



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

## Certificate of Accreditation

(Certificate No : L1735-240621)

This is to certify that

**Measurement Technology Co.,Ltd**  
**Calibration Laboratory of Southern Region Service Department**  
No.92, Dashe road, Dashe District, Kaohsiung city, Taiwan, (R.O.C.)

**is accredited in respect of laboratory**

**Accreditation Criteria** : ISO/IEC 17025:2017 ; CNS 17025:2018

**Accreditation Number** : 1735

**Originally Accredited** : February 16, 2007

**Effective Period** : February 16, 2022 to February 15, 2025

**Accredited Scope** : Calibration Field, see described in the Appendix



Scan to verify

*Yi-Ling Chen*

Yi-Ling Chen  
President, Taiwan Accreditation Foundation  
June 21, 2024

Accreditation Number : 1735

Laboratory Head : KAO, Wei-Chuan

## Length

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
KA1001 Gauge Block (Steel) Long Gauge Block (Steel)	Gauge Block PTW B-1 GRADE: 00 Long Gauge Block TESA/---	In-house method: Gauge Block Calibration Procedure (Document No.: MT-C-95-014) In-house method: Long Gauge Block Calibration Procedure (MT-C-95-132)	125	mm	125	mm	Steel	0.50	μm
			150	mm	150	mm	Steel	0.52	μm
			175	mm	175	mm	Steel	0.56	μm
			200	mm	200	mm	Steel	0.58	μm
			250	mm	250	mm	Steel	0.66	μm
			300	mm	300	mm	Steel	0.74	μm
			400	mm	400	mm	Steel	0.90	μm
			500	mm	500	mm	Steel	1.08	μm
			0.5	mm	10	mm	Steel	0.10	μm
			> 10	mm	15	mm	Steel	0.11	μm
			> 15	mm	25	mm	Steel	0.13	μm
			> 25	mm	75	mm	Steel	0.23	μm
			> 75	mm	100	mm	Steel	0.28	μm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									



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
KA1006 Thickness gauge	Outside Micrometer /Mitutoyo /MDC-1"SB	In-house method: Calibration procedure for Thickness gauge (Document No.: MT-C-99-007)	0	mm	3	mm		0.002	mm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									
KA1017 3-wire gauge /pin gauge	Pin Gauge /MTC/---	In-house method: Calibration Procedure for Three Wire Units /Pin Gauge (Document No.: MT-C-95-134)	0.1	mm	15	mm	3-wire gauge: (Steel and ceramic)	1.1	μm
			0.1	mm	15	mm	pin gauge: (Steel and ceramic)	0.9	μm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									
KA2001 Rule	Standard Tape /B-Y/5m	In-house method: Calibration Procedure for Rule (Document No.: MT-C-97-002)	0	cm	200	cm		0.04	cm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									
KA2002 Tape	Standard Tape /B-Y/5m	In-house method: Calibration Procedure for Tape (Document No.: MT-C-95-095)	0	cm	500	cm		0.04	cm
			0	cm	1000	cm		0.06	cm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									
KA2010 Dial & Digital Indicator (& Linear Gauge)	Linear Gauge (Dial Calibrator) (Sylvac/D50S-PRO)	In-house method: Calibration Procedure of Dial & Digital Indicator (Document No.: MT-C-113-001)	0	mm	25	mm	resolution: 0.001 mm	0.004	mm
			0	mm	25	mm	resolution: 0.01 mm	0.01	mm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; WENG, Kuo-Chou; KAO, Wei-Chuan									



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
KA2015 Thickness Gauge	Gauge Blocks/TSUG AMI/B1	In-house method: The Evaluation Report for Dial or Digital Thickness Gauge /MT-C-96-013	0	mm	10	mm	digital (resolution: 0.01 mm)	0.01	mm
			0	mm	10	mm	digital (resolution: 0.001 mm)	0.001	mm
			0	mm	20	mm	dial (resolution: 0.01 mm)	0.006	mm
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									
KA2016 Displacement (Extensometer) (on-site calibration included)	Laser Interferometer (RENISHAW / XL-80)	In-house method: Calibration Procedure for Displacement (Extensometer) (Document No.: MT-C-112-006)	0	mm	1000	mm		$(4.1+3.4*L)*2$ (L in meter (m))	$\mu\text{m}$
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; KAO, Wei-Chuan; HUANG, Chien-Ming									
KA2017 Testing Machine speed (on-site calibration included)	Laser Interferometer (RENISHAW/ XL-80)	In-house method: Calibration Procedure for Velocity of Testing Machine (Document No.: MT-C-112-007)	0	mm/min	1000	mm/min		0.022	mm/min
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; KAO, Wei-Chuan; HUANG, Chien-Ming									



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
KA2099 Measuring Wheel	Standard Tape	In-house method: Measuring Wheel Calibration Procedure (Document No.: MT-C-109-012)	0	m	1	m		0.02	m
Approval Signatory: CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan									

## Mass/Force

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
KC1001 STANDARD WEIGHT	METTLER(F1) 1 mg-200 g/23 EA METTLER(F1) 100 g-20 kg/10 EA	In-house method: Calibration Procedure for 1 mg to 20 kg Weight Set /MT-C-112-002	1	mg	1	mg	Stainless Steel (Class F1 and lower)	0.002	mg
			2	mg	2	mg	Stainless Steel (Class F1 and lower)	0.002	mg
			5	mg	5	mg	Stainless Steel (Class F1 and lower)	0.002	mg
			10	mg	10	mg	Stainless Steel (Class F1 and lower)	0.002	mg
			20	mg	20	mg	Stainless Steel (Class F1 and lower)	0.002	mg
			50	mg	50	mg	Stainless Steel (Class F1 and lower)	0.003	mg



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
KC1001 STANDARD WEIGHT	METTLER(F1) 1 mg-200 g/23EA METTLER(F1) 100 g-20 kg/10EA	In-house method: Calibration Procedure for 1 mg to 20 kg Weight Set /MT-C-112-002	100	mg	100	mg	Stainless Steel (Class F1 and lower)	0.003	mg
			200	mg	200	mg	Stainless Steel (Class F1 and lower)	0.003	mg
			500	mg	500	mg	Stainless Steel (Class F1 and lower)	0.007	mg
			1	g	1	g	Stainless Steel (Class F1 and lower)	0.04	mg
			2	g	2	g	Stainless Steel (Class F1 and lower)	0.04	mg
			5	g	5	g	Stainless Steel (Class F1 and lower)	0.05	mg
			10	g	10	g	Stainless Steel (Class F1 and lower)	0.05	mg
			20	g	20	g	Stainless Steel (Class F1 and lower)	0.05	mg
			50	g	50	g	Stainless Steel (Class F1 and lower)	0.05	mg
			100	g	100	g	Stainless Steel (Class F1 and lower)	0.06	mg
			200	g	200	g	Stainless Steel (Class F1 and lower)	0.11	mg



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
KC1001 STANDARD WEIGHT	METTLER(F1) 1 mg-200 g/23 EA METTLER(F1) 100 g-20 kg/10EA	In-house method: Calibration Procedure for 1 mg to 20 kg Weight Set /MT-C-112-002	500	g	500	g	Stainless Steel (Class F1 and lower)	0.4	mg
			1	kg	1	kg	Stainless Steel (Class F1 and lower)	0.003	g
			2	kg	2	kg	Stainless Steel (Class F1 and lower)	0.003	g
			5	kg	5	kg	Stainless Steel (Class F1 and lower)	0.004	g
			10	kg	10	kg	Stainless Steel (Class F1 and lower)	0.009	g
			20	kg	20	kg	Stainless Steel (Class F1 and lower)	0.017	g
			1	mg	1	mg	Copper	0.002	mg
			2	mg	2	mg	Copper	0.002	mg
			5	mg	5	mg	Copper	0.002	mg
			10	mg	10	mg	Copper	0.002	mg
			20	mg	20	mg	Copper	0.002	mg
			50	mg	50	mg	Copper	0.003	mg



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
KC1001 STANDARD WEIGHT	METTLER(F1) 1 mg-200 g/23EA METTLER(F1) 100 g-20 kg/10EA	In-house method: Calibration Procedure for 1 mg to 20 kg Weight Set /MT-C-112-002	100	mg	100	mg	Copper	0.003	mg
			200	mg	200	mg	Copper	0.003	mg
			500	mg	500	mg	Copper	0.007	mg
			1	g	1	g	Copper	0.04	mg
			2	g	2	g	Copper	0.04	mg
			5	g	5	g	Copper	0.05	mg
			10	g	10	g	Copper	0.05	mg
			20	g	20	g	Copper	0.05	mg
			50	g	50	g	Copper	0.05	mg
			100	g	100	g	Copper	0.06	mg
			200	g	200	g	Copper	0.12	mg
			500	g	500	g	Copper	0.4	mg
			1	kg	1	kg	Copper	0.003	g
			2	kg	2	kg	Copper	0.003	g
			5	kg	5	kg	Copper	0.005	g
			10	kg	10	kg	Copper	0.009	g
			20	kg	20	kg	Copper	0.018	g
			500	g	500	g	Cast Iron	0.6	mg
			1	kg	1	kg	Cast Iron	0.003	g
			2	kg	2	kg	Cast Iron	0.004	g
5	kg	5	kg	Cast Iron	0.006	g			
10	kg	10	kg	Cast Iron	0.011	g			
20	kg	20	kg	Cast Iron	0.022	g			
Approval Signatory:CHU, Wei-Hsin; WU, Min-Chao; KAO, Wei-Chuan; YEN, Chia-Hsun									





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
KC1002 Electronic Balance (on-site calibration included)	METTLER (F1) 1 mg-200 g/23 EA METTLER (F1) 100 g-20 kg/10 EA	In-house method: Calibration Procedure for Electronic Balance (1 mg~200 g) (on-site calibration included) Calibration Procedure for Electronic Balance (1 g ~ 20 kg) (on-site calibration included)	1	mg	500	mg	resolution: 0.00001 g	0.07	mg
			1	g	100	g	resolution: 0.00001 g	0.20	mg
			200	g	200	g	resolution: 0.00001 g	0.35	mg
			1	g	2	kg	resolution: 0.001 g	0.010	g
			5	kg	5	kg	resolution: 0.001 g	0.018	g
			10	kg	10	kg	resolution: 0.001 g	0.034	g
			20	kg	20	kg	resolution: 0.001 g	0.064	g
Approval Signatory:CHU, Wei-Hsin; WU, Min-Chao; KAO, Wei-Chuan; YEN, Chia-Hsun									
KC2004 Push Pull Gauge	STANDARD WEIGHTS METTLER /1 g~200 g CHINA SCALES /100 g~2000 g CHINA SCALES /100 g~10 kg	In-house method: Calibration procedure for Push Pull Gauge (MT-C-106-015)	0.01 (0.001)	N (kgf)	9.8 (1)	N (kgf)	digital	0.06 (0.006)	N (kgf)
			0.01 (0.001)	N (kgf)	98 (10)	N (kgf)	digital	0.10 (0.010)	N (kgf)
			0.1 (0.01)	N (kgf)	490 (50)	N (kgf)	digital	0.4 (0.04)	N (kgf)
			0.5 (0.005)	N (kgf)	9.8 (1)	N (kgf)	dial	0.10 (0.010)	N (kgf)
			0.5 (0.05)	N (kgf)	98 (10)	N (kgf)	dial	0.5 (0.05)	N (kgf)
			2.5 (0.25)	N (kgf)	490 (50)	N (kgf)	dial	1 (0.10)	N (kgf)
			Approval Signatory:CHU, Wei-Hsin; WU, Min-Chao; HSU, Cherng-Chin; KAO, Wei-Chuan						



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
KC4001 Torque Wrench	Torque Calibrator (NORBAR/50592.LOG/43228)	In-house method: Calibration Procedure for Torque Wrench (MT-C-110-004)	1	N·m	<25	N·m	CW, CCW	1.3	%
	Torque Calibrator (NORBAR/50593.LOG/43228)		25	N·m	<100	N·m	CW, CCW	1.7	%
	Torque Calibrator (NORBAR/50772.LOG/43228)		100	N·m	1000	N·m	CW, CCW	1.1	%
Approval Signatory:CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; HUANG, Chien-Ming									
KC4002 Torque Screwdriver	Torque Calibrator(Norbar/43213)	In-house method: Calibration Procedure for Torque Driver (MT-C-110-005)	0.02	N·m	<0.6	N·m	CW, CCW	1.6	%
	Torque Calibrator (TOHNICHI/TDT60CN3-G)		0.6	N·m	10	N·m	CW, CCW	1.8	%
Approval Signatory:CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; HUANG, Chien-Ming									



## Temperature/Humidity

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
KE1001 Liquid-in-glass Thermometer	Platinum Resistance Thermometer FLUKE/5681; Super Thermometer : FLUKE/1595A	In-house method: Liquid-in-Glass Thermometer Measurement System Calibration Procedure (Document No.: MT-C-95-015)	-80	°C	300	°C	Total immersion & partial immersion	0.016	°C
Approval Signatory:WANG, Jian-Wha; CHU, Wei-Hsin; LIN, Chin-Liang; HSU, Cherng-Chin									
KE1002 (Platinum ) Resistance Thermometer	Platinum Resistance Thermometer FLUKE/5681; Super Thermometer : FLUKE/1595A TRIPLE POINT OF WATER :FLUKE /5901B-G	In-house method: Resistance Thermometer Measurement System Calibration Procedure (Document No.: MT-C-97-001)	-80	°C	300	°C		0.016	°C
Approval Signatory:WANG, Jian-Wha; CHU, Wei-Hsin; LIN, Chin-Liang; HSU, Cherng-Chin; TSAI, Shun-Chin									
KE1004 THERMOCO UPLE (R,S,K,N,E,T,J 型)	Platinum Resistance Thermometer FLUKE 5628 Platinum Resistance Thermometer FLUKE 5624 THERMOCOUPLE THERMOWAY /R TYPE	In-house method: Thermocouple Calibration Procedure (MT-C-107-008)	$\geq -80$	°C	$\leq 50$	°C	K TYPE	0.22	°C
			>50	°C	$\leq 600$	°C	K TYPE	0.16	°C
			>600	°C	$\leq 1000$	°C	K TYPE	0.83	°C
			>1000	°C	$\leq 1200$	°C	K TYPE	2.1	°C
			$\geq 0$	°C	$\leq 50$	°C	R TYPE	0.11	°C
			>50	°C	$\leq 600$	°C	R TYPE	0.11	°C
			>600	°C	$\leq 1000$	°C	R TYPE	0.83	°C
			>1000	°C	$\leq 1200$	°C	R TYPE	2.1	°C



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		explanation	value
KE1004 THERMOCOUPLE (R,S,K,N,E,T,J 型)	Platinum Resistance Thermometer FLUKE 5628 Platinum Resistance Thermometer FLUKE 5624 THERMOCOUPLE THERMOWAY /R TYPE	In-house method: Thermocouple Calibration Procedure (MT-C-107-008)	$\geq 0$	°C	$\leq 50$	°C	S TYPE	0.11	°C
			>50	°C	$\leq 600$	°C	S TYPE	0.11	°C
			>600	°C	$\leq 1000$	°C	S TYPE	0.89	°C
			>1000	°C	$\leq 1200$	°C	S TYPE	2.1	°C
			$\geq -80$	°C	$\leq 50$	°C	N TYPE	0.22	°C
			>50	°C	$\leq 600$	°C	N TYPE	0.13	°C
			>600	°C	$\leq 1000$	°C	N TYPE	0.83	°C
			>1000	°C	$\leq 1200$	°C	N TYPE	2.1	°C
			$\geq -80$	°C	$\leq 50$	°C	E TYPE	0.22	°C
			>50	°C	$\leq 600$	°C	E TYPE	0.13	°C
			>600	°C	$\leq 900$	°C	E TYPE	0.82	°C
			$\geq -80$	°C	$\leq 50$	°C	J TYPE	0.22	°C
			>50	°C	$\leq 600$	°C	J TYPE	0.11	°C
			>600	°C	$\leq 700$	°C	J TYPE	0.80	°C
$\geq -80$	°C	$\leq 50$	°C	T TYPE	0.22	°C			
>50	°C	$\leq 400$	°C	T TYPE	0.11	°C			
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; LIN, Chin-Liang; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									
KE1005 Thermocouple Thermometer	Standard Platinum Resistance Thermometer FLUKE/5624; FLUKE/5628; Thermocouple Thermometer THERMOWAY /R TYPE	In-house method: Thermocouple Thermometer Calibration Procedure (Document No.: MT-C-107-007)	$\geq 0$	°C	$\leq 50$	°C	R Type	0.11	°C
			> 50	°C	$\leq 600$	°C	R Type	0.11	°C
			> 600	°C	$\leq 1000$	°C	R Type	0.83	°C
			> 1000	°C	$\leq 1200$	°C	R Type	2.1	°C
			$\geq 0$	°C	$\leq 50$	°C	S Type	0.11	°C
			> 50	°C	$\leq 600$	°C	S Type	0.11	°C
			> 600	°C	$\leq 1000$	°C	S Type	0.89	°C
			> 1000	°C	$\leq 1200$	°C	S Type	2.1	°C
			$\geq -80$	°C	$\leq 50$	°C	K Type	0.22	°C
> 50	°C	$\leq 600$	°C	K Type	0.16	°C			



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
KE1005 Thermocouple Thermometer	Standard Platinum Resistance Thermometer FLUKE/5624; FLUKE/5628; Thermocouple Thermometer THERMOWAY/R TYPE	In-house method: Thermocouple Thermometer Calibration Procedure (Document No.: MT-C-107-007)	> 600	°C	≤ 1000	°C	K Type	0.83	°C
			> 1000	°C	≤ 1200	°C	K Type	2.1	°C
			≤ -80	°C	≤ 50	°C	N Type	0.22	°C
			> 50	°C	≤ 600	°C	N Type	0.13	°C
			> 600	°C	≤ 1000	°C	N Type	0.83	°C
			> 1000	°C	≤ 1200	°C	N Type	2.1	°C
			≤ -80	°C	≤ 50	°C	E Type	0.22	°C
			> 50	°C	≤ 600	°C	E Type	0.13	°C
			> 600	°C	≤ 900	°C	E Type	0.82	°C
			≤ -80	°C	≤ 50	°C	J Type	0.22	°C
			> 50	°C	≤ 600	°C	J Type	0.11	°C
			> 600	°C	≤ 700	°C	J Type	0.80	°C
≤ -80	°C	≤ 50	°C	T Type	0.22	°C			
> 50	°C	≤ 400	°C	T Type	0.11	°C			
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; LIN, Chin-Liang; HSU, Cherng-Chin; KAO, Wei-Chuan									
KE1010 temperature Chamber	Hydra Data Bucket FLUKE/1586A	In-house method: Temperature Humidity Chamber Calibration Procedure /MT-C-108-005	15	°C	50	°C		0.6	°C
Approval Signatory: CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									



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
KE1099 Portable Thermometer Data Logger	Hydra Data Bucket FLUKE/1586A	In-house method: Humidity/temperature instrument Measurement System Validation Program/MT-C-109-016	15	°C	50	°C		0.8	°C
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									
KE1099 Temperature- Calibrator Furnace; Dry-Well Calibrator; High Temperature Furnace.	Platinum Resistance Thermometer FLUKE/5624; FLUKE/5628	In-house method: Temperature Calibration Furnace Measurement Calibration Procedure (Document No.: MT-C-103-022)	$\geq -80$	°C	$\leq 600$	°C		0.5	°C
			>600	°C	$\leq 1000$	°C		1.0	°C
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; LIN, Chin-Liang; HSU, Cherng-Chin									
KE2001 Hygrometer Hydrograph	Digital Hygrometer ROTRONIC /HYGROLOG HL- NT3-DP Hydra Data Bucket FLUKE/1586A	In-house method: Humidity/temperature instrument Measurement System Validation Program/MT-C-109-016	15	°C	50	°C		0.8	°C
			40	%	90	%	Relative humidity	4.3	%
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									



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
KE2004 Temperature & Humidity recorder	Digital Hygrometer ROTRONIC/HYGROLOG HL-NT3-DP Hydra Data Bucket FLUKE/1586A	In-house method: Humidity/temperature instrument Measurement System V Validation Program /MT-C-109-016	15	°C	50	°C		1.0	°C
			40	%	90	%	Relative humidity	4.3	%
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									
KE2005 Temp./Humidity Chamber	Digital Hygrometer ROTRONIC/HYGROLOG HL-NT3-DP Hydra Data Bucket FLUKE/1586A	In-house method: Temperature Humidity Chamber Calibration Procedure/MT-C-108-005	15	°C	50	°C		0.6	°C
			40	%	90	%	Relative humidity	4.0	%
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; HSU, Cherng-Chin; KAO, Wei-Chuan; TSAI, Shun-Chin									



## Electricity

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
KF1001 DCV source DC Voltmeter	CALIBRATOR DATRON4808 DC VOLTAGE MULTI Meter HP3458	In-house method: DC VOLTAGE MEASURING SYSTEM CALIBRATORATION PROCEDURE (Document No.:MT-C-95-010)	100	mV	1000	V		36	μV/V
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									
KF1002 DCA source DC Current- meter	MULTIFUNCTION CALIBRATOR DATRON4808 DIGITAL MULTIMETER HP 3458A	In-house method: DC CURRENT MEASURING SYSTEM CALIBRATION PROCEDURE (Document No.:MT-C-95-012)	100	μA	1	A		0.44	mA/A
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									
KF1003 DC High Voltage meter DC High Voltage tester	High Voltage DIVIDER/ROSS/VD /60-12.5Y-B-KB-A DMM/FLUKE/87V	In-house method: DC highvoltage measuring system calibration procedure (Document No.:MT-C-100-001)	1	kV	20	kV	DC High Voltage meter	2.0	%
			1	kV	20	kV	DC High Voltage tester	2.0	%
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									





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
KF1011 ACV source AC Voltmeter	Multifunction calibrator DATRON 4808 Digital multimeter HP 3458 A	In-house method: AC voltage measuring system calibration procedure (Document No.:MT-C-95-011)	1	V	1000	V	@60 Hz, 1 kHz	0.50	mV/V
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									
KF1012 ACA source AC Current-meter	Multifunction calibrator DATRON 4808 Digital multimeter HP 3458 A	In-house method: AC current measuring system calibration procedure (Document No.:MT-C-95-013)	1	mA	1	A	@ 60 Hz, 1 kHz	2.9	mA/A
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									
KF1013 AC High Voltage METER AC High Voltage tester	DIVIDER/ROSS/VD /60-12.5Y-B-KB-A DMM/FLUKE/87 V	In-house method: AC highvoltage measuring system calibration procedure (Document No.:MT-C-100-002)	1	kV	20	kV	AC High Voltage meter	2.0	%
			1	kV	20	kV	AC High Voltage tester	1.0	%
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									



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
KF3001 DC RESISTANCE METER DC RESISTANCE	PRECISION DECADE RESISTORS IET HARS-X-3-.001 DC voltage multi meter HP3458A PRECISION DECADE RESISTORS BIDDLE 72-6346-1 PRECISION DECADE RESISTORS IET 1433-33	In-house method: DC resistance measuring system calibration procedure (Document No.:MT-C-103-021)	0.1	$\Omega$	<1	$\Omega$	Resistance meter	2	m $\Omega$ / $\Omega$
			1	$\Omega$	<100	$\Omega$	Resistance meter	0.05	m $\Omega$ / $\Omega$
			100	$\Omega$	<1	M $\Omega$	Resistance meter	53	$\mu\Omega$ / $\Omega$
			1	M $\Omega$	100	M $\Omega$	Resistance meter	0.52	m $\Omega$ / $\Omega$
			0.001	$\Omega$	0.001	$\Omega$	Resistance meter	0.02	$\Omega$ / $\Omega$
			0.01	$\Omega$	0.01	$\Omega$	Resistance meter	2	m $\Omega$ / $\Omega$
			1	$\Omega$	1	$\Omega$	Resistance meter	0.05	m $\Omega$ / $\Omega$
			10	$\Omega$	10	$\Omega$	Resistance meter	34	$\mu\Omega$ / $\Omega$
			100	$\Omega$	100	$\Omega$	Resistance meter	32	$\mu\Omega$ / $\Omega$
			1	k $\Omega$	1	k $\Omega$	Resistance meter	30	$\mu\Omega$ / $\Omega$
			10	k $\Omega$	10	k $\Omega$	Resistance meter	30	$\mu\Omega$ / $\Omega$
			100	k $\Omega$	100	k $\Omega$	Resistance meter	30	$\mu\Omega$ / $\Omega$
			1	M $\Omega$	1	M $\Omega$	Resistance meter	55	$\mu\Omega$ / $\Omega$



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
KF3001 DC RESISTANCE METER DC RESISTANCE	PRECISION DECADE RESISTORS IET HARS-X-3-.001 DC voltage multi meter HP3458A PRECISION DECADE RESISTORS BIDDLE 72-6346-1 PRECISION DECADE RESISTORS IET 1433-33	In-house method: DC resistance measuring system calibration procedure (Document No.:MT-C-103-021)	10	MΩ	10	MΩ	Resistance meter	89	μΩ/Ω
			100	MΩ	100	MΩ	Resistance meter	0.28	mΩ/Ω
			0.001	Ω	<0.01	Ω	Resistance source	9	mΩ/Ω
			0.01	Ω	<1	Ω	Resistance source	7.1	mΩ/Ω
			1	Ω	<100	Ω	Resistance source	81	μΩ/Ω
			100	Ω	<1	MΩ	Resistance source	73	μΩ/Ω
			1	MΩ	100	MΩ	Resistance source	0.6	mΩ/Ω
			1	Ω	1	Ω	Resistance source	81	μΩ/Ω
			10	Ω	10	Ω	Resistance source	71	μΩ/Ω
			100	Ω	100	Ω	Resistance source	73	μΩ/Ω
			1	kΩ	1	kΩ	Resistance source	48	μΩ/Ω
			10	kΩ	10	kΩ	Resistance source	48	μΩ/Ω
			100	kΩ	100	kΩ	Resistance source	49	μΩ/Ω



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
KF3001 DC RESISTANCE METER DC RESISTANCE	PRECISION DECADE RESISTORS IET HARS-X-3-.001 DC voltage multi meter HP3458A PRECISION DECADE RESISTORS BIDDLE 72-6346-1 PRECISION DECADE RESISTORS IET 1433-33	In-house method: DC resistance measuring system calibration procedure (Document No.:MT-C-103-021)	1	MΩ	1	MΩ	Resistance source	0.6	mΩ/Ω
			10	MΩ	10	MΩ	Resistance source	0.6	mΩ/Ω
			100	MΩ	100	MΩ	Resistance source	0.6	mΩ/Ω
			0.001	Ω	<0.1	Ω	Resistance meter	0.02	Ω/Ω
			0.1	Ω	0.1	Ω	Resistance meter	0.3	mΩ/Ω
			0.001	Ω	0.001	Ω	Resistance source	9	mΩ/Ω
			0.01	Ω	0.01	Ω	Resistance source	7.1	mΩ/Ω
			0.1	Ω	0.1	Ω	Resistance source	0.3	mΩ/Ω
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									
KF3008 Insulation Resistance Tester	Decade Standard Resistance Box BIDDLE / 72-6346-1	In-house method: Digital Insulation Resistance meter /Insulation Resistance Calibration Procedure (MT-C-108-007)	1	MΩ	20	MΩ	100 V	20	mΩ/Ω
			20	MΩ	100	MΩ	100 V	0.2	Ω/Ω
			1	MΩ	20	MΩ	250 V	20	mΩ/Ω
			20	MΩ	200	MΩ	250 V	0.2	Ω/Ω
			1	MΩ	20	MΩ	500 V	20	mΩ/Ω
			20	MΩ	200	MΩ	500 V	0.2	Ω/Ω
			200	MΩ	500	MΩ	500 V	1	Ω/Ω
			1	MΩ	200	MΩ	1000 V	0.2	Ω/Ω
			200	MΩ	2000	MΩ	1000 V	2	Ω/Ω
			2	GΩ	10	GΩ	1000 V	1	Ω/Ω
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; KAO, Wei-Chuan; JHAN, Yuan-Jhu									



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
KF5001 ELECTRICAL SAFETY ANALYZER	PRECISION DECADE RESISTORS BIDDLE/72-6346-1 DIGITAL METER FLUKE/8846 A High voltage divider+DIGITAL METER ROSS /VD60.12.5 Y-B-KB-AL+FLUKE/87 Stopwatch Casio/HS-3(V)	In-house method: ELECTRICAL SAFETY ANALYZER CALIBRATION PROCEDURE (MT-C-112-01)	1	kV	6	kV	DC High Voltage Tester	12	mV/V
			1	kV	5	kV	AC High Voltage Tester(@ 60 Hz)	12	mV/V
			0.5	mA	10	mA	DC cut-off current	0.01	A/A
			0.5	mA	10	mA	AC cut-off current (@ 60 Hz)	0.01	A/A
			1	MΩ	1	MΩ	@500 V	0.3	Ω/Ω
			5	MΩ	5	MΩ	@500 V	0.2	Ω/Ω
			10	MΩ	10	MΩ	@500 V	0.09	Ω/Ω
			50	MΩ	50	MΩ	@500 V	0.6	Ω/Ω
			100	MΩ	100	MΩ	@500 V	0.6	Ω/Ω
			0.5	GΩ	0.5	GΩ	@500 V	0.08	Ω/Ω
			1	GΩ	1	GΩ	@500 V	0.08	Ω/Ω
1	MΩ	1	MΩ	@1000 V	0.3	Ω/Ω			



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
KF5001 ELECTRICAL SAFETY ANALYZER	PRECISION DECADE RESISTORS BIDDLE/72-6346-1 DIGITAL METER FLUKE/8846A High voltage divider+DIGITAL METER ROSS /VD60.12.5 Y-B-KB-AL+FLUKE/87 Stopwatch Casio/HS-3(V)	In-house method: ELECTRICAL SAFETY ANALYZER CALIBRATION PROCEDURE (MT-C-112-01)	5	MΩ	5	MΩ	@1000 V	0.2	Ω/Ω
			10	MΩ	10	MΩ	@1000 V	0.09	Ω/Ω
			50	MΩ	50	MΩ	@1000 V	0.6	Ω/Ω
			100	MΩ	100	MΩ	@1000 V	0.6	Ω/Ω
			0.5	GΩ	0.5	GΩ	@1000 V	0.08	Ω/Ω
			1	GΩ	1	GΩ	@1000 V	0.06	Ω/Ω
			5	GΩ	5	GΩ	@1000 V	0.1	Ω/Ω
			10	GΩ	10	GΩ	@1000 V	0.09	Ω/Ω
			1	s	60	s	Stopwatch	0.4	s
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; JHAN, Yuan-Jhu; CHAO, Pang-Chen									
KF5003 Electrostatic field meter	AC/DC High voltage divider/ROSS/VD60-12.5Y-B-KB-AL	In-house method: Calibration procedure for electrostatic field meter (Document No.: MT-C-95-080)	1	kV	20	kV	Spacing: 25 mm	0.08	kV/kV
Approval Signatory:CHU, Wei-Hsin; LIN, Chin-Liang; SHE, Yen-Fu; HSU, Cherng-Chin; JHAN, Yuan-Jhu									



## Electromagnetics

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
KG3001 Illuminance Meter	Standard Lamp ORIEL 63350 71171 Standard Lamp OL 100U HTS-360 IPicoammeter/detector KEITHLEY/ LMT 6485/--- 4459256/11B7251 dc powersupply Newport 69935 234	In-house method: Illuminance Meter Calibration Procedure (Document No.: MT-C-95-151)	$\geq 50$	lx	<500	lx		1.2	%
			$\geq 500$	lx	<1000	lx		1.4	%
			$\geq 1000$	lx	<1500	lx		1.2	%
			$\geq 1500$	lx	<5000	lx		1.2	%
			$\geq 5000$	lx	<10000	lx		1.2	%
			$\geq 10000$	lx	<15000	lx		1.5	%
			$\geq 15000$	lx	<20000	lx		1.5	%
			$=20000$	lx		lx	1.5	%	
Approval Signatory: WANG, Jian-Wha; CHU, Wei-Hsin; SHE, Yen-Fu; HSU, Cherng-Chin									



## Chemical

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		explanation	value
KI2000 pH meter	1. Multifunction calibrator: AOIP /PJ6301/351004 2. pH Meter: METTLER/S475-Basic/B243450359 3. pH standard buffer/ (4, 7, 10) pH	In-house method: pH meter Calibration Procedure (Document No.: MT-C-95-149)	pH 1		pH 1		@ 25 °C	0.02	pH
			pH 4		pH 4		@ 25 °C	0.01	pH
			pH 7		pH 7		@ 25 °C	0.01	pH
			pH 10		pH 10		@ 25 °C	0.01	pH
			pH 13		pH 13		@ 25 °C	0.02	pH
			20	°C	20	°C	Temperature Compensations (slope)	0.30	%
			60	°C	60	°C	Temperature Compensations (slope)	0.40	%
							Electrode Slope (@ 25 °C)	1.5	%
			pH 4		pH 4		Calibration Curve (@ 25 °C)	0.10	pH
			pH 7		pH 7		Calibration Curve (@ 25 °C)	0.10	pH
pH 10		pH 10		Calibration Curve (@ 25 °C)	0.10	pH			
Approval Signatory:CHU, Wei-Hsin; HSU, Cherng-Chin; TSAI, Shun-Chin									





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
KI9900 Conductivity Meter	1. Conductivity Meter: METTLER/ S475-Basic/B243450359 2. Conductivity Standard Solution/84,1413,12880 $\mu\text{S/cm}$	In-house method: Calibration Process of Electric Conductivity meter (Document No.: MT-C-95-158)	84	$\mu\text{S/cm}$	84	$\mu\text{S/cm}$		3.0	%
			1413	$\mu\text{S/cm}$	1413	$\mu\text{S/cm}$		2.0	%
			12880	$\mu\text{S/cm}$	12880	$\mu\text{S/cm}$		2.0	%
Approval Signatory: CHU, Wei-Hsin; HSU, Cherng-Chin; TSAI, Shun-Chin									

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

