



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513

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

ISO/IEC 17025:2005

& 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 January 2009):

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/Operations Manager

Initial Accreditation Date:

February 26, 2013

Issue Date:

March 16, 2017

Expiration Date:

March 16, 2019

Accreditation No.:

73303

Certificate No.:

L17-116

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.pjlabs.com



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Winston Scott PE, QM & 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
	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
	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
	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
	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
	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
	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
	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
	150 A to 1 050 A	2.5 mA/A + 50 mA	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Resistance (Output) ^{FO}	12 $\mu\Omega$ to 1.999 999 99 Ω	17 $\mu\Omega/\Omega$ + 4 $\mu\Omega$	Fluke 8508A
	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} Up to 200 mV	80 $\mu\Omega$	40 $\mu\Omega$ + 40 $\mu\Omega$	Fluke 5730A
	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
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	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 AC Voltage at the listed frequencies ^{FO}			Fluke 8508A
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 ^{FO}			
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 ^{FO}			
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	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 AC Voltage at the listed frequencies ^{FO}			Fluke 8508A
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
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
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	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option
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	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Measure AC Voltage at the listed frequencies ^{FO}			Fluke 5730A Wideband AC Voltage Option
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}			
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
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
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}			
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}			
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	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 AC Current at the listed frequencies ^{FO}			Fluke 8508A
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
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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	1 pF	3 pF/F + 0.3 pF	
120 Hz	1 pF	3 pF/F + 0.3 pF	
200 Hz	1 pF	3 pF/F + 0.2 pF	
400 Hz	1 pF	3 pF/F + 0.6 pF	
1 kHz	1 pF	3 pF/F + 0.3 pF	
2 kHz	1 pF	3 pF/F + 0.2 pF	
4 kHz	1 pF	3 pF/F + 0.6 pF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
10 kHz	1 pF	3 pF/F + 0.3 pF	
20 kHz	1 pF	3 pF/F + 0.2 pF	
40 kHz	1 pF	3 pF/F + 0.6 pF	
100 kHz	1 pF	3 pF/F + 0.3 pF	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	10 pF	0.03 pF/F + 3 pF	
120 Hz	10 pF	0.03 pF/F + 3 pF	
200 Hz	10 pF	0.03 pF/F + 2 pF	
400 Hz	10 pF	0.03 pF/F + 6 pF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
1 kHz	10 pF	0.03 pF/F + 3 pF	
2 kHz	10 pF	0.03 pF/F + 2 pF	
4 kHz	10 pF	0.01 pF/F + 6 pF	
10 kHz	10 pF	0.01 pF/F + 3 pF	
20 kHz	10 pF	0.01 pF/F + 2 pF	
40 kHz	10 pF	0.03 pF/F + 6 pF	
100 kHz	10 pF	0.03 pF/F + 3 pF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	100 pF	0.3 pF/F + 3 pF	
120 Hz	100 pF	0.3 pF/F + 3 pF	
200 Hz	100 pF	0.3 pF/F + 2 pF	
400 Hz	100 pF	0.1 pF/F + 6 pF	
1 kHz	100 pF	0.1 pF/F + 3 pF	
2 kHz	100 pF	0.1 pF/F + 2 pF	
4 kHz	100 pF	0.1 pF/F + 6 pF	
10 kHz	100 pF	0.1 pF/F + 3 pF	
20 kHz	100 pF	0.1 pF/F + 2 pF	
40 kHz	100 pF	0.1 pF/F + 6 pF	
100 kHz	100 pF	0.1 pF/F + 3 pF	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	1 nF	1 pF/F + 3 pF	
120 Hz	1 nF	1pF/F + 3 pF	
200 Hz	1 nF	1 pF/F + 2 pF	
400 Hz	1 nF	1 pF/F + 6 pF	
1 kHz	1 nF	1pF/F + 3 pF	
2 kHz	1 nF	1pF/F + 2 pF	
4 kHz	1 nF	1 pF/F + 6 pF	
10 kHz	1 nF	1 pF/F + 3 pF	
20 kHz	1 nF	1 pF/F + 2 pF	
40 kHz	1 nF	1 pF/F + 6 pF	
100 kHz	1 nF	1 pF/F + 3 pF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	10 nF	0.01 nF/F + 3 nF	
120 Hz	10 nF	0.01 nF/F + 3 nF	
200 Hz	10 nF	0.01 nF/F + 2 nF	
400 Hz	10 nF	0.01 nF/F + 6 nF	
1 kHz	10 nF	0.01 nF/F + 3 nF	
2 kHz	10 nF	0.01 nF/F+ 2 nF	
4 kHz	10 nF	0.01 nF/F + 6 nF	
10 kHz	10 nF	0.01 nF/F + 3 nF	
20 kHz	10 nF	0.01 nF/F + 2 nF	
40 kHz	10 nF	0.01 nF/F + 6 nF	
100 kHz	10 nF	0.01 nF/F + 3 nF	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	100 nF	0.1 nF/F + 3 nF	
120 Hz	100 nF	0.1 nF/F + 3 nF	
200 Hz	100 nF	0.1 nF/F + 2 nF	
400 Hz	100 nF	0.1 nF/F + 6 nF	
1 kHz	100 nF	0.1 nF/F + 3 nF	
2 kHz	100 nF	0.1 nF/F + 2 nF	
4 kHz	100 nF	0.1 nF/F + 6 nF	
10 kHz	100 nF	0.1 nF/F + 3 nF	
20 kHz	100 nF	0.1 nF/F + 2 nF	
40 kHz	100 nF	0.1 nF/F + 1 nF	
100 kHz	100 nF	0.1 nF/F + 1 nF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	1 μ F	1 nF/F + 3 nF	
120 Hz	1 μ F	1 nF/F + 3 nF	
200 Hz	1 μ F	1 nF/F + 2 nF	
400 Hz	1 μ F	1 nF/F + 6 nF	
1 kHz	1 μ F	1 nF/F + 3 nF	
2 kHz	1 μ F	1 nF/F + 2 nF	
4 kHz	1 μ F	3 nF/F + 1 nF	
10 kHz	1 μ F	3 nF/F + 1 nF	
20 kHz	1 μ F	3 nF/F + 1 nF	
40 kHz	1 μ F	3 nF/F + 1 nF	
100 kHz	1 μ F	3 nF/F + 1 nF	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	10 μ F	0.01 μ F/F + 3 μ F	
120 Hz	10 μ F	0.01 μ F/F + 3 μ F	
200 Hz	10 μ F	0.01 μ F/F + 2 μ F	
400 Hz	10 μ F	0.03 μ F/F + 1 μ F	
1 kHz	10 μ F	0.03 μ F/F + 1 μ F	
2 kHz	10 μ F	0.03 μ F/F + 1 μ F	
4 kHz	10 μ F	0.03 μ F/F + 1 μ F	
10 kHz	10 μ F	0.03 μ F/F + 1 μ F	
20 kHz	10 μ F	0.03 μ F/F + 1 μ F	
40 kHz	10 μ F	0.03 μ F/F + 1 μ F	
100 kHz	10 μ F	0.03 μ F/F + 1 μ F	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	100 μ F	0.3 μ F/F + 1 μ F	
120 Hz	100 μ F	0.3 μ F/F + 1 μ F	
200 Hz	100 μ F	0.3 μ F/F + 1 μ F	
400 Hz	100 μ F	0.3 μ F/F + 1 μ F	
1 kHz	100 μ F	0.3 μ F/F + 1 μ F	
2 kHz	100 μ F	0.3 μ F/F + 1 μ F	
4 kHz	100 μ F	1 μ F/F + 1 μ F	
10 kHz	100 μ F	1 μ F/F + 1 μ F	
20 kHz	100 μ F	0.3 μ F/F + 1 μ F	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	1 mF	3 μ F/F + 1 μ F	
120 Hz	1 mF	3 μ F/F + 1 μ F	
200 Hz	1 mF	3 μ F/F + 1 μ F	
400 Hz	1 mF	10 μ F/F + 1 μ F	
1 kHz	1 mF	10 μ F/F + 1 μ F	
2 kHz	1 mF	10 μ F/F + 1 μ F	
4 kHz	1 mF	30 μ F/F + 1 μ F	
10 kHz	1 mF	30 μ F/F + 1 μ F	
20 kHz	1 mF	30 μ F/F + 1 μ F	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Capacitance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	10 mF	0.1 mF/F + 1 mF	
200 Hz	10 mF	0.1 mF/F + 1 mF	
400 Hz	10 mF	0.3 mF/F + 1 mF	
1 kHz	10 mF	0.3 mF/F + 1 mF	
2 kHz	10 mF	0.3 mF/F + 1 mF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	100 mF	3 mF/F + 1 mF	
120 Hz	100 mF	3 mF/F + 1 mF	
200 Hz	100 mF	3 mF/F + 1 mF	
400 Hz	100 mF	5 mF/F + 1 mF	
1 kHz	100 mF	10 mF/F + 1 mF	
2 kHz	100 mF	10 mF/F + 1 mF	
Equipment to Provide Capacitance at the listed Fixed Point frequencies ^{FO}			
100 Hz	1 F	100 mF/F + 1 mF	
120 Hz	1 F	100 mF/F + 1 mF	
200 Hz	1 F	100 mF/F + 1 mF	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	100 nH	1 nH/H + 5.1 nH	
120 Hz	100 nH	1 nH/H + 5.1 nH	
200 Hz	100 nH	1 nH/H + 5.1 nH	
400 Hz	100 nH	1 nH/H + 5.1 nH	
1 kHz	100 nH	1 nH/H + 5.1 nH	
2 kHz	100 nH	1 nH/H + 5.1 nH	
4 kHz	100 nH	1 nH/H + 5.1 nH	
10 kHz	100 nH	1 nH/H + 5.1 nH	
20 kHz	100 nH	1 nH/H + 5.1 nH	
40 kHz	100 nH	1 nH/H + 5.1 nH	
100 kHz	100 nH	1 nH/H + 5.1 nH	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Winston Scott PE, QM & 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 Provide Inductance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	1 μ H	10 nH/H + 5.1 nH	
120 Hz	1 μ H	10 nH/H + 5.1 nH	
200 Hz	1 μ H	10 nH/H + 5.1 nH	
400 Hz	1 μ H	10 nH/H + 5.1 nH	
1 kHz	1 μ H	10 nH/H + 5.1 nH	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
2 kHz	1 μ H	10 nH/H + 5.1 nH	
4 kHz	1 μ H	10 nH/H + 5.1 nH	
10 kHz	1 μ H	5 nH/H + 5.1 nH	
20 kHz	1 μ H	10 nH/H + 5.1 nH	
40 kHz	1 μ H	10 nH/H + 5.1 nH	
100 kHz	1 μ H	10 nH/H + 5.1 nH	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	10 μ H	0.1 μ H/H + 5.1 μ H	
120 Hz	10 μ H	0.1 μ H/H + 5.1 μ H	
200 Hz	10 μ H	0.1 μ H/H + 5.1 μ H	
400 Hz	10 μ H	0.1 μ H/H + 5.1 μ H	
1 kHz	10 μ H	0.05 μ H/H + 5.1 μ H	
2 kHz	10 μ H	0.05 μ H/H + 5.1 μ H	
4 kHz	10 μ H	0.05 μ H/H + 5.1 μ H	
10 kHz	10 μ H	0.03 μ H/H + 3 μ H	
20 kHz	10 μ H	0.03 μ H/H + 3 μ H	
40 kHz	10 μ H	0.03 μ H/H + 3 μ H	
100 kHz	10 μ H	0.01 μ H/H + 3 μ H	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Inductance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	100 μ H	0.5 μ H/H + 5.1 μ H	
120 Hz	100 μ H	0.5 μ H/H + 5.1 μ H	
200 Hz	100 μ H	0.5 μ H/H + 5.1 μ H	
400 Hz	100 μ H	0.5 μ H/H + 5.1 μ H	
1 kHz	100 μ H	0.3 μ H/H + 3 μ H	
2 kHz	100 μ H	0.3 μ H/H + 3 μ H	
4 kHz	100 μ H	0.3 μ H/H + 3 μ H	
10 kHz	100 μ H	0.1 μ H/H + 3 μ H	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
20 kHz	100 μ H	0.1 μ H/H + 3 μ H	
40 kHz	100 μ H	0.1 μ H/H + 3 μ H	
100 kHz	100 μ H	0.2 μ H/H + 3 μ H	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	1 mH	3 μ H/H + 3 μ H	
120 Hz	1 mH	3 μ H/H + 3 μ H	
200 Hz	1 mH	3 μ H/H + 3 μ H	
400 Hz	1 mH	3 μ H/H + 3 μ H	
1 kHz	1 mH	1 μ H/H + 3 μ H	
2 kHz	1 mH	1 μ H/H + 3 μ H	
4 kHz	1 mH	2 μ H/H + 3 μ H	
10 kHz	1 mH	2 μ H/H + 3 μ H	
20 kHz	1 mH	2 μ H/H + 3 μ H	
40 kHz	1 mH	2 μ H/H + 3 μ H	
100 kHz	1 mH	3 μ H/H + 1 μ H	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Inductance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	10 mH	0.01 mH/H + 3 mH	
120 Hz	10 mH	0.01 mH/H + 3 mH	
200 Hz	10 mH	0.01 mH/H + 3 mH	
400 Hz	10 mH	0.01 mH/H + 3 mH	
1 kHz	10 mH	0.02 mH/H + 3 mH	
2 kHz	10 mH	0.02 mH/H + 3 mH	
4 kHz	10 mH	0.02 mH/H + 3 mH	
10 kHz	10 mH	0.03 mH/H + 1 mH	
20 kHz	10 mH	0.03 mH/H + 1 mH	
40 kHz	10 mH	0.03 mH/H + 1 mH	
100 kHz	10 mH	0.03 mH/H + 1 mH	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	100 mH	0.2 mH/H + 1 mH	
120 Hz	100 mH	0.2 mH/H + 1 mH	
200 Hz	100 mH	0.2 mH/H + 1 mH	
400 Hz	100 mH	0.2 mH/H + 1 mH	
1 kHz	100 mH	0.3 mH/H + 1 mH	
2 kHz	100 mH	0.3 mH/H + 1 mH	
4 kHz	100 mH	0.3 mH/H + 1 mH	
10 kHz	100 mH	0.3 mH/H + 1 mH	
20 kHz	100 mH	0.3 mH/H + 1 mH	
40 kHz	100 mH	0.3 mH/H + 1 mH	
100 kHz	100 mH	0.3 mH/H + 1 mH	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Inductance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	1 H	3 mH/H + 1 mH	
120 Hz	1 H	3 mH/H + 1 mH	
200 Hz	1 H	3 mH/H + 1 mH	
400 Hz	1 H	3 mH/H + 1 mH	
1 kHz	1 H	3 mH/H + 1 mH	
2 kHz	1 H	3 mH/H + 1 mH	
4 kHz	1 H	3 mH/H + 1 mH	
10 kHz	1 H	3 mH/H + 1 mH	
20 kHz	1 H	3 mH/H + 1 mH	
40 kHz	1 H	3 mH/H + 1 mH	
100 kHz	1 H	30 mH/H + 1 mH	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	10 H	0.03 H/H + 1 H	
120 Hz	10 H	0.03 H/H + 1 H	
200 Hz	10 H	0.03 H/H + 1 H	
400 Hz	10 H	0.03 H/H + 1 H	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
1 kHz	10 H	0.03 H/H + 1 H	
2 kHz	10 H	0.03 H/H + 1 H	
4 kHz	10 H	0.03 H/H + 1 H	
10 kHz	10 H	0.3 H/H + 1 H	
20 kHz	10 H	0.3 H/H + 1 H	
40 kHz	10 H	0.3 H/H + 1 H	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 Provide Inductance at the listed Fixed Point frequencies ^{FO}			HP 4274A
100 Hz	100 H	0.3 H/H + 1 H	
120 Hz	100 H	0.3 H/H + 1 H	
200 Hz	100 H	0.3 H/H + 1 H	
400 Hz	100 H	0.3 H/H + 1 H	
1 kHz	100 H	3 H/H + 1 H	
2 kHz	100 H	3 H/H + 1 H	
4 kHz	100 H	3 H/H + 1 H	
Equipment to Provide Inductance at the listed Fixed Point frequencies ^{FO}			
100 Hz	1 kH	30 H/H +1 H	
120 Hz	1 kH	30 H/H +1 H	
200 Hz	1 kH	30 H/H +1 H	
400 Hz	1 kH	30 H/H +1 H	
1 kHz	1 kH	50 H/H +1 H	
2 kHz	1 kH	50 H/H +1 H	
4 kHz	1 kH	50 H/H +1 H	
Equipment to Measure Inductance ^{FO}	1 mH	0.001 mH	General Radio 1482-E
	100 mH	0.1 mH	General Radio 1482-L

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 Measure RF Power ^{FO}	1 mHz to 4 GHz	0.05 ppm + 5 μ Hz	Fluke 9640A with RF Reference Source
Equipment to Measure RF Power ^{FO} Down to -48 dBm Equipment to Measure RF Power ^{FO} 10 MHz to 128 MHz	-130 dBm to +24 dBm to 125 MHz +14 dBm at 4 GHz (leveled)	0.03 dB to 100 kHz	Fluke 9640A-50 Leveling Head
		0.05 dB to 128 MHz	
		0.5 dB at 4 GHz	
		0.05 dB to -48 dBm	
		0.1 dB to -84 dBm	
		0.7 dB at -130 dBm	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Winston Scott PE, QM & Phone: 970-532-7990

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

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}	-70 dBm to 20 dBm (50 MHz to 26.5 GHz)	2.7 % at 100 MHz to 3.5 % at 26.5 GHz (Reference 50 MHz and 0 dBm)	Agilent E4418B Power Meter with CW Power Sensor ECP-E26A
	-70 dBm to -20 dBm (10 MHz to 18 GHz)	0.05 dBm at 50 MHz	HP 8484A Power Sensor

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)	2.5 kPa to 1.25 MPa (0.36 psig to 2 500 psig)	0.009 % of reading (25 % to 100 % FS)	Fluke (Ruska) 7252i Dual Channel Pressure and Calibrator used with compressed gas bottles.
	-100 kPa to 100 kPa (-14.5 psi to +14.5 psi) (absolute)	0.02 % FS	Additel ADT 761 Automated Pressure Calibrator (for air)
	0 MPa to 2.5 MPa (gage)		
	30 MPa to 100 MPa (4 400 psi to 15 000 psi)	0.016 % of reading	DHI PPCH-A100M Hydraulic Pressure Controller/Calibrator (for oils)
	Below 30 MPa (gage)	0.18 % of reading x 30 MPa	

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
	200 MHz to 12.4 GHz	10^{-5} Hz	

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
	0 °C to 100 °C	0.07 °C	
	100 °C to 420 °C	0.43 °C	
	420 °C to 660 °C	0.64 °C	



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
 Contact Name: Scott Winston PE, QM 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 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
	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
	0 °C to 100 °C	0.07 °C	
	100 °C to 420 °C	0.43 °C	
	420 °C to 660 °C	0.64 °C	
Equipment to Measure Temperature Thermocouple Type E ^{FO}	-95 °C to 660 °C	1.6 °C	Hart SPRT 5628 and Fluke Black Stack 2566 Thermocouple Scanner used with Polystat 9510 Constant Temperature Liquid Bath or Fluke 9144 or Fluke 9190A Metrology Wells
Equipment to Measure Temperature Thermocouple Type J ^{FO}	-95 °C to 660 °C	1.6 °C	
Equipment to Measure Temperature Thermocouple Type K ^{FO}	-95 °C to 660 °C	1.7 °C	
Equipment to Measure Temperature Thermocouple Type N ^{FO}	-95 °C to 660 °C	1.7 °C	
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	

- 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.



Certificate of Accreditation: Supplement

Laerie, Inc.

332 Unit 2 Mountain View Road, Berthoud, CO 80513
Contact Name: Scott Winston PE, QM Phone: 970-532-7990

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

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.

