



Architectural Testing

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

**Rendered to:**

**MI WINDOWS AND DOORS, INC.**

**SERIES/MODEL: 1650**

**TYPE: Double Hung Window**

**Summary of Test Results**



Architectural Testing

## ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC.  
P.O. Box 370  
650 West Market Street  
Gratz, Pennsylvania 17030-0370

Report No: 82672.01-113-11  
Test Date: 04/25/08  
Report Date: 05/13/08  
Expiration Date: 04/25/12

### **Test Sample Identification:**

**Series/Model:** 1650

**Type:** Double Hung Window

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

**Glazing Option A (Nominal Dimensions):** 7/8" IG (1/8" Annealed, 5/8" Air Space,  
1/8" Annealed)

**Glazing Option B (Nominal Dimensions):** 7/8" IG (1/8" Annealed, 1/4" Air Space,  
1/8" Annealed, 1/4" Air Space, 1/8" annealed)

**Glazing Option C (Nominal Dimensions):** 27/32" IG (3/32" Annealed, 9/32" Air Space,  
3/32" Annealed, 9/32" Air Space,  
3/32" Annealed)

**Project Scope:** Architectural Testing, Inc. was contracted by MI Windows and Doors, Inc. to conduct sound transmission loss tests on a Series/Model 1650, 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.



## Architectural Testing

82672.01-113-11

**Sample Descriptions:**

**Frame Construction:**

		<b>Frame</b>
<b>Size</b>		47-1/4" by 59"
<b>Thickness</b>		4"
<b>Corners</b>		Mitered
	Fasteners	Welds
	Seal Method	None
<b>Material</b>		Vinyl
	Reinforcement	N/A
	Thermal Break Material	N/A

**Sash Construction:**

		<b>Bottom Sash</b>	<b>Top Sash</b>
<b>Size</b>		43-7/8" by 28-3/4"	43-1/8" by 28"
<b>Thickness</b>		1-1/4"	1-1/4"
<b>Corners</b>		Mitered	Mitered
	Fasteners	Welds	Welds

**Sample Descriptions: (Continued)**

**Glazing Option A:**

<b>Measured Overall Insulation Glass Unit Thickness</b>		0.873"
<b>Spacer Type</b>	Steel U Shaped	

	<b>Exterior Sheet</b>	<b>Gap</b>	<b>Interior Sheet</b>
<b>Measured Thickness</b>	0.116"	0.641"	0.116"
<b>Muntin Pattern</b>	N/A	N/A	N/A
<b>Material</b>	Annealed	Air*	Annealed
<b>Laminate Material</b>	N/A	N/A	N/A

<b>Glazing Method</b>	Exterior
<b>Glazing Material</b>	Silicone
<b>Glazing Bead Material</b>	Vinyl

**Glazing Option B:**

<b>Measured Overall Insulation Glass Unit Thickness</b>		0.841"
<b>Spacer Type</b>	Aluminum	

	<b>Exterior Sheet</b>	<b>Gap</b>	<b>Middle Sheet</b>	<b>Gap</b>	<b>Interior Sheet</b>
<b>Measured Thickness</b>	0.116"	0.245"	0.116"	0.248"	0.116"
<b>Muntin Pattern</b>	N/A	N/A	N/A	N/A	N/A
<b>Material</b>	Annealed	Air*	Annealed	Air*	Annealed
<b>Laminate Material</b>	N/A	N/A	N/A	N/A	N/A

<b>Glazing Method</b>	Exterior
<b>Glazing Material</b>	Silicone
<b>Glazing Bead Material</b>	Vinyl

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

**Sample Descriptions:** (Continued)

**Glazing Option C:**

<b>Measured Overall Insulation Glass Unit Thickness</b>	0.835"
<b>Spacer Type</b>	Aluminum

	<b>Exterior Sheet</b>	<b>Gap</b>	<b>Middle Sheet</b>	<b>Gap</b>	<b>Interior Sheet</b>
<b>Measured Thickness</b>	0.090"	0.280"	0.090"	0.285"	0.090"
<b>Muntin Pattern</b>	N/A	N/A	N/A	N/A	N/A
<b>Material</b>	Annealed	Air*	Annealed	Air*	Annealed
<b>Laminate Material</b>	N/A	N/A	N/A	N/A	N/A

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**Glazing Method**

Exterior

**Sample Descriptions:** (Continued)

**Components:**

TYPE	QUANTITY	LOCATION
<b>Weatherstrip</b>		
0.187" by 0.150" Polypile with center fin	1 Row	Exterior meeting rail
0.187" by 250" Polypile with center fin	2 Rows	Stiles
0.187" by 250" Polypile with center fin	1 Row	Interior meeting rail
5/16" Diameter foam lined hollow bulb gasket	2 Rows	Bottom rail
1" by 1" Polypile pad	2	Corners of interior sash at meeting rail
<b>Hardware</b>		

**Comments:** The total weight of the sample was for glazing option A was 70 lbs. The total weight of the sample for glazing option B was 90 lbs. The total weight of the sample for glazing option C was 70 lbs. At the clients request no drawings will be included with this test report. The window was disassembled, and the components will be retained by ATI 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 1650, double hung window is listed below.

<b>Summary of Test Results</b>			
<b>ATI Data File No.</b>	<b>Glazing Option (Nominal Dimensions)</b>	<b>STC</b>	<b>OITC</b>
82672.01A	7/8" IG (1/8" annealed, 5/8" air space, 1/8" annealed)	25	20
82672.01B	7/8" IG (1/8" annealed, 1/4" air space, 1/8" annealed, 1/4" air space, 1/8" annealed)	30	26
82672.01C	27/32" IG (3/32" annealed, 9/32" air space, 3/32" annealed, 9/32" air space, 3/32" annealed)	28	23

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, Inc. 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(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

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Brandon C. Ward  
Technician - Acoustical Testing

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Todd D. Kister  
Laboratory Supervisor - Acoustical Testing

BCW:crc

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

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (6)
- Appendix-C: Photographs (1)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	05/13/08	N/A	Original Report Issue

## Appendix A

### Instrumentation:

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Description</b>	<b>ATI Number</b>
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	Y002929
Receive Room Microphone	G.R.A.S.	40AR	1/2", pressure type, condenser microphone	Y003246
Source Room Microphone	G.R.A.S.	40AR	1/2", pressure type, condenser microphone	Y003245
Receive Room Preamp	G.R.A.S.	26AK	1/2" preamplifier	Y003249
Source Room Preamp	G.R.A.S.	26AK	1/2" preamplifier	Y003248
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002816



## Architectural Testing



## SOUND TRANSMISSION LOSS

ASTM E90

### Architectural Testing

<b>ATI No.</b>	82672.01A	<b>Date</b>	04/25/08
<b>Client</b>	MI Windows and Doors, Inc.		
<b>Specimen</b>	Series/Model: 1650, double hung window with 7/8" IG (1/8" annealed, 5/8" air space, 1/8" annealed)		
<b>Specimen Area</b>	19.36 Sq Ft		
<b>Filler Area</b>	120.64 Sq Ft		
<b>Operator</b>	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	75.1	75.4	74.8	75.2	72.8	75.1
RH %	47.8	47.6	43.5	47.6	43.0	46.6

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	39.8	64.3	86.2	66.1	36.1	15	4.28	0	13.2
100	38.9	60.8	88.2	65.9	39.1	18	4.10	0	13.7
125	39.1	49.6	93.8	68.2	48.6	21	2.90	0	19.2
160	43.0	51.2	94.6	68.7	47.2	22	0.42	0	17.6
200	41.9	54.9	100.0	79.1	49.1	16	0.46	0	24.8
250	37.1	55.0	100.8	86.7	52.5	10	1.93	8	34.9
315	36.3	56.2	99.8	78.5	54.2	17	1.34	4	29.6
400	34.8	59.5	99.1	73.9	58.1	20	1.08	4	29.8
500	32.9	59.3	100.2	69.4	61.0	26	0.59	0	27.1
630	27.5	58.5	102.5	70.4	63.8	27	0.68	0	28.5
800	28.6	60.4	102.9	66.7	66.3	31	0.25	0	27.1
1000	26.3	64.4	102.4	65.0	72.3	32	0.54	0	32.2
1250	25.8	69.1	105.9	65.5	80.0	35	0.27	0	37.2
1600	21.9	71.7	111.7	70.4	81.5	36	0.28	0	38.0
2000	15.2	75.8	107.7	64.7	82.1	37	0.40	0	37.1
2500	7.0	85.8	106.1	62.0	77.1	38	0.36	0	31.6
3150	7.6	102.7	107.1	63.4	79.2	37	0.24	0	34.7
4000	6.6	123.0	105.9	68.1	80.0	30	0.25	0	42.3
5000	6.9	161.4	104.0	64.7	79.5	30	0.38	0	41.4

**STC Rating = 25**      *(Sound Transmission Class)*  
**Deficiencies = 16**      *(Number of deficiencies versus contour curve)*  
**OITC Rating = 20**      *(Outdoor/Indoor Transmission Class)*

**Note:**    *The acoustical chambers are qualified for measurements down to 80 hertz.  
 Data reported below 80 hertz is for reference only.*

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<b>ATI No.</b>	82672.01A	<b>Date</b>
<b>Client</b>	MI Windows and Doors, Inc.	
<b>Specimen</b>		
<b>Specimen Area</b>	19.36 Sq Ft	
<b>Filler Area</b>	120.64 Sq Ft	
<b>Operator</b>	Brandon C. Ward	

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<b>ATI No.</b>	82672.01B	<b>Date</b>
<b>Client</b>	MI Windows and Doors, Inc.	
<b>Specimen</b>		
<b>Specimen Area</b>	19.36 Sq Ft	
<b>Filler Area</b>	120.64 Sq Ft	
<b>Operator</b>	Brandon C. Ward	

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# SOUND TRANSMISSION LOSS

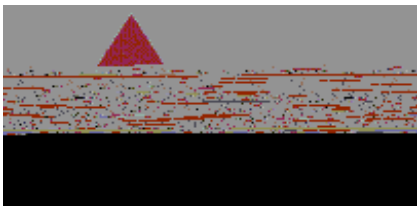
ASTM E90

**ATI No.** 82672.01C **Date**  
**Client** MI Windows and Doors, Inc.  
**Specimen**

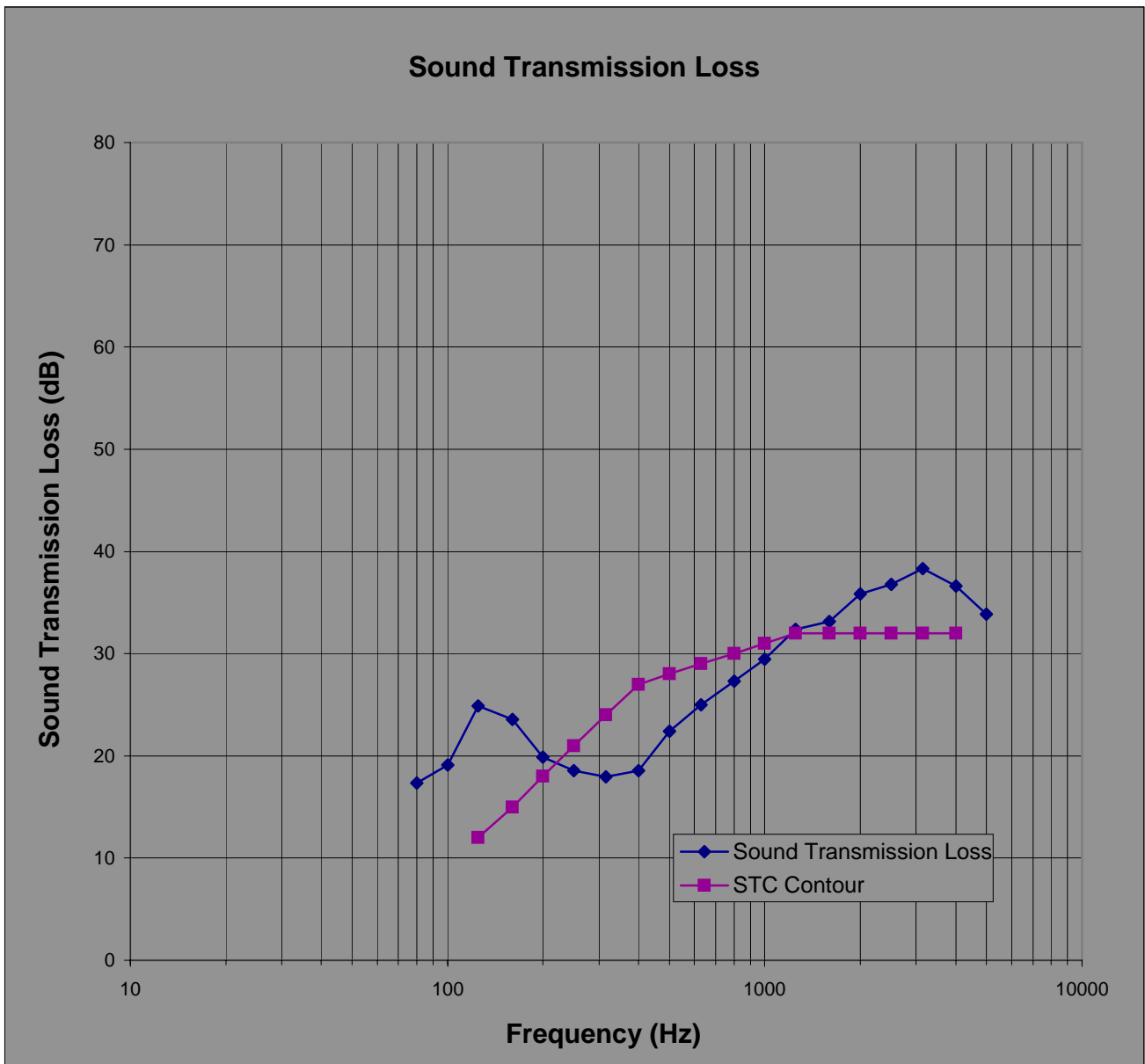
**Specimen Area** 19.36 Sq Ft  
**Filler Area** 120.64 Sq Ft  
**Operator** Brandon C. Ward

	<b>Bkgrd</b>	<b>Absorp</b>	<b>Source</b>	<b>Receive</b>	<b>Filler</b>	<b>Specimen</b>
<b>Temp F</b>	75.4	75.4	74.7	75.3	72.8	75.2
<b>RH %</b>	39.0	39.5	43.8	39.6	43.0	40.5

<b>Freq</b>	<b>Bkgrd SPL</b>	<b>Absorp (Sabines)</b>	<b>Source SPL</b>	<b>Receive SPL</b>	<b>Filler Specimen</b>	<b>Specimen 95</b>	<b>95%</b>	<b>No. of</b>	<b>Trans</b>
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**ATI No.** 82672.01C **Date** 04/25/08  
**Client** MI Windows and Doors, Inc.  
**Specimen** Series/Model: 1650, double hung window with 27/32" IG (3/32" annealed, 9/32" air space, 3/32" annealed, 9/32" air space, 3/32" annealed)  
**Specimen Area** 19.36 Sq Ft  
**Filler Area** 120.64 Sq Ft  
**Operator** Brandon C. Ward



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**Appendix C  
Photographs**



**Sample Installed in Test Chamber**