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Our Ref: 7073/AA

20 June 2019

XIAMEN GRACE SOLAR TECHNOLOGY CO.LTD.
(BYMEA Group) Building C/D, Vanke Yunxi
Huli Dist, Xiamen Shanghai
China

PV Array Frame Engineering Certification

Installation of Gracs Solar Roof Mount Flush Array Frame System - GS-SR-L Rail

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Tin and Tile Roof Mount Flush Array Frame System installation within Australia. The design check has been based on the information and test reports provided by XIAMEN GRACE SOLAR TECHNOLOGY Co. Ltd.

Components of the system covered in this certificate shown in the table below:

Component	Part No
GS-SR-L Rail	GS-SR-L
Aluminum Tin interface 80x40x40x7	GS-IK-LD05
Stainless Steel Hook 1#	GS-IK-01
Inter Clamp Kit 40mm	GS-IC-F40
End Clamp Kit 35/40/46mm	GS-EC-F35/40/46

This certificate is only valid for the Tin & Tile roof, Grace Solar Flush Solar Roof Mounted system with GS-SR-L Rail. The roof structure or the building structure shall be assessed separately and accordingly.

This certificate is only valid when fixing into minimum 1.9mm thick steel purlin or JD4 seasoned timber. If the fixing condition is different from this conditions, interface spacing shall be reviewed and validated.

This certificate is only valid when the roof zone definition falls into D6 of AS1170.2-2011(R2016).

This certificate is only valid as a whole. Any information extracted from this certificate is not valid if standing alone.

We find the Installation of Grace Solar Tin & Tile Roof Mount Flush Array Frame System with GS-SR-L Rail for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZS1170.2:2011 (R2016)
- Wind region A, B, C, D
- Wind terrain category 2 & 3
- Wind average recurrence interval of 200 years
- Maximum building height 20m

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- The PV panel dimensions to be 1670mmx1000mm (60 cells) or 1960mmx1000mm (72 cells)
- Maximum weight of the PV panel and array frame to be 15 kg/m^2
- Rails to be GS-SR-L Rail minimum continuous spanning 2 spans
- No PV panel to be installed within 2xs from edges and ridge. "s" is the maximum gap between the underside of the panel and the roof surface when installed on the roof (50mm≤s≤300mm)
- Material of array frame members to be AL/6005-T5 UNO
- Each PV panel to be installed using 2 rails minimum in all circumstances
- Installation of PV array to be done in accordance with the PV installation manual
- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing (Unit: mm)

NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame and the array frame fixing to the roof, not the roof structure and PV panel. It is the responsibility of the installer to adopt the most critical spacing.**
- **Tile hook uplift capacity has been based on test report No. 291-050 dated 18 November 2013 by Building Research Establishment Ltd.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed by **Ali Askari** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles.

This certification is applicable for Grace Solar Tin & Tile Roof Mount Flush System with components as specified in this letter and is only valid till 20/06/2021. Gamcorp should be contacted for future validation. Contact Gamcorp for customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd

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