



VELUX AMERICA, LLC.
P.O. Box 5001
Greenwood, South Carolina 29648-5001
1-800-888-3589

www.veluxusa.com

VELUX MODULAR UNIT SKYLIGHTS (VMS): HFC FIXED SKYLIGHT MODULE AND HVC MOTORIZED COMFORT VENTING SKYLIGHT MODULE

CSI Section:

08 62 00 Unit Skylights

1.0 RECOGNITION

VELUX America, LLC's Modular Unit Skylights (VMS) recognized in this report have been evaluated for use as glazed unit-skylights. The structural performance, air and water tightness, thermal performance, visible transmittance, condensation resistance, and durability were evaluated for compliance with the following codes:

- 2021, 2018, and 2015 International Building Code® (IBC)
- 2021, 2018, and 2015 International Energy Conservation Code (IECC)
- 2022 and 2019 California Building Code (CBC) – attached Supplement

2.0 LIMITATIONS

Use of the VELUX Modular unit skylights recognized in this report is subject to the following limitations:

2.1 VELUX Modular Unit Skylights shall be installed in accordance with the applicable code, the manufacturer's instructions, and this report. In the event of a conflict, the more restrictive governs.

2.2 The Modular curb mount glass-glazed unit skylights shall not be used in Type I or II construction when the installation requires a combustible curb or attachment, over acid-fume-containing spaces, in wind-borne debris regions, or where unusual loading is expected. Evidence may be submitted to the building official for review and approval where these installations are applicable.

2.3 Modular unit skylights that are set at an angle of less than 45 degrees from the horizontal shall be mounted at least 4 inches (102 mm) above the plane of the roof except for Group R-3 occupancies with a minimum roof slope of 3-units vertical in 12-units horizontal.

2.4 Electric motor-driven sash operators, in the HVC model skylights, shall comply with the applicable electrical code requirements and are subject to approval by the building official.

2.5 Velux Modular Unit Skylights have not been evaluated for use as components of a fire-resistant assembly. Fire-resistance-rated assemblies are outside the scope of this report.

2.6 Design and detailing of the curb, steel plate for attachment of brackets, and its attachment to the supporting structure are outside the scope of this report. When required, calculations using recognized engineering principles as described in IBC Section 1604.4, shall be prepared by a registered design professional and provided to the building official for approval. Modular skylight's performance grades reported are based on the assembly tested as described in Section 4.2.2 of this report. Other sizes, IGUs, and curb assemblies may be used when justification is provided to the building official.

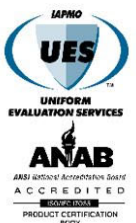
2.7 VELUX Modular unit skylights recognized in this report are produced in Østbirk, Denmark.

3.0 PRODUCT USE

3.1 General: VELUX® Modular Unit Skylights are skylights complying with IBC Section 2405.5 that provide natural light and views into the interior of building spaces. The skylights are intended for use on building roofs sloped from 0° (0:12 slope) vertical from the horizontal plane to 90° (1:0 slope) from the horizontal plane. Each unit is designed to attach to a site-built curb that is constructed from a minimum of nominally 2-inch (50.8 mm) by 4-inch (102 mm) wood members with a steel profile of sufficient strength to transfer the skylight loads to the framing members. The steel profile is required to be a minimum 3/8-inch (9.5 mm) thick and 4 inches (102 mm) wide. Skylights may be attached to other curb materials and construction of equal or greater size and strength when justification is provided to the building official. The HVC Modular skylights provide natural ventilation and are top hung with a hidden chain driven actuator. HFC units are fixed. Glass is continuously supported on all four sides using a roll-formed aluminum to resist uniform uplift loads.

3.2 Design:

3.2.1: Performance Grade Ratings: Based on the positive and negative performance grade ratings listed in Tables 1, 2, and 3 of this report, the product size(s) shall be selected that have performance grades in excess of the design pressures that are applicable to the unit's final location.





3.2.2 Fire Classification: Velux Modular Unit Skylights have a Class B fire classification in accordance with Section 1505 of the IBC.

3.3 Installation: Uplift design ratings recognized in this report are based on attachment of the curb to a lumber substrate exhibiting a minimum specific gravity of 0.43 as defined in Table 12.3.3A of the ANSI/AF&PA NDS with full nail engagement. Installation on lumber substrates with a specific gravity less than 0.43 may result in a lower design uplift rating. The modular units are designed to attach to sub-constructions made of steel, concrete, or wood with a steel profile along the top through use of Velux's patented mounting bracket and clamp systems. The mounting brackets are fixed with clamping system during installation. The mounting brackets can be directly fastened into the sub-construction if required by the engineer or building official. Steel profiles and direct fastening shall be designed by a registered design professional for the design pressures found in Table 1 of this report and the design is to be provided to the building official for approval when required. Modules that are placed adjacent to each other are secured to each other using fastening provided by Velux at the top and bottom of the skylight.

4.0 PRODUCT DESCRIPTION

4.1 Insulating Glass Units: Insulating glass units (IGU) used in curb mount glass-glazed unit skylights comply with Section 10.2 of AAMA/WDMA/CSA 101/I.S.2/A440-17 and -11.

Modular skylights up to 94 ½ inches (2400 mm) in height use a minimum exterior 0.236-inch-thick (6 mm) heat strengthened tempered glass and an interior minimum IGU with laminated glass lite inboard comprised of two sheets 0.118-inch-thick (3 mm) heat strengthened glass that are each permanently bonded to a minimum 0.0299-inch-thick (0.76 mm) polyvinyl butyral (PVB) interlayer with stainless steel spacers. The spaces between glass lites are filled with 95 percent argon gas.

Modular skylights equal to or taller than 94½ inches (2400 mm) in height use a minimum exterior 0.315-inch-thick (8 mm) heat strengthened tempered glass and an interior minimum IGU with laminated glass lite inboard comprised of two sheets 0.197-inch-thick (5 mm) heat strengthened glass that are each permanently bonded to a minimum 0.0299-inch-thick (0.76 mm) polyvinyl butyral (PVB) interlayer with stainless steel spacers. The spaces between glass lites are filled with 95 percent argon gas.

4.2 Modular Unit Assembly Details:

VELUX Modular Unit Skylights (Figure 1) consist of several integrated components. The IGU is mounted into a rigid pultruded composite frame and sash and is directly mounted in the field onto the site-built curb using corrosion resistant steel mounting brackets and clamps. Hinges are used in the

HVC skylights. Hot-applied primary sealant is bonded to the composite frame prior to IGU placement. Each module uses aluminum cladding attached on four sides of the skylight. Each module additionally has aluminum flashing in several widths used for watertight connection between roof, sub-construction, and module.

VELUX Modular Unit Skylights utilize a dual-durometer thermoplastic elastomer (TPE) inner frame gasket that is stapled to the glazing frame to lock the IGU in place for sealant curing and handling stability.

The HVC modular skylights employ an electric motor-driven sash operator with radio frequency remote control and have exterior sensors to automatically trigger the operator to close an open sash when rain droplets are present. The VELUX supplied electrical control system connects to a 110-volt current and operates the electric shades and electrical actuator motors which are 24-volt DC current driven. Each shade draws ½ Amp and skylight actuators draw 1 Amp each. The electrical control system can be controlled via a wall switch or wire digital remote, and the system can be integrated into a building management system for climate and energy control.

Condensation and air leakage control is accomplished using condensation gutters and baffled weep holes in the modular skylight. Condensation in the interior of the unit drains to the bottom of the skylight frame and deposits into the internal condensation gutter along the width of the skylight. The condensation runs through small weep holes into a secondary gutter which runs under the flashing and deposits on to the roof.

Certified energy, light, and comfort factors (U, SHGC, VT, and CR) for all sizes shall conform to IECC Section C303.1.3 (NFRC 100 and 200) and NFRC 500. The ratings are shown in Table 4 of this report.

4.3 Modular Configurations: The modular unit skylights can be arranged or assembled in several assembly configurations to create different arrays dependent upon building type and end use. Longlight 5-30° (Figure 2), Ridgelight 25-40° (Figure 3), and Northlight 25-90° (Figure 4).

Modules used in installation configurations of Step Longlight 5-30° (Figure 5), Step Ridgelight 25° (Figure 6), Atrium Longlight 5-30° (Figure 7), Atrium Ridgelight 25-40° (Figure 8), Ridgelight less than 25 degrees or greater than 40 degrees, and Northlight less than 25 degrees or greater than 90 degrees require the use of supports that are to be designed by a registered design professional and the design is to be provided to and approved by the building official.



5.0 IDENTIFICATION

5.1 VELUX Modular unit skylights covered by this report shall be identified with permanent labeling as detailed in Figure 9 of this report.

5.2 VELUX Modular unit skylights covered by this report shall be identified with temporary pane labeling that includes the following information:

- Manufacturer's name and address, tested model size and designation, glass type and thickness, NFRC-certified ratings and WDMA or another approved labeling agency.
- Primary and secondary designators as required by the AAMA/WDMA/CSA 101/I.S.2/A440-17 and -11 specification including but not limited to the positive and negative performance grade ratings.
- UES evaluation report number (ER-724).

The IAPMO UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-724

6.0 SUBSTANTIATING DATA

6.1 Reports of component and assembly testing and evaluation in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-17 and -11.

6.2 Test report of fire classification rating in accordance with ASTM E108.

6.3 Test reports are from laboratories in compliance with ISO/IEC 17025.

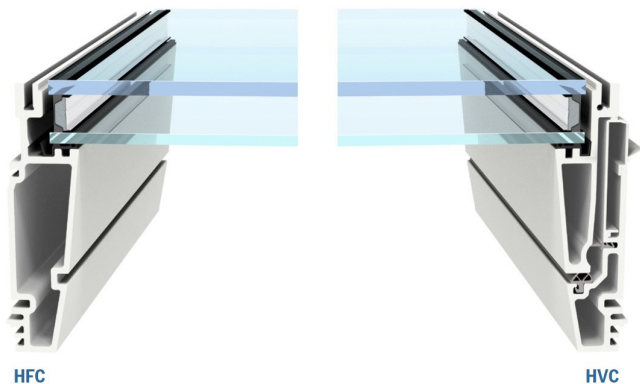
7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on VELUX America, LLC's Modular Unit Skylights to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.7 of this report under a quality control program with periodic inspections under the surveillance of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org



Modular unit



Frame and Sash

FIGURE 1 – VELUX Modular Skylight



EVALUATION REPORT

Number: 724

Originally Issued: 11/01/2021

Revised: 12/19/2023

Valid Through: 11/30/2024

TABLE 1– Longlight Installation and Brackets
VELUX HFC and HV Glass Weight
IGU: 10L and 11L 6.14 psf
IGU: 10T and 11T, 9.21 psf,

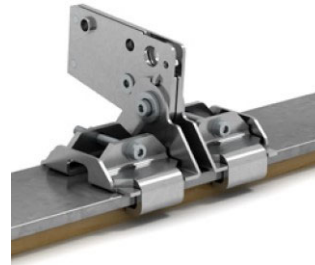
Length		Width				
Unit size ¹ (inches)	Unit size ¹ (mm)	26.6	29.5	31.5	35.4	39.4
		675	750	800	900	1000
23.6	600	HFC and HVC IGU: 10L or 11L Primary: SKG-PG 50 Maximum Air Leakage ² : 0.50 L/s/m ² (0.10 cfm/ft ²) Maximum Pressure with No Water Penetration ² : 720 Pa (15.04 psf) Download (PG _{POS}) = +2400 Pa (+50.13 psf) Uplift (PG _{NEG}) = -2400 Pa (-50.13 psf)				
31.5	800					
39.4	1000					
47.2	1200					
55.1	1400					
63.0	1600					
70.9	1800					
78.7	2000					
86.6	2220	HFC and HVC IGU: 10T or 11T Primary: SKG-PG 60 Maximum Air Leakage ² : <0.05 L/s/m ² (0.01 cfm/ft ²) Maximum Pressure with No Water Penetration ² : 1197 Pa (25.00 psf) Download (PG _{POS}) = +2800 Pa (+60.15 psf) Uplift (PG _{NEG}) = -2800 (-60.15 psf)				
94.5	2400					
102.4	2600					
110.2	2800					
118.1	3000					

¹ Unit size based on frame size.

² Based on tested size indicated.



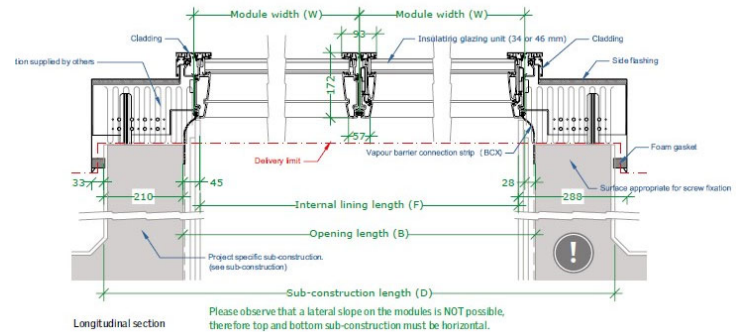
Longlight Assembly



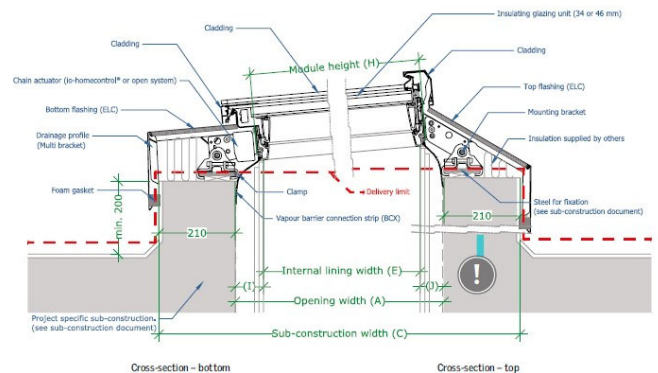
Top Bracket



Bottom Bracket



Longitudinal section



Cross-section - bottom

Cross-section - top

FIGURE 2 – Longlight 5-30°



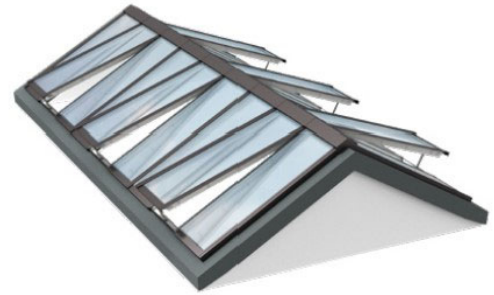
EVALUATION REPORT

Number: 724

Originally Issued: 11/01/2021

Revised: 12/19/2023

Valid Through: 11/30/2024

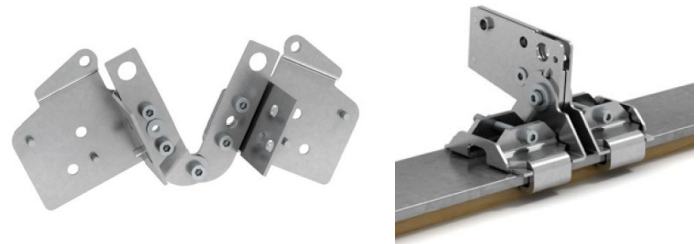


Ridgelight Assembly

TABLE 2– Ridgelight Installation and Brackets VELUX HFC and HVC Glass Weight IGU: 10L and 11L 6.14 psf					
Length		Width			
Unit size ¹ (inches)	Unit size ¹ (mm)	26.6	29.5	31.5	35.4
		675	750	800	900
23.6	600	HFC and HVC IGU: 10L or 11L Primary: SKG-PG 50 Maximum Air Leakage ² : 0.76 L/s/m ² : (0.15 cfm/ft ²) Maximum Pressure with No Water Penetration ² : 720 Pa (15.04 psf) Download (PG _{POS}) = +2400 Pa (+50.13 psf) Uplift (PG _{NEG}) = -2400 Pa (-50.13 psf)			
31.5	800				
39.4	1000				
47.2	1200				
55.1	1400				
63.0	1600				
70.9	1800				
78.7	2000				
86.6	2220				
94.5	2400				

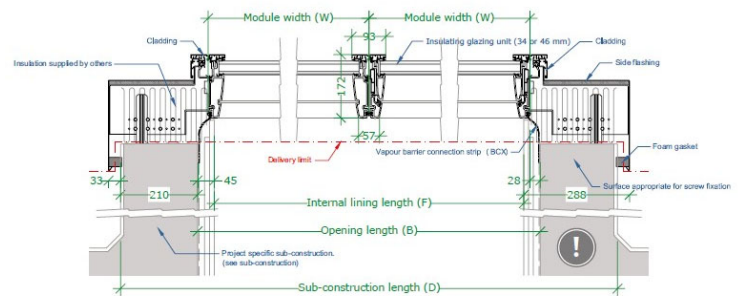
¹ Unit size based on frame size.

² Based on tested size indicated.



Top Bracket

Bottom Bracket



Longitudinal section

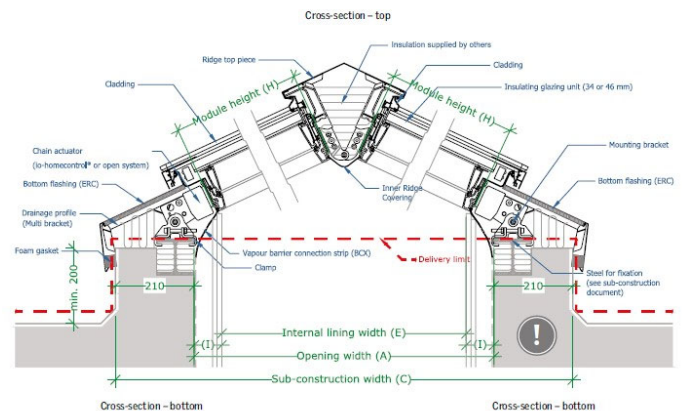


FIGURE 3 – Ridgelight 25-40°



EVALUATION REPORT

Number: 724

Originally Issued: 11/01/2021

Revised: 12/19/2023

Valid Through: 11/30/2024

TABLE 3— Northlight Installation and Brackets
VELUX HFC and HVC Glass Weight
IGU: 10L and 11L 6.14 psf
IGU: 10T and 11T, 9.21 psf,

Length		Width				
Unit size ¹ (inches)	Unit size ¹ (mm)	26.6	29.5	31.5	35.4	39.4
		675	750	800	900	1000
23.6	600	HFC and HVC IGU: 10L or 11L Primary: SKG-PG 50 Maximum Air Leakage: 0.76 L/s/m ² (0.15 cfm/ft ²) Maximum Pressure with No Water Penetration: 720 Pa (15.04 psf) Download (PG _{POS}) = +2400 Pa (+50.13 psf) Uplift (PG _{NEG}) = -2400 Pa (-50.13 psf)				
31.5	800					
39.4	1000					
47.2	1200					
55.1	1400					
63.0	1600					
70.9	1800					
78.7	2000	HFC and HVC IGU: 10T or 11T Primary: SKG-PG 75 Maximum Air Leakage ² : 0.76 L/s/m ² (0.15 cfm/ft ²) Maximum Pressure with No Water Penetration ² : 720 Pa (15.04 psf) Download (PG _{POS}) = 3600 Pa (+75.19 psf) Uplift (PG _{NEG}) = -3600 Pa (-75.19 psf)				
86.6	2220					
94.5	2400					
102.4	2600					
110.2	2800					
118.1	3000					

¹ Unit size based on frame size.

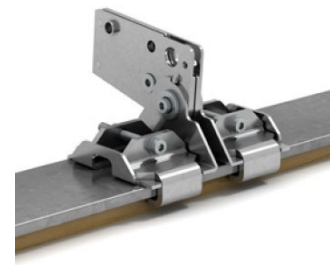
² Based on tested size indicated.



Northlight Assembly



Top Bracket



Bottom Bracket

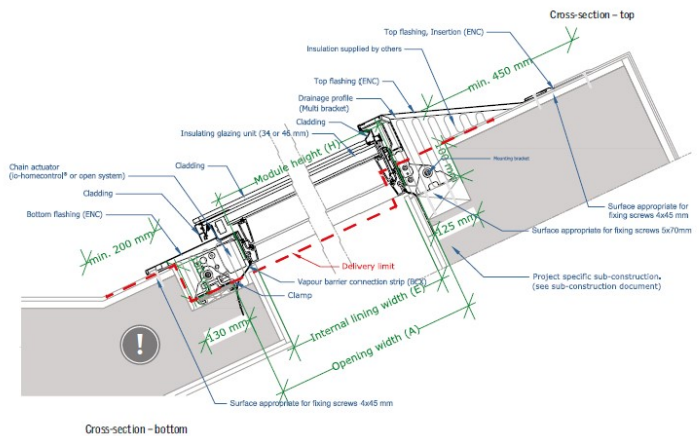
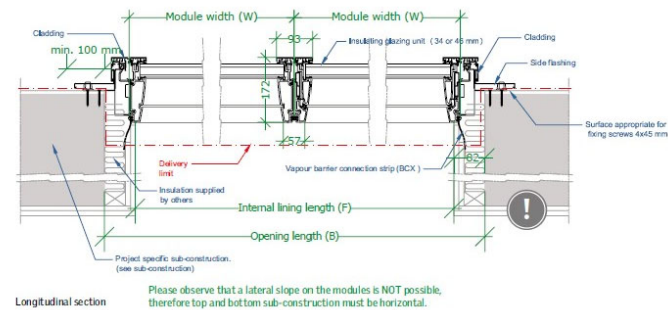


FIGURE 4 – Northlight 25-90°

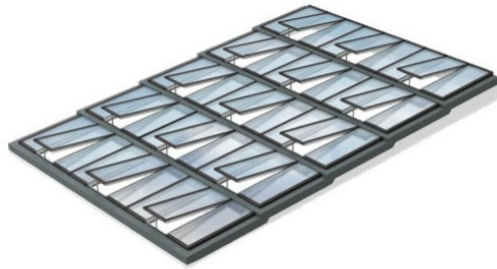


FIGURE 5 – Step Longlight 5-30°

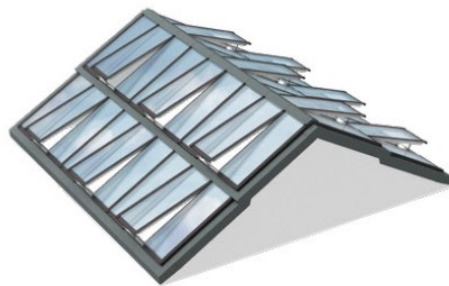


FIGURE 6 – Step Ridgelight 25-40°



FIGURE 7 – Atrium Longlight 5-30°



FIGURE 8 – Atrium Ridgelight 25-40°

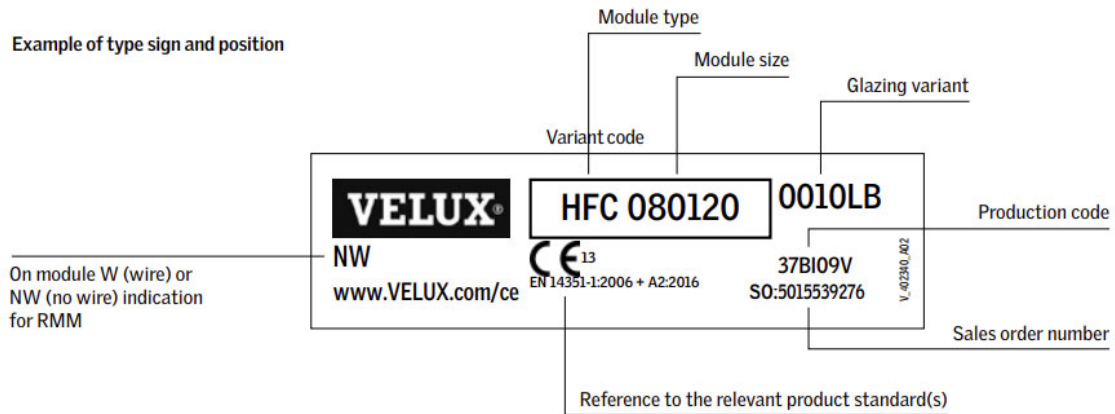


FIGURE 9 – Label Information



EVALUATION REPORT

Number: **724**

Originally Issued: 11/01/2021

Revised: 12/19/2023

Valid Through: 11/30/2024

TABLE 4– Energy, Light and Comfort ^{2,3}

Model/Glazing Option ¹	U-Factor (Btu/ft ² /°F/hr)	Solar Heat Gain Coefficient (SHGC)	Visible Transmittance (VT)	Condensation Resistance (CR)
HFC/10:8H-20Argon-33.2LowE -34mm IG	0.37	0.50	0.67	57
HFC/16:8H LowE-12 Argon-8HS-12Argon-33.2LowE-46mm IG	0.25	0.41	0.60	64
HFC/10T:8H-20Argon-55.2LowE -34mm IG	0.38	0.50	0.67	54
HFC/16T:8H LowE-12 Argon-4HS-12Argon-55.2LowE-46mm IG	0.25	0.41	0.60	63
HFC/11T:8H LowE-12 Argon-4HS-12 Argon-55.2 LowE-46mm IG	0.38	0.22	0.42	54
HFC/11:8H LowE(SG SN51)-20 Argon-33.2-34mm IG	0.38	0.22	0.42	54
HFC/11T: 8H LowE(SG SN51) -16 Argo-55.2-34mm IG	0.40	0.22	0.42	52
HFC/6H LowE (SunGuard SNX 60 HT)-22 Argon-33.2-34mm IG	0.38	0.23	0.51	54
HFC/8H LowE (SunGuard SNX 60 HT)-16 Argon-55.2-34mm IG	0.39	0.23	0.50	51
HVC/10:8H-20Argon-33.2LowE -34mm IG	0.37	0.50	0.67	54
HVC/16:8H LowE-12 Argon-8HS-12Argon-33.2LowE-46mm IG	0.23	0.41	0.60	64
HVC/10:8H-20Argon-55.2LowE -34mm IG	0.38	0.50	0.67	51
HVC/16T:8H LowE-12 Argon-4HS-12Argon-55.2LowE-42mm IG	0.24	0.41	0.60	63
HVC/11:8H LowE(SG SN41)-20 Argon-33.2-34mm IG	0.37	0.22	0.43	54
HVC/11:8H LowE(SG SN51)-20 Argon-33.2-34mm IG	0.36	0.22	0.42	55
HVC/11T:8H LowE(SG SN51) -16 Argo-55.2-34mm IG	0.38	0.22	0.42	51
HVC/6H LowE (SunGuard SNX 60 HT)-22 Argon-33.2-34mm IG	0.36	0.23	0.51	55
HVC/8H LowE (SunGuard SNX 60 HT)-16 Argon-55.2-34mm IG	0.38	0.23	0.50	52

- 1 The first number after the model depicts the IGU type. Only IGU types 10L, 10T, 11L and 11T have corresponding performance evaluated in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-17, -11. Other IGUS listed in this table require further justification to the building official for approval.
2. U-factors and Solar Heat Gain, Visible Transmittance shall be determined in accordance with NFRC 100 and NFRC 200, respectively and by an accredited, independent laboratory and labeled and certified by the manufacturer.
3. Condensation Resistance shall be determined in accordance with NFRC 500 and by an accredited independent laboratory and labeled and certified by the manufacturer.



CALIFORNIA SUPPLEMENT

VELUX AMERICA, LLC
P.O. Box 5001
Greenwood, South Carolina 29648-5001
(864) 941-4828
www.veluxusa.com

VELUX MODULAR UNIT SKYLIGHTS (VMS): HFC FIXED SKYLIGHT MODULE AND HVC MOTORIZED COMFORT VENTING SKYLIGHT MODULE

CSI Section:
08 62 00 Unit Skylights

1.0 Compliance with the following codes

- 2022 and 2019 California Building Code (CBC)

2.0 Requirements:

All information in ER-724, corresponding to compliance under the International Building Code (IBC) also applies to compliance under the CBC. Additional requirements for compliance with the CBC are provided in Section 3.0 of this supplement.

3.0 Additional Requirements:

3.1 Compliance for Materials Used

Reports of material testing and evaluation in accordance with Clauses 10 and 11 of AAMA/WDMA/CSA 101/I.S.2/A440-17 and -11 comply with the applicable requirements of CBC Chapter 7A, Section 1505.1 for assembly requirements and fire classification, and Section 2405.

3.2 Glazing Requirements

For those applications subject to the requirements of the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC) or the Department of Health Care Access and Information (HCAI), formerly the Office of Statewide Planning and Development (OSHPD 1 & 4), Table 1 of this supplement provides information to verify compliance with the additional provisions of Section 2403.2.1 and Table 2403.2.1 of the 2022 and 2019 California Building Code, as applicable.

3.3 This supplement expires concurrently with ER-724.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1 –Glass Area, Nominal Frame Lap and Glass Edge Clearance ¹

Skylight Model	Largest Size Glass Area (ft ²)	Nominal Design Values - mm (in.)					
		Frame Lap ²			Glass Edge Clearance ³		
		Sides	Bottom	Top	Sides	Bottom	Top
Modular HFC AND HVC	Less than 32 sq. ft	0.63 in (16 mm)	4.33 in (110 mm)	0.63 in (16 mm)	0.19 in (5 mm)	0.19 in (5 mm)	0.19 in (5 mm)

¹ All HFC and HVC Modules independent of module size are consistent in Frame Lap and Glass Edge clearance.

² The minimum Frame Lap requirement is 5/16 inch (7.9 mm) as defined in Table 2403.2.1 of the CBC.

³ The minimum Glass Edge Clearance requirement is 3/16 inch (4.8 mm) as defined in Table 2403.2.1 of the CBC.