Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines Upon Thames. TW18 3HR, UK

0789

Accredited to ISO/IEC 17025:2017

Campbell Associates Ltd

Issue No: 027 **Issue date:** 10 May 2026

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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ACOUSTICS			
Pistonphones & sound calibrators			Suitable to support the periodic testing of Sound Calibrators or Pistonphones according to IEC 60942:2003 Annex B (Withdrawn); or IEC 60942:2017 Annex B. Using the insert voltage technique with a WS2P or LS2P microphone and Norsonic 1504 with Nor-1018 Software or Norsonic 1525 with NorCal software.
Frequency	63 Hz to 16 kHz	0.10 % of reading	
Distortion	0.01 % to 4 %	14 % of reading	
Sound pressure level	90 – 140 dB *At 250 Hz* *At 1000 Hz*	 0.07 dB 0.07 dB	

Sound pressure level range of multi-frequency calibrators	Calibration and Measurement Capability in dB for Sound Pressure Level over the frequency ranges shown				
	31.5 Hz to 63 Hz	*63 Hz to 5 kHz*	*5 kHz to 8 kHz*	*8 kHz to 12.5 kHz*	*12.5 kHz to 16 kHz*
90 – 140 dB	0.13	0.09	0.12	0.19	0.27

Sound level meters Sound Level Meters	BS 7580:Part 1:1997	See remarks	Suitable to support the verification of Type 0, 1 & 2 SLMs originally manufactured in accordance with BS EN 60651:1994 BS EN 60804:1994 and for which appropriate correction factors are known and agreed

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ACOUSTICS (cont'd)			
Sound level meters			
Sound Level Meters	BS EN 61672-3:2006 (Withdrawn) as modified by UKAS TPS 49 Edition 2. June 2009.	See remarks	Suitable to support the verification of Class 1 & 2 SLMs originally manufactured in accordance with IEC 61672-3:2006 and for which required correction factors are known and agreed, including measurement of self generated noise with microphone fitted at customers request.
Sound Level Meters	BS EN 61672-3:2013	See remarks	Suitable to support the verification of Class 1 & 2 SLMs originally manufactured in accordance with IEC 61672-3:2013 and for which required correction factors are known and agreed, including measurement of self generated noise with microphone fitted at customers request.
Filters – sound level meter based octave band filters one-third octave band filters	 16 Hz to 16 kHz 16 Hz to 20 kHz	 0.13 dB 0.13 dB	Filters originally manufactured in accordance with IEC 61260:1995 (BS EN 61260:1996) or IEC 60225 in combination with a sound level meter
Reverberation time	50 Hz to 10 kHz		Suitable to support the verification of specific RT modules on sound level meters using transfer reference audio files i.e. computer generated multi-sine files to give the required decay curves
One- third octave bands	For R_t times of 0.1, 0.2, 0.5, 1 and 2 seconds 5 and 10 seconds	0.01 s 0.06 s	
Microphones Pressure sensitivity of 1", ½" & ¼" microphones @ reference frequency	250 Hz	0.1 dB	WSM type microphones
Electrostatic actuator response of 1" microphones	100 Hz to 4 kHz >4 kHz to 8 kHz >8 kHz to 12.5 kHz	0.21 dB 0.24 dB 0.48 dB	By electrostatic actuator methods in accordance with BS EN 61094-6:2005

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ACOUSTICS (cont'd)			
Microphones			
Electrostatic actuator response of ½" microphones	100 Hz to 4 kHz	0.21 dB	By electrostatic actuator Methods in accordance with BS EN 61094-6:2005
	>4 kHz to 8 kHz	0.24 dB	
	>8 kHz to 16 kHz	0.48 dB	The upper frequency limit for high sensitivity ½" microphones is 20 kHz
	>16 kHz to 20 kHz	0.7 dB	
	>20 kHz to 50 kHz	0.9 dB	
Electrostatic actuator response of ¼" microphones	100 Hz to 4 kHz	0.21 dB	By electrostatic actuator Methods in accordance with BS EN 61094-6:2005
	>4 kHz to 8 kHz	0.24 dB	
	>8 kHz to 16 kHz	0.48 dB	
	>16 kHz to 20 kHz	0.7 dB	
	>20 kHz to 50 kHz	0.9 dB	
	> 50 kHz to 100 kHz	1.2 dB	
Polarised self-capacitance of 1", ½" & ¼" microphones @ 250 Hz	1 pF to 100 pF	0.3%	
Low frequency response of ½" microphones (with pressure equalisation vent exposed to sound field)	2 Hz to 4 Hz	0.45 dB	Using microphone test chamber
	4 Hz to 25 Hz	0.27 dB	
	25 Hz to 100 Hz	0.26 dB	
Measurement Microphone (Including microphones, microphone systems, complete sound level meters and front end accessories).			
Free-field sensitivity level and relative frequency response	100 Hz to 800 Hz >800 Hz to 2.5 kHz >2.5 kHz to 12.5 kHz >12.5 kHz to 20 kHz	0.25 dB 0.30 dB 0.60 dB 0.75 dB	WSM type microphones, WSM microphone and pre-amplifier sets and/ or used with Class 1 Sound Level Meters. Using sequential comparison method in BS EN 61094-8:2012 using an LS2P reference microphone.
Free-field sensitivity level and relative frequency response	100 Hz to 800 Hz >800 Hz to 2.5 kHz >2.5 kHz to 12.5 kHz >12.5 kHz to 20 kHz	0.34 dB 0.38 dB 0.76 dB 0.99 dB	WSM type microphones, WSM microphone and pre-amplifier sets and/ or used with Class 2 Sound Level Meters. Using sequential comparison method in BS EN 61094-8:2012 using an WS2P reference microphone.

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ACOUSTICS (cont'd)			
Microphones			
Calibration of insertion loss level and relative frequency response of sound level meter case reflections and/ or front end accessories.	100 Hz to 800 Hz >800 Hz to 2.5 kHz >2.5 kHz to 12.5 kHz >12.5 kHz to 20 kHz	0.34 dB 0.38 dB 0.76 dB 0.99 dB	Sound level meter case reflections and/ or front end accessories. Using sequential comparison method in BS EN 61094-8:2012 using a reference microphone.
Tapping Machines			Suitable to support verification of tapping machines in accordance with BS EN ISO 16283-2:2020; BS EN ISO 16283-2:2015 (Withdrawn) & BS EN ISO 140-7:1998 (Withdrawn)
Velocity	0.70 m/s to 1.00 m/s	0.01 m/s	
Mass	480 g to 520 g	0.17 g	
Time	50 ms to 150 ms	0.25 ms	
Diameter	25 mm to 35 mm	0.03 mm	
Radius of curvature	300 mm to 700 mm	11 mm	
Angle of fall	0º to 0.6º	0.07°	
ACCELEROMETRY			
<u>Portable vibration field calibrators</u>			Portable vibration field calibrators to documented in-house procedure TP-15 "Calibration of Vibration Calibrators"
Acceleration:			
10 Hz to 20 Hz	1 ms^{-2} to 100 ms^{-2}	1.15 %	
20 Hz to 80 Hz	1 ms^{-2} to 100 ms^{-2}	0.77 %	
80 Hz	1 ms^{-2} to 100 ms^{-2}	0.63 %	
80 Hz to 1 kHz	1 ms^{-2} to 100 ms^{-2}	0.81 %	Certificate of Conformance to BS EN ISO 8041-1:2017 Annex A for devices with matching specification by periodic verification
1 kHz to 2 kHz	1 ms^{-2} to 100 ms^{-2}	1.55 %	
Frequency:			
8 Hz to 1280 Hz	1 ms^{-2} to 100 ms^{-2}	0.17 %	
Distortion (percentage of reading)	1 ms^{-2} to 100 ms^{-2}	0.18 %	

END

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Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand.
Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation Q[a, b] stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$