

**PERFORMANCE TESTING IN ACCORDANCE WITH
AAMA/WDMA/CSA 101/I.S.2/A440-11 (NAFS 2011) & CSA A440S1-17
AAMA/WDMA/CSA 101/I.S.2/A440-17 (NAFS 2017) & CSA A440S1:19
AAMA/WDMA/CSA 101/I.S.2/A440-22 (NAFS 2022)**

PRODUCT MANUFACTURER	
SKYREACH GROUP INC. 112A Snidercroft Rd. Concord, Ontario L4K 2K1 905-761-9988	
REPORT TF-00369-C1	
TEST REPORT SUMMARY	
Product type	Fixed Window
Product series/model	8100 Aluminum Fixed Window
Primary designator	Class CW – PG60: Size tested 1506 x 1506 mm (~59 x 59 in) – Type FW
Optional secondary designator	Positive design pressure (DP) = 2880 Pa (~60.15 psf) Negative design pressure (DP) = -2880 Pa (~-60.15 psf) Water penetration resistance test pressure = 720 Pa (~15.04 psf) Canadian air infiltration/ exfiltration level = Fixed Level (NAFS-11)
Option(s)	None

See UL Laboratory Canada Inc. complete report TF-00369-C1 for test specimen description and detailed test results.

Test laboratory location	UL Laboratory Canada Inc. (7 Underwriters Rd. Toronto, ON, M1R 3A9, Canada)		
Test completion date	2024-10-08	Number of pages	5 pages & 1 appendix
Report date	2024-11-10	Revision date	-

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1.0 INTRODUCTION

UL Laboratory Canada Inc. was retained by "**SKYREACH GROUP INC.**" to evaluate the performance of a fenestration product according to AAMA/WDMA/CSA 101/I.S.2/A440-11 (NAFS 2011) Standard and its Canadian Supplement CSA A440S1-17, AAMA/WDMA/CSA 101/I.S. 2/A440-17 (NAFS 2017) Standard and its Canadian Supplement CSA A440S1:19, and AAMA/WDMA/CSA 101/I.S. 2/A440-22 (NAFS 2022) Standard. The sample components and manufacturing are documented in section 2.0.

Note concerning the use of units of measurement in this report:

According to the AAMA/WDMA/CSA 101/I.S.2/A440 Standard, the use of SI (metric) units is the standard, while IP (Imperial) values given in parentheses are for reference purposes only, and are inexact rounded values. Section 5.0 contains testing results converted to IP units for the sake of convenience only. The only exception to using SI values is in the Performance Grade (PG) portion of the product designation.

Note concerning drawings:

The drawings reviewed for the production of this report are stamped and are on file at UL Laboratory Canada Inc. The availability of individual drawings will be at the discretion of the client.

2.0 DESCRIPTION OF THE SPECIMEN(S) TESTED

Model

8100 Aluminum Fixed Window

Product type

FW – (Fixed window)

Operation mode

Fixed

Drawings (Appendix)

Assembly Drawings & Bill of Materials

Drawings (Others)

0025373, 0396321

Date of sample reception

2024-10-01

Date(s) of testing

2024-10-08

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Test specimen installation (test buck)

Material: Spruce, Pine, Fir (SPF) (~2" x 10")

R.O. clearances: None.

Fastening: Sill/Head: None / Jambs: Fastened with (3) # 8 x 2" screws at center and 125 mm (4.92") from the ends, fastener holes covered with plastic caps.

Sealing detail: Exterior and interior frame perimeter sealed with sealant.

Frame

Material: Extruded Aluminum

Joinery type: Mitred joints mechanically fastened with (2) aluminum corner keys per corner, corners sealed with sealant.

Reinforcement: None

Thermal Break: (2 Rows) Plastic, frame perimeter.

Weatherstripping: None.

Sealant: Glazing stop corners sealed with sealant.

Drainage: Drain Slots with Eye-Lid Covers: (3) 33 mm x 8 mm (1.30" x 0.31"), sill, exterior face, at center and 143 mm (5.63") from the ends.

Glazing: Double glazed sealed unit 26 mm (1.02") / Nominal glass thickness: 5 mm (0.20") / Air space gap: 16 mm (0.63") / Type of glass: Tempered with LowE / Type of spacer: Aluminum Spacer / Type of sealant: Dual-sealed / Type of filling gas: Argon / Glass retention: Extruded aluminum glazing stop with closed cell foam, interior perimeter / Glazing seals: Closed cell foam: (2 Rows) Inner glazing cavity perimeter at glazing stop; Close cell foam along inner glazing cavity perimeter. Glazing Gasket: (1 Row) Interior and exterior glazing cavity perimeters / Grid description: None / Setting blocks: Sill: (3) 100 mm (3.94") long, at center and 205 mm (8.07") from the ends / Daylight opening: 1373 mm (54.06") W x 1373 mm (54.06") H

Overall dimensions: 1506 mm (59.29") W x 1506 mm (59.29") H

3.0 ALTERATION(S)

Alteration(s) performed in the laboratory on tested specimen to meet the reported performances: None.

4.0 TEST BENCH INFORMATION

Test bench identification: TB-AWS-10. The calibration of this test bench was done as per Article 9.0 of ASTM E283, *Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors*, and ASTM E331 *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference* and ASTM E547 *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Cycling Static Air Pressure Difference*. The last calibration of this test bench and related equipment was performed in September 2024.

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5.0 RESULTS OF PERFORMANCE TESTS

SPECIFICATIONS	TEST RESULTS
<p><u>U.S. Air Leakage Resistance Test</u> R – LC – CW Classifications: $Q_{inf} \leq 1.5 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ AW Classification: $Q_{inf} \leq 0.5 \text{ l/s-m}^2 \text{ @ } 300 \text{ Pa}$</p> <p><u>Canadian air infiltration/exfiltration level</u> R – LC – CW Classifications: FIXED: $Q \leq 0.2 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ AW Classification: FIXED: $Q \leq 0.2 \text{ l/s-m}^2 \text{ @ } 300 \text{ Pa}$</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-11 par. 9.3.2 A440S1-09 & A440S1-17 Canadian Supplements par. 5.3 ASTM-E283-04 (2012)</p>	<p>Class CW – U.S. Requirements (NAFS-11)</p> <p>Fixed Level – Canadian Requirements (NAFS-11)</p> <p>Surface: 2.27 m^2</p> <p>$Q_{inf} = 0.05 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ $Q_{ext} = 0.06 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$</p>
<p><u>Air Leakage Resistance Test</u> R – LC Classifications: $Q_{inf} \leq 1.5 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$</p> <p>Canadian air infiltration/exfiltration level: FIXED: $Q \leq 0.2 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ CW Classification: $Q \leq 0.5 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ AW Classification: $Q_{inf} \leq 0.5 \text{ l/s-m}^2 \text{ @ } 300 \text{ Pa}$ $Q_{ext} \leq 0.5 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-17 par. 9.3.2 A440S1-19 Canadian Supplement par. 5.4 ASTM-E283-04 (2012)</p>	<p>Class CW – Passed (NAFS-17)</p> <p>Surface: 2.27 m^2</p> <p>$Q_{inf} = 0.05 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ $Q_{ext} = 0.06 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$</p>
<p><u>(NAFS-22)</u> <u>Air Leakage Resistance Test</u> R – LC – Classifications: $Q_{inf} \leq 1.5 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ CW Classification: $Q \leq 1.0 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ AW Classification: $Q_{inf} \leq 1.5 \text{ l/s-m}^2 \text{ @ } 300 \text{ Pa}$ $Q_{ext} \leq 1.0 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ AAMA/WDMA/CSA 101/I.S.2/A440-22 par. 8.3.2. ASTM-E283-19</p>	<p>Class CW (NAFS-22)</p> <p>Surface: 2.27 m^2</p> <p>$Q_{inf} = 0.05 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$ $Q_{ext} = 0.06 \text{ l/s-m}^2 \text{ @ } 75 \text{ Pa}$</p>

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SPECIFICATIONS	TEST RESULTS
<p>Water Resistance Test No water infiltration under a minimum pressure differential: Designation LW: 0 Pa (0 psf) Class R: 140 Pa Class LC: 180 Pa Class CW: 220 Pa Class AW: 390 Pa</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-11 par. 9.3.3. A440S1-09 & A440S1-17 Canadian Supplements par. 5.4 AAMA/WDMA/CSA 101/I.S.2/A440-17 par. 9.3.2 A440S1-19 Canadian Supplement par. 5.5 AAMA/WDMA/CSA 101/I.S.2/A440-22 par. 8.3.3. Classes R, LC & CW: ASTM-E547-00 (2009 & 2016) Class AW: ASTM-E547-00 (2009 & 2016) & ASTM-E331-00 (2009 & 2016)</p>	<p>Class CW – U.S. & Canadian Requirements</p> <p>No water infiltration under the minimum test pressure for the class.</p> <p>No water infiltration at an optional test pressure differential of:</p> <p>220 Pa - U.S. & Canadian Requirements 580 Pa - U.S. & Canadian Requirements 720 Pa - Canadian requirements only</p>
<p>Uniform Load Deflection Test Member deflection at a minimum design pressure (DP) and at optional DP: Class R: 720 Pa – Reported only Class LC: 1200 Pa – Reported only Class CW: Limited to L/175 at 1440 Pa Class AW: Limited to L/175 at 1920 Pa</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-11 par. 9.3.4 AAMA/WDMA/CSA 101/I.S.2/A440-17 par. 9.3.4 AAMA/WDMA/CSA 101/I.S.2/A440-22 par. 8.3.4.2 ASTM-E330-02 (2010) & ASTM-E330-14</p>	<p>DP 60 – Class CW</p> <p>Net deflection measured on the jamb (Gateway): 0.06 mm @ –1440 Pa 0.14 mm @ +1440 Pa</p> <p>Net deflection measured on the jamb (DP 60): 0.04 mm @ –2880 Pa 0.25 mm @ +2880 Pa</p> <p>Span: 1430 mm Allowed ≤ 8.18 mm</p>
<p>Uniform Load Structural Permanent deformation is limited at a minimum structural test pressure (STP) and at optional STP of: Class R: ≤ 0.4% (L) at 1080 Pa Class LC: ≤ 0.4% (L) at 1800 Pa Class CW: ≤ 0.3% (L) at 2160 Pa Class AW: ≤ 0.2% (L) at 2880 Pa</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-11 par. 9.3.4 AAMA/WDMA/CSA 101/I.S.2/A440-17 par. 9.3.4 AAMA/WDMA/CSA 101/I.S.2/A440-22 par. 8.3.4.3 ASTM-E330-02 (2010) & ASTM-E330-14 (2021)</p>	<p>STP 60 – Class CW Permanent deformation measured on the jamb (Gateway): 0.07 mm @ –2160 Pa 0.24 mm @ +2160 Pa</p> <p>Permanent deformation measured on the jamb (STP 60): 0.01 mm @ –4320 Pa 0.19 mm @ +4320 Pa</p> <p>Span: 1430 mm Allowed ≤ 4.29 mm</p>
<p>Forced-Entry Resistance All windows shall be tested according to ASTM F588-07 & ASTM F588-14 Grade 10.</p> <p>AAMA/WDMA/CSA 101/I.S.2/A440-11 par. 9.3.5 AAMA/WDMA/CSA 101/I.S.2/A440-17 par. 9.3.5 AAMA/WDMA/CSA 101/I.S.2/A440-22 par. 8.3.5</p>	<p>Passed</p> <p>Grade 40</p> <p>T₁=10 min., L₁=1334 N, L₂=667 N & L₃=267 N</p>

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6.0 CONCLUSION

The fenestration product described in this report was tested in accordance with the AAMA/WDMA/CSA 101/I.S.2/A440-11 (NAFS 2011) Standard and its Canadian Supplement CSA A440S1-17, AAMA/WDMA/CSA 101/I.S. 2/A440-17 (NAFS 2017) Standard and its Canadian Supplement CSA A440S1:19, and AAMA/WDMA/CSA 101/I.S. 2/A440-22 (NAFS 2022) Standard, regarding performance testing. The above results were secured by using the designated test methods and the performance requirements of the referenced specification.

Detailed assembly drawings showing wall thickness of all members, corner construction and hardware application are on file and have been compared to the sample submitted.

The test records from this evaluation will be retained for a minimum of four (4) years from the date of report issuance. This report does not constitute certification of this product, which may only be granted by a certification agency.

Note on the Limitation of Liability:
Due care was taken in performing the testing sequence and in reporting the results related to the test specimen received for evaluation. Through acceptance of this report, the client agrees to exempt UL Laboratory Canada Inc. employees and owners from all liability claims and demands arising from any matter related to or concerning the quality and execution of the performance evaluation contained in this report. The Decision Rule is based on Simple Acceptance (Measurement Uncertainty is not taken into account when making a statement of conformity).

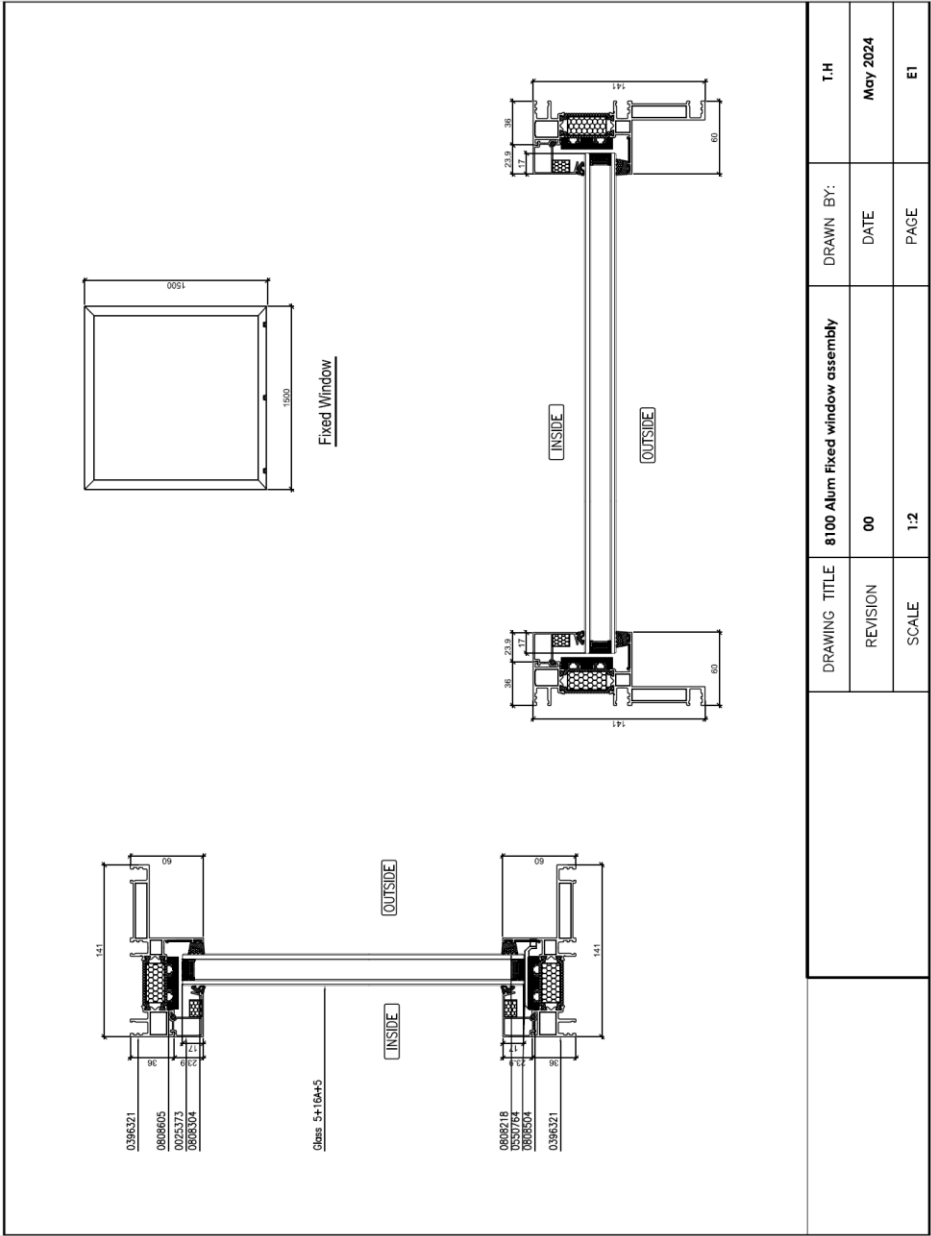
7.0 REVISION LOG

Rev. #	Date	Page(s)	Revision(s)
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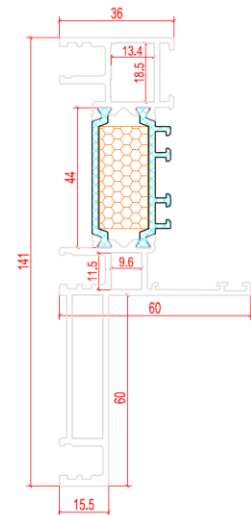
APPENDIX
DRAWINGS, SEALANT, DRAINAGE DETAILS & BILL OF MATERIALS

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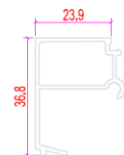


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	REVISION	00	DATE	May 2024
	SCALE	1:2	PAGE	E1

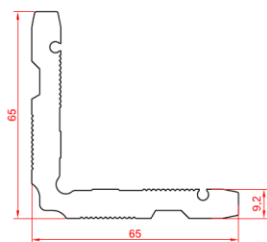
8100 Aluminum Fixed Window Profile



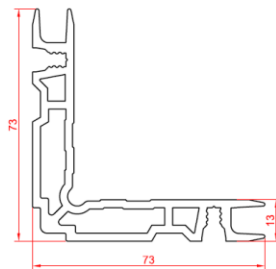
Window Frame



Glazing Bead



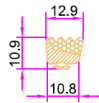


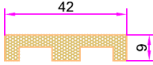

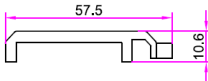
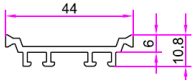
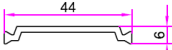
9mm Angular Code



13mm Angular Code

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8100 Aluminum Fixed Window Accessories Profile

0808218	Exterior Glazing Gasket	0808304	Interior Glazing Gasket
	EPDM		EPDM
0808504	Round bar adhesive strip	0808605	ES81 Foam
	EPDM		PE
0971014	Obturator sponge	0550764	Glass Pallet
	Obturator sponge		PA66
0965748	Heat-insulating strip	0965747	Heat-insulating strip
	PA66GF25		PA66GF25

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8100 Series Fixed Window BOM					
Date: 08/06/2024 (M/D/Y)					
No	Item	Description	Qty	Size(W x H x D)(mm)	Location:
1	Frame	Thermal broken aluminum	1	1500x1500x141	
3	Joinery	Mitre-cut, assembly with corner keys			
4	Installation	Wood buck			Fastened with #8 x 2.5" screws (2 per jamb and head), perimeter sealed w/ foam sealant
5	Glazing	Double-pane IGU, Tempered glass	1		Glass thickness: 5mm
6	Glazing Method	Laid in glazed	1	1414x1414	Interior perimeter
		Glazing stop, Aluminum extrusion			
7	Reinforcement	None			
8	Weatherstrips	None			
9	Drainage	3 Drainages in sill		34x8	
10	Hardware	None			
11	Screen	None			

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