

Test Report

SHANTI SOLAR

REPORT NUMBER : 4789149632.1.1-NABL-S1

PROJECT NUMBER : 4789149632.1.1

ULR NUMBER : TC616819100001080F



TC-6168, TC-6221,
TC-8159

Location (A)

UL India Pvt Limited,
Laboratory building,
Kalyani Platina Campus,
Sy.no.129/4, EPIP Zone,
Phase II, Whitefield,
Bangalore - 560 066
P:91-80-41384400

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Location (B)

UL India Pvt Limited,
A-12, Sector 34, Infocity
Phase 1, Gurugram -
122001

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Location (C)

UL India Pvt Limited,
Site: UL Jain Fire
Laboratory, Jain
University Campus,
Jakkasandra, Kanakpura
Taluk, Ramanagara Dist. -
562112

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TEST DISCIPLINE: ELECTRONICS
PRODUCT GROUP: SOLAR PANEL




General details

Customer / Applicant	Shanti Solar Plot No-S4-E1,20/A Info valley II, EMC Park, Harekrushnapur, Jatani, Khordha, Odisha, 752054 India		
Manufacturer	Shanti Solar Plot No-S4-E1,20/A Info valley II, EMC Park, Harekrushnapur, Jatani, Khordha, Odisha, 752054 India		
Program	NABL		
Test Lab Location	(a) UL Bangalore	Refer to Cover page for the UL address	
Item Under Test	Poly Crystalline Solar PV Modules of 330Wp		
Model	Tested Model SS330P represented the below models-SSXXXP (XXX=330-300Wp for 72-cells in steps of 5Wp) ; SSXXXP (XXX=275-250Wp for 60 cells in steps of 5Wp) ; SSXXXP (XXX=245-225Wp for 54 cells in steps of 5Wp) ; SSXXXP (XXX=220-200Wp for 48 cells in steps of 5Wp) & SSXXXP (XXX=165-150Wp for 36 cells in steps of 5Wp)		
Number of Samples	03 Nos		
UL Sample Identification	2571528; 2571529; 2571530	Refer Summary of Test results for multiple samples	
Manufacturer Serial Number (if any)	SS3300719000442; SS3300719000431; SS3300719000437		
Condition of IUT on receipt	Good		
Date of Receipt	23 September 2019		
Applicable Standard	IEC 61701 SALT MIST CORROSION TESTING OF PHOTOVOLTAIC (PV) MODULES- Edition 2 - Issue Date 2011/12/01, Severity Level-6		
Date of Testing (Start date)	1 October 2019	End Date	29 November 2019
UL general^ ambient condition	Temperature in °C		23 ±5°C
	Relative humidity in %		<70 %
Date of Reporting	29 November 2019		
Test In-charge	Ashuthosh B V		

 Supratik Ghosh Engineer Project Associate		 R. Prathap Sr. Project Engineer	
Reviewed by		Authorized signatory	

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General Remarks (If any)

- 1) *The below got test results in this report will relate only to the items tested.*
- 2) *This report shall not be reproduced except in full, without the written approval of the testing laboratory.*

Description of Item under Test (IUT)

Poly crystalline PV modules of 330Wp. Out of 3 samples 2 samples were tested and one module is considered as Control sample.

Enclosure:

Annexure A: Sample Identification

Annexure B: Summary of Test Results

Annexure C: Test Methods & test Results

Annexure D: Instruments Calibration Details

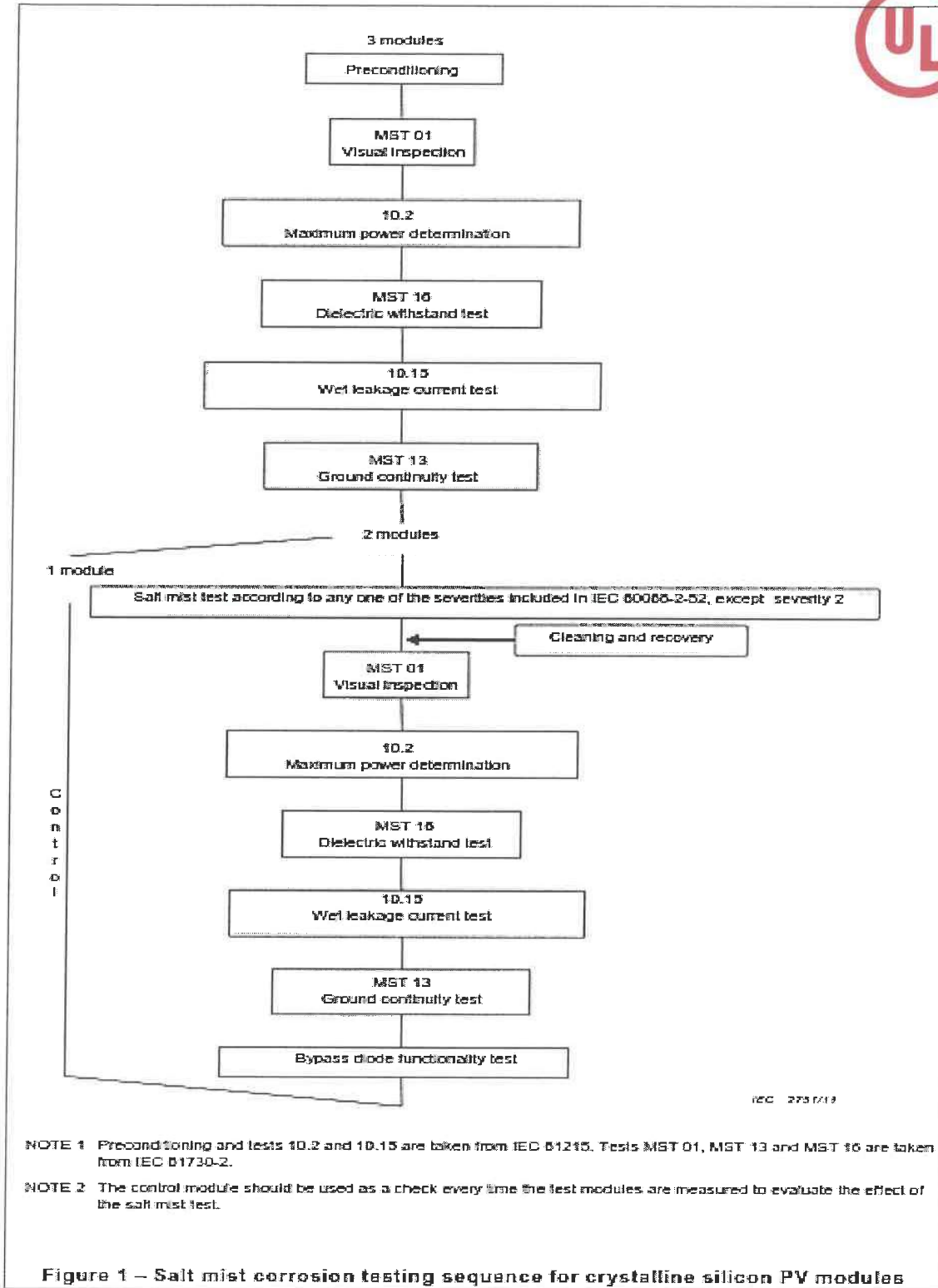
Annexure E: PIV Graphs, PV Module components list & Photos

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A handwritten signature in black ink, appearing to read 'S. Ghosh'.





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Annexure A: -

Sample Identification List



Sample Identification				
UL Sample No.	Identification in Report	Sample Serial Number	Date Received	Product Description
2571528 (Control)	2571528	SS3300719000442	23.09.2019	Model SS330P; Solar PV Module 330Wp
2571529	2571529	SS3300719000431		Model SS330P; Solar PV Module 330Wp
2571530	2571530	SS3300719000437		Model SS330P; Solar PV Module 330Wp

ANNEXURE B: -

SUMMARY OF TEST RESULTS

Test No.	Test Name	Results
1	Preconditioning (Modules should be exposed for 5-5.5kWh)	All the samples were Preconditioned for 5.16 Kwh/m ²
2	Visual Inspection Test (Before Salt Mist Test)	No Visual Defects were observed
3	Maximum Power Determination (Before Salt Mist Test)	Maximum Power Obtained 1) 2571528: 327.37 2) 2571529: 327.90 3) 2571530: 327.64
4	Dielectric withstand Test (Before Salt Mist Test)	No Dielectric Breakdown
5	Wet leakage current Test (Before Salt Mist Test)	No Dielectric Breakdown
6	Ground Continuity Test (Before Salt Mist Test)	All the resistances measured were within 0.1 Ohm
7	Salt Mist Test (Severity 1)	Test conducted on 2 samples

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8	Visual Inspection Test (After Salt Mist Test)	No Visual Defects were observed
9	Maximum Power Determination (After Salt Mist Test)	Maximum Power Obtained 1) 2571528: 326.77 2) 2571529: 326.69 3) 2571530: 325.03
10	Dielectric withstand Test (After Salt Mist Test)	No Dielectric Breakdown
11	Wet leakage current Test (After Salt Mist Test)	No Dielectric Breakdown
12	Ground Continuity Test (After Salt Mist Test)	All the resistances measured were within 0.1 Ohm
13	Bypass diode functionality test	All the bypass diodes remain operational
14	Maximum Power Determination (After Bypass diode Test)	Maximum Power Obtained 1) 2571529: 324.71 3) 2571530: 323.11

ANNEXURE C: -

TEST METHODS AND RESULTS

Preconditioning

All test samples shall be preconditioned with either global or direct normal sunlight (natural or simulated) according to the specifications given in the applicable design qualification and type approval IEC Standard applicable to the PV module technology considered, i.e., IEC 61215 for crystalline silicon.

(Before conducting preconditioning -> short visual inspection)

Before beginning testing, all modules, including the control, shall be exposed to sunlight (either real or simulated) at an irradiation level of 5 kWh/m² to 5.5 kWh/m² while open-circuited.

Apparatus:

The following equipment is required to perform Preconditioning in natural sunlight:

- a) A PV reference device (in accordance with IEC 60904-2) such as a reference cell, a reference module or a pyranometer.
- b) A suitable mount for supporting the test specimen and the reference device (A two-axis tracking system capable of tracking the sun is recommended in order to reduce testing time to a minimum, but it is not required).
- c) A system for collecting continuous short circuit data from the reference device. Data points should be collected at minimum intervals of 1 minute apart. If the data collection system is not capable of recording and displaying the

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