

TEST REPORT IEC 61215-series:2016 MQT 17 Hail Test	
Report Number	6066499.055.001
Date of issue	2019-12-10
Total number of pages	17
Name of Testing Laboratory preparing the Report	DEKRA Testing and Certification (Shanghai) Ltd.
Applicant's name	Chint Solar (Zhejiang) Co., Ltd.
Address	1335 Bin An Rd, Binjiang District, Hangzhou, Zhejiang, 310053, P.R. China
Test specification:	
Standard	IEC 61215-2: 2016 MQT 17
Test procedure	
Non-standard test method	N/A
Test Report Form No	HI_A
Test Report Form(s) Originator	DEKRA Testing and Certification (Shanghai) Ltd.
Master TRF	2019-05-20
General disclaimer:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Testing Laboratory. This report does not entitle to carry any test mark.</p>	

Test item description :	PV Module	
Trade Mark :	Chint/ Astronergy	
Manufacturer	Chint Solar (Zhejiang) Co., Ltd.	
Model/Type reference	CHSM72M(DG)-BH-xxx (xxx=365-455, in step of 5, mono 144cells) CHSM72M(DG)/F-BH-xxx (xxx=365-455, in step of 5, mono 144cells) CHSM60M(DG)-BH-xxx (xxx=305-380, in step of 5, mono 120cells) CHSM60M(DG)/F-BH-xxx (xxx=305-380, in step of 5, mono 120cells) CHSM72M(DGT)-BH-xxx (xxx=355-450, in step of 5, mono 144cells) CHSM72M(DGT)/F-BH-xxx (xxx=355-450, in step of 5, mono 144cells) CHSM60M(DGT)-BH-xxx (xxx=295-375, in step of 5, mono 120cells) CHSM60M(DGT)/F-BH-xxx (xxx=295-375, in step of 5, mono 120cells)	
Ratings :	Refer to Attachment 1 for more details.	
<input checked="" type="checkbox"/>	Testing procedure: CTF Stage 1:	DEKRA Testing and Certification (Shanghai) Ltd.
	Testing location/ address :	3F #250, Jiangchangsang Road, Building 16, Headquarter Economy Park Shibe Hi-Tech Park, Jing'an District, Shanghai, 200436, P.R. China
	Tested by (name, function, signature) :	Lee Huang
	Approved by (name, function, signature) ... :	Kevin Lu

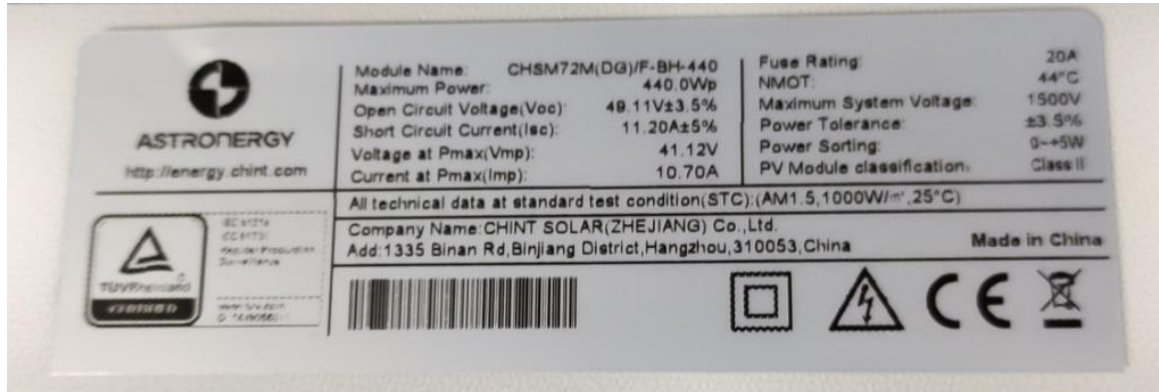
List of Attachments (including a total number of pages in each attachment):	
	attachment number / number of pages
Installation manual	
Drawings mechanical	
Circuit diagram	
Photographs	Annex 1, 2 pages
Component datasheets / certificates	
Others:	
List of test equipment used	Annex 2, 1 page
IV curve	Annex 3, 1 page
EL image	Annex 4, 1 page
CDF	Attachment 1, 6 pages

Summary of testing:	
Tests performed (name of test and test clause): Hail Test	Testing location: Changzhou HuaYang Inspection and Testing Technology Co., Ltd. No.8 Lanxiang Road, Wujin Economic Development Zone, Changzhou, Jiangsu, P.R.China
Summary of compliance with National Differences (List of countries addressed): N/A	
<input type="checkbox"/> The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Note: The marking plate represents all models covered by this report except for difference in electrical ratings and model designation. See "General product information" for electrical ratings for all models. As there will be other lower wattages to be covered under same report which follows same back label format.)



Test item particulars..... :	
Accessories and detachable parts included in the evaluation	
Mounting system used..... :	
Other options included..... :	
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Abbreviations used in the report:	
Pmax – Maximum power	HF – Humidity Freeze
Vmp – Maximum power voltage	DH – Damp Heat
Imp – Maximum power current	TC – Thermal Cycling
Isc – Short circuit current	α – Current temperature coefficient
Voc – Open circuit voltage	β – Voltage temperature coefficient
FF – Fill factor	δ – power temperature coefficient
STC – Standard Test Conditions (25°C, 1 000 W/m ²)	NMOT – Nominal Module Operating Temperature (20°C, 800 W/m ²)
MQT – Module Quality Tests	VFM _{rated} – Rated diode(s) forward voltage
VFM – Measured diode(s) forward voltage	NP – Nameplate
m_1 – the measurement uncertainty in % of laboratory for Pmax	m_2 – the measurement uncertainty in % of laboratory for Voc
m_3 – the measurement uncertainty in % of laboratory for Isc	t_1 – the manufacturer's rated lower production tolerance in % for Pmax
t_2 – the manufacturer's rated upper production tolerance in % for Voc	t_3 – the manufacturer's rated upper production tolerance in % for Isc
r – Pmax measurement reproducibility	
Testing Dates (YYYY-MM-DD)	
Date of first test item received	2019-12-06
Dates of tests (beginning/end).....	2019-12-06/2019-12-09

GENERAL REMARKS:				
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.				
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.				
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60384-10:				
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable	
When differences exist; they shall be identified in the General product information section.				
Name and address of factory (factories)			Chint Solar (Zhejiang) Co., Ltd. 1335 Bin An Rd, Binjiang District, Hangzhou, Zhejiang, 310053, P.R. China	
PRODUCT ELECTRICAL RATINGS:				
Module type	CHSM72M(DG)/ F-BH-440			
Voc [V] /Tolerance	49.11/±3.5%			
Vmp [V]	41.12			
I _{max} [A _{dc}]	10.70			
I _{sc} [A _{dc}] /Tolerance	11.20/±5%			
P _{mp} [W] /Tolerance	440/±3.5%			
Maximum system voltage [V]	1500			
Maximum Over-Current Protection Rating [A]	20			
Note: N/A				

GENERAL PRODUCT INFORMATION AND OTHER REMARKS:Modifications:

- Initial module design qualification
- Extension of module design qualification
- Original test report ref. No.:

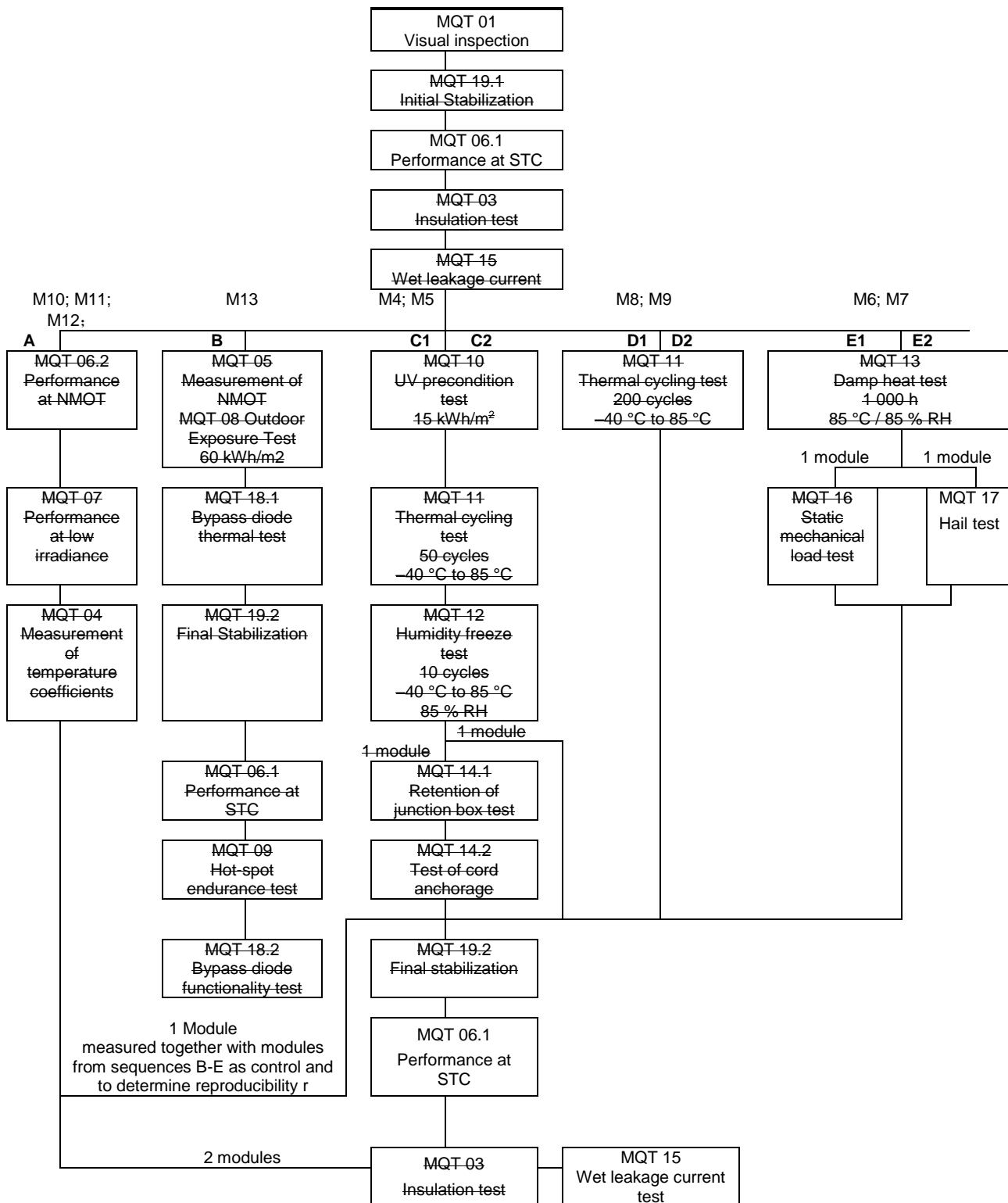
Model differences and modification:

- | | |
|--|---|
| <input type="checkbox"/> Test programs for crystalline silicon PV modules | <input type="checkbox"/> Test programs for thin-film PV modules |
| <input type="checkbox"/> 4.1.1 Modification to frontsheet | <input type="checkbox"/> 4.2.1 Modification to frontsheet |
| <input type="checkbox"/> 4.1.2 Modification to encapsulation system | <input type="checkbox"/> 4.2.2 Modification to encapsulation system |
| <input type="checkbox"/> 4.1.3 Modification to cell technology | <input type="checkbox"/> 4.2.3 Modification to front contact (e. g. TCO) |
| <input type="checkbox"/> 4.1.4 Modification to cell and string interconnect material or technique | <input type="checkbox"/> 4.2.4 Modification to cell technology |
| <input type="checkbox"/> 4.1.5 Modification to backsheet | <input type="checkbox"/> 4.2.5 Modification to cell layout |
| <input type="checkbox"/> 4.1.6 Modification to electrical termination | <input type="checkbox"/> 4.2.6 Modification to back contact |
| <input type="checkbox"/> 4.1.7 Modification to bypass diode | <input type="checkbox"/> 4.2.7 Modification to edge deletion |
| <input type="checkbox"/> 4.1.8 Modification to electrical circuitry | <input type="checkbox"/> 4.2.8 Modification to interconnect material or technique |
| <input type="checkbox"/> 4.1.9 Modification to edge sealing | <input type="checkbox"/> 4.2.9 Modification to backsheet |
| <input type="checkbox"/> 4.1.10 Modification to frame and/or mounting structure | <input type="checkbox"/> 4.2.10 Modification to electrical termination |
| <input type="checkbox"/> 4.1.11 Change in PV module size | <input type="checkbox"/> 4.2.11 Modification to bypass diode |
| <input type="checkbox"/> 4.1.12 Higher or lower output power (by 10 % or more) with the identical design and size and using the identical cell process | <input type="checkbox"/> 4.2.12 Modification to edge sealing |
| <input type="checkbox"/> 4.1.13 Increase of over-current protection rating | <input type="checkbox"/> 4.2.13 Modification to frame and/or mounting structure |
| <input type="checkbox"/> 4.1.14 Increase of system voltage | <input type="checkbox"/> 4.2.14 Change in PV module size |
| <input type="checkbox"/> 4.1.15 Change in cell fixing tape | <input type="checkbox"/> 4.2.15 Higher or lower output power (by 10 % or more) with the identical design and size |
| | <input type="checkbox"/> 4.2.16 Increase of over-current protection rating |
| | <input type="checkbox"/> 4.2.17 Increase of system voltage |

Note: The clause references modifications extracted from IEC 62915

MODULE GROUP ASSIGNMENT:			
Sample #	Type/model	Sample S/N	Remark
M6	CHSM72M(DG)/F-BH-440	2955736291501012	HI
Supplementary information: N/A			
Note (1)	Use the "General product information" field to give any information on model differences within a product type family covered by the test report and to describe the range of electrical and safety ratings, if the TRF covers a type family of modules.		
Note (3)	Use Annex 1 to list the used materials and components of the module (manufacturer/supplier and type reference).		
Note (4)	The module numbers/identifiers are set in accordance to IEC 62915 Photovoltaic (PV) modules – Retesting for type approval, design and safety qualification, Annex A3		

11	<p>TEST FLOW (if it is not a full test, strikethrough non-performed test)</p> <p>Note: Deviations from test sequence are possible but must be documented.</p>
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IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 01: MQT 01 ini: Initial Visual inspection			P
Test Date [YYYY-MM-DD]..... :		2019-12-06	—
Sample #	Nature and position of initial findings – comments or attach photos		—
M6	No major visual defects found		P
Supplementary information:N/A			

TABLE 02: MQT 19.1 ini: Initial stabilization								
TABLE 02.1: MQT 06.1 ini: Performance at STC before initial stabilization								
Test Date [YYYY-MM-DD]..... :		2019-12-06						—
Test method..... :		<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight						—
Sample #	Isc [A]	Voc [V]	Imp [A]	Vmp [V]	Pmax [W]	FF [%]	Result	
M6	11.235	49.070	10.711	41.308	442.464	80.26	—	
Supplementary information:								

TABLE 19.8: MQT 17 - Hail impact test								
Test Date [YYYY-MM-DD]..... :		2019-12-07						—
Sample #		M6						—
Ice ball size [mm]	1	2	3	4	5	6	—	
	44.9	45.3	45.1	45.2	44.3	45.5		
	7	8	9	10	11			
Ice ball weight [g]	1	2	3	4	5	6	—	
	42.92	42.60	43.54	43.29	44.51	44.35		
	7	8	9	10	11			
Ice ball velocity [m/s].....	1	2	3	4	5	6	—	
	29.7	29.5	29.8	30.3	30.0	30.7		
	7	8	9	10	11			
Number of impact locations	11						11	
Supplementary information: (impact location descriptions)								

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Clause	Requirement + Test	Result - Remark	Verdict
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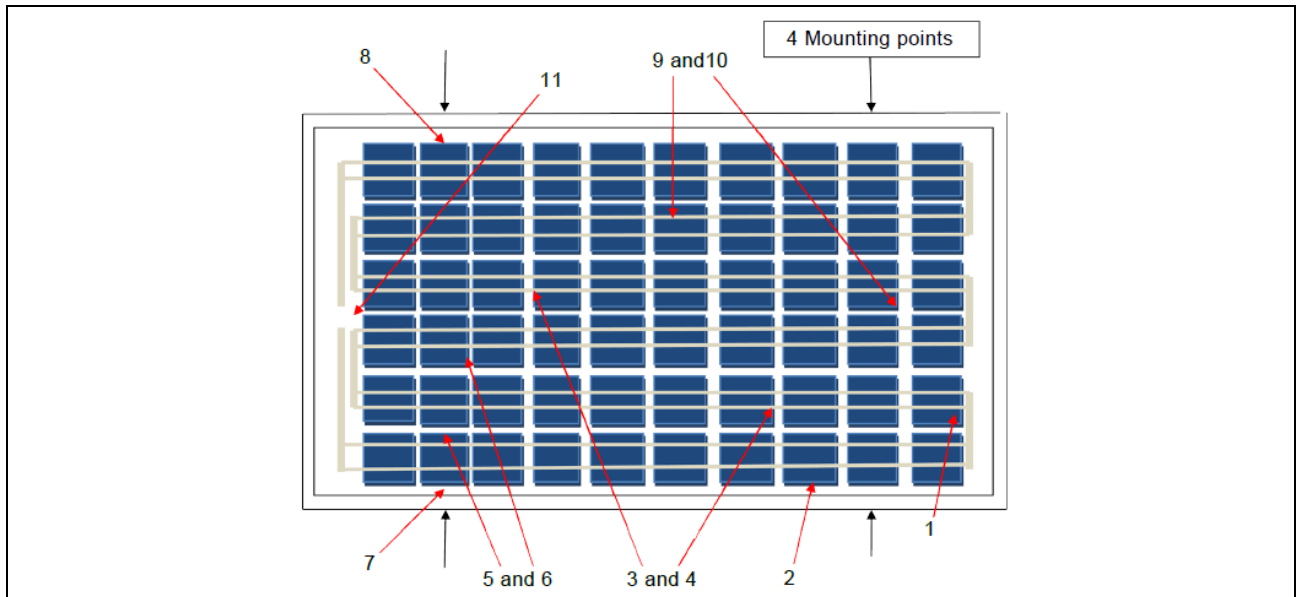


TABLE 19.9: MQT 01 - Visual inspection after hail impact test		P
Test Date [YYYY-MM-DD].....:	2019-12-09	—
Sample #	Nature and position of initial findings – comments or attach photos	—
M6	No major visual defects found	P
Supplementary information:		

TABLE 19.10: MQT 15 - Wet leakage current test after hail impact test			
Test Date [YYYY-MM-DD].....:	2019-12-09	—	
Test Voltage applied [V].....:	1500	—	
Solution temperature [°C].....:	21.5	—	
Size of module [m²].....:	2.24	—	
Sample #	Measured [MΩ]	Required Resistance [MΩ]	Result
M6	>2000	17.9	P
Supplementary information: N/A			

IEC 61215-2			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE 20.3: MQT 06.1: Final Performance at STC								
Test Date [YYYY-MM-DD]..... :				2019-12-09				—
Test method.....				<input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Natural sunlight				—
Sample #	Isc [A]	Voc [V]	Imp [A]	Vmp [V]	Pmax [W]	FF [%]	Power Degradation [%]	Result
M6	11.177	49.053	10.669	41.409	441.786	80.58	-0.15	—
Supplementary information:								

Annex 1: Photographs of test sample

Module type: CHSM72M(DG)/F-BH-440



Fig. 1: front view of test sample



Fig. 2: rear view of test sample

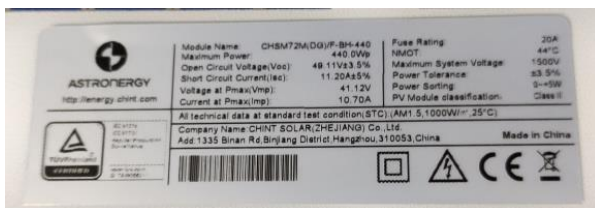


Fig. 3: view of type label



Fig. 4: view of serial number



Fig. 5: view of junction box

Fig. 6: view of solar cell



Fig. 7: view of cables

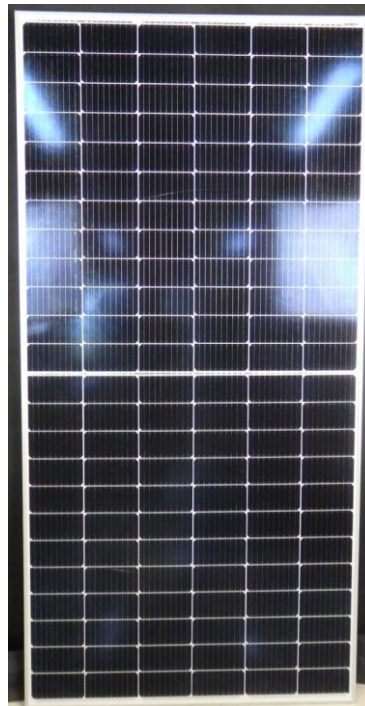


Fig. 8: view of cables test sample after HI test

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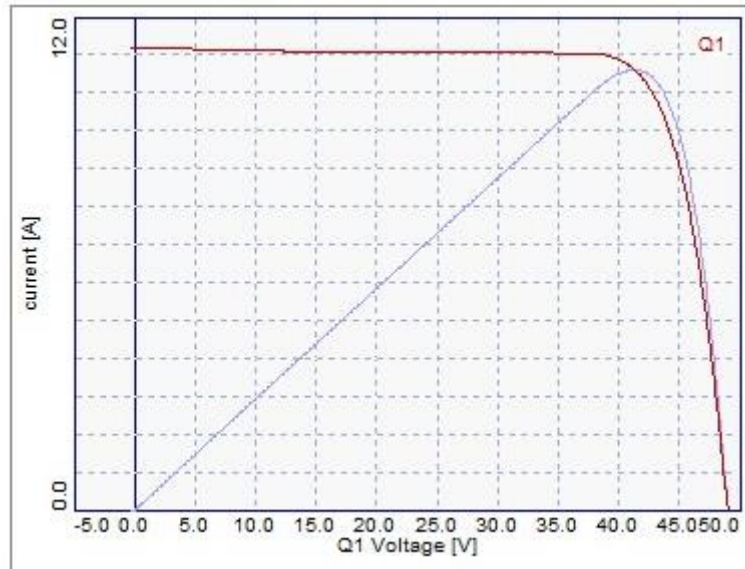
Annex 2: List of measurement equipment

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
1	Visual inspection	Visual inspection table HYJC-YS-033	/	2019.09.15	2020.09.14
		Illumination photometer HYJC-YS-070	0~40.0klux	2019.08.15	2020.08.14
2	Performance at STC and NMOT	Module pulse simulator HYJC-YS-021	AAA	2019.12.04	2020.12.03
3	Hail test	Hail tester HYJC-YS-036	25mm、 35mm、45mm	2018.12.20	2019.12.19
4	Wet leakage current test	Programmable control voltage insulation meter HYJC-YS-155	DC:0~8kV	2019.09.15	2020.09.14
		Conductance meter HYJC-YS-076	0.000US/cm~ 200.0ms/cm	2019.07.09	2020.07.08

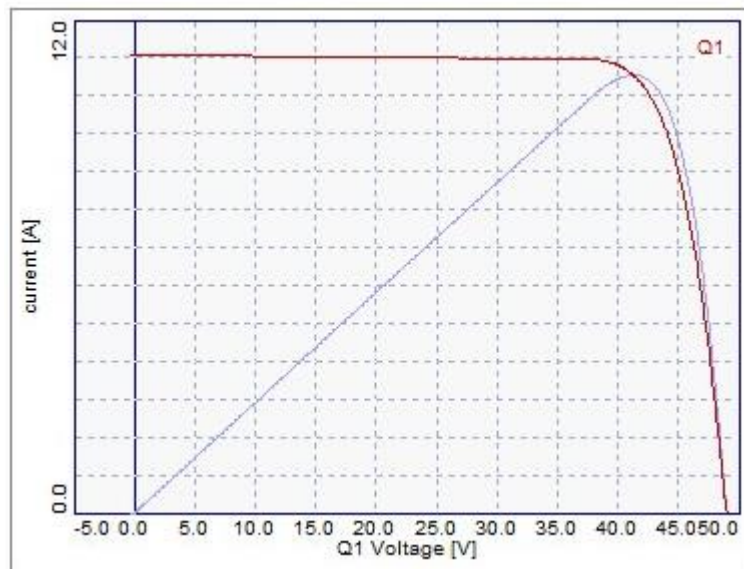
IEC 61215-2

Annex 3: IV curve for STC

IV-curves for Module type: CHSM72M(DG)/F-BH-440



*Sample no 2955736291501012
Initial*

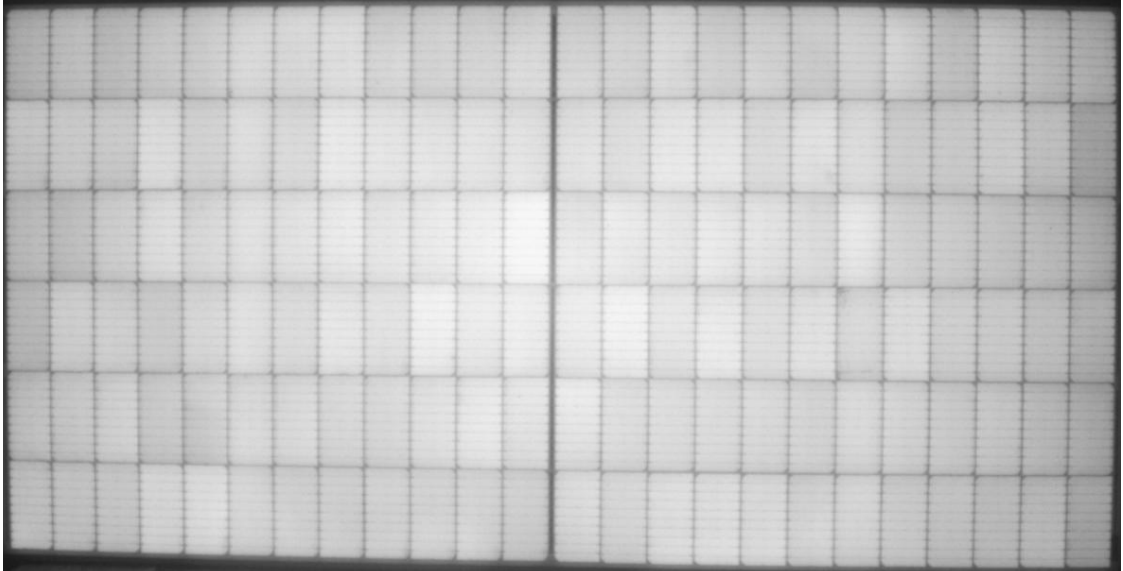


*Sample no 2955736291501012
Final*

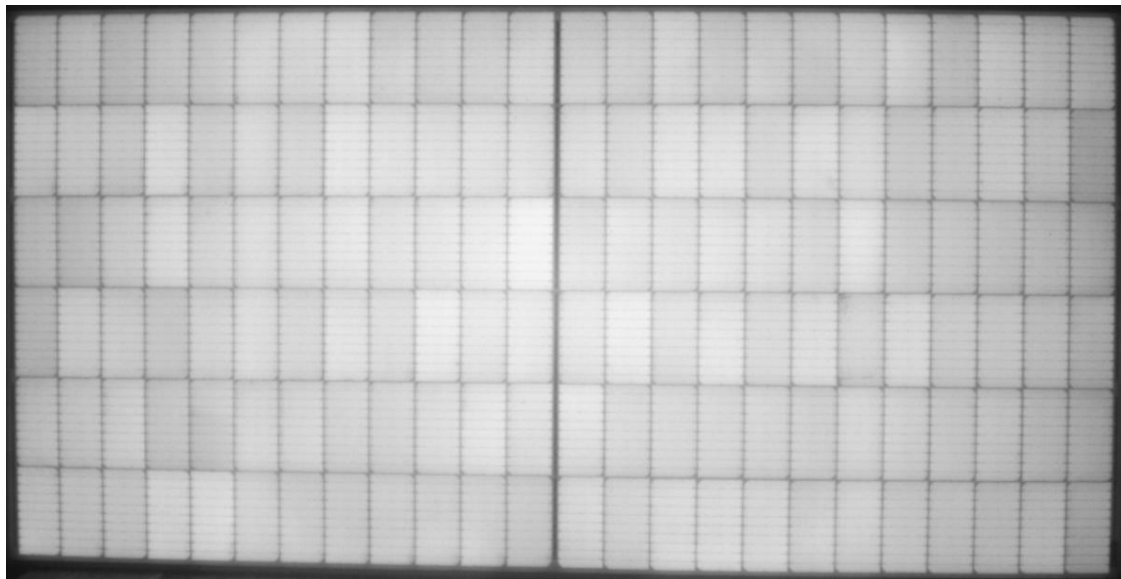
IEC 61215-2

Annex 4: EL image

EL image for Module type: CHSM72M(DG)/F-BH-440





*Sample no 2955736291501012
Initial*




*Sample no 2955736291501012
Final*

Attachment 1

CDF of PV Modules

Produkte <i>Products</i>		
Our Reference	6066499 055 001	Appendix No. 1
Constructional Data Form (CDF) for Photovoltaic (PV) Modules		Page 1 of 6
License Holder	Chint Solar (Zhejiang) Co., Ltd	
(full address)	1335 Bin An Rd, Binjiang District, Hangzhou, 310053, Zhejiang, China	
Production Factory 1 ...	Chint New Energy (Haining) Co., Ltd	
(full address)	No.1 Jisheng Road, Jianshan New District, Haining City, Zhejiang Province, 314415 P. R. China	
Production Factory 2 ...	Chint Solar (Zhejiang) Co., Ltd.	
(full address)	1335 Bin An Rd, Binjiang District, Hangzhou, 310053, Zhejiang, China	
Production Factory 3 ...	Ningbo Qixin Solar Electrical Appliance Co., Ltd.	
(full address)	No.37, Jingang Road, Binhai Industrial Park, Xiangshan, Ningbo City, Zhejiang Province, 315700, P. R. China	
Production Factory 4 ...	ECONESS ENERGY CO., LTD.	
(full address)	No. 58 Haida Road, Huashi Town, 214421 Jiayang, Jiangsu, P. R. China.	
Type of Product.....	Photovoltaic (PV) Modules	
Trademark	 ASTRONERGY ASTRONERGY/Chint	


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TÜV Rheinland Group
QMF-RT-39008SHGHangzhou, 2019-12-10
(City) (Date)


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Attachment 1

Produkte Products		
Our Reference	6066499 055 001	Appendix No. 1
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Module family A: 6" Mono c-Si Bifi Half-cell type		
Type Name or Model No.....	CHSM72M(DG)-BH-xxx (6" mono 144cells)	CHSM60M(DG)-BH-xxx (6" mono 120cells)
	CHSM72M(DG)/F-BH-xxx (6" mono 144cells)	CHSM60M(DG)/F-BH-xxx (6" mono 120cells)
Maximum System Voltage [VDC]	1500	1500
Rated Maximum Power [W].....	365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415,420,125,430,435,440,445,450,455	305, 310, 315, 320, 325, 330, 335, 340,345,350,355,360,365,370,375,380
Rated Short Circuit Current [A].....	9.74, 9.82, 9.90, 9.98, 10.06, 10.14, 10.22, 10.30, 10.38, 10.46, 10.54,10.90,10.97,11.06,11.12,11.20, 11.25,11.30,11.36	9.72, 9.79, 9.86, 9.93, 10.00, 10.07, 10.14, 10.21, 10.92,10.99,11.06,11.12,11.20,11.25,11.30,
Rated Open Circuit Voltage [V].....	46.98, 47.16, 47.34, 47.52, 47.70, 47.88, 48.06, 48.24, 48.42, 48.60, 48.78, 48.17,48.43,48.60, 48.90,49.11,49.44,49.78,50.07	39.66, 39.85, 40.04, 40.23, 40.42, 40.61, 40.80, 40.99, 39.49,39.81,40.12,40.47,40.74,41.11,41.48,
Tolerance of Rating Pmax / Isc / Voc [%].....	3.5 / 5 / 3.5	3.5 / 5 / 3.5
Over-current protection rating[A]:	20	20
Classification (IEC 61730).....	Class II	Class II
Fire rating.....	Class A	Class A
Pollution degree.....	I	I
Dimensions (l x w x h) [mm].....	2012x992x6mm/ 2032x1004x6mm 2018x998x30mm/ 2038x1010x30mm/ 2131x1052x30mm	1690x992x6mm/ 1708x1004x6mm 1696x998x30mm/ 1714x1010x30mm/ 1791x1052x30mm
Module area [m ²].....	2.00/ 2.33 2.01/ 2.06/ 2.24	1.68/ 1.71 1.69/ 1.73/ 1.88
Min- creepage distance [mm].....	11mm	11mm
Number of solar cells	144	120
Cells per bypass diode	48	40
Serial/parallel connection of cells	S	S
Type Name or Model No.....	CHSM72M(DGT)-BH-xxx (6" mono 144cells)	CHSM60M(DGT)-BH-xxx (6" mono 120cells)
	CHSM72M(DGT)/F-BH-xxx (6" mono 144cells)	CHSM60M(DGT)/F-BH-xxx (6" mono 120cells)
Maximum System Voltage [VDC]	1500	1500

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(Date)
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Attachment 1

Produkte Products		
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Rated Maximum Power [W].....:	355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405,410,415,420,425,430,435,440,445,450	295, 300, 305, 310, 315, 320, 325, 330, 335,340,345,350,355,360,370,375
Rated Short Circuit Current [A].....:	9.57, 9.65, 9.73, 9.81, 9.89, 9.97, 10.05, 10.13, 10.21, 10.29, 10.37,10.72,10.79,10.86, 10.92,10.98,11.07,11.16,11.22,11.28	9.51, 9.58, 9.65, 9.72, 9.79, 9.86, 9.93, 10.00, 10.07, 10.14,10.91,10.98,11.05,11.12,11.18,11.27,11.34,11.40
Rated Open Circuit Voltage [V].....:	46.72, 46.90, 47.08, 47.26, 47.44, 47.62, 47.80, 47.98, 48.16, 48.34, 48.52,48.23,48.50,48.77,49.08, 49.38,49.55,49.72,50.01,50.31	39.49, 39.68, 39.87, 40.06, 40.25, 40.44, 40.63, 40.82, 41.01,39.30,39.62,39.94,40.26,40.61,40.84,41.14,41.48
Tolerance of Rating Pmax / Isc / Voc [%].....:	3.5 / 5 / 3.5	3.5 / 5 / 3.5
Over-current protection rating[A]:	20	20
Classification (IEC 61730).....:	Class II	Class II
Fire rating	Class A	Class A
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2012x992x6mm/ 2032x1004x6mm 2018x998x30mm/ 2038x1010x30mm/ 2131x1052x30mm	1690x992x6mm/ 1708x1004x6mm 1696x998x30mm/ 1714x1010x30mm/ 1791x1052x30mm
Module area [m ²]	2.00/ 2.33 2.01/ 2.06/ 2.24	1.68/ 1.71 1.69/ 1.73/ 1.88
Min- creepage distance [mm]	11mm	11mm
Number of solar cells	144	120
Cells per bypass diode	48	40
Serial/parallel connection of cells	S	S

Shanghai, 2019-12-10




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Hangzhou
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Attachment 1

Produkte Products		
Our Reference	6066499 055 001	Appendix No. 1
Constructional Data Form (CDF) for Photovoltaic (PV) Modules		Page 4 of 6


List of Critical Components (add lines for multiple material sources)					
Object	Manufacturer / trademark	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Front cover	Xinyi Products(Anhui) Holdings Ltd.	AR Coated tempered glass Air side: coated; EVA side: N/A	Thickness = 2.0mm Thickness = 2.5mm	—	—
Rear cover 1	Xinyi Products(Anhui) Holdings Ltd.	AR Coated tempered glass Air side: coated; EVA side: N/A	Thickness = 2.0mm Thickness = 2.5mm	—	—
Rear cover 2	Xinyi Products(Anhui) Holdings Ltd.	AR Coated tempered glass Air side: coated; EVA side: Glazed	Thickness = 2.0mm Thickness = 2.5mm	—	—
Encapsulation material	Hangzhou First Applied Material Co., Ltd.	TF4 (between front cover and cells)	Unit gram=430±20 g/m2	—	—
		TF4 (between cells and rear cover)	Unit gram=430±20 g/m2	—	—
Solar cell	Chint Solar (Zhejiang) Co., Ltd. M.L.T. Solar Energy Products CO., LTD	1.1 CHSC-156M5SB-PT (dotted 5 busbars, mono c-Si cell)	156.75mm x78.375mm x 200um (±20 um)	—	—
		1.2 CHSC-158M5SB-PT (dotted 5 busbars, mono c-Si cell)	158.75mm x79.375mm x 200um (±20 um)	—	—
		1.3 CHSC-156M9SB-PT (dotted 9 busbars, mono Si cell)	156.75mm x78.375mm x 200um (±20 um)	—	—
		1.4 CHSC-158M9SB-PT (dotted 9 busbars, mono Si cell)	158.75mm x79.375mm x 200um (±20 um)	—	—
		1.5 CHSC-166M9SB-PT (dotted 9 busbars, mono c-Si cell)	166mm x83mm x 200um (±20 um)	—	—
Frame parts	Shaoxing Solarcom Solar Equipment Co., Ltd.	Anodized Aluminium Alloy 6063-T5	H(mm) x W(mm): 30x28 Assembled by clamps Oxide layer thickness: AA10 Black & Silver	—	—

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(Date)
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Attachment 1

Produkte Products		
Our Reference 6066499 055 001	Appendix No. 1	
Constructional Data Form (CDF) for Photovoltaic (PV) Modules		Page 5 of 6

List of Critical Components (add lines for multiple material sources)					
Object	Manufacturer / trademark	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Adhesive (frame)	Hangzhou Zhijiang Silicone Chemical Co., Ltd	JS-606 (White & Black)	Silicon	—	—
Cell connectors	Xi'an Telison New Materials co., Ltd.	Sn60Pb40	$\Phi=0.35\text{mm}/0.4\text{mm}$	—	—
String connectors	Hangzhou Xiaoshan Jianghai Industrial Co., Ltd.	Sn60Pb40	L(mm) X T(mm): 5.0 / 8.0x 0.35	—	—
Fluxing agent	Singapore Asahi Chemical & Solder Industries Pte Ltd	SF56	—	—	—
	Asahi solder technology (wuxi) company limited	SF56(MBB)			
Fixing tape	3M	UV-1	—	—	—
(Optional) Accessories	N/A	N/A	N/A	—	—

Shanghai, 2019-12-10

Lee Huang


TÜV Rheinland Group

QMF-RT-39008SHG

Hangzhou, 2019-12-10
(City) (Date)*Qian Huang*
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Object	Manufacturer / trademark	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Junction Box Combination					
Junction box	ZHEJIANG XINHUI PHOTOVOLTAIC TECHNOLOGY CO.,LTD.	PV-HBE4x	Rated Voltage=1500V Rated current=20A	IEC 62790:2014	R 50430795
Cable 1	Ningbo Kibor Wire & Cable Co., Ltd	H1Z2Z2-K 1x2,5...4.0 mm2	System Voltage = 1500V Max. Current = N/A	EN 50618:2014	R 50302047
Cable 2	Wuxi Xinhongye Wire & Cable Co., Ltd	H1Z2Z2-K 1x1,5...35 mm2	System Voltage = 1500V Max. Current = N/A	EN 50618:2014	R 50311889
Cable 3	Ningbo Sun Rise Electronic Technology Co., Ltd	H1Z2Z2-K 1x2,5...6.0 mm2	System Voltage = 1500V Max. Current = N/A	EN 50618:2014	R 50353266
Connectors 1	Zhejiang Xinhui Photovoltaic Technology Co., Ltd	PV-HCB40	Rated Current = 40A	IEC 62852: 2014	R 50340246
Connectors 2	Stäubli Electrical Connectors AG	PV-KST4-EVO2/XY_UR; PV-KBT4-EVO2/XY_UR	Rated Current = 45A	IEC 62852: 2014	R 60127169
Bypass diode 1	PanJit International Inc.	20SQ045(3)	Tj max =200	—	—
Bypass diode 2	Yangzhou Yangjie Electronic Co., Ltd	20SQ045(3)	Tj max =200	—	—
Bypass diode 3	PanJit International Inc.	25SQ045(3)	Tj max =200	—	—
Adhesive 1	Hangzhou Zhijiang Silicone Chemical Co., Ltd.	JS-606 Color: White and Black	Silicon	—	—
Adhesive 2	Beijing Tonsan New Material Technology Co., Ltd.	1527 Color: White and Black	Silicon	—	—
Adhesive 3	Shanghai Huitian New Chemical Material Co., Ltd.	906Z Color: White and Black	Silicon	—	—
Potting 1 (junction box)	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184 Color: White and Black	—	—	—
Potting 2 (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	5299W /5299W-S Color: White and Black	—	—	—
Potting 3 (junction box)	Beijing Tonsan New Material Technology Co., Ltd.	TS1521 Color: White and Black	—	—	—

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