



# Confirmation of Test Result

IEC 62716:2013

Ammonia corrosion testing of photovoltaic (PV) modules

**Ref.:** 2022- 40079

**Applicant:** SOLARWATT GmbH, Maria-Reiche-Str. 2a, 01109 Dresden

**Manufacturer:** SOLARWATT GmbH, Maria-Reiche-Str. 2a, 01109 Dresden

**Product:** **Crystalline silicon Photovoltaic (PV)-Modules**

**Standard:** IEC 62716:2013, Ammonia corrosion test

**Type:** Change of type designation due to marketing reasons

|  |   |
|--|---|
| Panel vision GM 3.0 (xxx Wp) pure                  | Panel vision GM 3.0 (xxx Wp) pure, light      |
| Panel vision GM 3.0 (xxx Wp) pure, low carbon      | Panel vision GM 3.0 (xxx Wp) pure, HV         |
| Panel vision GM 3.0 (xxx Wp) style                 | Panel vision GM 3.0 (xxx Wp) style, light     |
| Panel vision GM 3.0 (xxx Wp) style, low carbon     | Panel vision GM 3.0 (xxx Wp) style, HV        |
| Panel vision GM 3.0 (xxx Wp) construct             | Panel vision GM 3.0 (xxx Wp) construct, light |
| Panel vision GM 3.0 (xxx Wp) construct, low carbon | Panel vision GM 3.0 (xxx Wp) construct, HV    |
| Panel vision GM 3.0 (xxx Wp) black                 |   |
| Panel vision GM 3.0 (xxx Wp) black, low carbon     |   |
| Panel vision GM 3.0 (xxx Wp) black, light          |   |
| Panel vision GM 3.0 (xxx Wp) black, HV             |   |

## Test conditions

|                             |       |
|-----------------------------|-------|
| Hours including heating up: | 8 h   |
| NH3 -concentration (ppm):   | 6667  |
| Chamber temperature:        | 60°C  |
| Relative Humidity:          | 100 % |
| Hours including cooling:    | 16 h  |
| NH3 -concentration (ppm):   | 0     |
| Chamber temperature:        | 23°C  |
| Relative Humidity:          | 75 %  |
| Number of Cycles:           | 20    |
| Total exposure:             | 480 h |

## Pass criteria

|                             |                                      |
|-----------------------------|--------------------------------------|
| Power degradation:          | < 5 %                                |
| Dry Insulation:             | > 40 MΩm <sup>2</sup>                |
| Wet insulation:             | > 40 MΩm <sup>2</sup>                |
| Ground continuity:          | < 0.1 Ω                              |
| Visual Inspection:          | No findings which may affect safety. |
| Bypass diode functionality: | Shall be functional after test.      |



**Summary of test results:**

|                                   |          |             |
|-----------------------------------|----------|-------------|
| <b>Maximum power degradation:</b> | required | max. 5 %    |
|                                   | measured | max. 1,33 % |

The measured degradation is below the allowed degradation.

|                                   |          |                 |
|-----------------------------------|----------|-----------------|
| <b>Dry insulation resistance:</b> | required | 21,4 M $\Omega$ |
|                                   | measured | >276 M $\Omega$ |

The measured dry insulation resistance is above min. required dry insulation resistance.

|                                   |          |                 |
|-----------------------------------|----------|-----------------|
| <b>Wet insulation resistance:</b> | required | 21,4 M $\Omega$ |
|                                   | measured | >276 M $\Omega$ |

The measured wet insulation resistance is above min. required wet insulation resistance.

|                           |             |
|---------------------------|-------------|
| <b>Visual inspection:</b> | No findings |
|---------------------------|-------------|

|                                |          |                     |
|--------------------------------|----------|---------------------|
| <b>Ground continuity test:</b> | required | max. 0,1 $\Omega$   |
|                                | measured | max. 0,004 $\Omega$ |

The measured resistance is below the max. allowed resistance.

**Bypass diode functionality test:** Still functional after test

The complete test results and the relevant bill of materials are given in Test Report No.: TRPVM-2021-40202-1

VDE Renewables GmbH

  
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