

1512 S BATAVIA AVENUE  
GENEVA, IL 60134  
630-232-0104

An  ALION Technical Center

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FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

FOR: **dB Sound Control**  
Mt. Airy, NC

**Sound Transmission Loss**  
**RAL-TL18-392**

CONDUCTED: 2018-06-18 (Report Revised 2019-04-29)

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ON: Steel stud gypsum board wall, 0.6 psf ethylene vinyl acetate mass-loaded vinyl on source side

### 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 E90-09 (2016): "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements." The single number rating of the specimen was calculated according to ASTM E413-16: "Classification for Rating Sound Insulation." A description of the measuring procedure and room qualifications is available upon request. The transmission loss values are for a single direction of measurement. The product designation used in this report was provided to RAL by the sponsor and attributed to the specimen under test.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Steel stud gypsum board wall, 0.6 psf ethylene vinyl acetate mass-loaded vinyl on source side. A full internal inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

The building contractor and RAL staff compiled a detailed construction specification as follows:

#### Plates/Base Track

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Material: Clark Dietrich 25 ga EQ steel track  
Dimensions: 2 @ 2438.4 mm (96 in.) long x 31.75 mm (1.25 in.) high x 92.07 mm (3.625 in.) deep  
Installation: Friction fit to test frame over foam sill sealer  
Overall Weight: 2.15 kg (4.75 lbs)  
Mass per Unit Length: 0.44 kg/m (0.30 lb/ft)

#### Studs

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Material: Clark Dietrich 25 ga EQ steel studs  
Dimensions: 5 @ 2743.2 mm (108 in.) long x 31.75 mm (1.25 in.) wide x 92.07 mm (3.625 in.) deep  
Stud Spacing: 609.6 mm (24 in.) on center  
Installation: Crimped at top and bottom to tracks  
Side studs screwed to test frame at midpoint, one screw per side  
Fasteners: Type W bugle head drywall screw, 31.75 mm (1.25 in.) length  
Overall Weight: 7.14 kg (15.75 lbs)  
Mass per Unit Length: 0.52 kg/m (0.35 lb/ft)

*Note: A 6.35 mm (0.25 in.) bead of sealant was applied around both sides of the perimeter where framing members contact the test frame (0.91 kg (2 lbs) total).*



NVLAP LAB CODE 100227-0

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**Source Side**

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**Layer 1**

Material: Ethylene vinyl acetate mass-loaded vinyl  
Dimensions: 2 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)  
Thickness: 2.0 mm (0.08 in.)  
Installation: Screwed to studs, six screws per sheet  
Center seam treated with duct tape  
Fasteners: #8 wafer head stud screws  
Overall Weight: 19.96 kg (44 lbs)  
Mass per Unit Area: Nominal @ 2.93 kg/m<sup>2</sup> (0.6 lb/ft<sup>2</sup>)  
Measured @ 2.98 kg/m<sup>2</sup> (0.61 lb/ft<sup>2</sup>)

**Layer 2**

Material: Type X gypsum board  
Dimensions: 1 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)  
2 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)  
Thickness: 15.88 mm (0.625 in.)  
Installation: Screwed through Layer 1 to studs  
Fasteners: Type S bugle head drywall screws, 31.75 mm (1.25 in.) length  
Fastener Spacing: 406.4 mm (16 in.) on center, perimeter and field  
Overall Weight: 73.03 kg (161 lbs)  
Mass per Unit Area: 10.92 kg/m<sup>2</sup> (2.24 lb/ft<sup>2</sup>)

**Cavity**

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Material: R-13 unfaced fiberglass insulation  
Installation: Friction fit into stud cavities  
Overall Weight: 7.71 kg (17 lbs)  
Density: 12.97 kg/m<sup>3</sup> (0.81 lb/ft<sup>3</sup>)

**Receive Side**

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Material: Type X gypsum board  
Dimensions: 2 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)  
Thickness: 15.88 mm (0.625 in.)  
Installation: Screwed to studs  
Fasteners: Type S bugle head drywall screws, 31.75 mm (1.25 in.) length  
Fastener Spacing: 406.4 mm (16 in.) on center, perimeter and field  
Overall Weight: 72.69 kg (160.25 lbs)  
Mass per Unit Area: 10.87 kg/m<sup>2</sup> (2.23 lb/ft<sup>2</sup>)

*Note: A thin layer of sealant and metal tape was applied to joints and screw heads on both sides of the partition (0.45 kg (1 lbs) total).*

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### Physical Measures

Overall Dimensions: 2.44 m (96.00 in.) wide by 2.74 m (108.00 in.) high  
Overall Thickness: 127.00 mm (5.00 in.)  
Overall Weight: 184.05 kg (405.75 lbs.)  
Transmission Area: 6.69 m<sup>2</sup> (72.00 ft<sup>2</sup>)  
Mass per Unit Area: 27.54 kg/m<sup>2</sup> (5.64 lbs./ft<sup>2</sup>)

### Test Aperture

Size: 2.74 m (9.0 ft.) by 4.27 m (14.0 ft.)  
Filler Wall: Yes  
Sealed: Entire periphery (both sides) with dense mastic

### Test Environment

#### Source Room

Volume: 177.1 m<sup>3</sup> (6254.5 ft<sup>3</sup>)  
Temperature: 23±0°C (74±0°F)  
Humidity: 55±0%

#### Receive Room

Volume: 178.3 m<sup>3</sup> (6297.6 ft<sup>3</sup>)  
Temperature: 22±0°C (72±0°F)  
Humidity: 55±0%

#### Requirements

Temperature: 22° C +/- 2° C, not more than 3° C change over all tests.  
Humidity: ≥ 30% RH, not more than +/- 3% change over all tests.

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Figure 1 – Completed specimen mounted in test opening, as viewed from source room



Figure 2 – Framing members installed

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Figure 3 – Mass-loaded vinyl layer installed



Figure 4 – Stud cavity insulation installed, receive side gypsum board partially installed

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TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09 (2016).

<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>
100	20	0.71		800	57	0.13	
125	32	0.68	7	1000	60	0.14	
160	37	0.50	5	1250	61	0.18	
200	41	0.39	4	1600	60	0.12	
250	46	0.40	2	2000	56	0.09	3
315	49	0.19	2	2500	55	0.10	4
400	52	0.27	2	3150	59	0.11	
500	53	0.16	2	4000	61	0.09	
630	55	0.22	1	5000	62	0.09	

STC=55

ABBREVIATION INDEX

- FREQ. = FREQUENCY, HERTZ, (cps)
- T.L. = TRANSMISSION LOSS, dB
- C.L. = SAMPLING PRECISION DURING TEST IN dB, FOR A 95% CONFIDENCE LIMIT
- DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 32)
- STC = SOUND TRANSMISSION CLASS

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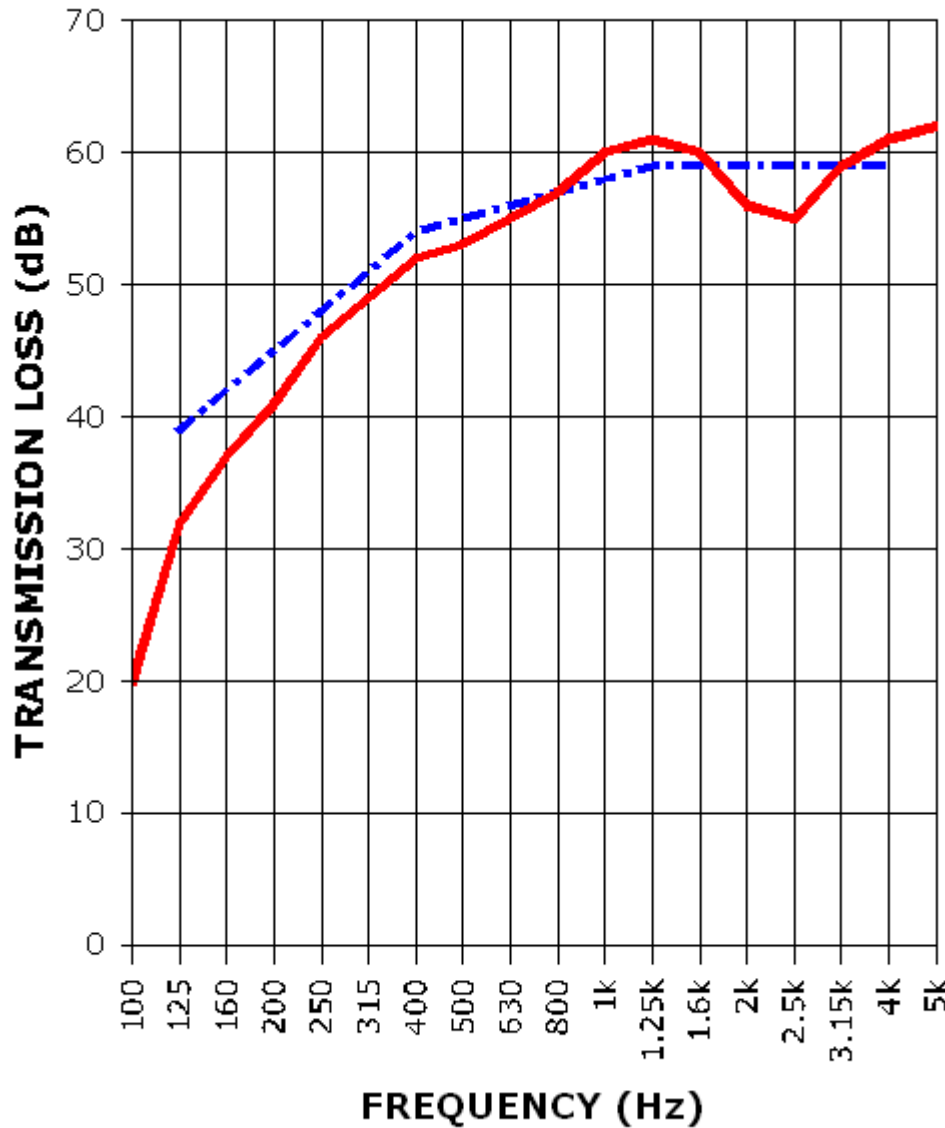
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SOUND TRANSMISSION REPORT

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TRANSMISSION LOSS  
SOUND TRANSMISSION LOSS CONTOUR

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### APPENDIX A: Extended Frequency Range Data

Specimen: Steel stud gypsum board wall, 0.6 psf ethylene vinyl acetate mass-loaded vinyl on source side (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM E90-09 (2016), 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. Sampling precision observed during this procedure is reported below.*

1/3 Octave Band Center Frequency (Hz)	Sound Transmission Loss (dB)	Sampling Precision (95% ±)
31.5	13	1.39
40	20	0.56
50	16	0.68
63	13	0.55
80	13	0.43
100	20	0.71
125	32	0.68
160	37	0.50
200	41	0.39
250	46	0.40
315	49	0.19
400	52	0.27
500	53	0.16
630	55	0.22
800	57	0.13
1000	60	0.14
1250	61	0.18
1600	60	0.12
2000	56	0.09
2500	55	0.10
3150	59	0.11
4000	61	0.09
5000	62	0.09
6300	64	0.10
8000	65	0.14
10000	65	0.16
12500	63	0.22



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### APPENDIX B: Instruments of Traceability

Specimen: Steel stud gypsum board wall, 0.6 psf ethylene vinyl acetate mass-loaded vinyl on source side

<u>Description</u>	<u>Model</u>	<u>Serial Number</u>	<u>Date of Certification</u>	<u>Calibration Due</u>
Bruel & Kjaer Pulse Analyzer - System4	Type 3560-C	2639093	2017-08-02	2018-08-02
Bruel & Kjaer Mic And Preamp D	Type 4943-B-001	2311440	2017-09-22	2018-09-22
Bruel & Kjaer Pistonphone	Type 4228	2781248	2017-08-02	2018-08-02
EXTECH_62	SD700	A.083662	2017-11-20	2018-11-20
EXTECH_63	SD700	A.083663	2017-11-20	2018-11-20

### APPENDIX C: Revisions to Original Test Report

Specimen: Steel stud gypsum board wall, 0.6 psf ethylene vinyl acetate mass-loaded vinyl on source side

<u>Date</u>	<u>Revision</u>
2019-04-29	Page 2: The nominal MLV thickness was replaced with the actual measured 2.0mm thickness.

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END