

ADAPT ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON
BETTER THAN WOOD CEILING PLANKS

SPECIMEN TYPE

152 mm Concrete Slab with Drop Ceiling

REPORT NUMBER

J7488.03-113-11-R0

TEST DATE

05/30/19

ISSUE DATE

06/19/19

RECORD RETENTION END

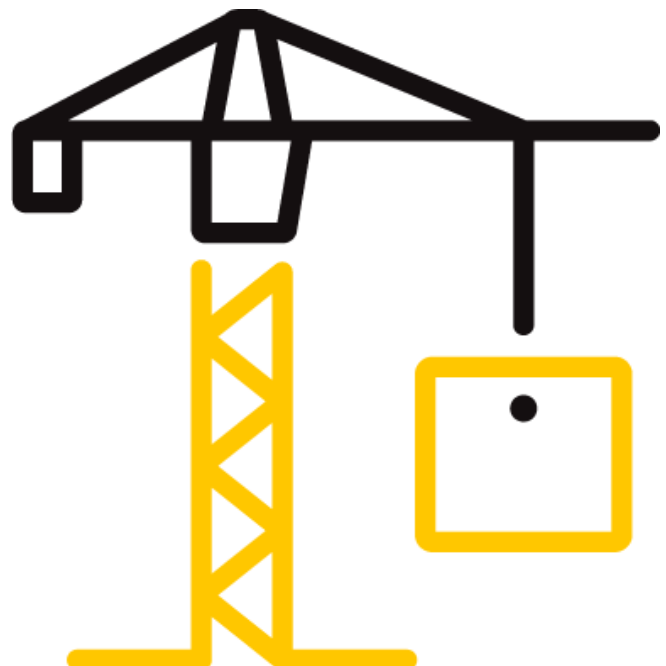
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DOCUMENT CONTROL

ATI 00629 (03/21/18)
RTTDS-R-AMER-Test-2844
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TEST REPORT FOR ADAPT

Report No.: J7488.03-113-11-R0

Date: 06/19/19

REPORT ISSUED TO

ADAPT

17650 East 32nd Place, Suite 10b
Aurora, Colorado 80011

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted to perform testing in accordance with ASTM E90 AND ASTM E492 on Better Than Wood Ceiling Planks. This report is a reissue in the name of Adapt through written authorization from the original report holder. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted in the VT test chambers at Intertek B&C located in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

DATA FILE NO.	J7488.01
SERIES/MODEL:	Better Than Wood Ceiling Planks
STC	63
IIC	70

COMPLETED BY:	Cody R. Snyder
TITLE:	Technician - Acoustical Testing
SIGNATURE:	
DATE:	06/19/19

COMPLETED BY:	Jordan Strybos
TITLE:	Engineer, Team Lead - Acoustical Testing
SIGNATURE:	
DATE:	06/19/19

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SECTION 3**TEST METHODS**

The specimen was evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E492-09(2016)e1, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM E989-18, *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4**MATERIAL SOURCE/INSTALLATION**

The full test specimen was assembled on the day of testing by B&C. All materials provided by the original client were installed on an existing B&C assembly (152 mm Concrete Slab with Drop Ceiling) utilizing B&C-supplied materials. The assembly was installed in a steel test frame which was installed into the opening between the source and receive rooms in the test chamber. The test frame was isolated from the structure with dense neoprene gasket.

The total weight of the floor/ceiling assembly was 4230.7 kg. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. The client did not supply drawings of the test specimen.

This report is reissued in the name of Adapt through written authorization from the original report holder. The original Report No. is J7488.01-113-11.

B&C 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 B&C for the entire test record retention period.

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**SECTION 5
EQUIPMENT**

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	INT00977	08/18 *
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	65124	05/18 *
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-1	06/18 *
Microphone Calibrator	Larson Davis	CAL200	Acoustical Calibrator	INT00852	09/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63741	04/19
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63739	04/19
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	67340	04/19
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	07/18
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/18
				63811	10/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65029	03/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65586	02/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01089	01/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00652	01/19
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63742	03/19
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	10/18
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	12/18

* The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

VT RECEIVE ROOM VOLUME	155.77 m ³
VT SOURCE ROOM VOLUME	190 m ³

**SECTION 6
LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Cody R. Snyder	Intertek B&C
Jordan Strybos	Intertek B&C

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SECTION 7**TEST PROCEDURE**

The microphones were calibrated before conducting the tests. The air temperature and relative humidity conditions were monitored and recorded during all measurements. The average temperature and humidity of both the source and received rooms are listed in Sections 10 and 11. The maximum and minimum temperatures and humidities of the receive room from the duration of the test are listed in Sections 12 and 13.

The airborne transmission loss test was conducted in accordance with the ASTM E90 test method using the single direction method. Two 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 impact sound transmission test was conducted in accordance with the ASTM E492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E492, and five sound absorption measurements were conducted at each of five microphone positions.

Detailed test procedures, data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

SECTION 8**TEST CALCULATIONS**

The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E413 and ASTM E989, respectively.

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SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Carpet Tile	914.4 by 228.6	8.0	Shaw 6E001 Dynamic Vision	10.98 m ²	2.34 kg/m ²
	Note: Adhered to the floor topping using integrated adhesive strips.				
Concrete Slab	3023 by 3632	152.4	5000 PSI	10.98 m ²	366.18 kg/m ²
	Note: Installed in a test frame flush to the source room. Mats of #5 reinforcing bars were placed 25.4 mm from both the top and bottom of the slab, with bars spaced on 305 mm centers in both directions. No noticeable shrinkage or cracking was visible on the specimen.				
Drywall Main Beam	38.1 by 2870	43.0	Armstrong HD8906	10.9 lin m	0.45 kg/m
	Note: Twelve gauge hanger wires were attached to the bottom side of the concrete at twelve locations and then to the main beams. The hanger wire was twisted around itself a minimum of three times within 76 mm creating a 305 mm plenum. The measured steel thickness was 0.5 mm.				
Cross Tee	38.3 by 1219	37.3	Armstrong XL8945P	27.2 lin m	0.45 kg/m
	Note: Inserted into the main beams on 610 mm centers. The measured steel thickness was 0.5 mm.				
Fiberglass Insulation	609.6 by 2438	88.9	Johns Manville Unfaced R-13	10.98 m ²	1.32 kg/m ²
	Note: Loose laid onto the ceiling grid system				
Gypsum Panel	3023 by 1219	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.56 m ²	11.23 kg/m ²
	Note: Fastened with 25.4 mm fine thread drywall screws on 305 mm centers. Seams and perimeter sealed with Pecora AC-20® Acoustical Sealant and covered with pressure-sensitive tape.				
Ceiling Planks	2438.4 by 203.2	15.9	Better Than Wood	10.98 m ²	3.08 kg/m ²
	Note: Hanging Channels were adhered to the gypsum panels on 610 mm centers with the attached 3M self-adhesive strips. The ceiling planks were mounted on the Hanging Channels with the manufacturer-supplied snap-clips, per manufacturer's instructions.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	5/30/2019				
DATA FILE NO.	J7488.01				
CLIENT	Adapt				
DESCRIPTION	8 mm Shaw 6E001 Dynamic Vision Carpet Tile, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm Better Than Wood Ceiling Planks				
SPECIMEN AREA	10.98 m ²	Receive Temp.	22.2°C	Source Temp.	21.5°C
TECHNICIAN	CRS	Receive Humidity	69%	Source Humidity	69%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	33.9	17.5	109	66	42	2.8	-
100	27.9	10.9	107	66	42	2.2	-
125	26.6	10.5	105	63	43	1.1	4
160	23.2	10.1	106	64	44	0.9	6
200	20.1	10.1	104	56	50	1.2	3
250	16.6	12.4	102	51	52	0.7	4
315	15.8	14.8	106	50	56	0.8	3
400	11.0	15.9	104	44	59	0.7	3
500	12.6	13.4	103	42	62	0.6	1
630	15.1	11.8	104	40	65	0.7	0
800	15.7	10.8	103	38	66	0.3	0
1000	18.2	10.0	102	38	65	0.3	1
1250	18.9	9.9	102	35	68	0.3	0
1600	12.6	10.4	102	34	68	0.5	0
2000	11.4	11.3	102	34	69	0.4	0
2500	10.6	11.5	100	33	68	0.4	0
3150	11.7	11.7	101	30	72	0.5	0
4000	7.7	12.9	101	28	73	0.6	0
5000	6.2	14.7	101	25	75	0.6	-
6300	6.3	17.8	95	15	78	0.7	-
8000	6.6	23.3	95	12	80	1.0	-
10000	6.8	23.3	89	7	80	0.7	-
STC Rating	63	<i>(Sound Transmission Class)</i>			Sum of Deficiencies	25	

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

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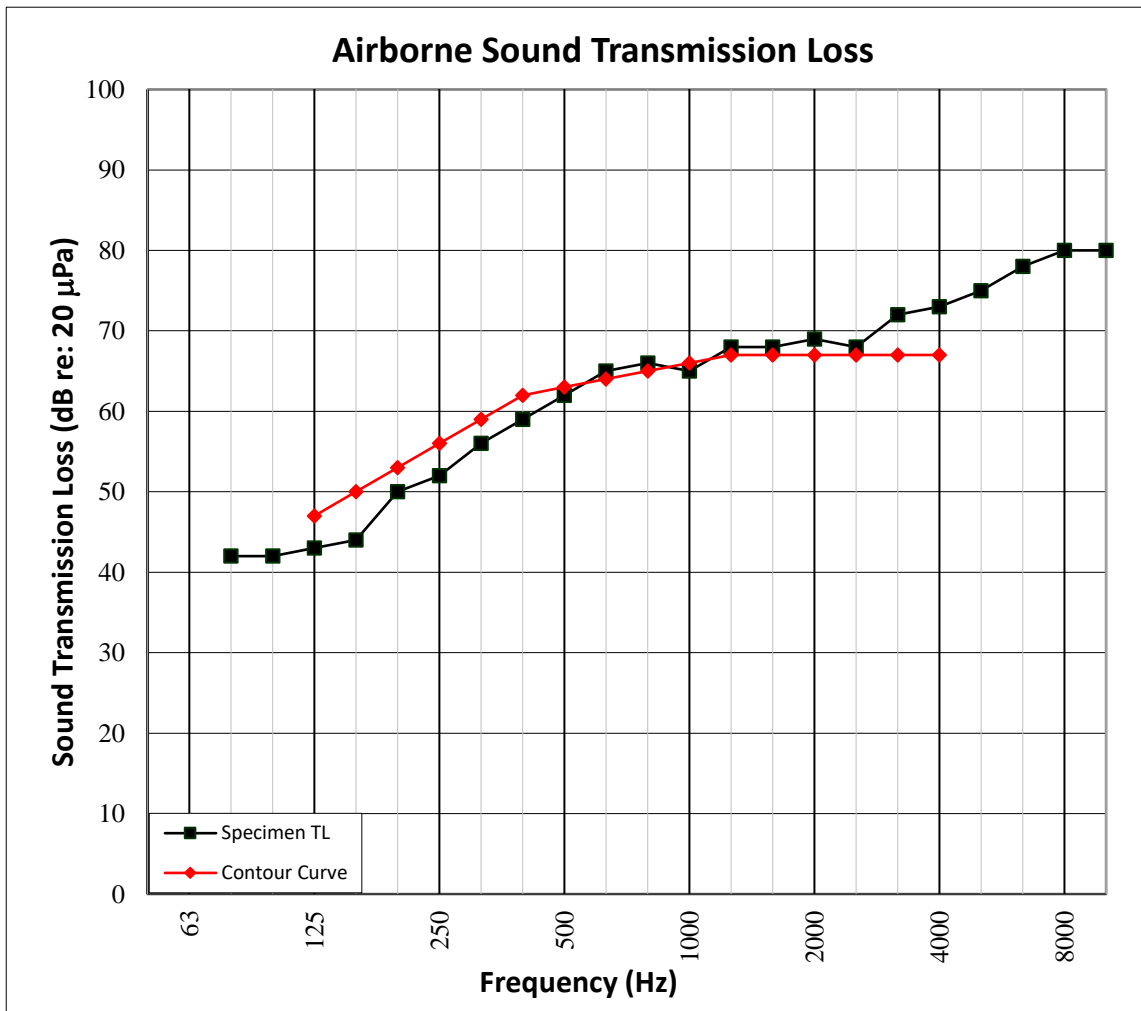
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	5/30/2019				
DATA FILE NO.	J7488.01				
CLIENT	Adapt				
DESCRIPTION	8 mm Shaw 6E001 Dynamic Vision Carpet Tile, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm Better Than Wood Ceiling Planks				
SPECIMEN AREA	10.98 m ²	Receive Temp.	22.2°C	Source Temp.	21.5°C
TECHNICIAN	CRS	Receive Humidity	69%	Source Humidity	69%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION



TEST DATE	5/30/2019				
DATA FILE NO.	J7488.01				
CLIENT	Adapt				
DESCRIPTION	8 mm Shaw 6E001 Dynamic Vision Carpet Tile, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm Better Than Wood Ceiling Planks				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	22.6°C	Minimum Temp.	21.9°C
TECHNICIAN	CRS	Max. Humidity	70%	Min. Humidity	68%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	35.5	16.5	48	1.8	-
100	31.7	10.5	50	1.3	8
125	29.0	10.9	46	1.3	4
160	25.6	9.9	47	1.1	5
200	21.5	10.8	44	0.8	2
250	17.8	12.5	47	0.7	5
315	19.4	15.1	45	0.9	3
400	14.2	16.1	44	1.2	3
500	14.5	12.7	36	1.1	0
630	18.2	11.5	33	1.2	0
800	17.3	11.2	29	1.6	0
1000	19.8	10.2	22	1.2	0
1250	21.2	9.9	22	1.2	0
1600	15.3	10.4	15	1.2	0
2000	14.6	11.5	10	0.5	0
2500	13.3	11.4	7	0.3	0
3150	14.2	11.7	7	0.5	0
4000	9.4	12.9	6	0.5	-
5000	7.1	14.7	6	0.3	-
6300	6.4	17.9	7	0.3	-
8000	6.6	23.2	8	0.3	-
10000	6.8	23.2	9	0.4	-
IIC Rating	70	<i>(Impact Insulation Class)</i>		Sum of Deficiencies	30

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

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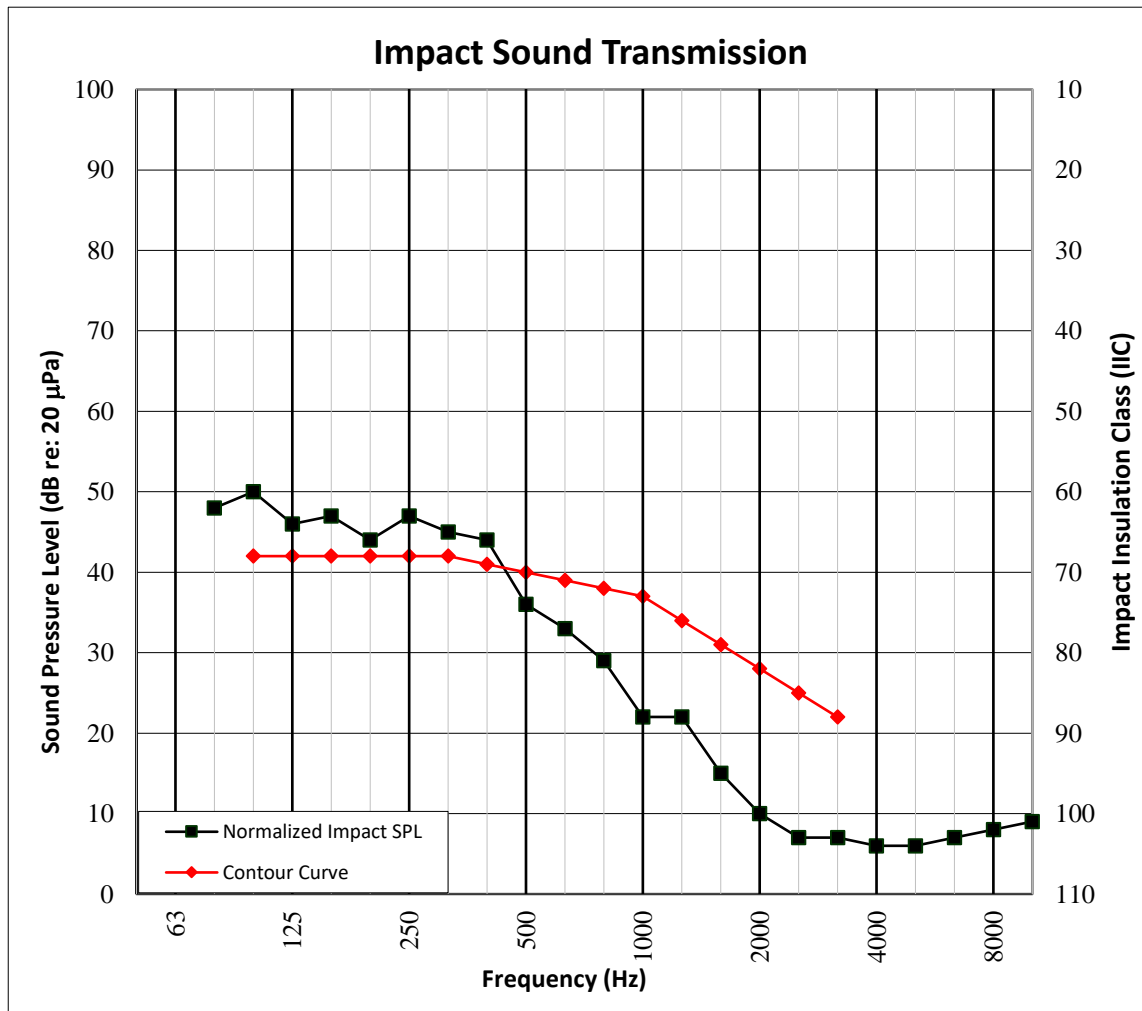
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	5/30/2019				
DATA FILE NO.	J7488.01				
CLIENT	Adapt				
DESCRIPTION	8 mm Shaw 6E001 Dynamic Vision Carpet Tile, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm Better Than Wood Ceiling Planks				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	22.6°C	Minimum Temp.	21.9°C
TECHNICIAN	CRS	Max. Humidity	70%	Min. Humidity	68%



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SECTION 14

PHOTOGRAPHS



Photo No. 1

Source Room View of Test Specimen Installation

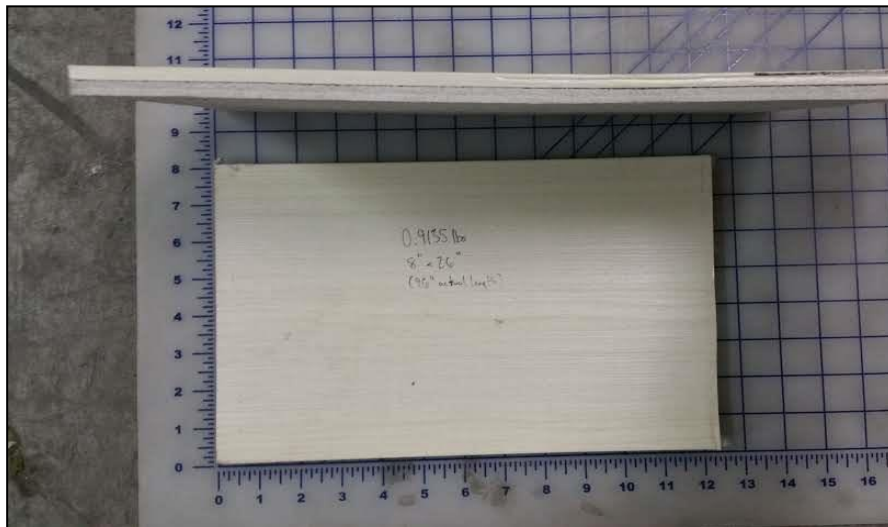


Photo No. 2

Close-Up of Test Specimen

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SECTION 15

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	06/19/19	N/A	Original Report Issue - Reissue of Report No. J7488.01-113-11 in the name of Adapt.