



World Class Accreditation

The American Association for Laboratory Accreditation

# Accredited Laboratory

A2LA has accredited

## ALL AMERICAN SCALES & CALIBRATION INC.

*East Canton, 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 23<sup>rd</sup> day of September 2009.



  
\_\_\_\_\_  
Peter Meyer

President & CEO  
For the Accreditation Council  
Certificate Number 1848.01  
Valid to August 31, 2011

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



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

ALL AMERICAN SCALES & CALIBRATION INC.  
 12943 Lisbon St. NE  
 Paris, OH 44669  
 Patrick Moody Phone: 330 862 8100

CALIBRATION

Valid until: August 31, 2011

Certificate Number: 1848.01

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

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Gage Blocks	Up to 1 in (2 to 4) in (5 to 20) in	(4.9 + 2L) μin (5.9 + 2L) μin (12 + 2L) μin	By mechanical comparison using universal measuring machine, DMS 680
Length Bars	Up to 20 in	(38 + 3.6L) μin	Universal measuring machine, DMS 680
Cylindrical Plug/Rings – Major/Minor Diameter	Up to 5 in	(15 + 2D) μin	Universal measuring machine, DMS 680
Threaded Plugs/Rings – Plug Pitch Diameter Ring Pitch Diameter	Up to 4 in Up to 4 in	(100 + 2D) μin (110 + 2D) μin	Universal measuring machine, DMS 680

*Peter M. Meyer*  
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Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Calipers & Verniers <sup>3</sup>	(Up to 36) in	0.6R	Gage blocks and rod standards
Height Gages <sup>3</sup>	(Up to 36) in	500 μin	Gage blocks, length rods
Digital Indicators <sup>3</sup>	(Up to 2) in	67 μin	Gage blocks
Dial and Test Indicators <sup>3</sup>	(Up to 2) in	70 μin	Gage blocks
Micrometers <sup>3</sup> –			
Outside	(Up to 12) in (12 to 24) in	(42 + 6L) μin (42 + 20L) μin	Gage blocks and rod standards
Inside	(Up to 1) in	0.6R	
Depth	(Up to 6) in	0.6R	
Pin Gages	(0.011 to 1) in	(15 + 2D) μin	Universal measuring machine, DMS 680
Pin Gages <sup>3</sup>	(0.011 to 1) in	(56 + 2D) μin	Micrometer
Rules and Tapes <sup>3</sup>	(Up to 72) in	0.04 in	Steel rule
Optical Comparators & Measuring Machines <sup>3</sup> –			
Axis Linearity	(Up to 6) in	160 μin	Master calibration artifact
Magnification	10 x 20 x 50 x 100 x	730 μin 410 μin 410 μin 420 μin	Magnification checker scale

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
DC Voltage – Generate <sup>3</sup>	Up to 330 mV 330 mV to 3.3 V (3.3 to 30)V (30 to 330)V (330 to 1000)V	70 µV/V + 3 µV 58 µV/V + 5 µV 58 µV/V + 50 µV 58 µV/V + 500 µV 64 µV/V + 1.5 mV	Fluke 5500A
DC Voltage – Measure <sup>3</sup>	Up to 100 mV 330 mV to 3.3 V (3.3 to 30)V (30 to 330)V (330 to 1000)V	45 µV/V + 3.5 µV 30 µV/V + 7 µV 28 µV/V + 50 µV 45 µV/V + 600 µV 48 µV/V + 10 µV	Fluke 8846A
DC Current – Generate <sup>3</sup>	Up to 2.2 mA (2.2 to 3.3) mA (3.3 to 11) mA (11 to 33) mA (33 to 330) mA 330 mA to 2.1 A (2.1 to 11) A	0.017 % + 0.05 µA 0.017 % + 0.05 µA 0.012 % + 0.25 µA 0.012 % + 0.25 µA 41 µA/A + 3.3 µA 0.036 % + 44 µA 0.074 % + 330 µA	Fluke 5500A
DC Current – Measure <sup>3</sup>	Up to 100 µA 100 µA to 1mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A (1 to 3) A (3 to 10) A	0.059 % + 25 nA 0.059 % + 50 nA 0.058 % + 2 µA 0.058 % + 5 µA 5.8 mA/A + 200 nA 1.2 mA/A + 600 nA 1.8 mA/A + 800 nA	Fluke 8846A
	(10 to 100) A (100 to 1000) A	5.6 mA/A + 3.5 nA 13 mA/A + 3.5 nA	Fluke 8846A with Empro shunts
Resistance – Generate <sup>3</sup>	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1kΩ (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ	0.015 % + 8 mΩ 0.014 % + 15 mΩ 0.011 % + 15 mΩ 0.011 % + 15 mΩ 0.011 % + 60 mΩ 0.011 % + 60 mΩ 0.011 % + 0.6 Ω 0.032 % + 0.6 Ω 0.013 % + 6 Ω 0.014 % + 6 Ω	Fluke 5500A

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Resistance – Generate <sup>3</sup> (cont)	330 kΩ to 1.1 MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.024 % + 55 Ω 0.019 % + 55 Ω 0.075 % + 550 Ω 4 nΩ/Ω + 550 Ω 6 nΩ/Ω + 5.5 kΩ 6 mΩ/Ω + 17 kΩ	Fluke 5500A
Resistance – Measure <sup>3</sup>	Up to 10 Ω 10 to 100 Ω 100 Ω to 1kΩ (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	0.012 % + 3 mΩ 0.012 % + 4 mΩ 0.012 % + 10 mΩ 0.012 % + 0.1 Ω 0.012 % + 1 Ω 0.012 % + 10 Ω 0.012 % + 100 Ω 9.3 mΩ/Ω + 10 kΩ 0.0126 % + 100 kΩ	Fluke 8846A
Electrical Calibration of RTD Indicators & Indicating System <sup>3</sup>			
Pt 385, 100 Ω	-200 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 300 °C 300 °C to 400 °C 400 °C to 630 °C 630 °C to 800 °C	0.058 °C 0.058 °C 0.081 °C 0.11 °C 0.12 °C 0.14 °C 0.27 °C	Fluke 5500A
Pt 3926, 100 Ω	-200 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 300 °C 300 °C to 400 °C 400 °C to 630 °C	0.058 °C 0.058 °C 0.081 °C 0.11 °C 0.11 °C 0.27 °C	
Pt 3916, 100 Ω	-200 °C to -190 °C -190 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C 260 °C to 300 °C 300 °C to 400 °C 400 °C to 600 °C 600 °C to 630 °C	0.29 °C 0.046 °C 0.046 °C 0.069 °C 0.081 °C 0.092 °C 0.11 °C 0.12 °C 0.27 °C	

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of RTD Indicators & Indicating System <sup>3</sup> (cont.)			
Pt 385, 200 Ω	-200 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C 260 °C to 300 °C 300 °C to 400 °C 400 °C to 600 °C 600 °C to 630 °C	0.046 °C 0.046 °C 0.046 °C 0.059 °C 0.14 °C 0.15 °C 0.17 °C 0.19 °C	Fluke 5500A
Pt 385, 500 Ω	-200 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C 260 °C to 300 °C 300 °C to 400 °C 400 °C to 600 °C 600 °C to 630 °C	0.047 °C 0.058 °C 0.058 °C 0.069 °C 0.092 °C 0.092 °C 0.11 °C 0.13 °C	
Pt 385, 1000 Ω	-200 °C to -80 °C -80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C 260 °C to 300 °C 300 °C to 400 °C 400 °C to 600 °C 600 °C to 630 °C	0.035 °C 0.034 °C 0.046 °C 0.058 °C 0.069 °C 0.081 °C 0.081 °C 0.27 °C	
PtNi 385, 120 Ω	-80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C	0.092 °C 0.092 °C 0.17 °C	
Cu 427, 10 Ω	-100 °C to 260 °C	0.35 °C	

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of Thermocouple Indicators & Indicating Systems <sup>3</sup>			
Type B	600 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1550 °C 1550 °C to 1820 °C	0.52 °C 0.42 °C 0.39 °C 0.41 °C	Fluke 5500A
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	0.38 °C 0.33 °C 0.39 °C 0.60 °C 0.98 °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	0.60 °C 0.23 °C 0.22 °C 0.23 °C 0.28 °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	0.34 °C 0.22 °C 0.22 °C 0.23 °C 0.30 °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	0.41 °C 0.25 °C 0.22 °C 0.23 °C 0.49 °C	
Type L	-200 °C to -100 °C -100 °C to 800 °C 800 °C to 900 °C	0.45 °C 0.34 °C 0.23 °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	0.49 °C 0.029 °C 0.27 °C 0.26 °C 0.39 °C	
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.67 °C 0.45 °C 0.41 °C 0.49 °C	

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of Thermocouple Indicators & Indicating Systems <sup>3</sup> (cont.) –			
Type S	0 °C to 250 °C 250 °C to 1000 °C 1000 °C to 1400 °C 1400 °C to 1767 °C	0.55 °C 0.45 °C 0.47 °C 0.65 °C	Fluke 5500A
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.76 °C 0.30 °C 0.24 °C 0.22 °C	
Type U	-200 °C to 0 °C 0 °C to 600 °C	0.66 °C 0.34 °C	

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
AC Voltage – Generate <sup>3</sup>			
(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	5 mV/V + 20 µV 1.7 mV/V + 20 µV 2.3 mV/V + 20 µV 2.9 mV/V + 20 µV 4 mV/V + 33 µV 12 mV/V + 60 µV	Fluke 5500A
(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	3 mV/V + 50 µV 0.059 % + 20 µV 1.2 mV/V + 20 µV 1.8 mV/V + 40 µV 2.8 mV/V + 170 µV 8.1 mV/V + 330 µV	
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	1.7 mV/V + 250 µV 0.036 % + 60 µV 0.093 % + 60 µV 1.6 mV/V + 300 µV 2.8 mV/V + 1.7 mV 5.3 mV/V + 3.3 mV	

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
AC Voltage – Generate <sup>3</sup> (cont.)			
(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	1.7 mV/V + 2.5 mV 0.047 % + 600 μV 0.093 % + 2.6 mV 2.2 mV/V + 5 mV 2.8 mV/V + 17 mV	Fluke 5500A
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz	0.058 % + 6.6 mV 0.093 % + 15 mV 1.1 V/V + 33 mV	
(330 to 1000) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.059 % + 80 μV 2.3 mV/V + 100 μV 2.3 mV/V + 500 μV	
AC Voltage – Measure <sup>3</sup>			
Up to 1000 V	(3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	12 mV/V + 0.3 V 4 mV/V + 0.3 V 0.07 % + 0.3 V 1.4 mV/V + 0.3 V 7 mV/V + 0.8 V 47 mV/V + 5 V	Fluke 8846A
AC Current – Generate <sup>3</sup>			
(29 to 330) μA 330 μA to 3.3 mA (3.3 to 33) mA (33 to 330) mA	20 Hz to 1 kHz	1.5 mA/A + 0.25 μA 1.2 mA/A + 0.3 μA 1.1 mA/A + 3 μA 1.1 mA/A + 30 μA	Fluke 5500A
330 mA to 2.2 A	45 Hz to 1 kHz	1.2 mA/A + 300 μA	
(2.2 to 11) A	500 Hz to 1 kHz	3.8 mA/A + 2 mA	

Parameter/Range	Frequency	CMC <sup>2,5</sup> ( $\pm$ )	Comments
AC Current – Measure <sup>3</sup>			
(5 to 100) $\mu$ A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	12 mA/A + 40 nA 3.5 mA/A + 40 nA 1.2 mA/A + 40 nA 2.4 mA/A + 250 nA	Fluke 8846A
100 $\mu$ A to 1 mA	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	12 mA/A + 400 nA 3.5 mA/A + 400 nA 1.2 mA/A + 400 nA 2.4 mA/A + 2.5 $\mu$ A	
(1 to 10) mA	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	12 mA/A + 4 $\mu$ A 3.5 mA/A + 4 $\mu$ A 1.2 mA/A + 4 nA 0.23 mA/A + 25 $\mu$ A	
(10 to 100) mA	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	12 mA/A + 40 $\mu$ A 3.5 mA/A + 40 $\mu$ A 1.2 mA/A + 40 $\mu$ A 2.4 mA/A + 250 $\mu$ A	
100 mA to 1 A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	12 mA/A + 400 $\mu$ A 3.5 mA/A + 400 $\mu$ A 1.2 mA/A + 400 $\mu$ A 4.1 mA/A + 700 $\mu$ A	
(1 to 3) A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	13 mA/A + 1.8 mA 4.1 mA/A + 1.8 mA 1.8 mA/A + 1.8 mA 4.1 mA/A + 2.1 mA	
(3 to 10) A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz (5 to 10) kHz	13 mA/A + 6 mA 4.1 mA/A + 6 mA 1.8 mA/A + 6 mA 4.1 mA/A + 70 mA	

### III. Fluid Quantities

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Flow Indicators, Liquid <sup>3</sup>	(0 to 100) gpm	1.6 % of Indicated Value	Tested with customer provided liquid (of a known density only), stopwatch, thermometer and scales

### IV. Mechanical

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Brinell Hardness Testers <sup>3</sup>	(200 to 400) HBW	7 HBW	ASTM E10
Indirect Verification of Microindentation Hardness Testers <sup>3</sup> –  Vickers ≥ 1 kgf < 1 kgf  Knoop	  (200 to 700) HV (200 to 700) HV  (200 to 700) HK	  6.1 HV 6.1 HV  13 HK	  ASTM E92 ASTM E384  ASTM E384

Parameter	Range	CMC <sup>2,4</sup> (±)	Comments		
Indirect Verification of Rockwell Hardness Testers <sup>3</sup>	(30 to 100) HRB (20 to 68) HRC	1.1 HRB 0.56 HRC	ASTM E18		
	84 HRA 73 HRA 61 HRA	0.64 HRA 0.54 HRA 0.54 HRA			
	83 HRE 75 HRE 66 HRE	0.71 HRE 0.54 HRE 0.77 HRE			
	95 HRF 86 HRF 74 HRF	0.87 HRF 0.80 HRF 0.83 HRF			
	90 HR15N 83 HR15N 73 HR15N	0.58 HR15N 0.73 HR15N 0.60 HR15N			
	88 HR15T 76 HR15T 71 HR15T	0.63 HR15T 0.58 HR15T 0.59 HR15T			
	78 HR30N 65 HR30N 42 HR30N	0.57 HR30N 0.57 HR30N 0.60 HR30N			
	76 HR30T 53 HR30T 42 HR30T	0.52 HR30T 0.77 HR30T 0.48 HR30T			
	Scales & Balances <sup>3</sup>	1 mg to 220 g		0.6R	Class 1 weights Class F weights Class F weights
		220 g to 32 kg		0.6R	
(0.01 to 200 000) lb		0.6R			
Pressure Gages, Transducers and Transmitters <sup>3</sup>	(-14.7 to 300) psi	0.05 % of full scale	Druck DPI-610		
	(300 to 5000) psi	0.03 % of full scale	Druck CR2200		

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Force <sup>3</sup> –  Tension and Compression	(0 to 100 000) lb	0.4 % of Indicated Value	Load cell; ASTM E4
Torque Wrenches <sup>3</sup>	(0 to 50) in·lb (0 to 250) in·lb (0 to 1000) in·lb (0 to 250) ft·lb  (300 to 1000) ft·lb	0.8 % of Indicated Value 0.8 % of Indicated Value 0.8 % of Indicated Value 0.8 % of Indicated Value  1.2 % of Indicated Value	CDI Torque calibrator using load cells  CDI manual torque calibrator
Mass, Fixed Points	10 mg 20 mg 30 mg 50 mg 100 mg 200 mg 300 mg 500 mg  1 g 2 g 3 g 5 g 10 g 20 g 30 g 50 g 100 g 200 g 500 g 1000 g 2000 g 5000 g  10 kg 25 kg	16 µg 9.9 µg 16 µg 13 µg 23 µg 11 µg 9.9 µg 17 µg  12 µg 14 µg 15 µg 16 µg 22 µg 26 µg 28 µg 32 µg 55 µg 100 µg 670 µg 1.3 mg 10 mg 10 mg  270 mg 340 mg	Comparison to Class 1 weights

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Mass, Fixed Points (cont.)	0.001 lb 0.002 lb 0.005 lb 0.01 lb 0.02 lb 0.05 lb 0.1 lb 0.2 lb 0.5 lb 1 lb 2 lb 5 lb 10 lb 25 lb 30 lb 50 lb 500 lb 1000 lb	12 µg 38 µg 16 µg 22 µg 47 µg 34 µg 90 µg 54 µg 190 µg 6.2 mg 9.1 mg 22 mg 25 mg 280 mg 260 mg 320 mg 6.2 g 7.6 g	Comparison to Class F weights
EQUOTIP (Leeb) – Indirect Verification, Fixed Point <sup>3</sup>	801 Leeb D Hardness	17 Leeb D Hardness	ASTM A956

#### V. Thermodynamics

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Liquid-in-Glass Thermometers	(-70 to 250) °C	0.25 °C	Omega CL27 with RTD probe
Relative Humidity – Measure <sup>3</sup>	10 % RH to 95 % RH	3.5 % RH	Dickson TM 125
Infrared Temperature – Measuring Equipment <sup>3</sup>	35 °C to 100 °C 100 °C to 200 °C 200 °C to 350 °C 350 °C to 500 °C	0.9 °C 1.1 °C 1.6 °C 2.1 °C	Fluke 4181 precision infrared calibrator

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Ovens, Furnaces & Freezers <sup>3</sup>	-100 °C to 1200 °C	1.4 °C	Omega DAQ56 data acquisition system and thermocouples  ASTM E145; uniformity survey only

## VI. Time and Frequency

Parameter	Range	CMC <sup>2</sup> (±)	Comments
Digital / Mechanical Tachometer <sup>3</sup>	(40 to 99 999) rpm	0.013 % of reading ± 1 LSD	Direct reflective pickup tachometer
Time Interval – Measure <sup>3</sup>	15 s to 24 hr	0.36 s	NIST synchronized computer clock
Frequency – Generate <sup>3</sup>	0.01 Hz to 2 MHz	290 µHz/Hz	Fluke 5500A
Frequency – Measure <sup>3</sup>	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz 40 Hz to 1 MHz	1.2 mHz/Hz 580 µHz/Hz 350 µHz/Hz 0.12 nHz/Hz	Fluke 8846A

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

<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. CMC's 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>  $L$  is the numerical value of the nominal length of the device measured in inches,  $R$  is the numerical value of the resolution of the device in microinches and  $D$  is the numerical value of the nominal diameter of the device measured in inches.

<sup>5</sup> The measurands stated are generated with the Fluke 5500 and 8800 series of instruments. This capability is suitable for the calibration of the devices intended to measure the stated measurand in the ranges indicated. CMC's are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.