

WINDLOCH, LLC

ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING A FIXED WINDOW FOR
THE 3 ST. MARK'S PLACE, NEW YORK CITY, NEW YORK PROJECT

REPORT NUMBER

P5109.02-113-11-R0

TEST DATE

12/29/22

ISSUE DATE

01/06/23

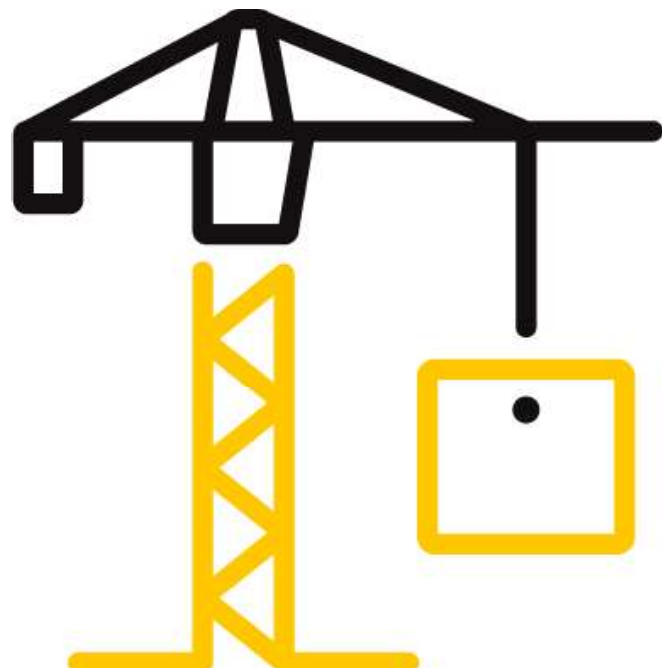
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TEST REPORT FOR WINDLOCH, LLC

Report No.: P5109.02-113-11-R0

Date: 01/06/23

REPORT ISSUED TO

WINDLOCH, LLC

467 Brook Avenue, Unit C
Deer Park, New York 11729

SECTION 1


SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Windloch, 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 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.

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For INTERTEK B&C:

COMPLETED BY:	Cody L. French
TITLE:	Technician Acoustical Testing
SIGNATURE:	 <small>Digitally Signed by: Cody French</small>
DATE:	01/06/23

REVIEWED BY:	Kurt A. Golden
TITLE:	Manager Acoustical Testing
SIGNATURE:	 <small>Digitally Signed by: Kurt A. Golden</small>
DATE:	01/06/23

CLF:jmc

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SECTION 2

SUMMARY OF TEST RESULTS

PROJECT	3 St. Mark's Place, New York City, New York
TYPE	Fixed Window

GLAZING (Nominal Dimensions)	1-1/4" IG (1/4" tempered exterior, 3/4" air space, 1/4" tempered interior)
DATA FILE NO.	P5109.01G
STC	36
OITC	27

GLAZING (Nominal Dimensions)	1-3/8" IG (1/4" tempered exterior, 13/16" air space, 5/16" tempered interior)
DATA FILE NO.	P5109.01H
STC	38
OITC	30

GLAZING (Nominal Dimensions)	1-9/16" IG (1/4" tempered exterior, 3/4" air space, 9/16" laminated interior)
DATA FILE NO.	P5109.01J
STC	42
OITC	33

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 E413-22, *Classification for Rating Sound Insulation*

ASTM E1332-22, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2020), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

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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
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02580	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02581	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02581	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02583	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02584	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02585	03/22
Source Room Microphone	National Instruments	378C20	Microphone and Preamplifier	INT02910	02/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02911	02/22
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	10/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02427	02/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01089	02/22
Receive Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT02912	02/22
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64902	10/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	08/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	02/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	10/22
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	02/22
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/22
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/22

*- 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
Yoav Ben-Shimon	Windloch, LLC
Cody L. French	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.

The specimen was returned per the client's request.

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.

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SECTION 9

SPECIMEN DESCRIPTION

	FRAME
SIZE	47-3/8" by 59-1/8"
THICKNESS	5-1/8"
CORNERS	Mitered
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL	Aluminum
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	Insulbar
DAYLIGHT OPENING SIZE	44-1/8" by 56-1/4"

OPTION P5109.01G

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	1.228"		
SPACER TYPE	Aluminum		
	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.226"	0.779"	0.223"
MATERIAL	Tempered	Air*	Tempered
LAMINATE MATERIAL	N/A	N/A	N/A

OPTION P5109.01H

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	1.385"		
SPACER TYPE	Aluminum		
	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.225"	0.839"	0.321"
MATERIAL	Tempered	Air*	Tempered
LAMINATE MATERIAL	N/A	N/A	N/A

OPTION P5109.01J

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	1.584"		
SPACER TYPE	Aluminum		
	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.226"	0.795"	0.563"
MATERIAL	Tempered	Air*	Laminated
LAMINATE MATERIAL	N/A	N/A	N/A

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

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GLAZING METHOD	Interior
GLAZING MATERIAL	EPDM
GLAZING BEAD MATERIAL	Aluminum

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	No weatherstrip		
HARDWARE	No hardware		
DRAINAGE	No drainage		

OPTION	TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft²)
P5109.01G	142	7.30
P5109.01H	162	8.33
P5109.01J	199	10.23

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

P5109.01G DATA

SPECIMEN AREA	1.81 m ²	RECEIVE TEMP.	24.1 °C	SOURCE TEMP.	24.4 °C
TECHNICIAN	Cody L. Fren	RECEIVE HUMIDITY	45%	SOURCE HUMIDITY	47%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	35.9	5.8	105	83	17	2.51	-
100	28.9	6.4	107	75	28	2.06	-
125	31.3	5.8	107	82	20	1.31	0
160	38.2	5.5	108	84	19	1.05	4
200	35.8	5.9	108	84	19	0.80	7
250	29.8	6.1	105	75	25	0.99	4
315	25.0	5.7	104	69	30	0.60	2
400	22.3	5.7	104	67	32	0.42	3
500	18.1	5.7	104	67	33	0.35	3
630	16.3	5.9	103	63	35	0.34	2
800	14.6	6.3	103	57	40	0.24	0
1000	10.2	6.4	104	57	42	0.34	0
1250	8.6	6.8	102	52	44	0.49	0
1600	6.7	7.3	100	50	43	0.42	0
2000	5.9	7.8	102	58	37	0.26	3
2500	6.0	9.0	102	57	38	0.23	2
3150	6.5	10.8	101	49	44	0.23	0
4000	7.3	13.3	99	41	49	0.27	0
5000	8.1	16.9	99	35	54	0.47	-
STC RATING	36 (Sound Transmission Class)						
DEFICIENCIES	30 (Sum of Deficiencies)						
OITC RATING	27 (Outdoor-Indoor Transmission Class)						

Notes:

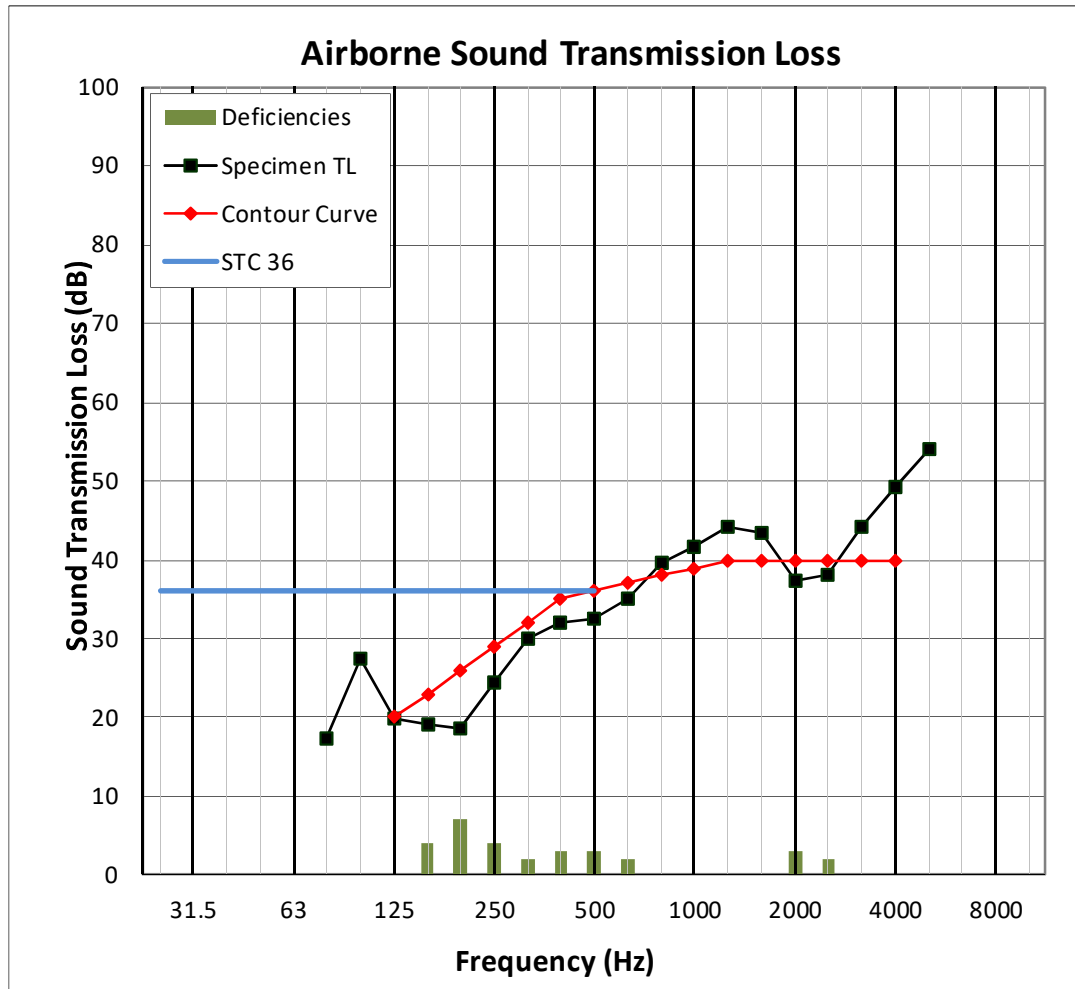
- 1) Receive Room levels less than 5 dB above the Background levels are red.
- 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
- 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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P5109.01G GRAPH



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P5109.01H DATA

SPECIMEN AREA	1.81 m ²	RECEIVE TEMP.	22.8 °C	SOURCE TEMP.	23.3 °C
TECHNICIAN	Cody L. French	RECEIVE HUMIDITY	48%	SOURCE HUMIDITY	48%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	35.5	5.6	106	82	19	3.14	-
100	28.1	5.8	106	73	29	1.62	-
125	29.8	5.5	107	80	22	1.23	0
160	38.8	4.9	108	82	22	1.39	3
200	37.5	5.7	107	83	20	0.70	8
250	29.0	6.3	105	68	31	0.68	0
315	23.5	5.9	104	63	36	0.61	0
400	20.9	5.7	104	62	37	0.43	0
500	16.5	5.7	104	61	38	0.35	0
630	16.1	5.8	103	59	39	0.34	0
800	14.0	6.3	103	56	42	0.24	0
1000	9.3	6.4	104	56	43	0.32	0
1250	7.8	6.9	102	54	42	0.52	0
1600	6.0	7.3	100	53	40	0.49	2
2000	5.7	7.7	102	58	38	0.22	4
2500	6.0	8.9	102	53	43	0.26	0
3150	7.0	10.6	101	43	50	0.26	0
4000	8.0	13.3	99	36	54	0.30	0
5000	9.3	16.5	99	32	58	0.53	-
STC RATING	38 (Sound Transmission Class)						
DEFICIENCIES	17 (Sum of Deficiencies)						
OITC RATING	30 (Outdoor-Indoor Transmission Class)						

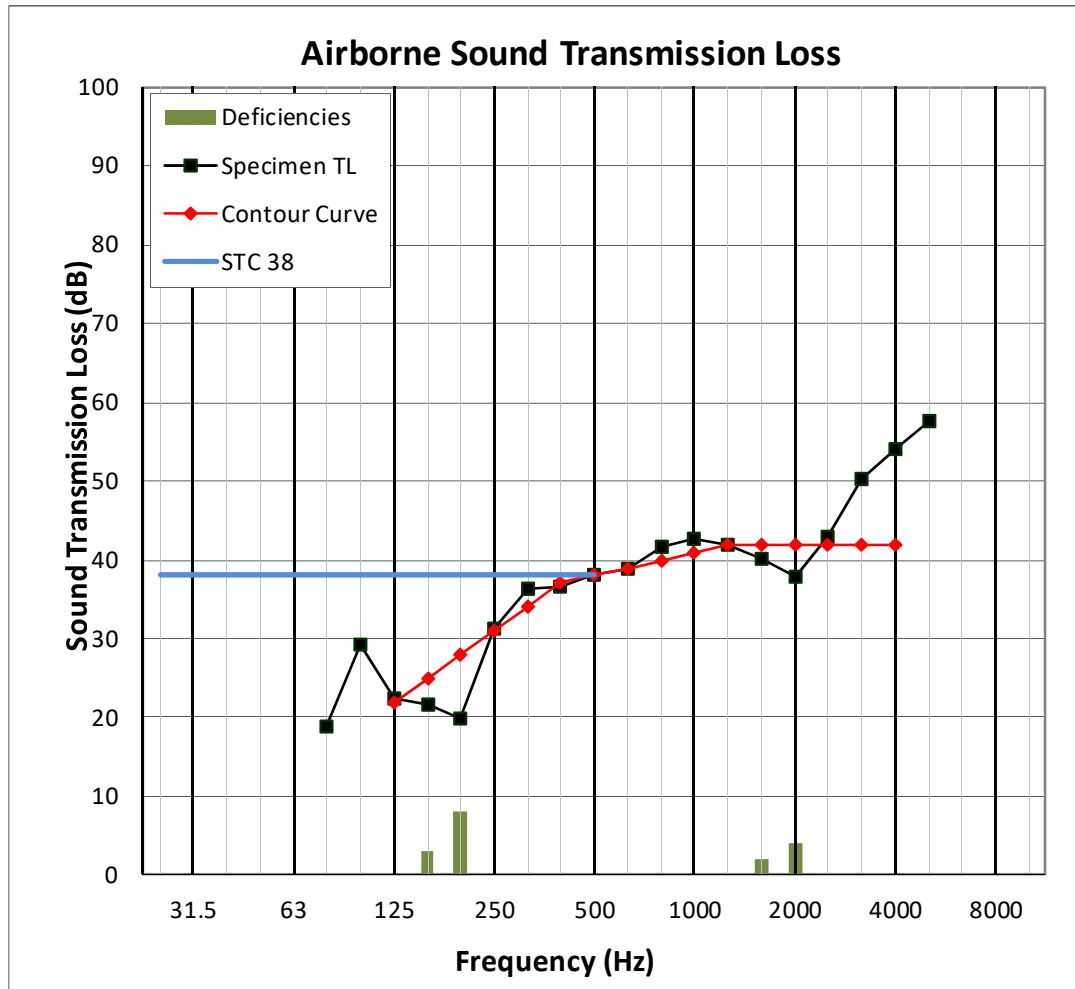
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P5109.01H GRAPH



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P5109.01J DATA

SPECIMEN AREA	1.81 m ²	RECEIVE TEMP.	22.5 °C	SOURCE TEMP.	23.3 °C
TECHNICIAN	Cody L. Fren	RECEIVE HUMIDITY	51%	SOURCE HUMIDITY	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	35.1	5.8	106	82	19	3.00	-
100	29.0	6.0	106	72	31	1.59	-
125	31.2	5.7	107	79	23	1.29	3
160	38.9	4.9	108	78	26	1.49	3
200	37.8	5.5	108	76	27	0.82	5
250	31.6	6.1	105	66	33	0.69	2
315	26.5	5.8	104	60	39	0.56	0
400	23.0	5.6	104	59	40	0.41	1
500	18.0	5.7	104	60	39	0.35	3
630	17.0	5.9	103	56	42	0.38	1
800	15.4	6.2	103	51	46	0.32	0
1000	10.4	6.4	104	51	47	0.38	0
1250	8.7	6.8	102	47	49	0.41	0
1600	6.5	7.3	100	45	49	0.45	0
2000	5.8	7.8	102	54	41	0.26	5
2500	6.0	8.8	103	54	41	0.24	5
3150	6.4	10.6	101	43	50	0.23	0
4000	7.2	13.1	99	36	55	0.35	0
5000	8.0	16.3	99	31	59	0.48	-
STC RATING	42 (Sound Transmission Class)						
DEFICIENCIES	28 (Sum of Deficiencies)						
OITC RATING	33 (Outdoor-Indoor Transmission Class)						

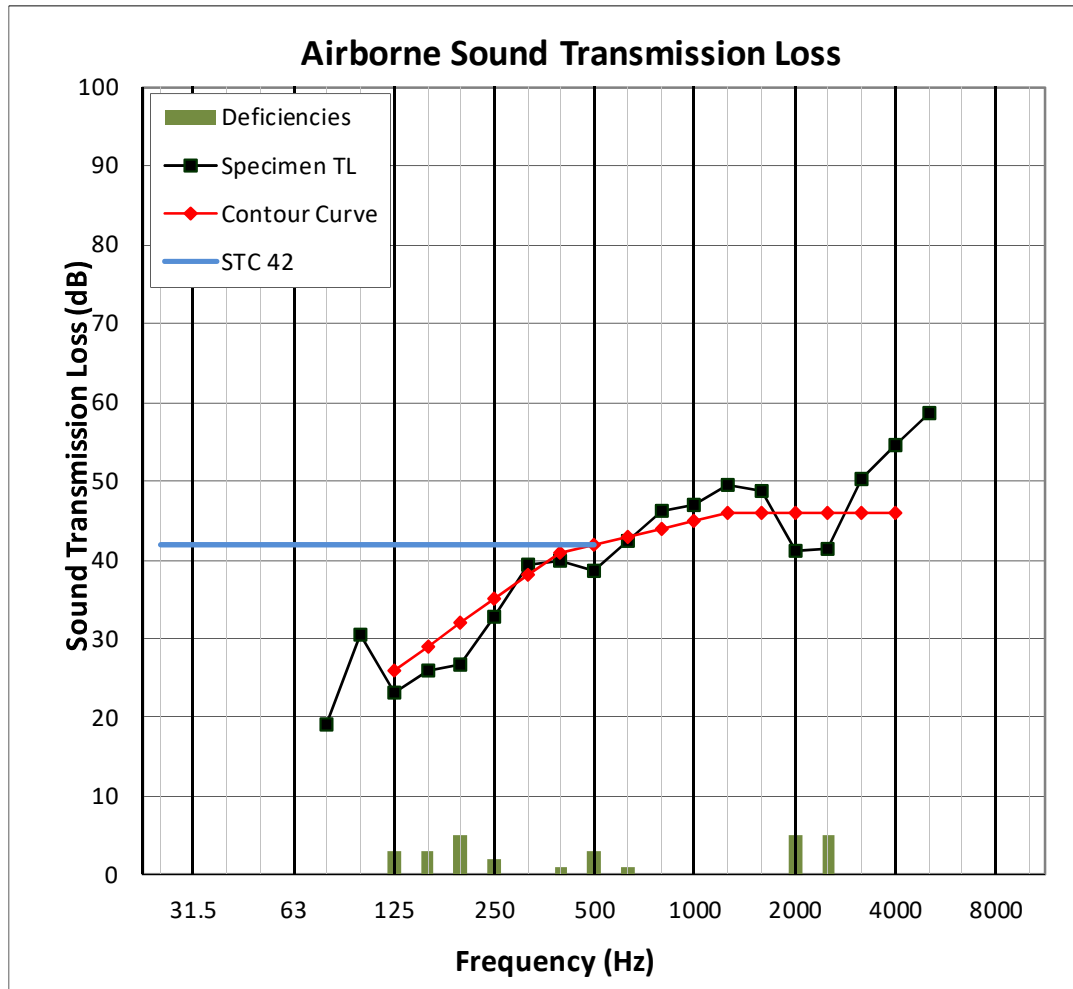
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SECTION 11

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

Telephone: 717-764-7700
Facsimile: 717-764-4129
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SECTION 12

REVISION LOG

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