


Prüfbericht-Nr.: Test report no.:	CN23GYU7 005	Auftrags-Nr.: Order no.:	244525166	Seite 1 von 27 Page 1 of 27
Kunden-Referenz-Nr.: Client reference no.:	2062731	Auftragsdatum: Order date:	25/06/2023	
Auftraggeber: Client:	Hengdian Group DMEGC Magnetics Co., Ltd. Hengdian Industrial Zone, Dongyang City, Zhejiang, P.R. China			
Prüfgegenstand: Test item:	Photovoltaic (PV) module			
Bezeichnung / Typ-Nr.: Identification / Type no.:	See module type designation on page 3-4			
Auftrags-Inhalt: Order content:	Design qualification and type approval of photovoltaic (PV) modules			
Prüfgrundlage: Test specification:	Photovoltaic (PV) modules IEC 61215-1:2021; IEC 61215-1-1:2021; IEC 61215-2:2021; IEC 61730-1:2016; IEC 61730-2:2016; EN IEC 61215-1:2021; EN IEC 61215-1-1:2021; EN IEC 61215-2:2021; EN IEC 61730-1:2018; EN IEC 61730-2:2018			
Wareneingangsdatum: Date of sample receipt:	30/05/2023			
Prüfmuster-Nr.: Test sample no.:	See clause 6			
Prüfzeitraum: Testing period:	26/06/2023 - 04/07/2023			
Ort der Prüfung: Place of testing:	Refer to page 6			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	<input checked="" type="checkbox"/> <u>Jiayu Song</u> Signed by: Jiayu Song	7/11/2023	genehmigt von: authorized by:	<input checked="" type="checkbox"/> <u>Anderson Ruan</u> Signed by: Anderson Ruan
Datum: Date:	11/07/2023		Ausstellungsdatum: Issue date:	11/07/2023
Stellung / Position:	Project Engineer		Stellung / Position:	Authorizer
Sonstiges / Other:	- Extension to Fire Rating: Class A (according to UL 790). - Refer to page 6 and Constructional Data Form (CDF) No. CN23GYU7 005 for more details.			
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
<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. <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>				

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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>Detailierte 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>

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Produktbeschreibung
Product description

I	General
1	Product details
1.1	<p>Module type designation</p> <p>Approved module types: Max. System Voltage (Up to 1500 VDC)</p> <p>With 1/2 cut mono bifacial c-Si cells (Under STC):</p> <p>DMxxxM10T-B78HBB (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HSW (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HST (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HBW (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B72HBB (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HSW (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HST (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HBW (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B66HBB (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HSW (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HST (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HBW (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B60HBB (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HSW (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HST (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HBW (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B54HBB (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HSW (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HST (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HBW (xxx = 405-430, in steps of 5, 108 cells)</p> <p>DMxxxM10T-B78HBT (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B72HBT (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B66HBT (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B60HBT (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B54HBT (xxx = 405-430, in steps of 5, 108 cells)</p> <p>With 1/2 cut mono bifacial c-Si cells (Under BNPI):</p> <p>DMxxxM10T-B78HBB (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HSW (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HST (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HBW (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B72HBB (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HSW (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HST (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HBW (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells)</p>

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Produktbeschreibung
Product description

DMxxxM10T-B66HBB (xxx = 550, 556, 561, 567, 572, 578, 132 cells)
 DMxxxM10T-B66HSW (xxx = 550, 556, 561, 567, 572, 578, 132 cells)
 DMxxxM10T-B66HST (xxx = 550, 556, 561, 567, 572, 578, 132 cells)
 DMxxxM10T-B66HBW (xxx = 550, 556, 561, 567, 572, 578, 132 cells)
 DMxxxM10T-B60HBB (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells)
 DMxxxM10T-B60HSW (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells)
 DMxxxM10T-B60HST (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells)
 DMxxxM10T-B60HBW (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells)
 DMxxxM10T-B54HBB (xxx = 446, 451, 457, 462, 468, 473, 108 cells)
 DMxxxM10T-B54HSW (xxx = 446, 451, 457, 462, 468, 473, 108 cells)
 DMxxxM10T-B54HST (xxx = 446, 451, 457, 462, 468, 473, 108 cells)
 DMxxxM10T-B54HBW (xxx = 446, 451, 457, 462, 468, 473, 108 cells)

DMxxxM10T-B78HBT (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells)
 DMxxxM10T-B72HBT (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells)
 DMxxxM10T-B66HBT (xxx = 550, 556, 561, 567, 572, 578, 132 cells)
 DMxxxM10T-B60HBT (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells)
 DMxxxM10T-B54HBT (xxx = 446, 451, 457, 462, 468, 473, 108 cells)

xxx represents output power in Wp

Refer to Constructional Data Form (CDF) No. CN23GYU7 005 for electrical ratings

1.2	Product safety ratings	
	The modules are intended for a maximum operating altitude [meters above sea level] of [m]	≤ 2000 m above sea level
	Recommended maximum series/parallel module configurations	Available in installation manual
1.3	Classification, applications and intended use	
	The module has been evaluated for the following Class (IEC 61140):	<input type="checkbox"/> Class 0 <input checked="" type="checkbox"/> Class II <input type="checkbox"/> Class III

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Produktbeschreibung
Product description

2	<p>Used materials</p> <p>See Constructional Data Form (CDF) No. CN23GYU7 005</p>																				
3	<p>Address(es) of the manufacturing site(s)</p> <table border="1" style="width: 100%;"> <tr> <td>Name / Description:</td> <td>DMEGC SOLAR Module Factory</td> </tr> <tr> <td>Street:</td> <td>Hengdian Industrial Zone</td> </tr> <tr> <td>Postcode / City, Country:</td> <td>Dongyang City, Zhejiang, P.R. China</td> </tr> <tr> <td>Type of production:</td> <td>Crystalline PV-module</td> </tr> <tr> <td>Inspection report No. and date</td> <td>50286934 003 / 07/04/2023</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <td>Name / Description:</td> <td>Jiangsu Dongci New Energy Technology Co., Ltd.</td> </tr> <tr> <td>Street:</td> <td>Sihong County Economic Development Zone, Sihong County,</td> </tr> <tr> <td>Postcode / City, Country:</td> <td>Suqian City, Jiangsu Province, P.R. China</td> </tr> <tr> <td>Type of production:</td> <td>Crystalline PV-module</td> </tr> <tr> <td>Inspection report No. and date</td> <td>CN23CCGO 001 / 08/05/2023</td> </tr> </table>	Name / Description:	DMEGC SOLAR Module Factory	Street:	Hengdian Industrial Zone	Postcode / City, Country:	Dongyang City, Zhejiang, P.R. China	Type of production:	Crystalline PV-module	Inspection report No. and date	50286934 003 / 07/04/2023	Name / Description:	Jiangsu Dongci New Energy Technology Co., Ltd.	Street:	Sihong County Economic Development Zone, Sihong County,	Postcode / City, Country:	Suqian City, Jiangsu Province, P.R. China	Type of production:	Crystalline PV-module	Inspection report No. and date	CN23CCGO 001 / 08/05/2023
Name / Description:	DMEGC SOLAR Module Factory																				
Street:	Hengdian Industrial Zone																				
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Street:	Sihong County Economic Development Zone, Sihong County,																				
Postcode / City, Country:	Suqian City, Jiangsu Province, P.R. China																				
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Inspection report No. and date	CN23CCGO 001 / 08/05/2023																				

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Produktbeschreibung
Product description

4

Summary of test results

All of the required tests of the standards IEC 61215 / EN IEC 61215 and IEC 61730 / EN IEC 61730 were passed according to its regulations of the pass criteria. It is therefore declared, that the photovoltaic modules of the aforementioned types fulfil the requirements of the standards IEC 61215 / EN IEC 61215 and IEC 61730 / EN IEC 61730, and it is recommended that certification should be granted.

The fire tests (Class A) were performed according to UL 790.

- The tests were performed on module type DMxxxM10T-B78HSW with bill of materials as listed on page 8 as representative. The test results are documented within this test report.
- Based on the test results, modules with following material combinations can be rated as Fire Rating Class A.

Object	Manufacturer	Type / model	Technical data / ratings
Front cover	FLAT GLASS GROUP CO., LTD	Semi-tempered photovoltaic glass	Thickness [mm]: 2.0±0.2 Surface treatment: AR coating Tempering method: Semi-tempered Transmission data: ≥93.5%
Backside cover	FLAT GLASS GROUP CO., LTD	Semi-tempered glass (transparent, or with black or white grid)	Thickness [mm]: 2.0±0.2
Encapsulation material	HANGZHOU FIRST APPLIED MATERIAL CO., LTD	EP304 (between front cover and solar cell)	Thickness [mm]: 0.50±0.05
		F406PS (between solar cell and backside cover)	Thickness [mm]: 0.50±0.05

This report have to be read in conjunction with test reports CN23GYU7 001-003 and Constructional Data Form (CDF) No. CN23GYU7 005.

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

Throughout this report a point is used as the decimal separator.

Summary of test locations:

All the tests were performed at Leading Edge Construction Materials Testing Company Limited, which is located at Asia Aluminum Industrial City, the New & High Tech Industrial Development Zone, Dawang, Zhaoqing, Guang Dong Province, China.

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Result

5	Test specification		
	IEC 61215-1:2021 Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements	applicable	—
	IEC 61215-1-1:2021 Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules	applicable	
	IEC 61215-2:2021 Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval - Part 2: Test procedures	applicable	
	IEC 61730-1:2016 Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction	applicable	
	IEC 61730-2:2016 Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	applicable	

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6 List of test samples

- The modules tested were taken at random from a production batch and subjected to manufacturer's normal quality control and inspection for safety testing
- The modules tested were prototypes of a new design and not taken from a production batch.

Module type: DM615M10T-B78HSW (Under STC) / DM677M10T-B78HSW (Under BNPI)

Sample no.	Sample SN	Test sequence	Remarks / constructional characteristics (e.g. cell, backsheet, frame type)
1	DMAASW9A4823 53X00001	J1	<p>Solar cell: DMND16B182, 182 (±0.25) x 91 (±0.25) x 0.13 (±0.013) mm, 16BB, Hengdian Group DMEGC Magnetics Co., Ltd.</p> <p>Front cover: Semi-tempered photovoltaic glass, 2.0±0.2mm thickness, FLAT GLASS GROUP CO., LTD</p> <p>Backside cover: Semi-tempered glass (with white grid), thickness 2.0±0.2mm, FLAT GLASS GROUP CO., LTD</p> <p>Cell connectors: Tin coated copper, Sn60Pb40, Ø0.25 mm, Hengdian Group DMEGC Magnetics Co., Ltd.</p> <p>String connectors: Tin coated copper, Sn60Pb40, 0.3*7 mm & 0.3*4 mm, Hengdian Group DMEGC Magnetics Co., Ltd.</p> <p>Fluxing agent: SF105, Singapore Asahi Chemical and Solder Industries Pte Ltd</p> <p>Cell fixing type: HZ UV-2, Guangdong Sunrui New Material Co., Ltd.</p>
2	DMAASW9A4823 53X00009	J3	<p>Junction box: DM-PVJ02, 1500V, 30A, Hengdian Group DMEGC Magnetics Co., Ltd.</p> <p>Bypass diode: 35SQ045, Tj=200 °C, Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.</p> <p>Cable: 62930 IEC 131 1x4mm², HALOGEN FREE LOW SMOKE, Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.</p> <p>Connector: PV-ZH202B, 1500V, 40A, Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.</p> <p>Adhesive (junction box & frame): 1527, white, H.B Fuller</p> <p>Potting material: 1533, H.B Fuller</p> <p>Encapsulation material: EP304 (between front cover and solar cell) / F406PS (between solar cell and backside cover), 0.50±0.05 mm, HANGZHOU FIRST APPLIED MATERIAL CO., LTD</p> <p>Frame parts: Aluminium alloy, 6005-T6, Anodized (Silver White), Hengdian Group DMEGC Magnetics Co., Ltd.</p>

Supplementary information: See test chart in Appendix A for full test sequences.

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II	IEC/EN 61215-1 and IEC/EN 61730-1 – Requirements for design construction
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7	Requirements for design and construction (Clause 5 of IEC/EN 61215-1 and IEC/EN 61730-1)
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7.1	General (Clause 5.1 of IEC/EN 61730-1)
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	Incorporation of a PV module into the final assembly does not require any alteration of the PV module from its originally evaluated form. (It is not provided in subassemblies).	PV modules are completely assembled.	P
	Product shipped from the factory	<input checked="" type="checkbox"/> completely assembled <input type="checkbox"/> as subassemblies	N/A
	Equipotential bonding continuity is not interrupted by installation.	N/A	N/A
	Any adjustable or movable structural part is provided with a locking device.	No such parts.	N/A
	PV modules do not have accessible burrs, sharp edges or sharp points.	Compliance checked by test MST 01	P
	Parts are prevented from loosening or turning if this results in a risk of fire, electric shock, or injury to persons.	Compliance checked by tests MST 01	P

7.2	Marking and documentation (Clause 5.2 of IEC/EN 61730-1 and Clause 5 of IEC/EN 61215-1)
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	Instructions related to safety are in an official language of the country where the equipment is to be installed.	Marking and documentation are written in English.	P
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7.2.1	Marking (Clause 5.2.2 of IEC/EN 61730-1 and Clause 5.1 of IEC/EN 61215-1)
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7.2.1.1	General (Clause 5.2.2.1 of IEC/EN 61730-1 and Clause 5.1 of IEC/EN 61215-1)
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	Each PV module includes the following clear and indelible markings:	Compliance checked by tests MST 01	P
	a) Name, registered trade name, or registered trade mark of manufacturer	Marked on type label	P
	b) Type or model number designation	Marked on type label	P
	c) Serial number (unless marked on other part of product)	Marked on type label / Additional label with barcode	P
	d) Date and place of manufacture; alternatively serial number assuring traceability of date and place of manufacture	Traceable from serial number (checked during factory inspection)	P
	e) Polarity of terminals or leads	"+" and "-" indicated on terminal	P
	f) Maximum system voltage or " V_{sys} "	Marked on type label	P
	g) Class of protection against electrical shock, in accordance with Clause 4 of IEC/EN 61730-1	Marked on type label	P
	h) Voltage at open-circuit or " V_{oc} " including manufacturing tolerances	Marked on type label	P
	i) Current at short-circuit or " I_{sc} " including manufacturing tolerances	Marked on type label	P

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Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Result
	j) Maximum power or "P _{max} " including manufacturing tolerances	Marked on type label	P
	k) Maximum overcurrent protection rating	Marked on type label	P
	l) Short-circuit current bifaciality coefficient ϕ_{Isc} Open-circuit voltage bifaciality coefficient ϕ_{Voc} Maximum power bifaciality coefficient ϕ_{Pmax}	Marked on type label	P
	m) Minimum radius of curvature	N/A	N/A
	All electrical data are shown at standard test conditions (STC) (1000 W/m ² , (25 ± 2) °C, AM 1.5 according to IEC 60904-3).	Marked on type label	P
	Description of measurement of BNPI (AM 1.5, T = 25 °C, Irradiance = 1000W/m ² + $\phi \cdot 135W/m^2$)	Marked on type label	P
	PV connectors or wiring are marked with a symbol or/and hint „Do not disconnect under load“. Symbol or/and warning notice is imprinted or labelled close to connector.	Connector fulfill the requirements of IEC 62852. Symbol or warning notice indicated on connector.	P
	For Class II and Class 0 PV modules, the  (IEC 60417-6042: Caution, risk of electric shock) symbol is applied near the PV module electrical connection means.	Electrical hazard symbol indicated on type label	P
	PV modules are marked to indicate the class.	<input checked="" type="checkbox"/> class II:  <input type="checkbox"/> class III:  <input type="checkbox"/> class 0: no symbol	P
	PV modules provided with terminals for field wiring rated only for use with copper wire are marked, at or adjacent to the terminals, with the statement "Use copper wire only", "Cu only", or the equivalent.	PV modules provided with terminals for field wiring rated for use with all types of wiring material, do not need to be marked.	N/A
	PV modules provided with terminals for field wiring rated only for use with a different specific wiring material are marked with a similar statement referring to the rated material.	PV modules provided with terminals for field wiring rated for use with all types of wiring material, do not need to be marked.	N/A
7.2.1.2	Symbols (Clause 5.2.2.2 of IEC/EN 61730-1)		
7.2.1.2.1	Equipotential bonding (Clause 5.2.2.2.1 of IEC/EN 61730-1)		
	A wiring terminal or bonding location for equipotential bonding is identified with:	<input checked="" type="checkbox"/>  	P
	No other terminal or location is identified in this manner.	Mounting hole may not be used for bonding.	P
7.2.1.2.2	Functional earthing (Clause 5.2.2.2.2 of IEC/EN 61730-1)		
	Field installed functional earthing conductor is identified with the symbol:	No functional earthing.	N/A
7.2.2	Documentation (Clause 5.2.3 of IEC/EN 61730-1 and Clause 5.2 of IEC/EN 61215-1)		

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
Clause	Anforderungen - Prüfungen / <i>Requirements - Tests</i>	<i>Measuring results - Remarks</i>	<i>Result</i>
	Documentation concerning electrical and mechanical installation is provided.	Available in data sheet / installation manual	P
	The documentation states the class for protection against electrical shock under which the PV module was qualified and any specific limitations required for that class.	Available in data sheet / installation manual	P
	Environmental conditions to which the module has been qualified are stated.	N/A	N/A
	- concerning temperature range, typically -40 °C to +40 °C.	Available in data sheet / installation manual	P
	- concerning wind/snow load including safety factor.	Available in data sheet / installation manual	P
	The documentation contains the following information:	N/A	N/A
	- Name, registered trade name, or registered trade mark of manufacturer	Available in data sheet / installation manual	P
	- Type or model number designation	Available in data sheet / installation manual	P
	- Maximum system voltage or "V _{sys} "	Available in data sheet / installation manual	P
	- Class for protection against electrical shock, in accordance with Clause 4 of IEC/EN 61730	Available in data sheet / installation manual	P
	- Voltage at open-circuit or "V _{oc} " including manufacturing tolerances	Available in data sheet / installation manual	P
	- Current at short-circuit or "I _{sc} " including manufacturing tolerances	Available in data sheet / installation manual	P
	- Maximum power or "P _{max} " including manufacturing tolerances	Available in data sheet / installation manual	P
	- Short-circuit current bifaciality coefficient $\phi_{I_{sc}}$ Open-circuit voltage bifaciality coefficient $\phi_{V_{oc}}$ Maximum power bifaciality coefficient $\phi_{P_{max}}$	Available in data sheet / installation manual	P
	- Minimum radius of curvature	N/A	N/A
	- Maximum overcurrent protection rating (compliance verified by reverse current overload test (MST 26))	Available in data sheet / installation manual	P
	- Recommended maximum series / parallel PV module configurations	Available in data sheet / installation manual	P
	- Temperature coefficient for maximum output power	Available in data sheet / installation manual	P
	- Temperature coefficient for voltage at open-circuit	Available in data sheet / installation manual	P
	- Temperature coefficient for short-circuit current	Available in data sheet / installation manual	P
	- All electrical data are shown at standard test conditions (1000 W/m ² , (25 ± 2) °C, AM 1.5 according to IEC 60904-3).	Available in data sheet / installation manual	P

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Absatz Clause	Photovoltaic (PV) modules Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Ergebnis Result
	- Description of measurement of BNPI (AM 1.5, T = 25 °C, Irradiance = 1000W/m ² + φ•135W/m ²)	Available in data sheet / installation manual	P
	- Performance at low irradiance (MQT 07) is specified.	Available in data sheet / installation manual	P
	Detailed wiring method for electrical installation is included in the documentation, containing	N/A	N/A
	- minimum cable diameters for PV modules intended for field wiring	Available in installation manual	P
	- any limitations on wiring methods and wire management that apply to the PV module junction box	Available in installation manual	P
	- size, type, material, and temperature rating of the conductors to be used	Junction boxes fulfill the requirements of IEC 62790	P
	- type of terminals for field wiring	Junction boxes fulfill the requirements of IEC 62790	P
	- specific PV connector model / types and manufacturer to which the PV module connectors can be mated	Available in installation manual	P
	- bonding to be used (if applicable) including all provided or specified hardware	Available in installation manual	P
	- type and ratings of bypass diode to be used (if applicable) as well as the installation instructions for those diodes (if applicable)	Junction boxes fulfill the requirements of IEC 62790	P
	The documentation includes	N/A	N/A
	- limitations to the mounting situation (e.g. slope, mounting means, cooling).	Available in installation manual	P
	- a statement indicating the fire rating(s)	<input checked="" type="checkbox"/> fire rating(s) and applied standards <input type="checkbox"/> statement that resistance to external fire sources was not evaluated	P
	- a statement indicating the minimum mechanical means for securing the PV module	Available in installation manual	P
	- a statement indicating the maximum altitude the PV module is designed for	≤ 2000 m above sea level Available in installation manual	P
	The documentation for roof mounting includes	N/A	N/A
	- a statement indicating the minimum mechanical means for securing the PV module	Available in installation manual	P
	- specific parameter(s) when the fire rating is dependent on a specific mounting structure, specific spacing, or specific means of attachment to the roof or structure	Available in installation manual	P
	The documentation includes a statement advising that external or otherwise artificially concentrated sunlight shall not be directed onto the front or back face of the PV module (if not qualified for).	Available in installation manual	P
	Assembly instructions are provided with a product shipped in subassemblies, and are detailed and adequate to the	No subassemblies	N/A

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Result
	degree required to facilitate complete and safe assembly of the product.		
	The following or equivalent statement is included: <i>"Under normal conditions, a photovoltaic module is likely to experience conditions that produce higher current and/or voltage than reported at standard test conditions. Accordingly, the values of Isc and Voc marked on this PV module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor current ratings, and size of controls (e.g. inverter) connected to the PV output."</i> Safety factor may vary acc. to local conditions.	Available in installation manual	P

Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Result

8 Pass criteria (Clause 7 of IEC/EN 61215-1)

8.1 Output power and electric circuitry (Clause 7.2 of IEC/EN 61215-1)

8.1.1 Verification of rated label values (Gate #1) (STC) (Clause 7.2.1 of IEC/EN 61215-1)

After stabilization, each individual module shall meet: $P_{\max(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_1 \right) \geq P_{\max(\text{NP})} \cdot \left(1 - \frac{ t_1 }{100}\right)$ $\bar{P}_{\max(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_1 \right) \geq P_{\max(\text{NP})}$	N/A	N/A
After stabilization, each individual module shall meet: $V_{\text{OC}(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_2 \right) \leq V_{\text{OC}(\text{NP})} \cdot \left(1 + \frac{ t_2 }{100}\right)$	N/A	N/A
After stabilization, each individual module shall meet: $I_{\text{SC}(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_3 \right) \leq I_{\text{SC}(\text{NP})} \cdot \left(1 + \frac{ t_3 }{100}\right)$	N/A	N/A
After stabilization, each individual module that is used for the qualification of low end power classes shall meet: $P_{\max(\text{Lab})} \cdot \left(1 - \frac{1.65}{100} m_4 \right) \leq P_{\max 4(\text{NP})} \cdot \left(1 + \frac{ t_4 }{100}\right)$	N/A	N/A

<p>m_1 [%] = measurement uncertainty of laboratory for P_{\max}</p> <p>m_2 [%] = measurement uncertainty of laboratory for V_{OC}</p> <p>m_3 [%] = measurement uncertainty of laboratory for I_{SC}</p> <p>t_1 [%] = manufacturer's rated lower production tolerance for P_{\max}</p> <p>t_2 [%] = manufacturer's rated upper production tolerance for V_{OC}</p> <p>t_3 [%] = manufacturer's rated upper production tolerance for I_{SC}</p> <p>t_4 [%] = manufacturer's rated upper production tolerance for $P_{\max 4}$</p> <p>$P_{\max 4}$ = maximum rated nameplate power of lowest power class module</p> <p>NP = name plate</p>	—
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— Verification of rated label values (Gate #1) (BNPI) (Clause 7.2.1 of IEC/EN 61215-1)

After stabilization, each individual module shall meet: $P_{\max(\text{BNPI})(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_{1(\text{BNPI})} \right) \geq P_{\max(\text{BNPI})(\text{NP})} \cdot \left(1 - \frac{ t_{1(\text{BNPI})} }{100}\right)$ $\bar{P}_{\max(\text{BNPI})(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_{1(\text{BNPI})} \right) \geq P_{\max(\text{BNPI})(\text{NP})}$	N/A	N/A
After stabilization, each individual module shall meet: $V_{\text{OC}(\text{BNPI})(\text{Lab})} \cdot \left(1 + \frac{1.65}{100} m_{2(\text{BNPI})} \right) \leq V_{\text{OC}(\text{BNPI})(\text{NP})} \cdot \left(1 + \frac{ t_{2(\text{BNPI})} }{100}\right)$	N/A	N/A
After stabilization, each individual module shall meet:	N/A	N/A

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
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	$I_{SC(BNPI)}(\text{Lab}) \cdot \left(1 + \frac{1.65 m_3(BNPI) }{100}\right) \leq I_{SC(BNPI)}(\text{NP}) \cdot \left(1 + \frac{ t_3(BNPI) }{100}\right)$		
	<p>After stabilization, each individual module that is used for the qualification of low end power classes shall meet:</p> $P_{\max(BNPI)}(\text{Lab}) \cdot \left(1 - \frac{1.65 m_1(BNPI) }{100}\right) \leq P_{\max4(BNPI)}(\text{NP}) \cdot \left(1 + \frac{ t_4(BNPI) }{100}\right)$	N/A	N/A
	<p> $m_1(\text{BNPI})$ [%] = measurement uncertainty of laboratory for $P_{\max(\text{BNPI})}$ $m_2(\text{BNPI})$ [%] = measurement uncertainty of laboratory for $V_{OC(\text{BNPI})}$ $m_3(\text{BNPI})$ [%] = the measurement uncertainty of laboratory for $I_{SC(\text{BNPI})}$ $t_1(\text{BNPI})$ [%] = manufacturer's rated lower production tolerance for $P_{\max(\text{BNPI})}$ $t_2(\text{BNPI})$ [%] = manufacturer's rated upper production tolerance for $V_{OC(\text{BNPI})}$ $t_3(\text{BNPI})$ [%] = manufacturer's rated upper production tolerance for $I_{SC(\text{BNPI})}$ $t_4(\text{BNPI})$ [%] = manufacturer's rated upper production tolerance for $P_{\max4(\text{BNPI})}$ $P_{\max4(\text{BNPI})}$ = maximum rated nameplate power of lowest power class module (under BNPI) NP = name plate </p>		—
8.1.2	Maximum power degradation during type approval testing (Gate #2) (STC) (Clause 7.2.2 of IEC/EN 61215-1)		
	<p>At the end of each test sequence, each test sample shall meet:</p> $P_{\max}(\text{Lab_Gate \#2}) \geq 0.95 \times P_{\max}(\text{Lab_Gate \#1}) \cdot \left(1 - \frac{r}{100}\right)$	N/A	N/A
	r = reproducibility		—
—	Maximum power degradation during type approval testing (Gate #2) (BNPI) (Clause 7.2.2 of IEC/EN 61215-1)		
	<p>At the end of each test sequence, each test sample shall meet:</p> $P_{\max(\text{BNPI})}(\text{Lab_Gate \#2}) \geq 0.95 \times P_{\max(\text{BNPI})}(\text{Lab_Gate \#1}) \cdot \left(1 - \frac{r(\text{BNPI})}{100}\right)$	N/A	N/A
	$r(\text{BNPI})$ = reproducibility		—
8.1.3	Electrical circuitry (Clause 7.2.3 of IEC/EN 61215-1)		
	Samples are not permitted to exhibit an open-circuit during the tests.	N/A	N/A
8.2	Visual defects (Clause 7.3 of IEC/EN 61215-1)		
	There is no visual evidence of a major defect.	No major visual defect	P
8.3	Electrical safety (Clause 7.4 of IEC/EN 61215-1)		
	The insulation test (MQT 03) requirements are met at the beginning and the end of each sequence.	N/A	N/A
	The wet leakage current test (MQT 15) requirements are met at the beginning and the end of each sequence.	N/A	N/A
	Specific requirements of the individual tests are met.	N/A	N/A
Supplementary information: N/A			

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Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Result

III	IEC/EN 61215-2 and IEC/EN 61730-2 – Test procedures
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9	Overview of tests and test results
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Initial examination	—	—
Visual inspection (MQT 01 / MST 01)	See table 9.1	P
Insulation test (MQT 03 / MST 16)	N/A	N/A
Wet leakage current test (MQT 15 / MST 17)	N/A	N/A
Accessibility test (MST 11)	N/A	N/A
Continuity test of equipotential bonding (MST 13)	N/A	N/A
Initial stabilization (MQT 19.1)	N/A	N/A
Maximum power determination (MQT 02 / MST 03)	N/A	N/A
Performance at STC and BNPI (MQT 06.1 / MST 03)	N/A	N/A
Gate #1 evaluation	N/A	N/A

Sequence A	—	—
Measurement of temperature coefficients (MQT 04)	N/A	N/A
Performance at low irradiance (MQT 07)	N/A	N/A

Sequence B1	—	—
Outdoor exposure test (MQT 08)	N/A	N/A

Sequence B2	—	—
Temperature test (MST 21)	N/A	N/A
Hot-spot endurance test (MQT 09 / MST 22)	N/A	N/A
Reverse current overload test (MST 26)	N/A	N/A

Sequence B3	—	—
Bypass diode thermal test (MQT 18.1 / MST 25)	N/A	N/A

Sequence C	—	—
UV preconditioning test (MQT 10 / MST 54)	N/A	N/A
Cyclic (dynamic) mechanical load test (MQT 20)	N/A	N/A
Thermal cycling test (50 cycles) (MQT 11 / MST 51)	N/A	N/A
Humidity-freeze test (MQT 12 / MST 52)	N/A	N/A

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Absatz Clause	Photovoltaic (PV) modules Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Ergebnis Result
Sequence C1		—	—
Retention of junction box on mounting surface (MQT 14.1 / MST 42)		N/A	N/A
Test of cord anchorage (MQT 14.2)		N/A	N/A
Sequence D		—	—
Thermal cycling test (200 cycles) (MQT 11 / MST 51)		N/A	N/A
Sequence E		—	—
Damp heat test (MQT 13 / MST 53)		N/A	N/A
Sequence E1		—	—
Static mechanical load test (MQT 16 / MST 34)		N/A	N/A
Sequence E2		—	—
Hail test (MQT 17)		N/A	N/A
Sequence F		—	—
Materials creep test (MST 37)		N/A	N/A
Sequence G		—	—
Damp heat test (200h) (MST 53)		N/A	N/A
UV test (front side) (MST 54)		N/A	N/A
Humidity-freeze test (MST 52)		N/A	N/A
UV test (back side) (MST 54)		N/A	N/A
Humidity-freeze test (MST 52)		N/A	N/A
Insulation thickness test (MST 04)		Not applicable for glass backsheets	N/A
Sequence G1		—	—
Cold conditioning 1 (MST 55)		N/A	N/A
Dry heat conditioning (MST 56)		N/A	N/A
Humidity-freeze test 1 (MST 52)		N/A	N/A
Cold conditioning 2 (MST 55)		N/A	N/A
Humidity-freeze test 2 (MST 52)		N/A	N/A
Sequence H		—	—
Impulse voltage test (MST 14)		N/A	N/A
Sequence M		—	—
Module breakage test (MST 32)		N/A	N/A

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Absatz Clause	Photovoltaic (PV) modules Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Ergebnis Result
Sequence I		—	—
Ignitability test (MST 24)		N/A	N/A
Sequence K		—	—
Potential induced degradation test (MQT 21)		N/A	N/A
Sequence J		—	—
Fire test (MST 23)		See table 9.44	P
Final measurements		—	—
Final stabilization (MQT 19.2 / MQT 19.3)		N/A	N/A
Maximum power determination (MQT 02 / MST 03)		N/A	N/A
Performance at STC and BNPI (MQT 06.1 / MST 03)		N/A	N/A
Gate #2 evaluation		N/A	N/A
Bypass diode functionality test (MQT 18.2 / MST 07)		N/A	N/A
Cut susceptibility test (MST 12)		Not applicable for glass backsheet	N/A
Accessibility test (MST 11)		N/A	N/A
Continuity test of equipotential bonding (MST 13)		Not applicable for frameless module.	N/A
Screw connections test (MST 33)		No screw connections	N/A
Durability of markings (MST 05)		N/A	N/A
Sharp edge test (MST 06)		N/A	N/A
Component tests		—	—
Peel test (MST 35)		No cemented joints	N/A
Lap shear strength test (MST 36)		No cemented joints	N/A
Supplementary information: See Appendix A: Test charts for more details.			

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
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9.1	Visual inspection (initial) – MQT 01 / MST 01		
Test date (dd/mm/yyyy)	26/06/2023		—
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
Supplementary information: N/A			

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Absatz	Photovoltaic (PV) modules	Messergebnisse - Bemerkungen	Ergebnis
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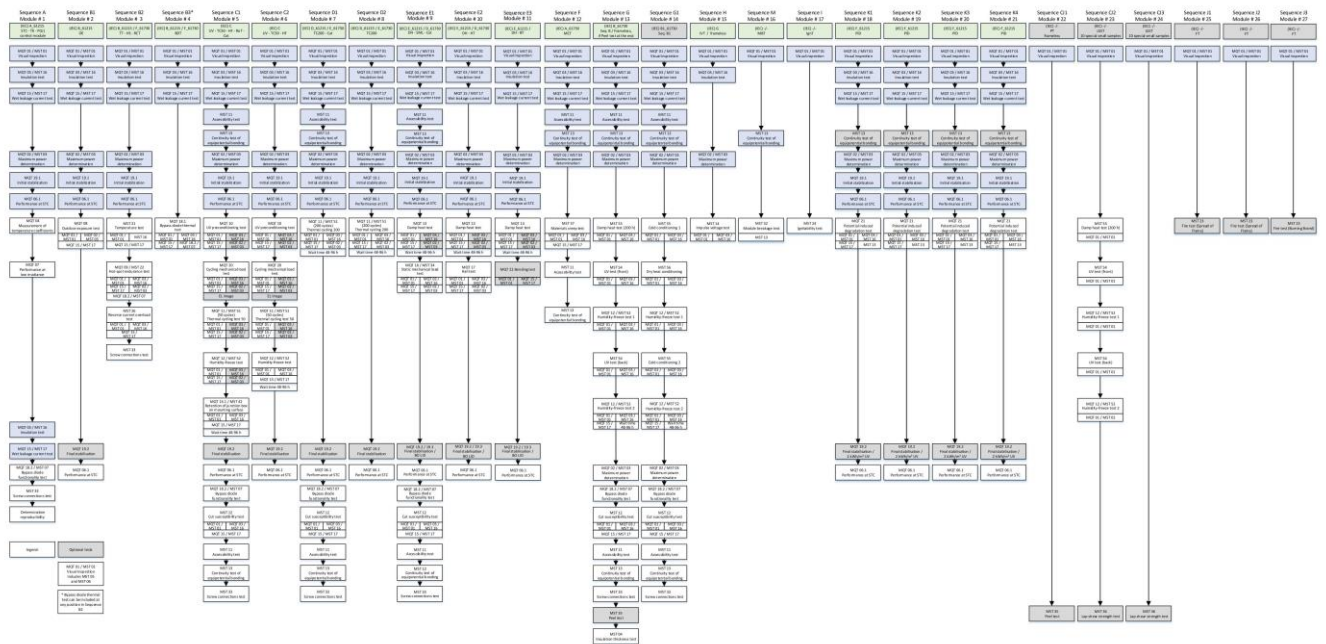
9.44	Fire test – MST 23 (acc. to UL 790)		
9.44.1	Spread of flame test		
Test date (dd/mm/yyyy)	26/06/2023	—	
Sample no.	1		
Fire class test specification	A		
Test results			
Did any portion of the module blow off or fall off the test deck in the form of flaming / glowing brands?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	P
Did any portion of the roof desk fall away in the form of glowing particles?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Was the flame spread beyond 1.82m for Class A, 2.40m for Class B or 3.96m for Class C?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Was there a significant lateral spread-of-flame from the path directly exposed to the test flame?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Supplementary information: N/A			

9.44.2	Burning brand test		
Test date (dd/mm/yyyy)	04/07/2023	—	
Sample no.	2		
Fire class test specification	A		
Test results			
Did any portion of the module blow off or fall off the test deck in the form of flaming / glowing brands?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	P
Did any portion of the roof desk fall away in the form of glowing particles?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Did the brand burn a hole through the roof covering or through any part of the module?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Did any sustained flaming of the module occur?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Supplementary information: N/A			

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Appendix A: Test charts



DISCLAIMER

These test sequences were compiled following the requirements as defined in the International Electrotechnical Commission standards IEC 61215:2011 and IEC 61730:2016.

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Appendix B: Abbreviations used in the report

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
α	Current temperature coefficient
β	Voltage temperature coefficient
γ	Power temperature coefficient
S	Series connection
SP	Series-parallel connection
PS	Parallel-series connection
R_{iso}	Electrical insulation resistance
A	Module area
BNPI	Bifacial nameplate irradiance
BSI	Bifacial stress irradiance
G_{BNPI}	Equivalent bifacial nameplate irradiance
G_{BSI}	Equivalent bifacial stress irradiance
φ	Bifaciality refers to the ratios between the main I-V characteristics of the rear side and the front side of a bifacial device, typically at Standard Test Conditions (STC) unless otherwise specified. It is quantified with reference to bifaciality coefficients, namely as φ.
φ_{Pmax}	Maximum power bifaciality coefficient
φ_{Voc}	Open-circuit voltage bifaciality coefficient
φ_{Isc}	Short-circuit current bifaciality coefficient

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Appendix C: History of reporting and certification

Subject	Module type	Report no.	Certificate no.	Date of issue
Basic certification (IEC 61215-1:2021; IEC 61215-1-1:2021; IEC 61215-2:2021; IEC 61730-1:2016; IEC 61730-2:2016; EN 61215-1:2021; EN 61215-1-1:2021; EN 61215-2:2021; EN IEC 61730-1:2018; EN IEC 61730-2:2018)	Max. System Voltage (Up to 1500 VDC) With 1/2 cut mono bifacial c-Si cells (Under STC): DMxxxM10T-B78HBB (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HSW (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HST (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B78HBW (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B72HBB (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HSW (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HST (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B72HBW (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B66HBB (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HSW (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HST (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B66HBW (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B60HBB (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HSW (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HST (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B60HBW (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B54HBB (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HSW (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HST (xxx = 405-430, in steps of 5, 108 cells) DMxxxM10T-B54HBW (xxx = 405-430, in steps of 5, 108 cells) With 1/2 cut mono bifacial c-Si cells (Under BNPI): DMxxxM10T-B78HBB (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HSW (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HST (xxx = 649, 655, 660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B78HBW (xxx = 649, 655,	CN23GYU7 001	PV 50582887 0001-0004	19/04/2023

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ADDITIONAL DOCUMENTATION

	<p>660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B72HBB (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HSW (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HST (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B72HBW (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B66HBB (xxx = 550, 556, 561, 567, 572, 578, 132 cells) DMxxxM10T-B66HSW (xxx = 550, 556, 561, 567, 572, 578, 132 cells) DMxxxM10T-B66HST (xxx = 550, 556, 561, 567, 572, 578, 132 cells) DMxxxM10T-B66HBW (xxx = 550, 556, 561, 567, 572, 578, 132 cells) DMxxxM10T-B60HBB (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells) DMxxxM10T-B60HSW (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells) DMxxxM10T-B60HST (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells) DMxxxM10T-B60HBW (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells) DMxxxM10T-B54HBB (xxx = 446, 451, 457, 462, 468, 473, 108 cells) DMxxxM10T-B54HSW (xxx = 446, 451, 457, 462, 468, 473, 108 cells) DMxxxM10T-B54HST (xxx = 446, 451, 457, 462, 468, 473, 108 cells) DMxxxM10T-B54HBW (xxx = 446, 451, 457, 462, 468, 473, 108 cells)</p>			
Extension to alternative manufacturing plant	Same as above	CN23GYU7 002	Factory annex	12/05/2023
Extension to new module types	<p>Max. System Voltage (Up to 1500 VDC) With 1/2 cut mono bifacial c-Si cells (Under STC): DMxxxM10T-B78HBT (xxx = 590-625, in steps of 5, 156 cells) DMxxxM10T-B72HBT (xxx = 535-575, in steps of 5, 144 cells) DMxxxM10T-B66HBT (xxx = 500-525, in steps of 5, 132 cells) DMxxxM10T-B60HBT (xxx = 450-480, in steps of 5, 120 cells) DMxxxM10T-B54HBT (xxx = 405-430, in steps of 5, 108 cells) With 1/2 cut mono bifacial c-Si cells (Under BNPI): DMxxxM10T-B78HBT (xxx = 649, 655,</p>	CN23GYU7 003	PV 50582887 0005	18/05/2023

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	660, 666, 671, 677, 682, 688, 156 cells) DMxxxM10T-B72HBT (xxx = 589, 594, 600, 605, 611, 616, 622, 627, 633, 144 cells) DMxxxM10T-B66HBT (xxx = 550, 556, 561, 567, 572, 578, 132 cells) DMxxxM10T-B60HBT (xxx = 495, 501, 506, 512, 517, 523, 528, 120 cells) DMxxxM10T-B54HBT (xxx = 446, 451, 457, 462, 468, 473, 108 cells)			
Co-license	Mylight Systems S.A.S	CN23GYU7 004	PV 50589780 0001-0005	27/06/2023

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FOTO-DOKUMENTATION
PHOTO DOCUMENTATION

Appendix D: Photos



Fig. 1: front view of test sample



Fig. 2: rear view of test sample

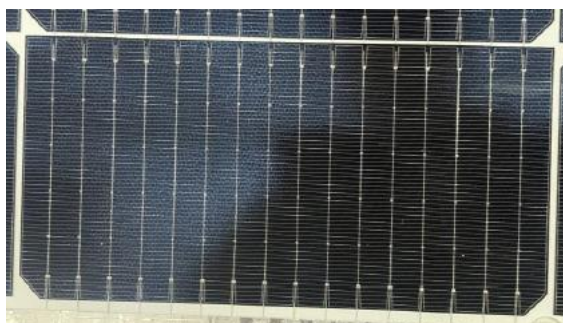


Fig. 3: detail view of solar cell



 <p>Hengdian Group DMEGC Magnetics Co.,Ltd Add: Hengdian Industrial Zone, 322118 Dongyang, Zhejiang P.R.China Tel: +86-579-86588601/86554950 Email: solar@dmegc.com.cn Web: www.dmegcsolar.com</p> <p>MADE IN CHINA</p>  <p>WARNING! Electrical Hazard Do not connect or disconnect under load</p>	Model Type: DM615M10T-B78HSW					
	Max System Voltage:	1500 V DC	PV Module Classification:	Class II		
	Max Series Fuse:	30 A	Dimension:	2465×1134×30 mm	Weight:	35.5 kg
		Pmax	Voc	Isc	Vmp	Imp
	STC:	615W(0/+3%)	55.62±3%V	13.88±4%A	46.44V	13.26 A
	BNPI:	677W(0/+3%)	55.75±3%V	15.27±4%A	(STC: E=1000W/m ² , AM1.5, Tc=25°C)	
	φPmax:	80±10%	φVoc: 100±3%	φIsc: 80±10%	(BNPI: Ef=1000W/m ² , Er=135W/m ² , AM1.5, Tc=25°C)	

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