



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Laerie, Inc.

56 Gateway Circle, Berthoud, CO 80513

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

& Meets the Requirements of ANSI/NCSI Z540.3-2006 sub-clause 5.3 and Z540-1-1994

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):

Electrical, Mechanical, 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:

March 23, 2022

Issue Date:

March 23, 2022

Expiration Date:

March 23, 2024

Accreditation No.:

115318

Certificate No.:

L22-225

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.pjllabs.com



Certificate of Accreditation: Supplement

Laerie, Inc.

56 Gateway Circle, Berthoud, CO 80513
 Contact Name: Dennis Ryan Phone: 970-532-7990

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

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 Voltage ^{FO}	0.3 μ V to 199.999 999 mV	5 μ V/V + 0.1 μ V	Fluke 8508A OEM Manual
	200 mV to 1.999 999 99 V	3.5 μ V/V + 0.4 μ V	
	2 V to 19.999 999 9 V	3.5 μ V/V + 4 μ V	
	20 V to 199.999 999 V	5.5 μ V/V + 40 μ V	
	200 V to 1 050 V	5.5 μ V/V + 500 μ V	
	0.5 kV to 2 kV	0.4 mV/V + 0.4 V	Vitrek 4600A (Option KV-35) With Matching Probe OEM Manual
	2 kV to 35 kV	0.4 mV/V + 7 V	
Equipment to Measure DC Voltage ^{FO}	10 nV to 220 mV	7.5 μ V/V + 0.4 μ V	Fluke 5730A OEM Manual
	220 mV to 2.2 V	5 μ V/V + 0.7 μ V	
	2.2 V to 11 V	3.5 μ V/V + 2.5 μ V	
	11 V to 22 V	3.5 μ V/V + 4 μ V	
	22 V to 220 V	5 μ V/V + 40 μ V	
	220 V to 1 100 V	6.5 μ V/V + 400 μ V	
	1 kV to 2.5 kV	38 V	Kikusui TOS 5051 OEM Manual
	2.6 kV to 5 kV	75 V	
Equipment to Output DC Current (Source) ^{FO}	1.25 nA to 200 μ A	12 μ A/A + 0.4 nA	Fluke 8508A OEM Manual
	200 μ A to 1.999 9 mA	12 μ A/A + 4 nA	
	2 mA to 19.999 mA	14 μ A/A + 40 nA	
	20 mA to 199.99 mA	48 μ A/A + 8 μ A	
	200 mA to 1.999 9 A	185 μ A/A + 16 μ A	
	2 A to 19.999 A	0.4 mA/A + 400 μ A	
Equipment to Measure DC Current ^{FO}	0.1 nA to 220 μ A	40 μ A/A + 6 nA	Fluke 5730A OEM Manual
	220 μ A to 2.2 mA	35 μ A/A + 7 nA	
	2.2 mA to 22 mA	35 μ A/A + 40 nA	
	22 mA to 220 mA	45 μ A/A + 0.7 μ A	
	220 mA to 2.2 A	80 μ A/A + 12 μ A	
	1.1 A to 2.999 99 A	0.38 mA/A + 40 μ A	Fluke 5520A/SC600 OEM Manual
	3 A to 10.999 9 A	0.5 mA/A + 500 μ A	
	11 A to 20.5 A	1 mA/A + 750 μ A	
Equipment to Measure DC Current for Clamp Ammeters ^{FO}	20 A to 149.999 A	2.5 mA/A + 15 mA	Fluke 5520A with 5500A Coil OEM Manual
	150 A to 1 050 A	2.5 mA/A + 50 mA	



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Equipment to Provide Resistance (Output) ^{FO}	12 $\mu\Omega$ to 1.999 999 99 Ω	17 $\mu\Omega/\Omega$ + 4 $\mu\Omega$	Fluke 8508A OEM Manual
	2 Ω to 19.999 999 9 Ω	9.5 $\mu\Omega/\Omega$ + 14 $\mu\Omega$	
	20 Ω to 199.999 999 Ω	8 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	
	200 Ω to 1.999 999 99 k Ω	8 $\mu\Omega/\Omega$ + 0.5 m Ω	
	2 k Ω to 19.999 999 9 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	20 k Ω to 199.999 999 k Ω	8 $\mu\Omega/\Omega$ + 50 m Ω	
	200 k Ω to 1.999 999 99 M Ω	9 $\mu\Omega/\Omega$ + 1 Ω	
	2 M Ω to 19.999 999 9 M Ω	20 $\mu\Omega/\Omega$ + 10 Ω	
	20 M Ω to 199.999 999 M Ω	120 $\mu\Omega/\Omega$ + 100 Ω	
200 M Ω to 1.999 999 99 G Ω	1.51 m Ω/Ω + 10 k Ω		
Equipment to Measure Resistance ^{FO}	80 $\mu\Omega$	40 $\mu\Omega$ + 40 $\mu\Omega$	Fluke 5730A OEM Manual
	80 $\mu\Omega$ to 1 Ω	95 $\mu\Omega/\Omega$ + 27 $\mu\Omega$	
	1 Ω to 1.9 Ω	95 $\mu\Omega/\Omega$ + 20 $\mu\Omega$	
	1.9 Ω to 10 Ω	23 $\mu\Omega/\Omega$ + 4 $\mu\Omega$	
	10 Ω to 19 Ω	23 $\mu\Omega/\Omega$ + 3.5 $\mu\Omega$	
	19 Ω to 190 Ω	10 $\mu\Omega/\Omega$ + 1.6 $\mu\Omega$	
	190 Ω to 19 k Ω	6.5 $\mu\Omega/\Omega$ + 1.6 $\mu\Omega$	
	19 k Ω to 190 k Ω	8.5 $\mu\Omega/\Omega$ + 1.6 $\mu\Omega$	
	190 k Ω to 1 M Ω	13 $\mu\Omega/\Omega$ + 2 $\mu\Omega$	
	1 M Ω to 1.9 M Ω	18 $\mu\Omega/\Omega$ + 2.5 $\mu\Omega$	
	1.9 M Ω to 10 M Ω	40 $\mu\Omega/\Omega$ + 8 $\mu\Omega$	
	10 M Ω to 19 M Ω	47 $\mu\Omega/\Omega$ + 16 $\mu\Omega$	
19 M Ω to 100 M Ω	100 $\mu\Omega/\Omega$ + 40 $\mu\Omega$		
Equipment to Output AC Voltage at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	Up to 200 mV	0.17 mV/V + 14 μ V	
10 Hz to 40 Hz	Up to 200 mV	0.14 mV/V + 4 μ V	
40 Hz to 100 Hz	Up to 200 mV	0.12 mV/V + 4 μ V	
100 Hz to 2 kHz	Up to 200 mV	0.11 mV/V + 2 μ V	
2 kHz to 10 kHz	Up to 200 mV	0.14 mV/V + 4 μ V	
10 kHz to 30 kHz	Up to 200 mV	0.34 mV/V + 8 μ V	
30 kHz to 100 kHz	Up to 200 mV	0.77 mV/V + 20 μ V	



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Equipment to Output AC Voltage at the listed frequencies ^{F0}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	200 mV to 2 V	0.15 mV/V + 0.12 mV	
10 Hz to 40 Hz	200 mV to 2 V	0.12 mV/V + 20 μ V	
40 Hz to 100 Hz	200 mV to 2 V	0.09 mV/V + 20 μ V	
100 Hz to 2 kHz	200 mV to 2 V	0.08 mV/V + 20 μ V	
2 kHz to 10 kHz	200 mV to 2 V	0.11 mV/V + 20 μ V	
10 kHz to 30 kHz	200 mV to 2 V	0.22 mV/V + 40 μ V	
30 kHz to 100 kHz	200 mV to 2 V	0.57 mV/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 ^{F0}			
1 Hz to 10 Hz	2 V to 20 V	0.15 mV/V + 1.2 mV	
10 Hz to 40 Hz	2 V to 20 V	0.12 mV/V + 200 μ V	
40 Hz to 100 Hz	2 V to 20 V	0.09 mV/V + 200 μ V	
100 Hz to 2 kHz	2 V to 20 V	0.08 mV/V + 200 μ V	
2 kHz to 10 kHz	2 V to 20 V	0.11 mV/V + 200 μ V	
10 kHz to 30 kHz	2 V to 20 V	0.22 mV/V + 400 μ V	
30 kHz to 100 kHz	2 V to 20 V	0.57 mV/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 ^{F0}			
1 Hz to 10 Hz	20 V to 200 V	0.15 mV/V + 12 mV	
10 Hz to 40 Hz	20 V to 200 V	0.12 mV/V + 2 mV	
40 Hz to 100 Hz	20 V to 200 V	0.09 mV/V + 2 mV	
100 Hz to 2 kHz	20 V to 200 V	0.08 mV/V + 2 mV	
2 kHz to 10 kHz	20 V to 200 V	0.11 mV/V + 2 mV	
10 kHz to 30 kHz	20 V to 200 V	0.22 mV/V + 4 mV	
30 kHz to 100 kHz	20 V to 200 V	0.57 mV/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 V	



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Equipment to Output AC Voltage at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	200 V to 1 000 V	0.15 mV/V + 70 mV	
10 Hz to 40 Hz	200 V to 1 000 V	0.12 mV/V + 20 mV	
40 Hz to 10 kHz	200 V to 1 000 V	0.115 mV/V + 20 mV	
10 kHz to 30 kHz	200 V to 1 000 V	0.225 mV/V + 40 mV	
30 kHz to 100 kHz	200 V to 1 000 V	0.58 mV/V + 200 mV	
Equipment to Output AC Voltage at the listed frequencies ^{FO}			Vitrek 4600A (Option KV-35) with Matching Probe OEM Manual
60 Hz	0.5 kV to 2 kV	0.7 mV/V + 2 V	
400 Hz	0.5 kV to 2 kV	4 mV/V + 4 V	
60 Hz	1.2 kV to 30 kV peak	5 mV/V + 70 V	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option OEM Manual
10 Hz to 20 Hz	1 nV to 2.2 mV	240 μ V/V + 4 μ V	
20 Hz to 40 Hz	1 nV to 2.2 mV	90 μ V/V + 4 μ V	
40 Hz to 20 kHz	1 nV to 2.2 mV	80 μ V/V + 4 μ V	
20 kHz to 50 kHz	1 nV to 2.2 mV	200 μ V/V + 4 μ V	
50 kHz to 100 kHz	1 nV to 2.2 mV	500 μ V/V + 5 μ V	
100 kHz to 300 kHz	1 nV to 2.2 mV	1 050 μ V/V + 10 μ V	
300 kHz to 500 kHz	1 nV to 2.2 mV	1 400 μ V/V + 20 μ V	
500 kHz to 1 MHz	1 nV to 2.2 mV	2 700 μ V/V + 20 μ V	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			
10 Hz to 20 Hz	2.2 mV to 22 mV	240 μ V/V + 4 μ V	
20 Hz to 40 Hz	2.2 mV to 22 mV	90 μ V/V + 4 μ V	
40 Hz to 20 kHz	2.2 mV to 22 mV	80 μ V/V + 4 μ V	
20 kHz to 50 kHz	2.2 mV to 22 mV	200 μ V/V + 4 μ V	
50 kHz to 100 kHz	2.2 mV to 22 mV	500 μ V/V + 5 μ V	
100 kHz to 300 kHz	2.2 mV to 22 mV	1 050 μ V/V + 10 μ V	
300 kHz to 500 kHz	2.2 mV to 22 mV	1 400 μ V/V + 20 μ V	
500 kHz to 1 MHz	2.2 mV to 22 mV	2 700 μ V/V + 20 μ V	



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Equipment to Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option OEM Manual
10 Hz to 20 Hz	22 mV to 220 mV	240 μ V/V + 12 μ V	
20 Hz to 40 Hz	22 mV to 220 mV	90 μ V/V + 7 μ V	
40 Hz to 20 kHz	22 mV to 220 mV	57 μ V/V + 7 μ V	
20 kHz to 50 kHz	22 mV to 220 mV	120 μ V/V + 7 μ V/V	
50 kHz to 100 kHz	22 mV to 220 mV	310 μ V/V + 17 μ V	
100 kHz to 300 kHz	22 mV to 220 mV	655 μ V/V + 20 μ V	
300 kHz to 500 kHz	22 mV to 220 mV	1 400 μ V/V + 25 μ V	
500 kHz to 1 MHz	22 mV to 220 mV	2 700 μ V/V + 45 μ V	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			
10 Hz to 20 Hz	220 mV to 2.2 V	240 μ V/V + 40 μ V	
20 Hz to 40 Hz	220 mV to 2.2 V	90 μ V/V + 15 μ V	
40 Hz to 20 kHz	220 mV to 2.2 V	42 μ V/V + 8 μ V	
20 kHz to 50 kHz	220 mV to 2.2 V	67 μ V/V + 10 μ V	
50 kHz to 100 kHz	220 mV to 2.2 V	85 μ V/V + 30 μ V	
100 kHz to 300 kHz	220 mV to 2.2 V	336 μ V/V + 80 μ V	
300 kHz to 500 kHz	220 mV to 2.2 V	1 000 μ V/V + 200 μ V	
500 kHz to 1 MHz	220 mV to 2.2 V	1 700 μ V/V + 300 μ V	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			
10 Hz to 20 Hz	2.2 V to 22 V	240 μ V/V + 400 μ V	
20 Hz to 40 Hz	2.2 V to 22 V	90 μ V/V + 150 μ V	
40 Hz to 20 kHz	2.2 V to 22 V	42 μ V/V + 50 μ V	
20 kHz to 50 kHz	2.2 V to 22 V	67 μ V/V + 100 μ V	
50 kHz to 100 kHz	2.2 V to 22 V	83 μ V/V + 200 μ V	
100 kHz to 300 kHz	2.2 V to 22 V	254 μ V/V + 600 μ V	
300 kHz to 500 kHz	2.2 V to 22 V	1 mV/V + 2 mV	
500 kHz to 1 MHz	2.2 V to 22 V	1.5 mV/V + 3.2 mV	



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Equipment to Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option OEM Manual
10 Hz to 20 Hz	22 V to 220 V	2.4 mV/V + 4 mV	
20 Hz to 40 Hz	22 V to 220 V	0.09 mV/V + 1.5 mV	
40 Hz to 20 kHz	22 V to 220 V	0.052 mV/V + 0.6 mV	
20 kHz to 50 kHz	22 V to 220 V	0.08 mV/V + 1 mV	
50 kHz to 100 kHz	22 V to 220 V	0.15 mV/V + 2.5 mV	
100 kHz to 300 kHz	22 V to 220 V	0.9 mV/V + 16 mV	
300 kHz to 500 kHz	22 V to 220 V	4.4 mV/V + 40 mV	
500 kHz to 1MHz	22 V to 220 V	8 mV/V + 80 mV	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option OEM Manual
15 Hz to 50 Hz	220 V to 1 100 V	300 μ V/V + 16 mV	
20 Hz to 1 kHz	220 V to 1 100 V	65 μ V/V + 3.5 mV	
Equipment to Measure AC Voltage at the listed frequencies ^{FO}			Kikusui TOS 5051 OEM Manual
60 Hz	1 kV to 2.5 kV	38 V	
60 Hz	2.6 kV to 5 kV	75 V	
Equipment to Output AC Current at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	12 μ A to 200 μ A	0.71 mA/A + 0.02 μ A	
10 Hz to 10 kHz	12 μ A to 200 μ A	0.5 mA/A + 0.02 μ A	
10 kHz to 30 kHz	12 μ A to 200 μ A	0.71 mA/A + 0.02 μ A	
30 kHz to 100 kHz	12 μ A to 200 μ A	4 mA/A + 0.02 μ A	
Equipment to Output AC Current at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	200 μ A to 2 mA	0.31 mA/A + 0.2 μ A	
10 Hz to 10 kHz	200 μ A to 2 mA	0.3 mA/A + 0.2 μ A	
10 kHz to 30 kHz	200 μ A to 2 mA	0.71 mA/A + 0.2 μ A	
30 kHz to 100 kHz	200 μ A to 2 mA	4 mA/A + 0.2 μ A	
Equipment to Output AC Current at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	2 mA to 20 mA	0.31 mA/A + 0.2 μ A	
10 Hz to 10 kHz	2 mA to 20 mA	0.3 mA/A + 0.2 μ A	
10 kHz to 30 kHz	2 mA to 20 mA	0.71 mA/A + 0.2 μ A	
30 kHz to 100 kHz	2 mA to 20 mA	4 mA/A + 0.2 μ A	



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Equipment to Output AC Current at the listed frequencies ^{FO}			Fluke 8508A OEM Manual
1 Hz to 10 Hz	20 mA to 200 mA	0.31 mA/A + 20 μ A	
10 Hz to 10 kHz	20 mA to 200 mA	0.29 mA/A + 20 μ A	
10 kHz to 30 kHz	20 mA to 200 mA	0.63 mA/A + 20 μ A	
Equipment to Output AC Current at the listed frequencies ^{FO}			
1 Hz to 10 Hz	200 mA to 2 A	0.62 mA/A + 0.2 mA	
10 Hz to 10 kHz	200 mA to 2 A	0.73 mA/A + 0.2 mA	
10 kHz to 30 kHz	200 mA to 2 A	3 mA/A + 0.2 mA	
Equipment to Output AC Current at the listed frequencies ^{FO}			
10 Hz to 2 kHz	2 A to 20 A	0.82 mA/A + 2 mA	
2 kHz to 10 kHz	2 A to 20 A	2.5 mA/A + 2 mA	
Equipment to Measure AC Current for Clamp Ammeters ^{FO}			Fluke 5520A with 5500A Coil OEM Manual
45Hz to 65Hz	20 A to 149.999 A	2.8 mA/A + 25 mA	
65Hz to 440 Hz	20 A to 149.999 A	7.9 mA/A + 27 mA	
Equipment to Measure AC Current for Clamp Ammeters ^{FO}			
45Hz to 65Hz	150 A to 1 025 A	2.8 mA/A+ 90 mA	
65Hz to 440 Hz	150 A to 1 025 A	7.9 mA/A + 100 mA	
Equipment to Measure Ls, Lp Inductance ^{FO}	0.001 nH to 00.000 kH	0.2% of reading	IET 1920 OEM Manual
Equipment to Measure Cs, Cp Capacitance ^{FO}	0.01 F to 9.999 F	0.2% of reading	



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Equipment to Measure Y, Gp, Bp Conductance ^{FO}	10 nS to 9999.9 S	02% of reading	IET 1920 OEM Manual
Equipment to Measure Z , Rs, Rp, Xs, ESR Impedance ^{FO}	0.00001 m Ω to 99.999 m Ω	0.2% of reading	
Equipment to Measure Phase Angle ^{FO}	-180.00° to +179.99°	0.36° of reading	
Equipment to Measure DC Resistance ^{FO}	0.100 0 m Ω to 100.99 k Ω	0.4% of reading	
Equipment to Measure Inductance ^{FO}	1 mH	0.001 mH	General Radio 1482-E OEM Manual
	100 mH	0.1 mH	General Radio 1482-L OEM Manual

Electrical – RF/Microwave

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Equipment to Measure RF Power ^{FO}	10 Hz to 4 GHz	\pm 0.00005Hz	Fluke 9640A with RF Reference Source OEM Manual
	>+20 dBm to +24 dBm 10Hz to 20 kHz	\pm 0.05 dB	Fluke 9640A-50 Leveling Head OEM Manual
	>+20 dBm to +24 dBm >20 kHz to <100 kHz	\pm 0.05 dB	
	>+20 dBm to +24 dBm 100 kHz to <10 MHz	\pm 0.05 dB	
	>+20 dBm to +24 dBm 10 MHz to 125 MHz	\pm 0.05 dB	
	>+14 dBm to +20 dBm 10Hz to 20 kHz	\pm 0.05 dB	
	>+14 dBm to +20 dBm >20 kHz to <100 kHz	\pm 0.05 dB	
	>+14 dBm to +20 dBm 100 kHz to <10 MHz	\pm 0.05 dB	
	>+14 dBm to +20 dBm 10 MHz to 125 MHz	\pm 0.05 dB	
	>+14 dBm to +20 dBm >125 MHz to 300 MHz	\pm 0.1 dB	



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Equipment to Measure RF Power FO	>+14 dBm to +20 dBm >300 MHz to 1.4 GHz	± 0.25 dB	Fluke 9640A-50 Leveling Head OEM Manual
	-17 dBm to +14 dBm 10Hz to 20 kHz	± 0.05 dB	
	-17 dBm to +14 dBm >20 kHz to <100 kHz	± 0.05 dB	
	-17 dBm to +14 dBm 100 kHz to <10 MHz	± 0.05 dB	
	-17 dBm to +14 dBm 10 MHz to 125 MHz	± 0.05 dB	
	-17 dBm to +14 dBm >125 MHz to 300 MHz	± 0.1 dB	
	-17 dBm to +14 dBm >300 MHz to 1.4 GHz	± 0.25 dB	
	-17 dBm to +14 dBm >1.4 GHz to 3 GHz	± 0.3 dB	
	-17 dBm to +14 dBm >3 GHz to 4 GHz	± 0.5 dB	
	-48 dBm to <-17 dBm 10Hz to 20 kHz	± 0.05 dB	
	-48 dBm to <-17 dBm >20 kHz to <100 kHz	± 0.05 dB	
	-48 dBm to <-17 dBm 100 kHz to <10 MHz	± 0.05 dB	
	-48 dBm to <-17 dBm 10 MHz to 125 MHz	± 0.05 dB	
	-48 dBm to <-17 dBm >125 MHz to 300 MHz	± 0.1 dB	
	-48 dBm to <-17 dBm >300 MHz to 1.4 GHz	± 0.5 dB	
	-48 dBm to <-17 dBm >1.4 GHz to 3 GHz	± 0.5 dB	
	-48 dBm to <-17 dBm >3 GHz to 4 GHz	± 0.5 dB	



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Electrical – RF/Microwave

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 Generate Power ^{FO}	2.0 GHz	2.2%	Agilent E4418B Power Meter with CW Power Sensor ECP-E26A OEM Manual
	4.0 GHz	2.0%	
	6.0 GHz	2.1%	
	8.0 GHz	2.3%	
	10.0 GHz	2.5%	
	12.4 GHz	2.8%	
	14.0 GHz	3.1%	
	16.0 GHz	3.4%	
	18.0 GHz	3.6%	HP 8484A Power Sensor OEM Manual
	2.0 GHz	2.2%	
	4.0 GHz	2.0%	
	6.0 GHz	2.1%	
	8.0 GHz	2.3%	
	10.0 GHz	2.5%	
	12.4 GHz	2.8%	
	14.0 GHz	3.1%	
	16.0 GHz	3.4%	
	18.0 GHz	3.6%	

Mechanical

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 Gas Pressure ^{FO} (Absolute or Gage)	-29.53 inHg to 29.53 inHg (absolute)	0.02 % FS	Additel ADT 761 Automated Pressure Calibrator (for air) OEM Manual
	0 inHg to 738.25 inHg (gage)		
	0.00 to 15000 psia	0.016 % of reading	DHI PPCH-A100M Hydraulic Pressure Controller/Calibrator (for oils) OEM Manual
	25 inHg to ATM (absolute)	0.18 % of reading	

Time & Frequency

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 Generate Time and Frequency ^{FO}	0.1 Hz to 225 MHz	10^{-5} Hz	HP53131A with Fluke 910R Time Base OEM Manual
	200 MHz to 12.4 GHz	10^{-5} Hz	



Certificate of Accreditation: Supplement

Laerie, Inc.

56 Gateway Circle, Berthoud, CO 80513
 Contact Name: Dennis Ryan Phone: 970-532-7990

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

Thermodynamic

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 Temperature SPRTs ^{FO}	-95 °C to 0 °C	0.09 °C	Hart SPRT 5628 and Fluke Black Stack 2560 SPRT used with Polystat 9510 Constant Temperature Liquid Bath or Fluke 9144 or Fluke 9190A Metrology Wells OEM Manual
	0 °C to 100 °C	0.07 °C	
	100 °C to 420 °C	0.43 °C	
	420 °C to 660 °C	0.64 °C	

Thermodynamic

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 Temperature PRTs ^{FO}	-95 °C to 0 °C	0.09 °C	Hart SPRT 5628 and Fluke Black Stack 2562 PRT Scanner used with Polystat 9510 Constant Temperature Liquid Bath or Fluke 9144 or Fluke 9190A Metrology Wells OEM Manual
	0 °C to 100 °C	0.02 °C	
	100 °C to 420 °C	0.43 °C	
	420 °C to 660 °C	0.64 °C	
Equipment to Measure Temperature Thermistors ^{FO}	-95 °C to 0 °C	0.09 °C	Hart SPRT 5628 and Fluke Black Stack 2564 Thermistor Scanner used in Polystat 9510 Constant Temperature Liquid Bath or Fluke 9144 or Fluke 9190A Metrology Wells OEM Manual
	0 °C to 100 °C	0.07 °C	
	100 °C to 420 °C	0.43 °C	
	420 °C to 660 °C	0.64 °C	



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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 Temperature Thermocouple Type E ^{FO}	-95 °C to 660 °C	1.6 °C	Hart SPRT 5628 and Fluke Black Stack 2566
Equipment to Measure Temperature Thermocouple Type J ^{FO}	-95 °C to 660 °C	1.6 °C	Thermocouple Scanner used with Polystat 9510
Equipment to Measure Temperature Thermocouple Type K ^{FO}	-95 °C to 660 °C	1.7 °C	Constant Temperature Liquid Bath or Fluke 9144 or
Equipment to Measure Temperature Thermocouple Type N ^{FO}	-95 °C to 660 °C	1.7 °C	Fluke 9190A Metrology Wells OEM Manual
Equipment to Measure Temperature Thermocouple Type S ^{FO}	-95 °C to 660 °C	1.9 °C	
Equipment to Measure Temperature Thermocouple Type T ^{FO}	-95 °C to 300 °C	1.6 °C	

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 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.
4. 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.