



SMSW LAB & RESEARCH CENTRE TEST REPORT



1.

Customer Details :-

Neosol Technologies Pvt.Ltd
Plot No.173,Sec-6,IMT Manesar,Gurgaon -
122051 (Haryana)

Testing Laboratory Details :-

SMSW LAB & RESEARCH CENTRE LLP
Plot No :- 90 ,Sector :- 5
IMT Manesar , Gurgaon ,
Haryana – 122052
Tel :- +91-124-4642736

2.

Test Report No :- SMSW LAB/ 2019 ~ 2020/ 25
Dated :-24.09.2019, Rev No :- 0
Lab Project No :- 1920/25



Prepared By :- Gaurav Kumar
(Quality Manager) *Gaurav*

Verified By :- Bharat Uppin
(Technical Manager) *Bharat*

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3.	Discipline :- Electronics	3.1	Group :- Miscellaneous Products
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4.

General Details of Sample / Project					
Customer Name and Address		Neosol Technologies Pvt.Ltd Plot No.173,Sec-6,IMT Manesar,Gurgaon -122051 (Haryana)			
Test Lab Location		SMSW LAB & RESEARCH LLP (For Details Address please refer the Page No 1)			
Device Under Test (DUT)		Solar Photovoltaic (PV) Module			
PV Module Manufacturer		Neosol 275 & 335Wp			
Manufacturer Sr No (If Any)		Refer the Test Result Table			
Sample Receipt Date		21.09.2019			
Test Lab Sample Identification		Refer The Test Result Table			
No of Sample		02 Nos			
DUT Condition on Receipt		Good			
Applicable Test Standard		IEC 61215:2005			
Customer Requirement if any		Yes (Customer Required Result in Pass & Fail as per Back Label Tolerance)			
Sample forwarding letter/ PO/Gate Pass No. & Date:		Gate pass No :- NSPL/19-20/CH-09, Dated -21/09/2019			
Buyer Name & Address		Mr.Abhinav (Neosol Technologies PVT.LTD.)			
Test Start Date	23.09.2019	Test End Date	24.09.2019	Report Date	24.09.2019
SMSW Lab Ambient Temp Condition		Temperature in ° C :- 25 ± 3° C Relative Humidity in % :- <70 % RH			
Test In-Charge Bharat Uppin (Technical Manager) <i>sharat</i>	Authorized Signatory				
	<i>Amresh Mahajan</i> (Head of Laboratory) or	Bharat Uppin (Technical Manager) or	<i>Gaurav Kumar</i> (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) <i>Gaurav</i>	Verified By :- Bharat Uppin (Technical Manager) <i>sharat</i>
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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 Clause No :- 10.2	Refer The Test Result Table	02 Nos	NA (As standard doesn't have any criteria) Sample Pass as per Back Label Tolerance Manufacture Claim :- 275±3% & 335±3% Actual :- 282.052 wp 341.831 wp

Pass = Sample Meet the Standard Requirement

Fail = Sample doesn't Meet the Standard Requirement

NA = Not Applicable

6.

Equipment Details which was used for Testing

Sr. No	SMSW Test Equipment	Make & Model	SMSW Lab Equipment ID	Calibrated By	Calibration Status (Valid Up To)
1	Sun Simulator	Spire 5100 Blue	SMSW/SS/01	Micro Calibration Lab Spire Eternal sun	01 Jan 2020 1 Nov 2019
2	Reference Module	MSE320SB1A Mission Solar	SMSW/RM/03	Spire Solar	21 May 2021
3	Hygrometer	HTC	SMSW/HM/01	NCL Pvt Ltd.	03 Jan 2020
4	Measuring Tape	Levo 5Mtr.	SMSW/MT/01	Vaishno Cal.Service	03 Jan 2020

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7.								
7.1	Test No -1. Maximum Power Maximum Power Determination at STC							
Type of Test Method Used :-								
Standard Test Method	<input checked="" type="checkbox"/>	Non Standard Test Method	<input type="checkbox"/>	Laboratory Developed Test Method	<input type="checkbox"/>			
Test Standard and Clause No:- IEC 61215 : 2005 Clause No :- 10.2								
Test Procedure:-								
1- As per IEC 61215:2005 Clause no 10.2 and SOP No :- SOP/LAB/02 Rev No 02, Effective Date :- 01.03.2019								
Purpose of Test:- To determine the maximum power								
Test Sample :- Total 02 Nos PV Module were tested for Maximum Power Determinations at STC								
Test Set Up (Configuration) :								
The following equipment were used to perform the Maximum Power Determination Test.								
<p>A. Class A+++ Solar Simulator as per IEC 60904-9. The test platform area of solar simulator was grater then area that is spanned by the test sample or specimen.</p> <p>B. A PV reference solar module as per IEC 60904-2 was used to calibrate the sun simulator specimen</p> <p>C. A means for monitoring the temperature of the test to an accuracy of ± 1 °C and repeatability of ± 0.5 °C.</p>								
7.1.1	Packing Box Detail (If any):- NA							
Test Set up Conditions:-								
Cell Temperature (°C)				25 °C (Corrected)				
Irradiance (W/m ²)				1000 W/m ²				
7.1.2	Test Result Table							
LAB ID	Serial No	P Max (W)	FF	Voc (V)	Isc (Amps)	Vmp (V)	Imp (Amps)	Module Efficiency (%)
SMSW-1920-812	72NSSEP3351900324	341.830	0.798	47.516	9.010	40.210	8.501	17.617
SMSW-1920-813	60NSSEP2751900098	282.052	0.732	40.466	9.517	31.349	8.997	17.277

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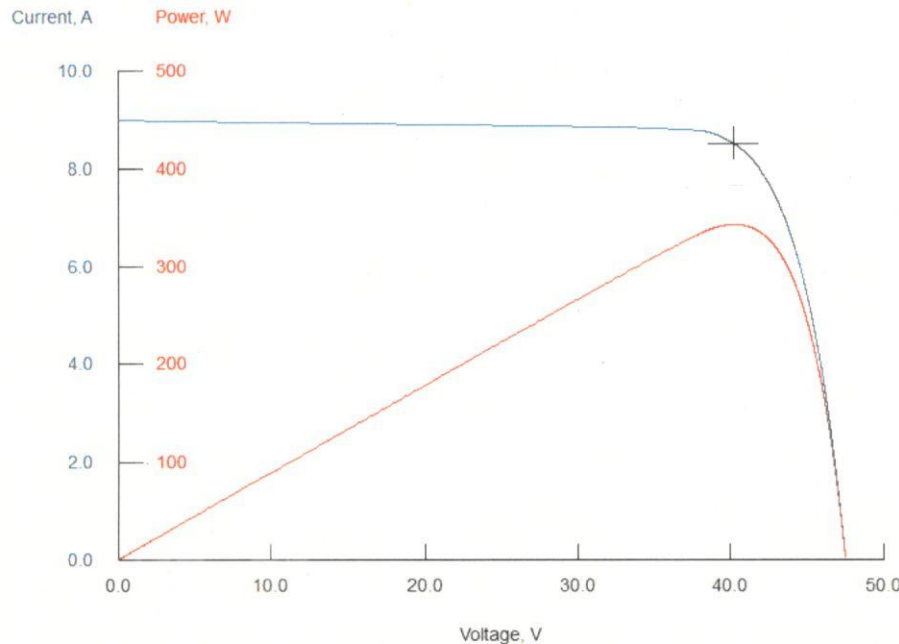
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Certificate No.: TC-7566

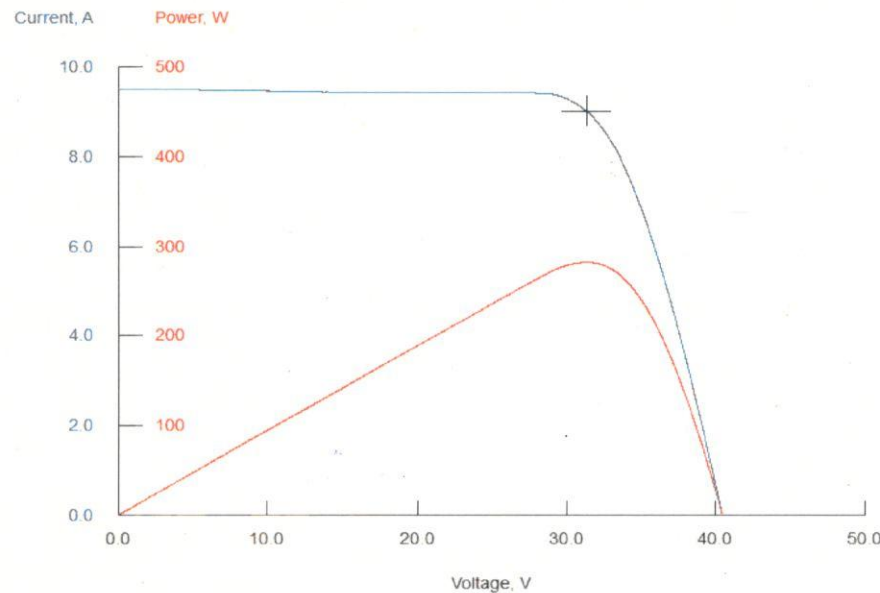
7.1.3 Test Result (IV Curve)

LAB ID:- SMSW-1920-812, Module Sr. No:- 72NSSEP3351900324



Project No :- 1920/25
Neosol 335 WP
Operator: Admin
ID: 72NSSEP3351900324
Module Type: ModuleType1
11:57:03 24-09-2019
Measured Temp: 25.1 °C
Corrected Temp: 25.0 °C
Irr Meas: 100.1mW/cm²
Irr Corr: 100.0mW/cm²
Voc: 47.516V
Isc: 9.010A
Pmax: 341.830W
Vpm: 40.210V
Ipm: 8.501A
FF: 0.798
Eff.c: 19.323%
Eff.m: 17.617%
Rs: 0.344 Ohm
Rsh: 195.891 Ohm
MCCC1: 1.085
Intensity V: 6.527V
Capacitor Voltage: 2450V
Load V: 6.900V
Sampling Frequency: 349000 Hz
Sweep Delay: 7 ms
Sweep Length: 48 ms
Sweep Direction: Isc->Voc
IV Points: 2297

LAB ID:- SMSW-1920-813, Module Sr. No:- 60NSSEP2751900098



Project No :- 1920/25
Neosol 275 WP
Operator: Admin
ID: 60NSSEP2751900098
Module Type: ModuleType1
12:55:49 24-09-2019
Measured Temp: 25.6 °C
Corrected Temp: 25.0 °C
Irr Meas: 100.1mW/cm²
Irr Corr: 100.0mW/cm²
Voc: 40.466V
Isc: 9.517A
Pmax: 282.052W
Vpm: 31.349V
Ipm: 8.997A
FF: 0.732
Eff.c: 19.133%
Eff.m: 17.277%
Rs: 0.671 Ohm
Rsh: 395.332 Ohm
MCCC1: 1.124
Intensity V: 6.761V
Capacitor Voltage: 2450V
Load V: 6.900V
Sampling Frequency: 349000 Hz
Sweep Delay: 7 ms
Sweep Length: 48 ms
Sweep Direction: Isc->Voc
IV Points: 3518

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(Quality Manager)

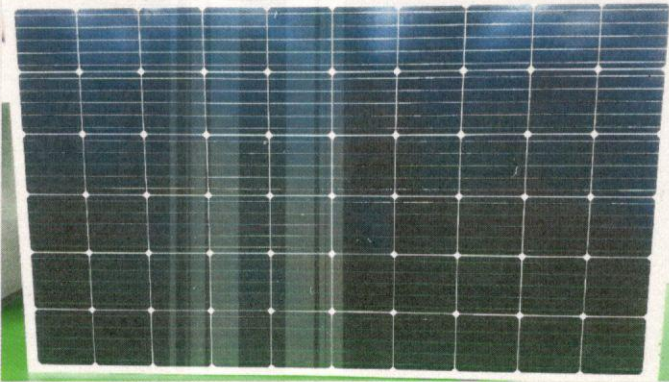

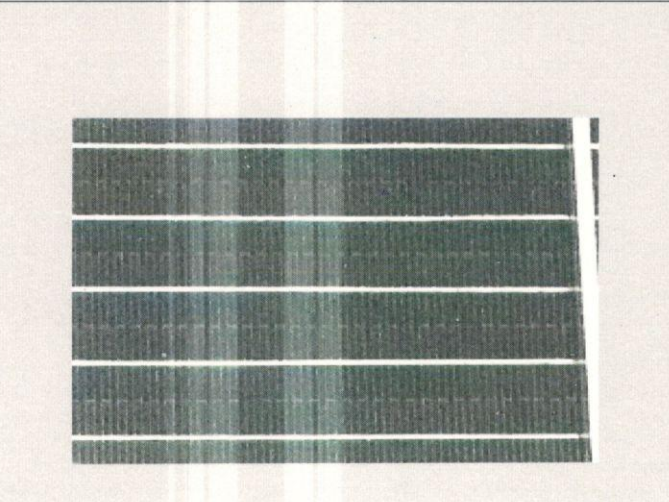
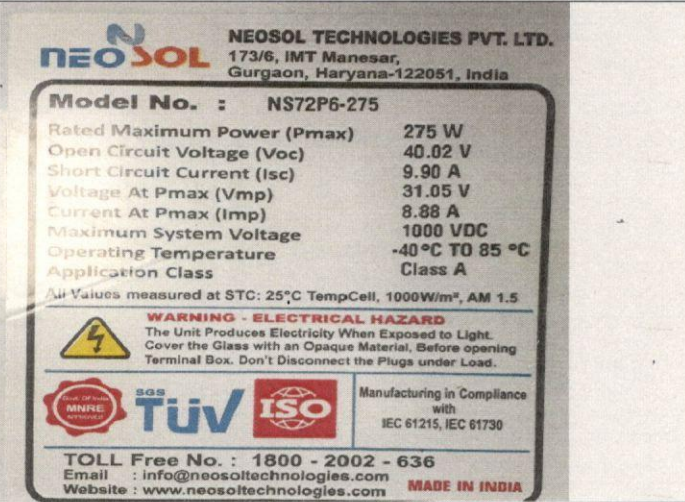
Verified By :- Bharat Uppin
(Technical Manager)

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7.1.4	Supplementary Information
Preconditioning not done as per customer requirement Cell Dimension provided by customer	
7.1.5	Acceptance Criteria
NA as per IEC 61215:2005 Clause No 10.2 Measured W_p with in $\pm 3\%$	
7.1.6	Photo Graphs of Sample and Other Details
Module Size (Length x Width)	1649 mm x 990 mm
Cell Size (Length x Width)	156.75mm x 156.75mm
Module Type	NS72P6-275
No of Cell	60 (10 X 6 Matrix)
Maximum System Voltage	1000V
Front view of Sample	Rear view of Sample
	
Detail view of Cell	Details view of Type Label
	

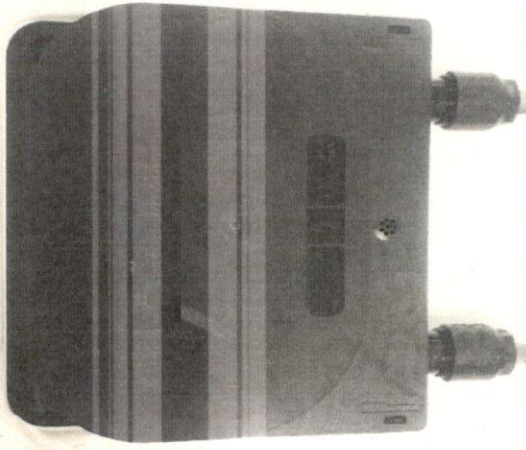
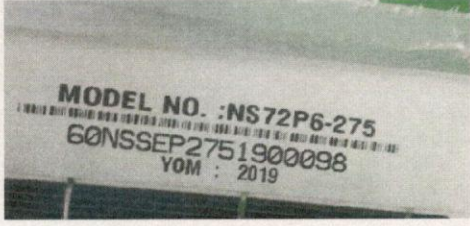
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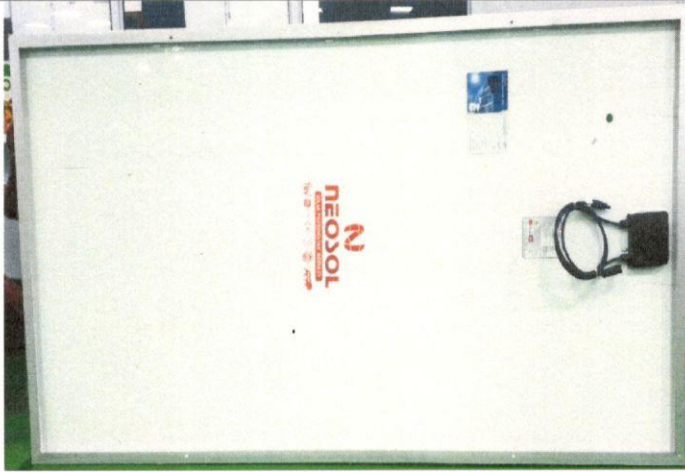


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<i>Detail view of Junction Box</i>	<i>Detail View of Serial No</i>
	

7.1.6 *Photo Graphs of Sample and Other Details*

<i>Module Size (Length x Width)</i>	1960 mm x 990 mm
<i>Cell Size (Length x Width)</i>	156.75 mm x 156.75mm
<i>Module Type</i>	NS72P6-335
<i>No of Cell</i>	72 (12 X 6 Matrix)
<i>Maximum System Voltage</i>	1000V
<i>Front view of Sample</i>	<i>Rear view of Sample</i>
	
<i>Detail view of Cell</i>	<i>Details view of Type Label</i>

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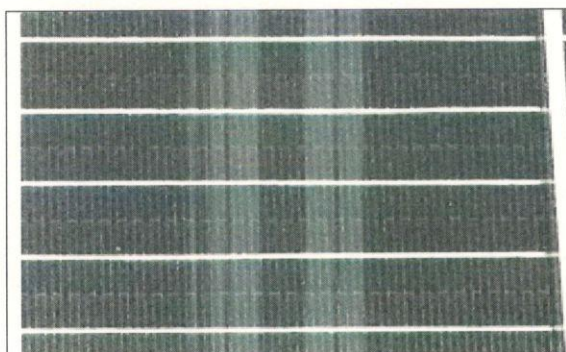
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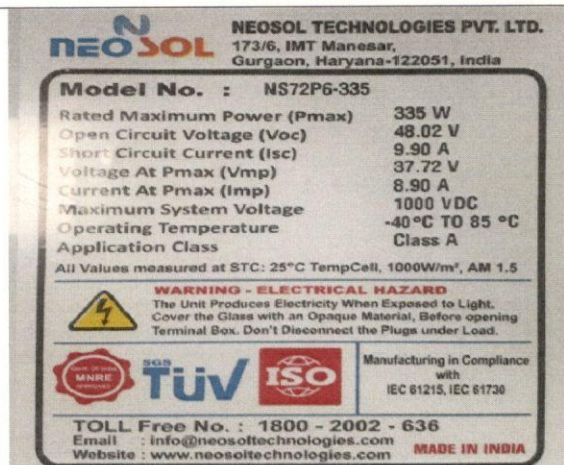
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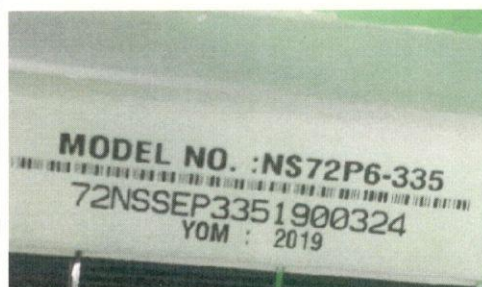
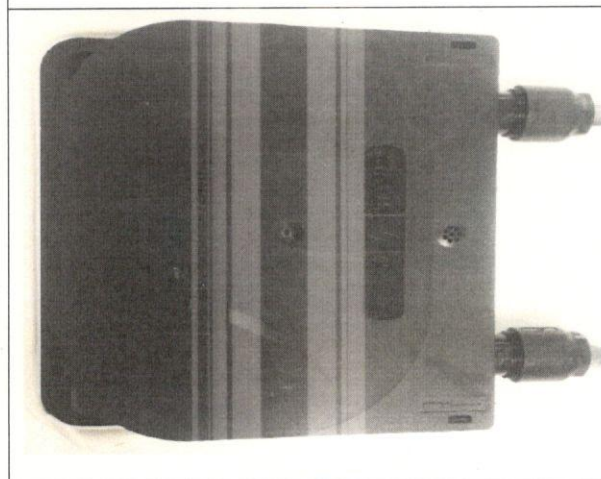
Certificate No.: TC-7566



Detail view of Junction Box



Detail View of Serial No



8.

Statement of the Estimated Measurement Uncertainty of Sun Simulator :-

1. The Measurement Uncertainty of PMax Measurement is 2.47% with Coverage Factor k= 2 and Confidence Level 95%
2. The Measurement Uncertainty of Current Measurement is 0.23% with Coverage Factor k= 2 and Confidence Level 95%
3. The Measurement Uncertainty of Voltage Measurement is 0.23% with Coverage Factor k= 2 and Confidence Level 95%

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9.

NOTE:-

1. The Test Results relates only to the item(s) tested.
2. The Test Report shall not be reproduced except in full, without the written consent of Quality Manager – SMSW Lab & Research Centre
3. The results reported in this test report are valid at the time of and under the stipulated conditions of measurements.

..... End of Test Report

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