GAUTAM SOLAR	Gautam Solar Private Limited IPQC Check Sheet	**Document No.** GSPL/IPQC/IPC/003 **Issue Date** 01/12/2024 **Rev. No./Rev.Date** 01/30-08-2025

Date: 2025-11-27	**Time:**	**Shift:** A	**Po.no.:** ef

Sr.No.	Stage	Check point	Quantum of Check Sample Size | Frequency	Shift Acceptance Criteria	Monitoring Result	Remarks,If any
1	Shop Floor	Temperature	once per shift	Temp. ≤53°C	Time: 08:00 AM - 26.15°C	OK
		Humidity	once per shift	RH ≤60%	Time: 08:00 AM - 58% RH	Acceptable
2	Glass Loader	Glass dimension(L*W*T)	once per shift	As Per PO	2376.09mm x 1128.01mm x 1.97mm	As per spec
		Appearance(Visual)	once per shift	Glass Broken, Crack, Scratches and Line mark not allowed	No Scratches/Cracks	No defects
3	EVA/EPE Cutting	EVA/EPE Type	once per shift	As per approved BOM	EVA PLASTOMER	Confirmed
		EVA/EPE dimension(L*W*T)	once per shift	As per Specification	2378.63mm x 1125.21mm x 0.71mm	Match PO
		EVA/EPE Status	once per shift	Not allowed dust & foreign particle/Cut & non Uniform Embossing /Mfg Date	Clean Surface	Acceptable
4	Eva/EPE Soldering at edge(If Applicable)	Soldering Temperature and Quality of Soldering	Once per shift	As per specification and Should be properly soldered (400 ± 20°C)	Time: 08:15 AM - Temp: 401.17°C	Stable
5	Cell Loading	Cell Manufacturer & Eff.	once per shift	Refer Process Card	Longi Solar	No defects
		Cell Size(*W)	once per shift	Refer Process Card	182.49mm x 104.95mm x 0.2mm (L x W x T)	OK
		Cell Condition	once per shift	Free From dust,finger spot,color variation	Clean - No Defects	Clear
		Cleanliness of Cell Loading Area	once per shift	No unwanted or waste material should be at Cell Loading Area	Clean Surface	OK
		Verification of Process Parameter	once per shift	ATW Stringer Specification	Taping Proper	Acceptable
		Cell Cross cutting	once per shift	Both side cutting should be equal.	-0.05mm	No defects
		Verification of Process Parameter	once Month	ATW Stringer Specification	No Shift	Good

6	Tabber & stringer	Visual Check after Stringing	once 1 String/TS/Shift	TS Visual Criteria	TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK	Good
		EL Image of Strings	once 1 String/TS/Shift	TS EL Criteria	TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK	Pass
		String length	once 1 String/Stringer/ shift	Refer Process Card	TS01A: 1162.7mm, TS01B: 1163.6mm, TS02A: 1162.5mm, TS02B: 1163.8mm, TS03A: 1162.6mm, TS03B: 1162.6mm, TS04A: 1163.8mm	OK
		Cell to Cell Gap	once 1 String/Stringer/ shift	Refer Process Card	TS01A: 0.79mm, TS01B: 0.75mm, TS02A: 0.81mm, TS02B: 0.78mm, TS03A: 0.8mm, TS03B: 0.81mm, TS04A: 0.8mm	Clear
		Verification of Soldering Peel Strength	2 cell each stringer Front & Back. per shift	Peel Strength ≥1N	TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK, TS04B: OK	Clear
		String to String Gap	once per shift		—	—
		Cell edge to Glass edge distance (Top,bottom & sides)	once per shift	Refer Process Card & Module Drawing	TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK	Pass
		Soldering Peel Strength b/w Ribbon to busbar interconnector	once per shift	≥2N	TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK	Clear
7	Auto bussing , layup & Tapping	Terminal busbar to edge of Cell	once per shift	132 Cell module drawing, Refer Module Drawing- GSPL/N144/G/001	Refer Module Drawing	No defects
		Soldering Quality of Ribbon to busbar	Every 4h per shift	No Dry/Poor Soldering	4.34	Pass
		Top & Bottom Creepage Distance/Terminal busbar to Glass Edge.	Every 4h per shift	Creepage distance should be as per process card/Drawing	Top: 11.75mm | Bottom: 11.65mm	OK
		Verification of Process Parameter	once per shift	Specification for Auto Bussing	No Shift	Pass
		Quality of auto taping	Every 4h per shift	Taping should be proper,no Cell Shifting allowed	Proper	Pass
8	Auto RFID Logo/Barcode placing (If Applicable)	Position verification of RFIDs Logo /Barcode placing	Every 4h per shift	Should not be tilt	Tilt: -0.73mm	—
9	EVA/EPE cutting	EVA/EPE Type	once per shift	EVA	EPE304	OK
		EVA/EPE dimension(L*W*T)	once per shift	As per Specification	2378.71mm x 1124.84mm x 0.72mm	—
		EVA/EPE Status	once per shift	Not allowed dust & foreign particle/Cut & non Uniform Embossing /Mfg Date	No Damage	OK

10	Back Glass Loader	Glass dimension(L*W*T)	once Per shift	As per PO	2375.87mm x 1128.1mm x 2.0mm	OK
11	Auto Busbar Flatten (If Applicable)	No. of Holes/ Holes dimension	once Per shift	3 hole with dimension 12mm ± 0.5mm	As per spec	OK
		Visual Inspection	5 pieces per shift	No crack/ breaks in busbar & properly flattened without bending and twisting	S.No: GS04875KG30225030006, GS04875KG30225030009, GS04875KG30225030050, GS04875KG30225030054, GS04875KG30225030099	Good
12	Pre lamination EL & Visual Inspection	EL Inspection and Visual Inspection	5 pieces per shift	Pre EL Inspection Criteria, Pre EL Visual Criteria	S.No: GS04875KG30225030017, GS04875KG30225030035, GS04875KG30225030052, GS04875KG30225030067, GS04875KG30225030087	No defects
13	String Rework Station	cleaning of rework station/Soldering iron and sponge	once per shift	Rework Station should be Clean/Sponge should be Wet	Clean Surface	No contamination
		Soldering Iron Temp.	once per shift	400±30°C	Time: 08:00 - Temp: 23.99°C	OK
14	Module Rework Station	Method of Rework	once per shift	As per WI (GSPL/P/WI/012)	As per spec	Pass
		Cleaning of Rework station/Soldering iron sponge	once per shift	Rework Station should be Clean/Sponge should be Wet	No Residue - CLEAN	Good
		Soldering Iron Temp.	once per shift	400±30°C	Time: 08:00 - Temp: 25.29°C	Acceptable
15	Laminator	Monitoring of Laminator Process parameter	once per shift	Process Parameter of jinchen Laminator	As per spec	—
		Cleaning of Diaphragm/release sheet	once 24h	Diaphragm/Release sheet should be clean,No EVA residue is allowed	Clean Surface	Clear
16	Auto Tape Removing (If Applicable)	Peel of Test b/w: EVA/Backsheet EVA/EPE/POE to Glass	All position All laminators to be covered in a month	E/G ≥60N/cm E /Bs≥60N/cm	As per spec	Pass
		Gel Content Test		75to 95%	As per spec	OK
		Visual Check after Lamination	5 pieces per shift	Check Tape Removing Should be smooth and No visual bubble Should be found.	S.No: GS04875KG30225030007, GS04875KG30225030036, GS04875KG30225030073, GS04875KG30225030089, GS04875KG30225030096	Pass
17	Auto Edge Trimming	Trimming Quality	5 pieces per shift	Excess layer from the glass edge should be removed,Uneven Trimming not allowed	Even Trim: 0.3mm deviation	—
		Trimming Blade life cycle	once per month	Worn out not allowed	Even Trim: -0.25mm deviation	Good

18	90° Visual Inspection	Visual Inspection	5 pieces per shift	Post Lam Visual Inspection Criteria	S.No: GS04875KG30225030033, GS04875KG30225030034, GS04875KG30225030078, GS04875KG30225030082, GS04875KG30225030092	Pass
19	Framing	Glue uniformity & continuity in frame groove	1 set per shift	Should be uniform,Back sealing should be proper	As per spec	Pass
		Short Side Glue Weight	once Per shift	Till as per Specification	Potting Weight: 19.92g	—
		Long Side Glue Weight	once Per shift		Potting Weight: 19.38g	Pass
		Anodizing Thickness	once Per shift	≥15 micron	As per spec	Pass
20	Junction Box Assembly	Junction Box(Connector Appearance & Cable Length)	once Per shift	As per Process Card & module drawing	JB Position: 0.59mm shift	Within tolerance
		Silicon Glue Weight on the bottom (g)	once Per shift	21±6 gm	Potting Weight: 21.51g	Acceptable
		Max Welding time	once Per shift	As per Specification	As per spec	No defects
21	Auto JB Soldering	Soldering current	once per shift	As per Specification	As per spec	Acceptable
		Soldering Quality	once per shift	Welding area should be fully covered & checked by twizzer,no yellowing allowed	As per spec	Good
22	JB Potting	A/B Glue Ratio	once Per shift	As per Specification	As per spec	—
		Potting material weight	once Per shift	21±6 gm	EVA PLASTOMER	OK
		Nozzle Changing	once every 6h	Should be changed after 6 hours or when found issue of damage or extra amount dispensing.	As per spec	OK
23	OLE Potting Inspection (If Applicable)	Visual Check	once 5 piece	Potting should be properly filled, and mounting hole should be as per drawing.	As per spec	OK
24	Curing	Temperature	once per shift	25±3■	Time: 08:00 - Temp: 24.52°C	Stable
		Humidity	once per shift	≤50%	Time: 08:00 - RH: 48%	Within Limit
		Curing Time(H)	once Per shift	≥4 hours	As per spec	—

25	Buffing	Corner Edge-Buffing belt condition	5 pieces per shift	Should not be sharp & No worn out	FF: 79.12%	OK
26	Cleaning	Module should be free from Tape,Dust,Dirt,EVA/Backs heet residue,Corner Burrs,Glue residue on glass,backsheet,JB,Wire etc.)	5 pieces per shift	Post Lam Visual Criteria	S.No: GS04875KG30225030006, GS04875KG30225030017, GS04875KG30225030041, GS04875KG30225030045, GS04875KG30225030093	Clean
27	Flash Tester	Ambient Temp.	once per shift	25±3■	Time: 08:00 - Temp: 27.42°C	Good
		Module Temp.	once per shift	25±3■	Time: 08:00 - Temp: 22.89°C	Good
		Isc/simulator Calibration	once 12h	Isc/simulation should be calibrated at the start of the shift with Golden/Silver module(GSEN/QA/K/11)	Isc: 13.16A	Pass
		Validation	once every 4h	As per GSEN/QA/K/11	As per spec	Acceptable
		Silver Reference Module Iv Check	once Two weeks	Should be same as original I-v picture	As per spec	Pass
28	Hipot Test	DCW/IR/Ground continuity	5 pieces per shift	≤50μA , >40MΩ·m² , (0-100) mΩ	S.No: GS04875KG30225030016, GS04875KG30225030039, GS04875KG30225030048, GS04875KG30225030055, GS04875KG30225030065	Pass
29	Post EL Test	Verification of current configuration in DC power supply	once Shift	As per WI (GSPL/P/WI/027)	Pmax: 622.59W	Pass
		EL Inspection and Visual Inspection	5 pieces per shift	Post EL Inspection Criteria, Post EL Visual Criteria	S.No: GS04875KG30225030009, GS04875KG30225030014, GS04875KG30225030033, GS04875KG30225030039, GS04875KG30225030092	Good
30	RFID	RFID Position	once per shift	As per Process card	Tilt: -0.38mm	OK
		Cell & Module Make & Manufacturing Month Verification	once per shift	As per BOM and Process card	As per spec	Pass
31	Final Visual Inspection	Visual Inspection	5 pieces per shift	Post lam visual inspection criteria	S.No: GS04875KG30225030023, GS04875KG30225030045, GS04875KG30225030086, GS04875KG30225030090, GS04875KG30225030096	Clear
		Re-label	5 pieces per shift	No bubble,Tilt,Align,no folded label not acceptable	Tilt: -0.57mm	Pass

32	Dimension measurement	L*W and Module Profile	once per shift	As per Module drawing (±1mm)	Refer Module Drawing	Pass
		Mounting Hole X & Y (H/L)	once Per shift		As per spec	Pass
		Diagonal Difference	once Per shift	≤3mm	FF: 78.61%	Pass
		Corner Gap	once Per shift	As per visual inspection criteria	As per spec	Within tolerance
		JB Cable length	once Per shift	As per Process Card	Cable: 1184.12mm	Within tolerance
33	Packaging	Packaging Label	once Per shift	WI For Packaging	Tilt: 0.74mm	Pass
		Content in Box	once Per shift		As per spec	Pass
		Box Condition	once Per shift	Damage,dull printing,wet boxes not allowed	As per spec	—
		Wooden Pallet dimension	once Per shift	should not be less than module dimension	As per spec	Within tolerance
34	Peel Test for Solar Cell	EVA to Glass Peel Strength	3 samples Per shift	≥60 N/cm	As per spec	OK
		EVA to Backsheet Peel Strength	3 samples Per shift	≥60 N/cm	As per spec	No defects
		Cell to EVA Adhesion Test	2 samples Per shift	≥50 N/cm	As per spec	No defects
		Ribbon to Cell Busbar Peel Strength (Front)	2 cells per stringer Per shift	≥1.0 N	Test1: 20.43N | Test2: 20.75N | Test3: 20.21N	OK
		Ribbon to Cell Busbar Peel Strength (Back)	2 cells per stringer Per shift	≥1.0 N	Test1: 21.37N | Test2: 20.39N | Test3: 20.76N	Pass
		EVA/EPE to Glass Interface Adhesion	2 samples Per day	≥55 N/cm, No delamination	As per spec	—
		Junction Box Adhesion (Silicon Glue)	1 sample Per shift	≥40 N/cm	JB Position: -0.36mm shift	OK
		Peel Test Temperature	Continuous During test	23±2°C	Time: 08:00 - Temp: 23.9°C	Controlled
		Test Sample Conditioning Time	All samples Before test	≥24 hours at 23±2°C	As per spec	—
		Peel Test Equipment Calibration	Equipment Monthly	Calibrated as per standard, Certificate valid	As per spec	Clear