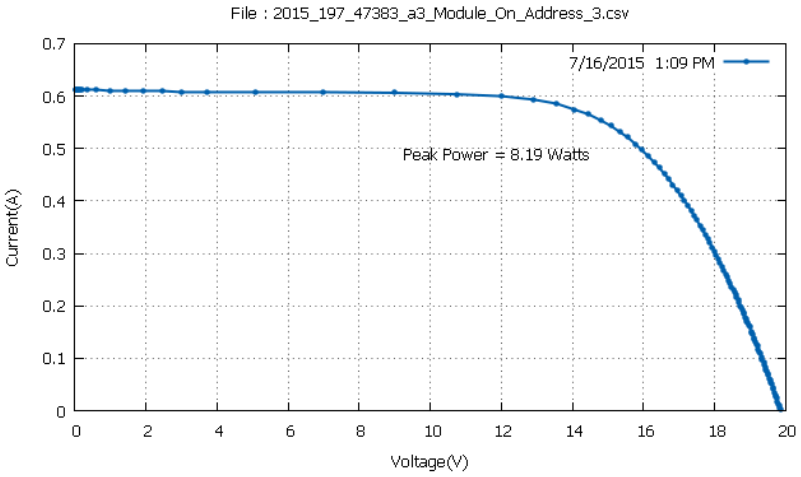
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8133135\ x\ 0.55480963}{933.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}42\ \%$$



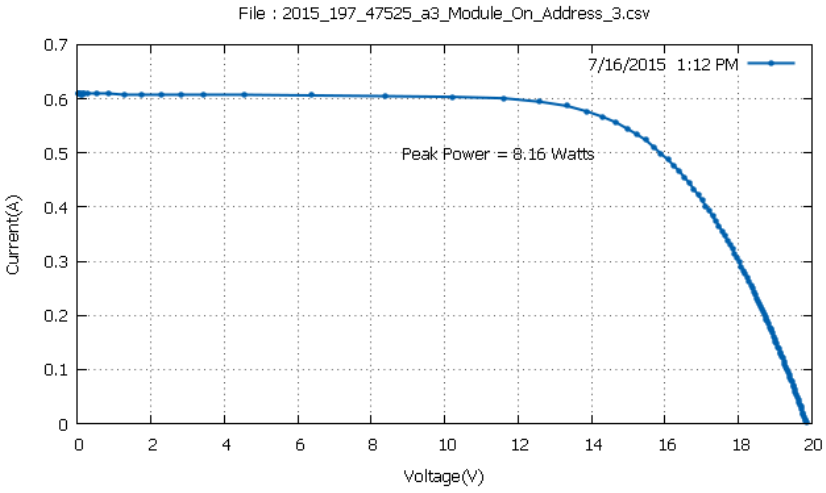
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.759193\ x\ 0.5573782}{934.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9292841\ x\ 0.552241}{932.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7978506\ x\ 0.5535253}{929.2\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.6741486\ x\ 0.556093}{927.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$

Module 5

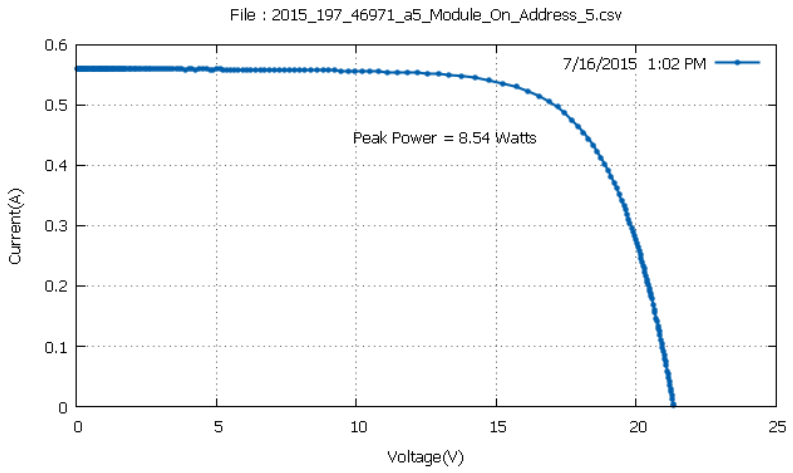
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

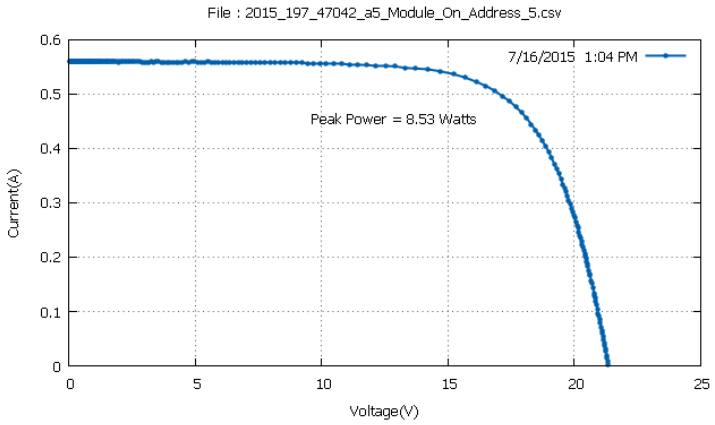
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	58,4	12,08
13:04	58,3	12,08
13:05	58,2	12,06
13:07	58	12,08
13:08	57,9	12,09
13:10	57,7	12,08

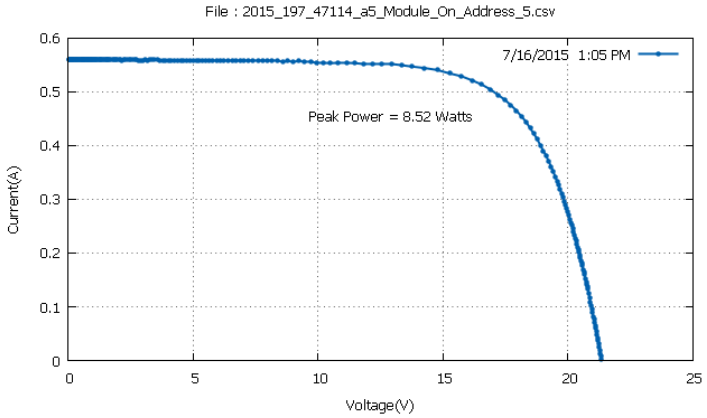
Mean Temperature: 58,08 ºC



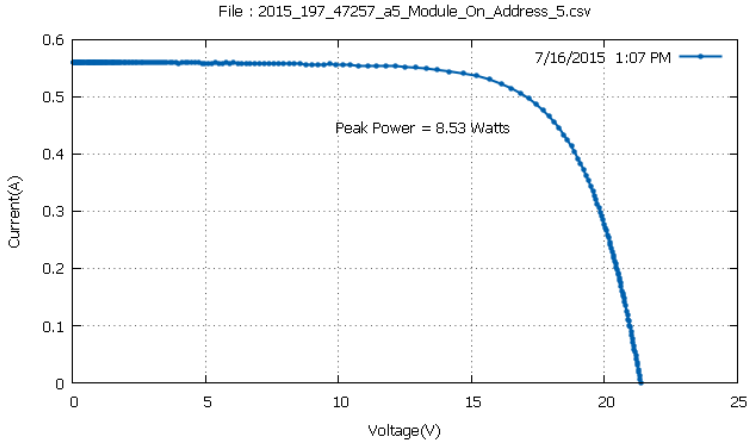
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1791134\ x\ 0.497016937}{934.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}08\ \%$$



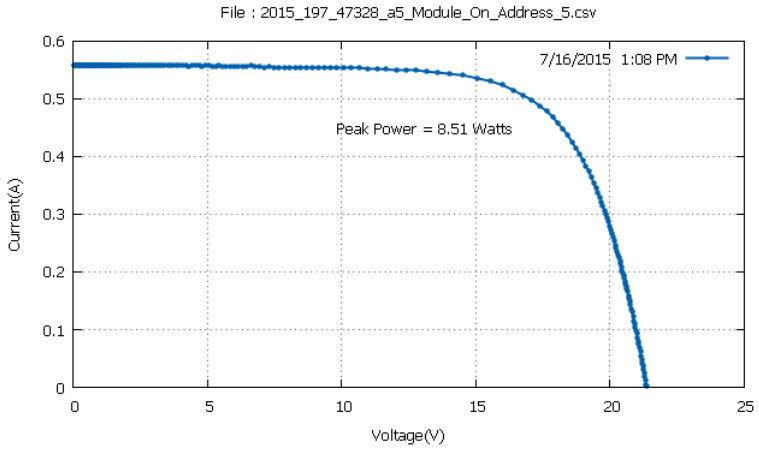
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8543968\ x\ 0.5060069}{933.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}08\ \%$$



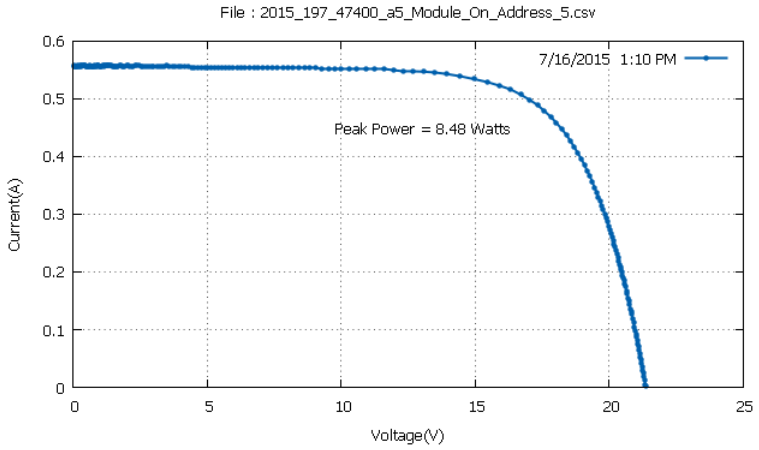
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8853\ x\ 0.504722655}{934.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1559\ x\ 0.497016937}{933.7\ x\ 0{,}0756} \text{ x } 100 = 12{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0786057\ x\ 0.4983012}{931.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}09\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0244865\ x\ 0.4983012}{928.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}08\ \%$$

Module 4

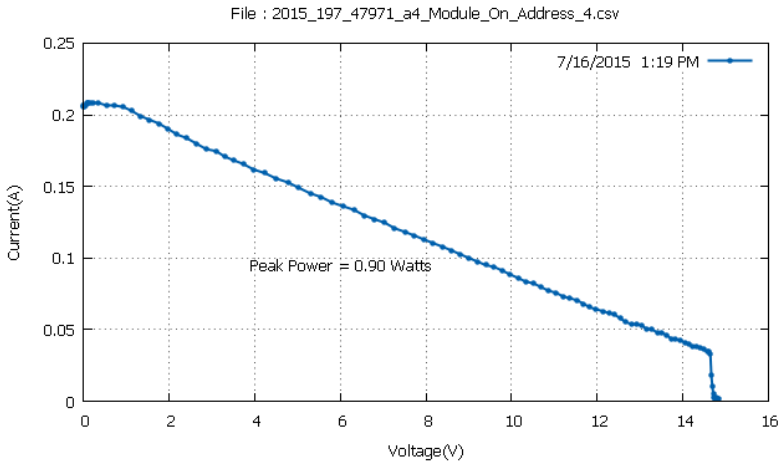
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

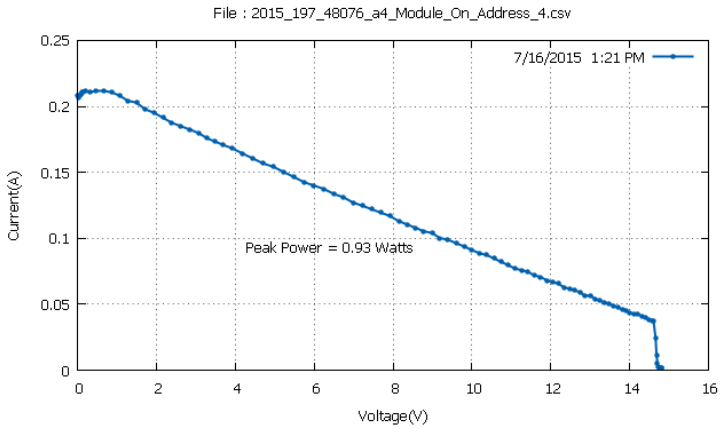
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:19	53,4	1,45
13:21	52,6	1,5
13:22	53,1	1,45
13:24	52,5	1,47
13:25	52,9	1,42
13:26	52,6	1,42

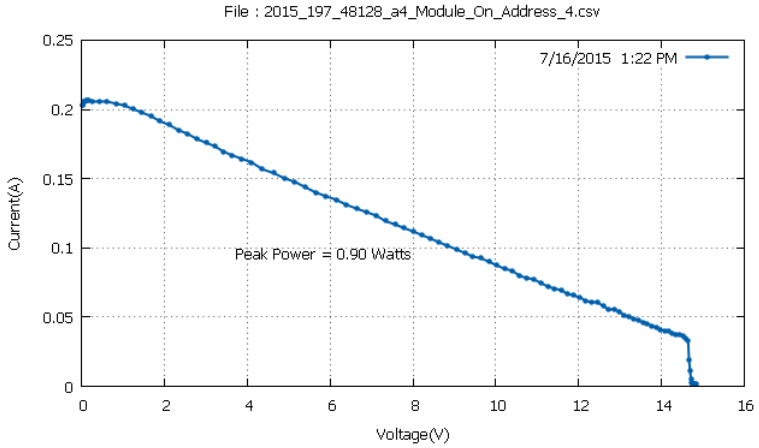
Mean Temperature: 52,85 ºC



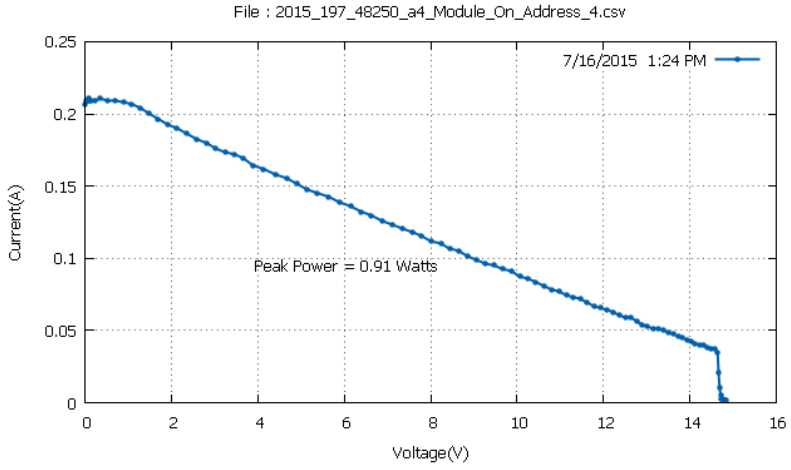
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.589557\ x\ 0.105311081}{923\ x\ 0{,}0671} \text{ x } 100 = 1{,}45\ \%$$



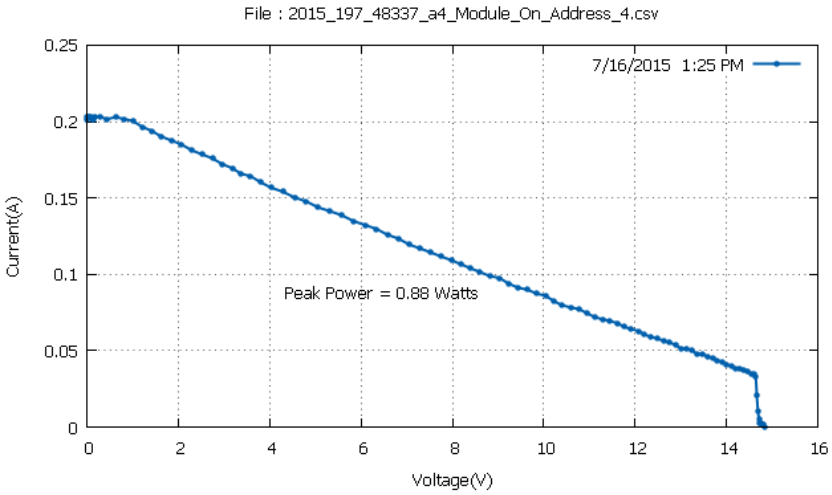
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.9452\ x\ 0.1040268}{923\ x\ 0{,}0671} \text{ x } 100 = 1{,}5\ \%$$



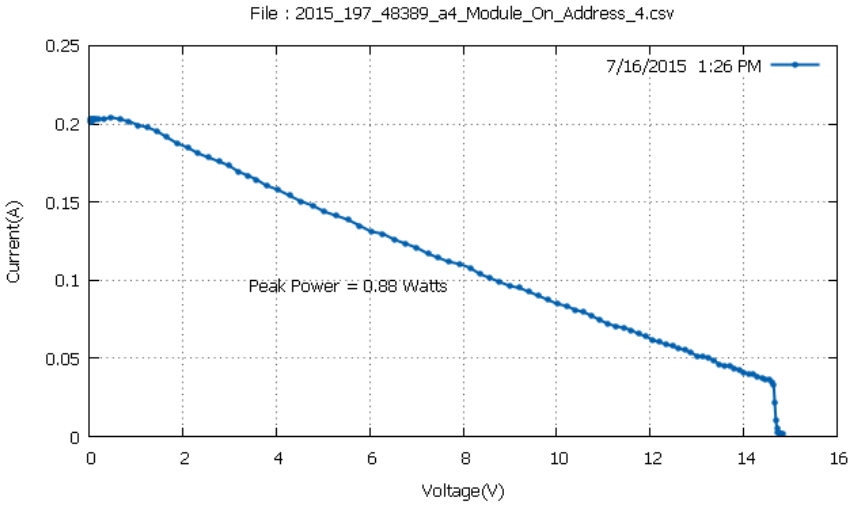
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.427198\ x\ 0.10659536}{922.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}45\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.635945\ x\ 0.10531108}{920.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.030245\ x\ 0.0976053}{921.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.141137\ x\ 0.10787964}{920.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$

Module 8

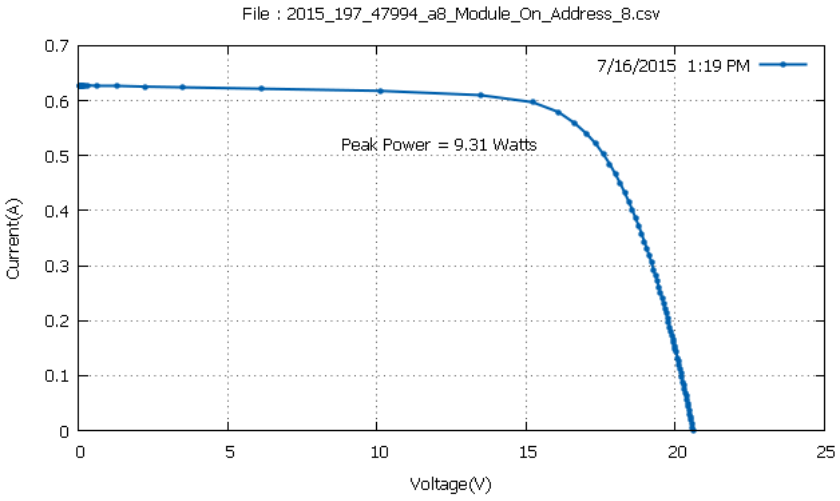
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

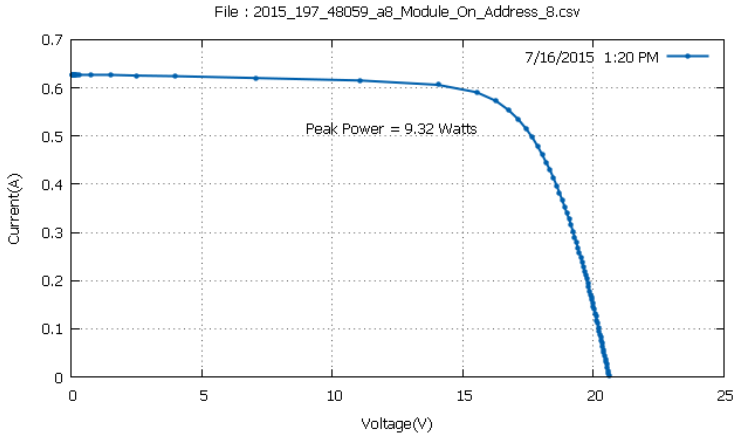
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:19	47,6	13,14
13:20	47,6	13,13
13:22	47,6	13,14
13:24	47,4	13,1
13:25	47	13,14
13:26	47,4	13,1

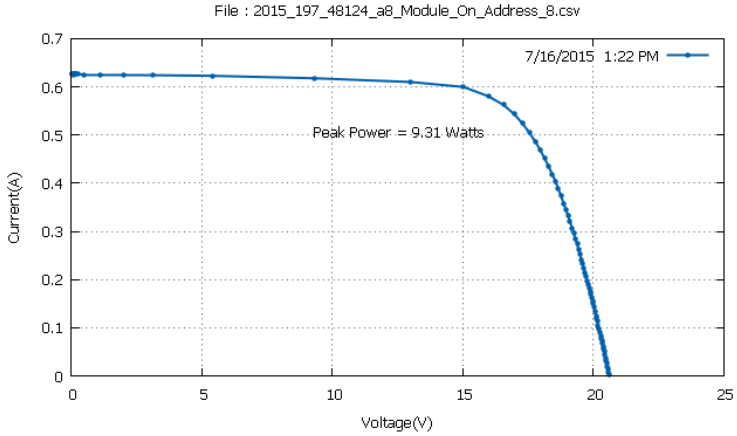
Mean Temperature: 47,43 ºC



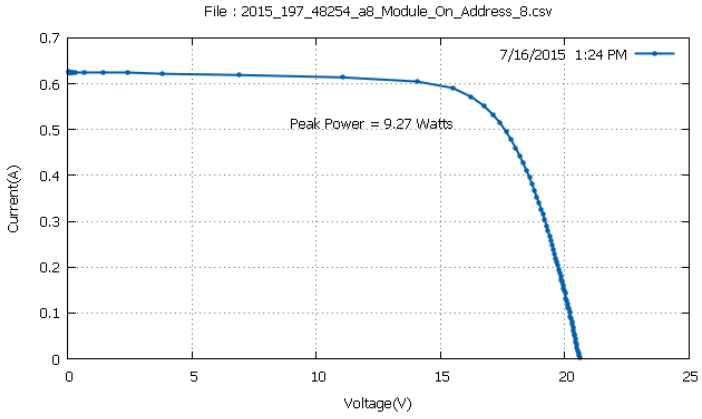
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0812588\ x\ 0.579210937}{922.5\ x\ 0{,}0768}$ x 100 = 13,14 %



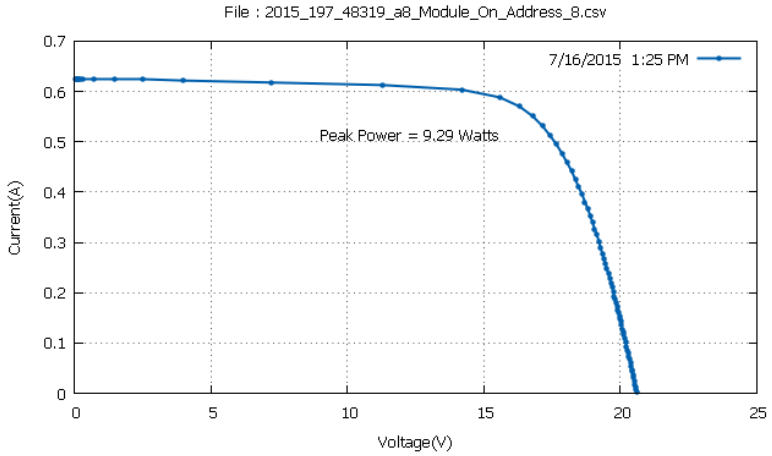
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2668114\ x\ 0.57278955}{923.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}13\ \%$$



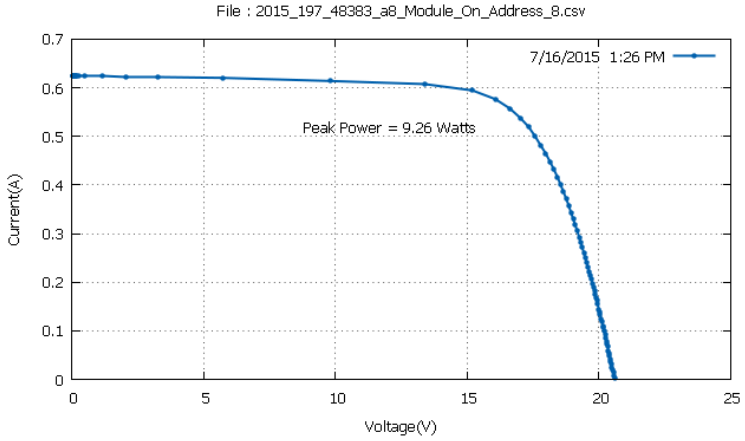
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5528717\ x\ 0.5625153}{922.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2281551\ x\ 0.57150524}{921.3\ x\ 0{,}0768} \text{ x } 100 = 13{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2977371\ x\ 0.570221}{920.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.065795\ x\ 0.5766424}{920.8\ x\ 0{,}0768} \text{ x } 100 = 13{,}1\ \%$$

Module 3

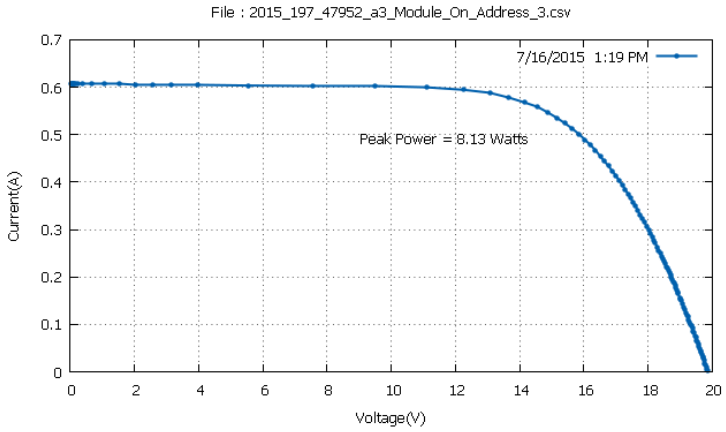
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

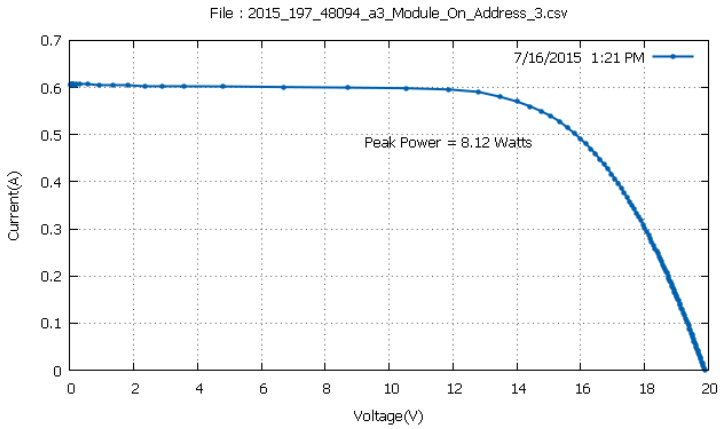
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:19	52,3	12,41
13:21	51,8	12,4
13:22	52,3	12,41
13:23	51,5	12,4
13:26	52,5	12,37
13:27	52,5	12,38

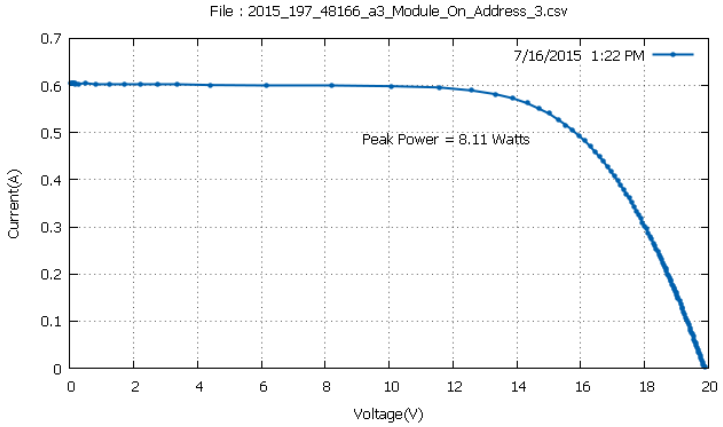
Mean Temperature: 52,15 ºC



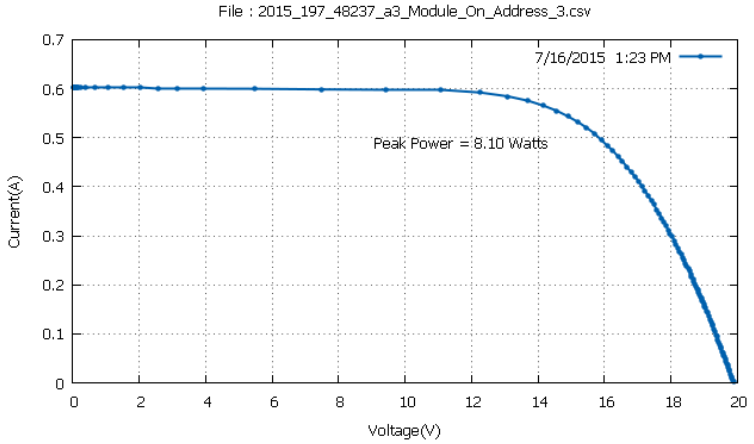
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.867432\ x\ 0.54710394}{923.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



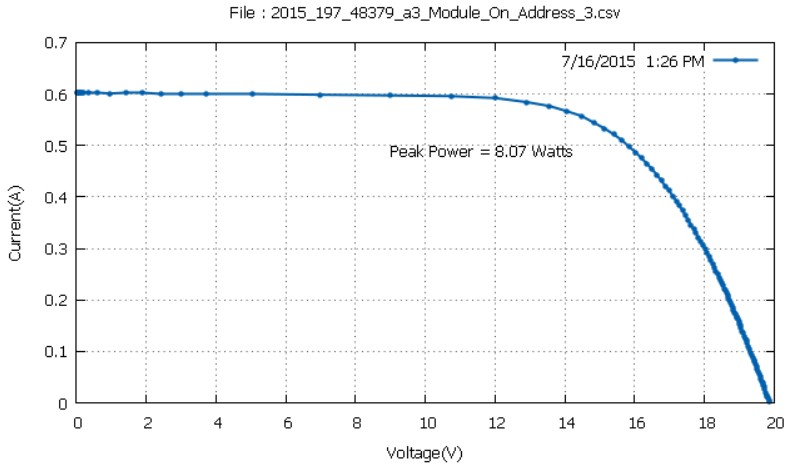
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.0607176\ x\ 0.53939825}{923.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$



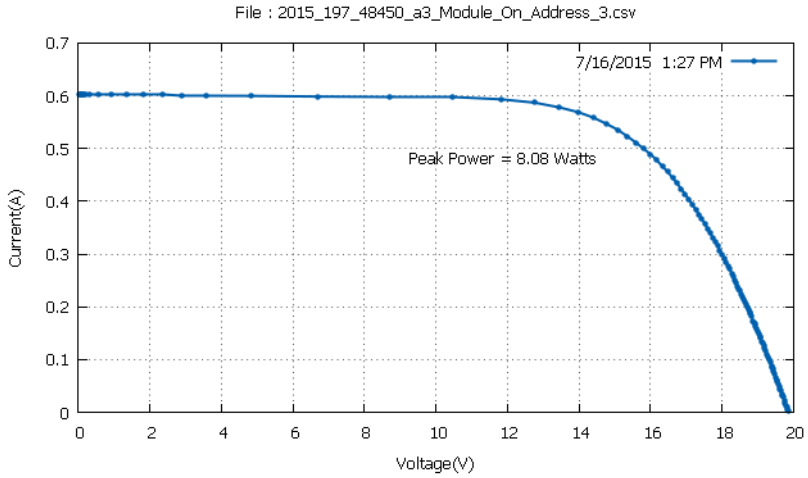
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.998866\ x\ 0.540682}{921.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.90609\ x\ 0.5432511}{920.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8210449\ x\ 0.54453533}{920.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.08391\ x\ 0.5355454}{920.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}38\ \%$$

Module 5

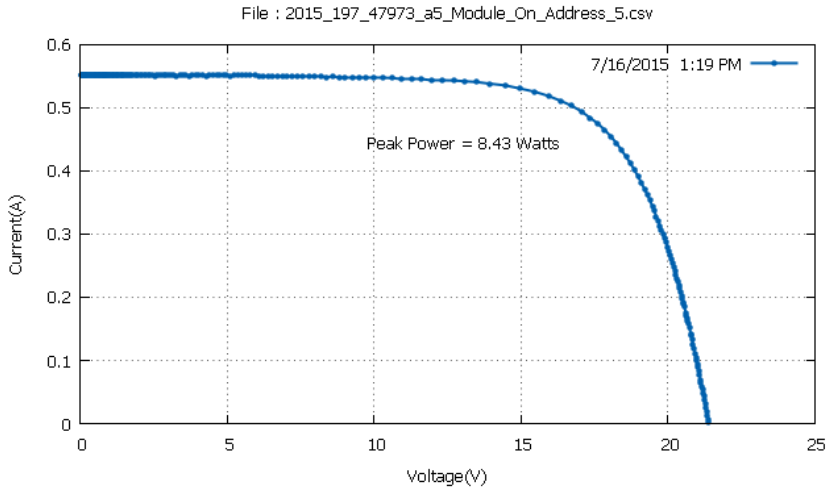
Date: 16/7/2015 – Noon Measurement

Temperature Ambient: 38 ºC

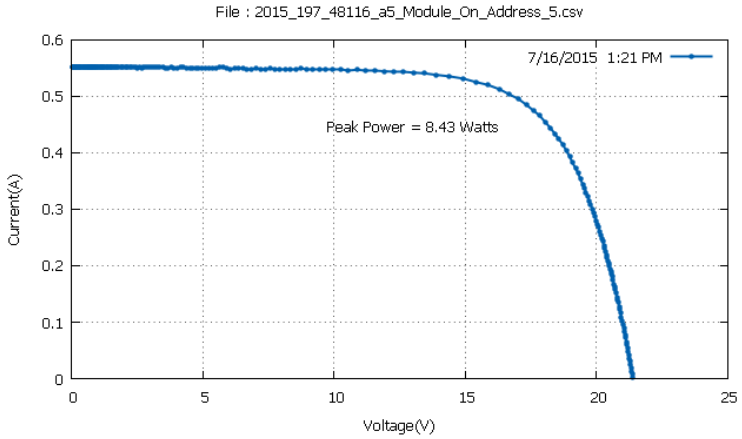
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:19	57	12,09
13:21	56,8	12,07
13:23	56,8	12,09
13:24	56,7	12,05
13:26	56,8	12,1
13:27	56,7	12,06

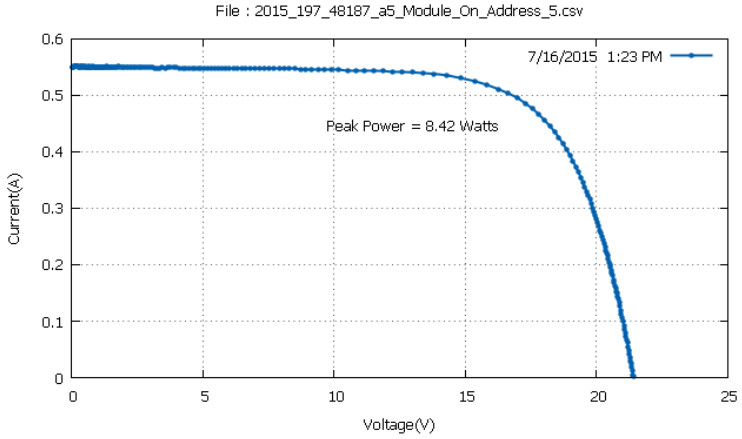
Mean Temperature: 56,8 ºC



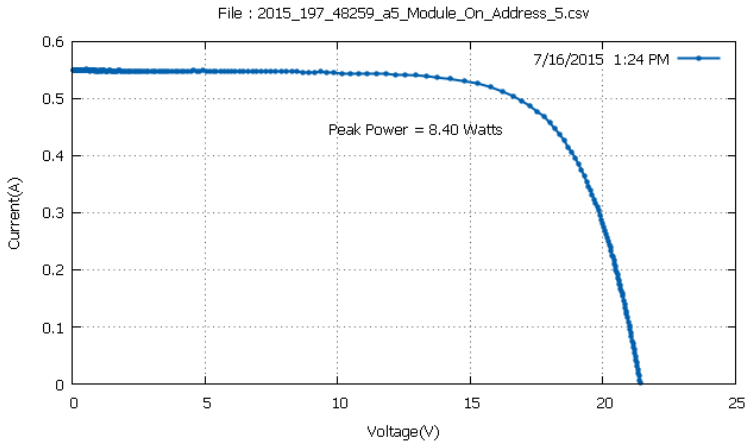
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.494448364}{922.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}09\ \%$$



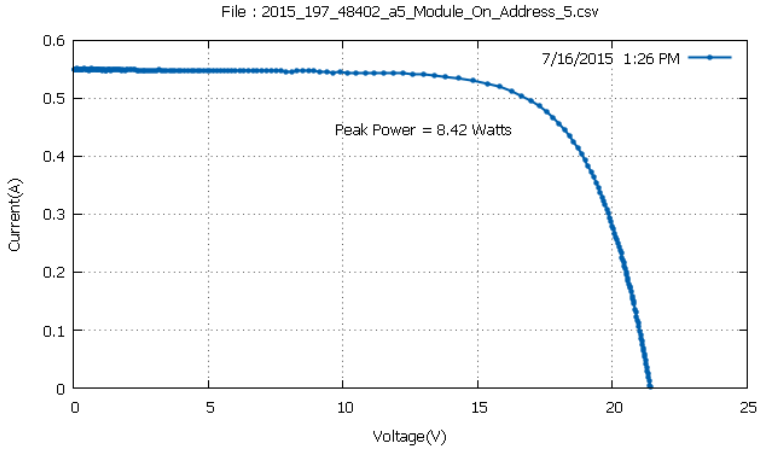
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0090237\ x\ 0.49573266}{923.2\ x\ 0{,}0756} \text{ x } 100 = 12{,}07\ \%$$



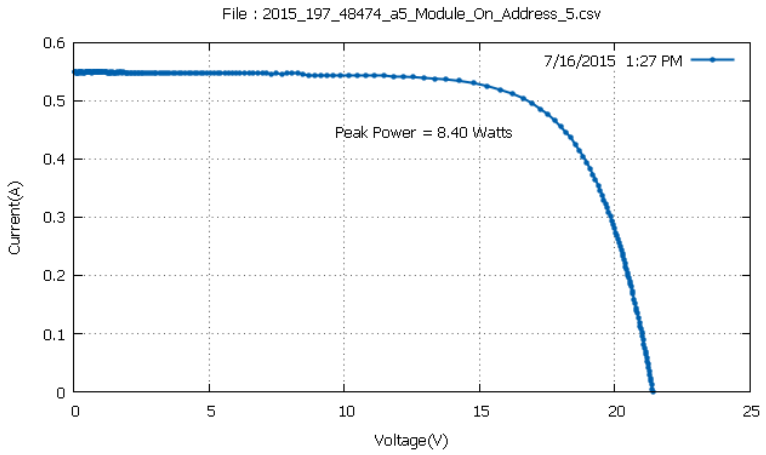
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.98583\ x\ 0.49573266}{920.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}09\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.947172\ x\ 0.4957326}{921.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9780979\ x\ 0.49573266}{921.1\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9471722\ x\ 0.495732665}{920.8\ x\ 0{,}0756}\ \text{x}\ 100 = 12{,}06\ \%$$

Module 4

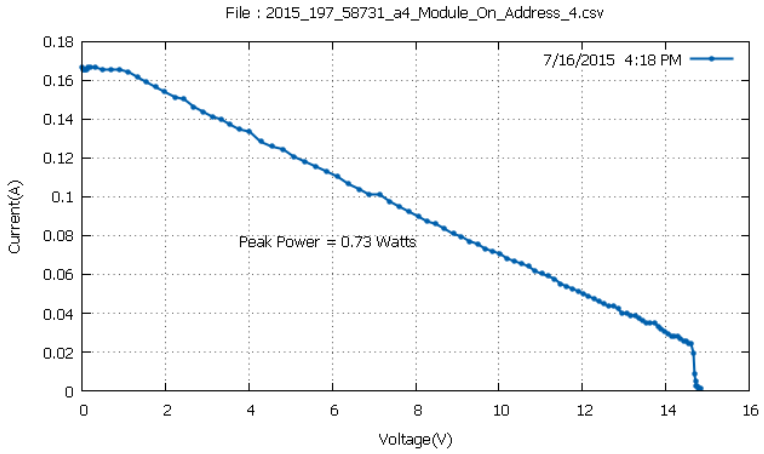
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

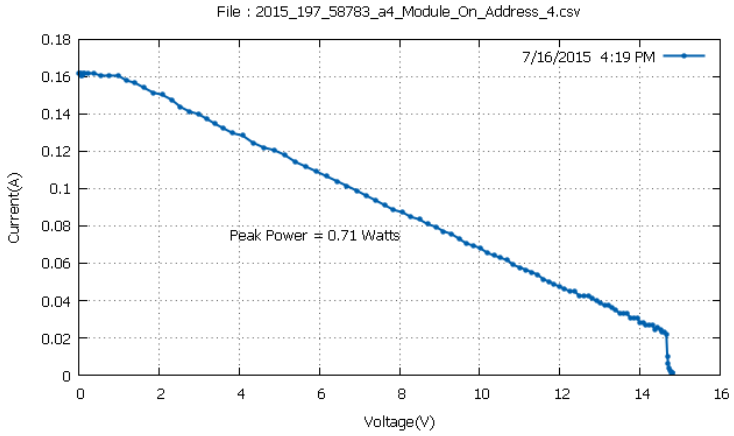
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:18	43,8	1,92
16:19	44,2	1,9
16:21	45,5	1,83
16:23	47	1,73
16:24	46,1	1,86
16:25	45	1,81

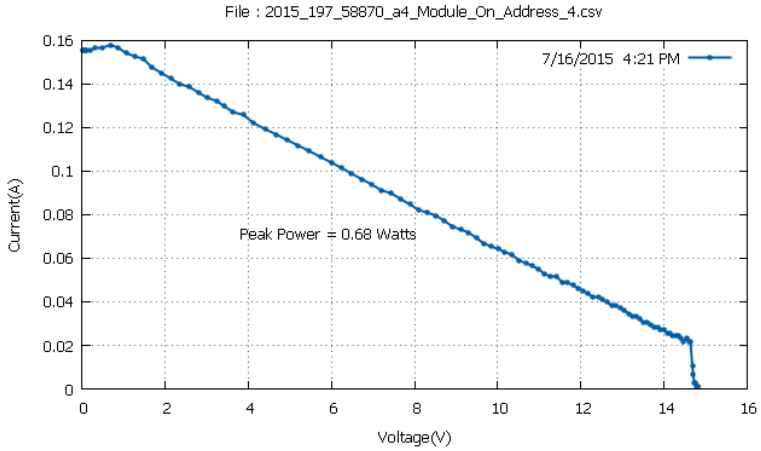
Mean Temperature: 45,26 ºC



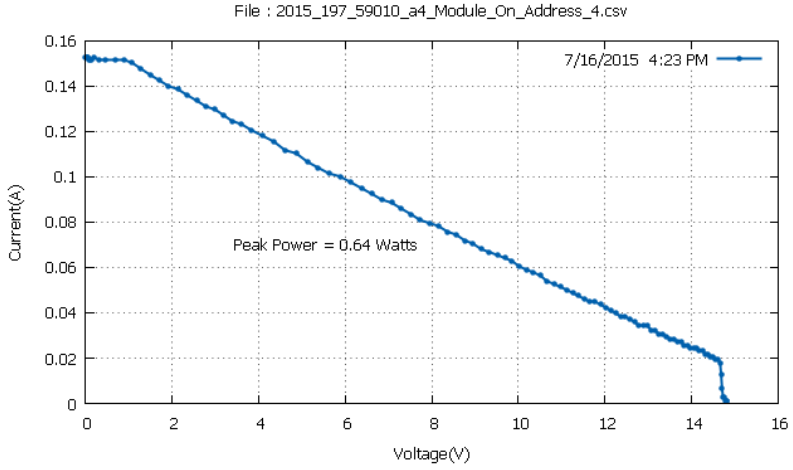
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.02516651\ x\ 0.09118398}{563.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}92\ \%$$



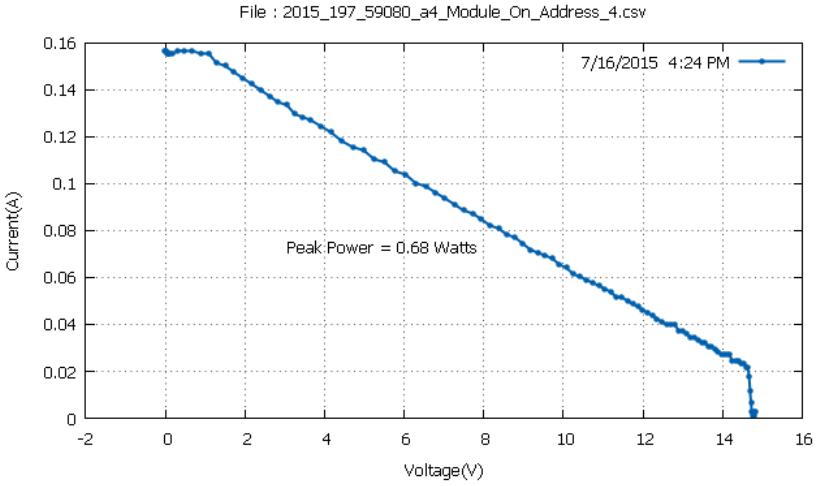
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.49678\ x\ 0.083478294}{556.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}9\ \%$$



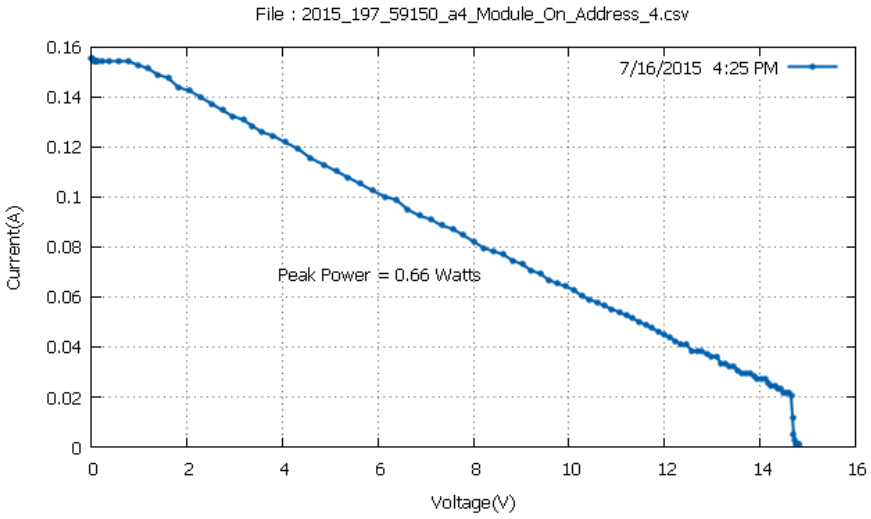
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.51224\ x\ 0.07962545}{552.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmp\square\ x\ Impp}{E\ x\ A} = \frac{8.14886\ x\ 0.07834117}{550.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.9633154\ x\ 0.0860468}{544.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.620482\ x\ 0.0770568}{542.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}81\ \%$$

Module 8

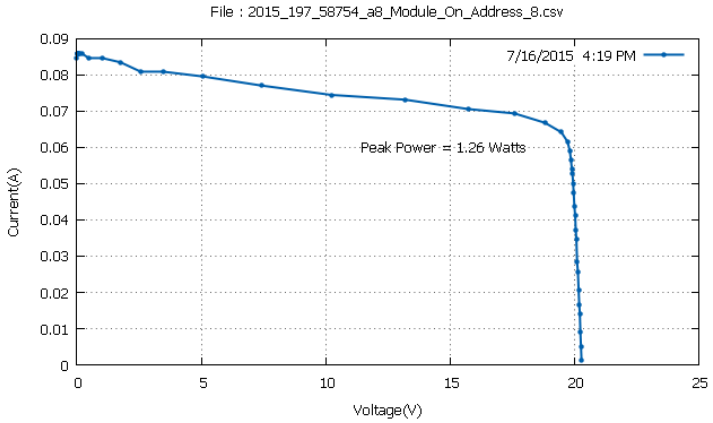
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

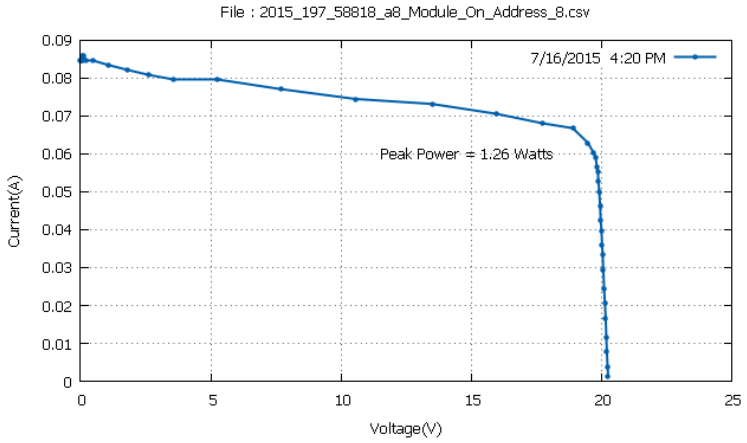
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:19	46	2,93
16:20	46,2	2,96
16:21	46,4	2,96
16:23	46,9	2,88
16:24	47	2,89
16:25	46,8	2,87

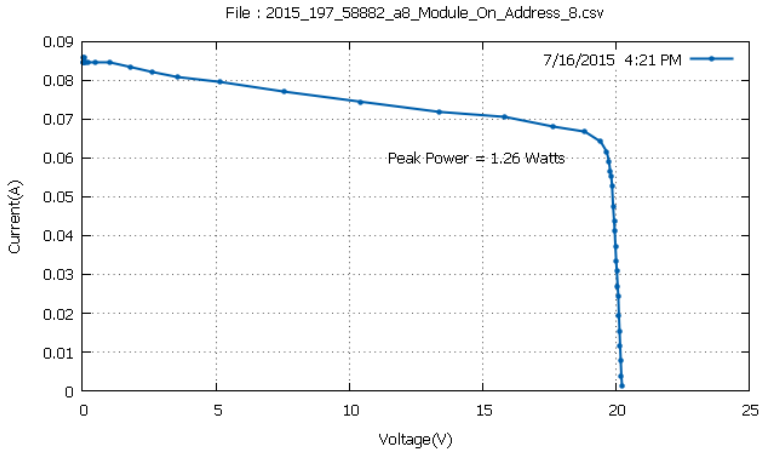
Mean Temperature: 46,55 ºC



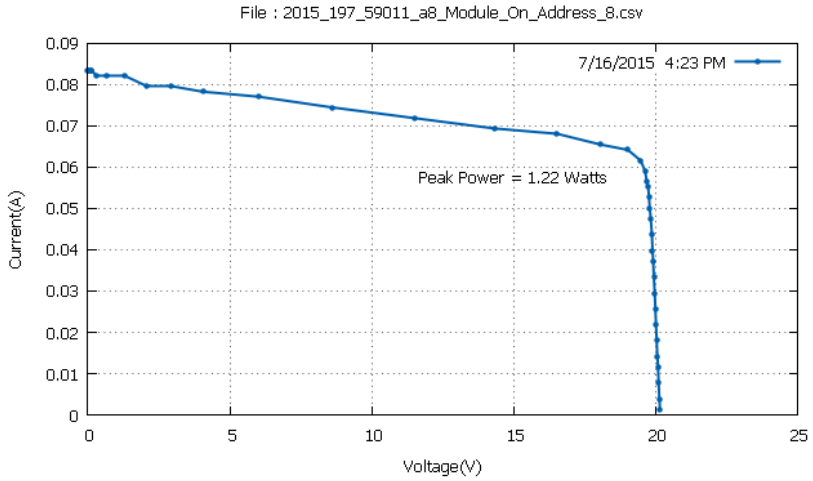
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.818164\ x\ 0.06678264}{559.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}93\ \%$$



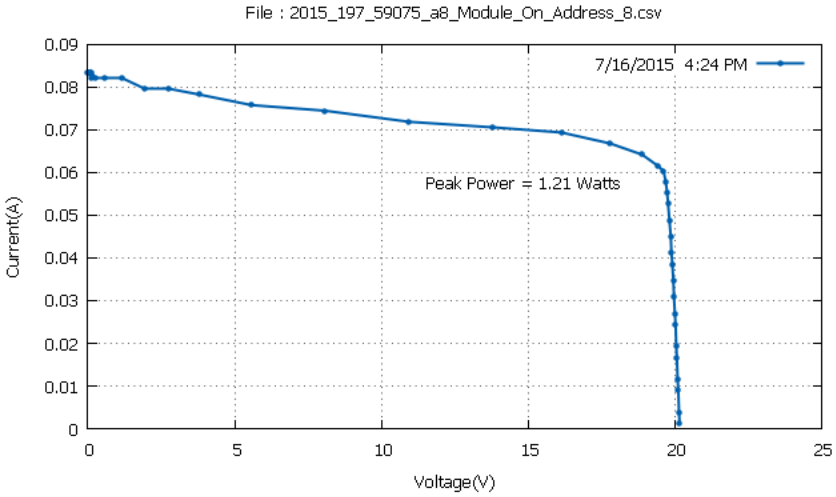
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.89548\ x\ 0.0667826}{554.1\ x\ 0{,}0768} \text{ x } 100 = 2{,}96\ \%$$



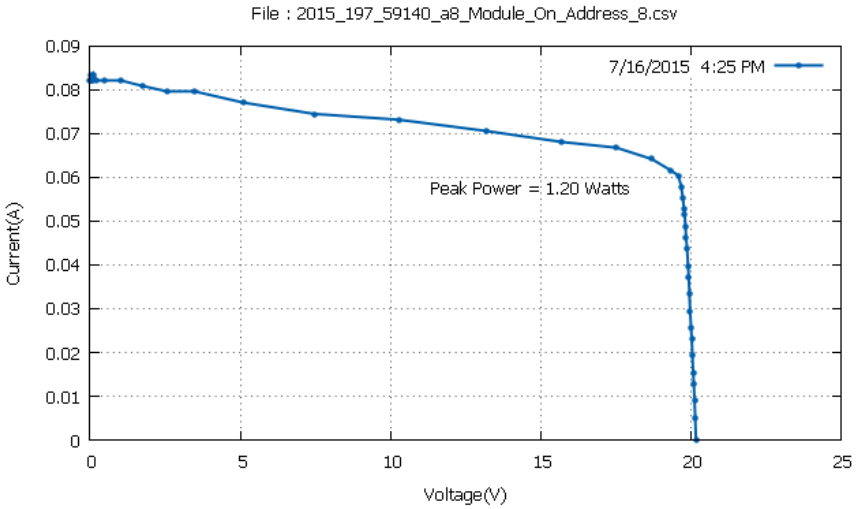
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.84136\ x\ 0.066782}{552.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.026912\ x\ 0.06421407}{550.5\ x\ 0{,}0768} \text{ x } 100 = 2{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8877468\ x\ 0.064214}{544.6\ x\ 0{,}0768} \text{ x } 100 = 2{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7021942\ x\ 0.06421407}{543.1\ x\ 0{,}0768} \text{ x } 100 = 2{,}87\ \%$$

Module 3

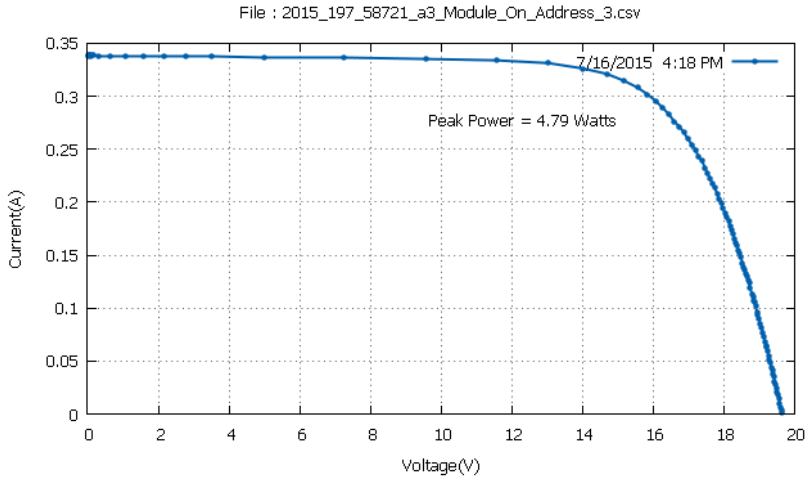
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

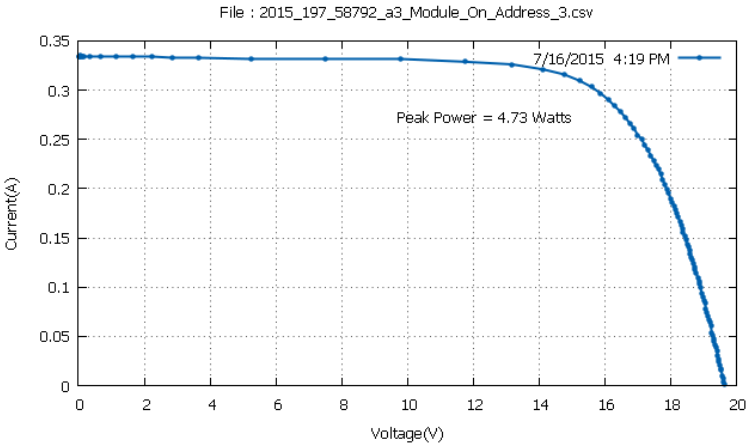
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:18	48,1	12
16:19	47,8	12
16:22	48,5	11,91
16:23	48,8	11,85
16:24	48,8	11,85
16:26	48,7	11,8

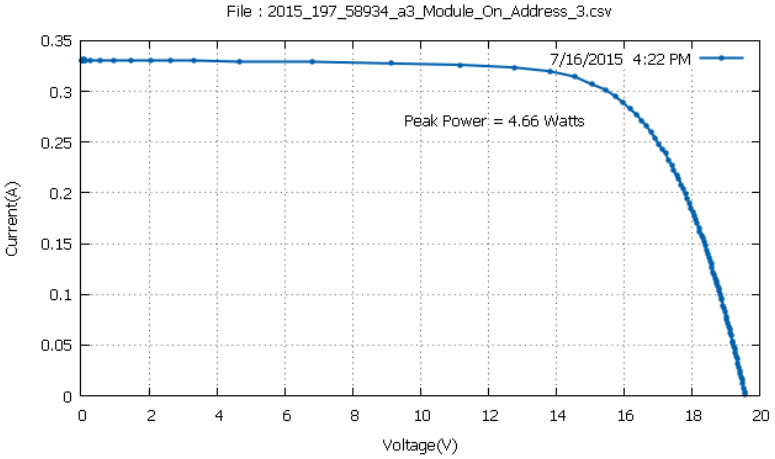
Mean Temperature: 48,45 ºC



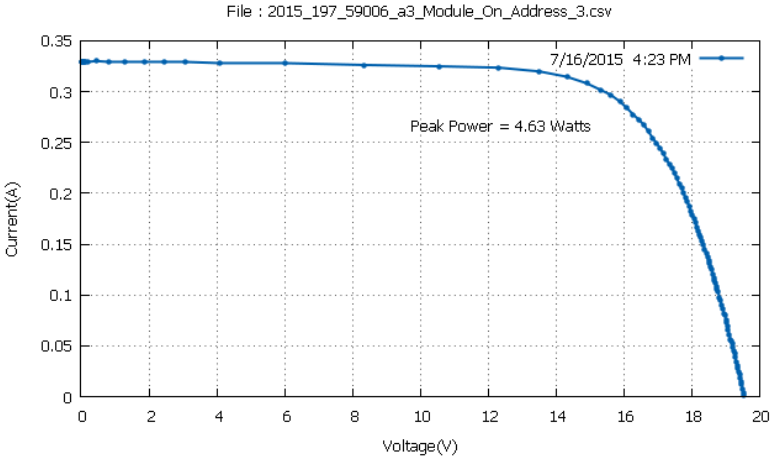
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5555248\ x\ 0.30822756}{563.4\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



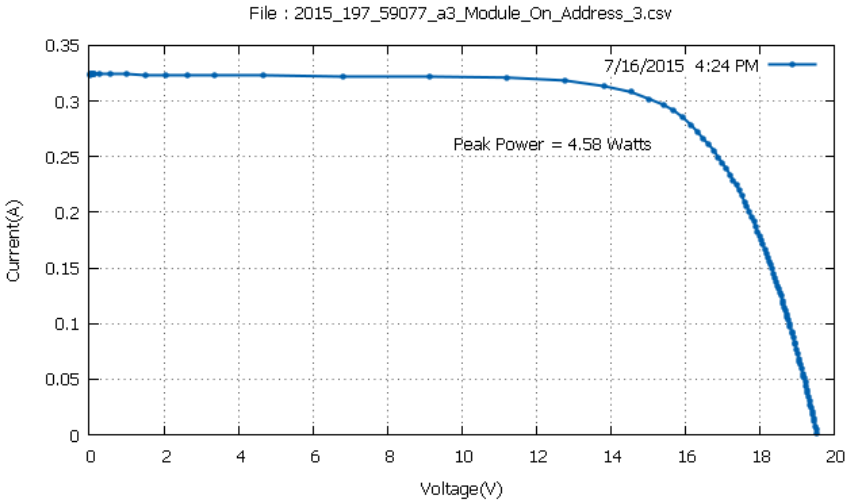
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.60191\ x\ 0.30309042}{556\ x\ 0{,}0709} \text{ x } 100 = 12\ \%$$



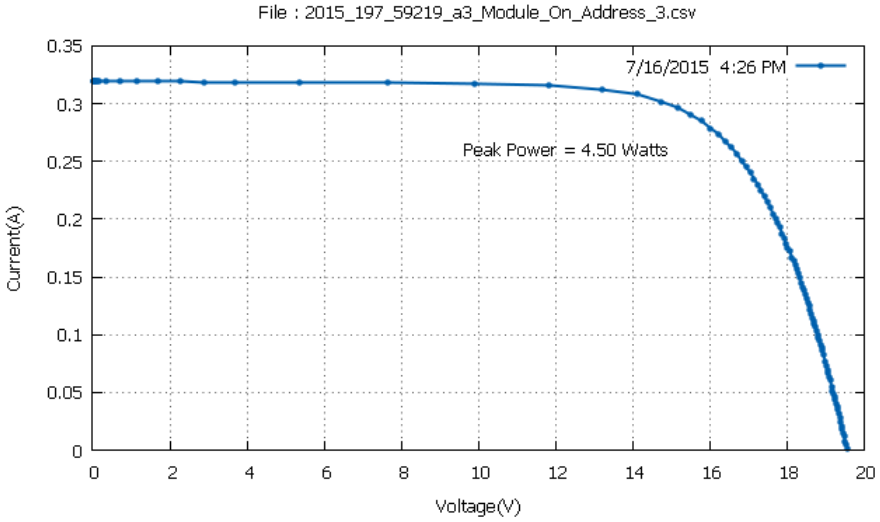
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.4472857\ x\ 0.3018061}{551.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6173763\ x\ 0.29666903}{550.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6946\ x\ 0.291531}{544.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.50913\ x\ 0.2902476}{538.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$

Module 5

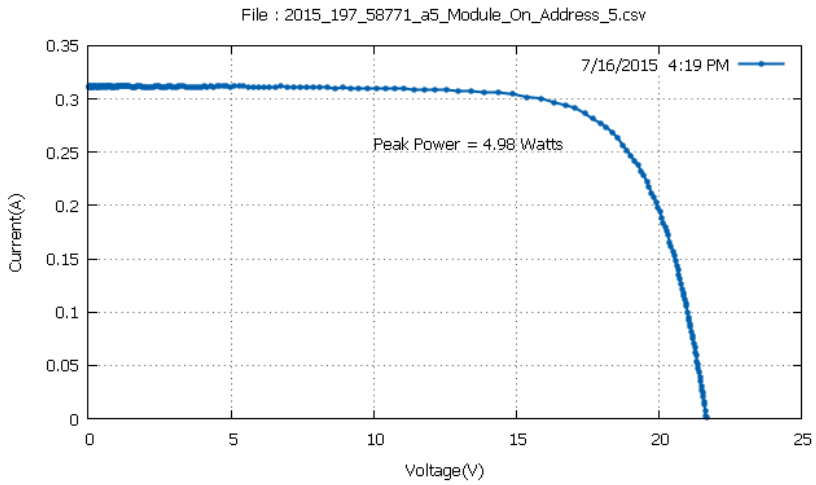
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

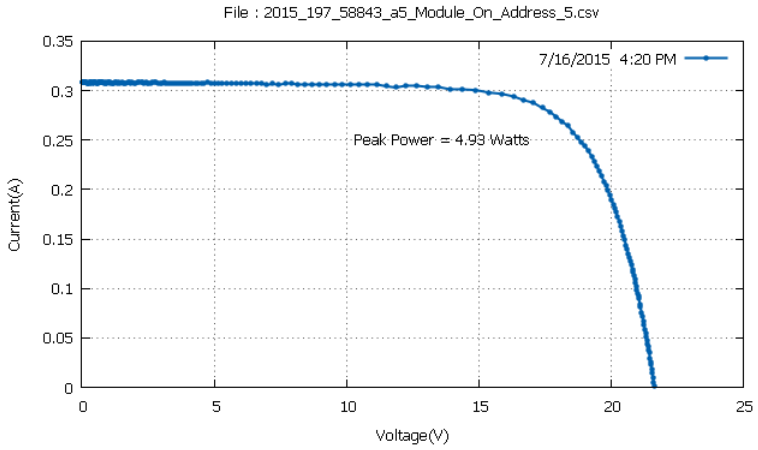
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:19	46,1	12
16:20	46,2	12
16:21	46,3	11,91
16:24	46,8	11,85
16:25	46,6	11,85
16:26	46,5	11,8

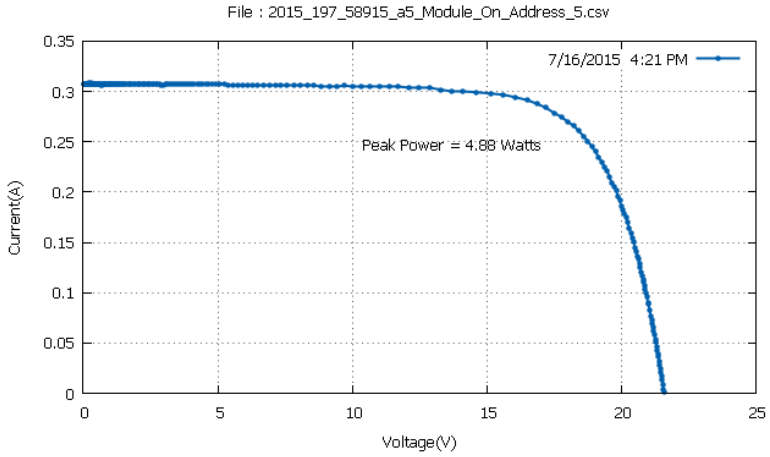
Mean Temperature: 46,41 ºC



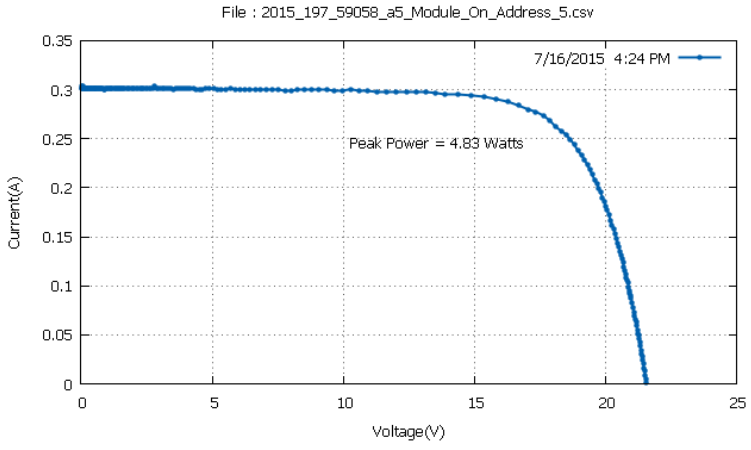
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.403324\ x\ 0.286394775}{559.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}77\ \%$$



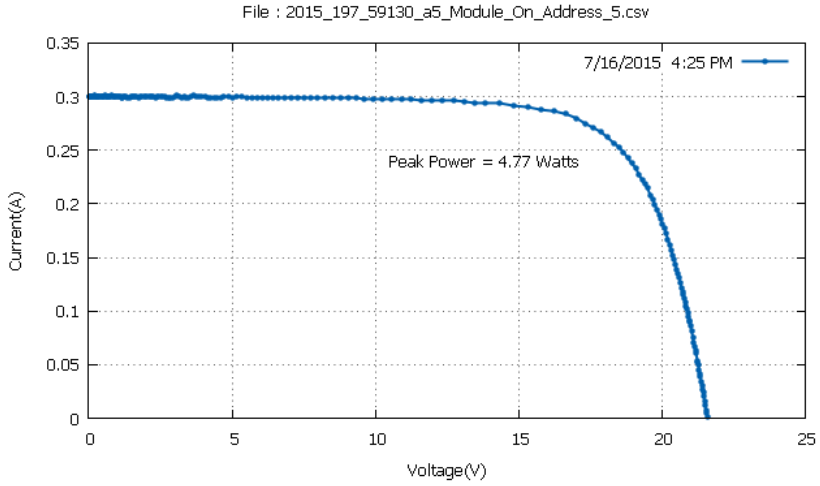
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.68165\ x\ 0.278689}{552.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}8\ \%$$



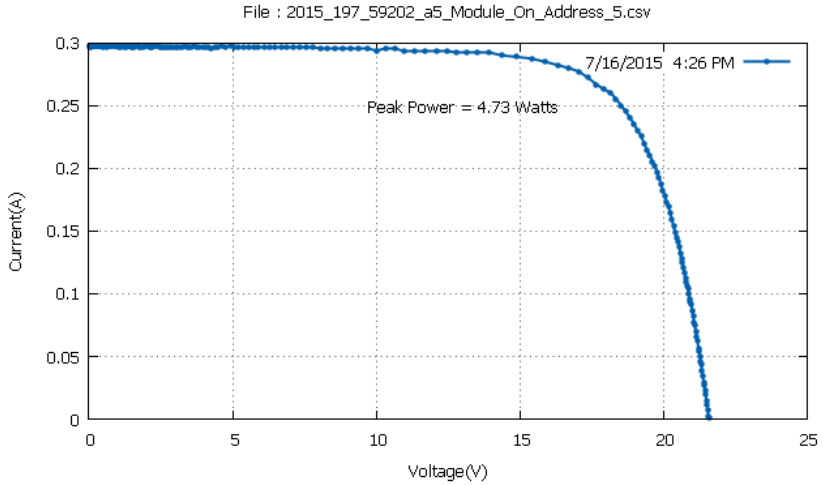
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7666988\ x\ 0.274836242}{552.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}67\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6352654\ x\ 0.273551971}{545.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.867206\ x\ 0.26713055}{543.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.0554123\ x\ 0.27740481}{538.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}62\ \%$$

Module 4

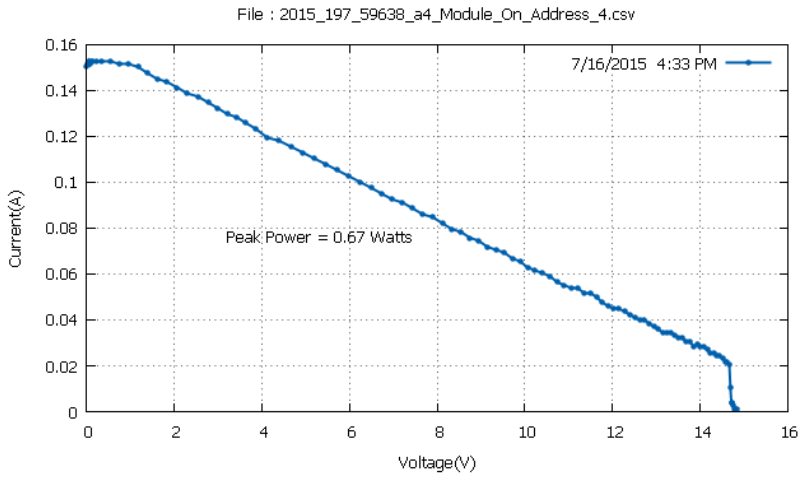
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

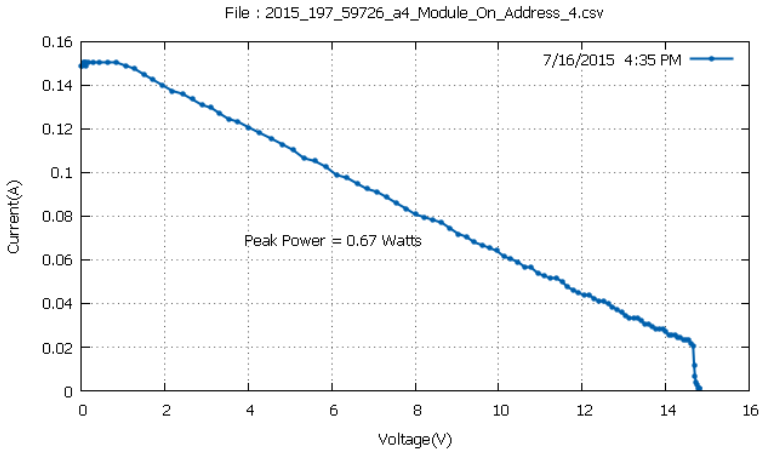
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:33	42,6	1,93
16:35	42,5	1,95
16:36	41,6	1,94
16:38	41,7	2,03
16:39	41,8	2,01
16:41	41,6	2

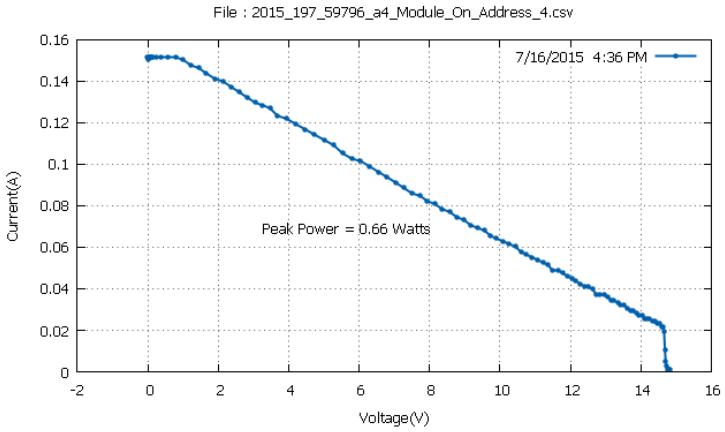
Mean Temperature: 41,96 ºC



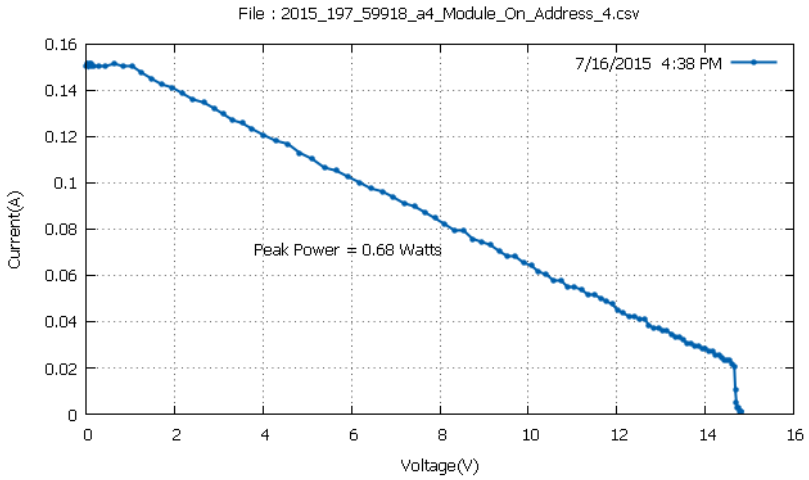
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.543169\ x\ 0.0783411}{516.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}93\ \%$$



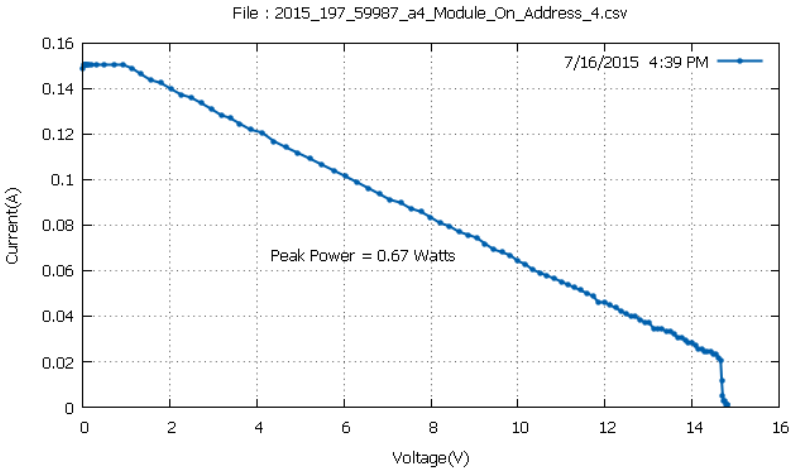
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.62821\ x\ 0.077056}{510.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}95\ \%$$



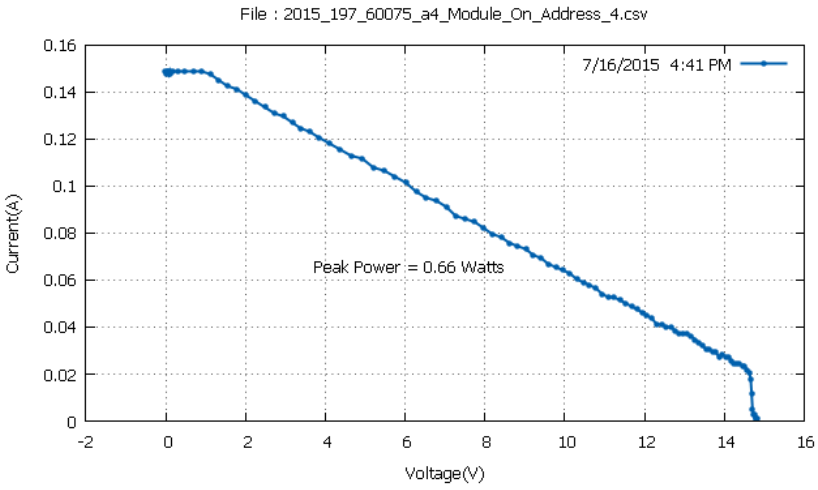
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.419467\ x\ 0.07834117}{506.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}94\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.82149\ x\ 0.07705689}{498.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.18487\ x\ 0.073204}{495.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.022514\ x\ 0.07320405}{491.6\ x\ 0{,}0671} \text{ x } 100 = 2\ \%$$

Module 8

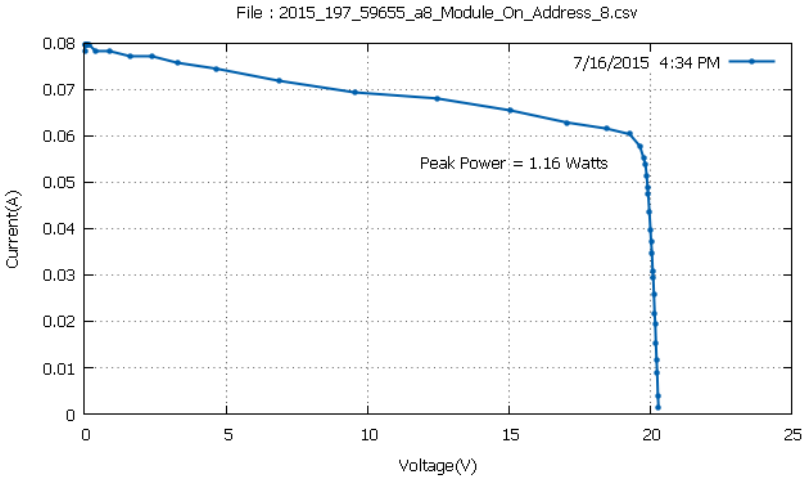
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

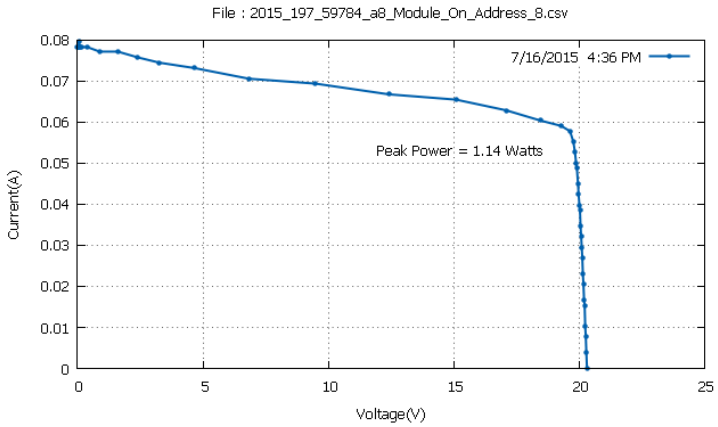
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:34	44,2	2,93
16:36	43,6	2,93
16:38	43,3	2,89
16:40	43	2,96
16:41	42,9	2,98
16:42	42,9	2,95

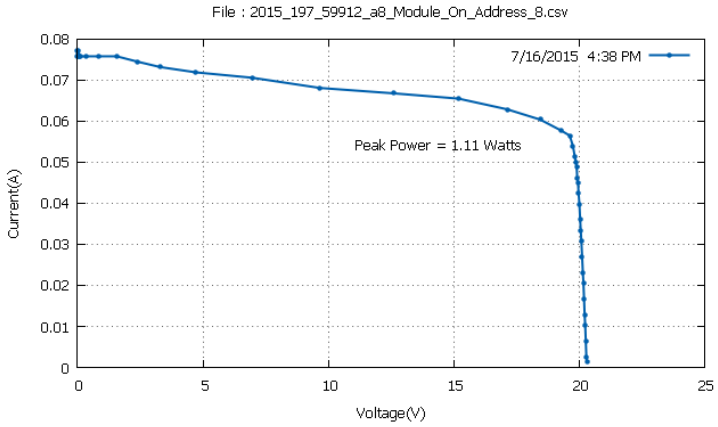
Mean Temperature: 43,31 ºC



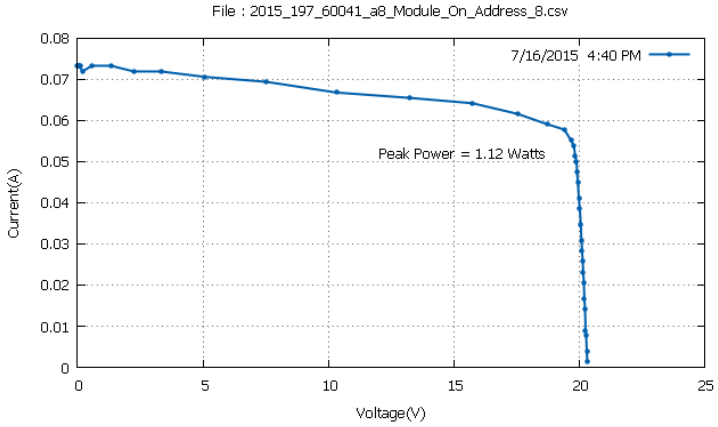
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.2743168\ x\ 0.0603612}{514.8\ x\ 0{,}0768} \text{ x } 100 = 2{,}93\ \%$$



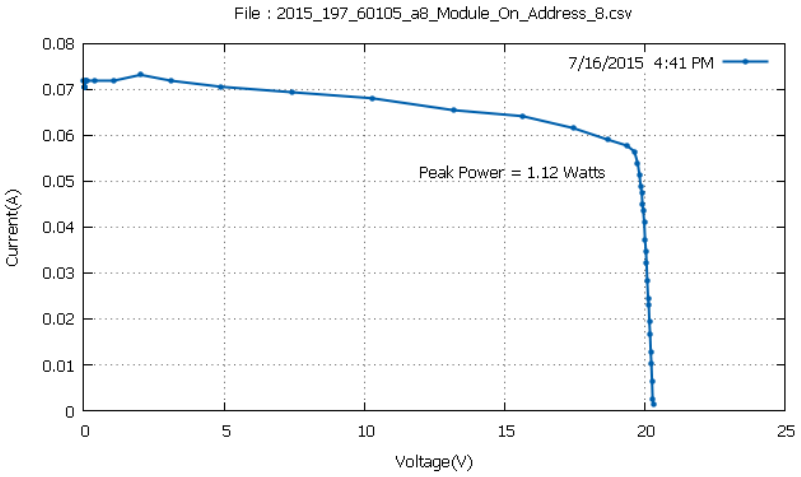
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.282047\ x\ 0.05907695}{505.7\ x\ 0{,}0768} \text{ x } 100 = 2{,}93\ \%$$



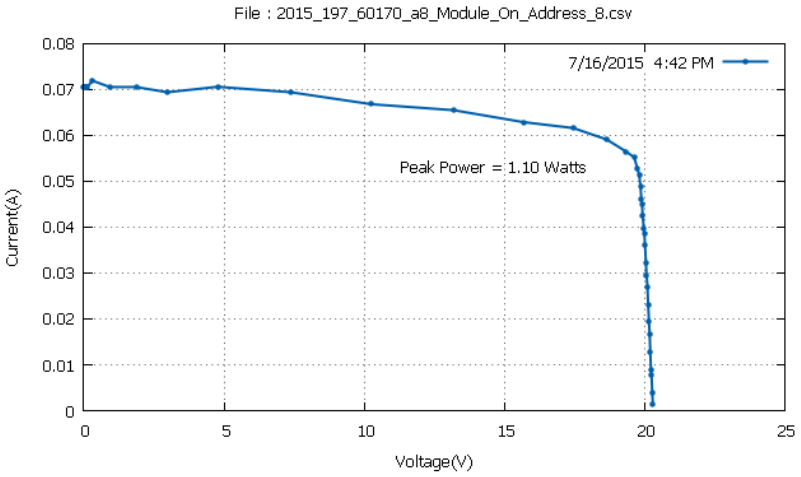
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.44707\ x\ 0.0603612}{499\ x\ 0{,}0768} \text{ x } 100 = 2{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.4057\ x\ 0.05779266}{492.8\ x\ 0{,}0768} \text{ x } 100 = 2{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.359361\ x\ 0.057792667}{488.8\ x\ 0{,}0768} \text{ x } 100 = 2{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.6480751\ x\ 0.05907695}{485\ x\ 0{,}0768} \text{ x } 100 = 2{,}95\ \%$$

Module 3

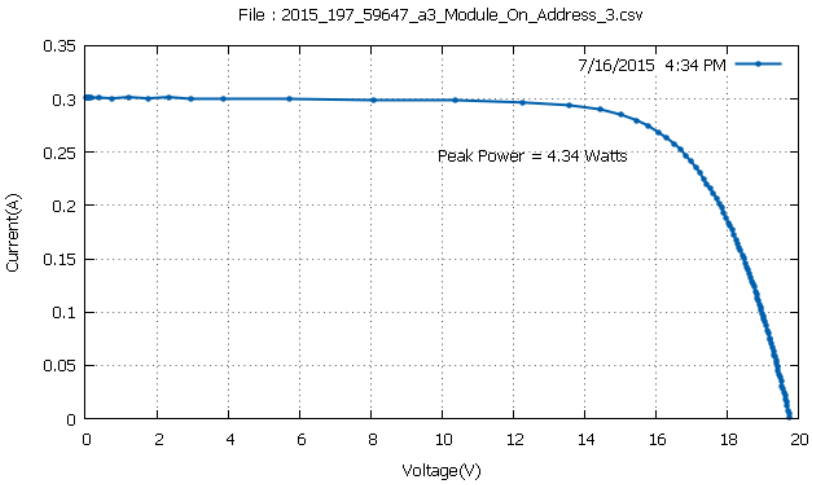
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

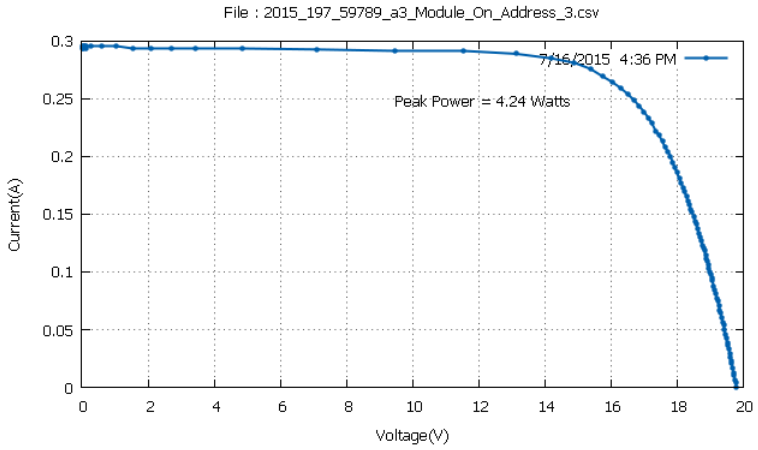
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:34	44	11,89
16:36	43,3	11,83
16:37	43,1	11,87
16:38	42,8	11,86
16:41	42,4	11,84
16:43	42	11,75

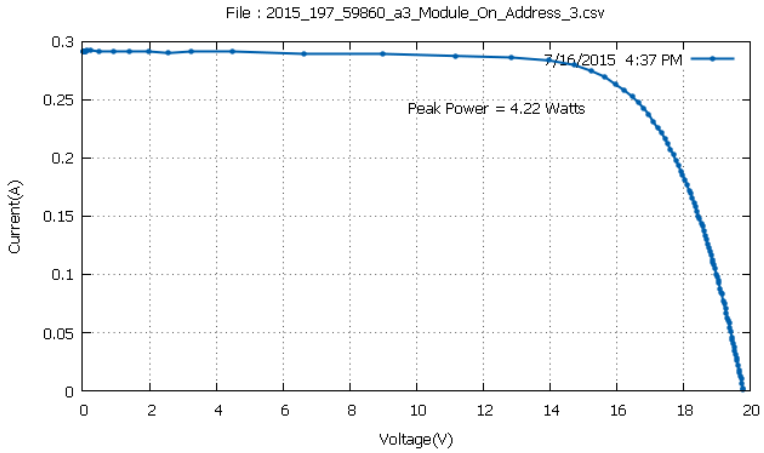
Mean Temperature: 42,93 ºC



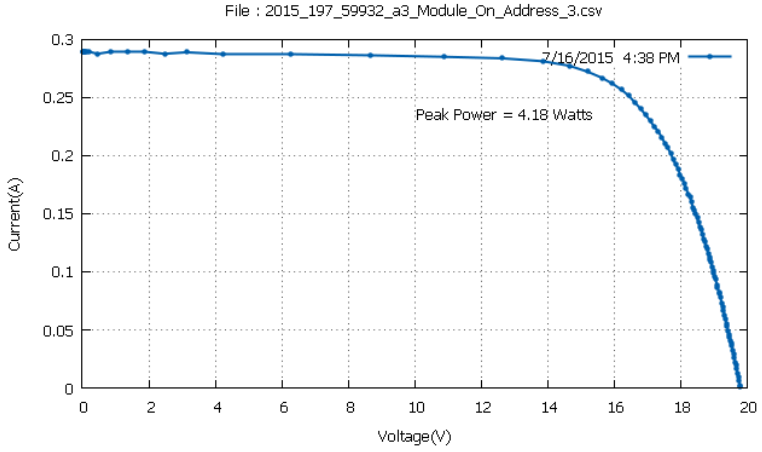
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7951975\ x\ 0.274836242}{514.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}89\ \%$$



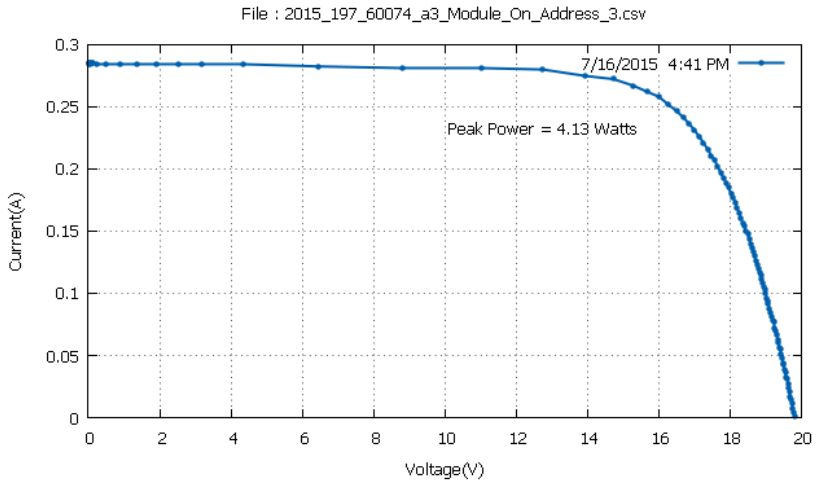
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.3699722\ x\ 0.2761205}{505.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}83\ \%$$



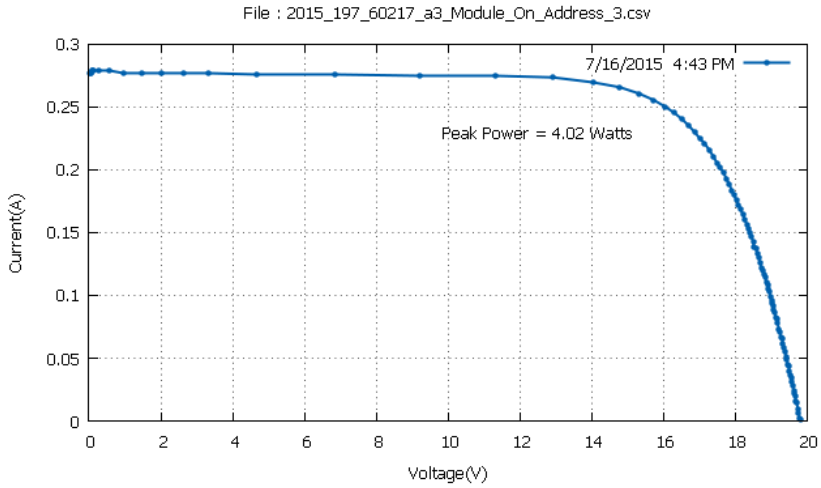
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6483021\ x\ 0.2696991}{501.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}87\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.949825\ x\ 0.26199343}{496.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0039444\ x\ 0.2581407}{491.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7256155\ x\ 0.255572021}{482.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}75\ \%$$

Module 5

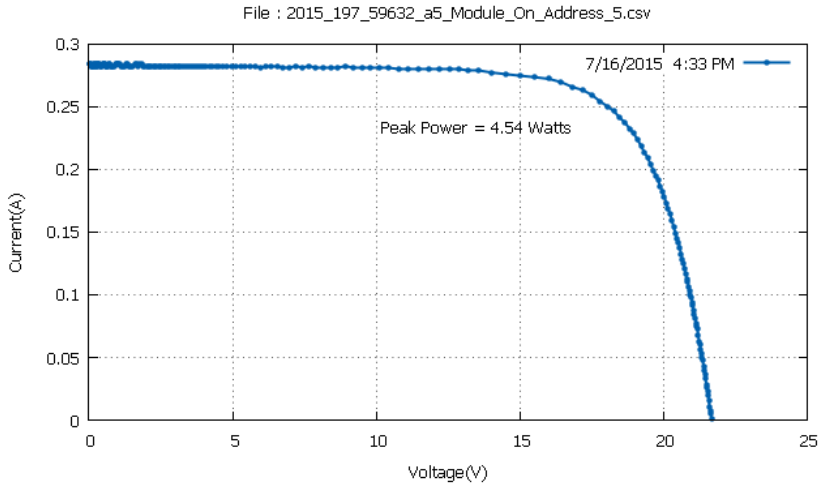
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

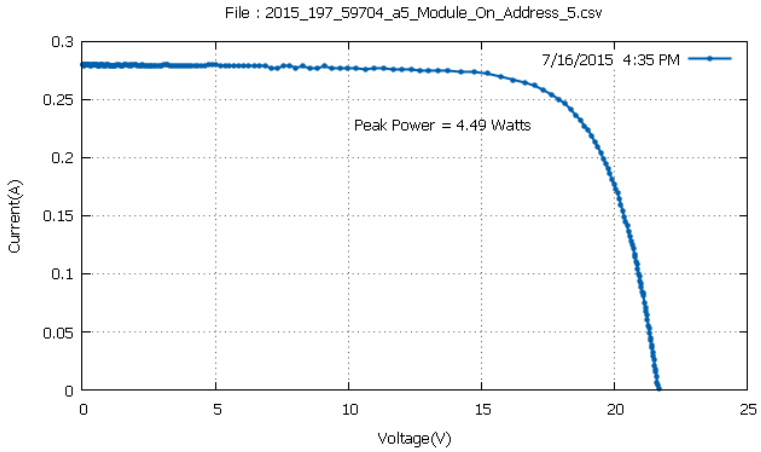
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:33	44,9	11,61
16:35	44,7	11,61
16:36	44,5	11,58
16:38	43,9	11,61
16:39	43,8	11,59
16:41	43,2	11,57

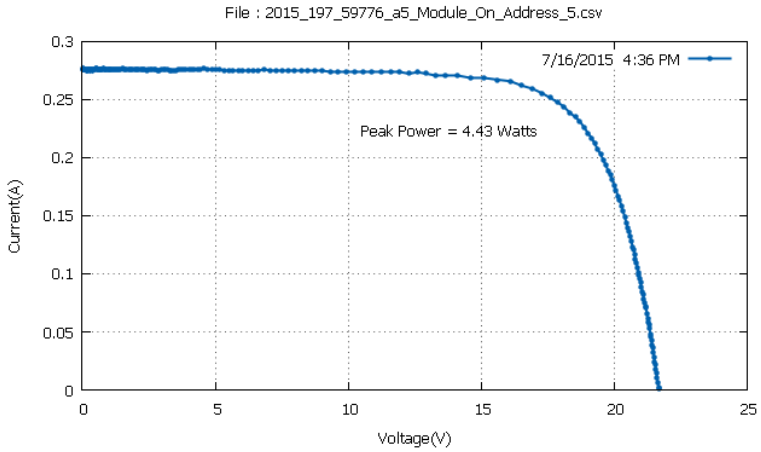
Mean Temperature: 44,16 ºC



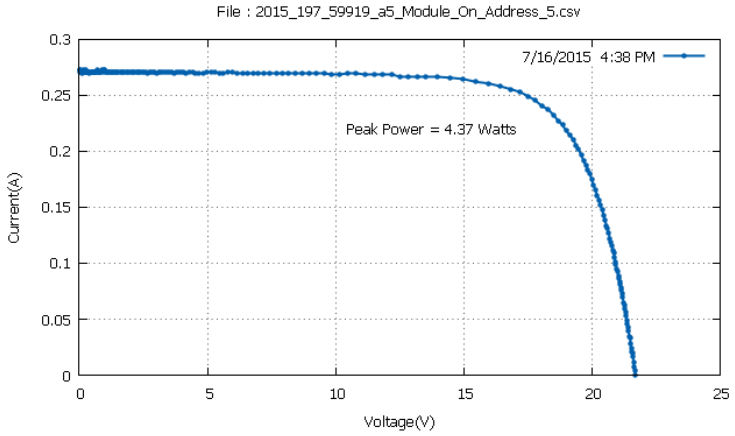
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.511562\ x\ 0.25942486}{516.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}61\ \%$$



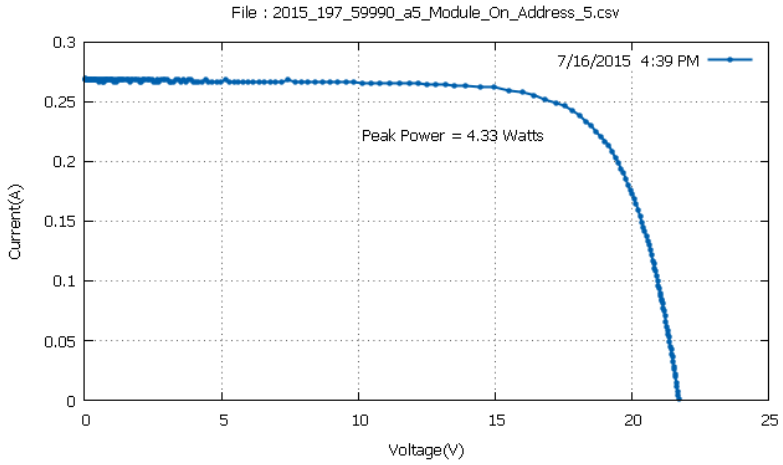
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6429958\ x\ 0.25428775}{511.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}61\ \%$$



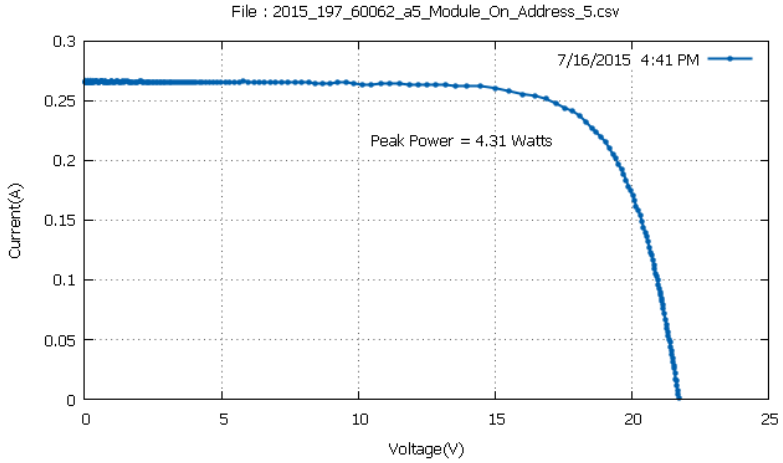
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.859474\ x\ 0.24786633}{505.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8053\ x\ 0.245297}{497.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5502\ x\ 0.24658204}{493.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}59\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8440113\ x\ 0.241444916}{492.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}57\ \%$$

Module 4

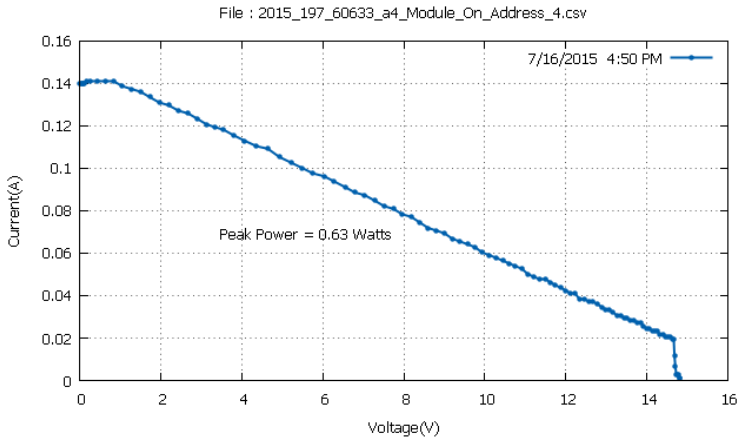
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

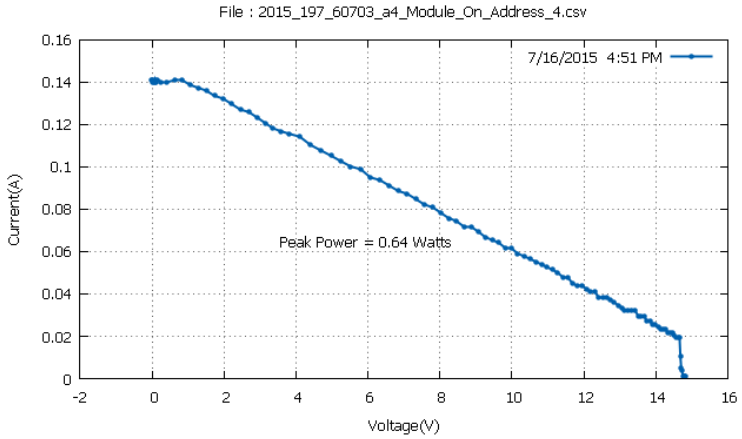
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:50	40,7	2,02
16:51	40	2,08
16:53	40	2,04
16:55	39,6	2,11
16:56	39,4	2,11
16:58	39,5	2,08

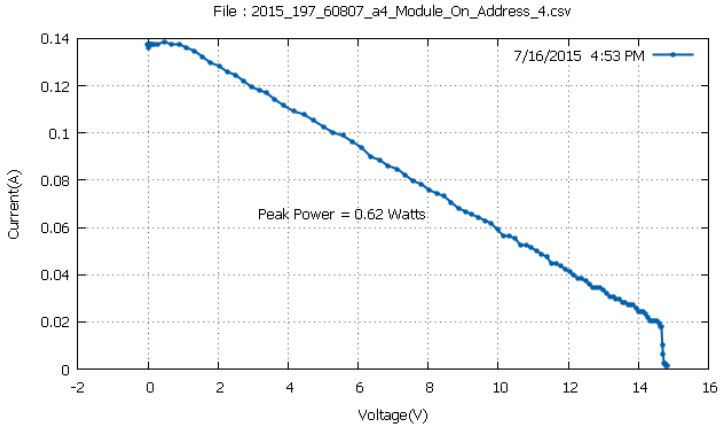
Mean Temperature: 39,86 ºC



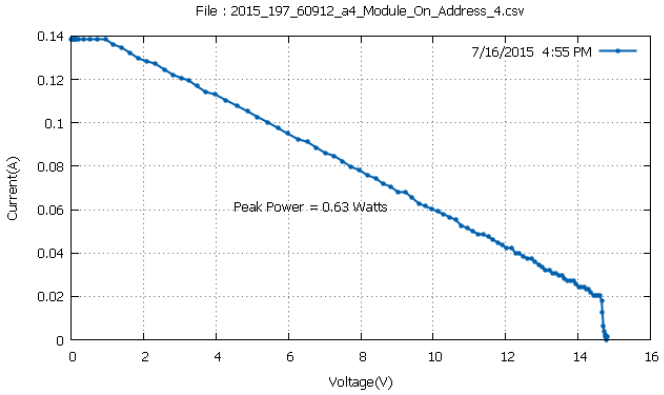
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.782842\ x\ 0.0719197}{463.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}02\ \%$$



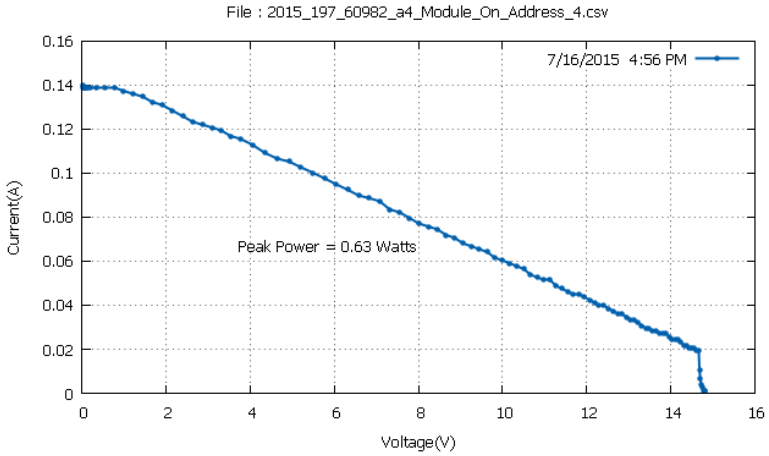
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.86788\ x\ 0.07191976}{458.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



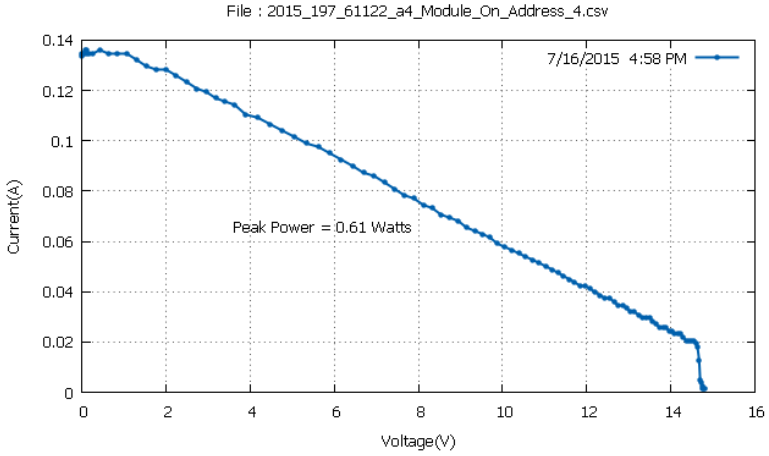
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.07320405}{453\ x\ 0{,}0671} \text{ x } 100 = 2{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.202989\ x\ 0.07705689}{444.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.44266\ x\ 0.0744883}{443.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.32669\ x\ 0.07320405}{436.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$

Module 8

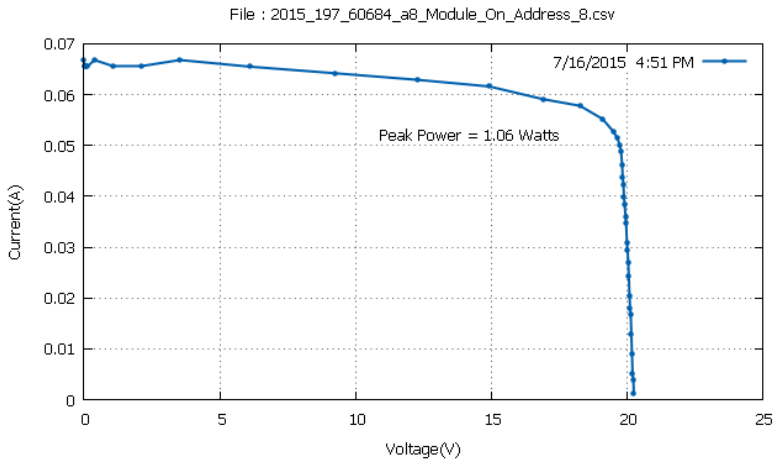
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

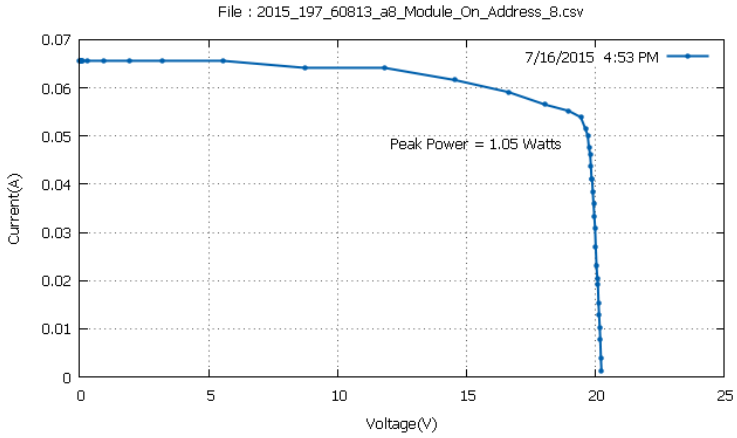
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:51	41,7	3
16:53	41,5	3,01
16:55	41	3,12
16:57	40,6	3,07
16:58	40,6	3,11
16:59	40,5	3,11

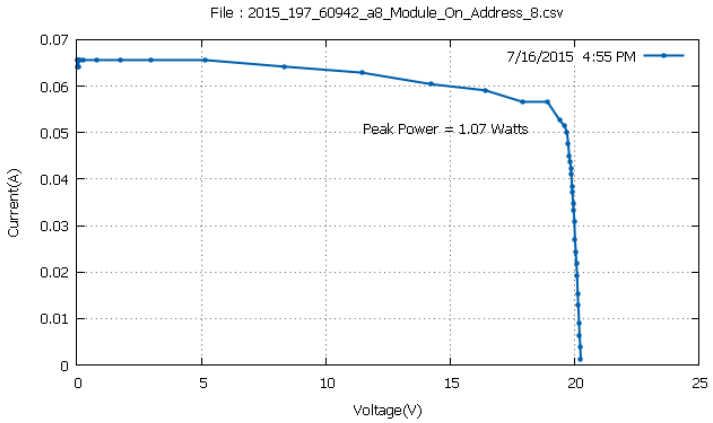
Mean Temperature: 40,98 ºC



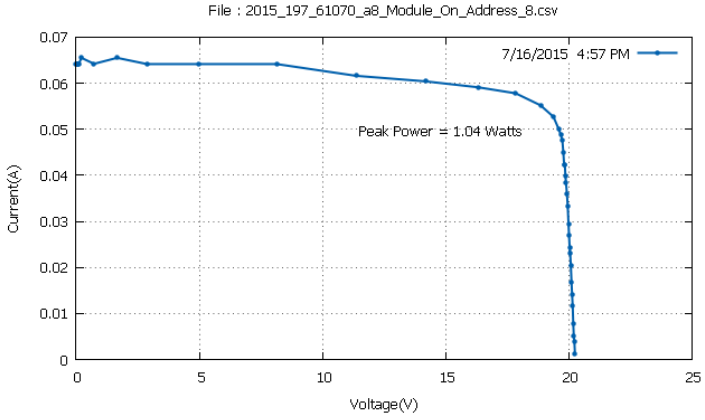
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2692375\ x\ 0.057792667}{459.2\ x\ 0{,}0768} \text{ x } 100 = 3\ \%$$



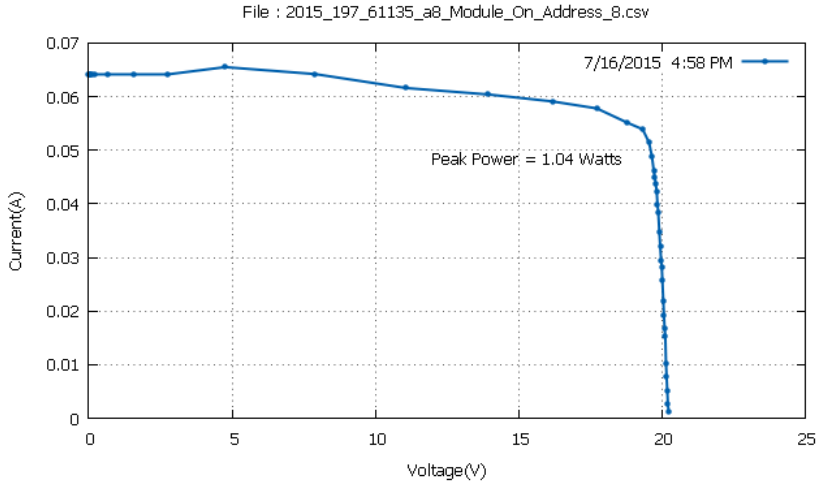
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.444406\ x\ 0.05393982}{453\ x\ 0{,}0768}\ \text{x } 100 = 3{,}01\ \%$$



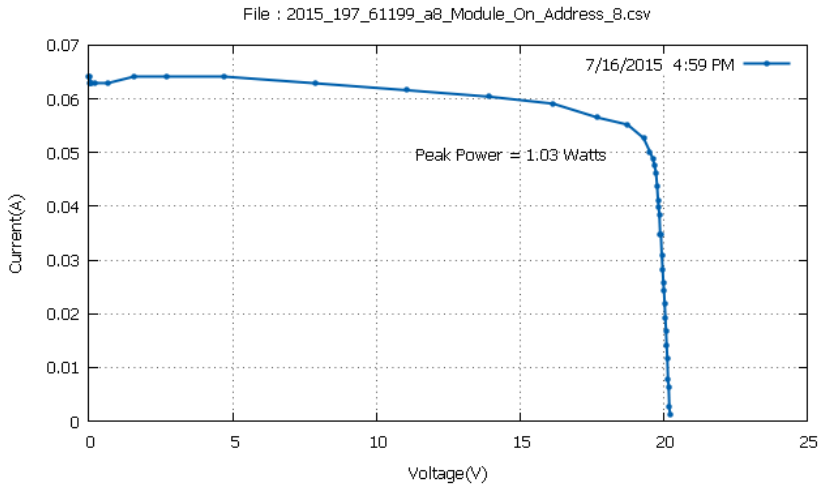
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.89548\ x\ 0.0565083846}{445.4\ x\ 0{,}0768}\ \text{x } 100 = 3{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.84909\ x\ 0.055224105}{439.9\ x\ 0{,}0768}\ \text{x } 100 = 3{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.328435\ x\ 0.05393982}{434.7\ x\ 0{,}0768} \text{ x } 100 = 3{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7485828\ x\ 0.055224105}{431.1\ x\ 0{,}0768} \text{ x } 100 = 3{,}11\ \%$$

Module 3

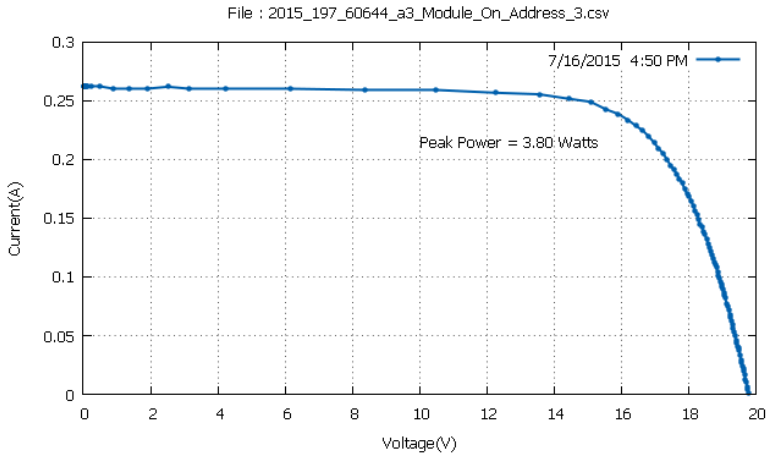
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

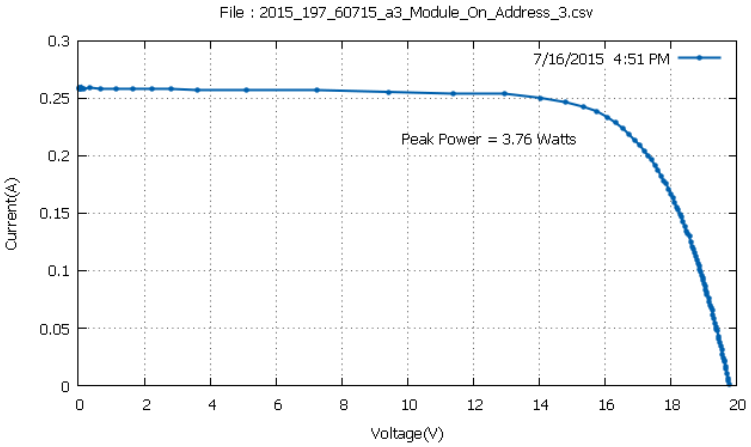
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:50	40,7	11,58
16:51	40,7	11,56
16:53	40,5	11,55
16:55	40,1	11,46
16:56	40	11,43
17:00	39,5	11,27

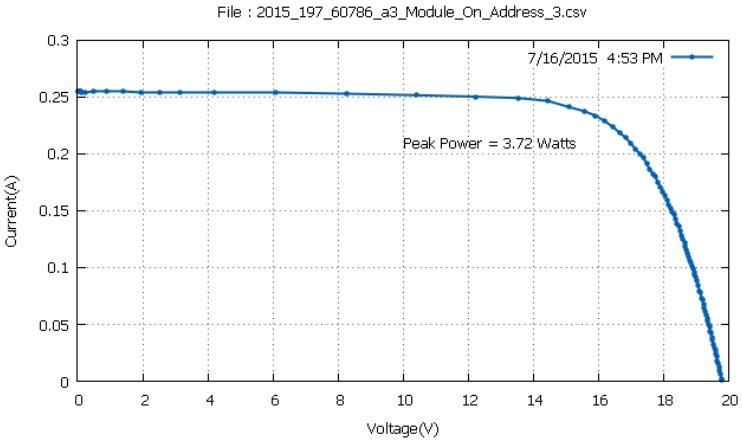
Mean Temperature: 40,25 ºC



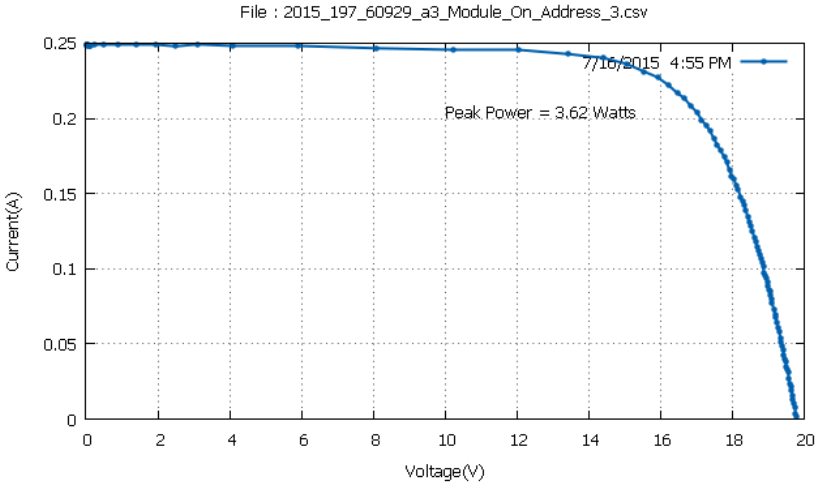
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034367\ x\ 0.23887635}{462.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}58\ \%$$



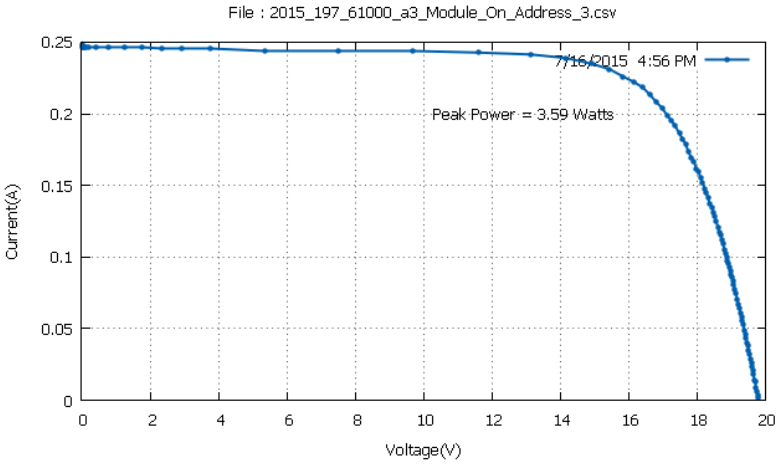
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.74881\ x\ 0.23887635}{458.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}56\ \%$$



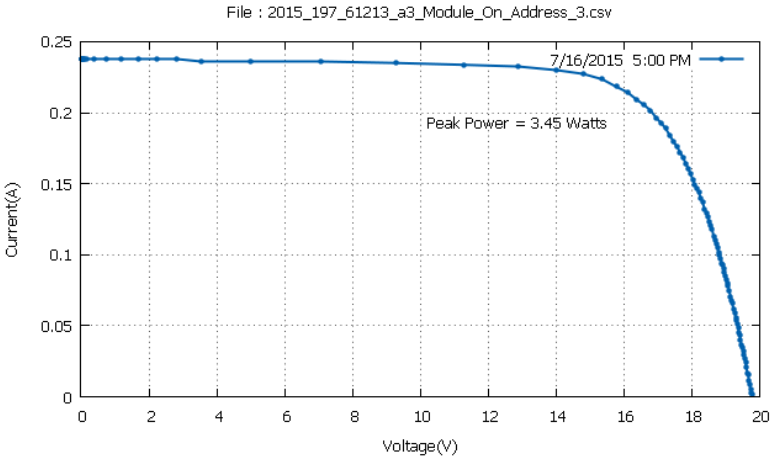
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.911168\ x\ 0.23373922}{454.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}55\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9189\ x\ 0.22731782}{445.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.15084\ x\ 0.22218}{442.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.096721\ x\ 0.214475}{431.6\ x\ 0{,}0709} \text{ x } 100 = 11{,}27\ \%$$

Module 5

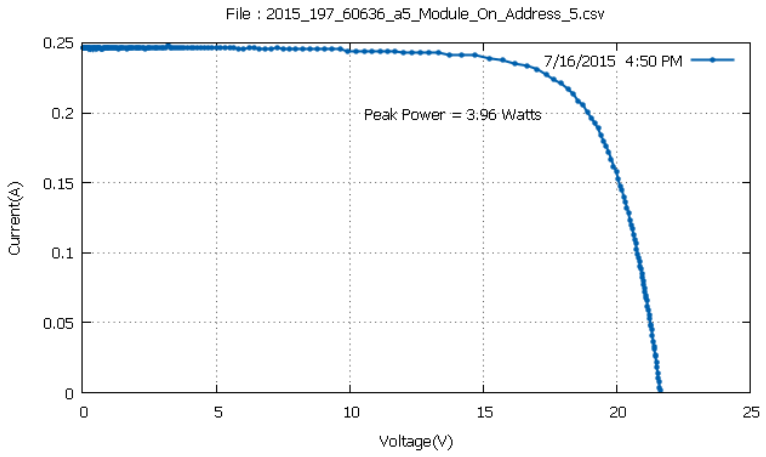
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

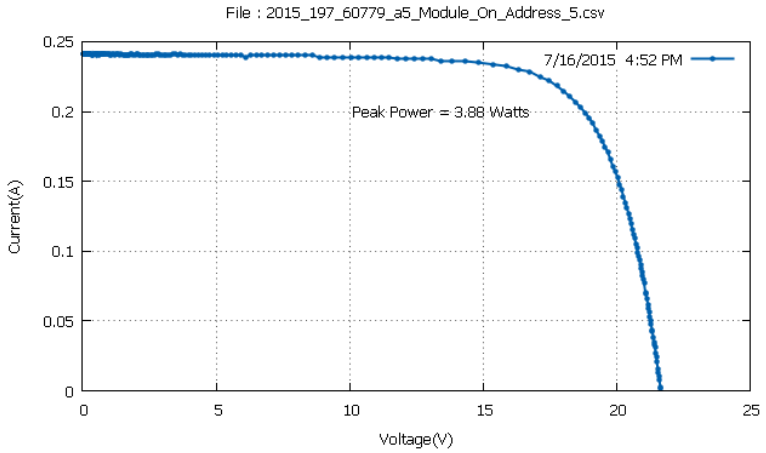
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:50	42,7	11,31
16:52	42,3	11,3
16:54	41,9	11,24
16:55	41,7	11,25
16:57	41,5	11,17
16:58	41,3	11,16

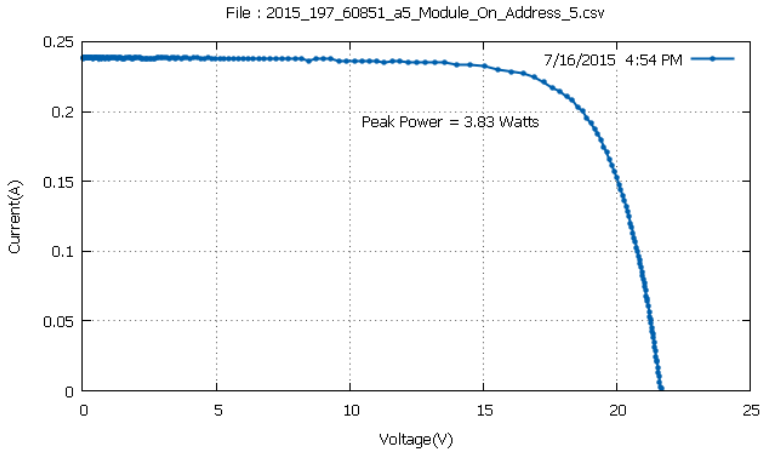
Mean Temperature: 41,9 ºC



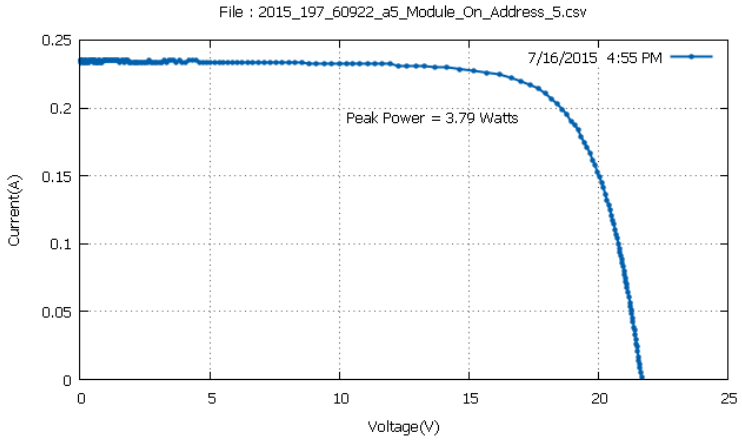
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9290581\ x\ 0.22089642}{463\ x\ 0{,}0756} \text{ x } 100 = 11{,}31\ \%$$



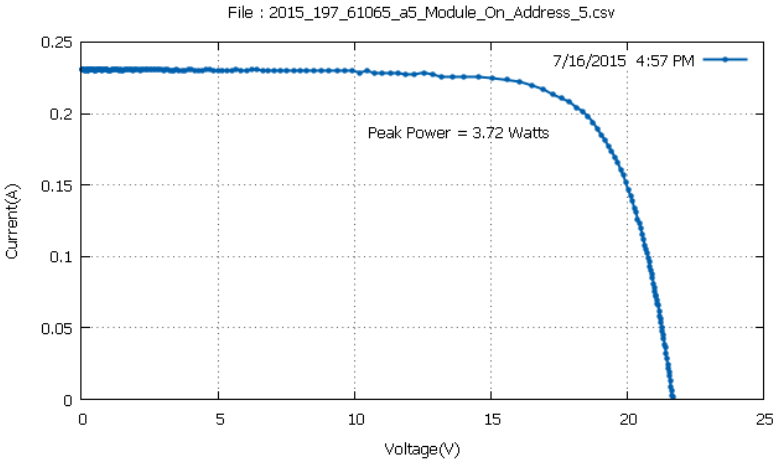
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.465173\ x\ 0.2221805}{454.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}3\ \%$$



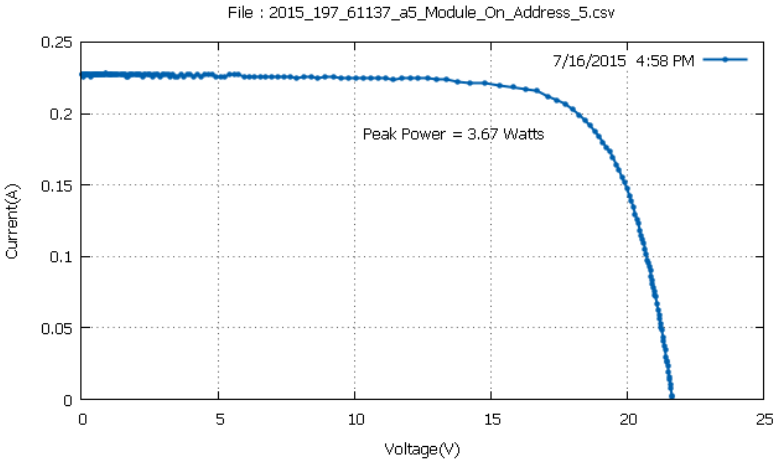
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8672066\ x\ 0.214475}{450.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.673921\ x\ 0.214475}{445.6\ x\ 0{,}0756} \text{ x } 100 = 11{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.2080536}{440.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.72804\ x\ 0.2067693}{434.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}16\ \%$$

Module 4

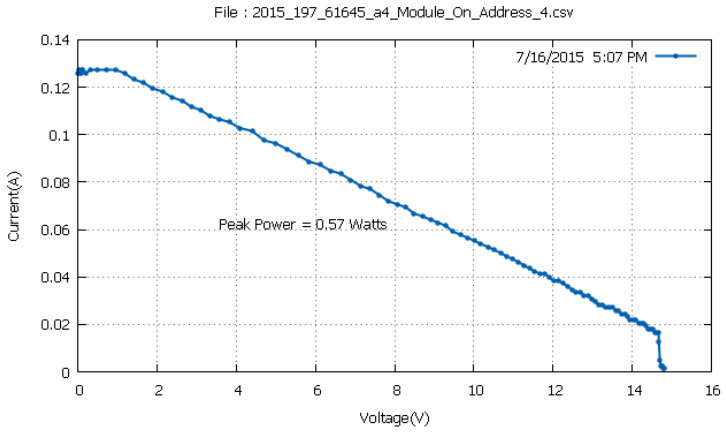
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

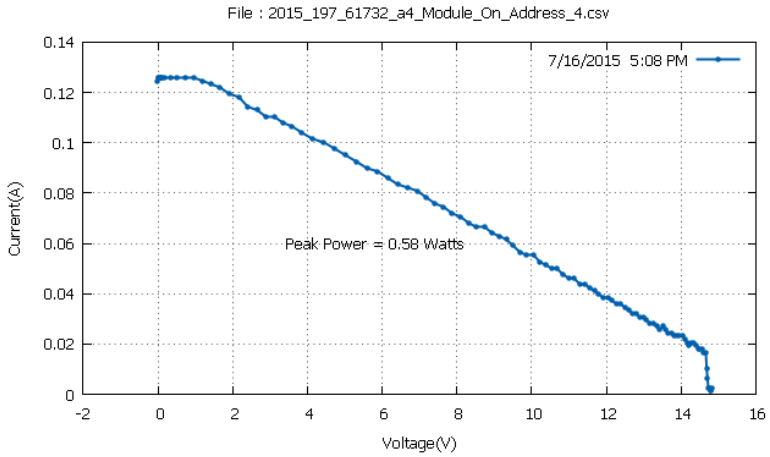
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:07	38,2	2,07
17:08	37,8	2,12
17:11	37,7	2,14
17:13	37,4	2,12
17:16	37,2	2,12
17:17	37,2	2,13

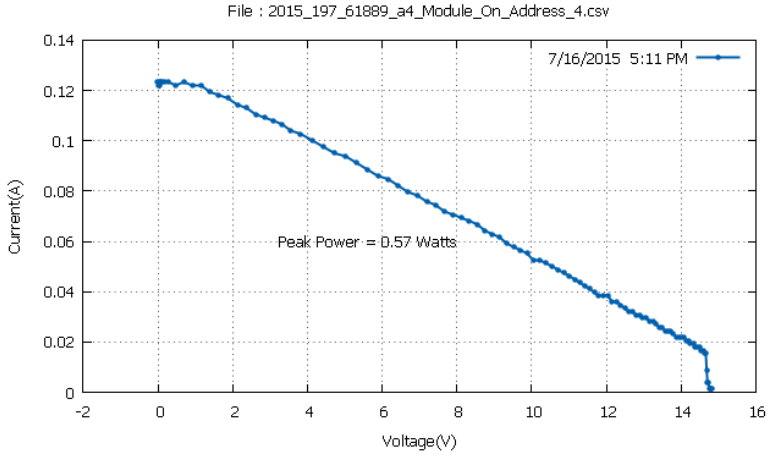
Mean Temperature: 37,58 ºC



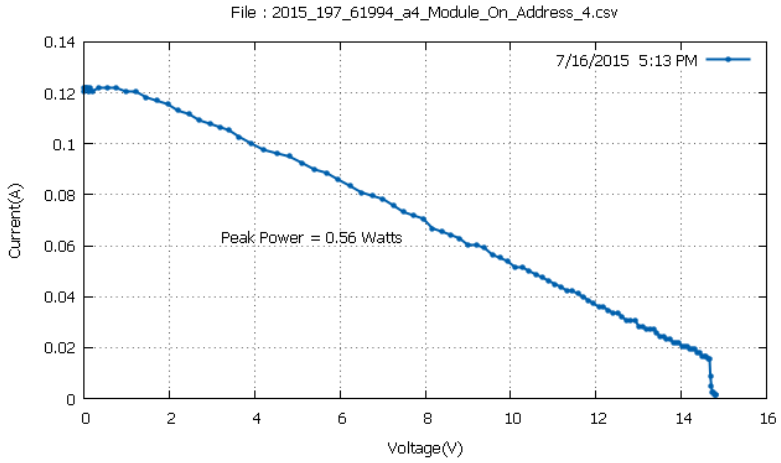
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.272571\ x\ 0.069351203}{409.9\ x\ 0{,}0671}$ x 100 = 2,07 %



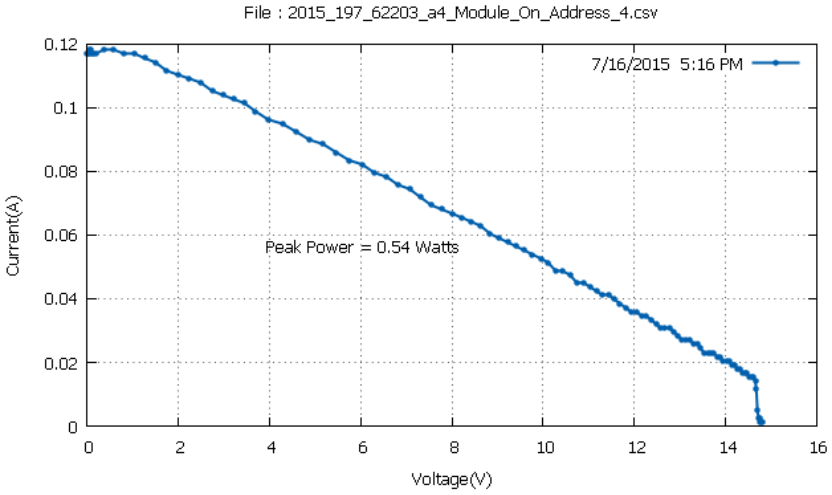
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.728722\ x\ 0.06678264}{407.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



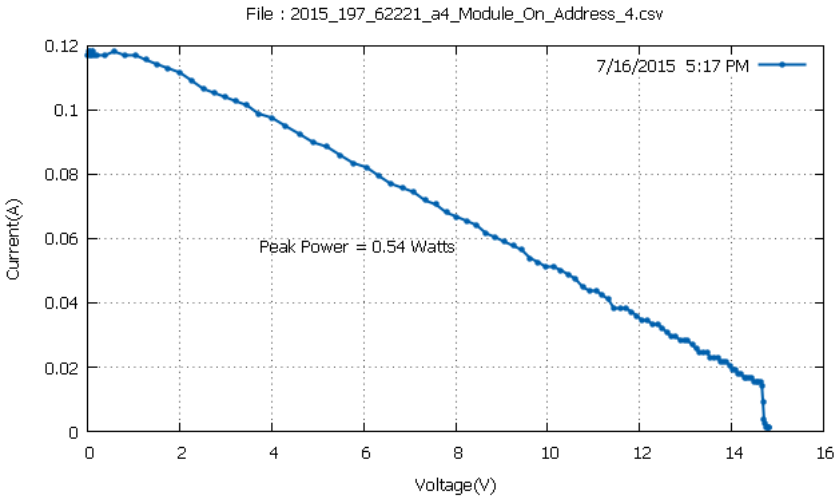
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.543169\ x\ 0.0667826}{396.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.94785261\ x\ 0.07063548}{392.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.628214\ x\ 0.062929794}{378.6\ x\ 0{,}0671}\ \text{x } 100 = 2{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.450392\ x\ 0.06421407}{377.9\ x\ 0{,}0671}\ \text{x } 100 = 2{,}13\ \%$$

Module 8

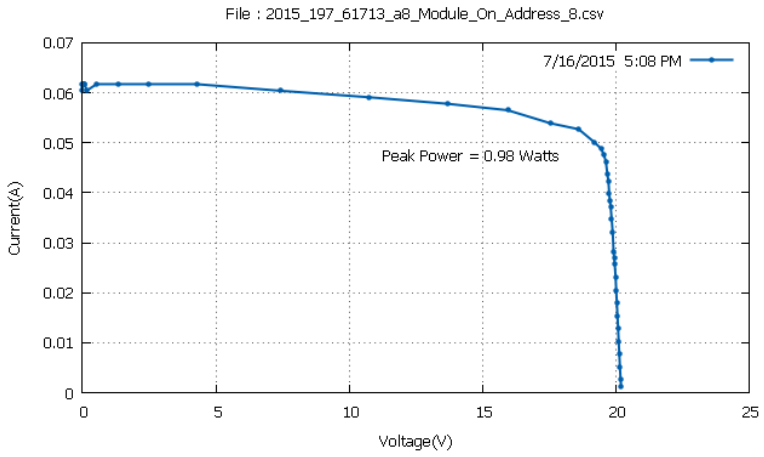
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

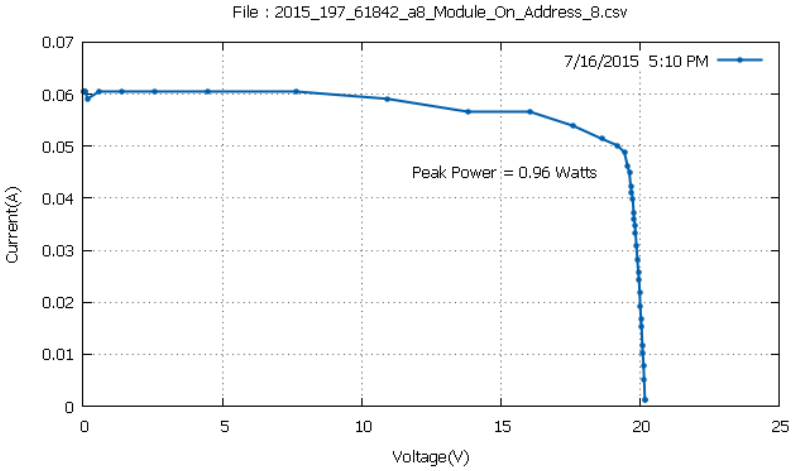
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:08	39,1	3,13
17:10	38,8	3,12
17:11	38,6	3,15
17:12	38,5	3,17
17:16	38	3,28
17:17	38	3,21

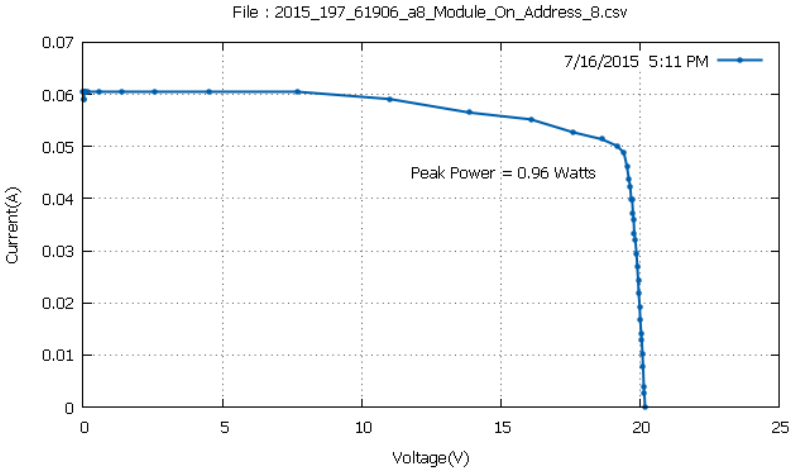
Mean Temperature: 38,5 ºC



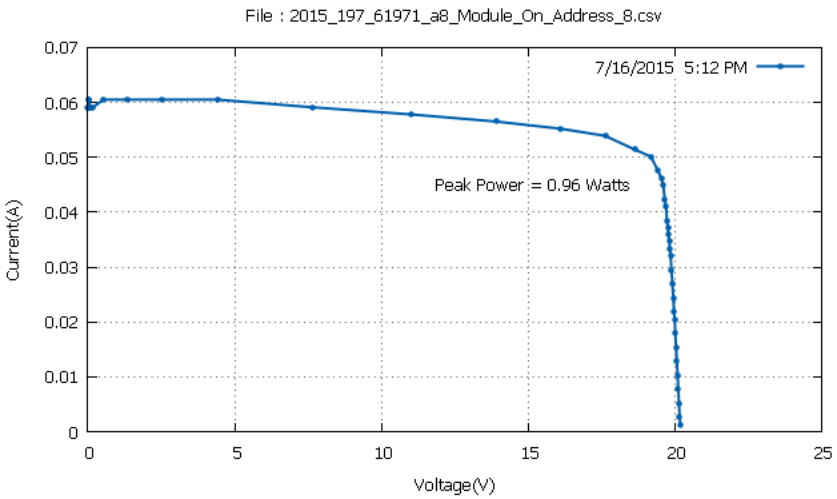
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.609418\ x\ 0.05265554}{407.7\ x\ 0{,}0768} \text{ x } 100 = 3{,}13\ \%$$



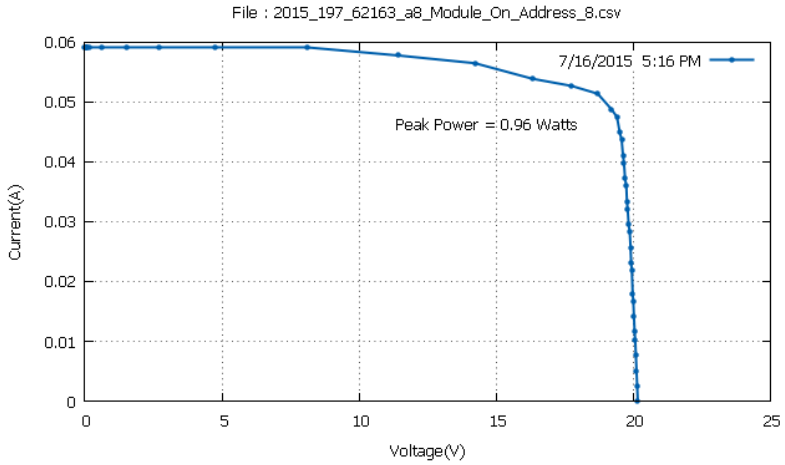
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.204734\ x\ 0.0500869}{400.6\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}12\ \%$$



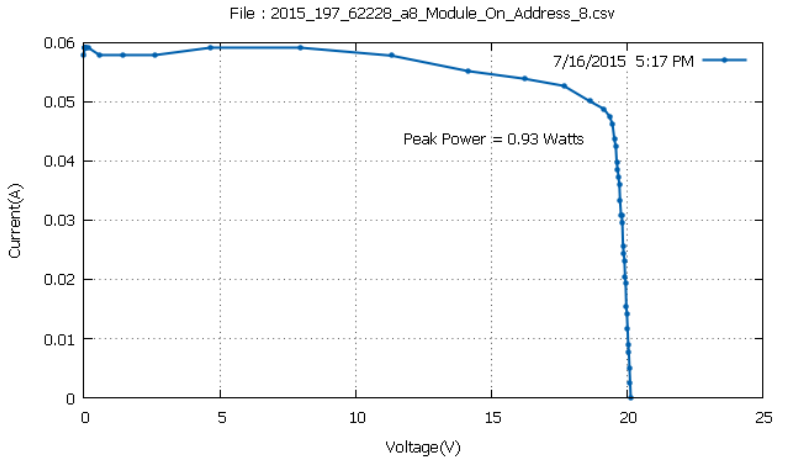
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.18154\ x\ 0.0500869}{396.3\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}15\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1892719\ x\ 0.05008698}{394.1\ x\ 0{,}0768}\ \text{x}\ 100 = 3{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.7021942\ x\ 0.05137126}{381\ x\ 0{,}0768} \text{ x } 100 = 3{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.150613\ x\ 0.048802696}{376.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}21\ \%$$

Module 3

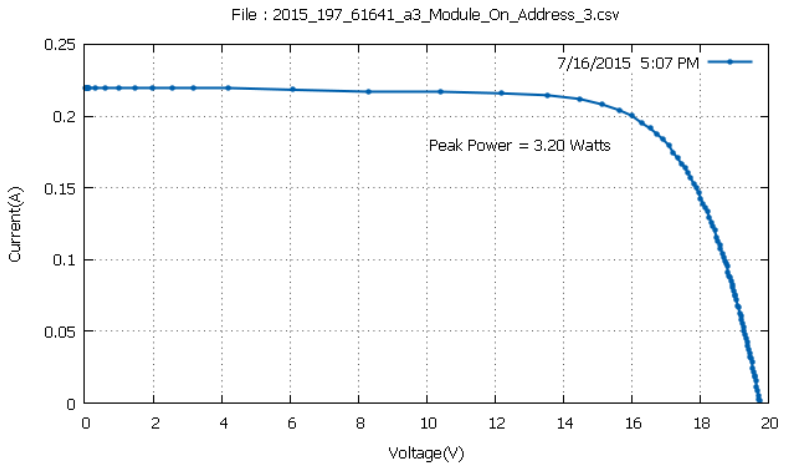
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

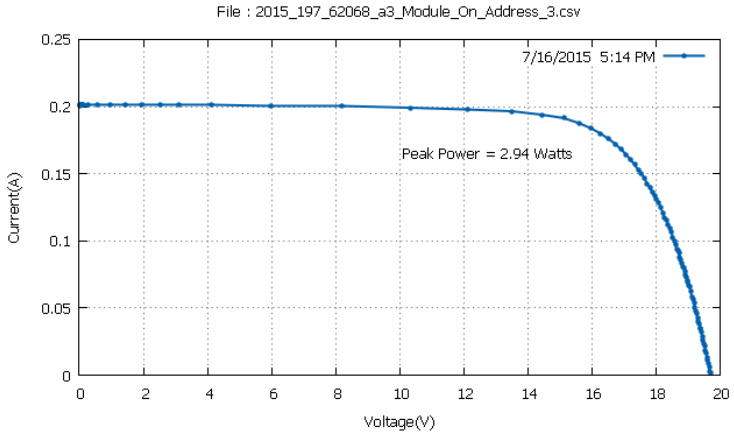
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:07	38,6	11
17:14	37,6	10,75
17:15	37,4	10,7
17:16	37,3	10,7
17:19	37	10,58
17:20	36,8	10,55

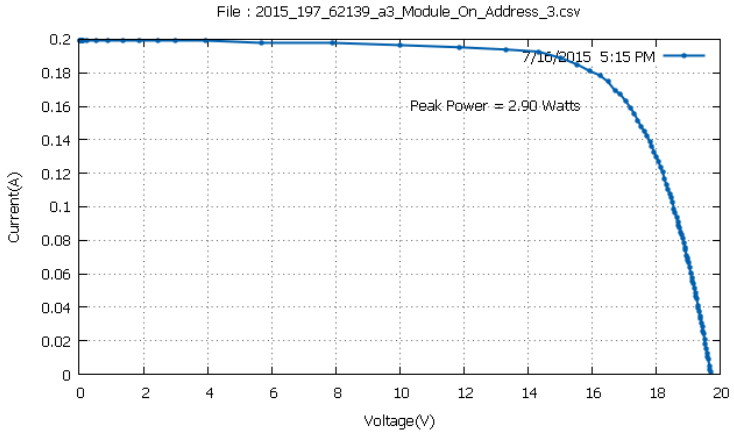
Mean Temperature: 37,45 ºC



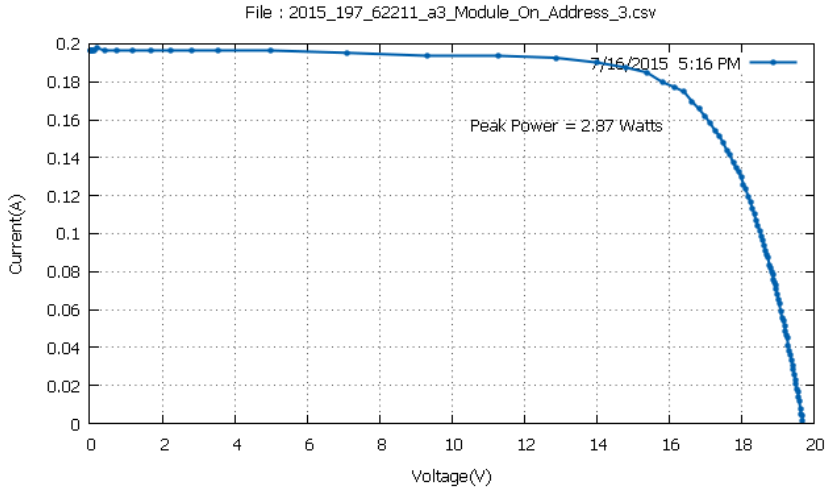
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.99621\ x\ 0.20034791}{410.6\ x\ 0{,}0709} \text{ x } 100 = 11\ \%$$



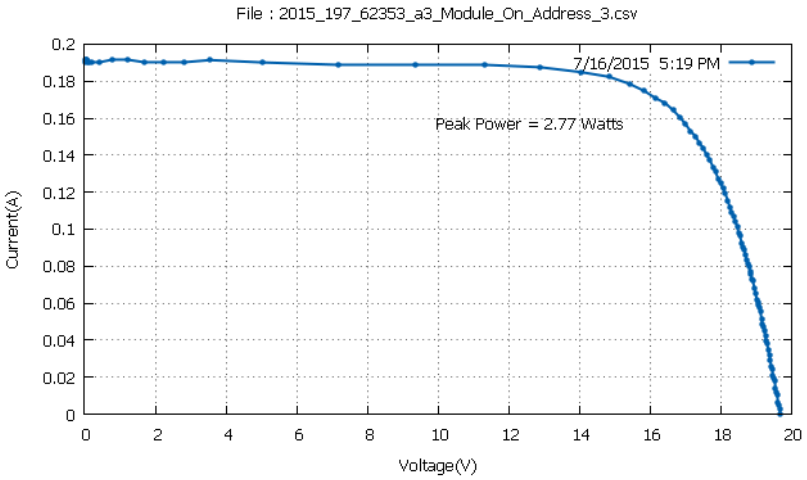
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.980751\ x\ 0.183652252}{385.5\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}75\ \%$$



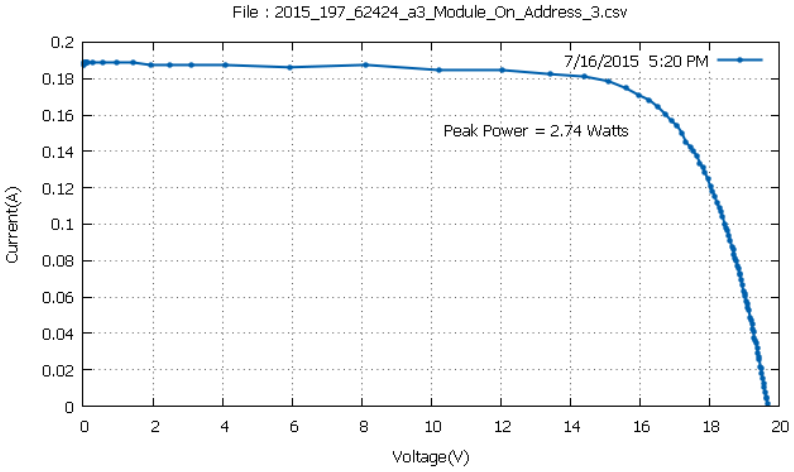
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.24361\ x\ 0.17851512}{382\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4137077\ x\ 0.174662277}{378.2\ x\ 0{,}0709}\ \text{x}\ 100 = 10{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8338547\ x\ 0.17466227}{369.1\ x\ 0{,}0709} \text{ x } 100 = 10{,}58\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.2745438\ x\ 0.16824087}{366\ x\ 0{,}0709} \text{ x } 100 = 10{,}55\ \%$$

Module 5

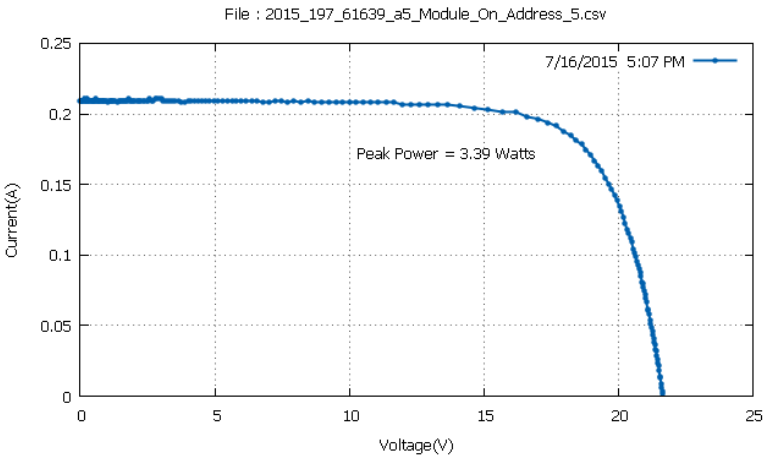
Date: 16/7/2015 – Afternoon Measurement

Temperature Ambient: 37 ºC

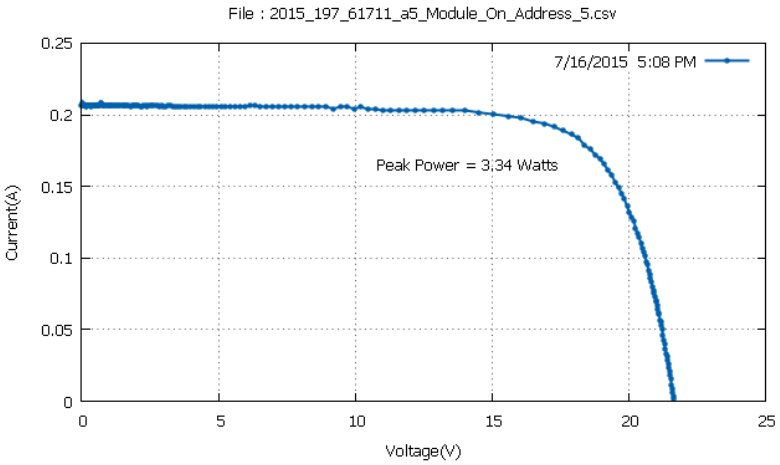
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:07	40,2	10,9
17:08	40	10,84
17:12	39,4	10,73
17:13	39,1	10,73
17:18	38,6	10,65
17:19	38,5	10,6

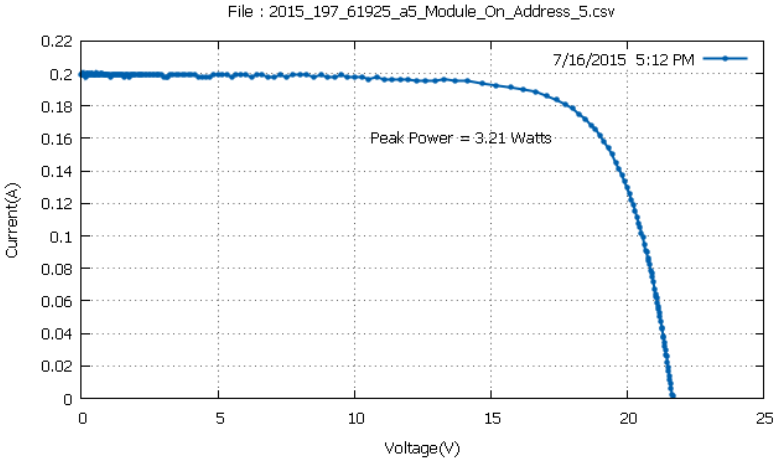
Mean Temperature: 39,3 ºC



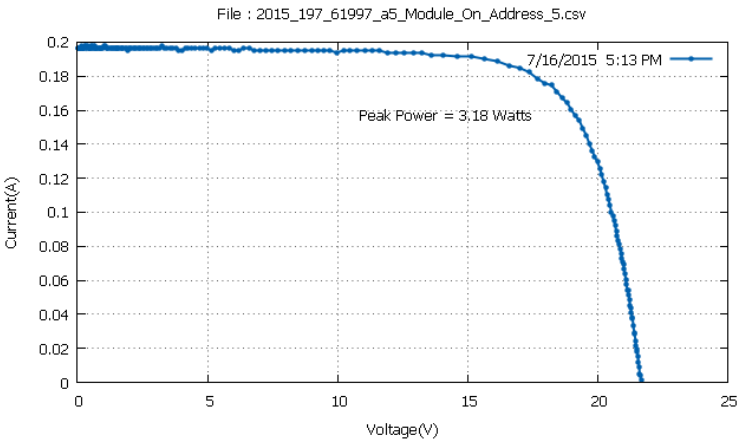
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6893845\ x\ 0.19135794}{411.3\ x\ 0{,}0756} \text{ x } 100 = 10{,}9\ \%$$



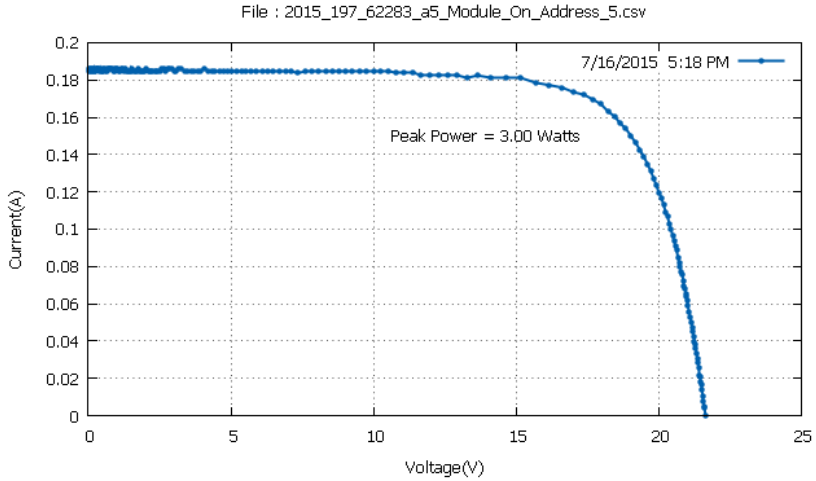
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.16873\ x\ 0.18365225}{407.5\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}84\ \%$$



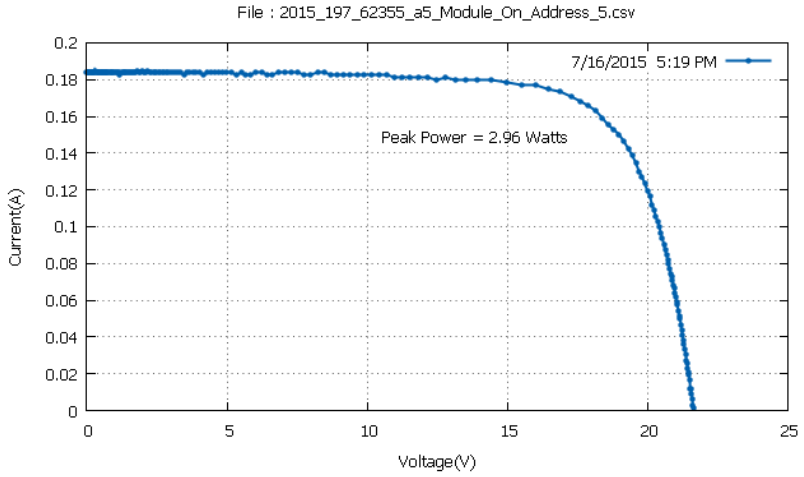
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.99864\ x\ 0.178515121}{395.6\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2151184\ x\ 0.174662277}{391.7\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.975444\ x\ 0.16695658}{372.4\ x\ 0{,}0756}\ \text{x } 100 = 10{,}65\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8904\ x\ 0.16567231}{369.3\ x\ 0{,}0756}\ \text{x } 100 = 10{,}6\ \%$$

Module 4

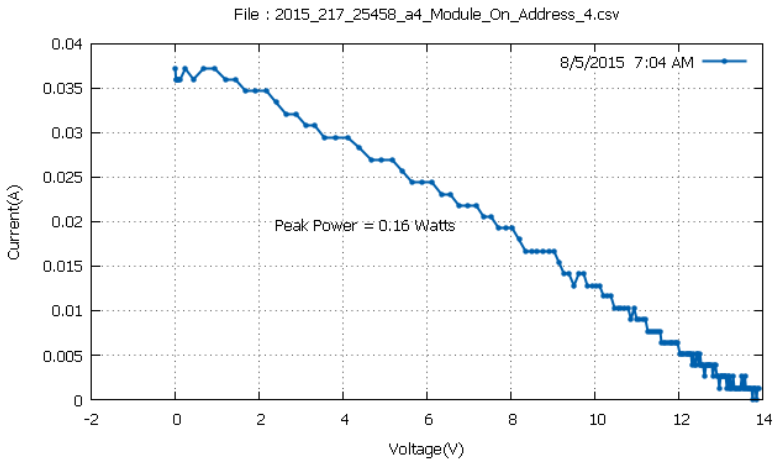
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

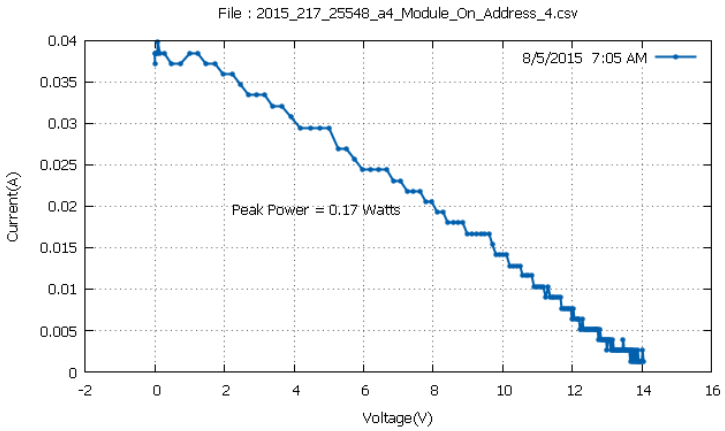
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:04	29,9	2,01
7:05	30,1	2,06
7:08	30,5	2,06
7:10	30,8	1,94
7:12	31,1	1,92
7:14	31,4	1,98

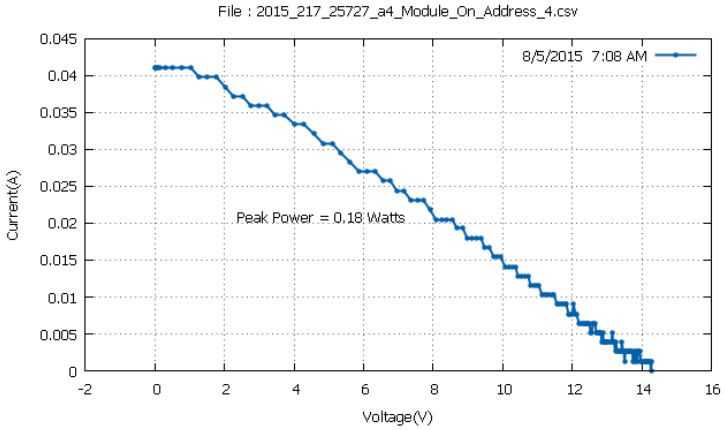
Mean Temperature: 30,63 ºC



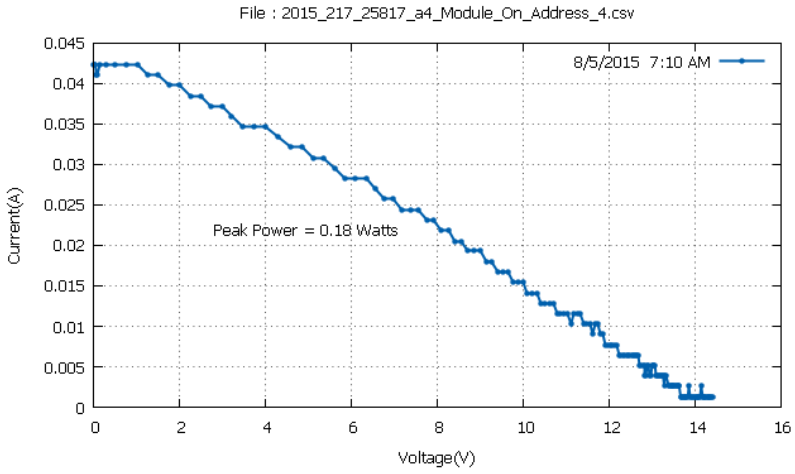
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.5690155\ x\ 0.021832784}{118.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}01\ \%$$



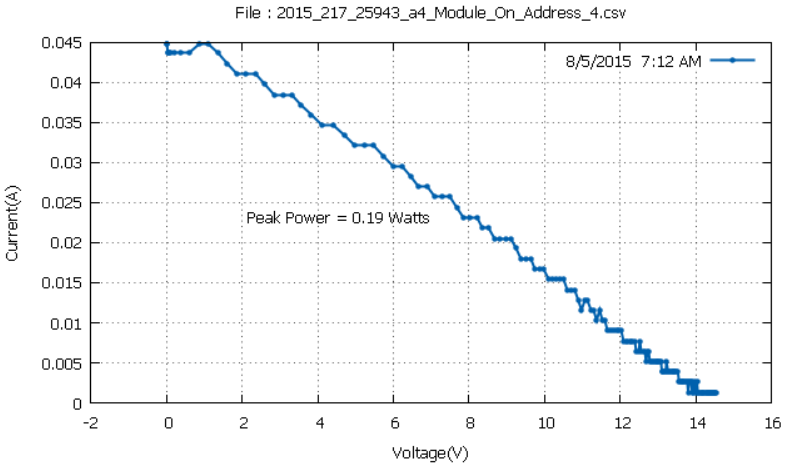
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.6154036\ x\ 0.021832784}{122.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}06\ \%$$



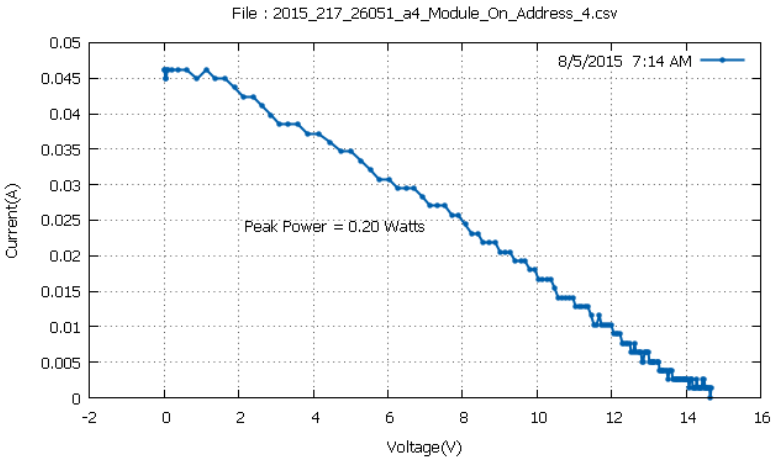
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.808688\ x\ 0.023117067}{130.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.21845\ x\ 0.021832784}{138.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}94\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.491701\ x\ 0.02568563}{147.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.530359\ x\ 0.026969911}{150\ x\ 0{,}0671} \text{ x } 100 = 1{,}98\ \%$$

Module 8

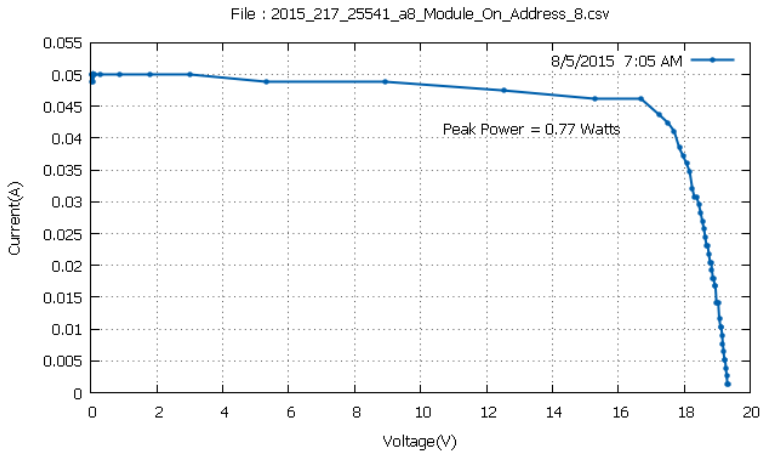
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

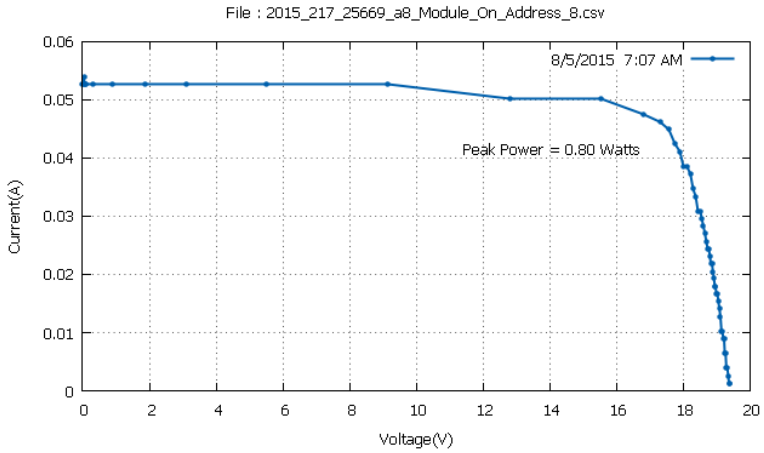
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:05	29,6	8,21
7:07	29,7	8,07
7:08	29,9	8,02
7:09	29,9	8,19
7:12	30,2	8,18
7:14	30,5	8,6

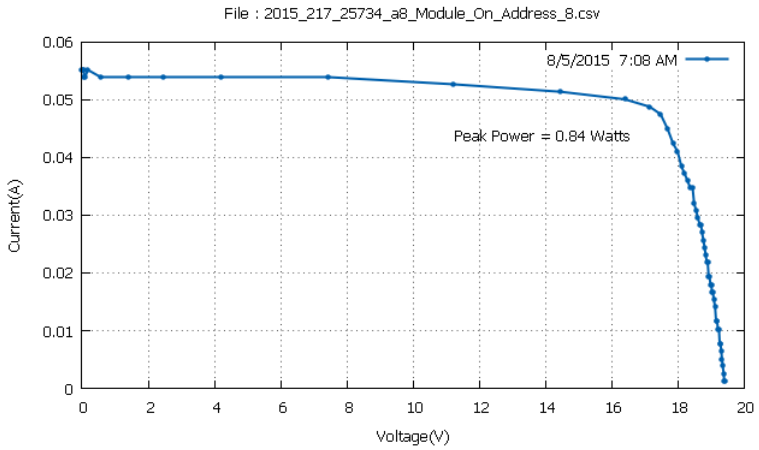
Mean Temperature: 29,96 ºC



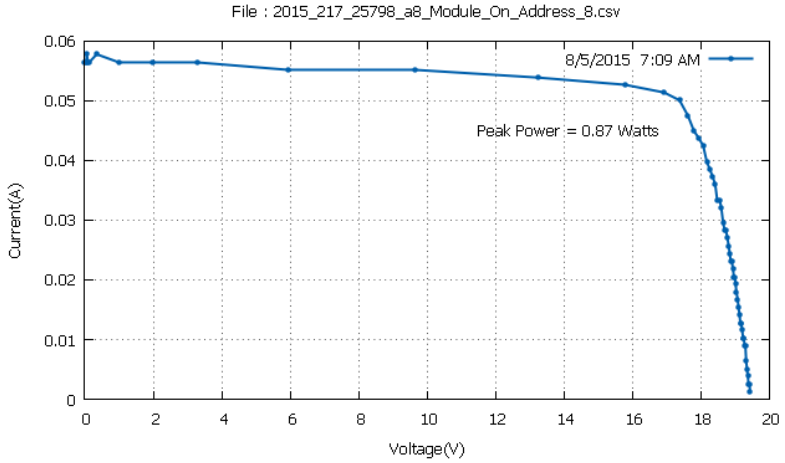
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6843052\ x\ 0.046234134}{122.1\ x\ 0{,}0768} \text{ x } 100 = 8{,}21\ \%$$



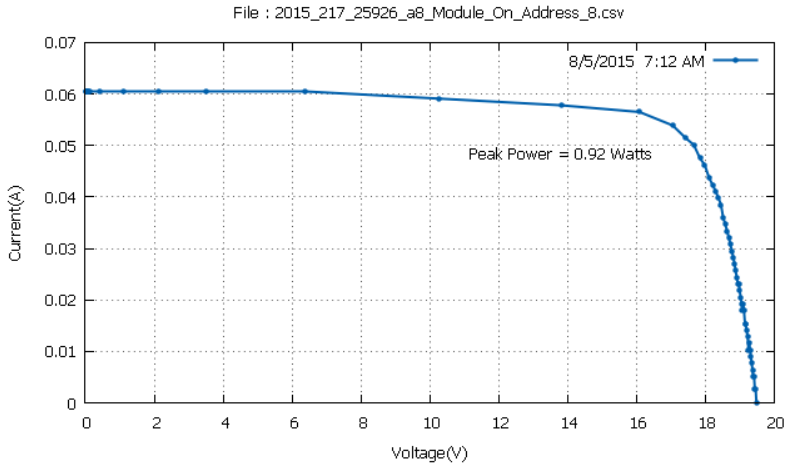
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3028164\ x\ 0.046234134}{129\ x\ 0{,}0768}\ \text{x } 100 = 8{,}07\ \%$$



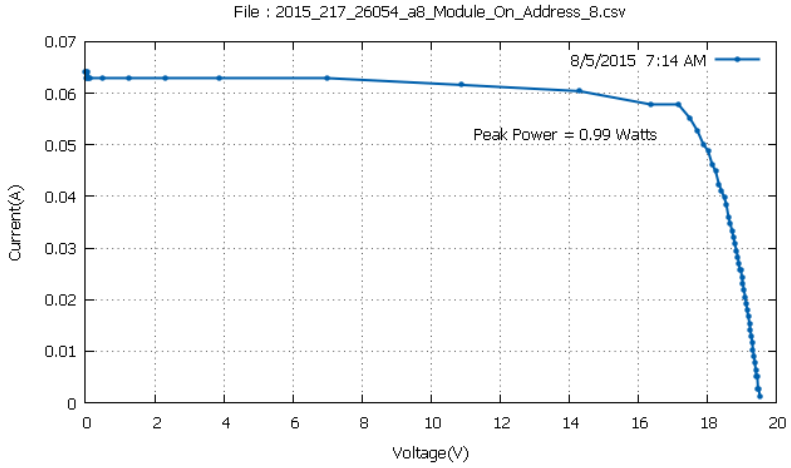
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1481876\ x\ 0.048802696}{133.3\ x\ 0{,}0768}\ \text{x } 100 = 8{,}2\ \%$$



$$n = \frac{P\square ut}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.372398\ x\ 0.0500869}{138.3\ x\ 0{,}0768}\ \text{x } 100 = 8{,}19\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.0539398231}{146.4\ x\ 0{,}0768} \text{ x } 100 = 8{,}18\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ \square} = \frac{17.16365\ x\ 0.0577926673}{150\ x\ 0{,}0768} \text{ x } 100 = 8{,}6\ \%$$

Module 3

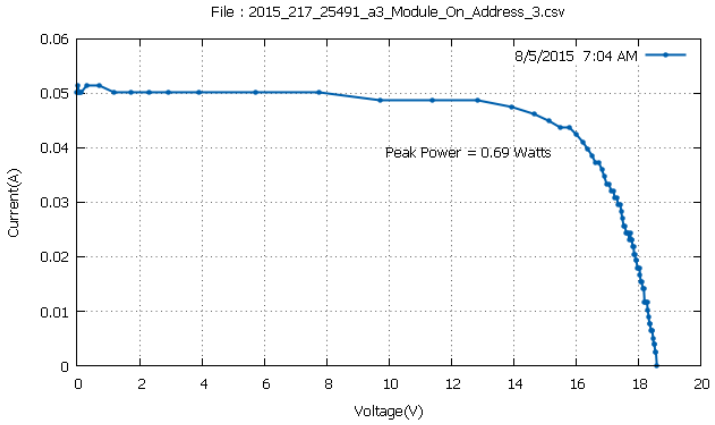
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

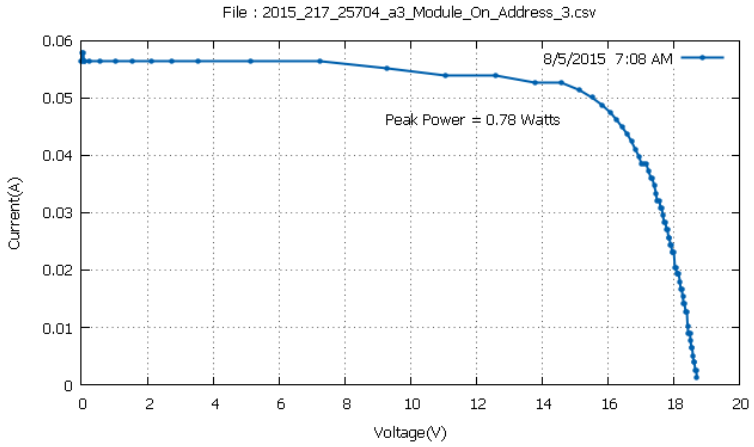
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:04	30	8,16
7:08	30,4	8,4
7:09	30,5	8,46
7:10	30,5	8,35
7:13	30,9	8,76
7:14	31,1	8,82

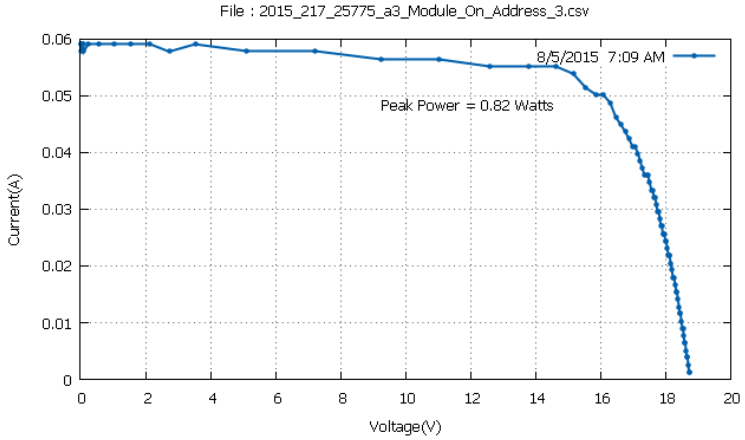
Mean Temperature: 30,56 ºC



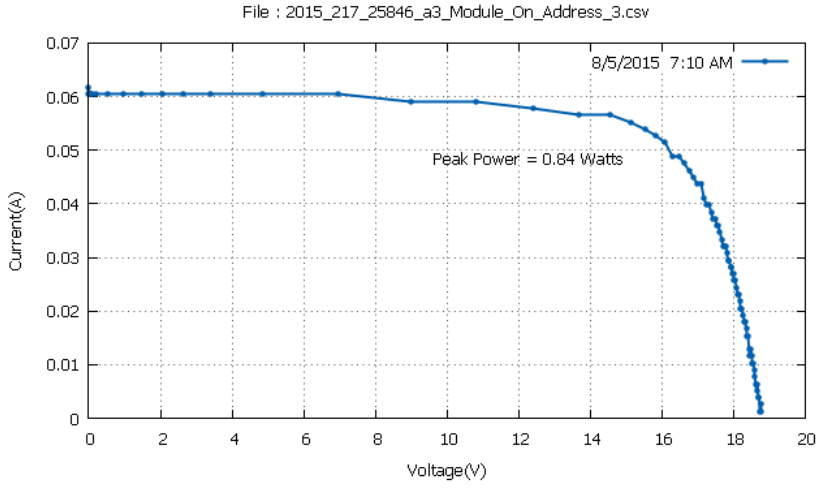
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.787466\ x\ 0.0436655}{119.2\ x\ 0{,}0709} \text{ x } 100 = 8{,}16\ \%$$



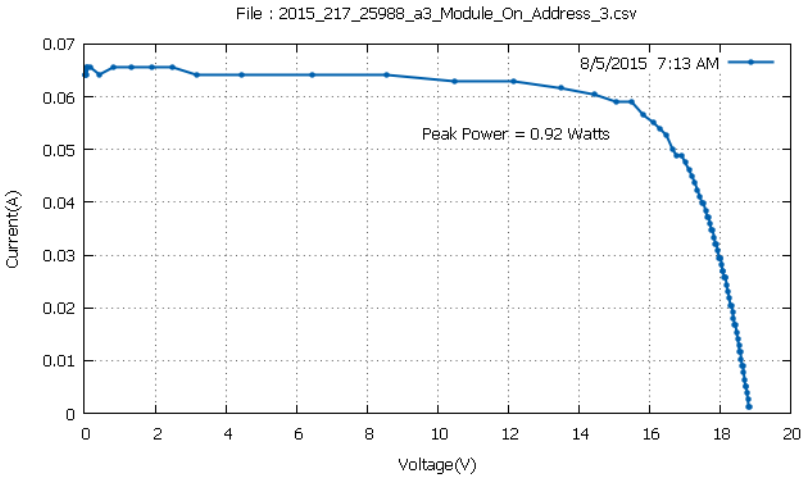
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.138031\ x\ 0.05137126}{131.1\ x\ 0{,}0709} \text{ x } 100 = 8{,}4\ \%$$



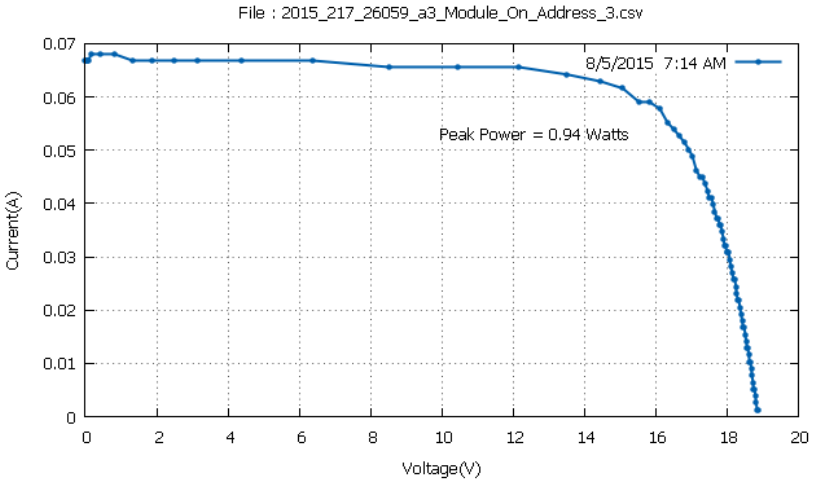
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.1534939\ x\ 0.053939823}{136.6\ x\ 0{,}0709} \text{ x } 100 = 8{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.524\ x\ 0.05393982}{141.9\ x\ 0{,}0709} \text{ x } 100 = 8{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.493674\ x\ 0.05907695}{148.1\ x\ 0{,}0709} \text{ x } 100 = 8{,}76\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8415861\ x\ 0.05907695}{150.2\ x\ 0{,}0709} \text{ x } 100 = 8{,}82\ \%$$

Module 5

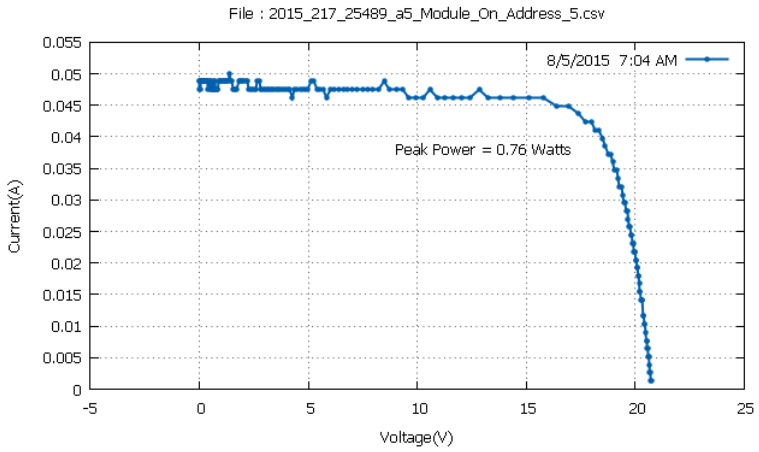
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

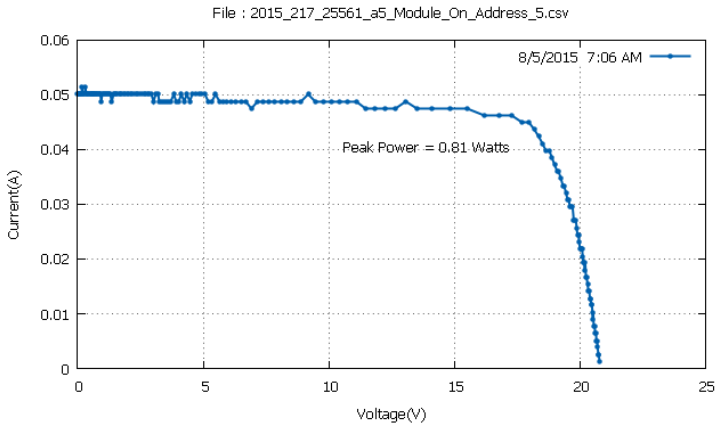
Fan OFF

Time AM	Panel Temperature ºC	Efficiency %
7:04	29,3	8,44
7:06	29,5	8,71
7:10	29,7	8,56
7:13	30	8,84
7:14	30,2	9,05
7:15	30,2	9,13

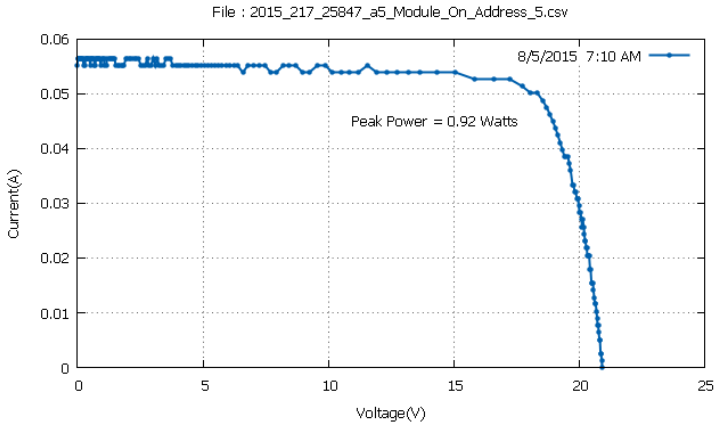
Mean Temperature: 29,81 ºC



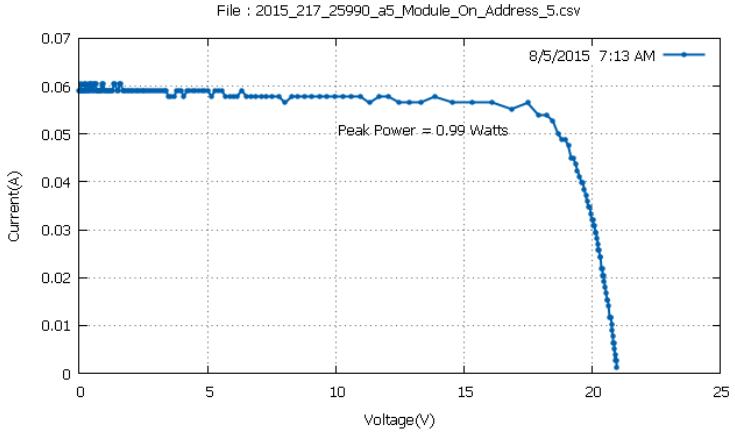
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.967714\ x\ 0.04238129}{119\ x\ 0{,}0756} \text{ x } 100 = 8{,}44\ \%$$



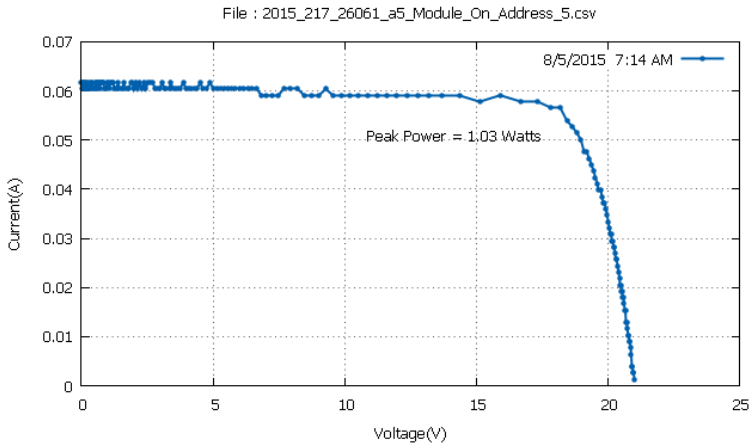
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.9599819\ x\ 0.0449498519}{123\ x\ 0{,}0756} \text{ x } 100 = 8{,}71\ \%$$



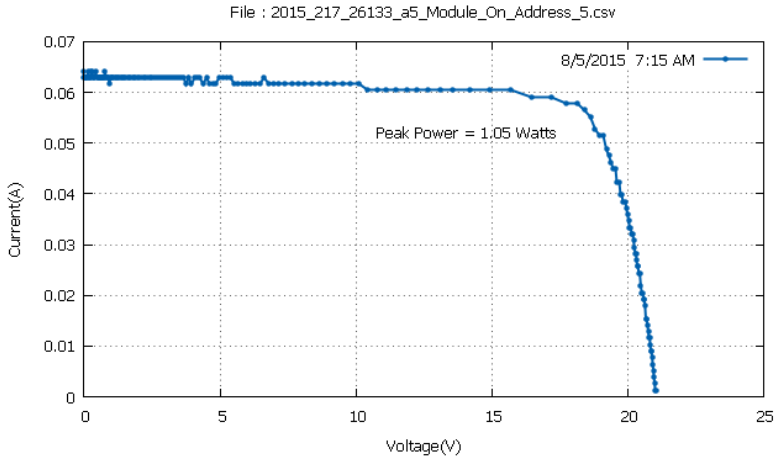
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3233566\ x\ 0.0500869}{142.1\ x\ 0{,}0756} \text{ x } 100 = 8{,}56\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.48836\ x\ 0.056508384}{148.1\ x\ 0{,}0756} \text{ x } 100 = 8{,}84\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.191923\ x\ 0.056508384}{150.4\ x\ 0{,}0756} \text{ x } 100 = 9{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.130073\ x\ 0.057792667}{152.1\ x\ 0{,}0756} \text{ x } 100 = 9{,}13\ \%$$

Module 4

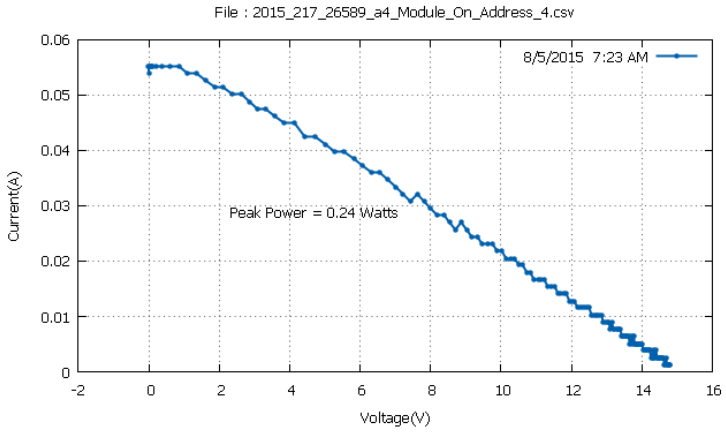
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

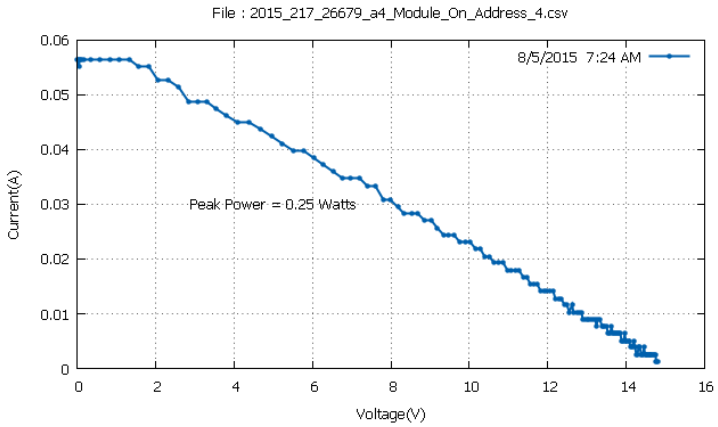
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:23	32	2,07
7:24	31,1	2,13
7:26	32,2	2,07
7:27	32,4	2,1
7:29	32,6	2,11
7:30	32,7	2,14

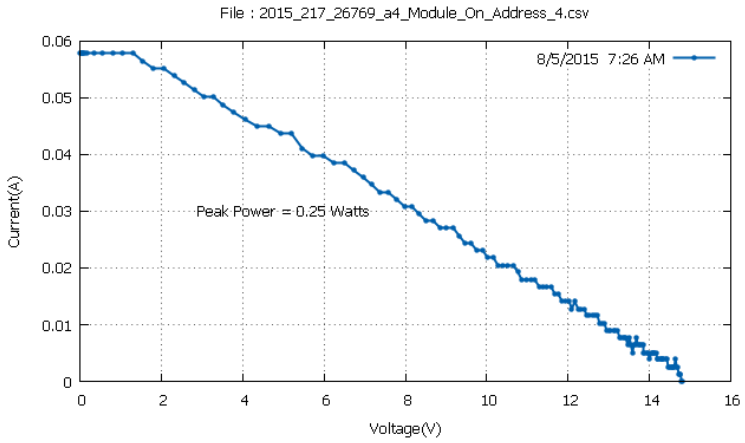
Mean Temperature: 32,16 ºC



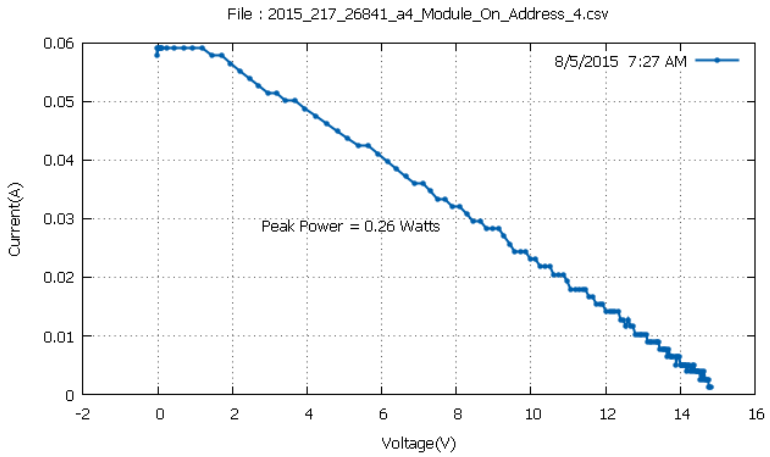
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.2906\ x\ 0.0333913}{172.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}07\ \%$$



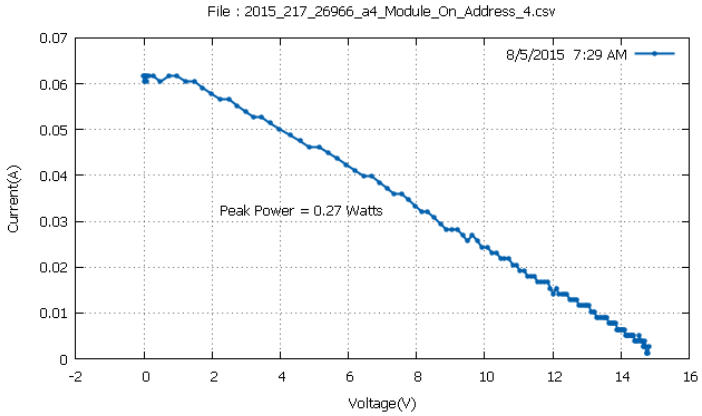
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.59994\ x\ 0.0333913}{174.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}13\ \%$$



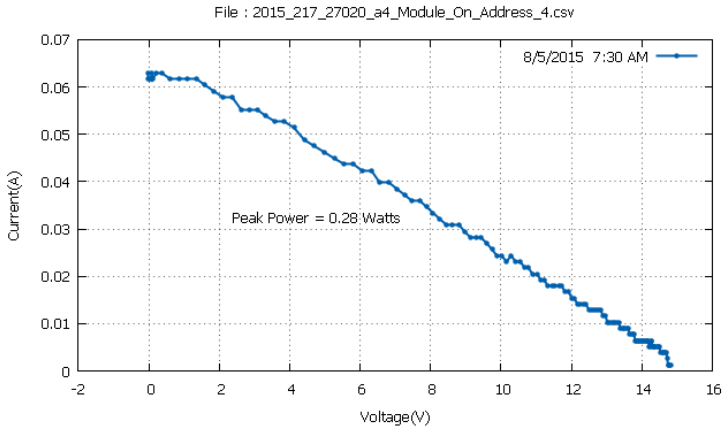
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.576747\ x\ 0.03339132}{179.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.0947485\ x\ 0.0321070366}{183.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.34480572\ x\ 0.037244163}{190.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{6.9505057\ x\ 0.03981272}{195\ x\ 0{,}0671} \text{ x } 100 = 2{,}14\ \%$$

Module 8

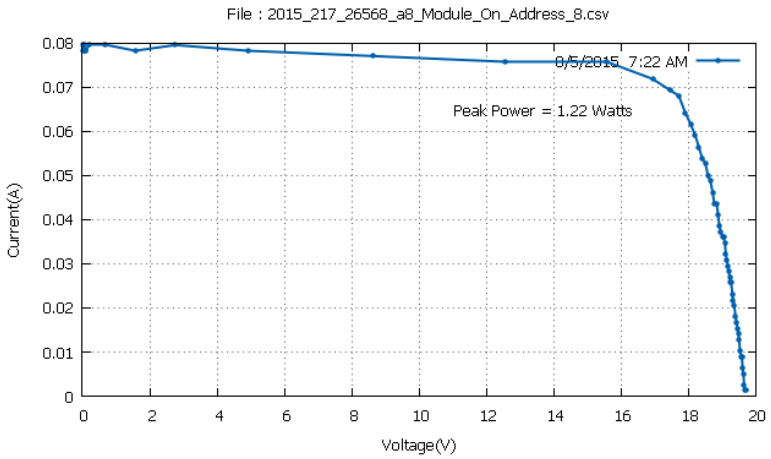
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

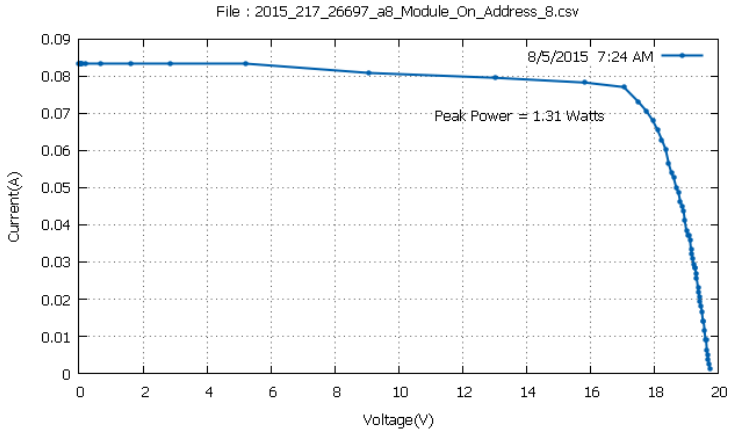
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:22	31,1	9,37
7:24	31,3	9,7
7:26	31,5	9,73
7:27	31,6	9,89
7:29	31,8	9,96
7:30	32	10,06

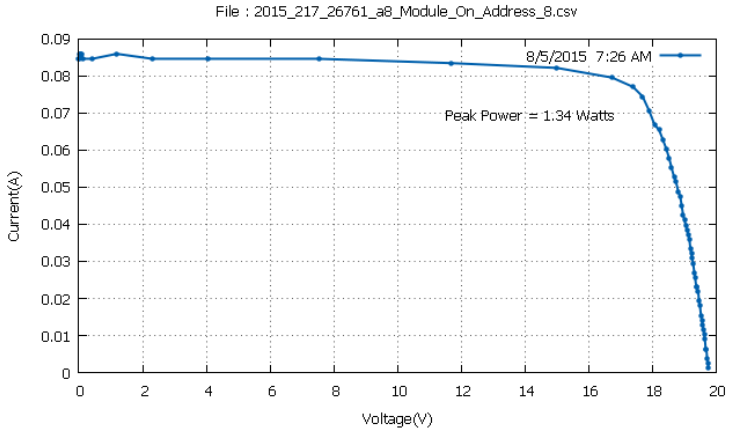
Mean Temperature: 31,55 ºC



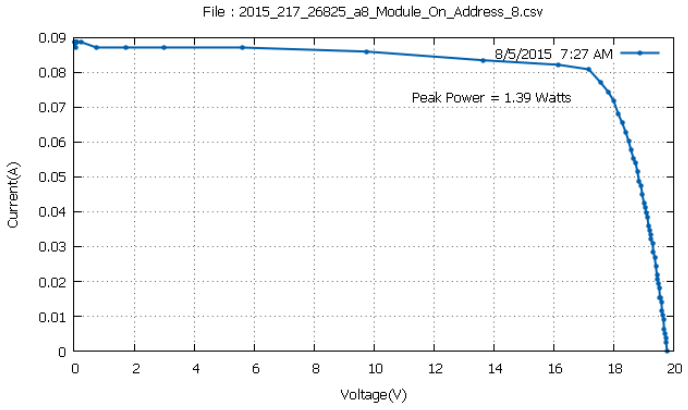
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.9394417\ x\ 0.07191976}{169.5\ x\ 0{,}0768} \text{ x } 100 = 9{,}37\ \%$$



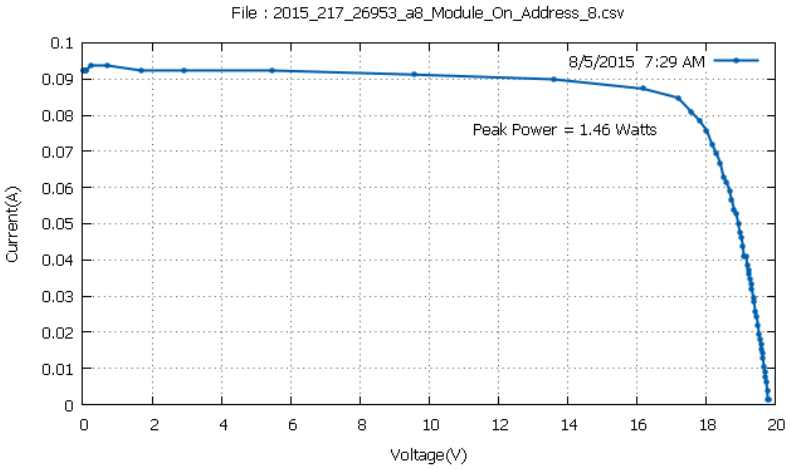
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.04768\ x\ 0.0770568}{175.7\ x\ 0{,}0768} \text{ x } 100 = 9{,}7\ \%$$



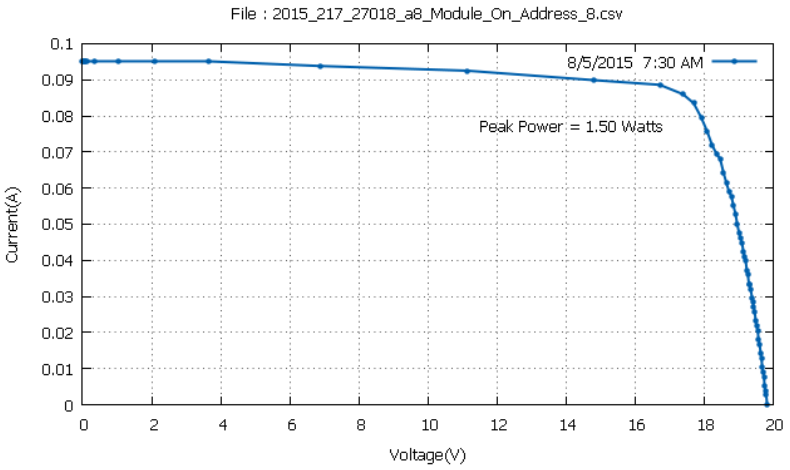
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3878613\ x\ 0.0770568}{179.3\ x\ 0{,}0768} \text{ x } 100 = 9{,}73\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.171382\ x\ 0.0809097}{182.9\ x\ 0{,}0768} \text{ x } 100 = 9{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1945763\ x\ 0.08476258}{190.7\ x\ 0{,}0768} \text{ x } 100 = 9{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.387861\ x\ 0.08604686}{194.1\ x\ 0{,}0768} \text{ x } 100 = 10{,}06\ \%$$

Module 3

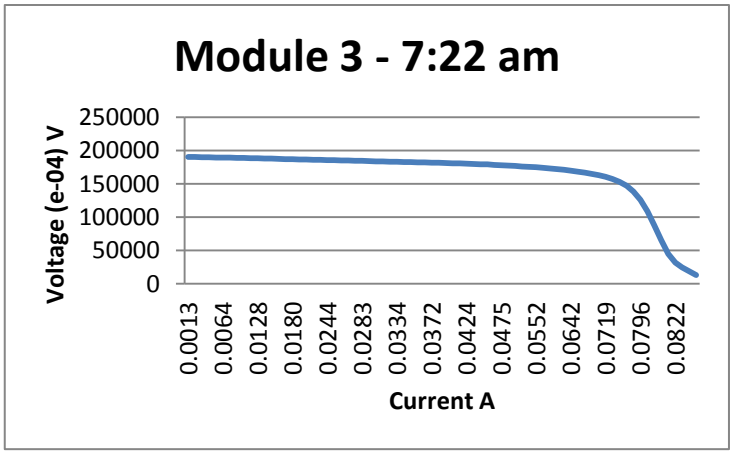
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

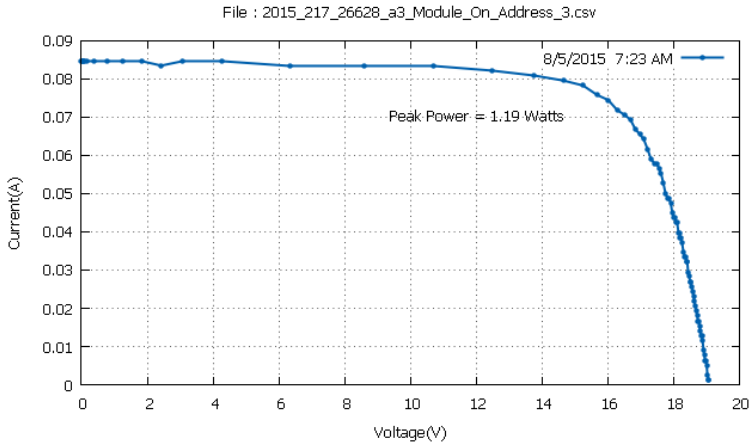
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:22	31,8	9,76
7:23	32	9,73
7:24	32	9,85
7:28	32,5	10,19
7:29	32,7	10,2
7:32	33,1	10,27

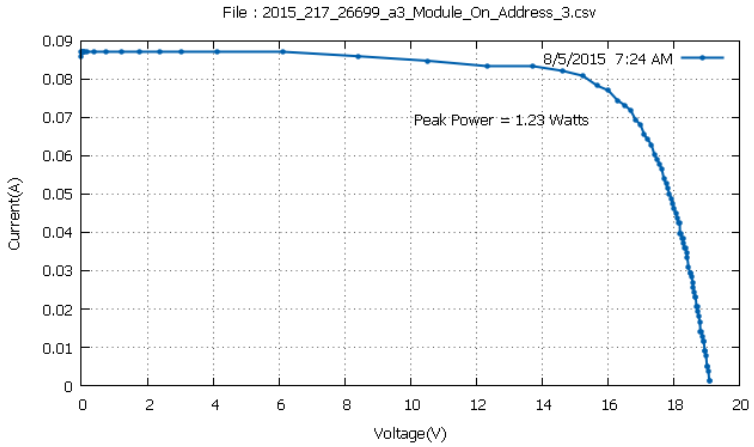
Mean Temperature: 32,35 ºC



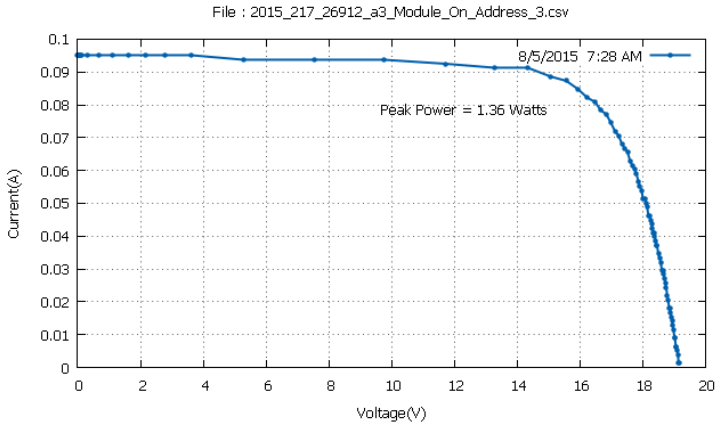
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.702421\ x\ 0.07448833}{169\ x\ 0{,}0709} \text{ x } 100 = 9{,}76\ \%$$



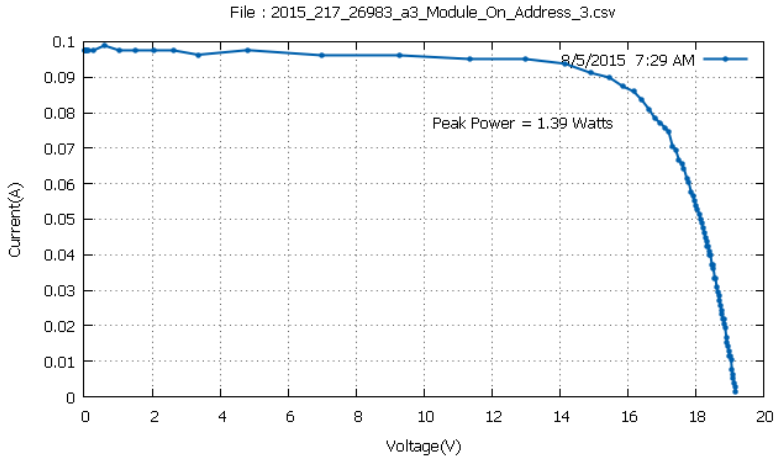
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.2462\ x\ 0.0783411}{172.4\ x\ 0{,}0709} \text{ x } 100 = 9{,}73\ \%$$



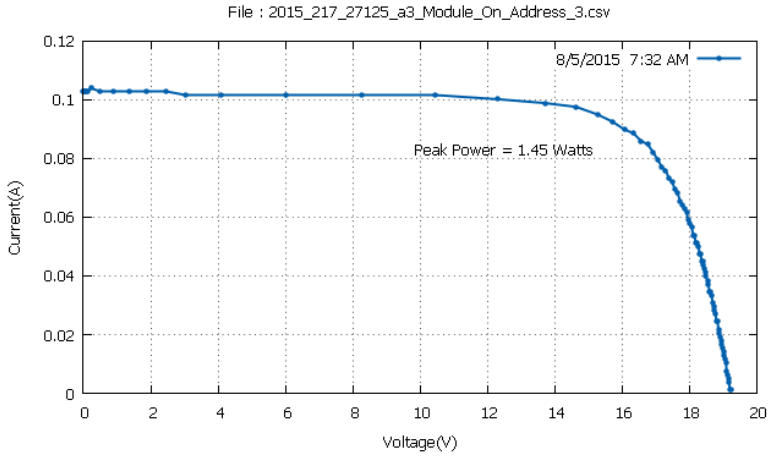
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0116768\ x\ 0.0770568}{176\ x\ 0{,}0709} \text{ x } 100 = 9{,}85\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5632563\ x\ 0.08733114}{188.1\ x\ 0{,}0709} \text{ x } 100 = 10{,}19\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.174036\ x\ 0.0860468}{192.2\ x\ 0{,}0709} \text{ x } 100 = 10{,}2\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.71788\ x\ 0.0924682}{199.1\ x\ 0{,}0709} \text{ x } 100 = 10{,}27\ \%$$

Module 5

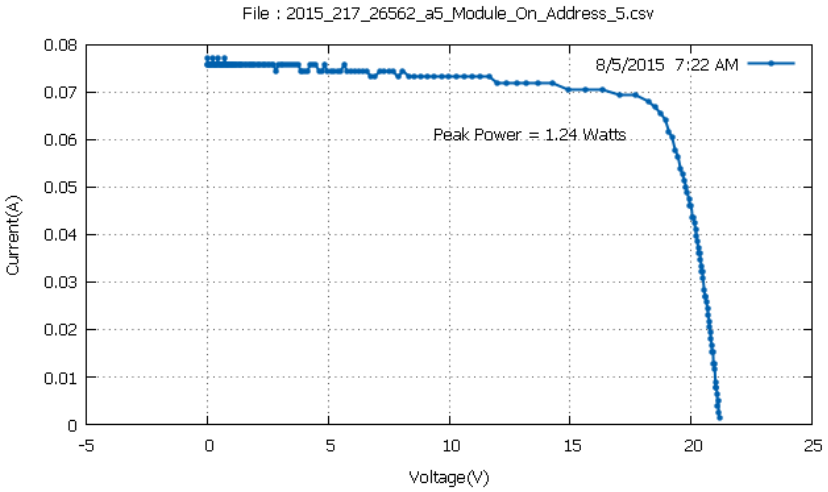
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

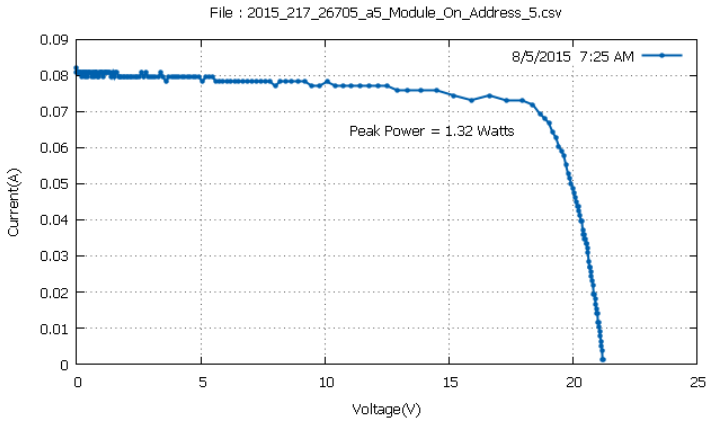
Speed 1

Time AM	Panel Temperature ºC	Efficiency %
7:22	31	9,68
7:25	31,4	9,9
7:27	31,6	10,04
7:28	31,7	10,03
7:29	31,9	10,02
7:32	32,3	10,22

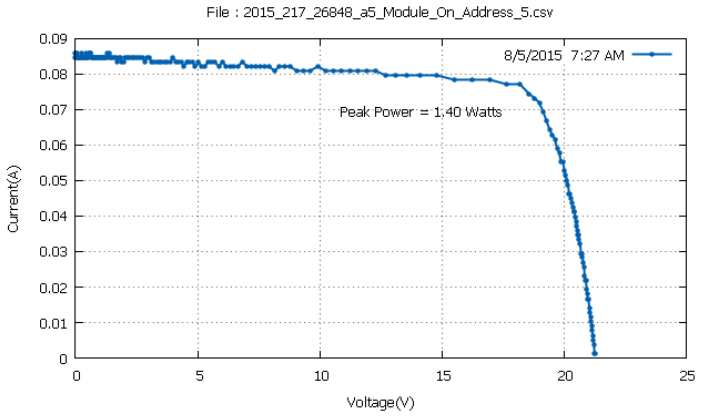
Mean Temperature: 31,65 ºC



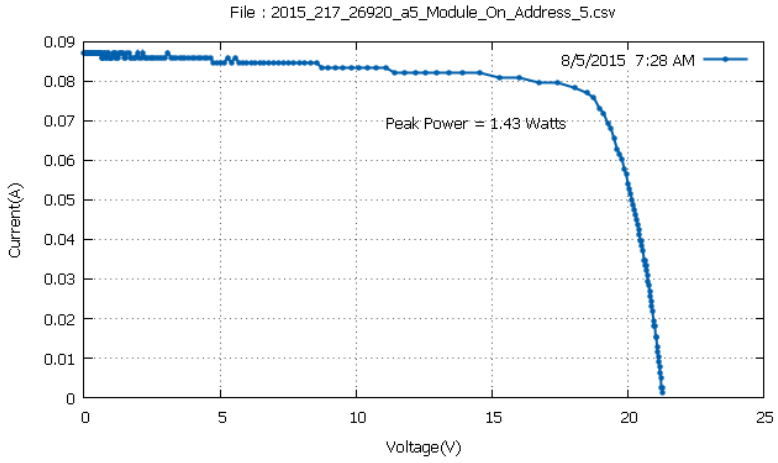
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.22284\ x\ 0.0680669}{169.3\ x\ 0{,}0756} \text{ x } 100 = 9{,}68\ \%$$



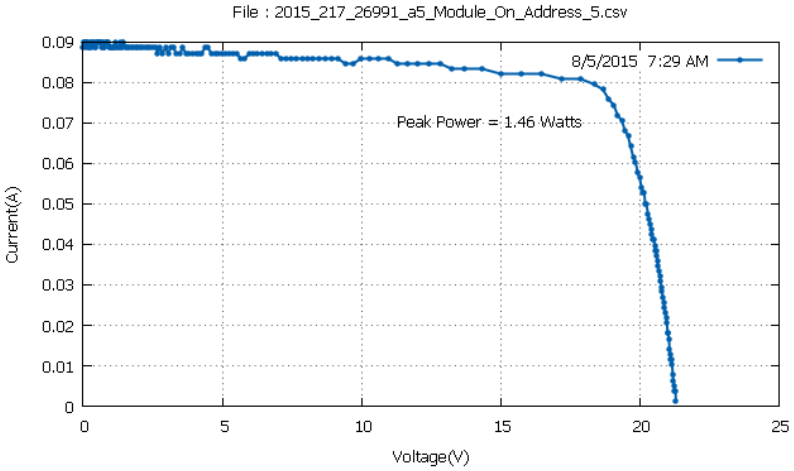
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.3929\ x\ 0.07191976}{176.2\ x\ 0{,}0756}\ \text{x}\ 100 = 9{,}9\ \%$$



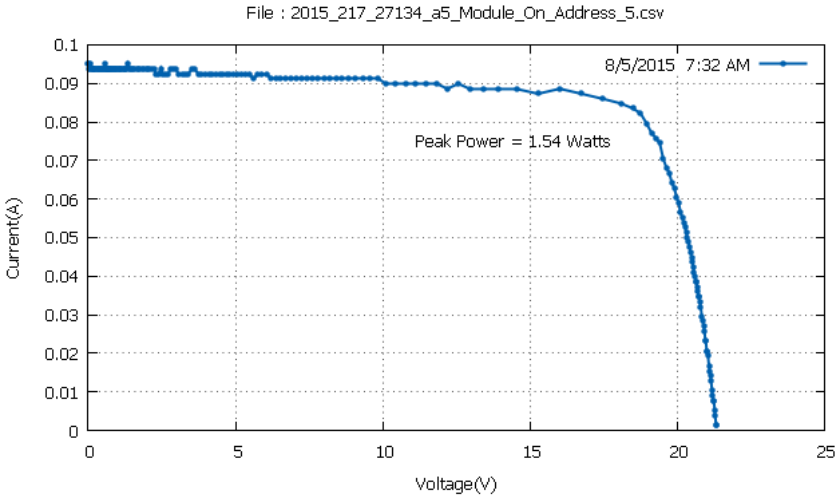
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.20738\ x\ 0.0770568}{184.3\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.4857159\ x\ 0.07705689}{188.6\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.671268\ x\ 0.0783411}{192.7\ x\ 0{,}0756} \text{ x } 100 = 10{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.493448\ x\ 0.083478294}{199.3\ x\ 0{,}0756} \text{ x } 100 = 10{,}22\ \%$$

Module 4

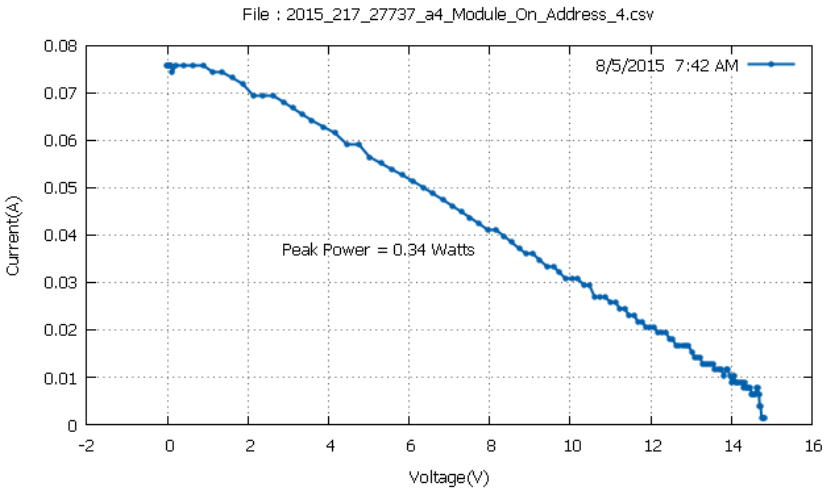
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

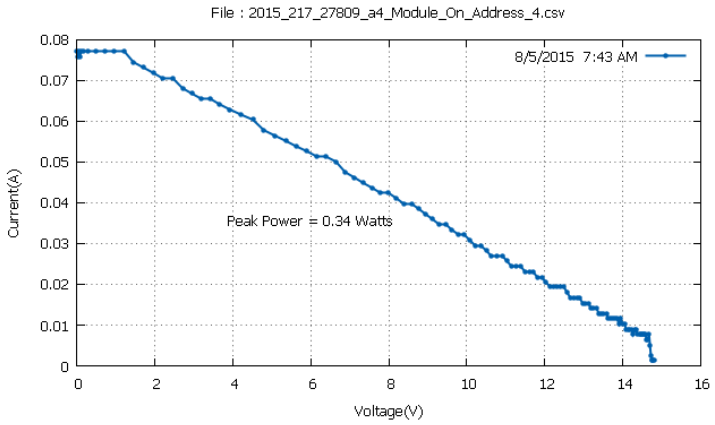
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:42	33,8	2,21
7:43	33,9	2,19
7:44	34	2,16
7:46	34,3	2,17
7:47	34,3	2,14
7:48	34,5	2,12

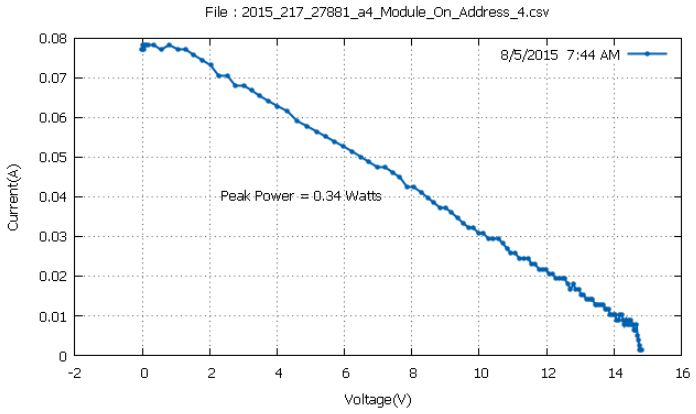
Mean Temperature: 34,13 ºC



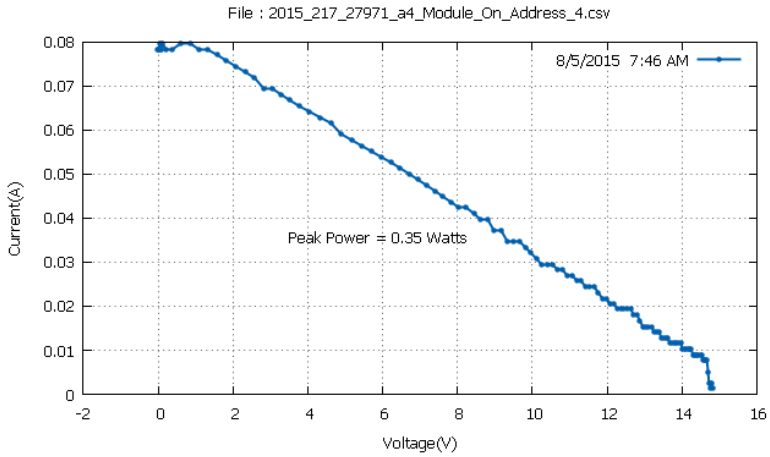
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.574094\ x\ 0.03981272}{228.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}21\ \%$$



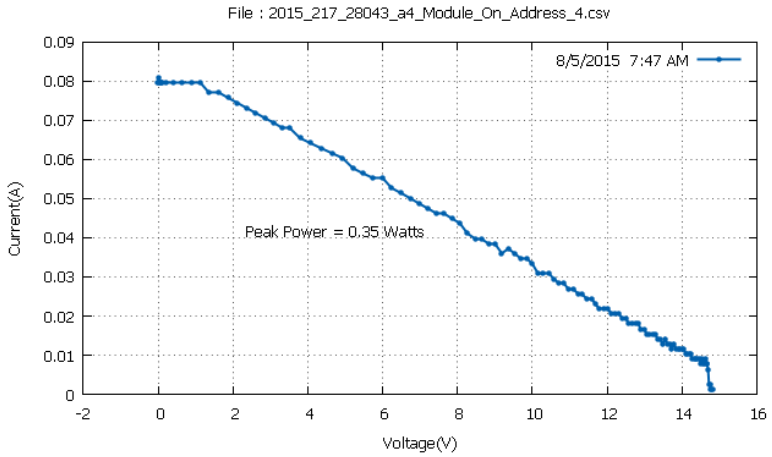
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.58182\ x\ 0.039812725}{230.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}19\ \%$$



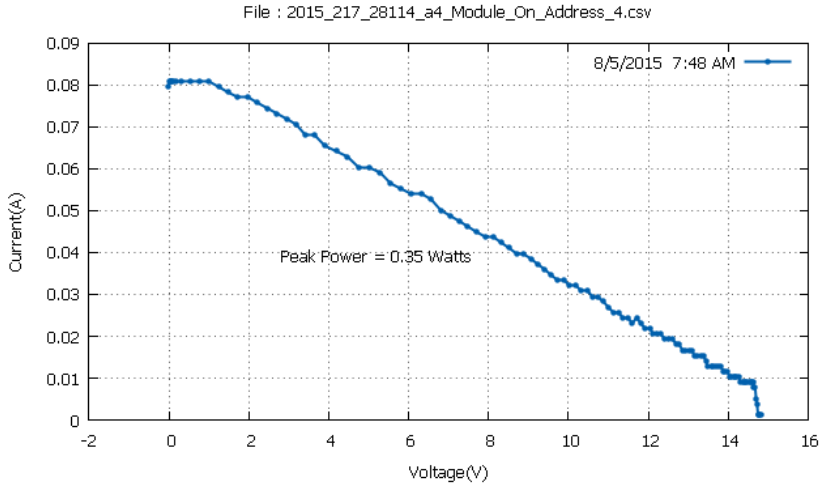
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.646329\ x\ 0.0449498519}{234.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.806035\ x\ 0.039812725}{239.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.646329\ x\ 0.04623413}{243.4\ x\ 0{,}0671} \text{ x } 100 = 2{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.5922\ x\ 0.04623413}{246.1\ x\ 0{,}0671} \text{ x } 100 = 2{,}12\ \%$$

Module 8

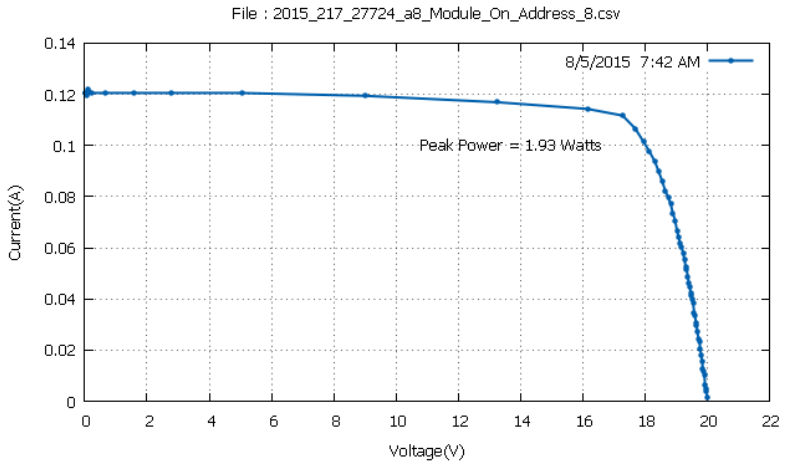
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

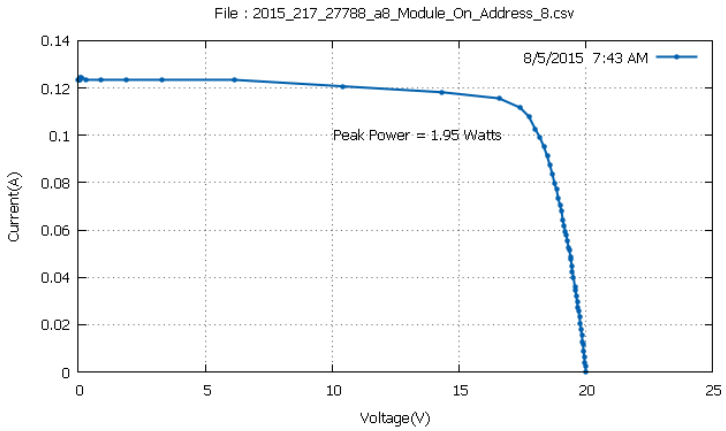
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:42	32,9	11,1
7:43	33	11,05
7:44	33	11,12
7:46	33,1	11,21
7:47	33,2	11,34
7:48	33,3	11,44

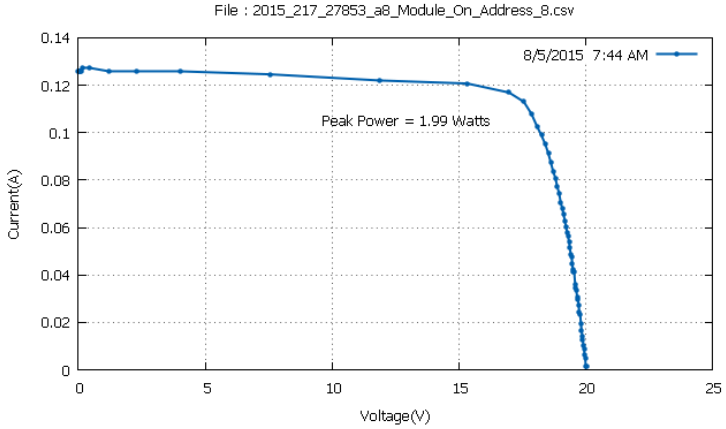
Mean Temperature: 33,08 ºC



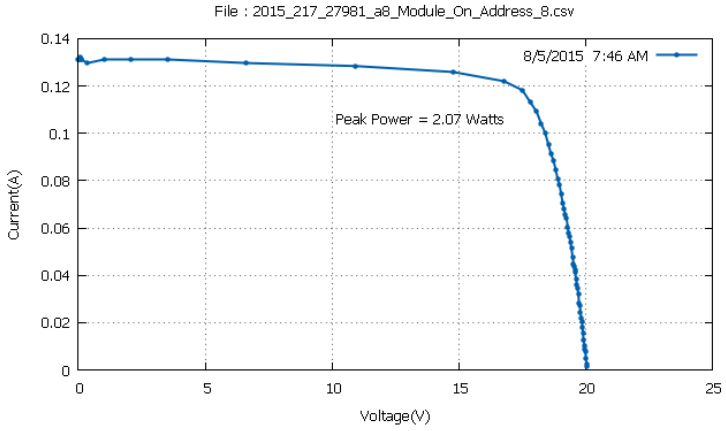
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.279621\ x\ 0.1117324}{226.3\ x\ 0{,}0768} \text{ x } 100 = 11{,}1\ \%$$



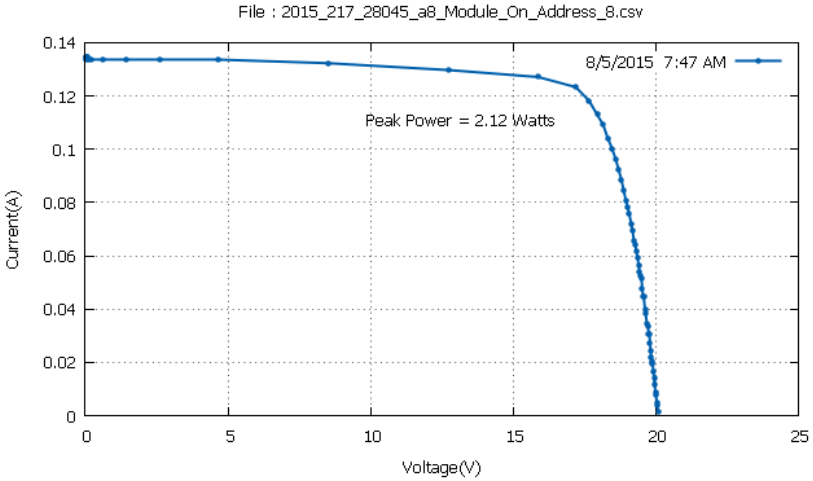
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.41878\ x\ 0.11173249}{229.6\ x\ 0{,}0768} \text{ x } 100 = 11{,}05\ \%$$



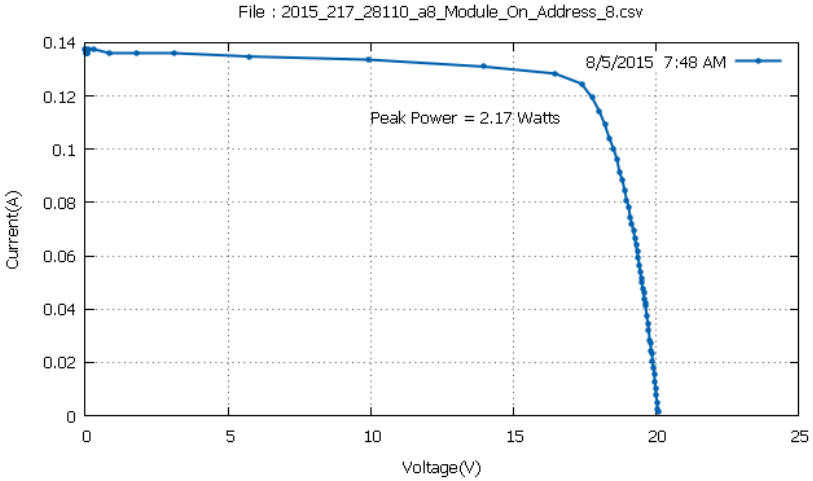
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5656\ x\ 0.113016769}{232.9\ x\ 0{,}0768} \text{ x } 100 = 11{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.51156\ x\ 0.118153}{240.3\ x\ 0{,}0768} \text{ x } 100 = 11{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1945763\ x\ 0.123291023}{243.4\ x\ 0{,}0768} \text{ x } 100 = 11{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.395591\ x\ 0.124575}{246.8\ x\ 0{,}0768} \text{ x } 100 = 11{,}44\ \%$$

Module 3

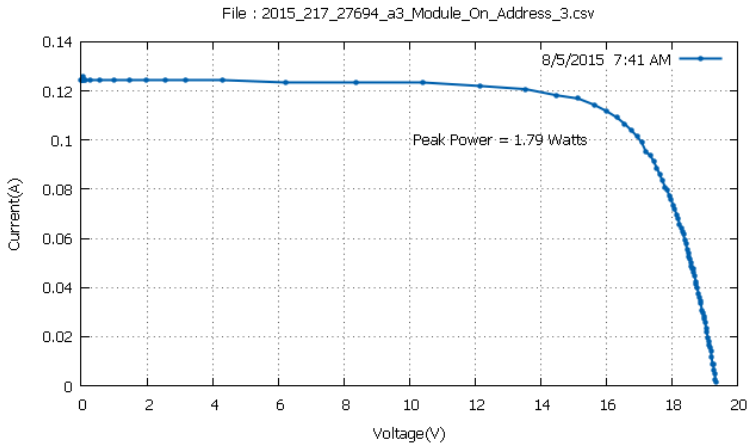
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

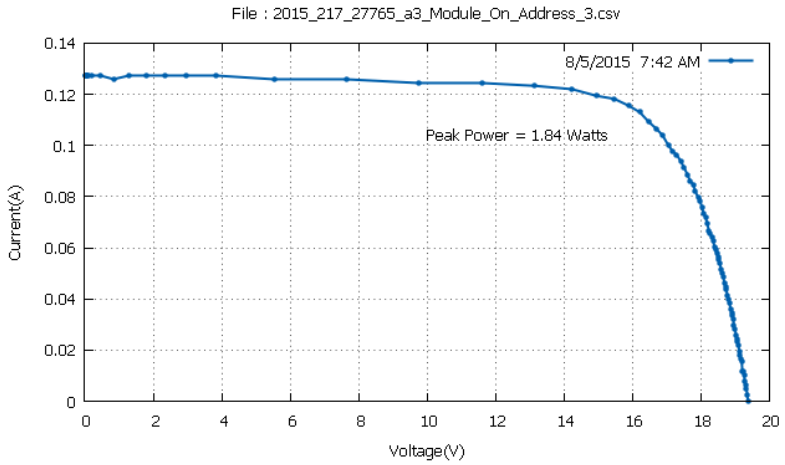
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:41	34,1	11,25
7:42	34,2	11,37
7:43	34,3	11,42
7:46	34,6	11,57
7:47	34,7	11,7
7:48	34,8	11,61

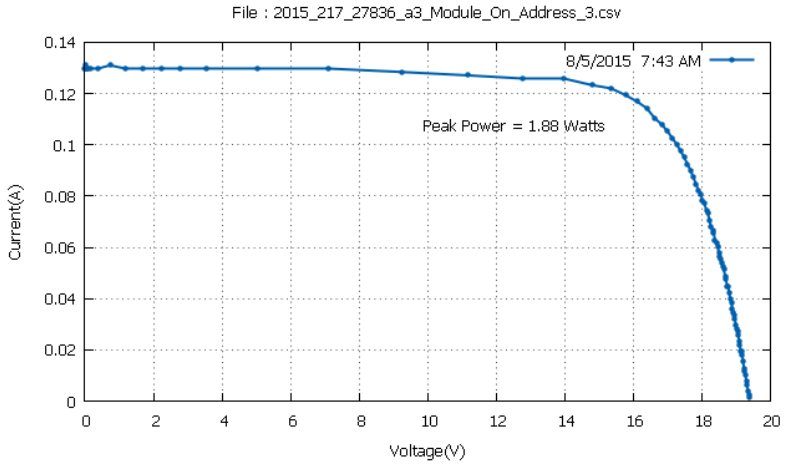
Mean Temperature: 34,45 ºC



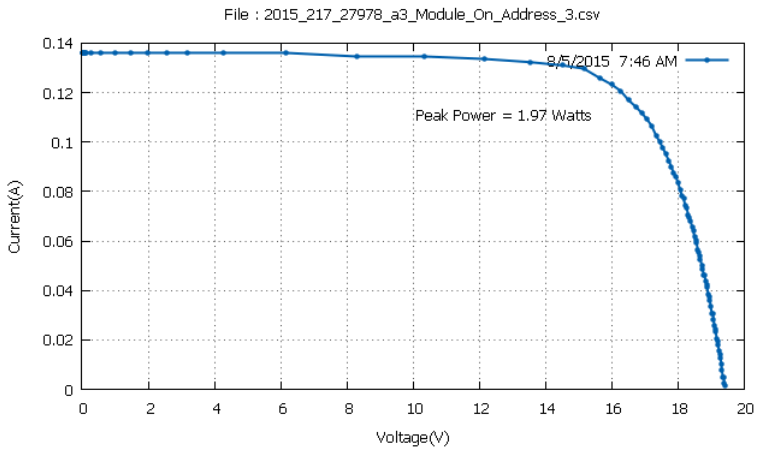
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.019407\ x\ 0.11173249}{224.4\ x\ 0{,}0709} \text{ x } 100 = 11{,}25\ \%$$



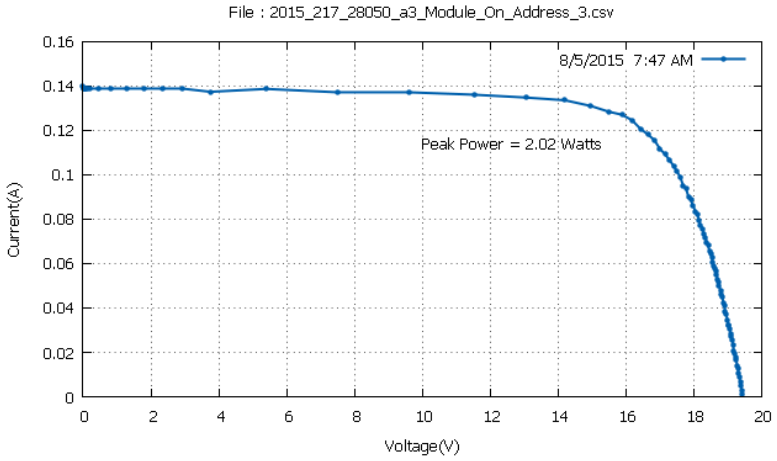
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.88024\ x\ 0.11558533}{228.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}37\ \%$$



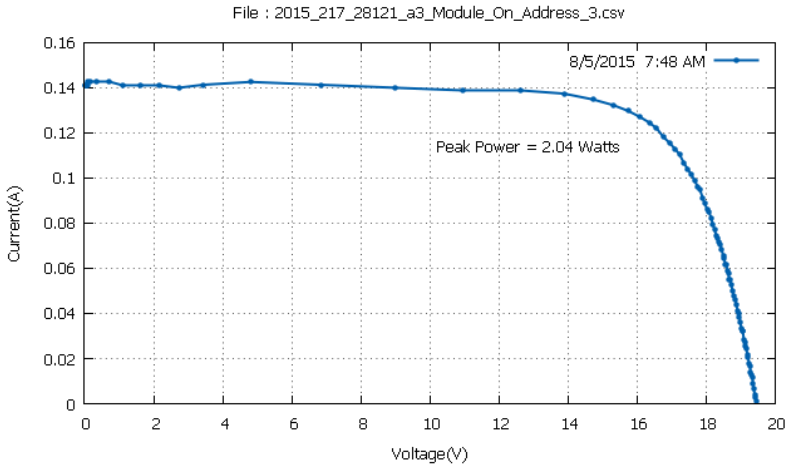
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.772004\ x\ 0.11943817}{232.2\ x\ 0{,}0709} \text{ x } 100 = 11{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.98848\ x\ 0.12329102}{240.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.880243\ x\ 0.127143875}{243.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.081258\ x\ 0.12714387}{247.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}61\ \%$$

Module 5

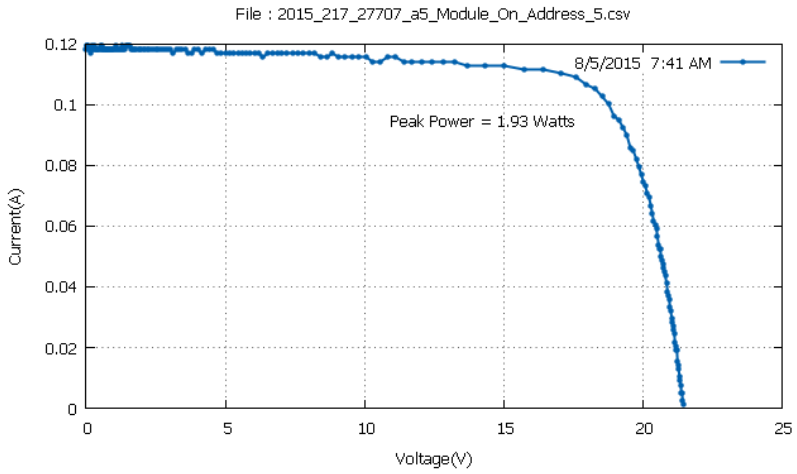
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

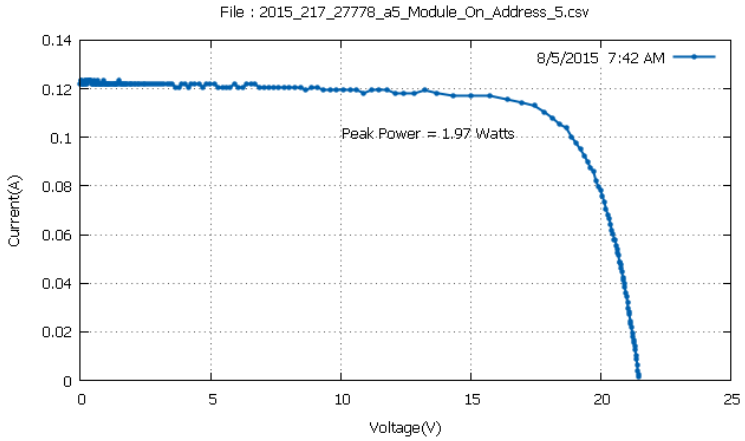
Speed 2

Time AM	Panel Temperature ºC	Efficiency %
7:41	33,4	11,33
7:42	33,5	11,38
7:44	33,7	11,48
7:46	34	11,63
7:47	34,1	11,7
7:48	34,3	11,63

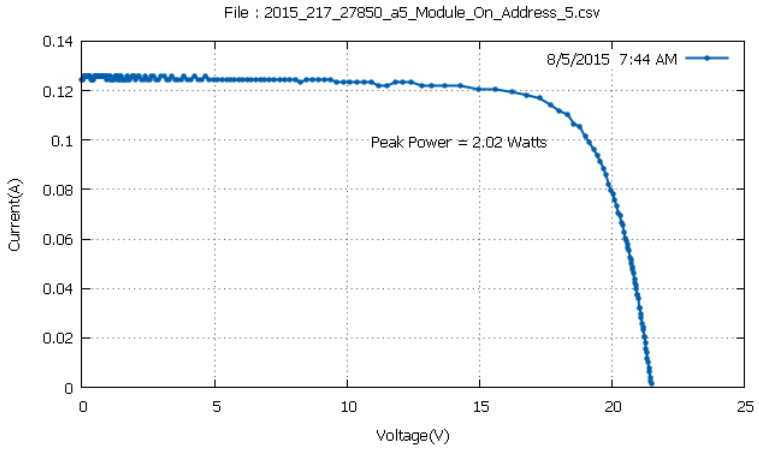
Mean Temperature: 33,83 ºC



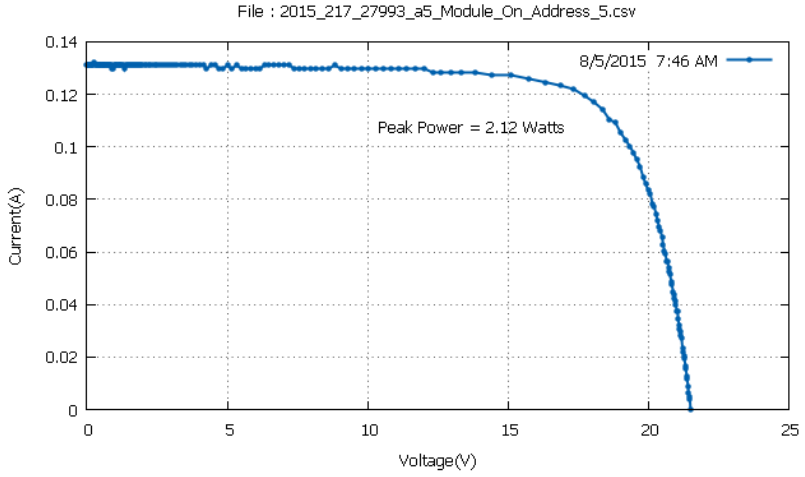
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.2847\ x\ 0.10531108}{225.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}33\ \%$$



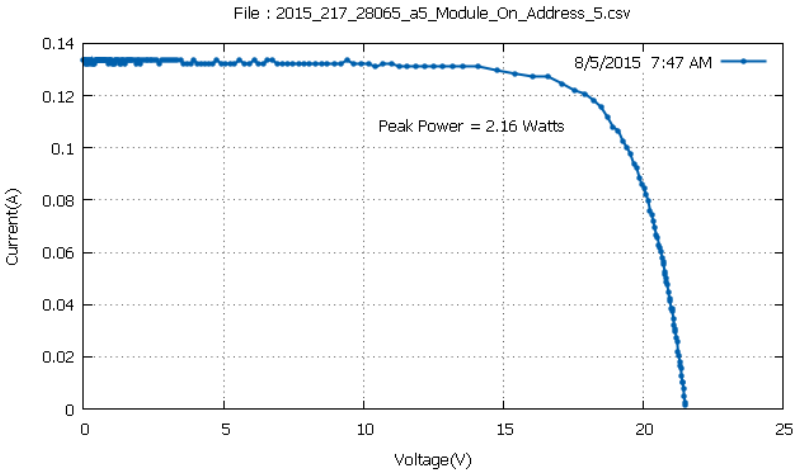
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4497128\ x\ 0.113016769}{228.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}38\ \%$$



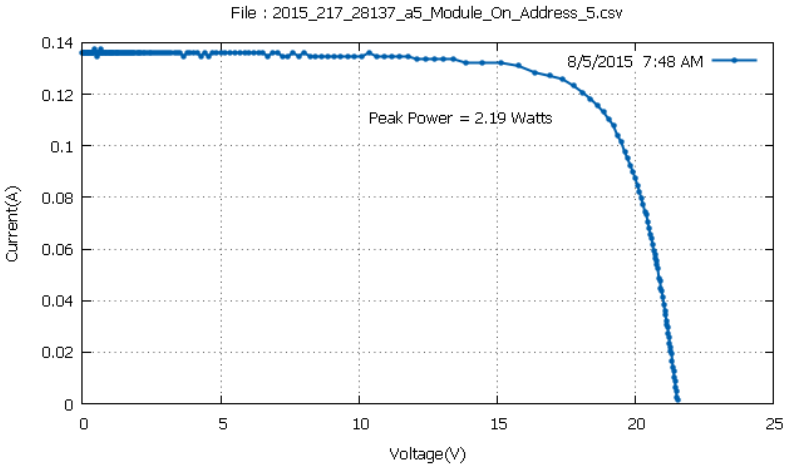
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.323356\ x\ 0.1104482}{232.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7357731\ x\ 0.1194381}{241.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}63\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.921325\ x\ 0.12072245}{244.4\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}7\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.7666988\ x\ 0.12329102}{248.9\ x\ 0{,}0756}\ \text{x}\ 100 = 11{,}63\ \%$$

Module 4

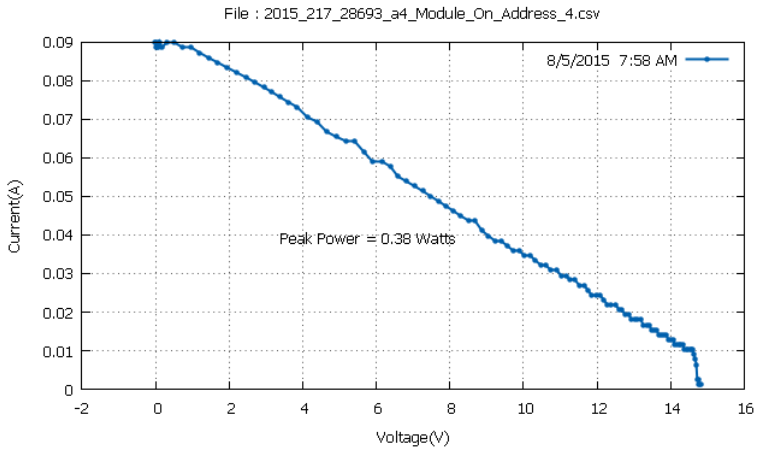
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

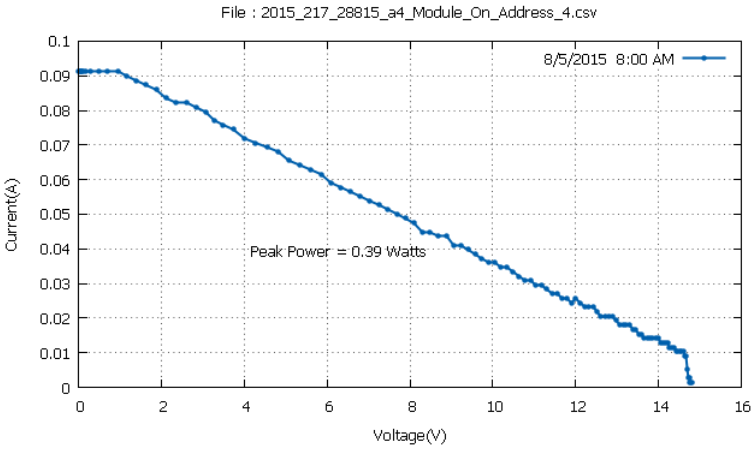
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
7:58	35,8	2,03
8:00	35,8	2,04
8:01	36,1	2,02
8:03	36,5	2,07
8:04	36,5	2,08
8:06	35,9	2,1

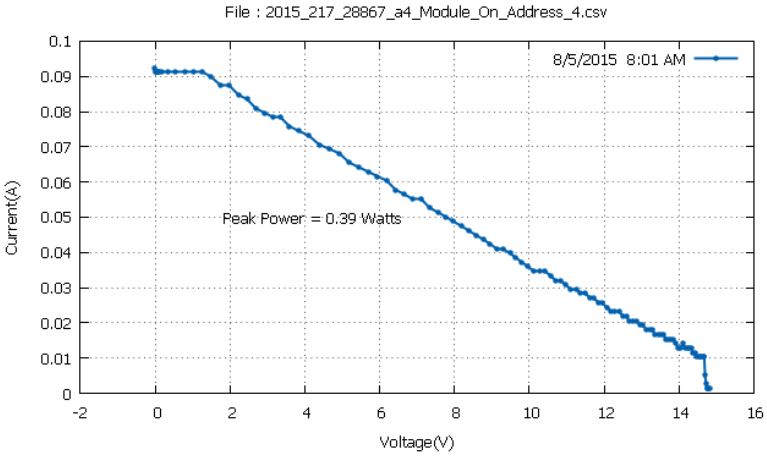
Mean Temperature: 36,1 ºC



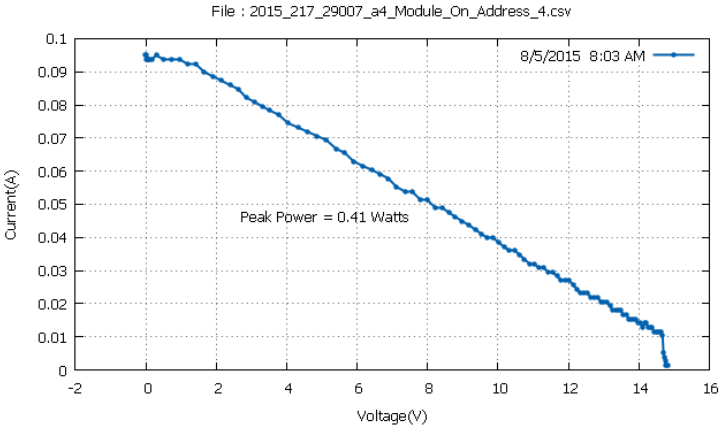
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.69006\ x\ 0.04366557}{278\ x\ 0{,}0671} \text{ x } 100 = 2{,}03\ \%$$



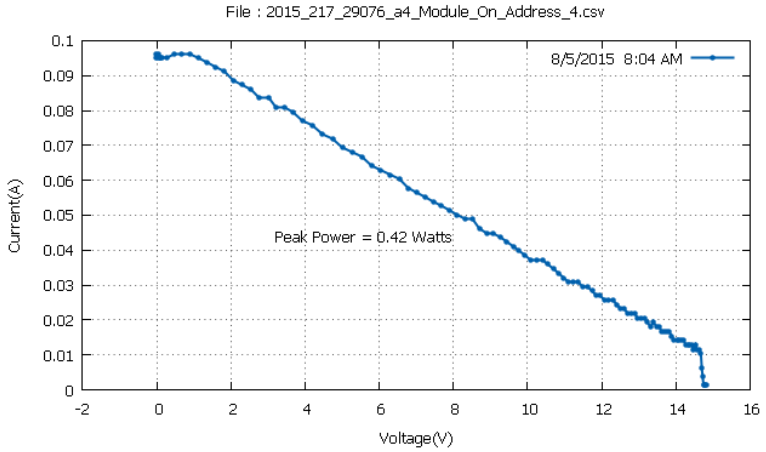
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.875618\ x\ 0.0436655}{284\ x\ 0{,}0671} \text{ x } 100 = 2{,}04\ \%$$



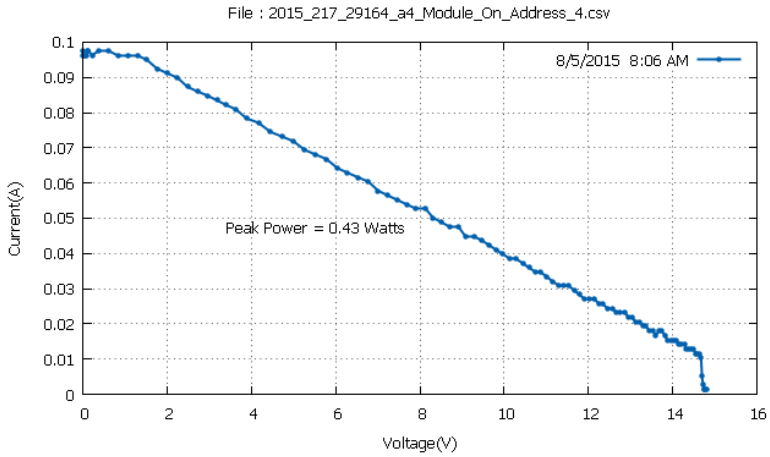
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.112864\ x\ 0.0552241}{287.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.0019\ x\ 0.05137}{295.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.24164\ x\ 0.051371}{300.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1102\ x\ 0.05265}{304.5\ x\ 0{,}0671} \text{ x } 100 = 2{,}1\ \%$$

Module 8

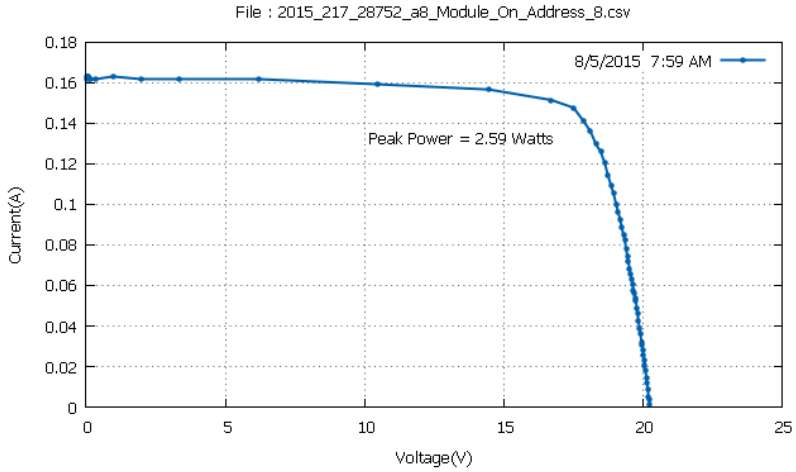
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

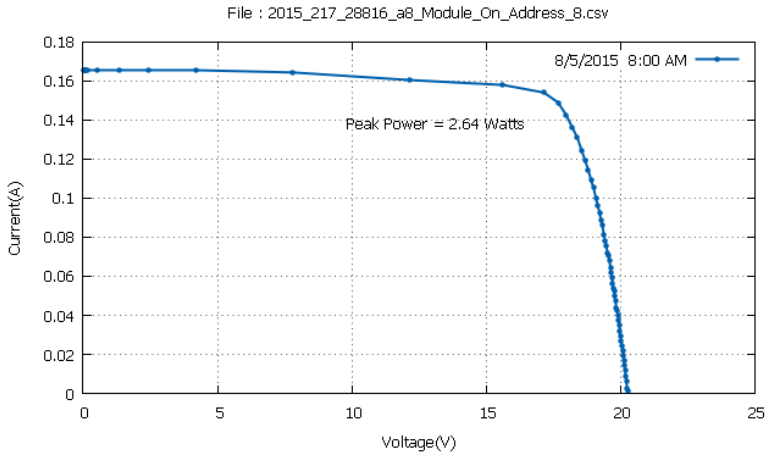
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
7:59	33,5	12
8:00	33,6	12,1
8:01	33,6	12,14
8:03	33,7	12,21
8:04	33,7	12,24
8:05	33,9	12,33

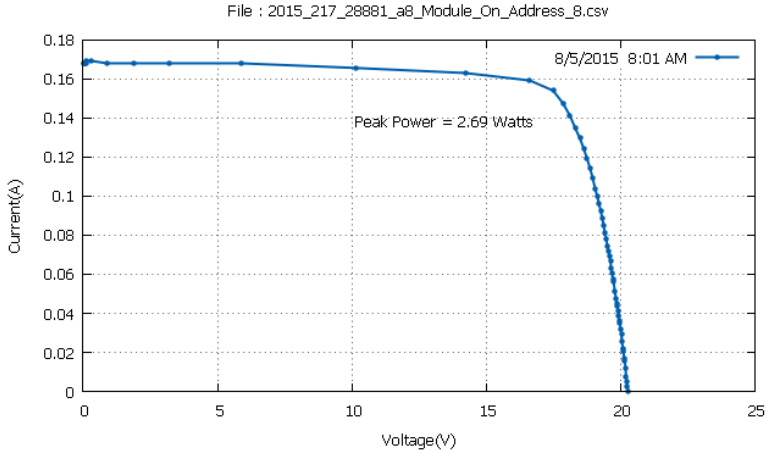
Mean Temperature: 33,66 ºC



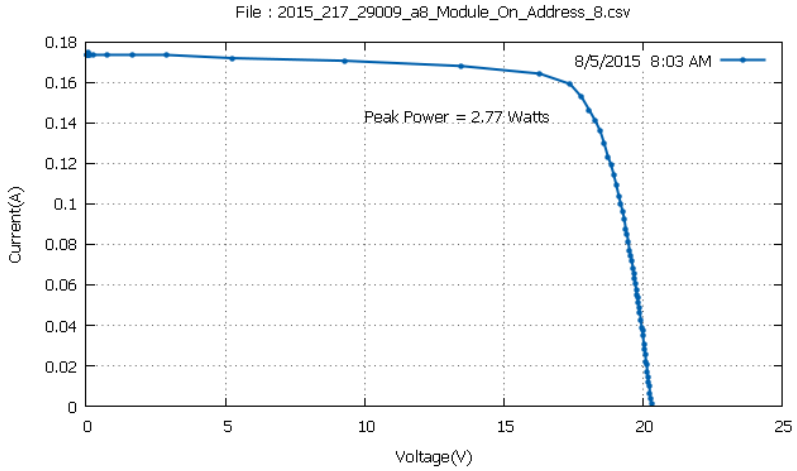
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.511562\ x\ 0.1476923}{280.9\ x\ 0{,}0768} \text{ x } 100 = 12\ \%$$



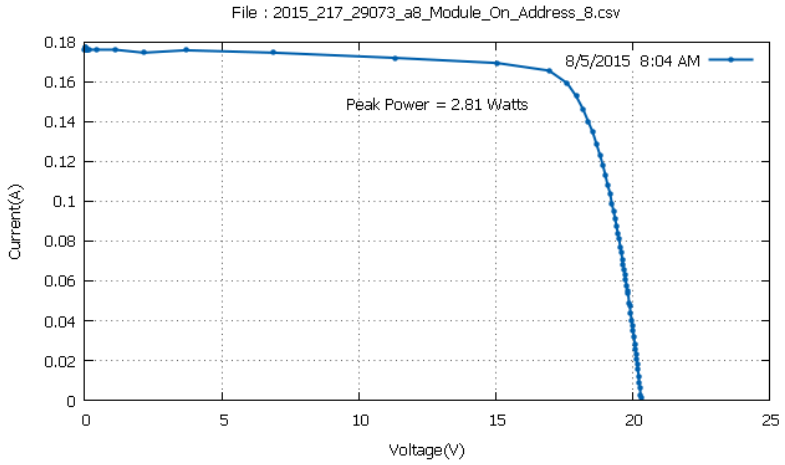
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.148187\ x\ 0.154113}{284.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}1\ \%$$



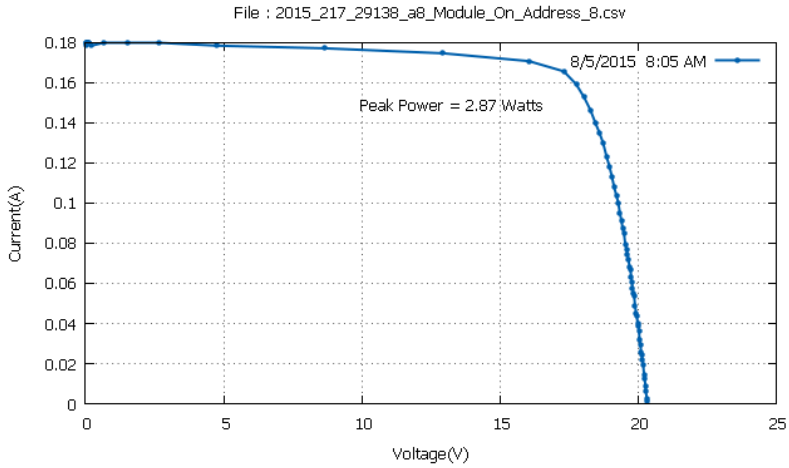
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4883\ x\ 0.1541137}{288.5\ x\ 0{,}0768} \text{ x } 100 = 12{,}14\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.387861\ x\ 0.1592509}{295.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.954904\ x\ 0.1656723}{298.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}24\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3105\ x\ 0.165672}{303\ x\ 0{,}0768} \text{ x } 100 = 12{,}33\ \%$$

Module 3

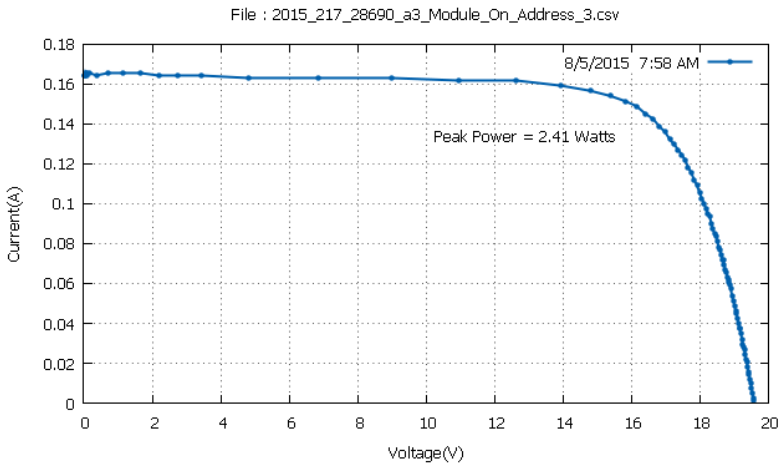
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

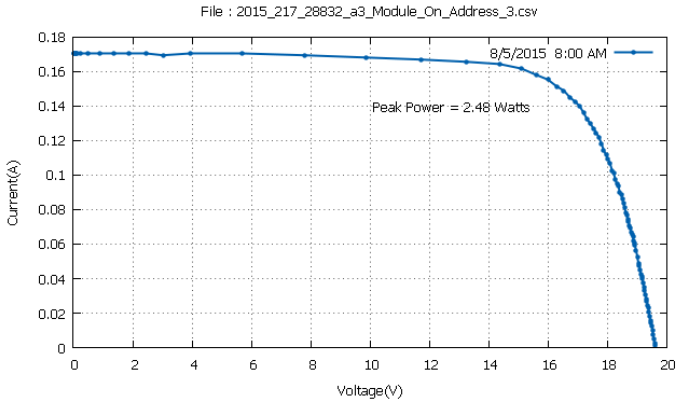
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
7:58	35,5	12,23
8:00	37,6	12,25
8:01	38,6	12,35
8:02	37,7	12,4
8:05	36,2	12,52
8:06	37	12,55

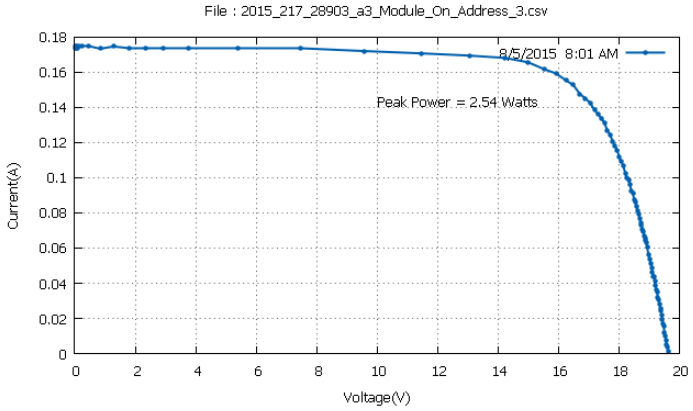
Mean Temperature: 37,1 ºC



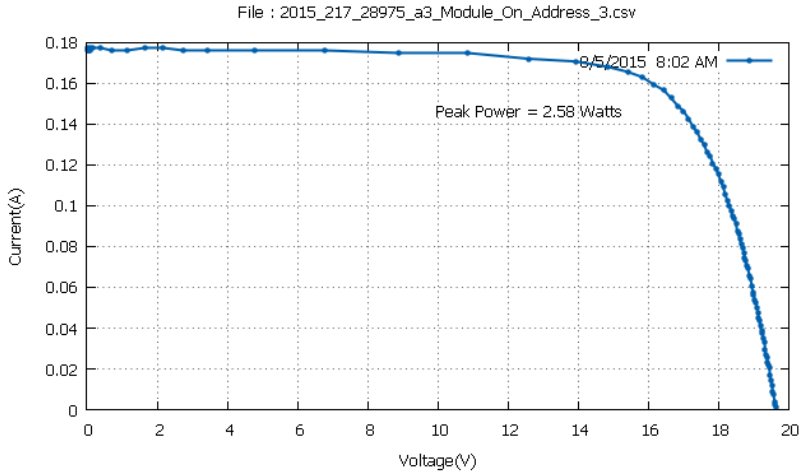
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1431\ x\ 0.148976}{277.8\ x\ 0{,}0709} \text{ x } 100 = 12{,}23\ \%$$



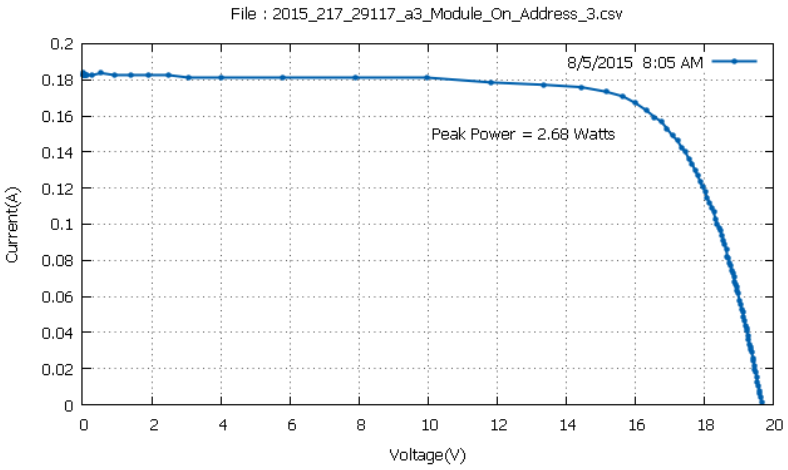
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.98848\ x\ 0.15539805}{285.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}25\ \%$$



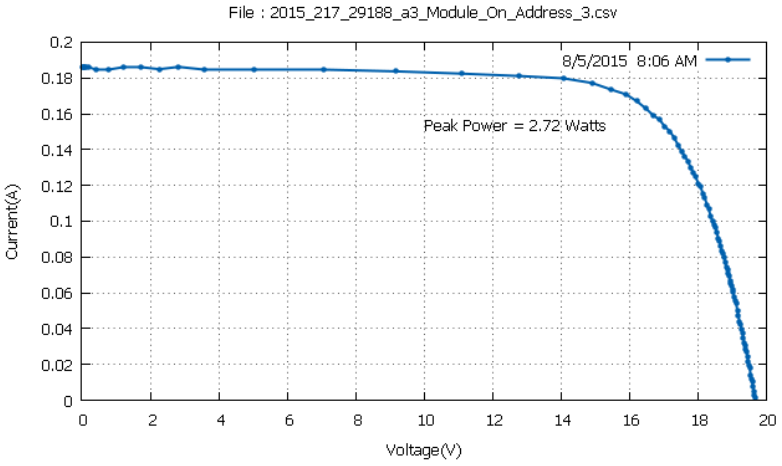
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9266\ x\ 0.1592507}{289.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}35\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.82612\ x\ 0.1631037}{293.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.019404\ x\ 0.16695658}{301.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9034\ x\ 0.170809}{305.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}55\ \%$$

Module 5

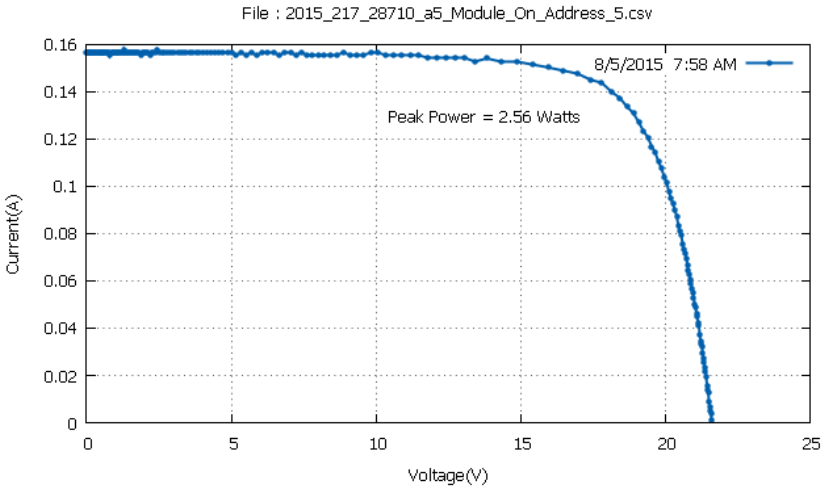
Date: 5/8/2015 – Morning Measurement

Temperature Ambient: 33 ºC

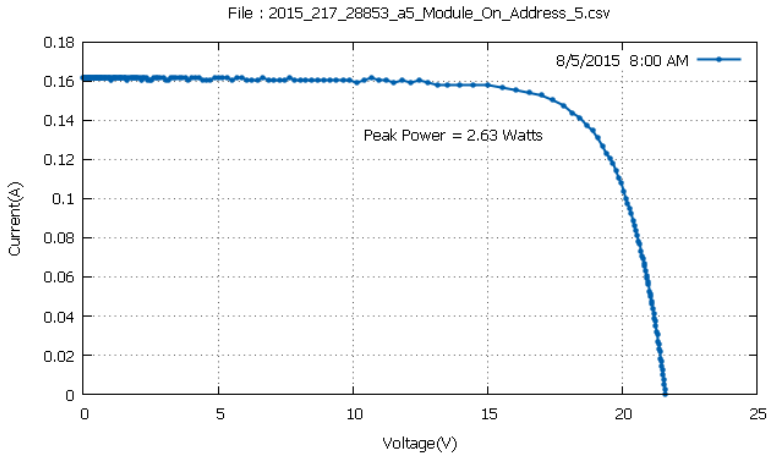
Speed 3

Time AM	Panel Temperature ºC	Efficiency %
7:58	35,7	12,15
8:00	35,9	12,13
8:02	36,3	12,17
8:03	36,5	12,21
8:05	36,7	12,3
8:06	36,7	12,37

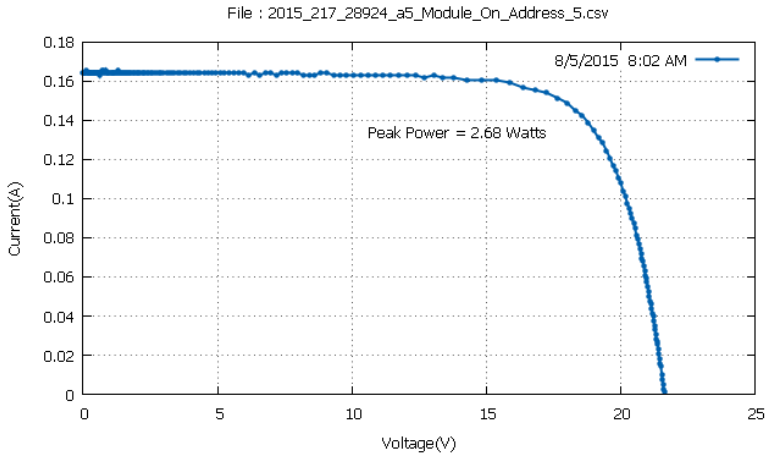
Mean Temperature: 36,3 ºC



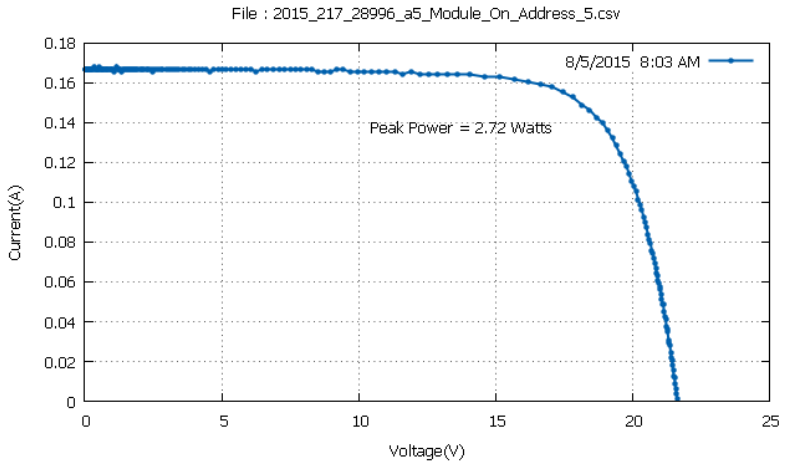
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.80535\ x\ 0.1438395}{278.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}15\ \%$$



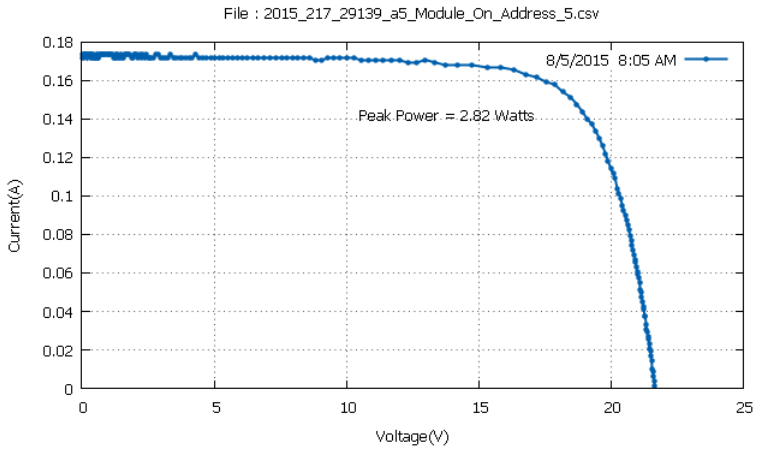
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.820817\ x\ 0.1476923}{286.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}13\ \%$$



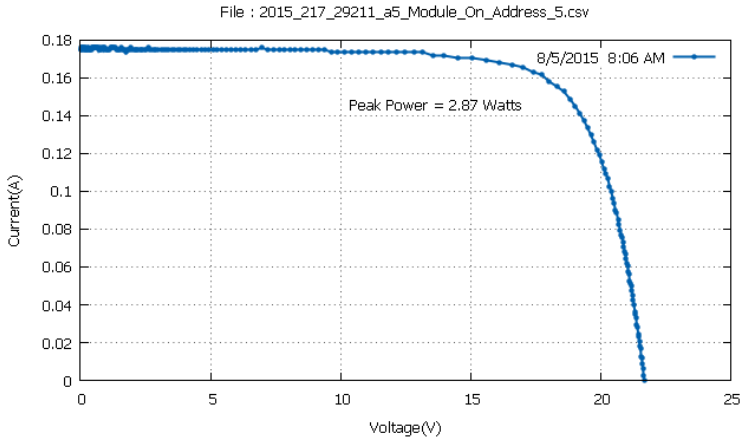
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.00637\ x\ 0.148976}{291.1\ x\ 0{,}0756} \text{ x } 100 = 12{,}17\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.82081\ x\ 0.152829}{294.5\ x\ 0{,}0756} \text{ x } 100 = 12{,}21\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.867206\ x\ 0.1579666}{303.3\ x\ 0{,}0756} \text{ x } 100 = 12{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.72804\ x\ 0.161819}{306.9\ x\ 0{,}0756} \text{ x } 100 = 12{,}37\ \%$$

Module 4

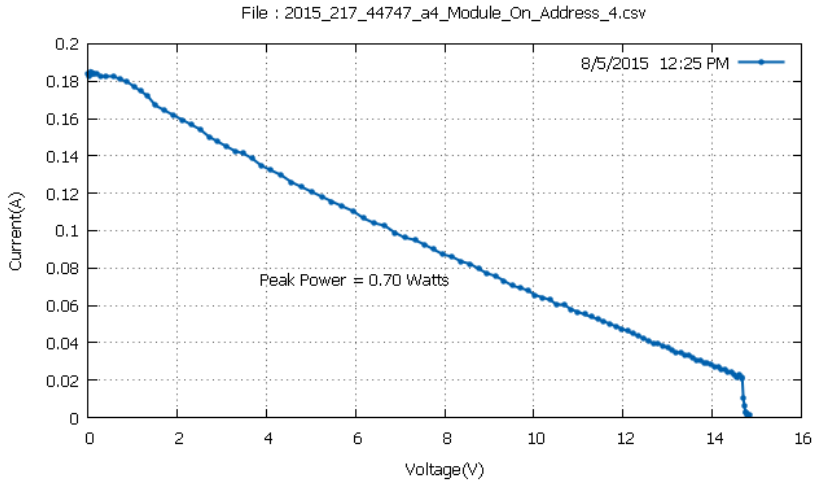
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

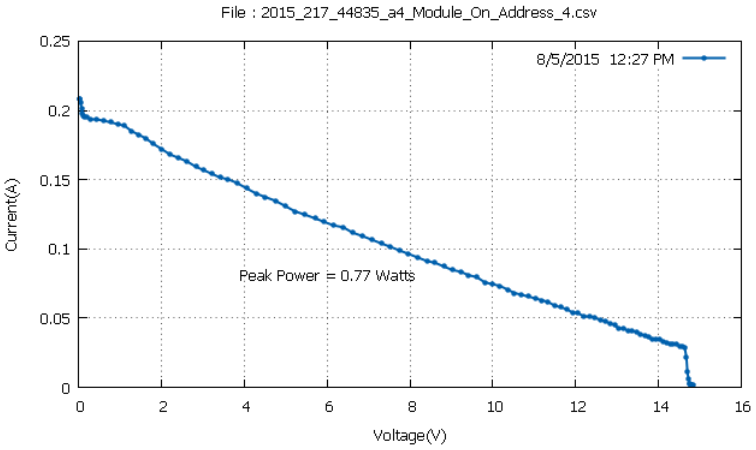
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:25	62,7	1,08
12:27	60,4	1,18
12:29	61,9	1,16
12:31	61,2	1,23
12:33	64,7	1,09
12:34	63,3	1,13

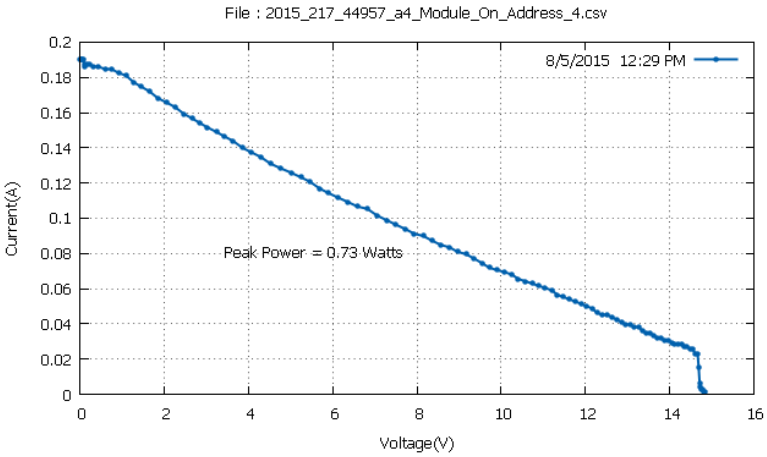
Mean Temperature: 62,36 ºC



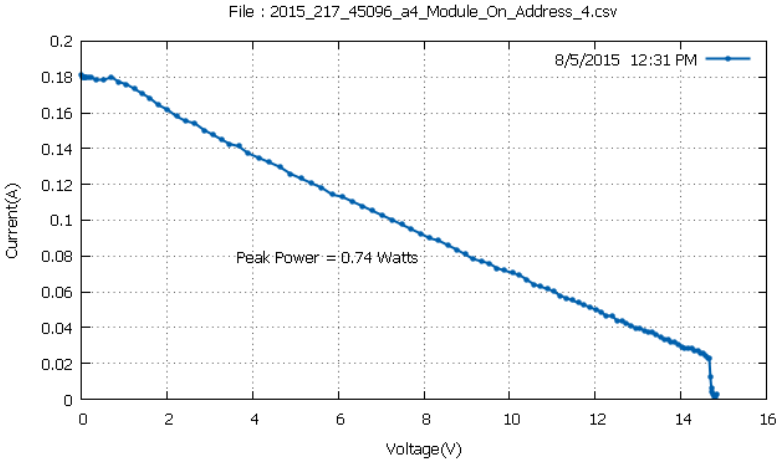
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.56636\ x\ 0.082194}{964.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}08\ \%$$



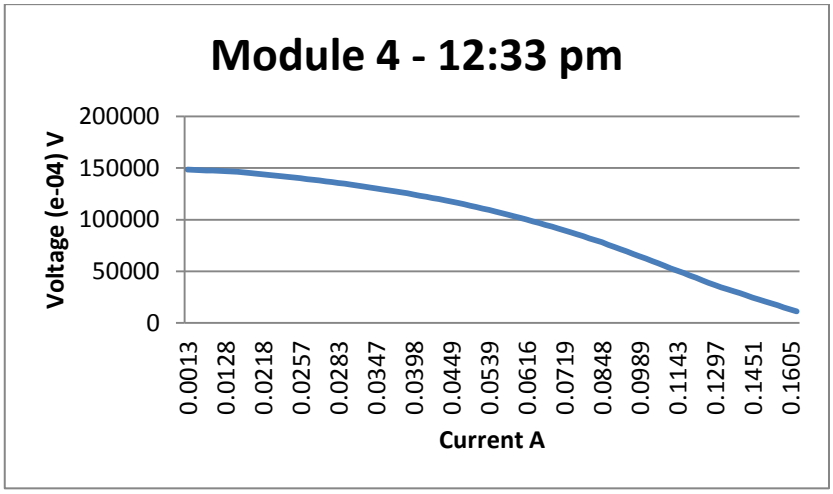
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.605\ x\ 0.0898}{971.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}18\ \%$$



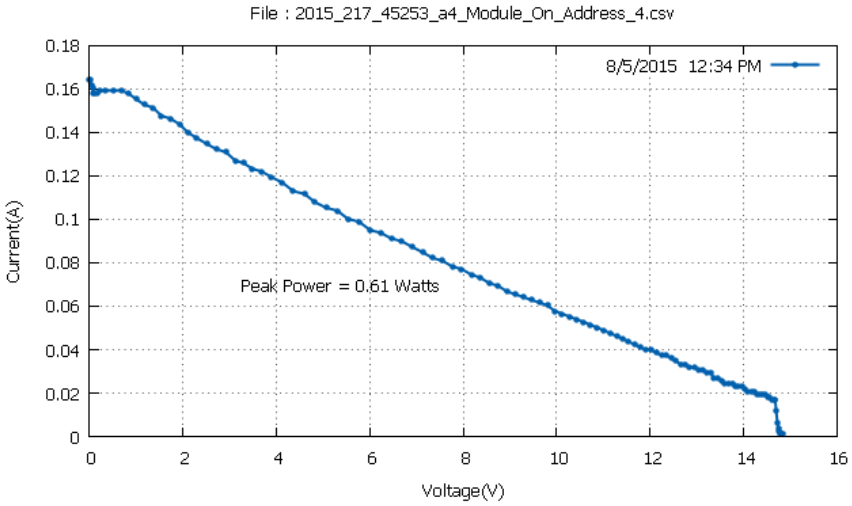
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1488\ x\ 0.089899}{930.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}16\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.3421\ x\ 0.088615}{893.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}23\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.009704\ x\ 0.08347829}{909.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}09\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.963315\ x\ 0.077056}{799\ x\ 0{,}0671} \text{ x } 100 = 1{,}13\ \%$$

Module 8

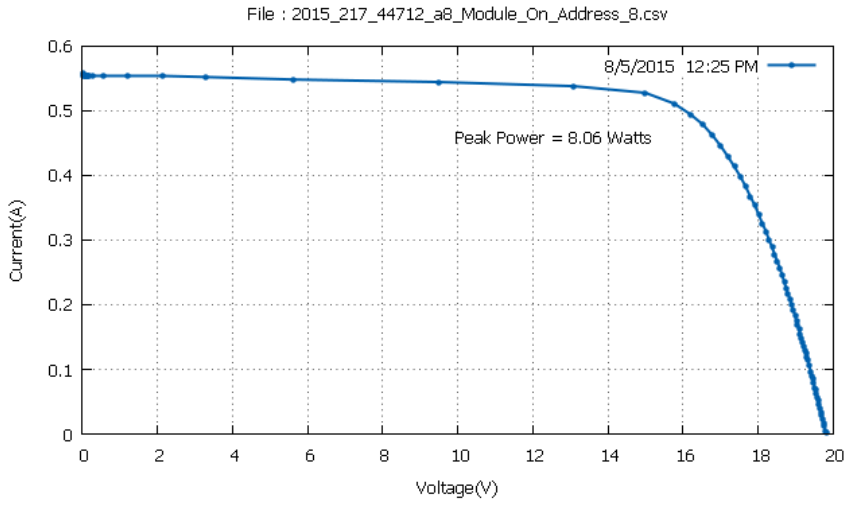
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

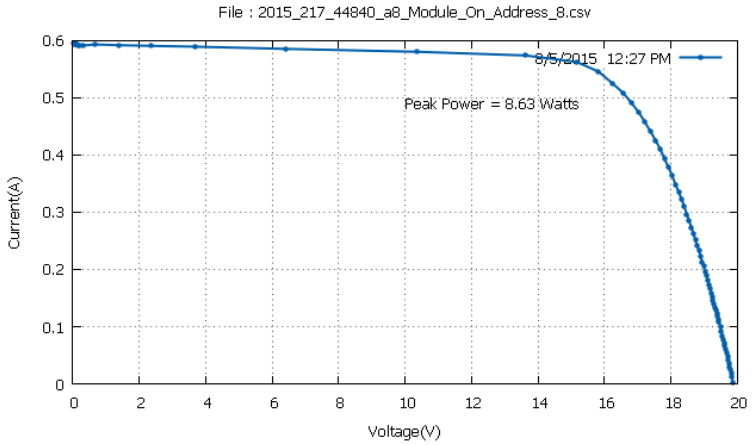
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:25	55,2	12,6
12:27	54,7	12,81
12:29	55,7	12,22
12:31	55,5	12,25
12:32	56,3	12,3
12:33	58	12,42

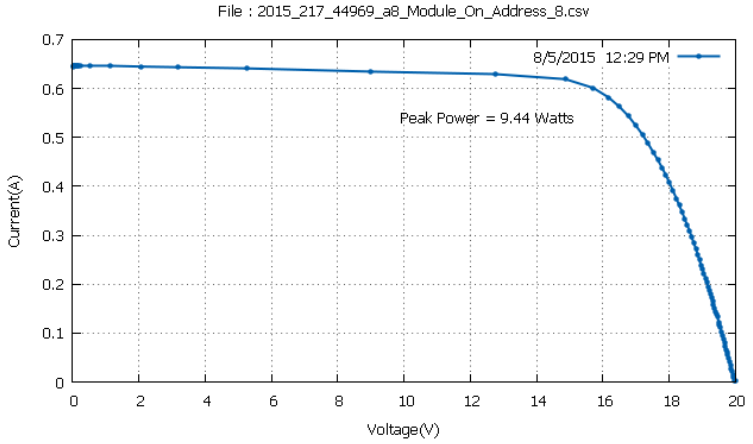
Mean Temperature: 55,9 ºC



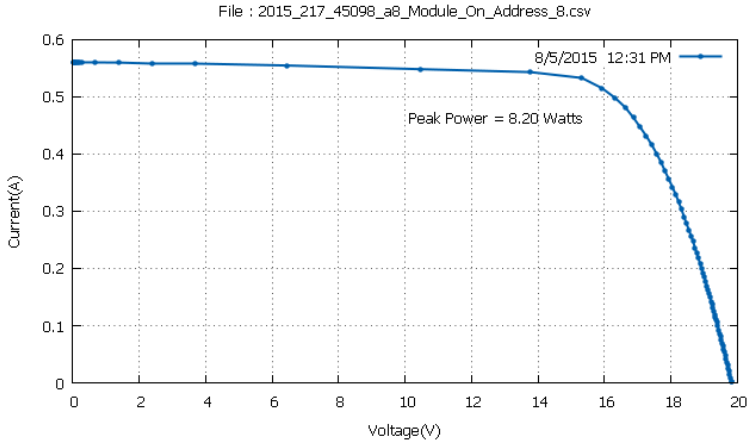
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.764\ x\ 0.51114}{832.4\ x\ 0{,}0768} \text{ x } 100 = 12{,}6\ \%$$



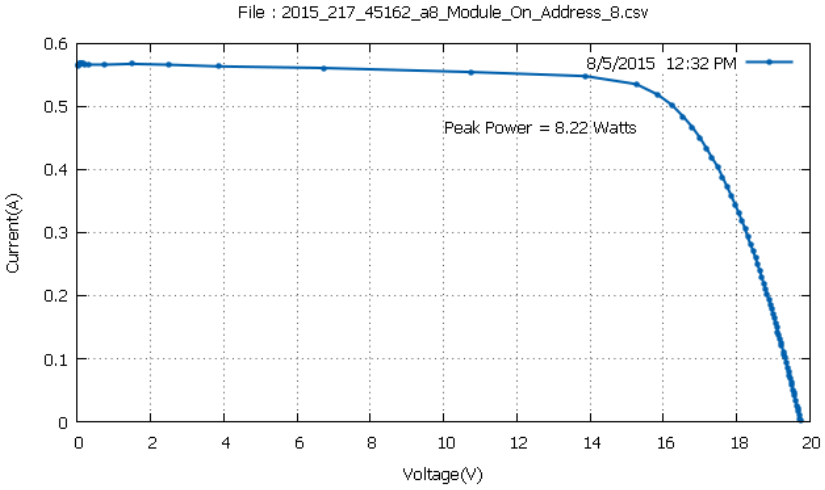
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.81839\ x\ 0.5458}{876.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}81\ \%$$



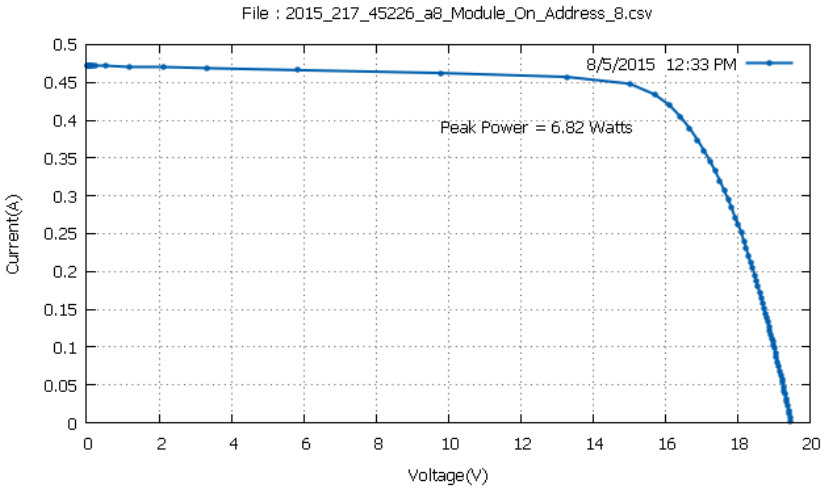
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.71015\ x\ 0.601043}{1005.9\ x\ 0{,}0768} \text{ x } 100 = 12{,}22\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.926\ x\ 0.514996}{871.2\ x\ 0{,}0768} \text{ x } 100 = 12{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8493\ x\ 0.51884}{869.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}3\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.7024\ x\ 0.434087}{714.8\ x\ 0{,}0768} \text{ x } 100 = 12{,}42\ \%$$

Module 3

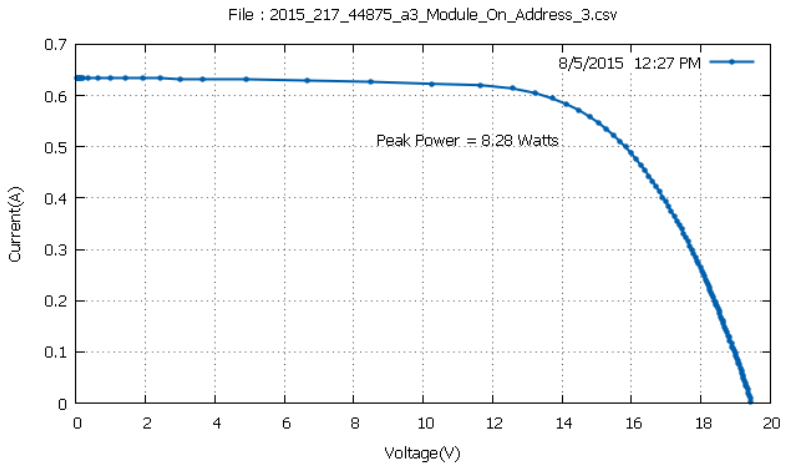
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

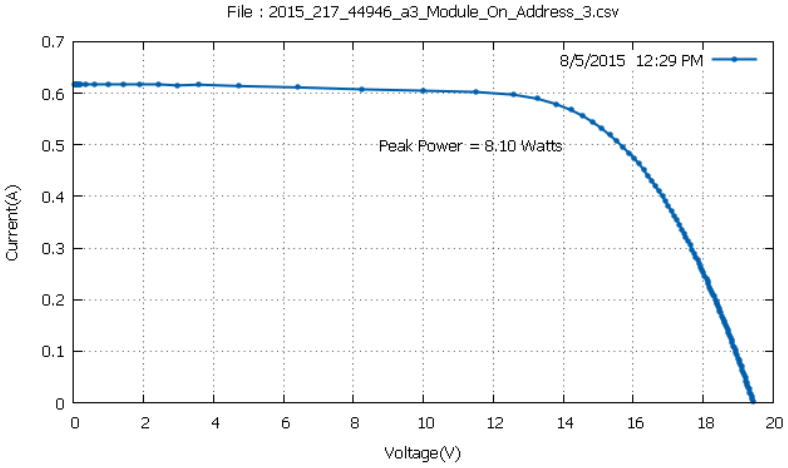
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:27	60,9	12,45
12:29	60,8	12,18
12:30	60,5	12,07
12:32	60,6	11,8
12:33	61,7	12,36
12:35	61,3	12,4

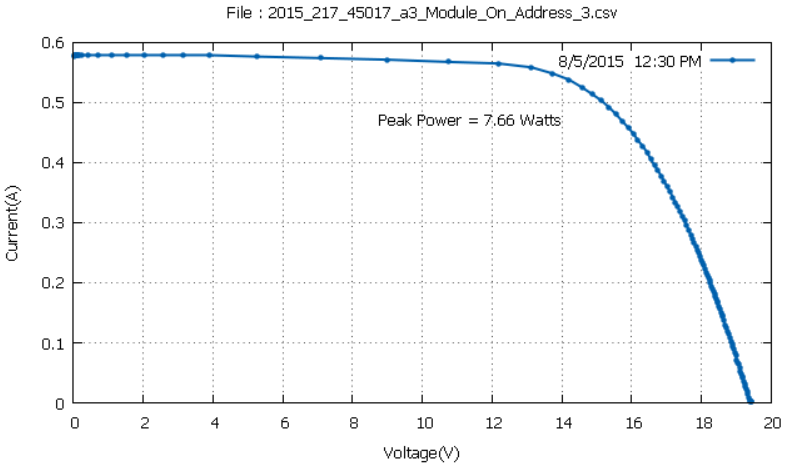
Mean Temperature: 60,96 ºC



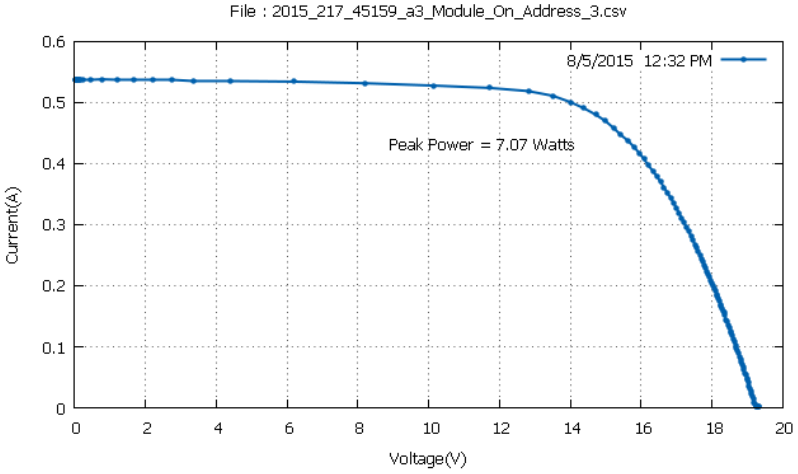
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.488\ x\ 0.5715}{937.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}45\ \%$$



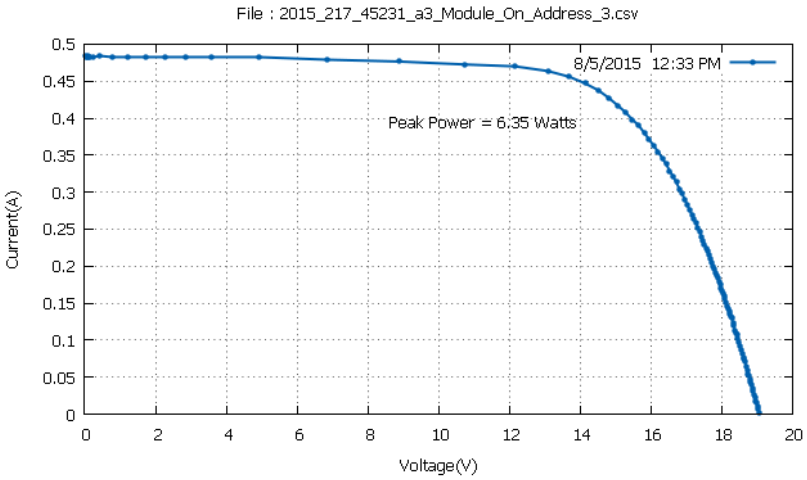
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.55817\ x\ 0.55609}{937.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}18\ \%$$



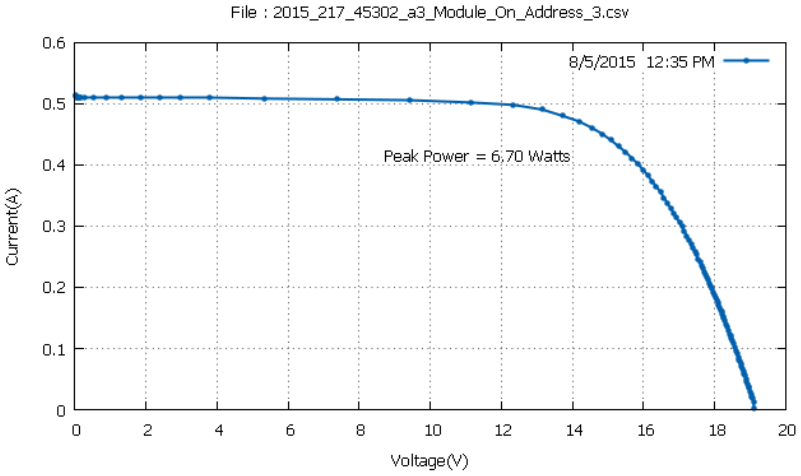
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5736\ x\ 0.5252}{895.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.712805\ x\ 0.48032}{845.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.504057\ x\ 0.43794}{724.6\ x\ 0{,}0709} \text{ x } 100 = 12{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.534983\ x\ 0.46105707}{762.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$

Module 5

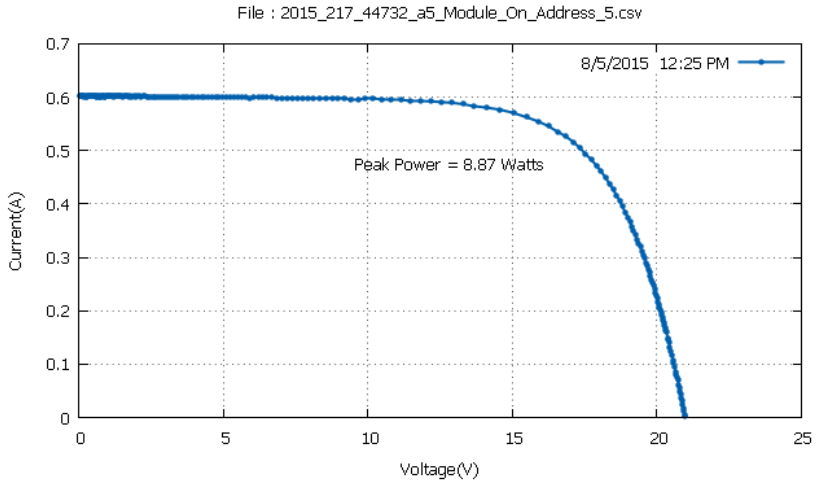
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

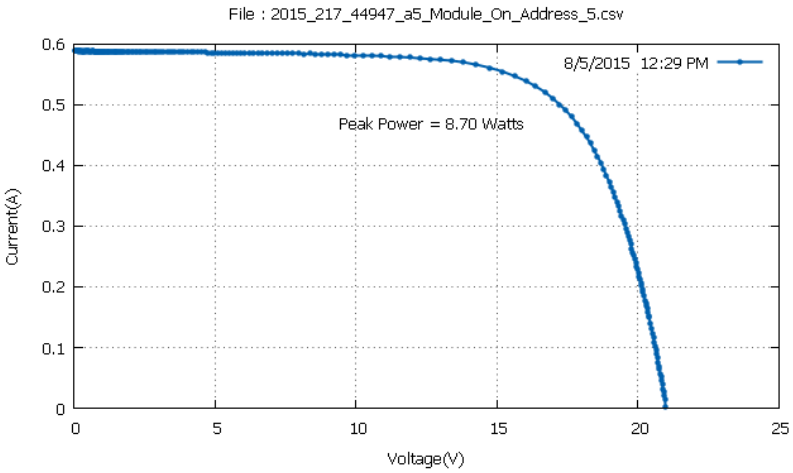
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
12:25	64,2	11,78
12:29	63,5	12,04
12:30	63,5	11,92
12:32	63,6	11,98
12:33	64,2	11,98
12:35	63,7	12,14

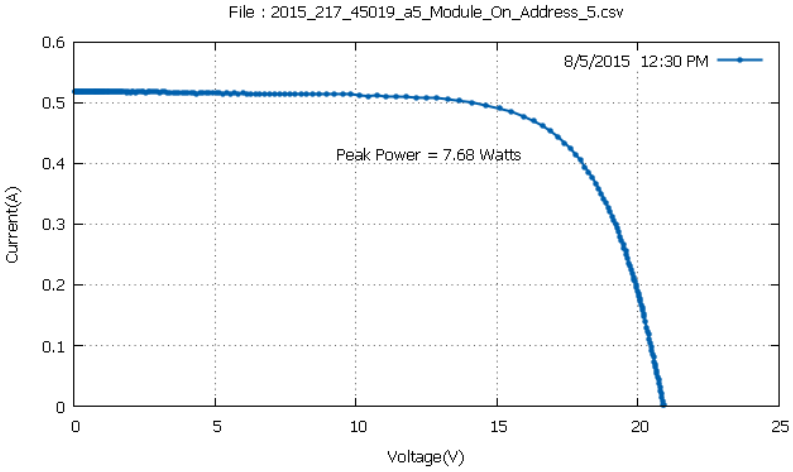
Mean Temperature: 63,78 ºC



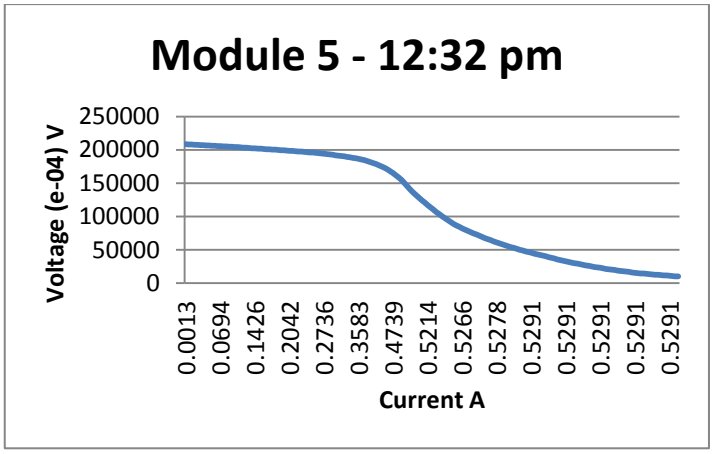
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.838\ x\ 0.52655}{995.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}78\ \%$$



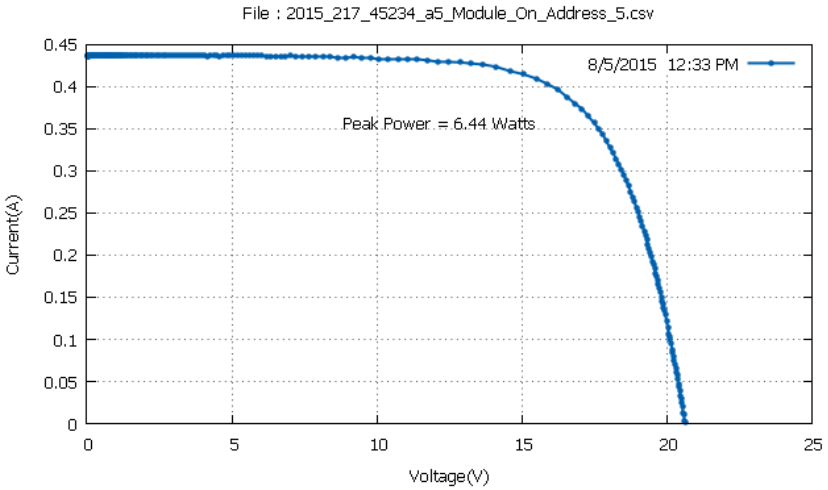
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.684305\ x\ 0.521418}{955.4\ x\ 0{,}0756} \text{ x } 100 = 12{,}04\ \%$$



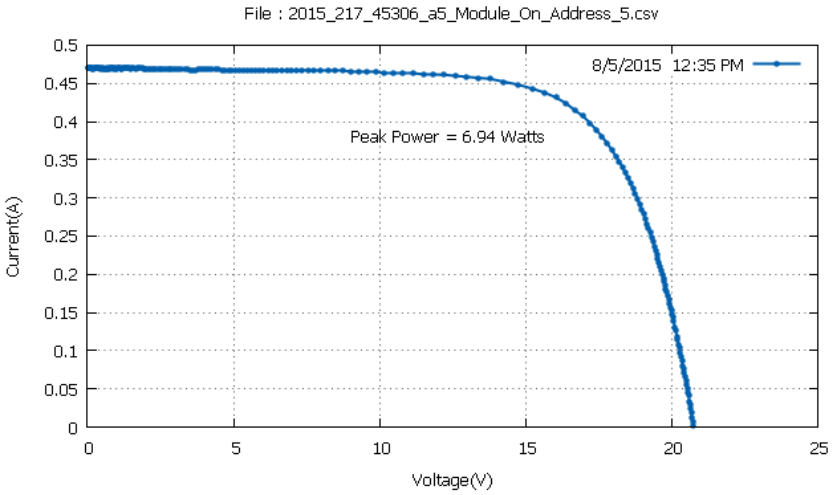
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6069\ x\ 0.46234}{851.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4987\ x\ 0.4738998}{861.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.235885\ x\ 0.39684}{711\ x\ 0{,}0756} \text{ x } 100 = 11{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.382\ x\ 0.423812}{755.8\ x\ 0{,}0756} \text{ x } 100 = 12{,}14\ \%$$

Module 4

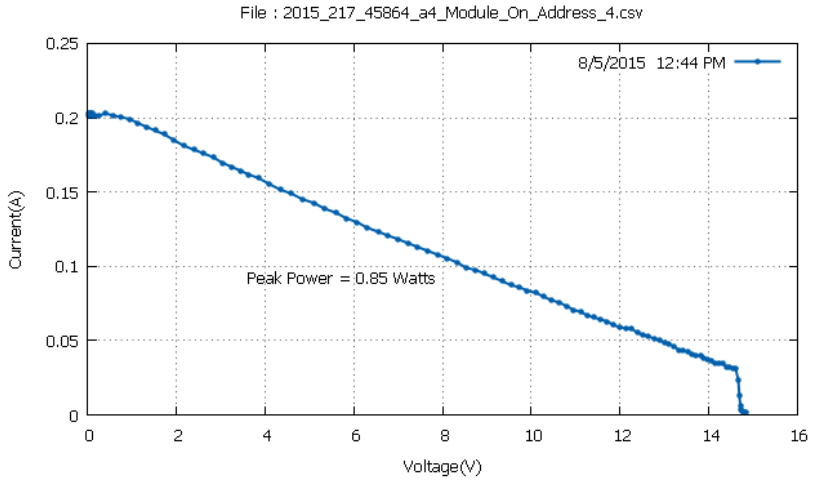
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

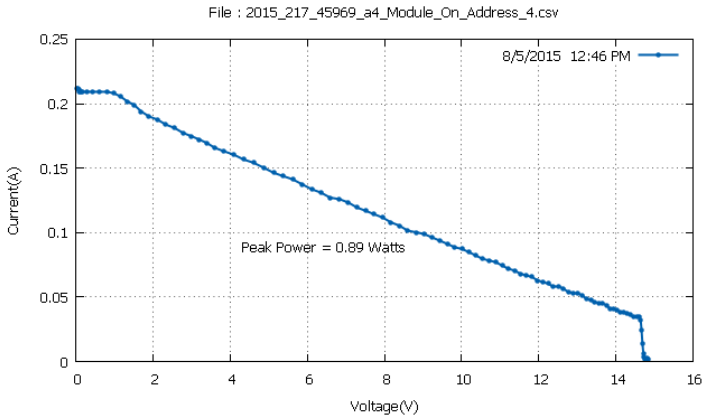
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	58,4	1,42
12:46	57,4	1,41
12:48	57,9	1,38
12:49	57,6	1,4
12:50	57,7	1,38
12:53	57,7	1,38

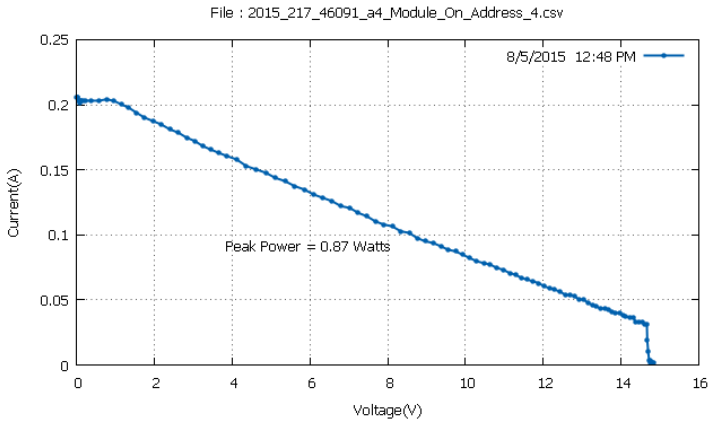
Mean Temperature: 57,78 ºC



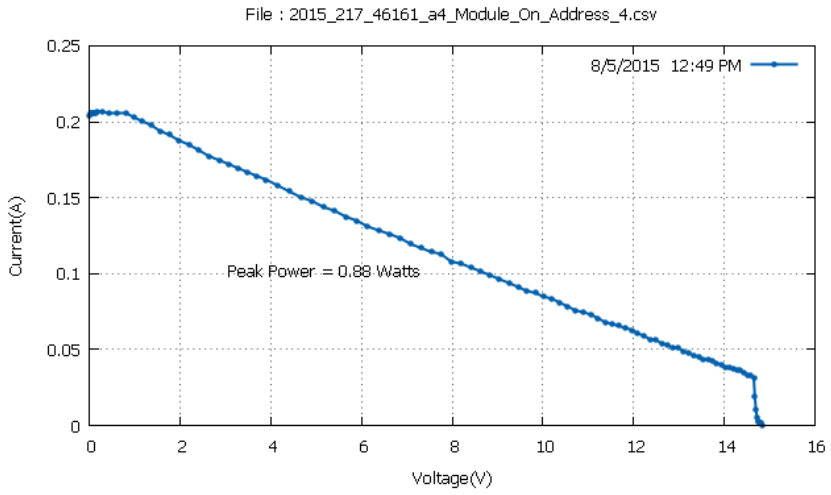
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.318959\ x\ 0.10274252}{891\ x\ 0{,}0671} \text{ x } 100 = 1{,}42\ \%$$



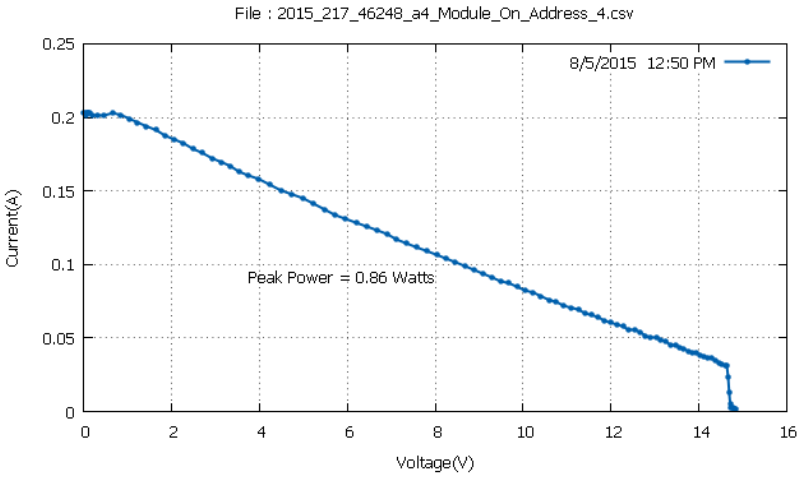
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.02251\ x\ 0.09888}{940.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$



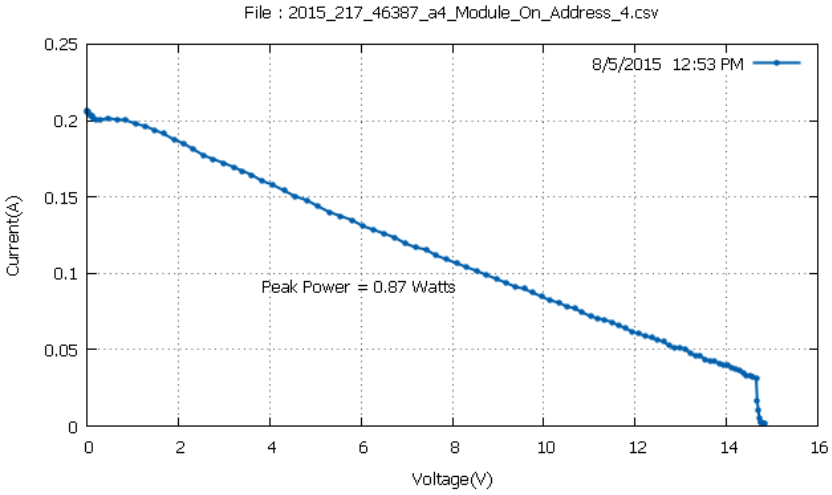
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.404\ x\ 0.10402}{936.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.3498\ x\ 0.105311}{933.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.26483\ x\ 0.104026}{928.4\ x\ 0{,}0671}\ \text{x } 100 = 1{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.53543\ x\ 0.1014582}{934.9\ x\ 0{,}0671}\ \text{x } 100 = 1{,}38\ \%$$

Module 8

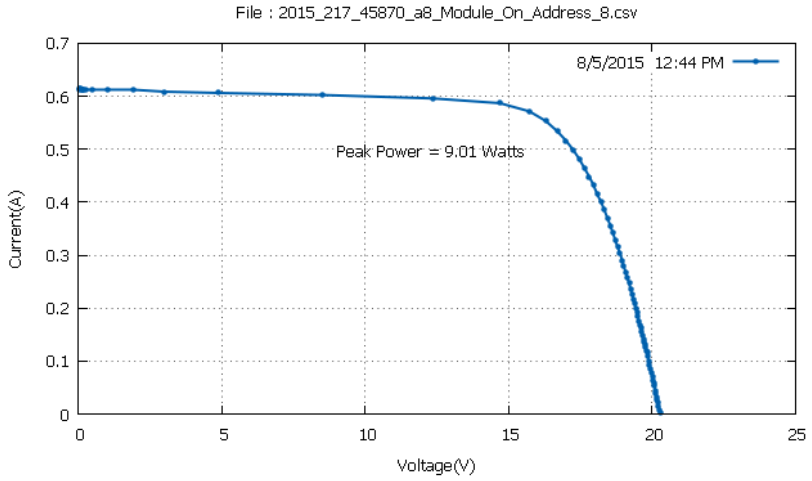
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

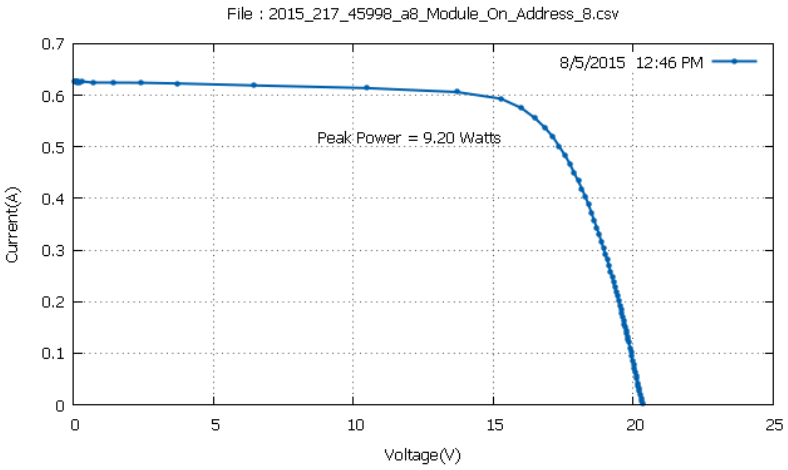
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	50,9	13,07
12:46	50,2	12,96
12:48	50,6	13,03
12:49	49,6	13
12:50	49,6	13,04
12:53	49,8	13,04

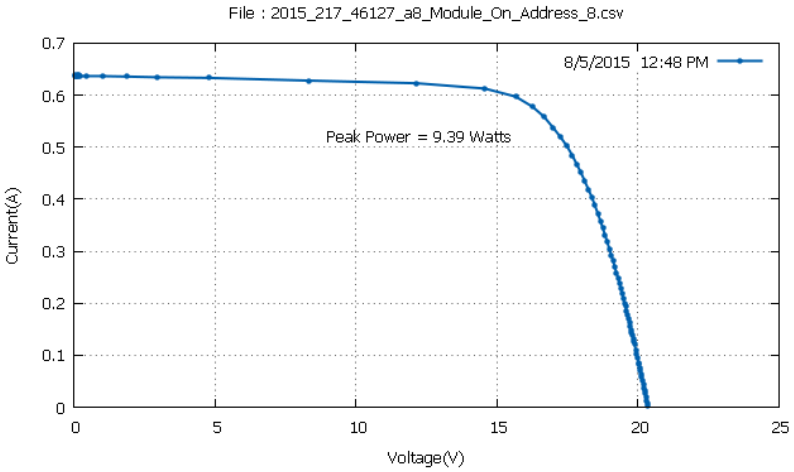
Mean Temperature: 50,11 ºC



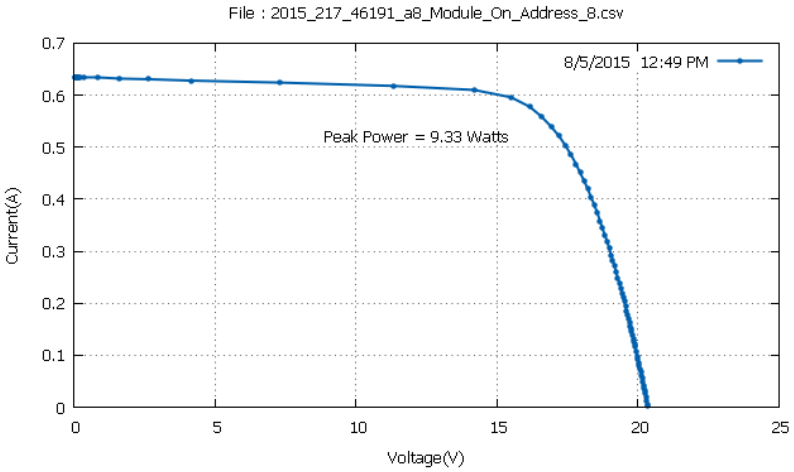
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.28227\ x\ 0.55352}{897\ x\ 0{,}0768}$ x 100 = 13,07 %



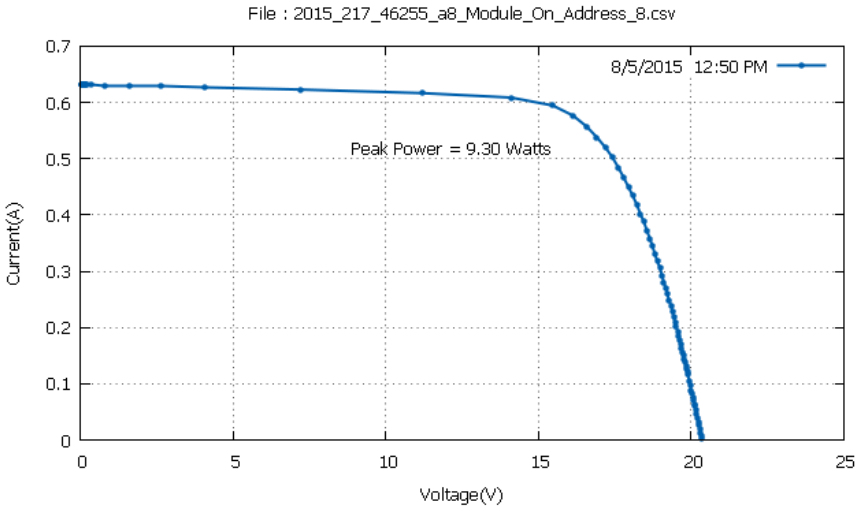
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.99621\ x\ 0.57535}{923.7\ x\ 0{,}0768} \text{ x } 100 = 12{,}96\ \%$$



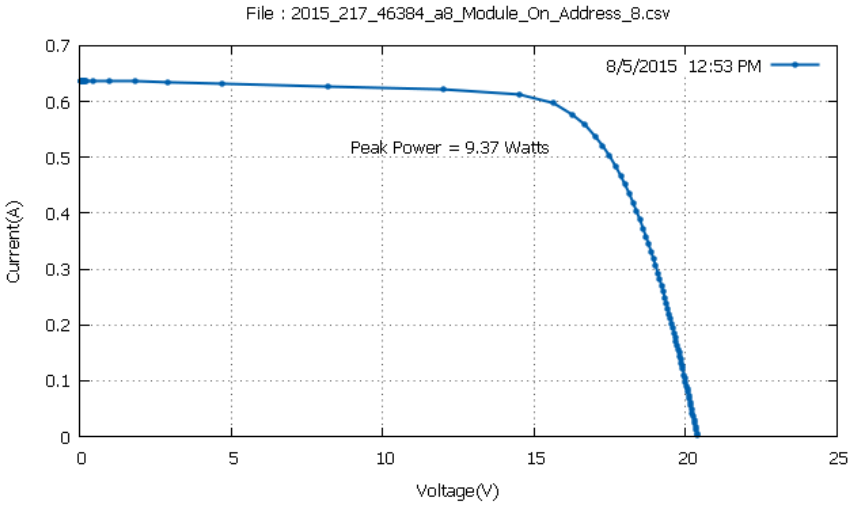
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.25134\ x\ 0.57792}{938.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}03\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.1508\ x\ 0.57792}{934.6\ x\ 0{,}0768} \text{ x } 100 = 13\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.12764\ x\ 0.576642}{928.2\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.251348\ x\ 0.576642}{935.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$

Module 3

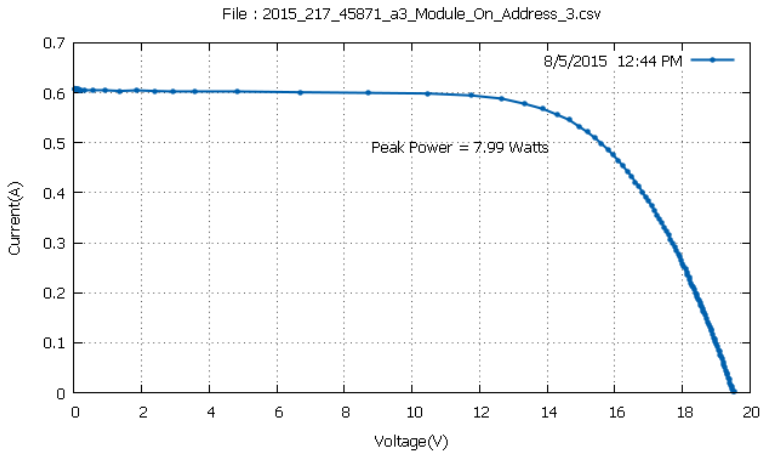
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

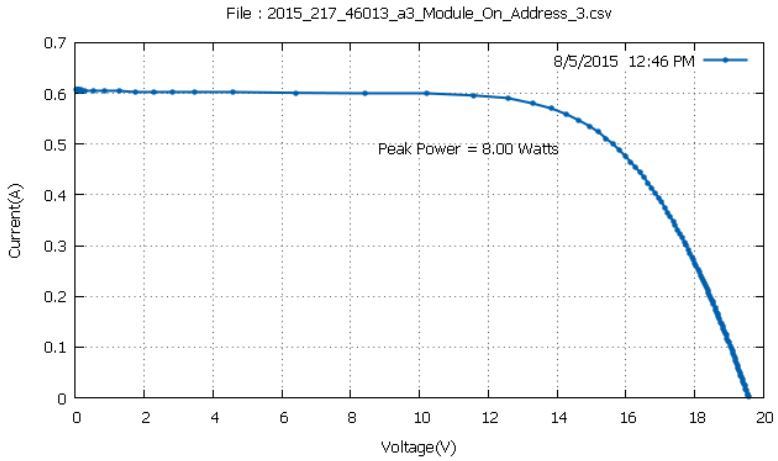
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	59,5	12,28
12:46	57,1	12,34
12:48	57,2	12,34
12:49	57,1	12,34
12:51	57,1	12,36
12:54	57,6	12,37

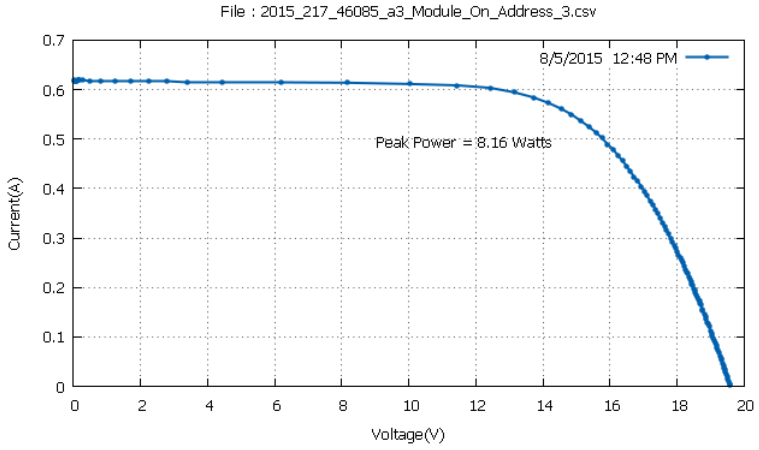
Mean Temperature: 57,6 ºC



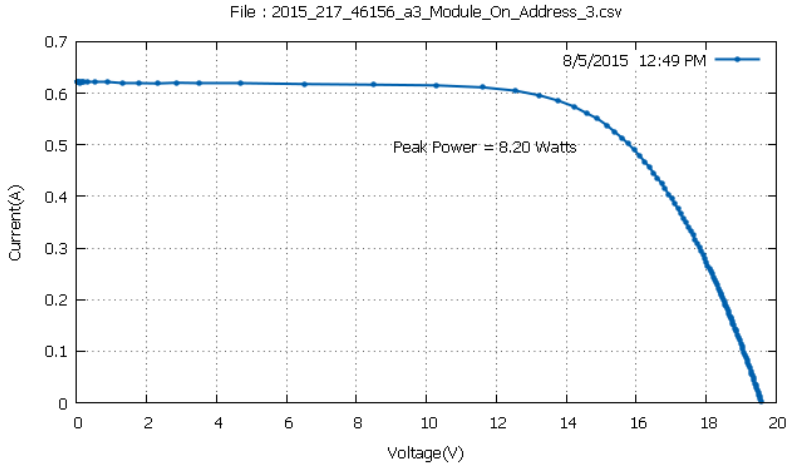
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.643222\ x\ 0.5458196}{917.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}28\ \%$$



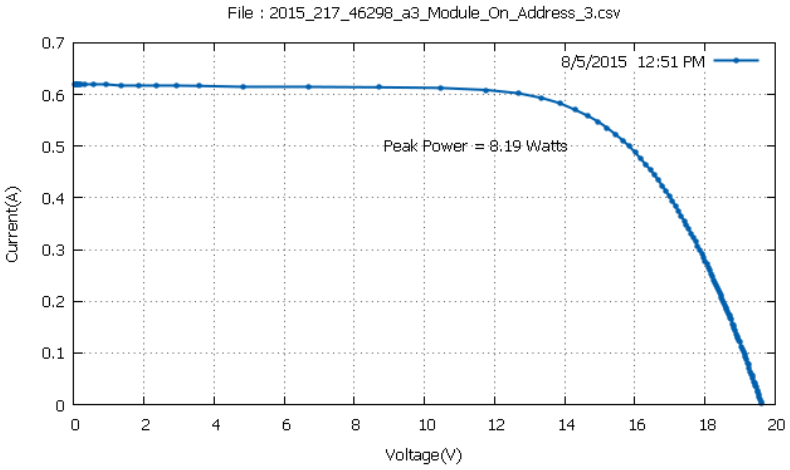
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.627\ x\ 0.547103}{914.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}34\ \%$$



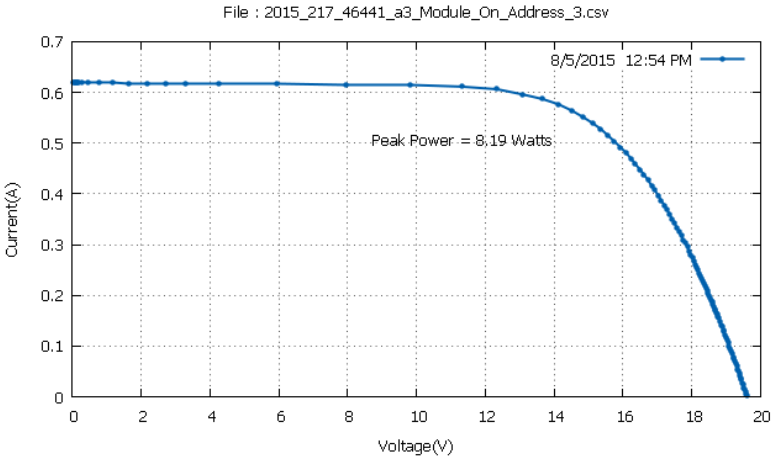
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.85\ x\ 0.54967}{932.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.88289\ x\ 0.55095}{937\ x\ 0{,}0709} \text{ x } 100 = 12{,}34\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.65868\ x\ 0.55866}{934.4\ x\ 0{,}0709} \text{ x } 100 = 12{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5195208\ x\ 0.5637995}{933.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}37\ \%$$

Module 5

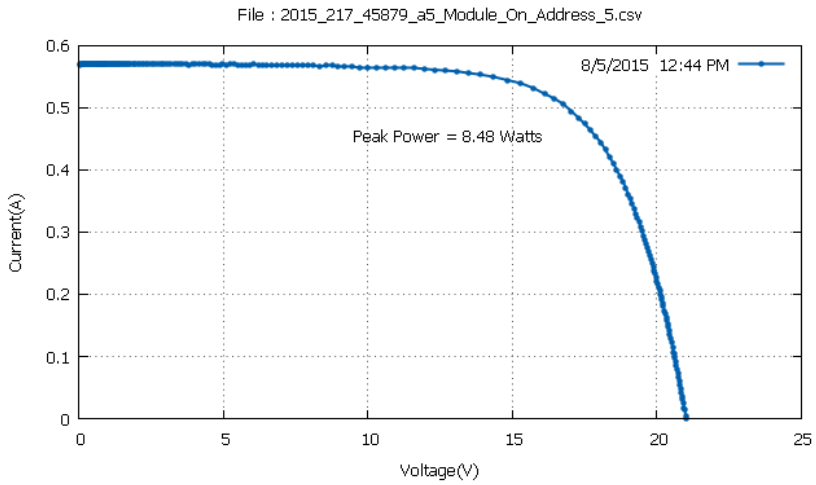
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

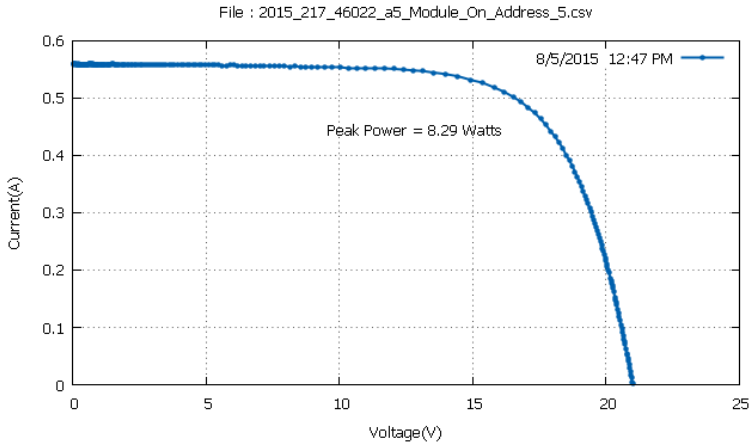
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
12:44	63	11,87
12:47	62,6	11,88
12:48	62,6	11,91
12:49	62,5	11,89
12:51	62,2	11,92
12:53	62,2	11,91

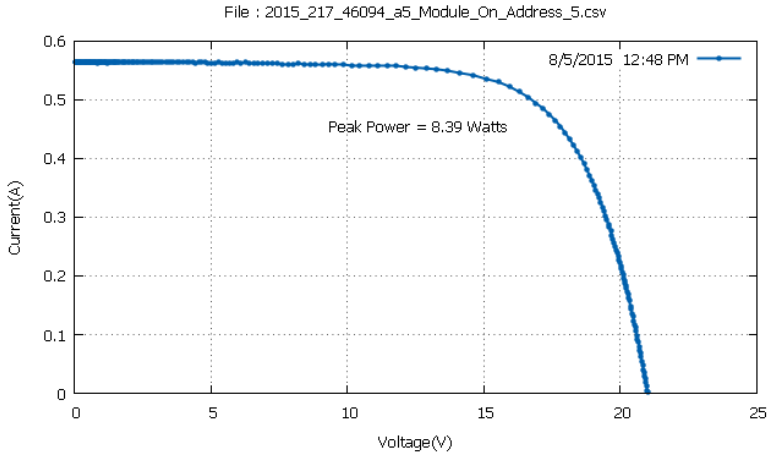
Mean Temperature: 62,51 ºC



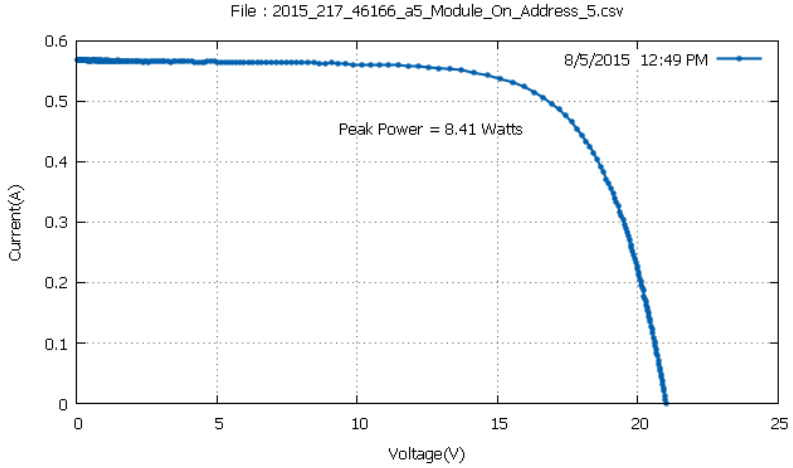
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.761\ x\ 0.506006}{944.4\ x\ 0{,}0756}$ x 100 = 11,87 %



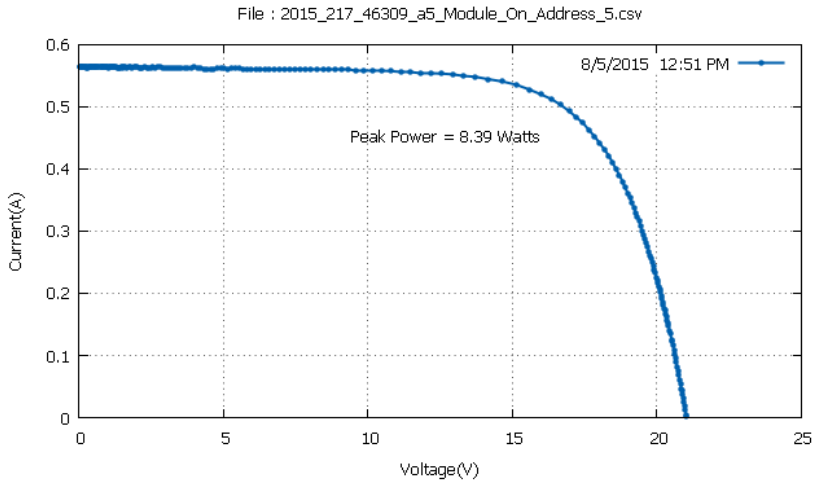
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.81573\ x\ 0.49316}{923\ x\ 0{,}0756} \text{ x } 100 = 11{,}88\ \%$$



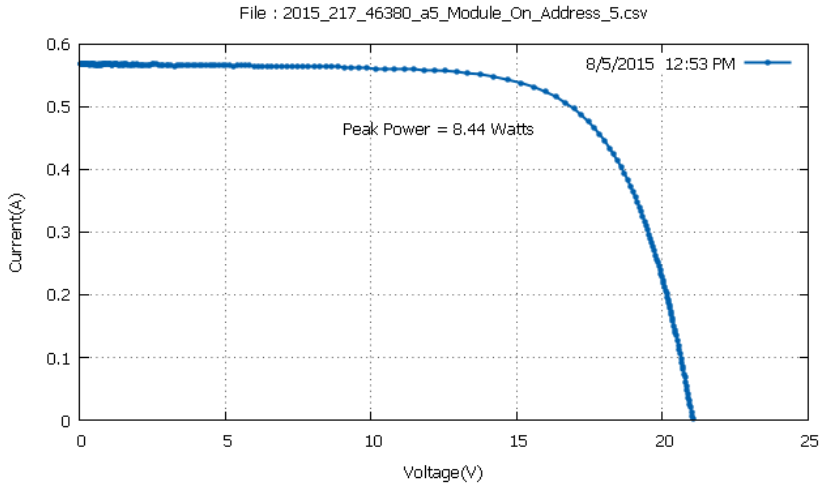
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.6147\ x\ 0.504722655}{931.8\ x\ 0{,}0756} \text{ x } 100 = 11{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.63018\ x\ 0.506006}{934.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.66111\ x\ 0.503438}{930.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}92\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.34412\ x\ 0.516281}{937\ x\ 0{,}0756} \text{ x } 100 = 11{,}91\ \%$$

Module 4

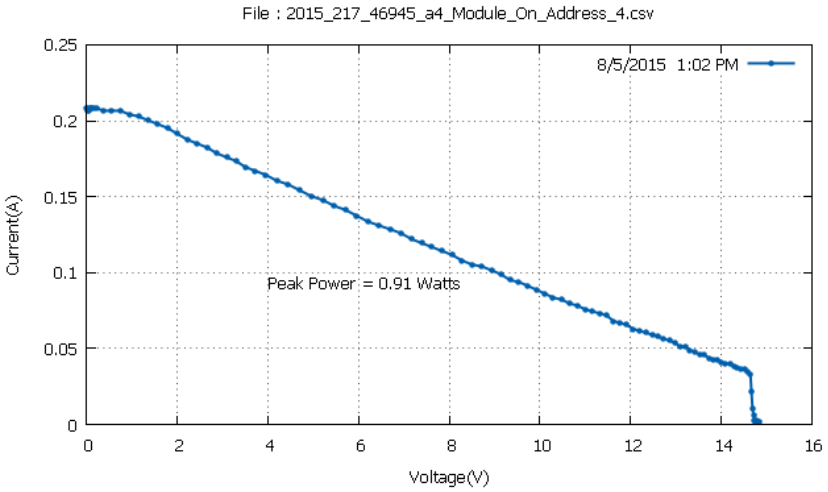
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

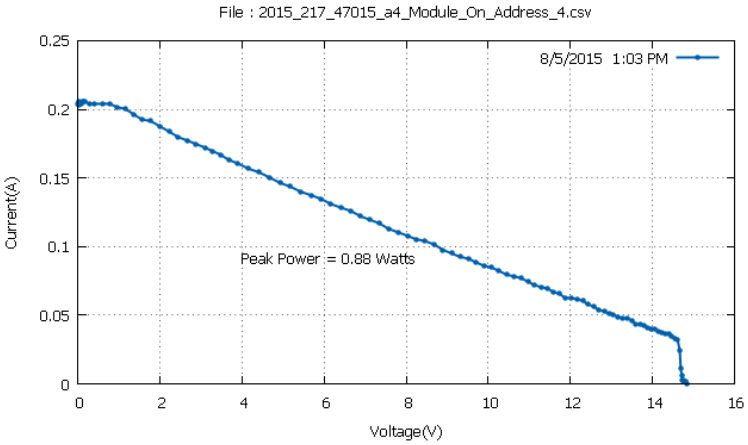
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	57,1	1,44
13:03	57,6	1,39
13:05	58,2	1,4
13:07	58,3	1,39
13:08	58,3	1,4
13:10	59	1,37

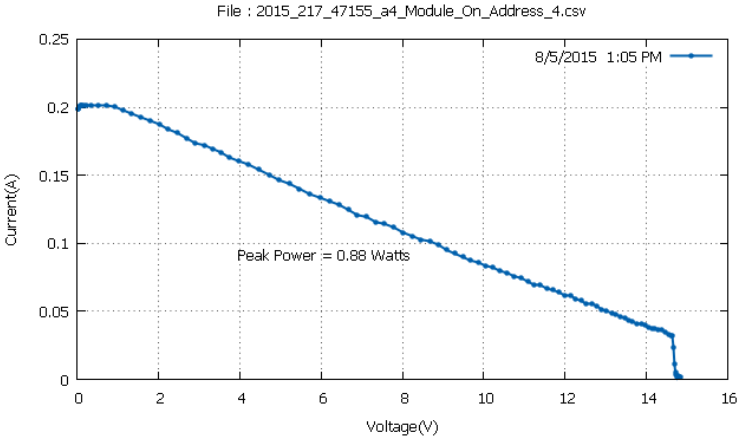
Mean Temperature: 58,08 ºC



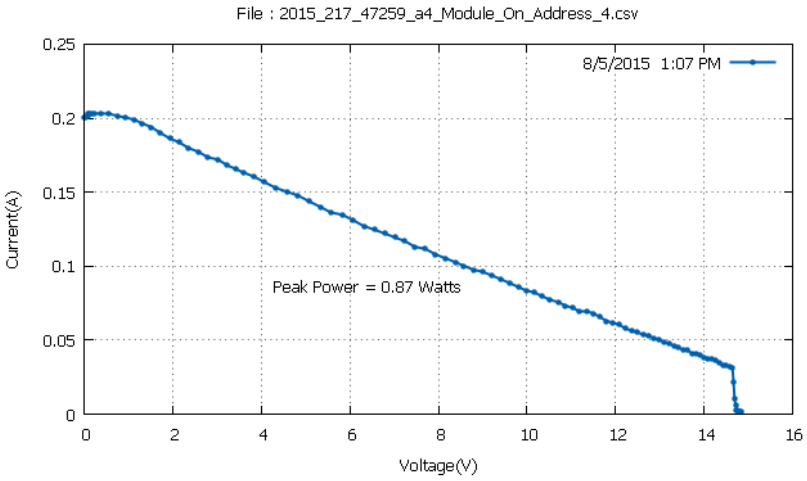
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72099\ x\ 0.104026}{939.4\ x\ 0{,}0671} \text{ x } 100 = 1{,}44\ \%$$



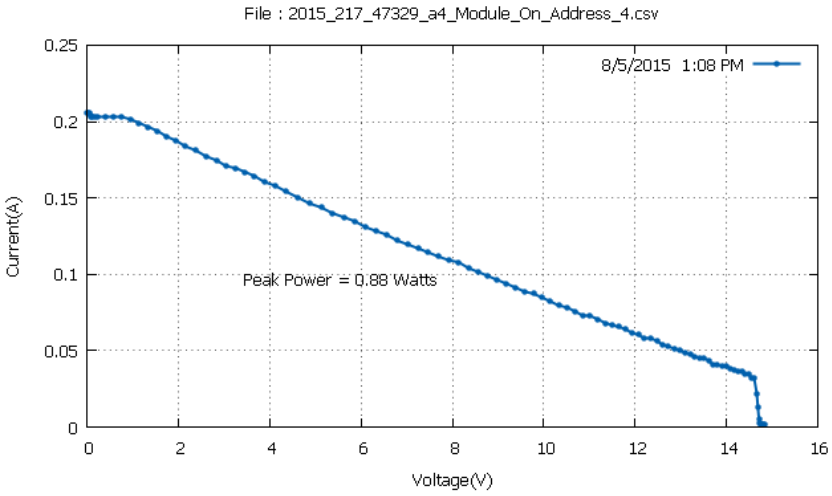
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.68233\ x\ 0.1014582}{938.9\ x\ 0{,}0671} \text{ x } 100 = 1{,}39\ \%$$



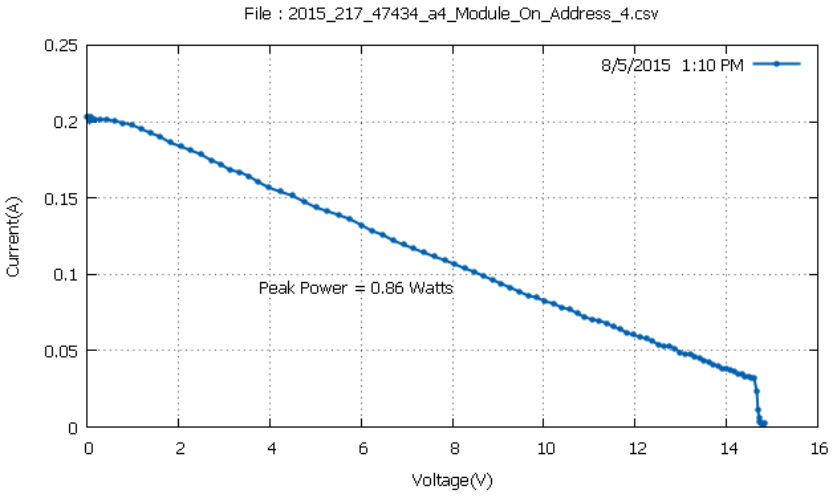
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.66687\ x\ 0.101458}{934.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.98385\ x\ 0.09632}{931.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}39\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.1334\ x\ 0.10787}{935.4\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}4\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.481317\ x\ 0.1014582}{931.3\ x\ 0{,}0671}\ \text{x}\ 100 = 1{,}37\ \%$$

Module 8

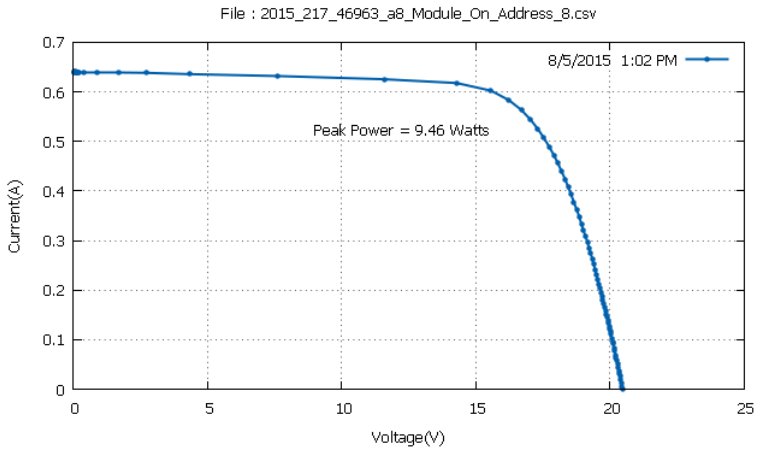
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

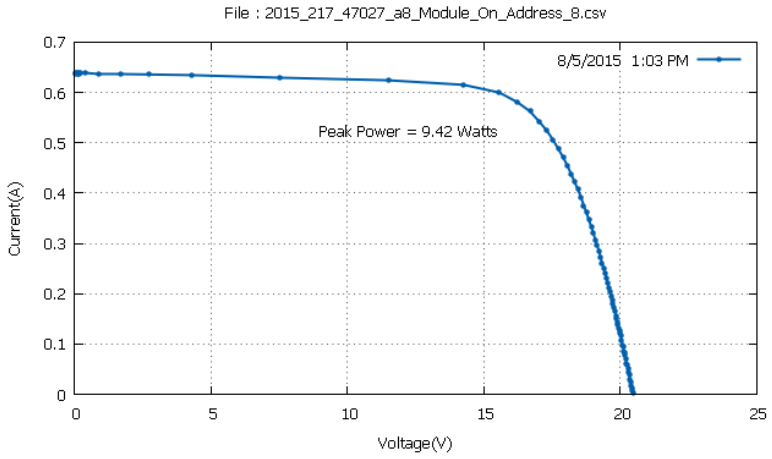
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	48,6	13,11
13:03	48,5	13,09
13:07	48,2	13,11
13:08	48	13,12
13:10	47,8	13,13
13:11	47,8	13,13

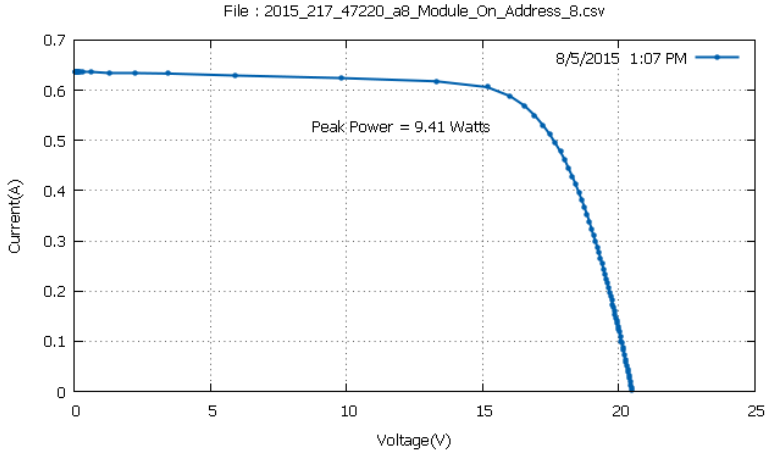
Mean Temperature: 48,15 ºC



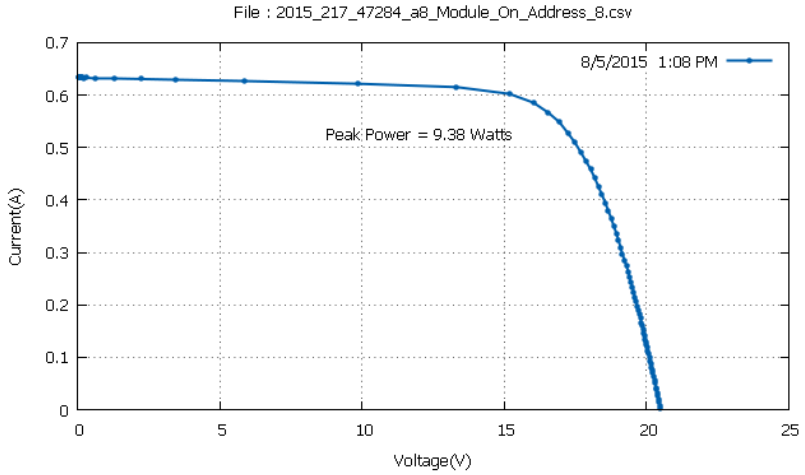
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.22815\ x\ 0.583063}{939.4\ x\ 0{,}0768}$ x 100 = 13,11 %



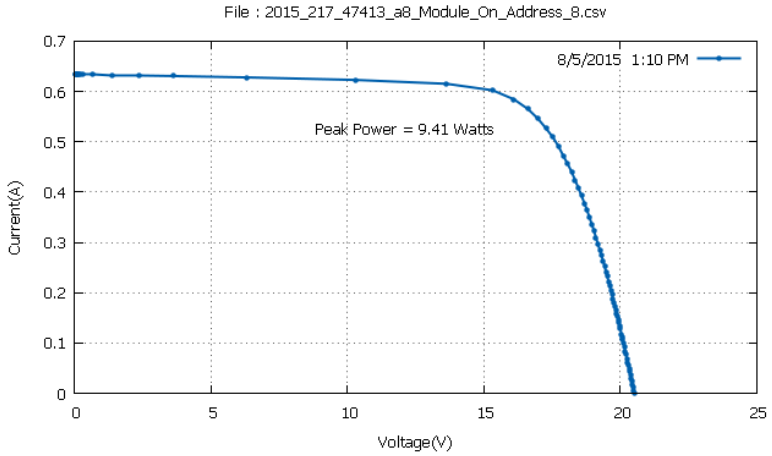
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.22815\ x\ 0.5804952}{937\ x\ 0{,}0768} \text{ x } 100 = 13{,}09\ \%$$



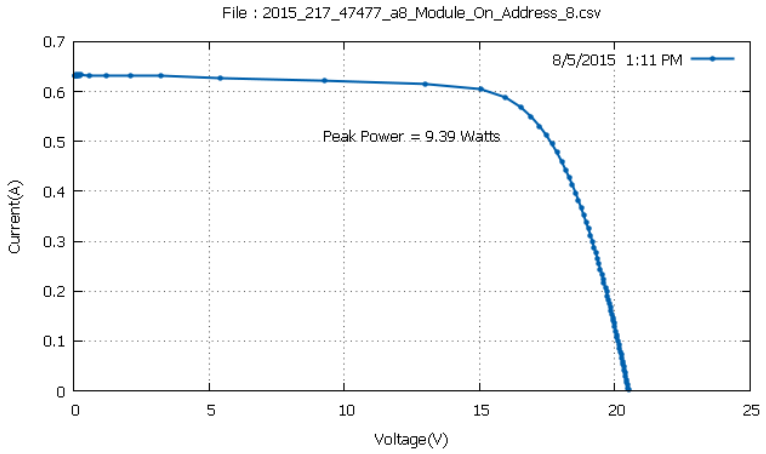
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.00394\ x\ 0.5882}{934.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0194\ x\ 0.58563}{930.6\ x\ 0{,}0768} \text{ x } 100 = 13{,}12\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0967\ x\ 0.5843}{932.7\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}13\ \%$$



$$n = \frac{Pout}{\square in} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.51421\ x\ 0.568936}{930.8\ x\ 0{,}0768}\ \text{x}\ 100 = 13{,}13\ \%$$

Module 3

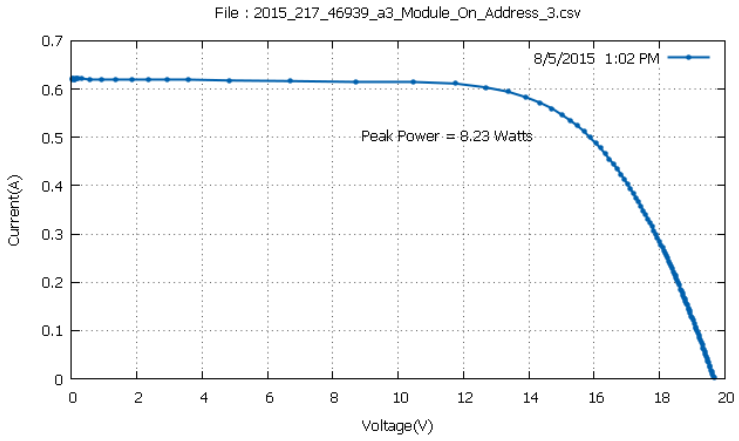
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

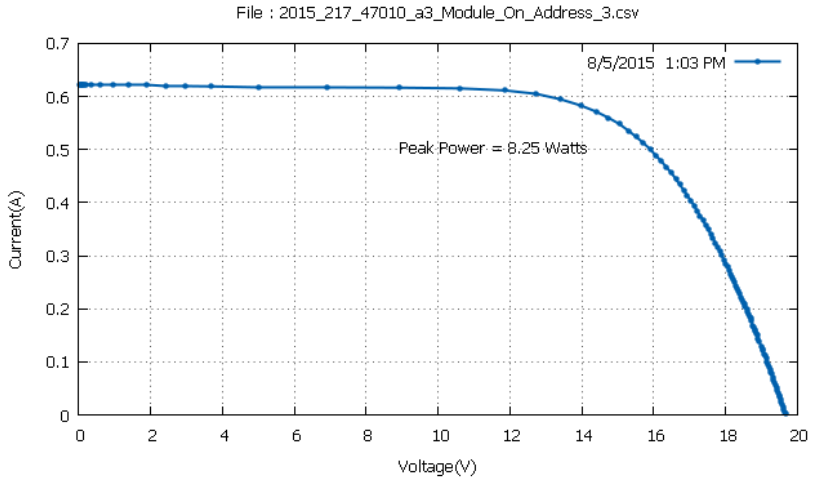
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	55,9	12,38
13:03	56,1	12,4
13:05	57,1	12,38
13:07	57,1	12,38
13:10	57,1	12,41
13:11	56,9	12,43

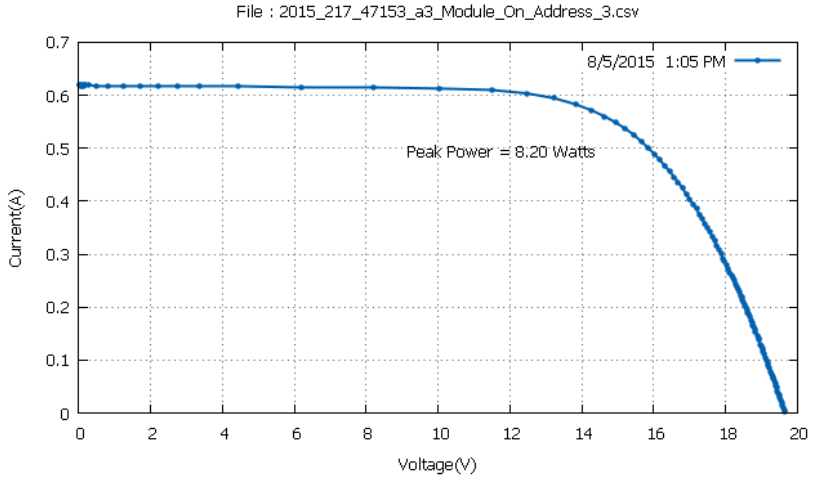
Mean Temperature: 56,7 ºC



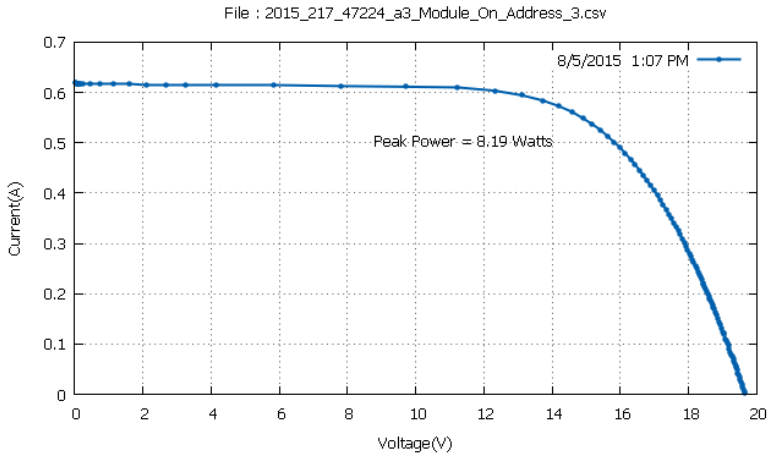
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.70507\ x\ 0.55994}{937.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}38\ \%$$



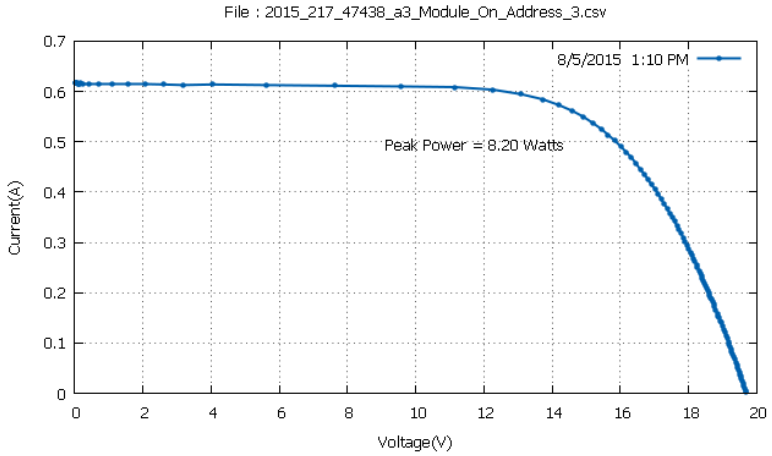
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.7359\ x\ 0.5599}{938\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$



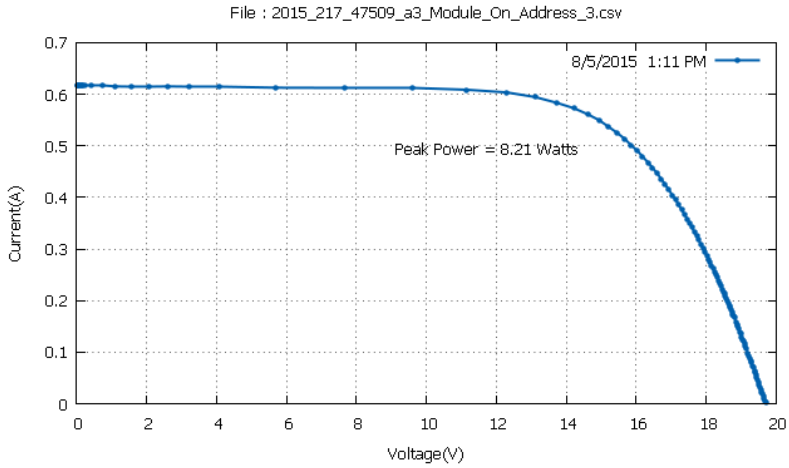
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.9447\ x\ 0.54838}{933.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.5891\ x\ 0.56123}{932.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.91382\ x\ 0.54967}{931.3\ x\ 0{,}0709} \text{ x } 100 = 12{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.93701\ x\ 0.5496}{931.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$

Module 5

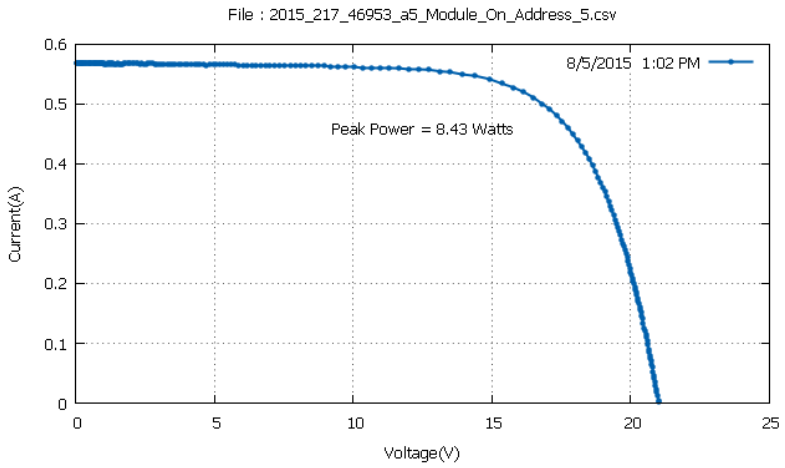
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

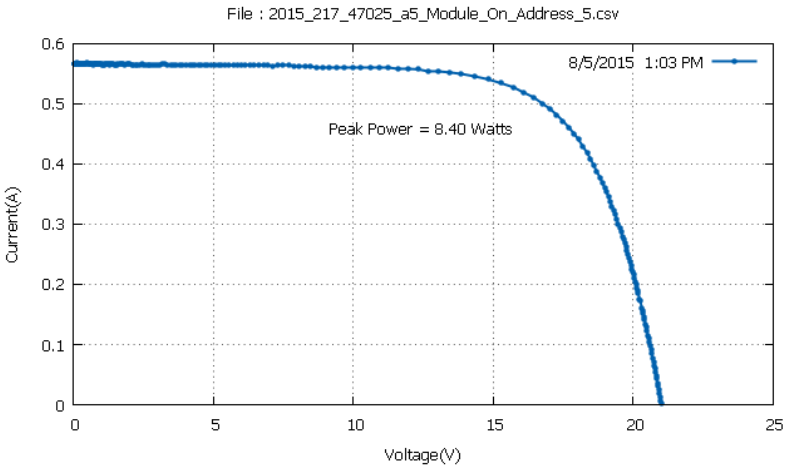
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
13:02	62,5	11,87
13:03	62,6	11,86
13:06	63	11,83
13:07	63	11,83
13:08	63,1	11,86
13:10	63,4	11,87

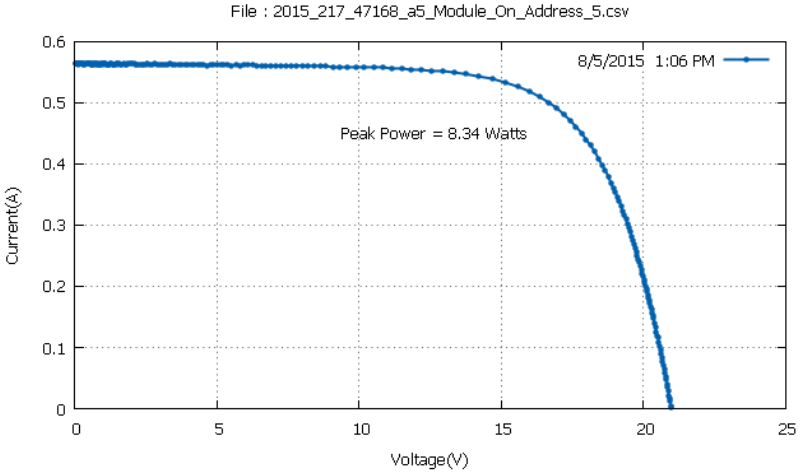
Mean Temperature: 62,93 ºC



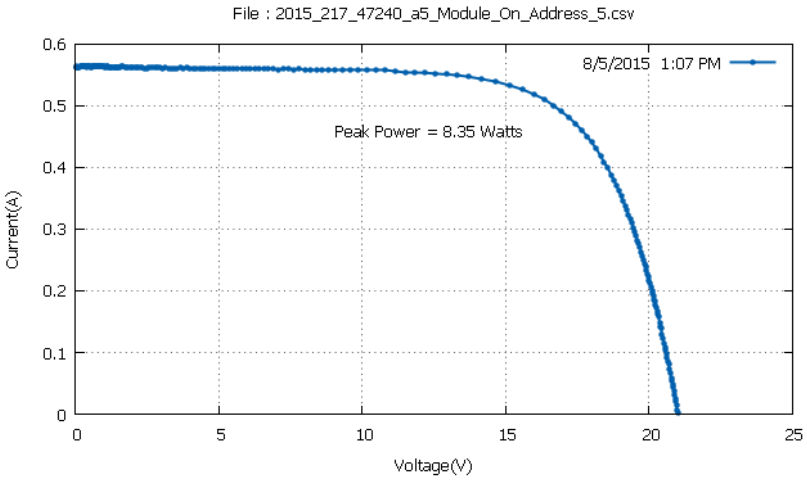
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.491022\ x\ 0.511144}{938.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}87\ \%$$



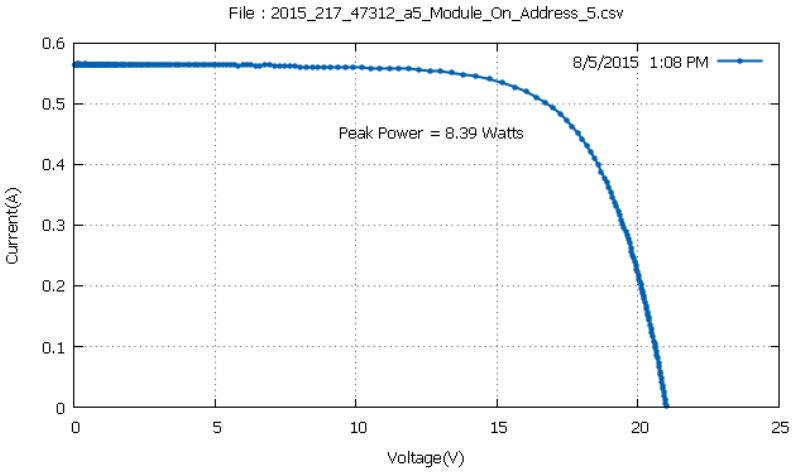
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.4291\ x\ 0.51114}{936.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}86\ \%$$



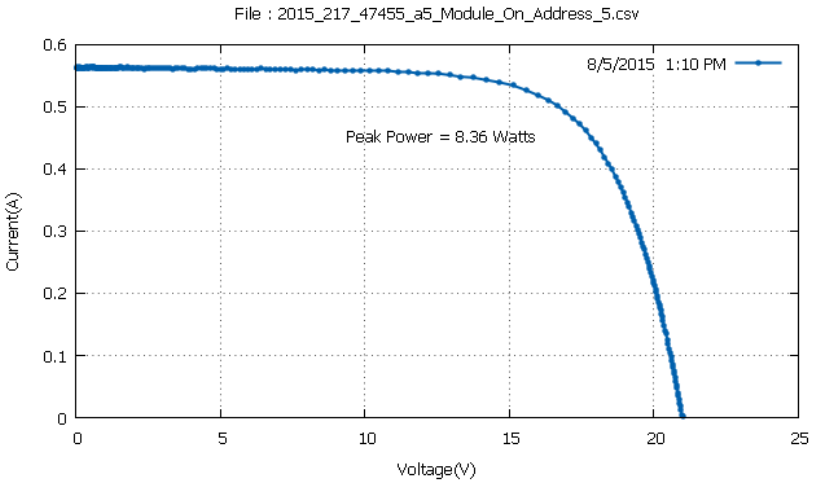
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.64564\ x\ 0.5008}{932.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.32866\ x\ 0.511144}{933.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}83\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.69976\ x\ 0.502154}{935.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}86\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.653\ x\ 0.502154}{931.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}87\ \%$$

Module 4

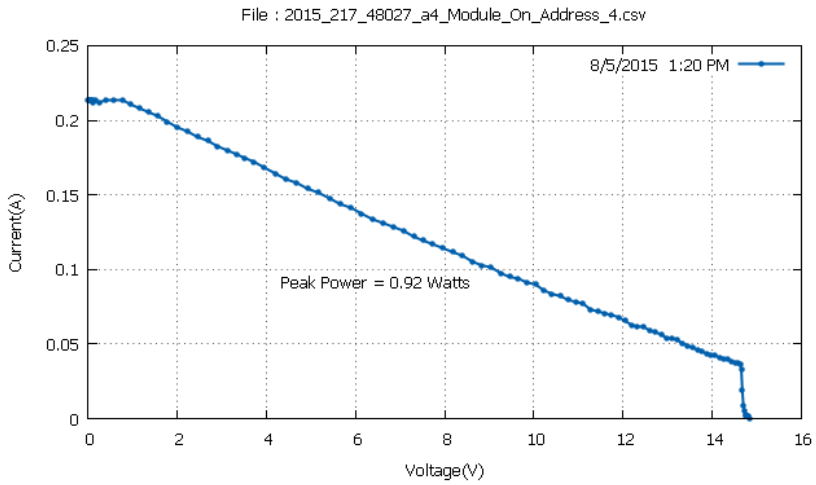
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

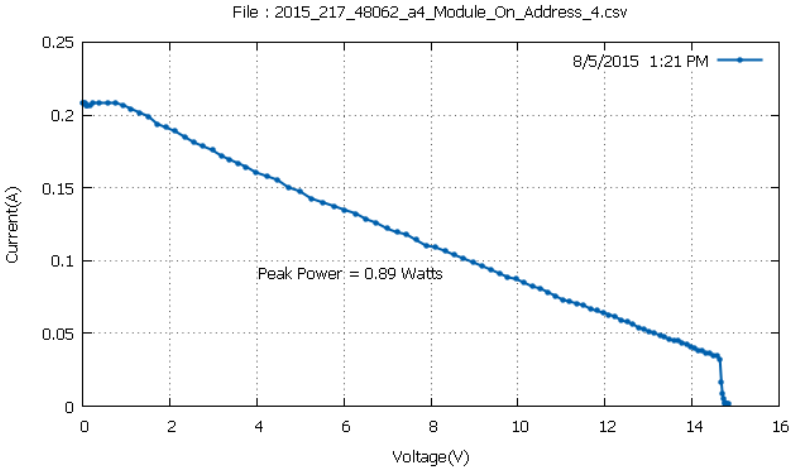
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:20	53,7	1,48
13:21	55,8	1,43
13:22	54,5	1,41
13:24	53,6	1,52
13:26	52,9	1,54
13:27	52,3	1,52

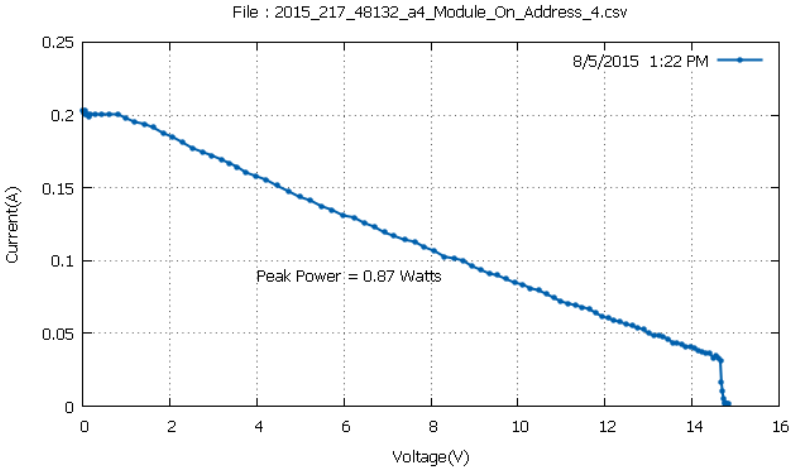
Mean Temperature: 53,8 ºC



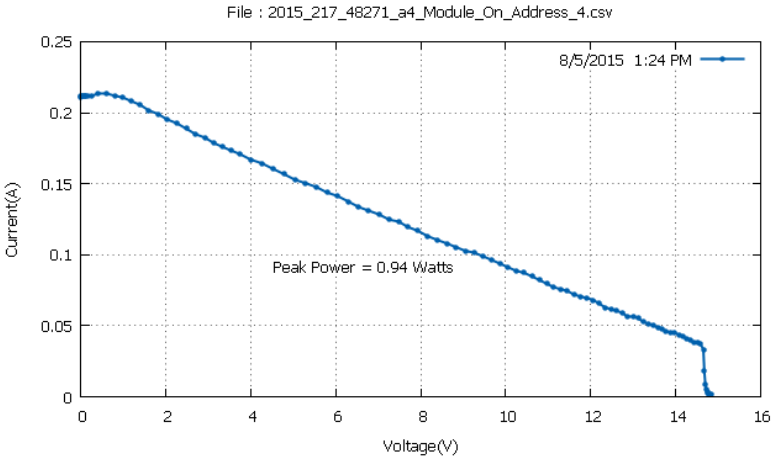
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.85242\ x\ 0.104026}{926.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}48\ \%$$



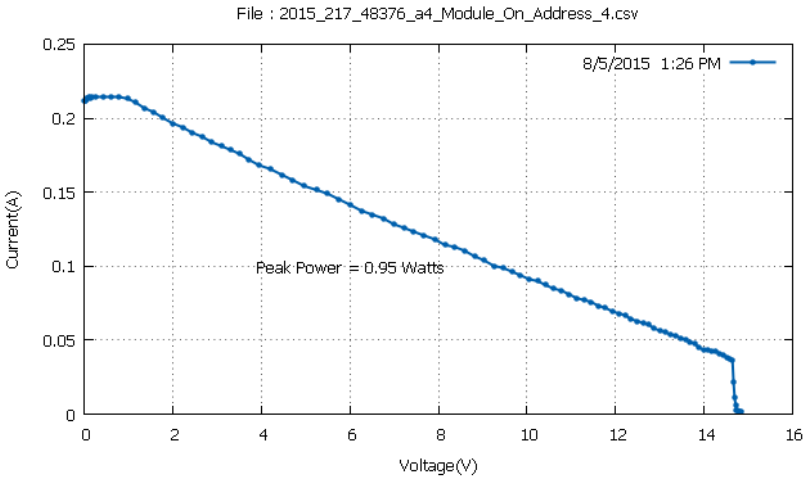
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.744184\ x\ 0.101458}{923.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}43\ \%$$



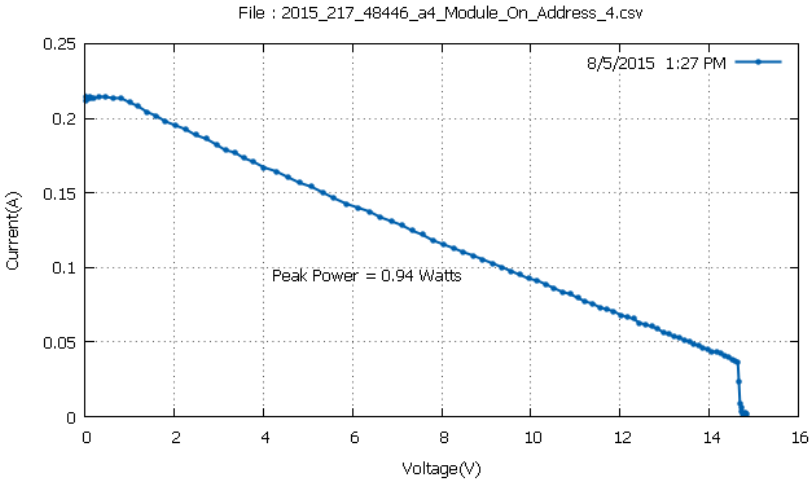
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.72872\ x\ 0.1001739}{917.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.25445\ x\ 0.101458}{919.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.5095\ x\ 0.10017}{915.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.922\ x\ 0.10531108}{918.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}52\ \%$$

Module 8

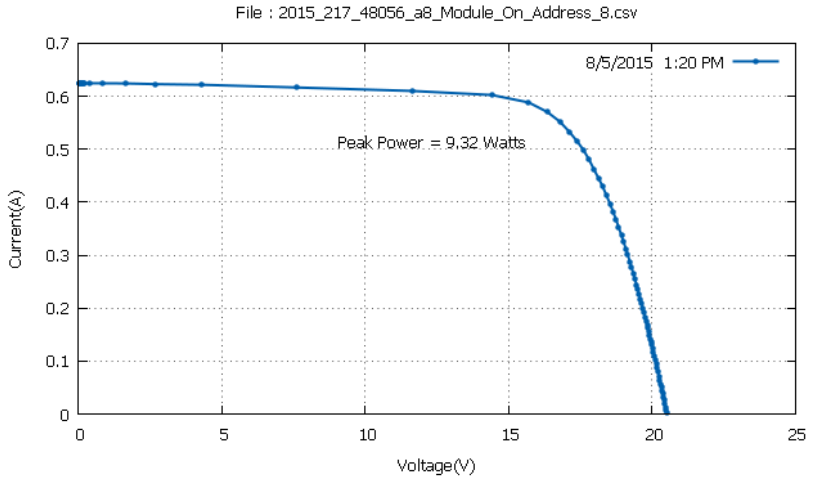
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

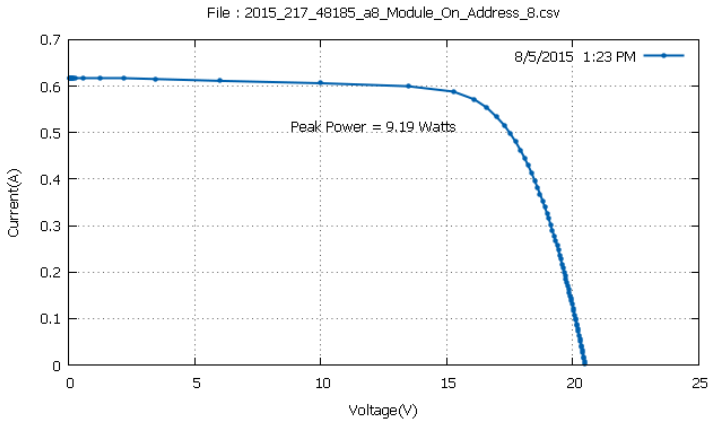
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:20	47,5	13,14
13:23	47,8	13,09
13:24	48	13,07
13:25	48	13,07
13:27	48,1	13,04
13:28	48,1	13,04

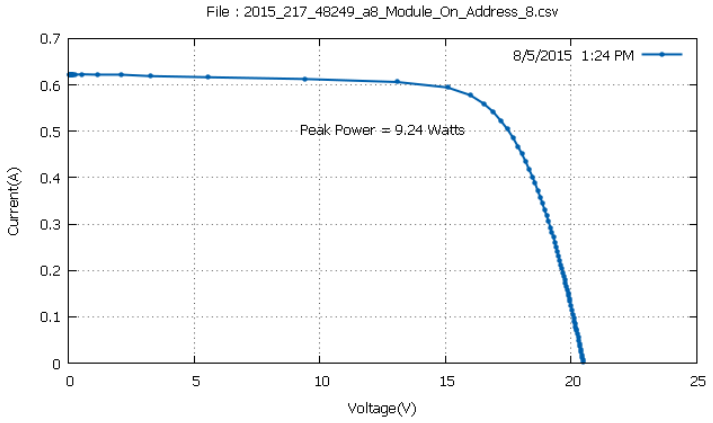
Mean Temperature: 47,91 ºC



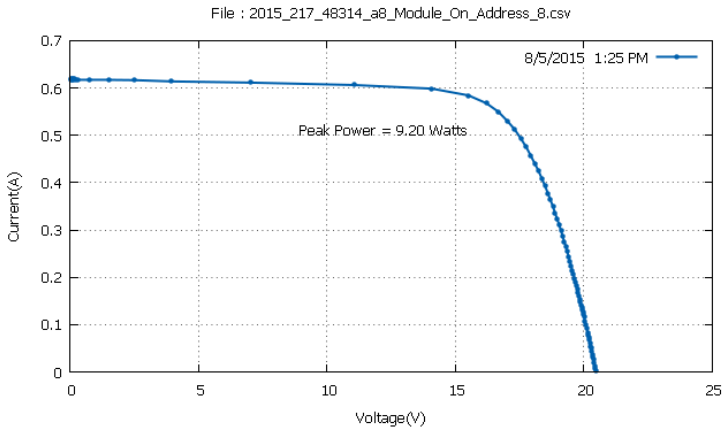
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.3441\ x\ 0.57022}{923.4\ x\ 0{,}0768}$ x 100 = 13,14 %



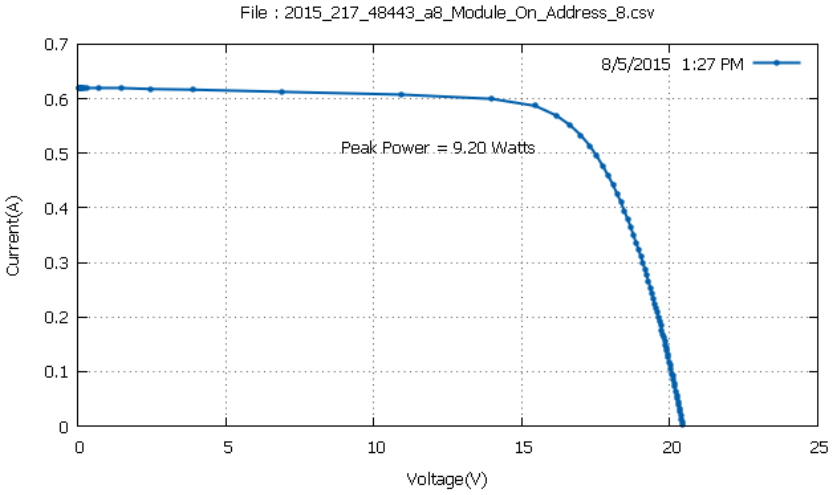
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.0889\ x\ 0.571505}{913.7\ x\ 0{,}0768} \text{ x } 100 = 13{,}09\ \%$$



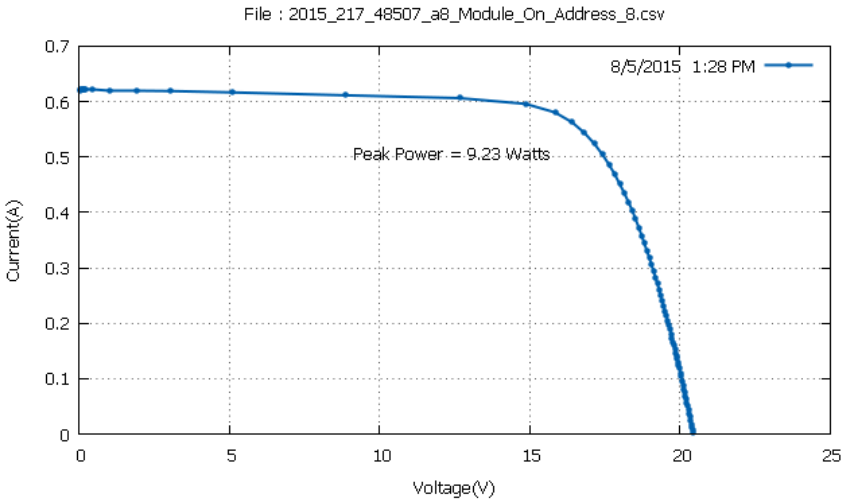
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5064\ x\ 0.55994}{920.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.20496\ x\ 0.5676524}{916\ x\ 0{,}0768} \text{ x } 100 = 13{,}07\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.174036\ x\ 0.5689}{918.4\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.405977\ x\ 0.562515}{921.1\ x\ 0{,}0768} \text{ x } 100 = 13{,}04\ \%$$

Module 3

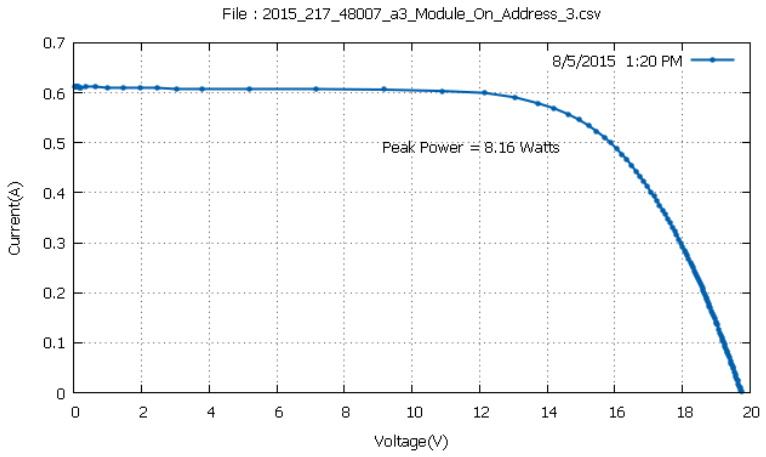
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

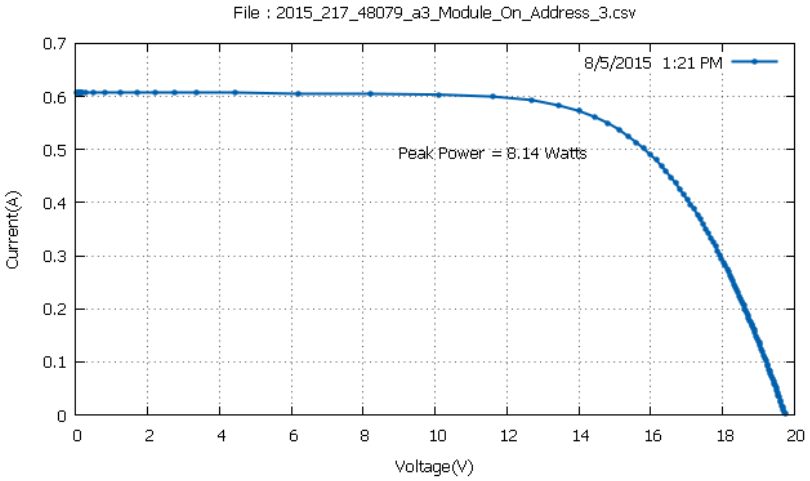
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:20	52,4	12,4
13:21	53,1	12,43
13:22	53,2	12,43
13:24	52,9	12,37
13:26	52,7	12,38
13:27	52	12,4

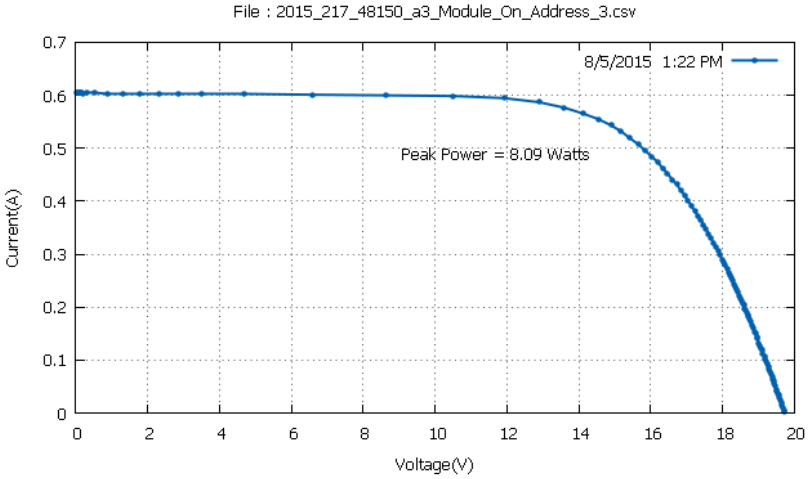
Mean Temperature: 52,71 ºC



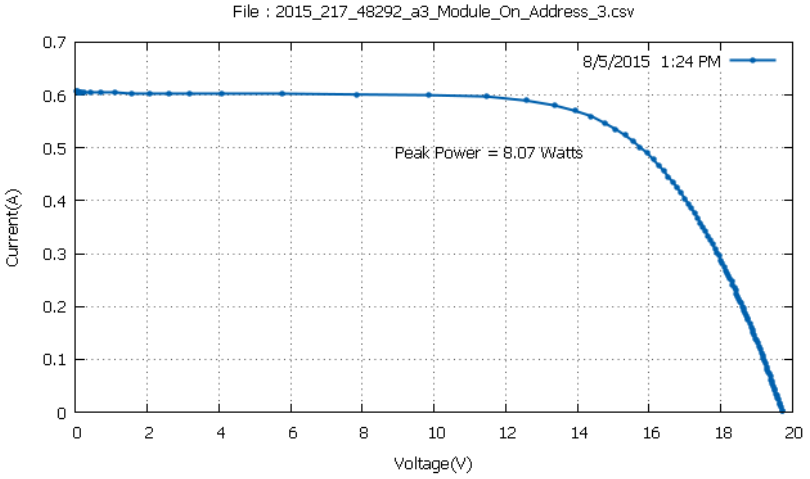
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.944747\ x\ 0.545819}{927.5\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$



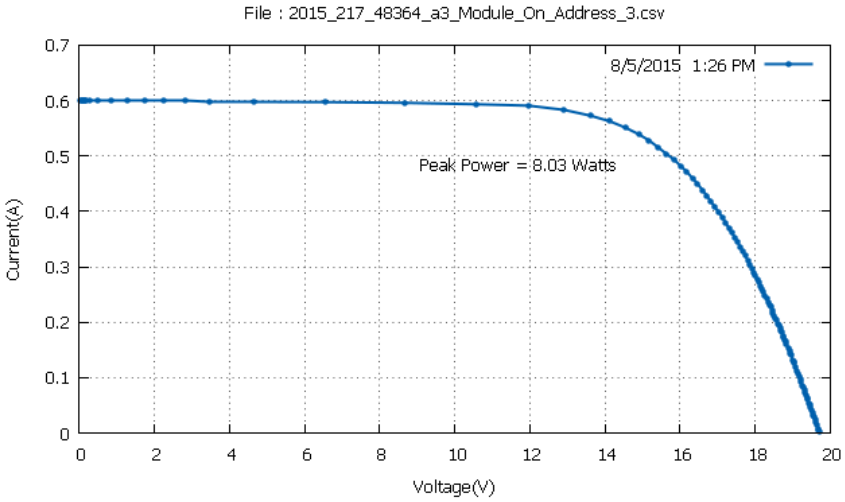
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.81331\ x\ 0.549672}{923.7\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



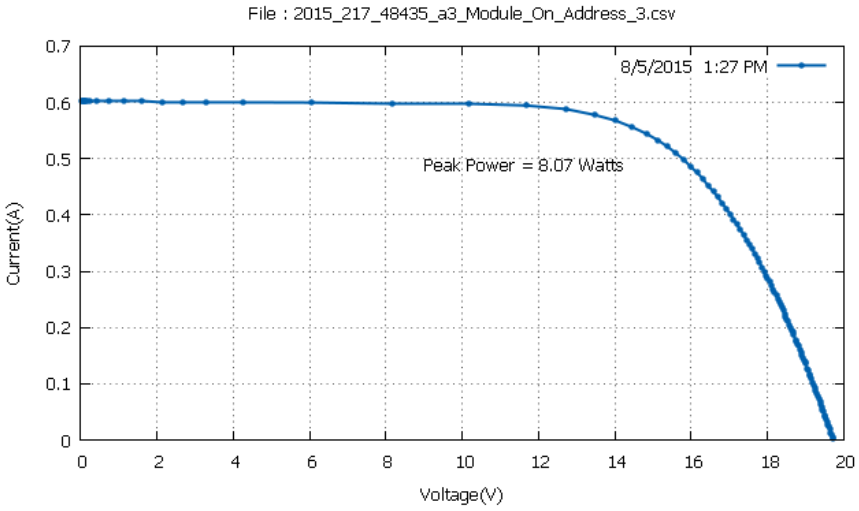
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.8906\ x\ 0.54325}{918\ x\ 0{,}0709} \text{ x } 100 = 12{,}43\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.75146\ x\ 0.547103}{920.1\ x\ 0{,}0709} \text{ x } 100 = 12{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.89062\ x\ 0.5393982}{914.9\ x\ 0{,}0709} \text{ x } 100 = 12{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{14.82104\ x\ 0.544535}{918\ x\ 0{,}0709} \text{ x } 100 = 12{,}4\ \%$$

Module 5

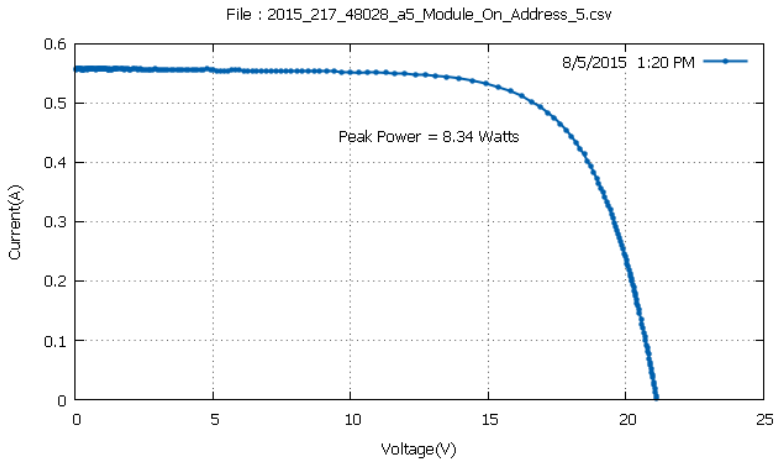
Date: 5/8/2015 – Noon Measurement

Temperature Ambient: 40 ºC

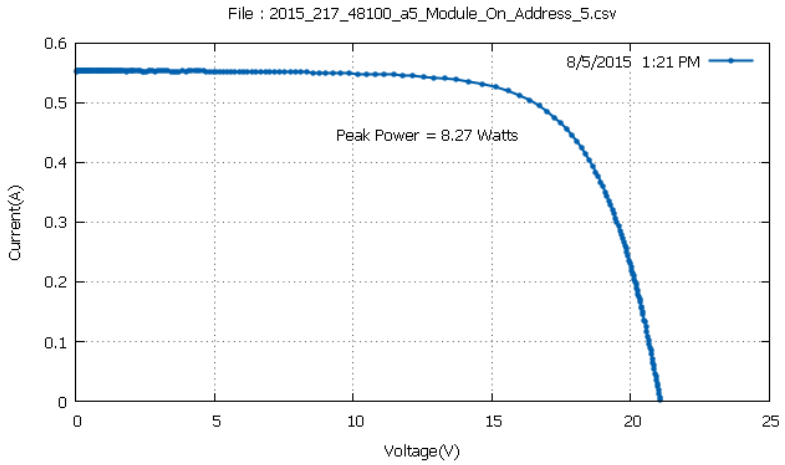
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
13:20	61	11,92
13:21	61	11,91
13:22	60,9	11,89
13:25	59,9	11,96
13:26	59,8	11,94
13:27	59,2	12

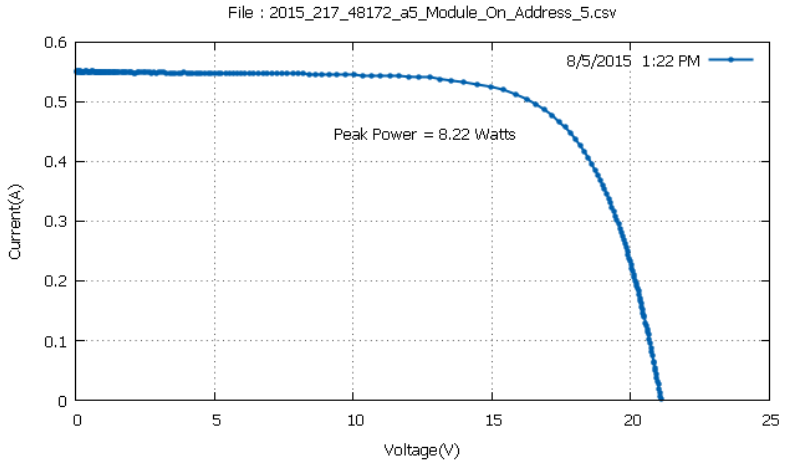
Mean Temperature: 60,3 ºC



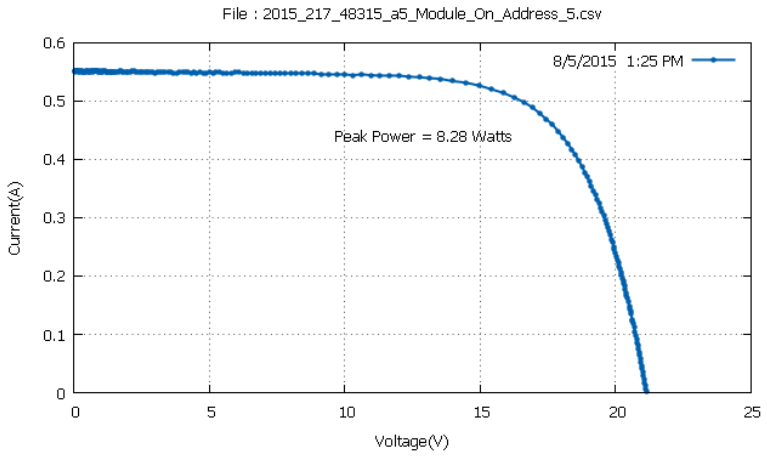
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.8698\ x\ 0.494448}{925.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}92\ \%$$



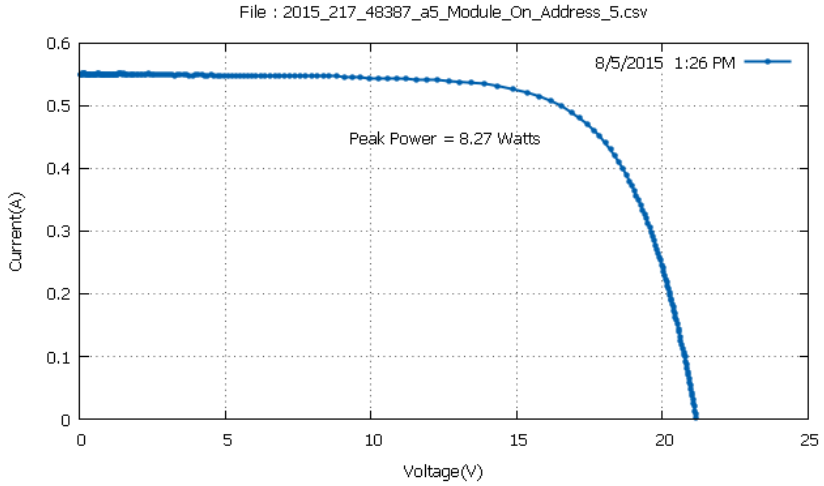
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.684305\ x\ 0.4957326}{918.4\ x\ 0{,}0756}\ \text{x } 100 = 11{,}91\ \%$$



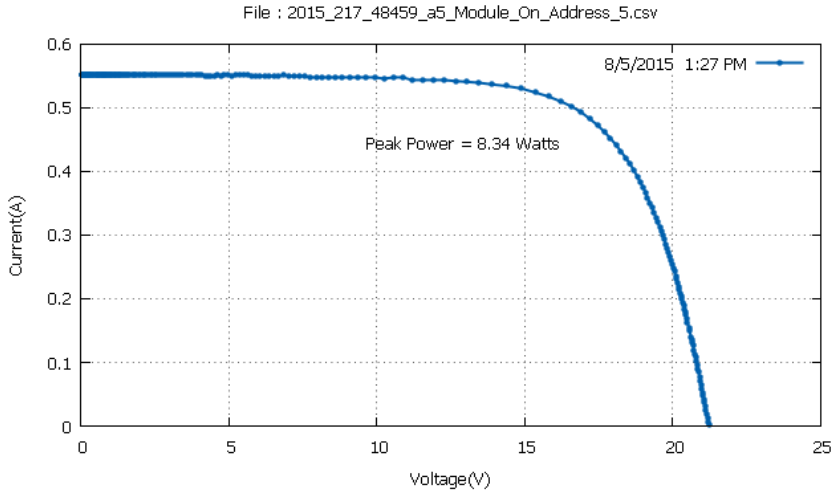
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.5915\ x\ 0.4957326}{914.4\ x\ 0{,}0756}\ \text{x } 100 = 11{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.916246\ x\ 0.48931124}{915.3\ x\ 0{,}0756}\ \text{x } 100 = 11{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.54514\ x\ 0.49958}{915.8\ x\ 0{,}0756}\ \text{x } 100 = 11{,}94\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.90078\ x\ 0.493164}{919.1\ x\ 0{,}0756}\ \text{x } 100 = 12\ \%$$

Module 4

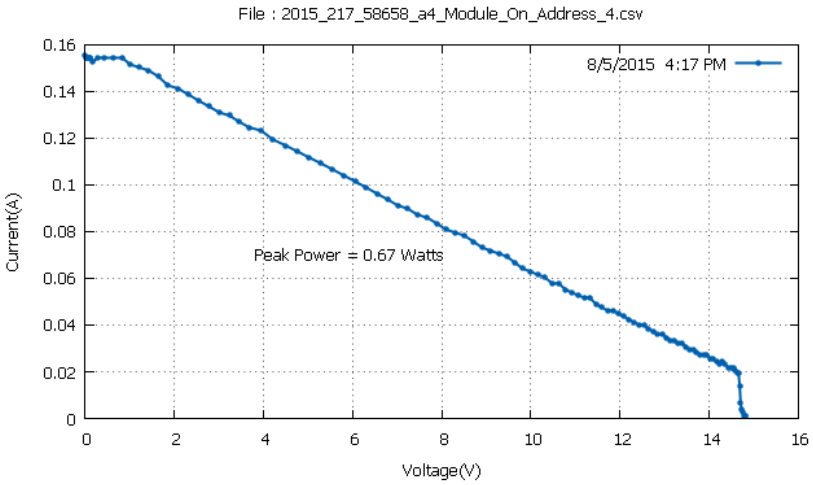
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

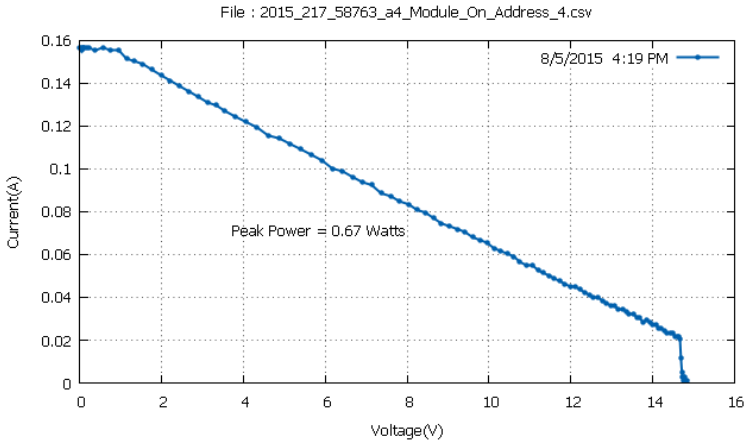
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	48,3	1,78
16:19	46,5	1,81
16:22	44,9	1,88
16:23	45	1,89
16:26	46,2	1,88
16:27	45,7	1,87

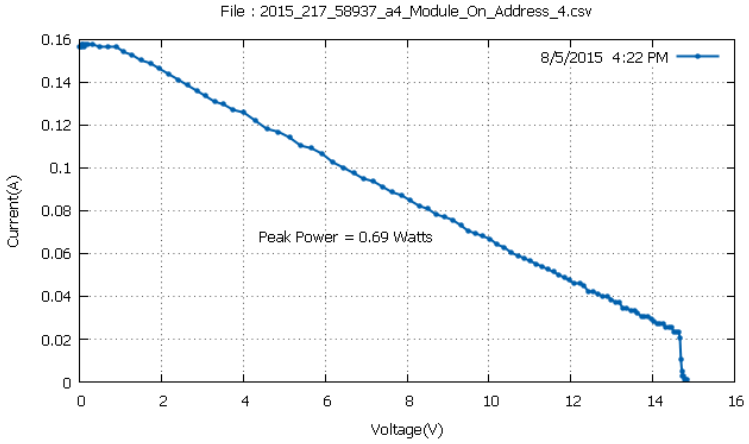
Mean Temperature: 46,1 ºC



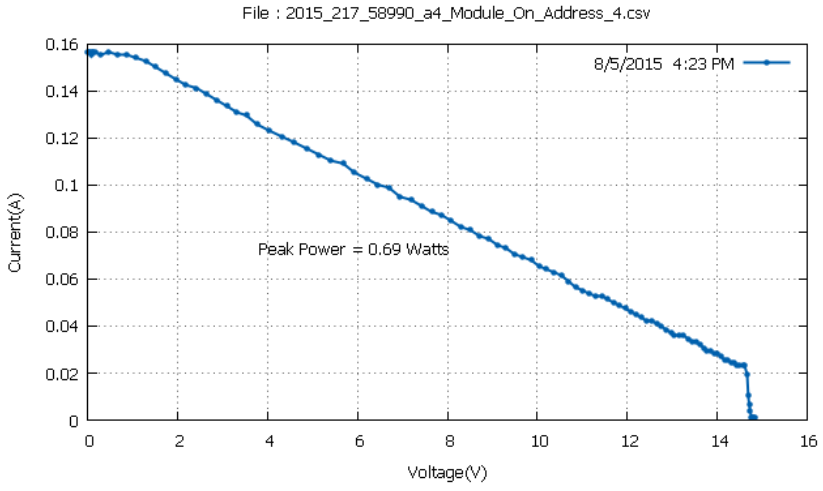
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.504512\ x\ 0.0783411}{558.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}78\ \%$$



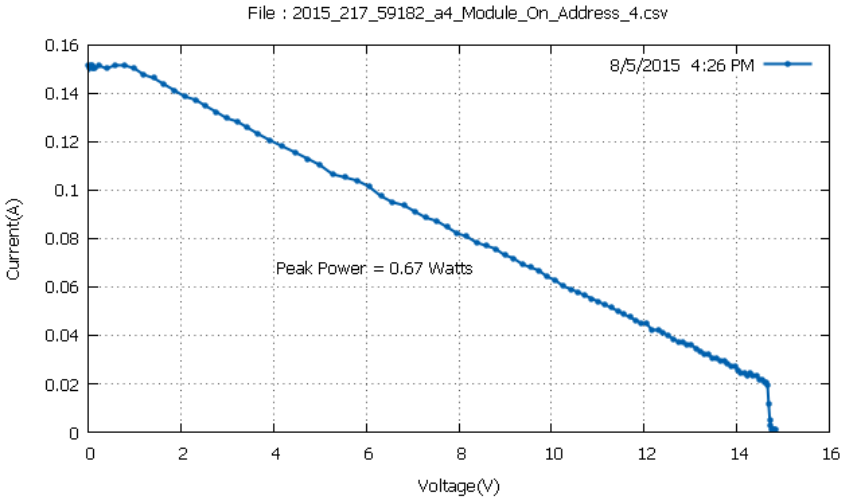
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.44266\ x\ 0.079625}{550.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}81\ \%$$



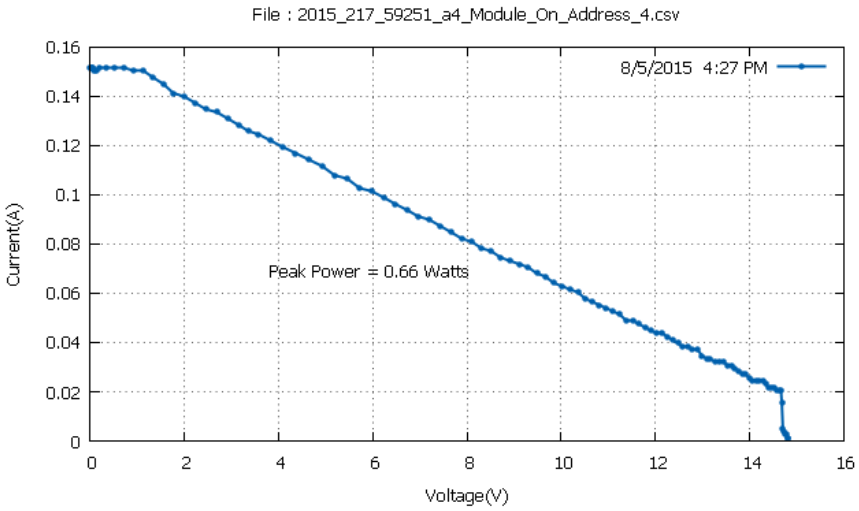
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.57409\ x\ 0.080909}{545.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.5045\ x\ 0.080909}{543.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}89\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.7828\ x\ 0.0757726}{531.2\ x\ 0{,}0671} \text{ x } 100 = 1{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.2931\ x\ 0.07063}{526\ x\ 0{,}0671} \text{ x } 100 = 1{,}87\ \%$$

Module 8

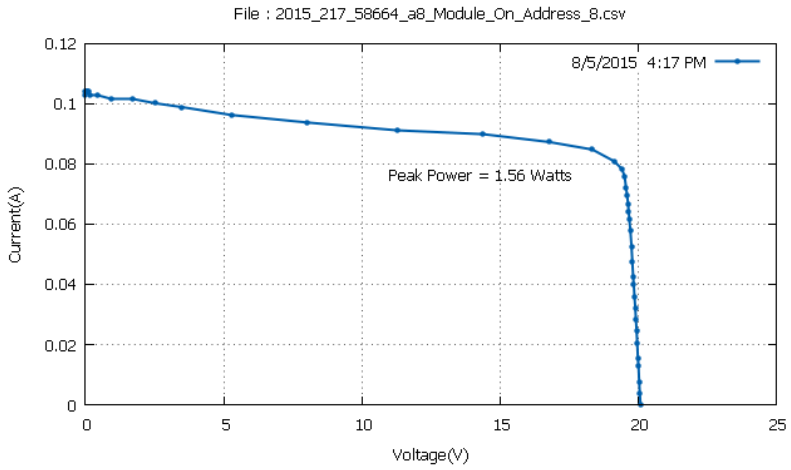
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

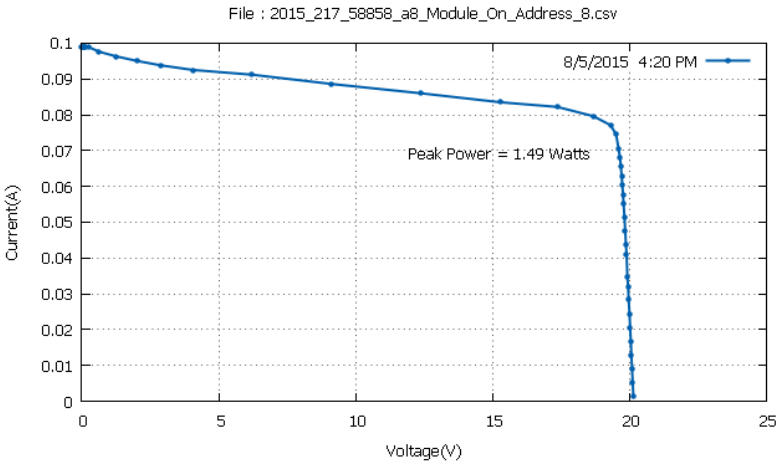
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	46,6	3,63
16:20	46,5	3,55
16:22	46,2	3,48
16:23	46,4	3,42
16:26	46,7	3,38
16:27	46,5	3,42

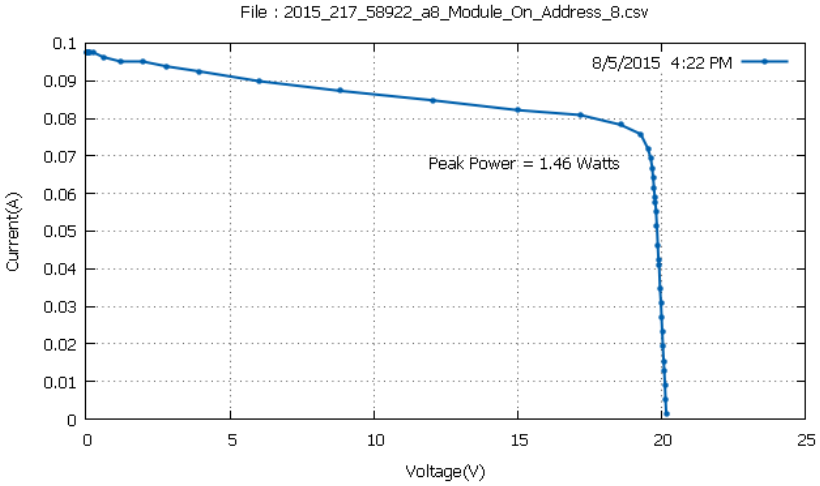
Mean Temperature: 46,48 ºC



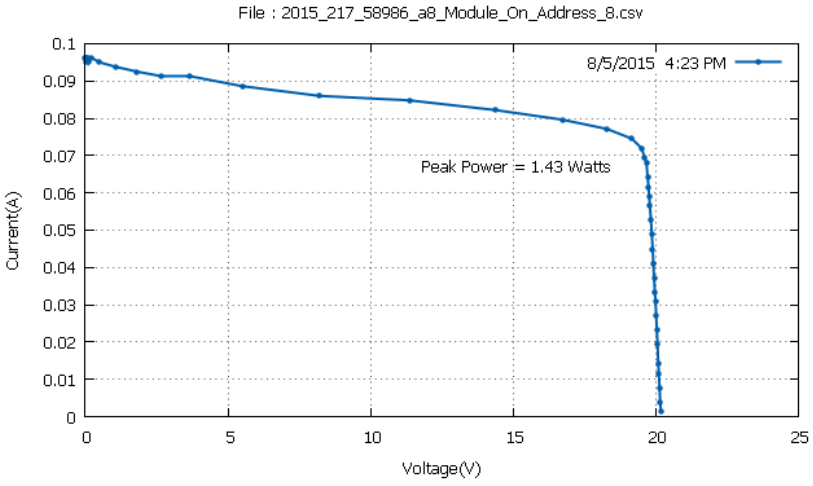
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.34655\ x\ 0.084762}{558.9\ x\ 0{,}0768} \text{ x } 100 = 3{,}63\ \%$$



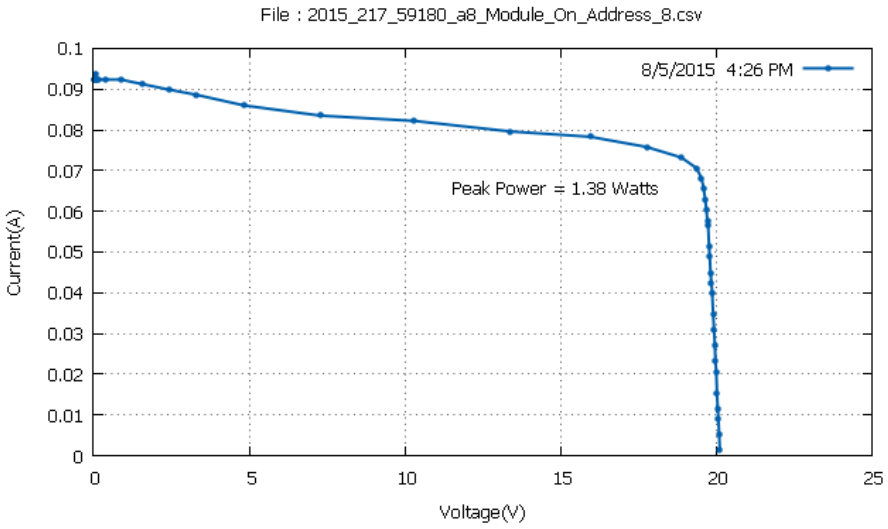
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.305242\ x\ 0.077056}{546.2\ x\ 0{,}0768}\ \text{x } 100 = 3{,}55\ \%$$



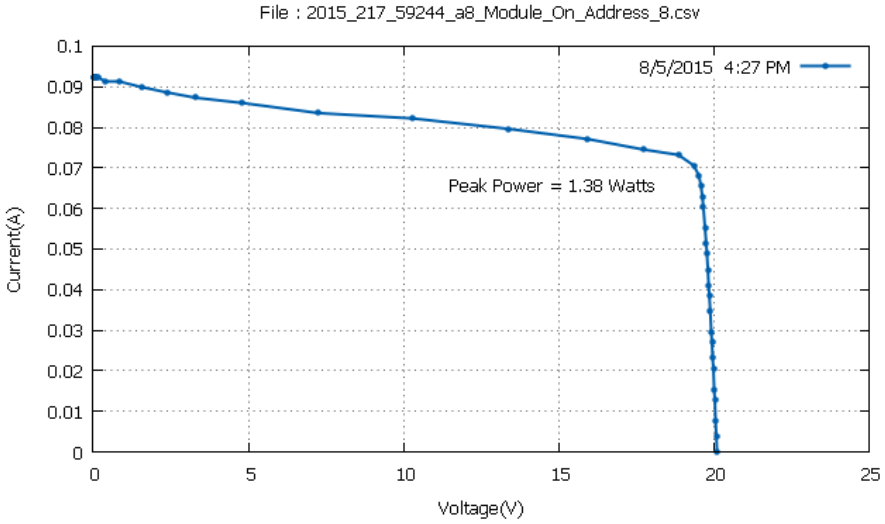
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.28204\ x\ 0.0757726}{546\ x\ 0{,}0768}\ \text{x } 100 = 3{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.16607\ x\ 0.074488}{544.1\ x\ 0{,}0768}\ \text{x } 100 = 3{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.880016\ x\ 0.073204}{531.2\ x\ 0{,}0768} \text{ x } 100 = 3{,}38\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.8568\ x\ 0.073204}{525.5\ x\ 0{,}0768} \text{ x } 100 = 3{,}42\ \%$$

Module 3

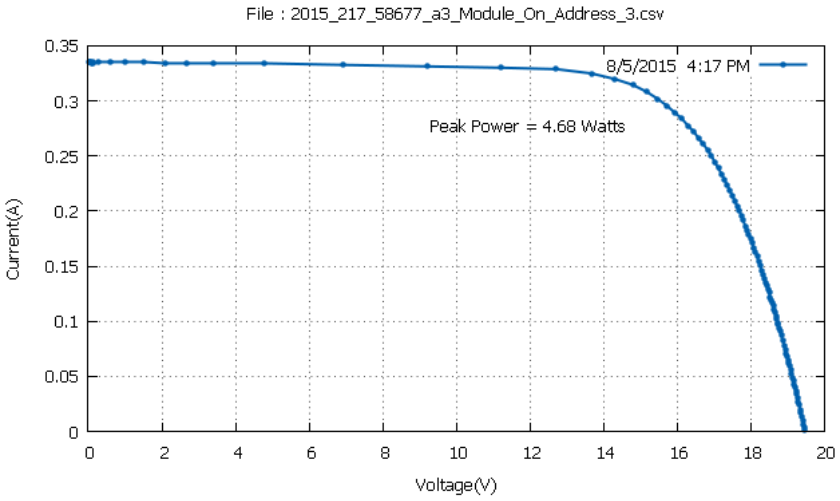
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

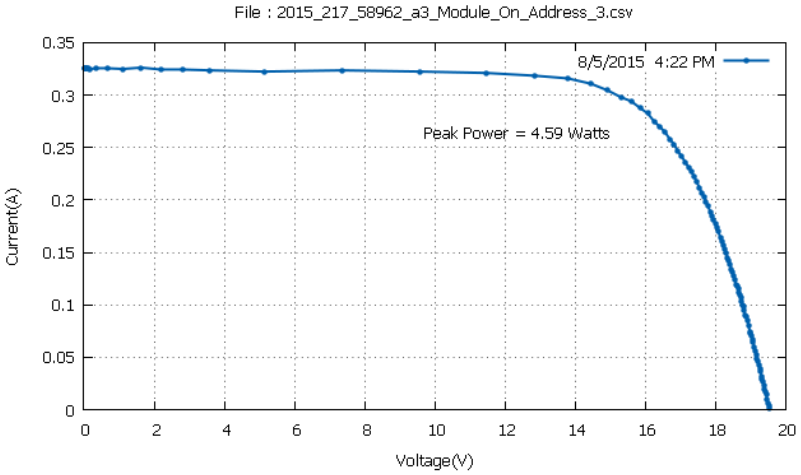
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	49,6	11,81
16:22	48,5	11,86
16:23	48,6	11,8
16:26	48,8	11,74
16:27	48,6	11,75
16:28	48,5	11,7

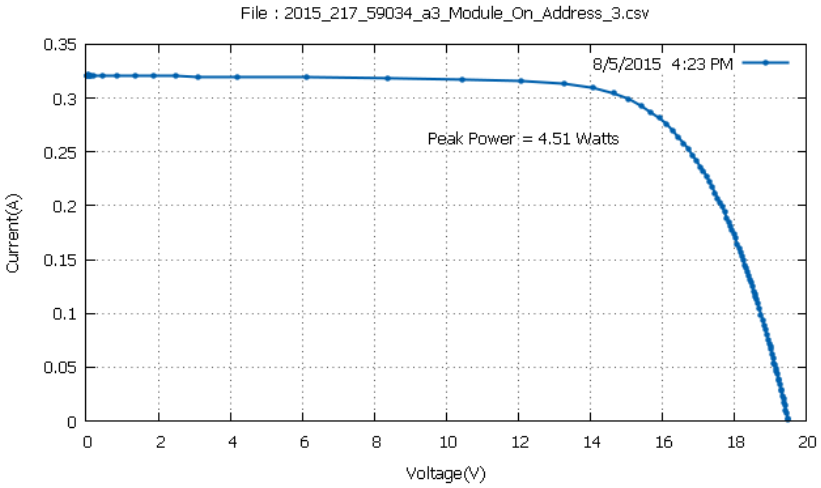
Mean Temperature: 48,76 ºC



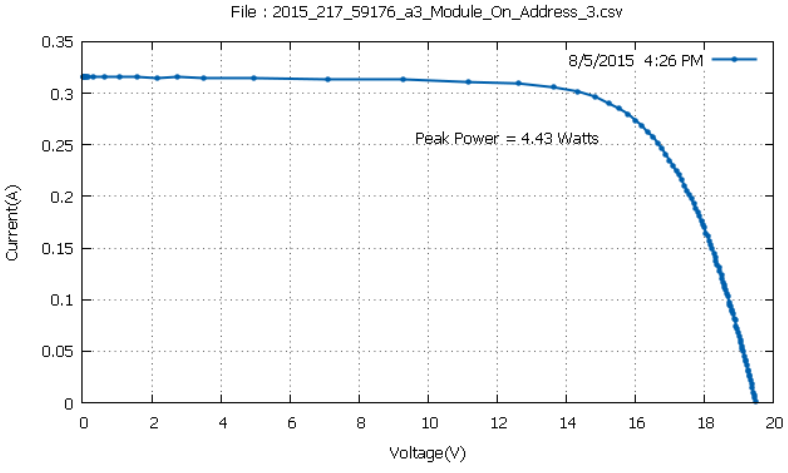
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.16895\ x\ 0.308227}{558.6\ x\ 0{,}0709} \text{ x } 100 = 11{,}81\ \%$$



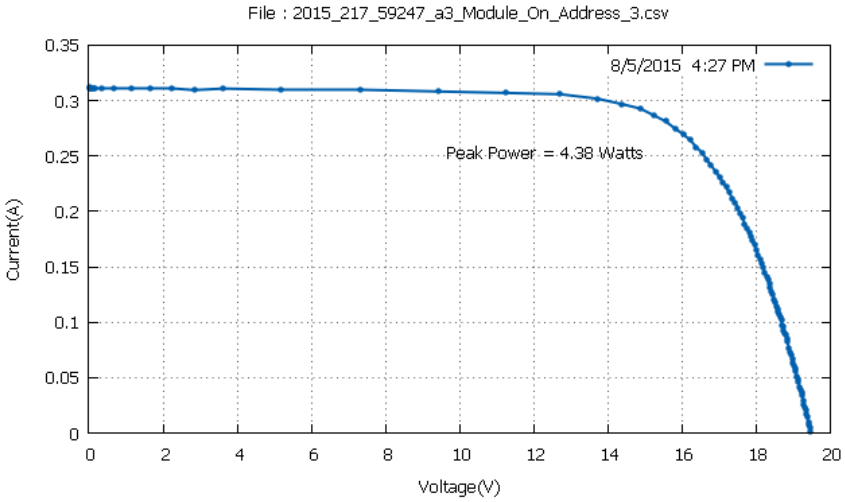
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.59418\ x\ 0.2941004}{545.8\ x\ 0{,}0709} \text{ x } 100 = 11{,}86\ \%$$



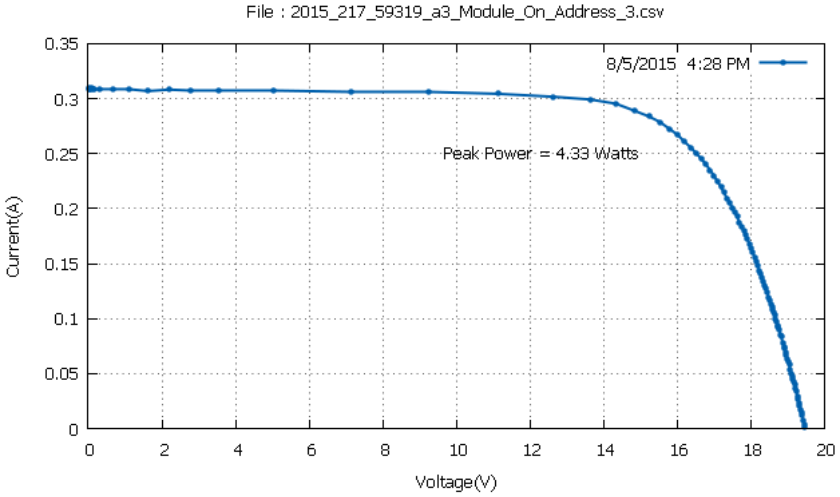
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.41636\ x\ 0.292816}{539.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}8\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.54006\ x\ 0.28511}{531.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}74\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5555\ x\ 0.2812576}{525.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5323\ x\ 0.2786}{521.9\ x\ 0{,}0709} \text{ x } 100 = 11{,}7\ \%$$

Module 5

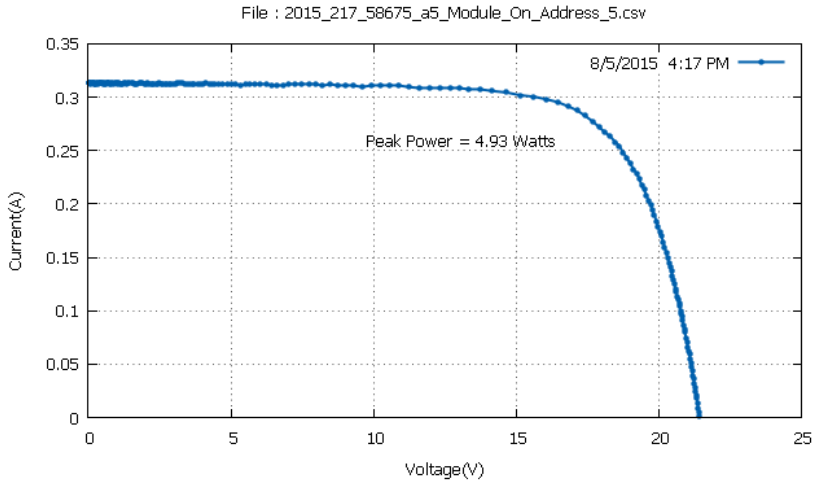
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

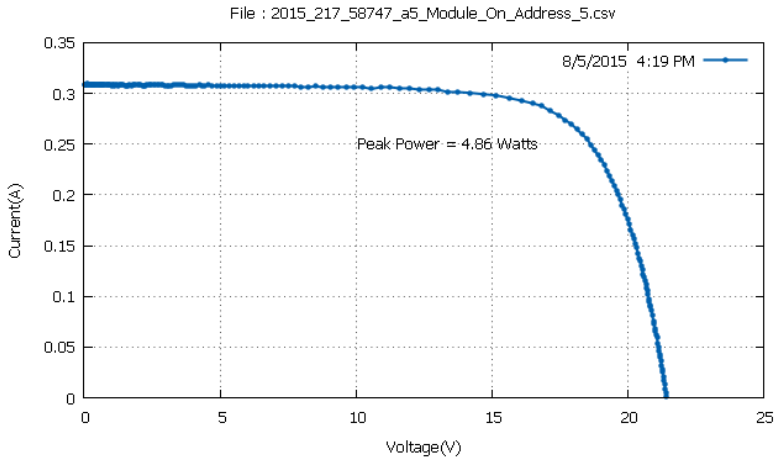
Fan OFF

Time PM	Panel Temperature ºC	Efficiency %
16:17	48,7	11,65
16:19	48,5	11,64
16:26	47,6	11,61
16:27	47,4	11,6
16:28	47,5	11,51
16:31	46,6	11,56

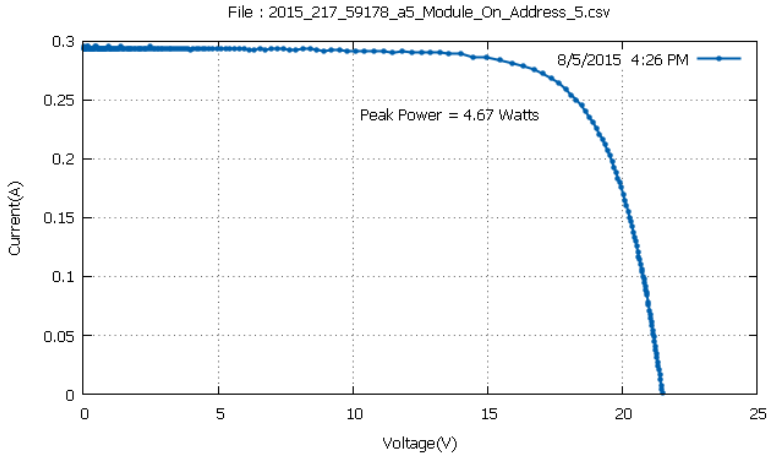
Mean Temperature: 47,71 ºC



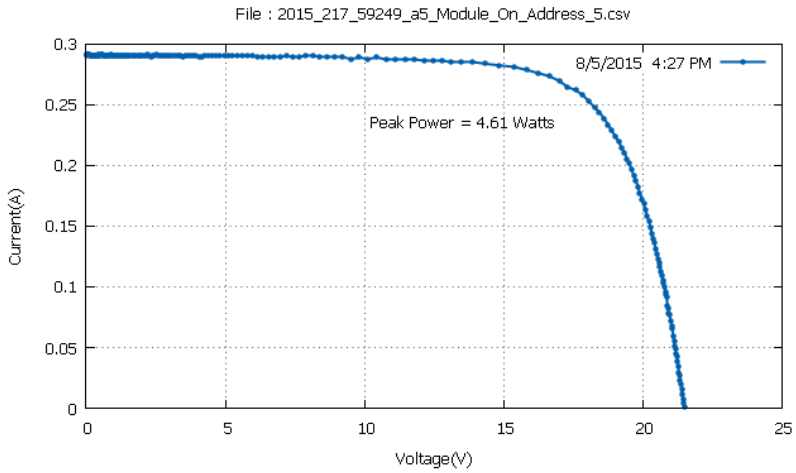
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.1327248\ x\ 0.28767904}{559.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}65\ \%$$



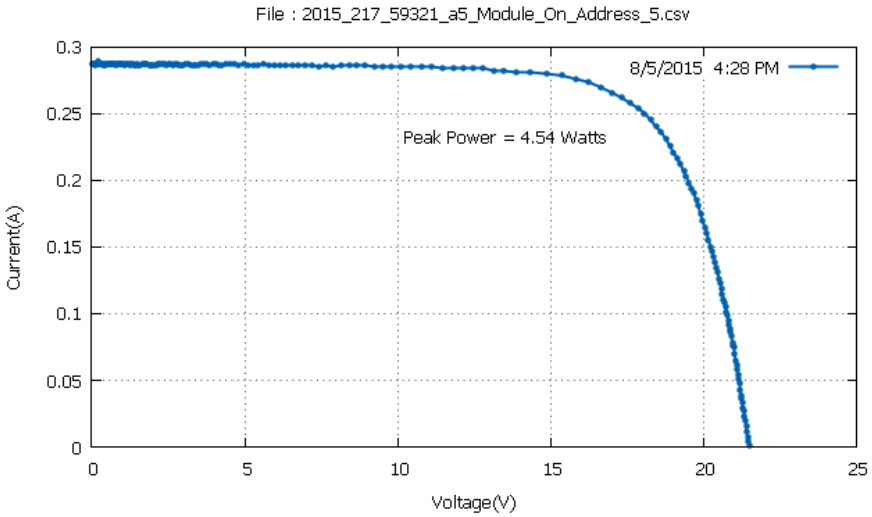
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.4497\ x\ 0.2786}{552.2\ x\ 0{,}0756} \text{ x } 100 = 11{,}64\ \%$$



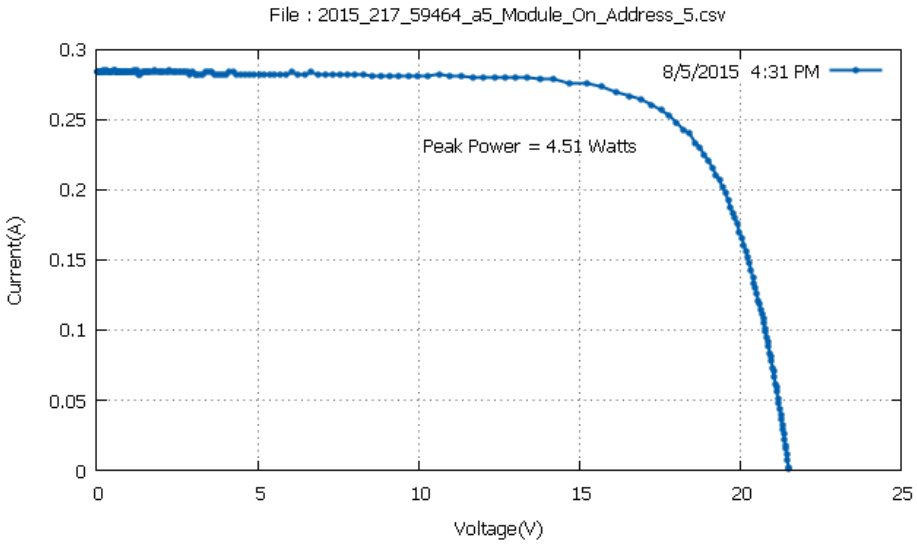
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.65072\ x\ 0.26456}{531.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}61\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.588876\ x\ 0.2619934}{525.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5966\ x\ 0.25814}{521.7\ x\ 0{,}0756} \text{ x } 100 = 11{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.5424\ x\ 0.256856}{516\ x\ 0{,}0756} \text{ x } 100 = 11{,}56\ \%$$

Module 4

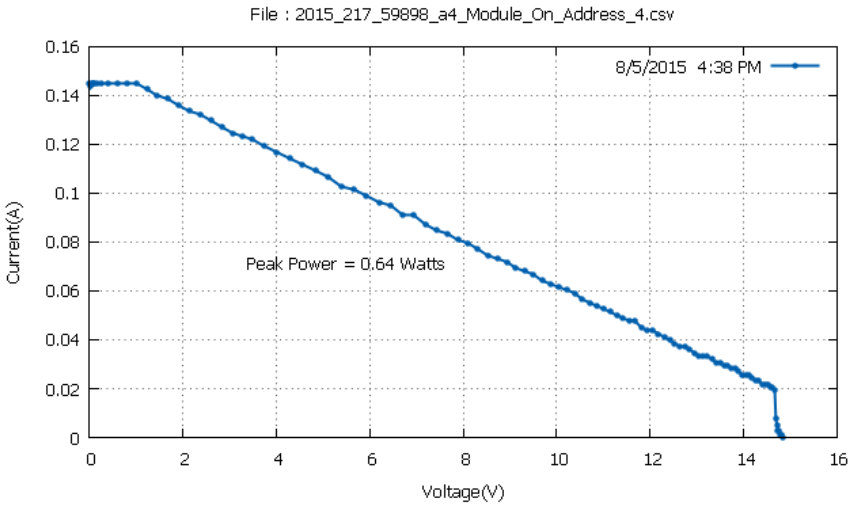
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

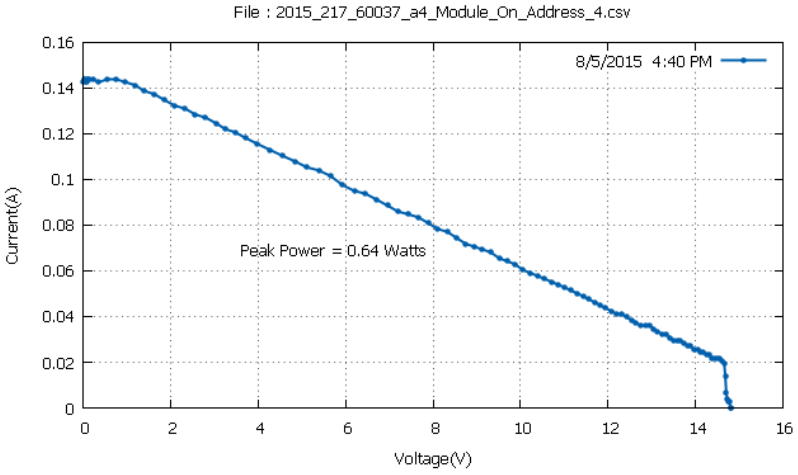
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:38	43,6	1,93
16:40	43,4	1,97
16:41	42,9	1,96
16:42	42,7	1,97
16:45	42,7	1,97
16:47	42,8	1,96

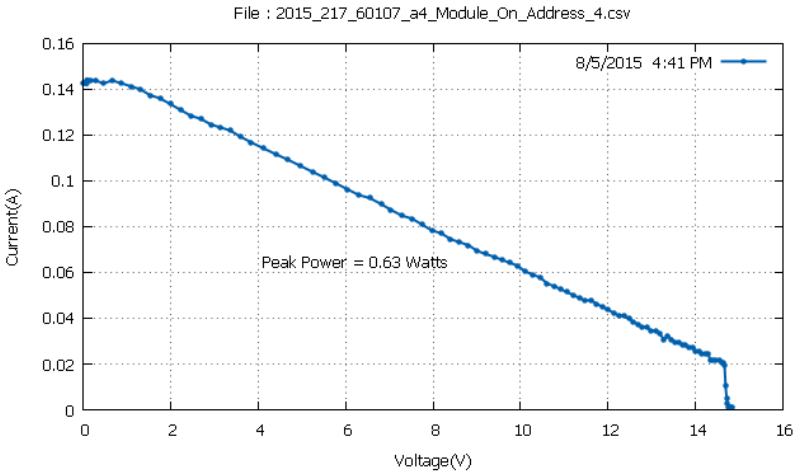
Mean Temperature: 43,01 ºC



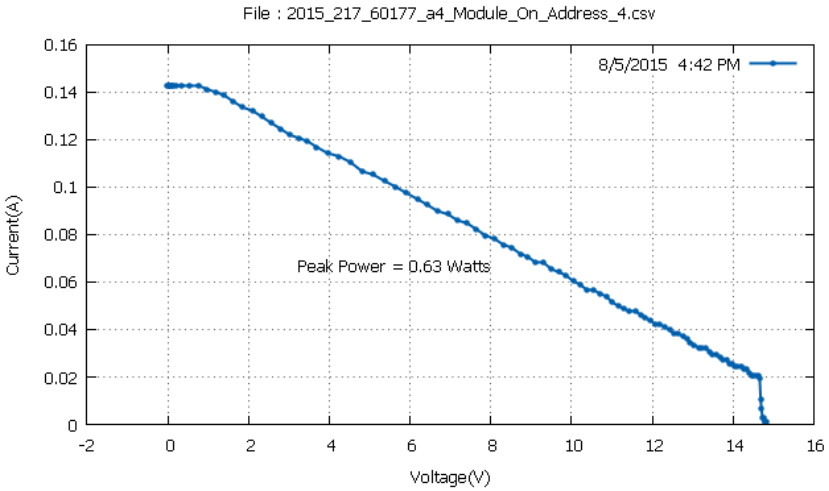
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.45812\ x\ 0.0757726}{492.1\ x\ 0{,}0671} \text{ x } 100 = 1{,}93\ \%$$



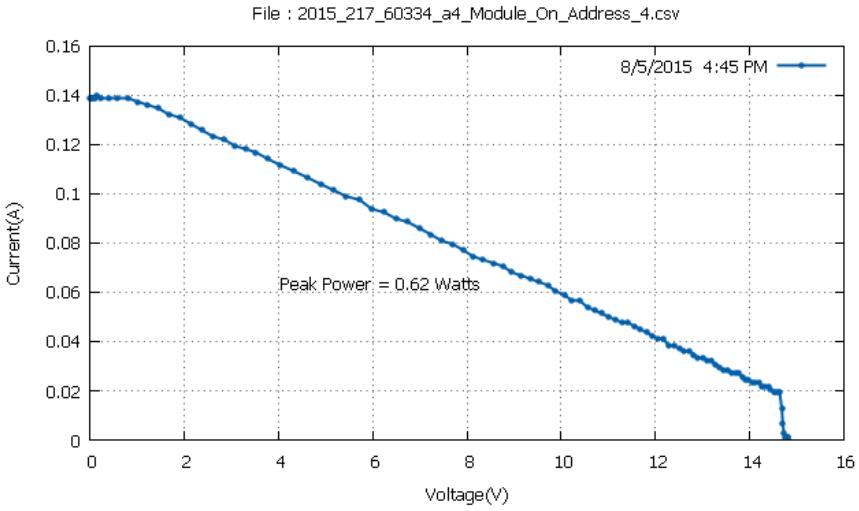
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.93746\ x\ 0.07191976}{482.3\ x\ 0{,}0671} \text{ x } 100 = 1{,}97\ \%$$



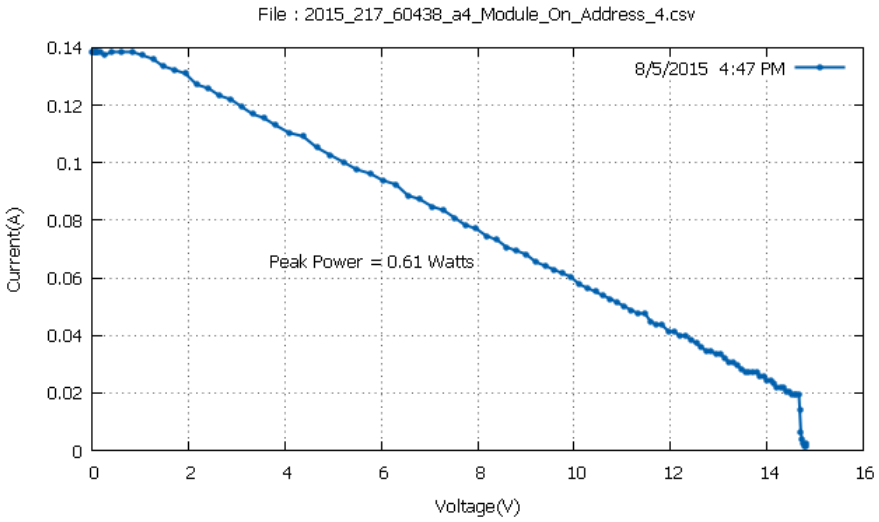
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.715911x\ 0.08219401}{477.6\ x\ 0{,}0671} \text{ x } 100 = 1{,}96\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.51997\ x\ 0.074488}{475.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.65914\ x\ 0.07191976}{468.5\ x\ 0{,}0671} \text{ x } 100 = 1{,}97\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.39627\ x\ 0.07320405}{462.8\ x\ 0{,}0671} \text{ x } 100 = 1{,}96\ \%$$

Module 8

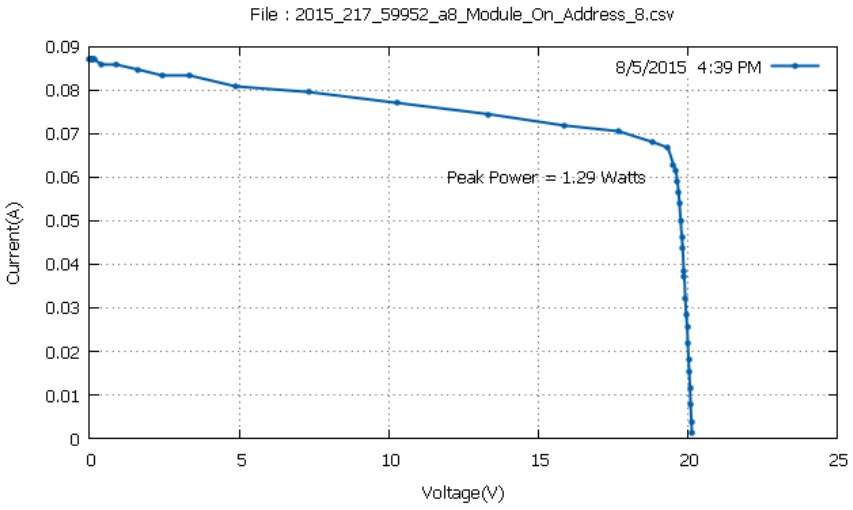
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

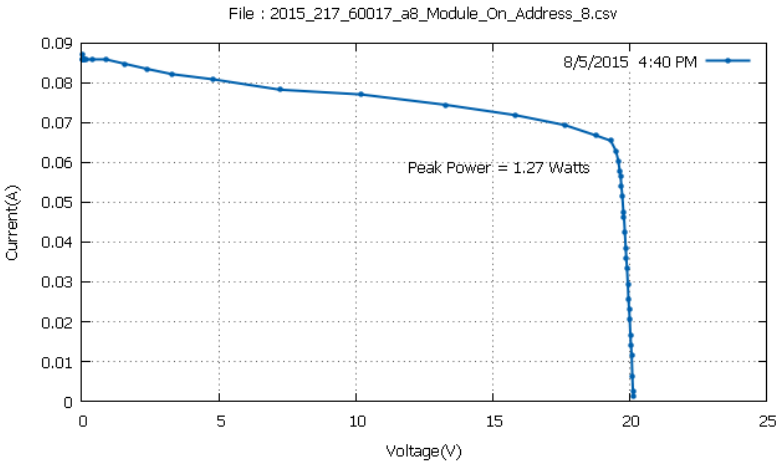
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:39	44,2	3,43
16:40	44,1	3,43
16:42	43,7	3,42
16:43	43,5	3,48
16:46	42,8	3,46
16:47	43,1	3,46

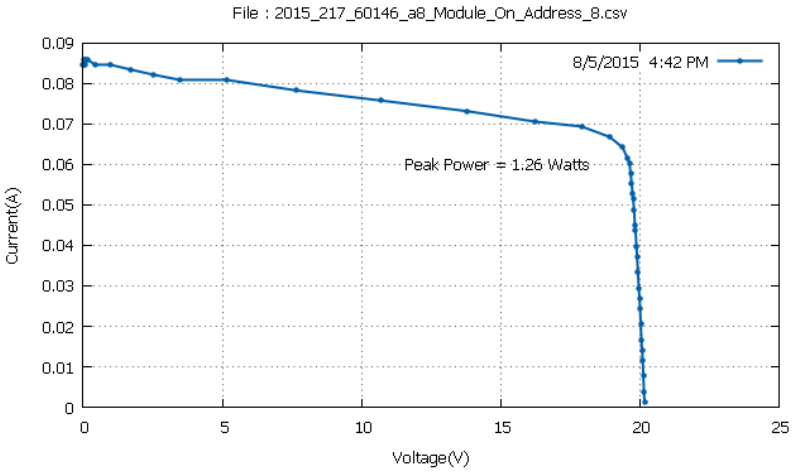
Mean Temperature: 43,56 ºC



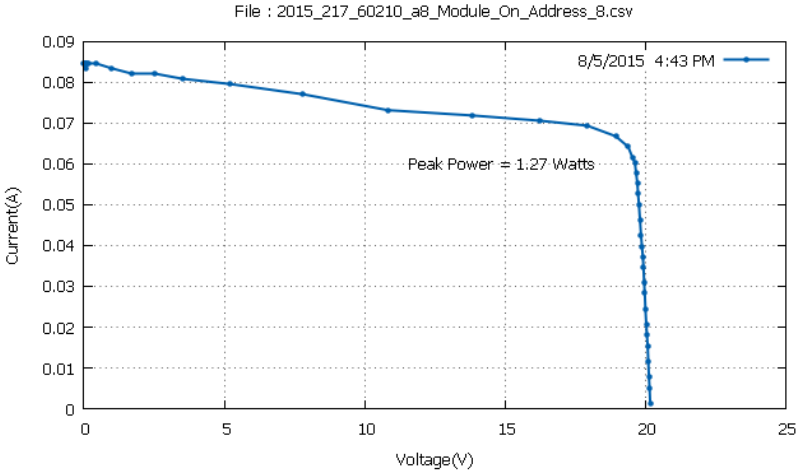
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.34389\ x\ 0.066782}{489.7\ x\ 0{,}0768} \text{ x } 100 = 3{,}43\ \%$$



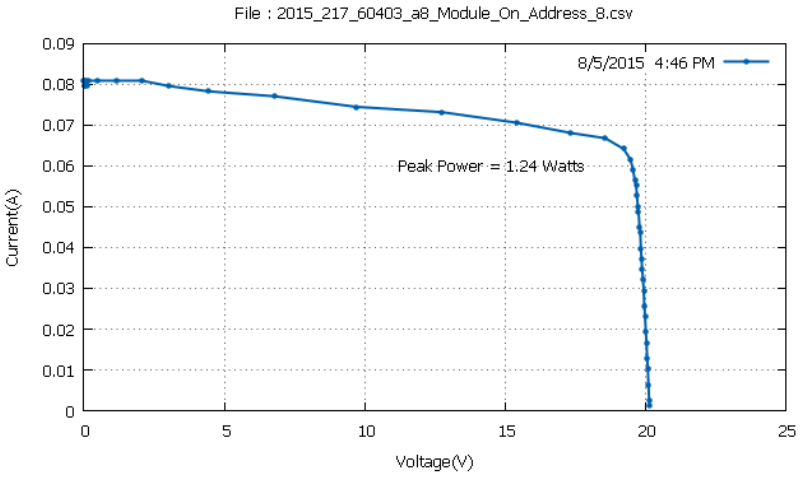
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.31297\ x\ 0.065498}{481.9\ x\ 0{,}0768} \text{ x } 100 = 3{,}43\ \%$$



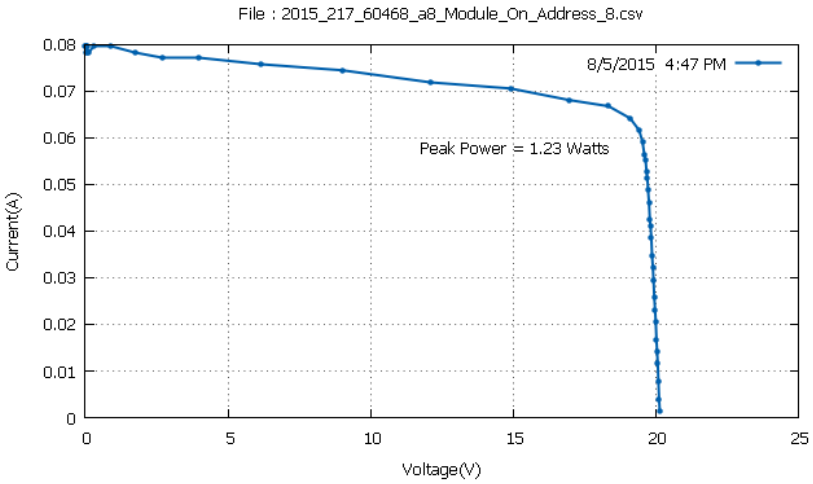
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9186726\ x\ 0.0667826}{478.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}42\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.94186\ x\ 0.0667826}{475.2\ x\ 0{,}0768} \text{ x } 100 = 3{,}48\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5707\ x\ 0.0667826}{465.7\ x\ 0{,}0768} \text{ x } 100 = 3{,}46\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.104225\ x\ 0.06421407}{462.1\ x\ 0{,}0768} \text{ x } 100 = 3{,}46\ \%$$

Module 3

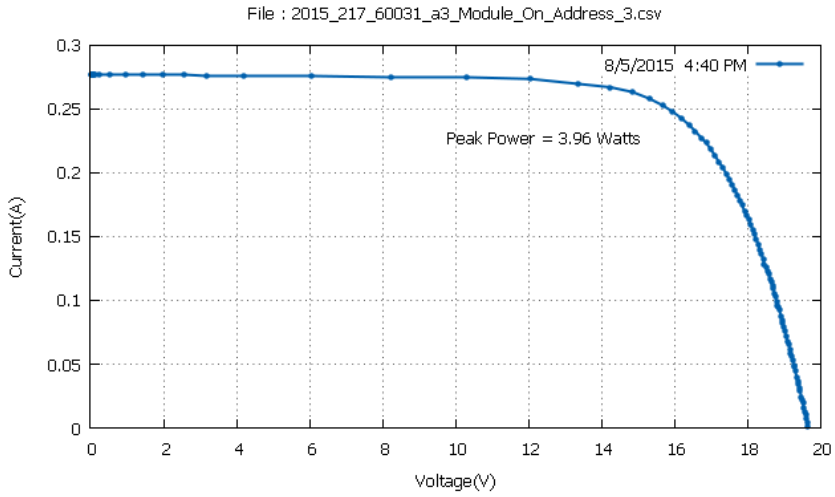
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

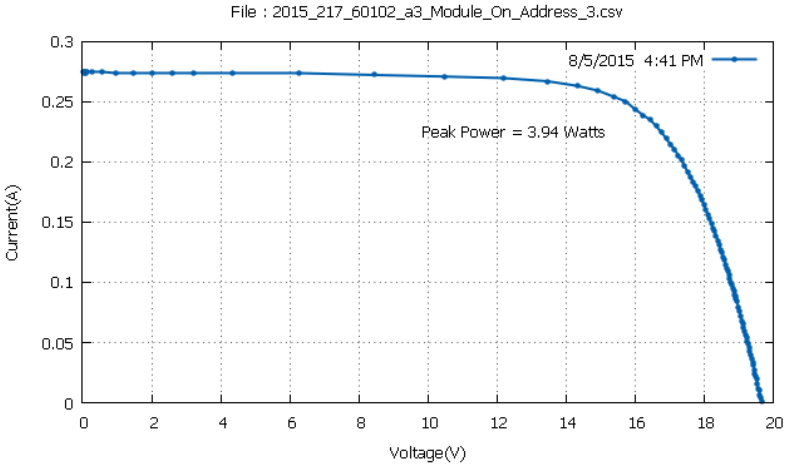
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:40	43,4	11,58
16:41	43,3	11,64
16:42	43,1	11,62
16:45	42,5	11,54
16:46	42,4	11,47
16:47	42,3	11,46

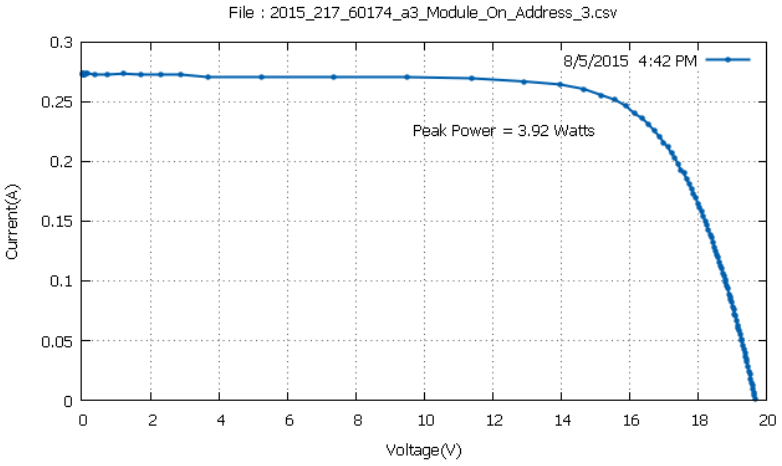
Mean Temperature: 42,83 ºC



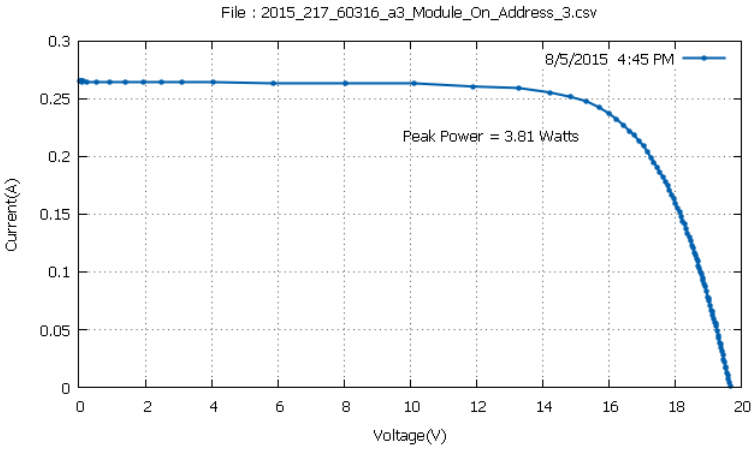
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6637\ x\ 0.2530034}{482.1\ x\ 0{,}0709}$ x 100 = 11,58 %



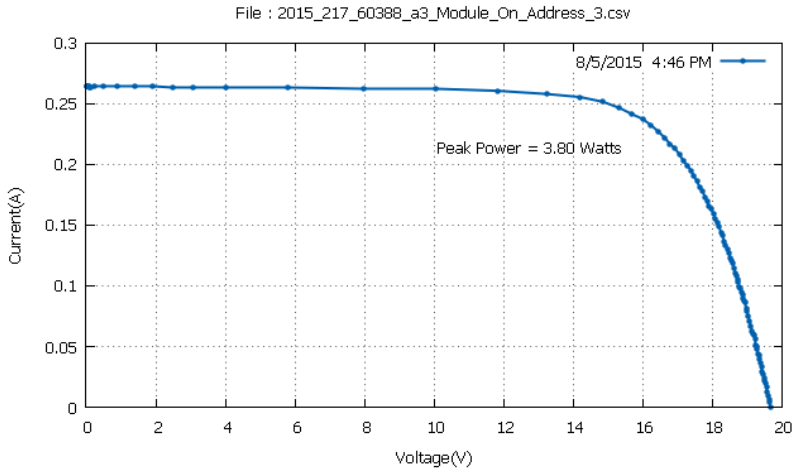
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.72561x\ 0.2504349}{477.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}64\ \%$$



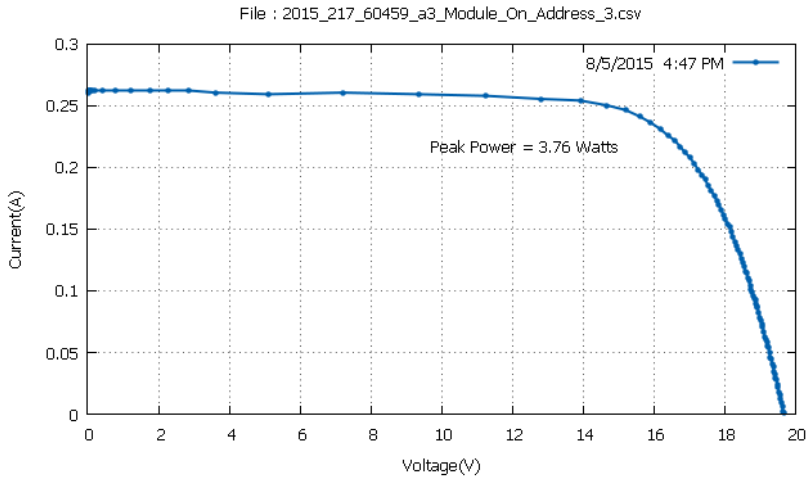
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.5787\ x\ 0.25171917}{475.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}62\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.702421\ x\ 0.242729}{465.7\ x\ 0{,}0709} \text{ x } 100 = 11{,}54\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9884\ x\ 0.23759207}{467.3\ x\ 0{,}0709} \text{ x } 100 = 11{,}47\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.59418\ x\ 0.2414449}{462.6\ x\ 0{,}0709} \text{ x } 100 = 11{,}46\ \%$$

Module 5

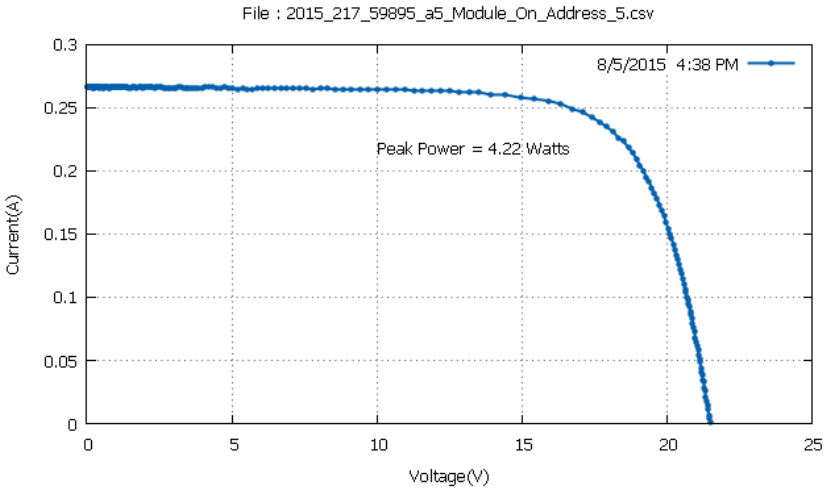
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

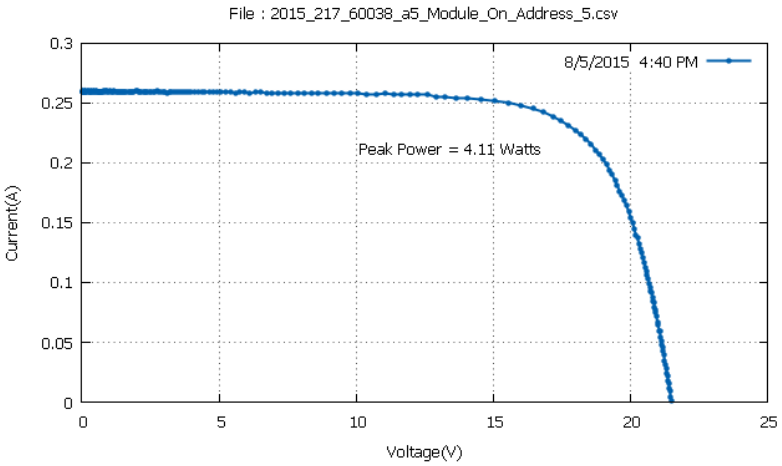
Speed 1

Time PM	Panel Temperature ºC	Efficiency %
16:38	46,2	11,38
16:40	45,6	11,31
16:41	45,3	11,39
16:43	44,9	11,36
16:45	45	11,25
16:46	44,8	11,26

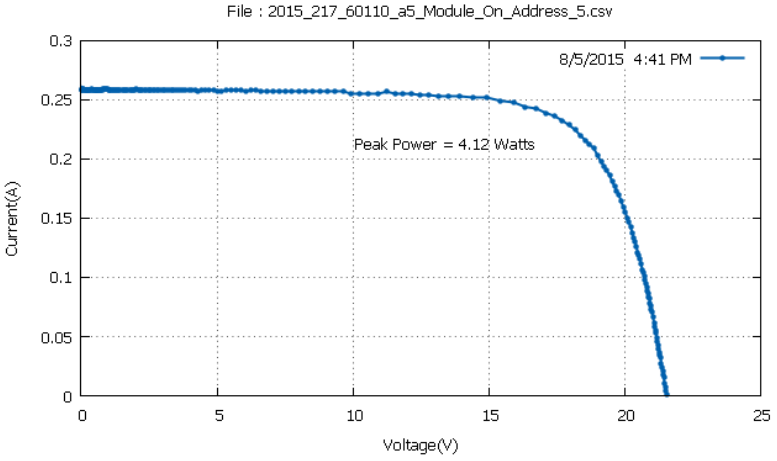
Mean Temperature: 45,3 ºC



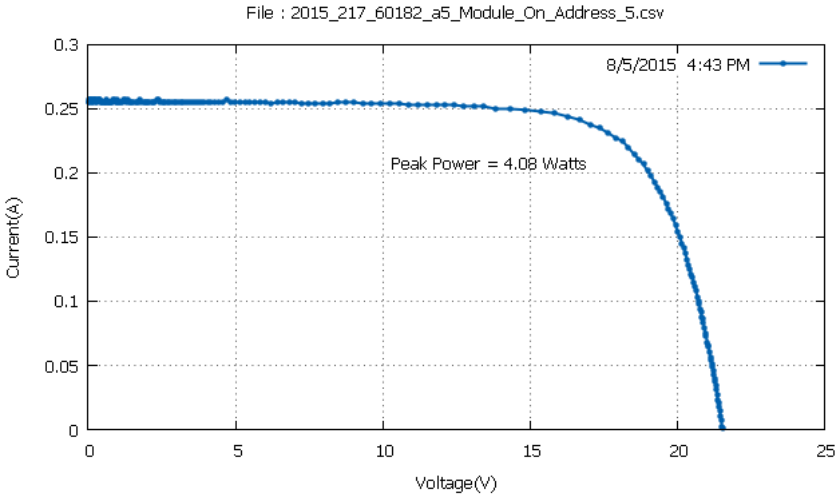
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.40332\ x\ 0.24272}{490.5\ x\ 0{,}0756} \text{ x } 100 = 11{,}38\ \%$$



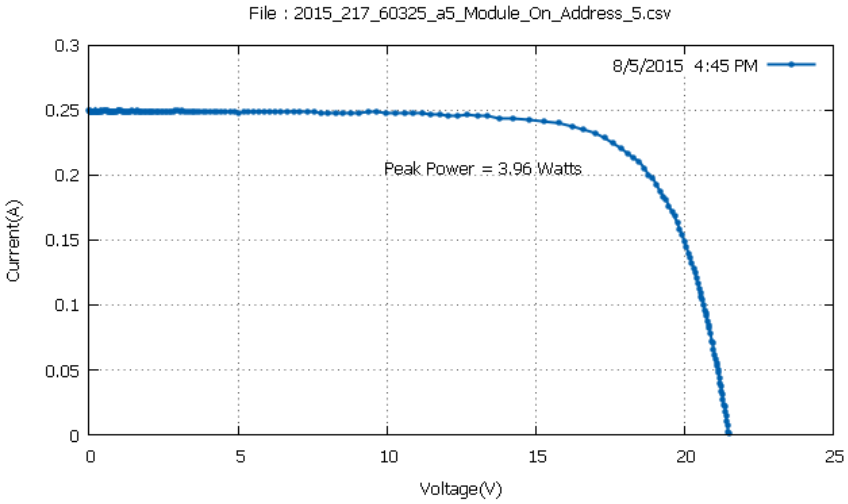
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.48063x\ 0.2350235}{480.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}31\ \%$$



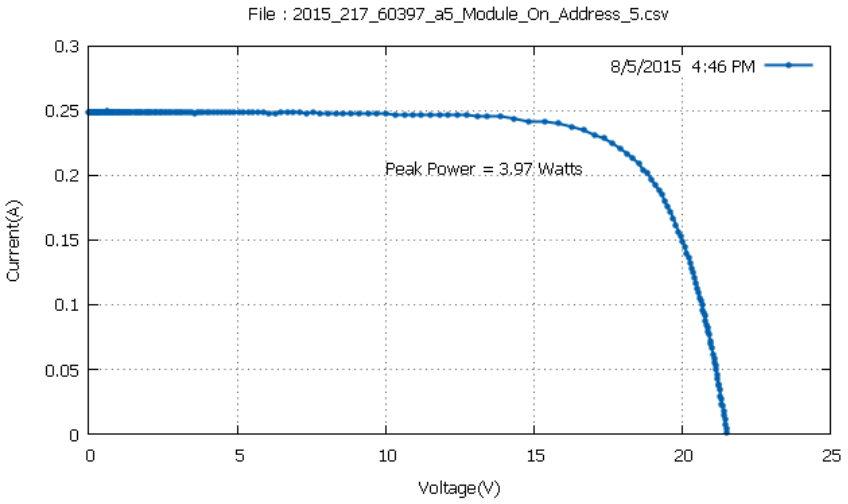
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.41878\ x\ 0.236307}{478.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}39\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.364666\ x\ 0.2350235}{475\ x\ 0{,}0756} \text{ x } 100 = 11{,}36\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.3182\ x\ 0.2286021}{465.4\ x\ 0{,}0756} \text{ x } 100 = 11{,}25\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.37239\ x\ 0.2286021}{466.1\ x\ 0{,}0756} \text{ x } 100 = 11{,}26\ \%$$

Module 4

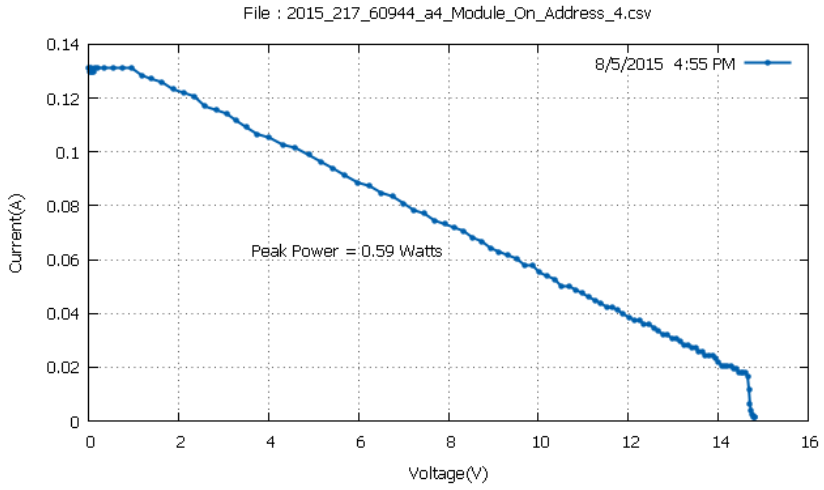
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

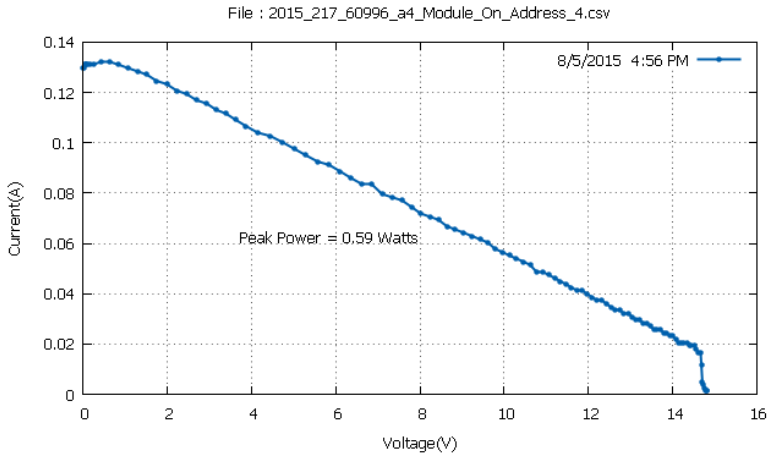
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:55	41	2,01
16:56	40,6	2,01
16:57	40,1	1,98
16:59	40,1	2,02
17:01	40,1	2,05
17:02	40,4	2

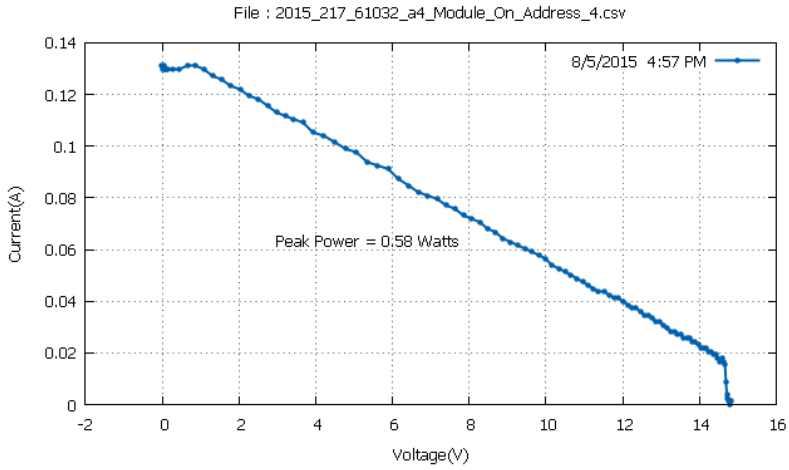
Mean Temperature: 40,38 ºC



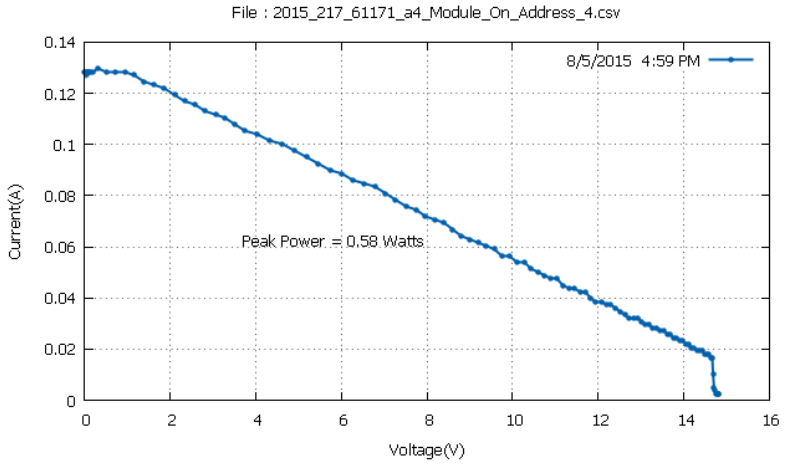
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.334421\ x\ 0.0706354}{436.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}01\ \%$$



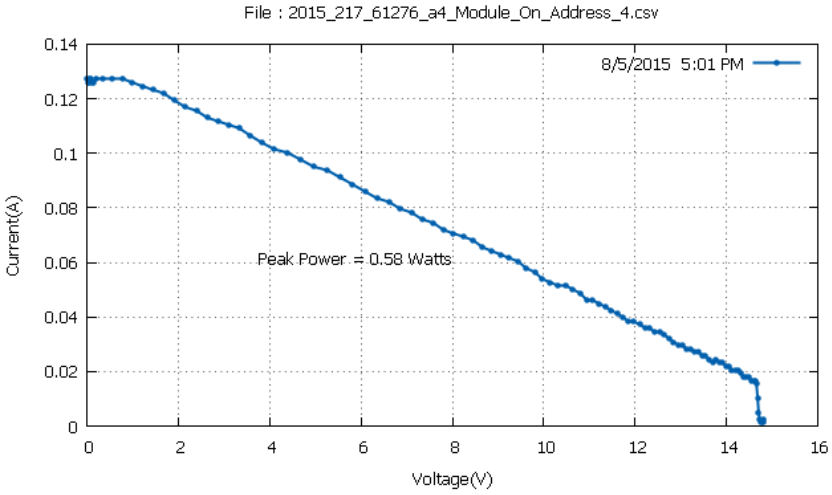
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.89373\ x\ 0.0744883}{436.6\ x\ 0{,}0671} \text{ x } 100 = 2{,}01\ \%$$



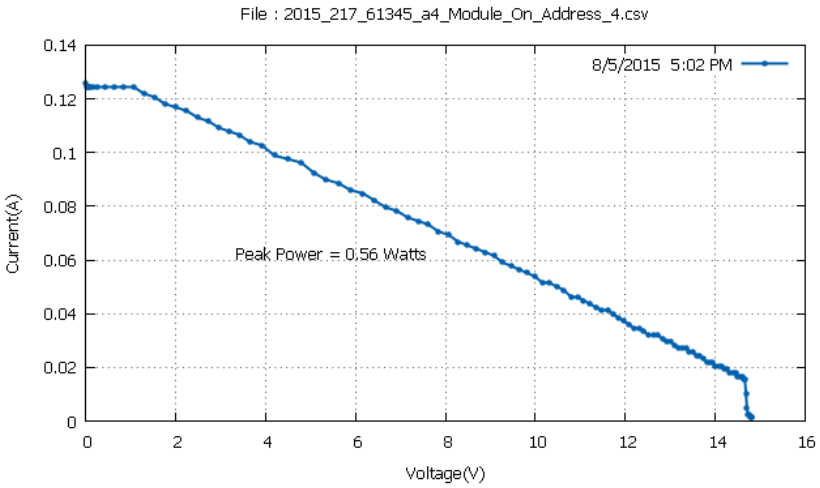
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.27257\ x\ 0.0706354}{434.7\ x\ 0{,}0671} \text{ x } 100 = 1{,}98\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.9865\ x\ 0.073204}{427\ x\ 0{,}0671} \text{ x } 100 = 2{,}02\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.45039\ x\ 0.06806}{421.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{9.07663\ x\ 0.061645}{417.3\ x\ 0{,}0671} \text{ x } 100 = 2\ \%$$

Module 8

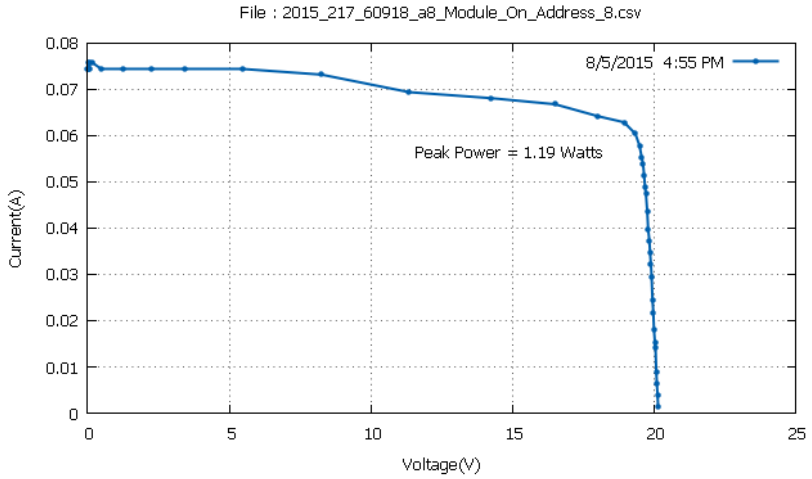
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

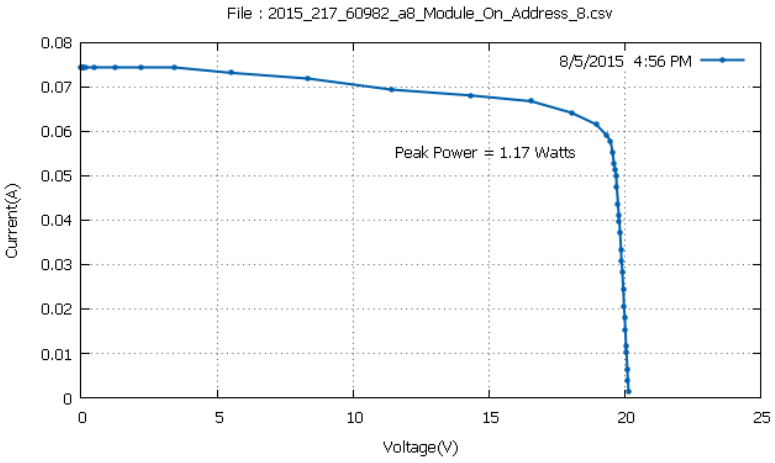
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:55	41,8	3,52
16:56	41,8	3,51
16:57	41,7	3,51
16:59	41,2	3,57
17:00	41,2	3,6
17:01	41	3,59

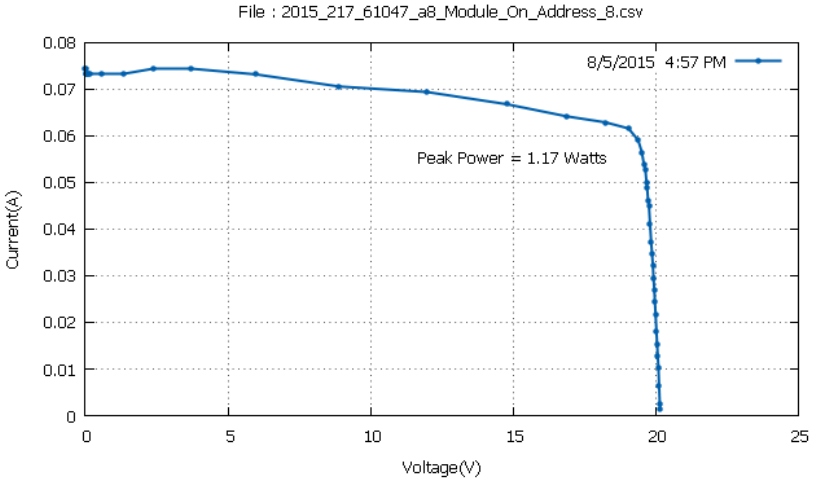
Mean Temperature: 41,45 ºC



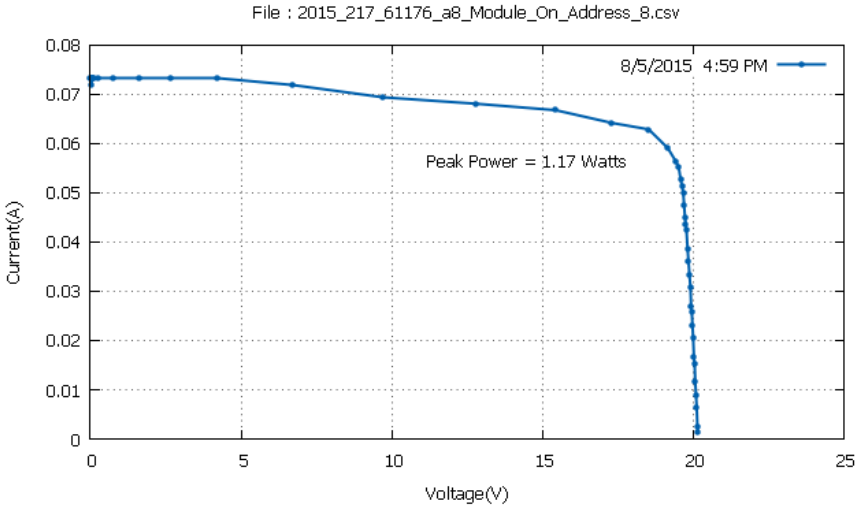
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.9418678\ x\ 0.06292979}{439.2\ x\ 0{,}0768} \text{ x } 100 = 3{,}52\ \%$$



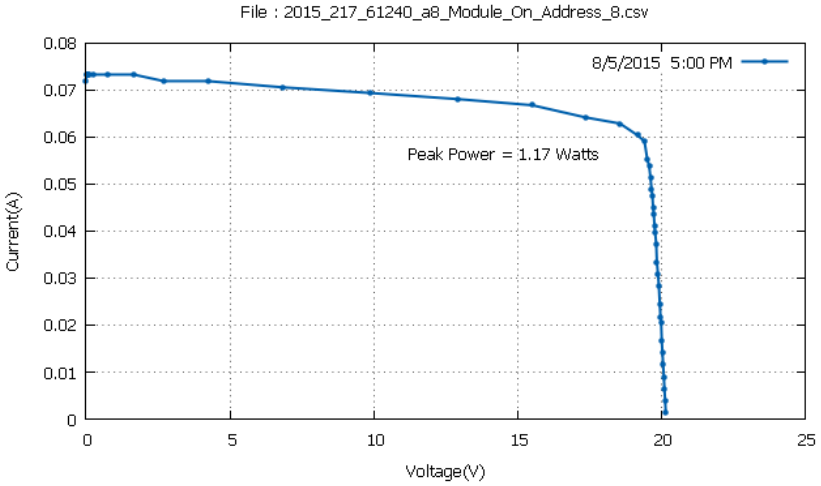
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.941867\ x\ 0.061645}{433.9\ x\ 0{,}0768}\ \text{x } 100 = 3{,}51\ \%$$



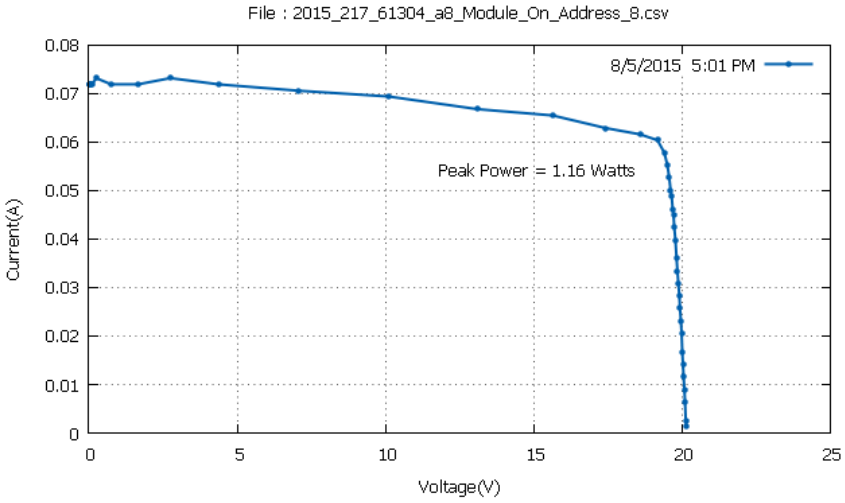
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.042375\ x\ 0.061645}{433.7\ x\ 0{,}0768}\ \text{x } 100 = 3{,}51\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.5243\ x\ 0.0629297}{425.8\ x\ 0{,}0768}\ \text{x } 100 = 3{,}57\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.56303\ x\ 0.0629297}{422.3\ x\ 0{,}0768} \text{ x } 100 = 3{,}6\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{19.1738\ x\ 0.060361}{420.6\ x\ 0{,}0768} \text{ x } 100 = 3{,}59\ \%$$

Module 3

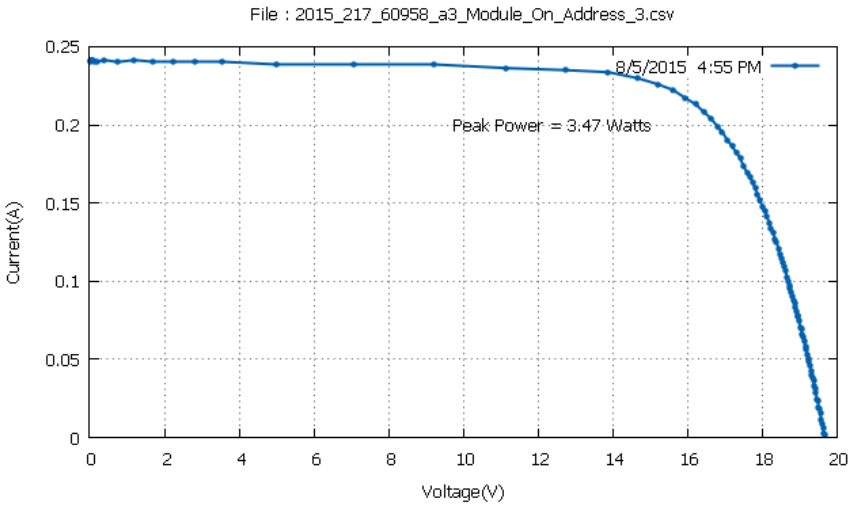
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

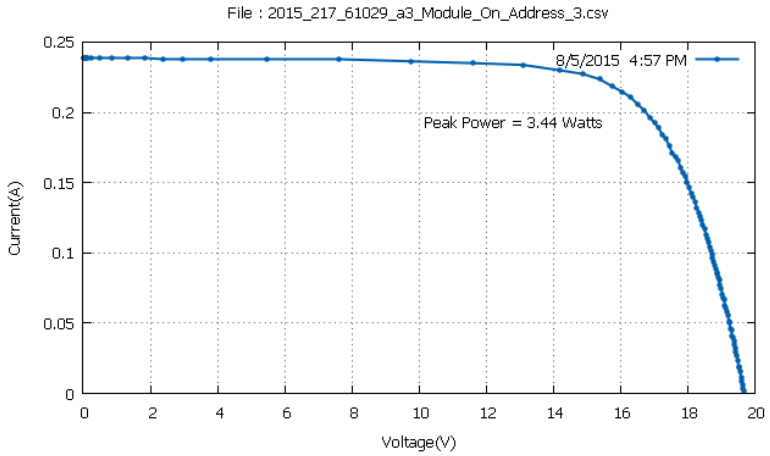
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:55	41,1	11,2
16:57	40,9	11,15
17:00	40,4	11,01
17:01	40,3	11
17:04	40	10,88
17:05	39,7	10,86

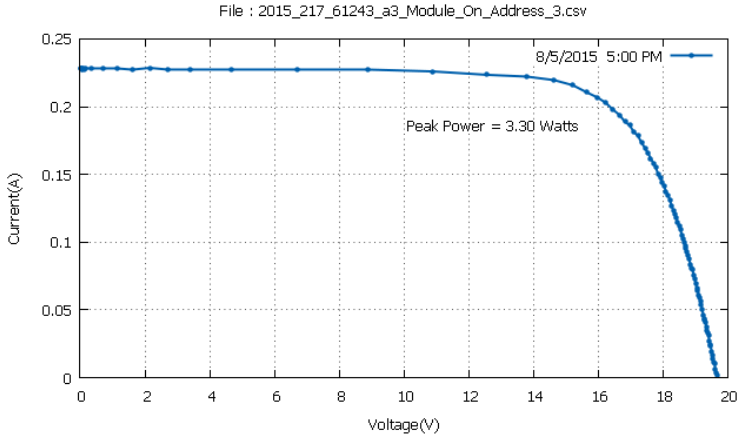
Mean Temperature: 40,4 ºC



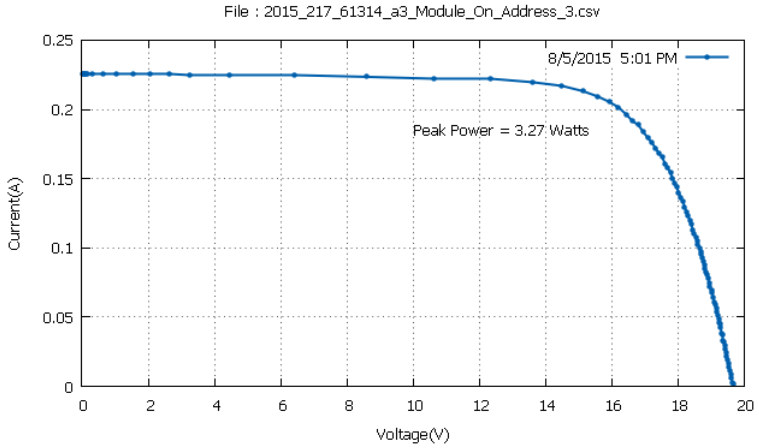
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.617376\ x\ 0.22218}{436.8\ x\ 0{,}0709}$ x 100 = 11,2 %



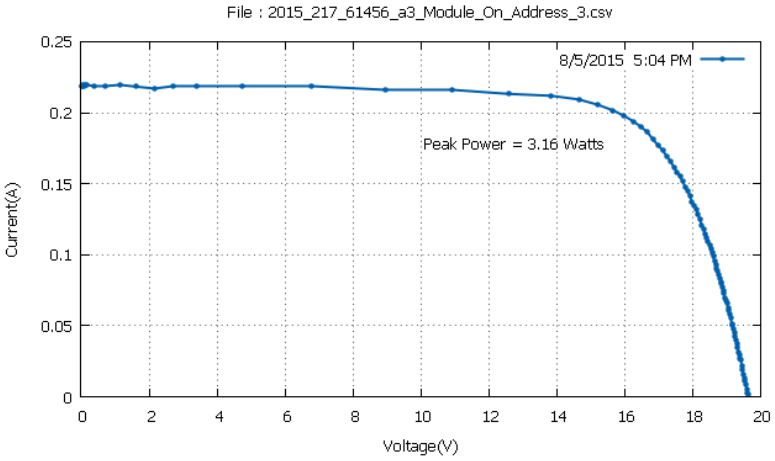
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{16.058065\ x\ 0.214475}{435.1\ x\ 0{,}0709} \text{ x } 100 = 11{,}15\ \%$$



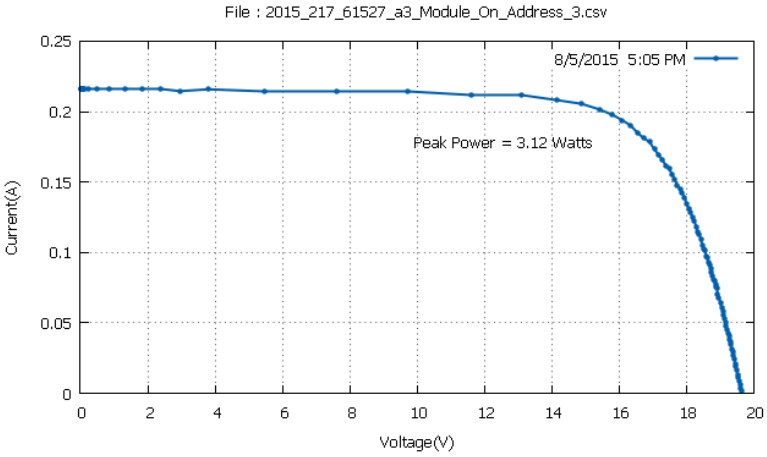
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.973\ x\ 0.206769}{422.5\ x\ 0{,}0709} \text{ x } 100 = 11{,}01\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9189\ x\ 0.205485}{419.6\ x\ 0{,}0709} \text{ x } 100 = 11\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.9807\ x\ 0.1977793}{409.6\ x\ 0{,}0709} \text{ x } 100 = 10{,}88\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.79519\ x\ 0.1977793}{405.1\ x\ 0{,}0709} \text{ x } 100 = 10{,}86\ \%$$

Module 5

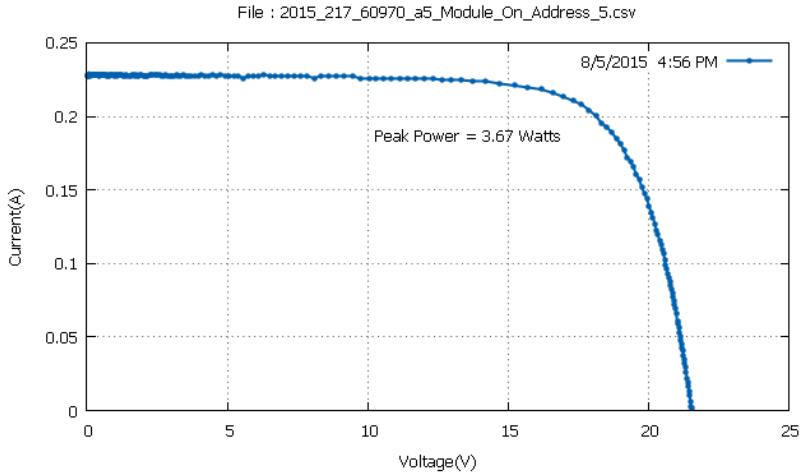
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

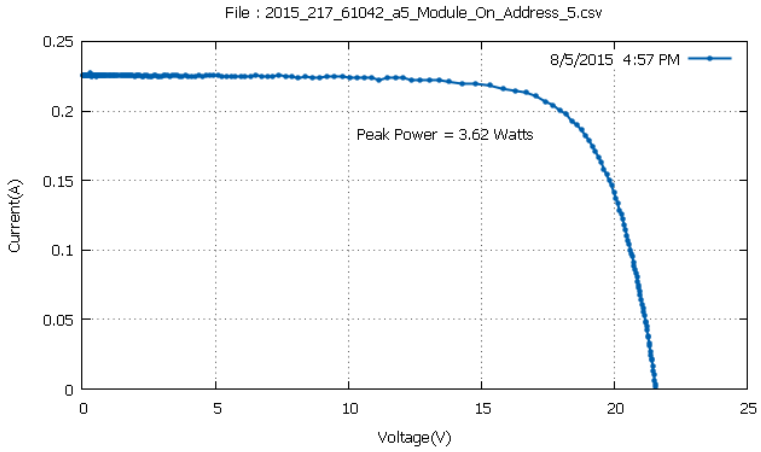
Speed 2

Time PM	Panel Temperature ºC	Efficiency %
16:56	43,2	11,1
16:57	42,9	11,03
16:59	42,4	10,94
17:00	42,3	10,91
17:02	41,9	10,87
17:04	41,6	10,8

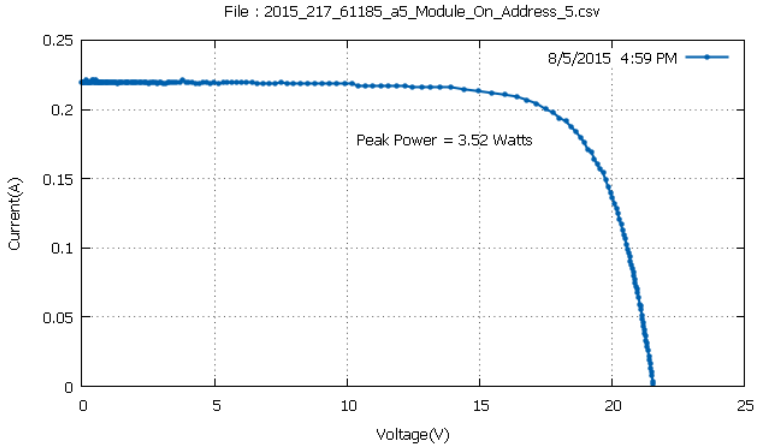
Mean Temperature: 42,38 ºC



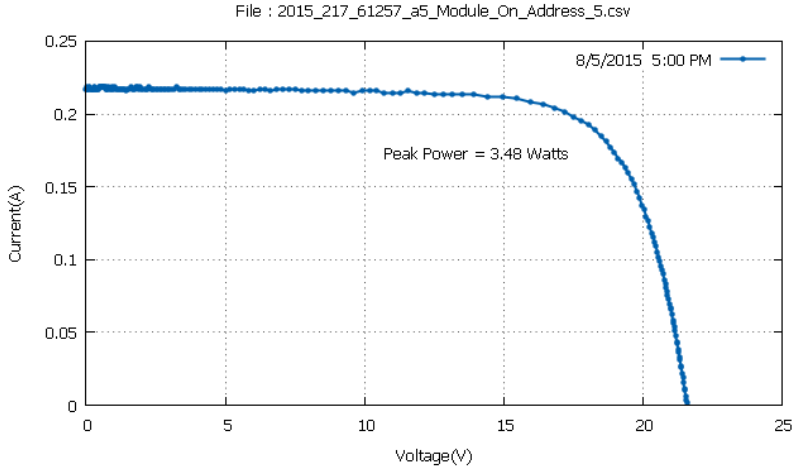
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6198\ x\ 0.20805}{437.3\ x\ 0{,}0756} \text{ x } 100 = 11{,}1\ \%$$



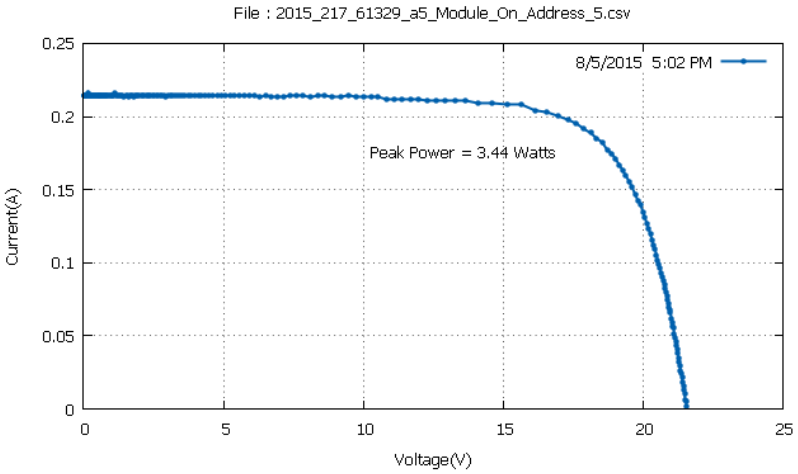
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.704847\ x\ 0.2042007}{433.9\ x\ 0{,}0756} \text{ x } 100 = 11{,}03\ \%$$



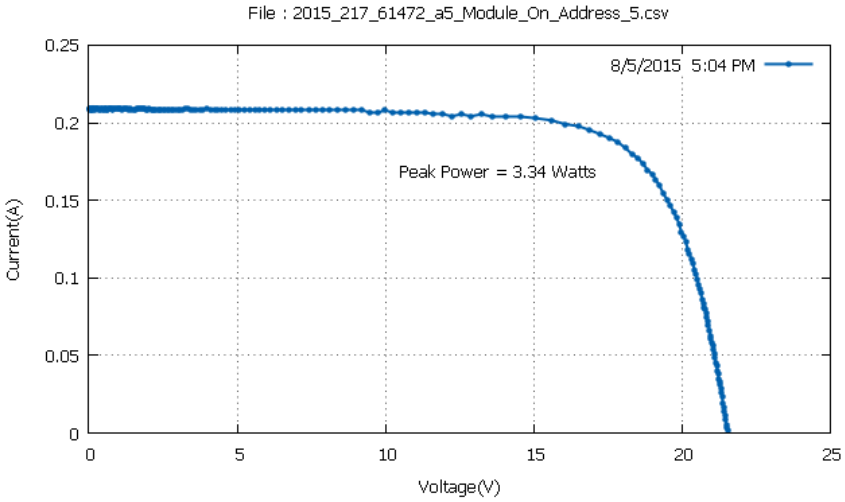
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.774\ x\ 0.1977793}{425.4\ x\ 0{,}0756} \text{ x } 100 = 10{,}94\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.0604\ x\ 0.192642}{421.8\ x\ 0{,}0756} \text{ x } 100 = 10{,}91\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6198\ x\ 0.1952107}{418.4\ x\ 0{,}0756} \text{ x } 100 = 10{,}87\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.8362\ x\ 0.187505}{408.9\ x\ 0{,}0756} \text{ x } 100 = 10{,}8\ \%$$

Module 4

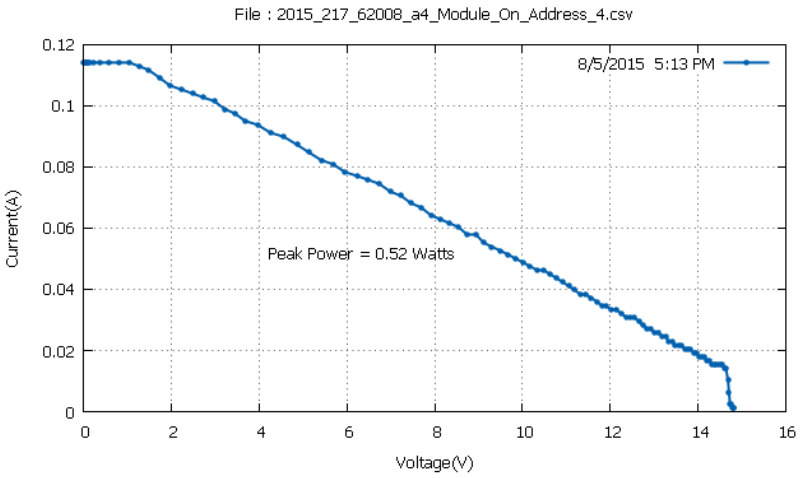
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

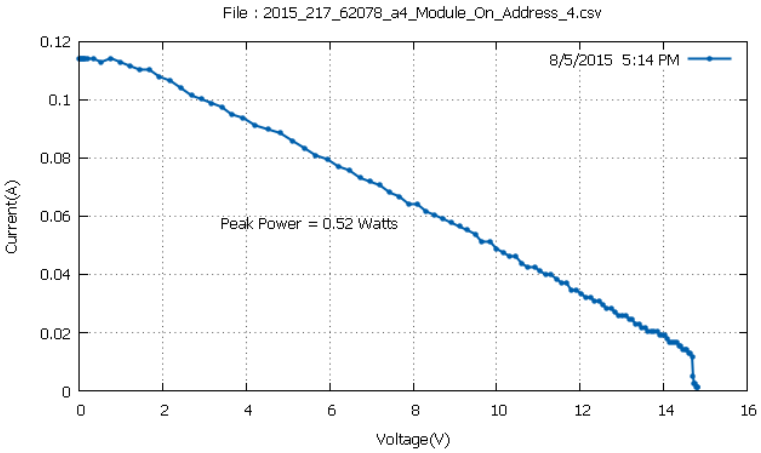
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:13	38,6	2,05
17:14	38,3	2,07
17:16	38,5	2,08
17:17	38	2,05
17:18	37,9	2,06
17:21	37,7	2,01

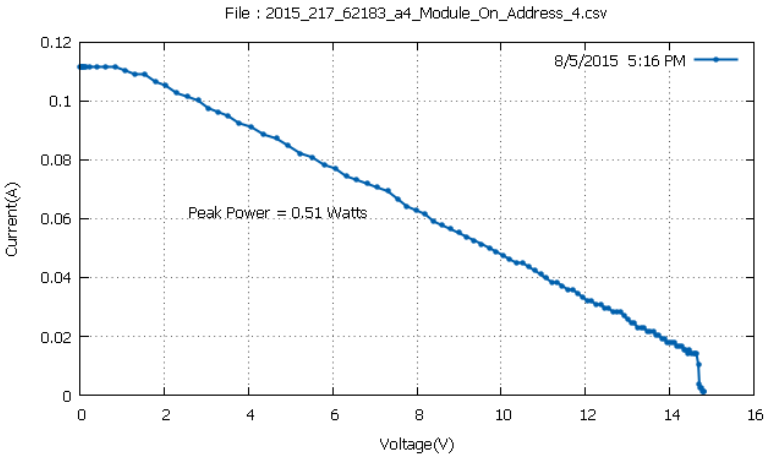
Mean Temperature: 38,16 ºC



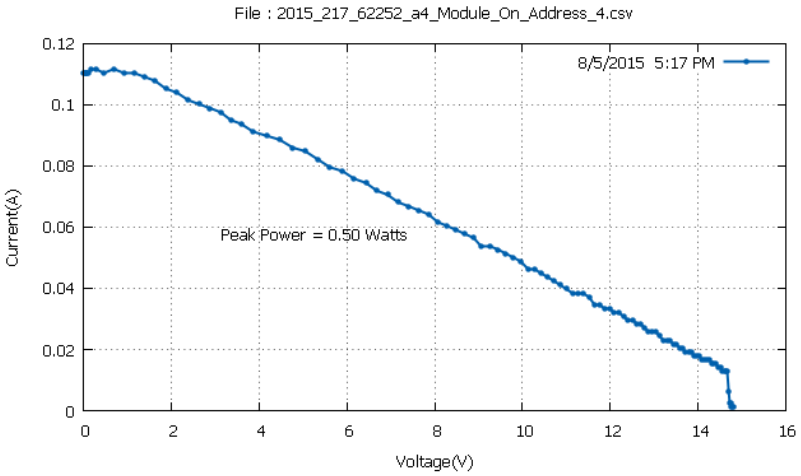
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.17979\ x\ 0.064214}{377.2\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



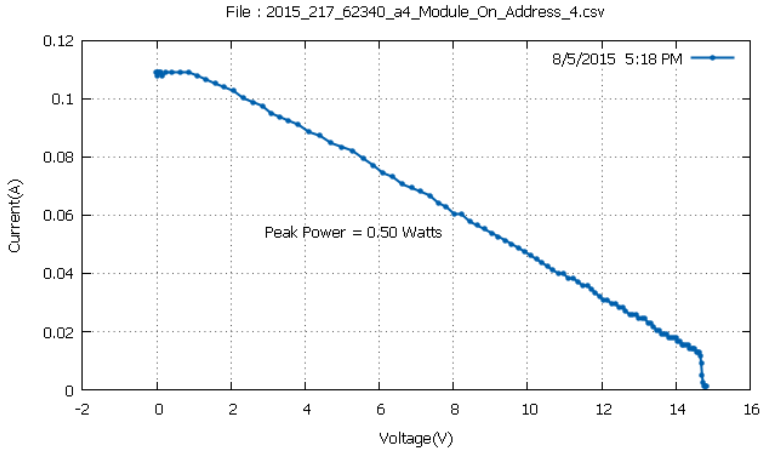
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.30349\ x\ 0.0629297}{372.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}07\ \%$$



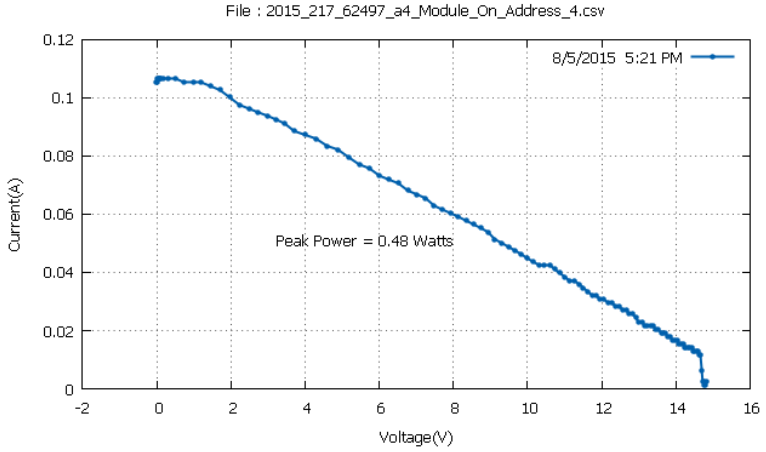
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.8086\ x\ 0.065498}{365.3\ x\ 0{,}0671} \text{ x } 100 = 2{,}08\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{7.855076\ x\ 0.06421}{362.9\ x\ 0{,}0671} \text{ x } 100 = 2{,}05\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.697796\ x\ 0.0577926}{360.7\ x\ 0{,}0671} \text{ x } 100 = 2{,}06\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{8.744184\ x\ 0.055224}{354.8\ x\ 0{,}0671} \text{ x } 100 = 2{,}01\ \%$$

Module 8

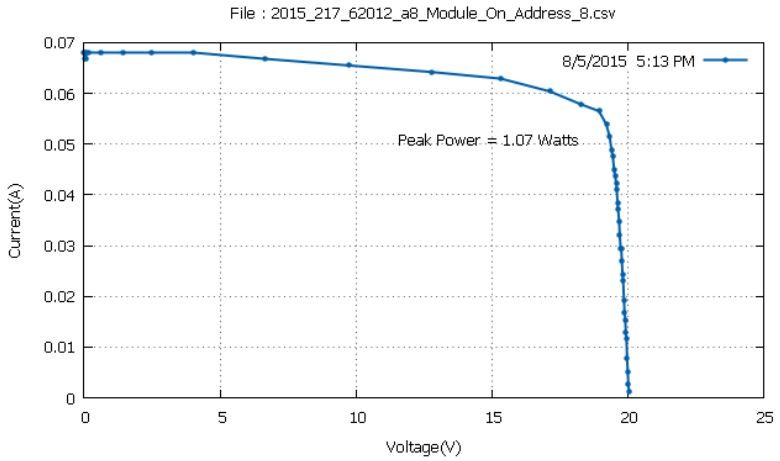
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

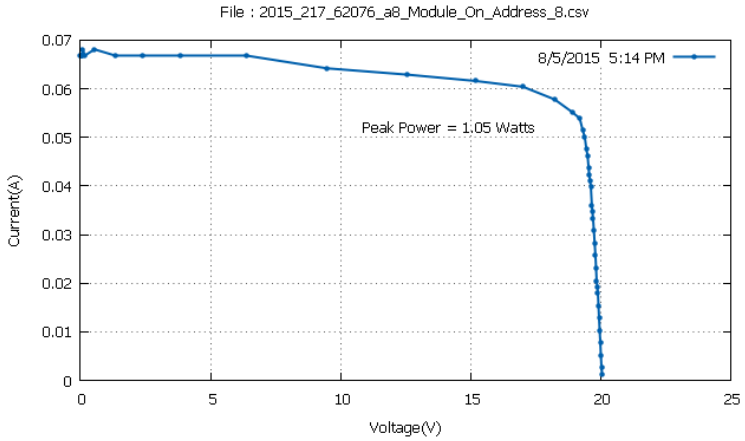
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:13	39,3	3,71
17:14	39,2	3,67
17:16	38,9	3,71
17:17	39	3,72
17:18	38,9	3,75
17:22	38,1	3,75

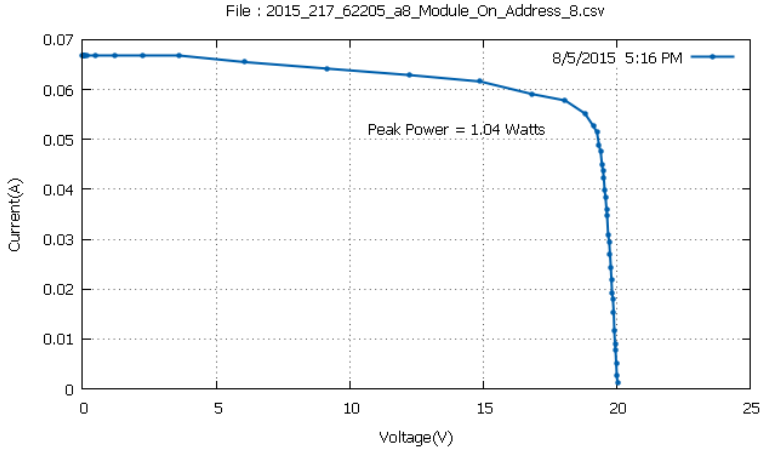
Mean Temperature: 38,9 ºC



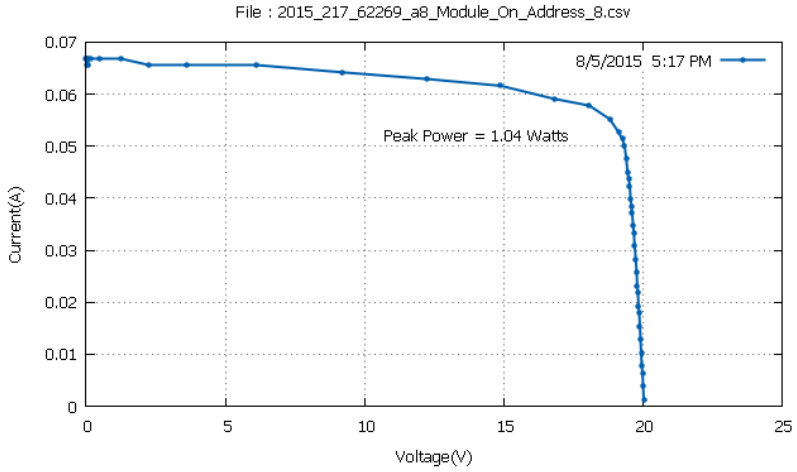
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.941867\ x\ 0.05650838}{375.3\ x\ 0{,}0768} \text{ x } 100 = 3{,}71\ \%$$



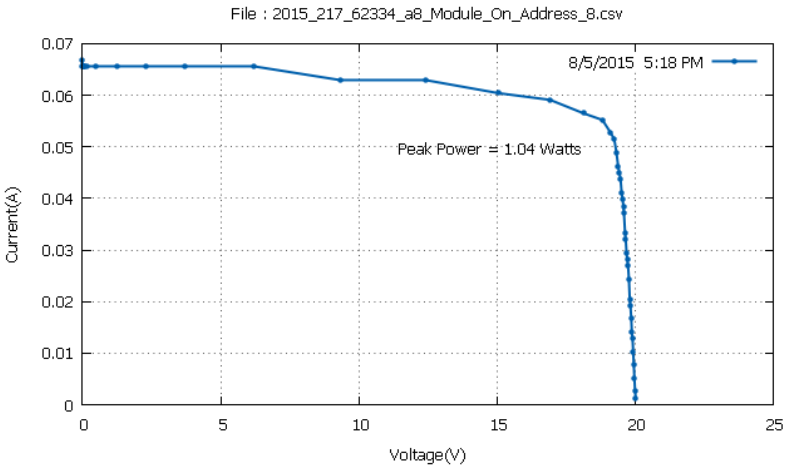
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.23058\ x\ 0.057792667}{372.4\ x\ 0{,}0768} \text{ x } 100 = 3{,}67\ \%$$



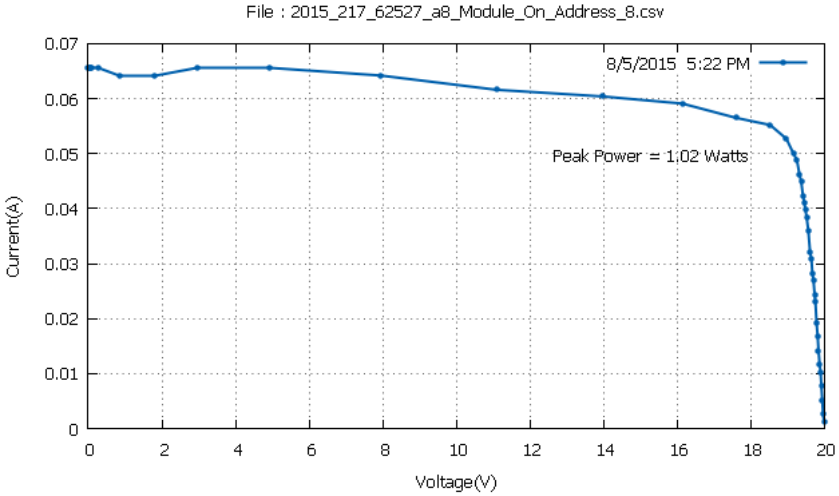
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.07595\ x\ 0.0577926}{364.3\ x\ 0{,}0768} \text{ x } 100 = 3{,}71\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.075952\ x\ 0.0577926}{363.8\ x\ 0{,}0768} \text{ x } 100 = 3{,}72\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.81816\ x\ 0.0552241}{361.2\ x\ 0{,}0768} \text{ x } 100 = 3{,}75\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{18.524372\ x\ 0.0552241}{354.1\ x\ 0{,}0768} \text{ x } 100 = 3{,}75\ \%$$

Module 3

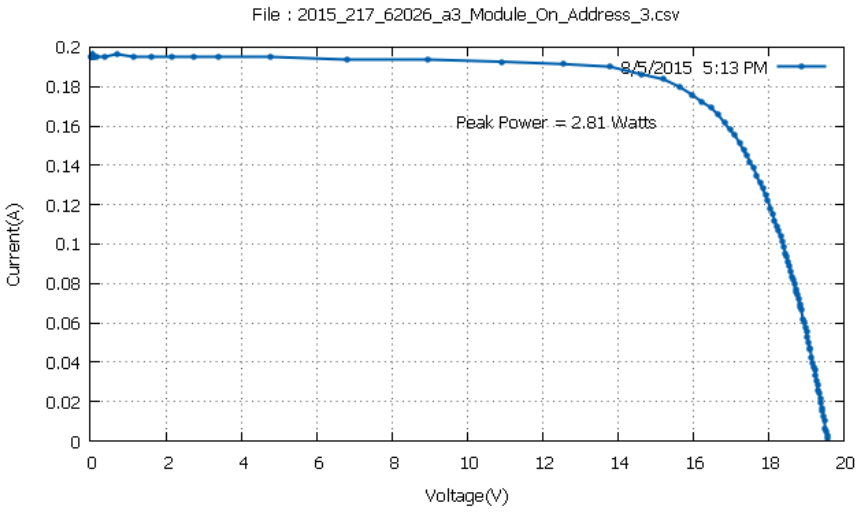
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

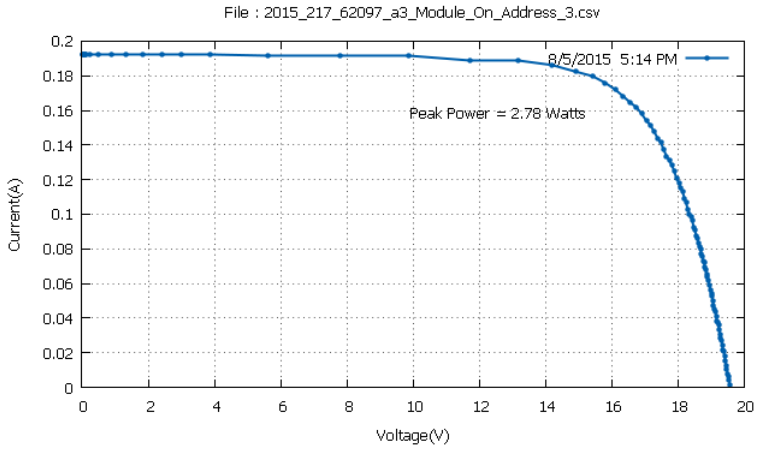
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:13	38,8	10,57
17:14	38,6	10,58
17:16	38,4	10,52
17:18	38,2	10,41
17:19	38	10,28
17:20	37,9	10,17

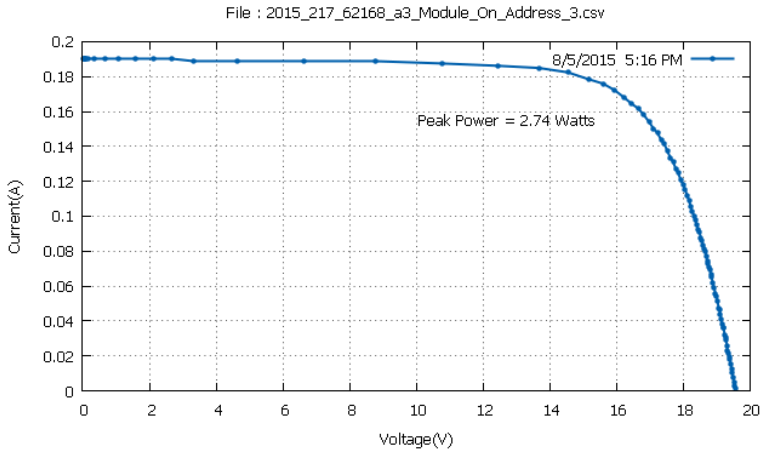
Mean Temperature: 38,31 ºC



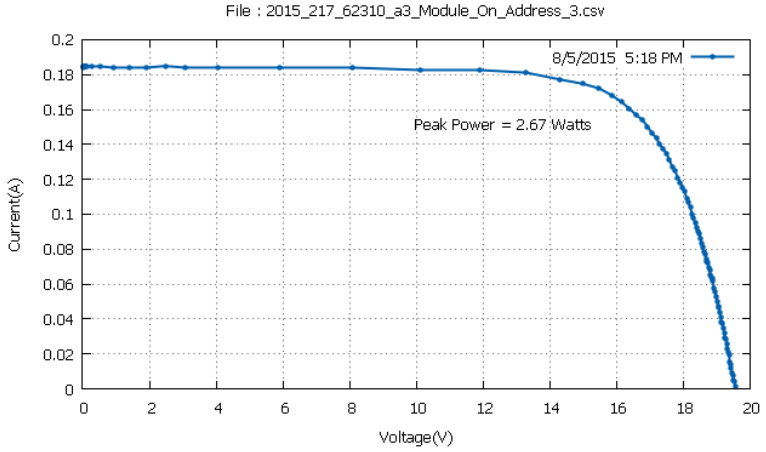
n= $\frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.64057\ x\ 0.179799}{374.8\ x\ 0{,}0709}$ x 100 = 10,57 %



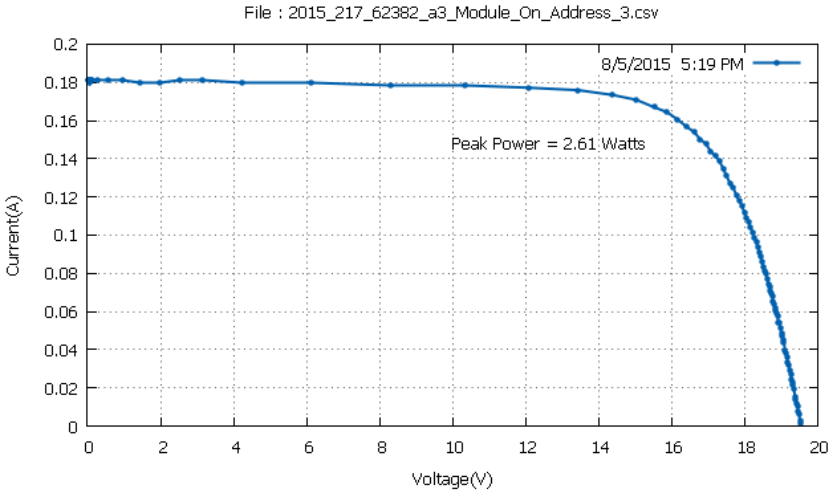
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.80292\ x\ 0.17594656}{370.5\ x\ 0{,}0709} \text{ x } 100 = 10{,}58\ \%$$



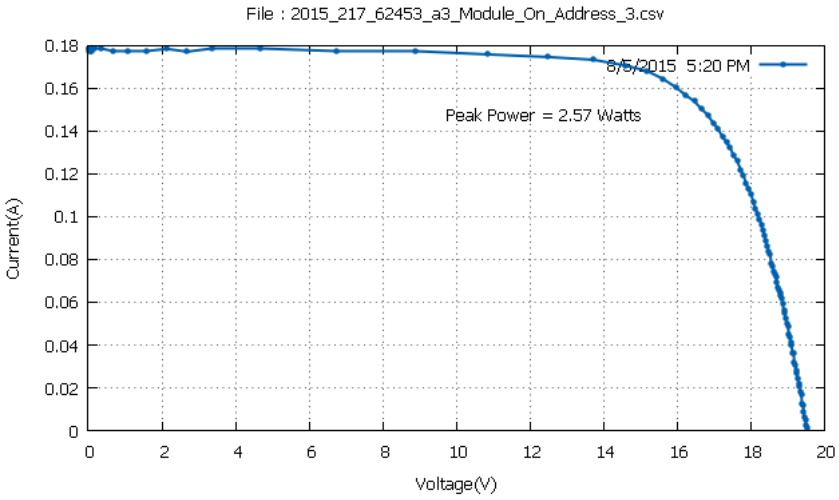
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.60191\ x\ 0.1759465}{367.2\ x\ 0{,}0709} \text{ x } 100 = 10{,}52\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.8493\ x\ 0.16824087}{361.7\ x\ 0{,}0709} \text{ x } 100 = 10{,}41\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.87251\ x\ 0.164388}{357.9\ x\ 0{,}0709} \text{ x } 100 = 10{,}28\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{15.6173\ x\ 0.164388}{356.2\ x\ 0{,}0709} \text{ x } 100 = 10{,}17\ \%$$

Module 5

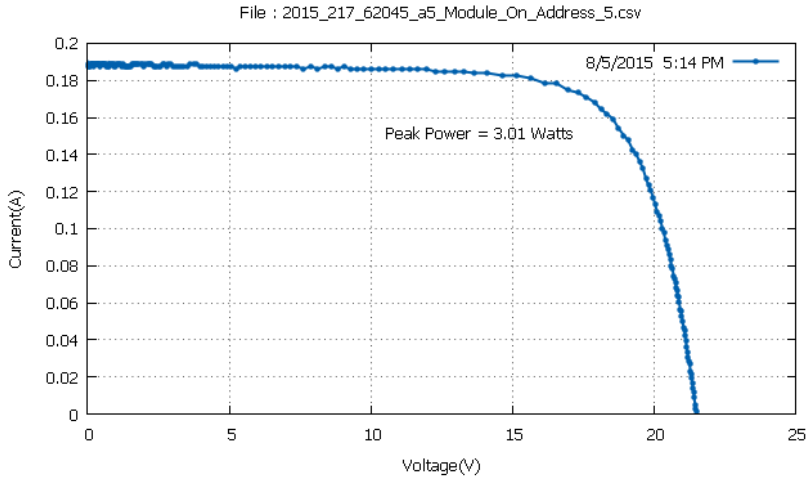
Date: 5/8/2015 – Afternoon Measurement

Temperature Ambient: 39 ºC

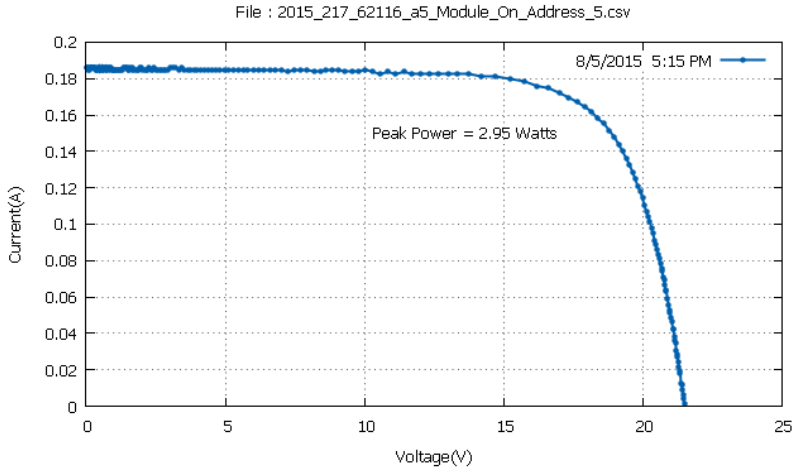
Speed 3

Time PM	Panel Temperature ºC	Efficiency %
17:14	40,4	10,62
17:15	40,3	10,55
17:16	40,1	10,59
17:18	39,6	10,37
17:20	39,5	10,29
17:21	39,5	10,27

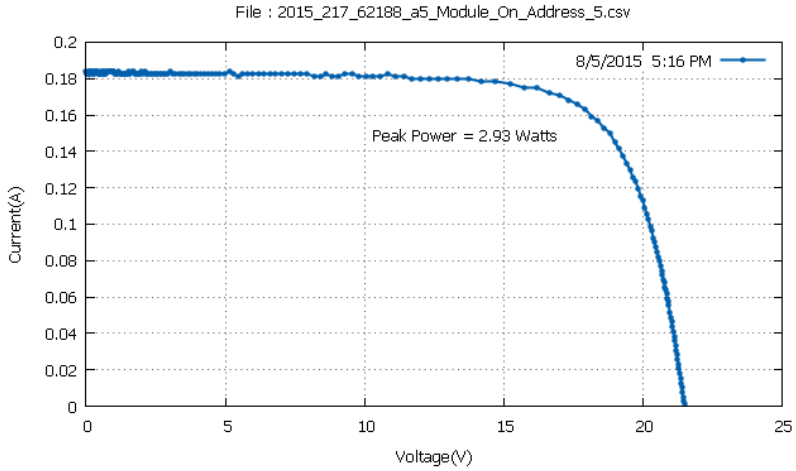
Mean Temperature: 39,9 ºC



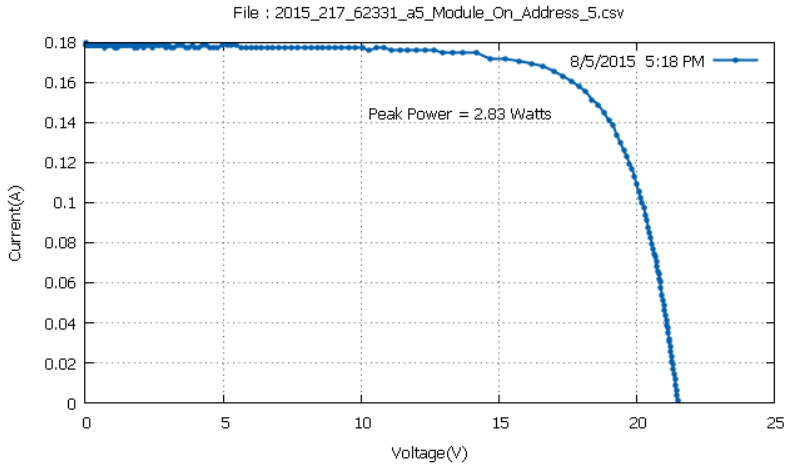
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.898132\ x\ 0.16824}{374.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}62\ \%$$



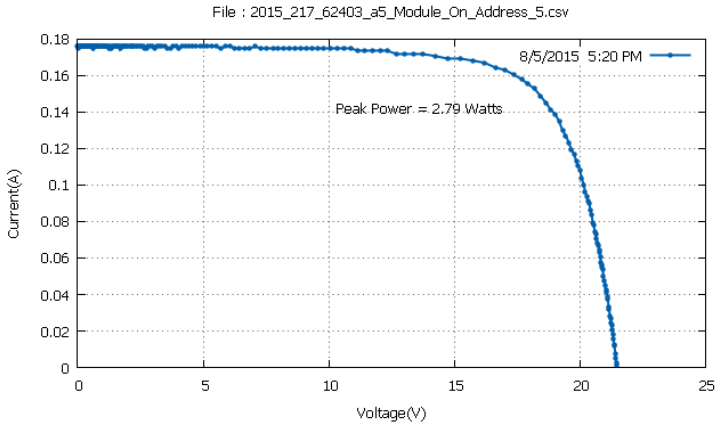
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.65072\ x\ 0.1669565}{369.6\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}55\ \%$$



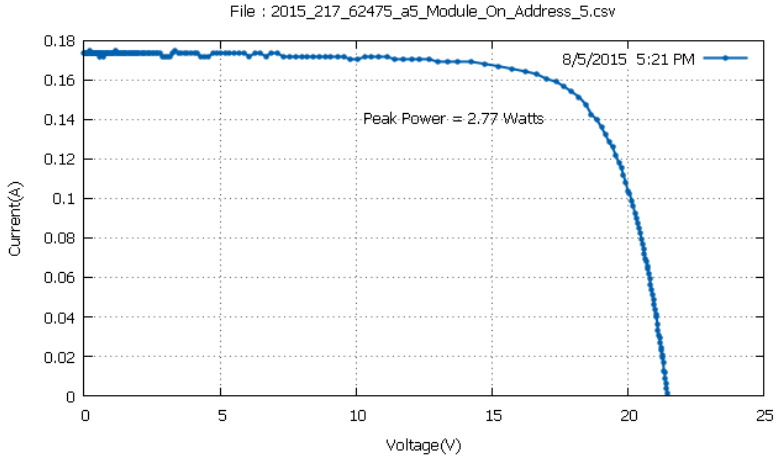
$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.65845\ x\ 0.1656723}{366\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}59\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.65845\ x\ 0.160535}{361\ x\ 0{,}0756}\ \text{x}\ 100 = 10{,}37\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.673921\ x\ 0.1579666}{358.6\ x\ 0{,}0756} \text{ x } 100 = 10{,}29\ \%$$



$$n = \frac{Pout}{Pin} = \frac{Vmpp\ x\ Impp}{E\ x\ A} = \frac{17.6661\ x\ 0.156682}{356.5\ x\ 0{,}0756} \text{ x } 100 = 10{,}27\ \%$$