Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
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35 Butler Street, Richmond VIC 3121 Tel: 03 9543 2211

Our Ref: 9981-03-05(RE8726 -02-02)/JD
4 July 2021

Tradezone Pty Ltd (Brand Name: Powerwave)
PO Box 3137, Helensvale
QLD 4212

PV Array Frame Engineering Certification

RE: AS/NZ 1170.2 Certification for Tilt Mounted System on Lysaght Klip Lok 406 (Concealed Fix Roof)

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Tilt Mounted System on Lysaght Klip Lok 406(Concealed Fix Roof) within Australia. The design check is based on the information and test reports provided by Tradezone Pty Ltd.

This certificate is **only valid** for Tilt Mounted System on Lysaght Klip Lok 406 (Concealed Fix Roof) itself. The roof structure or the building structure and PV panels shall be assessed separately and accordingly.

This certificate is **only valid** when roof clamp fixing to the **full rib** of roof sheeting on the top of the purlins. If the fixing condition is different from those conditions, interface spacing shall be reviewed and validated.

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 Tilt Mounted System on Lysaght Klip Lok 406 (Concealed Fix Roof) for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011(R2016) Wind actions
- Wind region **A, B, C, D**
- Wind terrain category **2 & 3**
- Wind average recurrence interval of **200 years**
- Maximum building height **20m**
- The maximum assessed PV panel dimensions are **1670mm x 1000mm, 1970mm x 1000mm, 2100mm x 1050mm, 2200mm x 1200mm, 2400mm x 1200mm**
- Weight of the PV panel and array frame to be 15 kg/m^2
- Rails to be **MA Rails**
- Roof clamp to be **Mibet Roof Clamp multi-functional 406**
- Material of Rails to be **AL6005-T5** UNO
- Each PV panel to be installed using **2 rails** minimum in all circumstances
- Roof clamps to be fixed only to the **full rib** of roof sheeting on the top of the purlins (See **Figure 1**)
- Installation of PV panels to be done in accordance with the PV panels installation manual
- The certification **excludes** assessment of roof structure and PV panels

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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 fixing of array frames to the roof, not the roof structure and PV panels. It is the responsibility of the installer to adopt the most critical spacing.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**
- **The capacity of roof clamp was obtained from test report no. 8524-02/JD, dated 24th July 2020 and provided by Melbourne Testing Services.**
- **The spacing shown in the interface tables shall be adjusted based on the assessment and requirement of the roof structures.**

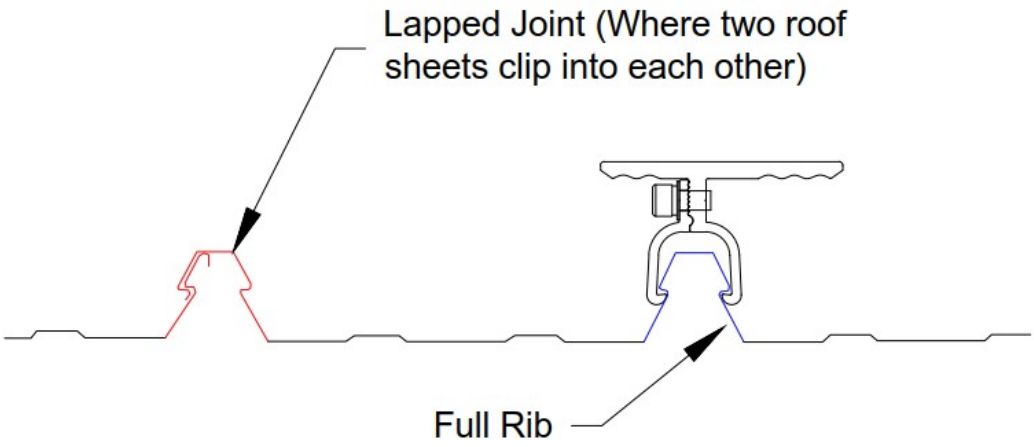

Figure 1 – Full Rib Location For Indicative

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Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed by **Jiewen Deng** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles. This certificate is only valid till 05/07/2023. 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

L. Van Spaandonk
Principal Engineer
FIEAust CPEng NER 5038980
NT Registration: 244137ES
QLD Registration: 18703
VIC Registration: EC 45972
TAS Registration: CC7366

Attachments:

- Summary table for interface spacing, Tilt mount - Lysaght Klip Lok 406 (Concealed Fix Roof)

Gamcorp (Melbourne) Pty Ltd
Consulting Structural & Civil Engineers
A.C.N 141 076 904
A.B.N 73 015 060 240

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Structural Design Documentation

Mibet Tilt Array Frame System Spacing Table

According to AS/NZS 1170.2-2011 (R2016)

with MA Rail – Lysaght Klip-Lok 406

within Australia

Terrain Category 2 & 3

For: Tradezone Pty Ltd (Brand Name: Powerwave)
PO Box 3137, Helensvale
QLD 4212

Job Numl 9981-03-05 (RE8726-02-02)
Date: 02/07/2021

Proud Member of: CONSULT AUSTRALIA Representing Engineering Excellence

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ISO 9001:2015 Registered Firm
Certificate No: AU1222

Client: **XIAMEN MIBET NEW ENERGY CO., LTD.**
Project: **Tradezone Pty Ltd (Brand Name: Powerwave)**
with MA Rail – Lysaght Klip-Lok 406
Address: **within Australia**

Australian Standards

AS/NZS 1170.0:2002 – Structural design actions, Part 0: General principles
AS/NZS 1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed and other actions
AS/NZS 1170.2:2011 (R2016) – Structural design actions, Part 2: Wind actions
AS/NZS 1664.1:1997 – Aluminium structures - Limit state design
AS 4100:2020 – Steel Structures
AS/NZS 4600:2018 – Cold-formed Steel Structures

Wind Terrain Category: WTC 2 & 3

Designed: **JD**
Checked: **AA**

Date: **Jul-21**

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	1.67m x 1m
Terrain category	**2**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	460	705	960	1495	380	575	780	1210	240	520	705	1085	215	490	665	1025
B	--	475	640	985	--	390	525	805	--	350	475	725	--	330	445	680
C	--	--	415	635	--	--	340	520	--	--	--	470	--	--	--	440
D	--	--	--	405	--	--	--	335	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	225	495	670	1035	--	405	550	840	--	365	495	755	--	250	465	715
B	--	335	450	685	--	--	370	565	--	--	335	510	--	--	--	480
C	--	--	--	445	--	--	--	365	--	--	--	325	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	430	580	895	--	325	475	730	--	--	430	655	--	--	405	620
B	--	--	390	595	--	--	220	490	--	--	--	440	--	--	--	415
C	--	--	--	385	--	--	--	220	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	1.67m x 1m
Terrain category	**3**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	555	855	1170	1730	555	855	1170	1730	480	735	1005	1565	430	660	895	1390
B	375	570	775	1200	375	570	775	1200	285	495	670	1030	--	440	595	915
C	--	370	500	770	--	370	500	770	--	220	435	660	--	--	385	590
D	--	--	230	490	--	--	230	490	--	--	--	425	--	--	--	380

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	600	810	1260	395	600	810	1260	240	515	700	1080	--	465	625	965
B	--	405	545	835	--	405	545	835	--	350	470	720	--	--	420	640
C	--	--	355	540	--	--	355	540	--	--	--	465	--	--	--	415
D	--	--	--	345	--	--	--	345	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	240	520	705	1090	240	520	705	1090	--	450	605	935	--	405	545	835
B	--	350	470	725	--	350	470	725	--	--	410	625	--	--	365	555
C	--	--	--	470	--	--	--	470	--	--	--	405	--	--	--	360
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	1.97m x 1m
Terrain category	**2**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	390	600	815	1275	215	490	665	1035	--	445	600	925	--	420	565	875
B	--	405	545	840	--	330	445	685	--	--	405	615	--	--	380	580
C	--	--	355	540	--	--	--	440	--	--	--	400	--	--	--	375
D	--	--	--	345	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	420	570	880	--	250	465	715	--	--	420	645	--	--	400	610
B	--	--	385	585	--	--	--	480	--	--	--	435	--	--	--	405
C	--	--	--	380	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	365	495	760	--	--	405	620	--	--	365	560	--	--	250	530
B	--	--	335	510	--	--	--	415	--	--	--	375	--	--	--	355
C	--	--	--	325	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	1.97m x 1m
Terrain category	**3**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	475	730	995	1565	475	730	995	1565	410	625	855	1335	365	560	760	1185
B	220	485	660	1020	220	485	660	1020	--	420	570	880	--	375	505	780
C	--	--	425	655	--	--	425	655	--	--	370	565	--	--	325	500
D	--	--	--	420	--	--	--	420	--	--	--	365	--	--	--	230

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	240	510	690	1075	240	510	690	1075	--	440	595	920	--	395	530	820
B	--	345	465	710	--	345	465	710	--	--	400	615	--	--	355	545
C	--	--	--	460	--	--	--	460	--	--	--	395	--	--	--	355
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	445	600	925	--	445	600	925	--	385	515	795	--	250	465	710
B	--	--	400	615	--	--	400	615	--	--	350	530	--	--	--	475
C	--	--	--	400	--	--	--	400	--	--	--	345	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.1m x 1.05m
Terrain category	**2**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	560	760	1190	--	460	620	965	--	405	560	865	--	285	530	815
B	--	375	505	785	--	--	415	640	--	--	375	575	--	--	355	540
C	--	--	--	505	--	--	--	410	--	--	--	370	--	--	--	350
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	295	530	820	--	--	435	670	--	--	295	600	--	--	235	570
B	--	--	355	545	--	--	--	445	--	--	--	405	--	--	--	380
C	--	--	--	355	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	460	710	--	--	260	580	--	--	--	520	--	--	--	495
B	--	--	--	475	--	--	--	390	--	--	--	350	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.1m x 1.05m
Terrain category	**3**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	445	680	930	1465	445	680	930	1465	280	585	795	1245	--	525	710	1105
B	--	455	615	955	--	455	615	955	--	395	530	820	--	350	475	730
C	--	--	400	610	--	--	400	610	--	--	340	525	--	--	--	470
D	--	--	--	390	--	--	--	390	--	--	--	235	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	475	645	1000	--	475	645	1000	--	390	555	860	--	225	495	765
B	--	--	430	660	--	--	430	660	--	--	375	570	--	--	--	510
C	--	--	--	430	--	--	--	430	--	--	--	370	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	405	560	865	--	405	560	865	--	--	485	745	--	--	430	665
B	--	--	375	575	--	--	375	575	--	--	--	495	--	--	--	445
C	--	--	--	375	--	--	--	375	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.2m x 1.2m
Terrain category	**2**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	**670**	**1135**	--	--	**480**	**920**	--	--	--	**760**	--	--	--	**715**
B	--	--	**485**	**745**	--	--	--	**610**	--	--	--	**550**	--	--	--	**515**
C	--	--	--	**480**	--	--	--	**270**	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	**715**	--	--	--	**605**	--	--	--	**440**	--	--	--	**315**
B	--	--	--	**520**	--	--	--	**310**	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	**630**	--	--	--	**355**	--	--	--	--	--	--	--	--
B	--	--	--	**450**	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Relationships built on trust

Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.2m x 1.2m
Terrain category	**3**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	610	885	1395	--	610	885	1395	--	380	700	1190	--	--	630	1055
B	--	310	585	910	--	310	585	910	--	--	505	785	--	--	390	695
C	--	--	--	585	--	--	--	585	--	--	--	500	--	--	--	440
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	595	955	--	--	595	955	--	--	--	760	--	--	--	675
B	--	--	285	630	--	--	285	630	--	--	--	545	--	--	--	485
C	--	--	--	290	--	--	--	290	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	785	--	--	--	785	--	--	--	665	--	--	--	600
B	--	--	--	550	--	--	--	550	--	--	--	475	--	--	--	300
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.4m x 1.2m
Terrain category	**2**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	**620**	**1040**	--	--	**315**	**810**	--	--	--	**700**	--	--	--	**665**
B	--	--	**325**	**685**	--	--	--	**560**	--	--	--	**505**	--	--	--	**475**
C	--	--	--	**440**	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	**665**	--	--	--	**465**	--	--	--	--	--	--	--	--
B	--	--	--	**475**	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	**595**	--	--	--	--	--	--	--	--	--	--	--	--
B	--	--	--	**295**	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 406 - mm

Type of Rail	MA Rail
Type of Interface	Tilt Roof Set
Solar Panel Dimension	2.4m x 1.2m
Terrain category	**3**

Tilt angle to roof surface (α) – $\alpha \leq 15°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	480	750	1280	--	480	750	1280	--	--	645	1090	--	--	595	965
B	--	--	540	835	--	--	540	835	--	--	465	715	--	--	295	635
C	--	--	--	535	--	--	--	535	--	--	--	460	--	--	--	290
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15° < \alpha \leq 25°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	415	870	--	--	415	870	--	--	--	700	--	--	--	630
B	--	--	--	580	--	--	--	580	--	--	--	500	--	--	--	330
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25° < \alpha \leq 30°$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	700	--	--	--	700	--	--	--	615	--	--	--	465
B	--	--	--	505	--	--	--	505	--	--	--	315	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Client: **Tradezone Pty Ltd (Brand Name: Powerwave)**
Project: **Solar Array Interface Spacing Table**
Address: **within Australia**
Designed: **JD**

Job: **9981-03-05**
Date: **Jul-21**
Checked: **AA**

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2-2011(R2016)

Components	Part Number	Description
MA Rail	MA Rail	as per drawing provided by client
Inter Clamp Kit (MA)	Inter Clamp Kit (MA)	as per drawing provided by client
End Clamp Kit (MA)	End Clamp Kit (MA)	as per drawing provided by client
Standard Tilt System	Standard Tilt System	as per drawing provided by client
Roof Clamp	Roof Clamp 406	as per drawing provided by client

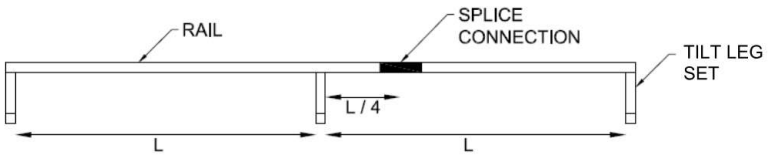
Note 2 Maximum uplift wind pressure is limited to 5 kPa. "--" states more uplift pressure.

Note 3 Tilt angle is measured from roof surface.

Note 4 Deflection is limited to Minimum of L/120 and 15mm

Note 5 Terrain Category 2 (TC2) refers to open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.
Terrain Category 3 (TC3) refers to terrain with numerous closely spaced obstructions having heights generally from 3 m to 10 m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. suburban housing, light industrial estates or dense forests.

Note 6 The optimised location of rail splice connection is at quarter length of the spacing of the interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 7 Refer Figure 1 for definition of roof zones.

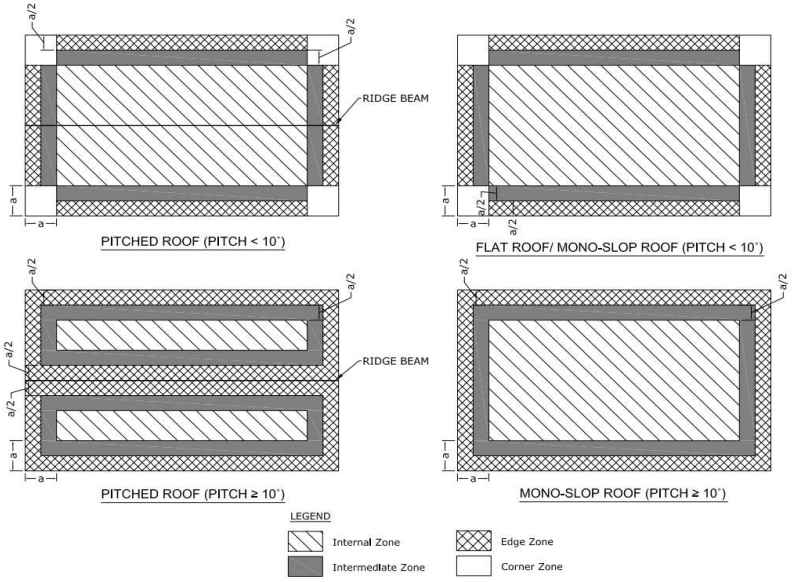


Figure 1 - Roof Zones Definition

In Figure 1, the value of dimension "a" is the minimum of 0.2b, 0.2d and h. (b & d are building dimensions and h is its height)