JOSTEC
BUILDING REGULATIONS COMPLIANCE SERVICES

SITMA
The Sound Insulation Testing & Measurement Association

Airborne Sound Insulation testing in accordance with Test Standards BS EN ISO 140-4:1998
Impact Sound Insulation testing in accordance with Test Standards BS EN ISO 140-7:1998

Report Reference Number: 33348

Test Date: 19/03/2024

Report Compilation Date: 26/03/2024

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
93 Watford Way, Barnet, NW4 4RS.

Competent Tester

Testing in this report was conducted by Joe Smith (Registration Number: 7226), who is a Certified tester in the SITMA Certification Scheme for Sound Insulation Testers, which is a UKAS Accredited Certification Body No. 10579.

Contents

The SITMA Certified Testers' Scheme

This testing described within this report was conducted by a certified tester of the Non-UKAS 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) in the SITMA Certification Scheme for Sound Insulation Testers. Further information on the certification scheme, it's lodgement system, quality control and auditing requirements are discussed below.

Certified Tester Conducting this test:

Certified Tester:	[redacted]
Associated Company:	JosTec, Suite 107 Moda Business Centre, Stirling Way, Borehamwood, WD6 2BW.
Live Certification Status	https://www.bcta.group/sitma/members

[redacted]

SITMA Certification Scope
The Non-UKAS SITMA Certification Scheme for Sound Insulation Testers operates to the principals BS EN ISO/IEC 17024:2012 [1].

Testers are certified 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: 33348
	Job Postcode: NW4 4RS

[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

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 $D_{nT,w}+C_{tr}$ or $L'_{nT,w}$ (dB)	Result $D_{nT,w}+C_{tr}$ or $L'_{nT,w}$ (dB)	Result
147624	Room 13 Studio	Room 12 Studio	≥ 43	42	FAIL
147625	Room 13 Studio	Room B Studio	≥ 43	39	FAIL
147626	Room 11 Studio	Room 10 Studio	≥ 43	41	FAIL
147627	Room 9 Studio	Room 10 Studio	≥ 43	45	PASS
147628	Room 13 Studio	Room 9 Studio	≥ 43	49	PASS
147629	Room 13 Studio	Room 10 Studio	≥ 43	49	PASS
147630	Room 11 Studio	Room 4 Studio	≥ 43	47	PASS
147631	Room 11 Studio	Room 5 Studio	≥ 43	48	PASS
147632	Room 13 Studio	Room 9 Studio	≤ 64	62	PASS
147633	Room 13 Studio	Room 10 Studio	≤ 64	60	PASS
147634	Room 11 Studio	Room 4 Studio	≤ 64	64	PASS
147635	Room 11 Studio	Room 5 Studio	≤ 64	61	PASS

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

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

Impact Sound Insulation Tests

Impact Sound Insulation was conducted to BS EN ISO 140-7:1998
Measurements of standardised impact Sound Pressure Level (L'_{nT}) were conducted in accordance with BS EN ISO 140-7:1998.

Level Measurements in the Receive Room
Level measurements were acquired in the receive room using a tapping machine, which has a set of 5 steel hammers, to produce impact noise in the source room in at least four different positions on the separating floor surface.
The tapping machine was orientated at 45 degrees to the main floor axis.
The noise level was measured in the receive room at a minimum of 4 swept microphone positions or a minimum of 6 fixed microphone positions at one-third octave band intervals from 100 to 3150 Hertz using an averaging time of at least 6 seconds for each of the 4 tapping machine positions, creating a minimum of 4 or 6 individual measurement readings.
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.

Background Measurements in Receive Room (L_b)
The background noise level was 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 (RT)
The reverberation measurements were carried out following the guidance in BS EN ISO 140-7: 1998 and BS 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 at each of two loudspeaker positions in accordance with Section 5.5 of BS EN ISO 140-7:1998.
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 and then moved to another corner whilst maintaining the distances and the measurements were repeated.

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.
These measurements are often the same readings as the airborne test when measured in the same group of tests where the receive room is the same and the test(s) carried out on the same day.

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

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

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

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

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
Tapper Machine	BS EN ISO 140-7:1998	29 Nov 2023	29 Nov 2025	U46093
Sound Level Meter (SLM)	IEC 61260-1:2014	21 Nov 2023	21 Nov 2025	U46013
Calibrator	IEC 60942:2017	21 Nov 2023	21 Nov 2024	U46011
Calibrator	IEC 60942:2017	11 Sep 2023	11 Sep 2024	U45326
Tapper Machine	BS EN ISO 140-7:1998	02 Sep 2022	02 Sep 2024	U41854
Sound Level Meter (SLM)	IEC 61260-1:2014	31 Aug 2022	31 Aug 2024	U41831
Speaker(Directivity)	SITMA PUS007	01 Mar 2024	31 May 2024	123456
Speaker(Directivity)	SITMA PUS007	01 Mar 2024	31 May 2024	123456

Detailed Test Results

Airborne Wall Tests – Material Change of Use by Joe Smith

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)	
147624	**Room 13 Studio**	39.0m^3	**Room 12 Studio**	29.1m^3	≥ 43 dB	42 dB	**Fail**
	Construction: Generic Metal Frame: Metal stud wall with insulation between and 2x plasterboard either side.						
	Deviations:						
147625	**Room 13 Studio**	39.0m^3	**Room B Studio**	23.0m^3	≥ 43 dB	39 dB	**Fail**
	Construction: Generic Metal Frame: Metal stud wall with insulation between and 2x plasterboard either side.						
	Deviations: Receive Room under 25m^3						
147626	**Room 11 Studio**	39.1m^3	**Room 10 Studio**	27.2m^3	≥ 43 dB	41 dB	**Fail**
	Construction: Generic Metal Frame: Metal stud wall with insulation between and 2x plasterboard either side.						
	Deviations: 6dB Rule not met						
147627	**Room 9 Studio**	29.1m^3	**Room 10 Studio**	27.2m^3	≥ 43 dB	45 dB	**Pass**
	Construction: Generic Metal Frame: Metal stud wall with insulation between and 2x plasterboard either side.						
	Deviations:						

Airborne floor Tests – Material Change of Use by Joe Smith

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)	
147628	**Room 13 Studio**	39.0m^3	**Room 9 Studio**	29.1m^3	≥ 43 dB	49 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						
147629	**Room 13 Studio**	39.0m^3	**Room 10 Studio**	27.2m^3	≥ 43 dB	49 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						
147630	**Room 11 Studio**	39.1m^3	**Room 4 Studio**	38.6m^3	≥ 43 dB	47 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations: 6dB Rule not met						
147631	**Room 11 Studio**	39.1m^3	**Room 5 Studio**	34.9m^3	≥ 43 dB	48 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						

Impact floor Tests – Material Change of Use by Joe Smith

Certificate Number	Plot & Source Room	Source Room Volume	Plot & Receive Room	Receive Room Volume	Target $L'_{nT,w}$	Result $L'_{nT,w}$	Result
		(m^3)		(m^3)	(dB)	(dB)	
147632	**Room 13 Studio**	39.0m^3	**Room 9 Studio**	29.1m^3	≤ 64 dB	62 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						
147633	**Room 13 Studio**	39.0m^3	**Room 10 Studio**	27.2m^3	≤ 64 dB	60 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						
147634	**Room 11 Studio**	39.1m^3	**Room 4 Studio**	38.6m^3	≤ 64 dB	64 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						
147635	**Room 11 Studio**	39.1m^3	**Room 5 Studio**	34.9m^3	≤ 64 dB	61 dB	**Pass**
	Construction: Generic Timber Joist: Timber joist floor with ceiling below on resilient bars.						
	Deviations:						

Appendix A – Individual Certificates

Test Type	Source Room	Partition	Receiver Room
Airborne sound insulation	Room 13 Studio	WM0001**	Room 12 Studio
Airborne sound insulation	Room 13 Studio	WM0001**	Room B Studio
Airborne sound insulation	Room 11 Studio	WM0001**	Room 10 Studio
Airborne sound insulation	Room 9 Studio	WM0001**	Room 10 Studio
Airborne sound insulation	Room 13 Studio	FT0001**	Room 9 Studio
Airborne sound insulation	Room 13 Studio	FT0001**	Room 10 Studio
Airborne sound insulation	Room 11 Studio	FT0001**	Room 4 Studio
Airborne sound insulation	Room 11 Studio	FT0001**	Room 5 Studio
Impact sound insulation	Room 13 Studio	FT0001**	Room 9 Studio
Impact sound insulation	Room 13 Studio	FT0001**	Room 10 Studio
Impact sound insulation	Room 11 Studio	FT0001**	Room 4 Studio
Impact sound insulation	Room 11 Studio	FT0001**	Room 5 Studio

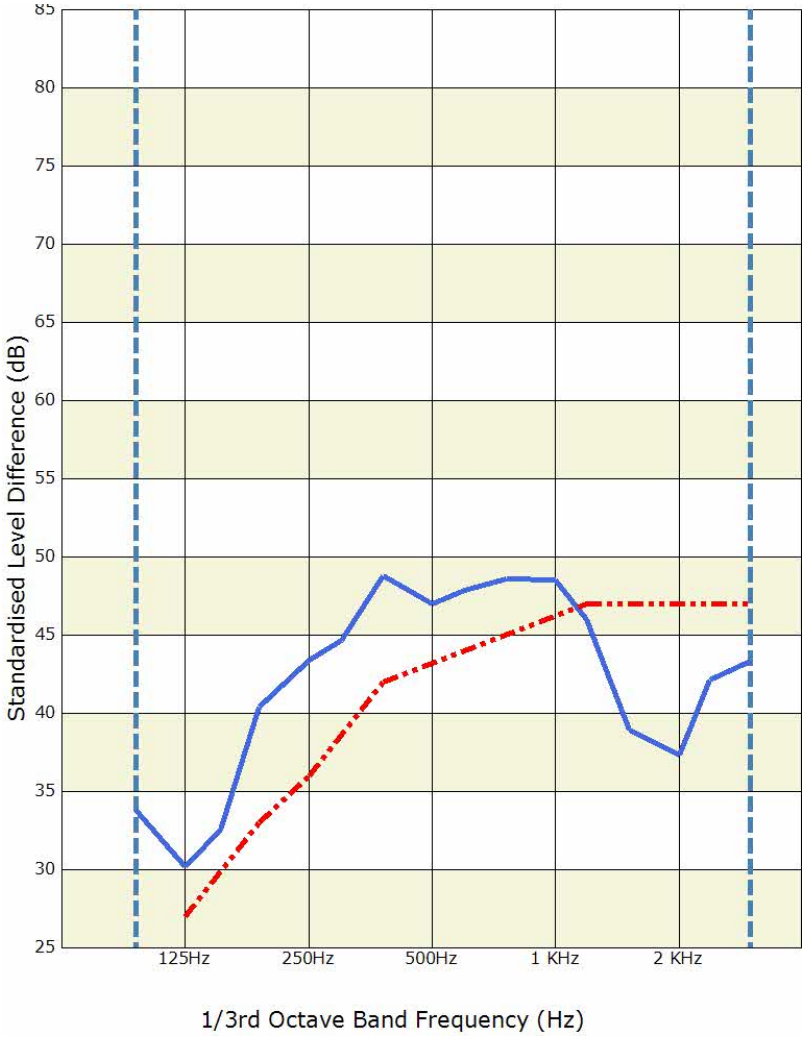
Registered Sound Insulation Test Certificate

Test No:	147624	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Wall)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	WM0001**	Room 12 Studio
Volume / Area	39.0m³	75.0m²	29.1m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	33.8	
125	30.2	
160	32.5	
200	40.4	
250	43.4	
315	44.7	
400	48.8	
500	47	
630	47.9	
800	48.6	
1	48.5	
1.25	46	
1.6	38.9	
2	37.3	
2.5	42.1	
3.15	43.3	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]:	43 (-1, -1) dB
$D_{nT,w}$ + C_{tr} [dB]:	42 dB
Minimum Pass Level [dB]:	43 dB

FAIL

Adverse Aggregated Deviations [dB]: 27.4

Partition Detail: Metal stud wall with insulation between and 2x plasterboard either side.

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

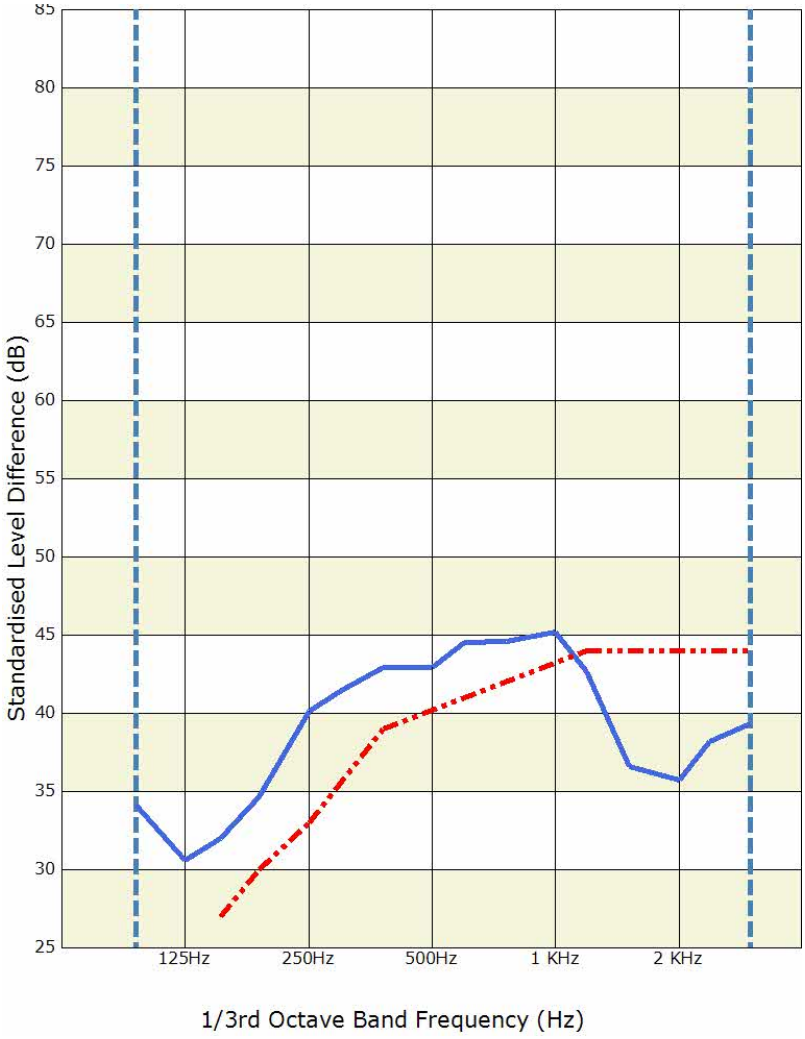
Registered Sound Insulation Test Certificate

Test No:	147625	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Wall)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	WM0001**	Room B Studio
Volume / Area	39.0m³	75.0m²	23.0m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	34.1	
125	30.6	
160	32	
200	34.7	
250	40.1	
315	41.5	
400	42.9	
500	42.9	
630	44.5	
800	44.6	
1	45.2	
1.25	42.7	
1.6	36.6	
2	35.7	
2.5	38.2	
3.15	39.3	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]:	40 (-1, -1) dB
$D_{nT,w}$+ C_{tr} [dB]:	39 dB
Minimum Pass Level [dB]:	43 dB

FAIL

Adverse Aggregated Deviations [dB]: 27.5

Partition Detail: Metal stud wall with insulation between and 2x plasterboard either side.

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

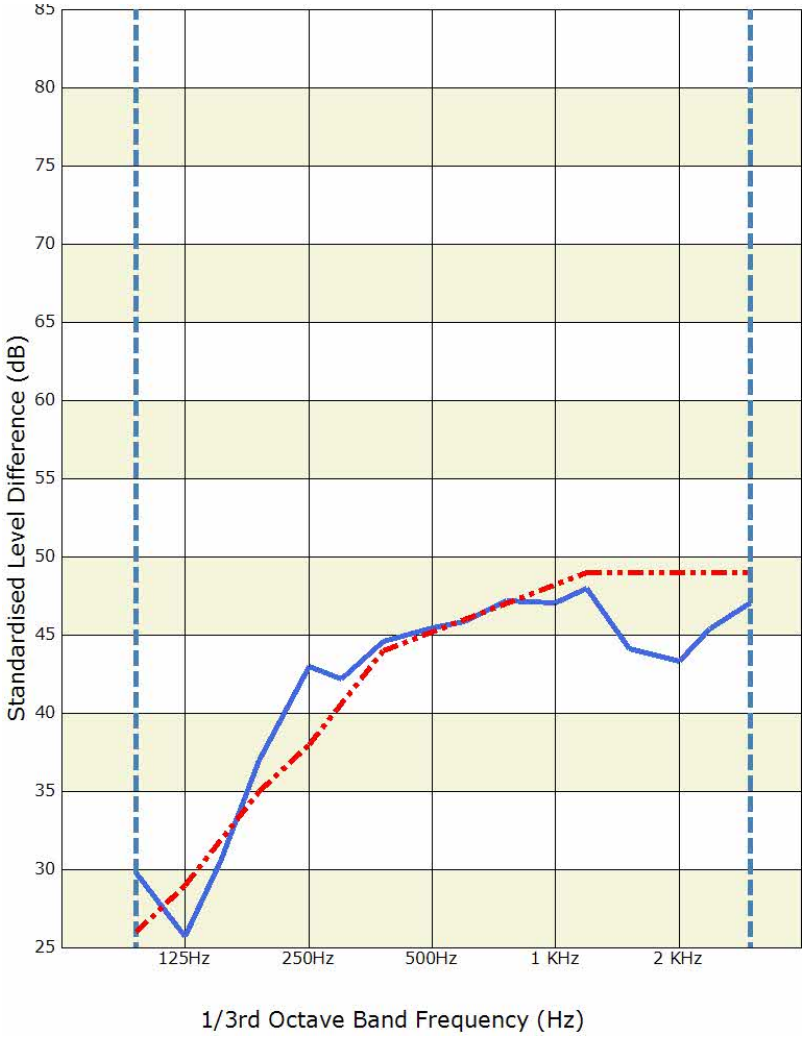
Registered Sound Insulation Test Certificate

Test No:	147626	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Wall)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 11 Studio	WM0001**	Room 10 Studio
Volume / Area	39.1m³	75.0m²	27.2m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	29.8	
125	25.7	
160	30.5	
200	37	
250	43	
315	42.2	
400	44.6	
500	45.5	
630	45.9	
800	47.2	
1	47.1	
1.25	48	
1.6	44.1	
2	43.3	
2.5	45.4	
3.15	47.1	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]: 45 (-1, -4) dB
$D_{nT,w}$ + C_{tr} [dB]: 41 dB
Minimum Pass Level [dB]: 43 dB

FAIL
Adverse Aggregated Deviations [dB]: 22.9

Partition Detail: Metal stud wall with insulation between and 2x plasterboard either side.

Test Exceptions (if any): 6dB Rule not met

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

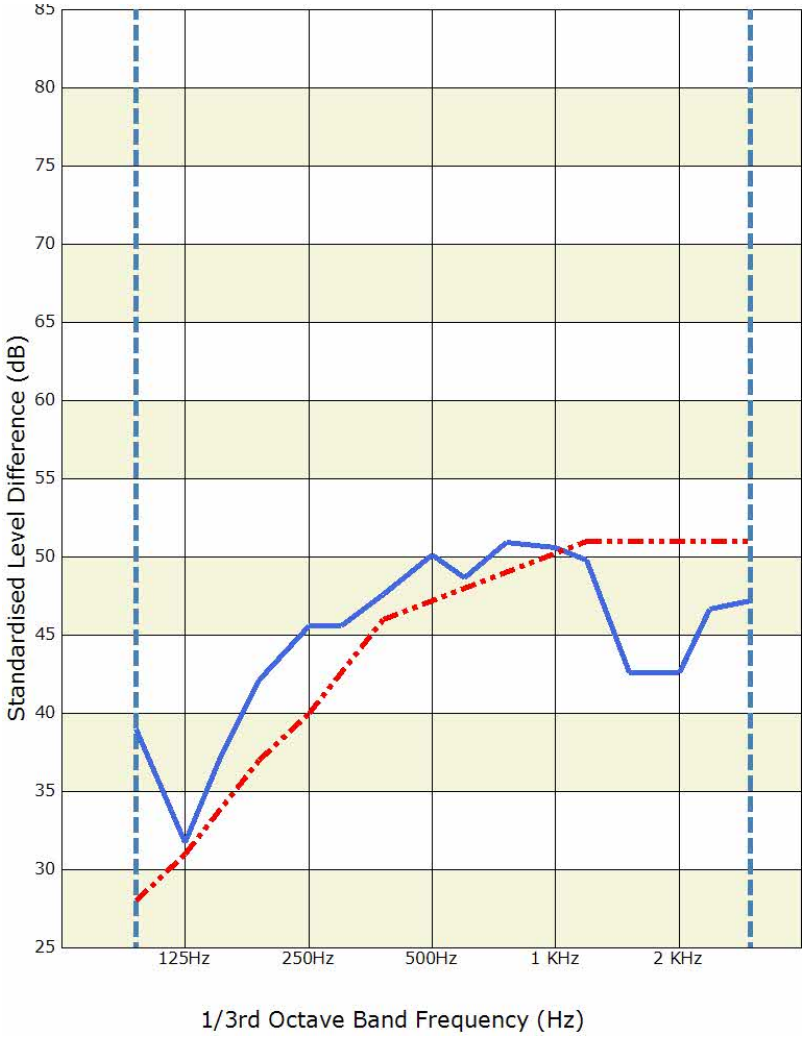
Registered Sound Insulation Test Certificate

Test No:	147627	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Wall)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 9 Studio	WM0001**	Room 10 Studio
Volume / Area	29.1m³	75.0m²	27.2m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	39	
125	31.7	
160	37.2	
200	42.1	
250	45.6	
315	45.6	
400	47.6	
500	50.1	
630	48.7	
800	50.9	
1	50.6	
1.25	49.8	
1.6	42.6	
2	42.6	
2.5	46.7	
3.15	47.2	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]: 47 (-1, -2) dB
$D_{nT,w}$ + C_{tr} [dB]: 45 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 26.1

Partition Detail: Metal stud wall with insulation between and 2x plasterboard either side.

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

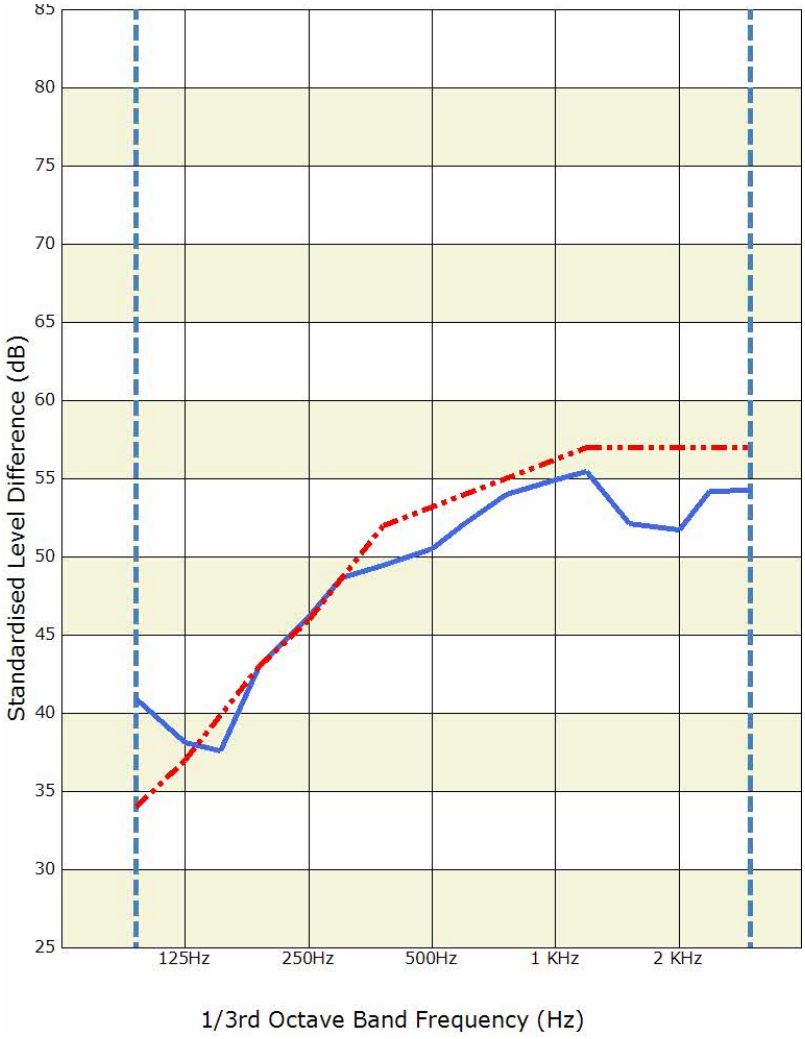
Registered Sound Insulation Test Certificate

Test No:	147628	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	FT0001**	Room 9 Studio
Volume / Area	39.0m³	75.0m²	29.1m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	40.9	
125	38.1	
160	37.6	
200	43	
250	46.2	
315	48.7	
400	49.5	
500	50.5	
630	52.1	
800	54	
1	54.9	
1.25	55.5	
1.6	52.1	
2	51.7	
2.5	54.2	
3.15	54.3	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]: 53 (-2, -4) dB
$D_{nT,w}$+ C_{tr} [dB]: 49 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 28.9

Partition Detail:Timber joist floor with ceiling below on resilient bars.

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

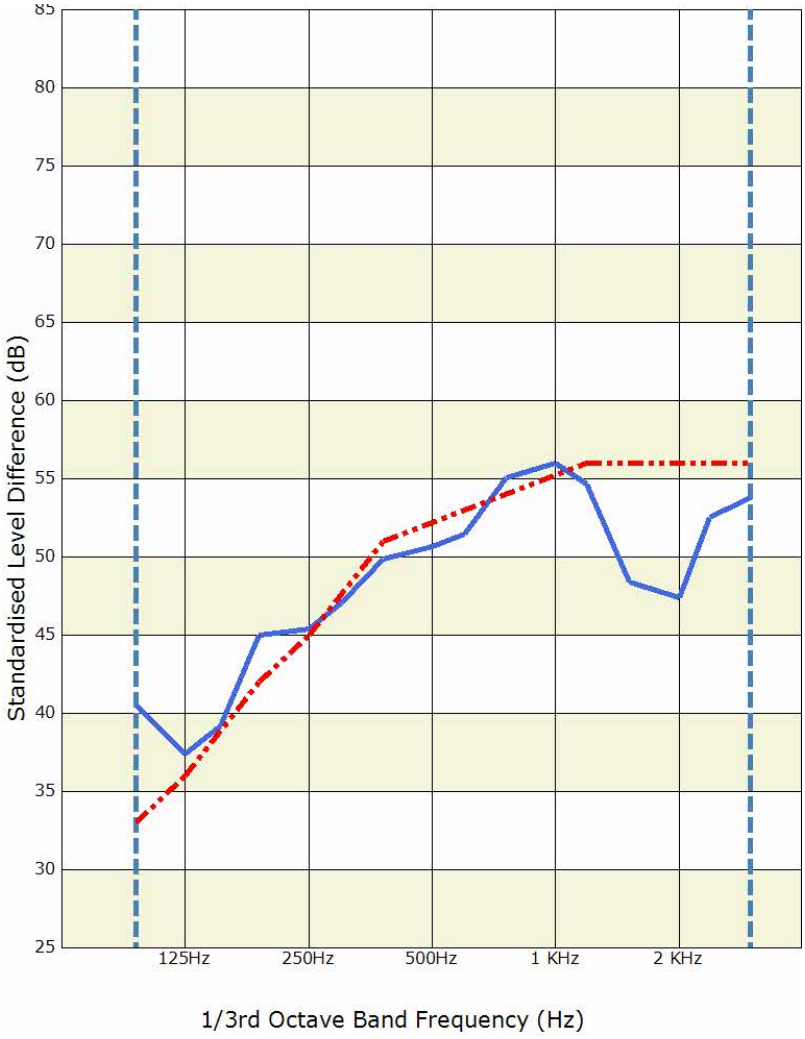
Registered Sound Insulation Test Certificate

Test No:	147629	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	FT0001**	Room 10 Studio
Volume / Area	39.0m³	75.0m²	27.2m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	40.5	
125	37.4	
160	39.2	
200	45	
250	45.4	
315	47.1	
400	49.9	
500	50.7	
630	51.5	
800	55.1	
1	56	
1.25	54.7	
1.6	48.4	
2	47.4	
2.5	52.5	
3.15	53.8	
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]:	52 (-2, -3) dB
$D_{nT,w}$+ C_{tr} [dB]:	49 dB
Minimum Pass Level [dB]:	43 dB

PASS

Adverse Aggregated Deviations [dB]: 28.0

Partition Detail:Timber joist floor with ceiling below on resilient bars.

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

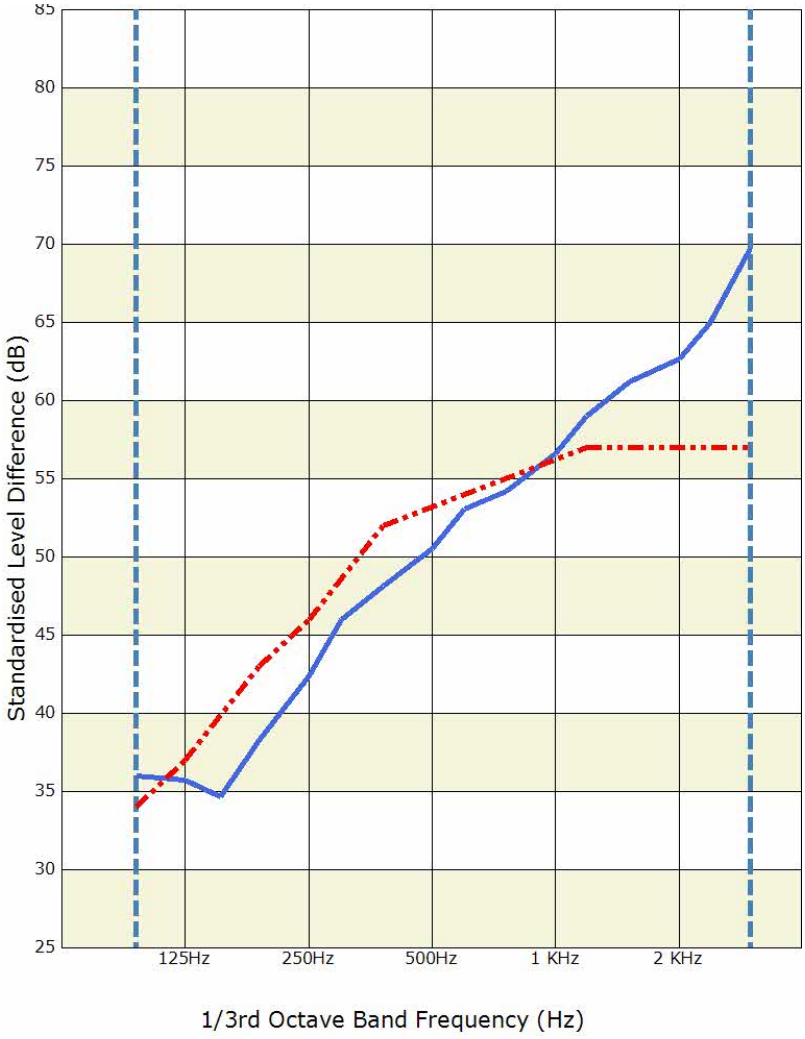
Registered Sound Insulation Test Certificate

Test No:	147630	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 11 Studio	FT0001**	Room 4 Studio
Volume / Area	39.1m³	75.0m²	38.6m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	36	
125	35.7	
160	34.7	
200	38.3	
250	42.4	
315	46	
400	48.1	
500	50.5	
630	53.1	
800	54.2	
1	56.6	
1.25	59	
1.6	61.2	
2	62.7	
2.5	64.9	X
3.15	69.7	X
4K*	0	
5K*	0	

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



*Outside scope of Certification

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]: 53 (-2, -6) dB
$D_{nT,w}$+ C_{tr} [dB]: 47 dB
Minimum Pass Level [dB]: 43 dB

PASS
Adverse Aggregated Deviations [dB]: 26.0

Partition Detail:Timber joist floor with ceiling below on resilient bars.

Test Exceptions (if any): 6dB Rule not met

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

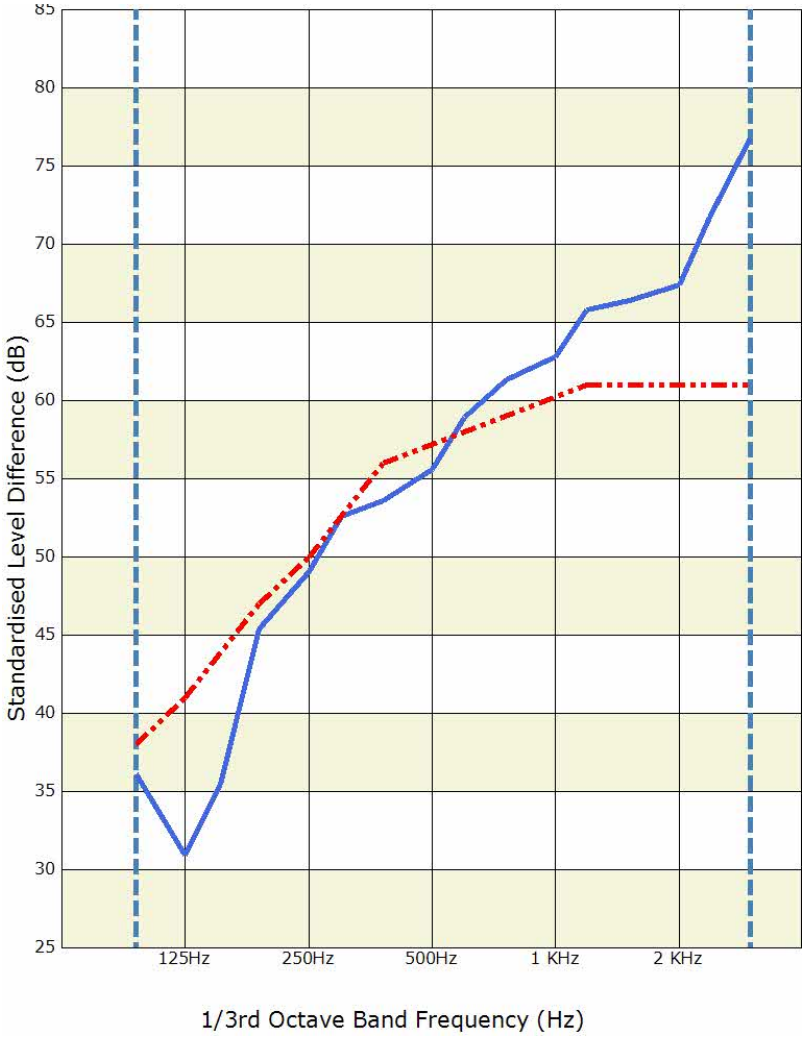
Registered Sound Insulation Test Certificate

Test No:	147631	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Airborne (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 11 Studio	FT0001**	Room 5 Studio
Volume / Area	39.1m³	75.0m²	34.9m³

Frequency (Hz)	D_{nT}	Correction
50*	0	
63*	0	
80*	0	
100	36.1	
125	30.9	
160	35.5	
200	45.4	
250	49.1	
315	52.6	
400	53.6	
500	55.6	
630	58.9	
800	61.3	
1	62.8	
1.25	65.8	
1.6	66.4	
2	67.4	
2.5	71.7	X
3.15	76.8	X
4K*	0	
5K*	0	

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



*Outside scope of Certification

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 (-4, -9) dB
$D_{nT,w}$+ C_{tr} [dB]:	48 dB
Minimum Pass Level [dB]:	43 dB

PASS

Adverse Aggregated Deviations [dB]: 27.2

Partition Detail:Timber joist floor with ceiling below on resilient bars.

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

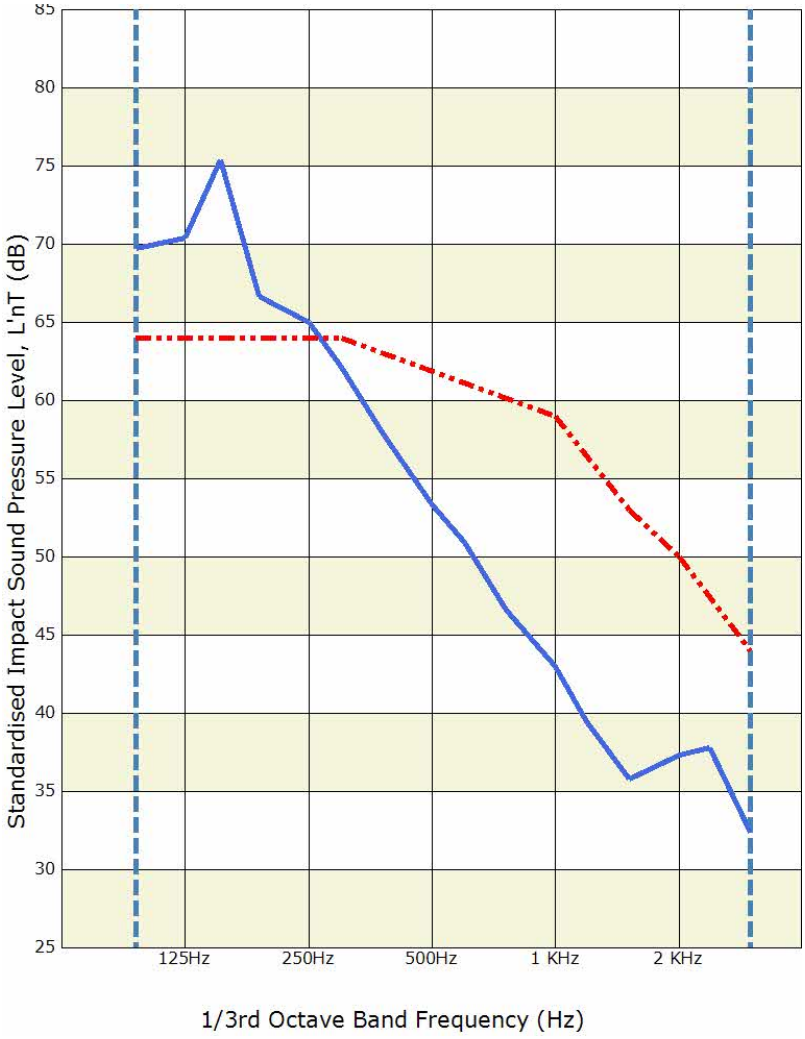
Registered Impact Test Certificate

Test No:	147632	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Impact (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	FT0001**	Room 9 Studio
Volume / Area	39.0m³	75.0m²	29.1m³

Frequency (Hz)	L'_{nT} 1/3 Octave (dB)	Correction
50*	0	
63*	0	
80*	0	
100	69.7	
125	70.4	
160	75.4	
200	66.7	
250	65	
315	62.1	
400	57.9	
500	53.3	
630	50.9	
800	46.6	
1	43	
1.25	39.5	
1.6	35.8	
2	37.3	
2.5	37.8	
3.15	32.4	
4K*	0	
5K*	0	

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



*Outside scope of Certification

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-2

$L'_{nT,w}$ (CI) [dB]: 62 (1) dB
Maximum Pass Level [dB]: 64 dB

PASS
Adverse Aggregated Deviations [dB]: 27.2

Partition Detail:Timber joist floor with ceiling below on resilient bars.

Test Exceptions (if any): None Declared by Tester

IMPACT SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 7:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 2:1997: Acoustics - rating of sound in buildings and of building elements

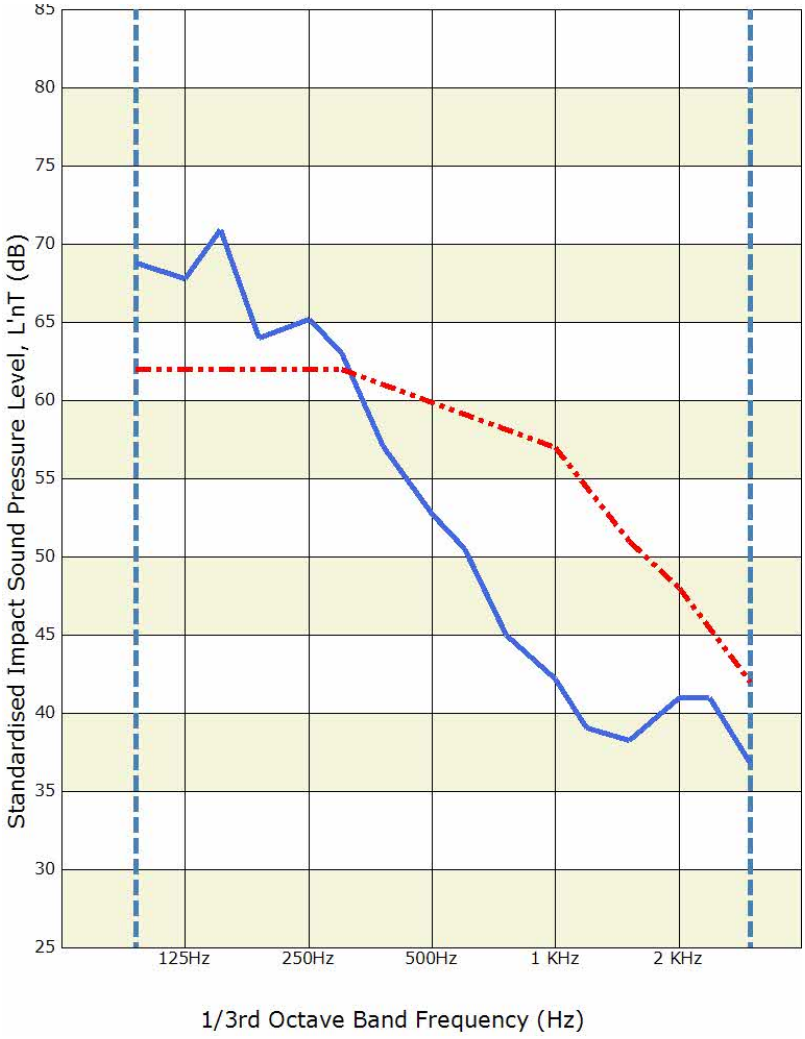
Registered Impact Test Certificate

Test No:	147633	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Impact (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 13 Studio	FT0001**	Room 10 Studio
Volume / Area	39.0m³	75.0m²	27.2m³

Frequency (Hz)	L'_{nT} 1/3 Octave (dB)	Correction
50*	0	
63*	0	
80*	0	
100	68.8	
125	67.8	
160	70.9	
200	64	
250	65.2	
315	63.1	
400	57.1	
500	52.7	
630	50.5	
800	45	
1	42.2	
1.25	39.1	
1.6	38.3	
2	41	
2.5	41	
3.15	36.8	
4K*	0	
5K*	0	

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



*Outside scope of Certification

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-2

$L'_{nT,w}$ (CI) [dB]: 60 (0) dB
Maximum Pass Level [dB]: 64 dB

PASS
Adverse Aggregated Deviations [dB]: 27.8

Partition Detail:Timber joist floor with ceiling below on resilient bars.

Test Exceptions (if any): None Declared by Tester

IMPACT SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 7:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 2:1997: Acoustics - rating of sound in buildings and of building elements

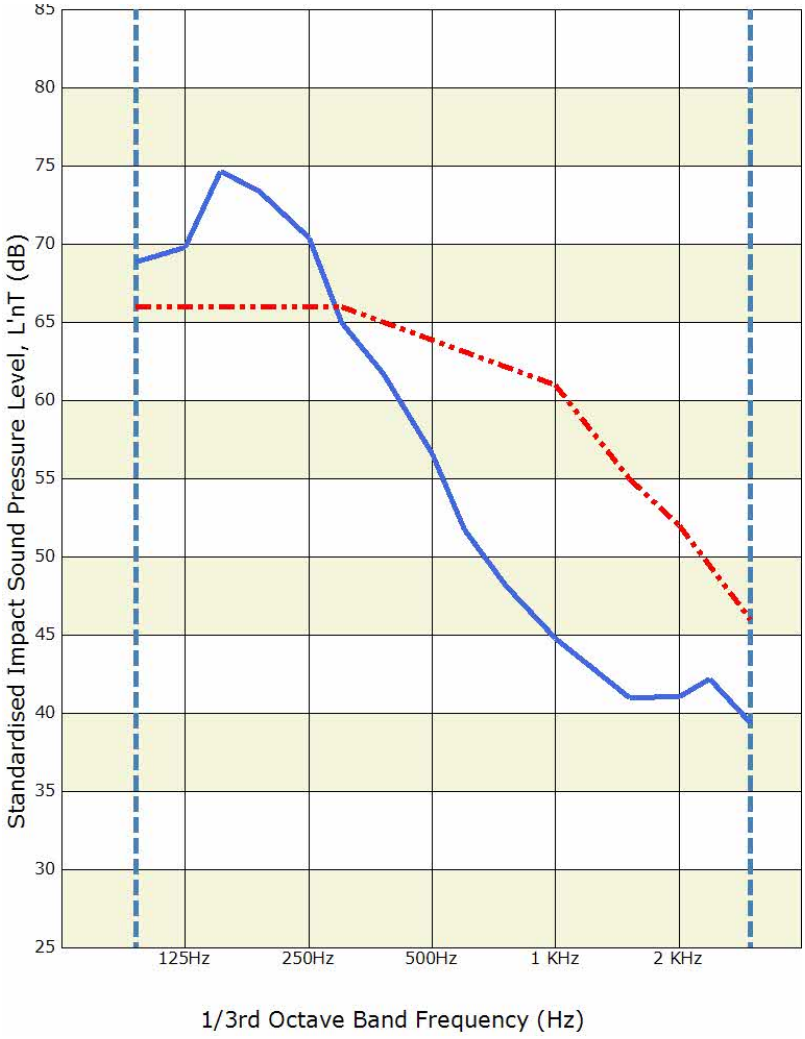
Registered Impact Test Certificate

Test No:	147634	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Impact (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 11 Studio	FT0001**	Room 4 Studio
Volume / Area	39.1m³	75.0m²	38.6m³

Frequency (Hz)	L'_{nT} 1/3 Octave (dB)	Correction
50*	0	
63*	0	
80*	0	
100	68.9	
125	69.8	
160	74.7	
200	73.4	
250	70.4	
315	65	
400	61.7	
500	56.6	
630	51.7	
800	48.1	
1	44.8	
1.25	43.2	
1.6	41	
2	41.1	
2.5	42.2	
3.15	39.4	
4K*	0	
5K*	0	

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



*Outside scope of Certification

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-2

$L'_{nT,w}$ (CI) [dB]: 64 (0) dB
Maximum Pass Level [dB]: 64 dB

PASS
Adverse Aggregated Deviations [dB]: 27.2

Partition Detail:Timber joist floor with ceiling below on resilient bars.

Test Exceptions (if any): None Declared by Tester

IMPACT SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 7:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 2:1997: Acoustics - rating of sound in buildings and of building elements

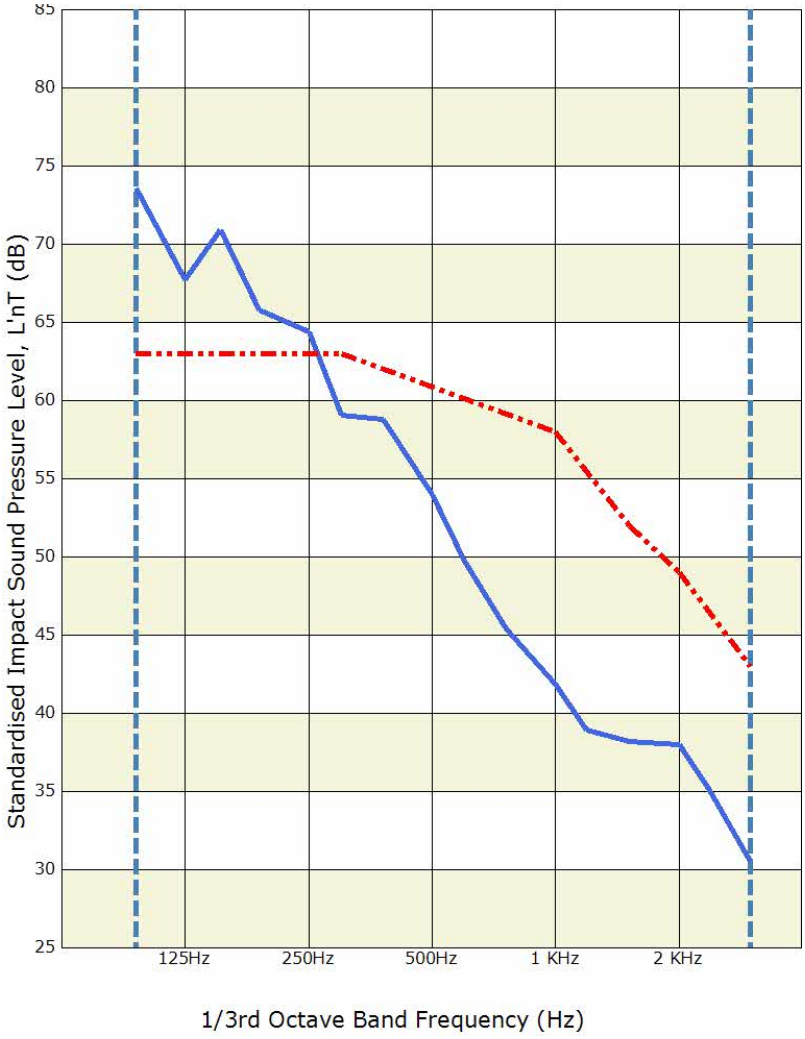
Registered Impact Test Certificate

Test No:	147635	Test Job Ref:	33348	Test Org Name:	JosTec
Customer:	Saks Property			Test Type:	Impact (Floor)
Address:	74 Brent Street, 74 Brent Street, Barnet	Job Address:	93 Watford Way, , Barnet	Test Date:	25/03/2024
				Tester:	Joe Smith
				Site type:	Material Change of Use
Postcode:	NW4 2ES	Postcode:	NW4 4RS	Site Build:	Rooms for Residential Use

	Source Room:	Partition:	Receiver Room:
Description:	Room 11 Studio	FT0001**	Room 5 Studio
Volume / Area	39.1m³	75.0m²	34.9m³

Frequency (Hz)	L'_{nT} 1/3 Octave (dB)	Correction
50*	0	
63*	0	
80*	0	
100	73.6	
125	67.7	
160	70.9	
200	65.8	
250	64.4	
315	59.1	
400	58.8	
500	54	
630	49.7	
800	45.4	
1	41.9	
1.25	38.9	
1.6	38.2	
2	38	
2.5	35.1	X
3.15	30.5	X
4K*	0	
5K*	0	

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



*Outside scope of Certification

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-2

$L'_{nT,w}$ (CI) [dB]: 61 (1) dB
Maximum Pass Level [dB]: 64 dB

PASS
Adverse Aggregated Deviations [dB]: 27.4

Partition Detail:Timber joist floor with ceiling below on resilient bars.

Test Exceptions (if any): None Declared by Tester

IMPACT SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 7:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 2:1997: Acoustics - rating of sound in buildings and of building elements

Appendix B – UKAS Calibration Certificates

Laboratory Location
Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

Certificate of Calibration and Conformance

Certificate number: **U41831**

Test Object:	**Sound Level Meter, BS EN IEC 61672-1:2013 Class 1** **Associated Frequency Analyser to BS EN IEC 61260:1996 Class 0**
Producer:	**Brüel & Kjær**
Type:	**2250**
Serial number:	**3000156**
Customer:	**JosTec Ltd**
Address:	**Suite 107, Moda Business Centre,** **Stirling Way. Borehamwood. WD6 2BW.**
Contact Person:	**Robert Joselyn**
Order No:	

Introduction:
Calibration has been performed as set out in CA Technical Procedures which are based on the procedures for periodic verification of sound level meters as per the **Test Object** listed above. Results and conformance statement are overleaf and detailed results, where appropriate, are provided in the attached Measurement Report.

Tested:	*Producer*	*Type*	*Serial No*	*Certificate No*
Microphone	Brüel & Kjær	4189	2775009	41830
Calibrator*	Brüel and Kjær	4231	3001014	U41829
Preamplifier	Brüel & Kjær	ZC0032	14653	Included

* The calibrator was complete with any required coupler for the microphone specified.

Additional items that have also been submitted for verification:

Wind shield	N/A
Attenuator	N/A
Extension cable	N/A

These items have been taken into account wherever appropriate.

Instruction Manual: BE1712-23 Firmware Version: BZ7222 v4.7.5 / BZ7223 v4.7.5 The test object is a single channel instrument.

Conditions	*Pressure kPa*	*Temperature °C*	*Humidity %RH*
Reference conditions	101.325	23	50
Measurement conditions	101.80 ±0.03	22.75 ±0.35	43.08 ±1.65

Calibration Dates:

Received date:	22/08/2022	Reviewed date:	31/08/2022
Calibration date:	31/08/2022	Issued date:	31/08/2022

Technicians: (Electronic certificate)

Calibrated by: [redacted] *L.Sc*

Reviewed by: [redacted]

Laboratory Location

Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

Certificate of Calibration

Certificate number: **U41854**

Test Object: **Floor Tapping Machine**

Producer: **Brüel & Kjær**
Type: **3207**
Serial number: **2715380**
Customer: **JosTec Ltd**
Address: **Suite 107 Moda Business Centre**
Stirling Way Borehamwood WD6 2BW
Contact Person: **Robert Joselyn**
Order No:

Method :
This certificate is issued against the requirements of Annex A of both BS EN ISO 16283-2:2015 and BS EN ISO 140-6/7:1998 in respect of regular verification and also meet the requirements of UKAS publication LAB23 covering the verification of floor tapping machines used for building acoustics applications.

The machine was inspected for mechanical soundness and tested for electrical safety. It was cleaned and lubricated in accordance with the manufacturers instructions where necessary. The cams and hammer guides were inspected to ensure a free fall of the hammers. The mass of each of the hammers was determined either by measurement or reference to historical data (see Statements overleaf) along with their curvature and diameter of the impact face. The machine was set up as per the manufacturers specification using the calibration gauge provided (where applicable) and checked for level, then the direction of fall of the hammer set was checked against the requirements of the standard. The time between successive hammer impacts was measured over a 30 second period and the mean and range of successive values calculated.

Statements:
A sucessful calibration indicates that this Tapping Machine meets the requirements of BS EN ISO 16283-2:2015 and BS EN ISO 140 parts 6, 7 & 8 annex A and is therefore suitable for the measurement of impact sound transmission following the procedures set out in their associated standards.

Expanded measurement uncertainties are:- Impact rate 0.25 ms, Hammer mass (mounted) 0.79 g, Hammer mass (demounted) 0.19 g, Hammer diameter 0.03 mm, Radius of curvature 11.0 mm, Hammer impact velocity 0.01 m/s and Hammer angle of fall 0.07 degree.

The mass of each individual hammer was measured in situ and the resulting data has been used in the calculation of the momentum of impact.

Environmental Conditions	Temperature	Relative Humidity
Reference Conditions:	23 °C	50 %RH
Measurement Conditions:	23.1 °C	55.0 %RH

Calibration Dates:

Received date:	22/08/2022	Reviewed date:	02/09/2022
Calibration date:	02/09/2022	Issued date:	02/09/2022

Technicians: (Electronic certificate)
Calibrated by:
Reviewed by: [redacted]

SITMA

The Sound Insulation Testing & Measurement Association

Speaker Stability

90 Day Extension

Laboratory Location
Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

0789

Certificate of Calibration and Conformance

Certificate number: **U45326**

Test Object: **Sound Calibrator**

Producer: **Brüel & Kjær**
Type: **4231**
Serial number: **3001014**
Customer: **Jostec Ltd**
Address: **Suite 107, Moda Business Centre, Stirling Way, Borehamwood. WD6 2BW.**
Contact Person: **Toby Robinson.**
Order No:

Measurement Results	Level dB	Level Stability dB	Frequency Hz	Distortion %
Measurement 1	94.06	0.02	1000.02	0.55
Measurement 2	94.05	0.02	1000.02	0.52
Measurement 3	94.06	0.02	1000.01	0.52
Result (Average):	**94.06**	**0.02**	**1000.02**	**0.53**
Expanded Uncertainty:	0.1	0.02	1	0.25
Degree of Freedom:	>100	>100	>100	>100
Coverage Factor:	2	2	2	2

The stated level is relative to 20µPa. The level is traceable to National Standards. The stated level is valid at reference conditions. The following correction factors have been applied during the measurement
Pres:0.0008 dB/kPa Temp:0.0015 dB/°C Humi:0.001 dB/%RH Load volume: 0.0003 dB/mm3

Conditions	*Pressure kPa*	*Temperature °C*	*Humidity %RH*
Reference conditions	101.325	23	50
Measurement conditions	100.689 ±0.042	22.4 ±0.1	42 ±1.1

The reported expanded uncertainty of measurements is based on a standard uncertainty multiplied by the coverage factor of k=2, providing a level of confidence of approximately 95%. Where the degrees of freedom are insufficient to maintain this confidence level, the coverage factor is increased to maintain this confidence level. The uncertainty has been determined in accordance with UKAS requirements.

Records: K:\C A\Calibration\Nor-1504\Nor-1018 CalCal\Current Year\BNK4231_3001014_M1.nmf

Preconditioning
The equipment was preconditioned for more than 4 hours in the specified calibration environment.

Method
Calibration has been performed as set out in the current version of CA Technical procedure TP01

Calibration Dates:

Received date:	31/08/2023	Reviewed date:	11/09/2023
Calibration date:	11/09/2023	Issued date:	11/09/2023

Technicians: (Electronic certificate)
Calibrated by: [redacted]
Reviewed by: