

Notified Body number: 2018

BANDYMAI
ISO/IEC 17025

Nr. LA.01.031

TEST REPORT No. 153-1 SF/23 OVA en
31st of August 2023

Page (pages)
1 (5)

**Window air permeability, water tightness
and resistance to wind load measurement**

(designation of the test)

Test methods: LST EN 1026:2016 Windows and doors- Air permeability. LST EN 1027:2016 Windows and doors – Water tightness. LST EN 12211:2016 Windows and doors – Resistance to wind load.

(number of normative document)

Specimen description: PVC window divided into two parts. The right side opens. Product dimensions: 2000x1700 mm. Product frame material: PVC. Product sash material: PVC. Filling the product sash/frame: reinforcement U 29x28x29-1.5mm. System: POLYWIN P705. Type of opening: opening inwards, right. Fittings: VORNE. Locks/handle: VHS. Fastening (number of sash locking points): 6 points. Gaskets: 2. Glazing: glass 2K, (4LowE+4CF) Argon 24 mm Ug=1.1 W/m²K. Producer of glass unit: First Glass Company, SIA. Date of sample production: 29/05/2023.
(name, description and identification details of a specimen; information submitted by the customer)

Customer: SIA "BALTIC FENSTER", Ilukstes iela 32-43, Riga, Latvija
(the name and address)

Manufacturer: SIA "BALTIC FENSTER", Ilukstes iela 32-43, Riga, Latvija
(the name and address)

Results of test:

Name of the indicator and unit	Method reference no.	Test result
Air permeability, class	LST EN 12207:2017	4
Water tightness, class	LST EN 12208:2002	5A
Resistance to wind load, test pressure, class	LST EN 12210:2016	3
Resistance to wind load, frame deflection, class	LST EN 12210:2016	C

Note. 1) Conformity of test results is evaluated using the decision rule in accordance with ILAC-G8: 09/2019 point 4.2.1.

Place of test: Building Physics Laboratory, Institute of Architecture and Construction, KTU
(name of the test laboratory)

Specimen delivery date: 10/07/2023

Date of test: 02/08/2023;
03/08/2023;
30/08/2023

Sampling: The test specimen sampled by customer, task No. 153/23, 29/05/2023

Additions information: Application 29/05/2023, drawings

(other deviations, other tests and any information related to the test)

Annex: 1– Test photos, 2– schematical view of the test rig, 3– measurement results (+8 pages)
(the numbers of the annexes should be pointed out)

Technical manager:
(approves the test report)

Test performed by:
(responsible for testing and results)

(signature)

(signature)

J. Ramanauskas
(n., surname)

R. Rauckis
(n., surname)

Validity – the named data and results refer exclusively to the tested and described specimens.
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Installation of the sample

Sample has been installed into test rig KS 3035/650 PC Nr.P2130 opening by workers of the laboratory. An opening of the test rig was adjusted that it size would meet the dimensions of the sample.

The ambient temperature and humidity close to the specimen shall be within the range 10 °C to 30 °C and 25 % to 75 % RH and the specimen shall be conditioned thus for at least 4 h immediately before test.

Methods and equipment

Air permeability has been tested in accordance with requirements of *test method* standard.

Test rig KS 3035/650 PC includes:

1. Test wall,
2. Air flow control block,
3. Water sprinkling system,
4. Indication and control equipment,
5. Deflection sensors.

Technical data of test rig:

1. Max size of the sample should be tested: width – 2400 mm, height – 2350 mm,
2. Max developed test pressure: ± 3000 Pa,
3. Ranges of measurement: I – (0,5...50) m³/h II – (0,5...300) m³/h,
4. Range of displacement sensors ± 25 mm.

Test rig KS 3035/650 PC No. P2130 tried LEI No. 83/22-D; 84/22-D 2022-10-20; 92/22-B 2022-10-21; 162/22-S 2022-10-21 and Nordic Metrology Science No.106698-3-1 2022-11-21.

- Sources:** [1] *LST EN 1027:2016 Windows and doors – Water tightness – Test method.*
[2] *LST EN 12208:2002 Windows and doors – Water tightness - Classification.*
[3] *LST EN 1026:2016 Windows and doors- Air permeability – Test method*
[4] *LST EN 12207:2017 Windows and doors- Air permeability – Classification.*
[5] *LST EN 12211:2016 Windows and doors – Resistance to wind load – Test method.*
[6] *LST EN 12210:2016 Windows and doors – Resistance to wind load – Classification.*
[7] *LST EN 14351-1:2006+A2:2016 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.*

Distribution: Customer

Laboratory of Building Physics,
Institute of Architecture and Construction of Kaunas
University of Technology

Original

Copy

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1 Annex. Test photos

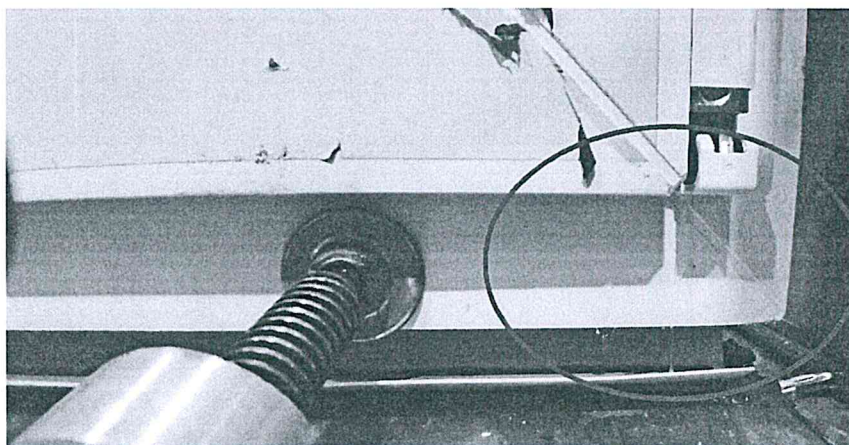
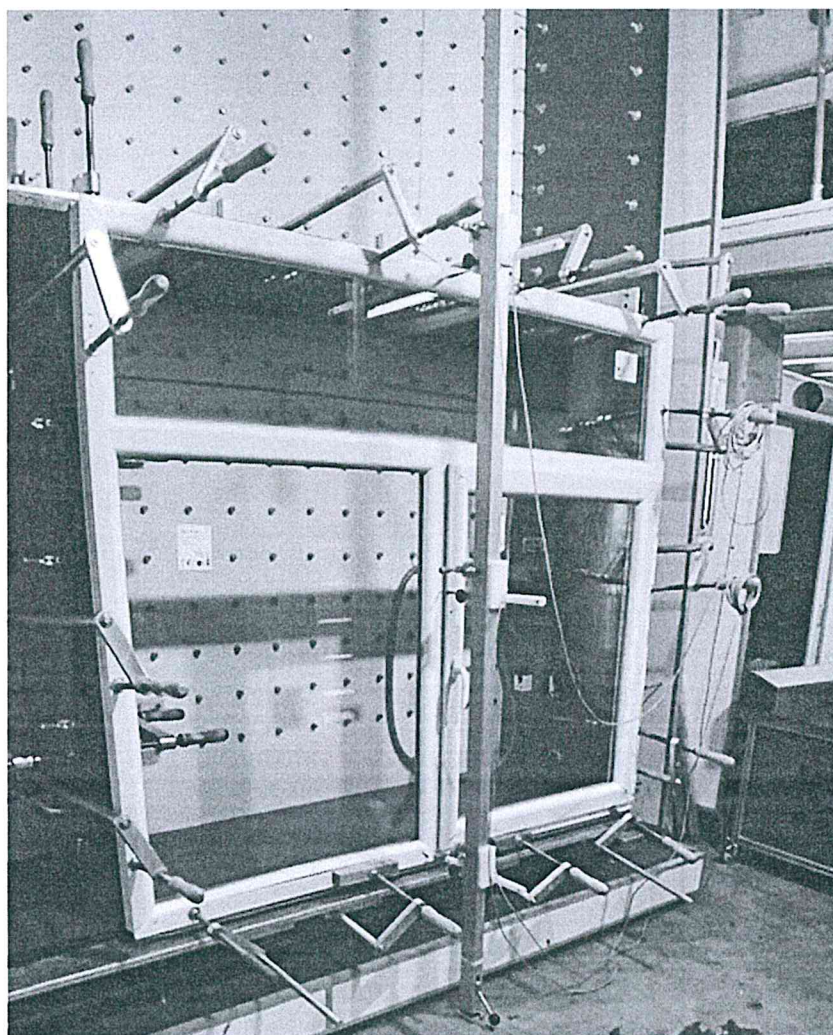


Fig 2. Photos of the sample during the test

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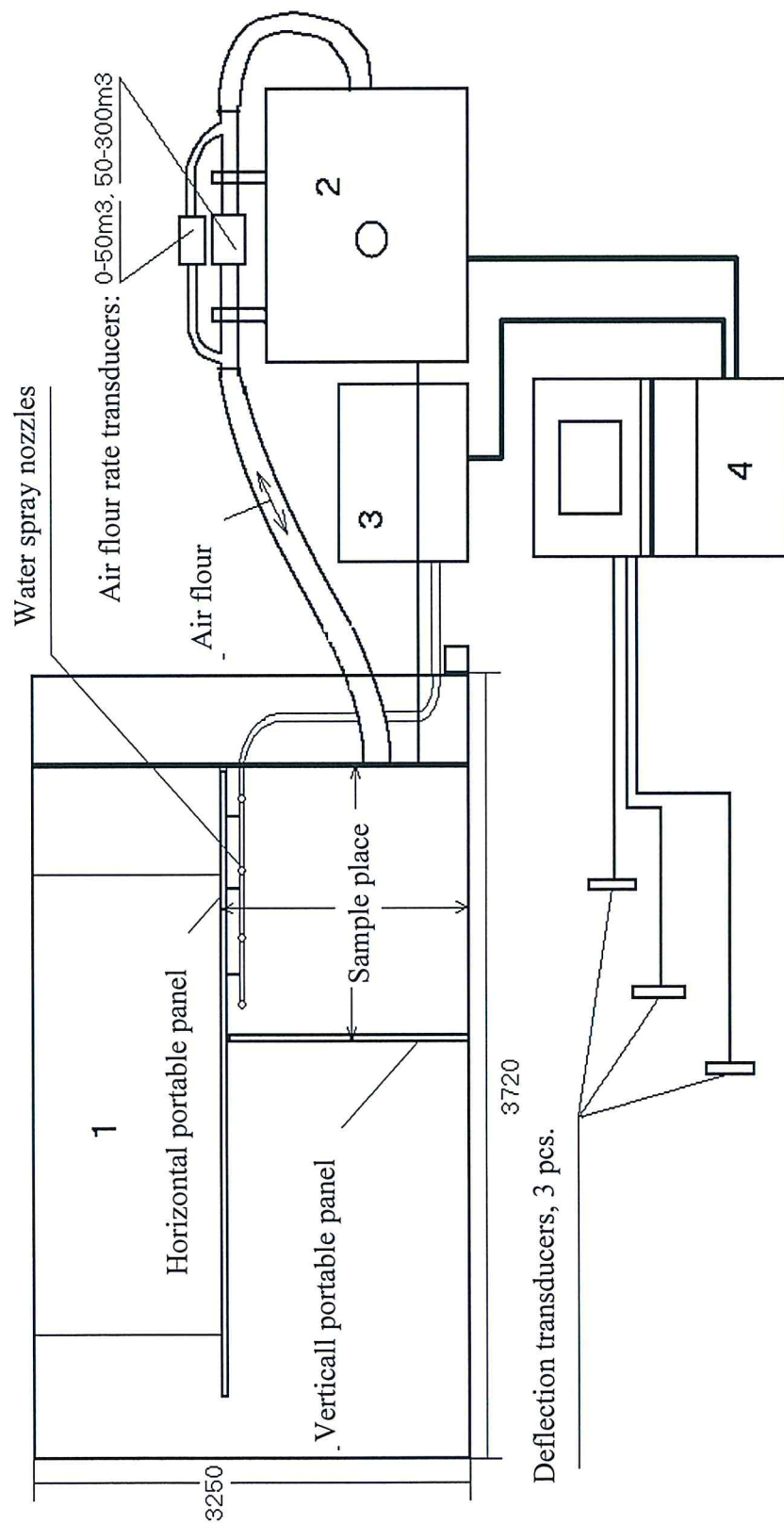


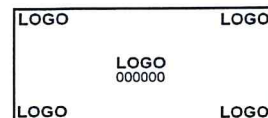
Fig 3. Equipment for window, door, roof window, industrial door and screen wall air permeability, rain water resistance and resistance to wind load measurements scheme: 1 – test measurement wall, 2 – air flow control and regulation block, 3 – water spray device, 4 – indicator and control equipment

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Test protocol

KTU Architektūros ir statybos institutas
Statybinės fizikos laboratorija
Tunelio g. 60, Kaunas
Lietuva



Client : Order 35 153/23 O
Test number: 01
Examiner : R.Rauckis

Date: 02.08.2023

Durchgeführte Prüfungen:

1.) Air Permeability: EN 12207 in accordance with BS EN 1026

Characteristics of element

Type of element : langas

Opening type : atidarimas i vidu

Measurement of the element (W x H): 2.000 x 1.700 m Area : 3.400 m²

Measurements of the sash (W x H): 0.945 x 1.014 m Area : 0.958 m²

Seal length : 3.918 m

Reference of Profiles

Frame :	Sill Detail :
Sash :	Transom :
Mullion :	Glazing bead :
Sealing :	Drip Bar :
Hardware :	Other :
Material :	Locking :
Finish :	Hinges :

Glazing

Type :	Filling :
Filling :	Glas area :
Glass Dimensions :	Other :

Classification

Air permeability EN 12207	Actual Class 4	Target Class 4
Water tightness EN 12208	Actual Class A0	Target Class A0
Wind resistance EN 12210	Actual Class 0-	Target Class 0-

Temperature: 23 Celsius Humidity: 58 Air pressure: 992.0 HPa

Remark:

Place:.....

Date:02.08.2023

Tester:.....

Test protocol

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Air Permeability: EN 12207 in accordance with BS EN 1026

Window surface: 3.400 m² Seal length: 3.918 m

1. Air Permeability pressure / Air Permeability suction

3 Pressure bump 654 Pa durchgeführt
3 Pressure bump -648 Pa durchgeführt

Pressure Pa		Qc m³/h	Qtc m³/h	Window surface		Joints length	
Nominal	Real			m³/h/m³	class	m³/h/m	class
+							
50	50	0.00	1.84	0.54	4	0.47	4
100	99	0.00	3.07	0.90	4	0.78	3
150	150	0.00	4.08	1.20	4	1.04	3
200	200	0.00	4.94	1.45	4	1.26	3
250	250	0.00	5.77	1.69	4	1.47	3
300	300	0.00	6.70	1.97	4	1.71	3
450	450	0.00	13.78	4.05	4	3.51	3
600	586	0.00	25.26	7.43	4	6.44	3
-							
-50	-50	0.00	1.87	0.55	4	0.47	3
-100	-100	0.00	3.02	0.89	4	0.77	3
-150	-149	0.00	4.02	1.18	4	1.02	3
-200	-199	0.00	4.63	1.36	4	1.18	4
-250	-249	0.00	5.44	1.60	4	1.38	3
-300	-300	0.00	6.10	1.79	4	1.55	4
-450	-453	0.00	7.58	2.23	4	1.93	4
-600	-601	0.00	8.95	2.63	4	2.28	4
Average							
50	50	0.00	1.85	0.54	4	0.47	3
100	99	0.00	3.05	0.89	4	0.77	3
150	149	0.00	4.05	1.19	4	1.03	3
200	199	0.00	4.79	1.41	4	1.22	3
250	249	0.00	5.60	1.64	4	1.43	3
300	300	0.00	6.40	1.88	4	1.63	3
450	451	0.00	10.68	3.14	4	2.72	3
600	593	0.00	17.10	5.03	4	4.36	3

Pressure: 4 Suction: 4 Average value: 4

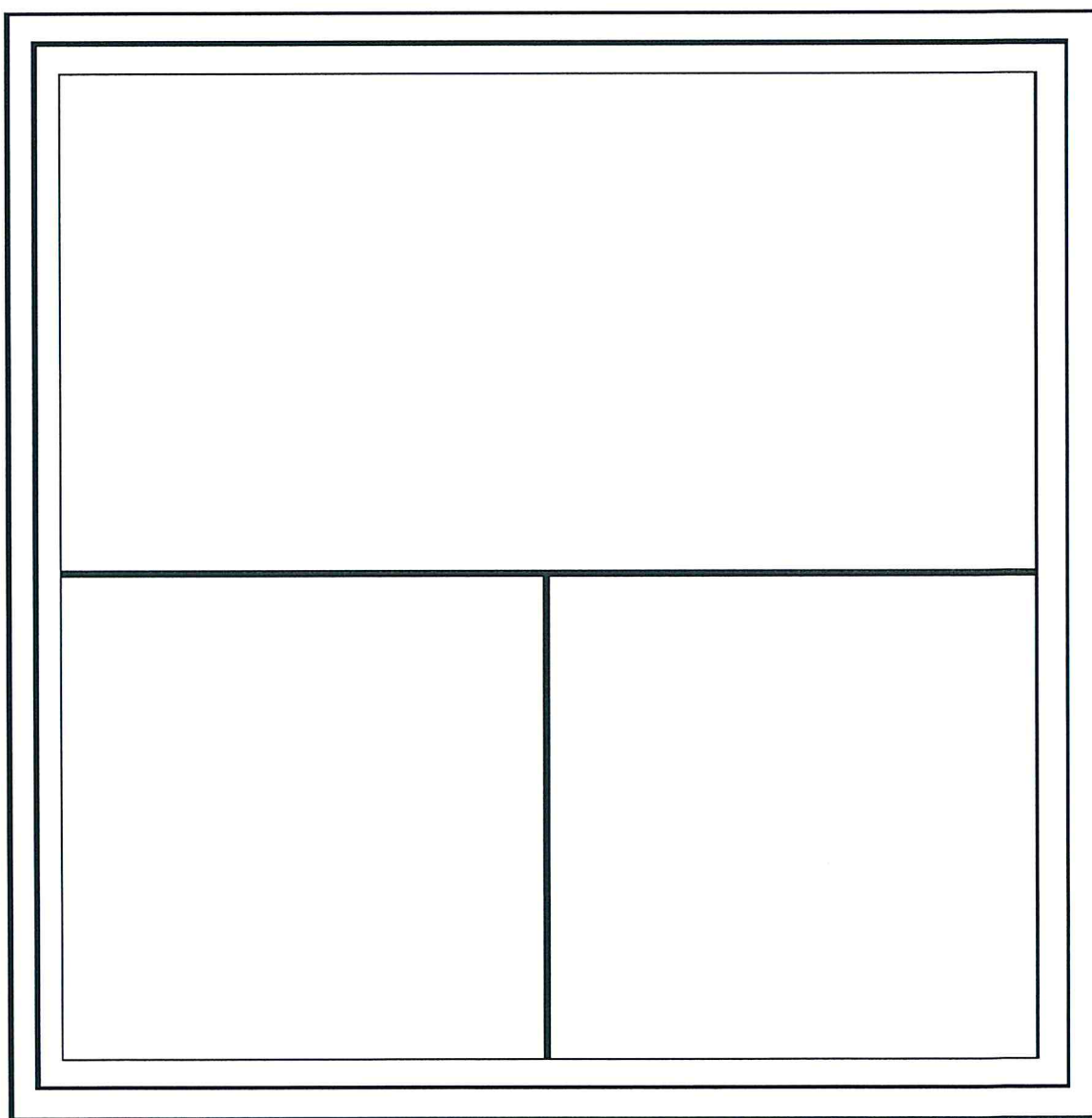
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Window sketch:

Dimensions (W x H) : 2.000 m x 1.700 m
Joints length: 3.918 m
Window surface: 3.400 m²
Sash surface: 0.958 m²



Test protocol

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Statybinės fizikos laboratorija
Tunelio g. 60, Kaunas
Lietuva



Client : Order 36 153/23 V

Test number: 01

Date: 03.08.2023

Examiner : R.Rauckis

Durchgeführte Prüfungen:

1.) Watertightness: EN 12208

Characteristics of element

Type of element : langas

Opening type : atidaromas i vidu

Measurement of the element (W x H) : 2.000 x 1.700 m Area : 3.400 m2

Measurements of the sash (W x H) : 0.945 x 1.140 m Area : 1.077 m2

Seal length : 4.170 m

Reference of Profiles

Frame :	Sill Detail :
Sash :	Transom :
Mullion :	Glazing bead :
Sealing :	Drip Bar :
Hardware :	Other :
Material :	Locking :
Finish :	Hinges :

Glazing

Type :	Filling :
Filling :	Glas area :
Glass Dimensions :	Other :

Classification

Air permeability EN 12207	Actual Class 0	Target Class 0
Water tightness EN 12208	Actual Class A6	Target Class A5
Wind resistance EN 12210	Actual Class 0-	Target Class 0-

Temperature: 23 Celsius Humidity: 64 Air pressure: 990.8 HPa

Remark:

Place:.....

Date:03.08.2023

Tester:.....

Test protocol

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Watertightness: EN 12208 -

Spaying method A Number of nozzles: 5 Vol. Water: 600.0 litre/hour
Spaying angle: 24 Degree : 10.0 litre/minute
Add. spraying pipe Number of nozzles: 0 Vol. Water: 0.0 litre/hour
(1.0 litre/nozzle) : 0.0 litre/minute

1. Watertightness pressure

Pressure Pa		Time	Remark
Nominal	Real		
0	0	00:15:00	OK
50	50	00:05:00	OK
100	100	00:05:00	OK
150	151	00:05:00	OK
200	201	00:05:00	OK
250	252	00:05:00	Flow:00:03:15

Watertightness Class: A5

Point of water ingress :

Probable cause of leakage :

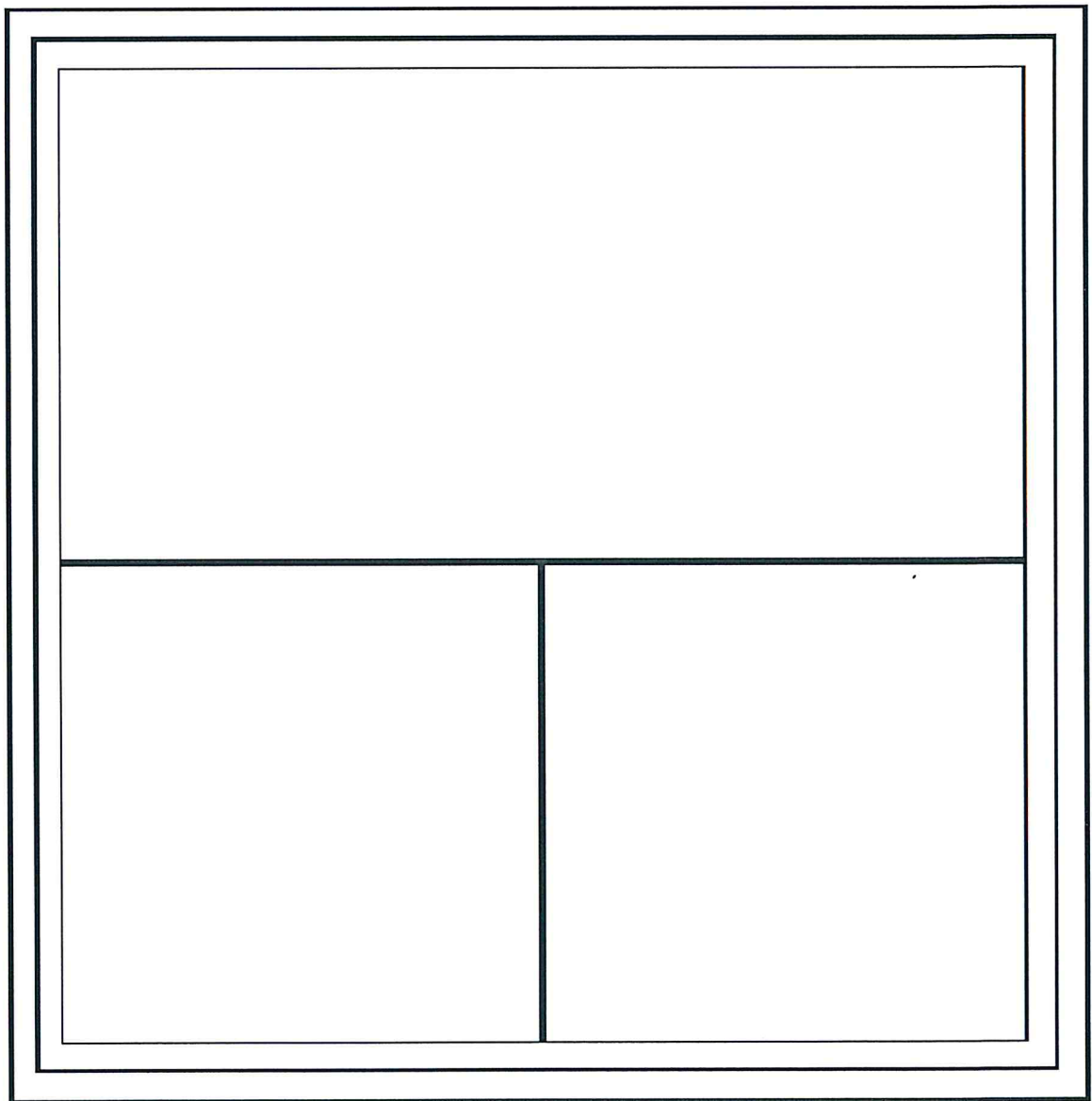
Test protocol

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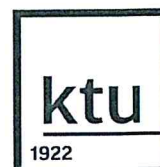
Window sketch:

Dimensions (W x H) : 2.000 m x 1.700 m
Joints length: 4.170 m
Window surface: 3.400 m²
Sash surface: 1.077 m²



Test protocol

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Lietuva



architektūros
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institutas

Client : 153/23 A
Test number:
Examiner : R.Rauckis

Date: 30.08.2023

Carried out tests:

- 1.) Wind Resistance: EN 12210
- 2.) Safety test

Bandinio charakteristikos

Bandinio tipas : Langas
Varstymo tipas : atidaromas i isore
Measurement of the element (W x H) : 2.000 x 1.70 m Area : 3.400 m²
Measurements of the sash (W x H) : 0.945 x 1.40 m Area : 1.077 m² Seal
length : 4.170 m

Profilio duomenys

Remas :	Stikl. paketo skirtukas :
Varcia :	Skersinis remas :
Remo elementai :	Stiklajuostes :
Sandarinimas :	Drenazinis kanalas :
Tech. iranga :	Kita :
Medziagiskumas :	Uzraktas :
Apdaila :	Vyriai :

Istiklinimas

Tipas :	Uzpildas :
Uzpildas :	Stiklo plotas :
Stiklo matmenys :	Kitas :

Classification

Air permeability EN 12207	Target Class 0	Actual Class 0
Water tightness EN 12208	Target Class A0	Actual Class A0
Wind resistance EN 12210	Target Class 3C	Actual Class 3C

Temperature: 24 Celsius Humidity: 69 Air pressure: 994.3 hPa

Remark:

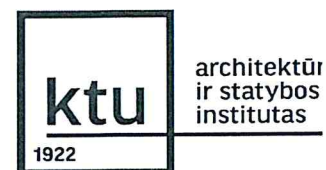
Place:.....

Date:30.08.2023

Tester:.....

Test protocol

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Wind Resistance: EN 12210

Temperature: 24 Celsius Humidity: 69 % Air pressure: 994.3 HPa

Wind Resistance: EN 12210		
P1 for deflection	1200	-1200
P2 for cycles	-600	600
P3 for safety test	-1800	1800

Deflection:

Distance between the way transducers

a01 <-> c03 = 1660 mm

A = 1/150 B = 1/200 C = 1/300

Wind Resistance P1 pressure

3 Pressure pulses 1320 Pa implemented

Pressure		Distortion			Distortion	Distortion
Desired	Actual	Absolute			Relative	class
1200	1208	a01= -0.72	b02= -12.67	c03= -0.77	f01= -11.33	C (1/>999)
0	0	a01= 0.00	b02= -0.07	c03= 0.00	f01= -0.07	

Class: 3

Wind Resistance P1 suction

3 Pressure pulses -1320 Pa implemented

Pressure		Distortion			Distortion	Distortion
Desired	Actual	Absolute			Relative	class
-1200	-1198	a01= 0.53	b02= 13.74	c03= 0.61	f01= 13.17	C (1/ 999)
0	0	a01= 0.00	b02= 0.06	c03= 0.01	f01= 0.05	

Class: 3

Pressure pulses

50 Cycles -600 Pa / 600 Pa implemented Remark

:

Class: 3C

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Safety test

P3 = Pa Des/Est: -1800 / -1802 : 0 / 0

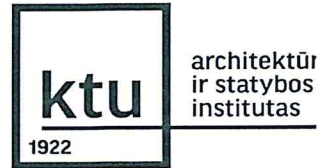
Remark Suction :

P3 = Pa Des/Est: 1800 / 1804 : 0 / 0

Remark Pressure :

Test protocol

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Window sketch:

Dimensions (W x H) : 2.000 m x 1.700 m
Joints length: 4.170 m
Window surface: 3.400 m²
Sash surface: 1.077 m²

