



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

NOVASTAR SOLUTIONS.COM LLC
DBA NOVASTAR METROLOGY
35200 Plymouth Road
Livonia, MI 48150
Guy Howe Phone: 734 453 8003

CALIBRATION

Valid To: March 31, 2025

Certificate Number: 1277.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,9}:

I. Acoustical Quantities

| Parameter/Range | Frequency | CMC ² (±) | Comments |
|--|--|---|---|
| Microphone Acoustic Level – Sensitivity: ¼, ½, & 1 in Frequency Response: ¼, ½, & 1 in | 114 dB @ 250 Hz 20 Hz to 92.2 kHz | 0.29 dB 0.30 dB + 0.000 84 dB/kHz | Modal shop acoustic calibration system |
| Sound Level Calibrators – (75 to 124) dB | (0.25 to 1) kHz | 0.29 dB | Modal shop acoustic calibration system |
| Sound Level Meters – (94 to 114) dB | (0.125 to 2) kHz (0.02 to 20) kHz | 0.64 dB 0.12 dB | Acoustic method Electrical method |

II. Chemical

| Parameter/Equipment | Range | CMC ^{2, 6, 10} (\pm) | Comments |
|--|--|--|----------------------|
| pH ³ – Measuring Equipment | 4.01 pH unit 7.01 pH unit 10.01 pH unit | 0.019 pH unit 0.023 pH unit 0.025 pH unit | Accredited solutions |
| Conductance ³ – Measuring Equipment | 1.015 mS/cm 1.408 mS/cm 12.85 mS/cm 111.3 mS/cm | 0.0058 mS/cm + 0.6R 0.010 mS/cm + 0.6R 0.087 mS/cm + 0.6R 0.88 mS/cm + 0.6R | Accredited solutions |

III. Dimensional

| Parameter/Equipment | Range | CMC ^{2, 6} (\pm) | Comments |
|---|---|---|---------------------------------------|
| Micrometers ³ | Up to 36 in | (4.6 + 5.0L) μ in + 0.6R | Gage blocks |
| Tri-Bore | Up to 5 in | (6.4 + 4.4L) μ in + 0.6R | Ring gage set |
| Calipers ³ | Up to 36 in | (2.9 + 11L) μ in + 0.6R | Gage blocks |
| Angle ³ | 90° Up to 60° | 0.000 43° 0.000 048 °/° | Master square Sine bar/gage blocks |
| Optical Comparators ³ – Magnification Linear Accuracy Angle | 10× to 100× (0.001 to 6) in (30/60/90/120/150)° | 420 μ in 150 μ in + 0.6R 0.0048° + 0.6R | Magnification scale Glass scale |
| Cylindrical Gages ³ – Pins, Plugs, Discs | (0.003 to 4.0) in | (16 + 1.9L) μ in | ULM and gage blocks |
| Height Gages ^{3, 8} | Up to 48 in | (48 + 4.5L) μ in | Gage blocks |

| Parameter/Equipment | Range | CMC ^{2,6} (\pm) | Comments |
|--|---|--|---|
| Indicators ³ – Dial & Digital | Up to 4 in Up to 100 mm | $(1.4 + 4.5L) \mu\text{in} + 0.6R$ $(54 + 7.6L) \text{nm} + 0.6R$ | Gage blocks |
| Gage Blocks | (0.01 to 4) in (0.5 to 100) mm (>4 to 8) in | $(1.6 + 3.7L) \mu\text{in}$ $(89 + 3.4L) \text{nm}$ $(16 + 2L) \mu\text{in}$ | Twin head comparison ULM |
| Linear Displacement | Up to 60 in Up to 254 M | $(930 + 21L) \mu\text{in}$ 0.47 mm | String pot calibration system Measurement Wheel System |
| Radius Gage | (0.005 to 5) in | 0.0012 in | Optical comparator |
| Threaded Plug Gages – Pitch Diameter (5 to 80 TPI) Major Diameter | Up to 8 in Up to 6 in | $(75 + 1.5L) \mu\text{in}$ $(16 + 1.9L) \mu\text{in}$ | ULM, thread wires, gage blocks ULM and gage blocks |
| Thread rings – Pitch Diameter (5 to 80 TPI) | Up to 6.5 in | Accuracy of Setting Plug Used | Thread setting plug |
| Gage Balls | Up to 4 in | $(16 + 3.9L) \mu\text{in}$ | ULM |
| Ring Gages | Up to 8 in | $(16 + 1.9L) \mu\text{in}$ | ULM, master rings and gage blocks |
| Foils & Thickness Gages | Up to 8 in | $(16 + 1.9L) \mu\text{in}$ | ULM |
| Linear Scales/Reticles | Up to 12 in | 0.00051 in | Optical comparator |

| Parameter/Equipment | Range | CMC ^{2,6} (±) | Comments |
|----------------------------|------------------------------------|------------------------|-------------------------------|
| Durometers – | | | ASTM D2240 |
| Indenter Extension & Shape | Types A, B, C, D, E, O, OO, and DO | | Optical comparator |
| Diameter | Indenter Diameter | 11 µm | |
| Radius | Tip radius | 11 µm | |
| Angle | Indenter Angle | 0.085° | |
| Extension | Indenter extension length | 11 µm | |
| Indenter Display | Up to 100 Duro Units | 0.09 Duro + 0.6R | Gage blocks and surface plate |
| Spring Calibration Force | All scales | 0.0013 N | Dual pan balance and weights |
| Geometric Measurements – | | | |
| X Axis | Up to 900 mm | 3.9 µm + 0.0043 µm/mm | CMM |
| Y Axis | Up to 1000 mm | 4.0 µm + 0.0043 µm/mm | |
| Z Axis | Up to 600 mm | 3.9 µm + 0.0042 µm/mm | |

V. Electrical – DC/Low Frequency

| Parameter/Range | Frequency | CMC ^{2, 11} (±) | Comments |
|------------------------------------|--|---|-------------------|
| AC Current ³ – Generate | | | |
| (0 to 220) µA | (10 to 20) Hz (20 to 40) Hz (40 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.031 % + 16 nA 0.020 % + 10 nA 0.014 % + 8 nA 0.033 % + 12 nA 0.13 % + 65 nA | Fluke 5730A |
| (0.22 to 2.2) mA | (10 to 20) Hz (20 to 40) Hz (40 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.031 % + 40 nA 0.020 % + 35 nA 0.013 % + 35 nA 0.027 % + 110 nA 0.13 % + 650 nA | Fluke 5730A |
| (2.2 to 22) mA | (10 to 20) Hz (20 to 40) Hz (40 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.038 % + 400 nA 0.020 % + 350 nA 0.013 % + 350 nA 0.028 % + 550 nA 0.14 % + 5 µA | |
| (22 to 220) mA | (10 to 20) Hz (20 to 40) Hz (40 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.031 % + 4 µA 0.021 % + 3.5 µA 0.014 % + 2.5 µA 0.033 % + 3.5 µA 0.14 % + 10 µA | Fluke 5730A/5725A |
| (0.22 to 2.2) A | (20 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.031 % + 35 µA 0.059 % + 80 µA 0.86 % + 160 µA | Fluke 552XA |
| (2.2 to 10) A | (40 to 1000) Hz (1 to 5) kHz (5 to 10) kHz | 0.053 % + 170 µA 0.11 % + 380 µA 0.42 % + 750 µA | |
| (1.1 to 3) A | (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.19 % + 0.1 mA 0.062 % + 0.1 mA 0.62 % + 1 mA 2.6 % + 5 mA | |
| (3 to 11) A | (45 to 100) Hz (0.1 to 1) kHz (1 to 5) kHz | 0.062 % + 2 mA 0.1 % + 2 mA 2.6 % + 2 mA | |
| (11 to 20.5) A | (45 to 100) Hz (0.1 to 1) kHz (1 to 5) kHz | 0.12 % + 5 mA 0.15 % + 5 mA 3.1 % + 5 mA | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (\pm) | Comments |
|--|--|---|--------------------------------------|
| AC Current ³ – Generate (cont) | | | |
| (> 20.5 to 40) A | (45 to 440) Hz | 0.46 % + 0.008 A | Fluke 552XA w/ EA002 2/10/50 Coil |
| (> 40 to 200) A | (45 to 440) Hz | 0.53 % + 0.01 A | |
| (> 200 to 1025) A | (45 to 440) Hz | 0.35 % + 0.04 A | |
| AC Current ³ – Measure | | | |
| (0 to 100) μ A | (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz | 0.51 % + 30 nA 0.21 % + 30 nA 0.13 % + 30 nA 0.13 % + 30 nA | HP 3458A, option II |
| (0.1 to 1) mA | (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz | 0.49 % + 0.2 μ A 0.21 % + 0.2 μ A 0.1 % + 0.2 μ A 0.061 % + 0.2 μ A 0.085 % + 0.2 μ A | |
| (1 to 10) mA | (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz | 0.49 % + 2 μ A 0.17 % + 2 μ A 0.085 % + 2 μ A 0.061 % + 2 μ A 0.069 % + 2 μ A | |
| (10 to 100) mA | (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz | 0.49 % + 20 μ A 0.18 % + 20 μ A 0.078 % + 20 μ A 0.061 % + 20 μ A 0.085 % + 20 μ A | |
| 100 mA to 1 A | (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz | 0.5 % + 0.2 mA 0.24 % + 0.2 mA 0.15 % + 0.2 mA 0.18 % + 0.2 mA | |
| (1 to 10) A | (45 to 1000) Hz (1 to 5) kHz | 0.03 % 0.08 % | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (\pm) | Comments |
|------------------------------------|---|---|-------------|
| AC Voltage ³ – Generate | | | |
| (0 to 2.2) mV | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz (500 to 1000) kHz | 0.16 % + 4.0 μ V 0.16 % + 4.0 μ V 0.17 % + 4.0 μ V 0.17 % + 4.0 μ V 0.19 % + 5 μ V 0.23 % + 10 μ V 0.29 % + 20 μ V 0.65 % + 20 μ V | Fluke 5730A |
| (2.2 to 22) mV | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz (500 to 1000) kHz | 0.063 % + 4 μ V 0.028 % + 4 μ V 0.024 % + 4 μ V 0.054 % + 4 μ V 0.13 % + 5 μ V 0.27 % + 10 μ V 0.36 % + 20 μ V 0.70 % + 20 μ V | |
| (22 to 220) mV | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz (500 to 1000) kHz | 0.062 % + 12 μ V 0.024 % + 7 μ V 0.015 % + 7 μ V 0.031 % + 7 μ V 0.079 % + 17 μ V 0.17 % + 20 μ V 0.36 % + 25 μ V 0.69 % + 45 μ V | |
| (0.22 to 2.2) V | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz (500 to 1000) kHz | 0.028 % + 40 μ V 0.011 % + 15 μ V 0.0053 % + 8 μ V 0.0084 % + 10 μ V 0.011 % + 30 μ V 0.042 % + 80 μ V 0.12 % + 200 μ V 0.21 % + 300 μ V | |
| (2.2 to 22) V | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz (500 to 1000) kHz | 0.051 % + 400 μ V 0.020 % + 150 μ V 0.0076 % + 50 μ V 0.015 % + 100 μ V 0.021 % + 200 μ V 0.066 % + 0.6 mV 0.18 % + 2 mV 0.30 % + 3.2 mV | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (\pm) | Comments |
|--|--|--|---|
| AC Voltage ³ – Generate (cont) | | | |
| (22 to 220) V* | (10 to 20) Hz (20 to 40) Hz (40 to 20 000) Hz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz | 0.050 % + 4 mV 0.019 % + 1.5 mV 0.0091 % + 0.6 mV 0.014 % + 1 mV 0.026 % + 2.5 mV 0.030 % + 16 mV 0.21 % + 40 mV | Fluke 57X0A *220V range subject to 2.2E7 V-Hz limitation |
| (220 to 1100) V | (40 to 1000) Hz (1 to 20) kHz (20 to 30) kHz | 0.0064 % + 4 mV 0.0098 % + 6 mV 0.020 % + 11 mV | Fluke 5730A/5725A |
| (220 to 750) V | (30 to 50) kHz (50 to 100) kHz | 0.014 % + 11 mV 0.033 % + 45 mv | |
| AC Voltage ³ – Measure | | | |
| (0 to 10) mV | (40 to 1000) Hz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz | 0.023 % + 1.1 μ V 0.035 % + 1.1 μ V 0.12 % + 1.1 μ V 0.58 % + 1.1 μ V 4.6 % + 2 μ V | HP 3458A, option II |
| (10 to 100) mV | (40 to 1000) Hz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 1000) kHz (1 to 2) MHz | 0.0087 % + 2 μ V 0.017 % + 2 μ V 0.035 % + 2 μ V 0.093 % + 2 μ V 0.35 % + 10 μ V 1.2 % + 10 μ V 1.7 % + 10 μ V | |
| 100 mV to 1 V | (40 to 1000) Hz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 1000) kHz (1 to 2) MHz | 0.0081 % + 20 μ V 0.016 % + 20 μ V 0.035 % + 20 μ V 0.092 % + 20 μ V 0.35 % + 0.1 mV 1.2 % + 0.1 mV 1.7 % + 0.1 mV | |
| (1 to 10) V | (40 to 1000) Hz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 1000) kHz | 0.0081 % + 0.2 mV 0.016 % + 0.2 mV 0.035 % + 0.2 mV 0.092 % + 0.2 mV 0.35 % + 1 mV 1.2 % + 1 mV | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (±) | Comments |
|--|---|---|--|
| AC Voltage ³ – Measure (cont) | | | |
| (10 to 100) V | (40 to 1000) Hz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz | 0.023 % + 2 mV 0.023 % + 2 mV 0.040 % + 2 mV 0.14 % + 2 mV | HP 3458A, option II |
| (100 to 1000) V | (40 to 1000) Hz | 0.51 % + 20 mV | |
| (1 to 10) kV | (30 to 200) Hz | 0.14 % IV + 0.1 V | Vitrek 4700 high voltage meter |
| (10 to 30) kV | (30 to 200) Hz | 0.22 % IV | Vitrek 4700 high voltage meter with HVP-35 probe |
| Capacitance ³ – Generate | | | |
| (0.19 to 0.4) nF | 10 Hz to 10 kHz | 0.58 % + 0.01 nF | Fluke 552XA |
| (0.4 to 1.1) nF | 10 Hz to 10 kHz | 0.52 % + 0.01 nF | |
| (1.1 to 3.3) nF | 10 Hz to 3 kHz | 0.52 % + 0.01 nF | |
| (3.3 to 11) nF | 10 Hz to 1 kHz | 0.28 % + 0.01 nF | |
| (11 to 33) nF | 10 Hz to 1 kHz | 0.26 % + 0.1 nF | |
| (33 to 110) nF | 10 Hz to 1 kHz | 0.26 % + 0.1 nF | |
| (110 to 330) nF | 10 Hz to 1 kHz | 0.26 % + 0.3 nF | |
| (0.33 to 1.1) μF | (10 to 600) Hz | 0.26 % + 1 nF | |
| (1.1 to 3.3) μF | (10 to 300) Hz | 0.26 % + 3 nF | |
| (3.3 to 11) μF | (10 to 150) Hz | 0.26 % + 10 nF | |
| (11 to 33) μF | (10 to 120) Hz | 0.41 % + 30 nF | |
| (33 to 110) μF | (10 to 80) Hz | 0.46 % + 0.1 μF | |
| (110 to 330) μF | (10 to 50) Hz | 0.47 % + 0.3 μF | |
| (0.33 to 1.1) mF | (0 to 20) Hz | 0.46 % + 1 μF | |
| (1.1 to 3.3) mF | (0 to 6) Hz | 0.47 % + 3 μF | |
| (3.3 to 11) mF | (0 to 2) Hz | 0.47 % + 10 μF | |
| (11 to 33) mF | (0 to 0.6) Hz | 0.76 % + 30 μF | |
| (33 to 110) mF | (0 to 0.2) Hz | 1.1 % + 0.10 mF | |
| Oscilloscopes ³ – | | | |
| Amplitude, DC Signal 50 Ω Load 1 MΩ Load | (-6.6 to 6.6) V (-130 to 130) V | 0.29 % IV + 40 μV 0.058 % IV + 40 μV | Fluke 552XA/SC1100 |
| Amplitude, Square Wave 50 Ω Load | ±1 mV to ±6.6 V _{p-p} 10 Hz to 10 kHz | 0.29 % IV + 40 μV | |
| 1 MΩ Load | ±1 mV to ±130 V _{p-p} 10 Hz to 1 kHz | 0.12 % IV + 40 μV | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (\pm) | Comments |
|--|--|--|----------------------------------|
| Oscilloscopes ³ – (cont) | | | |
| Time Marker into 50 Ω Load-Source | 5 s to 50 ms | 29 parts in 10 ⁶ + 1000 parts in 10 ⁶ /s | Fluke 552XA/SC1100 |
| | 20 ms to 2 ns | 2.9 parts in 10 ⁶ | |
| Leveled Sine Wave Relative to 50 kHz [5 mV to 5.5 V] p-p | 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (550 to 1100) MHz (1.1 to 3.2) GHz (3.2 to 6.0) GHz | 2.0 % + 100 μ V 2.5 % + 100 μ V 4.7 % + 100 μ V 4.3 % 5.3 % 5.3 % | Fluke 9500B w/ active head(s) |
| Rise Time | 10 Hz to 2 MHz (125 to 175) ps | 20 ps | |
| | 10 Hz to 1 MHz (59 to 81) ps | 15 ps | |

| Parameter/Equipment | Range | CMC ^{2, 4, 11} (\pm) | Comments |
|------------------------------------|--|--|--|
| Capacitance – Fixed Points | 100 pF 1 nF to 1 μ F | 0.059 % 0.016 % | Standard capacitors |
| Capacitance – Measure | 10 pF to 1.1 μ F | 0.018 % | Gen Rad 1615A capacitance bridge |
| DC Current ³ – Generate | 0.1 nA to 220 μ A (0.22 to 2.2) mA (2.2 to 22) mA (22 to 220) mA (0.22 to 2.2) A | 95 μ A/A + 6 nA 82 μ A/A + 7 nA 83 μ A/A + 40 nA 110 μ A/A + 0.7 μ A 99 μ A/A + 12 μ A | Fluke 5730A |
| | (2.2 to 10) A | 420 μ A/A + 480 μ A | Fluke 5730A/5725A |
| | (1.1 to 3) A (3 to 11) A (11 to 20) A | 0.039 % + 40 μ A 0.052 % + 0.33 mA 0.1 % + 0.75 mA | Fluke 552XA |
| | (20 to 40) A (40 to 200) A (200 to 1025) A | 0.45 % + 0.008 A 0.51 % + 0.01 A 0.31 % + 0.04 A | Fluke 552XA with EA002 2/10/50 Coil |

| Parameter/Equipment | Range | CMC ^{2, 4, 11} (\pm) | Comments |
|--|--|---|---|
| DC Current ³ – Measure | (10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A | 22 μ A/A + 0.8 nA 21 μ A/A + 5 nA 21 μ A/A + 50 nA 35 μ A/A + 0.5 μ A 0.011 % + 10 μ A | HP 3458A, option II |
| | (1 to 10) A (10 to 20) A | 0.032 % + 0.6 mA 0.027 % + 3.3 mA | HP 3458A w/ Fluke Y5020 shunt |
| DC Voltage ³ – Measure | (0 to 100) mV (0.1 to 1) V (1.0 to 10) V (10 to 100) V (100 to 1000) V | 5.2 μ V/V + 0.3 μ V 4.1 μ V/V + 0.3 μ V 4.0 μ V/V + 0.5 μ V 6.2 μ V/V + 30 μ V 63 μ V/V + 0.1 mV* | HP 3458A, option II *Add 12 mV/V · (V _{in} /1000) ² for input >100 V |
| | (1 to 10) kV | 0.036 % IV + 0.03 V | Vitretek 4700 high voltage meter |
| | (10 to 30) kV | 0.13 % IV | Vitretek 4700 high voltage meter with HVP-35 probe |
| DC Voltage ³ – Generate | (0 to 220) mV (0 to 2.2) V (2.2 to 11) V (11 to 22) V (22 to 220) V (220 to 1100) V | 9.2 μ V/V + 0.4 μ V 5.9 μ V/V + 0.7 μ V 4.1 μ V/V + 2.5 μ V 4.5 μ V/V + 4 μ V 5.8 μ V/V + 40 μ V 7.8 μ V/V + 400 μ V | Fluke 5730A |
| Inductance – Measure @ 100 Hz Fixed Values | 100 μ H to 5 H | 0.3 % | Standard inductor set w/ GenRad 1632A bridge as transfer standard |
| Inductance – Generate | 100 μ H to 5.0 H | 0.071 % | Gen Rad 1482 standard inductors |

| Parameter/Equipment | Range | CMC ^{2,4,11} (±) | Comments |
|------------------------------------|---|--|---|
| Resistance ³ – Measure | (0 to 10) Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ 100 MΩ to 1 GΩ | 15 μΩ/Ω + 0.05 mΩ 13 μΩ/Ω + 0.50 mΩ 10 μΩ/Ω + 5.0 mΩ 10 μΩ/Ω + 50 mΩ 10 μΩ/Ω + 50 mΩ 16 μΩ/Ω + 2.0 Ω 52 μΩ/Ω + 100 Ω 0.051 % + 1.0 kΩ 0.5 % + 10 kΩ | HP 3458A, option II |
| Resistance ³ – Generate | (1 and 10) mΩ (0.1, 1, 10, 100) Ω (1, 10, 100, 1000) kΩ 0 Ω 1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ (0.0001 to 1) TΩ Fixed Values 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ | 4.7 μΩ/Ω 4.7 μΩ/Ω 4.7 μΩ/Ω 4.8 μΩ 110 μΩ 210 μΩ 270 μΩ 620 μΩ 1.2 mΩ 2.2 mΩ 7.7 mΩ 15 mΩ 77 mΩ 150 mΩ 1.0 Ω 3.1 Ω 23 Ω 48 Ω 480 Ω 1.1 kΩ 13 kΩ 0.23 % IV. + 0.0011 % IV/GΩ 150 mΩ 1.0 Ω 3.1 Ω 23 Ω 48 Ω 480 Ω 1.1 kΩ 13 kΩ | L&N reference resistors ESI SR1010 reference resistors Copper shorting block Fluke 5730A IET Labs HRRS decade resistor Fluke 5730A |

| Parameter/Equipment | Range | CMC ^{2, 11} (±) | Comments |
|--|--|---|--------------|
| Electrical Simulation – Thermocouple Indication and Measure devices ³ | | | |
| Type C | (0 to 250) °C (250 to 1000) °C (1000 to 1500) °C (1500 to 1800) °C (1800 to 2000) °C (2000 to 2250) °C (2250 to 2315) °C | 0.24 °C 0.19 °C 0.21 °C 0.25 °C 0.27 °C 0.34 °C 0.38 °C | Ectron 1140A |
| Type E | (-270 to -245) °C (-245 to -195) °C (-195 to -155) °C (-155 to -90) °C (-90 to 1000) °C | 1.40 °C 0.21 °C 0.12 °C 0.10 °C 0.09 °C | |
| Type J | (-210 to -180) °C (-180 to -120) °C (-120 to -50) °C (-50 to 1200) °C | 0.14 °C 0.12 °C 0.10 °C 0.09 °C | |
| Type K | (-255 to -195) °C (-195 to -115) °C (-115 to -55) °C (-55 to 1000) °C (1000 to 1372) °C | 0.81 °C 0.15 °C 0.11 °C 0.09 °C 0.10 °C | |
| Type N | (-200 to -140) °C (-140 to -70) °C (-70 to 25) °C (25 to 160) °C (160 to 1300) °C | 0.28 °C 0.18 °C 0.14 °C 0.12 °C 0.11 °C | |
| Type R | (-30 to 45) °C (45 to 160) °C (160 to 380) °C (380 to 775) °C (775 to 1768) °C | 0.66 °C 0.49 °C 0.38 °C 0.34 °C 0.30 °C | |
| Type S | (-30 to 45) °C (45 to 105) °C (105 to 310) °C (310 to 615) °C (615 to 1768) °C | 0.67 °C 0.49 °C 0.41 °C 0.37 °C 0.34 °C | |

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|--|--|---|-------------|
| Electrical Simulation – Thermocouple Indication & Measure Devices ³ (cont) | | | |
| Type T | (-270 to -255) °C (-255 to -240) °C (-240 to -210) °C (-210 to -150) °C (-150 to -40) °C (-40 to 100) °C (100 to 400) °C | 2.10 °C 0.57 °C 0.35 °C 0.22 °C 0.14 °C 0.10 °C 0.09 °C | Fluke 552XA |
| Type U | (-200 to 0) °C (0 to 600) °C | 0.65 °C 0.31 °C | |
| Electrical Simulation – RTD Indicating Devices ³ – | | | |
| Pt 385, 100 Ω | (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C | 0.058 °C 0.058 °C 0.085 °C 0.1 °C 0.12 °C 0.12 °C 0.27 °C | Fluke 552XA |
| Pt 3926, 100 Ω | (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C | 0.058 °C 0.058 °C 0.081 °C 0.1 °C 0.12 °C 0.14 °C | |
| Pt 3916, 100 Ω | (-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C | 0.29 °C 0.046 °C 0.058 °C 0.069 °C 0.081 °C 0.092 °C 0.1 °C 0.12 °C 0.27 °C | |

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|--|---|---|---------------------------------------|
| Electrical Simulation – RTD Indicating Devices ³ – (cont) | | | |
| Pt 385, 200 Ω | (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C | 0.046 °C 0.046 °C 0.046 °C 0.058 °C 0.14 °C 0.15 °C 0.16 °C 0.18 °C | Fluke 552XA |
| Pt 385, 500 Ω | (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C | 0.047 °C 0.058 °C 0.058 °C 0.069 °C 0.093 °C 0.093 °C 0.1 °C 0.13 °C | |
| Pt 385, 1000 Ω | (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C | 0.035 °C 0.035 °C 0.046 °C 0.058 °C 0.069 °C 0.081 °C 0.081 °C 0.27 °C | |
| PtNi 385, 120 Ω | (-80 to 0) °C (0 to 100) °C (100 to 260) °C | 0.092 °C 0.092 °C 0.16 °C | |
| Cu 427, 10 Ω | (-100 to 260) °C | 0.35 °C | |
| LF Energy | 10 J 50 J 100 J 360 J | 0.17 J 0.32 J 0.53 J 2.4 J | Fluke impulse 7000 “Gold Standard” |

VI. Electrical – RF/Microwave

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (±) | Comments |
|--|---------------------------------------|-----------------------------|---|
| RF Absolute Power ^{3, 5} – Measure | | | |
| 1 mW Reference | 50 MHz | 1.7 % | HP 8478B sensor w/ HP 432A power meter and type N connector |
| (-30 to 10) dBm | 100 kHz to 4.2 GHz (4.2 to 18) GHz | 1.6 % 1.8 % | Power meter w/ 8482A power sensor 8481A power sensor |
| (10 to 20) dBm | 100 kHz to 4.2 GHz (4.2 to 18) GHz | 3.3 % 3.8 % | 8482A power sensor 8481A power sensor |
| (-20 to 30) dBm | 10 MHz to 18 GHz | 3.3 % | Agilent 5532B, N1913A |
| RF Absolute Power ^{3, 5} – Generate | | | |
| Sine Wave into 50 Ω | | | |
| (-48 to 24) dBm | 0.001 Hz to 100 kHz | 0.035 dB | Fluke 96040B RF reference source |
| (-48 to 24) dBm | 100 kHz to 128 MHz | 0.066 dB | |
| (-48 to 20) dBm | (128 to 300) MHz | 0.088 dB | |
| (-48 to 20) dBm | (0.3 to 1.4) GHz | 0.24 dB | |
| (-48 to 14) dBm | (1.4 to 3) GHz | 0.36 dB | |
| (-17 to 14) dBm | (3 to 4) GHz | 0.37 dB | |
| (-74 to -17) dBm | (3 to 4) GHz | 0.61 dB | |
| (-74 to -48) dBm | (0.1 to 10) MHz | 0.24 dB | |
| (-84 to -48) dBm | (10 to 128) MHz | 0.12 dB | |
| (-74 to -48) dBm | (128 to 300) MHz | 0.12 dB | |
| (-74 to -48) dBm | (0.3 to 1.4) GHz | 0.47 dB | |
| (-74 to -48) dBm | (1.4 to 3) GHz | 0.59 dB | |
| (-94 to -74) dBm | (0.1 to 10) MHz | 0.59 dB | |
| (-94 to -74) dBm | (1.4 to 3) GHz | 1.2 dB | |
| (-84 to -74) dBm | (128 to 300) MHz | 0.35 dB | |
| (-84 to -74) dBm | (0.3 to 1.4) GHz | 0.60 dB | |
| (-84 to -74) dBm | (3 to 4) GHz | 1.2 dB | |
| (-94 to -84) dBm | (10 to 128) MHz | 0.36 dB | |
| (-94 to -84) dBm | (128 to 300) MHz | 0.58 dB | |
| (-94 to -84) dBm | (0.3 to 1.4) GHz | 1.2 dB | |
| (-130 to -94) dBm | (10 to 128) MHz | 0.84 dB | |
| (-130 to -94) dBm | (128 to 300) MHz | 1.8 dB | |
| (-130 to -94) dBm | (0.3 to 3) GHz | 1.8 dB | |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (\pm) | Comments |
|---|--|---|--------------------------------|
| RF Tuned Power – Measure (-129 to 16) dB | (0.0001 to 18) GHz | 0.073 dB + 0.044 % | N5531S System MMR |
| Amplitude Modulation – Generate AM Flatness Carrier Frequency: (11 to 13.5) MHz Depth: (0 to 99) % | Rate Frequency: 50 Hz to 50 kHz 20 Hz to 100 kHz | 0.16 % 0.32 % | HP 11715A AM/FM test source |
| Amplitude Modulation – Measure Carrier Frequency: (0.15 to 10) MHz Depth: (5 to 99) % (0 to 99) % (10 to 1300) MHz Depth: (5 to 99) % | Rate Frequency: 50 Hz to 10 kHz 20 Hz to 10 kHz 50 Hz to 50 kHz | 3.5 % + 1 digit 4.1 % + 1 digit 1.6 % + 1 digit | HP 8902A w/ HP 11722A |
| Frequency Modulation – Measure Carrier Frequency: (0.25 to 10) MHz \leq 40 kHz Peak Deviation (10 to 1300) MHz \leq 400 kHz Peak Deviation | Rate Frequency: 20 Hz to 10 kHz 50 Hz to 100 kHz 20 Hz to 400 kHz | 2.3 % + 1 digit 3.0 % + 1 digit 6.7 % + 1 digit | HP 8902A w/ HP 11722A |

| Parameter/Range | Frequency | CMC ^{2, 4, 11} (±) | Comments |
|--|--|--|--|
| Frequency Modulation – Generate FM Flatness Carrier Frequency: (11 to 13.5) MHz (88 to 108) MHz (352 to 432) MHz | Rate Frequency: DC to 100 kHz (100 to 200) kHz DC to 100 kHz (100 to 200) kHz DC to 100 kHz (100 to 200) kHz | 0.33 % 0.43 % 0.34 % 0.43 % 0.34 % 0.43 % | HP 11715A AM/FM test source |
| Phase Modulation – Measure Carrier Frequency: (0.15 to 10) MHz (10 to 1300) MHz | Rate Frequency: 200 Hz to 10 kHz 200 Hz to 20 kHz | 4.8 % + 1 digit 4.6 % + 1 digit | HP 8902A w/ HP 11722A sensor |
| RF Volts – Measure, Fixed Points 3 V | (1 to 10) MHz (10 to 30) MHz (30 to 50) MHz (50 to 70) MHz (70 to 80) MHz (80 to 100) MHz | 0.091 % 0.11 % 0.19 % 0.30 % 0.32 % 0.38 % | HP 11049A thermal voltage converter |
| Distortion – Measure | 20 Hz to 20 kHz >20 kHz to 100 kHz >100 kHz to 18 GHz | 1.2 dB 2.3 dB 0.23 dB + 0.12 dB/GHz | HP 8903B audio analyzer HP E4440A spectrum analyzer |

VII. Mechanical

| Parameter/Equipment | Range | CMC ^{2, 4, 10} (±) | Comments |
|---|-----------------------|--|---|
| Torque Wrench | (4.0 to 40) ozf·in * | 1.3 % of IV from (10 to 100) % FS | JETCO TED-40 |
| | (2.5 to 25) lbf·in * | 0.32 % of IV from (10 to 100) % FS | Larson STWCS |
| | (10 to 3120) lbf·in * | 0.24 % of IV from (10 to 100) % FS | |
| | (0 to 1000) ozf·in * | 0.49 % of IV (10 to 100) % of range | Futek torque system |
| | (0 to 600) lbf·ft | 1.8 lbf·ft (10 to 100) % of range | Note: Ranges indicated by * are related to footnote 3 |
| Acceleration/Vibration – Measuring Equipment | | | |
| Voltage Sensitivity, Frequency Response (0.02 to 5000) mV/g | (5 to 99) Hz | 2.1 % IV | Modal shop 9155 |
| | 100 Hz | 1.4 % IV | |
| | (101 to 920) Hz | 1.2 % IV | |
| | (921 to 5000) Hz | 1.8 % IV | |
| | (5 to 10) kHz | 3.0 % IV | |
| Charge Sensitivity, Frequency Response (0.04 to 100) pC/g | (5 to 99) Hz | 2.1 % IV | Modal shop 9155 |
| | 100 Hz | 1.4 % IV | |
| | (101 to 920) Hz | 1.2 % IV | |
| | (921 to 5000) Hz | 1.8 % IV | |
| | (5 to 10) kHz | 3.0 % IV | |
| Piezoresistive Sensitivity, Frequency Response (0.000 08 to 100) mV/V/g | (5 to 99) Hz | 2.1 % IV | Modal shop 9155 |
| | 100 Hz | 1.4 % IV | |
| | (101 to 920) Hz | 1.2 % IV | |
| | (921 to 5000) Hz | 1.8 % IV | |
| | (5 to 10) kHz | 3.0 % IV | |
| Digital Sensitivity, Frequency Response (1 to 500 000) Counts/g | (5 to 99) Hz | 2.1 % IV | Modal shop 9155 |
| | 100 Hz | 1.4 % IV | |
| | (101 to 920) Hz | 1.2 % IV | |
| | (921 to 5000) Hz | 1.8 % IV | |
| | (5 to 10) kHz | 3.0 % IV | |

| Parameter/Equipment | Range | CMC ^{2, 4, 10} (±) | Comments |
|--|---|---|--|
| Torque ³ – Measuring Equipment Torque Transducers | (0.6 to 42) lbf·ft (42 to 300) lbf·ft (1.7 to 600) lbf·ft | 0.012 % IV 0.013 % IV 0.015 % IV | Torque arm/dead weight |
| Pressure Gauges ³ – Measuring Equipment Pneumatic Hydraulic | (-5 to 5) psig (-14.5 to 50) psig (-14.5 to 300) psig (-14.5 to 1000) psig (10 to 50) psig (51 to 10 000) psig (0 to 10) inH ₂ O | 0.0065 % IV + 0.0005 psig 0.0055 % IV + 0.0033 psig 0.0085 % IV + 0.015 psig 0.011 % IV + 0.051 psig 0.0088 psig 0.019 % 0.006 inH ₂ O | Pace 6000 Deadweight tester Meriam manometer |
| Absolute Pressure ³ – Measuring Equipment and Measure | (9 to 20) psia (0.5 to 80) psia (0.5 to 330) psia (0.5 to 1030) psia | 0.0058 % IV + 0.0013 psia 0.0058 % IV + 0.004 psia 0.0063 % IV + 0.017 psia 0.0064 % IV + 0.052 psia | Pace 6000 |
| Scales and Balances ³ – Analytical Balances ³ | (0.5 to 629) lb (1 to 500) mg (0.5 to 10) g (10 to 100) g (100 to 1000) g (1 to 10) kg | 0.01 % + 0.6R 0.012 mg + 0.000088 mg/g 0.0094 mg + 0.0051 mg/g 0.034 mg + 0.0027 mg/g 0.02 mg + 0.0029 mg/g 0.014 mg + 0.0029 mg/g | ASTM class 6 weights ASTM class 1 weights |

| Parameter/Equipment | Range | CMC ^{2, 4, 6, 10} (±) | Comments |
|---|-------------------------|--------------------------------|--|
| Mass Measure– | (1 to 5) g | 0.09 mg | XE-50 |
| | (5 to 10) g | 0.10 mg | XE-50 |
| Fixed Points | (10 to 20) g | 0.13 mg | XE-50 |
| | (20 to 50) g | 0.16 mg | XE-50 |
| | (50 to 200) g | 6.9 mg | PE 1600 |
| | (200 to 500) g | 7 mg | PE 1600 |
| | (500 to 1000) g | 7.4 mg | PE 1600 |
| | (1 to 2) kg | 0.02 g | TCL-6002 |
| | (2 to 5) kg | 0.03 g | TCL-6002 |
| | (5 to 10) kg | 0.16 g | Setra12000L |
| | (10 to 20) kg | 0.16 g | GP-30K |
| | 1 g | 0.09 mg | Mass Comparator, Class 1 weight, Substitution method |
| | 2 g | 0.09 mg | |
| | 5 g | 0.09 mg | |
| | 10 g | 0.10 mg | |
| | 20 g | 0.13 mg | |
| 50 g | 0.16 mg | | |
| 100 g | 6.9 mg | | |
| 200 g | 6.9 mg | | |
| 500 g | 7 mg | | |
| 1 kg | 7.4 mg | | |
| 2 kg | 0.02 g | | |
| 5 kg | 0.03 g | | |
| 10 kg | 0.16 g | | |
| 20 kg | 0.16 g | | |
| 50 lb | 0.00037 lb (170 mg) | | |
| Force ^{3, 7} – Measuring Equipment | (0.5 to 500) lbf | 0.01 % IV + 0.6R | ASTM class 6 weights |
| | (100 to 1000) lbf | 0.061 % FS | Load cells |
| | (200 to 2000) lbf | 0.050 % FS | |
| | (500 to 5000) lbf | 0.049 % FS | |
| | (1000 to 10 000) lbf | 0.049 % FS | |
| | (2500 to 25 000) lbf | 0.056 % FS | |
| | (5000 to 50 000) lbf | 0.049 % FS | |
| | (10 000 to 100 000) lbf | 0.064 % FS | |
| (50 000 to 500 000) lbf | 0.05 % FS | Compression only | |

| Parameter/Equipment | Range | CMC ^{2, 4, 10} (±) | Comments |
|--|--|---|--|
| Rockwell Hardness ³ – Indirect Verification of Superficial Hardness Testers | HRA: Low Medium High HRBW: Low Medium High HRC: Low Medium High HRRW HR15N: Low Medium High HR30N: Low Medium High HR15TW: Low Medium High HR30TW: Low Medium High | 0.54 HRA 0.43 HRA 0.32 HRA 0.83 HRBW 1.0 HRBW 0.79 HRBW 0.86 HRC 1.0 HRC 0.44 HRC 1.6 HRRW 0.99 HR15N 0.80 HR15N 0.97 HR15N 0.49 HR30N 0.78 HR30N 0.38 HR30N 0.52 HR15TW 0.59 HR15TW 0.48 HR15TW 0.97 HR30TW 0.77 HR30TW 0.57 HR30TW | ASTM E18 |
| Universal Testing Machine, Compression Testing Machines, Tension Testing Machines ³ | (0.5 to 500) lbf (100 to 1000) lbf (200 to 2000) lbf (500 to 5000) lbf (1000 to 10 000) lbf (2500 to 25 000) lbf (5000 to 50 000) lbf (10 000 to 100 000) lbf (50 000 to 500 000) lbf | 0.011 % IV 0.061 % FS 0.050 % FS 0.058 % FS 0.049 % FS 0.056 % FS 0.056 % FS 0.056 % FS 0.056 % FS | ASTM E4, load cells and dead weights tension and compression Compression only |

VIII. Thermodynamics

| Parameter/Equipment | Range | CMC ^{2, 10} (±) | Comments |
|---|--|--------------------------|-----------------------------------|
| Temperature ³ – Measuring Equipment | (-95 to 150) °C | 0.014 °C + 42 µC/°C | Fluke 1502 w/ 5628 PRT in bath |
| Infrared Temperature ³ – Measure | (25 to 400) °C | 0.45 °C + 0.017 °C/°C | Black body |
| Temperature ³ – Measure | (-95 to 660) °C | 0.031 °C + 72 µC/°C | Fluke 1502 w/ 5628 PRT |
| | (200 to 1200) °C | 0.4 °C + 5.2 m°C/°C | Type N thermocouple |
| Thermocouples – Types B, C, E, J, K N, R, S, T, U | (-50 to 660) °C | 0.23 °C + 0.12 m°C/°C | Fluke 552XA/ Fluke 1502A/5628 |
| RTDs – | (-50 to 660) °C | 0.038 °C | HP3458A/Hart 1502A/ 5628 |
| Relative Humidity – Measuring Equipment | (10 to 95) % RH | 0.7 % RH | Thunder Scientific 2500 |
| | 11.3 % RH | 1.6 % RH | Vaisala HMK15 |
| | 33 % RH | 1.6 % RH | |
| | 75.5 % RH | 2.0 % RH | |
| | 97.7 % RH | 2.6 % RH | |
| Relative Humidity ³ – Measure | (11.3 to 90) % RH (90 to 97.7) % RH | 1.9 % RH 2.5 % RH | Vaisala MI70/HMP77B |

IX. Time & Frequency

| Parameter/Equipment | Range | CMC ^{2, 10} (±) | Comments |
|------------------------------------|--------|-------------------------------|-------------------------------|
| Frequency – Measuring Equipment | 10 MHz | 5.7 x 10 ⁻¹² Hz/Hz | NOVAS WR 2410 GPS receiver |

| Parameter/Equipment | Range | CMC ^{2, 10} (\pm) | Comments |
|---------------------|---------------------|--------------------------------|---|
| Frequency – Measure | 0.01 Hz to 18 GHz | 1.6×10^{-9} Hz/Hz | NOVAS WR 2410 GPS receiver w/ Frequency Counter |
| Period – Measure | 1 μ s to 1000 s | 1.2×10^{-9} s/s | NOVAS WR 2410 GPS receiver w/frequency counter |
| Rise Time – Measure | (0.35 to 1000) ns | 0.40 ns | Oscilloscope |
| Stopwatches | (0 to 86400) s | 33 ms | NIST RP 960-12 |
| | (0 to 19.99) s/day | 0.039 s/day | Timometer |

¹ This laboratory offers commercial calibration service and field calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the Calibration and Measurement Capability Uncertainty (CMC) found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the uncertainty introduced by the item being calibrated, (e.g., resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

⁴ In the statement of CMC, the value is defined as the percentage of reading unless otherwise indicated; IV represents *Indicated Value* and FS represents *Full Scale*.

⁵ The CMCs do not include mismatches.

⁶ In the statement of CMC, L represents the length of the unit under test in inches or millimeters, where appropriate; R represents the resolution of the unit under test.

⁷ Greater than 100 klb, field service available only.

⁸ Repeatability of the Unit Under Test has not been utilized in the calculation of the CMC value for this measurement parameter.

⁹ This scope meets A2LA's *P112 Flexible Scope Policy*.

¹⁰ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

¹¹ The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.



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This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and R205 – *Specific Requirements: Calibration Laboratory Accreditation Program*. 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 dated April 2017).



Presented this 1st day of May 2023.

A blue ink signature of Mr. Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1277.01
Valid to March 31, 2025
Revised April 5, 2024

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.