

ECO SUPPLY ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A
BILDAU IV79, TILT-TURN WINDOW

REPORT NUMBER

I1160.01-113-11-R0

TEST DATE

02/16/18

ISSUE DATE

02/23/18

RECORD RETENTION END DATE

02/16/22

PAGES

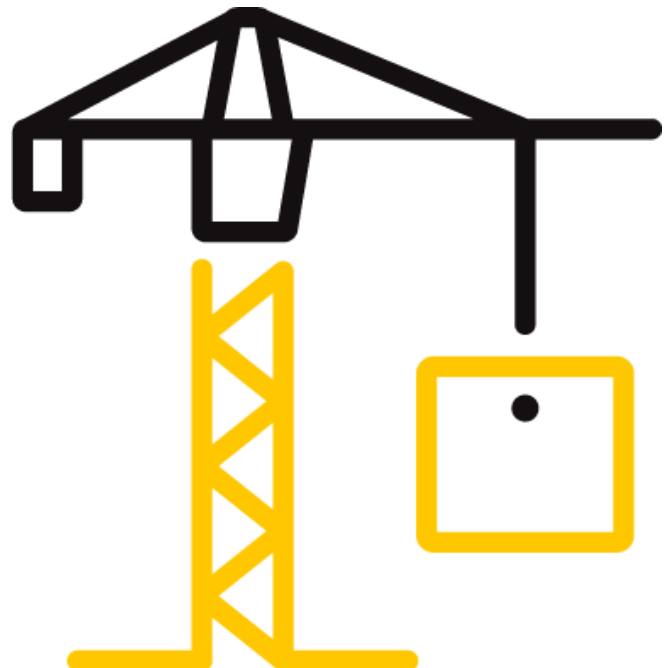
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TEST REPORT FOR ECO SUPPLY

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Date: 02/23/18

REPORT ISSUED TO

ECO SUPPLY

2115 Westmoreland Street
Richmond, Virginia 23230

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by ECO Supply to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). 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.

SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	Bildau IV79
TYPE	Tilt-turn window
GLAZING (Nominal Dimensions)	1-3/4" IG (5/16" laminated exterior, 31/64" air space, 5/32" annealed center, 31/64" air space, 5/16" laminated interior), Glass temperature 75°F
DATA FILE NO.	I1160.01
STC	46
OITC	37

For INTERTEK B&C:

COMPLETED BY:	Sean G. Close
TITLE:	Technician I Acoustical Testing
SIGNATURE:	
DATE:	02/23/18

REVIEWED BY:	Kurt A. Golden
TITLE:	Project Lead Acoustical Testing
SIGNATURE:	
DATE:	02/23/18

SGC:jmc

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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. 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.

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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	65124	06/16 *
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126	05/16 *
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125	05/16 *
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	08/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64903	02/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65103	02/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64905	02/17
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	64906	02/17
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65969	03/17
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	03/17
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/17
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	Y002919	04/17

*- 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

N/A-Not Applicable

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SECTION 6**LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Sean G. Close	Intertek B&C
Jear Mutunda	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.

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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.

SECTION 9

SPECIMEN DESCRIPTION

	FRAME	VENT
SIZE	48" by 60"	44-3/4" by 56-3/4"
THICKNESS	3-3/4"	3-3/4"
CORNERS	Mortise and tenon	Butted
FASTENERS	Screws	Screws
SEAL METHOD	N/A	N/A
MATERIAL	Wood with aluminum clad exterior	Wood with aluminum clad exterior
REINFORCEMENT	N/A	N/A
THERMAL BREAK MATERIAL	N/A	N/A
DAYLIGHT OPENING SIZE	N/A	38-1/4" by 50-3/8"

N/A-Not Applicable

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MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	1.734"
SPACER TYPE	Swisspacer

	EXTERIOR SHEET	GAP	CENTER SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.310"	0.478	0.152"	0.470"	0.324"
MUNTIN PATTERN	N/A	N/A	N/A	N/A	N/A
MATERIAL	Laminated	Air	Annealed	Air	Laminated
LAMINATE MATERIAL	PVB	N/A	N/A	N/A	PVB

GLAZING METHOD	Exterior
GLAZING MATERIAL	EPDM
GLAZING BEAD	Aluminum with EPDM

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	1/2" Rubber leaf gasket	1 Row	Frame perimeter
	1/8" Rubber gasket	1 Row	Cladding perimeter
HARDWARE	Multi-point lock system	1	Vent perimeter
	Multi-point hinge system	1	Top and bottom rail
	Keeper	7	Frame perimeter
DRAINAGE	No drainage		

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft²)
233	11.65

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

The client did not supply a report drawing of the test specimen.

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SECTION 10

TEST RESULTS

I1160.01 DATA

SPECIMEN AREA	1.86 m ²	RECEIVE TEMP.	24.1 °C	SOURCE TEMP	22.8 °C
TECHNICIAN	Sean G. Clos	RECEIVE HUMIDITY	50%	SOURCE HUMIDITY	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	36.8	4.3	104	78	23	1.62	-
100	33.9	5.3	105	73	27	1.65	-
125	36.0	5.0	105	70	31	1.20	0
160	38.0	4.5	105	73	28	1.44	5
200	35.4	4.4	105	69	33	1.14	3
250	30.7	5.3	106	64	37	0.49	2
315	26.1	5.4	99	55	40	0.52	2
400	24.5	5.8	97	51	41	0.52	4
500	22.8	5.9	98	51	43	0.38	3
630	21.2	5.8	101	53	43	0.40	4
800	20.1	6.1	100	50	45	0.33	3
1000	17.5	6.3	97	45	47	0.18	2
1250	15.0	6.8	98	44	48	0.38	2
1600	12.3	7.1	102	47	49	0.36	1
2000	11.0	7.5	96	40	50	0.15	0
2500	10.6	8.4	95	36	52	0.27	0
3150	11.6	10.1	97	37	52	0.28	0
4000	12.9	12.2	96	34	54	0.23	0
5000	14.0	15.4	95	29	58	0.35	-
STC RATING	46 (Sound Transmission Class)						
DEFICIENCIES	31 (Sum of Deficiencies)						
OITC RATING	37 (Outdoor-Indoor Transmission Class)						

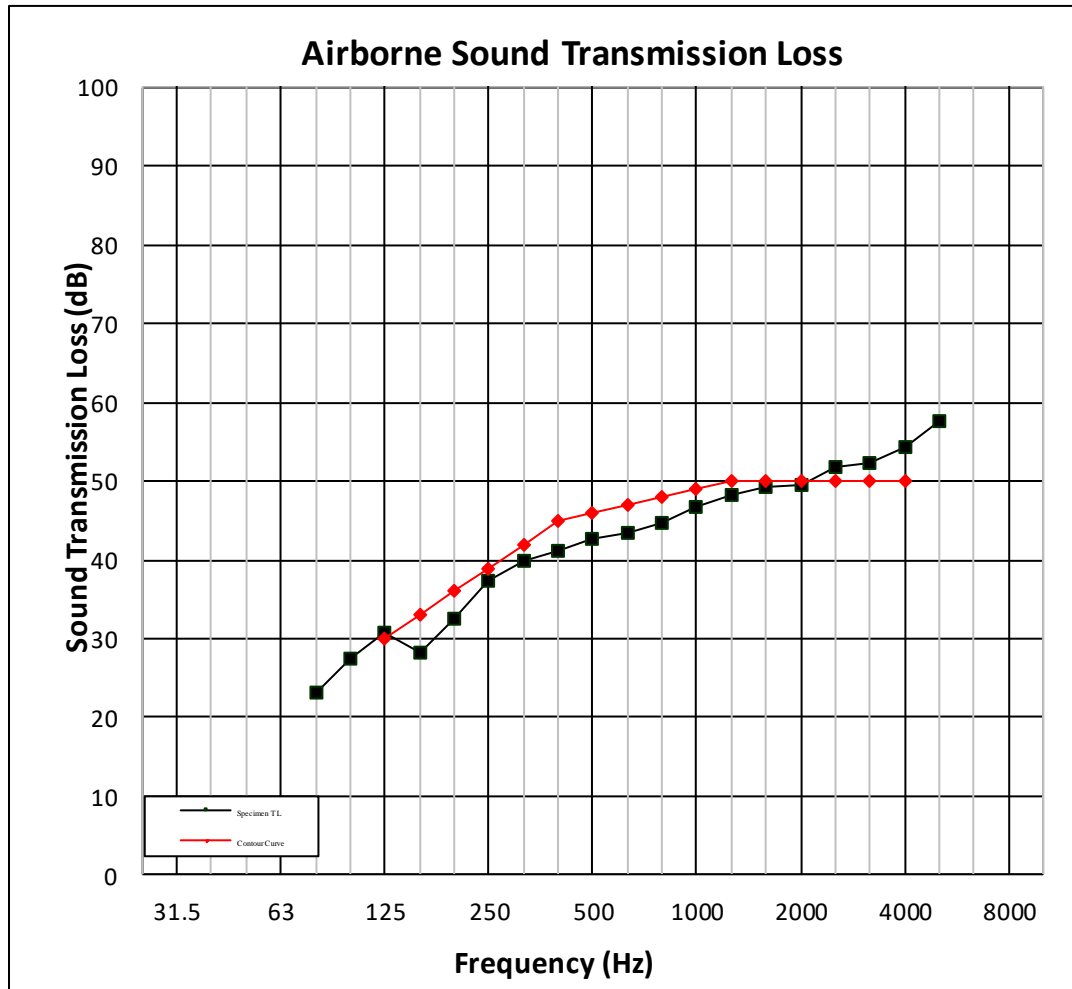
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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I1160.01 GRAPH



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SECTION 11

PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Specimen



Photo No. 2
Source Room View of Installed Specimen



Total Quality. Assured.

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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	02/23/18	N/A	Original Report Issue