



**NOS. 27 - 31 WESTBROOK ROAD  
MARGATE, KENT CT9 5AU**

**SOUND INSULATION TESTING**

**(ANC REGISTERED TASK NO. 18753335 : PASSWORD: YMWW5N)**

**On behalf of:  
Mr Jamie Chapman**

Report No. MRL/100/1269.2v1  
March 2018

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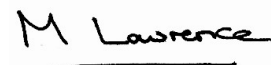
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On behalf of:  
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## Notice to Building Control Officer

### 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: 53335

Task Password: YMWW5N

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.

## 1.0 SITE & TESTING DETAILS

1.1 MRL Acoustics Limited is registered under the Association of Noise Consultants' Registration Scheme to carry out pre-completion sound insulation testing (ANC Registered Organisation No. 187). The testing was carried out by Mr M. Lawrence who is an approved tester (No. 187/1). This report is an ANC Registered Report with the unique Registration Number 53335.

### Site Details

1.2 The details of the development at which the sound insulation testing was carried out are as follows:

Site address:	Nos. 27 - 31 Westbrook Road, Margate, Kent CT9 5AU
Development type:	Flats formed by material change of use
No. of dwellings:	9

### Testing Details

1.3 The test details are as follows:

Test Date(s):	16 <sup>th</sup> March 2018
No. separating walls tested:	1
No. of separating floors tested:	2
Cupboards, wardrobes etc:	None
Background noise due to:	Intermittent road traffic
Furnishings:	None
Floor coverings:	None

1.4 Details of the constructions, test rooms and room volumes are given on the charts in Appendix III. The construction details are based on information provided by the client.

- 1.5 The tests detailed in this report have been carried out in full accordance with ISO 140-4 and ISO 140-7. All the relevant procedures described in Annex B of Approved Document E (2003) of the Building Regulations have been followed.
- 1.6 A glossary of the technical terms used in this report is provided in Appendix I. Testing methodology is described in Appendix II.

### Equipment

- 1.7 Details of the equipment used during the sound insulation tests are shown in Table 1. Current calibration certificates for the equipment can be provided if required.

**Table 1: Details of Equipment Used During Sound Insulation Tests**

Equipment Description	Manufacturer	Type Number	Serial Number	Date of Expiration of Calibration	Calibration Certification Number
Sound Level Meter	Rion	Type NA-28	01291241	04/04/2018	1604159
Pre-Amplifier	Rion	NH-23	81273	04/04/2018	1604159
Calibrator	Rion	Type NC-74	35094450	01/04/2018	1604157
Tapping Machine	ANV	Type TM01	TM01008	01/04/2018	1604158
Power Amplifier	Stage Line Foldback Speaker	MAK-12P 12" 180W 248740	OBJH0489	-	-
Sound Source	Minirator Noise Generator	MR2	681869-061010459	-	-

## 2.0 ASSESSMENT OF MEASURED SOUND INSULATION PERFORMANCE

### Sound Insulation Test Results

2.1 The results of the sound insulation tests are detailed in Appendix III and are summarised in Table 2.

**Table 2: Sound Insulation Test Results**

Test No.	Source Room	Receiver Room	Test Type & Required Sound Insulation	Measured Sound Insulation	Pass/Fail
1	Flat 6 Lounge (80m <sup>3</sup> )	Flat 5 Lounge (50m <sup>3</sup> )	Airborne Wall 43 dB D <sub>nT,w</sub> + C <sub>tr</sub> (minimum)	61 dB D <sub>nT,w</sub> + C <sub>tr</sub>	Pass
2	Flat 5 Lounge (60m <sup>3</sup> )	Flat 1 Bedroom 1 (60m <sup>3</sup> )	Airborne Floor 43 dB D <sub>nT,w</sub> + C <sub>tr</sub> (minimum)	46 dB D <sub>nT,w</sub> + C <sub>tr</sub>	Pass
3	Flat 5 Bedroom 2 (36m <sup>3</sup> )	Flat 1 Bedroom 2 (36m <sup>3</sup> )	Airborne Floor 43 dB D <sub>nT,w</sub> + C <sub>tr</sub> (minimum)	46 dB D <sub>nT,w</sub> + C <sub>tr</sub>	Pass
4	Flat 5 Lounge (60m <sup>3</sup> )	Flat 1 Bedroom 1 (60m <sup>3</sup> )	Impact Floor 64 dB L' <sub>nT,w</sub> (maximum)	64 dB L' <sub>nT,w</sub>	Pass
5	Flat 5 Bedroom 2 (36m <sup>3</sup> )	Flat 1 Bedroom 2 (36m <sup>3</sup> )	Impact Floor 64 dB L' <sub>nT,w</sub> (maximum)	64 dB L' <sub>nT,w</sub>	Pass

# Rooms smaller than the recommended volume of 25m<sup>3</sup> in Approved Document E (2003) of the Building Regulations

### Conclusion

2.2 The results in Table 2 show that the tested party walls and party floors have met the minimum requirements for sound insulation as specified in Approved Document E (2003) of the Building Regulations for flats formed by material change of use.

2.3 The results of all tests have been registered for certification under the Association of Noise Consultants' Registration Scheme and can be viewed online at <http://www.theanc.co.uk>, then going to 'Building Control' and clicking on the 'ADvANCE' logo, using the Task Reference Number 53335 and Password YMWW5N.

**APPENDIX I – GLOSSARY OF TERMS**

$L_{eq}$  This is the 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period. In other words,  $L_{eq}$  is the level of a continuous noise which has the same total energy as the real fluctuating noise, measured over the same time period.

RT Measured reverberation time in receiver room in seconds.

$RT_0$  Standard reverberation time of 0.5 seconds

**Airborne Sound Insulation Testing**

D Level difference, effectively  $D = \text{source level} - (\text{receiver level corrected for background level})$

$D_{nT}$  Standardised level difference, standardised to a receiver room reverberation time of 0.5 seconds,  $D_{nT} = D + 10 \log (RT/RT_0)$

$D_{nT,w}$  Weighted standardised level difference, a single figure generated by comparing the  $D_{nT}$  with a reference curve. The reference curve is shifted in 1dB steps until the sum of adverse deviation of the test curve, compared to the reference curve, is as large as possible, but no more than 32.0 dB. The value of the shifted reference curve at 500Hz is taken as the  $D_{nT,w}$ . N.B. As  $D_{nT,w}$  for airborne transmission represents a level difference, an improvement generates a larger figure.

$C_{tr}$  A 'spectrum adaptation term' used to correct the  $D_{nT,w}$  in order to reflect low frequency performance of the wall or floor tested.



### Impact Sound Insulation Testing

- L Level, effectively  $L = \text{receiver level corrected for background level}$
- $L'_{nT}$  Standardised level, standardised to a receiver room reverberation time of 0.5 seconds,  
 $L'_{nT} = L - 10 \log (RT/RT_0)$
- $L'_{nT,w}$  Weighted standardised level, a single figure generated by comparing the  $L'_{nT}$  with a reference curve. The reference curve is shifted in 1dB steps until the sum of adverse deviation of the test curve, compared to the reference curve, is as large as possible, but no more than 32.0 dB. The value of the shifted reference curve at 500Hz is taken as the  $L'_{nT,w}$ . N.B. As  $L'_{nT,w}$  for impact transmission represents an absolute level, an improvement generates a smaller figure.

## APPENDIX II – TESTING METHODOLOGY

Testing was carried out in accordance with the relevant sections of the methodology detailed below.

### **Airborne Sound Insulation Tests**

Airborne sound insulation measurements involve generating a high noise level on one side of the test sample (source room) and then measuring the difference in noise levels between the source and receiver rooms. The testing was carried out in full accordance with the requirements of the BS EN ISO 140-4:1998: “Field Measurements of Airborne Sound Insulation between Rooms”. All the relevant procedures described in Annex B of Approved Document E of the Building Regulations have been followed.

Any airborne tests were carried out using a Rion NA-28 Type 1 Sound Level Meter loaded with the Rion NX-28BA Building Acoustics Program Card. A calibration check was carried out before and after the noise measurements and there was no variation in the calibration level.

Pink noise was produced at high volume in the source room and the resultant diffuse sound field was measured in the source room using a ‘sweeping microphone’ method and the transmitted sound was measured using the same method in the receiver room. The source was then moved to a new position and further source room and receiver room measurements were taken. Therefore a total number of two source room and two receiver room measurements were collected. Measurements were taken for a minimum of thirty seconds at each position in the source and receiver rooms. Testing was carried out with all source room and receiver room doors and windows closed.

Background  $L_{eq}$  noise levels were recorded in the receiver room without the sound source operating. Where applicable, corrections for background noise have been made in accordance with BS EN ISO 140-4, Para 6.6.

Receiver room reverberation time (RT) calculations were made using the interrupted noise method by means of a Minirator MR2 pink noise generator and RT calculation algorithms within the Rion NA-28 sound level meter. A total of six RT measurements were made comprising two speaker positions and measurements at three different microphone positions. The results of the measurements in each room were averaged to establish the RT of the room.

All of the above measurements were made over sixteen third-octave bands 100 Hz to 3150 Hz inclusive.

### **Impact Sound Insulation Tests**

Impact sound insulation measurements involve running a specialised tapping machine on a floor in the source room and measuring the resultant noise level in the receiving room below. The testing of party floors was carried out in full accordance with the requirements of the BS EN ISO 140-7:1998: "Field Measurements of Impact Sound Insulation of Floors". All the relevant procedures described in Annex B of Approved Document E of the Building Regulations have been followed.

Any impact tests were carried out using a Rion NA-28 Type 1 Sound Level Meter loaded with the Rion NX-28BA Building Acoustics Program Card. A calibration check was carried out before and after the noise measurements and there was no variation in the calibration level.

An ANV Type TM01 tapping machine was used as the source for the impact testing. For the tests, the tapping machine was placed in four positions in the source room. Measurements of the impact sound pressure level generated by the tapping machine were measured at a total of four microphone positions in the receiver room using a 'sweeping microphone' method. Measurements were taken for a minimum of thirty seconds in the receiver room for each of the four tapping machine positions. Testing was carried out with all source room and receiver room doors and windows closed.

Background  $L_{eq}$  noise levels were recorded in the receiver room without the tapping machine operating. Where applicable, corrections for background noise have been made in accordance with BS EN ISO 140-7, Para 5.6.

Receiver room reverberation time (RT) calculations were made using the interrupted noise method by means of a Minirator MR2 pink noise generator and RT calculation algorithms within the Rion NA-28 sound level meter. A total of six RT measurements were made comprising two speaker positions and measurements at three different microphone positions. The results of the measurements in each room were averaged to establish the RT of the room.

All of the above measurements were made over sixteen third-octave bands 100 Hz to 3150 Hz inclusive.

### **Sound Insulation Test Results Calculation and Rating**

The results of any airborne sound insulation tests have been standardised and rated in accordance with the requirements of EN ISO 717 Part 1: 1997 "Rating of sound insulation in buildings and of building elements - Field measurement of airborne sound insulation between rooms".

The results of any impact sound insulation tests have been standardised and rated in accordance with the requirements of EN ISO 717 Part 2: 1997 "Rating of sound insulation in buildings and of building elements - Field measurement of impact sound insulation of floors".

The single number indices for  $D_{nT,w}$ ,  $C_{tr}$  and  $L'_{nT,w}$  have been calculated using in-house spreadsheets to ensure that the level differences obtained from each source position have been arithmetically averaged as required in Annex B, Paragraph B2.6 of Approved Document E (2003).

## APPENDIX III – SOUND INSULATION TEST SHEETS



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

Client: Jamie Chapman      Date of test: 16/03/2018      Test No. 2

Project: Nos. 27 - 31 Westbrook Road, Margate, Kent

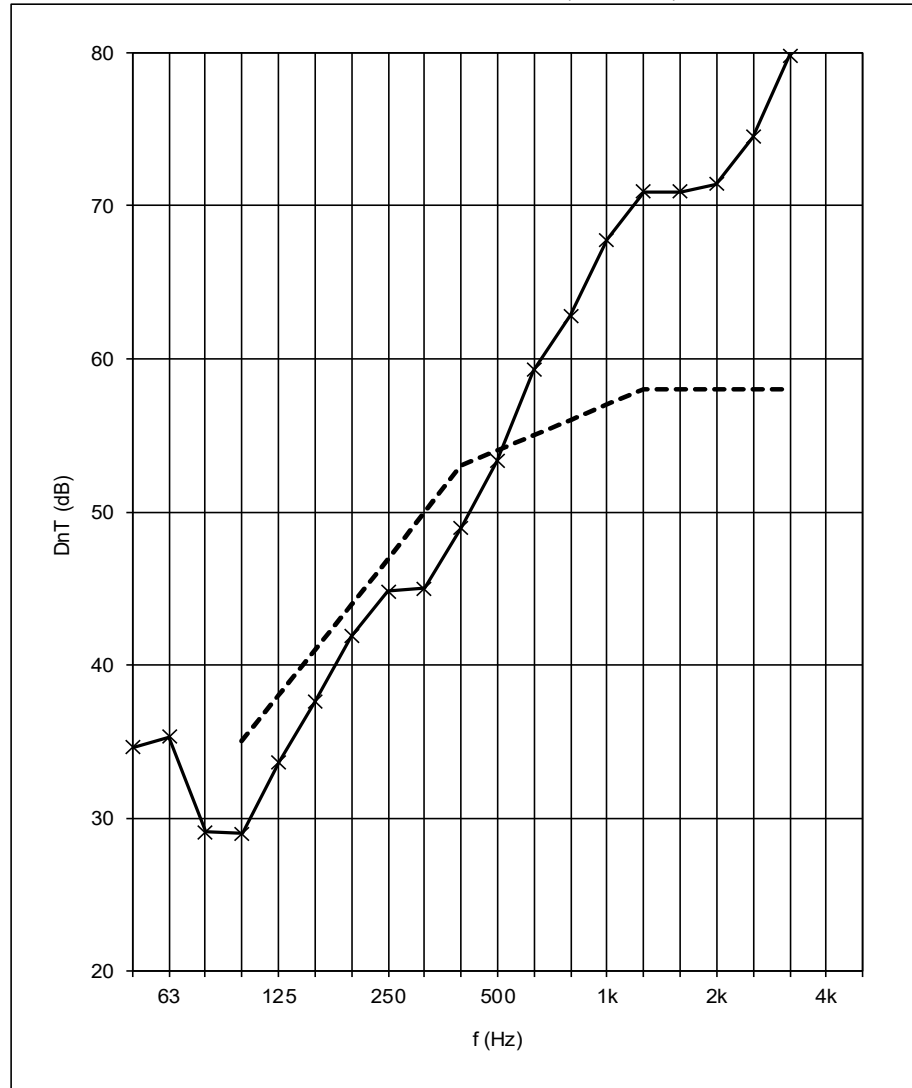
Party Floor: Timber joist floor; floorboards retained and overlaid with 22mm T&G chipboard on resilient layer with 100mm mineral wool insulation laid between the joists. Ceilings comprise 2 x 15mm SoundBloc plasterboard

Source Room: Flat 5      Lounge  
Receiver Room: Flat 1      Bedroom 1

Source room volume (m<sup>3</sup>): 50.0  
Receiving room volume (m<sup>3</sup>): 50.0

----- Shifted reference curve.  
---X---X--- Measurement results (DnT values).

Frequency f Hz	DnT (1/3 octave) dB
50	34.6
63	35.3
80	29.1
100	29.0
125	33.7
160	37.6
200	41.9
250	44.8
315	45.0
400	49.0
500	53.3
630	59.3
800	62.8
1000	67.8
1250	70.9
1600	70.9
2000	71.4
2500	74.5
3150	>= 79.8
4000	>= 84.8
5000	>= 84.7



Rating according to ISO 717-1

DnT,w (C; Ctr) = 54 (-2; -8) dB

No background noise influence on DnT,w

**Background noise influence on C and Ctr**

Evaluation based on field measurement  
results obtained by an engineering method

No. of test report: MRL/100/1269.2v1

Name of test institute: MRL Acoustics Ltd

Date: 20/03/2018

Signature: *M Lawrence*







