

Test Report

FOR: **Commercial Acoustics**
Tampa, FL

Sound Transmission Loss
RAL-TL17-048

CONDUCTED: 2017-02-08

Page 1 of 10

ON: Dbl. metal std. wall, 18 ga. 6" studs 24" oc, 2" Air gap, Dbl lyr 5/8" Type X (Sor.) and 1 lyr 5/8" Type X (Rec.), 1 lyr. dB-3 each side, 6" insulation each wall

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.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Dbl. metal std. wall, 18 ga. 6" studs 24" oc, 2" Air gap, Dbl lyr 5/8" Type X (Sor.) and 1 lyr 5/8" Type X (Rec.), 1 lyr. dB-3 each side, 6" insulation each wall.

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

Plates/Base Track

Material: 18g Steel Track
Dimensions: 4267.2 mm (168 in.) wide x 31.75 mm (1.25 in.) high
x 158.75 mm (6.25 in.) deep
Fastened: Friction Fit
Weight (Both Tracks): 36.29 kg (80 lbs.)
Isolation (Receive Side): Wall Blokker
Isolation Thickness: 3.18 mm (0.125 in.)
Isolation Weight: 18.48 kg (40.75 lbs.)

Note: Two sets of tracks and studs were used and had a 50.8 mm (2 in.) air gap between the two tracks.

152.4 mm (6 in.) strips of dB-3 Barrier were cut and added between the test frame and the framing members of the receive side (See Figure 2)

Studs

Material: 18g Steel Studs
Dimensions: 41.4 mm (1.63 in.) wide x 2743.2 mm (108 in.) high
x 158.75 mm (6.25 in.) deep
Stud Spacing: 609.6 mm (24 in.) on center
Fasteners: #8 Wafer head stud screw S12 Top and Bottom
Friction Fit on Sides
Weight (Overall): 93.89 kg (207 lbs.)



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 2 of 10

Source Side

Layer 1

Material: Wall Blokker
Dimensions: 3 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
1 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 3.18 mm (0.125 in.)
Fasteners: #8 Wafer head stud screw S12
(3 on top, 2 on sides, 2 on bottom per sheet – 7 total)
Overall Weight: 49.9 kg (110 lbs.)

Layer 2

Material: Type X Gypsum
Dimensions: 3 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
1 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 16 mm (0.63 in.)
Fasteners: Type S12 Bugle head drywall screws
Fastener Spacing: 406.4 mm (16 in.) On Center
Overall Weight: 127.91 kg (282 lbs.)

Layer 3

Material: Type X Gypsum
Dimensions: 3 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
1 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 16 mm (0.63 in.)
Fasteners: Type S12 Bugle head drywall screws
Fastener Spacing: 406.4 mm (16 in.) On Center
Overall Weight: 127.8 kg (281.75 lbs.)



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 3 of 10

Receive Side

Layer 1

Material: Wall Blokker
Dimensions: 3 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
1 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 3.18 mm (0.125 in.)
Fasteners: #8 Wafer head stud screw S12
(3 on top, 2 on sides, 2 on bottom per sheet – 7 total)
Overall Weight: 49.9 kg (110 lbs.)

Layer 2

Material: Type X Gypsum
Dimensions: 3 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
1 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 16 mm (0.63 in.)
Fasteners: Type S12 Bugle head drywall screws
Fastener Spacing: 406.4 mm (16 in.) On Center
Overall Weight: 126.89 kg (279.75 lbs.)

Note: A thin bead of acoustical sealant and metal tape were applied over each joint and screw head on both sides. 1.36 kg (3 lbs.)

Cavity

Material: R-19 Unfaced Fiberglass Insulation (both rows)
Thickness: 6.25 inches (nominal)
Fastened: Friction Fit
Weight: 31.98 kg (70.5 lbs.)



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 4 of 10

Physical Measures

Overall Dimensions: 4.27 m (168.00 in.) wide by 2.74 m (108.00 in.) high
Overall Thickness: 422.28 mm (16.63 in.)
Overall Weight: 615.88 kg (1357.75 lbs.)
Transmission Area: 11.71 m² (126.00 ft²)
Mass per Unit Area: 52.63 kg/m² (10.78 lbs./ft²)

Test Aperture

Size: 2.74 m (9.0 ft.) by 4.27 m (14.0 ft.)
Filler Wall: None
Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 177.1 m³ (6254.5 ft³)
Temperature: 22±0°C (72±0°F)
Humidity: 56±1%

Receive Room

Volume: 178.3 m³ (6297.6 ft³)
Temperature: 23±0°C (74±1°F)
Humidity: 56±1%

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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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 5 of 10



Figure 1 – Specimen mounted in the test opening.



Figure 2 - Detail of Wall Blokker installed on test frame where the framing members will sit.



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 6 of 10



Figure 3 – Detail of studs and Wall Blokker installed on studs on one side.



Figure 4 - Detail of insulation.



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 7 of 10

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	42	0.46		800	71	0.12	
125	46	0.31	3	1000	73	0.14	
160	50	0.46	2	1250	76	0.13	
200	53	0.29	2	1600	78	0.09	
250	54	0.23	4	2000	78	0.07	
315	53	0.27	8	2500	80	0.09	
400	56	0.26	8	3150	82	0.09	
500	62	0.14	3	4000	85	0.09	
630	66	0.26		5000	86	0.09	

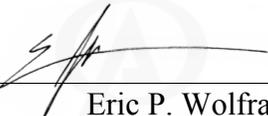
STC=65

ABBREVIATION INDEX

- FREQ. = FREQUENCY, HERTZ, (cps)
- T.L. = TRANSMISSION LOSS, dB
- C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
- DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 30)
- STC = SOUND TRANSMISSION CLASS
- * = FILLER WALL CORRECTION APPLIED; T.L. COEFFICIENT DIFFERENCE BETWEEN 6 AND 15.
- ** = LOWER LIMITS OF THE T.L. FOR SPECIMEN; T.L. COEFFICIENT DIFFERENCE LESS THAN 6.

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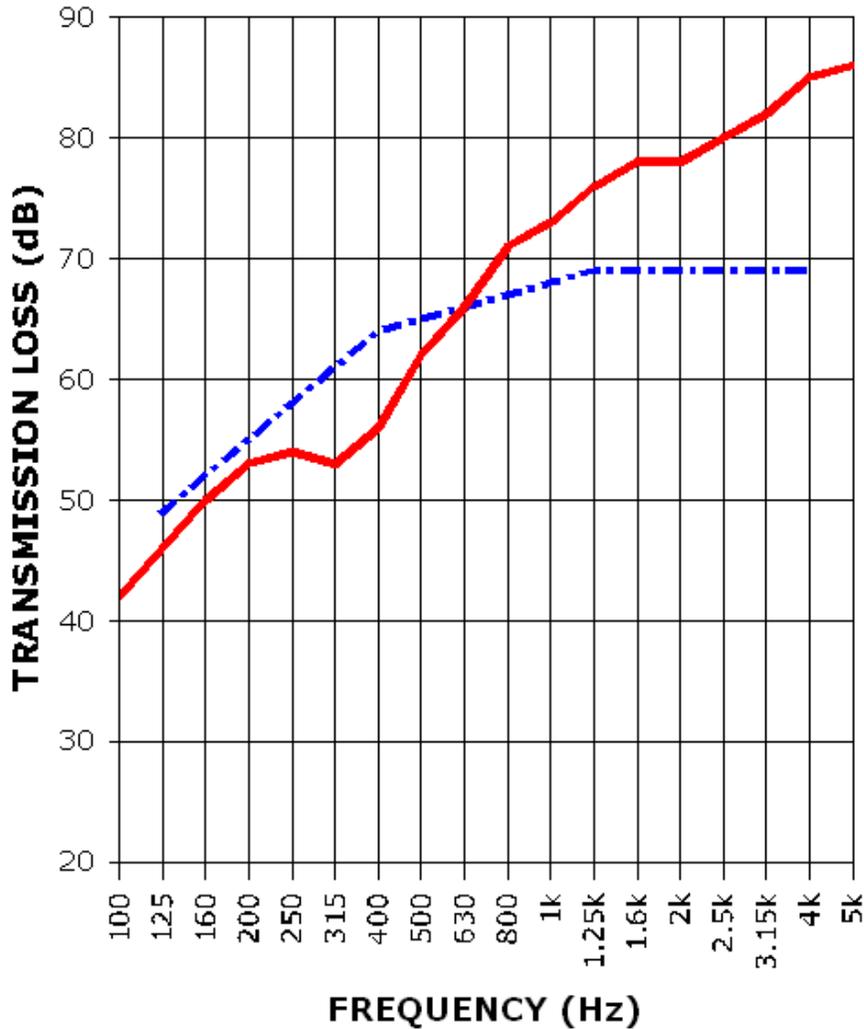
Test Report

Commercial Acoustics
2017-02-08

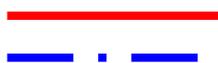
RAL-TL17-048
Page 8 of 10

SOUND TRANSMISSION REPORT

DbL. metal std. wall, 18 ga. 6" studs 24" oc, 2" Air gap, DbL lyr 5/8" Type X (Sor.) and 1 lyr 5/8" Type X (Rec.), 1 lyr. dB-3 each side, 6" insulation each wall



STC=65



TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 9 of 10

APPENDIX A: Extended Frequency Range Data

Specimen: Dbl. metal std. wall, 18 ga. 6" studs 24" oc, 2" Air gap, Dbl lyr 5/8" Type X (Sor.) and 1 lyr 5/8" Type X (Rec.), 1 lyr. dB-3 each side, 6" insulation each wall (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.

1/3 Octave Band Center Frequency (Hz)	Sound Transmission Loss (dB)	Uncertainty (95% ±)
31.5	17	1.28
40	27	0.95
50	32	0.45
63	32	0.70
80	39	0.67
100	42	0.46
125	46	0.31
160	50	0.46
200	53	0.29
250	54	0.23
315	53	0.27
400	56	0.26
500	62	0.14
630	66	0.26
800	71	0.12
1000	73	0.14
1250	76	0.13
1600	78	0.09
2000	78	0.07
2500	80	0.09
3150	82	0.09
4000	85	0.09
5000	86	0.09
6300	81	0.11
8000	73	0.07
10000	65	0.04
12500	58	0.05



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Test Report

Commercial Acoustics
2017-02-08

RAL-TL17-048
Page 10 of 10

APPENDIX B: Instruments of Traceability

Specimen: Dbl. metal std. wall, 18 ga. 6" studs 24" oc, 2" Air gap, Dbl lyr 5/8" Type X (Sor.) and 1 lyr 5/8" Type X (Rec.), 1 lyr. dB-3 each side, 6" insulation each wall (See Full Report)

<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	2016-07-26	2017-07-26
Bruel & Kjaer Mic And Preamp E	Type 4943-B-001	2311441	2016-03-17	2017-03-17
Bruel & Kjaer Pistonphone	Type 4228	2781248	2016-07-25	2017-07-25
Omega Digital Thermo-Hygrometer A	Model # RH411	H0102487	2016-08-12	2017-08-12
Omega Digital Thermo-Hygrometer D	Model # RH411	H0102210	2016-07-13	2017-07-13

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