# TÜV Rheinland Solar Energy

### Report

### **Factory Inspection**

as part of the photovoltaic module qualification according to IEC 61215 / IEC 61730 / ANSI/UL 61730 and to cover UK MCS 010 requirements

Report no.: 15085694.009

September 2022

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Requirements of the CIG 023 report are fully covered by this report.

Inspector:

15085694.009

Shulong Yang



# Inspection of photovoltaic (PV) module manufacturing site

	Initial inspection		
$\boxtimes$	Follow-up inspection		
from: 06/09/202		06/09/2022	
Date and time of inspection:			8:30 a.m.

ate and time of inspection:	from:	06/09/2022	until:	06/09/2022
		8:30 a.m.		17:30 p.m.

### Participants of the opening meeting:

Name	Company	Position
Xu Wengui	LONGi Solar Technology (Zhejiang) Co., Ltd.	SQE manager
Chen Yanting	LONGi Solar Technology (Zhejiang) Co., Ltd.	Quality engineer
Gao Bo	LONGi Solar Technology (Zhejiang) Co., Ltd.	SQE engineer
Xu Xudong	LONGi Solar Technology (Zhejiang) Co., Ltd.	Measuring engineer
Zheng Wei	LONGi Solar Technology (Zhejiang) Co., Ltd.	Equipment engineer
Shulong Yang	TÜV Rheinland	Inspector

### Participants of the closing meeting:

Name	Company	Position
Xu Wengui	LONGi Solar Technology (Zhejiang) Co., Ltd.	SQE manager
Chen Yanting	LONGi Solar Technology (Zhejiang) Co., Ltd.	Quality engineer
Gao Bo	LONGi Solar Technology (Zhejiang) Co., Ltd.	SQE engineer
Xu Xudong	LONGi Solar Technology (Zhejiang) Co., Ltd.	Measuring engineer
Zheng Wei	LONGi Solar Technology (Zhejiang) Co., Ltd.	Equipment engineer
Shulong Yang	TÜV Rheinland	Inspector

### Company details:

Name/Description:	LONGi Green Energy Technology Co., Ltd.
Street:	No. 388, Middle Hangtian Road, Chang'an District
Postcode/City:	Xi'an, Shaanxi
Country:	China
Phone:	+86 29 82219988
E-mail:	module@longi-silicon.com
Web address:	www.longigroup.com

### Contact details Quality manager:

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Department:	Quality Department
Phone:	+86 0570-875555-8032
E-mail:	chenwei77@longi.com

### Contact details Inspector:

Name:	Shulong Yang
Department:	TÜV Rheinland, Business Field Solar Energy
Phone:	+86 21 6081 1806
E-mail:	Shulong.yang@tuv.com

Inspector:

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#### Production at several sites:

🛛 Yes 🗌 No

### Address of the inspected site:

Name/Description:	LONGi Solar Technology (Zhejiang) Co., Ltd.
Street:	No. 2 Bailing Middle Road, Donggang Development Zone
Postcode/City:	324000 / Quzhou City, Zhejiang Province
Country:	P. R. China
Type of production:	Crystalline silicon PV module production

#### Additional manufacturing sites:

Name/Description:	LONGi Solar Technology (Taizhou) Co., Ltd.
Street:	No. 268 Xingtai South Road, Hailing District
Postcode/City:	225314, Taizhou, Jiangsu
Country:	P. R. China
Type of production:	Crystalline PV module production

Name/Description:	Vina Solar Technology Co., Ltd.
Street:	Work shop E12, Lot CN-03, Van Trung Industry Zone, Viet Yen District
Postcode/City:	Bac Giang Province
Country:	Vietnam
Type of production:	Crystalline PV module production;

Name/Description:	LONGi Solar Technology (Chuzhou) Co., Ltd.
Street:	No. 19 Huaian Road, Chuzhou City, Anhui Province, P. R. China.
Postcode/City:	239000 / Chuzhou
Country:	P.R. China
Type of production:	Crystalline silicon PV module production

Name/Description:	LONGi Solar Technology (Jiangsu) Co., Ltd.
Street:	No.288 Yaojia Road, Jiulong Town
Postcode/City:	225314, Taizhou, Jiangsu
Country:	P. R. China
Type of production:	Crystalline PV module production

Name/Description:	LONGi Solar Technology Co., Ltd. (Xi'an Module Factory)
Street	No. 8369 Shangyuan Road, Caotan Ecological Industrial Park, Economic and
Street.	Technological Development Zone
Postcode/City:	710018 / Xi'an
Country:	P.R. China
Type of production:	Crystalline PV module production

Name/Description:	LONGi Solar Technology (Jiaxing) Co., Ltd.		
Street:	Room 248, building 6, photovoltaic science and innovation park, 1288 kanghe road, xiuzhou district		
Postcode/City:	Jiaxing, Zhejiang		
Country:	P.R.China		
Type of production:	Crystalline silicon PV module production		
Name/Description:	LONGi Solar Technology (Xi'an) Co., Ltd		
Street:	Zaoxin Road, Weiqu District, Xi'an City, Shaanxi Province		
Postcode/City:	- / Xi'an		
Country:	P.R. China		
Type of production:	Crystalline PV module production;		

Inspection report no .:			
Inspector:	Shulong Yang Precisely Right.		
Name/Description:	LONGi Solar Technology (Datong) Co., Ltd.		
Street:	North district of Economic and Technological Development Zones Enterprise Incu- bation Service Center, Huavuan Tuen Township, Xinrong district		
Postcode/City:	037000 / Datong		
Country:	P.R. China		
Type of production:	Crystalline silicon PV module production		
Name/Description:	LONGi Solar Technology (Qinghai) Co., Ltd.		
Street:	No.1-53 Gabatai Community of Xitai Village, Gonghe County		
Postcode/City:	813000/Qinghai		
Country:	P.R. China		
Type of production:	Crystalline silicon PV module production		
Name/Description:	LONGi Solar Technology ( Xianyang ) Co., Ltd.		
Street:	No.120 Wenxing West Road, Qindu District		
Postcode/City:	712010 / Xianvang City, Shaanxi Province		
Country:	P.R. China		

Crystalline PV module production

A

Type of production:

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Inspector:



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### 1 Ambit of the inspection

 All (to be) certified module type families the inspection refers to at the site inspected shall be listed.

 See certificate no. PV 50421496 Page 1, 3-15 (IEC 61215 / IEC 61730) and PV 50426376 Page 1-16 (IEC 61215 / IEC 61730) and COnstructional Data Form (CDF) no. CDF 50155409 040 and CDF 50212844 041 as reference.

 Total 3 workshops, work shop 1 was inspected during the day of inspection, the module type LR4-72HPH-445M with 144pcs mono c-Si cut solar cells were being produced.

 Co licences:

 Company name
 Licence no.

 /
 /

 /
 /

### 2 Inspected facility areas

 $\boxtimes$  Production line, production of PV module type ...

- $\boxtimes$  Completely running
- □ Partly running
- Not running
- $\boxtimes$  Warehouse
- $\boxtimes$  Quality / research lab
- $\Box$  Other

Inspector:

### 3 Production in the considered period

Number of production lines: Number of shifts: Number of production staff per shift:		<ul><li>115 for each workshop (3 workshops in total)</li><li>9 lines (3 lines for each workshop)</li><li>2</li></ul>		
Production times		⊠ All year □ Seasonal: from to		
Holiday shut down		⊠ No □ Yes, from … to …		
Production capacity: 3500 MW <sub>P</sub> per year				
Serial number:	from	LRP90300210900700321	until	LRP904000220900110292
Period: from		17/09/2021	until	06/09/2022
Explanation for serial number coding:				
See annex 1.3 Serial No. coding rule for details.				
Example for traceability supplied by a bill of materials for one module:				
Serial number: LRP904000220900110292 Bill of material refer to can be checked by series number.				



### 4 Components and materials for the production

The certification according to the respective standards which are the scope of this audit determines the usable materials for the production. All changes in the module design and used materials must be declared to TÜV Rheinland. Depending on the type of change, an extension of the respective certification to the new module type may require the repetition of certain tests.

In this section, the conformity of the current module production with the certified materials and material combinations will be verified by means of random sampling of delivery notes or invoices during the past period and by inspection of current inventory.

In the following, each module component is represented by one item. If different type specifications or materials are used, sub-items shall be used.

### 4.1 Solar cell

Type/Specification	Manufacturer
Type designation: M2ENB	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 156.75 x 31.35 / 157.25 x 31.45	Name and location of supplier (if applicable):
Thickness [µm ± tolerance]:180±18	
□ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer	
Type designation: M2ENB	Name and location of manufacturer:	
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd	
Dimensions [mm x mm]: 156 .75x 26.13	Name and location of supplier (if applicable):	
Thickness [µm ± tolerance]: 200±20		
□ Validated by up-to-date invoice/delivery note		
$\Box$ Not purchased since last inspection		
Supplementary information:		

Type/Specification	Manufacturer
Type designation: M2BNB	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 156 .75x 26.13 / 157.25 x 26.21	Name and location of supplier (if applicable):
Thickness [µm $\pm$ tolerance]: 200±20 / 180±18	

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□ Validated by up-to-date invoice/delivery note

 $\hfill\square$  Not purchased since last inspection

Supplementary information:

Type/Specification	Manufacturer	
Type designation: M2A5B	Name and location of manufacturer:	
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd	
Dimensions [mm x mm]: 156.75 (±0.25) x 156.75 (±0.25)	Name and location of supplier (if applicable):	
Thickness [ $\mu$ m ± tolerance]:200±20		
□ Validated by up-to-date invoice/delivery note		
$\Box$ Not purchased since last inspection		
Supplementary information:		

Type/Specification	Manufacturer	
Type designation: M2E5B / M2B5B / M2B6B	Name and location of manufacturer:	
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd	
Dimensions [mm x mm]: 156.75 x 156.75 mm /	Name and location of supplier (if applicable):	
156.75 x 78.375 mm		
Thickness [µm $\pm$ tolerance]:200 $\pm$ 20		
□ Validated by up-to-date invoice/delivery note		
$\Box$ Not purchased since last inspection		
Supplementary information:		

Type/Specification	Manufacturer		
Type designation: M2E12B	Name and location of manufacturer:		
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd		
Dimensions [mm x mm]: 156.75 x 156.75 mm	Name and location of supplier (if applicable):		
Thickness [µm $\pm$ tolerance]:200 $\pm$ 20			
□ Validated by up-to-date invoice/delivery note			
Not purchased since last inspection			
Supplementary information:			

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Type/Specification

Manufacturer

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Type designation: M2E6B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 156.75 x 156.75 mm / 156.75 x 78.375 mm	Name and location of supplier (if applicable):
Thickness [µm $\pm$ tolerance]:200 $\pm$ 20	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M6B6B / M6E6B / M6E9B / M6C9B / M6B9B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 166 x 83 Thickness [µm ± tolerance]: 200±20 / 180±18	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> <li>Supplementary information:</li> </ul>	

Type/Specification	Manufacturer
Type designation: M10B9B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: $182(\pm 2) \times 182(\pm 2) / 182(\pm 2) \times 91(\pm 2) / 182(\pm 2) \times 91.875(\pm 2) / 182(\pm 2) \times 96.75(\pm 2) / 182(\pm 2) \times 87.0(\pm 2)$ Thickness [µm ± tolerance]: $200\pm 20 / 180\pm 18$	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
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Type designation: M10D9B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 182(±2) x 182(±2) / 182(±2) x 91(±2) / 182(±2) x 91.875(±2)	Name and location of supplier (if applicable):
Thickness [ $\mu$ m ± tolerance]: 200±20	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M10B18B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 182(±2) x 182(±2) / 182(±2) x 91(±2) / 182(±2) x 91.875(±2)	Name and location of supplier (if applicable):
Thickness [µm $\pm$ tolerance]: 200±20 / 180±18 / 160±16	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M10N18B / M10N18B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 182(±2) x 182(±2) / 182(±2) x 91(±2)	Name and location of supplier (if applicable):
Thickness [ $\mu$ m ± tolerance]: 180±18 / 160±16	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
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Type/Specification	Manufacturer
Type designation: M6P0B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	LONGi Solar Technology Co., Ltd
Dimensions [mm x mm]: 166x 83 mm	Name and location of supplier (if applicable):
Thickness [ $\mu$ m ± tolerance]: 175±17.5	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M6E6B / M6B6B	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	Vina Cell technology Co., Ltd.
Dimensions [mm x mm]: 166x 83 mm	Name and location of supplier (if applicable):
Thickness [ $\mu$ m ± tolerance]: 200±20	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: VC6M5-P5 / VC6M5-P6 / VC6M5- P7 Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75 (±0.25) x 156.75 (±0.25) Thickness [µm ± tolerance]: 200	Name and location of manufacturer: Vina Cell technology Co., Ltd. Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> <li>Supplementary information:</li> </ul>	

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Type/Specification	Manufacturer
Type designation: M6B6B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 166x 83 mm Thickness [µm ± tolerance]: 200±20	Name and location of manufacturer: Jiangsu Runergy YUEDA PV TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> <li>Supplementary information:</li> </ul>	

Type/Specification	Manufacturer
Type designation: LES65TN	Name and location of manufacturer:
Technology (mono/poly Si, etc.): Mono	TSEC Corporation
Dimensions [mm x mm]: 156.75 (±0.25) x 156.75 (±0.25)	Name and location of supplier (if applicable):
Thickness [µm $\pm$ tolerance]: 200 $\pm$ 20	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

# 4.2 Front cover

Type/Specification	Manufacturer
Type designation: Coated Tempered glass	Name and location of manufacturer:
Material (glass, etc.): Glass	Xinyi Solar (Hongkong) Limited
Thickness [mm]: 2.8 / 3.2 / 4.0 mm	Changzhou Almaden Co., Ltd.
Kind of surface treatment: N/A	Fujian Xinfuxing Glass Co., Ltd.
Tempering method (if tempered glass): n/a	Shaanxi Topray Solar Co., Ltd
	Flat Solar Glass Group Co., Ltd
	China Building Materials (HeFei) New Energy Co., Ltd.
	China Building Materials (Yixing) New Energy Co., Ltd.
	CHINA CSG HOLDING
	Shanxi RiShengDa New Energy Group Co., Ltd
	HENAN ANCAI HI-TECH CO.,LTD
	Anhui Shengshi New Energy Materials Technology

Inspector:

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	Co., Ltd
	Shenzhen New Kibing Technology Co., Ltd
	Ningxia Jinjing Technology Co., LTD
	IRCO GROUP ELECTRONICS CO., LTD.
	SUOLATE SPECIAL GLASS (JIANGSU) CO., LTD.
	LONGi Green Energy Technology Co., Ltd
	Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	

Type/Specification	Manufacturer
Type designation: Coated Tempered glass	Name and location of manufacturer:
Material (glass, etc.): Glass	xinyi Solar (Hongkong) Limited
Thickness [mm]: 2.5±0.2 (mm)	CHINA CSG HOLDING
Thickness:2.0±0.2 (mm) for framed module	SUOLATE SPECIAL GLASS (JIANGSU) CO., LTD
Kind of surface treatment: N/A	CNBM (YIXING) NEW ENERGY RESOURCES CO., LTD
Tempering method (if tempered glass): n/a	CNBM (Hefei) New Energy Resources Co.,Ltd
	Changzhou Almaden Co., Ltd.
	Changzhou Huamei Photovoltaic New Materials Co.,Ltd.
	Flat Solar Glass Group Co., Ltd
	Nangjing solglass Science & Technology Co., Ltd
	Shenzhen New Kibing Technology Co., Ltd
	Shaanxi Topray Solar Co., Ltd
	CAI HONG GROUP NEW ENERGY COMPANY LIM- ITED
	ShanXi RiShengDa New Material Technology Co.,Ltd
	Changli glass Honghu Co., Ltd
	HENAN ANCAI HI-TECH CO.,LTD
	Anhui Shengshi New Energy Materials Technology Co.,Ltd.
	Ningxia Jinjing Technology Co., LTD
	JIANGSU XIUQIANG GLASSWORK CO., LTD.
	LONGi Green Energy Technology Co., Ltd
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	

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Supplementary information:

# 4.3 Backside cover

Type/Specification	Manufacturer
Type designation: Crown BF-TM4 (1500V)	Name and location of manufacturer:
Thickness [mm]: 350 µm	Crown Advanced Material Co., Ltd
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF / PET / PVDF	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: Cynagard 2X5A(R)	Name and location of manufacturer:
Thickness [mm]: 320 µm	Cybrid Technologies Inc.
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVDF / PET / Preimer coating	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: ZTT-KPO350	Name and location of manufacturer:
Thickness [mm]: 350 µm	ZhongTian Photovoltaic Materials Co., Ltd.
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVDF / PET / PO	
Max. system voltage [V]: 1500	
⊠ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

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Type/Specification	Manufacturer
Type designation: VTPE1RWHV-F	Name and location of manufacturer:
Thickness [mm]: 331 µm	Taiflex Scientific Co.,Ltd
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF / PET / Fluororesin	
Max. system voltage [V]: 1500	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: KPP2	Name and location of manufacturer:
Thickness [mm]: 343 µm	Lucky Film Co., Ltd
<u>If non-glass: N/A</u>	Name and location of supplier (if applicable):
Backsheet structure (layers): PO / PET / PVDF	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: ZTT-TPO	Name and location of manufacturer:
Thickness [mm]: 355 µm	ZhongTian Photovoltaic Materias Co., Ltd.
<u>If non-glass: N/A</u>	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF 25 $\mu m/PET$ 250 $\mu m/$ POE:60 $\mu m,$	
Max. system voltage [V]: 1500	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: TPP1	Name and location of manufacturer:
Thickness [mm]: 328 μm	Lucky Film Co.,Ltd.
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF 25 $\mu m$ / PET 230 $\mu m$ / LK-PO 60 $\mu m$	
Max. system voltage [V]: 1500	

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 $\boxtimes$  Validated by up-to-date invoice/delivery note

 $\hfill\square$  Not purchased since last inspection

Type/Specification	Manufacturer
Type designation: TFB30 (plus)	Name and location of manufacturer:
Thickness [mm]: 320 µm	Jolywood (Suzhou) Sunwatt Co.,Ltd.
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF 25 $\mu\text{m}/\text{PET}$ 275 $\mu\text{m}/$ Fluorine resin 10 $\mu\text{m}$	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: ETT15S-1	Name and location of manufacturer:
Thickness [mm]: 331 µm	Ningbo Exciton New Energy Co Ltd
If non-glass: N/A	Name and location of supplier (if applicable):
Backsheet structure (layers): PVF 25 $\mu\text{m}/\text{PET}$ 230 $\mu\text{m}/$ PO 60 $\mu\text{m}$	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: BEC-306D (white or black)	Name and location of manufacturer:
Thickness [mm]: 320 μm	Suzhou First PV Material Co., Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers): PVF 25 μm / PET 275 μm / Fluoro resin 10 μm Max. system voltage [V]: 1500	Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Inspector:

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Type/Specification	Manufacturer
Type designation: KFB30 (plus)	Name and location of manufacturer:
Thickness [mm]: 315 µm	Jolywood (Suzhou) Sunwatt Co.,Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers): PVDF 20 μm / PET 275 μm / Fluoro resin 10 μm Max. system voltage [V]: 1500	Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Manufacturer
Name and location of manufacturer:
LONGi Green Energy Technology Co.,Ltd.
Name and location of supplier (if applicable):

Type/Specification	Manufacturer
Type designation: LRTxyz03 (x=O,y=A,z=B)	Name and location of manufacturer:
Thickness [mm]: 331 µm	LONGi Green Energy Technology Co.,Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers):	Name and location of supplier (if applicable):
PVF 25 μm/PET 230 μm/ PO 60 μm	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

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Inspector:

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Type/Specification	Manufacturer
Type designation: LRTxyz02 (x=C,y=A,z=B)	Name and location of manufacturer:
Thickness [mm]: 320 µm	LONGi Green Energy Technology Co.,Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers):	Name and location of supplier (if applicable):
PVF 25 $\mu m/PET$ 275 $\mu m/$ Fluorine resin 10 $\mu m$	
Max. system voltage [V]: 1500	
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LRKxyz02	Name and location of manufacturer:
(x=C, y=A, z=B)	LONGi Green Energy Technology Co.,Ltd.
Thickness [mm]: 315 μm	Name and location of supplier (if applicable):
If non-glass: N/A	
Backsheet structure (layers):	
PVDF 20 μm / PET 275 μm / Fluoro resin 10 μm	
Max. system voltage [V]: 1500	
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LRTxyz04	Name and location of manufacturer:
(x=O, y=A, z=B)	LONGi Green Energy Technology Co.,Ltd.
Thickness [mm]: 328 µm	Name and location of supplier (if applicable):
<u>If non-glass: N/A</u> Backsheet structure (layers):	
PVF 25 μm / PET 230 μm / LK-PO 60 μm,	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

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Type/Specification	Manufacturer
Type designation: NewCo-1500E	Name and location of manufacturer:
Thickness [mm]: 350 µm	Zhejiang Sinopoly Materials Co., Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers): Modified PO 325 μm / Modified PE 25 μm	Name and location of supplier (if applicable):
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LRCOYZ	Name and location of manufacturer:
Thickness [mm]: 350 μm	LONGi Green Energy Technology Co.,Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers):	Name and location of supplier (if applicable):
Modified PO 325 μm / Modified PE 25 μm	
Max. system voltage [V]: 1500	
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: KPCw1	Name and location of manufacturer:
Thickness [mm]: 316.5 μm	Lucky Film Co.,Ltd.
<u>If non-glass: N/A</u> Backsheet structure (layers):	Name and location of supplier (if applicable):
PVDF 20 μm / PET 285 μm / Fluoride 5 μm	
Max. system voltage [V]: 1500	
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

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Type/Specification	Manufacturer
Type designation: LRTxyz01	Name and location of manufacturer:
(x=O, y=A, z=B)	LONGi Green Energy Technology Co.,Ltd.Name and
Thickness [mm]: 350 µm	location of supplier (if applicable):
If non-glass: N/A	
Backsheet structure (layers):	
PVF / PET / PVDF	
Max. system voltage [V]: 1500	
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: Coated Tempered glass	Name and location of manufacturer:
Material (glass, etc.): Glass	Xinyi Solar (Hongkong) Limited
Thickness [mm]: 2.5±0.2 (mm)	CHINA CSG HOLDING
Thickness:2.0±0.2 (mm) for framed module	SUOLATE SPECIAL GLASS (JIANGSU) CO., LTD
Kind of surface treatment: N/A	Changzhou Almaden Co., Ltd.
Tempering method (if tempered glass): n/a	Changzhou Huamei Photovoltaic New Materials Co.,Ltd.
	CNBM (YIXING) NEW ENERGY RESOURCES CO.,LTD
	CNBM (Hefei) NEW ENERGY RESOURCES CO.,LTD
	Flat Solar Glass Group Co., Ltd
	Nangjing solglass Science & Technology Co., Ltd
	Shenzhen New Kibing Technology Co., Ltd
	Shaanxi Topray Solar Co., Ltd
	CAI HONG GROUP NEW ENERGY COMPANY LIM- ITED
	Shanxi RiShengDa New Material Technology Co.,Ltd
	Changli glass Honghu Co., Ltd
	HENAN ANCAI HI-TECH CO.,LTD
	Anhui Shengshi New Energy Materials Technology Co.,Ltd.
	Ningxia Jinjing Technology Co., LTD
	JIANGSU XIUQIANG GLASSWORK CO., LTD.
	LONGi Green Energy Technology Co., Ltd
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	

Inspector:

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 $\Box$  Not purchased since last inspection

Supplementary information:

### 4.4 Interconnection circuit

### 4.4.1 Cell connector

Type/Specification	Manufacturer
Article/specification no.:	Name and location of manufacturer:
0.27x1.0 mm	Shaanxi Guangde Electronic Materials Co., Ltd.
0.25 × 1.0	Suzhou Yourbest New-type Materials Co., Ltd.
0.25 x 0.8 mm	Jiangsu Wetown Copper Co.,Ltd.
0.4 mm (Diameter)	Xi'an Telison New Materials Co.,Ltd.
0.25 x 0.6 mm	TONYSHARE(Suzhou) Electronic Material Technolo-
0.25 x 2 , 0.12 x 8 mm for shingling module	
0.43/90,triangular	ZHEJIANG JINGYUAN PHOTOELECTRIC TECH-
0.35 mm (Diameter)	Zhejiang Trumhe New Materials Co., Ltd
0.18 x 0.6mm	HUIZHOU DEJINCHANG OPTOELECTRONICS
0.3 mm (Diameter)	TECHNOLOGY Co.,LTD
0.23 mm (Diameter)	LONGi Green Energy Technology Co., Ltd
0.25 mm (Diameter)	Name and location of supplier (if applicable):
0.35 mm (Diameter)	
Thickness [mm $\pm$ tolerance]: N/A	
Width [mm $\pm$ tolerance]: N/A	
Composition of alloy: 63%Sn/37%Pb	
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

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# 4.4.2 String connector

Type/Specification	Manufacturer
Article/specification no.:	Name and location of manufacturer:
0.4 x 6.0 mm	Shaanxi Guangde Electronic Materials Co., Ltd.
0.3 x 6.0 mm	Suzhou Yourbest New-type Materials Co., Ltd.
0.25 x 4.0 mm	Jiangsu Wetown Copper Co.,Ltd.
0.3 x 7.0 mm	Xi'an Telison New Materials Co.,Ltd.
0.3 x 4.0 mm	TONYSHARE(Suzhou) Electronic Material Technolo-
0.25 x 5.0 mm	
Thickness [mm $\pm$ tolerance]: N/A	NOLOGY CO.,LTD
Width [mm ± tolerance]: N/A	Zhejiang Trumhe New Materials Co., Ltd
Composition of alloy: 63%Sn/37%Pb	HUIZHOU DEJINCHANG OPTOELECTRONICS TECHNOLOGY Co.,LTD
	LONGi Green Energy Technology Co., Ltd
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Article/specification no.:	Name and location of manufacturer:
0.25x2.0 mm (between cell strings)	Suzhou Yourbest New-type Materials Co., Ltd
0.12x8.0 mm (beteen cell string and string connector)	Name and location of supplier (if applicable):
0.25x4.0 mm (between string interconnector)	
Thickness [mm $\pm$ tolerance]: N/A	
Width [mm $\pm$ tolerance]: N/A	
Composition of alloy: 63%Sn/37%Pb	
□ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
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# 4.4.3 Soldering material

Type/Specification	Manufacturer
Conductive adhesive:	Name and location of manufacturer:
	Darbond Technology co.,ltd
туре. Бт-30	Name and location of supplier (if applicable):
Conductive adhesive:	Name and location of manufacturer:
TYPE: LOCTITE ADLESTIK CA 2556HE	Henkel (China) Investment Co., Ltd.
	Name and location of supplier (if applicable):
Conductive adhesive:	Name and location of manufacturer:
	Zhejiang XinYu Advanced Material Co., Ltd
Type: SE-200X	Name and location of supplier (if applicable):
Conductive adhesive:	Name and location of manufacturer:
	Heraeus Materials Technology Shanghai Ltd.
Type: Hecaro M SC10	Name and location of supplier (if applicable):
Connector	Name and location of manufacturer:
Type: 0.25x2mm (between cell strings)	Suzhou YourBest New-type Materials Co. Ltd
0.12x8mm (between cell string and string connector)	Name and location of supplier (if applicable):
Soldering of busbars:	Name and location of manufacturer:
Fluxing agent/paste: SF56	Singapore Asahi Chemical and Solder Industries Pte
	Asahi Solder Technology (Wuxi) Co. Ltd .
	Name and location of supplier (if applicable):
Soldering of busbars:	Name and location of manufacturer:
Eluxing agent/paste: SE105	ASAHI SOLDER TECHNOLOGY (WUXI)CO.,LTD.
	Name and location of supplier (if applicable):
Soldering of busbars:	
5	Name and location of manufacturer:
Fluxing agent/paste: 952-S	Neme and leastion of experies (if emplicable)
Soldering of busbars:	Name and location of manufacturer:
Fluxing agent/paste: WS-867	Zhengzhou Wise PV Technology Co.,Ltd.
	Name and location of supplier (if applicable):

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Soldering of busbars:	Name and location of manufacturer:
Eluving agent/paste: TEHE9200	Kester Components Pte Ltd.
Thurng agen/paste. IT in 9200	Name and location of supplier (if applicable):
Soldering of busbars:	Nome and leastion of manufacturary
Fluxing agent/paste: 8000T20	ShenZhen Embrace Glory Electronic Material Co.,Ltd
	HuiZhou Embrace Glory New Material Technology Co. LTD
	Name and location of supplier (if applicable):
Soldering of busbars:	Name and location of manufacturer:
Eluving agent/pasto: W/TO B//112E	Shenzhen Vital New Material Company Limited.
Fluxing agen/paste. WTO-FVTT2F	Name and location of supplier (if applicable):
Connection of junction box terminals:	
	Name and location of manufacturer:
Soldering tin:	Name and location of supplier (if applicable):
Fluxing agent/paste:	
Flux:	1
⊠ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Tin:	
□ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

# 4.4.4 Cell fixing tape

Type/Specification	Manufacturer
Type designation: UV-1 / UV-T	Name and location of manufacturer:
Dimensions [mm]:	3M China Ltd.
	Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
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Type/Specification	Manufacturer
Type designation: FF-3665	Name and location of manufacturer:
Dimensions [mm]:	Cybrid Technologies Inc.
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: DT-9609	Name and location of manufacturer:
Dimensions [mm]:	Darbond Technology co.,Itd
	Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: 9966	Name and location of manufacturer:
Dimensions [mm]:	Shanghai Hyperion Adhesive Material Co.,ltd
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: BCP-1 (B) / BCP-1W	Name and location of manufacturer:
Dimensions [mm]:	LONGi Green Energy Technology Co., Ltd.
	Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

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Type/Specification	Manufacturer
Type designation: FF-3665(T75)	Name and location of manufacturer:
Dimensions [mm]:	Cybrid Technologies Inc.
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

### 4.5 Electrical connection

# 4.5.1 Junction box, bypass diode, cable, connector

Junction box type/Specification	Manufacturer
Type designation: PV-ZH011B-5	Name and location of manufacturer:
Nominal current [A]: N/A	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.
Nominal voltage [V]: 1500	Name and location of supplier (if applicable):
Max. temperature rating [°C]: 110	
Certificate no.: R 50353585	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Junction box type/Specification	Manufacturer
Type designation: PV-ZH011-6B	Name and location of manufacturer:
Nominal current [A]: N/A	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.
Nominal voltage [V]: 1500	Name and location of supplier (if applicable):
Max. temperature rating [°C]: 110	
Certificate no.: R 50345461	
□ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

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Junction box type/Specification	Manufacturer
Type designation: TL-BOX026-15enpxyzF	Name and location of manufacturer:
Nominal current [A]: N/A	Jiangsu Tonglin Electric Co., Ltd.
Nominal voltage [V]: 1500	Name and location of supplier (if applicable):
Max. temperature rating [°C]: 110	
Certificate no.: R 50330137	
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Junction box type/Specification	Manufacturer
Type designation: Z8S-abcd	Name and location of manufacturer:
Nominal current [A]: N/A	Dongguan Zerun Electronic Technology Co., Ltd.
Nominal voltage [V]: 1500	Name and location of supplier (if applicable):
Max. temperature rating [°C]: 125	
Certificate no.: R 50424007	
□ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

Junction box type/Specification	Manufacturer
Type designation:	Name and location of manufacturer:
PV-LR02A / PV-LR02B / PV-LR03A / PV-LR03B /	LONGi Green Energy Technology Co., Ltd.
PV-LR04A / PV-LR04B	Name and location of supplier (if applicable):
Nominal current [A]: N/A	
Nominal voltage [V]: 1500	
Max. temperature rating [°C]: 110	
Certificate no.: R 50415848	
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Junction box type/Specification	Manufacturer
Type designation: PV-LR07A	Name and location of manufacturer:
Nominal current [A]: N/A	LONGi Green Energy Technology Co., Ltd.
Nominal voltage [V]: 1500	Name and location of supplier (if applicable):
Max. temperature rating [°C]: 110	
Certificate no.: R 50523266	

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Supplementary information:

Junction box type/Specification	Manufacturer
Type designation: TL-BOX029G-1xyzF; TL- BOX029G-2xF; TL-BOX029G-3xyzF Nominal current [A]: N/A Nominal voltage [V]: 1500 Max. temperature rating [°C]: 125	Name and location of manufacturer: Jiangsu Tonglin Electric Co., Ltd. Name and location of supplier (if applicable):
Certificate no.: R 50369864	
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	·
Supplementary information:	

# 4.6 Cell encapsulation

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: F406PS Thickness [mm]: <u>0.50 / 0.45</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: F806PS Thickness [mm]: 0.55 / 0.50 Colour: <u>N/A</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

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Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: SV-15296 Thickness [mm]: <u>0.55 / 0.50</u>	Name and location of manufacturer: Changzhou Sveck Photovoltaic New Material Co., Ltd. Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: SV-15297 Thickness [mm]: 0.55 / 0.50 Colour: <u>N/A</u>	Name and location of manufacturer: Changzhou Sveck Photovoltaic New Material Co., Ltd. Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: EVA9110T Thickness [mm]: <u>0.55 / 0.50</u>	Name and location of manufacturer: 3M China Ltd. Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: EVA9120B Thickness [mm]: 0.55 / 0.50 Colour: <u>N/A</u>	Name and location of manufacturer: 3M China Ltd. Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: F406PS Thickness [mm]: 0.35 - 0.50	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: F806W Thickness [mm]: 0.35 - 0.70 Colour: <u>N/A</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):

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Supplementary information:

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: S201MT1 Thickness [mm]: 0.35 - 0.85	Name and location of manufacturer: HIUV Material Technology Co.,Ltd. Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: S201W Thickness [mm]: 0.35 - 0.85 Colour: <u>N/A</u>	Name and location of manufacturer: HIUV Material Technology Co.,Ltd. Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	•
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: SV-15296 Thickness [mm]: 0.35 - 0.85	Name and location of manufacturer: Changzhou Sveck Photovoltaic New Material Co., Ltd. Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: SV-15297W Thickness [mm]: 0.35 - 0.85 Colour: <u>N/A</u>	Name and location of manufacturer: Changzhou Sveck Photovoltaic New Material Co., Ltd. Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	

Type/Specification	Manufacturer
Frontside of cells	Name and location of manufacturer:
Type designation: LRET	LONGi Solar Technology Co., Ltd
Thickness [mm]: 0.35 - 0.85	Name and location of supplier (if applicable):

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Type designation: LREW Thickness [mm]: 0.35 - 0.85 Colour: <u>N/A</u> Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):

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Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: B601HP Thickness [mm]: 0.35 - 0.80	Name and location of manufacturer: Changzhou BBETTER FILM TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: B601W Thickness [mm]: 0.35 - 0.80 Colour: <u>N/A</u>	Name and location of manufacturer: Changzhou BBETTER FILM TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: LRET01 Thickness [mm]: 0.55 / 0.50	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: LREC01 Thickness [mm]: 0.55 / 0.50 Colour: <u>N/A</u>	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> <li>Supplementary information:</li> </ul>	

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	Frontside of cells	Name and location of manufacturer:
	Type designation: LRET01	LONGi Solar Technology Co., Ltd
	Thickness [mm]: 0.35 - 0.85	Name and location of supplier (if applicable):
	Backside of cells	Name and location of manufacturer:
	Type designation: LREW01	LONGi Solar Technology Co., Ltd
	Thickness [mm]: 0.35 - 0.85 Colour: N/A	Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note		
	$\Box$ Not purchased since last inspection	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: LRET02 Thickness [mm]: 0.35 - 0.80	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: LREW02 Thickness [mm]: 0.35 - 0.80 Colour: <u>N/A</u>	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: TF4 Thickness [mm]: 0.30 – 1.0	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: F806PS Thickness [mm]: 0.35 - 0.85 Colour: <u>N/A</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note	

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Supplementary information:

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: TF4 Thickness [mm]: 0.30 – 1.0	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: F806W Thickness [mm]: 0.35 - 0.70 Colour: <u>N/A</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: T11 Thickness [mm]: 0.40 – 0.60	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: W11 Thickness [mm]: 0.40 – 0.60 Colour: <u>N/A</u>	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	

Type/Specification	Manufacturer
Frontside of cells	Name and location of manufacturer:
Type designation: SE-556	Changzhou Sveck PV New Material Co., Ltd
Thickness [mm]: 0.50 – 0.65	Name and location of supplier (if applicable):

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Backside	of	cells	
Dackside	UI.	00113	

Type designation: SE-556 Thickness [mm]: 0.50 – 0.65 Colour: <u>N/A</u> Name and location of manufacturer: Changzhou Sveck PV New Material Co., Ltd Name and location of supplier (if applicable):

□ Validated by up-to-date invoice/delivery note

 $\hfill\square$  Not purchased since last inspection

Supplementary information:

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: Cybright T22 Thickness [mm]: 0.60 – 1.0	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: Cybright T22 Thickness [mm]: 0.60 – 1.0 Colour: <u>N/A</u>	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: 3MTM 8110 Thickness [mm]: 0.60 – 1.0	Name and location of manufacturer: 3M Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: 3MTM 8110 Thickness [mm]: 0.60 – 1.0 Colour: <u>N/A</u>	Name and location of manufacturer: 3M Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	
	Т

Type/Specification

Manufacturer

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Frontside of cells	Name and location of manufacturer:	
Type designation: 3MTM 8110	ЗМ	
Thickness [mm]: 0.60 – 1.0	Name and location of supplier (if applicable):	
Backside of cells	Name and location of manufacturer:	
Type designation: 3MTM 8110	3M	
Thickness [mm]: 0.60 – 1.0	Name and location of supplier (if applicable):	
│ Validated by up-to-date invoice/delivery note		
□ Not purchased since last inspection		
Supplementary information:		

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: TF4 Thickness [mm]: 0.45 – 0.85	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: TF4 Thickness [mm]: 0.45 – 0.85 Colour: <u>N/A</u>	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: XF6-1C Thickness [mm]: 0.45 – 0.70	Name and location of manufacturer: Hangzhou Xinfu Energy-Saving Materials Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: XF6-1C Thickness [mm]: 0.45 – 0.70 Colour: <u>N/A</u>	Name and location of manufacturer: Hangzhou Xinfu Energy-Saving Materials Co., Ltd Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	

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# □ Not purchased since last inspection

Type/Specification	Manufacturer
Frontside of cells	Name and location of manufacturer:
Type designation: B602 Thickness [mm]: 0.50 – 0.70	CHANGZHOU BBETTER FILM TECHNOLOGY CO., LTD.
	Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: B602 Thickness [mm]: 0.50 – 0.70 Colour: <u>N/A</u>	Name and location of manufacturer: CHANGZHOU BBETTER FILM TECHNOLOGY CO., LTD. Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: S201MT1 Thickness [mm]: 0.60±0.20	Name and location of manufacturer: Shanghai HIUV New Materials Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: P507 Thickness [mm]: 0.70±0.20 Colour: <u>N/A</u>	Name and location of manufacturer: Shanghai HIUV New Materials Co., Ltd Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	

Supp	lement	tary in	forma	tion:

Type/Specification	Manufacturer
Frontside of cells	Name and location of manufacturer:
Type designation: F406PS	HANGZHOU FIRST APPLIED MATERIAL CO., LTD
Thickness [mm]: 0.40 - 0.85	Name and location of supplier (if applicable):

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Backside of cells	Name and location of manufacturer:
Type designation: TF4 Thickness [mm]: 0.45 - 0.85 Colour: <u>N/A</u>	HANGZHOU FIRST APPLIED MATERIAL CO., LTD Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: ISARD2180 / ISARD1180 Thickness [mm]: 0.40 - 0.80	Name and location of manufacturer: Crown Advanced material Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: ISARD1180 Thickness [mm]: 0.40 - 0.80 Colour: <u>N/A</u>	Name and location of manufacturer: Crown Advanced material Co., Ltd Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: B601HP Thickness [mm]: 0.45 - 0.5	Name and location of manufacturer: Changzhou BBETTER FILM TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: B602 Thickness [mm]: 0.5 - 0.7 Colour: <u>N/A</u>	Name and location of manufacturer: Changzhou BBETTER FILM TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	
Supplementary information:	

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Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: SV-15296 Thickness [mm]: 0.35 - 0.85	Name and location of manufacturer: Changzhou Sveck PV Material Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: SE-556 Thickness [mm]: 0.5 - 0.65 Colour: <u>N/A</u>	Name and location of manufacturer: Changzhou Sveck PV Material Co., Ltd Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: T11 Thickness [mm]: 0.5 ± 0.05	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: T22 Thickness [mm]: 0.8 ± 0.2 Colour: <u>N/A</u>	Name and location of manufacturer: Cybrid Technologies Inc Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
Frontside of cells	Name and location of manufacturer:
Type designation: LRET	LONGi Solar Technology Co., Ltd
Thickness [mm]: 0.60 ±0.20	Name and location of supplier (if applicable):
Backside of cells	Name and location of manufacturer:
Type designation: LRPT	LONGi Solar Technology Co., Ltd Name and location
Thickness [mm]: 0.70 ±0.20	of supplier (if applicable):
Colour: <u>N/A</u>	

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**TÜV**Rheinland<sup>®</sup> Precisely Right.

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 $\hfill\square$  Not purchased since last inspection

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: LRET01 Thickness [mm]: 0.35 - 0.85	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
Backside of cells Type designation: LRPT01 Thickness [mm]: 0.5 ~ 0.65 Colour: <u>N/A</u>	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	
Supplementary information:	

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: LRET01 Thickness [mm]: 0.35 - 0.85	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<u>Backside of cells</u> Type designation: LRPT01 Thickness [mm]: 0.5 ~ 0.65 Colour: <u>N/A</u>	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Supplementary information:	

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## 4.7 Frame and frame adhesive

### 4.7.1 Frame

Type/Specification/Drawing no.	Manufacturer
Material / hardness (T5, T6 etc.): 6063 T5	Name and location of manufacturer:
Coating (type & thickness): N/A	Yingkou Changtai Aluminum Material Co., Ltd
Drawing no.: N/A	Jiangyin Shunyuan Electrical Steel Materials Co., Ltd.
Assembly components (screws, rivets, etc.): N/A	Jiangsu Akcome Solar Science & Technology Co.,Ltd
	Yingkou Changtai Aluminum Material Co.,Ltd
	Asia Aluminium (China) Company Limited
	Name and location of supplier (if applicable):
□ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification/Drawing no.	Manufacturer
Material / hardness (T5, T6 etc.): 6005-T6	Name and location of manufacturer:
Coating (type & thickness): 35 / 30	Jiangsu Akcome Solar Science & Technology Co.,Ltd
Drawing no.: N/A	Yingkou Changtai Aluminum Material Co.,Ltd
Assembly components (screws, rivets, etc.): N/A	LONGi Solar Technology Co., Ltd
	Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

# 4.7.2 Frame adhesive (tape/silicone)

Type/Specification	Manufacturer
Type designation:1527 / 1527 (Black) / 1581	Name and location of manufacturer:
Thickness: N/A	H.B.FULLER (SUZHOU) ADVANCED MATERIAL CO.,LTD.
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

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Type/Specification	Manufacturer
Type designation: PV-804	Name and location of manufacturer:
Thickness: N/A	Dow Corning Corporation
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: HT906Z	Name and location of manufacturer:
Thickness: N/A	Shanghai Huitian New Chemical Material Co.,Ltd.
	Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: 888N	Name and location of manufacturer:
Thickness: N/A	Chengdu Guibao Science & Technology Co., Ltd
	Name and location of supplier (if applicable):
⊠ Validated by up-to-date invoice/delivery note	
$\Box$ Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: CV709 / CREVO709 Thickness: N/A	Name and location of manufacturer: Sika (Jiangsu) industrial Material Ltd. Name and location of supplier (if applicable):
<ul> <li>Validated by up-to-date invoice/delivery note</li> <li>Not purchased since last inspection</li> <li>Supplementary information:</li> </ul>	

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Type/Specification	Manufacturer
Type designation: RS-3316	Name and location of manufacturer:
Thickness: N/A	ZHENJIANG RAYBOND NEW MATERIAL TECH- NOLOGY CO., LTD. Name and location of supplier (if applicable):
<ul> <li>☑ Validated by up-to-date invoice/delivery note</li> <li>□ Not purchased since last inspection</li> </ul>	1
Supplementary information:	

Type/Specification	Manufacturer
Type designation: HT-8258 / HT-8188	Name and location of manufacturer:
Thickness: N/A	Jiangsu Tianchen New Materials CO., LTD.
	Name and location of supplier (if applicable):
⊠ validated by up-to-date involce/delivery note	
Not purchased since last inspection	
Supplementary information:	

# 4.8 Markings

To ensure compatibility with all Canadian jurisdictions, products meeting CAN/CSA-C22.2 No. 61730-1/-2 requirements shall be bilingual – English and French.

Type/Specification	Manufacturer
Type label: N/A	Name and location of manufacturer: AVERY (CHINA) CO LTD Name and location of supplier (if applicable):
Barcode or serial number label: N/A	Name and location of manufacturer: N/A Name and location of supplier (if applicable):
☑ Validated by up-to-date invoice/delivery note	
□ Not purchased since last inspection	
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### 5 **Production process**

Inspector:

The certification according to IEC 61215 also determines the sequence of the production process as well as the main process machines and parameters.

### 5.1 Incoming inspections and preparation of materials

Description of methods, sample size, recording, demands for suppliers, etc.:

Overall as documented in LgiLE-Q-QMD-021.

For glass: flatness, transmittance, and dimensions check with sampling base. Documented in LgiLE-Q-QMD-021-05 and LgiLE-Q-QMD-021-030.

For EVA: width, thickness check with sampling, EVA gel content, peel off with backsheet / glass is performed accordingly. Documented in LgiLE-Q-QMD-021-03.

For backsheet: visual, thickness/ width check, test record and peel off test report (each layer of backsheet) is provided by the supplier. Documented in LgiLE-Q-QMD-021-01.

For solar cells: 100% pre-sorting by cell manufactuer according to the colur template and power rating. Documented in LgiLE-Q-QMD-021-07.

For ribbon: visual, thickness / width check, weight, etc. Documented in LgiLE-Q-QMD-021-04 and LgiLE-Q-QMD-021-031.

For frame: visual, dimension, strength, etc. Documented in LgiLE-Q-QMD-021-02.

For adhesive: visual, curing time, curing depth, etc. Documented in LgiLE-Q-QMD-021-08.

For Junction box: components type name check performed for each new delivery batch. Documented in LgiLE-Q-QMD-021-06.

For potting material: visual, curing time, etc. Documented in LgiLE-Q-QMD-021-14.

For fluxing agent: visual, density, etc. Documented in LgiLE-Q-QMD-021-09.

 Is there a procedure covering the way to handle non-conforming components and materials?

 ☑ Yes
 □ No
 □ Not applicable

 Are materials adequately prepared for production and stored?
 □ Not applicable

 ☑ Yes
 □ No
 □ Not applicable

### 5.2 Lay-up of glass

□ Manually
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□ Semi-automatically

☑ Automatically

### Description of single process steps

The glass is automatically placed in the corresponding position, and the glass does not need to be cleaned. Quality controls: N/A

## 5.3 Solar cell cutting

Manually	□ Semi-automatically	☑ Automatically
Type, make and quantity of equipment:	SLD-3200 from De SLD-3200 from De SLD-5500 from De SLD-5500 from De	elong, 11 sets in workshop 1 elong, 4 sets in workshop 2 elong, 4 sets in workshop 2 elong, 4 sets in workshop 3
Cutting technology:	Laser mode: Pluse	e, Frequency 10 – 500Hz
Process parameters:	Cutting depth 50-6	60%
Quality controls:	The parameters a	re checked 3 times per shift

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Remarks: N/A

# 5.4 Solar cell tabbing and connection to strings

Manually

 $\hfill\square$  Semi-automatically

⊠ Automatically

Type, make and quantity of equipment:	MS40A from Autowell (16 sets in workshop 1) MS40B from Autowell (16 sets in workshop 2) MS40A from Autowell (16 sets in workshop 3)	
Number of soldering points:	5 lines	
Soldering technology (contact, IR, hot air, induction, laser, etc.):	IR	
Preheating temperature defined?	⊠ Yes	□ No
Soldering temperatures defined?	⊠ Yes	🗆 No
Min. distance between cells (incl. tolerances) [mm]:	1.8 ± 0.2 mm	
Quality controls:	Temperature check is performed every shift. Pull test is performed every shift.	
Remarks: N/A		

### 5.5 Interconnection of strings

□ Manually

□ Semi-automatically

⊠ Automatically

Type, make and quantity of equipment:	DH150-F 3 sets in workshop 1 DH150-F 3 sets in workshop 2 DH150-F 3 sets in workshop 3	
Soldering technology (contact, IR, hot air, induction, laser, etc.):	Contact, F side current 4.5±1A, 1700±500ms M side current 5.0±1A, 2500±500ms B side current 4.5±1A, 1700±350ms	
Soldering temperature defined?	□ Yes	⊠ No
Min. distance between cells [mm]:	2±0.5 mm	
Min. distance between strings [mm]:	2±0.5 mm	
Min. distance between active parts and edge [mm]:	15±0.5 mm	
Quality controls:		
Remarks: N/A		

### 5.6 Compilation of material layers

□ Manually

 $\boxtimes$  Semi-automatically

□ Automatically

Description of single process steps		
The cell strings are moved up to glass & EVA with automatic manipulator.		
The operators adjust the position of cell strings manually with template, and solder the string connector.		
Quality controls: N/A		

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# 5.7 Recording of EL images

□ Manually

□ Semi-automatically

□ Automatically

Description of single process steps

100% EL image check and visual inspection are performed after this process. EL is checked by Al first. Failure is checked manually.

### 5.8 Lamination process

Parameter/Specification	Value/Remarks		
Type, make and quantity of equipment:	JCCY2456-DST from Hebei Yiheng (2 sets in work- shop 1) TCBY-G7-11 from Hebei Yiheng (8 sets in workshop 1, 3 sets in workshop 2, 11 sets in workshop 3) JCCY2438-T from Hebei Yiheng (12 sets in workshop 2)		
Quantity of modules per lamination:	3 / 4 per layer depending on the module size		
Chamber pressure [mbar] (evacuation/lamination/cooling phase):	- / -60±20, -40±20, -20±20 / - (for Chamber 1) - / -60±20, -40±20, -20±20 / - (for Chamber 2)		
Lamination temperature [°C] (evacuation/lamination/cooling phase):	For EVA from Sveck:143±3°C For EVA from First: 144±3°C For EVA from HIUV: 144±3°C		
		Chamber 1	
		300±60 / 0~40, 0~40, 0~120 / -	
	EVA from Sveck	Chamber 2	
		30±30 / 20, 20, 240~540 / -	
	EVA from First	Chamber 1	
Lamination time [min]		- / 20, 20, 0~120 / -	
(evacuation/lamination/cooling phase):		Chamber 2	
		- / 20, 20, 240~540 / -	
	EVA from HIUV	Chamber 1	
		- / 20, 20, 0~120 / -	
		Chamber 2	
		- / 20, 20, 240~540 / -	
Non-uniformity of temperature [%]:	±2°C		
Requirement for Gel content [%]:	75-95%		
Process recording:	Yes		
Quality controls:	Temperature uniformity check (9 points) is performed weeky. Gel-content test is performed 3 laminators / 24 hours		

### 5.9 Electrical connection

□ Manually

□ Semi-automatically

 $\boxtimes$  Automatically

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Description of single process steps			
CG18040-D01/D02/D03 in workshop1			
CG18040-D04/D06/D09 in workshop2			
CG18040-D05/D07/D08 in workshop3			
Manual placement of junction box, automatic welding junction box			
Amount of silicone defined and verified?	⊠ Yes	🗆 No	
Position of junction box application defined?	⊠ Yes	🗆 No	
Pressure defined?	⊠ Yes	🗆 No	
Bypass diode functionality test conducted?	□ Yes	🖾 No	
Junction box potted?	⊠ Yes	□ No	
Quality controls: Visual check is performed 3 times per shift.			

### 5.10 Framing

	Manu	Jally
_		,

Semi-automatically

□ Automatically

Description of single process steps			
<ol> <li>Load frame manually.</li> <li>Inject frame adhesive by auto machine.</li> <li>Locate laminate and frame by auto machine.</li> <li>Press process automatically.</li> <li>Module move away.</li> </ol>			
Amount of silicone defined and verified?	⊠ Yes	🗆 No	
Position and/or pressure defined?	⊠ Yes	□ No	
Quality controls: N/A			

# 5.11 Safety and functionality tests

### 5.11.1 Hi-pot test

Parameter/Specification	Value/Remarks		
	CHT9981A, from Changzhou Hepu, 4 sets in work- shop 1		
Type, make and quantity of equipment:	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 2		
	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 3		
Sample rate [%]:	100		
Test voltage [V]:	4800		
Duration of tests [s]:	8 s for raise time; 2 s for test time / 10 s for raise time; 2 s for test time		
Pass criteria:	No breakdown and Leakage current < 0.05 mA		
Remarks:			
Recommendation from TÜV Rheinland: $V_{TEST} = (1000 V + 2 x V_{SYS}) x Y$ ,			
where $Y = 1$ for a minimum test duration of 1 minute, $Y = 1.2$ for a minimum test duration of 1 second.			

### 5.11.2 Insulation test

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Parameter/Specification	Value/Remarks

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Type, make and quantity of equipment:	CHT9981A, from Changzhou Hepu, 4 sets in work- shop 1		
	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 2		
	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 3		
Sample rate [%]:	100		
Test voltage [V]:	1500		
Duration of tests [s]:	2 s for raise time; 2 s for test time /		
	3 s for raise time; 2 s for test time		
Min. insulation resistance $[M\Omega]$ :	≥ (40 M $\Box$ ·m2 divide the module area)		
Pass criteria:	Minimum insulation resistance and no dielectric breakdown		
Remarks: Recommendation from TÜV Rheinlar	nd: test performance acc. to IEC 61215 conditions.		

# 5.11.3 Continuity of equipotential bonding test

Parameter/Specification	Value/Remarks
	CHT9981A, from Changzhou Hepu, 4 sets in work- shop 1
Type, make and quantity of equipment:	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 2
	CHT9985A, from Changzhou Hepu, 4 sets in work- shop 3
Sample rate [%]:	100
Duration of tests [s]:	2
Applied current [A]:	50
Pass criteria:	<0.1Ω
Remarks: N/A	

# 5.11.4 Wet leakage test

Parameter/Specification	Value/Remarks	
Type, make and quantity of equipment:	YD9860D-8K, Yangzhou Yangzi, 1 unit	
Sample rate [%]:	3 pcs per week	
Test voltage [V]:	1500	
Duration of tests [s]:	120	
Min. insulation resistance [MΩ]:	40MΩ·m2 / module area	
Pass criteria:	> 40MΩ·m²	
Remarks: Recommendation from TÜV Rheinland: test performance acc. to IEC 61215 conditions.		

# 5.11.5 Bypass diode functionality test

Parameter/Specification	Value/Remarks
Type, make and quantity of equipment:	/
Sample rate [%]:	/

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Applied method of IEC 61215-2:	ΠA	□В	□ Other
Pass criteria:	1		
Remarks: N/A			

# 5.11.6 Functional check on test equipment

Is a functional check of test equipment used for safety tests performed?	⊠ Yes	□ No	□ N/A
Is there a procedure describing how the functional checks shall be conducted?	<ul> <li>Yes,</li> <li>automated</li> <li>manual</li> <li>process</li> </ul>	🗆 No	□ N/A
How is the proper function of the test equipment verified?	<ul> <li>Simulated failure (dummy)</li> <li>Test procedure according to the equipment manual</li> <li>Internal self-test; test program included in equipment certification</li> <li>Internal self-test; verified by the inspector</li> <li>Others (provide details):</li> </ul>		
Is there evidence that the simulated failure (if applicable) represents the tripping limits as required?	□ Yes	🗆 No	⊠ N/A
Is there evidence that this functional check is conducted properly, even if certified products were not in production?	⊠ Yes	□ No	□ N/A
Is a functional check conducted in intervals which will allow previous production to be retested if incorrect functioning is detected before it leaves the factory?	□ Yes	□ No	⊠ N/A
Is there a procedure requiring appropriate actions to be taken by the operator if a functional check is found to be unsatisfac- tory?	□ Yes	🗆 No	⊠ N/A
Is this procedure appropriate to ensure that improperly checked products are re-tested?	⊠ Yes	□ No	□ N/A
Are corrective actions taken as well as results of test equip- ment functional checks recorded?	□ Yes	□ No	⊠ N/A

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# 5.12 Control of output power

Parameter/Specification	Value/Remarks
Type, make and quantity of equipment:	Flash Generator HIGHLIGHT 3 SMT, from PASAN, 4 units in workshop 1 CH-2000, from PASAN, 4 units in workshop 2 CH-2000, from PASAN, 4 units in workshop 3
Type of simulator (flash type (short/long-pulse; multi flash); continous):	Single pluse
Max. test area [m <sup>2</sup> ]:	2.4m x 1.4m
Duration of measurement [ms]:	10
Non-uniformity of irradiance [±% or class]:	Class A+
Spectral match [±% or class]:	Class A+
Temporal instability of irradiance [±% or class]:	Class A+
Detailed description of simulator classification acc. to IEC 60904-9:	N/A
Temperature sensors (PT100, IR, etc.):	IR
Detailed description of applied temperature correc- tion procedures (measurement temperature, max. correction interval, used correction parameters etc.) acc. to IEC 60891:	Temperature coefficient are used and provided by internal production information booklet.
Detailed description of applied flasher calibration procedures (used reference modules (prima- ry/secondary), verification and adjustment of flasher, reproducibility, etc.):	Yes, the simulator was monitored every 2hours with reference module and calibrated every 4 hour by reference module which was standardlized by TUV Rheinland.
Light induced degradation considered?	Yes
Measurement uncertainty [±%]:	N/A
Detailed description of applied procedures for measurement uncertainty determination:	N/A
Labelled production tolerance $[\pm\%]$ :	3

## 5.13 Final visual control

-

Description of single process steps
Manual scrubbing and visual inspection.



### 6 Quality assurance / control

#### 6.1 Quality management system

Quality management system type:	ISO 9001: 2015		Certification body:	15/07/2016
Certificate issue date:	09/7/20190		Certificate expiry date:	14/07/2022
Quality manual:	⊠ Yes	□ No	Number / last revision:	LGi-G-EP-01

### 6.2 Premises and environmental conditions

It must be assured that the environmental conditions in the production and storage rooms do not have a negative influence on the quality of the PV modules. The technical requirements for the production areas and the environment should be laid down in written form.

### 6.2.1 Storage and handling of materials

Regulation of storage processes, definition of storage periods and transportation guidelines, material handling guidelines, packaging instructions:

Storage conditions:

⊠ Defined temperature

 $\boxtimes$  Defined relative humidity

See details in document LGiLE-T-TED-038

#### 6.2.2 **Production areas**

Description of conditions, measures to maintain order and cleanliness:

⊠ Defined temperature

 $\boxtimes$  Defined relative humidity

See details in document LGiLE-Q-QED-074

#### 6.2.3 Staff training

Are work instructions available at the location where the processes take place?				
□ No	□ Parts of the line		⊠ Total line	
Have a competence matrix and training records for all personnel been established?				
⊠ Yes	□ No			
Description:				
All the working staff was separately trained according to LGiLE(Z)-W-PD-013				

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# 6.3 Handling of test and calibration equipment

The superior line has to be submarily differences where	, and to sting a service sect that allows a particle starm, such		
The production line has to be equipped with measuring and testing equipment that allows a satisfactory qual-			
ity control. All equipment that is used for tests has to be	e calibrated / checked on regular basis.		
Is test and measuring equipment used calibrated (inclu	iding reference equipment used for verification)?		
⊠ Yes	🗆 No		
Is the equipment provided with a label or similar indicating the next calibration due date?			
⊠ Yes	□ No		
Have methods and cycles for calibration including check-up and recording been set?			
⊠ Yes	□ No		
Was any test / measurement device identified during the audit which is not specified in the equipment list?			
⊠ Yes	□ No		
Do the calibration / verification records indicate that calibration is traceable to national / international stand-			
ards of measurement?			
⊠ Yes	□ No		

### 6.4 Regular quality assurance tests

Are regular offline test programs used to maintain the quality of the products? If so, which are these?
Pull-off test performed.
Gel content test performed.
Temperature Uniformity of laminator performed.
Safety tests performed.
See annex 1.6, 1.7, 1.8 for details

# 6.5 Documentation of process data

For the processing, storing and back tracing of test and process data, these must be documented in an ade- guate way. The recording of the data should allow a process monitoring which shows possible tendencies.			
Description of methods:			
Production data is managed through MES system which could trace the processing data according to the serial number. See details in document LGiLE-T-TED-038.			
Are test records of routine tests maintained and satisfactory?			
⊠ Yes	□ No	□ Not applicable	

## 6.6 Directing of faulty products

The production process must dispose of regulations and methods which have to be applied, if the quality			
control shows a faulty product or a p	roduct is outside the production tolera	ances. How is the course of events	
determined, if a faulty product is four	nd?		
faulty products will be classified to different classes, faulty products & materials can be reworked, repaired,			
scrapped or sent back to suppliers. See details in document LGiLE(Z)-Q-QCD-093.			
Are repaired and reworked (corrected) items again subjected to appropriate tests / inspections in accordance			
with procedures?			
⊠ Yes	□ No	Not applicable	

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Inspector:



# 6.7 Changes to certified products

Is a reference about the certified version available?	<ul> <li>Yes,</li> <li>Set of drawings</li> <li>Reference sample</li> <li>Parts list</li> <li>Photo documentation</li> <li>Other</li> </ul>	□ No	□ N/A
Is this reference under control of the licence hold- er?	⊠ Yes	🗆 No	□ N/A
Is any procedure ensuring that constructional changes of the certified product are made only after approval by the certification body?	⊠ Yes	□ No	□ N/A
Have changes been made to the certified product since last inspection that needed to be informed to the certification body?	□ Yes	□ No	⊠ N/A



## 7 Requirements for MCS 010 certification

 $\boxtimes$  Applicable  $\square$  Not applicable

### 7.1 General

This section should be used to record evidence of compliance with MCS 010 Table 1 clause 6 (ordering) and clause 7 (purchasing).

Orders, contracts and tenders shall be reviewed to ensure that

- the requirements are adequately defined for each product for quantity, packaging, deliver, etc.,
- the company has the resource and capability to meet the order/contract requirements. Where the time scales cannot be met, the company shall detail when the order/contract will be fulfilled.

Records of this activity shall be maintained for all orders/contracts and tenders and presented for inspection. A process shall also exist for managing amendments to contracts / orders.

Description of processes:

The order and contract do contain quantity, specification, type, delivery date and these procedures are established and documented in LGiLE-S-POD-047.

A master list of suppliers shall be established to identify their address, location, contact details and the service or products/materials supplied. The method of adding or removing suppliers and products/materials from the master list shall be established, e.g. previous dealings/past history, product approval.

Description of processes:

A master list of suppliers is available, which contains the address, location, contact details and the service or products / materials supplied or each supplier.

Purchase orders for products shall clearly identify the part number, class, grade, size, finish, trade name and any other details quoting (where necessary), tolerances or relevant product standards.

Description of processes:

All the requested information is recorded in purchase orders.

Contract related records must as a minimum contain details of the customer reference, dates, quantities and details of all products supplied. Does the company keep these records for a minimum of five years? Contracts contain details of the customer reference, dates, quantities and details of all products supplied. These contract related records especially for the main component materials are kept for 30 years.

### 7.2 Internal quality control

Are regular internal review meetings taking place to review the status of the quality system? At what frequency?

The quality review meeting is performed yearly.

Method used to control quality relevant documents (document number/data base/master list/revision numbers etc.); storage/backup of documentation (awareness of relevant international and national standards to be fulfilled):

Document number and revision number are used to control the document; The quality department is responsible for storage / backup of documentation, all the document can be found in OA system.

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# 7.3 Complaints

The company shall manage complaints under controlled condition and shall keep a log/register of any com- plaints received and the corrective and preventative actions taken to satisfy the complaint and where neces- sary the complainant. Complaints must be dealt within a timely and effective manner. Are these requirements accounted for?		
⊠ Yes , refer to document LGiLE-Q-QED-201.	□ No	
Are the received complaints reviewed on a regular basis regarding if they are related to single errors or system errors?		
⊠ Yes	□ No	
Is the originator of the complaint informed about the handling and the result of the complaint?		
⊠ Yes	□ No	
Are corrective actions and decisions regarding customer complaints recorded?		
⊠ Yes □ No		

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spector: Shulong Yang			Precisely Right.	
3 Summary				
Did the inspection sl	how any de	viations?		
Severe	Short-tern	n correctable	⊠ None	
Remarks from the in	spector / co	orrective meas	ures	
This inspection serves No. 1 was selected for dering process. The en	as follow-up i inspection af tire productio	inspection at LON fter the factory exp in line, warehouse	Gi Solar Technolog panded the product and IQC process	gy (Zhejiang) Co., Ltd. The workshop tion capacity by introducing new sol- were inspected.
(Only for follow-up ins Have all found non-cor factorily?	spections) P	revious non-con eviations from the	formities: last inspection be	en reviewed and implemented satis-
⊠ Yes		🗆 No		Not applicable
Confirmation that cer was granted:	tification ma	irks were in gene	eral only found on	products for which a test mark
Confirmed		⊠ Not confirme	d	Not applicable
The factory will be vis	sited again i	n		
🛛 One year	Six m	onths	Three months	
Determination of act	tions by certif	ication body nece	ssary	
Deviations:	1.0			
N/A				
Recommendations:				
N/A	-			
Are the requirements	of MCS 010	fulfilled?		
⊠ Yes		🗆 No		Not applicable
Quzhou 06/09/2022 Place/Date			(Signature: Ins	spector)
Quzhou 06/09/2022			T	

Annex: List of surveyed documents

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# Annex 1: List of surveyed documents

(E.g., accreditations, certificates, declarations, licenses, data sheets, quality control verifications)

No.	Description
1	ISO certificates
2	Organization chart
3	Workshop layout
4	Serial No. coding rule
5	Bill of materials and process data
6	Pull-off test record
7	Gel content test record
8	Temperature Uniformity of laminator record
9	Label

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Annex 1.1 ISO certificates



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### Annex 1.2 Organization chart



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Inspector:

**TÜV**Rheinland<sup>®</sup> Precisely Right.

Annex 1.3 Workshop layout



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### Annex 1.4 Serial No. coding rule

	立体力和	组件工厂代码、条形码、托盘号编码规	密级	
	大开石桥	则和唛头、标签模板规定	版本状态	V20
IONG	文件体目		应供收死定         版本状态         V20           页         码         1 / 2	
LONGI	又什骗亏	LGILE (PM) -I-PRD-016	生效日期	2022/02/14

代码始终保留,不得更改、删除。

工单类型	编码	工单类型	编码
量产工单	Р	产品开发工单	R
实验工单	Е	代工工单	D

### 1.1 组件条码的组成

1.1.1 组成组件条码包括以下几项内容:



A: 乐叶标识;

B: 工单类型;

C: 电池片正面栅线数量;

电池片正面栅线数量	对应编号
无栅电池片	0
一栅电池片	1
九栅电池片	9
十栅电池片	А
十一栅电池片	В

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	文件名称	组件工厂代码、条形码、托盘号编码规 则和唛头、标签模板规定	<ul> <li>密 级</li> <li>版本状态</li> </ul>	V20
LONGI	立此编具		页 码	2 / 2
LONG	义件骗节	LGILE (PM) -I-PRD-016	生效日期	2022/02/14

	三十五栅电池片	Z
--	---------	---

D: 组件版型;

单晶(Mono)			
组件版型对应编号	电池片	组件版型	备注
01	125	72	目前集团内不生产125电池片
02	125	96	组件
03		60	
04		72	
09	除125电池片以外的其	50	
10	它单晶电池片	54	
11		66	
12		78	

多晶(Poly)

组件版型对应编号	电池片	电池片数量	备注
05	125*125	72	
06	125*125	96	目前集团内无多晶电池片组
07	156*156	60	件
08	156*156	72	

E: 车间号/工厂代码,参考LGiLE-T-TED-068《乐叶组件工厂代码》;

F: 年月;

备注: 1. 与工单年月保持一致。

2. 因工单年月数字只有三位表示,故10月对应A,11月对应B,12月对应C,例如组件条码中的年月1810对应工单中年月18A。

G: 工单流水码

H: 生产数量代码(组件序列号)

1.1.2 组件条码类型

Inspector:

Shulong Yang



### Annex 1.5 Bill of materials and process data

	组件履历查词 x										
	调条件	(8.0+)	510 I PP0040002201	00110202	( #0) )	ang [	and the second (managed)	RADING REAL	e)		
	0.00	\$81+2	f(#) LRF9040002209	900110292	HE HU	MT (EMCLOSS	Cileran Cargary Cireate	Charlen Camarca	<u></u>		
	.件基端信息 组件号	工单目标料号	実际料号   ]	[艺流程] 产品型	号 原工单号	现工单号   组件车间	组件等级 组件状态 是否NG 当前工步	销售订单号	订单名称	1	虚拟码   W1
Sector         Sector<	RP90400022090011029	2 80A06A5020371	80A06A5020371	LR4-72H	PH-M PB112290	01 PB11229001 一车间	CA 正常 否 分档 LG	I-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaish	a-日本/Japan-50.1MW P9H4	444444444
No. 10         Yor         Yor<											
Name         All All All         All All All All         All All All All All All All All All All	件测试信息 测试由:※	<b>车制</b> 协车	功车档	由涂档	和討場度	FE	分档初回	1	箱星	向华时间	历史箱号
Number         Number         Number         SPACE	10.97859	451.56436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%),新电流分相	首,只要需求功率	LRA904000220900611	2022-09-06 13:44:57	
Bind Bind Bind Bind Bind Bind Bind Bind	40.03050	101 00100			21 222204	0.90020302					k)
No.         Output (No.         Image: No.	件物料信息	1		1						1 40 1	
Control         Control <t< td=""><td>893204000005</td><td>C00076</td><td>小和LAC 001822072115026</td><td>上序</td><td></td><td></td><td>初村御述 授事:汇本冬 慶形 美袖 9663P8</td><td>b37_0.3*7mm</td><td></td><td>#10 K0</td><td>893EC000769</td></t<>	893204000005	C00076	小和LAC 001822072115026	上序			初村御述 授事:汇本冬 慶形 美袖 9663P8	b37_0.3*7mm		#10 K0	893EC000769
Distance         Operation         Operation <th< td=""><td>823103000085</td><td>C001584</td><td>4220826448724238</td><td></td><td></td><td></td><td>EVA 白色 510g/m<sup>2</sup> 102</td><td>27mm</td><td></td><td>M2</td><td>降基C001584</td></th<>	823103000085	C001584	4220826448724238				EVA 白色 510g/m <sup>2</sup> 102	27mm		M2	降基C001584
Alex Law	893101000046	C00076	901822082410005	委屈			煤带_互联条_圆丝_卷轴_Sn63P	b37_0.36mm		KQ	隆基C000769
		niology (zine	ejiany) co.,ctt	u. · · · · · · · · · · · · ·				and a second second	1000000 400 - 100 - 100 V		
BASE         BASE         LOB         ALE         BASE         LAE         BASE         BASE         LAE         BASE         SEA         LAE         BASE         SEA         DE         DE        DE        DE	组件履历查询 x	Har Technology (Zhujjang) Co., Ltd. 1         Manufacturing Execution System           #7         #1880, Unreaded 22000         R/U         R/U         RELING         Status         Status									
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Control         Control <t< td=""><td>组件号</td><td>工单目标料号</td><td>实际科号 丁</td><td>[艺病程   产品型</td><td>号 原工单号</td><td>現工単号 組件车间</td><td>组件等级   组件状态   是否NG   当前工步  </td><td>销售订单号</td><td>订单名称</td><td></td><td>虚拟码</td></t<>	组件号	工单目标料号	实际科号 丁	[艺病程   产品型	号 原工单号	現工単号 組件车间	组件等级   组件状态   是否NG   当前工步	销售订单号	订单名称		虚拟码
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Marka         2007.2         275.8         45.8         Marka         17         Marka         Ma	生物にず体育										
1373 00         415 50.00         145         10         2400000         2200572001         2200572001         22005000000000000000000000000000000000	测试电流	实则功率	功率档	电流档	刑试温度	FF	分档规则	1	箱号	包装时间	历史籍号
NAME         NAME         NAME           10 <t< td=""><td>10.97859</td><td>451.56436</td><td>445</td><td>N</td><td>24.928701</td><td>0.78672725</td><td>220815-72HPH-445(0-6%),新电流分</td><td>治・只要需求功率</td><td>LRA904000220900611</td><td>2022-09-06 13:44:57</td><td>ANGIN .</td></t<>	10.97859	451.56436	445	N	24.928701	0.78672725	220815-72HPH-445(0-6%),新电流分	治・只要需求功率	LRA904000220900611	2022-09-06 13:44:57	ANGIN .
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Preside 2002/1002/1002/1002/4002/071         LUE / 2004/41         Preside 2002/1002/1002/1002/1002/1002/1002/1002	組件号	<b>上甲目标积号</b>	头际科号	上艺派程 产品	12号 原上甲4	5 划上甲号 組件车间	相伴等級 相伴状态 是合NG 当前上步	销售订甲号	リ単名标		虚拟码 W1
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0011911         001919422085544200-0         幕間         IFER Lass and Lass Solution (2020000000000000000000000000000000000	料号		小批次	I	5		物料描述			单位	供应商
● 100000000         COUNTRAIN 12022/201745         基ビ         代目、日本のからいたい         100         ● 第三00000000           CGI Solar Technology (Zhejiang) Co.,Ltd.*         Main Unit Curring Execution system         Use Exting Exet Exet Extended Execution System         Use Exting Exet Exet Exet Exet Exet Exet Exet Exet	823101000113	C0015	84220825AA4620040	圣月	3		EVA_高速_530g/m <sup>2</sup> _10	123mm		M2	隆基C001584
the field and a second a	893204000008	C0007	/6901822072607045	叠片	2		焊带_汇流条_窗形_卷轴_Sn63P	2b37_0.3*4mm		KØ	隆基C000769
Control	Gi Solar Techr	nology (Zheij	iang) Co Ltd	i Manutac	turina Exec	ution system	维防_密封胶_脱肟_用巴	270K@999		KG	陸至000771
中         現作業店         LEP940000220000110222         水山         水空         原目に高好意一般目した         原目に高け高         MARK(S)1         MARK(S)1           健存業店         LEP940000220000110222         水山         水空         原目に高好意一般目した         MARK(S)1         MARK(S)1         MARK(S)1           健存業店         LEP940000220000110222         Rule (1)         Rule (1)         MARK(S)1         MARK(S)1         MARK(S)1           健存業店         LEP94000022000110222         Rouce (2)         LE4720111         PE14220011         EEIE         MARK(S)1         MARK(S)1         MARK(S)1           M00020000110222         Rouce (2)         Rule (2) <thrule (2)<="" th=""> <thrule (2<="" td=""><td>di solar rechi</td><td>lology (Zheji</td><td>ang) co.,ctu.</td><td></td><td>unig ence</td><td></td><td></td><td></td><td></td><td></td><td></td></thrule></thrule>	di solar rechi	lology (Zheji	ang) co.,ctu.		unig ence						
日本語         出作品         工作品         パーペ         RELEGAR         CALLERAR         CALERAR         CALLERAR         CALERAR         CALLERAR         CALERAR	件履历登词X										
	*	组件条码	3 LRP904000220900	0110292	查询 ) i	春空 📄 献EL返條前…)	前EL图片)(三线盒图片)(三W曲线图)	■ 后EL图片	片		
The Second Seco	は信息	TMOLEUR	1916-141 D			10 7 66 2 49.05 7 30 40		Side Work and The	27 46 -5 37	1	anarran Luo
構築         万葉均本         万葉均         电流性         新に建築         FF         分性規則         報号         包括時間         原子           077599         451 50436         M         24 522701         0.76672725         220815-724PH-4450-6%), 新組流分性。只要意求力革         LPA00400220900511         2202496 13.44.57           HR         MAR         NATION         1.9         202209-06 13.44.57         202015-724PH-4450-6%), 新組流分性。只要意求力革         LPA00400222090031         202209-06 13.44.57           HR         MAR         TJF         MAR         PE         PE <t< td=""><td>4000220900110292</td><td>80A06A5020371 8</td><td>30A06A5020371</td><td>LR4-72HPH</td><td>-M PB11229001</td><td>PB11229001 一车间</td><td>CA 正常 否 分档 LOI</td><td>i-L-Sal-2201-1344-A006</td><td>Kobe Yamada PV Plant Godo Kaisl</td><td>ha-日本.Uapan-50.1MW P9H</td><td>44444444444</td></t<>	4000220900110292	80A06A5020371 8	30A06A5020371	LR4-72HPH	-M PB11229001	PB11229001 一车间	CA 正常 否 分档 LOI	i-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisl	ha-日本.Uapan-50.1MW P9H	44444444444
加加点         交換作         の数格         利用価度         FF         分析相例         報号         毛融振列         内交換F           09759         451.564.36         44         M         24.920701         076677275         220015-7214PH-4450-4%), 適电流列值、回流         LPA04000220900511         2022-09.013.44.57 <td< td=""><td>机信息</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	机信息										
19.9759         41.954,75         44.5         M         24.282071         0.7067/25         20015-72/HPH-4450-6%). 新电流分信,只要要求功率         LPA0040022000011         2022-05.0613.44.57           4月8	所式电流	实测功率	功车档	电流档	测试温度	FF	分档规则		箱号	包装时间	历史箱号
	0.97859 4	151.56436	445	М	24.928701	0.78672725	220815-72HPH-445(0-6%),新电流分档	自,只要需求功率	LRA904000220900611	2022-09-06 13:44:57	
料信         小比次         工序         理価         供担応           631020063         C004786020202003058030         発程         低池恒 600576 月前日,103873715777.3277116.55*3,1月度上水15-51.30240-00,21近4億10.53,2月日,24:15-51         K0         採屋C004778           831030003         C0007712207116138         発程         ビービスはたまれたたたたまれたたたたまたした。たち-51         K0         採屋C000771           831030003         C0007712207116138         発程         ビービスはたまれたたたたまれたたたたまたした。たち-51         K0         採屋C000771           74705度12         C1005712207116138         発程         ビービスはたまれたたたたまたした。たち-51         K0         採屋C000771           74705度12         C1007712207116138         発程         第 2         「日本         ビービス         ビ	3.07050 · · ·	CALCOADO -			04.000704	0.7077777					
C0007/8002022090058086         補植         税益価値の05.75_損益(1087/37/15400-0.0_型が超位)超低価値(15.3,元績)         共         持載C004780           6310200003         C0007712207110138         発植         後記価(2005.75_損益(1087/37/15400-0.25))         K0         特量C004780           8310300003         C0007712207110138         発植         後記(200771         K0         特量C004780           6310200029         C0007712207110138         発植         後記(200771         K0         特量C004780           6310200029         C0007712207110138         発植         第名(200771)         K0         特量C004780           6310200029         C0007712207110138         発植         第名(200771)         K0         特量C004780           64102202000110292         充省         第名(200771)         K4         K1         K1         K4           6417         「日本日秋村         「京和村         第二年         第二年         K1         K4	料号	1	小批次	「「「「「「「」」「「「」」「「「」」「「」」「「」」「「」」「「」」「「」			物料描述			単位	供应商
3810400003 8810200003 C0007712200170139         発程 20007712200170139         発程 20007712200170139         化0 20007712200170139         化0 20007712200170139         化0 2000771220170139         化0 20007712207010139         化0 2000771220701039         L         L         L         L	63102000583	C00478802	2022090358306	装框		铝边框_6005-T6_银白	a_1038*35*15mm_3.2mm_AA10_35.5*_图	号FZ7235150200-00_超达	框_边框槽口5.3,无膜	支	隆基C004788
SR10300003     C0007712207110138     発程     発程     日本       SR1030001     C0007712207110138     発程     日本     日本 <td< td=""><td>83104000003</td><td>C000771</td><td>12206170310</td><td>装框</td><td></td><td></td><td>硅胺_灌封胺B胺_胶醇_白色_</td><td>A: B=5:1</td><td></td><td>KO</td><td>隆基C000771</td></td<>	83104000003	C000771	12206170310	装框			硅胺_灌封胺B胺_胶醇_白色_	A: B=5:1		KO	隆基C000771
Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution system         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Techniology (Zhejidarig) COJ,LLC, Indicatoring Execution System         Bit Solid I Technio Colid I Technic I Technio Colid I Technic I	83103000003	C000771	12207110138	装框	1011		硅胶_灌封胶A胶_脱醇_白色_	A: B=5:1		KG	隆基C000771
またたは、日本の10000003 C000071220710103 安全 低いたいの「「「「「「」」」の「「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「「」」」の「」」	Gi Solar Techi	lology (znějí	ang) co.,Ltu.	· manufac	any Lie	acion system					
抽作条約         LRP904000220900110222         充当         孫之         国家主義報告         国家主義報告        国家主義報告         国家主義報告         国	牛爾历查询 X										
		组件条码	B LRP904000220900	0110292	查询 ) 言	青空 前EL返修前	●前EL图片) (■线盒图片) (■N曲线图)	■后EL图片	Ħ ]		
Constraints in an advectable in an advectable in an advectable in advectable i	件 路信息		THE R. LEWIS CO., LANSING MICH.	公元程 产品型号	原工单号	現工単号 組件车间 祖 PP11229001 キンフ	件等级  組件状态  是否NG  当前工歩	销售订单号	订单名称 Kobe Yamada DV Diani Conte Korin	a Et lanan 50 1MM COL	虚拟码 W
式信息           式信息         状式量度         FF         分指規则         箱号         包装計画         用決量           16/10:26         451 55435         M4 24 928701         0.78672725         220315-72HPH-445(0-5%)         新母、         12022-09-00613 44.57         D2022-09-00613 44.57           1/202         451 55435         LRA904000220300611         2022-09-00613 44.57         D2022-09-00613 44.57         D           1/202         -         <	#信息 組住号 4000220000110222	工单目标料号	兴际村专 12	1.04.701-01	INTER ADDRESS OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER		500 正常 首 77相 L(3)	-L-08F2201-1344-AUU6	Nove ramaga ny Plant Godo Kaish	ia. Proshau 2011MAA 1 58H	***********
時日地点         天期約率         功率指         电热格         郵配店館         FF         分性規則         福号         包数5月         の方参告         の方参告         の方参告         日本         日本<	件 路信息 组件号    4000220900110292	工单目标料号 80A06A5020371 8	<u> </u>	LR4-72HPH	-M PB11229001						
<u>9.27569</u> 451.5436 445 M 24.92701 0.76672725 220815-724円445(0-6%), 新电流分指, 只要素求効素 LRA804000220900611 2022-09-06.13.44.57 H福島	件 組信息 组件号    4000220900110292   試信息	工单目标料号 80A06A5020371 8	<u> 英称料号</u> 工2 30A06A5020371	LR4-72HPF	FM PB11229001	2					
	件 超信息 组件号   (4000220900110292   试信息 照前电流   :	工单目标科号 80A06A5020371 8 实则功率	<u> </u>	LR4-72HPH 电流椅	FM   PB11229001 孤式畫度	FF	分档规则	1	箱号	包装时间	历史箱号
村号         小松次         江岸         竹田純生         中位         村会前           883102000584         C0004788022022000358402         漆軽         組造種=2094*35*35*mm_6月_3.2mm_AA10_1300*396*400(7*10)mm_54.5*_圆号12723535100-18_长始種自5.3.无臓         支         隆基C004788           883102000033         C0000712207110138         菜種         植造量 2094*35*35*mm_6月_3.2mm_AA10_1300*396*400(7*10)mm_54.5*_圆号12723535100-18_长始種自5.3.无臓         大         隆基C004788           883102000033         C0000712207110138         菜種         載信金 電視 PVLR07A PVLR5 14mm*4140mm*4140mm=4140         5400 TU IM IME_17/11101561.1m1 **m8#2080.0045 18a         #         B#30000014	件 路信息 组件号 44000220900110292 试信息 照示地流 0.97859 4	工单目标科号 80A06A5020371 8 实则功率 151.56436	<u> </u>	LR4-72HPH 电流情 M	₩ PB11229001 耿i式量度 24.928701	FF 0.78672725	分档规则 220815-72HPH-445(0-6%),新电流分相	a,只要需求功率	箱号 LRA904000220900611	包装时间 2022-09-06 13:44:57	历史辅号
	体 組住是 組住号 (4000220900110292) 試信是 昭和地流 0.97859 4 6(2)20 4	工单目标料号 80A06A5020371 8 次则功率 151.56436	<u> </u>	LR4-72HPH 电流情 M	预试量度 24.928701 24.020701	FF 0.78672725	分档规则 220815-72HPH-445(0-6%),新电流分档	a,只要需求功率	箱号 LRA904000220900611	包装时间 2022-09-06 13:44:57	历史箱号
	件 程信息 组件号 14000220900110292 武信息 販売电流 0.97859 4 0.97859 4 第 1 1 1 1 1 1 1 1 1 1 1 1 1	工单目标料号 80A06A5020371 8 80A06A5020371 8 实则功率 451.56436		LR4-72HPH 电流精 M 工序	····································	FF 0.78672725	分档规则 220815-72HPH-445(0-6%),新电流分档 物料描述	a,只要需求功率	箱号 LRA904000220900611	包装时间 2022-09-06 13:44:57 单位	历史箱号
72202000009 C00099427400220930847 塗石 線径金度 P/LR07A PV-LR5 1*40mm *4100mm-C4/6 4160mm MB-L7010101561-01 =80号7050045 18A 客 #8450-00074	件 確信息 指件号 14000220900110292 试信息 新印电流 9.97859 4 0.97859 4 0.97859 4 16.210.2000564	工单目标科号 80A06A5020371 6 实则功率 451.56436	メルド科号 工2     200AD6A5020371     功率档     445     H肥次     2003080266402	LR4-72HPH 电流档 M 工序	WIT PETT 229001 取成量度 24.928701 24.928701 24.928701 24.928701	FF 0.78672725	分结规则 220815-72HPH-445(0-6%), 創电流分档 物件描述 物件描述	1, 只要需求功率	福号 LRA904000220900611	包装时间 2022-09-06 13:44:57 单位	历史箱号 供应商
	件 確信題 相件号 (信信題 能(信息 能(市地)法 (10.97859) 4 9.97859 4 9.97	工单目标料号 80A06A5020371 { 实别功率 451.56436 4 C00478802 C00478802	メロド科号 工2     北京科号 工2     北京科号 工2     北京福祉     445     村肥次     10222090356402     12207110138	LR4-72HPH 电流结 M 工序 法框	AN PETT229001 取れ温度 24 928701 24 928701 自动程。	FF 0.78672725 0.78672725 0.78672725 0.78672725 0.78672725 0.78672725 0.78672725 0.78672725 0.7867275 0.786725 0.776725 0.7867200000000000000000000000000000000000	分档规则 220815-72HPH-445(0-03),新电流分档 物件嵌连 nm_6有_3.2mm_A410_1000996400(7710) 2450 安全的本面、数率 个的	1,只要需求功率 )mm_54.5*_图号FZ72363 A: R=51	箱号 LRA904000220900611 50100-18_长边框槽口5.3元8	包装时间 2022-09-06 13:44:57 单位 支 人	历史辅号 供应商 隆基C004788 降复C00071

Shulong Yang

Inspector:



### Annex 1.6 Pull-off test record

	±1.45	由洲片切纳		相体温度	100.445	正/背面			拉力值 (	正6背5)			亚杨盾	会体占上は	制实结用			
	电池方规管	1日 7年市/家	焊接温度	100355	止/月四	电极1	电极2	电极3	电极4	电极5	电极6	一千均道	百佰忌百匹	判定结未				
							1	Ē	2.35	3.73	3.26	2.53	2.97	2.97	2.97			
					2	īE	3.12	2.49	2.41	2.28	3.12	3.12	2.76	1				
					3	 TF	3.81	3.59	3.32	0.82	3.81	3.81	3 19	1				
					4	 	4.21	154	2.72	4.21	2.40	4.21	2.40	-				
						<u> </u>	4.21	1.04	0.74	9.21	3.40	4.21	3.40	98%	合格			
					5	<u>ш</u>	4.98	4.98	2.71	3.02	4.34	4.34	4.06	-				
					6	止	5.26	5.26	2.59	3.99	1.65	3.95	3.78	4				
					7	<u> </u>	4.93	1.19	4.1	4.81	4.28	4.93	4.04	4				
9月5日	94	166*166	隆基0.35mm	250°C	8	止	5.19	5.19	1.17	4.23	3.87	4.23	3.98	-				
			P.2.2.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	250 0	9	11	3.51	3.51	0.99	1.28	1.73	1.73	2.13					
					2	日	1.15	5.00	3.14	2.21	1.0		2.34	-				
					2	吉	4.00	3.96	4.11	3.07	4.69		4.17	•				
						4	背	168	2.19	6.17	5.05	33		3.68	1			
					5	背	1.78	1.32	3.95	2.77	2.4		2.44	100%	合格			
					6	背	1.76	1.32	4.06	4.24	2.69		2.81					
					7	背	2.66	4.03	6.99	2.75	2.64		3.81					
					8	背	3.5	3.5	4.42	3.55	2.97		3.59					
					9	背	3.26	5.35	2.8	2.24	2.32		3.19					
							1	Ē	5.43	1.54	2.69	2.5	2.48	3.81	3.08	1		
					2	ΤĒ	2.64	1.54	2.07	1.35	1.94	2.88	2.07	4	A+6			
					3	E	1.34	1.16	1.02	1.24	2.45	3.1	1.72	4				
					4	Ē	1.5	1.71	1.32	1.54	1.65	1.35	1.51	96%				
					5	止	1.11	1.25	1.98	1.54	3	1.98	1.81		台格			
								6	<u><u><u> </u></u></u>	1.08	1	1.65	2.78	1 10	1.21	1.45	-	
							/	표	1.07	25	1.33	1.98	1.12	1.12	1.29	-		
						Í		8	<u> </u>	0.85	2.0	1.37	0.49	1.00	1.49	2.79	-	
9月5日	9B	166*166	隆基0.35mm	250°C	1	出	3.19	132	9.20	23	4.03	4.03	2.89					
					2	背	3.55	3.55	2.86	4.58	4.81		3.87	1				
					3	背	126	2.33	2.87	2.39	3.12		2.39	1				
					4	背	1.14	3.67	3.39	4.86	3.17		3.25	1				
					5	背	3.71	1	1.26	1.08	1.32		1.67	98%	合格			
					6	背	1.45	2.01	4.92	4.66	2.18		3.04	1				
					7	背	2.71	2.75	1.99	4.2	3.28		2.99	]				
		8 背 3.65 3.56 4.8 3.9 3.28		3.84	1													
					9	背	5.41	1.13	1.23	1.13	0.13		1.81	L				
	1	1			1	TE	126	128	4 58	4 65	I 4.01	542	3 5 3					

Inspection report no .:	15085694.009	
Inspector:	Shulong Yang	



### Annex 1.7 Gel content test record

方彩琴

2022-09-03

检查员

日期

		(IVID) < 3%	2pcs	(AC,Re=0,T)			
	交联度	75-95%	1pcs	每批 (Ac,Re=0,1)	80.36	/	
Ē	预交联度(白色 EVA))	福斯特 F806W-B:15%≤预交联度 ≤45%;海优威 S201W:15%≤预交 联度≤45%;斯威克 15%≤预交联度 ≤45%	1pcs	每批 (Ac,Re=0,1)	/	/	⊖ OK ⊖ NG
E	VA与背板剥离强 度	共挤白膜≥40N/cm	2pcs	每批 (Ac,Re=0,1)	/	1	
E	VA与玻璃剥离强 度	≥70N/cm(白色EVA标/推≥60N/cm)	2pcs	每批 (Ac,Re=0,1)	150.11	154.62	
	体积电阻率	>1.0×10的15次方Ω•cm;白色EVA 及共挤白膜>1.0×10的14次方Ω•cm	1pcs	每批 (Ac,Re=0,1)	74.5×10的15次	z/	● OK ⊖ NG
困	「裂伸长率 (交联	透明膜≥500%;共挤白膜及白膜		每批	740 57	Ι, Ι	
	后)	≥400%	1pcs	(Ac,Re=0,1)			Ŭ Ŭ
量	最终判定:						
	批次判定			● 合格 ○ 7	下合格		
	备注						
	不合格原因						

工程师/主管确认

高博

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Shulong Yang

Inspector:



Annex 1.8	Temperature	Uniformity	of	laminator	record
/	romporataro	ormorring	۰.	annacor	100010

机台号:	1112			_	-					
20214 2A21A 2021.3.10	130 145 B. 130 B. 130 B. 100 B. 100	129.5 129.3 144.9 144.6 129.9 129.6 129.9 129.6 149.9 129.6 149.9 129.4	13 14 1297 129.5 1443 144.2 129-4 131.7 143.6 144.4 129-6 121.7	15 T 129.6 17 144.7 14 130.1 131 144.9 143 131.141.9	5 17 22 129. F 89 4443 F 131.1 J 143.4 9 121. 5	T8 T9 129.1 129.5 144.8 144.2 184.6 131.4 192.5 142.9 121.2 12.1	TO差值 <i>0-1</i> 0.8 0.8 0.5 p.7	TI差值 /./ 0-7 とす 上す	一般	April 1
5.0	BL (42 B) BO B2 (42 B1 B0 B2 (47 B2 (47)	141.7 (42.4 127.5 130.7 142.1 142.1 129.4 129.8 144 7 144 6	$   \begin{array}{c}     1 \varphi_{1} q & 1 \varphi_{3} \\     1 \zeta_{1} \zeta_{1} & \zeta_{3} \alpha_{3} \\     (\varphi_{2}, q) & 1 \varphi_{3} \\     1 \varphi_{1} \zeta_{2} & \zeta_{3} \\     1 \varphi_{1} \zeta_{3} & \zeta_{3} \\     1 \varphi_{1} & \zeta$	143.614 130 13 142.7 14 131.2 12 112 12	1,6 130 5 2,1 (41,2 1,0 129.9	141.5 142,6 129,2 129,5 142,1 143,1 130, 129,0	0.7	2,2 2,4 2,5 1,6	Roth -	ション
7.11	B1 130 B2 145 B, 130 B2 145	129.2 129.5 144.5 144.1 1305 131.4 145.8 140	131 129 144.6 144.5 131.4 128.3 146.6 144.5	142,1 (4) 129,1 (1) 129,1 (	5 1425 31 131.6 58 1462 V 131.7 55 1497	146.2 146.4 120.4 121.6 146 144.6 120.5 130.4 144.5 144.6	0 0	27	合松之	部成章
- 7113 - 10.13 - 11.13	B, 130 13, 145 B, 150 B, 150 B, 145 B, 135	1274 143 142.6 144.4 131 130.7 145.5 1455 1322 1355	130.3 130.1 1461.7 141.7 129.2 1303 14614 14511 135.8 135.4	124.1 13 197.3 19 129.2 1. 5 145.2 10 136.9 13	13 141-6 1.3 141-6 1.1 129.5 14.9 1458 1.9 136.4	1432 /44,6 1732 /44,6 1723 /31 146 1449 1369 1354	b 0.7 0.4 1.9	217 2 1.9 1.9 1.1 11	分榜	387675 387675 387675
12.07	B, 143 B, 135 B, 135 B, 135 D~ 145	143.0 1454 134.8 134.9 145.9 1451 126.2 136.3	1450 1464 133,7 134,1 143,9 1440 166,0 136,0 186,0 136,0	143.4 10 1360 1 143.5 10 1360 1 1360 1	45-2 145.8 143 136.7 1.2 1636 17.0 133.7 2.9 182.0	1459 143 3 Rtio 1343 1430 1434 1351 1365 144.1 11440	2.0 0.9 1.9 1.3 1.3	2.8 2.6 2.8 1.0 2.8	命權	新祝
25	B1 130 B2 145 B1 130 B2145	131.6 1305 14413 1458 1301 155 1451 1458	1:0.9 5012 165.2 (48.1 129.7 130.2 144.9 144.1	130,6 13 143,7 14 124,1 13 145,9 14	1.3 131.9 6.7 144.9 3.9 131.1 6.0 146.1	130.7 31.1 1443 1435 130.8 29.5 144.7 144.5	116	1.7 ),0 1.6 2.0	合格 日本	行動会
510	B, 130 B, 150 B, 130 B, 130 B, 130 B, 130	150.2 1529 131.7 14.5 150.3 150.7	151. 151.2 151.4 150.5 151.7 150. 151.7 150.	- 151.5 1. 7 131.6 1. 9 149.9 /	49.9 149. 19.3 129.4 49.7 151.3 9.1 129.9	151.2 1505 131.9 131. 149.3 149. 131.4 130.	1 1.5 7 1.9 7 1.9 7 1.9	1.8 2.6 2.4 2.0	12112 春楼 春楼	13012 13012
7.12	B1150 B1150 B1150 B1150 B1150 B1150	150.7 151.7 130.5 14.6 150.9 151. 132.9 151.	151.4 49 4 130.2 130.9 150.2 149. 135.10 136.3	P 149.9 1 131.3 13 1 151.2 1 1 155.6 13	51.7 151.0 1.6 134.7 1.5 150.0 4.6 134.8	157.3 149.5 1319 131. 1449.7 151.5 155. 135.	1.7	2.4	<u>务授</u>	消费
9.5	32.145	1925 145-3	15.61437	1106.7 11	65.5 143.	F NB. 1 110	1 1.6			

15085694.009

Shulong Yang



Annex 1.9 Label

Inspector:

LR4-72HPH-445M	LONGI
Rated Maximum Power (Pmax) Power Tolerance Voltage at Pmax (Vmp) Current at Pmax (Imp) Open-Circuit Voltage (Voc) Short-Circuit Current (Isc) Voc & Isc Tolerance Maximum System Voltage Maximum System Voltage Maximum System Voltage Maximum System Voltage Protection Class	445W 0 ~ 3% 41.3 V 10.78 A 49.1 V 11.55 A 49.1 V 11.55 A 43% 1500 V 20 A -40°C ~ 85°C Class II
STC: AM1.5 1000W/m <sup>2</sup> 25°C Teaded to IEC 61235: 2016 and IEC 61720: 2016	
No 38, Middle Mogana Rosa, Chang no Ginnist, Xifan Bhanani 201808, P. B. China. Wwww.longi.com Medi in China	