



# SERVICE CORPORATION

## Metrology Capabilities

ISO/IEC 17025 and ANSI/NCSL Z540-1  
Scope of Accredited Metrology Capabilities

And

Non-Accredited Metrology Capabilities

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# Metrology Capabilities

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## INTRODUCTION

FLW Service Corporation is located in Huntington Beach, CA and has been in business for over 35 years. The 3000 square foot Laboratory in Huntington Beach was set up in 2008 and is equipped to provide calibration in the discipline of force, pressure, temperature, dimensional, and a wide range of electronic instrumentation.

We have developed a comprehensive calibration program which meets the requirements of ISO/IEC 17025:2017 (E), ANSI/NCSL Z540-1:1994 (R2002), ISO 10012-1:2003 and MIL-STD-45662A:1988. We have been ISO/IEC 17025 accredited by A2LA since 2013. FLW Service is a privately-owned metrology/calibration service which also supports a full field service program. Our customer base includes the aerospace, bio-medical, pharmaceutical, and high-tech commercial industries.

FLW has over 450 pieces of equipment which are now active and whose Calibration is traceable to NIST. All of our primary standards go directly to an approved ISO/IEC 17025 accredited laboratory. This gives us the competency of providing you, the customer, with quality service and satisfaction.

For more information, please visit our web site at [www.flw.com](http://www.flw.com).

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# Accredited Metrology Capabilities

## Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2, 3, 4</sup> ( $\pm$ )	Comments
DC Voltage – Generate	(0 to 330) mV (0 to 3.3) V (0 to 33) V (30 to 330) V (100 to 1000) V	23 $\mu$ V/V + 1.0 $\mu$ V 12 $\mu$ V/V + 2.0 $\mu$ V 14 $\mu$ V/V + 20 $\mu$ V 20 $\mu$ V/V + 0.15 mV 20 $\mu$ V/V + 1.5 mV	Fluke 5522A
DC Voltage – Measure	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V	8.0 $\mu$ V/V + 0.32 $\mu$ V 5.6 $\mu$ V/V + 0.32 $\mu$ V 5.6 $\mu$ V/V + 0.51 $\mu$ V 7.4 $\mu$ V/V + 32 $\mu$ V 11 $\mu$ V/V + 0.10 $\mu$ V	Keysight 3458A, option 002
DC Current – Generate	(0 to 330) $\mu$ A (0 to 3.3) mA (0 to 33) mA (0 to 330) mA (0 to 1.1) A (1.1 to 3) A (0 to 11) A (11 to 20.5) A	0.017 % + 20 nA 0.011 % + 50 nA 0.012 % + 0.25 $\mu$ A 0.011 % + 2.5 $\mu$ A 0.023 % + 40 $\mu$ A 0.043 % + 40 $\mu$ A 0.055 % + 0.50 mA 0.11 % + 0.75 mA	Fluke 5522A
DC Current – Measure	(0 to 100) $\mu$ A (0 to 1.0) mA (0 to 10) mA (0 to 100) mA (0 to 1.0) A	31 $\mu$ A/A + 0.81 nA 26 $\mu$ A/A + 5.1 nA 28 $\mu$ A/A + 51 nA 67 $\mu$ A/A + 0.51 $\mu$ A 0.013 % + 10 $\mu$ A	Keysight 3458A, option 002

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## Metrology Capabilities

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Parameter/Equipment	Range	CMC <sup>2, 3, 4</sup> ( $\pm$ )	Comments
Resistance – Generate	(0 to 11) $\Omega$ (11 to 33) $\Omega$ (33 to 110) $\Omega$ (110 to 330) $\Omega$ (0.33 to 1.1) k $\Omega$ (1.1 to 3.3) k $\Omega$ (3.3 to 11) k $\Omega$ (11 to 33) k $\Omega$ (33 to 110) k $\Omega$ (110 to 330) k $\Omega$ (0.33 to 1.1) M $\Omega$ (1.1 to 3.3) M $\Omega$ (3.3 to 11) M $\Omega$ (11 to 33) M $\Omega$ (33 to 110) M $\Omega$ (110 to 330) M $\Omega$ (330 to 1100) M $\Omega$	54 $\mu\Omega/\Omega + 0.0010 \Omega$ 35 $\mu\Omega/\Omega + 0.0015 \Omega$ 32 $\mu\Omega/\Omega + 0.0014 \Omega$ 32 $\mu\Omega/\Omega + 0.0020 \Omega$ 32 $\mu\Omega/\Omega + 0.0020 \Omega$ 33 $\mu\Omega/\Omega + 0.020 \Omega$ 32 $\mu\Omega/\Omega + 0.020 \Omega$ 34 $\mu\Omega/\Omega + 0.20 \Omega$ 33 $\mu\Omega/\Omega + 0.20 \Omega$ 37 $\mu\Omega/\Omega + 2.0 \Omega$ 37 $\mu\Omega/\Omega + 2.0 \Omega$ 111 $\mu\Omega/\Omega + 30 \Omega$ 0.047 % + 50 $\Omega$ 0.12 % + 2.5 k $\Omega$ 0.68 % + 3.0 k $\Omega$ 0.38 % + 0.10 M $\Omega$ 1.8 % + 0.50 M $\Omega$	Fluke 5522A
Resistance – Measure	(0 to 10) $\Omega$ (10 to 100) $\Omega$ (0.10 to 1) k $\Omega$ (1 to 10) k $\Omega$ (10 to 100) k $\Omega$ (0.10 to 1) M $\Omega$ (1 to 10) M $\Omega$ (10 to 100) M $\Omega$	21 $\mu\Omega/\Omega + 51 \mu\Omega$ 18 $\mu\Omega/\Omega + 0.51 m\Omega$ 15 $\mu\Omega/\Omega + 0.51 m\Omega$ 15 $\mu\Omega/\Omega + 5.1 m\Omega$ 17 $\mu\Omega/\Omega + 51 m\Omega$ 20 $\mu\Omega/\Omega + 2.2 \Omega$ 63 $\mu\Omega/\Omega + 0.10 k\Omega$ 0.096 % + 1.0 k $\Omega$	Keysight 3458A, option 002

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## Metrology Capabilities

Parameter/Range	Frequency	CMC <sup>2, 3, 4</sup> ( $\pm$ )	Comments
AC Voltage – Generate			
(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	0.096 % + 6.0 $\mu$ V 0.032 % + 6.0 $\mu$ V 0.039 % + 6.0 $\mu$ V 0.14 % + 6.0 $\mu$ V 0.45 % + 12 $\mu$ V 1.04 % + 50 $\mu$ V	Fluke 5522A
(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	0.050 % + 8.0 $\mu$ V 0.033 % + 8.0 $\mu$ V 0.040 % + 8.0 $\mu$ V 0.103 % + 8.0 $\mu$ V 0.253 % + 32 $\mu$ V 0.57 % + 70 $\mu$ V	
(0.33 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	0.050 % + 50 $\mu$ V 0.028 % + 60 $\mu$ V 0.041 % + 60 $\mu$ V 0.099 % + 50 $\mu$ V 0.252 % + 0.13 mV 0.60 % + 0.60 mV	
(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	0.045 % + 0.65 mV 0.021 % + 0.60 mV 0.032 % + 0.60 mV 0.070 % + 0.60 mV 0.217 % + 1.6 mV	
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.024 % + 2.0 mV 0.030 % + 6.0 mV 0.047 % + 6.0 mV 0.126 % + 6.0 mV 0.25 % + 50 mV	
(330 to 1000) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.047 % + 10 mV 0.041 % + 10 mV 0.050 % + 10 mV	

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## Metrology Capabilities

Parameter/Range	Frequency	CMC <sup>2, 3, 4</sup> ( $\pm$ )	Comments
AC Voltage – Measure			
(0 to 10) mV	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 100 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz	0.026 % + 2.3 $\mu$ V 0.038 % + 2.3 $\mu$ V 0.11 % + 2.3 $\mu$ V 0.58 % + 2.3 $\mu$ V 4.4 % + 2.8 $\mu$ V 17.8 % + 5.4 $\mu$ V 7.8 % + 7.3 $\mu$ V 22 % + 8.2 $\mu$ V	Keysight 3458A, option 002
(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 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.011 % + 2.0 $\mu$ V 0.021 % + 2.0 $\mu$ V 0.035 % + 2.0 $\mu$ V 0.20 % + 2.0 $\mu$ V 0.45 % + 10 $\mu$ V 1.1 % + 10 $\mu$ V 4.4 % + 70 $\mu$ V 4.5 % + 80 $\mu$ V 17 % + 0.10 mV	
(0.1 to 1) V	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 4) MHz (4 to 8) MHz (8 to 10) MHz	0.011 % + 20 $\mu$ V 0.021 % + 20 $\mu$ V 0.062 % + 20 $\mu$ V 0.192 % + 20 $\mu$ V 0.45 % + 0.10 mV 1.1 % + 0.10 mV 4.3 % + 0.70 mV 4.5 % + 0.80 mV 17 % + 1.0 mV	
(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 (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.023 % + 0.40 mV 0.011 % + 0.20 mV 0.019 % + 0.20 mV 0.062 % + 0.20 mV 0.189 % + 0.20 mV 1.2 % + 1.0 mV 3.7 % + 1.0 mV 5.5 % + 1.0 mV 4.4 % + 7.0 mV 4.4 % + 8.0 mV 17 % + 10 mV	
(10 to 100) V	40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.023 % + 2.0 mV 0.029 % + 2.0 mV 0.072 % + 2.0 mV 0.23 % + 2.0 mV 0.47 % + 10 mV	

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## Metrology Capabilities

Parameter/Range	Frequency	CMC <sup>2, 4</sup> ( $\pm$ )	Comments
AC Voltage – Measure (cont.)			
(100 to 700) V	40 Hz to 1 kHz (1 to 20) kHz	0.047 % + 20 mV 0.067 % + 20 mV	Keysight 3458A, option 002
AC Current – Generate			
(30 to 330) $\mu$ A	(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	0.22 % + 0.10 $\mu$ A 0.17 % + 0.10 $\mu$ A 0.14 % + 0.10 $\mu$ A 0.33 % + 0.15 $\mu$ A 1.08 % + 0.20 $\mu$ A 1.8 % + 0.40 $\mu$ A	Fluke 5522A
(0.33 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	0.22 % + 0.15 $\mu$ A 0.14 % + 0.15 $\mu$ A 0.11 % + 0.15 $\mu$ A 0.22 % + 0.20 $\mu$ A 0.56 % + 0.30 $\mu$ A 1.1 % + 0.60 $\mu$ A	
(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	0.20 % + 2.0 $\mu$ A 0.10 % + 2.0 $\mu$ A 0.048 % + 2.0 $\mu$ A 0.090 % + 2.0 $\mu$ A 0.22 % + 3.0 $\mu$ A 0.46 % + 4.0 $\mu$ A	
(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	0.20 % + 20 $\mu$ A 0.10 % + 20 $\mu$ A 0.047 % + 20 $\mu$ A 0.11 % + 50 $\mu$ A 0.22 % + 0.10 mA 0.45 % + 0.20 mA	
(0.33 to 1) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.20 % + 0.10 mA 0.057 % + 0.10 mA 0.66 % + 1.0 mA 2.7 % + 5.0 mA	

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## Metrology Capabilities

Parameter/Range	Frequency	CMC <sup>2, 4</sup> ( $\pm$ )	Comments
AC Current – Generate (cont.)			
(1 to 3) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	5.34 % + 0.10 mA 5.86 % + 0.10 mA 2.65 % + 1.0 mA 6.4 % + 5.0 mA	Fluke 5522A
(3 to 11) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.174 % + 2.0 mA 0.20 % + 2.0 mA 3.3 % + 2.0 mA	
(11 to 20) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.14 % + 5.0 mA 0.17 % + 5.0 mA 3.3 % + 5.0 mA	
AC Current – Measure			
(0 to 100) $\mu$ A	100 Hz to 5 kHz	0.070 % + 30 nA	Keysight 3458A, option 002
(0.1 to 1) mA	100 Hz to 5 kHz	0.038 % + 0.20 $\mu$ A	
(1 to 10) mA	100 Hz to 5 kHz	0.037 % + 2.0 $\mu$ A	
(10 to 100) mA	100 Hz to 5 kHz	0.037 % + 20 $\mu$ A	
(0.1 to 1) A	100 Hz to 5 kHz	0.11 % + 0.20 mA	

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## Metrology Capabilities

Parameter/Equipment	Range	CMC <sup>2</sup> ( $\pm$ )	Comments
Electrical Simulation of Thermocouples – Generate and Measure			
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.55 °C 0.18 °C 0.15 °C 0.18 °C 0.23 °C	Fluke 5522A
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.30 °C 0.18 °C 0.16 °C 0.19 °C 0.26 °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 0.20 °C 0.18 °C 0.29 °C 0.44 °C	
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.44 °C 0.24 °C 0.21 °C 0.20 °C 0.30 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.63 °C 0.36 °C 0.17 °C 0.44 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	0.52 °C 0.40 °C 0.41 °C 0.51 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.69 °C 0.26 °C 0.18 °C 0.15 °C	

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## Metrology Capabilities

Parameter/Equipment	Range	CMC <sup>2</sup> ( $\pm$ )	Comments
Electrical Simulation of Thermocouples – Generate			
Type J	(-210 to -100) °C (-100 to 800) °C (800 to 1200) °C	1.6 °C 1.6 °C 1.6 °C	Fluke 753, AMS 2750
Type K	(-200 to -100) °C (-100 to 400) °C (400 To 1200) °C (1200 to 1372) °C	1.6 °C 1.6 °C 1.6 °C 1.6 °C	
Type N	(-200 to -100) °C (-100 to 900) °C (900 to 1300) °C	1.6 °C 1.6 °C 1.6 °C	
Type R	(-20 to 0) °C (0 to 100) °C (100 to 1767) °C	1.9 °C 1.8 °C 1.7 °C	
Type S	(-20 to 0) °C (0 to 200) °C (200 to 1400) °C (1400 to 1767) °C	1.9 °C 1.8 °C 1.7 °C 1.8 °C	
Type T	(-250 to -200) °C (-200 to 0) °C (0 to 400) °C	1.7 °C 1.6 °C 1.6 °C	
Type K	(-200 to 0) °C (0 to 1000) °C (1000 to 1372) °C	1.7 °C 1.6 °C 1.7 °C	Fluke 726, AMS 2750
Type N	(-200 to 0) °C (0 to 1300) °C	1.8 °C 1.6 °C	
Type J	(-200 to 0) °F (0 to 320) °F (320 to 1600) °F (1600 to 2100) °F	0.94 °F 0.45 °F 0.51 °F 0.72 °F	Additel ADT 226, AMS2750
Type K	(-200 to 0) °F (0 to 250) °F (250 to 2000) °F (2000 to 2200) °F	1.0 °F 0.51 °F 0.87 °F 1.2 °F	

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## Metrology Capabilities

Parameter/Equipment	Range	CMC <sup>2</sup> ( $\pm$ )	Comments
Electrical Simulation of Thermocouples – Generate and Measure <sup>3</sup> (cont)			
Type N	(-200 to 0) °F (0 to 250) °F (250 to 800) °F (800 to 2200) °F	1.2 °F 0.68 °F 0.67 °F 0.84 °F	Additel ADT 226, AMS2750
Type T	(-200 to 100) °F (100 to 250) °F (250 to 700) °F	1.3 °F 0.46 °F 0.40 °F	

## Mechanical

Parameter/Equipment	Range	CMC <sup>2, 6, 7</sup> ( $\pm$ )	Comments
Gauge Pressure - Generate			
Pneumatic Pressure	(-15 to 15) inH <sub>2</sub> O (0 to 2.5) psi (0 to 5) psi (0 to 15) psi (0 to 150) psi (0 to 1500) psi	0.0034 inH <sub>2</sub> O 0.011 psi 0.00057 psi 0.0017 psi 0.017 psi 0.17 psi	Mensor CPC 6000
Pneumatic & Hydraulic Pressure	(-14.7 to -13) psi (-13 to -7.25) psi (-7.25 to 0) psi (0 to 250) psi (250 to 500) psi (500 to 750) psi (750 to 1000) psi	0.026 psi 0.026 psi 0.026 psi 0.027 psi 0.046 psi 0.068 psi 0.091 psi	Additel ADT 226 w/ 161 pressure module CP1KM
Hydraulic Pressure	(87 to 870) psi (870 to 40000) psi	0.018 % 0.017 %	Budenberg CPB3800HP

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## Metrology Capabilities

### Thermodynamics

Parameter/Equipment	Range	CMC <sup>2, 4</sup> ( $\pm$ )	Comments
Ovens, Furnaces, Autoclaves, Freezers, Incubators, and Environmental Chambers <sup>3</sup> –  Uniformity Survey			AMS 2750
Type K & N	(0 to 392) °C (392 to 1093) °C (1093 to 1344) °C	1.6 °C 1.7 °C 2.7 °C	HP, Agilent, Keysight 34970A/34972A data acquisition /switch unit special limits of error
System Accuracy Test			Fluke 753
Type K	(-200 to 0) °C (0 to 1093) °C (1093 to 1372) °C	2.4 °C 2.4 °C 3.1 °C	
Type N	(-200 to -100) °C (-100 to 0) °C (0 to 1093) °C (1093 to 1300) °C	2.0 °C 1.8 °C 1.9 °C 2.7 °C	
Type K	(-200 to 1000) °C (1000 to 1372) °C	1.9 °C 2.7 °C	Fluke 726
Type N	(-200 to 0) °C (0 to 1093) °C (1093 to 1300) °C	2.0 °C 1.9 °C 2.7 °C	
Type J	(-210 to -100) °F (-100 to 800) °F (800 to 1200) °F (800 to 1200) °F	0.94 °F 0.45 °F 0.51 °F 0.72 °F	
Type K	(0 to 1000) °F (0 to 1000) °F (1000 to 1372) °F (1000 to 1372) °F	1.0 °F 0.51 °F 0.87 °F 1.2 °F	Additel ADT 226
Type N	(-200 to 0) °F (0 to 1300) °F (0 to 1300) °F (0 to 1300) °F	1.2 °F 0.68 °F 0.67 °F 0.84 °F	
Type T	(-250 to -200) °F	1.3 °F	

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	(-200 to 0) °F (0 to 400) °F	0.46 °F 0.40 °F	
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Parameter/Equipment	Range	CMC <sup>2, 6, 7</sup> (±)	Comments
Temperature - Measure	(-39 to 0) °C 0°C (0 to 232) °C (232 to 420) °C (420 to 660) °C	0.016 °C 0.015 °C 0.029 °C 0.031 °C 0.040 °C	Fluke 1502A w/ Isotech T100-450
Temperature – Measuring Equipment	(-25 to 0) °C 0 °C (0 to 80) °C  (40 to 232) °C (232 to 420) °C (420 to 650) °C  (-70 to 80) °C	0.16 °C 0.16 °C 0.19 °C  0.69 °C 0.69 °C 0.70 °C  0.28 °C	Fluke 1502A & Isotech T100-450 w/ Kaye LTR- 50  Fluke 1502A & Isotech T100-450 w/ WIKA CTD9100  DEWTRAK II/DX/AT hygrometer w/ Tenney UTRC-W4F-C Environmental Chamber
Relative Humidity – Measuring Equipment	(20 to 50) % RH 50 % RH (50 to 90) % RH	0.78 % RH 0.80 % RH 0.84 % RH	DEWTRAK II/DX/AT hygrometer w/ Tenney UTRC-W4F-C Environmental Chamber

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

<sup>2</sup> 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.

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<sup>3</sup> 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 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> 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.

<sup>5</sup>This scope meets A2LA's P112 Flexible Scope Policy.

<sup>6</sup>In the statement of CMC, the percentage value is defined as the percentage of reading.

<sup>7</sup>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.

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## Metrology Capabilities

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### Non-Accredited Metrology Capabilities

#### Dimensional

Range	Accuracy ( $\pm$ )	Comments
(0 to 1 X 10.000) Inch	0.00002 Inch	P&W Supermicrometer
(0.05 to 4.0) Inch	Grade 2	Starrett Gage Blocks
(5.0 to 72) Inch	Grade 2	Starrett Gage Blocks

#### Mass / Force

Range	Accuracy	Comments
2 mg to 36 kg	Class 1	Troemner
(2 to 10) lb	Class F	Troemner
(10 to 900) lb	Class F	Troemner

#### Torque

Range	Accuracy ( $\pm$ )	Comments
(0 to 250) ft-lbs	0.25% IV	CDI
(0 to 500) ft-lbs	1% IV	Sweeney
(0 to 1000) ft-lbs	0.5% IV	AWS

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# Metrology Capabilities

## Biomedical

Parameter	Range	Accuracy ( $\pm$ )	Comments
Viscosity	(18 to 718) cSt	0.25%	Gardco G Series
pH	(0 to 14) pH	-	Buffer Solution Simulated Input
Conductivity	-	-	Conductivity Solution Simulated Input

## Flow

Parameter	Range	Accuracy ( $\pm$ )	Comments
Gas Flow	5 sccm to 1000 slm	Dependent on range	Fluke MOLBOX1+A700K-A

## Temperature

Parameter	Range	Accuracy ( $\pm$ )	Comments
Infrared	(50 to 500) °C	Dependent on range	Fluke 9122 RTD & Black Body

## Speed & Frequency

Parameter	Range	Accuracy ( $\pm$ )	Comments
Tachometers - Laser	(0.2 to 99,999) Hz	-	Fluke 5520a/5522a

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