Architectural Testing

ASTM E 90 SOUND TRANSMISSION LOSS TEST REPORT

Rendered to:

SOUTHERN CROSS TECHNOLOGIES, INC.

WALLBOARD SERIES / MODEL: Green E-Board™

TYPE: Single Steel Stud Wall Construction

Summary of Test Results			
ATI Data File No.	**Sample Description**	**STC**	**OITC**
80089.01	One layer of 1/2" Green E-Board™ on each side, R-13 insulation in the cavity.	47	30

Reference should be made to Architectural Testing, Inc. Report No. 80089.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

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Architectural Testing

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

SOUTHERN CROSS TECHNOLOGIES, INC.
3461 High Ridge Road
Boynton Beach, Florida 33426

Report No:	80089.01-113-11
Test Date:	01/25/08
Report Date:	01/29/08
Expiration Date:	01/25/12

Test Sample Identification:

Wallboard Series / Model: Green E-Board™

Type: Single Steel Stud Wall Construction

Overall Size: 96" by 96"

Project Scope: Architectural Testing, Inc. was contracted by Southern Cross Technologies, Inc. to conduct a sound transmission loss test on a single steel stud wall construction. 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*.

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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" specimens. The filler wall achieved an STC rating of 69.

The 96" by 96" plug was removed from the filler wall assembly. The wall system was assembled in the test opening. The wallboard was installed onto 3-5/8" 25 gauge steel studs. The studs were spaced 16" on center. The panels were fastened using 1-5/8" drywall screws every 12". Acoustical sealant and duct tape were used to seal the perimeter of the single steel stud wall construction to the test opening. The seams and all screw holes of the wall construction were sealed with acoustical sealant and duct tape. R-13 fiberglass insulation was used in the wall system cavity. The interior side of the single steel stud wall construction, 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 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:

Overall Wall System Size: 96" by 96"

Overall Wall System Thickness (Nominal Dimension): 4-5/8"

Construction Materials:

Stud Material	Nominal Dimensions	Stud Spacing	Quantity Used	Average Weight (lbs. / lineal ft.)
25 gauge steel (0.020")	3-5/8" x 96"	16" on center	7	0.26

Track Material	Nominal Dimensions	Quantity Used	Average Weight (lbs. / lineal ft.)
25 gauge steel (0.020")	3-5/8" x 96"	2	0.26

Receive Room Wallboard	Nominal Dimensions	Quantity Used	Average Weight (lbs. / Sq. ft.)
Green E-Board™ 1/2" wall / backer board	1/2" x 48" x 48"	4	2.72

Source Room Wallboard	Nominal Dimensions	Quantity Used	Average Weight (lbs. / Sq. ft.)
Green E-Board™ 1/2" wall / backer board	1/2" x 48" x 48"	4	2.72

Cavity Insulation Type	Nominal Dimensions	Quantity Used	Average Weight (lbs. / Sq. ft.)
One layer of R13 fiberglass batt insulation	3.5" x 16" x 96"	6	0.26
Total Wall Construction Weight (lbs)			383.52
Total Wall Construction Weight (lbs / sq. ft.)			5.99

Comments: The client did not supply drawings on the single steel stud wall construction. The sample was disassembled and the components will be retained by Architectural Testing, Inc. for four years. Photographs of the sample setup 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 single steel stud wall construction is listed below.

Summary of Test Results			
ATI Data File No.	**Sample Description**	**STC**	**OITC**
80089.01	One layer of 1/2" Green E-Board™ on each side, R-13 insulation in the cavity.	47	30

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.:

Brandon Ward EJM

Digitally Signed for: Brandon Ward by Eric J. Miller

Brandon C. Ward
Technician - Acoustical Testing

Todd D. Kister

Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

BCW:alb

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

Rev. #	Date	Page(s)	Revision(s)
0	1/29/08	0	Original report issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number
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	Cirrus	511E	Pistonphone calibrator	Y001777
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^3 (234 m^3)	Rotating vane and stationary diffusers. Temperature and humidity controlled. Isolation pads under the floor.
Source Room	7296.3 ft^3 (206.6 m^3)	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

ASTM E90

Architectural Testing

ATI No.	80089.01	**Date**	01/25/08
Client	Southern Cross Technologies, Inc.		
Specimen	Series / Model: 1/2" Green E-Board™ One Layer on Each Side and R-13 insulation in the cavity.		
Specimen Area	64.00 Sq Ft		
Filler Area	76.00 Sq Ft		
Operator	Brandon Ward-DP		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	73.4	73.7	72.3	73.4	71.8	73.2
RH %	43.4	43.3	41.6	43.5	42.9	42.9

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 Defici-encies	Trans Coef Diff
80	37.6	71.6	92.8	77.4	47.1	15	2.39	0	31.5
100	36.6	70.3	96.1	79.1	47.9	17	3.42	0	30.6
125	39.0	56.6	100.9	76.7	55.1	25	2.14	6	29.7
160	40.7	54.8	102.3	76.0	55.3	27	1.74	7	27.6
200	38.9	50.5	106.9	72.3	54.5	36	1.02	1	18.0
250	33.6	56.2	106.9	69.2	57.0	38	1.11	2	18.1
315	30.3	56.2	104.9	61.5	57.5	44	0.76	0	12.7
400	30.4	57.6	103.7	57.5	62.5	47	0.80	0	15.2
500	30.1	58.6	104.5	55.3	66.0	50	0.77	0	15.7
630	24.9	59.8	106.6	54.2	67.0	53	0.30	0	13.6
800	25.6	60.9	104.5	50.5	70.6	54	0.62	0	15.7
1000	23.2	63.1	103.4	47.0	74.0	56	0.58	0	16.9
1250	23.1	68.8	106.1	47.4	75.3	58	0.47	0	16.1
1600	18.7	69.5	111.9	52.3	74.1	59	0.65	0	14.1
2000	13.9	77.0	107.1	49.2	72.3	57	0.56	0	14.4
2500	6.6	90.0	105.3	55.7	74.6	48	0.37	3	25.7
3150	6.7	105.9	105.6	58.2	80.2	45	0.51	6	34.3
4000	6.8	128.7	104.2	52.1	83.2	49	0.36	2	33.3
5000	6.8	175.2	102.3	45.3	86.2	53	0.50	0	32.8

STC Rating = **47** *(Sound Transmission Class)*
Deficiencies = **27** *(Number of deficiencies versus contour curve)*
OITC Rating = **30** *(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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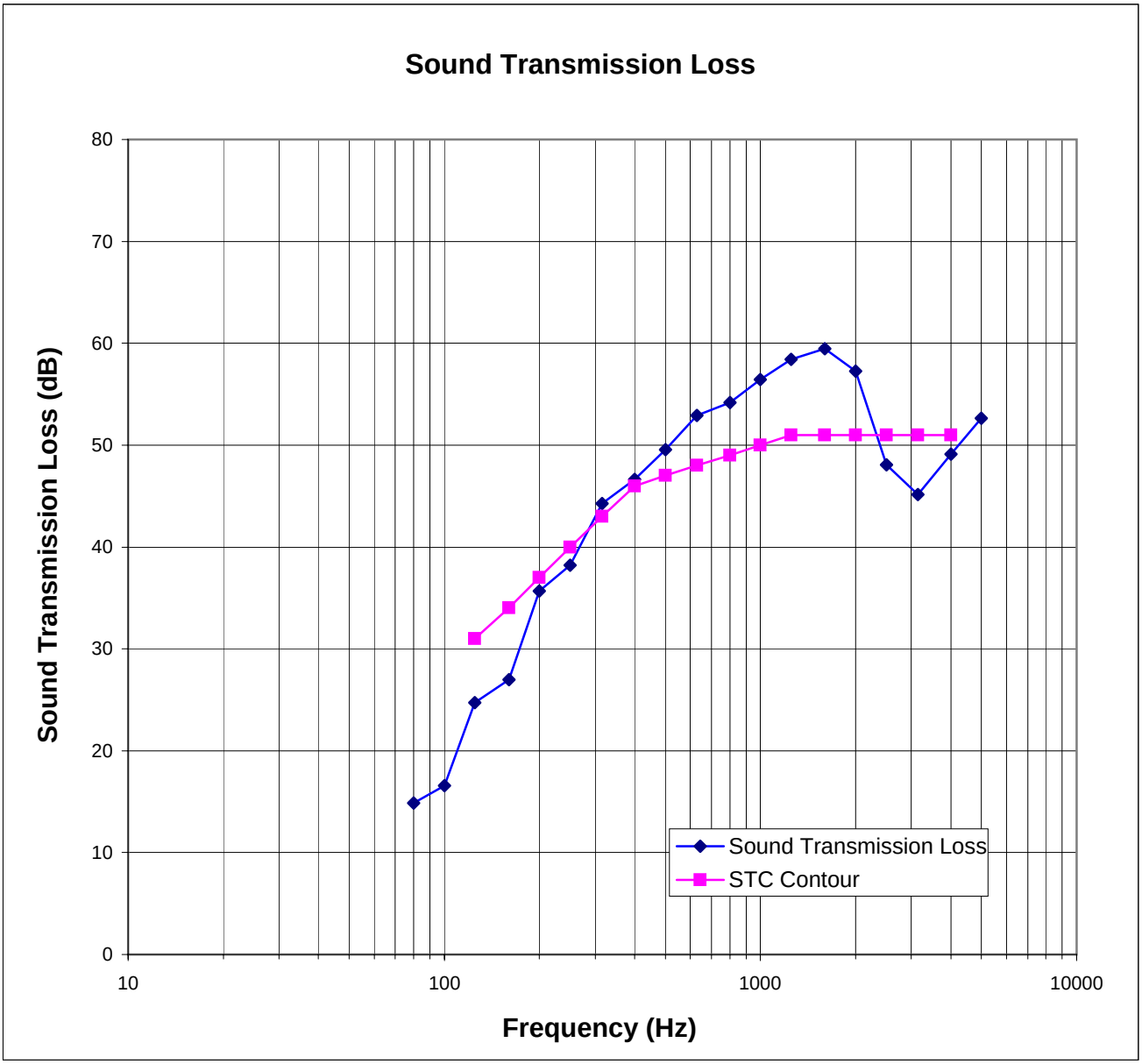
ATI No.	80089.01	**Date**	01/25/08
Client	Southern Cross Technologies, Inc.		
Specimen	Series / Model: 1/2" Green E-Board™ One Layer on Each Side and R-13 insulation in the cavity.		
Specimen Area	64.00 Sq Ft		
Filler Area	76.00 Sq Ft		
Operator	Brandon Ward-DP		



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Appendix C

Photographs

R-13 Insulation Installed in Cavity

Receive Side of Sample Installed in Test Chamber

Appendix C

Photographs (Continued)

Source Side of Sample Installed in Test Chamber