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

An ALION Technical Center

Test Report

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FOR: **CarpetCycle LLC**
Newark, NJ

Sound Transmission Loss
RAL-TL17-079

CONDUCTED: 2017-03-08

ON: Metal Stud Wall 24 inch oc, 1 layer 5/8 inch gypsum each side Screw Spacing 24 inch oc perimeter and field, Insulation Quiet-Tech Acoustic Insulation Batts by CarpetCycle

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 Metal Stud Wall 24 inch oc, 1 layer 5/8 inch gypsum each side Screw Spacing 24 inch oc perimeter and field, Insulation Quiet-Tech Acoustic Insulation Batts by CarpetCycle.

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

Plates/Base Track

Material:	25g EQ Steel
Dimensions:	2438.4 mm (96 in.) wide x 31.75 mm (1.25 in.) high x 92.2 mm (3.63 in.) deep
Fastened:	Friction Fit
Weight:	2.38 kg (5.25 lbs.)

Studs

Material:	25g EQ Steel
Dimensions:	31.75 mm (1.25 in.) wide x 2743.2 mm (108 in.) high x 92.2 mm (3.63 in.) deep
Stud Spacing:	609.6 mm (24 in.) On Center
Fastened:	Crimped to Base Track
Weight:	7.26 kg (16 lbs.)

Source Side

Material:	Type X Gypsum
Dimensions:	2 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
Thickness:	16 mm (0.63 in.)
Fasteners:	Type S Bugle Head Drywall Screw
Fastener Spacing:	609.6 mm (24 in.) On Center, Field and Perimeter
Weight:	71.44 kg (157.5 lbs.)

Cavity

Material:	Quiet-Tech Acoustic Insulation Batts
Fastened:	Friction Fit between studs
Thickness:	63.5 mm (2.5 in.)
Weight:	20.18 kg (44.5 lbs.)

Receive Side

Material:	Type X Gypsum
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:	16 mm (0.63 in.)
Fasteners:	Type S Bugle Head Drywall Screw
Fastener Spacing:	609.6 mm (24 in.) On Center, Field and Perimeter
Weight:	71.78 kg (158.25 lbs.)

Note: A thin bead of smoke and sound sealant, and metal tape were applied over each joint and screw head. 0.45 kg (1 lbs.)

Physical Measures

Overall Dimensions:	2.44 m (96.00 in.) wide by 2.74 m (108.00 in.) high
Overall Thickness:	123.82 mm (4.88 in.)
Overall Weight:	174.41 kg (384.50 lbs.)
Transmission Area:	6.69 m^2 (72.00 ft^2)
Mass per Unit Area:	26.07 kg/m^2 (5.34 $lbs./ft^2$)

Test Aperture

Size:	2.74 m (9.0 ft.) by 4.27 m (14.0 ft.)
Frame:	Wood lined steel frame with sill sealer
Filler Wall:	Yes
Sealed:	Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume:	177.1 m^3 (6254.5 ft^3)
Temperature:	22±0ºC (71±0ºF)
Humidity:	51±1%

Receive Room

Volume:	178.3 m^3 (6297.6 ft^3)
Temperature:	22±0ºC (72±1ºF)
Humidity:	50±1%

Requirements

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

Figure 1 – Specimen mounted in the test opening.

Figure 2 - Detail of the framing members.

Figure 3 – Detail of Quiet-Tech partially installed in between studs and source side gypsum board

Figure 4 - Detail of Quiet-Tech 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).

FREQ.	T.L.	C.L.	DEF.	FREQ.	T.L.	C.L.	DEF.
100	15	0.68		800	55	0.10	
125	27	0.40	6	1000	56	0.13	
160	33	0.66	3	1250	58	0.17	
200	37	0.38	2	1600	56	0.11	
250	41	0.28	1	2000	48	0.10	5
315	45	0.30		2500	46	0.13	7
400	48	0.26		3150	51	0.06	2
500	51	0.21		4000	54	0.05	
630	53	0.20		5000	57	0.05	

STC=49

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 = 26)
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.

Tested by _____
Marc Sciaky
Experimentalist

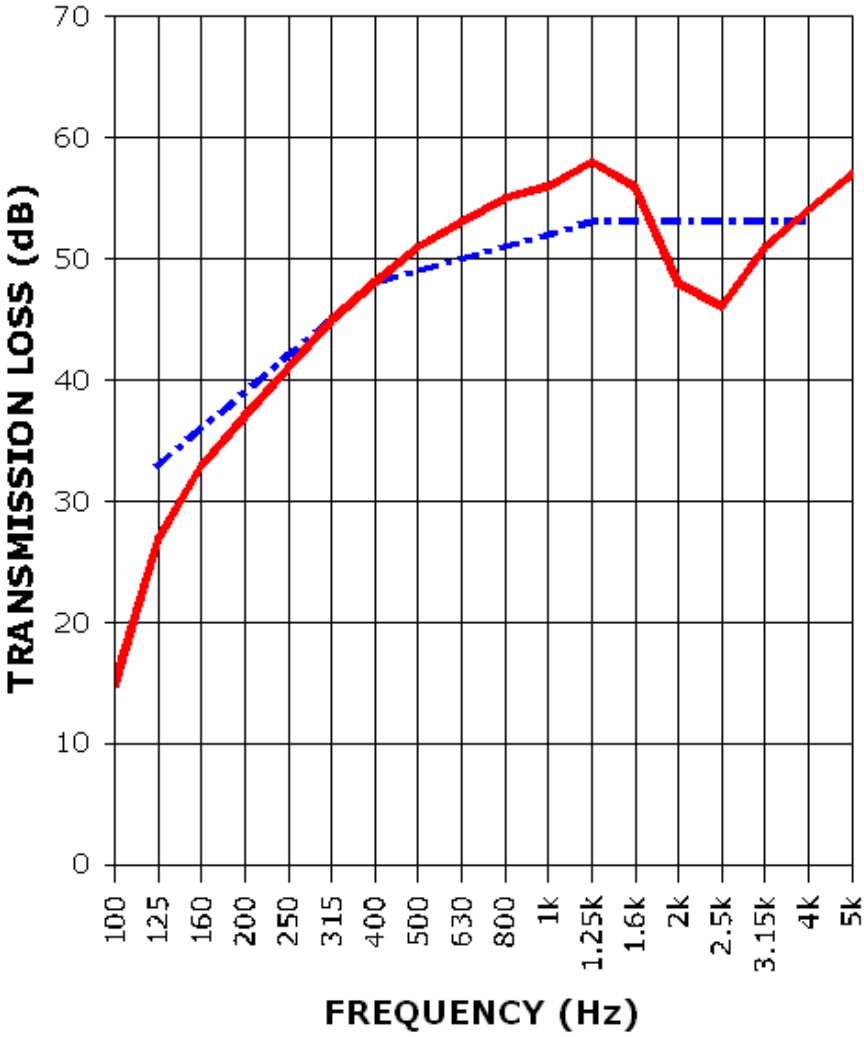
Report by _____
Miles Possing
Acoustician

Approved by _____
Eric P. Wolfram
Laboratory Manager

Digitally signed by Eric Wolfram
DN: cn=Eric Wolfram, o=Alion Science and Technology, ou=Riverbank Acoustical Laboratories, email=ewolfram@alionscience.com, c=US
Date: 2017.03.16 16:49:18 -05'00'

SOUND TRANSMISSION REPORT

Metal Stud Wall 24 inch oc, 1 layer 5/8 inch gypsum each side Screw Spacing 24 inch oc perimeter and field, Insulation Quiet-Tech Acoustic Insulation Batts by CarpetCycle



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TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR

CarpetCycle LLC **RAL-TL17-079**
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APPENDIX A: Extended Frequency Range Data

Specimen: Metal Stud Wall 24 inch oc, 1 layer 5/8 inch gypsum each side Screw Spacing 24 inch oc perimeter and field, Insulation Quiet-Tech Acoustic Insulation Batts by CarpetCycle (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	1.70
40	25	0.79
50	15	0.81
63	12	0.76
80	12	0.73
100	15	0.68
125	27	0.40
160	33	0.66
200	37	0.38
250	41	0.28
315	45	0.30
400	48	0.26
500	51	0.21
630	53	0.20
800	55	0.10
1000	56	0.13
1250	58	0.17
1600	56	0.11
2000	48	0.10
2500	46	0.13
3150	51	0.06
4000	54	0.05
5000	57	0.05
6300	60	0.07
8000	62	0.07
10000	60	0.08
12500	78	3.18

APPENDIX B: Instruments of Traceability

Specimen: Metal Stud Wall 24 inch oc, 1 layer 5/8 inch gypsum each side Screw Spacing 24 inch oc perimeter and field, Insulation Quiet-Tech Acoustic Insulation Batts by CarpetCycle (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
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

END