



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Teledyne LeCroy
700 Chestnut Ridge Road
Chestnut Ridge, NY 10977

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

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

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 14 February 2022

Certificate Number: AC-2555



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

Teledyne LeCroy
700 Chestnut Ridge Road
Chestnut Ridge, NY 10977
Paul Mowat 845-578-6060
paul.mowat@teledyne.com www.teledyne.com

CALIBRATION

Valid to: **February 14, 2022**

Certificate Number: **AC-2555**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(0 to 330) mV (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1 000) V	47 $\mu\text{V/V} + 3.3 \mu\text{V}$ 40 $\mu\text{V/V} + 4.5 \mu\text{V}$ 40 $\mu\text{V/V} + 39 \mu\text{V}$ 43 $\mu\text{V/V} + 0.39 \text{ mV}$ 43 $\mu\text{V/V} + 1.2 \text{ mV}$	Fluke 5500A Multi Product Calibrator
DC Voltage – Measure	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V	9 $\mu\text{V/V} + 1.2 \mu\text{V}$ 5.5 $\mu\text{V/V} + 1.2 \mu\text{V}$ 5.4 $\mu\text{V/V} + 1.9 \mu\text{V}$ 8.1 $\mu\text{V/V} + 0.041 \text{ mV}$ 9.7 $\mu\text{V/V} + 0.31 \text{ mV}$	HP 3458A w/ option 002 Multimeter
DC Current – Source	(0 to 3.2) mA (3.2 to 32) mA (32 to 320) mA 320 mA to 2.1 A (2.1 to 11) A	0.1 mA/A + 0.04 μA 80 $\mu\text{A/A} + 0.22 \mu\text{A}$ 82 $\mu\text{A/A} + 2.8 \mu\text{A}$ 0.24 mA/A + 34 μA 0.47 mA/A + 0.26 mA	Fluke 5500A Multi Product Calibrator
DC Current – Measure	(10 to 100) μA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	28 $\mu\text{A/A} + 0.81 \text{ nA}$ 26 $\mu\text{A/A} + 5.6 \text{ nA}$ 26 $\mu\text{A/A} + 60 \text{ nA}$ 42 $\mu\text{A/A} + 0.52 \mu\text{A}$ 0.12 mA/A + 10 μA	HP 3458A w/ option 002 Multimeter



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source	(0 to 11) Ω (11 to 33) Ω (33 to 330) Ω (0.33 to 3.3) kΩ (3.3 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ (0.33 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.012 % of reading + 6.2 mΩ 0.010 % of reading + 0.012 Ω 0.007 % of reading + 0.012 Ω 0.007 % of reading + 0.05 Ω 0.007 % of reading + 0.47 Ω 0.009 % of reading + 4.7 Ω 0.01 % of reading + 4.7 Ω 0.012 % of reading + 43 Ω 0.047 % of reading + 0.43 kΩ 0.1 % of reading + 0.43 kΩ 0.4 % of reading + 4.3 kΩ 0.4 % of reading + 13 kΩ	Fluke 5500A Multi Product Calibrator (2-wire mode from 110 kΩ to 330 MΩ)
Resistance – Measure	0 to 10 Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ (0.1 to 1) MΩ (1 to 10) MΩ (10 to 100) MΩ	18 μΩ/Ω + 51 μΩ 18 μΩ/Ω + 0.5 mΩ 13 μΩ/Ω + 0.5 mΩ 13 μΩ/Ω + 5.2 mΩ 13 μΩ/Ω + 0.05Ω 17 μΩ/Ω + 2.0 Ω 53 μΩ/Ω + 100 Ω 0.055 % of reading + 1 kΩ	HP 3458A w/ option 002 Multimeter
AC Voltage – Source	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz (33 to 330) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.3 % of reading + 20 μV 0.12 % of reading + 16 μV 0.16 % of reading + 16 μV 0.19 % of reading + 16 μV 0.27 % of reading + 26 μV 0.79 % of reading + 47 μV 0.22 % of reading + 39 μV 0.04 % of reading + 16 μV 0.08 % of reading + 16 μV 0.12 % of reading + 38 μV 0.19 % of reading + 0.13 mV 0.54 % of reading + 0.26 mV	Fluke 5500A Multi Product Calibrator



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	(0.33 to 3.3) V		Fluke 5500A Multi Product Calibrator
	(10 to 45) Hz	0.15 % of reading + 0.2 mV	
	45 Hz to 10 kHz	0.02 % of reading + 47 μV	
	(10 to 20) kHz	0.06 % of reading + 47 μV	
	(20 to 50) kHz	0.06 % of reading + 47 μV	
	(50 to 100) kHz	0.19 % of reading + 1.3 mV	
	(100 to 500) kHz	0.39 % of reading + 2.6 mV	
	(3.3 to 33) V		
	(10 to 45) Hz	0.12 % of reading + 2 mV	
	45 Hz to 10 kHz	0.03 % of reading + 0.47 mV	
	(10 to 20) kHz	0.062 % of reading + 2.0 mV	
	(20 to 50) kHz	0.15 % of reading + 4.0 mV	
	(50 to 100) kHz	0.19 % of reading + 13 mV	
	(33 to 330) V		
	45 Hz to 1 kHz	0.04 % of reading + 5 mV	
(1 to 10) kHz	0.06 % of reading + 12 mV		
(10 to 20) kHz	0.07 % of reading + 26 mV		
(330 to 1 020) V			
45 Hz to 1 kHz	0.04 % of reading + 62 mV		
(1 to 5) kHz	0.16 % of reading + 77 mV		
(5 to 10) kHz	0.16 % of reading + 0.39 V		
AC Voltage – Measure	(10 to 100) mV		HP 3458A w/ option 002 Multimeter
	40 Hz to 1 kHz	0.34 mV/V + 1.1 μV	
	(1 to 20) kHz	0.41 mV/V + 1.1 μV	
	(20 to 50) kHz	1.3 mV/V + 1.1 μV	
	(50 to 100) kHz	5 mV/V + 1.1 μV	
	100 mV to 1 V		
	40 Hz to 1 kHz	90 μV/V + 20 μV	
	(1 to 20) kHz	0.16 mV/V + 20 μV	
	(20 to 50) kHz	0.32 mV/V + 20 μV	
	(50 to 100) kHz	0.82 mV/V + 29 μV	
	(1 to 10) V		
	40 Hz to 1 kHz	85 μV/V + 0.2 mV	
	(1 to 10) kHz	0.15 mV/V + 0.2 mV	
	(10 to 20) kHz	0.15 mV/V + 0.2 mV	
	(20 to 50) kHz	0.33 mV/V + 0.6 mV	
(50 to 100) kHz	0.81 mV/V + 2.3 mV		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(10 to 100) V 40 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz	0.22 mV/V + 2 mV 0.23 mV/V + 2 mV 0.23 mV/V + 2 mV	HP 3458A w/ option 002 Multimeter
	(100 to 700) V 40 Hz to 1 kHz (1 to 5) kHz (10 to 20) kHz	0.41 mV/V + 20 mV 0.6 mV/V + 20 mV 0.61 mV/V + 66 mV	
Oscilloscopes ¹ – Frequency Ref - Lo BW	10 MHz	0.25 μ Hz/Hz	HP 8648C w/option 1E5, R&S SMB100A w/option SMB-B1Signal Generators
Oscilloscopes ¹ – Frequency Ref – Hi BW	10 MHz	50 nHz/Hz	Anritsu Generator phase locked to Stanford Research Systems Rb Frequency Standard PRS10
Oscilloscopes ^{1,2} – Bandwidth	(-20 to +20) dBm 10 kHz to 2 GHz (2 to 4) GHz	0.28 dB 0.34 dB	HP 8648C w/option 1EA, R&S SMB100A Signal Generators
	(-20 to +20) dBm 25 MHz to 8 GHz 25 MHz to 16 GHz 25 MHz to 36 GHz 25 MHz to 50 GHz 25 MHz to 65 GHz	0.3 dB 0.35 dB 0.48 dB + M 0.45 dB + M 0.52 dB + M	

Electrical – RF/Microwave

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
RF Power – Measure ²	(-60 to +20) dBm 9 kHz to 2 GHz (2 to 4) GHz (4 to 8) GHz	0.28 dB 0.34 dB 0.3 dB	Agilent 4418B Power Meter w/E9304 H18 Power Sensor
	(-35 to +20) dBm DC to 16 GHz (16 to 36) GHz DC to 50 GHz (50 to 65) GHz	0.35 dB 0.48 dB 0.45 dB + M 0.52 dB + M	

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Measure	1 kHz to 300 MHz	0.6 nHz/Hz + 0.58 μHz	Stanford Research Systems - SR620 Counter, phase locked to Rb Frequency Standard PRS10
Frequency – Generate	10 MHz	0.6 nHz/Hz yearly	Stanford Research Systems Rb Frequency Standard - PRS10

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

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. M = mismatch error.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-2555.



R. Douglas Leonard Jr., VP, PILR SBU

