Chartered Building Consultancy

ADUR & WORTHING
PLANNING SERVICES
PLAN AWDM/ 0861/13
DATE VALID 23 JUL 2014



Client:	Old Star Ale & Cider House
Site Address:	Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, BN43 5DQ
Reported By:	Simon Barrett BSc(Hons) MSc MIOA
Checked By:	Peter Attwood BSc(Hons) MSc MCIOB MIOA MIDiagE
Date Written:	7 July 2014
Test Date:	4 July 2014
Reference Number:	J1580/11741624
Report Number:	41624
ANC Registration No.:	117
Field Test Type:	For Compliance with Airborne Sound Insulation Requirements for Floors.

Providing Better Living, Working & Learning Environments

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ANC THE ASSOCIATION OF NOISE CONSULTANTS

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1.0 Summary

1.1 Details of Sound Insulation Tests

The tests detailed in this report were carried out on 4 July 2014 for Old Star Ale & Cider House to check the acoustic performance of party floors between the Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, BN43 5DQ and the flat above.

The tests detailed in this report have been carried out in full accordance with ISO 140-4 [1].

The report also compares the results achieved with the levels prescribed in Approved Document E of The Building Regulations 2003 [5] in order to check for compliance. All the procedures in Annex B of Approved Document E of The Building Regulations have been followed. The following test types were carried out:

Test Type:	**No. of Room Pair Tests**
Vertical Airborne (Floors)	2

Approved Document E states that the individual value of airborne insulation achieved should be not less than $D_{nTw} + C_{tr} = 43$ dB for floors.

The results show that the room pairs tested satisfy the requirements of Approved Document E.

1.2 Sound Insulation Test Online Verification

The test results may be verified online through the "ADvANCE" on-line verification system. The "ADvANCE" summary page has been printed out and will accompany this report.

To access the "ADvANCE" on-line verification website follow the steps below:

- Go to the ANC website: www.theanc.co.uk
- Follow links to Building Control "ADvANCE"
- Enter task number: 41624
- Enter Password HSGSMY

[redacted]

Simon Barrett BSc(Hons) MSc MIOA

[redacted]

Peter Attwood BSc(Hons) MSc MCIOB MIOA MIDiagE

2.0 Test Report

2.1 General

Client Name:	Old Star Ale & Cider House
Address:	14 Buckhurst Road Telscombe Cliffs East Sussex BN10 7AH England
Site:	Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, BN43 5DQ
Type of Property:	New Micro-Pub underneath existing flats
Test conducted by:	Simon Barrett BSc(Hons) MSc MIOA Acoustic Associates Sussex Ltd 8 Highdown House Shoreham Airport Shoreham-by-Sea West Sussex BN43 5PB
Date of tests:	4 July 2014
Note:	Acoustic Associates Sussex Ltd is listed on the list of ANC Registered Members and was at the time of the testing

3.0 Results

3.1 General

Results of the measurements, in terms of single-figure ratings, are provided below. They are provided as Weighted Standardised Level Differences D_{nTw} + C_{tr} (for airborne sound) as required by BS EN ISO 140-4 [1]. It is also defined in ISO 717-1 [2], which deals with airborne insulation.

On the following pages, the tabulated results are presented (together with the underlying data in the appendix) from which the single-figure ratings are calculated. Adverse deviations that occurred in exceed of 8 dB are also recorded in accordance with BS EN ISO 140-4.

Approved Document E of The Building Regulations: Resistance to the passage of sound [3] sets out the following requirements for Material Change of Use:

Airborne Sound Insulation:
The insulation values for airborne insulation for floors shall not be less than D_{nTw} + C_{tr} = 43 dB

3.2 Separating Floors (Airborne)

Source Room		Receiving Room								Test Reference \ ITS80\41624	
		1st Floor Flat, Dining Room 2		(L_n) 1/3 Octave Common Area (dB)		DnTw (dB)		DnTw + Ctr (dB)		Minimum Pass Criterion (dB)		Fail\Pass	
Bar Area	(L_n) 1/3 Octave	1st Floor Flat, Dining Room 2	(L_n) 1/3 Octave	1.7:2	1.5:1	2S	4S	4S	4S	43	43	Pass	Pass
Bar Area	70	42	36.1										

N.B. For the purpose of interpretation of the tabulated data above, with airborne sound insulation it is the level difference that is being measured between rooms and the higher the result the better the insulation.

3.3 Element Construction Details

Party floor construction consisted of the following:

Existing floor and joists (unknown), Existing lath & plaster ceiling,
2x 12.5mm Fireline Battens with 50mm Rockwool
100mm Timber Battens with 50mm Rockwool overboarding to existing ceiling
1x 12.5mm Fireline Plasterboard and Skim Coat

3.4 Test Method

Before any measurements were taken, the meter was calibrated. The calibration procedure was repeated at the end of the tests to check for any calibration 'drift'. No significant drift occurred.

Resistance to Airborne Sound

Two loudspeakers were placed facing into the corners, separated from each other, at different heights in the source room and angled across the room to create a diffuse sound field. An amplifier was used to broadcast pink noise through the loudspeakers using two individual noise generators. The spectrum shape of the reverberant noise was checked to ensure that each $^1/_3$ octave band was within 6 dB of its neighbouring bands. The spectrum shape was adjusted if necessary to comply with this criterion.

Measurements were taken in the source room at each $^1/_3$ octave band centre frequency between 100 Hz and 3.15 kHz using the "sweep" technique as described in ISO140 (30 secs.). Further measurements were then taken in the same way in the receiving room on the other side of the test element. The reverberation time was also obtained using the interrupt stationery technique for each $^1/_3$ octave centre frequency in the receiving room. This was spatially averaged over 6 positions in the room.

Ambient sound pressure levels (without the source operating) were also taken at each frequency in the receiving rooms to check that ambient noise levels were at least 10 dB below the measured levels due to generated noise and thus did not contribute to the measured levels. These too were spatially-averaged. Type of noise radiated: Broadband pink noise. Dominant sources of background noise were as follows: Road Traffic

Equipment used:

Description	Type	Serial	Manufacturer	Calibration Expiry Date	Calibration Certificate No.
Type 1 SLM	NOR140	1403397	Norsonic	08/04/2015	142243
Mic (140)	1225	98401	Norsonic	08/04/2015	142243
SLM Calibrator	GA602	31042	Castle	04/04/2015	142215
Sound Source	2 Speaker	-	Neutrik/Behringer/D.A.S./Phonic	-	-
Sound Source	Reverb	-	JBL(EON)	-	-

N.B. for calibration certificates and details see appendix.

4.0 References

1. BS EN ISO 140-4:1998: *Field measurements of airborne sound insulation between rooms*

2. BS EN ISO 717-1: 1997: *Rating of sound insulation in buildings and of building elements. Part 1: Airborne Sound Insulation.*

3. The Building Regulations 2000 (as amended 2003). *Approved Document E: Resistance to the Passage of Sound.*

5.0 Glossary of Terms

$D_{nT,w}$ **Weighted Standardised Level Difference.** A single-figure value of airborne sound insulation performance, derived according to procedures in BS EN ISO 717-1, based on the D_{nT} values at different frequencies (100-3150 Hz third octave bands).

D_{nT} **Standardised Level Difference.** A frequency-dependent measurement of airborne sound insulation, calculated using the following formula:

$$D_{nT} = L_1 - L_2 + 10\log(T/T_0)\ dB$$

Where: L_1 is the energy-averaged sound pressure level due to the pink noise source measured in the source room using a sweep technique.
L_2 is the energy-averaged sound pressure level measured in the receiving room using a sweep technique.
T is the mean receiving room reverberation time (derived from T_{30} measured in seconds).
T_0 is the reference reverberation time (= 0.5s for dwellings).

C_{tr} **Spectrum Adaptation Term** calculated in accordance with BS EN ISO 717-1, to characterise airborne sound insulation with respect to typical outdoor noise sources (A-weighted urban traffic noise).

Appendices.

Graphical & Tabular Presentation of Results,

Equipment Calibration Certificate & The ANC Summary Sheet of Certification of The Results.

6.0 Graphical and Tabular Presentation of Results

On the following pages, the graphical results are presented, together with the underlying data from which the single-figure ratings are calculated. Please note that, in accordance with BS EN ISO 140-4, any adverse deviations in excess of 8 dB should be reported. These occurred:

Reference Number J1580/41624	Adverse Deviations > 8dB	Frequency Hz
1	9.5	100

Simon Barrett BSc(Hons) MSc MIOA
Acoustic Associates Sussex Ltd

Standardized level difference according to BS EN ISO 140-4

Field measurements of airborne sound insulation between rooms

Client: Old Star Ale & Cider House
Date of test: 04/07/2014
Description: Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, West Sussex, BN43 5DQ

Object: Bar Area - 1st Floor Flat Dining Room (Vertical)
Common Area = 15.1 sq.m

Source room volume: 70 m³
Receiving room volume: 36.1 m³

Frequency f [Hz]	D_{nT} 1/3 octave [dB]	
50	29.2	
63	36.1	
80	27.6	
100	26.4	
125	38.7	1
160	40.6	
200	42.2	
250	43.4	
315	45.4	
400	48.9	
500	52.8	1
630	56.2	1
800	57.7	1
1,000	58.2	1
1,250	61.5	1
1,600	65.7	1
2,000	67.9	1
2,500	67.4	1
3,150	68.9	1
4,000	69.4	1
5,000	70.5	1

1: DnT value at limit of measurement



Rating according to ISO 717-1

$D_{nT,w}(C;C_{tr})$ = 55 (-3;-10) dB

$C_{50\text{-}3150}$ = -4 dB $C_{50\text{-}5000}$ = -3 dB $C_{100\text{-}5000}$ = -2 dB

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

$C_{tr,50\text{-}3150}$ = -12 dB $C_{tr,50\text{-}5000}$ = -12 dB $C_{tr,100\text{-}5000}$ = -10 dB

Company: Acoustic Associates Sussex Ltd

No. of test report: J1580/412624/1

Date: 04/07/2014 Signature:

Standardized level difference according to BS EN ISO 140-4

Field measurements of airborne sound insulation between rooms

Client: Old Star Ale & Cider House
Date of test: 04/07/2014
Description: Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, West Sussex, BN43 5DQ

Object: Bar Area - 1st Floor Flat Dining Room (Vertical)
Common Area = 15.1 sq. m

Source room volume: 70 m³
Receiving room volume: 42.0 m³

Frequency f [Hz]	D_{nT} 1/3 octave [dB]
50	28.1
63	27.4
80	24.9
100	30.3
125	39.2
160	38.7
200	42.4
250	43.1
315	45.3
400	49.9
500	51.5
630	55.2
800	59.0
1,000	59.8
1,250	65.2
1,600	69.0
2,000	69.3
2,500	69.1
3,150	72.2 [1]
4,000	73.6 [1]
5,000	72.9 [1]

[1] DnT value at limit of measurement



Rating according to ISO 717-1

$D_{nT,w}(C;C_{tr})$ = 55 (-2;-8) dB

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

$C_{50\text{-}3150}$ = -4 dB $C_{50\text{-}5000}$ = -3 dB $C_{100\text{-}5000}$ = -1 dB

$C_{tr,50\text{-}3150}$ = -13 dB $C_{tr,50\text{-}5000}$ = -13 dB $C_{tr,100\text{-}5000}$ = -8 dB

Company: Acoustic Associates Sussex Ltd

No. of test report: J1580/412624/2

Date: 04/07/2014 Signature:

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

DATE OF ISSUE: 8 April 2013 CERTIFICATE NUMBER: **142243**

BS EN ISO 9001:2008 APPROVED BY **LRQA**

CERT No 953910

Home Farm Industrial Park
Norwich Road
Marsham
Norfolk
NR10 5PQ
Tel:
Fax:

Approved Signatory
Electronically Authorised Document
P.K.Clark
M.A.Frost
R.J.Wade
M S Pardoe ✔

Customer	**ACOUSTIC ASSOCIATES SUSSEX LTD**
Order No	**SS/020413**
Equipment Description	**PRECISION SOUND ANALYSER**
Manufacturer	**NORSONIC**
Model	**NOR140**
Serial No	**1403397**
Ident No	**NOT KNOWN**
Date Of Calibration	**8 APRIL 2013**

INSTRUMENT CONDITION

Adjustments Made	**NO**
Repairs Made	**NO**

ENVIRONMENT

The instrument was placed in the laboratory environment for a minimum period of 4 hours and was operated prior to calibration.

Measurements were made in ambient conditions of 22ºC ± 3ºC and 45% ± 15% RH.

STABILITY

The results attached to this certificate refer to measurements made at the time of test and not to the instrument's ability to maintain calibration.
All reference instruments are traceable to recognised National Standards.
The attached results are a true record of the levels required to return the instrument to the

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

BS EN ISO 9001:2008 APPROVAL CERTIFICATE No. 953910

CERTIFICATE NUMBER
142243

INSTRUMENTS USED

EQUIPMENT	SERIAL No	CERTIFICATE No	CAL DUE
Genrad 1986	01-08-22-80	M2046	03 Jan 2014

MEASUREMENT UNCERTAINTIES

The expanded uncertainty quoted refers to the measured values only, with no account being taken of the instruments ability to maintain its calibration. The expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%.

PARAMETER	RANGE	EXPANDED UNCERTAINTY
d.c. Resistance	0.01Ω - 400MΩ	± 409ppm
	400MΩ - 1TΩ	± 1%
d.c. Voltage	0V – 1kV	± 79ppm
d.c. Voltage	1.01kV-15kV	± 2.2%
d.c. Current	0mA – 20A	± 437ppm
a.c. Voltage	0mV – 1.05kV	± 1.2%
a.c. Current	0mA – 20A	± 0.5%
Frequency	0.5Hz – 20GHz	± 0.1ppm
Capacitance	0.5nF – 40mF	± 1.1%
Time	0 - 1 Hour	± 1s
Distortion	10mV - 100V	± 1.4mV
Temperature (Dry Block)	-30°C - 350°C	± 1%
Temperature (Simulation)	-270°C - 1800°C	± 0.57%
Pressure	10mBar - 35Bar	± 0.04%
Torque	0.1 - 1100Nm	± 0.5%
Weight	2g - 157kg	± 0.03%
Humidity	0% - 90%	± 1%
Shock		± 4%
Sound	Frequency	± 0.06%
Sound	Level	± 0.16dB
Tachometers	60rpm - 96000rpm	± 0.1%
Vibration Meters	10Hz - 1kHz	± 5%
Vibration Calibrators		± 3%
Mechanical Measurement	<200mm	± 0.0003mm
	>200mm	± 0.002mm
Inductance		± 0.1%
Power (VA)		± 1%
Power (RF)		± 0.5dB

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

BS EN ISO 9001:2008 APPROVAL CERTIFICATE No. 953910

CERTIFICATE NUMBER

142243

RESULT SHEET 0225 – NOR140 SOUND LEVEL METER **ISSUE No 1**

1) BATTERY REPLACED **NO**

2) ACOUSTIC LEVEL

Nominal	Limits	Pre	Post	Units	Pre Error %	Post Error %
94	±2%	94.0	94.0	dB	0.00	0.00
104	±2%	104.0	104.0	dB	0.00	0.00
114	±2%	114.0	114.0	dB	0.00	0.00

COMMENTS

The sound level meter was calibrated with the supplied microphone, model number 1225 serial number 98401

Calibration carried out in accordance with BS7580 part 1 1997, section 5.6.1.

TEST ENGINEER M A FROST **DATE 08 APRIL 2013**

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

DATE OF ISSUE: 4 April 2013 CERTIFICATE NUMBER: **142216**

BS EN ISO 9001:2008 APPROVED BY **LRQA**

CERT No 953910

Home Farm Industrial Park
Norwich Road
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Norfolk
NR10 5PQ
Tel: [redacted]
Fax:

Approved Signatory
Electronically Authorised Document
P.K.Clark
M.A.Frost
R.J.Wade
M S Pardoe ✔

Customer	**ACOUSTIC ASSOCIATES SUSSEX LTD**
Order No	**SS/020413**
Equipment Description	**ACOUSTIC CALIBRATOR**
Manufacturer	**CASTLE GROUP LTD**
Model	**GA607**
Serial No	**041173**
Ident No	**NOT KNOWN**
Date Of Calibration	**4 APRIL 2013**

INSTRUMENT CONDITION

Adjustments Made	**NO**
Repairs Made	**NO**

ENVIRONMENT

The instrument was placed in the laboratory environment for a minimum period of 4 hours and was operated prior to calibration.

Measurements were made in ambient conditions of 22ºC ± 3ºC and 45% ± 15% RH.

STABILITY

The results attached to this certificate refer to measurements made at the time of test and not to the instrument's ability to maintain calibration.
All reference instruments are traceable to recognised National Standards.

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

BS EN ISO 9001:2008 APPROVAL CERTIFICATE No. 953910

CERTIFICATE NUMBER
142216

INSTRUMENTS USED

EQUIPMENT	SERIAL No	CERTIFICATE No	CAL DUE
Keithley 2015	1330979	M2025	02 Jan 2014
Testo 511	39105277/103	M1953	01 Aug 2013
PCB Pieztotronics 480C02	LW030521	M2062	04 Jan 2014
PCB 378B02	LW107695	M1956	26 Sep 2013

MEASUREMENT UNCERTAINTIES

The expanded uncertainty quoted refers to the measured values only, with no account being taken of the instruments ability to maintain its calibration. The expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%.

PARAMETER	RANGE	EXPANDED UNCERTAINTY
d.c. Resistance	0.01Ω - 400MΩ	± 409ppm
	400MΩ - 1TΩ	± 1%
d.c. Voltage	0V – 1kV	± 79ppm
d.c. Voltage	1.01kV-15kV	± 2.2%
d.c. Current	0mA – 20A	± 437ppm
a.c. Voltage	0mV – 1.05kV	± 1.2%
a.c. Current	0mA – 20A	± 0.5%
Frequency	0.5Hz – 20GHz	± 0.1ppm
Capacitance	0.5nF – 40mF	± 1.1%
Time	0 - 1 Hour	± 1s
Distortion	10mV - 100V	± 1.4mV
Temperature (Dry Block)	-30°C - 350°C	± 1%
Temperature (Simulation)	-270°C - 1800°C	± 0.57%
Pressure	10mBar - 35Bar	± 0.04%
Torque	0.1 - 1100Nm	± 0.5%
Weight	2g - 157kg	± 0.03%
Humidity	0% - 90%	± 1%
Shock		± 4%
Sound	Frequency	± 0.06%
Sound	Level	± 0.16dB
Tachometers	60rpm - 96000rpm	± 0.1%
Vibration Meters	10Hz - 1kHz	± 5%
Vibration Calibrators		± 3%
Mechanical Measurement	<200mm	± 0.0003mm
	>200mm	± 0.002mm
Inductance		± 0.1%
Power (VA)		± 1%
Power (RF)		± 0.5dB

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

BS EN ISO 9001:2008 APPROVAL CERTIFICATE No. 953910

CERTIFICATE NUMBER

142216

RESULT SHEET 0092 – GA607 ACOUSTICAL CALIBRATOR **ISSUE No 2**

1) BATTERY REPLACED **NO**

2) STATIC PRESSURE

Measured	Units
1012.0	hPa

3) ACOUSTIC LEVEL @1kHz

Nominal	Limits	Measured Voltage		Acoustic Level		Error %
94	±0.4dB	50.857	mVac	93.733	dB	-0.28
104	±0.4dB	160.850	mVac	103.734	dB	-0.26

4) ACOUSTIC FREQUENCY

Nominal	Limits	Measured	Units	Pre Error %
1.0	±1%	1.000025	kHz	0.00

5) DISTORTION AT 1kHz

Level dB	Limits	Measured	Units
94	±3%	0.803	%
104	±3%	0.678	%

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

BS EN ISO 9001:2008 APPROVAL CERTIFICATE No. 953910

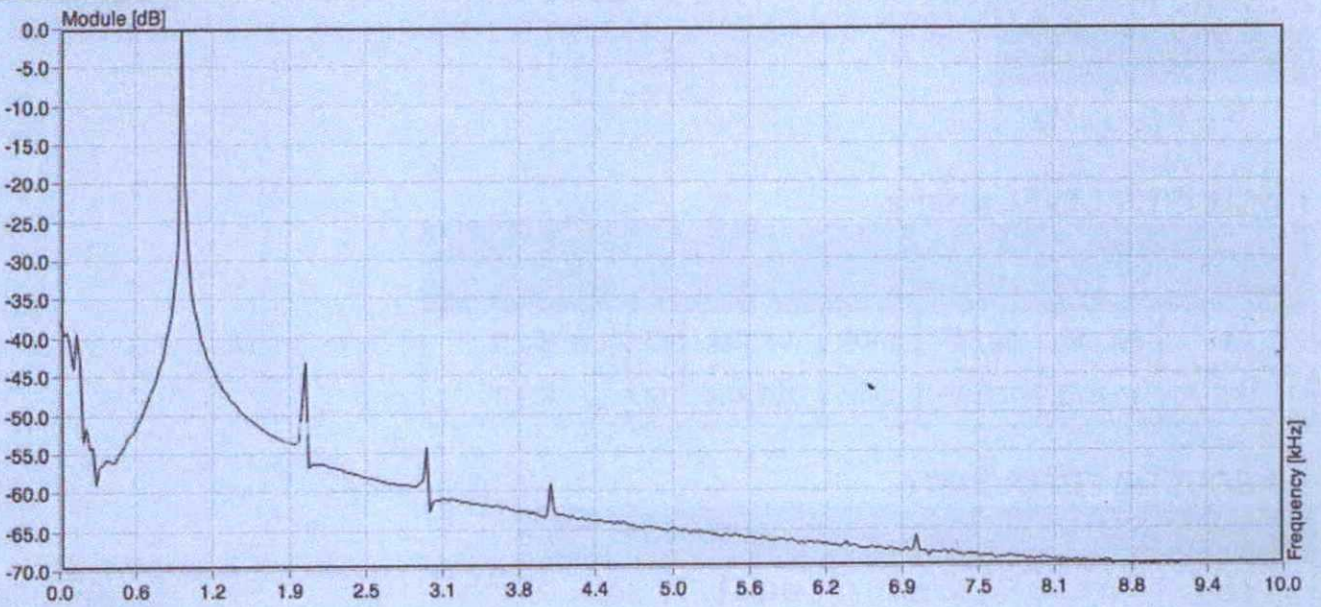
CERTIFICATE NUMBER

142216

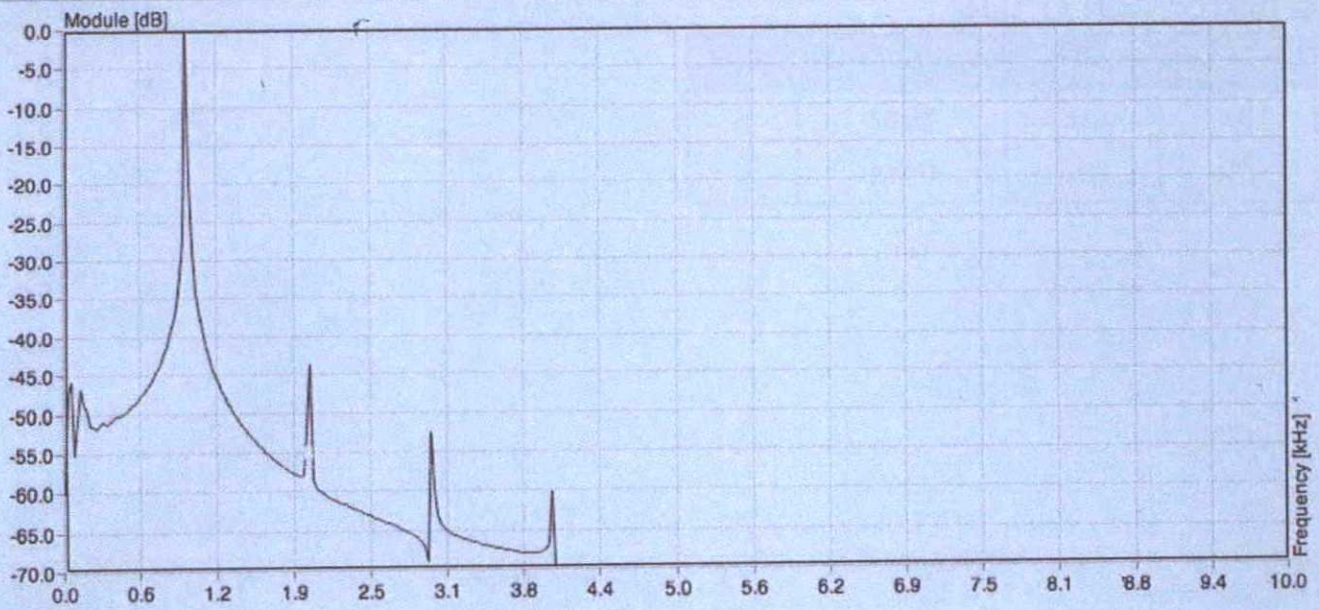
RESULT SHEET 0092 – GA607 ACOUSTICAL CALIBRATOR **ISSUE No 2**

6) FREQUENCY ANALYSIS

Analysis at 94dB



Analysis at 104dB



COMMENTS

Calibration carried out in accordance with BS EN 60942:2003.

TEST ENGINEER R J WADE **DATE 04 APRIL 2013**

ANC
THE ASSOCIATION OF NOISE CONSULTANTS

CERTIFICATION OF PRE-COMPLETION SOUND INSULATION TESTING

ADvANCE.

DATE TASK ACCESSED
7 July 2014

Task number	41624	**Password**	HSGSMY	**Registered organisation number**	117
Task registration date	04/07/2014			**Registered organisation name**	Acoustic Associates Sussex Ltd
Client	Old Star Ale & Cider House			**Registered organisation address**	18 Highdown House, Shoreham-by-Sea, Sussex, BN43 5PB
Site address	Old Star Ale & Cider House, 16a & 16b High Street, Shoreham, BN43 5DQ			**Registered organisation e-mail**	[redacted]

Test ID	Test Date	Source Room	Receiving Room	Project Type	Wall / Floor	Type	Target	Descriptor	Result	Pass / Fail †	Retest Comments
1	04/07/2014	Bar Area	1st Floor Flat, Dining Room	HFCON	Floor	Airborne	≥ 43 dB	$D_{nT,w}+C_{tr}$	45 dB	✔	New test
2	04/07/2014	Bar Area	1st Floor Flat, Bedroom 2	HFCON	Floor	Airborne	≥ 43 dB	$D_{nT,w}+C_{tr}$	47 dB	✔	New test

HFNB - Purpose built houses and flats
HFCON - Houses and flats formed by material change of use
RRNB - Purpose built rooms for residential purposes
RRCON - Rooms for residential purposes formed by material change of use

✔ Performance at or better than the performance standard cited in Building Regulations Approved Document E
✖ Performance is worse than the performance standard cited in Building Regulations Approved Document E
† *Responsibility for deciding on compliance with Building Regulations lies with the Building Control Body*

To check this certificate against the official online test log, please go to http://www.theanc.co.uk, follow the link to the ADvANCE website and input **TASK NUMBER 41624** and **PASSWORD HSGSMY**

This Certificate confirms that the tests described in the list above gave the results stated and were carried out by the named ANC registered test organisation, at the stated property, on the stated date and that the named test organisation was a member of the ANC Scheme at the time of the tests.