



Applicant: Hengdian Group DMEGC Magnetics Co., LTD

Address: Hengdian Industrial Zone, 322118 Dongyang City, Zhejiang Province P.R. China

Attn: Wang Guoqiang

Sample Description: PV Modules

Model No.: DM410M10-54HSW, DM545M10-B72HSW, DM575M10T-72HSW, DM570M10T-B72HSW

Sample Received Date: 2023-09-07 and 2023-09-21 (Sample 18)

Test Period: 2023-09-07~2023-09-27

Test Location: TÜV SÜD Certification and Testing (China) Co., Ltd.
Shanghai Branch, SHA Chemical Lab.

Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples

Test Results: Refer to following page(s)

Remark:

- The result relates only to the items tested.
- The reference model(s) was declared by client.
- The test sample(s) and item(s) was specified by client.

TÜV SÜD Certification and Testing (China) Co., Ltd.
TÜV SÜD Group
Prepared by:

Reviewed by:



Mr. Jialong Han



Mr. Feng ZHANG

Disclaimer Measurement Uncertainty: Unless otherwise agreed upon, Pass or Fail verdicts are given base on the measured values without any considerations of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as Fail. Any use for advertising purposes must be granted in writing. This test report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.



SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	



TEC_WUX_F_25.05E - Rev. 00 2021-06-24



1. TESTED SUBJECT DESCRIPTION

Sample No.	Description (Material, colour)	Photograph/Location
01	Transparent glass	
02	Silvery aluminium alloy frame	
03	Silvery aluminium alloy hinge	
04	White plastic rear cover	

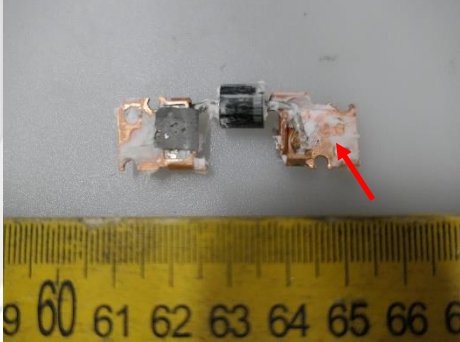
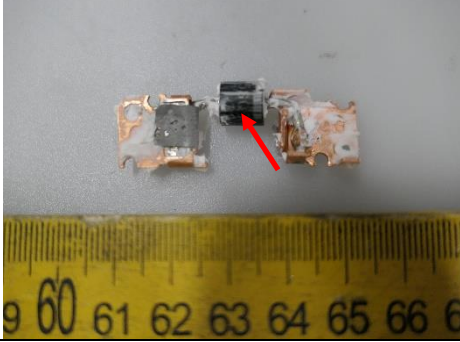


Sample No.	Description (Material, colour)	Photograph/Location
05	White plastic inner film	
06	Translucent plastic inner film	
07	Blue solar cell	
08	Silvery label	



Sample No.	Description (Material, colour)	Photograph/Location
09	White label	
10	White glue	
11	White glue	
12	Purple plastic cable tie	



Sample No.	Description (Material, colour)	Photograph/Location
13	Black plastic plug enclosure	
14	Black plastic shell	
15	Golden copper alloy sheet	
16	Black diode	



Sample No.	Description (Material, colour)	Photograph/Location
17	Silvery metal pin	
18	Silvery solder	
19	Silvery solder	
20	Silvery tin strip	

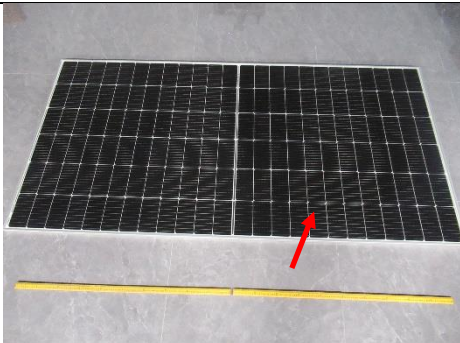
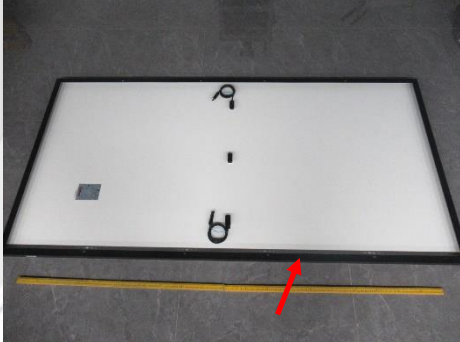


Sample No.	Description (Material, colour)	Photograph/Location
21	Black plastic cable sleeve	 A black plastic cable sleeve, shown from two angles (top and side), with a yellow ruler below it for scale.
22	Black plastic sleeve	 Two small black plastic sleeves, shown from two angles, with a yellow ruler below them for scale.
23	Black plastic sleeve	 Two small black plastic sleeves, shown from two angles, with a yellow ruler below them for scale.
24	Dark grey plastic sealing ring	 A dark grey plastic sealing ring, shown from a side angle, with a red arrow pointing to a specific feature and a yellow ruler below it for scale.

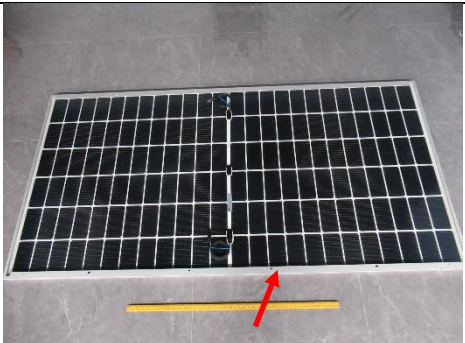
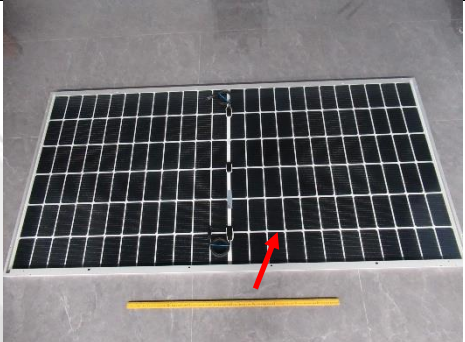
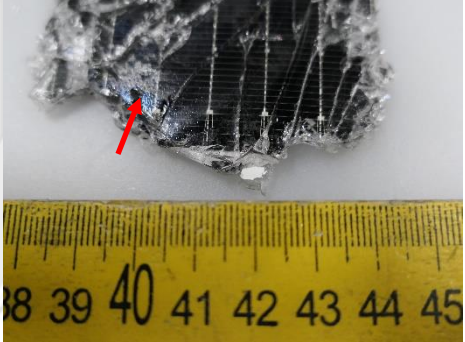


Sample No.	Description (Material, colour)	Photograph/Location
25	Silvery metal sleeve	
26	Black plastic cable jacket	
27	Silvery copper alloy wire	
28	Silvery copper alloy contact piece	



Sample No.	Description (Material, colour)	Photograph/Location
29	Transparent glass	
30	Blue plastic cable tie	
31	Black aluminium alloy frame	
32	Silvery aluminium alloy hinge	



Sample No.	Description (Material, colour)	Photograph/Location
33	Silvery aluminium alloy frame	
34	White ink	
35	Blue solar cell (16BB Topcon)	
36	Transparent plastic tape 3M	



Sample No.	Description (Material, colour)	Photograph/Location
37	Transparent plastic tape Shangrui	



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2. TEST RESULT(S)

2.1 SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN 62321-2:2014, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometer (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometer (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
01	BL	BL	BL	BL	NA	NA	NA	NA	NA
02	BL	BL	BL	BL	NA	NA	NA	NA	NA
03	BL	BL	BL	BL	NA	NA	NA	NA	NA
04	BL	BL	BL	BL	BL	BL	BL	BL	BL
05	BL	BL	BL	BL	BL	BL	BL	BL	BL
06	BL	BL	BL	BL	BL	BL	BL	BL	BL
07	BL	BL	BL	BL	BL	BL	BL	BL	BL
08	BL	BL	BL	BL	BL	BL	BL	BL	BL
09	BL	BL	BL	BL	BL	BL	BL	BL	BL
10	BL	BL	BL	BL	BL	BL	BL	BL	BL
11	BL	BL	BL	BL	BL	BL	BL	BL	BL
12	BL	BL	BL	BL	BL	BL	BL	BL	BL
13	BL	BL	BL	BL	BL	BL	BL	BL	BL
14	BL	BL	BL	BL	BL	BL	BL	BL	BL
15	BL	BL	BL	BL	NA	NA	NA	NA	NA
16	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
17	BL	BL	BL	BL	NA	NA	NA	NA	NA
18	BL	BL	BL	BL	NA	NA	NA	NA	NA
19	BL	BL	BL	BL	NA	NA	NA	NA	NA
20	BL	BL	BL	BL	NA	NA	NA	NA	NA
21	BL	BL	BL	BL	BL	BL	BL	BL	BL



Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Pb	Hg	Cr	Br	DEHP	BBP	DBP	DIBP
22	BL	BL	BL	BL	BL	BL	BL	BL	BL
23	BL	BL	BL	BL	BL	BL	BL	BL	BL
24	BL	BL	BL	BL	BL	BL	BL	BL	BL
25	BL	BL	BL	Inc. ^(a)	NA	NA	NA	NA	NA
26	BL	BL	BL	BL	BL	BL	BL	BL	BL
27	BL	BL	BL	BL	NA	NA	NA	NA	NA
28	BL	BL	BL	BL	NA	NA	NA	NA	NA
29	BL	BL	BL	BL	NA	NA	NA	NA	NA
30	BL	BL	BL	BL	BL	BL	BL	BL	BL
31	BL	BL	BL	BL	NA	NA	NA	NA	NA
32	BL	BL	BL	BL	NA	NA	NA	NA	NA
33	BL	BL	BL	BL	NA	NA	NA	NA	NA
34	BL	BL	BL	BL	BL	BL	BL	BL	BL
35	BL	BL	BL	BL	BL	BL	BL	BL	BL
36	BL	BL	BL	BL	BL	BL	BL	BL	BL
37	BL	BL	BL	BL	BL	BL	BL	BL	BL

Remark:

- "BL" denotes below limit
- "OL" denotes over limit
- "Inc." denotes inconclusive
- "NA" denotes not applicable
- "(a)" denotes further confirmation test was conducted, results are listed in 2.2 and 2.3.

-XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Br	$X \leq (300-3\sigma)$	$X > (300-3\sigma)$	NA
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA
ELEMENT	METAL		

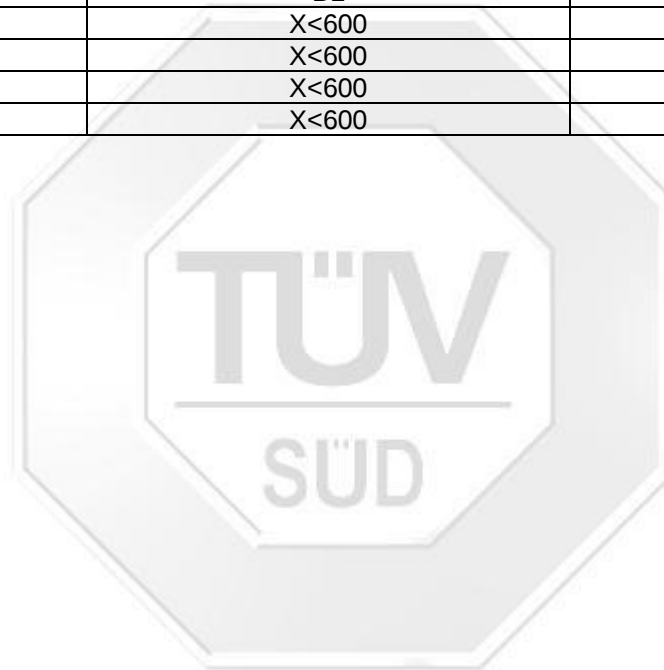


	BL	INCONCLUSIVE	OL
Cd	$X \leq (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X \geq (130+3\sigma)$
Pb	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Hg	$X \leq (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X \geq (1300+3\sigma)$
Cr	$X \leq (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X \leq (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X \geq (150+3\sigma)$
Pb	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Hg	$X \leq (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X \geq (1500+3\sigma)$
Br	$X \leq (250-3\sigma)$	$X > (250-3\sigma)$	NA
Cr	$X \leq (500-3\sigma)$	$X > (500-3\sigma)$	NA

-Screening limits in mg/kg for regulated phthalates in various matrices

PHthalates	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$





2.2 HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2014 /A1:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Ultraviolet-visible spectrophotometer (UV-Vis).

[Reporting Limit: 2.0 mg/kg for Cadmium; 5.0 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10.0 mg/kg for Lead and Mercury.]

Sample No.	Result(s)				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
25	--	/	Negative	--	--
Unit	mg/kg	mg/kg	µg/cm²	mg/kg	mg/kg
RoHS Requirement	100	1000	Negative [#]	1000	1000

Remark:

- "mg/kg" denotes milligram per kilogram
- "µg/cm²" denotes micrograms per square centimeter
- "<" denotes less than
- "Positive" denotes the absorbance value of sample is > 0.13 µg/cm², the sample is considered to be positive for Hexavalent Chromium.
- "Inconclusive" denotes the absorbance value of sample is ≥ 0.10 µg/cm² and ≤ 0.13 µg/cm², the sample is considered to be Inconclusive for Hexavalent Chromium.
- "Negative" denotes the absorbance value of sample is < 0.10 µg/cm², the sample is considered to be negative for Hexavalent Chromium.
- [#] According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1) and Annex II.
- "--" denotes tested by XRF, result is listed in 2.1
- "(c)" denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 7(c)-I "Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound".



2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

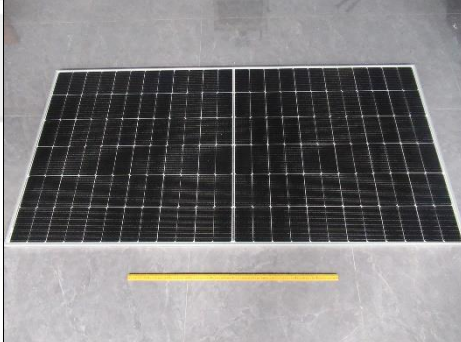
Test Item		Result(s) [mg/kg]	RoHS Requirement [mg/kg]
		16	
PBBs	Monobromobiphenyl	<5	-
	Dibromobiphenyl	<5	-
	Tribromobiphenyl	<5	-
	Tetrabromobiphenyl	<5	-
	Pentabromobiphenyl	<5	-
	Hexabromobiphenyl	<5	-
	Heptabromobiphenyl	<5	-
	Octabromobiphenyl	<5	-
	Nonabromobiphenyl	<5	-
	Decabromobiphenyl	<5	-
	Sum of detected PBBs	<50	1000
PBDEs	Monobromodiphenyl ether	<5	-
	Dibromodiphenyl ether	<5	-
	Tribromodiphenyl ether	<5	-
	Tetrabromodiphenyl ether	<5	-
	Pentabromodiphenyl ether	<5	-
	Hexabromodiphenyl ether	<5	-
	Heptabromodiphenyl ether	<5	-
	Octabromodiphenyl ether	<5	-
	Nonabromodiphenyl ether	<5	-
	Decabromodiphenyl ether	<5	-
	Sum of detected PBDEs	<50	1000

Remark:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than



APPENDIX I: Product Model

Product: PV Modules	
	
DM410M10-54HSW	DM545M10-B72HSW
	
DM575M10T-72HSW	DM570M10T-B72HSW
Additional model: TOPCon series: DMXXXM10T-54HSW, DMXXXM10T-54HBW, DMXXXM10T-54HBB, DMXXXM10T-60HSW, DMXXXM10T-60HBW, DMXXXM10T-60HBB, DMXXXM10T-66HSW, DMXXXM10T-66HBW, DMXXXM10T-66HBB, DMXXXM10T-72HSW, DMXXXM10T-72HBW, DMXXXM10T-72HBB, DMXXXM10T-78HSW, DMXXXM10T-78HBW, DMXXXM10T-78HBB, DMXXXM10T-54HSW-V, DMXXXM10T-54HBW-V, DMXXXM10T-54HBB-V, DMXXXM10T-60HSW-V, DMXXXM10T-60HBW-V, DMXXXM10T-60HBB-V, DMXXXM10T-66HSW-V, DMXXXM10T-66HBW-V, DMXXXM10T-66HBB-V, DMXXXM10T-72HSW-V, DMXXXM10T-72HBW-V, DMXXXM10T-72HBB-V, DMXXXM10T-78HSW-V, DMXXXM10T-78HBW-V, DMXXXM10T-78HBB-V, DMXXXM10T-B54HSW, DMXXXM10T-B54HBW, DMXXXM10T-B54HST, DMXXXM10T-B54HBT, DMXXXM10T-B54HBB, DMXXXM10T-B60HSW, DMXXXM10T-B60HBW, DMXXXM10T-B60HST, DMXXXM10T-B60HBT, DMXXXM10T-B60HBB, DMXXXM10T-B66HSW, DMXXXM10T-B66HBW, DMXXXM10T-B66HST, DMXXXM10T-B66HBT, DMXXXM10T-B66HBB, DMXXXM10T-B72HSW, DMXXXM10T-B72HBW, DMXXXM10T-B72HST, DMXXXM10T-B72HBT, DMXXXM10T-B72HBB,	



DMXXXM10T-B78HSW, DMXXXM10T-B78HBW, DMXXXM10T-B78HST, DMXXXM10T-B78HBT,
DMXXXM10T-B78HBB,
DMXXXM10RT-54HSW, DMXXXM10RT-54HBW, DMXXXM10RT-54HBB, DMXXXM10RT-54HSW-V,
DMXXXM10RT-54HBW-V, DMXXXM10RT-54HBB-V, DMXXXM10RT-B54HSW, DMXXXM10RT-B54HBW,
DMXXXM10RT-B54HST,
DMXXXM10RT-B54HBT, DMXXXM10RT-B54HBB,
DMXXXM10RT-B54HSW-L, DMXXXM10RT-B54HBW-L, DMXXXM10RT-B54HST-L,
DMXXXM10RT-B54HBT-L, DMXXXM10RT-B54HBB-L,
DMXXXG12RT-66HSW, DMXXXG12RT-66HBW, DMXXXG12RT-66HBB,
DMXXXG12RT-66HSW-V, DMXXXG12RT-66HBW-V, DMXXXG12RT-66HBB-V,
DMXXX G12RT-B66HSW, DMXXX G12RT-B66HBW, DMXXX G12RT-B66HST,
DMXXX G12RT-B66HBT, DMXXXG12RT-B66HBB;
DMXXXG12T-66HSW, DMXXXG12T-66HBW, DMXXXG12T-66HBB,
DMXXXG12T-66HSW-V, DMXXXG12T-66HBW-V, DMXXXG12T-66HBB-V,
DMXXX G12T-B66HSW, DMXXX G12T-B66HBW, DMXXX G12T-B66HST,
DMXXX G12T-B66HBT, DMXXXG12T-B66HBB;
DMXXXG12T-60HSW, DMXXXG12T-60HBW, DMXXXG12T-60HBB,
DMXXXG12T-60HSW-V, DMXXXG12T-60HBW-V, DMXXXG12T-60HBB-V,
DMXXX G12T-B60HSW, DMXXX G12T-B60HBW, DMXXX G12T-B60HST,
DMXXX G12T-B60HBT, DMXXXG12T-B60HBB;
PERC seires:
DMXXXM6-60HSW, DMXXXM6-60HBW, DMXXXM6-60HBB,
DMXXXM6-72HSW, DMXXXM6-72HBW, DMXXXM6-72HBB,
DMXXXM10-54HSW, DMXXXM10-54HBW, DMXXXM10-54HBB,
DMXXXM10-60HSW, DMXXXM10-60HBW, DMXXXM10-60HBB,
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DMXXXM10-72HSW, DMXXXM10-72HBW, DMXXXM10-72HBB,
DMXXXM10-78HSW, DMXXXM10-78HBW, DMXXXM10-78HBB,
DMXXXM6-60HSW-V, DMXXXM6-60HBW-V, DMXXXM6-60HBB-V,
DMXXXM6-72HSW-V, DMXXXM6-72HBW-V, DMXXXM6-72HBB-V,
DMXXXM10-54HSW-V, DMXXXM10-54HBW-V, DMXXXM10-54HBB-V,
DMXXXM10-60HSW-V, DMXXXM10-60HBW-V, DMXXXM10-60HBB-V,
DMXXXM10-66HSW-V, DMXXXM10-66HBW-V, DMXXXM10-66HBB-V, DMXXXM10-72HSW-V, DMXXXM10-
72HBW-V, DMXXXM10-72HBB-V, DMXXXM10-78HSW-V, DMXXXM10-78HBW-V, DMXXXM10-78HBB-V,
DMXXXM6-B60HSW, DMXXXM6-B60HBW, DMXXXM6-B60HST,
DMXXXM6-B60HBT, DMXXXM6-B60HBB,
DMXXXM6-B72HSW, DMXXXM6-B72HBW, DMXXXM6-B72HST,
DMXXXM6-B72HBT, DMXXXM6-B72HBB,



DMXXXM10-B54HSW, DMXXXM10-B54HBW, DMXXXM10-B54HST, DMXXXM10-B54HBT, DMXXXM10-B54HBB,
DMXXXM10-B60HSW, DMXXXM10-B60HBW, DMXXXM10-B60HST, DMXXXM10-B60HBT, DMXXXM10-B60HBB,
DMXXXM10-B66HSW, DMXXXM10-B66HBW, DMXXXM10-B66HST, DMXXXM10-B66HBT, DMXXXM10-B66HBB,
DMXXXM10-B72HSW, DMXXXM10-B72HBW, DMXXXM10-B72HST, DMXXXM10-B72HBT, DMXXXM10-B72HBB,
DMXXXM10-B78HSW, DMXXXM10-B78HBW, DMXXXM10-B78HST, DMXXXM10-B78HBT, DMXXXM10-B78HBB;
Greenhouse series which are with the model name start with "GH"
GH series other type:
GHXXXG1-60SW-C, GHXXXM6-B54HST-C, GHXXXM6-B54HSW-C, GHXXXM6-B66HST-C, GHXXXM6-B66HSW-C, GHXXXM6-B72HST-C, GHXXXM6-B72HSW-C, GHXXXM10-B48HST-C, GHXXXM10-B66HST-C, GHXXXM10-B66HSW-C, GHXXXM10-B72HST-C, GHXXXM10-B72HSW-C, GHXXXM10T-B48HST-C, GHXXXM10T-B66HST-C, GHXXXM10T-B66HSW-C, GHXXXM10T-B72HST-C, GHXXXM10T-B72HSW-C
XXX means module nameplate power.

Remark:

1. The report covers material testing on specified samples.
2. The tested materials covered by the report were declared by the manufacturer to be used on the additional model.

--END OF REPORT--