



Gautam Solar Private Limited

Document No.	GSPL/FQC/WI/001
Issue Date	01/12/2024
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Document Title: FQC

Type of Document: WI OF FQC

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 Checksheet.
- **FQC Supervisor:** Review defects, ensure corrective action.
- **QA Head:** Approve final lots for dispatch.

4. Reference Documents

- FQA Checksheet (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

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 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 $>40 \text{ M}\Omega$.

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.

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