



# TEST REPORT

**SGS-CSTC**  
**Standards Technical Services**  
**(Shanghai) Co., Ltd.**

No.588 West Jindu Road,  
Songjiang District,  
Shanghai, China

**Report reference no.** .....: SHES240400798671  
**Date of issue**.....: Aug.15, 2024  
**Total number of pages** .....: 16  
**Testing laboratory** .....: SGS-CSTC Standards Technical Services(Shanghai) Co., Ltd.  
**Address** .....: 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China  
**Applicant's name**.....: PROMOD ENERJİ A.Ş.  
**Address** .....: Kayseri O.S.B. Mah. 29. Cad. No.27 Melikgazi, KAYSERİ, Türkiye  
**Test specification** .....: IEC TS 62804-1:2015 PID test  
**Test item description** .....: Photovoltaic (PV) module(s)  
**Trade mark** .....:   
**Manufacturer**.....: PROMOD ENERJİ A.Ş.  
**Address** .....: Kayseri O.S.B. Mah. 29. Cad. No.27 Melikgazi, KAYSERİ, Türkiye  
**Factory**.....: PROMOD ENERJİ A.Ş.  
**Address** .....: Kayseri O.S.B. Mah. 29. Cad. No.27 Melikgazi, KAYSERİ, Türkiye  
**Model/Type reference** .....: PRD670-132MT  
**Ratings** .....: Refer to nameplate



Signature

Drafted by: Ricardo Xu



Signature

Approved by: Van Hua

### Summary of testing

Samples PRD670-132MT are selected and tested referring to IEC TS 62804-1-2015 stress in this test report. Details of test result are shown in this test report.

#### Tests performed (name of test and test clause):

IEC TS 62804-1:2015

#### Testing location:

Guoce Testing Technology (Suzhou) Co., Ltd.

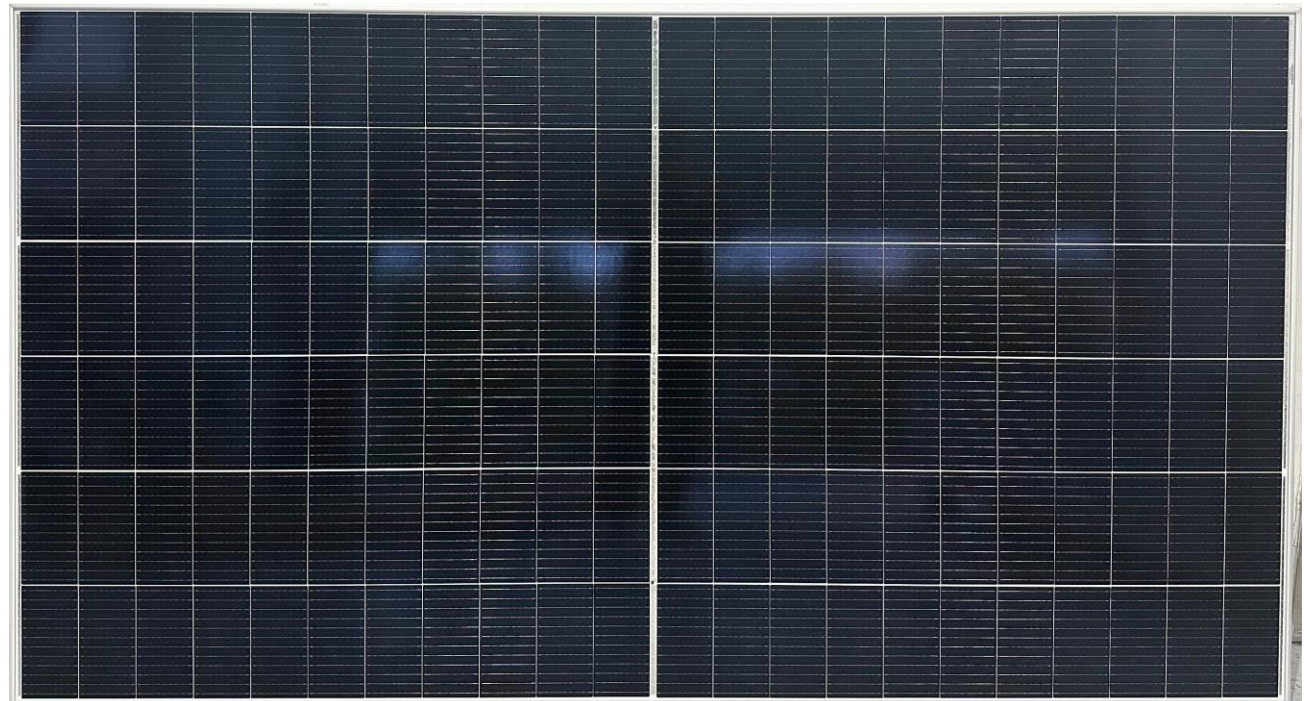
Building 11, No. 18, Yaofeng East Road, Mudu Town, Wuzhong District, Suzhou, Jiangsu, 215151, China

### Copy of marking plate / device under test:

Module Type: PRD670-132MT

|                                                                                                                                                                                                                          |  |                                       |        |                                                                                                                                                                                                                                                                                                                                                                 |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <div>PROMOD<br/>ENERJİ</div>                                                                                                                                                                                             |  | Rated Max. Power (Pmax)               | 670W   | Dimensions                                                                                                                                                                                                                                                                                                                                                      | 2384*1303*35 |
|                                                                                                                                                                                                                          |  | Voltage at Pmax                       | 38.48V | Weight                                                                                                                                                                                                                                                                                                                                                          | 34KG         |
| <div>Module type: PM66HC210BF</div> <div>STC: E=1000 W/m<sup>2</sup>,<br/>AM 1.5 Tc: 25°C.<br/>Power Sorting: 0 ~±4W</div> <div></div> |  | Current at Pmax                       | 17.42A | Safety class                                                                                                                                                                                                                                                                                                                                                    | Class II     |
|                                                                                                                                                                                                                          |  | Open-Circuit Voltage(Voc)             | 46.15V | Standards                                                                                                                                                                                                                                                                                                                                                       | IEC          |
|                                                                                                                                                                                                                          |  | Short-Circuit Current(Isc)            | 18.43A | <div></div> <div>WARNING:<br/>This module produces electricity when<br/>exposed the light. Follow all applicable<br/>electrical safety precautions</div>                                                                                                                   |              |
|                                                                                                                                                                                                                          |  | Maximum System Voltage                | 1500V  |                                                                                                                                                                                                                                                                                                                                                                 |              |
|                                                                                                                                                                                                                          |  | Maximum Overcurrent Protection Rating | 30A    |                                                                                                                                                                                                                                                                                                                                                                 |              |
| PROMODENERJİ ÜRETİM SA. VE TİC. A.Ş. Add: Kayseri OSB mah. 29. Cad. no:27 Melikgazi / Kayseri /TÜRKİYE www.promodenerji.com                                                                                              |  |                                       |        | <div></div> |              |
| MADE IN TURKEY                                                                                                                                                                                                           |  |                                       |        |                                                                                                                                                                                                                                                                                                                                                                 |              |

Marking plate of sample



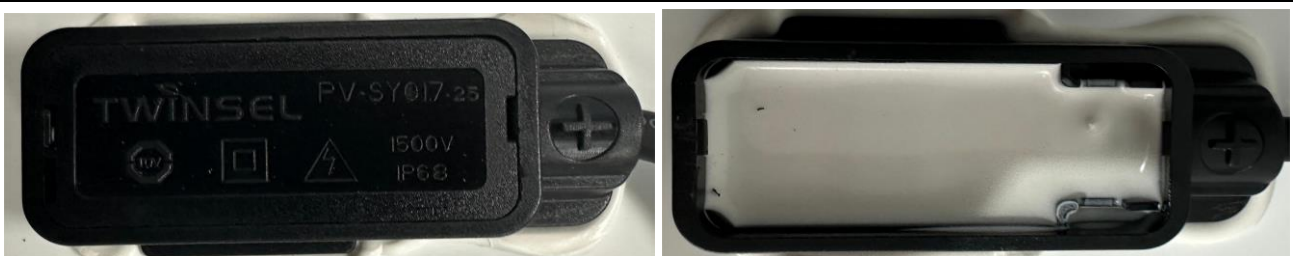
Front view of sample



Rear view of sample



View of connector



View of junction box



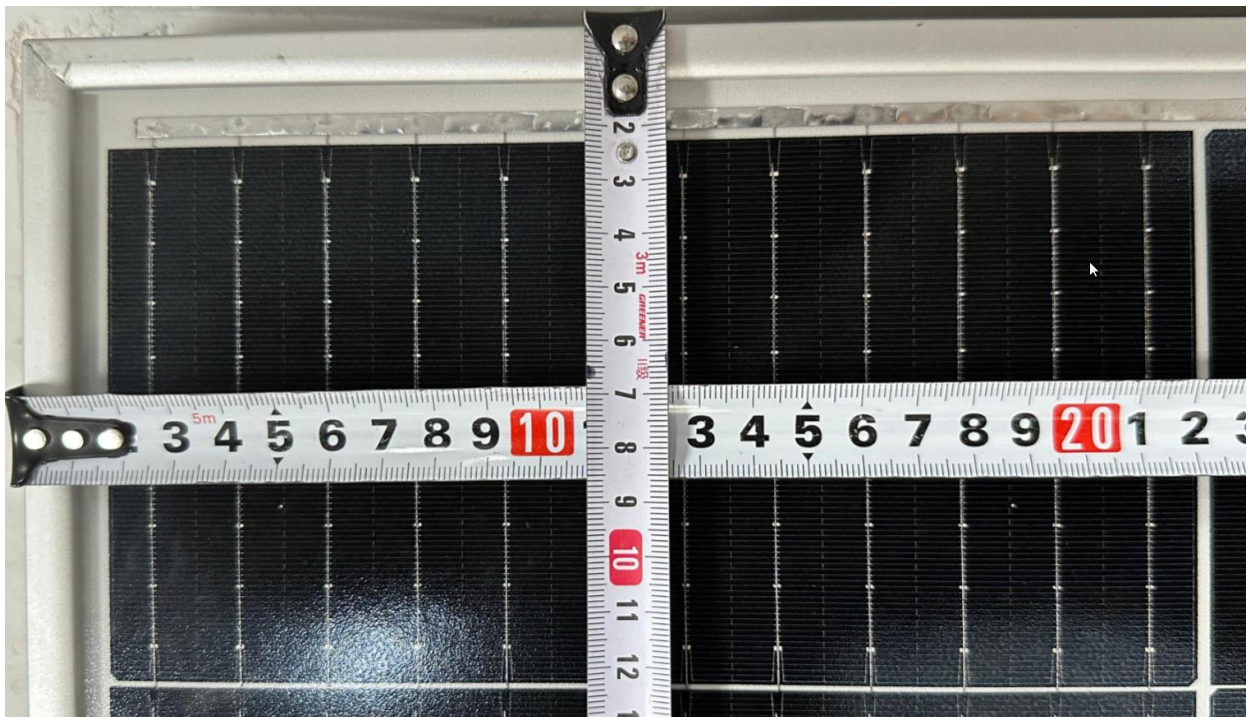
View of mounting holes



View of ground



View of frame



View of cell



View of cable

| Possible test case verdicts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| - Test case does not apply to the test object.....:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N/A      |
| - Test object does meet the requirement .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Pass (P) |
| - Test object does not meet the requirement .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fail (F) |
| General remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |
| <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>“(See Enclosure #)” refers to additional information appended to the report.</p> <p>“(See appended table)” refers to a table appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>List of test equipment must be kept on file and available for review.</p> <p>This document is issued by the company under its General Conditions of Service accessible at <a href="http://www.sgs.com/terms_and_conditions.htm">http://www.sgs.com/terms_and_conditions.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company’s findings at the time of its intervention only and within the limits of Client’s instructions, if any. The Company’s sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p> <p>Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 30 days. This document cannot be reproduced except in full, without prior approval of the company.</p> |          |
| General product information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |
| The product is photovoltaic (PV) module.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |

## 1. Test samples

| Sample # | Model        | Sample S/N     | Remark |
|----------|--------------|----------------|--------|
| 01       | PRD670-132MT | 482030I2611194 | PID    |
| 02       |              | 482101I2601499 |        |
| 03       |              | 482101I2601049 |        |
| 04       |              | 482030I2613395 |        |

## 2. Test specification and test result

| Initial Measurements         |                                                                     |   |
|------------------------------|---------------------------------------------------------------------|---|
| TABLE: 2.1                   | MQT 01 Visual inspection (Initial)                                  | P |
| Test Date [YYYY-MM-DD] ..... | 2024-05-31                                                          | — |
| Sample #                     | Nature and position of initial findings – comments or attach photos | — |
| 01                           | No major visual defects                                             | P |
| 02                           | No major visual defects                                             | P |
| 03                           | No major visual defects                                             | P |
| 04                           | No major visual defects                                             | P |

| TABLE: 2.2                           | MQT 06.1 Performance at STC (Initial) |         |         |         |         |        | — |
|--------------------------------------|---------------------------------------|---------|---------|---------|---------|--------|---|
| Test Date [YYYY-MM-DD] .....         | 2024-05-31                            |         |         |         |         |        | — |
| Module temperature [°C] .....        | Corrected to 25.0                     |         |         |         |         |        | — |
| Irradiance [W/m <sup>2</sup> ] ..... | Corrected to 1000                     |         |         |         |         |        | — |
| Sample #                             | Isc [A]                               | Voc [V] | Imp [A] | Vmp [V] | Pmp [W] | FF [%] |   |
| 01                                   | 18.39                                 | 46.23   | 16.56   | 39.93   | 661.2   | 79.77  |   |
| 02                                   | 18.34                                 | 46.17   | 16.57   | 39.84   | 660.0   | 79.94  |   |
| 03                                   | 18.38                                 | 46.13   | 16.58   | 39.79   | 659.8   | 79.83  |   |
| 04                                   | 18.28                                 | 46.17   | 16.65   | 39.83   | 663.3   | 79.59  |   |
| Supplementary information: /         |                                       |         |         |         |         |        |   |

| TABLE: 2.3                     | MQT 03 Insulation test (Initial) |          |                      |    | P      |
|--------------------------------|----------------------------------|----------|----------------------|----|--------|
| Test Date [YYYY-MM-DD] .....   | 2024-06-04                       |          |                      |    | —      |
| Test Voltage applied [V] ..... | 8000/1500                        |          |                      |    | —      |
| Sample #                       | Measured                         | Required | Dielectric breakdown |    | Result |
|                                | MΩ                               | MΩ       | Yes (description)    | No |        |
| 01                             | 23120                            | ≥12.86   | —                    | No | P      |
| 02                             | 27540                            | ≥12.86   | —                    | No | P      |

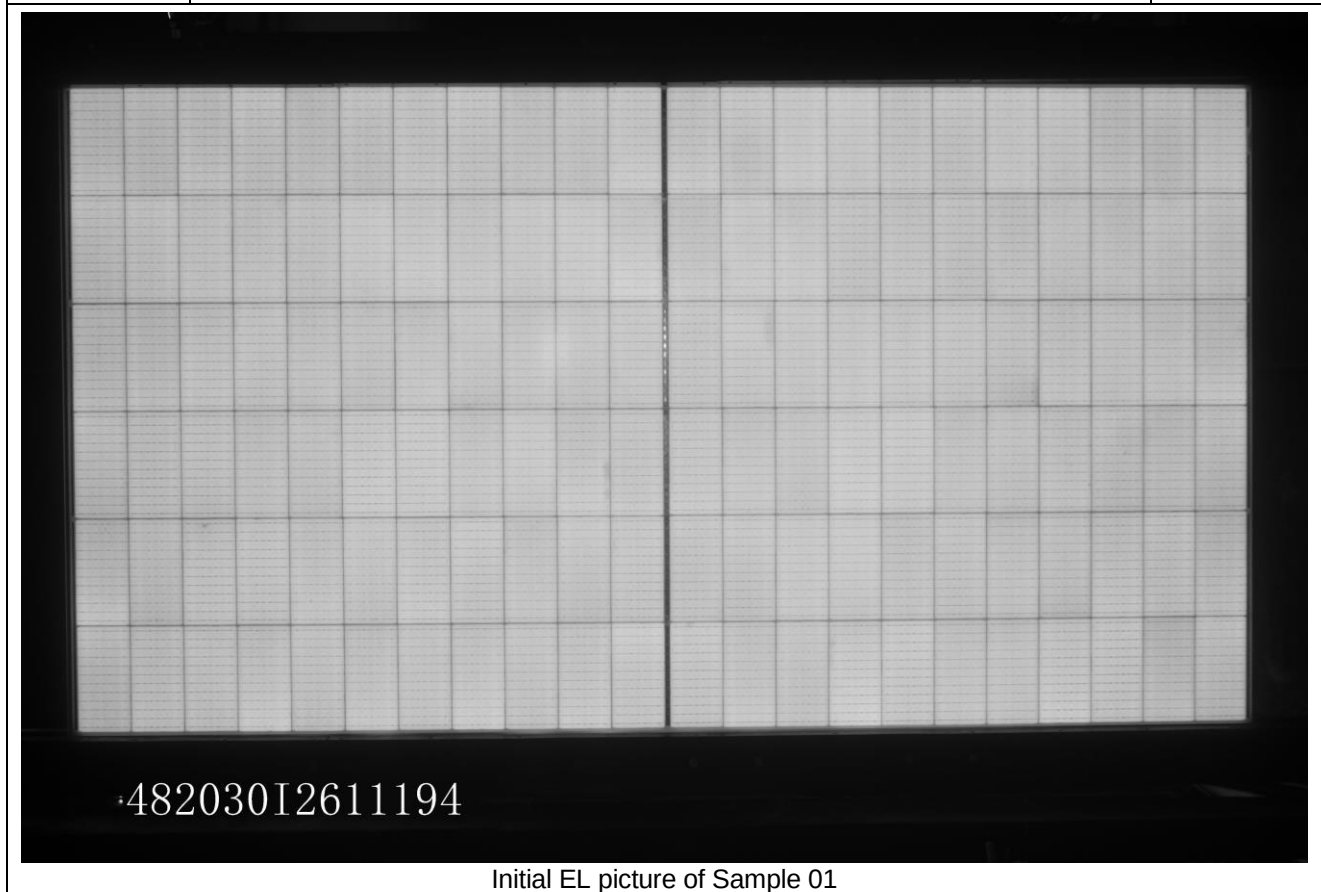
|                                                                  |       |              |   |    |   |
|------------------------------------------------------------------|-------|--------------|---|----|---|
| 03                                                               | 26610 | $\geq 12.86$ | — | No | P |
| 04                                                               | 24330 | $\geq 12.86$ | — | No | P |
| Supplementary information: Size of module [m <sup>2</sup> ] 3.11 |       |              |   |    |   |

| TABLE 2.4 MQT 15 Wet leakage current test (Initial)              |                        |                     | P      |
|------------------------------------------------------------------|------------------------|---------------------|--------|
| Test Date [YYYY-MM-DD] .....                                     |                        | 2024-06-04          | —      |
| Test Voltage applied [V] .....                                   |                        | 1500                | —      |
| Solution resistivity [ $\Omega$ cm] .....                        |                        | 2071                | P      |
| Solution temperature [°C] .....                                  |                        | 22.5                | P      |
| Sample #                                                         | Measured [ $M\Omega$ ] | Limit [ $M\Omega$ ] | Result |
| 01                                                               | 5806                   | $\geq 12.86$        | P      |
| 02                                                               | 4298                   | $\geq 12.86$        | P      |
| 03                                                               | 5640                   | $\geq 12.86$        | P      |
| 04                                                               | 6685                   | $\geq 12.86$        | P      |
| Supplementary information: Size of module [m <sup>2</sup> ] 3.11 |                        |                     |        |

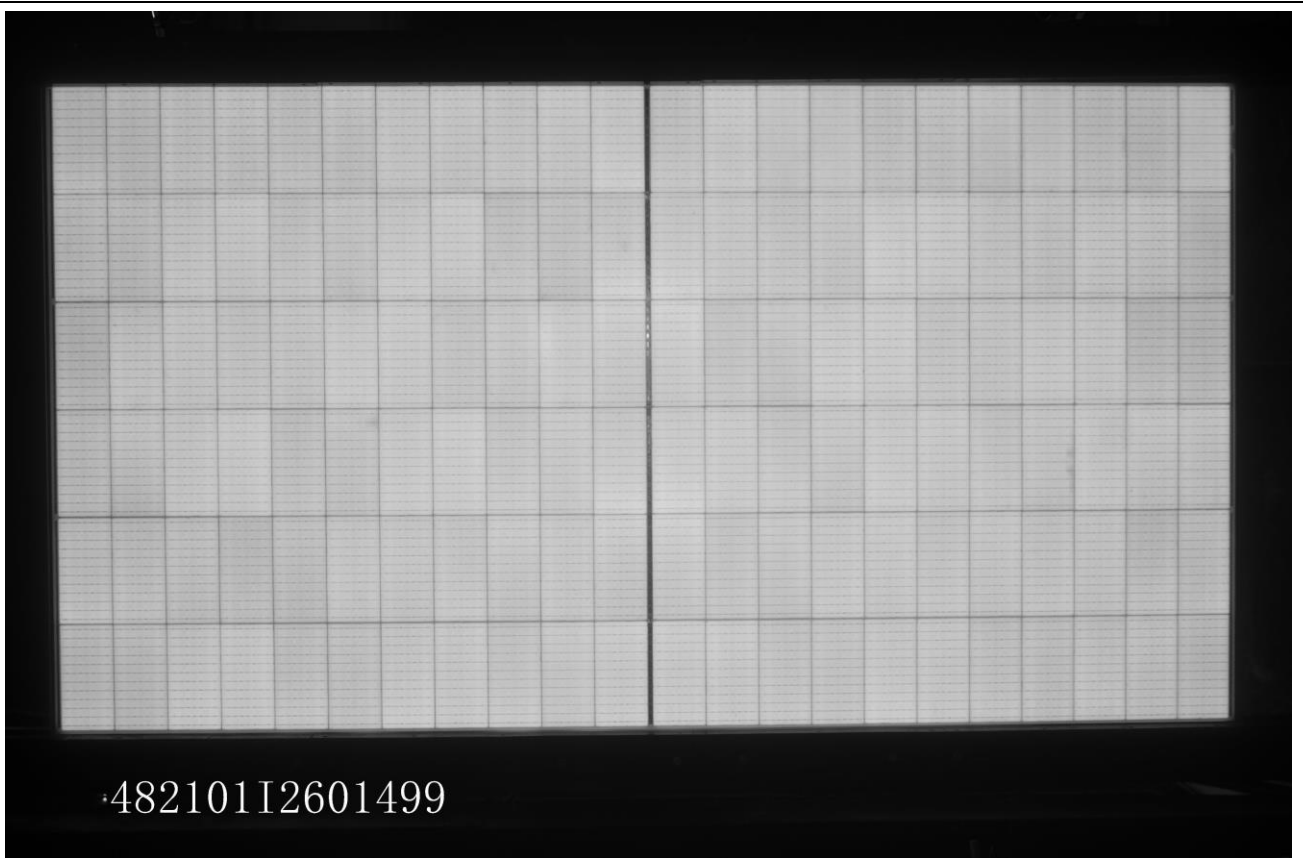
| TABLE 2.5                                    |             | MST 13 Ground continuity test (Initial)                                                                                                                                        |                | P       |
|----------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|
| Test Date [YYYY-MM-DD] ..... :               |             | 2024-06-04                                                                                                                                                                     |                | —       |
| Maximum over-current protection rating [A] : |             | 30                                                                                                                                                                             |                | —       |
| Current applied [A] .....:                   |             | 75                                                                                                                                                                             |                | —       |
| Location of designated grounding point....:  |             | The ground hole of one longer side                                                                                                                                             |                | —       |
| Another location of contacting point....:    |             | A:The ground hole of one longer side<br>B:Adjacent shorter side with greatest distar grounding point<br>C:Another Adjacent shorter side with greatest from the grounding point |                |         |
| Sample #                                     | Voltage (V) |                                                                                                                                                                                | Resistance (Ω) | Verdict |
| 01-A                                         | 0.0358      |                                                                                                                                                                                | 0.0005         | P       |
| 01-B                                         | 0.0302      |                                                                                                                                                                                | 0.0004         | P       |
| 01-C                                         | 0.0252      |                                                                                                                                                                                | 0.0003         | P       |
| 02-A                                         | 0.0369      |                                                                                                                                                                                | 0.0005         | P       |
| 02-B                                         | 0.0295      |                                                                                                                                                                                | 0.0004         | P       |
| 02-C                                         | 0.0239      |                                                                                                                                                                                | 0.0003         | P       |
| 03-A                                         | 0.0382      |                                                                                                                                                                                | 0.0005         | P       |
| 03-B                                         | 0.0316      |                                                                                                                                                                                | 0.0004         | P       |
| 03-C                                         | 0.0249      |                                                                                                                                                                                | 0.0003         | P       |
| 04-A                                         | 0.0386      |                                                                                                                                                                                | 0.0005         | P       |

|                                                     |        |        |   |
|-----------------------------------------------------|--------|--------|---|
| 04-B                                                | 0.0322 | 0.0004 | P |
| 04-C                                                | 0.0259 | 0.0003 | P |
| Supplementary information: Size of module [m²] 3.11 |        |        |   |

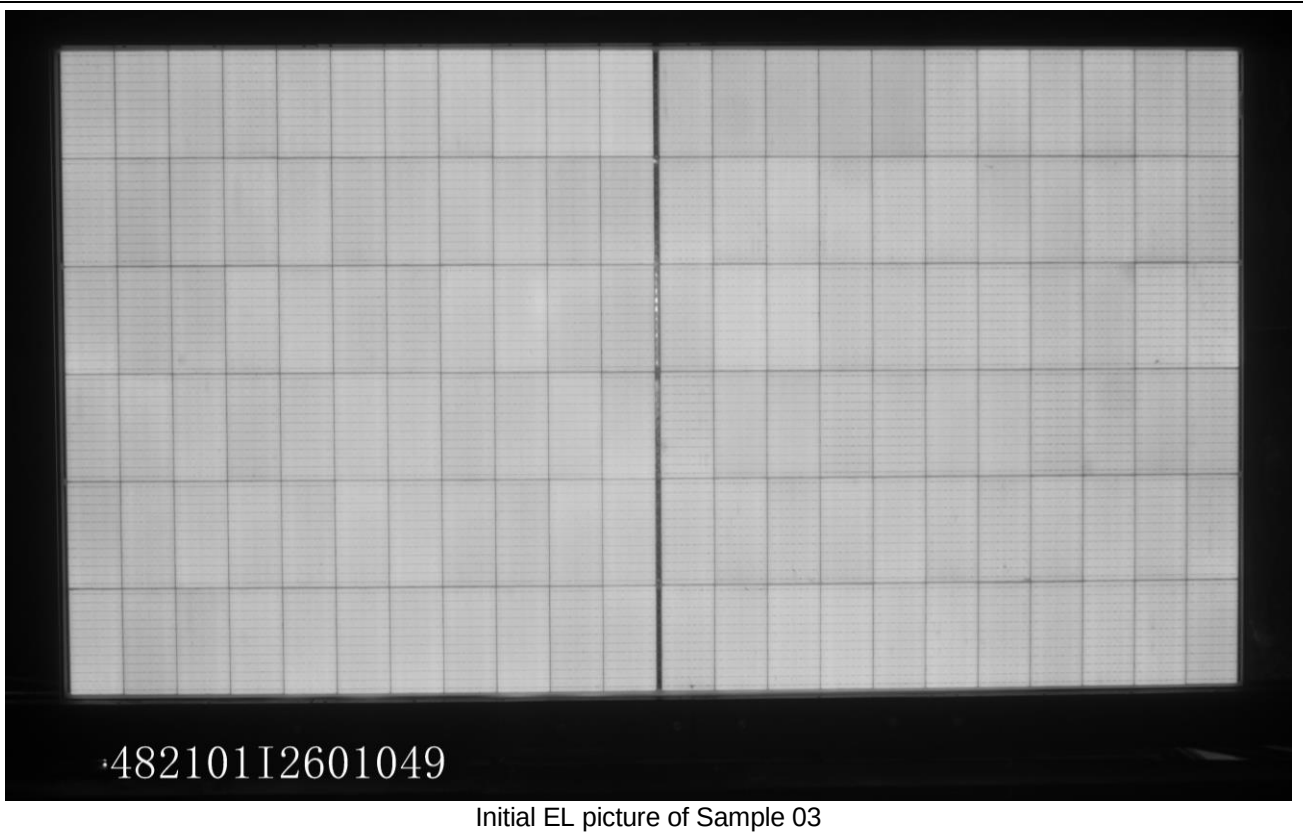
| TABLE 2.6                    | Electroluminescence test (Initial)                                  | —      |
|------------------------------|---------------------------------------------------------------------|--------|
| Test Date [MM/DD/YYYY] ..... | 2024-06-04                                                          | —      |
| Applied current [A] .....    | 18                                                                  | —      |
| Exposure time [s]            | 6                                                                   | —      |
| Sample No.                   | Nature and position of initial findings – comments or attach photos | Result |
| 01                           | No major visual defects                                             | —      |
| 02                           | No major visual defects                                             | —      |
| 03                           | No major visual defects                                             | —      |
| 04                           | No major visual defects                                             | —      |



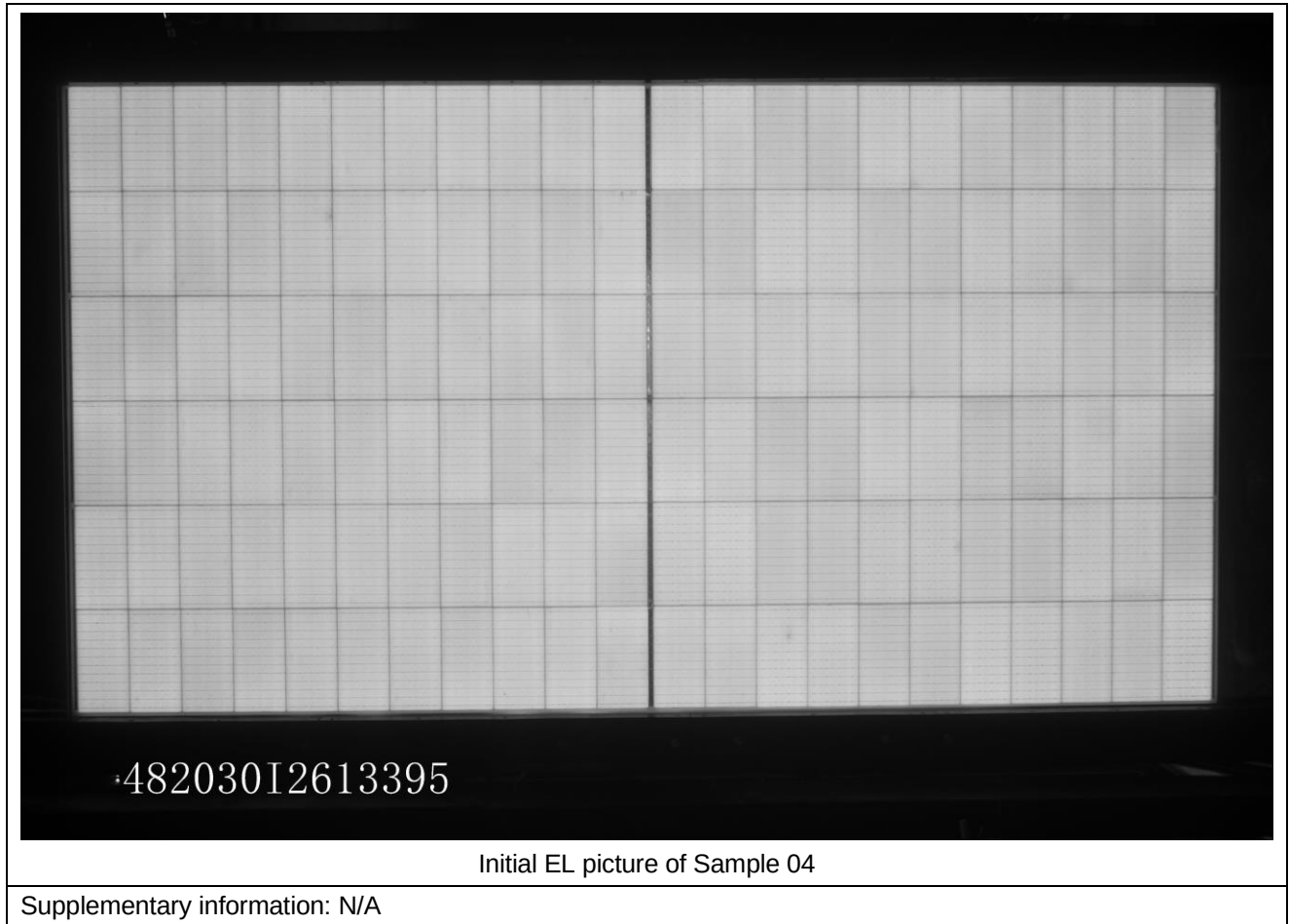
Initial EL picture of Sample 01



Initial EL picture of Sample 02



Initial EL picture of Sample 03



| TABLE 2.7 Potential-induced degradation (PID) stress test |                                     | —       |
|-----------------------------------------------------------|-------------------------------------|---------|
| Test Date [YYYY-MM-DD] start/end .....                    | 2024-06-04/2024-06-09               | —       |
| Temperature [°C].....                                     | 85                                  | —       |
| Humidity [%].....                                         | 85                                  | —       |
| Total hours [h] .....                                     | 96                                  | —       |
| Voltage [V].....                                          | 01, 02 (+1500V),<br>03, 04 (-1500V) | —       |
| Sample #                                                  | Open circuits (yes/no)              | Verdict |
| 01                                                        | No                                  | P       |
| 02                                                        | No                                  | P       |
| 03                                                        | No                                  | P       |
| 04                                                        | No                                  | P       |
| Supplementary information: /                              |                                     |         |

| TABLE 2.8                   | MQT 06.1 Maximum power determination (after PID test) | P |
|-----------------------------|-------------------------------------------------------|---|
| Test Date [YYYY-MM-DD]..... | 2024-06-09                                            | — |

|                                                                                                                        |         |         |                                                                                                |         |         |        |
|------------------------------------------------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------------------------|---------|---------|--------|
| Radiant source                                                                                                         |         |         | <input checked="" type="checkbox"/> Solar simulator, <input type="checkbox"/> Natural sunlight |         |         | —      |
| Module temperature [°C] .....                                                                                          |         |         | Corrected to 25.0                                                                              |         |         | —      |
| Irradiance [W/m <sup>2</sup> ] .....                                                                                   |         |         | Corrected to 1000                                                                              |         |         | —      |
| Sample #                                                                                                               | Voc [V] | Vmp [V] | Isc [A]                                                                                        | Imp [A] | Pmp [W] | FF [%] |
| 01                                                                                                                     | 18.16   | 45.91   | 16.34                                                                                          | 39.74   | 649.4   | 77.89  |
| 02                                                                                                                     | 18.12   | 45.87   | 16.32                                                                                          | 39.71   | 648.1   | 77.97  |
| 03                                                                                                                     | 18.09   | 45.83   | 16.23                                                                                          | 39.67   | 643.8   | 77.66  |
| 04                                                                                                                     | 18.06   | 45.79   | 16.31                                                                                          | 39.71   | 647.7   | 78.32  |
| Pmp degradation after this test [%]:<br>Sample 01: -1.78%; Sample 02: -1.80%.<br>Sample 03: -2.42%; Sample 04: -2.35%; |         |         |                                                                                                |         |         | P      |
| Supplementary information: /                                                                                           |         |         |                                                                                                |         |         |        |

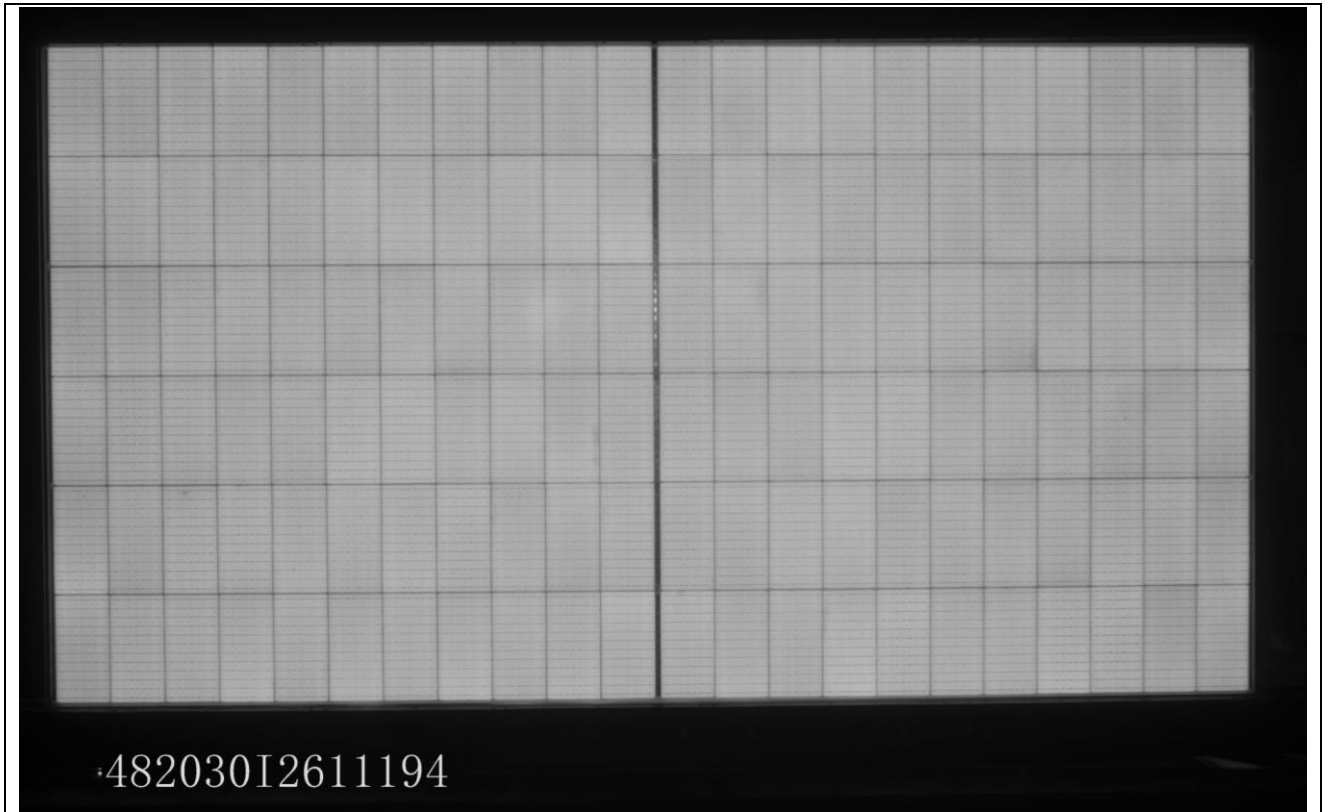
| TABLE 2.9                      | MQT 01 Visual inspection (after PID test)                           |            | P       |
|--------------------------------|---------------------------------------------------------------------|------------|---------|
| Test Date [YYYY-MM-DD] ..... : |                                                                     | 2024-06-09 | —       |
| Sample #                       | Nature and position of initial findings – comments or attach photos |            | Verdict |
| 01                             | No visual defects                                                   |            | P       |
| 02                             | No visual defects                                                   |            | P       |
| 03                             | No visual defects                                                   |            | P       |
| 04                             | No visual defects                                                   |            | P       |
| Supplementary information: /   |                                                                     |            |         |

| TABLE 2.10                        | MQT 15 Wet leakage current test (after PID test) |               |            | P      |
|-----------------------------------|--------------------------------------------------|---------------|------------|--------|
| Test Date [YYYY-MM-DD] .....      |                                                  | 2024-06-09    |            | —      |
| Test Voltage applied [V] .....    |                                                  | 1500          |            | —      |
| Solution resistivity [Ω cm] ..... |                                                  | 2071          |            | —      |
| Solution temperature [°C] .....   |                                                  | 22.3          |            | —      |
| Sample #                          | Area                                             | Measured [MΩ] | Limit [MΩ] | Result |
| 01                                | 3.11                                             | ≥12.86        | 5789       | P      |
| 02                                | 3.11                                             | ≥12.86        | 7716       | P      |
| 03                                | 3.11                                             | ≥12.86        | 8949       | P      |
| 04                                | 3.11                                             | ≥12.86        | 6762       | P      |
| Supplementary information: /      |                                                  |               |            |        |

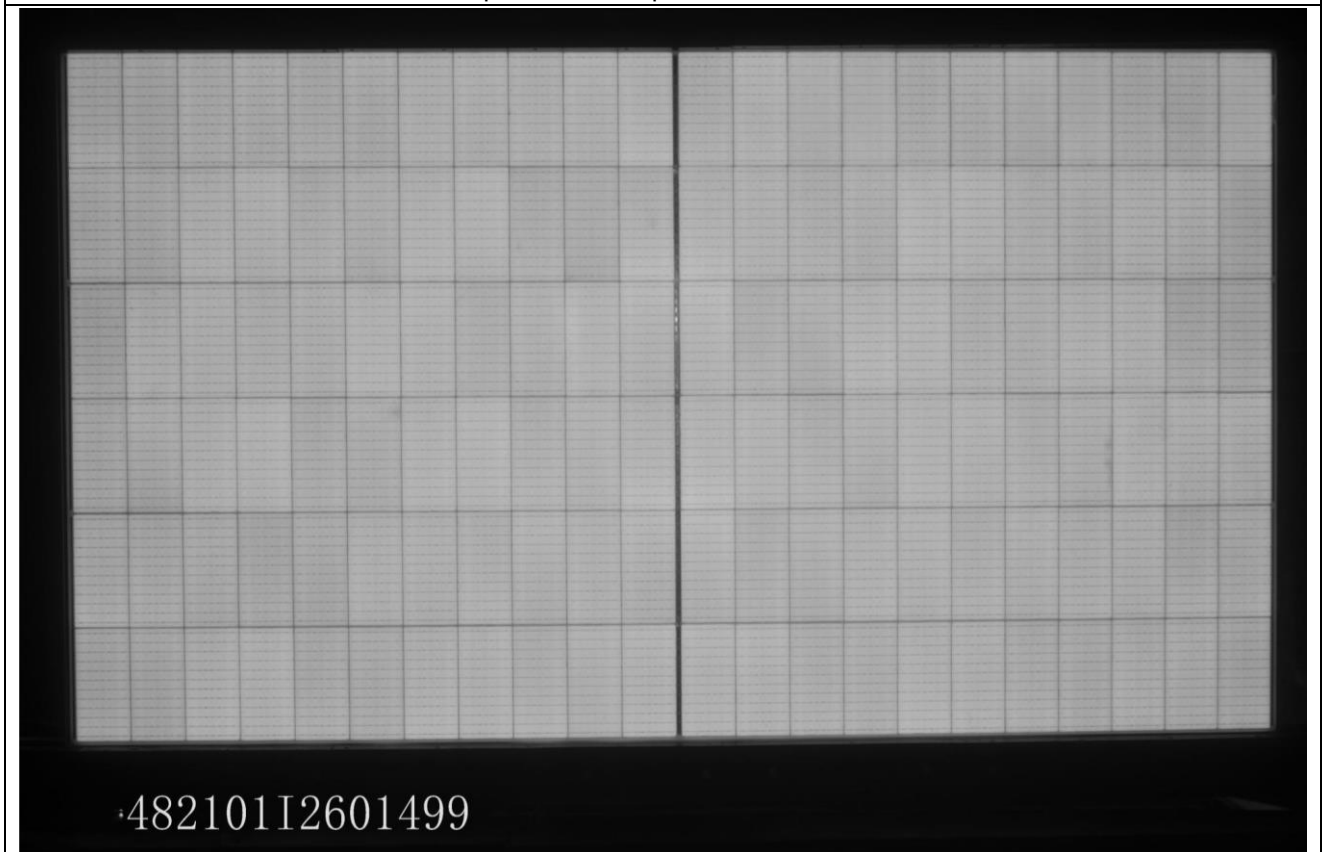
| TABLE 2.11                   | MST 13 Ground continuity test (after PID test) |            | P |
|------------------------------|------------------------------------------------|------------|---|
| Test Date [YYYY-MM-DD] ..... |                                                | 2024-06-09 | — |

|                                                                             |             |                                                                                                         |         |
|-----------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------|---------|
| Maximum over-current protection rating [A]                                  |             | 30                                                                                                      | —       |
| Current applied (A) .....                                                   |             | 75                                                                                                      | —       |
| Location of designated grounding point...:                                  |             | The ground hole of one longer side                                                                      | —       |
| Another location of contacting point<br>(Maximum resistance measured).....: |             | A:The ground hole of one longer side<br>B:Adjacent shorter side with greatest distar<br>grounding point | —       |
| Sample #                                                                    | Voltage (V) | Resistance (Ω)                                                                                          | Verdict |
| 01-A                                                                        | 0.0374      | 0.0005                                                                                                  | P       |
| 01-B                                                                        | 0.0321      | 0.0004                                                                                                  | P       |
| 01-C                                                                        | 0.0247      | 0.0003                                                                                                  | P       |
| 02-A                                                                        | 0.0381      | 0.0005                                                                                                  | P       |
| 02-B                                                                        | 0.0326      | 0.0004                                                                                                  | P       |
| 02-C                                                                        | 0.0252      | 0.0003                                                                                                  | P       |
| 03-A                                                                        | 0.0384      | 0.0005                                                                                                  | P       |
| 03-B                                                                        | 0.0322      | 0.0004                                                                                                  | P       |
| 03-C                                                                        | 0.0256      | 0.0003                                                                                                  | P       |
| 04-A                                                                        | 0.0378      | 0.0005                                                                                                  | P       |
| 04-B                                                                        | 0.0321      | 0.0004                                                                                                  | P       |
| 04-C                                                                        | 0.0248      | 0.0003                                                                                                  | P       |
| Supplementary information: /                                                |             |                                                                                                         |         |

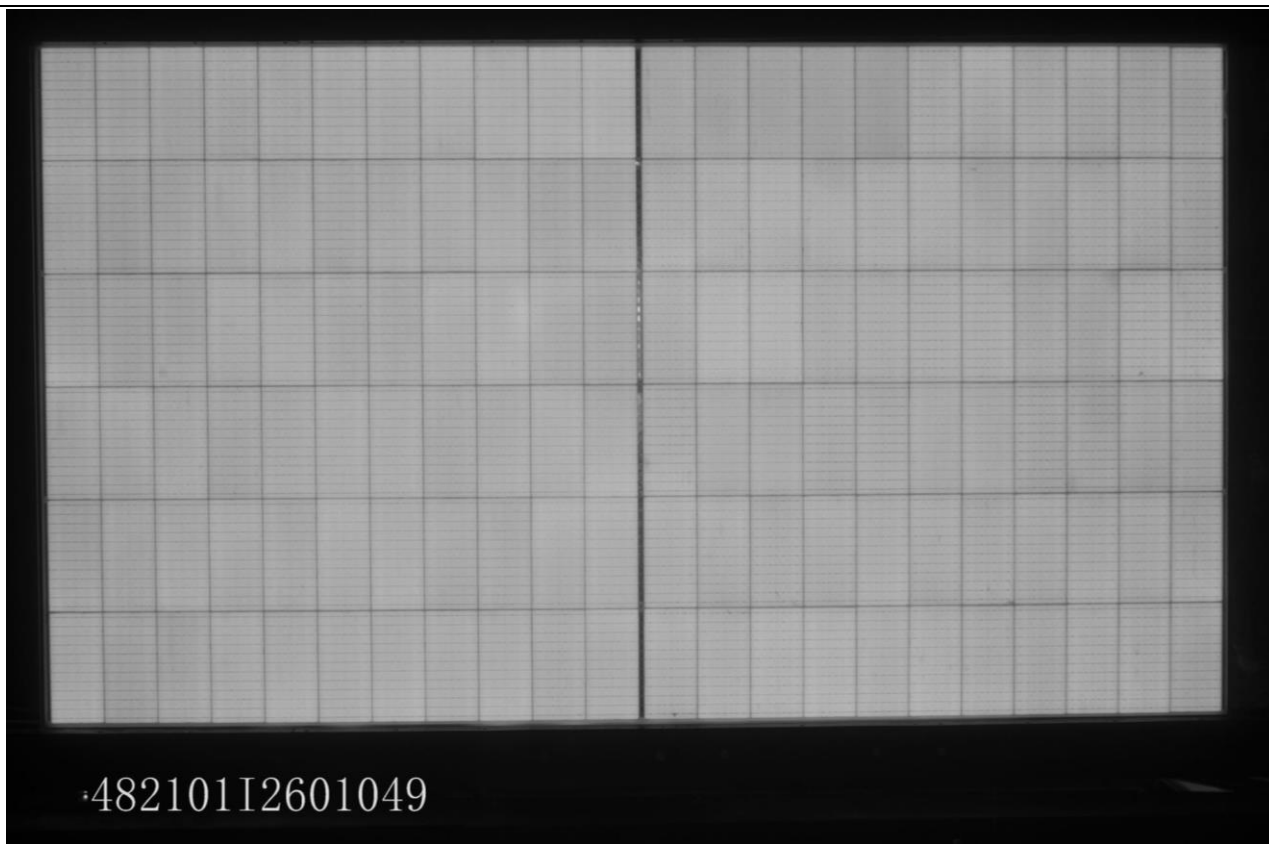
| TABLE 2.12 Electroluminescence measurement after PID test |                                                                     |        |
|-----------------------------------------------------------|---------------------------------------------------------------------|--------|
| Test Date [YYYY-MM-DD].....:                              | 2024-06-09                                                          | —      |
| Applied current [A].....:                                 | 18                                                                  | —      |
| Exposure time [s].....:                                   | 6                                                                   | —      |
| Sample #                                                  | Nature and position of initial findings – comments or attach photos | Result |
| 01                                                        | No major visual defects.                                            | P      |
| 02                                                        | No major visual defects.                                            | P      |
| 03                                                        | No major visual defects.                                            | P      |
| 04                                                        | No major visual defects.                                            | P      |
| Supplementary information: EL pictures                    |                                                                     |        |



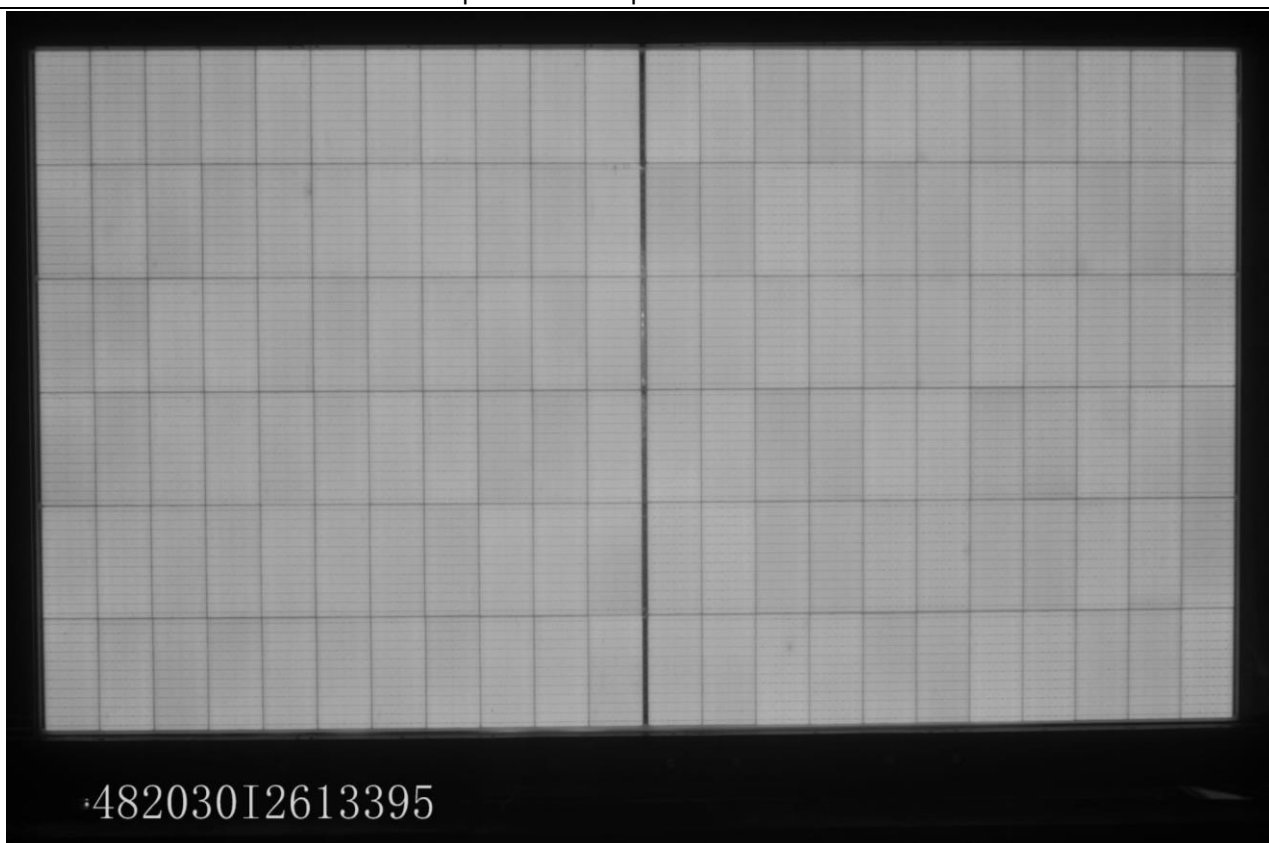
EL picture of Sample 01 after PID test



EL picture of Sample 02 after PID test



EL picture of Sample 03 after PID test



EL picture of Sample 04 after PID test

### 3. List of measurement equipments

| No. | Test Item                   | Equipment                      | Code          | Calibration Expire Date |
|-----|-----------------------------|--------------------------------|---------------|-------------------------|
| 1   | Visual inspection           | Luminometer                    | GCYQ-AG-15    | 2025-01-31              |
|     |                             | tape measure                   | GCYQ-AG-43/44 | 2024-08-23              |
| 2   | Maximum power determination | Pulsed Solar Simulator         | GCYQ-HJ-22    | 2024-08-22              |
|     |                             | Standard components            | GCTC-BZJ-004  | 2024-09-17              |
|     |                             | Temperature and humidity meter | GCYQ-AG-32-1  | 2024-08-20              |
| 3   | Insulation test             | Withstanding voltage/          | GCYQ-AG-18    | 2024-08-17              |
|     |                             | Temperature and humidity meter | GCYQ-AG-32-4  | 2024-08-20              |
| 4   | Wet leakage current test    | Withstanding voltage/          | GCYQ-AG-18    | 2024-08-17              |
|     |                             | Conductive meter               | GCYQ-AG-07    | 2024-11-22              |
| 5   | PID test                    | PID tester                     | GCYQ-AG-19    | 2024-09-01              |
| 6   | Ground continuity test      | DC power supply                | GCYQ-AG-23    | 2024-08-22              |
| 7   | Electroluminescence test    | EL test system                 | GCYQ-HJ-23    | 2024-08-01              |

### 4. Statement of the estimated uncertainty of the test results

The estimated uncertainty fulfils the requirements from the IEC GUIDE 115.

Uncertainty: I<sub>sc</sub> :1.0%; V<sub>oc</sub>: 2.4%; P<sub>max</sub>: 2.6% (K=2)

----- End of Test Report -----