



Sound Insulation Testing Report



SITMA Job No: 8765

Job Ref (optional): 17462B

Historical Site* (if ticked) ☐
* As defined in Approved Document E - 'Requirements'

Tested Site	Customer	Testing Organisation	Testing Accreditation
Address 23 Sea Road East Preston Littlehampton England	Name The Standard P Ltd Address 23 Sea Road East Preston Littlehampton Postcode BN16 1JN	Name Airtight Noisecheck Ltd Address The Old Laundry Bridge Street Southwick Hants Postcode PO17 6DZ	ATTMA Membership No. 9004 UKAS No (if accredited) Reporting Standard Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments

Testing Summary

Test No Test Type	Test Date Test Engineer	Building Type Building Purpose	Source Room Receiver Room	Volume (m3) Volume (m3)	Test Result (dB)	Test Criteria* (dB)	Pass/Fail
25987	02/12/2019	Material Change of Use	GROUND FLOOR BAR Commercial Space	200	56	43	PASS
Airborne (Floor)	Mark Witcher	Dwelling-House/Flat	1ST FLOOR FLAT Living Room 1	48			
Construction Type:	FS0001** - Generic Steel Concrete Composite - existing flooring, concrete plank, void, rockwool insulation, suspended ceiling, 2 x 12.5mm sound board.						

This report has been prepared in accordance with the requirements of the reporting standard (stated above). All tests were conducted on the Test Date indicated and are calculated from field measurements taken on that date.

Calibration

All equipment used for testing holds full UKAS calibration to ensure the testing conducted is as accurate as possible. To reduce the amount of documentation issued with each report, a summary of the calibration is shown below. Alternatively, you may request a copy of our calibration certificates for the kit directly from us.
The SITMA scheme requires more frequent calibration than other schemes, as shown:

Equipment Calibration

Sound Level Meter(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
EA7	1407126	NORSONIC	NOR140	U28220	28/03/2018	28/03/2020

Calibrator(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
AC 1 KIT 3 CALIBRATOR	29212	NORSONIC	NOR 1251	04198/1	21/03/2019	20/03/2020

Tapping Machine(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
KIT 3 TAPPING MACHINE	31117	NORSONIC	NOR 211A	03607/8	15/03/2018	15/03/2020

Item	Standard	Frequency
Sound Level Meter & Microphone (Type 1)	ISO 61672-1 (+ Filters IEC 61260) ISO 60651, IEC 60804	24 Months
Calibrator	IEC 60942	12 Months
Tapping Machine	Annex A ISO 140-7	24 Months
Speaker & Amplifier	None	Checked each test

Testing Methodology

Airborne Sound Insulation was conducted to BS EN ISO 140-4:1998

Measurements of standardised level difference (D_{nT}) were carried out in accordance with BS EN ISO 140-4:1998. Level measurements in the Source & Receive Room (L1 & L2)

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

The noise level was measured in both the source room and receive room, sampling as much of the room as possible. 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 average time of 30 seconds for each of the 2 sound source positions. The measurements in each room were arithmetically averaged.

Background Measurements in Receive Room (B2)

Where noise levels were measured in the receive room, the background noise level was also measured with the speaker turned off. This is to ensure the background noise level did not influence the result. The background noise level is 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 (T₂, or T₂₀)

A minimum of 6 reverberation time measurements were also taken in the receive room to accurately define the level of influence the diffuse field has on the microphone, ensuring that an increase in soft or hard surfaces does not impact the overall test result.

A minimum of 6 reverberation times were measured in each room using a minimum of 3 microphone positions at each of 2 loud speaker positions in accordance with BS EN ISO 354:2003 (also complies with BS EN 20354)

Calculation of the Airborne Sound Insulation Test Result

Any receive room noise measurements that are within 6dB of the background measurements are corrected by logarithmically averaging the difference to correct the receive room measurement. The correction is applied up to 10dB, where a maximum correction of 1.6dB is applied. Any background noise level greater than 10dB over the L₂ measurement will appear to reduce the sound insulation at that frequency.

The difference between the source and 'corrected' receive room measurement is calculated for each speaker position and 2 differences averaged to obtain 'D'.

The result is normalized by taking adding 10 times the logarithm of half the reverberation time at each frequency to give the standardized level difference (D_{nT}) at each frequency.

The D_{nT} are then compared to the standard reference line as defined in BS EN ISO 717-1:1997 to give a single figure result of D_{nT,w}

The spectrum adaptation terms (C;Ctr) are then calculated in accordance with BS EN ISO 717-1:1997.

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

Impact Sound Insulation was conducted to BS EN ISO 140-7:1998

Measurements of standardised level difference (L_{nT}) were carried out in accordance with BS EN ISO 140-7:1998.

Level measurements were acquired in the receive room using a tapping machine, which has a set of 5 steel hammers to produce impact noise on the separating floor.

The tapping machine is always orientated at 45 degrees to the main floor axis.

The noise level was measured in the receive room at 2 microphone positions at one third octave band intervals from 100 to 3150 Hertz using an average time of at least 6 seconds for each of 4 tapping machine positions, creating 8 individual measurement readings.

Measurements were always taken at least 0.7m away from any reflective or absorptive surfaces.

Background Measurements in Receive Room (B₂)

Where noise levels were measured in the receive room, the background noise level was also measured with the tapping machine turned off. This is to ensure the background noise level did not influence the result. The background noise level is 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 (T₂, or T₂₀)

A minimum of 6 reverberation time measurements were also taken in the receive room using a minimum of 3 microphone positions at each of 2 loud speaker positions in accordance with BS EN ISO 354:2003 (also complies with BS EN 20354) to accurately define the level of influence the diffuse field has on the microphone, ensuring that an increase in soft or hard surfaces does not impact the overall test result. These measurements are often the same readings as the airborne test when measured in the same group of tests.

Calculation of the Impact Sound Insulation Test Result

The Standardised impact sound pressure level (L_{nT}) was calculated by logarithmically averaging the receive room measurements. Any receive room noise measurements that are within 6dB of the background measurements are corrected by logarithmically averaging the difference to correct the receive room measurement. The correction is applied up to 10dB, where a maximum correction of 1.6dB is applied. Any background noise level greater than 10dB over the L₂ measurement will appear to reduce the sound insulation at that frequency. The result is normalized by taking adding 10 times the logarithm of half the reverberation time at each frequency to give the standardized level difference (L_{nT}) at each frequency.

The D_{nT} are then compared to the standard reference line as defined in BS EN ISO 717-2:1997 to give a single figure result of D_{nT,w}. All measurements are taken to 0.1dB precision, except reverberation times which are taken to 0.01 seconds precision.

Sampling Regime & Room Requirements

Testing was conducted using a sampling regime, 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 Building Regulations requirements. Rooms are selected at random by the tester except where specifically requested by either a local authority or specialist input from Robust Details.

All rooms are greater than 25m³ unless stated on the test certificate. Rooms were tested unfurnished unless testing is specifically requested in a furnished room. Testers shall use the larger room as the source room, with a tolerance of 10% of volume being acceptable either way. Doors and windows must be closed and kitchen units, cupboard doors, wardrobes etc shall be open for the duration of the test.

For impact testing, the tests are always conducted on the structural floor. It is only ever acceptable to test on a soft floor covering where that covering is an integral part of the building structure and cannot physically be lifted by the testers 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 ISO 140-14 which all testers hold a copy of as a mandatory entry requirement into the SITMA scheme. Where a test has an awkward layout, the testing method from ISO 140-14 will be defined in the report and sketches held internally.

Deviations

If any deviation from the testing method was necessary, details of the deviation are indicated on each individual test certificate (appended to this report). Some deviations, such as background noise levels, are often an unavoidable part of testing as testing must take place on a live building site. Where deviations were avoidable, or tests have been conducted on a 'trial' basis, these will be highlighted at the bottom of each certificate.

Auditing

Quality Management

All companies are audited into the SITMA scheme, which looks at both the performance of the company (Quality Management Systems) and the outcome of the test (Site Witness). Each company is audited annually to ensure the QMS is maintained and accuracy is assured.

Site Based Testing

Each tester is audited up to 4 times a year using the SITMA unannounced audit process. It is a mandatory requirement that all SITMA members inform SITMA of their location using the SITMA Lodgement tool *before* a test is conducted. This allows SITMA to conduct unannounced auditing of its members, ensuring quality remains high.

All testers must supply their audit on request.

Authorisation

Test results for each test are authorised by the Testing Engineer, who has been approved to do so under the rules of the SITMA Testing Scheme. The report has been prepared for, and is for the sole use of, the 'Customer' indicated above. It may not be relied upon by any third party except by a local authority for the intended purpose of demonstrating compliance with required building control standards. The report may not be presented other than in full electronic or printed form, without the written permission of the Testing Organisation. No responsibility is accepted to any third party and no liability is accepted outside the scope of this report.

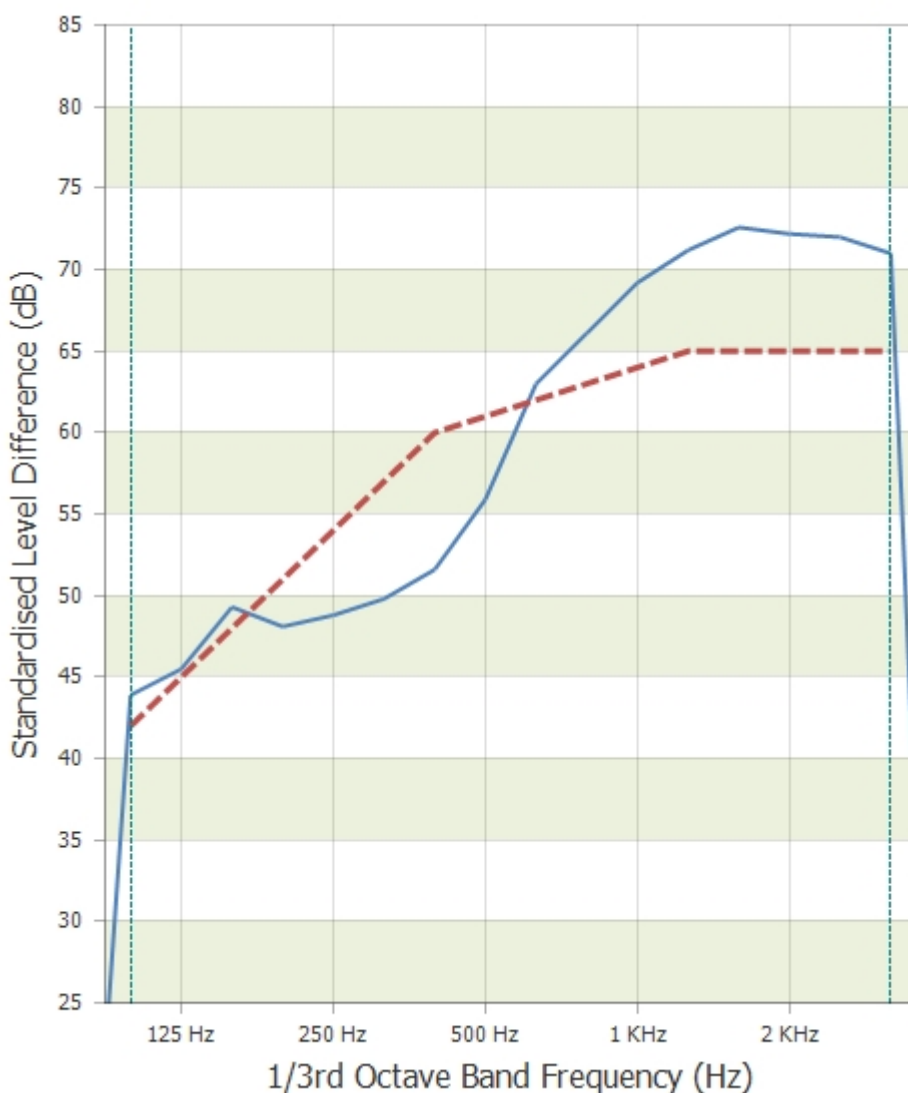
Registered Sound Insulation Test Certificate

Test No: 25987 Test Job Ref: 8765 Testing Org. Name: Airtight Noisecheck SITMA Membership No: 9004

Customer	The Standard P Ltd	Job Address	23 Sea Road	Test Type	Airborne (Floor)
Address	23 Sea Road		East Preston	Test Date	02/12/2019
	East Preston		Littlehampton	Tester	Mark Witcher
	Littlehampton				
		England		Site Type	Material Change of Use
Postcode	BN16 1JN	Postcode	BN16 1JN	Site Build	Dwelling-House/Flat

Source Room:		Partition:	Receiver Room:
Description	GROUND FLOOR BAR Commercial Space	FS0001**	1ST FLOOR FLAT Living Room 1
Volume / Area	200.0 m3	20.0 m2	48.0 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	43.9	X
125 Hz	45.5	
160 Hz	49.3	
200 Hz	48.1	
250 Hz	48.8	
315 Hz	49.8	
400 Hz	51.6	
500 Hz	55.9	
630 Hz	63.0	
800 Hz	66.1	
1 KHz	69.2	X
1.25 KHz	71.2	X
1.6 KHz	72.6	X
2 KHz	72.2	X
2.5 KHz	72.0	X
3.15 KHz	71.0	X
4 KHz*	.0	
5 KHz*	.0	



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

*Outside scope of accreditation

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

$D_{nT,w}(C; C_{tr})$ [dB]: 61 (-2; -5) dB

$D_{nT,w} + C_{tr}$ [dB]: 56 dB

Minimum Pass Level [dB]: 43 dB

PASS

Adverse Aggregated Deviations [dB]: 28.8 dB

Partition Detail: FS0001** - Generic Steel Concrete Composite - existing flooring, concrete plank, void, rockwool insulation, suspended ceiling, 2 x 12.5mm sound board.

Test Exceptions (if any):