

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: 119/2015-16 /CSC/NISE

Dated: 13/08/15

To,
M/s. Navitas Green Solutions Pvt. Ltd.
B-20/3, Road No. 13/14, Hosiwala Industrial
Estate, Sachin Paldana Highway, Surat - 394230,
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 06/08/15. In this connection, I am directed to enclose herewith the Test Report No: 91/119/NISE/2015-16 - Module Dated 12/08/15. 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, 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

Shikha Jain

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

Encl:

1. Test Report-Total Page 20
2. 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. 91/119/NISE/2015-16-Module	Date: 12/08/2015	Page 1 of 5
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A. SCOPE

1.	Service Request No.	91/0715
2.	Requested By (Name & Address of the organization)	M/S. NAVITAS GREEN SOLUTIONS PVT. LTD B-20/3, ROAD NO. 13/14, HOJIWALA INDUSTRIAL ESTATE, SACHIN PALSANA HIGHWAY, SURAT- 394230, GUJARAT.
3.	Details of the test item	
	a. Nomenclature	PV Module
	b. Manufactured By	M/S. NAVITAS GREEN SOLUTIONS PVT LTD SOLAR.
	c. Model / Type No.	Ref. page no. 02 to 05
	d. Serial No.	Ref. page no. 02 to 05
4.	Date of Submission of Samples	07/08/2015
5.	Condition of samples on receipt	Good
6.	Date of Completion of Tests	11/08/2015
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	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, 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

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STC PERFORMANCE AFTER STABILISATION OF PV MODULES

(Please ref. Annexure A1 to A15 for modules I-V curve details)

1. Serial No. : NS200061500001
 Make : **NAVITAS SOLAR**
 Model No. : Multi Crystalline Si/NS 200
 Cell Area : 243.36 Sq.cm.
 Module Area : 13196.70 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
30.10	8.84	0.750	24.10	8.28	17.1	15.1	199	200W	PASS

2. Serial No. : NS250061500001
 Make : **NAVITAS SOLAR**
 Model No. : Multi Crystalline Si/ NS 250
 Cell Area : 243.36 Sq.cm.
 Module Area : 16209.71 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
37.72	9.00	0.766	30.40	8.55	17.8	16.0	260	250W	PASS

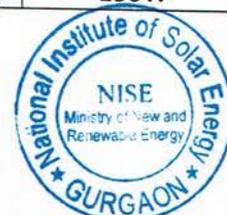
3. Serial No. : NS240061500001
 Make : **NAVITAS SOLAR**
 Model No. : Multi Crystalline Si/ NS 240
 Cell Area : 243.36 Sq.cm.
 Module Area : 16209.71 Sq.cm.

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
37.49	8.90	0.766	30.22	8.45	17.5	15.8	255	240W	PASS

4. Serial No. : NS150061500001
 Make : **NAVITAS SOLAR**
 Model No. : Multi Crystalline Si/ NS 150
 Cell Area : 243.36 Sq.cm.
 Module Area : 9926.80 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
22.48	8.44	0.771	18.20	8.04	16.7	14.7	146.4	150W	PASS

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5. Serial No. : NS120061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS 120
 Cell Area : 204.36 Sq.cm.
 Module Area : 8366.40 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
22.63	6.96	0.777	18.34	6.67	16.6	14.6	122.3	120W	PASS

6. Serial No. : NS100061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS100
 Cell Area : 176.28 Sq.cm.
 Module Area : 7491.90 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
22.71	6.27	0.776	18.58	5.95	17.4	14.7	110.5	100W	PASS

7. Serial No. : NS075061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS75
 Cell Area : 127.92 Sq.cm.
 Module Area : 5577.60 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
22.63	4.553	0.773	18.63	4.277	17.3	14.3	79.7	75W	PASS

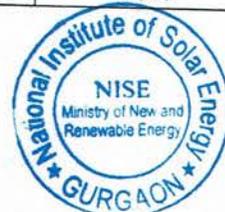
8. Serial No. : NS050061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS 50
 Cell Area : 87.36 Sq.cm.
 Module Area : 3990.00 Sq.cm.

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
22.67	3.086	0.777	18.70	2.907	17.3	13.6	54.4	50W	PASS

9. Serial No. : NS040061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS 40
 Cell Area : 67.08 Sq.cm.
 Module Area : 3078.95 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
22.55	2.356	0.785	18.75	2.224	17.3	13.5	41.7	40W	PASS

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10. Serial No. : NS020061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS 20
 Cell Area : 35.88 Sq.cm.
 Module Area : 1820.00 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
22.00	1.274	0.749	17.93	1.171	16.2	11.5	21.0	20W	PASS

11. Serial No. : NS010061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS10
 Cell Area : 20.28 Sq.cm.
 Module Area : 1053.50 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
22.79	0.721	0.756	18.41	0.675	17.0	11.8	12.42	10W	PASS

12. Serial No. : NS005061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS5
 Cell Area : 20.02 Sq.cm.
 Module Area : 589.96 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
11.41	0.732	0.757	9.25	0.684	17.6	10.7	6.33	5W	PASS

13. Serial No. : NS003061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS3
 Cell Area : 11.70 Sq.cm.
 Module Area : 382.20 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
11.29	0.4295	0.723	9.02	0.3888	16.6	9.17	3.51	3W	PASS

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14. Serial No. : NS300061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS300
 Cell Area : 243.36 Sq.cm.
 Module Area : 19334.95 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
44.61	9.08	0.759	35.79	8.59	17.5	15.9	307	300W	PASS

15. Serial No. : NS290061500001
 Make : NAVITAS SOLAR
 Model No. : Multi Crystalline Si/ NS290
 Cell Area : 243.36 Sq.cm.
 Module Area : 19334.95 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
44.92	9.09	0.760	36.20	8.57	17.7	16.0	310	290W	PASS

NOTE: Certificate conforming to the qualification testing as per IEC 61215 has not been provided by the manufacturer. It is a must to have the IEC -61215 qualification test certificate before deployment of these modules in the field.

Tested By Rah
 Dr. Rahnuma Siddiqui
 Research Associate

Authorized Signatory Rajesh Kumar
 Dr. Rajesh Kumar
 Scientist-F

Issued By Kishu



Date...12/08/2015

Date...18/8/15

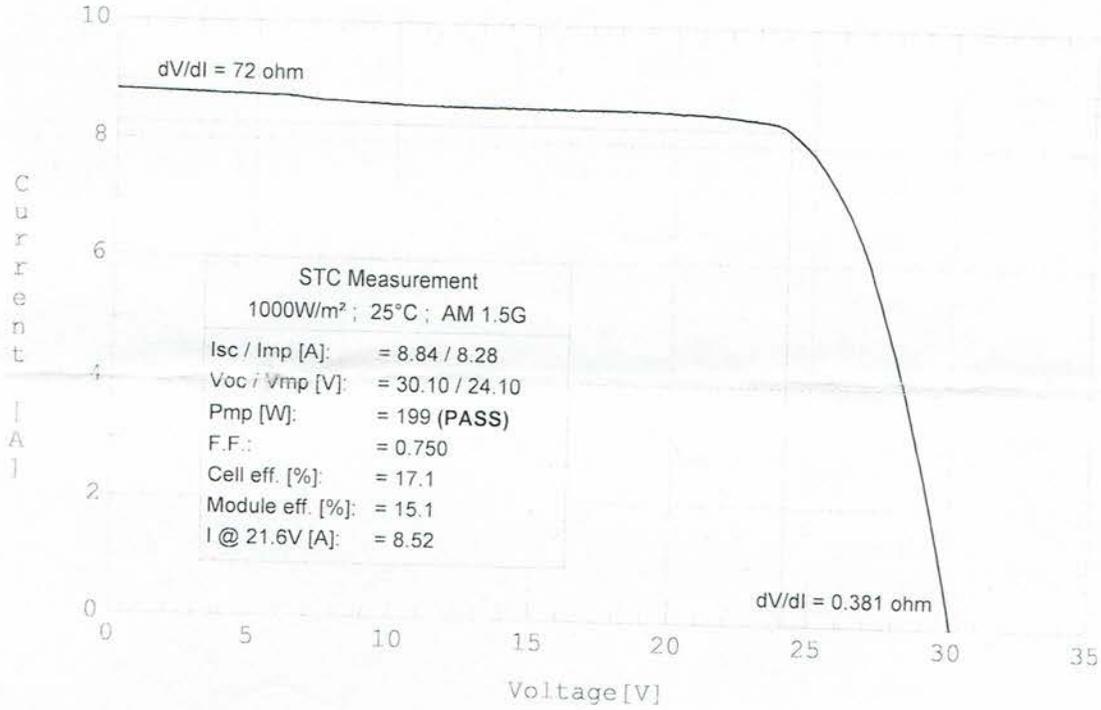
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File: Unnamed
Module name: Multi C-Si 91/0715

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Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS200
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS200061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	243.36	Module area (m ²):	1.319670
Cells parallel:	1	Cells serial:	48
Ambient temp. (°C):	25.6	Sensor temp. (°C):	25.4
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	8.84	Imp (A):	8.28
Voc (V):	30.10	Vmp (V):	24.10
Pmp (W):	199	F.F.:	0.750
Cell eff. (%):	17.1	Module eff. (%):	15.1
Est. shunt resistance. (ohm)	72	Est. series resistance: (mohm)	381



Notes:

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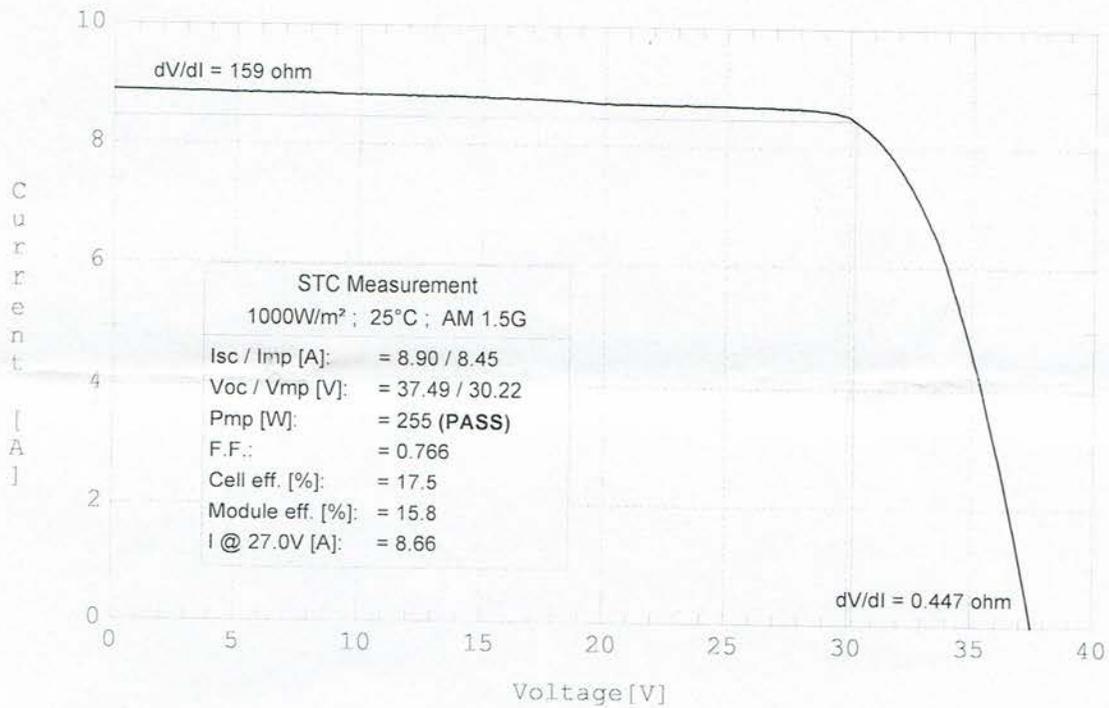
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File: Unnamed
Module name: Multi C-Si 91/0715

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Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS240
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS240061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	243.36	Module area (m ²):	1.620971
Cells parallel:	1	Cells serial:	60
Ambient temp. (°C):	25.3	Sensor temp. (°C):	24.9
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	8.90	Imp (A):	8.45
Voc (V):	37.49	Vmp (V):	30.22
Pmp (W):	255	F.F.:	0.766
Cell eff. (%):	17.5	Module eff. (%):	15.8
Est. shunt resistance: (ohm)	159	Est. series resistance: (mohm)	447

Notes:

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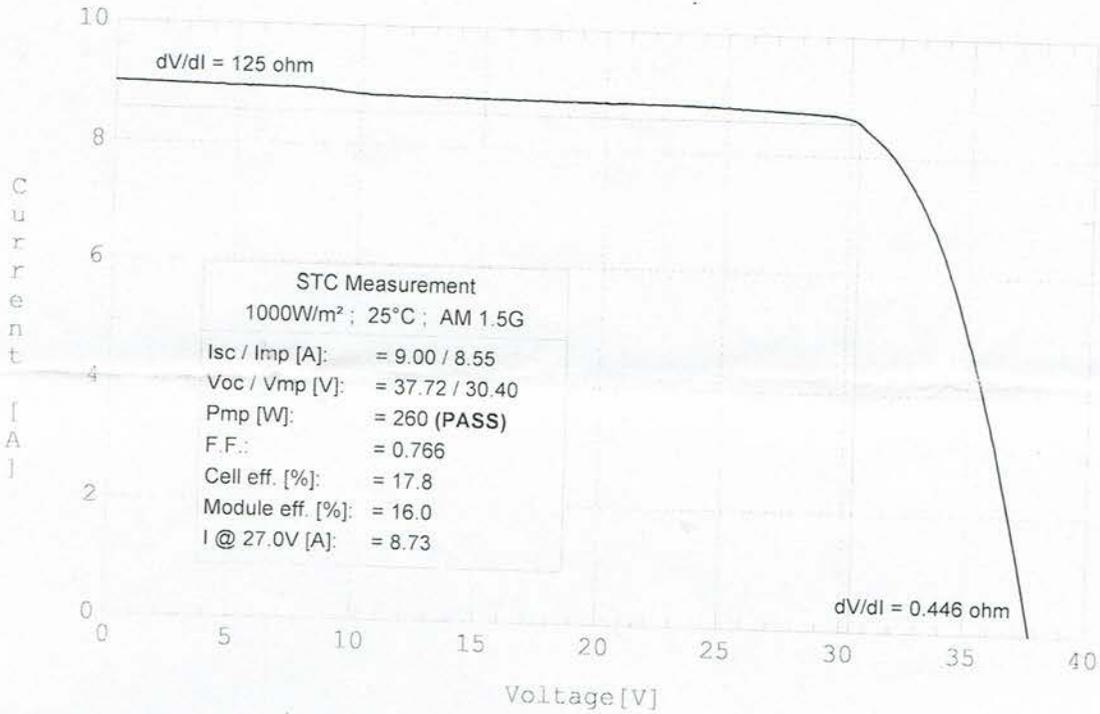


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File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS250
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS250061500001
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):	1.620971
Cells parallel:	1	Cells serial:	60
Ambient temp. (°C):	25.3	Sensor temp. (°C):	24.9
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	9.00	Imp (A):	8.55
Voc (V):	37.72	Vmp (V):	30.40
Pmp (W):	260	F.F.:	0.766
Cell eff. (%):	17.8	Module eff. (%):	16.0
Est. shunt resistance: (ohm)	125	Est. series resistance: (mohm)	446

Notes:



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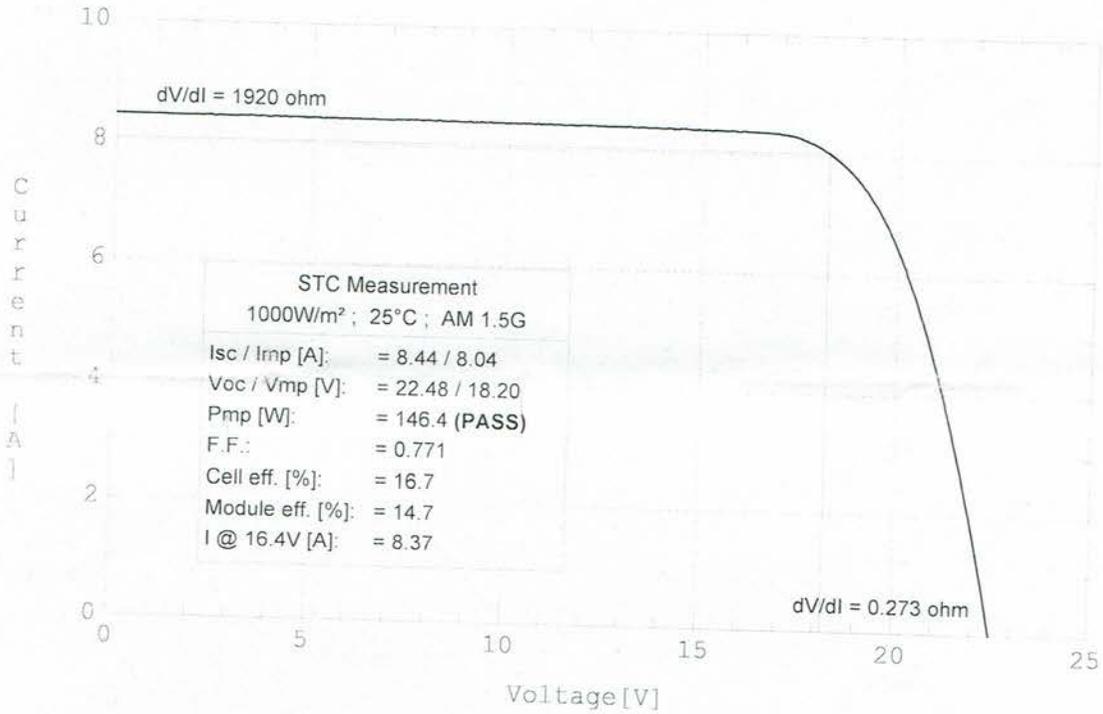
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File: Unnamed
Module name: Multi C-Si 91/0715

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Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS150
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS150061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	243.36	Module area (m ²):	0.992680
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.3	Sensor temp. (°C):	24.5
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	8.44	Imp (A):	8.04
Voc (V):	22.48	Vmp (V):	18.20
Pmp (W):	146.4	F.F.:	0.771
Cell eff. (%):	16.7	Module eff. (%):	14.7
Est. shunt resistance: (ohm)	1920	Est. series resistance: (mohm)	273

Notes:



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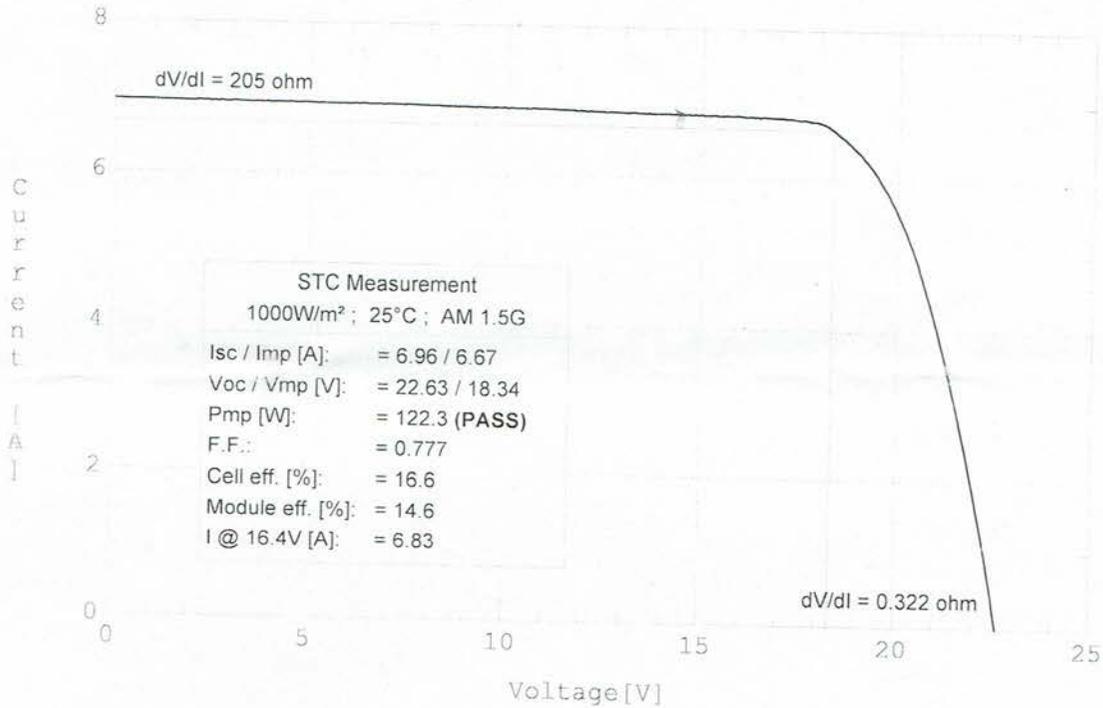
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS120
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS120061500001
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):	204.36	Module area (m²):	0.836640
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.4	Sensor temp. (°C):	25.0
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	6.96	Imp (A):	6.67
Voc (V):	22.63	Vmp (V):	18.34
Pmp (W):	122.3	F.F.:	0.777
Cell eff. (%):	16.6	Module eff. (%):	14.6
Est. shunt resistance: (ohm)	205	Est. series resistance: (mohm)	322

Notes:



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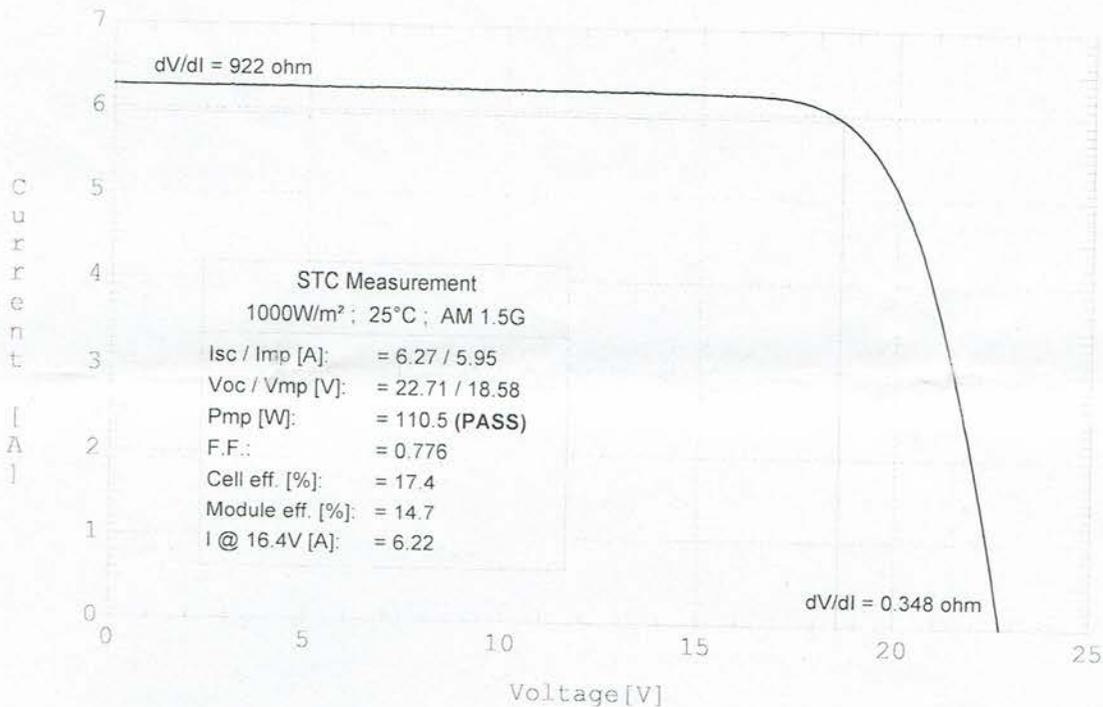
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File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS100
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS100061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	176.28	Module area (m ²):	0.749190
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.5	Sensor temp. (°C):	25.1
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	6.27	Imp (A):	5.95
Voc (V):	22.71	Vmp (V):	18.58
Pmp (W):	110.5	F.F.:	0.776
Cell eff. (%):	17.4	Module eff. (%):	14.7
Est. shunt resistance: (ohm)	922	Est. series resistance: (mohm)	348

Notes:



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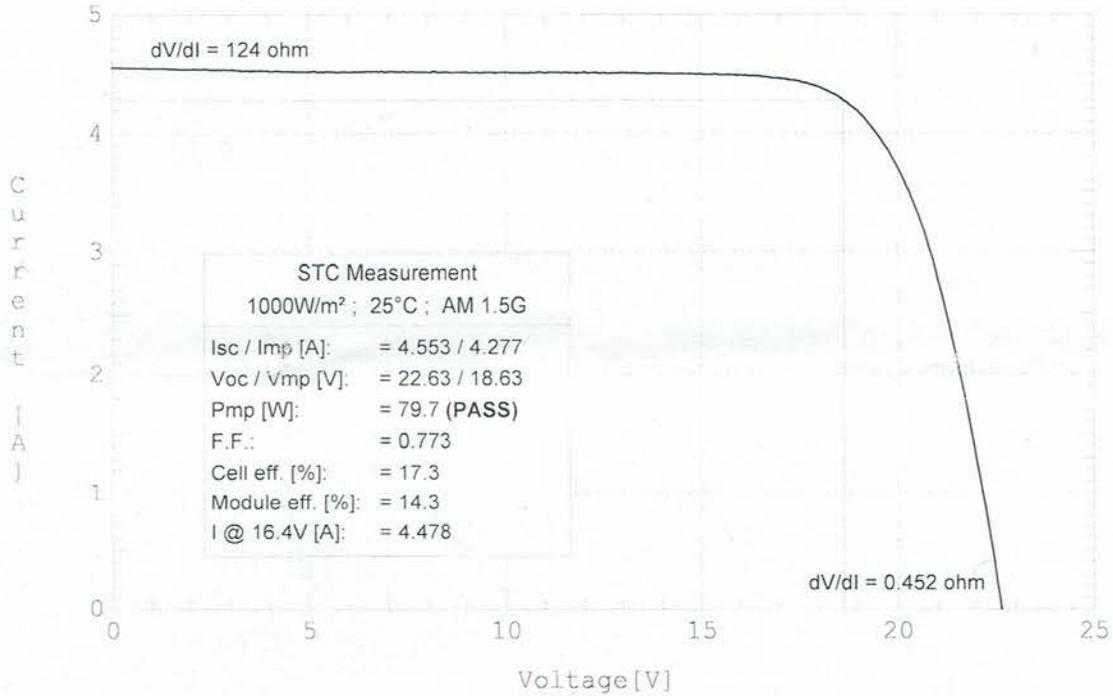
Revised
12/08/2015

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS75
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS075061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	127.92	Module area (m ²):	0.557760
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.7	Sensor temp. (°C):	25.2
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	4.553	Imp (A):	4.277
Voc (V):	22.63	Vmp (V):	18.63
Pmp (W):	79.7	F.F.:	0.773
Cell eff (%):	17.3	Module eff. (%):	14.3
Est. shunt resistance: (ohm)	124	Est. series resistance: (mohm)	452

Notes:



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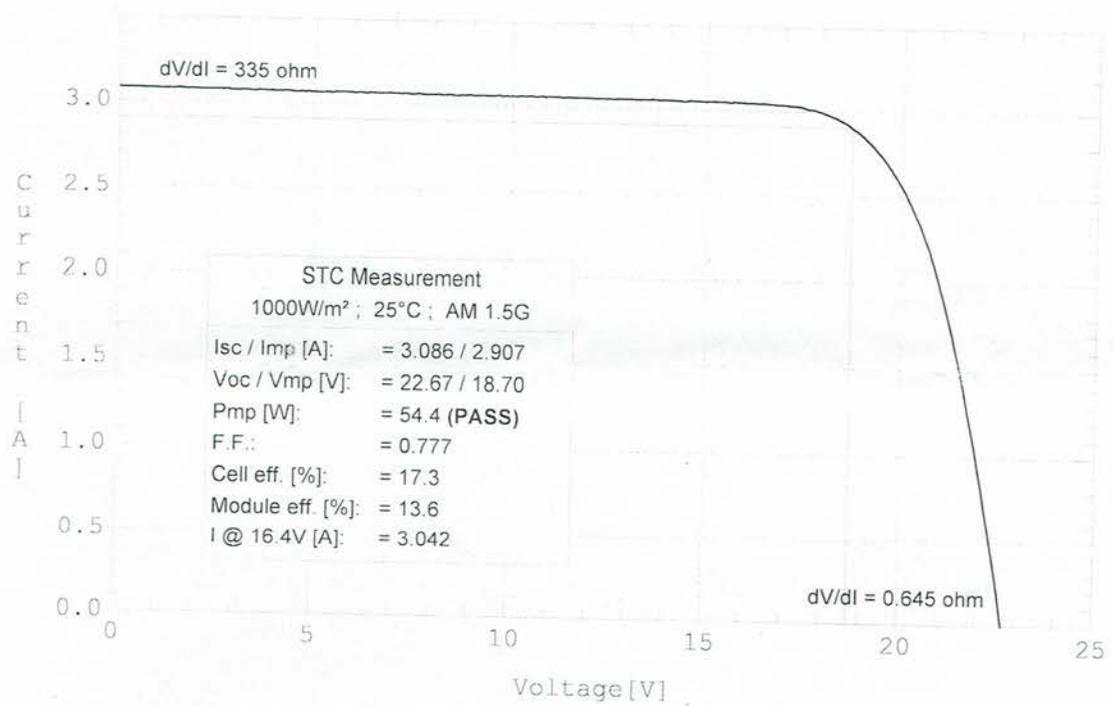
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12/08/2015

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS50
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS050061500001
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):	87.36	Module area (m²):	0.399000
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.4	Sensor temp. (°C):	25.1
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	3.086	Imp (A):	2.907
Voc (V):	22.67	Vmp (V):	18.70
Pmp (W):	54.4	F.F.:	0.777
Cell eff. (%):	17.3	Module eff. (%):	13.6
Est. shunt resistance: (ohm)	335	Est. series resistance: (mohm)	645

Notes:



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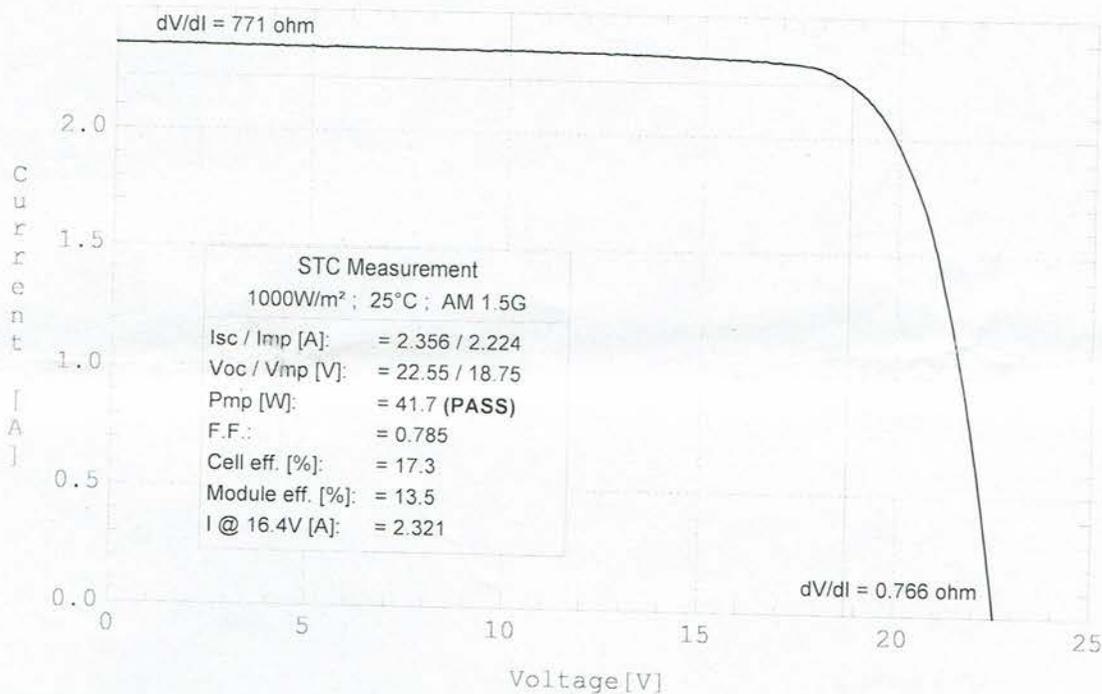
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12/08/2015

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS40
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS040061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	67.08	Module area (m ²):	0.307895
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.6	Sensor temp. (°C):	25.2
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	2.356	Imp (A):	2.224
Voc (V):	22.55	Vmp (V):	18.75
Pmp (W):	41.7	F.F.:	0.785
Cell eff. (%):	17.3	Module eff. (%):	13.5
Est. shunt resistance: (ohm)	771	Est. series resistance: (mohm)	766

Notes:



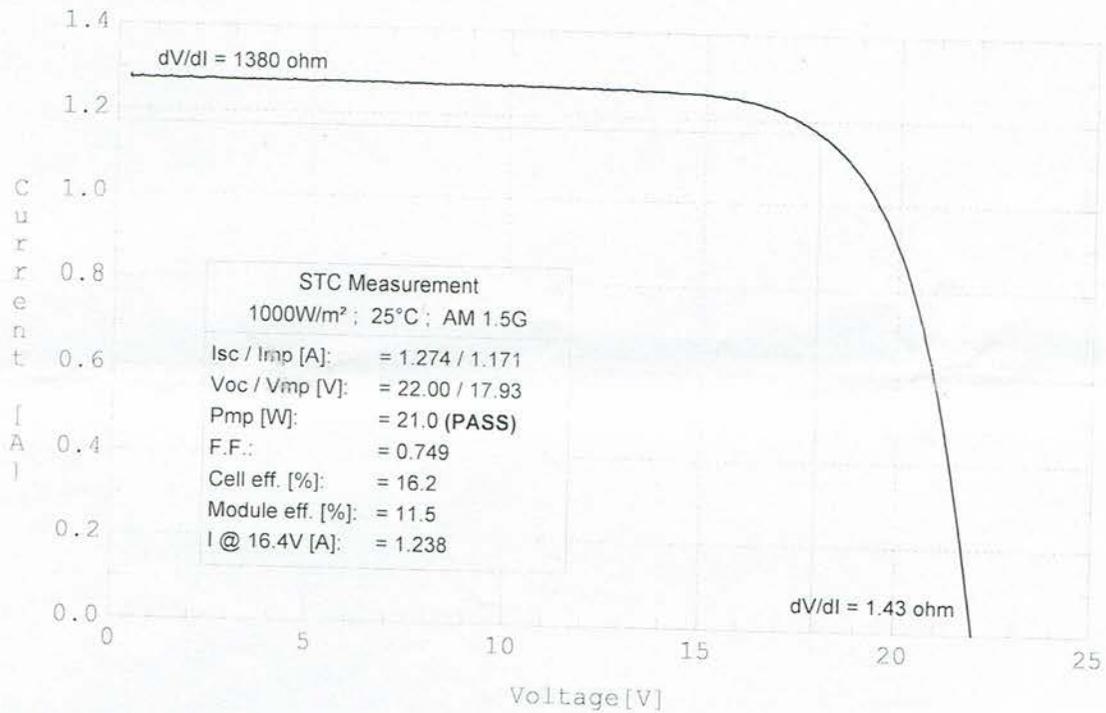
Caepal Kumar Pal
12/08/2015

Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS20
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS020061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	35.88	Module area (m ²):	0.182000
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.6	Sensor temp. (°C):	25.2
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	1.274	Imp (A):	1.171
Voc (V):	22.00	Vmp (V):	17.93
Pmp (W):	21.0	F.F.:	0.749
Cell eff. (%):	16.2	Module eff. (%):	11.5
Est. shunt resistance: (ohm)	1380	Est. series resistance: (mohm)	1430

Notes:



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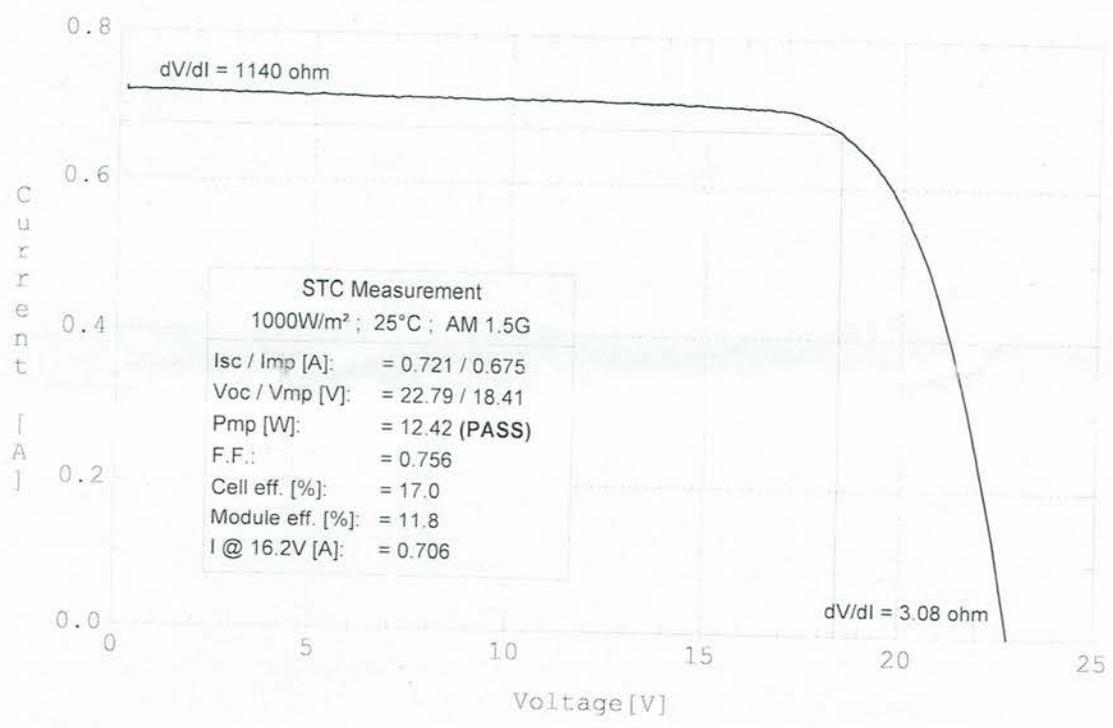
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS10
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS010061500001
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):	0.105350
Cells parallel:	1	Cells serial:	36
Ambient temp. (°C):	25.6	Sensor temp. (°C):	25.2
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.721	Imp (A):	0.675
Voc (V):	22.79	Vmp (V):	18.41
Pmp (W):	12.42	F.F.:	0.756
Cell eff. (%):	17.0	Module eff. (%):	11.8
Est. shunt resistance: (ohm)	1140	Est. series resistance: (mohm)	3080



Notes:

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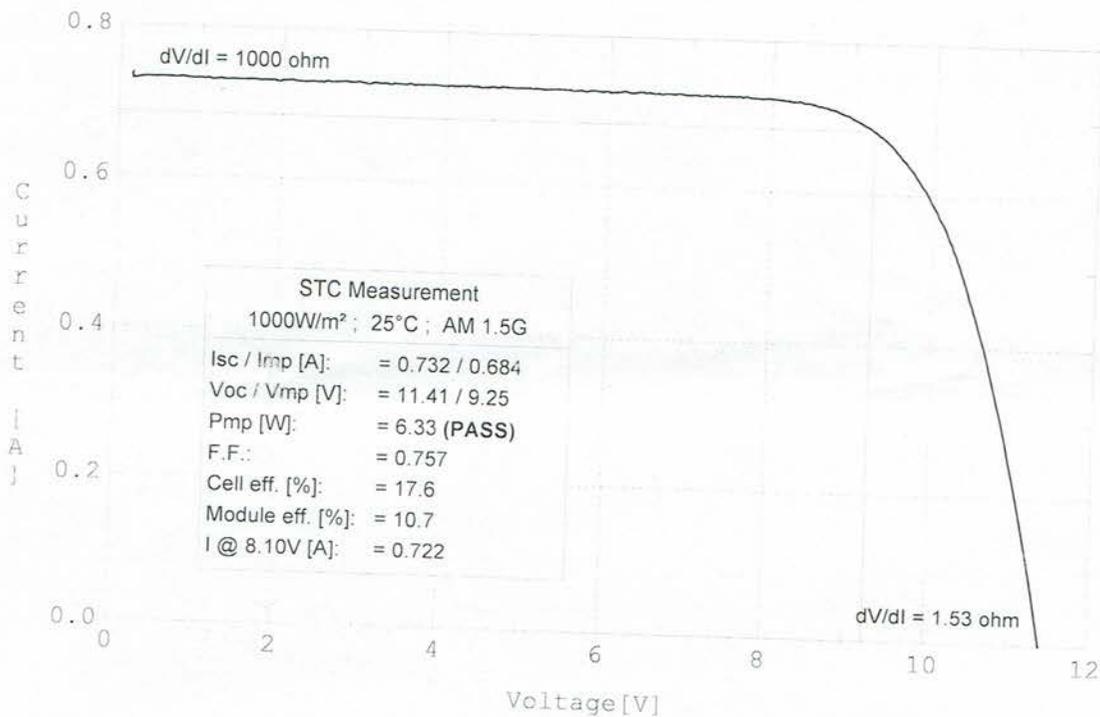
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS5
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS005061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	20.02	Module area (m ²):	0.058996
Cells parallel:	1	Cells serial:	18
Ambient temp. (°C):	25.8	Sensor temp. (°C):	25.2
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.732	Imp (A):	0.684
Voc (V):	11.41	Vmp (V):	9.25
Pmp (W):	6.33	F.F.:	0.757
Cell eff. (%):	17.6	Module eff. (%):	10.7
Est. shunt resistance: (ohm)	1000	Est. series resistance: (mohm)	1530

Notes:



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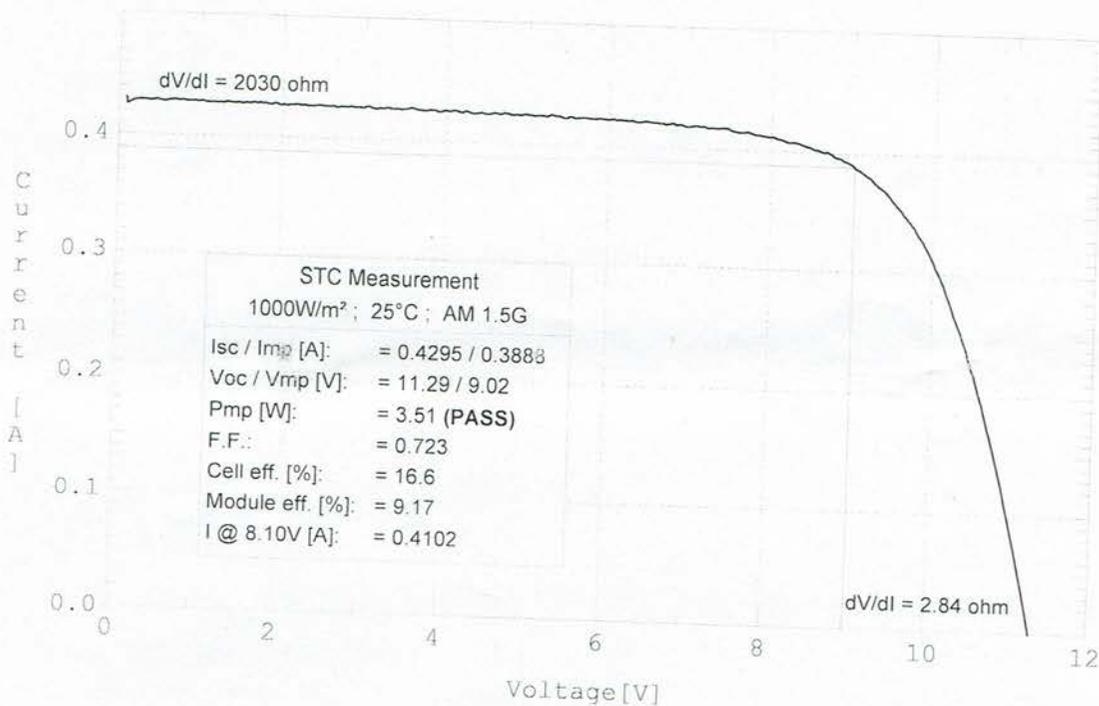
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS3
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS003061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	11.70	Module area (m ²):	0.038220
Cells parallel:	1	Cells serial:	18
Ambient temp. (°C):	25.5	Sensor temp. (°C):	25.2
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	0.4295	Imp (A):	0.3888
Voc (V):	11.29	Vmp (V):	9.02
Pmp (W):	3.51	F.F.:	0.723
Cell eff. (%):	16.6	Module eff. (%):	9.17
Est. shunt resistance: (ohm)	2030	Est. series resistance: (mohm)	2840

Notes:



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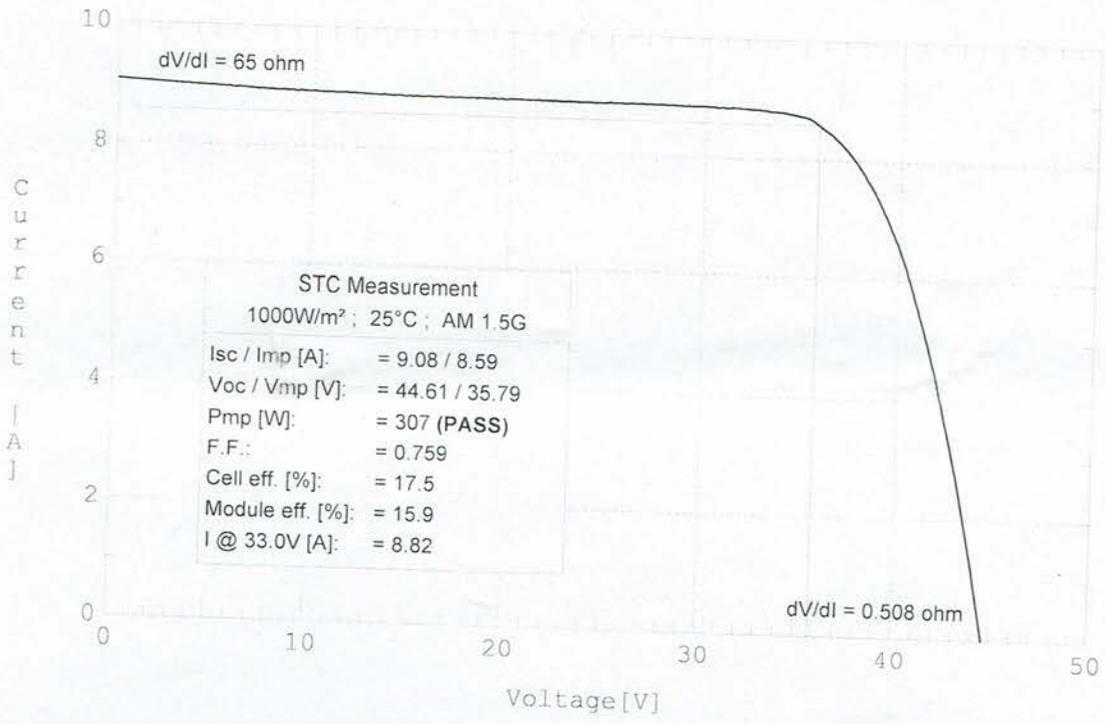
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS300
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS300061500001
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):	1.933495
Cells parallel:	1	Cells serial:	72
Ambient temp. (°C):	25.6	Sensor temp. (°C):	25.2
Irradiance (W/m²):	1000	Corrected temp. (°C):	25.0
Isc (A):	9.08	Imp (A):	8.59
Voc (V):	44.61	Vmp (V):	35.79
Pmp (W):	307	F.F.:	0.759
Cell eff. (%):	17.5	Module eff. (%):	15.9
Est. shunt resistance: (ohm)	65	Est. series resistance: (mohm)	508



Notes:

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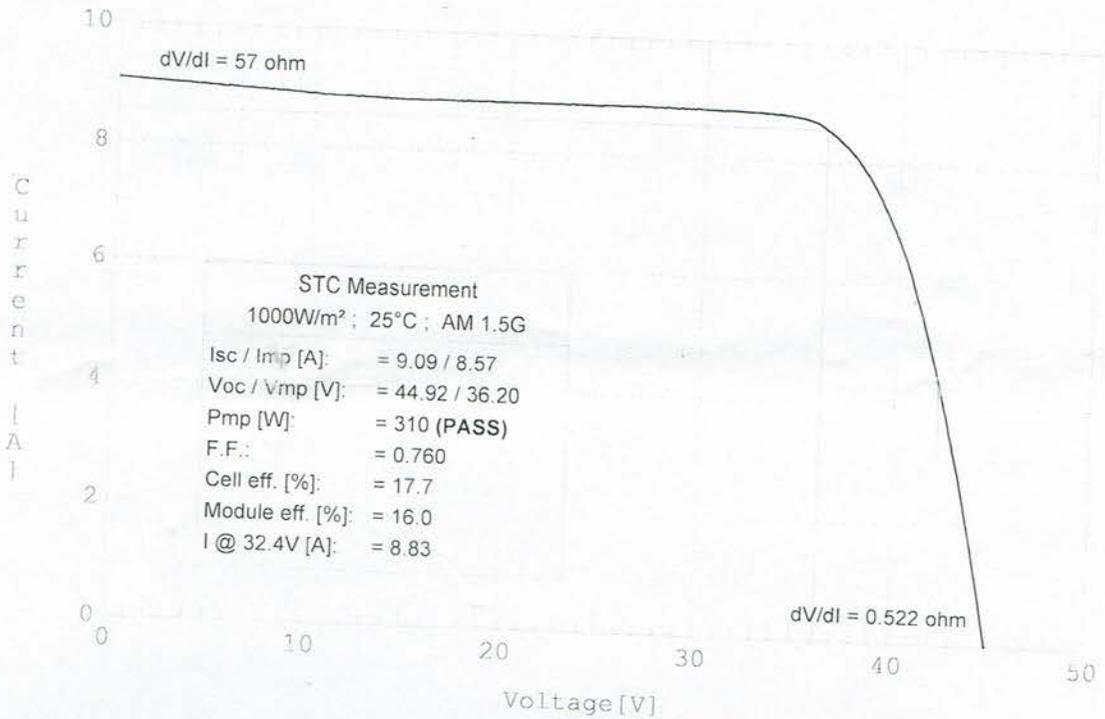
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Solar Energy Centre

File: Unnamed
Module name: Multi C-Si 91/0715

QuickSun Flash Tester
Version 5.18.19

Print Date: 11/08/2015



Module:	1	Operator:	JRS(MANOJ)
Name:	Multi C-Si 91/0715	#:	NS290
Bin #:	Yr-		
Manufacturer:	NAVITASSOLAR	Product ID:	NS290061500001
Current temp. coeff. (microA/cm ² /°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 (cm ²):	243.36	Module area (m ²):	1.933495
Cells parallel:	1	Cells serial:	72
Ambient temp. (°C):	25.7	Sensor temp. (°C):	24.9
Irradiance (W/m ²):	1000	Corrected temp. (°C):	25.0
Isc (A):	9.09	Imp (A):	8.57
Voc (V):	44.92	Vmp (V):	36.20
Pmp (W):	310	F.F.:	0.760
Cell eff. (%):	17.7	Module eff. (%):	16.0
Est. shunt resistance: (ohm)	57	Est. series resistance: (mohm)	522

Notes:

Capal kumar

Raj
12/08/2015





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

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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				

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