

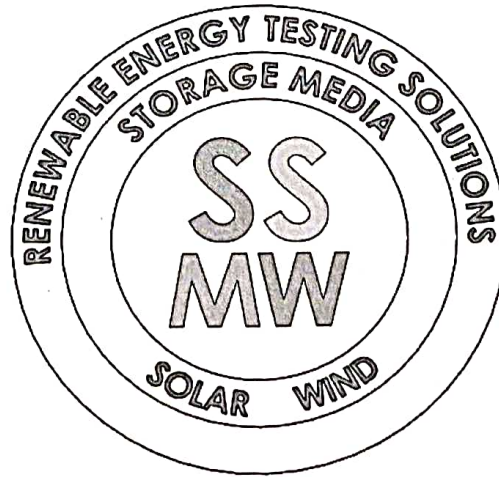


SMSW LAB & RESEARCH CENTRE, LLP TEST REPORT



1.	Customer Details :- Neosol Technologies Pvt. Ltd. Plot No. 173, Sec-6, IMT Manesar, Gurgaon 122051 (Haryana), India Mobile No. : +91 9990 271 257	Testing Laboratory Details :- SMSW LAB & RESEARCH CENTRE LLP Plot No :- 90 ,Sector :- 5 IMT Manesar , Gurgaon , Haryana – 122052 Tel :- +91-124-4642736
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2.	Test Report No :- SMSW LAB/ 2020 ~ 2021/ 14 Dated :- 25.10.2020, Rev No :- 00, Lab Project No :- 2021/14
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Prepared By :- Gaurav Kumar (Quality Manager)	Verified By :- Bhatat Uppin (Technical Manager)
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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F
Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 1 of 9



SMSW LAB & RESEARCH CENTRE, LLP TEST REPORT



TC-7566

3.	Discipline :- Electronics	3.1	Group :- Miscellaneous Products
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4.	
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General Details of Sample / Project					
Customer Name and Address	Neosol Technologies Pvt. Ltd. Plot No. 173, Sec-6, IMT Manesar, Gurgaon 122051 (Haryana), India Mobile No. : +91 9990 271 257				
Test Lab Location	SMSW LAB & RESEARCH LLP (For Details Address please refer the Page No 1)				
Device Under Test (DUT)	Solar Photovoltaic (PV) Module 5 Busbar Poly Crystalline , 36 Cell, 1000 & 600 System voltage ,				
PV Module Manufacturer	Neosol Technologies Pvt. Ltd. Plot No. 173, Sec-6, IMT Manesar, Gurgaon 122051 (Haryana), India Mobile No. : +91 9990 271 257				
Manufacturer Sr No (If Any)	Refer the Test Result Table				
Sample Receipt Date	22-Oct-2020				
Test Lab Sample Identification	Refer The Test Result Table				
No of Sample	5Nos (40 Wp-01, 50 Wp-01, 75 Wp-01, 100 Wp-01, 150 Wp-01)				
DUT Condition on Receipt	Good				
Applicable Test Standard	IEC 61215:2005				
Customer Requirement if any	No				
Sample forwarding letter/ PO/Gate Pass No. & Date:	Delivery challan No.- NSPL/20-21/004 , Dated 22.10.2020				
Buyer Name & Address , Contact Information	Mr. Abhinav Pathak (Neosol Technologies Pvt. Ltd.) , 9990271257				
Test Start Date	22.10.2020	Test End Date	24.10.2020	Report Issue Date	25.10.2020
SMSW Lab Ambient Temp Condition	Temperature in ° C :- 25 ± 3° C Relative Humidity in % :- <70 % RH				
Test In-Charge Bharat Uppin (Technical Manager)	Authorized Signatory				
	Amresh Mahajan (Head of Laboratory)		Or	Gaurav Kumar (Quality Manager)	

Note: - SMSW Lab hasn't participated in the sample selection .The Applicable Standard and raw data of test report are available with SMSW Lab

Prepared By :- Gaurav Kumar (Quality Manager)	Verified By :- Bharat Uppin (Technical Manager)
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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F
Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 2 of 9

Plot No. 90, Sector-5, IMT, Manesar, Gurugram, Haryana - 122052, INDIA, Tel: +91-124-4642736
Email ID :- info@smswlab.in, Web Site :- www.smswlab.in



SMSW LAB & RESEARCH CENTRE, LLP TEST REPORT



TC-7566

5.					
Summary of Test Result (Project)					
Test No	Test Name	Test Standard and Clause No	Test Lab Sample Identification	No of Sample Tested	Result
01	Maximum Power Determination at STC	IEC 61215:2005/ IS 14286:2010, Clause No 10.2	Refer The Test Result Table	05 Nos	NA

Abbreviations:-

Pass	:	Sample Meet the Standard Requirement
Fail	:	Sample doesn't meet the Standard Requirement
NA	:	Not Applicable
Isc	:	Short Circuit Current
Voc	:	Open Circuit Voltage
Imp /Ipm:	:	Current at Pmax
Vmp/Vpm :	:	Voltage at Pmax
FF	:	Fill Factor
Temp	:	Temperature
SOP	:	Standard Operating Procedure (Work Instruction)
Pmax/Pmp:	:	Maximum Power
N/A	:	Not Available
Spec	:	Specification
OEM	:	Original Equipment Manufacturer
STC	:	Standard Test Conditions

6.				
Equipment Details which was used for Testing				
Sr. No	SMSW Test Equipment	Make & Model	SMSW Lab Equipment ID	Calibration Status (Valid Up To & Calibrated By)
01	Camera	Sony ILCE-5000 L/B AP2	SMSW/DC/01	NA
02	Measuring Tape	Freemans	SMSW/MT/01	27 Dec 2020 Vaishno Calibration Services
03	Hygrometer	HTC	SMSW/HM/01	09 Jan 2021 Quality Service & Laboratories
04	Sun Simulator	Spire 5100 Blue	SMSW/SS/01	Temp Sensor :- 27 Dec 2020 Micro Calibration Lab DAQ & LM Board :- 30 Oct 2020 Eternalsun spire(OEM)
05	Reference Module	Wanxiang 80201101211011	SMSW/RM/01	25 May 2021 (Spire)

Prepared By :- Gaurav Kumar (Quality Manager)		Verified By :- Bharat Uppin (Technical Manager)	
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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC75662000000032F

Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 3 of 9



SMSW LAB & RESEARCH CENTRE, LLP TEST REPORT



TC-7566

7.								
7.1 Test No -1 Maximum Power Determination at STC								
Type of Test Method Used :-								
Standard Test Method			Non Standard Test Method			Laboratory Developed Test Method		
<input checked="" type="checkbox"/>			<input type="checkbox"/>			<input checked="" type="checkbox"/>		
Test Standard and Clause No:- IEC 61215:2005/ IS 14286:2010 Clause no 10.2								
Test Procedure :- As per IEC 61215:2005/ IS 14286:2010 clause no 10.2 and Lab SOP No :- SOP/LAB/02 Rev No :- 02 ,Dated :- 01.03.2019								
Purpose of Test :- 1- To determine the maximum power of the module								
Test Sample:- Total 05 Nos PV Module was tested								
7.1.1 Packing Box Detail (If any) :- NA								
Clause		Requirements+ Test			Result- Remark			Verdict
7.1.2 Test Set up Conditions :-								
Test Date [DD/MM/YYYY]..... :					24.10.2020			
Module Temperature [°C]..... :					25 °C (Corrected)			
Irradiance (W/m ²)..... :					1000 W/m ² (Corrected)			
Test Result Table								
LAB ID	Serial No	Pmax (Wp)	FF	Voc (V)	Isc (A)	Vpm(V)	Ipm(A)	M - Eff %
SMSW-2021-419	36NSSEP1502000084	160.903	0.788	22.785	8.958	19.018	8.461	16.24
SMSW-2021-420	36NSSEP2002501	82.325	0.806	22.814	4.477	19.387	4.247	15.97
SMSW-2021-421	36NSSEP2005200	53.888	0.788	22.750	3.007	19.160	2.813	15.06
SMSW-2021-422	36NSSEP2004801	108.447	0.800	22.848	5.936	19.259	5.631	16.15
SMSW-2021-423	36NSSEP2005010	43.941	0.852	22.831	2.259	19.810	2.218	15.55
Test Result (IV Curve)								
LAB ID :- SMSW-2021-419, Module Sr No:- 36NSSEP1502000084								
						<p>Lab Project no - 2021/14 Neosol 150Wp Operator Admn ID 36NSSEP1502000084 Module Type ModuleType1 14 08 36 24-10-2020 Measured Temp 24.8 °C Corrected Temp 25.0 °C Irr Meas 100.2mW/cm² Irr Corr. 100.0mW/cm² Voc 22.785V Isc 8.958A Pmax 160.902W Vpm 19.018V Ipm 8.461A FF 0.788 Eff c 18.133% Eff m 16.239% Rs 0.215 Ohm Rsh 118.644 Ohm MCCC1 1.117 Intensity V 6.719V Capacitor Voltage 2450V Load V 6.460V Sampling Frequency 409000 Hz Sweep Delay 7 ms Sweep Length 40 ms Sweep Direction Isc->Voc IV Points 3701</p>		

Prepared By :- Gaurav Kumar (Quality Manager)		Verified By :- Bharat Uppin (Technical Manager)	
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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F

Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 4 of 9

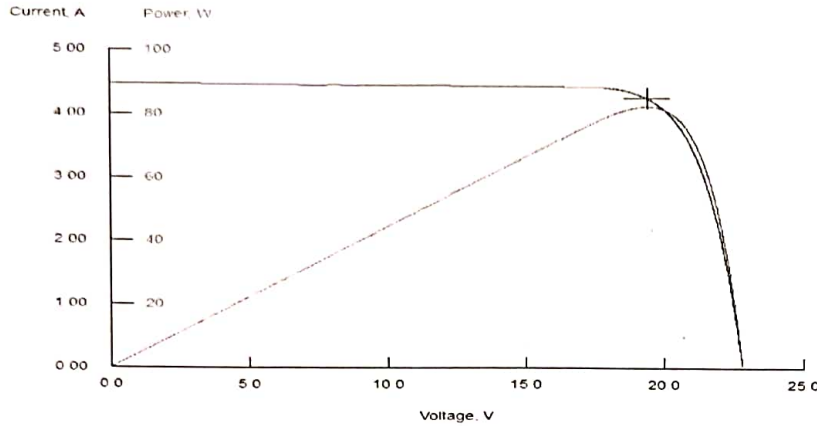


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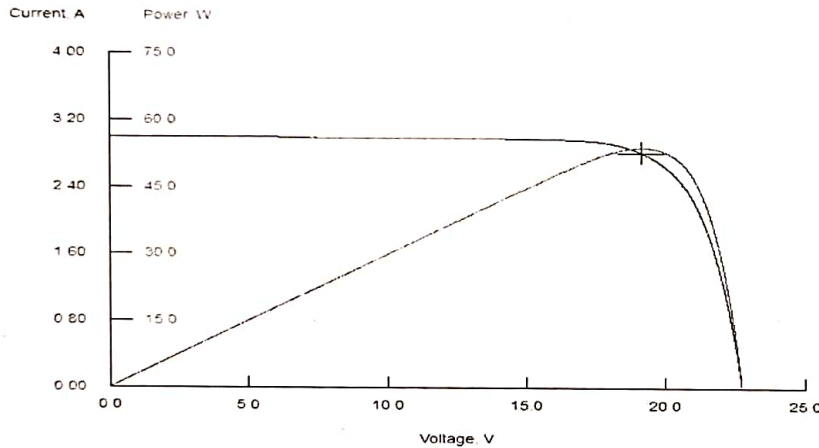
TC-7566

LAB ID :- SMSW-2021-420, Module Sr No:- 36NSSEP2002501



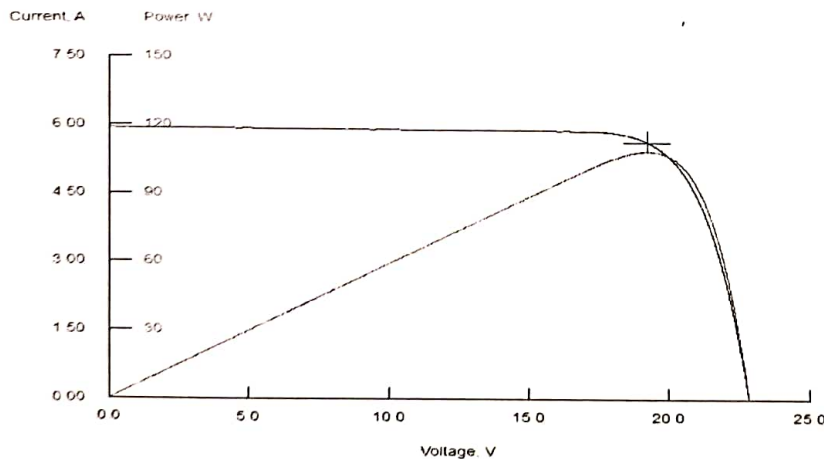
Lab Project no - 2021/14
 Neosol 75Wp
 Operator Admin
 ID 36NSSEP2002501
 Module Type ModuleType1
 14 36 26 24-10-2020
 Measured Temp 25.5 °C
 Corrected Temp 25.0 °C
 Irr Meas 100.1mW/cm²
 Irr Corr 100.0mW/cm²
 Voc 22.614V
 Isc 4.477A
 Pmax 82.325W
 Vpm 19.387V
 Ipm 4.247A
 FF 0.806
 Eff c 18.674%
 Eff m 15.974%
 Rs 0.287 Ohm
 Rsh 398.006 Ohm
 MCCC1 1.117
 Intensity V 6.720V
 Capacitor Voltage 2450V
 Load V 3.912V
 Sampling Frequency 409000 Hz
 Sweep Delay 7 ms
 Sweep Length 40 ms
 Sweep Direction Isc->Voc
 IV Points 3678

LAB ID :- SMSW-2021-421, Module Sr No:- 36NSSEP2005200



Lab Project no - 2021/14
 Neosol 50Wp
 Operator Admin
 ID 36NSSEP2005200
 Module Type ModuleType1
 14 52 04 24-10-2020
 Measured Temp 25.6 °C
 Corrected Temp 25.0 °C
 Irr Meas 100.2mW/cm²
 Irr Corr 100.0mW/cm²
 Voc 22.750V
 Isc 3.007A
 Pmax 53.888W
 Vpm 19.160V
 Ipm 2.913A
 FF 0.788
 Eff c 18.335%
 Eff m 15.062%
 Rs 0.452 Ohm
 Rsh 389.750 Ohm
 MCCC1 1.117
 Intensity V 6.720V
 Capacitor Voltage 2450V
 Load V 3.212V
 Sampling Frequency 409000 Hz
 Sweep Delay 7 ms
 Sweep Length 40 ms
 Sweep Direction Isc->Voc
 IV Points 2714

LAB ID :- SMSW-2021-422, Module Sr No:- 36NSSEP2004801



Lab Project no - 2021/14
 Neosol 100Wp
 Operator Admin
 ID 36NSSEP2004801
 Module Type ModuleType1
 14 16 44 24-10-2020
 Measured Temp 25.3 °C
 Corrected Temp 25.0 °C
 Irr Meas 100.1mW/cm²
 Irr Corr 100.0mW/cm²
 Voc 22.648V
 Isc 5.936A
 Pmax 108.447W
 Vpm 19.259V
 Ipm 5.631A
 FF 0.800
 Eff c 18.449%
 Eff m 16.146%
 Rs 0.261 Ohm
 Rsh 234.101 Ohm
 MCCC1 1.117
 Intensity V 6.720V
 Capacitor Voltage 2450V
 Load V 4.813V
 Sampling Frequency 409000 Hz
 Sweep Delay 7 ms
 Sweep Length 40 ms
 Sweep Direction Isc->Voc
 IV Points 3487

Prepared By :- Gaurav Kumar
(Quality Manager)

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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F
Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 5 of 9

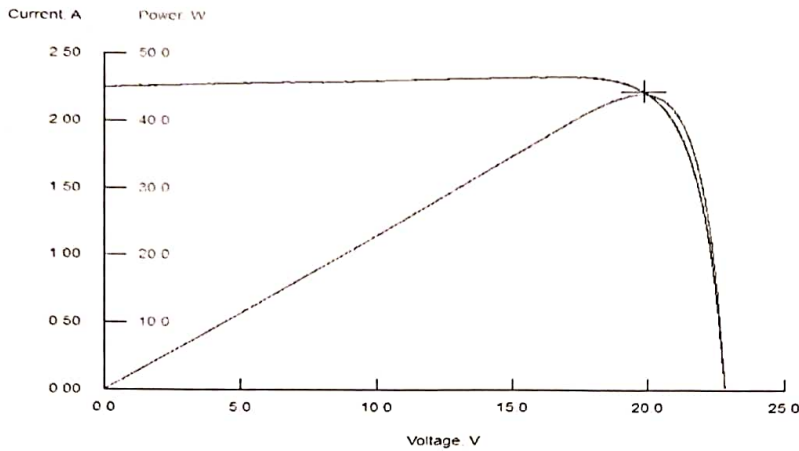


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TC-7566

LAB ID :- SMSW-2021-423, Module Sr No:- 36NSSEP2005010



Lab Project no - 2021/14
Irrsol 40 V/m
Operator Admin
ID 36NSSEP2005010
Module Type Module Type1
17 06 25 24-10-2020
Measured Temp 25.7 °C
Corrected Temp 25.0 °C
Irr Meas 100 mW/cm^2
Irr Corr 100 mW/cm^2
Voc 22.831V
Isc 2.259A
Pmax 43.941W
Vpm 19.810V
Ipm 2.218A
FF 0.852
Eff c 19.934%
Eff m 15.546%
Rs 0.426 Ohm
Rsh 163.846 Ohm
MCCC1 1.128
Intensity V 6.789V
Capacitor Voltage 2450V
Load V 2.670V
Sampling Frequency 468000 Hz
Sweep Delay 6 ms
Sweep Length 35 ms
Sweep Direction Isc -> Voc
IV Points 3683

7.1.3 Supplementary Information

Preconditioning not done as per customer requirement.

7.1.4 Acceptance Criteria

NA as per IEC 61215:2015/IS 14286:2010 Clause no.- 10.2

Prepared By :- Gaurav Kumar
(Quality Manager)

Verified By :- Bharat Uppin
(Technical Manager)

Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F

Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 6 of 9



SMSW LAB & RESEARCH CENTRE, LLP TEST REPORT



TC-7566

8. Copy of Marking Plate

<p>NEOSOL NEOSOL TECHNOLOGIES PVT. LTD. 173/6, IMT Manesar, Gurgaon, Haryana-122051, India</p> <p>Model No. : NS48P6-150</p> <p>Rated Maximum Power (Pmax) 150 W Open Circuit Voltage (Voc) 23.14 V Short Circuit Current (Isc) 8.99 A Voltage At Pmax (Vmp) 19.65 V Current At Pmax (Imp) 8.46 A Maximum System Voltage 1000 VDC Operating Temperature -40°C TO 85°C Application Class CLASS A</p> <p>All Values measured at STC: 25°C TempCell, 1000W/m², AM 1.5</p> <p>WARNING - ELECTRICAL HAZARD The Unit Produces Electricity When Exposed to Light. Cover the Glass with an Opaque Material, Before opening Terminal Box. Don't Disconnect the Plugs under Load.</p> <p> Manufacturing in Compliance with IEC 61215, IEC 61730</p> <p>TOLL Free No. : 1800 - 2002 - 636 Email : info@neosoltechnologies.com Website : www.neosoltechnologies.com MADE IN INDIA</p>	<p>NEOSOL NEOSOL TECHNOLOGIES PVT. LTD. 173/6, IMT Manesar, Gurgaon, Haryana-122051, India</p> <p>Model No. : NS36P4-75</p> <p>Rated Maximum Power (Pmax) 75 W Open Circuit Voltage (Voc) 23.14 V Short Circuit Current (Isc) 4.49 A Voltage At Pmax (Vmp) 19.65 V Current At Pmax (Imp) 4.21 A Maximum System Voltage 600 VDC Operating Temperature -40°C TO 85°C Application Class CLASS A</p> <p>All Values measured at STC: 25°C TempCell, 1000W/m², AM 1.5</p> <p>WARNING - ELECTRICAL HAZARD The Unit Produces Electricity When Exposed to Light. Cover the Glass with an Opaque Material, Before opening Terminal Box. Don't Disconnect the Plugs under Load.</p> <p> Manufacturing in Compliance with IEC 61215, IEC 61730</p> <p>TOLL Free No. : 1800 - 2002 - 636 Email : info@neosoltechnologies.com Website : www.neosoltechnologies.com MADE IN INDIA</p>	<p>NEOSOL NEOSOL TECHNOLOGIES PVT. LTD. 173/6, IMT Manesar, Gurgaon, Haryana-122051, India</p> <p>Model No. : NS36P3-40</p> <p>Rated Maximum Power (Pmax) 40 W Open Circuit Voltage (Voc) 23.14 V Short Circuit Current (Isc) 2.25 A Voltage At Pmax (Vmp) 19.65 V Current At Pmax (Imp) 2.11 A Maximum System Voltage 600 VDC Operating Temperature -40°C TO 85°C Application Class CLASS A</p> <p>All Values measured at STC: 25°C TempCell, 1000W/m², AM 1.5</p> <p>WARNING - ELECTRICAL HAZARD The Unit Produces Electricity When Exposed to Light. Cover the Glass with an Opaque Material, Before opening Terminal Box. Don't Disconnect the Plugs under Load.</p> <p> Manufacturing in Compliance with IEC 61215, IEC 61730</p> <p>TOLL Free No. : 1800 - 2002 - 636 Email : info@neosoltechnologies.com Website : www.neosoltechnologies.com MADE IN INDIA</p>
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<p>NEOSOL NEOSOL TECHNOLOGIES PVT. LTD. 173/6, IMT Manesar, Gurgaon, Haryana-122051, India</p> <p>Model No. : NS36P4-100</p> <p>Rated Maximum Power (Pmax) 100 W Open Circuit Voltage (Voc) 23.14 V Short Circuit Current (Isc) 5.95 A Voltage At Pmax (Vmp) 19.65 V Current At Pmax (Imp) 5.60 A Maximum System Voltage 600 VDC Operating Temperature -40°C TO 85°C Application Class CLASS A</p> <p>All Values measured at STC: 25°C TempCell, 1000W/m², AM 1.5</p> <p>WARNING - ELECTRICAL HAZARD The Unit Produces Electricity When Exposed to Light. Cover the Glass with an Opaque Material, Before opening Terminal Box. Don't Disconnect the Plugs under Load.</p> <p> Manufacturing in Compliance with IEC 61215, IEC 61730</p> <p>TOLL Free No. : 1800 - 2002 - 636 Email : info@neosoltechnologies.com Website : www.neosoltechnologies.com MADE IN INDIA</p>	<p>NEOSOL NEOSOL TECHNOLOGIES PVT. LTD. 173/6, IMT Manesar, Gurgaon, Haryana-122051, India</p> <p>Model No. : NS36P3-50</p> <p>Rated Maximum Power (Pmax) 50 W Open Circuit Voltage (Voc) 23.14 V Short Circuit Current (Isc) 2.99 A Voltage At Pmax (Vmp) 19.65 V Current At Pmax (Imp) 2.82 A Maximum System Voltage 600 VDC Operating Temperature -40°C TO 85°C Application Class CLASS A</p> <p>All Values measured at STC: 25°C TempCell, 1000W/m², AM 1.5</p> <p>WARNING - ELECTRICAL HAZARD The Unit Produces Electricity When Exposed to Light. Cover the Glass with an Opaque Material, Before opening Terminal Box. Don't Disconnect the Plugs under Load.</p> <p> Manufacturing in Compliance with IEC 61215, IEC 61730</p> <p>TOLL Free No. : 1800 - 2002 - 636 Email : info@neosoltechnologies.com Website : www.neosoltechnologies.com MADE IN INDIA</p>
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9. Photo Graphs of Sample and Other Details

Module Size (Length x Width)	1490 X 665 mm	1010 X 665 mm	775 X 665 mm	538 X 665 mm	425 X 665 mm
Frame Size	35 X 25 mm	30 X 25 mm	30 X 25 mm	35 X 20 mm	30 X 25 mm
Cell Size (Length x Width)	157 X 157 mm	104 X 157 mm	78 X 157mm	52 X 157mm	39 X 157 mm
Module Type/ Model No	NS48P6-150	NS36P4-100	NS36P4-75	NS36P3-50	NS36P3-40
No of Cell / Cell Technology	36 (9X6 Matrix) / Poly	36 (9X4 Matrix) / Poly	36 (9X4 Matrix) / Poly	36 (9X4 Matrix) / Poly	36 (9X4 Matrix) / Poly
Maximum System Voltage	1000 V Dc		600 V Dc		

Prepared By :- Gaurav Kumar (Quality Manager) <i>GK</i>	Verified By :- Bharat Uppin (Technical Manager) <i>BUP</i>
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Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F
Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 7 of 9

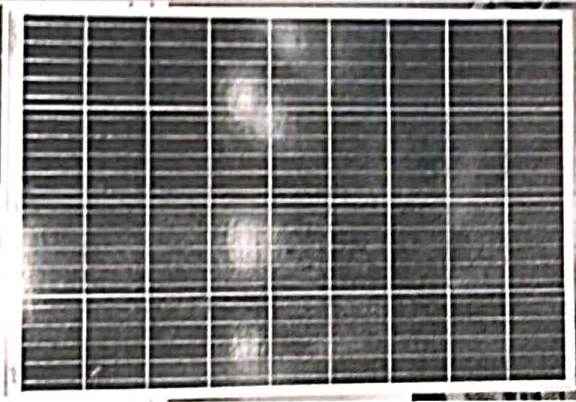


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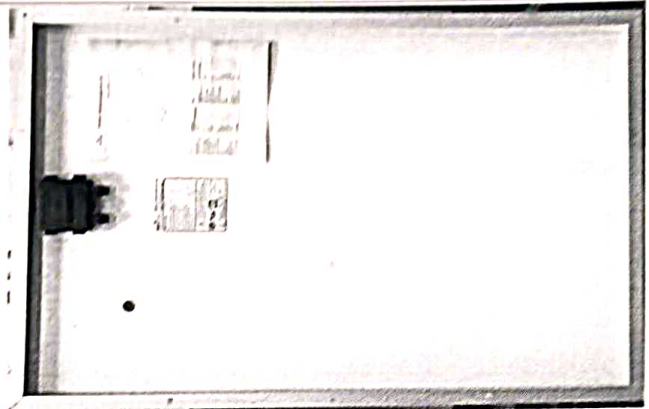


TC-7566

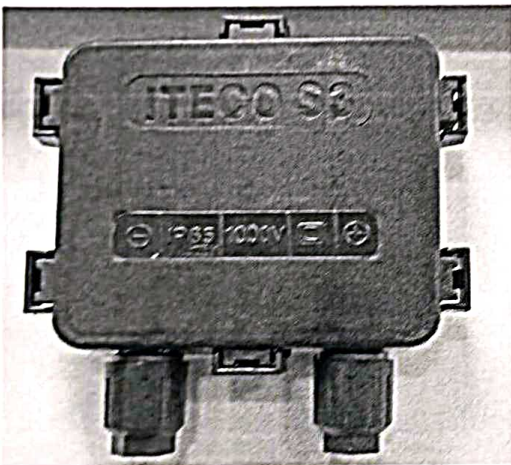
Front view of Sample



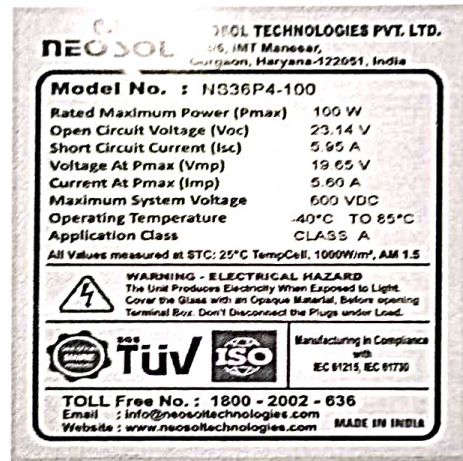
Rear view of Sample



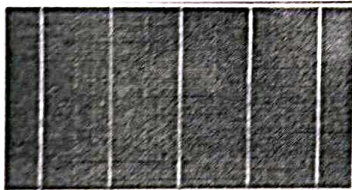
Detail view of Junction Box



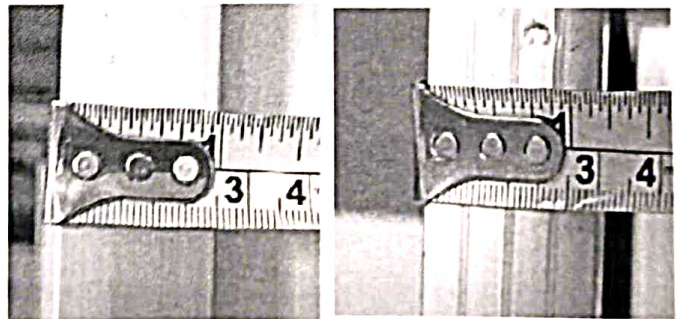
Details view of Type Label



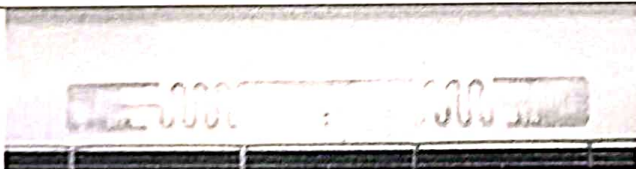
Detail view of Cell



Frame Details



Detail view of RFID



Prepared By :- Gaurav Kumar
(Quality Manager)

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(Technical Manager)

Report No: - SMSW LAB/ 2020 ~ 2021/14, Rev No: - 00 , ULR No:- TC756620000000032F
Format No: - F/SMSW/ Lab/15, Rev No:- 05, Rev Date :- 01.06.2020 Page 8 of 9