



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Transcat – Mobile Service

35 Vantage Point Drive
Rochester, NY 14624

Fulfills the requirements of

ISO/IEC 17025:2017

and national standards

**ANSI/NCSL Z540-1-1994 (R2002) AND
ANSI/NCSL Z540.3-2006 (R2013)**

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
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Jason Stine, Vice President

Expiry Date: 07 September 2027
Certificate Number: AC-2489.34



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),
ANSI/NCSL Z540.3-2006 (R2013)**

Transcat – Mobile Service

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CALIBRATION

ISO/IEC 17025 Accreditation Granted: **07 September 2025**

Certificate Number: **AC-2489.34** Certificate Expiry Date: **07 September 2027**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	(0.05 to 1) mA		Comparison to Keithley DMM7510 7.5 Digit Multimeter
	(3 to 5) Hz	1.2 % of reading + 0.46 μ A	
	(5 to 10) Hz	0.35 % of reading + 0.46 μ A	
	10 Hz to 2 kHz	0.094 % of reading + 0.35 μ A	
	(2 to 5) kHz	0.11 % of reading + 0.35 μ A	
	(5 to 10) kHz	0.11 % of reading + 0.35 μ A	
	(1 to 10) mA		
	(3 to 5) Hz	1.2 % of reading + 4.6 μ A	
	(5 to 10) Hz	0.35 % of reading + 4.6 μ A	
	10 Hz to 2 kHz	0.094 % of reading + 3.5 μ A	
	(2 to 5) kHz	0.11 % of reading + 3.5 μ A	
	(5 to 10) kHz	0.11 % of reading + 3.5 μ A	
	(10 to 100) mA		
	(3 to 5) Hz	1.2 % of reading + 46 μ A	
	(5 to 10) Hz	0.35 % of reading + 46 μ A	
	10 Hz to 2 kHz	0.093 % of reading + 35 μ A	
	(2 to 5) kHz	0.11 % of reading + 35 μ A	
	(5 to 10) kHz	0.11 % of reading + 35 μ A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	(0.1 to 1) A		Comparison to Keithley DMM7510 7.5 Digit Multimeter
	(3 to 5) Hz	1.2 % of reading + 0.46 mA	
	(5 to 10) Hz	0.35 % of reading + 0.46 mA	
	10 Hz to 2 kHz	0.23 % of reading + 0.46 mA	
	(2 to 5) kHz	1 % of reading + 0.46 mA	
	(5 to 10) kHz	2.3 % of reading + 0.46 mA	
	(1 to 3) A		
	(3 to 5) Hz	1.2 % of reading + 1.7 mA	
	(5 to 10) Hz	0.35 % of reading + 1.7 mA	
	10 Hz to 2 kHz	0.23 % of reading + 1.7 mA	
	(2 to 5) kHz	1 % of reading + 1.7 mA	
	(5 to 10) kHz	2.3 % of reading + 1.7 mA	
AC Current – Measure ¹	(3 to 10) A		Comparison to Ohms Labs CS-100 Precision Shunt, Keithley DMM7510 7.5 Digit Multimeter
	(3 to 5) Hz	1.2 % of reading + 5.8 mA	
	(5 to 10) Hz	0.46 % of reading + 5.8 mA	
	10 Hz to 2 kHz	0.46 % of reading + 5.8 mA	
	(2 to 5) kHz	1 % of reading + 5.8 mA	
	(5 to 10) kHz	2.3 % of reading + 5.8 mA	
AC Current – Generate ¹	(10 to 100) A		Comparison to Fluke 5522A Multiproduct Calibrator
	(50 to 60) Hz	0.084 % of reading + 40 mA	
	400 Hz	0.085 % of reading + 40 mA	
	1 kHz	0.13 % of reading + 36 mA	
	(29 to 330) μ A		
	(10 to 20) Hz	0.16 % of reading + 80 nA	
	(20 to 45) Hz	0.12 % of reading + 80 nA	
	45 Hz to 1 kHz	0.097 % of reading + 80 nA	
	(1 to 5) kHz	0.23 % of reading + 0.12 μ A	
	(5 to 10) kHz	0.62 % of reading + 0.16 μ A	
	(10 to 30) kHz	1.2 % of reading + 0.31 μ A	
	(0.33 to 3.3) mA		
	(10 to 20) Hz	0.16 % of reading + 0.12 μ A	
	(20 to 45) Hz	0.097 % of reading + 0.12 μ A	
	45 Hz to 1 kHz	0.078 % of reading + 0.12 μ A	
	(1 to 5) kHz	0.16 % of reading + 0.16 μ A	
	(5 to 10) kHz	0.39 % of reading + 0.23 μ A	
	(10 to 30) kHz	0.78 % of reading + 0.47 μ A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Generate ¹	(3.3 to 33) mA		Comparison to Fluke 5522A Multiproduct Calibrator
	(10 to 20) Hz	0.14 % of reading + 1.6 μ A	
	(20 to 45) Hz	0.071 % of reading + 1.6 μ A	
	45 Hz to 1 kHz	0.035 % of reading + 1.6 μ A	
	(1 to 5) kHz	0.064 % of reading + 1.6 μ A	
	(5 to 10) kHz	0.16 % of reading + 2.3 μ A	
	(10 to 30) kHz	0.31 % of reading + 3.1 μ A	
	(33 to 330) mA		
	(10 to 20) Hz	0.14 % of reading + 16 μ A	
	(20 to 45) Hz	0.071 % of reading + 16 μ A	
	45 Hz to 1 kHz	0.033 % of reading + 16 μ A	
	(1 to 5) kHz	0.078 % of reading + 39 μ A	
	(5 to 10) kHz	0.16 % of reading + 78 μ A	
	(10 to 30) kHz	0.31 % of reading + 0.16 mA	
	(0.33 to 1.1) A		
	(10 to 45) Hz	0.14 % of reading + 78 μ A	
	45 Hz to 1 kHz	0.04 % of reading + 78 μ A	
	(1 to 5) kHz	0.47 % of reading + 0.78 mA	
	(5 to 10) kHz	1.9 % of reading + 3.9 mA	
	(1.1 to 3) A		
	(10 to 45) Hz	0.14 % of reading + 78 μ A	
	45 Hz to 1 kHz	0.049 % of reading + 78 μ A	
	(1 to 5) kHz	0.47 % of reading + 0.78 mA	
	(5 to 10) kHz	1.9 % of reading + 3.9 mA	
	(3 to 11) A		
	(10 to 100) Hz	0.049 % of reading + 1.6 mA	
	100 Hz to 1 kHz	0.079 % of reading + 1.6 mA	
	(1 to 5) kHz	2.3 % of reading + 1.6 mA	
	(11 to 20.5) A		
	(10 to 100) Hz	0.095 % of reading + 3.9 mA	
	100 Hz to 1 kHz	0.12 % of reading + 3.9 mA	
	(1 to 5) kHz	2.3 % of reading + 3.9 mA	
AC Clamp-on Ammeters (Toroidal Type) Transformer Type Sensor ¹	(20 to 150) A		Comparison to Fluke 5522A Multiproduct Calibrator, 1 kA Current Coil
	(45 to 65) Hz	0.24 % of reading + 19 mA	
	(65 to 440) Hz	0.62 % of reading + 21 mA	
	(150 to 1 000) A		
	(45 to 65) Hz	0.24 % of reading + 70 mA	
	(65 to 440) Hz	0.61 % of reading + 78 mA	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Clamp-on Ammeters (Non-toroidal Type) Hall Effect Type Sensor ¹	(20 to 150) A (45 to 65) Hz (65 to 440) Hz (150 to 1 000) A (45 to 65) Hz (65 to 440) Hz	0.5 % of reading + 0.19 A 0.9 % of reading + 0.19 A 0.52 % of reading + 0.7 A 0.9 % of reading + 0.7 A	Comparison to Fluke 5522A Multiproduct Calibrator, 1 kA Current Coil
AC Clamp-on Ammeters (Non-toroidal Type) Hall Effect Type Sensor ¹	(1 to 6) kA (10 to 300) Hz (1 to 2) kA (300 to 440) Hz (2 to 6) kA (300 to 440) Hz	0.6 % of reading 0.8 % of reading 0.66 % of reading	Comparison to Fluke 5522A Multiproduct Calibrator, 6 kA Current Coil
AC Voltage – Measure ¹	(5 to 100) mV (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (0.1 to 1) V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (1 to 10) V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (10 to 100) V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.2 % of reading + 35 μ V 0.35 % of reading + 35 μ V 0.071 % of reading + 35 μ V 0.16 % of reading + 58 μ V 0.7 % of reading + 92 μ V 4.6 % of reading + 0.58 mV 1.2 % of reading + 0.35 mV 0.35 % of reading + 0.35 mV 0.069 % of reading + 0.35 mV 0.16 % of reading + 0.58 mV 0.69 % of reading + 0.92 mV 4.6 % of reading + 5.8 mV 1.2 % of reading + 3.5 mV 0.35 % of reading + 3.5 mV 0.069 % of reading + 3.5 mV 0.16 % of reading + 5.8 mV 0.69 % of reading + 9.2 mV 4.6 % of reading + 58 mV 1.2 % of reading + 35 mV 0.35 % of reading + 35 mV 0.069 % of reading + 35 mV 0.16 % of reading + 58 mV 0.69 % of reading + 92 mV 4.6 % of reading + 0.58 V	Comparison to Keithley DMM7510 7.5 Digit Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure ¹	(100 to 700) V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.2 % of reading + 0.24 V 0.35 % of reading + 0.24 V 0.07 % of reading + 0.24 V 0.17 % of reading + 0.4 V 0.71 % of reading + 0.65 V 4.6 % of reading + 4 V	Comparison to Keithley DMM7510 7.5 Digit Multimeter
AC High Voltage – Measure ¹	(0.7 to 5) kV 10 mHz to 10 Hz (10 to 30) Hz (30 to 200) Hz (200 to 450) Hz (450 to 600) Hz (5 to 30) kV 10 mHz to 10 Hz (10 to 30) Hz (30 to 200) Hz (200 to 450) Hz (450 to 600) Hz (30 to 50) kV 10 mHz to 10 Hz (10 to 30) Hz (30 to 70) Hz (70 to 200) Hz (200 to 450) Hz (50 to 70) kV 10 mHz to 10 Hz (10 to 30) Hz (30 to 70) Hz (70 to 200) Hz (200 to 450) Hz	0.15 % of reading + 0.17 V 0.13 % of reading + 0.29 V 0.11 % of reading + 0.37 V 0.48 % of reading + 0.17 V 0.88 % of reading + 0.17 V 0.2 % of reading + 2.4 V 0.15 % of reading + 2.4 V 0.12 % of reading + 2.4 V 0.71 % of reading + 2.4 V 1.4 % of reading + 2.4 V 0.25 % of reading + 2.5 V 0.19 % of reading + 2.5 V 0.14 % of reading + 2.5 V 0.7 % of reading + 2.5 V 2.9 % of reading + 2.5 V 0.37 % of reading + 2.6 V 0.27 % of reading + 2.6 V 0.18 % of reading + 2.6 V 1.2 % of reading + 2.6 V 1.7 % of reading + 2.6 V	Comparison to Vitretek 4700 High Voltage Meter with Associated High Voltage Probes
AC Voltage – Generate ¹	(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	0.065 % of reading + 4.7 μ V 0.014 % of reading + 4.7 μ V 0.017 % of reading + 4.7 μ V 0.079 % of reading + 4.7 μ V 0.27 % of reading + 9.3 μ V 0.62 % of reading + 39 μ V	Comparison to Fluke 5522A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Generate ¹	(33 to 330) mV		Comparison to Fluke 5522A Multiproduct Calibrator
	(10 to 45) Hz	0.027 % of reading + 6.2 μ V	
	45 Hz to 10 kHz	0.012 % of reading + 6.2 μ V	
	(10 to 20) kHz	0.013 % of reading + 6.2 μ V	
	(20 to 50) kHz	0.027 % of reading + 6.2 μ V	
	(50 to 100) kHz	0.062 % of reading + 25 μ V	
	(100 to 500) kHz	0.16 % of reading + 54 μ V	
	(0.33 to 3.3) V		
	(10 to 45) Hz	0.027 % of reading + 39 μ V	
	45 Hz to 10 kHz	0.012 % of reading + 47 μ V	
	(10 to 20) kHz	0.015 % of reading + 47 μ V	
	(20 to 50) kHz	0.024 % of reading + 39 μ V	
	(50 to 100) kHz	0.055 % of reading + 49 μ V	
	(100 to 500) kHz	0.19 % of reading + 0.47 mV	
	(3.3 to 33) V		
	(10 to 45) Hz	0.027 % of reading + 0.5 mV	
	45 Hz to 10 kHz	0.012 % of reading + 0.47 mV	
	(10 to 20) kHz	0.019 % of reading + 0.47 mV	
	(20 to 50) kHz	0.027 % of reading + 0.47 mV	
	(50 to 100) kHz	0.7 % of reading + 1.2 mV	
Capacitance – Measure ¹	(33 to 330) V		Comparison to Keithley DMM7510 7.5 Digit Multimeter
	45 Hz to 1 kHz	0.015 % of reading + 1.6 mV	
	(1 to 10) kHz	0.016 % of reading + 4.7 mV	
	(10 to 20) kHz	0.02 % of reading + 4.7 mV	
	(20 to 50) kHz	0.025 % of reading + 4.7 mV	
	(50 to 100) kHz	0.16 % of reading + 39 mV	
	(330 to 1 020) V		
	45 Hz to 1 kHz	0.023 % of reading + 7.8 mV	
	(1 to 5) kHz	0.02 % of reading + 7.8 mV	
	(5 to 10) kHz	0.023 % of reading + 7.8 mV	
	Up to 1 nF	1.2 % of reading + 2.3 pF	
	(1 to 10) nF	1.2 % of reading + 12 pF	
	(10 to 100) nF	0.47 % of Reading + 0.12 nF	
	100 nF to 1 μ F	0.47 % of reading + 1.2 nF	
	(1 to 10) μ F	0.48 % of Reading + 12 nF	
	(10 to 100) μ F	0.48 % of reading + 0.12 μ F	
	100 μ F to 1 mF	0.6 % of reading + 1.2 μ F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Generate ¹ (Simulation)	(220 to 400) pF 10 Hz to 10 kHz	0.4 % of reading + 7.8 pF	Comparison to Fluke 5522A Multiproduct Calibrator
	(0.4 to 1.1) nF 10 Hz to 10 kHz	0.4 % of reading + 7.8 pF	
	(1.1 to 3.3) nF 10 Hz to 3 kHz	0.4 % of reading + 7.8 pF	
	(3.3 to 11) nF 10 Hz to 1 kHz	0.21 % of reading + 7.8 pF	
	(11 to 33) nF 10 Hz to 1 kHz	0.2 % of reading + 78 pF	
	(33 to 110) nF 10 Hz to 1 kHz	0.21 % of reading + 78 pF	
	(110 to 330) nF 10 Hz to 1 kHz	0.2 % of reading + 0.23 nF	
	(0.33 to 1.1) μ F (10 to 600) Hz	0.21 % of reading + 0.78 nF	
	(1.1 to 3.3) μ F (10 to 300) Hz	0.21 % of reading + 2.3 nF	
	(3.3 to 11) μ F (10 to 150) Hz	0.2 % of reading + 7.8 nF	
	(11 to 33) μ F (10 to 120) Hz	0.32 % of reading + 23 nF	
	(33 to 110) μ F (10 to 80) Hz	0.37 % of reading + 78 nF	
	(110 to 330) μ F DC to 50 Hz	0.38 % of reading + 0.23 μ F	
	(0.33 to 1.1) mF DC to 20 Hz	0.35 % of reading + 0.78 μ F	
	(1.1 to 3.3) mF DC to 6 Hz	0.35 % of reading + 2.3 μ F	
	(3.3 to 11) mF DC to 2 Hz	0.35 % of reading + 7.8 μ F	
	(11 to 33) mF DC to 0.6 Hz	0.58 % of reading + 23 μ F	
	(33 to 110) mF DC to 0.2 Hz	0.85 % of reading + 78 μ F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Measure ¹	(0 to 10) μ A (10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A (1 to 3) A (3 to 10) A	0.008 7 % of reading + 0.35 nA 0.007 1 % of reading + 1 nA 0.007 1 % of reading + 10 nA 0.007 2 % of reading + 0.1 μ A 0.018 % of reading + 3.5 μ A 0.047 % of reading + 58 μ A 0.047 % of reading + 0.14 mA 0.18 % of reading + 3.2 mA	Comparison to Keithley DMM7510 7.5 Digit Multimeter
DC Current – Measure ¹	(10 to 100) A (100 to 500) A	0.015 % of reading + 2 mA 0.3 % of reading	Comparison to Ohms Labs CS-100 Precision Shunt, Canadian LAB-500-5 Current Shunt, Keithley DMM7510 7.5 Digit Multimeter
DC Current – Generate ¹	(0 to 330) μ A (0.33 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 1.1) A (1.1 to 3) A (3 to 11) A (11 to 20.5) A	0.12 mA/A + 16 nA 82 μ A/A + 39 nA 98 μ A/A + 0.19 μ A 78 μ A/A + 1.9 μ A 0.16 mA/A + 31 μ A 0.3 mA/A + 31 μ A 0.51 mA/A + 0.39 mA 0.93 mA/A + 0.58 mA	Comparison to Fluke 5522A Multiproduct Calibrator
DC Clamp-on Ammeters (Non-Toroidal Type) Transformer Type Sensor ^{1,3}	(20 to 54.999 5) A (55 to 149.999 5) A (150 to 549.995) A (550 to 1 025) A	0.47 % of reading + 0.11 A 0.41 % of reading + 0.11 A 0.45 % of reading + 0.39 A 0.51 % of reading + 0.39 A	Comparison to Fluke 5522A Multiproduct Calibrator, Fluke 5500A 50-turn Current Coil, Fluke 55120A Transconductance Amplifier, 1 kA Current Coil, 6 kA Current Coil
DC Resistance – Generate ¹ (Variable Artifact)	(0.1 to 1) M Ω (1 to 10) M Ω (10 to 100) M Ω (0.1 to 1) G Ω (1 to 10) G Ω (10 to 100) G Ω (0.1 to 1) T Ω	0.037 % of reading 0.037 % of reading + 1.2 $\mu\Omega/\Omega/V$ 0.12 % of reading + 1.2 $\mu\Omega/\Omega/V$ 0.23 % of reading + 1.2 $\mu\Omega/\Omega/V$ 0.59 % of reading + 1.2 $\mu\Omega/\Omega/V$ 1.2 % of reading + 1.2 $\mu\Omega/\Omega/V$ 1.2 % of reading + 1.2 $\mu\Omega/\Omega/V$	Comparison to IET HRRS-B-7-100k-10kV Decade Resistance Substituter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Resistance – Generate ¹ (Fixed Artifacts)	10 $\mu\Omega$ 100 $\mu\Omega$ 1 m Ω 10 m Ω 100 m Ω 1 Ω	0.37 % of reading 0.37 % of reading 0.02 % of reading 0.008 2 % of reading 0.008 2 % of reading 0.003 7 % of reading	Comparison to Current Shunts
DC Resistance – Measure ¹	(0 to 1) Ω (1 to 10) Ω (10 to 100) Ω (0.1 to 1) k Ω (1 to 10) k Ω (10 to 100) k Ω (0.1 to 1) M Ω (1 to 10) M Ω (10 to 100) M Ω (0.1 to 1) G Ω	0.004 1 % of reading + 58 $\mu\Omega$ 0.003 6 % of reading + 58 $\mu\Omega$ 0.003 2 % of reading + 0.46 m Ω 0.002 9 % of reading + 3.5 m Ω 0.003 5 % of reading + 35 m Ω 0.003 6 % of reading + 0.35 Ω 0.007 % of reading + 4.6 Ω 0.023 % of reading + 0.12 k Ω 0.23 % of reading + 3.5 k Ω 1 % of reading + 0.12 M Ω	Comparison to Keithley DMM7510 7.5 Digit Multimeter
PRT/RTD – Generate ¹ (Simulation)	Pt 385, 100 Ω (-200 to -80) $^{\circ}\text{C}$ (-80 to 0) $^{\circ}\text{C}$ (0 to 100) $^{\circ}\text{C}$ (100 to 300) $^{\circ}\text{C}$ (300 to 400) $^{\circ}\text{C}$ (400 to 630) $^{\circ}\text{C}$ (630 to 800) $^{\circ}\text{C}$ Pt 385, 200 Ω -200 to -80) $^{\circ}\text{C}$ (-80 to 0) $^{\circ}\text{C}$ (0 to 100) $^{\circ}\text{C}$ (100 to 260) $^{\circ}\text{C}$ (260 to 300) $^{\circ}\text{C}$ (300 to 400) $^{\circ}\text{C}$ (400 to 600) $^{\circ}\text{C}$ (600 to 630) $^{\circ}\text{C}$	0.039 $^{\circ}\text{C}$ 0.039 $^{\circ}\text{C}$ 0.054 $^{\circ}\text{C}$ 0.07 $^{\circ}\text{C}$ 0.078 $^{\circ}\text{C}$ 0.093 $^{\circ}\text{C}$ 0.18 $^{\circ}\text{C}$ 0.031 $^{\circ}\text{C}$ 0.031 $^{\circ}\text{C}$ 0.031 $^{\circ}\text{C}$ 0.039 $^{\circ}\text{C}$ 0.093 $^{\circ}\text{C}$ 0.1 $^{\circ}\text{C}$ 0.11 $^{\circ}\text{C}$ 0.12 $^{\circ}\text{C}$	Comparison to Fluke 5522A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
PRT/RTD – Generate ¹ (Simulation)	Pt 385, 500 Ω		Comparison to Fluke 5522A Multiproduct Calibrator
	(-200 to -80) °C	0.031 °C	
	(-80 to 0) °C	0.039 °C	
	(0 to 100) °C	0.039 °C	
	(100 to 260) °C	0.047 °C	
	(260 to 300) °C	0.062 °C	
	(300 to 400) °C	0.062 °C	
	(400 to 600) °C	0.07 °C	
	(600 to 630) °C	0.085 °C	
	Pt 385, 1 000 Ω		
	(-200 to -80) °C	0.023 °C	
	(-80 to 0) °C	0.023 °C	
	(0 to 100) °C	0.031 °C	
	(100 to 260) °C	0.039 °C	
	(260 to 300) °C	0.047 °C	
	(300 to 400) °C	0.054 °C	
	(400 to 600) °C	0.054 °C	
	(600 to 630) °C	0.18 °C	
	Pt 3916, 100 Ω		
	(-200 to -190) °C	0.19 °C	
	(-190 to -80) °C	0.031 °C	
	(-80 to 0) °C	0.039 °C	
	(0 to 100) °C	0.047 °C	
	(100 to 260) °C	0.054 °C	
	(260 to 300) °C	0.062 °C	
	(300 to 400) °C	0.07 °C	
	(400 to 600) °C	0.078 °C	
	(600 to 630) °C	0.018 °C	
	Pt 3926, 100 Ω		
	(-200 to -80) °C	0.039 °C	
	(-80 to 0) °C	0.039 °C	
	(0 to 100) °C	0.054 °C	
	(100 to 300) °C	0.07 °C	
	(300 to 400) °C	0.078 °C	
	(400 to 630) °C	0.093 °C	
	PtNi 385, 120 Ω		
	(-80 to 0) °C	0.062 °C	
	(0 to 100) °C	0.062 °C	
	(100 to 260) °C	0.1 °C	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
PRT/RTD – Generate ¹ (Simulation)	Cu 427, 10 Ω (-100 to 260) $^{\circ}\text{C}$	0.23 $^{\circ}\text{C}$	Comparison to Fluke 5522A Multiproduct Calibrator
DC Resistance – Generate ¹ (Simulation)	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 to 1.1) k Ω (1.1 to 3.3) k Ω (3.3 to 11) k Ω (11 to 33) k Ω (33 to 110) k Ω (110 to 330) k Ω (0.33 to 1.1) M Ω (1.1 to 3.3) M Ω (3.3 to 11) M Ω (11 to 33) M Ω (33 to 110) M Ω (110 to 330) M Ω (0.33 to 1.1) G Ω	32 $\mu\Omega/\Omega$ + 0.78 m Ω 24 $\mu\Omega/\Omega$ + 1.2 m Ω 22 $\mu\Omega/\Omega$ + 1.1 m Ω 22 $\mu\Omega/\Omega$ + 1.6 m Ω 22 $\mu\Omega/\Omega$ + 1.6 m Ω 22 $\mu\Omega/\Omega$ + 16 m Ω 22 $\mu\Omega/\Omega$ + 16 m Ω 22 $\mu\Omega/\Omega$ + 0.16 Ω 22 $\mu\Omega/\Omega$ + 0.16 Ω 27 $\mu\Omega/\Omega$ + 1.6 Ω 26 $\mu\Omega/\Omega$ + 1.6 Ω 66 $\mu\Omega/\Omega$ + 23 Ω 0.1 m Ω/Ω + 39 Ω 0.19 m Ω/Ω + 1.9 k Ω 0.41 m Ω/Ω + 2.3 k Ω 0.23 % of reading + 78 k Ω 12 % of reading + 0.39 M Ω	Comparison to Fluke 5522A Multiproduct Calibrator
DC Voltage – Measure ¹	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 500) V (500 to 1 000) V	0.002 3 % of reading + 1 μV 0.001 8 % of reading + 2.3 μV 0.001 6 % of reading + 14 μV 0.002 6 % of reading + 0.58 mV 0.002 7 % of reading + 5.8 mV 0.004 4 % of reading	Comparison to Keithley DMM7510 7.5 Digit Multimeter
DC High Voltage – Measure ¹	(1 to 10) kV (10 to 35) kV (35 to 50) kV (50 to 70) kV (70 to 100) kV	0.042 % of reading + 92 mV 0.047 % of reading + 2.4 V 0.056 % of reading + 2.4 V 0.088 % of reading + 2.4 V 0.17 % of reading + 2.5 V	Comparison to Vitretek 4700 High Voltage Meter with Associated High Voltage Probes
DC Voltage – Generate ¹	Up to 330 mV (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1 020) V	16 $\mu\text{V}/\text{V}$ + 0.78 μV 9 $\mu\text{V}/\text{V}$ + 1.6 μV 10 $\mu\text{V}/\text{V}$ + 16 μV 15 $\mu\text{V}/\text{V}$ + 0.12 mV 14 $\mu\text{V}/\text{V}$ + 1.2 mV	Comparison to Fluke 5522A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Thermocouple Simulation – Generate/Measure ¹	Type B		Comparison to Fluke 5522A Multiproduct Calibrator
	(600 to 800) °C	0.35 °C	
	(800 to 1 000) °C	0.28 °C	
	(1 000 to 1 550) °C	0.24 °C	
	(1 550 to 1 820) °C	0.26 °C	
	Type E		
	(-250 to -100) °C	0.39 °C	
	(-100 to -25) °C	0.13 °C	
	(-25 to 350) °C	0.12 °C	
	(350 to 650) °C	0.13 °C	
	(650 to 1 000) °C	0.17 °C	
	Type J		
	(-210 to -100) °C	0.21 °C	
	(-100 to -30) °C	0.13 °C	
	(-30 to 150) °C	0.12 °C	
	(150 to 760) °C	0.14 °C	
	(760 to 1 200) °C	0.18 °C	
	Type K		
	(-200 to -100) °C	0.26 °C	
	(-100 to -25) °C	0.15 °C	
	(-25 to 120) °C	0.13 °C	
	(120 to 1 000) °C	0.21 °C	
	(1 000 to 1 372) °C	0.31 °C	
	Type N		
	(-200 to -100) °C	0.31 °C	
	(-100 to -25) °C	0.18 °C	
	(-25 to 120) °C	0.15 °C	
	(120 to 410) °C	0.15 °C	
	(410 to 1 300) °C	0.21 °C	
	Type R		
	(0 to 250) °C	0.46 °C	
	(250 to 400) °C	0.29 °C	
	(400 to 1 000) °C	0.26 °C	
	(1 000 to 1 767) °C	0.32 °C	
	Type S		
	(0 to 250) °C	0.45 °C	
	(250 to 1 000) °C	0.3 °C	
	(1 000 to 1 400) °C	0.29 °C	
	(1 400 to 1 767) °C	0.36 °C	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Thermocouple Simulation – Generate/Measure ¹	Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.49 °C 0.19 °C 0.13 °C 0.12 °C	Comparison to Fluke 5522A Multiproduct Calibrator
DC Power – Source ¹	(0.33 to 330) mA 11 μW to 330 W (0.33 to 3) A 11 mW to 3 kW (3 to 20.5) A 99 mW to 20.9 kW	0.018 % of reading 0.017 % of reading 0.054 % of reading	Comparison to Fluke 5522A Multiproduct Calibrator
AC Power – Source ^{1,2,3} PF = 1	3.3 mA to 3 A (10 to 45) Hz 0.11 mW to 99 W 3.3 mA to 20.5 A (45 to 65) Hz 0.11 mW to 20.9 kW 33 mA to 3 A (65 to 500) Hz 11 mW to 3.06 kW 33 mA to 20.5 A 500 Hz to 1 kHz 11 mW to 20.9 kW (3 to 20.5) A (65 to 500) Hz 9.9 W to 20.9 kW	0.18 % of reading 0.14 % of reading 0.16 % of reading 0.16 % of reading 0.16 % of reading	Comparison to Fluke 5522A Multiproduct Calibrator
Oscilloscopes ¹			
Amplitude DC into 50 Ω load into 1 MΩ load	(-6.6 to 6.6) V (-130 to 130) V	0.23 % of reading + 31 μV 0.12 % of reading + 31 μV	Comparison to Fluke 55xxA/11 Multiproduct Calibrator With 1.1 GHz Scope Option
Amplitude Square Wave into 50 Ω load	10 Hz to 10 kHz 1 mVp-p to 6.6 Vp-p	0.23 % of reading + 31 μV	
into 1 MΩ load	10 Hz to 1 kHz 1 mVp-p to 130 Vp-p (1 to 10) kHz 1 mVp-p to 130 Vp-p	0.14 % of reading + 31 μV 0.23 % of reading + 31 μV	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes ¹			
Timing – Generate into 50 Ω load	1 ns to 20 ms 50 ms 100 ms 200 ms 500 ms 1 s 2 s 5 s	0.000 22 % reading 0.005 9 % reading 0.009 8 % reading 0.018 % reading 0.041 % reading 0.08 % reading 0.16 % reading 0.39 % reading	
Rise Time – Generate into 50 Ω Load Rate: 1 kHz to 2 MHz Rate: 2 MHz to 10 MHz	5 mVp-p to 2.5 Vp-p 250 ps (nominal) 250 ps (nominal)	120 ps 120 ps	
Leveled Sine Wave – Generate into 50 Ω load	5 mVp-p to 5.5 Vp-p 50 kHz 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 5 mVp-p to 3.5 Vp-p 600 MHz to 1.1 GHz	1.2 % of reading + 0.23 mV 2.8 % of reading + 0.23 mV 3.2 % of reading + 0.23 mV 4.7 % of reading + 0.23 mV 5.5 % of reading + 0.23 mV	Comparison to Fluke 55xxA/11 Multiproduct Calibrator With 1.1 GHz Scope Option
Bandwidth/Flatness – Measure (50 kHz Reference) into 50 Ω load	5 mVp-p to 5.5 Vp-p 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 5 mVp-p to 3.5 Vp-p 600 MHz to 1.1 GHz	1.2 % of reading + 78 μ V 1.6 % of reading + 78 μ V 2.3 % of reading + 78 μ V 3.9 % of reading + 78 μ V	
Input Impedance – Measure into 50 Ω load into 1 M Ω load	(40 to 60) Ω (0.5 to 1.5) M Ω	0.09 % of reading 0.09 % of reading	
Input Capacitance – Measure	(5 to 50) pF	3.9 % of reading + 0.39 pF	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes ¹ Wave Generator – Source Amplitude (Sine, Square, Triangle) into 50 Ω load into 1 M Ω load Frequency	10 Hz to 10 kHz 1.8 mVp-p to 2.5 Vp-p 1.8 mVp-p to 55 Vp-p 10 Hz to 10 kHz	2.3 % of reading + 78 μ V 2.3 % of reading + 78 μ V 0.001 9 % of reading + 12 mHz	Comparison to Fluke 55xxA/11 Multiproduct Calibrator With 1.1 GHz Scope Option

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Calipers ^{1,2} (Inside, Outside, Depth, Step) Length Jaw Parallelism	(0.05 to 0.4) in (0.4 to 1) in (1 to 9) in (4 to 48) in Up to 1 in	(16 + 1.5L) μ in (15 + 3.5L) μ in (8.5 + 8.5L) μ in (8 + 9.2L) μ in 59 μ in	Comparison to ASME B89.1.6 Grade AS-1 Gage Block Set Long Block Set Pin Gages
Indicators ¹ (Dial, Digital, Drop, Test)	(0.05 to 0.4) in (0.4 to 1) in (1 to 9) in	(16 + 1.5L) μ in (15 + 3.5L) μ in (8.5 + 8.5L) μ in	Comparison to ASME B89.1.6 Grade AS-1 Gage Block Set
Micrometers ¹ (Inside, Outside, Depth) Diameter Anvil Flatness Anvil Parallelism	(0.05 to 0.4) in (0.4 to 1) in (1 to 9) in (4 to 48) in Up to 1 in Up to 1 in	(16 + 1.5L) μ in (15 + 3.5L) μ in (8.5 + 8.5L) μ in (8 + 9.2L) μ in 4.4 μ in 7.2 μ in	Comparison to ASME B89.1.6 Grade AS-1 Gage Block Set Long Block Set Optical Flat Optical Parallel

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure Indicating Devices ¹ (Gauge)	(-13 to 300) psig	0.086 psi	Comparison to Additel ADT760 Automatic Pressure Calibrator with ADT155-02-CP300 Pressure Module
Pressure Indicating Devices ¹ (Gauge)	Up to 15 000 psig	8.9 psi	Comparison to Additel ADT760 Automatic Pressure Calibrator with ADT160A-GP15K-PSI Pressure Module
Pressure Indicating Devices ¹ (Gauge)	Up to 30 000 psig	35.4 psi	Comparison to Additel ADT760 Automatic Pressure Calibrator with ADT681-10-GP30K-PSI-AM Pressure Module
Rockwell Hardness and Superficial Testers ¹	HRBw ≤ 59 HRBw ≥ 80 HRBw HRC ≤ 34 HRC (35 to 59) HRC ≥ 60 HRC	0.5 HRBw 0.42 HRBw 0.27 HRC 0.46 HRC 0.24 HRC	Indirect Verification per ASTM E18 using Hardness Test Blocks
Scales and Balances ¹ (SI)	Up to 500 mg (0.5 to 5) g (5 to 10) g (10 to 50) g 50 g to 6 kg	12 µg 40 µg 61 µg 91 µg 0.000 32 % of reading	ASTM E617 Class 1 weights and NIST HB 44 utilized in the calibration of the weighing system.
Torque Indicating Devices ¹ (Wrenches, Drivers, etc.)	(0.2 to 10) N·m (10 to 20) N·m (20 to 100) N·m (100 to 200) N·m (200 to 1 100) N·m	1.1 % of reading 0.69 % of reading 0.68 % of reading 0.63 % of reading 0.71 % of reading	Comparison to Stahlwille Torque Calibrator

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Hydraulic Torque Measuring Devices ¹ (1 000 to 10 000) psi	(70 to 27 000) N·m	1.3 % of reading	Comparison to Torque Calibration System
Torque Multipliers ¹	(150 to 27 000) N·m	1.5 % of reading 1.5 % of reading	Comparison to Torque Calibration System

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Humidity – Measure ¹	(-40 to 10) °C		Comparison to Vaisala HM70/HMP77 Temperature/Humidity Indicator/Probe
	(10 to 90) %RH	3.5 %RH	
	(90 to 99) %RH	4.6 %RH	
	(10 to 30) °C		
	(10 to 90) %RH	1.3 %RH	
	(90 to 99) %RH	2.4 %RH	
	(30 to 180) °C		
	(10 to 90) %RH	3.5 %RH	
	(90 to 99) %RH	4.6 %RH	
Temperature – Measure ¹	(-40 to 180) °C	0.27 °C	Comparison to Vaisala HM70/HMP77 Temperature/Humidity Indicator/Probe

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Measure ¹	3 Hz to 500 kHz (0.1 to 700) V	92 µHz/Hz + 0.38 µHz	Comparison to Keithley DMM7510 7.5 Digit Multimeter
Frequency – Source ¹	10 mHz to 2 MHz	2 µHz/Hz + 8 µHz	Comparison to Fluke 5522A Multiproduct Calibrator
Stopwatches/Timers ¹	Up to 599 s/mon	58 ms/d	Comparison to Vibrograf TM-4500 Timometer

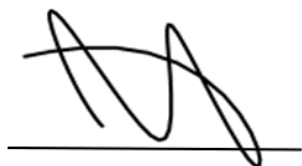
Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Duty Cycle – Source ¹ Square Wave: < 3.3 Vp-p Freq: 0.1 Hz to 100 kHz	(1 to 10) % Duty Cycle 10 μ s to 100 s (10 to 49) % Duty Cycle 10 μ s to 100 s 50 % Duty Cycle 10 μ s to 100 s (51 to 90) % Duty Cycle 10 μ s to 100 s (90 to 99) % Duty Cycle 10 μ s to 100 s	0.62 % of reading + 78 ns 0.039 % of reading + 78 ns 0.001 6 % of reading + 78 ns 0.039 % of reading + 78 ns 0.62 % of reading + 78 ns	Comparison to Fluke 5522A Multiproduct Calibrator

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:

- The laboratory utilizes a mobile lab for most of its field service work. Please note that uncertainties listed are valid whenever the work is performed in the mobile lab. Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements.
- L = length in inches; PF = power factor.
- The uncertainties shown are for the most favorable conditions. There is an increase in uncertainty that corresponds to the laboratory's AC voltage and current uncertainties at different frequencies other than the ones shown. Power factors (PF) other than the one shown contribute to the power uncertainty. PF is related to the cosine of phase. Therefore, uncertainties track the laboratory's phase uncertainty closely at PF near one but are magnified heavily as PF approaches zero. The lab may also report reactive power, apparent power, and power factor under this accreditation. If needed, contact laboratory for more information regarding uncertainties at frequency and power factor combinations other than the ones shown.
- Unless otherwise specified in the far-right column, the laboratory is utilizing an in-house developed calibration procedure.
- The legal entity for this location is Transcat, Inc. Mobile Service is based out of the Rochester location and consists of three mobile units that are duplicates of each other.



Jason Stine, Vice President