

Project: 187Caversahm Road, Caversham, Reading RG1
Client: Spencer Chaplin
ANC Task Reg. No.: 56462

Date: 26/10/2018
Reference: 20181026_4337
Org. No.: 150



Project	187Caversahm Road, Caversham, Reading RG1			
Report Title	Pre-completion Sound Insulation Tests			
Test Organisation	Paragon Acoustic Consultants Ltd (Organisation No: 150)			
ANC Task Number	56462			
Client	Spencer Chaplin			
Author	J Gillott MIOA		Date:	26/10/2018
Checked	Patrick Shortt MSc MIOA		Date:	26/10/2018
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Limitations

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- a) The date on which this assessment was undertaken; and
- b) The date on which the final report is delivered.

Paragon Acoustic Consultants Ltd makes no representation whatsoever concerning the legal significance of its findings or to other legal matters referred to in the following report.

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Opinions, if included herein, 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, Paragon Acoustic Consultants Ltd reserves the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

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1. Executive Summary

Paragon Acoustic Consultants Ltd has undertaken airborne and impact sound insulation testing of structures that separate adjoining dwellings contained within the development known as 187Caversahm Road, Caversham, Reading RG1.

The test results reported herein show that all structures tested met the target values given in the Building Regulations Approved Document E. The results may be viewed via the Association of Noise Consultants "Advance" web site by following the instructions set out at the end of this report.

2. Introduction

Paragon Acoustic Consultants Ltd has been commissioned to measure the airborne and impact sound insulation between rooms for residential purposes being formed as part of a conversion project known as 187Caversahm Road, Caversham, Reading RG1.

The development is formed by material change of use but is not of historic interest.

The client commissioning the tests is as follows:

Spencer Chaplin
13 Brooklin Drive
Emma Green, Reading
RG4 8SR

This report is an ANC Registered Report with the unique registration number 56462.

All tests were undertaken by Paragon Acoustic Consultants Ltd, active registered organisation number 150. All testers were registered under the ANC scheme at the time of testing.

The testing and rating values discussed within this report are based on the guidance and principles contained within the following documents.

- BS EN ISO 140-4: 1998 Acoustics – Measurement of sound insulation in buildings and of building elements. Part 4. Field measurement of airborne sound insulation of building elements;
- BS EN ISO 140-7: 1998 Acoustics – Measurement of sound insulation in buildings and of building elements. Part 7. Field measurements of impact sound insulation of floors;
- BS EN ISO 717-1:1997 Acoustics – Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation;
- BS EN ISO 717-2:1997 Acoustics – Rating of sound insulation in buildings and of building elements. Part 2. Impact sound insulation.

3. Buildings Regulations Approved Document E: Resistance to the Passage of Sound

Part E of Schedule 1 to the Building Regulations 2000 requires that reasonable resistance to sound is provided both between and within dwelling houses, flats and rooms for residential purposes and that reverberation is appropriately controlled within common internal areas of such premises.

Approved Document E (2003 edition incorporating 2004, 2010, 2013 and 2015 amendments) provides guidance on how to achieve reasonable levels of sound insulation between dwellings and offers suggested forms of construction accordingly. Adoption of the forms of construction **does not** of itself guarantee that the required performance levels will be achieved and it is therefore the responsibility of the developer to demonstrate compliance by means of pre-completion tests conducted to the satisfaction of the relevant building control body.

The sound insulation requirements for separating walls, floors and stairs are broadly divided into two categories depending on the exact nature of the usage. These are: dwelling-houses or flats and rooms for residential purposes.

Rooms for residential purposes are interpreted as a room, or suite of rooms, which is not a dwelling-house or flat and which may be used by one or more persons to live and sleep in, including rooms in hotels, hostels, boarding houses, halls of residence and residential homes but not including rooms in hospitals, or other similar establishments, used for patient accommodation.

When considering the provision of reasonable sound insulation for purpose built dwelling-houses and flats and dwelling-houses and flats formed by material change of use, compliance with requirement E1 may be demonstrated by building separating walls, separating floors and stairs that have a separating function, together with associated flanking construction, in such a way that they achieve prescribed sound insulation values set out in the Approved Document.

The building undergoing testing is subject to material change. The required minimum standards of sound insulation that would normally be required for dwelling houses and flats formed by material change of use are given in Table 0.1a of the Approved Document, reproduced below.

Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function (source: ADE Table 0.1a)		
	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Dwelling-houses and flats formed by material change of use		
Walls	43	-
Floors and stairs	43	64

It should be noted that the quantity $D_{nT,w}$ is derived from the sound level difference and higher values represent better sound insulation. Conversely, as $L'_{nT,w}$ represents a transmitted impact noise level, the lower the figure the better.

4. Sound Insulation Tests

4.1 Attendance

The tests were undertaken on 26th October 2018 by the following ANC registered tester:

- J A Gillott MIOA.

4.2 Measuring Equipment

The following instrumentation and equipment was used during the testing:

Equipment Description and Serial Number	Manufacturer	Model Number	Calibration certificate number	Calibration expiry date
Real-time sound level analyser, serial no. 31322	Norsonic	NOR 118	U25471	02/05/2019
Microphone, serial no. 72929	Norsonic	NOR 1225	U25470	02/05/2019
Acoustic Calibrator, serial no. 31080	Norsonic	NOR 1251	U25469	02/05/2019
Preamplifier, serial no. 30366	Norsonic	NOR 1206	U22513	02/05/2019
31-band graphic equalizer	Behringer	FBQ3102	n/a	n/a
2 x Powered monitors	JBL	EON 10	n/a	n/a
2 x Sound sources	Minirator	MR1	n/a	n/a
Tapping Machine, serial no. 2775540	Norsonic	NOR 277	UCRT18/1141	02/02/2020

All acoustic instrumentation carried current manufacturer's calibration certificates, copies of which are given over to Appendix B.

Field calibration checks were made using a calibrator meeting Class 1 of IEC 60942 at the beginning and end of the measurement session. No significant drift was encountered, calibration level 114.0 dB $\pm$ 0.2dB @ 1.0 kHz $\pm$ 0.2%.

4.3 Airborne Sound Insulation Test Procedure

All procedures in Annex B of the Approved Document E to the Building Regulations have been followed except for the following, given in Table A:

Table A: Reasons for non-compliance with Annex B of the Approved Document.

Section of Annex B	Annex B Requirement	Reason for non-compliance	Procedure carried out.
B2.11	Room volumes should be at least 25m ³	Certain room volumes were below 25m ³	Measurement time increased

The testing was carried out in full accordance with BS EN ISO 140-4: 1998 Acoustics – Measurement of sound insulation in buildings and of building elements. Part 4. Field measurement of airborne sound insulation of building elements.

The analyser was programmed to record values of the equivalent continuous sound pressure level including the sixteen 1/3-octave bands with centre frequencies 100 Hz to 3150 Hz inclusive.

Two tripod mounted loudspeakers were used within the source room, connected to separate, uncorrelated sound sources. The loudspeakers were positioned so as to obtain a diffuse sound field within the space, ensuring that the source centres were a minimum distance of 0.5m from any room boundary and not within the same planes parallel to room boundaries (a minimum vertical separation of 150mm was maintained between each loudspeaker enclosure). The loudspeaker separation distances complied with distances given in Annex A.2 of the British Standard.

Each sound source was set to provide the same output level and the loudspeakers adjusted to ensure that, where possible, the sound pressure level in the receiving room was a minimum of 10 dB above the background levels obtained for each 1/3-octave band over the frequency range of interest. The sound field in the source room was inspected and adjusted to ensure compliance with the requirements of Clause 6.2 of the British Standard, i.e., that the sound spectrum should not have level differences greater than 6 dB between adjacent one-third octave bands.

A moving microphone was used with a minimum sweep radius of 0.7 metres. The plane of the traverse was inclined in order to cover a large proportion of the space permitted for measurement. The plane of the traverse was such that it did not lie within 10 degrees of any plane of the room (walls, floors or ceilings). Sound pressure level measurements L_1 and L_2 were obtained at two positions within the source and receiving rooms respectively, using a minimum measurement duration of 60 seconds. Microphone positions complied with the minimum separating distances given in Clause 6.3.2 of the British Standard. All windows, doors and ventilators were kept shut during testing. Cupboard doors were in the open position through all measurements.

4.4 Receive Room Reverberation Time

The receive-room reverberation time T was measured following the general guidance given in BS EN ISO 140-7:1998. Values of T quantify how “live” or “dead” a room sounds, being defined as the time it would take for a sound to decay by 60 dB after the sound source terminates.

The microphone positions for the reverberation time measurements were chosen such that the data were not too strongly influenced by the direct sound. The minimum distance $d_{\min}$ between the source and microphone was calculated according to the ISO 3382 1997 thus:

$$d_{\min} = 2\sqrt{\frac{V}{cT}} \quad [2]$$

Where:

V = the room volume

c = the speed of sound

T = the expected room reverberation time

The number of loudspeaker positions, microphone positions and decay measurements follow clause 5.5 of BS EN ISO 140-7:1998.

4.5 Impact Sound Insulation Test Procedure

All procedures in Annex B of the Approved Document E to the Building Regulations have been followed except for the following, given in Table A:

Table A: Reasons for non-compliance with Annex B of the Approved Document.

Section of Annex B	Annex B Requirement	Reason for non-compliance	Procedure carried out.
B2.11	Room volumes should be at least 25m ³	Certain room volumes were below 25m ³	Measurement time increased

The testing was carried out in full accordance with BS EN ISO 140-7: 1998 Acoustics – Measurement of sound insulation in buildings and of building elements. Part 7. Field measurements of impact sound insulation of floors.

The tapping machine was placed in the source room at a minimum distance of 0.5 metres from any room boundary, with the hammer connecting line oriented at 45° to the direction of the floor joists. Sound pressure level measurements were obtained within the receiving room for each of four randomly located tapping machine positions. A minimum measurement duration of 10 seconds was adopted, exceeding the value given at clause 5.3.4 of BS EN ISO 140-7, following Table 2 above.

For each test, the background sound pressure level was measured in the receiving room using a minimum 60-second sample period. The receive room reverberation time was determined as discussed in Section 4.4 above. All windows and doors were kept shut during testing.

5. Description of Building Construction and Background Noise

The client has advised the floor build ups are as follows:

Floors: Proprietary acoustic flooring system on floor boards on joists with insulation between joists. Resilient bars on underside of joists, 2 X 15mm SoundBloc on underside resilient bars.

Background noise comprised road traffic and occasional passing pedestrian voice levels, both beyond the control of the tester. Where measurements are limited by background noise and where corrections have been necessary (to Clause 6.6 of BS EN ISO 140-4: 1998 or Clause 5.6 of BS EN ISO 140-7: 1998 as appropriate) the results graphs identify values with a “Limit of Measurement” accordingly.

6. Results

The results of all tests are summarised in section 6.1 and 6.2.

6.1 Airborne Tests

The test results show values of the weighted standardised level difference $D_{nT,w}$ with the spectrum adaptation term C_{tr} ($D_{nT,w} + C_{tr}$) calculated in accordance with BS EN ISO 717-1:1997. This quantity has been obtained from values of the standardised level difference D_{nT} according to BS EN ISO 140-4:1998:

$$D_{nT} = D + 10 \lg \left(\frac{T}{T_0} \right) \quad [2]$$

where D (the level difference in dB) is the average sound pressure level measured in a specific frequency band in the receiving room, corrected for the background noise level

and subtracted from the average sound pressure level in the source room. T is the measured reverberation time in the receiving room and T_0 is the reference reverberation time - 0.5 seconds for dwellings.

Table 1: Airborne Sound Insulation Test Results

Test Ref	Source Room		Receive Room		Performance $D_{nT,w} + C_{tr}$		Pass/Fail
	Description	Vol (m ³)	Description	Vol (m ³)	Test Result	ADE:2003 Minimum	
1	1st floor living room	42.3	Gnd floor living room	40.8	44 dB	43 dB	Pass
3	1st floor bedroom	62.7	Gnd floor bedroom*	24	48 dB	43 dB	Pass

* Test result to be treated with caution as the room volume was below 25m³

6.2 Impact Tests

The certificates show values of the weighted standardised impact sound pressure level $L'_{nT,w}$ calculated in accordance with BS EN ISO 717-2:1997. This quantity has been obtained from values of the standardised impact sound pressure level L'_{nT} according to BS EN ISO 140-7:1998:

$$L'_{nT} = L_i + 10 \lg \left(\frac{T}{T_0} \right) \quad [3]$$

where L_i is the average sound pressure level in the receiving room when the floor under test is excited by the standardized impact sound source.

Table 2: Impact Sound Insulation Test Results

Test Ref	Source Room		Receive Room		Performance $L'_{nT,w}$		Pass/Fail
	Description	Vol (m ³)	Description	Vol (m ³)	Result	ADE:2003 Maximum	
2	1st floor living room	42.3	Gnd floor living room	40.8	61 dB	64 dB	Pass
4	1st floor bedroom	62.7	Gnd floor bedroom*	24	62 dB	64 dB	Pass

* Test result to be treated with caution as the room volume was below 25m³

7.0 Conclusions

Paragon Acoustic Consultants Ltd has been commissioned by the client to measure the airborne and impact sound insulation between Sample Residential dwellings at 187Caversahm Road, Caversham, Reading RG1.

The results of all tests set out herein and carried out in accordance with the procedures given in Annex B of the Building Regulations ADE 2003, demonstrate that the separating structures tested achieved the performance values given under requirement E1 of the Building Regulation Approved Document E: 2003 (and amendments).

Appendix A: BS EN ISO 140 Part 4 and Part 7 Graphs

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Standardized level difference according to ISO 140-4:1998																																													
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2500	>= 62.5																																																				
3150	64.6																																																				
4000																																																					
5000																																																					
No. of test report:	3	Name of test institute:	Paragon Acoustic Consultants Ltd																																																		
Date:	26-Oct-18	Signature:																																																			

Project: 187Caversahm Road, Caversham, Reading RG1
Client: Spencer Chaplin
ANC Task Reg. No.: 56462

Date: 26/10/2018
Reference: 20181026_4337
Org. No.: 150

Standardized impact sound pressure levels according to ISO 140-7:1998																																															
Field measurements of impact sound insulation of floors																																															
Client:	Spencer Chaplin	Date of test:	26-Oct-18																																												
Address:	187 Caversham Road																																														
Source Room:	1st floor bedroom	Source room volume:	62.7 m ³																																												
Receiving Room:	Gnd floor bedroom	Receiving room volume:	24.0 m ³																																												
Test element:																																															
Area S of test element:	8.7 m ²																																														
Description of building construction: Proprietary acoustic flooring system on floor boards on joists with insulation between joists. Resilient bars on underside of joists, 2 X 15mm SoundBloc on underside resilient bars.																																															
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px;">Frequency f Hz</th> <th style="padding: 2px;">L'_{nT} (one-third octave) dB</th> </tr> </thead> <tbody> <tr><td>50</td><td></td></tr> <tr><td>63</td><td></td></tr> <tr><td>80</td><td></td></tr> <tr><td>100</td><td>65.5</td></tr> <tr><td>125</td><td>76.2</td></tr> <tr><td>160</td><td>72.2</td></tr> <tr><td>200</td><td>70.2</td></tr> <tr><td>250</td><td>63.8</td></tr> <tr><td>315</td><td>62.8</td></tr> <tr><td>400</td><td>59.8</td></tr> <tr><td>500</td><td>58.0</td></tr> <tr><td>630</td><td>53.7</td></tr> <tr><td>800</td><td>50.3</td></tr> <tr><td>1000</td><td>47.1</td></tr> <tr><td>1250</td><td>42.9</td></tr> <tr><td>1600</td><td>38.2</td></tr> <tr><td>2000</td><td>35.1</td></tr> <tr><td>2500</td><td>31.5</td></tr> <tr><td>3150</td><td>26.5</td></tr> <tr><td>4000</td><td></td></tr> <tr><td>5000</td><td></td></tr> </tbody> </table>		Frequency f Hz	L'_{nT} (one-third octave) dB	50		63		80		100	65.5	125	76.2	160	72.2	200	70.2	250	63.8	315	62.8	400	59.8	500	58.0	630	53.7	800	50.3	1000	47.1	1250	42.9	1600	38.2	2000	35.1	2500	31.5	3150	26.5	4000		5000		----- Frequency range according to the curve of reference values (ISO 717-2)	
Frequency f Hz	L'_{nT} (one-third octave) dB																																														
50																																															
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5000																																															
Notes Measurement limit due to background '																																															
Rating according to ISO 717-2 $L'_{nT,w} = 62$ dB;																																															
Evaluation based on field measurement results obtained in one-third octave bands by an engineering method																																															
No. of test report: 4		Name of test institute: Paragon Acoustic Consultants Ltd																																													
Date: 26-Oct-18		Signature:																																													

Project: 187Caversham Road, Caversham, Reading RG1
Client: Spencer Chaplin
ANC Task Reg. No.: 56462

Date: 26/10/2018
Reference: 20181026_4337
Org. No.: 150

Calibration Certificates

Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
www.campbell-associates.co.uk
Phone 01371 871030 Facsimile 01371879106



CALIBRATION



0789

Certificate of Calibration and Conformance

Certificate No.: U25471

Test object: Sound Level Meter, BS EN IEC 61672-1:2003 Class 1 (Precision)
Manufacturer: Norsonic
Type: 118
Serial no: 31322

Customer: Paragon Acoustic Consultants Ltd
Address: 12b Southview Business Park,
Marsack Street, Caversham,
Berkshire, RG4 5AF.
Contact Person: Gina Shortt
Order No: GS200417

Method :

Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification set out in BS EN IEC 61672-3:2006. Results and conformance statement are overleaf and detailed results are in the attached Test Report.

	Producer:	Type:	Serial No:	Certificate number
Microphone	Norsonic	1225	72929	25470
Calibrator*	Norsonic	1251	31080	U25469
Preamplifier	Norsonic	1206	30366	Included

Additional items that also have been submitted for verification

Wind shield	Norsonic	Nor1451
Attenuator	None	
Extension cable	None	

These items have been taken into account wherever appropriate.

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.37 ± 0.01kPa	22.9 ± 0.2°C	38.1 ± 2%RH

Date received : 25/04/2017
Date of calibration: 02/05/2017
Date of issue: 02/05/2017

Engineer

Palanivel Marappan B. Eng (Hons), M.Sc

Supervisor

Darren Batten Tech IOA

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Page 1 of 2

Project: 187Caversham Road, Caversham, Reading RG1
Client: Spencer Chaplin
ANC Task Reg. No.: 56462

Date: 26/10/2018
Reference: 20181026_4337
Org. No.: 150



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 06 February 2018

Certificate Number: UCRT18/1141

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

E-Mail: info@noise-and-vibration.co.uk

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 4 Pages

Approved Signatory

J. Harriman

A handwritten signature in blue ink, appearing to read 'J. Harriman'.

CUSTOMER Paragon Acoustic Consultants
12B Southview Business Park
Marsack Street
Caversham
Reading
RG4 5AF

ORDER No GS300118

Job No UKAS18/02082

DATE OF RECEIPT 02 February 2018

PROCEDURE Calibration Engineer's Handbook section 31

IDENTIFICATION Tapping Machine Norsonic type 211A serial no. 29713

CALIBRATED ON 06 February 2018

PREVIOUS CALIBRATION Calibrated on 29 January 2016 Certificate No. U20595 issued by a UKAS accredited calibration laboratory No. 0789

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

Certificate N° UCRT18/1141

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

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The tapping machine was set up in accordance with the manufacturer's instructions prior to testing. The tests carried out were based on the requirements of BS EN ISO 140-7:1998. The requirements of ISO 140:7 Annex A applied by this laboratory take into account, and correct for, the error in the fourth paragraph. To correct the error the following text needs to be inserted between the words 'velocity of impact must be' and '0.033 m/s' -- "(0.886±0.022)m/s. The tolerance limits of the velocity may be increased to a maximum of ±"

Hammer diameter: all dimensions in mm					
Requirement: 30 ± 0.2			Laboratory uncertainty ± 0.04 mm		
Measurement #	Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
1	30.02	30.01	30.02	30.00	30.01
2	30.00	30.01	30.01	30.02	30.01
3	30.00	30.01	30.02	30.02	30.01
4	30.02	30.01	30.02	30.02	30.01
5	30.02	30.01	30.02	30.00	30.00
6	30.01	30.00	30.02	30.01	30.02
	PASS	PASS	PASS	PASS	PASS

Curvature of impact surface: radius in mm					
Requirement: 500 ± 100			Laboratory uncertainty in ± mm		
Measurement #	Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
1	547	529	529	541	535
2	541	529	529	529	541
3	535	535	529	541	541
Max uncertainty	17	17	17	17	17
	PASS	PASS	PASS	PASS	PASS

Minimum falling height of hammer, in mm				
Requirement: minimum 44				
Laboratory uncertainty ± 0.04 mm				
Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
>44	>44	>44	>44	>44
PASS	PASS	PASS	PASS	PASS

CERTIFICATE OF CALIBRATION

Certificate N° UCRT18/1141

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

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Hammer mass: all measurements in g					
Requirement: 500 ± 12			Lab uncertainties in g		
Uncertainty	Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
	1.88	1.38	1.19	0.85	0.98
Measurement #	mounted	mounted	mounted	mounted	mounted
1	498.4	502.5	502.3	501.6	502.2
2	500.9	502.6	501.5	501.3	501.7
3	500.4	502.5	502.4	501.4	502.5
4	500.5	503.4	502.3	501.5	502.6
5	501.4	501.5	502.9	501.5	502.4
	PASS	PASS	PASS	PASS	PASS

Note: the measurement uncertainty is increased for hammers which have not been demounted from the machine

Distance between support and nearest hammer, in mm			
Requirement: minimum 100		Support 1	Support 2
Laboratory uncertainty ± 0.21 mm		113.26	> 122.26
		PASS	PASS

Hammer separation: all measurements in mm				
Requirement: 100 ± 3		Lab uncertainties in mm		
Uncertainty	0.20	0.20	0.20	0.20
Measurement	Hammer 1-2	Hammer 2-3	Hammer 3-4	Hammer 4-5
Maximum	100.25	100.17	100.17	100.31
Minimum	99.87	99.82	99.79	99.85
	PASS	PASS	PASS	PASS

Time to lift hammer, in ms				
Requirement: maximum 80				
Laboratory uncertainty ± 0.70 ms				
Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
<80	<80	<80	<80	<80
PASS	PASS	PASS	PASS	PASS

CERTIFICATE OF CALIBRATION	Certificate N° UCRT18/1141
UKAS ACCREDITED CALIBRATION LABORATORY No 0653	Page 4 of 4 Pages

Hammer velocity: all measurements in m/s					
Laboratory uncertainty ± 0.010 m/s					
Requirement	0.886 $\pm$ 0.033	0.886 $\pm$ 0.033	0.886 $\pm$ 0.033	0.886 $\pm$ 0.033	0.886 $\pm$ 0.033
Measurement #	Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
1	0.871	0.884	0.883	0.892	0.906
2	0.887	0.864	0.890	0.887	0.892
3	0.871	0.865	0.891	0.881	0.881
4	0.869	0.880	0.864	0.893	0.895
5	0.884	0.885	0.882	0.883	0.886
	PASS	PASS	PASS	PASS	PASS

Impact interval: all measurements in ms						
Laboratory uncertainty ± 0.70 ms						
Requirement	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Mean
	100 $\pm$ 20	100 $\pm$ 20	100 $\pm$ 20	100 $\pm$ 20	100 $\pm$ 20	100 $\pm$ 5
	106	95	106	104	98	102
	PASS	PASS	PASS	PASS	PASS	PASS

Angle of fallen hammer: all readings in °					
Requirement: 90 $\pm$ 0.5		Laboratory uncertainty ± 0.18 °			
Measurement #	Hammer 1	Hammer 2	Hammer 3	Hammer 4	Hammer 5
1	90.02	90.16	90.08	89.93	89.89
2	89.90	90.08	89.90	89.91	89.88
3	90.05	90.12	89.92	90.12	90.06
4	89.73	90.12	90.18	89.78	90.10
5	89.69	89.93	89.93	89.86	90.19
6	89.78	89.80	89.83	89.90	90.12
	PASS	PASS	PASS	PASS	PASS

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

END

R 5

Appendix C: 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:

Go to the ANC secure server at www.theanc.co.uk

Navigate to the [ADvANCE](#) page which links to the ANC site available for use by BCOs.

Enter the following in the spaces provided:

Task Number 56462 Task Password: QXTXEX

Select role "Building Control Officer" and press "Login"

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.