



Certificate No. : LN1001-191024

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

National Measurement Laboratory, R. O. C.
National Measurement Laboratory, R. O. C.(Acoustics & Vibration)

321 Kuang Fu Rd., Sec. 2, Hsinchu, Taiwan, R. O. C.

is accredited in respect of laboratory

Accreditation Criteria : ISO/IEC 17025:2017;CNS 17025:2018
Accreditation Number : N1001
Originally Accredited : January 01, 2003
Effective Period : January 01, 2017 to December 31, 2021
Accredited Scope : Calibration Field, see described in the Appendix
Specific Accreditation Program : Accreditation Program for National Metrology Institutes

Chung-Lin Wang
President, Taiwan Accreditation Foundation
Date: October 24, 2019

P1, total 15 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix

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President, Taiwan Accreditation Foundation
Date: October 24, 2019

Accreditation Number : N1001

Laboratory Head : LIN, Tzeng-Yow

Vibration & Acoustics

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB1001 Accelerometer	B&K 8305 /B&K 2626 /PCB 080A200 /PCB 442A102	instrument calibration technique for accelerometer-comparison method (Document No.:07-3-83-0038)		V /(m/s ²)		V /(m/s ²)	Voltage sensitivity: Frequency 50 Hz to 3 kHz, Frequency /Amplitude:(50 Hz, 100 Hz, 160 Hz, 200 Hz, 300 Hz, 400 Hz, 500 Hz, 600 Hz, 700 Hz, 800 Hz, 900 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz) /100 m/s ²	1.8	%
				V /(m/s ²)		V /(m/s ²)	Voltage sensitivity: Frequency 3 kHz (exclude) to 7 kHz, Frequency/Amplitude:(4000 Hz, 5000 Hz, 6000 Hz, 7000 Hz) /100 m/s ²	4.4	%
				pC /(m/s ²)		pC /(m/s ²)	Charge sensitivity: Frequency/Amplitude: (100 Hz, 160 Hz) /100 m/s ²	1.5	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB1001 Accelerometer	Uniphase 1101 Laser Interferometer Module/ RENISHAW /RLU 10 Laser Interferometer Module	instrument calibration technique for accelerometer -sine-approx imation method (Document No.:07-3-90 -0117)		V /(m/s ²)		V /(m/s ²)	Voltage sensitivity: Frequency 50 Hz to 2.5 kHz, Frequency /Amplitude: (50 Hz/13 m/s ²), (100 Hz/21 m/s ²), (160 Hz/26 m/s ²), (200 Hz/65 m/s ²), (300 Hz/65 m/s ²), (400 Hz/65 m/s ²), (500 Hz/65 m/s ²), (600 Hz/65 m/s ²), (700 Hz/65 m/s ²), (800 Hz/65 m/s ²), (900 Hz/65 m/s ²), (1000 Hz/65 m/s ²), (1500 Hz/65 m/s ²), (2000 Hz/65 m/s ²), (2500 Hz/65 m/s ²)	0.52	%
				V /(m/s ²)		V /(m/s ²)	Voltage sensitivity: Frequency 2.5 kHz(exclude) to 10 kHz, Frequency /Amplitude: (3000 Hz/92 m/s ²), (4000 Hz/92 m/s ²), (5000 Hz/92 m/s ²), (6000 Hz/92 m/s ²), (7000 Hz/92 m/s ²), (10000 Hz/132 m/s ²)	1.9	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB1001 Accelerometer	Uniphase 1101 Laser Interferometer Module/ RENISHAW /RLU 10 Laser Interferometer Module	instrument calibration technique for accelerometer -sine-approximation method (Document No.:07-3-90-0117)		pC / (m/s^2)		pC / (m/s^2)	Charge sensitivity: Frequency 50 Hz to 2.5 kHz, Frequency /Amplitude: (50 Hz/13 m/s^2), (100 Hz/21 m/s^2), (160 Hz/26 m/s^2), (200 Hz/65 m/s^2), (300 Hz/65 m/s^2), (400 Hz/65 m/s^2), (500 Hz/65 m/s^2), (600 Hz/65 m/s^2), (700 Hz/65 m/s^2), (800 Hz/65 m/s^2), (900 Hz/65 m/s^2), (1000 Hz/65 m/s^2), (1500 Hz/65 m/s^2), (2000 Hz/65 m/s^2), (2500 Hz/65 m/s^2)	0.55	%
				pC / (m/s^2)		pC / (m/s^2)	Charge sensitivity: Frequency 2.5 kHz (exclude) to 10 kHz, Frequency/Amplitude: (3000 Hz/92 m/s^2), (4000 Hz/92 m/s^2), (5000 Hz/92 m/s^2), (6000 Hz/92 m/s^2), (7000 Hz/92 m/s^2), (10000 Hz/132 m/s^2)	1.9	%
KB1001 Accelerometer	Uniphase 1101 Laser Interferometer Module /RENISHAW /RLU 10 Laser Interferometer Module	instrument calibration technique for accelerometer -fringe-counting method (Document No.:07-3-83-0045)		V / (m/s^2)		V / (m/s^2)	Voltage sensitivity: Frequency 50 Hz to 700 Hz, Frequency /Amplitude: (50 Hz/13 m/s^2), (100 Hz/21 m/s^2), (160 Hz/26 m/s^2), (200 Hz/65 m/s^2), (300 Hz/65 m/s^2), (400 Hz/65 m/s^2), (500 Hz/65 m/s^2), (600 Hz/65 m/s^2), (700 Hz/65 m/s^2)	0.50	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB1001 Accelerometer	Uniphase 1101 Laser Interferometer Module /RENISHAW /RLU 10 Laser Interferometer Module	instrument calibration technique for accelerometer -fringe -counting method (Document No.:07-3-83-0045)		pC / (m/s^2)		pC / (m/s^2)	Charge sensitivity: Frequency 50 Hz to 700 Hz, Frequency /Amplitude: (50 Hz/13 m/s^2), (100 Hz/21 m/s^2), (160 Hz/26 m/s^2), (200 Hz/65 m/s^2), (300 Hz/65 m/s^2), (400 Hz/65 m/s^2), (500 Hz/65 m/s^2), (600 Hz/65 m/s^2), (700 Hz/65 m/s^2)	0.50	%
KB1001 low frequency accelerometer	PCB 301M26 /442A102	instrument calibration technique for low frequency accelerometer -comparison method (Document No.:07-3-86-0085)		V / (m/s^2)		V / (m/s^2)	Voltage sensitivity: Frequency 0.5 Hz to 160 Hz, Frequency /Amplitude: (0.5 Hz/0.5 m/s^2), (0.8 Hz/0.5 m/s^2), (1 Hz/1 m/s^2), (2 Hz/1.5 m/s^2), (3 Hz/3.5 m/s^2), (3.15 Hz/3.5 m/s^2), (5 Hz/5 m/s^2), (6.3 Hz/5 m/s^2), (10 Hz/5 m/s^2), (15 Hz/5 m/s^2), (16 Hz/5 m/s^2), (20 Hz/5 m/s^2), (30 Hz/5 m/s^2), (31.5 Hz/5 m/s^2), (40 Hz/5 m/s^2), (50 Hz/5 m/s^2), (70 Hz/5 m/s^2), (100 Hz/5 m/s^2), (160 Hz/5 m/s^2)	1.9	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB1001 low frequency accelerometer	Laser Interferometer Module SIOS SL 02/1	instrument calibration technique for low frequency accelerometer -sine approximation method (Document No.:07-3-87-0004)		V /(m/s^2)		V /(m/s^2)	Voltage sensitivity: Frequency 0.1 Hz to 160 Hz, Frequency /Amplitude: (0.1 Hz/0.01 m/s^2), (0.2 Hz/0.05 m/s^2), (0.315 Hz, 0.4 Hz, 0.5 Hz, 0.63 Hz) /0.1 m/s^2 , (0.7 Hz, 0.8 Hz) /0.2 m/s^2 , (0.9 Hz, 1 Hz) /0.5 m/s^2 , (1.25 Hz, 1.6 Hz, 2 Hz)/1 m/s^2 , (2.5 Hz, 3.15 Hz) /2 m/s^2 , (4 Hz, 5 Hz, 6.3 Hz, 8 Hz, 10 Hz, 12.5 Hz, 15 Hz, 16 Hz, 20 Hz, 30 Hz, 31.5 Hz, 40 Hz, 50 Hz, 63 Hz, 70 Hz, 80 Hz, 90 Hz, 100 Hz)/5 m/s^2 , (160 Hz/10 m/s^2)	1.0	%
KB1001 shock accelerometer	PCB 301A12 /PCB 482A21	instrument calibration technique for shock accelerometer -comparison method (Document No.:07-3-76-0007)		V /(m/s^2)		V /(m/s^2)	Voltage sensitivity: Accerleration: 200 m/s^2 , 2000 m/s^2 , 6000 m/s^2 , 10000 m/s^2 , Shock duration 0.6 ms to 3.0 ms	1.9	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB1001 shock accelerometer	REO/32734	instrument calibration technique for shock accelerometer - phase operation method (Document No.:07-3-98-6157)		V /(m/s ²)		V /(m/s ²)	Voltage sensitivity: Accerleration: 200 m/s ² , 1000 m/s ² , 2000 m/s ² , 3000 m/s ² , 4000 m/s ² , 5000 m/s ² , 6000 m/s ² , 8000 m/s ² , 10000 m/s ² , Shock duration 0.3 ms to 3.0 ms	0.8	%
				pC /(m/s ²)		pC /(m/s ²)	Charge sensitivity: Accerleration: 200 m/s ² , 1000 m/s ² , 2000 m/s ² , 3000 m/s ² , 4000 m/s ² , 5000 m/s ² , 6000 m/s ² , 8000 m/s ² , 10000 m/s ² , Shock duration 0.3 ms to 3.0 ms	0.8	%
KB1002 vibration meter low frequency vibration meter	B&K 8305 /B&K 2626 Allied Signal QA-2000 /BKM 2601	instrument calibration technique for vibration meter -comparison method (Document No.:07-3-77-0030) instrument calibration technique for low frequency vibration meter -comparison method (Document No.:07-3-86-0044)		m/s ²		m/s ²	Acceleration: Frequency 50 Hz to 5 kHz, Frequency /Amplitude:(50 Hz, 100 Hz, 160 Hz, 200 Hz, 300 Hz, 400 Hz, 500 Hz, 600 Hz, 700 Hz, 800 Hz, 900 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 5000 Hz) /100 m/s ²	1.7	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB1002 vibration meter low frequency vibration meter	B&K 8305 /B&K 2626 Allied Signal QA-2000 /BKM 2601	instrument calibration technique for vibration meter -comparison method (Document No.:07-3-77-0030) instrument calibration technique for low frequency vibration meter -comparison method (Document No.:07-3-86-0044)		m/s		m/s	Velocity:Frequency 50 Hz to 2 kHz, Frequency/Amplitude: (50 Hz/318.12 mm/s), (100 Hz/159.09 mm/s), (160 Hz/99.45 mm/s), (200 Hz/79.50 mm/s), (300 Hz/52.80 mm/s), (400 Hz/39.70 mm/s), (500 Hz/31.70 mm/s), (600 Hz/26.50 mm/s), (700 Hz/22.70 mm/s), (800 Hz/19.90 mm/s), (900 Hz/17.68 mm/s), (1000 Hz/15.90 mm/s), (1500 Hz/10.61 mm/s), (2000 Hz/7.96 mm/s)	2.3	%
				m		m	Displacement: Frequency 50 Hz to 200 Hz, Frequency/Amplitude: (50 Hz/2.03 mm), (100 Hz/0.51 mm), (160 Hz/0.20 mm), (200 Hz/0.13 mm)	2.1	%
				m/s ²		m/s ²	Acceleration: Frequency 3.15 Hz to 50 Hz, Frequency/Amplitude: 3.15 Hz/3.5 m/s ² , (5 Hz, 6.3 Hz, 10 Hz, 15 Hz, 16 Hz, 20 Hz, 30 Hz, 31.5 Hz, 40 Hz, 50 Hz)/5 m/s ²	1.8	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB1002 vibration meter low frequency vibration meter	B&K 8305 /B&K 2626 Allied Signal QA-2000 /BKM 2601	instrument calibration technique for vibration meter -comparison method (Document No.:07-3-77-0030) instrument calibration technique for low frequency vibration meter -comparison method (Document No.:07-3-86-0044)		m/s		m/s	Velocity:Frequency 3.15 Hz to 50 Hz, Frequency/Amplitude: (3.15 Hz/176.83 mm/s), (5 Hz/159.26 mm/s), (6.3 Hz/126.32 mm/s), (10 Hz/79.57 mm/s), (15 Hz/53.08 mm/s), (16 Hz/49.72 mm/s), (20 Hz/39.82 mm/s), (30 Hz/26.54 mm/s), (31.5 Hz/25.27 mm/s), (40 Hz/19.96 mm/s), (50 Hz/15.94 mm/s)	2.6	%
				m		m	Displacement: Frequency 3.15 Hz to 50 Hz, Frequency/Amplitude: (3.15 Hz/17.87 mm), (5 Hz/10.14 mm), (6.3 Hz/6.38 mm), (10 Hz/2.53 mm), (15 Hz/1.13 mm), (16 Hz/0.99 mm), (20 Hz/0.63 mm), (30 Hz/0.28 mm), (31.5 Hz/0.26 mm), (40 Hz/0.16 mm), (50 Hz/0.1 mm)	2.7	%
KB1099 charge amplifier	HP 16383A	instrument calibration technique for charge amplifier (Document No.:07-3-96-0230)		mV /pC		mV /pC	Frequency 10 Hz	1.2	%
				mV /pC		mV /pC	Frequency 10 Hz (exclude) to 10 kHz	0.20	%

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB2001 microphone	B&K 4160 /B&K 4180	instrument calibration technique for microphone free-field sensitivity -reciprocity method (Document No.:07-3 -A2-0205)		dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 1 kHz to 3.15 kHz (fulfilling IEC 61094-1 LS1P)	0.16	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 3.15 kHz(exclude) to 10 kHz (fulfilling IEC 61094-1 LS1P)	0.17	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 1 kHz to 5 kHz (fulfilling IEC 61094-1, LS2aP, LS2F)	0.16	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 5 kHz(exclude) to 20 kHz (fulfilling IEC 61094-1 LS2aP, LS2F)	0.17	dB
KB2001 microphone	B&K 4160 /B&K 4180	instrument calibration technique for microphone sound pressure sensitivity -reciprocity method (Document No.:07-3 -83-0046)		dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 20 Hz to 40 Hz (fulfilling IEC 61094-1 LS1P)	0.06	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 40 Hz(exclude) to 5 kHz (fulfilling IEC 61094-1 LS1P)	0.05	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 5 kHz(exclude) to 10 kHz (fulfilling IEC 61094-1 LS1P)	0.08	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS1P: Frequency 10 kHz(exclude) to 12.5 kHz (fulfilling IEC 61094-1 LS1P)	0.12	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 20 Hz to 40 Hz (fulfilling IEC 61094-1 LS2aP, LS2F)	0.06	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB2001 microphone	B&K 4160 /B&K 4180	instrument calibration technique for microphone sound pressure sensitivity -reciprocity method (Document No.:07-3 -83-0046)		dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 40 Hz(exclude) to 8 kHz (fulfilling IEC 61094-1 LS2aP, LS2F)	0.05	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 8 kHz(exclude) to 20 kHz (fulfilling IEC 61094-1 LS2aP, LS2F)	0.11	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	LS2P: Frequency 20 kHz(exclude) to 25 kHz (fulfilling IEC 61094-1 LS2aP, LS2F)	0.20	dB
KB2001 microphone	B&K 4160 /B&K 4180	instrument calibration technique for microphone sound pressure sensitivity -comparis on method (Document No.:07-3 -A5-0152)		dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 20 Hz to 40 Hz (fulfilling IEC 61094-1 LS1, IEC 61094-4 WS1)	0.12	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 40 Hz(exclude) to 8 kHz (fulfilling IEC 61094-1 LS1, IEC 61094-4 WS1)	0.08	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 8 kHz(exclude) to 12.5 kHz (fulfilling IEC 61094-1 LS1, IEC 61094-4 WS1)	0.16	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 20 Hz to 40 Hz (fulfilling IEC 61094-1LS2, IEC 61094-4 WS2)	0.12	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 40 Hz(exclude) to 8 kHz (fulfilling IEC 61094-1LS2, IEC 61094-4 WS2)	0.08	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB2001 microphone	B&K 4160 /B&K 4180	instrument calibration technique for microphone sound pressure sensitivity -comparison method (Document No.:07-3 -A5-0152)		dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 8 kHz(exclude) to 20 kHz (fulfilling IEC 61094-1LS2, IEC 61094-4 WS2)	0.16	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 20 Hz to 40 Hz (fulfilling IEC 61094-4 WS3)	0.12	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 40 Hz(exclude) to 8 kHz (fulfilling IEC 61094-4 WS3)	0.08	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 8 kHz(exclude) to 16 kHz (fulfilling IEC 61094-4 WS3)	0.16	dB
				dB (reference: 1 V/Pa)		dB (reference: 1 V/Pa)	Frequency 16 kHz(exclude) to 20 kHz (fulfilling IEC 61094-4 WS3)	0.20	dB
KB2002 piston phone	B&K 4144 (WS1P) /B&K 4134 (WS2P)	instrument calibration technique for sound calibrator -insert -voltage technique (Document No.:07-3 -83-0050)	90	dB (reference: 20 μ Pa)	130	dB (reference: 20 μ Pa)	Frequency 250 Hz	0.12	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB2002 piston phone	B&K 4160(LS1P) /B&K 4180(LS2P) /	instrument calibration technique for sound calibrator -insert -voltage technique (Document No.:07-3-83-0050)	90	dB (reference: 20 μ Pa)	130	dB (reference: 20 μ Pa)	Frequency 250 Hz	0.08	dB
KB2002 piston phone	B&K 4228	instrument calibration technique for sound calibrator -comparison method (Document No.:07-3-80-0027)	90	dB (reference: 20 μ Pa)	130	dB (reference: 20 μ Pa)	Frequency 250 Hz	0.14	dB
KB2003 sound calibrator	B&K 4144 (WS1P) /B&K 4134 (WS2P)	instrument calibration technique for sound calibrator -insert -voltage technique (Document No.:07-3-83-0050)	90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Sound calibrator: Frequency 1 kHz	0.12	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 31.5 Hz	0.16	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 63 Hz to 8 kHz	0.12	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 12.5 kHz to 16 kHz	0.18	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KB2003 sound calibrator	B&K 4160(LS1P) /B&K 4180(LS2P)	instrument calibration technique for sound calibrator -insert -voltage technique (Document No.:07-3 -83-0050)	90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Sound calibrator: Frequency 1 kHz	0.08	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 31.5 Hz	0.10	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 63 Hz to 8 kHz	0.08	dB
			90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Multi-frequency sound calibrator: Frequency 12.5 kHz to 16 kHz	0.14	dB
KB2003 sound calibrator	B&K 4231	instrument calibration technique for sound calibrator -comparison method (Document No.:07-3 -80-0027)	90	dB (reference: 20 μ Pa)	120	dB (reference: 20 μ Pa)	Frequency 1 kHz	0.14	dB
KB2004 sound level meter	B&K 4228 /B&K 4231 /B&K 4226	instrument calibration technique for sound pressure level of sound level meter (Document No.:07-3 -97-0083)	124	dB (reference: 20 μ Pa)	124	dB (reference: 20 μ Pa)	Frequency 250 Hz	0.2	dB
			94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 31.5 Hz	0.3	dB
			94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 63 Hz to 1 kHz	0.2	dB
			94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 2 kHz to 4 kHz	0.3	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KB2004 sound level meter	B&K 4228 /B&K 4231 /B&K 4226	instrument calibration technique for sound pressure level of sound level meter (Document No.:07-3-97-0083)	94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 8 kHz	0.4	dB
			94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 12.5 kHz	0.5	dB
			94	dB (reference: 20 μ Pa)	114	dB (reference: 20 μ Pa)	Frequency 16 kHz	0.6	dB

Note: Smallest uncertainty represents an expanded uncertainty using a coverage factor approximately 95 % level of confidence.

Approval Signatory

Approval Signatory	Scope
WANG, Sheng-Han	KB1001, KB1002, KB1099
TSUEI, Kuang-Yih	KB1001, KB1002, KB1099
KUO, Shu-Fen	KB2001, KB2002, KB2003, KB2004
CHEN, Jiun-Kai	KB1001, KB1002, KB1099
TU, Tsung-Hsien	KB1001, KB1002, KB1099, KB2001, KB2002, KB2003, KB2004

(Null Below)