



CALIBRATION LABORATORIES

NVLAP LAB CODE 200893-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

| | |
|--|---|
| <p>Transcat - Anaheim 720 N. Valley Street, Suite G Anaheim, CA 92801 Mr. Tony Kutch Phone: 714-817-8160 Fax: 714-817-8161 E-mail: tkutch@transcat.com URL: www.transcat.com</p> | <p>Parameter(s) of Accreditation Dimensional Electromagnetics – DC/Low Frequency Time and Frequency Mechanical Electromagnetics – RF/Microwave Thermodynamic</p> <p>This laboratory is compliant to ANSI/NC SL Z540-1-1994; Part 1. (NVLAP Code: 20/A01)</p> |
|--|---|

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|---|--|----------------------------------|
| DIMENSIONAL | | | |
| <p>NVLAP Code: 20/D05 LENGTH & DIAMETER; STEP GAGES Micrometers and Calipers— Outside, Inside, Depth</p> <p>Field calibrations available ^{Note 4}</p> | <p>0.02 in to 8 in 8 in to 42 in 0.02 in to 42 in</p> | <p>Where L is the length in inches of device under test.</p> <p>15 $\mu\text{in} + 3L \mu\text{in}$ 10 $\mu\text{in} + 4L \mu\text{in}$ 15 $\mu\text{in} + 14L \mu\text{in}$</p> | <p>Comparison to Gage Blocks</p> |
| <p>Anvil Flatness</p> <p>Field calibrations available ^{Note 4}</p> | <p>0 in to 1 in</p> | <p>5.3 μin</p> | <p>Optical Flats</p> |
| <p>Anvil Parallelism</p> <p>Field calibrations available ^{Note 4}</p> | <p>0 in to 1 in</p> | <p>5.3 μin</p> | <p>Optical Parallel</p> |
| <p>Dial Indicators</p> <p>Field calibrations available ^{Note 4}</p> | <p>0 in to 1 in 1 in to 6 in 0.2 in to 6 in</p> | <p>8 μin 4 $\mu\text{in} + 4L \mu\text{in}$ 7 $\mu\text{in} + 14L \mu\text{in}$</p> | <p>Gage Blocks</p> |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|--------------------------------------|--|---|
| Length Measurement – Single Axis | | | |
| Inner Dimensions | 0.06 in to 4.7 in | 3 μ in + 4L μ in | Horizontal Comparator |
| Outer Dimensions | 0.05 in to 3.5 in 3.5 in to 10 in | 3 μ in + 4L μ in 10 μ in + 4L μ in | Horizontal Comparator Super Micrometer |
| Height Gages | 0.05 in to 8 in 8 in to 26 in | 22 μ in + 3L μ in 12 μ in + 4L μ in | Gage Blocks with Surface Plate |
| NVLAP Code: 20/D14 THREADED PLUGS & RING GAGES | | | |
| Threaded Plugs – Inner Diameter | 0 in to 6 in | 150 μ in | Comparison to Master Set Plugs |
| Outer Pitch Diameter | 0 in to 6 in | 82 μ in | Super Micrometer with Thread Wires |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|--|--------------------------|---|--|-------------|
| ELECTROMAGNETICS – DC/LOW FREQUENCY | | | | |
| NVLAP Code: 20/E02 AC RESISTORS AND CURRENT | | | | |
| AC Current – Measuring Equipment | 0 μ A to 220 μ A | 10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz | 0.081 % + 25 nA 0.054 % + 20 nA 0.043 % + 16 nA 0.083 % + 40 nA 0.17 % + 80 nA | Fluke 5700A |
| Field calibrations available ^{Note 4} | 0.22 mA to 2.2 mA | 10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz | 0.073 % + 40 nA 0.041 % + 35 nA 0.025 % + 35 nA 0.069 % + 400 nA 0.16 % + 800 nA | |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) <small>Note 3</small> | Remarks | |
|--|--------------------|------------------|---|-----------------------------|------------------------|
| | 2.2 mA to 22 mA | 10 Hz to 20 Hz | 0.073 % + 400 nA | | |
| | | 20 Hz to 40 Hz | 0.041 % + 350 nA | | |
| | | 40 Hz to 1 kHz | 0.025 % + 350 nA | | |
| | | 1 kHz to 5 kHz | 0.069 % + 4 μA | | |
| | | 5 kHz to 10 kHz | 0.16 % + 8 μA | | |
| | 22 mA to 220 mA | 10 Hz to 20 Hz | 0.071 % + 4 μA | | |
| | | 20 Hz to 40 Hz | 0.036 % + 3.5 μA | | |
| | | 40 Hz to 1 kHz | 0.017 % + 3.5 μA | | |
| | | 1 kHz to 5 kHz | 0.067 % + 40 μA | | |
| | | 5 kHz to 10 kHz | 0.16 % + 80 μA | | |
| | 0.22 A to 2.2 A | 20 Hz to 1 kHz | 0.069 % + 35 μA | | |
| | | 1 kHz to 5 kHz | 0.081 % + 80 μA | | |
| | | 5 kHz to 10 kHz | 0.85 % + 160 μA | | |
| | 2.2 A to 11 A | 40 Hz to 1 kHz | 0.057 % + 170 μA | | Fluke 5720A with 5725A |
| | | 1 kHz to 5 kHz | 0.13 % + 380 μA | | |
| 5 kHz to 10 kHz | | 0.37 % + 750 μA | | | |
| 11 A to 20.5 A | 45 Hz to 100 Hz | 0.11 % + 3.9 mA | Fluke 5520A | | |
| | 100 Hz to 1 kHz | 0.13 % + 3.9 mA | | | |
| | 1 kHz to 5 kHz | 2.3 % + 3.9 mA | | | |
| Extended Frequency Ranges Field calibrations Available <small>Note 4</small> | 29 μA to 329.99 μA | 10 kHz to 30 kHz | 1.2 % + 3 μA | Fluke 5520A | |
| | 330 μA to 3.299 mA | 10 kHz to 30 kHz | 0.78 % + 0.5 μA | | |
| | 3.3 mA to 32.99 mA | 10 kHz to 30 kHz | 0.31 % + 3 μA | | |
| | 29 mA to 329.99 mA | 10 kHz to 30 kHz | 0.31 % + 0.16 mA | | |
| Clamp-on Ammeter Toroidal Type Field calibrations Available <small>Note 4</small> | 20 A to 150 A | 45 Hz to 65 Hz | 0.30 % + 26 mA | Fluke 5520A with 5500A/Coil | |
| | | 65 Hz to 440 Hz | 0.83 % + 47 mA | | |
| | 150 A to 1000 A | 45 Hz to 65 Hz | 0.35 % + 0.12 A | | |
| | | 65 Hz to 440 Hz | 1.1 % + 0.22 A | | |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|--|-----------------|-----------------|-------------------------------------|--------------------------------|
| Clamp-on Ammeter Non-Toroidal Type Field calibrations Available ^{Note 4} | 20 A to 150 A | 45 Hz to 65 Hz | 0.57 % + 0.25 A | Fluke 5520A with 5500A/Coil |
| | 150 A to 1000 A | 65 Hz to 440 Hz | 1.0 % + 0.25 A | |
| | | 45 Hz to 65 Hz | 0.60 % + 0.90 A | |
| | | 65 Hz to 440 Hz | 1.3 % + 0.92 A | |
| AC Current – Measure Field calibrations available ^{Note 4} | 0 µA to 100 µA | 10 Hz to 20 Hz | 0.40 % + 30 nA | Agilent 3458A opt 2 |
| | | 20 Hz to 45 Hz | 0.15 % + 30 nA | |
| | | 45 Hz to 100 Hz | 0.065 % + 30 nA | |
| | | 100 Hz to 1 kHz | 0.065 % + 30 nA | |
| | 100 µA to 1 mA | 10 Hz to 20 Hz | 0.40 % + 200 nA | |
| | | 20 Hz to 45 Hz | 0.15 % + 200 nA | |
| | | 45 Hz to 100 Hz | 0.065 % + 200 nA | |
| | | 100 Hz to 1 kHz | 0.039 % + 200 nA | |
| | 1 mA to 10 mA | 10 Hz to 20 Hz | 0.40 % + 2 µA | |
| | | 20 Hz to 45 Hz | 0.15 % + 2 µA | |
| | | 45 Hz to 100 Hz | 0.066 % + 2 µA | |
| | | 100 Hz to 1 kHz | 0.040 % + 2 µA | |
| | 10 mA to 100 mA | 10 Hz to 20 Hz | 0.40 % + 20 µA | |
| | | 20 Hz to 45 Hz | 0.15 % + 20 µA | |
| | | 45 Hz to 100 Hz | 0.066 % + 20 µA | |
| | | 100 Hz to 1 kHz | 0.040 % + 20 µA | |
| | 100 mA to 1 A | 10 Hz to 20 Hz | 0.40 % + 200 µA | |
| | | 20 Hz to 45 Hz | 0.16 % + 200 µA | |
| | | 45 Hz to 100 Hz | 0.085 % + 200 µA | |
| | | 100 Hz to 1 kHz | 0.10 % + 200 µA | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|---------------------------------|--|------------------------------------|
| NVLAP Code: 20/E05 DC RESISTANCE AND CURRENT DC Resistance – Measuring Equipment and Measure Available ^{Note 4} DC Resistance – Measuring Equipment Field calibrations Available ^{Note 4} DC Current – Measuring Equipment and Measure Field calibrations available ^{Note 4} | 0 Ω to 0.25 Ω | 31 $\mu\Omega/\Omega$ | Hart 1575 Bridge |
| | 0.25 Ω to 2.5 Ω | 120 $\mu\Omega/\Omega$ | |
| | 2.5 Ω to 25 Ω | 47 $\mu\Omega/\Omega$ | |
| | 25 Ω to 400 Ω | 9.3 $\mu\Omega/\Omega$ | |
| | 400 Ω to 1 k Ω | 11 $\mu\Omega/\Omega$ + 500 $\mu\Omega$ | Agilent 3458A with Decade Resistor |
| | 1 k Ω to 10 k Ω | 10 $\mu\Omega/\Omega$ + 5 m Ω | |
| | 10 k Ω to 100 k Ω | 13 $\mu\Omega/\Omega$ + 50 m Ω | |
| | 100 k Ω to 1 M Ω | 19 $\mu\Omega/\Omega$ + 2 Ω | |
| | 1 M Ω to 10 M Ω | 53 $\mu\Omega/\Omega$ + 100 Ω | |
| | 1 m Ω | 12 $\mu\Omega/\Omega$ | L&N 4221B |
| | 10 m Ω | 12 $\mu\Omega/\Omega$ | L&N 4222B |
| | 100 m Ω | 12 $\mu\Omega/\Omega$ | L&N 4223B |
| | 2 G Ω to 10 G Ω | 0.59 % | IET HRRS-B-3-1G-5KV |
| 20 G Ω to 100 G Ω | 1.2 % | | |
| 200 G Ω to 1 T Ω | 2.6 % | | |
| 0 μ A to 100 μ A | 25 μ A/A + 0.8 nA | Agilent 3458A with Current Source | |
| 100 μ A to 1 mA | 23 μ A/A + 5 nA | | |
| 1 mA to 10 mA | 23 μ A/A + 50 nA | | |
| 10 mA to 100 mA | 37 μ A/A + 500 nA | | |
| 100 mA to 1 A | 110 μ A/A + 10 μ A | | |
| 1 A to 100 A | 0.046 % | L&N 4361 with Agilent 3458A opt 2 and Current Source | |
| 100 A to 300 A | 0.046 % | L&N 4363 with Agilent 3458A opt 2 and Current Source | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|--|---|---|
| Clamp-on Ammeter Non-Toroidal Type Field calibrations Available ^{Note 4} | 20 A to 150 A 150 A to 1000 A | 0.50 % + 0.14 A 0.52 % + 0.50 A | Fluke 5520A with 5500A/Coil |
| NVLAP Code: 20/E06 DC VOLTAGE DC Voltage – Measure Field calibrations Available ^{Note 4} | 500 V to 800 V 800 V to 1000 V | 14 μ V/V + 100 μ V 18 μ V/V + 100 μ V | Agilent 3458A opt 2 |
| DC Voltage – Measuring Equipment and Measure Field calibrations Available ^{Note 4} | 0 V to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 500 V | 6.7 μ V/V + 0.5 μ V 4.6 μ V/V + 0.5 μ V 6.7 μ V/V + 30 μ V 9.7 μ V/V + 100 μ V | Agilent 3458A opt 2 with Fluke 5700A |
| DC Voltage – Measuring Equipment Field calibrations Available ^{Note 4} | 220 V to 1100 V | 9.7 μ V/V + 500 μ V | Fluke 5700A |
| DC Voltage – Measure Field calibrations Available ^{Note 4} | 1 kV to 20 kV 20 kV to 65 kV 65 kV to 100 kV | 0.036 % 0.073 % 0.11 % | High Voltage Divider |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|----------------------------------|-----------------|---|-------------------------|
| NVLAP Code: 20/E09 LF AC VOLTAGE AC High Voltage – Measure | 700 V to 20 kV 20 kV to 70 kV | 60 Hz 60 Hz | 0.093 % 0.11 % | High Voltage Divider |

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| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|---|--------------------|--------------------|-------------------------------------|---------------------|
| AC Voltage – Measure Field calibrations available ^{Note 4} | 0 mV to 10 mV | 1 Hz to 40 Hz | 0.031 % + 3 μV | Agilent 3458A opt 2 |
| | | 40 Hz to 1 kHz | 0.021 % + 1.1 μV | |
| | | 1 kHz to 20 kHz | 0.049 % + 1.1 μV | |
| | | 20 kHz to 50 kHz | 0.12 % + 1.1 μV | |
| | | 50 kHz to 100 kHz | 0.50 % + 1.1 μV | |
| | | 100 kHz to 300 kHz | 4.0 % + 2 μV | |
| | 10 mV to 100 mV | 1 Hz to 40 Hz | 0.012 % + 4 μV | |
| | | 40 Hz to 1 kHz | 0.0089 % + 2 μV | |
| | | 1 kHz to 20 kHz | 0.016 % + 2 μV | |
| | | 20 kHz to 50 kHz | 0.035 % + 2 μV | |
| | | 50 kHz to 100 kHz | 0.082 % + 2 μV | |
| | | 100 kHz to 300 kHz | 0.30 % + 10 μV | |
| | 100 mV to 1 V | 300 kHz to 1 MHz | 1.0 % + 10 μV | |
| | | 1 Hz to 40 Hz | 0.0092 % + 40 μV | |
| | | 40 Hz to 1 kHz | 0.0088 % + 20 μV | |
| | | 1 kHz to 20 kHz | 0.015 % + 20 μV | |
| | | 20 kHz to 50 kHz | 0.033 % + 20 μV | |
| | | 50 kHz to 100 kHz | 0.081 % + 20 μV | |
| | 1 V to 10 V | 100 kHz to 300 kHz | 0.30 % + 100 μV | |
| | | 300 kHz to 1 MHz | 1.0 % + 100 μV | |
| 1 Hz to 40 Hz | | 0.0078 % + 400 μV | | |
| 40 Hz to 1 kHz | | 0.0077 % + 200 μV | | |
| 1 kHz to 20 kHz | | 0.014 % + 200 μV | | |
| 20 kHz to 50 kHz | | 0.031 % + 200 μV | | |
| 10 V to 100 V | 50 kHz to 100 kHz | 0.080 % + 200 μV | | |
| | 100 kHz to 300 kHz | 0.30 % + 1 mV | | |
| | 300 kHz to 1 MHz | 1.0 % + 1 mV | | |
| | 1 Hz to 40 Hz | 0.023 % + 4 mV | | |
| | 40 Hz to 1 kHz | 0.022 % + 2 mV | | |
| | 1 kHz to 20 kHz | 0.022 % + 2 mV | | |
| | 20 kHz to 50 kHz | 0.036 % + 2 mV | | |
| | 50 kHz to 100 kHz | 0.12 % + 2 mV | | |

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| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks | |
|--|--------------------|--------------------|-------------------------------------|-------------|-----------------|
| AC Voltage – Measuring Equipment Field calibrations available ^{Note 4} | 100 V to 700 V | 100 kHz to 300 kHz | 0.40 % + 10 mV | Fluke 5700A | |
| | | 300 kHz to 1 MHz | 1.5 % + 10 mV | | |
| | | 0 mV to 2.2 mV | 1 Hz to 40 Hz | | 0.041 % + 40 mV |
| | | | 40 Hz to 1 kHz | | 0.041 % + 20 mV |
| | | | 1 kHz to 20 kHz | | 0.060 % + 20 mV |
| | | | 20 kHz to 50 kHz | | 0.12 % + 20 mV |
| | 50 kHz to 100 kHz | | 0.30 % + 20 mV | | |
| | 2.2 mV to 22 mV | 10 Hz to 20 Hz | 0.061 % + 4.5 μV | | |
| | | 20 Hz to 40 Hz | 0.038 % + 4.5 μV | | |
| | | 40 Hz to 20 kHz | 0.034% + 4.5 μV | | |
| | | 20 kHz to 50 kHz | 0.045 % + 4.5 μV | | |
| | | 50 kHz to 100 kHz | 0.089 % + 7 μV | | |
| | | 100 kHz to 300 kHz | 0.17 % + 13 μV | | |
| | | 300 kHz to 500 kHz | 0.22 % + 25 μV | | |
| | 22 mV to 220 mV | 500 kHz to 1 MHz | 0.37 % + 25 μV | | |
| | | 10 Hz to 20 Hz | 0.073 % + 5 μV | | |
| | | 20 Hz to 40 Hz | 0.050 % + 5 μV | | |
| | | 40 Hz to 20 kHz | 0.040 % + 5 μV | | |
| | | 20 kHz to 50 kHz | 0.072 % + 5 μV | | |
| | | 50 kHz to 100 kHz | 0.11 % + 7 μV | | |
| | | 100 kHz to 300 kHz | 0.14 % + 12 μV | | |
| 300 kHz to 500 kHz | | 0.21 % + 25 μV | | | |
| 22 mV to 220 mV | 500 kHz to 1 MHz | 0.36 % + 25 μV | | | |
| | 10 Hz to 20 Hz | 0.056 % + 13 μV | | | |
| | 20 Hz to 40 Hz | 0.022 % + 8 μV | | | |
| | 40 Hz to 20 kHz | 0.015 % + 8 μV | | | |
| | 20 kHz to 50 kHz | 0.036 % + 8 μV | | | |
| 22 mV to 220 mV | 50 kHz to 100 kHz | 0.087 % + 25 μV | | | |
| | 100 kHz to 300 kHz | 0.12 % + 25 μV | | | |
| | 300 kHz to 500 kHz | 0.18 % + 25 μV | | | |
| | 500 kHz to 1 MHz | 0.35 % + 80 μV | | | |

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| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|---|-------------------|--------------------|-------------------------------------|---------|
| | 220 mV to 2.2 V | 10 Hz to 20 Hz | 0.050 % + 80 μV | |
| | | 20 Hz to 40 Hz | 0.016 % + 25 μV | |
| | | 40 Hz to 20 kHz | 0.0086 % + 6 μV | |
| | | 20 kHz to 50 kHz | 0.014 % + 16 μV | |
| | | 50 kHz to 100 kHz | 0.026 % + 70 μV | |
| | | 100 kHz to 300 kHz | 0.046 % + 130 μV | |
| | | 300 kHz to 500 kHz | 0.12 % + 350 μV | |
| | | 500 kHz to 1 MHz | 0.23 % + 850 μV | |
| | 2.2 V to 22 V | 10 Hz to 20 Hz | 0.050 % + 0.8 mV | |
| | | 20 Hz to 40 Hz | 0.016 % + 0.25 mV | |
| | | 40 Hz to 20 kHz | 0.0079 % + 60 μV | |
| | | 20 kHz to 50 kHz | 0.014 % + 0.16 mV | |
| | | 50 kHz to 100 kHz | 0.026 % + 0.35 mV | |
| | | 100 kHz to 300 kHz | 0.053 % + 1.5 mV | |
| | | 300 kHz to 500 kHz | 0.11 % + 4.3 mV | |
| | | 500 kHz to 1 MHz | 0.28 % + 8.5 mV | |
| | 22 V to 220 V | 10 Hz to 20 Hz | 0.050 % + 8 mV | |
| | | 20 Hz to 40 Hz | 0.016 % + 2.5 mV | |
| | | 40 Hz to 20 kHz | 0.0087 % + 0.8 mV | |
| | | 20 kHz to 50 kHz | 0.024 % + 3.5 mV | |
| 50 kHz to 100 kHz | | 0.051 % + 8 mV | | |
| 100 kHz to 300 kHz | | 0.15 % + 90 mV | | |
| 300 kHz to 500 kHz | | 0.47 % + 90 mV | | |
| 500 kHz to 1 MHz | | 1.2 % + 190 mV | | |
| 220 V to 1100 V | 40 Hz to 1 kHz | 0.011 % + 4 mV | Fluke 5720A/5725A | |
| | 1 kHz to 20 kHz | 0.017 % + 6 mV | | |
| | 20 kHz to 30 kHz | 0.060 % + 11 mV | | |
| 220 V to 750 V | 30 kHz to 50 kHz | 0.060 % + 11 mV | | |
| | 50 kHz to 100 kHz | 0.23 % + 45 mV | | |

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|---|----------------------|------------------|-------------------------------------|--------------------|
| NVLAP Code: 20/E10 LOW FREQUENCY CAPACITANCE Capacitance – Measure Capacitance – Measuring Equipment Field calibrations available ^{Note 4} | 0 pF to 10 pF | 1 kHz | 0.47 % + 0.05 pF | GenRad 1689-9700 |
| | 10 pF to 100 pF | 1 kHz | 0.058 % + 0.05 pF | |
| | 100 pF to 25 μF | 1 kHz | 0.024 % + 0.05 pF | |
| | 25 μF to 100 μF | 1 kHz | 0.035 % | |
| | 100 μF to 1000 μF | 1 kHz | 0.24 % | |
| | 1 nF | 1 kHz | 0.017 % | GenRad 1409 Series |
| | 2 nF | 1 kHz | 0.017 % | |
| | 5 nF | 1 kHz | 0.017 % | |
| | 10 nF | 1 kHz | 0.017 % | |
| | 20 nF | 1 kHz | 0.017 % | |
| | 50 nF | 1 kHz | 0.017 % | |
| | 0.1 μF | 1 kHz | 0.017 % | |
| | 0.2 μF | 1 kHz | 0.017 % | |
| | 0.5 μF | 1 kHz | 0.017 % | |
| | 1 μF | 1 kHz | 0.017 % | |
| | 0.19 nF to 1.0999 nF | 10 Hz to 10 kHz | 0.39 %+ 7.8 pF | Fluke 5520A |
| | 1.1 nF to 3.2999 nF | 10 Hz to 3 kHz | 0.39 %+ 7.8 pF | |
| | 3.3 nF to 10.9999 nF | 10 Hz to 1 kHz | 0.21 %+ 7.8 pF | |
| | 11 nF to 109.999 nF | 10 Hz to 1 kHz | 0.21 %+ 0.78 pF | |
| | 110 nF to 329.999 nF | 10 Hz to 1 kHz | 0.21 %+ 0.24 nF | |
| 0.33 μF to 1.09999 μF | 10 Hz to 600 Hz | 0.21 %+ 0.78 nF | | |
| 1.1 μF to 3.2999 μF | 10 Hz to 300 Hz | 0.21 %+ 2.4 nF | | |
| 3.3 μF to 10.9999 μF | 10 Hz to 150 Hz | 0.21 %+ 7.8 nF | | |
| 11 μF to 32.9999 μF | 10 Hz to 120 Hz | 0.32 %+ 24 nF | | |
| 33 μF to 109.9999 μF | 10 Hz to 80 Hz | 0.36 %+ 78 nF | | |
| 110 μF to 329.999 μF | DC to 50 Hz | 0.36 %+ 0.24 μF | | |
| 0.33 mF to 1.09999 mF | DC to 20 Hz | 0.36 % + 0.78 μF | | |

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|--|---------------|------------------|---|---------------------------------------|
| NVLAP Code: 20/E11 LOW FREQUENCY INDUCTANCE Inductance – Measure | 100 μ H | 1 kHz | 0.025 % | Fixed Inductors with GenRad 1689-9700 |
| | 1 mH | 1 kHz | 0.025 % | |
| | 10 mH | 1 kHz | 0.025 % | |
| | 100 mH | 1 kHz | 0.025 % | |
| | 1 H | 1 kHz | 0.025 % | |
| | 10 H | 1 kHz | 0.025 % | |
| NVLAP Code: 20/E15 PHASE METERS LF Phase – Measuring Equipment Field calibrations Available ^{Note 4} | 0° to 179.99° | 10 Hz to 65 Hz | 0.11° | Fluke 5520A |
| | | 65 Hz to 500 Hz | 0.20° | |
| | | 500 Hz to 1 kHz | 0.39° | |
| | | 1 kHz to 5 kHz | 1.9° | |
| | | 5 kHz to 10 kHz | 3.9° | |
| | | 10 kHz to 20 kHz | 7.8° | |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|--------|---|----------------------|
| TIME AND FREQUENCY | | | |
| NVLAP Code: 20/F01 FREQUENCY DISSEMINATION Frequency – Measuring Equipment and Measure Field calibrations Available ^{Note 4} Uncertainty values of derivatives of 10 MHz will differ due to resolution, noise and gating errors. | 10 MHz | 8.0×10^{-11} Hz | GPS/Datum |
| | 10 MHz | 2.9×10^{-9} Hz | Agilent 53131A (010) |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|--|------------------------------|--|---|--|
| NVLAP Code: 20/F03 OSCILLATOR CHARACTERIZATION | | | | |
| AM Depth – Measure Field calibrations Available ^{Note 4} | | | | |
| Where <i>AM</i> is the amplitude modulation depth of the measured signal. | | | | |
| Modulation Rate: 50 Hz to 10 kHz | 5 % to <40 % 40 % to 99 % | 150 kHz to 10 MHz 150 kHz to 10 MHz | 0.021 <i>AM</i> % + 0.014 % 0.021 <i>AM</i> % + 0.14 % | Agilent 8902A With 11722A |
| 20 Hz to <50 Hz | 5 % to <40 % 40 % to 99 % | 150 kHz to 10 MHz 150 kHz to 10 MHz | 0.031 <i>AM</i> % + 0.014 % 0.031 <i>AM</i> % + 0.14 % | |
| 50 Hz to 50 kHz | 5 % to <40 % 40 % to 99 % | 10 MHz to 1.3 GHz 10 MHz to 1.3 GHz | 0.011 <i>AM</i> % + 0.014 % 0.011 <i>AM</i> % + 0.14 % | |
| 50 Hz to 50 kHz | 5 % to <40 % 40 % to 99 % | 1.3 GHz to 26.5 GHz 1.3 GHz to 26.5 GHz | 0.016 <i>AM</i> % + 0.014 % 0.016 <i>AM</i> % + 0.14 % | |
| 20 Hz to 100 kHz | 5 % to <40 % 40 % to 99 % | 10 MHz to 26.5 GHz 10 MHz to 26.5 GHz | 0.031 <i>AM</i> % + 0.014 % 0.031 <i>AM</i> % + 0.14 % | Agilent 8902A With 11722A, 11792A, and 11793A |
| FM Modulation – Measure Field calibrations Available ^{Note 4} | | | | |
| Where <i>FM</i> is the frequency modulation peak deviation of the measured signal. | | | | |
| Modulation Rate: 20 Hz to 10 kHz | 0 kHz to 3.999 kHz | 250 kHz to 10 MHz | 0.021 <i>FM</i> Hz + 20 Hz | Agilent 8902A With 11722A |
| 20 Hz to 10 kHz | 4 kHz to 39.99 kHz | 250 kHz to 10 MHz | 0.021 <i>FM</i> Hz + 22 Hz | |
| 50 Hz to 100 kHz | 0 kHz to 3.999 kHz | 100 MHz to 26.5 GHz | 0.011 <i>FM</i> Hz + 20 Hz | Agilent 8902A With 11722A, 11792A, and 11793A |
| 50 Hz to 100 kHz | 4 kHz to 39.99 kHz | 100 MHz to 26.5 GHz | 0.011 <i>FM</i> Hz + 22 Hz | |
| 50 Hz to 100 kHz | 40 kHz to 400 kHz | 100 MHz to 26.5 GHz | 0.011 <i>FM</i> Hz + 100 Hz | |
| 20 Hz to <50 Hz | 0 kHz to 3.999 kHz | 100 MHz to 26.5 GHz | 0.050 <i>FM</i> Hz + 20 Hz | |
| 20 Hz to <50 Hz | 4 kHz to 39.99 kHz | 100 MHz to 26.5 GHz | 0.050 <i>FM</i> Hz + 22 Hz | |
| 20 Hz to <50 Hz | 40 kHz to 400 kHz | 100 MHz to 26.5 GHz | 0.050 <i>FM</i> Hz + 100 Hz | |
| >100 kHz to 200 kHz | 0 kHz to 3.999 kHz | 100 MHz to 26.5 GHz | 0.050 <i>FM</i> Hz + 100 Hz | |
| >100 kHz to 200 kHz | 4 kHz to 39.99 kHz | 100 MHz to 26.5 GHz | 0.050 <i>FM</i> Hz + 100 Hz | |

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| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) <small>Note 3</small> | Remarks |
|---|---|--|---|--|
| >100 kHz to 200 kHz | 40 kHz to 400 kHz | 100 MHz to 26.5 GHz | 0.050 PM Hz + 100 Hz | |
| Phase Modulation – Measure | | | Where PM is the phase modulation peak phase deviation of the measured signal. | |
| Field calibrations Available <small>Note 4</small> | | | | |
| Modulation Rate: 200 Hz to 10 kHz | 0 rad to 3.999 rad 4 rad to 39.99 rad 40 rad to 400 rad | 150 kHz to 10 MHz 150 kHz to 10 MHz 150 kHz to 10 MHz | 0.042 PM rad + 0.030 rad 0.042 PM rad + 0.030 rad 0.042 PM rad + 0.10 rad | Agilent 8902A With 11722A |
| 200 Hz to 20 kHz | 0 rad to 3.999 rad 4 rad to 39.99 rad 40 rad to 400 rad | 10 MHz to 26.5 GHz 10 MHz to 26.5 GHz 10 MHz to 26.5 GHz | 0.036 PM rad + 0.030 rad 0.036 PM rad + 0.030 rad 0.036 PM rad + 0.10 rad | Agilent 8902A With 11722A, 11792A, and 11793A |
| Harmonic Distortion | | | | |
| Field calibrations Available <small>Note 4</small> | 0 dBc to -80 dBc | 30 Hz to 6.5 GHz 6.5 GHz to 22 GHz 22 GHz to 26.5 GHz | 1.7 dB 2.6 dB 3.3 dB | Agilent 8563E |
| Total Harmonic Distortion | 0 dB to -80 dB | 20 Hz to 20 kHz 20 kHz to 100 kHz | 1.2 dB 2.3 dB | Agilent 8903B |
| AM Total Harmonic Distortion | 0 dB to -80 dB | 20 Hz to 100 kHz | 2.7 dB | |
| Total Harmonic Distortion 5 Hz to 600 kHz Fundamental | | | | |
| Input Voltage Range <30 V | 100 % to 0.3 % 0.1 % | 10 Hz to 1 MHz 1 MHz to 3 MHz 10 Hz to 20 Hz 20 Hz to 30 Hz 30 Hz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1.2 MHz | 3 % 6 % 12 % 6 % 3 % 6 % 12 % | Agilent 334A |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|---|----------------|--------------------|-------------------------------------|-----------------|
| Input Voltage Range >30 V | 100 % to 0.3 % | 10 Hz to 300 kHz | 3 % | Agilent 334A |
| | | 300 kHz to 500 kHz | 6 % | |
| | 0.1 % | 500 kHz to 3 MHz | 12 % | |
| | | 20 Hz to 30 Hz | 12 % | |
| | | 30 Hz to 300 kHz | 3 % | |
| | | 300 kHz to 500 kHz | 6 % | |
| | | 500 kHz to 1.2 MHz | 12 % | |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty (k=2) ^{Note 3} | Remarks |
|---|---------------------|-------------------------------------|-----------------|
| NVLAP Code: 20/F04 PULSE WAVEFORM | | | |
| Rise Time – Measuring Equipment | ≥ 25 ps | 2.9 ps | Pulser |
| Rise Time – Measure | 25 ps to 250 ps | 10 % | Sampling System |
| | > 250 ps | 4.0 % | |
| MECHANICAL | | | |
| NVLAP Code: 20/M06 FORCE | | | |
| Force/Tension Field calibrations Available ^{Note 4} | 0.03 lbf to 250 lbf | 0.063 % | Deadweights |
| NVLAP Code: 20/M08 MASS | | | |
| Mass – Metric | 30 kg | 0.15 g | Echelon III |
| | 25 kg | 0.12 g | |
| | 20 kg | 0.10 g | |
| | 10 kg | 50 mg | |
| | 5 kg | 25 mg | |
| | 2 kg | 10 mg | |
| | 1 kg | 5.0 mg | |
| | 500 g | 2.5 mg | |
| | 200 g | 1.0 mg | |
| | 100 g | 0.50 mg | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks | | |
|---|---|---|-------------|--------|----------------------|
| Mass - Avoirdupois | 50 g | 0.30 mg | Echelon III | | |
| | 20 g | 0.18 mg | | | |
| | 10 g | 0.13 mg | | | |
| | 5 g | 0.09 mg | | | |
| | 2 g | 0.07 mg | | | |
| | 1 g | 0.05 mg | | | |
| | 500 mg | 0.04 mg | | | |
| | 200 mg | 0.03 mg | | | |
| | 100 mg | 0.025 mg | | | |
| | 50 mg | 0.021 mg | | | |
| | 20 mg | 0.019 mg | | | |
| | 10 mg | 0.019 mg | | | |
| | 5 mg | 0.019 mg | | | |
| | 2 mg | 0.019 mg | | | |
| | 1 mg | 0.019 mg | | | |
| | Balances Field calibrations Available ^{Note 4} | 50 lb | | 0.23 g | ASTM Class 1 Weights |
| | | 30 lb | | 0.14 g | |
| 20 lb | | 91 mg | | | |
| 10 lb | | 46 mg | | | |
| 5 lb | | 23 mg | | | |
| 3 lb | | 14 mg | | | |
| 2 lb | | 9.1 mg | | | |
| 1 lb | | 4.6 mg | | | |
| 8 oz | | 2.3 mg | | | |
| 4 oz | | 1.2 mg | | | |
| 2 oz | | 0.57 mg | | | |
| 1 oz | 0.29 mg | | | | |
| 0.5 oz | 0.14 mg | | | | |
| | 5 kg | 3.6 mg | | | |
| | 2 kg | 1.6 mg | | | |
| | 1 kg | 0.71 mg | | | |
| | 500 g | 0.22 mg | | | |
| | 300 g | 0.18 mg | | | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|--------|---|----------------------|
| Balances – Avoirdupois | 200 g | 0.35 mg | ASTM Class 4 Weights |
| | 100 g | 0.13 mg | |
| | 50 g | 0.091 mg | |
| | 30 g | 0.079 mg | |
| | 20 g | 0.026 mg | |
| | 10 g | 0.026 mg | |
| | 5 g | 0.022 mg | |
| | 3 g | 0.013 mg | |
| | 2 g | 0.019 mg | |
| | 1 g | 0.019 mg | |
| | 500 mg | 0.011 mg | |
| | 200 mg | 0.011 mg | |
| | 100 mg | 0.011 mg | |
| | 50 mg | 0.011 mg | |
| | 20 mg | 0.011 mg | |
| | 10 mg | 0.011 mg | |
| | 5 mg | 0.011 mg | |
| | 1 mg | 0.011 mg | |
| | 50 lb | 2.3 g | |
| | 30 lb | 1.4 g | |
| | 20 lb | 0.91 g | |
| | 10 lb | 0.46 g | |
| | 5 lb | 0.23 g | |
| | 3 lb | 0.14 g | |
| | 2 lb | 91 mg | |
| | 1 lb | 46 mg | |
| | 8 oz | 23 mg | |
| | 4 oz | 12 mg | |
| 2 oz | 5.7 mg | | |
| 1 oz | 2.9 mg | | |
| 0.5 oz | 1.4 mg | | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|--|---------------------------|---|----------------------------|
| NVLAP Code: 20/M15 TORQUE | | | |
| Torque – Measure | 1 lbf-in to 2 lbf-in | 1.3 % | Mountz TL-10i |
| Field calibrations Available ^{Note 4} | 2 lbf-in to 5 lbf-in | 0.76 % | CDI 950-DT with Loader |
| | 5 lbf-in to 250 lbf-in | 0.40 % | |
| | 250 lbf-in to 250 lbf-ft | 0.56 % | |
| | 250 lbf-ft to 1000 lbf-ft | 1.3 % | CDI 1000PF |
| Torque – Measuring Equipment | 5 ozf-in to 250 lbf-ft | 0.063 % | Torque Wheels with Weights |
| Field calibrations Available ^{Note 4} | | | |
| ELECTROMAGNETICS – RF/MICROWAVE | | | |
| NVLAP Code: 20/R02 COAXIAL/WAVEGUIDE TERMINATIONS | | | |
| VSWR | | | |
| Field calibrations Available ^{Note 4} | 5 MHz to 2 GHz | 0.015 rho (< 1.03 VSWR) | Anritsu-Wiltron 60N50 |
| | 2 GHz to 18 GHz | 0.023 rho (< 1.05 VSWR) | Anritsu-Wiltron 87A50 |
| NVLAP Code: 20/R11 RF-DC VOLTAGE/ CURRENT CONVERTER | | | |
| Oscilloscope Bandwidth (reference 50 kHz) | 500 kHz to 100 MHz | 1.5 % + 100 μ V | Fluke 5520A SC1100 |
| | 100 MHz to 300 MHz | 2.0 % + 100 μ V | |
| Field calibrations Available ^{Note 4} | 300 MHz to 600 MHz | 2.6 % + 100 μ V | |
| | 600 MHz to 1.1 GHz | 2.6 % + 100 μ V | |
| Sine Wave Flatness | 10 Hz to 1 MHz | 0.059 % | Thermal Voltage Converters |
| Field calibrations Available ^{Note 4} | 1 MHz to 10 MHz | 0.10 % | |
| | 10 MHz to 30 MHz | 0.18 % | |
| | 30 MHz to 50 MHz | 0.41 % | |
| | 50 MHz to 80 MHz | 0.71 % | |
| | 80 MHz to 100 MHz | 0.84 % | |

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| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|---|--|---|
| NVLAP Code: 20/R13 RF/MICROWAVE ATTENUATORS Relative Tunes RF Power Field calibrations Available ^{Note 4} 250 kHz to 26.5 GHz | 0 dB to -20 dB -20 dB to -40 dB -40 dB to -60 dB -60 dB to -80 dB -80 dB to -100 dB -100 dB to -120 dB | 2.3 % (0.10 dB) 2.8 % (0.12 dB) 3.5 % (0.15 dB) 4.3 % (0.18 dB) 6.8 % (0.28 dB) 7.5 % (0.31 dB) | Agilent 8902A with 11722A, 11792A, and 11793A |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Frequency Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|---|--------------------|--------------------|---|--|
| NVLAP Code: 20/R17 RF/MICROWAVE POWER METERS Absolute RF Power Field calibrations Available ^{Note 4} | 1 mW Reference | 50 MHz | 0.32 % (0.014 dBm) | Agilent 478A- H75, 432A, and 3458A |
| Into 50 Ω | +30 dBm to -20 dBm | 100 kHz to 2 GHz | 1.8 % | Agilent 8902A with 11722A |
| | | 2 GHz to 12 GHz | 3.2 % | Agilent 8902A |
| | | 12 GHz to 19 GHz | 3.9 % | With 11722A, |
| | | 19 GHz to 26.5 GHz | 4.3 % | 11792A and 11793A |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|--|--|--|--|
| THERMODYNAMIC | | | |
| NVLAP Code: 20/T02 HUMIDITY Relative Humidity Field calibrations Available ^{Note 4} | 10 % to 90 % | 3.0 % | Vaisala HMI41 with HMP46 |
| NVLAP Code: 20/T05 PRESSURE Absolute Pressure – Source | 0 psia to 25 psia 25 psia to 500 psia | 0.0019 psia 0.0065 % + 0.001 psia | Ruska 7250xi |
| Gage Pressure – Source | 25 psig to 500 psig | 0.0066 % | Ruska 7250xi |
| Field calibrations Available ^{Note 4} | -15 psig to -0.5 psig 0.5 psig to 3 psig 3 psig to 25 psig 500 psig to 1500 psig 1500 psig to 15 000 psig | 0.017 % 0.017 % 0.0078 % 0.0080 % 0.016 % | Pressurements T3500/3 Ametek T-150 |
| Field calibrations Available ^{Note 4} | -2 inH ₂ O to 2 inH ₂ O | 0.00012 inH ₂ O | Dwyer 1430 |
| | -36 inH ₂ O to -22 inH ₂ O -22 inH ₂ O to 22 inH ₂ O 22 inH ₂ O to 60 inH ₂ O 60 inH ₂ O to 72 inH ₂ O 72 inH ₂ O to 804 inH ₂ O | 0.0090 % + 150 μinH ₂ O 0.0020 inH ₂ O 0.0090 % + 150 μinH ₂ O 0.0065 inH ₂ O 0.0090 % + 150 μinH ₂ O | DHI PPC4-ui |
| NVLAP Code: 20/T03 LABORATORY THERMOMETERS, DIGITAL AND ANALOG Temperature – Measuring Equipment Field calibrations Available ^{Note 4} | -80 °C to 110 °C 110 °C to 300 °C 300 °C to 600 °C | 0.016 °C 0.14 °C 0.35 °C | Liquid Bath with Hart 1575 and SPRT Dry Block with Hart 1575 and SPRT |

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|--|-------------------|---|---------------------|
| Temperature – Measure Field calibrations Available ^{Note 4} | -197 °C to 660 °C | 0.011 °C | Hart 1575 with SPRT |

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

| Measured Parameter or Device Calibrated | Type | Range | Uncertainty ($k=2$) ^{Note 3} | Remarks |
|--|------|--------------------|---|--|
| NVLAP Code: 20/T08 TEMPERATURE INDICATORS Electrical Calibration of Thermocouple Devices Field calibrations Available ^{Note 4} | J | -210 °C to 1200 °C | 0.090 °C | Thermocouple Half Junctions with Agilent 3458A |
| | K | -270 °C to 1372 °C | 0.091 °C | |
| | T | -270 °C to 400 °C | 0.098 °C | |
| | E | -270 °C to 1000 °C | 0.093 °C | |
| | R | -50 °C to 1768 °C | 0.24 °C | |
| | S | -50 °C to 1768 °C | 0.22 °C | |
| END | | | | |

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Notes

Note 1: A Calibration and Measurement Capability (CMC) is a description of the best result of a calibration or measurement (result with the smallest uncertainty of measurement) that is available to the laboratory's customers under normal conditions, when performing more or less routine calibrations of nearly ideal measurement standards or instruments. The CMC is described in the laboratory's scope of accreditation by: the measurement parameter/device being calibrated, the measurement range, the uncertainty associated with that range (see note 3), and remarks on additional parameters, if applicable.

Note 2: Calibration and Measurement Capabilities are traceable to the national measurement standards of the U.S. or to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

Note 3: The uncertainty associated with a measurement in a CMC is an expanded uncertainty using a coverage factor, $k = 2$, with a level of confidence of approximately 95 %. Units for the measurand and its uncertainty are to match. Exceptions to this occur when marketplace practice employs mixed units, such as when the artifact to be measured is labeled in non-SI units and the uncertainty is given in SI units (Example: 5 lb weight with uncertainty given in mg).

Note 3a: The uncertainty of a specific calibration by the laboratory may be greater than the uncertainty in the CMC due to the condition and behavior of the customer's device and specific circumstances of the calibration. The uncertainties quoted do not include possible effects on the calibrated device of transportation, long term stability, or intended use.

Note 3b: As the CMC represents the best measurement results achievable under normal conditions, the accredited calibration laboratory shall not report smaller uncertainty of measurement than that given in a CMC for calibrations or measurements covered by that CMC.

Note 3c: As described in Note 1, CMCs cover calibrations and measurements that are available to the laboratory's customers under *normal conditions*. However, the laboratory may have the capability to offer special tests, employing special conditions, which yield calibration or measurement results with lower uncertainties. Such special tests are not covered by the CMCs and are outside the laboratory's scope of accreditation. In this case, NVLAP requirements for the labeling, on calibration reports, of results outside the laboratory's scope of accreditation apply. These requirements are set out in Annex A.1.h. of NIST Handbook 150, Procedures and General Requirements.

Note 4: Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements. (This note applies only if marked in the body of the scope.)

Note 5: Values listed with percent (%) are percent of reading or generated value unless otherwise noted.

Note 6: NVLAP accreditation is the formal recognition of specific calibration capabilities. Neither NVLAP nor NIST guarantee the accuracy of individual calibrations made by accredited laboratories.

Note 7: See [NIST Handbook 150](#) for further explanation of these notes.

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