



# CERTIFICATE OF ACCREDITATION

**ANSI National Accreditation Board**  
11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

**Spectrum Technologies,  
a Transcat Company  
1228 State Route 487  
Paxinos, PA 17860**

has been assessed by ANAB and meets the requirements of international standard

**ISO/IEC 17025:2017**

and national standards

**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 activities to which this accreditation applies

AC-2489.19

Certificate Number

  
ANAB Approval

Certificate Valid Through: 09/07/2021  
Version No. 002 Issued: 08/20/2019



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).



ANSI National Accreditation Board

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

**Spectrum Technologies,  
a Transcat Company**

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Paxinos, PA 17860  
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**CALIBRATION**

Valid to: **September 7, 2021**

Certificate Number: **AC-2489.19**

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage - Source	(0 to 330) mV	0.004 8 % + 2.3 $\mu$ V	Fluke 5500A
	(0.33 to 3.3) V	0.003 9 % + 3.9 $\mu$ V	
	(3.3 to 33) V	0.004 % + 39 $\mu$ V	
	(33 to 330) V	0.004 3 % + 0.39 mV	
	(330 to 1 000) V	0.004 3 % + 1.2 mV	
DC Current - Source	(0 to 3.3) mA	0.01 % + 0.04 $\mu$ A	Fluke 5500A
	(3.3 to 33) mA	0.009 6 % + 0.19 $\mu$ A	
	(33 to 330) mA	0.007 8 % + 2.5 $\mu$ A	
	(0.33 to 2.2) A	0.025 % + 34 $\mu$ A	
	(2.2 to 11) A	0.047 % + 0.26 mA	
AC Voltage - Source	(1 to 33) mV		Fluke 5500A
	(10 to 45) Hz	0.27 % + 16 $\mu$ V	
	(0.045 to 10) kHz	0.12 % + 16 $\mu$ V	
	(10 to 20) kHz	0.16 % + 16 $\mu$ V	



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Source	(1 to 33) mV		Fluke 5500A
	(20 to 50) kHz	0.19 % + 16 $\mu$ V	
	(50 to 100) kHz	0.27 % + 26 $\mu$ V	
	(100 to 500) kHz	0.78 % + 47 $\mu$ V	
	(33 to 330) mV		
	(10 to 45) Hz	0.19 % + 39 $\mu$ V	
	(0.045 to 10) kHz	0.039 % + 16 $\mu$ V	
	(10 to 20) kHz	0.078 % + 16 $\mu$ V	
	(20 to 50) kHz	0.12 % + 31 $\mu$ V	
	(50 to 100) kHz	0.19 % + 0.13 mV	
	(100 to 500) kHz	0.54 % + 0.26 mV	
	(0.33 to 3.3) V		
	(10 to 45) Hz	0.12 % + 0.19 mV	
	(0.045 to 10) kHz	0.023 % + 46 $\mu$ V	
	(10 to 20) kHz	0.062 % + 47 $\mu$ V	
	(20 to 50) kHz	0.11 % + 0.23 mV	
	(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 % + 1.9 mV	
(0.045 to 10) kHz	0.031 % + 0.47 mV		
(10 to 20) kHz	0.062 % + 2 mV		
(20 to 50) kHz	0.15 % + 3.9 mV		
(50 to 100) kHz	0.19 % + 13 mV		

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Source	(33 to 330) V		Fluke 5500A
	45 Hz to 1 kHz	0.039 % + 5.1 mV	
	(1 to 10) kHz	0.062 % + 12 mV	
	(10 to 20) kHz	0.07 % + 26 mV	
	(330 to 1020) V		
	45 Hz to 1 kHz	0.039 % + 62 mV	
(1 to 5) kHz	0.16 % + 78 mV		
(5 to 10) kHz	0.16 % + 390 mV		
AC Current - Source	(30 to 330) $\mu$ A		
	(10 to 20) Hz	0.25 % + 0.12 $\mu$ A	
	(20 to 45) Hz	0.098 % + 0.12 $\mu$ A	
	45 Hz to 1 kHz	0.097 % + 0.12 $\mu$ A	
	(1 to 5) kHz	0.31 % + 0.12 $\mu$ A	
	(0.33 to 3.3) mA		
	(10 to 20) Hz	0.16 % + 0.23 $\mu$ A	
	(20 to 45) Hz	0.16 % + 0.23 $\mu$ A	
	45 Hz to 1 kHz	0.078 % + 0.23 $\mu$ A	
	(1 to 5) kHz	0.16 % + 0.23 $\mu$ A	
	(5 to 10) kHz	0.47 % + 0.23 $\mu$ A	
	(3.3 to 33) mA		
	(10 to 20) Hz	0.16 % + 2.3 $\mu$ A	
	(20 to 45) Hz	0.079 % + 2.3 $\mu$ A	
	45 Hz to 1 kHz	0.07 % + 2.3 $\mu$ A	
	(1 to 5) kHz	0.16 % + 2.3 $\mu$ A	
	(5 to 10) kHz	0.47 % + 2.3 $\mu$ A	

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Source	(33 to 330) mA		Fluke 5500A
	(10 to 20) Hz	0.16 % + 23 $\mu$ A	
	(20 to 45) Hz	0.078 % + 23 $\mu$ A	
	45 Hz to 1 kHz	0.07 % + 23 $\mu$ A	
	(1 to 5) kHz	0.16 % + 23 $\mu$ A	
	(5 to 10) kHz	0.47 % + 23 $\mu$ A	
	(0.330 to 2.2) A		
	(10 to 45) Hz	0.16 % + 0.23 mA	
	45 Hz to 1 kHz	0.078 % + 0.23 mA	
	(1 to 5) kHz	0.58 % + 0.23 mA	
	(2.2 to 10) A		
	(10 to 65) Hz	0.047 % + 1.6 mA	
(65 to 500) Hz	0.078 % + 1.6 mA		
500 Hz to 1 kHz	0.26 % + 1.6 mA		
Resistance - Source	(0 to 11) $\Omega$	0.009 4 % + 0.004 6 $\Omega$	Fluke 5500A
	(11 to 33) $\Omega$	0.009 4 % + 0.007 7 $\Omega$	
	(33 to 110) $\Omega$	0.007 % + 0.007 7 $\Omega$	
	(110 to 330) $\Omega$	0.007 1 % + 0.007 7 $\Omega$	
	(0.33 to 1.1) k $\Omega$	0.007 1 % + 0.047 $\Omega$	
	(1.1 to 3.3) k $\Omega$	0.007 1 % + 0.047 $\Omega$	
	(3.3 to 11) k $\Omega$	0.007 % + 0.47 $\Omega$	
	(11 to 33) k $\Omega$	0.007 1 % + 0.47 $\Omega$	
	(33 to 110) k $\Omega$	0.008 6 % + 4.7 $\Omega$	
	(110 to 330) k $\Omega$	0.009 5 % + 4.7 $\Omega$	

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance - Source	(0.33 to 1.1) MΩ	0.012 % + 43 Ω	Fluke 5500A
	(1.1 to 3.3) MΩ	0.013 % + 43 Ω	
	(3.3 to 11) MΩ	0.047 % + 0.43 kΩ	
	(11 to 33) MΩ	0.086 % + 0.43 kΩ	
	(33 to 110) MΩ	0.4 % + 4.3 kΩ	
	(110 to 330) MΩ	0.54 % + 4.3 kΩ	
Capacitance - Source	(0.33 to 11) nf (50 to 1 000) Hz	0.41 % + 7.8 pF	Fluke 5500A
	(11 to 110) nf (50 to 1 000) Hz	0.22 % + 7.8 pF	
	(110 to 330) nf (50 to 1 000) Hz	0.22 % + 0.23 nF	
	(0.33 to 1.1) μf (50 to 1 000) Hz	0.22 % + 0.77 nF	
	(1.1 to 3.3) μf (50 to 1 000) Hz	0.22 % + 2.3 nF	
	(3.3 to 11) μf (50 to 400) Hz	0.22 % + 7.8 nF	
	(11 to 33) μf (50 to 400) Hz	0.33 % + 23 nF	
	(33 to 110) μf (50 to 200) Hz	0.45 % + 78 nF	
	(110 to 330) μf (50 to 100) Hz	0.59 % + 0.23 μF	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance - Source	(0.33 to 1.1) mf (50 to 100) Hz	0.85 % + 0.23 $\mu$ F	Fluke 5500A

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source	0.01 Hz to 2 MHz	19 $\mu$ Hz/Hz + 0.78 mHz	Fluke 5500A

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. Values listed with percent (%) are percent of reading unless otherwise noted
3. CMC is for a controlled laboratory environment of 18 °C to 28 °C (65 °F to 82 °F), when outside of this environment, larger measurement uncertainties are expected than what is reported on the accredited scope.
4. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-2489.19.



Vice President

