

US WEATHERSEAL WINDOWS & DOORS CORP.

TEST REPORT

SCOPE OF WORK

70mm Tilt & Turn Window

REPORT NUMBER

211013007SHF-001

TEST DATE(S)

2021-10-18

ISSUE DATE

2021-10-22

PAGES

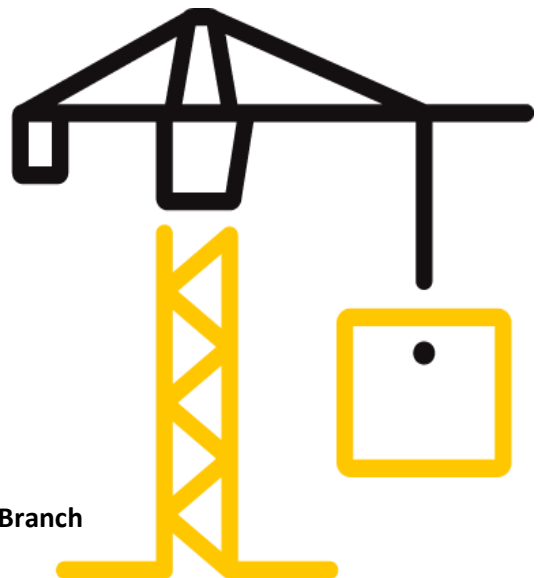
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DOCUMENT CONTROL NUMBER

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Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch



Test Report

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Test Report

Issue Date: 2021-10-22 Intertek Report No. 211013007SHF-001

Applicant: US WEATHERSEAL WINDOWS & DOORS CORP.
Applicant Address: 4918 3RD AVENUE, BROOKLYN, NY 11220
Attn: Tracy Wu
SUBJECT: Performance testing
Dual-action Window

Product Information

Product Name	70mm Tilt & Turn Window	Brand	/
Sample Description	Good Condition	Sample Amount	1 set
		Received Date	2021-10-13
Sample ID	Model	Specification	
S211013007SHF.001	WS-70	914mm(W) x 2438mm(H)	

Test Methods And Standards

Test Standard	ASTM E283/E283M-19; ASTM E547-2000(R2016); ASTM E330-2014
Specification Standard	AAMA/WDMA/CSA 101/I.S.2/A440-17 (NAFS 2017 - North American Fenestration Standard / Specification for Windows, Doors and Skylights)
Test Conclusion	The samples were tested according to the above standards, and the results are shown in the following page.

Note:

1.This report relates specifically to the sample(s) that were drawn and provided by the applicant or their nominated third party. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment and only relate to the sample(s) as received and tested.

Report Authorized

 <hr/> Name: Fred Bao Title: Approver	  <hr/> Name: Zac Zhang Title: Reviewer	 <hr/> Name: Gio Liu Title: Project Engineer
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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 October 13th, 2021.

A full scale sample of 70mm Tilt & Turn Window (Model: WS-70) 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	70mm Tilt & Turn Window
Model	WS-70
Dimension of Window Frame	914mm(Width) x 2438mm(Height) x 70mm(Thickness)
Dimension of Window Sash	847mm(Width) x 2371mm(Height) x 79mm(Thickness)
Aluminum Profile	Model: LAN-70 Manufacturer: US Weatherseal Window & Door Corp.
Frame Corner Construction Details: Joinery type	Set with an alignment key, and secured with two corner keys, each lanced once per member end and then sealed with sealant Joinery type: Mitered and sealed
Reinforcement	None
Glazing	Dimension: 721mm(Width) x 2245mm(Height) Structure: 6mm +12A +6mm +12A +6mm Low-E Supplier: Jiangsu JiaCheng Special Glass Manufacturing Co., Ltd.
Hardware	Handle; Supplier: Hoppe Tilt-turn hinges, Limit arm; Supplier: Gisees
Weather-strip	Model: (1) 0508204; (2) 0508306 Material: EPDM Supplier: Jiangyin Haida Rubber & Plastic Co., Ltd.
Thermal Break	Model: (1) 6x33mm; (2) 10x33mm; (3) 12x33mm Material: PA66GF25 Nylon insulation strip Supplier: Shandong Huajian Aluminum Group Co., Ltd.
Drainage	Sizes: 25mm x 8mm (Width x Height) Quantity: 2
Gasket (between sash and frame)	Model: (1) 0808101; (2) 0808007; (3) 0808702 Material: EPDM Supplier: Jiangyin Haida Rubber & Plastic Co., Ltd.

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Table 1 Product Information(Continued)

Sealant of Glass	Model: T796 Neutral silicone sealant Material: Silicone sealant Supplier: Hangzhou Zhijiang Silicone Chemicals Co., Ltd.
Installation	The rough opening allowed for a 3mm shim space at the jambs and a 1.5mm shim space at the head and sill. The exterior perimeter of the window was sealed with silicone.

The sample ID number was S211013007SHF.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

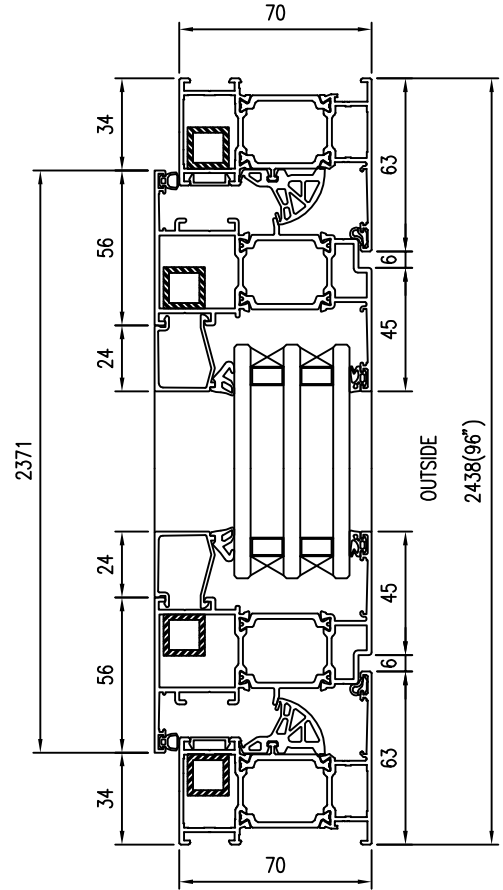
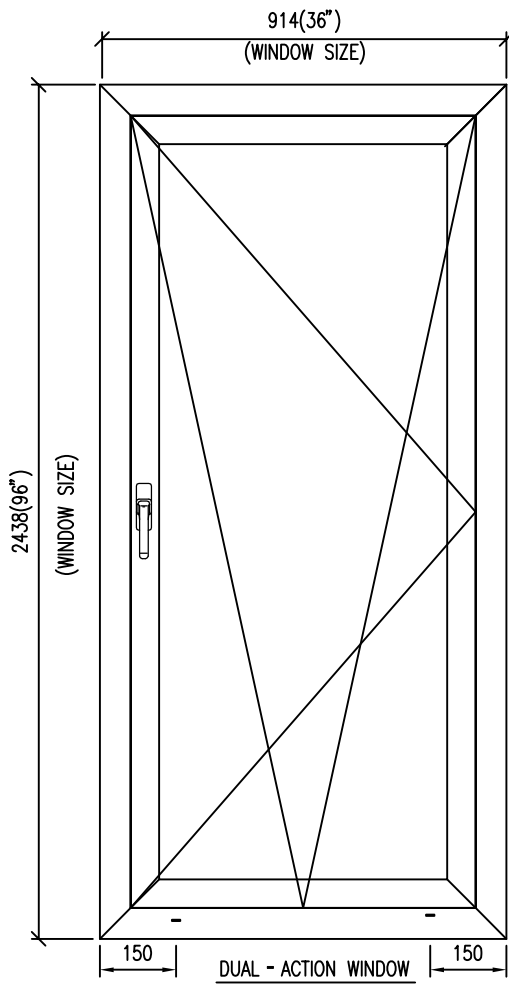
<i>Test Description</i>	<i>Requirements</i>		<i>Results</i>		<i>Verdict</i>
Air Leakage Resistance Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.2 ASTM E283/E283M-19 2021/10/18	Maximum air leakage at +75 Pa	0.5 L/s·m ²	Air leakage at +75 Pa	0.06 L/s·m ²	Pass
	Maximum air leakage at -75 Pa	0.5 L/s·m ²	Air leakage at -75 Pa	0.04 L/s·m ²	
			Average air leakage rate	0.05 L/s·m ²	
Water Penetration Resistance Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.3 ASTM E547-2000(R2016) 2021/10/18	Minimum water pressure	220 Pa (4.59 psf)	Test Pressure	580 Pa (12.11 psf)	Pass
			After water sprayed for complete four cycles in 24 minutes at 580 Pa (12.11 psf), there was no water penetration.		
Uniform Load Deflection Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.4.2 ASTM E330-2014 2021/10/18	Minimum Design Pressure (DP)	1440 Pa (30.08 psf)	Design Pressure (DP)	1440 Pa (30.08 psf)	Pass
			Maximum deflection at Stile at handle side	2.0 mm	
			Maximum deflection at Bottom Rail	0.2 mm	
Uniform Load Structural Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.4.3 ASTM E330-2014 2021/10/18	Minimum Structural Pressure (STP)	2160 Pa (45.11 psf)	Structural Pressure (STP)	2160 Pa (45.11 psf)	Pass
			No significant breakage or damage after ultimate strength was released.		
			Maximum permanent deformation at Stile at handle side	0.3 mm	
			Maximum permanent deformation at Bottom Rail	0.1 mm	

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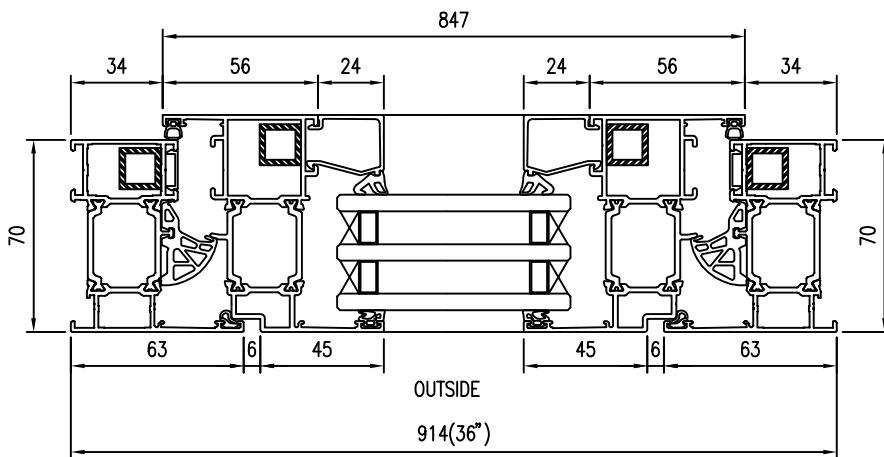
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Appendix A: Sample Drawings



TYPICAL SECTION DETAIL



TYPICAL PLAN DETAIL

Fig.1 Drawing of Representative Sample

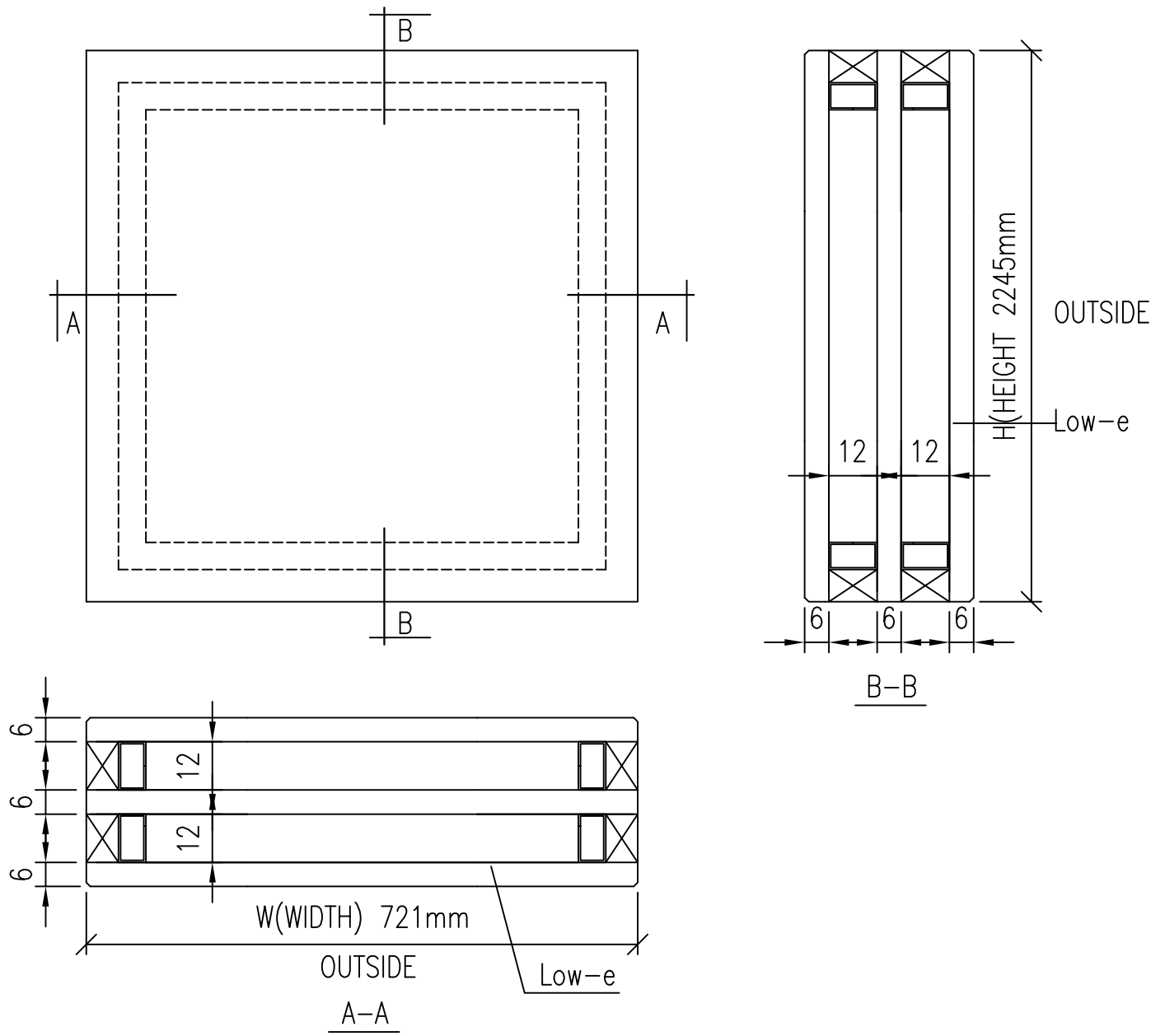


Fig.2 Drawing of Representative Sample

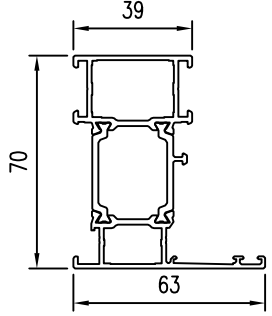
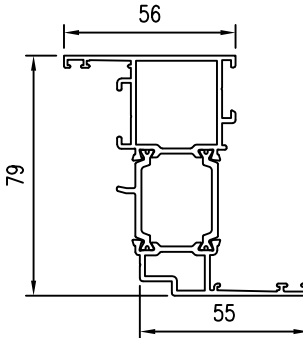
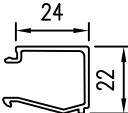
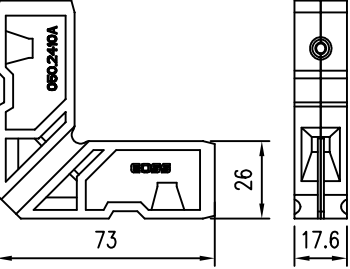
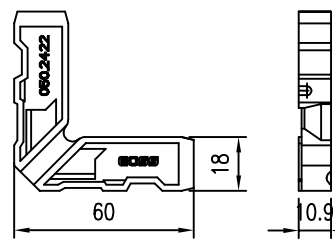
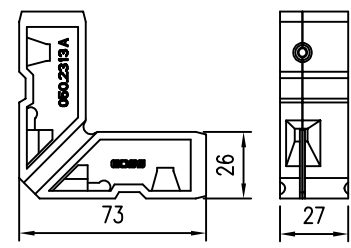
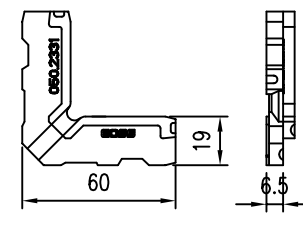

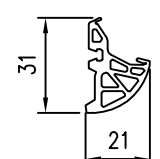

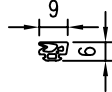

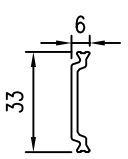
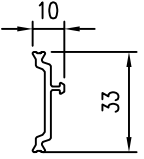
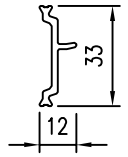
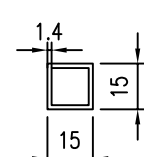
<p>0030211</p>  <p>Window frame</p>	<p>0030222</p>  <p>window sash</p>	<p>0011223</p>  <p>Line pressing</p>	<p>0502410</p>  <p>Corner connector</p>
<p>0502422</p>  <p>Corner connector</p>	<p>0502313</p>  <p>Corner connector</p>	<p>0502331</p>  <p>Corner connector</p>	<p>0808101</p>  <p>Sealant strip</p>
<p>0808007</p>  <p>Isobaric Sealant strip</p>	<p>0808702</p>  <p>Sealant strip</p>	<p>0508204</p>  <p>Adhesive tape outside glass</p>	<p>0508306</p>  <p>Inner glass adhesive strip</p>
<p>Insulation strip</p> 	<p>Insulation strip</p> 	<p>Insulation strip</p> 	<p>Steel pipe</p> 

Fig.3 Drawing of Representative Sample

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Appendix B: Test Data

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

Operable area: 2.23 m²**Table B.1 Test Data of Air Leakage Resistance Test**

Infiltration rate (75 Pa)	0.06 L/s·m ²	0.01 cfm/ft ²
Exfiltration rate (75 Pa)	0.04 L/s·m ²	0.01 cfm/ft ²
Average air leakage rate (75 Pa)	0.05 L/s·m ²	0.01 cfm/ft ²
Requirement: Air leakage rate for Class CW of Window (75 Pa)	0.5 L/s·m ²	0.10 cfm/ft ²

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Appendix B: Test Data

B.2 Water resistance test – Test method ASTM E547-2000(R2016)

No water penetration occurred when the pressure was 580 Pa (12.11 psf).

After water sprayed for complete four cycles in 24 minutes at 580 Pa (12.11 psf), there was no water penetration.

Test result: $P_{\max} = 580 \text{ Pa (12.11 psf)}$.

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Appendix B: Test Data

B.3 Uniform Load Deflection Test – Test method ASTM E330-2014, Procedure A

Span length, L = 2250 mm Set Points (1-3)
Span length, L = 710 mm Set Points (3-5)

Test Pressure (DP), P = 1440 Pa (30.08 psf)

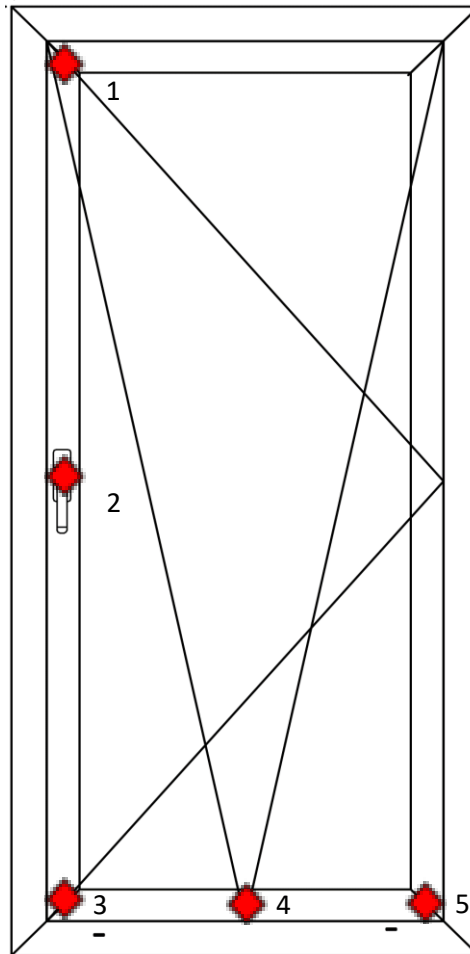


Fig.5 Locations of Displacement Measuring Devices

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Table B.2 Test Data of Uniform Load Deflection Test

Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		1	2	3	
Stile at handle side	2250	+P = 1440	0.6	1.6	0.3	1.2
		0	0.1	0.2	0.1	0.1
		-P = -1440	2.0	3.6	1.2	2.0
		0	0.2	0.2	0.1	0.1
Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		3	4	5	
Bottom Rail	710	+P = 1440	0.3	0.6	0.6	0.2
		0	0.1	0.1	<0.1	0.1
		-P = -1440	1.2	1.3	1.1	0.2
		0	0.1	0.1	0.2	<0.1

Table B.3 Test Data of Uniform Load Deflection Test for Stile at handle side

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1440 Pa (30.08 psf)	1.2	(0.05)	2.0	(0.08)
Span length, L =	2250 mm	(88.58 in.)	Deflection limit L/175 =	12.9 mm (0.51 in.)

Table B.4 Test Data of Uniform Load Deflection Test for Bottom Rail

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1440 Pa (30.08 psf)	0.2	(0.01)	0.2	(0.01)
Span length, L =	710 mm	(27.95 in.)	Deflection limit L/175 =	4.1 mm (0.16 in.)

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Appendix B: Test Data

B.4 Uniform Load Structural Test – Test method ASTM E330-2014, Procedure A

Design Pressure, P = 1440 Pa (30.08 psf)

Structural Pressure, P = 2160 Pa (45.11 psf)

Table B.5 Test Data of Uniform Load Structural Test

Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Maximum permanent deformation(mm)
Item	Span Length		1	2	3	
Stile at handle side	2250	+P = 2160	–	–	–	–
		0	0.3	0.4	0.1	0.2
		-P = -2160	–	–	–	–
		0	0.2	0.4	<0.1	0.3
Permanent Deformation limit, L x 0.3% = 6.8 mm						
Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Maximum permanent deformation(mm)
Item	Span Length		3	4	5	
Bottom Rail	710	+P = 2160	–	–	–	–
		0	0.1	0.2	0.2	0.1
		-P = -2160	–	–	–	–
		0	<0.1	0.2	0.3	0.1
Permanent Deformation limit, L x 0.3% = 2.1 mm						

Table B.6 Test Data of Uniform Load Structural Test For Stile at handle side

Test Pressure	Deflection Measurements, mm (in.)	
	Positive	Negative
	Perm. Set	Perm. Set
2160 Pa (45.11 psf)	0.2 (0.01)	0.3 (0.01)

Table B.7 Test Data of Uniform Load Structural Test For Bottom Rail

Test Pressure	Deflection Measurements, mm (in.)	
	Positive	Negative
	Perm. Set	Perm. Set
2160 Pa (45.11 psf)	0.1 (<0.01)	0.1 (<0.01)

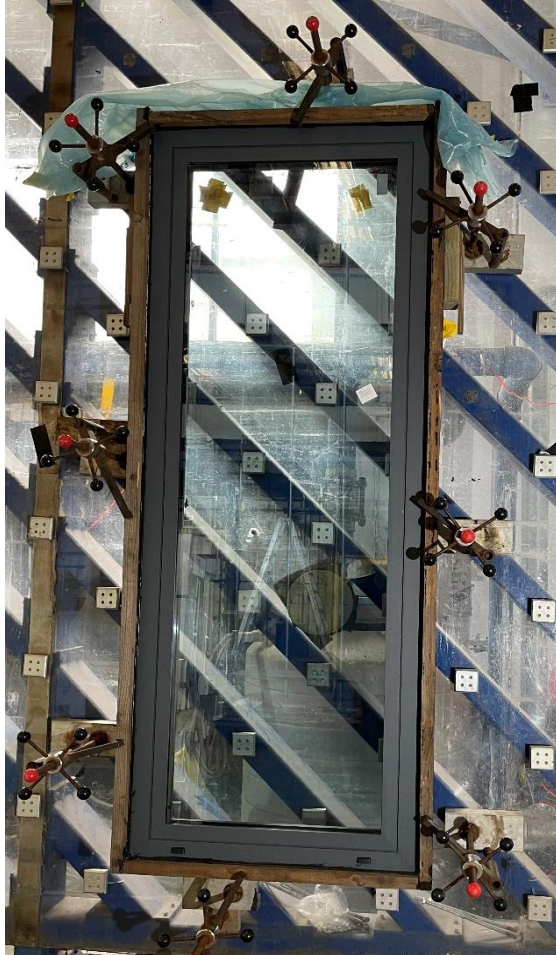
After the test loads were released, there was no failure or permanent deformation of any part of the window system that would cause the test specimen to be inoperable. There was no permanent deformation which was in excess of 0.3% of its span.

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Appendix C: Sample Received Photo



Revision:

NO.	Date	Changes
211013007SHF-001	2021-10-22	First issue