



H1599.01-303-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E90

Rendered to:

NEON ENERGY

Series/Model: ULTRA

Type: Tilt/Turn Window

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
H1599.01	1-1/8" IG (1/4" annealed exterior, 5/8" air space, 1/4" tempered interior)	35	27

Reference should be made to Intertek-ATI Report No. H1599.01-303-11 for complete test specimen description. This page alone is not a complete report. Flanking limit tests and reference specimen tests are available upon request.



Acoustical Performance Test Report

NEON ENERGY
4989 East La Palma Ave.
Anaheim, California 92807

Report No	H1599.01-303-11
Test Date	06/02/17
Report Date	07/20/17

Project Scope

Architectural Testing, Inc., an Intertek company ("Intertek-ATI"), was contracted to conduct a sound transmission loss test. The complete test data is included as Appendix B of this report. The client provided the test specimen.

Test Methods

Testing for this project was conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

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

ASTM E413-10, *Classification for Rating Sound Insulation*

ASTM E1332-10a, *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*

Test Procedure

All measurements were conducted in the HT test chambers at Intertek-ATI located in York, Pennsylvania. 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 levels were made simultaneously in the receive and source rooms at each of five microphone positions.

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

Specimen Installation

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

The specimen plug was removed from the filler wall assembly. A filler wall-reducing element was used to adjust the test opening size to accommodate the test specimen. The reducing element consisted of a double 2x6 wood stud wall construction with three layers of 5/8" drywall on both sides. The stud cavities in the wall were insulated with two layers of R-13 fiberglass insulation. The specimen was placed on a foam isolation pad in the custom 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.

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.

Specimen Descriptions

	Frame	Vent
Size	47-1/4" by 59"	45-1/2" by 57-3/8"
Thickness	2-1/4"	2-9/16"
Corners	Mitered	Mitered
Fasteners	Keys	Keys
Seal Method	Foam	Foam
Material	Aluminum	Aluminum
Reinforcement	N/A	N/A
Thermal Break Material	Insulbar	Insulbar
Daylight Opening Size	N/A	39-3/16" by 51-1/4"

Measured Overall Insulation Glass Unit Thickness	1.094"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.230"	0.629"	0.235"
Muntin Pattern	N/A	N/A	N/A
Material	Annealed	Air*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Interior
Glazing Material	Rubber gasket
Glazing Bead Material	Aluminum

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

Specimen Descriptions (Continued)

TYPE	QUANTITY	LOCATION
Weatherstrip		
Hollow bulb gasket with leaf	1 Row	Perimeter of frame
1/2" by 3/16" foam gasket	1 Row	Perimeter of frame
1/2" by 3/16" foam gasket	1-Row	Perimeter of vent
Hardware		
Multi point lock system with handle	1	Lock Stile
Keepers	9	Lock jamb, Hinge jamb, Head, Sill
Hinges	2	Hinge jamb
Drainage		
1" by 1/4" weep slot with cover	4	Sill
Total Weight (lbs)		Average Weight (lbs / ft ²)
134		6.92

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

Comments

The client did not supply a report drawing of the test specimen. Intertek-ATI will store test specimen samples for four years.

Intertek-ATI will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

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For INTERTEK-ATI:

Leeland S. Hoover
Technician I - Acoustical Testing

Bradlay D. Hunt
Laboratory Manager – Acoustical Testing

LSH:bh/ss

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Equipment description (1)

Appendix B: Complete test results (2)

Appendix C: Photographs (1)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
R0	07/20/17	N/A	Original Report Issue.



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Appendix A

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	INT00395	10/16
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	INT00396	10/16
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	INT00394	10/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00229	03/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00230	03/16
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	INT00231	03/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00232	03/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00233	03/16
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	INT00234	03/16
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00235	03/16
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00236	03/16
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00237	03/16
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00238	03/16
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00299	10/16
Source Room Environmental Indicator	Comet	T7510	Source Room	INT00300	10/16
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	INT00288	04/16

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

Test Chamber:

	Volume	Description
Receive Room	231 m ³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	200 m ³	Stationary diffusers only Temperature and humidity controlled Isolation pads under the floor

	Maximum Size	Description
TL Test Opening	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

N/A-Non Applicable



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Appendix B

Complete Test Results

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	06/02/17						
Data File No.	H1599.01						
Client	Neon Energy						
Description	Series/Model: ? tilt/turn window with 1-1/8" IG (1/4" annealed exterior, 5/8" air space, 1/4" tempered interior)						
Specimen Area	1.80 m ²	Receive Temp.	24.2 °C		Source Temp.	23.9 °C	
Technician	Leeland S. Hoov	Receive Humidity	46%		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	38.9	4.7	103	75	25.5	1.45	-
100	36.5	5.0	105	78	23.7	1.59	-
125	41.9	5.1	105	77	24.3	1.09	0
160	43.1	5.2	103	82	17.1	0.81	5
200	35.0	6.3	105	82	17.6	0.89	7
250	24.9	6.7	105	75	24.2	0.58	4
315	20.6	6.9	106	73	27.0	0.65	4
400	22.0	6.0	105	71	29.0	0.75	5
500	19.0	5.3	104	65	34.2	0.23	1
630	13.9	5.8	106	63	38.3	0.49	0
800	15.2	6.0	105	61	39.3	0.21	0
1000	8.1	6.0	106	61	40.1	0.22	0
1250	7.4	6.2	104	55	44.0	0.18	0
1600	6.5	6.6	104	53	45.3	0.22	0
2000	7.9	7.7	101	57	37.4	0.25	2
2500	7.3	8.4	101	57	37.4	0.22	2
3150	6.0	9.5	101	49	44.7	0.21	0
4000	5.9	11.4	99	40	50.6	0.42	0
5000	5.8	14.1	98	39	50.3	0.34	-

STC Rating **35** *(Sound Transmission Class)*
Deficiencies **30** *(Sum of Deficiencies)*
OITC Rating **27** *(Outdoor-Indoor Transmission Class)*

Notes:

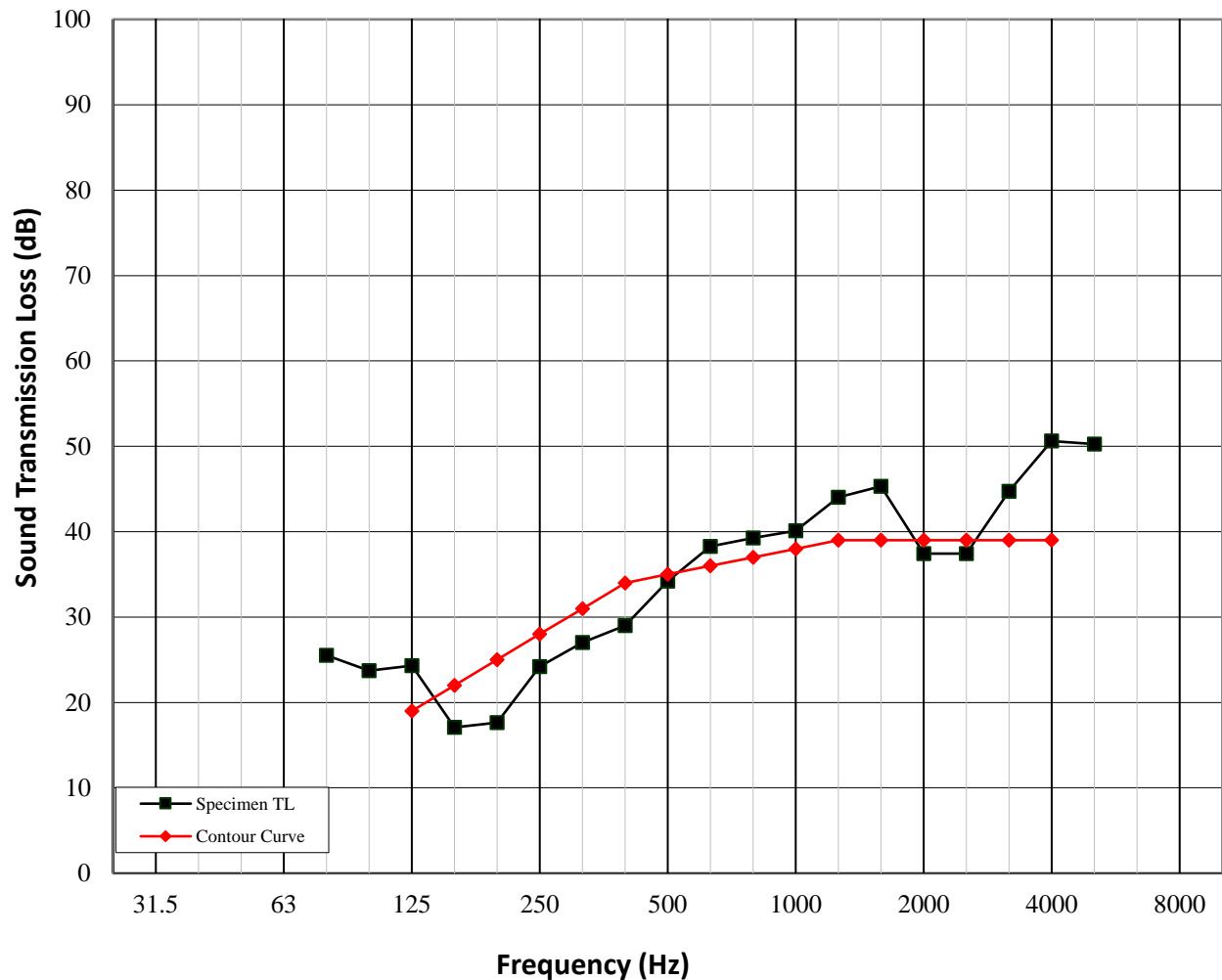
- 1) Receive Room levels less than 5 dB above the Background levels are red.
- 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
- 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

AIRBORNE SOUND TRANSMISSION LOSS

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Client	Neon Energy					
Description	Series/Model: tilt/turn window with 1-1/8" IG (1/4" annealed exterior, 5/8" air space, 1/4" tempered interior)					
Specimen Area	1.80 m ²	Receive Temp.	24.2 °C		Source Temp.	23.9 °C
Technician	Leeland S. Hoov	Receive Humidity	46%		Source Humidity	50%

Airborne Sound Transmission Loss

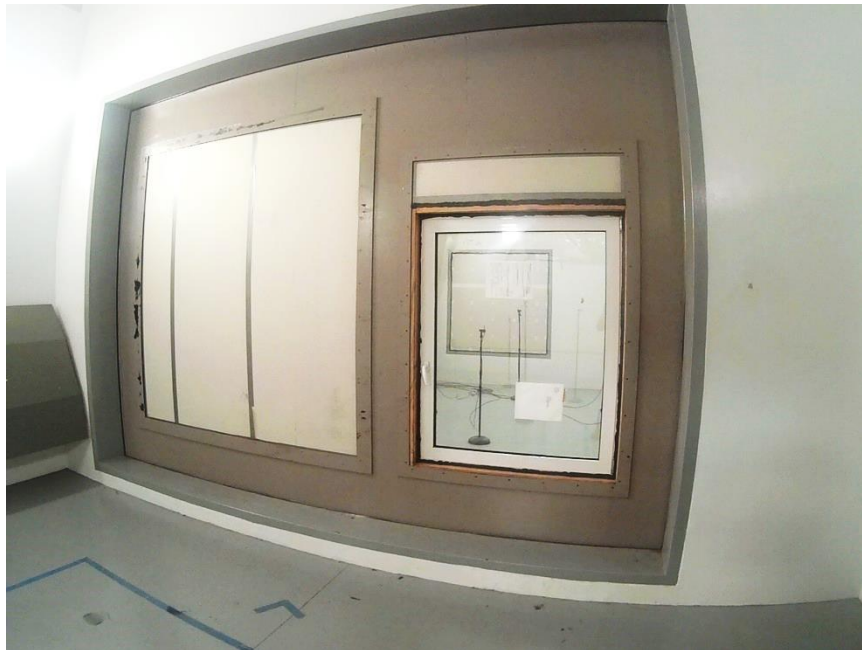


Appendix C

Photographs



Source Room View of Test Specimen



Receive Room View of Test Specimen