

## Test Report

FOR: **dB Noise Reduction**  
Cambridge, Ontario.

**Sound Absorption**  
**RAL™-A15-090a**

CONDUCTED: 2015-04-16

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ON: dBNR Nois-eNvelope™ Panel A4 (Perforations Face Source)

### TEST METHOD

Riverbank Acoustical Laboratories™ is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) as an ISO 17025:2005 Laboratory (NVLAP Lab Code: 100227-0) and for this test procedure. The test reported in this document conformed explicitly with ASTM C423-09a: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-05(2012): "Standard Practices for Mounting Test Specimens During Sound Absorption Tests." A description of the measuring procedure and room qualifications is available upon request.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as dBNR Nois-eNvelope™ Panel A4 (Perforations Face Source). A full internal inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

#### **Frame**

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Overall Size: Two at 1.17 m (46.0 in.) x 2.43 m (95.50 in.)  
Overall Thickness: 101.60 mm (4.0 in.)  
Material: Galvannealed steel\*  
Material Thickness 1.21 mm (0.048 in.), 18 gauge

#### **Face Panel**

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Thickness: 0.86 mm (0.034 in.), 22 gauge  
Material: Galvannealed steel\*  
Perforations: 2.32 mm (0.09 in.) diameter  
60° staggered pitch, 4.45 mm (0.175 in.) on center  
24.6% open area in perforated region  
Fastened: Tongue and groove interlocking joints, soldered to frame  
approximately 101.60 mm (4.0 in.) on center

#### **Rear Panel**

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Thickness: 1.19 mm (0.047 in.), 18 gauge  
Material: Galvannealed steel\*  
Fastened: Tongue and groove interlocking joints, soldered to frame  
approximately 152.40 mm (6.0 in.) on center



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### Core

Thickness: 101.60 mm (4.0 in.)  
Material: Approximately 101.60 mm (4.0 in.) mineral wool, 4.0 lbs./ft<sup>3</sup>\*

\* = Information provided by manufacturer and not verified by RAL.

### Physical Measures

Size: 2.34 m (92.00 in.) wide by 2.43 m (95.50 in.) long  
Thickness: 101.60 mm (4.00 in.)  
Weight: 138.35 kg (305.00 lbs.)  
Mass per Unit Area: 24.41 kg/m<sup>2</sup> (5.00 lbs/ft<sup>2</sup>)  
Area: 5.67 m<sup>2</sup> (61.00 ft<sup>2</sup>)

### Test Environment

Volume: 292.0 m<sup>3</sup> (10,311.0 ft<sup>3</sup>)  
Temperature: 21.8±0.1°C (71.2±0.2°F)  
Humidity: 60.2±1.1%  
Barometric Pressure: 99.1 kPa.



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**PHOTOGRAPH WITHHELD BY DB NOISE REDUCTION  
CONTAINS PROPRIETARY INFORMATION**

Figure 1 – Specimen mounted in the test chamber.

**PHOTOGRAPH WITHHELD BY DB NOISE REDUCTION  
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Figure 2 – Detail of the test specimen.



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**PHOTOGRAPH WITHHELD BY DB NOISE REDUCTION  
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Figure 3 – Detail of the insulated core.



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### MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. The perimeter edges were exposed, as would be typical of an actual installation of this specimen.

### TEST RESULTS

1/3 Octave Center Frequency (Hz)	Total Absorption (SI) (m <sup>2</sup> )	Total Absorption (IP) (Sabins)	Absorption Coefficient (Sabins / ft <sup>2</sup> )
100	3.93	42.31	0.69
** 125	5.13	55.25	0.91
160	5.24	56.37	0.92
200	6.02	64.77	1.06
** 250	6.14	66.11	1.08
315	6.29	67.71	1.11
400	6.48	69.79	1.14
** 500	6.31	67.95	1.11
630	6.27	67.47	1.11
800	6.16	66.27	1.09
** 1000	6.15	66.22	1.09
1250	6.11	65.81	1.08
1600	6.17	66.36	1.09
** 2000	6.08	65.43	1.07
2500	6.12	65.88	1.08
3150	6.11	65.78	1.08
** 4000	5.96	64.13	1.05
5000	6.08	65.48	1.07

**SAA = 1.09**  
**NRC = 1.10**



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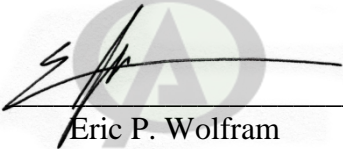
TEST RESULTS (Continued)

The sound absorption average (SAA) is defined as a single number rating, the average, rounded to the nearest 0.01, of the sound absorption coefficient of a material for the twelve one-third octave bands from 200 through 2500 Hz, inclusive.

The noise reduction coefficient (NRC) is defined from previous versions of this same test method as the average of the coefficients at 250, 500, 1000, and 2000 Hz, expressed to the nearest integral multiple of 0.05.

Tested by   
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Experimentalist

Report by   
Chris Nottoli  
Acoustician

Approved by   
Eric P. Wolfram  
Laboratory Manager



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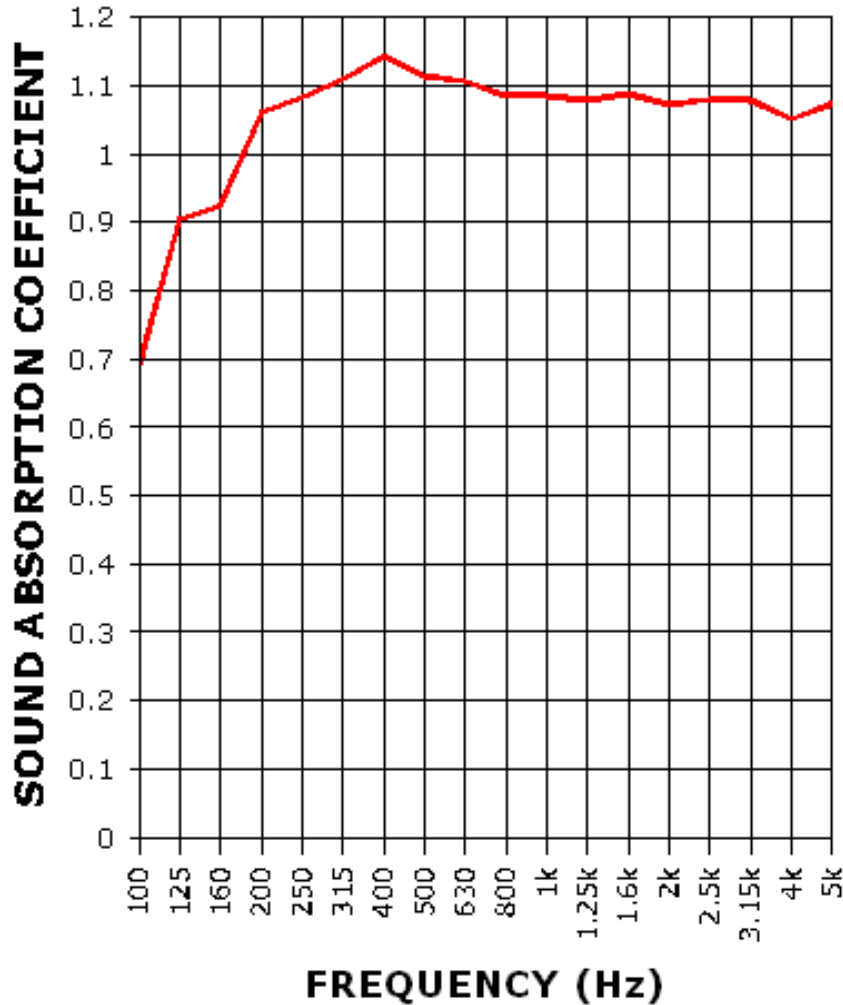
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**SOUND ABSORPTION REPORT**  
dBNR Nois-eNvelope™ Panel A4 (Perforations Face Source)



**SAA = 1.09**  
**NRC = 1.10**



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**APPENDIX A: Extended Frequency Range Data**

Specimen: dBNR Nois-eNvelope™ Panel A4 (Perforations Face Source) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-09a, but extend beyond the defined frequency range of 100Hz to 5,000Hz. These unofficial results are representative of the RAL test environment only and intended for research & comparison purposes.*

1/3 Octave Band Center Frequency (Hz)	Total Absorption (Sabins)	Absorption Coefficient (Sabins / ft <sup>2</sup> )
31.5	6.70	0.11
40	6.96	0.11
50	3.40	0.06
63	15.32	0.25
80	12.22	0.20
100	42.31	0.69
125	55.25	0.91
160	56.37	0.92
200	64.77	1.06
250	66.11	1.08
315	67.71	1.11
400	69.79	1.14
500	67.95	1.11
630	67.47	1.11
800	66.27	1.09
1000	66.22	1.09
1250	65.81	1.08
1600	66.36	1.09
2000	65.43	1.07
2500	65.88	1.08
3150	65.78	1.08
4000	64.13	1.05
5000	65.48	1.07
6300	68.30	1.12
8000	70.43	1.15
10000	71.37	1.17
12500	77.86	1.28



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**APPENDIX B: Instruments of Traceability**

Specimen: dBNR Nois-eNvelope™ Panel A4 (Perforations Face Source) (See Full Report)

<b><u>Description</u></b>	<b><u>Model</u></b>	<b><u>Serial Number</u></b>	<b><u>Date of Certification</u></b>	<b><u>Calibration Due</u></b>
Bruel & Kjaer Pulse Analyzer	Type 3560-C	2647140	2015-04-08	2016-04-08
Bruel & Kjaer Mic And Preamp	Type 4943-B-001	2311440	2014-09-03	2015-09-03
G.R.A.S Pistonphone	Type42AF-1	80001	2014-08-06	2015-08-06
Omega Digital Temp., Humid. And Pressure Recorder	OM-CP-PRHTemp2000	N11105	2014-09-30	2015-09-30

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