

Foshan Wanjia Window and Door Co., Ltd

TEST REPORT

REPORT NUMBER

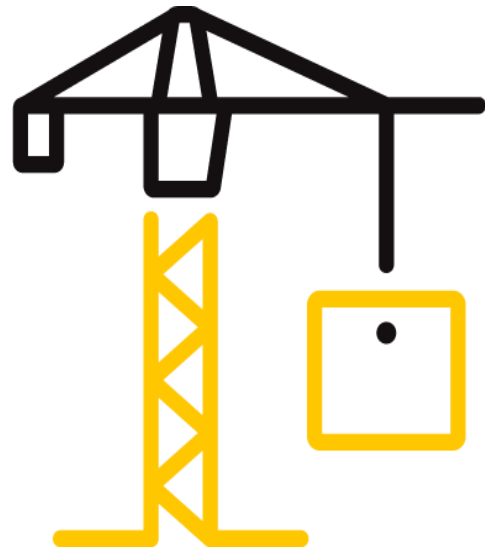
210329061GZU-001

ISSUE DATE

2021-4-30

PAGES

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Effective date: 2020-09-01

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Test Report

Issue Date: 2021-04-30 Intertek Report No. 210329061GZU-001

Applicant: Foshan Wanjia Window and Door Co., Ltd
Applicant Address: 5, Songxing Road, Songgang, Shishan Town, Nanhai District, Foshan, Guangdong, China
Attn: Guoqiang Wan
Primary product designator: Class CW - PG45 - Size Tested 1250mm x 1850mm (49.21in. x 72.83in.) - Type DAW
Class CW - PG45 - Size Tested 2550mm x 1850mm (100.39in. x 72.83in.) - Type FW

Optional secondary designator: Positive Design Pressure = +2160 Pa (45.11 psf)
Negative Design Pressure = -2160 Pa (-45.11 psf)
Water penetration resistance test pressure = 720 Pa (15.04 psf)
Air infiltration/exfiltration level: A2 level (Dual-action-part), Fixed level (Fixed-part)

SUBJECT: Performance testing
<K80 Dual-action with Fixed Window Assembly>

Dear Sir,
This test report for represents the results of our evaluation of the above referenced product(s) to the requirements contained in the following standards:

TEST METHODS AND STANDARDS
AAMA/WDMA/CSA 101/I.S.2/A440-11 (NAFS 2011 - North American Fenestration Standard / Specification for Windows, Doors and Skylights), CSA A440S1-17 (Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-11)

SAMPLE ID	MODEL	SPECIFICATION
S210329060-001	WBW80LPC	3800mm (Width) x1850 mm (Height) x 80mm (Thickness)

SAMPLE RECEIVED: 2021-03-29
TESTED FROM: 2021-04-01 TO 2021-04-05

TEST LOCATION: C2-1 Building Heping Fair, Yongning Street, Zengcheng District, Guangzhou, China

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Test Items, Method and Results:

1 Test Samples

Sample was submitted to Intertek directly from the client. Sample was not independently selected for testing. Sample was received at the Evaluation Center on Mar 29, 2021.

A full scale sample of Dual-action with Fixed Window Assembly (Model: WBW80LPC) was provided by the manufacturer that was not weathered nor conditioned.

The description of the samples given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

Table 1 Product Information

Product Name	K80 Dual-action with Fixed Window Assembly
Model	WBW80LPC
Dimension of Window Frame	3800mm (Width) x1850 mm (Height) x 80mm (Thickness)
Dimension of Window Sash	Operable Sash: 1202mm (Width) x 1782 mm (Height) x 89mm (Thickness)
Aluminum Profile	Model: SPEC 80 Manufacturer: Zhen hao Co., Ltd.
Frame Corner Construction Details	Mechanically assembled by Corner Combining Machine, then Glued and sealed
Reinforcement	None
Glazing	Dimension: Operable Sash: 1082mm(Width) x 1662 mm (Height) Structure: 5mm+12A+5mm+16A+5mm Tempered three-layer glass Fixed glass: 2482mm(Width) x 1762 mm (Height) Structure: 8mm+27A+8mm tempered double glazing Supplier: foshan xinhongze
Hardware	Specify type: Window handle Model: 0757Bi Supplier: Fapim
Weather-strip	None
Thermal Break	Model: HK35.3B, HK35.3G, HK35.3 Material: PA66GF25 Nylon insulation strip Supplier: Technoform Bautec(Suzhou) Thermal Insulation Material Co., Ltd.
Drainage	Sizes: 25mmx 5mm (Width x Height) quantity: 7

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Table 1 Product Information (continued)

Gasket (Between leaf and frame)	Model:BLM-009, BLM-006, 22239, LBY-005, ACE-YZ01A, GDWY-003 Material: EPDM Supplier: HAIDA Co., Ltd.
Sealant of Glass	Model: LM-9980 Material: Silicone weatherproof sealan Supplier: lingmei Co., Ltd.
Installation	The rough opening allowed for a 10mm shim space. The exterior perimeter of the test specimen was sealed with silicon sealant.

The sample ID number were S210329060-001. The drawings of the representative sample were referenced in Appendix A, the test data was referenced in Appendix B and the photo of the representative sample was referenced in Appendix C.

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Test Items, Method and Results:

2 Test Result

Table 2 Test Result for Product to Canada

Test Description	Requirements (Class CW-PG45)		Results		Verdict
Air Leakage Resistance Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.2 & ASTM E283/E283M-19 (Fixed-part)	Maximum air leakage at +75 Pa	0.2 L/s·m ²	Air leakage at +75 Pa	0.01 L/s·m ²	Pass
	Maximum air leakage at -75 Pa	0.2 L/s·m ²	Air leakage at -75 Pa	<0.01 L/s·m ²	
	Average air leakage rate			0.01 L/s·m ²	
Air Leakage Resistance Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.2 & ASTM E283/E283M-19 (Dual-action-part)	Maximum air leakage at +75 Pa	1.5 L/s·m ²	Air leakage at +75 Pa	0.65 L/s·m ²	Pass
	Maximum air leakage at -75 Pa	1.5 L/s·m ²	Air leakage at -75 Pa	0.65 L/s·m ²	
	Average air leakage rate			0.65 L/s·m ²	
Water Penetration Resistance Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.3 & ASTM E547-2000(R2016)	Minimum water pressure	330 Pa (6.89 psf)	Test Pressure	720 Pa (15.02 psf)	Pass
			No water penetration occurred when the pressure was 720 Pa (15.02 psf).		
Uniform Load Deflection Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.4.2 & ASTM E330/E330M-14	Design Pressure (DP)	2160 Pa (45.11 psf)	Design Pressure (DP)	2160 Pa (45.11 psf)	Pass
			Net deflection at stile at handle side	3.8 mm	
			Net deflection at bottom rail	1.7 mm	
			Net deflection at mullion	6.0 mm	

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Table 2 Test Result for Product to Canada (continued)

Test Description	Requirements (Class CW-PG45)		Results		Verdict
Uniform Load Structural Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.4.2 & ASTM E330/E330M-14	Structural Pressure (STP)	3240 Pa (67.67 psf)	Structural Pressure (STP)	3240 Pa (67.67 psf)	Pass
			After the test loads were released, there was no failure or permanent deformation of any part of the window system that would cause the test specimen to be inoperable.		
			Net permanent deflection at stile at handle side	1.0 mm	
			Net permanent deflection at bottom rail	0.1 mm	
			Net permanent deflection at mullion	1.2 mm	
Sash Concentrated Load Test on Latch Rail AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.6.4.3	Deflection limit at Perpendicular (normal to the plane)	1.5 mm	Deflection at 135N (30.35 lbf)	One direction: 0.72 mm opposite direction: 0.70 mm	Pass
	Deflection limit at Parallel (in the plane)	3.3 mm	Deflection at 270N (60.70 lbf)	One direction: 0.76 mm opposite direction: 0.81 mm	
Stabilizing Arm Load Test AAMA/WDMA/CS A101/I.S.2/A440-11, Clause 9.3.6.5.3	The load to the Leaf corners	890 N	The load to the Leaf corners	890 N	Pass
			The load to the Top rail at center	1780 N	
	The load to the Top rail at center	1780 N	After test, no damage to the window frame, operable sash or leaf components, glass, stabilizing arm, and hardware components, and the product function normally.		

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Table 2 Test Result for Product to Canada (continued)

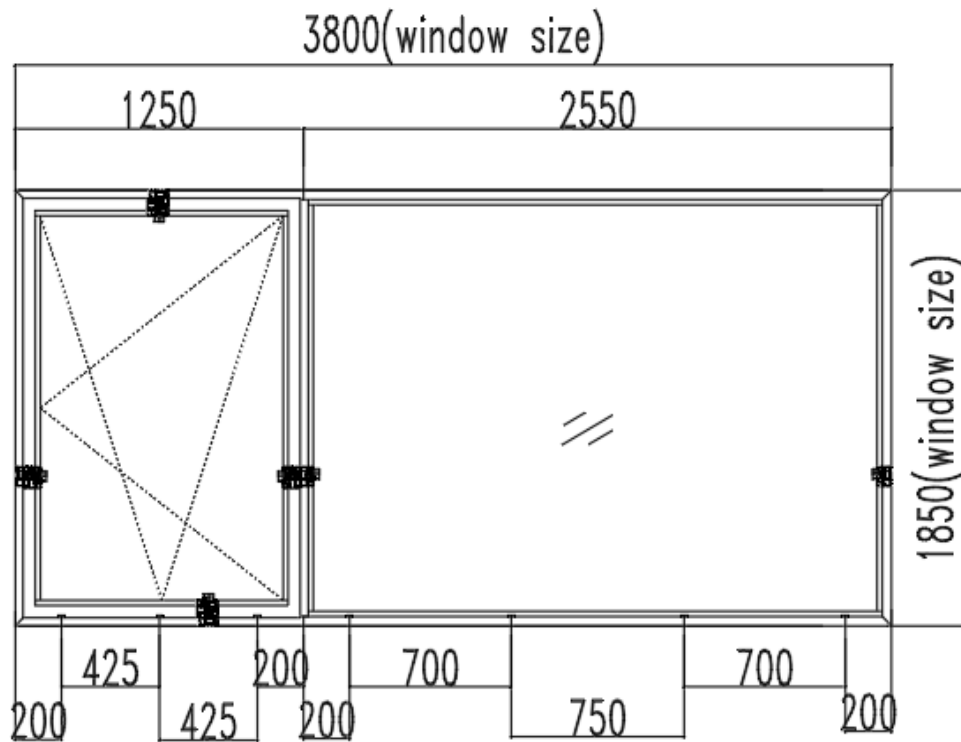
Test Description	Requirements (Class CW-PG45)	Results		Verdict
Forced-entry Resistance Test AAMA/WDMA/CS A101/I.S.2/A440- 11, Clause 9.3.5 & ASTM F588-17	Grade 10 (according to the customer's requirements) For Grade 10: T1=5min Concentrated load of L1 is 150 lbf (667N) Concentrated load of L2 is 75 lbf (333N)	Test Class	Grade 10	Pass
		After test, there was no opening which allows for entrance through the tested specimen. The leaf remained locked and closed. Lock and hinges were not disengaged. The glazed panel cannot be opened or removed by hand or tools for hardware manipulation within a time limit of 5min(T1).		
Remark: All of tests were conducted on the same specimen, for the only one that sent by client.				

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Appendix A: Sample Drawings



K80 Casement Windows

Fig.1 Drawing of Representative Sample

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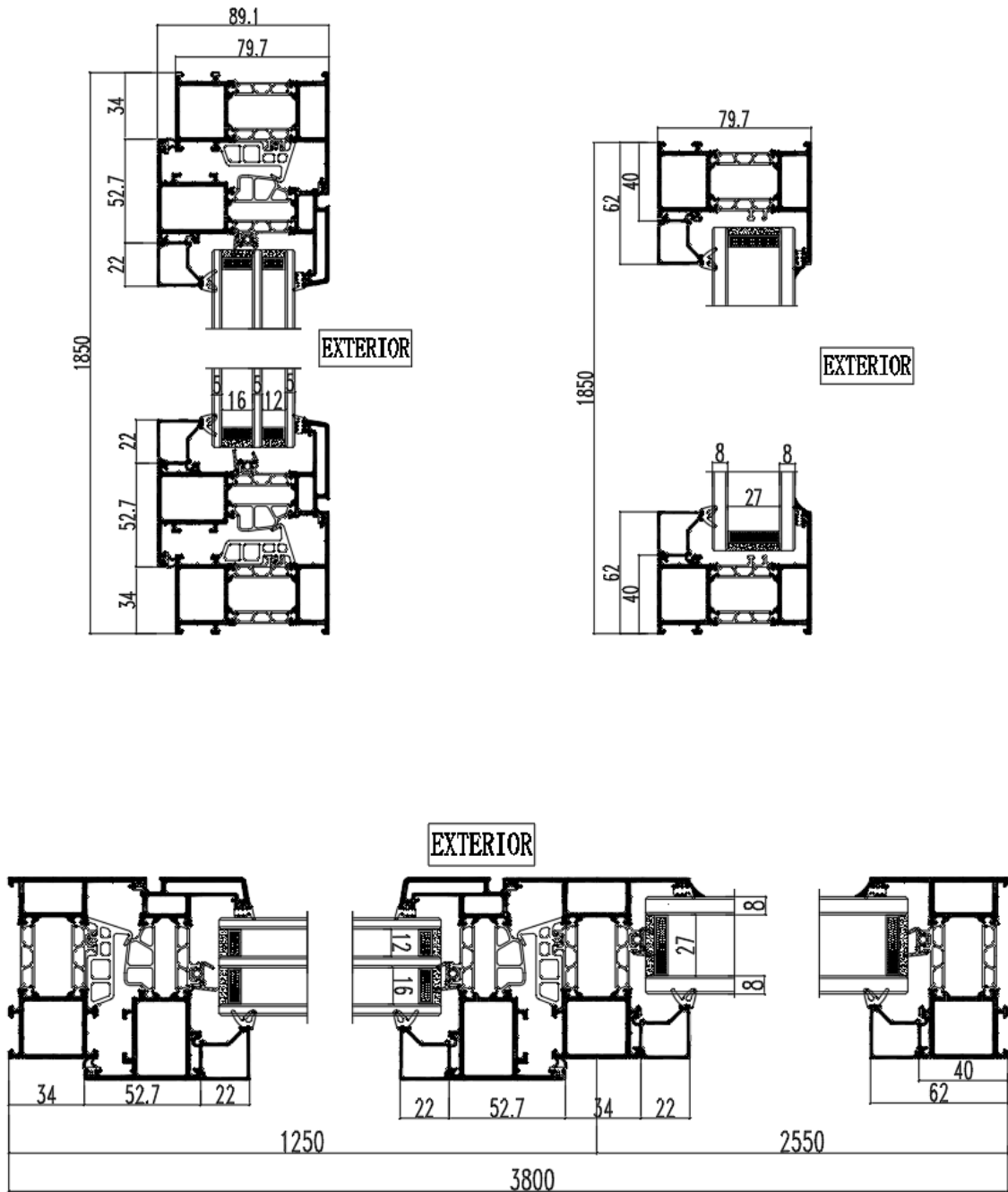


Fig.2 Drawing of Representative Sample

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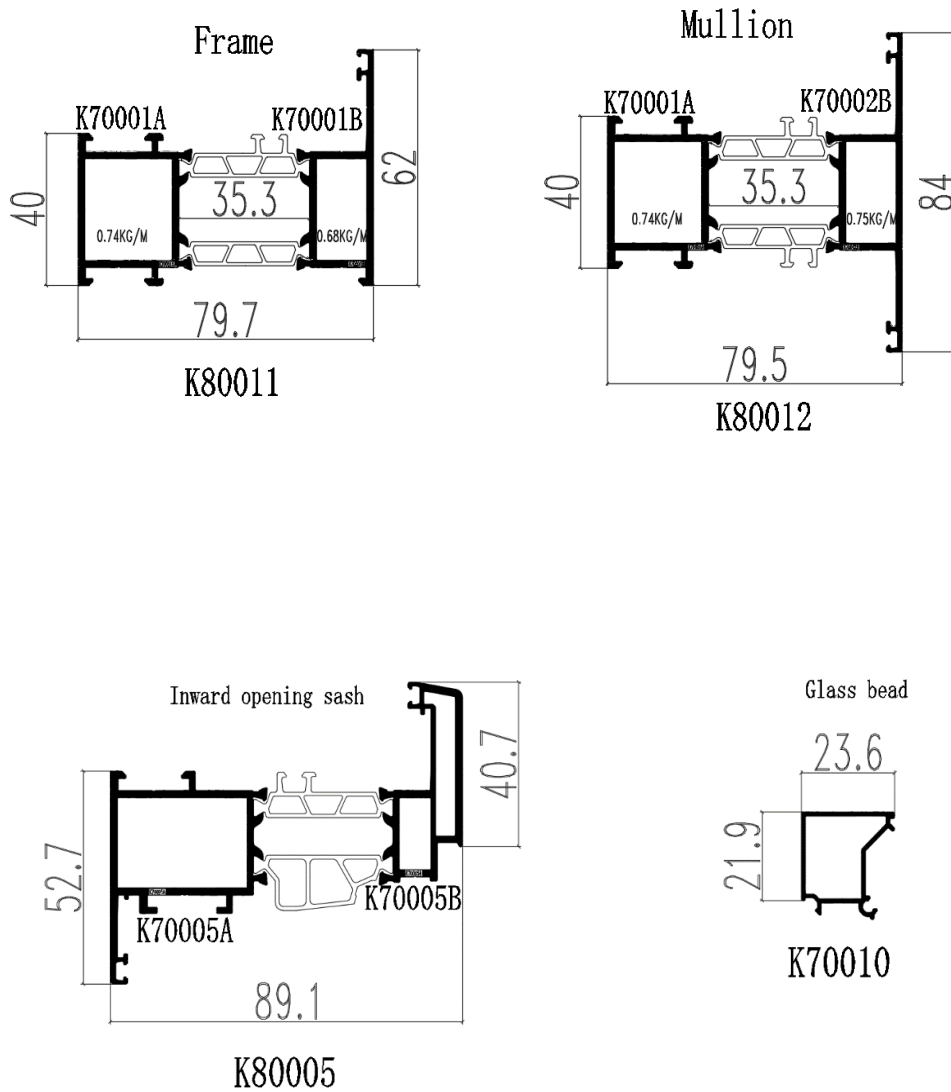


Fig.3 Drawing of Representative Sample

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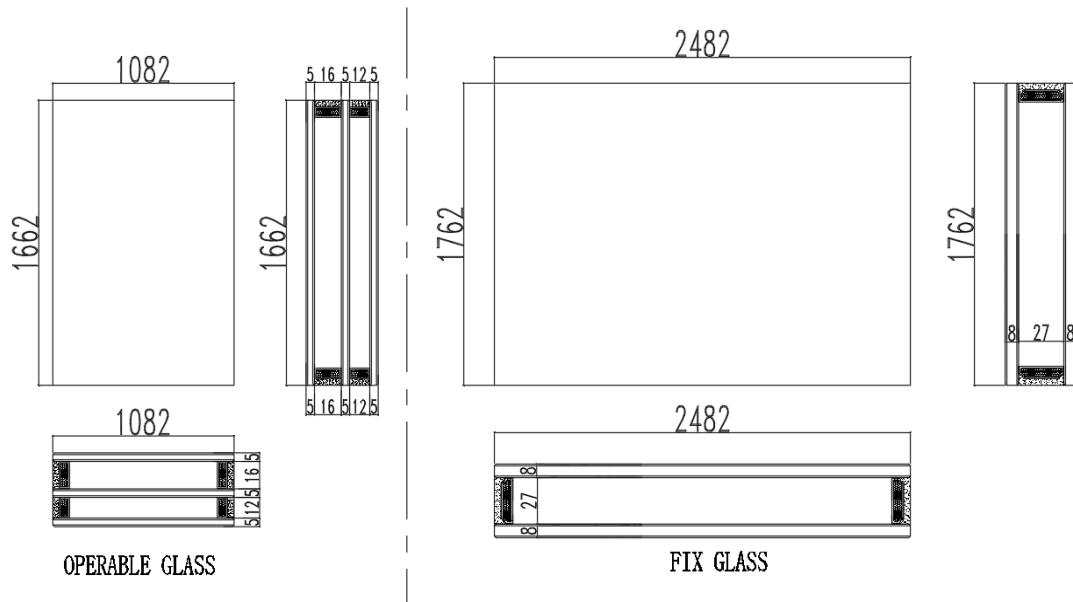


Fig.4 Drawing of Glazing Structure

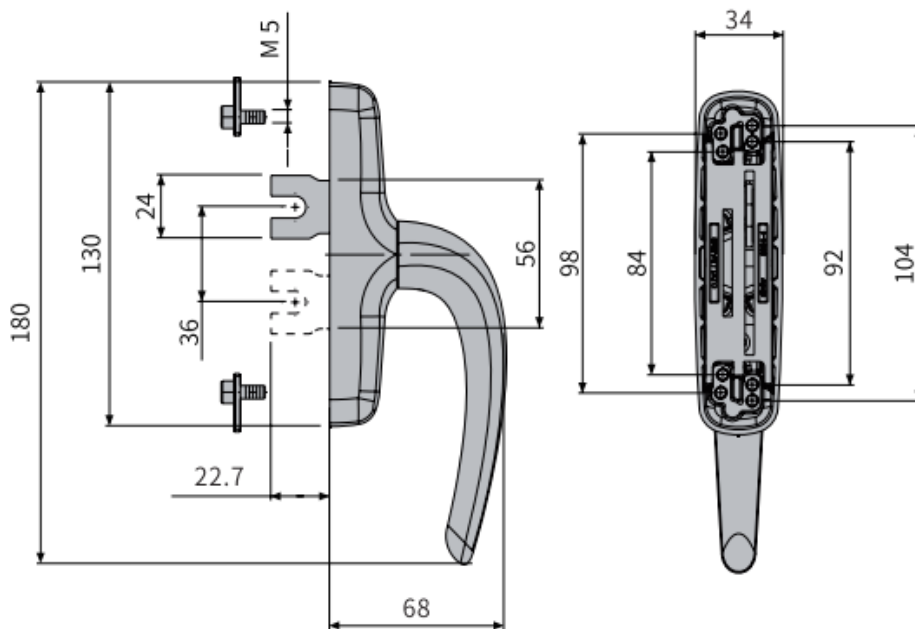


Fig.5 Drawing of Representative Sample

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Appendix B: Test Data

B.1 Air Leakage Resistance Test – Test method ASTM E283/E283M-19

Fixed area: 4.718 m² (50.76 ft²)**Table B.1 Test Data of Air Leakage Resistance Test**

Infiltration rate (75 Pa)	0.01 L/s·m ²	0.002 cfm/ft ²
Exfiltration rate (75 Pa)	<0.01 L/s·m ²	<0.001 cfm/ft ²
Average air leakage rate (75 Pa)	0.01 L/s·m ²	0.001 cfm/ft ²

The Fixed window met the requirements of Fixed Level to Class CW for Air Leakage Resistance Test as per AAMA/WDMA/CSA 101/I.S.2/A440-11.

Dual-action area: 2.313 m² (24.88ft²)**Table B.2 Test Data of Air Leakage Resistance Test**

Infiltration rate (75 Pa)	0.65 L/s·m ²	0.129 cfm/ft ²
Exfiltration rate (75 Pa)	0.65 L/s·m ²	0.129 cfm/ft ²
Average air leakage rate (75 Pa)	0.65 L/s·m ²	0.129 cfm/ft ²

The Dual-action window met the requirements of A2 Level for Air Leakage Resistance Test as per AAMA/WDMA/CSA 101/I.S.2/A440-11.

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Appendix B: Test Data

B.2 Water resistance test – Test method ASTM E547-2000

No water penetration was occurred when the pressure was 720 Pa (15.02psf).

Test result: Pmax = 720 Pa (15.02psf).

The tested specimen met the requirements for Class CW-PG45 for Water Penetration Resistance Test as per AAMA/WDMA/CSA 101/I.S.2/A440-11.

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Appendix B: Test Data

B.3 Uniform Load Deflection Test – Test method ASTM E330/E330M-14, Procedure A

Span length, L1 :1700 mm (66.93 in.) (1-3)

Span length, L2 :1100 mm (43.31 in.) (3-5)

Span length, L3 :1700 mm (66.93 in.) (6-8)

Test Pressure (DP), P = 2160 Pa (45.11 psf)

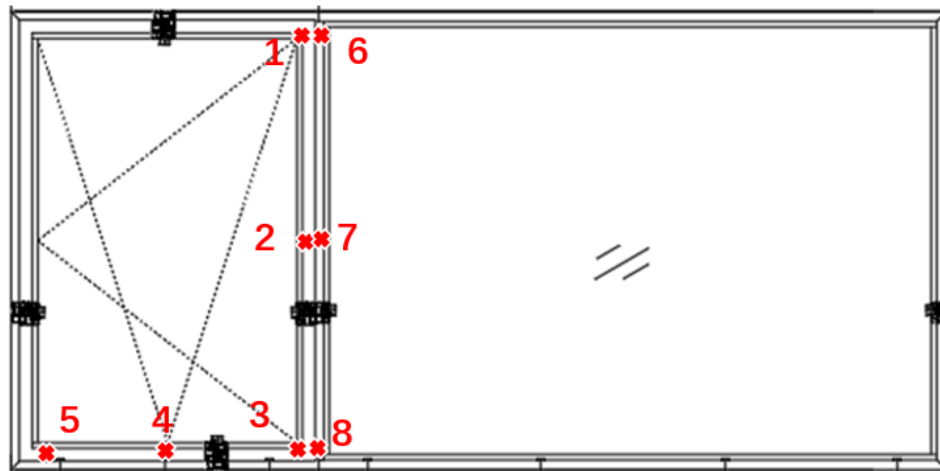


Fig.6 Locations of Displacement Measuring Devices

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Table B.3 Test Data of Uniform Load Deflection Test

Member (mm)		Test Pressure (Pa)	Deflection (mm)			Net Deflection
Item	Span Length		1	2	3	
Stile at Handle Side	1700	+P = 2160	4.0	7.2	2.9	3.8
		0	0.2	0.2	0.1	0.1
		-P = -2160	6.4	9.4	5.0	3.7
		0	0.5	1.0	0.3	0.6
Member (mm)		Test Pressure (Pa)	Deflection (mm)			Net Deflection
Item	Span Length		3	4	5	
Bottom Rail	1100	+P = 2160	3.0	1.5	0.1	1.5
		0	0.1	0.1	0.0	0.1
		-P = -2160	5.0	2.9	1.6	1.7
		0	0.2	0.1	0.2	<0.1
Member (mm)		Test Pressure (Pa)	Deflection (mm)			Net Deflection
Item	Span Length		6	7	8	
Mullion	1700	+P = 2160	2.1	8.0	2.1	5.9
		0	0.2	0.2	0.1	0.1
		-P = -2160	3.8	9.5	3.2	6.0
		0	0.5	0.9	0.3	0.5

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Table B.4 Test Data of Uniform Load Deflection Test for Stile at Handle Side

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Deflection	Perm. Set	Deflection	Perm. Set
2160 Pa (45.11 psf)	3.8 (0.15)	0.1 (<0.01)	3.7 (0.15)	0.6 (0.02)
Deflection limit at design pressure, L1/175=9.71 mm (0.38 in.)				

Table B.5 Test Data of Uniform Load Deflection Test for Bottom Rail

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Deflection	Perm. Set	Deflection	Perm. Set
2160 Pa (45.11 psf)	1.5 (0.06)	0.1 (<0.01)	1.7 (0.07)	<0.1 (<0.01)
Deflection limit at design pressure, L2/175=6.29 mm (0.25 in.)				

Table B.6 Test Data of Uniform Load Deflection Test for Mullion

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Deflection	Perm. Set	Deflection	Perm. Set
2160 Pa (45.11 psf)	5.9 (0.23)	0.1 (<0.01)	6.0 (0.24)	0.5 (0.02)
Deflection limit at design pressure, L3/175=9.71 mm (0.38 in.)				

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Appendix B: Test Data

B.4 Uniform Load Structural Test – Test method ASTM E330/E330M-14, Procedure A

Design Pressure, P = 2160 Pa (45.11 psf)

Structural Pressure, P = 3240 Pa (67.67 psf)

Table B.7 Test Data of Uniform Load Structural Test

Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Net permanent deformation
Item	Span Length		1	2	3	
Stile at Handle Side	1700	+P = 3240	—	—	—	—
		0	0.3	0.3	0.1	0.1
		-P = -3240	—	—	—	—
		0	0.8	1.5	0.3	1.0
Permanent Deformation limit, L1 x 0.3% = 5.10 mm (0.20 in.)						
Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Net permanent deformation
Item	Span Length		3	4	5	
Bottom Rail	1100	+P = 3240	—	—	—	—
		0	0.1	0.0	0.0	0.1
		-P = -3240	—	—	—	—
		0	0.3	0.2	0.2	0.1
Permanent Deformation limit, L2 x 0.3% = 3.30 mm (0.13 in.)						
Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Net permanent deformation
Item	Span Length		6	7	8	
Mullion	1700	+P = 3240	—	—	—	—
		0	0.2	0.3	0.1	0.1
		-P = -3240	—	—	—	—
		0	0.8	1.7	0.3	1.2
Permanent Deformation limit, L3 x 0.3% = 5.10 mm (0.20 in.)						

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Table B.8 Test Data of Uniform Load Structural Test

Test Pressure	Deflection Measurements, mm (in.)			
	Perm. Set for Stile at Handle Side		Perm. Set for Bottom Rail	
	Positive	Negative	Positive	Negative
3240Pa (67.67 psf)	0.1 (<0.01)	1.0 (0.04)	0.1 (<0.01)	0.1 (<0.01)

Test Pressure	Deflection Measurements, mm (in.)	
	Perm. Set for Mullion	
	Positive	Negative
3240Pa (67.67 psf)	0.1 (<0.01)	1.2 (0.05)

After the test loads were released, there was no failure or permanent deformation of any part of the window system that would cause the test specimen to be inoperable. There was no permanent deformation which was in excess of 0.3% of its span.

The tested specimen met the requirements for Class CW-PG45 for Uniform Load Structure Test as per AAMA/WDMA/CSA 101/1.S.2/A440-11.

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Appendix C: Sample Received Photo



REPORT AUTHORIZED

When signed with physical or electronic signature, the contents of this report have been prepared and approved per Intertek's quality process in accordance with ISO 17025.

Approved by:

Prepared by:

Oliver Zhu

Ziqing Chen

Name: Oliver Zhu

Title: Reviewer

Name: Ziqing Chen

Title: Engineer

Revision:

Report No.	Date	Revision Reason	Revision Summary	Author	Reviewer
210329061GZU-001	2021-04-30	/	First issue	Ziqing Chen	Oliver Zhu

End of Test Report