

**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.**

Inspection report no.: 15085694.009

Inspector: Shulong Yang

## Inspection of photovoltaic (PV) module manufacturing site

<input type="checkbox"/>	Initial inspection
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<input checked="" type="checkbox"/>	Follow-up inspection
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<b>Date and time of inspection:</b>	from: 06/09/2022 8:30 a.m.	until: 06/09/2022 17:30 p.m.
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### 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:

Name:	Chen Wei
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

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

**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 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.: 15085694.009

Inspector: Shulong Yang

Name/Description:	LONGi Solar Technology (Datong) Co., Ltd.
Street:	North district of Economic and Technological Development Zones Enterprise Incubation Service Center, Huayuan 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 / Xianyang City, Shaanxi Province
Country:	P.R. China
Type of production:	Crystalline PV module production

**List of contents**

1	Ambit of the inspection .....	6
2	Inspected facility areas .....	6
3	Production in the considered period.....	6
4	Components and materials for the production .....	7
4.1	Solar cell .....	7
4.2	Front cover.....	12
4.3	Backside cover .....	14
4.4	Interconnection circuit.....	21
4.4.1	Cell connector.....	21
4.4.2	String connector.....	22
4.4.3	Soldering material.....	23
4.4.4	Cell fixing tape .....	24
4.5	Electrical connection.....	26
4.5.1	Junction box, bypass diode, cable, connector.....	26
4.6	Cell encapsulation .....	28
4.7	Frame and frame adhesive.....	40
4.7.1	Frame .....	40
4.7.2	Frame adhesive (tape/silicone) .....	40
4.8	Markings .....	42
5	Production process.....	43
5.1	Incoming inspections and preparation of materials .....	43
5.2	Lay-up of glass .....	43
5.3	Solar cell cutting .....	43
5.4	Solar cell tabbing and connection to strings .....	44
5.5	Interconnection of strings .....	44
5.6	Compilation of material layers .....	44
5.7	Recording of EL images .....	45
5.8	Lamination process .....	45
5.9	Electrical connection.....	45
5.10	Framing.....	46
5.11	Safety and functionality tests.....	46
5.11.1	Hi-pot test .....	46
5.11.2	Insulation test.....	46
5.11.3	Continuity of equipotential bonding test .....	47
5.11.4	Wet leakage test.....	47
5.11.5	Bypass diode functionality test .....	47
5.11.6	Functional check on test equipment.....	48
5.12	Control of output power .....	49
5.13	Final visual control.....	49
6	Quality assurance / control.....	50
6.1	Quality management system .....	50
6.2	Premises and environmental conditions.....	50
6.2.1	Storage and handling of materials.....	50
6.2.2	Production areas.....	50
6.2.3	Staff training.....	50
6.3	Handling of test and calibration equipment .....	51
6.4	Regular quality assurance tests .....	51
6.5	Documentation of process data.....	51
6.6	Directing of faulty products .....	51
6.7	Changes to certified products.....	52
7	Requirements for MCS 010 certification .....	53
7.1	General .....	53
7.2	Internal quality control .....	53
7.3	Complaints.....	54
8	Summary.....	55
	Annex 1: List of surveyed documents .....	56

Inspection report no.: 15085694.009

Inspector: Shulong Yang

### 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.	Main licence no. (as reference)	Production since last inspection [MW <sub>P</sub> ]
/	/	/	/

### 2 Inspected facility areas

<input checked="" type="checkbox"/> Production line, production of PV module type ... <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Completely running</li> <li><input type="checkbox"/> Partly running</li> <li><input type="checkbox"/> Not running</li> </ul> <input checked="" type="checkbox"/> Warehouse <input checked="" type="checkbox"/> Quality / research lab <input type="checkbox"/> Other
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### 3 Production in the considered period

Number of production lines:	115 for each workshop (3 workshops in total)		
Number of shifts:	9 lines (3 lines for each workshop)		
Number of production staff per shift:	2		
Production times	<input checked="" type="checkbox"/> All year <input type="checkbox"/> Seasonal: from ... to ...		
Holiday shut down	<input checked="" type="checkbox"/> No <input type="checkbox"/> 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.			

Inspection report no.: 15085694.009

Inspector: Shulong Yang

#### 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 Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75 x 31.35 / 157.25 x 31.45 Thickness [ $\mu\text{m} \pm$ tolerance]: 180 $\pm$ 18	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M2ENB Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75x 26.13 Thickness [ $\mu\text{m} \pm$ tolerance]: 200 $\pm$ 20	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M2BNB Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75x 26.13 / 157.25 x 26.21 Thickness [ $\mu\text{m} \pm$ tolerance]: 200 $\pm$ 20 / 180 $\pm$ 18	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input type="checkbox"/> Validated by up-to-date invoice/delivery note
<input type="checkbox"/> Not purchased since last inspection
Supplementary information:

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

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

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

Type/Specification	Manufacturer
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Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type designation: M2E6B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75 x 156.75 mm / 156.75 x 78.375 mm Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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 [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20 / 180 $\pm$ 18	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M10B9B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 182( $\pm$ 2) x 182( $\pm$ 2) / 182( $\pm$ 2) x 91( $\pm$ 2) / 182( $\pm$ 2) x 91.875( $\pm$ 2) / 182( $\pm$ 2) x 96.75( $\pm$ 2) / 182( $\pm$ 2) x 87.0( $\pm$ 2) Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20 / 180 $\pm$ 18	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
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Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type designation: M10D9B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 182(±2) x 182(±2) / 182(±2) x 91(±2) / 182(±2) x 91.875(±2) Thickness [µm ± tolerance]: 200±20	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Type/Specification	Manufacturer
Type designation: M10N18B / M10N18B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 182(±2) x 182(±2) / 182(±2) x 91(±2) Thickness [µm ± tolerance]: 180±18 / 160±16	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: M6P0B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 166x 83 mm Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 175 $\pm$ 17.5	Name and location of manufacturer: LONGi Solar Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: M6E6B / M6B6B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 166x 83 mm Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20	Name and location of manufacturer: Vina Cell technology Co., Ltd. Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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 ( $\pm$ 0.25) x 156.75 ( $\pm$ 0.25) Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200	Name and location of manufacturer: Vina Cell technology Co., Ltd. Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: M6B6B Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 166x 83 mm Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20	Name and location of manufacturer: Jiangsu Runergy YUEDA PV TECHNOLOGY CO.,LTD Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LES65TN Technology (mono/poly Si, etc.): Mono Dimensions [mm x mm]: 156.75 ( $\pm$ 0.25) x 156.75 ( $\pm$ 0.25) Thickness [ $\mu\text{m} \pm \text{tolerance}$ ]: 200 $\pm$ 20	Name and location of manufacturer: TSEC Corporation Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

## 4.2 Front cover

Type/Specification	Manufacturer
Type designation: Coated Tempered glass Material (glass, etc.): Glass Thickness [mm]: 2.8 / 3.2 / 4.0 mm Kind of surface treatment: N/A Tempering method (if tempered glass): n/a	Name and location of manufacturer: Xinyi Solar (Hongkong) Limited Changzhou Almaden Co., Ltd. Fujian Xinfuxing Glass Co., Ltd. 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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

	<p>Co., Ltd</p> <p>Shenzhen New Kibing Technology Co., Ltd</p> <p>Ningxia Jinjing Technology Co., LTD</p> <p>IRCO GROUP ELECTRONICS CO., LTD.</p> <p>SUOLATE SPECIAL GLASS (JIANGSU) CO., LTD.</p> <p>LONGi Green Energy Technology Co., Ltd</p> <p>Name and location of supplier (if applicable):</p>
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

Supplementary information:

### 4.3 Backside cover

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

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

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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

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

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

Type/Specification	Manufacturer
Type designation: TPP1 Thickness [mm]: 328 µm <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	Name and location of manufacturer: Lucky Film Co.,Ltd. Name and location of supplier (if applicable):

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection
Supplementary information:

Type/Specification	Manufacturer
Type designation: TFB30 (plus) Thickness [mm]: 320 µm <u>If non-glass: N/A</u> Backsheet structure (layers): PVF 25 µm/PET 275 µm/ Fluorine resin 10 µm Max. system voltage [V]: 1500	Name and location of manufacturer: Jolywood (Suzhou) Sunwatt Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: ETT15S-1 Thickness [mm]: 331 µm <u>If non-glass: N/A</u> Backsheet structure (layers): PVF 25 µm/PET 230 µm/ PO 60 µm Max. system voltage [V]: 1500	Name and location of manufacturer: Ningbo Exciton New Energy Co Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: BEC-306D (white or black) Thickness [mm]: 320 µm <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 manufacturer: Suzhou First PV Material Co., Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	



Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: KFB30 (plus) Thickness [mm]: 315 µm <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 manufacturer: Jolywood (Suzhou) Sunwatt Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LRTxyz05 (x=C,y=A or C,z=B) Thickness [mm]: 320 µm <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 manufacturer: LONGi Green Energy Technology Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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

Type/Specification	Manufacturer
Type designation: LRKxyz02 (x=C, y=A, z=B) Thickness [mm]: 315 µm <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 manufacturer: LONGi Green Energy Technology Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: LRTxyz04 (x=O, y=A, z=B) Thickness [mm]: 328 µm <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	Name and location of manufacturer: LONGi Green Energy Technology Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: NewCo-1500E Thickness [mm]: 350 µm <u>If non-glass: N/A</u> Backsheet structure (layers): Modified PO 325 µm / Modified PE 25 µm Max. system voltage [V]: 1500	Name and location of manufacturer: Zhejiang Sinopoly Materials Co., Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang



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

Type/Specification	Manufacturer
Type designation: Coated Tempered glass Material (glass, etc.): Glass Thickness [mm]: 2.5±0.2 (mm) Thickness:2.0±0.2 (mm) for framed module Kind of surface treatment: N/A Tempering method (if tempered glass): n/a	Name and location of manufacturer: xinyi Solar (Hongkong) Limited CHINA CSG HOLDING SUOLATE SPECIAL GLASS (JIANGSU) CO., LTD Changzhou Almaden Co., Ltd. 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 LIMITED 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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input type="checkbox"/> 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 x 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 Technology Co., Ltd
0.25 x 2 , 0.12 x 8 mm for shingling module	ZHEJIANG JINGYUAN PHOTOELECTRIC TECHNOLOGY CO.,LTD
0.43/90,triangular	Zhejiang Trumhe New Materials Co., Ltd
0.35 mm (Diameter)	HUIZHOU DEJINCHANG OPTOELECTRONICS TECHNOLOGY Co.,LTD
0.18 x 0.6mm	LONGi Green Energy Technology Co., Ltd
0.3 mm (Diameter)	Name and location of supplier (if applicable):
0.23 mm (Diameter)	
0.25 mm (Diameter)	
0.35 mm (Diameter)	
Thickness [mm ± tolerance]: N/A	
Width [mm ± tolerance]: N/A	
Composition of alloy: 63%Sn/37%Pb	
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

#### 4.4.2 String connector

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

Type/Specification	Manufacturer
Article/specification no.: 0.25x2.0 mm (between cell strings) 0.12x8.0 mm (between cell string and string connector) 0.25x4.0 mm (between string interconnector) Thickness [mm ± tolerance]: N/A Width [mm ± tolerance]: N/A Composition of alloy: 63%Sn/37%Pb	Name and location of manufacturer: Suzhou Yourbest New-type Materials Co., Ltd Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

#### 4.4.3 Soldering material

Type/Specification	Manufacturer
<b>Conductive adhesive:</b> Type: DT-90	Name and location of manufacturer: Darbond Technology co.,Ltd Name and location of supplier (if applicable):
<b>Conductive adhesive:</b> Type: LOCTITE ABLESTIK CA 3556HF	Name and location of manufacturer: Henkel (China) Investment Co., Ltd. Name and location of supplier (if applicable):
<b>Conductive adhesive:</b> Type: SE-200X	Name and location of manufacturer: Zhejiang XinYu Advanced Material Co., Ltd Name and location of supplier (if applicable):
<b>Conductive adhesive:</b> Type: Hecaro™ SC10	Name and location of manufacturer: Heraeus Materials Technology Shanghai Ltd. Name and location of supplier (if applicable):
<b>Connector</b> Type: 0.25x2mm (between cell strings) 0.12x8mm (between cell string and string connector) 0.25x4mm (between string interconnector)	Name and location of manufacturer: Suzhou YourBest New-type Materials Co.,Ltd. Name and location of supplier (if applicable):
<b>Soldering of busbars:</b> Fluxing agent/paste: SF56	Name and location of manufacturer: Singapore Asahi Chemical and Solder Industries Pte Ltd Asahi Solder Technology (Wuxi) Co. Ltd . Name and location of supplier (if applicable):
<b>Soldering of busbars:</b> Fluxing agent/paste: SF105	Name and location of manufacturer: ASAHI SOLDER TECHNOLOGY (WUXI)CO.,LTD. Name and location of supplier (if applicable):
<b>Soldering of busbars:</b> Fluxing agent/paste: 952-S	Name and location of manufacturer: Shenzhen TongFang Electronic New Material Co., Ltd Name and location of supplier (if applicable):
<b>Soldering of busbars:</b> Fluxing agent/paste: WS-867	Name and location of manufacturer: Zhengzhou Wise PV Technology Co.,Ltd. Name and location of supplier (if applicable):

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<p><b>Soldering of busbars:</b></p> <p>Fluxing agent/paste: TFHF9200</p>	<p>Name and location of manufacturer: Kester Components Pte Ltd.</p> <p>Name and location of supplier (if applicable):</p>
<p><b>Soldering of busbars:</b></p> <p>Fluxing agent/paste: 8000T20</p>	<p>Name and location of manufacturer: ShenZhen Embrace Glory Electronic Material Co.,Ltd HuiZhou Embrace Glory New Material Technology Co. LTD</p> <p>Name and location of supplier (if applicable):</p>
<p><b>Soldering of busbars:</b></p> <p>Fluxing agent/paste: WTO-PV112F</p>	<p>Name and location of manufacturer: Shenzhen Vital New Material Company Limited.</p> <p>Name and location of supplier (if applicable):</p>
<p><b>Connection of junction box terminals:</b></p> <p>Soldering tin: Fluxing agent/paste:</p>	<p>Name and location of manufacturer: Name and location of supplier (if applicable):</p>
<p>Flux:</p> <p><input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection</p>	
<p>Tin:</p> <p><input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection</p>	
<p>Supplementary information:</p>	

**4.4.4 Cell fixing tape**

Type/Specification	Manufacturer
<p>Type designation: UV-1 / UV-T</p> <p>Dimensions [mm]:</p>	<p>Name and location of manufacturer: 3M China Ltd.</p> <p>Name and location of supplier (if applicable):</p>
<p><input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection</p>	
<p>Supplementary information:</p>	



Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: FF-3665 Dimensions [mm]:	Name and location of manufacturer: Cybrid Technologies Inc. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

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

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: FF-3665(T75) Dimensions [mm]:	Name and location of manufacturer: Cybrid Technologies Inc. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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 Nominal current [A]: N/A Nominal voltage [V]: 1500 Max. temperature rating [°C]: 110 Certificate no.: R 50353585	Name and location of manufacturer: Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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

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

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

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection
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 Certificate no.: R 50369864	Name and location of manufacturer: Jiangsu Tonglin Electric Co., Ltd. Name and location of supplier (if applicable):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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):

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection
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):

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection
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):

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection
Supplementary information:

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<u>Backside of cells</u> 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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
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Inspection report no.: 15085694.009

Inspector: Shulong Yang

<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: LREW01 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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note	



Inspection report no.: 15085694.009

Inspector: Shulong Yang

Not purchased since last inspection

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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<u>Backside of cells</u> 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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
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Inspection report no.: 15085694.009

Inspector: Shulong Yang

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

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

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Not purchased since last inspection

Supplementary information:

Type/Specification	Manufacturer
<u>Frontside of cells</u> Type designation: B602 Thickness [mm]: 0.50 – 0.70	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]: 0.50 – 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):

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: 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):

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]: 0.40 - 0.85	Name and location of manufacturer: HANGZHOU FIRST APPLIED MATERIAL CO., LTD  Name and location of supplier (if applicable):

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note
<input type="checkbox"/> Not purchased since last inspection
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note	
<input type="checkbox"/> Not purchased since last inspection	
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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note	
<input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

#### 4.7 Frame and frame adhesive

##### 4.7.1 Frame

Type/Specification/Drawing no.	Manufacturer
Material / hardness (T5, T6 etc.): 6063 T5 Coating (type & thickness): N/A Drawing no.: N/A Assembly components (screws, rivets, etc.): N/A	Name and location of manufacturer: Yingkou Changtai Aluminum Material Co., Ltd Jiangyin Shunyuan Electrical Steel Materials Co., Ltd. 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):
<input type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

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

##### 4.7.2 Frame adhesive (tape/silicone)

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



Inspection report no.: 15085694.009

Inspector: Shulong Yang

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

Type/Specification	Manufacturer
Type designation: HT906Z Thickness: N/A	Name and location of manufacturer: Shanghai Huitian New Chemical Material Co.,Ltd. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: 888N Thickness: N/A	Name and location of manufacturer: Chengdu Guibao Science & Technology Co., Ltd Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Type/Specification	Manufacturer
Type designation: RS-3316 Thickness: N/A	Name and location of manufacturer: ZHENJIANG RAYBOND NEW MATERIAL TECHNOLOGY CO., LTD. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

Type/Specification	Manufacturer
Type designation: HT-8258 / HT-8188 Thickness: N/A	Name and location of manufacturer: Jiangsu Tianchen New Materials CO., LTD. Name and location of supplier (if applicable):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> 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):
<input checked="" type="checkbox"/> Validated by up-to-date invoice/delivery note <input type="checkbox"/> Not purchased since last inspection	
Supplementary information:	

## 5 Production process

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 manufacturer according to the colour 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?

Yes                       No                       Not applicable

### 5.2 Lay-up of glass

- Manually                       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 Delong, 11 sets in workshop 1 SLD-3200 from Delong, 4 sets in workshop 2 SLD-5500 from Delong, 4 sets in workshop 2 SLD-5500 from Delong, 4 sets in workshop 3
Cutting technology:	Laser mode: Pluse, Frequency 10 – 500Hz
Process parameters:	Cutting depth 50-60%
Quality controls:	The parameters are checked 3 times per shift

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

Remarks: N/A

#### 5.4 Solar cell tabbing and connection to strings

Manually                       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?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Soldering temperatures defined?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> 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?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> 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                       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

### 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 AI 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 workshop 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	
Lamination time [min] (evacuation/lamination/cooling phase):	EVA from Sveck	Chamber 1
		300±60 / 0~40, 0~40, 0~120 / -
		Chamber 2
	EVA from First	Chamber 1
		- / 20, 20, 0~120 / -
		Chamber 2
	EVA from HIUV	Chamber 1
		- / 20, 20, 0~120 / -
		Chamber 2
	Chamber 1	
	- / 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 weekly. Gel-content test is performed 3 laminators / 24 hours	

### 5.9 Electrical connection

- Manually                       Semi-automatically                       Automatically

Inspection report no.: 15085694.009

Inspector: Shulong Yang

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?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Position of junction box application defined?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Pressure defined?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Bypass diode functionality test conducted?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Junction box potted?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Quality controls: Visual check is performed 3 times per shift.		

### 5.10 Framing

Manually                       Semi-automatically                       Automatically

Description of single process steps		
1. Load frame manually. 2. Inject frame adhesive by auto machine. 3. Locate laminate and frame by auto machine. 4. Press process automatically. 5. Module move away.		
Amount of silicone defined and verified?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Position and/or pressure defined?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Quality controls: N/A		

### 5.11 Safety and functionality tests

#### 5.11.1 Hi-pot test

Parameter/Specification	Value/Remarks
Type, make and quantity of equipment:	CHT9981A, from Changzhou Hepu, 4 sets in workshop 1 CHT9985A, from Changzhou Hepu, 4 sets in workshop 2 CHT9985A, from Changzhou Hepu, 4 sets in workshop 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: $V_{TEST} = (1000 V + 2 \times V_{SYS}) \times Y$ , 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

Parameter/Specification	Value/Remarks
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Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

Type, make and quantity of equipment:	CHT9981A, from Changzhou Hepu, 4 sets in workshop 1 CHT9985A, from Changzhou Hepu, 4 sets in workshop 2 CHT9985A, from Changzhou Hepu, 4 sets in workshop 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 [MΩ]:	≥ (40 MΩ·m <sup>2</sup> divide the module area)
Pass criteria:	Minimum insulation resistance and no dielectric breakdown
Remarks: Recommendation from TÜV Rheinland: test performance acc. to IEC 61215 conditions.	

### 5.11.3 Continuity of equipotential bonding test

Parameter/Specification	Value/Remarks
Type, make and quantity of equipment:	CHT9981A, from Changzhou Hepu, 4 sets in workshop 1 CHT9985A, from Changzhou Hepu, 4 sets in workshop 2 CHT9985A, from Changzhou Hepu, 4 sets in workshop 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·m <sup>2</sup> / module area
Pass criteria:	> 40MΩ·m <sup>2</sup>
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 [%]:	/

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Applied method of IEC 61215-2:	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> Other
Pass criteria:	/		
Remarks: N/A			

### 5.11.6 Functional check on test equipment

Is a functional check of test equipment used for safety tests performed?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Is there a procedure describing how the functional checks shall be conducted?	<input checked="" type="checkbox"/> Yes, <input type="checkbox"/> automated <input type="checkbox"/> manual process	<input type="checkbox"/> No	<input type="checkbox"/> N/A
How is the proper function of the test equipment verified?	<input type="checkbox"/> Simulated failure (dummy) <input type="checkbox"/> Test procedure according to the equipment manual <input checked="" type="checkbox"/> Internal self-test; test program included in equipment certification <input type="checkbox"/> Internal self-test; verified by the inspector <input type="checkbox"/> Others (provide details):		
Is there evidence that the simulated failure (if applicable) represents the tripping limits as required?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Is there evidence that this functional check is conducted properly, even if certified products were not in production?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> 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?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Is there a procedure requiring appropriate actions to be taken by the operator if a functional check is found to be unsatisfactory?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Is this procedure appropriate to ensure that improperly checked products are re-tested?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Are corrective actions taken as well as results of test equipment functional checks recorded?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A



### 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); continuous):	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 correction 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 (primary/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 standardized 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 [±%]:	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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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  
 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  
 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

### 6.3 Handling of test and calibration equipment

The production line has to be equipped with measuring and testing equipment that allows a satisfactory quality control. All equipment that is used for tests has to be calibrated / checked on regular basis.	
Is test and measuring equipment used calibrated (including reference equipment used for verification)?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is the equipment provided with a label or similar indicating the next calibration due date?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Have methods and cycles for calibration including check-up and recording been set?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Was any test / measurement device identified during the audit which is not specified in the equipment list?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Do the calibration / verification records indicate that calibration is traceable to national / international standards of measurement?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> 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 adequate 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?		
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> 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 product is outside the production tolerances. How is the course of events determined, if a faulty product is found?		
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?		
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not applicable

Inspection report no.: 15085694.009

Inspector: Shulong Yang

### 6.7 Changes to certified products

Is a reference about the certified version available?	<input checked="" type="checkbox"/> Yes, <input checked="" type="checkbox"/> Set of drawings <input checked="" type="checkbox"/> Reference sample <input type="checkbox"/> Parts list <input type="checkbox"/> Photo documentation <input type="checkbox"/> Other	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Is this reference under control of the licence holder?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Is any procedure ensuring that constructional changes of the certified product are made only after approval by the certification body?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Have changes been made to the certified product since last inspection that needed to be informed to the certification body?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

## 7 Requirements for MCS 010 certification

Applicable  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).*

<p>Orders, contracts and tenders shall be reviewed to ensure that</p> <ul style="list-style-type: none"> <li>- the requirements are adequately defined for each product for quantity, packaging, deliver, etc.,</li> <li>- 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.</li> </ul> <p>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.</p>
<p>Description of processes:</p>
<p>The order and contract do contain quantity, specification, type, delivery date and these procedures are established and documented in LGiLE-S-POD-047.</p>
<p>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.</p>
<p>Description of processes:</p>
<p>A master list of suppliers is available, which contains the address, location, contact details and the service or products / materials supplied or each supplier.</p>
<p>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.</p>
<p>Description of processes:</p>
<p>All the requested information is recorded in purchase orders.</p>
<p>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?</p>
<p>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.</p>

### 7.2 Internal quality control

<p>Are regular internal review meetings taking place to review the status of the quality system? At what frequency?</p>
<p>The quality review meeting is performed yearly.</p>
<p>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):</p>
<p>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.</p>

Inspection report no.: 15085694.009

Inspector: Shulong Yang

### 7.3 Complaints

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

Inspection report no.: 15085694.009  
 Inspector: Shulong Yang

## 8 Summary

**Did the inspection show any deviations?**

Severe       Short-term correctable       None

**Remarks from the inspector / corrective measures**

<b>Summary of factory inspection:</b>			
This inspection serves as follow-up inspection at LONGi Solar Technology (Zhejiang) Co., Ltd. The workshop No. 1 was selected for inspection after the factory expanded the production capacity by introducing new soldering process. The entire production line, warehouse and IQC process were inspected.			
<b>(Only for follow-up inspections) Previous non-conformities:</b>			
Have all found non-conformities / deviations from the last inspection been reviewed and implemented satisfactorily?			
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not applicable	
<b>Confirmation that certification marks were in general only found on products for which a test mark was granted:</b>			
<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Not confirmed	<input type="checkbox"/> Not applicable	
<b>The factory will be visited again in</b>			
<input checked="" type="checkbox"/> One year	<input type="checkbox"/> Six months	<input type="checkbox"/> Three months	<input type="checkbox"/>
<input type="checkbox"/> Determination of actions by certification body necessary			
<b>Deviations:</b>			
N/A			
<b>Recommendations:</b>			
N/A			
<b>Are the requirements of MCS 010 fulfilled?</b>			
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not applicable	
<p>Quzhou 06/09/2022</p> <p>Place/Date (Signature: Inspector)</p> <p>Quzhou 06/09/2022</p> <p>Place/Date (Signature: Quality control manager)</p>			

Annex: List of surveyed documents

Inspection report no.: 15085694.009

Inspector: Shulong Yang

## 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



Inspection report no.: 15085694.009

Inspector: Shulong Yang

Annex 1.1 ISO certificates



Inspection report no.: 15085694.009

Inspector: Shulong Yang





Inspection report no.: 15085694.009

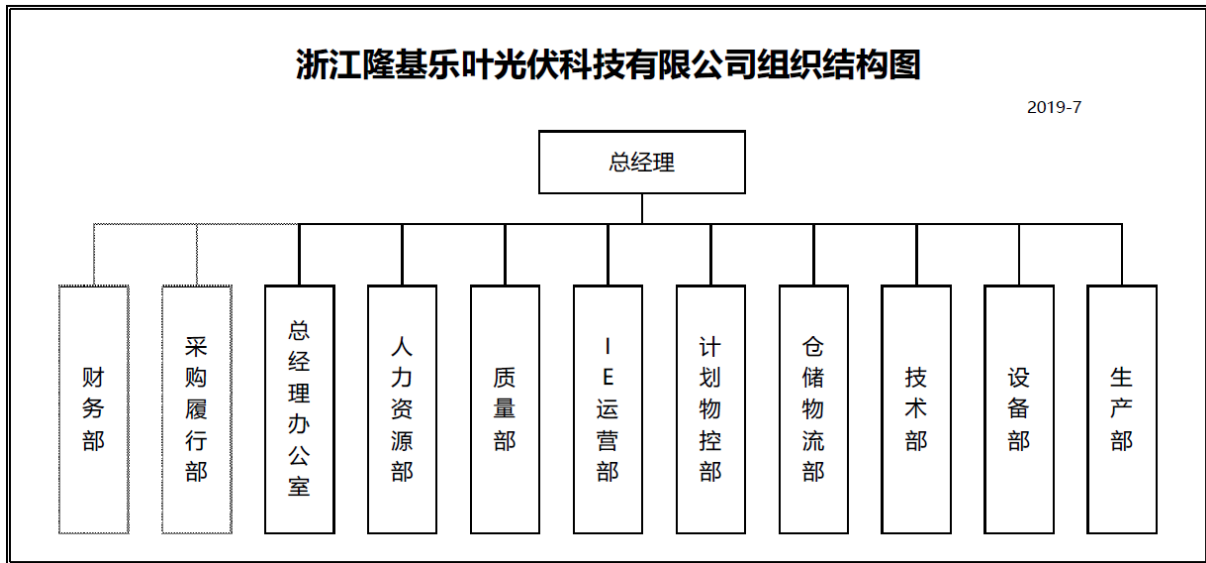
Inspector: Shulong Yang



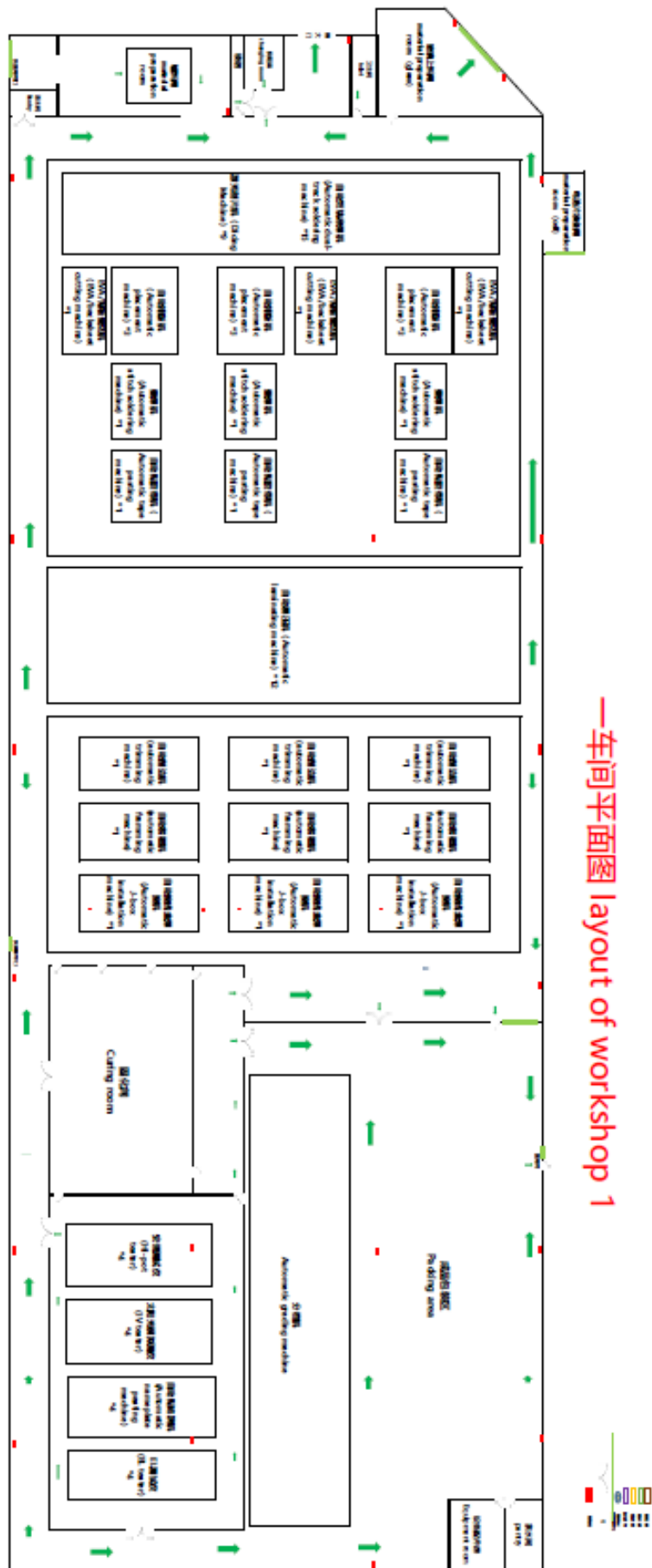
Inspection report no.: 15085694.009

Inspector: Shulong Yang

Annex 1.2 Organization chart



Annex 1.3 Workshop layout



一车间平面图 layout of workshop 1

Annex 1.4 Serial No. coding rule

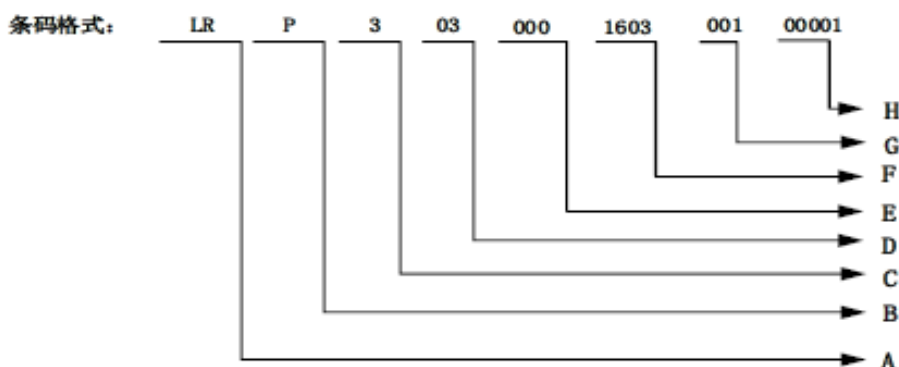
<b>LONGi</b>	文件名称	组件工厂代码、条形码、托盘号编码规则和唛头、标签模板规定	密 级	
			版本状态	V20
	文件编号	LGiLE (PM) -T-PRD-016	页 码	1 / 2
			生效日期	2022/02/14

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	P	产品开发工单	R
实验工单	E	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	A
十一栅电池片	B
.....	.....

Inspection report no.: 15085694.009

Inspector: Shulong Yang

<b>LONGi</b>	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	密 级	
			版本状态	V20
	文件编号	LGiLE (PM) -T-PRD-016	页 码	2 / 2
			生效日期	2022/02/14

三十五栅电池片	Z
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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 组件
02	125	96	
03	除125电池片以外的其 它单晶电池片	60	
04		72	
09		50	
10		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	目前集团内无多晶电池片组 件
06	125*125	96	
07	156*156	60	
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



Inspection report no.: 15085694.009

Inspector: Shulong Yang



Annex 1.5 Bill of materials and process data

LONGI Solar Technology (Zhejiang) Co.,Ltd. Manufacturing Execution System

组件履历查询 x

查询条件 组件条码 LRP904000220900110292

组件基础信息

组件号	工单目标料号	实际料号	工艺流程	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NO	当前工步	销售订单号	订单名称	虚拟码	WI	WZ
LRP904000220900110292	80A06A5020371	80A06A5020371	LR4-7ZHPH-M	PB11229001	PB11229001	一车间	CA	正常	否	分档	LOI-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisha-日本Japan-50.1MW	P9H444444444444			

组件测试信息

测试电流	实测功率	功率档	电流档	测试温度	FF	分档规则	箱号	包装时间	历史编号
10.97859	451.58436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%)	LRA904000220900611	2022-09-06 13:44:57	

组件物料信息

料号	小批次	工序	物料描述	单位	供应商
893204000005	C00078901822073115036	叠层	焊带_工电流_扁丝_叠层_Sn63Pb37_0.3*7mm	KG	隆基C000789
823103000085	C001584220826A08724238	叠层	EVA_白色_510g/m²_1027mm	M2	隆基C001584
893101000046	C00078901822082410005	叠层	焊带_互联系_扁丝_叠层_Sn63Pb37_0.35mm	KG	隆基C000789

LONGI Solar Technology (Zhejiang) Co.,Ltd. Manufacturing Execution System

组件履历查询 x

查询条件 组件条码 LRP904000220900110292

组件基础信息

组件号	工单目标料号	实际料号	工艺流程	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NO	当前工步	销售订单号	订单名称	虚拟码	WI	WZ
LRP904000220900110292	80A06A5020371	80A06A5020371	LR4-7ZHPH-M	PB11229001	PB11229001	一车间	CA	正常	否	分档	LOI-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisha-日本Japan-50.1MW	P9H444444444444			

组件测试信息

测试电流	实测功率	功率档	电流档	测试温度	FF	分档规则	箱号	包装时间	历史编号
10.97859	451.58436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%)	LRA904000220900611	2022-09-06 13:44:57	

组件物料信息

料号	小批次	工序	物料描述	单位	供应商
833103000066	C000750L007P22081302950	叠层	背板_TPK_白色_1035mm_1500V_Lang	M2	隆基C000750
713121L800	M0UAA22081010074	叠层	扩膜_电池片_漆S_单晶166/2238_0.165_双面PERC_L8_正常_自有车保线A-级	片	隆基S003891
813132000116	C000741C018220731M2419	叠层	光伏玻璃_超白压花_普通_钢化_镀膜_2089*1033*2mm	块	隆基C000741

LONGI Solar Technology (Zhejiang) Co.,Ltd. Manufacturing Execution System

组件履历查询 x

查询条件 组件条码 LRP904000220900110292

组件基础信息

组件号	工单目标料号	实际料号	工艺流程	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NO	当前工步	销售订单号	订单名称	虚拟码	WI	WZ
LRP904000220900110292	80A06A5020371	80A06A5020371	LR4-7ZHPH-M	PB11229001	PB11229001	一车间	CA	正常	否	分档	LOI-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisha-日本Japan-50.1MW	P9H444444444444			

组件测试信息

测试电流	实测功率	功率档	电流档	测试温度	FF	分档规则	箱号	包装时间	历史编号
10.97859	451.58436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%)	LRA904000220900611	2022-09-06 13:44:57	

组件物料信息

料号	小批次	工序	物料描述	单位	供应商
823101000113	C001584220825AA4620040	叠层	EVA_深蓝色_530g/m²_1023mm	M2	隆基C001584
893204000008	C000789018220730787845	叠层	焊带_工电流_扁丝_叠层_Sn63Pb37_0.3*4mm	KG	隆基C000789
893002000000	C0007712208210009	装框	铝框_密封胶_胶条_白色_270kg/套	KG	隆基C000771

LONGI Solar Technology (Zhejiang) Co.,Ltd. Manufacturing Execution System

组件履历查询 x

查询条件 组件条码 LRP904000220900110292

组件基础信息

组件号	工单目标料号	实际料号	工艺流程	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NO	当前工步	销售订单号	订单名称	虚拟码	WI	WZ
LRP904000220900110292	80A06A5020371	80A06A5020371	LR4-7ZHPH-M	PB11229001	PB11229001	一车间	CA	正常	否	分档	LOI-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisha-日本Japan-50.1MW	P9H444444444444			

组件测试信息

测试电流	实测功率	功率档	电流档	测试温度	FF	分档规则	箱号	包装时间	历史编号
10.97859	451.58436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%)	LRA904000220900611	2022-09-06 13:44:57	

组件物料信息

料号	小批次	工序	物料描述	单位	供应商
863102000583	C00478802202090358306	装框	铝边框_6005-T6_铝白_1038*35*1.5mm_3.2mm_AA10_35.5°_四号FZ27235150200-00_铝边框_边槽槽口5.3无膜	套	隆基C004788
863104000003	C0007712208170310	装框	硅胶_密封胶B胶_胶条_白色_A: B=5:1	KG	隆基C000771
863103000003	C0007712208170138	装框	硅胶_密封胶A胶_胶条_白色_A: B=5:1	KG	隆基C000771

LONGI Solar Technology (Zhejiang) Co.,Ltd. Manufacturing Execution System

组件履历查询 x

查询条件 组件条码 LRP904000220900110292

组件基础信息

组件号	工单目标料号	实际料号	工艺流程	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NO	当前工步	销售订单号	订单名称	虚拟码	WI	WZ
LRP904000220900110292	80A06A5020371	80A06A5020371	LR4-7ZHPH-M	PB11229001	PB11229001	一车间	CA	正常	否	分档	LOI-L-Sal-2201-1344-A006	Kobe Yamada PV Plant Godo Kaisha-日本Japan-50.1MW	P9H444444444444			

组件测试信息

测试电流	实测功率	功率档	电流档	测试温度	FF	分档规则	箱号	包装时间	历史编号
10.97859	451.58436	445	M	24.928701	0.78672725	220815-72HPH-445(0-6%)	LRA904000220900611	2022-09-06 13:44:57	

组件物料信息

料号	小批次	工序	物料描述	单位	供应商
863102000584	C00478802202090358402	装框	铝边框_6005-T6_铝白_2094*35*3.5mm_6孔_3.2mm_AA10_1300*990*400(7°)10mm_54.5°_四号FZ27235350100-18_铝边框_边槽槽口5.3无膜	套	隆基C004788
863103000003	C0007712208170138	装框	硅胶_密封胶A胶_胶条_白色_A: B=5:1	KG	隆基C000771
873203000099	C0009942H002209030847	装框	接线盒_常规_PV-LR07A_PV-LR5_114mm*1140mm*1400mm_三分体_1500V_TUV_图号JZ010101501-01_二极管20S0045_16A	套	隆基C000994



Inspection report no.: 15085694.009

Inspector: Shulong Yang



Annex 1.6 Pull-off test record

日期	机台	电池片规格	焊带厂家	焊接温度	栅线	正/背面	拉力值 (正6背5)						平均值	合格点占比	判定结果		
							电极1	电极2	电极3	电极4	电极5	电极6					
9月5日	9A	166*166	隆基0.35mm	250°C		正	1	2.35	3.73	3.26	2.53	2.97	2.97	98%	合格		
							2	3.12	2.49	2.41	2.28	3.12	3.12			2.76	
							3	3.81	3.59	3.32	0.82	3.81	3.81			3.19	
							4	4.21	1.54	2.72	4.21	3.48	4.21			3.40	
							5	4.98	4.98	2.71	3.02	4.34	4.34			4.06	
							6	5.26	5.26	2.59	3.99	1.65	3.95			3.78	
							7	4.93	1.19	4.1	4.81	4.28	4.93			4.04	
							8	5.19	5.19	1.17	4.23	3.87	4.23			3.98	
							9	3.51	3.51	0.99	1.28	1.73	1.73			2.13	
							背	1	1.19	3.55	3.14	3.21	1.6	2.54	100%	合格	
								2	4.66	5.9	4.11	3.87	2.3	4.17			
								3	1.17	3.86	4.68	3.31	4.68				3.54
								4	1.68	2.19	6.17	5.05	3.3				3.68
								5	1.78	1.32	3.95	2.77	2.4				2.44
								6	1.76	1.32	4.06	4.24	2.69				2.81
								7	2.66	4.03	6.99	2.75	2.64				3.81
								8	3.5	3.5	4.42	3.55	2.97				3.59
								9	3.26	5.35	2.8	2.24	2.32				3.19
9月5日	9B	166*166	隆基0.35mm	250°C		正	1	5.43	1.54	2.69	2.5	2.48	3.81	3.08	96%	合格	
							2	2.64	1.54	2.07	1.35	1.94	2.88	2.07			
							3	1.34	1.16	1.02	1.24	2.45	3.1	1.72			
							4	1.5	1.71	1.32	1.54	1.65	1.35	1.51			
							5	1.11	1.25	1.98	1.54	3	1.98	1.81			
							6	1.08	1	1.65	2.78	1	1.21	1.45			
							7	1.07	1.11	1.33	1.98	1.12	1.12	1.29			
							8	0.86	2.5	1.37	1.49	1.55	1.49	1.54			
							9	0.79	3.42	4.26	6.16	4.03	4.03	3.78			
							背	1	3.19	1.32	3.55	2.3	4.11	2.89	98%	合格	
								2	3.55	3.55	2.86	4.58	4.81	3.87			
								3	1.26	2.33	2.87	2.39	3.12				2.39
								4	1.14	3.67	3.39	4.86	3.17				3.25
								5	3.71	1	1.26	1.08	1.32				1.67
								6	1.45	2.01	4.92	4.66	2.18				3.04
								7	2.71	2.75	1.99	4.2	3.28				2.99
								8	3.85	3.56	4.8	3.9	3.28				3.84
								9	5.41	1.13	1.23	1.13	0.13				1.81
1	正	1.76	1.28	4.58	4.65	4.01	5.42	3.53									

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Annex 1.7 Gel content test record

	(MID) < 3%	2pcs (Ac,Re=0,1)			
交联度	75-95%	每批 1pcs (Ac,Re=0,1)	80.36	/	<input checked="" type="radio"/> OK <input type="radio"/> NG
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%	每批 1pcs (Ac,Re=0,1)	/	/	<input type="radio"/> OK <input type="radio"/> NG
EVA与背板剥离强度	共挤白膜≥40N/cm	每批 2pcs (Ac,Re=0,1)	/	/	<input type="radio"/> OK <input type="radio"/> NG
EVA与玻璃剥离强度	≥70N/cm(白色EVA标准≥60N/cm)	每批 2pcs (Ac,Re=0,1)	150.11	154.62	<input checked="" type="radio"/> OK <input type="radio"/> NG
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	每批 1pcs (Ac,Re=0,1)	74.5×10的15次/		<input checked="" type="radio"/> OK <input type="radio"/> NG
断裂伸长率 (交联后)	透明膜 ≥500%; 共挤白膜及白膜 ≥400%	每批 1pcs (Ac,Re=0,1)	710.57	/	<input type="radio"/> OK <input type="radio"/> NG

最终判定:

批次判定	<input checked="" type="radio"/> 合格 <input type="radio"/> 不合格		
备注			
不合格原因			
检查员	方彩琴	工程师/主管确认	高博
日期	2022-09-03		

Annex 1.8 Temperature Uniformity of laminator record

**LONGi** 层压机点温记录表

机台号: 11上

时间	设定温度	T1	T2	T3	T4	T5	T6	T7	T8	T9	T0差值	T1差值	判定	操作人
2021/4	120	129.5	127.3	129.7	129.5	129.6	120.2	129.9	129.1	129.5	0.7	1.1	合格	张洪波
2021/4	145	144.9	144.8	144.8	144.2	144.7	144.9	144.7	144.8	144.2	0.8	0.7	合格	张洪波
2021/3/10	B1 130	129.9	128.6	129.4	131.7	130.1	131.5	131.1	128.6	131.1	1.2	2.5	合格	张洪波
	B2 130	129.9	128.6	129.4	131.7	130.1	131.5	131.1	128.6	131.1	1.2	2.5	合格	张洪波
4:10	B1 130	129.5	127.9	129.9	129.6	129.7	129.9	129.1	129.5	129.4	0.7	1.5	合格	张洪波
	B2 142	129.7	129.4	129.9	128.7	129.6	129.3	129.2	129.5	129.5	0.7	2.2	合格	张洪波
5:10	B1 130	129.5	127.9	129.9	129.6	129.7	129.9	129.1	129.5	129.4	0.7	2.5	合格	张洪波
	B2 142	129.7	129.4	129.9	128.7	129.6	129.3	129.2	129.5	129.5	0.7	2.5	合格	张洪波
6:40	B1 130	129.4	129.5	129.6	129.8	129.7	131.0	129.9	130.1	129.9	1.1	1.6	合格	张洪波
	B2 142	129.7	129.4	129.9	128.7	129.6	129.3	129.2	129.5	129.5	0.7	1.4	合格	张洪波
7:11	B1 130	129.2	129.6	129.1	129.9	129.7	131.1	129.5	129.3	129.4	0.7	2.6	合格	张洪波
	B2 145	129.1	129.4	129.6	129.8	129.7	131.1	129.5	129.3	129.4	0.7	2.7	合格	张洪波
8:13	B1 130	129.1	129.4	129.6	129.8	129.7	131.1	129.5	129.3	129.4	0.7	2.5	合格	张洪波
	B2 145	129.1	129.4	129.6	129.8	129.7	131.1	129.5	129.3	129.4	0.7	2.5	合格	张洪波
9:13	B1 130	129.7	129.5	129.3	129.1	129.1	130.2	129.0	129.0	129.0	0	2.7	合格	张洪波
	B2 145	129.7	129.5	129.3	129.1	129.1	130.2	129.0	129.0	129.0	0	2.7	合格	张洪波
10:13	B1 130	129.7	129.5	129.3	129.1	129.1	130.2	129.0	129.0	129.0	0	2.7	合格	张洪波
	B2 145	129.7	129.5	129.3	129.1	129.1	130.2	129.0	129.0	129.0	0	2.7	合格	张洪波
11:12	B1 135	132.2	135.5	135.8	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
	B2 142	132.0	135.4	135.0	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
12:09	B1 135	132.0	135.4	135.0	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
	B2 142	132.0	135.4	135.0	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
2021/10	B1 135	132.0	135.4	135.0	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
	B2 142	132.0	135.4	135.0	133.4	136.5	136.9	136.4	136.9	135.4	1.9	1.7	合格	张洪波
2:5	B1 130	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
	B2 145	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
3:7	B1 130	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
	B2 145	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
4:6	B1 130	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
	B2 145	129.6	129.5	129.7	129.6	129.7	129.6	129.7	129.6	129.7	1.1	1.6	合格	张洪波
5:6	B1 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
	B2 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
6:21	B1 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
	B2 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
7:12	B1 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
	B2 150	150.2	150.9	151.1	151.2	151.5	149.9	149.7	151.2	150.9	1.5	1.8	合格	张洪波
9:5	B1 130	129.5	127.3	129.7	129.5	129.6	120.2	129.9	129.1	129.5	0.7	1.1	合格	张洪波
	B2 145	129.5	127.3	129.7	129.5	129.6	120.2	129.9	129.1	129.5	0.7	1.1	合格	张洪波

备注: 工艺人员每月点温一次, T0=T检测-T设置 ≤2°C, T1=T检测max-T检测min ≤3°C

LGILE (Z) -W-TD-294-0703

Inspection report no.: 15085694.009

Inspector: Shulong Yang

Annex 1.9 Label

