

## Overview of IEC 62108 resp. EN 62108 tests

Code	Qualification Test	Test Conditions
10.1	Visual Inspection	according defined inspection list
10.2.2	Electrical Performance(EP) Outdoor side-by-side	Clear Sky; DNI > 700W/m <sup>2</sup> with variation < 2% in any 5min interval, Wind speed < 6m/s, no gust > 10m/s 10 min before any measurement
10.2.3	EP-Solar Simulator	Relative measurement only
10.2.4	EP-Dark I-V Measurement	10 points at generated current of 0,9 to 1,6 times of I <sub>sc</sub>
10.3	Ground Path Continuity Test	Resistance < 0,1 Ω between marked grounding point and frame points in distance at a current that equals 2,5 times the maximum over-current protection rating of the module (for a minimum of 2 minutes)
10.4	Electrical Insulation Test	1000 VDC + twice the open circuit voltage of the system at STC for 2 min, reduce voltage to 500V for 2min
10.5	Wet Insulation Test	Evaluation of insulation of the module under wet conditions; 500V for 2min
10.6	Thermal Cycling Test	200(100/400) and 1000(500/2000) cycles -40°C to +85(110/65)°C
10.7	Damp Heat Test	1000(2000) h at +85(65)°C, 85% RH
10.8	Humidity Freeze Test	20(40) cycles -40°C to +85(65)°C, 85% RH
10.9	Hail Impact Test	25.4 mm diameter ice ball at 22.4 m/s, directed at 11 impact locations
10.10	Water Spray Test	Exposed to water for 1 h in 4 positions, 45° to the horizontal, stow position, normal limit of tracking, upside down
10.11	Bypass diode thermal test	Asses adequacy of thermal design of by-pass diodes at a current of 1.25 x I <sub>sc</sub> running through the diodes at module temperature of 75°C
10.12	Robustness of Terminations Test	As in IEC 60068-2-21 defined
10.13	Mechanical Load Test	Three cycles of 2400 Pa uniform load, applied for 1 h to front and back surfaces in turn
10.14	Off-Axis Beam Damage Test	Suspect location for 15 min at DNI>800W/m <sup>2</sup> , or stop tracking for 3h
10.15	UV-conditioning Test	Min.50 kWh/m <sup>2</sup> UV-radiation below 400 nm with DNI>600W/m <sup>2</sup> (at 60°C module temperature for duration of the indoor test)
10.16	Outdoor Exposure Test	Calculated DNI of 1000 kWh/m <sup>2</sup> with DNI>600W/m <sup>2</sup>
10.17	Hot-Spot Endurance Test	As in IEC 612515:2005 5 hour exposure to > 700 W/m <sup>2</sup> irradiance in worst-case hot-spot condition