

Korea Laboratory Accreditation Scheme

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, 2021. ~ February 02, 2025.

Scope of Accreditation : Attached Annex

Date of issue : February 07, 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 CHONG WOOK

Head

Korea Laboratory Accreditation Scheme

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 | 20412 | (5 ~ 700) kPa abs (700 ~ 7 000) kPa abs (0 ~ 7 000) kPa | 1.7×10^{-3} 1.2×10^{-3} 5.7×10^{-4} | Air Dead Weight Tester Digital Pressure Controller /TS-CI-P12 |
| Dial type vacuum gauges | 20413 | (-100 ~ 0) kPa | 5.0×10^{-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 | 40101 | 10 µA (10 ~ 100) µA (100 ~ 200) µA (200 ~ 300) µA (0.3 ~ 1) mA (1 ~ 2) mA (2 ~ 3) mA (3 ~ 10) mA (10 ~ 20) mA (20 ~ 30) mA (30 ~ 100) mA (100 ~ 200) mA (200 ~ 300) mA (0.3 ~ 1) A (1 ~ 2) A (2 ~ 2.99) A (2.99 ~ 5) A (5 ~ 10) A (10 ~ 50) A (50 ~ 100) A | 17 nA 28 nA 38 nA 50 nA 0.12 nA 0.20 µA 0.28 µA 0.98 µA 1.8 µA 2.6 µA 10 µA 18 µA 26 µA 0.19 mA 0.62 mA 0.92 mA 2.4 mA 4.2 mA 12 mA 16 mA | Meter calibrator, Transconductance amplifier /TS-CI-E101 |
| DC voltage/current calibrator | 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 | 1.5 µV 9 µV 0.08 mV 0.9 mV 11 mV 2.2 µV 12 µV 0.11 mV 1.8 mV 11 mV | 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 | 40103 | | | |
| Current | | (+) | | Digital multimeter /TS-CI-E103 |
| | | (0 ~ 100) μ A | 13 nA | |
| | | (0.1 ~ 1) mA | 43 nA | |
| | | (1 ~ 10) mA | 0.47 μ A | |
| | | (10 ~ 100) mA | 7.5 μ A | |
| | | (0.1 ~ 1) A | 0.23 mA | |
| | | (1 ~ 10) A | 3.7 mA | |
| | | (10 ~ 30) A | 20 mA | |
| | | (-) | | |
| | | (0 ~ 100) μ A | 18 nA | |
| | | (0.1 ~ 1) mA | 86 nA | |
| | | (1 ~ 10) mA | 0.83 μ A | |
| | | (10 ~ 100) mA | 12 μ A | |
| | | (0.1 ~ 1) A | 0.28 mA | |
| | | (1 ~ 10) A | 5.2 mA | |
| | | (10 ~ 30) A | 20 mA | |
| Electrical temperature calibrators | 40104 | | | |
| Output voltage | | (+) | | Digital multimeter, Meter calibrator /TS-CI-E104 |
| | | (0 ~ 100)mV | 1.6 μ V | |
| | | (0.1 ~ 1)V | 8.6 μ V | |
| | | (1 ~ 10) V | 0.076 mV | |
| | | (10 ~ 100) V | 0.90 mV | |
| | | (-) | | |
| | | (0 ~ 100) mV | 2.3 μ V | |
| | | (0.1 ~ 1)V | 12 μ V | |
| | | (1 ~ 10) V | 0.11 mV | |
| | | (10 ~ 100) V | 1.8 mV | |
| Output current | | (+) | | |
| | | (0 ~ 4) mA | 0.74 μ A | |
| | | (4 ~ 8) mA | 0.75 μ A | |
| | | (8 ~ 20) mA | 1.1 μ A | |
| | | (20 ~ 24) mA | 6.3 μ A | |
| | | (24 ~ 100) mA | 7.5 μ A | |

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, |
| | | (0 ~ 20) mA | 1.1 µA | Meter calibrator |
| | | (20 ~ 24) mA | 12 µA | /TS-CI-E104 |
| | | (24 ~ 100) mA | 12 µA | |
| | | (0 ~ 100) Ω | 1.1 mΩ | |
| | | (100 ~ 400) Ω | 5.9 mΩ | |
| | | (0.4 ~ 1) kΩ | 11 mΩ | |
| | | (1 ~ 4) kΩ | 48 mΩ | |
| | | (4 ~ 10) kΩ | 0.11 Ω | |
| | | (-8.824 ~ 74.868) mV | 2.1 µV | |
| | | (0 ~ 17.136) Ω | 0.81 mΩ | |
| | | (17.136 ~ 100) Ω | 1.1 mΩ | |
| | | (100 ~ 1 000) Ω | 11 mΩ | |
| | | (1 000 ~ 3 137.08) Ω | 44 mΩ | |
| | | (±) | | |
| | | (0 ~ 100) mV | 2.5 µV | |
| | | (0.1 ~ 0.33) V | 9 µV | |
| | | (0.33 ~ 3) V | 30 µV | |
| | | (3 ~ 30) V | 0.34 mV | |
| | | (±) | | |
| | | (0 ~ 4) mA | 0.6 µA | |
| | | (4 ~ 8) mA | 0.9 µA | |
| | | (8 ~ 12) mA | 1.2 µA | |
| | | (12 ~ 16) mA | 1.5 µA | |
| | | (16 ~ 20) mA | 1.8 µA | |
| | | (20 ~ 24) mA | 2.2 µA | |
| | | (24 ~ 30) mA | 2.6 µA | |
| | | (30 ~ 100) mA | 10 µA | |
| | | (0 ~ 10) Ω | 0.78 mΩ | |
| | | (10 ~ 100) Ω | 2.5 mΩ | |
| | | (100 ~ 1 000) Ω | 26 mΩ | |
| | | (1 ~ 10) kΩ | 0.75 Ω | |

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 | (-8.824 ~ 13.421) mV (13.421 ~ 37.006) mV (37.006 ~ 61.017) mV (61.017 ~ 74.868) mV | 1.1 µV 1.5 µV 1.8 µV 2.0 µV | Digital multimeter, Meter calibrator /TS-CI-E104 |
| Input RTD resistance | | (0 ~ 17.136) Ω (17.136 ~ 100) Ω (100 ~ 1 000) Ω (1 000 ~ 3 137.08) Ω | 1.3 mΩ 2.5 mΩ 26 mΩ 0.13 Ω | |
| DC voltmeter | 40112 | (±) (0 ~ 10) mV (10 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V | 1.1 µV 2.4 µV 11 µV 0.11 mV 1.6 mV 16 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 | 40301 | (50 Hz ~ 1 kHz) (30 ~ 100) μ A (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 2.9) A (2.9 ~ 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 | 0.18 μ A 0.90 μ A 4.6 μ A 46 μ A 0.46 mA 1.5 mA 6.2 mA 22 mA 36 mA 32 mA 52 mA 0.11 A 0.18 A | Meter calibrator, Transconductance amplifier, /TS-CI-E301 |
| Clamp ammeters/voltmeters | 40302 | (0 ~ 600) mV (0.6 ~ 6) V (6 ~ 60) V (60 ~ 600) V (600 ~ 1 000) V (60 Hz ~ 1 kHz) (0.1 ~ 300) mV (300 ~ 600) mV (0.6 ~ 3) V (3 ~ 6) V (6 ~ 30) V (30 ~ 60) V (60 ~ 300) V (300 ~ 600) V (600 ~ 1 000) V | 64 μ V 0.66 mV 6.5 mV 68 mV 0.64 V 80 μ V 0.14 mV 0.76 mV 1.4 mV 7.8 mV 13 mV 0.08 V 0.17 V 0.70 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 | | | |
| | | (0 ~ 10) mA | 14 µA | Meter calibrator, |
| | | (10 ~ 20) mA | 26 µA | Current coil, |
| | | (20 ~ 30) mA | 35 µA | Transconductance amplifier |
| | | (30 ~ 100) mA | 0.14 mA | /TS-CI-E302 |
| | | (100 ~ 200) mA | 0.26 mA | |
| | | (0.2 ~ 1) A | 1.4 mA | |
| | | (1 ~ 2) A | 2.6 mA | |
| | | (2 ~ 5) A | 6.3 mA | |
| | | (5 ~ 10) A | 14 mA | |
| | | (10 ~ 20) A | 30 mA | |
| | | (20 ~ 50) A | 78 mA | |
| | | (50 ~ 100) A | 0.17 A | |
| | | (100 ~ 200) A | 0.34 A | |
| | | (200 ~ 300) A | 0.48 A | |
| | | (300 ~ 400) A | 0.64 A | |
| | | (400 ~ 500) A | 0.80 A | |
| | | (500 ~ 600) A | 1.0 A | |
| | | (600 ~ 1 000) A | 1.6 A | |
| | | (1 000 ~ 2 000) A | 3.5 A | |
| | | | | |
| | | (60 Hz ~ 1 kHz) | | |
| | | (0.1 ~ 1) mA | 1.6 µA | |
| | | (1 ~ 2) mA | 3.0 µA | |
| | | (2 ~ 3) mA | 4.3 µA | |
| | | (3 ~ 6) mA | 7.9 µA | |
| | | (6 ~ 10) mA | 15 µA | |
| | | (10 ~ 20) mA | 26 µA | |
| | | (20 ~ 30) mA | 37 µA | |
| | | (30 ~ 60) mA | 79 µA | |
| | | (60 ~ 100) mA | 0.14 mA | |
| | | (100 ~ 200) mA | 0.26 mA | |
| | | (200 ~ 300) mA | 0.37 mA | |
| | | (300 ~ 600) mA | 0.78 mA | |
| | | (0.6 ~ 1) A | 1.4 mA | |
| | | (1 ~ 2) A | 2.7 mA | |
| | | (2 ~ 2.9) A | 3.8 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 | | 1 kHz | | Meter calibrator, |
| | | (2.9 ~ 5) A | 7.1 mA | Current coil, |
| | | (5 ~ 6) A | 8.4 mA | Transconductance amplifier |
| | | (6 ~ 10) A | 15 mA | /TS-CI-E302 |
| | | (10 ~ 20) A | 34 mA | |
| | | 60 Hz | | |
| | | (2.9 ~ 5) A | 7.0 mA | |
| | | (5 ~ 6) A | 8.4 mA | |
| | | (6 ~ 10) A | 15 mA | |
| | | (10 ~ 20) A | 35 mA | |
| | | (20 ~ 60) A | 0.10 A | |
| | | (60 ~ 100) A | 0.18 A | |
| | | (100 ~ 250) A | 0.40 A | |
| | | (250 ~ 500) A | 0.9 A | |
| | | (500 ~ 600) A | 1.4 A | |
| | | (600 ~ 1 000) A | 1.8 A | |
| | | (1 000 ~ 2 000) A | 3.6 A | |
| | | (2 000 ~ 5 000) A | 8.6 A | |
| Resistance | | | | |
| | | (0 ~ 100) Ω | 64 mΩ | |
| | | (0.1 ~ 1) kΩ | 0.64 Ω | |
| | | (1 ~ 10) kΩ | 6.4 Ω | |
| | | (10 ~ 100) kΩ | 64 Ω | |
| | | (0.1 ~ 1) MΩ | 0.64 kΩ | |
| | | (1 ~ 10) MΩ | 6.4 kΩ | |
| AC power meter | 40311 | | | |
| DC voltage | | (0.1 ~ 1.5) V | 66 µV | Meter calibrator, |
| | | (1.5 ~ 6) V | 0.10 mV | Current coil |
| | | (6 ~ 15) V | 0.66 mV | /TS-CI-E311 |
| | | (15 ~ 30) V | 0.74 mV | |
| | | (30 ~ 60) V | 1.2 mV | |
| | | (60 ~ 150) V | 6.8 mV | |
| | | (150 ~ 300) V | 7.8 mV | |
| | | (300 ~ 600) V | 12 mV | |
| | | (600 ~ 1 000) V | 66 mV | |

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 | | |
| | | (0.1 ~ 1.5) V | 0.24 mV | Meter calibrator, Current coil |
| | | (1.5 ~ 6) V | 1.2 mV | /TS-CI-E311 |
| | | (6 ~ 15) V | 2.4 mV | |
| | | (15 ~ 30) V | 4.2 mV | |
| | | (30 ~ 60) V | 12 mV | |
| | | (60 ~ 150) V | 26 mV | |
| | | (150 ~ 300) V | 48 mV | |
| | | (300 ~ 600) V | 0.16 V | |
| | | (600 ~ 1 000) V | 0.26 V | |
| DC current | | (1 ~ 5) mA | 0.62 µA | |
| | | (5 ~ 10) mA | 1.2 µA | |
| | | (10 ~ 20) mA | 1.9 µA | |
| | | (20 ~ 50) mA | 6.2 µA | |
| | | (50 ~ 100) mA | 9.8 µA | |
| | | (100 ~ 200) mA | 18 µA | |
| | | (200 ~ 500) mA | 0.11 mA | |
| | | (0.5 ~ 1) A | 0.19 mA | |
| | | (1 ~ 2) A | 0.62 mA | |
| | | (2 ~ 5) A | 2.4 mA | |
| | | (5 ~ 10) A | 4.2 mA | |
| | | (10 ~ 20) A | 16 mA | |
| | | (20 ~ 50) A | 78 mA | |
| | | (50 ~ 100) A | 0.16 A | |
| | | (100 ~ 250) A | 0.40 A | |
| | | (250 ~ 500) A | 0.80 A | |
| | | (500 ~ 1 000) A | 1.8 A | |
| AC current | | (50 ~ 60) Hz | | |
| | | 1 ~ 5 mA | 3.2 µA | |
| | | (5 ~ 10) mA | 4.7 µA | |
| | | (10 ~ 20) mA | 7.9 µA | |
| | | (20 ~ 50) mA | 32 µA | |
| | | (50 ~ 100) mA | 46 µA | |
| | | (100 ~ 200) mA | 78 µA | |
| | | (200 ~ 500) mA | 0.28 mA | |
| | | (0.5 ~ 1) A | 0.46 mA | |
| | | (1 ~ 2) A | 0.9 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 power meter | 40311 | (50 ~ 60) Hz | | |
| | | (2 ~ 5) A | 3.8 mA | Meter calibrator, Current coil |
| | | (5 ~ 10) A | 6 mA | /TS-CI-E311 |
| | | (10 ~ 20) A | 22 mA | |
| | | 60 Hz | | |
| | | (20 ~ 50) A | 80 mA | |
| | | (50 ~ 100) A | 0.16 A | |
| | | (100 ~ 250) A | 0.4 A | |
| | | (250 ~ 500) A | 0.9 A | |
| | | (500 ~ 1 000) A | 1.6 A | |
| AC power | | (50 ~ 60) Hz | | |
| | | 60 W | 36 mW | |
| | | (60 ~ 120) W | 66 mW | |
| | | (120 ~ 240) W | 0.13 W | |
| | | (240 ~ 600) W | 0.48 W | |
| | | (600 ~ 1 200) W | 0.96 W | |
| | | (1 200 ~ 2 400) W | 1.6 W | |
| Power factor | | (2 400 ~ 4 800) W | 5.6 W | |
| | | (50 ~ 60) Hz | | |
| | | LEAD (0.1 ~ 1) | 6.1×10^{-4} | |
| | | LAG (0.1 ~ 1) | 6.1×10^{-4} | |
| AC voltmeter | 40318 | (1 ~ 3) mV | | |
| | | 10 Hz | 7.0 μ V | Meter calibrator /TS-CI-E318 |
| | | 50 Hz ~ 10 kHz | 5.4 μ V | |
| | | 10 kHz ~ 100 kHz | 18 μ A | |
| | | (3 ~ 10) mV | | |
| | | 10 Hz | 12 μ V | |
| | | 50 Hz ~ 10 kHz | 7 μ V | |
| | | 10 kHz ~ 100 kHz | 36 μ 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 voltmeter | 40318 | (10 ~ 30) mV | | Meter calibrator |
| | | 10 Hz | 25 μ V | /TS-CI-E318 |
| | | 50 Hz ~ 10 kHz | 9.2 μ V | |
| | | 10 kHz ~ 100 kHz | 90 μ V | |
| | | (30 ~ 100) mV | | |
| | | 10 Hz | 32 μ V | |
| | | 50 Hz ~ 1 kHz | 19 μ V | |
| | | 1 kHz ~ 10 kHz | 21 μ V | |
| | | 10 kHz ~ 100 kHz | 88 μ V | |
| | | (100 ~ 300) mV | | |
| | | 10 Hz | 80 μ V | |
| | | 50 Hz ~ 10 kHz | 42 μ V | |
| | | 10 kHz ~ 100 kHz | 0.22 mV | |
| | | (0.3 ~ 1) V | | |
| | | 10 Hz | 0.30 mV | |
| | | 50 Hz ~ 1 kHz | 0.17 mV | |
| | | 1 kHz ~ 10 kHz | 0.18 mV | |
| | | 10 kHz ~ 100 kHz | 0.64 mV | |
| | | (1 ~ 3) V | | |
| | | 10 Hz | 0.78 mV | |
| | | 50 Hz ~ 10 kHz | 0.42 mV | |
| | | 10 kHz ~ 100 kHz | 1.8 mV | |
| | | (3 ~ 10) V | | |
| | | 10 Hz | 3.0 mV | |
| | | 50 Hz ~ 1 kHz | 1.7 mV | |
| | | 1 kHz ~ 10 kHz | 1.9 mV | |
| | | 10 kHz ~ 100 kHz | 8.2 mV | |
| | | (10 ~ 30) V | | |
| | | 10 Hz | 7.8 mV | |
| | | 50 Hz ~ 10 kHz | 4.2 mV | |
| | | 10 kHz ~ 100 kHz | 22 mV | |

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 | 40318 | AC voltmeter (30 ~ 100) V 50 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 100 kHz (100 ~ 300) V 50 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz (300 ~ 700) V 50 Hz ~ 10 kHz (700 ~ 1 000) V 50 Hz ~ 10 kHz | 17 mV 23 mV 0.20 V 48 mV 54 mV 0.20 V 0.18 V 0.24 V | Meter calibrator /TS-CI-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 | | | |
| | | (0 ~ 100) mV | 1.5 μ V | Digital multimeter |
| | | (0.1 ~ 1) V | 9 μ V | /TS-CI-E403 |
| | | (1 ~ 10) V | 0.08 mV | |
| | | (10 ~ 100) V | 0.9 mV | |
| | | (100 ~ 1 000) V | 11 mV | |
| | | | | |
| | | 40 Hz | | |
| | | (1 ~ 100) mV | 17 μ V | |
| | | (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 μ V | |
| | | (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 μ V | |
| | | (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 μ V | |
| | | (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 | AC voltage | 50 kHz ~ 100 kHz | | |
| | | (0 ~ 100) mV | 80 µV | Digital multimeter |
| | | (0.1 ~ 1) V | 0.58 mV | /TS-CI-E403 |
| | | (1 ~ 10) V | 5.8 mV | |
| | | (10 ~ 100) V | 60 mV | |
| | DC current | (0 ~ 100) µA | 13 nA | |
| | | (0.1 ~ 1) mA | 44 nA | |
| | | (1 ~ 10) mA | 0.48 µA | |
| | | (10 ~ 100) mA | 7.5 µA | |
| | | (0.1 ~ 1) A | 0.23 mA | |
| | | (1 ~ 10) A | 3.7 mA | |
| | | (10 ~ 30) A | 20 mA | |
| | AC Current | 40 Hz ~ 1 kHz | | |
| | | (29 ~ 100) µA | 39 nA | |
| | | (0.1 ~ 1) mA | 0.36 µA | |
| | | (1 ~ 10) mA | 3.6 µA | |
| | | (10 ~ 100) mA | 36 µA | |
| | | (0.1 ~ 1) A | 0.50 mA | |
| | | (1 ~ 10) A | 9.9 mA | |
| | Resistance | (0 ~ 10) Ω | 0.13 mΩ | |
| | | (10 ~ 100) Ω | 1.1 mΩ | |
| | | (0.1 ~ 1) kΩ | 11 mΩ | |
| | | (1 ~ 10) kΩ | 0.11 Ω | |
| | | (10 ~ 100) kΩ | 1.1 Ω | |
| | | (0.1 ~ 1) MΩ | 14 Ω | |
| | | (1 ~ 10) MΩ | 0.24 kΩ | |
| | | (10 ~ 100) MΩ | 15 kΩ | |
| Leakege current tester | DC voltage | 40416 | | |
| | | (0 ~ 30) V | 6.2 mV | Meter calibrator , |
| | | (30 ~ 300) V | 62 mV | Digital multimeter |
| | AC voltage | 60 Hz ~ 1 kHz | | /TS-CI-E416 |
| | | (0.1 ~ 30) V | 6.4 mV | |
| | | (30 ~ 100) V | 64 mV | |
| | | (100 ~ 200) V | 72 mV | |
| | | (200 ~ 300) V | 80 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. |
|--|-------------------|-------------------|--|---|
| Leakege current tester | DC current | (0 ~ 100) μ A | 70 nA | Meter calibrator , Digital multimeter /TS-CI-E416 |
| | | (0.1 ~ 1) mA | 0.64 μ A | |
| | | (1 ~ 10) mA | 6.4 μ A | |
| | | (10 ~ 50) mA | 9.0 μ A | |
| | AC current | 60 Hz ~ 1 kHz | | |
| | | (0 ~ 100) μ A | 0.19 μ A | |
| | | (0.1 ~ 1) mA | 1.1 μ A | |
| | | (1 ~ 10) mA | 7.8 μ A | |
| | | (10 ~ 50) mA | 34 μ A | |
| | Output resistance | 1 k Ω | 0.64 Ω | |
| | | 1.5 k Ω | 0.70 Ω | |
| | | 2 k Ω | 0.72 Ω | |
| | | 5 k Ω | 0.96 Ω | |
| Analogue/Digital multimeters | DC voltage | (0 ~ 10) mV | 1.1 μ V | Meter calibrator /TS-CI-E419 |
| | | (10 ~ 100) mV | 2.4 μ V | |
| | | (100 ~ 600) mV | 7.0 μ V | |
| | | (0.6 ~ 1) V | 11 μ V | |
| | | (1 ~ 3) V | 30 μ V | |
| | | (3 ~ 6) V | 74 μ V | |
| | | (6 ~ 10) V | 0.11 mV | |
| | | (10 ~ 30) V | 0.34 mV | |
| | | (30 ~ 60) V | 0.98 mV | |
| | | (60 ~ 100) V | 1.6 mV | |
| | | (100 ~ 300) V | 4.6 mV | |
| | | (300 ~ 500) V | 8.4 mV | |
| | AC voltage | (500 ~ 700) V | 12 mV | |
| | | (700 ~ 1 000) V | 16 mV | |
| | | 50 Hz ~ 1 kHz | | |
| | | (1 ~ 3) mV | 5.4 μ V | |
| | | (3 ~ 10) mV | 7.0 μ V | |
| | | (10 ~ 30) mV | 9.2 μ V | |
| | | (30 ~ 100) mV | 19 μ V | |
| | | (100 ~ 300) mV | 42 μ 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. |
|--|---------------|-----------------|--|--|
| Analogue/Digital multimeters | 40419 | | | |
| AC voltage | | (300 ~ 600) mV | 0.13 mV | Meter calibrator |
| | | (0.6 ~ 1) V | 0.17 mV | /TS-CI-E419 |
| | | (1 ~ 3) V | 0.42 mV | |
| | | (3 ~ 6) V | 1.2 mV | |
| | | (6 ~ 10) V | 1.7 mV | |
| | | (10 ~ 30) V | 4.2 mV | |
| | | (30 ~ 60) V | 12 mV | |
| | | (60 ~ 100) V | 17 mV | |
| | | (100 ~ 200) V | 34 mV | |
| | | (200 ~ 300) V | 48 mV | |
| | | (300 ~ 500) V | 0.13 V | |
| | | (500 ~ 700) V | 0.18 V | |
| | | (700 ~ 1 000) V | 0.24 V | |
| | | 1 kHz ~ 10 kHz | | |
| | | (1 ~ 3) mV | 5.4 µV | |
| | | (3 ~ 10) mV | 7.0 µV | |
| | | (10 ~ 30) mV | 9.2 µV | |
| | | (30 ~ 100) mV | 21 µV | |
| | | (100 ~ 300) mV | 42 µV | |
| | | (300 ~ 600) mV | 0.15 mV | |
| | | (0.6 ~ 1) V | 0.18 mV | |
| | | (1 ~ 3) V | 0.42 mV | |
| | | (3 ~ 6) V | 1.6 mV | |
| | | (6 ~ 10) V | 1.9 mV | |
| | | (10 ~ 30) V | 4.2 mV | |
| | | (30 ~ 60) V | 18 mV | |
| | | (60 ~ 100) V | 23 mV | |
| | | (100 ~ 200) V | 38 mV | |
| | | (200 ~ 300) V | 54 mV | |
| | | (300 ~ 500) V | 0.13 V | |
| | | (500 ~ 700) V | 0.18 V | |
| | | (700 ~ 1 000) V | 0.34 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. |
|--|---------------|-----------------------|--|--|
| Analogue/Digital multimeters | 40419 | | | |
| DC Current | | (0 ~ 10) μ A | 17 nA | Meter calibrator |
| | | (10 ~ 100) μ A | 28 nA | /TS-CI-E419 |
| | | (100 ~ 300) μ A | 50 nA | |
| | | (300 ~ 600) μ A | 88 nA | |
| | | (0.6 ~ 1) mA | 0.12 μ A | |
| | | (1 ~ 3) mA | 0.30 μ A | |
| | | (3 ~ 6) mA | 0.70 μ A | |
| | | (6 ~ 10) mA | 0.98 μ A | |
| | | (10 ~ 30) mA | 2.8 μ A | |
| | | (30 ~ 60) mA | 7.0 μ A | |
| | | (60 ~ 100) mA | 9.8 μ A | |
| | | (100 ~ 300) mA | 28 μ A | |
| | | (300 ~ 600) mA | 0.13 mA | |
| | | (0.6 ~ 1) A | 0.19 mA | |
| | | (1 ~ 2) A | 0.62 mA | |
| | | (2 ~ 2.99) A | 0.92 mA | |
| | | (2.99 ~ 5) A | 2.4 mA | |
| | | (5 ~ 10) A | 4.2 mA | |
| AC current | | 50 Hz ~ 1 kHz | | |
| | | (29 ~ 100) μ A | 0.18 μ A | |
| | | (100 ~ 300) μ A | 0.36 μ A | |
| | | (0.3 ~ 1) mA | 0.90 μ A | |
| | | (1 ~ 3) mA | 2.4 μ A | |
| | | (3 ~ 10) mA | 4.6 μ A | |
| | | (10 ~ 30) mA | 11 μ A | |
| | | (30 ~ 100) mA | 46 μ A | |
| | | (100 ~ 300) mA | 0.11 mA | |
| | | (0.3 ~ 1) A | 0.46 mA | |
| | | (1 ~ 2) A | 1.0 mA | |
| | | (2 ~ 2.9) A | 1.5 mA | |
| | | (2.9 ~ 5) A | 3.8 mA | |
| | | (5 ~ 10) A | 6.2 mA | |
| Resistance | | (0 ~ 100) Ω | 2.4 m Ω | |
| | | (0.1 ~ 1) k Ω | 24 m Ω | |
| | | (1 ~ 10) k Ω | 0.24 Ω | |
| | | (10 ~ 100) k Ω | 2.4 Ω | |

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 | | | |
| Resistance | | (0.1 ~ 1) MΩ (1 ~ 10) MΩ | 26 Ω 1.1 kΩ | Meter calibrator /TS-CI-E419 |
| Voltage/current Recorder | 40424 | | | |
| DC voltage | | (±) (0 ~ 10) mV (10 ~ 20) mV (20 ~ 50) mV (50 ~ 100) mV (100 ~ 200) mV (200 ~ 500) mV (0.5 ~ 1) V (1 ~ 2) V (2 ~ 10) V (10 ~ 20) V (20 ~ 100) V (100 ~ 200) V (200 ~ 1 000) V | 1.2 μV 1.4 μV 1.8 μV 7.0 μV 7.6 μV 9.0 μV 64 μV 68 μV 0.66 mV 0.68 mV 6.6 mV 7.2 mV 66 mV | Meter calibrator /TS-CI-E424 |
| DC current | | (±) (0 ~ 10) mA (10 ~ 20) mA (20 ~ 50) mA (50 ~ 100) mA (100 ~ 200) mA (200 ~ 500) mA (0.5 ~ 1) A (1 ~ 2) A (2 ~ 5) A (5 ~ 10) A | 1.2 μA 1.9 μA 9.0 μA 12 μA 19 μA 0.13 mA 0.20 mA 0.62 mA 2.4 mA 4.2 mA | |

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 | (-95 ~ 140) °C (140 ~ 420) °C | 0.02 °C 0.03 °C | SPRT /TS-CI-T01 |
| Temperature indicators /Recorders/Controllers, , temperature calibrators | 50102 | -196 °C (-80 ~ 250) °C | 0.03 °C 0.03 °C | SPRT, Meter Calibrator /TS-CI-T02 |
| with sensor | | -196 °C (-80 ~ 250) °C | 0.11 °C 0.11 °C | |
| without sensor | | | | |
| Resistance thermometers; SPRT, IPRT, thermistors, etc. | 50104 | (-80 ~ 250) °C | 0.03 °C | SPRT /TS-CI-T04 |
| IPRT | | | | |
| Thermal expansion thermometers;bimetal, gas or liquid type | 50105 | (0 ~ 120) °C (120 ~ 250) °C | 0.3 °C 0.5 °C | SPRT /TS-CI-T05 |
| bimetal | | | | |
| Temperature Transducers | 50107 | (-80 ~ 100) °C (100 ~ 250) °C | 0.09 °C 0.12 °C | 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; polymer thinfilm, hair, etc. | 50302 | | | Dew-point hygrometers /TS-CI-H01, TS-CI-H02 |
| temperature | | (-40 ~ 50) °C (50 ~ 140) °C | 0.8 °C 1.7 °C | |
| humidity | | (10 ~ 20) % R.H. (20 ~ 95) % R.H. | 3.3 % R.H. 2.7 % R.H. | |
| Temperature humidity recorders ; Hygrothermograph, etc. | 50304 | | | Dew-point hygrometers /TS-CI-H04 |
| temperature | | (0 ~ 50) °C | 1.1 °C | |
| humidity | | (10 ~ 20) % R.H. (20 ~ 95) % R.H. | 4.8 % R.H. 4.5 % R.H. | |
| Transducers; dew-point/relative humidity | 50305 | | | Dew-point hygrometers /TS-CI-H05 |
| | | (10 ~ 20) % R.H. (20 ~ 95) % R.H. | 3.3 % R.H. 2.8 % R.H. | |
| Humidity generators; two-pressure, two-temperature, flow mixing humidity generator, constant temperature and humidity chamber, etc. | 50306 | | | Dew-point hygrometers /TS-CI-H06 |
| temperature | | (-40 ~ 180) °C | 0.4 °C | |
| humidity | | (10 ~ 95) % R.H. | 2.8 % R.H. | |