



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

Rendered to:

MASONITE INNOVATION CENTER

SERIES/MODEL: Rediframe

TYPE: Side-Hinged Single Door

Summary of Test Results			
Data File No.	Test Description	STC	OITC
E2104.01A	Inoperable Test: Sealed with duct seal on both sides	37	32
E2104.01B	Operable Test: Zero International Seals, 8150S one row on head and jambs, 369AA mortised door bottom.	33	30
E2104.01C	Operable Test: Zero International Seals, 8150S one row on head and jambs, 188S one row head and jambs, 369AA mortised door bottom.	34	30
E2104.01D	Operable Test: Zero International Seals, 8150S one row on head and jambs, 188S one row head and jambs, 369AA mortised door bottom, 564A threshold.	34	30

Reference should be made to Architectural Testing, Inc. Report No. E2104.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.



ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

MASONITE INNOVATION CENTER
1955 Powis Road
West Chicago, Illinois 60185

Report No: E2104.02-113-11
Test Date: 01/13/15
Report Date: 02/26/15

Test Sample Identification:

Series/Model: Rediframe

Type: Side-Hinged Single Door

Overall Leaf Size: 35-3/4" by 83-5/8"

Project Scope: Architectural Testing, Inc. was contracted to conduct sound transmission loss tests on a Series/Model Rediframe, side-hinged single door system. 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 90-09, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.*

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 (Reapproved 2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.*

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 door specimens. The filler wall achieved an STC rating of 68.

Sample Installation: (Continued)

The specimen plug was removed from the filler wall assembly. The door system was placed on a foam isolation pad in the 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.

Test Procedure: The door was closed and latched for this test. The sound transmission loss test was conducted in accordance with the ASTM E 90 test method using a single direction of measurement. One 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 both rooms, at each of 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	Leaf
Size	39-1/2" by 87-3/4"	35-3/4" by 83-5/8"
Thickness	6"	1-3/4"
Corners	Mitered	Butted
Fasteners	Tabs	Glue
Seal Method	None	None
Material	18 Gauge steel	Wood
Reinforcement	N/A	N/A
Thermal Break Material	N/A	N/A

N/A-Non Applicable

Sample Descriptions: (Continued)

Components:

TYPE	QUANTITY	LOCATION
Weatherstrip		
Zero International 8150S	1 Row	Head and jambs
Zero International door bottom 369AA	1	Bottom rail
Zero International 188S	1 Row	Head and jambs (Options C and D only)
Zero International 564A threshold	1	Sill (Option D only)
Hardware		
Sargent 11 line cylindrical lock set	1	Lock stile
McKinney hinge	3	Jambs
Drainage		
None		

Comments: The weight of the door leaf was 132 lbs. The weight of the test sample was 226 lbs. The client did not supply drawings on the Series/Model Rediframe, side-hinged single door system. The test specimen was returned per the client's request. 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 Rediframe, side-hinged single door system is listed below.

Summary of Test Results			
Data File No.	Test Description	STC	OITC
E2104.01A	Inoperable Test: Sealed with duct seal on both sides	37	32
E2104.01B	Operable Test: Zero International Seals, 8150S one row on head and jambs, 369AA mortised door bottom.	33	30
E2104.01C	Operable Test: Zero International Seals, 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom.	34	30
E2104.01D	Operable Test: Zero International Seals, 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom, 564A threshold.	34	30

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

Architectural Testing 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 Architectural Testing for the entire test record retention period.


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:



Digitally Signed by: Eric Thompson

Eric A. Thompson
Technician - Acoustical Testing



Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

EAT:jmc

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

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (8)
- Appendix-D: Photographs (1)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/26/15	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition card	65127	04/14 *
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	12/14
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	65103	05/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64906	12/14
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	11/14
Receive Room Environmental Indicator	Vaisala	HMW92	Temperature Humidity Sensor	64286	06/14
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature and Humidity Sensor	Y002653	06/14
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	65105	04/14

*- 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 (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



E2104.02-113-11

Appendix B
Complete Test Results



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15						
Data File No.	E2104.01A						
Client	Masonite Innovation Center						
Description	Series/Model: Rediframe, side-hinged single door system, sealed with duct seal on both sides (inoperable)						
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C	
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%	

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	36.6	4.9	106	81	21.9	1.92	-
100	34.1	5.6	107	80	23.0	1.98	-
125	37.9	5.1	108	80	24.1	1.47	0
160	39.6	4.9	106	78	25.2	0.61	0
200	37.1	4.7	107	75	28.6	0.66	0
250	30.6	5.0	107	74	29.9	0.81	0
315	25.3	5.7	103	69	29.4	0.58	4
400	24.9	5.9	102	65	31.9	0.39	4
500	22.7	5.9	102	63	34.7	0.44	2
630	20.5	5.7	103	62	37.1	0.71	1
800	18.0	5.8	103	59	38.9	0.64	0
1000	13.4	6.1	101	57	39.3	0.38	1
1250	12.2	6.9	99	56	38.2	0.43	3
1600	9.2	7.2	102	61	36.0	0.56	5
2000	6.0	7.4	101	59	36.5	0.38	4
2500	5.3	8.3	99	55	38.6	0.39	2
3150	5.0	9.8	100	55	38.6	0.40	2
4000	5.4	12.0	99	51	40.1	0.37	1
5000	6.2	15.2	97	46	43.1	0.55	-

STC Rating **37** *(Sound Transmission Class)*
Deficiencies 29 *(Sum of Deficiencies)*
OITC Rating **32** *(Outdoor-Indoor Transmission Class)*

Notes:
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
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



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15					
Data File No.	E2104.01A					
Client	Masonite Innovation Center					
Description	Series/Model: Rediframe, side-hinged single door system, sealed with duct seal on both sides (inoperable)					
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%





AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15						
Data File No.	E2104.01B						
Client	Masonite Innovation Center						
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 369AA mortised door bottom (operable)						
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C	
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%	

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	35.1	5.0	106	81	21.6	1.86	-
100	34.8	5.7	107	80	23.0	1.88	-
125	35.7	5.5	107	80	23.2	1.24	0
160	37.9	5.1	107	79	23.9	0.56	0
200	35.8	4.7	107	77	27.1	0.60	0
250	30.3	5.0	108	76	28.1	0.84	0
315	24.4	5.7	103	71	28.0	0.57	1
400	23.4	5.9	101	67	30.6	0.48	1
500	20.4	5.9	102	65	32.8	0.42	0
630	17.7	5.6	103	65	34.2	0.66	0
800	15.7	5.8	103	63	35.4	0.55	0
1000	11.0	6.1	101	61	35.7	0.27	0
1250	10.5	7.0	99	58	36.1	0.42	1
1600	7.9	7.3	102	64	32.8	0.58	4
2000	4.8	7.7	101	64	31.1	0.45	6
2500	4.6	8.7	99	62	31.5	0.43	6
3150	4.7	10.2	100	59	34.1	0.33	3
4000	5.3	12.4	98	54	37.2	0.34	0
5000	5.8	15.8	97	48	40.0	0.54	-

STC Rating **33** *(Sound Transmission Class)*
Deficiencies **22** *(Sum of Deficiencies)*
OITC Rating **30** *(Outdoor-Indoor Transmission Class)*

Notes:
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
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



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15					
Data File No.	E2104.01B					
Client	Masonite Innovation Center					
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 369AA mortised door bottom (operable)					
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%





AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15						
Data File No.	E2104.01C						
Client	Masonite Innovation Center						
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom (operable)						
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C	
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%	

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	35.1	4.2	106	81	23.1	2.09	-
100	36.7	5.2	107	80	23.4	1.94	-
125	36.2	5.1	107	80	23.4	1.33	0
160	37.8	5.1	107	80	23.4	0.66	0
200	35.8	4.7	107	77	27.1	0.63	0
250	30.1	5.2	108	76	28.3	0.82	0
315	23.6	5.7	103	71	27.9	0.54	2
400	21.9	5.8	101	67	30.7	0.41	2
500	18.2	5.9	102	65	33.1	0.41	1
630	16.3	5.7	103	65	34.3	0.69	1
800	14.3	5.8	103	63	35.8	0.54	0
1000	10.8	6.0	101	61	36.0	0.27	1
1250	9.0	6.9	99	58	36.8	0.42	1
1600	7.3	7.3	102	63	34.0	0.55	4
2000	5.1	7.7	101	62	33.2	0.41	5
2500	4.8	8.6	99	60	33.7	0.43	4
3150	4.7	10.2	100	58	35.2	0.34	3
4000	5.3	12.4	99	53	38.5	0.37	0
5000	5.9	15.9	97	47	41.2	0.57	-

STC Rating **34** *(Sound Transmission Class)*
Deficiencies 24 *(Sum of Deficiencies)*
OITC Rating **30** *(Outdoor-Indoor Transmission Class)*

Notes:
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
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



AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	01/13/15					
Data File No.	E2104.01C					
Client	Masonite Innovation Center					
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom (operable)					
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%





AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	01/13/15						
Data File No.	E2104.01D						
Client	Masonite Innovation Center						
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom, 564A threshold (operable)						
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C	
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%	

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	37.1	5.1	106	81	21.3	1.88	-
100	37.4	5.0	107	79	24.2	1.91	-
125	38.3	5.1	107	80	23.7	1.20	0
160	38.8	5.0	107	80	23.0	0.69	0
200	36.8	4.9	107	77	26.7	0.77	0
250	33.2	4.9	108	76	28.4	0.84	0
315	26.5	5.6	103	70	28.3	0.59	2
400	23.7	5.9	101	66	31.1	0.44	2
500	20.7	5.9	102	64	33.5	0.41	0
630	19.2	5.6	103	64	34.7	0.72	0
800	17.4	5.7	103	63	35.0	0.64	1
1000	14.4	6.0	101	62	34.7	0.31	2
1250	12.7	6.8	99	58	36.8	0.42	1
1600	9.5	7.2	102	63	33.9	0.57	4
2000	6.3	7.5	101	62	33.3	0.39	5
2500	6.1	8.6	99	60	33.7	0.42	4
3150	5.3	10.2	100	58	35.3	0.35	3
4000	5.6	12.4	99	52	39.1	0.36	0
5000	6.0	15.7	97	46	42.3	0.56	-

STC Rating **34** *(Sound Transmission Class)*
Deficiencies 24 *(Sum of Deficiencies)*
OITC Rating **30** *(Outdoor-Indoor Transmission Class)*

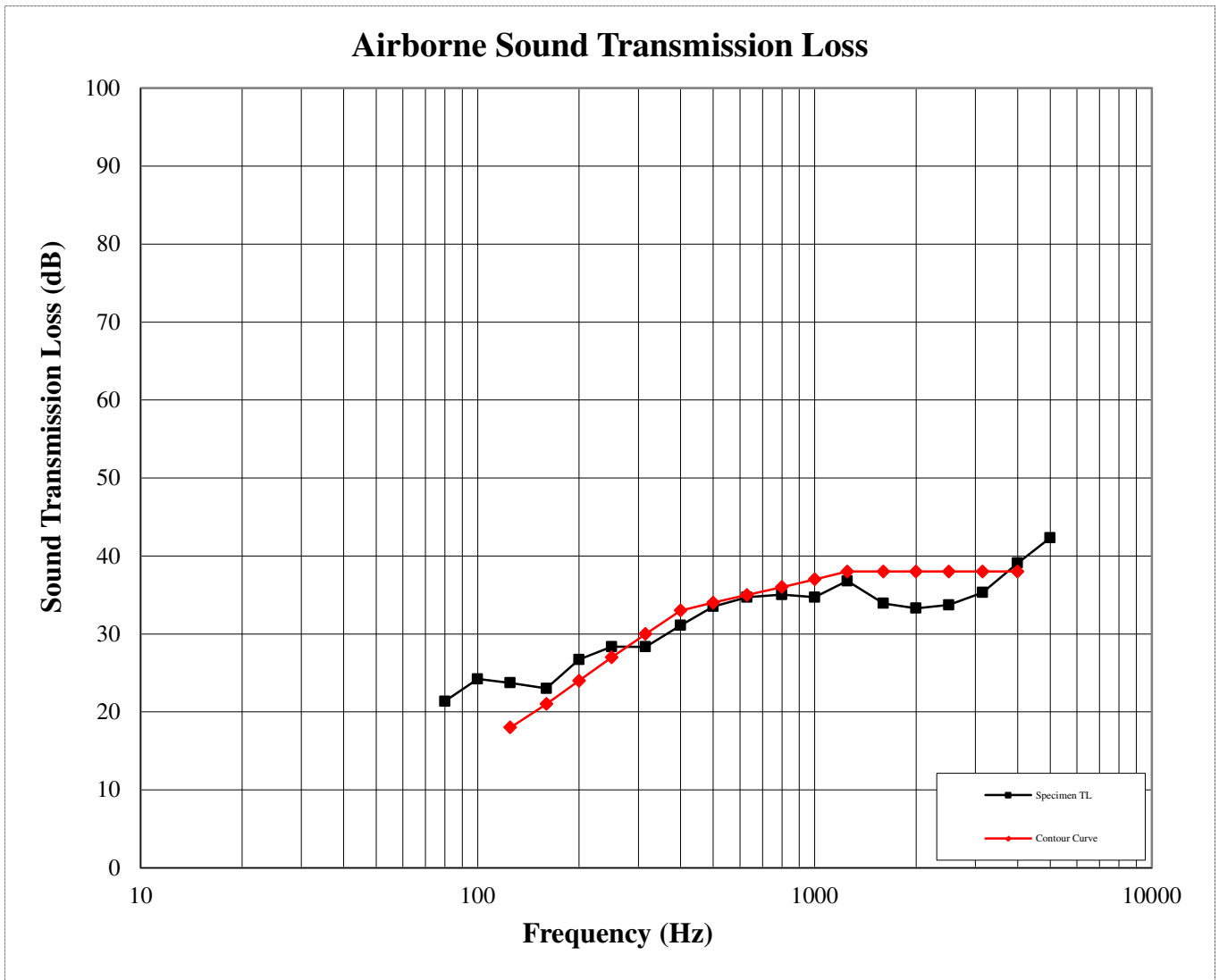
Notes:
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied



AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	01/13/15					
Data File No.	E2104.01D					
Client	Masonite Innovation Center					
Description	Series/Model: Rediframe, side-hinged single door system, with Zero International Seals 8150S one row on head and jambs, 188S one row on head and jambs, 369AA mortised door bottom, 564A threshold (operable)					
Specimen Area	2.24 m ²	Receive Temp.	23.8 °C		Source Temp.	23.9 °C
Technician	Eric A. Thomps	Receive Humidity	46%		Source Humidity	48%



Appendix C

Photographs



Receive Room View of an Installed Test Specimen



Source Room View of an Installed Test Specimen