

Sound Insulation Test Report

Measurements to British Standard BS EN ISO 140-4 & 7 (1998) and BS EN ISO 717-1 & 2 (1997), following the test procedures in Annex B of Approved Document E of The Building Regulations at:

22-24 Cross Street

Reading

Hampshire

RG1 1SN

Tom Greatorex

Approved Test Technician - Peak Acoustics Ltd

Note: This report should not be reproduced except in full, without written approval of the laboratory

Ref: SHA-007

Property Type: Change of use - Flats

Test	Source Room	Receiving Room	Measured DnTW + Ctr (dB)	Required Level DnTw + Ctr (dB)	Measured L'nT,w (dB)	Required Level L'nT,w (dB)	Pass/Fail	Improvement on Building Regulations (dB)	Test Type
1	Flat 3 - Living/Kitchen	Flat 1 - Living/Kitchen	62	43			Pass	19	ABF
2	Flat 3 - Living/Kitchen	Flat 1 - Living/Kitchen			43	64	Pass	21	IMP
3	Flat 3 - Living/Kitchen	Flat 4 - Living/Kitchen	69	43			Pass	26	ABW
4	Flat 5 - Bedroom	Flat 3 - Bedroom	63	43			Pass	20	ABF
5	Flat 5 - Bedroom	Flat 3 - Bedroom			44	64	Pass	20	IMP
6	Flat 5 - Living/Kitchen	Flat 6 - Living/Kitchen	68	43			Pass	25	ABW

ABW - Airborne Wall

ABF - Airborne Floor

IMP - Impact

Ref: SHA-007

Testing commissioned by:

SHA Environmental
105, Adelphi Court
Epsom, Surrey
KT17 1BB

Test Date:

15/05/2019

Equipment: Kit 2

Svantek 977 Class 1 SLM Serial No. 45494
Svantek SV 33 Acoustic Calibrator Serial No. 58014
Lookline EM50 Tapping Machine Serial No. TM.14035
Qsources Qam Amplifier - SN 3138
Aco Pacific type 7052E microphone Serial No. 72673
Qsources Qohm Dodec Source - 8120D

Ref: SHA-007

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

Client: SHA Environmental
 Certificate: Airborne 1

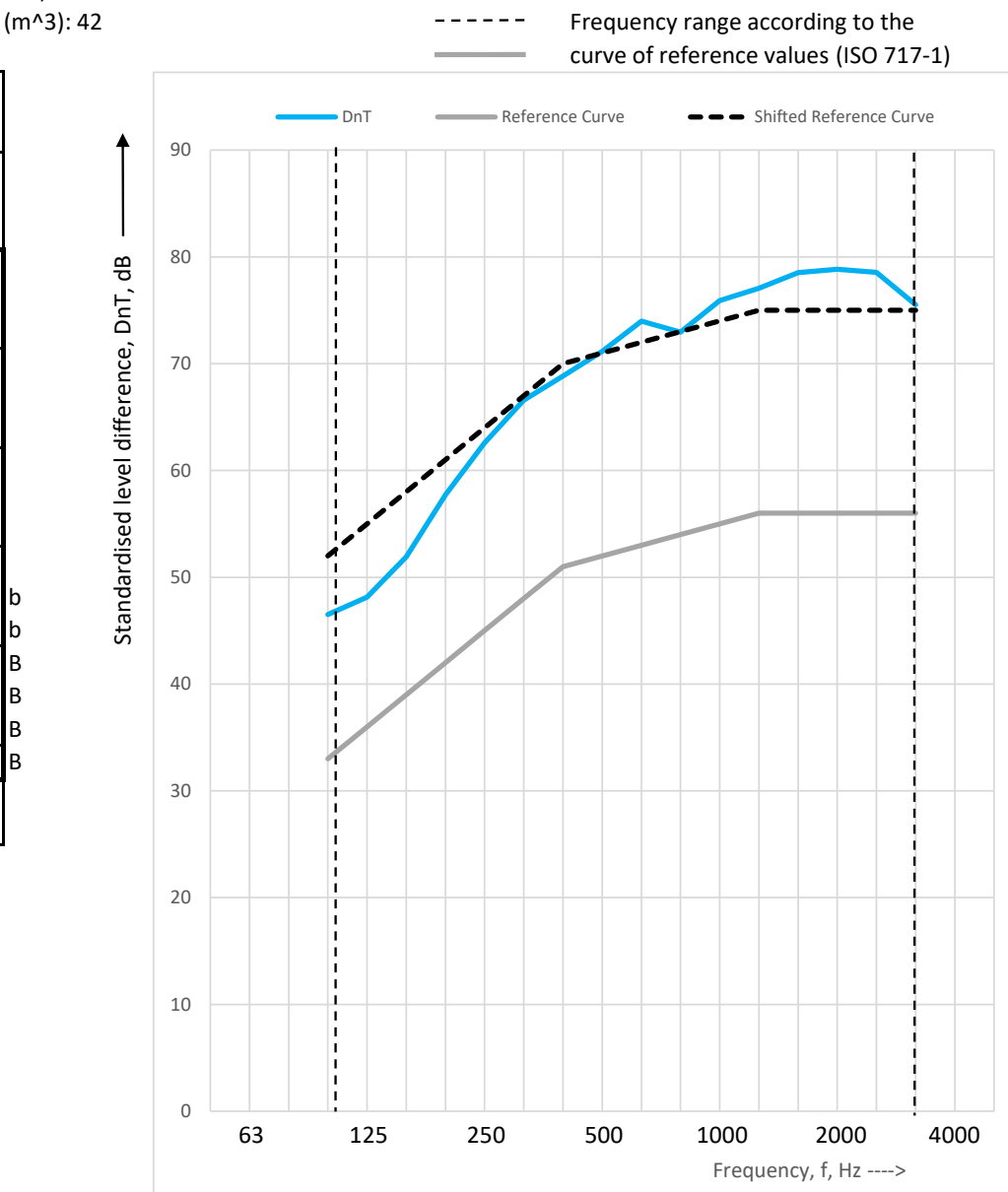
Date of test: 15/05/2019

Project: SHA-007

Source: Flat 3 - Living/Kitchen
 Receiver: Flat 1 - Living/Kitchen

Source room volume (m³): 42
 Receiver room volume (m³): 42

Frequency (Hz)	DnT 1/3 octave (dB)
50	
63	
80	
100	46.5
125	48.1
160	51.9
200	57.7
250	62.6
315	66.6
400	68.8
500	71.2
630	74.0
800	73.0
1000	75.9
1250	77.1
1600	78.5
2000	78.8
2500	78.5
3150	75.5
4000	
5000	



Rating according to ISO 717-1

Signed: Tom Greateorex

DnT,w (C; Ctr) = 71 (-3; -9) dB

Evaluation based on field measurement
 results obtained by an engineering method

b: background corrected, B: maximum correction
 Result corrected for background noise

Certificate Ref: SHA-007 - 1

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

Standardised level difference according to ISO 140-7
Field measurements of impact sound insulation between rooms

Client: SHA Environmental

Date of test: 15/05/2019

Certificate: Impact 2

Project: SHA-007

Source: Flat 3 - Living/Kitchen

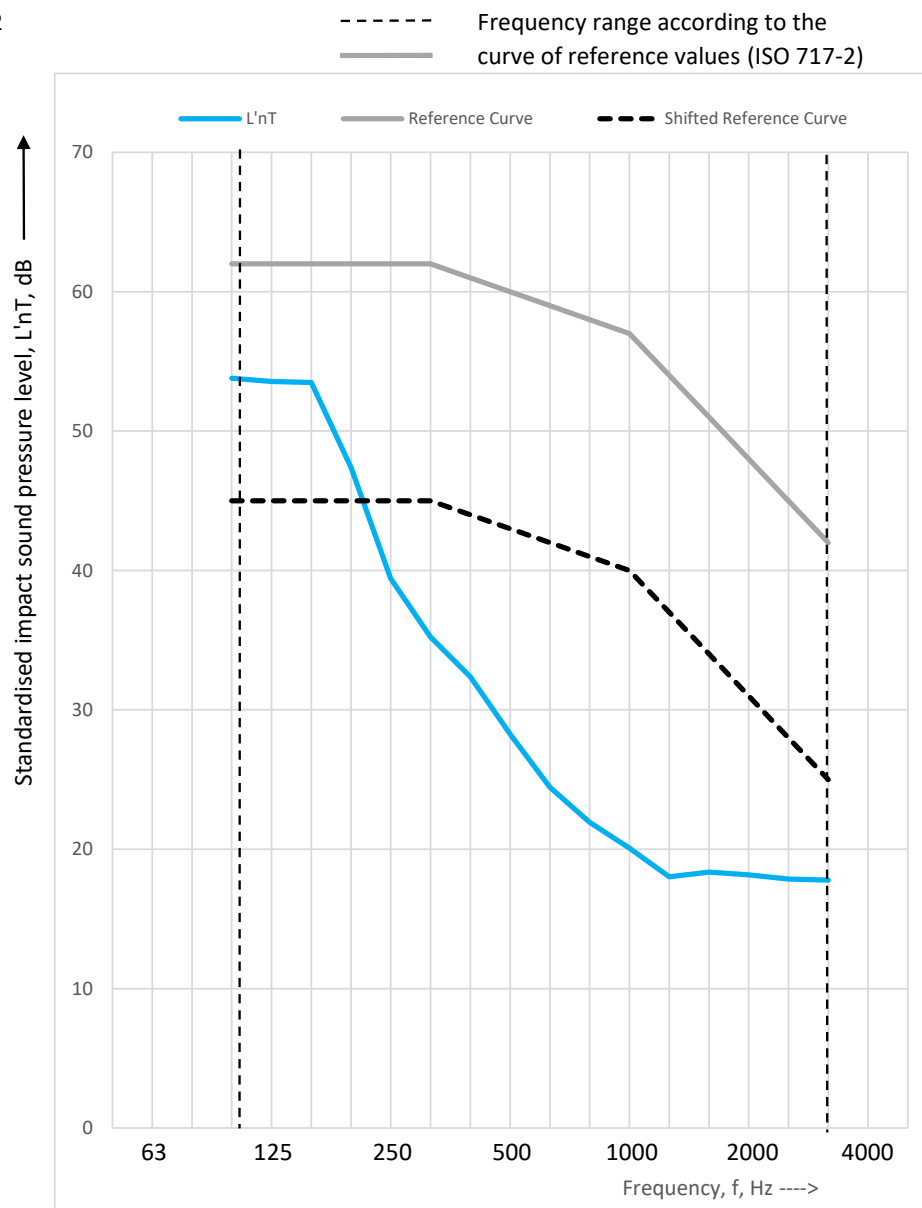
Receiver: Flat 1 - Living/Kitchen

Source room volume (m³): 42

Receiver room volume (m³): 42

Frequency (Hz)	L'nT 1/3 octave (dB)
50	
63	
80	
100	53.8
125	53.6
160	53.5
200	47.4
250	39.4
315	35.2
400	32.4
500	28.2
630	24.4
800	21.9
1000	20.1
1250	18.0
1600	18.4
2000	18.2
2500	17.9
3150	17.8
4000	
5000	

b
B
B
B
B
B
B



Rating according to ISO 717-2

L'nT,w = 43 dB

Evaluation based on field measurement
 results obtained by an engineering method

Signed: Tom Greateorex

b: background corrected, B: maximum correction

Result corrected for background noise

Certificate Ref: SHA-007 - 2

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

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

Client: SHA Environmental
 Certificate: Airborne 3

Date of test: 15/05/2019

Project: SHA-007

Source: Flat 3 - Living/Kitchen
 Receiver: Flat 4 - Living/Kitchen

Source room volume (m^3): 42
 Receiver room volume (m^3): 42

Frequency (Hz)	DnT 1/3 octave (dB)
50	
63	
80	
100	58.4
125	58.1
160	57.7
200	57.7
250	65.5
315	68.4
400	69.1
500	73.0
630	76.3
800	76.5
1000	80.4
1250	80.5
1600	80.5
2000	79.4
2500	78.9
3150	75.7
4000	
5000	

b

b

B

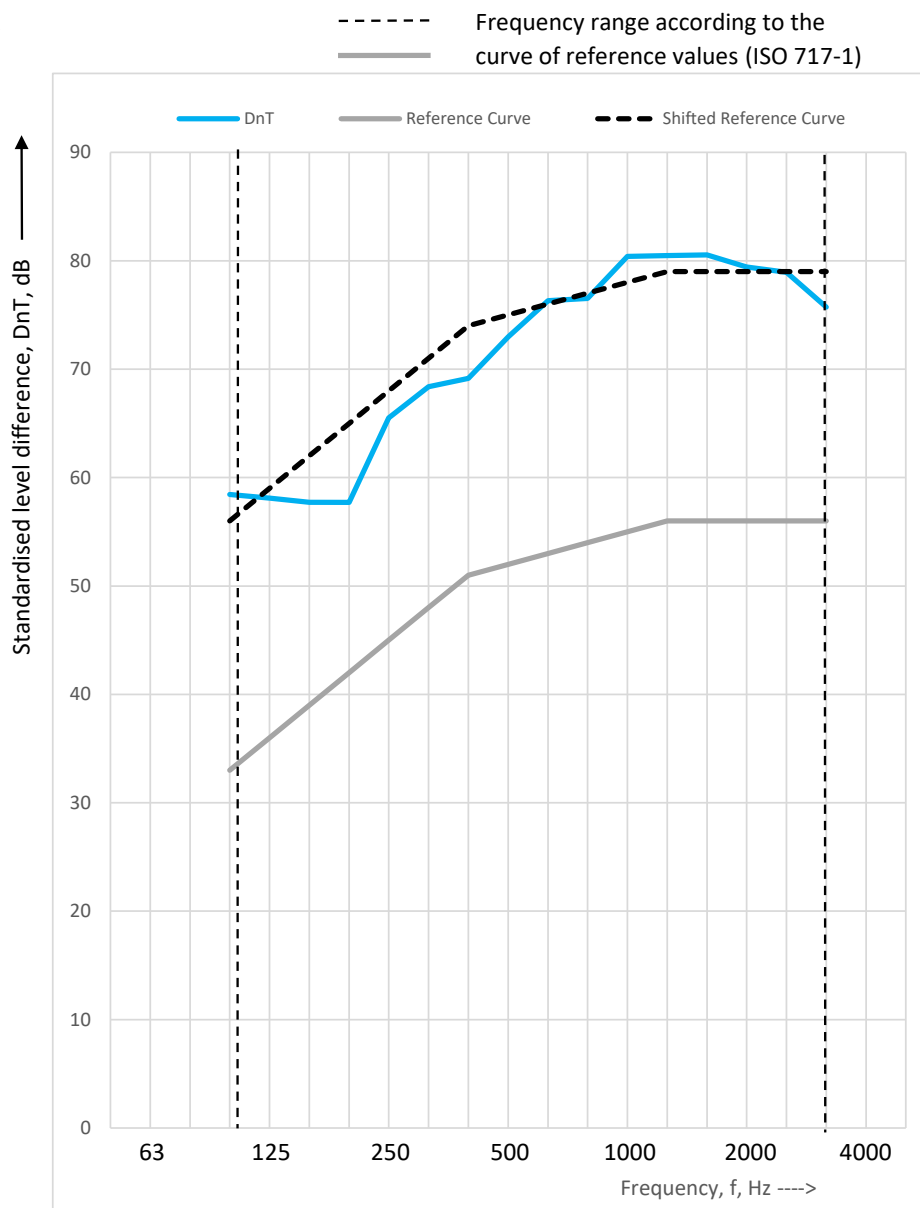
B

B

B

B

B



Rating according to ISO 717-1

Signed: Tom Greateorex

DnT,w (C; Ctr) = 75 (-2; -6) dB

Evaluation based on field measurement
 results obtained by an engineering method

b: background corrected, B: maximum correction

Result corrected for background noise

Certificate Ref: SHA-007 - 3

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

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

Client: SHA Environmental
 Certificate: Airborne 4

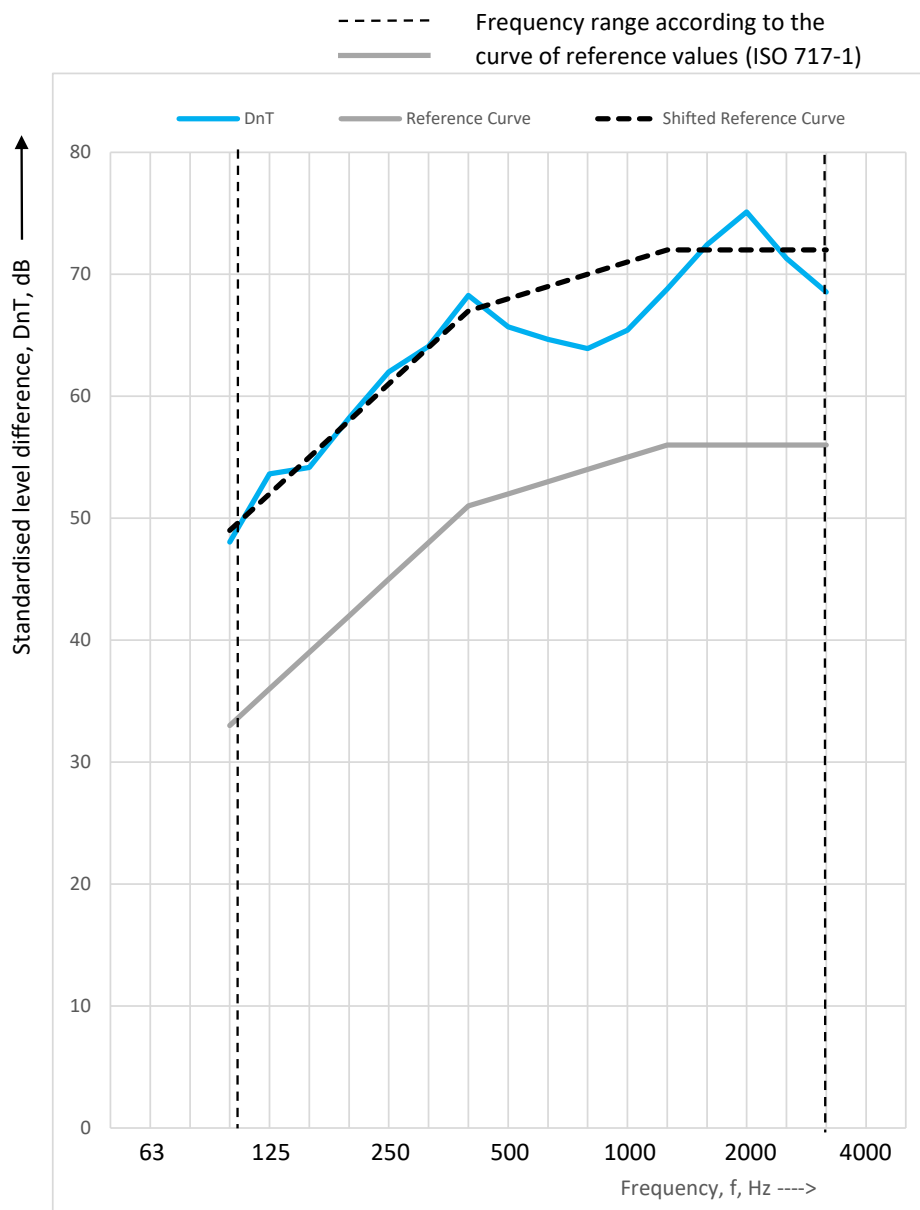
Date of test: 15/05/2019

Project: SHA-007

Source: Flat 5 - Bedroom
 Receiver: Flat 3 - Bedroom

Source room volume (m³): 23
 Receiver room volume (m³): 23

Frequency (Hz)	DnT 1/3 octave (dB)
50	
63	
80	
100	48.0
125	53.6
160	54.2
200	58.2
250	62.0
315	64.1
400	68.3
500	65.7
630	64.7
800	63.9
1000	65.4
1250	68.8
1600	72.4
2000	75.1
2500	71.3
3150	68.6
4000	
5000	



Rating according to ISO 717-1

DnT,w (C; Ctr) = 68 (-2; -5) dB

Evaluation based on field measurement
 results obtained by an engineering method

Signed: Tom Greateorex

b: background corrected, B: maximum correction

Result corrected for background noise

Certificate Ref: SHA-007 - 4

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

Standardised level difference according to ISO 140-7
Field measurements of impact sound insulation between rooms

Client: SHA Environmental
 Certificate: Impact 5

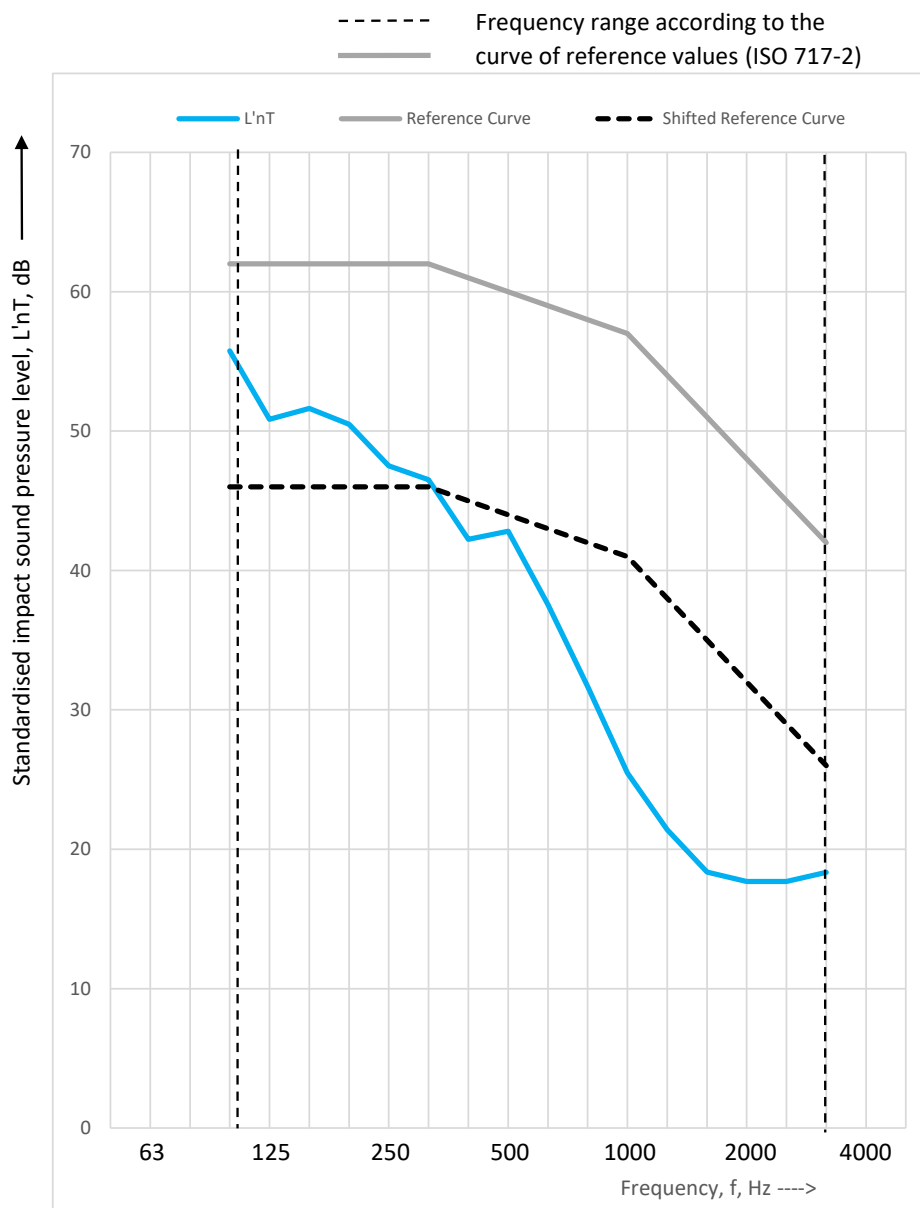
Date of test: 15/05/2019

Project: SHA-007

Source: Flat 5 - Bedroom
 Receiver: Flat 3 - Bedroom

Source room volume (m³): 23
 Receiver room volume (m³): 23

Frequency (Hz)	L'nT 1/3 octave (dB)
50	
63	
80	
100	55.8
125	50.9
160	51.6
200	50.5
250	47.5
315	46.5
400	42.2
500	42.8
630	37.5
800	31.7
1000	25.5
1250	21.4
1600	18.4
2000	17.7
2500	17.7
3150	18.3
4000	
5000	



Rating according to ISO 717-2

L'nT,w = 44 dB

Evaluation based on field measurement
 results obtained by an engineering method

Signed: Tom Greateorex

b: background corrected, B: maximum correction
 Result corrected for background noise

Certificate Ref: SHA-007 - 5

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

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

Client: SHA Environmental
 Certificate: Airborne 6

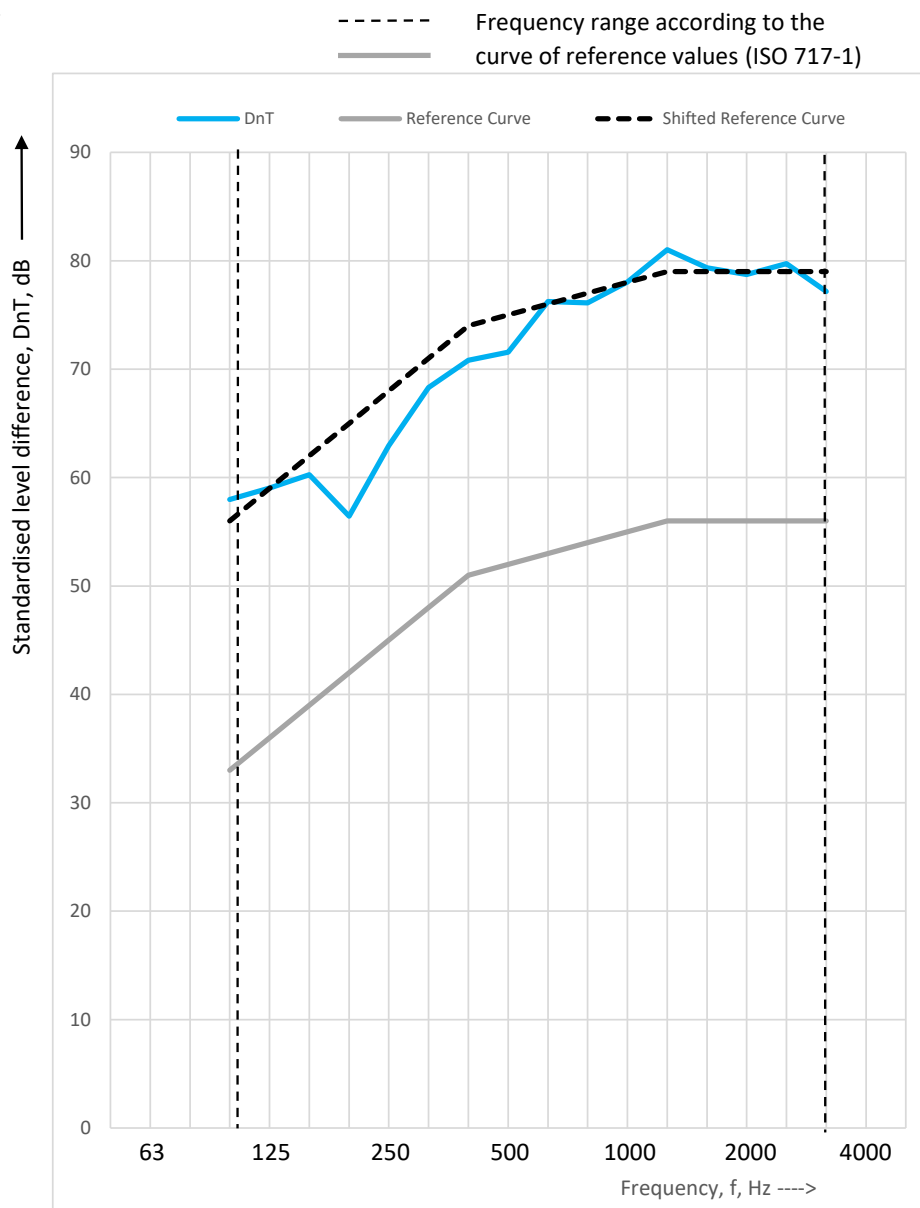
Date of test: 15/05/2019

Project: SHA-007

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

Source room volume (m³): 47
 Receiver room volume (m³): 47

Frequency (Hz)	DnT 1/3 octave (dB)	
50		
63		
80		
100	58.0	b
125	59.0	
160	60.3	
200	56.4	
250	62.9	
315	68.3	
400	70.8	b
500	71.6	
630	76.2	
800	76.1	b
1000	78.0	b
1250	81.0	B
1600	79.3	B
2000	78.7	B
2500	79.7	B
3150	77.2	B
4000		
5000		



Rating according to ISO 717-1

Signed: Tom Greateorex

DnT,w (C; Ctr) = 75 (-3; -7) dB

Evaluation based on field measurement
 results obtained by an engineering method

b: background corrected, B: maximum correction
 Result corrected for background noise

Certificate Ref: SHA-007 - 6

Test Institute:

Peak Acoustics Ltd

Date: 16/05/2019

References

Test Procedure - Airborne Sound Insulation

Airborne sound insulation measurements are taken to a recommended procedure summarised below:-

- A pink noise source generates a steady and continuous spectrum across the required frequency bands.
- Measurements, following the International Standard (2), of the sound levels are taken at one-third octave intervals from 100Hz to 3150Hz, in the source and receiver room using fixed microphone positions.
- An average sound pressure level, representative of the space in each room is established.
- Reverberation time measurements are made in the receiver room (3).
- The standardised level difference (DnT) in decibels (dB) is calculated in each frequency band using the equation: $DnT = L1 - L2 + 10 \lg T/T0$.

DnT is the Standardised Level Difference (dB)

L1 is the average sound pressure level in the source room (dB)

L2 is the average sound pressure level in the receiver room (dB)

T is the average reverberation time of the receiver room (seconds)

T0 is the reference reverberation time of 0.5 seconds.

- The Weighted Standardised Level Difference (DnT,w) in decibels and Spectrum Adaptation Terms (C and Ctr) , are calculated in accordance with BS EN ISO 717-1:1997(4)

Test Procedure - Impact Sound Transmission

Impact sound insulation measurements are taken to a recommended procedure summarised below:-

- An industry standard *tapping machine* is used as the impact noise source.
- Measurements, following the International Standard (5), if the sound level are taken at one-third octave bands intervals from 100Hz to 3150Hz in the receiver room using fixed microphone positions.
- An average sound pressure level representative of the space in each room is established.
- Reverberation time measurements are made in the receiver room (3)
- The Standardised Impact Sound Pressure Level (L'nT) in decibels (dB) is calculated in each frequency band using the equation: $Lnt = L1 - 10 \lg T/T0$

where L'nT is the Standardised Level Difference (dB)

L1 is the average sound pressure level in the source room (dB)

L2 is the average sound pressure level in the receiver room (dB)

T is the average reverberation time of the receiver room (seconds)

T0 is the reference reverberation time of 0.5 seconds.

- The Weighted Standardised Impact Sound Pressure Level (L'nT,w) in decibels (dB) is calculated in accordance with BS EN ISO 717-2:1997 (6).

Reference Documents

1. The Building Regulations 2015 - Approved Document E: Resistance to the passage of sound.
2. BS EN ISO 140-4:1998 Acoustics - Measurements of sound insulation in buildings and of building elements.
3. BS EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room.
4. BS EN ISO 717-1:1997 (Incorporating Amendment 1) Rating of sound insulation in buildings and of building elements.
5. BS EN ISO 140-7:1998 Field Measurements of impact sound insulation of floors.
6. BS EN ISO 717-2:1997 (Incorporating Amendment 1) Acoustics. Rating of sound insulation in buildings and of building elements. Impact sound insulation.

