NORTHERN TERRITORY OF AUSTRALIA

CERTIFICATE OF COMPLIANCE - STRUCTURAL DESIGN

Solaredge
Tokyo Office : 1-9-4, Nihonbashi-Honcho, Chuo-ku.

Attention: Daniel Huber
Documents Attached: Appendix A – Panel Data Sheet.

22nd January 2019

RE: Wind Pressure Testing of Solaredge Solar Crystalline Silicon Photovoltaic (PV) Modules. Type SPV300-60MMJ.

Dear Sir,

This Certificate of Compliance verifies that the Solaredge Solar Module (SPV300-60MMJ) is capable of withstanding design wind loads and rail configuration as specified in Table 1.

Rapid Engineering NT were engaged by Solaredge to carry out and witness two static simulated wind load strength test for the above-mentioned solar panel module. The test procedure followed was similar to the method as outlined in AS4040.2:1992 – Static Strength Test Regime. The test static load test was conducted by Simon Andropov and witnessed by Chris Gillard from this office on the 17th of January in Darwin, Northern Territory.

The test module was mounted on an air-bag test rig front side up. The size of the module was measured as 992x1650x40mm deep. The fixing of the module was fixed using the Clenergy mounting brackets and rails. The rail spacings and fixings were 800mm & 1200mm apart using only 2 rails. An air bag was used to apply a constant pressure to the underside of the test module.

The load was applied by increasing the air pressure of the air bag in increments of 1 kPa. The pressure in the air bag was measured by using a manometer calibrated to 9.81 mm equal to 1.0 kPa. The mid span vertical deflection of the test module panel was measured using a digital deflection meter. The air pressure was increased in increments and held constant for a period of one minute and the deflection recorded. This air pressure is increased until failure of the system is achieved, or the required design value is achieved. The electrical continuity of the panel was not measured during the test. The behavior of the module and supporting fixtures were observed and recorded. Photographs were taken, the maximum deflection and pressure were also recorded.

The maximum design pressures that were adopted were 10kPa for Region C. These figures were chosen to allow the modules to be installed on buildings up to 15m in height subject to the variability factor. The applied factor of variability in accordance with AS 1170.0 Table B1 for a single test specimen is 1.46 adopting a coefficient of variation of structural characteristics of 10%.

Test no.1:
The module was positioned in the test rig with 2 rails 800mm apart and the module sustained a 10kPa design test pressure; however due the excessive deflection of the panel of up to 69mm the fixing between the hold down clamp and panel was about to give way and therefore the test was terminated.

Test no.2:
The module was positioned in the test rig with 2 rails 1200mm apart and the module sustained a 10kPa design test pressure; however, once the pressure was increased to 11kPa the polycarbonate protective glazing sepearted from the supporting frame and then scattered. Deflections of up to 52mm were recorded in the polycarbonate protective glazing were recorded.

Please refer to Table 1 below for recommended Ultimate Limit State Design Capacity.

Table1.

Test	Panel Type & Size (1960x992x40mm)	Support Points (mm)	Max. Applied Load (kPa)	Material Variability Factor AS/NZS 1170.0 Tb B1 – kt	Recommended Limit State Design Capacity (kPa)
No.1	**Solaredge SPV300-60MMJ**	800	10.0	1.46	6.85
No.2	**Solaredge SPV300-60MMJ**	1200	10.0	1.46	6.85

The recommended Ultimate Strength Limit State design capacities of the Solaredge SPV300-60MMJ solar module are summarized in Table 1. We hereby certify that the Solaredge SPV300-60MMJ solar module can resist design wind pressures with support conditions as listed in Table 1. It is our opinion that the same wind pressures can be resisted with support points at 900 & 1000mm.

This certificate excludes the module fixing clamps, the support rail or fixing to the roof as this may limit the maximum design wind pressure.

CERTIFICATION BY STRUCTURAL ENGINEER

Company Name if certification is on behalf of a company			**Company NT Registration Number**
Gillard Engineering Services Pty Ltd T/A Rapid Engineering NT			245638ES
I certify that reasonable care has been taken to ensure that the structural engineering aspects of the works as described above have been designed in accordance with the requirements of the Building Code of Australia and the Northern Territory Building Regulations.			
*** Name** (print clearly) **Chris Gillard** Nominee for Gillard Engineering Services Pty Ltd	*** Nominee/Individual NT Registration Number** 193976ES	**Signature**	**Date** **22/01/2019**

Should you require any further information in relation to this report please contact this office.

Regards,

Chris Gillard

Senior Structural Engineer

Rapid Engineering NT.