



Sound Insulation Test Report

Project:	New Islington Phase 3, Lockyard Lane, Manchester, M4 6HF
Client:	Urban Splash
Report Reference:	02-20-82137 N1
Issue Date:	17 th March 2021



Version History

Version	Issue Date	Produced By	Checked By	Comment
1	17/03/21	Richard Whitfield (AMIOA)	Neil Turnbull (MIOA)	Initial issue.

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1 Introduction

Stroma Built Environment has been commissioned by Urban Splash to carry out airborne sound insulation tests between rooms within dwellings at New Islington Phase 3, Lockyard Lane, Manchester, M4 6HF.

Stroma Built Environment is a UKAS accredited testing laboratory No. 2731, for field measurements of sound insulation. The sound insulation tests were carried out by Richard Whitfield (AMIOA) of Stroma Built Environment on 16th March 2021.

This report contains the results of 3 sets of tests as defined by Building Regulations Approved Document Part E. It is understood that the separating wall construction is the same throughout the development.

2 The Building Regulations Approved Document Part E

This development is classed as purpose-built dwellings - houses under definitions contained within the Building Regulations 2010 Approved Document Part E.

The Building Regulations 2010 Approved Document Part E – Resistance to the passage of sound, sets out minimum sound insulation performance that should be achieved under test. The minimum test requirements for party walls and floors between rooms within purpose-built dwellings are given in Table 1 (taken from table 0.1a of the regulations):

Table 1: Performance standards for separating walls and floors applicable to purpose-built dwellings.

Description		Performance Standard
Walls	$D_{nT,w} + C_{tr}$ (airborne)	≥ 45 dB
Floors and stairs	$D_{nT,w} + C_{tr}$ (airborne)	≥ 45 dB
	$L'_{nT,w}$ (impact)	≤ 62 dB

3 Test Results

3.1 Deviations from Standard Test Procedures

All procedures in Annex B of the Building Regulations Approved Document E have been followed.

3.2 Airborne Sound Insulation

Results of airborne sound insulation tests are summarised in Table 2:

Table 2 Airborne sound insulation test results.

Test Report Number	Source Room		Receiver Room		Partition Type	Measured $D_{nT,w} + C_{tr}$ (dB)	Required $D_{nT,w} + C_{tr}$ (dB)	Pass/Fail
	Description	Volume (m ³)	Description	Volume (m ³)				
02-20-82137N1A1	16 Kitchen/ Lounge	128.0	17 Kitchen/ Lounge	128.0	Wall	47	≥45	Pass
02-20-82137N1A2	16 Bedroom 4	45.0	17 Bedroom 4	45.0	Wall	45	≥45	Pass
02-20-82137N1A3	13 Kitchen/ Lounge	128.0	12 Kitchen/ Lounge	128.0	Wall	45	≥45	Pass
02-20-82137N1A4	13 Bedroom 1	33.0	12 Bedroom 1	33.0	Wall	49	≥45	Pass
02-20-82137N1A5	4 Kitchen/ Lounge	128.0	5 Kitchen/ Lounge	128.0	Wall	48	≥45	Pass
02-20-82137N1A6	4 Bedroom 2	33.0	5 Bedroom 2	33.0	Wall	48	≥45	Pass

4 Test Details

4.1 Instrumentation

Table 3 lists the equipment used during the tests and to download, evaluate and report the results.

Table 3 Equipment used for test

Equipment Description	Type Number	Manufacturer
Sound Level Meter, (complete with building acoustics module & wireless remote-control unit)	2250	Bruel & Kjaer
0.5" Microphone	4189	Bruel & Kjaer
Calibrator	4231	Bruel & Kjaer
Active loudspeaker	TS308	Alto
AKG Wireless microphone system	WMS	AKG
Qualifier software	7830	Bruel & Kjaer

4.2 Test Procedure

Airborne sound insulation tests were carried out in accordance with BS EN ISO 140-4:1998 “Field measurements of airborne sound insulation between rooms”.

Rating of airborne test results has been carried out in accordance with BS EN ISO 717-1:1997 “Acoustics – Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation.”

4.2.1 Airborne Sound Insulation Test Procedure

High volume “pink noise” was generated by the loudspeaker in the source room, positioned as required by the relevant standards. The spatial energy average of the one-third octave band noise levels was obtained within the source room for a total duration of no less than 30 seconds per source position, by using a 30 second sweep or 5No. 6 second measurements. The same procedure was then repeated in the receiving room. These procedures were repeated for a second loudspeaker position within the source room.

As required by procedures in paragraph B2.6 of Annex B of Building Regulations Approved Document E the arithmetic average of the spatial energy average levels for each loudspeaker position was then obtained for source and receiver levels to determine the level difference, D as defined in BS EN ISO 140-4:1998.

4.2.2 Reverberation Time Measurement Procedure

The reverberation time was measured in each receiving room to correct for room reverberant characteristics. A “pink noise” sound was generated in the room from the sound source and the decay time was measured using the reverberation time function of the Brüel & Kjær sound level meter. A minimum of 6 reverberation time measurements were taken using a minimum of 3 microphone positions for at least 1 loudspeaker position to obtain an overall average reverberation time result.

4.2.3 Background Noise

Background noise levels were measured inside each receiving room to correct, if necessary, the received airborne noise measurements for influence of prevailing noise climate. Background noise was due to site-based activities.

Results strongly influenced by background noise, are presented as the limit of measurement. The results affected in such a way are indicated with a “≥” (greater than or equal to) for airborne results, to indicate that the true sound insulation value may be better than that gained on the day of testing.

5 Test Certificates

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments

Field measurements of airborne sound insulation between rooms

Client: Urban Splash

Date of test: 16/03/2021

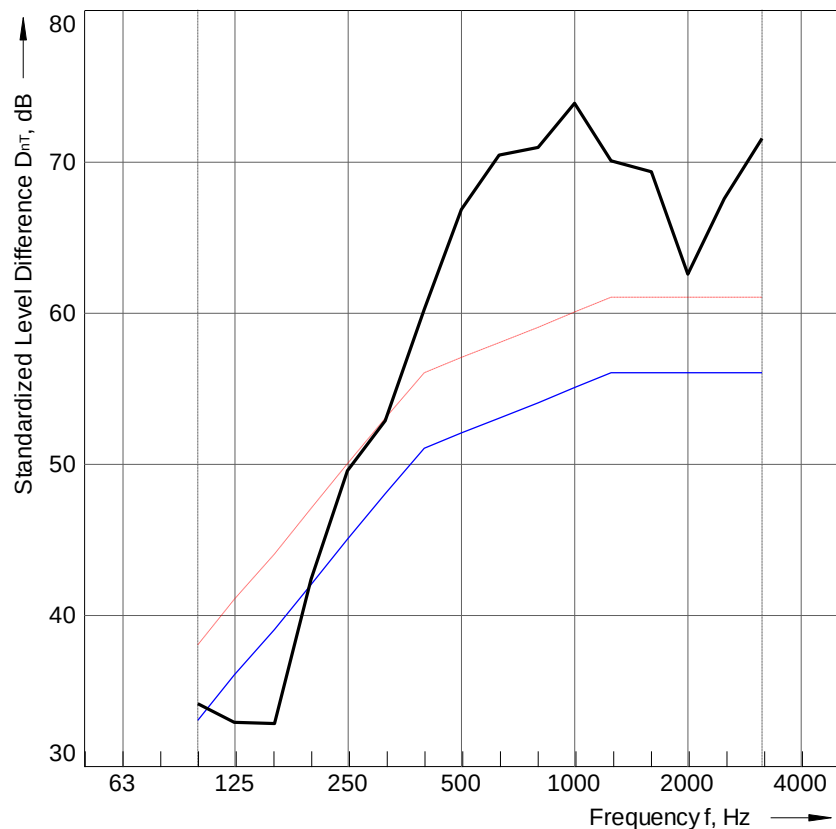
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 128.00 m³Receiving room volume V: 128.00 m³

Frequency range according to the
curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50	
63	
80	
100	34.1
125	32.9
160	32.8
200	42.3
250	49.5
315	52.8
400	60.2
500	66.8
630	>= 70.4
800	>= 70.9
1000	>= 73.8
1250	>= 70.0
1600	>= 69.3
2000	>= 62.5
2500	>= 67.5
3150	>= 71.5
4000	
5000	



Rating according to BS EN ISO 717-1

 $D_{nT,w} (C; C_{tr}) = 57 (-4; -10) \text{ dB}$

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

 $C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$ $C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$

No. of test report: 02-20-82137N1A1

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments**Field measurements of airborne sound insulation between rooms**

Client: Urban Splash

Date of test: 16/03/2021

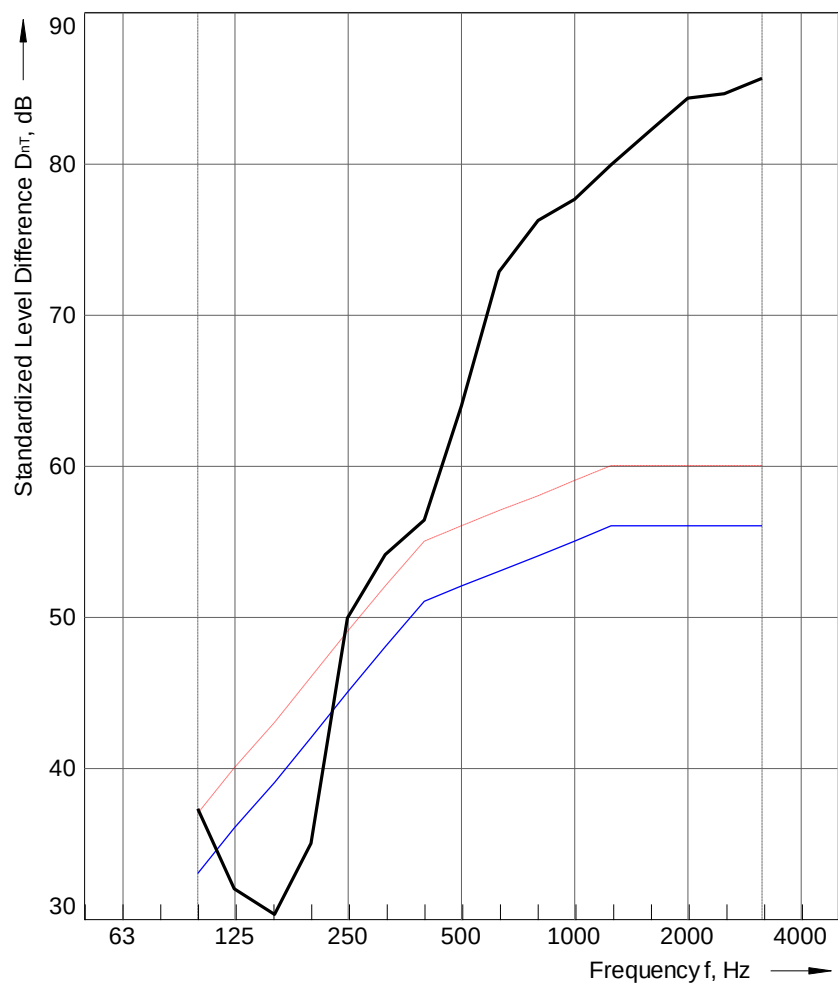
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 45.00 m³
 Receiving room volume V: 45.00 m³

Frequency range according to the
 curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50 63 80	
100 125 160	37.3 32.0 30.3
200 250 315	35.0 49.9 54.1
400 500 630	56.4 ≥ 63.9 ≥ 72.8
800 1000 1250	≥ 76.2 ≥ 77.6 ≥ 79.9
1600 2000 2500	≥ 82.2 ≥ 84.3 ≥ 84.6
3150 4000 5000	≥ 85.6

**Rating according to BS EN ISO 717-1** $D_{nT,w} (C; C_{tr}) = 56 (-6; -11) \text{ dB}$

Evaluation based on field measurement
 results obtained in one-third-octave bands
 by an engineering method

 $C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$
 $C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$

No. of test report: 02-20-82137N1A2

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments**Field measurements of airborne sound insulation between rooms**

Client: Urban Splash

Date of test: 16/03/2021

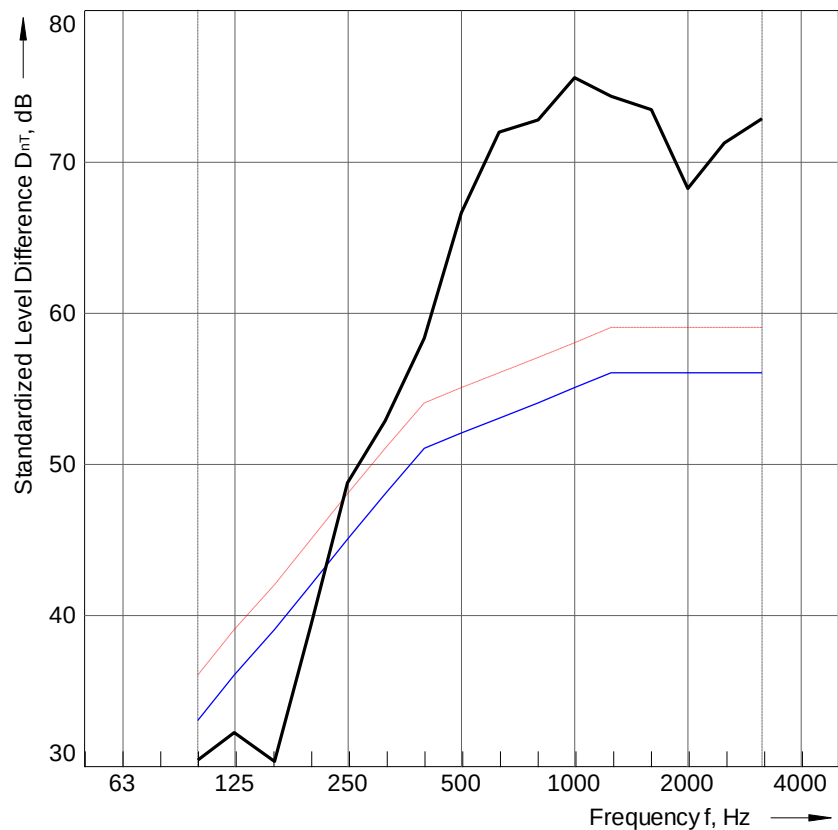
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 128.00 m³Receiving room volume V: 128.00 m³

Frequency range according to the
curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50 63 80	
100 125 160	30.4 32.2 30.3
200 250 315	39.3 48.7 52.8
400 500 630	58.3 66.6 ≥ 71.9
800 1000 1250	≥ 72.7 ≥ 75.5 ≥ 74.3
1600 2000 2500	≥ 73.4 ≥ 68.2 ≥ 71.2
3150 4000 5000	≥ 72.8

**Rating according to BS EN ISO 717-1**

$$D_{nT,w} (C; C_{tr}) = 55 \text{ (-4; -10) dB}$$

Evaluation based on field measurement
results obtained in one-third-octave bands
by an engineering method

$$C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$$

$$C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$$

No. of test report: 02-20-82137N1A3

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments**Field measurements of airborne sound insulation between rooms**

Client: Urban Splash

Date of test: 16/03/2021

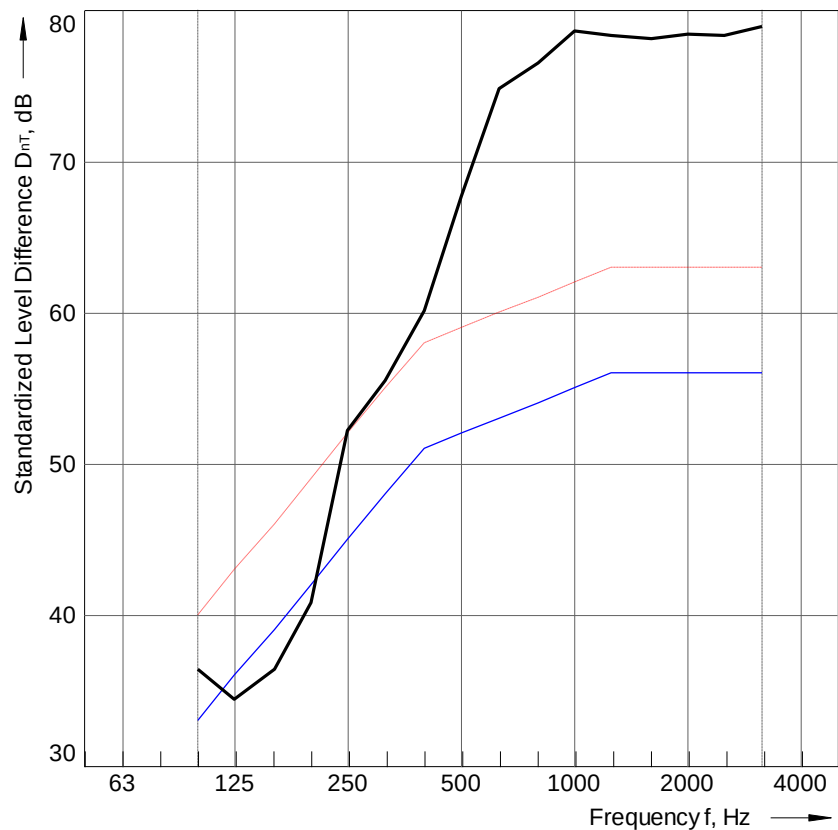
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 33.00 m³
 Receiving room volume V: 33.00 m³

Frequency range according to the
 curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50 63 80	
100 125 160	36.4 34.4 36.4
200 250 315	40.8 52.2 55.5
400 500 630	60.1 67.7 ≥ 74.8
800 1000 1250	≥ 76.5 ≥ 78.6 ≥ 78.3
1600 2000 2500	≥ 78.1 ≥ 78.4 ≥ 78.3
3150 4000 5000	≥ 78.9

**Rating according to BS EN ISO 717-1**

$$D_{nT,w} (C; C_{tr}) = 59 (-4; -10) \text{ dB}$$

Evaluation based on field measurement
 results obtained in one-third-octave bands
 by an engineering method

$$C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$$

$$C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$$

No. of test report: 02-20-82137N1A4

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments**Field measurements of airborne sound insulation between rooms**

Client: Urban Splash

Date of test: 16/03/2021

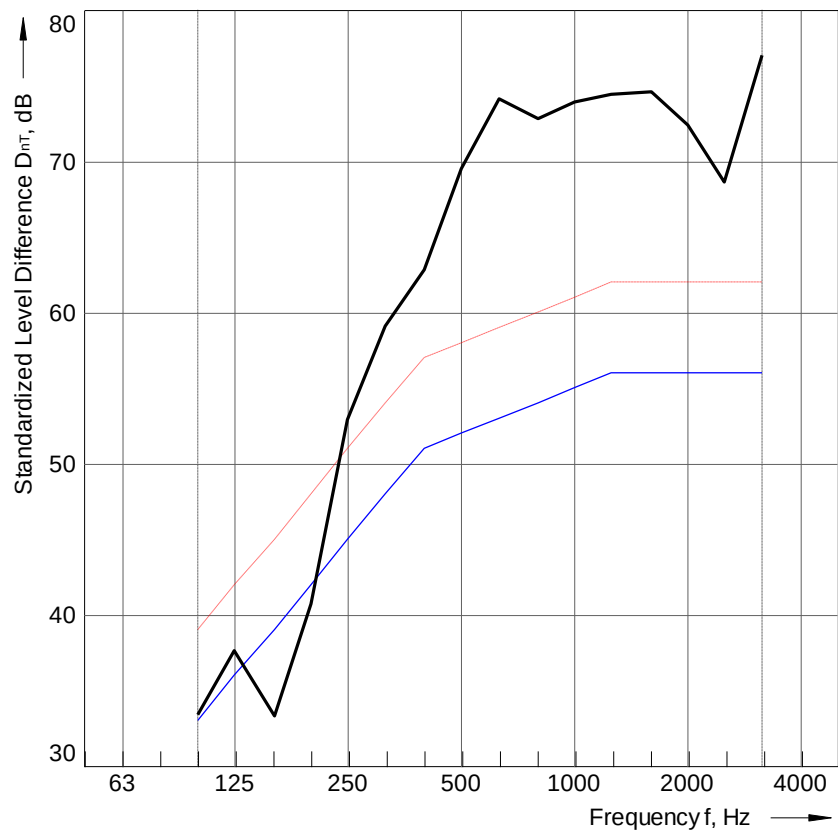
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 128.00 m³Receiving room volume V: 128.00 m³

Frequency range according to the
curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50 63 80	
100 125 160	33.4 37.6 33.3
200 250 315	40.7 52.9 59.1
400 500 630	62.8 ≥ 69.5 ≥ 74.1
800 1000 1250	≥ 72.8 ≥ 73.9 ≥ 74.4
1600 2000 2500	≥ 74.6 ≥ 72.4 ≥ 68.6
3150 4000 5000	≥ 77.0

**Rating according to BS EN ISO 717-1**

$$D_{nT,w} (C; C_{tr}) = 58 \text{ (-4; -10) dB}$$

Evaluation based on field measurement
results obtained in one-third-octave bands
by an engineering method

$$C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$$

$$C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$$

No. of test report: 02-20-82137N1A5

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

Standardized Level Difference according to Part E of Building Regulations 2000 with 2010 amendments**Field measurements of airborne sound insulation between rooms**

Client: Urban Splash

Date of test: 16/03/2021

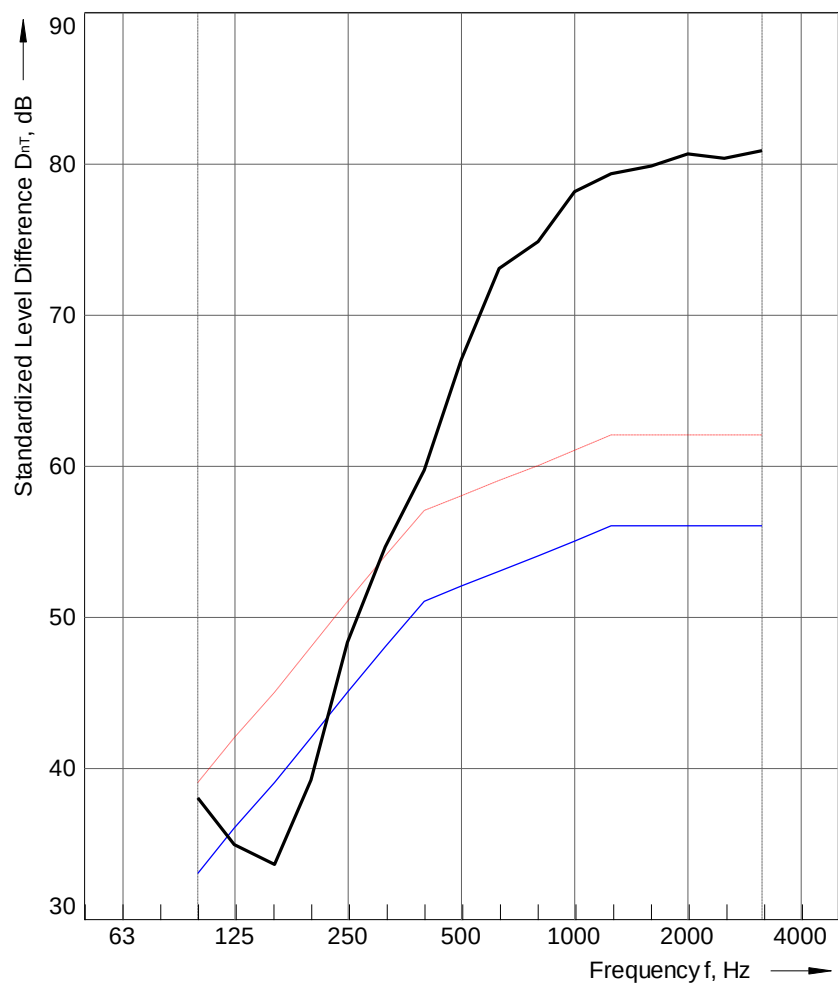
Description and identification of the building construction and test arrangement, direction of measurement:

See sections 3 and 4 of report.

Source room volume: 33.00 m³
 Receiving room volume V: 33.00 m³

Frequency range according to the
 curve of reference values (BS EN ISO 717-1)

Frequency f Hz	D _{nT} 1/3 Octave dB
50 63 80	
100 125 160	38.0 34.9 33.6
200 250 315	39.2 48.3 54.6
400 500 630	59.7 67.0 73.0
800 1000 1250	74.8 78.1 79.3
1600 2000 2500	79.8 80.6 80.3
3150 4000 5000	80.8

**Rating according to BS EN ISO 717-1** $D_{nT,w} (C; C_{tr}) = 58 (-5; -10) \text{ dB}$

Evaluation based on field measurement
 results obtained in one-third-octave bands
 by an engineering method

 $C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$
 $C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$

No. of test report: 02-20-82137N1A6

Name of test institute: Stroma Built Environment

Date: 16/03/2021

Signature:

End of Report

OUR GROUP SERVICES ACROSS THE RIBA PLAN OF WORK

- **Stroma Building Control** offers Building Control services as an alternative to LABC
- **Stroma Built Environment** offers environmental consultancy and testing services
- **Stroma Certification** offers approved certification and training services
- **Stroma Software** offers digital data collection and data analysis services
- **Stroma Specialist Access** offers difficult access services for UK infrastructure & building

Strategic Definition	Preparation and Brief	Concept Design	Developed Design	Technical Design	Construction	Handover and Close Out	In Use
		Building Control (including first principals, developed design ideas, initial reports, initial notice, site inspections, final certificate issued)					
Acoustic Services (Consultancy, Noise Impact Testing & Sound Insulation Testing Services)							
	Air Quality Assessments (Supporting Planning & Environmental Monitoring)						
BREEAM (Environmental Assessments for Sustainability)							
CDM (providing health & safety advisory services for buildings in development)							
			Air Tightness Services (Air Leakage Testing & Consultancy for Part L)				
	Energy Compliance (Energy Audits & Management Services)						
						Thermography (Thermal Imaging)	
Noise, Vibration, Dust (Monitoring & Assessment to minimise construction impacts)							
							Building Inspections
	Life Cycle Costing (assessing whole-life development performance)						
	Water Efficiency Calculations (compliance with Water Performance & Part G)						
BIM Certification & Digital Construction (Certification for BIM Level 2 Compliance)							
							Competent Person Schemes
Mobile Data Capture Software (create digital forms for on site data collection)							