Sun2Earth Solar

POWER FROM SUN RAYS

MNRE CERTIFICATE BELOW MODULES: 37 WATT, 40 WATT, 50 WATT, 75 WATT, 100 WATT, 300 WATT

NISE

National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)
19 k.m Stone, Gurgaon-Faridabad Road, Gwal Pahri, Gurgaon (Haryana) -122003

File No: 263/2015/ /CSC/NISE

Dated: 30/03/2015

To,

M/S. SUN 2. EARTH SOLAR.
No. 1. PART. I, BHAIEWALA, IND,
EAST. NEAR. NAVL. HIRA. BAZAR B/S. SARDAR. SMRTI.
BHAWAN. VARACHHA. ROAD. SURAT. 395008

Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')

Dear Sir,

Please refer to your letter No, /Order Form No. / Dated 02/03/15. In this connection, I am directed to enclose herewith the **Test Report No :** 205/262/NISE/205/101 dated 30/3/15 in respect of your submitted samples in original, for ready reference and record.

2. Discrepancies, if any observed, in respect of any of the entries contained in the above report should be brought to the notice of this office **within 30 days from the date of issue of this letter,** failing which it will be presumed that the entries therein are in order and no further correspondence will be entertained thereafter on this particular report.
3. We would like to solicit your views and therefore enclosing a Feed Back Form with a request to be filled up by you and then send as soon as possible. Your suggestions are valuable for us to make our further improvements and take corrective action in improving our quality of service.
4. Original Invoice No. NISE 283/2014-15 dated 02/03/15 for the testing fees along with service tax received by us are enclosed along with this letter for your records.
5. Further you are also requested to **collect your samples at your cost within 30 days,** from the date of issue of this letter failing which NISE will dispose of the sample in best possible manner and NISE will not be responsible in any manner for this sample.
6. Please note that no duplicate invoice or test report will be issued by NISE under any circumstances.

Kindly acknowledge the receipt of this letter along with original test report and original invoice.

Yours faithfully,

30/3/2015

CA Aarchana Yadav
(In-Charge, Customer Service Cell)
(National Institute of Solar Energy)

Encl:

1. Test Report - Total page 10
2. Original Invoice for Test Report
3. Feedback Form

Copy forwarded for information to:

1. PA to Director General-NISE
2. Guard File
3. Office Copy

NATIONAL INSTITUTE OF SOLAR ENERGY

(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)

(An autonomous institute of Ministry of New & Renewable Energy, Government of India)

Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Test Report No.205/263/NISE/2015-Module	Date: 26 / 03 / 2015	Page 1of 4

A. SCOPE

1.	Service Request No.	205/0315
2.	Requested By (Name & Address of the organization)	M/S SUN 2 EARTH SOLAR NO.1, PART 1, BHAJIWALA IND. EAST, NEAR MINI HIRA BAZAR, B/S SARDAR SMURTI BHAVAN, VARACHHA ROAD, SURAT- 395008.
3.	Details of the test item	
	a. Nomenclature	PV Module
	b. Manufactured By	M/S. SUN 2 EARTH SOLAR,SURAT.
	c. Model / Type No.	Ref. page no. 02&03
	d. Serial No.	Ref. page no. 02&03
4.	Date of Submission of Samples	03/03/2015
5.	Condition of samples on receipt	Good
6.	Date of Completion of Tests	24/03/2015
7.	Applicable test specifications	Customer's
8.	Test category	STC Performance Test as per IEC-60904-1

B.MAJOR EQUIPMENTS USED

S.N.	NOMENCLATURE	MAKE	MODEL	CAL VALIDITY
1.	SUN SIMULATOR	ENDEAS	QUICKSUN 700A	May 2015

NOTE:

1. This test report refers only to the particular items submitted for testing as per specifications/requirements stipulated by the customer.
2. The results reported in the Test Report are valid at the time of and under the stipulated conditions of measurements.
3. The test report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director General, National Institute of Solar Energy.
4. The client is requested to collect the tested sample back within 30 days from the date of issue of the report

National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON

Gopal Kumar

26/03/2015

NATIONAL INSTITUTE OF SOLAR ENERGY

(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)

(An autonomous institute of Ministry of New & Renewable Energy, Government of India)

Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Test Report No. 205/263/NISE/2015-Module	Date: 26 / 03 / 2015	Page 2 of 4

STC PERFORMANCE AFTER STABILISATIONOF PV MODULES

(Please ref. Annexure A1to A6for modules I-V curve details)

1. Serial No. : S2ES150200223
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/ S2E037
   Cell Area : 65.52Sq.cm.
   Module Area : 3510Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.61	2.361	0.759	18.38	2.203	17.2	11.5	40.5	37W	**PASS**

2. Serial No. : S2ER150200220
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/S2E040
   Cell Area : 74.88 Sq.cm.
   Module Area : 3523.50Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.60	2.648	0.751	18.25	2.461	16.7	12.7	44.9	40W	**PASS**

3. Serial No. : S2EP150200187
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/S2E050
   Cell Area : 93.60 Sq.cm.
   Module Area : 4252.50Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.54	3.323	0.758	18.33	3.099	16.9	13.4	56.8	50W	**PASS**

4. Serial No. : S2EN150200227
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/S2E075
   Cell Area : 124.80Sq.cm.
   Module Area : 6075Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.60	4.430	0.760	18.21	4.177	16.9	12.5	76.1	75W	**PASS**

National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON

Gopal Kumar

26/03/2015

NATIONAL INSTITUTE OF SOLAR ENERGY
(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)
(An autonomous institute of Ministry of New & Renewable Energy, Government of India)
Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.
Ph. 0124-2579251 (CSC), Fax: 0124-2579207

5. Serial No. : S2EL150200208
Make : **SUN 2 EARTH SOLAR**
Model No. : Multi Crystalline Si/S2E100
Cell Area : 177.845q.cm.
Module Area : 7774 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.37	6.30	0.728	17.55	5.84	16.0	13.2	102.6	100W	**PASS**

6. Serial No. : S2EA150200228
Make : **SUN 2 EARTH SOLAR**
Model No. : Multi Crystalline Si/ S2E300
Cell Area : 243.36 Sq.cm.
Module Area : 19266 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
45.22	9.12	0.730	35.57	8.46	17.2	15.6	301	300W	**PASS**

Insulation resistance test

Sr. No	Module Sr. No	Module Model No.	DC voltage applied (V)	Insulation Resistance GΩ	Leakage Current nA	Remarks
1.	S2ES150200223	S2E037	**1000**	**130**	**8.12**	**No breakdown at 3000 V**
2.	S2ER150200220	S2E040	**1000**	**76.3**	**13.8**	**No breakdown at 3000**
3.	S2EP150200187	S2E050	**1000**	**63.7**	**16.6**	**No breakdown at 3000**
4.	S2EN150200227	S2E075	**1000**	**51.9**	**20.4**	**No breakdown at 3000**
5.	S2EL150200208	S2E100	**1000**	**5.07**	**208**	**No breakdown at 3000**

National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON

Gopal Kumar
26/03/2015

NATIONAL INSTITUTE OF SOLAR ENERGY
(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)
(An autonomous institute of Ministry of New & Renewable Energy, Government of India)
Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.
Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Measurement of temperature coefficients

Sr. No	Module Sr. No	Module Model No.	Temperature coefficient for current %A/°C	Temperature coefficient for voltage% V/°C	Temperature Coefficient for Power% W/°C
1.	S2ES150200223	S2E037	**0.0448**	**-0.3297**	**-0.4395**
2.	S2ER150200220	S2E040	**0.0411**	**-0.3454**	**-0.471**
3.	S2EP150200187	S2E050	**0.042522**	**-0.328**	**-0.4389**
4.	S2EN150200227	S2E075	**0.0494**	**-0.329**	**-0.445**
5.	S2EL150200208	S2E100	**0.0536**	**-0.3372**	**-0.4788**
6.	S2EA150200228	S2E300	**0.0601**	**-0.304**	**-0.439**

NOTE: The qualification test certificate as per IEC 61215 has not been submitted by the company. It is a must to have the IEC 61215 qualification test certificate for the module before their deployment in the field .

Tested By Gopal Kumar
Gopal Kumar
Research Associate
Date 26/03/2015

Authorized Signatory Rajesh Kumar
Dr. Rajesh Kumar
Scientist-E
Date 27/03/2015

Issued By
Date 30/03/2015

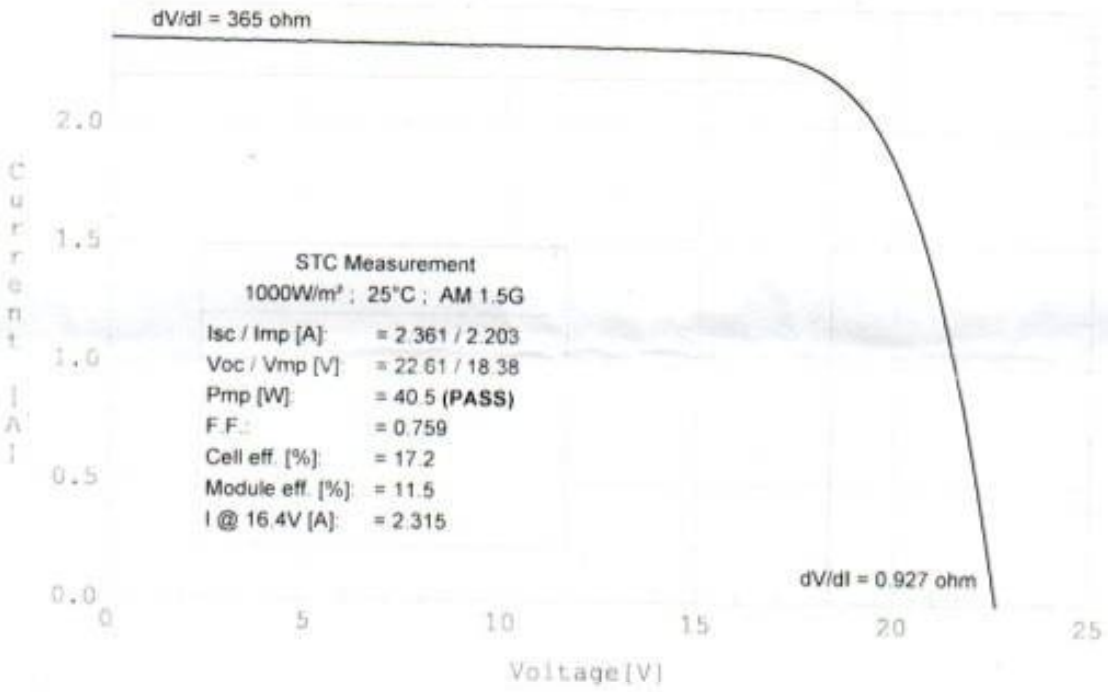
A1

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E037
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2ES150200223
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance (mOhm/cell):	8.80
Cell area (cm²):	65.52	Module area (m²):	0.351000
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.7	Sensor temp. (°C):	25.4
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	2.361	Imp (A):	2.203
Voc (V):	22.61	Vmp (V):	18.38
Pmp (W):	40.5	F.F.:	0.759
Cell eff. (%):	17.2	Module eff. (%):	11.5
Est. shunt resistance (ohm):	365	Est. series resisrance (mohm):	927

Notes:

National Institute of Solar Energy
NISE
GURGAON

Vinay Kumar Rai

16/03/2015

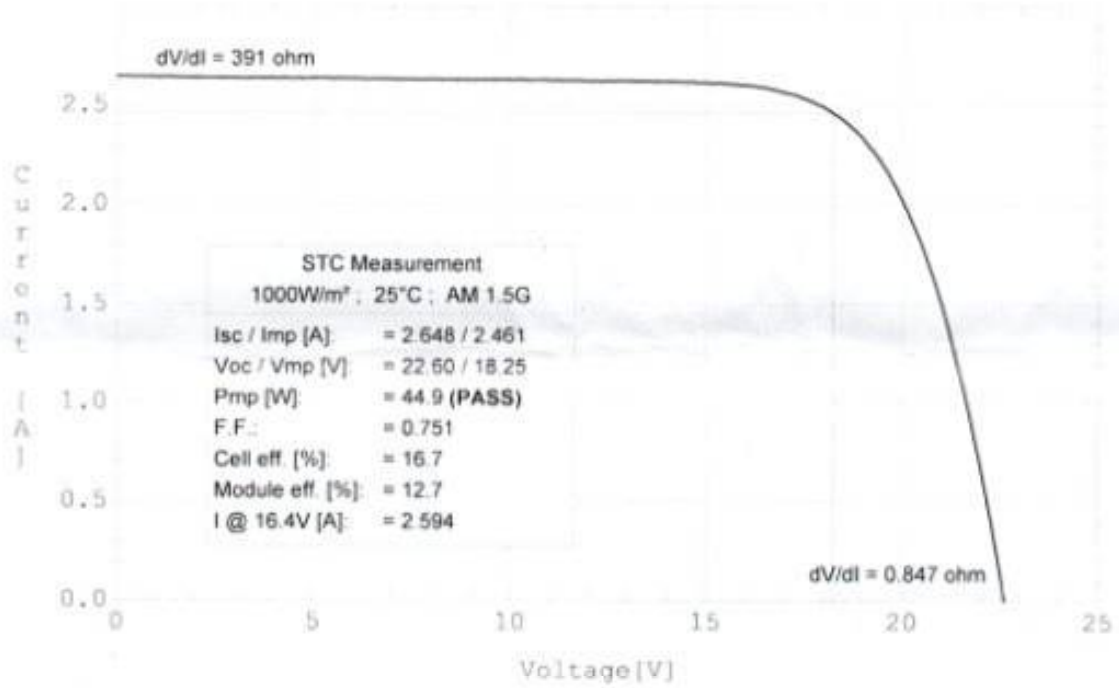
A2

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E040
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2ER150200220
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	74.88	Module area (m²):	0.352350
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.7	Sensor temp. (°C):	25.6
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	2.648	Imp (A):	2.461
Voc (V):	22.60	Vmp (V):	18.25
Pmp (W):	44.9	F.F.:	0.751
Cell eff. (%):	16.7	Module eff. (%):	12.7
Est. shunt resistance: (ohm)	391	Est. series resisrance: (mohm)	847

Notes:

National Institute of Solar Energy
NISE
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Vinay Kumar Rai

Rai
16/03/2015

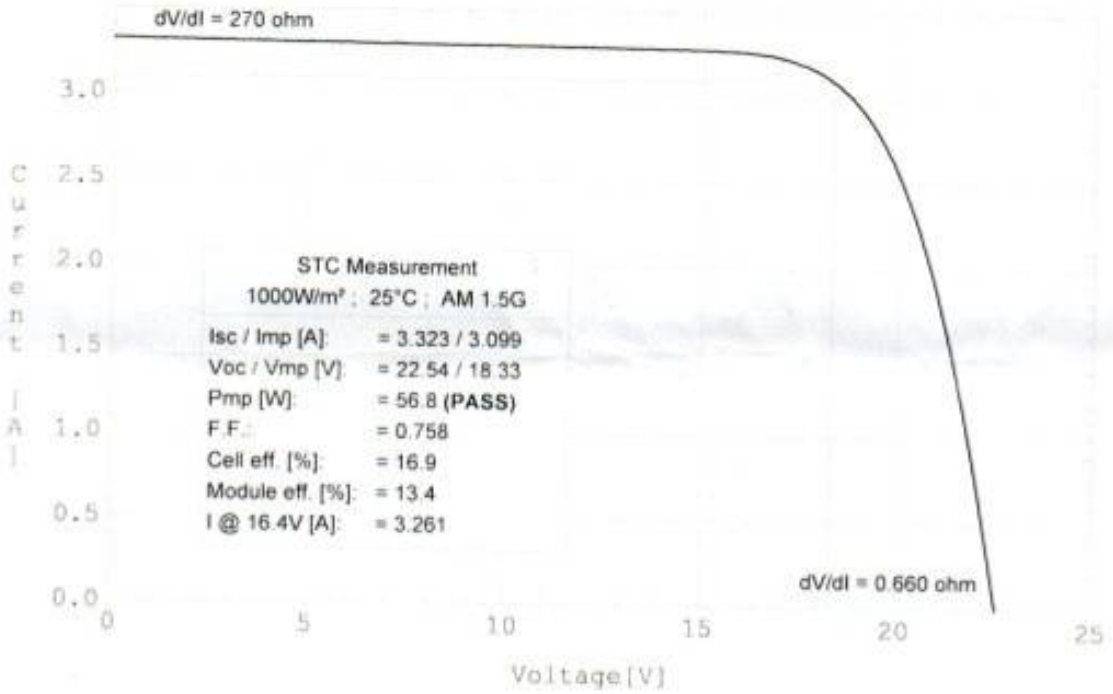
A3

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E050
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EP150200187
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	93.60	Module area (m²):	0.425250
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.4	Sensor temp. (°C):	25.5
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	3.323	Imp (A):	3.099
Voc (V):	22.54	Vmp (V):	18.33
Pmp (W):	56.8	F.F.:	0.758
Cell eff. (%):	16.9	Module eff. (%):	13.4
Est. shunt resistance (ohm)	270	Est. series resisrance (mohm)	660

Notes:

National Institute of Solar Energy
NISE
Ministry of New and Renewable Energy
GURGAON

Vinay Kumar Rai

Rai
16/03/2015

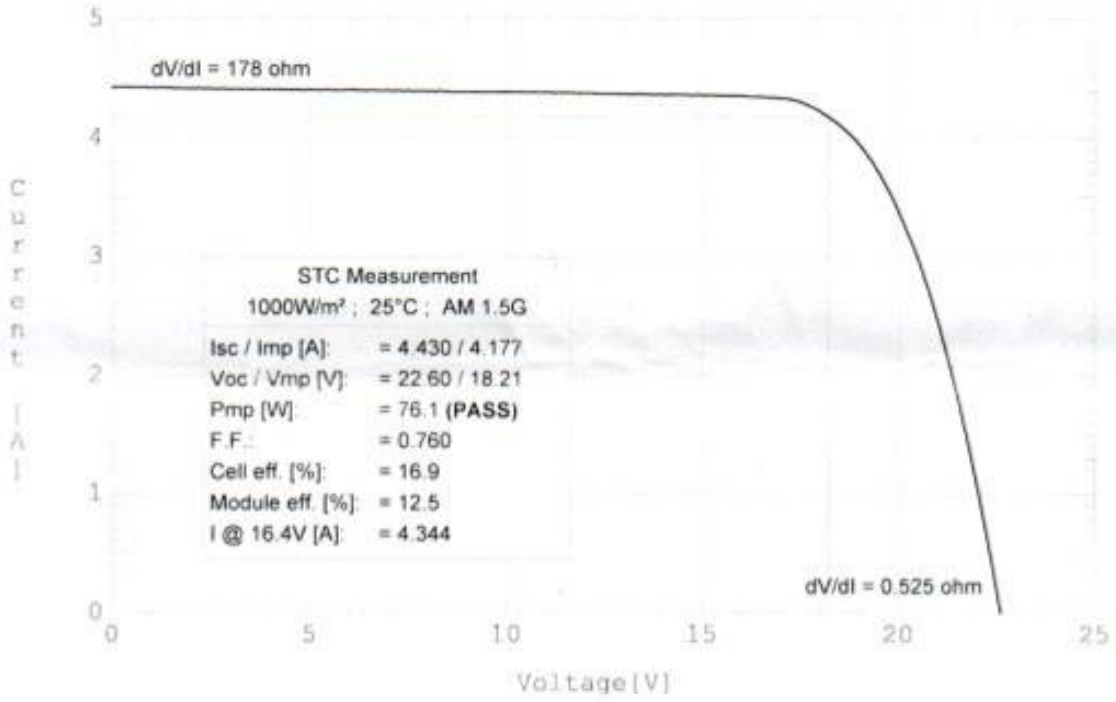
A4

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E075
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EN150200227
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	124.80	Module area (m²):	0.607500
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.2	Sensor temp. (°C):	25.3
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	4.430	Imp (A):	4.177
Voc (V):	22.60	Vmp (V):	18.21
Pmp (W):	76.1	F.F.:	0.760
Cell eff. (%):	16.9	Module eff. (%):	12.5
Est. shunt resistance: (ohm)	178	Est. series resisrance: (mohm)	525

Notes:

National Institute of Solar Energy
NISE
Ministry of New and Renewable Energy
GURGAON

Vinay Kumar Rau

16/03/2015

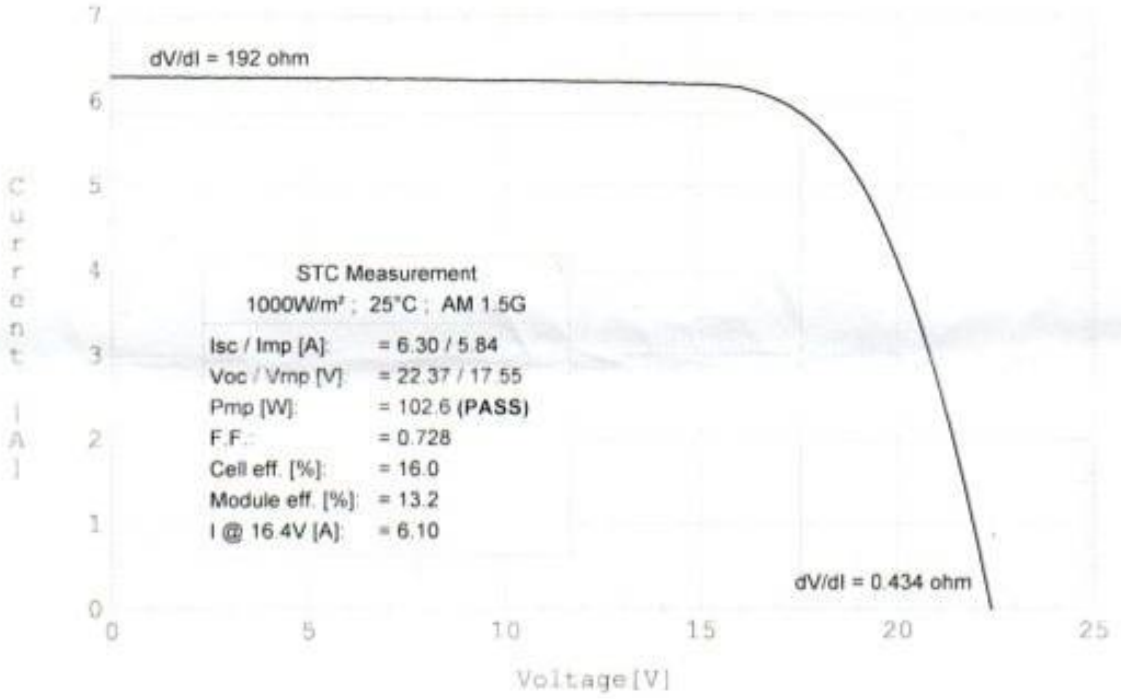
A5

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E100
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EL150200208
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance (mOhm/cell):	8.80
Cell area (cm²):	177.84	Module area (m²):	0.777400
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.0	Sensor temp. (°C):	25.2
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	6.30	Imp (A):	5.84
Voc (V):	22.37	Vmp (V):	17.55
Pmp (W):	102.6	F.F.:	0.728
Cell eff. (%):	16.0	Module eff. (%):	13.2
Est. shunt resistance (ohm):	192	Est. series resisrance (mohm):	434

Notes:

National Institute of Solar Energy
NISE
Ministry of New and Renewable Energy
GURGAON

Vinay Kumar Rai

16/03/2015

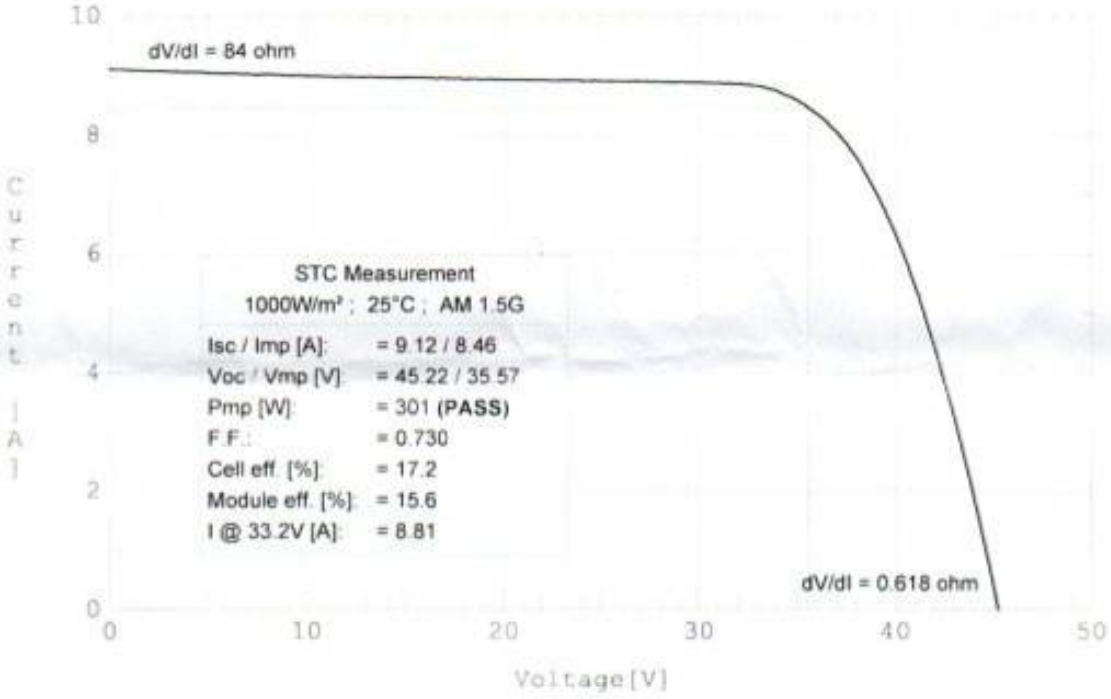
A6

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 205/0315

QuickSun Flash Tester
Version 5.18.19

Print Date: 13/03/2015



Module:	1	Operator:	JRS
Name:	Multi C-Si 205/0315	#:	S2E300
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EA150200228
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	243.36	Module area (m²)	1.926600
Cells parallel:	1	Cells serial:	72
Ambient temp. (°C):	24.9	Sensor temp. (°C):	25.1
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	9.12	Imp (A):	8.46
Voc (V):	45.22	Vmp (V):	35.57
Pmp (W):	301	F.F.:	0.730
Cell eff. (%):	17.2	Module eff. (%):	15.6
Est. shunt resistance: (ohm)	84	Est. series resisrance: (mohm)	618

Notes:

National Institute of Solar Energy ★ NISE Ministry of New and Renewable Energy ★ GURGAON

Vinay Kumar Rai

16/03/2015

Sun2Earth Solar

POWER FROM SUN RAYS

MNRE CERTIFICATE BELOW MODULES: 3 WATT, 5 WATT, 10 WATT, 200 WATT, 250 WATT

NISE

National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)
19 K.m Stone, Gurgaon-Faridabad Road, Gwal Phari, Gurgaon (Haryana)-122003

File No: 202/2015-16 /CSC/NISE Dated: 27/10/15

To,
M/s. Sun 2 Earth Solar
Shed No-1, Bhajiwala Ind. Est., beside Sardar Smruti Bhavan near Mini Hira Bazar, A.K. Road
Surat - 395008, Gujarat.

Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')

Dear Sir,

Please refer to your letter No,/Order Form No. 01 Dated 05/10/15. In this connection, I am directed to enclose herewith the Test Report No : 143/202/NISE/2015-16 - Mod. Dated 21/10/2015. In respect of your submitted samples in original, for ready reference and record.

2. Discrepancies, if any observed, in respect of any of the entries contained in the above report should be brought to the notice of this office within 30 days from the data of issue of this letter, falling which it will be presumed that the entries therein are in order and no further correspondence will be entertained thereafter on this particular report.

3. We would like to solicit your views and therefore enclosing a Feedback Form with a request to be filled up by you and then send as soon as possible. Your suggestions are valuable for us to make our further improvements and take corrective action in improving our quality of service.

4. Further, You are also requested to collect your samples at your cost within 30 days, from the date of issue of this letter falling which NISE will dispose of the sample in best possible manner and NISE will not be responsible in any manner for this sample.

Kindly acknowledge the receipt of this letter along with original test report and original Invoice.

Yours faithfully

29/10/2015

Dr Shweta Soam
(In-charge, Customer Service Cell)
(National Institute of Solar Energy)

Encl:
1. Test Report-Total Page 08
2. Feedback Form

Copy forwarded for Information to:
1. PA to Director General-NISE
2. Guard File
3. Office Copy

NISE
National Institute of Solar Energy

Certificate No. : T-1848

NATIONAL INSTITUTE OF SOLAR ENERGY

(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)

(An autonomous institute of Ministry of New & Renewable Energy, Government of India)

Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Test Report No. 143/202/NISE/2015-16-Module	Date: 21/10/2015	Page 1of 3

A. SCOPE

1.	Service Request No.	143/0915
2.	Requested By (Name & Address of the organization)	M/S. SUN 2 EARTH SOLAR SHED NO.1, BHAJIWALA IND.EST., BESIDE SARDAR SMRUTI BHAVAN, NEAR MINI HIRA BAZAR, A.K. ROAD, SURAT- 395008, GUJARAT.
3.	Details of the test item	
	a. Nomenclature	PV Module
	b. Manufactured By	M/S. SUN 2 EARTH SOLAR SHED NO.1, BHAJIWALA IND.EST., BESIDE SARDAR SMRUTI BHAVAN, NEAR MINI HIRA BAZAR, A.K. ROAD, SURAT- 395008, GUJARAT.
	c. Model / Type No.	Ref. page no. 02&03
	d. Serial No.	Ref. page no. 02&03
4.	Date of Submission of Samples	16/10/2015
5.	Condition of samples on receipt	Good
6.	Date of Completion of Tests	21/10/2015
7.	Applicable test specifications	Customer's
8.	Test category	STC Performance Test as per IEC-60904-1

B.MAJOR EQUIPMENTS USED

S.N.	NOMENCLATURE	MAKE	MODEL	CAL VALIDITY
1.	SUN SIMULATOR	ENDEAS	QUICKSUN 700A	NOVEMBER 2015

NOTE:

1. This test report refers only to the particular items submitted for testing as per specifications/requirements stipulated by the customer.
2. The results reported in the Test Report are valid at the time of and under the stipulated conditions of measurements.
3. The test report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director General, National Institute of Solar Energy.
4. The client is requested to collect the tested sample back within 30 days from the date of issue of the report.

National Institute of Solar Energy GURGAON NISE

21/10/2015

NATIONAL INSTITUTE OF SOLAR ENERGY

(FORMERLY KNOWN AS SOLAR ENERGY CENTRE)

(An autonomous institute of Ministry of New & Renewable Energy, Government of India)

Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Test Report No. 143/202/NISE/2015-16-Module	Date: 21/10/2015	Page 2 of 3

STC PERFORMANCE AFTER STABILISATION OF PV MODULES

(Please ref. Annexure A1to A5for modules I-V curve details)

1. Serial No. : S2ED150900803
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si / S2E250
   Cell Area : 243.36 Sq.cm.
   Module Area : 16189.93 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
37.59	9.01	0.733	29.91	8.30	17.0	15.3	248	250W	**PASS**

2. Serial No. : S2EX150900797
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/S2E10
   Cell Area : 20.28 Sq.cm.
   Module Area : 1056.00 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.51	0.718	0.781	18.86	0.669	17.3	12.0	12.62	10W	**PASS**

3. Serial No. : S2EH150900823
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/S2E200
   Cell Area : 180.96 Sq.cm.
   Module Area : 14755.99 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.67	13.25	0.731	17.75	12.37	16.9	14.9	220	200W	**PASS**

4. Serial No. : S2EZ150900612
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si /S2E03
   Cell Area : 12.48 Sq.cm.
   Module Area : 344.10 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
11.15	0.4328	0.770	9.26	0.4015	16.5	10.8	3.72	3W	**PASS**

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Ph. 0124-2579251 (CSC), Fax: 0124-2579207

5. Serial No. : S2EY150900800
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/ S2E05
   Cell Area : 20.28 Sq.cm.
   Module Area : 540.20 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
11.21	0.727	0.775	9.34	0.676	17.3	11.7	6.31	5W	**PASS**

NOTE: The report on qualification testing of the modules as per IEC61215 has not been provided by the company. It is a must to have the IEC 61215 certification before deployment of these modules in the field.

Tested By
Dr. Rahnuma Siddiqui
Research Associate
Date 21/10/2015

Authorized Signatory
Dr. Rajesh Kumar
Scientist-F
Date 23/X/15

Issued By
28/10/2015
Date.....

National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON

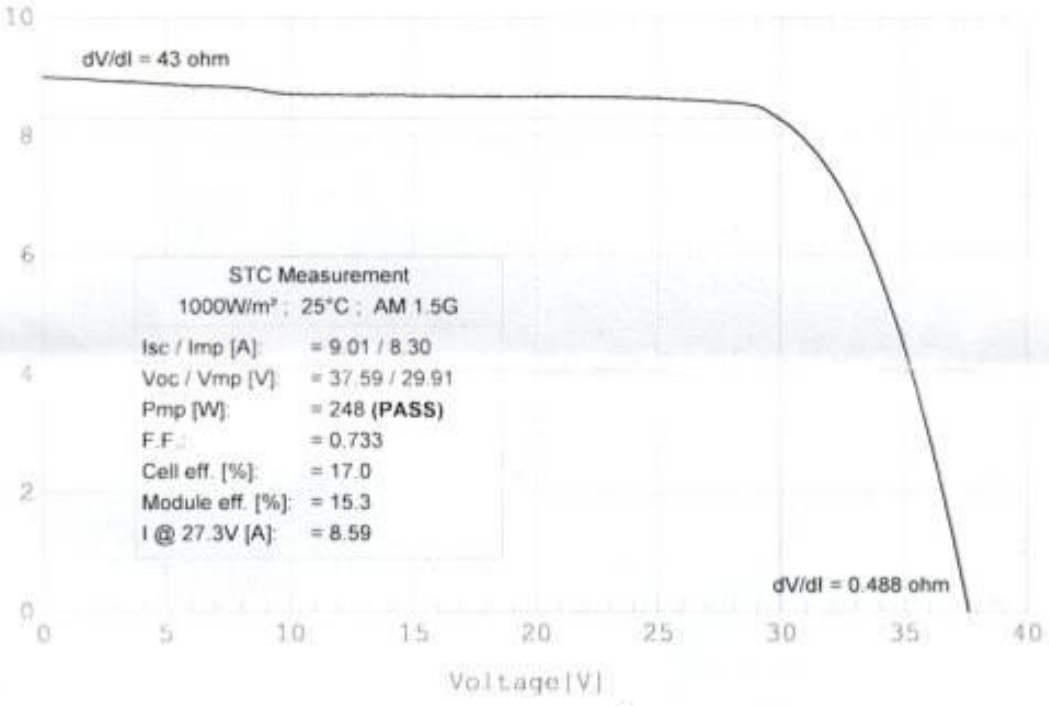
A1

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 143/0915

QuickSun Flash Tester
Version 5.18.19

Print Date: 21/10/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 143/0915	#:	S2E250
Bin #:	Yr-		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2ED150900803
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	243.36	Module area (m²):	1.618993
Cells parallel:	1	Cells serial:	60
Ambient temp. (°C):	25.5	Sensor temp. (°C):	25.3
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	9.01	Imp (A):	8.30
Voc (V):	37.59	Vmp (V):	29.91
Pmp (W):	248	F.F.:	0.733
Cell eff. (%):	17.0	Module eff. (%):	15.3
Est. shunt resistance: (ohm)	43	Est. series resisrance: (mohm)	488

Notes:

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21/10/2015

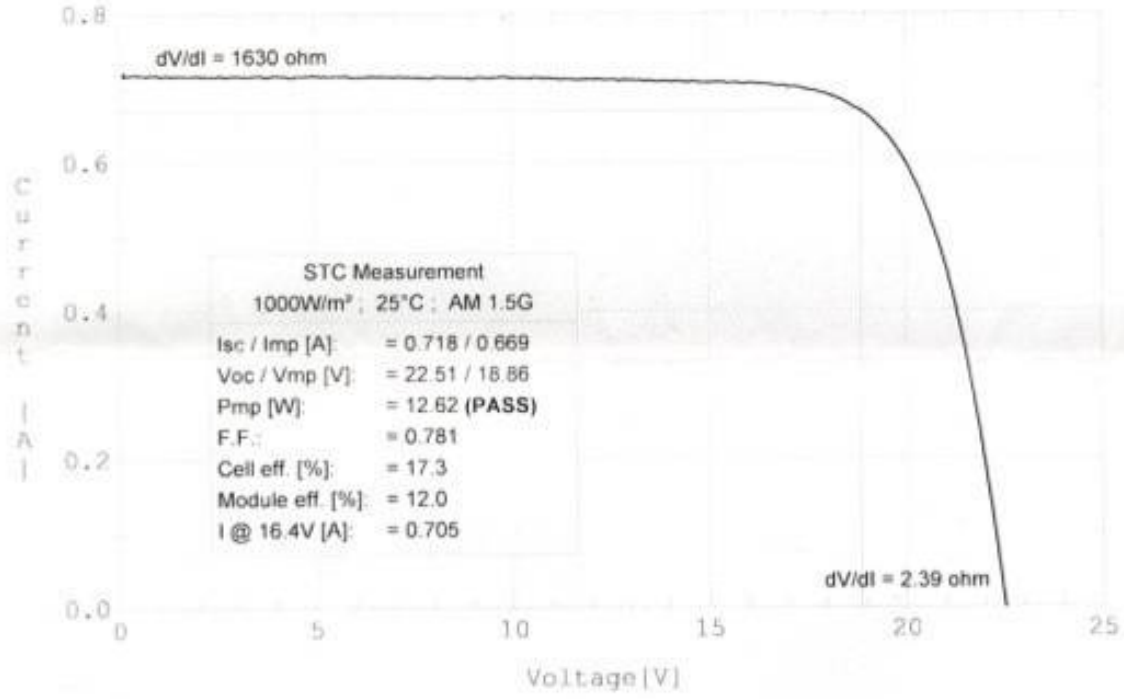
A2

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 143/0915

QuickSun Flash Tester
Version 5.18.19

Print Date: 21/10/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 143/0915	#:	S2E10
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EX150900797
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	20.28	Module area (m²):	0.105600
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	24.9	Sensor temp. (°C):	25.1
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.718	Imp (A):	0.669
Voc (V):	22.51	Vmp (V):	18.86
Pmp (W):	12.62	F.F.:	0.781
Cell eff. (%):	17.3	Module eff. (%):	12.0
Est. shunt resistance: (ohm)	1630	Est. series resisrance: (mohm)	2390

Notes:

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21/10/2015

A3

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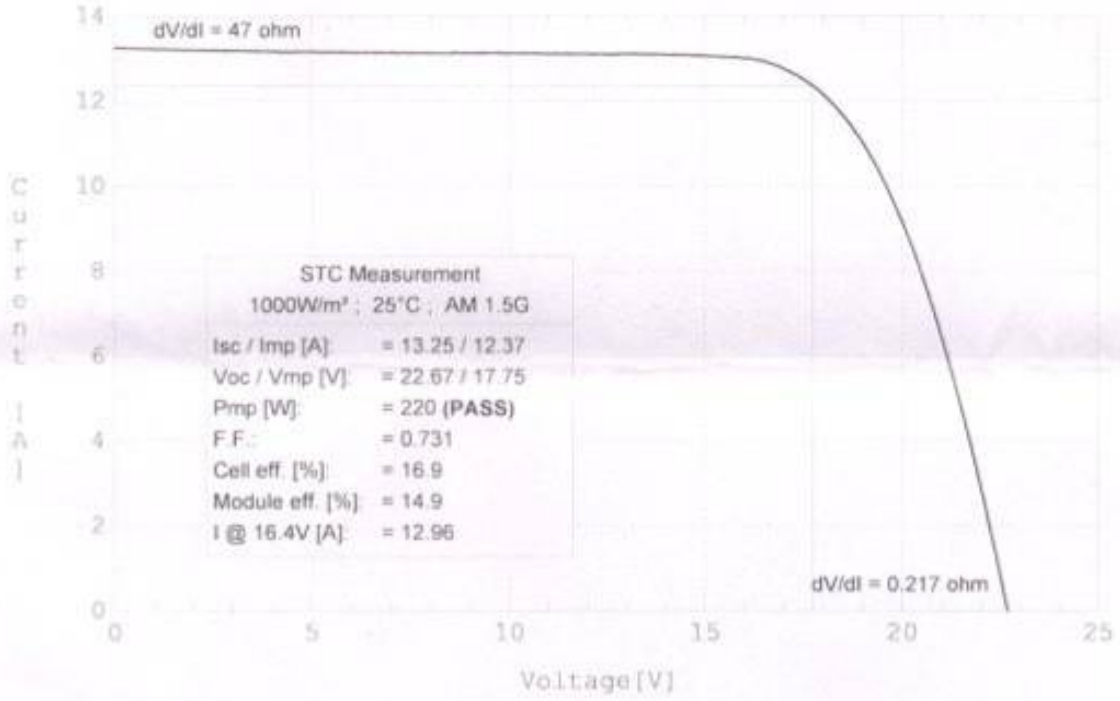
File: Unnamed
Module name: Multi C-Si 143/0915

QuickSun Flash Tester
Version 5.18.19

Print Date: 21/10/2015



STC Measurement
1000W/m² ; 25°C ; AM 1.5G

Isc / Imp [A]:	= 13.25 / 12.37
Voc / Vmp [V]:	= 22.67 / 17.75
Pmp [W]:	= 220 **(PASS)**
F.F.:	= 0.731
Cell eff. [%]:	= 16.9
Module eff. [%]:	= 14.9
I @ 16.4V [A]:	= 12.96

Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 143/0915	#:	S2E200
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EH150900823
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance (mOhm/cell):	8.80
Cell area (cm²):	180.96	Module area (m²):	1.475599
Cells parallel:	2	Cells serial:	36
Ambient temp. (°C):	25.7	Sensor temp. (°C):	25.3
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	13.25	Imp (A):	12.37
Voc (V):	22.67	Vmp (V):	17.75
Pmp (W):	220	F.F.:	0.731
Cell eff. (%):	16.9	Module eff. (%):	14.9
Est. shunt resistance (ohm):	47	Est. series resisrance (mohm):	217

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Notes:

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A4

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File: Unnamed
Module name: Multi C-Si 143/0915

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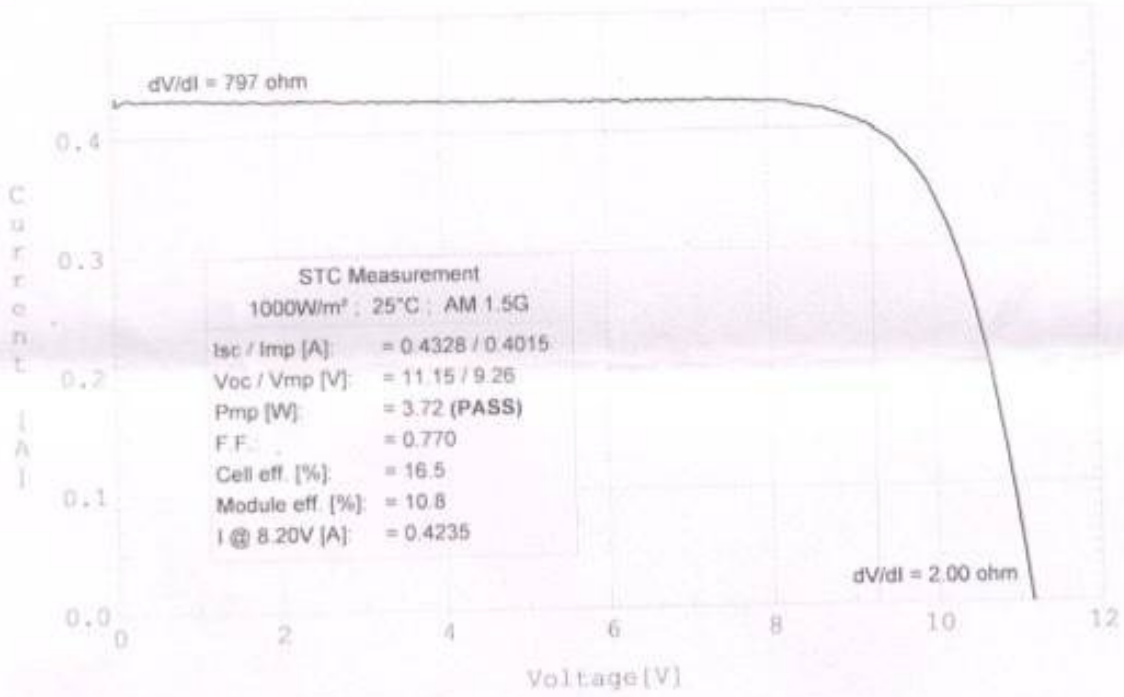
Version 5.18.19

Print Date: 21/10/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 143/0915	#:	S2E03
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EZ150900612
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance (mOhm/cell):	8.80
Cell area (cm²):	12.48	Module area (m²):	0.034410
Cells parallel:	1	Cells serial:	18
Ambient temp. (°C):	24.5	Sensor temp. (°C):	25.2
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.4328	Imp (A):	0.4015
Voc (V):	11.15	Vmp (V):	9.26
Pmp (W):	3.72	F.F.:	0.770
Cell eff. (%):	16.5	Module eff. (%):	10.8
Est. shunt resistance (ohm):	797	Est. series resisrance (mohm):	2000

Notes:

National Institute of Solar Energy ★ GURGAON ★ NISE

Gaurav Kumar

21/10/2015

A5

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 143/0915

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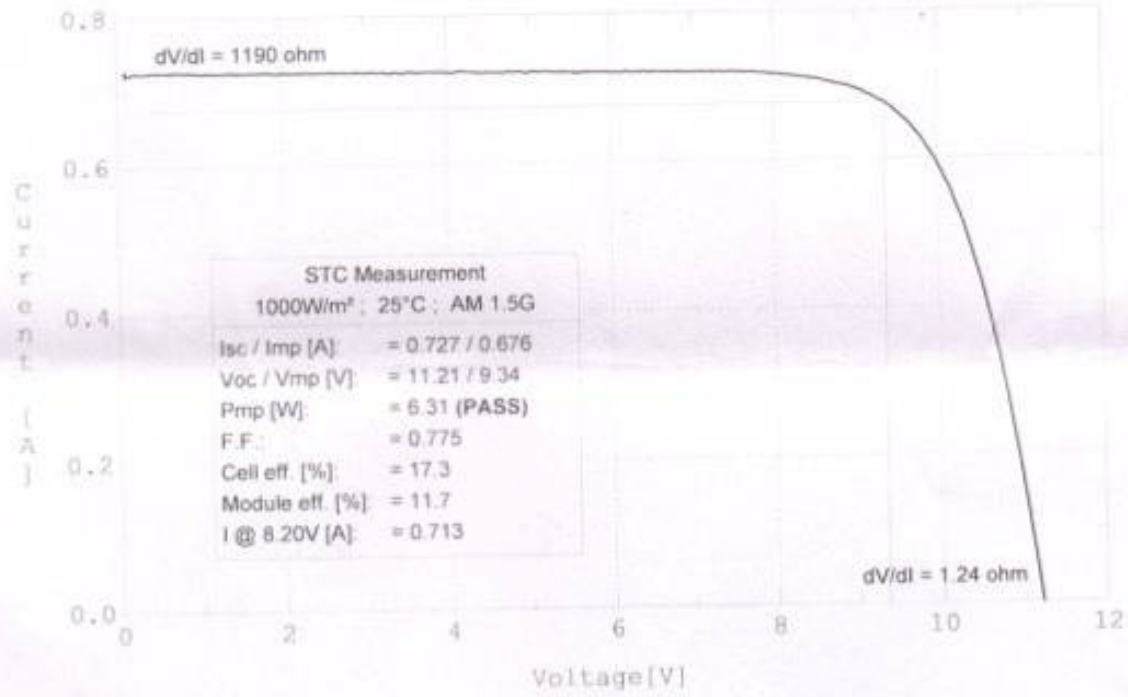
Version 5.18.19

Print Date: 21/10/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 143/0915	#:	S2E05
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH SOLAR	Product ID:	S2EY150900800
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	20.28	Module area (m²):	0.054020
Cells parallel:	1	Cells serial:	18
Ambient temp. (°C):	24.4	Sensor temp. (°C):	25.0
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.727	Imp (A):	0.676
Voc (V):	11.21	Vmp (V):	9.34
Pmp (W):	6.31	F.F.:	0.775
Cell eff. (%):	17.3	Module eff. (%):	11.7
Est. shunt resistance (ohm):	1190	Est. series resisrance (mohm):	1240

Notes:

National Institute ... GURGAON

Gurpal Kumar 21/10/2015

National Institute of Solar Energy
(An Autonomous Institution of MNRE, GOI)
19th Mile Stone, Gurgaon-Faridabad Road, Gwal Pahari, Gurgaon
(Haryana)-122003

PVTF/FR/CSC/03

CUSTOMER SERVICE CELL

FEED BACK

Company Name:

Service Availed from NISE:

Company Address:-

Name of Person giving Feedback:

Designation & Location:-

Sr. No.	Particulars	Feedback Ratings			
		Excellent *...	Good	Average	Poor*
1.	Content of Report				
2.	Sample Handling				
3.	Time Taken				
4.	Test Report Format				
5.	Courtesy				

*Please give comments:

Remarks:-

Signature & Date of Client

(Name of Authorised Person)

FOR OFFICIAL USE
Acknowledged by_____ Date_____ Mode: By Post/Hand/E-mail
T.A/T.M.E:

Sun2Earth Solar

POWER FROM SUN RAYS

MNRE CERTIFICATE BELOW MODULES: 20 WATT, 25 WATT, 30 WATT

NISE

National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)
19 K.m Stone, Gurgaon-Faridabad Road, Gwal Phari, Gurgaon (Haryana)-122003

File No: 238/2015-16./CSC/NISE/1035 Dated: 9/12/15

To,
M/s. SUN2EARTH SOLAR
SHED No.1, Part 1, Bhatjiwala IND.Est. Near mini
Hira Bazar, B/s Sardar Smurti Bhavan Near A.K. Rd. Surat 395008.

Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')

Dear Sir,

Please refer to your letter No,/Order Form No. 01. Dated 23/11/15. In this connection, I am directed to enclose herewith the Test Report No : 169/238/NISE/2015-16. Mod. Dated 4/12/15. In respect of your submitted samples in original, for ready reference and record.

2. Discrepancies, if any observed, in respect of any of the entries contained in the above report should be brought to the notice of this office within 30 days from the data of issue of this letter, falling which it will be presumed that the entries therein are in order and no further correspondence will be entertained thereafter on this particular report.

3. We would like to solicit your views and therefore enclosing a Feedback Form with a request to be filled up by you and then send as soon as possible. Your suggestions are valuable for us to make our further improvements and take corrective action in improving our quality of service.

4. Further, You are also requested to collect your samples at your cost within 30 days, from the date of issue of this letter falling which NISE will dispose of the sample in best possible manner and NISE will not be responsible in any manner for this sample.

Kindly acknowledge the receipt of this letter along with original test report and original Invoice.

Yours faithfully

9/12/15

Dr.Shweta Soam
(In-charge, Customer Service Cell)
(National Institute of Solar Energy)

National Institute of Solar Energy * GURGAON * NISE Ministry of New and Renewable Energy

Encl:
1. Test Report-Total Page 05.
2. Feedback Form

Copy forwarded for Information to:
1. PA to Director General-NISE
2. Guard File
3. Office Copy

Certificate No. : T-1848

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Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Test Report No. 169/238/NISE/2015-16-Module	Date: 04/12/2015	Page 1of 2

A. SCOPE

1.	Service Request No.	169/2315
2.	Requested By (Name & Address of the organization)	M/S. SUN 2 EARTH SOLAR SHED NO-1, PART 1, BHAJIWALA IND. EST. B/S SARDAR SMURTI BHAVAN, NEAR MINI HIRA BAZAR, A.K. ROAD VARACHHA. SURAT- 395008.
3.	Details of the test item	
	a. Nomenclature	PV Module
	b. Manufactured By	M/S. SUN 2 EARTH SOLAR SHED NO-1, PART 1, BHAJIWALA IND. EST. B/S SARDAR SMURTI BHAVAN, NEAR MINI HIRA BAZAR, A.K. ROAD VARACHHA. SURAT- 395008.
	c. Model / Type No.	Ref. page no. 02
	d. Serial No.	Ref. page no. 02
4.	Date of Submission of Samples	24/11/2015
5.	Condition of samples on receipt	Good
6.	Date of Completion of Tests	03/12/2015
7.	Applicable test specifications	Customer's
8.	Test category	STC Performance Test as per IEC-60904-1

B.MAJOR EQUIPMENTS USED

S.No.	NOMENCLATURE	MAKE	MODEL	CAL VALIDITY
1.	SUN SIMULATOR	ENDEAS	QUICKSUN 700A	MAY 2016

NOTE:

1. This test report refers only to the particular items submitted for testing as per specifications/requirements stipulated by the customer.
2. The results reported in the Test Report are valid at the time of and under the stipulated conditions of measurements.
3. The test report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Solar Energy Center.
4. The client is requested to collect the tested sample back within 30 days from the date of issue of the report.

04/12/2015

National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON

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Village & Post-Gwalpahari, Dist-Gurgaon, (Haryana), Pin – 122003.

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

STC PERFORMANCE AFTER STABILISATIONOF PV MODULES
(Please ref. Annexure A1 to A3 for modules I-V curve details)

1. Serial No. : S2EU151100182
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si / S2E025
   Cell Area : 43.68 Sq.cm.
   Module Area : 2281.50 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Celi eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.28	1.571	0.763	18.23	1.465	17.0	11.7	26.7	25W	**PASS**

2. Serial No. : S2EV151100178
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si / S2E020
   Cell Area : 40.56 Sq.cm.
   Module Area : 2277.00 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.34	1.503	0.756	18.21	1.393	17.4	11.1	25.4	20W	**PASS**

3. Serial No. : S2ET151100183
   Make : **SUN 2 EARTH SOLAR**
   Model No. : Multi Crystalline Si/ S2E030
   Cell Area : 49.92 Sq.cm.
   Module Area : 2281.50 Sq.cm.

V_{oc} (V)	I_{sc} (A)	F.F	V_{mp} (V)	I_{mp} (A)	Cell eff.%	M. eff. %	P_{max} (W)	Manufacturer's claim	Remarks
22.61	1.754	0.768	18.74	1.626	17.0	13.4	30.5	30W	**PASS**

NOTE: The report on qualification testing of the modules as per IEC 61215 has not been provided by the company. It is a must to have the IEC 61215 certification before deployment of these modules in the field.

Tested By
Dr. Rahnuma Siddiqui
Research Associate
Date 04/12/2015

Authorized Signatory
Dr. Rajesh Kumar
Scientist-F
Date 9/12/2015

Issued By
National Institute of Solar Energy NISE Ministry of New and Renewable Energy GURGAON
Date 9/12/2015

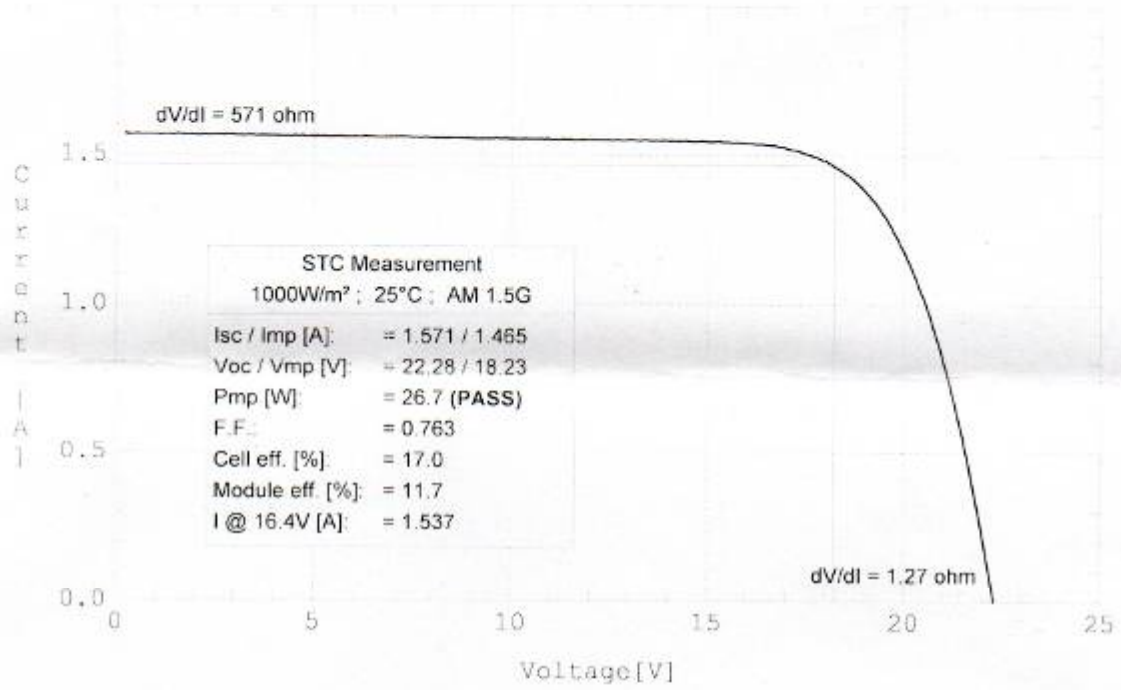
A1

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 169/2315

QuickSun Flash Tester
Version 5.18.19

Print Date: 03/12/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 169/2315	#:	S2E025
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH	Product ID:	S2EU151100182
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	43.68	Module area (m²):	0.228150
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	24.4	Sensor temp. (°C):	24.9
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	1.571	Imp (A):	1.465
Voc (V):	22.28	Vmp (V):	18.23
Pmp (W):	26.7	F.F.:	0.763
Cell eff. (%):	17.0	Module eff. (%):	11.7
Est. shunt resistance: (ohm)	571	Est. series resisrance: (mohm)	1270

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Notes:

Gopal Kumar 04/12/2015

Rai 04/12/2015

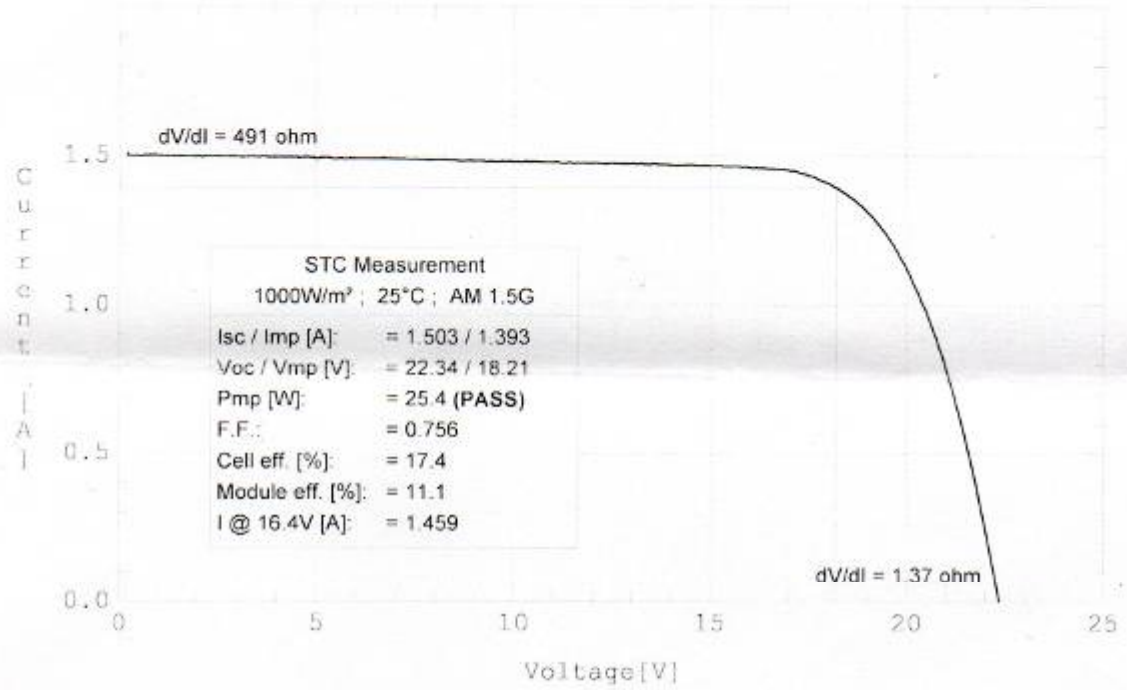
A2

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 169/2315

QuickSun Flash Tester
Version 5.18.19

Print Date: 03/12/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 169/2315	#:	S2E020
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH	Product ID:	S2EV151100178
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	40.56	Module area (m²):	0.227700
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	24.3	Sensor temp. (°C):	24.7
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	1.503	Imp (A):	1.393
Voc (V):	22.34	Vmp (V):	18.21
Pmp (W):	25.4	F.F.:	0.756
Cell eff. (%):	17.4	Module eff. (%):	11.1
Est. shunt resistance: (ohm)	491	Est. series resisrance: (mohm)	1370

Notes:

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GURGAON

Gaurav Kumar
04/12/2015

04/12/2015

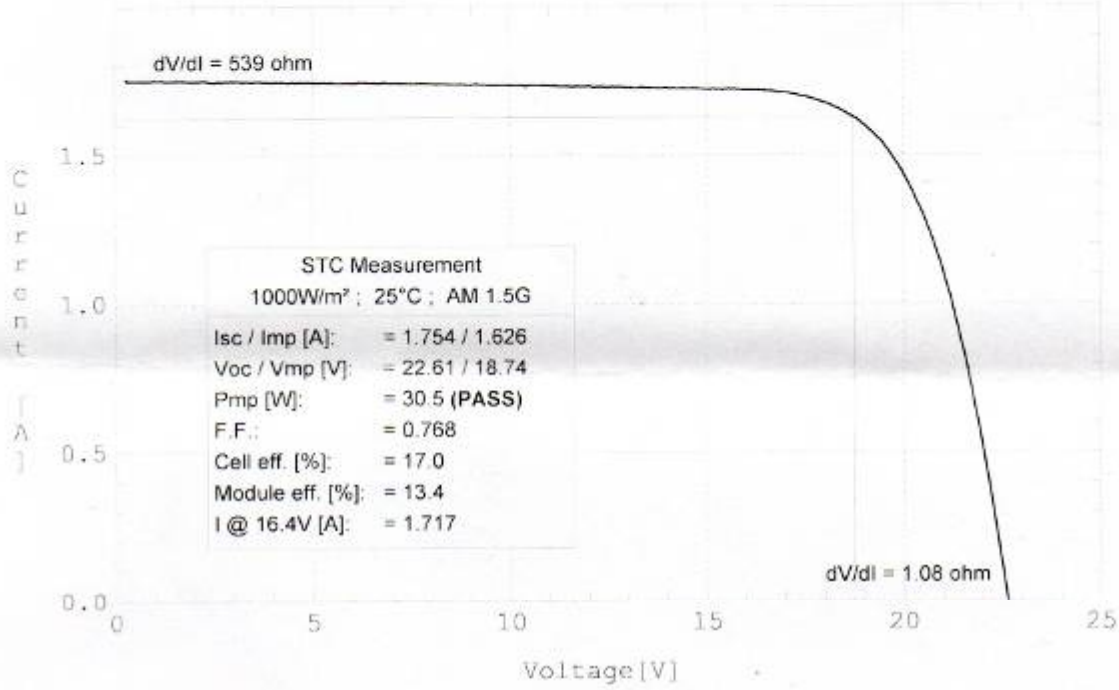
A3

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 169/2315

QuickSun Flash Tester
Version 5.18.19

Print Date: 03/12/2015



Module:	1	Operator:	JRS(SNEH)
Name:	Multi C-Si 169/2315	#:	S2E030
Bin #:	Yr-2015		
Manufacturer:	SUN 2 EARTH	Product ID:	S2ET151100183
Current temp. coeff. (microA/cm²/°C):	20.00	Voltage temp. coeff. (mV/cell/°C):	-2.10
Curve correction fac. (mOhm/cell/°C):	0.00	Series resistance. (mOhm/cell):	8.80
Cell area (cm²):	49.92	Module area (m²):	0.228150
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	24.4	Sensor temp. (°C):	24.9
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	1.754	Imp (A):	1.626
Voc (V):	22.61	Vmp (V):	18.74
Pmp (W):	30.5	F.F.:	0.768
Cell eff. (%):	17.0	Module eff. (%):	13.4
Est. shunt resistance: (ohm)	539	Est. series resisrance: (mohm)	1080

Notes:

National Institute of Solar Energy
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Gopal Kumar
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