

# KINETICS NOISE CONTROL ACOUSTICAL PERFORMANCE TEST REPORT

#### **SCOPE OF WORK**

ASTM E90 AND ASTM E492 TESTING ON CLICK-LOCK LVT OVER THREE-LAYERS PLYWOOD OVER 2X6 DIMENSIONAL LUMBER SLEEPS WITH R6.7 FIBERGLASS INSULATION OVER KINETICS METAWRX ISOLATORS

#### **SPECIMEN TYPE**

Vulcraft 2VLI Composite Floor Deck

#### **REPORT NUMBER**

N3131.15-113-11-R0

#### **TEST DATE**

02/09/22

#### **ISSUE DATE**

03/16/22

#### RECORD RETENTION END

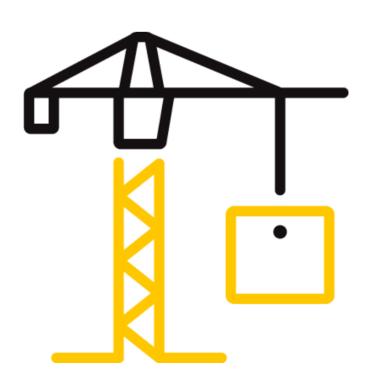
02/09/26

#### **PAGES**

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# **DOCUMENT CONTROL**

ATI 00629 (03/21/18) RTTDS-R-AMER-Test-2844 © 2017 INTERTEK





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#### **TEST REPORT FOR KINETICS NOISE CONTROL**

Report No.: N3131.15-113-11-R0

Date: 03/16/22

#### **REPORT ISSUED TO**

**KINETICS NOISE CONTROL** 6300 Irelan Place - PO Box 655 Dublin, Ohio 43017

#### **SECTION 1**

#### **SCOPE**

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Kinetics Noise Control to perform testing in accordance with ASTM E90 AND ASTM E492 on Click-Lock LVT over Three-Layers Plywood over 2x6 Dimensional Lumber Sleeps with R6.7 Fiberglass Insulation over Kinetics MetaWrx Isolators. 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.	N3131.15
SERIES/MODEL:	Click-Lock LVT over Three-Layers Plywood over 2x6 Dimensional Lumber
SERIES/IVIODEL:	Sleeps with R6.7 Fiberglass Insulation over Kinetics MetaWrx Isolators
STC	61
IIC	64
HIIC	82

**COMPLETED BY:** Corev S. Kohler **COMPLETED BY:** Daniel B. Mohler Technician - Acoustical Project Lead - Acoustical TITLE: TITLE: **Testing** Testing **SIGNATURE: SIGNATURE: DATE:** 03/16/22 DATE: 03/16/22

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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 E989-21**, 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 (Vulcraft 2VLI Composite Floor Deck) 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 3413.4 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.

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 DA	ΤE
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02572	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02574	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02575	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02576	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02577	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02578	05/21	*
2-Channel Analog Output	National Instruments	NI 9260	2-Channel Analog Input	INT02573	05/21	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	10/21	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63745	09/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	07/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	10/21	
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 63811	10/21 10/21	
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	63741	07/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63740	04/21	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63739	04/21	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter 63812		10/21	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	02/21	

<sup>\*</sup> The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

VT RECEIVE ROOM VOLUME	158.99 m³
VT SOURCE ROOM VOLUME	190 m³

## **SECTION 6**

## **LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Morgan S. J. Kennedy	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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# **SECTION 9**

# **TEST SPECIMEN DESCRIPTION**

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT			
Luxury Vinyl	1219.2 by 152.4	6.8	Shaw Como Plus	10.98 m²	6.49 kg/m²			
Plank	Note: Loose laid.	The flooring had a	n attached pad backing.					
	2438.4 by 1219.2	18.3	N/A	10.98 m²	12.4 kg/m²			
Plywood	than 254 mm apa		d, adhered with Liquid Nails o second layer with 50.8 mm r and in the field.					
	2438.4 by 1219.2	18.3	N/A	10.98 m²	12.4 kg/m²			
Plywood	than 254 mm apa	Note: Installed with seams staggered, adhered with Liquid Nails Heavy Duty with ribbons no more than 254 mm apart, and fastened to first layer with 31.75 mm coarse thread wood screws on 305 mm centers along the perimiter and in the field.						
Plywood	2438.4 by 1219.2	18.3	N/A	10.98 m²	12.4 kg/m²			
Piywood	Note: Loose laid on top the isolators.							
2x6 Dimensional	3023 by 139.7	38.1	N/A	21.16 lin m	2.71 kg/m			
Lumber	Note: Loose laid on 609.6 mm centers							
Isolator	107.8 by 107.8	19.1	Kinetics MetaWrx	42	0.15 kg/ea			
isolatol	Note: Placed on the concrete slab on 609.6 mm centers each way.							
Fiberlgass	1219.2 by 406.4	50.8	R6.7 Unfaced	10.98 m²	0.59 kg/m²			
Insulaton	Note: Loose laid on the slab with cutouts for isolators.							
Standard 4000	3023 by 3632	139.7	N/A	10.98 m²	248.08 kg/m²			
PSI Concrete	Note: Poured directly on the floor deck and allowed to cure for a minimum of 28 days. No noticeable shrinkage or cracking was visible on the specimen.							
	3023 by 3632	50.8	18 Gage Vulcraft 2VLI	10.98 m²	12.74 kg/m²			
Composite Floor Deck	Note: Installed per manufacturer's specifications in a test frame with the top of the concrete flush with the source room. All seams and gaps underneath the deck were plugged with backer rod and sealed with Pecora AC-20 Acoustical Sealant.							



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## **SECTION 10**

# **TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS**

TEST DATE	2/9/2022							
DATA FILE NO.	N3131.15				ACCREDITED			
CLIENT	Kinetics Noise C	netics Noise Control						
	mm Plywood, 38. 50.8 mm R6.7 Un	metics Noise Control  Testing Laboratory  B mm Shaw Como Plus Luxury Vinyl Plank, 18.3 mm Plywood, 18.3 mm Plywood, 18.3 mm Plywood, 38.1 mm 2x6 Dimensional Lumber, 19.1 mm Kinetics MetaWrx Isolator,  B mm R6.7 Unfaced Fiberlgass Insulaton, 139.7 mm Standard 4000 PSI Concrete, 50.8 mm 18 Gage Vulcraft 2VLI Composite Floor Deck						
SPECIMEN AREA	10.98 m <sup>2</sup>	Receive Temp.	22.6°C	Source Temp.	23°C			
TECHNICIAN	MSJK	Receive Humidity	42%	Source Humidity	42%			

FREQ	BACKGROUND	ABSORPTION	SOURCE	RECEIVE	SPECIMEN	95%	NUMBER
FREQ	SPL	ABSORPTION	SPL	SPL	TL	CONFIDENCE	OF
(Hz)	(dB)	m²	(dB)	(dB)	(dB)	LIMIT	DEFICIENCIES
50	36	23.9	90	55	32	3.7	-
63	38.9	18.9	91	54	35	3.6	-
80	34.4	14.4	101	66	35	2.6	-
100	27.2	10.0	102	70	34	2.8	-
125	29.5	8.9	106	66	42	1.8	3
160	23.3	8.8	103	62	43	1.0	5
200	19.4	10.1	99	57	44	2.0	7
250	22.8	9.3	102	53	51	1.0	3
315	19.1	9.4	106	53	54	1.2	3
400	15.5	8.0	107	50	59	0.7	1
500	17.2	7.6	105	46	62	1.0	0
630	16.5	7.3	105	44	64	0.6	0
800	16.6	7.3	104	43	64	0.4	0
1000	19.0	7.3	104	41	65	0.5	0
1250	16.8	7.5	103	39	66	0.5	0
1600	12.5	7.8	103	39	66	0.4	0
2000	10.1	8.6	104	38	67	0.7	0
2500	8.5	9.4	99	36	65	1.1	0
3150	8.2	10.5	99	37	62	1.0	3
4000	8.5	11.9	99	37	62	1.5	3
5000	9.2	14.2	96	30	65	1.8	-
6300	9.8	17.5	94	28	64	1.8	-
8000	10.7	22.5	94	23	67	1.9	-
10000	11.2	22.5	91	18	71	1.9	-
STC Ratir	1 <mark>g</mark> 61	(Sound Transmi	ssion Class)	•	Sum o	f 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  $\ensuremath{\textit{red}}$  are potentially limited by the laboratory flanking limit.
- 3) Specimen TL levels listed in <u>blue</u> 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 KINETICS NOISE CONTROL**

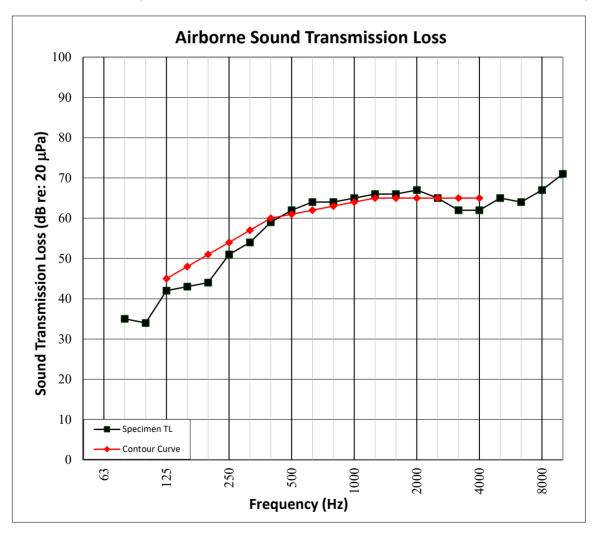
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## **SECTION 11**

# **TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH**

DATA FILE NO. CLIENT DESCRIPTION	6.8 mm Shaw Con mm Plywood, 38. 50.8 mm R6.7 Uni	•				
SPECIMEN AREA	10.98 m²	Receive Temp.	22.6°C	Source Temp.	23°C	
TECHNICIAN	MSJK	Receive Humidity	42%	Source Humidity	42%	





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# **TEST REPORT FOR KINETICS NOISE CONTROL**

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## **SECTION 12**

# **TEST RESULTS - IMPACT SOUND TRANSMISSION**

TEST DATE DATA FILE NO.	2/9/2022 N3131.15				ACCREDITED			
CLIENT	Kinetics Noise C	etics Noise Control						
DESCRIPTION	mm Plywood, 38. 50.8 mm R6.7 Uni	metics Noise Control  Testing Laboratory  B mm Shaw Como Plus Luxury Vinyl Plank, 18.3 mm Plywood, 18.3 mm Plywood, 18.3 mm Plywood, 38.1 mm 2x6 Dimensional Lumber, 19.1 mm Kinetics MetaWrx Isolator, 1.8 mm R6.7 Unfaced Fiberlgass Insulaton, 139.7 mm Standard 4000 PSI Concrete, 50.8 mm 18 Gage Vulcraft 2VLI Composite Floor Deck						
SPECIMEN AREA	10.98 m²	Maximum Temp.	24.3°C	Minimum Temp.	21.1°C			
TECHNICIAN	MSJK	Max. Humidity	46%	Min. Humidity	38%			

FREQ	BACKGROUND SPL	ABSORPTION	NORMALIZED IMPACT SPL	95% CONFIDENCE	NUMBER OF
(Hz)	(dB)	m²	(dB)	LIMIT	DEFICIENCIES
80	28.4	14.0	55	2.1	-
100	29.7	9.9	53	1.5	5
125	27.8	8.5	55	1.0	7
160	23.2	8.4	55	0.7	7
200	20.8	9.8	55	0.5	7
250	15.8	9.3	51	0.3	3
315	17.7	9.4	47	0.5	0
400	14.8	8.1	42	0.5	0
500	15.1	7.3	35	0.5	0
630	17.1	7.2	27	0.5	0
800	16.8	7.4	20	0.7	0
1000	18.7	7.2	20	1.1	0
1250	16.1	7.4	16	0.7	0
1600	12.1	7.8	12	0.6	0
2000	9.4	8.7	10	0.9	0
2500	8.2	9.4	9	1.1	0
3150	8.0	10.3	9	1.2	0
4000	8.5	12.0	8	0.9	-
5000	9.2	14.1	9	1.0	-
6300	9.8	17.3	11	1.0	-
8000	10.7	22.5	13	0.9	-
10000	11.2	22.5	13	1.0	-
IIC Rating	g 64	(Impact Insulati	on Class)	Sum of Deficiencies	29

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



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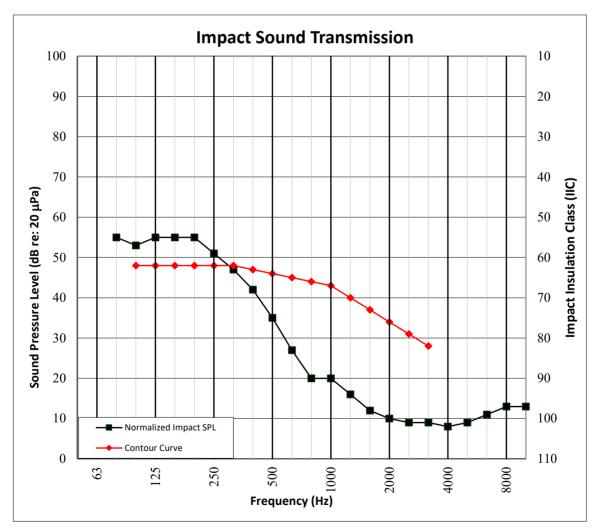
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## **SECTION 13**

# **TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH**

TEST DATE DATA FILE NO. CLIENT	2/9/2022 N3131.15 Kinetics Noise C	·						
DESCRIPTION	mm Plywood, 38. 50.8 mm R6.7 Uni	8 mm Shaw Como Plus Luxury Vinyl Plank, 18.3 mm Plywood, 18.3 mm Plywood, 38.1 mm 2x6 Dimensional Lumber, 19.1 mm Kinetics MetaWrx Isolator, 0.8 mm R6.7 Unfaced Fiberlgass Insulaton, 139.7 mm Standard 4000 PSI Concrete, 50.8 m 18 Gage Vulcraft 2VLI Composite Floor Deck						
SPECIMEN AREA	10.98 m²	Maximum Temp.	24.3°C	Minimum Temp.	21.1°C			
TECHNICIAN	MSJK	Max. Humidity	46%	Min. Humidity	38%			





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# **TEST REPORT FOR KINETICS NOISE CONTROL**

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## **SECTION 14**

# **TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION**

TEST DATE	2/9/2022							
DATA FILE NO.	N3131.15				ACCREDITED			
CLIENT	Kinetics Noise C	etics Noise Control						
DESCRIPTION	mm Plywood, 38. 50.8 mm R6.7 Uni	metics Noise Control  Testing Laboratory  B mm Shaw Como Plus Luxury Vinyl Plank, 18.3 mm Plywood, 18.3 mm Plywood, 18.3 mm Plywood, 38.1 mm 2x6 Dimensional Lumber, 19.1 mm Kinetics MetaWrx Isolator,  B mm R6.7 Unfaced Fiberlgass Insulaton, 139.7 mm Standard 4000 PSI Concrete, 50.8  m 18 Gage Vulcraft 2VLI Composite Floor Deck						
SPECIMEN AREA	10.98 m²	Maximum Temp.	24.3°C	Minimum Temp.	21.1°C			
TECHNICIAN	MSJK	Max. Humidity	46%	Min. Humidity	38%			

FREQ	BACKGROUND SPL	ABSORPTION	NORMALIZED IMPACT SPL		95% CONFIDENCE	NUMBER OF
(Hz)	(dB)	m²	(dB)		LIMIT	DEFICIENCIES
400	14.8	8.1	42		0.5	13.1
500	15.1	7.3	35		0.5	6.6
630	17.1	7.2	27		0.5	0.0
800	16.8	7.4	20		0.7	0.0
1000	18.7	7.2	20		1.1	0.0
1250	16.1	7.4	16		0.7	0.0
1600	12.1	7.8	12		0.6	0.0
2000	9.4	8.7	10		0.9	0.0
2500	8.2	9.4	9		1.1	0.0
3150	8.0	10.3	9		1.2	0.0
HIIC Ra	ting 82	(High-Frequen	cy Impact Insulation Class)	Sı	um of Deficiencies	19.6

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



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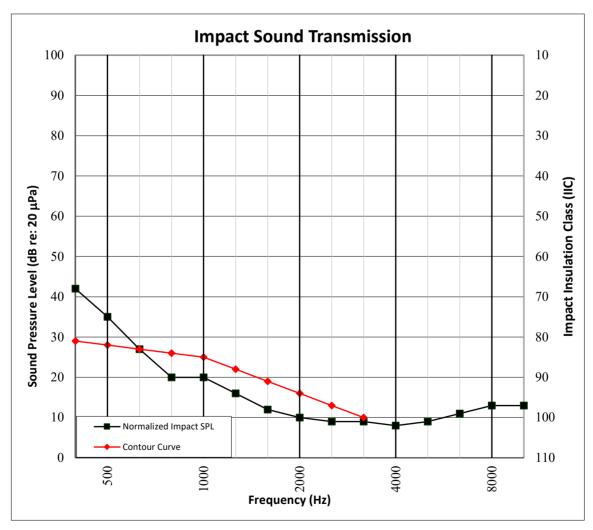
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## **SECTION 15**

# TEST RESULTS -HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH

TEST DATE DATA FILE NO. CLIENT	2/9/2022 N3131.15 Kinetics Noise C	ACCREDITED Testing Laboratory				
DESCRIPTION	6.8 mm Shaw Como Plus Luxury Vinyl Plank, 18.3 mm Plywood, 18.3 mm Plywood, 38.1 mm 2x6 Dimensional Lumber, 19.1 mm Kinetics MetaWrx Isolator, 50.8 mm R6.7 Unfaced Fiberlgass Insulaton, 139.7 mm Standard 4000 PSI Concrete, 50.8 mm 18 Gage Vulcraft 2VLI Composite Floor Deck					
SPECIMEN AREA	10.98 m²	Maximum Temp.	24.3°C	Minimum Temp.	21.1°C	
TECHNICIAN	MSJK	Max. Humidity	46%	Min. Humidity	38%	





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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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## **SECTION 17**

# **REVISION LOG**

REVISION #	DATE	PAGES	DESCRIPTION
R0	03/16/22	N/A	Original Report Issue