

Acoustics, Ultrasound and Vibration, Spain, CEM (Centro Español de Metrología)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					NMI Internal Identifier	Comments
Quantity	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage factor	Level of Confidence	Is the expanded uncertainty a relative one?		
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	20 Hz to 24.9 Hz	0.08	dB	2	95%	No	1	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	25 Hz to 63 Hz	0.05	dB	2	95%	No	2	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	63.1 Hz to 4.0 kHz	0.03	dB	2	95%	No	3	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	4.1 kHz to 6.3 kHz	0.05	dB	2	95%	No	4	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	6.4 kHz to 8 kHz	0.07	dB	2	95%	No	5	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS1	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	8.1 kHz to 10 kHz	0.08	dB	2	95%	No	6	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	20 Hz to 31.4 Hz	0.08	dB	2	95%	No	7	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	31.5 Hz to 62.9 Hz	0.05	dB	2	95%	No	8	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	63 Hz to 125 Hz	0.04	dB	2	95%	No	9	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	125.1 Hz to 8 kHz	0.03	dB	2	95%	No	10	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	8.1 kHz to 12.5 kHz	0.04	dB	2	95%	No	11	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	12.6 kHz to 16 kHz	0.05	dB	2	95%	No	12	Approved on 09 November 2006
Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	16.1 kHz to 20 kHz	0.07	dB	2	95%	No	13	Approved on 09 November 2006

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Pressure sensitivity level	Measurement microphone type LS2	IEC 61094-2:1992			dB (reference: 1 V/Pa)	Frequency	20.1 kHz to 25 kHz	0.14	dB	2	95%	No	14	Approved on 09 November 2006
Sound pressure level	Pistonphone or sound calibrator single frequency 250 Hz to 1 kHz	Calibrated measurement microphone	70	130	dB (reference: 20 μ Pa)	Microphone type	LS1P	0.06	dB	2	95%	No	15	Approved on 09 November 2006
Sound pressure level	Pistonphone or sound calibrator single frequency 250 Hz to 1 kHz	Calibrated measurement microphone	70	130	dB (reference: 20 μ Pa)	Microphone type	LS2P	0.06	dB	2	95%	No	16	Approved on 09 November 2006
Sound pressure level	Sound calibrator, multi-frequency	Calibrated measurement microphone	70	130	dB (reference: 20 μ Pa)	Frequency	31.5 Hz to 4 kHz	0.10	dB	2	95%	No	17	Approved on 12 April 2013
						Microphone type	LS2P							
Sound pressure level	Sound calibrator, multi-frequency	Calibrated measurement microphone	70	130	dB (reference: 20 μ Pa)	Frequency	> 4 kHz to 16 kHz	0.15	dB	2	95%	No	17	Approved on 12 April 2013
						Microphone type	LS2P							
Charge sensitivity (modulus)	Accelerometer	Laser interferometry, ISO 16063-11			C/(m/s ²)	Frequency	0.4 Hz to < 10 Hz	0.5	%	2	95%	Yes		Approved on 19 October 2015
Charge sensitivity (modulus)	Accelerometer	Laser interferometry, ISO 16063-11			C/(m/s ²)	Frequency	10 Hz to 5 kHz	0.4	%	2	95%	Yes		Approved on 19 October 2015
Charge sensitivity (modulus)	Accelerometer	Laser interferometry, ISO 16063-11			C/(m/s ²)	Frequency	> 5 kHz to 10 kHz	0.8	%	2	95%	Yes		Approved on 19 October 2015
Charge sensitivity (phase shift)	Accelerometer	Laser interferometry, ISO 16063-11	0	360	°	Frequency	0.4 Hz to 1 kHz	0.5	°	2	95%	Yes		Approved on 19 October 2015
Charge sensitivity (phase shift)	Accelerometer	Laser interferometry, ISO 16063-11	0	360	°	Frequency	> 1 kHz to 10 kHz	1	°	2	95%	Yes		Approved on 19 October 2015
Voltage sensitivity (modulus)	Acceleration measuring chain	Laser interferometry, ISO 16063-11			V/(m/s ²)	Frequency	0.4 Hz to < 10 Hz	0.5	%	2	95%	Yes		Approved on 19 October 2015

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Voltage sensitivity (modulus)	Acceleration measuring chain	Laser interferometry, ISO 16063-11			V/(m/s ²)	Frequency	10 Hz to 5 kHz	0.4	%	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (modulus)	Acceleration measuring chain	Laser interferometry, ISO 16063-11			V/(m/s ²)	Frequency	> 5 kHz to 10 kHz	0.8	%	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (phase shift)	Acceleration measuring chain	Laser interferometry, ISO 16063-11	0	360	°	Frequency	0.4 Hz to 1 kHz	0.5	°	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (phase shift)	Acceleration measuring chain	Laser interferometry, ISO 16063-11	0	360	°	Frequency	> 1 kHz to 10 kHz	1	°	2	95%	Yes	Approved on 19 October 2015	
Charge sensitivity (modulus)	Accelerometer	Comparison, ISO 16063-21			C/(m/s ²)	Frequency	0.4 Hz to < 10 Hz	0.7	%	2	95%	Yes	Approved on 19 October 2015	
Charge sensitivity (modulus)	Accelerometer	Comparison, ISO 16063-21			C/(m/s ²)	Frequency	10 Hz to 5 kHz	0.6	%	2	95%	Yes	Approved on 19 October 2015	
Charge sensitivity (modulus)	Accelerometer	Comparison, ISO 16063-21			C/(m/s ²)	Frequency	> 5 kHz to 10 kHz	1.0	%	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (modulus)	Acceleration measuring chain	Comparison, ISO 16063-21			V/(m/s ²)	Frequency	0.4 Hz to < 10 Hz	0.7	%	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (modulus)	Acceleration measuring chain	Comparison, ISO 16063-21			V/(m/s ²)	Frequency	10 Hz to 5 kHz	0.6	%	2	95%	Yes	Approved on 19 October 2015	
Voltage sensitivity (modulus)	Acceleration measuring chain	Comparison, ISO 16063-21			V/(m/s ²)	Frequency	> 5 kHz to 10 kHz	1.0	%	2	95%	Yes	Approved on 19 October 2015	
Acceleration (modulus)	Acceleration measuring instrument (with accelerometer)	Comparison, ISO 16063-21	1	100	m/s ²	Frequency	0.4 Hz to < 10 Hz	0.7	%	2	95%	Yes	Approved on 19 October 2015	
Acceleration (modulus)	Acceleration measuring instrument (with accelerometer)	Comparison, ISO 16063-21	1	400	m/s ²	Frequency	10 Hz to 5 kHz	0.6	%	2	95%	Yes	Approved on 19 October 2015	

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Acceleration (modulus)	Acceleration measuring instrument (with accelerometer)	Comparison, ISO 16063-21	1	400	m/s ²	Frequency	> 5 kHz to 10 kHz	1.0	%	2	95%	Yes		Approved on 19 October 2015
Acceleration (modulus)	Acceleration calibrator	Reference accelerometer	1	100	m/s ²	Frequency	0.4 Hz to < 10 Hz	0.7	%	2	95%	Yes		Approved on 19 October 2015
Acceleration (modulus)	Acceleration calibrator	Reference accelerometer	1	400	m/s ²	Frequency	10 Hz to 5 kHz	0.6	%	2	95%	Yes		Approved on 19 October 2015
Acceleration (modulus)	Acceleration calibrator	Reference accelerometer	1	400	m/s ²	Frequency	> 5 kHz to 10 kHz	1.0	%	2	95%	Yes		Approved on 19 October 2015