



**TEST REPORT No. 102 SF/14 A en**  
**Date: 11 of June 2014**

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**Determination of the airborne sound reduction index**

(test name)

Test method: *LST EN ISO 10140-2:2010 Acoustics – Laboratory measurement of sound insulation of building elements. Part 2: Measurements of airborne sound insulation (ISO 10140-2:2010); LST EN ISO 10140-1:2010 Part 1: Application rules for specific products (ISO 10140-1:2010); LST EN ISO 10140-4:2010 Part 4: Measurement procedures and requirements (ISO 10140-4:2010); LST EN ISO 10140-5:2010 Part 5: Requirements for test facilities and equipment (ISO 10140-5:2010).*

(number of normative document or test method, description of test procedure, test uncertainty)

Specimen description: Wooden window. Measurements: width – 1480 mm, height – 1230 mm. Profiles: frame 94×80 mm, sash 94×80 mm; System type: GAMA 94. Opening: opens inwards, right hand. Hardware: ROTO. Fixing: 7 points in perimeter. Gaskets: SCHLEGEL of foam rubber two contours. Glazing: glass 56 mm, 4-22Ar-4-22Ar-4 (two glasses selective coated, spaces filled argon gases, spacers bars - aluminum).

(identification of the specimen)

Customer: UAB „Langu gama“ Liepkalnio str. 160D, LT-02121 Vilnius

(name and address of enterprise)

Manufacturer: UAB „Langu gama“ Liepkalnio str. 160D, LT-02121 Vilnius

(name and address of enterprise)

Test result:

Name of quantity, unit	Test method	Test result
Weighted sound reduction index $R_w$ ( $C$ ; $C_{tr}$ ; $C_{100-5000}$ ; $C_{tr,100-5000}$ ), dB	LST EN ISO 717-1:2013*	35 (-2; -7; -1; -7;) dB
<b>Note.</b> The testing are carried out in purpose for conformity assessment of the product according to LST EN 14351-:2006+A1:2010 *Flexible scope of accreditation		

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

(name of the test laboratory)

Specimen delivery date: 2014-06-06

Test date: 2014-06-08

Sampling: The test specimen sampled by customer. Description N° 102/14, 2014-06-25

Additional information: Application 2014-01-02, drawing

(any deviations, complementary tests, exceptions and any information related with particular test)

Annex: 1 - Measurement results, 2 - Schematical view of the test, 3 - Cross section of the specimen

(the numbers of the annexes should be pointed out)

Technical manager:

(approves the test results)

Tested by:

(technically responsible for testing)

(signature)

(signature)

J. Ramanauskas

(n., surname)

K. Miškinis

(n., surname)

S. P.

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### Installation of the sample and measurement

Sample has been installed into the hole (1500×1250) of the dividing wall between two reverberating chambers by workers of the laboratory. The installation of the specimen is described on the drawing in Annex 2. The airborne sound reduction index has been determined by using the precision integrated noise spectra meter, positional microphone and loudspeaker.

### Methods and equipment

The airborne sound reduction index  $R$  was determined in accordance with requirements of LST EN ISO 10140-1:2010 [1], LST EN ISO 10140-2:2010 [2], LST EN ISO 10140-4:2010 [3], LST EN ISO 10140-5:2010, [4]. Weighted sound reduction index  $R_w$  was determined in accordance with requirements LST EN ISO 717-1:2013 [5].

The thickness of the reverberating chamber's walls is 0,25m. The thickness of the covering masonry shell is 0,38m. The dimensions of the floor of sound chamber are 4,9x4,8m, height – 3,5÷3,0m (the coming down by steps ceiling). The dimensions of the floor of the sound receiving chamber are 4,8x4,3m, height – 3,5÷3,0m (the coming down by steps ceiling). The chamber's volumes are 80 and 68,56m<sup>3</sup>.

### Equipment of the measurement:

Microphone L&D (Larson & Davis) 2560 Nr.2572; Initial microphone amplifier L&D, PRM 900C Nr.3782; Precision integrated noise spectra meter and noise generator L&D, 2800 B Nr.0527; Microphone LD Nr.2546, Initial microphone amplifier PRM900C Nr.3777 calibration certificate VMC Nr.794567 AV 3.3-00-807, 2011-03-07; Calibrator of sound level LD CAL200 Nr.0712 calibration certificate VMC Nr.794566 AV 3.3-00-806, 2011-03-07

Loudspeaker	made to order
Power amplifier	made to order
Microphone positioning system	made to order
Relative humidity and temperature sensor	Testo 615, No. 3070000244Gb
Static pressure	Barometer Aneroider No. 1685

**Sources:** [1] *LST EN ISO 10140-1:2010 Acoustics. Measurement of sound insulation in buildings and of building elements. Part 1: Application rules for specific products (ISO 10140-1:2010).*  
[2] *LST EN ISO 10140-2:2010 Acoustics. Measurement of sound insulation in buildings and of building elements. Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010).*  
[3] *LST EN ISO 10140-4:2010 Acoustics. Measurement of sound insulation in buildings and of building elements. Part 4: Measurement procedures and requirements (ISO 10140-4:2010).*  
[4] *LST EN ISO 10140-5:2010 Acoustics. Measurement of sound insulation in buildings and of building elements. Part 5: Requirements for test facilities and equipment (ISO 10140-5:2010).*  
[5] *LST EN ISO 717-1:2013 Acoustics- Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation (ISO 717-1:2013).*

<b>Distribution:</b>	Customer	Original
	ASI, SF laboratory	Original

**Contact person :** Vidmantas Dikavičius, tel. +370 37 350799

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Notified Body number: 2018

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Annex 1 - Measurement results

## Sound reduction index, $R$ , in accordance with ISO 10140-2

(test name)

**Test method:** LST EN ISO 10140-1:2010, LST EN ISO 10140-2:2010, LST EN ISO 10140-4:2010, LST EN ISO 10140-5:2010  
(number of normative document or test method, description of test procedure, test uncertainty)

**Manufacturer:** UAB „Langu gama“ Liepkalnio str. 160D, LT-02121 Vilnius  
(name and address of enterprise)

**Client:** UAB „Langu gama“ Liepkalnio str. 160D, LT-02121 Vilnius  
(name and address of enterprise)

**Product identification:** Wooden window. Glazing: glass 56 mm, 4-22Ar-4-22Ar-4  
(identification of the product)

**Test element mounted by:** Laboratory person

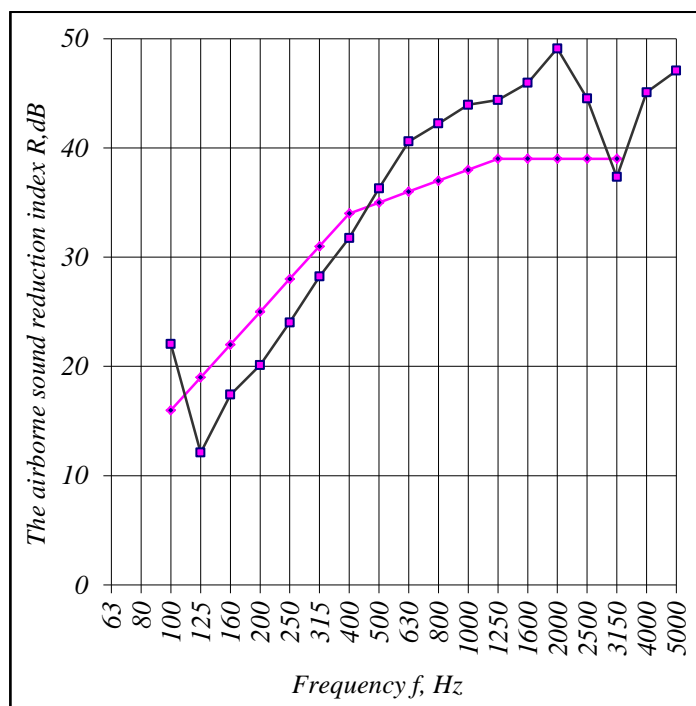
**Description of test facility, test element and test arrangement, including reference to ISO 10140-2:2010, where applicable:**

<b>Test room identification:</b>	<b>horizontal</b>	<b>Relative humidity in the test rooms:</b>	56,0 %
<b>Area, <math>S</math>, of the test element:</b>	1,88 m <sup>2</sup>	<b>Static pressure:</b>	0,1 MPa
<b>Air temperature in the test rooms:</b>	20,0 °C	<b>Receiving room volume:</b>	68,55 m <sup>3</sup>
<b>Test date:</b>	2014-06-11		

Laboratory of Building Physics, Institute of Architecture and

**Name of test institute:** Construction of Kaunas University of Technology

Frequency $f$ , Hz	$R$ , dB 1/3 octave
50	
63	
80	
100	22,0
125	12,1
160	17,4
200	20,1
250	24,0
315	28,2
400	31,8
500	36,3
630	40,6
800	42,2
1000	43,9
1250	44,4
1600	46,0
2000	49,1
2500	44,5
3150	37,3
4000	45,1
5000	47,1



Rating in accordance with LST EN ISO 717-1:2013

$R'_w(C; C_{tr}) = 35 (-2; -7)$  dB;  $C_{50-3150} =$  dB;  $C_{tr,50-5000} =$  dB;  $C_{100-5000} = -1$  dB;  $C_{tr,100-5000} = -7$  dB

Tested by:

K. Miškinis

(technically responsible for testing)

(n., surname)

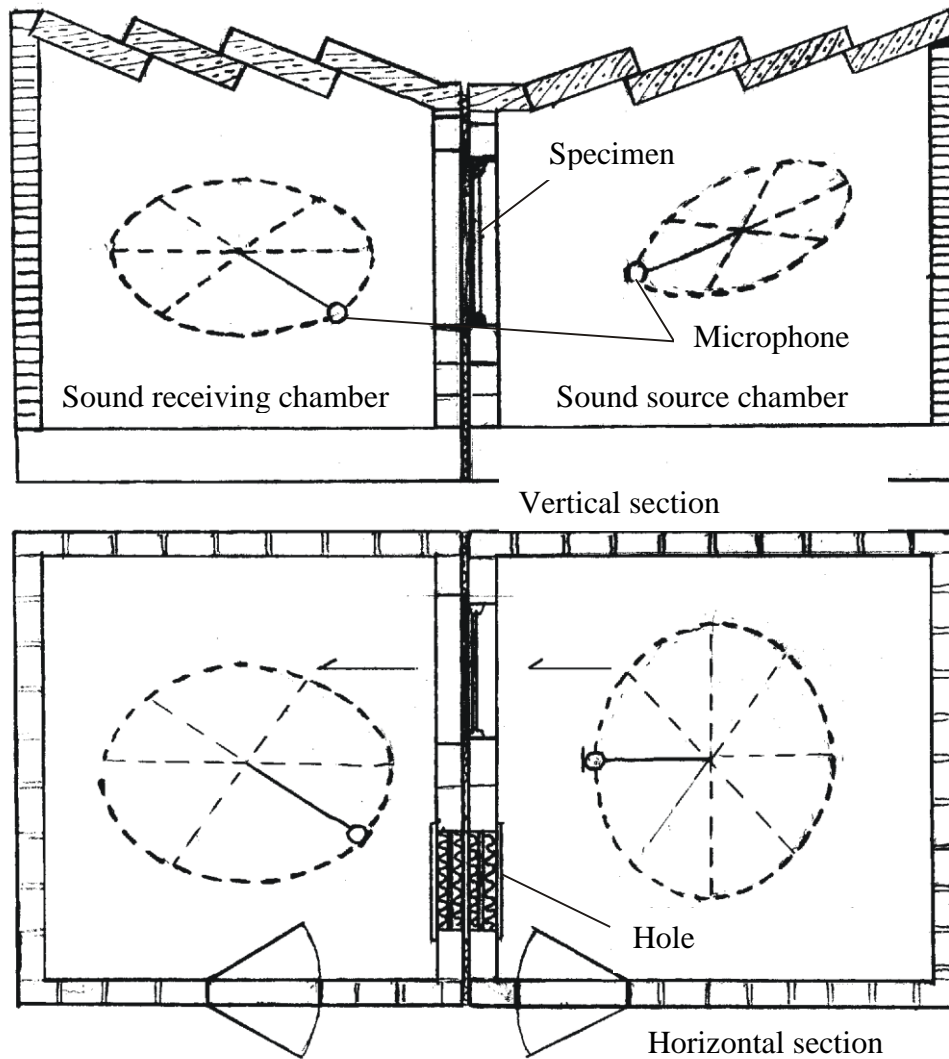
(signature)

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Annex 2. Schematical view of the test

Reverberating chambers



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Annex 3. Cross section of the specimen

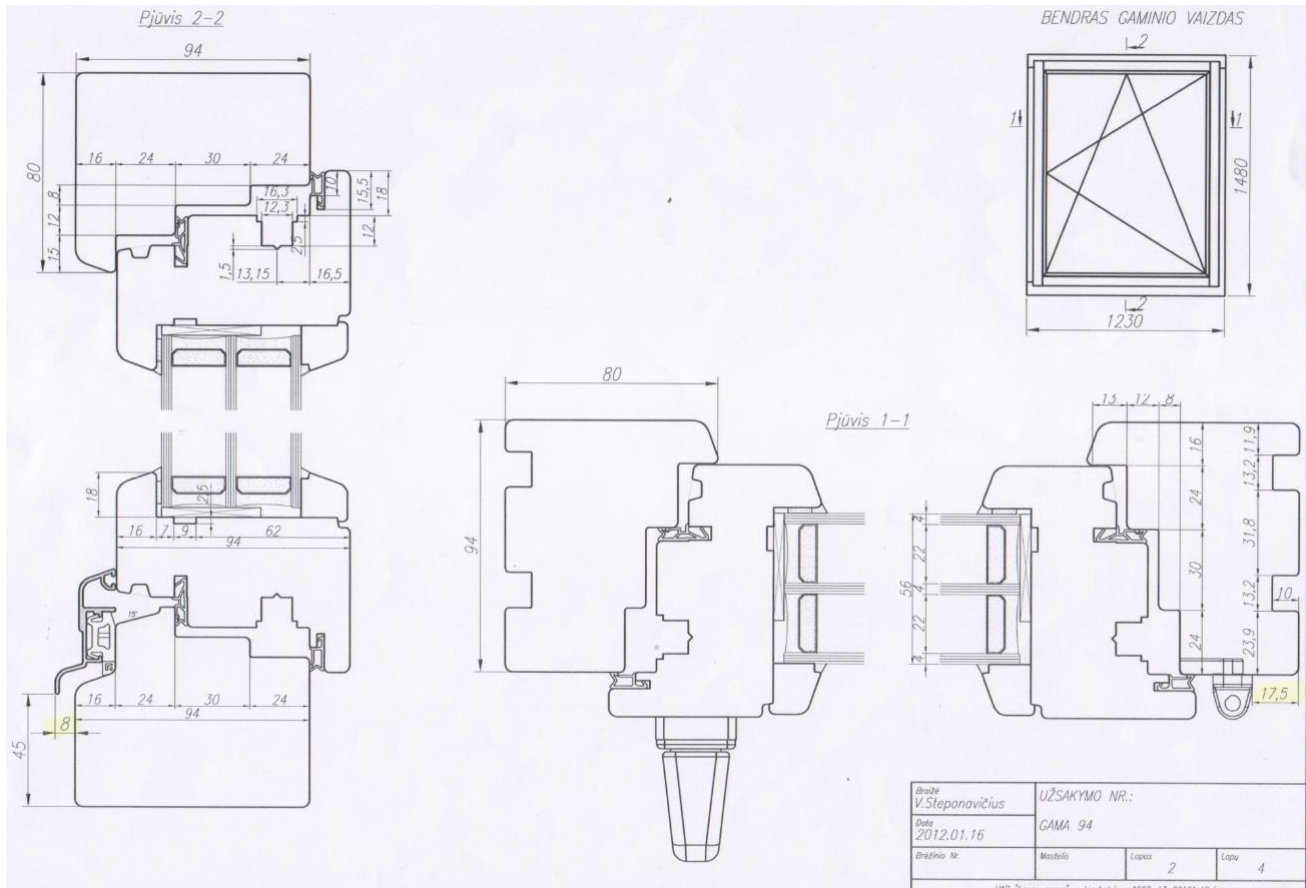


Fig 1. Window drawings (by the customer submitted information)

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