

THERMA-TRU CORPORATION ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A
FIBERGLASS FOAM CORE FIRE DOOR, 3070

REPORT NUMBER

J4864.01-113-11-R0

TEST DATE

05/23/19

ISSUE DATE

07/02/19

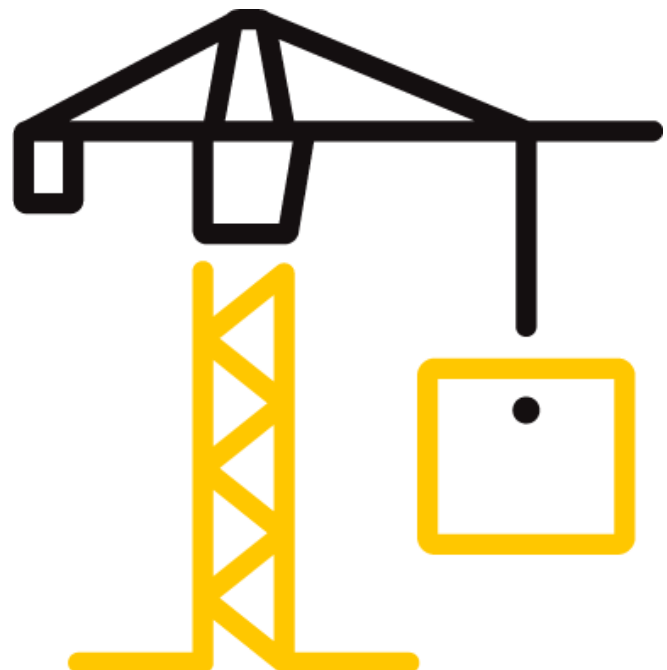
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TEST REPORT FOR THERMA-TRU CORPORATION

Report No.: J4864.01-113-11-R0

Date: 07/02/19

REPORT ISSUED TO

THERMA-TRU CORPORATION

6214 Monciov Road
Maumee, Ohio 43537

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Therma-Tru Corporation 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 York, Pennsylvania.

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:	Zachary P. Golden	REVIEWED BY:	Todd D. Kister
TITLE:	Technician Team Leader Acoustical Testing	TITLE:	Laboratory Manager Acoustical Testing
SIGNATURE:		SIGNATURE:	
DATE:	07/02/19	DATE:	07/02/19

ZPG:jmcs

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SECTION 2**SUMMARY OF TEST RESULTS****OPTION A**

SERIES/MODEL	Fiberglass Foam Core Fire Door
TYPE	3070 with 1" hinge stile

TEST CONDITION	Inoperable (Sealed with duct seal on both sides)
DATA FILE NO.	J4864.01A
STC	24
OITC	25

TEST CONDITION	Operable
DATA FILE NO.	J4864.01A1
STC	23
OITC	24

OPTION B

SERIES/MODEL	Fiberglass Foam Core Fire Door
TYPE	3070 with 4" hinge stile

TEST CONDITION	Inoperable (Sealed with duct seal on both sides)
DATA FILE NO.	J4864.01B
STC	25
OITC	25

TEST CONDITION	Operable
DATA FILE NO.	J4864.01B1
STC	25
OITC	24

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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

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Duct seal 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. Operable portions of the test specimen, if any, were cycled at least five times 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.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3*	04/18
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	12/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64903	05/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65103	03/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65905	03/19
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	65906	03/19
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/19
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	01/19
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/19
Microphone Calibrator	Larson Davis	CAL200	Acoustical Calibrator	INT00852	09/18

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

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m ³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m ³	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

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Kurt A. Golden	Intertek B&C
Zachary P. Golden	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

	FRAME
SIZE	37-5/8" by 86"
THICKNESS	4-9/16"
CORNERS	Butted
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL: HEAD AND JAMBS	Wood
MATERIAL: SILL	Aluminum
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A
DAYLIGHT OPENING SIZE	N/A

LEAF SIZE

36" wide by 83-1/4" high by 1-11/16" thick

LEAF LAYERS(OUTSIDE TO INSIDE)	LAYER DESCRIPTION (MATERIAL AND THICKNESS)
1	0.090" Fiberglass
2	1-1/2" Polystyrene foam
3	0.090" Fiberglass

N/A-Not Applicable

OPTION A

There was 1" by 1-1/2" engineered wood reinforcing the hinge stile and bottom rail and 4" by 1-1/2" engineered wood reinforcing the lock stile and top rail.

OPTION B

There was 1" by 1-1/2" engineered wood reinforcing bottom rail and 4" by 1-1/2" engineered wood reinforcing the hinge stile, lock stile and top rail.

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	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	Therma-Tru Long Reach foam-filled	1 Row	Head and lock jamb
	Q-Lon® p/n QEED-825 foam-filled	1 Row	Hinge jamb
	Therma-Tru double bulb PVC door bottom	1 Row	Bottom rail
HARDWARE	Hinge	3	Hinge stile
	Lock assembly set	1	Lock stile
	Keeper	2	Keeper jamb
DRAINAGE	Sloped sill	1	Sill

OPTION	TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
A	86	3.83
B	92	4.09

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

J4864.01A DATA (INOPERABLE CONDITION)

SPECIMEN AREA	2.09 m ²	RECEIVE TEMP.	21.9 °C	SOURCE TEMP	22.2 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	51%	SOURCE HUMIDIT	50%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	41.3	5.7	103	77	23	1.68	-
100	37.5	5.4	105	79	22	1.71	-
125	37.5	6.4	105	79	21	1.38	0
160	41.4	5.4	106	81	22	0.89	0
200	39.2	4.9	106	80	22	0.77	0
250	33.2	5.4	102	75	23	0.60	0
315	27.4	5.8	102	73	24	0.36	0
400	23.6	6.0	101	70	26	0.40	0
500	20.2	6.2	102	69	28	0.39	0
630	20.9	5.9	101	67	30	0.37	0
800	17.7	6.1	100	65	30	0.22	0
1000	14.1	6.3	101	66	30	0.36	0
1250	12.8	6.8	100	64	30	0.21	0
1600	9.8	7.2	99	68	26	0.16	2
2000	8.7	7.8	100	74	20	0.32	8
2500	9.3	8.7	100	70	23	0.26	5
3150	9.1	9.9	99	55	37	0.16	0
4000	9.0	12.4	97	47	43	0.25	0
5000	9.9	15.7	97	43	46	0.26	-
STC RATING	24 (Sound Transmission Class)						
DEFICIENCIES	15 (Sum of Deficiencies)						
OITC RATING	25 (Outdoor-Indoor Transmission Class)						

Notes:

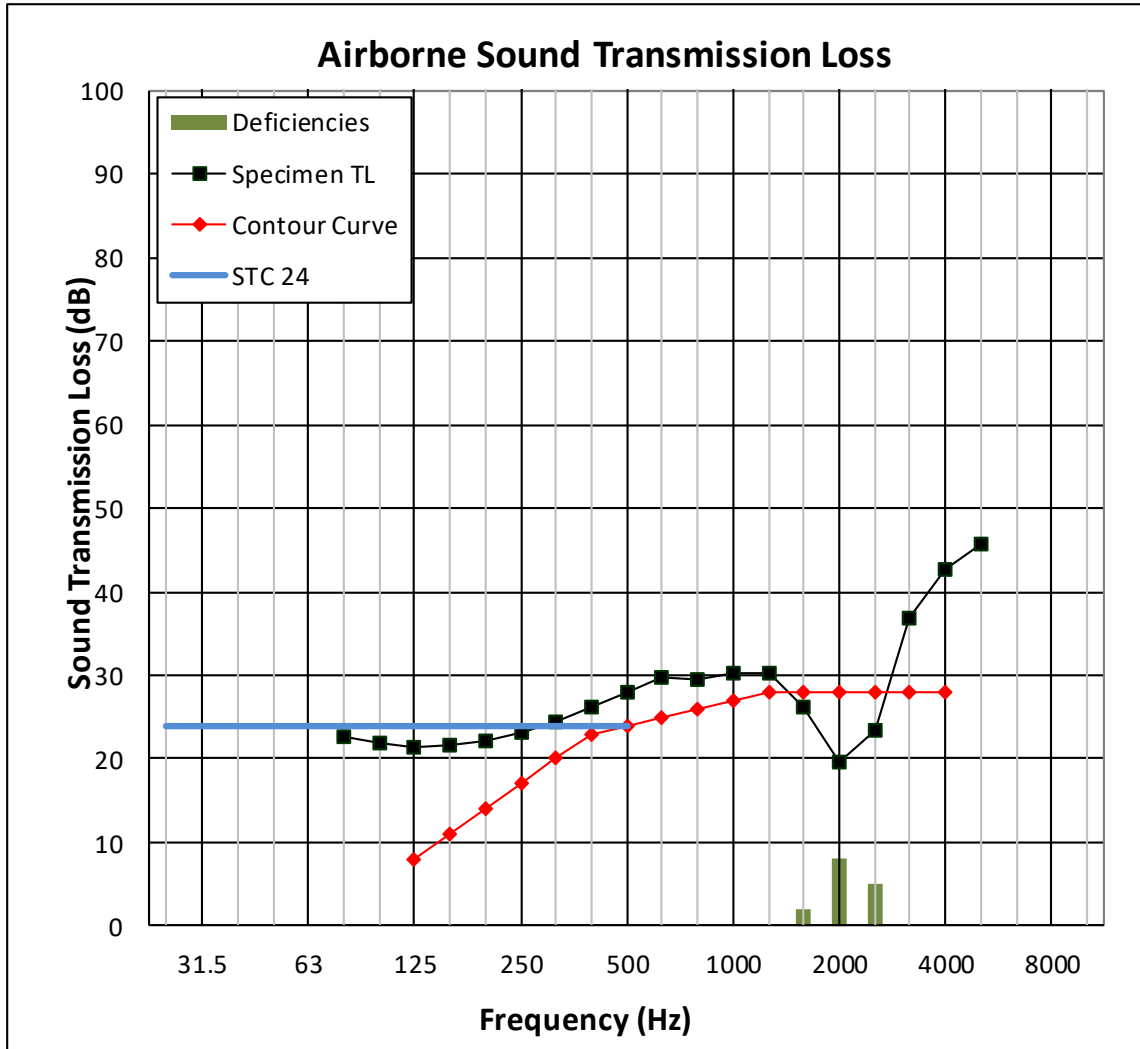
- 1) Receive Room levels less than 5 dB above the Background levels are red.
- 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
- 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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J4864.01A GRAPH (INOPERABLE CONDITION)



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J4864.01A1 DATA (OPERABLE CONDITION)

SPECIMEN AREA	2.09 m ²	RECEIVE TEMP.	21.3 °C	SOURCE TEMP	21.4 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	54%	SOURCE HUMIDIT	54%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	41.3	5.8	103	78	22	1.63	-
100	37.9	5.7	105	80	21	1.70	-
125	37.1	6.2	104	80	20	1.50	0
160	41.1	5.4	107	81	21	0.68	0
200	39.7	5.0	106	81	22	0.81	0
250	33.1	5.5	102	75	23	0.56	0
315	27.4	5.7	102	74	24	0.45	0
400	23.6	6.1	101	71	26	0.45	0
500	19.2	6.2	102	69	28	0.34	0
630	20.5	6.0	101	68	29	0.41	0
800	16.3	6.2	100	67	28	0.20	0
1000	12.3	6.4	101	69	27	0.36	0
1250	9.6	7.0	100	67	27	0.20	0
1600	8.1	7.3	99	69	25	0.17	2
2000	7.5	7.8	99	74	19	0.28	8
2500	7.4	8.7	100	71	23	0.20	4
3150	7.9	10.1	99	58	34	0.19	0
4000	8.7	12.4	97	54	35	0.25	0
5000	9.7	15.8	97	53	36	0.29	-
STC RATING	23 (Sound Transmission Class)						
DEFICIENCIES	14 (Sum of Deficiencies)						
OITC RATING	24 (Outdoor-Indoor Transmission Class)						

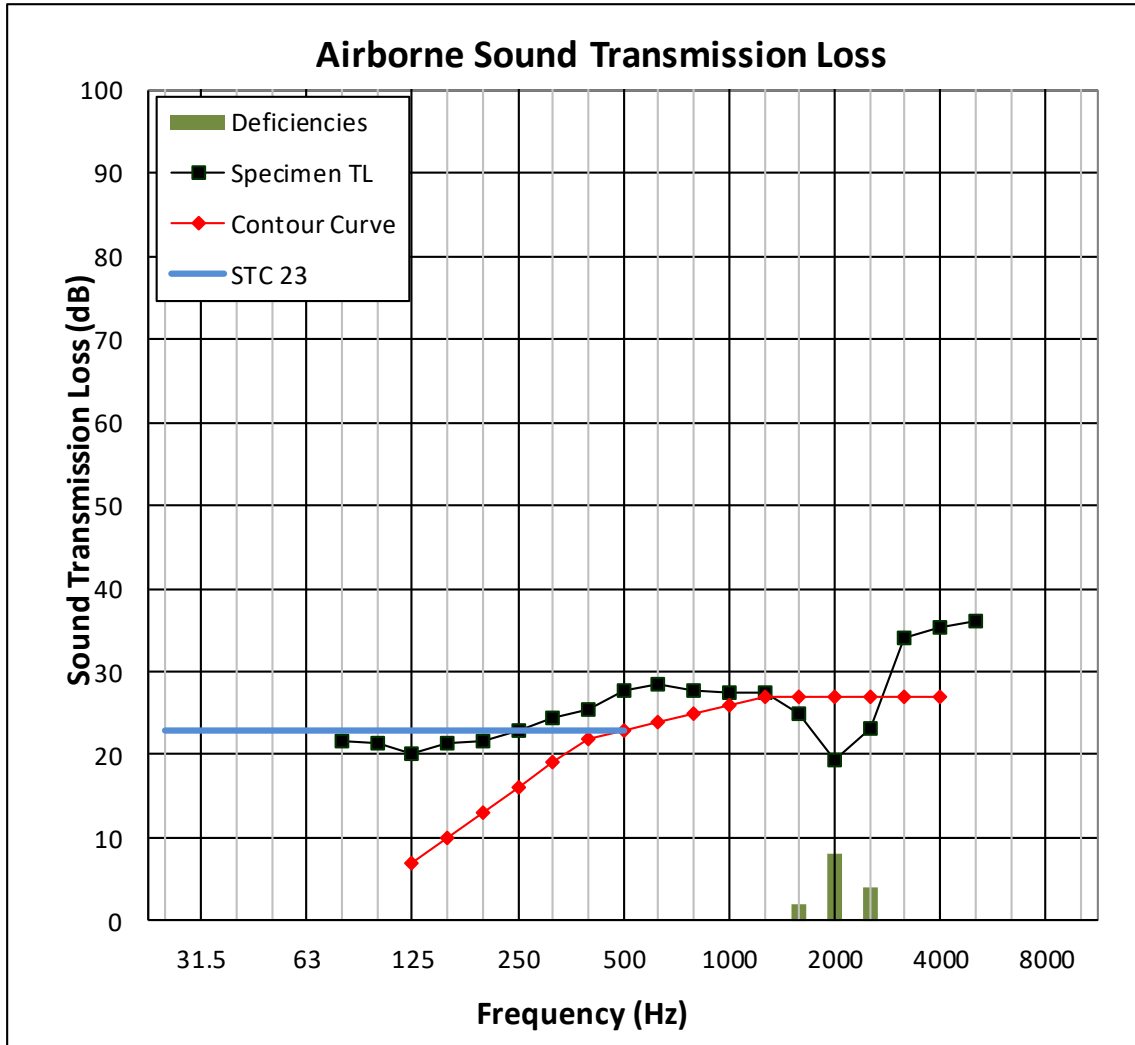
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J4864.01A1 GRAPH (OPERABLE CONDITION)



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J4864.01B DATA (INOPERABLE CONDITION)

SPECIMEN AREA	2.09 m ²	RECEIVE TEMP.	22.3 °C	SOURCE TEMP	22.4 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	48%	SOURCE HUMIDITY	50%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	40.8	5.8	103	78	23	1.85	-
100	34.2	5.8	104	79	21	1.80	-
125	37.4	5.6	105	78	22	1.53	0
160	40.9	5.7	107	80	22	0.94	0
200	39.5	4.9	106	80	22	0.71	0
250	33.6	5.5	102	75	23	0.58	0
315	27.7	5.8	102	73	25	0.35	0
400	24.1	6.1	101	70	26	0.41	0
500	21.3	6.2	102	69	28	0.38	0
630	21.6	5.9	102	67	30	0.37	0
800	18.4	6.1	100	65	30	0.26	0
1000	14.7	6.3	101	65	31	0.35	0
1250	12.7	6.8	100	64	31	0.17	0
1600	9.5	7.2	99	65	29	0.17	0
2000	8.0	7.7	99	72	21	0.31	8
2500	7.8	8.7	100	72	22	0.18	7
3150	8.1	10.2	99	59	33	0.16	0
4000	8.8	12.6	97	48	41	0.32	0
5000	9.9	16.1	97	44	45	0.28	-
STC RATING	25 (Sound Transmission Class)						
DEFICIENCIES	15 (Sum of Deficiencies)						
OITC RATING	25 (Outdoor-Indoor Transmission Class)						

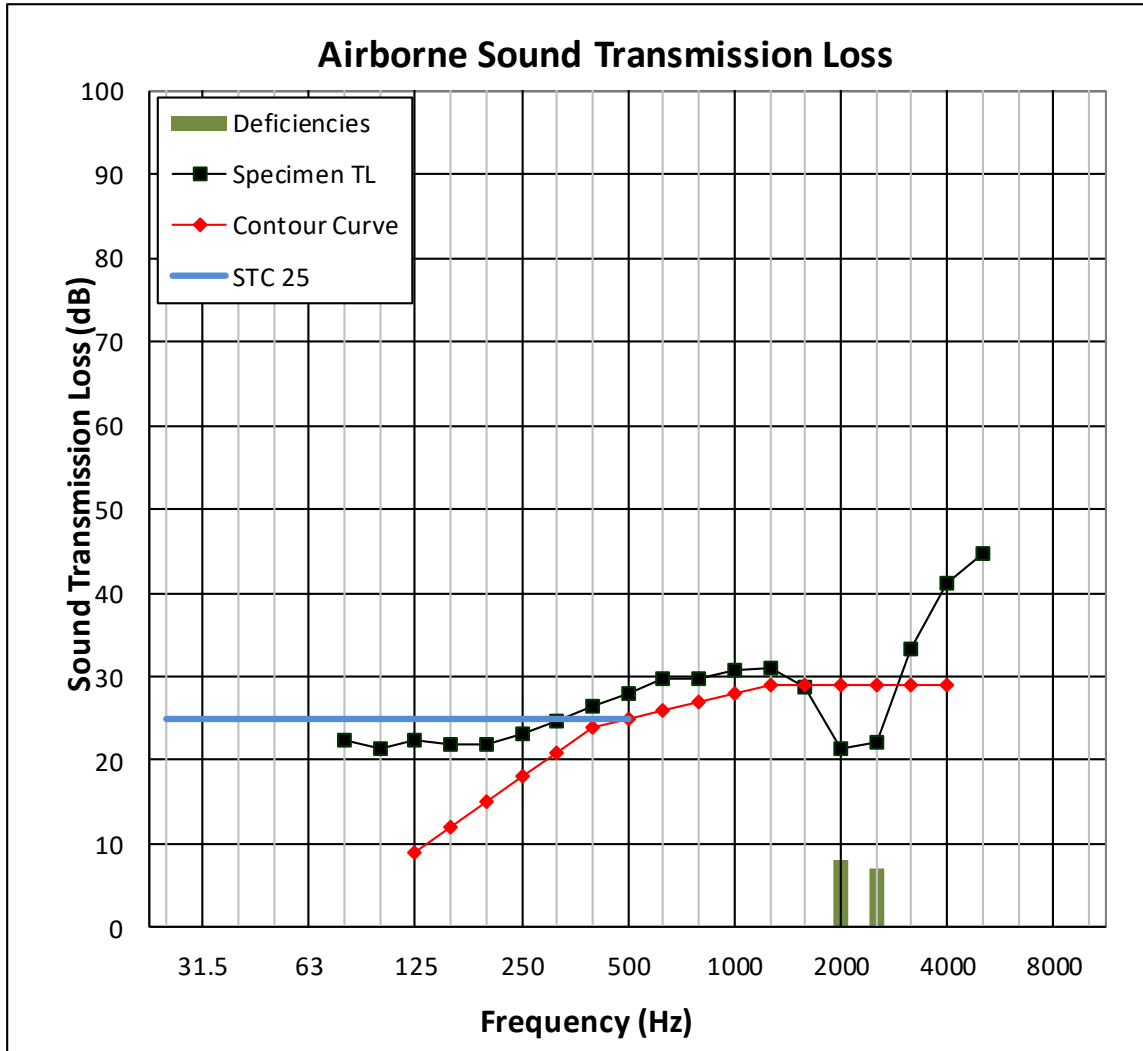
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J4864.01B GRAPH (INOPERABLE CONDITION)



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J4864.01B1 DATA (OPERABLE CONDITION)

SPECIMEN AREA	2.09 m ²	RECEIVE TEMP.	21.5 °C	SOURCE TEMP	21.6 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	57%	SOURCE HUMIDIT	52%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	41.2	6.3	103	78	21	1.66	-
100	34.8	6.3	104	80	20	1.60	-
125	37.4	6.0	105	80	21	1.41	0
160	40.6	5.4	107	81	21	0.79	0
200	39.3	4.9	106	81	22	0.73	0
250	33.7	5.4	102	75	23	0.57	0
315	27.3	5.7	102	73	25	0.42	0
400	23.3	6.1	101	71	26	0.43	0
500	19.1	6.3	102	69	28	0.40	0
630	20.5	5.9	101	68	29	0.36	0
800	16.6	6.1	99	67	28	0.18	0
1000	12.8	6.5	101	69	27	0.38	1
1250	10.0	7.0	100	68	27	0.16	2
1600	8.9	7.3	99	67	27	0.17	2
2000	8.0	7.8	99	73	21	0.31	8
2500	7.7	8.8	100	72	22	0.20	7
3150	8.0	10.2	99	60	32	0.16	0
4000	8.7	12.7	97	55	34	0.26	0
5000	9.7	16.1	97	54	35	0.30	-
STC RATING	25 (Sound Transmission Class)						
DEFICIENCIES	20 (Sum of Deficiencies)						
OITC RATING	24 (Outdoor-Indoor Transmission Class)						

Notes:

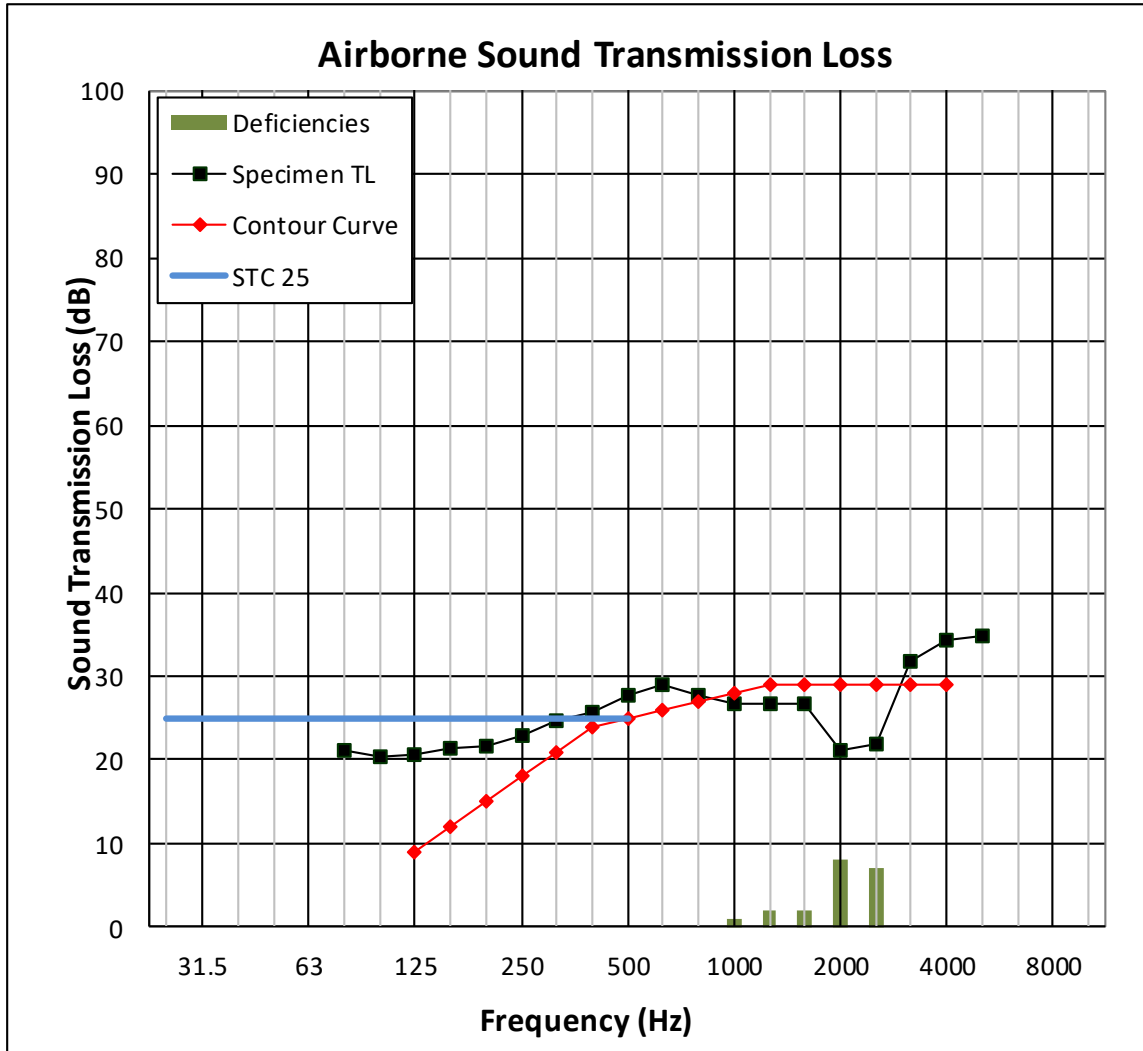
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J4864.01B1 GRAPH (OPERABLE CONDITION)



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SECTION 11 PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Test Specimen



Photo No. 2
Source Room View of Installed Test Specimen



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

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SECTION 12

REVISION LOG

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