



**S B CONSULTING**

**Engineering & Acoustics Limited**

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**ANC** ACOUSTICS &  
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# **Pre-Completion Test (PCT)**

## **Report**

### **of**

## **930 Oxford Road**

## **(Basement), Reading.**

## **RG30 6TJ**

Our Report Number: 056/17

***This report is an ANC Registered Report with the unique registration number 54415.***

Report written by & checked by,

Mr S D Bruce, CEng BEng MIMechE MIOA.

Date of Issue: 22/03/18



### **1) Introduction**

The current edition of Building Regulations Part E (ADE) came into force on 1 July 2003 and introduced pre-completion testing (PCT) for sound insulation as a means of demonstrating compliance for all residential developments.

The following sets of test have been undertaken to establish the acoustic performance of the separating elements between individual dwellings (walls and floors as applicable, depending upon the building layout). It should be noted that tests can only be undertaken between rooms. Stairwells, hallways and corridors must not be tested.

### **2) Test & Client Details**

|                           |                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Address under Test:       | 930 Oxford Road (Basement)<br>Reading<br>RG30 6TJ                                                                        |
| Date of Test:             | 13/03/18                                                                                                                 |
| Type of Building:         | Basement converted into 2 flats.                                                                                         |
| Person in charge of test: | Mr S D Bruce, <i>CEng MIMechE MIOA</i><br><i>Registered Tester under the ANC Approved Scheme at the time of testing.</i> |
| Client details:           | Mr H Raichura<br>c/o Hilsdon Holmes Ltd<br>Butterbee House<br>Launceston Road<br>Callington<br>Cornwall<br>PL17 8DS      |

### **3) Test Standards, Methods & Exceptions**

The testing and subsequent calculations and results presented in this report have been conducted in full accordance with the following standards, with the any exception listed.

- Annex B of ADE
- BS EN ISO 140-4:1988
- BS EN ISO 140-7:1998
- BS EN ISO 717-1:1997 (incorporating amendment No.1)
- BS EN ISO 717-2:1997 (incorporating amendment No.1)
- BS EN 20354:1993 (but referring to ISO140-7:1998 for source and microphone positions, and number of decays)

In particular the following test methods have been adopted:



- A single sound source was used at all times.
- Airborne tests were carried out using two loudspeaker positions, with one measurement taken in the source and receiver room for each loudspeaker position.
- Impact tests were carried out using four tapping machine positions, with one measurement taken in the receiver room for each tapping machine position.
- All measurements were taken using the Manual Moving Microphone method with a 30 second sweep time.
- The test engineer was present in the room when measurements were being taken.
- Reverberation time ( $RT_{20}$ ) was measured using interrupted pink noise at three positions, with two decays at each of the three positions.

### Exceptions:

- Ground floor Salon was fitted out and furnished
- Garden flat bathroom was below the recommended room volume of 25m<sup>3</sup>.

### 4) Test Equipment

The following test equipment has been used to undertake all tests reported herein.

| Item                                 | Manufacturer / Model                                           | Serial Number           | Calibration Due                                          |
|--------------------------------------|----------------------------------------------------------------|-------------------------|----------------------------------------------------------|
| Sound Analyser                       | Norsonic, type 118<br>Preamp type 1206<br>Microphone type 1225 | 31979<br>31008<br>72965 | 06/04/19<br>also<br>field calibrated<br>before each use. |
| Acoustic Calibrator                  | Norsonic, type 1251                                            | 31523                   | 06/04/18                                                 |
| Loudspeaker                          | Norsonic, type 250<br>(hemi-dodecahedron)                      | 31449                   | N/A                                                      |
| Power Amplifier /<br>Noise Generator | Norsonic, type 280                                             | 2803694                 | N/A                                                      |
| Tapping Machine                      | Norsonic, type 211A                                            | 31475                   | 16/01/20                                                 |

### 5) Acceptance Criteria

The building under test contains two flats formed by “change of use”. The following sound insulation levels must be achieved and demonstrated (where possible) through testing to comply with Part E of the Building Regulations:

| Separating Element                         | Airborne                            | Impact                      |
|--------------------------------------------|-------------------------------------|-----------------------------|
| Separating floor between dwellings & salon | $D_{nT,w} + C_{tr} = 43$ dB or more | $L'_{nT,w} = 64$ dB or less |
| Separating wall between dwellings          | $D_{nT,w} + C_{tr} = 43$ dB or more | Not Applicable              |

**6) Construction Details Under Test**

Construction details of the party floor and/or wall under test are given below:

| Separating Element        | Construction Details                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Separating Floor Detail 1 | 8/9" joists, push fitted standard Rockwool 100mm sound insulation slabs, new 15mm GTEC fire board, skimmed, 50mm softwood timber over the new ceiling at 600mm centres, push fitted 50mm RW3-60kg/m <sup>3</sup> Rockwool, installed heavyduty SRS resilient bars at 400mm centres and fitted SRS Maxiboard with manufacturers supplied glue and sealants. Skimmed finish. |
| Separating Wall Detail 1  | Original 100mm block wall with independent timber frame wall lining comprising of Maxiboard and mineral wool slab.                                                                                                                                                                                                                                                         |

**7) Test Rooms & Results Summary**

The following pairs of rooms were selected by the test engineer.

| Room Identifier                     | Element Under Test | Step / Stagger |
|-------------------------------------|--------------------|----------------|
| Ground Floor Salon                  | Floor Detail 1     | None           |
| Basement Flat Living Room & Bedroom |                    |                |
| Garden Flat Bathroom                | Wall Detail 1      | None           |
| Basement Flat Living Room           |                    |                |

The tests undertaken and the calculated results are summarised below:

| Source Room (airborne)    |                          | Receiver Room (airborne)  |                          | Measured $D_{nT,w} + C_{tr}$ (dB) | Measured $L'_{nT,w}$ (dB) | Required Sound Insulation Performance                       | Pass / Fail |
|---------------------------|--------------------------|---------------------------|--------------------------|-----------------------------------|---------------------------|-------------------------------------------------------------|-------------|
| Description               | Volume (m <sup>3</sup> ) | Description               | Volume (m <sup>3</sup> ) |                                   |                           |                                                             |             |
| Ground Floor Salon        | 101                      | Basement Flat Living Room | 41                       | 50                                | 57                        | $D_{nT,w} + C_{tr} \geq 43$<br>dB<br>$L'_{nT,w} \leq 64$ dB | Pass        |
| Ground Floor Salon        | 101                      | Basement Flat Bedroom     | 42                       | 47                                | 56                        |                                                             | Pass        |
| Basement Flat Living Room | 41                       | Garden Flat Bathroom      | 16                       | 52                                | N/A                       |                                                             | Pass        |

*Note: For impact tests, the source room is always above the receiver room. For airborne test, the source room is always the larger room.*

**Site Conditions During Testing:** Some background noise due to rain on skylight affecting Garden Flat Bathroom test. See "Detailed Test Results" for figures & graphs for all tests.



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### Notice to Building Control Officer

#### Certification of Test Results

ANC operates an online, secure, paperless certification system for sound insulation tests.

The online verification (certification) system means that Building Control Bodies will need to follow the steps below to verify the results quoted in the relevant test report:

1. Go to the ANC secure server at [www.theanc.co.uk](http://www.theanc.co.uk)
2. Navigate to the [ADvANCE](#) page which links to the ANC site available for use by BCOs.
3. Enter the following in the spaces provided:

Task Number: 54415

Task Password: AEYSWF

4. Select role "Building Control Officer" and press "Login"
5. You will then see a summary list of results of all the Tests undertaken to date for this project (Task) as held on the secure primary server and you can print this table for your records.



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# Detailed

# Test Results



### Standardized level difference according to ISO 140-4 Field measurements of airborne sound insulation between rooms

ANC Test Number: 54415/01

Source Room: Ground Floor Salon

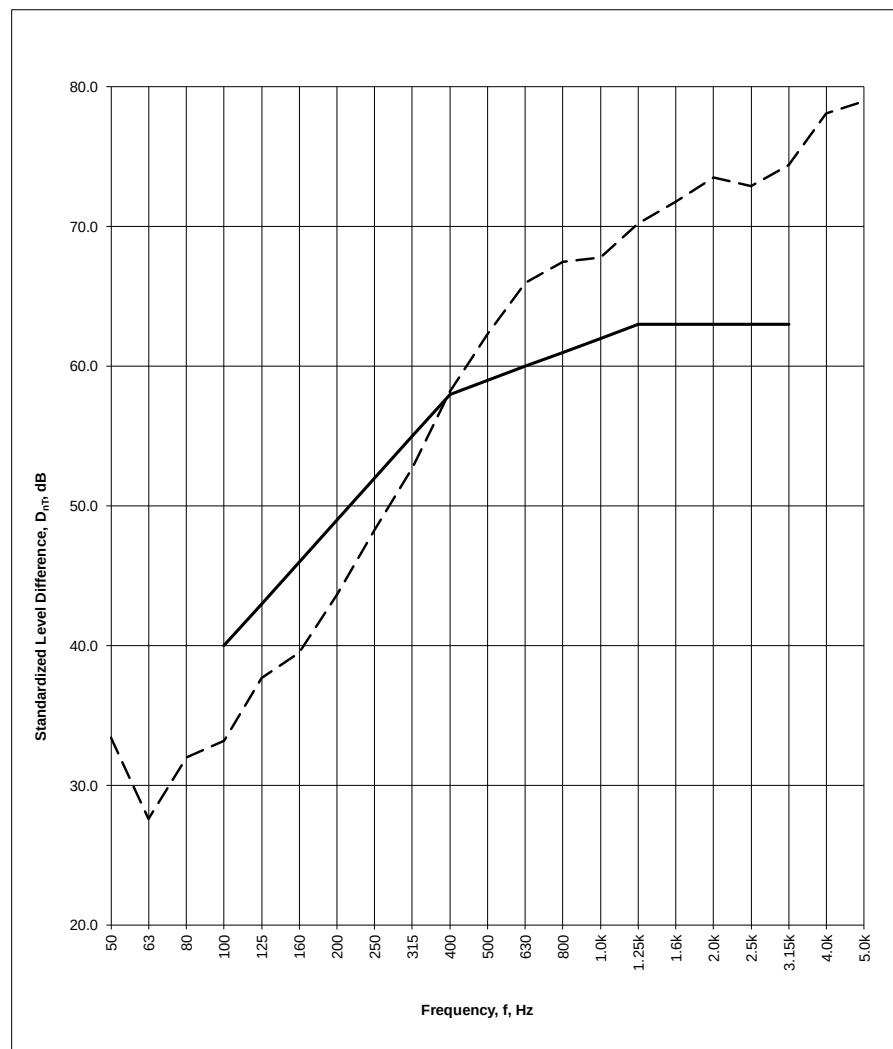
Receiver Room: Basement Flat Living Room

Construction Detail: 8/9" floor joists, 100mm sound insulation slabs, new 15mm GTEC fire board ceiling, skimmed, 50mm softwood timber over the new ceiling, 50mm RW3-60kg/m3 Rockwool, installed heavy-duty SRS resilient bars at 400mm centres with Maxiboard & skim finish.

(50Hz-80Hz & 4kHz-5kHz for information only)  
(≥ denotes limit of measurement)

————— Curve of reference values (ISO 717-1)

| Frequency<br><i>f</i><br>Hz | $D_{nT}$<br>(one-third<br>octave)<br>dB |
|-----------------------------|-----------------------------------------|
| 50                          | 33.4                                    |
| 63                          | 27.6                                    |
| 80                          | 32.0                                    |
| 100                         | 33.2                                    |
| 125                         | 37.7                                    |
| 160                         | 39.5                                    |
| 200                         | 43.7                                    |
| 250                         | 48.3                                    |
| 315                         | 52.7                                    |
| 400                         | 58.2                                    |
| 500                         | 62.3                                    |
| 630                         | 66.0                                    |
| 800                         | 67.5                                    |
| 1.0k                        | 67.8                                    |
| 1.25k                       | 70.2                                    |
| 1.6k                        | 71.8                                    |
| 2.0k                        | 73.5                                    |
| 2.5k                        | 72.9                                    |
| 3.15k                       | ≥74.4                                   |
| 4.0k                        | ≥78.1                                   |
| 5.0k                        | ≥79.0                                   |



Rating According to ISO 717-1:  $D_{nT,w} (C;C_{tr}) = 59 (-3;-9) \text{ dB} / D_{nT,w} + C_{tr} = 50 \text{ dB}$

Evaluation based on field measurement. Results obtained by an engineering method.



### Standardized level difference according to ISO 140-4 Field measurements of airborne sound insulation between rooms

ANC Test Number: 54415/02

Source Room: Ground Floor Salon

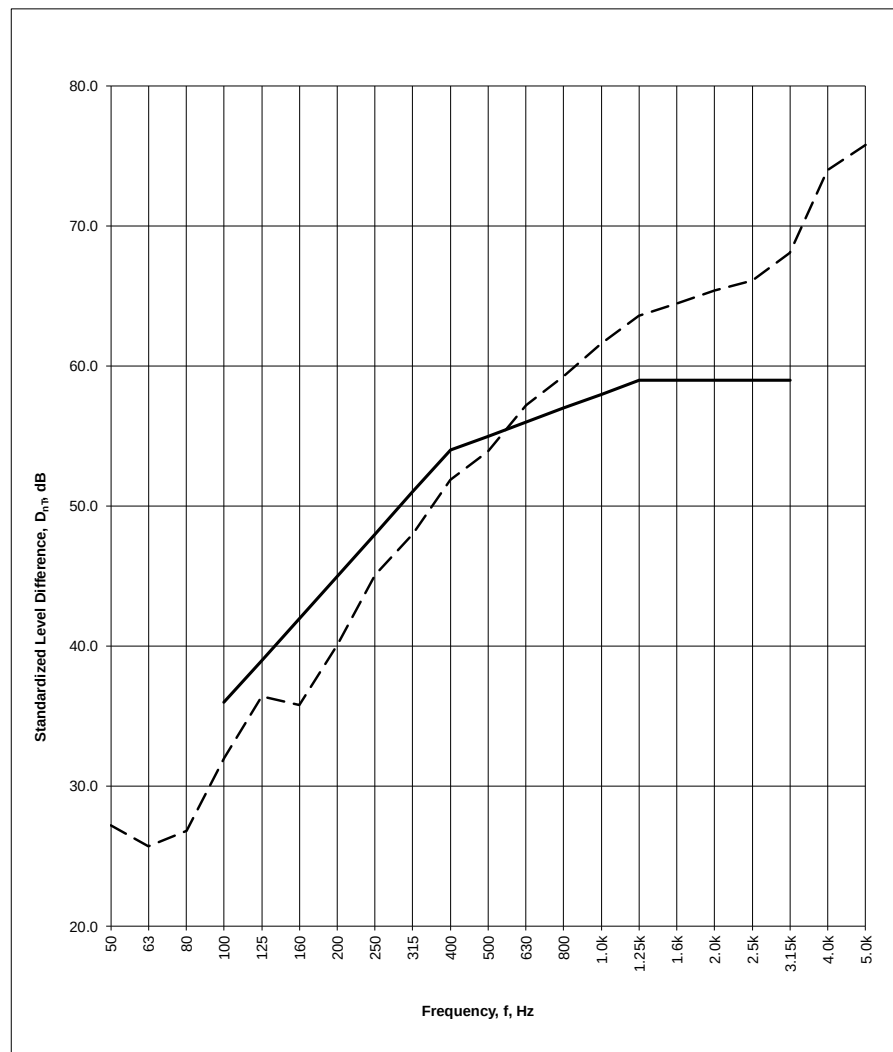
Receiver Room: Basement Flat Bedroom

Construction Detail: 8/9" floor joists, 100mm sound insulation slabs, new 15mm GTEC fire board ceiling, skimmed, 50mm softwood timber over the new ceiling, 50mm RW3-60kg/m3 Rockwool, installed heavy-duty SRS resilient bars at 400mm centres with Maxiboard & skim finish.

(50Hz-80Hz & 4kHz-5kHz for information only)  
(≥ denotes limit of measurement)

————— Curve of reference values (ISO 717-1)

| Frequency<br><i>f</i><br>Hz | $D_{nT}$<br>(one-third<br>octave)<br>dB |
|-----------------------------|-----------------------------------------|
| 50                          | 27.2                                    |
| 63                          | 25.7                                    |
| 80                          | 26.8                                    |
| 100                         | 32.0                                    |
| 125                         | 36.4                                    |
| 160                         | 35.8                                    |
| 200                         | 40.1                                    |
| 250                         | 45.1                                    |
| 315                         | 48.0                                    |
| 400                         | 51.9                                    |
| 500                         | 53.9                                    |
| 630                         | 57.2                                    |
| 800                         | 59.3                                    |
| 1.0k                        | 61.6                                    |
| 1.25k                       | 63.6                                    |
| 1.6k                        | 64.5                                    |
| 2.0k                        | 65.4                                    |
| 2.5k                        | 66.1                                    |
| 3.15k                       | 68.1                                    |
| 4.0k                        | 74.0                                    |
| 5.0k                        | 75.8                                    |



Rating According to ISO 717-1:  $D_{nT,w}$  (C;C<sub>tr</sub>) = 55 (-2;-8) dB /  $D_{nT,w} + C_{tr} = 47$  dB

Evaluation based on field measurement. Results obtained by an engineering method.



### Standardized impact sound pressure levels according to ISO 140-7 Field measurements of impact sound insulation of floors

ANC Test Number: 54415/03

Source Room: Ground Floor Salon

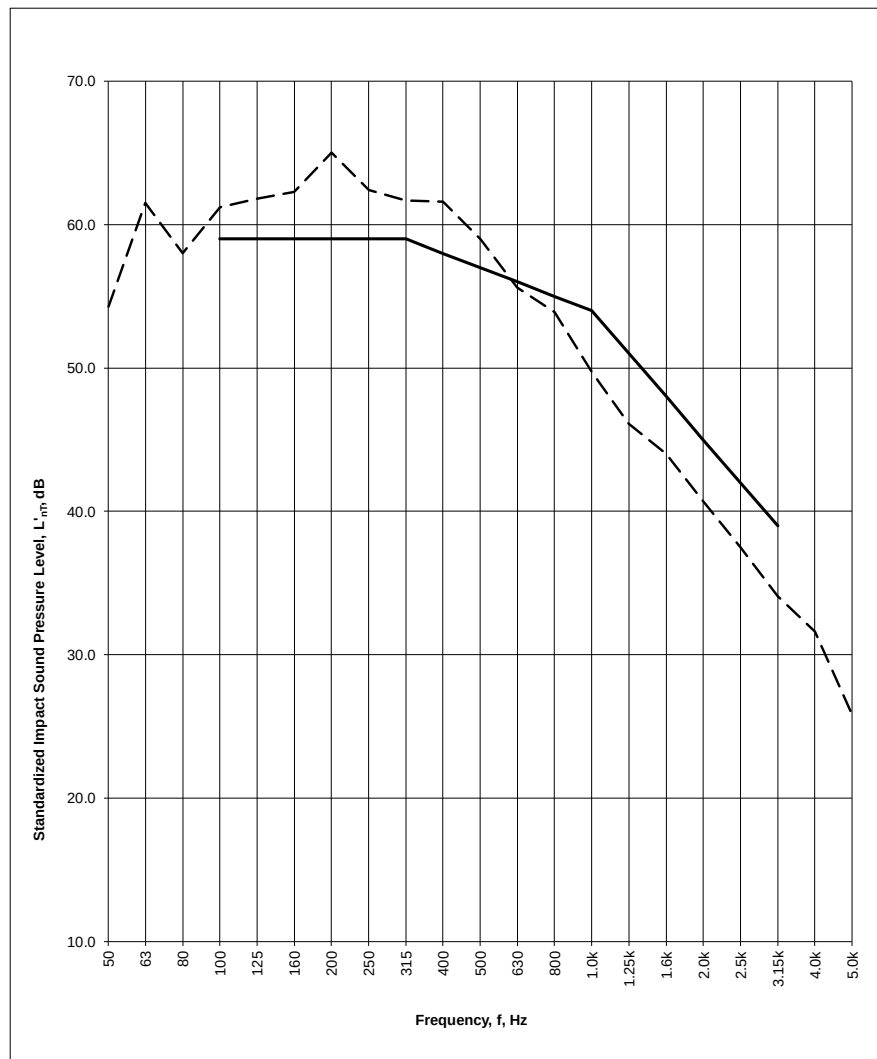
Receiver Room: Basement Flat Living Room

Construction Detail: 8/9" floor joists, 100mm sound insulation slabs, new 15mm GTEC fire board ceiling, skimmed, 50mm softwood timber over the new ceiling, 50mm RW3-60kg/m3 Rockwool, installed heavy-duty SRS resilient bars at 400mm centres with Maxiboard & skim finish.

(50Hz-80Hz & 4kHz-5kHz for information only)  
(≤ denotes limit of measurement)

— Curve of reference values (ISO 717-2)

| Frequency<br><i>f</i><br>Hz | $D_{nT}$<br>(one-third<br>octave)<br>dB |
|-----------------------------|-----------------------------------------|
| 50                          | 54.3                                    |
| 63                          | 61.5                                    |
| 80                          | 58.0                                    |
| 100                         | 61.2                                    |
| 125                         | 61.8                                    |
| 160                         | 62.3                                    |
| 200                         | 65.0                                    |
| 250                         | 62.4                                    |
| 315                         | 61.7                                    |
| 400                         | 61.6                                    |
| 500                         | 59.0                                    |
| 630                         | 55.6                                    |
| 800                         | 53.9                                    |
| 1.0k                        | 49.7                                    |
| 1.25k                       | 46.1                                    |
| 1.6k                        | 44.0                                    |
| 2.0k                        | 40.7                                    |
| 2.5k                        | 37.5                                    |
| 3.15k                       | 34.1                                    |
| 4.0k                        | 31.6                                    |
| 5.0k                        | 54.3                                    |



Rating According to ISO 717-2:  $L'_{nT,w} = 57$  dB

Evaluation based on field measurement. Results obtained by an engineering method.



### Standardized impact sound pressure levels according to ISO 140-7 Field measurements of impact sound insulation of floors

ANC Test Number: 54415/04

Source Room: Ground Floor Salon

Receiver Room: Basement Flat Bedroom

Construction Detail: 8/9" floor joists, 100mm sound insulation slabs, new 15mm GTEC fire board ceiling, skimmed, 50mm softwood timber over the new ceiling, 50mm RW3-60kg/m3 Rockwool, installed heavy-duty SRS resilient bars at 400mm centres with Maxiboard & skim finish.

(50Hz-80Hz & 4kHz-5kHz for information only)  
(≤ denotes limit of measurement)

— Curve of reference values (ISO 717-2)

| Frequency<br><i>f</i><br>Hz | <i>D</i> <sub>nT</sub><br>(one-third<br>octave)<br>dB |
|-----------------------------|-------------------------------------------------------|
| 50                          | 64.3                                                  |
| 63                          | 69.2                                                  |
| 80                          | 64.9                                                  |
| 100                         | 64.6                                                  |
| 125                         | 62.3                                                  |
| 160                         | 63.5                                                  |
| 200                         | 63.1                                                  |
| 250                         | 58.6                                                  |
| 315                         | 57.6                                                  |
| 400                         | 58.4                                                  |
| 500                         | 56.3                                                  |
| 630                         | 53.8                                                  |
| 800                         | 53.7                                                  |
| 1.0k                        | 50.7                                                  |
| 1.25k                       | 48.6                                                  |
| 1.6k                        | 46.5                                                  |
| 2.0k                        | 42.9                                                  |
| 2.5k                        | 38.1                                                  |
| 3.15k                       | 35.5                                                  |
| 4.0k                        | 30.8                                                  |
| 5.0k                        | 25.7                                                  |



Rating According to ISO 717-2: ***L'*<sub>nT,w</sub> = 56 dB**

Evaluation based on field measurement. Results obtained by an engineering method.



### Standardized level difference according to ISO 140-4 Field measurements of airborne sound insulation between rooms

ANC Test Number: 54415/05

Source Room: Basement Flat Living Room

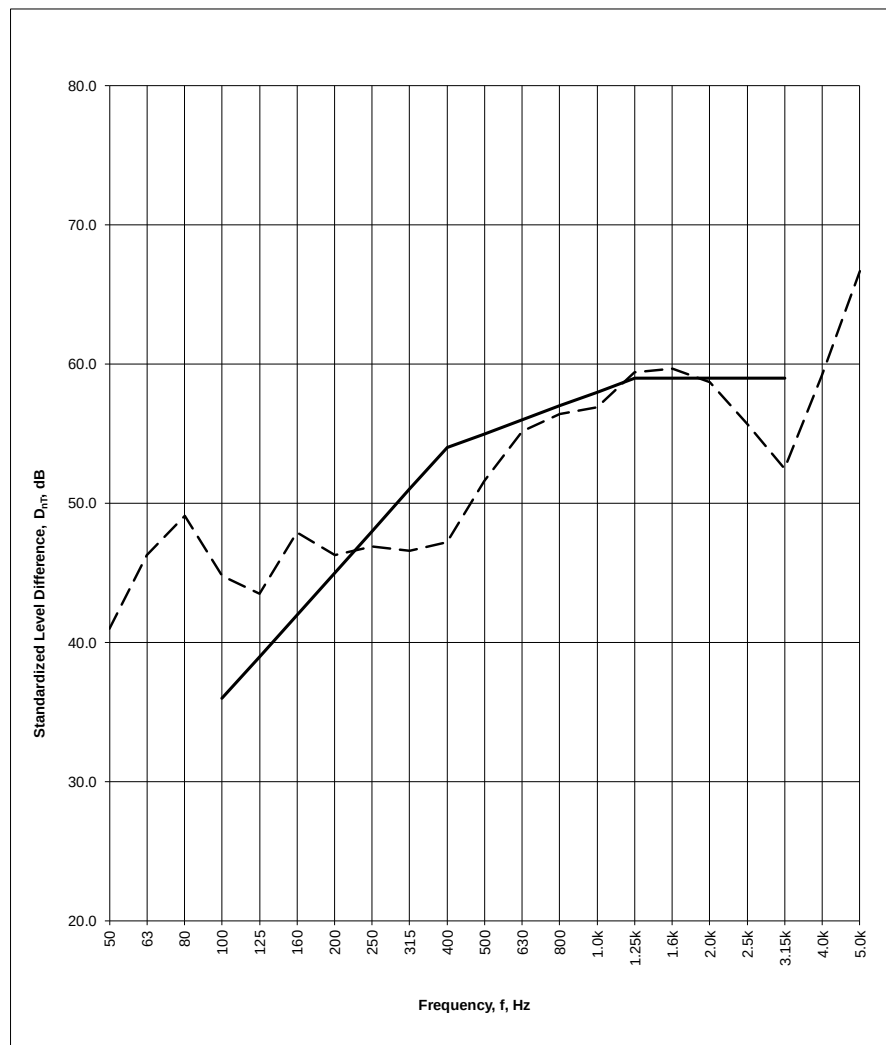
Receiver Room: Garden Flat Bedroom

Construction Detail: Original 100mm block wall with independent timber frame wall lining comprising of Maxiboard and mineral wool slab.

(50Hz-80Hz & 4kHz-5kHz for information only)  
(≥ denotes limit of measurement)

————— Curve of reference values (ISO 717-1)

| Frequency<br><i>f</i><br>Hz | $D_{nT}$<br>(one-third<br>octave)<br>dB |
|-----------------------------|-----------------------------------------|
| 50                          | ≥41.0                                   |
| 63                          | ≥46.3                                   |
| 80                          | 49.1                                    |
| 100                         | 44.8                                    |
| 125                         | 43.5                                    |
| 160                         | 47.9                                    |
| 200                         | 46.3                                    |
| 250                         | 46.9                                    |
| 315                         | 46.6                                    |
| 400                         | 47.2                                    |
| 500                         | 51.6                                    |
| 630                         | 55.2                                    |
| 800                         | ≥56.4                                   |
| 1.0k                        | ≥56.9                                   |
| 1.25k                       | ≥59.4                                   |
| 1.6k                        | ≥59.7                                   |
| 2.0k                        | ≥58.7                                   |
| 2.5k                        | ≥55.7                                   |
| 3.15k                       | ≥52.5                                   |
| 4.0k                        | ≥59.2                                   |
| 5.0k                        | ≥66.7                                   |



Rating According to ISO 717-1:  $D_{nT,w}$  (C;C<sub>tr</sub>) = 55 (-1;-3) dB /  $D_{nT,w}+C_{tr}$  = 52 dB

Evaluation based on field measurement. Results obtained by an engineering method.