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| 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: 2025-11-16 | | Time: | Shift: A | Po.no.: 23456 | |

| Sr.No. | Stage | Check point | Quantum of Check Sample Size Frequency | Shift Acceptance Criteria | Monitoring Result | Remarks,If any |
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| 1 | Shop Floor | Temperature | once per shift | Temp. ≤53°C | Time: 08:00 AM - 24.11°C | Controlled |
| | | Humidity | once per shift | RH ≤60% | Time: 08:00 AM - 56% RH | Within Limit |
| 2 | Glass Loader | Glass dimension(L*W*T) | once per shift | As Per PO | 2376.7mm x 1127.98mm x 1.99mm | As per spec |
| | | Appearance(Visual) | once per shift | Glass Broken, Crack, Scratches and Line mark not allowed | Clear Surface | Pass |
| 3 | EVA/EPE Cutting | EVA/EPE Type | once per shift | As per approved BOM | EPE304 | Verified |
| | | EVA/EPE dimension(L*W*T) | once per shift | As per Specification | 2377.38mm x 1125.66mm x 0.7mm | As per spec |
| | | EVA/EPE Status | once per shift | Not allowed dust & foreign particle/Cut & non Uniform Embossing /Mfg Date | Clean Surface | OK |
| 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: 395.84°C | Within Limit |
| 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 | 182.47mm x 105.17mm | Clear |
| | | Cell Condition | once per shift | Free From dust,finger spot,color variation | No Damage/Cracks | 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 | No Shift | Pass |
| | | Cell Cross cutting | once per shift | Both side cutting should be equal. | 0.06mm | Clear |
| | | Verification of Process Parameter | once Month | ATW Stringer Specification | Taping Proper | OK |

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| 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, TS04A: OK | OK |
| | | EL Image of Strings | once 1 String/TS/Shift | TS EL Criteria | TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK, TS04B: OK | OK |
| | | String length | once 1 String/Stringer/ shift | Refer Process Card | TS01A: 1163.3mm, TS01B: 1163.1mm, TS02A: 1163.5mm, TS02B: 1162.7mm, TS03A: 1162.3mm, TS03B: 1163.4mm, TS04A: 1163.2mm | OK |
| | | Cell to Cell Gap | once 1 String/Stringer/ shift | Refer Process Card | TS01A: 0.75mm, TS01B: 0.78mm, TS02A: 0.73mm, TS02B: 0.81mm, TS03A: 0.74mm, TS03B: 0.78mm | OK |
| | | Verification of Soldering Peel Strength | 2 cell each stringer Front & Back. per shift | Peel Strength \geq 1N | TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK | Pass |
| | | String to String Gap | once per shift | | — | Within tolerance |
| | | 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, TS04B: OK | OK |
| | | Soldering Peel Strength b/w Ribbon to busbar interconnector | once per shift | \geq 2N | TS01A: OK, TS01B: OK, TS02A: OK, TS02B: OK, TS03A: OK, TS03B: OK, TS04A: OK, TS04B: OK | Pass |
| 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 | Clear |
| | | Soldering Quality of Ribbon to busbar | Every 4h per shift | No Dry/Poor Soldering | 2.72 | Good |
| | | Top & Bottom Creepage Distance/Terminal busbar to Glass Edge. | Every 4h per shift | Creepage distance should be as per process card/Drawing | Top: 12.32mm Bottom: 11.85mm | Pass |
| | | Verification of Process Parameter | once per shift | Specification for Auto Bussing | Auto Bussing | Good |
| | | Quality of auto taping | Every 4h per shift | Taping should be proper,no Cell Shifting allowed | Proper | OK |
| 8 | Auto RFID Logo/Barcode placing (If Applicable) | Position verification of RFIDs Logo /Barcode placing | Every 4h per shift | Should not be tilt | Tilt: -0.21mm | — |

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| | | EVA/EPE Type | once per shift | EVA | EPE304 | Confirmed |
| 9 | EVA/EPE cutting | EVA/EPE dimension(L*W*T) | once per shift | As per Specification | | Within tolerance |
| | | EVA/EPE Status | once per shift | Not allowed dust & foreign particle/Cut & non Uniform Embossing /Mfg Date | | Pass |
| | | Glass dimension(L*W*T) | once Per shift | As per PO | | Match PO |
| 10 | Back Glass Loader | No. of Holes/ Holes dimension | once Per shift | 3 hole with dimension 12mm ± 0.5mm | As per spec | — |
| | | Visual Inspection | 5 pieces per shift | No crack/ breaks in busbar & properly flattened without bending and twisting | | OK |
| 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: 10029, 10031, 10049, 10073, 10094 | OK |
| 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 - No EVA Residue | OK |
| | | Soldering Iron Temp. | once per shift | 400±30°C | Time: 08:00 - Temp: 24.72°C | OK |
| 14 | Module Rework Station | Method of Rework | once per shift | As per WI (GSPL/P/WI/012) | As per spec | Acceptable |
| | | Cleaning of Rework station/Soldering iron sponge | once per shift | Rework Station should be Clean/Sponge should be Wet | Clean Surface | OK |
| | | Soldering Iron Temp. | once per shift | 400±30°C | Time: 08:00 - Temp: 23.62°C | Acceptable |
| 15 | Laminator | Monitoring of Laminator Process parameter | once per shift | Process Parameter of jinchen Laminator | As per spec | OK |
| | | Cleaning of Diaphragm/release sheet | once 24h | Diaphragm/Release sheet should be clean,No EVA residue is allowed | Clean Surface | No defects |
| 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 | OK |
| | | Gel Content Test | | 75to 95% | As per spec | Pass |
| | | Visual Check after Lamination | 5 pieces per shift | Check Tape Removing Should be smooth and No visual bubble Should be found. | S.No: 10011, 10027, 10049, 10073, 10097 | OK |
| 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: 0.65mm deviation | Good |
| | | Trimming Blade life cycle | once per month | Worn out not allowed | Even Trim: 0.11mm deviation | OK |

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| 18 | 90° Visual Inspection | Visual Inspection | 5 pieces per shift | Post Lam Visual Inspection Criteria | S.No: 10016, 10026, 10042, 10043, 10048 | No defects |
| 19 | Framing | Glue uniformity & continuity in frame groove | 1 set per shift | Should be uniform, Back sealing should be proper | As per spec | Good |
| | | Short Side Glue Weight | once Per shift | Till as per Specification | Potting Weight: 20.2g | OK |
| | | Long Side Glue Weight | once Per shift | | Potting Weight: 18.38g | — |
| | | Anodizing Thickness | once Per shift | ≥15 micron | As per spec | Good |
| 20 | Junction Box Assembly | Junction Box(Connector Appearance & Cable Length) | once Per shift | As per Process Card & module drawing | JB Position: -0.17mm shift | As per spec |
| | | Silicon Glue Weight on the bottom (g) | once Per shift | 21±6 gm | Potting Weight: 19.64g | OK |
| | | Max Welding time | once Per shift | As per Specification | As per spec | OK |
| 21 | Auto JB Soldering | Soldering current | once per shift | As per Specification | As per spec | Pass |
| | | Soldering Quality | once per shift | Welding area should be fully covered & checked by twizzer, no yellowing allowed | As per spec | Pass |
| 22 | JB Potting | A/B Glue Ratio | once Per shift | As per Specification | As per spec | Pass |
| | | Potting material weight | once Per shift | 21±6 gm | EVA PLASTOMER | Confirmed |
| | | Nozzle Changing | once every 6h | Should be changed after 6 hours or when found issue of damage or extra amount dispensing. | As per spec | — |
| 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 | Clear |
| 24 | Curing | Temperature | once per shift | 25±3■ | Time: 08:00 - Temp: 23.21°C | Stable |
| | | Humidity | once per shift | ≤50% | Time: 08:00 - RH: 42% | OK |
| | | 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: 77.73% | OK |

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| 26 | Cleaning | Module should be free from Tape,Dust,Dirt,EVA/Backsheet residue,Corner Burrs,Glue residue on glass,backsheet,JB,Wire etc.) | 5 pieces per shift | Post Lam Visual Criteria | S.No: 10004, 10025, 10028, 10075, 10100 | Good |
| 27 | Flash Tester | Ambient Temp. | once per shift | 25±3■ | Time: 08:00 - Temp: 24.65°C | Good |
| | | Module Temp. | once per shift | 25±3■ | Time: 08:00 - Temp: 27.11°C | Pass |
| | | 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: 13.35A | Good |
| | | Validation | once every 4h | As per GSEN/QA/K/11 | As per spec | OK |
| | | Silver Reference Module I-V Check | once Two weeks | Should be same as original I-v picture | As per spec | OK |
| 28 | Hipot Test | DCW/IR/Ground continuity | 5 pieces per shift | ≤50µA , >40MΩ·m² , (0-100) mΩ | S.No: 10008, 10022, 10046, 10047, 10077 | — |
| 29 | Post EL Test | Verification of current configuration in DC power supply | once Shift | As per WI (GSPL/P/WI/027) | Pmax: 626.6W | Within spec |
| | | EL Inspection and Visual Inspection | 5 pieces per shift | Post EL Inspection Criteria, Post EL Visual Criteria | S.No: 10004, 10009, 10032, 10064, 10075 | Good |
| 30 | RFID | RFID Position | once per shift | As per Process card | Tilt: -0.72mm | Good |
| | | Cell & Module Make & Manufacturing Month Verification | once per shift | As per BOM and Process card | As per spec | No defects |
| 31 | Final Visual Inspection | Visual Inspection | 5 pieces per shift | Post Lam visual inspection criteria | S.No: 10019, 10050, 10061, 10084, 10086 | No defects |
| | | Re-label | 5 pieces per shift | No bubble,Tilt,Align,no folded label not acceptable | Tilt: 0.74mm | OK |
| 32 | Dimension measurement | L*W and Module Profile | once per shift | As per Module drawing (±1mm) | Refer Module Drawing | OK |
| | | Mounting Hole X & Y (H/L) | once Per shift | | As per spec | Acceptable |
| | | Diagonal Difference | once Per shift | ≤3mm | FF: 77.91% | Good |
| | | 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: 1183.7mm | As per spec |

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| | | Packaging Label | once Per shift | WI For Packaging | Tilt: -0.49mm | Pass |
| 33 | Packaging | Content in Box | once Per shift | | As per spec | OK |
| | | Box Condition | once Per shift | Damage,dull printing,wet boxes not allowed | As per spec | Pass |
| | | Wooden Pallet dimension | once Per shift | should not be less than module dimension | As per spec | Within tolerance |