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SITMA
The Sound Insulation Testing & Measurement Association



Airborne Sound Insulation testing in accordance with Test Standards BS EN ISO 140-4:1998

Report Reference Number: 70826

Test Date: 03/05/2025

Report Compilation Date: 06/05/2025

Abstract

Pre-completion Sound Insulation Testing is the process of measuring how much noise a building element, normally a separating wall or a separating floor, prevents from travelling through to a neighbouring dwelling

This report describes the test procedure and the results obtained from the pre-completion sound insulation testing at
148-152 Montague St, Worthing, BN11 3HH.

Competent Tester

Testing in this report was conducted by Peter Cable (Registration Number: 7214), who is a Certified tester in the SITMA Certification Scheme for Sound Insulation Testers, which is a UKAS Accredited Certification Body No. 10579.

SITMA operates solely as a personal certification body. Its accredited function is limited to certifying individuals and their ability to follow the test standards. SITMA does not conduct these tests itself, nor does it participate in or influence the testing process in any way, neither is any tester an employee of SITMA.

The certification and reporting of tests falls outside the scope of the accredited scheme.

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The SITMA Certified Testers' Scheme

This testing described within this report was conducted by a certified tester of the UKAS Accredited SITMA Certification Scheme for Sound Insulation Testers. The report was generated using the SITMA Portal, which testers are required to use as part of the requirements for certified testers (as per PUS006 - Lodgement Process, Rules & Guidance) Further information on the certification scheme, it's lodgement system, quality control and auditing requirements are discussed below.

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Certified Tester Conducting this test:

Certified Tester:	Peter Cable
Associated Company:	New Home Assessments, 123 Watchouse Road, Galleywood, Chelmsford, CM2 8NG.
Live Certification Status	https://www.bcta.group/sitma/members



SITMA Certification Scope
The SITMA Certification Scheme for Sound Insulation Testers is a UKAS Accredited Certification Body No. 10579. SITMA itself holds BS EN ISO/IEC 17024:2012 accreditation from UKAS, not the tester.

Testers are certified by SITMA in accordance with the SITMA Scope of Accreditation[2], accessible here: https://www.bcta.group/sitma/sitma-certification-scheme-scope/

Audit Requirements
Each tester is audited annually, which may be unannounced, in accordance with SITMA Document PUS012 – Audit Process & Outcomes.This is achieved by the tester logging their job onto the SITMA portal **in advance of testing taking place.**

Each certified tester will be able to issue you with their SITMA audit documentation from their last audit alongside this report, if requested.

SITMA Portal
The SITMA Portal, besides logging every job for every tester, is used to generate reports, just like this one. The portal does not accept pre-calculated information, it takes the raw data from the sound level meter and calculates each individual test result before producing this report, ensuring no test data has been amended by any tester prior to being uploaded.

Calibration Requirements
SITMA calibration requirements can be found here:https://www.bcta.group/sitma/equipment/usable-equipment.

Complaints
You should speak directly with the tester if you wish to make a complaint. If your complaint is not handled to your satisfaction, you are then welcome to make a complaint directly to the SITMA certified tester's scheme in line with our complaints process. SITMA Document PUS013 – Complaints & Appeals.

TO CHECK THIS REPORT IS VALID

1. Head to this site:	https://www.sitma.bcta.group/
2. Use these credentials:	Report Reference Number: 70826
	Job Postcode: BN11 3HH

[1] BS EN ISO/IEC 17024:2012 Conformity assessment — General requirements for bodies operating certification of persons (2018)
[2] United Kingdom Accreditation Service (UKAS) SITMA accreditation No. 10579

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Report Revisions

Report Version:	Change(s) made
1.0	This document is the initial issue

Simplified Test Results

Certificate Number	Plot & Source Room	Plot & Receive Room	Target $D_{nT,w}+C_{tr}$ (dB)	Result $D_{nT,w}+C_{tr}$ (dB)	Result
213620	Plot 4 Bedroom 2	Plot 5 Kitchen	≥ 43	50	PASS
213621	Plot 2 Kitchen / Living Room	Plot 4 Kitchen / Living Room	≥ 43	58	PASS
213622	Unit Gr Fl Commercial Space	Plot 2 Kitchen / Living Room	≥ 43	48	PASS

* Results shown with an asterisk have a deviation which is discussed on the certificate and in the Detailed Test Results section.

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Testing Methodology

Airborne Sound Insulation Tests

Measurements of Standardised Level Difference (D_{nT}) were conducted in accordance with BS EN ISO 140-4:1998.

Level measurements in the Source & Receive Rooms (L_1 & L_2)
The noise was generated in the source room by placing an active loudspeaker, which produced a steady spectrum of noise, in an external corner of the room, opposite the wall being tested (where walls are being tested) at least 0.5m away from any reflective surface.

The sound pressure level was measured in both the source room and receive room, sampling as much of the room as possible, for each of two loudspeaker positions. The sound level meter was always kept 0.7m away from any reflective surface as to not artificially increase or decrease noise levels into the microphone.

The measurements were taken at one-third octave band intervals from 100 to 3150 Hertz using an averaging time of at least 30 seconds. The speaker was moved at least 1.4m horizontally and 0.3m vertically and the measurements were repeated. The measurements in each room were logarithmically averaged.

Background Measurements in Receive Room (L_b)
Background noise levels were measured in the receive room with the source room speaker turned off to ensure the background noise level did not influence the result. Corrections are applied when the background noise level is within 10dB of the signal and background noise level combined.

The background noise level was measured over a time period that accurately reflects the background noise measurement at the time of the test. This is normally between 6 & 30 seconds and can vary between the first and second background measurements.

Reverberation Time Measurements (RT)
The reverberation measurements were carried out following the guidance in BS EN ISO 140-7: 1998 and BS EN ISO EN 354:2003[3] .

A minimum of 6 reverberation time measurements were carried out in the receive room to accurately define the amount of influence the diffuse field has on the microphone, ensuring that the soft or hard surfaces within the room do not impact the overall test result.

These 6 reverberation time measurements were measured in the receive room using a minimum of 3 microphone positions in accordance with Section 6.5 of BS EN ISO 140-4:1998.

The noise was generated in the receive room by placing an active loudspeaker, which produced a steady spectrum of noise, in a corner of the room at least 0.5m away from any reflective surface.

The T_{20} RT measurements are used in the calculation as a minimum. Where T_{30} RT measurements are available, these are used where the sound level meter can do so.

[3] BS EN ISO 354:2003 Acoustics – Measurement of sound absorption in a reverberation room

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Calculation Methodology

Uniform Requirements

Background Noise Correction ('Corrected L_2')
Any receive room measurements that are within 6dB of the background measurements are corrected by adding 1.3 dB to the receive room measurement.

If the difference in levels is smaller than 10dB but greater than 6dB, the signal is corrected as per BS EN ISO 140-4:1998 Section 6.6 for airborne tests and BS EN ISO 140-7:1998 Section 5.6 for impact tests.

Precision
All measurements are taken to 0.1dB precision, except reverberation times which are taken to 0.01 second precision. Measurements are calculated without rounding until the single number rating calculation, following guidance from BS EN ISO 717-1:1997[4] and BS EN ISO 717-2:1997[5]

Airborne Sound Insulation Tests

Level Difference ('*D*')
The difference between the source and 'corrected' receive room measurement is calculated for each speaker position and 2 differences arithmetically averaged to obtain '*D* for each frequency measured. These are calculated separately for Speaker Position 1 and Speaker Position 2.

Standardised Level Difference ('D_{nT}')
The results at each third octave band frequency are standardised by adding 10 times the logarithm of the reverberation time at each frequency, divided by 0.5 (reference reverberation time), to give the standardized level difference (D_{nT}) at each frequency.

Weighted Standardized Level Difference ('$D_{nT,w}$')
The individual D_{nT} are then compared to the standard reference curve, with the sum of unfavourable deviations measured and adjusted, as defined in BS EN ISO 717-1:1997 to give a single figure result of $D_{nT,w}$.

Weighted Standardized Level Difference with Spectrum Adaption ('$D_{nT,w}$ + C;C_{tr}')
The spectrum adaptation terms (C;C_{tr}) are then calculated in accordance with BS EN ISO 717-1:1997.

Precision
All measurements are taken to 0.1dB precision, except reverberation times which are taken to 0.01 seconds precision.

[4] BS EN ISO 717-1:1997 Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation
[5] BS EN ISO 717-2:1997 Acoustics – Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation

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Impact Sound Insulation Tests

Standardized Impact Sound Pressure Level (‘*L*'$_{nT}$’)
The results at each third octave band frequency are standardized by subtracting 10 times the logarithm of half the reverberation time at each frequency, divided by 0.5, to the ‘corrected’ L2 to give the Standardized Impact Sound Pressure Level (L'$_{nT}$) at each frequency.

Weighted Standardized Impact Sound Pressure Level (‘*L*’$_{nT}$’).
The L’$_{nT}$ are then compared to the standard reference curve, with the sum of unfavourable deviations measured and adjusted, as defined in BS EN ISO 717-2:1997 to give a single figure result of $L_{nT,w}$

[4] BS EN ISO 717-1:1997 Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation
[5] BS EN ISO 717-2:1997 Acoustics – Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation

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Sampling Regime

Testing was conducted using a sampling regime in accordance with Approved Document E 2003 [as amended] (ADE), ensuring each construction type was tested on the project, not necessarily each plot. It is assumed that each construction type is constructed consistently. If this is not the case, and deviations of the construction type occur, further testing will be required to comply with the requirements of Approved Document E 2003 [as amended] to the Building Regulations.

The location of the sets of tests were selected at random by the tester except where specifically requested by the Local Authority Building Control officer, Approved Inspector or by specialist input from Robust Details Limited.

Rooms were tested unfurnished unless testing is specifically requested in a furnished room.
Testing is conducted using the larger room as the source room, with a tolerance of 10% of volume being acceptable either way. Doors, windows, and trickle vents must be closed and kitchen units, cupboard doors, wardrobes etc shall be open for the duration of the test when they have been installed against the separating wall under test.
For impact testing, the tests are always conducted on the separating floor that has received Building Control Approval. It is only ever acceptable to test on a soft floor covering where that covering is an integral part of a Type 1 concrete floor as defined by ADE and cannot physically be lifted by the tester's own hands.

Occasionally, rooms may have an awkward layout, such as a stagger, be significant in length (>10m) or contain internal barriers. These requirements are defined in BS EN ISO 140-14:2004[6] which all testers hold a copy of as a mandatory entry requirement into the SITMA Certified Testers' Scheme. Where a test has an awkward layout, the testing method from BS EN ISO 140-14:2004 will be defined in the report and sketches held internally.

Deviations

Background Noise Levels
Background noise levels are often an unavoidable part of testing as testing must take place on a live building site. Though a correction is applied within the calculation, high background noise levels may result in the wall/floor under test not achieving its full potential.
Situations can occur where background noise levels are not high, but the sound insulation performance of the separating floor or wall is so good that the measured levels are close to the prevailing background levels. The equipment used cannot distinguish between background noise levels and the noise from the speaker.

Deviations Related to the test

If any deviation from the testing method was necessary, details of the deviation are indicated on each individual test certificate (appended to this report). Where deviations were avoidable, or tests have been conducted on a 'trial' basis, these will be highlighted at the bottom of each certificate.

[6] BS EN ISO 140-14:2004 Acoustics – Measurement of sound insulation in buildings and of building elements – Part 14: Guidelines for special situations in the field

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Calibration

Calibration
The calibration certificates can be requested from the SITMA Certified Tester at any time.

Item Category	Standard	Calibration From	Calibration Expiry	Certificate Number
Sound Level Meter & Microphone	BS EN 61672-1:2013	14 Aug 2024	13 Aug 2026	UCRT24/2106
Calibrator	IEC 60942:2017	24 Apr 2024	23 Apr 2026	UCRT24/1630
Speaker	SITMA PUS007-Directivity	20 May 2024	19 May 2026	Directivity - Peter Cable - Kit 2 - 20.05.2024
	SITMA PUS007-Stability	20 May 2024	19 May 2026	Stabiltiy - Peter Cable - Kit 2 - 20.05.2024
	SITMA PUS007-Directivity	20 May 2024	20 May 2026	Directivity - Peter Cable - Kit 2 -20.05.2024
Tapper Machine	BS EN ISO 140-7:1998 Annex	15 Aug 2024	14 Aug 2026	UCRT24/2113
	BS EN ISO 140-7:1998 Annex One-Off Checks	15 Aug 2024	No Expiry	UCRT24/2113

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Detailed Test Results

Airborne Wall Tests – Material Change of Use by Peter Cable

Certificate Number	Plot & Source Room	Source Room Volume	Plot & Receive Room	Receive Room Volume	Target $D_{nT,w}+C_{tr}$	Result $D_{nT,w}+C_{tr}$	Result
		(m^3)		(m^3)	(dB)	(dB)	
213620	**Plot 4 Bedroom 2**	25.0m^3	**Plot 5 Kitchen**	19.7m^3	≥ 43 dB	50 dB	**Pass**
	Construction: Generic Masonry Block: Masonary Block						
	Deviations: Receive Room under 25m^3						

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Airborne floor Tests – Material Change of Use by Peter Cable

Certificate Number	Plot & Source Room	Source Room Volume	Plot & Receive Room	Receive Room Volume	Target $D_{nT,w}+C_{tr}$	Result $D_{nT,w}+C_{tr}$	Result
		(m^3)		(m^3)	(dB)	(dB)	
213621	**Plot 2 Kitchen / Living Room**	68.2m^3	**Plot 4 Kitchen / Living Room**	60.3m^3	≥ 43 dB	58 dB	**Pass**
	Construction: Generic Concrete: Concrete						
	Deviations:						
213622	**Unit Gr Fl Commercial Space**	937.4m^3	**Plot 2 Kitchen / Living Room**	68.2m^3	≥ 43 dB	48 dB	**Pass**
	Construction: Generic Concrete: Concrete						
	Deviations:						

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Appendix A – Individual Certificates

Test Type	Source Room	Partition	Receiver Room
Airborne sound insulation	Plot 4 Bedroom 2	WB0001**	Plot 5 Kitchen
Airborne sound insulation	Plot 2 Kitchen / Living Room	FC0001**	Plot 4 Kitchen / Living Room
Airborne sound insulation	Unit Gr Fl Commercial Space	FC0001**	Plot 2 Kitchen / Living Room

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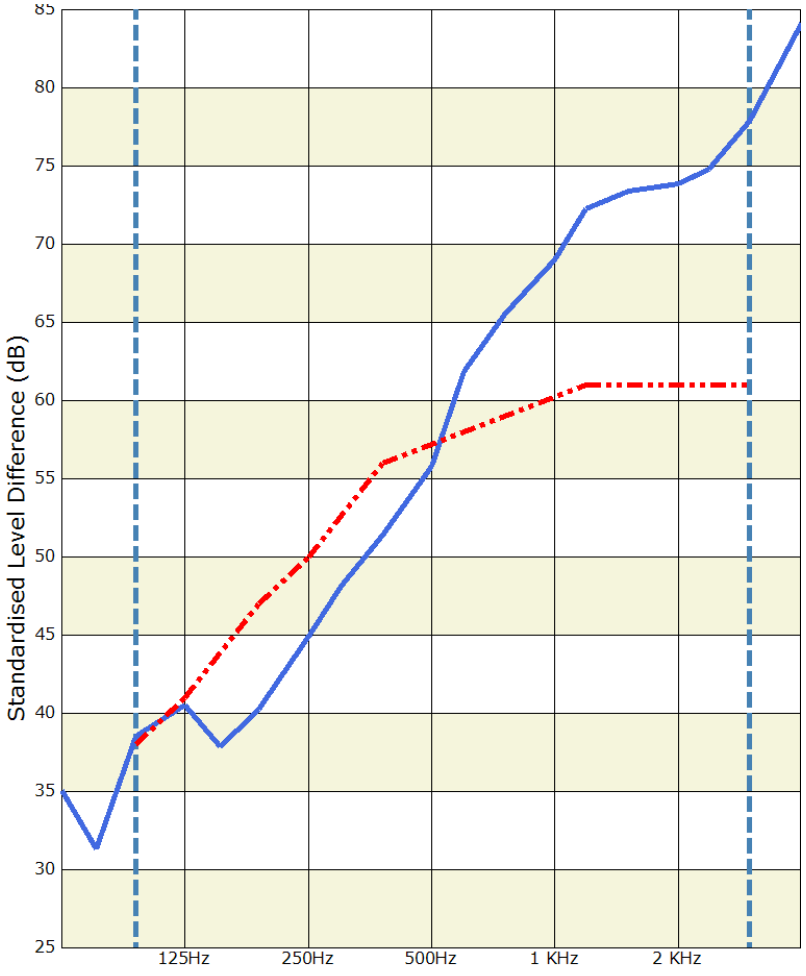
Registered Sound Insulation Test Certificate

Test No:	213620	**Test Job Ref:**	70826	**Test Org Name:**	New Home Assessments
Customer:	Hilsdon Holmes			**Test Type:**	Airborne (Wall)
Address:	Butterbee House, Launceston Road, Callington	**Job Address:**	148-152 Montague St, , Worthing	**Test Date:**	03/05/2025
				Tester:	Peter Cable
				Site type:	Material Change of Use
Postcode:	Pl17 8DS	**Postcode:**	BN11 3HH	**Site Build:**	Dwelling-House/Flat

	Source Room:	**Partition:**	**Receiver Room:**
Description:	Plot 4 Bedroom 2	WB0001**	Plot 5 Kitchen
Volume / Area	25.0m³	10.0m²	19.7m³

Frequency (Hz)	D_{nT}	Correction
50*	30.9	X
63*	35.1	X
80*	31.3	
100	38.5	
125	40.5	
160	37.9	
200	40.3	
250	44.9	
315	48.1	
400	51.4	
500	55.8	
630	61.9	
800	65.6	
1K	69	
1.25K	72.3	
1.6K	73.4	
2K	73.9	
2.5K	74.8	
3.15K	77.9	
4K*	84.1	X
5K*	84.6	X

Evaluation based on field measurement using results obtained by an engineering method



*Denotes Measurement outside the testers scope of certification & the scope of the SITMA Accreditation.

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-1

$D_{nT,w}$ (C; C_{tr}) [dB]: 57 (-2, -7) dB
$D_{nT,w}$+ C_{tr} [dB]: 50 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 29.1

Partition Detail:Masonary Block

Test Exceptions (if any): Receive Room under 25m³

AIRBORNE SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 4:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 1:1997: Acoustics - rating of sound in buildings and of building elements

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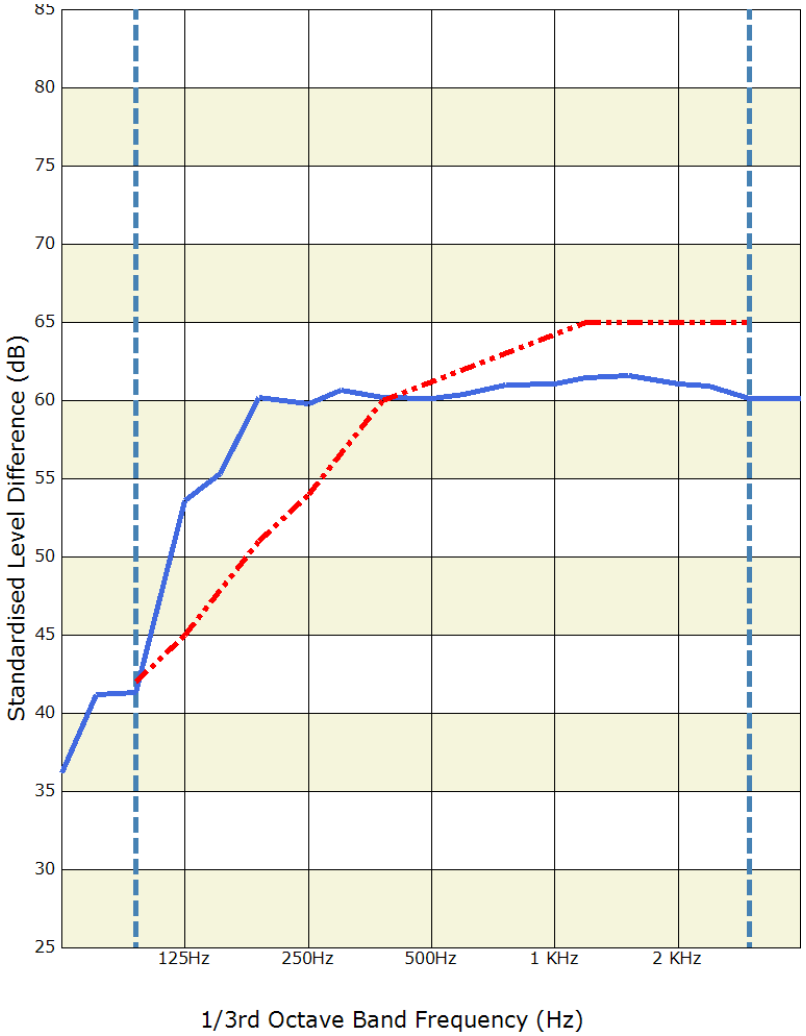
Registered Sound Insulation Test Certificate

Test No:	213621	**Test Job Ref:**	70826	**Test Org Name:**	New Home Assessments
Customer:	Hilsdon Holmes			**Test Type:**	Airborne (Floor)
Address:	Butterbee House, Launceston Road, Callington	**Job Address:**	148-152 Montague St, , Worthing	**Test Date:**	03/05/2025
				Tester:	Peter Cable
				Site type:	Material Change of Use
Postcode:	Pl17 8DS	**Postcode:**	BN11 3HH	**Site Build:**	Dwelling-House/Flat

	Source Room:	**Partition:**	**Receiver Room:**
Description:	Plot 2 Kitchen / Living Room	FC0001**	Plot 4 Kitchen / Living Room
Volume / Area	68.2m³	26.7m²	60.3m³

Frequency (Hz)	D_{nT}	Correction
50*	27.7	
63*	36.2	
80*	41.2	
100	41.3	X
125	53.6	
160	55.3	
200	60.2	
250	59.8	
315	60.7	
400	60.2	
500	60.1	
630	60.4	
800	61	
1K	61.1	
1.25K	61.5	
1.6K	61.6	
2K	61.1	
2.5K	60.9	
3.15K	60.1	
4K*	60.1	
5K*	60.1	

Evaluation based on field measurement using results obtained by an engineering method



*Denotes Measurement outside the testers scope of certification & the scope of the SITMA Accreditation.

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-1

$D_{nT,w}$ (C; C_{tr}) [dB]: 61 (-1, -3) dB
$D_{nT,w}$+ C_{tr} [dB]: 58 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 27.9

Partition Detail:Concrete

Test Exceptions (if any): None Declared by Tester

AIRBORNE SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 4:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 1:1997: Acoustics - rating of sound in buildings and of building elements

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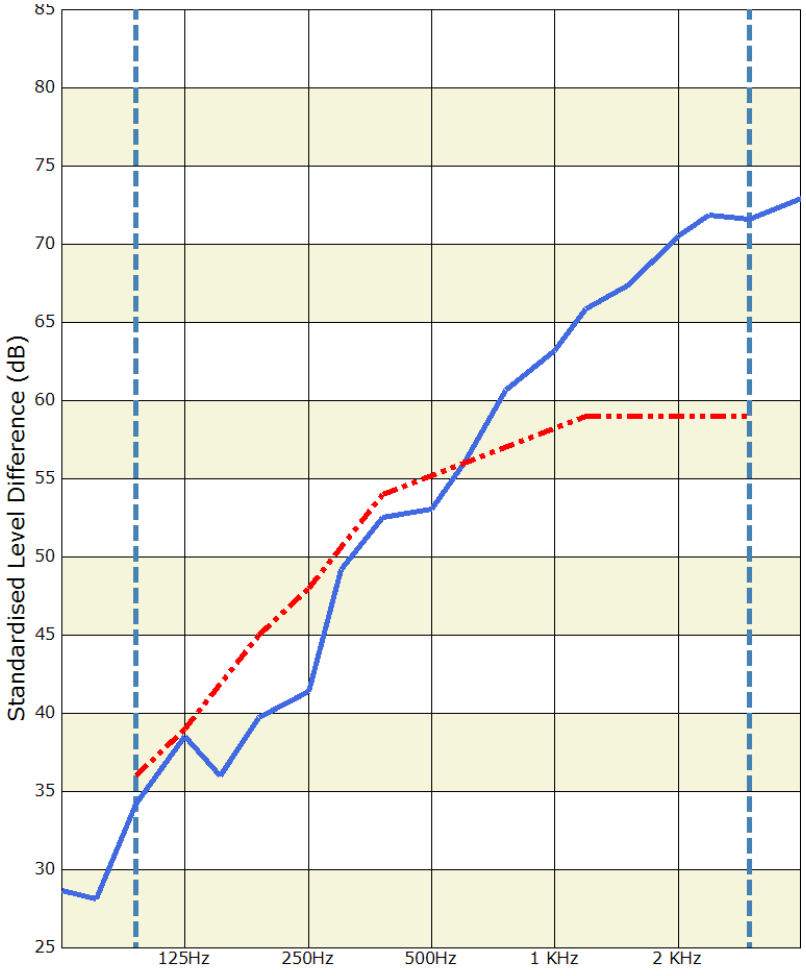
Registered Sound Insulation Test Certificate

Test No:	213622	**Test Job Ref:**	70826	**Test Org Name:**	New Home Assessments
Customer:	Hilsdon Holmes			**Test Type:**	Airborne (Floor)
Address:	Butterbee House, Launceston Road, Callington	**Job Address:**	148-152 Montague St, , Worthing	**Test Date:**	03/05/2025
				Tester:	Peter Cable
				Site type:	Material Change of Use
Postcode:	Pl17 8DS	**Postcode:**	BN11 3HH	**Site Build:**	Dwelling-House/Flat

	Source Room:	**Partition:**	**Receiver Room:**
Description:	Unit Gr Fl Commercial Space	FC0001**	Plot 2 Kitchen / Living Room
Volume / Area	937.4m³	25.8m²	68.2m³

Frequency (Hz)	D_{nT}	Correction
50*	19.6	
63*	28.7	
80*	28.1	
100	34.2	
125	38.5	
160	36	
200	39.7	
250	41.4	
315	49.2	
400	52.5	
500	53.1	
630	56	
800	60.7	
1K	63.2	
1.25K	65.9	
1.6K	67.4	
2K	70.5	
2.5K	71.9	
3.15K	71.6	X
4K*	72.9	X
5K*	71.7	X

Evaluation based on field measurement using results obtained by an engineering method



*Denotes Measurement outside the testers scope of certification & the scope of the SITMA Accreditation.

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-1

$D_{nT,w}$ (C; C_{tr}) [dB]: 55 (-2, -7) dB
$D_{nT,w}$+ C_{tr} [dB]: 48 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 25.4

Partition Detail:Concrete

Test Exceptions (if any): None Declared by Tester

AIRBORNE SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 4:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 1:1997: Acoustics - rating of sound in buildings and of building elements

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