



## Sound Insulation Test Report

<i>Job Number</i>	2044IK
<i>Client Name</i>	Ikoustic Ltd
<i>Client Address:</i>	
<i>House name/number</i>	Erivan Business Park
<i>Street</i>	Sandbeck Way
<i>City/Town</i>	Wetherby
<i>County</i>	West Yorkshire
<i>Post Code</i>	LS22
<i>Test Date</i>	09/01/2018
<i>Testing engineer</i>	Mr J Miralles, BEng
<i>Site Address:</i>	
<i>House name/number</i>	Flats 1, 2 & 3
<i>Street</i>	Longlands Farm
<i>City/Town</i>	Wiston, Haverfordwest
<i>County</i>	Pembrokeshire
<i>Post Code</i>	SA62 4QB
<i>Type of property</i>	Dwelling-flats formed by material change of use
<i>Instrumentation used</i>	Kit 3

Authorised By:	Mr J Barratt Gibson, PG Dip, AMIOA
Date:	09/01/2018
Document Reference:	2044IK
Previous Version Numbers:	NA



No. 8568

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### 1. Executive Summary

NOVA Acoustics Ltd has been commissioned to carry out testing of the sound insulation properties of the separating partitions, and assess whether or not the acoustical performance of the internal building elements is acceptable. The development's sound insulation tests are to be carried out and rated in accordance with the following standards:

The measurement procedure and guidance within Annex E of the Building Regulations Approved Document E 2003 'Resistance to the Passage of Sound' was followed. The results are then assessed in accordance with it in order to indicate compliance. The test and subsequent calculations and assessment have indicated that the separating partitions have performed as follows:

The results tests are summarised below:

Type of partition	Source Room	Receiving Room	Measured Level	Required Level	Passed/Failed	Test No.
			DnT,w +Ctr dB			
Floor	Flat 2 Bedroom 1	Flat 1 Bedroom 1	54	43	Passed	2044IK - A
Floor	Flat 2 Bedroom 2	Flat 1 Bedroom 2	52	43	Passed	2044IK - B
Wall	Flat 2 Bedroom 2	Flat 3 Bedroom 1	46	43	Passed	2044IK - E
Wall	Flat 3 Kitchen	Flat 1 Bedroom 2	59	43	Passed	2044IK - F
Wall	Flat 3 Kitchen	Main House Lounge	69	43	Passed	2044IK - G
Wall	Main House Bedroom	Flat 3 Bedroom 2	56	43	Passed	2044IK - H

Table 1

Type of partition	Source Room	Receiving Room	Measured Level	Required Level	Passed/Failed	Test No.
			LnT,w dB			
Floor	Flat 2 Bedroom 1	Flat 1 Bedroom 1	53	64	Passed	2044IK - C
Floor	Flat 2 Bedroom 2	Flat 1 Bedroom 2	56	64	Passed	2044IK - D

Table 2

In summary the tested separating partitions between rooms COMPLY with the sound insulation requirements within the current Building Regulations.

*Deviations from Building Regulations Part E Annex E B:*

Room volume <25m<sup>3</sup>

## **2.0 The Building Regulations**

Approved Document E (2003) edition which incorporates 2004, October 2010 and April 2013 amendments. Sets out guideline sound transmission values that should be achieved under test if acoustical performance is to be deemed acceptable. These values can be found in table 1.0a and 1.0b of Approved Document E.

## **3.0 Test Methods, Procedures and Equipment**

Airborne sound insulation testing uses a Dodecahedral loudspeaker placed in the "source room", which should be the larger of the two rooms when measuring wall and floor insulation. The source is balanced so the average sound pressure levels in adjacent 1/3<sup>rd</sup> octave bands are no more than 6dB. The source noise level is then measured a minimum of 5 times, measuring each time in a different randomly selected location that is at a minimum distance of 1.0 meter from any wall, floor, ceiling or the speaker. This is repeated for 2 speaker positions. The room on the other side of the partition construction is the "receiver room" and the noise level coming through from the source room is then measured a minimum of 5 times for 2 speaker positions, measuring each time in a different randomly selected location that is at a minimum distance of 1.0 meter from any wall, floor, ceiling. This is repeated for 2 speaker positions.

A difference in source and receiver noise levels is measured and calculated for each wall and floor in accordance with BS EN 140-4:1998. The resulting frequency dependant level differences are converted into "a single number characterising the acoustical performance" using the method given in BS EN ISO 717-1:1997, namely the weighted standardised level difference (DnT,w).

Impact sound insulation test uses a standard tapping which is placed on the floor above a receiving room. The noise level from the machine tapping is then measured in the receiver room a minimum of 5 times measuring each time in a different randomly selected location that is at a minimum distance of 1.0 meter from any wall, floor or ceiling. The process is then repeated a second time with the standard tapping machine rotated 90° and moved to a different position within the room. This level is measured and calculated for each floor in accordance with BS EN ISO 140-7:1998. The results are converted into a single number using the method given in BS EN ISO 717-2:1997 namely the weighted standardised impact sound pressure level (L'nT,w).

## **4.0 Instrumentation Details:**

### **Kit 1, 2 or 3**

CESVA SC420 Sound Level Meter  
CESVA CB006 Calibrator  
CESVA Dodecahedral Loudspeaker BP012  
CESVA Amplifier AP602  
CESVA Impact Machine MI006  
(Traceable calibration certificates can be supplied on request)

## **5.0 Calibration**

Before and after the survey the measurement apparatus was checked and calibrated to an accuracy showing negligible deviation using the Calibrator.

## **Appendix A**

Calculation of Weighted Standardised Level Difference and/or Calculation of Weighted Standardised Impact Sound Pressure Level  
(Please see following pages)

# Standardized level difference according to Resistance to the passage of sound approved document E

## Field measurements of airborne sound insulation between rooms

Client : Ikoustic Ltd

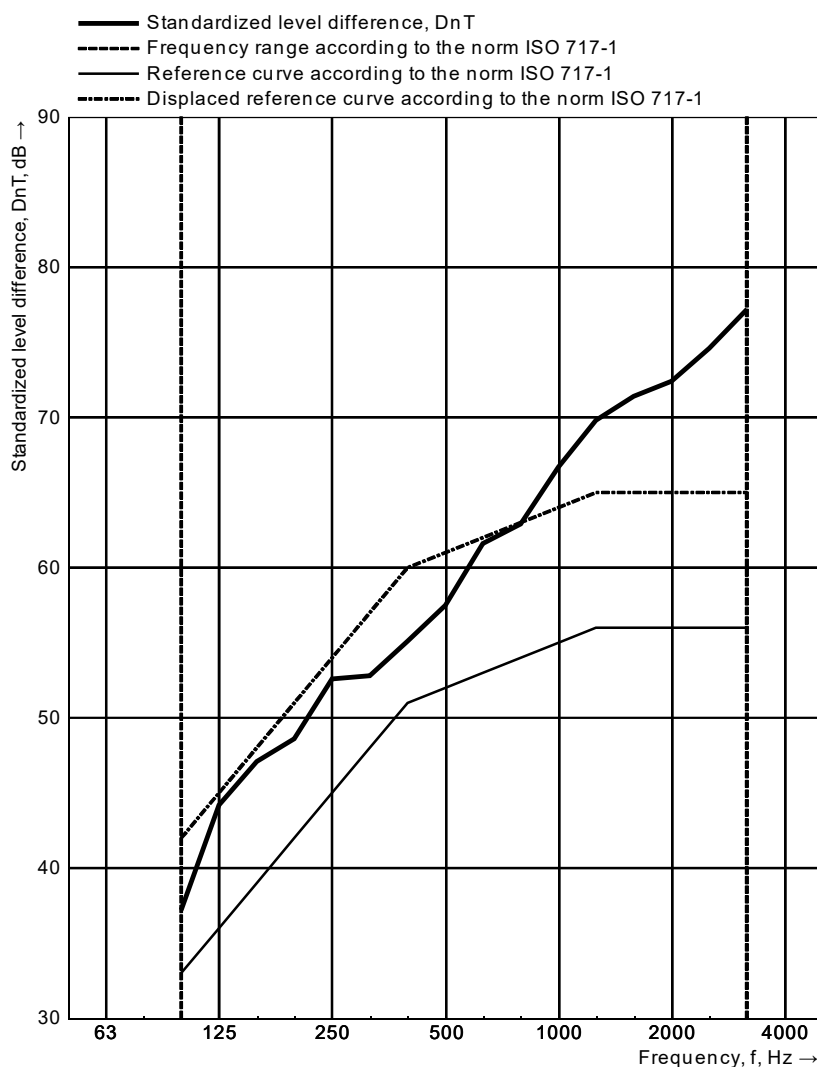
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 27.00 m<sup>3</sup>Receiving room volume : 26.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	37.2
125	44.2
160	47.1
200	48.6
250	52.6
315	52.8
400	55.1
500	57.5
630	61.6
800	62.9
1000	66.7
1250	69.8
1600	71.4
2000	72.4
2500	74.6 *
3150	77.2 *
4000	--
5000	--



\* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 61 (-1 ; -7) dB;

Evaluation based on in situ measurement  
results obtained by an engineering method  
(1/3 octave)

No. of test report : 2044IK - A

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*

# **Standardized level difference according to Resistance to the passage of sound approved document E** **Field measurements of airborne sound insulation between rooms**

Client : Ikoustic Ltd

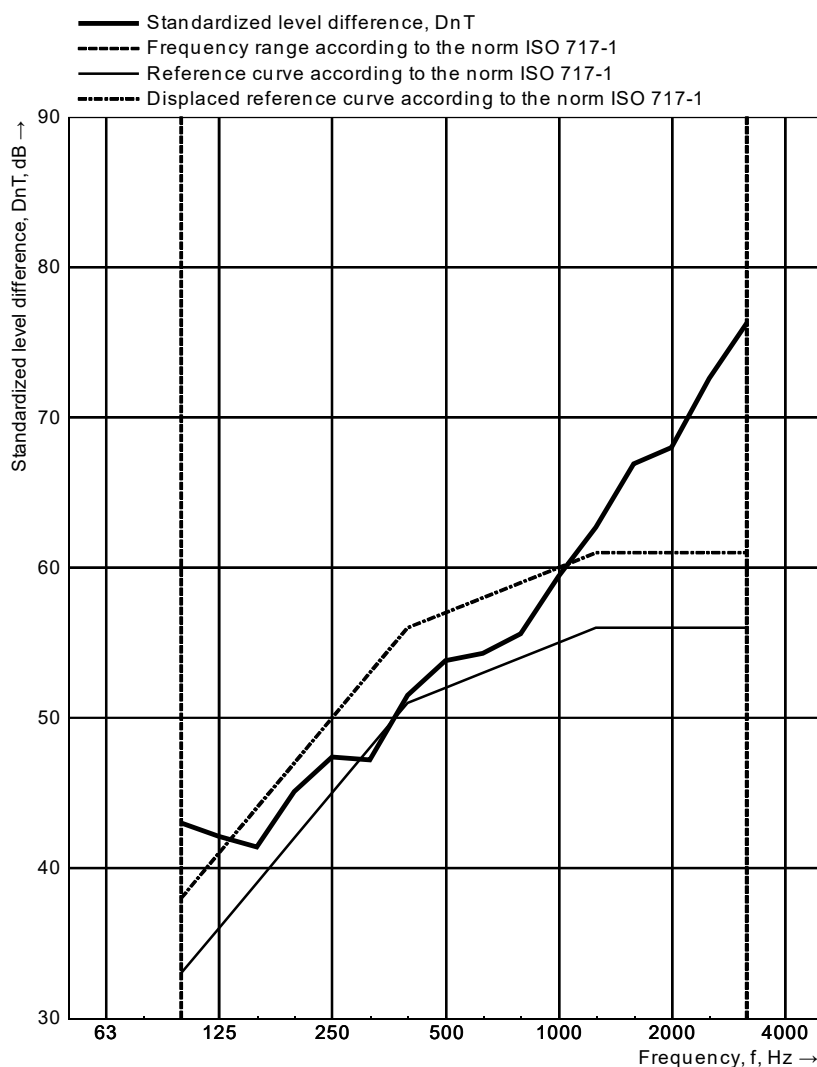
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 27.00 m<sup>3</sup>Receiving room volume : 20.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	43.0
125	42.1
160	41.4
200	45.1
250	47.4
315	47.2
400	51.5
500	53.8
630	54.3
800	55.6
1000	59.4
1250	62.7
1600	66.9
2000	68.0
2500	72.6
3150	76.3 *
4000	--
5000	--



\* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 57 (-1 ; -5) dB;

Evaluation based on in situ measurement  
 results obtained by an engineering method  
 (1/3 octave)

No. of test report : 2044IK - B

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*

**Standardized impact sound pressure level according to Resistance to the passage of sound approved document E**  
**Field measurements of impact sound insulation of floors**

Client : Ikoustic Ltd

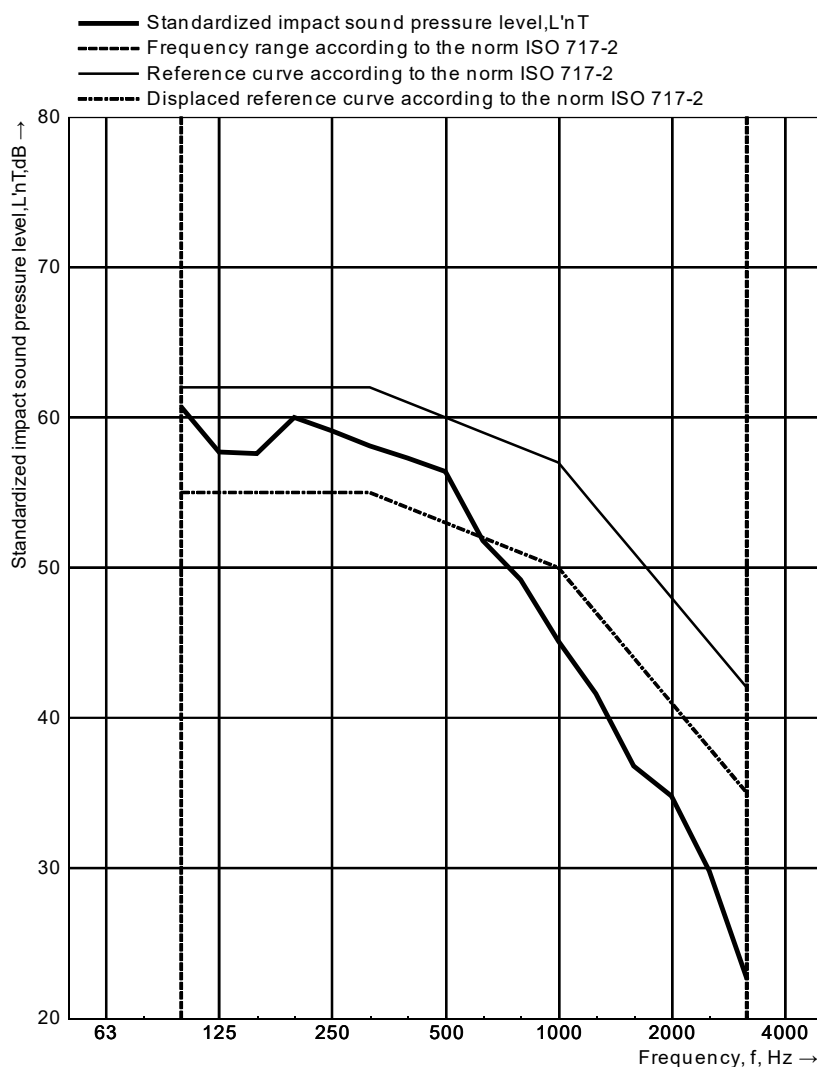
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Receiving room volume : 26.00 m<sup>3</sup>

Frequency f Hz	L'nT (1/3 octave) dB
50	--
63	--
80	--
100	60.7
125	57.7
160	57.6
200	60.0
250	59.1
315	58.1
400	57.3
500	56.4
630	51.8
800	49.2
1000	45.1
1250	41.6
1600	36.8
2000	34.8
2500	29.8
3150	22.6
4000	--
5000	--



Rating according to ISO 717-2

L'nT,w (Ci) = 53 (0) dB;

Evaluation based on in situ measurement results obtained by an engineering method

No. of test report : 2044IK - C

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*

**Standardized impact sound pressure level according to Resistance to the passage of sound approved document E**  
**Field measurements of impact sound insulation of floors**

Client : Ikoustic Ltd

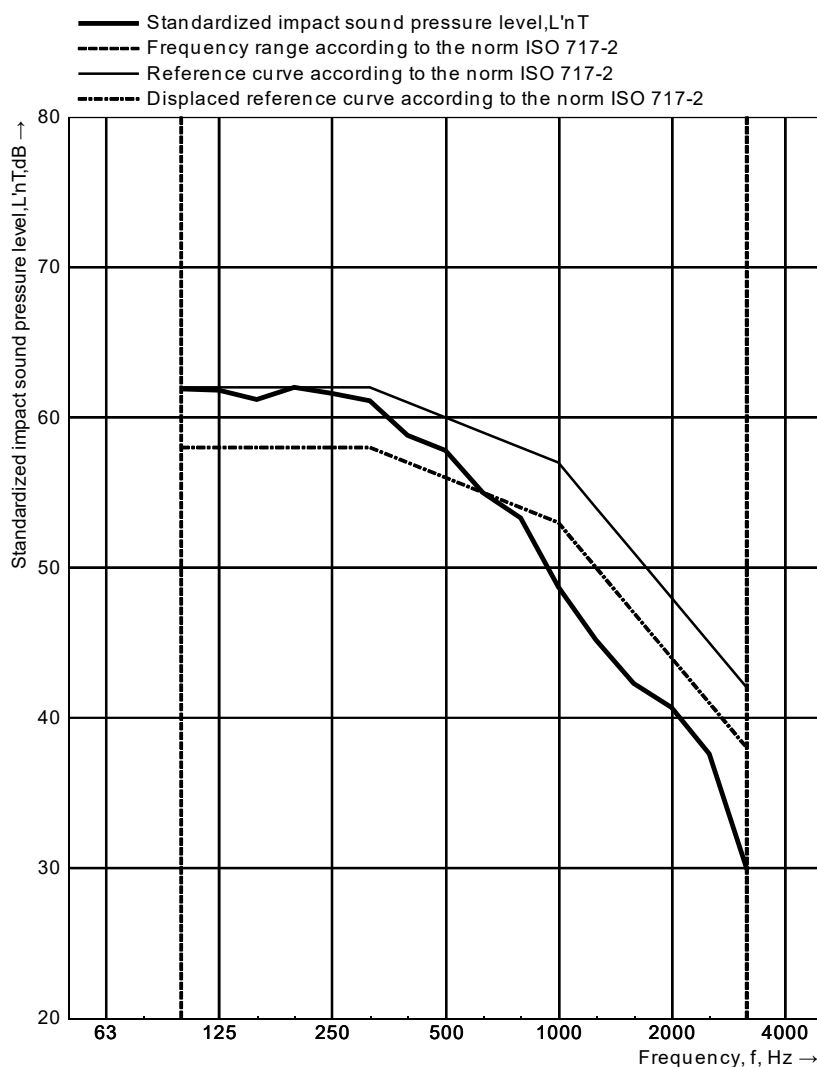
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Receiving room volume : 20.00 m<sup>3</sup>

Frequency f Hz	L'nT (1/3 octave) dB
50	--
63	--
80	--
100	61.9
125	61.8
160	61.2
200	62.0
250	61.6
315	61.1
400	58.8
500	57.8
630	55.0
800	53.3
1000	48.7
1250	45.2
1600	42.3
2000	40.7
2500	37.6
3150	29.9
4000	--
5000	--



Rating according to ISO 717-2

L'nT,w (Ci) = 56 (-1) dB;

Evaluation based on in situ measurement results obtained by an engineering method

No. of test report : 2044IK - D

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J. Barratt-Gibson*

# **Standardized level difference according to Resistance to the passage of sound approved document E** **Field measurements of airborne sound insulation between rooms**

Client : Ikoustic Ltd

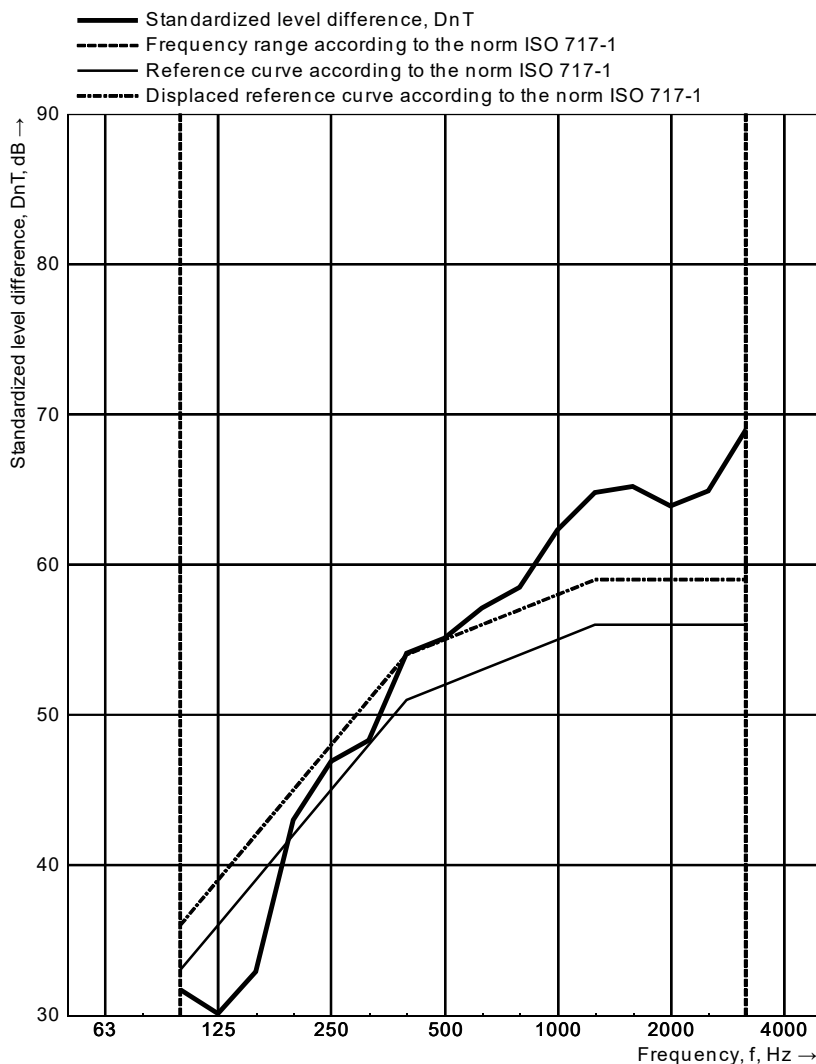
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 27.00 m<sup>3</sup>Receiving room volume : 18.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	31.7
125	30.1
160	32.9
200	43.0
250	46.9
315	48.3
400	54.1
500	55.1
630	57.1
800	58.5
1000	62.3
1250	64.8
1600	65.2
2000	63.9
2500	64.9
3150	69.0
4000	--
5000	--



Rating according to ISO 717-1

DnT,w (C;Ctr) = 55 (-4 ; -9) dB;

Evaluation based on in situ measurement  
 results obtained by an engineering method  
 (1/3 octave)

No. of test report : 2044IK - E

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*



# **Standardized level difference according to Resistance to the passage of sound approved document E** **Field measurements of airborne sound insulation between rooms**

Client : Ikoustic Ltd

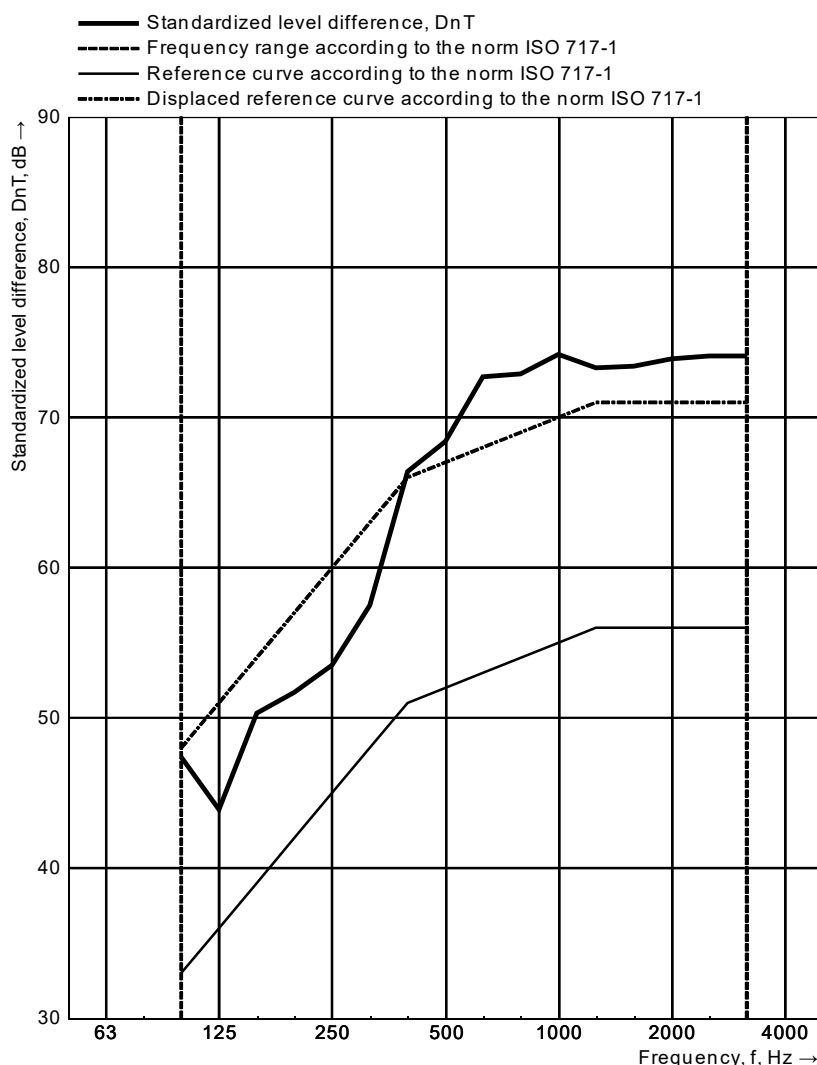
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 70.00 m<sup>3</sup>Receiving room volume : 20.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	47.4
125	43.9
160	50.3
200	51.7
250	53.5
315	57.5
400	66.4
500	68.4
630	72.7
800	72.9
1000	74.2 *
1250	73.3 *
1600	73.4
2000	73.9 *
2500	74.1 *
3150	74.1 *
4000	--
5000	--



\* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 67 (-3 ; -8) dB;

Evaluation based on in situ measurement  
 results obtained by an engineering method  
 (1/3 octave)

No. of test report : 2044IK - F

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*

# **Standardized level difference according to Resistance to the passage of sound approved document E** **Field measurements of airborne sound insulation between rooms**

Client : Ikoustic Ltd

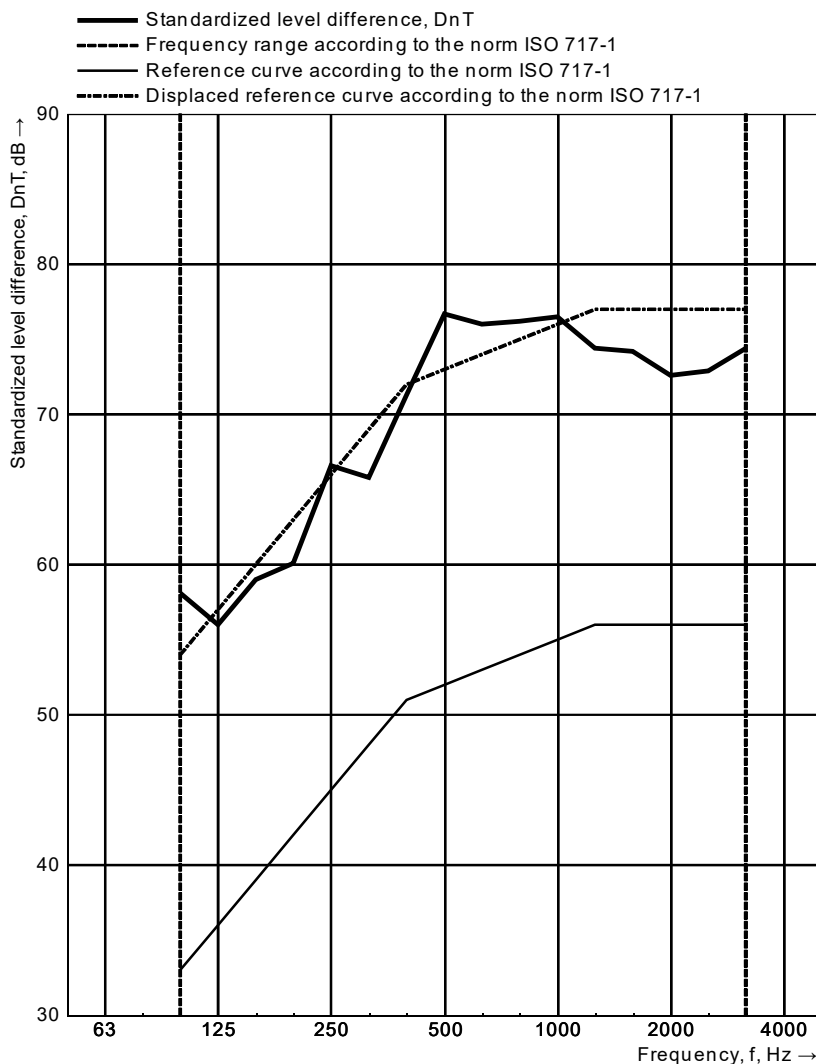
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 70.00 m<sup>3</sup>Receiving room volume : 46.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	58.1
125	56.0
160	59.0
200	60.1
250	66.6
315	65.8
400	71.3
500	76.7 *
630	76.0 *
800	76.2 *
1000	76.5 *
1250	74.4 *
1600	74.2 *
2000	72.6 *
2500	72.9 *
3150	74.4 *
4000	--
5000	--



\* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 73 (-1 ; -4) dB;

Evaluation based on in situ measurement  
 results obtained by an engineering method  
 (1/3 octave)

No. of test report : 2044IK - G

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*

# **Standardized level difference according to Resistance to the passage of sound approved document E** **Field measurements of airborne sound insulation between rooms**

Client : Ikoustic Ltd

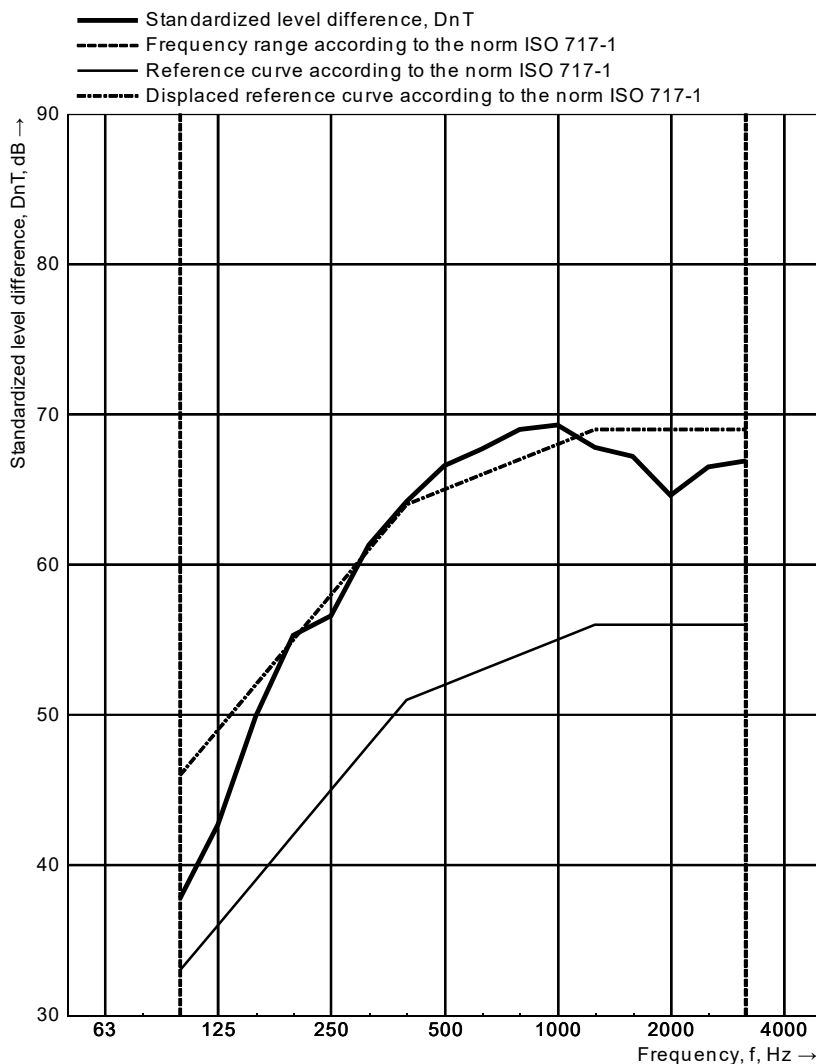
Test date : 09 January 2018

Description and identification of the building construction and test arrangement, direction of measurement :

See pages 1 &amp; 2.

Source room volume : 38.00 m<sup>3</sup>Receiving room volume : 18.00 m<sup>3</sup>

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	37.8
125	42.7
160	49.9
200	55.3
250	56.6
315	61.3
400	64.2
500	66.6
630	67.7 *
800	69.0 *
1000	69.3 *
1250	67.8 *
1600	67.2 *
2000	64.6 *
2500	66.5 *
3150	66.9 *
4000	--
5000	--



\* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 65 (-3 ; -9) dB;

Evaluation based on in situ measurement  
 results obtained by an engineering method  
 (1/3 octave)

No. of test report : 2044IK - H

Name of test institute : NOVA Acoustics Ltd

Date : 09 January 2018

Signature : *J Barratt-Gibson*