

**ASTM E 90 SOUND TRANSMISSION LOSS
TEST REPORT**

Rendered to:

ALL SEASONS DOOR & WINDOW, MFG

SERIES/MODEL: A500

TYPE: Double Hung Window

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
97455.01	1" IG (5/16" laminated, 3/8" air space, 5/16" laminated), Glass temperature 75° F	37	30

Reference should be made to Architectural Testing, Inc. Report No. 97455.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

ALL SEASONS DOOR & WINDOW, MFG
28 Edgeboro Road
East Brunswick, New Jersey 08816

Report No: 97455.01-113-11
Test Date: 01/18/10
Report Date: 01/26/10
Expiration Date: 01/18/14

Test Sample Identification:

Series/Model: A500

Type: Double Hung Window

Overall Size: 47-1/4" by 59"

Glazing (Nominal Dimensions): 1" IG (5/16" laminated, 3/8" air space, 5/16" laminated),
Glass Temperature 75° F

Project Scope: Architectural Testing, Inc. was contracted by All Seasons Door & Window, MFG to conduct a sound transmission loss test on a Series/Model A500, double hung window. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report. The sample was provided by the client.

Test Methods: The acoustical test was conducted in accordance with the following:

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

ASTM E 413-04, Classification for Rating Sound Insulation.

ASTM E 1332-90 (Re-approved 2003), Standard Classification for Determination of Outdoor-Indoor Transmission Class.

ASTM E 2235-04, Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.

Test Equipment: The equipment used to conduct this test meets the requirements of ASTM E 90. The microphones were calibrated before conducting the sound transmission loss test. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation: Sound transmission loss tests were initially performed on a filler wall that was designed to test 48" by 72" and 72" by 48" test specimens. The filler wall achieved an STC rating of 68.

A filler wall reducing element was used to reduce the test opening size. The reducing element consisted of two separate 2x6 wood frames filled with concrete to reduce the test opening size to 47-3/4" wide by 59-1/2" high. A dense neoprene gasket was placed between the two wood and concrete frames. The window was placed on an isolation pad in the new test opening. Open cell foam was used to fill the cavity in the surrounding perimeter of the window. Duct seal was used to seal the perimeter of the window to the test opening on both sides. The interior side of the window frame, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. The vent was opened and closed at least five times prior to testing.

Test Procedure: The window was closed and locked for this test. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Frame Construction:

	Frame
Size	47-1/4" by 59"
Thickness	4-1/4"
Corners	Butted
Fasteners	Screws
Seal Method	Foam pads
Material	Aluminum
Reinforcement	N/A
Thermal Break Material	Urethane

N/A-Non Applicable

Sample Descriptions: (Continued)

Sash Construction:

	Bottom Sash	Top Sash
Size	44-5/8" by 29"	43" by 28-7/8"
Thickness	1-3/4"	1-3/4"
Corners	Butted	Butted
Fasteners	Screws	Screws
Seal Method	Sealant and foam pads	Sealant and foam pads
Material	Aluminum	Aluminum
Reinforcement	N/A	N/A
Thermal Break Material	Urethane	Urethane
Daylight Opening Size	41-3/4" by 24-3/4"	40" by 24-5/8"

Glazing:

Measured Overall Insulation Glass Unit Thickness	1.006"
Spacer Type	Stainless steel

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.120" - 0.060" - 0.121"	0.404"	0.118" - 0.060" - 0.123"
Muntin Pattern	N/A	N/A	N/A
Material	Laminated	Air*	Laminated
Laminate Material	PVB	N/A	PVB

Glazing Method	Interior
Glazing Material	Silicone
Glazing Bead Material	Aluminum with flexible wedge gasket

* - Stated per Client/Manufacturer, N/A-Non Applicable

Sample Descriptions: (Continued)

Components:

TYPE	QUANTITY	LOCATION
Weatherstrip		
1" by 3/4" Open cell foam	2 Rows	All stiles
1" by 3/4" Open cell foam	1 Row	Top sash meeting rail and bottom rail
5/16" Q-Lon foam-filled bulb seal	1 Row	Bottom sash meeting rail
1/4" Foam-filled bulb seal	1 Row	Top rail of top sash and all stiles
0.270" by 0.250" Polypile with center fin	2 Rows	Top sash meeting rail
0.270" by 0.290" Polypile with center fin	1 Row	Bottom sash meeting rail
0.270" by 0.250" Polypile with center fin	1 Row	All stiles
1-1/4" by 1" Q-Lon foam-filled pad	4	Upper corners of the bottom sash (at meeting rail) and lower corners of the top sash
1/2" by 1-1/4" Q-Lon foam-filled pad	2	Upper corners of the bottom sash (at meeting rail)
1-1/8" by 13/16" by 1/4" Thick open cell foam pad	2	Upper corners of the bottom sash (at meeting rail)
Hardware		
Spring loaded lock bar	2	Top and bottom rails
Spring balance	4	Jambs
Plastic tilt latch	4	Upper corners of both sash
Metal tilt bar	4	Lower corners of both sash
Drainage		
1-1/4" by 1/4" Weep slot with cover	2	Sill face

Comments: The weight of the sample was 156 lbs. The client did not supply drawings on the Series/Model A500, double hung window. The window was disassembled, and the components will be retained by Architectural Testing for four years. Photographs of the test specimen are included in Appendix C.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the sound transmission loss test results on the Series/Model A500, double hung window is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
97455.01	1" IG (5/16" laminated, 3/8" air space, 5/16" laminated), Glass temperature 75° F	37	30

Note: Due to the calculations and sample size, transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. On each data sheet listed in Appendix B, cells highlighted in green indicate transmission loss values affected in this way.

The complete test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. 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 may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

Bradley D. Hunt
Project Manager - Acoustical Testing

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

BDH:jmcs

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)



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Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	01/26/10	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Last Calibrated
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	004112	06/08/09*
Data Acquisition Unit	Agilent Technologies	34970A	Data Acquisition Unit	62211	07/29/09
Receive Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003246	08/18/09
Source Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003245	08/18/09
Receive Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003249	08/08/09
Source Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003248	08/18/09
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002816	02/10/09
Noise Source	Delta Electronics	SNG-1	Two, Uncorrelated "Pink" noise signals	Y002181	N/A
Equalizer	Rane	RPE228	Programmable EQ	Y002180	N/A
Power Amplifiers	Renkus-Heinz	P2000	Two, Amplifiers	Y002179 Y001779	N/A
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y001784 Y001785	N/A
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y002649 Y002650	N/A
Receiving Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002652	08/23/09
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	005066	08/18/09
Weather Station	Davis Instruments	6150C	Laboratory Barometric Pressure, Temperature, and Humidity	Y003257	03/26/09

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

Test Chamber:

	Volume	Description
Receiving Room	234 m ³ (8291.3 ft ³)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m ³ (7296.3 ft ³)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable

Appendix B
Complete Test Results



SOUND TRANSMISSION LOSS

ASTM E 90

Architectural Testing

ATI No.	97455.01	Date	01/18/10
Client	All Seasons Door & Window, MFG		
Specimen	Series/Model: A-500, double hung window with 1" IG (5/16" laminated, 3/8" air space, 5/16" laminated), Glass temperature 75°F		
Specimen Area	19.36 Sq Ft		
Filler Area	120.64 Sq Ft		
Operator	Bradlay Hunt		


	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	73.2	71.7	75.2	72.7	74.0	73.2
RH %	49.1	50.7	46.9	49.2	43.6	49.0

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	40.8	48.9	85.1	60.0	36.0	22	2.16	0	7.0
100	40.2	56.3	88.6	57.6	41.3	27	2.40	0	7.0
125	40.6	48.8	92.2	63.4	47.3	25	1.71	0	14.6
160	42.5	50.0	94.7	64.0	49.5	27	1.33	0	15.0
200	41.1	55.9	98.9	75.4	52.9	19	1.15	8	26.1
250	39.8	56.6	99.7	63.7	56.1	31	0.88	0	16.8
315	39.2	60.2	98.1	62.1	57.7	31	0.97	2	18.6
400	37.9	58.4	97.5	58.0	62.8	35	0.56	1	20.1
500	38.6	62.8	98.5	55.1	67.1	38	0.39	0	20.8
630	35.3	59.5	101.3	56.6	71.0	40	0.38	0	23.2
800	36.6	60.1	100.9	55.6	73.1	40	0.27	0	24.8
1000	32.8	64.6	100.6	54.8	76.4	41	0.42	0	27.9
1250	32.7	69.3	104.0	56.8	78.3	42	0.36	0	28.7
1600	29.6	74.0	110.1	62.9	83.2	41	0.40	0	33.9
2000	21.2	79.4	105.9	58.4	84.2	41	0.15	0	34.9
2500	13.5	89.2	104.4	56.1	85.7	42	0.23	0	36.1
3150	12.7	105.6	105.1	53.9	86.3	44	0.35	0	34.5
4000	10.5	126.6	103.9	49.8	87.2	46	0.37	0	33.3
5000	8.8	166.8	102.2	45.0	85.6	48	0.45	0	29.8

STC Rating = 37 (Sound Transmission Class)
Deficiencies = 11 (Number of deficiencies versus contour curve)
OITC Rating = 30 (Outdoor/Indoor Transmission Class)

Notes:

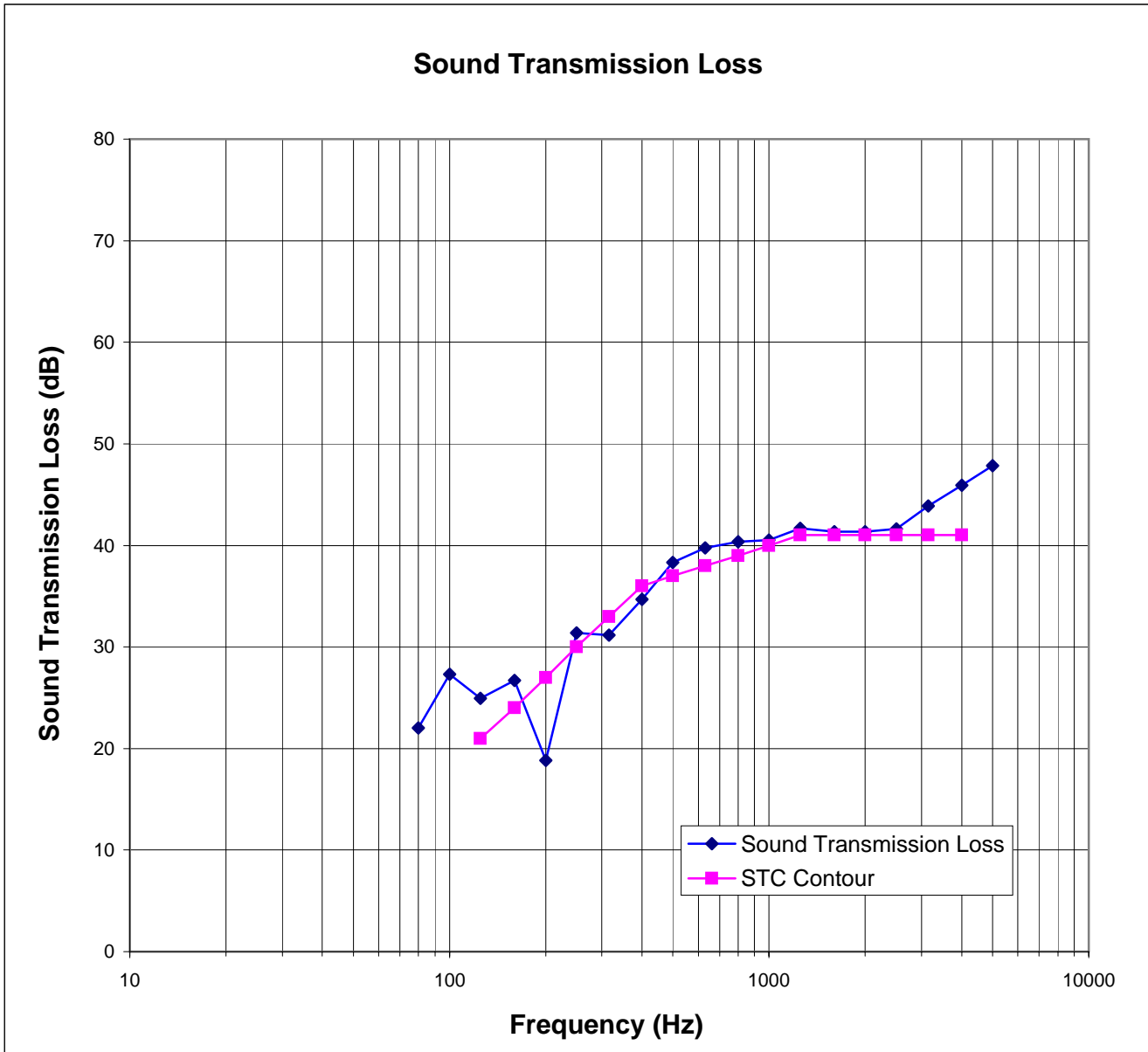
- 1) The acoustical chambers are qualified for measurements down to 80 hertz. Data reported below 80 hertz is for reference only.
- 2) Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. These cells are highlighted red.
- 3) Transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. These cells are highlighted green.
- 4) Receive Room levels less than 5dB above the Background levels are highlighted in yellow.

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Architectural Testing

ATI No. 97455.01 Date 01/18/10
Client All Seasons Door & Window, MFG
Specimen Series/Model: A-500, double hung window with 1" IG (5/16" laminated, 3/8" air space, 5/16" laminated), Glass temperature 75°F
Specimen Area 19.36 Sq Ft
Filler Area 120.64 Sq Ft
Operator Bradlay Hunt



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Appendix C

Photographs



Receive Room View of Installed Specimen



Source Room View of Installed Specimen