

**SITMA Job No:** 13044

**Job Ref (optional):** 21-119

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

Tested Site	Customer	Testing Organisation	Testing Accreditation
<b>Name</b> 102 High Street Chatham Kent England ME4 6AG	<b>Name</b> Roger Thomas 102 High Street Chatham Kent ME4 6AG	<b>Name</b> REDFANSolutions 27 Llys Walsh Rhyl Denbighshire LL18 4FR	ATTMA Membership No. 9076 UKAS No (if accredited) Reporting Standard Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments

### Testing Summary

Test No	Test Date	Building Type	Source Room	Volume (m3)	Test Result (dB)	Test Criteria* (dB)	Pass/Fail
45446	12/02/2021	Material Change of Use Dwelling-House/Flat	Flat 2 Kitchen / Utility 102 High Street Hall / Landing	44.3 14.8	51	43	PASS
Construction Type: FC0001** - Generic Concrete - Unknown							
45447	12/02/2021	Material Change of Use Dwelling-House/Flat	Flat 2 Kitchen / Utility 102 High Street Hall / Landing	44.3 14.8	51	64	PASS
Construction Type: FC0001** - Generic Concrete - Unknown							
45449	12/02/2021	Material Change of Use Dwelling-House/Flat	Flat 1 Kitchen / Utility 102 High Street Hall / Landing	143 14.8	52	43	PASS
Construction Type: FC0001** - Generic Concrete - Unknown							
45450	12/02/2021	Material Change of Use Dwelling-House/Flat	Flat 1 Kitchen / Utility 102 High Street Hall / Landing	143 14.8	50	64	PASS
Construction Type: FC0001** - Generic Concrete - Unknown							
45445	12/02/2021	Material Change of Use Dwelling-House/Flat	Flat 1 Kitchen / Utility Flat 2 Other	143 27.2	53	43	PASS
Construction Type: FC0001** - Generic Concrete - Unknown							

Test No	Test Date	Building Type	Source Room	Volume (m3)	Test Result (dB)	Test Criteria* (dB)	Pass/Fail
Test Type	Test Engineer	Building Purpose	Receiver Room	Volume (m3)			

Construction Type: WT0001\*\* - Generic Timber Frame - Unknown

45448	12/02/2021	Material Change of Use	102 High Street Living Room 1	77.9	51	43	PASS
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Airborne (Wall)	Andy Hunt	Dwelling-House/Flat	102a High Street Living Room 1	320.6			
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Construction Type: WT0001\*\* - Generic Timber Frame - Unknown

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
14529308	14529308	Norsonic	145	U35821	28/09/2020	27/09/2022

Calibrator(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
125525488	125525488	Norsonic	1255	U35819	28/09/2020	27/09/2021

Tapping Machine(s)

Reference	Serial Number	Manufacturer	Model	Certificate No	Calibrated Date	Calibration Expires
2776302	2776302	Norsonic	277	CAL022-2020-12858	18/09/2020	17/09/2022

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 25m<sup>3</sup> 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

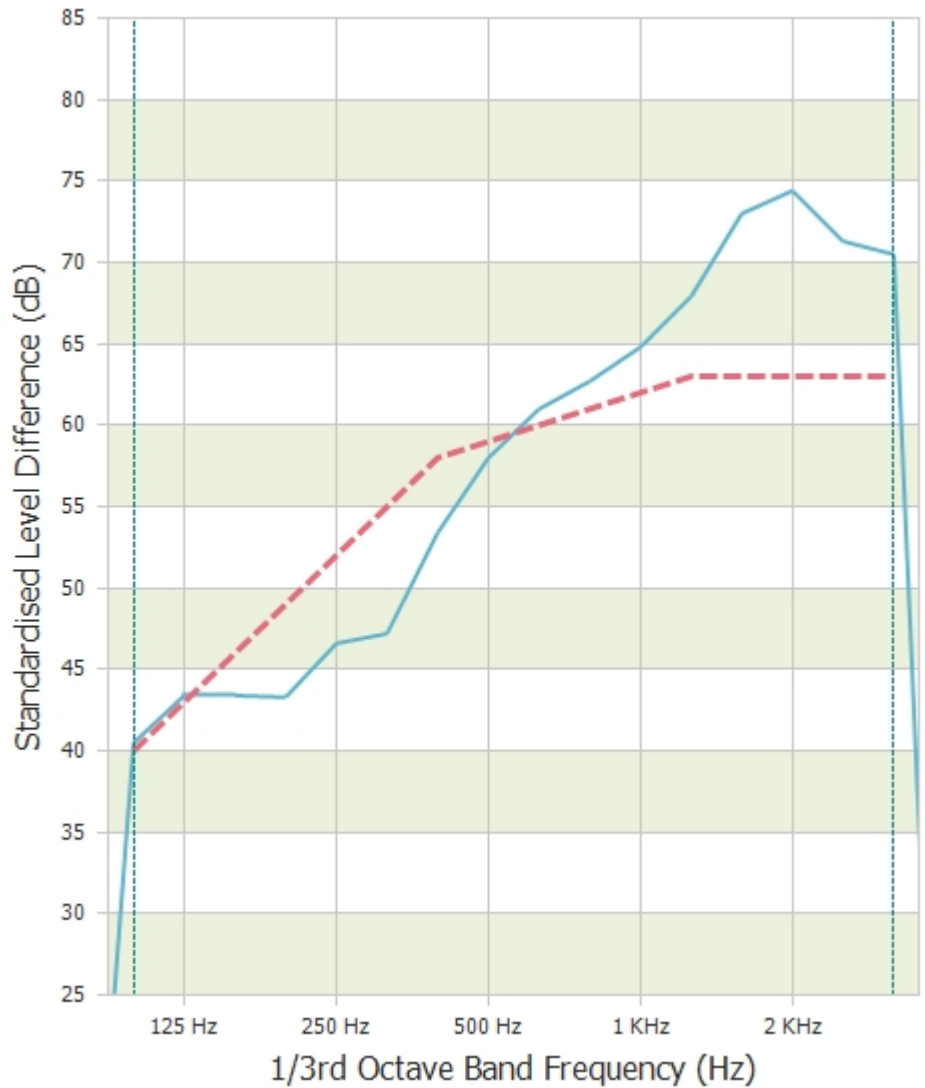


Test No: 45445    Test Job Ref: 13044    Testing Org. Name: REDFANSolutions    SITMA Membership No: 9076

Customer	Roger Thomas	Job Address	102 High Street	Test Type	Airborne (Wall)
Address	102 High Street			Test Date	12/02/2021
	Chatham		Chatham	Tester	Andy Hunt
	Kent		Kent		
	England		England	Site Type	Material Change of Use
Postcode	ME4 6AG	Postcode	ME4 6AG	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Flat 1 Kitchen / Utility	WT0001**	Flat 2 Other
Volume / Area	143.0 m3	10.7 m2	27.2 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	40.5	
125 Hz	43.4	
160 Hz	43.4	
200 Hz	43.3	
250 Hz	46.6	
315 Hz	47.2	
400 Hz	53.4	
500 Hz	58.0	X
630 Hz	61.0	X
800 Hz	62.7	X
1 KHz	64.8	X
1.25 KHz	67.9	X
1.6 KHz	73.0	X
2 KHz	74.4	X
2.5 KHz	71.3	X
3.15 KHz	70.5	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]: 59 (-2; -6) dB

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

Minimum Pass Level [dB]: 43 dB

**PASS**

Adverse Aggregated Deviations [dB]: 27.1 dB

Partition Detail: WT0001\*\* - Generic Timber Frame - Unknown

Test Exceptions (if any): Source room and receiving room were fully furnished

# Registered Sound Insulation Test Certificate

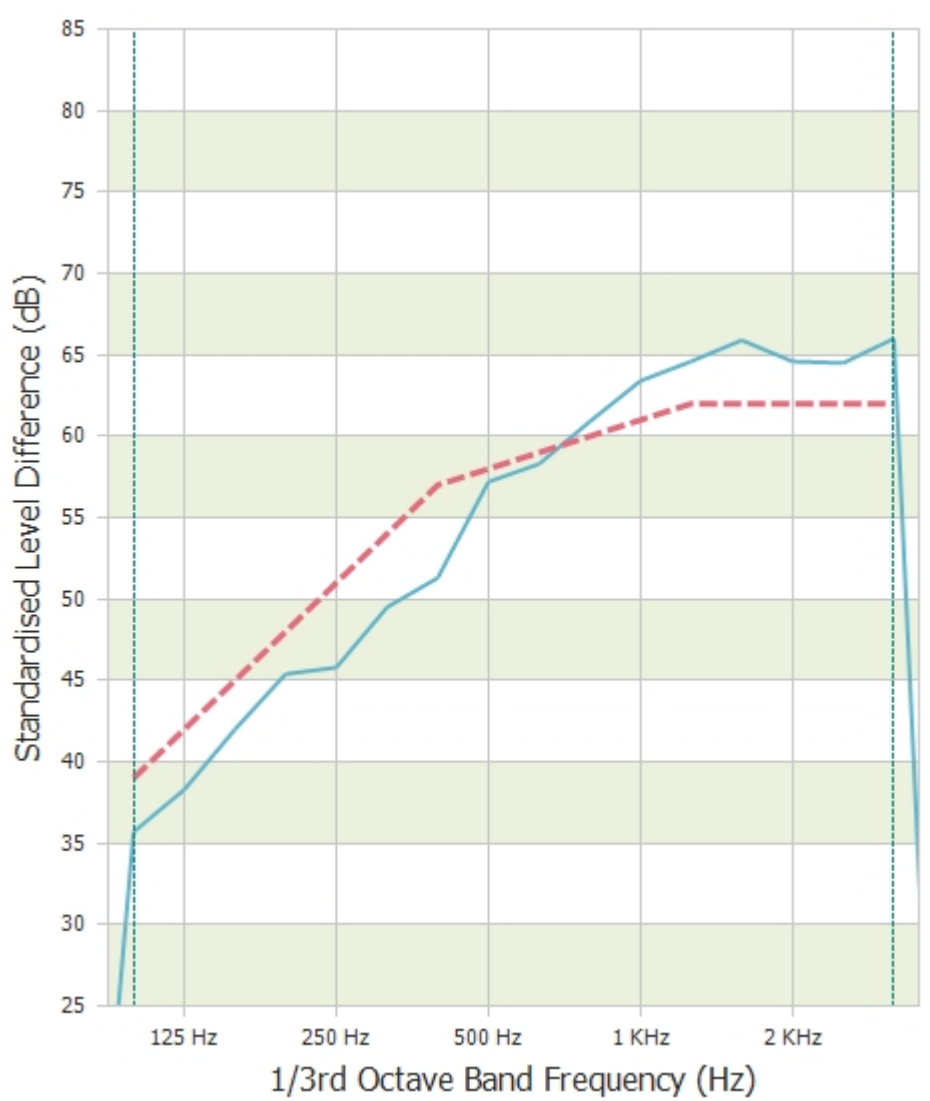


Test No: 45446    Test Job Ref: 13044    Testing Org. Name: REDFANSolutions    SITMA Membership No: 9076

Customer	Roger Thomas	Job Address	102 High Street	Test Type	Airborne (Floor)
Address	102 High Street			Test Date	12/02/2021
	Chatham		Chatham	Tester	Andy Hunt
	Kent		Kent		
Postcode	ME4 6AG	Postcode	ME4 6AG	Site Type	Material Change of Use
			England	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Flat 2 Kitchen / Utility	FC0001**	102 High Street Hall / Landing
Volume / Area	44.3 m3	18.4 m2	14.8 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	35.7	
125 Hz	38.3	
160 Hz	42.0	
200 Hz	45.4	
250 Hz	45.8	
315 Hz	49.5	
400 Hz	51.3	
500 Hz	57.2	
630 Hz	58.3	
800 Hz	60.9	
1 KHz	63.4	X
1.25 KHz	64.6	X
1.6 KHz	65.9	X
2 KHz	64.6	X
2.5 KHz	64.5	
3.15 KHz	66.0	
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]:	58 (-2; -7) dB	PASS
$D_{nT,w} + C_{tr}$ [dB]:	51 dB	
Minimum Pass Level [dB]:	43 dB	
		Adverse Aggregated Deviations [dB]: 29.5 dB

Partition Detail: FC0001\*\* - Generic Concrete - Unknown

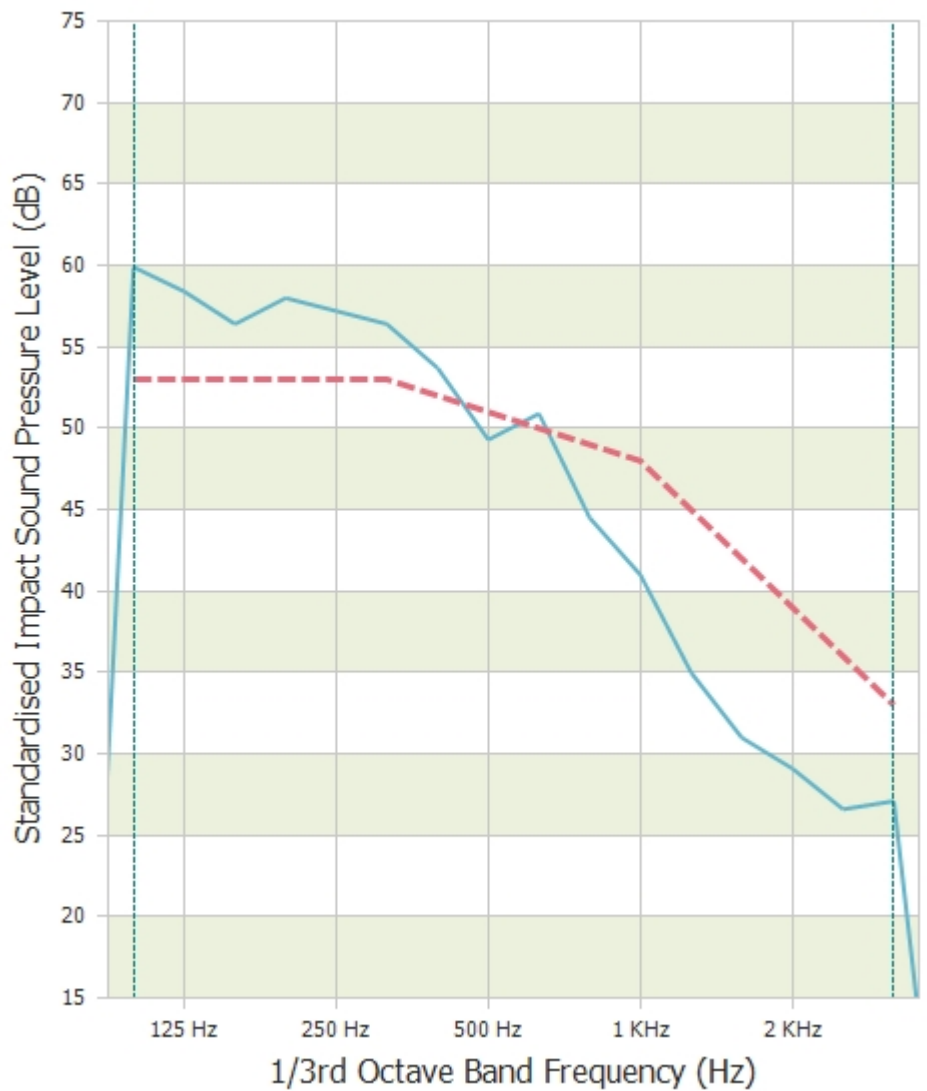
Test Exceptions (if any): Source room was fully furnished

# Registered Sound Insulation Test Certificate



Test No:	45447	Test Job Ref:	13044	Testing Org. Name:	REDFANSolutions	SITMA Membership No:	9076
Customer	Roger Thomas	Job Address	102 High Street	Test Type	Impact (Floor)		
Address	102 High Street			Test Date	12/02/2021		
	Chatham		Chatham	Tester	Andy Hunt		
	Kent		Kent				
	England		England	Site Type	Material Change of Use		
Postcode	ME4 6AG	Postcode	ME4 6AG	Site Build	Dwelling-House/Flat		
Source Room:		Partition:		Receiver Room:			
Description	Flat 2 Kitchen / Utility	FC0001**		102 High Street Hall / Landing			
Volume / Area	44.3 m3	18.4 m2		14.8 m3			

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	59.9	
125 Hz	58.4	
160 Hz	56.4	
200 Hz	58.0	
250 Hz	57.2	
315 Hz	56.4	
400 Hz	53.7	
500 Hz	49.3	
630 Hz	50.9	
800 Hz	44.5	
1 KHz	41.0	
1.25 KHz	35.0	X
1.6 KHz	31.0	X
2 KHz	29.1	X
2.5 KHz	26.6	X
3.15 KHz	27.1	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 717-2

$L'_{nT,w}(CI)$  [dB]: 51 (0) dB

Maximum Pass Level [dB]: 64 dB

**PASS**

Adverse Aggregated Deviations [dB]: 30.9 dB

Partition Detail: FC0001\*\* - Generic Concrete - Unknown

Test Exceptions (if any): Source room was fully furnished



# Registered Sound Insulation Test Certificate

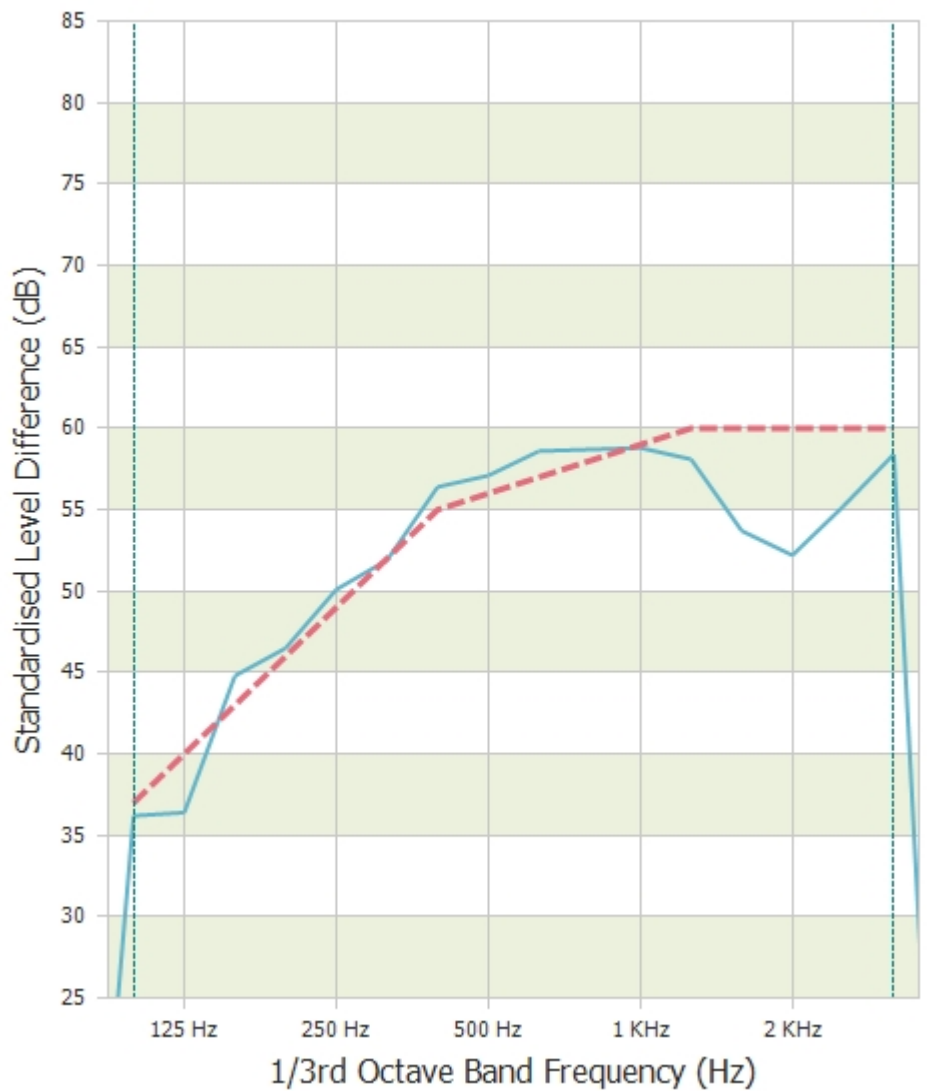


Test No: 45448    Test Job Ref: 13044    Testing Org. Name: REDFANSolutions    SITMA Membership No: 9076

Customer	Roger Thomas	Job Address	102 High Street	Test Type	Airborne (Wall)
Address	102 High Street			Test Date	12/02/2021
	Chatham		Chatham	Tester	Andy Hunt
	Kent		Kent		
	England		England	Site Type	Material Change of Use
Postcode	ME4 6AG	Postcode	ME4 6AG	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	102 High Street Living Room 1	WT0001**	102a High Street Living Room 1
Volume / Area	77.9 m3	22.9 m2	320.6 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	36.2	
125 Hz	36.4	
160 Hz	44.8	
200 Hz	46.5	
250 Hz	50.1	
315 Hz	51.9	
400 Hz	56.4	
500 Hz	57.1	
630 Hz	58.6	
800 Hz	58.7	
1 KHz	58.8	
1.25 KHz	58.1	
1.6 KHz	53.7	
2 KHz	52.2	
2.5 KHz	55.2	
3.15 KHz	58.4	
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]: 56 (-2; -5) dB

$D_{nT,w} + C_{tr}$  [dB]: 51 dB

Minimum Pass Level [dB]: 43 dB

**PASS**

Adverse Aggregated Deviations [dB]: 27.1 dB

Partition Detail: WT0001\*\* - Generic Timber Frame - Unknown

Test Exceptions (if any): Building materials in receiving room

# Registered Sound Insulation Test Certificate

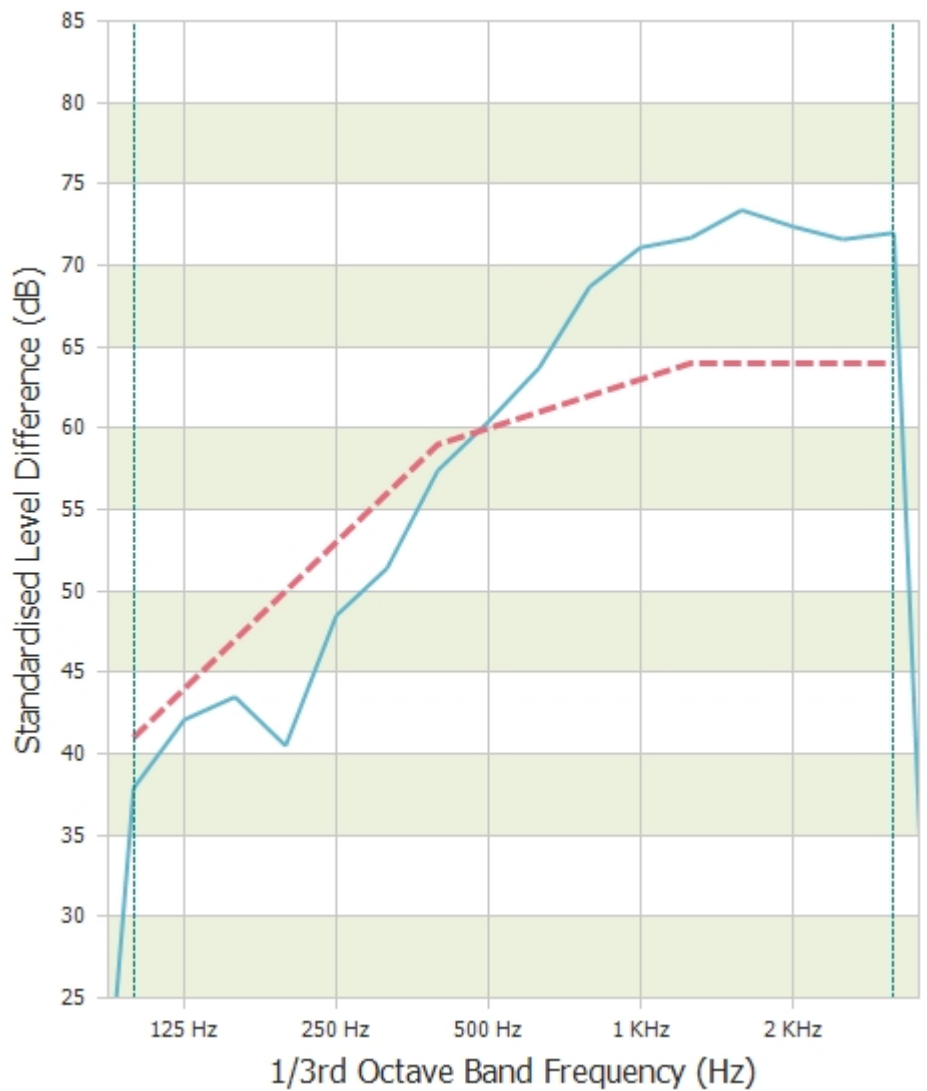


Test No: 45449    Test Job Ref: 13044    Testing Org. Name: REDFANSolutions    SITMA Membership No: 9076

Customer	Roger Thomas	Job Address	102 High Street	Test Type	Airborne (Floor)
Address	102 High Street			Test Date	12/02/2021
	Chatham		Chatham	Tester	Andy Hunt
	Kent		Kent		
	England		England	Site Type	Material Change of Use
Postcode	ME4 6AG	Postcode	ME4 6AG	Site Build	Dwelling-House/Flat

	Source Room:	Partition:	Receiver Room:
Description	Flat 1 Kitchen / Utility	FC0001**	102 High Street Hall / Landing
Volume / Area	143.0 m3	16.1 m2	14.8 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	37.9	
125 Hz	42.1	
160 Hz	43.5	
200 Hz	40.5	
250 Hz	48.5	
315 Hz	51.4	
400 Hz	57.4	
500 Hz	60.4	
630 Hz	63.7	
800 Hz	68.7	
1 KHz	71.1	X
1.25 KHz	71.7	X
1.6 KHz	73.4	X
2 KHz	72.4	X
2.5 KHz	71.6	X
3.15 KHz	72.0	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]: 60 (-3; -8) dB

$D_{nT,w} + C_{tr}$  [dB]: 52 dB

Minimum Pass Level [dB]: 43 dB

**PASS**

Adverse Aggregated Deviations [dB]: 28.7 dB

Partition Detail: FC0001\*\* - Generic Concrete - Unknown

Test Exceptions (if any): Source room was fully furnished

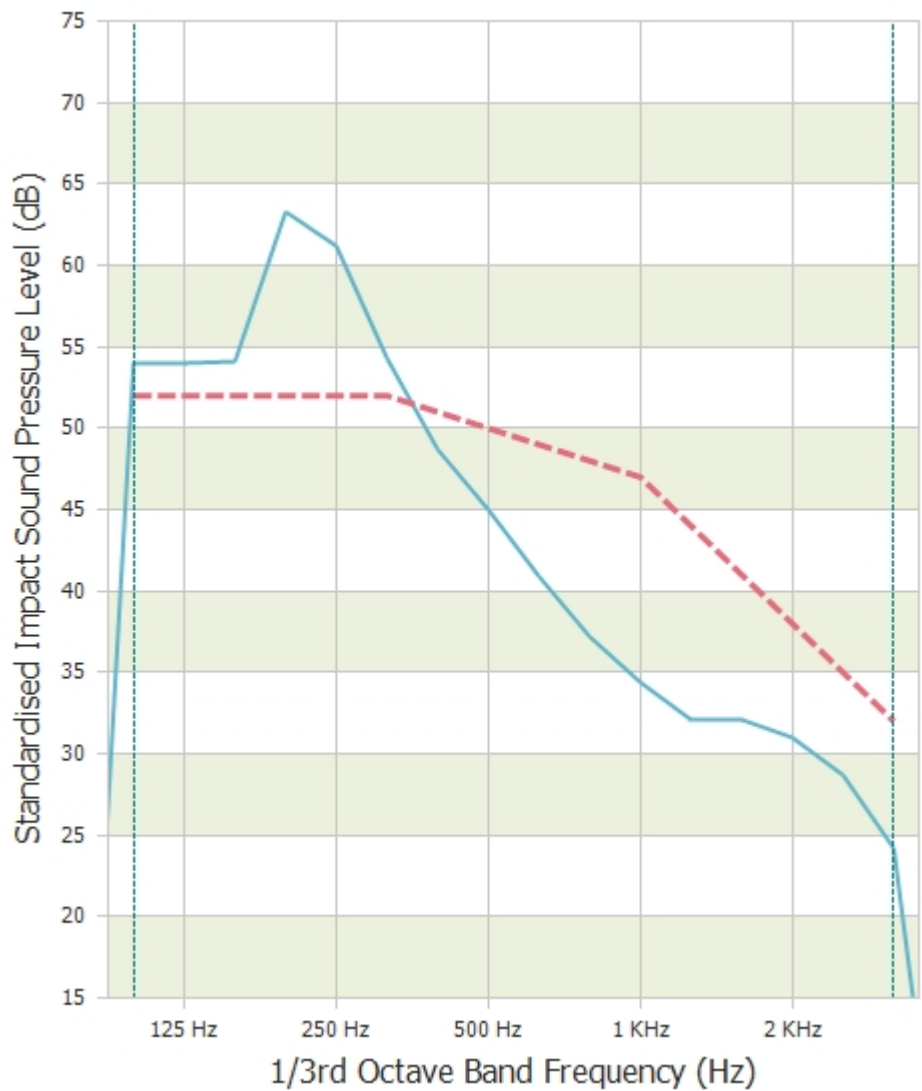
# Registered Sound Insulation Test Certificate



Test No:	45450	Test Job Ref:	13044	Testing Org. Name:	REDFANsolutions	SITMA Membership No:	9076
Customer:	Roger Thomas	Job Address:	102 High Street	Test Type:	Impact (Floor)	Test Date:	12/02/2021
Address:	102 High Street		Chatham	Tester:	Andy Hunt	Site Type:	Material Change of Use
	Chatham		Kent	Site Build:	Dwelling-House/Flat		
	Kent		England				
Postcode:	ME4 6AG	Postcode:	ME4 6AG				

	Source Room:	Partition:	Receiver Room:
Description	Flat 1 Kitchen / Utility	FC0001**	102 High Street Hall / Landing
Volume / Area	143.0 m3	16.1 m2	14.8 m3

Frequency (Hz)	DnT 1/3 Octave (dB)	High BGnd
50 Hz*	.0	
63 Hz*	.0	
80 Hz*	.0	
100 Hz	54.0	
125 Hz	54.0	
160 Hz	54.1	
200 Hz	63.3	
250 Hz	61.2	
315 Hz	54.3	
400 Hz	48.7	
500 Hz	45.0	
630 Hz	40.9	
800 Hz	37.2	
1 KHz	34.4	
1.25 KHz	32.1	
1.6 KHz	32.1	
2 KHz	31.0	
2.5 KHz	28.7	
3.15 KHz	24.2	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 717-2

$L'_{nT,w}(CI)$  [dB]: 50 (2) dB

Maximum Pass Level [dB]: 64 dB

PASS

Adverse Aggregated Deviations [dB]: 28.9 dB

Partition Detail: FC0001\*\* - Generic Concrete - Unknown

Test Exceptions (if any): Source room was fully furnished