



# CERTIFICATE OF ACCREDITATION

## ANSI-ASQ National Accreditation Board

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

This is to certify that

**Teledyne LeCroy**

**700 Chestnut Ridge Road**

**Chestnut Ridge, NY 10977**

has been assessed by ANAB

and meets the requirements of international standard

**ISO/IEC 17025:2005**

and national standard

**ANSI/NCSL Z540-1-1994 (R2002)**

while demonstrating technical competence in the field of

**CALIBRATION**

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

AC-2555

Certificate Number

  
ANAB Approval

Certificate Valid: 02/14/2018-02/14/2020  
Version No. 001 Issued: 02/14/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005  
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, 2020**

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 $\mu$ V/V + 3.3 $\mu$ V 40 $\mu$ V/V + 4.5 $\mu$ V 40 $\mu$ V/V + 39 $\mu$ V 43 $\mu$ V/V + 0.39 mV 43 $\mu$ V/V + 1.2 mV	Fluke 5500A Multi Product Calibrator
DC Voltage – Measure <sup>1</sup>	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V	9 $\mu$ V/V + 1.2 $\mu$ V 5.5 $\mu$ V/V + 1.2 $\mu$ V 5.4 $\mu$ V/V + 1.9 $\mu$ V 8.1 $\mu$ V/V + .041 mV 9.7 $\mu$ V/V + 0.31 mV	HP 3485A w/ option 002 Multimeter
DC Current – Source	(0 to 3.2) mA (3.3 to 32) mA (33 to 320) mA 330mA to 2.1 A (2.2 to 11) A	0.10 mA/A + 0.04 $\mu$ A 80 $\mu$ A/A + 0.22 $\mu$ A 82 $\mu$ A/A + 2.8 $\mu$ A 0.24 mA/A + 34 $\mu$ A 0.47 mA/A + 0.26 mA	Fluke 5500A Multi Product Calibrator
DC Current – Measure	(10 to 100) $\mu$ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	28 $\mu$ A/A + 0.81 nA 26 $\mu$ A/A + 5.6 nA 26 $\mu$ A/A + 60 nA 42 $\mu$ A/A + 0.52 $\mu$ A 0.12 mA/A + 10 $\mu$ A	HP 3485A w/ option 002 Multimeter



Electrical – DC/Low Frequency

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



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 % + 0.2mV	
	45 Hz to 10 kHz	0.02 % + 47 μV	
	(10 to 20) kHz	0.06 % + 47 μV	
	(20 to 50) kHz	0.06 % + 47 μV	
	(50 to 100) kHz	0.19 % + 1.3 mV	
	(100 to 500) kHz	0.39 % + 2.6 mV	
	(3.3 to 33) V		
	(10 to 45) Hz	0.12 % + 2.0 mV	
	45 Hz to 10 kHz	0.03 % + 0.47 mV	
	(10 to 20) kHz	0.062 % + 2.0 mV	
	(20 to 50) kHz	0.15 % + 4.0 mV	
	(50 to 100) kHz	0.19 % + 13 mV	
	(33 to 330) V		
	45 Hz to 1 kHz	0.04 % + 5 mV	
	(1 to 10) kHz	0.06 % + 12 mV	
(10 to 20) kHz	0.07 % + 26 mV		
(330 to 1 020) V			
45 Hz to 1 kHz	0.04 % + 62mV		
(1 to 5) kHz	0.16 % + 77 mV		
(5 to 10) kHz	0.16 % + 0.39V		
AC Voltage – Measure <sup>1</sup>	(10 to 100) mV		HP 3458A Multimeter
	40 Hz to 1 kHz	0.34mV/V + 1.1μV	
	(1 to 20) kHz	0.41mV/V + 1.1μV	
	(20 to 50) kHz	1.3mV/V + 1.1μV	
	(50 to 100) kHz	5.0mV/V + 1.1μV	
	100 mV to 1 V		
	40 Hz to 1 kHz	90μV/V + 20μV	
	(1 to 20) kHz	0.16mV/V + 20μV	
	(20 to 50) kHz	0.32mV/V + 20μV	
	(50 to 100) kHz	0.82mV/V + 29μV	
	(1 to 10) V		
	40 Hz to 1 kHz	85μV/V + 0.2mV	
	(1 to 10) kHz	0.15mV/V + 0.2mV	
	(10 to 20) kHz	0.15mV/V + 0.2mV	
	(20 to 50) kHz	0.33mV/V + 0.6mV	
	(50 to 100) kHz	0.81mV/V + 2.3mV	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure <sup>1</sup>	(10 to 100) V 40 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz	0.22mV/V + 2mV 0.23mV/V + 2mV 0.23V/V + 2.0mV	HP 3458A Multimeter
	(100 to 700) V 40 Hz to 1 kHz (1 to 5) kHz (10 to 20) kHz	0.41mV/V + 20mV 0.60mV/V + 20mV 0.61mV/V + 66mV	
Oscilloscopes <sup>1</sup> – Frequency Ref - Lo BW	10 MHz	0.25 $\mu$ Hz/Hz	HP 8648C w/option 1E5 Signal Generator
Frequency Ref – Hi BW	10 MHz	50 nHz/Hz	Anritsu Generator phase locked to Stanford Research Systems Rb Frequency Standard PSR10
Bandwidth	(-20 to +20) dBm 10 kHz to 4 GHz	0.4 dB	Agilent 4418B Power Meter w/E9304 H18 Power Sensor
	(-20 to +20) dBm 25 MHz to 50 GHz 25 MHz to 65 GHz	0.64 dB 0.90 dB	R&S NRPZ57 Power Sensor

Electrical – RF/Microwave

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
RF Power – Measure	(-60 to +20) dBm 9 kHz to 4 GHz	0.40 dB	Agilent 4418B Power Meter w/E9304 H18 Power Sensor
	(-35 to +20) dBm DC to 50 GHz (50 to 65) GHz	0.45 dB 0.61 dB	R&S NRPZ57 Power Sensor



Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Measure	1 kHz to 300 MHz	0.5 nHz/Hz + 0.58 $\mu$ Hz	Stanford Research Systems - SR620 Counter, phase locked to Rb Frequency Standard PSR10
Frequency – Generate	10 MHz	50 nHz/Hz	Stanford Research Systems Rb Frequency Standard - PSR10

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. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-2555.



Vice President

