



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

WESCAN CALIBRATION
 2228 Pegasus Way NE
 Calgary, AB T2E 8M5, Canada
 Malcolm Smith Phone: 604 275 0600

CALIBRATION

Valid until: January 31, 2013

Certificate Number: 1500.03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Length Standards	(1 to 24) in	(4 + 7L) μin	Gage blocks, gauging head/amplifier
Flatness – Surface Plate ³ (Grading is based on Flatness Only)	12 in × 12 in to 12 ft × 12 ft	70 μin	Electronic leveling
Crimp Tools	(0.011 to 0.25) in Above 0.25 in	0.0003 in 0.0013 in	Pin Gages, supermicrometer, digital caliper

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Height Gauges ³	Up to 24in	(66 + 5.3L) μin	Gage blocks
Calipers ³	Up to 60 in	(9 + 6.2L) μin	Gage blocks
Micrometers (OD) ³	Up to 80 in	(35 + 5.6L) μin	Gage blocks
Indicators ³	(0.1 to 1) in (1 to 3) in	(21 + 8L) μin (53 + L) μin	Gage blocks
Dial Indicator Calibrators	Up to 2 in	60 μin	Gage blocks
Gauge Head/Amplifier	(0.0001 to 0.2) in	5 μin	Gage blocks
Step Gauges	Up to 40 in	(2 + 7.2L) μin	Gage blocks
ID Instruments –ID Micrometers ³	(2 to 24) in	(110 + 4.4L) μin	Gage blocks, gauging head/amplifier
Depth Micrometers ³	(0 to 12) in	(46 + 4.4L) μin	Gage blocks
Thickness Gauges	(0.001 to 1) in	55 μin	Gage blocks
Precision Levels	Up to 72 in	10 μin/in	Sine bar, gage blocks
Protractors	(0 to 10) degrees (10 to 90) degrees	0.06 degrees 0.13 degrees	Sine bar, gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
DC Voltage – Measure and Generate ³	Range (0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	12 µV/V + 0.04 µV 12 µV/V + 0.35 µV 12 µV/V + 0.6 µV 12 µV/V + 35 µV 18 µV/V + 120 µV	Fluke 5520A w/ HP 3458A
	Measure Only (1 to 6) kV (6 to 20) kV (20 to 35) kV (35 to 40) kV	0.015 % rdg 3 % rdg 1.5 % rdg 3 % rdg	Fluke 80K-6 w/ Fluke multimeter Fluke 80K-40 w/ Fluke multimeter
DC Current – Measure and Generate ³	(0 to 100) nA 100 nA to 1 µA 1 µA to 10 µA 10 µA to 100 µA 100 µA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	53 µA/A + 0.05 nA 36 µA/A + 0.05 nA 32 µA/A + 0.12 nA 32 µA/A + 0.9 nA 32 µA/A + 6 nA 32 µA/A + 60 nA 32 µA/A + 600 nA 0.014 % rdg + 12 µA	Fluke 5520A w/ HP 3458A
	Measure Only (1 to 0.5) A (0.5 to 20) A	0.007 % rdg 0.02 % rdg	Fluke 5520A w/ Fluke Y5020 and HP 3458A
	Generate Only (20 to 1000) A	0.03 % rdg 0.7 % rdg + 0.6 A	High current shunts, HP 3458A Fluke 5520A w/ Fluke 5500A/coil

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of RTD Indicators and Indicating Systems ³ – (cont)			
Pt 395 only	630 °C to 800 °C	0.21 °C	Fluke 5520A
Pt 3916, 100 Ω	-200 °C to -190 °C	0.23 °C	
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 100 °C	0.05 °C	
	100 °C to 260 °C	0.06 °C	
	260 °C to 300 °C	0.07 °C	
	300 °C to 400 °C	0.08 °C	
	400 °C to 600 °C	0.09 °C	
Pt 385, 200 Ω	600 °C to 630 °C	0.21 °C	
	-200 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.11 °C	
	300 °C to 400 °C	0.12 °C	
Pt 385, 500 Ω	400 °C to 600 °C	0.13 °C	
	600 °C to 630 °C	0.14 °C	
	-200 °C to -80 °C	0.04 °C	
	-80 °C to 260 °C	0.05 °C	
	260 °C to 400 °C	0.07 °C	
Pt 385, 1000 Ω	400 °C to 600 °C	0.08 °C	
	600 °C to 630 °C	0.1 °C	
	-200 °C to 0 °C	0.03 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 300 °C	0.05 °C	
PtNi 385, 120 Ω	300 °C to 600 °C	0.06 °C	
	600 °C to 630 °C	0.21 °C	
PtNi 385, 120 Ω	-80 °C to 100 °C	0.07 °C	
	100 °C to 260 °C	0.13 °C	
Cu 427, 10 Ω	-100 °C to 260 °C	0.27 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicators and Indicating Systems ³ –			
Type B	600 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1550 °C 1550 °C to 1820 °C	0.40 °C 0.30 °C 0.30 °C 0.30 °C	Fluke 5520A
Type C	0 °C to 150 °C 150 °C to 650 °C 650 °C to 1000 °C 1000 °C to 1800 °C 1800 °C to 2316 °C	0.27 °C 0.27 °C 0.28 °C 0.40 °C 0.70 °C	
Type E	-250 °C to -100 °C -100 °C to -25 °C -25 °C to 350 °C 350 °C to 650 °C 650 °C to 1000 °C	0.42 °C 0.14 °C 0.13 °C 0.16 °C 0.18 °C	
Type J	-210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.42 °C 0.18 °C 0.16 °C 0.15 °C 0.18 °C	
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.28 °C 0.18 °C 0.15 °C 0.22 °C 0.33 °C	
Type L	-200 °C to -100 °C -100 °C to 800 °C 800 °C to 900 °C	0.34 °C 0.25 °C 0.19 °C	
Type N	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 410 °C 410 °C to 1300 °C	0.36 °C 0.20 °C 0.19 °C 0.18 °C 0.25 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicators and Indicating Systems ³ – (cont)			Fluke 5520A
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.50 °C 0.34 °C 0.29 °C 0.34 °C	
Type S	0 °C to 250 °C 250 °C to 1000 °C 1000 °C to 1400 °C 1400 °C to 1767 °C	0.50 °C 0.31 °C 0.31 °C 0.39 °C	
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.54 °C 0.20 °C 0.16 °C 0.13 °C	
Type U	-200 °C to 0 °C 0 °C to 600 °C	0.51 °C 0.26 °C	
Thermistors	-40 °C to 150 °C	0.03 °C + 0.004 °C 0.006 °C + 0.005 °C 0.008 °C + 0.0006 °C	Decade Resistors

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Voltage – Generate ³ (1 to 33) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.072 % rdg + 5.5 µV 0.014 % rdg + 5.5 µV 0.018 % rdg + 5.5 µV 0.09 % rdg + 5.5 µV 0.31 % rdg + 11 µV 0.72 % rdg + 45 µV	Fluke 5520A

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Voltage – Generate ³ (cont)			
(33 to 330) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.027 % rdg + 7.2 μV 0.012 % rdg + 7.2 μV 0.014 % rdg + 7.2 μV 0.032 % rdg + 7.2 μV 0.072 % rdg + 29 μV 0.18 % rdg + 63 μV	Fluke 5520A
330 mV to 3.3 V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.027 % rdg + 45 μV 0.011 % rdg + 23 μV 0.017 % rdg + 45 μV 0.027 % rdg + 45 μV 0.063 % rdg + 110 μV 0.22 % rdg + 540 μV	
(3.3 to 33) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.027 % rdg + 590 μV 0.014 % rdg + 180 μV 0.022 % rdg + 540 μV 0.032 % rdg + 540 μV 0.081 % rdg + 1.5 mV	
(33 to 330) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.017 % rdg + 1.8 mV 0.018 % rdg + 5.4 mV 0.023 % rdg + 5.4 mV 0.027 % rdg + 5.4 mV 0.18 % rdg + 45 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.027 % rdg + 9 mV 0.023 % rdg + 9 mV 0.027 % rdg + 9 mV	
AC Voltage – Measure ³			
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	0.049 % rdg + 3.5 μV 0.032 % rdg + 1.3 μV 0.049 % rdg + 1.3 μV 0.14 % rdg + 1.3 μV 0.64 % rdg + 1.3 μV 4.9 % rdg + 2.3 μV	HP 3458A

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Voltage – Measure ³ (cont)			HP 3458A
(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 kHz to 1 MHz (1 to 2) MHz	0.01 % rdg + 5 μV 0.01 % rdg + 2.3 μV 0.017 % rdg + 2.3 μV 0.037 % rdg + 2.3 μV 0.096 % rdg + 2.3 μV 0.37 % rdg + 12 μV 1.3 % rdg + 12 μV 1.9 % rdg + 12 μV	
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	90 μV/V + 50 μV 90 μV/V + 23 μV 0.017 % rdg + 23 μV 0.036 % rdg + 23 μV 0.092 % rdg + 23 μV 0.35 % rdg + 120 μV 1.2 % rdg + 120 μV 1.8 % rdg + 120 μV	
(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 kHz to 1 MHz (1 to 2) MHz	0.009 % rdg + 500 μV 0.009 % rdg + 230 μV 0.017 % rdg + 230 μV 0.035 % rdg + 230 μV 0.092 % rdg + 230 μV 0.35 % rdg + 1.2 mV 1.2 % rdg + 1.2 mV 1.8 % rdg + 1.2 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 (100 to 300) kHz 300 kHz to 1 MHz	0.024 % rdg + 4.6 mV 0.024 % rdg + 2.3 mV 0.024 % rdg + 2.3 mV 0.04 % rdg + 2.3 mV 0.14 % rdg + 2.3 mV 0.46 % rdg + 12 mV 1.8 % rdg + 12 mV	

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Voltage – Measure ³ (cont)			
(100 to 1000) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.047 % rdg + 46 mV 0.047 % rdg + 23 mV 0.069 % rdg + 23 mV 0.14 % rdg + 23 mV 0.35 % rdg + 23 mV	HP 3458A
(1 to 5) kV	60 Hz	0.5 % rdg	
AC Current – Measure ³			Fluke 80K6 w/Fluke 87
(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 (10 to 30) kHz	0.18 % rdg + 0.09 µA 0.14 % rdg + 0.09 µA 0.12 % rdg + 0.09 µA 0.27 % rdg + 0.14 µA 0.72 % rdg + 0.18 µA 1.5 % rdg + 0.36 µA	
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 (10 to 30) kHz	0.18 % rdg + 0.14 µA 0.12 % rdg + 0.14 µA 0.09 % rdg + 0.14 µA 0.18 % rdg + 0.18 µA 0.45 % rdg + 0.27 µA 0.90 % rdg + 0.54 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 (10 to 30) kHz	0.16 % rdg + 1.8 µA 0.08 % rdg + 1.8 µA 0.04 % rdg + 1.8 µA 0.07 % rdg + 1.8 µA 0.18 % rdg + 2.7 µA 0.36 % rdg + 3.6 µA	

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Current – Generate ³			
(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 (10 to 30) kHz	0.16 % rdg + 18 µA 0.08 % rdg + 18 µA 0.04 % rdg + 18 µA 0.09 % rdg + 45 µA 0.18 % rdg + 90 µA 0.36 % rdg + 180 µA	Fluke 5520A
330 mA to 1.1 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.16 % rdg + 90 µA 0.05 % rdg + 90 µA 0.54 % rdg + 900 µA 2.3 % rdg + 4500 µA	
(1.1 to 3) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.16 % rdg + 90 µA 0.06 % rdg + 90 µA 0.12 % rdg + 230 µA 0.35 % rdg + 230 µA	
(3 to 20) A	45 Hz to 5 kHz	0.012 % rdg	w/HP 3458A, Fluke Y5020
(20 to 1000) A	(45 to 440) Hz	0.7 % rdg + 0.6 A	w/Fluke 5500A/coil
Capacitance – Generate ³			
(0.19 to 0.4) nF (0.4 to 1.1) nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 µF (1.1 to 3.3) µF (3.3 to 11) µF (11 to 33) µF (33 to 110) µF (110 to 330) µF 330 µF to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 300) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz (0 to 50) Hz (0 to 20) Hz (0 to 6) Hz (0 to 2) Hz (0 to 0.6) Hz (0 to 0.2) Hz	0.45 % rdg + 0.009 nF 0.45 % rdg + 0.009 nF 0.45 % rdg + 0.009 nF 0.23 % rdg + 0.009 nF 0.23 % rdg + 0.09 nF 0.23 % rdg + 0.09 nF 0.23 % rdg + 0.27 nF 0.23 % rdg + 0.9 nF 0.23 % rdg + 2.7 nF 0.23 % rdg + 9.0 nF 0.36 % rdg + 27 nF 0.41 % rdg + 90 nF 0.41 % rdg + 270 nF 0.41 % rdg + 0.9 µF 0.41 % rdg + 2.7 µF 0.41 % rdg + 9 µF 0.68 % rdg + 27 µF 0.99 % rdg + 90 µF	Fluke 5520A

Parameter/Range	Frequency	CMC ² (±)	Comments
DC Power ³ – 33 mV to 1020 V	(0.33 to 100) mA (100 to 330) mA 330 mA to 3 A (3 to 21) A	0.005 % rdg 0.018 % rdg 0.02 % rdg 0.02 % rdg	Fluke 5520A
AC Current – Measure ³ To 100 µA 100 µA to 1 mA (1 to 10) mA (10 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (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 (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 (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	0.46 % rdg + 0.035 µA 0.17 % rdg + 0.035 µA 0.07 % rdg + 0.035 µA 0.07 % rdg + 0.035 µA 0.46 % rdg + 0.23 µA 0.17 % rdg + 0.23 µA 0.07 % rdg + 0.23 µA 0.038 % rdg + 0.23 µA 0.07 % rdg + 0.23 µA 0.46 % rdg + 0.46 µA 0.63 % rdg + 1.7 µA 0.46 % rdg + 2.3 µA 0.17 % rdg + 2.3 µA 0.07 % rdg + 2.3 µA 0.038 % rdg + 0.23 µA 0.07 % rdg + 2.3 µA 0.46 % rdg + 4.6 µA 0.63 % rdg + 17 µA 0.46 % rdg + 23 µA 0.17 % rdg + 23 µA 0.07 % rdg + 23 µA 0.038 % rdg + 23 µA 0.07 % rdg + 23 µA 0.46 % rdg + 46 µA 0.63 % rdg + 170 µA	HP 3458A

Parameter/Range	Frequency	CMC ² (±)	Comments
AC Current – Measure ³ (cont)			
100 mA to 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	0.46 % rdg + 230 μA 0.18 % rdg + 230 μA 0.09 % rdg + 230 μA 0.12 % rdg + 230 μA 0.35 % rdg + 230 μA 1.2 % rdg + 460 μA	HP 3458A
(1 to 20) A	1 Hz to 5 kHz	0.012 % rdg	w/Fluke Y5020 shunt

Parameter/Range	Frequency	CMC ² (±)	Comments
Distortion (THD)	20 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.013 % of rdg 0.037 % of rdg 0.065 % of rdg	HP 8903A
Oscilloscopes ³ –			Fluke 5520A/SC1100
DC and square wave	Into 50 Ω	0.2 % rdg + 32 μV	
DC only	Into 1 MΩ	0.04 % rdg + 32 μV	
Square wave	Into 1 MΩ	0.09 % rdg + 32 μV	
Leveled sine wave	50 kHz reference	1.7 % rdg + 240 μV	
	Relative to 50 kHz reference		
	50 kHz to 100 MHz	1.3 % rdg + 80 μV	
	(100 to 300) MHz	1.7 % rdg + 80 μV	
	(300 to 600) MHz	3.3 % rdg + 80 μV	
	(600 to 1100) MHz	4.5 % rdg + 80 μV	
Time marker	5 s to 50 ms 20 ms to 100 ns 50 ns to 20 ns 10 ns 5 ns to 2 ns	0.0002 % rdg 0.0002 % rdg 0.0002 % rdg 0.0002 % rdg 0.0002 % rdg	

III. Electrical – Microwave/RF

Parameter/Range	Frequency	CMC ² (±)	Comments
Relative Power – (0 to -10) dBm (-10 to -20) dBm (-20 to -30) dBm (-30 to -40) dBm (-40 to -50) dBm (-50 to -60) dBm (-60 to -70) dBm (-70 to -80) dBm (-80 to -90) dBm (-90 to -100) dBm (-100 to -110) dBm (-110 to -120) dBm	10 MHz to 26.5 GHz	0.028 dB 0.041 dB 0.044 dB 0.075 dB 0.087 dB 0.093 dB 0.11 dB 0.12 dB 0.16 dB 0.17 dB 0.19 dB 0.20 dB	HP 8902A with 11793A, 11722A and 11792A
Absolute Power – (20 to 30) dBm (10 to 20) dBm (0 to 10) dBm (-10 to 0) dBm (-20 to -10) dBm	<2.6 GHz >2.6 GHz <2.6 GHz >2.6 GHz <2.6 GHz >2.6 GHz <2.6 GHz >2.6 GHz	3.3 % rdg 4.8 % rdg 3.3 % rdg 4.8 % rdg 1.3 % rdg 3.8 % rdg 1.3 % rdg 3.8 % rdg 1.4 % rdg 3.8 % rdg	HP 8902A with 11793A HP 11722A HP 11792A
High Power RF – 1000 W	25 MHz to 1 GHz	67 W	Bird 4421 with 4022
Amplitude Modulation Carrier: 150 kHz to 10 MHz Depth: up to 99 % Carrier: (0.1 to 1.3) GHz Depth: Up to 99 %	(20 to 50) Hz (0.05 to 100) kHz (20 to 50) Hz (0.05 to 100) kHz	3.0 % rdg 2.0 % rdg 1.1 % rdg 3.0 % rdg	HP 8902A

Parameter/Range	Frequency	CMC ² (±)	Comments
Frequency Modulation Carrier: (0.25 to 10) MHz Dev: Up to 40 kHz Carrier: (0.01 to 1.3) GHz Dev: Up to 400 kHz	(0.02 to 10) kHz (20 to 50) Hz (0.05 to 100) kHz (100 to 200) kHz	2.3 % rdg 5.8 % rdg 1.2 % rdg 5.8 % rdg	HP 8902A
Phase Modulation Carrier (0.15 to 10) MHz Carrier (0.01 to 1.3) GHz	(0.2 to 10) kHz (0.2 to 20) kHz	4.7 % rdg 3.5 % rdg	HP 8902A

IV. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Force – Measure and Measuring Equipment ³	(0 to 450) lbf	0.05 % rdg	Dead weight
Scales and Balances ³	1 mg to 4 g 4 g to 6.1 kg (6.1 to 200) kg	0.22 mg + 0.6R 0.0004 % rdg + 0.6R 0.006 % rdg + 0.6R	Class F weights
Torque – Measure and Measuring Equipment ³	4 in·lb to 600 ft·lb	0.3 % rdg	CDI torque system
Pressure/Vacuum – Measure and Measuring Equipment ³	(15 to 10 000) psig	0.12 % rdg	Digital pressure gauges and pressure pump

V. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Temperature ³ – Measure and Measuring Equipment	-200 °C to -20 °C Ice Point 0 °C to 100 °C	0.03 °C 0.01 °C 0.08 °C	Hart 5614, HP 3458A ASTM E563 ice point, Hart 5614, HP 3458A RTE-5B, Hart 5614, HP3458A
Relative Humidity – Measure and Measuring Equipment ³	10 % to 90 % RH 90 % to 95 % RH	1.3 % rdg 2.5 % rdg	Vaisala M170/HMP77B

VI. Time and Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Frequency – Measure and Measuring Equipment			
Laboratory	0.001 Hz to 26.5 GHz	5 parts in 10 ¹²	GPS HP Z3801A
Field ³	0.001 Hz to 26.5 GHz	2 parts in 10 ⁹	Rubidium clock, PTB-100

¹ This laboratory offers commercial calibration service and field calibration service, where noted.

² Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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; D is the numerical value of the nominal diameter of the device measured in inches



The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

WESCAN CALIBRATION

Calgary, AB, Canada

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. 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 8 January 2009*).

Presented this 15th day of February 2011.





Peter Abney

President & CEO
For the Accreditation Council
Certificate Number 1500.03
Valid to January 31, 2013

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