

CERTIFICATE OF ACCREDITATION

tessol Co., Ltd.

Accreditation No. : KC21-383

Corporation Registration No. : 131111-0166403

Address of Laboratory : 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do,
Republic of Korea

Date of Initial Accreditation : February 03, 2021.

Validity of Accreditation : February 03, 2025. ~ February 02, 2029.

Scope of Accreditation : Attached Annex

Date of issue : November 27, 2024.

This calibration laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to Joint ISO-ILAC-IAF Communiqué).



CHIN CHONGWOOK

Head

Korea Laboratory Accreditation Scheme

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017 & KS Q ISO/IEC 17025:2017

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CALIBRATION

Valid To : February. 2, 2029

Accreditation No : KC21-383

In recognition of the successful completion of the KOLAS evaluation process,
 accreditation is granted to this laboratory to perform the following calibrations

Field Code	Item of Calibration	on-site	Field Code	Item of Calibration	on-site	Field Code	Item of Calibration	on-site
204. Pressure			50105	Thermal expansion thermometers; bimetal, gas or liquid type	Y			
20406	Absolute pressure gauges	Y						
20408	Compound pressure gauges	Y						
20409	Differential pressure gauges	Y	50107	Temperature transducers	Y			
20411	Gauge pressure gauges	Y	503. Humidity					
20412	Pressure transducers /transmitters	Y	50302	Relative humidity hygrometers; polimer polimer thinfilm, hair, etc.	Y			
20413	Dial type vacuum gauges	Y						
401. DC voltage & current			50304	Temperature humidity recorders; Hygrothermograph, etc	N			
40101	DC ammeters	Y						
40103	DC voltage/current calibrator	Y						
40104	Electrical temperature calibrator	Y	50305	Dew-point/Relative humidity Transducers	N			
40112	DC voltmeters	Y						
403. AC voltage, current & power			50306	Humidity generators; two-pressure, two-temperature, flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y			
40301	AC ammeters	Y						
40302	Clamp ammeters/voltmeters	Y						
40311	AC power meter	N						
40318	AC voltmeters	Y						
404. Other DC & LF Measurements								
40403	Multimeter calibrators, Multifunction calibrators	Y						
40416	Leakage current testers	Y						
40419	Analogue/Digital multimeters	Y						
40421	Oscilloscope	Y						
40424	Volt/Current recorders	Y						
501. Contact thermometry								
50101	Temperature generators; ovens, ice-point baths, isothermal liquid baths, dry-block calibrators	Y						
50102	Temperature indicators /recorders/controllers, temperature calibrators	Y						
50104	Resistance thermometers; SPRT, IPRT, thermistors, etc	N						

Note

1. This laboratory provides calibration services in permanent standard laboratory and at on-site.
2. Laboratory conducts on-site calibration should meet requirements of KOLAS-SR-007.
3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.
4. Measurement uncertainty normally is quoted as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k=2$. It expresses the lowest uncertainty of measurement that can be provided by accredited calibration laboratories in normal conditions.
5. Due to the calibration environment such as reference standards or customers' facilities, it is note that uncertainty of measurement on a calibration certificate may be expressed larger than measurement uncertainty on scope of accreditation in general.

204. Pressure

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Absolute pressure gauges	20406	(5 ~ 700) kPa abs (700 ~ 7 000) kPa abs	1.1×10^{-3} 1.2×10^{-3}	Digital Pressure Controller /TS-CI-P06
Compound pressure gauges	20408	(-100 ~ 0) kPa (0 ~ 7 000) kPa	3.0×10^{-3} 1.2×10^{-3}	Digital Pressure Controller /TS-CI-P08
Differential pressure gauges	20409	(0 ~ 14) kPa (14 ~ 7 000) kPa	1.4×10^{-3} 2.4×10^{-3}	Digital Pressure Controller /TS-CI-P09
Gauge pressure gauges	20411	(0 ~ 7 000) kPa	1.4×10^{-4}	Air Dead Weight Tester Digital Pressure Controller /TS-CI-P11
Pressure transducers/transmitters Absolute	20412	(5 ~ 700) kPa abs (700 ~ 7 000) kPa abs	1.7×10^{-3} 1.3×10^{-3}	Air Dead Weight Tester Digital Pressure Controller /TS-CI-P12
Gauge		(0 ~ 7 000) kPa	5.7×10^{-4}	
Dial type vacuum gauges	20413	(-100 ~ 0) kPa	3.0×10^{-3}	Digital Pressure Controller /TS-CI-P13

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
DC ammeters Current	40101	(0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 5) mA (5 ~ 10) mA (10 ~ 50) mA (50 ~ 100) mA (100 ~ 500) mA (0.5 ~ 1) A (1 ~ 5) A (5 ~ 10) A (10 ~ 20) A (20 ~ 60) A (60 ~ 100) A	10 nA 0.05 μ A 0.3 μ A 0.4 μ A 3 μ A 6 μ A 0.06 mA 0.10 mA 1.4 mA 2.6 mA 3 mA 13 mA 16 mA	Meter calibrator, Transconductance amplifier /TS-CI-E101
DC voltage/current calibrator Voltage Current	40103	(+) (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V (-) (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V (+) (0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 10) A (10 ~ 30) A	1.6 μ V 9 μ V 0.08 mV 0.9 mV 11 mV 2.3 μ V 12 μ V 0.11 mV 1.8 mV 11 mV 13 nA 44 nA 0.48 μ A 7.4 μ A 0.23 mA 3.7 mA 20 mA	Digital multimeter /TS-CI-E103

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
DC voltage/current calibrator Current	40103	(-) (0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 10) A (10 ~ 30) A	18 nA 86 nA 0.83 μ A 12 μ A 0.28 mA 5.2 mA 20 mA	Digital multimeter /TS-CI-E103
Electrical temperature calibrators Output voltage Output current Output resistance	40104	(+) (0 ~ 100)mV (0.1 ~ 1)V (1 ~ 10) V (10 ~ 100) V (-) (0 ~ 100) mV (0.1 ~ 1)V (1 ~ 10) V (10 ~ 100) V (+) (0 ~ 8) mA (8 ~ 20) mA (20 ~ 24) mA (24 ~ 100) mA (-) (0 ~ 20) mA (20 ~ 100) mA (0 ~ 100) Ω (100 ~ 400) Ω (0.4 ~ 1) k Ω (1 ~ 4) k Ω (4 ~ 10) k Ω	1.6 μ V 8.6 μ V 76 μ V 0.90 mV 2.3 μ V 12 μ V 0.11 mV 1.8 mV 0.8 μ A 1.1 μ A 6.2 μ A 7.3 μ A 1.1 μ A 12 μ A 1.1 m Ω 5.9 m Ω 11 m Ω 0.05 Ω 0.2 Ω	Digital multimeter, Meter calibrator /TS-CI-E104

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Electrical temperature calibrators	40104			Digital multimeter, Meter calibrator /TS-CI-E104
Output TD voltage		(-8.824 ~ 74.868) mV	2.1 μ V	
Output RTD resistance		(0 ~ 17.136) Ω (17.136 ~ 100) Ω (100 ~ 1 000) Ω (1 000 ~ 3 137.08) Ω	0.81 m Ω 1.1 m Ω 11 m Ω 0.05 Ω	
Input voltage		(\pm) (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 3) V (3 ~ 10) V (10 ~ 30) V (30 ~ 100) V (100 ~ 300) V	2 μ V 0.01 mV 0.02 mV 0.1 mV 0.3 mV 1 mV 0.01 V	
Input current		(\pm) (0 ~ 4) mA (4 ~ 8) mA (8 ~ 12) mA (12 ~ 16) mA (16 ~ 20) mA (20 ~ 24) mA (24 ~ 30) mA (30 ~ 100) mA	0.3 μ A 0.4 μ A 0.9 μ A 1.0 μ A 1.1 μ A 1.3 μ A 1.5 μ A 5 μ A	
Input resistance		(0 ~ 10) Ω (10 ~ 100) Ω (100 ~ 1 000) Ω (1 ~ 10) k Ω	0.74 m Ω 1.4 m Ω 12 m Ω 0.71 Ω	
Input TC voltage		(-8.824 ~ 13.421) mV (13.421 ~ 37.006) mV (37.006 ~ 74.868) mV	0.6 μ V 0.8 μ V 1.0 μ V	

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Electrical temperature calibrators Input RTD resistance	40104	(0 ~ 17.136) Ω (17.136 ~ 100) Ω (100 ~ 1 000) Ω (1 000 ~ 3 137.08) Ω	1 mΩ 2 mΩ 0.02 Ω 0.06 Ω	Digital multimeter, Meter calibrator /TS-CI-E104
DC voltmeter Voltage	40112	(±) (0 ~ 20) mV (20 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V	0.6 μV 1.2 μV 6 μV 0.04 mV 0.6 mV 8 mV	Meter calibrator /TS-CI-E112

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
AC ammeter Current	40301	(60 Hz ~ 1 kHz) 10 μA (10 ~ 100) μA (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 3) A (3 ~ 10) A 60 Hz (10 ~ 20) A (20 ~ 100) A (60 ~ 100) Hz (10 ~ 20) A (20 ~ 100) A (100 Hz ~ 1 kHz) (10 ~ 20) A (20 ~ 100) A	0.04 μA 0.05 μA 0.2 μA 2 μA 0.02 mA 0.4 mA 1.1 mA 3 mA 22 mA 0.04 A 33 mA 0.06 A 0.11 A 0.18 A	Meter calibrator, Transconductance amplifier, /TS-CI-E301
Clamp ammeters/voltmeters DC voltage AC voltage	40302	(0 ~ 200) mV (200 ~ 600) mV (0.6 ~ 6) V (6 ~ 60) V (60 ~ 600) V (600 ~ 1 000) V (60 Hz ~ 1 kHz) (0.1 ~ 100) mV (100 ~ 200) mV (200 ~ 400) mV (400 ~ 600) mV (0.6 ~ 6) V (6 ~ 50) V (50 ~ 60) V	0.01 mV 0.1 mV 1 mV 0.01 V 0.1 V 1 V 0.02 mV 0.04 mV 0.1 mV 0.2 mV 1 mV 0.01 V 0.02 V	Meter calibrator, Current coil, Transconductance amplifier /TS-CI-E302

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.		
Clamp ammeters/voltmeters	40302	(60 Hz ~ 1 kHz)	(60 ~ 300) V	0.1 V	Meter calibrator, Current coil, Transconductance amplifier /TS-CI-E302	
			(300 ~ 600) V	0.2 V		
			(600 ~ 1 000) V	1 V		
			DC current	(0 ~ 10) mA		0.02 mA
		(10 ~ 20) mA		0.03 mA		
		(20 ~ 50) mA		0.06 mA		
		(50 ~ 100) mA		0.2 mA		
		(100 ~ 200) mA		0.3 mA		
		(200 ~ 300) mA		0.4 mA		
		(300 ~ 500) mA		0.6 mA		
		(0.5 ~ 1) A		2 mA		
		(1 ~ 3) A		4 mA		
		(3 ~ 10) A		0.02 A		
		(10 ~ 20) A		0.03 A		
		(20 ~ 50) A		0.06 A		
		(50 ~ 100) A		0.12 A		
		(100 ~ 200) A		0.4 A		
		(200 ~ 300) A		0.5 A		
		(300 ~ 400) A		0.7 A		
		(400 ~ 500) A		0.8 A		
		(500 ~ 600) A		1.1 A		
		(600 ~ 1 000) A		2 A		
		(1 000 ~ 2 000) A		4 A		
		AC current	(60 Hz ~ 1 kHz)	1 mA		2 μA
				(1 ~ 5) mA		6 μA
				(5 ~ 10) mA		0.02 mA
				(10 ~ 20) mA		0.03 mA
				(20 ~ 50) mA		0.06 mA
				(50 ~ 100) mA		0.2 mA
				(100 ~ 200) mA		0.3 mA
				(200 ~ 300) mA		0.4 mA
				(300 ~ 500) mA		0.6 mA
				(0.5 ~ 1) A		2 mA
				(1 ~ 3) A		4 mA

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.	
Clamp ammeters/voltmeters	40302	AC current	(60 Hz ~ 1 kHz) (3 ~ 5) A (5 ~ 10) A (10 ~ 20) A 60 Hz (20 ~ 50) A (50 ~ 100) A (100 ~ 200) A (200 ~ 300) A (300 ~ 400) A (400 ~ 500) A (500 ~ 600) A (600 ~ 1 000) A (1 000 ~ 2 000) A (2 000 ~ 5 000) A	7 mA 0.02 A 0.03 A 0.06 A 0.13 A 0.4 A 0.5 A 0.7 A 0.8 A 1.2 A 2 A 4 A 9 A	Meter calibrator, Current coil, Transconductance amplifier /TS-CI-E302
		Resistance	(0 ~ 100) Ω (0.1 ~ 1) kΩ (1 ~ 10) kΩ (10 ~ 100) kΩ (0.1 ~ 1) MΩ (1 ~ 10) MΩ	0.01 Ω 0.1 Ω 1 Ω 0.01 kΩ 0.1 kΩ 1 kΩ	
AC power meter	40311	DC voltage	(0 ~ 6) V (6 ~ 60) V (60 ~ 600) V (600 ~ 1 000) V	0.1 mV 1 mV 0.01 V 0.1 V	Meter calibrator, Current coil /TS-CI-E311
		AC voltage	(50 ~ 60) Hz 0.1 V (0.1 ~ 1.5) V (1.5 ~ 6) V (6 ~ 15) V (15 ~ 30) V (30 ~ 60) V (60 ~ 150) V	72 μV 0.3 mV 0.8 mV 3 mV 5 mV 9 mV 0.03 V	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.	
AC power meter	40311	(50 ~ 60) Hz (150 ~ 300) V (300 ~ 600) V (600 ~ 1 000) V	0.05 V	Meter calibrator, Current coil /TS-CI-E311	
			0.15 V		
			0.2 V		
			0.2 μA		
		DC current	(1 ~ 5) mA		0.5 μA
			(5 ~ 10) mA		1 μA
			(10 ~ 20) mA		3 μA
			(20 ~ 50) mA		5 μA
			(50 ~ 100) mA		9 μA
			(100 ~ 200) mA		0.04 mA
			(200 ~ 500) mA		0.08 mA
			(0.5 ~ 1) A		0.14 mA
			(1 ~ 2) A		0.7 mA
			(2 ~ 5) A		1.4 mA
			(5 ~ 10) A		3 mA
			(10 ~ 20) A		16 mA
		AC current	(20 ~ 50) A	76 mA	
			(50 ~ 100) A	0.16 A	
			(100 ~ 250) A	0.4 A	
			(250 ~ 500) A	0.8 A	
			(500 ~ 1 000) A	1.8 A	
			(50 ~ 60) Hz		
			1 ~ 5 mA	2.0 μA	
			(5 ~ 10) mA	4.0 μA	
			(10 ~ 20) mA	8.0 μA	
			(20 ~ 50) mA	12 μA	
		(50 ~ 100) mA	18 μA		
		(100 ~ 200) mA	92 μA		
		(200 ~ 500) mA	0.15 mA		
		(0.5 ~ 1) A	0.24 mA		
		(1 ~ 2) A	0.8 mA		
		(2 ~ 5) A	1.7 mA		
		(5 ~ 10) A	3 mA		
		(10 ~ 20) A	11 mA		

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
AC voltmeter AC voltmeter	40318	(0.1 ~ 1) V 40 Hz 40 Hz ~ 20 kHz (20 ~ 50) kHz (50 ~ 100) kHz (100 ~ 200) kHz (200 ~ 500) kHz (0.5 ~ 1) MHz (1 ~ 10) V 40 Hz 40 Hz ~ 20 kHz (20 ~ 50) kHz (50 ~ 100) kHz (100 ~ 200) kHz (200 ~ 500) kHz (0.5 ~ 1) MHz (10 ~ 100) V 40 Hz 40 Hz ~ 20 kHz (20 ~ 50) kHz (50 ~ 100) kHz (100 ~ 1 000) V 55 Hz 55 Hz ~ 1 kHz	 0.12 mV 0.07 mV 0.09 mV 0.13 mV 0.43 mV 1.3 mV 2.0 mV 1.2 mV 0.7 mV 0.9 mV 1.2 mV 3.3 mV 13 mV 19 mV 12 mV 7 mV 11 mV 19 mV 0.08 V 0.08 V	Meter calibrator /TS-C1-E318

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Multimeter calibrator	40403			
DC voltage		(0 ~ 100) mV	1.5 μV	Digital multimeter /TS-CI-E403
		(0.1 ~ 1) mV	9 μV	
		(1 ~ 10) V	0.08 mV	
		(10 ~ 100) V	0.9 mV	
		(100 ~ 1 000) V	11 mV	
AC voltage		40 Hz		
		(1 ~ 100) mV	17 μV	
		(0.1 ~ 1) V	0.10 mV	
		(1 ~ 10) V	1.0 mV	
		(10 ~ 100) V	11 mV	
		50 Hz		
		(100 ~ 1 000) V	0.15 V	
		40 Hz ~ 1 kHz		
		(0 ~ 100) mV	17 μV	
		(0.1 ~ 1) V	0.10 mV	
		(1 ~ 10) V	1.0 mV	
		(10 ~ 100) V	11 mV	
		50 Hz ~ 1 kHz		
		(100 ~ 1 000) V	0.15 V	
		1 kHz ~ 20 kHz		
		(0 ~ 100) mV	27 μV	
		(0.1 ~ 1) V	0.23 mV	
		(1 ~ 10) V	2.3 mV	
		(10 ~ 100) V	24 mV	
		20 kHz ~ 50 kHz		
		(0 ~ 100) mV	61 μV	
		(0.1 ~ 1) V	0.57 mV	
		(1 ~ 10) V	5.7 mV	
		(10 ~ 100) V	57 mV	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Multimeter calibrator	40403	50 kHz ~ 100 kHz		
AC voltage		(0 ~ 100) mV	80 μ V	Digital multimeter /TS-CI-E403
		(0.1 ~ 1) V	0.58 mV	
		(1 ~ 10) V	5.8 mV	
		(10 ~ 100) V	60 mV	
DC current		(0 ~ 100) μ A	13 nA	
		(0.1 ~ 1) mA	44 nA	
		(1 ~ 10) mA	0.48 μ A	
		(10 ~ 100) mA	7.3 μ A	
		(0.1 ~ 1) A	0.23 mA	
		(1 ~ 10) A	6.3 mA	
		(10 ~ 30) A	20 mA	
AC Current		40 Hz ~ 1 kHz		
		(29 ~ 100) μ A	39 nA	
		(0.1 ~ 1) mA	0.36 μ A	
		(1 ~ 10) mA	3.6 μ A	
		(10 ~ 100) mA	36 μ A	
		(0.1 ~ 1) A	0.50 mA	
		(1 ~ 10) A	9.5 mA	
Resistance		(0 ~ 10) Ω	0.13 m Ω	
		(10 ~ 100) Ω	1.1 m Ω	
		(0.1 ~ 1) k Ω	11 m Ω	
		(1 ~ 10) k Ω	0.11 Ω	
		(10 ~ 100) k Ω	1.1 Ω	
		(0.1 ~ 1) M Ω	14 Ω	
		(1 ~ 10) M Ω	0.24 k Ω	
		(10 ~ 100) M Ω	15 k Ω	
Leakege current tester	40416			
DC voltage		(0 ~ 30) V	0.01 V	미터 교정기, 디지털 멀티미터 /TS-CI-E416
		(30 ~ 300) V	0.1 V	
AC voltage		60 Hz ~ 1 kHz		
		(0.1 ~ 30) V	0.01 V	
		(30 ~ 300) V	0.1 V	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.	
Leakege current tester	40416	DC current	(0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 50) mA	0.1 μ A 0.001 mA 0.01 mA	Meter calibrator, Digital multimeter /TS-CI-E416
AC current		60 Hz ~ 1 kHz (0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 50) mA	0.1 μ A 0.001 mA 0.01 mA 0.02 mA		
Output resistance		(1 ~ 5) k Ω	1 Ω		
Analogue/Digital multimeters	40419	DC voltage	(\pm) (0 ~ 20) mV (20 ~ 100) mV (0.1 ~ 1) V (1 ~ 2) V (2 ~ 5) V (5 ~ 10) V (10 ~ 20) V (20 ~ 50) V (50 ~ 100) V (100 ~ 200) V (200 ~ 500) V (500 ~ 1 000) V	0.6 μ V 1.2 μ V 6 μ V 0.02 mV 0.03 mV 0.04 mV 0.1 mV 0.4 mV 0.6 mV 3 mV 5 mV 8 mV	Meter calibrator /TS-CI-E419
AC voltage		40 Hz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V 40 Hz ~ 20 kHz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V	17 μ V 0.12 mV 1.2 mV 12 mV 0.08 V 14 μ V 0.07 mV 0.7 mV 7 mV		

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.	
Analogue/Digital multimeters	40419	AC voltage	55 Hz ~ 1 kHz (100 ~ 1 000) V	0.09 V	Meter calibrator /TS-CI-E419
			(20 ~ 50) kHz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V	21 μ V 0.09 mV 0.9 mV 11 mV	
			(50 ~ 100) kHz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V	49 μ V 0.13 mV 1.2 mV 19 mV	
			(100 ~ 200) kHz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V	90 μ V 0.43 mV 3.4 mV	
			(200 ~ 500) kHz (0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V	0.17 mV 1.3 mV 0.013 V	
		DC Current	(\pm) (0 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 3) A (3 ~ 10) A	10 nA 42 nA 0.40 μ A 5.3 μ A 80 μ A 0.85 mA 2.7 mA	
		AC current	40 Hz 1 mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A	0.21 μ A 2.1 μ A 19 μ A 0.28 mA	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Analogue/Digital multimeters AC current	40419	40 Hz ~ 1 kHz 1 mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 3) A (3 ~ 10) A (1 ~ 10) kHz 1 mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A	0.16 μ A 1.6 μ A 14 μ A 0.28 mA 1.0 mA 2.9 mA 1.8 μ A 16 μ A 0.12 mA 7.0 mA	Meter calibrator /TS-CI-E419
Resistance		(0 ~ 10) Ω (10 ~ 100) Ω (0.1 ~ 1) k Ω (1 ~ 10) k Ω (10 ~ 100) k Ω (0.1 ~ 1) M Ω (1 ~ 10) M Ω	0.23 m Ω 1.2 m Ω 9 m Ω 0.09 Ω 1.4 Ω 17 Ω 0.44 k Ω	
Oscilloscope DC Voltage	40421	(\pm) (1 ~ 6) mV (6 ~ 12) mV (12 ~ 30) mV (30 ~ 60) mV (60 ~ 120) mV (120 ~ 300) mV (0.3 ~ 0.6) V (0.6 ~ 1.2) V (1.2 ~ 3) V (3 ~ 6) V (6 ~ 12) V (12 ~ 30) V (30 ~ 60) V (60 ~ 120) V	42 μ V 44 μ V 52 μ V 64 μ V 0.13 mV 0.19 mV 0.72 mV 0.84 mV 1.4 mV 2.6 mV 11 mV 15 mV 26 mV 82 mV	Meter calibrator, Digital multimeter /TS-CI-E421

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.		
Oscilloscope	40421	AC Voltage	1 kHz		Meter calibrator, Digital multimeter /TS-CI-E421	
			(1 ~ 3) mV	42 μV		
			(3 ~ 6) mV	44 μV		
			(6 ~ 12) mV	50 μV		
			(12 ~ 30) mV	64 μV		
			(30 ~ 60) mV	88 μV		
			(60 ~ 120) mV	0.17 mV		
			(120 ~ 300) mV	0.30 mV		
			(0.3 ~ 0.6) V	0.84 mV		
			(0.6 ~ 1.2) V	1.2 mV		
			(1.2 ~ 3) V	2.6 mV		
			(3 ~ 6) V	5.0 mV		
			(6 ~ 12) V	12 mV		
			(12 ~ 30) V	25 mV		
			(30 ~ 60) V	49 mV		
			(60 ~ 120) V	0.12 V		
			Bandwidth level	600 mV		
				50 kHz		8 mV
				50 kHz ~ 1 MHz		14 mV
				(1 ~ 10) MHz		18 mV
				((10 ~ 1 000) MHz)		19 mV
			Time Marker	10 ns		0.62 ps
				(10 ~ 100) ns		6.2 ps
				(0.1 ~ 1) μs		62 ps
				(1 ~ 10) μs		0.62 ns
				(10 ~ 100) μs		6.2 ns
				(0.1 ~ 1) ms		62 ns
				(1 ~ 10) ms		0.62 μs
				(10 ~ 100) ms		6.2 μs
				(0.1 ~ 1) s		62 μs
				(1 ~ 10) s		0.62 ms
			Cal Output Amplitude	(0.1 ~ 1) kHz		
				(0.1 ~ 5) V		2 mV
				(5 ~ 10) V		0.02 V

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Oscilloscope Cal Output Amplitude Cal Output Frequency Input Impedance	40421	(1 ~ 10) kHz (0.1 ~ 1) V (1 ~ 5) V (5 ~ 10) V 1 Hz ~ 2 kHz 50 Ω 1 MΩ	2 mV 3 mV 0.02 V 0.7 Hz 7 mΩ 0.7 kΩ	Meter calibrator, Digital multimeter /TS-CI-E421
Voltage/current Recorder DC voltage DC current	40424	(±) (0 ~ 20) mV (20 ~ 100) mV (0.1 ~ 1) V (1 ~ 20) V (20 ~ 100) V (100 ~ 1 000) V (±) (0 ~ 10) mA (10 ~ 50) mA (50 ~ 100) mA (100 ~ 200) mA (200 ~ 500) mA (0.5 ~ 1) A (1 ~ 10) A	1 μV 2 μV 0.01 mV 0.1 mV 1 mV 0.01 V 1 μA 4 μA 9 μA 0.03 mA 0.06 mA 0.10 mA 2.6 mA	Meter calibrator /TS-CI-E424

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Temperature generators; ovens, ice-point baths, isothermal liquid baths, dry-block calibrators	50101	0 ℃ (-95 ~ 420) ℃	0.01 ℃ 0.02 ℃	SPRT /TS-CI-T01
Temperature indicators /Recorders/Controllers, ,temperature calibrators with sensor without sensor	50102	-196 ℃ (-80 ~ 420) ℃ -196 ℃ (-80 ~ 420) ℃	0.03 ℃ 0.03 ℃ 0.11 ℃ 0.11 ℃	SPRT, Meter Calibrator /TS-CI-T02
Resistance thermometers; SPRT, IPRT, thermistors, etc. IPRT	50104	-196 ℃ (-80 ~ 420) ℃	0.02 ℃ 0.03 ℃	SPRT /TS-CI-T04
Thermal expansion thermometers;bimetal, gas or liquid type bimetal	50105	(-80 ~ 0) ℃ (0 ~ 120) ℃ (120 ~ 250) ℃ (250 ~ 420) ℃	0.6 ℃ 0.3 ℃ 0.6 ℃ 1.5 ℃	SPRT /TS-CI-T05
Temperature Transducers	50107	(-80 ~ 100) ℃ (100 ~ 250) ℃ (250 ~ 420) ℃	0.09 ℃ 0.12 ℃ 0.14 ℃	SPRT /TS-CI-T07

503. Humidity

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Relative humidity hygrometers; polimer thinfilm, hair, etc. temperature humidity	50302	(-40 ~ 0) °C (0 ~ 70) °C (70 ~ 100) °C (100 ~ 140) °C (10 ~ 15) % R.H. (15 ~ 30) % R.H. (30 ~ 40) % R.H. (40 ~ 60) % R.H. (60 ~ 80) % R.H. (80 ~ 95) % R.H.	0.5 °C 0.6 °C 1.2 °C 2.4 °C 2.4 % R.H. 2.1 % R.H. 2.2 % R.H. 2.3 % R.H. 2.4 % R.H. 2.5 % R.H.	Dew-point hygrometers /TS-CI-H01, TS-CI-H02
Temperature humidity recorders ; Hygrothermograph, etc. temperature humidity	50304	(0 ~ 50) °C (10 ~ 95) % R.H.	0.8 °C 4.3 % R.H.	Dew-point hygrometers /TS-CI-H04
Transducers; dew-point/relative humidity	50305	(10 ~ 15) % R.H. (15 ~ 40) % R.H. (40 ~ 60) % R.H. (60 ~ 80) % R.H. (80 ~ 95) % R.H.	2.4 % R.H. 2.2 % R.H. 2.3 % R.H. 2.4 % R.H. 2.5 % R.H.	Dew-point hygrometers /TS-CI-H05
Humidity generators; two-pressure, two- temperature, flow mixing humidity generator, constant temperature and humidity chamber, etc. temperature humidity	50306	(-40 ~ 100) °C (100 ~ 180) °C (10 ~ 20) % R.H. (20 ~ 30) % R.H. (30 ~ 40) % R.H. (40 ~ 60) % R.H. (60 ~ 70) % R.H. (70 ~ 80) % R.H. (80 ~ 95) % R.H.	0.5 °C 1.2 °C 2.6 % R.H. 2.4 % R.H. 2.3 % R.H. 2.2 % R.H. 2.1 % R.H. 2.5 % R.H. 2.7 % R.H.	Dew-point hygrometers /TS-CI-H06