TL−1195

Rangi Windows Ltd

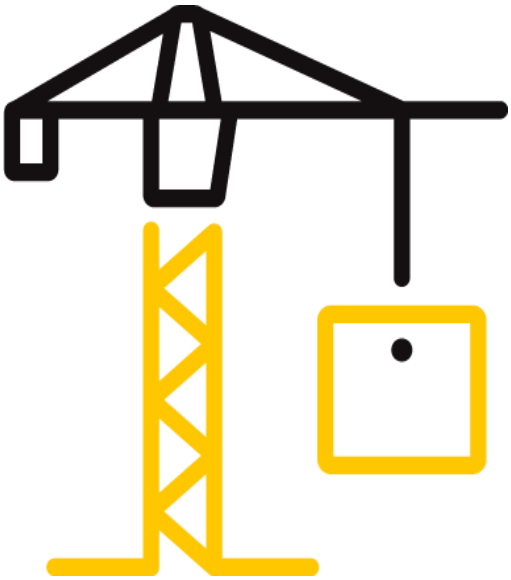
TEST REPORT

SCOPE OF WORK
WINDOWS AND DOORS

REPORT NUMBER
241127161GZC-001

ISSUE DATE
2025/1/13

PAGES
18



Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

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Test Report

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Applicant:	Rangi Windows Ltd
Address:	25 Stock Street, New Lynn, Auckland
Attn:	rangiwindows@gmail.com

Manufacturer:	Rangi Windows Ltd
Address:	25 Stock Street, New Lynn, Auckland
Attn:	jackyzhong@boyingby.com

SUBJECT: Performance testing
< Sliding Door with Awning 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
SNZ TS 4211: 2022 – Specification for the classification of windows

SAMPLE ID	MODEL	SPECIFICATION
S241127161GZU.001	BY-RG-NZS-002	2740 mm (Width) × 2140 mm (Height) × 166 mm (Thickness)

SAMPLE RECEIVED: 2024/11/27
TESTED FROM: 2024/11/28 TO 2024/12/5

TEST LOCATION: C2-1, Heping Xu, Yongning Street, Zengcheng District, Guangzhou, China.

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Test Items, Method and Results：

1 Test Samples

A full scale of sample 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

1	Product Name	Sliding Door with Awning Window assembly
2	Model	BY-RG-NZS-002
3	Dimension of Door Frame	2740 mm (Width) × 2140 mm (Height) × 166 mm (Thickness)
4	Dimension of Door Sash	Awning sash: 844 mm (Width) × 1065 mm (Height) × 47 mm (Thickness) Sliding sash 1#: 946 mm (Width) × 2030 mm (Height) × 36 mm (Thickness) Sliding sash 2#: 946 mm (Width) × 2030 mm (Height) × 36 mm (Thickness)
5	Aluminum Profile	Model: SPEC 166 Manufacturer: Guangdong Jihua
6	Frame Corner Construction Details	Mechanically assembled: Glued & screwed (T4.2*30mm ST4.8*30 Self tapping)
7	Reinforcement	39*46*2mm Aluminum alloy square tube fixing on interlocking stile
8	Glazing	Dimension: Awning sash: 748 mm (Width) × 970 mm (Height), quantity:1 Fixed panel: 820 mm (Width) × 942 mm (Height), quantity:1 Sliding sash: 820 mm (Width) × 1904 mm (Height), quantity:2 Structure: 24 mm thick, 6mm +12A +6mm Tempered Insulating Glass Supplier: Guangdong HongHua Glass
9	Hardware	Model: 847D (Handle); HC660-12'' (Friction stay); HPY-43 (D-lock); CMLJF006 (Roller wheel). Supplier: Guangdong Kinlong Hardware Products Co., LTD.
10	Weather-strip	Model: 7x8 Supplier: WINGKAY
11	Thermal Break	Model: I19, C19, C20 Material: PA66GF25 Nylon insulation strip Supplier: BaiYun YiLe

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Table 1 Product Information(Cont.)

12	Drainage	Sizes: 30 mm × 6 mm (Width × Height) Quantity: 7
13	Gasket (Between sash and frame)	Model: 2486-VST-GA11, 2132-DJH-GA04 Material: EPDM Supplier: WINGKAY
14	Sealant of Glass	Model: SS550 Material: Silicone sealant Supplier: Baiyun
15	Installation	The rough opening allowed for a 10mm shim space. The exterior perimeter of the test specimen was sealed with silicone sealant.

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Test Items, Method and Results:

2 Test Result

Table 2 Test Results

Test Description	Test Result				Rating	Verdict
Serviceability deflection test	Serviceability limit state (SLS) wind pressure		± 1250 Pa		Exposure Rating: VH	Pass
	Structural member #1: ***Handle side stile of sliding sash***		1/746			
	Structural member #2: ***Interlocking stile***		1/478			
	Structural member #3: ***Mullion***		1/513			
	Structural member #4: ***Awning sash stile***		1/486			
	Structural member #5: ***Awning sash bottom rail***		1/355			
	Structural member #6: ***Transom***		1/371			
Operating of opening sashes test	First sliding sash	Initiate Movement Requirement: <135N	Fully Closed	91 N	NA	Pass
			1/3 Open	43 N		
			2/3 Open	73 N		
			1/3 Closed	59 N		
			2/3 Closed	48 N		
		Initiate Movement Requirement: <100N	Fully Closed	52 N		
			1/3 Open	45 N		
			2/3 Open	38 N		
			1/3 Closed	39 N		
			2/3 Closed	41 N		
	Inter-mediate sliding sash	Initiate Movement Requirement: <135N	Fully Closed	51 N		
			1/3 Open	42 N		
			2/3 Open	45 N		
			1/3 Closed	44 N		
			2/3 Closed	40 N		
		Initiate Movement Requirement: <100N	Fully Closed	50 N		
			1/3 Open	42 N		
			2/3 Open	32 N		
			1/3 Closed	38 N		
			2/3 Closed	24 N		

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2 Test Result

Table 2 Test Results(Cont.)

Test Description	Test Result				Rating	Verdict
Operating of opening sashes test	Awning sash	Initiate Movement Requirement: <100N	Fully Closed	15 N	NA	Pass
			1/3 Open	19 N		
			2/3 Open	21 N		
			1/3 Closed	43 N		
			2/3 Closed	34 N		
		Initiate Movement Requirement: <100N	Fully Closed	8 N		
			1/3 Open	9 N		
			2/3 Open	8 N		
			1/3 Closed	28 N		
			2/3 Closed	27 N		
Air infiltration test	Total area: 5.86 m^2 Opening joint length: 13.27 m	at +75Pa:	1.81 $L/s \cdot m^2$		Class 2	Pass
			0.80 L/s·m			
		at -75Pa:	1.60 $L/s \cdot m^2$			
			0.71 L/s·m			
		at +150Pa:	2.82 $L/s \cdot m^2$			
			1.24 L/s·m			
		at -150Pa:	2.36 $L/s \cdot m^2$			
			1.04 L/s·m			
Water penetration test	No water penetration at:		375 Pa		Exposure Rating: VH	Pass
	Description: Water splashed into indoor from the space under interlocking stile of first sliding sash when tested at 455Pa for 1 minute.					
Ultimate strength test	±		1760	Pa with no collapse	Exposure Rating: VH	Pass
	Description: No significant breakage, permanent deformation or operational malfunction after ultimate strength was released.					
Torsional strength test	Maximum limited deflection: 20.25 mm		Maximum deflection measurement: 1.09 mm		NA	Pass

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Appendix A: Test Data and Sample Drawings:

A.1 Serviceability Deflection Test – Test method AS/NZS 4420.1-2016

Test Pressure (Serviceability limit state wind pressure), P= 1250 Pa.

Note: Unless a smaller value of allowable deflection is separately specified for windows that are subject to specific design, in buildings requiring specific design, the maximum deflection due to bending of any structural member, including the outer window frame, measured relative to the end of the member at the serviceability limit state shall not exceed span/200th of the span.

Table 3 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		1	2	3		
Handle side stile of sliding sash	1940	+P/4=313	0.0	0.4	0.0	0.4	/
		+2P/4=625	0.5	1.1	0.1	0.8	/
		+3P/4=938	1.1	1.8	0.3	1.1	/
		+4P/4=1250	1.7	2.6	0.6	1.5	1:1293
		0	0.2	0.2	0.1	0.1	/
Handle side stile of sliding sash	1940	-P/4=-313	0.2	1.0	0.1	0.9	/
		-2P/4=-625	0.7	2.0	0.3	1.5	/
		-3P/4=-938	1.2	2.9	0.5	2.1	/
		-4P/4=-1250	1.7	3.8	0.7	2.6	1:746
		0	0.3	0.3	0.2	0.1	/

Table 4 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		4	5	6		
Interlocking stile	1960	+P/4=313	0.7	1.0	0.3	0.5	/
		+2P/4=625	1.3	2.4	0.9	1.3	/
		+3P/4=938	2.0	4.1	1.5	2.4	/
		+4P/4=1250	2.6	6.0	2.0	3.7	1:530
		0	0.3	0.6	0.2	0.4	/
Interlocking stile	1960	-P/4=-313	1.0	1.4	0.4	0.7	/
		-2P/4=-625	1.5	3.0	1.1	1.7	/
		-3P/4=-938	2.1	4.9	1.8	3.0	/
		-4P/4=-1250	2.7	6.6	2.3	4.1	1:478
		0	0.5	0.6	0.3	0.2	/

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A.1 Deflection Test – Test method AS/NZS 4420.1-2016

Table 5 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		7	8	9		
Mullion	2000	+P/4=313	0.0	0.7	0.0	0.7	/
		+2P/4=625	0.0	1.8	0.0	1.8	/
		+3P/4=938	0.3	3.0	0.2	2.8	/
		+4P/4=1250	0.6	4.4	0.4	3.9	1:513
		0	0.3	0.3	0.1	0.1	/
Mullion	2000	-P/4=-313	0.0	0.7	0.0	0.7	/
		-2P/4=-625	0.0	1.7	0.0	1.7	/
		-3P/4=-938	0.2	2.9	0.2	2.7	/
		-4P/4=-1250	0.5	4.0	0.3	3.6	1:556
		0	0.3	0.3	0.1	0.1	/

Table 6 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		10	11	12		
Awning sash stile	1020	+P/4=313	0.0	0.5	0.8	0.4	/
		+2P/4=625	0.0	1.3	2.0	1.0	/
		+3P/4=938	0.4	2.3	3.3	1.5	/
		+4P/4=1250	0.8	3.5	4.9	2.1	1:486
		0	0.3	0.3	0.3	<0.1	/
Awning sash stile	1020	-P/4=-313	0.0	0.5	0.9	0.5	/
		-2P/4=-625	0.1	1.3	2.1	1.0	/
		-3P/4=-938	0.6	2.5	3.6	1.5	/
		-4P/4=-1250	1.1	3.8	5.0	2.0	1:510
		0	0.4	0.3	0.3	0.1	/

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A.1 Deflection Test – Test method AS/NZS 4420.1-2016

Table 7 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		12	13	14		
Awning sash bottom rail	780	+P/4=313	0.8	0.4	0.0	0.4	/
		+2P/4=625	2.0	1.1	0.1	1.0	/
		+3P/4=938	3.3	2.0	0.3	1.5	/
		+4P/4=1250	4.9	3.0	0.6	2.2	1:355
		0	0.3	0.3	0.2	0.1	/
Awning sash bottom rail	780	-P/4=-313	0.9	0.4	0.0	0.5	/
		-2P/4=-625	2.1	1.1	0.1	1.0	/
		-3P/4=-938	3.6	2.1	0.6	1.5	/
		-4P/4=-1250	5.0	3.0	1.2	1.9	1:411
		0	0.3	0.3	0.1	0.1	/

Table 8 Test Data of Deflection Test

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		15	16	17		
Transom	780	+P/4=313	0.7	0.4	0.0	0.4	/
		+2P/4=625	1.8	1.1	0.0	0.9	/
		+3P/4=938	3.0	2.0	0.2	1.4	/
		+4P/4=1250	4.5	3.0	0.4	2.1	1:371
		0	0.3	0.2	0.1	0.1	/
Transom	780	-P/4=-313	0.7	0.5	0.0	0.4	/
		-2P/4=-625	1.7	1.1	0.0	0.9	/
		-3P/4=-938	2.9	2.0	0.1	1.4	/
		-4P/4=-1250	4.1	2.9	0.3	1.9	1:411
		0	0.3	0.2	0.1	0.1	/

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A.2 Sample Drawings

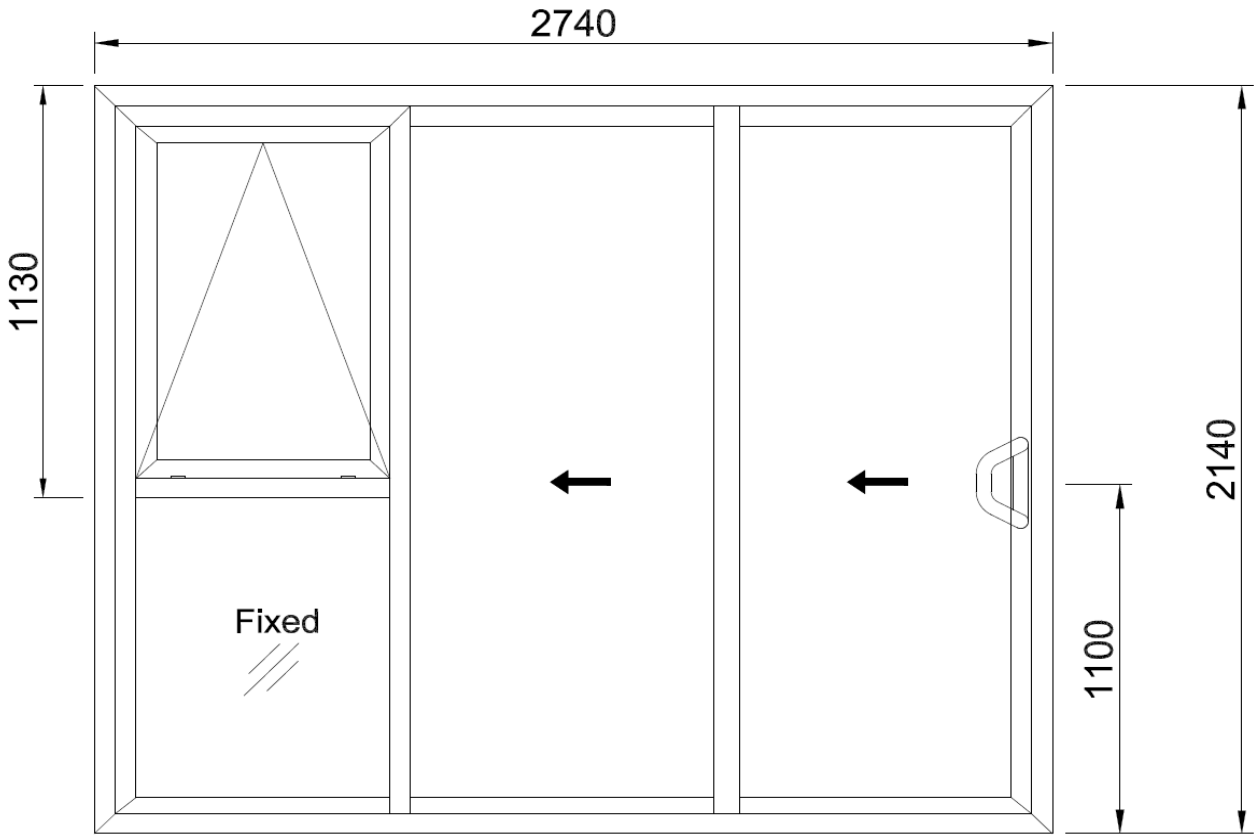

Fig.1 Drawing of Representative Sample

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A.2 Sample Drawings(Cont.)

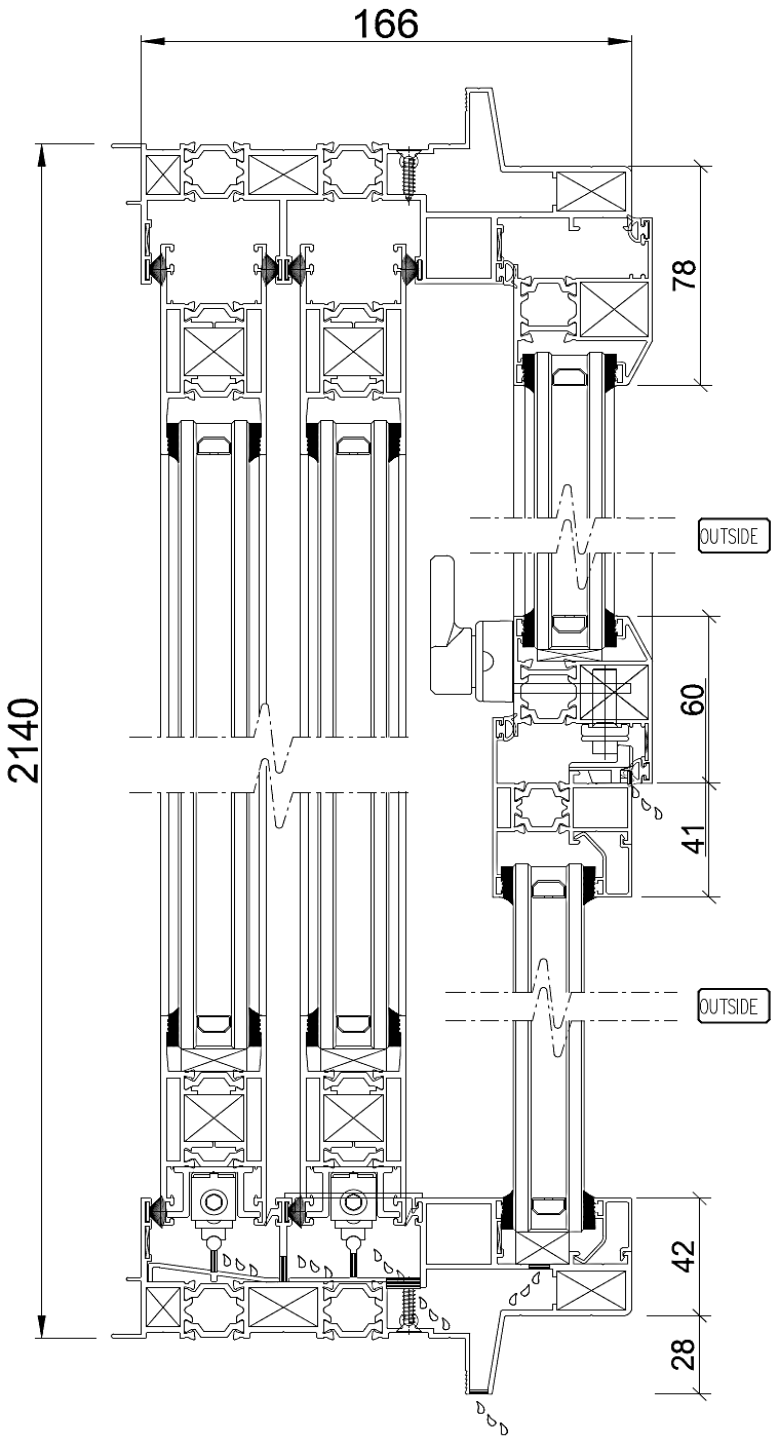

Fig.2 Drawing of Representative Sample

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A.2 Sample Drawings(Cont.)

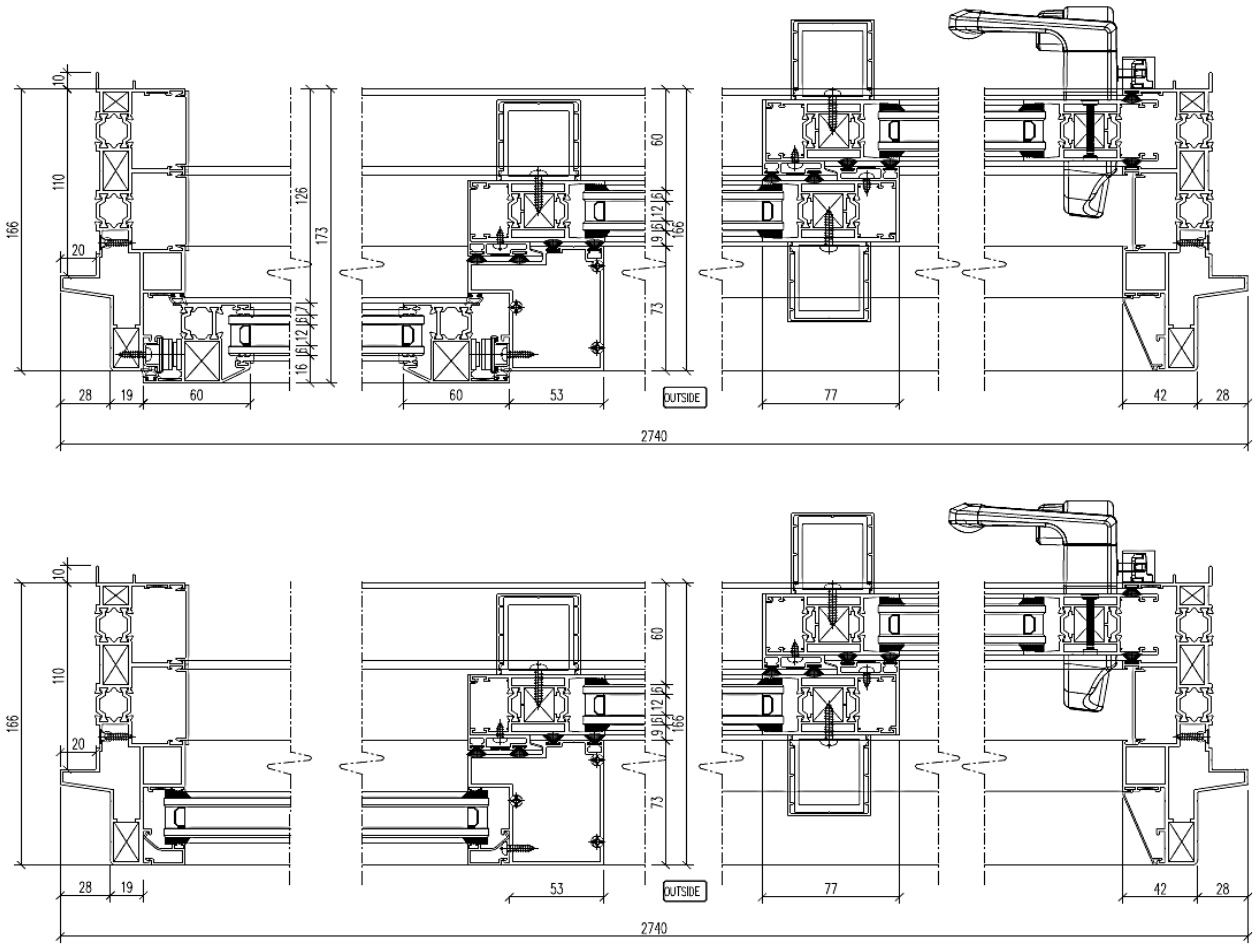

Fig.3 Drawing of Representative Sample

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A.2 Sample Drawings(Cont.)

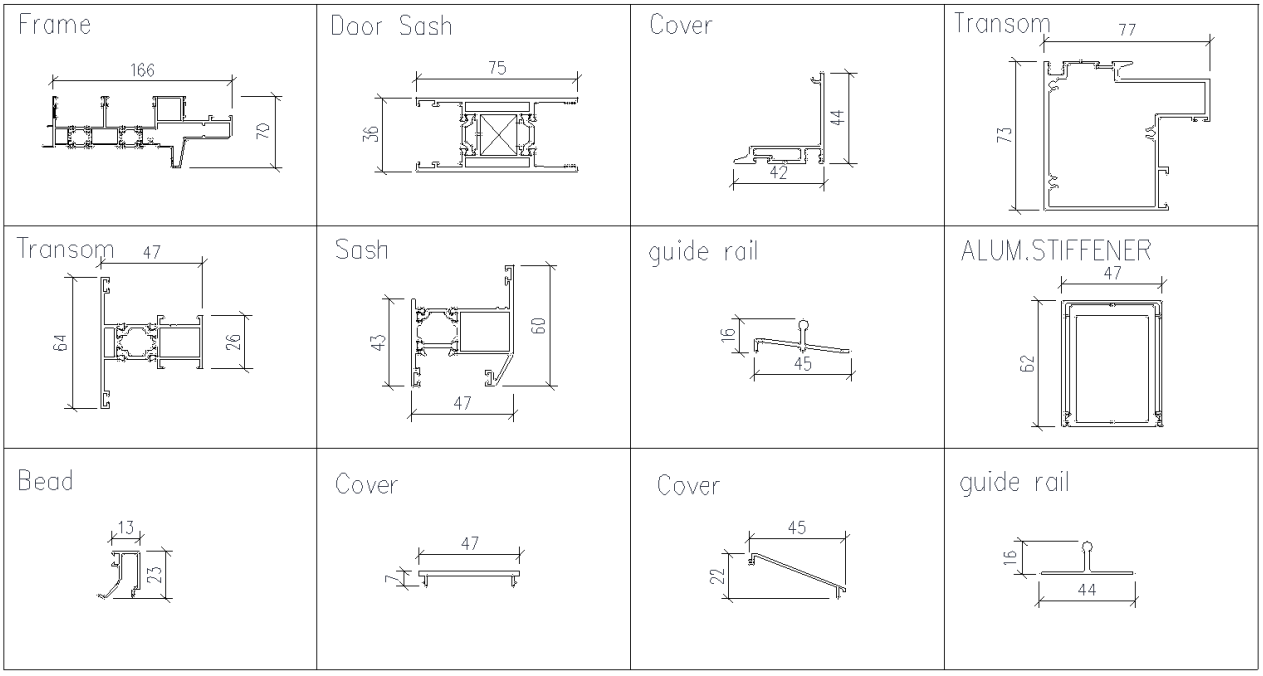

Fig.4 Drawing of Aluminum Profile

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A.2 Sample Drawings(Cont.)

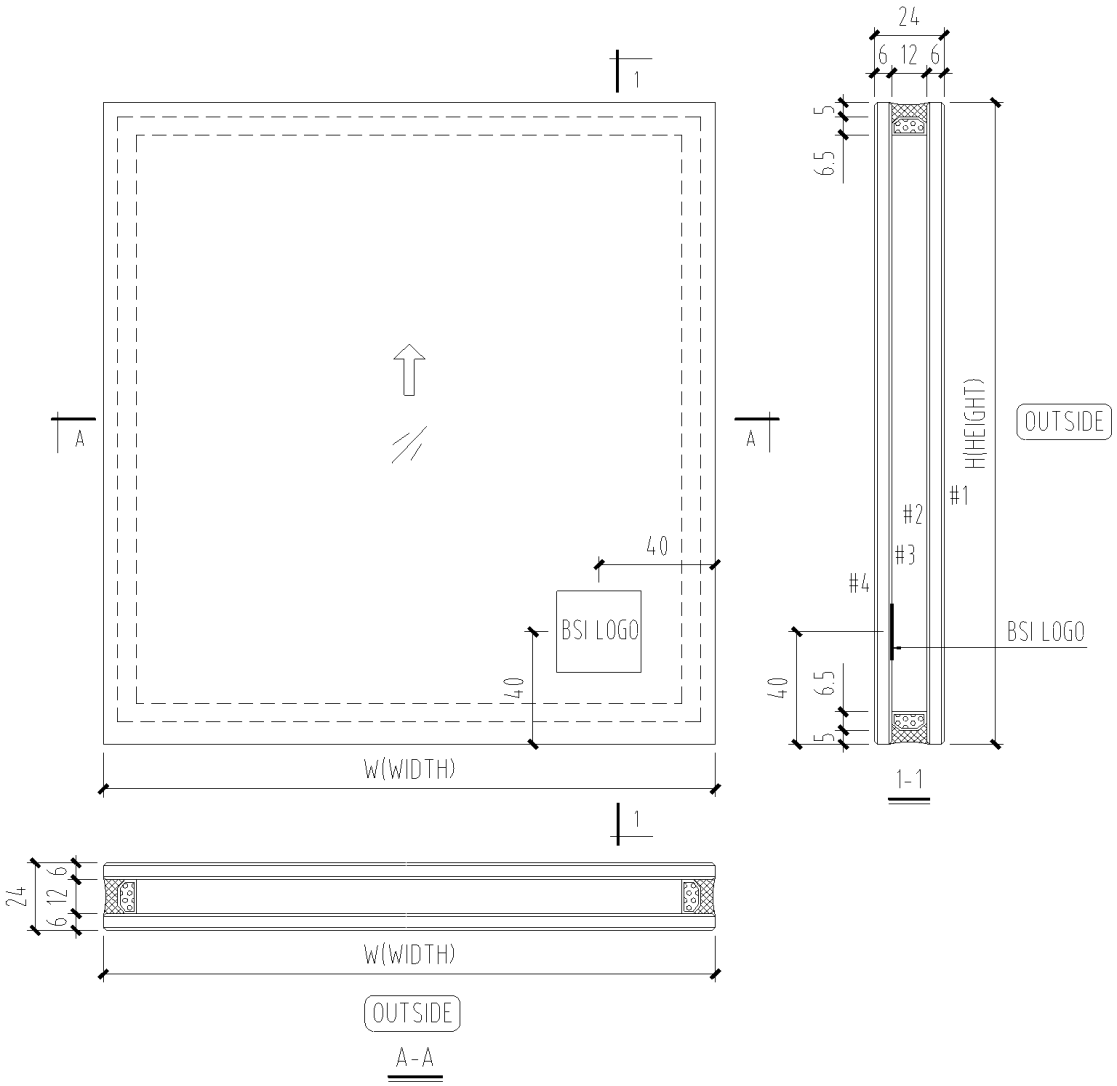

Fig.5 Drawing of Glazing

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A.2 Sample Drawings(Cont.)

	
Handle	Friction stay
	
D-lock	Roller wheel

Fig.6 Drawing of Hardware

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A.2 Sample Drawings(Cont.)

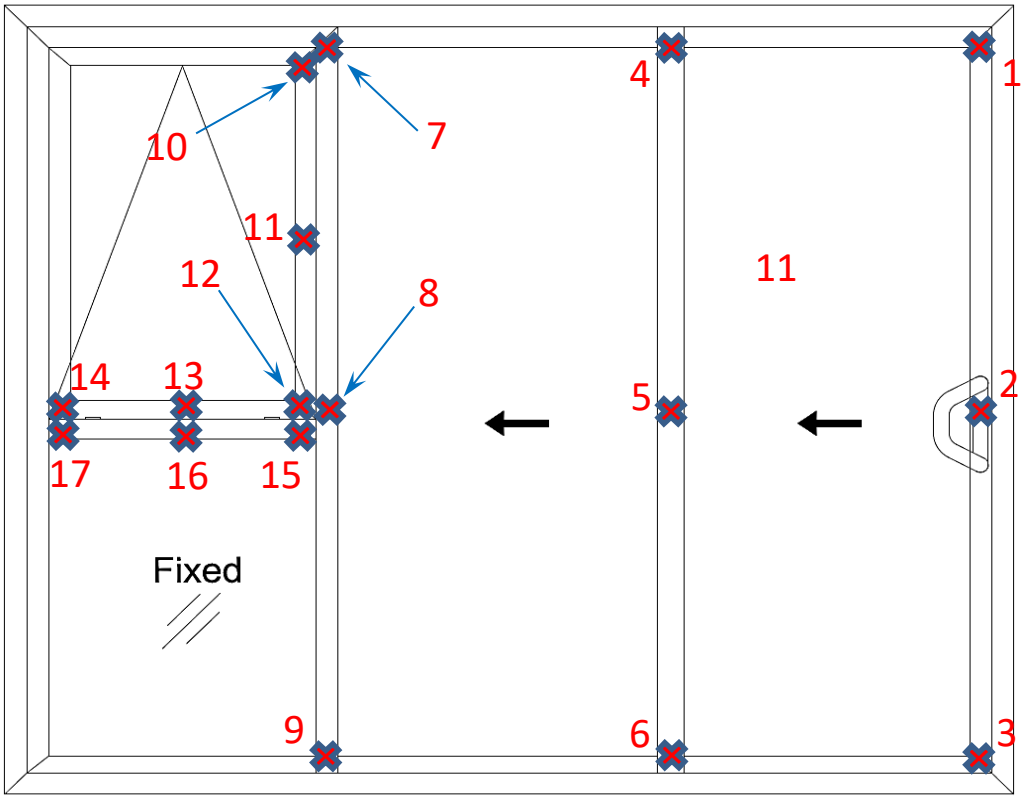

Fig.7 Locations of Displacement Measuring Devices

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A.2 Sample Drawings(Cont.)

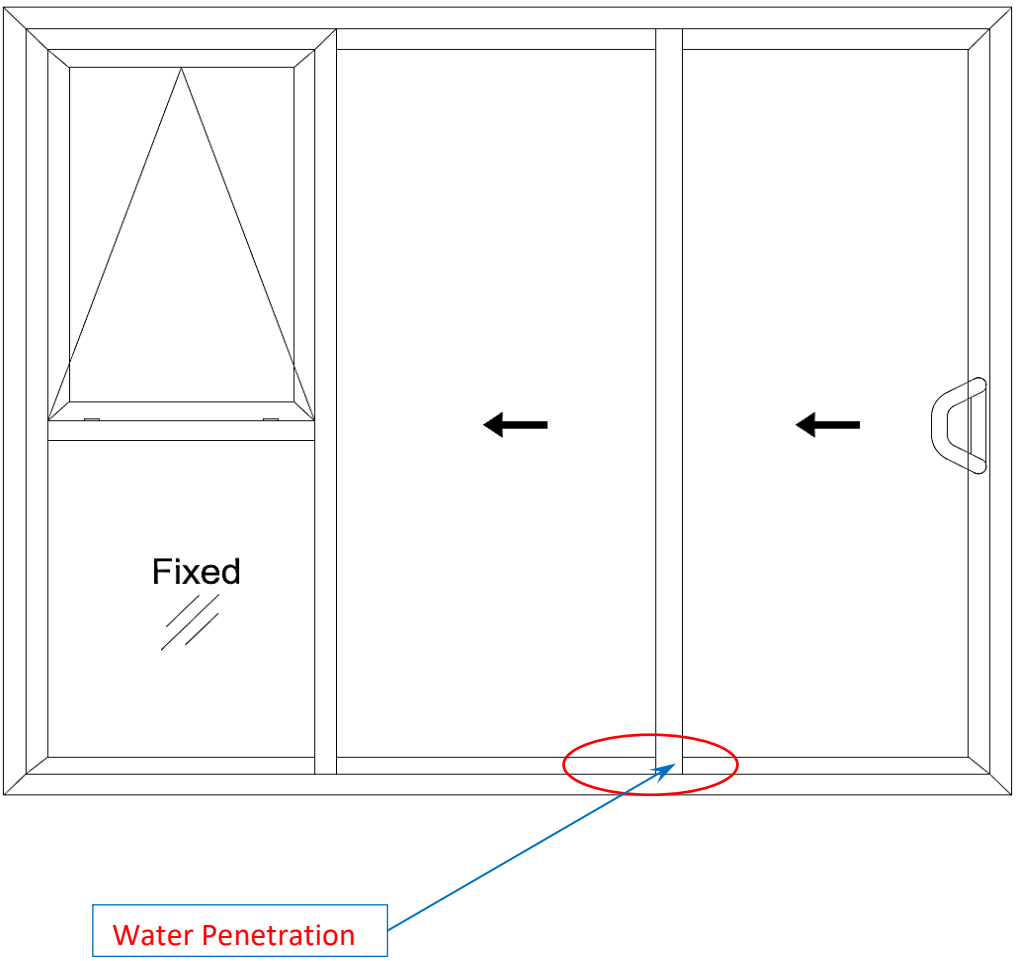

Fig.8 Location of Wate Penetration

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Appendix B: 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:**
Ziqing Chen	Oliver zhu
Name: Ziqing Chen	Name: Oliver Zhu
Title: Reviewer	Title: Project Engineer

Revision:

Revision No.	Date	Revision Reason	Revision Summary	Author	Reviewer
R0	/	/	Original Report Issue	/	/

End of Test Report