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R-STUD, LLC
ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A 600RS162-19, WALL SYSTEM

REPORT NUMBER
J3544.01-303-11-R0

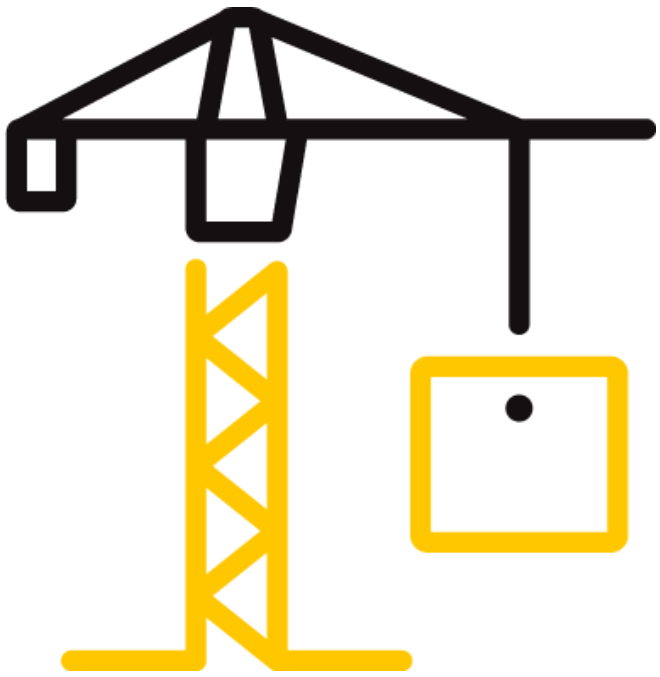
TEST DATE
03/14/19

ISSUE DATE
04/10/19

RETENTION DATE
04/10/23

PAGES
11

DOCUMENT CONTROL NUMBER
RT-R-AMER-Test-2758 (01/24/19)



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TEST REPORT FOR R-STUD, LLC
Report No.: J3544.01-303-11-R0
Date: 04/10/19

REPORT ISSUED TO

R-STUD, LLC
16869 SW 65TH Ave
#303
Lake Oswego, OR 97035

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by R-stud, LLC to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test methods. The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in Lake Forest, California.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Marco T. Santa Rosa	**REVIEWED BY:**	Leeland S. Hoover
TITLE:	Technician II Acoustical Testing	**TITLE:**	Laboratory Manager Acoustical Testing
SIGNATURE:		**SIGNATURE:**	
DATE:	03/26/19	**DATE:**	03/26/19

MTSR:LSH:ab

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SECTION 2
SUMMARY OF TEST RESULTS

SERIES/MODEL	600RS162-19
TYPE	Wall System
DATA FILE NO.	J3544.01A
STC	50
OITC	34

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4
SPECIMEN INSTALLATION

The specimen was constructed in the laboratory. A sound transmission loss test was initially performed on a filler wall. The 96" wide by 96" high specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Caulk was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing.

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SECTION 5
EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00392	10/17
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00393	10/17
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00397	10/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00239	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00240	05/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00241	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00242	04/18
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT00243	04/18
Receive Room Microphone	PBC Piezotronics	378C20	Microphone and Preamplifier	INT00234	04/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00235	04/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00236	04/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00237	04/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00238	04/18
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00299	04/18
Source Room Environmental Indicator	Comet	T7510	Source Room	INT00300	04/18
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/18

**- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.*

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	231 m³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	196 m³	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

N/A-Not Applicable

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SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Patrick Lucas	R-stud, LLC
Marco T. Santa Rosa	Intertek B&C
Leeland S Hoover	Intertek B&C

SECTION 7
TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure level measurements were made simultaneously in receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

SECTION 8
ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating
To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

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OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

SECTION 9
SPECIMEN DESCRIPTION

GYPSUM BOARD	One Layer of 5/8" USG Sheetrock Type X
STUDS	1-5/8" Steel Studs, 24" Centers
INSULATION	R-13, Unfaced Fiberglass Insulation
GYPSUM BOARD	One Layer of 5/8" USG Sheetrock Type X

MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
GYPSUM BOARD	48” by 96”	0.625”	USG Sheetrock Type X	2 sheets	2.24 lbs/ft^2
	Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.				
STUD	6” by 94-1/2”	1-5/8”	Steel, 25 Gauge (0.019")	5 pieces	1.28 lbs/linear ft
	Note: Spaced on 24" centers. Fastened at top and bottom track.				
INSULATION	24” by 96”	3.5”	R-13 Unfaced Fiberglass Insulation	6 batts	0.27 lbs/ft^2
	Note: N/A				
GYPSUM BOARD	48” by 96”	0.625”	USG Sheetrock Type X	2 sheets	2.24 lbs/ft^2
	Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.				
TOP TRACK	6” by 96”	2-1/2”	Steel	1 piece	2.32 lbs/linear ft
	Note: Isolated from test frame with neoprene foam				
BOTTOM TRACK	6” by 96”	1-3/8”	Steel	1 piece	1.04 lbs/linear ft
	Note: Isolated from test frame with neoprene foam				

** - Stated per Client/Manufacturer, N/A-Not Applicable*

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Photographs are included in Section 11.

The client did not supply a report drawing of the test specimen.

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SECTION 10
TEST RESULTS

ASTM E90
AIRBORNE SOUND TRANSMISSION LOSS

IAS ACCREDITED Testing Laboratory

TEST DATE	03/14/19				
DATA FILE NO.	J3544.01A				
CLIENT	R-Stud				
DESCRIPTION	Series/Model: 600RS162-19 Wall With 1 Layer Drywall Source x 1 Layer Drywall Receive				
SPECIMEN AREA	5.95 m²	**RECEIVE TEMP.**	17.2 °C	**SOURCE TEMP**	17.6 °C
TECHNICIAN	Marco T. San	**RECEIVE HUMIDITY**	39%	**SOURCE HUMIDIT**	39%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	46.6	6.1	102	86	16	1.58	-
100	37.6	5.1	102	80	24	0.99	-
125	41.0	5.4	103	71	32	1.17	2
160	46.1	5.1	103	68	36	0.66	1
200	36.1	6.2	106	66	41	0.69	0
250	25.8	7.0	107	63	44	0.38	0
315	22.4	6.8	106	59	47	0.57	0
400	24.1	6.0	106	57	50	0.38	0
500	18.8	5.2	107	57	52	0.46	0
630	18.3	5.5	106	53	54	0.28	0
800	21.6	5.6	105	49	58	0.23	0
1000	8.3	5.8	107	49	59	0.27	0
1250	5.8	6.1	105	47	59	0.23	0
1600	5.1	6.8	103	47	56	0.14	0
2000	3.9	8.3	101	53	46	0.25	8
2500	4.1	9.8	101	53	46	0.28	8
3150	4.6	11.6	100	47	50	0.25	4
4000	5.1	14.7	96	37	56	0.31	0
5000	5.6	19.8	92	28	59	0.52	-
STC RATING		50	*(Sound Transmission Class)*				
DEFICIENCIES		23	*(Sum of Deficiencies)*				
OITC RATING		34	*(Outdoor-Indoor Transmission Class)*				

Notes:
1) Receive Room levels less than 5 dB above the Background levels are red.
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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ASTM E90
AIRBORNE SOUND TRANSMISSION LOSS

IAS ACCREDITED Testing Laboratory

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CLIENT	R-Stud				
DESCRIPTION	Series/Model: 600RS162-19 Wall With 1 Layer Drywall Source x 1 Layer Drywall Receive				
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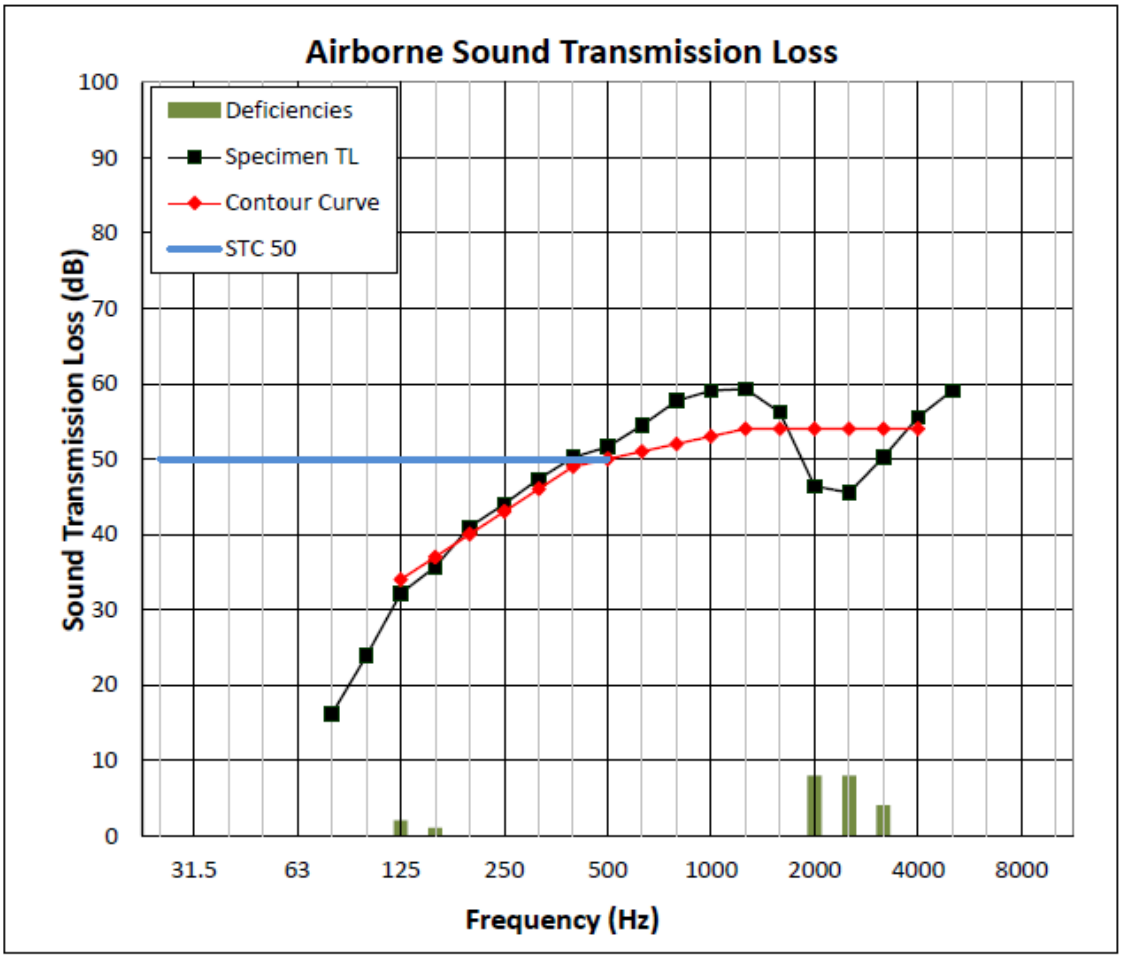
TECHNICIAN	Marco T. San	**RECEIVE HUMIDITY**	39%	**SOURCE HUMIDIT**	39%



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SECTION 11
PHOTOGRAPHS

Photo No. 1
Source Room View of Test Specimen

Photo No. 2
Source Room View of Test Specimen

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SECTION 12
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	04/10/19	N/A	Original Report Issue