


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p><b>0789</b></p> <p>Accredited to <b>ISO/IEC 17025:2005</b></p>	<h3>Campbell Associates Ltd</h3> <p>Issue No: 006 Issue date: 13 October 2011</p>	
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<p><b>Calibration performed at the above address only</b></p>		

#### DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ( $k=2$ )	Remarks
<b>ACOUSTICS</b>			
<u>Pistonphones &amp; sound calibrators</u>			
Sound pressure level	250 Hz 1000 Hz	0.08 dB	Using Norsonic 1504 with NOR-1018 Software
Sound pressure level of multi-frequency calibrator	31.5 Hz to 63 Hz >63 to 125 Hz >125 Hz to 5 kHz >5 kHz to 8 kHz >8 kHz to 12.5 kHz >12.5 kHz to 16 kHz	0.13 dB 0.09 dB 0.08 dB 0.12 dB 0.22 dB 0.45 dB	
Amplitude stability	Dependent on instrument	0.02 dB	With WS2P microphone
Frequency	63 Hz to 16 kHz	0.10 % of reading	
Distortion	Dependent on instrument	14 % of reading	
Periodic testing of sound calibrators in accordance with IEC 60942:2003	90 to 140 dB	Uncertainties as listed above See also remarks	Periodic testing of sound calibrators Class LS, 1 or 2 using Insert voltage technique using WS2P or LS2P microphone as appropriate
<u>Sound level meters</u>			
Verification of Sound Level Meters	BS 7580:Part 1:1997	See remarks	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
<b>Filters</b> - 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



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<b>Reverberation time</b> One- third octave bands	50 Hz to 10 kHz For R <sub>t</sub> times of 0.1, 0.2, 0.5, 1 and 2 seconds 5 and 10 seconds	0.01 s  0.06 s	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
<b>Microphones</b> 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 – 4 kHz  >4 kHz – 8 kHz  >8 kHz to 12.5 kHz	0.21 dB  0.24 dB  0.48 dB	By electrostatic actuator methods
Electrostatic actuator response of ½" microphones	100 Hz – 4 kHz  >4 kHz – 8 kHz  >8 kHz to 16 kHz  >16 kHz to 20 kHz  >20 kHz to 50 kHz	0.21 dB  0.24 dB  0.48 dB  0.7 dB  0.9 dB	By electrostatic actuator methods  The upper frequency limit for high sensitivity ½" microphones is 20 kHz
Electrostatic actuator response of ¼" microphones	100 Hz – 4 kHz  >4 kHz – 8 kHz  >8 kHz to 16 kHz  >16 kHz to 20 kHz  >20 kHz to 50 kHz  > 50 kHz to 100 kHz	0.21 dB  0.24 dB  0.48 dB  0.7 dB  0.9 dB  1.2 dB	By electrostatic actuator methods
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 100 Hz	0.8 dB	Using microphone test chamber
END			