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

# Certificate of Accreditation

(Certificate No：LN0881-240923)

This is to certify that

## National Measurement Laboratory, R. O. C.

**National Measurement Laboratory, R. O. C.(Temperature, Humidity)**

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

**is accredited in respect of laboratory**

| | | |
|---|---|---|
| **Accreditation Criteria** | ： | ISO/IEC 17025:2017；CNS 17025:2018 |
| **Accreditation Number** | ： | N0881 |
| **Originally Accredited** | ： | May 15, 2002 |
| **Effective Period** | ： | May 15, 2021 to May 14, 2026 |
| **Accredited Scope** | ： | Calibration Field, see described in the Appendix |
| **Specific Accreditation Program** | ： | Accreditation Program for National Metrology Institutes |

Scan to verify

Yi-Ling Chen

Yi-Ling Chen
President, Taiwan Accreditation Foundation
September 23, 2024



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

Accreditation Number ：N0881
Laboratory Head ：LAN, Yu-Ping

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 |
| KE1002 Platinum resistance thermometer, Fixed-point Cell | FLUKE/5960A, ISOTECH/17924, FLUKE/5900E, Hart Scientific/5901A, Hart Scientific/5943, ISOTECH/17668, FLUKE/5904, NML/Sn, ISOTECH/17669, ISOTECH/17671, NML/Al, FLUKE/5907, FLUKE/5908, ISOTECH/17673 | Instrument Calibration Technique for the Fixed-Point Calibration of Platinum Resistance Thermometer (Document No.: 07-3-82-0061) | -190 | ℃ | 962 | ℃ | FP of Ag | 6.0 | mK |
| | | | -190 | ℃ | 962 | ℃ | FP of Al | 4.1 | mK |
| | | | -190 | ℃ | 962 | ℃ | FP of Zn | 2.1 | mK |
| | | | -190 | ℃ | 962 | ℃ | FP of Sn | 0.52 | mK |
| | | | -190 | ℃ | 962 | ℃ | FP of In | 0.85 | mK |
| | | | -190 | ℃ | 962 | ℃ | MP of Ga | 0.37 | mK |
| | | | -190 | ℃ | 962 | ℃ | TP of $H_2O$ | 0.16 | mK |
| | | | -190 | ℃ | 962 | ℃ | TP of Hg | 0.43 | mK |
| | | | -190 | ℃ | 962 | ℃ | TP of Ar | 0.81 | mK |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| | brand /model | document name /no. | minimum value | units | maximum value | units | explanation | value | units |
| KE1002 Resistance thermometer detector, Resistance thermometer, Thermometer containing display meter (Digital thermometer) | ISOTECH 909/25.5, ROSEMOUNT 162CE | Instrument Calibration Technique for Resistance Temperature Thermometer (Document No.: 07-3-82-0060) | 0 | ℃ | 0 | ℃ | | 6.3 (0.0063) | mK (℃) |
| | | | 5 | ℃ | 10 | ℃ | | 6.8 (0.0068) | mK (℃) |
| | | | >10 | ℃ | 20 | ℃ | | 7.0 (0.0070) | mK (℃) |
| | | | >20 | ℃ | 30 | ℃ | | 7.0 (0.0070) | mK (℃) |
| | | | >30 | ℃ | 40 | ℃ | | 7.4 (0.0074) | mK (℃) |
| | | | >40 | ℃ | 50 | ℃ | | 6.9 (0.0069) | mK (℃) |
| | | | >50 | ℃ | 60 | ℃ | | 7.0 (0.0070) | mK (℃) |
| | | | >60 | ℃ | 70 | ℃ | | 7.3 (0.0073) | mK (℃) |
| | | | >70 | ℃ | 80 | ℃ | | 8.0 (0.0080) | mK (℃) |
| | | | >80 | ℃ | 100 | ℃ | | 11 (0.011) | mK (℃) |
| | | | >100 | ℃ | 150 | ℃ | | 8.7 (0.0087) | mK (℃) |
| | | | >150 | ℃ | 200 | ℃ | | 9.0 (0.0090) | mK (℃) |
| | | | >200 | ℃ | 250 | ℃ | | 11 (0.011) | mK (℃) |
| | | | >250 | ℃ | 300 | ℃ | | 18 (0.018) | mK (℃) |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
| | | | | | | | | | |
| KE1004 type R, S, B thermocouple | Hart -5943-09, CMS-Sn-1-05, Fluke-5906-Zn-06116, Fluke-5907-Al-07170, Fluke-5908-Ag-08077 | Instrument Calibration Technique for the Fixed-Point Calibration of Noble Metal Thermocouples (Document No.: 07-3-89-0009) | 29.7646 | ℃ | 29.7646 | ℃ | MP of Ga | 0.20 | ℃ |
| | | | 231.928 | ℃ | 231.928 | ℃ | FP of Sn | 0.14 | ℃ |
| | | | 419.527 | ℃ | 419.527 | ℃ | FP of Zn | 0.13 | ℃ |
| | | | 660.323 | ℃ | 660.323 | ℃ | FP of Al | 0.12 | ℃ |
| | | | 961.78 | ℃ | 961.78 | ℃ | FP of Ag | 0.11 | ℃ |
| | | | 0 | ℃ | 961.78 | ℃ | | 0.20 | ℃ |
| | | | >961.78 | ℃ | 1200 | ℃ | | 0.41 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
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| 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 |
| KE1007 Standard radiation thermometer | Ag: CHINO IR-RO-AG, Cu: CHINO IR-RO-Cu | Instrument Calibration Technique for the Fixed-Point Calibration of Radiation Thermometers (Document No.: 07-3-90-0113) | 800 | ℃ | 800 | ℃ | 650 nm | 0.38 | ℃ |
| | | | 900 | ℃ | 900 | ℃ | 650 nm | 0.30 | ℃ |
| | | | 1000 | ℃ | 1000 | ℃ | 650 nm | 0.31 | ℃ |
| | | | 1100 | ℃ | 1100 | ℃ | 650 nm | 0.35 | ℃ |
| | | | 1200 | ℃ | 1200 | ℃ | 650 nm | 0.37 | ℃ |
| | | | 1300 | ℃ | 1300 | ℃ | 650 nm | 0.45 | ℃ |
| | | | 1400 | ℃ | 1400 | ℃ | 650 nm | 0.66 | ℃ |
| | | | 1500 | ℃ | 1500 | ℃ | 650 nm | 0.89 | ℃ |
| | | | 1600 | ℃ | 1600 | ℃ | 650 nm | 1.2 | ℃ |
| | | | 1700 | ℃ | 1700 | ℃ | 650 nm | 1.5 | ℃ |
| | | | 1800 | ℃ | 1800 | ℃ | 650 nm | 1.8 | ℃ |
| | | | 1900 | ℃ | 1900 | ℃ | 650 nm | 2.1 | ℃ |
| | | | 2000 | ℃ | 2000 | ℃ | 650 nm | 2.5 | ℃ |
| | | | 800 | ℃ | 800 | ℃ | 900 nm | 0.28 | ℃ |
| | | | 900 | ℃ | 900 | ℃ | 900 nm | 0.24 | ℃ |
| | | | 1000 | ℃ | 1000 | ℃ | 900 nm | 0.26 | ℃ |
| | | | 1100 | ℃ | 1100 | ℃ | 900 nm | 0.31 | ℃ |
| | | | 1200 | ℃ | 1200 | ℃ | 900 nm | 0.34 | ℃ |
| | | | 1300 | ℃ | 1300 | ℃ | 900 nm | 0.41 | ℃ |
| | | | 1400 | ℃ | 1400 | ℃ | 900 nm | 0.55 | ℃ |
| | | | 1500 | ℃ | 1500 | ℃ | 900 nm | 0.71 | ℃ |
| | | | 1600 | ℃ | 1600 | ℃ | 900 nm | 0.89 | ℃ |
| | | | 1700 | ℃ | 1700 | ℃ | 900 nm | 1.1 | ℃ |
| | | | 1800 | ℃ | 1800 | ℃ | 900 nm | 1.4 | ℃ |
| | | | 1900 | ℃ | 1900 | ℃ | 900 nm | 1.6 | ℃ |
| | | | 2000 | ℃ | 2000 | ℃ | 900 nm | 1.9 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |

| 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 |
| KE1007 Linear Pyrometer | Ag: CHINO IR-RO-AG, Cu: CHINO IR-RO-Cu | Instrument Calibration Technique for the Fixed-Point Calibration of Radiation Thermometers (Document No.: 07-3-90-0113) | 961.78 | ℃ | 961.78 | ℃ | (@650 nm) -Ag | 0.25 | ℃ |
| | | | 1084.62 | ℃ | 1084.62 | ℃ | (@650 nm) -Cu | 0.33 | ℃ |
| | | | 961.78 | ℃ | 961.78 | ℃ | (@900 nm) -Ag | 0.25 | ℃ |
| | | | 1084.62 | ℃ | 1084.62 | ℃ | (@900 nm) -Cu | 0.30 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
| | | | | | | | | | |
| KE1007 Radiation thermometer | ASL/T100-250-ID | Instrument Calibration Technique for the Comparative Calibration of Room Temperature Radiation Thermometer (Document No.: 07-3-97-0003) | 10 | ℃ | 90 | ℃ | | 0.1 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
| | | | | | | | | | |
| KE2001 Hygrometer electronic psychrometer, humidity transducer, digital humidity analyzer, | Thunder Scientific 2500ST | Instrument Calibration Technique for Two-Pressure Humidity Generator (2500) Calibration System (Document No.: 07-3-99-5145) | 10 | % | 98 | % | relative humidity | (0.0038×RH +0.0306) | %RH |
| | | | 0 | ℃ | <35 | ℃ | Temperature | 0.064 | ℃ |
| | | | 35 | ℃ | <69.5 | ℃ | Temperature | 0.12 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
| | | | | | | | | | |

| 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 |
| KE2003 Optical chilled dew point hygrometer | Thunder Scientific 2500ST | Instrument Calibration Technique for Two-Pressure Humidity Generator (2500) Calibration System (Document No.: 07-3-99-5145) | -27 | ℃ | 25 | ℃ | Dew point | 0.068 | ℃ |
| | | | >25 | ℃ | <68 | ℃ | Dew point | 0.089 | ℃ |
| Approval Signatory: KO, Hsin-Yi; YEH, Chien-Chih; TSAI, Shu-Fei; TU, Tsung-Hsien | | | | | | | | | |
| | | | | | | | | | |

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