
PV MODULE MASTER SUPPLY AGREEMENT (CHISME SOLAR AND STORAGE PROJECT)

DATED as of May 15, 2025

LONGi Solar Technology (U.S.) Inc.,

hereinafter referred to as (“**Vendor**”)

- and -

RED RIVER CLEAN ENERGY, LLC,

hereinafter referred to as (“**Purchaser**”)

TABLE OF CONTENTS

	Page
ARTICLE 1. INTERPRETATION	3
Section 1.1 Definitions	3
Section 1.2 Actions on Non-Business Days	9
Section 1.3 Currency and Payment Obligations	9
Section 1.4 Calculation of Time	9
Section 1.5 Additional Rules of Interpretation	10
Section 1.6 Schedules	10
ARTICLE 2. PURCHASE OF PV MODULES	11
Section 2.1 Purchase and Sale of PV Modules	11
Section 2.2 Volume and Type of PV Modules; Inspections	14
Section 2.3 Purchase Prices	15
Section 2.4 Shipment and Delivery	16
Section 2.5 Billing and Payment	18
Section 2.6 Insurance and Damage in Transit	19
Section 2.7 Guarantees	20
ARTICLE 3. TERM AND TERMINATION	20
Section 3.1 Term	20
Section 3.2 Default by Purchaser	20
Section 3.3 Default by Vendor	21
Section 3.4 Force Majeure	23
ARTICLE 4. WARRANTY	23
Section 4.1 Specifications	23
Section 4.2 General Product Warranty	23
Section 4.3 Performance Warranty	24
Section 4.4 Warranties are Transferrable	24
Section 4.5 Compliance by Purchaser	24
Section 4.6 Claim Procedures	24
Section 4.7 Warranty Insurance	25
Section 4.8 Project Site Access	25
ARTICLE 5. REPRESENTATIONS AND WARRANTIES	25
Section 5.1 Representations and Warranties of Vendor	25
Section 5.2 Representations and Warranties of Purchaser	28
ARTICLE 6. INDEMNIFICATION AND LIMITATIONS OF LIABILITY	28
Section 6.1 Indemnification	28
Section 6.2 Limitation of Liability	30
Section 6.3 Exclusion of Indirect Damages	31
Section 6.4 Duty to Mitigate	31
Section 6.5 Application	31
ARTICLE 7. CONFIDENTIALITY	31
Section 7.1 Information To Be Confidential	31
Section 7.2 Use Of Confidential Information	31

Section 7.3 Required Disclosure	31
Section 7.4 Return or Destruction	32
ARTICLE 8. DISPUTE RESOLUTION	32
Section 8.1 Disputes	32
Section 8.2 Interim Relief and Third-Party Claims	33
Section 8.3 Injunctive Relief	34
Section 8.4 Pending Dispute: Duty to Continue	34
ARTICLE 9. LENDER ACCOMMODATIONS	34
Section 9.1 Assignment to Lender	34
Section 9.2 Lender Rights	34
ARTICLE 10. GENERAL	35
Section 10.1 Expenses	35
Section 10.2 Public Announcement	35
Section 10.3 Notices	35
Section 10.4 Further Assurances	37
Section 10.5 Entire Agreement	37
Section 10.6 Amendment	37
Section 10.7 Waiver	37
Section 10.8 Severability	37
Section 10.9 Remedies Cumulative	37
Section 10.10 Governing Law; Limited Submission to Jurisdiction	38
Section 10.11 Waiver of Jury Trial	38
Section 10.12 Third Party Beneficiaries	38
Section 10.13 Successors and Assigns	38
Section 10.14 Counterparts	39
Section 10.15 Language	39
Section 10.16 Survival	39
SCHEDULE A – DESCRIPTION OF PV MODULES AND SPECIFICATIONS.....	A-1
SCHEDULE B – PV MODULE PRICING.....	B-1
SCHEDULE C – FORM OF PURCHASE ORDER.....	C-1
SCHEDULE D – PACKING AND SHIPPING; ACCESS TO PROJECT SITE.....	D-1
SCHEDULE E –WARRANTY.....	E-1
SCHEDULE F – ACCEPTANCE CRITERIA.....	F-1
SCHEDULE G – PROJECT LIST.....	G-1
SCHEDULE H – PV MOUNTING COMPATIBILITY APPROVAL LETTER.....	H-1
SCHEDULE I – DELIVERY SCHEDULE.....	I-1
SCHEDULE J – FORM OF VENDOR AFFILIATE GUARANTY.....	J-1

PV MODULE MASTER SUPPLY AGREEMENT

This Agreement dated as of May 15, 2025 (the “**Effective Date**”) is made

B E T W E E N

Red River Clean Energy, LLC, a Delaware limited liability company

hereinafter referred to as (“**Purchaser**”)

- and -

LONGi Solar Technology (U.S.) Inc., a Delaware corporation (the “**Vendor**”).

RECITALS:

- A. Vendor is willing to sell the PV Modules to Purchaser throughout the Term; and
- B. Purchaser is willing to purchase the PV Modules from Vendor throughout the Term.

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged by each Party, the Parties agree as follows:

ARTICLE 1. INTERPRETATION

Section 1.1 Definitions

In this Agreement:

(1) “**Affiliate**” means, with respect to any Person, any other Person who directly or indirectly controls, is controlled by, or is under direct or indirect common control with, such Person, and includes any Person in like relation to an Affiliate. A Person shall be deemed to “control” another Person if such Person possesses, directly or indirectly, the power to direct or cause the direction of the management and policies of such other Person, whether through the ownership of voting securities, by contract or otherwise; and the term “controlled” shall have a similar meaning.

(2) “**Agreement**” means this PV Module Master Supply Agreement and all the Schedules attached hereto, as the same may be amended, restated or replaced from time to time.

(3) “**Applicable Law**” means and includes all laws, codes, ordinances, statutes, rules, regulations, orders, decrees, judgments, injunctions, specified standards or objective criteria explicitly contained in any Applicable Permit or approval, notices or binding agreements promulgated by any Governmental Authority having jurisdiction over either Party, a Facility, or a Party’s obligations under this Agreement as the same may be modified, amended or repealed from time to time.

(4) “**Applicable Permit**” means any action, approval, consent, waiver, exemption, variance, franchise, order, permit, authorization, right or license of or from a Governmental Authority that is necessary for the performance of the work under this Agreement.

(5) “**Borrower**” has the meaning set out in Section 9.1(1).

(6) “**Business Day**” means any day except Saturday, Sunday or any day on which banks are generally not open for business in Houston, Texas.

(7) “**Change in Law**” means enactment, adoption, promulgation, modification, updates (including a written or oral change in interpretation by a Governmental Authority) or repeal of any Applicable Law after the Effective Date. Change in Law does not include any new or increased tariffs imposed on the PV Modules (including any components thereof) after the Effective Date.

(8) “**Change in Law Event**” means a Change in Law that prevents a Party from performing its obligations under this Agreement or complying with any conditions required to be complied with under this Agreement.

(9) “**Cancellation Notice**” has the meaning set out in Section 2.1(7).

(10) “**Confidential Information**” means, in relation to a Party (the “**Discloser**”):

(a) all information, in whatever form communicated or maintained, whether orally, in writing, electronically, in computer readable form or otherwise, that the Discloser discloses to, or that is gathered by a Party (the “**Recipient**”) or any of the Recipient’s Representatives in connection with the Purchase contemplated by this Agreement, whether provided before or after the Effective Date, including information that contains or otherwise reflects information concerning the Discloser or its businesses, affairs, financial condition, assets, liabilities, operations, prospects or activities, and specifically includes financial information, budgets, business plans, ways of doing business, business results, prospects, customer lists, forecasts, engineering reports, environmental reports, evaluations, legal opinions, names of venture partners and contractual parties, and any information provided to the Discloser by third parties under circumstances in which the Discloser has an obligation to protect the confidentiality of such information;

(b) all plans, proposals, reports, analyses, notes, studies, forecasts, compilations or other information, in any form, that are based on, contain or reflect any Confidential Information regardless of the identity of the Person preparing the same (“**Notes**”);

(c) the existence and terms of this Agreement;

(d) the fact that confidential information has been disclosed or made available by Discloser to the Recipient or the Recipient’s Representatives; and

(e) the fact that discussions or negotiations are or may be taking place with respect to a possible transaction, the proposed terms of any such transaction and the status of any discussions or negotiations under this Agreement;

but does not include Product Documentation or any information that:

(f) is at the time of disclosure to the Recipient or thereafter becomes generally available to the public, other than as a result of a disclosure by the Recipient or any of the Recipient's Representatives in breach of this Agreement;

(g) is or was received by the Recipient on a non-confidential basis from a source other than the Discloser or its Representatives if such source is not prohibited from disclosing the information to the Recipient by a confidentiality agreement with, or a contractual, fiduciary or other legal confidentiality obligation to, the Discloser; or

(h) was known by the Recipient prior to disclosure in connection with the transactions contemplated by this Agreement and was not subject to any contractual, fiduciary or other legal confidentiality obligation on the part of the Recipient.

(11) **"Daily LD Amount"** has the meaning set out in Section 3.3(1).

(12) **"Damages"** means any loss, cost, liability, claim, demand, action, suit, proceeding, interest, fine, penalty, assessment, damages available at law or in equity (including incidental, consequential, special, aggravated, exemplary or punitive damages), expense (including reasonable costs, fees and expenses of legal counsel on a full indemnity basis, without reduction for tariff rates or similar reductions and reasonable costs, fees and expenses of investigation) or diminution in value.

(13) **"DC LD Daily Amount"** has the meaning set out in Section 3.3.

(14) **"Debtor"** has the meaning set out in Section 1.1(31).

(15) **"Delivery Date"** has the meaning set out in Section 2.1(3).

(16) **"Delivery Location"** means the location in Texas identified in the Purchase Order for the delivery of the PV Modules.

(17) **"Designate"** has the meaning set out in Section 2.1(6).

(18) **"Dispute"** has the meaning set out in Section 8.1(1).

(19) **"Dispute Notice"** has the meaning set out in Section 8.1(2).

(20) **"Dollars"** or **"\$"** means the lawful currency of the United States of America.

(21) **"Effective Date"** has the meaning set out on the first page of this Agreement.

(22) “**Facility**” means, with respect to the Project, the ground-mount solar photovoltaic generating system to be constructed.

(23) “**Facility kWdc**” means the DC capacity of a Facility measured in kilowatts.

(24) “**Force Majeure**” means any act, event, cause or condition that prevents or delays a Party from performing its obligations hereunder (other than the payment obligation) or complying with any conditions required to be complied by such Party hereunder, that is beyond the affected Party’s reasonable control, and not the fault of the claiming party, and to the extent the claiming party was and is unable to by the exercise of due diligence to prevent or mitigate the effects of such act or event, and shall include, but not be limited to:

(a) acts of God, including epidemics, extreme wind, ice, lightning or other storms, earthquakes, tornadoes, hurricanes, cyclones, landslides, drought, floods and washouts;

(b) fires or explosions, civil disobedience or disturbances, war, acts of sabotage, blockades, insurrections, terrorism, revolution, riots or epidemics, embargo;

(c) strikes and other labor disputes (other than legal strikes or labour disputes by employees of (i) such Party, or (ii) a third party contractor of such Party, unless, in either such case, such strikes or other labor disputes are the result or part of a general industry strike or labor dispute);

(d) an order, judgment, legislation, ruling or direction by Governmental Authorities restraining a Party, provided that the affected Party has not applied for or assisted in the application for and has used commercially reasonable efforts to oppose said order, judgment, legislation, ruling or direction; and

(e) any Change in Law that requires or makes advisable any modifications in the design of the PV Modules.

For avoidance of doubt, events of Force Majeure do not include financial cost or economic hardship, customs, new or increased tariffs imposed on the PV Modules (including any component thereof) after the execution of this Agreement or import delays, strikes or labor disturbances of Vendor or Vendor’s suppliers or affiliates, work stoppages of Vendor or Vendor’s affiliates or suppliers, or manpower shortages of Vendor or Vendor’s affiliates or suppliers, unless such failure or event is itself due to an event of Force Majeure or unless such strikes, labor disturbances or work stoppages are the direct result of conditions in the industry or industries in which Vendor, Vendor’s suppliers or Vendor’s affiliates conduct business (such that Vendor, Vendor’s supplier or Vendor’s affiliate could not, acting alone or in concert, through commercially reasonable efforts, prevent any such strike, labor disturbance or work stoppage).

(25) “**Governmental Authority**” means any federal, state, local, municipal or other governmental, regulatory, administrative, judicial, public or statutory instrumentality, court or governmental tribunal, agency, commission, authority, body or entity, or any political subdivision thereof, having legal jurisdiction over the matter or Person.

(26) **“Intellectual Property Rights”** has the meaning set out in Section 5.1(6)(a).

(27) **“Interconnection Agreement”** means the interconnection agreement for the Project between Purchaser and applicable transmission operator.

(28) **“Invoice”** has the meaning set out in Section 2.5(1).

(29) **[Reserved]**

(30) **“Labels”** means any labels or notices affixed by Vendor or Manufacturer on the PV Modules.

(31) **“Lender”** means any lender providing senior or subordinated construction, interim or long-term debt or equity financing or refinancing for or in connection with the development, construction, purchase, installation or operation of the Project, whether that financing or refinancing takes the form of private debt, public debt or any other form (including but not limited to debt financing or refinancing provided to a member or other direct or indirect owner or Affiliate of the Purchaser (the **“Debtor”**)), including any equity and tax investor directly or indirectly providing financing or refinancing for the Project or purchasing equity ownership interests of Purchaser and/or its Affiliates, and any trustee or agent acting on their behalf, and any Person providing interest rate protection agreements to hedge any of the foregoing debt obligations.

(32) **“Lien Waiver”** has the meaning set out in Section 2.3(5).

(33) **“Manufacturer”** means Illuminate USA, LLC, a Delaware limited liability company, whose primary assembly location is 3600 Etna Parkway, Pataskala, Ohio 43062.

(34) **[Reserved]**.

(35) **“Order”** means any order, directive, judgment, decree, injunction, decision, ruling, award or writ of any Governmental Authority.

(36) **“Party”** means Vendor or Purchaser, together with their permitted successors, assigns and transferees, and **“Parties”** means both Vendor and Purchaser, and their respective successors and permitted transferees.

(37) **“Payment Due Date”** has the meaning set out in Section 2.5(2).

(38) **“Person”** is to be broadly interpreted and includes an individual, a corporation, a partnership, a trust, an unincorporated organization, a Governmental Authority, and the executors, administrators or other legal representatives of an individual in such capacity.

(39) **“Product Documentation”** has the meaning set out in Section 2.4(10) and includes Labels.

(40) **“Project”** means the solar photovoltaic energy projects of Purchaser identified in Schedule G.

(41) **“Purchase”** means the purchase of PV Modules by Purchaser from Vendor pursuant to this Agreement.

(42) **“Purchase Order”** has the meaning set out in Section 2.1(1).

(43) **“Purchase Price”** means the price to be paid by Purchaser to Vendor for the Purchase as identified in Schedule “B” hereto, as may be amended.

(44) **“Purchaser”** means Red River Clean Energy, LLC, together with its permitted successors, transferees and assigns.

(45) **“Purchaser’s Default”** has the meaning set out in Section 3.2.

(46) **“Purchaser’s Indemnified Parties”** means the Purchaser, the Debtor, and each of their respective Affiliates, subsequent purchasers, contractors, customers, directors, officers, employees, agents, successors and assigns.

(47) **“PV”** means solar photovoltaic.

(48) **“PV Modules”** means the PV modules manufactured by Manufacturer, as described in Schedule A.

(49) **“Rescinding Notice”** has the meaning set out in Section 2.1(6).

(50) **“Representative”** when used with respect to a Party means each director, officer, employee, agent, consultant, adviser and other representative of that Party who is involved in the Purchase.

(51) **“Rules”** has the meaning set out in Section 8.1(5)(b).

(52) **“Site”** means the physical location where a Project is to be built.

(53) **“Solvent”** means, with respect to any Person, that as of the date of determination both (i) (a) the sum of such Person’s debt (including contingent liabilities) does not exceed all of its property, at a fair valuation; (b) the Person is able to pay the probable liabilities on such Person’s then existing debts as they become absolute and matured (taking into account the timing and amounts of cash to be received by such Person and the amounts to be payable on or in respect of obligations of such Person); (c) such Person’s capital is not unreasonably small in relation to its business or any contemplated or undertaken transaction; and (d) such Person does not intend to incur, or believe (nor should it reasonably believe) that it will incur, debts beyond its ability to pay such debts as they become due (taking into account the timing and amounts of cash to be received by such Person and the amounts to be payable on or in respect of obligations of such Person); and (ii) such Person is “solvent” within the meaning given that term and similar terms under applicable laws relating to fraudulent transfers and conveyances. For purposes of this definition, the amount of any contingent liability at any time shall be computed as the amount that, in light of all of the facts and circumstances existing at such time, represents the amount that can reasonably be expected to become an actual or matured liability (discounted to present value at rates believed to be reasonable by such Person acting in good faith).

(54) **“PPA”** means, with respect to the Project, any power purchase agreement entered into from time to time by the Purchaser or its Affiliate, and the applicable counterparty thereto, as may be amended or restated from time to time

(55) **“Specifications”** has the meaning set out in Section 2.2.

(56) **“Taxes”** means any and all forms of taxation, charges, duties, imposts, levies and rates whenever imposed by any Governmental Authority, including transaction privileges, sales tax, use tax, gross receipts tax, transaction privilege tax, property tax, income tax, withholding taxes, corporation tax, franchise taxes, capital gains tax, capital tax, capital transfer tax, inheritance tax, value added tax, goods and services tax, customs duties, capital duty, excise duties, betterment levy, stamp duty, stamp duty reserve tax, national insurance, social security or other similar contributions, and generally any tax, duty, impost, levy, rate or other similar amount and any interest, penalty, fine or other amount due in connection therewith, in all cases imposed by any Governmental Authority in respect thereof and whether disputed or not.

(57) **“Term”** has the meaning set out in Section 3.1.

(58) **“Vendor”** means LONGi Solar Technology (U.S.) Inc., together with its permitted successors, transferees and assigns.

(59) **“Vendor’s Indemnified Parties”** means Vendor and Vendor’s Affiliates and their respective directors, officers, employees and agents.

Section 1.2 Actions on Non-Business Days

If any payment is required to be made or other action (including the giving of notice) is required to be taken pursuant to this Agreement on a day which is not a Business Day, then such payment or action shall be considered to have been made or taken in compliance with this Agreement if made or taken on the next succeeding Business Day.

Section 1.3 Currency and Payment Obligations

Except as otherwise expressly provided in this Agreement:

(a) all dollar amounts referred to in this Agreement are stated in US Dollars per Watt-peak (**“Wp”**) direct current of nominal power; and

(b) any payment contemplated by this Agreement shall be made by wire transfer of immediately available funds to an account specified by the payee, by cash, by certified cheque or by any other method that provides immediately available funds.

Section 1.4 Calculation of Time

If any period of time is to expire hereunder on any day that is not a Business Day, the period shall be deemed to expire at 5:00 p.m. (Houston, Texas time) on the next succeeding Business Day.

Section 1.5 Additional Rules of Interpretation

(1) *Gender and Number.* In this Agreement, unless the context requires otherwise, words in one gender include all genders and words in the singular include the plural and vice versa.

(2) *Headings and Table of Contents.* The inclusion in this Agreement of headings of Articles and Sections and the provision of a table of contents are for convenience of reference only and are not intended to modify or interpret the text to which they refer.

(3) *Section References.* Unless the context requires otherwise, references in this Agreement to Sections or Schedules are to Sections or Schedules of this Agreement.

(4) *Words of Inclusion.* Wherever the words “include”, “includes” or “including” are used in this Agreement, they shall be deemed to be followed by the words “without limitation” and the words following “include”, “includes” or “including” shall not be considered to set forth an exhaustive list.

(5) *References to this Agreement.* The words “hereof”, “herein”, “hereto”, “hereunder”, “hereby” and similar expressions shall be construed as referring to this Agreement in its entirety and not to any particular Section or portion of it.

(6) *Statute References.* Unless otherwise indicated, all references in this Agreement to any statute include the regulations there under, in each case as amended, re-enacted, consolidated or replaced from time to time and in the case of any such amendment, re-enactment, consolidation or replacement, reference herein to a particular provision shall be read as referring to such amended, re-enacted, consolidated or replaced provision and also include, unless the context otherwise requires, all applicable guidelines, bulletins or policies made in connection therewith.

(7) *Document References.* All references herein to any agreement (including this Agreement), document or instrument mean such agreement, document or instrument as amended, supplemented, modified, varied, restated or replaced from time to time in accordance with the terms thereof and, unless otherwise specified therein, includes all schedules and exhibits attached thereto.

Section 1.6 Schedules

The following Schedules are attached to and incorporated in this Agreement by reference and deemed to be a part hereof:

Schedule A – Description of PV Modules and Specifications

Schedule B – PV Module Pricing

Schedule C – Form of Purchase Order

Schedule D – Packing and Shipping; Access to Project Site

Schedule E – Warranty

Schedule F – Acceptance Criteria

Schedule G – Project Description

Schedule H – PV Mounting compatibility approval letter

Schedule I – Delivery Schedule

Schedule J – Form of Vendor Affiliate Guaranty

ARTICLE 2. PURCHASE OF PV MODULES

Section 2.1 Purchase and Sale of PV Modules

(1) During the Term, Purchaser agrees to buy and Vendor agrees to sell to Purchaser the PV Modules ordered by Purchaser's duly issued purchase orders in the form attached hereto as Schedule "C" (a "**Purchase Order**") on the terms and conditions provided herein. The PV Modules shall only be used by Purchaser within the United States. Each Purchase Order may be sent in writing or transmitted electronically and shall be deemed to be incorporated as part of this Agreement upon Purchaser's issuance thereof. If any term of this Agreement conflicts with any term of an issued Purchase Order, or any confirmation, Invoice or other documentation issued by Vendor with respect to a Purchase Order, this Agreement shall supersede the Purchase Order, confirmation, Invoice or other documentation.

(2) The Vendor shall provide a written acknowledgement of receipt for each Purchase Order provided by the Purchaser, within 24 hours of receipt. Vendor shall have the right to reject a Purchase Order only if the Purchase Order does not comply with the express requirements of this Agreement. A Purchase Order shall be deemed accepted by Vendor in the event Vendor fails to provide proper written notice of rejection within four (4) Business Days of Purchaser's issuance of the Purchase Order which satisfies the criteria for a Purchase Order set out in Section 2.1(3). Notwithstanding the foregoing, the Vendor must provide a written notice of acceptance for a Purchase Order which satisfies the criteria for a Purchase Order set out in Section 2.1(3).

(3) Each Purchase Order shall specify the quantity of PV Modules subject to the Purchase Order, and the terms of this Agreement, the Delivery Location, the PV Module class, type and price, the "Bill To" address and the scheduled delivery date (the "**Delivery Date**") and shall be executed by an authorized signatory of the Purchaser. The scheduled Delivery Date shall not be less than sixty (60) days following the date of the Purchase Order and not more than sixty (60) days following the expiration of the Term. Where a Purchase Order includes a Delivery Date that is less than sixty (60) days before the date of the Purchase Order, the Vendor shall use commercially reasonable efforts to accommodate such a request from the Purchaser.

(4) Attached hereto as Schedule “I” is a non-binding project order forecast prepared by the Purchaser to assist the Vendor in maintaining its production schedule and delivery capacity.

(5) This Agreement shall not impose any obligation of exclusivity on either Party hereto, and each Party shall be free to purchase and sell goods and services similar or identical to the PV Modules from and to third parties, at its sole discretion.

(6) Purchaser may authorize its designate (including a construction contractor) (the “**Designate**”) to directly provide Vendor with Purchase Orders for PV Modules for a Facility. In such circumstances, Purchaser shall provide a written notice to Vendor of the name and authorized signatory of such Designate. Upon receipt thereof (without any obligation by Vendor to verify the authenticity of such written notice of designation), Vendor may treat any Purchase Order from the Designate as duly issued in accordance with this Agreement until receipt of a written notice from the Purchaser that the Designate is no longer authorized to issue a Purchase Order (a “**Rescinding Notice**”) (without any obligation by Vendor to verify the authenticity of such Rescinding Notice). Any Purchase Order for PV Modules received by the Vendor from the Designate after receipt of a Rescinding Notice shall not be the responsibility of the Purchaser. Invoices for Purchase Orders issued in accordance with this Section 2.1(6) shall be paid by Purchaser in accordance with the terms of this Agreement. Any dispute between Purchaser and Designate regarding any designation notice, any Rescinding Notice or any action (or inaction) taken by either Purchaser or Designate contained therein or pursuant thereto shall be solely and exclusively between Purchaser and Designate, and Vendor shall have no obligation or liability to either Purchaser or Designate other than as a result of Vendor’s obligation to follow any such written notice in accordance with the terms hereof.

(7) A Purchase Order, or delivery of any portion of the PV Modules described therein, may be cancelled by the Purchaser after acceptance by the Vendor either (i) thirty (30) days or more prior to Delivery Date without penalty where the relevant Purchase Order is replaced by, or such PV Modules are to be used as part of, a Purchase Order for another project or projects on similar terms (and, in any event, on terms no less financially favorable to Vendor) as the cancelled Purchase Order, in which case, payment paid by the Purchaser in respect of the cancelled Purchase Order shall be applied to the replacement Purchase Order; or (ii) thirty days or more before the Delivery Date noted in such Purchase Order upon Purchaser providing written notice of such cancellation (the “**Cancellation Notice**”) to Vendor, which shall, subject to and in accordance with Section 2.1(9), result in the Purchaser’s payment of the cancellation fee as set forth in Section 2.1(9).

(8) Cancellation of a Purchase Order or of delivery of any portion of the PV Modules described therein shall not serve to terminate or otherwise invalidate this Agreement or any term contained herein.

(9) The Purchaser shall provide a five percent (5%) deposit with each Purchase Order, exclusive of any Taxes. The deposit shall be credited by the Vendor toward the Purchaser’s final payment for the full volume set out in the Purchase Order. Subject to the express terms of this Agreement, if Purchaser provides a Cancellation Notice, Purchaser shall pay to Vendor a cancellation fee (the “**Cancellation Fee**”), in the amount described in the table below, it being

understood that such cancellation fee shall be reduced by the amount of the Deposit and any other amounts paid by the Purchaser in respect to such Purchase Order. The Parties agree that the Cancellation Fee payable pursuant to this Section is not a penalty but represents a genuine and reasonable pre-estimate of the damages that Vendor will suffer as a result of Purchaser's cancellation of a Purchase Order hereunder.

<u>Timing for Cancellation Notice</u>	<u>Amount of Cancellation Fee</u>
If Cancellation Notice is received at least 90 days or more prior to the scheduled delivery date.	10% of Purchase Price for the Purchase Order.
If Cancellation Notice is received between 90 days and 60 days prior to the scheduled delivery date.	20% of Purchase Price for the Purchase Order.
If Cancellation Notice is received 59 days or less prior to the scheduled delivery date.	30% of Purchase Price for the Purchase Order.

(10) Notwithstanding the immediately foregoing:

(a) where any Purchase Order or this Agreement is cancelled or terminated as a result of the Vendor's default of its obligations under this Agreement, the Deposit and any payments by the Purchaser relating to such Purchase Order shall be returned to the Purchaser within thirty (30) days of such cancellation or termination, unless same is disputed in good faith by the Vendor, in which case, the return or non-return of such Deposit shall be governed by the results of such dispute; and

(b) where the Purchaser changes a Delivery Date for a Purchase Order thirty (30) days or more before the scheduled Delivery Date and the new Delivery Date is within ninety (90) days of the scheduled Delivery Date, the Purchase Order shall not be treated as cancelled or terminated and the Deposit shall be applied to the Purchase Order with the new Delivery Date. For greater clarity, a changed Purchase Order resulting in a Delivery Date more than ninety (90) days after the scheduled Delivery Date shall be deemed to be a cancelled or terminated Purchase Order.

Section 2.2 Volume and Type of PV Modules; Inspections

(1) Subject to Section 2.1, Purchaser agrees to purchase and Vendor agrees to sell PV Modules which meet the specifications for such PV Modules ("**Specifications**") set out in Schedule "A". The Specifications may be revised from time to time by mutual agreement of the Parties.

(2) The maximum quantity of PV Modules that Purchaser is entitled to order, and Vendor shall be required to provide, is 210 MW, or such other higher quantity as the Parties may mutually agree.

(3) Vendor shall inspect and perform electroluminescence (EL) testing on the PV Modules prior to shipment. Vendor shall make available to Purchaser or Purchaser's third party designee all inspection reports, including all EL test results and original imagery.

(4) Prior to shipment, Purchaser or Purchaser's designated inspector may conduct a General Inspection Level I pre-shipment inspection of the finished PV Modules. Such inspection

shall be carried out in accordance with ISO 2859 Acceptable Quality Limit (AQL) standards and the defect classification criteria defined in Schedule F. Defects identified through Electroluminescence (EL) imaging and visual inspections shall be recorded separately, each assessed against the specified AQL thresholds. If, in the course of such inspection, any batch of PV Modules fails to pass AQL Critical: 0; Major: 1.5 and Minor: 4.0 as set forth in Schedule F, Vendor shall remove such batch and conduct a second inspection with the same AQL standard. If such second inspection fails, Vendor shall return such batch for rework and conduct a third inspection with a tighter AQL Critical: 0; Major: 1.5 and Minor: 2.5. If the third inspection fails, the entire batch shall be deemed permanently rejected, the applicable serial numbers of the PV Modules recorded and in no event shall any such PV Modules be shipped to Purchaser. If any individual Module is found to have a defect (Critical, Major or Minor) within an otherwise conforming batch of PV Modules, its serial number shall be recorded and in no event shall it be shipped to Purchaser. Vendor shall provide, upon written request by Purchaser, a root cause analysis 8D report for a failed lot of PV Modules for Purchaser's review.

Section 2.3 Purchase Prices

(1) The Vendor shall sell the PV Modules at the purchase price set forth in Schedule "B" (as such prices may be adjusted downward hereunder, "**Purchase Price**"). Five percent (5%) of the Purchase Price (the "**Deposit**") for each Purchaser Order shall be due upon Vendor's acceptance of the Purchase Order, and the balance shall be due upon Vendor's delivery of the PV Modules to the Delivery Location and Purchaser's acceptance of such PV Modules (in accordance with Section 2.5(2)).

(2) The Vendor may not increase the Purchase Price during the term of this Agreement as relates to the PV Modules subject to this Agreement.

(3) The Purchase Price for each PV Module shall be all-inclusive, including all applicable Taxes (other than Purchaser Taxes, defined below), and represents the sole and exclusive consideration to Vendor hereunder for the PV Modules. Purchaser shall not be billed for, nor shall Purchaser have any obligation to pay, any charge or amount not specifically authorized in Purchaser's duly issued Purchase Order. Any additional terms or conditions contained on any Invoice or packing slip shall not be binding on Purchaser, and no action by Purchaser (including the payment of any such invoice in whole or in part) shall be construed as binding Purchaser with respect thereto. For avoidance of doubt, Vendor shall be solely responsible for all tariffs imposed on the PV Modules (including any components thereof), including any tariffs in effect as of the date of this Agreement and any new or increased tariffs imposed thereafter, whether applied retroactively or prospectively. Purchaser shall not be responsible for any portion of such tariffs under any circumstances.

(4) Vendor shall, in accordance with Applicable Law, timely administer and timely pay all Taxes that are included in the Purchase Price and timely furnish to the appropriate taxing authorities all required information and reports in connection with such Taxes and furnish copies of such information and reports (other than information specifically pertaining to Vendor's income and profit) to Purchaser as reasonably requested by Purchaser. The goods provided by Vendor may be exempt from some Taxes or sales Taxes under State of Texas or other Applicable Law ("**Potential Exempt Taxes**"), in which case, Purchaser shall provide written evidence of

such exemption to Vendor (including any relevant certificate); provided, however, that should Purchaser be unable to provide such written evidence (including relevant certificate), Purchaser shall be responsible for such Potential Exempt Taxes. To the extent necessary or applicable, Purchaser and Vendor shall take all necessary actions within such Party's reasonable control to obtain such sales Tax exemptions for Potential Exempt Taxes. Notwithstanding the foregoing, Vendor shall not be required to pay, and Purchaser shall pay, any Taxes associated with Purchaser's net income, Purchaser's installation and use of the PV Modules at the Facility, or Taxes due as a result of the increase in value of such real estate (collectively, "**Purchaser Taxes**").

(5) Vendor shall, at the time of submission of each Invoice, submit to Purchaser appropriate duly executed written waivers and releases of liens, substantially in the applicable form specified by the Lenders (a "**Lien Waiver**") from Vendor and any subcontractor of Vendor that has commenced performing a portion of the work until such time as Vendor or such subcontractor ceases performing work and has delivered a final Lien Waiver as contemplated in this Section 2.3(5). Lien Waivers delivered prior to final payment of a Purchase Order shall be conditioned only upon receipt of payment stated therein by such party. Upon the final payment by Purchaser of a Purchase Order, Vendor shall obtain and deliver to Purchaser unconditional, final Lien Waivers relating to such performance of such portion of the work.

(6) Upon receipt of the Deposit of each Purchase Order, Vendor shall post an irrevocable standby letter of credit in favor of Purchaser in the full amount of such payment(s) made by Purchaser, which letter of credit shall remain in place until the applicable PV Modules are delivered to Purchaser as provided in this Agreement. The irrevocable standby letter of credit shall be from a federally chartered bank with assets in excess of \$10,000,000,000, in a form acceptable to the Purchaser, acting reasonably. In the event of any breach of Agreement by the Vendor, Purchaser may draw upon the irrevocable standby letter of credit for any damages or refund owed by Vendor to Purchaser.

Section 2.4 Shipment and Delivery

(1) The Vendor shall be responsible for the payment of all shipping and delivery costs reasonably incurred by the Vendor, including any tariffs, import or custom charges.

(2) All PV Modules to be shipped for each Purchase Order shall be prepared, marked and packed for shipment in accordance with the instructions specified on Schedule D hereto.

(3) Vendor shall ship all PV Modules in new condition. Vendor shall fill each Purchase Order in accordance with this Agreement and so as to meet the Delivery Date (a "**Scheduled Order**"). All PV Modules shall be shipped from the Vendor's warehouse in the State of Ohio or the Manufacturer's manufacturing facility in Pataskala, Ohio, and delivered DDP (Incoterms 2020) to the Delivery Location and into the possession of the Purchaser or its Designate. The Vendor shall comply with all requirements for Site access stipulated in Schedule D at all times while accessing the Delivery Location and shall ensure that its employees, subcontractors or agents accessing the Delivery Location are aware of and comply with all such requirements.

(4) Vendor shall deliver a Scheduled Order to the Delivery Location on or before 1:00 PM on the Delivery Date. For greater certainty, delivery after 1:00 PM shall be deemed to be delivery on the following Business Day. At any time prior to twelve (12) Business days before the scheduled Delivery Date for such Scheduled Order (the “**PO Cut-off Date**”), the Vendor may notify the Purchaser of an alternative proposed Delivery Date, provided such proposed Delivery Date is within five (5) Business Days’ of the Delivery Date set out in the Purchase Order. The Vendor shall not be entitled to change the Delivery Date after the PO Cut-off Date.

(5) In the event that the Vendor incurs costs under its shipping and delivery contracts related to the unloading the PV Modules at the Delivery Location or the delay of the unloading, the Purchaser shall pay such unloading costs, in which latter case the Purchaser or the Designate shall reimburse the Vendor in the amount of said costs within ten (10) Business Days of such written request by the Vendor. The Vendor shall provide proof of the costs incurred, upon the request of the Purchaser.

(6) Title to the PV Modules, free and clear of all liens, encumbrances and other security interests, shall pass directly to the Purchaser when full payment of the Purchase Price for the delivered PV Modules has been received by the Vendor.

(7) Vendor shall bear all risk of loss for any damage resulting to the PV Modules until Vendor has delivered the PV Modules to the Delivery Location. For greater certainty, such risk of loss or damage shall not include such loss or damage resulting to the PV Modules while the PV Modules are stored by Vendor for Purchaser; provided, however, that Vendor shall use its commercially reasonable best efforts to maintain the physical integrity of such stored PV Modules.

(8) Vendor will immediately notify Purchaser in writing of any event or condition that could delay delivery of the PV Modules beyond the Delivery Date; provided, however, that such notification shall not require Purchaser to accept any late shipment or waive any of its rights or remedies with respect thereto.

(9) Vendor acknowledges and agrees that time is of the essence with respect to Vendor’s performance under this Agreement.

(10) Vendor shall provide to the Purchaser within 5 days of the Effective Date and forthwith as may be updated from time to time, one (1) complete up-to-date set (in electronic format) of its standard user manuals, technical manuals setting forth pertinent information relating to the operation, installation and maintenance of PV Modules, including all warranties and product warnings, for each product (collectively, “**Product Documentation**”). Vendor and the PV Module Manufacturer shall at the time of delivery of the PV Modules provide to Purchaser a complete and comprehensive Bill of Materials (BOM) covering all materials used in the manufacturing of the PV Modules, including the specific manufacturer of all sub-components of the PV Modules. The PV Modules shall have Vendor’s qualified BOM for the entire Project (not to exceed three (3) sets of combinations of BOM), i.e. each sub-component shall be sourced from Vendor’s qualified list of suppliers for all provided PV Modules under the terms of this Agreement. The PV Modules shall have under the terms of this Agreement. Vendor and

Purchaser shall agree to a list of qualified suppliers as of the Effective Date and any change to such list of qualified suppliers shall require Purchaser's written consent.

(11) Upon request of the Purchaser, the Vendor shall provide a flash data report with respect to each Purchase Order, which shall be provided 5 days prior to the respective Delivery Date.

(12) If Vendor holds or maintains possession, custody or control of any PV Modules sold hereunder at the request and consent of Purchaser, Vendor shall hold all such PV Modules in trust for Purchaser, at no extra cost for five (5) days following the Delivery Date, and shall physically segregate and identify all such PV Modules as being property of Purchaser. In the event the Vendor holds said PV Modules five (5) days past the Delivery Date, the Purchaser agrees to pay a storage fee to the Vendor of \$0.0002 per Watt of PV Module stored per day for a further period of up to 45 days.

Section 2.5 Billing and Payment

(1) Vendor shall invoice the Purchaser for all PV Modules at the time of shipment from the Vendor to the Delivery Location. Vendor shall issue a separate invoice for each Purchase Order containing the following information ("**Invoice(s)**"):

- (i) the name of the Purchaser;
- (ii) the description and quantity of PV Modules ordered;
- (iii) the description and quantity of PV Modules shipped;
- (iv) the Delivery Location and the Delivery Date;
- (v) the Purchase Order number,
- (vi) the Lien Waiver relating to the Invoice
- (vii) the Purchase Price;
- (viii) the Payment Due Date; and
- (ix) all applicable discounts.

All Invoices, bills of lading, and freight bills for the PV Modules shall be delivered to Purchaser at the "Bill To" address shown on the Purchase Order.

(2) Subject to the terms and conditions contained herein, Purchaser will remit payment of the Purchase Price due hereunder (less any applicable discounts, offsets and any adjustment for PV Modules rejected by the Purchaser in accordance with the terms of this Agreement) for the PV Modules within thirty (30) days of the Delivery Date, provided however that the date payment is due shall be extended by one day for each day that the PV Modules are delivered to the Delivery Location after the Delivery Date (the "**Payment Due Date**").

(3) Purchaser shall not be obligated to accept or pay for: (i) any PV Modules in excess of the quantity ordered in its Purchase Order, (ii) PV Modules that have been damaged while in transit, (iii) PV Modules which fail to meet the Specifications, (iv) PV Modules not received at the Delivery Location, unless otherwise agreed by the Parties in writing, (v) deliveries arriving more than three (3) days in advance of the Delivery Date specified on the Purchase Order, unless otherwise agreed by the Parties in writing, or (vi) deliveries after the Delivery Date specified on the Purchase Order, unless otherwise agreed by the Parties in writing.

(4) Unpaid amounts owing with respect to Invoices received by the Purchaser (the “**Total Unpaid Amount**”) shall not exceed the sum of the following at any time:

(a) twenty million (\$20,000,000.00) United States dollars, as the limitation of credit provided by the Vendor; and

(b) an amount, as determined by the Purchaser within its discretion, which may be increased or decreased from time to time, and secured by an irrevocable standby letter of credit (“L/C”), (the “**Purchaser’s Credit Limit**”).

(5) The L/C shall be from a federally chartered bank with assets in excess of \$10,000,000,000, in a form acceptable to the Vendor, acting reasonably. After the expiry of the period referred to in Section 3.2(2), the Vendor may draw upon the L/C for the unpaid amount of any Purchase Order.

(6) For any period of time that the Total Unpaid Amount exceeds the Purchaser’s Credit Limit, the Vendor shall have the right to withhold any further deliveries of PV Modules without liability of any kind under the Agreement or otherwise (including, without limitation, any liquidated or other damages payable relating to late delivery of a Scheduled Order), reject any new Purchase Orders which it has not yet accepted and be indemnified by the Purchaser for breach of the covenant, provided that once the Total Unpaid Amount is within the Purchaser’s Credit Limit, the rights and obligations herein shall resume and any time periods hereunder, including for delivery or confirmation of Purchase Orders, shall resume but be extended for the period that the Purchaser’s Credit Limit was exceeded.

Section 2.6 Insurance and Damage in Transit

(1) Vendor shall be responsible for (i) ensuring that each Scheduled Order is complete and undamaged at the time of unloading at the Delivery Location (and shall make a record confirming same at the time of unloading, a copy of which record shall be made available to Purchaser upon request), and (ii) making any claims against the shipper and/or its insurer in respect of any damage incurred in the shipment and delivery of the Scheduled Order. The Purchaser shall be responsible for completing a visual inspection, to be verified in writing and witnessed by the shipment carrier, of the Scheduled Order for any damage which may have occurred in transit upon receipt of the Scheduled Order at the Delivery Location.

(2) Where damage is discovered during the inspection of the Scheduled Order at the Delivery Location in accordance with Section 2.6(1), (i) Vendor shall, as soon as practicable, re-deliver the portion of Scheduled Order affected by such damage in an undamaged condition, and (ii) Purchaser shall pay to Vendor for such re-delivered Scheduled Order in accordance with the

provisions of Section 2.5 and subject to the credit set out in Section 3.3(1) applied from the original Delivery Date.

(3) Vendor shall, at its own cost and expense, obtain and maintain in full force and effect with reputable insurers licensed in the State of Texas during the Term, insurance coverage for its obligations under this Agreement and shall provide Purchaser with a copy of an insurance certificate evidencing such coverage as requested from time to time. The purchase and existence of insurance does not reduce or release Vendor from liability incurred and/or assumed within the scope of this Agreement. Vendor's failure to maintain insurance shall not relieve it of liability under this Agreement.

(4) The Purchaser and the Lenders shall each be listed as additional insureds and loss payees under all such Vendor insurance, other than insurance required by law. Vendor shall require that its insurers release and waive all rights of subrogation against the Purchaser and the Lenders with respect to any insurance required by this Agreement. Such insurance policies shall, at a minimum, provide a severability of interests and a cross-liability clause applying to liability policies on which the Purchaser and the Lenders are listed as additional insureds and loss payees.

(5) Vendor shall ensure that it has commercial general liability insurance with a limit of fifteen million dollars (\$15 million) and worker safety insurance coverage customary for a supplier of PV modules in Texas.

Section 2.7 Guarantees

(1) **Purchaser Guaranty.** After giving effect to the transactions contemplated hereunder, including the contingent obligations evidenced hereby, Purchaser is, on either an unconsolidated basis or a consolidated basis, Solvent (as defined herein), and Purchaser has and will have assets which, fairly valued, exceed its indebtedness, liabilities or obligations.

(2) **Vendor Affiliate Guaranty.** Manufacturer shall guarantee Vendor's obligations under this Agreement pursuant to a guaranty in the form set forth herein as **Schedule J ("Vendor Affiliate Guaranty")**.

ARTICLE 3. TERM AND TERMINATION

Section 3.1 Term

(1) The term of this Agreement (the "**Term**") shall begin on the Effective Date and end, subject to Sections 3.2 and 3.3, on the second anniversary of the Effective Date.

(2) Any extension of the Term must be agreed upon in writing between the Parties.

Section 3.2 Default by Purchaser

(1) If Vendor has not received payment when due from Purchaser, Vendor shall be entitled to charge interest on the amount of any such overdue payment at the rate of eight percent

(8.00%) per annum, calculated daily, (or such lower amount as may be prescribed as the maximum lawful rate of interest by Applicable Laws from time-to-time) beginning the first Business Day after the Payment Due Date.

(2) If Vendor has not received payment from Purchaser within five (5) Business Days after the Payment Due Date and the Vendor and Purchaser have not agreed to an alternative arrangement, then:

(a) Vendor shall have the right to withhold any further deliveries of PV Modules and, in addition to payment for any amounts due past due, be indemnified by the Purchaser for breach of covenant in accordance with the provisions of Article 6; and

(b) if any two (2) accepted Purchase Orders have been so cancelled without otherwise being replaced in compliance with this Agreement in any twelve (12)-month period other than as a result of an event of Force Majeure or Change in Law Event, Vendor shall have the right to terminate this Agreement, including such pending Purchase Orders as Vendor may determine, by providing five (5) Business Days prior written notice of such termination to the Purchaser in respect of all terminated Purchase Orders (but Scheduled Orders with a Delivery Date within such five (5) Business Days may not be terminated), and, unless such delay was solely caused by an event of Force Majeure or Change in Law Event, Vendor shall be indemnified by the Purchaser for breach of covenant in accordance with the provisions of Article 6.

(3) Vendor shall also have the right, in its sole discretion, to terminate this Agreement if Purchaser (i) is in material breach of any other term or condition of this Agreement and such breach is not remedied within thirty (30) Business Days after written notice of such breach has been provided to Purchaser; (ii) files a voluntary petition in bankruptcy or similar proceeding; (iii) has filed against it an involuntary petition in bankruptcy or similar proceeding which is not being contested by the Purchaser; (iv) applies for or consents to the appointment of a receiver, trustee or liquidator; or (v) makes a general assignment for the benefit of creditors.

Section 3.3 Default by Vendor

(1) For each day that the delivery of some or all of the PV Modules subject to a Purchase Order to the Delivery Location is delayed beyond the Delivery Date, as such date may be adjusted in accordance with Section 2.4(4), Vendor shall pay to Purchaser as liquidated damages a daily amount (the “**Daily LD Amount**”) commencing on the first day after the last approved Delivery Date until the earlier of:

- (a) the date the Scheduled Order is delivered in full to the Delivery Location;
- or
- (b) termination by the Purchaser of the Purchase Order.

(2) The daily LD Amount shall be calculated in accordance with following:

Daily LD Amount = \$1,000 per MW of undelivered PV Modules per day of delay from the Delivery Date.

(3) The Parties agree that the liquidated damages payable pursuant to this Section are not a penalty but represent a genuine and reasonable pre-estimate of the damages that Purchaser will suffer as a result of the delay in delivering the PV Modules beyond the Delivery Date. The Parties agree that no liquidated damages shall be owed if the Vendor's delay in achieving the Delivery Date is solely attributable to a Change in Law Event, an event of Force Majeure, or a breach of this Agreement by Purchaser. The maximum amount of liquidated damages for which Vendor shall be responsible to pay shall not exceed ten percent (10%) of the Purchase Price of the PV Modules; provided, however, that if the maximum amount of liquidated damages shall be achieved, Purchaser, in its sole discretion, may terminate the applicable Purchase Order.

(4) In the event such delay of delivery exceeds thirty (30) Business Days from the Delivery Date, then, notwithstanding the occurrence of any event of Force Majeure or Change in Law Event:

(a) Purchaser shall have the right but not the obligation to cancel the applicable Purchase Order and, unless such delay was solely caused by an event of Force Majeure or Change in Law Event, in addition to the payment of liquidated damages pursuant to Section 3.3(1), be indemnified by the Vendor for breach of covenant in accordance with the provisions of Article 6; and

(b) if any two (2) Purchase Orders have been so cancelled in any 12-month period other than as a result of an event of Force Majeure or Change in Law Event, the Purchaser shall have the right to terminate this Agreement, including such Pending Purchase Orders as the Purchaser may determine, by providing five (5) Business Days prior written notice of such termination to Vendor, and, unless such delay was solely caused by an event of Force Majeure or Change in Law Event, the Purchaser shall be indemnified by the Vendor for breach of covenant in accordance with the provisions of Article 6.

(5) Purchaser shall also have the right, in its sole discretion, to terminate this Agreement if Vendor (i) is in material breach of any term or condition of this Agreement and such breach is not remedied within thirty (30) Business Days after written notice of such breach has been provided to Vendor; (ii) files a voluntary petition in bankruptcy or similar proceeding; (iii) has filed against it an involuntary petition in bankruptcy or similar proceeding which is not being contested by the Vendor; (iv) applies for or consents to the appointment of a receiver, trustee or liquidator; or (v) makes a general assignment for the benefit of creditors.

(6) Either Party shall have the right, in its sole discretion, to terminate this Agreement or the applicable Purchase Order, if an event of Force Majeure shall be continuing for one hundred eighty (180) days or more after the notice of Force Majeure has been provided as required under Section 3.4. In the case of any termination under this Section, Vendor shall refund to Purchaser the full amount of Purchase Price Payments paid to Vendor, and Purchaser shall pay to Vendor the amounts due hereunder, in each case, as of the date of such termination (it being understood and agreed that neither Party shall be liable to the other Party for any damages or other amounts, other than the amounts described in this sentence and for any damages as a result of a breach hereunder occurring prior to (or independent of) such event of

Force Majeure, and for avoidance of doubt, no Cancellation Fee shall be owed by Purchaser upon any termination under this Section 3.3(6)).

(7) Either Party shall have the right, in its sole discretion, to terminate this Agreement or the applicable Purchaser Order, with seventy five (75) days of the occurrence of a Change in Law Event; provided that notice of the Change in Law Event has been provided by the affected Party within five (5) Business Days after the occurrence of such Change in Law Event. In the case of any termination under this Section, Vendor shall refund to Purchaser the full amount of Purchase Price Payments paid to Vendor, and Purchaser shall pay to Vendor the amounts due hereunder, in each case, as of the date of such termination (it being understood and agreed that neither Party shall be liable to the other Party for any damages or other amounts, other than the amounts described in this sentence and for any damages as a result of a breach hereunder occurring prior to (or independent of) such Change in Law Event, and for avoidance of doubt, no Cancellation Fee shall be owed by Purchaser upon any termination under this Section 3.3(7)).

Section 3.4 Force Majeure

(1) Upon the occurrence of an event of Force Majeure with respect to a Party, its obligations under this Agreement will, to the extent that they are affected by the event of Force Majeure, be suspended; provided, however, that under no circumstances will a Party's obligations to pay any amounts due under this Agreement be suspended or excused. Any Party affected by an event of Force Majeure will promptly inform the other Party and will use commercially reasonable efforts to fulfill its obligations under this Agreement and to remove or avoid any disability and mitigate any damages caused by such event of Force Majeure at the earliest practicable time and to the greatest extent possible.

ARTICLE 4. WARRANTY

Section 4.1 Specifications

(1) Vendor represents, warrants and covenants that all PV Modules sold under this Agreement will meet the Specifications. Purchaser shall have the right to reject any PV Modules that do not meet such Specifications.

(2) Upon receipt of a notice from Purchaser of any PV Modules which do not meet the Specifications, unless the Vendor disputes that the PV Modules fail to meet the Specifications, the Vendor shall, as soon as practicable, collect and correct or replace the affected portion of a Scheduled Order, and re-deliver such corrected or replacement PV Modules in accordance with the Specifications, in which case Purchaser shall pay to Vendor for such re-delivered PV Modules in accordance with the provisions of Section 2.5 and subject to the credit set out in Section 3.3(1) applied from the original Delivery Date.

Section 4.2 General Product Warranty

(1) With the exception of reductions in power output, which shall be governed by Section 4.3 but subject to the explicit terms of this Agreement, Vendor shall warranty the materials and workmanship with respect to the PV Modules in favor of and for the benefit of the

Purchaser, for a period of twelve (12) years from the date of actual final delivery to the Delivery Location of PV Modules forming part of a Scheduled Order, in accordance with the Vendor's standard warranty documentation, a copy of which is attached as Schedule E.

Section 4.3 Performance Warranty

(1) Subject to the conditions and exceptions set out herein, Vendor warrants the power output of the PV Modules in accordance with the Vendor's standard warranty documentation, a copy of which is attached as Schedule E, which warranty shall be in the name of and for the benefit of the Purchaser.

Section 4.4 Warranties are Transferrable

(1) The warranties provided by Vendor under Section 4.1, Section 4.2 and Section 4.3 shall be fully transferrable by Purchaser in accordance with the terms and conditions of this Agreement (including Vendor's limited warranty), including from the Purchaser to any Affiliate, subject to the provisions of this Article 4 and the other provisions of the warranty, including that the modules remain in their original location and configuration; provided however, the Vendor acknowledges that the removal and repositioning of the PV Modules to a different location within the same constructed mounting system on the same Site shall not constitute a change in location and configuration for the purposes of the warranty.

Section 4.5 Compliance by Purchaser

(1) The warranties provided by Vendor under Section 4.1, Section 4.2 and Section 4.3 are conditional upon the compliance by Purchaser and its Representatives with the following covenant:

(a) the installation, testing and use of the PV Modules shall be performed in accordance with the Product Documentation and Applicable Laws.

Section 4.6 Claim Procedures

(1) The following rules and procedures shall apply to any alleged breach of warranty under Section 4.1, Section 4.2 and Section 4.3:

(a) Those rules and procedures as outlined in the Warranty Claims Process included in Schedule E.

(b) In the event of any repair or replacement of a PV Module in accordance with this Section 4.6, (i) the warranty under Section 4.3 with respect to such PV Module shall continue to apply, and (ii) the warranty under Section 4.2 shall continue until the later of (i) the period provided for under Section 4.2, or (ii) one (1) year from the date of completion of such repair or replacement.

(c) Any repaired or replacement PV Module shall function properly with the balance of the Facility in accordance with all Applicable Law and Applicable Permits and

at the same performance levels or higher of the original PV Modules, without imposing additional operating and maintenance costs.

Section 4.7 Warranty Insurance

(1) The Vendor shall purchase, at its own expense, insurance coverage for its warranty obligations hereunder which shall include commercially reasonable terms customary for the industry. Vendor shall deliver to the Purchaser on the Effective Date a true copy of the certificate of insurance from the broker that placed the warranty insurance policy, effective as of the Effective Date.

Section 4.8 Project Site Access

(1) In the event that the Vendor or its employees, subcontractors, or agents visit a Project location for any reason, including for the purposes of servicing, inspecting, delivering or removing any PV Modules or equipment, the Vendor, together with such employees, subcontractors, or agents, shall be bound by the delivery requirements stipulated in Schedule D hereto and the Vendor shall be liable for failure of any such persons to abide by such requirements.

ARTICLE 5. REPRESENTATIONS AND WARRANTIES

Section 5.1 Representations and Warranties of Vendor

Vendor represents and warrants to the Purchaser as follows:

(1) *Incorporation and Corporate Power of Vendor.* Vendor is a corporation incorporated, organized and subsisting under the laws of the jurisdiction of its incorporation. Vendor has the corporate power, authority and capacity to execute and deliver this Agreement and all other agreements and instruments to be executed by it as contemplated herein and to perform its other obligations hereunder and under all such other agreements and instruments.

(2) *No Bankruptcy.* No act or proceeding has been taken or authorized by or against Vendor by any other Person in connection with the dissolution, liquidation, winding up, bankruptcy or insolvency of Vendor or with respect to any amalgamation, merger, consolidation, arrangement or reorganization of, or relating to, Vendor and, to the knowledge of Vendor, no such proceedings have been threatened by any other Person.

(3) *Enforceability of Vendor's Obligations.* This Agreement constitutes the valid and binding obligation of Vendor enforceable against Vendor in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general equitable principles.

(4) *Warranty Insurance.*

(a) That it has delivered to the Purchaser a true copy of the certificate of insurance from the broker that placed the warranty insurance policy required pursuant to Section 4.8, effective as of the Effective Date;

(b) That all policy premiums of such warranty insurance policy have been paid in full with no use of any premium payment financing or other similar arrangement; and

(c) Such warranty insurance policy is in full force and effect with all current premiums paid and not having premiums due at any time in the future.

(5) *Applicable Laws.* The PV Modules delivered hereunder shall comply with all Applicable Laws and all Applicable Permits.

(6) *Intellectual Property.*

(a) Vendor owns or is licensed or is otherwise lawfully permitted to use any and all of the inventions, processes, know-how, trade secrets, technical expertise, copyrights, trademarks, patents and other intellectual property (“**Intellectual Property Rights**”) relating to the design, engineering, manufacture, sale, supply, importation, assembly, installation, servicing, repair and use of the PV Modules and the design, engineering, manufacture, sale, supply, importation, assembly, installation, servicing, repair and use of the PV Modules will not infringe the Intellectual Property Rights of any third party.

(b) Pursuant to the terms of this Agreement, Purchaser is being provided a license to certain Intellectual Property Rights, (i) owned by Vendor, or (ii) licensed by or otherwise lawfully permitted to be used by Vendor, to use all Intellectual Property Rights and to disclose all specifications, drawings, process technology, data, technical information, and other proprietary information, the PV Module installation manual, the limited warranty and flash data (collectively, the “**Module Information**”) delivered in connection with this Agreement for the necessary purpose of ownership, use, operation, maintenance and repair of the PV Modules (including engineering, construction, ownership, operation, maintenance and repair of the PV Modules or any component thereof), provided that any disclosure made to a third party pursuant to the foregoing license from Vendor to Purchaser shall only be made pursuant to a written agreement providing for confidentiality provisions. The Agreement provides Purchaser and its Representatives with an irrevocable, transferable, nonexclusive, royalty-free license to use the Intellectual Property Rights in connection with the Facility solely for the necessary purpose of ownership, use, operation, maintenance and repair of the PV Modules (including engineering, construction, ownership, operation, maintenance and repair of the PV Modules or any component thereof) and Purchaser may transfer such license relating to the financing, sale, lease, assignment or other transfer of rights to a successor in interest involving the Facility, in whole or in part, to which the Intellectual Property Rights apply, in accordance with the assignment provisions set forth in this Agreement.

(c) Without limiting the obligations of Vendor pursuant to Section 6.1, Vendor shall defend, indemnify and hold harmless the Purchaser from (i) any breach by Vendor of Vendor's Intellectual Property Rights representations above, and (ii) any claim of any third party that any PV Module furnished under this Agreement infringes any patent, copyright or other intellectual property rights of any type (provided, that the PV Modules are used only in the United States). Vendor shall, at its own expense and option, either (i) settle or defend the claim or any suit or proceeding and pay all damages and costs awarded in it against Purchaser (it being understood and agreed that Vendor shall control, and Purchaser may participate at its own expense, in any such settlement or defense in accordance with Section 6.1 hereof), (ii) procure for Purchaser, or reimburse Purchaser for procuring, the right to continue using the infringing PV Module (or any component thereof) or (iii) modify or replace the infringing PV Module (or any component thereof) so that it becomes non-infringing, in either case, in a commercially reasonable manner and commercially reasonable time period reasonably acceptable to Purchaser and Vendor (taking into good faith consideration whether such manner and/or time period unreasonably interferes with Purchaser's activities or operations or Vendor's defense of such claim). If in connection with any such claim the continued use of any PV Module for the purpose intended under this Agreement is forbidden by any court of competent jurisdiction, Vendor shall, at its own expense and option, take one or more of the actions under preceding clauses (ii) or (iii), provided, that, in no case shall Vendor take any action which adversely affects Purchaser's continued use and enjoyment of the PV Modules without the prior written consent of Purchaser. The foregoing indemnification obligations of Vendor set forth in this section shall not apply where such indemnification is:

- (i) based solely upon or resulting solely from any PV Modules that have been altered (except for alterations by or at the express written direction or recommendation of Vendor, including work or services performed pursuant Vendor's limited warranty);
- (ii) based upon a combination of any PV Modules with any equipment or materials not provided by Vendor, where such infringement would not have occurred but-for such combination; or
- (iii) the result of PV Modules custom-made by Vendor for Purchaser in accordance with designs and specifications provided by Purchaser to Vendor.

(7) *No Forced Labor.* The PV Modules provided under this Agreement and the applicable Purchase Order are in compliance with all applicable law impacting the importation of products or components of products made with forced or slave labor in effect as of the Effective Date, including, but not limited to, the Uyghur Forced Labor Prevention Act (the "UFLPA"); (ii) Vendor is in possession of comprehensive component and component-input production route traceability for the PV Modules and PV Module components for itself and all its suppliers; and (iii) no components or raw materials used in manufacturing the PV Modules contain any goods, wares, articles, or merchandise mined, produced, or manufactured in whole or in part in the Xinjiang Uyghur Autonomous Region of China and have no connection to any entities listed on

the UFLPA Entity List. Vendor shall provide Purchaser with a detailed supply chain report for the cells within 30 days of the execution of this Agreement, and a detailed supply chain report for other components used in the PV Modules prior to shipment of the PV Modules from the Manufacturer, which supply chain report shall identify the origin of all components and raw materials used in the PV Modules, including any sourced from Vietnam or other regions subject to U.S. tariffs on Chinese-subsidized goods, to ensure compliance with U.S. trade regulations and mitigate tariff risks. The scope of such detailed supply chain report shall be determined in Vendor's reasonable discretion (taking into good faith consideration comments provided by Purchaser). If following receipt of the supply chain report Purchaser or its Lender shall have any further inquiries regarding the supply chain for the cells or other components used in the PV Modules, Vendor shall promptly cooperate and coordinate in addressing any reasonable requests for additional information or documentation regarding the supply chain.

(8) *Compliance with Specifications.* The PV Modules delivered hereunder shall, at the time of shipment, comply with the Specifications.

Section 5.2 Representations and Warranties of Purchaser

Purchaser represents and warrants to Vendor as follows:

(1) *Power and Capacity.* Purchaser is a limited liability company formed, organized and subsisting under the laws of the jurisdiction of its formation. Purchaser has the limited liability power, authority and capacity to execute and deliver this Agreement and all other agreements and instruments to be executed by it as contemplated herein and to perform its obligations under this Agreement and under all such other agreements and instruments.

(2) *No Bankruptcy.* No act or proceeding has been taken or authorized by or against Purchaser by any other Person in connection with the dissolution, liquidation, winding up, bankruptcy or insolvency of Purchaser or with respect to any amalgamation, merger, consolidation, arrangement or reorganization of, or relating to, Purchaser and, to the knowledge of Purchaser, no such proceedings have been threatened by any other Person.

(3) *Enforceability of Obligations.* This Agreement constitutes a valid and binding obligation of Purchaser enforceable against Purchaser in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general equitable principles.

ARTICLE 6. INDEMNIFICATION AND LIMITATIONS OF LIABILITY

Section 6.1 Indemnification

(1) Vendor shall defend, indemnify and hold harmless Purchaser's Indemnified Parties against, and will reimburse or compensate them for, any Damages incurred and arising from the performance of Vendor's obligations under this Agreement or failure to perform such obligations in connection with or resulting from:

(a) any negligent act or omission, fraud, or willful misconduct of any of Vendor and its Affiliates, along with each of their respective officers, directors, partners, members, shareholders, agents, employees, successors, and assigns (collectively, the “**Vendor Parties**”) causing personal injury, death or property damage to a third party (including employees of any Vendor Party or Purchaser’s Indemnified Parties);

(b) any breach of any covenant on the part of Vendor contained in this Agreement;

(c) other than any Lien Waiver, any lien or other encumbrance of any Person or entity claiming by, through or under Vendor, its subcontractors, vendors or any Affiliate thereof upon the Modules, the Facility or other property of Purchaser in connection with this Agreement;

(d) any taxes to be paid by Vendor in accordance with this Agreement; and

Purchaser may enforce an indemnity in favor of any of Purchaser’s Indemnified Parties on behalf of each such party and Vendor acknowledges that it cannot refuse to perform its indemnification obligations hereunder solely because the Purchaser’s Indemnified Parties are not third party beneficiaries hereunder.

(2) Purchaser shall defend, indemnify and hold harmless Vendor’s Indemnified Parties against, and will reimburse or compensate them for, any Damages incurred and arising from the performance of Purchaser’s obligations under this Agreement or failure to perform such obligations in connection with or resulting from:

(a) any negligent act or omission, fraud, or willful misconduct of any of Purchaser, its Affiliates and each of their respective officers, directors, partners, members, shareholders, agents, employees, successors, and assigns (collectively, the “**Purchaser Parties**”) causing personal injury, death or property damage to a third party (including employees of any Purchaser Party or the Vendor’s Indemnified Parties);

(b) any taxes to be paid by Purchaser in accordance with this Agreement and

(c) any breach of any covenant on the part of Purchaser contained in this Agreement.

(3) A Purchaser’s Indemnified Party or Vendor’s Indemnified Party (each, an “**Indemnified Party**”) shall promptly (in no event later than five (5) Business Days) after the receipt of notice of the commencement of any legal action or of any claims against such Indemnified Party in respect of which indemnification may be sought pursuant to the foregoing provisions of this Article notify Vendor or Purchaser, as the case may be (each, an “**Indemnifying Party**”) in writing thereof, provided that the failure of an Indemnified Party promptly to provide any such notice shall only reduce the liability of the Indemnifying Party by the amount of any Damages attributable to the failure of the Indemnified Party to give such notice in such manner. In case any such claim or legal action shall be made or brought against an

Indemnified Party, such Indemnified Party shall notify the Indemnifying Party thereof, the Indemnifying Party may, or if so requested by the Indemnified Party, shall assume the defense thereof at its sole cost and expense (it being understood and agreed the Indemnifying Party will not be liable to the Indemnified Party under this Article for any legal fees and expenses subsequently incurred by such Indemnified Party in connection with the defense thereof). If the Indemnifying Party does not assume the defense of any such claim or legal action, then the Indemnifying Party shall remain liable to such Indemnified Party under this Article for any reasonable legal fees and expenses incurred by such Indemnified Party in connection with the defense thereof. No Indemnified Party shall settle any indemnified claim over which the Indemnifying Party has not been afforded the opportunity to assume the defense or without the Indemnifying Party's prior written consent, which consent shall not be unreasonably withheld. The Indemnifying Party shall control the settlement of all claims over which it has assumed the defense; provided, however, that if the Indemnifying Party concludes any settlement which requires any action or forbearance from action by an Indemnified Party or any of its Affiliates, the reasonable and documented costs and expenses incurred by the Indemnified Party or any of its Affiliates shall be reimbursed by the Indemnified Party; provided, further, that, the Indemnified Party shall not conclude any settlement without the prior written consent of the Indemnifying Party. The Indemnified Party shall provide reasonable assistance to the Indemnifying Party when the Indemnifying Party so requests, at the Indemnifying Party's sole cost and expense, in connection with such legal action or claim. Subject to the above provisions, in all cases the Indemnified Party shall have the right to participate in and be represented by counsel of its own choice, at its sole cost and expense, in any such legal action or with respect to any claim.

(4) Notwithstanding any other provision in this Agreement to the contrary, the indemnification obligations and rights set forth in this Article shall survive the expiration or other termination of this Agreement, and Purchaser's acceptance of the PV Modules shall not be construed to relieve Vendor of any obligation under this Article.

Vendor may enforce an indemnity in favor of any of Vendor's Indemnified Parties on behalf of each such party and Purchaser acknowledges it cannot refuse to perform its indemnification obligations hereunder solely because the Vendor's Indemnified Parties are not third party beneficiaries hereunder.

Section 6.2 Limitation of Liability

(1) The aggregate cumulative liability of each Party, including each of their respective directors, officers, employees and agents for all claims arising under or relating to this Agreement, notwithstanding the form in which any such action is brought, whether in contract, tort (including negligence), fundamental breach or otherwise (save and except (i) in respect of any fraud, willful misconduct, or gross negligence on the part of such Party, (ii) with respect to the indemnification obligations of the Parties pursuant to this Article 6 in the event of any claims made by a third party for injury, death or property damage to a third party, and (iii) the payment of liquidated damages and cancellation fees provided for under this Agreement), shall not exceed the value of the specific Purchase Order or Scheduled Order to which the liability directly relates, unless such liability is covered by insurance required under this Agreement.

Section 6.3 Exclusion of Indirect Damages

(1) Neither Party shall be liable for any consequential, incidental, indirect, special, exemplary or punitive damages, loss of revenues, loss of profits, loss of savings, equipment downtime, or injury to persons or property even if advised of the possibility of such damages, loss, or injury and regardless of the form in which any action is brought, whether in contract, tort (including negligence), fundamental breach or otherwise, save and except for (i) fraud, willful misconduct, or gross negligence on the part of such Party, (ii) with respect to the indemnification obligations of the Parties pursuant to this Article 6 in the event of any claims made by a third party for injury, death or property damage to a third party, , and (iii) the payment of liquidated damages and cancellation fees provided for under this Agreement.

Section 6.4 Duty to Mitigate

(1) Each Party agrees that it has a duty to mitigate Damages in accordance with applicable law and covenants that it will use commercially reasonable efforts to minimize any Damages in accordance with applicable law it may incur as a result of the other Party's performance or non-performance of this Agreement.

Section 6.5 Application

(1) The waivers and disclaimers of liability, releases from liability, limitations and apportionments of liability and the protections of the indemnity and hold harmless obligations expressed in this Agreement shall extend to each Party and its Affiliates and its and their respective successors, assigns, officers, directors, shareholders, managers, members, partners, employees, agents and representatives.

ARTICLE 7. CONFIDENTIALITY

Section 7.1 Information To Be Confidential.

(1) Each Party shall treat confidentially and not disclose, and shall cause each of its Representatives to treat confidentially and not disclose, other than as expressly contemplated by this Agreement, any Confidential Information of the other Party.

Section 7.2 Use Of Confidential Information.

(1) Either Party may disclose Confidential Information only to those of its Representatives who need to know such Confidential Information in connection with the Purchase. No Party shall use, nor permit its Representatives to use, Confidential Information for any other purpose nor in any way that is, directly or indirectly, detrimental to the other Party.

Section 7.3 Required Disclosure.

(1) If either Party or any of its Representatives receives a request or is legally required to disclose all or any part of the Confidential Information, such Party shall (a) to the extent legally permissible, immediately notify the other Party of the request or requirement, (b) if

requested by the other Party, consult with the other Party on the advisability of taking legally available steps to resist or narrow the request or lawfully avoid the requirement, and (c) permit the other Party to take all necessary steps to seek a protective order or other appropriate remedy. If a protective order or other remedy is not available, or if the other Party waives compliance with the provisions of this Section 7.3, (i) the Party receiving the request for disclosure or its Representatives, as the case may be, may disclose to the Person requiring disclosure only that portion of the Confidential Information which is legally required to be disclosed, and (ii) such Party shall not be liable for such disclosure unless such disclosure was caused by or resulted from a previous disclosure by such Party or its Representatives not permitted by this Agreement.

Section 7.4 Return or Destruction.

(1) Following the termination of this Agreement in accordance with the provisions of this Agreement, each Party shall (and shall cause each of its Representatives to) (a) return promptly to the other Party or destroy all Confidential Information then in such Party's possession or in the possession of its Representatives, , and (b) deliver to the other Party a written confirmation by one of its duly authorized senior officers indicating that the requirements of this sentence have been satisfied in full); provided, however, that a Recipient will be permitted to retain any Confidential Information to the extent required by applicable law or regulation or its *bonafide* internal compliance or documentation retention policies, so long as such retained Confidential Information remains subject to the terms of this Agreement.

ARTICLE 8. DISPUTE RESOLUTION

Section 8.1 Disputes

(1) Any dispute, controversy or claim between the Parties arising out of or relating to this Agreement or the breach termination or validity thereof (a "**Dispute**") shall be resolved pursuant to the procedures set forth in this Article 8.

(2) Either Party shall provide Notice to the other Party of the existence of the Dispute (the "**Dispute Notice**");

(3) a Vice President (or equivalent) of each of the Parties, each with authority to negotiate and resolve the Dispute, shall endeavor to meet, either in person or by telephonic conference, within ten (10) days after the receipt by a Party of the Dispute Notice, to seek to resolve the Dispute through mutual agreement; and

(4) in the event the procedures referenced in clause (3) above do not result for any reason in resolution of the dispute within twenty (20) days after receipt by a Party of the Dispute Notice, each Party shall have the right to request mediation which shall be administered by the American Arbitration Association ("**AAA**") in accordance with its Commercial Mediation Rules then in effect, within sixty (60) days, unless otherwise agreed to by the Parties; and

(5) in the event the procedures referenced in clause (3) and (4) above do not result for any reason in resolution of the dispute within 60 days after receipt by a Party of the Dispute

Notice, each Party, without further delay, shall have the right to submit the Dispute to arbitration in accordance with the following procedures:

(a) The seat of arbitration shall be New York, New York;

(b) The arbitration shall be administered by the AAA in accordance with its Commercial Arbitration Rules then in effect (the “**Rules**”) (except to the extent modified herein). There shall be three (3) arbitrators: (A) claimant shall appoint an arbitrator in its demand for arbitration, (B) respondent shall appoint an arbitrator within twenty (20) days after receipt of a copy of the demand, and (C) within fifteen (15) days after the appointment of the second arbitrator, the two (2) arbitrators appointed by the Parties shall select a third arbitrator who shall serve as chair of the arbitral tribunal. Any arbitrator not timely appointed shall be appointed by the AAA using the listing ranking and striking procedures in the Rules, with each Party being given three (3) strikes. When acting as appointing authority under this Article 8, AAA shall endeavor to appoint as each arbitrator (including any chair) an attorney who has experience with and is knowledgeable regarding the engineering, procurement and construction industry;

(c) The arbitral tribunal shall have no authority or power to enter an award which is in conflict with governing law. The award shall be in writing and shall contain the reasons on which it is based. The award of the arbitral tribunal shall be final and binding on the Parties and may be challenged only on the grounds set forth on the Federal Arbitration Act, 9 U.S.C. §1 et seq. Any award may be enforced or confirmed in any court of competent jurisdiction; and

(d) The fees and expenses of the arbitration panel and the AAA shall be borne equally by Purchaser and Vendor and each Party shall bear its own legal expenses.

Section 8.2 Interim Relief and Third-Party Claims

(1) Third-Party Claims. Notwithstanding the Parties’ agreement to arbitrate disputes arising pursuant to this Agreement, in the event a Party is sued by a third party or sues a third party on claims that concern the other Party’s obligations under this Agreement and the allocation of liability and/or damages among all the Parties (including the Party sought to be joined pursuant to this Section 8.2(1) to the suit), then, the Party sued or the Party initiating suit may join the other Party. However, as a condition to such joinder, the Party sued or initiating suit must first request the third party to arbitrate the dispute pursuant to this Article 8. Each Party agrees not to object to such joinder or challenge such proceeding on the grounds that the Parties agreed to arbitrate disputes pursuant to this Article 8.

(2) Stay of Arbitration. In the event the Parties are involved in a pending arbitration pursuant to this Article 8 and both Parties are parties to an action pursuant to Section 8.2(1) that is related to any of the issue(s) or claim(s) raised in the arbitration proceeding, it is agreed that, if the arbitral tribunal in the pending arbitration determines that such a stay would be appropriate, the arbitration proceeding shall be stayed pending the conclusion or settlement of the third-party action. Any conclusion or settlement of such third-party action shall be admissible as evidence (to the extent relevant) for purposes of the arbitration proceedings under this Agreement.

Section 8.3 Injunctive Relief

(1) Notwithstanding the foregoing, nothing in this Article 8 shall prevent a Party from pursuing immediate injunctive relief to maintain the status quo or prevent irreparable harm with respect to any Dispute or to enforce the Dispute (including arbitration provisions) set forth herein.

Section 8.4 Pending Dispute: Duty to Continue

(1) Pending the resolution of a Dispute, Vendor shall continue to perform the work consistent with the applicable provisions of this Agreement, and Purchaser shall continue to pay all undisputed amounts required in accordance with the applicable provisions of this Agreement.

ARTICLE 9. LENDER ACCOMMODATIONS

Section 9.1 Assignment to Lender

(1) The Purchaser without the approval of Vendor, may grant an interest in its rights and obligations under this Agreement to any Lender(s); provided, however, that such granting of an interest shall in not relieve Purchaser of its payment obligations hereunder. Promptly after granting such interest, such Purchaser (the “**Borrower**”), shall notify Vendor in writing of the name, address, and telephone and facsimile numbers of any Lenders to which Borrower’s interest under this Agreement has been assigned. Such notice shall include the names of the Lenders to whom all written and telephonic communications may be addressed. After giving Vendor such initial notice, Borrower shall promptly give the Vendor notice of any change in the information provided in the initial notice or any revised notice.

Section 9.2 Lender Rights

(1) If Borrower encumbers its interest under this Agreement as permitted by this Article 9, the following provisions shall apply:

(a) The Lenders shall have the right, but not the obligation, to perform any act required to be performed by Borrower under this Agreement to prevent or cure a Borrower’s default and such act performed by the Lenders shall be as effective to prevent or cure a default as if done by Borrower.

(b) Upon the receipt of a written request from Borrower or any Lender and, subject to Vendor’s reasonable review, Vendor shall execute or arrange for the delivery of such certificates, consents, opinions, affidavits, agreements and acknowledgements, amendments and other documents as may be reasonably required by the Lenders in connection with any financing or refinancing and will enter into reasonable agreements with such Lender that provide that Vendor recognizes the rights of such Lender upon foreclosure of Lender’s security interest, including, without limitation, Lender’s rights to enforce Lender’s security interest and exercise any other rights and remedies in respect of such security interest and such other provisions as may be reasonably requested by any such Lender. At the request of Borrower or the Lenders, and, subject to Vendor’s reasonable review, Vendor shall execute, acknowledge and deliver to the Lenders, a

written statement declaring: (i) either that this Agreement is not modified and in full force and effect, or the specific modifications to the Agreement and whether the Agreement as so modified is in full force and effect; (ii) whether Purchaser is or is not then in default hereunder; and (iii) whether any past defaults have been fully cured.

(c) Pursuant to documents executed by Vendor, when any Lender has appointed an agent, a receiver or a receiver and manager or has obtained a court-appointed receiver or receiver and manager for the purpose of enforcing such Lender's security interest, that Person may exercise any of the Lender's rights under this Section.

(d) Vendor agrees that no Lender shall be obligated to perform any obligation or be deemed to incur any liability or obligation provided in this Agreement on the part of Borrower or shall have any obligation or liability to Vendor with respect to this Agreement except to the extent any Lender has assumed the obligations of Borrower hereunder; provided that Vendor shall nevertheless be entitled to exercise all of its rights hereunder in the event that the applicable cure period provided herein, if any, and any cure period provided for in an agreement between Vendor and the Lender, if any, have expired without a cure having been effected either by Purchaser or the Lender.

ARTICLE 10. GENERAL

Section 10.1 Expenses

(1) Each of Purchaser and Vendor shall be responsible for and bear all of its own costs and expenses incurred in connection with the negotiation of this Agreement, including any expenses of their respective Representatives, incurred at any time in connection with pursuing or consummating this Agreement.

Section 10.2 Public Announcement

(1) Neither Purchaser nor Vendor shall make any public announcement concerning the Purchase or related negotiations without the other Party's prior written approval, except as may be required by law or rule of any stock exchange or quotation system. If such announcement is required by law or rule of any stock exchange or quotation system, the Party required to make the announcement shall inform the other Party of the contents of the announcement proposed to be made and shall use its reasonable efforts to obtain the other Party's approval for the announcement, which approval may not be unreasonably withheld.

Section 10.3 Notices

(1) *Mode of Giving Notice.* Any notice, direction, certificate, consent, determination or other communication required or permitted to be given or made under this Agreement shall be in writing and shall be effectively given and made if (i) delivered personally, (ii) sent by prepaid courier service or mail, or (iii) sent by fax, email or other similar means of electronic communication, in each case to the applicable address set out below:

(a) if to Vendor, to:

General Manager, LONGi Solar Technology (U.S.) Inc.
2633 Camino Ramon, Ste 460
San Ramon, CA 94583
Phone: 925-380-6084
Email: eluo@longi.com

with a copy to:

Legal, LONGi Solar Technology (U.S.) Inc.
2633 Camino Ramon, Ste 460
San Ramon, CA 94583
Phone: 925-380-6084
Email: us_legal@longi.com

(b) if to Purchaser, to:

Manager, Red River Clean Energy
11515 Burnet Rd, Ste 825
Austin, TX 78758
Phone: (312) 883-4846
E-mail: mluo@redrivercleanenergy.com

with a copy to:

Raymond W. Faricy III
2000 IDS Center, 80 South 8th Street
Minneapolis, MN 55402-2119
Phone: (612) 371-3507
E-mail: FARICYR@ballardspahr.com

(2) *Deemed Delivery of Notice.* Any such communication so given or made shall be deemed to have been given or made and to have been received on the day of delivery if delivered, or on the day of faxing, emailing or sending by other means of recorded electronic communication, provided that such day in either event is a Business Day and the communication is so delivered, faxed, emailed or sent before 4:30 p.m. (Houston, Texas time) on such day. Otherwise, such communication shall be deemed to have been given and made and to have been received on the next following Business Day. Any such communication sent by mail shall be deemed to have been given and made and to have been received on the fifth (5th) Business Day following the mailing thereof; provided however that no such communication shall be mailed during any actual or apprehended disruption of postal services. Any such communication given or made in any other manner shall be deemed to have been given or made and to have been received only upon actual receipt.

(3) *Change of Address.* Any Party may from time to time change its address under this Section 8.3 by notice to the other Party given in the manner provided by this Section 8.3.

Section 10.4 Further Assurances

(1) Each Party shall from time to time promptly execute and deliver or cause to be executed and delivered all such further documents and instruments and shall do or cause to be done all such further acts and things in connection with this Agreement that the other Party may reasonably require as being necessary or desirable in order to effectively carry out or better evidence or perfect the full intent and meaning of this Agreement or any provision hereof.

Section 10.5 Entire Agreement

(1) This Agreement, together with all Purchase Orders hereunder, constitutes the entire agreement between the Parties pertaining to the subject matter of this Agreement and supersedes all prior agreements, understandings, negotiations and discussions, whether oral or written, including any letter of intent entered into between the Parties. There are no conditions, representations, warranties, obligations or other agreements between the Parties in connection with the subject matter of this Agreement (whether oral or written, express or implied, statutory or otherwise) except as explicitly set out in this Agreement.

Section 10.6 Amendment

(1) No amendment of this Agreement shall be effective unless made in writing and signed by the Parties.

Section 10.7 Waiver

(1) A waiver of any default, breach or non-compliance under this Agreement shall not be effective unless in writing and signed by the Party to be bound by the waiver. No waiver shall be inferred from or implied by any failure to act or delay in acting by a Party in respect of any default, breach or non-observance or by anything done or omitted to be done by the other Party. The waiver by a Party of any default, breach or non-compliance under this Agreement will not operate as a waiver of that Party's rights under this Agreement in respect of any continuing or subsequent default, breach or non-observance (whether of the same or any other nature).

Section 10.8 Severability

(1) Any provision of this Agreement which is prohibited or unenforceable in any jurisdiction will, as to that jurisdiction, be ineffective to the extent of such prohibition or unenforceability and will be severed from the balance of this Agreement, all without affecting the remaining provisions of this Agreement or affecting the validity or enforceability of such provision in any other jurisdiction.

Section 10.9 Remedies Cumulative

(1) Except as otherwise outlined herein, the rights, remedies, powers and privileges herein provided to a Party are cumulative and in addition to and not exclusive of or in substitution for any rights, remedies, powers and privileges otherwise available to that Party.

Section 10.10 Governing Law; Limited Submission to Jurisdiction

(1) This Agreement shall be governed by the laws of the State of New York, without regard to any laws regarding conflict of laws thereof that would require the laws of another jurisdiction to apply.

(2) The Parties irrevocably accept and submit to the non-exclusive jurisdiction of the state or federal courts located in New York, New York with respect to any suit, action or proceeding in aid of arbitration, including an action for an order of interim, provisional or conservatory measures to maintain the status quo and prevent irreparable harm and for recognition and enforcement of any award rendered by the arbitral tribunal, and the Parties irrevocably waive any objection to the laying of venue or defense that the forum is inconvenient with respect to any such suit, action or proceeding for such purpose. The Parties' right to apply for such judicial relief in aid of arbitration and the commencement of any such suit, action or proceeding in aid of arbitration shall not be deemed incompatible with, or a waiver of, the Parties' agreement to arbitrate. This consent to jurisdiction is being given solely for purposes of this Agreement, and it is not intended to, and shall not, confer consent to jurisdiction with respect to any other dispute in which a party to this Agreement may become involved. The Parties acknowledge and agree that terms and conditions of this Agreement have been freely, fairly and thoroughly negotiated.

Section 10.11 Waiver of Jury Trial

(1) EACH PARTY HEREBY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY PROCEEDING BROUGHT UNDER THIS AGREEMENT. Each Party (a) certifies that no representative of the other Party has represented, expressly or otherwise, that such other Party would not, in the event of litigation, seek to enforce the foregoing waiver and (b) acknowledges that it and the other Party has been induced to enter into this Agreement by, among other things, the mutual waivers and certifications in this Section 8.12.

Section 10.12 Third Party Beneficiaries.

(1) The provisions of this Agreement and all rights of the Parties hereunder are intended for the sole benefit of Purchaser and Vendor and there are no third-party beneficiaries hereof (other than the Lenders solely for the purpose of enforcement of Section 9.2).

Section 10.13 Successors and Assigns

(1) This Agreement shall enure to the benefit of, and be binding on, the Parties and their respective successors and permitted assigns. Except as explicitly permitted by the terms hereof, neither Party may assign or transfer, whether absolutely, by way of security or otherwise, all or any part of its respective rights or obligations under this Agreement without the prior written consent of the other Party, except that either Party may assign this Agreement to an Affiliate of the assigning Party on condition that such Affiliate agrees in writing to be bound by the terms hereof, and such assignment shall not relieve the assigning Party of its obligations hereunder.

Section 10.14 Counterparts

(1) This Agreement may be executed in counterparts, each of which shall be deemed to be an original and both of which taken together shall be deemed to constitute one and the same instrument. To evidence its execution of an original counterpart of this Agreement, a Party may send a copy of its original signature on the execution page hereof to the other Party by facsimile transmission and such transmission shall constitute delivery of an executed copy of this Agreement to the receiving Party.

Section 10.15 Language

(1) The Parties have required that this Agreement and all deeds, documents and notices relating to this Agreement be drawn up in the English language.

Section 10.16 Survival

(1) Without prejudice to the survival of any obligations that accrue prior to the termination or expiration of this Agreement, Article 1, Article 4, Article 5, Article 6, Article 7, Article 8, Article 9, and Article 10, any Purchase Orders that have not been fully performed and any amounts owed by one Party to the other at the time of termination, shall survive any termination or expiry of this Agreement.

[The balance of this page is intentionally blank]

IN WITNESS WHEREOF the Parties have executed this Agreement as of the Effective Date.

Red River Clean Energy, LLC

By: Mike Luo
Mike Luo (May 15, 2025 10:31 CDT)
Name: Mike Luo
Title: President

LONGi Solar Technology (U.S.) Inc.

DocuSigned by:

46AD6E3577A7451...

By: _____

Name: LUO XIN

Title:
VP

Schedule A – Description of PV Modules and Specifications

LR5-72HBD Hi-MO 5 Ice Shield modules produced by the Manufacturer

(attached)

Hi-MO 5

(For US market)

Ice-Shield

LR5-72HBD 540~560M

- Extraordinary reliability against hailstorms
- Advanced module technology delivers superior module efficiency
 - M10 Gallium-doped Wafer
 - 18-busbar Half-cut Cell
- Globally validated bifacial energy yield
- High module quality ensures long-term reliability

12

12-year Warranty for
Materials and Processing

30

30-year Warranty for Extra
Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

LONGi



21.7%

MAX MODULE
EFFICIENCY

0~3%

POWER
TOLERANCE

<2%

FIRST YEAR
POWER DEGRADATION

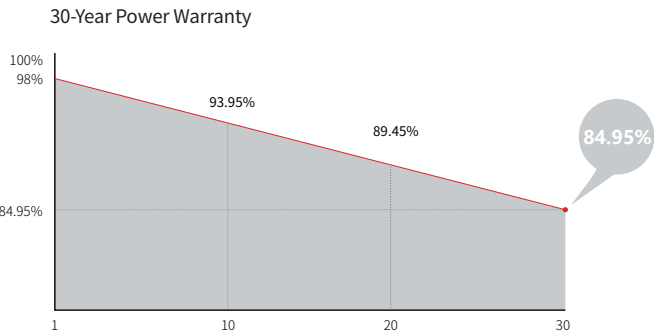
0.45%

YEAR 2-30
POWER DEGRADATION

HALF-CELL

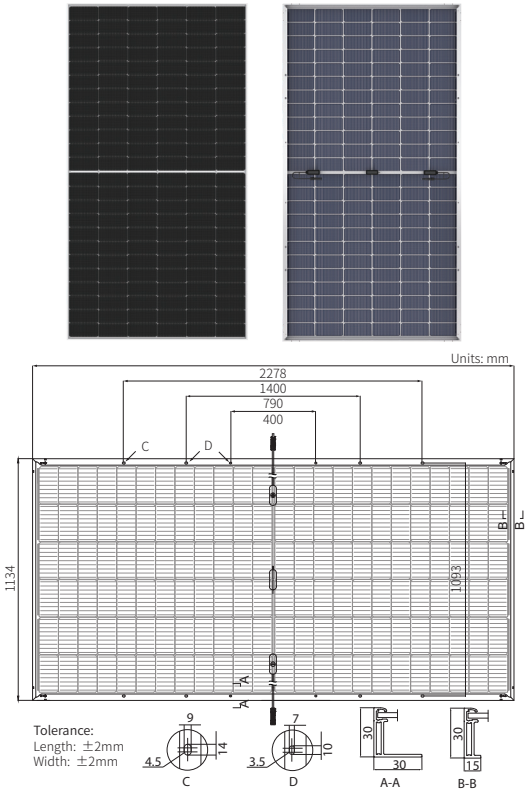
Lower operating temperature

Additional Value



Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm ² , +400, -200mm/±1400mm length can be customized
Glass	Dual-glass, 3.2mm coated tempered glass + 2.0mm heat strengthened glass
Frame	Anodized aluminum alloy frame
Weight	39.5kg
Dimension	2278×1134×30mm
Packaging	36pcs per pallet / 180pcs per 20' GP / 468pcs per 40' HC



Electrical Characteristics

Module Type	STC : AM1.5 1000W/m ² 25°C		NOCT : AM1.5 800W/m ² 20°C 1m/s									
	LR5-72HBD-540M	LR5-72HBD-545M	LR5-72HBD-550M	LR5-72HBD-555M	LR5-72HBD-560M							
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (P _{max} /W)	540	403.6	545	407.4	550	411.1	555	414.8	560	418.6		
Open Circuit Voltage (V _{oc} /V)	49.50	46.54	49.65	46.68	49.80	46.82	49.95	46.97	50.10	47.11		
Short Circuit Current (I _{sc} /A)	13.85	11.17	13.92	11.23	13.99	11.29	14.05	11.34	14.10	11.38		
Voltage at Maximum Power (V _{mp} /V)	41.65	38.86	41.80	39.00	41.95	39.14	42.10	39.28	42.25	39.42		
Current at Maximum Power (I _{mp} /A)	12.97	10.39	13.04	10.45	13.12	10.51	13.19	10.56	13.26	10.62		
Module Efficiency(%)	20.9		21.1		21.3		21.5		21.7			

Electrical characteristics with different rear side power gain (reference to 550W front)

P _{max} /W	V _{oc} /V	I _{sc} /A	V _{mp} /V	I _{mp} /A	P _{max} gain
578	49.80	14.68	41.95	13.77	5%
605	49.80	15.38	41.95	14.43	10%
633	49.90	16.08	42.05	15.08	15%
660	49.90	16.78	42.05	15.74	20%
688	49.90	17.48	42.05	16.39	25%

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Bifaciality	70±5%
Fire Rating	UL type 29 IEC Class C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	50mm hailstone at the speed of 32.4m/s*

Temperature Ratings (STC)

Temperature Coefficient of I _{sc}	+0.050%/°C
Temperature Coefficient of V _{oc}	-0.265%/°C
Temperature Coefficient of P _{max}	-0.340%/°C

*The product can withstand larger hailstones impacting at higher speeds when integrated with tracker hail stow technology.

Specifications included in this datasheet are subject to change without notice. LONGi reserves the right of final interpretation. (20241206V1.0 Draft) For US market

Schedule B – PV Module Pricing

1. Unit Price, Contract Module Quantity and Contract Wattage:

Module Model	Module Unit Price*\$/Wdc	Contract Module Quantity (Pcs)	Contract Wattage (Wdc)	Module Price (USD)
LR5-72HBD-545M(Ice-Shield)	\$0.265	46,260	25,211,700	\$6,681,100.50
LR5-72HBD-550M(Ice-Shield)	\$0.265	316,944	174,319,200	\$46,194,588.00
LR5-72HBD-555M(Ice-Shield)	\$0.265	18,936	10,509,480	\$2,785,012.20
Total		382,140	210,040,380	\$55,660,700.70

Incoterms (2020): DDP to Project Site

Project Site Address: 8987 County Road 268

Early TX, 76802

31.57970000°, -98.8355139°

2. Total Bin Class Distribution

Model Number	Power Class (Wdc)	Module Quantity (Pcs)	Wattage (Wdc)
LR5-72HBD(Ice-Shield)	545	46,260	25,211,700
LR5-72HBD(Ice-Shield)	550	316,944	174,319,200
LR5-72HBD(Ice-Shield)	555	18,936	10,509,480
Total		382,140	210,040,380

Schedule C – Form of Purchase Order

Purchase Order

PURCHASER Red River Clean Energy, LLC

Date:
P.O. #:
Project
ID:
Project:
Ref:

Vendor: Name: PROJECT Red River Clean Energy LLC
OWNER:
Address: Ship to: [Project Address]
Phone: ("Delivery Location")
US
Taxpayer
ID No.:

Shipping Method Payment Terms Delivery Date

Qty	Item #	Description	Job	Unit Price	Line Total
-----	--------	-------------	-----	------------	------------

Please quote P.O. # and project name on invoice	Subtotal
	HST #VALUE!
	Total #VALUE!

This Purchase Order is issued in accordance with and subject to the terms and conditions of that certain PV Module Master Supply Agreement made as of [•] (the "Master Supply Agreement") between[•] ("Vendor") and Red River Clean Energy, LLC ("Purchaser"), the terms, conditions, rights and obligations of which are incorporated herein by reference, mutatis mutandis.

Pursuant to the terms of the Master Supply Agreement, Vendor acknowledges that title to the above equipment shall be transferred free and clear of any liens to the Project Owner noted above and all rights and obligations under the warranty in respect of the items to be delivered under this Purchase Order are in favor of the Project Owner noted above.

[•]

Authorized by Date

Schedule D – Packing and Shipping; Access to Project Site

I. Packing and Shipping

Prior to shipment, all packaging containing each PV Module and other piece of equipment shall be labelled as being the property of the Purchaser as identified in the Purchase Order associated with such PV Modules or other equipment.

II. Access to Project Site

The Vendor shall ensure that each of the below requirements is followed by the Vendor, its employees, subcontractors and/or agents, including any delivery or service personnel or vehicles at or around each Delivery Location as further detailed below.

(1) Operation of Vehicles

All vehicles, including delivery or service vehicles, must enter or leave the Site through the designated access roads.

Motor vehicles may be operated beyond designated parking areas, to the extent considered necessary by the Vendor, acting reasonably, so long as such vehicles are not operated beyond designated parking areas. Such vehicles shall be operated with due caution at all times while on the Site.

On or near the Site, the driver or operator must comply with the following:

- (i) Speed limit must not exceed 8 km (5 miles) per hour at any time;
- (ii) When a co-driver/helper is assigned to the vehicle, he/she must direct the movement of the vehicle or equipment while on foot from a position away from the vehicle and in clear view of the driver or operator;
- (iii) When a co-driver/helper is not assigned to the vehicle, vehicles with limited rear vision must not be backed up without the aid of a ground guide who must direct the movement of the vehicle or equipment while on foot from a position away from the vehicle or equipment and in clear view of the driver or Operator;
- (iv) When a vehicle is parked on the Site, the following conditions must be met:
 - (a) The ignition turned off;
 - (b) The key removed;
 - (c) The transmission placed in park (neutral if not parked);
 - (d) The parking brake engaged; and
 - (e) The doors locked

(provided that cranes, skyjacks and similar equipment will not be considered to be “parked” when in use, even if not in motion, and therefore the ignition may be left on while in use, provided that responsible personnel must be in attendance and supervising such equipment at all times during which the ignition is left on.

- (vi) When returning to a parked vehicle or equipment, the driver/operator must circle the vehicle or equipment and ensure that there are no persons under or near the vehicle or equipment;
- (vii) Vehicles or equipment must never be left unattended with the engine running. Engines must not be left idling unnecessarily;
- (viii) All tools, supplies, equipment, etc. are to be securely stored in the vehicle; and
- (ix) Reversing or backing up must be avoided as much as possible. The vehicle should be positioned so that the driver can drive it away rather than back it up.

(2) Rules for Backing-up:

- 1. The driver or operator must understand the hand signals to be used prior to moving the vehicle.
- 2. The driver or operator must get the whole picture (get out and walk around the vehicle).
- 3. If the driver or operator loses eye contact with the guide, he/she must stop immediately and re-establish eye contact. The driver/operator must be sure it is safe to resume reversing.
- 4. The driver or operator must reverse slowly, no faster than normal walking speed.
- 5. The driver or operator must check on both sides (mirrors) as he/she reverses.
- 6. All vehicles, including delivery or service vehicles, which are used to enter the Site should, wherever possible, be equipped with back-up alarms.

REVERSE ONLY WHEN IT IS SAFE TO DO SO!

It is the responsibility of the driver or operator to exercise extreme caution when reversing a vehicle. Vehicles shall not be backed-up without the aid of a ground guide at the rear of the vehicle and in clear view of the driver or operator. This, however, does not relieve the operator’s responsibility to exercise extreme caution when reversing the vehicle.

(3) Delivery / Service of Equipment

For identification purposes, all personnel must wear a uniform which clearly identifies the company, including the name and logo (if applicable) and, if the company issues any

identification badges to its employees, such employees must wear such badges at all times when in or around the Site.

All deliveries of machinery, equipment and supplies made during normal Site operation hours must be subject to safety concerns on an individual Site basis. Services are to be provided in accordance with prior arrangements with the Purchaser.

All machinery, equipment and supplies must be delivered by employees of the Vendor or its subcontractors. Deliveries may be made outside of normal operation hours (and are not limited to normal operation hours only). Deliveries may be made to any part of the Project or to any other area deemed appropriate by the Vendor in consultation with the Purchaser, and are not limited to being delivered solely to the designated receiving area on the Site.

(4) Safety Procedures

Delivery personnel shall leave the Site clean with all debris removed off the Site. Materials, tools and machinery must either be removed from the Site or, if left on the site, be properly secured.

The Vendor shall take all necessary precautions regarding protection of individuals at the Delivery Location.

The Vendor shall coordinate all access into the premises with Purchaser representatives. At no time will the Vendor or its agents impede the Facility's operation in any way. A designated delivery and storage areas shall be designated by the Purchaser.

(5) Site Safety and Security:

The Vendor agrees and understands, and must ensure that its applicable agents, employees and subcontractors agree and understand, that Site safety is the first priority in all instances.

All personal injury incidents and property damage, no matter how minor, which occur on the Site, shall be reported immediately to the Purchaser.

Schedule E –Warranty

(attached)



Limited Warranty for Solar Modules

Utility Generation Market



This Limited Warranty applies to the following modules		
Series	60&66 cells	72&78 cells
Hi-MO 5	LR5-66HBD-xxxM	LR5-72HBD-xxxM
	/	LR5-72HIBD-xxxM
Hi-MO 7	/	LR5-72HGD-xxxM
	/	LR7-72HGD-xxxM

1. Limited Warranty

The warranty start date of the Solar Modules stipulated under this Limited Warranty for Solar Modules (hereinafter referred to as "Limited Warranty") is the date of delivery to the Customer or 6 months after the modules are shipped out of the production plant, whichever is earlier (hereinafter referred to as "Warranty Start Date"). For the avoidance of doubt, the aforesaid Customer means the Buyer as agreed in the Sales Contract for sale of the Solar Modules.

1.1. 12-Year Limited Product Warranty

The Supplier warrants that for a period of 12 years since the Warranty Start Date that the Solar Modules (including the DC connectors and cables) will be free of defects in material or workmanship which affects the normal installation or utilization of the modules, provided that the Solar Modules are installed, utilized and maintained according to the stipulations of the Installation Manual provided by the Supplier, which may be updated from time to time. Defects do not include changes in appearance or normal wear and tear of the Solar Modules after the modules is installed. Performance warranty for the power output is not included here but it shall be specifically elaborated in the "30 Year Limited Performance Warranty" section below.

1.2. 30-Year Limited Performance Warranty

The Supplier warrants for a period of 30-year performance warranty ("Performance Warranty Period") in details as below. For the avoidance of doubt, this limited performance warranty only applies to the actual power output of the front-side of the modules.

As for the Hi-MO 5 series, during the first year of the Performance Warranty Period, the actual power output (performance) of the modules will reach at least 98% of the nominal power output; and from the second year, the actual power output will decline annually by no more than 0.45% for a period of 29 years; by the end of the 30th year, an actual output of at least 85% of the nominal power output is guaranteed.

Actual Power Output (Year=1) $\geq$ Nominal Power * (1 - 2%)

Actual Power Output(Year=N, $2 \leq N \leq 30$) $\geq$ Nominal Power * (1 - (2% + 0.45% * (N-1)))

As for the Hi-MO 7 series, during the first year of the Performance Warranty Period, the actual power output (performance) of the modules will reach at least 99% of the nominal power output; and from the second year, the actual power output will decline annually by no more than 0.4% for a period of 29 years; by the end of the 30th year, an actual output of at least 87.4% of the nominal power output is guaranteed.

Actual Power Output (Year=1) $\geq$ Nominal Power * (1 - 1%)

Actual Power Output(Year=N, $2 \leq N \leq 30$) $\geq$ Nominal Power * (1 - (1% + 0.4% * (N-1)))

The actual power output is to be measured under standard testing condition ("STC" or "Standard Test Conditions") in an independent testing lab accepted by the Supplier or previously designated by the Supplier, and when measuring the actual power output, measurement equipment tolerance is to be taken into consideration, as per IEC60904.

Standard Test Conditions are: Air mass 1.5, wind speed 0m/s, irradiance 1000W/m², cell temperature 25°C

2. Warranty Claim Procedure

In any case, any and all warranty claims shall be submitted to the Supplier or its authorized distributor in writing or by mail within the corresponding warranty period. The customer shall provide necessary evidence documents for its claim. If the customer believes that the Solar Module does not meet the requirements of the "Limited Warranty", the customer should notify the sales team or global technical service department of the Supplier in writing or submit the notice via email through "Contact LONGi" button on the Supplier's global official website page (the website is www.longi.com) within 30 days after the claim is identified. The notice should include the following information: (a) the claimant; (b) a detailed description of the claim; (c) supporting materials, including photos or data; (d) serial number of affected module; (e) evidence for purchase of the affected module; (f) model of the affected module; (g) project location; (h) other supplementary information required by the Supplier. The Supplier will review and evaluate alleged claims after receipt of the claim and full information as stipulated herein. If the Supplier at its sole discretion considers it necessary, the Supplier can request the module be shipped back to the Supplier's factory or 3rd-party for testing, in which case, the Supplier will provide the customer with a Return Merchandise Authorization ("RMA").

In the event the Customer fails to notify the Supplier and provide the relevant information of (a)-(h) as described above within the time required by the Supplier, or fail to coordinate the Supplier arrange the defected modules transfer under necessary circumstances, the Supplier is entitled to refuse to process the relevant claim demand without any liability until the Customer has provided the relevant information as required by the Supplier.

In the absence of such RMA, any returned module will not be accepted by the Supplier. In the event the Customer returns the Solar Modules without written agreement of the Supplier, the risks (including but not limited to damage and loss of the Solar Modules) and expenses related to the Solar Modules shall be borne by the Customer. Subject to the approval of the Supplier's technical service department, the necessary and documented shipping costs related to the Limited Product Warranty or the Limited Performance Warranty will be compensated by the Supplier to the customer.

The Supplier is entitled to decide whether to send a representative to investigate the alleged claims on site and related cost and expenses shall be borne by the Supplier. In the event that the Supplier decides to send a representative to the product installation site for verification, the customer shall actively cooperate for such investigation. If the customer refuses the Supplier to enter the site for investigation without a proper and appropriate reason, the Supplier has the right to extend the claim process until necessary evidence is provided. In case a consensus regarding the cause of any module defect cannot be reached between the Supplier and the customer, the supplier have rights to assign authoritative testing facilities, such as PI, TÜV SUD, TÜV Rheinland, Intertek, UL, CQC, CGC, etc., which should be accepted by both parties to participate in the final settlement. The Supplier will pay for the reasonable costs incurred by such test in advance. All costs shall be borne by the losing party finally, including shipping freight, transportation insurance, and laboratory testing costs etc., except for the lawsuit which should be judged by written judgment. The Supplier reserves the right of final interpretation.

3. Remedies for Claims

In the event that the customer claims that the module(s) fails to meet the “Limited Warranty” as described in Sections 1.1 and 1.2 above and the Supplier confirms the cause for such defect lies on the product material or workmanship; or at the request of the client, a mutually-agreed third-party testing was done to reveal that the cause of such defect lies on the material or workmanship, then the Supplier shall, at its sole discretion, either

1. Repair the defective solar modules. In such case, the Supplier shall prepare the repair project plan and carry out the repair project for the affected modules; or
2. Replace the defective modules or provide additional module(s) to make up for the output gap between the guaranteed output and the actual power output of the defective module(s) ; or
3. Refund the residual value of the defective modules or refund the value equivalent of the output gap between the guaranteed power output and the actual power output of the defective module(s).

*Residual value = current market price (price-per-watt) * nominal power * left-over service life/ 30*

*Value Equivalent of Output Gap = current market price (price-per-watt) * (guaranteed power output – actual power output) * left-over service life/ 30*

SPECIAL NOTE:

1. Unless otherwise agreed by the Parties in written, the repaired module(s) or replacement module(s) will be delivered by the Supplier in accordance with the same Incoterms and destination as the relevant module supply contract. The insurance, freight, customs clearance fees and other reasonable expenses shall be borne in accordance with the Incoterms in the original module supply contract. In the case that the Customer pays for such costs in advance, and expects to contact the Supplier for compensation for such aforesaid costs, the Customer shall provide the invoices to evidence that such costs are incurred from related service providers. Costs incurred due to dismantling, repacking, installation or reinstallation the module(s) and other related expenses shall be borne by the Customer.
2. Any repair or replacement of the affected module(s) shall not renew the applicable warranty period. The warranty period for replaced or repaired module(s) is the remainder of the warranty for the affected modules. The Supplier is entitled to deliver similar module(s) at its sole discretion in replacement of the affected module(s) if the affected module(s) is no longer available. The nominal power of the module(s) used to replace the concerned module(s) shall at least equal or over the power wattage of the affected module(s).
3. Unless instructed by Supplier or required by law, the Customer shall dispose of out-of-use module (s) in accordance with applicable regulations on electronic waste treatment and disposal at its own cost. If the Supplier decides or is required by law to retrieve these defective modules, the ownership of the relevant module(s) belong to the Supplier. In the event the Customer returns the Solar Modules to the Supplier without the prior written consent of the Supplier, the risks (including but not limited to damage or loss of the Solar Modules) and expenses related to the Solar Modules shall be borne by the Customer, and the Supplier is entitled to refuse to deal with the related claims and demands without any liability therefrom. Unless with written authorization from the Supplier, any replaced module(s) shall not be resold, reworked or reused in any way.

4. Product limited warranty will terminate after refunding the residual value. If the output gap keeps growing after compensating the value equivalent had been compensated, the Customer could apply claim based on the growing value equivalent as well, which means it should exclude the value equivalent of last claim.

5. The buyer is obliged to cooperate with the Supplier to sign a "Settlement Agreement" so that the remedy plan for any alleged claim can be implemented. The Parties agree that the Supplier is entitled to use this as a precondition for fulfilling the obligations under this "Limited Warranty".

4. Liability Exemptions

The Supplier shall be free of any liability in the event that any defect of the Solar Modules is caused by or in connection to the Force Majeure. The Supplier and the Customer understands and agree that the Supplier shall free of liability in the event any obligations under this "Limited Warranty" is delayed or could not be provided because of the occurrence of the Force Majeure as defined under Clause 9 of this "Limited Warranty".

Save the stipulations under Clause 9, the Supplier and the Customer understand and agree that this "Limited Warranty" does not apply to any one of the following situations:

- Module(s) have been installed, used and maintained in a manner that fails to strictly comply with the relevant provisions of the supplier's installation manual, module technical specification and maintenance manual; or
- Module(s) which have been subject to misuse, abuse, negligence, vandalism or accident; or
- Module(s) which have been subject to power supply failure, power surge, lightning, flood, fire, accidental damage or other events beyond the control of the Supplier directly or indirectly; or
- Module(s) which have been installed on mobile equipment (except for photovoltaic tracking systems) such as vehicles, ships, etc., or offshore facilities (except for pre-authorized floating systems or fishery-solar hybrid project); or
- Module(s) which have been subject to system voltage over the rated maximum system voltage or surge; or
- Module(s) which have been installed on unqualified buildings; or
- Module(s) which have been installed near extreme heat or in extreme or volatile environmental conditions, causing the module(s) to corrode, oxidize, or to suffer from chemical materials in the environment; or
- Failure to pay the purchase price to the Supplier or its affiliated company that sells the module(s) to the customer; or
- Module(s) which have been used in a way that infringes on the intellectual property rights of the Supplier or any other third party (including but not limited to patent rights, trademark rights, etc.);

In addition, when the nameplate and serial number of the module(s) are tampered with, removed or unrecognizable without the written authorization of the Supplier, the claim will be rejected.

5. Limitation of Liability

The Supplier assumes no warranties, express or implied, other than the warranties made herein and specifically disclaims all other warranties, including but not limited to, merchantability or fitness for a particular purpose, usage or application, or other obligations and responsibilities assumed by the Supplier, unless the Supplier expressly recognizes other obligations and responsibilities in a duly signed written document. The customer understands and agrees that the Supplier shall not be liable for personal injury or property damage, and shall not be liable for other losses or injuries caused by or related to the module(s) (including but not limited to any module defect, or any defect arising from improper use and installation of the module(s)). The Supplier excludes all liabilities for any collateral, consequential or special damages. Losses caused by module defect, including but not limited to, loss of profit, loss of power, loss of business opportunity, loss of goodwill, increase of the operating cost or loss of income are clearly excluded here. If the Supplier is liable for compensation to the customer, the total amount of compensation shall not exceed the invoice price of the defective module(s) paid by the customer.

6. Assignment

The Customer can transfer the rights and obligations under this "Limited Warranty" to the subsequent project owner by informing the Supplier in writing of this transfer of rights, provided that:

1. The module(s) remain at the initial installation site without being tempered with; and
2. The purchase price of the module(s) are fully paid to the Supplier or other payable amounts (such as liquidated damages); and
3. This transfer of rights covers all provisions of this "Limited Warranty"; and
4. The transferee agrees to be bound by all terms of this "Limited Warranty".

If required by the Supplier, the Customer shall, within 15 days upon receipt of the notice from the Supplier, provide reasonable evidence to prove the inheritance of ownership. Otherwise, the Supplier shall have the right to refuse to process the relevant claim and shall not be liable for it.

The rights of this "Limited Warranty" shall only be transferred if above mentioned requirements are fully met, otherwise such transfer shall not be binding upon on the Supplier, and the Supplier has the right to refuse to process the relevant demand for claims without any liability.

7. Severability

If a certain section or clause of this "Limited Warranty" itself or its applicability to certain people or certain situation is deemed invalid, ineffective or unable to be implemented, this does not affect the validity of any other sections or clauses of this warranty. In such case, the applicability of other sections or clauses of this shall be regarded as independent and effective.

8. Applicable Law and Dispute Resolution

Any dispute relating to this “Limited Warranty”, including but not limited to, disputes relating to the survival, validity, breach or termination of the “Limited Warranty”, shall be resolved in accordance with the governing law and jurisdiction written in the Solar Module supply contract. The Supplier reserves the right of final interpretation.

9. Force Majeure

Force Majeure refers to unforeseeable, unavoidable and insurmountable objective conditions in practice, including but not limited to war, riot, strike, epidemic, quarantine, traffic control and other social events; and earthquake, fire, flood, blizzard, hurricane, lightning, natural disaster and other natural disaster; or due to lack of adequate or adequate labor force, shortage of raw materials or inability to produce capacity, technology or output, or delay not caused by either Party due to delay of construction period due to approval delay of non-municipal supporting facilities; or the delay caused by national laws, regulations, administrative rules or orders and any unforeseeable events beyond the control of the Supplier.

Upon occurrence of Force Majeure or its continuing, in sales or defective product warranty claim, the Supplier cannot fulfill or delay in performance of its obligations under this “Limited Warranty”, the Supplier shall be free of any liability to the loss or damages incurred therefrom, but the Supplier shall promptly notify the Customer regard to the Force Majeure, and shall negotiate with the Customer in time to take necessary measurements to minimize the impact of the Force Majeure.



LONGi Solar Technology Co., Ltd.

No.8369 Shang Yuan Road, Economic And Technological
Development Zone, Xi'an, China

www.longi.com

Schedule F – Acceptance Criteria

(attached)



隆基组件产品质量标准

LONGi Module Quality Criteria

1. 基本定义和要求 General Definition and Requirement

1.1 目的 Purpose

定义隆基主要原辅材料及组件生产过程控制及隆基组件出厂验货的检验项目、检验方法、抽样基准等，确保进厂原辅材料质量及组件生产过程及组件出厂质量得到有效控制，且满足规定的要求。

Define the inspection items, inspection methods and sampling standards, etc. for LONGi main raw materials incoming and module process control and output inspection module, in order to ensure the quality of raw materials and production process and pre-shipment inspection has been controlled and can meet related requirements.

1.2 适用范围 Scope of Application

本文件适用于隆基所有组件工厂生产所需的主要原辅材料进厂检验，组件生产过程控制及出厂检验工作。

These inspection criteria are applicable to raw materials incoming inspection, production process control and pre-shipment inspection for all LONGi modules.

1.3 不良等级 Defect Level

从可能造成影响的程度对条款类别进行区分，分为关键不良、严重不良、轻微不良。

Defect level: Categorized based on potential impacts to 3 levels, Critical defect, Major defect, Minor defect.

关键不良：对体会造成伤害或违反法律法规的缺点。



Critical Defect: Defects may cause injury on the human body, or cause violation of laws and regulations.
严重不良：对产品的基本性能、实用性与操作会构成障碍。

Major Defect: Defects may have effect on the basic performance, practicality and operating of the product.
轻微不良：外观性质量不良，或对产品的基本性，实用性与操作性不会构成障碍。

Minor Defect: Quality defects only on the appearance, or defects which have no effect on the basic performance, practicality and operating of the product.

1.4 抽样及 AQL 标准 Sampling and AQL standards

抽样水平：参照 ISO2859-1:1999 标准，并按具体条款中列明的参数执行。

Sampling Level: Referring to ISO2859-1:1999, and detailed parameters in related listed item.

AQL 标准：按照具体条款中列明的参数执行。

AQL Standard: Referring to detailed parameters in related listed item.

2. 原辅材料进料检验要求 Raw Material Incoming Inspection Requirement

2.1 检验要求 Inspection Condition

电池片，玻璃，背板，EVA/POE，线盒，焊带，硅胶，边框材料进料检验要求如下：

The incoming inspection requirements for Cell, Glass, Baksheet, EVA/POE, J-box, Ribbon, Silicon, Frame are as below.

材料 Material	序号 No.	测试项目 Test Item	规范/公差 Standard/Tolerance	测试设备 Test Equipment	取样频率 Frequency
电池片检验 Cell Inspection	1	尺寸 Size	参考电池片进货检验指导书 Refer to cell incoming inspection instructions	游标卡尺、千分尺 Caliper\Microcalliper	每批 Each batch
	2	外观 Appearance	参考电池片进货检验指导书 Refer to cell incoming inspection	点线规、钢尺 Steel Ruler	每批 Each batch



			instructions		
	3	EL	参考电池片进货检验指导书 Refer to cell incoming inspection instructions	单片 EL 测试仪 Single EL test	每批 Each batch
	4	电性能 Electrical	参考电池片进货检验指导书 Refer to cell incoming inspection instructions	单片功率测试仪 Single I-V test	每批 Each batch
玻璃检验 Glass inspection	1	尺寸 Size	参考《光伏玻璃进货检验指导书》 Refer to glass incoming inspection instructions	卷尺，千分尺 Flexible Rule\Microcalliper	每批 Each batch
	2	外观 Appearance	参考《光伏玻璃进货检验指导书》 Refer to glass incoming inspection instructions		每批 Each batch
	3	弯曲度 Curvature	参考《光伏玻璃进货检验指导书》 Refer to glass incoming inspection instructions	钢球、放大镜、点线规 steel ball、magnifier	每批 Each batch
	4	膜厚 Thickness	100~140μm	膜厚测试仪 Thickness test	每批 Each batch
	5	硬度（镀膜） Hardness	参考《光伏玻璃进货检验指导书》 Refer to glass incoming inspection instructions	硬度测试仪 Hardness test	每批 Each batch
	6	附着力测试（镀膜） Coating Adhesion Test	镀膜玻璃：标准≤0 级 Standard of Reflective glass：≤0 镀釉玻璃：标准≤1 级 Standard of Glazed glass：≤1	漆膜划格器 Grid knife	每月初/次 Beginning of each month
	7	抗冲击强度 Impact Strength	参考《光伏玻璃进货检验指导书》 Refer to glass incoming inspection instructions	1040g 钢球 1040g steel ball	每月初/次 Beginning of each month
	8	高透镀膜玻璃透光率 Glass transmittance	参考《光伏玻璃进货检验指导书》 Refer to 《glass incoming inspection instructions》	透光率测试仪 transmittance test	每批 Each batch



检验背板 Backsheet inspection	1	背板厚度 Thickness		尺寸±10% size±10%	千分尺 Microcalliper	每批/5 卷 Each batch/5 roll
	2	剥离强度 Peel Strength		≥40N/cm (涂层 Coating) ; ≥60N/cm (氟膜 Fluorine Film)	拉力计 tension meter	每批 Each batch
	3	层间剥离强度 Inter-layer slipping strength		≥4N/cm	拉力计/百格刀 tension meter/Grid knife	每批 Each batch
	4	收缩率 Shrinkage		横向≤1.0%, 纵向≤1.0% broadwise≤1.0%, direction≤1.0%	烘箱 bake oven	每批 Each batch
检 验 EVA/POE EVA/POE inspection	1	尺寸 Size	宽度 Width	规格尺寸, 公差 0~+5mm, 每卷测试 3 个点, 边缘锯齿状的以外沿为基准; 白色 EVA 公差 0~+7 Spec: tolerance 0 ~ +5mm(white EVA 0~+7mm) Test 3 points on each roll, the outer edge of the serrated edge is the datum	卷尺 Flexible Rule	每批 Each batch
	2		克 重 Weight	抽 5 卷用圆盘取样器在每卷上取一个 100cm2 EVA, 电子天平上称重记录 数值, 标准参照《EVA POE 技术协 议》 Draw 5 rolls and take a 100cm2 EVA on each roll with a disc sampler,Record the weighing value on the electronic balance,standard refer to 《EVA/POE technology agreement》	圆盘取样器、电子天平 Electronic balance	每批 Each batch
	3		厚 度 Thickness	EVA 厚 度: 规 格 尺 寸, 公 差 -0.03/+0.08mm	千分尺、测厚规 Microcalliper	每批 Each batch



				每卷测试 6 个点，每边 3 个值，记录平均值。 EVA thickness spec : tolerance -0.03/+0.08mm Test 6 points on each roll, 3 values on each side, and record the average value		
	4	外观 Appearance	外观 Appearance	参考《EVA 进货检验指导书》《POE 进货检验指导书》 Refer to 《EVA incoming inspection instructions》 《 POE incoming inspection instructions》	/	每批 Each batch
	5	剥离强度 Peeling strength	EVA 与背板 EVA and backsheet	≥40N/cm	拉力测试仪 Tensile strength tester	每批 Each batch
	6		EVA 与玻璃 EVA and glass	EVA 与玻璃 ≥70N/cm; POE 与玻璃≥60N/cm EVA and glass≥70N/cm, POE and glass≥60N/cm,	拉力测试仪 Tensile strength tester;	每批 Each batch
	7	体积电阻率 Volume resistivity		EVA > 1.0* 【10】 ^15Ω*cm，白色 EVA > 1.0* 【 10 】 ^14 Ω *cm ; POE>1.0* 【10】 ^15Ω*cm	体积电阻测试仪 Volume resistance tester	每批 Each batch
	8	收缩率: 温度 130℃, 时间 3min Shrinkage : Tem 130 ° Time3min		横向 < 2%, 纵向 < 4% Broadwise≤ 2%, direction≤4% POE: (130℃, 3min) : 横向<1.5%、纵向<3% POE: (130℃, 3min) Broadwise <	烘箱 Bake oven	每批 Each batch



				1.5%, Direction≤3%		
	9	交联度 Cross linking	POE	75-95%	电子天平、烘箱、 萃取装置	每批 Each batch
	10		EVA	75%-95%	Electronic balance 、 bake oven	每批 Each batch
检验接线盒 J-Box inspection	1	外观 Appearance	尺寸 size	依照《接线盒设计图纸》 refer to 《 j-box design drawing》	卷尺、卡尺 Flexible Rule	每批 Each batch
	2	尺寸 Size	外观 Appearance	依照《接线盒进货检验指导书》 refer to 《 J-box incoming inspection instructions》	/	每批 Each batch
	3	二极管性能 Diode performance		依照《接线盒设计图纸》 refer to 《 j-box design drawing》	万用表 Multimeter	每批 Each batch
	4	连接线与线缆的抗拉力 Tensile resistance of connecting wire and cable		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	拉力测试仪 tensile strength tester	每月 every month
	5	焊锡高度 Solder height		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	卡尺 Caliper	每批 Each batch
	6	正向压降 Forward voltage		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	万用表 Multimeter	每批 Each batch
	7	绝缘电阻 Insulation resistance		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	直流低电阻测试仪 DC low resistance tester	每批 Each batch
	8	线缆绝缘电阻 Cable insulation resistance		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	直流低电阻测试仪 DC low resistance tester	每批 Each batch



				instructions》		
	9	背板粘结强度 Bonding strength of backsheet		依照《接线盒进货检验指导书》 Refer to《 j-box incoming inspection instructions》	拉力计 Tension meter	每月 Every month
检验焊带 Ribbon inspection	1	外观 Appearance 尺寸 size	尺寸 Size	依照《光伏异形焊带进货检验指导书》和《光伏焊带进货检验指导书》 refer to 《 Photovoltaic special-shaped ribbon incoming inspection instructions》 and 《PV Ribbon incoming inspection instruction》	显微镜、千分尺、钢直尺或 COA Microcalliper, Steel ruler、COA	每批 Each batch
	2		外观 Appearance		目视/10 倍放大镜、点线规、卡尺、千分尺 Visual/10x magnifying glass, caliber rule, Microcalliper	每批 Each batch
	3	称重 Weighing	称重 Weighing		电子天平 Electronic balance	每批 Each batch
	4	可焊性 Solderability	可焊性 Solderability		电烙铁、拉力机 Electric iron 、Tensile Tester	每批 Each batch
	5	弯曲度 Curvature	弯曲度 Curvature		直尺、塞尺 Ruler\Feeler	每批 Each batch
	6	电阻率 Electrical resistivity	圆形焊带 Circular welding strip	$\leq 0.022\Omega\cdot\text{mm}^2/\text{m}$	电阻测试仪 Resistance meter	每批 Each batch
	7		常规焊带电阻率 Normal strip resistivity	$\leq 0.0225\Omega\cdot\text{mm}^2/\text{m}$	电阻测试仪 Resistance meter	每批 Each batch
	8		低电阻焊带	$\leq 0.0195\Omega\cdot\text{mm}^2/\text{m}$	电阻测试仪	每批



			电阻率 Low resistance strip resistivity		Resistance meter	Each batch
	9	屈服强度 Yield strength	屈服强度 Yield strength	依照《光伏异形焊带进货检验指导书》和《光伏焊带进货检验指导书》Refer to 《 Photovoltaic special-shaped ribbon incoming inspection instructions》 and 《PV Ribbon incoming inspection instruction》	万能拉力机 Universal machine tension	每批 Each batch
	10	抗拉强度 Tensile strength	厚 度 ≤ 0.25mm Thickness ≤ 0.25mm	互联条 ≥ 150 Mpa、汇流条 > 200 Mpa Interconnection bar ≥ 150 Mpa , Busbar > 200 Mpa	万能拉力机 Universal machine tension	每批 Each batch
	11		厚 度 > 0.25mm Thickness ≤ 0.25mm	互联条/汇流条： > 180mpa Interconnection bar/Busba: > 180 Mpa	万能拉力机 Universal machine tension	每批 Each batch
	12	延伸率 Elongation		互联条>25%，汇流条>30%，不区分厚度 Interconnection bar>25%, Busbar>30%, Regardless of thickness	万能拉力机 Universal machine tension	每批 Each batch
检验硅胶 Sealant Inspection	1	密封胶 Sealant	外 观 Appearance	膏状、无杂质、颗粒、结块、凝胶、气泡 Cream、no impurities, particles, caking, gels, bubbles,	/	每月/2 次 Twice per month
	2		固 化 深 度 Cure depth	参照《密封胶进货检验指导书》	卡尺、四氟乙烯板 Caliber rule,	每月/2 次 Twice per month



				Refer to 《 sealant incoming inspection instructions》	Tetrafluoroethylene plate	
3		硬 度 Hardness	40-60 (Shore-A)	邵氏硬度计 Shore durometer	每月/2 次 Twice per month	
4		表干时间 Surface drying time	参照《密封胶进货检验指导书》 Refer to 《 sealant incoming inspection instructions》	/	每月/2 次 Twice per month	
5		与接线盒粘接性 Adhesion to J-box	48 小时后≥500N 48 Hour Later≥500N	万能拉力机 Universal tension machine	每月/2 次 Twice per month	
6	灌封胶 Potting	外 观 Appearance	无杂质、颗粒、结块、凝胶、气泡等 No impurities, particles, caking, gels, bubbles, etc.	烧杯 Beaker	每月/2 次 Twice per month	
7		固化时间 Curing Time	标准≤24H Standard: ≤24H	电子秤 Electronic balance	每月/2 次 Twice per month	
8		粘 度 viscosity	A 组分: 3500-8000mpa.s, B 组分: 15-80mpa.s (回天 B 组分: 170-270mpa.s) A component: 3500-8000mpa.s, B component: 15-80mpa.s (Huitian component: 170-270mpa.s)	粘度计/COA viscometer/COA	每月/2 次 Twice per month	
9		凝 胶 时 间 Gelation time	标准≤60min standard: ≤60min	烧杯 Beaker	每月/2 次 Twice per month	
10		硬 度 Hardness	将样品静置 24H 后进行测试, 25Shore-A≤硬度≤35Shore A Test the sample after standing for 24h	邵氏硬度计 Shore durometer	每月/2 次 Twice per month	



检验边框 Aluminous frame inspection	1	尺寸 Size	参考《铝型材进货检验指导书》 Refer to 《Aluminous frame incoming inspection instructions》	卷尺、卡尺、千分尺、 角度尺、韦氏硬度仪、 塞尺 Flexible Rule、caliber rule、Microcalliper	每批 Each batch
		外观 Appearance			
	2	边框氧化膜厚度 Frame oxide film thickness	AA10≥8μm，AVE≥10；	涡流测厚仪 I-MPOD	每批 Each batch
	3	硬度 Hardness	6005 T6 HW≥14，测试 3 个点取 平均值为测试硬度 6005 T6 HW≥14，The average value of 3 points is taken as the test hardness	硬度计 Hardometer	每批 Each batch

3. 组件生产过程控制质量检验要求 Module Production Process Control Inspection Requirement

3.1 检验要求 Inspection Requirement

组件生产过程质量检验要求如下：

The requirements for module production process control are as below.

过程名称 Process Name	步骤名称 Step Name	序 号 NO.	CTQ 产品 CTQ Product	CTP 过程 CTP Process	规范/公差 Standard/Tolerance	测量设备/工具 Measure equipment/tool	频率 Frequency
物料周转 Material turnover	玻璃上料 Glass loading	1	在线玻璃上料环境温度湿度 Ambient temperature and humidity		温度 10 ~ 30℃，湿 度 10%≤RH≤70% Tem10 ~ 30 ℃，	温 湿 度 计 Hygrothermograph	4h



				humidity $10\% \leq RH \leq 70\%$		
		2	上料玻璃信息 Glass information	符合订单 BOM 要求 Meet the BOM requirements of the order	目视 Visual	12h
	EVA/POE 裁切 EVA\POE cutting	1	长度尺寸 Length size	符合订单 版图要求 Meet the requirements of order layout	卷尺 Flexible Rule	首件 First article
		2	平整度 Planeness	无褶皱 No fold	目视 Visual	首件 First article
		3	外观 Appearance	干净整洁、无异物、无脏污 Clean and tidy, free of foreign matters and dirt	目视 Visual	首件 First article
		4	材料失效性 Material failure	拆包到使用时间控制 $\leq 12h$ Time control from unpacking to use $\leq 12h$	目视 Visual	4h
	背板裁切 Backsheet cutting	1	背板裁切长度 Backsheet cutting length	符合订单 版图要求 Meet the requirements of order layout	卷尺 Flexible Rule	首件 First article
		2	背板开口长度 Backsheet opening length	符合订单 版图要求 Meet the requirements of order layout	卷尺 Flexible Rule	首件 First article
		3	背板开口距离 Backsheet opening distance	符合订单 版图要求 Meet the requirements of	卷尺 Flexible Rule	首件 First article



				order layout		
		4	开孔效果 Opening effect	穿 透 、 无 毛 刺 Penetration and no burr	目视 Visual	首件 First article
		5	背板外观 Backsheet appearance	干净整洁、无异物、 无脏污 Clean and tidy, free of foreign matters and dirt	目视 Visual	首件 First article
		6	铺设精度 Laying accuracy	居中铺设，不得超出玻璃边缘且 EVA 与玻璃两边边缘距离之差 ≤5mm Laying in the middle and not exceed the edge of the glass, Difference between EVA and edges on both sides of glass ≤ 5mm	卷尺 Flexible Rule	首件 First article
		7	材料失效性 Material failure	拆包到使用时间控制 ≤12h Time control from unpacking to use ≤ 12h	目视 Visual	4h
	焊带准备 Ribbon preparation	1	来料信息 Incoming material information	来料信息与工单信息、符合订单 BOM 要求 Incoming and order information meet the BOM requirements of the order	目视 Visual	全部 All



	电池片准备 cell preparation	1	来料信息 Incoming material information	来料信息与工单信息、符合订单 BOM 要求 Incoming and order information meet the BOM requirements of the order	目视 Visual	全部 All
划片 Scribing	电池片上料 Cell charging	1	信息核对 Information check	电池片信息与工单信息一致性：开班及工单切换时核对电池片厂家，规格，颜色，转换效率 Consistency between cell information and order information	目视 Visual	全部 All
	激光划片 Laser Scribing	1	激光划片参数点检 Scribing parameters check list	参数正确符合作业指导书要求 Parameters correct and meet the requirements of operation instructions	目视 Visual	12h
		2	功率 Power	M6: 0-100% ； M10: 80±20%	目视 Visual	12h
		3	切割深度 Cutting depth	M6: 50% ± 15% ； M10: 50%±10%	显微镜 Microscope	首件 First article
		4	切割后外观 Appearance after cutting	无崩边、无脱晶 No edge collapse and no crystallization	目视 Visual	1 次/每片 Once / piece
焊接	焊接	1	正面焊接拉力	参数正确符合作业指	拉力计	12h



Soldering	Soldering		Front soldering tension		导书要求 Parameters correct and meet the requirements of operation instructions	Tension meter	
		2	背面焊接拉力 Back soldering tension		参数正确符合作业指 导书要求 Parameters correct and meet the requirements of operation instructions	拉力计 Tension meter	12h
		3	焊带偏移 Ribbon offset		参考附件 1《组件外观 检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	菲林尺 Microrule	首件 First article
		4	电池串长度 Cell string length		参考 版型 图纸 要求 refer to drawing requirements	卷尺 Flexible Rule	首件 First article
		5	电池片片间距 Cell spacing		参考 版型 图纸 要求 refer to drawing requirements	菲林尺 Microrule	首件 First article
串检 Serial inspection	外观检查 Appearance inspection	1	焊 接 后 电 池 片外观 Appearance of cell after soldering	露白、片间距、破片、虚 印等不良 Exposed white, film spacing, fragments, false printing and other defects	参考附件 1《组件外观 检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	目视/菲林尺 Visual/microrule	首件 First article
	EL 检查	2	EL	隐裂、明暗、破片、短路、	参考附件 2《组件外观	EL 测试仪	24h



	EL inspection			黑心、同心圆、虚焊 Mic-crack、Scrack、short circuit、black center、poor soldering	检验标准》 Referring to Annex 2 《Module EL Inspection Criteria》	EL Tester	
排版 Composing	电池片进料 Cell feed	1	电池串位置 Cell string position		符合图纸、外观标准要求（串间距/错位/方正偏移） Meet the requirements of drawings and appearance standards	目视 Visual	首件 First article
		2	电池串极性 Cell string polarity		玻璃面从左往右依次为正负性交替 The glass surface is alternately positive and negative from left to right	目视 Visual	首件 First article
叠层 Lay up	间距 Pacing	1	电池串间距定位 Cell string spacing positioning		符合订单版图实际要求 Meet the requirements of order layout	菲林尺 钢尺 Microrule 、 steel rule	12h
		2	电池片距离玻璃长边 Distance between the cell and the long side of the glass		符合订单版图实际要求 Meet the requirements of order layout	菲林尺 钢尺 Microrule 、 steel rule	12h
		3	电池片距离玻璃短边 Distance between the cell and the short side of the glass		符合订单版图实际要求 Meet the requirements of	菲林尺 钢尺 Microrule 、 steel rule	12h



				order layout		
设备焊接 Equipment soldering	1	汇流条裁切尺寸 Busbar cutting size	参 考 图 纸 标 准 reference drawing standard	卷尺 Flexible Rule	12h	
	2	电池片到玻璃长边距离 Distance between the cell and the long side of the glass	符合制作手册版图要 求 Meet the requirements of order layout	直尺 菲林尺 ruler/microrule	24h	
	3	外观性能 Performance	无堆锡、无崩边、缺 角、碎片 No crack and unfilled corner	目视 Visual	24h	
EVA POE 铺设 EVA/POE laying	1	开 孔 位 置 效 果 Effect of opening position	符合制作手册版图要 求 Meet the requirements of order layout	卷尺/菲林尺 Flexible Rule/microrule	首件 First article	
	2	EVA 长边长度 (2 个长边) EVA long side length(2 long sides)	符合制作手册版图要 求 Meet the requirements of order layout	卷尺/菲林尺 Flexible Rule/microrule	首件 First article	
	3	EVA 外观 EVA Appearance	干净整洁、无异物、 无脏污、无褶皱 Clean and tidy, no dirty and wrinkles	目视 Visual	首件 First article	
铺背板 (适 用于单玻) Lay back sheet (For single glass	1	"背板条码粘贴位置 Pasting position of backsheet bar code"	参考制作手册和版图要 求 Meet the requirements of order layout	目视 visual	首件 First article	
	2	"引出线超出背板长度 outgoing line exceeds the length of the	参考制作手册和版图要 求	目视 visual	首件 First article	



	product)		backsheet"		Meet the requirements of order layout		
		3	"背板长边长度 (2 个长边) backsheet long side length(2 long sides)"		参考制作手册和版图要求 Meet the requirements of order layout	"卷尺/菲林尺/工装 Flexible Rule/microrule"	首件 First article
		4	材料失效性 material failure		"拆包到使用时间控制≤12h Time control from unpacking to use ≤ 12h"	目视 visual	首件 First article
	背 玻 铺 设 (适用于双玻) Back glass laying (For Dual glass product)	1	玻璃铺设精度 Glass laying accuracy		玻璃铺设后上下偏差 ≤ 2mm Upper and lower deviation after glass laying ≤ 2mm	目视 visual	首件 First article
镜检& EL 测试 Appearance & EL inspection	外观检查 Inspection	1	外观检测 Appearance test		参考附件 1《组件外观检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	目视/菲林尺/钢直尺 Visual/microrule	100%
	EL 检测 EL testing	1	相机曝光时间 Camera exposure time		参考《镜检&EL 测试作业指导书》 reference《Operation instruction for mirror inspection & el test 》	目视 Visual	12h
		2	EL 检测 EL	隐裂、虚焊、破片、短路	参考附件 2《组件 EL	目视 Visual	24h



			test	等 Micro-crack, faulty soldering, crack, short circuit, etc.	检验标准》 Referring to Annex 2 《 Module EL Inspection Criteria》		
组件层压 Laminating	组件层压 Laminating	1	一段层压 Primary lamination	温度、真空度、层压时间 等 Temperature, vacuum degree, lamination time, etc	参 考 层 压 参 数 表 Refer to lamination parameter table	目视 Visual	12h
		2		层压压力 Pressure	参 考 层 压 参 数 表 Refer to lamination parameter table	目视 Visual	12h
		3		极限真空 Kpa Extreme vacuo Kpa	羿珩：120s 内小于 70Pa 金辰：120s 内小于 110Pa Yixing : Less than 70pa within 120s Jincheng: Less than 110pa within 120s	目视 Visual	12h
		4	二段层压 Two stage lamination	温度、真空度、层压时间 等 Temperature, vacuum degree, lamination time, etc.	参 考 层 压 参 数 表 Refer to lamination parameter table	目视 Visual	12h
		5		层压压力 Pressure	参 考 层 压 参 数 表 Refer to lamination parameter table	目视 Visual	12h
		6		极限真空 kpa Extreme vacuo Kpa	羿珩：120s 内小于 70Pa 金辰：120s 内小于 110Pa	目视 Visual	12h



					Yixing : Less than 70pa within 120s Jinchen : Less than 110pa within 120s		
		7	可靠性 Reliability	交联度: POE/EVA 标准值: Cross-linking : POE\ EVA standard value	75%-95%	二甲苯 Dimethylbenzene	24h
		8		玻璃与 POE/EVA 剥离强度 Peel Strength between glass and POE/EVA	POE ≥60N/cm EVA ≥70Ncm	拉力计 Tension meter	每月 Every month
		9		背板与 EVA/POE 剥离强度 Peel Strength between backsheet and POE/EVA	≥40N/cm	拉力计 Tension meter	每月 Every month
层压检 Laminator inspection	层压检 Laminator inspection	1	组件外观 Appearance	如脏污、露白、裂片等 Dirt, whiteness, crack, etc.	参考附件 1《组件外观检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	菲林尺 microrule	2h
		2		如脏污、露白、裂片等 Dirt, whiteness, crack, etc.		菲林尺 microrule	2h
		3		组 件 安 全 距 离 Safe distance		钢直尺、菲林尺、工装 microrule 、 steel ruler	2h
装框 Framing	边 框 打 胶 Frame gluing	1	长边框打胶克重 Gluing gram weight of long frame		参考作业指导书&制作手册要求 Refer to operation instruction	电子天平 Electronic balance	4h



					& production manual requirements		
		2	短边框打胶克重 Gluing gram weight of short frame		参考作业指导书&制作手册要求 Refer to operation instruction & production manual requirements	电子天平 Electronic balance	4h
	装框 Framing	1	装框外观 Appearance after framing	组框后边框间隙 Border gap	参考附件 1《组件外观检验标准》 Referring to Annex 1 《 Module Appearance Inspection Criteria》	目视 Visual	24
		2		边 框 错 位 Frame dislocation	参考附件 1《组件外观检验标准》 Referring to Annex 1 《 Module Appearance Inspection Criteria》	目视 Visual	24
		3		组件尺寸长、短边公差 Tolerance of long and short sides	±2mm	卷尺 Flexible Rule	12h
		4		边 框 安 装 孔 尺 寸 Mounting hole size	符合图纸要求，安装孔之差≤1mm，漏水孔之差≤1.5mm Comply with drawing requirements , Mounting hole difference ≤ 1mm , Leakage hole difference≤1.5mm	卷尺 Flexible Rule	12h



安装接线盒 J-Box placement	接线盒打胶 Gluing of junction box	1	接线盒打胶胶量 Gluing amount of junction box		参考接线盒打胶用量 标准/参考订单手册 Refer to the standard for gluing amount of junction box/Order manual	电子天平 Electronic balance	12h
		2	接线盒型号 J-Box model		参 考 订 单 BOM reference BOM	目视 Visual	24
	安装接线盒 J-box placement	1	接线盒区域温湿度 Temperature and humidity in j-box area		10-30℃, 20%≤RH≤ 70%	温湿度计 Hygrothermograph	4h
		2	接线盒胶线 Junction box glue wire		参考附件 1《组件外观 检验标准》 Referring to Annex 1 《 Module Appearance Inspection Criteria》	卷尺、目视 Tape, Visual	24H
	接线盒焊接 01503J-Box soldering	1	焊接温度 Soldering Temperature		Resistance welding: 300±40℃ Magnetic discharge welding: 15±5A	目视 Visual	12h
		2	焊接时间 Soldering time		Resistance welding: M6: 1 ~ 4s, M10: 1 ~ 4.5s Magnetic discharge welding: M6: 0.5 ~ 2.5s, M10: 0.5 ~ 2.5s	目视 Visual	12h
		3	焊接效果 soldering effect	引出线焊接面积 Welding area of outgoing line	焊 接 面 积 ≥ 80% Welding area≥80%	钢直尺 Steel ruler	24h
		4		焊 接 外 观 Welding appearance	无虚焊、漏焊、有效 焊接长度满足要求 No poor soldering	目视 Visual	24h



					and missing soldering, effective welding length meets the requirements		
接线盒灌胶 J-box gluing	灌封胶 Gluing	1	AB 胶配比 AB glue ratio		参考灌胶用量标准/订 单手册 Refer to glue filling dosage standard /Order manual	电子天平 Electronic balance	3h
		2	AB 胶小样表干时间 Surface drying time of AB glue sample		30min	电子天平 Electronic balance	3h
		3	接线盒灌胶胶量 Glue filling amount of junction box		参考灌胶用量标准/订 单手册 Refer to glue filling dosage standard /Order manual	电子天平 Electronic balance	12h
		4	灌胶后外观	溢胶 Excessive glue	参考附件 1《组件外观	目视 Visual	12h
		5	Potting appearance	缺胶 Starved	检验标准》 Referring to Annex 1 《 Module Appearance Inspection Criteria》	目视 Visual	12h
固化 Curing	固化 Curing	1	固 化 房 温 湿 度 Temperature and humidity		RH≥70% 25℃±2℃	温 湿 度 计 Hygrothermograph	2h
		2	组件固化时间 Curing time		≥3h	目视 Visual	12h
锉角 File angle	锉角 File angle	1	自动锉角边框外观 Border appearance		无毛刺 No burr	目视 Visual	12h
		2	边框无间隙 Frame without gap		参考附件 1《组件外观 检验标准》 Referring to Annex 1 《 Module	塞尺 Feeler gauge	12h



				Appearance Inspection Criteria》		
背面清洗 Back cleaning	背面清洗 Back cleaning	1	接线盖盒盖效果 J-Box cover effect	无松动，不允许有脱落 No falling off is allowed	目视 Visual	24h
		2	清洗后的组件背面不允许有明显脏污 No obvious dirt is allowed	干净，无可视脏污 Clean and no visible dirt	目视 Visual	24h
		3	上 电 工 装 连 接 Upper electrical installation connection	连 接 牢 固 Firm connection	目视 Visual	24h
绝缘耐压测试 Hi-Pot Test	测试 Hi-Pot Test	1	耐压测试 Hi-Pot	1500V 组件直流耐压 测试:电压 4800VDC, 漏电流 ≤ 50μA, 升压 时间 10s, 测试时间 1s, 电 压 升 速 ≤ 500V/s ; DC withstand voltage test of 1500V module : DC Voltage4800V , Leakage current≤50 μA, rising time 10s, test time 1s, rate of voltage rise≤500V/s	耐压设备 Voltage equipment	24h
		2	绝缘测试 Insulation test	直流电压 1500V 绝 缘电阻 ≥ 40MΩ·m², 测试 1s DC Voltage1500V , insulation resistance	绝缘设备 Insulation equipment	24h



				$\geq 40\text{M}\Omega\cdot\text{m}^2$ and test 1s.		
		3	接地连续性测试 Ground continuity test	M6: 以 62.5A 的恒定电流（组件最大允许通过安全电流的 2.5 倍）测试，测试电阻要 $< 0.1\Omega$ ，测试时间 1s; M10: 以 75A 的恒定电流（组件最大允许通过安全电流的 2.5 倍）进行测试，测试电阻 $< 0.1\Omega$ ，测试时间 1s; M6: Taking 62.5A constant current(2.5 times maximum safety current of module), resistance $< 0.1\Omega$, test duration time 1s. M10: Taking 75A constant current(2.5 times maximum safety current of module), resistance $< 0.1\Omega$, test duration time 1s.	测试设备 Testing equipment	24h
正面清洗 Front cleaning	正面清洗 Front cleaning	1	玻璃面 Glass surface	无 EVA、硅胶脏污，边框溢胶 No EVA, silica gel	目视 Visual	24H



					dirt, frame glue overflow		
功率测试 Power test	标准 Calibration	1	组件温湿度 Temperature and humidity	温度 Temperature	组 件 ： 25 ± 2 °C module: 25±2°C 标片: 25±1°C (2 级 标板的校准温度) Reference module: 25±1°C (Calibration temperature of level 2 standard plate)	温湿度计 Hygrothermograph	4h
		2		湿度 Humidity	10%<RH < 70%		4h
		3	校 准 光 强 控 制 Calibration intensity control		1000±20W/m²	目视 Visual	24
		4	标板 EL 隐裂检测 EL crack detection of reference module		参考附件 2 《组件 EL 检验标准》 Referring to Annex 2 《 Module EL Inspection Criteria》	EL 测试 EL test	12h
		5	标板洁净度 Cleanliness of reference module		表 面 洁 净 无 脏 污 Surface is clean and no dirt	目视 Visual	4h
		6	灯管更换周期 Lamp tube replacement cycle		众森: ≤8 万次 , 更 换后达到 3A 要求 Pasan: ≤10 万次 , 更换后达到 3A 要求 ≤ 100000 times, meeting 3A requirements after replacement	IV 测试仪 IV test	24h



		7	测试曲线 Test curve		平滑无台阶 Smooth without steps	IV 测试仪 IV test	24h
		8	监控电池的洁净度 The cleanliness of monitor cell		表面洁净无脏污 Surface is clean and no dirt	IV 测试仪 IV test	4h
		9	校准波动 Calibration fluctuation		不同时间段： (-0.4%) ≤ΔPmax ≤0.4% Different time periods: (-0.4%) ≤ΔPmax≤0.4%	IV 测试仪 IV test	4h
双面组件功率测试 Bifacial Module Power test	标准 Standard	1	双面率测试 Bifaciality test		根据产品规格书参数 According to Datasheet	IV 测试仪 IV test	10pcs/月
EL 测试 EL Test	EL 测试 EL Test	1	分辨率 Resolution		0.4~0.6(B 级) 0.4~0.6(B Grade)	分辨率纸 Resolution paper	每月 every month
		2	EL 图片确认 EL picture confirmation	虚焊、隐裂、短路、破片等不良 Poor soldering, micro crack, short circuit, fragment, etc	参考附件 2《组件外观检验标准》 Referring to Annex 2 《Module EL Inspection Criteria》	EL 测试仪 EL Tester	24h
粘贴铭牌 Pasting nameplate	粘贴铭牌 Pasting nameplate	1	条码是否正确 Barcode correct or not		三码一致 Three codes are consistent	目视 Visual	24h
		2	铭牌粘贴 Nameplate pasting		无歪斜 气泡 No skew and no bubble	目视 Visual	12h
		3	打印字迹 Print handwriting		无可视断针,字迹清	目视 Visual	12h



					晰，可辨识，符合图纸要求 Handwriting is clear and No visible broken needle , Comply with drawing requirements		
		4	打印信息正确 Print information		信 息 正 确 Information correct	目视 Visual	12h
		5	黏贴位置 Adhesive position		符 合 图 纸 要 求 Comply with drawing requirements	目视 Visual	12h
终检 FQC	检验 Inspection	1	玻 璃 面 外 观 检查 Visual inspection of glass surface	电池片破片、间距、偏移、划伤、气泡等 Check the cell for fragments, spacing, offset, scratch, bubbles, etc.	参考附件 1《组件外观检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	目视/卷尺/直尺 Visual/ flexible rule	24h
		2	背 板 面 外 观 检查 Appearance inspection of backplane surface	背板划伤 脏污 溢胶 边框 线盒 线缆等 Check the backsheet for scratches, dirt, glue overflow, frame, junction box, etc.	参考附件 1《组件外观检验标准》 Referring to Annex 1 《Module Appearance Inspection Criteria》	目视/卷尺/直尺 Visual/ flexible rule	24h
		3	条码检查 Barcode inspection	字迹 内容 外观 Handwriting, content, appearance	符合工单 图纸要求， 打印字迹清晰，内容正确 Meet the requirements of work order drawings, The printing handwriting	目视/卷尺/直尺 Visual/ flexible rule	24h



					is clear		
		4	铭牌检查 Label inspection	字迹 内容 外观 Handwriting, content, appearance	无气泡 褶皱 字迹清晰 内容正确 No bubbles and folds, clear handwriting and correct content	目视/卷尺/直尺 Visual/ flexible rule	24h
包装 Packing	包装 Packing	1	唛头 标签 Shipping and label		字迹清晰、位置、内容信息符合制作手册及订单要求 The handwriting is clear , location&content information meet the requirements of the production manual and order	目视 Visual	每拖 Per drag
		2	纸箱 托盘 Carton and pallet		无破损，符合制作手册机订单要求、缠绕方式正确、放 PE 膜 No damage and meeting the order requirements of the production manual,	目视 Visual	每拖 Per drag
		3	包装方式 Packaging		符合制作手册 图纸要求，包装无破损 Meet the requirements of production manual and drawings, and the package is free of damage	目视 Visual	每拖 Per drag



4. 组件出厂检验标准 Module Pre-shipment Inspection Requirement

4.1 出厂检验基本条件 Pre-shipment Inspection Basic Conditions

4.1.1 抽样及 AQL 标准 Sampling and AQL standards

抽样水平：参照 ISO2859-1:1999 标准，一般检验水平 I 适用于外观、EL 和功率检验，特殊检验水平 S-3 适用于绝缘耐压和接地检验。

Sampling Level: General Inspection Level I according to ISO2859-1:1999 is applicable for Visual, EL and Power Inspections, Special Inspection Level S-3 is applicable for Hi-Pot and Grounding Inspection.

AQL 标准：关键性不良 Cr: AQL 0，主要不良 Ma: AQL 1.5，次要不良 Mi: AQL 4.0。适用于所有检验项目，但不同的检验项目按照对应的不良类型需单独统计 AQL。

AQL Standard: Critical defect AQL 0, Major defect AQL 1.5, Minor defect AQL 4.0. This AQL is applicable for all inspections, but AQL shall be calculated separately for each different inspection and defect level.

4.1.2 隆基标准验货次数 LONGi standard inspection times

第一次验货不通过，剔除不符合隆基标准产品后，对第一次不通过的检验项目进行第二次验货，第二次不通过进行全部返工后，对第二次仍不通过的检验项目进行第三次验货，第三次验货不通过拒货。

If the first inspection is fail, carry out the second inspection for the failed inspection item in first time after removing the products that do not meet the LONGi standard. If the second inspection is fail, all product rework and carry out the third inspection for the failed inspection item in second time. If the third inspection fail, reject.

4.1.3 隆基标准验货批次 LONGi standard inspection batch

标准验货可以按照 15~20MW/批次进行。



Standard inspection batch volume can be 15MW~20MW.

4.1.4 隆基标准验货测试项目 LONGi standard test items

指在厂内验货线进行的基本项目，包括外观，EL，功率，绝缘耐压，接地。

Refers to the basic items carried out in the factory inspection line, including appearance, EL, power, Hi-pot, Grounding inspections.

4.2 组件外观检验 Module Appearance Inspection

4.2.1 检验条件 Inspection Condition

4.2.1.1 检验员：矫正视力>0.8，无色盲；Inspector: Naked or corrected acuity of human eyes above 0.8, No color-blind.

4.2.1.2 室内检验：光照强度 700-1000LUX，外观目视检验距离 80cm-100cm。正视查看不良角度 0~90°，检验方式:翻转检查；检验频次：100%全检；检验时间：不少于 5s.

Indoor inspection: Module inspection condition: Luminance within 700-1000 lux, Overall appearance viewed at a distance of 80cm-100cm; An approximate angle of 0~ 90° (perpendicular) to the surface, Inspection method: flip inspection; Inspection frequency: 100% full inspection; Inspection time: no less than 5s:

室外检验：光照强度 1000LUX 以上，外观目视检验距离 80cm-100cm；检验角度:顺光 0~180°；检验方式：目视移动检查；检验频次：同版型 3pcs，检验时间不少于 5s.

Outdoor inspection: Light intensity above 1000LUX, visual inspection distance of appearance 80cm-100cm; Inspection Angle: smooth 0~180°;

4.2.1.3 工具：直尺、游标卡尺、菲林尺、检验工装等；Tools: Ruler/Vernier caliper/Film size/Inspection tooling.

4.2.1.4 不良面积界定：规则图形（如圆形、矩形、三角形）的面积按不良实际面积计算，不规则图形以外切矩形的近似面积计算。

Defect area judgment: Regular graphics (such as circle/ rectangle/ triangle): Calculate the actual area. Irregular graphics: Calculate the area of enclosing rectangle.



4.2.1.5 数量定义：电池数量均为半片电池数量概念，涉及标准为百分比的不能整除的，四舍五入取整数（如 1.6 片取整后为 2 片），但结果 < 1 片的按 1 片计算。quantity: the number of batteries is the concept of the number of half cells, Refers to the standard percentage is not divisible, rounded to an integer (such as 1.6 pieces rounded to 2 pieces), but the result < 1 piece is calculated as 1 piece

4.2.1.6 长度定义：长度数值是整片电池边长或者半片电池长边 Length: the length value is the length of the whole battery or the long side of half a cell

4.2.1.7 面积定义：面积大小是整片电池概念 Area: Area size is the whole cell concept

4.2.1.8 缺陷判定：组件正背面单独判定；有特殊注明背面要求的，按照要求判定。Module front and back separately determined; Where there is a special indication of the requirements on the reverse side, it shall be judged according to the requirements.

4.2.2 术语定义 Terms and definitions

外观标准：按照材料类型，分为 1.电池片相关（单双面区分）、2、焊带相关、3.玻璃相关（含单双玻区分）、4.背板相关（含单双玻区分）、5.边框相关、6.铭牌相关、7、接线盒相关。

Appearance standard: According to the type of material, it is divided into 1、cell related (Single and double sided) ,2、Ribbon related 、3、glass related(including single/double glass module), 4、back plate related(including single/double glass module),5、frame related, 6、Label related、7、junction box related.

边框 A 面：组件玻璃面侧，默认为装饰面，组件安装后，能被客户能看到或长时间使用到的一面。

Side A: the glass side of the component, which is the decorative surface by default. After the component is installed, it can be seen or used by customers for a long time.

边框 B 面：组件侧面，默认为非装饰面，组件安装后，不能被客户看到或长时间不使用的一面。

Side B: the side of the component, which is non decorative by default. After the component is installed, it cannot be seen by the customer or will not be used for a long time.

边框 C 面：组件背板面侧，默认为非装饰面，组件安装后，不能被客户看到或长时间不使用的一面。



Side C: the side of the back panel of the module, which is not decorative by default. After the component is installed, it cannot be seen by the customer or will not be used for a long time.

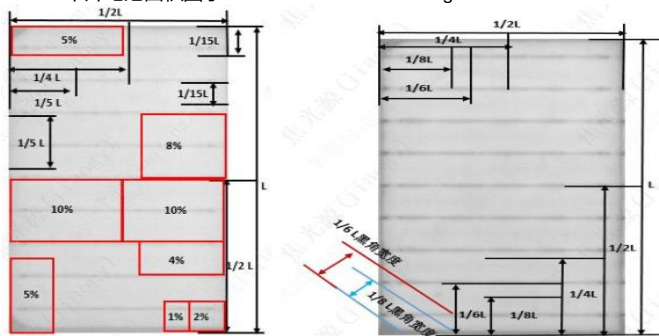
4.2.1 检验标准 Inspection criteria

参考附件 1 组件外观检验标准，按照每个项目列出的不良类型和相应的 AQL 判定。
Refer to Annex 1 Module Appearance Inspection Criteria, judged according to listed defect level and related AQL for each item.

4.3 组件 EL 检验 Module EL Inspection

4.3.1 面积判定示意图 Area determination diagram

Hi-MO5 半片电池面积图示 Area determination diagram for half cell of Hi-MO5





4.3.2 光伏组件灰度尺标准 Module Gray scale Standard

0	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%

灰度：灰度量化概念请按照以上灰度尺为准。

Gray scale: the concept of grayscale quantization should be based on the above gray scale.

灰度对比说明：电池单片上缺陷灰度与单片整体灰度进行对比； 电池整片灰度与组件其他电池片灰度对比.

The grayscale of defects on a single cell was compared with that of the whole cell. The grayscale of the whole cell is compared with that of other cells in the module

数量：电池数量均为半片电池数量概念。

Quantity: the number of batteries is the cOncept of the number of half cells.

长度：长度数值是整片电池边长或者半片电池长边。

Length: the length value is the length of the whole battery or the long side of half a cell.

面积：面积大小参考半片电池图例。



Area: refer to the legend of half cell.

4.3.3 组件 EL 判定及标准图示 EL inspection criteria and limit/sample picture

参考附件 2 组件 EL 检验标准，按照每个项目列出的不良类型和相应的 AQL 判定。

Refer to Annex 2 Module EL Inspection Criteria, judged according to listed defect level and related AQL for each item.

4.4 功率检验 Power Inspection

检验标准 Inspection criteria

- 1. 复测平均功率≥平均铭牌功率，合格

Average retest power ≥ Average nameplated power, OK.

- 2. 复测单块功率 < 铭牌功率*99.5%，不允许。

Individual retest power < Nameplated power * 99.5%, Not allowed.

- 3. 铭牌功率*99.5% ≤ 复测单块功率 < 铭牌功率，按照次要不良 AQL 2.5 判定。

Nameplated power * 99.5% ≤ Individual retest power < Nameplated power, judged according to Minor defect AQL 4.0.

4.5 绝缘耐压检验 Hi-pot Inspection

检验标准 Inspection criteria

漏电流小于 0.05mA，按照关键不良 AQL 0 判定。

Current leakage < 0.05mA, judged according to Critical defect AQL 0.



4.6 接地检验 Grounding Inspection

检验标准 Inspection criteria

测试电阻 $< 1\Omega$, 按照关键不良 AQL 0 判定。

Resistance $< 1\Omega$, judged according to Critical defect AQL 0.

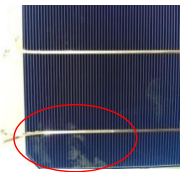
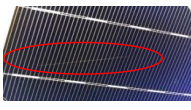
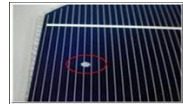
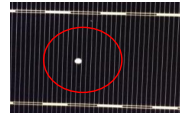


附件 1 组件外观检验标准

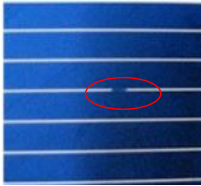
Annex 1 Module Appearance Inspection Criteria

检验项目 Inspection Item	缺陷 Defect name	缺陷等级 Defect grade	图片 Reference pictures	QA级 Grade QA
1、电池片 Cell	1.1色差 Color contrast	轻微缺陷 Minor		1) 组件整体颜色呈中蓝、深蓝、深深蓝、不允许混色（不同颜色出现在同一块组件中），图一为限度样片，超出不允许，图二为OK图片，具体以实物封样为准 2) 单片中镀膜导致的黄金片、彩虹片不允许，左图三 3) 整体背面颜色不管控包含氮氧化硅镀膜工艺,左图四 1)The overall color of each module should be uniform（medium/dark blue/dark dark blue blue）；colour mixture; (different color in one module not allowed) Figure 1 is the limit sample, which is beyond the allowable limit, and Figure 2 is the OK picture 2) single film coating caused by gold film, rainbow film is not allowed 3) the overall back color is not controlled including the silicon oxide coating process

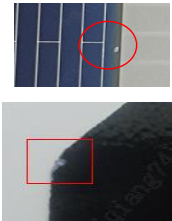
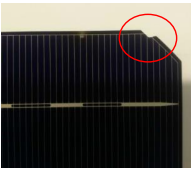


	1. 2 电池片污痕 (正、背面) Stain(Front/ back side)	轻微缺陷 Minor		1) 手指印：不允许； 2) 脏污：单个$\leq 20\text{mm}^2$，单片电池片≤ 1个，同一组件脏污电池片$\leq 5\%$组件电池片总数 3) 助焊剂印迹：单片电池片总面积$\leq 10\text{mm}^2$，同一组件助焊剂电池片$\leq 4\%$组件电池片总数 Front and back side count and judge separate 1) Finger prints not allowed. 2) Stain: area$\leq 20\text{mm}^2$，amount per cell ≤ 1 Affected cell qty./module $\leq 5\%$ total module cells 3) Scaling powder Imprint:Sigle Cell Area $\leq 10\text{mm}^2$，Affected cell qty./module$\leq 4\%$ total module cells
	1. 3. 电池片划痕（正面） Scratch of cell（front side）	轻微缺陷 Minor		1) 可见划痕长度$\leq 20\text{mm}$， 2) 单片电池片划痕≤ 2处， 同一组件划痕电池片$\leq 5\%$组件电池片总数 1) Visible scratch length $\leq 20\text{mm}$ 2) Scratch qty./cell ≤ 2 Affected cell qty./module $\leq 5\%$ total module cells
	1. 4. 电池片白斑（正背面） White spot(front /backside)	轻微缺陷 Minor		正面 1) 面积$\leq 0.05\text{mm}^2$，不计片数和个数； 2) $0.05\text{mm}^2 < \text{单个面积} \leq 3\text{mm}^2$ 单片电池片白斑数量≤ 2个，同一组件白斑电池片数量$\leq 5\%$组件电池片总数 背面 1) 直径$\leq 3\text{mm}$，不计个数和片数 2) $3\text{mm} < \text{直径} \leq 10\text{mm}$，单片$< 8$个；单块组件白斑电池片数量$\leq 15\%$组件电池片总数； 3) 直径$> 10\text{mm}$，不允许



				Front Side: 1) $\text{Area} \leq 0.05\text{mm}^2$, no counting amount of cell and white spot. 2) $0.05\text{mm}^2 < \text{Area of each white spot} \leq 3\text{mm}^2$ Amount in each cell ≤ 2; Amount of cell in each module $\leq 5\%$ total module cells Black Side: 1) Diameter $\leq 3\text{mm}$, no counting amount of cell and white spot. 2) $3\text{mm} < \text{Diameter of white spot} \leq 10\text{mm}$, Amount in each cell ≤ 8; Amount of cell in each module $\leq 15\%$ total module cells 3) Diameter $> 10\text{mm}$, not allowed
	1.5 断栅(正面) Broken finger (Front side)	轻微缺陷 Minor		1) 长度 $\leq 1\text{mm}$: 单片电池数量不计, 同一组件断栅电池片数量不限 2) $1\text{mm} < \text{断栅长度} \leq 2\text{mm}$ (非连续断栅): 单片电池片断栅数量 ≤ 2处, 同一组件断栅电池片数量 $\leq 5\%$组件电池片总数 3) 长度 $> 2\text{mm}$, 不允许 1) length of broken finger $\leq 1\text{mm}$: no counting amount of cell and white spot 2) $1\text{mm} < \text{length of broken finger} \leq 2\text{mm}$: Amount of broken finger ≤ 2per cell; Amount of cell with broken finger $\leq 5\%$ total module cells 3) length of broken finger Broken finger $> 2\text{mm}$,not allowed.
	1.6 脱晶(正、背面单独判定) Silicone peel off (front side and back side judged separately)	轻微缺陷 Minor		正背面单独判定 1) 面积 $\leq 1\text{mm}^2$, 单片 ≤ 2个, 片数不计; 2) $1\text{mm}^2 < \text{面积} \leq 5\text{mm}^2$, 单片电池片 ≤ 2处, 单块组件 $\leq 3\%$组件电池片总数 1) Affected area $\leq 1\text{mm}^2$, amount ≤ 2per cell, cell amount

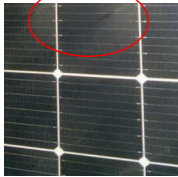


				no need to count; 2) $1\text{mm}^2 < \text{Affected area} \leq 5\text{mm}^2$, ≤ 2per cell; cell amount $\leq 3\%$ total module cells
	1.7崩边 Edge Chip	轻微缺陷 Minor		边沿缺失，厚度方向没有贯穿整片电池片厚度 1)长度$\leq 3\text{mm}$，宽度$\leq 0.5\text{mm}$， 2)单片电池片≤ 2处，单块组件$\leq 3\%$组件电池片总数 The edge is missing and the thickness direction does not run through the whole thickness of the cell 1)Length$\leq 3\text{mm}$;Width0.5mm; 2)Amount of edge chip ≤ 2per cell; Amount of cell with edge chip $\leq 3\%$ total module cells
	1.8 缺角 Corner chipped	重要缺陷 Major		边沿缺失，贯穿整个电池片厚度 V形、锯齿不允许； 其他参考崩边标准 The edge is missing, and the thickness direction runs through the thickness of the whole cell "V" chip or zigzag notch Not allowed, Other reference Edge Chip standards

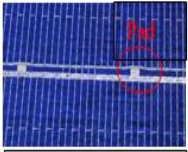


	1.9 碎片/穿孔 Breakage/ pinhole	重要缺陷 Major		不允许 Not allowed
	1.10 虚印 (正背面) Poor printing	轻微缺陷 Minor		轻微非断开的虚印 1) 正面单块电池片虚印面积$\leq 12\text{cm}^2$，单块组件$\leq 5\%$组件电池片总数 2) 背面：不管控 Slight no breaking virtual print 1) Front: Area of poor printing per cell$\leq 12\text{cm}^2$,Amount of cell with poor printing $\leq 5\%$ total module cells 2) Back: No requirement

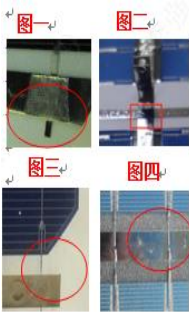


	1.11 栅线氧化 Finger Oxidation	轻微缺陷 Minor		1) 单块电池片氧化面积$\leq 20\text{cm}^2$，单块组件$\leq 5\%$组件电池片总数 2) 背面：不管控 1) Slight non breaking virtual print Front: Area of poor printing per cell$\leq 20\text{cm}^2$,Amount of cell with poor printing $\leq 5\%$ total module cells 2) Back: No requirement
	1.12边缘白印 Edge white print	轻微缺陷 Minor		1) 月牙形、长条形目视可见的彩虹印不允许; 2) 宽度$\leq 1\text{mm}$线状边缘白印，长度$\leq 20\text{mm}$，单片电池片划痕≤ 3处；同一组件电池片$\leq 3\%$组件电池片总数 1. the crescent shaped and long strip-shaped rainbow print visible by visual inspection is not allowed; 2. White mark on linear edge with width $\leq 1\text{mm}$, determined according to scratch standard: length $\leq 20\text{mm}$, single cell scratch ≤ 3; Scratch cells of the same component $\leq 3\%$ total module cells

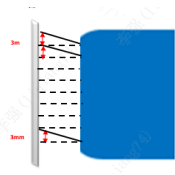
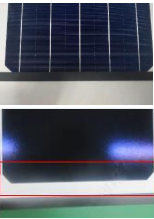


2 焊带 Busribbon	2.1.焊带偏移 Ribbon Shifted	轻微缺陷 Minor	 Pad 点中心位置或 pad 中心连接线到偏移焊 带边缘的距离	9BB: 1) 焊带偏离主栅线$\leq 2\text{mm}$, 偏移数量不超过组件总焊带数量的 5% 2) 每根焊带允许空焊点≤ 2 (不包括头尾焊点) 1) ribbon shifted Bus-bar $\leq 2\text{mm}$, Total number shall not exceed 5% of the total number of weld belts 2) Empty solder joints of Each Ribbon ≤ 2 (head and tail solder joints are not included) 18BB: 1) 鱼叉位置: 焊带偏离主栅线在鱼叉内, 数量不计, 超出鱼叉位置按照主栅线要求管控; 2) 正面主栅线位置: 焊带偏离主栅线$< 3\text{mm}$, 每根焊带允许空焊点≤ 3 (不包括头尾焊点), 每片≤ 2 根, 总数不超过总焊带数量的 3%; 背面主栅线位置: 焊带偏离主栅线$< 3\text{mm}$, 每根焊带允许空焊点≤ 4 (不包括头尾焊点), 每片≤ 2 根, 总数不超过总焊带数量的 3%; 3) 焊带偏离主栅线$\geq 3\text{mm}$, 不允许 1) Harpoon position: The welding strip deviates from the main grid line within the harpoon (not exceeding the edge lines on both sides of the harpoon), and the quantity is not allowed. The position beyond the harpoon is controlled according to the requirements of the main grid line 2) Main grid line position : ribbon shifted Bus-bar $\leq 3\text{mm}$; Empty solder joints of Each Ribbon ≤ 3 (head and tail solder joints are not included), Single cell≤ 2, Total number shall not exceed 3% of the total number of weld belts
-------------------	-------------------------------	---------------	---	---

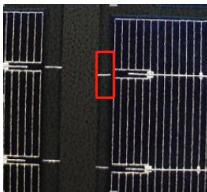


				3) Welding strip deviation from the main grid line $\geq 3\text{mm}$, not allowed
	2.2.焊带与汇流条搭接 Junction of ribbon and connector	轻微缺陷 Minor		1) 未剪焊带超出汇流条 $\leq 2\text{mm}$, 焊带与汇流条 2) 完全接触 左图一, 涉及汇流与汇流条焊接的, 超出部分 $\leq 2\text{mm}$, 汇流条与汇流条完全接触 如图一 图二 2) 汇流条超出焊带0-6mm 如图三 3) 汇流条与焊带焊接长度 $\geq 1.5\text{mm}$, 如图四 1) Uncut ribbon length $\leq 2\text{mm}$ Ribbon should contact completely with bus-bar. 2) Ribbon to bus-bar Distance 0-6mm 3) Ribbon of Junction and weld length $\geq 1.5\text{mm}$
2 焊带 Bus-bar	2.3.汇流条位置偏移 Bus-bar shifted	轻微缺陷 Minor		1、汇流条与电池片之间 $\geq 1\text{mm}$ 2、汇流条与铝边框之间 $\geq 1\text{mm}$ 1、Gap between bus-bar and cell $\geq 1\text{mm}$ 2、Gap between bus-bar and frame $\geq 1\text{mm}$

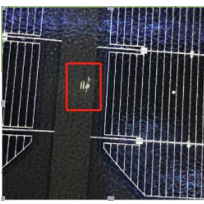
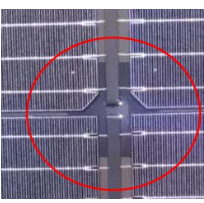
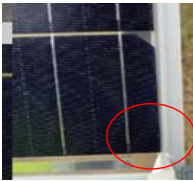


	2.4.汇流条 位置偏移 Bus-bar shifted	轻微缺陷 Minor		头尾部焊带与汇流条之间保持垂直状态，头尾部焊带偏移≤3mm 1) Maintain a vertical position between the head/tail welding strip and the bus-bar 2) Shift between the head/tail welding strip and the bus-bar ≤3mmD
3 黑色EPE放置(适用于全黑组件) EPE position(suitable to all black module)	3.1 EPE遮盖 Bus-bar uncovered by EPE	轻微缺陷 Minor		EPE全部遮盖住汇流条 Bus-bar fully covered by EPE
	3.2 EPE遮盖电池片 Cell covered by EPE	轻微缺陷 Minor		1、常规组件EPE遮挡电池片不超过第二根栅线 The EPE shield battery does not exceed the second cell line 2、1102组件：EPE直线形均匀遮盖电池片边缘且宽≤2mm不管制，非均匀性遮盖电池片时，极差≤3mm。 EPE covers the edge of the cell uniformly in a straight line with a width ≤ 2mm, which is not controlled. When the cell is covered by non-uniformity, the range ≤ 3mm



3 黑色汇流条 Black Bus-bar	3.3汇流条弯折处泛白(全黑组件) White at bus bar bend (all black modules)	轻微缺陷 Minor		1, 泛白面积 $S \leq 60\text{mm}^2$ 2, 数量不计 1, White area $\leq 60\text{mm}^2$ 2, The quantity is not counted
	3.4 汇流条旁边溢锡	轻微缺陷 Minor		1) 溢锡面积 $\leq 5\text{mm}^2$ 2) 数量不计 1) Tin overflow area $\leq 5\text{mm}^2$ 2) The quantity is not counted
	3.5 焊带与汇流条搭接	轻微缺陷 Minor		1)未剪焊带超出汇流条 $\leq 1.5\text{mm}$ 2)汇流条超出焊带0-6mm 3)黑色汇流条面焊疤无可视面积要求 1) Uncut welding strip exceeding bus bar $\leq 1.5\text{mm}$ 2) The bus bar exceeds the welding strip by 0-6mm 3) There is no visual area requirement for welding scar on black bus bar surface



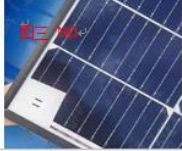
	3.6 黑色汇流条划伤(掉漆)			1)划伤面积小于5mm² 或者长度小于5mm，数量≤3个； 2)面积≤1mm²，忽略不计 1) The scratch area≤5mm² or the length ≤ 5mm, Qty≤3 2) area≤1mm²，The quantity is not counted
	3.7隔离方块色差	/		隔离方块与背板颜色、汇流条颜色允许有颜色差异 Color difference is allowed between isolation block and backplane and bus bar
	3.8 引线孔溢胶	/		引出线孔溢AB胶不做管控 The overflow of AB glue in the outlet hole is not controlled
4 玻璃面 Glass	4.1.安全距离Safety distance	重要缺陷 Major		安全距离：电池片到玻璃边缘距离 以层压图纸为准。 测量方式：电池片到边框内侧的距离 1)双玻安全距离≥1mm 2)单玻安全距离≥0.85 mm 防积灰组件：短边框安全距离满足IEC标准要求,长边框参考以上常规标准; 测量方式：汇流条外侧边缘到玻璃边缘距离

-V06-

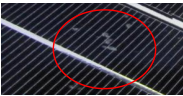
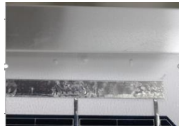


4 玻璃面 Glass	4.4.串间距 Cell string gap	重要缺陷 Major		常规: M6: 2.1 +3/-1.5mm M10: 1.7 +3/-1.5mm 其他过程变更参考层压件图纸 Other changes Refer to the designation drawing of laminatio
	4.5 方阵偏移 Array shifted	重要缺陷 Major		长边框侧 组件两端电池片与边框距离之差≤8mm Distance difference between the battery and the frame at both ends of the module≤8mm
	4.6 错位 Misalignme nt	轻微缺陷 Minor		1、常规组件 电池串相邻错位≤1.5mm Conventional module Misalignment ≤ 1.5mm 2、1102组件电池串相邻错位≤2.5mm 1102 module Misalignment ≤ 2.5mm



	5.1 异物（正反面单独判定） Foreign material (Front and back side count and judge separate)	轻微缺陷 Mino		1) 不允许有机杂物（如昆虫、油渍等） 2) 异物不得引起内部短路 3) 正面电池片上：异物面积$\leq 5\text{ mm}^2$ 或异物长度$\leq 10\text{mm}$，单玻组件数量≤ 2个；双玻组件数量≤ 3个 背面电池片上：异物面积$\leq 20\text{ mm}^2$ 或异物长度$\leq 20\text{mm}$，单双玻数量≤ 20个； 4) 正面电池片外： 异物面积$\leq 10\text{ mm}^2$ 或异物长度$\leq 15\text{mm}$；单玻组件数量≤ 3个；双玻组件数量≤ 4个 背面电池片外：异物面积$\leq 20\text{mm}^2$ 或长度$\leq 20\text{mm}$，单双玻组件数量≤ 20个 5) 异物面积$\leq 0.5\text{mm}^2$，忽略不计； 6) 异物距离玻璃边缘尺寸$\geq 10\text{mm}$ Separate judgment of glass front and back 1) Organic foreign material is not allowed, e.g. insects, grease, etc. 2) Foreign material should not lead to short circuit. 3) On cell surface: Area $\leq 5\text{mm}^2$ or Length $\leq 10\text{mm}$, Foreign material qty./ single glass module ≤ 2, double glass ≤ 3 Back cell: Area $\leq 20\text{mm}^2$ or Length $\leq 20\text{mm}$, Foreign material qty./ single glass module & double glass ≤ 20 4) Outside cell surface: Area $\leq 10\text{mm}^2$ or Length $\leq 15\text{mm}$, Foreign material qty./ single glass module ≤ 3, double glass
--	---	---------------------------------	---	---

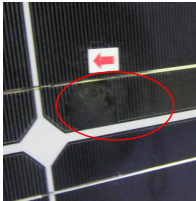
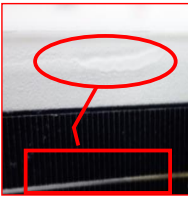
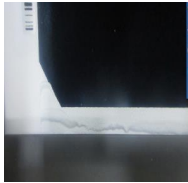


				≤4 Back cell: Area ≤ 20mm² or Length ≤ 20mm, Foreign material qty./ single glass module & double glass≤20 5) Ignore if Area ≤ 0.5mm² 6) Distance of foreign material to glass edge ≥ 10mm
	6.1 气泡（正反面单独判定） Bubble (Front and back side count and judge separate)	重要缺陷 Major	   	1)气泡不得引起内部短路 2)电池片上： 气泡直径<1mm，数量不计 气泡直径1-3mm，数量≤6个； 气泡直径>3mm，不允许 3)电池片外： 单玻：气泡面积≤4mm²，且气泡与电池片间距≥0.3mm；面积≤0.5mm²，忽略不计，气泡直径1.5-3mm，数量≤10个；气泡直径>3mm，不允许 双玻：气泡直径≤2mm，数量不计；气泡直径2-4mm，数量≤15个；气泡直径>4mm，不允许 4)任何区域不允许有密集气泡，密集气泡定义：400mm²范围内Φ<2mm的气泡个数≥15个 1)Bubble should not lead to short circuit (except connecting to cell finger). 2) On the cell:



				Ignore if Bubble diameter $\leq 1\text{mm}$, The quantity is not counted Ignore if Bubble diameter $1\text{-}3\text{mm}$, Qty≤ 6 Ignore if Bubble diameter $> 3\text{mm}$, not allow 3)Outside cell area: Total amount ≤ 3 per Module Single Glass: The bubble area is $\leq 4\text{ mm}^2$, and the distance between the bubble and the cell is $\geq 0.3\text{mm}$; the area is $\leq 0.5\text{ mm}^2$, The quantity is not counted Ignore if Bubble diameter $1.5\text{-}3\text{mm}$, Qty≤ 10 Double Glass: Ignore if Bubble diameter $\leq 2\text{mm}$ The quantity is not counted Ignore if Bubble diameter $2\text{-}4\text{mm}$, Qty≤ 15 Bubble diameter $> 4\text{mm}$, not allowed 4) Dense bubbles are not allowed in any area. Definition of dense bubbles: $400\text{ mm}^2, \phi < \dots$ The number of 2mm bubbles is more than 15
--	--	--	--	--



	7.1.封装胶膜未溶或缺失(正背面单独判定)Eva/poe un-melted of missing(Front and back side count and judge separate)	重要缺陷 Major		不允许 Not allowed															
	7.2.白色EVA White EVA	轻微缺陷 Minor	 	1) EVA褶皱 (针对白色EVA) 局部区域允许最多褶皱数量≤4 条，电池片区域和空白区域可以共存 EVA wrinkle; (for white EVA) the maximum number of wrinkle in local area is less than 4, and the cell area and blank area can coexist 电池片区域，宽度≤4mm Cell area, width ≤ 4mm <table><tr><td>长度</td><td>≤ 10m</td><td>≤ 20m</td><td>≤ 30m</td><td>≤ 60m</td></tr><tr><td></td><td>m</td><td>m</td><td>m</td><td>m</td></tr><tr><td>数量</td><td>忽略不计</td><td>≤ 5 片</td><td>≤ 3 片</td><td>≤ 1 片</td></tr></table> 组件边沿区域，宽度≤4mm Module edge area, width ≤ 4mm	长度	≤ 10m	≤ 20m	≤ 30m	≤ 60m		m	m	m	m	数量	忽略不计	≤ 5 片	≤ 3 片	≤ 1 片
长度	≤ 10m	≤ 20m	≤ 30m	≤ 60m															
	m	m	m	m															
数量	忽略不计	≤ 5 片	≤ 3 片	≤ 1 片															



				<table><tr><td>长度</td><td>≤ 10mm</td><td>≤ 100m m</td><td>≤ 150mm</td></tr><tr><td>数量</td><td>忽略不 计</td><td>≤5片</td><td>≤3片</td></tr></table> Cell area, width ≤ 4mm <table><tr><td>Le ngt h</td><td>≤ 10m m</td><td>≤ 20m m</td><td>≤ 30m m</td><td>≤ 60m m</td></tr><tr><td>nu mb er</td><td>Igno re</td><td>≤5</td><td>≤3</td><td>≤1</td></tr></table> Component edge area, width ≤ 4mm <table><tr><td>Width</td><td>≤ 10m m</td><td>≤ 100m m</td><td>≤ 150m m</td></tr><tr><td>numb er</td><td>Ignor e</td><td>≤5</td><td>≤3</td></tr></table> 2) EVA溢白（针对白色EVA） 电池片区域要求不能达到细栅线边缘，溢白总数量≤5 个 EVA white overflow (for white EVA) It is required that the area of cells cannot reach the edge of fine grid lines, and the total number of white spill≤ 5 电池片区域 Cell area,	长度	≤ 10mm	≤ 100m m	≤ 150mm	数量	忽略不 计	≤5片	≤3片	Le ngt h	≤ 10m m	≤ 20m m	≤ 30m m	≤ 60m m	nu mb er	Igno re	≤5	≤3	≤1	Width	≤ 10m m	≤ 100m m	≤ 150m m	numb er	Ignor e	≤5	≤3
长度	≤ 10mm	≤ 100m m	≤ 150mm																											
数量	忽略不 计	≤5片	≤3片																											
Le ngt h	≤ 10m m	≤ 20m m	≤ 30m m	≤ 60m m																										
nu mb er	Igno re	≤5	≤3	≤1																										
Width	≤ 10m m	≤ 100m m	≤ 150m m																											
numb er	Ignor e	≤5	≤3																											

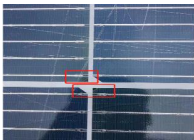


				长度	≤3mm	≤10mm	≤15mm
				数量	不计	≤5	≤3
				汇流条区域 Bus-bar area			
				宽度	≤1mm	≤2mm	≤4mm
				数量	不计	≤6	≤4
	8.1.条码一 Barcode 1#	轻微缺陷 Minor		1) 不允许条码反, 条码歪斜, 偏移≤2mm 2) 条码可以读取 (扫描枪)、ID号可以辨识 3) 黑色条码标签横向、纵向露白区域≤1mm. 1) Inverted barcode not allowed. Offset ≤ 2mm 2) Barcode can be read (by barcode scanner)/ID can be identified. 3) Horizongtal and vertical exposed white areas of black barcode lable ≤1mm			
	8.2.条码二 Barcode 2#	轻微缺陷 Minor		1) 印刷正确清晰 2) 条码不遮盖电池片, 偏移≤2mm 3) 不允许重码 1) Barcode clearly printed, correct format, 2) Do not cover cell, Offset ≤ 2mm 3) Duplicate barcode not allowed,			

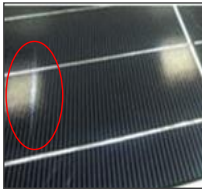


	9.1 玻璃划痕 (正面) Glass scratch (front side)	轻微缺陷 Minor		1)10mm≤长度≤20mm，宽度≤1mm的划痕，同一组件允许数量≤10 条； 2)20 mm<长度≤40 mm，宽度≤1mm的划痕，同一组件允许数量≤6 条； 3)不允许长度>40 mm 的划痕。 Single Glass / Double Glass front side: 1) 10mm ≤Length≤20mm, width ≤1mm, scratch qty. allowed ≤10 2) 20mm <Length≤40mm, width ≤1mm, scratch qty. allowed ≤6 3) Length >40mm not allowed
	9.2 玻璃划痕 (背面，非镀釉玻璃) Glass bubble (back side, unglazed glass)	轻微缺陷 Minor		双玻背面 镀釉区域： 1)5 mm≤长度≤10 mm，宽度≤0.5mm 的划痕，同一组件允许数量≤6 条 2)10 mm<长度≤15 mm，宽度≤0.5mm 的划痕，同一组件允许数量≤4 条 3)不允许长度>15 mm 的划痕 非镀釉区域： 宽度<0.5mm 1)划伤长度<10mm，数量≤6， 2)划伤长度 10-20mm，数量≤4； 3)划伤长度 20-50mm，数量≤1 4)宽度>0.5mm，不允许 Double Glass black side: Non-glazed module: 1)5 mm≤length≤10 mm，width≤0.5 mm, Amount in 1 module≤6 2)10 mm<length≤15 mm, width≤0.5 mm , Amount in 1 module≤4

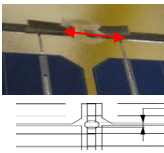
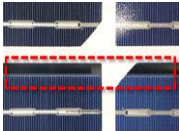
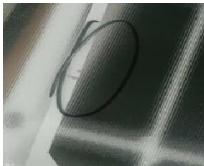


				3)Length>15 mm, not allowed Unglazed area of glazed glass: Width<0.5mm 1)Length <10mm ,Qty.. ≤6 per module; 2)Length within 10-20mm, Qty≤4per module. 3)Length within 20-50mm,Qty≤1per module. 4)Width≥0.5mm, not allowed.
	9.3.玻璃放反 Glass reverse	重要缺陷 Major		不允许 Not allowed
	9.4.玻璃气泡 (正面) Glass bubble (front side)	轻微缺陷 Minor		1)圆形气泡: 直径≤2mm, 数量≤8处 2)椭圆气泡: 长度≤5mm, 宽度≤1mm, 数量≤8处 3)开口气泡, 气线不允许 1) Round bubble: Diameter ≤2mm, bubble qty./module ≤8 2) Oval bubble: Length≤5mm, width≤1mm, bubble qty./module ≤8 3) Opening bubble, line-shaped bubble not allowed
	9.5.玻璃面脏污 (正面) Glass Stain (front side)	轻微缺陷 Minor		正面视角1m处 任何角度不可有可见EVA残胶, 硅胶等脏污 Positive perspective on glass surface from 1m ,EVA residue, sealant residue, mark cannot be seen from any angle

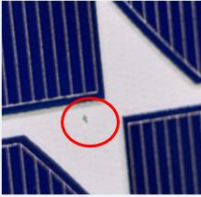
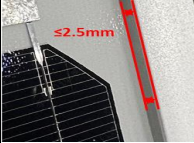
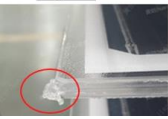
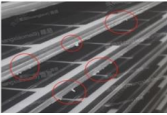
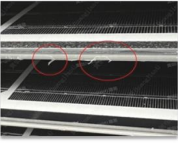


	9.6 玻璃叠差 Glass misalignment	轻微缺陷 Minor		1. 长度或宽度 L<500mm，最大允许误差≤0.5mm 2. 长度或宽度 500mm≤L<1000mm，最大允许误差≤1mm 3. 长度或宽度 1000mm≤L<2000mm，最大允许误差≤2mm 4. 长度或者宽度 2000mm≤L<4000 mm，最大允许误差≤3mm 1) Length/width: L < 500mm, allowable difference ≤ 0.5mm 2) Length/width: 500mm ≤ L< 1000mm, allowable difference ≤ 1mm 3) Length/width: 1000mm ≤ L< 2000mm, allowable difference ≤ 2mm 4) Length/width: 2000mm ≤ L< 4000mm, allowable difference ≤ 3mm
	9.7 玻璃面印痕（正面） Glass Mark (front side)	轻微缺陷 Minor		1)1m处直视可见明显印痕 圆形直径≤15mm， 椭圆长度≤100mm，宽度≤10mm 2)单片组件≤8处 1) Allowable visible mark on glass surface from 1m: i) Round shape: Diameter ≤15mmii) Oval-shaped: Length ≤100mm, Width ≤10mm 2) Mark qty./module ≤8
	9.8 玻璃面压痕 Glass indentation	轻微缺陷 Minor		1、常规组件：长条、圆形及不规则正常 90 度 1mm 直视不允许 Strip, circle and irregularity Normal 90 °1mm direct vision is not allowed 2、1102组件：1m处直视可见明显印痕圆形直径≤20mm，椭圆长度≤150mm，宽度≤15mm 单片组件≤5%组件电池片总数 Allowable visible mark on glass surface from 1m:Round shape: Diameter ≤ 20mm Oval-shaped: Length ≤150mm, Width ≤15mm, Mark qty./module ≤5%

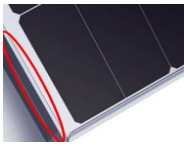
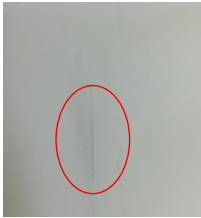


	9.9 引出线长度 Length of lead-out wire	轻微缺陷 Minor		1) 按照图纸尺寸偏差±1mm，适于安装接线盒 2) 层压后引出线间距≥1mm 1) According to technical drawing, Lead-out bus-bar length: 20 ±1mm 2) Lead out spacing after lamination≥1mm
漏光 Light leakage	9.10 网格与电 池片间漏光 Light leakage between grid and cell	轻微缺陷 Minor		宽度≤3mm，数量不计 Width ≤ 3mm, quantity not counted
锯齿波 Sawtooth wave	9.11 镀釉面锯齿 波 Saw tooth wave on glazed surface	轻微缺陷 Minor		高度≤2mm Height ≤ 2mm
镀釉面斑点 Enamel spots	9.12 镀釉面斑 点 Enamel spots	轻微缺陷 Minor		直径<2.0mm，≤10.0个/m ² ; 2.0mm≤直径≤4mm，≤5.0个/m ² ; 4mm<直径≤6.0mm，≤2.0个/m ² ; Diameter < 2.0 mm, ≤ 10.0 pieces / m ² ; 2. mm ≤ diameter ≤ 4 mm, ≤ 5.pieces / m ² 4 mm ≤ diameter ≤ 6 mm, ≤ 2pieces / m ²

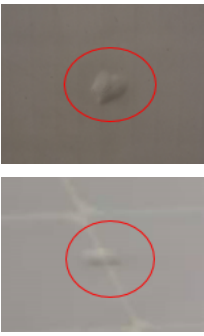
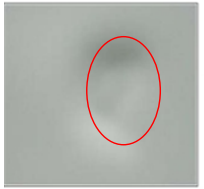


镀釉面针孔 Pinhole on glazed surface	9.13 镀釉面针孔 Pinhole on glazed surface	轻微缺陷 Minor		直径≤0.5mm 允许; 0.5mm<直径≤1mm , ≤10 个/m2, 1mm<直径≤2mm , ≤6.0 个/m2 Diameter ≤ 0.5mm is allowed 0.5mm < diameter ≤ 1mm, ≤ 10 pieces / m², 1mm < diameter ≤ 2mm, ≤ 6 pieces / m²
镀釉层间距 Glazing layer spacing	9.14 镀釉层到边框间距 Glazing layer to frame spacing	轻微缺陷 Minor		玻璃镀釉层边缘到长短边框 A 面内侧距离≤2.5mm The distance between the edge of the glazing layer and the inside of side A of the long and short frame is less ≤2.5mm
削边工艺 (BIPV 组件) Edge cutting process (BIPV module)	9.15 削边后外观要求 Appearance requirements after edge cutting	轻微缺陷 Minor	  	削边后组件四边平整、无明显残胶、毛边及毛刺: 1) 直角边残胶长度及宽度≤3mm (从玻璃边缘到胶的外围), 四角各允许 1 处(缺陷位置如图一); 2) 边缘毛刺、拉丝长度≤3mm 以内, 宽度≤1mm 以内, 忽略不计; 大于 3mm 不允许 (缺陷位置如图二、图三); After trimming, the four edges of the module are flat and free of obvious adhesive residue, burrs, and burrs: 1) The length and width of the residual adhesive on the right angle edge should be ≤ 3mm (from the glass edge to the outer edge of the adhesive), and one defect is allowed on each corner (as shown in Figure 1); 2) Edge burrs, wire drawing length ≤ 3mm, width ≤ 1mm, ignored; Greater than 3mm is not allowed (as shown in Figure 2 and Figure 3 for defect location)

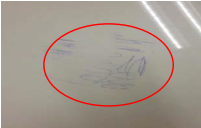


防积灰组件玻璃面 Prevent dust Product	9.16 玻璃与短边框间隙 Glass and Short frame gap	轻微缺陷 Minor		玻璃与短边框间隙≤1.5mm Glass and Short frame Gap≤1.5mm
10 背板面 Back sheet	10.1 背板划伤 Damage on back sheet	重要缺陷 Minor		背板表层第一层背膜划破 不允许 The first dorsal membrane on the surface of the back sheet was cut Not allowed
	10.2. 背板划痕 Scratch on back sheet	轻微缺陷 Minor		无手感的划痕 长度≤100mm, ≤2处 Scratch without feel Length≤100mm, amount≤2
	10.3 背板偏移 Back sheet shifted	重要缺陷 Major		层压件不允许 Laminations are not allowed



	10.4.背板鼓包 Blister	轻微缺陷 Minor		形成面积的鼓包（例如：自然鼓起，因气泡、胶带方面的鼓起）不允许 Bulge forming area (e.g. natural bulge due to bubble and tape bulge) is not allowed
	10.5.背板凸点 Bump	轻微缺陷 Minor		高度≤0.5mm，数量不计 高度>0.5mm，单片组件≤3处 Height ≤0.5mm, The quantity is not counted Height >0.5mm, ≤3per module.
	10.6.背板凹坑/褶皱 Dented/ Wrinkle	轻边微缺陷 Minor		1)凹坑深度≤0.5mm：直径≤5mm个数不计；5mm<直径≤10mm，数量≤3处；直径>10mm或深度>0.3mm不允许 2)褶皱深度≤0.5mm，长度≤50mm,数量≤3处 1) Depth of dent ≤ 0.5mm: i) Diameter of dent ≤5mm, ignore dent quantity. ii) 5mm < Diameter of dent ≤ 10mm, dent qty. ≤3. iii) Diameter of dent >10mm or depth of dent >0.3mm. Not allowed. 2) Depth of wrinkle ≤0.5mm: i) Length ≤50mm ii) Wrinkle qty./module ≤3

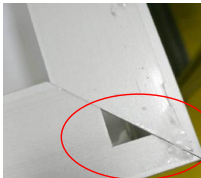


	10.7.背板脱层 Delamination	重要缺陷 Major		不允许 Not allowed
	10.8.背板色差 Color contrast of back sheet	轻微缺陷 Minor		背板颜色、外观、透明度整体一致，无拼接痕迹 Back sheet overall color, appearance, transparency shall consistent. No splitting marks.
	10.9.背板脏污 Stain on back sheet	轻微缺陷 Minor		1m外观察无明显脏污，不允许有不可擦拭的脏污 No stain, Un-removable stain not allowed.
10 背板面 Back sheet	10.10泡棉胶带 foam tape	重要缺陷 Major		符合图纸安装要求，不允许泡棉胶带缺失， Meets the installation requirements of the drawing, and it is not allowed to lose foam tape
	10.11 线卡 Line Card	轻微缺陷 Minor		符合图纸安装要求，线卡不允许缺失及与组件分离 Comply with the installation requirements of the drawings, and the line card is not allowed to be missing or separated from the module
	10.12 跨接汇流条折叠 Jumper Busbar fold	轻微缺陷 Minor		折叠高度 $\leq 0.5\text{mm}$ ，折叠长度 $\leq 0.4\text{mm}$ ，单根跨接汇流条折叠 ≤ 1 处，单片组件 ≤ 3 处 Folded height $\leq 0.5\text{mm}$, folded length $\leq 0.4\text{mm}$, single jumper Busbar folding ≤ 1 , Qty ≤ 3 per module

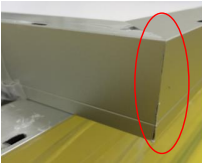
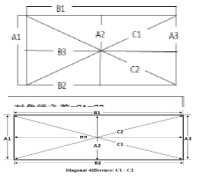


11 边框 Frame	11.1划痕/撞伤（白边框） Scratch/ Dented （White frame）	轻微缺陷 Minor		1）无金属外漏 No metal leakage A 面（长条形）Side A (strip) 宽度（width）≤0.5mm，深度（Depth）≤0.1mm： <table border="1"><tr><td>L(mm)</td><td>≤10</td><td>10~30</td><td>30~50</td><td>TQ(长)</td><td>TQ(短)</td></tr><tr><td>Q(黑)</td><td>4</td><td>2</td><td>0</td><td>3</td><td>2</td></tr><tr><td>Q(银)</td><td>5</td><td>3</td><td>1</td><td>4</td><td>3</td></tr></table>	L(mm)	≤10	10~30	30~50	TQ(长)	TQ(短)	Q(黑)	4	2	0	3	2	Q(银)	5	3	1	4	3																																
			L(mm)	≤10	10~30	30~50	TQ(长)	TQ(短)																																														
Q(黑)	4	2	0	3	2																																																	
Q(银)	5	3	1	4	3																																																	
	B C 面（长条形）Side B C (strip) 宽度≤0.5mm 深度（Depth）≤0.1mm； 60~200mm 1 条 <table border="1"><tr><td>L(mm)</td><td>≤15</td><td>15~30</td><td>30~60</td><td>TQ(长)</td><td>TQ(短)</td></tr><tr><td>Q(黑)</td><td>6</td><td>4</td><td>2</td><td>6</td><td>4</td></tr><tr><td>Q(银)</td><td>8</td><td>6</td><td>4</td><td>8</td><td>6</td></tr></table> 面积型：Area type <table border="1"><tr><td>Frame</td><td>单个面积（single Area）</td><td>长边（long side）</td><td>短边（Short side）</td></tr><tr><td>sideA</td><td>≤2mm²</td><td>2pcs</td><td>2pcs</td></tr><tr><td>sideB</td><td>≤4mm²</td><td>3pcs</td><td>3pcs</td></tr><tr><td>sideC</td><td>≤12mm²</td><td>3pcs</td><td>3pcs</td></tr></table> 2）金属外漏（黑色/银色） metal leakage(Black / Silver) 长条形(strip) 宽度（width）≤0.5mm，深度（Depth）≤0.1mm <table border="1"><tr><td rowspan="2">Frame</td><td colspan="2">长度 (L)≤5</td><td colspan="2">长度 (L) ≤50</td></tr><tr><td>长边 (long side)</td><td>短边 (Short side)</td><td>长边 (long side)</td><td>短边 (Short side)</td></tr><tr><td>sideA</td><td>2</td><td>1</td><td></td><td></td></tr><tr><td>sideB C</td><td></td><td></td><td>2</td><td>1</td></tr></table> 面积型：Area type	L(mm)	≤15	15~30	30~60	TQ(长)	TQ(短)	Q(黑)	6	4	2	6	4	Q(银)	8	6	4	8	6	Frame	单个面积（single Area）	长边（long side）	短边（Short side）	sideA	≤2mm ²	2pcs	2pcs	sideB	≤4mm ²	3pcs	3pcs	sideC	≤12mm ²	3pcs	3pcs	Frame	长度 (L)≤5		长度 (L) ≤50		长边 (long side)	短边 (Short side)	长边 (long side)	短边 (Short side)	sideA	2	1			sideB C			2	1
L(mm)	≤15	15~30	30~60	TQ(长)	TQ(短)																																																	
Q(黑)	6	4	2	6	4																																																	
Q(银)	8	6	4	8	6																																																	
Frame	单个面积（single Area）	长边（long side）	短边（Short side）																																																			
sideA	≤2mm ²	2pcs	2pcs																																																			
sideB	≤4mm ²	3pcs	3pcs																																																			
sideC	≤12mm ²	3pcs	3pcs																																																			
Frame	长度 (L)≤5		长度 (L) ≤50																																																			
	长边 (long side)	短边 (Short side)	长边 (long side)	短边 (Short side)																																																		
sideA	2	1																																																				
sideB C			2	1																																																		

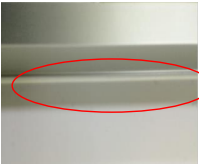


				<table><tr><td>Frame</td><td>单个面积/数量 (single Area / quantity)</td><td>长边 (long side)</td><td>短边 (Short side)</td></tr><tr><td>sideA</td><td>≤2mm², ≤1个 (pcs)</td><td>1处 (PCS)</td><td>1处</td></tr><tr><td>sideB/C</td><td>≤4mm², ≤2个 (pcs)</td><td>2处</td><td>2处</td></tr><tr><td>sideB/C</td><td>≤10mm², ≤1个 (pcs)</td><td>1处</td><td>1处</td></tr></table>	Frame	单个面积/数量 (single Area / quantity)	长边 (long side)	短边 (Short side)	sideA	≤2mm ² , ≤1个 (pcs)	1处 (PCS)	1处	sideB/C	≤4mm ² , ≤2个 (pcs)	2处	2处	sideB/C	≤10mm ² , ≤1个 (pcs)	1处	1处
Frame	单个面积/数量 (single Area / quantity)	长边 (long side)	短边 (Short side)																	
sideA	≤2mm ² , ≤1个 (pcs)	1处 (PCS)	1处																	
sideB/C	≤4mm ² , ≤2个 (pcs)	2处	2处																	
sideB/C	≤10mm ² , ≤1个 (pcs)	1处	1处																	
	11.2.边框色差 Color contrast of frame	轻微缺陷 Minor		颜色、外观、透明度整体一致， The overall color, appearance, transparency shall be consistent. No splitting marks.																
	11.3 间隙/错位 Frame Deviation/ gap	轻微缺陷 Minor		错位：正面上下错位≤0.5mm，侧面上下错位≤0.5mm，反面上下错位≤0.8mm。 间隙：正面缝隙≤0.8mm，反面缝隙≤0.8mm Deviation: Front side displacement: ≤0.5mm ,B side displacement≤0.5mm, Back side displacement≤0.8mm Gap: Front side≤0.8mm ,Back side≤0.8mm																

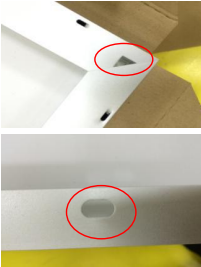


	11.4 边框毛刺 Burr	轻微缺陷 Minor		不允许（超过即返工） Not allowed. Rework if found.
	11.5 边框变形 Deformed	重要缺陷 Major		1、C面轻微弓形≤5mm 2、变形不允许（超过即返工） 1、bow ≤5mm 2、deformation Not allowed Rework if found.
	11.6 边框清洁度 Stain	轻微缺陷 Minor		边框上脏污、硅胶等残留，不可擦拭污渍距离 1m 处不可视放行。 There is no dirt and silicon residue on the frame; cannot be cleaned but not visible from 1m, acceptable
	11.7 组件尺寸 Module dimension	重要缺陷 Major		1) 长短边框公差±2mm; 2) 两对角线之差绝对值≤3mm 1) Long/short frame difference: ± 2mm; 2) Both side diagonal difference absolute value: ≤ 3mm



	12.1硅胶 Sealant	轻微缺陷 Minor	  	1) 闭口气泡背膜与边框间隙不接受，未破气泡直径$\leq 5\text{mm}$，每边≤ 5个 2) 开口气泡导致缺胶的不允许，开口气泡直径$\leq 5\text{mm}$，每边≤ 15个，背板与边框间隙不允许， 3) 边框溢胶：可见溢胶，$0\text{mm} < \text{胶线宽度} \leq 7\text{mm}$，胶线均匀美观，允许组件四角堆胶 4) 补胶后胶线均匀美观，补胶接头无毛刺、堆胶、缝隙 5) 预打胶工艺，与正常溢胶无缝隙，无毛刺，节点高度$\leq 4\text{mm}$ 6) 每边卷边长度$\leq 30\text{cm}$，单块组件卷边总长度$\leq 60\text{cm}$，单边数量不超过 2 处，总数量不超过 8 处 7) 防积灰组件产品： 正面：A 面长短边框接缝处的溢胶，$0\text{mm} < \text{胶线宽度} \leq 2\text{mm}$ 胶线均匀美观；正面无溢胶污染， 背面： 一次溢胶：可见溢胶，$1\text{mm} < \text{胶线宽度} \leq 7\text{mm}$，胶线宽度极差$\leq 5\text{mm}$，允许组件四角堆胶 1) Closed bubble and Gap between back sheet and frame are not allowed. The diameter of the unbroken bubble is less than 5mm and Qty≤ 5 2) The gap between the back plate and the frame is not allowed, Opening bubble diameter $< 5\text{mm}$, ≤ 15 on each side Gap between back sheet and frame are not allowed 3) Frame Overflowing of sealant: $1\text{mm} < \text{the width of overflow} \leq 7\text{mm}$, allowing four comers of the componends to pile glue 4) After the normal process, the glue line is uniform and beautiful, and the glue joint has no burr, glue pile and gap 5) Pre-gluing process, no gap with normal glue overflow, no burr, node height $\leq 4\text{mm}$
--	-------------------	---------------	---	--

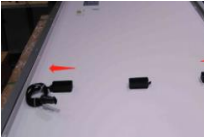
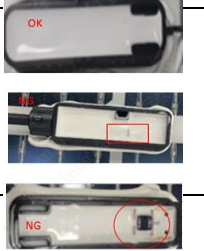


				6) Each crimping dege$\leq$30cm, total crimping length of single block component$\leq$60mm, The number of single side shall not exceed 2, and the total number shall not exceed 8 7) Prevent dust Product: On the front: Glue overflow at the seams of long and short frames on side A, 0mm<glue line width$\leq$2mm.; No overflow glue pollution on the front; The back: Overflowing of sealant: 1mm<the width of overflow $\leq$7mm, Width difference of adhesive line $\leq$ 5mm ,allowing four comers of the module to pile glue.
	13.1安装孔/ 漏水孔 Installation/ drainage hole	重要缺陷 Major		边框安装孔、漏水孔、接地孔位置尺寸正确，符合图纸要求，不允许缺失 Frame mounting hole, grounding hole and drainage hole position are correct and conform to the drawing requirements,Missing is not allowed 1) 安装孔之差$\leq$1mm 2) 漏水孔之差$\leq$1.5mm 1) Installation hole dimension difference: $\leq$ 1mm 2) Drainage hole dimension difference: $\leq$ 1.5mm
	13.2.边框地 标缺失Earth symbol missing	轻微缺陷 Minor		不允许 Not allowed



	13.2 边框爆膜 Frame burst film	轻微缺陷 Minor		单个面积≤150mm²，数量不计 Single Area≤150mm², Quantity is not counted
14 铭牌 Label	14.1 铭牌偏移 Label shifted	轻微缺陷 Minor		1) 条码，铭牌无明显褶皱气泡 2) 铭牌偏移≤3mm (超过返工) 1) No obvious bubble or drape on label and barcode 2) Label shifted ≤3mm, Barcode (Rework if exceed the criteria)
铭牌 Label 条码 Barcode	14.2 激光打码	轻微缺陷 Minor		条码： 1) 条码打印内容、格式、位置 符合图纸要求，内容清晰可辨，条码无断码，且易于扫描 2) 以边框 B 面和 C 面交界位基准，条码偏移≤2mm (L1-L2) 铭牌 1、铭牌打印内容、格式、位置 符合图纸要求，内容清晰可辨 2、以边框 C 面为基准，铭牌偏移≤3mm (L1-L2) Barcode： 1) The content, format and position of barcode printing shall meet the requirements of the drawing, the content shall be clear and legible, the barcode shall not be broken, and it is easy to scan 2) Base on border B and C, Barcode offset≤2mm (L1-L2) Nameplate 1) The printed content, format and position of the nameplate shall meet the requirements of the drawing, and the content shall be clear and legible 2) Base on border C, Barcode offset≤3mm (L1-L2)



15 接线盒 J-box	15.1 接线盒 偏移 J-box shifted	轻微缺陷 Minor		分体式组件：接线盒左右端与边框之差≤5mm（超过返工） Split J-box: Difference between left and right end of J-box to glass edge (A-B): ≤5mm, Rework if found.
	15.2接线盒 焊接 J-box soldering	重要缺陷 Major		1.引出线安装/焊接必须牢固（汇流条与接线柱无明显偏移，引出线与焊接柱有效焊接长度大于焊接柱长度的 1/2） 1.The lead-out wire must be firmly installed/welded (There is no obvious deviation between the bus bar and the terminal post, the effective welding length between the outgoing line and the welding column is more than 1/2 of the length of the welding column)
	15.3接线盒 线胶J-box sealant	轻微缺陷 Minor		胶线光滑饱满，不得有毛刺、缺胶、堆胶现象，溢胶范围 2-7mm（超过返工） 1) Excessive sealant should be smooth surface and no burr, no lack of sealant and no accumulated sealant. 2) Sealant overflow should within 2-7mm.
	15.4接线盒灌 胶 J-box sealant	重要 缺陷 Major		1)接线盒内密封胶固化后必须盖过引出线，引出线不能可见， - 2) 灌密封胶必须完全覆盖二极管，引出线、焊盘金属件，整体灌胶外观不可见； 1)AB sealant shall fully cover lead-out busbar 2) The sealing adhesive must completely cover the secondary pipe, lead wire, and solder pad metal parts, and the overall appearance of the sealing adhesive must not be visible;



	15.5 接线盒 线圈 J-box seal ring	重要 缺陷 Major		密封圈无断裂、破损且密封圈未脱（超过返工） No breakage/damage in seal ring, and not falling off.
	15.6接线盒 外观 Appearance of J-box	重要 缺陷 Major		1) 各种标识清晰、无缺失 2) 接线盒盒盖应盖紧; 1)Each identification/symbol is clear and no missing 2) J-box cover shall be tightly closed,
		致命 缺陷 Critical		1) 接线盒（包括箱体、盒盖、导线、连接器、二极管等）规格正确，金属不得外漏； 2) 零件齐全，安装到位、牢固， 3) 连接线极性标志正确，长度符合订单要求 1) J-box (Include J-box body, cover, cable, connector, bypass diode) specification shall correct no crack, no damage and other defect. 2) Parts complete, properly installed, firm, 3) Cable correctly labelled with terminal, length of cable fulfill WO requirement
	15.7接线盒 线尺寸 J-box dimension	重要 缺陷 Major		参照图纸要求 Refer to the designation drawing
16. 包装 Packing	16.1.包装 托盘 外观 Appearance of packing tray	轻微缺陷 Minor	/	1) 托盘无发霉、开裂、破损、不得露尖钉； 2) 箱体与托盘不可错位，箱体必须平均放在托盘内，纸箱四边距离托盘边位置相等； 3) 纸箱无破损、脚印、脏污； 4) 胶合板舌片锁紧，箱体无破损、脚印、脏污、开裂，钢边无破损，不允许EVA槽脱落

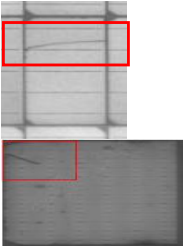
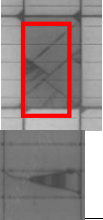


				5)PE膜缠绕符合要求，破损不能超过1层、不可露出组件 6)打包带符合要求， 无翻转、歪斜、开裂 7)外箱标识应与内箱实物对应一致，条码清晰； 8)不同色系的组件不允许混箱、混柜 9) 尾拖组件可混包 1) No mold, crack, damage, or nail exposure on the tray 2)The box body and the tray shall not be misplaced. The box body shall be placed in the tray on an average basis. The four sides of the carton shall be equal to the distance between the sides of the tray 3) .No damage, footprints or smudges in the carton 4)Plywood tongue lock, box body no damage, footprints, dirt, cracking, steel edge no damage, EVA groove is not allowed to fall off 5)PE film winding meets the requirements, the damage shall not exceed 1 layer, and the components shall not be exposed 6)Packing belt meets the requirements, no turning, skew, cracking; 7) The label of the outer box should be consistent with that of the inner box, and the barcode should be clear 8) Mixing boxes and cabinets are not allowed for components of different colors 9) The trailing modules can be mixed package
--	--	--	--	---

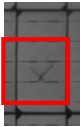
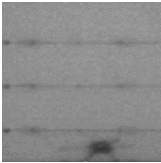
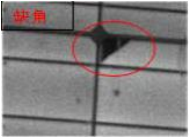
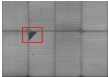


附件 2 组件 EL 检验标准

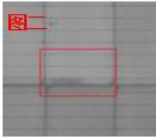
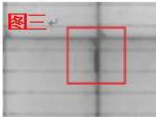
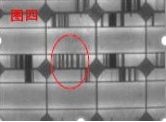
Annex 2 Module EL Inspection Criteria

序 号 No.	项目 Type of defect	不良程度 Severity	EL 照片 EL image	Grade QA
1	线状隐裂 Line micro crack	重要不良 Major		1) 隐裂长度≤1/2 电池长度；单片电池线状隐裂≤1 处；单块组件线状隐裂电 池片数量 M6≤4 片， M10≤8 片 2) 不允许贯穿（两边连接）； 1)Micro-crack length ≤ 1/2 of full cell length; Line micro crack qty/cell ≤ 1;Qty. of cell with line micro crack M6≤4 PCS M10≤8 2) Micro-crack cannot run through entire cell area
2	网状隐裂 Path micro crack	重要不良 Major		不允许 Not allowed.

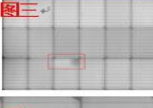
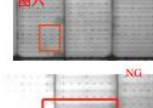
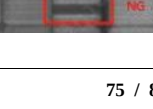


3	叉状隐裂 Cross crack	重要不良 Major	 	较长的隐裂长度$\leq 1 / 10$ 电池片长度， 单片电池片叉状隐裂数量≤ 2 处， 叉状隐裂电池片数量$\leq 4\%$电池片数量（适用所有版型，数值采用四舍五入）； 如图一 1) The longer cross micro-crack length $\leq 1/10$ full cell length Cross crack cells$\leq 4\%$ total cells（Applicable to all module versions, Values are rounded ）
4	砸伤隐裂	重要不良 Major		1)较长的隐裂长度$\leq 1 / 10$ 电池片长度， 单片电池片叉状隐裂数量≤ 2 处， 叉状隐裂电池片数量$\leq 4\%$电池片数量（适用所有版型，数值采用四舍五入）， 如图一 1) The longer cross micro-crack length $\leq 1/10$ full cell length Cross micro-crack qty/cell ≤ 2; Cross crack cells$\leq 4\%$ total cells（Applicable to all module versions, Values are rounded ）
5	缺角 Corner chipped	重要不良 Major	 	1)单片电池片缺角面积$\leq$单片电池片面积的 3% 2)单片电池片缺角数量≤ 1 处； 缺角电池片数量$\leq 3.5\%$电池数量（适用所有版型，数值采用四舍五入） 1) Area of corner chipped/cell A $\leq 3\%$ 2) Corner chipped qty/cell ≤ 1, Corner chipped cells$\leq 3.5\%$ total cells

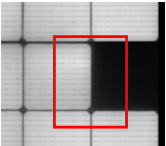
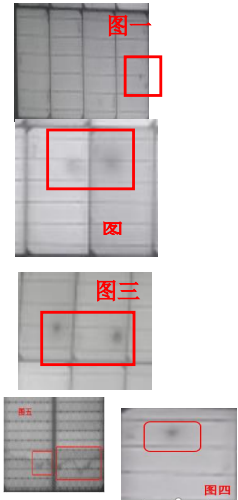


6	断栅 Broken finger	重要不良 Major	图一  图二  图三  图四 	1) 单片断栅面积≤4%，允许，电池数量不计；(图一) 2) 4% < 单片面积≤8%，电池数量≤10%电池总数量；(图二 三) 3) 单片面积 > 8%，不允许 (图四) 1) Single cell area ≤ 4%, allowed, No control over the number of cells (Fig 一) 2) 4% < single cell area≤8% Quantity≤10% of total cells (Fig 二 三 四) 3) Single cell area > 8%, not allowed (Fig 四)
---	------------------	------------	--	--

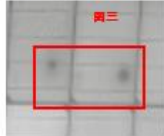
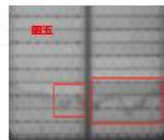


7	虚焊 Weak soldering	重要不良 Major	 图一  图二  图三  图四  图五  图六  图七  图八	平行主栅且贯穿整片电池片的阴影定义为整条阴影， 1) 不允许整条阴影；（如图一 图二）1102 电池，整条较浅明暗差异为正常，如图七 2) 累计虚焊面积$\leq 5\%$半片电池片面积，虚焊电池数量$\leq$电池数量的 10%； 累计虚焊面积$\leq 10\%$半片电池片面积，虚焊电池数量$\leq$电池数量的 5%； 累计虚焊面积 $> 10\%$半片电池片面积不允许（如图三） 3) 仅 U 型槽区域出现阴影，数量不计。（如图四 图五） 4) LR6 组件 电池整条明暗较浅，差异为正常，如图 7，其他参考常规组件虚焊标准 The shadow parallel to the main grid and running through the whole cell is defined as the whole shadow 1) Not allowed. Whole shadow; 1102 module, The light and dark difference of the cell is normal, as shown in Fig 7 2) Grand total Weak soldering area $\leq 5\%$ half cell area , Weak soldering amount $\leq 10\%$ of Cell amount; Grand total Weak soldering area $\leq 10\%$ half cell area , Weak soldering amount $\leq 5\%$ of Cell amount; Grand total Weak soldering area $> 10\%$ half cell area, not allowed 3) The number of shadows in U-groove area is not counted. 4) The whole battery strip of LR6 component is light and dark, and the difference is normal, as shown in Figure 7. For others, refer to the conventional component virtual welding standard
---	-------------------	------------	--	--

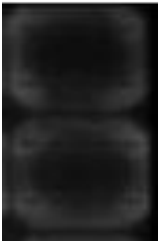
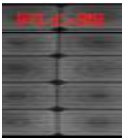
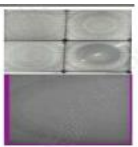


8	短路 Short circuit	关键不良 Critical		不允许 Not allowed.
9	黑斑 (包含边缘黑点) Black spot(Edge black spot not included)	轻微不良 Minor		Hi-MO5/Hi-MO7 1) 单处面积≤3%电池片面积，允许，单片数量不计，电池数量不计；图一 2) 3%电池片面积 < 单处面积≤10%电池片面积，单片数量不计，电池数量≤4%电池总数，图二 图三 图四 3) 单处面积 > 10%电池片面积，不允许 1) Single area≤3%电池片，allowed，The quantity in a single cell is not counted，total cells quantity is not counted Figure 1 2) 3% < Single area≤10%，The quantity in a single cell is not counted，Total cell ≤4% Figure 2 Figure 3 Figure 4 3) Single area > 10%，not allowed

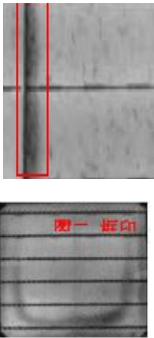


	黑斑 (包含边缘黑点) Black spot(Edge black spot not included)	轻微缺陷 Minor	    	HI-MO6 1) 单处面积≤3%电池片面积, 允许, 单片数量不计, 电池数量不计; 图一 2) 3%电池片面积 < 单处面积≤10%电池片面积, 单片数量不计, 电池数量≤4%电池总数, 图二 图三 图四 图五 3) 单处面积 > 10%电池片面积, 不允许 1) Single area≤3%电池片, allowed, The quantity in a single cell is not counted, total cells quantity is not counted; Figure 1 2) 3% < Single area≤10%, The quantity in a single cell is not counted, Total cell ≤4%; Figure 2 Figure 3 Figure 4 Figure 5 3) Single area > 10%, not allowed
--	--	-----------------------	---	--

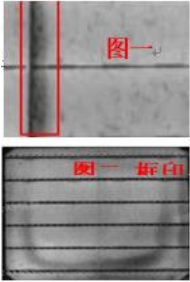
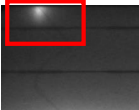


10	黑心 Black core	重要不良 Major		不允许 Not allowed
11	同心圆 Striation ring	重要不良 Major		不允许 Not allowed
	同心圆 Striation ring	重要不良 Major		Hi-MO7: 1) 灰度值差异≤ 35%，数量不计; 2) 灰度值差异 > 35%，允许同一块光伏组件电池数量的 10% 3) 氧环导致黑心，按黑心标准判定 Hi-MO7: 1) Gray scale≤35% the number is not counted; 2) Gray scale > 35%, oxygen ring allows 10% of the number of cells in the same photovoltaic module 3) Oxygen ring causes black heart, judged according to black heart standard
12	黑边/角 Black edge/corner	轻微不良 Minor		Hi-MO5/ Hi-MO7 1) 如左图一，黑边/角宽度≤1/8 电池片长度，数量不计; 2) 如左图一，1/8 电池片长度 < 黑边/角 宽度≤1/6 电池片长度，电池片数≤

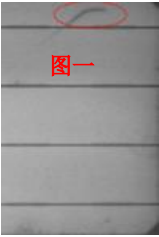
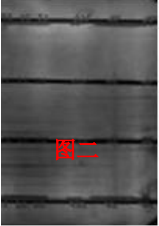
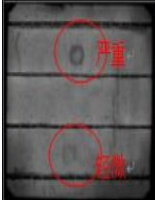


			10%电池总数 （适用所有版型，数值采用四舍五入） 3) 如左图一，黑边/角 宽度 > 1/6 电池片长度不允许； 4) 如左图二，框印按照黑边判定 1) black edge/horn width ≤ 1/8 of cell length, no counting; 2) 1/8 of cell length ≤ black edge/horn width ≤ 1/6 of cell length Qty ≤ 10% total cells (Applicable to all module versions, Values are rounded) 3) black edge/horn width > 1/6 of cell length Not allowed; 4) As shown in the second picture on the left, the frame print is judged by the black edge 度，电池片数 ≤ 3.5% 电池总数 （适用所有版型，数值采用四舍五入） 4) 如左图二，框印按照黑边判定 1) as shown on the left the gray level difference is within 40% of black edge/horn width ≤ 1/8 of cell length, no counting; 2) as shown on the left the gray level difference is within 40% of black edge/horn width > 1/6 of cell length Not allowed 3) as shown on the left the gray level difference is within 40% , 1/8 of cell length ≤ black edge/horn width ≤ 1/6 of cell length Qty ≤ 3.5% total cells (Applicable to all module versions, Values are rounded) ; 4) As shown in the second picture on the left, the frame print is judged by the black edge
--	--	--	--

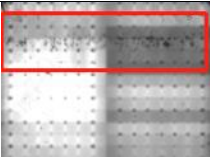
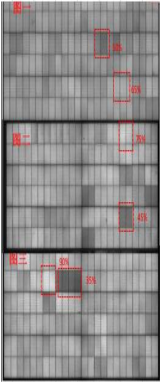


	黑边/角 Black edge/corner	轻微缺陷 Minor		Hi-MO6: 1) 电池片黑边角宽度≤ 1/6 电池片长，整个组件电池片数量不计 2) 电池片黑边角宽度 > 1/6 不允许 3) 如左图三，框印按照黑边判定 1) black edge/horn width≤1/6 of cell length, The number of cells in the module is not included 2) black edge/horn width > 1/6 of cell length, not allowed 3) As shown in the second picture on the left, the frame print is judged by the black edge
13	亮斑 Bright spot	重要不良 Major		不允许 Not allowed.

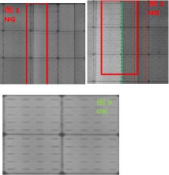
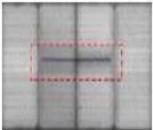


14	划痕 Scratch	轻微不良 Minor	 	非密集划痕（黑线等同）： 1) 划痕程度为低于图一，不计 2) 划痕长度< 1/5 电池片长度，允许≤3 条/片 3) 划痕长度> 1/5 电池片长度，不允许 密集划痕：（划痕胶集中，形成面积） 如图二，密集划痕，区域面积< 1/2 电池片面积。 Single scratch 1) The severity lower than fiure1, allowed; 2) The severity is the same to fiure1,Length< 1/5length of cell, ≤3/cell 3)Length > 1/5 length of cell, not allowed. Dense scratch as shown in figure2 Area of scratch<1/2area of cell
15	吸盘印 Suction mark	轻微不良 Minor		1)达到或超过左图严重程度的吸盘印，灰度差异 40%以上，不允许 2)未达到左图严重标准的吸盘印，数量不计，灰度差异 40%以下 1) sucker printing that reaches or exceeds the seve rity of the figure on the left is not allowed; The gray level difference is within 40% 2) the number of sucker prints that do not meet the severe standard in the figure on the right shall not be counted. The gray difference is less than 40%

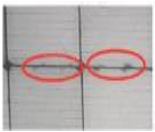
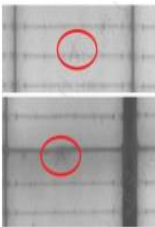


16	皮带印记 Belt imprint	轻微不良 Minor		1.灰度差异≤35%，允许，不限长度及片数 2.灰度差异 > 35%，不允许 1.GV≤30%，allowed，Unlimited length and number of pieces 2.GV > 30%，not allowed
17	明暗片 Mismatched cell	轻微不良 Minor		差异说明：单个组件中电池片最暗与最亮的明暗差异 1) 灰度值相差 15%以下的明暗片不计；图一 2) 灰度值相差 15% ~ 30%的明暗片≤电池数量的 10%；图二 3) 灰度值相差 30% ~ 50%的明暗片≤电池数量的 5%；图三 4) 不允许灰度值相差 50%以上的明暗片。 Difference Description: the difference between the darkest and brightest cells in a single module 1) Gray value difference ≤15%, ignore 2) 15% < Gray value difference≤30%, Qty≤10% of Cell amount; 3) 30% < Gray value difference≤50%, Qty≤5% of Cell amount; 4) Not allowed 50% < Gray value difference
18	明暗片 Mismatched cell	轻微缺陷 Minor		Hi-MO7： 差异：每个组件电池片间、单个半片电池片内存在明暗差异不一致的现象； 1) 整体（片内明暗、片间明暗）：灰度极差≤20% 以下的明暗片不计； 2) 整体（片内明暗、片间明暗）：20% < 灰度值极差≤30% 的明暗片（片内明暗+片间明暗）≤电池数量的 10%； 3) 片内明暗：灰度值极差>30%，不允许； 4) 片间明暗：30% < 灰度值极差≤50% 的明暗片≤电池数量的 5%；

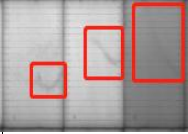


				5) 片间明暗：灰度值极差 > 50%，不允许 Inconsistent light and dark differences exist between cells of each module and within a single half cell 1) Whole (intra-slice light and dark, inter-slice light and dark): Gray scale≤20%, Not counting quantity; 2) Whole (intra-slice light and dark, inter-slice light and dark): 20% < Gray scale≤30%, Qty≤10% of Cell amount; 3) intra-slice light and dark: Gray scale > 30%, not allowed; 4) inter-slice light and dark: 30 < Gray scale≤50%, Qty≤5% of Cell amount 5) inter-slice light and dark: Gray scale > 50%, not allowed.
19	拼接不良	重要不良 Major		1、拼接重合在电池片上，导致拼接处电池片影像缺失不允许； 图一 2、拼接镜头亮度颜色差异大不允许 图 二 3、无拼接不良 图 三 1)coincident splicing is on cell area, resulting in missing image of coincident cells, which is not allowed (picture1) 2)Large camera difference in brightness and color is not allowed (picture2) 3) o poor splicing (picture3)
20	黑线 Black line	重要缺陷 Major		不允许 Not allowed



21	卡槽印	重要缺陷 Major		Hi-MO7 电池 不允许触及主栅线 Do not touch the main grid line
22	叉状阴影	重要缺陷 Major	 叉状阴影长度计算 方法：以叉型两边最长边的长度为准	Hi-MO7 电池 单点型： 1) 单个缺陷长度 ≤5mm 忽略不计； 2) 5mm<单个缺陷长度≤ 电池长度的 1/6L， 电池片内单个缺陷数量≤5， 组件内缺陷电池片的数量≤6%电池片总数； 3) 单个缺陷长度>电池长度的 1/6L 不允许 密集型： 1)灰度差异 < 30%， 组件内缺陷电池片的数量≤7%电池片总数 2) 30≤灰度差异≤35%， 组件内缺陷电池片的数量≤5% 电池片总数 3) 灰度差异 > 35%,不允许 Single point type 1) Single defect length ≤ 5mm ignored 2) 5mm< The length of a single defect is less than or equal to 1/6L of the cell length. The number of single defects in a cell is less than or equal to 5. The number of defective cells in a module is less than or equal to 6% of the total number of cells



				3) Single defect length > 1/6L of cell length is not allowed intensive 1) Gray difference < 30%, the number of defective cells in the module is less than 7% of the total number of cells 2) 30%≤ gray difference ≤35%, the number of defective cells in the module ≤5% total number of cells 3) Gray difference > 35%, not allowed
23	水印印 Watermark	轻微缺陷 Minor		Hi-MO7: 单片电池片内灰度差异≤30%，组件电池片数量不计；单片电池片内灰度差异 > 30%，不允许 Hi-MO7: Single cell Gd≤30%， the quantity is not counted；Single cell Gd > 30%， not allowed

Schedule G – Project

Chisme

“Chisme Solar and Storage project located in Mills and Brown Counties, Texas”

Schedule H – PV Mounting compatibility approval letter

Preliminary compatibility approval letter shown below for Array Technologies Omnitrack PV Tracker system, final compatibility approval letter to be provided to Owner once Array Technologies tracker design is finalized and provided to Vendor

To: ATI

Issue Date: May 15, 2025

Subject: Compatibility approval letter of ATI's tracker

To whom it may concern:

Regarding the compatibility between ATI's Rail (or Tracker) and LONGi's module, we have conducted the related tests according to IEC 61215-2:2016 Static mechanical load test items. The detailed installation information is as below.

Rail (Or Tracker) Manufacturer	ATI	
Rail (Or Tracker) Type and Version	21011, 21063, 20822, 20834, 20916	
LONGi Product	Module Type	LR5-72HBD
	Module Dimension	2278*1134*30/ 2256*1134*35
Bolts Mounting	Bolts Specification	M6&M8
	Bolts Torque Value	As per module installation manual
	Clamp Material	Aluminum
	Bolts Specification for Clamp Fixing	As per tracker installation manual
	Bolts Torque Value for Clamp Fixing	As per module installation manual

Based on the above installation method for LONGi module, the maximum static load which can be borne is as below table. This compatibility test is only for module and rail (or tracker) structure without involving drive and control system.

Module Model	Module Size	Rail part No.	Mount method	Max. Design Loads
LR5-72HBD	2278*1134*30 2256*1134*35	21011	400mm thru-bolt mounting	±1200 Pa
		21063	400mm thru-bolt mounting (Light gauge)	±1000Pa
		20822	Hi-rise 300 Clamp	±800Pa
		20834	Hi-rise 400 Clamp	±800Pa
		20916	1400mm thru-bolt	+1866/-1600

Design Load = Test Load / 1.5.

The above data is only for the test requirements, and the actual load might vary under different installation ambience.

There is a possibility that changes in type and combination method of the above listed rail (or tracker) and module may affect module load ability. Meantime, due to complex project operation ambience, there are some factors which may affect the compatibility between rail (or tracker) and module, such as high wind pressure, rail (or tracker)'s strength, and improper installation.

This letter is to inform the result of the tests, which cannot be in any way deemed as the commitment of the quality of the ATI's rail (or tracker).

LONGi Green Energy Technology Co., Ltd.

Schedule I – Delivery Schedule

Weekly Shipment	Module Type	Avg. Power Class (Watts)	Module Count (Pcs)	Shipment Wattage (Watts)	Container Count	ETD Date	Guaranteed Delivery Date+2days	MW
1	LR5-72HBD-550M	550	9,360	5,148,000	20	2026/2/28	3/2/2026	5.1
2	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/3/7	3/9/2026	12.9
3	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/3/14	3/16/2026	12.9
4	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/3/21	3/23/2026	12.9
5	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/3/28	3/30/2026	12.9
6	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/4/4	4/6/2026	12.9
7	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/4/11	4/13/2026	12.9
8	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/4/18	4/20/2026	12.9
9	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/4/25	4/27/2026	12.9
10	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/5/2	5/4/2026	12.9
11	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/5/9	5/11/2026	12.9
12	LR5-72HBD-545M	550	23,400	12,870,000	50	2026/5/16	5/18/2026	12.9
13	LR5-72HBD-550M	550	23,400	12,870,000	50	2026/5/23	5/25/2026	12.9
14	LR5-72HBD-545M	545	9,360	5,101,200	20	2026/5/30	6/1/2026	5.1
14	LR5-72HBD-550M	550	9,360	5,148,000	20	2026/5/30	6/1/2026	5.1
15	LR5-72HBD-545M	545	23,400	12,753,000	50	2026/6/6	6/8/2026	12.8
16	LR5-72HBD-545M	545	9,360	5,101,200	20	2026/6/13	6/15/2026	5.1
16	LR5-72HBD-550M	550	14,040	7,722,000	30	2026/6/13	6/15/2026	7.7
17	LR5-72HBD-555M	555	18,720	10,389,600	40	2026/6/19	6/21/2026	10.4
18	LR5-72HBD-545M	545	4,140	2,256,300	9	2026/6/27	6/29/2026	2.3
18	LR5-72HBD-550M	550	3,384	1,861,200	7	2026/6/27	6/29/2026	1.9
18	LR5-72HBD-555M	555	216	119,880	0	2026/6/27	6/29/2026	0.1
			382,140	210,040,380	817			210.0

Purchaser may delay the Delivery Schedule set forth herein by delivering prior written notice of such delay to Supplier. Upon receipt of any such notice, the Delivery Schedule shall be appropriately adjusted.

Schedule J– Form of Vendor Affiliate Guaranty
(attached)

VENDOR AFFILIATE GUARANTY

In consideration of that certain **PV Module Master Supply Agreement (Chisme Solar and Storage Project)** (the “**Guaranteed Agreement**”), dated as of the date hereof, by and between Red River Clean Energy, LLC, a Delaware limited liability company (“**Purchaser**”), and LONGi Solar Technology (U.S.) Inc., a Delaware corporation (“**Vendor**”), Illuminate USA, LLC, a limited liability company formed and duly subsisting under the laws of the State of Delaware (hereinafter “**Guarantor**”), hereby irrevocably and unconditionally covenants with and guarantees to Red River Clean Energy, LLC, with effect from the date of the Agreement, the following:

1. Guarantor hereby warrants that it is an affiliate of Vendor and hereby unconditionally guarantees to Purchaser the due, full and prompt performance by Vendor of all its obligations to Purchaser under and pursuant to the Guaranteed Agreement. Guarantor hereby agrees to pay to Purchaser its reasonable attorneys’ fees and the costs and expenses of collection incurred by Purchaser to enforce any obligation of Guarantor under this guaranty.

2. The obligations of Guarantor contained herein are direct, independent and primary obligations of Guarantor and are absolute, present, unconditional and continuing obligations and are not conditioned in any way upon the institution of suit or the taking of any other action or any attempt to enforce payment of Vendor’s obligations under the Guaranteed Agreement and without limitation, shall constitute a guarantee of payment, binding upon Guarantor and its successors and permitted assigns and irrevocable without regard to the genuineness, validity, legality or enforceability of the Guaranteed Agreement or the lack of power or authority of Vendor to enter into the Guaranteed Agreement or any substitution, release or exchange of any other guarantee or any other security for Vendor’s payment obligations or any other circumstance whatsoever that might otherwise constitute a legal or equitable discharge of a surety or guarantor and shall not be subject to any right of set-off, recoupment or counterclaim.

3. Without limiting the generality of the foregoing, Guarantor shall have no right to terminate the guaranty contained herein or to be released, relieved or discharged from its obligations hereunder, and such obligations shall be neither affected nor diminished, for any reason whatsoever, including without limitation:
 - (a) any amendment or supplement to or modification of the Guaranteed Agreement;
 - (b) any extension or renewals of Vendor’ s obligations under the Guaranteed Agreement;
 - (c) the occurrence of any Vendor event of default under the Guaranteed Agreement;
 - (d) any furnishing or acceptance of additional security or any exchange, surrender, substitution or release of any security;

- (e) any waiver, consent or other action or inaction or any exercise or non-exercise of any right, remedy or power with respect to Vendor's obligations under the Guaranteed Agreement; and
- (f) any merger or consolidation of Vendor or Guarantor into or with any other Person or any change in the structure of Vendor or in the ownership of Vendor by Guarantor.

For greater certainty, the obligations of the Guarantor under this Vendor Affiliate Guaranty shall be discharged and released upon the earlier of (i) the date on which all delivery and payment obligations under the Guaranteed Agreement have been completed and paid in full in accordance with the terms of the Guaranteed Agreement or (ii) the date on which the Guaranteed Agreement has been terminated in accordance with its terms and the payment in full of all amounts owed by Vendor thereunder that survive the termination of the Guaranteed Agreement.

- 4. Guarantor unconditionally waives, to the fullest extent permitted by Applicable Law, as defined in the Agreement, any right it may have to:
 - (a) notice of any waiver or extension granted to Vendor or to any other notice which may be required by statute, rule of law or otherwise as a condition to the pursuit of any rights of Purchaser against Vendor, Guarantor or any other person;
 - (b) require Purchaser to proceed against Vendor or any other Person or pursue any collateral or remedy within Purchaser's power;
 - (c) require acceptance of the guaranty contained herein;
 - (d) diligence, presentment, demand for payment, protest and all other notices, including notice of the creation or renewal extension or accrual of any of Vendor's payment obligations under the Guaranteed Agreement;
 - (e) require any election of remedies; and
 - (f) require the marshalling of assets or the resort to any other security.
- 5. Unless and until the obligations of Guarantor under this Vendor Affiliate Guaranty shall be discharged and released, Guarantor hereby waives any claim, right or remedy, direct or indirect, that Guarantor now has or may hereafter have against Vendor in connection with this Vendor Affiliate Guaranty or the performance by Guarantor of its obligations hereunder.
- 6. This Agreement shall be construed in accordance with and governed by the laws of the State of New York.

[The remainder of this page has been left blank]

SIGNED by the Guarantor at _____, this 15th day of May, 2025.

Illuminate USA, LLC

By: _____
Name:
Title: