



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

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CALIBRATION

Valid To: January 31, 2013

Certificate Number: 1577.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1</sup>:

I. Dimensional

Equipment	Range	CMC <sup>2</sup> (±)	Comments
Calipers <sup>3</sup> Micrometers <sup>3</sup> Indicators <sup>3</sup> Height Gages <sup>3</sup>	(0.050 to 12) in (0.050 to 12) in (0.050 to 1) in (0.050 to 24) in	430 μin + 0.34 μin/in 52 μin + 5.4 μin/in 16 μin 570 μin + 1.6 μin/in	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments
DC Voltage – Generate <sup>3</sup>	(0 to 220) mV (0.22 to 2.2) V (2.2 to 11) V (11 to 22) V (22 to 220) V (220 to 1100) V	8 μV/V + 0.4 μV 8 μV/V + 1.3 μV 8 μV/V + 6 μV 8 μV/V + 8 μV 9.1 μV/V + 130 μV 10 μV/V + 1.3 mV	Fluke 5700A

Parameter/Equipment	Range	CMC <sup>2,5,6</sup> ( $\pm$ )	Comments
DC Voltage – Measure <sup>3</sup>	(1 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V (1 to 60) kV	11 $\mu$ V/V + 0.6 $\mu$ V 8 $\mu$ V/V + 0.8 $\mu$ V 8 $\mu$ V/V + 0.7 $\mu$ V 11 $\mu$ V/V + 69 $\mu$ V 18 $\mu$ V/V + 340 $\mu$ V 3.6 mV/V + 1 V	Agilent 3458A opt 002  Ross VD-60 w/DMM
DC Current – Measure <sup>3</sup>	(1 to 100) $\mu$ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A  (1 to 20) A	21 $\mu$ A/A + 920 pA 19 $\mu$ A/A + 6.9 nA 21 $\mu$ A/A + 52 nA 35 $\mu$ A/A + 520 nA 0.012 % + 19 $\mu$ A  48 $\mu$ A/A + 1.7 mA	Agilent 3458A opt 002  Agilent 3458A, Fluke Y5020A
DC Current – Generate <sup>3</sup>	Up to 2.2 mA (2.2 to 22) mA (22 to 220) mA (0.22 to 2.2) A (2.2 to 11) A	52 $\mu$ A/A + 24 nA 53 $\mu$ A/A + 230 nA 67 $\mu$ A/A + 1.6 $\mu$ A 88 $\mu$ A/A + 42 $\mu$ A 0.042 % + 560 $\mu$ A	Fluke 5700A  Fluke 5700A/5725A
Clamp Meters	(10 to 500) A	0.26 % + 0.05 A	Fluke 5500A w/coil
Resistance – Measure <sup>3</sup>	(0.01 to 10) $\Omega$ (10 to 100) $\Omega$ (0.1 to 1) k $\Omega$ (1 to 10) k $\Omega$ (10 to 100) k $\Omega$ (0.1 to 1) M $\Omega$ (1 to 10) M $\Omega$ (10 to 100) M $\Omega$ (0.1 to 1) G $\Omega$	14 $\mu\Omega/\Omega$ + 150 $\mu\Omega$ 16 $\mu\Omega/\Omega$ + 0.6 m $\Omega$ 15 $\mu\Omega/\Omega$ + 0.6 m $\Omega$ 14 $\mu\Omega/\Omega$ + 6 m $\Omega$ 15 $\mu\Omega/\Omega$ + 52 m $\Omega$ 21 $\mu\Omega/\Omega$ + 2.3 $\Omega$ 61 $\mu\Omega/\Omega$ + 120 $\Omega$ 0.57 m $\Omega/\Omega$ + 2.5 k $\Omega$ 5.8 m $\Omega/\Omega$ + 15 k $\Omega$	Agilent 3458A opt 002

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Resistance – Generate <sup>3</sup>	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	62 μΩ 0.011 % 0.011 % 0.0033 % 0.0035 % 2 mΩ 3.8 mΩ 15 mΩ 29 mΩ 0.0014 % 0.0014 % 1.7 Ω 3.1 Ω 24 Ω 48 Ω 0.0047 % 1.1 kΩ 14 kΩ	Fluke 5700A
Fixed Points <sup>3</sup>	(1 to 1000) MΩ	2.5 mΩ/Ω + 25 Ω	IET high resistance decade

Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
Inductance – Generate <sup>3</sup> 100.0 mH	@ 1 kHz	0.1 % of IV	GR 1482L
Inductance – Measure <sup>3</sup> Fixed Points  1 mH 10 mH 100 mH 1 H 10 H	@ 1 kHz	0.34 μH 3 μH 0.03 mH 0.31 mH 5.3 mH	GR 1689M

Parameter/Range	Frequency	CMC <sup>2,4,5</sup> (±)	Comments
Capacitance – Generate <sup>3</sup>  Fixed Points –  0.001 μF 0.01 μF 0.1 μF  10 pF to 1 μF  (0.33 to 10.999) nF (11 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 (0.33 to 1.1) mF	  @ 1 kHz  @ 1 kHz  (50 to 1000) Hz (50 to 1000) Hz (50 to 1000) Hz (50 to 1000) Hz (50 to 1000) Hz (50 to 400) Hz (50 to 400) Hz  (50 to 200) Hz  (50 to 100) Hz (50 to 100) Hz	  0.051 % of IV  0.058 % of IV + 0.6 pF  0.58 % + 0.012 nF 0.3 % + 0.11 nF 0.3 % + 0.34 nF 0.3 % + 1.2 nF 0.41 % + 4 nF 0.41 % + 12 nF 0.47 % + 35 nF  0.59 % + 110 nF  0.82 % + 340 nF 1.2 % + 350 nF	  GR 1409 standard capacitors  GR 1413 decade capacitor  Fluke 5500A
Capacitance – Measure <sup>3</sup>  Fixed Point –  100 pF 1 nF 10 nF 100 nF 1 μF (1 to 10) μF (10 to 100) μF	  @ 1kHz	  0.09 pF 0.9 pF 2.4 pF 25 pF 0.22 nF 0.017 μF 0.69 μF	  GR 1689M

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
AC Voltage – Generate			
(0.22 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 (300 to 500) kHz (0.5 to 1) MHz	0.0068 mV 0.0056 mV 0.0053 mV 0.0062 mV 0.01 mV 0.017 mV 0.031 mV 0.035 mV	Fluke 5700A/5725A
(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 (300 to 500) kHz (0.5 to 1) MHz	0.054 % + 0.005 mV 0.02 % + 0.005 mV 0.01 % + 0.005 mV 0.026 % + 0.01 mV 0.08 % + 0.009 mV 0.11 % + 0.014 mV 0.17 % + 0.027 mV 0.33 % + 0.028 mV	
(22 to 200) 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 (300 to 500) kHz (0.5 to 1) MHz	0.05 % + 0.027 mV 0.019 % + 0.016 mV 0.008 % + 0.016 mV 0.023 % + 0.036 mV 0.063 % + 0.098 mV 0.098 % + 0.06 mV 0.17 % + 0.044 mV 0.34 % + 0.095 mV	
(0.22 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 (300 to 500) kHz (0.5 to 1) MHz	0.047 % + 0.16 mV 0.015 % + 0.06 mV 0.007 % + 0.034 mV 0.011 % + 0.052 mV 0.024 % + 0.095 mV 0.04 % + 0.21 mV 0.01 % + 0.4 mV 0.022 % + 0.89 mV	
(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 (300 to 500) kHz (0.5 to 1) MHz	0.05 % + 0.94 mV 0.015 % + 0.61 mV 0.007 % + 0.33 mV 0.011 % + 0.52 mV 0.024 % + 0.69 mV 0.047 % + 2.2 mV 0.13 % + 4.7 mV 0.27 % + 9.8 mV	

Parameter/Range	Frequency	CMC <sup>2,5,6</sup> (±)	Comments
AC Voltage – Generate (cont)			
(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 (300 to 500) kHz (0.5 to 1) MHz	0.049 % + 2.9 mV 0.015 % + 6 mV 0.007 % + 3.2 mV 0.02 % + 7.3 mV 0.05 % + 12 mV 0.15 % + 91 mV 0.47 % + 90 mV 1.2 % + 190 mV	Fluke 5700A/5725A
(220 to 1100) V	(15 to 50) Hz 50 Hz to 1 kHz	0.03 μV + 24 mV 0.006 % + 190 mV	
AC Voltage – Measure <sup>3</sup>			
(1 to 10) mV	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.03 % + 7 μV 0.03 % + 7 μV 0.09 % + 7 μV 0.6 % + 4 μV 4.6 % + 3 μV	Agilent 3458A
(10 to 100) mV	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.015 % + 11 μV 0.019 % + 11 μV 0.034 % + 9.9 μV 0.9 mV + 8 μV 3.4 mV + 19 μV	
100 mV to 1 V	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	93 μV/V + 47 μV 0.016 % + 40 μV 0.036 % + 32 μV 0.094 % + 33 μV 3.4 mV/V + 140 μV	
(1 to 10) V	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.011 % + 330 μV 0.017 % + 260 μV 0.036 % + 310 μV 0.097 % + 270 μV 3.5 mV/V + 1.4 mV	
(10 to 100) V	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz	0.024 % + 2.6 mV 0.025 % + 2.6 mV 0.043 % + 2.6 mV	

Parameter/Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments
AC Voltage – Measure <sup>3</sup> (cont)			
(100 to 700) V	(50 to 100) kHz (100 to 300) kHz	1.4 mV/V + 2.5 mV 4.6 mV/V + 12 mV	Agilent 3458A
(1 to 60) kV	60 Hz	5.8 mV/V + 1.2 V	Ross VD-60 w/DMM
AC Current – Measure <sup>3</sup>			
(10 to 100) μA	(20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz	1.7 mA/A + 0.04 nA 0.7 mA/A + 0.04 nA 0.7 mA/A + 0.04 nA	Agilent 3458A opt 002
(0.1 to 1) mA	(20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.7 mA/A + 0.23 μA 0.7 mA/A + 0.23 μA 0.35 mA/A + 0.23 μA 0.7 mA/A + 0.23 μA 4.6 mA/A + 0.46 μA 6.4 mA/A + 1.7 μA	
(1 to 10) mA	(20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.7 mA/A + 2.3 μA 0.7 mA/A + 2.3 μA 0.35 mA/A + 2.3 μA 0.7 mA/A + 2.3 μA 4.6 mA/A + 4.6 μA 6.4 mA/A + 17 μA	
(10 to 100) mA	(20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.7 mA/A + 23 μA 0.7 mA/A + 23 μA 0.35 mA/A + 23 μA 0.7 mA/A + 23 μA 4.6 mA/A + 46 μA 6.4 mA/A + 170 μA	
(0.1 to 1) A	(20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz	1.9 mA/A + 0.23 mA 0.92 mA/A + 0.24 mA 1.2 mA/A + 0.24 mA 3.5 mA/A + 0.23 mA 12 mA/A + 0.46 mA	Agilent 3458A, Fluke Y5020
(0 to 20) A	(45 to 100) Hz (0.1 to 1) kHz	0.11 mA/A + 5.4 mA 0.18 mA/A + 4.7 mA	

Parameter/Range	Frequency	CMC <sup>2, 5</sup> (±)	Comments
AC Current – Generate <sup>3</sup>			
(10 to 220) µA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.09 % + 42 nA 0.05 % + 37 nA 0.02 % + 34 nA 0.08 % + 69 nA 0.21 % + 130 nA	Fluke 5700A
(0.22 to 2.2) mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.09 % + 82 nA 0.047 % + 76 nA 0.017 % + 90 nA 0.08 % + 590 nA 0.21 % + 1.2 µA	Fluke 5700A/5725A
(2.2 to 22) mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.08 % + 510 nA 0.047 % + 760 nA 0.017 % + 890 nA 0.07 % + 8.3 µA 0.21 % + 12 µA	
(22 to 220) mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.09 % + 8.8 µA 0.05 % + 7.4 µA 0.019 % + 8.7 µA 0.08 % + 59 µA 0.2 % + 120 µA	
(0.22 to 2.2) A	40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.085 % + 91 µA 0.085 % + 170 µA 1.2 % + 270 µA	
(2.2 to 11) A	40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.054 % + 190 µA 0.11 % + 440 µA 0.42 % + 870 µA	
(20 to 500) A	(45 to 400) Hz	0.26 % + 0.11 A	Fluke 5500A w/coil

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of Thermocouple Indicators and Indicating Systems <sup>3</sup> –			
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.5 °C 0.16 °C 0.14 °C 0.16 °C 0.21 °C	Fluke 5500A
Type J	(-210 to -100) °C (100 to -30) °C (-30 to 150) °C (150 to 760) °C	0.27 °C 0.16 °C 0.14 °C 0.17 °C	
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.33 °C 0.18 °C 0.16 °C 0.26 °C 0.4 °C	
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.4 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.57 °C 0.35 °C 0.33 °C 0.4 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C (-250 to -150) °C (-150 to 0) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C 0.63 °C 0.24 °C	
Type T	(0 to 120) °C (120 to 400) °C	0.16 °C 0.14 °C	

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Electrical Calibration of RTD Indicators and Indicating Systems <sup>3</sup> –			
Pt 385, 100 Ω	(-200 to 0) °C (0 to 100) °C (100 to 400) °C (400 to 630) °C (630 to 800) °C	0.05 °C 0.07 °C 0.1 °C 0.12 °C 0.23 °C	Fluke 5500A
Pt 3926, 100 Ω	(-200 to 0) °C (0 to 100) °C (100 to 400) °C (400 to 630) °C	0.05 °C 0.07 °C 0.1 °C 0.12 °C	
Pt 3916, 100 Ω	(-200 to -190) °C (-190 to 100) °C (100 to 400) °C (400 to 600) °C (600 to 630) °C	0.25 °C 0.06 °C 0.09 °C 0.1 °C 0.23 °C	
Pt 385, 200 Ω	(-190 to 260) °C (260 to 600) °C (600 to 630) °C	0.05 °C 0.14 °C 0.16 °C	
Pt 385, 500 Ω	(-190 to 260) °C (260 to 600) °C (600 to 630) °C	0.06 °C 0.09 °C 0.11 °C	
Pt 385, 1000 Ω	(-190 to 0) °C (0 to 300) °C (300 to 600) °C (600 to 630) °C	0.03 °C 0.06 °C 0.07 °C 0.23 °C	
Pt 385, 120 Ω (Ni 120)	(-80 to 100) °C (100 to 260) °C	0.08 °C 0.14 °C	
Cu 427, 10 Ω	(-100 to 260) °C	0.3 °C	
Oscilloscope <sup>3</sup> –			
Time Marker	(2 to 5) ns 10 ns (20 to 50) ns 100 ns to 20 ms 50 ms to 5 s	25 μHz/Hz 25 μHz/Hz 25 μHz/Hz 25 μHz/Hz 25 μHz/Hz + 15 MHz	Fluke 5500A w/SC600 option

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
Leveled Sine Wave <sup>3</sup> – 5 mV to 5.5 V	50 kHz reference	2 % + 300 μV	Fluke 5500A
Absolute	(0.5 to 100) MHz (0.1 to 0.3) GHz (0.3 to 0.6) GHz	3.5 % + 300 μV 4 % + 300 μV 6 % + 300 μV	w/SC600 option
Flatness	(0.5 to 100) MHz (0.1 to 0.3) GHz (0.3 to 0.6) GHz	1.5 % + 100 μV 2 % + 100 μV 4 % + 100 μV	w/SC600 option

### III. Mechanical

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Scales <sup>3</sup> and Balances <sup>3</sup>	10 mg to 1 g (1 to 10) g (10 to 100) g 100 g to 1 kg (1 to 11) kg	0.018 mg 0.051 mg 0.26 mg 1.4 mg 16 mg	Weight set, Class 1
Pressure/Vacuum <sup>3</sup> Measure and Measuring Equipment	(0 to 35) psi(a)  (30 to 300) psi(a)  (300 to 15 000) psi	0.00006 psi/psi + 0.00081 psi  0.00009 psi/psi + 0.0047 psi  0.025 % of FS + 0.6R	Pressure monitor   Dead weight tester
Force Gages <sup>3</sup> and Load Cells <sup>3</sup>	(0 to 300) lb	0.01 % of FS + 0.6R	Class F weights

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Torque Wrenches <sup>3</sup> , Screwdrivers <sup>3</sup> , Watches <sup>3</sup> Measure	(0 to 50) in·lb (0 to 250) in·lb (0 to 1000) in·lb (0 to 250) ft·lb	0.17 in·lb + 0.6R 1.2 in·lb + 0.6R 4.4 in·lb + 0.6R 2 ft·lb + 0.6R	Torque calibrator
Torque Calibrators <sup>3</sup>	(0 to 500) in·lb (0 to 250) ft·lb	(0.0008 + 0.00042 <i>i</i> ) in·lb (0.0022 + 0.00016 <i>f</i> ) ft·lb	Torque arms with class 6 dead weight

#### IV. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Temperature <sup>3</sup> –  Measuring Equipment	(-20 to 0) °C (0 to 100) °C (100 to 200) °C (200 to 300) °C (300 to 400) °C	0.04 °C 0.04 °C 0.05 °C 0.11 °C 0.11 °C	PRT system and liquid bath  PRT system and dry blocks
Measure	(-20 to 0) °C (0 to 100) °C (100 to 200) °C (200 to 300) °C (300 to 400) °C (400 to 600) °C	0.02 °C 0.02 °C 0.02 °C 0.02 °C 0.03 °C 0.03 °C	PRT system
Relative Humidity <sup>3</sup> –  Measuring Equipment	(10 to 95) % RH	0.6 % RH	Thunder Scientific 1200 humidity generator
Measure	(10 to 90) % RH	1.1 % RH	Standard RH probe

## V. Time and Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> ( $\pm$ )	Comments
Frequency – Measure <sup>3</sup>	10 MHz	1 nHz/Hz	GPS receiver

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> In the statement of CMC,  $L$  is the numeric value of the nominal length of the device measured in inches,  $R$  is the numerical value of the resolution of the device in inches,  $f$  is the numerical value of the measurement of the device in ft·lb,  $i$  is the numerical value of the measurement of the device in in·lb, IV represents "Indicated Value", and FS represents "Full Scale".

<sup>5</sup> The measurands stated are generated with the Fluke 5500A or 5700A series of instruments. This capability is suitable for the calibration of the devices intended to measure the stated measurand in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.

<sup>6</sup> The measurands stated are measured with the Agilent 3458A. This capability is suitable for the calibration of the devices intended to generate the measurand in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a combination of the fraction of the reading/output plus a range specification.



The American Association for Laboratory Accreditation

World Class Accreditation

# Accredited Laboratory

A2LA has accredited

## MIDWEST METROLOGY, LLC

*Clayton, OH*

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 24<sup>th</sup> day of January 2011.



A handwritten signature in black ink, appearing to read "Peter Abney", written over a horizontal line.

President & CEO  
For the Accreditation Council  
Certificate Number 1577.01  
Valid to January 31, 2013

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