National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : PV MODULE TEST LABORATORY(PMTL), WAAREE ENERGIES LTD., SURVEY NO. 38/1, VILLAGE TUMB, UMBERGAON, VALSAD, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

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Validity 31/01/2023 to 30/01/2025 **Last Amended on** -

S.No	Discipline / Group	Materials or Products tested	Component, parameter or characteristic tested / Specific Test Performed / Tests or type of tests performed	Test Method Specification against which tests are performed and / or the techniques / equipment used
Permanent Facility				
1	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Ignitability Test (MST 24)	IS/IEC 61730-2 (Clause no.10.18)
2	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Accessibility Test (MST 11)	IS/IEC 61730-2 (Clause no.10.9)
3	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Bending Test (MQT 22)	IEC 61215-2 (Clause no.4.22)
4	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Bypass Diode Testing (MQT 18/MST 25 & MST 07) {MQT 18.1/MST 25: Bypass diode thermal test, and MQT 18.2/MST 07: Bypass diode functionality test}	IEC 61215-2 (Clause 4.18), IS 14286 (Part 2) (Clause 4.18), IS/IEC 61730-2 (Clause 10.19 & 10.8)
5	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Bypass diode Thermal runaway test	IEC 62979
6	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Cold Conditioning (MST 55)	IS/IEC 61730-2 (Clause no. 10.32)
7	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Cut Susceptibility Test (MST 12)	IS/IEC 61730-2 (Clause no.10.10)
8	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Cyclic Dynamic Mechanical Load Testing	IEC TS 62782, IEC 61215-2 (Clause no. 4.20)
9	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Damp Heat Test (MQT 13/MST 53)	IEC 61215-2 (Clause 4.13), IS 14286 (Part 2) (Clause 10.13), IS/IEC 61730-2 (Clause 10.30)
10	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Detection of Potential-induced degradation - Delamination	IEC TS 62804-1-1
11	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Dry Heat Conditioning (MST 56)	IS/IEC 61730-2 (Clause no. 10.33)
12	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Durability of markings (MST 05)	IS/IEC 61730-2 (Clause no.10.6)

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13	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Electroluminescence (EL)	IEC 60904-13, IEC TS 62804-1 (Clause 4.2 (f)), IEC TS 62782 (Clause 5 (f))
14	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Extended Thermal Cycling of PV modules	IEC 62892
15	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Ground Continuity Test (MST 13) / Continuity test of equipotential bonding (MST 13)	IS/IEC 61730-2 (Clause 10.11), IEC TS 62804-1, IEC 61701
16	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Hail Test (MQT 17)	IEC 61215-2 (Clause 4.17), IS 14286 (Part 2) (Clause 4.17)
17	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Hot-Spot Endurance Test (MQT 09/MST 22)	IEC 61215-2 (Clause 4.9), IS 14286 (Part 2) (Clause 4.9), IS/IEC 61730-2 (Clause 10.16)
18	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Humidity Freeze Test (MQT 12/MST 52)	IEC 61215-2 (Clause 4.12), IS 14286 (Part 2) (Clause 4.12), IS/IEC 61730-2 (Clause 10.29)
19	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Impulse Voltage Test (MST 14)	IS/IEC 61730-2 (Clause no.10.12)
20	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Insulation Test (MQT 03/MST 16)	IEC 61215-2 (Clause 4.3), IS 14286 (Part 2) (Clause 4.3), IS/IEC 61730-2 (Clause 10.13)
21	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Insulation thickness test (MST 04)	IS/IEC 61730-2 (Clause no.10.5)
22	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Lap shear strength test (MST 36)	IS/IEC 61730-2 (Clause no. 10.25)
23	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Materials creep test (MST 37)	IS/IEC 61730-2 (Clause no.10.26)
24	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Maximum Power Determination (MQT 02/MST 03)	IEC 61215-2 (Clause 4.2), IS 14286 (Part 2) (Clause 4.2), IS/IEC 61730-2 (Clause 10.4)
25	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Measurement of Current-Voltage Characteristics of Bi-facial Photovoltaic Modules	IEC TS 60904-1-2:2019/IS 12762(Part 1/Sec2)
26	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Measurement of NMOT (MQT 05)	IS 14286 (Part 2) (Clause 4.5)

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27	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Measurement of Temperature Coefficient (MQT 04)	IEC 61215-2 (Clause 4.4), IS 14286 (Part 2) (Clause 4.4)
28	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Module breakage test (MST 32)	IS/IEC 61730-2 (Clause no. 10.21)
29	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Outdoor exposure test (MQT 08)	IEC 61215-2 (Clause 4.8) IS 14286(Part 2) (Clause 4.8)
30	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Peel Test (MST 35)	IS/IEC 61730-2 (Clause no. 10.24)
31	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Performance at Low Irradiance (MQT 07)	IEC 61215-2 (Clause 4.7), IS 14286 (Part 2) (Clause 4.7)
32	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Performance at NMOT (MQT 06.2)	IS 14286(Part 2) (Clause 4.6)
33	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Performance at STC (MQT 06.1/MST 02)	IEC 61215-2 (Clause 4.6), IS 14286(Part 2) (Clause 4.6), IS/IEC 61730-2 (Clause no. 10.3)
34	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Performance testing and energy rating – Part 1: Irradiance and temperature performance measurements and power rating	IEC 61853-1
35	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Reverse Current Overload Test (MST 26)	IS/IEC 61730-2 (Clause no. 10.27)
36	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Robustness of Termination (MQT 14/MST 42) {MQT 14.1: Retention of junction box on mounting surface; and MQT 14.2: Test of cord anchorage}	IEC 61215-2 (Clause 4.14), IS 14286 (Part 2) (Clause 4.14), IS/IEC 61730-2 (Clause 10.27)
37	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Salt Mist Corrosion Test (Severity: 1, 3, 4, 5, 6)	IS/IEC 61701 (Clause 7) IEC 60068-2-52 (Clause 9.4)
38	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Screw Connections Test MST 33	IS/IEC 61730-2 (Clause no. 10.22)

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39	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Sharp Edge Test (MST 06)	IS/IEC 61730-2 (Clause no. 10.7)
40	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Stabilization (MQT 19)	IEC 61215-2 (Clause 4.19), IS 14286 (Part 2) (Clause 4.19)
41	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Static Mechanical Load Test (MQT 16/MST 34)	IEC 61215-2 (Clause 4.16), IS 14286 (Part 2) (Clause 4.16), IS/IEC 61730-2 (Clause 10.23)
42	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Temperature Test (MST 21)	IS/IEC 61730-2 (Clause no. 10.15)
43	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Test methods for the Detection of Potential -Induced Degradation (Pre-stress Test, Voltage Stress Test, and Post-Stress Test)	IEC 61215-2 (Clause no. 4.21),IEC TS 62804-1 (Clause 4.3)
44	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Thermal Cycling Test (MQT 11/MST 51)	IEC 61215-2 (Clause 4.11); IS 14286 (Part 2) (Clause 4.11), IS/IEC 61730-2 (Clause 10.28)
45	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	UV preconditioning (MQT 10/MST 54)	IEC 61212-2 (Clause 4.10), IS 14286 (Part 2) (Clause 4.10), IS/IEC 61730-2 (Clause 10.31)
46	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Visual Inspection Test (MQT 01/MST 01)	IEC 61215-2 (Clause 4.1), IS 14286 (Part 2) (Clause 4.1), IS/IEC 61730-2 (Clause 10.2)
47	ELECTRONICS-MISCELLANEOUS PRODUCTS	Crystalline Silicon Terrestrial Photovoltaic Modules	Wet Leakage Current Test (MQT 15/MST 17)	IEC 61215-2 (Clause 4.15), IS 14286(Part 2) (Clause 4.15), IS/IEC 61730-2 (Clause 10.14)