

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

**Rendered to:**

**THERMA-TRU DOORS**

**SERIES/MODEL: Slimline**

**TYPE: 8/0 Sliding Patio Door with Impact Glass**

<b>Summary of Test Results</b>				
<b>ATI Data File No.</b>	<b>Glazing (Nominal Dimensions)</b>	<b>STC</b>	<b>OITC</b>	<b>EWNR</b>
74391.01	15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) glass temperature 75° F	30	27	32
74391.01A*	Inoperable condition 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) inoperable test, duct taped both sides of both panels	35	28	34

*\* This test was not performed in accordance with ASTM E 90, the door system was not operable.*

Reference should be made to ATI Report No. 74391.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

## ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

THERMA-TRU DOORS  
118 Industrial Drive  
Edgerton, Ohio 43517

Report No: 74391.01-113-11  
Revision 1: 12/04/07  
Test Date: 08/20/07  
Report Date: 11/28/07  
Expiration Date: 08/20/11

### **Test Sample Identification:**

**Series/Model:** Slimline

**Type:** 8/0 Sliding Patio Door with Impact Glass

**Overall Size:** 71-5/8" by 95-9/16"

**Glazing (Nominal Dimensions):** 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior)

**Project Scope:** Architectural Testing, Inc. was contracted by Therma-Tru Doors to conduct sound transmission loss tests on a Series/Model Slimline, 8/0 sliding patio door with impact glass. 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 tests were conducted in accordance with the following:

ASTM E 90-04, *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*.

\* For test number 74391.01A, the following deviation from the standard was performed: The door was tested in a sealed condition and was not operable during the test.

**Test Equipment:** The equipment used to conduct these tests meets the requirements of ASTM E 90. The microphones were calibrated before conducting sound transmission loss tests. 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 96" by 96" and 96" by 120" test specimens. The filler wall achieved an STC rating of 69.

A filler wall reducing element was used to reduce the test opening size to 72-1/8" wide by 96-1/16" high. The reducing element consisted of a double 2x4 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-11 fiberglass insulation. The sliding glass door was placed on a foam isolation pad in the new test opening. Duct seal was used to seal the perimeter of the test specimen to the test opening on both sides. The interior side of the door 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 panel was opened and closed at least five times prior to testing.

**Test Procedure:** The 8/0 sliding patio door with impact glass 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:**

		<b>Frame</b>
<b>Size</b>		71-5/8" by 95-9-/16"
<b>Thickness</b>		5-3/4"
<b>Corners</b>		Coped
	Fasteners	Screws
	Seal Method	Foam pads / Sealant
<b>Material</b>		Fiberglass
	Reinforcement	Composite
	Thermal Break Material	N/A

Sample Descriptions: (Continued)

Panel Construction:

	Active Interior Panel	Fixed Exterior Panel
<b>Size</b>	35-9/16" by 92-3/16"	35-9/16" by 92-3/16"
<b>Thickness</b>	1-3/4"	1-3/4"
<b>Corners</b>	Mitered	Mitered
Fasteners	Screws / Keyed	Screws / Keyed
Seal Method	Sealant	Sealant
<b>Material</b>	Fiberglass	Fiberglass
Reinforcement	None	None
Thermal Break Material	N/A	N/A
<b>Daylight Opening Size</b>	30-1/8" by 86-7/8"	30-1/8" by 86-7/8"

Glazing:

<b>Measured Overall Insulation Glass Unit Thickness</b>	0.961"
<b>Spacer Type</b>	Aluminum

	Exterior Sheet	Gap	Interior Sheet
<b>Measured Thickness</b>	0.122" - 0.090" - 0.122"	0.505"	0.122"
<b>Muntin Pattern</b>	N/A	N/A	N/A
<b>Material</b>	Laminated	Air*	Tempered
<b>Laminate Material</b>	PVB	N/A	N/A

<b>Glazing Method</b>	Interior
<b>Glazing Material</b>	Butyl tape
<b>Glazing Bead Material</b>	Fiberglass

\* Stated per client/manufacture, N/A-non applicable

**Sample Descriptions:** (Continued)

**Components:**

	TYPE	QUANTITY	LOCATION
<b>Weatherstrip</b>			
	0.187" by 0.210" Polypile with center fin	4 Rows	Frame perimeter
	0.187" by 0.150" Polypile with center fin	1 Row	Both meeting rails
<b>Hardware</b>			
	Wheel assembly set	2	Active bottom rails
	Handle with dual point lock	1	Lock stile
	Keeper	2	Lock jamb
<b>Drainage</b>			
	1" by 5/16" Weepslot with cover	3	Sill
	1" by 5/16" Weepslot	2	Sill

**Comments:** The fixed panel was secured by screws in the head and sill. The weight of the sample was 332 lbs. The client did not supply drawings on the Series/Model Slimline, 8/0 sliding patio door with impact glass. The 8/0 sliding patio door with impact glass was disassembled, and the components will be retained by ATI for four years.

**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 Slimline, 8/0 sliding patio door with impact glass is listed below.

ATI Data File No.	Glazing Description (Nominal Dimensions)	STC	OITC	EWNR
74391.01	15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) glass temperature 75° F	30	27	32
74391.01A*	Inoperable Condition 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) inoperable test, duct taped both sides of both panels	35	28	34

\* This test was not performed in accordance with ASTM E 90, the door system was not operable.

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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Kurt A. Golden  
Senior Technician - Acoustical Testing

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Todd D. Kister  
Laboratory Supervisor - Acoustical Testing

KAG:alb

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

Appendix-A: Equipment description (1)

Appendix-B: Complete test results (6)

 <p>NVLAP LAB CODE 200361</p>	<p>Architectural Testing, Inc is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program for the specific test methods listed under lab code 200361. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.</p>
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### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	09/27/07	N/A	Original Report Issue
1	12/04/07	Cover page, summary page 2, 4	Changed type to 8/0 Sliding Patio Door with impact glass and added the EWNR data and data sheet  Added inoperable SPL test results to results table, and data sheet

## Appendix A

### Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	Y002929
Receive Room Microphone	ACO Pacific	7047	1/2", pressure type, condenser microphone	Y002817
Source Room Microphone	ACO Pacific	7047	1/2", pressure type, condenser microphone	Y002750
Receive Room Preamp	ACO Pacific	4012	1/2" preamplifier	Y002892
Source Room Preamp	ACO Pacific	4012	1/2" preamplifier	Y003240
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002186
Noise Source	Delta Electronics	SNG-1	Two, non-coherelated "Pink" noise signals	Y002181
Equalizer	Rane	RPE228	Programmable EQ	Y002180
Power Amplifiers	Renkus-Heinz	P2000	2 - Amplifiers	Y002179 Y001779
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	2 - Loudspeakers	Y001784 Y001785
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	2 - Loudspeakers	Y002649 Y002650

### Test Chamber:

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

	Maximum Size	Description
TL Test Opening	14 ft wide by 10 ft high	Vibration break between source and receive rooms.

**Appendix B**  
**Complete Test Results**



## SOUND TRANSMISSION LOSS and EXTERIOR WALL NOISE REDUCTION

ASTM E90

### Architectural Testing

<b>ATI No.</b>	74391.01	<b>Date</b>	08/20/07
<b>Client</b>	Therma-Tru Doors		
<b>Specimen</b>	Series/Model: Slimline, 8/0 Sliding Patio Door with Impact Glass with 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) Glass Temperature 75°F		
<b>Specimen Area</b>	47.53 Sq Ft		
<b>Filler Area</b>	92.47 Sq Ft		
<b>Operator</b>	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
<b>Temp F</b>	78.4	79.2	76.2	78.9	69.4	78.2
<b>RH %</b>	67.7	67.3	47.9	67.7	64.8	62.6

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	42.8	49.2	85.4	62.0	42.8	23	3.74	0	16.8
100	42.6	51.3	88.0	62.6	45.4	25	3.47	0	17.4
125	41.2	53.5	93.5	66.8	46.6	26	3.03	0	17.5
160	44.4	56.2	94.8	70.9	45.8	23	1.52	0	19.8
200	43.9	56.3	99.8	78.4	50.5	21	1.00	0	27.0
250	38.3	64.6	100.3	79.1	53.4	20	1.30	3	30.6
315	37.5	67.4	98.8	73.4	58.9	24	1.03	2	32.1
400	34.5	68.0	98.9	69.3	63.8	28	0.85	1	32.9
500	32.4	72.1	99.5	69.3	67.3	28	0.94	2	36.0
630	25.7	65.2	101.5	69.6	71.1	31	0.42	0	37.7
800	26.8	67.8	102.0	69.7	74.1	31	0.25	1	40.5
1000	24.9	74.3	101.1	69.7	76.8	30	0.56	3	44.4
1250	24.5	80.7	104.9	73.2	79.9	29	0.43	5	47.6
1600	20.2	81.6	111.0	78.7	81.6	30	0.25	4	48.7
2000	13.5	85.1	106.9	72.7	76.0	32	0.31	2	41.5
2500	6.8	90.1	105.7	68.3	74.6	35	0.19	0	37.1
3150	7.9	102.9	106.7	66.3	82.0	37	0.51	0	42.1
4000	7.1	118.8	105.7	64.3	87.2	37	0.34	0	47.0
5000	7.6	144.4	104.0	57.5	89.7	42	0.25	0	45.2

<b>STC Rating =</b>	<b>30</b>	<i>(Sound Transmission Class)</i>
<b>Deficiencies =</b>	<b>23</b>	<i>(Number of deficiencies versus contour curve)</i>
<b>OITC Rating =</b>	<b>27</b>	<i>(Outdoor/Indoor Transmission Class)</i>
<b>EWNR Rating=</b>	<b>32</b>	<i>(Exterior Wall Noise Reduction)</i>

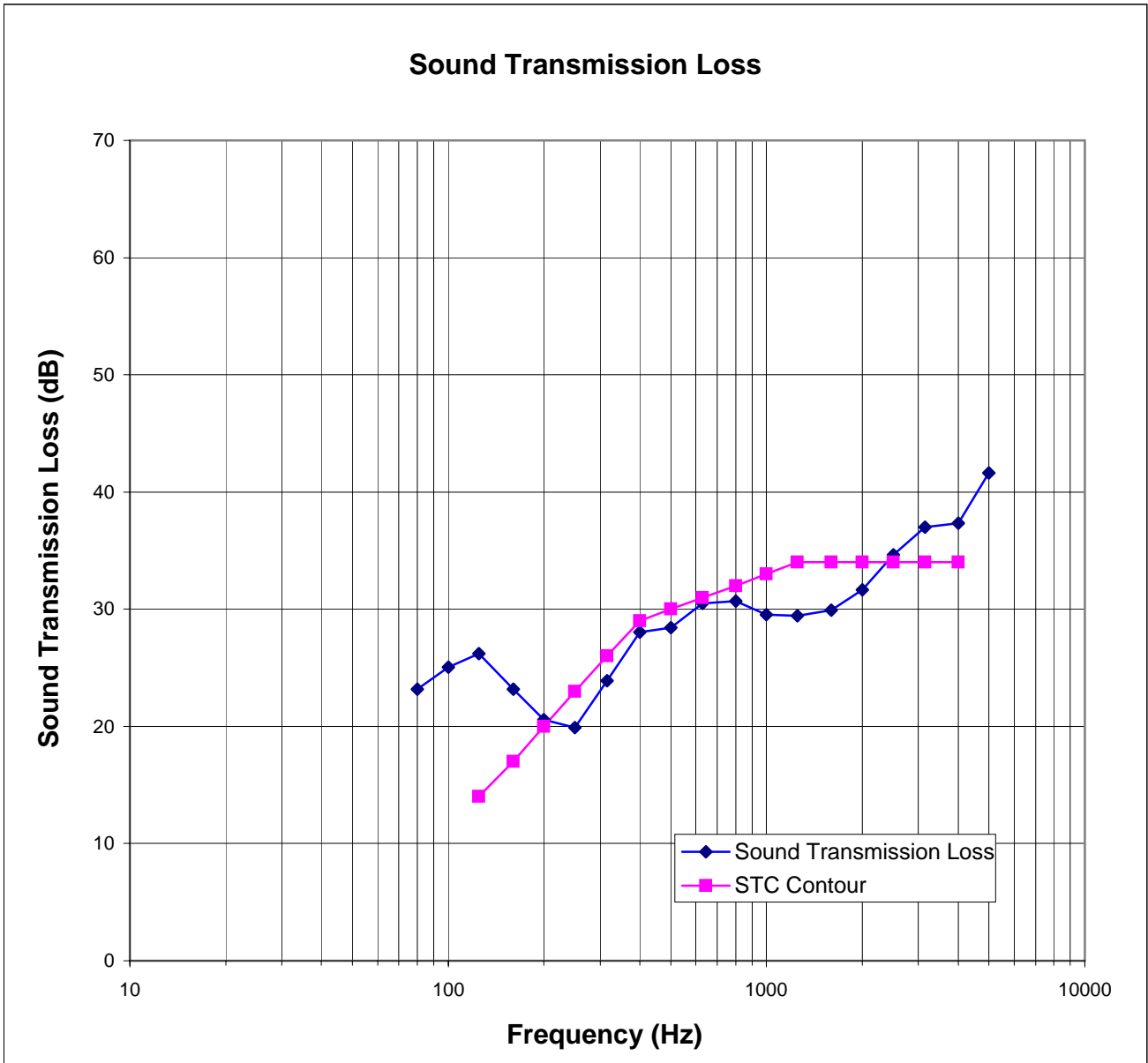
**Note:** The acoustical chambers are qualified for measurements down to 80 hertz.  
Data reported below 80 hertz is for reference only.

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### Architectural Testing

ATI No. 74391.01 Date 08/20/07  
Client Therma-Tru Doors  
Specimen Series/Model: Slimline, 8/0 Sliding Patio Door with Impact Glass with 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) Glass Temperature 75°F  
Specimen Area 47.53 Sq Ft  
Filler Area 92.47 Sq Ft  
Operator Brandon C. Ward



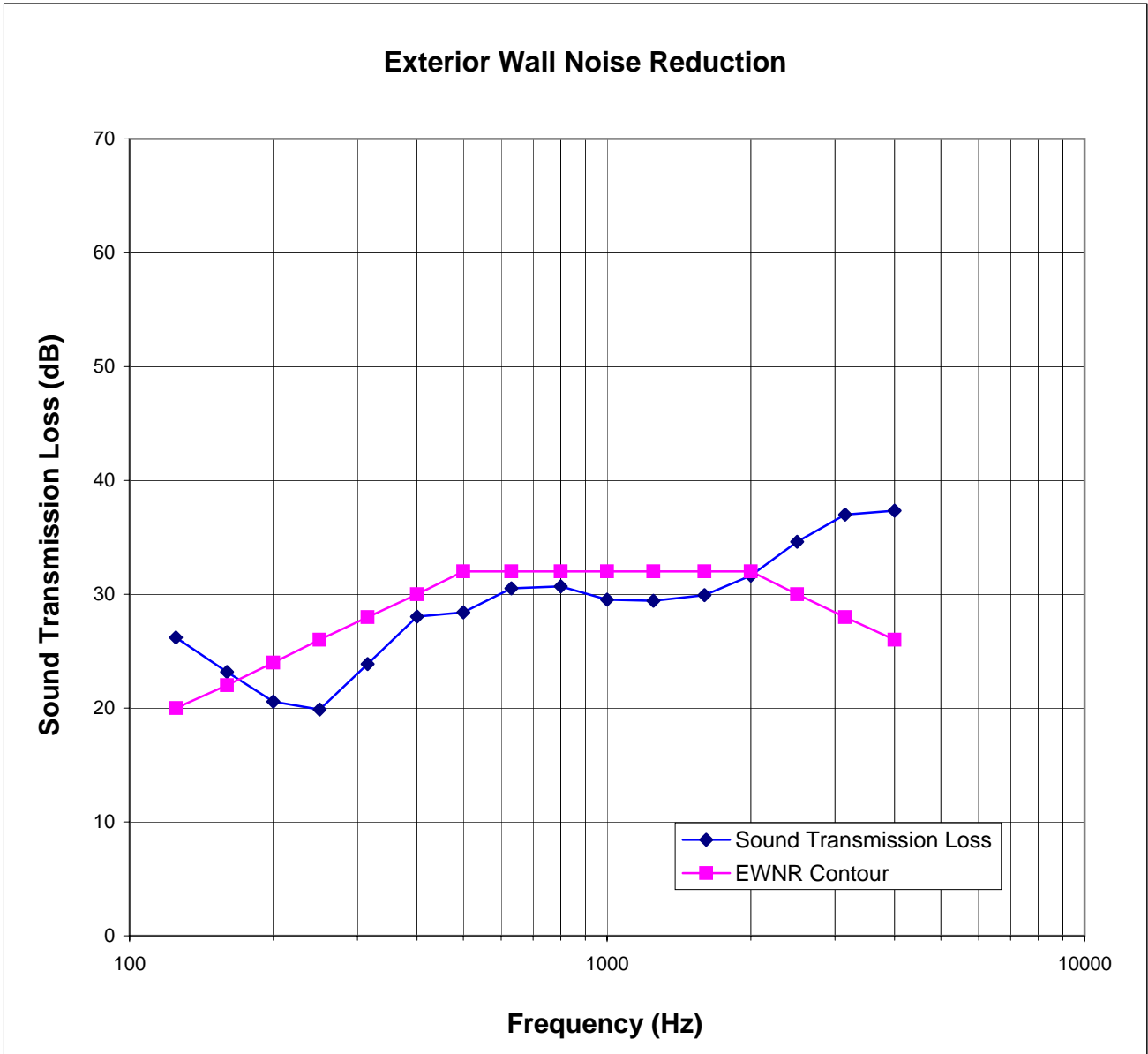
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### Architectural Testing

ATI No. 74391.01 Date 08/20/07  
Client Therma-Tru Doors  
Specimen Series/Model: Slimline, 8/0 Sliding Patio Door with Impact Glass with 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) Glass Temperature 75°F

Specimen Area 47.53 Sq Ft  
Filler Area 92.47 Sq Ft  
Operator Brandon C. Ward



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## SOUND TRANSMISSION LOSS and EXTERIOR WALL NOISE REDUCTION

ASTM E90

### Architectural Testing

<b>ATI No.</b>	74391.01A	<b>Date</b>	09/19/07
<b>Client</b>	Therma-Tru Doors		
<b>Specimen</b>	Series/Model: Slimline 8/0 Sliding Patio Door with Impact Glass with 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) both sides duct taped SPL test		
<b>Specimen Area</b>	47.53 Sq Ft		
<b>Filler Area</b>	92.47 Sq Ft		
<b>Operator</b>	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
<b>Temp F</b>	72.5	73.3	70.9	73.7	69.4	72.6
<b>RH %</b>	67.7	66.4	51.1	67.6	64.8	63.2

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	38.9	49.2	85.4	62.2	42.8	23	4.39	0	16.9
100	41.1	47.7	88.0	62.6	45.4	25	3.25	0	17.1
125	39.3	49.5	93.7	66.2	46.6	27	2.83	0	16.3
160	41.5	51.8	94.8	70.3	45.8	24	1.28	0	18.7
200	43.4	60.2	99.8	77.8	50.5	21	0.72	4	26.7
250	39.4	62.2	100.3	78.6	53.4	21	1.29	7	29.9
315	37.8	67.4	99.2	74.0	58.9	24	0.90	7	32.3
400	36.7	66.7	98.8	69.4	63.8	28	0.71	6	33.0
500	35.7	65.0	100.3	68.7	67.3	30	0.71	5	34.1
630	29.3	65.9	102.5	67.3	71.1	34	0.43	2	34.4
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2000	15.9	80.2	107.3	63.1	76.0	42	0.22	0	31.2
2500	7.6	90.1	105.9	60.1	74.6	43	0.25	0	28.7
3150	8.3	102.3	107.0	59.3	82.0	44	0.38	0	34.8
4000	7.4	118.5	105.7	56.4	87.2	45	0.22	0	39.0
5000	7.8	147.9	104.1	51.3	89.7	48	0.31	0	38.9

<b>STC Rating =</b>	<b>35</b>	<i>(Sound Transmission Class)</i>
<b>Deficiencies =</b>	<b>31</b>	<i>(Number of deficiencies versus contour curve)</i>
<b>OITC Rating =</b>	<b>28</b>	<i>(Outdoor/Indoor Transmission Class)</i>
<b>EWNR Rating=</b>	<b>34</b>	<i>(Exterior Wall Noise Reduction)</i>

**Note:** The acoustical chambers are qualified for measurements down to 80 hertz.  
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### Architectural Testing

ATI No. 74391.01A

Date 09/19/07

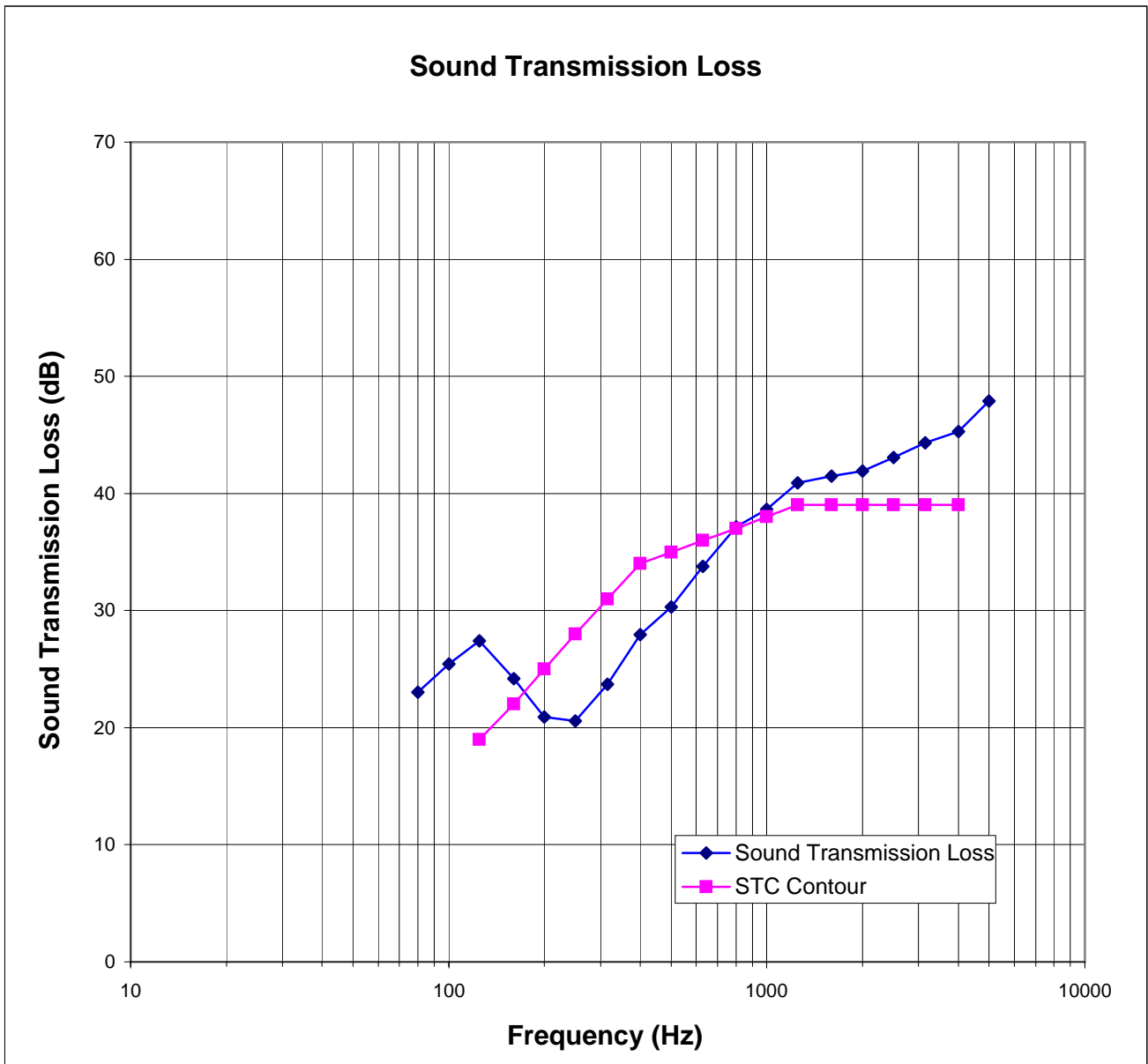
Client Therma-Tru Doors

Specimen Series/Model: Slimline 8/0 Sliding Patio Door with Impact Glass with 15/16" IG (5/16" laminated exterior, 1/2" air space, 1/8" tempered interior) both sides duct taped SPL test

Specimen Area 47.53 Sq Ft

Filler Area 92.47 Sq Ft

Operator Brandon C. Ward



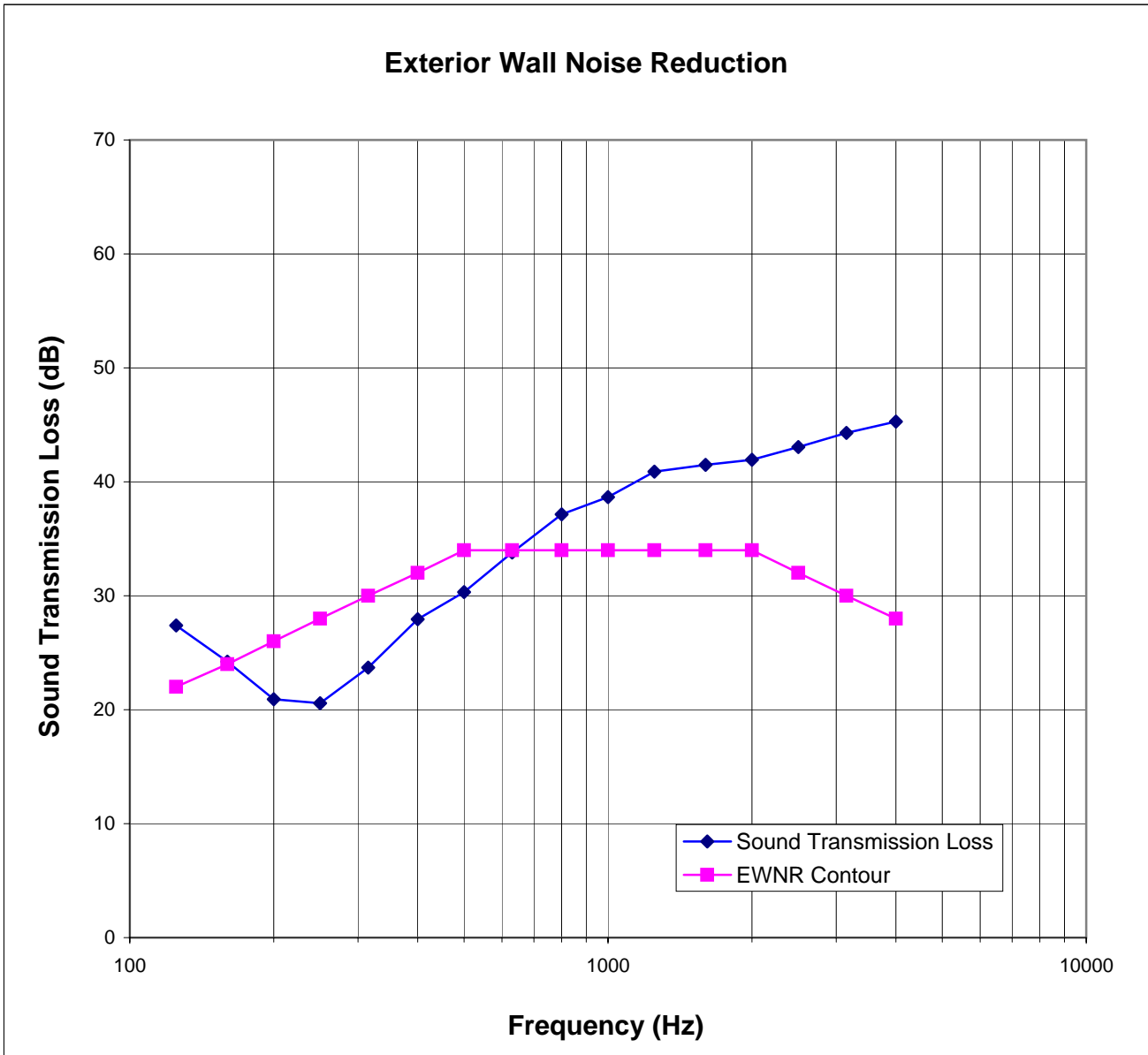
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### Architectural Testing

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