



Gautam Solar Private Limited

Document No. GSPL/FQC/WI/001

Issue Date 01/12/2024

Document Title: FQC

Rev. No./ Rev. Date 00

Type of Document: WI OF FQC

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## 1. Purpose

### 1. Purpose

To ensure all finished PV modules meet required quality standards before packaging and dispatch.

### 2. Scope

Applies to all finished solar modules after lamination and assembly, prior to final packing and dispatch.

### 3. Responsibilities

- FQC Inspector:** Perform checks and record data as per FQA Checksheets.
- FQC Supervisor:** Review defects, ensure corrective action.
- QA Head:** Approve final lots for dispatch.

### 4. Reference Documents

- FQA Checksheets (Excel)
- IEC 61215 / IEC 61730 Standards
- Customer Specifications
- Module Datasheet

### 5. Equipment & Tools

- Visual Inspection Tools (Light Table)
- Measuring Tape
- EL Tester
- I-V Tester
- Hi-pot Tester
- IR Camera
- Torque Wrench
- Barcode/QR Scanner

### 6. Procedure

#### 6.1 Panel Information

Prepared By:	Approved By:	Documents Status
 FQC Manager	 Plant Head	



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Record the following in the FQA Checksheet:

- Module Sr. No.
- Cell Power
- Module Power
- Operator Name
- Date

### 6.2 Visual Inspection

Check and record the following (from your sheet):

- **Glass Cleaned** – No dirt, watermarks.
- **Frame Condition** – No dents, proper alignment.
- **Junction Box Fitment** – Secure, clean silicone application.
- **Label Placement** – Correct position, aligned.
- **Sticker Details** – Match datasheet/customer format.
- **Cable & Connector Check** – Length, polarity, cleanliness.
- **QR Code Check** – Legible and scannable.
- **Module Front/Back** – No foreign particles, dirt, or scratches.
- **Packing Materials** – Proper interleaf, tapes, corner protection.

✓ Record each parameter as **OK/NG**.

### 6.3 EL Testing

- Capture EL image.
- Check for microcracks, finger interruptions, black spots, solder issues.
- Record result in the EL image column.

### 6.4 I-V Testing

- Record:
  - Voc (V)
  - Isc (A)
  - Vmp (V)
  - Imp (A)
  - Pmax (W)
  - FF (%)
- Compare with datasheet. Accept if within  $\pm 3\%$  tolerance.

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## 6.5 Hi-pot / Insulation Resistance

- Apply 1,000 V DC.
- Resistance must be >40 MΩ.

## 6.6 Torque Test (If Applicable)

- Use torque wrench to check tightness of junction box screws and frame corner screws (torque 0.8–1.2 Nm).

## 6.7 Final Remarks

- If any parameter is marked **NG**, isolate the panel and inform the supervisor.
- Panels marked NG should not be packed or dispatched until reworked and approved.

## 7. Acceptance Criteria

- All parameters marked **OK**.
- Electrical and EL results within acceptable range.
- Visual checks pass without major defects.

## 8. Rejection Criteria

- Physical damage (glass crack, frame dent, etc.).
- EL failures (micro cracks, broken cells).
- Mismatch in label or QR code.
- Failed electrical test results.

## 9. Records & Documentation

- Fill FQA Checksheet for each panel inspected.
- Save digital EL images linked by panel serial number.
- Maintain daily summary for traceability.

## 10. Safety Guidelines

- Wear gloves, ESD band, safety gear.
- Handle modules from frame only.
- Use suction pads or lifting tools for heavy handling.

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ensure uniformity in performance, labeling, and packaging.

Gautam Solar Pvt.Ltd.

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