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PALZIV NORTH AMERICA ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 AND ASTM E492 TESTING ON LIFEPROOF PLUSH CARPET OVER 8MM (5/16”) HQ LIVING CARPET CUSHION

SPECIMEN TYPE
152 mm Concrete Slab with Suspended Ceiling

REPORT NUMBER
M5263.15-113-11-R0

TEST DATE
06/19/21

ISSUE DATE
11/17/22

RECORD RETENTION END
06/19/25

PAGES
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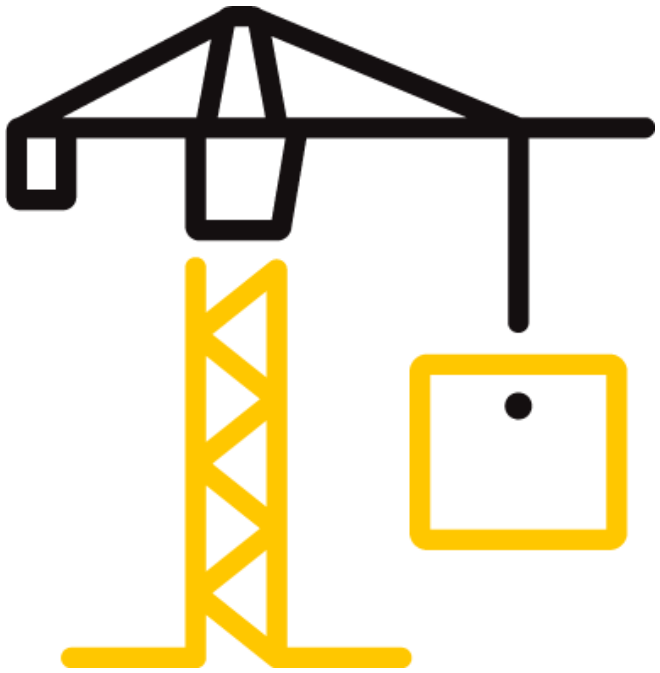

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TEST REPORT FOR PALZIV NORTH AMERICA
Report No.: M5263.15-113-11-R0
Date: 11/17/22

REPORT ISSUED TO
PALZIV NORTH AMERICA
7966 NC 56 Highway
Louisburg, North Carolina 27549

SECTION 1
SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Palziv North America to perform testing in accordance with ASTM E90 AND ASTM E492 on Lifeproof Plush Carpet over 8mm (5/16") HQ Living Carpet Cushion. Results obtained are tested values and were secured by using the designated test methods. 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.	M5263.15
SERIES/MODEL:	Lifeproof Plush Carpet over 8mm (5/16") HQ Living Carpet Cushion
STC	60
IIC	93
HIIC	97

COMPLETED BY:	Morgan S. J. Kennedy	**COMPLETED BY:**	Daniel B. Mohler
TITLE:	Technician - Acoustical Testing	**TITLE:**	Project Lead - Acoustical Testing
SIGNATURE:	Digitally Signed by: Morgan Kennedy	**SIGNATURE:**	Digitally Signed by: Daniel Mohler
DATE:	11/17/22	**DATE:**	11/17/22

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Report No.: M5263.15-113-11-R0
Date: 11/17/22

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 E989-21, *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2020), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

ASTM E3222-20, *Standard Classification for Determination of High-Frequency Impact Sound Ratings*

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 (152 mm Concrete Slab with Suspended 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 4204.7 kg. 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 specimen is included in the report.

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.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called “Shared Risk approach,” of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

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SECTION 5
EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-1	10/20	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-4	10/20	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	65124	02/21	*
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	65105	09/20	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64340	11/20	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65617	09/20	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65968	01/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT01089	02/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00652	02/21	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/20	
				63811	10/20	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65969	04/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	03/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63747	09/20	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63745	09/20	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63744	09/20	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	10/20	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	01/21	

* 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
Daniel B. Mohler	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 receive 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), IIC (Impact Insulation Class), and HIIC (High-Frequency Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, and ASTM E3222, respectively.

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TEST REPORT FOR PALZIV NORTH AMERICA
Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 9
TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Carpet	3048 by 3657.6	16.0	Lifeproof Plush	10.98 m²	2.69 kg/m²
	Note: Loose laid				
Foam Carpet Cushion	1282.8 by 3048	8.0	(5/16") HQ Living	10.98 m²	0.39 kg/m²
	Note: Loose laid				
Concrete Slab	3023 by 3632	152.4	5000 PSI	10.98 m²	366.18 kg/m²
	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 m²	1.32 kg/m²
	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 m²	11.23 kg/m²
	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.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS

IAS ACCREDITED Testing Laboratory

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	22.3°C	**Source Temp.**	22.4°C
TECHNICIAN	CRS	**Receive Humidity**	62%	**Source Humidity**	62%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**SOURCE SPL** (dB)	**RECEIVE SPL** (dB)	**SPECIMEN TL** (dB)	**95% CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
80	28.2	15.8	95	62	32	3.3	-
100	21.8	10.5	94	59	37	2.2	-
125	21.5	10.5	94	54	41	2.6	3
160	19.2	10.5	94	53	42	1.1	5
200	14.7	11.0	94	48	47	1.2	3
250	18.3	11.6	98	47	52	1.2	1
315	14.6	11.2	101	49	53	0.9	3
400	14.4	10.0	101	49	54	0.6	5
500	10.4	9.0	100	43	58	0.8	2
630	11.5	9.0	102	44	59	1.2	2
800	13.3	9.0	100	42	60	0.5	2
1000	14.1	9.0	99	38	62	0.6	1
1250	10.5	9.1	100	38	63	0.8	1
1600	6.5	9.2	100	35	66	0.7	0
2000	5.5	9.9	99	33	68	0.6	0
2500	4.9	11.3	98	31	69	0.5	0
3150	4.6	12.2	99	30	69	0.3	0
4000	5.1	13.2	100	27	72	0.5	0
5000	5.8	14.5	100	26	73	0.6	-
6300	6.5	17.1	95	19	74	0.6	-
8000	7.1	21.8	94	16	75	1.2	-
10000	7.5	21.8	91	9	80	1.1	-
STC Rating	**60**	*(Sound Transmission Class)*			**Sum of Deficiencies**		**28**

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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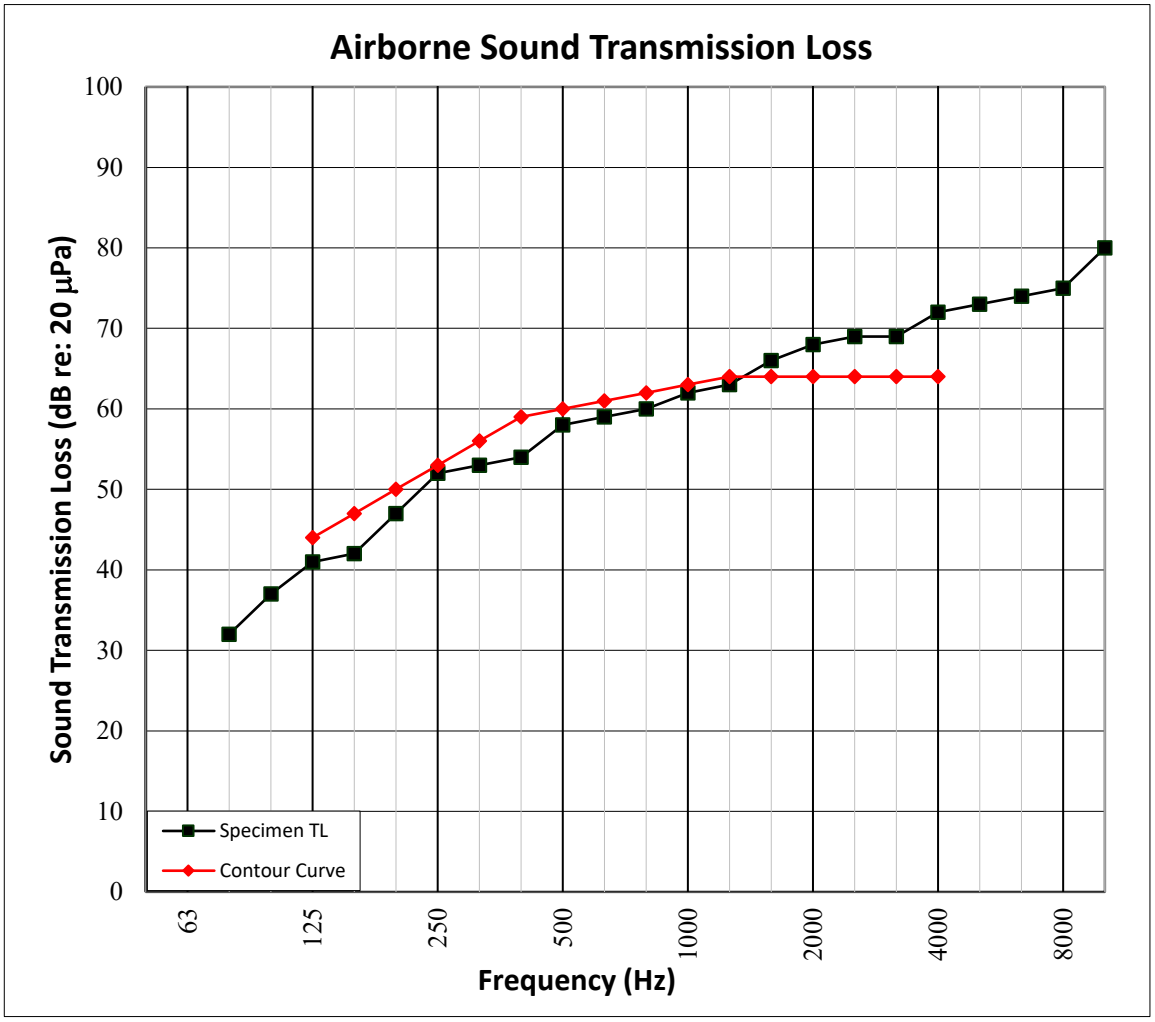
TEST REPORT FOR PALZIV NORTH AMERICA

Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	22.3°C	**Source Temp.**	22.4°C
TECHNICIAN	CRS	**Receive Humidity**	62%	**Source Humidity**	62%



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TEST REPORT FOR PALZIV NORTH AMERICA

Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	22.3°C	**Minimum Temp.**	22.2°C
TECHNICIAN	CRS	**Max. Humidity**	62%	**Min. Humidity**	62%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** (dB)	**95% CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
80	28.1	16.1	34	1.6	-
100	24.7	9.1	27	1.3	8
125	21.9	10.5	23	1.0	4
160	22.2	10.2	20	1.0	1
200	17.9	11.8	15	0.8	0
250	18.4	11.9	18	2.1	0
315	16.2	11.2	15	0.7	0
400	15.6	10.5	16	0.6	0
500	9.7	9.3	14	0.7	0
630	12.5	9.0	12	0.8	0
800	13.2	9.0	11	1.3	0
1000	13.8	9.1	11	1.5	0
1250	10.3	9.0	7	0.8	0
1600	5.9	9.2	3	0.4	0
2000	5.0	10.1	3	0.3	0
2500	4.4	11.4	3	0.3	1
3150	4.4	12.1	3	0.2	4
4000	5.1	13.2	4	0.2	-
5000	5.8	14.4	5	0.2	-
6300	6.5	17.2	7	0.2	-
8000	7.1	21.9	9	0.2	-
10000	7.5	21.9	9	0.2	-
IIC Rating	**93**	*(Impact Insulation Class)*		**Sum of Deficiencies**	**18**

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

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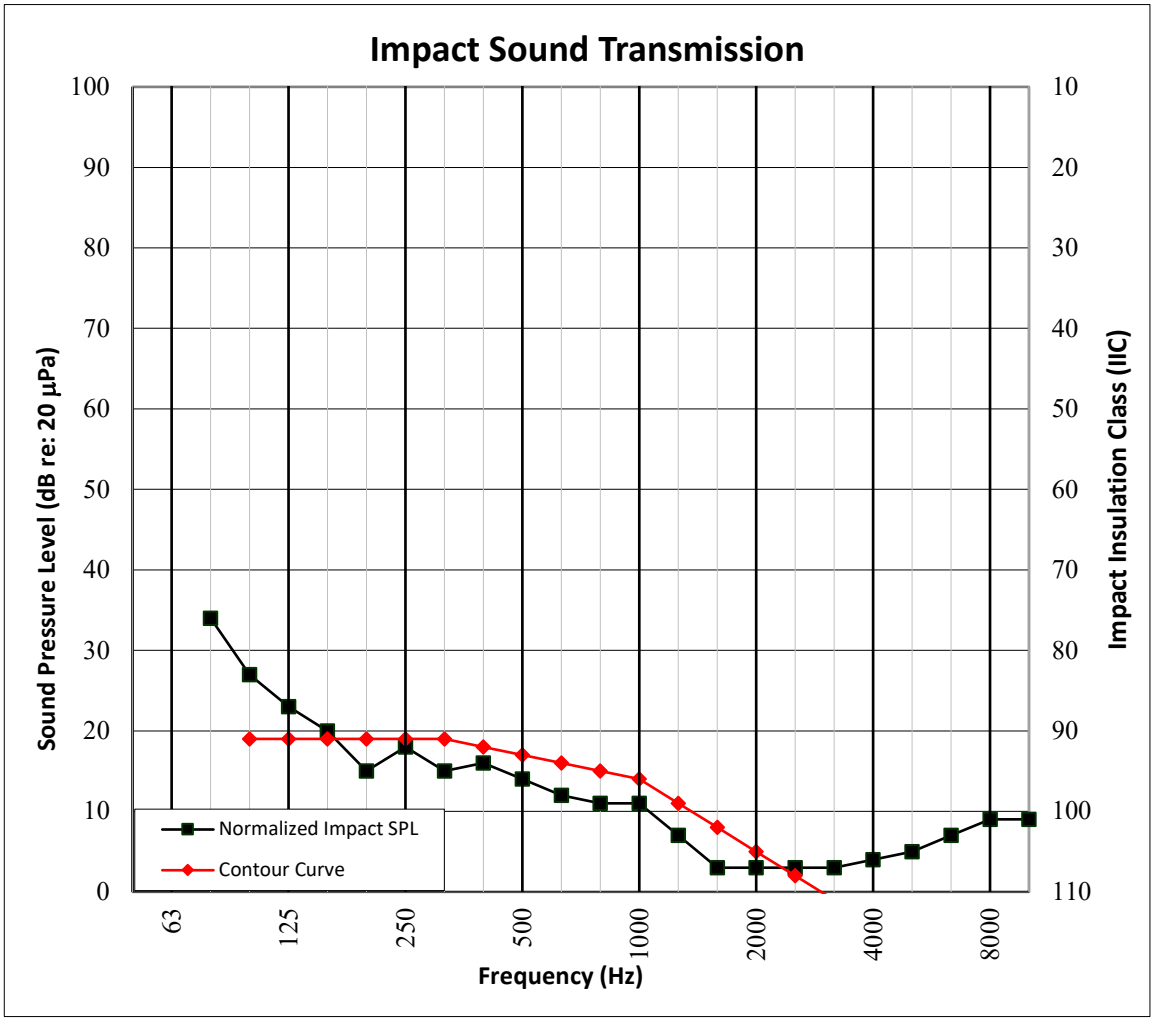
Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH

IAS ACCREDITED Testing Laboratory

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	22.3°C	**Minimum Temp.**	22.2°C
TECHNICIAN	CRS	**Max. Humidity**	62%	**Min. Humidity**	62%



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TEST REPORT FOR PALZIV NORTH AMERICA

Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	22.3°C	**Minimum Temp.**	22.2°C
TECHNICIAN	CRS	**Max. Humidity**	62%	**Min. Humidity**	62%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** (dB)	**95% CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
400	15.6	10.5	16	0.6	1.7
500	9.7	9.3	14	0.7	0.7
630	12.5	9.0	12	0.8	0.2
800	13.2	9.0	11	1.3	0.4
1000	13.8	9.1	11	1.5	0.9
1250	10.3	9.0	7	0.8	0.5
1600	5.9	9.2	3	0.4	0.0
2000	5.0	10.1	3	0.3	1.6
2500	4.4	11.4	3	0.3	4.9
3150	4.4	12.1	3	0.2	8.2
HIIC Rating	**97**	*(High-Frequency Impact Insulation Class)*		**Sum of Deficiencies**	**19.1**

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

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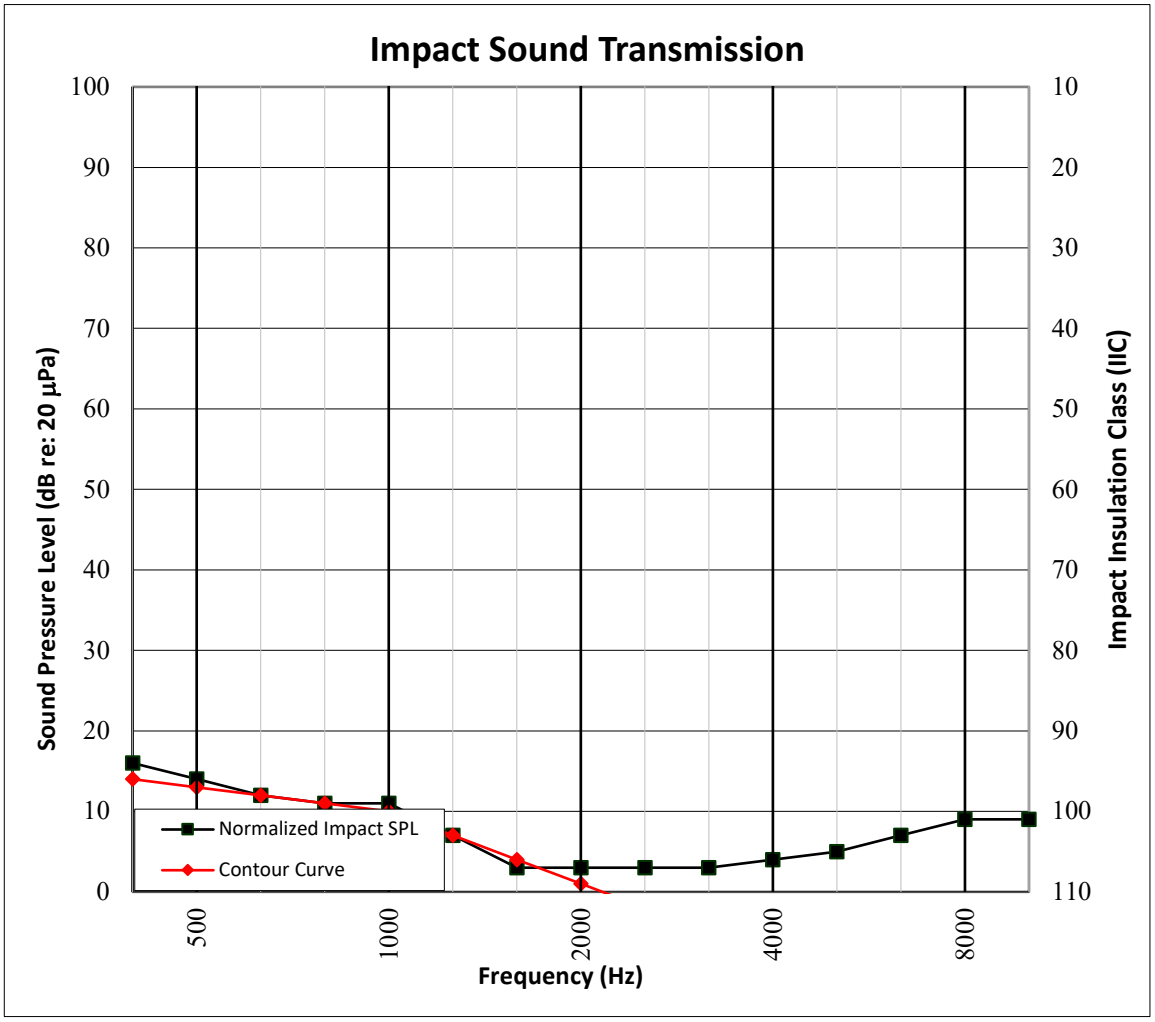
SECTION 15

TEST RESULTS -HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH

TEST DATE	6/19/2021				
DATA FILE NO.	M5263.15				
CLIENT	Palziv North America				
DESCRIPTION	16 mm Lifeproof Plush Carpet, 8 mm (5/16") HQ Living Foam Carpet Cushion, 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				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	22.3°C	**Minimum Temp.**	22.2°C
TECHNICIAN	CRS	**Max. Humidity**	62%	**Min. Humidity**	62%



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SECTION 16
PHOTOGRAPHS

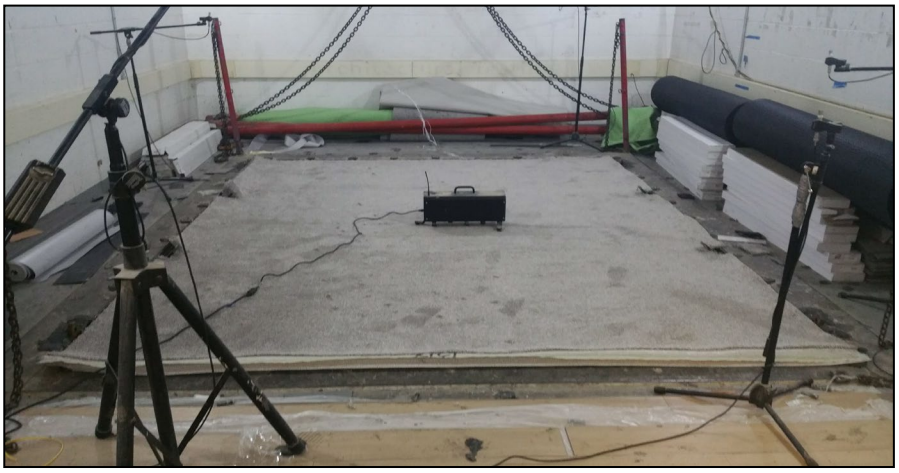

Photo No. 1
Source Room View of Test Specimen Installation

Photo No. 2
Receive Room View of Test Specimen Installation

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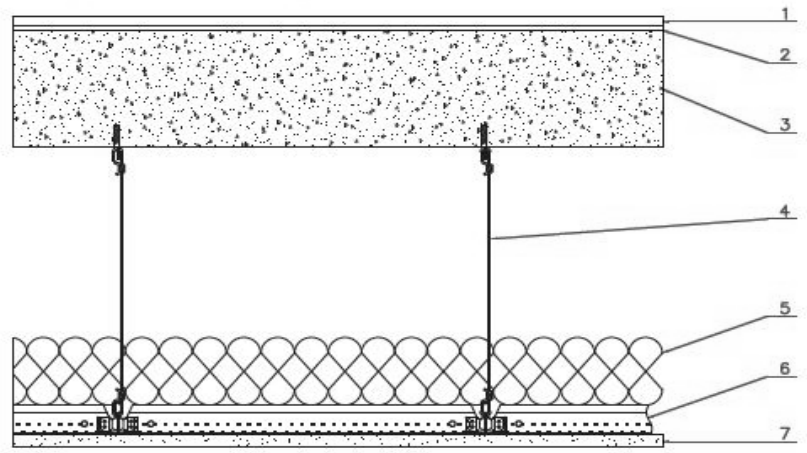
TEST REPORT FOR PALZIV NORTH AMERICA
Report No.: M5263.15-113-11-R0
Date: 11/17/22

SECTION 17
DRAWING



1-Floor Topping
2-Underlayment
3-Concrete Slab
4-Hanger Wire
5-Insulation
6-Ceiling Grid
7-Ceiling

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SECTION 18

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	11/17/22	N/A	Original Report Issue