

# ADAPT ACOUSTICAL PERFORMANCE TEST REPORT

## SCOPE OF WORK

ASTM E1414 TESTING ON BETTER THAN WOOD CEILING PLANKS

## REPORT NUMBER

J7488.04-113-11-R0

## TEST DATE

05/31/19

## ISSUE DATE

06/19/19

## PAGES

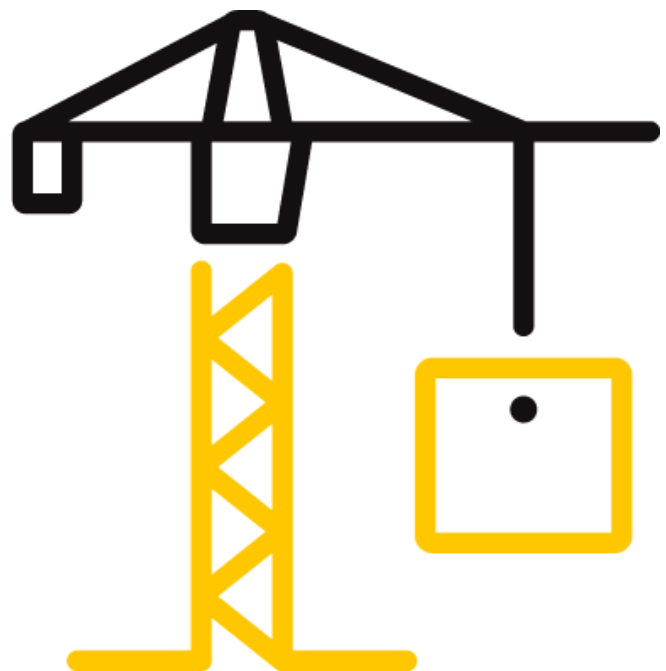
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## DOCUMENT CONTROL

ATI 00693 (07/24/17)

RTTDS-R-AMER-Test-2763

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## TEST REPORT FOR ADAPT

Report No.: J7488.04-113-11-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 E1414 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. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

### SECTION 2

#### SUMMARY OF TEST RESULTS

<b>DATA FILE NO.</b>	J7488.02
<b>SERIES/MODEL:</b>	Better Than Wood Ceiling Planks
<b>CEILING TYPE:</b>	Continuous Suspended Ceiling System
<b>TEST RESULT:</b>	CAC 25

**COMPLETED BY:** Cody R. Snyder  
Technician Team Lead -  
**TITLE:** Acoustical Testing

**SIGNATURE:**  
**DATE:** 06/19/19

**REVIEWED BY:** Jordan Strybos  
Engineer, Team Lead -  
**TITLE:** 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 E1414/E1414M-16**, *Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum*

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

**SECTION 4****MATERIAL SOURCE/INSTALLATION**

The suspended ceiling system was installed as a continuous system.

The full test specimen was assembled on the day of testing by B&C. The ceiling grid was constructed using B&C-supplied materials. The ceiling planks were supplied by the client. A separating wall with a metal top cap was constructed per ASTM E1414, utilizing construction that yielded a minimum STC rating of 65.

B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. A drawing of the test setup is included in the report.

This report is reissued in the name of Adapt through written authorization from the original report holder. The original Report No. is J7488.02-113-11.

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.

**SECTION 6  
LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Michael K. Daniel	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 test chamber are listed in Sections 10 and 11.

The airborne sound attenuation test was conducted in accordance with the ASTM E1414 test method using the direct method to obtain the normalization term. Two background noise sound pressure level measurements and ten sound absorption measurements were conducted at each of the five microphone positions in the receive room. Four sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions.

The CAC (Ceiling Attenuation Class) was calculated in accordance with ASTM E1414.

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

**SECTION 8****TEST CALCULATIONS**

Normalized Ceiling Attenuation ( $D_{n,c}$ ) 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.

**CAC Rating**

To obtain the Ceiling Attenuation Class (CAC), read the  $D_{n,c}$  of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

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**SECTION 9**

**TEST SPECIMEN DESCRIPTION**

MATERIAL	DIMENSIONS	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT	TOTAL WEIGHT
Main Beam	144" by 1.75"	Armstrong Prelude	90 lin. ft	2.456 lb/ft	221.04 lbs
	Note: A continuous row of 20-gauge steel angle was fastened around the perimeter of the reverberation room walls to set the correct plenum depth per ASTM E1414. Twelve 1/2"-13 eye bolts were threaded into the bottom side of the reverberation room ceiling on 48" centers using 1/2" threaded concrete anchors, and 12-gauge hanger wire was twisted around each eye bolt a minimum of three times within a 3" space to hang the main beams in line with the perimeter angle.				
4' Cross Tee	48" by 1.5"	Armstrong Prelude	64 lin. ft	1.777021 lb/ft	113.729344 lbs
	Note: Installed between the main beams on 24" centers using the product's click and lock mechanism				
Ceiling Planks	96" by 0.625"	Better Than Wood	450 ft <sup>2</sup>	0.632423 lb/ft <sup>2</sup>	284.59035 lbs
	Note: Installed beneath the ceiling grid system using the manufacturer-supplied snap clips				

**Comments:** The total weight of the grid system was 619.4 lbs.

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### SECTION 10

#### TEST RESULTS - NORMALIZED CEILING ATTENUATION

<b>TEST DATE</b>	05/31/19				
<b>DATA FILE NO.</b>	J7488.02				
<b>CLIENT</b>	Adapt				
<b>DESCRIPTION</b>	Better Than Wood Ceiling Planks				
<b>TECHNICIAN</b>	MKD	<b>Temperature</b>	22.2°C	<b>Humidity</b>	69.18%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	SOURCE SPL (dB)	RECEIVE SPL (dB)	NORMALIZED CEILING ATTENUATION	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	43.7	19.7	68	59	7	10.5	0
100	47.7	16.2	79	76	2	5.8	0
125	44.9	13.0	84	75	8	6.0	1
160	37.0	12.3	87	74	13	5.3	0
200	34.0	8.6	94	80	15	4.5	0
250	26.4	12.4	92	77	15	3.9	3
315	26.2	13.6	94	74	19	2.0	2
400	21.4	13.0	92	69	23	3.5	1
500	17.9	11.7	91	67	24	1.5	1
630	16.4	11.1	86	66	21	1.7	5
800	21.1	11.4	91	69	23	2.4	4
1000	17.4	11.0	89	64	26	1.4	2
1250	16.8	10.4	89	64	26	2.0	3
1600	17.1	10.3	90	64	27	2.0	2
2000	17.4	11.7	89	60	29	1.5	0
2500	17.8	12.4	90	57	32	1.6	0
3150	17.1	10.2	89	56	34	0.9	0
4000	14.5	9.0	89	54	36	0.7	0
5000	13.9	9.1	89	55	35	0.9	0
<b>CAC Rating</b>	<b>25</b>	<i>(Ceiling Attenuation Class)</i>					
<b>Sum of Deficiencies</b>	<b>24</b>						

- 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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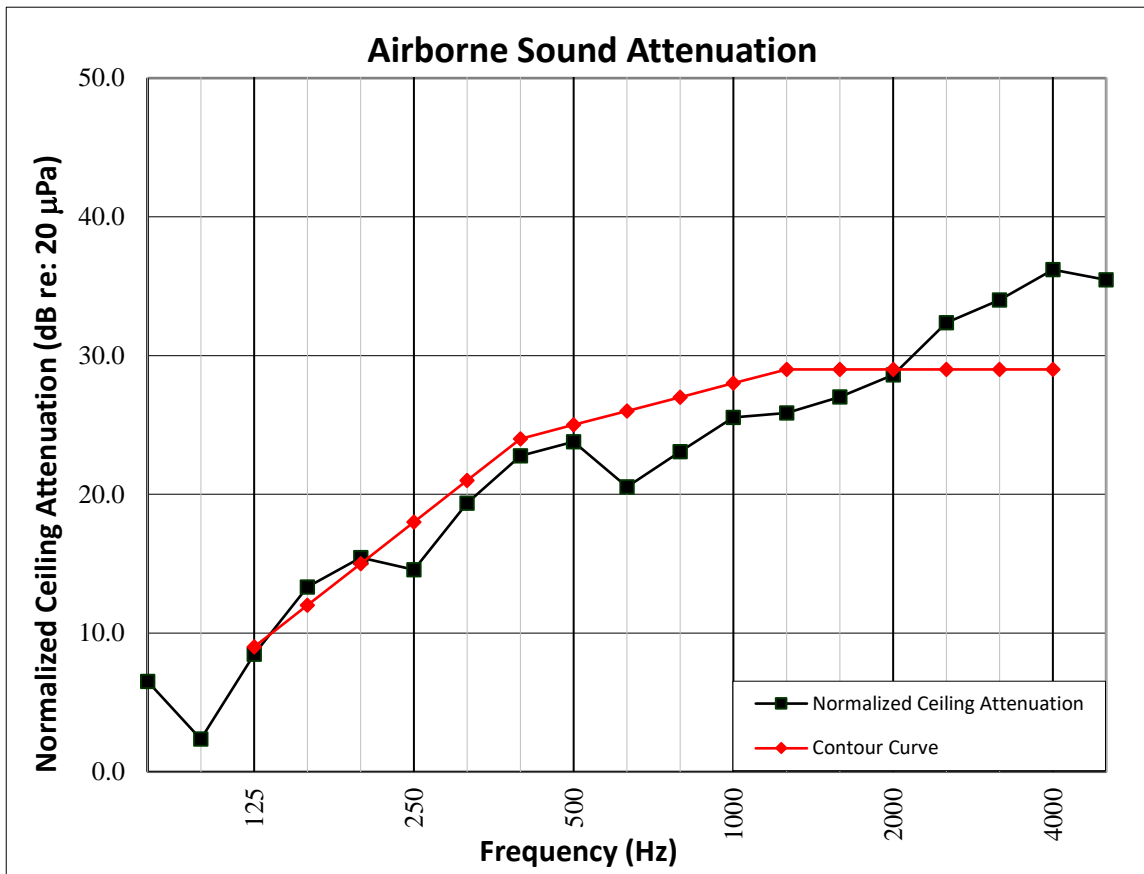
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### SECTION 11

#### TEST RESULTS - NORMALIZED CEILING ATTENUATION GRAPH

<b>TEST DATE</b>	05/31/19				
<b>DATA FILE NO.</b>	J7488.02				
<b>CLIENT</b>	Adapt				
<b>DESCRIPTION</b>	Better Than Wood Ceiling Planks				
<b>TECHNICIAN</b>	MKD	<b>Temperature</b>	22.2°C	<b>Humidity</b>	69.2%





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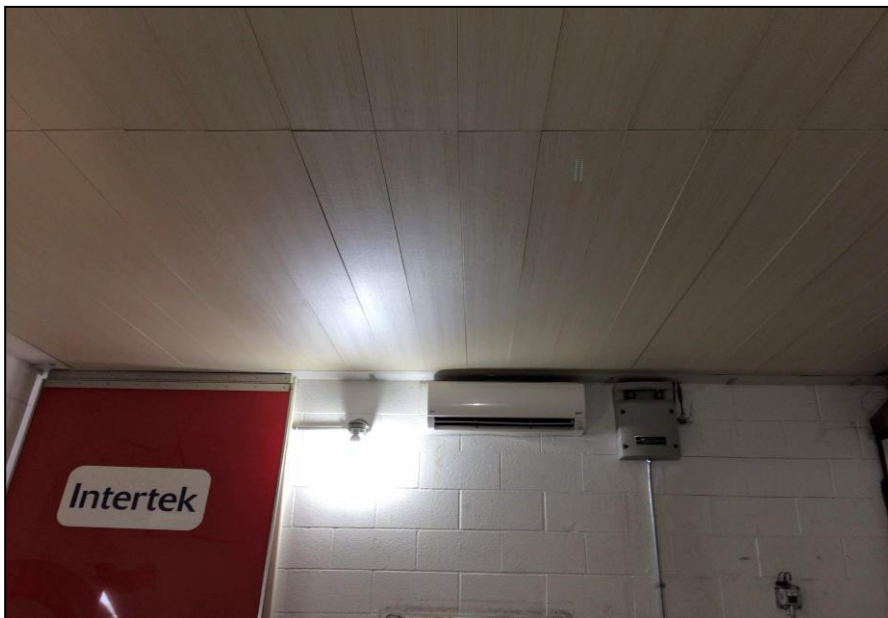
### SECTION 12

#### PHOTOGRAPHS



**Photo No. 1**

**Receive Room View of Test Specimen Installation**



**Photo No. 2**

**Close-Up of Test Specimen**

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### SECTION 12

#### PHOTOGRAPHS (CONT'D)



**Photo No. 3**  
**Source Room View of Test Specimen Installation**

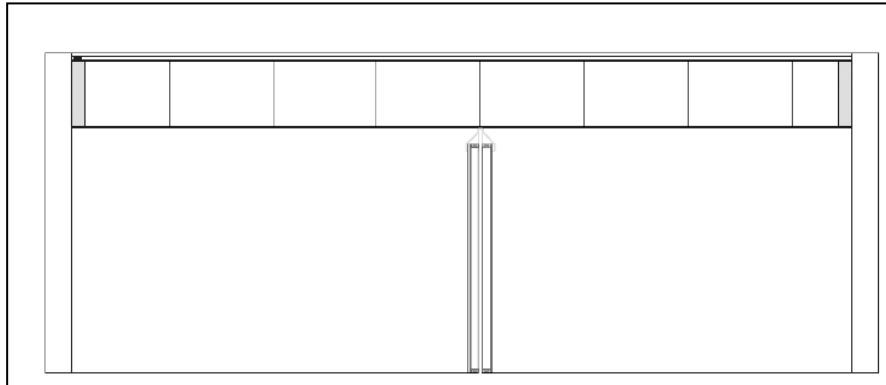
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**SECTION 13**

**DRAWING**



**Drawing No. 1**  
**Elevation View of Reverberation Chamber**

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**SECTION 14**

**REVISION LOG**

REVISION #	DATE	PAGES	DESCRIPTION
R0	06/19/19	N/A	Original Report Issue - Reissue of Report No. J7488.02-113-11 in the name of Adapt.