



G8813.03-303-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E90

Rendered to:

NEON ENERGY

Series/Model: ULTRA

Type: Fixed Window

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
G8813.03	28 mm (1-1/8") IG (6mm (1/4") tempered interior, 16mm (5/8") air space, 6mm (1/4") annealed exterior)	33	27

Reference should be made to Intertek-ATI Report No. G8813.03-303-11 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 Avenue
Anaheim, California 92807

Report No	G8813.03-303-11
Test Date	03/27/17
Report Date	05/15/17

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 E 413-10, Classification for Rating Sound Insulation

ASTM E 1332-10a, Standard Classification for Rating Outdoor-Indoor Sound Attenuation

ASTM E 2235-04(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 Lake Forest, California. 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, consisting of two separate 2x6 wood frames filled with concrete, was used to adjust the test opening size to accommodate the test specimen. A dense neoprene gasket was placed between the two wood and concrete frames. The specimen was placed on an 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
Size		47-1/4" by 59"
Thickness		2-1/4"
	Corners	Mitered
	Fasteners	Keys / stakes
	Seal Method	Foam
Material		Aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar
Daylight Opening Size		43" by 54-3/4"

Measured Overall Insulation Glass Unit Thickness	1.089"
Spacer Type	Aluminum with butyl

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.233"	0.625"	0.231"
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	Foam tape / rubber gasket
Glazing Bead Material	Aluminum

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

Specimen Descriptions (Continued)

TYPE	QUANTITY	LOCATION
Weatherstrip		
No weatherstrip		
Hardware		
No hardware		
Drainage		
1" by 1/4" weep slot with cover	3	Sill

Total Weight (lbs)	Average Weight (lbs / ft ²)
124	6.40

* - 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)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
R0	05/15/17	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Chassis	National Instruments	PXI-1033	Data Acquisition Chassis	INT00392	10/16
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	INT00397	10/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00249	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00250	04/17
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	INT00251	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00252	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00248	04/17
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	00288	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 and humidity controlled Temperature

	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	03/27/17						
Data File No.	G8813.03						
Client	Neon Energy						
Description	Series/Model: Ultra Fixed Window with 27 mm (1") IG (6 mm (1/4") tempered interior, 16 mm (5/8") air space, 5 mm (1/4") annealed exterior)						
Specimen Area	1.80 m ²	Receive Temp.	20.7 °C		Source Temp.	20.9 °C	
Technician	Leeland S. Hoov	Receive Humidity	52%		Source Humidity	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	39.9	4.7	104	75	25.4	1.46	-
100	35.7	4.9	105	76	25.8	1.50	-
125	41.4	5.2	105	79	21.2	1.31	0
160	44.9	5.3	103	79	19.5	0.67	1
200	38.0	6.1	106	81	18.8	0.89	4
250	23.9	6.8	106	78	22.0	0.46	4
315	18.1	6.6	106	75	26.1	0.36	3
400	18.6	5.8	107	75	27.5	0.52	5
500	21.4	5.2	108	72	31.5	0.50	2
630	16.6	5.6	106	67	34.0	0.34	0
800	18.5	5.7	106	62	38.2	0.29	0
1000	9.6	5.9	108	60	42.4	0.19	0
1250	7.0	6.0	106	56	45.5	0.24	0
1600	5.7	6.5	104	53	45.2	0.24	0
2000	6.5	7.5	102	63	32.4	0.26	5
2500	5.9	8.4	102	59	36.3	0.22	1
3150	5.2	9.5	101	49	45.0	0.26	0
4000	5.4	11.5	99	36	54.7	0.33	0
5000	5.7	14.6	99	35	55.0	0.41	-

STC Rating	33	(Sound Transmission Class)
Deficiencies	25	(Sum of Deficiencies)
OITC Rating	27	(Outdoor-Indoor Transmission Class)
Rw Rating	33	(Sound Reduction Index)

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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Technician	Leeland S. Hoov	Receive Humidity	52%		Source Humidity	52%

Airborne Sound Transmission Loss

