



Polaris Acoustics | Acoustic Consultants

Post-Installation Airborne Sound Insulation Verification Report

46 High Street, West End

Hatch & Barrel Ltd

P1959-PA-SI-REP-01

18th May 2026



Report Detail

Report	Post-Installation Airborne Sound Insulation Verification Report
Site	46 High Street, West End
Client	Hatch & Barrel Ltd
Reference	P1959-PA-SI-REP-01
Test Date	13 th May 2026

Revision History

Rev.	Issued Date	Notes	Prepared and checked by
01	18 th May 2026	Original Issue	Mathew Vaughan BA (Hons) MSc MIOA

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Executive Summary

Mathew Vaughan T/A Polaris Acoustics has undertaken post-installation airborne sound insulation testing between the ground-floor commercial premises and the first-floor residential accommodation at 46 High Street, West End, Southampton, SO30 3DR. The testing has been undertaken to support the discharge of Planning Condition 3 attached to planning permission F/26/101048.

Condition 3 requires that the cafe/bar is not brought into use until a verification report containing the results of post-installation airborne sound insulation testing has been submitted to and approved in writing by the Local Planning Authority. The condition requires the testing to be undertaken between the commercial premises at ground floor and the residential accommodation on the first floor and requires the verification report to confirm compliance with the recommendations of Paragraph 4.3.3 of the Polaris Acoustics Noise Impact Assessment dated 31st March 2026, reference P1950-PA-ZZ-REP-01.

Paragraph 4.3.3 of the original Noise Impact Assessment identified the separating floor/ceiling treatment as the principal physical mitigation measure controlling transmission of internal music noise to the residential accommodation above. The design-stage INSUL appraisal indicated airborne sound insulation performance in the order of R_w 56 dB, with $C = -1$ dB and $C_{tr} = -3$ dB, for the assessed floor/ceiling build-up. In music-noise terms, the original assessment identified $R_w + C$, approximately 55 dB, as the more relevant single-number indicator for the proposed background-music use.

Post-installation field testing measured a standardised airborne sound insulation performance of:

$$D_{nT,w} (C; C_{tr}) = 56 (-1; -5) \text{ dB}$$

This corresponds to $D_{nT,w} + C = 55$ dB and $D_{nT,w} + C_{tr} = 51$ dB. The measured $D_{nT,w} + C$ value is therefore equal to the music-relevant design-stage value of approximately $R_w + C = 55$ dB identified in the original assessment.

The field measurement was undertaken in accordance with BS EN ISO 16283-1 and rated in accordance with BS EN ISO 717-1. The test result is a direct in-situ verification of the installed separating floor/ceiling system and includes the effect of the actual room relationship, workmanship, junctions, and flanking paths present at the time of testing.

Some high-frequency receiving-room bands, specifically 3.15 kHz, 4 kHz and 5 kHz, were background limited. These bands have been treated prudently. The 4 kHz and 5 kHz bands are outside the standard $D_{nT,w}$ rating range. The 3.15 kHz band is within the standard rating range but is well above the shifted ISO 717-1 reference curve and does not control the single-number rating. The presence of background limitation in these high-frequency bands therefore does not undermine the stated $D_{nT,w}$ result or the conclusion that the condition has been satisfied.

On the basis of the measured field performance, the installed separating floor/ceiling construction is considered to achieve a level of airborne sound insulation consistent with the recommendations of Paragraph 4.3.3 of the Noise Impact Assessment. The measured $D_{nT,w} + C$ value is equal to the music-relevant design-stage value of approximately $R_w + C = 55$ dB and is also within the normal tolerance expected when comparing design-stage INSUL predictions with completed in-situ field performance.



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1. Introduction

1.1. Appointment and Scope

Polaris Acoustics has been instructed by Hatch and Barrel Ltd to prepare a post-installation airborne sound insulation verification report for the premises at 46 High Street, West End, Southampton, SO30 3DR.

The purpose of this report is to present the results of airborne sound insulation testing undertaken between the ground-floor commercial premises and the first-floor residential accommodation, and to assess whether the installed separating floor/ceiling construction satisfies the acoustic recommendations set out in Paragraph 4.3.3 of the Polaris Acoustics Noise Impact Assessment dated 31st March 2026, reference P1950-PA-ZZ-REP-01.

This report has been prepared specifically to support the discharge of Planning Condition 3 attached to Eastleigh Borough Council planning permission F/26/101048.

1.2. Site and Development Context

The site comprises the ground floor of 46 High Street, West End, Southampton. Planning permission has been granted for the change of use of the ground floor from shop use to cafe use and bar use in the evenings. Residential accommodation is present at first-floor level above the commercial premises. The acoustic relationship between the commercial premises and the first-floor residential accommodation is therefore a material consideration, particularly in relation to internal amplified background music and internal patron activity.

Figure 1.1: Site Location Plan



1.3. Planning Condition

On the Decision Notice, Planning Condition 3 states that:

“The cafe/ bar hereby permitted shall not be brought into use until a verification report with the results of the post-installation airborne sound insulation testing has been submitted to and approved in writing by the Local Planning Authority.

The testing shall be undertaken between the commercial premises at ground floor and the residential accommodation on the first floor. The verification report must be produced by a qualified acoustic consultant and confirm compliance with the recommendations of Paragraph 4.3.3 of the Noise impact Assessment by Polaris Acoustics dated 31st March 2026 (referenced P1950-PA-ZZ-REP-01). If the testing identifies that the required performance standard has not been achieved, details of additional sound insulation measures and further post-installation airborne sound insulation testing shall be submitted to and approved in writing by the Local Planning Authority.

Reason: To protect the amenity of the first-floor resident”.

1.4. Scope of Verification

This report addresses the airborne sound insulation performance of the separating floor/ceiling construction between the ground-floor commercial premises and the first-floor residential accommodation. It verifies the installed construction by reference to field test data and the acoustic design basis set out in the original Noise Impact Assessment.

This report relates specifically to the post-installation airborne sound insulation verification required by Planning Condition 3. It does not seek to discharge the separate operational controls attached to the permission, including the requirement for music to remain low-level background music only. Those controls remain relevant to the ongoing operation of the premises.

2. Acoustic Design Basis

2.1. Relevant Recommendations of Paragraph 4.3.3

Paragraph 4.3.3 of the original Noise Impact Assessment identified the separating floor/ceiling construction as the principal physical mitigation measure controlling airborne transmission of internal music noise to the residential accommodation above.

The original assessment stated that the existing ceiling would be retained and that a new double-boarded MF ceiling would be installed below the existing joists using acoustic hangers, with approximately 200 mm mineral wool infill. The hanger arrangement was described as passing through via access hatches without rigid contact with the existing ceiling boards.

The design-stage acoustic model considered a construction comprising a 22 mm particle board floor, solid timber joists, acoustic hangers, approximately 200 mm mineral wool infill and a double 15 mm dB board ceiling lining. The modelled airborne sound insulation performance was stated to be in the order of R_w 56 dB, with $C = -1$ dB and $C_{tr} = -3$ dB. The INSUL prediction is presented in **Appendix 3**.

2.2. Nature of Design-Stage Prediction and Uncertainty

The original INSUL appraisal was a design-stage prediction and was expressly not presented as a guarantee of as-built acoustic separation. The original assessment recognised that final in-situ performance would depend on the installed construction, airtightness, workmanship, junction detailing, penetrations, access hatches and flanking transmission through adjoining elements and air paths.

It is therefore appropriate to compare the measured field result against the original design-stage prediction on a prudent, engineering basis, rather than treating the modelled value as an exact laboratory guarantee. A tolerance of approximately ± 3 dB is commonly appropriate when interpreting design-stage acoustic predictions against field measurements, as recommended by INSUL, particularly where the final result depends on workmanship and flanking transmission. In the present case, the comparison is stronger than merely falling within that tolerance: the measured $D_{nT,w} + C$ value is 55 dB, equal to the design-stage music-relevant value of approximately $R_w + C = 55$ dB.

This comparison should be read with the important technical distinction that R_w is a laboratory/element-type descriptor, whereas $D_{nT,w}$ is a field-measured standardised level difference between rooms. Since Condition 3 specifically requires post-installation airborne sound insulation testing between the commercial premises and the residential accommodation, $D_{nT,w}$ and associated spectrum adaptation terms are the appropriate field verification descriptors.

3. Post-Installation Test Methodology

3.1. Standards and Measurement Approach

Airborne sound insulation testing was undertaken in accordance with BS EN ISO 16283-1. The measured frequency-band results were rated in accordance with BS EN ISO 717-1 to derive the single-number airborne sound insulation rating $D_{nT,w}$ and associated spectrum adaptation terms C and C_{tr} .

The test was undertaken using an artificial sound source within the ground-floor commercial premises, with sound pressure levels measured in the source room and receiving room. Background sound levels and receiving-room reverberation times were measured to allow appropriate correction and standardisation of the receiving-room levels.

The test comprised measurements of source-room sound pressure level, receiving-room sound pressure level, receiving-room background sound level, and receiving-room reverberation time. Spatially averaged source-room and receiving-room levels were used to determine the standardised level difference, D_{nT} , in each one-third octave band. The measured results were then rated in accordance with BS EN ISO 717-1 to derive $D_{nT,w}$ and the associated spectrum adaptation terms C and C_{tr} .

3.2. Test Path

Table 3.1 below provides a summary of the test path.

Table 3.1: Test Path Summary

Item	Details
Source Room	Ground floor commercial premises (café / bar area).
Receiving Room	First-floor residential living room (46A High Street, West End).
Transmission Path	Ground-floor commercial premises to first-floor residential accommodation.
Building Element	Separating floor/ceiling.
Approximate Source Room Volume	150 m ³
Approximate Receiving Room Volume	90 m ³

The measurement positions, measurement durations and calculated frequency-band results are provided in the standardised level difference test sheet at **Appendix 4**.

3.3. Separating Floor / Ceiling Construction

The installed construction was reported by the applicant / installer to comprise a timber separating floor with a 22 mm particle board floor deck on timber joists, retained existing ceiling, suspended MF ceiling on acoustic hangers, approximately 200 mm mineral wool infill, and two layers of 15 mm acoustic plasterboard / dB board lining to the underside.

The completed construction has been verified acoustically by field measurement. The measured $D_{nT,w}$ result therefore includes the combined effect of the installed separating construction, workmanship, junctions, and any residual flanking paths present at the time of testing.

3.4. Instrumentation and Methodology

All measurements were undertaken using an ACOEM Fusion 4G sound level meter (serial no. 14388), which conforms to the requirements for a Class 1 precision sound level meter. The instrument was field calibrated before and after deployment using an ACOEM/01dB Cal 01 acoustic calibrator (serial no. 990456) generating a reference level of 94 dB at 1 kHz. No significant calibration drift was observed over the measurement session. Calibration certification and equipment details are provided in **Appendix 2**.

3.5. Measurement Procedure and Corrections

For each one-third-octave frequency band, source-room sound pressure levels were logarithmically averaged to derive the spatially averaged source-room level, L_1 . Receiving-room source-on sound pressure levels were similarly logarithmically averaged to derive $L_{2,total}$. Receiving-room background sound levels were logarithmically averaged to derive $L_{2,BG}$.

Background correction was applied to the receiving-room source-on level where appropriate. Where the source-on receiving-room level was close to background, the affected band was treated conservatively and flagged as background limited. No arbitrary correction or uplift has been applied to the source-room level to compensate for loudspeaker spectral output. The validity of each band has instead been considered by reference to the receiving-room signal-to-noise margin and the standard background correction approach.

The standardised level difference was calculated in each band as follows:

$$D_{nT} = L_1 - L_{2,c} + 10 \cdot \log_{10} (T / T_0)$$

where L_1 is the spatially averaged source-room sound pressure level, $L_{2,c}$ is the background-corrected receiving-room sound pressure level, T is the receiving-room reverberation time and T_0 is the reference reverberation time of 0.5 seconds.

4. Measurement Results

4.1. Frequency-Band Results

The measured standardised level difference values are summarised in **Table 4.1** and shown graphically in **Appendix 4**. The plotted reference curve is the shifted BS EN ISO 717-1 reference curve used to derive the single-number $D_{nT,w}$ rating. The full ISO 717-1 output is presented in **Appendix 4**.

Table 4.1: Measured Standardised Level Difference Values

Frequency Hz	Standardised Level Difference, D_{nT} (dB)	Comment
50	36.6	Extended low-frequency information; not used in basic $D_{nT,w}$ rating
63	40.2	Extended low-frequency information; not used in basic $D_{nT,w}$ rating
80	40.7	Extended low-frequency information; not used in basic $D_{nT,w}$ rating
100	41.4	Used in standard $D_{nT,w}$ rating range
125	40.3	Used in standard $D_{nT,w}$ rating range
160	39.9	Used in standard $D_{nT,w}$ rating range
200	44.9	Used in standard $D_{nT,w}$ rating range
250	48.7	Used in standard $D_{nT,w}$ rating range
315	52.5	Used in standard $D_{nT,w}$ rating range
400	53.2	Used in standard $D_{nT,w}$ rating range
500	53.7	Used in standard $D_{nT,w}$ rating range
630	52.4	Used in standard $D_{nT,w}$ rating range
800	54.8	Used in standard $D_{nT,w}$ rating range
1000	55.8	Used in standard $D_{nT,w}$ rating range
1250	56.2	Used in standard $D_{nT,w}$ rating range
1600	56.2	Used in standard $D_{nT,w}$ rating range
2000	60.1	Used in standard $D_{nT,w}$ rating range
2500	65.5	Used in standard $D_{nT,w}$ rating range
3150	68.0	Background-limited / high-frequency band
4000	69.3	Background-limited / high-frequency band
5000	67.4	Background-limited / high-frequency band

4.2. Single-Number Rating

The primary rating value derived from the field measurement is $D_{nT,w} = 56$ dB. The corresponding music-relevant field value is $D_{nT,w} + C = 55$ dB. The low-frequency traffic-type adaptation value is $D_{nT,w} + C_{tr} = 51$ dB. **Table 4.2** provides an overview of the rating descriptors and corresponding values.

Table 4.2: Summary of Single-Number Airborne Rating

Rating Descriptor	Measured Value
$D_{nT,w}$	56 dB
C	-1 dB
C_{tr}	-5 dB
$D_{nT,w} + C$	55 dB
$D_{nT,w} + C_{tr}$	51 dB
$D_{nT,w} (C; C_{tr})$	56 (-1; -5) dB

4.3. Spectrum Adaptation Terms

The following spectrum adaptation terms in **Table 4.3** have been derived for completeness. The primary compliance comparison for the original Paragraph 4.3.3 design basis is $D_{nT,w} + C$, as the original assessment identified $R_w + C$ as the more relevant music-noise indicator.

Table 4.3: Spectrum Adaptation Terms

Frequency Range	C	C_{tr}
50-3150 Hz	-1 dB	-6 dB
100-3150 Hz	-1 dB	-5 dB
50-5000 Hz	-1 dB	-6 dB
100-5000 Hz	0 dB	-5 dB

4.4. Background-Limited High-Frequency Bands

During the receiving-room measurements, the high-frequency bands at 3.15 kHz, 4 kHz and 5 kHz were background limited. This is not unusual where the separating construction provides high attenuation and the transmitted receiving-room levels approach the residual background sound level.

The background-limited nature of these high-frequency bands has been treated prudently and does not undermine the verification conclusion for the following reasons:

- The 4 kHz and 5 kHz bands are outside the standard 100 Hz to 3150 Hz frequency range used to derive $D_{nT,w}$.



- The 3.15 kHz band is within the standard DnT,w rating range; however, the measured value is well above the shifted BS EN ISO 717-1 reference curve and does not control the rating.
- Where a receiving-room level is background limited, the reported level difference is conservative because the true transmitted source-only level may be lower than can be resolved from the measured background.
- No positive correction has been applied to artificially improve the single-number rating as a consequence of the background limitation.

5. Assessment Against Condition 3

5.1. Compliance with Required Test Scope

Condition 3 requires post-installation airborne sound insulation testing between the commercial premises at ground floor and the residential accommodation on the first floor. The testing reported herein has been undertaken across that relevant separating floor/ceiling path, from the ground-floor commercial premises to the first-floor residential accommodation. The test scope therefore accords with the location and transmission path required by the condition.

5.2. Comparison with Paragraph 4.3.3 Design Basis

The relevant original design-stage performance basis was $R_w + C \approx 55$ dB. The measured field result is $D_{nT,w} + C = 55$ dB. On that basis, the measured field performance is directly consistent with the speech and music-relevant design-stage acoustic performance basis set out in Paragraph 4.3.3 of the original Noise Impact Assessment.

Table 5.1: Comparison of Design-Stage Basis and Measured Field Performance

Item	Original design-stage basis	Measured field result
Primary rating	R_w 56 dB	$D_{nT,w}$ 56 dB
Spectrum adaptation term for music/general activity	$C = -1$ dB	$C = -1$ dB
Speech and music-relevant value	$R_w + C \approx 55$ dB	$D_{nT,w} + C = 55$ dB
Conclusion	Performance basis for separating floor/ceiling	Achieved in field measurement

5.3. Treatment of R_w and $D_{nT,w}$ Descriptor Difference

The original design-stage appraisal used R_w -based values generated for the assessed separating floor/ceiling build-up. The post-installation test has produced $D_{nT,w}$ -based field values. These descriptors are not identical: R_w is an element/laboratory-type weighted sound reduction index, whereas $D_{nT,w}$ is a field-measured standardised level difference between rooms.

This difference does not weaken the verification. Condition 3 specifically requires post-installation airborne sound insulation testing between the ground-floor commercial premises and the first-floor residential accommodation. $D_{nT,w}$ is therefore the appropriate field verification descriptor. The measured result confirms that the installed construction achieves a field performance consistent with the design-stage $R_w + C$ acoustic performance basis used in the original assessment.

5.4. Design-Stage Uncertainty and Interpretation

The original assessment identified the INSUL output as a design-stage indication of likely performance rather than a guarantee of as-built acoustic separation. It also noted that the actual performance would depend on airtightness, workmanship, junction detailing, penetrations, access hatches, and flanking transmission.

When comparing a design-stage model with post-installation field measurement, a margin of approximately ± 3 dB is a prudent and reasonable allowance for normal design-stage uncertainty. This report does not rely on that tolerance to manufacture compliance. The measured $D_{nT,w} + C$ value of 55 dB is equal to the original music-relevant design-stage value of $R_w + C \approx 55$ dB. It is therefore both within any reasonable design-stage uncertainty range and directly aligned with the central performance basis adopted in the original assessment.

5.5. Operational Context

The original acoustic conclusions were predicated on the premises operating as a modest cafe/bar with low-level background music only, and not as an entertainment-led venue. That operational basis remains material. The measured separating floor/ceiling performance confirms that the installed construction is consistent with the original acoustic design basis, but it does not remove the need for the premises to operate in accordance with the approved assumptions and planning controls.

In particular, the measured sound insulation result should be read alongside the continuing requirement that any music remains low-level background music only, with no live music, DJs, subwoofers, promoted events, amplified performances or other entertainment-led operation unless subject to separate acoustic review and consent where required.

6. Conclusion

Post-installation airborne sound insulation testing has been undertaken between the ground-floor commercial premises and the first-floor residential accommodation at 46 High Street, West End. The testing has been undertaken to support discharge of Planning Condition 3 associated with planning application F/26/101048.

The measured field performance of the separating floor/ceiling construction was:

$$D_{nT,w} (C; C_{tr}) = 56 (-1; -5) \text{ dB}$$

$$D_{nT,w} + C = 55 \text{ dB}; D_{nT,w} + C_{tr} = 51 \text{ dB}$$

The original Noise Impact Assessment identified $R_w + C \approx 55 \text{ dB}$ as the more relevant design-stage single-number indicator for the proposed background-music cafe/bar use. The measured field value of $D_{nT,w} + C = 55 \text{ dB}$ is therefore consistent with the original design-stage performance basis in Paragraph 4.3.3.

The high-frequency bands at 3.15 kHz, 4 kHz and 5 kHz were background limited. This has been reviewed prudently and does not affect the conclusion. The 4 kHz and 5 kHz bands are outside the standard $D_{nT,w}$ rating range, and the 3.15 kHz band is not a controlling band for the rating. The background-limited nature of these high-frequency bands is conservative and does not artificially improve the reported single-number result.

On the basis of the measured post-installation airborne sound insulation performance, the installed separating floor/ceiling construction is considered to comply with the recommendations of Paragraph 4.3.3 of the Polaris Acoustics Noise Impact Assessment dated 31st March 2026, reference P1950-PA-ZZ-REP-01.

Accordingly, in acoustic terms, Planning Condition 3 is considered suitable for discharge.

7. References

1. BS EN ISO 16283-1, Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation.
2. BS EN ISO 717-1, Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation.
3. BS 8233:2014, Guidance on sound insulation and noise reduction for buildings.
4. Polaris Acoustics, Noise Impact Assessment, 46 High Street, West End, Hatch and Barrel Ltd, reference P1950-PA-ZZ-REP-01, dated 31st March 2026.
5. Eastleigh Borough Council, Planning Decision Notice, Application F/26/101048, dated 12th May 2026.

Appendices

Appendix 1: Glossary of Acoustics Terminology

Term	Explanation
Absorption Coefficient	Fraction of incident sound absorbed by a material (0 = none, 1 = complete absorption).
Ambient Noise	All-encompassing background sound at a location, including natural and man-made sources.
dB(A)	A-weighted decibels. Adjusts measurements to reflect the sensitivity of human hearing. Standard in environmental noise assessment.
Decibel (dB)	Logarithmic unit for sound level, expressing a ratio relative to a reference pressure (20 µPa). Used for sound pressure levels, changes in level, and sound insulation.
$D_{nT,w}$	Weighted standardized level difference. Field measure of airborne sound insulation between rooms.
Frequency (Hz)	Unit of frequency, equal to one cycle per second. Determines pitch.
Hertz (Hz)	See <i>Frequency</i> .
$L_{A10,T}$	A-weighted sound level exceeded for 10% of the period. Historically used to describe road traffic noise.
$L_{A90,T}$	A-weighted level exceeded for 90% of the period. Used as background sound level in BS 4142.
$L_{Aeq,T}$	Equivalent continuous A-weighted sound level over a given period T. Represents the energy-averaged noise level. Used in BS 8233 and ProPG.
L_{AFmax}	Maximum A-weighted sound level recorded during a measurement period. Relevant to sleep disturbance criteria.
Reverberation Time (RT60 / T60)	Time for sound to decay by 60 dB after the source stops. Indicates room “liveliness.”
Rw (or SRI)	Weighted sound reduction index. Laboratory measure of a building element’s sound insulation. Higher = better.

Appendix 2: Schedule of Equipment

Equipment Type	Manufacturer	Serial Number	Calibration Type	Date of Last Calibration Check	Date of Next Calibration Check
Fusion 4G Sound & Vibration Analyser	ACOEM	14388	Manufacturer Traceable Calibration to: Class 1 IEC 61672-3	24 th October 2024	October 2026
40CD Microphone Capsule	G.R.A.S.	470605		24 th October 2024	October 2026
PRE22 Pre-Amplifier	ACOEM	2138080		24 th October 2024	October 2026
CAL-01 Calibrator (Class 1)	ACOEM	990456		24 th October 2025	October 2026
DMK01 Weather Protection Kit	ACOEM	Not Applicable			
RAL 135-5M 5m Cable for PRE 22	ACOEM/LEMO	Not Applicable			





Tests report

TR-REP-10875.xls

ISSUED FOR :

ACOUSTIC1

Acoustic1

Overdale

Manordeilo

SA19 7BD Llandeilo

United Kingdom

Name and location of the laboratory of tests:

Acoustic1 - Overdale Manordeilo, Llandeilo

Carmathenshire UK SA19 7BD

TESTED INSTRUMENT

Designation :

Integrator Sound Level Meter

Manufacturer :

01dB

Type :

FUSION + DMK

Serial number :

14388

Identification number :

Date of issue :

24/10/2024

This report includes 7 pages

The measurements are performed according to the IEC 61672-3, Electroacoustics, - Sound level meters – Part 3: Periodic tests.

Steve THOMAS

Head of calibration laboratory at Acoustic 1

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Instruments used for tests:

Designation	Manufacturer	Type	Serial number	Identification number
Insulated chamber	SKC Acoustic	-	-	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Programmable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types ($k=2$). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.) are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
93.6	0.4	93.8	+/- 1.0

Self-generated noise

0° RA208 + short windscreen

Microphone replaced by the electrical input-signal device	Nominal value (dB)	Displayed value (dB)
Leq dBA	< 14	9.9
Leq dBB	< 15	9.8
Leq dBC	< 20	11.6
Leq dBZ	< 21	17.8

Microphone installed	Nominal value (dB)	Displayed value (dB)
Leq dBA	< 20	15.4

Tests report:

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Acoustical signal tests of a frequency weightings

0° RA208 + short windscreen	Measurement error		Uncertainty (dB)	Maximum Permissible Error (dB)
	C (dB)			
125 Hz	-0.1		0.3	+/- 1,0
1000 Hz	0.0		0.3	+/- 0,7
8000 Hz	-1.2		0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

0° RA208 + short windscreen	Measurement error			Uncertainty (dB)	Maximum Permissible Error (dB)
	Z (dB)	A (dB)	C (dB)		
63 Hz	-0.2	-0.2	-0.2	0.4	+/- 1,0
125 Hz	-0.2	-0.3	-0.1	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	0.1	0.1	0.1	0.4	+/- 1,0
4000 Hz	0.5	0.5	0.5	0.6	+/- 1,0
8000 Hz	-0.5	-1.0	-1.0	0.6	-2,5 ; +1,5
16000 Hz	-3.1	-8.4	-8.4	0.4	-16,0 ; +2,5

Frequency and time weightings at 1 kHz

0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.0	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.0	+/- 0,1
LEQ dBA / 1000 Hz	94.0	0.1	0.0	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.0	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.0	+/- 0,2

Long-term stability

0° RA208 + short windscreen

Displayed value (dB)		Measured deviation (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
Initial indication	Final indication			
94.0	94.0	0.0	0.1	+/- 0,1



ACOEM Group

Tests report:
TR-REP-10875.xls

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Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

FUSION user manual	DOCT131 version M February 2018
Type-approval certificate	France: LNE-27092 revision 2 dated 04/04/2017 Deutschland: DE-16-M-PTB-0006 dated 28/09/2016

#REF!

End of tests report

Sound Calibrator Certificate



Calibrator: 01dB 01DB CAL 01

Serial no: 990456
Level: 94.02 dB
Frequency: 1000.03 Hz

Reference conditions:

Pressure: 101.325 kPa
Temperature: 23.0 °C
Relative humidity: 50 %RH

The stated level is valid at measurement conditions.
Frequency stability: 0.00 %

Measurement conditions:

Pressure: 99.845 ± 0.005 kPa
Temperature: 23.3 ± 1.0 °C
Relative humidity: 51.5 ± 2.0 %RH

Measured according to IEC 60942.

The stated level is relative to 20µPa.

All results quoted are directly traceable to the National Physical Laboratory, London
with a calculated uncertainty less than 0.10 dB (2×sd).



Appendix 3: INSUL Ceiling Construction

Sound Insulation Prediction (v10.0.7)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 31/03/2026

Job Name:



R_w 56 dB

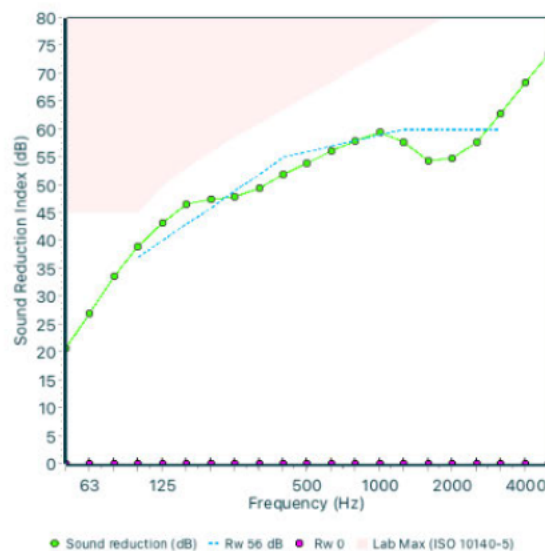
C -1 dB

Ctr -3 dB

System description

Panel 1 1 x 22 mm Particle Board
 Frame Solid Joist with Gyproc acoustic hanger (87 mm x 45 mm), Stud spacing 600 mm, Cavity Width 200 mm + 200 mm Rockwool (48kg/m³)
 Panel 2 2 x 15 mm Siniat GTEC dB Board 15mm
 Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 50.1 kg/m², Mass-air-mass resonant frequency = : 37 Hz

freq. (Hz)	R (dB)	Roct (dB)
50	21	
63	27	24
80	34	
100	39	
125	43	42
160	46	
200	47	
250	48	48
315	50	
400	52	
500	54	54
630	56	
800	58	
1000	59	58
1250	58	
1600	54	
2000	55	55
2500	58	
3150	63	
4000	68	66
5000	74	



Appendix 4: Standardised Level Difference Test Sheet

Standardised level difference measured in accordance with ISO 16283-1 Field measurement of airborne sound insulation between rooms			
Project No:	P1959	Date of Test:	13th May 2026
Client:	Hatch and Barrel Ltd	Transmission Path:	Café to Fl.1 Living Room
Location:	46 High Street, West End, SO30 3DR	Building Element:	Separating Floor
Description:	Timber separating floor with 22 mm particle board deck on timber joists, retained existing ceiling, suspended MF ceiling on acoustic hangers below, approximately 200 mm mineral wool infill, and 2 x 15 mm acoustic plasterboard/dB board lining to underside. Junctions, penetrations and access hatches sealed/detailed to limit rigid bridging and flanking transmission.		
Approximate source room volume:		150 m ³	Approximate receiving room volume:
			90 m ³

Frequency <i>f</i> Hz	Standardised Level Diff. <i>D_{nT}</i> (dB)
50	36.6
63	40.2
80	40.7
100	41.4
125	40.3
160	39.9
200	44.9
250	48.7
315	52.5
400	53.2
500	53.7
630	52.4
800	54.8
1000	55.8
1250	56.2
1600	56.2
2000	60.1
2500	65.5
3150	68.0
4000	69.3
5000	67.4

1/3 Octave Band Centre Frequency, Hz

Rating in accordance with ISO 717-1:		
$D_{nT,w} = 56$ dB	$D_{nT,w} + C_{tr} = 51$ dB	
Rating according to BS EN ISO 717-1:	$C_{50-3150} = -1$ dB	$C_{tr,50-3150} = -6$ dB
$D_{nT,w}(C; C_{tr}) = 56 (-1; -5)$ dB	$C_{100-3150} = -1$ dB	$C_{tr,100-3150} = -5$ dB
Evaluation based on field measurement using results obtained by an engineering method.	$C_{50-5000} = -1$ dB	$C_{tr,50-5000} = -6$ dB
	$C_{100-5000} = 0$ dB	$C_{tr,100-5000} = -5$ dB

Test Report #: P1959	Consultant: Mathew Vaughan BA (Hons) MSc MIOA	
Date: 15th May 2026	Signature:	