



TEST REPORT

SGS-CSTC
Standards Technical Services
(Shanghai) Co., Ltd.

No.588 West Jindu Road,
Songjiang District,
Shanghai, China

Report reference no.: SHES191202758771

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Total number of pages: 10

Testing laboratory: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Address: 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Applicant's name.....: Zhejiang Shinefar Solar Power Co., Ltd.

Address: NO.108 Xinghe Road, Yuyue Town, Deqing , Huzhou , Zhejiang ,China.

Test specification: Clause MQT 01, MQT 06.1, MQT 03, MQT 15, MQT 16 of IEC 61215-2:2016

Clause MST 26 of IEC 61730-2:2016

Test item description: Photovoltaic (PV) module(s)

Trade mark.....: Null

Manufacturer: Same as application

Model/Type reference: SF-M6/36160

Ratings: Refer to marking plate of sample

Signature

Tested by: Jessie Zhang

Signature

Approved by: Van Hua



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Summary of testing

Submitted samples are tested according to MQT 01, MQT 06.1, MQT 03, MQT 15, MQT 16 of IEC 61215-2:2016 and MST 26 of IEC 61730-2:2016.

The test results are present within this test report.

Tests performed (name of test and test clause):

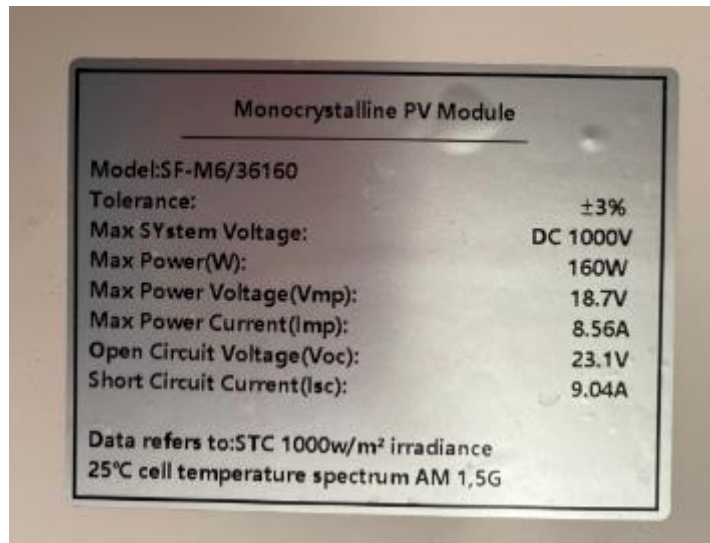
IEC 61215-2:2016:
 Visual inspection (MQT 01)
 Performance at STC (MQT 06.1)
 Insulation test (MQT 03)
 Wet leakage current test (MQT 15)
 Static mechanical load test (MQT 16)
 IEC 61730-2:2016:
 Reverse current overload test MST 26

Testing location:

CPVT (National Centre of Supervision and Inspection on Solar Photovoltaic Products Quality, China)
 Suite A, 5 Xinhua Rd., WND, Wuxi, Jiangsu, China.
 214028

Copy of marking plate / device under test:

Module Type: SF-M6/36160

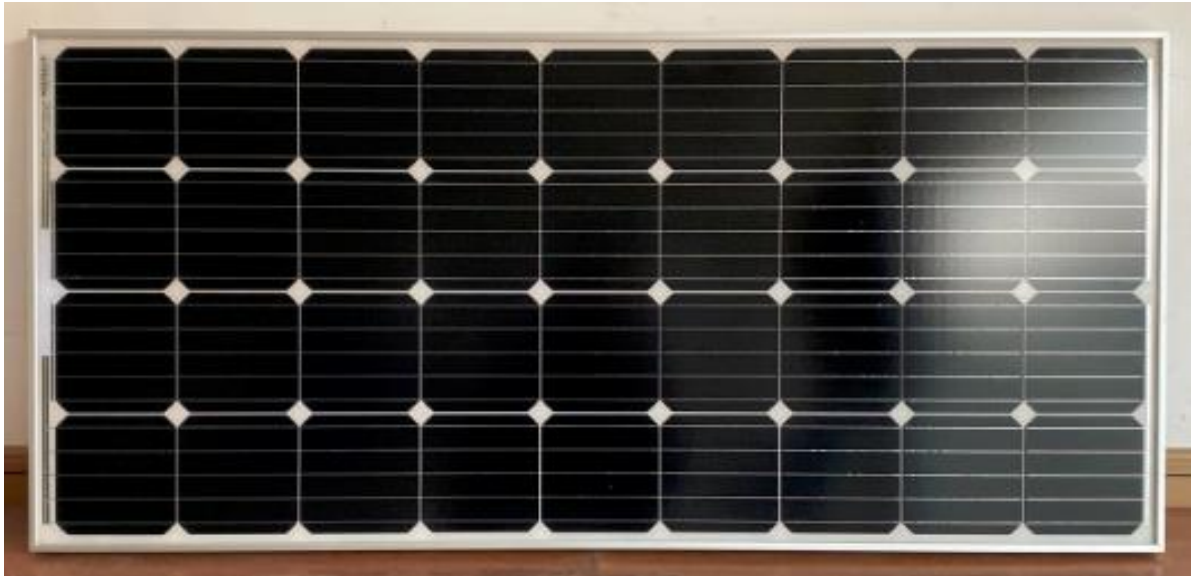


Marking plate of Sample

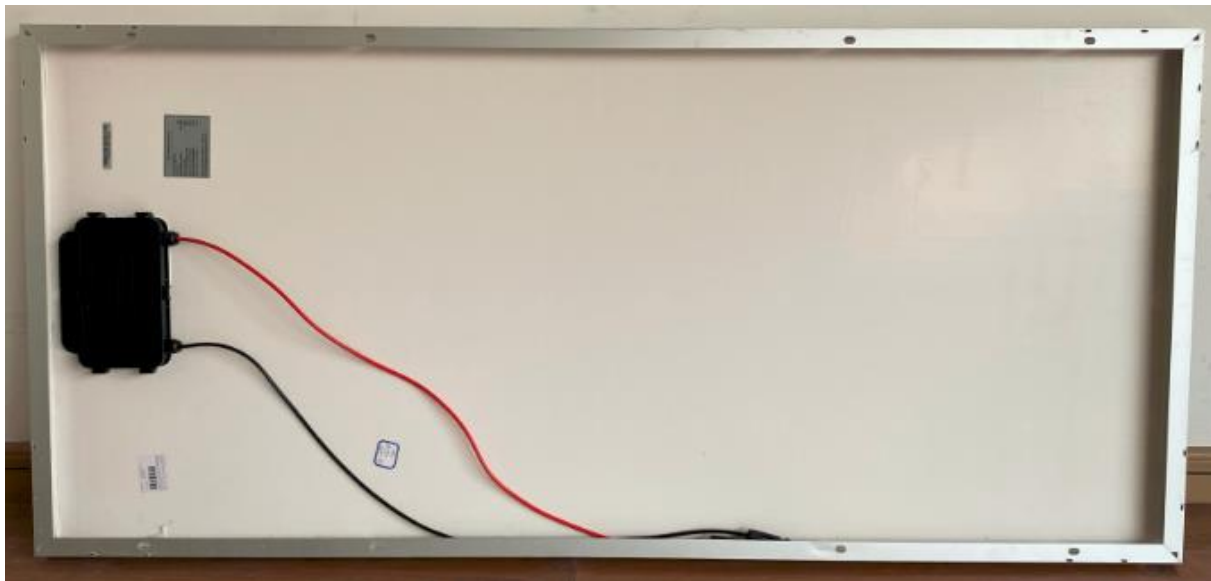


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Serial Number of Sample



Front view of sample



Rear view of sample

Possible test case verdicts

- Test case does not apply to the test object	N/A
- Test object does meet the requirement	Pass (P)



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- Test object does not meet the requirement	Fail (F)
General remarks	
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>List of test equipment must be kept on file and available for review.</p> <p>This document is issued by the company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p> <p>Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 30 days. This document cannot be reproduced except in full, without prior approval of the company.</p> <p>Contents:</p> <ol style="list-style-type: none"> 1) The main report 2) Appendix 1: List of measurement equipment 3) Appendix 2: Statement of the estimated uncertainty of the test results 	
General product information	
The product is photovoltaic (PV) module.	



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1. Sampling procedure

<input type="checkbox"/> Random sampling from production (e.g. during factory audit (FA) or inline inspection)
<input type="checkbox"/> Random sampling from the warehouse, container or transportation boxes
<input checked="" type="checkbox"/> Modules have been submitted by the manufacturer/ client without random sampling by SGS

2. Test sample

Sample #	Model Type	Serial Number
01	SF-M6/36160	7790292135970005

3. Test specification and test result

MQT 01 Visual inspection		
Test Date [YYYY-MM-DD]	:	2019-12-06
Sample #	Nature and position of initial findings	Verdict
01	No Major visual defects	P
Supplementary information: N/A		

MQT 06.1 Performance at STC						
Test Date [YYYY-MM-DD]	:	2019-12-06				—
Test method		<input checked="" type="checkbox"/> indoor	<input type="checkbox"/> outdoor	—		
Module temperature [°C]	:	Corrected to 25.0				—
Irradiance [W/m ²]	:	Corrected to 1000				—
Sample #	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	FF [%]
01	23.19	18.80	8.995	8.520	160.2	76.79
Supplementary information: Refer to Appendix 2: Statement of the estimated uncertainty of the test verdicts.						

MQT 03 Insulation test		
Test Date [YYYY-MM-DD]	:	2019-12-06
Test Voltage applied [V]	:	3000/1000



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Size of module [m ²]		1.00	—	
Required Resistance [MΩ].....		≥40.0	—	
Sample #	Measured	Dielectric breakdown		Result
	MΩ	Yes (description)	No	
01	>1000	—	No	P
Supplementary information: /				

MQT 15 Wet leakage current test				
Test Date [YYYY-MM-DD]		2019-12-06		—
Test Voltage applied [V].....		1000		—
Solution temperature [°C]		22.5		—
Solution resistivity [Ω cm)		2360		—
Size of module [m ²]		1.00		—
Sample #	Limit [MΩ]	Measured [MΩ]		Result
01	≥40.0	>1000		P
Supplementary information: /				

MQT 16 Static mechanical load test				P
Sample #:	01		—	
Design load (front side/ back side)	1600/1600		—	
Safety factors	1.5		—	
Test Date [YYYY-MM-DD]	2019-12-12		—	
Mounting method	Clamps mounting (4 points)		—	
Load applied to	front side	back side		—
Mechanical load [Pa]	2400	2400		—
First cycle time (start/end)	1h	1h		—
Intermittent open-circuit (yes/no)	No	No		P
Second cycle time (start/end)	1h	1h		—
Intermittent open-circuit (yes/no)	No	No		P
Third cycle time (start/end)	1h	1h		—
Intermittent open-circuit (yes/no)	No	No		P



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Supplementary information: /			
TABLE 19.6: MQT 01 - Visual inspection after static mechanical load test			P
Test Date [YYYY-MM-DD]	2019-12-13		—
Sample #	Nature and position of initial findings – comments or attach photos		—
01	No Major visual defects		P
Supplementary information: /			
TABLE 19.7: MQT 15 - Wet leakage current test after static mechanical load test			P
Test Date [YYYY-MM-DD]	2019-12-13		—
Test Voltage applied [V]	1000		—
Solution temperature [°C]	21.5		—
Size of module [m ²]	1.00		—
Solution resistivity [Ω cm]	23371		—
Sample #	Measured [MΩ]	Limit [MΩ]	Result
01	>1000	≥40.0	P
Supplementary information: /			

MST 26 Reverse current overload test			
Sample #	01		—
Test Date (YYYY-MM-DD)	2019-12-13		—
Test current (A)	20.2		—
Range of applied voltage (V)	27.8~24.8		—
Test duration	2 hours		—
Observations			Result
■ No flaming of the module			P
■ No flaming or charring of the cheesecloth			
Supplementary information: /			
Wet leakage current test after Reverse current overload test			—
Test Date (YYYY-MM-DD)	2019-12-16		—
Test Voltage applied (V, dc)	1000		—
Solution resistivity (Ω cm)	2166		—



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Solution temperature (°C)		21.3	—
Sample#	Measured [MΩ]	Limit [MΩ]	Result
01	>1000	≥40.0	P
Supplementary information: Size of module 1.00 [m ²]			

Appendix 1: List of measurement equipments

Clause	Measurement / testing	Testing / measuring equipment / material used	Equipment ID	Calibration due date
4.1 10.2	Visual inspection	Luminometer	OI20-02	2020.04.01
4.3 10.13	Insulation test	Withstanding voltage/Insulation resistance tester	EV21-56	2020.09.01
4.6	Performance at STC	Pulsed Solar Simulator	EV20-53	2020.03.19
		Hybrid Recorder	TT21-56	2020.08.02
4.15 10.14	Wet leakage current test	Withstanding voltage/ Insulation resistance tester	EV21-57	2020.09.01
		Conductive meter	CC20-01	2020.04.02
		Contact Thermometer	TT20-12	2020.03.28
4.16	Static mechanical load test	Mechanical load tester	FP21-07	2020.08.02
10.19	Reverse current overload test	DC Power Supply	ES21-501	2020.07.21
		Luminometer	OI20-02	2020.04.01
		Hybrid Recorder	TT21-04	2020.06.26
	Others	Temperature -hydrometer	TT21-44	2020.04.29
			TT21-45	
			TT21-47	
		Steel Tape	LS21-05	2020.07.25
		Vernier caliper	LS20-04	2020.07.25



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Appendix 2: Statement of the estimated uncertainty of the test results

The estimated uncertainty fulfils the requirements from the CTL decision sheet DSH 251B / 2009.

----- End of Test Report -----



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