

IMPACT SECURITY, LLC

ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A
DEFENSELITE PRO, FIXED WINDOW

REPORT NUMBER

N2700.01-113-11-R1

TEST DATE

04/27/22

ISSUE DATE

05/12/22

REVISION 1 DATE

06/27/22

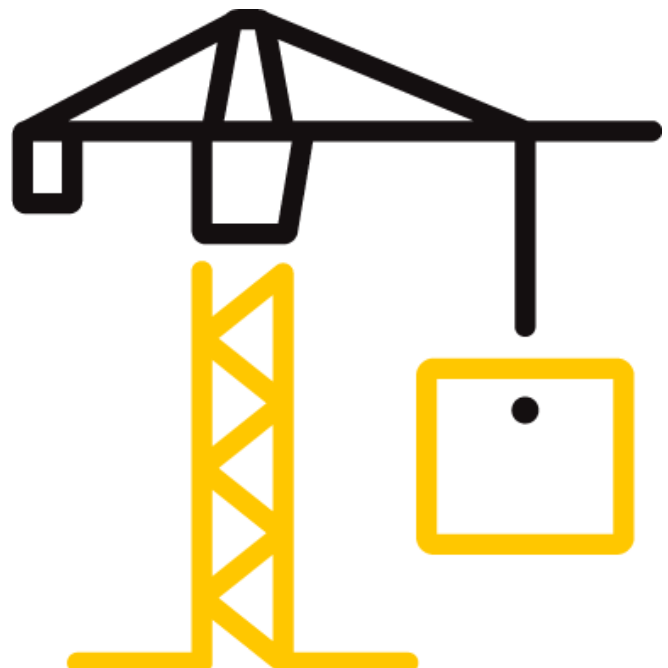
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TEST REPORT FOR IMPACT SECURITY, LLC

Report No.: N2700.01-113-11-R1

Revision 1 Date: 06/27/22 Date: 05/12/22

REPORT ISSUED TO

IMPACT SECURITY, LLC

600 Kirk Road #100

Marietta, Georgia 30060

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Impact Security, 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:	Andrew M. Johnston	REVIEWED BY:	Kurt A. Golden
TITLE:	Technician	TITLE:	Manager
SIGNATURE:	Acoustical Testing	SIGNATURE:	Acoustical Testing
DATE:	06/27/22	DATE:	06/27/22

AMJ:jmc

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	DefenseLite Pro
TYPE	Fixed Window
GLAZING (Nominal Dimensions)	3/8" Polycarbonate exterior, 1-5/8" air space, 1/4" tempered interior
DATA FILE NO.	N2700.01
STC	41
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 E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *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*

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
2-Channel Analog Output	National Instruments	NI-9260	2-Channel Analog Output	INT02582	03/22
Source Room Microphone	National Instruments	378C20	Microphone and Preamplifier	65617	03/22
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	09/21
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02256	09/21
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02427	01/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01089	02/22
Receive Room Microphone	PCB piezotronics	378B20	Microphone and Preamplifier	64907	02/22
Receive Room Microphone	PBC Piezotronics	378BC20	Microphone and Preamplifier	64908	01/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	01/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	01/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/22
Receive Room Environmental Indicator	T7510	T7510	Receive Room	64915	02/22
Source Room Environmental Indicator	T7510	T7510	Source Room	64914	03/22
Microphone Calibrator	Larson Davis	1251	Acoustical Calibrator	65327	02/22

*- 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
Steve Champlin	DefenseLite LLC
Andrew M. Johnston, Kurt A. 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.

The test specimen was sent to another department within Intertek B&C for further testing.

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	48" by 78"
THICKNESS	4-1/2"
CORNERS	Butted
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL	Aluminum
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A
DAYLIGHT OPENING SIZE	34-1/2" by 73-1/4"

	EXTERIOR SHEET
MEASURED THICKNESS	0.332"
MATERIAL	Polycarbonate
AIRSPACE	1.625"

	INTERIOR SHEET
MEASURED THICKNESS	0.225"
MATERIAL	Tempered
GLAZING METHOD	Exterior
GLAZING MATERIAL	EPDM
GLAZING BEAD MATERIAL	Aluminum

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

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
133	6.04

N/A-Not Applicable

Photographs are included in Section 11.

Drawings of the test specimen are included in Section 12.

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SECTION 10

TEST RESULTS

N2700.01 DATA

SPECIMEN AREA	2.04 m ²	RECEIVE TEMP.	20.1 °C	SOURCE TEMP	19.7 °C
TECHNICIAN	Andrew M. J.	RECEIVE HUMIDITY	49%	SOURCE HUMIDITY	46%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	41.2	5.9	106	79	23	2.07	-
100	34.2	6.6	107	80	23	1.60	-
125	35.3	5.4	107	78	26	1.14	0
160	40.8	5.2	109	77	29	1.00	0
200	38.1	5.2	109	76	29	0.57	2
250	31.7	5.7	105	72	29	0.69	5
315	26.2	5.9	106	70	31	0.27	6
400	23.0	5.9	105	67	33	0.47	7
500	18.7	6.1	105	64	36	0.51	5
630	19.9	5.9	104	62	37	0.30	5
800	17.0	6.2	103	57	41	0.36	2
1000	12.2	6.3	105	56	44	0.29	0
1250	9.3	6.8	103	51	47	0.34	0
1600	7.6	7.3	100	47	48	0.18	0
2000	7.3	7.7	102	48	48	0.32	0
2500	7.2	8.9	103	47	50	0.15	0
3150	8.2	10.7	101	40	54	0.14	0
4000	10.6	13.7	100	34	58	0.32	0
5000	11.3	17.3	100	40	50	0.32	-
STC RATING	41 (Sound Transmission Class)						
DEFICIENCIES	32 (Sum of Deficiencies)						
OITC RATING	33 (Outdoor-Indoor Transmission Class)						

Notes:

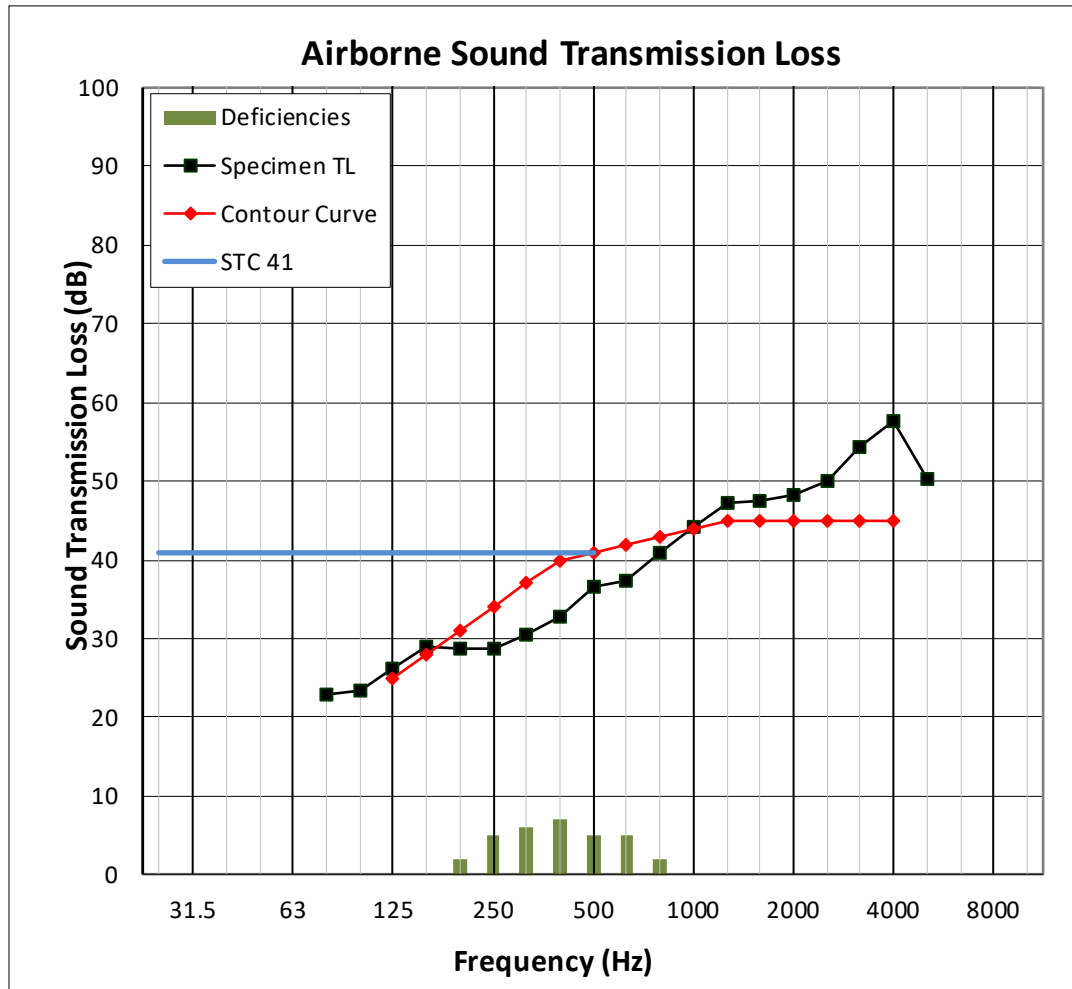
- 1) Receive Room levels less than 5 dB above the Background levels are red.
- 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
- 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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N2700.01 GRAPH



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SECTION 11

PHOTOGRAPHS



Photo No. 1
Interior View of Installed Test Specimen



Photo No. 2
Source Room View of Installed Test Specimen

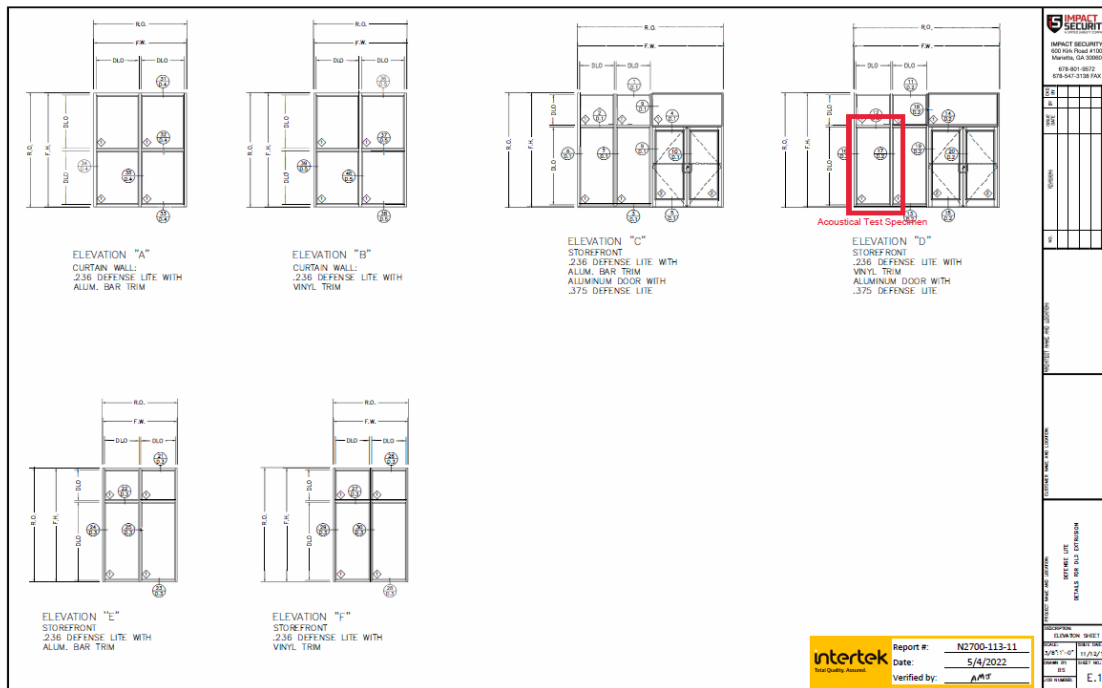
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SECTION 12

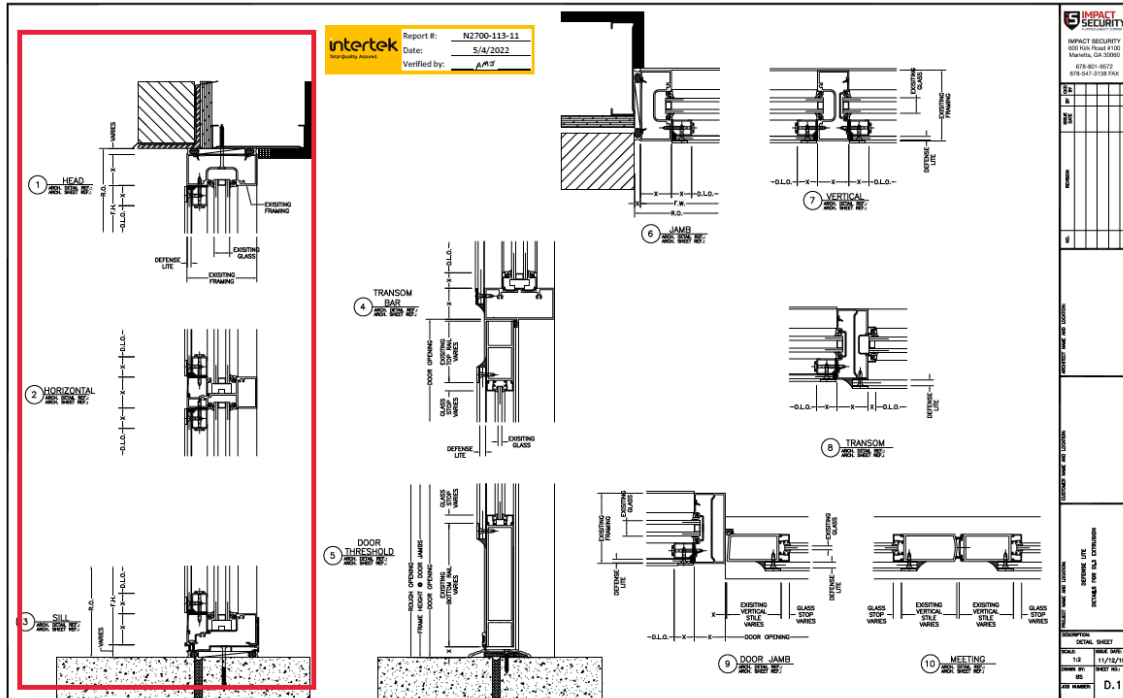
DRAWINGS



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SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	05/12/22	N/A	Original Report Issue
1	06/27/22	All	Corrected company name