



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

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CALIBRATION

Valid To: September 30, 2021

Certificate Number: 1387.01

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. Dimensional

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Bore Micrometers	Up to 12 in Up to 304.8 mm	(34 + 1.2D) μin (0.86 + 0.0012D) μm	Master rings
Dial Bore Gages (Bore Gage w/ Indicator)	Up to 12 in Up to 304.8 mm	0.61R μin 0.61R μm	Indicator calibrator
Calipers ³	Up to 24 in (24 to 80) in Up to 610 mm (610 to 2032) mm	0.60R μin (16L - 25) μin 0.60R μm (0.016L - 0.03) μm	Caliper checker, gage blocks
Caliper Checkers	Up to 12 in (25 to 305) mm	(11 + 1.8L) μin (0.28 + 0.0018L) μm	Electronic indicator amplifier, gage blocks
Caliper Gage ³ – Internal, External	Up to 20 in Up to 508 mm	0.60R μin 0.60R μm	Gage blocks, ring gages
Depth Step Gages	(0.5 to 11.5) in (12.7 to 290) mm	(12 + 3.0L) μin (0.30 + 0.003L) μm	Electronic indicator amplifier, gage blocks

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Cylindrical Ring Gages ³	Up to 0.425 in (0.425 to 17) in	4.3 μ in (11 + 0.63D) μ in	828 CIM universal length machine, master rings, gage blocks
	Up to 10.80 mm (15.24 to 430) mm	0.11 μ m (0.28 + 0.000 63D) μ m	
	Up to 13 in Up to 330.2 mm	(2.5 + 6.4D) μ in (0.06 + 0.0064D) μ m	CMM
	Up to 6 in Up to 152.4 mm	(13 + 0.03D) μ in (0.33 + 0.000 03D) μ m	Vision system
Disc, Plug and Pin Gages ³	Up to 38 in Up to 508 mm	(7.9 + 0.92L) μ in (0.20 + 0.000 92L) μ m	Universal length machine
Electronic Indicator Amplifier ³	Up to 0.02 in Up to 0.508 mm	9.3 μ in 0.24 μ m	Gage blocks, optical flat
Go/No-go Gages ⁵	Up to 12 in Up to 304.8 mm	(12 + 0.45L) μ in (0.30 + 0.00045L) μ m	Vision system
	Up to 39 in Ext. Measurement	(7.9 + 0.92L) μ in (0.20 + 0.000 92L) μ m	Universal length machine
	Up to 11.5 in Int. Measurement	(12 + 3.0L) μ in (0.30 + 0.003L) μ m	Electronic indicator amplifier, gage blocks
	Up to 6 in	0.000 30 in	Rings, plugs, hand tools
Optical Flats	Up to 6 in Up to 152.4 mm	3.9 μ in 0.10 μ m	Master optical flat

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Sine Bars – Length Flatness Parallelism	Up to 20 in Up to 20 in Up to 508 mm Up to 20 in Up to 508 mm	(12 + 0.45L) μin 28 μin 0.71 μm 14 μin 0.36 μm	Vision system Electronic indicator amplifier
Cylindrical Square – Straightness Roundness	Up to 12 in Up to 10 in	22 μin (1.4 + 1.8D) μin	Roundness machine
Glass Scales	Up to 12 in Up to 304.6 mm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm	Vision system
Gage Blocks – Length Only	Up to 1 in (1 to 20) in Up to 25.4 mm (25.4 to 508) mm	3.5 μin (2.6 + 0.80L) μin 0.09 μm (0.07 + 0.0008L) μm	Master gage blocks (direct comparison)
Height Gages ³	Up to 48 in Up to 1219.2 mm	0.60R μin 0.60R μm	Gage blocks
Indicators/LVDTs ³	Up to 4 in 0.000 01 in 0.000 05 in 0.0001 in 0.0005 in 0.001 in 0.000 25 mm 0.001 mm 0.0025 mm 0.01 mm 0.025 mm	0.60R μin 7.1 μin 0.60R μin 0.60R μin 0.60R μin 0.60R μin 0.18 μm 0.60R μm 0.60R μm 0.60R μm 0.60R μm	Gage blocks Indicator calibrator

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Length Standards ³	Up to 38 in Up to 508 mm	$(7.9 + 0.92L) \mu\text{in}$ $(0.20 + 0.00092L) \mu\text{m}$	Universal length machine (ULM)
	Up to 40 in Up to 1016 mm	$(16 + 0.89L) \mu\text{in}$ $(0.41 + 0.00089L) \mu\text{m}$	Gage blocks, electronic ind amp
Levels ³	Up to 12 in Up to 304.8 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Surface plate, sine bar, gage blocks
Micrometers ³ –	Up to 48 in Up to 1219.2 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Gage blocks
Groove	Up to 4 in Up to 101.6 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Gage blocks
Depth	Up to 12 in Up to 304.8 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Gage blocks
Inside	Up to 16 in Up to 406.4 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Universal length machine
Specialty Micrometers	Up to 4 in Up to 101.6 mm	$0.60R \mu\text{in}$ $0.60R \mu\text{m}$	Master pins
Indicator Calibrators ³ (Mic Head Type)	Up to 1 in Up to 25.4 mm	$(22 + 4.2L) \mu\text{in}$ $(1.1 + 0.0042L) \mu\text{m}$	LVDT's
Parallels	Up to 20 in Up to 508 mm	$19 \mu\text{in}$ $0.48 \mu\text{m}$	Electronic indicator amplifier
Plain Pins Class ZZ ³	Up to 2 in Up to 50.8 mm	$29 \mu\text{in}$ $0.66 \mu\text{m}$	Laser micrometer
Protractor			
Bevel	Up to 180°	2.3 arcsec	Vision system
Digital ³	Up to 90°	27 arcsec	Sine plate, gage blocks

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Snap Gage ³ – Flatness of Anvils	Up to 3 in Up to 76.2 mm	4.1 μ in 0.11 μ m	Optical flat
Size	Up to 1 in Up to 25.4 mm (1 to 20) in (25.4 to 508) mm	6.3 μ in 0.16 μ m (3.9 + 2.4L) μ in (0.10 + 0.0024L) μ m	Gage blocks
Spheres/Roundness	Up to 10 in Up to 254 mm	(1.4 + 1.8D) μ in (0.036 + 0.0018D) μ m	Roundness machine
Steel Rules ³	Up to 12 in Up to 304.8 mm (12 to 72) in (304.8 to 1828.8) mm	(12 + 0.45L) μ in (0.30 + 0.000 45L) μ m 110 μ in 2.6 μ m	Vision system Direct comparison
Steel Tapes ³	Up to 26 ft Up to 100 ft	0.04 in 0.06 in	Direct comparison
Pi Tapes ³	(8 to 17) in (203 to 432) mm (17 to 36) in (432 to 914) mm (36 to 144) in (914 to 3600) mm	950 μ in 24 μ m 940 μ in 24 μ m 2200 μ in 55 μ m	Master disc gage Vision system Optical comparison
Thickness and Feeler Gage ³	Up to 2 in Up to 50.8 mm	(6.6 + 0.88L) μ in (0.17 + 0.000 88L) μ m	Universal length machine (ULM)
Thread Measuring Wires ³	(4 to 80) TPI (0.35 to 4.0) TP μ m	6.0 μ in 0.15 μ m	Universal length machine, gage blocks, master pins
Angle Blocks	Up to 90°	2.3 arcsec	Vision system

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Chamfer Check Gages	Set Ring Effective Diameter	49 μin	Chamfer check master, set ring
	Gage Probe Angle	2.3 arcsec	Vision system
Screw Thread Micrometer	Up to 2 in	0.60R μin	Gage blocks, thread setting plug
	Up to 50.0 mm	0.60R μm	
Screw Thread Micrometer Standards	Up to 12 in Up to 304.8 μm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm	Vision system
Thread Plugs ³ –			
Major Diameter	Up to 8 in Up to 203.2 mm	(8.2 + 1.2D) μin (0.21 + 0.0012D) μm	Universal length machine
Pitch Diameter	Up to 80 TPI Up to 4.0 mm pitch	(65 + 0.32D) μin (1.7 + 0.000 32D) μm	Universal length machine, thread measuring wires
Tapered Thread Plug Gage – Pitch Diameter	Up to 4 in Up to 101.6 mm	(65 + 0.32D) μin (1.7 + 0.000 32D) μm	Universal length machine, gage blocks
Step	Up to 1 in Up to 25.4 mm	59 μin 1.5 μm	Gage blocks
Universal Measuring Machines/Bench Micrometers ³	Up to 39 in Up to 1000 mm	(7.9 + 0.92L) μin (0.20 + 0.000 92L) μm	Gage blocks
Optical Shaft Measurement System ³			
Length (Y Axis)	Up to 600 mm	(1.5 + 0.000 59L) μm	Master steel artifacts
Diameter (X Axis)	Up to 180 mm	(1.5 + 0.0014D) μm	

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
CMM/Articulating Arm CMM's ³ –			
Hysteresis	Up to 0.500 in Up to 12.5 mm	94 μin 2.4 μm	Indicator amp
X-Scale Displacement	Up to 20 in Up to 500 mm	(11 + 3.3L) μin (0.28 + 3.3L) μm	Gage blocks
Y-Scale Displacement	Up to 20 in Up to 500 mm	(12 + 4.1L) μin (0.30 + 4.1L) μm	
Z-Scale Displacement	Up to 20 in Up to 500 mm	(13 + 4.1L) μin (0.33 + 4.1L) μm	
Volumetric Displacement	Up to 40 in Up to 1000 mm	(12 + 4.3L) μin (0.30 + 4.3L) μm	
Laser Micrometers ³	Up to 4 in Up to 101.6 mm	(21 + 1.5D) μin (0.53 + 0.0015L) μm	Class XXX master pins
NPT Tapered Thread Rings –			
Standoff	Up to 1.5 in Up to 38 mm	77 μin 2.0 μm	Electronic indicator, master NPT plug
Ring Thickness	Up to 1.5 in Up to 38 mm	(8.2 + 1.2L) μin (0.21 + 0.0012L) μm	Universal length machine (ULM)
Video Measurement System ³ –			
X, Y Axis	Up to 12 in Up to 304.8 μm	(11 + 0.89L) μin (0.28 + 0.000 89L) μm	Calibration grid
Z Axis	Up to 6 in Up to 152.4 mm	(14 + 0.49L) μin (0.36 + 0.000 49L) μm	Gage blocks
Radius Gages	Up to 12 in Up to 304.8 μm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm	Vision system

Parameter/Equipment	Range	CMC ² (±)	Comments
Adjustable Thread Rings ⁸	Up to 2.5 in	W (Set Plug Tolerance)	Set using master plug gages. ASME/ANSI B1.2-1983 and ASME/ANSI B1.3-2007
Geometry Measuring Machine ³ –			
Gage Head Amplifier	0.004 µin fine 0.036 µin course 0.10 mm fine 0.9 mm course	7.0 µin 7.0 µin 0.18 µm 0.18 µm	Master sphere, gage blocks, cylindrical square, optical flat
Radial Accuracy	3 in 75 mm	5.3 µin 0.14 µm	
Coning Accuracy	8 in 200 mm	5.3 µin 0.14 µm	
Axial Bearing Accuracy	3 in 75 mm	8.6 µin 0.22 µm	
Parallelism of Column to Table Axis Accuracy	Up to 12 in Up to 300 mm	8.3 µin 0.21 µm	
Straightness of Column	Up to 12 in Up to 300 mm	5.3 µin 0.14 µm	
R-Axis Perpendicularity	Up to 4 in Up to 101.6 mm	6.1 µin 0.16 µm	
Straightness	Up to 4 in Up to 101.6 mm	6.6 µin 0.17 µm	

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Contour/Contour Systems ³ – Tracing Arm Length and Stylus Tip Height Pick- up Sensitivity Probe Deflection Repeatability Stylus Tip Form and Radius	Up to 14 in Up to 350 mm 2 in 50 mm 0 Base 3 mm	7.8 μin 0.20 μm 46 μin 1.2 μm 0.15 μin 0.004 μm 9.1 μin 0.23 μm	Gage blocks, pin gages, optical flats
Surface Finish Testers ³ – Ra, Ry, Rz	(2 to 500) μin (0.05 to 12.5) μm	5.0 μin 0.13 μm	Master surface finish patch
Surface Finish Standards ³ – Ra, Ry, Rz	(2 to 500) μin (0.05 to 12.5) μm	4.2 μin 0.10 μm	Direct comparison to master surface patch
Crimping tools ³	Go/No Go Crimp Height Pullout Test	0.0010 in 0.000 15 in 0.5 lb	Pin gages Point micrometer Force gage, master weights
Gage Block Comparator ³	Up to 4 in Up to 100 mm (4 to 20) in (100 to 508) mm	3.8 μin 0.1 μm (0.6 + 0.8L) μin (0.015 + 0.0008L) μm	Master gage blocks
ID / OD Comparator ³	Up to 10 in Up to 250 mm	(9.0 + 0.67D) μin (0.23 + 0.000 67D) μm	Gage blocks
Bolt Protrusion Gauges	Up to 12 in Up to 304.8 mm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm	Vision system

Parameter/Equipment	Range	CMC ^{2, 4} (\pm)	Comments
Electronic Levels	Angular: +/- 990 arcsec Linear: +/- 0.005 in (Differential Mode)	2.3 arcsec 19 μ in	Surface plate, sine bar, gage blocks
Optical Comparators ³ –			
Horizontal Linearity	Up to 12 in Up to 304.8 mm	(52 + 1.4L) μ in (1.3 + 0.0014L) μ m	Glass master
Vertical Linearity	Up to 9 in Up to 228.6 mm	(97 + 0.39L) μ in (2.5 + 0.00039L) μ m	Glass master
Squareness	Up to 12 in Up to 304.8 mm	160 μ in 4.0 μ m	Glass master
Table Parallelism	Up to 12 in Up to 304.8 mm	140 μ in 3.4 μ m	Indicator
Distortion	Up to 10 in magnified image	55 μ in	Glass master, 14" glass scale
	Up to 254 mm magnified image	1.4 μ m	
Magnification – 10x to 100x	Up to 20 in image Up to 508 mm image	55 μ in 1.4 μ m	Glass master, 14" glass scale
Chart Angularity	90°	220 arcsec	Glass master
Chart Rotation	180°	330 arcsec	Glass master
Surface Plates ³ –			
Flatness	Up to 245 in diagonal line	(17 + 0.59DL) μ in	Electronic levels
Repeatability	Localized up to 245 in diagonal line	24 μ in	Repeat reading indicator
Tool Makers Microscopes ³ –			
Linearity	Up to 12 in Up to 304.8 mm	190 μ in 4.6 μ m	Glass master

II. Dimensional Testing/Calibration¹

Parameter/Equipment	Range	CMC ^{2, 4, 5} (±)	Comments
Surface Finish – Measure	(2 to 500) μin (0.05 to 12.5) μm	4.0 μin 0.10 μm	Master surface finish patch
Roundness – Measure	Up to 10 in Up to 254 mm	(9.2 + 1.6D) μin (0.23 + 0.0016D) μm	Roundness machine
Flatness – Measure	Up to 20 in Up to 508 mm	28 μin 0.71 μm	Electronic indicator
	Up to 6 in Up to 152.4 mm	3.9 μin 0.10 μm	Optical flat
Parallelism – Measure	Up to 20 in Up to 508 mm	19 μin 0.48 μm	Electronic indicator amplifier
Radius – Measure	Up to 12 in Up to 304.8 mm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm	Vision system
Straightness – Measure	Up to 12 in Up to 304.8 mm	22 μin 0.56 μm	Electronic indicator amplifier
Video Measurement ⁵ –			
	X, Y Axis	Up to 12 in Up to 304.8 μm	(12 + 0.45L) μin (0.30 + 0.000 45L) μm
Z Axis	Up to 6 in Up to 152.4 mm	(14 + 0.49L) μin (0.36 + 0.000 49L) μm	
Angular Measurements ⁵	Up to 360 °	2.3 arcsec	Vision system

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Contour ⁵ – Tracing Arm Length	Up to 14 in Or 350 mm	7.8 μin 0.20 μm	Contour system
2D Optical Inspection ⁵ – Measure			Optical comparator
Horizontal Linearity	Up to 12 in Up to 304.8 mm	(52 + 1.4L) μin (1.3 + 0.0014L) μm	
Vertical Linearity	Up to 9 in Up to 228.6 mm	(97 + 0.39L) μin (2.5 + 0.000 39L) μm	
Angle	Up to 180°	220 arcsec	
Geometric Measurements ⁵	X: Up to 39 in Up to 1000 mm Y: Up to 48 in Up to 1200 mm Z: Up to 24 in Up to 600 mm Volume: (39 x 48 x 24 in) (1000 x 1200 x 600 mm)	(6.6 + 0.47L) μin (0.17 + 0.000 47L) μm (7.5 + 0.41L) μin (0.19 + 0.000 41L) μm (6.5 + 0.78L) μin (0.17 + 0.000 78L) μm (4.9 + 0.81L) μin (0.12 + 0.000 81L) μm	CMM

III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
DC Voltage – Generate ³	(0 to 219.999) mV (0.220 to 2.1999) V (2.2 to 10.9999) V (11 to 21.9999) V (22 to 219.999) V (220 to 1100) V	9.9. $\mu\text{V}/\text{V} + 0.40 \mu\text{V}$ 5.8 $\mu\text{V}/\text{V} + 0.70 \mu\text{V}$ 4.1 $\mu\text{V}/\text{V} + 2.5 \mu\text{V}$ 4.2 $\mu\text{V}/\text{V} + 4.0 \mu\text{V}$ 5.9 $\mu\text{V}/\text{V} + 40 \mu\text{V}$ 7.6 $\mu\text{V}/\text{V} + 400 \mu\text{V}$	Fluke 5720A w/ Fluke 5725A
DC Voltage – Measure ³	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V	4.2 $\mu\text{V}/\text{V} + 0.30 \mu\text{V}$ 3.2 $\mu\text{V}/\text{V} + 0.30 \mu\text{V}$ 3.3 $\mu\text{V}/\text{V} + 0.50 \mu\text{V}$ 5.2 $\mu\text{V}/\text{V} + 30 \mu\text{V}$ 5.2 $\mu\text{V}/\text{V} + 0.10 \text{ mV}$	Agilent 3458A opt 002
DC High Voltage – Measure ³	(1 to 10) kV (10 to 90) kV	0.50 % + 0.40 V 1.0 % + 4.0 V	Vitrek 4700 Vitrek 4700 w/ HL100 probe
DC Current – Generate ³	(0 to 3.29999) mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (0 to 11) A (11 to 110) A (110 to 550) A	0.015 % + 0.050 μA 0.010 % + 0.25 μA 0.010 % + 3.3 μA 0.030 % + 44 μA 0.070 % + 330 μA 1.0 % + 50 mA 1.0 % + 75 mA	Fluke 5720 w/ Fluke 5500 coil
DC Current – Measure ³	(10 to 100) μA 100 μA to 1 mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	20 $\mu\text{A}/\text{A} + 0.80 \text{ nA}$ 19 $\mu\text{A}/\text{A} + 5.0 \text{ nA}$ 17 $\mu\text{A}/\text{A} + 50 \text{ nA}$ 37 $\mu\text{A}/\text{A} + 0.50 \mu\text{A}$ 0.013 % + 10 μA	Agilent 3458A opt 002
High Current – Measure ³ DC up to 60 Hz ³	(1 to 15) A (15 to 100) A (100 to 300) A (300 to 5000) A	1.9 mA/A + 4.5 μA 290 $\mu\text{A}/\text{A} + 0.3 \text{ mA}$ 150 $\mu\text{A}/\text{A} + 0.9 \text{ mA}$ 120 $\mu\text{A}/\text{A} + 15 \text{ mA}$	Current shunt w/ 6.5 digit voltmeter

Parameter/Range	Frequency	CMC ^{2, 7} (\pm)	Comments
AC Voltage – Generate ³			
Up to 2.2 mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.028 % + 4.0 μ V 0.011 % + 4.0 μ V 91 μ V/V + 4.0 μ V 0.024 % + 4.0 μ V 0.056 % + 5.0 μ V 0.11 % + 10 μ V	Fluke 5720A
(2.2 to 22) mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.025 % + 4.0 μ V 91 μ V/V + 4.0 μ V 85 μ V/V + 4.0 μ V 0.021 % + 4.0 μ V 0.051 % + 5.0 μ V 0.11 % + 10 μ V	
(22 to 220) mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.025 % + 12 μ V 0.011 % + 7.0 μ V 0.011 % + 7.0 μ V 0.021 % + 7.0 μ V 0.047 % + 17 μ V 0.091 % + 20 μ V	
220 mV to 2.2 V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.025 % + 40 μ V 91 μ V/V + 15 μ V 46 μ V/V + 8.0 μ V 76 μ V/V + 10 μ V 0.012 % + 30 μ V 0.043 % + 80 μ V	
(2.2 to 22) V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.025 % + 400 μ V 91 μ V/V + 150 μ V 46 μ V/V + 50 μ V 76 μ V/V + 100 μ V 0.011 % + 200 μ V 0.028 % + 600 μ V	
(22 to 220) V	10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.024 % + 4.0 mV 91 μ V/V + 1.5 mV 53 μ V/V + 0.60 mV 81 μ V/V + 1.0 mV 0.016 % + 2.5 mV 0.091 % + 16 mV	
(220 to 1100) V	40 Hz to 1 kHz (1 to 20) kHz	0.014 % + 4.0 mV 0.018 % + 6.0 mV	

Parameter/Range	Frequency	CMC ^{2, 7} (\pm)	Comments
AC Voltage – Measure ³			
Up to 10 mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.030 % + 3.0 μ V 0.020 % + 1.1 μ V 0.040 % + 1.1 μ V 0.11 % + 1.1 μ V 0.51 % + 1.1 μ V 4.1 % + 2.0 μ V	Agilent 3458A opt 002
(10 to 100) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 1) MHz (1 to 2) MHz	0.0080 % + 4.0 μ V 0.0080 % + 2.0 μ V 0.016 % + 2.0 μ V 0.031 % + 2.0 μ V 0.081 % + 2.0 μ V 0.34 % + 10 μ V 1.1 % + 10 μ V 1.6 % + 10 μ V	
100 mV to 1 V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz	0.0090 % + 40 μ V 0.0070 % + 20 μ V 0.017 % + 20 μ V 0.036 % + 20 μ V 0.82 % + 20 μ V 0.31 % + 100 μ V 1.1 % + 100 μ V 1.6 % + 100 μ V	
(1 to 10) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 to 1 MHz	0.0080 % + 0.40 mV 0.0080 % + 0.20 mV 0.015 % + 0.20 mV 0.031 % + 0.20 mV 0.080 % + 0.20 mV 0.30 % + 1.0 mV 1.0 % + 1.0 mV	
(10 to 100) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.030 % + 4.0 mV 0.030 % + 2.0 mV 0.030 % + 2.0 mV 0.040 % + 2.0 mV 0.13 % + 2.0 mV	
(100 to 750) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.040 % + 4.0 mV 0.040 % + 2.0 mV 0.060 % + 2.0 mV 0.14 % + 2.0 mV 0.40 % + 2.0 mV	

Parameter/Range	Frequency	CMC ^{2,7} (±)	Comments
AC High Voltage – Measure ³			
(1 to 10) kV	60 Hz	0.90 % + 0.40 V	Vitrek 4700
(10 to 90) kV	60 Hz	1.6 % + 6.0 V	Vitrek 4700 w/ HL100 probe
AC Current – Generate ³			
(29 to 330) µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.30 % + 0.15 µA 0.15 % + 0.15 µA 0.15 % + 0.25 µA 0.28 % + 0.15 µA 1.5 % + 0.15 µA	Fluke 5720A
330 µA to 3.3 mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.24 % + 0.30 µA 0.12 % + 0.30 µA 0.12 % + 0.30 µA 0.24 % + 0.30 µA 0.72 % + 0.30 µA	
(3.3 to 33) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.24 % + 3.0 µA 0.12 % + 3.0 µA 0.11 % + 30 µA 0.24 % + 30 nA 0.74 % + 30 µA	
(33 to 330) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.24 % + 30 µA 0.12 % + 30 µA 0.11 % + 30 µA 0.24 % + 30 µA 0.72 % + 30 µA	
330 mA to 3.3 A	(10 to 45) Hz 40 Hz to 1 kHz (1 to 5) kHz	0.24 % + 300 µA 0.12 % + 300 µA 0.40 % + 2.0 mA	
(2.2 to 11) A	(45 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz	0.080 % + 2.0 mA 0.12 % + 2.0 mA 0.40 % + 2.0 mA	
(11 to 110) A (110 to 550) A	50 Hz 50 Hz	1.3 % + 1.9 mA 0.66 % + 1.1 A	Fluke 5720 w/ 50 turn coil

Parameter/Range	Frequency	CMC ^{2,7} (±)	Comments
AC Current – Measure ³			
(5 to 100) μA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5kHz	0.45 % + 0.030 μA 0.17 % + 0.030 μA 0.070 % + 0.030 μA 0.10 % + 0.003 μA	Agilent 3458A opt 002
(1 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.47 % + 20 μA 0.18 % + 20 μA 0.080 % + 20 μA 0.050 % + 20 μA 0.080 % + 20 μA 0.50 % + 40 μA 0.70 % + 150 μA	
1 A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.47 % + 200 μA 0.19 % + 200 μA 0.10 % + 200 μA 0.12 % + 200 μA 0.37 % + 20 μA 1.2 % + 40 μA	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Resistance – Generate ³	(0 to 10.999) Ω (11 to 32.999) Ω (33 to 109.999) Ω (110 to 329.999) Ω (0.330 to 1.099 99) kΩ (1.1 to 3.299 99) kΩ (3.3 to 10.9999) kΩ (11 to 32.9999) kΩ (33 to 109.999) kΩ (110 to 329.999) kΩ	0.014 % + 8.0 mΩ 0.014 % + 15 mΩ 0.14 % + 15 mΩ 0.11 % + 15 mΩ 0.12 % + 60 mΩ 0.11 % + 60 mΩ 0.12 % + 600 mΩ 0.11 % + 600 mΩ 0.13 % + 6.0 Ω 0.15 % + 6.0 Ω	Fluke 5500A, 4-wire
	(0.33 to 1.099 99) MΩ (1.1 to 3.299 99) MΩ (3.3 to 10.9999) MΩ (11 to 32.9999) MΩ (33 to 109.999) MΩ	0.20 % + 55 Ω 0.20 % + 55 Ω 0.70 % + 550 Ω 1.4 % + 550 Ω 5.9 % + 5.5 kΩ	Fluke 5500A, 2-wire

Parameter/Equipment	Range	CMC ^{2, 7} (±)	Comments
Resistance – Generate (Fixed Points) ³	0 Ω 1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1.0 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	51 μΩ 110 μΩ 110 μΩ 280 μΩ 550 μΩ 1.3 mΩ 2.3 mΩ 9.9 mΩ 19 mΩ 99 mΩ 190 mΩ 1.3 Ω 2.5 Ω 24 Ω 47 Ω 470 Ω 1.1 kΩ 12 kΩ	Fluke 5720A
	1 Ω 10 Ω 100 Ω 10 kΩ	6.0 μΩ 60 μΩ 590 μΩ 48 mΩ	Fluke 742A1 Fluke 742A-10 Fluke 742A-100 Fluke 742A-10 k
Resistance – Measure ³	(0 to 10) Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	18 μΩ/Ω + 50 μΩ 13 μΩ/Ω + 500 μΩ 11 μΩ/Ω + 500 μΩ 11 μΩ/Ω + 50 mΩ 16 μΩ/Ω + 2.0 Ω 53 μΩ/Ω + 100 Ω 0.070 % + 1.0 kΩ	Agilent 3458A opt 002
Capacitance – Generate ³	(0.33 to 0.499) nF (0.5 to 1.0999) nF (1.1 to 3.2999) nF (3.3 to 10.999) nF (11 to 32.999) nF (33 to 109.99) nF (110 to 329.99) nF (0.33 to 1.0999) μF (1.1 to 3.2999) μF (3.3 to 10.999) μF (11 to 32.999) μF (33 to 109.99) μF (110 to 329.99) μF 330 μF to 1.1 mF	0.58 % + 0.010 nF 0.58 % + 0.010 nF 0.61 % + 0.010 nF 0.58 % + 0.010 nF 0.33 % + 0.10 nF 0.29 % + 0.10 nF 0.27 % + 0.30 nF 0.29 % + 1.0 nF 0.41 % + 3.0 nF 0.41 % + 10 nF 0.47 % + 30 nF 0.58 % + 100 nF 0.94 % + 300 nF 1.2 % + 300 nF	Fluke 5500A

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouples and Thermocouple Indicating Systems ³			
Type B	(600 to 800) °C (800 to 1000) °C (1000 to 1550) °C (1550 to 1820) °C	0.59 °C 0.45 °C 0.39 °C 0.39 °C	Fluke 5500A
Type C	(0 to 150) °C (150 to 650) °C (650 to 1000) °C (1000 to 1800) °C (1800 to 2316) °C	0.37 °C 0.32 °C 0.38 °C 0.59 °C 0.97 °C	
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.57 °C 0.19 °C 0.16 °C 0.18 °C 0.24 °C	
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.31 °C 0.19 °C 0.16 °C 0.20 °C 0.27 °C	
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.37 °C 0.21 °C 0.19 °C 0.30 °C 0.46 °C	
Type L	(-200 to -100) °C (-100 to 800) °C (800 to 900) °C	0.43 °C 0.30 °C 0.20 °C	
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.45 °C 0.27 °C 0.22 °C 0.21 °C 0.31 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.70 °C 0.43 °C 0.40 °C 0.43 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouples and Thermocouple Indicating Systems ³ (cont)			
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	0.58 °C 0.44 °C 0.44 °C 0.51 °C	Fluke 5500A
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.70 °C 0.28 °C 0.19 °C 0.16 °C	
Type U	(-200 to 0) °C (0 to 600) °C	0.65 °C 0.31 °C	
Electrical Calibration of RTD Indicating Systems ³ –			
Pt 395, 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	0.060 °C 0.060 °C 0.090 °C 0.11 °C 0.12 °C 0.14 °C 0.26 °C	Fluke 5500A
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	0.060 °C 0.060 °C 0.090 °C 0.10 °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 0.050 °C 0.060 °C 0.070 °C 0.090 °C 0.090 °C 0.10 °C 0.12 °C 0.26 °C	

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Electrical Calibration of RTD Indicating Systems 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	0.050 °C 0.050 °C 0.050 °C 0.060 °C 0.15 °C 0.17 °C 0.18 °C 0.19 °C	Fluke 5500A
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	0.050 °C 0.070 °C 0.070 °C 0.080 °C 0.10 °C 0.10 °C 0.10 °C 0.12 °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	0.040 °C 0.040 °C 0.050 °C 0.070 °C 0.070 °C 0.090 °C 0.090 °C 0.27 °C	
PtNi 385, 120 Ω (Ni120)	(-80 to 0) °C (0 to 100) °C (100 to 260) °C	0.10 °C 0.10 °C 0.17 °C	
Cu 427, 10 Ω	(-100 to 260) °C	0.35 °C	
Radar Guns (Fixed Points) ³			
K and KA Band	25.3 MPH	2.4 MPH	Tuning forks
K and KA Band	40.3 MPH	2.4 MPH	
KA Band	55.3 MPH	2.4 MPH	
Welding Devices ³	(0 to 350) ADC (0 to 100) VDC	1.0 % 0.05 VDC	Loadbank and DMM

IV. Mechanical

Parameter/Equipment	Range	CMC ^{2, 6, 8} (±)	Comments
Pressure ³ – Measure	Up to 4000 psi (2000 to 20 000) psi (4000 to 40 000) psi	(0.03 + 0.000 015 × a) psi (0.04 + 0.000 029 × a) psi (0.06 + 0.000 043 × a) psi	Deadweight tester
	Up to 5 psi (5 to 50) psi (50 to 500) psi	(0.0013 + 0.000 013 × a) psi (0.0011 + 0.000 014 × a) psi (0.0045 + 0.000 017 × a) psi	Primary pressure standard a = applied pressure at the calibration value
Pressure – Measuring Equipment ³	(0 to 1) psi (0 to 5) psi (0 to 50) psi (0 to 100) psi (0 to 300) psi	0.0016 psi 0.0041 psi 0.0089 psi 0.019 psi 0.036 psi	Multifunction calibrator
	Up to 10 000 psi	0.16 % of range	Deadweight tester
Vacuum – Measuring Equipment ³	(-30 to 0) in Hg	0.030 in Hg	Multifunction calibrator
Force Gages ³ – Tension and Compression (Force Gages, Dynamometers, etc.)	(0 to 5) lbf (0 to 25) lbf (0 to 50) lbf (0 to 200) lbf (0 to 500) lbf	0.033 lbf 0.033 lbf 0.053 lbf 0.14 lbf 0.39 lbf	Weights
	(0 to 10 000) lbf	0.0014 % IV	Moorehouse load cell
Torque Wrenches ³	Up to 2000 ft·lbf	0.76 % of indicated value	Torque transducers
Torque Transducers	(20 to 200) in·ozf (0 to 50) in·lbf (50 to 250) in·lbf (250 to 1000) in·lbf (0 to 250) ft·lbf (250 to 2000) ft·lbf	0.23 % 0.81 % 0.18 % 0.051 % 0.20 % 0.075 %	Torque arms, weights

Parameter/Equipment	Range	CMC ² (±)	Comments
Scales ³	(50 to 500) lb	0.98 lb	ASTM Class F weights
Scales and Balances ³	(10 to 100) mg (100 to 500) mg (1 to 5) g 10 g 20 g 50 g 100 g 200 g 500 g	0.35 mg 0.35 mg 0.34 mg 0.31 mg 0.32 mg 1.7 mg 3.0 mg 3.1 mg 3.5 mg	ASTM Class 4 weights

Parameter/Equipment	Range	CMC ² (±)	Comments
Indirect Verification of Rockwell Hardness Testers ³	HRA:		Master hardness test blocks using in-house procedure (Note: this CAB does not meet ASTM E18)
	(60 to 69) HRA	0.78 HRA	
	(70 to 79) HRA	0.43 HRA	
	(80 to 93) HRA	0.38 HRA	
	HRB:		
	(1 to 50) HRB	0.73 HRB	
	(51 to 79) HRB	0.93 HRB	
	(80 to 130) HRB	0.95 HRB	
	HRC:		
	(20 to 39) HRC	0.60 HRC	
	(40 to 59) HRC	0.61 HRC	
	(60 to 70) HRC	0.75 HRC	
	HR30N:		
	(40 to 59) HR30N	0.56 HR30N	
	(60 to 76) HR30N	0.65 HR30N	
	(77 to 85) HR30N	0.67 HR30N	
	HR30T:		
	(20 to 49) HR30T	0.50 HR30T	
	(50 to 56) HR30T	0.48 HR30T	
	(57 to 85) HR30T	0.48 HR30T	
	HR15N:		
	(40 to 79) HR15N	0.59 HR15N	
	(80 to 89) HR15N	0.46 HR15N	
	(90 to 95) HR15N	0.44 HR15N	
HR15T:			
(20 to 79) HR15T	0.57 HR15T		
(80 to 87) HR15T	0.45 HR15T		
(88 to 100) HR15T	0.36 HR15T		
HR45N:			
(10 to 49) HR45N	0.94 HR45N		
(50 to 66) HR45N	0.42 HR45N		
(67 to 75) HR45N	0.75 HR45N		
HR45T:			
(1 to 39) HR45T	0.64 HR45T		
(40 to 49) HR45T	0.71 HR45T		
(50 to 75) HR45T	0.98 HR45T		

Parameter/Equipment	Range	CMC ² (±)	Comments
Indirect Verification of Brinell Hardness Testers at Test Conditions ³ – HBW 5/750 HBW 10/3000	(200 to 400) HBW (400 to 750) HBW	15 HBW 21 HBW	Master hardness test blocks using an in- house procedure (Note: this CAB does not meet ASTM E10)
Indirect Verification of Vickers Hardness Testers ³ (@ 500 gf)	(200 to 400) HV (400 to 750) HV	5.9 HV 7.4 HV	Master hardness test blocks using in- house procedure (Note: this CAB does not meet ASTM E384)
Indirect Verification of Knoop Hardness Testers ³ (@ 500 gf)	(100 to 200) HK (300 to 400) HK (500 to 600) HK	2.1 HK 4.0 HK 6.1 HK	Master hardness test blocks using an in- house procedure (Note: this CAB does not meet ASTM E384)
Mass	1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 lb 2 lb 5 lb 10 lb 20 lb 50 lb	0.34 mg 0.33 mg 0.32 mg 0.31 mg 0.32 mg 0.32 mg 0.33 mg 3.1 mg 3.5 mg 0.0020 oz 0.0020 oz 0.0020 oz 0.014 oz 0.014 oz 0.014 oz	ASTM Class 6 and 7 weights

V. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 4, 6, 8} (±)	Comments
Relative Humidity – Measuring Equipment, Fixed Points ³	11 % RH 33 % RH 53 % RH 75.5 % RH 90 % RH	1.4 % RH	Rotronic HygroPalm/ saturated salts
Relative Humidity – Measure ³	(10 to 90) % RH	1.4 % RH	Rotronic HygroPalm
Temperature – Measuring Equipment, Glass Thermometers ³	(-50 to 500) °C	0.20 °C	Dry block w/ RTD
Temperature / Humidity Recorders ³	(-73 to 190) °C (11 to 90) % RH	0.45 °C 1.4 % RH	Temperature meter, Rotronic HygroPalm
Temperature- Measure Ovens, Furnaces, and Freezers ³	(-50 to 500) °C	0.20 °C	RTD w/ indicator
Temperature – IR Measuring Equipment ³	(50 to 500) °C	$(0.77 + 0.007T)$ °C	Fluke 9132

VI. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 6, 8} (±)	Comments
Tachometers	Up to 10 000 RPM	0.18 %	Function generator
Stop Watches/Time Measurement ³	Up to 24 hours	0.35 s 0.04 s	Comparison Totalize w/GPS

Parameter/Equipment	Range	CMC ^{2, 6, 8} (\pm)	Comments
Frequency – Measuring Equipment	10 Hz to 20.999 999 MHz (21 to 60.999 999) MHz	2.0 parts in 10 ⁶ Hz/Hz 4.0 parts in 10 ⁸ Hz/Hz	HP 3325A sync w GPS
Fixed Point	10 MHz	6.0 parts in 10 ¹¹ Hz/Hz	Novis NR2310 GPS
Frequency – Measure ³	0.01 Hz to 100 MHz	4.0 parts in 10 ⁸ Hz/Hz	HP 5334B

¹ This laboratory offers commercial dimensional testing/calibration and on-site calibration services.

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 and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the 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 actual 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, L is the numerical value of the nominal length of the device measured in inches or millimeters. DL is the diagonal length in inches or millimeters. R is the resolution of the unit under test. D is the numerical value of the nominal diameter of the device measured in inches or millimeters. Pitch diameter is measured by the three-wire method. Major diameter is calibrated by direct measurement. In the statement of CMC, T indicates temperature in degrees Celsius. In the statement of CMC, H is the Humidity of the reading.

⁵ This laboratory meets R205 – *Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above and is considered equivalent to that of a calibration.

⁶ In the statement of CMC, a percent refers to a percentage of reading unless otherwise noted.

⁷ 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. CMC's 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.

⁸ 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.

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



Accredited Laboratory

A2LA has accredited

MSI-VIKING GAGE, LLC.

Duncan, SC

for technical competence in the field of

Calibration

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 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 16th day of October 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1387.01
Valid to September 30, 2021
Revised July 8, 2020

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