

TAIXING SAINTY INDUSTRY CO., LTD.

CERTIFICATE REPORT

SCOPE OF WORK

Crank Window

REPORT NUMBER

220114006SHF-002

TEST DATE(S)

2022-01-17

ISSUE DATE

2021-01-26

PAGES

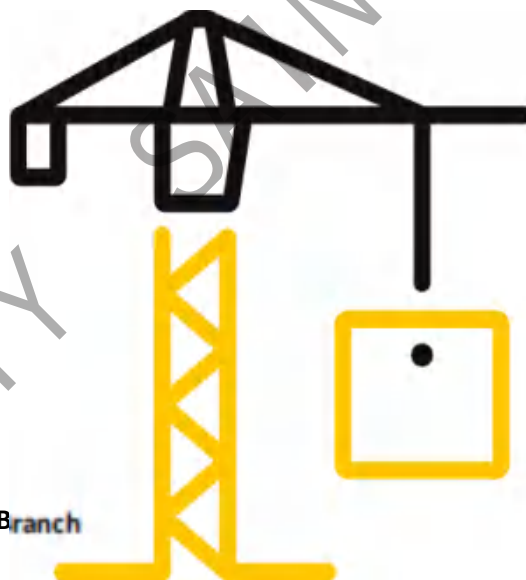
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DOCUMENT CONTROL NUMBER

LFT-APAC-SHF-OP-10k(May 1, 2021)

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Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch



Test Report

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Test Report

Issue Date: 2021-01-26 Intertek Report No. 220114006SHF-002

Applicant: Taixing Sainty Industry Co., Ltd.
Applicant Address: No.88, Zhuwei, Jiangwei Dept 5, Quxia City, Jiangsu Province, China
Attn: Frank
Manufacturer: Shandong Sainty Aluminium Limited
Manufacturer Address: NO.88, Baogou Town, Zaozhuang City, Shandong Province, China
SUBJECT: Performance testing

Product Information

Product Name	Crank Window	Brand	Sainty
Sample Description	Good Condition	Sample Amount	1 set
		Received Date	2022-01-14
Sample ID	Model	Specification	
S220114006SHF.001	STAW	900mm(W) x 1500mm(H)	

Test Methods And Standards

Test Standard	ASTM E283/E283M-2019; ASTM E547-2000(R2016); ASTM E331-2000(R2016); ASTM E330/E330M-2014(R2021)
Specification Standard	AAMA/WDMA/CSA 101/I.S.2/A440-17 (NAFS 2017 - North American Fenestration Standard / Specification for Windows, Doors and Skylights) Clause 9.3.2, Clause 9.3.3, Clause 9.3.4; CSA A440S1-19 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-17 Clause 5.4 and Clause 5.5
Test Conclusion	The samples were tested accordance with Class AW requirements for awning window, 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

Name: Fred Bao
Title: Approver

Name: Zac Zhang
Title: Reviewer

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 Jan 14th, 2022.

A full scale sample of Crank Window (Model: STAW) 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	Crank Window
Model	STAW
Dimension of Window Frame	900mm(Width) x1500mm(Height) x100mm(Thickness)
Dimension of Window Sash	842mm(Width) x1442mm(Height) x68mm(Thickness)
Aluminum Profile	Model: GR100-1; GR100-3; GR100-DB; GR100-SK; GR100-SS; GR110-SYX; GR100-6 Manufacturer: Shandong Sainty Aluminium Limited
Frame Corner Construction Details: Joinery type	Mitre-cut, assembly with Set Angle machine
Reinforcement	None
Glazing	Dimension: 705mm(Width) × 1305mm(Height) Structure: 6mm +16A +6mm Tempered Glass Supplier: Shandong Wensheng Glass Technology Co., Ltd.
Hardware	Specify type: Crank Window Rotary Operator, Lock Model: HJ080-138 Supplier: 3H Specify type: Hung Window Hinge Model: HCC40A Supplier: Kinlong
Weather-strip	Specify type:100PT Model:EPDM Supplier: Jlangyin Haida Rubber And Plastice Co., Ltd.
Thermal Break	Model: BT3031, BT3032, BT3033, BT3034 Material: PA66 Supplier: Qingdao Baotai Pastic Co., Ltd.
Drainage	None

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Table 1 Product Information(Continued)

Gasket (between sash and frame)	Model: 100DY; CW1011; CW1010 Material: EPDM Supplier: JIangyin Haida Rubber And Plastice Co., Ltd.
Sealant of Glass	Model: CW1012; CW1312 Material: EPDM Supplier: Qingdao Baotai Pastic Co., Ltd.
Installation	Put the assembled window into the rough opening that allowed for 6 mm shim space, fix it on the wall with screws, then fill it with PU foam, finally apply silicone on the edge of the window frame and scrape it flat with a scraper.

The sample ID number was S220114006SHF.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

Test Description	Requirements		Results		Verdict
Air Leakage Resistance Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.2 ASTM E283/E283M-2019	Maximum air leakage at +75 Pa (1.57 psf)	No Requirement	Air leakage at +75 Pa (1.57 psf)	0.14 L/s·m ² (0.03 cfm/ft ²)	Pass
	Maximum air leakage at -75 Pa (1.57 psf)	0.50 L/s·m ² (0.10 cfm/ft ²)	Air leakage at -75 Pa (1.57 psf)	0.20 L/s·m ² (0.04 cfm/ft ²)	
Air Leakage Resistance Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.2 ASTM E283/E283M-2019	Maximum air leakage at +300 Pa (6.27 psf)	0.50 L/s·m ² (0.10 cfm/ft ²)	Air leakage at +300 Pa (6.27 psf)	0.27 L/s·m ² (0.05 cfm/ft ²)	Pass
	Maximum air leakage at -300 Pa (6.27 psf)	No Requirement	Air leakage at -300 Pa (6.27 psf)	0.39 L/s·m ² (0.08 cfm/ft ²)	
Water Penetration Resistance Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.3 ASTM E547-2000(R2016) & ASTM E331-2000(R2016)	Minimum water pressure	380 Pa (7.94 psf)	Test Pressure	380 Pa (7.94 psf)	Pass
			After water sprayed for four cycles in 24 minutes per ASTM E547 and then sprayed for 15 minutes per ASTM E331 at 380 Pa (7.94 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/E330M-2014(R2021)	Minimum Design Pressure (DP)	1920 Pa (40.10 psf)	Design Pressure (DP)	1920 Pa (40.10 psf)	Pass
			Maximum deflection at Stile	0.2 mm (0.01 in.)	
			Maximum deflection at Rail at handle side	0.1 mm (<0.01 in.)	

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Table 2 Test Result (Continued)

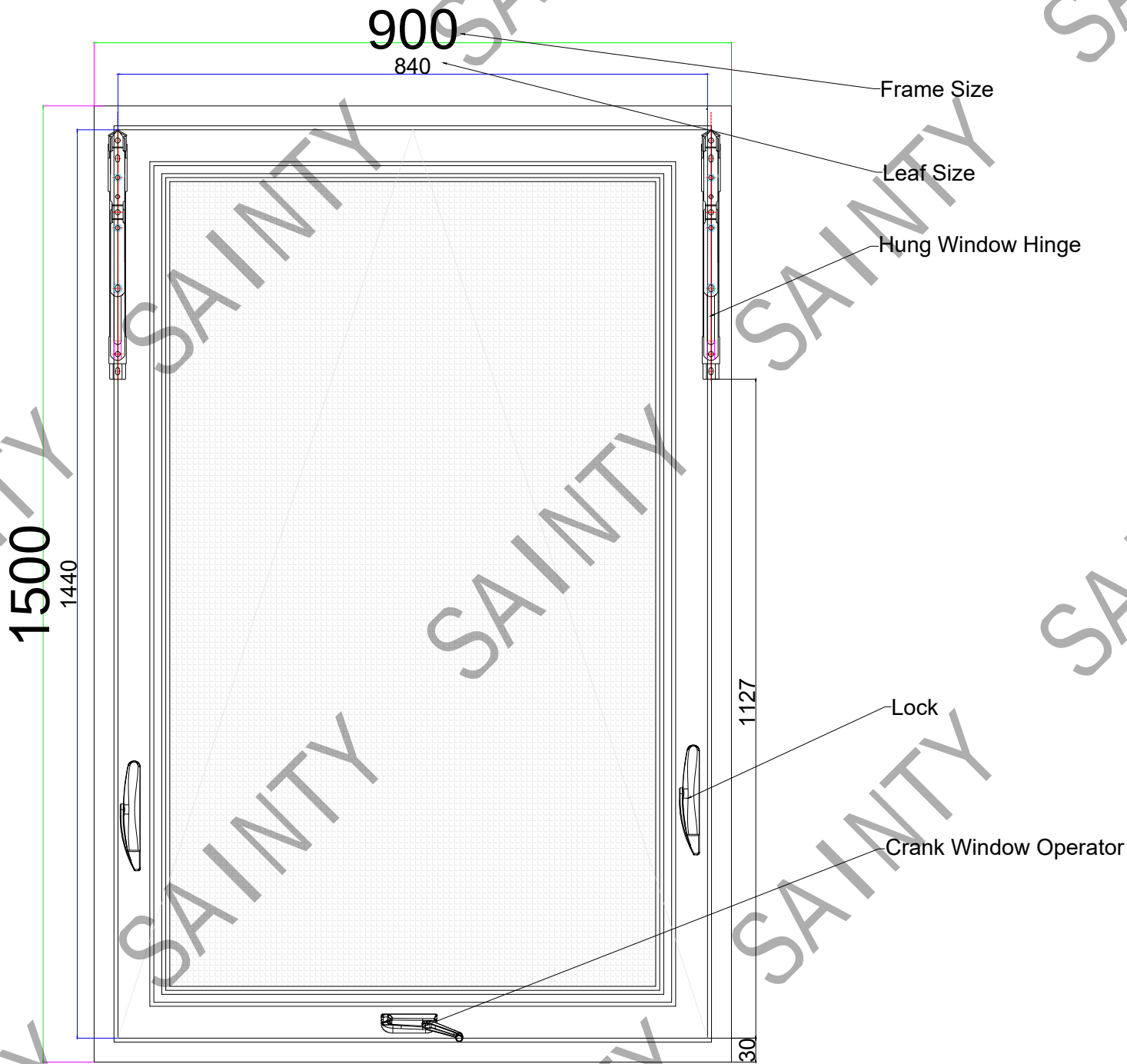
Test Description	Requirements		Results		Verdict
Uniform Load Structural Test AAMA/WDMA/CSA101/I.S.2/A440-17, Clause 9.3.4.3 ASTM E330/E330M-2014(R2021)	Minimum Structural Pressure (STP)	2880 Pa (60.15 psf)	Structural Pressure (STP)	2880 Pa (60.15 psf)	Pass
			No significant breakage or damage after ultimate strength was released.		
			Maximum permanent deformation at Stile	<0.1 mm (<0.01 in.)	
			Maximum permanent deformation at Rail at handle side	0.1 mm (<0.01 in.)	

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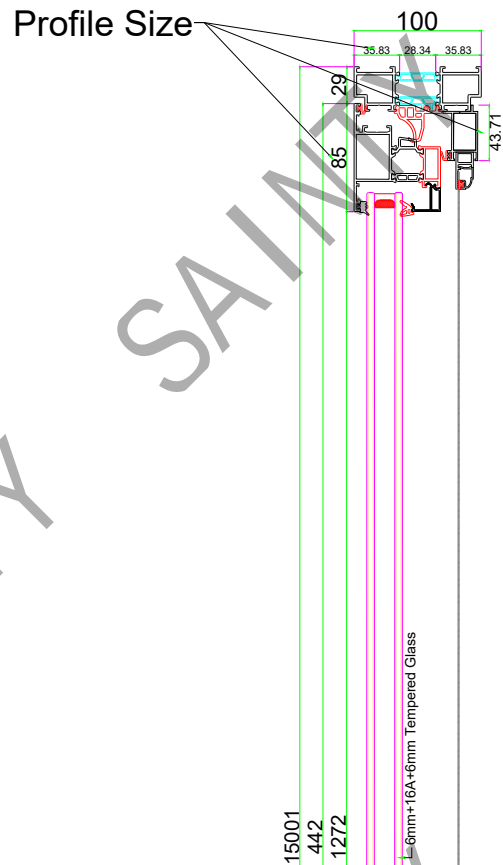
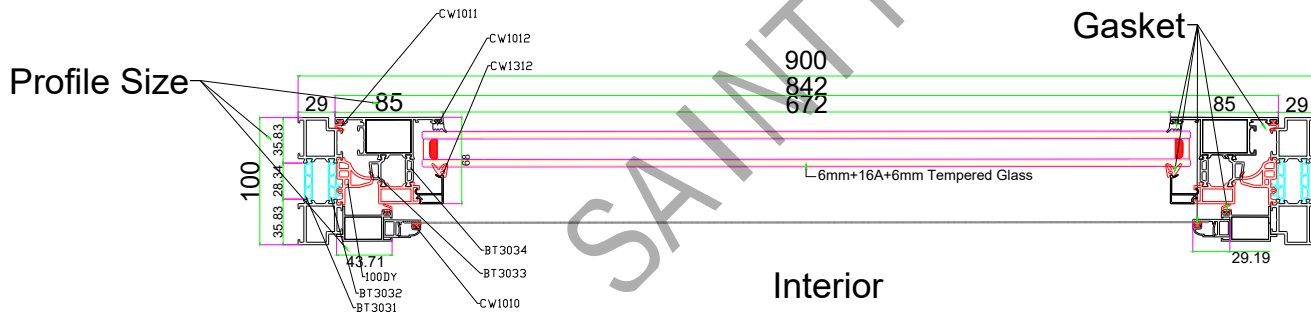
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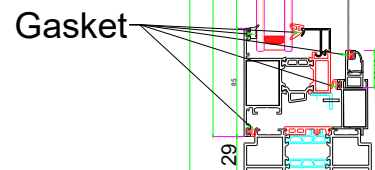
Appendix A: Sample Drawings

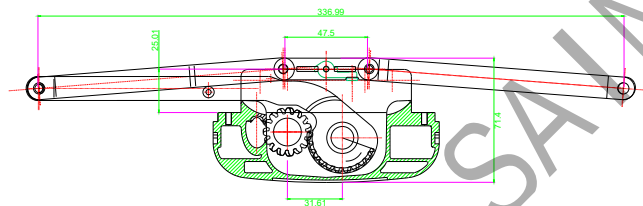


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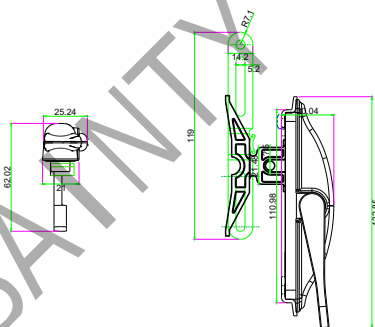
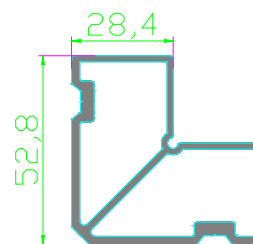


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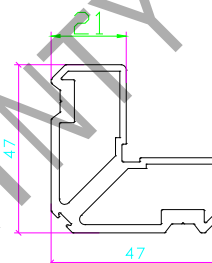




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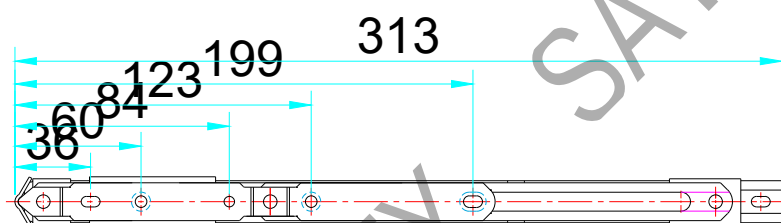
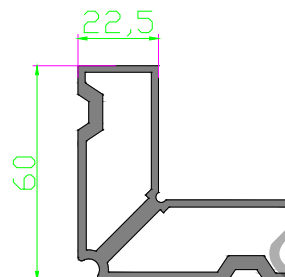


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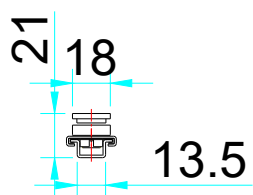
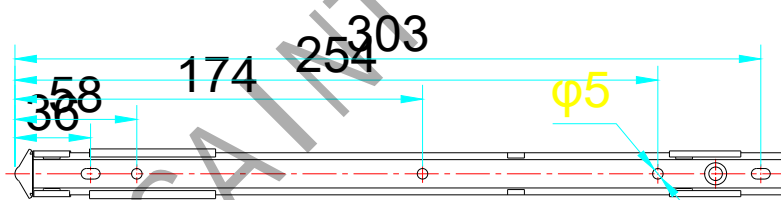
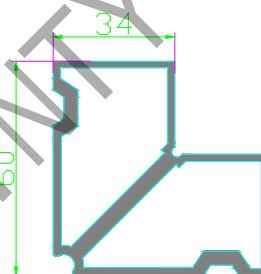


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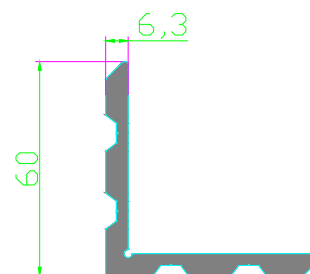
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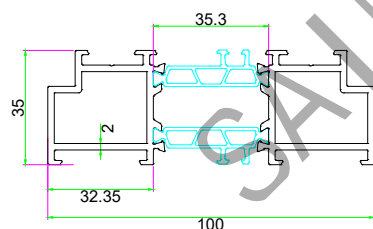


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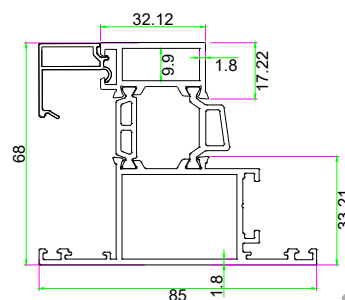


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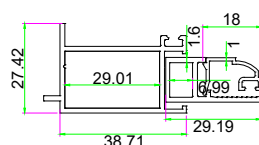
Aluminum profile



Window Frame

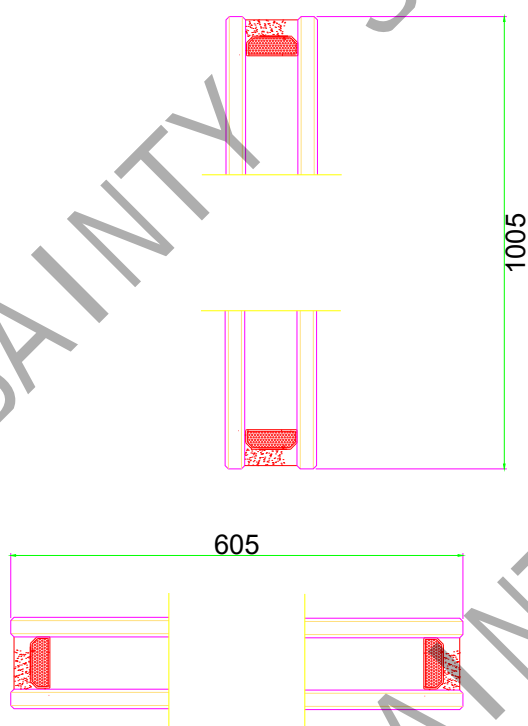


Window Leaf



Screen Window Frame

Glass: Opening Vent



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Appendix B: Test Data

B.1 Air Leakage Resistance Test – Test method ASTM E283/E283M-2019

Overall area: 0.96 m²

Table B.1 Test Data of Air Leakage Resistance Test

Infiltration rate (75 Pa)	0.14 L/s·m ²	0.03 cfm/ft ²
Exfiltration rate (75 Pa)	0.20 L/s·m ²	0.04 cfm/ft ²
Requirements: Air Exfiltration rate for Class AW windows (75 Pa)	0.50 L/s·m ²	0.10 cfm/ft ²

Table B.2 Test Data of Air Leakage Resistance Test

Infiltration rate (300 Pa)	0.27 L/s·m ²	0.05 cfm/ft ²
Exfiltration rate (300 Pa)	0.39 L/s·m ²	0.08 cfm/ft ²
Requirements: Air Infiltration rate for Class AW windows (300 Pa)	0.50 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) & ASTM E331-2000(R2016)

No water penetration occurred when the pressure was 380 Pa (7.94 psf)

After water sprayed for four cycles in 24 minutes per ASTM E547 and then sprayed for 15 minutes per ASTM E331 at 380 Pa (7.94 psf), there was no water penetration.

Test result: $P_{\max} = 380 \text{ Pa (7.94 psf)}$.

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Appendix B: Test Data

B.3 Uniform Load Deflection Test – Test method ASTM E330/E330M-2014(R2021), Procedure A

Span length, L = 1030 mm

Set Points (1-3)

Span length, L = 600 mm

Set Points (3-5)

Test Pressure (DP), P = 1920 Pa (40.10 psf)

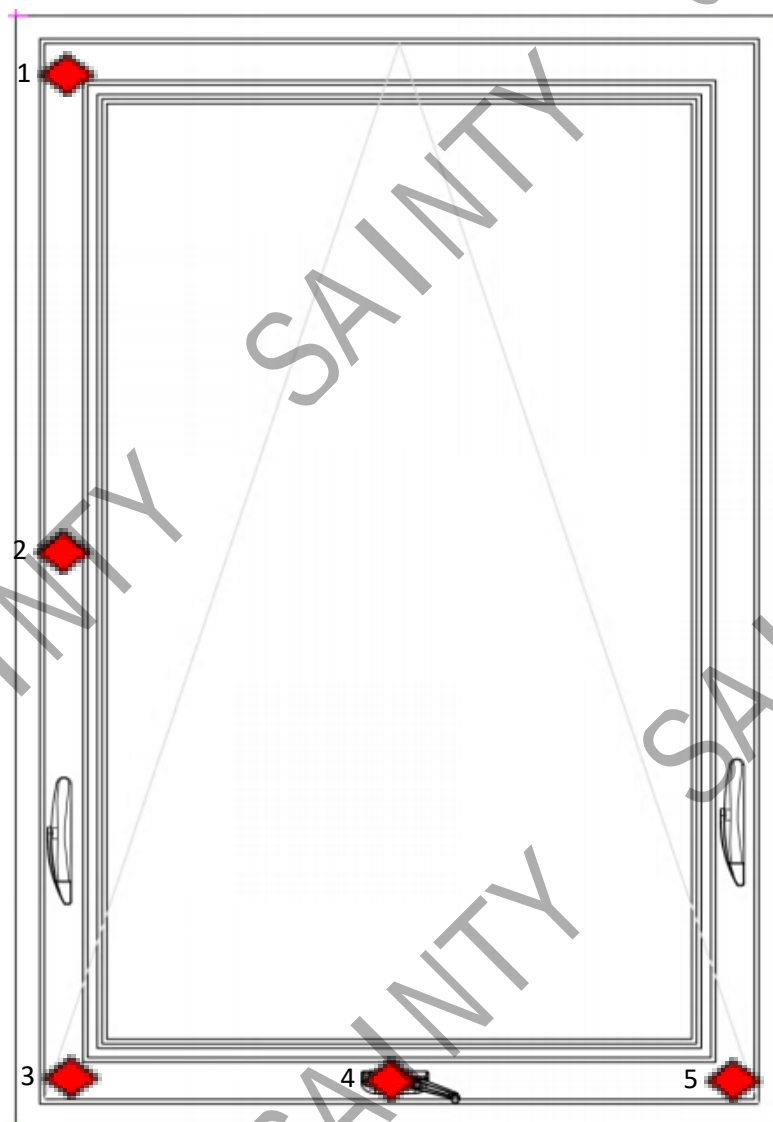


Fig.5 Locations of Displacement Measuring Devices

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Table B.3 Test Data of Uniform Load Deflection Test

Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		1	2	3	
Stile	1030	+P = 1920	0.4	0.6	0.5	0.2
		0	0.1	0.1	0.1	<0.1
		-P = -1920	0.9	1.4	2.0	<0.1
		0	0.2	0.2	0.3	<0.1
Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		3	4	5	
Rail at handle side	600	+P = 1920	0.5	0.5	0.5	<0.1
		0	0.1	0.1	0.1	<0.1
		-P = -1920	2.0	2.1	2.1	0.1
		0	0.3	0.4	0.4	0.1

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

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1920 Pa (40.10 psf)	0.2	(0.01)	<0.1	(<0.01)
Span length, L =	1030 mm	(40.55 in.)	Deflection limit L/175 =	5.9 mm (0.23 in.)

Table B.5 Test Data of Uniform Load Deflection Test for Rail at handle side

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1920 Pa (40.10 psf)	<0.1	(<0.01)	0.1	(<0.01)
Span length, L =	600 mm	(23.62 in.)	Deflection limit L/175 =	3.4 mm (0.13 in.)

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Appendix B: Test Data

B.4 Uniform Load Structural Test – Test method ASTM E330/E330M-2014(R2021), Procedure A

Design Pressure, P = 1920 Pa (40.10 psf)

Structural Pressure, P = 2880 Pa (60.15 psf)

Table B.6 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	1030	+P = 2880	–	–	–	–
		0	0.2	0.2	0.3	<0.1
		-P = -2880	–	–	–	–
		0	0.4	0.5	0.7	<0.1
Permanent Deformation limit, L x 0.2% = 2.1 mm						
Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Maximum permanent deformation(mm)
Item	Span Length		3	4	5	
Rail at handle side	600	+P = 2880	–	–	–	–
		0	0.3	0.4	0.4	0.1
		-P = -2880	–	–	–	–
		0	0.7	0.8	0.9	<0.1
Permanent Deformation limit, L x 0.2% = 1.2 mm						

Table B.7 Test Data of Uniform Load Structural Test For Stile

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Perm. Set		Perm. Set	
2880 Pa (60.15 psf)	<0.1	(<0.01)	<0.1	(<0.01)

Table B.8 Test Data of Uniform Load Structural Test For Rail at handle side

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Perm. Set		Perm. Set	
2880 Pa (60.15 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 0.2% of its span.

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Appendix C: Sample Received Photo



Revision:

NO.	Date	Changes
220114006SHF-002	2021-01-26	First issue