

Client: A.D.A. Louvre Systems Pty Ltd
23 Heath Street, Lonsdale, S.A. 5160

Measurement Type: Airborne Sound Insulation

AS 1191-2002 "Acoustics – Method for laboratory measurement of airborne sound insulation of building elements"
AS/NZS ISO 717-1:2004 "Acoustics – Rating of sound insulation in buildings and of building elements. Part 1: Airborne Sound Insulation"

Test Specimen [Specimen area: 3.60 x 3.00 m (w x h) = 10.8 m²]

Description: 'HY-LOT 14' Acoustic Ventillation Louvre System; 300 mm depth.

Details¹

- Three identical louvre modules; each occupying an area 1.2 x 3.0 m (w x h).
- 14 blades at 205 mm vertical spacing per module; 13 openings with 89 mm air-flow gaps.
- Blade construction 1.2 mm unperforated aluminium sheet (top/external), 0.6 mm galvanised steel with Ø3.2 perforations @ 30% open area (bottom/internal), filled with Fletcher F132 semi rigid insulation (32 kg/m³, 75 mm thick).
- Framing: 2.0 mm aluminium.

Installation (Installed by the client, with some assistance by the laboratory.)

- The three louvre modules were placed in the test aperture, standing next to each other, set approx 50 mm back from the face of the surrounding wall of the chamber.
- Extruded aluminium strips were used to cover the vertical gaps between the adjacent louvre modules on the external face only; fixed with self drilling screws.
- The gaps between the edges of the laboratory test aperture (top and sides) and the adjacent louvre module edges were covered with aluminium angle; bolted into pre-tapped mounting holes of the aperture, and fixed to the louvre modules with self drilling screws.
- Minimal gap was left between the bottom blade of each louvre module; any incidental gaps were left exposed.

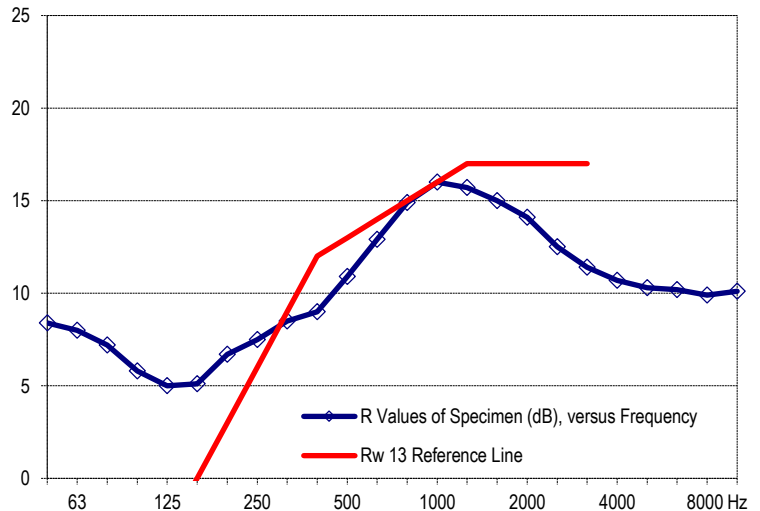
Additional test specimen information is provided on page 2 (drawing provided by client).



Test specimen installed (as tested)

Measurement Details & Results^{2,3}

Frequency ⁴ (Hz)	Specimen R Value (dB)		Repeatability δ (dB)
	1/3 Octave	Whole Octave	
50	8.4		2.6
63	8.0	7.8	2.0
80	7.2		2.6
100	5.8		2.0
125	5.0	5.3	1.8
160	5.1		2.0
200	6.7		2.0
250	7.5	7.5	1.3
315	8.5		1.5
400	9.0		2.7
500	10.9	10.7	1.2
630	12.9		0.8
800	14.9		1.1
1000	16.0	15.5	1.3
1250	15.7		1.0
1600	15.0		1.2
2000	14.1	13.7	1.3
2500	12.5		1.1
3150	11.4		1.1
4000	10.7	10.8	1.2
5000	10.3		1.0
6300	10.2		1.0
8000	9.9	10.1	0.9
10000	10.1		0.8



Performance Index Numbers

R_w (C; C_{tr}) = 13 (0; -1) dB
STC = 13

Measurement Conditions

Date of measurement: 14 August 2019
200 m³ chamber (north): 11 °C, 69 % R.H.
100 m³ chamber (south): 11 °C, 72 % R.H.
Atmospheric pressure: 1012 mBar

Notes, Deviations etc

1. Physical characteristics of materials may be suppliers' nominal figures; not necessarily verified by CSIRO.
2. \geq indicates R values, if any, where measurability was limited by proximity to background level.
3. Measurement was carried out in both directions through the test specimen, using 3 loudspeaker positions in each chamber; giving 6 spatially independent sets of R values, from which average R values and repeatability estimates have been calculated (repeatability estimates rounded up to 1 decimal place).

4. AS 1191 standard frequency range is limited to bands from 100 to 5000 Hz; measurement has not been optimised for bands outside that range.

Issuing Authority

Signed:
Date: 29 August 2019

Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-A-4/2
Microphones/preamps: • GRAS type 40AP microphones on B&K type 2669 preamps, rotating simultaneously in both rooms with 33 sec period, 1.32 m radius.
Noise source: • Norsonic NOR276 dodecahedron loudspeaker driven by a Norsonic NOR280 power amplifier
Calibration: • Brüel & Kjær type 4231 acoustic calibrator: Jul 2018 (NATA cal)
• Analyser: Jul 2018 (NATA cal)

Laboratory Construction

Chambers: • 300 mm thick concrete • rectangular prism with dimensional proportions 1:1.3:1.6 for spectral distribution and overlap of room modes • northern room approx. 200 m³ vol (212 m² area); southern room 100 m³ vol (133 m² area).
Diffusers: • 200 m³ room: 20 diffusers (approx 40 m²) • 100 m³ room: none.
Isolation: • \geq R_w 78; structurally separate (60 mm air gap), vibration isolated (11 Hz).
Specimen • 3.60 m wide x 3.00 m high, each chamber having 25 mm thick steel plate aperture: lining its 300 mm deep portion of the test aperture, creating a total aperture depth of 660 mm, resilient foam sealing the 60 mm air gap.

Additional Test Specimen Details (drawing provided by client)

ESTIMATED WEIGHT (Kg):

MATERIALS:

- 2.0mm FRAME (ALUM)
- 1.2mm BLADE (ALUM)
- 0.6mm PERFORATED MESH (GALV) 3.2 Ø HOLE 30% OPEN AREA
- F32 SEMI-RIGID INSULATION (see below for details)

A B C D E F H

Material R-value

R2,3	Thickness	75	Density	32	Mass/unit area	2.4
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A B C D E F H

Thickness

75	Sound absorption coefficients (reverberation) at frequencies (Hz) of:	125	250	500	1000	2000	NRC
		0,29	1,08	1,23	1,03	,99	1,1

A B C D E F H

GENERAL TOLERANCES UNLESS SPECIFIED OTHERWISE STATED

ALL DIMENSIONS IN MILLIMETRES

FINISH: Original Drawing Size: **A3**

3rd Angle Projection

Scale: 1:20

Sheet: 1 of 1

Dim: SMM

Date: 1-8-19

Ckd:

Material:

Finish:

A B C D E F H

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SAXON ENGINEERING

TEST ACOUSTIC LOUVRE

A B C D E F H

Job No.

Quote No.

Drawing No. TEST-HY-LOT 14

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A B C D E F H