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**AUDIO SCHEMES
LTD**

**STUDIOS AT
RELIANCE
WHARF, HOXTON,
LONDON**


**SOUND
INSULATION
TESTING**

**11 SEPTEMBER
2020**

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**AUDIO SCHEMES LTD
STUDIOS AT RELIANCE WHARF, HOXTON, LONDON
SOUND INSULATION TESTING**

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REVIEW AND AUTHORISATION			
Authored and approved by Adrian Finn	Position Director	Signature 	Date 11/09/2020

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1. INTRODUCTION

- 1.1.1 AF Acoustics was commissioned by Audio Schemes Ltd to undertake sound insulation tests of a number of newly installed studios at Reliance Wharf, Hoxton London.

2. TESTING SCHEDULE

- 2.1.1 The sound insulation testing was undertaken on 9 September 2020 by Adrian Finn.
- 2.1.2 Although testing was undertaken to establish the sound insulation of the studios, the testing was not required for Building Control purposes. The purpose of the test was to establish sound insulation performance between two adjacent studios and the sound insulation performance of two different door sets.
- 2.1.3 The sound insulation tests detailed in this report were undertaken in accordance with BS EN ISO 16283-1: 2014 "*Acoustics — Field measurement of sound insulation in buildings and of building elements. Part 1: Airborne sound insulation.*"
- 2.1.4 This report records the results of the sound insulation tests and details the procedures used throughout the measurement and post-processing phases.

3. METHODOLOGY

3.1 Airborne Tests

- 3.1.1 High volume "pink" noise was generated at two loudspeakers positions in the source room, positioned to obtain a diffuse sound field. A spatial average of the resulting one-third octave band noise levels between 50 Hz and 5000 Hz was obtained by using a moving microphone technique over a minimum period of 60 seconds at each of the two positions.
- 3.1.2 The same measurement procedure was used in the receiver room.
- 3.1.3 The results of the tests were rated in accordance with BS EN ISO 717-1: 1997 "Rating of sound insulation in buildings and of building elements. Part 1 Airborne sound insulation"

3.2 Reverberation Time

- 3.2.1 Reverberation time measurements were taken following the procedure described below in order to correct the receiver levels for room characteristics.
- 3.2.2 The reverberation time was measured in accordance with BS 3382-2:2008 "Acoustics - Measurement of room acoustic parameters - Part 2: Reverberation time in ordinary rooms" using the integrated impulse method, using an impulse response by bursting a balloon and measuring the reverberation time in each of the one third octave bands between 50 Hz and 5000 Hz. The internal programme of the meter was used to measure the decay time of the sound in the room. This was repeated five more times in the receiver room to obtain an average result.

3.3 Background Noise

- 3.3.1 The background noise levels in the receiver rooms were measured during the tests and the receiving room levels corrected in accordance with BS EN ISO 16283-1: 2014 part 1.
- 3.3.2 The main source of background noise observed during the tests was local traffic noise from adjacent roads.

4. INSTRUMENTATION

4.1.1 The instrumentation used during testing is shown in Table 4.1 below.

Instrument	Manufacturer and Type	Serial Number	Date of Last Calibration
Precision integrating sound level meter & analyser	NTI Audio XL2-TA Class 1 Sound Level Meter	A2A-17402-E0	February 2020
	NTI Audio MA220 Pre-amplifier	8850	February 2020
	NTI Audio MC230A Microphone	A18347	February 2020
Calibrator	Norsonic 1251	30900	March 2020

TABLE 4.1: INSTRUMENTATION USED DURING TESTING

5. TEST ROOMS

5.1.1 Details of the floors tested are shown in Table 5.1 below.

Test Element	Room 1	Room 2	Construction
Wall/Doorset	Studio 4	Corridor	Exact build-up unknown. Doorset incorporates one door as lead lined.
Wall	Studio 2	Studio 3	Exact build-up unknown.
Wall/Doorset	Studio 2	Corridor /workspace	Exact build-up unknown. Both door sets incorporate lead lining.

TABLE 5.1: - ROOM DETAILS

6. RESULTS

6.1.1 The results of the testing are summarised in the table below. For airborne tests, the higher the value, the better the performance.

6.2 Pre-works Airborne Tests

6.2.1 The summarised results of the airborne tests are shown in Table 6.1.

Test Element	Source	Receiver	Test Result
Wall	Studio 4	Corridor	55 dB $D_{nT,w} + C_{tr}$
Wall	Studio 2	Studio 3	67 dB $D_{nT,w} + C_{tr}$
Wall	Studio 2	Corridor /workspace	53 dB $D_{nT,w} + C_{tr}$

TABLE 6.1: PRE-WORKS AIRBORNE TEST RESULTS

7. DISCUSSION

- 7.1.1 The sound insulation between the two studios was very high and achieved 67 dB $D_{nT,w} + C_{tr}$.
- 7.1.2 To put a 67dB difference in the performance of the studio into context, noise conventionally is measured in decibels (dB). The decibel is a logarithmic unit and decibel levels do not add and subtract arithmetically. An increase or decrease of 3 dB in the level of a steady noise is about the smallest that is noticeable by most human ears. It represents a doubling or halving of noise energy. An increase or decrease of 10 dB represents a ten-fold change in noise energy, and is perceived as a doubling or halving of loudness. A reduction of 67 dB is equivalent to a 99% reduction in noise.

8. CONCLUSION

- 8.1.1 AF Acoustics was commissioned by Audio Schemes Ltd to undertake sound insulation tests of a number of newly installed studios at Reliance Wharf, Hoxton London.
- 8.1.2 The sound insulation tests were undertaken between two studios and of two different door set configurations.
- 8.1.3 Test certificates are given in Appendix B.

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APPENDIX A: LIMITATIONS TO THE REPORT

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of AF Acoustics Ltd. AF Acoustics Ltd accepts no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/or AF Acoustics Ltd and agree to indemnify AF Acoustics Ltd for any and all loss or damage resulting therefrom. AF Acoustics Ltd accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations AF Acoustics Ltd reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

APPENDIX B: FIGURES

**Standardized level difference according to ISO 16283-1
Field measurements of airborne sound insulation between rooms**

Client: Audio Schemes Ltd

Date of test: 09/09/2020

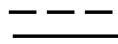
Description and identification of the building construction and the test arrangement, direction of measurement:

Airborne wall, Studio 4 to Corridor

Construction details: -

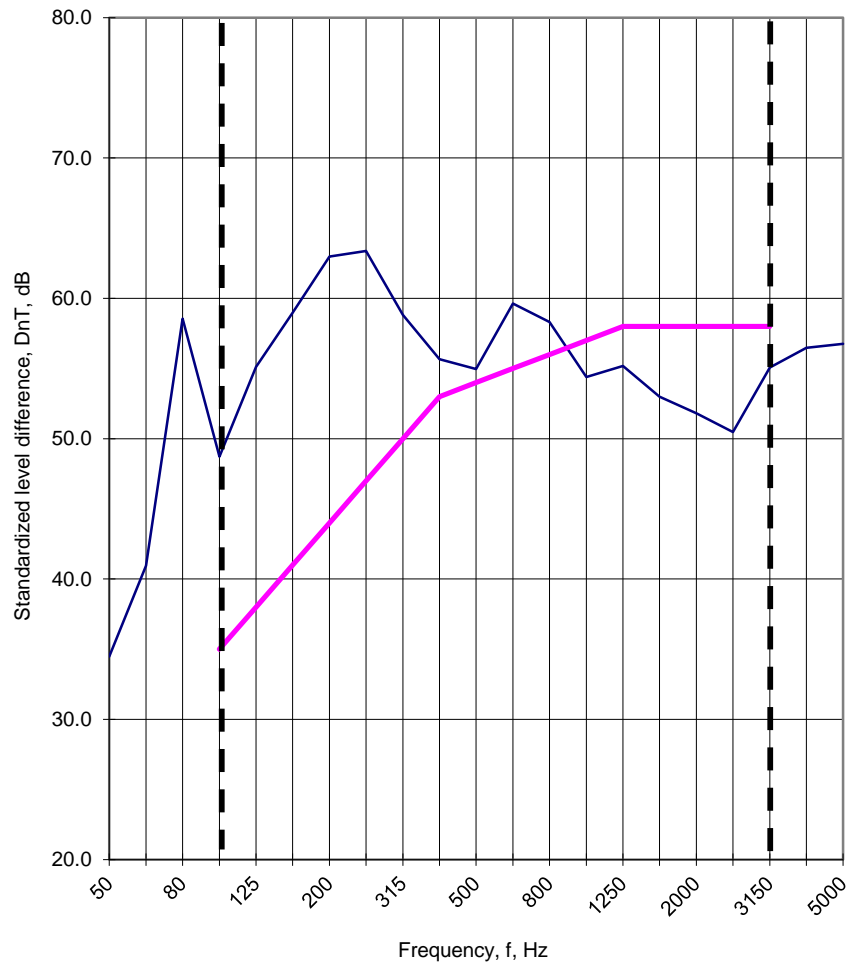
Source room volume:
Receiving room volume:

25 m³
-



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

Frequency f Hz	D _{nT} (one-third octave) dB
50	34.5
63	40.9
80	58.6
100	48.7
125	55.1
160	59.0
200	63.0
250	63.4
315	58.8
400	55.7
500	55.0
630	59.6
800	58.3
1000	54.4
1250	55.2
1600	53.0
2000	51.8
2500	50.5
3150	55.1
4000	56.5
5000	56.8

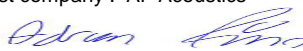


* Signifies value at limit of measurement

Rating according to ISO 717-1

D _{nT,w} (C;Ctr) =	54 (0 ; 1) dB	C50-3150	0 dB	C50-5000	0 dB	C100-5000	0 dB
D _{nT,w} + Ctr =	55 dB						
Evaluation based on field measurement results obtained by an engineering method		Ctr ₅₀₋₃₁₅₀	-1 dB	Ctr ₅₀₋₅₀₀₀	-1 dB	Ctr ₁₀₀₋₅₀₀₀	1 dB

Name of test company : AF Acoustics

Signature: 

Standardized level difference according to ISO 16283-1
Field measurements of airborne sound insulation between rooms

Client: Audio Schemes Ltd

Date of test: 09/09/2020

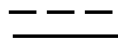
Description and identification of the building construction and the test arrangement, direction of measurement:

Airborne wall, Studio 2 to Studio 3

Construction details: -

Source room volume:
 Receiving room volume:

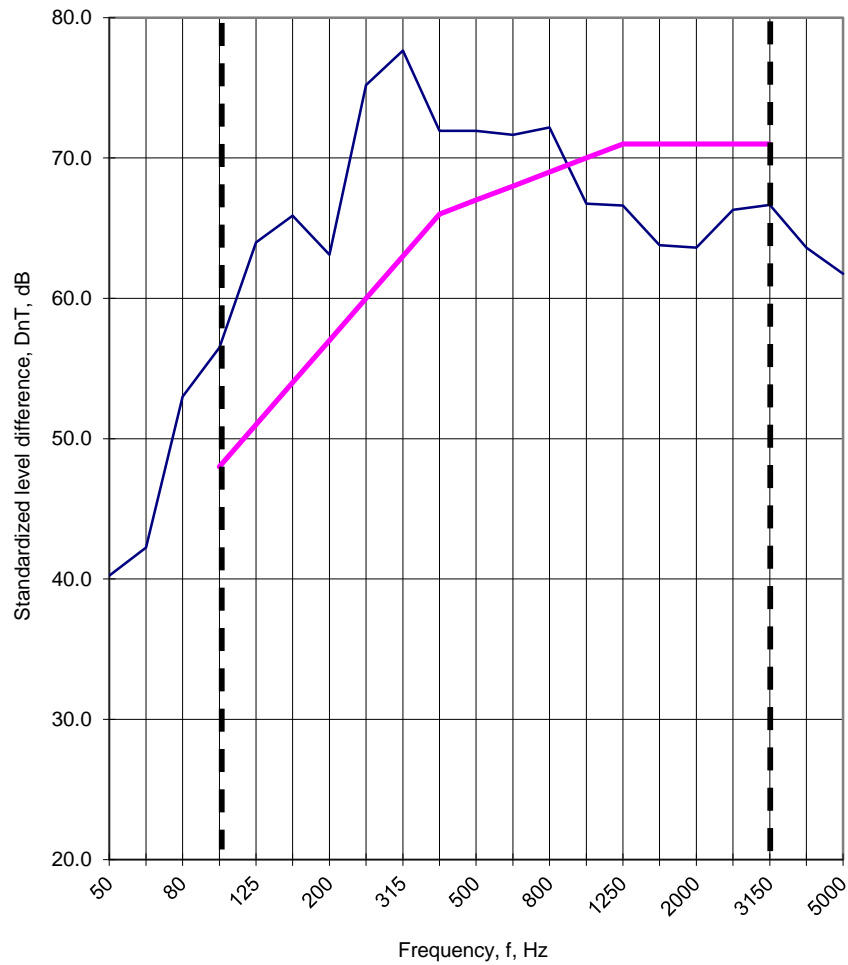
25 m³
 23 m³



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

Frequency f Hz	D _{nT} (one-third octave) dB
50	40.2
63	42.2
80	53.0
100	56.5
125	64.0
160	65.9
200	63.1
250	75.2
315	77.7
400	71.9
500	71.9
630	71.7
800	72.2
1000	66.8
1250	66.6
1600	63.8
2000	63.6
2500	66.3
3150	66.7
4000	63.6
5000	61.8

* Signifies value at limit of measurement



Rating according to ISO 717-1

D _{nT,w} (C;Ctr) =	67 (-1 ; 0) dB	C ₅₀₋₃₁₅₀	-1 dB	C ₅₀₋₅₀₀₀	-2 dB	C ₁₀₀₋₅₀₀₀	-2 dB
D _{nT,w} + Ctr =	67 dB						
Evaluation based on field measurement results obtained by an engineering method		C _{tr,50-3150}	-6 dB	C _{tr,50-5000}	-7 dB	C _{tr,100-5000}	-1 dB

Name of test company : AF Acoustics

Signature:

**Standardized level difference according to ISO 16283-1
Field measurements of airborne sound insulation between rooms**

Client: Audio Schemes Ltd

Date of test: 09/09/2020

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

Airborne wall, Studio 2 to Corridor

Construction details: -

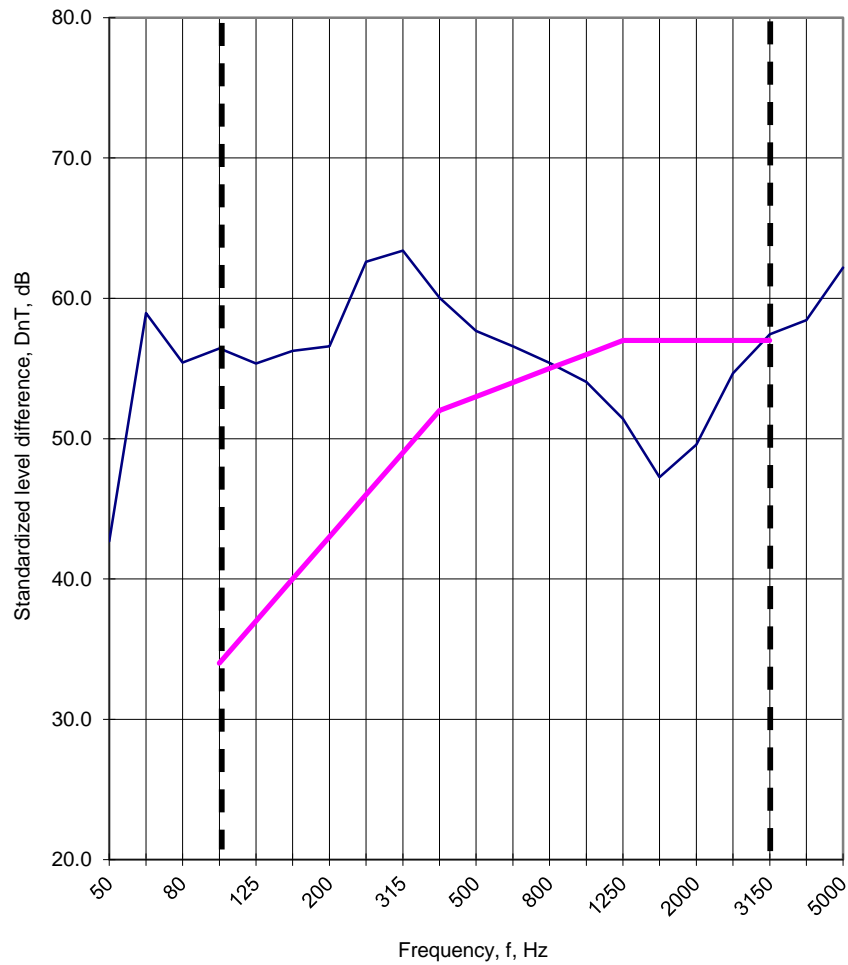
Source room volume:
Receiving room volume:

25 m³
-

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

Frequency f Hz	D _{nT} (one-third octave) dB
50	42.7
63	59.0
80	55.4
100	56.4
125	55.4
160	56.2
200	56.6
250	62.6
315	63.4
400	60.1
500	57.7
630	56.6
800	55.4
1000	54.0
1250	51.4
1600	47.2
2000	49.6
2500	54.7
3150	57.4
4000	58.4
5000	62.2

* Signifies value at
limit of measurement



Rating according to ISO 717-1

D _{nT,w} (C;Ctr) =	53 (-1 ; 0) dB	C50-3150	-1 dB	C50-5000	0 dB	C100-5000	0 dB
D _{nT,w} + Ctr =	53 dB						
Evaluation based on field measurement results obtained by an engineering method		Ctr,50-3150	-1 dB	Ctr,50-5000	-1 dB	Ctr,100-5000	0 dB

Name of test company : AF Acoustics

Signature: