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DOC No. : MCIND/22-23/LB/BIS/ Plot 5 and 6, Swastik Industrial Estate, Vill: Sari, Tal:
091.V1 Sanand, Ahmedabad, Ahmadabad, Gujarat, India -
Telephone : +91 9871742221 382220
FAX : 41204299
E-Mail : puneet.kumar@mitsuic
hemicals.com
BO Code : NA

**Test REPORT AS PER : IS/IEC 61730 : PART 2
(2004)**

QR Code/Barcode : 131554CRS

REPORT NO : SC22SPI01031_2

DATE : 19 Dec, 2022

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address : UNIQUE SUN POWER LLP
BL NO. 2281/2/1/1, SUB PLOT. 1-A,
TADKESHWAR, NEAR ARETH MINNOR CANAL,
MANDVI, SURAT, NA, GUJARAT, India - 394170

b) Nature of sample : -

c) Grade/Variety/Type/Class Size etc : NA

d) Declare values, if any : -

e) Batch No. & Date of Manufacture : /

f) Quantity : 26

g) Date of Receipt : 19 Dec, 2022

h) BIS Seal : Verified by Sample Cell

i) IO's Signature : Verified by Sample Cell

j) Any other Information / Expiry Date, If any : /

k) Date of Commencement of Testing : 19 Dec, 2022

l) Date of Completion of Testing : 19 Dec, 2022

m) Section Code : 22EEE48N

n) Section Report No. : 22EEE48N_1_A1

o) Report Type : Revised

p) Reference Report No. : SC22SPI01031_1

q) Remarks : Please refer attached test report

Gita Kumari
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 19 Dec, 2022 17:47 PM

1. Mitsui Chemicals India Pvt. Ltd.

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PART B. SUPPLEMENTARY INFORMATION

- | | |
|--|----------------|
| 1. Reference to sampling procedure, wherever applicable. | Not Applicable |
| 2. Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any. | Yes |
| 3. Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any. | Not Applicable |
| 3. NABL Report required ? | Yes |

Hebin Manuel
OIC Electrical
(Authorized Signatory)
Authorized on: 19 Dec, 2022 17:46 PM

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PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	Cl.5, Table 7	Mechanical load test (MST 34)	MΩ, Visual inspection	-	-	-	Mechanical load test date:08/12/2022. First cycle front side -2400pa, First cycle rear side -2400pa. Second cycle front side -2400pa, Second cycle rear side -2400pa. Third cycle front side -2400pa, Third cycle rear side -5400pa. The Module passed 1. Visual inspection, 2. Wet leakage current test. For more details, please refer attached test report.
2	Cl.5, Table 7	Hot spot test (MST 22)	°C, MΩ, Visual inspection	-	-	-	Module -MCIND/2022/0376, Hot spot test date: 25/11/2022 Max temperature: 66.8 °C. Module passed 1. Visual Inspection, 2. Dielectric withstand test, 3. Wet leakage current test. For more details, please refer attached test report.
3	Cl.5, Table 7	Robustness of termination test (MST 42)	MΩ, Visual inspection	-	-	-	Robustness of termination test date: 13/12/2022. Module passed 1. Visual inspection, 2. Dielectric withstand test. For more details, please refer attached test report.
4	Cl.5, Table 7	Wet leakage current test (MST 17)	MΩ	-	-	-	Wet leakage current test (After Preconditioning), date: 11/10/2022. modules passed the test. For more details, refer attached test report.
5	Cl.5, Table 7	UV resistance (MST 54)	MΩ, Visual inspection	-	-	-	UV resistance test date: 31/10/2022 to 05/11/2022. All modules passed 1. Visual inspection, 2 Dielectric withstand test. For more details, please refer attached test report.
6	Cl.5, Table 7	Damp heat (DH1000) (MST 53)	MΩ, Visual inspection	-	-	-	Damp heat (DH1000) test date: 11/10/2022 to 30/11/2022. All modules passed 1. Visual Inspection, 2. Dielectric withstand test, 3. Wet leakage current test. For more details, refer attached test report.

7	Cl.5, Table 7	Humidity freeze (10HF) (MST 52)	MΩ, Visual inspection	-	-	-	Humidity freeze test date: 25/11/2022 to 08/12/2022 All modules passed 1. Visual Inspection, 2. Dielectric withstand test. For more details, please refer attached test report.
8	Cl.5, Table 7	Thermal cycling (T50) (MST 51)	MΩ, Visual inspection	-	-	-	Thermal cycling (TC50) test date: 09/11/2022 to 19/11/2022. Modules passed 1. Visual inspection, Dielectric withstand test. For more details, please refer the test report.
9	Cl.5, Table 7	Thermal cycling (T200) (MST 51)	MΩ, Visual inspection	-	-	-	Thermal cycling (TC200) date: 17/10/2022 to 25/11/2022, Applied current: 13.14A Module passed 1. Visual Inspection, 2. Dielectric withstand test.
10	11.3	Terminal box knockout tests (MST 44)	mm, Visual inspection	-	-	-	Test Not Applicable
11	11.2	Conduit Bending test (MST 33)	Visual inspection	-	-	-	Test Not Applicable
12	11.1	Partial discharge-test (MST 15)	kV	-	-	-	Test Not Applicable
13	10.10	Module breakage test (MST 32)	mm, g, sq. cm., Visual inspection	-	-	-	Module breakage test date: 21/11/2022 Breakage occurred at 1220m, glass pieces did not fall from the module. For more details, please refer attached test report.
14	10.9	Reverse Current overload test (MST 26)	Visual inspection, MΩ	-	-	-	Reverse Current overload test date: 06/12/2022. The module passed the test without any flaming on cheesecloth, tissue paper. For more details, please refer attached test report
15	10.8	Fire test (MST 23)	Visual inspection, m.	-	-	-	Spread of flame and burning band test date: 29/11/2022. Module fire resistance class: C For more details, please refer attached test report.
16	10.7	Temperature test (MST 21)	°C	-	-	-	Temperature test date: 05/12/2022 All the measured temperatures are with the standard criteria. For more details, please refer attached test report for more details.

17	10.6	Dielectric withstand test (MST 16)	MΩ	-	-	-	Dielectric withstand test (after Preconditioning) date: 11/10/2022. All modules passed the test. For more details, please refer attached test report.
18	10.5	Impulse voltage test Visual inspection, MΩ (MST 14)		-	-	-	Impulse voltage test date: 02/12/2022, No evidence of dielectric breakdown or surface tracking observed. For more details, please refer attached test report.
19	10.4	Ground Continuity Test (MST 13)	Ω	-	-	-	Ground Continuity test (after preconditioning) date: 11/10/2022. All modules passed Ground Continuity test. For more details, please refer attached test report
20	10.3	Cut susceptibility test (MST 12)	Ω, MΩ	-	-	-	Test date: 14/12/2022 All modules passed 1. Visual Inspection, 2. Dielectric withstand test, 3. Wet leakage current test, 4. Ground Continuity test. For more details, refer attached test report.
21	10.2	Accessibility test (MST 11)	Ω	-	-	-	All the modules passed the test. For more details, please refer the test report.
22	10.1	Visual Inspection (MST 01)	as per cl.10.1.3	-	-	-	All the modules met the visual inspection (Initial & Final) requirements as per the standard. For further details, please refer the test report.

Hebin Manuel
OIC Electrical
 (Authorized Signatory)
 Authorized on: 19 Dec, 2022 17:46 PM

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PART D. REMARKS

Please refer attached test report MCIND/22-23/LB/BIS/091.V1

Hebin Manuel
OIC Electrical
(Authorized Signatory)
Authorized on: 19 Dec, 2022 17:46 PM

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SUMMARY OF TEST REPORT

TEST REPORT NO: MCIND/22-23/LB/BIS/091.V1
 ULR NO: TC89062200000091F
 DATED (dd/mm/yyyy): 19/12/2022

Number of pages in test report: Page no.1 to 62
TEST FORMAT AS PER IS/IEC 61730-2:2004 (First Edition) +A1:2017

1. Name of manufacturer:	UNIQUE SUN POWER LLP
2. Product:	Crystalline Silicon Terrestrial Photovoltaic Modules (Si wafer based)
3. Test Request Number:	SC22SPI01031
4. Model:	<p>144 CELL FAMILY: Mono (Half-Cut Cell) SUN144P550 (Representative Model) SUN144P545, SUN144P540, SUN144P535, SUN144P530, SUN144P525, SUN144P520</p> <p>132 CELL FAMILY: Mono (Half-Cut Cell) SUN132P505, SUN132P500, SUN132P495, SUN132P490, SUN132P485, SUN132P480, SUN132P475, SUN132P470</p> <p>120 CELL FAMILY: Mono (Half-Cut Cell) SUN120P465, SUN120P460, SUN120P455, SUN120P450, SUN120P445, SUN120P440, SUN120P435</p> <p>108 CELL FAMILY: Mono (Half-Cut Cell) SUN108P420, SUN108P415, SUN108P410, SUN108P405, SUN108P400</p>
5. Model differences provided (if applicable): Yes/No	YES



6. Model differences verified as per MNRE Guidelines for series formulation: Yes/No		YES	
7. Test Results:			
SL.NO.	TEST REQUIREMENTS	CLAUSE	VERDICT
1	MQT 01- Visual Inspection	10.1	P
2	MST 11- Accessibility Test	10.2	P
3	MST 12- Cut Susceptibility Test	10.3	P
4	MST 13- Ground Continuity Test	10.4	P
5	MST 14- Impulse Voltage Test	10.5	P
6	MST 16- Dielectric Withstand Test	10.6	P
7	MST 21- Temperature Test	10.7	P
8	MST 23- Fire Test	10.8	P
9	MST 26- Reverse Current overload	10.9	P
10	MST 32- Module Breakage Test	10.10	P
11	MST 17- Wet Leakage Test	10.15	P
12	MST 22- Hot-Spot Test	10.9	P
13	MST 34- Mechanical Load Test	10.16	P
14	MST 51a - Thermal Cycling Test	10.11	P
15	MST 51b - Thermal Cycling Test	10.11	P
16	MST 52- Humidity Freeze Test	10.12	P
17	MST 53- Damp Hest Test	10.13	P
18	MST 54-UV Preconditioning Test	10.10	P

-	Component Test	-	-
19	Partial Discharge Test	As per test report submitted by manufacturer, Partial Discharge rating has been verified for the backsheet (RENEWSYS INDIA PVT. LTD., Preserv 1 300 WD (refer 61730-1 report Annexure)	P
20	Conduit Bending Test	As there is no Conduits in Junction Box, Conduit bending test was not applicable.	N/A
21	Terminal Box Knock out Test	As there is no Terminal box in Junction Box, Terminal box knockout test was not applicable.	N/A

**General Information:**

1. The conformity certificates of critical components are verified to ensure complete testing of product under test and details regarding harmonized IEC/UL Standards (where IS standards are not available) are also provided in the list of critical component.

CONCLUSION:

1. Sample meets all relevant requirements of IS/IEC 61730-2: 2004 +A1:2017
- 2- ~~Sample fails to meet the following test requirements:~~

I, hereby, undertake that the verdict stated in the test reports for all the tests matches with the test results. The sample meets all relevant requirements of IS/IEC 61730-2:2004 +A1:2017: ~~/does not meet the requirements stated above at 2) of conclusion.~~ If any deviation is found, suitable punitive action may be taken by BIS.



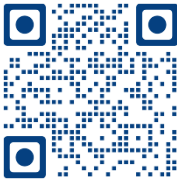
Date(dd/mm/yyyy): 19/12/2022

(Signature of Authorized person)

This report is issued for test request number” **SC22SPI00761**”. The lab couldn’t upload the report due to a technical issue. Hence, the customer raised a new test request number” **SC22SPI01031**” to upload the reports.

This test report is uploaded under the test request number” **SC22SPI01031**” with the results of **SC22SPI00761**”.




TEST REPORT IS/IEC 61730-2:2004+A1:2017 PV Module Safety Qualification Part 2: Requirements for testing	
Report Number.	MCIND/22-23/LB/BIS/091.V1
ULR Number	TC89062200000091F
Test Request no	SC22SPI01031
Date of issue	19.12.2022
Total number of pages	62
Test Report QR Code:	
	
Name of testing Laboratory	
Preparing the Report	Mitsui Chemicals India Private Limited
Applicant's name	UNIQUE SUN POWER LLP
Address	BL No. 2281/2/1/1, Sub Plot. 1-A, Tadkeshwar, Near Areth Minnor Canal, Mandvi, Surat, Gujarat - 394170.
Test Specification:	
Standard	IS/IEC 61730-2:2004 (First Edition) +A1:2017
Test procedure	IS/IEC 61730-2:2004 (First Edition) +A1:2017
Non-standard test method	N/A
Test Report Form No.	IS/IEC 61730-2_V1.0
Test Report Form(s) Originator	BIS
Master TRF	Dated 19.02.2018
General disclaimer:	
The test results presented in this report relate only to the object tested.	



ULR No. : TC89062200000091F

Report No.: MCIND/22-23/LB/BIS/091.V1

Test item description:	Crystalline Silicon Photovoltaic Modules (Si wafer based)
Trade mark:	
Manufacturer:	UNIQUE SUN POWER LLP BL No. 2281/2/1/1, Sub Plot. 1-A, Tadkeshwar, Near Areth Minnor Canal, Mandvi, Surat, Gujarat - 394170
Model/Type reference:	<p>144 CELL FAMILY: Mono (Half-Cut Cell) SUN144P550 (Representative Model) SUN144P545, SUN144P540, SUN144P535, SUN144P530, SUN144P525, SUN144P520</p> <p>132 CELL FAMILY: Mono (Half-Cut Cell) SUN132P505, SUN132P500, SUN132P495, SUN132P490, SUN132P485, SUN132P480, SUN132P475, SUN132P470</p> <p>120 CELL FAMILY: Mono (Half-Cut Cell) SUN120P465, SUN120P460, SUN120P455, SUN120P450, SUN120P445, SUN120P440, SUN120P435</p> <p>108 CELL FAMILY: Mono (Half-Cut Cell) SUN108P420, SUN108P415, SUN108P410, SUN108P405, SUN108P400</p>

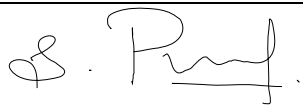

Ratings:	<p><u>Maximum System Voltage: 1500 VDC</u></p> <p><u>Maximum over current protection rating: 25 A</u></p> <p>144 CELL FAMILY: Mono (Half-Cut Cell) SUN144P550 (Representative Model) SUN144P545, SUN144P540, SUN144P535, SUN144P530, SUN144P525, SUN144P520</p> <p>132 CELL FAMILY: Mono (Half-Cut Cell) SUN132P505, SUN132P500, SUN132P495, SUN132P490, SUN132P485, SUN132P480,</p>
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ULR No. : TC89062200000091F

Report No.: MCIND/22-23/LB/BIS/091.V1

	SUN132P475, SUN132P470 120 CELL FAMILY: Mono (Half-Cut Cell) SUN120P465, SUN120P460, SUN120P455, SUN120P450, SUN120P445, SUN120P440, SUN120P435 108 CELL FAMILY: Mono (Half-Cut Cell) SUN108P420, SUN108P415, SUN108P410, SUN108P405, SUN108P400
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Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing laboratory	Mitsui Chemicals India Private Limited
	Testing location/address:	Plot no. 5 & 6, Swastik Industrial Estate, Sarkhej-Bavla Highway, Village: Sari, Tal: Sanand, Ahmedabad- 382220, INDIA
	Tested by (name + signature) :	Mr. Praveen kumar 
	Reviewed by (name+ signature):	Mr. Hebin Manuel 
	Approved & Issued by (name + signature):	Mr. Gowri Ganesh 