



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

PCI

8100 Brownleigh Dr., #100A, Raleigh, NC 27617

(Hereinafter called the Organization) and hereby declares that Organization 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 (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional, Electrical, Mechanical, Chemical, Time & Frequency, and Thermodynamic Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Initial Accreditation Date:

September 12, 2011

Issue Date:

November 26, 2019

Expiration Date:

January 31, 2022

Revision Date:

December 11, 2020

Accreditation No.:

54363

Certificate No.:

L19-586-R1

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjilabs.com



Certificate of Accreditation: Supplement

PCI

8100 Brownleigh Dr., #100A, Raleigh, NC 27617
 Contact Name: Steve Hilker Phone: 919-781-7787

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure Length ^{FO}	0.001 in to 0.4 in	21 μ in/in + 30 μ in	Gage Block Set CCA055, Calibration of Digital Thickness Gauges
	0.401 in to 1 in	48 μ in/in + 19 μ in	
	1.001 in to 7 in	59 μ in/in + 8.4 μ in	
	7.001 in to 24 in	57 μ in/in + 140 μ in	Distance Bars CCA055, Calibration of Digital Thickness Gauges

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure DC Voltage ^{FO}	0.01 mV to 329.999 9 mV	0.001 3 mV + 0.000 023 mV/mV	Fluke 5520A CCA033, Calibration of Electronic Devices
	0.33 V to 3.299 999 V	0.000 58 V + 0.000 005 4 V/V	
	3.3 V to 32.999 99 V	0.000 58 V + 0.000 005 5 V/V	
	33 V to 329.999 9 V	0.000 32 V + 0.000 021 V/V	
	330 V to 1 020 V	0.001 7 V + 0.000 021 V/V	
Equipment to Output DC Voltage ^{FO}	0.000 3 μ V to 200 mV	5 μ V/V + 0.1 μ V	Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
	200 mV to 2 V	3.5 μ V/V + 0.4 μ V	
	2 V to 20 V	3.5 μ V/V + 4 μ V	
	20 V to 200 V	5.5 μ V/V + 0.04 mV	
	200 V to 1 000 V	5.5 μ V/V + 0.5 mV	
	1 000 V to 6 000 V	10 mV/V + 2 V	Fluke 80K-6 HV Probe with 8060A Multi-meter CCA033, Calibration of Electronic Devices
Equipment to Measure DC Current ^{FO}	0.001 μ A to 329.999 μ A	0.023 μ A + 0.000 18 μ A/A	Fluke 5520A Calibrator CCA033 Calibration of electronic devices
	0.33 mA to 3.299 99 mA	0.000 084 mA + 0.000 11 mA/mA	
	3.3 mA to 32.999 9 mA	0.000 65 mA + 0.000 11 mA/mA	
	33 mA to 329.999 mA	0.003 mA + 0.000 11 mA/mA	
	0.33 mA to 1.099 99 mA	0.000 047 A + 0.000 24 A/A	
	1.1 ADC to 2.999 99 ADC	0.000 041 + 0.000 45 A/A	
	3 A to 10.999 9 A	0.000 83 A + 0.000 56 A/A	
	11 A to 20.5 A	0.002 6 A + 0.001 2 A/A	



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Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output DC Current ^{FO}	Up to 20 μ A	0.000 62 μ V + 0.000 036 4 μ V/ μ V	Fluke 8588A Reference Multimeter CCA033, Calibration of Electronic Devices
	20 μ A to 200 μ A	0.000 6 μ A + 0.000 013 4 μ V/ μ V	
	0.200 mA to 2 mA	0.000 006 1 mA + 0.000 012 1 mA/mA	
	2 mA to 20 mA	0.000 06 mA + 0.000 013 2 mA/mA	
	20 mA to 200 mA	0.001 5 mA + 0.000 049 9 mA/mA	
	200 mA to 2 A	0.000 15 A + 0.000 152 A/A	
	2 A to 30 A	-0.009 4 A + 0.001 26 A/A	
Equipment to Output Capacitance ^{FO}	0.1 nF to 2 nF	0.001 2 nF + 0.000 169 nF/nF	Fluke 8588A Reference Multimeter CCA033, Calibration of Electronic Devices
	2 nF to 20 nF	0.002 9 nF + 0.000 926 nF/nF	
	20 nF to 200 nA	0.015 nF + 0.000 614 nF/nF	
	0.2 μ F to 2 μ F	0.000 13 μ F + 0.000 689 μ F/ μ F	
	2 μ F to 20 μ F	0.001 4 μ F + 0.000 628 μ F/ μ F	
	20 μ F to 200 μ A	0.015 μ F + 0.000 905 μ F/ μ F	
	0.2 mF to 2 mA	0.000 34 mF + 0.000 809 mF/mF	
	2 mA to 20 mA	0.001 5 mF + 0.001 06 mF/mF	
Equipment to Measure Resistance- ^{FO}	0.001 Ω + 10.999 9 Ω	0.001 2 Ω + 0.000 047 Ω / Ω	Fluke 5520A CCA033, Calibration of Electronic Devices
	11 Ω to 32.999 9 Ω	0.001 7 Ω + 0.000 035 Ω / Ω	
	33 Ω to 109.999 9 Ω	0.006 1 Ω + 0.000 27 Ω / Ω	
	110 Ω to 329.999 9 Ω	0.002 3 Ω + 0.000 033 Ω / Ω	
	0.33 k Ω to 1.099 999 k Ω	0.000 003 9 k Ω + 0.000 032 k Ω / Ω	
	1.1 k Ω to 3.299 999 k Ω	0.000 053 k Ω + 0.000 017 k Ω /k Ω	
	3.3 k Ω to 10.999 99 k Ω	0.000 55 k Ω + 0.000 014 k Ω /k Ω	
	11 k Ω to 32.999 99 k Ω	0.000 52 k Ω + 0.000 029 k Ω /k Ω	
	33 k Ω to 109.999 9 k Ω	0.000 39 k Ω + 0.000 033 k Ω /k Ω	
	110 k Ω to 329.999 9 k Ω	0.005 k Ω + 0.000 033 k Ω /k Ω	
	330 k Ω to 1.099 999 M Ω	0.000 003 8 M Ω + 0.000 037 M Ω /M Ω	
	1.1 M Ω to 3.299 999 M Ω	0.000 051 M Ω + 0.000 068 M Ω /M Ω	
	3.3 M Ω to 10.999 99 M Ω	0.000 37 M Ω + 0.000 14 M Ω /M Ω	
	11 M Ω to 32.999 99 M Ω	0.002 8 M Ω + 0.000 3 M Ω /M Ω	
	33 M Ω to 109.999 9 M Ω	0.003 5 M Ω + 0.000 59 M Ω /M Ω	
110 M Ω to 329.999 9 M Ω	0.12 M Ω + 0.003 5 M Ω /M Ω		
330 M Ω to 1 100 M Ω	0.58 M Ω + 0.018 M Ω /M Ω		



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Equipment to Output Resistance ^{FO}	0.000 012 Ω to 2 Ω	17 $\mu\Omega/\Omega$ + 4 $\mu\Omega$	Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
	2 Ω to 20 Ω	9.5 $\mu\Omega/\Omega$ + 28 $\mu\Omega$	
	20 Ω to 200 Ω	8 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	
	200 Ω to 2 k Ω	8 $\mu\Omega/\Omega$ + 500 $\mu\Omega$	
	2 k Ω to 20 k Ω	8 $\mu\Omega/\Omega$ + 5.0 m Ω	
	20 k Ω to 200 k Ω	8 $\mu\Omega/\Omega$ + 50 m Ω	
	200 k Ω to 2 M Ω	9 $\mu\Omega/\Omega$ + 1 Ω	
	2 M Ω to 20 M Ω	20 $\mu\Omega/\Omega$ + 100 Ω	
	20 M Ω to 200 M Ω	120 $\mu\Omega/\Omega$ + 10 k Ω	
	200 M Ω to 2 G Ω	1 510 $\mu\Omega/\Omega$ + 100 k Ω	
2 G Ω to 20 G Ω	1 510 $\mu\Omega/\Omega$ + 1 M Ω		
Equipment to Measure Capacitance ^{FO}	0.19 nF to 0.399 9 nF	0.11 nF + 0.009 1 nF/nF	Fluke 5520A CCA033, Calibration of Electronic Devices
	0.4 nF to 1.099 9 nF	0.011 nF + 0.006 6 nF/nF	
	1.1 nF to 3.299 9 nF	0.012 nF + 0.005 9 nF/nF	
	3.3 nF to 10.999 9 nF	0.012 nF + 0.002 9 nF/nF	
	11 nF to 32.999 9 nF	0.12 nF + 0.003 nF/nF	
	33 nF to 109.999 nF	0.12 nF + 0.002 9 nF/nF	
	110 nF to 329.999 nF	0.33 nF + 0.003 1 nF/nF	
	0.33 μ F to 1.099 99 μ F	0.001 3 μ F + 0.002 9 μ F/ μ F	
	1.1 μ F to 3.299 99 μ F	0.003 4 μ F + 0.003 μ F/ μ F	
	3.3 μ F to 10.999 9 μ F	0.011 μ F + 0.003 1 μ F/ μ F	
	11 μ F to 32.999 9 μ F	0.33 μ F + 0.004 8 μ F/ μ F	
	33 μ F to 109.99 μ F	0.11 μ F + 0.005 5 μ F/ μ F	
	110 μ F to 329.99 μ F	0.34 μ F + 0.005 4 μ F/ μ F	
	0.33 mF to 1.099 99 mF	0.001 3 mF + 0.005 2 mF/mF	
	1.1 mF to 3.299 9 mF	0.003 5 mF + 0.005 2 mF/mF	
	3.3 mF to 10.999 9 mF	0.12 mF + 0.005 3 mF/mF	
11 mF to 32.999 9 mF	0.034 mF + 0.008 7 mF/mF		
33 mF to 110 mF	0.12 mF + 0.013 mF/mF		



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Equipment to Measure AC Voltage (at the listed frequencies) ^{FO}			Fluke 5520A CCA033, Calibration of Electronic Devices
10 Hz to 45 Hz	1 mV to 32.999 mV	0.008 9 mV + 0.000 878 mV/mV	
45 Hz to 10 kHz	1 mV to 32.999 mV	0.009 mV + 0.000 148 mV/mV	
10 kHz to 20 kHz	1 mV to 32.999 mV	0.009 mV + 0.000 202 mV/mV	
20 kHz to 50 kHz	1 mV to 32.999 mV	0.008 8 mV + 0.001 11 mV/mV	
50 kHz to 100 kHz	1 mV to 32.999 mV	0.015 mV + 0.004 02 mV/mV	
100 kHz to 500 kHz	1 mV to 32.999 mV	0.058 mV + 0.009 23 mV	
Equipment to Measure AC Voltage (at the listed frequencies) ^{FO}			
10 Hz to 45 Hz	33 mV to 329.999 mV	0.009 2 mV + 0.003 46 mV/mV	
45 Hz to 10 kHz	33 mV to 329.999 mV	0.009 mV + 0.001 74 mV/mV	
10 kHz to 20 kHz	33 mV to 329.999 mV	0.009 mV + 0.002 23 mV/mV	
20 kHz to 50 kHz	33 mV to 329.999 mV	0.009 2 mV + 0.004 04 mV/mV	
50 kHz to 100 kHz	33 mV to 329.999 mV	0.037 mV + 0.000 924 mV/mV	
100 kHz to 500 kHz	33 mV to 329.999 mV	0.081 mV + 0.002 31 mV/mV	



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Equipment to Measure AC Voltage (at the listed frequencies) ^{F0}			Fluke 5520A CCA033, Calibration of Electronic Devices
10 Hz to 45 Hz	0.33 V to 3.299 99 V	0.000 058 V + 0.000 346 V/V	
45 Hz to 10 kHz	0.33 V to 3.299 99 V	0.000 069 V + 0.000 173 V/V	
10 kHz to 20 kHz	0.33 V to 3.299 99 V	0.000 069 V + 0.000 219 V/V	
20 kHz to 50 kHz	0.33 V to 3.299 99 V	0.000 076 V + 0.000 292 V/V	
50 kHz to 100 kHz	0.33 V to 3.299 99 V	0.00 14 V + 0.000 808 V/V	
100 kHz to 500 kHz	0.33 V to 3.299 99 V	0.000 69 V + 0.002 77 V/V	
Equipment to Measure AC Voltage (at the listed frequencies) ^{F0}			
10 Hz to 45 Hz	3.3 V to 32.999 9 V	0.000 75 V + 0.003 46 V/V	
45 Hz to 10 kHz	3.3 V to 32.999 9 V	0.000 69 V + 0.000 173 V/V	
10 kHz to 20 kHz	3.3 V to 32.999 9 V	0.000 69 V + 0.000 277 V/V	
20 kHz to 50 kHz	3.3 V to 32.999 9 V	0.000 69 V + 0.000 404 V/V	
50 kHz to 100 kHz	3.3 V to 32.999 9 V	0.001 8 V + 0.001 04 V/V	
Equipment to Measure AC Voltage (at the listed frequencies) ^{F0}			
45 Hz to 1 kHz	33 V to 329.999 V	0.002 3 V + 0.000 219 V/V	
1 kHz to 10 kHz	33 V to 329.999 V	0.006 9 V + 0.000 231 V/V	
10 kHz to 20 kHz	33 V to 329.999 V	0.006 9 V + 0.000 289 V/V	
20 kHz to 50 kHz	33 V to 329.999 V	0.006 9 V + 0.000 346 V/V	
50 kHz to 100 kHz	33 V to 329.999 V	0.058 V + 0.002 31 V/V	
Equipment to Measure AC Voltage (at the listed frequencies) ^{F0}			
45 Hz to 1 kHz	330 V to 1 020 V	0.12 V + 0.000 346 V/V	
1 kHz to 5 kHz	330 V to 1 020 V	0.04 V + 0.000 261 V/V	
5 kHz to 10 kHz	330 V to 1 020 V	0.012 V + 0.000 346 V/V	
Equipment to Output AC Voltage (at the listed frequencies) ^{F0}			Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
1 Hz to 10 Hz	0.052 mV to 200 mV	165 μ V/V + 14 μ V	
10 Hz to 40 Hz	0.052 mV to 200 mV	140 μ V/V + 4 μ V	
40 Hz to 100 Hz	0.052 mV to 200 mV	115 μ V/V + 4 μ V	
100 Hz to 2 kHz	0.052 mV to 200 mV	110 μ V/V + 2 μ V	
2 kHz to 10 kHz	0.052 mV to 200 mV	135 μ V/V + 4 μ V	
10 kHz to 30 kHz	0.052 mV to 200 mV	340 μ V/V + 8 μ V	
30 kHz to 100 kHz	0.052 mV to 200 mV	765 μ V/V + 20 μ V	



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Equipment to Output AC Voltage (at the listed frequencies) ^{FO}			Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
1 Hz to 10 Hz	200 mV to 2 V	150 μ V/V + 120 μ V	
10 Hz to 40 Hz	200 mV to 2 V	115 μ V/V + 20 μ V	
40 Hz to 100 Hz	200 mV to 2 V	90 μ V/V + 20 μ V	
100 Hz to 2 kHz	200 mV to 2 V	75 μ V/V + 20 μ V	
2 kHz to 10 kHz	200 mV to 2 V	110 μ V/V + 20 μ V	
10 kHz to 30 kHz	200 mV to 2 V	220 μ V/V + 40 μ V	
30 kHz to 100 kHz	200 mV to 2 V	570 μ V/V + 200 μ V	
100 kHz to 300 kHz	200 mV to 2 V	3 mV/V + 2 mV	
300 kHz to 1 MHz	200 mV to 2 V	10 mV/V + 20 mV	
Equipment to Output AC Voltage (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	2 V to 20 V	150 μ V/V + 1.2 mV	
10 Hz to 40 Hz	2 V to 20 V	115 μ V/V + 200 μ V	
40 Hz to 100 Hz	2 V to 20 V	90 μ V/V + 200 μ V	
100 Hz to 2 kHz	2 V to 20 V	75 μ V/V + 200 μ V	
2 kHz to 10 kHz	2 V to 20 V	110 μ V/V + 200 μ V	
10 kHz to 30 kHz	2 V to 20 V	220 μ V/V + 400 μ V	
30 kHz to 100 kHz	2 V to 20 V	570 μ V/V + 2 mV	
100 kHz to 300 kHz	2 V to 20 V	3 mV/V + 20 mV	
300 kHz to 1 MHz	2 V to 20 V	10 mV/V + 200 mV	
Equipment to Output AC Voltage (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	20 V to 200 V	150 μ V/V + 12 mV	
10 Hz to 40 Hz	20 V to 200 V	115 μ V/V + 2 mV	
40 Hz to 100 Hz	20 V to 200 V	90 μ V/V + 2 mV	
100 Hz to 2 kHz	20 V to 200 V	75 μ V/V + 2 mV	
2 kHz to 10 kHz	20 V to 200 V	110 μ V/V + 2 mV	
10 kHz to 30 kHz	20 V to 200 V	220 μ V/V + 4 mV	
30 kHz to 100 kHz	20 V to 200 V	570 μ V/V + 20 mV	
100 kHz to 300 kHz	20 V to 200 V	3 mV/V + 200 mV	
300 kHz to 1 MHz	20 V to 200 V	10 mV/V + 2 mV	



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Equipment to Output AC Voltage (at the listed frequencies) ^{FO}			Fluke 8508A Reference Multi- meter CCA033, Calibration of Electronic Devices
1 Hz to 10 Hz	200 to 1 050 V	150 μ V/V + 73.5 mV	
10 Hz to 40 Hz	200 V to 1 050 V	120 μ V/V + 21 mV	
40 Hz to 10 kHz	200 V to 1 050 V	115 μ V/V + 21 mV	
10 kHz to 30 kHz	200 V to 1 050 V	225 μ V/V + 42 mV	
30 kHz to 100 kHz	200 V to 1 050 V	580 μ V/V + 210 mV	
45 Hz to 1 kHz	1 000 V to 6 000 V	11.2 mV/V + 12 V	Fluke 80K-6 HV Probe with 8060A Multi-meter CCA033, Calibration of Electronic Devices
Equipment to Measure AC Current (at the listed frequencies) ^{FO}			Fluke 5520A CCA033, Calibration of Electronic Devices
10 Hz to 20 Hz	29 μ A to 329.99 μ A	0.12 μ A + 0.002 31 μ A/ μ A	
20 Hz to 45 Hz	29 μ A to 329.99 μ A	0.12 μ A + 0.001 73 μ A/ μ A	
45 Hz to 1 kHz	29 μ A to 329.99 μ A	0.12 μ A + 0.001 44 μ A/ μ A	
1 kHz to 5 kHz	29 μ A to 329.99 μ A	0.17 μ A + 0.003 46 μ A/ μ A	
5 kHz to 10 kHz	29 μ A to 329.99 μ A	0.23 μ A + 0.009 24 μ A/ μ A	
10 kHz to 30 kHz	29 μ A to 329.99 μ A	0.46 μ A + 0.018 5 μ A/ μ A	
Equipment to Measure AC Current (at the listed frequencies) ^{FO}			
10 Hz to 20 Hz	0.33 mA to 3.299 9 mA	0.000 17 mA + 0.002 31 mA/mA	
20 Hz to 45 Hz	0.33 mA to 3.299 9 mA	0.000 17 mA + 0.001 44 mA/mA	
45 Hz to 1 kHz	0.33 mA to 3.299 9 mA	0.000 17 mA + 0.001 15 mA/mA	
1 kHz to 5 kHz	0.33 mA to 3.299 9 mA	0.000 23 mA + 0.002 31 mA/mA	
5 kHz to 10 kHz	0.33 mA to 3.299 9 mA	0.000 35 mA + 0.005 77 mA/mA	
10 kHz to 30 kHz	0.33 mA to 3.299 9 mA	0.000 69 mA + 0.011 5 mA/mA	
Equipment to Measure AC Current (at the listed frequencies) ^{FO}			
10 Hz to 20 Hz	3.3 mA to 32.999 mA	0.002 3 mA + 0.002 08 mA/mA	
20 Hz to 45 Hz	3.3 mA to 32.999 mA	0.002 3 mA + 0.001 04 mA/mA	
45 Hz to 1 kHz	3.3 mA to 32.999 mA	0.002 3 mA + 0.000 462 mA/mA	
1 kHz to 5 kHz	3.3 mA to 32.999 mA	0.002 3 mA + 0.000 924 mA/mA	
5 kHz to 10 kHz	3.3 mA to 32.999 mA	0.003 5 mA + 0.002 31 mA/mA	
10 kHz to 30 kHz	3.3 mA to 32.999 mA	0.004 6 mA + 0.004 62 mA/mA	



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Equipment to Measure AC Current (at the listed frequencies) ^{F0}			Fluke 5520A CCA033, Calibration of Electronic Devices
10 Hz to 20 Hz	33 mA to 329.99 mA	0.023 mA + 0.002 08 mA/mA	
20 Hz to 45 Hz	33 mA to 329.99 mA	0.023 mA + 0.001 04 mA/mA	
45 Hz to 1 kHz	33 mA to 329.99 mA	0.023 mA + 0.000 462 mA/mA	
1 kHz to 5 kHz	33 mA to 329.99 mA	0.023 mA + 0.000 923 mA/mA	
5 kHz to 10 kHz	33 mA to 329.99 mA	0.12 mA + 0.002 31 mA/mA	
10 kHz to 30 kHz	33 mA to 329.99 mA	0.23 mA + 0.004 62 mA/mA	
Equipment to Measure AC Current (at the listed frequencies) ^{F0}			
10 Hz to 45 Hz	0.33 A to 1.099 99 A	0.000 12 A + 0.002 08 A/A	
45 Hz to 1 kHz	0.33 A to 1.099 99 A	0.000 12 A + 0.000 573 A/A	
1 kHz to 5 kHz	0.33 A to 1.099 99 A	0.001 2 A + 0.006 93 A/A	
5 kHz to 10 kHz	0.33 A to 1.099 99 A	0.005 8 A + 0.028 9 A/A	
Equipment to Measure AC Current (at the listed frequencies) ^{F0}			
10 Hz to 45 Hz	1.1 A to 2.999 99 A	0.000 21 A + 0.002 06 A/A	
45 Hz to 1 kHz	1.1 A to 2.999 99 A	0.000 35 A + 0.000 641 A/A	
1 kHz to 5 kHz	1.1 A to 2.999 99 A	0.001 2 A + 0.006 93 A/A	
5 kHz to 10 kHz	1.1 A to 2.999 99 A	0.005 8 A + 0.028 9 A/A	
Equipment to Measure AC Current (at the listed frequencies) ^{F0}			
10 Hz to 45 Hz	3 A to 10.999 9 A	0.002 4 A + 0.000 69 A/A	
45 Hz to 1 kHz	3 A to 10.999 9 A	0.002 3 A + 0.001 15 A/A	
1 kHz to 5 kHz	3 A to 10.999 9 A	0.002 3 A + 0.034 6 A/A	
Equipment to Measure AC Current (at the listed frequencies) ^{F0}			
45 Hz to 100 Hz	11 A to 20.5 A	0.005 8 A + 0.001 39 A/A	
100 Hz to 1 kHz	11 A to 20.5 A	0.005 8 A + 0.001 73 A/A	
1 kHz to 5 kHz	11 A to 20.5 A	0.005 8 A + 0.034 6 A/A	
Equipment to Output AC Current (at the listed frequencies) ^{F0}			Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
1 Hz to 10 Hz	0.06 μ A to 199.99 μ A	500 μ A/A + 0.02 μ A	
10 Hz to 10 kHz	0.06 μ A to 199.99 μ A	500 μ A/A + 0.02 μ A	
10 kHz to 30 kHz	0.06 μ A to 199.99 μ A	710 μ A/A + 0.02 μ A	
30 kHz to 100 kHz	0.06 μ A to 199.99 μ A	4 mA/A + 0.02 μ A	



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8100 Brownleigh Dr., #100A, Raleigh, NC 27617
 Contact Name: Steve Hilker Phone: 919-781-7787

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Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output AC Current (at the listed frequencies) ^{FO}			Fluke 8508A Reference Multi-meter CCA033, Calibration of Electronic Devices
1 Hz to 10 Hz	200 μ A to 1.999 900 mA	310 μ A/A + 0.2 μ A	
10Hz to 10 kHz	200 μ A to 1.999 900 mA	300 μ A/A + 0.2 μ A	
10 kHz to 30 kHz	200 μ A to 1.999 900 mA	710 μ A/A + 0.2 μ A	
30 kHz to 100 kHz	200 μ A to 1.999 900 mA	4 mA/A + 0.2 μ A	
Equipment to Output AC Current (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	2 mA to 19.999 900 mA	310 μ A/A + 2 μ A	
10Hz to 10 kHz	2 mA to 19.999 900 mA	300 μ A/A + 2 μ A	
10 kHz to 30 kHz	2 mA to 19.999 900 mA	710 μ A/A + 2 μ A	
30 kHz to 100 kHz	2 mA to 19.999 900 mA	4 mA/A + 2 μ A	
Equipment to Output AC Current (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	20 mA to 199.990 0 mA	310 μ A/A + 20 μ A	
10Hz to 10 kHz	20 mA to 199.990 0 mA	290 μ A/A + 20 μ A	
10 kHz to 30 kHz	20 mA to 199.990 0 mA	625 μ A/A + 20 μ A	
Equipment to Output AC Current (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	200 mA to 1.999 900 A	620 μ A/A + 200 μ A	
10Hz to 10 kHz	200 mA to 1.999 900 A	735 μ A/A + 200 μ A	
10 kHz to 30 kHz	200 mA to 1.999 900 A	3 mA/A + 200 μ A	
Equipment to Output AC Current (at the listed frequencies) ^{FO}			
1 Hz to 10 Hz	2 A to 19.999 00 A	820 μ A/A + 2 mA	
10Hz to 10 kHz	2 A to 19.999 00 A	2.5 mA/A + 2 mA	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type B) ^{FO}	600 °C to 800 °C	0.51 °C	Electrical Simulation of Thermocouple Output Fluke 5520A CCA033, Calibration of Electronic Devices
	800.01 °C to 1 000 °C	0.4 °C	
	1 000.01 °C to 1 550 °C	0.35 °C	
	1 550.01 °C to 1 820 °C	0.39 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type C) ^{FO}	0 °C to 150 °C	0.35 °C	
	150.01 °C to 650 °C	0.3 °C	
	650.01 °C to 1 000 °C	0.36 °C	
	1 000.01 °C to 1 800 °C	0.58 °C	
	1 800.01 °C to 2 316 °C	0.97 °C	



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MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type E) ^{FO}	-250 °C to -100 °C	0.58 °C	Electrical Simulation of Thermocouple Output Fluke 5520A CCA033, Calibration of Electronic Devices
	-99.99 °C to -25 °C	0.19 °C	
	-24.99 °C to 350 °C	0.17 °C	
	350.01 °C to 650 °C	0.19 °C	
	650.01 °C to 1 000 °C	0.25 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type J) ^{FO}	-210 °C to -100 °C	0.32 °C	
	-99.99 °C to -30 °C	0.21 °C	
	-29.99 °C to 150 °C	0.17 °C	
	150.01 °C to 760 °C	0.20 °C	
	760.01 °C to 1200 °C	0.27 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type K) ^{FO}	-200 °C to -100 °C	0.39 °C	
	-99.99 °C to -25 °C	0.21 °C	
	-24.99 °C to 120 °C	0.19 °C	
	120.01 °C to 1 000 °C	0.3 °C	
	1 000.01 °C to 1 372 °C	0.47 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type N) ^{FO}	-200 °C to -100 °C	0.47 °C	
	-99.99 °C to -25 °C	0.26 °C	
	-24.99 °C to 120 °C	0.22 °C	
	120.01 °C to 410 °C	0.21 °C	
	410.01 °C to 1 300 °C	0.32 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type R) ^{FO}	0 °C to 250 °C	0.66 °C	
	250.01 °C to 400 °C	0.41 °C	
	400.01 °C to 1 000 °C	0.39 °C	
	1 000.01 °C to 1 767 °C	0.47 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type S) ^{FO}	0 °C to 250 °C	0.55 °C	
	250.01 °C to 1 000 °C	0.42 °C	
	1 000.01 °C to 1 400 °C	0.43 °C	
	1 400.01 °C to 1 767 °C	0.54 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type T) ^{FO}	-250 °C to -150 °C	0.73 °C	
	-149.99 °C to 0 °C	0.28 °C	
	0 °C to 120 °C	0.19 °C	
	120.01 °C to 400 °C	0.17 °C	



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Temperature Calibration, Indication, and Control Equipment used with Thermocouple (Type U) ^{FO}	-200 °C to 0 °C	0.65 °C	Electrical Simulation of Thermocouple Output Fluke 5520A CCA033, Calibration of Electronic Devices
	0.01 °C to 600 °C	0.32 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 385) 100 Ω ^{FO}	-200 °C to 0 °C	0.05 °C	Electrical Simulation of RTD Output Fluke 5520A Calibrator CCA033, Calibration of Electronic Devices
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 3926) 100 Ω ^{FO}	-200 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 3916) 100 Ω ^{FO}	-200 °C to -190 °C	0.25 °C	
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.06 °C	
	100 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 600 °C	0.12 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 385) 200 Ω ^{FO}	-200 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.12 °C	
	300 °C to 400 °C	0.13 °C	
	400 °C to 600 °C	0.14 °C	
	600 °C to 630 °C	0.16 °C	



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Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 385) 500 Ω ^{FO}	-200 °C to -80 °C	0.04 °C	Electrical Simulation of RTD Output Fluke 5520A Calibrator CCA033, Calibration of Electronic Devices
	-80 °C to 100 °C	0.05 °C	
	100 °C to 260 °C	0.06 °C	
	260 °C to 400 °C	0.08 °C	
	400 °C to 600 °C	0.09 °C	
	600 °C to 630 °C	0.11 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Pt 385) 1 000 Ω ^{FO}	-190 °C to 0 °C	0.03 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.06 °C	
	300 °C to 600 °C	0.07 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Ni 385) 120 Ω ^{FO}	-80 °C to 100 °C	0.08 °C	
	100 °C to 260 °C	0.14 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD (Cu 427) 10 Ω ^{FO}	-100 °C to 260 °C	0.3 °C	
Equipment to measure pk-pk Volts ^{FO}	1mV to 130 V pk-pk	1 mV/V + 40 μ V	Fluke 5522A/1100 Calibrator CCA033, Calibration of Electronic Devices
Equipment to Measure Leveled Sine Wave - Flatness ^{FO}	5 mV to 5.5 V pk-pk 50 kHz (Reference)	20 mV/V + 300 μ V	
	50 kHz to 100 MHz	15 mV/V + 100 μ V	
	>100 MHz to 300 MHz	20 mV/V + 100 μ V	
	>300 MHz to 600 MHz	40 mV/V + 100 μ V	
	>600 MHz to 1 100 MHz	50 mV/V + 100 μ V	
Equipment to measure Time Markers ^{FO}	1 nS to 20 mS	0.000 25 % of reading	
	50 mS to 5 S	0.002 5% of reading + 0.001 T	
Equipment to Measure DC Current Toroidal Clamp Meter ^{FO}	1.65 to 16.5 ADC	0.004 6 A + 0.002 77 A / A	Fluke 5520A with Fluke 50-turn coil CCA033, Calibration of Electronic Devices
	16.5 to 55 ADC	0.017 A + 0.002 9 A / A	
	55 to 150 ADC	0.018 A + 0.002 92 A / A	
	150 to 550 ADC	0.073 + 0.002 87 A / A	
	550 to 1 000 ADC	0.07 A + 0.003 11 A / A	



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Equipment to Measure AC Current Toroidal Clamp Meter ^{FO}	1.65 AAC to 16.5 AAC 45 Hz to 65 Hz	0.005 8 A + 0.003 27 A / A	Fluke 5520A with Fluke 50-turn coil CCA033, Calibration of Electronic Devices
	1.65 AAC to 16.5 AAC 65 Hz to 100 Hz	0.004 7 A + 0.009 11 A / A	
	1.65 AAC to 16.5 AAC 100 Hz to 440 Hz	0.006 2 A + 0.009 33 A / A	
	16.5 AAC to 150 AAC 45 Hz to 65 Hz	0.031 A + 0.003 52 A / A	
	16.5 AAC to 150 AAC 65 Hz to 100 Hz	0.055 A + 0.009 23 A / A	
	16.5 AAC to 150 AAC 45 Hz to 440 Hz	0.055 A + 0.009 73 A / A	
	150 AAC to 1 000 AAC 45 Hz to 65 Hz	0.14 A + 0.003 51 A / A	
	150 AAC to 1 000 AAC 65 Hz to 100 Hz	0.14 A + 0.009 22 A / A	
	150 AAC to 1000 AAC 100 Hz to 440 Hz	0.13 A + 0.009 19 A / A	
Equipment to Measure DC Current Non-Toroidal Clamp Meter ^{FO}	1.65 ADC to 16.5 ADC	0.024 A + 0.005 75 A / A	
	16.5 ADC to 55 ADC	0.16 + 0.0057 8 A / A	
	55 ADC to 150 ADC	0.16 A + 0.005 79 A / A	
	150 ADC to 550 ADC	0.58 A + 0.005 8 A / A	
	550 ADC to 1 000 ADC	0.58 A + 0.005 89 A / A	
Equipment to Measure AC Current Non-Toroidal Clamp Meter ^{FO}	1.65 AAC to 16.5 AAC 45 Hz to 65 Hz	0.035 A + 0.006 51 A / A	
	1.65 AAC to 16.5 AAC 65 Hz to 100 Hz	0.035 A + 0.011 6 A / A	
	1.65 AAC to 16.5 AAC 100 Hz to 440 Hz	0.035 A + 0.011 8 A / A	
	16.5 AAC to 150 AAC 45 Hz to 65 Hz	0.29 A + 0.006 6 A / A	
	16.5 AAC to 150 AAC 65 Hz to 100 Hz	0.29 A + 0.01 16 A / A	
	16.5 AAC to 150 AAC 100 Hz to 440 Hz	0.29 A + 0.012 1 A / A	
	150 AAC to 1 000 AAC 45 Hz to 65 Hz	1.0 A + 0.006 61 A / A	
	150 AAC to 1 000 AAC 65 Hz to 100 Hz	1.0 A + 0.011 6 A / A	
	150 AAC to 1 000 AAC 100 Hz to 440 Hz	0.99 A + 0.016 3 A / A	



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Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure Pressure ^F	-14.9 psig to -0.05 psig	0.0012 psig + 0.000 00 376 psig/psig	Mensor CPC6050 CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	-30 inH ₂ O to -10 inH ₂ O	0.000 11 inH ₂ O + 0.000 007 3 inH ₂ O/ inH ₂ O	Fluke 7250lp CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	-10 inH ₂ O to 10 inH ₂ O	0.000 13 inH ₂ O + 0.000 095 inH ₂ O/ inH ₂ O	
	10 inH ₂ O to 30 inH ₂ O	0.000 11 inH ₂ O + 0.000 007 3 inH ₂ O/ inH ₂ O	
	1 psig to 10 psig	0.001 2 psig + 0 000 001 08 psig/psig	Mensor CPC6050 CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	10 psig to 20 psig	0.000 21 psig + 0 000 117 psig/psig	
	20 psig to 25 psig	0.003 6 + 0.000 001 31 psig/psig	Fluke 2700G-BG200K CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	25 psig to 500 psig	0.000 72 psig + 0.000 16 psig/psig	Fluke 7250xi CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	500 psig to 1 000 psig	0.000 13 psig + 0.000 118 psig/psig	Mensor CPC6050 CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
Equipment to Measure Pressure ^{FO}	1 000 psig to 2 000 psig	0.000 007 4 psig + 0.000 119 psig/psig	Fluke PM600-A14M CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	2 000 psig to 5 000 psig	0.57 + 0.000 001 01 psig/psig	Fluke 2700G-G35M CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
Equipment to Measure Pressure ^{FO} Hydraulic	200 psig to 10000 psig	0.00094 psig + 0.0000973 psig/psig	Fluke P3214 DWT w/correction software CCA222, CCA014, Calibration of Pressure devices, Metrology Lab
	10 000 psig to 15 000 psig	0.1 % of reading	Ametek T-150 CCA222, CCA014, Calibration of Pressure devices, Metrology Lab



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Equipment to Measure Pressure ^o	-15 psig to -0.01 psig	0.009 3 - 0.000 000 254 psig/psig	Fluke 2700G-BG200K CCA222, Calibration of Pressure devices, Metrology Lab
	0.01 psig to 30 psig	0.003 6 + 0.000 001 31 psig/psig	
	30 psig to 90 psig	0.011 psig	Fluke PM600-A2M CCA222, Calibration of Pressure devices, Metrology Lab
	90 psig to 300 psig	0.002 7 + 0.000 106 psig/psig	Fluke PM600-A2M CCA222, Calibration of Pressure devices, Metrology Lab
	300 psig to 1 000 psig	0.000 001 9 + 0.000 115 psig/psig	Fluke PM600-A7M CCA222, Calibration of Pressure devices, Metrology Lab
	1 000 psig to 2 000 psig	-0.000 68 + 0.000 116 psig/psig	Fluke PM600-A14M CCA222, Calibration of Pressure devices, Metrology Lab
Torque Wrenches ^{FO}	0.5 lbf•in to 5 lbf•in	1 % of reading	Mountz Indicator PTT-2000 w/ BMX80z Transducer CCA133, Calibration of Torque Devices
	5 lbf•in to 50 lbf-in	0.0012 lbf•in + 0.00292 lbf•in	CDI 2000-400-02 Torque System CCA133, Calibration of Torque Devices
	40 lbf•in to 400 lbf-in	0.015 lbf•in + 0.000291 lbf•in	
	100 lbf•in to 1000 lbf-in	0.012 lbf•in + 0.00293 lbf•in	
	25 lbf•in to 250 lbf-ft	0.022 lbf•in + 0.00286 lbf•in	
	60 lbf•ft to 600 lbf-ft	0.01 lbf•ft + 0.00293 lbf•ft/lbf•in	



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Mechanical

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Pipettes and Repeaters ^{FO}	0.1 μ L to 2 μ L	0.020 8 μ L/ μ L + 0.017 μ L	Photometric using Artel PCST TM CCA153, Calibration of Pipettes and Similar Delivery Systems Using the Photometric Method	
	2 μ L to 10 μ L	0.001 23 μ L/ μ L + 0.056 μ L		
	10 μ L to 30 μ L	0.002 95 μ L/ μ L + 0.038 μ L		
	20 μ L to 200 μ L	0.002 04 μ L/ μ L + 0.089 μ L		
	Equipment to Measure Flow ^F	200 μ L to 1 000 μ L	0.001 58 μ L/ μ L + 0.18 μ L	Gravimetric Tare Addition with Moisture Trap CCA132, Calibration of Pipettes and Similar Delivery Systems Using the Gravimetric Method
		1 000 μ L to 5 000 μ L	0.001 79 μ L/ μ L + 0.76 μ L	
		5 000 μ L to 10 000 μ L	0.006 95 μ L/ μ L + 25 μ L	
		10 000 μ L to 20 000 μ L	0.006 02 μ L/ μ L + 16 μ L	
Equipment to Measure Flow ^F	2 sccm to 20 sccm	0.028 sccm + 0.000 534 sccm/sccm	Fluke 1E2, 1E3, 3E4, Molbloes and Fluke Molbox+ CCA245 Calibration of Flow Devices	
	20 sccm to 100 sccm	0.000 47 sccm + 0.001 93 sccm/sccm		
	100 sccm to 1 000 sccm	0.002 6 sccm + 0.001 44 sccm/sccm		
	1 000 sccm to 2 000 sccm	0.007 5 sccm + 0.001 44 sccm/sccm		
	2 000 sccm to 3 000 sccm	4.2 sccm + 0.001 44 sccm/sccm		
	3 SLM to 50 SLM	0.002 5 SLM + 0.001 89 SLM/SLM		
	50 SLM to 100 SLM	0.002 6 SLM + 0.001 44 SLM/SLM		

Time & Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to measure Time and Frequency ^F	10 MHz	2 parts in 10^{-12}	Quartzlock E8-X GPS Reference CCA033, Calibration of Electronic Devices
	1 PPS	2 parts in 10^{-12}	
	Up to 20 MHz	1 part in 10^{-10}	HP 3325A with GPS CCA033, Calibration of Electronic Devices
	20 MHz to 300 MHz	2 parts in 10^{-10}	Fluke 5500A monitored with GPS disciplined Fluke PM6681 CCA033, Calibration of Electronic Devices
Equipment to measure Time and Frequency ^O	0.001 Hz to 300 MHz	1.2×10^{-5} Hz/Hz	Fluke PM6681 CCA033, Calibration of Electronic Devices



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Time and Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to output Time and Frequency ^{FO}	0.001 Hz to 300 MHz	1.2×10^{-5} Hz/Hz	Fluke PM6681 CCA033, Calibration of Electronic Devices
Equipment to source Time and Frequency ^F	Up to 300 MHz	2 parts in 10^{-10}	GPS Disciplined Fluke PM6681 CCA033, Calibration of Electronic Devices
Stopwatches /Timers ^{FO}	Up to 48 hours	0.05 sec/day	Timometer 4500 CCA049, Calibration of Timers
	60 sec to 8 640 0 sec	0.038 sec/day	Fluke PM6681 NIST 960-12 Totalized Method CCA033, Calibration of Electronic Devices

Chemical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Conductivity Meters ^F	18.18 M Ω -cm	0.27 M Ω -cm	Thornton 200CRw/ 240-201 Conductivity CCA011 Conductivity Probes

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Measurement PRT ^F	-196 °C	0.01 °C	Hart 1594A, Fluke 5699, EDL Cryo-Cal CCA223 Calibration of Temperature Devices, Metrology Lab
	-80 °C to 0 °C	0.007 4 °C + 0.000 088 °C/°C	Hart 1594A, Fluke 5699 and Fluke 7381 CCA223 Calibration of Temperature Devices, Metrology Lab
	0 °C to 110 °C	0.007 4 °C + 0.000 028 3 °C/°C	Hart 1594A, Fluke 5699 and Fluke 7341 CCA223 Calibration of Temperature Devices, Metrology Lab
	110 °C to 150 °C	0.011 °C + 0.000 040 4 °C/°C	Hart 1594A, Fluke 5699 and Fluke 7341 CCA223 Calibration of Temperature Devices, Metrology Lab



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Thermodynamic

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Temperature Measurement PRT ^F	150 °C to 200 °C	0.026 °C + 0.000 111 °C/°C	Fluke 1594, Fluke 5699 and Fluke 6102 CCA223 Calibration of Temperature Devices, Metrology Lab
	200 °C to 550 °C	0.002 8 °C + 0.000 035 °C/°C	Hart 1594, Fluke 5699 and Ultra Bath CCA223 Calibration of Temperature Devices, Metrology Lab
Temperature Measurement PRT ^O	-196 °C to 660 °C	0.025 °C	Hart 2560 and Fluke 5699 CCA223 Calibration of Temperature Devices, Metrology Lab
Temperature Measurement Thermistor ^{FO}	-40 °C to 140 °C	0.025 °C	Fluke 1594 and Hart 5699 SPRT CCA223 Calibration of Temperature Devices, Metrology Lab
Temperature Measurement LIG Thermometer ^F	-80 °C to 500 °C	0.025 °C	Hart 2560 and Hart 5628 SPRT CCA223 Calibration of Temperature Devices, Metrology Lab
Temperature Measurement Thermocouple – Type T ^F	-196°C to 400 °C	0.25 °C	
Temperature Measurement Thermocouple Types J & K ^F	0°C to 600 °C	0.35 °C	
Equipment to Measure Temperature ^F	0.01 °C	0.005 °C	Triple Point of Water CCA223 Calibration of Temperature Devices, Metrology Lab
	-38.834 4 °C	0.001 °C	ISO Tech Fixed Cell – Mercury CCA223 Calibration of Temperature Devices, Metrology Lab
	156.598 5 °C	0.002 °C	ISO Tech Fixed Cell – Indium CCA223 Calibration of Temperature Devices, Metrology Lab
	419.527 °C	0.002 °C	ISO Tech Fixed Cell – Zinc CCA223 Calibration of Temperature Devices, Metrology Lab
Equipment to Measure Humidity ^F	10 % RH to 95 % RH	0.5 % RH	Thunder Scientific 2500 Humidity CCA058 Calibration of Temperature, Humidity Device, Carbon Dioxide, Oxygen and Dew Point Devices



Certificate of Accreditation: Supplement

PCI

8100 Brownleigh Dr., #100A, Raleigh, NC 27617
Contact Name: Steve Hilker Phone: 919-781-7787

Accreditation is granted to the facility to perform the following calibrations:

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this calibration at its fixed location.
4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
6. The term T represents time in s (seconds).