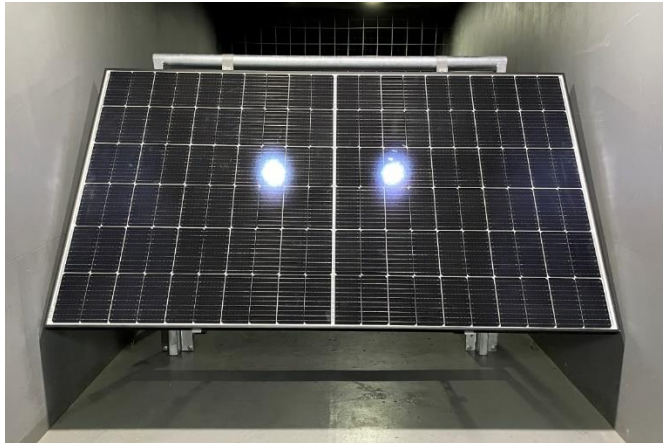


Prüfbericht-Nr.: Test report no.:	CN23NZOY 001	Auftrags-Nr.: Order no.:	170347210	Seite 1 von 8 Page 1 of 8
Kunden-Referenz-Nr.: Client reference no.:	2516235	Auftragsdatum: Order date:	2023-07-10	
Auftraggeber: Client:	WEIHANG ENERGY TECHNOLOGY CO., LTD. No.126 Huangzhong Road, XuXiake Town, Jiangyin 214407, Jiangsu, P.R. China			
Prüfgegenstand: Test item:	Foldable solar balcony structure			
Bezeichnung / Typ-Nr.: Identification / Type no.:	WH-T-Y-45			
Auftrags-Inhalt: Order content:	Wind load resistance performance test for Foldable solar balcony structure			
Prüfgrundlage: Test specification:	According to client's requirement Refer to JGJ/T 338-2014 Construction Engineering Wind Tunnel Test Method			
Wareneingangsdatum: Date of sample receipt:	2023-07-06			
Prüfmuster-Nr.: Test sample no.:	170347210-01			
Prüfzeitraum: Testing period:	2023-07-13			
Ort der Prüfung: Place of testing:	See remark on page 2			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: Test result*:	Siehe Sonstiges / See Other			
erstellt von: created by:			genehmigt von: authorized by:	
Datum: Date:	2023-07-25		Ausstellungsdatum: Issue date:	2023-07-25
Stellung / Position:	Andy Hong / PE		Stellung / Position:	Constant Zhao / Reviewer
Sonstiges / Other:	Test result refer to clause 9.			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * 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				
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. 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.				

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Anmerkungen
Remarks

1	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. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <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>									
2	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. <i>As contractually agreed, this document has been signed digitally only. TUV 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, TUV 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>									
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>									
4	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. <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>									
5	Liste der Prüfgeräte List of test equipment <table><tr><th>Prüfmittel Test equipment</th><th>Prüfmittel-Nr. / ID-Nr. Equipment No. / ID-No.</th><th>Nächste Kalibrierung Next calibration</th></tr><tr><td>Pitot tube</td><td>D-1-027</td><td>2027-08-28</td></tr><tr><td>Digital micromanometer</td><td>D-1-121</td><td>2023-08-30</td></tr></table> Remark: Place of testing: Guangdong Provincial Academy of Building Research Group Co., Ltd (No. 121, Xianlie East Road, Tianhe District, Guangzhou City, Guangdong Province, P.R. China)	Prüfmittel Test equipment	Prüfmittel-Nr. / ID-Nr. Equipment No. / ID-No.	Nächste Kalibrierung Next calibration	Pitot tube	D-1-027	2027-08-28	Digital micromanometer	D-1-121	2023-08-30
Prüfmittel Test equipment	Prüfmittel-Nr. / ID-Nr. Equipment No. / ID-No.	Nächste Kalibrierung Next calibration								
Pitot tube	D-1-027	2027-08-28								
Digital micromanometer	D-1-121	2023-08-30								

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Produktbeschreibung
Product description

1	Produktdetails Product details	Foldable solar balcony structure together with one PV module installed on the simulated balcony rail
2	Maße / Gewicht Dimensions / Weight	L*W*H 1) PV module: 1903*1134*30 mm 2) Profile - long: 1140*30*30 mm 3) Profile - short: 600*30*30 mm 4) Cross brace: 950*30*30 mm 5) Hook: 140*45*67 mm 6) Hose clamp: 59-82 mm
3	Bedienelemente Operating elements	N/A
4	Ausstattung / Zubehör Equipment / Accessories	N/A
5	Verwendete Materialien Used materials	1) Profile - long: AL6005-T5 2) Profile - short: AL6005-T5 3) Cross brace: AL6005-T5 4) Hook: SUS304 5) Hose clamp: SUS304
6	Sonstiges Other	N/A
7	Prüfmusterbereitstellung: Test sample obtaining	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen/ Measuring results - Remarks	Ergebnis Result

8	Test item and requirement		
8.1	Test background and apparatus This test was carried out in the small test section (1.8m×2.0m) of CGB-1 wind tunnel laboratory. Wind pressure and wind velocity can be read via anemometer installed in the test section. The anemometer is pitot tube, located beneath 1.8m and 1.5m ahead of the centre of test turntable. Pitot tube is connected with fan control system by pressure sensors. The interior of wind tunnel is shown in Figure 1.		
			
	Figure 1. Wind tunnel		
8.2	Test requirement Install the Foldable solar balcony structure with a PV module to a simulated balcony rail according to client's requirement. Maintain the tilt angle of PV module at 50°. Turn on the wind load resistance performance test facility, and conduct test as below conditions: 1. Wind direction 0° (PV module facing wind), wind velocity 15m/s, 25m/s and 34m/s, hold for 10 minutes under each wind velocity, turn off the facility and check whether deformation of sample, components looseness, falling off or destruction occurs; 2. Wind direction 180° (PV module back side facing wind), wind velocity 15m/s, 25m/s and 34m/s, hold for 10 minutes under each wind velocity, turn off the facility and check whether deformation of sample, components looseness, falling off or destruction occurs;		

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen/ Measuring results - Remarks	Ergebnis Result
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Figure 2. PV module facing wind (0°)



Figure 3. PV module back side facing wind (180°)

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen/ Measuring results - Remarks	Ergebnis Result
8.3	Test procedure The procedure of wind load resistance performance as follows: 1. Install the test sample in the wind tunnel floor according to the specification of client; 2. Check and confirm that the sample is firmly installed, and confirm that the connection of each component is firm; 3. Turn on the wind test facility, gradually adjust the facility to increase the wind velocity; 4. Observe whether the test sample in the process of increasing wind velocity is normally operated, and whether deformation, vibration, damage or components falling off occurs; 5. Monitoring the wind velocity through the wind velocity monitoring probe; 6. Gradually increase wind velocity to 15m/s, 25m/s and 34m/s, hold the wind velocity for 10 minutes for each wind velocity; 7. Observe whether the sample in the stabilization process operates normally, whether there is vibration, deformation, components falling off or destruction occurs; 8. If deformation, components falling off or destruction occurs, turn off the facility and stop the test.		

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9	Test result			
9.1	PV module facing wind (0°)			
	Wind direction	Wind velocity	Duration	Phenomenon
	Facing the wind (0°)	0	/	All parts of the sample are firmly installed
		15 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		25 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		34 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		Turn off the blower	/	There is no visual deformation on the sample, and no loosening or destruction of component after testing.
9.2	PV module back side facing wind (180°)			
	Wind direction	Wind velocity	Duration	Phenomenon
	Back side facing the wind (180°)	0	/	All parts of the sample are firmly installed
		15 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		25 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		34 m/s	10 min	There is no obvious vibration of the PV module detected, and no connection or component damage occurred.
		Turn off the blower	/	There is no visual deformation on the sample, and no loosening or destruction of component after testing.

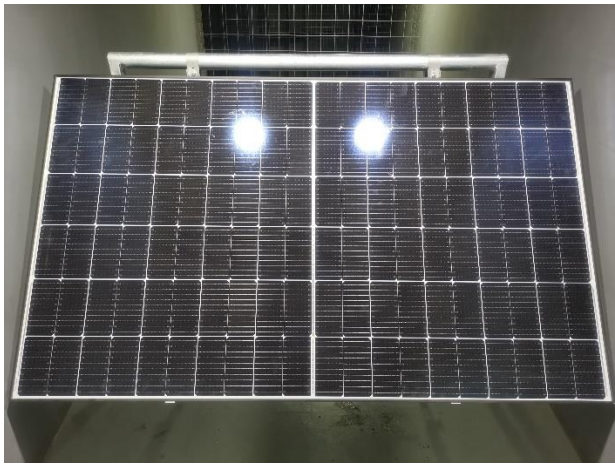
Conclusion:

The test conducted under laboratory conditions according to the requirement of client. The conclusion of the test as below:

There is no visual deformation on the sample, and no loosening or destruction of component after testing when the wind velocity reached 34 m/s (122.4 km/h) under two different wind direction test condition.

It should be pointed out that the test was carried out in laboratory conditions and only wind velocity action be considered. The wind velocity and wind direction are relatively fixed during testing. However, in the actual environment the wind may sometimes blow with rain, sand, debris, etc. Thus, the conditions of its deformation or destruction may be slightly different from the laboratory conditions.

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10	Test photo		
10.1	PV module facing wind (0°)		
			
	Before test	After test	
10.2	PV module back side facing wind (180°)		
			
	Before test	After test	

*** End of Report ***