

Test Report

SHANTI SOLAR

REPORT NUMBER : 4789149632.2.1-S1

PROJECT NUMBER: 4789149632.2.1

ULR NUMBER : TC616819100001026P

12-LO-F0852 Issue: 10.0



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

.....

Location (B)

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

.....

Location (C)

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



Report Number: 4789149632.2.1-S1
ULR Number: TC616819100001026P

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	Others		
Test Lab Location	(a) UL Bangalore	Refer to Cover page for the UL address	
Item Under Test	330Wp- 3 nos. Poly Crystalline Module		
Model	Tested Model SS330P represented the below models-SSXXXP (XXX=330-300Wp for 72-cells in steps of 5Wp)		
Number of Samples	THREE (03 Nos.)		
UL Sample Identification	2571531, 2571532, 2571533	Refer Summary of Test results for multiple samples	
Manufacturer Serial Number (if any)	SS3300719000450, SS3300719000441, SS3300719000434		
Condition of IUT on receipt	Good		
Date of Receipt	23 September 2019		
Applicable Standard	IEC TS 62804-1 PHOTOVOLTAIC (PV) MODULES – TEST METHODS FOR THE DETECTION OF POTENTIAL-INDUCED DEGRADATION – PART 1: CRYSTALLINE SILICON- Edition 1 - Issue Date 2015/08/01		
Date of Testing (Start date)	3 October 2019	End Date	22 October 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
Supratik Ghosh
Engineer Project Associate
Reviewed by



Srimathy N
Srimathy N
Engineer Project Associate
Approved by



Disclaimer

The issuance of this report in no way implies Listing, Classification or Recognition by UL and does not authorize the use of UL Listing, Classification or Recognition Marks or any other reference to UL on the product or system. UL authorizes the above named company to reproduce this Report provided it is reproduced in its entirety. UL's name or marks cannot be used in any packaging, advertising, promotion or marketing relating to the data in this Report, without UL's prior written permission. The results of testing in this report apply only to the sample product/item, which was tested. UL Lab has not participated in the sample selection. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. ^The applicable standard ambient condition supersedes the lab general ambient conditions and are recorded in datasheets available in the lab.

Reviewed by signature:

12-LO-F0852, Issue 10.0 *Supratik Ghosh*

Report Number: 4789149632.2.1-S1
ULR Number: TC616819100001026P



General Remarks (If any): - N/A

Description of Item under Test (IUT)

Poly Crystalline PV Modules for PID testing. Total 2 samples were tested. 1 sample was control sample.

Sample Identification for PID Test				
Sl. No.	Sample card Number	Sample Serial Number	Test	Product Identification & Serial Number
1	2571531(Control)	SS3300719000450	PID (Negative Grounding)	Solar PV Module 330Wp; SS3300719000450
2	2571532	SS3300719000441		Solar PV Module 330Wp; SS3300719000441
3	2571533	SS3300719000434		Solar PV Module 330Wp; SS3300719000434

Summary of Test Results

Test No.	Test Name	Standard & Clause Number	Result
1	Preconditioning (Pre- PID Test)	N/A	Refer individual test tables
2	Visual Inspection Test (Pre-PID Test)	IEC 61215:2005(10.1)	Refer individual test tables
3	Maximum Power Determination (Pre-PID Test)	IEC 61215:2005(10.2)	Refer individual test tables
4	Performance at low irradiance (Pre-PID Test)	IEC 61215:2005(10.7)	Refer individual test tables
5	Wet Leakage Current Test (Pre-PID Test)	IEC 61215:2005(10.15)	Refer individual test tables
6	Electroluminescence at Isc (Pre-PID Test)	N/A	No major defect was found

Reviewed by signature:
12-LO-F0852, Issue 10.0





7	Ground continuity test (Pre-PID Test)	N/A	Refer individual test tables
8	PID Test: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - Total 288Hrs	IEC 62804-1:2015	Test Condition: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - 1st CYCLE
9	Maximum Power Determination (Post-PID Test)	IEC 61215:2005(10.2)	Maximum Power Degradation: Sample 2571532 is -0.52% Sample 2571533 is -0.26%
10	Performance at low irradiance (Post-PID Test) - Final	IEC 61215:2005(10.7)	Refer individual test tables
11	Wet Leakage Current Test (Post-PID Test)	IEC 61215:2005(10.15)	No defect found
12	Electroluminescence at Isc (Post-PID Test)	N/A	No major defect was found
13	Visual Inspection Test (Post-PID Test)	IEC 61215:2005(10.1)	Refer individual test tables
14	PID Test: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - Total 288Hrs	IEC 62804-1:2015	Test Condition: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - 2nd CYCLE
15	Maximum Power Determination (Post-PID Test)	IEC 61215:2005(10.2)	Maximum Power Degradation: Sample 2571532 is -0.57% Sample 2571533 is -0.64%
16	Performance at low irradiance (Post-PID Test) - Final	IEC 61215:2005(10.7)	Refer individual test tables
17	Wet Leakage Current Test (Post-PID Test)	IEC 61215:2005(10.15)	Refer individual test tables
18	Electroluminescence at Isc (Post-PID Test)	N/A	No major defect was found
19	Visual Inspection Test (Post-PID Test)	IEC 61215:2005(10.1)	Refer individual test tables

Reviewed by signature:
 12-LO-F0852, Issue 10.0

Sghosh



20	PID Test: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - Total 288Hrs	IEC 62804-1:2015	Test Condition: 3 Cycles at 85°C ± 2°C, 85 ± 3% of RH for 96Hrs - 3rd CYCLE
21	Maximum Power Determination (Post-PID Test)	IEC 61215:2005(10.2)	Maximum Power Degradation: Sample 2571532 is -0.69% Sample 2571533 is -0.72%
22	Performance at low irradiance (Post-PID Test) - Final	IEC 61215:2005(10.7)	Refer individual test tables
23	Wet Leakage Current Test (Post-PID Test)	IEC 61215:2005(10.15)	Refer individual test tables
24	Electroluminescence at Isc (Post-PID Test)	N/A	No major defect was found
25	Visual Inspection Test (Post-PID Test)	IEC 61215:2005(10.1)	Refer individual test tables

P: Meets the requirements F: Does not meet the requirement NA: Not applicable

Master Equipment and Calibration details

SI No	Test Name	Id Number	Description	Expiration Date
1	Pre conditioning	69889	PYRANOMETER (PV LAB)	2022-AUG-23
2	Pre conditioning	70817	Datalogger	2020-MAY-07
3	Pre conditioning	71790	CONTINUOUS SIMULATOR	N/A
4	Visual Inspection	80703	Light Meters & Sensors	2020-MAR-25
5	Visual Inspection	160912	Fixture, For Testing, Table	N/A
6	Visual Inspection	76645	Magnifying Lens, Without Ruler	N/A
7	Maximum Power Determination	176313	REFERENCE MODULE (PV LAB)	2020-JAN-04
8	Maximum Power Determination	65675	Datalogger, RH & Temperature	2020-FEB-06
9	Maximum Power Determination	70683	Thermometer, Infrared	2020-FEB-11
10	Maximum Power Determination	177815	Measuring Tool, Ruler or Tape Measure	2020-FEB-16

Reviewed by signature:

12-LO-F0852, Issue 10.0 *Sghosh*



11	Maximum Power Determination	70472	FLASH SOLAR SIMULATOR	N/A
12	Performance @ Low Irradiances	70472	FLASH SOLAR SIMULATOR	N/A
13	Performance @ Low Irradiances	65675	Datalogger, RH & Temperature	2020-FEB-06
14	Performance @ Low Irradiances	70683	Thermometer, Infrared	2020-FEB-11
15	Performance @ Low Irradiances	177815	Measuring Tool, Ruler or Tape Measure	2020-FEB-16
16	Performance @ Low Irradiances	176313	REFERENCE MODULE (PV LAB)	2020-JAN-04
17	Wet Insulation Resistance test	177913	Meter, pH, Digital or Analog	2020-MAR-04
18	Wet Insulation Resistance test	167776	Fixture, For Testing, Water Tank	N/A
19	Wet Insulation Resistance test	159551	Timer, Digital or Analog, Wound or Battery Powered	2020-SEP-11
20	Wet Insulation Resistance test	67918	Indicator, Temperature	2020-JAN-10
21	Wet Insulation Resistance test	171342	Apparatus, Insulation Resistance Test	2020-JAN-11
22	Insulation resistance test	68600	Apparatus, Insulation Resistance Test	2020-APR-22
23	Insulation resistance test	68612	Datalogger, RH & Temperature	2020-SEP-09
24	Insulation resistance test	159551	Timer, Digital or Analog, Wound or Battery Powered	2020-SEP-11
25	Dielectric test	68598	Apparatus, Dielectric Strength Test	2020-MAR-27
26	Ground Continuity test	127260	EARTH CONTINUITY TESTER	2019-NOV-22
27	Ground Continuity test	68612	Datalogger, RH & Temperature	2020-SEP-09
28	Ground Continuity test	159551	Timer, Digital or Analog, Wound or Battery Powered	2020-SEP-11
29	EL	88424	Power Supply, DC	2020-JAN-04
30	EL	85226	Electro Luminescence Test Station	N/A
31	EL	85703	Electro Luminescence Test Station	N/A
32	EL	85706	Electro Luminescence Test Station	N/A
33	EL	85707	Electro Luminescence Test Station	N/A
34	EL	68610	Datalogger, RH & Temperature	2020-JAN-11

Reviewed by signature:
 12-LO-F0852, Issue 10.0 *Sghosh*

