

# R-STUD, LLC

# ACOUSTICAL

# PERFORMANCE

# TEST REPORT

**SCOPE OF WORK**

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A 600RS163-43 WALL SYSTEM

**REPORT NUMBER**

J3544.04-303-11-R0

**TEST DATE**

03/15/19

**ISSUE DATE**

04/10/19

**RETENTION DATE**

04/10/23

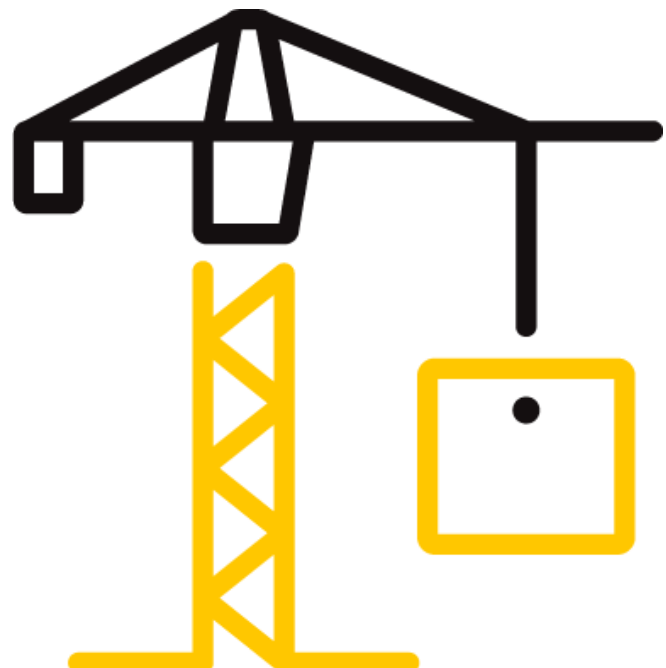
**PAGES**

11

**DOCUMENT CONTROL NUMBER**

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

© 2017 INTERTEK



## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### REPORT ISSUED TO

#### R-STUD, LLC

3200 Park Center Dr

14th Floor

Costa Mesa, CA 92626

### 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:

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

MTSR:LSH

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### SECTION 2

#### SUMMARY OF TEST RESULTS

<b>SERIES/MODEL</b>	600RS163-43
<b>TYPE</b>	Wall System
<b>DATA FILE NO.</b>	J3544.01D
<b>STC</b>	50
<b>OITC</b>	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.

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### 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 m <sup>3</sup>	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	196 m <sup>3</sup>	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

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### 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.

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### 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.

#### 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

<b>GYP SUM BOARD</b>	One Layer of 5/8" USG Sheetrock Type X
<b>STUDS</b>	1-5/8" Steel, 16" Centers
<b>INSULATION</b>	R-19 Fiberglass insulation
<b>DENSG LASS SHEATHING</b>	One Layer, 5/8" Georgia-Pacific DensGlass
<b>MOISTURE CONTROL</b>	Henry Company WeatherSmart With FortiFlash
<b>WOOD PLANK</b>	1" by 4" wood strips, 16" center
<b>REVEAL PANEL</b>	James Hardie panel

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

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 <sup>2</sup>
	<i>Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.</i>				
STUD	6" by 94-1/2"	1.625"	Steel, 18 Gauge (0.045")	7 pieces	2.92 lbs/linear ft
	<i>Note: Spaced on 16" centers. Fastened at top and bottom track.</i>				
INSULATION	16" by 96"	4.5"	R-19 Fiberglass Insulation	7 batts	0.32lbs/ft <sup>2</sup>
	<i>Note: N/A</i>				
DENSGLASS SHEATHING	48" by 96"	0.645"	Georgia-Pacific DensGlass	2 sheets	2.64 lbs/ft <sup>2</sup>
	<i>Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.</i>				
MOISTURE CONTROL	48" by 96"	0.014"	Henry Company Fortifiber	2 pieces	0.000625 lbs/linear ft
	<i>Note: Stapled to the DensGlass sheathing</i>				
WOOD PLANK	1" by 4"	0.735"	Wood	7 sheets	1.85 lbs/ft <sup>2</sup>
	<i>Note: Screws spaced on 12" centers. Planks spaced on 16" centers.</i>				
REVEAL PANEL	48" by 95-1/2"	0.437"	James Hardie Panel	2 sheets	3.4 lbs/linear ft
	<i>Note: Aluminum trim was used to fasten panels at joints and borders of wall. Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape</i>				
TOP TRACK	6" by 96"	2.5"	Steel	1 piece	3 lbs/linear ft
	<i>Note: Isolated from test frame with neoprene foam</i>				
BOTTOM TRACK	6" by 96"	1.375"	Steel	1 piece	2.72 lbs/linear ft
	<i>Note: Isolated from test frame with neoprene foam</i>				

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

Photographs are included in Section 11.

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

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### SECTION 10

#### TEST RESULTS

#### ASTM E90 AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	03/15/19				
DATA FILE NO.	J3544.01D				
CLIENT	R-Stud				
DESCRIPTION	Series/Model: 600RS163-43 Wall With 1 Layer Drywall Receive x 1 Layer Dense Glass Source				
SPECIMEN AREA	5.95 m <sup>2</sup>	RECEIVE TEMP.	18.9 °C	SOURCE TEMP	19.6 °C
TECHNICIAN	Marco T Sant	RECEIVE HUMIDITY	23%	SOURCE HUMIDIT	23%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m <sup>2</sup> )	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	44.9	6.5	103	81	22	1.30	-
100	34.5	6.7	102	82	19	1.19	-
125	37.9	6.3	103	77	26	0.95	8
160	44.2	5.8	103	72	31	0.66	6
200	35.3	6.5	106	74	32	0.68	8
250	23.4	7.0	107	68	38	0.39	5
315	20.2	7.1	106	62	44	0.69	2
400	21.8	6.2	106	57	49	0.42	0
500	18.7	5.3	107	57	51	0.36	0
630	19.9	5.7	107	54	54	0.24	0
800	22.6	5.9	106	49	58	0.35	0
1000	10.7	6.3	107	47	61	0.23	0
1250	6.0	6.7	106	44	62	0.24	0
1600	5.1	7.9	103	42	60	0.20	0
2000	3.8	10.0	100	42	57	0.41	0
2500	3.7	12.3	100	41	56	0.20	0
3150	4.1	15.0	99	35	60	0.20	0
4000	4.6	20.0	95	25	65	0.27	0
5000	5.2	27.3	91	15	70	0.60	-
STC RATING	50 (Sound Transmission Class)						
DEFICIENCIES	29 (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

## TEST REPORT FOR R-STUD, LLC

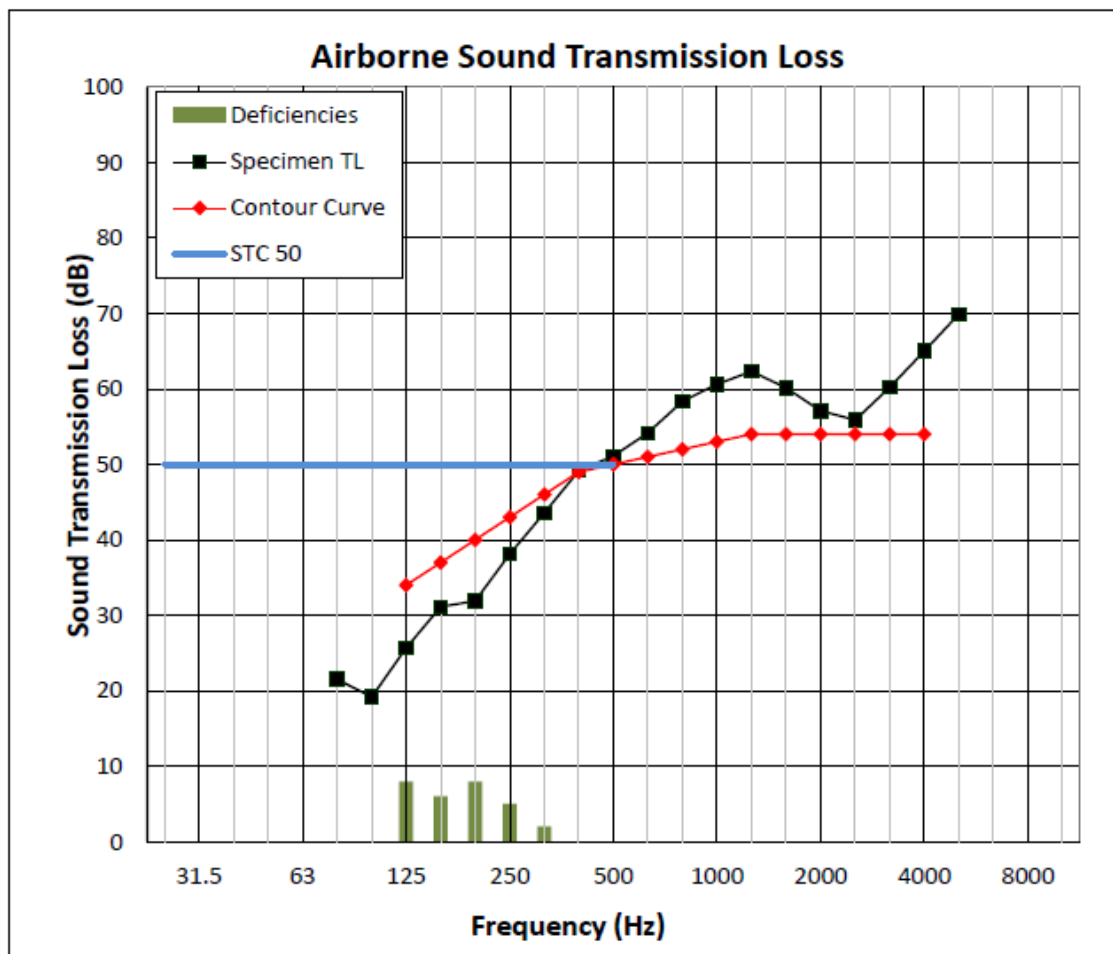
Report No.: J3544.04-303-11-R0

Date: 04/10/19

### ASTM E90 AIRBORNE SOUND TRANSMISSION LOSS



<b>TEST DATE</b>	03/15/19				
<b>DATA FILE NO.</b>	J3544.01D				
<b>CLIENT</b>	R-Stud				
<b>DESCRIPTION</b>	Series/Model: 600RS163-43 Wall With 1 Layer Drywall Receive x 1 Layer Dense Glass Source				
<b>SPECIMEN AREA</b>	5.95 m <sup>2</sup>	<b>RECEIVE TEMP.</b>	18.9 °C	<b>SOURCE TEMP</b>	19.6 °C
<b>TECHNICIAN</b>	Marco T Sant	<b>RECEIVE HUMIDITY</b>	23%	<b>SOURCE HUMIDIT</b>	23%



## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### SECTION 11

#### PHOTOGRAPHS



**Photo No. 1**  
**Receive Room View of test Specimen**



**Photo No. 2**  
**Source Room View of Test Specimen**



Total Quality. Assured.

25800 Commercentre Drive  
Lake Forest, California 92630

Telephone: 949-460-9600  
Facsimile: 717-764-4129  
[www.intertek.com/building](http://www.intertek.com/building)

## TEST REPORT FOR R-STUD, LLC

Report No.: J3544.04-303-11-R0

Date: 04/10/19

### SECTION 12

#### REVISION LOG

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