

Sound Insulation Testing Report

SITMA Job No: 13599

Job Ref (optional): AA0130

Historical Site* (if ticked) ☐

* As defined in Approved Document E - 'Requirements'

Tested Site	Customer	Testing Organisation	Testing Accreditation
Address	Name Address	Name Address	ATTMA Membership No. UKAS No (if accredited)
8 Brookburn Road Chorlton Manchester England	Huse Living Ltd. 102 Roseneath Road Urmston Manchester	Air Testing UK Ltd Viridor House 3 Bolholt Terrace Bury Greater Manchester	9053 Reporting Standard Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
Postcode	Postcode	Postcode	
M21 9ES	M41 5AZ	BL8 1PP	

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
48160 Airborne (Wall)	17/03/2021 Zachary Simcox	New Build Dwelling-House/Flat	Plot 2 Living Room 1 Plot 1 Living Room 1	58 58	53	45	PASS
Construction Type: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard							
48159 Airborne (Wall)	17/03/2021 Zachary Simcox	New Build Dwelling-House/Flat	Plot 1 Bedroom 1 Plot 2 Bedroom 1	42 42	53	45	PASS
Construction Type: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard							
48161 Airborne (Wall)	17/03/2021 Zachary Simcox	New Build Dwelling-House/Flat	Plot 3 Bedroom 2 Plot 4 Bedroom 2	42 21	61	45	PASS
Construction Type: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard							

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:

Sound Insulation Testing Report

Equipment Calibration

Sound Level Meter(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
NTI - A2A-16190-E0	A2A-16190-E0	NTi Audio	XL2	U39259	17/07/2020	17/07/2021

Calibrator(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
Calibrator - 16088	16088	Larson Davis	Cal200	U35259	17/07/2020	17/07/2021

Tapping Machine(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
Tapping Machine	TP02268	NTIi Audio	TM3	U32314	21/06/2019	21/06/2021

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 ($C; C_{tr}$) 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.

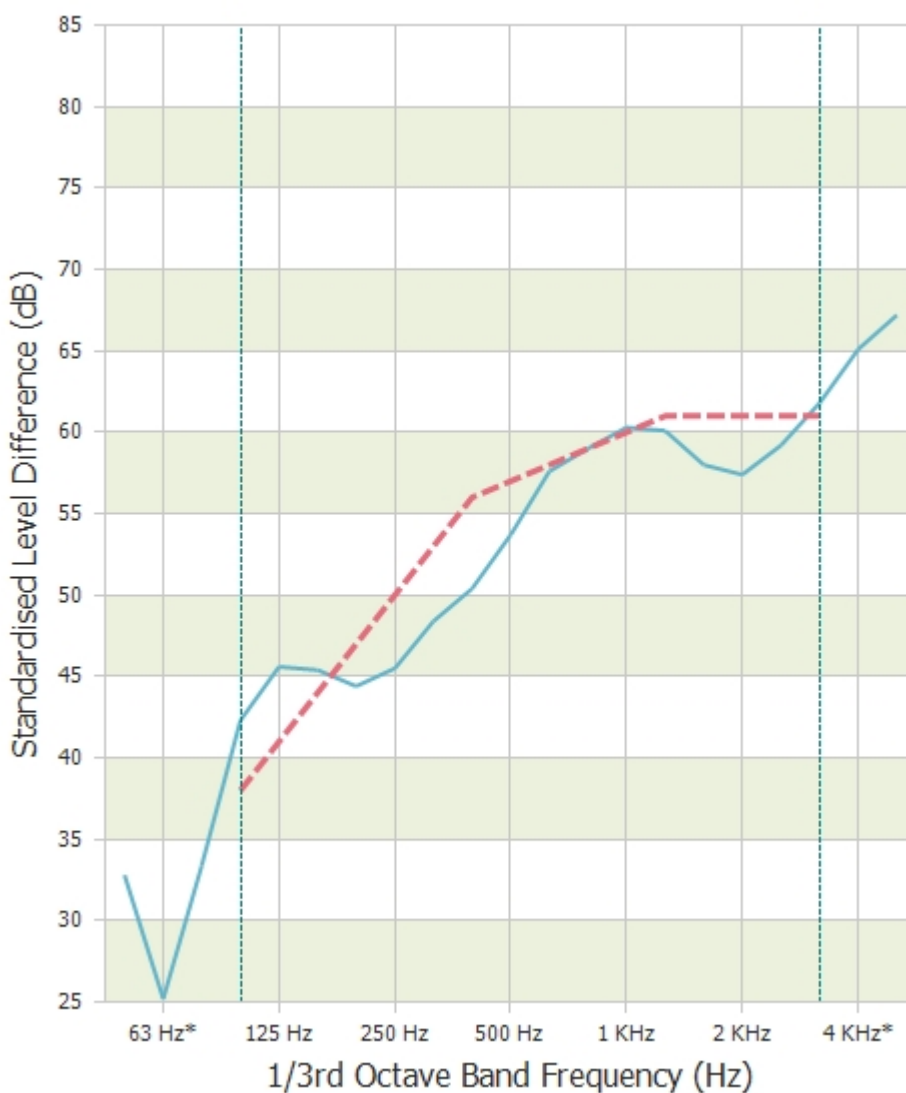
Registered Sound Insulation Test Certificate

Test No: 48159 Test Job Ref: 13599 Testing Org. Name: Air Testing UK Ltd SITMA Membership No: 9053

Customer	Huse Living Ltd.	Job Address	8 Brookburn Road	Test Type	Airborne (Wall)
Address	102 Roseneath Road		Chorlton	Test Date	17/03/2021
	Urmston		Manchester	Tester	Zachary Simcox
	Manchester				
		England		Site Type	New Build
Postcode	M41 5AZ	Postcode	M21 9ES	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Plot 1 Bedroom 1	WT0001**	Plot 2 Bedroom 1
Volume / Area	42.0 m3	8.4 m2	42.0 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	32.8	
63 Hz*	25.2	
80 Hz*	33.4	
100 Hz	42.3	
125 Hz	45.6	
160 Hz	45.4	
200 Hz	44.4	
250 Hz	45.5	
315 Hz	48.4	
400 Hz	50.4	
500 Hz	53.7	
630 Hz	57.6	
800 Hz	59.0	
1 KHz	60.3	
1.25 KHz	60.1	
1.6 KHz	58.0	
2 KHz	57.4	
2.5 KHz	59.2	
3.15 KHz	61.8	
4 KHz*	65.1	
5 KHz*	67.2	



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]: 57 (-1; -4) dB

$D_{nT,w} + C_{tr}$ [dB]: 53 dB

Minimum Pass Level [dB]: 45 dB

PASS

Adverse Aggregated Deviations [dB]: 30.3 dB

Partition Detail: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard

Test Exceptions (if any):

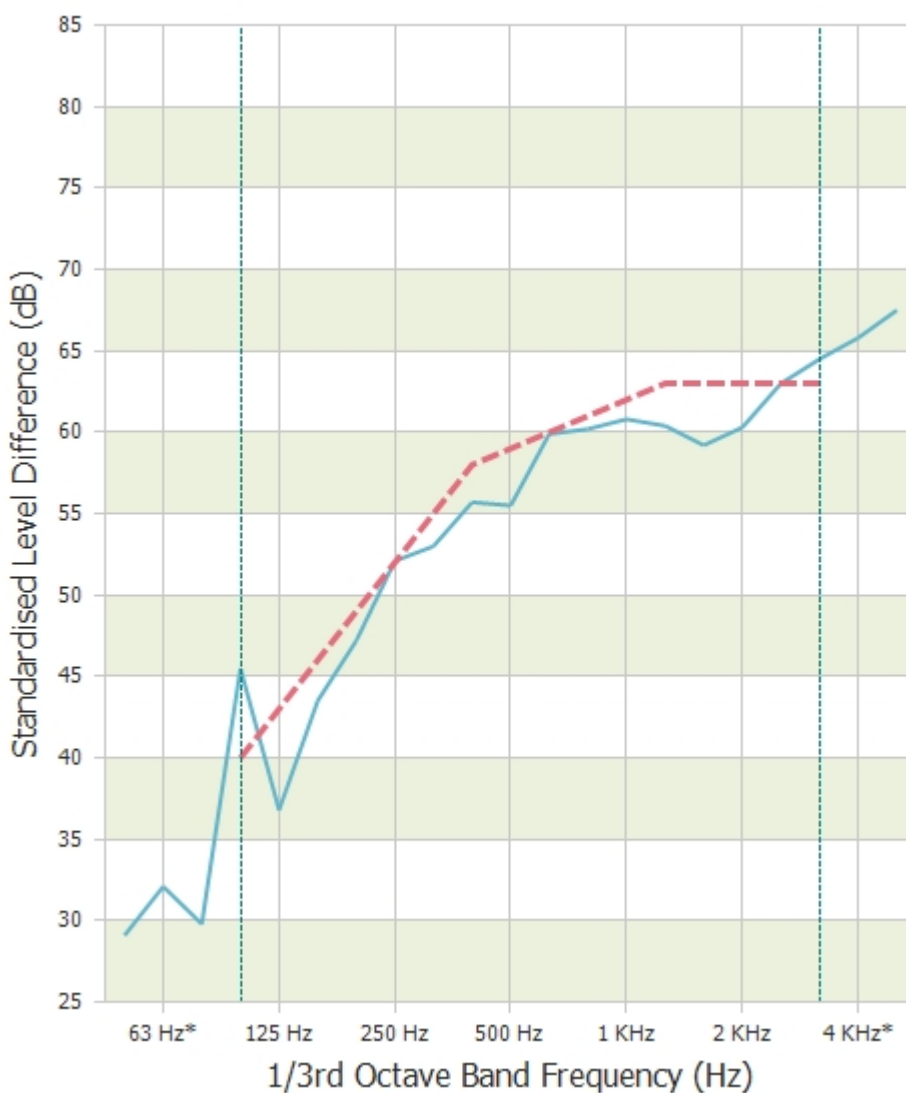
Registered Sound Insulation Test Certificate

Test No: 48160 Test Job Ref: 13599 Testing Org. Name: Air Testing UK Ltd SITMA Membership No: 9053

Customer	Huse Living Ltd.	Job Address	8 Brookburn Road	Test Type	Airborne (Wall)
Address	102 Roseneath Road		Chorlton	Test Date	17/03/2021
	Urmston		Manchester	Tester	Zachary Simcox
	Manchester				
		England		Site Type	New Build
Postcode	M41 5AZ	Postcode	M21 9ES	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Plot 2 Living Room 1	WT0001**	Plot 1 Living Room 1
Volume / Area	58.0 m3	14.0 m2	58.0 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	29.1	
63 Hz*	32.1	
80 Hz*	29.8	
100 Hz	45.5	
125 Hz	36.8	
160 Hz	43.5	
200 Hz	47.2	
250 Hz	52.1	
315 Hz	53.0	
400 Hz	55.7	
500 Hz	55.5	
630 Hz	59.9	
800 Hz	60.2	
1 KHz	60.8	
1.25 KHz	60.4	
1.6 KHz	59.2	
2 KHz	60.3	
2.5 KHz	63.0	
3.15 KHz	64.5	
4 KHz*	65.8	
5 KHz*	67.5	



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]: 59 (-2; -6) dB

$D_{nT,w} + C_{tr}$ [dB]: 53 dB

Minimum Pass Level [dB]: 45 dB

PASS

Adverse Aggregated Deviations [dB]: 29.5 dB

Partition Detail: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard

Test Exceptions (if any):

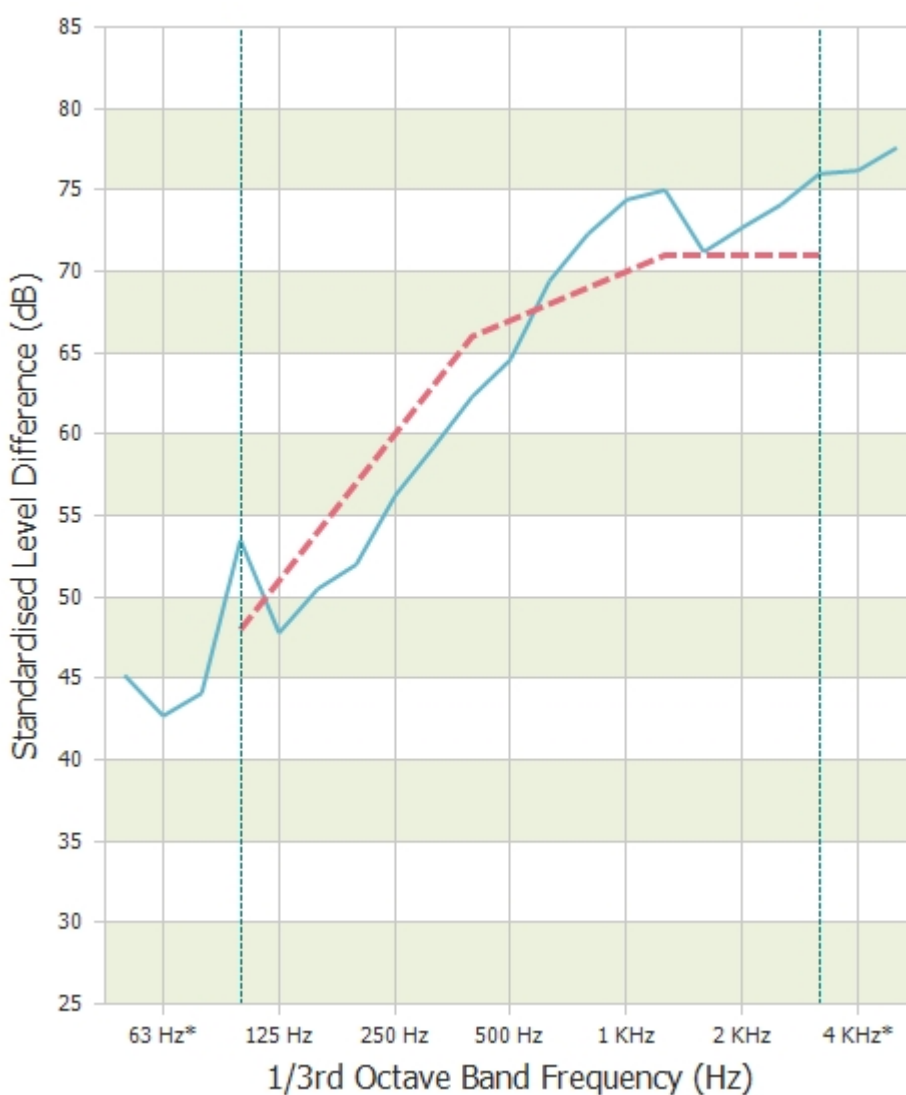
Registered Sound Insulation Test Certificate

Test No: 48161 Test Job Ref: 13599 Testing Org. Name: Air Testing UK Ltd SITMA Membership No: 9053

Customer	Huse Living Ltd.	Job Address	8 Brookburn Road	Test Type	Airborne (Wall)
Address	102 Roseneath Road		Chorlton	Test Date	17/03/2021
	Urmston		Manchester	Tester	Zachary Simcox
	Manchester				
		England		Site Type	New Build
Postcode	M41 5AZ	Postcode	M21 9ES	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Plot 3 Bedroom 2	WT0001**	Plot 4 Bedroom 2
Volume / Area	42.0 m3	8.4 m2	21.0 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	45.2	
63 Hz*	42.7	
80 Hz*	44.1	
100 Hz	53.5	
125 Hz	47.8	
160 Hz	50.5	
200 Hz	52.0	
250 Hz	56.2	
315 Hz	59.2	
400 Hz	62.3	
500 Hz	64.6	
630 Hz	69.4	
800 Hz	72.3	
1 KHz	74.4	
1.25 KHz	75.0	X
1.6 KHz	71.2	X
2 KHz	72.7	X
2.5 KHz	74.1	X
3.15 KHz	76.0	X
4 KHz*	76.2	X
5 KHz*	77.6	X



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]: 67 (-1; -6) dB

$D_{nT,w} + C_{tr}$ [dB]: 61 dB

Minimum Pass Level [dB]: 45 dB

PASS

Adverse Aggregated Deviations [dB]: 25.4 dB

Partition Detail: WT0001** - Generic Timber Frame - 2 x 15mm plasterboard / 300 mm void with mineral wool / 2 x 15 mm plasterboard

Test Exceptions (if any):