



TEST REPORT

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

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



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Report reference no.: SHES230601055971-01
Date of issue.....: Jun. 13, 2023
Total number of pages: 11
Testing laboratory: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Address: 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Applicant's name.....: LUXEN SOLAR ENERGY CO., LTD.
Address: No. 1, Haiyue Road, Suxitong Technologies & Industries Park, Nantong City, Jiangsu Province, P. R. China

Test specification: Clause MQT 01, MQT 02, MQT 03, MQT 15 of IEC 61215-2:2016

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

Trade mark.....: 

Manufacturer: LUXEN SOLAR ENERGY CO., LTD.
 No. 1, Haiyue Road, Suxitong Technologies & Industries Park, Nantong City, Jiangsu Province, P. R. China

Model/Type reference: LNVH-595M

Ratings: Refer to marking plate of sample



Signature

Tested by: Janine Tian



Signature

Approved by: Van Hua



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List of tests performed

Test item	Requirement + Test	Result	Verdict
1	Visual inspection	See Table 1	P
2	Maximum power determination	See Table 2	P
3	Insulation test	See Table 3	P
4	Wet leakage current test	See Table 4	P

Pre-conditioning has been performed with an irradiance dose of 5.0 kWh/m².



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Summary of testing

Submitted samples are tested according to Clause MQT 01, MQT 02, MQT 03, MQT 15 of IEC 61215-2:2016. 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 02)
 Insulation test (MQT 03)
 Wet leakage current test (MQT 15)

Testing location:

Guoce Testing Technology (suzhou) Co., Ltd.
 Building 11, No. 18, Yaofeng East Road, Mudu Town,
 Wuzhong District, Suzhou, Jiangsu, 215151, China

Copy of marking plate / device under test:

Module Type: LNVH-595M



Marking plate of Sample



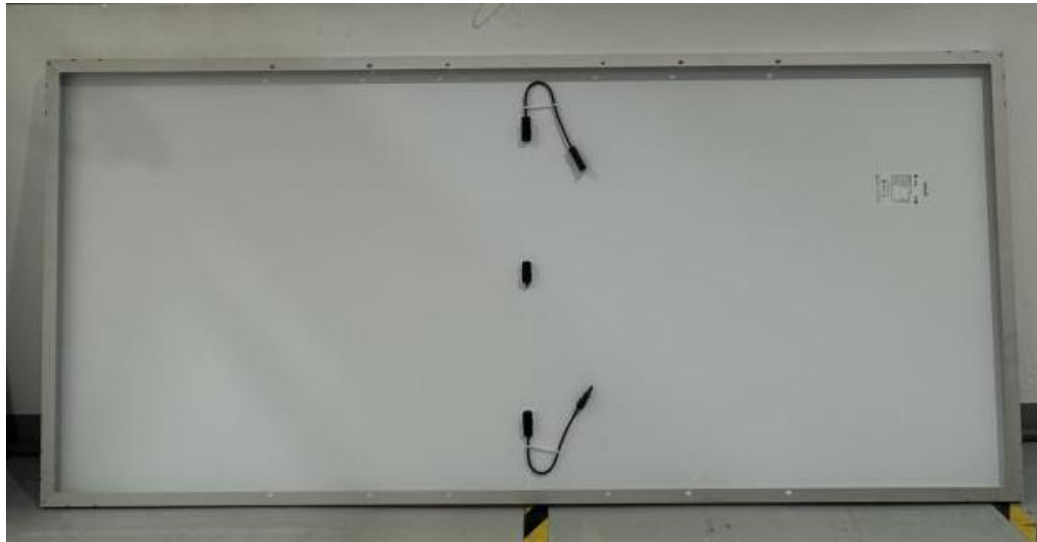
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Front view of sample



Rear view of sample



Connector



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Testing Center E&E, China

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Junction Box

Possible test case verdicts	
- Test case does not apply to the test object	N/A
- Test object does meet the requirement	Pass (P)
- 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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Description of module construction						
Model	Cell Type		No. of cells	Dimension [mm]		
LNVH-595M	Mono-crystalline		156	2465x1134x35		
Technical Data						
Type/Model	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	Max.System Voltage [V]
LNVH-595M	54.00	45.88	13.87	12.97	595	1500
Type/Model	Module Efficiency [%]		Energy Efficiency Class			
LNVH-595M	21.29		A			
Supplementary information: Energy efficiency >13.5%: Class A.						
Energy efficiency classes	A>13.5%					
	13%<B≤13.5%					
	12%<C≤13%					
	11%<D≤12%					
	E<11%					



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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	LNVH-595M	VHMC314163723085
02		VHMC314163721891

3. Test specification and test result

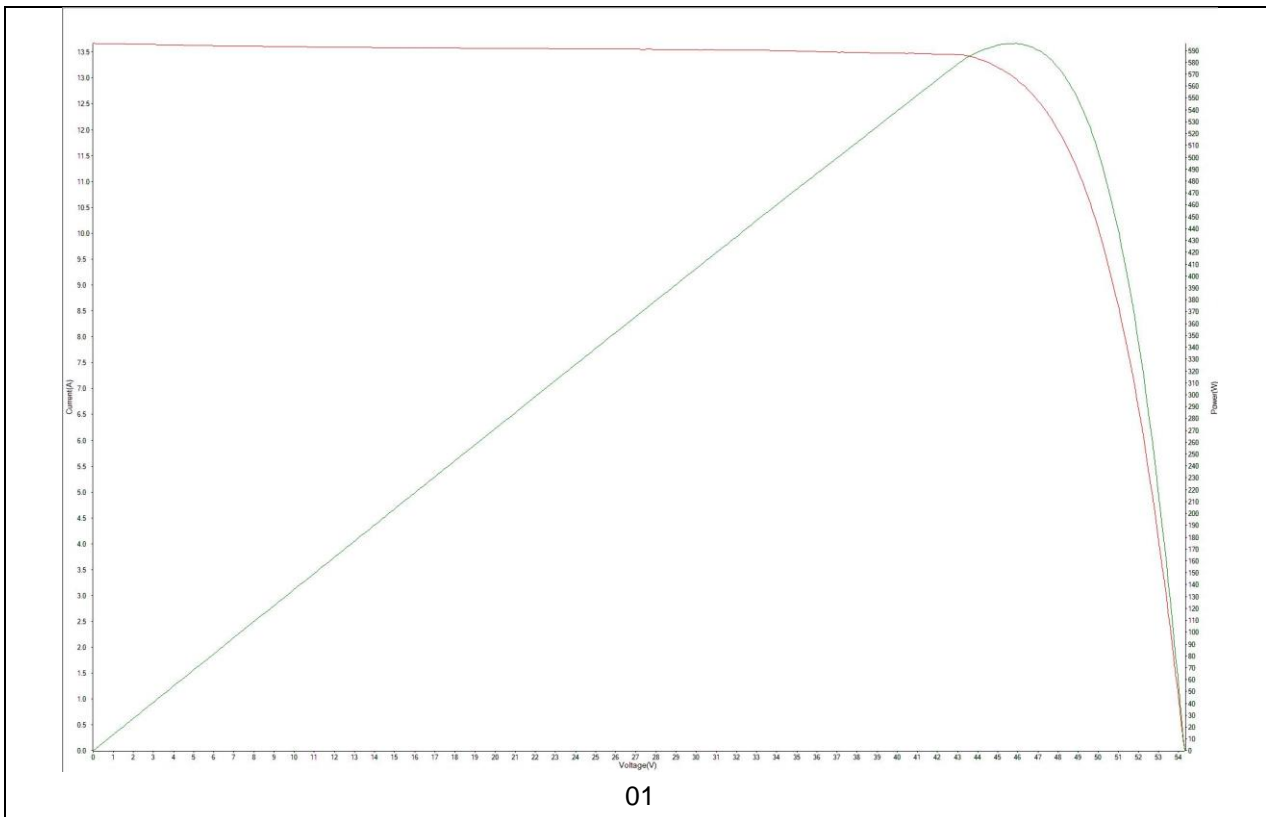
TABLE 1: MQT 01 Visual inspection		
Test Date [YYYY-MM-DD]	:	2023-06-08
Sample #		Nature and position of initial findings
01		No Major visual defects
02		No Major visual defects
Supplementary information: N/A		

TABLE 2: MQT 02 Maximum power determination						
Test Date [YYYY-MM-DD]:		2023-06-08			—	
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	54.29	45.75	13.67	13.02	595.8	80.29
02	54.16	45.56	13.63	12.95	589.8	79.92
IV Curve:						



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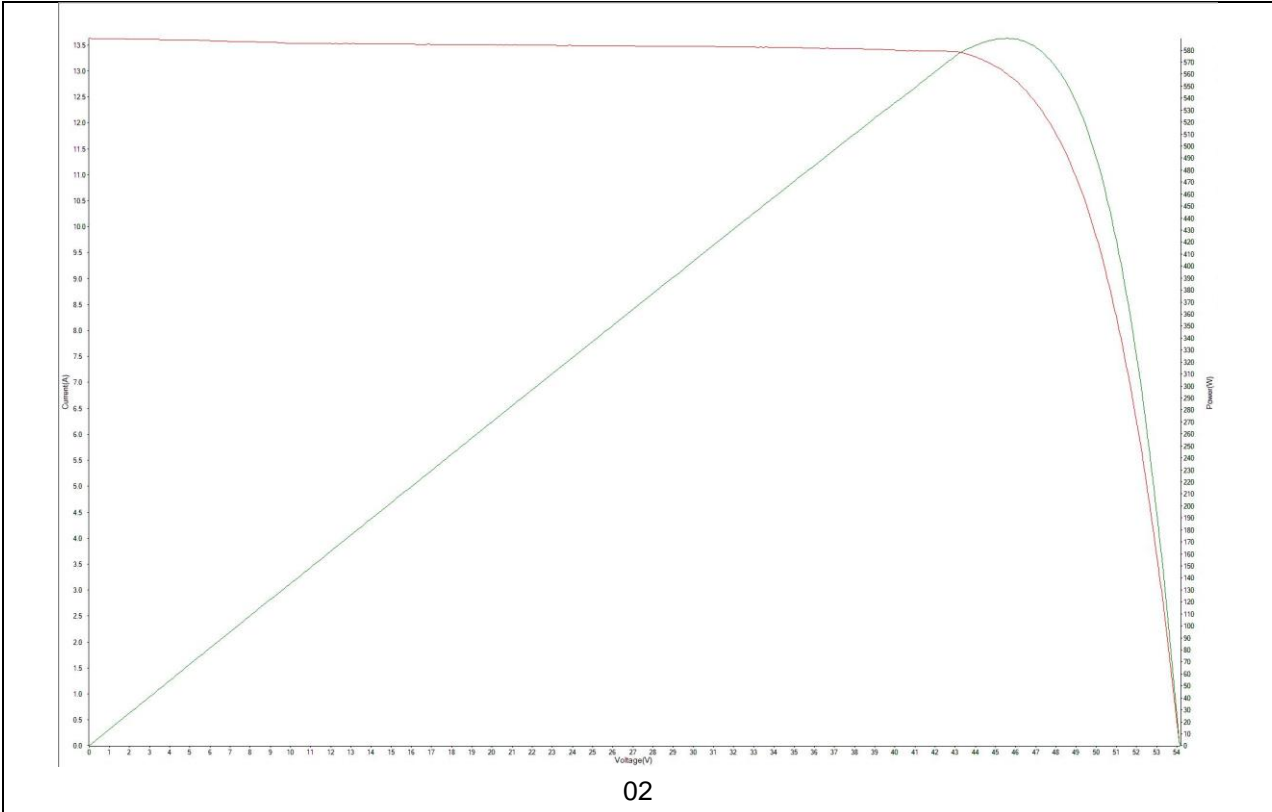
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02

Supplementary information: Refer to Appendix 2: Statement of the estimated uncertainty of the test verdicts. The discrepancy between the labelled power value and the measured value shall not exceed the limit of -5%~10%.

TABLE 3: MQT 03 Insulation test					
Test Date [YYYY-MM-DD]	2023-06-09				—
Test Voltage applied [V]	4000V 1min/1500V 2min				—
Size of module [m ²]	2.80				—
Sample #	Measured	Required Resistance	Dielectric breakdown		Result
	MΩ	MΩ	Yes (description)	No	
01	27081	≥14.29	—	No	P
02	20688	≥14.29	—	No	P

Supplementary information: Minimum requirement acc. to IEC 61215:2016 is 40 MΩ *m².



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TABLE 4: MQT 15 Wet leakage current test			
Test Date [YYYY-MM-DD]	2023-06-09		—
Test Voltage applied [V].....	1500V 2min		—
Solution resistivity [Ω cm)	1967		—
Solution temperature [$^{\circ}$ C]	24.2		—
Size of module [m^2]	2.80		—
Sample #	Required Resistance [$M\Omega$]	Measured [$M\Omega$]	Result
01	≥ 14.29	12330	P
02	≥ 14.29	11817	P
Supplementary information: Minimum requirement acc. to IEC 61215:2016 is 40 $M\Omega \cdot m^2$.			

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	PM6612L	2024.02.13
4.3 10.13	Insulation test	Withstanding voltage/Insulation resistance tester	GCYQ-AG-18	2023.08.18
4.6	Performance at STC	Pulsed Solar Simulator	GIV-20A2616	2023.08.02
4.15 10.14	Wet leakage current test	Withstanding voltage/ Insulation resistance tester	GCYQ-AG-18	2023.08.18
		Conductive meter	GCYQ-AG-07	2023.11.01

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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