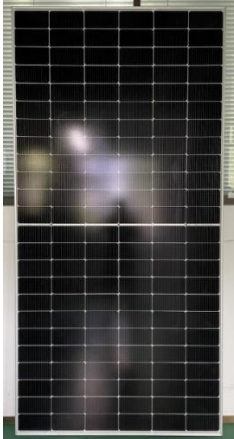





Prüfbericht-Nr.: Test report no.:	CN23XG69 001	Auftrags-Nr.: Order no.:	244515531	Seite 1 von 17 Page 1 of 17
Kunden-Referenz-Nr.: Client reference no.:	2496578	Auftragsdatum: Order date:	16/05/2023	
Auftraggeber: Client:	Sany Silicon Energy (Zhuzhou) Co., Ltd. Room 518-50, Building 1, Longxin International, No.255, Tongxia Road, Tongtangwan Street, Shifeng District, 412005 Zhuzhou City, Hunan Province, P.R. China			
Prüfgegenstand: Test item:	Photovoltaic (PV) module			
Bezeichnung / Typ-Nr.: Identification / Type no.:	See module type designation on page 3			
Auftrags-Inhalt: Order content:	Salt mist corrosion testing of photovoltaic (PV) modules			
Prüfgrundlage: Test specification:	IEC 61701:2020, EN IEC 61701:2020 test method 8 Salt mist corrosion testing of photovoltaic (PV) modules			
Wareneingangsdatum: Date of sample receipt:	17/05/2023			
Prüfmuster-Nr.: Test sample no.:	Refer to page 5			
Prüfzeitraum: Testing period:	17/05/2023 - 07/08/2023			
Ort der Prüfung: Place of testing:	Refer to page 4			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	<input checked="" type="checkbox"/> 	genehmigt von: authorized by:	<input checked="" type="checkbox"/> 	
Datum: Date:	23/10/2023	Ausstellungsdatum: Issue date:	23/10/2023	
Stellung / Position:	Project Engineer	Stellung / Position:	Authorizer	
Sonstiges / Other:	<ul style="list-style-type: none"> - Basic qualification for module types listed on page 3 - Valid in conjunction with TÜV Rheinland certificate PV 50587005 - Valid only for the material combinations as listed in Constructional Data Form (CDF) No. CN23XG69 001 			
				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<p>* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</p> <p>* Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>				
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</p> <p><i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 2 von 17
Page 2 of 17

Anmerkungen
Remarks

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
2	<p>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.</p> <p><i>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</i></p>
3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird.</p> <p><i>The decision rule for statements of conformity in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report.</i></p>

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 3 von 17
Page 3 of 17

Produktbeschreibung
Product description

1	Produktdetails Product details	<p>New model types:</p> <p>Max. system voltage: up to 1500 VDC (Voc at STC):</p> <p>With ½ cut of mono c-Si cells:</p> <p>SYMN144TSxxx (xxx=560-585, in steps of 5, 144 cells)</p> <p>SYMN120TSxxx (xxx=460-480, in steps of 5, 120 cells)</p> <p>SYMN108TSxxx (xxx=420-440, in steps of 5, 108 cells)</p> <p>xxx represents output power in Wp</p>											
2	Verwendete Materialien Used materials	see Constructional Data Form (CDF) no. CN23XG69 001											
3	Adresse(n) der Fertigungsstätte(n) Address(es) of the manufacturing site(s)	<table border="1"> <tr> <td data-bbox="558 880 885 952">Name / Description:</td> <td data-bbox="885 880 1532 952">Sany Silicon Energy (Zhuzhou) Co., Ltd.</td> </tr> <tr> <td data-bbox="558 952 885 1059">Street:</td> <td data-bbox="885 952 1532 1059">Sany Energy Equipment Industrial Park, No.320 Qingshui Road, Shifeng District</td> </tr> <tr> <td data-bbox="558 1059 885 1167">Postcode / City, Country:</td> <td data-bbox="885 1059 1532 1167">412005 / Zhuzhou City, Hunan Province, P.R. China</td> </tr> <tr> <td data-bbox="558 1167 885 1238">Type of production:</td> <td data-bbox="885 1167 1532 1238">Crystalline PV-module</td> </tr> <tr> <td data-bbox="558 1238 885 1323">Inspection report No. / Date:</td> <td data-bbox="885 1238 1532 1323">CN23RWL8 001 / 11/05/2023</td> </tr> </table>		Name / Description:	Sany Silicon Energy (Zhuzhou) Co., Ltd.	Street:	Sany Energy Equipment Industrial Park, No.320 Qingshui Road, Shifeng District	Postcode / City, Country:	412005 / Zhuzhou City, Hunan Province, P.R. China	Type of production:	Crystalline PV-module	Inspection report No. / Date:	CN23RWL8 001 / 11/05/2023
Name / Description:	Sany Silicon Energy (Zhuzhou) Co., Ltd.												
Street:	Sany Energy Equipment Industrial Park, No.320 Qingshui Road, Shifeng District												
Postcode / City, Country:	412005 / Zhuzhou City, Hunan Province, P.R. China												
Type of production:	Crystalline PV-module												
Inspection report No. / Date:	CN23RWL8 001 / 11/05/2023												
4	Sonstiges Other	Test sample(s), as well sample information, description, product details and intended usage was provided by customer. Throughout this report a point is used as the decimal separator.											
5	Prüfmusterbereitstellung Test sample obtaining	<input checked="" type="checkbox"/> Sending by customer <input type="checkbox"/> Sampling by TÜV Rheinland Group <input type="checkbox"/> others:											

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 4 von 17
Page 4 of 17

Produktbeschreibung
Product description

6 Zusammenfassung der Prüfergebnisse
Summary of test results

According to the inquiry, the resistance of photovoltaic (PV) modules to salt mist should be assessed in accordance with IEC 61701:2020 and EN IEC 61701:2020.

The required tests of IEC 61701:2020 and EN IEC 61701:2020 were passed according to its regulations of the pass criteria. The above listed module types have passed all tests of the IEC 61215/EN 61215 and IEC 61730/EN 61730 standards before salt mist resistance test was applied (see history of certification).

- Basic qualification for model types listed in section 1. The relevant tests were performed on SYMN144TSxxx with bill of materials as listed on page 5 as representative. The test results are documented within this test report.

- The differences of module types are as below:

1. SYMN144TSxxx are for modules with 144 pcs half-cut 182mm Topcon solar cells;
2. SYMN120TSxxx are for modules with 120 pcs half-cut 182mm Topcon solar cells;
3. SYMN108TSxxx are for modules with 108 pcs half-cut 182mm Topcon solar cells

- The materials and combinations in below table have been approved on module in main license with certificate PV 50587005. No additional testing is considered necessary.

Object	Manufacturer	Type / model	Technical data / ratings
Cell connectors	Changzhou Sheng Yue metal new material Co., Ltd.	Sn60Pb40	$\varnothing = 0.26 \pm 0.01 \text{ mm}$
String connectors	Changzhou Sheng Yue metal new material Co., Ltd.	Sn60Pb40	T(mm) x L(mm): 0.4mm x 6.0mm 0.4mm x 4.0mm
Fluxing agent	Zhuhai Changxian New Materials Technology Co., Ltd	CX700	—
Fixing tape	Guangdong Sunrui New Material Co., Ltd.	HZ UV-100	Thickness= $100 \mu\text{m} \pm 40 \mu\text{m}$

The test report is valid only for the materials as listed in Constructional Data Form (CDF) No. CN23XG69 001.

This test report includes a history of reporting and certification and photo in the appendix.

Summary of test locations:

All the tests were performed at China Academy of Information and Communications Technology, China Telecommunication Technology Labs, which is located at Cuihu Cloud Center. No 1. Gaolizhang Road. Wenquan. Haidian District. Beijing. China.

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 5 von 17
Page 5 of 17

Produktbeschreibung
Product description

7.1	List of test samples Module type: SYMN144TS565		
Sample no.	Sample SN	Remarks / constructional characteristics (e.g. cell, backsheet, frame type)	—
1#	2304010120767	Front cover: 3.2mm External AR Coating Tempered Glass from Hunan Kibing Solar Technology Co., Ltd. Encapsulation material: TF4 (between glass and cell) / F806W (between cell and backsheet) from HANGZHOU FIRST APPLIED MATERIAL CO., LTD. Backsheet: FFC-JW3010 (Plus) from Jolywood (Suzhou) Sunwatt Co., Ltd. Solar Cell: SYCN182T16 from Sany Silicon Energy (Zhuzhou) Co., Ltd. Frame: 30mm, 6005-T6 from CHANGSHU DONGNENG SOLAR TECHNOLOGY CO., LTD	
2#	2304010120817	Adhesive of frame sealing: HT906Z from Shanghai Huitian New Material Co., Ltd. Cell connector: Φ0.26mm Sn60/Pb40 from Suzhou YourBest New-type Materials Co., Ltd. String connector: 6.0mm x 0.4mm, 4.0mm x 0.4mm Sn60/Pb40 from Suzhou YourBest New- type Materials Co., Ltd. Fluxing agent: SF180 from ASAHI SOLDER TECHNOLOGY(WUXI) CO., LTD Fixing Tape: D60F6-2 from SuZhou Rongzhi Electronic Technology Co., Ltd	
3#	2304010120823	Junction box: 3Qxy from QC Solar (Suzhou) Corporation Cable: 62930 IEC 131 1 x 4.0mm ² from QC Solar (Suzhou) Corporation Connector: QC4.10-cds from QC Solar (Suzhou) Corporation Bypass diode: QCM2545 from QC Solar (Suzhou) Corporation Adhesive of J-Box sealing: HT906Z from Shanghai Huitian New Material Co., Ltd. Potting Material in junction box: 5299W-S from Shanghai Huitian New Material Co., Ltd.	
Remark: Sample # 1 was tested as reference module.			

Absatz <i>Clause</i>	Anforderungen - Prüfungen / <i>Requirements - Tests</i>	Messergebnisse – Bemerkungen / <i>Measuring results - Remarks</i>	Ergebnis <i>Result</i>
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7.2	Visual inspection (initial)			
Test date (dd/mm/yyyy)		18/05/2023		
Sample no.	Requirement		Nature and position of initial findings	—
1	No major visual defects		No major visual defects	P
2			No major visual defects	P
3			No major visual defects	P
Supplementary information: N/A				

7.3	Maximum power determination at STC (initial)						
Test date (dd/mm/yyyy)			18/05/2023				—
Test method			<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight				
Ambient temperature [°C]			25 ± 2				
Irradiance [W/m²]			1000 ± 10				
Module temperature [°C]			25 ± 2				
Sample no.	P _{max} [W]	V _{mpp} [V]	I _{mpp} [A]	V _{oc} [V]	I _{sc} [A]	FF [%]	
1	561.9	43.74	12.849	51.24	13.603	81.5	N/A
2	561.9	43.79	12.837	51.27	13.604	81.3	N/A
3	563.8	43.96	12.812	51.49	13.609	81.2	N/A
Supplementary information: N/A							

7.4.1	Performance at STC (after stabilization 1)						
Test date (dd/mm/yyyy)			22/05/2023				—
Test method			<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight				
Ambient temperature [°C]			25 ± 2				
Irradiance [W/m²]			1000 ± 10				
Module temperature [°C]			25 ± 2				
Sample no.	P _{max} [W]	V _{mpp} [V]	I _{mpp} [A]	V _{oc} [V]	I _{sc} [A]	FF [%]	
1	561.8	43.73	12.846	51.23	13.601	81.6	N/A
2	561.4	43.77	12.827	51.25	13.602	81.4	N/A
3	563.4	43.98	12.810	51.48	13.605	81.5	N/A
Supplementary information: N/A							

Absatz <i>Clause</i>	Anforderungen - Prüfungen / <i>Requirements - Tests</i>	Messergebnisse – Bemerkungen / <i>Measuring results - Remarks</i>	Ergebnis <i>Result</i>
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7.4.2	Performance at STC (after stabilization 2)						
Test date (dd/mm/yyyy)			24/05/2023				—
Test method			<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight				
Ambient temperature [°C]			25 ± 2				
Irradiance [W/m²]			1000 ± 10				
Module temperature [°C]			25 ± 2				
Sample no.	P _{max} [W]	V _{mpp} [V]	I _{mpp} [A]	V _{oc} [V]	I _{sc} [A]	FF [%]	
1	561.0	43.72	12.837	51.23	13.438	81.4	N/A
2	561.4	43.75	12.834	51.28	13.442	81.5	N/A
3	563.1	43.92	12.803	51.47	13.411	81.7	N/A
Supplementary information: N/A							

7.4.3		Performance at STC (after stabilization 3)						
Test date (dd/mm/yyyy)			26/05/2023				—	
Test method			<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight					
Ambient temperature [°C]			25 ± 2					
Irradiance [W/m²]			1000 ± 10					
Module temperature [°C]			25 ± 2					
Measurement uncertainties [%] (k =2)			P _{max,m1}	≤1.6	V _{oc,m2}	≤ 0.5		I _{sc,m3}
Sample no.	P _{max} [W]	V _{mpp} [V]	I _{mpp} [A]	V _{oc} [V]	I _{sc} [A]	FF [%]		
1	560.9	43.71	12.834	51.22	13.435	81.5	N/A	
2	561.8	43.77	12.837	51.27	13.443	81.5	N/A	
3	563.2	43.97	12.807	51.48	13.412	81.6	N/A	
Supplementary information: N/A								

Absatz <i>Clause</i>	Anforderungen - Prüfungen / <i>Requirements - Tests</i>	Messergebnisse – Bemerkungen / <i>Measuring results - Remarks</i>	Ergebnis <i>Result</i>
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7.5	Initial stabilization - MQT 19.1				
<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight <input type="checkbox"/> Other stabilization procedures					
Test date (dd/mm/yyyy)			22/05/2023 - 26/05/2023		—
Irradiance [W/m²]			1000		
Module temperature [°C]			50		
Sample no.	Test	Integrated irradiation [kWh/m²]	P_{\max} [W]	Stabilization [%] *	
1	Initial	—	561.8	0.16	P
	Light-soaking 1	5	561.0		
	Light-soaking 2	5	560.9		
2	Initial	—	561.4	0.07	P
	Light-soaking 1	5	561.4		
	Light-soaking 2	5	561.8		
3	Initial	—	563.4	0.05	P
	Light-soaking 1	5	563.1		
	Light-soaking 2	5	563.2		
Supplementary information:					
* Stabilization criterion: $(P_{\max} - P_{\min})/P_{\text{avg}} \leq 1 \%$ for three consecutive measurements.					

7.6	Insulation test (initial)					
Test date (dd/mm/yyyy)				30/05/2023		—
Maximum system voltage [V _{DC}]				1500		
High voltage applied [V _{DC}]				8000		
Insulation resistance measured at [V _{DC}]				1500		
Sample no.	R _{iso} [GΩ]	A [m²]	R _{iso} ·A [GΩ·m²]	Dielectric breakdown		
				Yes (description)	No	
1	>50.00	2.58	>129.00	-	No	P
2	>50.00	2.58	>129.00	-	No	P
3	>50.00	2.58	>129.00	-	No	P
Supplementary information: Minimum requirement is 0.04 GΩ·m² for A > 0.1 m² and 0.4 GΩ for A ≤ 0.1 m². Insulation tester can measure up to 50.00 GΩ.						

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 9 von 17
Page 9 of 17

Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
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7.7	Wet leakage current test (initial)			
Test date (dd/mm/yyyy)		30/05/2023		—
Insulation resistance measured at [V _{DC}]		1500		
Solution resistivity [Ω·cm]		≤ 3500		
Solution temperature [°C]		22 ± 2		
Sample no.	R _{iso} [MΩ]	A [m²]	R _{iso} ·A [MΩ·m²]	
1	4520.0	2.58	11661.60	P
2	3870.0	2.58	9984.60	P
3	3610.0	2.58	9313.80	P
Supplementary information: Minimum requirement is 40 MΩ·m².				

7.8	Continuity test of equipotential bonding (initial)		
Test date (dd/mm/yyyy)		31/05/2023	—
Maximum overcurrent protection rating [A]		25.0	
Current applied [A]		62.5	
Duration of applied current [min]		2	
Location of designated point for equipotential bonding		long side of the frame	
No. of other conductive parts tested		3	
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]	
1	0.206	0.0033	P
2	0.249	0.0040	P
3	0.193	0.0031	P
Supplementary information: N/A			

Prüfbericht-Nr.: CN23XG69 001 Test report no.:			Seite 10 von 17 Page 10 of 17
Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result

8	Salt mist corrosion test		
Test date (dd/mm/yyyy)	07/06/2023 to 06/08/2023	—	
Sample no. 2	2304010120817		
Sample no. 3	2304010120823		
NaCl concentration [%]	5		
Course of cycle (7 days)	- Spraying: 2h / 35°C / reaction of NaCl with PH 3.5 - Dry storage: 4h / 60°C / RH 30% - Humidity storage: 2h / 50°C / RH 95% - The transition times: between 30 min and 60 min from salt mist to dry condition, between 15 min and 30 min from dry condition to humid condition and within 30 min from humid condition to salt mist. The transition times were included in next condition period.		
Duration	180 cycles = 60 days		
Supplementary information: The test was performed according to IEC 61701:2020, EN IEC 61701:2020 test method 8.			

8.1	Visual inspection after Salt mist corrosion test			
Test date (dd/mm/yyyy)		07/08/2023		
Sample no.	Requirement		Nature and position of initial findings	—
1	No major visual defects		No major visual defects	P
2			No major visual defects	P
3			No major visual defects	P
Supplementary information: -				

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Absatz <i>Clause</i>	Anforderungen - Prüfungen / <i>Requirements - Tests</i>	Messergebnisse – Bemerkungen / <i>Measuring results - Remarks</i>	Ergebnis <i>Result</i>
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8.2 Maximum power determination at STC after Salt mist corrosion test

Test date (dd/mm/yyyy)				07/08/2023				—	
Test method				<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight					
Ambient temperature [°C]				25 ± 2					
Irradiance [W/m²]				1000 ± 10					
Module temperature [°C]				25 ± 2					
Measurement uncertainties [%] (k =2)				P _{max,m1}	≤ 2.5	V _{oc,m2}	≤ 0.6		I _{sc,m3}
Sample no.	P _{max} [W]	V _{mpp} [V]	I _{mpp} [A]	V _{oc} [V]	I _{sc} [A]	FF [%]	Degra- dation [%]		
2	553.9	43.87	12.626	51.39	13.293	81.1	-1.44	P	
3	557.0	43.59	12.779	51.08	13.544	80.5	-1.10	P	
Supplementary information: -									

8.3 Insulation test after Salt mist corrosion test

Test date (dd/mm/yyyy)				07/08/2023		—
Maximum system voltage [V_{DC}]				1500		
High voltage applied [V_{DC}]				8000		
Insulation resistance measured at [V_{DC}]				1500		
Sample no.	R_{iso} [$G\Omega$]	A [m^2]	$R_{iso} \cdot A$ [$G\Omega \cdot m^2$]	Dielectric breakdown		
				Yes (description)	No	
2	>50.00	2.58	>129.00	-	No	P
3	>50.00	2.58	>129.00	-	No	P
Supplementary information: Minimum requirement is $0.04 G\Omega \cdot m^2$ for $A > 0.1 m^2$ and $0.4 G\Omega$ for $A \leq 0.1 m^2$. Insulation tester can measure up to $50.00 G\Omega$.						

Prüfbericht-Nr.: CN23XG69 001
Test report no.:

Seite 12 von 17
Page 12 of 17

Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
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8.4	Wet leakage current test after Salt mist corrosion test			
Test date (dd/mm/yyyy)		07/08/2023		—
Insulation resistance measured at [V _{DC}]		1500		
Solution resistivity [Ω·cm]		≤ 3500		
Solution temperature [°C]		22 ± 2		
Sample no.	R _{iso} [MΩ]	A [m²]	R _{iso} ·A [MΩ·m²]	
2	4130.0	2.58	10655.40	P
3	3520.0	2.58	9081.60	P
Supplementary information: Minimum requirement is 40 MΩ·m².				

8.5	Continuity test of equipotential bonding after Salt mist corrosion test			
Test date (dd/mm/yyyy)		07/08/2023		—
Maximum overcurrent protection rating [A]		25.0		
Current applied [A]		62.5		
Duration of applied current [min]		2		
Location of designated point for equipotential bonding		long side of the frame		
No. of other conductive parts tested		3		
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]		
2	0.319	0.0051		P
3	0.276	0.0044		P
Supplementary information: N/A				

Prüfbericht-Nr.: CN23XG69 001 Test report no.:	Seite 13 von 17 Page 13 of 17
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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen / Measuring results - Remarks	Ergebnis Result
-------------------------	--	--	---------------------------

8.6	Bypass diode functionality test after Salt mist corrosion test			
Test date (dd/mm/yyyy)		07/08/2023		—
Number of diodes in junction box		3		
Diode manufacturer		QC Solar (Suzhou) Corporation		
Diode type designation		QCM2545		
Applied current [A]		I _{sc} x 1.25		
Duration of current flow [min]		60		
Sample no.	Diode 1	Diode 2	Diode 3	
2	working properly	working properly	working properly	P
3	working properly	working properly	working properly	P
Supplementary information: N/A				

--- Ende des Prüfberichts / End of Test Report ---

Anlage zum Prüfbericht-Nr.: CN23XG69 001
APPENDIX to Test report no.:

Seite 14 von 17
Page 14 of 17

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Appendix A: Abbreviations used in the report

NMOT	Nominal Module Operating Temperature
STC	Standard Test Conditions
P_{\max}	Maximum power
I_{mpp}	Maximum power point current
V_{mpp}	Maximum power point voltage
I_{sc}	Short circuit current
V_{oc}	Open circuit voltage
FF	Fill factor
A	Module area

Anlage zum Prüfbericht-Nr.: CN23XG69 001
APPENDIX to Test report no.:

Seite 15 von 17
Page 15 of 17

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Appendix B: History of reporting and certification

Subject	Module type	Report no.	Certificate no.	Date of issue
N/A				

Anlage zum Prüfbericht-Nr.: CN23XG69 001
APPENDIX to Test report no.:

Seite 16 von 17
Page 16 of 17

FOTO-DOKUMENTATION
PHOTO DOCUMENTATION

Appendix C: Photos

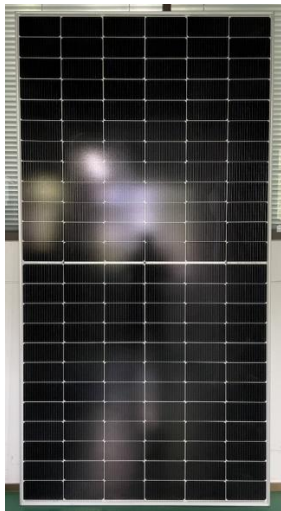


Fig. 1: front view of test sample



Fig. 2: rear view of test sample

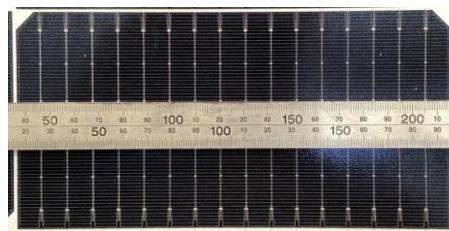


Fig. 3: detail view of solar cell



PV MODULE
Sany Silicon Energy (Zhuzhou) Co., LTD
Sany Energy Equipment Industrial Park,
No.320 Qingshui Road, Shifeng District,
Zhuzhou City, Hunan Province
412005 China
www.sanygroup.com/

SYM144TS665
Max. power (P_{max})
Max. power tolerance
Voltage at max. power (V_{mpp})
Current at max. power (I_{mpp})
Open-circuit voltage (V_{oc})
Short-circuit current (I_{sc})
Maximum system voltage

565W
±3%
41.92V
13.48A
50.60V±3%
14.23A±3%
1500VDC

Series Fuse Rating
operating temperature range
protect rage
module wprotecteight
module size
STC

25A
40°C ~ +85°C
II
28.0(kg)
2278×1134×30(mm)
1000W/m², AM1.5, 25°C



warning

Only the professionals can install and
maintain the components Be careful of the
dangerous high DC voltage when connecting
the components Never damage or scratch the
back of the assembly

Fig. 4: detail view of type label

FOTO-DOKUMENTATION
PHOTO DOCUMENTATION



Fig. 5: detail view of closed junction box



Fig. 6: detail view of connector



Fig. 7: detail view of cable

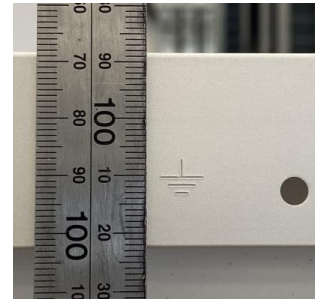


Fig. 8: detail view of equipotential bonding hole and symbol



Fig. 9: detail view of frame corner

N/A

N/A