



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Gore Laboratories, Inc.
10 Northern Blvd., Suite 5
Amherst, NH 03031

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

and national standard

ANSI/NCSL Z540-1-1994

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations to which this accreditation applies.

AC-1322

Certificate Number


ANAB Approval

Certificate Valid: 06/06/2016-04/14/2018
Version No. 003 Issued: 06/06/2016



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 January 2009).



ANSI-ASQ National Accreditation Board

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

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CALIBRATION

Valid to: April 14, 2018

Certificate Number: AC-1322

I. ELECTROMAGNETIC - DC/LOW FREQUENCY

PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
DC Voltage - Source	Up to 220 mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V 220 V to 1.1 kV	7 μ V/V + 0.75 μ V 6 μ V/V + 1.2 μ V 5 μ V/V + 4 μ V 5 μ V/V + 8 μ V 6 μ V/V + 0.1 mV 8 μ V/V + 0.6 mV	Fluke 5700A	Direct Comparison using a Fluke characterized Standard
	10 V	2 μ V/V	Fluke 732B	Direct transfer techniques performed utilizing a Fluke 732B
DC Voltage - Measure	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	5.5 μ V/V + 1 μ V 5.1 μ V/V + 1 μ V 4.6 μ V/V + 2 μ V 6.5 μ V/V + 30 μ V 19 μ V/V + 0.1 mV	HP 3458A Opt 002	HP 3458A characterized DMM
DC Current - Source	Up to 220 μ A 220 μ A to 2.2 mA (2.2 to 22) mA (22 to 220) mA	50 μ A/A + 10 nA 50 μ A/A + 10 nA 50 μ A/A + 100 nA 60 μ A/A + 1 μ A	Fluke 5700A	Direct Comparison using a Fluke characterized Standard
	220 mA to 2.2 A (2.2 to 11) A	80 μ A/A + 30 μ A 0.34 mA/A + 0.48 mA	Fluke 5700A and Fluke 5725A	
DC Current - Measure	(10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	20 μ A/A + 0.8 nA 20 μ A/A + 5 nA 20 μ A/A + 50 nA 35 μ A/A + 0.5 μ A 0.11 mA/A + 10 μ A	HP 3458A Opt 002	HP 3458A characterized DMM



PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Resistance - Source	0 Ω	50 $\mu\Omega$	Fluke 5700A	Direct Comparison using a Fluke characterized Standard
	1 Ω	95 $\mu\Omega/\Omega$		
	1.9 Ω	95 $\mu\Omega/\Omega$		
	10 Ω	28 $\mu\Omega/\Omega$		
	19 Ω	26 $\mu\Omega/\Omega$		
	100 Ω	17 $\mu\Omega/\Omega$		
	190 Ω	17 $\mu\Omega/\Omega$		
	1 k Ω	12 $\mu\Omega/\Omega$		
	1.9 k Ω	12 $\mu\Omega/\Omega$		
	10 k Ω	11 $\mu\Omega/\Omega$		
	19 k Ω	11 $\mu\Omega/\Omega$		
	100 k Ω	13 $\mu\Omega/\Omega$		
	190 k Ω	13 $\mu\Omega/\Omega$		
	1 M Ω	18 $\mu\Omega/\Omega$		
	1.9 M Ω	19 $\mu\Omega/\Omega$		
	10 M Ω	37 $\mu\Omega/\Omega$		
19 M Ω	47 $\mu\Omega/\Omega$			
100 M Ω	0.12 m Ω/Ω			
Individual Values	1 Ω	8 $\mu\Omega/\Omega$	Fluke 742A-1 Fluke 742A-10k	Direct Comparison to the Primary Resistor
	10 k Ω	4.8 $\mu\Omega/\Omega$		
(In 100 m Ω Steps)	100 m Ω to 1 Ω	10 m Ω/Ω + 40 m Ω	ESI DB-877	Direct Comparison using an incremental decade resistor.
(In 1 Ω Steps)	(1 to 10) Ω	1.2 m Ω/Ω + 40 m Ω		
(In 10 Ω Steps)	(10 to 100) Ω	0.3 m Ω/Ω + 40 m Ω		
(In 100 Ω Steps)	100 Ω to 1 k Ω	0.3 m Ω/Ω + 40 m Ω		
(In 1 k Ω Steps)	(1 to 10) k Ω	0.3 m Ω/Ω + 40 m Ω		
(In 10 k Ω Steps)	(10 to 100) k Ω	0.3 m Ω/Ω + 40 m Ω		
(In 100 k Ω Steps)	100 k Ω to 1 M Ω	0.3 m Ω/Ω + 40 m Ω		
(In 1 M Ω Steps)	(1 to 11) M Ω	0.3 m Ω/Ω + 40 m Ω		
Resistance - Measure	Up to 10 Ω	18 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	HP 3458A Opt 002	HP 3458A characterized DMM
	(10 to 100) Ω	13 $\mu\Omega/\Omega$ + 0.5 m Ω		
	100 Ω to 1 k Ω	11 $\mu\Omega/\Omega$ + 0.5 m Ω		
	(1 to 10) k Ω	11 $\mu\Omega/\Omega$ + 5 m Ω		
	(10 to 100) k Ω	11 $\mu\Omega/\Omega$ + 50 m Ω		
	100 k Ω to 1 M Ω	15 $\mu\Omega/\Omega$ + 2 Ω		
	(1 to 10) M Ω	53 $\mu\Omega/\Omega$ + 0.1 k Ω		
	(10 to 100) M Ω	0.5 m Ω/Ω + 1 k Ω		
100 M Ω to 1 G Ω	5 m Ω/Ω + 10 k Ω			

PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
AC Voltage - Source	Up to 2.2 mV		Fluke 5700A	Direct Comparison using a Fluke characterized Standard
	(10 to 20) Hz	0.5 mV/V + 5 µV		
	(20 to 40) Hz	0.22 mV/V + 5 µV		
	40 Hz to 20 kHz	0.11 mV/V + 5 µV		
	(20 to 50) kHz	0.37 mV/V + 5 µV		
	(50 to 100) kHz	0.9 mV/V + 8 µV		
	(100 to 300) kHz	1.2 mV/V + 15 µV		
	(300 to 500) kHz	1.7 mV/V + 30 µV		
	500 kHz to 1 MHz	3.3 mV/V + 30 µV		
	(2.2 to 22) mV			
	(10 to 20) Hz	0.55 mV/V + 6 µV		
	(20 to 40) Hz	0.22 mV/V + 6 µV		
	40 Hz to 20 kHz	0.11 mV/V + 6 µV		
	(20 to 50) kHz	0.37 mV/V + 6 µV		
	(50 to 100) kHz	0.9 mV/V + 8 µV		
	(100 to 300) kHz	1.2 mV/V + 15 µV		
	(300 to 500) kHz	1.7 mV/V + 30 µV		
	500 kHz to 1 MHz	3.3 mV/V + 30 µV		
	(22 to 220) mV			
	(10 to 20) Hz	0.55 mV/V + 16 µV		
	(20 to 40) Hz	0.22 mV/V + 10 µV		
	40 Hz to 20 kHz	0.1 mV/V + 10 µV		
	(20 to 50) kHz	0.33 mV/V + 10 µV		
	(50 to 100) kHz	0.8 mV/V + 30 µV		
	(100 to 300) kHz	1 mV/V + 30 µV		
	(300 to 500) kHz	1.7 mV/V + 40 µV		
	500 kHz to 1 MHz	3.3 mV/V + 0.1 mV		
	220 mV to 2.2 V			
	(10 to 20) Hz	0.55 mV/V + 0.1 mV		
	(20 to 40) Hz	0.17 mV/V + 30µV		
	40 Hz to 20 kHz	75 µV/V + 7 µV		
	(20 to 50) kHz	0.13 mV/V + 20 µV		
	(50 to 100) kHz	0.25 mV/V + 80 µV		
	(100 to 300) kHz	0.44 mV/V + 0.15 mV		
	(300 to 500) kHz	1.1 mV/V + 0.4 mV		
	500 kHz to 1 MHz	2.2 mV/V + 1 mV		
(2.2 to 22) V				
(10 to 20) Hz	0.55 mV/V + 1 mV			
(20 to 40) Hz	0.17 mV/V + 0.3 mV			
40 Hz to 20 kHz	75 µV/V + 70 µV			
(20 to 50) kHz	0.13 mV/V + 0.2 mV			
(50 to 100) kHz	0.25 mV/V + 0.4 mV			
(100 to 300) kHz	0.55 mV/V + 1.7 mV			
(300 to 500) kHz	1.3 mV/V + 5 mV			
500 kHz to 1 MHz	2.8 mV/V + 9 mV			

PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
AC Voltage - Source (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 220 V to 1.1 kV 50 Hz to 1 kHz (1 to 20) kHz (20-30) kHz (220 to 750) V (30 to 50) kHz (50 to 100) kHz	0.55 mV/V + 10 mV 0.17 mV/V + 3 mV 80 μ V/V + 1 mV 0.22 mV/V + 4 mV 0.55 mV/V + 10 mV 80 μ V/V + 4 mV 0.13 mV/V + 6 mV 0.36 mV/V + 11 mV 0.36 mV/V + 11 mV 1.3 mV/V + 45 mV	Fluke 5700A	Direct Comparison using a Fluke characterized Standard
AC Voltage - Measure	(1 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 300 kHz to 1MHz (1 to 4) MHz (4 to 8) MHz (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 (2 to 4) MHz (4 to 8) MHz (8 to 10) MHz	302 μ V/V + 3 μ V 202 μ V/V + 1.1 μ V 302 μ V/V + 1.1 μ V 1 mV/V + 1.1 μ V 5 mV/V + 1.1 μ V 40 mV/V + 2 μ V 12 mV/V + 5 μ V 70 mV/V + 7 μ V 200 mV/V + 8 μ V 72 μ V/V + 4 μ V 72 μ V/V + 2 μ V 142 μ V/V + 2 μ V 302 μ V/V + 2 μ V 802 μ V/V + 2 μ V 3 mV/V + 10 μ V 10 mV/V + 10 μ V 15 mV/V + 10 μ V 40 mV/V + 70 μ V 40 mV/V + 80 μ V 150 mV/V + 100 μ V	HP 3458A Opt 002	HP 3458A characterized DMM

PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
AC Voltage - Measure (cont)	100 mV to 1 V		HP 3458A Opt 002	HP 3458A characterized DMM
	(1 to 40) Hz	72 μ V/V + 40 μ V		
	40 Hz to 1 kHz	72 μ V/V + 20 μ V		
	(1 to 20) kHz	0.14 mV/V + 20 μ V		
	(20 to 50) kHz	0.3 mV/V + 20 μ V		
	(50 to 100) kHz	0.8 mV/V + 20 μ V		
	(100 to 300) kHz	3 mV/V + 0.1 mV		
	300 kHz to 1 MHz	10 mV/V + 0.1 mV		
	(1 to 2) MHz	15 mV/V + 0.1 mV		
	(2 to 4) MHz	40 mV/V + 0.7 mV		
	(4 to 8) MHz	40 mV/V + 0.8 mV		
	(8 to 10) MHz	150 mV/V + 1 mV		
	(1 to 10) V			
	(1 to 40) Hz	72 μ V/V + 0.4 mV		
	40 Hz to 1 kHz	72 μ V/V + 0.2 mV		
	(1 to 20) kHz	0.14 mV/V + 0.2 mV		
	(20 to 50) kHz	0.3 mV/V + 0.2 mV		
	(50 to 100) kHz	0.8 mV/V + 0.2 mV		
	(100 to 300) kHz	3 mV/V + 1 mV		
	300 kHz to 1 MHz	10 mV/V + 1 mV		
	(1 to 2) MHz	15 mV/V + 1 mV		
	(2 to 4) MHz	40 mV/V + 7 mV		
	(4 to 8) MHz	40 mV/V + 8 mV		
	(8 to 10) MHz	0.15 V/V + 10 mV		
	(10 to 100) V			
	(1 to 40) Hz	0.2 mV/V + 4 mV		
	40 Hz to 1 kHz	0.2 mV/V + 2 mV		
	(1 to 20) kHz	0.2 mV/V + 2 mV		
	(20 to 50) kHz	0.35 mV/V + 2 mV		
	(50 to 100) kHz	1.2 mV/V + 2 mV		
(100 to 300) kHz	4 mV/V + 10 mV			
300 kHz to 1 MHz	15 mV/V + 10 mV			
(100 to 700) V				
(1 to 40) Hz	0.4 mV/V + 40 mV			
40 Hz to 1 kHz	0.4 mV/V + 20 mV			
(1 to 20) kHz	0.6 mV/V + 20 mV			
(20 to 50) kHz	1.2 mV/V + 20 mV			
(50 to 100) kHz	3 mV/V + 20 mV			

PARAMETER / EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
AC Current - Source	Up to 220 μA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 220 μA 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 (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 (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 220 mA to 2.2 A 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.7 mA/A + 30 nA 0.38 mA/A + 25 nA 0.14 mA/A + 20 nA 0.6 mA/A + 50 nA 1.6 mA/A + 1 μ A 0.7 mA/A + 50 nA 0.38 mA/A + 40 nA 0.14 mA/A + 40 nA 0.6 mA/A + 0.5 μ A 1.6 mA/A + 1 μ A 0.7 mA/A + 0.5 μ A 0.38 mA/A + 0.4 μ A 0.14 mA/A + 0.4 μ A 0.6 mA/A + 5 μ A 1.6 mA/A + 10 μ A 0.7 mA/A + 5 μ A 0.38 mA/A + 4 μ A 0.15 mA/A + 4 μ A 0.6 mA/A + 50 μ A 1.6 mA/A + 0.1 mA 0.65 mA/A + 40 μ A 0.75 mA/A + 0.1 mA 9 mA/A + 0.2 mA	Fluke 5700A	Direct Comparison using a Fluke characterized Standard
	(2.2 to 11) A 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.4 mA/A + 0.17 mA 0.85 mA/A + 0.38 mA 3.3 mA/A + 0.75 mA	Fluke 5700A with 5725A	
AC Current - Measure	(5 to 100) μA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz 100 μA to 1 mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (1 to 10) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	4 mA/A + 30 nA 1.5 mA/A + 30 nA 0.61 mA/A + 30 nA 0.61 mA/A + 30 nA 4 mA/A + 0.2 μ A 1.5 mA/A + 0.2 μ A 0.61 mA/A + 0.2 μ A 0.31 mA/A + 0.2 μ A 4 mA/A + 2 μ A 1.5 mA/A + 2 μ A 0.61 mA/A + 2 μ A 0.31 mA/A + 2 μ A	HP 3458A Opt 002	HP 3458A characterized DMM

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
AC Current - Measure (cont)	(10 to 100) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz 100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	4 mA/A + 20 μ A 1.5 mA/A + 20 μ A 0.61 mA/A + 20 μ A 0.31 mA/A + 20 μ A 4 mA/A + 0.2 mA 1.6 mA/A + 0.2 mA 0.81 mA/A + 0.2 mA 1 mA/A + 0.2 mA	HP 3458A Opt 002	HP 3458A characterized DMM
Capacitance - Source 1 kHz 1 kHz (1 μ F Steps)	50 pF to 1.11115 μ F	5.2 mF/F + 5 pF	General Radio 1412-BC	Decade Capacitance Standard
	10 nF	0.55 mF/F	General Radio 1409-L	Fixed Capacitance Standard
	100 nF	0.55 mF/F	General Radio 1409-T	
	500 nF	0.55 mF/F	General Radio 1409-X	
1 μ F	0.55 mF/F	General Radio 1409-Y		
	(1 to 10) μ F	2.5 mF/F	General Radio 1424-A	Stepped (RSS) Capacitance Standard
Capacitance - Measure (20 to 200) Hz 200 Hz to 2 kHz (1.1 to 150) kHz	(1 to 10) pF @ 1 kHz 10 nF to 10 μ F @ 1 kHz (1 to 10) F @ 1 kHz	3 mF/F + 0.02 pF 5.1 μ F/F 10 mF/F	Electro Scientific Industries 2160 Video Bridge	Direct comparison using a Video Bridge Impedance Tester
Inductance - Source 1 kHz	1 mH 10 mH 100 mH	1.2 mH/H 1.2 mH/H 1.3 mH/H	General Radio 1482-E General Radio 1482-H General Radio 1482-L	
Inductance - Measure (20 to 500) Hz 500 Hz to 10 kHz (10 to 150) kHz	(10 to 100) kH @ 1 kHz 10 mH to 10 H @ 1 kHz (10 to 100) nH @ 1 kHz	3 mH/H 0.58 mH/H 0.3 H/H + 0.02 μ H	Electro Scientific Industries 2160 Video Bridge	Direct comparison using a Video Bridge Impedance Tester
Electrical Simulation of RTDs	(-200 to 0) $^{\circ}$ C (0 to 850) $^{\circ}$ C	0.005 % + 0.1 $^{\circ}$ C 0.025 % + 0.1 $^{\circ}$ C	Beamex MC5	Direct source of 2, 3 & 4-wire RTD type
Measurement of PRT Simulators	(-200 to 0) $^{\circ}$ C (0 to 850) $^{\circ}$ C	0.007 % + 0.06 $^{\circ}$ C 0.025 % + 0.06 $^{\circ}$ C		Direct measure of 2, 3 & 4-wire RTD type

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Oscilloscopes Voltage Amplitude 1M Ω Load - DC or 1 kHz 50 Ω Load - DC or 1 kHz Deflection Error Readout High Amplitude Output Unterminated Risetime 50 Ω Load Risetime Fast Rise Output 50 Ω Load 100 mVp-p to 1 Vp-p	200 μ Vp-p to 100 Vp-p $\pm 7.5 \%$ 100 Hz to 1 MHz 100 Hz to 1 MHz 1 Hz to 1 MHz	3 mV/V + 1 μ V 2.7 mV/V + 1 μ V 1.2 mV/V 0.29 ms/s 2.9 ms/s 36 ms/s	Tektronix PG-506A	Direct comparison using a PG506A calibration generator
Time Markers Marker Spacing: Error Readout:	1 ns to 5 s $\pm 7.5 \%$ (0% at 1 ms)	2.9 ms/s 1.2 ms/s	Tektronix TG-501A	Direct comparison using a TG501A Time Mark Generator
Leveled Sign Wave 500 mV to 5.5 Vp-p 5 mV to 550 mVp-p	250 kHz to 100 MHz (100 to 250) MHz 250 kHz to 50 MHz (50 to 100) MHz (100 to 250) MHz	16 mV/V 43 mV/V 11 mV/V 11 mV/V 31 mV/V	Tektronix SG-503	Direct comparison using a SG 503 Sine-Wave Generator
500 mV to 5.5 Vp-p	(245 to 1050) MHz	40 mV/V	Tektronix SG-504	Direct comparison using a SG 504 Sine-Wave Generator
Waveform Characteristics Measure Amplitude Parameters Time Parameters Rise Time	Up to 500 MHz	10 mV/V 1.2 ms/s 1.2 ms/s	Tektronix TDS754A	Direct comparison using a Digitizing Oscilloscope

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Electrical Simulation of Thermocouples				
Type B	(200° to 500) °C (500 to 800) °C (800 to 1 820) °C	2 °C 0.8 °C 0.9 °C		
Type R	(-50 to 0) °C (0 to 150) °C (150 to 1 400) °C (1 400 to 1 768) °C	1.1 °C 0.8 °C 0.5 °C 0.6 °C		
Type S	(-50 to 0) °C (0 to 50) °C (50 to 1 500) °C (1 500 to 1 768) °C	1.1 °C 0.8 °C 0.7 °C 0.8 °C		
Type E	(-200 to 0) °C (0 to 600) °C (600 to 990) °C	0.08 % + 0.17 °C 0.015 % + 0.17 °C 0.026 % + 0.1 °C	Beamex MC5	Direct comparison using a Multifunction Calibrator
Type J	(-200 to 0) °C (0 to 1 200) °C	0.7 % + 0.18 °C 0.02 % + 0.18 °C		
Type K	(-200 to 0) °C (0 to 1 000) °C (1 000 to 1 372) °C	0.1 % + 0.2 °C 0.02 % + 0.2 °C 0.03 % + 0.1 °C		
Type N	(-200 to -100) °C (-100 to 0) °C (0 to 750) °C (750 to 1 300) °C	0.2 % + 0.1 °C 0.05 % + 0.25 °C 0.01 % + 0.25 °C 0.03 % + 0.1 °C		
Type T	(-250 to -200) °C (-200 to 0) °C (0 to 390) °C	0.8 °C 0.1 % + 0.2 °C 0.01 % + 0.2 °C		

II. TIME AND FREQUENCY

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Frequency	0.001 Hz to 20 MHz	5.86 x 10 ⁻¹¹ Hz	HP Z3816A GPS using a HP 3325B for display	GPS based 10 MHz signal measured by a HP 3325B
	0.1 Hz to 3 GHz	5.86 x 10 ⁻¹¹ Hz	HP Z3816A GPS using a HP 53131A Opt 030 for display	GPS based 10 MHz distributed signal and a HP 53131A counter

III. THERMODYNAMIC

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Temperature Source	ICEPOINT	0.02°C	ISOTECH T100- 450 SPRT with Hart Scientific 1502A & Dri-block Calibrator	Comparison using a standard platinum RTD
	100 °C	0.02°C		
	200 °C	0.02°C		
	400 °C	0.03°C		
Temperature Measure	ICEPOINT	0.02°C	ISOTECH T100- 450 SPRT with Hart Scientific 1502A & Dri-block Calibrator	Comparison using a standard platinum RTD
	100 °C	0.02°C		
	200 °C	0.02°C		
	400 °C	0.03°C		

IV. MECHANICAL

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(\pm)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Torque	(15 to 200) in oz	0.25 % of reading	CDI 5000-ST with 5000-ST / 2000-5- 02	Direct comparison on a torque cell (CW & CCW)
	(4 to 1000) in lb	0.25 % of reading		
	(20 to 250) ft lb	0.25 % of reading		

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Pressure	(0 to 50) psig	0.013 psig	Ashcroft ATE-100 with AQS-2 Modules	Direct comparison using Air or Nitrogen
	(50 to 250) psig	0.06 psig		Direct comparison using Nitrogen
	(250 to 1 000) psig	0.25 psig		
Scales and Balances	200 mg	0.03 mg	ASTM Class 2	Direct application of Class 2 Mass
	500 mg	0.03 mg		
	200 g	1 mg		
	500 g	2.5 mg		
	10 kg	100 mg	ASTM Class 3	Direct application of Class 3 Mass

V. DIMENSIONAL ⁽²⁾

PARAMETER/ EQUIPMENT	RANGE	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	REFERENCE STANDARD OR EQUIPMENT	Method(s)
Outside Micrometers	(0.01 to 1) in.	(28 + 2.5L) μin	ASME B89.1.9- 2002 Grade-0 Gage Blocks	Direct comparison using steel gage blocks
	(>1 to 24) in.	(133 + 6.1L) μin		
Calipers	(0.05 to 4) in.	(21 + 2.5L) μin		
	(>4 to 8) in.	(45 + 2.1L) μin		
	(>8 to 24) in.	(133 + 6.1L) μin		
	(>24 to 30) in.	(160 + 8.1L) μin		
Height Gages	(0.05 to 4) in.	(21 + 2.5L) μin		
	(>4 to 8) in.	(45 + 2.1L) μin		
	(>8 to 24) in.	(133 + 6.1L) μin		

Notes:

1. Calibration and Measurement Capabilities (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of k=2.
2. In the statement of CMC, L is the numerical value of the nominal length of the device measured in inches, calculated for instruments made of steel
3. This scope is part of and must be included with the Certificate of Accreditation No. AC- 1322



Vice President