



E6211.02-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E90

Rendered to:

TREX COMPANY, LLC

Series/Model: Trex[®] Seclusion[®]

Type: Sound Barrier Fence

Summary of Test Results			
Data File No.	Description	STC	OITC
E6211.01	Trex [®] Seclusion [®] , sound barrier fence	17	16

Reference should be made to Intertek-ATI Report No. E6211.02-113-11 for complete test specimen description. This page alone is not a complete report. Flanking limit tests and reference specimen tests are available upon request.



Acoustical Performance Test Report

TREX COMPANY, LLC
245 Capitol Lane
Winchester, Virginia 22602

Report No	E6211.02-113-11
Test Date	03/24/15
Report Date	06/17/15

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct a sound transmission loss test. This report is a reissue in the name of Trex Company, LLC through written authorization from the original client. The complete test data is included as Appendix B of this report. The client provided the test specimen.

Test Methods

Testing for this project was conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E90-09, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

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

Test Procedure

All measurements were conducted in the HT test chambers at Intertek-ATI located in York, Pennsylvania. 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 levels were made simultaneously in the receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Specimen Installation

A sound transmission loss test was initially performed on a filler wall.

A sound transmission loss test was initially performed on a filler wall. The 96" wide by 96" high specimen plug was removed from the filler wall assembly. The specimen was constructed in the laboratory per the manufacturer's instructions. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen frame, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall.

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 may not exceed 32. The maximum deficiency at any one frequency may 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.

Specimen Descriptions

A composite material fence section measuring 96" by 96" was tested. The original client provided all test materials, and the test specimen did not arrive assembled. Eighteen vertical picket sections were installed between two end posts.

An aluminum bottom rail was mounted horizontally, and the rail utilized a fence picket on either side. Each picket was 5-3/4" wide by 1" thick with 1/4" thick walls. The end posts were a 4-7/8" hollow square with 1/2" thick walls. A top rail capped off the pickets and measured 5" tall by 4-1/8" wide with 1/2" thick walls.

Comments

The total weight of the test specimen was 266 lbs. The client did not supply a report drawing of the test specimen. The specimen was returned per the client's request.



This report is reissued in the name of Trex Company, LLC through written authorization from the client to whom the original report was rendered. The original Report number is E6211.01-113-11.

Intertek-ATI 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 Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

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 is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For INTERTEK-ATI:

Kurt A. Golden
Project Facilitator - Acoustical Testing

Todd D. Kister
Laboratory Supervisor – Acoustical Testing

KAG:jmc

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)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
R0	06/17/15	N/A	Original Report Issue – Reissue of Report No. E6211.01-113-11 in the name of Trex Company, LLC

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



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Appendix B

Complete Test Results



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	03/24/15						
Data File No.	E6211.01						
Client	Trex Company, LLC						
Description	Series/Model: Trex® Seclusion®, sound barrier fence						
Specimen Area	5.95 m ²	Receive Temp.	22.5 °C		Source Temp.	20.9 °C	
Technician	Kurt A. Golden	Receive Humidity	46%		Source Humidity	47%	

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	38.3	4.4	105	93	13.4	1.86	-
100	35.7	3.9	105	92	14.6	1.55	-
125	37.7	4.9	105	92	13.5	1.48	0
160	43.1	4.6	106	92	14.4	0.75	0
200	39.2	4.9	105	90	15.7	0.98	0
250	33.2	5.0	106	89	17.2	0.64	0
315	27.7	6.1	100	85	15.4	0.38	0
400	28.1	6.3	100	84	15.1	0.33	1
500	25.8	6.3	100	85	14.8	0.31	2
630	22.1	5.9	101	86	15.6	0.35	2
800	18.9	6.0	100	82	17.9	0.15	1
1000	13.7	6.2	99	80	18.4	0.34	2
1250	12.1	7.0	97	76	20.0	0.29	1
1600	9.1	7.3	100	79	19.9	0.44	1
2000	5.3	7.8	99	80	17.7	0.20	3
2500	5.2	8.8	97	81	14.7	0.25	6
3150	4.7	10.5	98	80	15.0	0.17	6
4000	5.5	12.7	97	77	16.1	0.34	5
5000	6.2	16.3	94	73	16.8	0.20	-

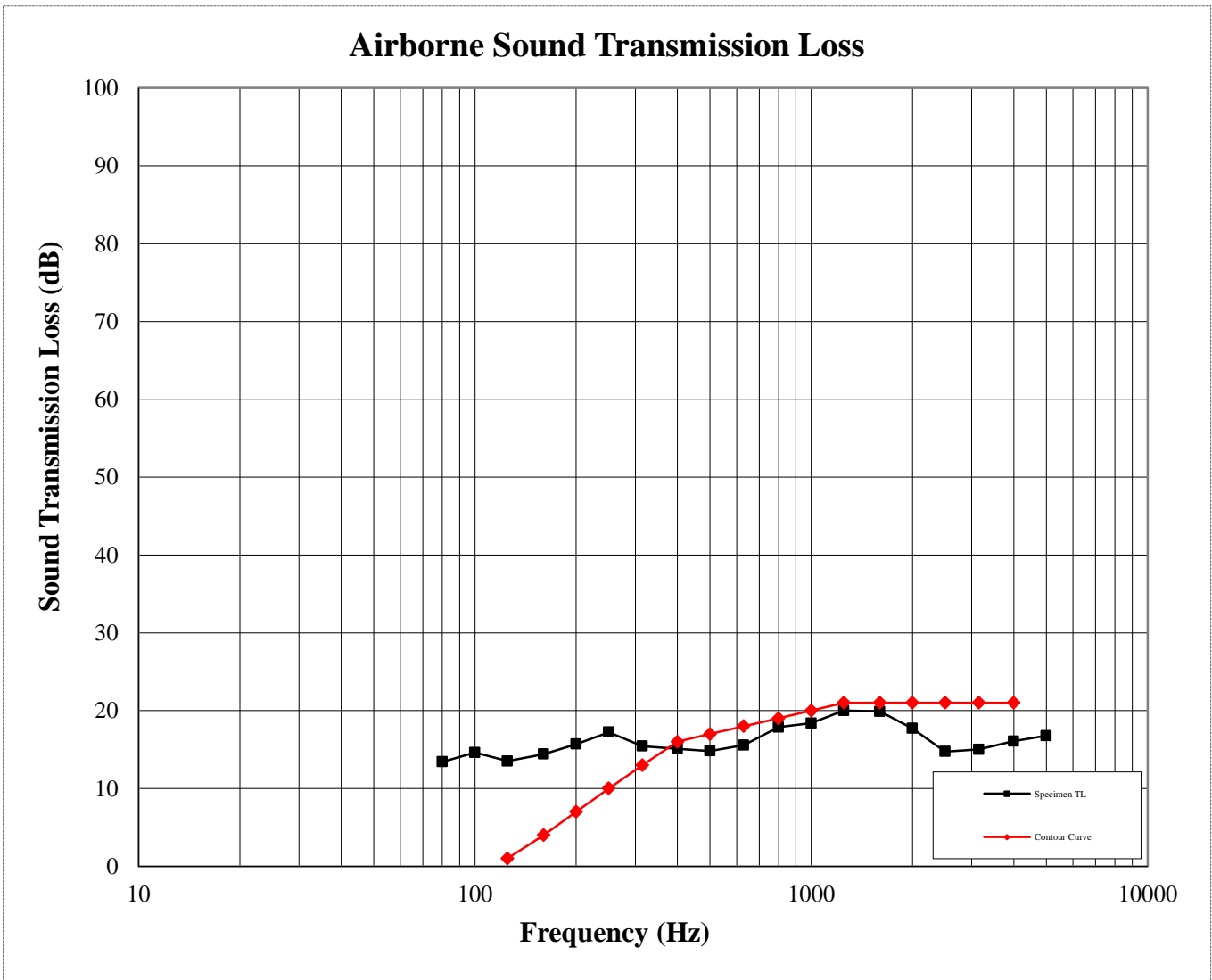
STC Rating **17** *(Sound Transmission Class)*
Deficiencies **30** *(Sum of Deficiencies)*
OITC Rating **16** *(Outdoor-Indoor Transmission Class)*

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



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Description	Series/Model: Trex® Seclusion®, sound barrier fence					
Specimen Area	5.95 m ²	Receive Temp.	22.5 °C		Source Temp.	20.9 °C
Technician	Kurt A. Golden	Receive Humidity	46%		Source Humidity	47%



Appendix C

Photographs



Receive Room View of Installed Specimen



Source Room View of Installed Specimen