






TEST REPORT IEC 61215 series:2021 Terrestrial photovoltaic (PV) modules – Design qualification and type approval	
Report Number.	TRPVP09050/25P/02
Date of issue	2025-09-26
Total number of pages	25
Applicant's name	Polyshine solar Co., Ltd.
Address	No.288, Maodian Road, Shanghai, P.R. China, 201716
Test specification:	
Standards	<input type="checkbox"/> IEC 61215-1:2021 / EN IEC 61215-1:2021 <input checked="" type="checkbox"/> IEC 61215-2:2021 / EN IEC 61215-2:2021 <input type="checkbox"/> IEC 61215-1-1:2021 / EN IEC 61215-1-1:2021 <input type="checkbox"/> IEC 61215-1-2:2021 + AMD1:2022 / EN IEC 61215-1-2:2021 <input type="checkbox"/> IEC 61215-1-3:2021 + AMD1:2022 / EN IEC 61215-1-3:2021 <input type="checkbox"/> IEC 61215-1-4:2021 + AMD1:2022 / EN IEC 61215-1-4:2021
Test procedure	Commission Testing
Non-standard test method	N/A
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Test item description	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules	
Trade Mark		
Manufacturer	Polyshine solar Co., Ltd.	
Address	No.288, Maodian Road, Shanghai, P.R. China, 201716	
Model/Type reference	PV Modules with 182mm half-cut Mono-crystalline Silicon Solar Cells: 144 cells: JY1-72H520PC	
Ratings	Refer to page 8.	
Designed by (name, function, signature)	Ivan Zhang (Project Engineer)	 数字签名者: Ivan zhang 日期: 2025.09.26 19:15:14 +08'00'
Reviewed by (name, function, signature)	Bella Liu (Technical Certifier)	 数字签名者: bella liu 日期: 2025.09.26 20:09:22 +08'00'
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
Testing Laboratory	Zhejiang HJE Co., LTD	
Testing location/address	3F - 4F, Building 1, No. 3556 Linggongtang Road, Nanhu District, Jiaxing City, Zhejiang Province	
Remark: N/A		

List of Annexes

List of Annexes (including a total number of pages in each attachment):	
	attachment number / number of pages
Installation manual	N/A
Drawings mechanical	N/A
Circuit diagram	N/A
Photographs	Annex 3, 2 pages
Component datasheets / certificates	N/A
Others:	
Statement of Measurement Uncertainty	Annex 1, 1 page
List of test equipment used	Annex 2, 1 page

Summary

Summary of testing:	
<p>Tests performed (name of test and test clause): According to the enquiry of the applicant, a commission testing was performed according to IEC 61215-2:2021, testing items are listed in page 8 in this report. Remark: Our verdict was performed according to the requirement of client. Module type JY1-72H520PC (2246x1185x2.5mm) was delivered to testing lab as test samples and conducted with all the related tests.</p> <p>Test items: BOM1: Refer to page 12, TESTING OVERVIEW of BOM1</p> <p>All tests were successfully passed.</p>	<p>Testing location: Zhejiang HJE Co., LTD 3F - 4F, Building 1, No. 3556 Linggongtang Road, Nanhu District, Jiaxing City, Zhejiang Province</p>
Summary of compliance with National Differences (List of countries addressed): N/A	
Use of uncertainty of measurement for decisions on conformity (decision rule) :	
<p><input type="checkbox"/> No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").</p> <p><input checked="" type="checkbox"/> Other: The expanded measurement uncertainty resulting from the standard measurement uncertainty multiplied with a factor $k=2$ is specified, denoting the deviations of the measurement value within a probability of 95%.</p>	

Marking Plate

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Note: The marking plate represents all models covered by this report except for difference in electrical ratings and model designation. See “General product information” for electrical ratings for all models. As there will be other lower wattages to be covered under same report which follows same back label format.)



General Remarks

Test item particulars.....	: N/A
Accessories and detachable parts included in the evaluation.....	: N/A
Mounting system used.....	: Clamps
Other options included.....	: N/A
Possible test case verdicts:	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement	: P (Pass)
- test object does not meet the requirement	: F (Fail)
Abbreviations used in the report:	
P_{max} – Maximum power	HF – Humidity Freeze
V_{mp} – Maximum power voltage	DH – Damp Heat
I_{mp} – Maximum power current	TC – Thermal Cycling
I_{sc} – Short circuit current	α – Current temperature coefficient
V_{oc} – Open circuit voltage	β – Voltage temperature coefficient
FF – Fill factor	δ – power temperature coefficient
STC – Standard Test Conditions (25°C, 1 000 W/m ²)	TCO – Transparent conductive oxide
MQT – Module Quality Tests	TRF – Test report form
VFM – Measured diode(s) forward voltage	VFM _{rated} – Rated diode(s) forward voltage
P_{max} (Lab) – the measured maximum power of each module	NP – Nameplate
\bar{P}_{max} (Lab) – the arithmetic average of the measured maximum power of the modules	P_{max} (NP) – the minimum rated nameplate power of each module without tolerances
I_{sc} (Lab) – the measured maximum I_{sc}	V_{oc} (Lab) – the measured maximum V_{oc}
I_{sc} (NP) – the maximum rated nameplate I_{sc} without tolerances	V_{oc} (NP) – the maximum rated nameplate V_{oc} of each module without tolerances
m_1 – the measurement uncertainty in % of laboratory for P_{max}	P_{max4} (NP) – the maximum rated nameplate power of each lowest power class module, without tolerances
m_3 – the measurement uncertainty in % of laboratory for I_{sc}	m_2 – the measurement uncertainty in % of laboratory for V_{oc}
t_2 – the manufacturer's rated upper production tolerance in % for V_{oc}	t_1 – the manufacturer's rated lower production tolerance in % for P_{max}
	t_3 – the manufacturer's rated upper production tolerance in % for I_{sc}

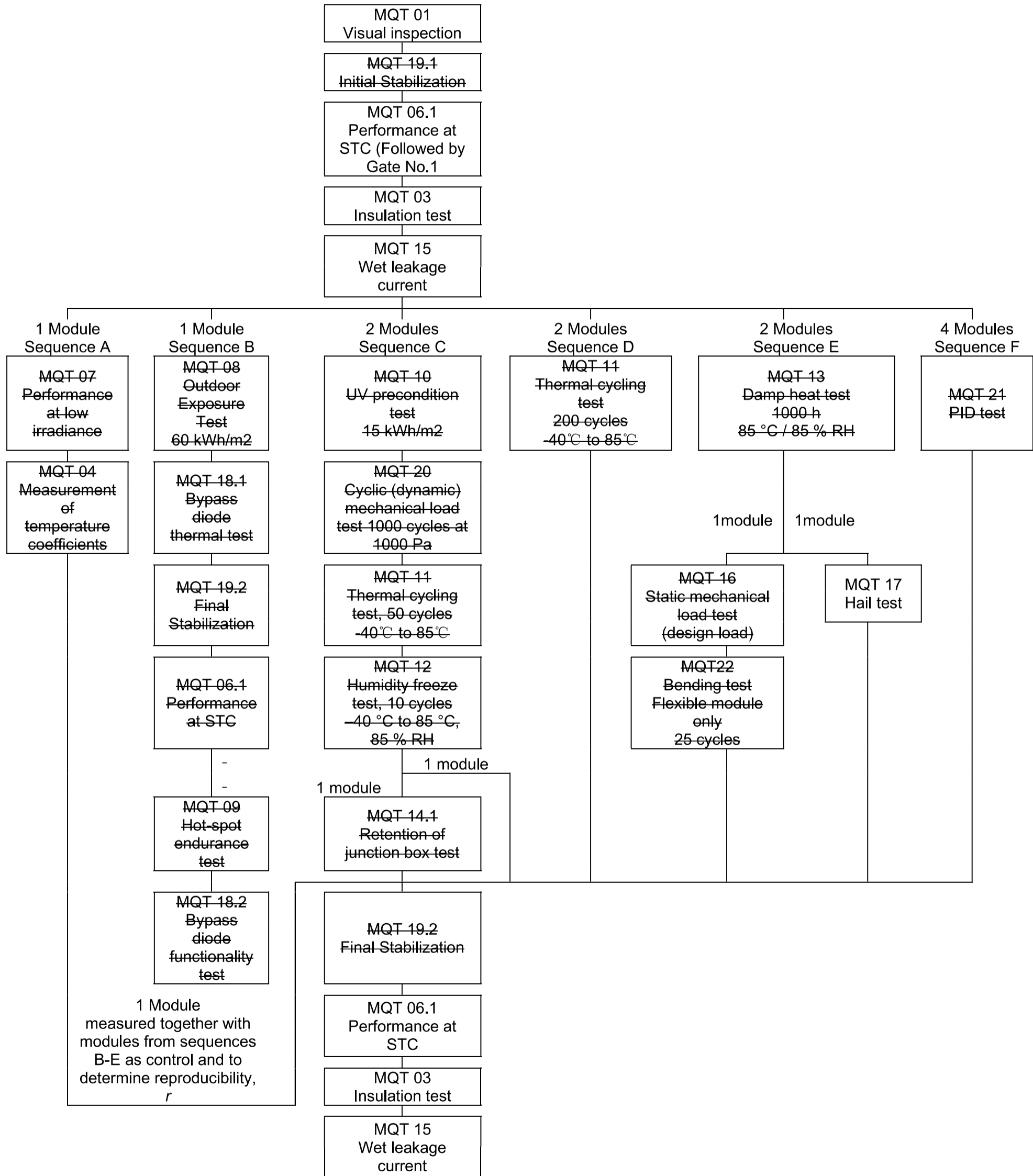
<p>$r - P_{max}$ measurement reproducibility</p> <p>ϕV_{oc} - open-circuit voltage bifaciality coefficient</p> <p>ϕI_{sc} - the short circuit current bifaciality coefficient</p> <p>BNPI - for bifacial modules, corresponding to 1 000 W/m² on the module front and 135 W/m² on the module rear</p> <p>aBSI - for stress on bifacial modules, corresponding to 1 000 W/m² on the module front and more than 300 W/m² or the manufacturer's claimed irradiance value on the module rear</p>	<p>t_4 – the manufacturer's rated upper production tolerance in % for $P_{max4}(NP)$</p> <p>ϕP_{max} - the maximum power bifaciality coefficient</p> <p>BSI - for stress on bifacial modules, corresponding to 1 000 W/m² on the module front and 300 W/m² on the module rear</p> <p>RTE – Relative thermal endurance index</p> <p>RTI – Relative temperature index</p> <p>TI – Temperature index</p>
<p>Testing Dates (YYYY-MM-DD)</p> <p>Date of first test item received : 2025-09-15</p> <p>Dates of tests (beginning/end)..... : 2025-09-15/2025-09-23</p>	

GENERAL REMARKS:				
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator. This TRF is based on TRF IEC 61216F_SE</p>				
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61216F_SE:				
The application for obtaining a TÜV NORD Mark Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable	
When differences exist; they shall be identified in the General product information section.				
Name and address of factory (factories :			Polyshine solar Co., Ltd. Anhui Branch No.9, Tagang Industrial Park, Tongzha Town, Hanshan County, Ma'anshan City	
PRODUCT ELECTRICAL RATINGS:				
<u>Monofacial Module:</u>				
Module type	JY1-72H520PC	N/A	N/A	N/A
V _{oc} [V] /Tolerance	50.20±3%	N/A	N/A	N/A
V _{mp} [V]	42.34	N/A	N/A	N/A
I _{mp} [A _{dc}]	12.30	N/A	N/A	N/A
I _{sc} [A _{dc}] /Tolerance	13.24±4%	N/A	N/A	N/A
P _{max} [W] /Tolerance	520±3%	N/A	N/A	N/A
Maximum system voltage [V]	1500	N/A	N/A	N/A
Maximum Over-Current Protection Rating [A]	20	N/A	N/A	N/A
Note: N/A				

Module Group Assignment:**Module type: JY1-72H520PC (BOM1)**

MODULE GROUP ASSIGNMENT:				
Sample #	Sample Group ID	Type/model	Sample S/N	Remark
1-M7	E	JY1-72H520PC	/	HI
Note (1)	Use the "General product information" field to give any information on model differences within a product type family covered by the test report and to describe the range of electrical and safety ratings, if the TRF covers a type family of modules.			
Note (2)	Use Annex 1 to list the used materials and components of the module (manufacturer/supplier and type reference).			
Note (3)	The module numbers/identifiers are set in accordance to IEC TS 62915 Photovoltaic (PV) modules – Retesting for type approval, design and safety qualification, Annex A3			

11 TEST FLOW (if it is not a full test, strikethrough non-performed test)



IEC 61215-1						
Clause	Requirement + Test				Result - Remark	Verdict
7. PASS CRITERIA						—
7.2	Power output and electric circuitry					—
7.2.1	Verification of rated label values (Gate No. 1)					—
	Manufacturer's tolerances and Laboratory uncertainties					—
		t_1	t_2	t_3	t_4	—
	manufacturer's rated lower/upper production tolerance in %	3	4	3	3	
		m_1	m_2	m_3		
	measurement uncertainty in % of the laboratory	2.0	0.8	2.0		
	Laboratory reproducibility r	N/A				
	After stabilization, each individual module meets the requirements					-
	P_{max}	See Table 03.1, Table 03.3			P	
	V_{oc}	See Table 03.1, Table 03.3			P	
	I_{sc}	See Table 03.1, Table 03.3			P	
	After stabilization the arithmetic average \bar{P}_{max} of all modules meet the requirements.	See Table 03.1, Table 03.3			P	
7.3	Visual defects					—
	There is no visual evidence of a major defect.	Yes			P	
7.4	Electrical safety					—
	The insulation test (MQT 03) requirements are met at the beginning and the end of each sequence	Yes			P	
	The wet leakage current test (MQT 15) requirements met at the beginning and at the end of each sequence	Yes			P	
	Specific requirements of the individual tests are met	Yes			P	
Supplementary information: N/A						

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

Testing Overview**Module type: JY1-72H520PC (BOM1)**

4. TESTING OVERVIEW			—
	Initial examination	All modules	—
4.1	Visual inspection (MQT 01))	See Table 01	P
4.6	Performance at STC&BNPI (MQT 06.1)	See Table 03.1 - 03.3 and Tables A.4.7 – A.4.9	—
4.3	Insulation test (MQT 03)	See Table 04	P
4.15	Wet leakage current test (MQT 15)	See Table 05	P

Sequence E2	1 Module	Sample 1-M7	—
4.17	Hail test (MQT 17)	See Table 21	P

	Final measurement	All modules	—
4.6	Performance at STC&BNPI (MQT 06.1)	See Table 23.5, 23.8	P
4.3	Insulation test (MQT 03)	See Table 23.9	P
4.15	Wet leakage current test (MQT 15)	See Table 23.10	P

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

Test Results

Module type: JY1-72H520PC (BOM1)

TABLE 01: MQT 01 ini: Initial Visual inspection			P
Test Date [YYYY-MM-DD]..... :		2025-09-15	—
Sample #	Nature and position of initial findings – comments or attach photos		—
1-M7	No visual defects		P
Supplementary information: N/A			

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 02: MQT 19.1 ini: Initial stabilization							—
TABLE 02.1: MQT 06.1 ini: Performance at STC before initial stabilization							—
Test Date [YYYY-MM-DD]..... :				2025-09-15			—
Test method..... :				<input checked="" type="checkbox"/> Solar simulator <input type="checkbox"/> Natural sunlight			—
Sample #	I_{sc} [A]	V_{oc} [V]	I_{mp} [A]	V_{mp} [V]	P_{max} [W]	FF [%]	Result
1-M7	12.70	50.24	11.96	42.11	503.68	78.93	—
Supplementary information: N/A							

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 04: MQT 03: Initial Insulation test				P
Test Date [YYYY-MM-DD].....:		2025-09-15		—
Test Voltage applied [V]		2 minutes of 1500 and 1 minute of 8000		—
Size of module [m ²]		2.67		—
Required Resistance [MΩ].....:		>15.0		—
Sample #	Measured	Dielectric breakdown		Result
	MΩ	Yes (description)	No	
1-M7	>1000	No breakdown	×	P
Supplementary information: N/A				

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 05: MQT 15: Initial Wet leakage current test			P
Test Date [YYYY-MM-DD]	2025-09-15		—
Test Voltage applied [V]	2 minutes of 1500		—
Solution temperature [°C]	22±2		—
Solution resistivity [Ω cm]	<3500		—
Size of module [m ²]	2.67		—
Sample #	Required Resistance [MΩ]	Measured [MΩ]	Result
1-M7	>15.0	>1000	P
Supplementary information: N/A			

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 21: MQT 17 - Hail impact test							P
Test Date [YYYY-MM-DD]..... :	2025-09-23						—
Sample #	1-M7						—
Ice ball size [mm]	1	2	3	4	5	6	—
	30±5%	30±5%	30±5%	30±5%	30±5%	30±5%	
	7	8	9	10	11	—	
	30±5%	30±5%	30±5%	30±5%	30±5%	—	
Ice ball weight [g]	1	2	3	4	5	6	—
	12.70	12.88	13.07	13.33	13.48	13.22	
	7	8	9	10	11	—	
	13.43	12.96	13.06	13.24	13.13	—	
Ice ball velocity [m/s]	1	2	3	4	5	6	—
	24.78	24.69	24.46	24.53	24.67	24.71	
	7	8	9	10	11	—	
	24.59	24.73	24.58	24.65	24.57	—	
Number of impact locations	11						—
Supplementary information: N/A							

TABLE 21.1: MQT 01 - Visual inspection after hail impact test		P
Test Date [YYYY-MM-DD]..... :	2025-09-23	
Sample #	Nature and position of initial findings – comments or attach photos	
1-M7	No visual defects	
Supplementary information: N/A		

TABLE 21.2: MQT 15 - Wet leakage current test after hail impact test			P
Test Date [YYYY-MM-DD]..... :	2025-09-23		—
Test Voltage applied [V]	2 minutes of 1500		—
Solution temperature [°C]..... :	22.9		—
Size of module [m²]	2.67		—
Solution resistivity [Ω cm]	2263		—
Sample #	Measured [MΩ]	Required Resistance [MΩ]	Result
1-M7	>1000	>15.0	P
Supplementary information: N/A			

IEC 61215-2							
Clause	Requirement + Test					Result - Remark	Verdict
TABLE 21.3: MQT 02 - Maximum power determination after hail impact test - Optional							—
Test Date [YYYY-MM-DD].....:			2025-09-23			—	
Module temperature [°C].....:			Corrected to 25.0			—	
Irradiance [W/m ²)			Corrected to 1000			—	
Sample #	I _{sc} [A]	V _{oc} [V]	I _{mp} [A]	V _{mp} [V]	P _{max} [W]	FF [%]	—
1-M7	12.63	50.14	11.59	42.04	487.31	76.93	—
Supplementary information: N/A							

TABLE 21.4: MQT 03 Insulation test after hail impact test - Optional						P
Test Date [YYYY-MM-DD].....:			2025-09-23			—
Test Voltage applied [V]			2 minutes of 1500 and 1 minute of 8000			—
Size of module [m ²)			2.67			—
Required Resistance [MΩ].....:			>15.0			—
Sample #	Measured	Required	Dielectric breakdown		Result	
	MΩ	MΩ	Yes (description)	No		
1-M7	>1000	>15.0	No breakdown	x	P	
Supplementary information: N/A						

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

For monofacial modules										
TABLE 23.5: MQT 06.1: Final Performance at STC									P	
Test Date [YYYY-MM-DD]..... :					—					—
Test method					<input checked="" type="checkbox"/> Solar simulator		<input type="checkbox"/> Natural sunlight			—
Sample #	I_{sc} [A]	V_{oc} [V]	I_{mp} [A]	V_{mp} [V]	P_{max} [W]	FF [%]	P_{max} [W] (Lab Gate No.1)	Power Degradation [%]	Result	
1-M7	12.63	50.14	11.59	42.04	487.31	76.93	503.68	-3.25	P	
Supplementary information: N/A										

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 23.9: MQT 03 fin: Final Insulation test					P
Test Date [YYYY-MM-DD]..... :		—			—
Test Voltage applied [V]		2 minutes of 1500 and 1 minute of 8000			—
Size of module [m ²]		2.67			—
Sample #	Required	Measured	Dielectric breakdown		Result
	MΩ	MΩ	Yes (description)	No	
1-M7	>1000	>15.0	No breakdown	x	P
Supplementary information: N/A					

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 23.10: MQT 15 fin: Final Wet leakage current test			P
Test Date [YYYY-MM-DD]	:	—	—
Test Voltage applied [V]	:	2 minutes of 1500	—
Solution temperature [°C].....	:	22±2	—
Size of module [m ²]	:	2.67	—
Solution resistivity [Ω cm].....	:	< 3500	—
Sample #	Measured [MΩ]	Limit [MΩ]	Result
1-M7	>1000	>15.0	P
Supplementary information: N/A			

Annex 1: Statement of Measurement Uncertainty

Clause #	Parameter/ Measurement / test method	Requirement % or k	Calculated U of M*
MQT02/MQT06	Pmpp (m ₁)	k=2	2.0%
MQT02/MQT06	Voc (m ₂)	k=2	0.8%
MQT02/MQT06	Isc (m ₃)	k=2	2.0%

Annex 2: List of Measurement Equipment

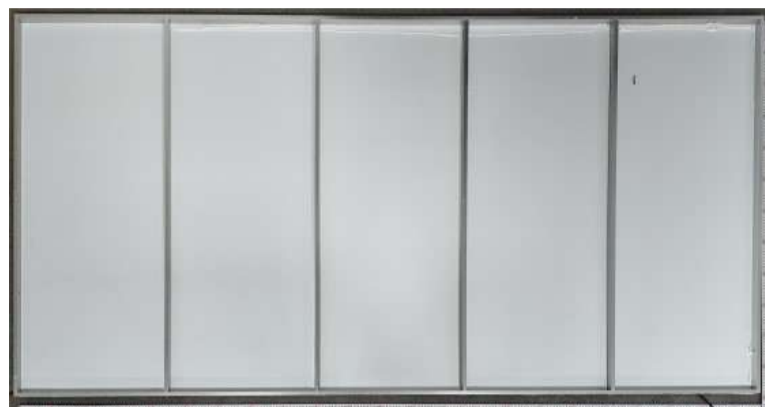
Testing / measuring equipment	Type	Equipment ID	Calibration due date
Digital thermohygrometer	LYWSDCGQ/01ZM	HJE-036	2025-12-02
Lux meter	TES 1332A	HJE-013	2025-12-05
Steel tape measure	5.0m	HJE-021	2025-12-02
Steel tape measure	3.5m	HJE-049	2025-12-02
Steel ruler	50cm	HJE-094	2025-12-02
Steel ruler	50cm	HJE-022	2025-12-02
Insulation withstand voltage tester	ZW-HIT01-1203	HJE-004	2025-12-23
Wet leakage test system	ZW-WLT02-151512252515	HJE-003	2025-12-02
Conductivity meter	CCT-3320V	HJE-018	2025-12-02
infrared thermometer gun	FLUKE 561	HJE-009	2026-06-04
Transient simulator	GIV-30AC	HJE-028	2025-10-21
EL Tester	α7R II	HJE-046	2025-11-30
DC source	9360-30 1U	HJE-045	2025-12-02
Hail impact testing machine	YQ-GF-BB2	HJE-058	2026-03-31
Electronic balances	CN-LQC6002	HJE-100	2026-04-08
Digital calipers	(0-150)mm	HJE-020	2025-12-02
stopwatch	PC2810	HJE-040	2025-12-05
Horizontal refrigerated freezer conversion cabinet	BD-100	HJE-099	2026-06-26
Refrigerator	BCD-223WDPT	HJE-101	2026-06-26
Inclinometer	-	HJE-035	2025-12-09

Annex 3: Sample Photos

Module type: JY1-72H520PC (BOM1)



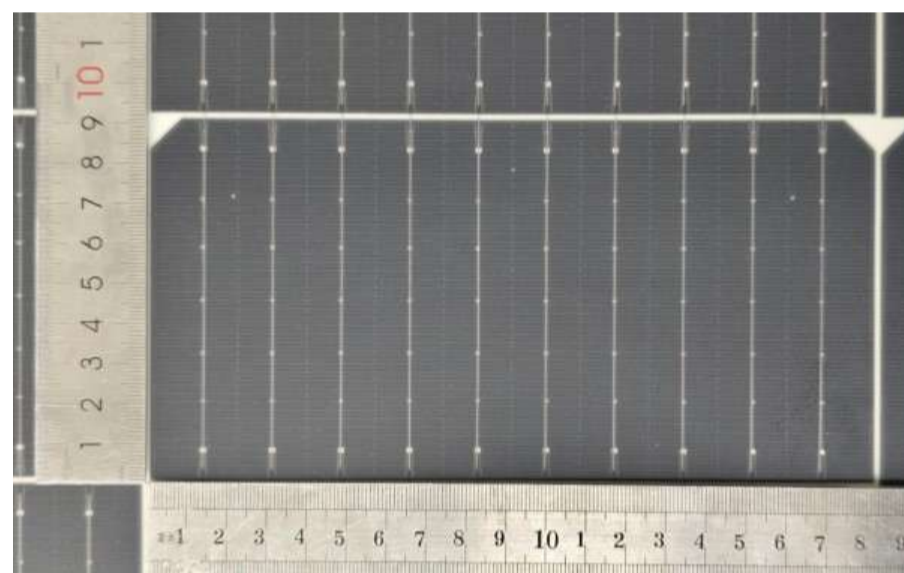
Front overview



Back overview



Label



Solar cell



Edge(Frame)

N/A

Grounding Mark



Junction box (TL-SOX216x)



Junction box (opened)

N/A



Bypass diode (Junction box is potted)

Cable (62930 IEC 131 1x4mm²)



Mark (Do not disconnect under load)

Connectors (TL-CABLE01S Pro)

----- End of test report -----