

LK/J003264/5207/01

21 October 2021

ACOUSTIC
CONSULTANTS

**WALDORF HOUSE, 5 COOPER STREET,
MANCHESTER, M2 2FW**

SOUND INSULATION TESTS REPORT

architectural

environmental

occupational

industrial

noise control at source

project management

planning

legal services

expert witness

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Association of Noise Consultants Registration Number: 105
Test Report Number: 105/73488

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Notice to Building Control Officer

Certification of Test Results

ANC operates an online, secure, paperless certification system for sound insulation tests.

The online verification (certification) system means that Building Control Bodies will need to follow the steps below to verify the results quoted in the relevant test report:

1. Go to the ANC secure server at www.theanc.co.uk
2. Navigate to the [ADvANCE](#) page which links to the ANC site available for use by BCOs.
3. Enter the following in the spaces provided:

Task Number: 73488

Task Password: KP9KR3

4. Select role "Building Control Officer" and press "Login"
5. You will then see a summary list of results of all the Tests undertaken to date for this project (Task) as held on the secure primary server and you can print this table for your records.

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1.0 SUMMARY

PDA Ltd was commissioned by Acelux Ltd to carry out sound insulation tests at the conversion development at Waldorf House, 5 Cooper St in Manchester, M2 2FW. This report is an ANC Registered Report with the unique registration number 105/73488.

Analysis of the test data has shown that the airborne sound insulation of the separating walls tested has met the performance standards given in the Building Regulations Approved Document E 2003 edition, and can be described as having 'passed'.

Analysis of the test data has shown that the airborne and impact sound insulation of the separating floors tested has met the performance standards given in the Building Regulations Approved Document E 2003 edition, and can be described as having 'passed'.

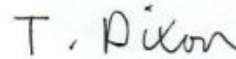
In addition the airborne and impact sound insulation performance of the separating walls and floors has exceeded the minimum Building Regulations ADE performance by at least 3 dB, therefore 3 credits may be awarded in accordance with the BREEAM Domestic Refurbishment scheme.

Report Prepared By:



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2.0 TEST DETAILS

2.1 Site Description

The tests were conducted at the conversion development at Waldorf House, 5 Cooper St in Manchester, M2 2FW.

The development consists of the renovation of a building previously used as a Masonic Lodge into 14 no. residential dwellings over a number of floors.

2.2 Test Details

The tests were conducted on the 12 October 2021. All measurements were made by Liam Kavaney of PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER.

PDA Ltd is accredited by the Association of Noise Consultants (ANC), accreditation number 105, to undertake sound insulation testing to demonstrate compliance with the Building Regulations, Approved Document E (2003 edition).

The equipment used during the tests is as listed in Table 5 at the end of this report. The sound level meters were calibrated before and after the tests as appropriate, during which time no significant calibration deviation was observed. The sound level meters, acoustic calibrators and microphones are all covered by current calibration certificates.

The testing methods for airborne and impact sound insulation were in full accordance with: the suggested methods presented in BS EN ISO 140-parts 4 & 7: 1998 "Field Measurements of Airborne Sound Insulation Between Rooms", "Field Measurements of Impact Sound Insulation of Floors". The results of the tests were analysed in accordance with BS EN ISO 717-parts 1 & 2: 1997, amended 2006.

In addition, all the procedures in Annex B of the Approved Document E, guidance to the Building Regulations have been followed.

2.3 Basic Procedures

Airborne Sound Insulation

The field testing of structures for airborne sound insulation involves generating a controlled level of noise in one room (the source room) and measuring the resulting noise in the other room (the receiving room), separated from the source room by the element under test. A sound source is used and operated in two separate positions. Spatial and temporal averaging of the noise level in both rooms is carried out by manually sweeping the microphone through a predetermined circular path of travel in a plane not within 10° of any room surface plane. The sweeps are completed over a minimum 30-second period, with one separate measurement cycle being completed in both the source and receiving rooms.

A minimum 30-second manual sweeping of the microphone through a predetermined circular path of travel in a plane not within 10° of any room surface plane was taken in the receiver room for a background noise measurement when the loudspeaker in the source room was turned off.

Corrections are applied to the measured levels for the effects of background noise and acoustic absorption, the latter being characterised by reverberation time measurements. Background noise is measured in the receiving room using the sweep method over a minimum 30-second period. The corrected, measured source room and

receiving room levels are used to derive the Standardised Level Difference and the data, in third octave bands, are compared with reference values using defined matching criteria to determine the single figure Weighted Standardised Level Difference. From this data a Spectrum Adaptation term is calculated which gives an indication of the performance of the element when exposed to particular types of noise. This term is additive to the Weighted Standardised Level Difference and is quoted when referring to the element's sound insulation performance.

Impact Sound Insulation

Impact sound insulation measurements are primarily applicable to floor structures and are intended to give an indication of the ability of the floor to attenuate impact sources such as footsteps. For these tests the source is a standard tapping machine, which comprises a set of 'hammers' which are controlled to rise and fall at pre-determined rates to excite the floor structure. The noise produced by the operation of the tapping machine is measured in the reception room. Spatial and temporal averaging of the noise level in the receiver rooms is carried out by the selection of two randomly distributed positions for each of the four tapping machine locations and averaging the noise level of each measurement over a minimum 6-second period. Corrections are again applied to account for acoustic conditions within the reception room and the resulting figures, in third octave band frequencies, are denoted the Standardised Impact Sound Pressure Levels. As with airborne sound insulation measurements, the results are compared with standard data to determine the single figure rating, the Weighted Standardised Impact Sound Pressure Level.

Reverberation Time Measurement

The reverberation time measurements were conducted within the receiving rooms for each test by recording the decay from a continuous wide band pink noise generator. The equipment was set to measure T_{20} reverberation decay. Measurements were taken with one loudspeaker location and three randomly selected microphone locations. Measurements were repeated twice at each microphone location.

The source and receiving rooms were as detailed in the results summary in Tables 2 – 4 at the end of this report.

2.4 Wall and Floor Constructions

It is understood the separating wall constructions for this development are understood to be;

- *Existing solid masonry wall with any openings infilled with 2 no. layers of 12.5mm Soundbloc plasterboard on resilient bars either side of a 92mm metal stud, with 50mm Isover Acoustic Partition Roll in the cavity.*
- *2 no. layers of 15mm Soundbloc plasterboard either side of a 146mm Acoustic metal stud with 50mm Isover Acoustic Partition Roll in the cavity.*
- *140mm blockwork (density of 1350kg/m³) with 1 no. layer of 12.5mm soundbloc plasterboard on Gypframe GL1 Lining channel to form 85mm cavity with 50mm mineral wool (minimum density 10kg/m³) infill.*
- *2 no. layers of 12.5mm Soundbloc plasterboard on resilient bars either side of a 92mm metal stud, with 50mm Isover Acoustic Partition Roll in the cavity.*

It is understood that the separating floor construction between apartments was as follows;

- 28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.
- 28mm Knauf Brio 18WF on existing 160mm concrete slab with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in the void.

3.0 TERMS OF REFERENCE

3.1 Building Regulations 2010 Approved Document E (2003) – Resistance to the Passage of Sound

The development is classed as a conversion project and as such the requirements of the Building Regulations are as follows:

Table 1 – Building Regulations ADE sound insulation requirements

Dwelling Houses and Flats formed by a Material Change of Use	Airborne Sound Insulation $D_{nT,w} + C_{tr}$ dB (minimum values)	Impact Sound Insulation $L'_{nT,w}$ dB (maximum values)
Walls	≥43	-
Floors	≥43	≤64

3.2 BREEAM Domestic Refurbishment 2014 – Hea02 ‘Sound Insulation’

It is understood that the development is to be assessed under the BREEAM Domestic Refurbishment scheme with the development as a historic building. Section Hea 02 ‘Sound Insulation’ awards credits for compliance and the improvement upon the minimum standards of the Building Regulations ADE in Table 1 above. In accordance with this the following criteria is required.

Table 2 – BREEAM Domestic Refurbishment 2012 – Hea02 ‘Sound Insulation’

Credits awarded	Improvement in sound insulation upon the minimum values in Building Regulations ADE	Walls - Airborne Sound Insulation $D_{nT,w} + C_{tr}$ dB (minimum values)	Floors - Airborne Sound Insulation $D_{nT,w} + C_{tr}$ dB (minimum values)	Floors - Impact Sound Insulation $L'_{nT,w}$ dB (maximum values)
2	0dB	≥ 43	≥ 43	≤ 64
3	3dB	≥ 46	≥ 46	≤ 61
4	5dB	≥ 48	≥ 48	≤ 59

4.0 RESULTS

4.1 Background Noise Levels

A measurement of typical noise levels was made within the receiver rooms during the tests. The background noise levels were between 24 and 39 dB $L_{Aeq,T}$ and comprised of some ongoing construction works on site and traffic noise on Cooper Street. It should be noted that where low background noise levels exist, these are not taken into account by Approved Document E. Consequently, even if a wall or floor is performing satisfactorily it may still be the case that sound can be heard passing between the adjacent spaces, this being a result of a lack of masking provided by the background noise. Please see Section 2.3 for a brief description of the test procedure for background noise measurements.

4.2 Airborne Sound Insulation – Separating Walls and Floors

The airborne noise measurements obtained on site have been processed to produce the standardised level difference (D_{nT}) between the rooms. The D_{nT} is detailed with the weighted standardised level difference $D_{nT,w}$ and the C_{tr} values in the test certificate at the rear of this report. The $D_{nT,w} + C_{tr}$ allows the sound insulation performance of the elements tested to be compared with the ADE requirements detailed in Section 3 above. The obtained $D_{nT,w} + C_{tr}$ for the separating walls and floors are presented in summary Tables 2 and 3 at the end of this report.

4.3 Impact Sound Insulation – Separating Floors

The impact noise measurement obtained on site has been processed to produce the standardised impact sound pressure level (L'_{nT}) between the rooms. The L'_{nT} is detailed with the weighted standardised impact sound pressure $L'_{nT,w}$ in the test certificate at the rear of this report. The $L'_{nT,w}$ allows the impact sound insulation performance of the elements tested to be compared with the ADE requirements detailed in Section 3 above. The obtained $L'_{nT,w}$ values for the separating floor is presented in summary Table 4 at the end of this report.

5.0 DISCUSSION OF RESULTS

5.1 Airborne Sound Insulation – Separating Walls and Floors

The obtained results from the sound insulation tests show that the minimum sound insulation values as stated in ADE 2003 have been met for all separating walls and floors. As such these elements may be regarded as having 'passed' the tests.

In addition the airborne sound insulation performance of the separating walls and floors has exceeded the minimum Building Regulations ADE performance by at least 3 dB, therefore 3 credits may be awarded in accordance with the BREEAM Domestic Refurbishment scheme.

5.2 Impact Sound Insulation – Separating Floors

The obtained results for the floors tested did not exceed the maximum value of impact sound insulation required by ADE 2003. As such the floors may be regarded as having 'passed' the tests.

In addition the impact sound insulation performance of the separating floors has exceeded the minimum Building Regulations ADE performance by at least 3dB, therefore 3 credits may be awarded in accordance with the BREEAM Domestic Refurbishment scheme.

Results Summary Tables

Table 2 – Airborne Wall Sound Insulation Test Results:

ANC Test Reference	Source Room		Receiver Room		Measured $D_{nT,w} + C_{tr}$ dB	Building Regulations ADE Required Sound Insulation Performance, $D_{nT,w} + C_{tr}$ dB	'Pass' or 'Fail'
	Description	Volume, m^3	Description	Volume, m^3			
1057348801	Flat 13 Living / Kitchen	94	Flat 14 Bedroom	33	52	≥ 43	Pass
1057348802	Flat 12 Bedroom	47	Flat 11 Bedroom	47	52	≥ 43	Pass
1057348803	Flat 6 Living / Kitchen	151	Flat 5 Living / Kitchen	120	50	≥ 43	Pass
1057348804	Flat 1 Living / Kitchen	95	Flat 2 Living / Kitchen	92	55	≥ 43	Pass

Table 3 – Airborne Floor Sound Insulation Test Results:

ANC Test Reference	Source Room		Receiver Room		Measured $D_{nT,w} + C_{tr}$ dB	Building Regulations ADE Required Sound Insulation Performance, $D_{nT,w} + C_{tr}$ dB	'Pass' or 'Fail'
	Description	Volume, m^3	Description	Volume, m^3			
1057348805	Flat 13 Living / Kitchen	94	Flat 10 Bedroom	52	49	≥ 43	Pass
1057348806	Flat 14 Living / Kitchen	131	Flat 9 Living / Kitchen	101	56	≥ 43	Pass
1057348807	Flat 12 Bedroom	47	Flat 6 Bedroom	45	62	≥ 43	Pass
1057348808	Flat 6 Living / Kitchen	151	Flat 2 Living / Kitchen	92	47	≥ 43	Pass

Table 4 – Impact Floor Sound Insulation Test Results:

ANC Test Reference	Source Room		Receiver Room		Measured $L'_{nT,w}$ dB	Building Regulations ADE Required Sound Insulation Performance, $L'_{nT,w}$ dB	'Pass' or 'Fail'
	Description	Volume, m^3	Description	Volume, m^3			
1057348809	Flat 13 Living / Kitchen	94	Flat 10 Bedroom	52	48	≤ 64	Pass
1057348810	Flat 14 Living / Kitchen	131	Flat 9 Living / Kitchen	101	46	≤ 64	Pass
1057348811	Flat 12 Bedroom	47	Flat 6 Bedroom	45	42	≤ 64	Pass
1057348812	Flat 6 Living / Kitchen	151	Flat 2 Living / Kitchen	92	53	≤ 64	Pass

Equipment List

Table 5 – Equipment

Manufacturer	Type	Model	Serial Number	Calibration Date	Calibration Certificate Number	Date of Expiration of Calibration
Nokia	Pink Noise Generator	6303e	0587577	-	-	-
Mackie	Sound Source	SRM350	204299601AKJW0027	-	-	-
Rion	Sound Level Meter	NA-28	680933	22/01/2021	04962/2	22/01/2023
Rion	Pre-Amplifier	NH-23	80984	22/01/2021	04962/2	22/01/2023
Rion	Half-inch Microphone	UC-59	8200	22/01/2021	04962/2	22/01/2023
Rion	Calibrator	NC-74	34683835	21/01/2021	04962/1	21/01/2022
Norsonic	Tapping Machine	211A	29735	08/09/2021	05449/3	08/09/2021

APPENDIX

PDA LTD. TEST CERTIFICATES

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

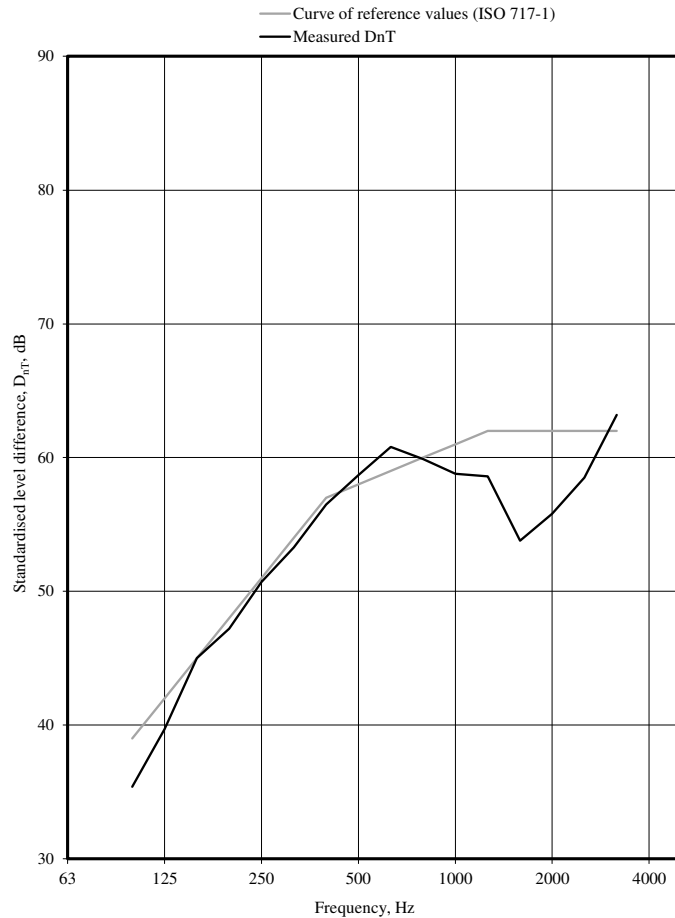
Source Room: Flat 13 Living / Kitchen
Receiver Room: Flat 14 Bedroom

Wall Construction (Notional)

Existing solid masonry wall with any openings infilled with 2 no. layers of 12.5mm Soundbloc plasterboard on resilient bars either side of a 92mm metal stud, with 50mm Isover Acoustic Partition Roll in the cavity.

Source Room Volume : 94 m³
Receiver Room Volume : 33 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	35.4
125	39.7
160	45.0
200	47.2
250	50.7
315	53.3
400	56.5
500	58.7
630	60.8
800	59.9
1000	58.8
1250	58.6
1600	53.8
2000	55.8
2500	58.5
3150	63.2
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) = **58** -2 -6 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348801
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

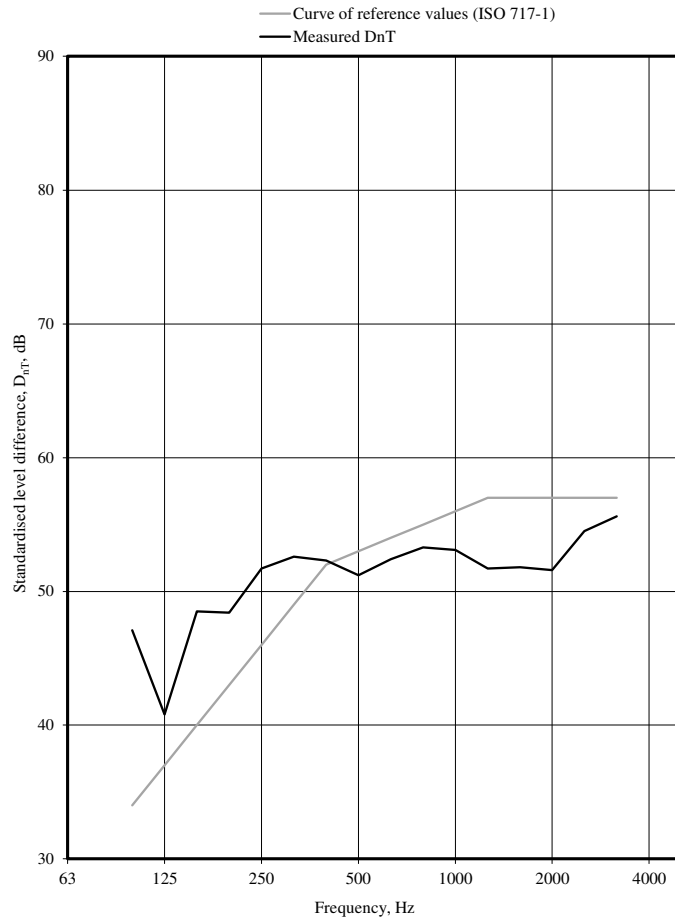
Source Room: Flat 12 Bedroom
Receiver Room: Flat 11 Bedroom

Wall Construction (Notional)

2 no. layers of 15mm Soundbloc plasterboard either side of a 146mm Acoustic metal stud with 50mm Isover Acoustic Partition Roll in the cavity.

Source Room Volume : 47 m³
Receiver Room Volume : 47 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	47.1
125	40.8
160	48.5
200	48.4
250	51.7
315	52.6
400	52.3
500	51.2
630	52.4
800	53.3
1000	53.1
1250	51.7
1600	51.8
2000	51.6
2500	54.5
3150	55.6
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) = **53** -1 -1 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348802
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

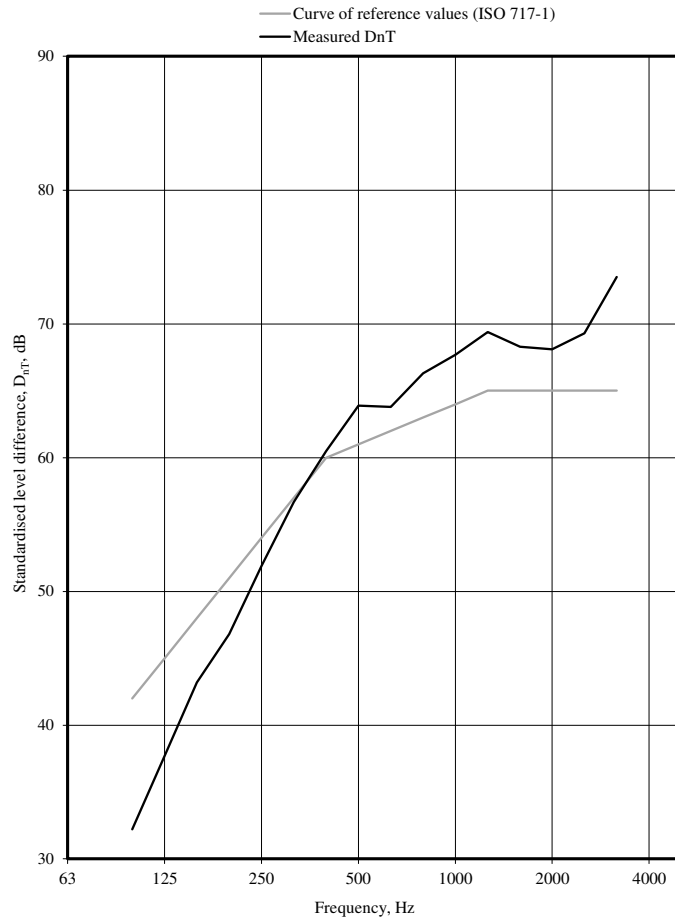
Source Room: Flat 6 Living / Kitchen
Receiver Room: Flat 5 Living / Kitchen

Wall Construction (Notional)

140mm blockwork (density of 1350kg/m³) with 1 no. layer of 12.5mm soundbloc plasterboard on Gypframe GL1 Lining channel to form 85mm cavity with 50mm mineral wool (minimum density 10kg/m³) infill.

Source Room Volume : 151 m³
Receiver Room Volume : 120 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	32.2
125	37.7
160	43.2
200	46.8
250	51.9
315	56.7
400	60.5
500	63.9
630	63.8
800	66.3
1000	67.7
1250	≥ 69.4
1600	≥ 68.3
2000	≥ 68.1
2500	≥ 69.3
3150	≥ 73.5
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) ≥ **61** -4 -11 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348803
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd **Date of Test:** 12 October 2021
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW



Description of tested construction, test arrangement and direction of measurement :

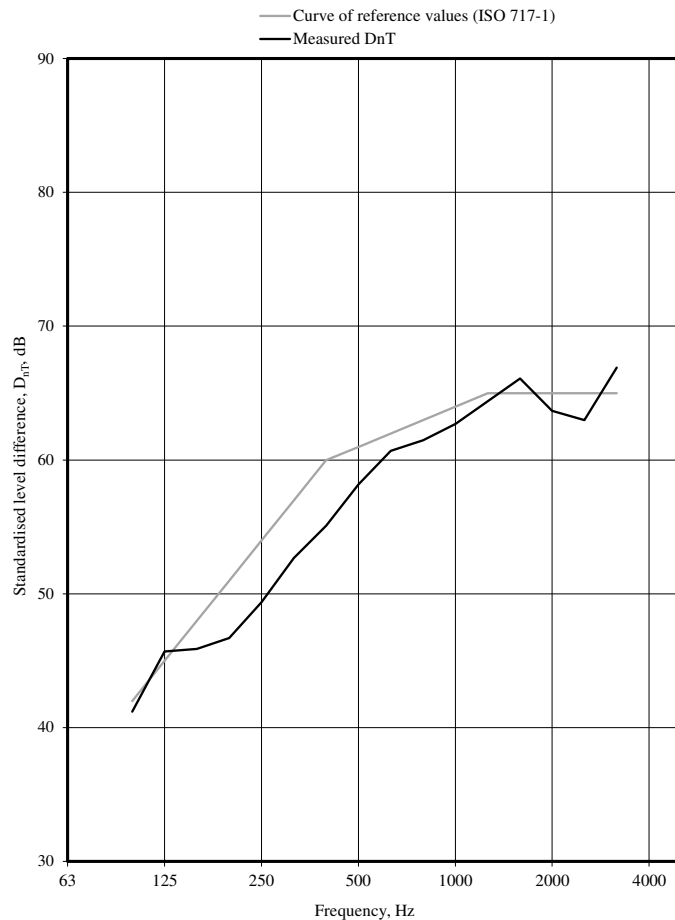
Source Room: Flat 1 Living / Kitchen
Receiver Room: Flat 2 Living / Kitchen

Wall Construction (Notional)

2 no. layers of 12.5mm Soundbloc plasterboard on resilient bars either side of a 92mm metal stud, with 50mm Isover Acoustic Partition Roll in the cavity.

Source Room Volume : 95 m³
Receiver Room Volume : 92 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	41.2
125	45.7
160	45.9
200	46.7
250	49.4
315	52.7
400	55.1
500	58.2
630	60.7
800	61.5
1000	62.7
1250	64.4
1600	66.1
2000	63.7
2500	63.0
3150	66.9
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) = **61** -2 -6 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348804

Name of Test Institute : PDA Ltd, 3 Bridgewater Court,
Barsbank Lane, Lymm, Cheshire,
WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

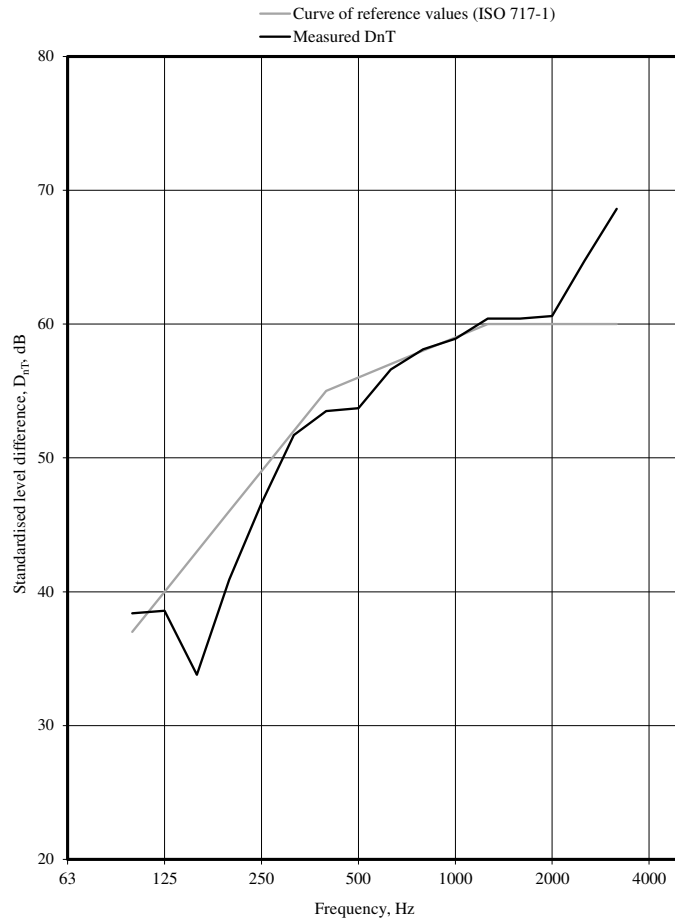
Source Room: Flat 13 Living / Kitchen
Receiver Room: Flat 10 Bedroom

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 94 m³
Receiver Room Volume : 52 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	38.4
125	38.6
160	33.8
200	40.9
250	46.6
315	51.7
400	53.5
500	53.7
630	56.6
800	58.1
1000	58.9
1250	60.4
1600	≥ 60.4
2000	≥ 60.6
2500	≥ 64.7
3150	≥ 68.6
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) ≥ **56** -3 -7 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348805
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd **Date of Test:** 12 October 2021
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW



Description of tested construction, test arrangement and direction of measurement :

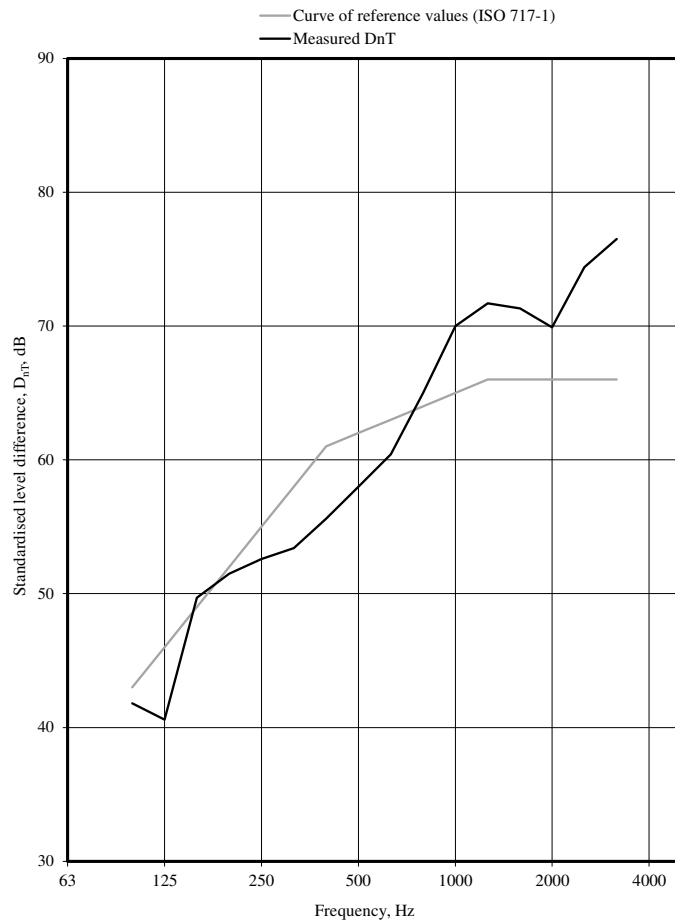
Source Room: Flat 14 Living / Kitchen
 Reciever Room: Flat 9 Living / Kitchen

Floor Construction (Notional)

28mm Knauf Brio 18WF on exisiting 160 mm concrete slab with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in the void.

Source Room Volume : 131 m³
 Receiver Room Volume : 101 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	41.8
125	40.6
160	49.7
200	51.5
250	52.6
315	53.4
400	55.6
500	58.0
630	60.4
800	65.0
1000	70.0
1250	71.7
1600	71.3
2000	69.9
2500	74.4
3150	76.5
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) ≥ **62** -1 -6 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348806 **Name of Test Institute :** PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

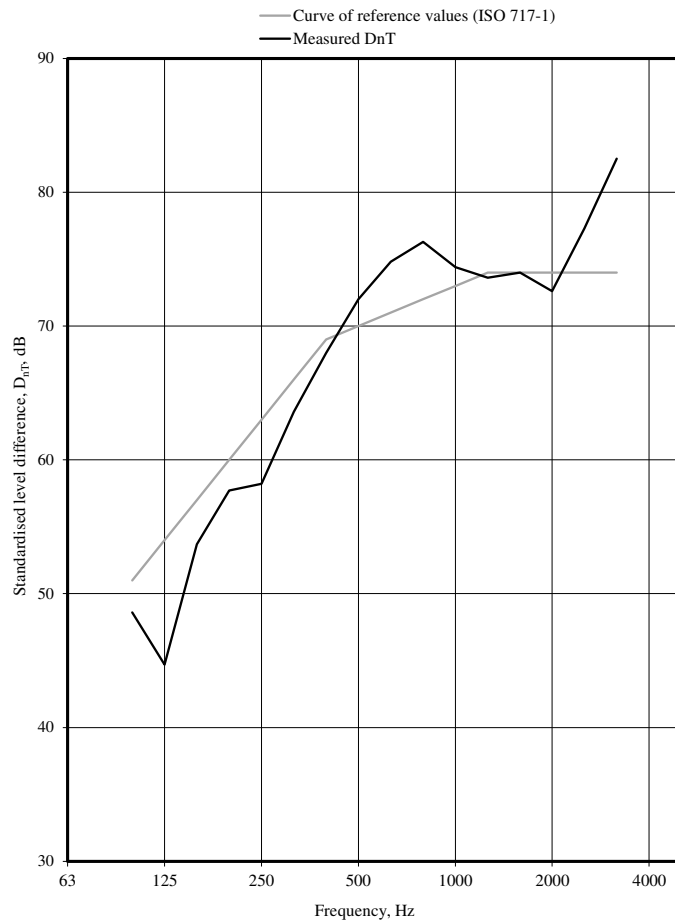
Source Room: Flat 12 Bedroom
 Reciever Room: Flat 6 Bedroom

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 47 m³
 Receiver Room Volume : 45 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	48.6
125	44.7
160	53.7
200	57.7
250	58.2
315	63.6
400	68.0
500	72.0
630	74.8
800	76.3
1000	74.4
1250	73.6
1600	≥ 74.0
2000	≥ 72.6
2500	≥ 77.3
3150	≥ 82.5
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) ≥ **70** -3 -8 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348807
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

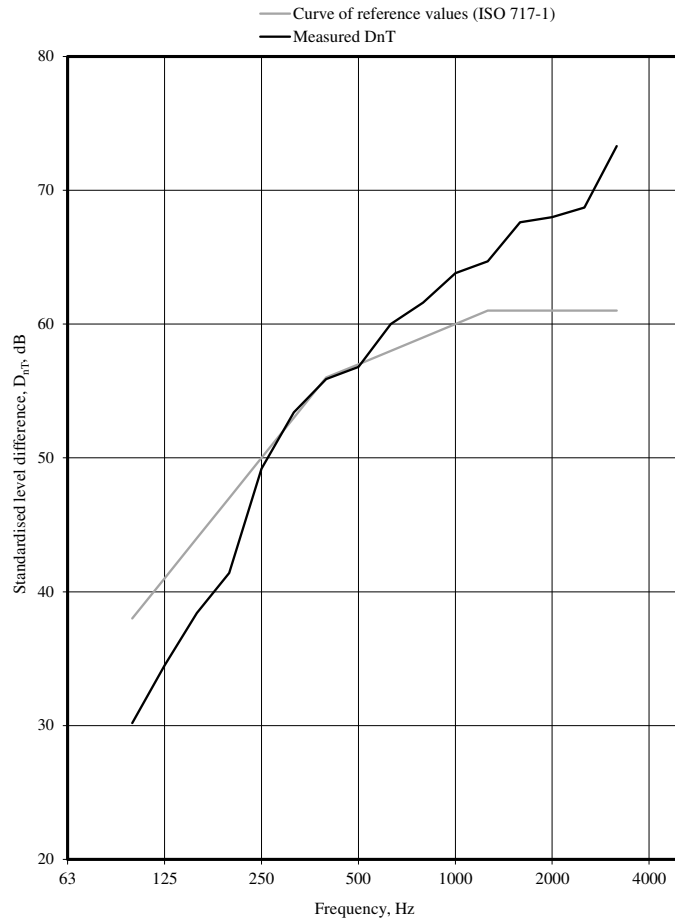
Source Room: Flat 6 Living / Kitchen
 Reciever Room: Flat 2 Living / Kitchen

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 151 m³
 Receiver Room Volume : 92 m³

Frequency Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	30.2
125	34.5
160	38.4
200	41.4
250	49.2
315	53.4
400	55.9
500	56.8
630	60.0
800	61.6
1000	63.8
1250	64.7
1600	≥ 67.6
2000	≥ 68.0
2500	≥ 68.7
3150	≥ 73.3
4000	
5000	



Rating According to ISO 717-1

D_{nT,w} (C; Ctr) ≥ **57** -3 -10 **dB**

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348808
Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≥ - measurement limited due to background

Signature :

Standardised impact sound pressure levels according to ISO 140-7
Field measurements of impact sound insulation of floors

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

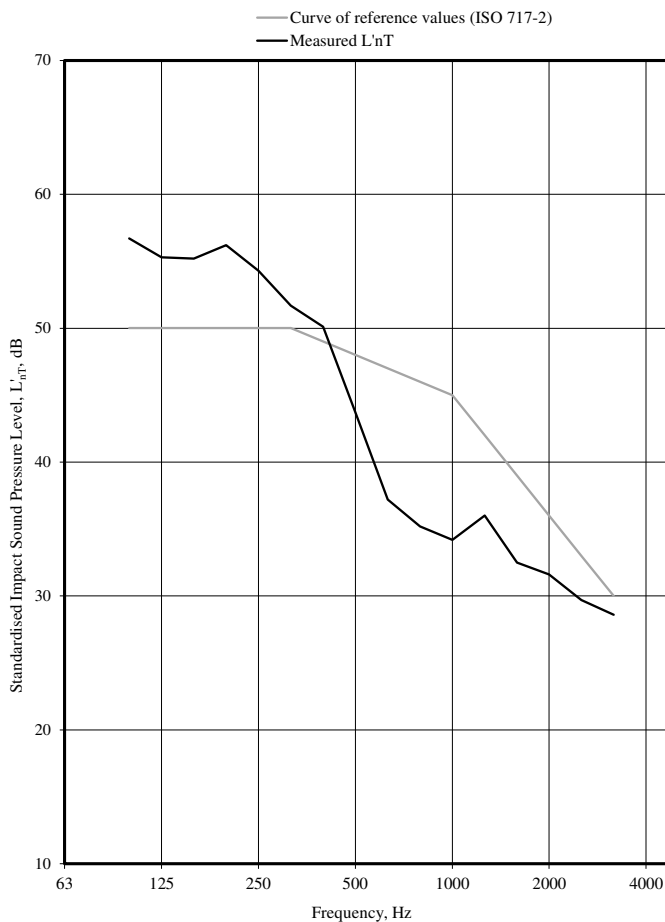
Source Room: Flat 13 Living / Kitchen
Receiver Room: Flat 10 Bedroom

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 94 m³
Receiver Room Volume : 52 m³

Frequency Hz	L' nT (one-third octave) dB
50	
63	
80	
100	56.7
125	55.3
160	55.2
200	56.2
250	54.3
315	51.7
400	50.1
500	43.7
630	37.2
800	35.2
1000	34.2
1250	36.0
1600	32.5
2000	31.6
2500	29.7
3150	28.6
4000	
5000	



Rating According to ISO 717-2

L' nT,w = **48** dB

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348809

Name of Test Institute : PDA Ltd, 3 Bridgewater Court,
Barsbank Lane, Lymm, Cheshire,
WA13 0ER

Date: 21 October 2021

Notes:

≤ - measurement limited due to background

Signature :

Standardised impact sound pressure levels according to ISO 140-7
Field measurements of impact sound insulation of floors

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

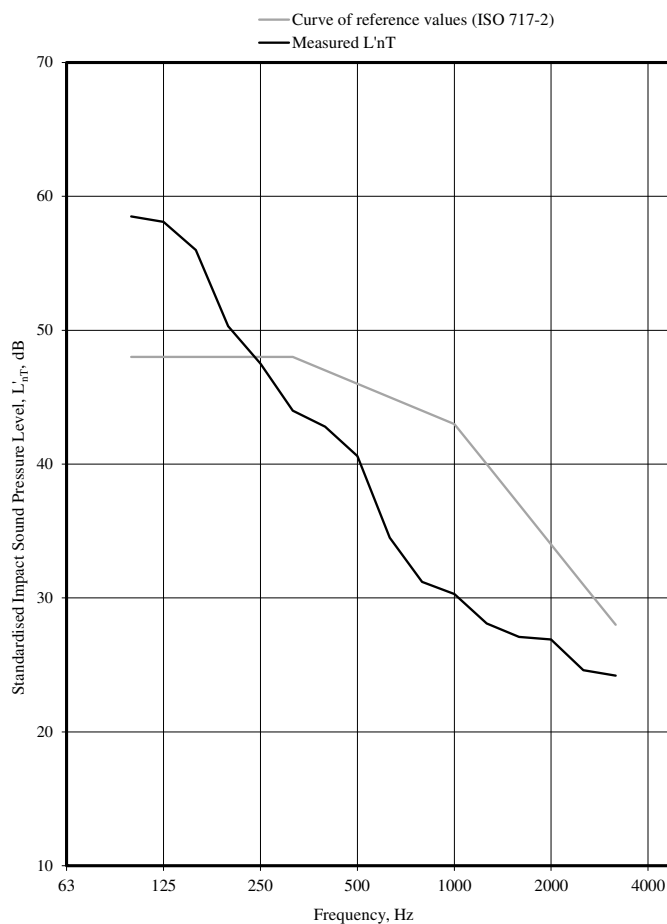
Source Room: Flat 14 Living / Kitchen
Receiver Room: Flat 9 Living / Kitchen

Floor Construction (Notional)

28mm Knauf Brio 18WF on existing 160 mm concrete slab with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in the void.

Source Room Volume : 131 m³
Receiver Room Volume : 101 m³

Frequency Hz	L' _{nT} (one-third octave) dB
50	
63	
80	
100	58.5
125	58.1
160	56.0
200	50.3
250	47.5
315	44.0
400	42.8
500	40.6
630	34.5
800	31.2
1000	30.3
1250	28.1
1600	27.1
2000	26.9
2500	24.6
3150	24.2
4000	
5000	



Rating According to ISO 717-2

L' _{nT,w} = **46** dB

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348810

Name of Test Institute : PDA Ltd, 3 Bridgewater Court,
Barsbank Lane, Lymm, Cheshire,
WA13 0ER

Date: 21 October 2021

Notes:

≤ - measurement limited due to background

Signature :

Standardised impact sound pressure levels according to ISO 140-7
Field measurements of impact sound insulation of floors

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

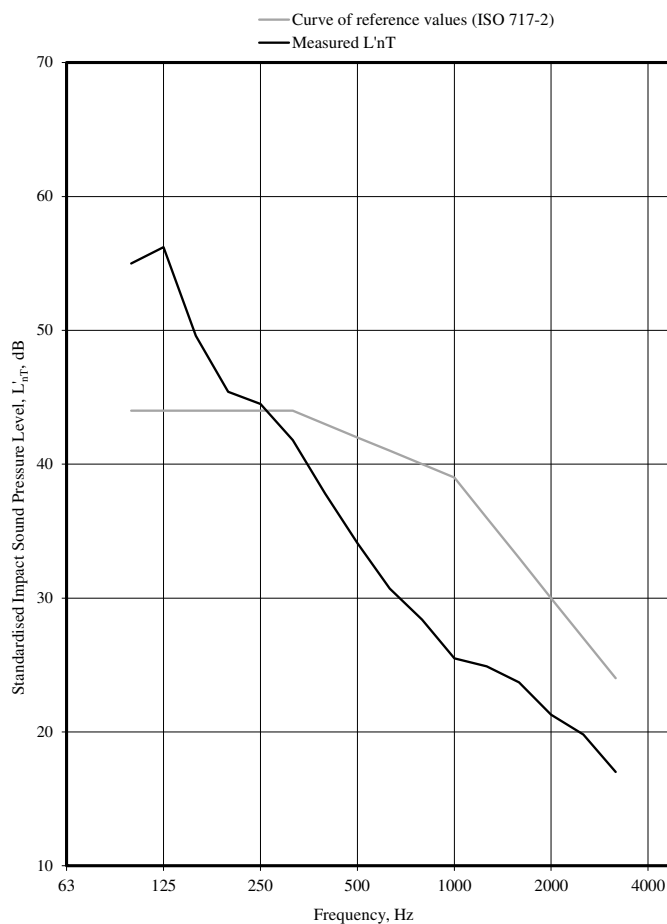
Source Room: Flat 12 Bedroom
Receiver Room: Flat 6 Bedroom

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 47 m³
Receiver Room Volume : 45 m³

Frequency Hz	L' _{nT} (one-third octave) dB
50	
63	
80	
100	55.0
125	56.2
160	49.6
200	45.4
250	44.5
315	41.8
400	37.8
500	34.1
630	30.7
800	28.4
1000	25.5
1250	24.9
1600	23.7
2000	21.3
2500	19.8
3150	17.0
4000	
5000	



Rating According to ISO 717-2

L' _{nT,w} = **42** dB

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348811

Name of Test Institute : PDA Ltd, 3 Bridgewater Court, Barsbank Lane, Lymm, Cheshire, WA13 0ER

Date: 21 October 2021

Notes:

≤ - measurement limited due to background

Signature :

Standardised impact sound pressure levels according to ISO 140-7
Field measurements of impact sound insulation of floors

Client: Acelux Ltd
Address: Waldorf House, 5 Cooper Street, Manchester, M2 2FW
Date of Test: 12 October 2021



Description of tested construction, test arrangement and direction of measurement :

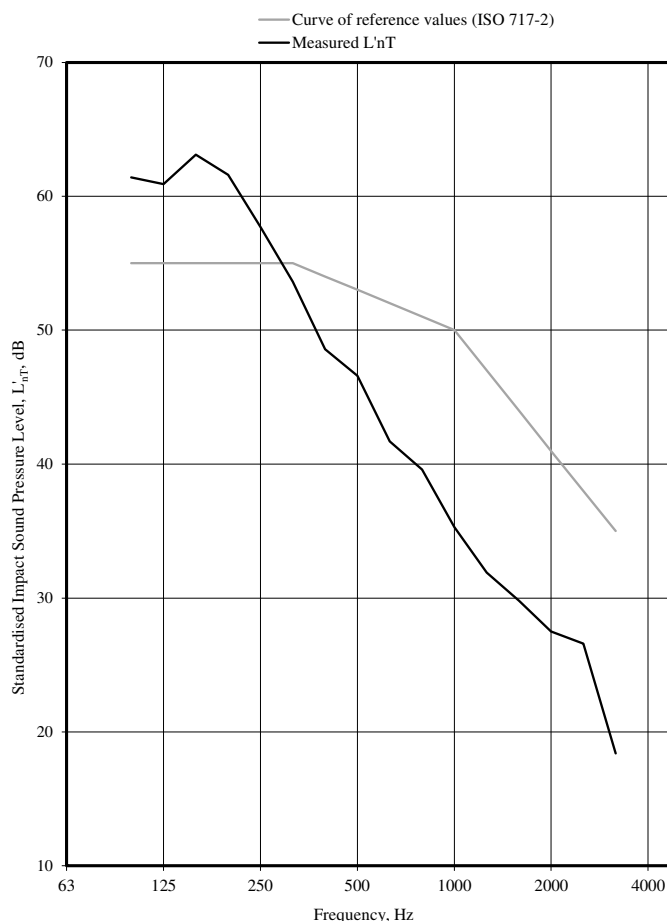
Source Room: Flat 6 Living / Kitchen
Receiver Room: Flat 2 Living / Kitchen

Floor Construction (Notional)

28mm Knauf Brio 18WF on 22mm T&G floorboards on existing timber joists with insulation between the joists with 2 no. layers of 12.5mm Soundbloc plasterboard attached directly to the underside of the joists with a suspended Casoline MF ceiling made up of 2 no. layers 12.5mm FireLine plasterboard with 100mm insulation in a 190mm void.

Source Room Volume : 151 m³
Receiver Room Volume : 92 m³

Frequency Hz	L' _{nT} (one-third octave) dB
50	
63	
80	
100	61.4
125	60.9
160	63.1
200	61.6
250	57.7
315	53.6
400	48.6
500	46.6
630	41.7
800	39.6
1000	35.3
1250	31.9
1600	29.8
2000	27.5
2500	26.6
3150	18.4
4000	
5000	



Rating According to ISO 717-2

L' _{nT,w} = **53** dB

Evaluation based on field measurement results obtained by an engineering method

No. of Test Report: 1057348812

Name of Test Institute : PDA Ltd, 3 Bridgewater Court,
Barsbank Lane, Lymm, Cheshire,
WA13 0ER

Date: 21 October 2021

Notes:

≤ - measurement limited due to background

Signature :