

May 2023

To Whom It May Concern:

VELUX Australia Pty Ltd supplies the following information.

- AS 4285 - Standard for Skylights and Roof Windows

VELUX Skylights FCM/FS/VS/VSE/VSS/VCE/VCM/VCS, Roof Windows GGL/GHL/GPL and sun tunnels TWR/TWF supplied in Australia have been tested to, and meet, Australian Standard AS4285-2007 & AS4285-2019 for skylights. (table 1)

- AS1288 – Overhead Glazing

VELUX Skylights and Roof Windows with High Performance laminated glazing are manufactured with Grade A safety laminated glass and meet Australian Standard AS1288-2006 for sloped overhead glazing. Report from Calderone and Associates available on request.

*(Skylight FCM/FS/VS/VSE/VSS/VCE/VCM/VCS glazing variant 04)*

*(Roof Window GGL/GHL/GPL glazing variant 76)*

- AS3959 – Bushfire

VELUX Skylights FCM/FS/VS/VSE/VSS/VCE/VCM/VCS with High Performance glazing have been tested to, and pass, bushfire attack level (BAL) 40 - per AS3959-2009 bushfire requirements. Suntunnel TWR has tested to, and passed, BAL 29. (table 2)

- NCC Thermal Performance - U-Value & SHGC

VELUX skylights comply with the NCC Vol 1 Section J & Vol 2 - 3.12.1.3 thermal requirements. (table 3)

- AS 1191 & AS/NZS 1276 – Acoustics

VELUX Skylights with High Performance laminated glazing reduce sound by approx 31 decibels. VELUX Roof Windows with laminated glazing reduce sound by approx 34 decibels. All VELUX double glazed units have been tested to Australian standards for Rw and STC ratings. (table 4)

- NCC Boundary Separation



VELUX Skylights and Roof Windows have been assessed as suitable for boundary installations where the BCA requires non-combustible materials. CSIRO letter of assessment available on request. *(opening models assessed in the closed position)*

- CODEMARK Certification

VELUX Skylights, Roof Windows and Sun Tunnels are Codemark Certified for Australia.

<https://www.velux.com.au/professionals/test-reports>

Table 1

<b>AS4285 – Skylights: Watertightness, Concentrated Load, Non-cyclonic &amp; Cyclonic wind pressures</b>					
<b>Model</b>	<b>IBA Test No:</b>	<b>Watertightness</b>	<b>Concentrated Load</b> (2.41kN)	<b>Non-Cyclonic kPa</b> (static pressure)	<b>Cyclonic &amp; Northern Territory ULS (kPa)</b> <b>Per NCC guidelines</b> (fatigue test – 10,00 pulses)
FCM 4646 0004B *	2009-098-S5 2009-098-S6	<b>PASS</b>	<b>PASS</b>	+7.2 -7.3	-5.0
FS S06 2004A	2009-098-S1 2009-098-S12	<b>PASS</b>	<b>PASS</b>	+4.0 -4.0	-2.4
VS / VSE / VSS S06 2004A	2009-098-S10 2009-098-S16 2015-014-S5	<b>PASS</b>	<b>PASS</b>	+5.0 -6.5	-2.8
GGL M08 3076	4023S8-GGL 2009-098-S8	<b>PASS</b>	<b>PASS</b>	+5.0 -7.0	-4.0
GGL SK06 3076	2014-067-S1 2014-067-S3	<b>PASS</b>	<b>PASS</b>	+4.0 -6.0	-4.0
GPL SK06 3076	2014-067-S2 2014-067-S5	<b>PASS</b>	<b>PASS</b>	+4.0 -2.5	N/A
TWF/R 014 (V1.0)	4023S12-TWF	<b>PASS</b>	<b>PASS</b> (1.1kN)	+4.0 -5.0	N/A
TWF/R 0K14 (V2.0)	2015-014-S1	<b>PASS</b>	<b>PASS</b> (1.1kN)	+5.0 -7.0	N/A
VCE 4646 00004AC	2012-099-S1 2012-099-S2 2012-099-S4	<b>PASS</b>	<b>PASS</b>	+3.75 -3.75	-1.5
VCM 4646 2004AD 	2017-016-S5 2017-016-S10	<b>PASS</b>	<b>PASS</b>	+4.5 -5.0	-2.16 -3.21(AS4040)
VCS 4646 2004AD 	2017-016-S1 2017-016-S8	<b>PASS</b>	<b>PASS</b>	+4.5 -4.0	-2.16 -3.21(AS4040)
FCM 4672 0004AD *	2022-086-S1-R1	<b>PASS</b>	<b>PASS</b>	+4.09 -9.75	-5.07 (C3) General

NATA Approved Test Facility: Ian Bennie & Associates, Dandenong, Victoria

\* Cyclonic testing: FCM tested on a timber base, secured with VELUX screws.

 Cyclonic testing: VCM/VCS tested on a timber base, secured with #8 roofing screws (not supplied by VELUX). Secondary results achieved per AS4040 guidelines.

Table 2

<b>AS3959 – Construction of Buildings in Bushfire-prone Areas</b>				
<b>Model</b>	<b>Exova Test Report</b>	<b>BAL 29 + <i>18-75 degree pitch</i></b>	<b>BAL 40 * <i>0-18 degree pitch</i></b>	<b>BAL 40 * <i>18-75 degree pitch</i></b>
<b>FCM 4646 0004B</b>	EWFA 2548902.1	-	<b>PASS</b>	-
<b>FCM 4646 0004B</b>	EWFA 2391800.2	-	-	<b>PASS</b>
<b>FS S06 2004A</b>	EWFA 2398200.2	-	-	<b>PASS</b>
<b>VS S06 2004A</b>	EWFA 2398100.3	-	-	<b>PASS</b>
<b>VSE S06 2004A</b>	EWFA 2548900.1	-	-	<b>PASS</b>
<b>VSS S06 2004AD ^</b>	EWFA 31154800.1	-	-	<b>PASS</b> <i>(with EDW flashing)</i>
<b>VCE 4646 0004AC</b>	EWFA 2686100.2	-	<b>PASS</b>	-
<b>VCM/VCS 4646 2004AD**</b>	EWFA 46234000.1 Assessment Report	-	<b>PASS</b>	<b>PASS</b>
<b>TWR 0K14 2010</b>	EWFA 34505800.1	<b>PASS</b>	-	-
<b>TWR 0K14 2010</b>	EWFA 34505800.1	<b>PASS</b>	-	-
<b>FCM 4646 0004B</b>	EWFA 2548902.1	-	<b>PASS</b>	-
<b>FCM 4646 0004B</b>	EWFA 2391800.2	-	-	<b>PASS</b>
<b>FCM 4672 0004AD</b>	FRT220044 R1.0	-	<b>PASS</b>	-
<b>FCM 4672 0004AD</b>	FRT220205 R1.0	-	-	<b>PASS</b>

NATA Approved Test Facility: Exova Warringtonfire, Dandenong, Victoria

\* PASS applies only to High Performance laminated glazing (04 & 76)

+ PASS applies only to TWR rigid shaft

^ GPL SK06 and VSS S06 tested with VELUX EDW flashing. All other models tested with custom built flashing (not supplied by VELUX)

\*\*Product assessed by Exova – based on previous test results

NB: VELUX EDW flashings suit Skylights and Roof Windows FS/VS/VSE/VSS/GGL/GHL/GPL

NB: VELUX recommends FCM/VCE/VCM/VCS/VSS installed at a maximum 60 degrees.

VELUX recommends GHL/GPL installed at a maximum 55 degrees.

VELUX recommends TWR installed at a maximum 60 degrees.

NB: All opening Skylights/Roof Windows tested in the closed position. Consult with local council as fire resistant mesh may be required. (not supplied by VELUX)

Table 3

BCA Thermal Requirements					
Model: Skylight	Glazing (IGU)	U=Value (W/m2*K)	SHGC Solar Heat Gain Co-efficient	VT Visible Light Transmittance	Luminous Efficacy (Ke) Ke = VT/SHGC
VS / VSE / VSS ^	Type 04	2.5	0.21	0.48	2.29
FS	Type 04	2.6	0.24	0.55	2.29
FCM *	Type 04 ♦	2.9	0.28	0.64	2.29
VCE / VCM / VCS *	Type 04 ♦	2.9	0.24	0.55	2.29
TWR / TWF 014	2010	2.4	0.5		

Thermal figures generated by AFRC accredited laboratory:  
Ian Bennie & Associates, Dandenong, Victoria.

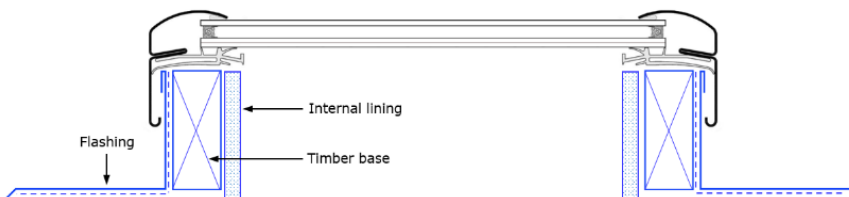
Ke is the relationship of light vs heat.  
A standard vertical single glazed window has a Ke of 0.7.  
ie: a single glazed vertical window lets in 0.7 units of light for every unit of heat. (less light, more heat)  
A thermally efficient double glazed VELUX skylight lets in 2.29 units of light for every unit of heat.  
ie: More light, less heat

All Skylight values based on AFRC calculations. All values audited by AWA (Australian Window Association)  
Link: <https://www.awawers.net/skylight/skylist/VELUX>

^ VSS not calculated – VSE/VSS have the same configuration 04 glazing.  
\* VCM/VCS not calculated – VCE/VCM/VCS have the same configuration 04 glazing.

♦ FCM/VCE/VCM/VCS figures generated with timber base and internal lining (gyprock) – not supplied by VELUX.  
(See picture below)

♦ FCM on timber base



Model: Roof Window	Glazing (IGU)	U=Value (W/m2*K)	SHGC Solar Heat Gain Co-efficient	VT Visible Light Transmittance	Luminous Efficacy (Ke) Ke = VT/SHGC
GGL / GPL	Type 76	1.3	0.31	0.64	2.06

Roof Window values based on EU calculations. (EN 14351-1:2006+A2:2016)

Table 4

**AS/NZS 1276 – Acoustics**

Model:	FCM 4646 2004	VCM 4646 2004	FS S06 2004	VSS S06 2004	GGL SK06 2076
Rw	29 dB	30 dB	32 dB	32 dB	34 dB
STC	29	31	32	32	34

Acoustic values calculated by CSIRO Laboratories, Clayton, Victoria.

Table 5

<b>AS 4055 – Wind classifications</b>		
<b>Model:</b>	<b>Sizes</b>	<b>Ultimate Strength Wind Classification Non cyclonic Roofs(r), General areas of the roof(G)</b>
<b>GGL</b>	All	N5r(G)
<b>GPL</b>	All	N3r(G)
<b>VS / VSS / VSE</b>	All	N6r(G)
<b>FS</b>	All	N4r(G)
<b>FCM</b>	All	N6r(G)
<b>VCS</b>	All	N4r(G)
<b>VCM</b>	All	N5r(G)
<b>TWF / TWR</b>	All	N6r(G)

Values calculated by Acronem Consulting – Hampton, Victoria