

REGUPOL AMERICA

ACOUSTICAL

PERFORMANCE

TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON 18" OPEN WEB TRUSS WITH 5 MM SONUS RUBBER UNDERLAYMENT, HARDWOOD FLOOR AND SONUSCLIP CEILING

SPECIMEN TYPE

Open Web Truss - 457 mm

REPORT NUMBER

H6848.04-303-11-R0

TEST DATE(S)

11/15/17

ISSUE DATE

01/03/18

RECORD RETENTION END

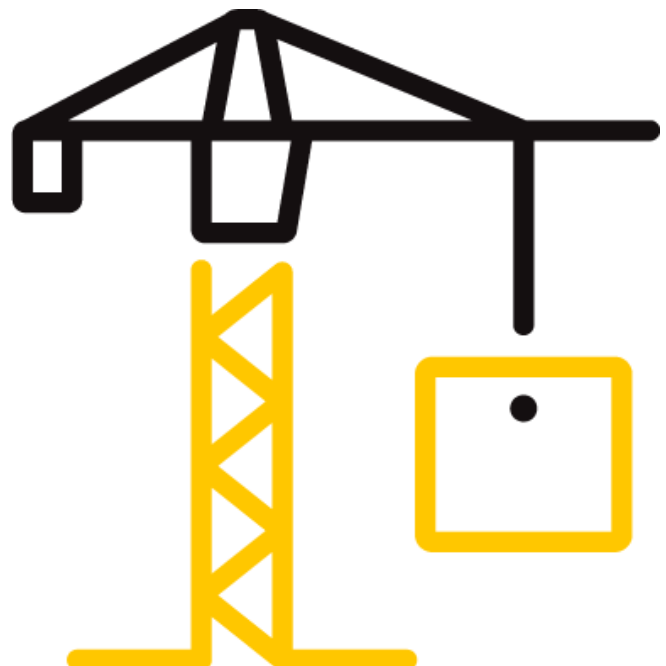
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Report No.: H6848.04-303-11-R0

Date: 01/03/18

REPORT ISSUED TO

REGUPOL AMERICA

11 Ritter Way

Lebanon, Pennsylvania 17042

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by to perform testing in accordance with ASTM E90 AND ASTM E492 on 18" Open Web Truss with 5 mm Sonus Rubber Underlayment, Hardwood Floor and SonusClip Ceiling. 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 Lake Forest, California.

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.	H6848.04
SERIES/MODEL:	18" Open Web Truss with 5 mm Sonus Rubber Underlayment, Hardwood Floor and SonusClip Ceiling
STC	60
IIC	55

COMPLETED BY: Leeland S. Hoover

TITLE: Technician I

SIGNATURE:

DATE: 01/03/18

COMPLETED BY: Bradley D. Hunt

TITLE: Laboratory Manager

SIGNATURE:

DATE: 01/03/18

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SECTION 3**TEST METHOD(S)**

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 E989-06 (2012), *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 client were installed on an existing B&C assembly (Open Web Truss - 457 mm) 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 762.3 kg. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments.

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-1033	Data Acquisition Card	63763-1	06/16 *
Microphone Calibrator	Norsonic	1251	Pistonphone calibrator	INT00127	03/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65617	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	05/17
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/16
				63811	10/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63738	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63739	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63740	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63742	04/17
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	63741	04/17
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	11/16
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	Tapping Machine	65351	02/17

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

VT RECEIVE ROOM VOLUME	180.6 m ³
VT SOURCE ROOM VOLUME	129.4 m ³

**SECTION 6
LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Bill Devin	Regupol America
Leeland S. Hoover	Intertek B&C
Bradlay D. Hunt	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 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. Four 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/inch)	THICKNESS (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Bamboo Flooring	914.4 by 127	10.0	Hardwood	11.15 m ²	11.96 kg/m ²
	Note: Loose laid				
Rubber Underlayment	2794 by 1219	5.1	Regupol 5mm Sonus	11.15 m ²	3.81 kg/m ²
	Note: Loose laid				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	11.15 m ²	13.82 kg/m ²
	Note: Adhered to the floor trusses with Loctite PL 400 Subfloor adhesive. Fastened with 9D nails on 203 mm centers along perimeter and 305 mm centers along trusses.				
Fiberglass Insulation	520.7 by 3023	88.9	Johns Manville Unfaced R-13	11.15 m ²	1.32 kg/m ²
	Note: Installed in the cavity between trusses flush with the OSB. Hanger wire was used to keep insulation secure on 305 mm				
Open Web Truss	88.9 by 2933.7	457.2	Stone Truss L/360	7 trusses	19.05 kg/truss
	Note: Installed on 610 mm centers using JUS414 hanger brackets.				
SonusClip	76.2 by 35.1	25.6	Regupol	23 clips	0.06 kg/m ²
	Note: Each clip was installed with a single 50.8 mm long 8 gauge drywall screw				
25 gauge Hat Channel	3454.4 by 63.5	22.1	N/A	27.6 lin m	0.63 kg/m
	Note: Installed on 609 mm centers perpendicular to the trusses.				
Gypsum Panel	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C core	11.15 m ²	11.91 kg/m ²
	Note: Fastened to the hat channels on 305 mm centers with 25.4 mm Type S bugle head screws. The seams of the gypsum panels were sealed with Pecora AC-20 FTR caulk and covered with pressure sensitive tape.				
Gypsum Panel	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C core	11.15 m ²	11.91 kg/m ²
	Note: Fastened to the hat channels on 305 mm centers with 47.6 mm Type S bugle head screws. The seams of the gypsum panels were sealed with Pecora AC-20 FTR caulk and covered with pressure sensitive tape.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	11/15/2017				
DATA FILE NO.	H6848.04				
CLIENT	Regupol America				
DESCRIPTION	9.99 mm Hardwood Bamboo Flooring, 5.1 mm Regupol 5mm Sonus Rubber Underlayment, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm Stone Truss L/360 Open Web Truss, 25.6 mm Regupol SonusClip, 22.11 mm 25 gauge Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
SPECIMEN AREA	11.15 m ²	Receive Temp.	21.1	Source Temp.	21.1
TECHNICIAN	LSH	Receive Humidity	45%	Source Humidity	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	24.8	7.1	102	65	39	2.9	-
100	24.8	6.2	104	67	40	1.9	-
125	25.8	5.3	102	67	39	1.3	5
160	20.7	5.4	100	60	44	1.7	3
200	14.2	5.9	100	56	47	1.0	3
250	12.5	6.3	98	51	50	0.8	3
315	7.5	7.2	102	49	55	1.1	1
400	7.4	7.4	102	50	53	0.8	6
500	6.3	6.1	100	47	55	0.5	5
630	4.9	6.2	96	41	57	0.5	4
800	3.6	6.2	96	39	60	0.7	2
1000	3.3	6.3	97	35	64	0.6	0
1250	2.3	6.6	98	35	65	0.3	0
1600	2.2	6.9	99	32	69	0.3	0
2000	2.4	7.8	99	30	70	0.5	0
2500	3.3	8.6	100	28	73	0.5	0
3150	4.1	9.4	99	23	77	0.3	0
4000	4.9	11.3	98	20	79	0.4	0
5000	5.1	13.9	96	15	80	0.3	-
6300	5.7	18.2	94	12	80	0.4	-
8000	6.1	24.7	95	9	82	0.6	-
10000	6.3	31.0	94	7	82	0.3	-
STC Rating	60	<i>(Sound Transmission Class)</i>			Sum of Deficiencies	32	

- 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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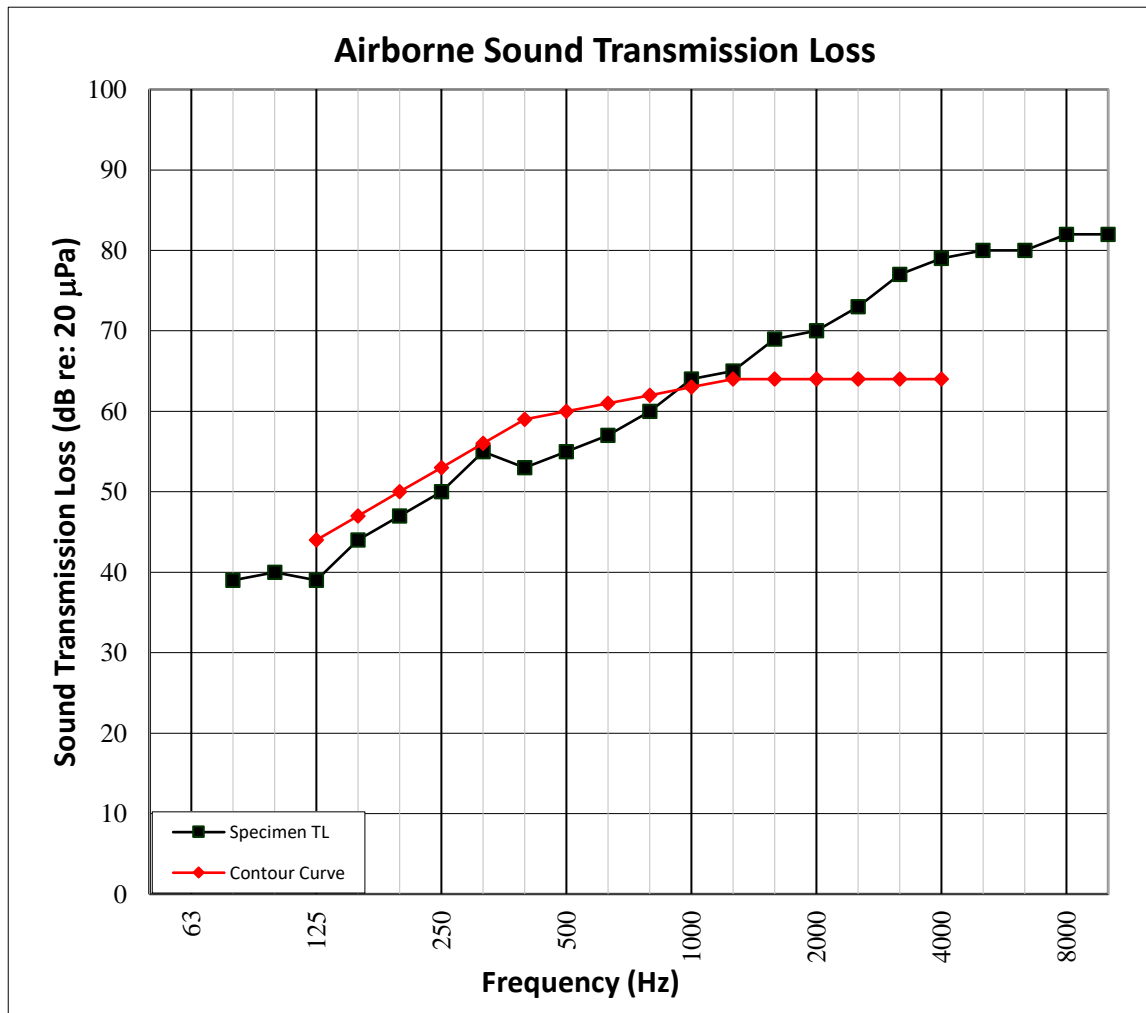
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	11/15/2017				
DATA FILE NO.	H6848.04				
CLIENT	Regupol America				
DESCRIPTION	9.99 mm Hardwood Bamboo Flooring, 5.1 mm Regupol 5mm Sonus Rubber Underlayment, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm Stone Truss L/360 Open Web Truss, 25.6 mm Regupol SonusClip, 22.11 mm 25 gauge Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
SPECIMEN AREA	11.15 m ²	Receive Temp.	21.1	Source Temp.	21.1
TECHNICIAN	LSH	Receive Humidity	45%	Source Humidity	45%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION



TEST DATE	11/15/2017				
DATA FILE NO.	H6848.04				
CLIENT	Regupol America				
DESCRIPTION	9.99 mm Hardwood Bamboo Flooring, 5.1 mm Regupol 5mm Sonus Rubber Underlayment, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm Stone Truss L/360 Open Web Truss, 25.6 mm Regupol SonusClip, 22.11 mm 25 gauge Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
SPECIMEN AREA	11.15 m ²	Maximum Temp.	21.1	Minimum Temp.	21.1
TECHNICIAN	LSH	Max. Humidity	45%	Min. Humidity	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	28.4	6.8	63	1.5	-
100	26.1	6.0	65	1.6	8
125	26.2	5.1	61	0.8	4
160	19.5	5.0	60	0.5	3
200	13.4	6.1	60	0.4	3
250	14.0	6.3	59	0.4	2
315	12.2	7.4	51	0.4	0
400	10.6	7.4	52	0.4	0
500	7.9	6.2	48	0.2	0
630	6.6	6.1	44	0.2	0
800	6.7	6.3	43	0.3	0
1000	6.8	6.2	40	0.2	0
1250	3.7	6.6	38	0.2	0
1600	3.0	6.9	33	0.2	0
2000	3.6	7.9	32	0.2	0
2500	4.2	8.6	27	0.2	0
3150	5.6	9.4	20	0.2	0
4000	5.5	11.2	15	0.3	-
5000	5.4	14.1	9	0.3	-
6300	5.8	18.0	8	0.3	-
8000	6.1	24.9	9	0.3	-
10000	6.3	31.4	9	0.3	-
IIC Rating	55	<i>(Impact Insulation Class)</i>		Sum of Deficiencies	20

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

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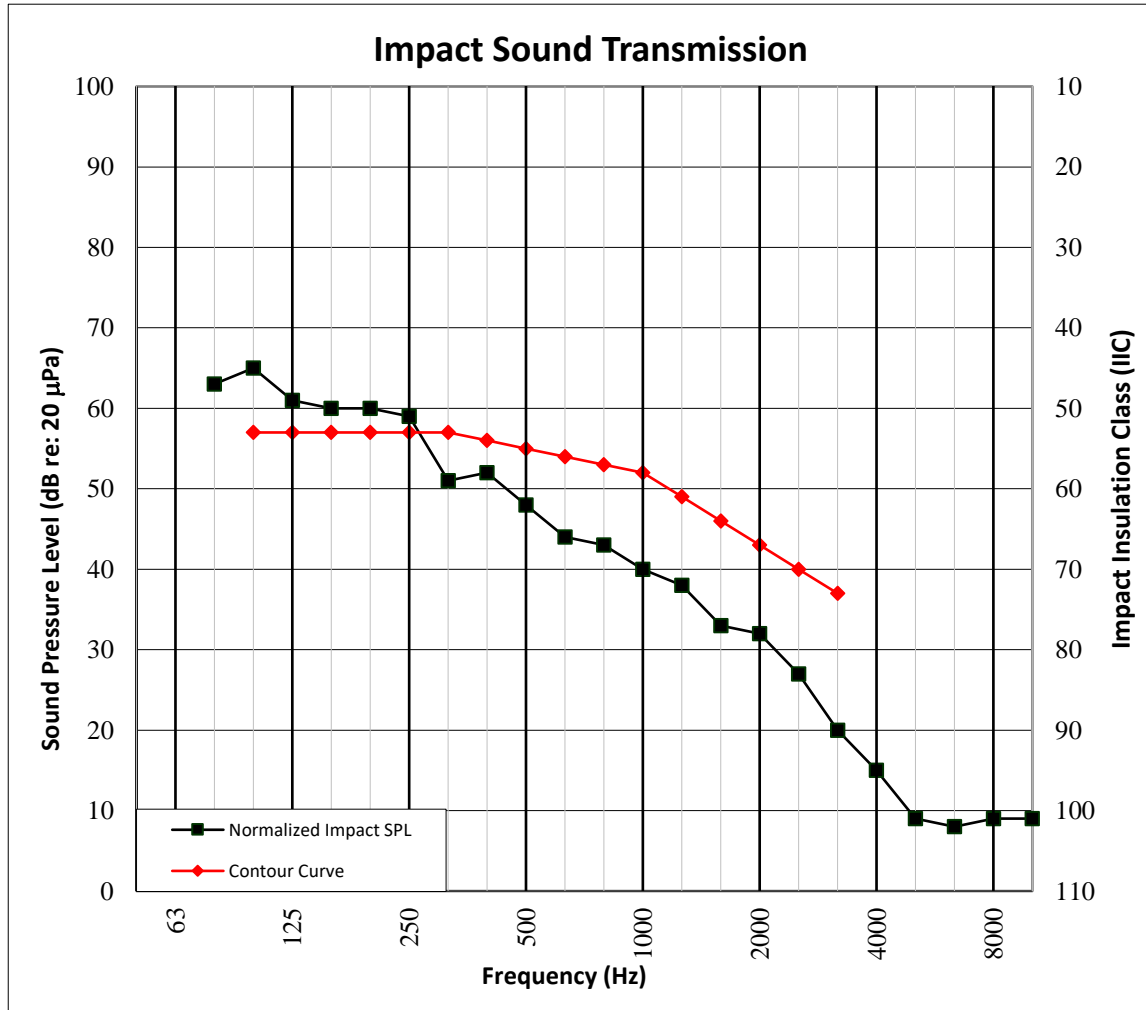
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	11/15/2017				
DATA FILE NO.	H6848.04				
CLIENT	Regupol America				
DESCRIPTION	9.99 mm Hardwood Bamboo Flooring, 5.1 mm Regupol 5mm Sonus Rubber Underlayment, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm Stone Truss L/360 Open Web Truss, 25.6 mm Regupol SonusClip, 22.11 mm 25 gauge Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
SPECIMEN AREA	11.15 m ²	Maximum Temp.	21.1	Minimum Temp.	21.1
TECHNICIAN	LSH	Max. Humidity	45%	Min. Humidity	45%



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SECTION 14

PHOTOGRAPHS



Photo No. 1

Source Room View of Test Specimen Installation



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SECTION 16

REVISION LOG

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