



# CERTIFICATE OF ACCREDITATION

## The ANSI National Accreditation Board

Hereby attests that

**Trident Systems & Engineering**  
**2646 Palma Dr., #130**  
**Ventura, CA 93003**

Fulfills the requirements of

**ISO/IEC 17025:2017**

In the field of

**CALIBRATION**

This certificate is valid only when accompanied by a current scope of accreditation document.  
The current scope of accreditation can be verified at [www.anab.org](http://www.anab.org).

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 18 June 2024  
Certificate Number: L2321



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.  
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).

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

### Trident Systems & Engineering

2646 Palma Dr., #130  
Ventura, CA 93003  
Charles Sharp 805-830-8596

### CALIBRATION

Valid to: **June 18, 2024**

Certificate Number: **L2321**

#### Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current - Source	(0 to 200) $\mu$ A (0.1 to 2.0) mA (1.0 to 20) mA (10 to 200) mA (0.1 to 2) A	111 $\mu$ A/A + 2.4 nA 44 $\mu$ A/A + 12 nA 44 $\mu$ A/A + 130 nA 45 $\mu$ A/A + 1.3 $\mu$ A 110 $\mu$ A/A + 25 $\mu$ A	Wavetek 4808 Multifunction Calibrator Opt 10 / 40
DC Current - Source	(1 to 20) A	516 $\mu$ A/A + 8 mA	Wavetek 9100 Calibration System
DC Current - Measure	(0 to 120) $\mu$ A (0.1 to 1.2) mA (1.0 to 12) mA (10 to 120) mA (0.1 to 1.05) A	15 $\mu$ A/A + 2 nA 15 $\mu$ A/A + 15.3 nA 14 $\mu$ A/A + 161 nA 29 $\mu$ A/A + 2 $\mu$ A 98 $\mu$ A/A + 24 $\mu$ A	Keysight 3458A Multimeter
DC Current - Measure	(1 to 20) A	136 $\mu$ A/A + 1.8 mA	3458A Multimeter / EL7520 Shunt
AC Current - Source	(10 to 200) $\mu$ A 10 Hz to 1 kHz (1 to 5) kHz (0.1 to 2) mA 10 Hz to 1 kHz (1 to 5) kHz (1 to 20) mA 10 Hz to 1 kHz (1 to 5) kHz (10 to 200) mA 10 Hz to 1 kHz (1 to 5) kHz	210 $\mu$ A/A + 19 nA 336 $\mu$ A/A + 26 nA 171 $\mu$ A/A + 220 nA 288 $\mu$ A/A + 215 nA 114 $\mu$ A/A + 1.3 $\mu$ A 203 $\mu$ A/A + 1.2 $\mu$ A 128 $\mu$ A/A + 17 $\mu$ A 223 $\mu$ A/A + 17 $\mu$ A	Wavetek 4808 Multifunction Calibrator Opt 20 / 40

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Source	(0.1 to 2) A 10 Hz to 1 kHz (1 to 5) kHz	358 $\mu$ A/A + 163 $\mu$ A 526 $\mu$ A/A + 197 $\mu$ A	Wavetek 4808 Multifunction Calibrator Opt 20 / 40
AC Current - Source	(1 to 20) A (10 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz	1.6 mA/A + 1.8 mA 1.6 mA/A + 1.7 mA 5.5 mA/A + 27 mA	Wavetek 9100 Calibration System
AC Current - Measure	(10 to 120) $\mu$ A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz (0.1 to 1.2) 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 (1 to 12) 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 (10 to 120) 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 (0.1 to 1.05) A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz	3.8 mA/A + 51 nA 1.5 mA/A + 46 nA 576 $\mu$ A/A + 44 nA 565 $\mu$ A/A + 43 nA 3.8 mA/A + 390 nA 1.4 mA/A + 355 nA 521 $\mu$ A/A + 348 nA 271 $\mu$ A/A + 301 nA 519 $\mu$ A/A + 348 nA 3.8 mA/A + 665 nA 3.8 mA/A + 3.9 $\mu$ A 1.4 mA/A + 3.6 $\mu$ A 540 $\mu$ A/A + 3.5 $\mu$ A 277 $\mu$ A/A + 3 $\mu$ A 538 $\mu$ A/A + 3.5 $\mu$ A 3.8 mA/A + 6.7 $\mu$ A 3.8 mA/A + 39 $\mu$ A 1.4 mA/A + 35 $\mu$ A 540 $\mu$ A/A + 35 $\mu$ A 277 $\mu$ A/A + 30 $\mu$ A 538 $\mu$ A/A + 35 $\mu$ A 3.8 mA/A + 66 $\mu$ A 3.8 mA/A + 362 $\mu$ A 1.5 mA/A + 336 $\mu$ A 717 $\mu$ A/A + 329 $\mu$ A 932 $\mu$ A/A + 282 $\mu$ A 2.8 mA/A + 349 $\mu$ A	Keysight 3458A Multimeter



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Measure	(1 to 20) A (10 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz	175 $\mu$ A/A + 219 $\mu$ A 152 $\mu$ A/A + 311 $\mu$ A 159 $\mu$ A/A + 477 $\mu$ A	3458A Multimeter / EL7520 Shunt
Resistance - Source Fixed Points	10 $\Omega$ 100 $\Omega$ 1 k $\Omega$ 10 k $\Omega$ 100 k $\Omega$ 1 M $\Omega$ 10 M $\Omega$ 100 M $\Omega$	0.31 m $\Omega$ 1.2 m $\Omega$ 11.8 m $\Omega$ 118 m $\Omega$ 1.3 $\Omega$ 31 $\Omega$ 612 $\Omega$ 10 k $\Omega$	Wavetek 4808 Multifunction Calibrator Opt 50
Resistance - Source Adjustable	(0.1 to 10.999) $\Omega$ (11 to 32.999) $\Omega$ (33 to 109.999) $\Omega$ (110 to 329.999) $\Omega$ 330 $\Omega$ to 1.099 9 k $\Omega$ (1.1 to 3.299 9) k $\Omega$ (3.3 to 10.999 9) k $\Omega$ (11 to 32.999 9) k $\Omega$ (33 to 109.999) k $\Omega$ (110 to 329.999) k $\Omega$ 330k $\Omega$ to 1.099 9 M $\Omega$ (1.1 to 3.299 9) M $\Omega$ (3.3 to 10.999 9) M $\Omega$ (11 to 32.999 9) M $\Omega$ (33 to 109.999) M $\Omega$	139 $\mu\Omega$ / $\Omega$ + 7 m $\Omega$ 138 $\mu\Omega$ / $\Omega$ + 12 m $\Omega$ 104 $\mu\Omega$ / $\Omega$ + 12 m $\Omega$ 107 $\mu\Omega$ / $\Omega$ + 11 m $\Omega$ 36.2 $\mu\Omega$ / $\Omega$ + 31 m $\Omega$ 109 $\mu\Omega$ / $\Omega$ + 65 m $\Omega$ 104 $\mu\Omega$ / $\Omega$ + 697 m $\Omega$ 108 $\mu\Omega$ / $\Omega$ + 651 m $\Omega$ 126 $\mu\Omega$ / $\Omega$ + 7.1 $\Omega$ 147 $\mu\Omega$ / $\Omega$ + 6.1 $\Omega$ 172 $\mu\Omega$ / $\Omega$ + 65 $\Omega$ 218 $\mu\Omega$ / $\Omega$ + 57.6 $\Omega$ 693 $\mu\Omega$ / $\Omega$ + 662 $\Omega$ 1.3 m $\Omega$ / $\Omega$ + 4.3 k $\Omega$ 5.6 m $\Omega$ / $\Omega$ + 6.6 k $\Omega$	Fluke 5500A Multi Product Calibrator
Resistance Measure	(1 to 12) $\Omega$ (10 to 120) $\Omega$ 100 $\Omega$ to 1.2 k $\Omega$ (1 to 12) k $\Omega$ (10 to 120) k $\Omega$ 100 k $\Omega$ to 1.2 M $\Omega$ (1 to 12) M $\Omega$ (10 to 120) M $\Omega$	13 $\mu\Omega$ / $\Omega$ + 180 $\mu\Omega$ 9.6 $\mu\Omega$ / $\Omega$ + 1.6 m $\Omega$ 7.2 $\mu\Omega$ / $\Omega$ + 6.6 m $\Omega$ 7.1 $\mu\Omega$ / $\Omega$ + 66 m $\Omega$ 7.2 $\mu\Omega$ / $\Omega$ + 647 m $\Omega$ 12 $\mu\Omega$ / $\Omega$ + 10 $\Omega$ 40 $\mu\Omega$ / $\Omega$ + 299 $\Omega$ 501 $\mu\Omega$ / $\Omega$ + 5.7 k $\Omega$	Keysight 3458A Multimeter
DC Voltage Source	(0 to 200) mV (0.1 to 2) V (1 to 20) V (20 to 200) V (100 to 1 100) V	5.7 $\mu$ V/V + 1 $\mu$ V 5.5 $\mu$ V/V + 1.4 $\mu$ V 4.4 $\mu$ V/V + 2.7 $\mu$ V 5.6 $\mu$ V/V + 65 $\mu$ V 7.4 $\mu$ V/V + 591 $\mu$ V	Wavetek 4808 Multifunction Calibrator Opt 10 / 30



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage Measure	(0 to 120) mV (0.1 to 1.2) V (1 to 12) V (10 to 120) V (100 to 1 050) V	9.4 $\mu$ V/V + 1 $\mu$ V 8 $\mu$ V/V + 0.86 $\mu$ V 8.2 $\mu$ V/V + 2.7 $\mu$ V 11 $\mu$ V/V + 59 $\mu$ V 12 $\mu$ V/V + 168 $\mu$ V	Keysight 3458A Multimeter
DC Voltage Measure	(1 to 6) kV	12 mV/V + 40 mV	Fluke 80K-6 High Voltage Probe / 87V Multimeter
AC Voltage Source	(1 to 20) mV (10 to 31) Hz (32 to 330) Hz (0.3 to 10) kHz (10 to 33) kHz (30 to 100) kHz (100 to 330) kHz (0.3 to 1) MHz (10 to 200) mV (10 to 31) Hz (32 to 330) Hz (0.3 to 10) kHz (10 to 33) kHz (30 to 100) kHz (100 to 330) kHz (0.3 to 1) MHz (0.1 to 2) V (10 to 31) Hz (32 to 330) Hz (0.3 to 33) kHz (30 to 100) kHz (100 to 330) kHz (0.3 to 1) MHz (1 to 20) V (10 to 31) Hz (32 to 330) Hz (0.3 to 33) kHz (30 to 100) kHz (100 to 330) kHz (0.3 to 1) MHz	169 $\mu$ V/V + 7.8 $\mu$ V 57 $\mu$ V/V + 9 $\mu$ V 129 $\mu$ V/V + 6.7 $\mu$ V 127 $\mu$ V/V + 6.7 $\mu$ V 266 $\mu$ V/V + 8.4 $\mu$ V 1.3 mV/V + 13 $\mu$ V 2.5 mV/V + 29 $\mu$ V 139 $\mu$ V/V + 14 $\mu$ V 27 $\mu$ V/V + 15 $\mu$ V 82 $\mu$ V/V + 12 $\mu$ V 82 $\mu$ V/V + 12 $\mu$ V 324 $\mu$ V/V + 20 $\mu$ V 1.1 mV/V + 30 $\mu$ V 2.4 mV/V + 157 $\mu$ V 99 $\mu$ V/V + 70 $\mu$ V 62 $\mu$ V/V + 71 $\mu$ V 54 $\mu$ V/V + 45 $\mu$ V 91 $\mu$ V/V + 74 $\mu$ V 260 $\mu$ V/V + 146 $\mu$ V 1.8 mV/V + 922 $\mu$ V 99 $\mu$ V/V + 708 $\mu$ V 63 $\mu$ V/V + 721 $\mu$ V 44 $\mu$ V/V + 350 $\mu$ V 92 $\mu$ V/V + 829 $\mu$ V 262 $\mu$ V/V + 1.8 mV 1.7 mV/V + 1.2 mV	Wavetek 4808 Multifunction Calibrator Opt 20 / 30

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage Source	(10 to 200) V (10 to 31) Hz (32 to 330) Hz (0.3 to 10) kHz (10 to 33) kHz (30 to 100) kHz (100 to 330) kHz (100 to 750) V (10 to 330) Hz (0.3 to 3.3) kHz (3 to 10) kHz (10 to 33) kHz (30 to 100) kHz	130 $\mu\text{V/V} + 7 \text{ mV}$ 70 $\mu\text{V/V} + 6.8 \text{ mV}$ 54 $\mu\text{V/V} + 3.1 \text{ mV}$ 69 $\mu\text{V/V} + 3.6 \text{ mV}$ 131 $\mu\text{V/V} + 9.6 \text{ mV}$ 843 $\mu\text{V/V} + 35 \text{ mV}$ 141 $\mu\text{V/V} + 26 \text{ mV}$ 93 $\mu\text{V/V} + 36 \text{ mV}$ 94 $\mu\text{V/V} + 31 \text{ mV}$ 131 $\mu\text{V/V} + 35 \text{ mV}$ 998 $\mu\text{V/V} + 92 \text{ mV}$	Wavetek 4808 Multifunction Calibrator Opt 20 / 30
AC Voltage Measure	(1 to 12) 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 (10 to 120) 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 (0.3 to 1) MHz (0.1 to 1.2) 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 (0.3 to 1) MHz	293 $\mu\text{V/V} + 5.7 \mu\text{V}$ 123 $\mu\text{V/V} + 4.2 \mu\text{V}$ 335 $\mu\text{V/V} + 3.1 \mu\text{V}$ 888 $\mu\text{V/V} + 3.1 \mu\text{V}$ 4.7 $\text{mV/V} + 3.5 \mu\text{V}$ 38 $\text{mV/V} + 11 \mu\text{V}$ 84 $\mu\text{V/V} + 11 \mu\text{V}$ 61 $\mu\text{V/V} + 5.3 \mu\text{V}$ 121 $\mu\text{V/V} + 5.2 \mu\text{V}$ 275 $\mu\text{V/V} + 5 \mu\text{V}$ 690 $\mu\text{V/V} + 14 \mu\text{V}$ 2.8 $\text{mV/V} + 25 \mu\text{V}$ 9.1 $\text{mV/V} + 78 \mu\text{V}$ 61 $\mu\text{V/V} + 81 \mu\text{V}$ 49 $\mu\text{V/V} + 49 \mu\text{V}$ 128 $\mu\text{V/V} + 44 \mu\text{V}$ 277 $\mu\text{V/V} + 47 \mu\text{V}$ 745 $\mu\text{V/V} + 62 \mu\text{V}$ 2.9 $\text{mV/V} + 223 \mu\text{V}$ 9.4 $\text{mV/V} + 518 \mu\text{V}$	Keysight 3458A Multimeter



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage Measure	(1 to 12) V		Keysight 3458A Multimeter
	(1 to 40) Hz	61 $\mu$ V/V + 814 $\mu$ V	
	40 Hz to 1 kHz	65 $\mu$ V/V + 445 $\mu$ V	
	(1 to 20) kHz	127 $\mu$ V/V + 442 $\mu$ V	
	(20 to 50) kHz	277 $\mu$ V/V + 471 $\mu$ V	
	(50 to 100) kHz	745 $\mu$ V/V + 615 $\mu$ V	
	(100 to 300) kHz	2.9 mV/V + 2.3 mV	
	(0.3 to 1) MHz	9.4 mV/V + 5.2 mV	
	(10 to 120) V		
	(1 to 40) Hz	175 $\mu$ V/V + 8.8 mV	
	40 Hz to 1 kHz	184 $\mu$ V/V + 4.4 mV	
	(1 to 20) kHz	184 $\mu$ V/V + 4.4 mV	
	(20 to 50) kHz	324 $\mu$ V/V + 4.8 mV	
	(50 to 100) kHz	1.2 mV/V + 6.8 mV	
(100 to 300) kHz	3.8 mV/V + 29 mV		
(100 to 700) V		Fluke 80K-6 High Voltage Probe / 87V Multimeter	
700 V to 5 kV	15 mV/V + 6.2 V		
Oscilloscope Amplitude			Fluke 5500A - SC300 Multi Product Calibrator
DC Signal – 50 $\Omega$	5 mV to 2.2 V	3 mV/V + 0.12 mV	
DC Signal – 1 M $\Omega$	5 mV to 33 V	3 mV/V + 0.12 mV	
AC Signal – 50 $\Omega$	5 mV to 2.2V 10 Hz to 10 kHz	3 mV/V + 0.12 mV	
AC Signal – 1 M $\Omega$	5 mV to 55V 10 Hz to 10 kHz	3 mV/V + 0.12 mV	
Time Marker - 50 $\Omega$	2 ns to 50 $\mu$ s 100 $\mu$ s to 5 s	30 parts in 10 <sup>6</sup> s 0.59 % of reading	
Bandwidth relative to 50 kHz 50 $\Omega$ load	5 mV to 5.5 V 50 kHz	23 mV/V + 231 $\mu$ V	
	5 mV to 5.5 V 50 kHz to 100 MHz	25 mV/V + 105 $\mu$ V	

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscope Bandwidth relative to 50 kHz, 50 $\Omega$ load	5 mV to 5.5 V (100 to 250) MHz	28 mV/V + 125 $\mu$ V	Fluke 5500A - SC300 Multi Product Calibrator

**Electrical – RF/Microwave**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Power Sensor Calibration Factors	(70 to 100) % of applied Power 0.1 MHz (0.3 to 1 000) MHz (1 to 3) GHz (3 to 4.2) GHz (0.01 to 4) GHz (4 to 9) GHz (9 to 17) GHz (17 to 18) GHz (0.1 to 1) GHz (1 to 6) GHz (6 to 10) GHz (10 to 12.4) GHz (12.4 to 18) GHz (18 to 23) GHz (23 to 25) GHz (25 to 26.5) GHz	1.6 % of reading 1.4 % of reading 1.5 % of reading 1.6 % of reading 1.5 % of reading 1.8 % of reading 1.9 % of reading 2.5 % of reading 1.9 % of reading 2 % of reading 2.1 % of reading 2.2 % of reading 2.3 % of reading 2.8 % of reading 2.9 % of reading 3.2 % of reading	Keysight 848XX Multimeter / 11667X Splitter
RF Power - Power Meter Reference	1 mW, 50 MHz	0.42 % of reading	478A H76 Power Meter
Absolute Power	(-20 to 20) dBm (0.1 to 10) MHz	0.16 dB	8482A Power Sensor
Absolute Power	(-20 to 20) dBm 10 MHz to 18 GHz	0.16 dB	8481A Power Sensor
Absolute Power	(-20 to 20) dBm (18 to 26.5) GHz	0.19 dB	8485A Power Sensor
Absolute Power	(-20 to 20) dBm (26.5 to 40) GHz (40 to 50) GHz	0.22 dB 0.23 dB	N8487A Power Sensor





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**Electrical – RF/Microwave**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Absolute Power	(-60 to -20) dBm (10 to 50) MHz	0.19 dB	E4412A Power Sensor
Absolute Power	(-60 to -20) dBm 50 MHz to 18 GHz (18 to 33) GHz (33 to 40) GHz (40 to 45) GHz (45 to 50) GHz	0.19 dB 0.2 dB 0.23 dB 0.28 dB 0.29 dB	8487D Power Sensor

**Length – Dimensional Metrology**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Calipers <sup>2</sup>	(0.05 to 60) in	(330 + 3L) μin	Gage Blocks
Micrometers <sup>2</sup>	(0.05 to 12) in	(29 + 5L) μin	
Height Gages <sup>2</sup>	(0.05 to 60) in	(330 + 3L) μin	
Indicators <sup>2</sup>	(0.05 to 2) in	(14 + 23L) μin	

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure Gages and Transducers	(0 to 300) psi	0.17 psi + 0.000 7 psi/psi	Pressure Calibrator
Pressure Gages and Transducers	(5 to 5 000) psi	0.02 psi + 0.000 07 psi/psi	Dead weight Tester
Vacuum Gages and Transducers	(0 to 29) inHg	0.38 inHg	Pressure Calibrator
Torque Watches & Screwdrivers	(2 to 215) ozf·in	0.07 ozf·in + 0.009 ozf·in/ozf·in	Torque Watch Calibrator

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Wrenches	(1 to 100) lbf-ft	0.1 lbf-in + 0.01 lbf-in/ lbf-in	Torque Calibrator
Weigh Scales Resolution: 0.000 1 g 0.000 1 g 0.001 g 0.01 g 0.1 g	(0 to 100) g (0 to 200) g (0 to 200) g (0 to 200) g (0 to 200) g	0.4 mg 0.8 mg 1 mg 10 mg 0.1 g	Class S Masses
Weigh Scales Resolution: 0.01 g 0.1 g	(0 to 2 000) g (0 to 2 000) g	0.02 g 0.1 g	Class F1 Masses
Weigh Scales Resolution: 0.1 lb 0.5 lb	(0 to 100) lb (0 to 100) lb	0.1 lb 0.5 lb	Class 6/7 Masses

**Time and Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency Source	10 MHz Fixed	2.8 parts in 10 <sup>11</sup> of reading	GPS Disciplined Oscillator Z3805A
Frequency Source	(0.1 to 30) Hz 30 Hz to 100 kHz (0.1 to 20) MHz	3.7 parts in 10 <sup>5</sup> of reading 1.3 parts in 10 <sup>7</sup> of reading 5.8 parts in 10 <sup>9</sup> of reading	Keysight 3325A Function Generator
Frequency Source	20 MHz to 2.05 GHz	1.2 parts in 10 <sup>9</sup> of reading	Keysight 8644A Signal Generator
Frequency Source	(2 to 26) GHz (26 to 50) GHz	6.3 parts in 10 <sup>10</sup> of reading 2.3 parts in 10 <sup>10</sup> of reading	Keysight 83650B Signal Generator
Frequency Measure	(0.1 to 30) Hz 30 Hz to 200 kHz (0.2 to 100) MHz 100 MHz to 3 GHz	3.6 parts in 10 <sup>5</sup> of reading 5.4 parts in 10 <sup>8</sup> of reading 1.2 parts in 10 <sup>9</sup> of reading 2.4 parts in 10 <sup>10</sup> of reading	Keysight 53132A Counter
Frequency Measure	(3 to 26) GHz	6.4 parts in 10 <sup>10</sup> of reading	Keysight 5351B Counter

**Time and Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency Measure	(26 to 50) GHz	7.5 parts in 10 <sup>10</sup> of reading	Keysight 8563E Spectrum Analyzer

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ( $k=2$ ), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2.  $L$  = length in inches.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. L2321.



R. Douglas Leonard Jr., VP, PILR SBU

