



## REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 101696388

Date: March 17, 2017

REPORT NO. 101696388CRT-013d

**SOUND TRANSMISSION LOSS TEST AND CLASSIFICATION  
OF TEST # 235605 ID: MAGNETIC FLOOR  
OVER A WOOD JOIST FLOOR/CEILING ASSEMBLY  
WITH A 1 INCH THICK GYPSUM CONCRETE TOPPING**

**RENDERED TO**

**MAGNETIC BUILDING SOLUTIONS**

### INTRODUCTION

This report gives the result of a Sound Transmission Loss test on Test # 235605 ID: Magnetic Floor. The flooring was selected and supplied by the client and received at the laboratories on March 10, 2017. The flooring appeared to be in new, unused condition upon arrival.

### AUTHORIZATION

Signed Intertek Quotation No. Qu-00691147.

### TEST METHOD

The specimen was tested in general accordance with the American Society for Testing and Materials designation ASTM E90-09, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements", and classified in accordance with the American Society for Testing and Materials designation ASTM E413-16, "Classification for Rating Sound Insulation". The size of the source room for the measurements is smaller than the minimum recommended of 125m<sup>3</sup>. This leads to slightly elevated uncertainties in the measurement data at low frequencies and does not allow microphones to be placed in full accordance with section A.2.

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## **GENERAL**

The sound-insulating property of a partition element is expressed in terms of the sound transmission loss. The procedure for determining this quantity is to mount (and perimeter seal) the test specimen as a partition between two reverberation rooms. Sound is introduced in one of the rooms (the source room) and measurements are made of the noise reduction between source room and receiving room. The rooms are so arranged and constructed that the only significant sound transmission between them is through the test specimen.

The purpose of the Sound Transmission Class (STC) is to provide a single figure rating that can be used for comparing the sound-insulating properties of partition elements used for general building design purposes. The higher the rating (STC) the greater the sound insulating properties of the partition.

## **DESCRIPTION OF THE FLOOR/CEILING ASSEMBLY**

The test floor is a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The materials used in the assembly from top to bottom are:

- 1.00 inch thick Gypsum Concrete
- $\frac{3}{4}$  inch thick tongue & groove OSB decking (glued and screwed)
- 18 inch high Open Web Trusses (spaced 24 inches on center)
- 3.5 inch, unfaced insulation installed at the top of the cavities
- Dietrich RC Deluxe Resilient Channels (spaced 16 inches on center) fastened at every intersection
- One layer of 5/8 inch thick Type C Gypsum Board (taped and finished with compound)

## **DESCRIPTION OF TEST SPECIMEN**

The test specimen consisted of Magnetic Building Solutions Test # 235605 ID: Magnetic Floor. The sample consisted of Evoke Vinyl Plank Flooring 47  $\frac{1}{2}$  inch X 6  $\frac{3}{4}$  inch X  $\frac{3}{16}$  inch thick installed floating over PI No:AMBS-16002GZ anti-rust flexible iron sheet which was installed over the magnetic floor underlayment.

- The click together Evoke flooring weighed 1.57 lbs./ft.<sup>2</sup>
- The 0.3 mm thick anti-rust sheet weighed 0.22 lbs./ft.<sup>2</sup>
- The 1.5 mm thick magnetic floor underlayment weighed 0.88 lbs./ft.<sup>2</sup>

**TEST # 235605 ID: MAGNETIC FLOOR  
OVER A WOOD JOIST FLOOR/CEILING ASSEMBLY  
WITH 1 INCH OF GYPSUM CONCRETE**

1/3 Octave Band  
Center Frequency

Hertz

Sound Transmission Loss in dB

80	22
100	27
125	35
160	40
200	39
250	41
315	45
400	46
500	52
630	52
800	51
1000	55
1250	55
1600	58
2000	56
2500	60
3150	62
4000	65
5000	67

Sound Transmission Class 53

**PRECISION**

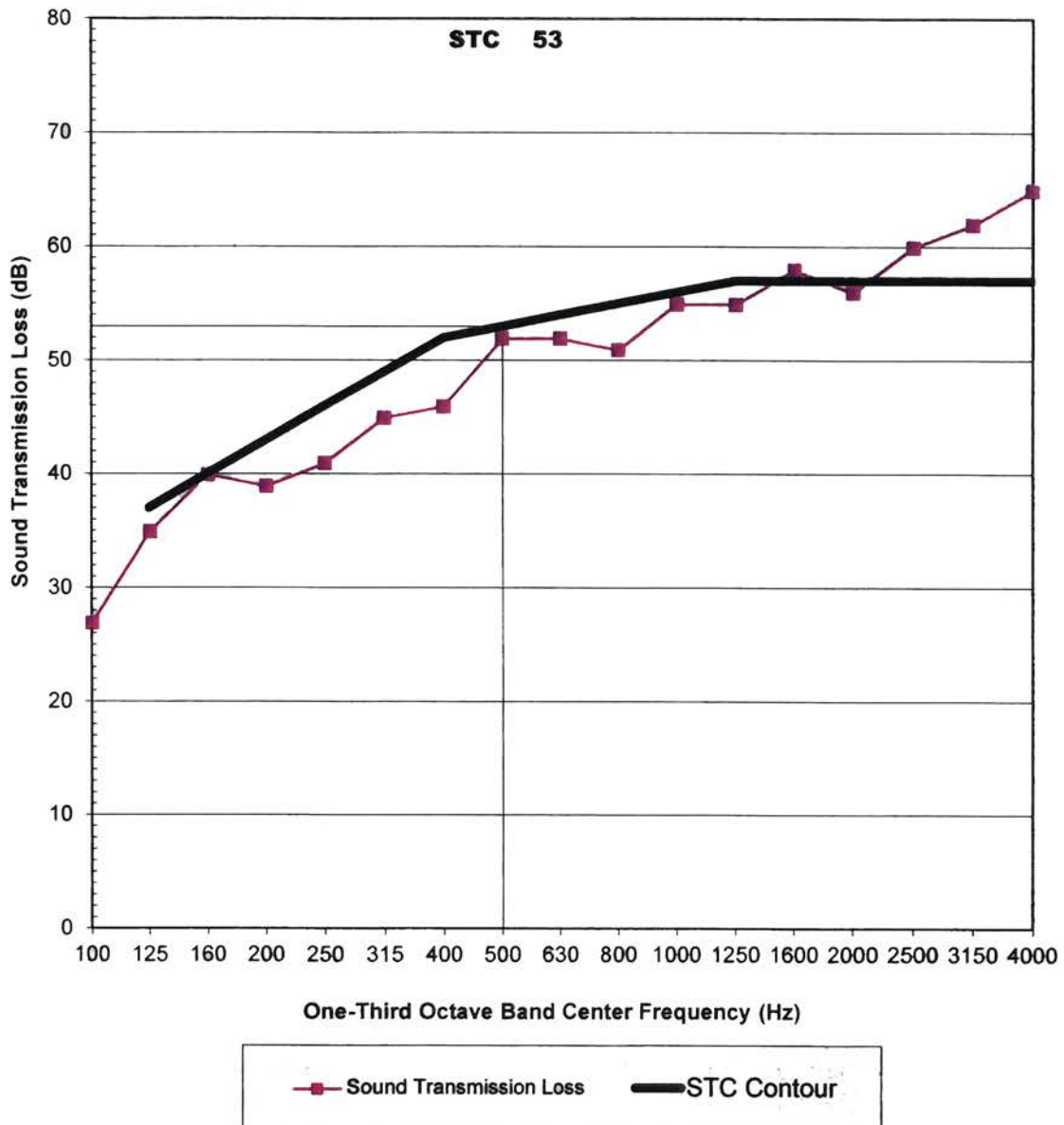
For the Intertek flooring test facility, the 95% confidence interval  $\Delta$ TL, is as follows:

<u>Range of One-Third Octave Bands</u>	<u>Transmission Loss 95% Confidence Uncertainty, dB</u>
125 and 200	<4.0
250 and 315	<2.0
400 - 4000	<1.5



TEST # 235605 ID: MAGNETIC FLOOR  
OVER A WOOD JOIST FLOOR/CEILING ASSEMBLY  
WITH 1 INCH OF GYPSUM CONCRETE

Sound Transmission Loss



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### **REMARKS**

1. Ambient Temperature: 69°F
2. Relative Humidity: 31%

### **CONCLUSION**

The test method employed for this test has no pass-fail criteria; therefore, the evaluation of the test results is left to the discretion of the client.

Date of Test: March 17, 2017

Report Approved by:

A handwritten signature in black ink, appearing to read "Brian Cyr".

Brian Cyr  
Engineer  
Acoustical Testing

Report Reviewed By:

A handwritten signature in black ink, appearing to read "James R. Kline".

James R. Kline  
Engineer/Quality Supervisor  
Acoustical Testing

Attachments: None



## REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 102925989

Date: March 17, 2017

REPORT NO. 102925989CRT-001f

**IMPACT SOUND TRANSMISSION TEST ON  
TEST # 235605 ID: MAGNETIC FLOOR  
OVER A SIX INCH CONCRETE  
SLAB WITH A DROP CEILING**

**RENDERED TO**

**MAGNETIC BUILDING SOLUTIONS**

### INTRODUCTION

This report gives the result of an Impact Sound Transmission test on Test # 235605 ID: Magnetic Floor. The flooring was selected and supplied by the client and received at the laboratories on March 10, 2017. The flooring appeared to be in new, unused condition upon arrival.

### AUTHORIZATION

Signed Intertek Quotation No. Qu-00762661

### TEST METHOD

The floor system was tested in general accordance with the American Society for Testing and Materials designation ASTM E492-09 (Reapproved 2016), "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine". It was classified in accordance with ASTM E989-06 (Reapproved 2012), entitled, "Standard Classification for Determination of Impact Insulation Class (IIC)".

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## **GENERAL**

The test method is designed to measure the impact sound transmission performance of a floor-ceiling assembly, in a controlled laboratory environment. A standard tapping machine (Bruel & Kjaer Type 3207) was placed at four positions on the test floor that forms the horizontal separation between two rooms, one directly above the other. The data obtained was normalized to a reference room absorption of 10 square meters in accordance with the test method.

The standard also prescribes a single-figure classification rating called "Impact Insulation Class, IIC" which can be used by architects, builders and code authorities for acoustical design purposes in building construction.

The IIC is obtained by matching a standard reference contour to the plotted normalized one-third octave band sound pressure levels at each test frequency. The greater the IIC rating, the lower the impact sound transmission through the floor-ceiling assembly.

## **DESCRIPTION OF THE FLOOR/CEILING ASSEMBLY**

The floor/ceiling assembly system consisted of a 6 inch thick concrete floor with a drop ceiling below forming the horizontal separation between two rooms, one directly above the other. The drop ceiling consisted of 14 inch deep steel bar joists spaced 38 inches on center. The ceiling construction consisted of 2 x 4 inch wood bolted to the bar joists. The 2 x 4 inch wood was spaced 24 inches on center. Resilient channels (1/2 inch single leaf) were positioned on 16 inch centers between the furring strips and the 1/2 inch gypsum board. Sound attenuation batts (U.S.G. Thermofiber), four (4) inches in thickness were placed between the joists in the formed cavity. The receiving room below measured 1440 cubic feet.

## **DESCRIPTION OF TEST SPECIMEN**

The test specimen consisted of Magnetic Building Solutions Test # 235605 ID: Magnetic Floor. The sample consisted of Evoke Vinyl Plank Flooring 47 1/2 inch X 6 3/4 inch X 3/16 inch thick installed floating over PI No:AMBS-16002GZ anti-rust flexible iron sheet which was installed over the magnetic floor underlayment.

- The click together Evoke flooring weighed 1.57 lbs./ft.<sup>2</sup>
- The 0.3 mm thick anti-rust sheet weighed 0.22 lbs./ft.<sup>2</sup>
- The 1.5 mm thick magnetic floor underlayment weighed 0.88 lbs./ft.<sup>2</sup>



## RESULTS OF TEST

The data obtained in the room below the panel normalized to  $A_0 = 10$  square meters, is as follows:

<u>1/3 Octave Band Center Frequency Hertz</u>	<u>1/3 Octave Band Sound Pressure Level dB re 0.0002 Microbar</u>
100	56
125	58
160	58
200	55
250	56
315	57
400	57
500	57
630	56
800	57
1000	57
1250	58
1600	58
2000	58
2500	57
3150	51
Impact Insulation Class (IIC)	46

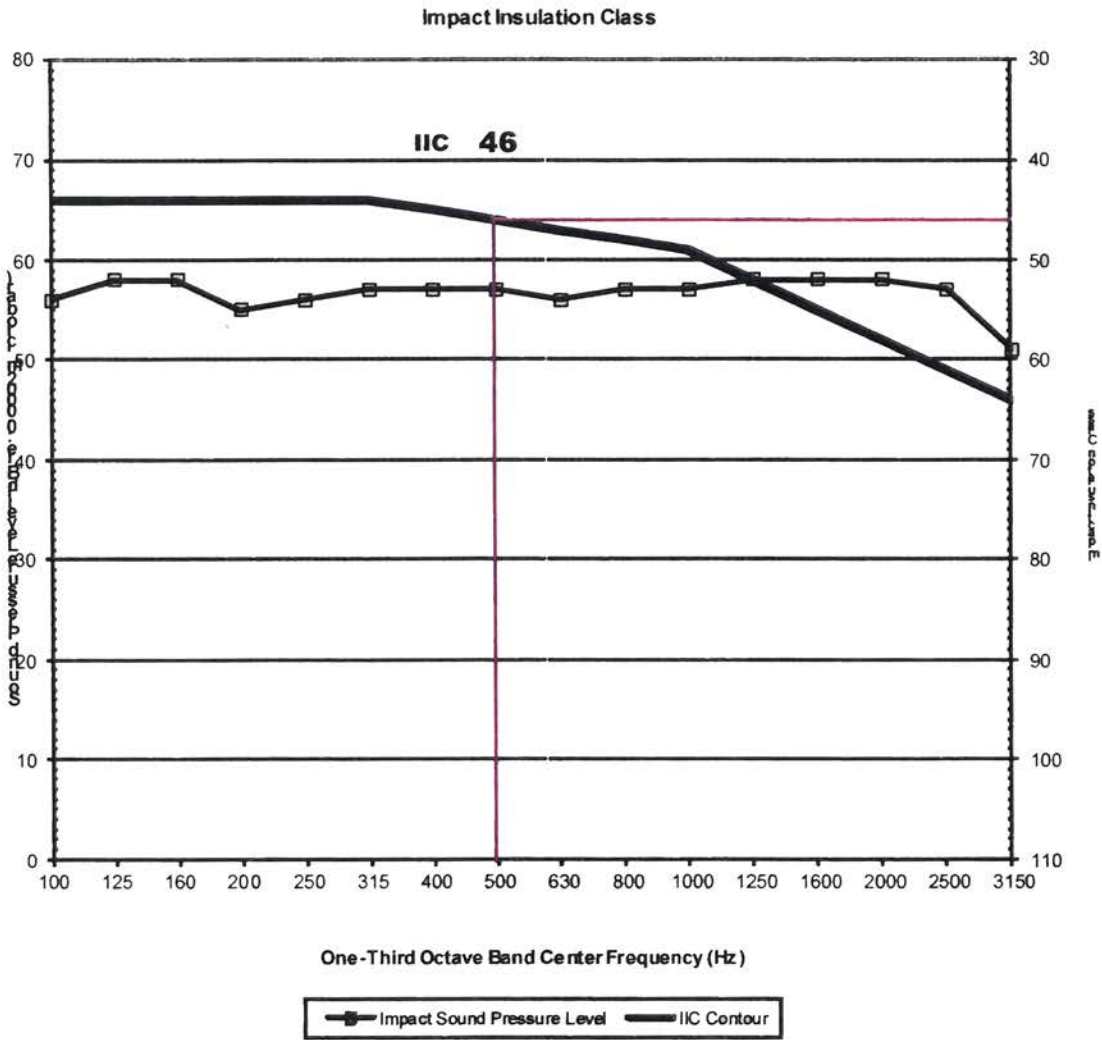
## PRECISION

The 95% uncertainty level for each tapping machine location is less than 3 dB for the 1/3 octave bands centered in the range from 100 to 400 Hz and less than 2.5 dB for the bands centered in the range from 500 to 3150 Hz.

For the floor/ceiling construction, the 95% uncertainty limits ( $\Delta L_n$ ) for the normalized sound pressure levels were determined to be less than 2 dB for the 1/3 octave bands centered in the range from 100 to 3150 Hz.



TEST # 235605 ID: MAGNETIC FLOOR  
OVER A SIX INCH CONCRETE SLAB WITH A DROP CEILING



MAGNETIC BUILDING SOLUTIONS



### **REMARKS**

1. Ambient Temperature: 69°F
2. Relative Humidity: 31%

### **CONCLUSION**

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