



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

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

This is to certify that

TesCom

15527 Ranch Road 620 N

Austin, TX 78717

Including satellite site located at 12132 Colwick St. San Antonio, TX 78216

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

ISO/IEC 17025:2005

and national standard

ANSI/NCSL Z540-1-1994

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-1417

Certificate Number


ANAB Approval

Certificate Valid: 09/29/2016-11/20/2017
Version No. 004 Issued: 09/29/2016



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 January 2009).



ANSI-ASQ National Accreditation Board

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005 & ANSI/NCSL Z540-1-1994

TesCom

15527 Ranch Road 620 N. Austin, Texas 78717
www.tescomusa.com

Point of Contact: Darrell Walker Email: darrellw@tescomusa.com Phone: 512-244-6689

CALIBRATION

Valid to: November 20, 2017 Certificate Number: AC-1417

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|---|--|------------------------------------|
| DC Voltage - Source | Up to 220 mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V 220 V to 1.1 kV | 7.7 μ V/V + 0.4 μ V 5.1 μ V/V + 0.7 μ V 3.6 μ V/V + 2.5 μ V 3.6 μ V/V + 4 μ V 5.1 μ V/V + 40 μ V 6.8 μ V/V + 0.4 mV | Fluke 5720A with Fluke 5725A |
| DC Voltage - Measure | Up to 200 mV 200 mV to 2 V (2 to 20) V (20 to 200) V 200 V to 1 kV | 3.9 μ V/V + 0.1 μ V 3.6 μ V/V + 0.4 μ V 3.3 μ V/V + 4 μ V 5.1 μ V/V + 40 μ V 5.4 μ V/V + 1 mV | Fluke 8508A Opt 001 |
| | (1 to 30) kV | 1 mV/V* | Ross VD 30 Voltage Divider |
| DC Current - Measure | (100 to 200) μ A 200 μ A to 2 mA (2 to 20) mA (20 to 200) mA 200 mA to 2 A (2 to 20) A | 8.7 μ A/A + 0.4 nA 8 μ A/A + 4 nA 13 μ A/A + 40 nA 46 μ A/A + 0.8 μ A 0.2 mA/A + 16 μ A 0.4 mA/A + 0.4 mA | Fluke 8508A Opt 001 |



Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|--|--|---|--|
| DC Current - Source | Up to 220 μ A 220 μ A to 2.2 mA (2.2 to 22) mA (22 to 100) mA (100 to 220) mA | 42 μ A/A + 6 nA 37 μ A/A + 7 nA 36 μ A/A + 40 nA 46 μ A/A + 0.7 μ A 46 μ A/A + 0.7 μ A + (200 x I ²) μ A/A 82 μ A/A + 12 μ A 82 μ A/A + 12 μ A + (10 x I ²) μ A/A 0.51 mA/A + 0.50 mA | Fluke 5720A with Fluke 5725A |
| | 220 mA to 1 A (1 to 2.2) A (2.2 to 11) A (11 to 20.5) A | 1 mA/A + 0.75 mA | Fluke 5520A/SC1100 |
| Capacitance - Source 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz (0 to 50) Hz (0 to 20) Hz (0 to 6) Hz (0 to 2) Hz (0 to 0.6) Hz (0 to 0.2) Hz | 190 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 110) nF (110 to 330) nF 330 nF to 1.1 μ F (1.1 to 3.3) μ F (3.3 to 11) μ F (11 to 33) μ F (33 to 110) μ F (110 to 330) μ F 330 μ F to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF | 3.98 mF/F + 10 pF 3.95 mF/F + 10 pF 1.95 mF/F + 10 pF 1.95 mF/F to + 0.10 nF 1.95 mF/F + 0.30 mF 2.06 mF/F + 1 nF 1.96 mF/F + 3 nF 1.96 mF/F + 10 nF 3.11 mF/F + 30 nF 3.50 mF/F + 0.10 μ F 3.54 mF/F + 0.30 μ F 3.58 mF/F + 1 μ F 3.58 mF/F + 3 μ F * 3.58 mF/F + 10 μ F* 5.87 mF/F + 30 μ F * 8.57 mF/F + 0.10 mF * | Fluke 5520A/SC1100 |
| Resistance - Measure | Up to 2 Ω (2 to 20) Ω (20 to 200) Ω 200 Ω to 2 k Ω (2 to 20) k Ω (20 to 200) k Ω 200 k Ω to 2 M Ω (2 to 20) M Ω (20 to 200) M Ω 200 M Ω to 2 G Ω | 13 $\mu\Omega/\Omega$ + 4 $\mu\Omega$ 8.3 $\mu\Omega/\Omega$ + 14 $\mu\Omega$ 8.1 $\mu\Omega/\Omega$ + 50 $\mu\Omega$ 8 $\mu\Omega/\Omega$ + 0.5 m Ω 8 $\mu\Omega/\Omega$ + 5 m Ω 8.1 $\mu\Omega/\Omega$ + 50 m Ω 8.8 $\mu\Omega/\Omega$ + 1 Ω 14 $\mu\Omega/\Omega$ + 0.1 k Ω 76 $\mu\Omega/\Omega$ + 10 k Ω 1.5 m Ω/Ω + 1 M Ω | Fluke 8508A Opt 01 |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|------------------------|---|------------------------------------|
| Resistance - Source | 1 Ω | 98 $\mu\Omega/\Omega$ | Fluke 5720A |
| | 1.9 Ω | 99 $\mu\Omega/\Omega$ | |
| | 10 Ω | 23 $\mu\Omega/\Omega$ | |
| | 19 Ω | 23 $\mu\Omega/\Omega$ | |
| | 100 Ω | 10 $\mu\Omega/\Omega$ | |
| | 190 Ω | 10 $\mu\Omega/\Omega$ | |
| | 1 k Ω | 8.7 $\mu\Omega/\Omega$ | |
| | 1.9 k Ω | 8.7 $\mu\Omega/\Omega$ | |
| | 10 k Ω | 8.9 $\mu\Omega/\Omega$ | |
| | 19 k Ω | 8.9 $\mu\Omega/\Omega$ | |
| | 100 k Ω | 11 $\mu\Omega/\Omega$ | |
| | 190 k Ω | 11 $\mu\Omega/\Omega$ | |
| | 1 M Ω | 21 $\mu\Omega/\Omega$ | |
| | 1.9 M Ω | 22 $\mu\Omega/\Omega$ | |
| 10 M Ω | 41 $\mu\Omega/\Omega$ | | |
| 19 M Ω | 48 $\mu\Omega/\Omega$ | | |
| 100 M Ω | 0.1 m Ω/Ω | | |
| AC Voltage - Source | Up to 2.2 mV | | Fluke 5720A |
| | (10 to 20) Hz | 5 mV/V + 4 μ V | |
| | (20 to 40) Hz | 3 mV/V + 4 μ V | |
| | 40 Hz to 20 kHz | 2.3 mV/V + 4 μ V | |
| | (20 to 50) kHz | 1.8 mV/V + 4 μ V | |
| | (50 to 100) kHz | 1.8 mV/V + 5 μ V | |
| | (100 to 300) kHz | 2.2 mV/V + 10 μ V | |
| | (300 to 500) kHz | 2.7 mV/V + 20 μ V | |
| | 500 kHz to 1 Hz | 3.8 mV/V + 20 μ V | |
| | (2.2 to 22) mV | | |
| | (10 to 20) Hz | 0.34 mV/V + 4 μ V | |
| | (20 to 40) Hz | 0.25 mV/V + 4 μ V | |
| | 40 Hz to 20 kHz | 1 mV/V + 4 μ V | |
| | (20 to 50) kHz | 0.36 mV/V + 4 μ V | |
| | (50 to 100) kHz | 0.63 mV/V + 5 μ V | |
| | (100 to 300) kHz | 1.1 mV/V + 10 μ V | |
| | (300 to 500) kHz | 1.6 mV/V + 20 μ V | |
| | 500 kHz to 1 MHz | 2.8 mV/V + 20 μ V | |
| | (22 to 220) mV | | |
| | (10 to 20) Hz | 0.35 mV/V + 12 μ V | |
| | (20 to 40) Hz | 0.27 mV/V + 7 μ V | |
| | 40 Hz to 20 kHz | 0.27 mV/V + 7 μ V | |
| | (20 to 50) kHz | 0.33 mV/V + 7 μ V | |
| (50 to 100) kHz | 0.54 mV/V + 17 μ V | | |
| (100 to 300) kHz | 0.97 mV/V + 20 μ V | | |
| (300 to 500) kHz | 1.5 mV/V + 25 μ V | | |
| 500 kHz to 1 MHz | 2.8 mV/V + 45 μ V | | |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|--|---|------------------------------------|
| AC Voltage - Source | 220 mV to 2.2 V (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz | 0.25 mV/V + 40 μ V 95 μ V/V + 15 μ V 48 μ V/V + 8 μ V 80 μ V/V + 10 μ V 0.11 mV/V + 30 μ V 0.43 mV/V + 80 μ V 1 mV/V + 0.2 mV 1.7 mV/V + 0.3 V | Fluke 5720A with Fluke 5725A |
| | (2.2 to 22) V (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz (22 to 220) V (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz 220 V to 1.1 kV (15 to 50) Hz 50 Hz to 1 kHz 40 Hz to 1 kHz (1 to 20) kHz (20 to 30) kHz (220 to 750) V (30 to 50) kHz (50 to 100) kHz | 0.25 mV/V + 0.4 mV 94 μ V/V + 0.15 mV 47 μ V/V + 50 μ V 78 μ V/V + 0.1 mV 0.12 mV/V + 0.2 mV 0.30 mV/V + 0.6 mV 1 mV/V + 2 mV 1.5 mV/V + 3.2 mV 0.25 mV/V + 4 mV 94 μ V/V + 1.5 mV 61 μ V/V + 0.6 mV 88 μ V/V + 1 mV 0.16 mV/V + 2.5 mV 0.92 mV/V + 16 mV 4.5 mV/V + 40 mV 8.2 mV/V + 80 mV 0.31 mV/V + 16 mV 74 μ V/V + 3.5 mV 96 μ V/V + 4 mV 0.17 mV/V + 6 mV 0.6 mV/V + 11 mV 0.6 mV/V + 11 mV 2.4 mV/V + 45 mV | |
| AC Voltage - Measure | Up to 2.2 mV (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz | 0.25 mV/V + 1.3 μ V 0.23mV/V + 1.3 μ V 0.23 mV/V + 1.3 μ V 0.25 mV/V + 2 μ V 0.27 mV/V + 2.5 μ V 0.51 mV/V + 4 μ V 1.3 mV/V + 8 μ V 4.7 mV/V + 8 μ V | Fluke 5790A Opt 03 |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|----------------------------|---|------------------------------------|
| AC Voltage – Measure | (2.2 to 7) mV | | Fluke 5790A Opt 03 |
| | (10 to 20) Hz | 0.13 mV/V + 1.3 μ V | |
| | (20 to 40) Hz | 0.11 mV/V + 1.3 μ V | |
| | 40 Hz to 20 kHz | 0.11 mV/V + 1.3 μ V | |
| | (20 to 50) kHz | 0.11 mV/V + 2 μ V | |
| | (50 to 100) kHz | 0.12 mV/V + 2.5 μ V | |
| | (100 to 300) kHz | 0.3 mV/V + 4 μ V | |
| | (300 to 500) kHz | 0.81 mV/V + 8 μ V | |
| | 500 kHz to 1 MHz | 3.5 mV/V + 8 μ V | |
| | (7 to 22) mV | | |
| | (10 to 20) Hz | 0.1 mV/V + 1.3 μ V | |
| | (20 to 40) Hz | 65 μ V/V + 1.3 μ V | |
| | 40 Hz to 20 kHz | 63 μ V/V + 1.3 μ V | |
| | (20 to 50) kHz | 83 μ V/V + 2 μ V | |
| | (50 to 100) kHz | 0.12 mV/V + 2.5 μ V | |
| | (100 to 300) kHz | 0.26 mV/V + 4 μ V | |
| | (300 to 500) kHz | 0.67 mV/V + 8 μ V | |
| | 500 kHz to 1 MHz | 2.6 mV/V + 8 μ V | |
| | (22 to 70) mV | | |
| | (10 to 20) Hz | 94 μ V/V + 1.5 μ V | |
| | (20 to 40) Hz | 62 μ V/V + 1.5 μ V | |
| | 40 Hz to 20 kHz | 65 μ V/V + 1.5 μ V | |
| | (20 to 50) kHz | 86 μ V/V + 2 μ V | |
| | (50 to 100) kHz | 0.16 mV/V + 2.5 μ V | |
| | (100 to 300) kHz | 0.33 mV/V + 4 μ V | |
| | (300 to 500) kHz | 0.48 mV/V + 8 μ V | |
| | 500 kHz to 1 MHz | 1.3 mV/V + 8 μ V | |
| | (70 to 220) mV | | |
| | (10 to 20) Hz | 67 μ V/V + 1.5 μ V | |
| | (20 to 40) Hz | 40 μ V/V + 1.5 μ V | |
| | 40 Hz to 20 kHz | 36 μ V/V + 1.5 μ V | |
| | (20 to 50) kHz | 54 μ V/V + 2 μ V | |
| | (50 to 100) kHz | 0.1 mV/V + 2.5 μ V | |
| | (100 to 300) kHz | 0.22 mV/V + 4 μ V | |
| | (300 to 500) kHz | 0.34 mV/V + 8 μ V | |
| | 500 kHz to 1 MHz | 1.2 mV/V + 8 μ V | |
| (220 to 700) mV | | | |
| (10 to 20) Hz | 74 μ V/V + 1.5 μ V | | |
| (20 to 40) Hz | 37 μ V/V + 1.5 μ V | | |
| 40 Hz to 20 kHz | 34 μ V/V + 1.5 μ V | | |
| (20 to 50) kHz | 36 μ V/V + 2 μ V | | |
| (50 to 100) kHz | 62 μ V/V + 2.5 μ V | | |
| (100 to 300) kHz | 0.2 mV/V + 4 μ V | | |
| (300 to 500) kHz | 0.33 mV/V + 8 μ V | | |
| 500 kHz to 1 MHz | 1.2 mV/V + 8 μ V | | |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|------------------------|---|------------------------------------|
| AC Voltage - Measure | 700 mV to 2.2 V | | |
| | (10 to 20) Hz | 88 μ V/V | |
| | (20 to 40) Hz | 68 μ V/V | |
| | 40 Hz to 20 kHz | 65 μ V/V | |
| | (20 to 50) kHz | 69 μ V/V | |
| | (50 to 100) kHz | 83 μ V/V | |
| | (100 to 300) kHz | 0.2 mV/V | |
| | (300 to 500) kHz | 0.31 mV/V | |
| | 500 kHz to 1 MHz | 1.3 mV/V | |
| | (2.2 to 7) V | | |
| | (10 to 20) Hz | 69 μ V/V | |
| | (20 to 40) Hz | 42 μ V/V | |
| | 40 Hz to 20 kHz | 33 μ V/V | |
| | (20 to 50) kHz | 45 μ V/V | |
| | (50 to 100) kHz | 77 μ V/V | |
| | (100 to 300) kHz | 0.21 mV/V | |
| | (300 to 500) kHz | 0.48 mV/V | |
| | 500 kHz to 1 MHz | 1.6 mV/V | |
| | (7 to 22) V | | |
| | (10 to 20) Hz | 67 μ V/V | |
| | (20 to 40) Hz | 40 μ V/V | |
| | 40 Hz to 20 kHz | 30 μ V/V | |
| | (20 to 50) kHz | 38 μ V/V | |
| | (50 to 100) kHz | 73 μ V/V | |
| | (100 to 300) kHz | 0.2 mV/V | |
| | (300 to 500) kHz | 0.47 mV/V | |
| | 500 kHz to 1 MHz | 1.6 mV/V | |
| | (22 to 70) V | | |
| | (10 to 20) Hz | 68 μ V/V | |
| | (20 to 40) Hz | 42 μ V/V | |
| | 40 Hz to 20 kHz | 37 μ V/V | |
| | (20 to 50) kHz | 51 μ V/V | |
| | (50 to 100) kHz | 88 μ V/V | |
| | (100 to 300) kHz | 0.2 mV/V | |
| | (300 to 500) kHz | 0.51 mV/V | |
| | (70 to 220) V | | |
| (10 to 20) Hz | 69 μ V/V | | |
| (20 to 40) Hz | 45 μ V/V | | |
| 40 Hz to 20 kHz | 47 μ V/V | | |
| (20 to 50) kHz | 86 μ V/V | | |
| (50 to 100) kHz | 0.13 mV/V | | |
| (220 to 700) V | | | |
| (10 to 20) Hz | 70 μ V/V | | |
| (20 to 40) Hz | 48 μ V/V | | |
| 40 Hz to 20 kHz | 38 μ V/V | | |
| (20 to 50) kHz | 0.14 mV/V | | |
| (50 to 100) kHz | 0.87 mV/V | | |

Fluke 5790A Opt 03

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|--|---|---|---|
| AC Voltage - Measure | 700 V to 1 kV 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (1 to 30) kV 60 Hz | 38 μ V/V 0.15 mV/V 0.87 mV/V 5 mV/V* | Fluke 5790A Opt 03 Ross VD - 30 Voltage Divider |
| AC Voltage - Measure Wideband Relative to 1 kHz | Up to 2.2 mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (2.2 to 7) mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (7 to 22) mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (22 to 70) mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (70 to 220) mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (220 to 700) mV 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz | 1.1 mV/V + 1.5 μ V 1.1 mV/V + 1.5 μ V 2.7 mV/V + 1.5 μ V 4.7 mV/V + 1.5 μ V 11 mV/V + 3 μ V 1.1 mV/V + 1.5 μ V 1.1 mV/V + 1.5 μ V 1.6 mV/V + 1.5 μ V 2.7 mV/V + 1.5 μ V 5.8 mV/V + 1.5 μ V 1.1 mV/V 1.1 mV/V 1.6 mV/V 2.6 mV/V 5.8 mV/V 0.79 mV/V 0.79 mV/V 1.6 mV/V 2.4 mV/V 5.5 mV/V 0.78 mV/V 0.79 mV/V 1.6 mV/V 2.4 mV/V 5.5 mV/V 0.78 mV/V 0.79 mV/V 1.6 mV/V 2.4 mV/V 5.5 mV/V | Fluke 5790A Opt 03 |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|--|--|---|------------------------------------|
| AC Voltage - Measure Wideband Relative to 1 kHz | 700 mV to 2.2 V 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz (2.2 to 7) V 500 kHz to 1.2 MHz (1.2 to 2) MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz | 0.79 mV/V 0.78 mV/V 1.6 mV/V 2.4 mV/V 5.5 mV/V 0.79 mV/V 0.79 mV/V 1.6 mV/V 2.4 mV/V 5.5 mV/V | Fluke 5790A Opt 03 |
| AC Current - Measure | Up to 200 μA (1 to 10) Hz 10 Hz to 10 kHz 200 μA to 2 mA (1 to 10) Hz 10 Hz to 10 kHz (2 to 20) mA (1 to 10) Hz 10 Hz to 10 kHz (20 to 200) mA (1 to 10) Hz 10 Hz to 10 kHz 200 mA to 2 A 10 Hz to 2 kHz (2 to 10) kHz (2 to 20) A 10 Hz to 2 kHz (2 to 10) kHz | 0.29 mA/A + 20 nA 0.29 mA/A + 20 nA 0.28 mA/A + 0.2 μ A 0.27 mA/A + 0.2 μ A 0.29 mA/A + 2 μ A 0.28 mA/A + 2 μ A 0.29 mA/A + 20 μ A 0.31 mA/A + 20 μ A 0.64 mA/A + 0.2 mA 0.86 mA/A + 0.2 mA 0.84 mA/A + 2 mA 2.6 mA/A + 2 mA | Fluke 8508A Opt 01 |
| AC Current - Source | Up to 220 μA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 220 μA to 2.2 mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.34 mA/A + 16 nA 0.28 mA/A + 10 nA 0.26 mA/A + 8 nA 0.36 mA/A + 12 nA 1.2 mA/A + 65 nA 0.34 mA/A + 40 nA 0.28 mA/A + 35 nA 0.25 mA/A + 35 nA 0.3 mA/A + 0.11 μ A 1.2 mA/A + 0.65 μ A | Fluke 5720A |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|---------------------------------------|--|--|--|
| AC Current - Source | (2.2 to 22) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (22 to 220) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 220 mA to 2.2 A 10 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.34 mA/A + 0.4 μ A 0.28 mA/A + 0.35 μ A 0.25 mA/A + 0.35 μ A 0.3 mA/A + 0.55 μ A 1.2 mA/A + 5 μ A 0.28 mA/A + 4 μ A 0.21 mA/A + 3.5 μ A 0.17 mA/A + 2.5 μ A 0.23 mA/A + 3.5 μ A 1.13 mA/A + 10 μ A 0.27 mA/A + 35 μ A 0.46 mA/A + 80 μ A 7.2 mA/A + 0.16 nA | Fluke 5720A |
| | (2.2 to 11) A 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.49 mA/A + 0.17 μ A 0.98 mA/A + 0.38 μ A 3.7 mA/A + 0.75 μ A | Fluke 5720A w/Fluke 5725A |
| | (11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz | 1.2 mA/A + 5 mA 1.5 mA/A + 5 mA 30 mA/A + 5 mA | Fluke 5520A/SC1100 |
| Clamp-on Ammeter Non-Toroidal type | (1.65 to 16.5) A (45 to 65) Hz (65 to 440) Hz (16.5 to 55) A (45 to 65) Hz (65 to 440) Hz (55 to 150) A (45 to 65) Hz (65 to 440) Hz (150 to 550) A (45 to 65) Hz (65 to 440) Hz (550 to 1000) A (45 to 65) Hz (65 to 440) Hz | 0.1 A 0.07 A 0.48 A 0.95 A 0.51 A 0.67 A 2.3 A 4.7 A 3.7 A 5.5 A | Fluke 5520A/SC 1100 with Fluke 5500A 50 turn coil |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|---|---|---|--|
| Clamp-on Ammeter Toroidal type | (1.65 to 16.5) A (45 to 65) Hz (65 to 440) Hz (16.5 to 55) A (45 to 65) Hz (65 to 440) Hz (55 to 150) A (45 to 65) Hz (65 to 440) Hz (150 to 550) A (45 to 65) Hz (65 to 440) Hz (550 to 1 000) A (45 to 65) Hz (65 to 440) Hz | 0.05 A 0.03 A 0.16 A 0.69 A 0.19 A 0.36 A 1.1 A 3.2 A 1.9 A 3.8 A | Fluke 5520A/SC 1100 with Fluke 5500A 50 turn coil |
| Oscilloscopes Amplitude – DC DC Signal into 50 Ω Load DC Signal into 1 M Ω Load Amplitude - Square Wave 10 Hz to 10 kHz 50 Ω Load 1 M Ω Load Amplitude - Leveled Sine Flatness (Relative to 50 kHz) Amplitude - Leveled Sine Absolute Amplitude Time Marker (into 50 Ω Load) Spike or Square Wave Spike, Square, 20 % Pulse Spike or Square Wave Square or Sine Wave Sine Wave Edge Specs (into 50 Ω Load) Rise Time | (0 to \pm 6.6) V (0 to \pm 130) V 1 mV to 6.6 V p-p 1 mV to 130 V p-p 5 mV to 5.5 V 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 4 mV to 3.5 V 600 MHz to 1.1 GHz 5 mV to 5.5 V 50 kHz Reference | 2.5 mV/V + 40 μ V 5.7 mV/V + 40 μ V 3.1 mV/V + 40 μ V 9.8 mV/V + 40 μ V 23 mV/V + 0.1 mV 41 mV/V + 0.1 mV 42 mV/V + 0.1 mV 40 mV/V + 0.3 mV 40 mV/V + 0.3 mV (20 + 1 000t) μ s/s 2 μ s/s 2 μ s/s 2 μ s/s 2 μ s/s 7.5 ps | Fluke 5520A/SC1100 |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|---|---------------------|---|--|
| Electrical Simulation of Thermocouples | (600 to 800) °C | 0.45 °C | Fluke 5520A |
| | (800 to 1 000) °C | 0.35 °C | |
| Type B | (1 000 to 1 550) °C | 0.31 °C | |
| | (1 550 to 1 820) °C | 0.34 °C | |
| Type C | (0 to 150) °C | 0.31 °C | |
| | (150 to 650) °C | 0.29 °C | |
| | (650 to 1 000) °C | 0.32 °C | |
| | (1 000 to 1 800) °C | 0.51 °C | |
| | (1 800 to 2 316) °C | 0.86 °C | |
| Type E | (-250 to -100) °C | 0.53 °C | |
| | (-100 to -25) °C | 0.19 °C | |
| | (-25 to 350) °C | 0.15 °C | |
| | (350 to 650) °C | 0.17 °C | |
| Type J | (650 to 1 000) °C | 0.22 °C | |
| | (-210 to -100) °C | 0.28 °C | |
| | (-100 to -30) °C | 0.17 °C | |
| | (-30 to 150) °C | 0.15 °C | |
| | (150 to 760) °C | 0.18 °C | |
| Type K | (760 to 1 200) °C | 0.24 °C | |
| | (-200 to -100) °C | 0.34 °C | |
| | (-100 to -25) °C | 0.19 °C | |
| | (-25 to 120) °C | 0.17 °C | |
| Type L | (120 to 1 000) °C | 0.27 °C | |
| | (1 000 to 1 372) °C | 0.41 °C | |
| | (-200 to -100) °C | 0.38 °C | |
| | (-100 to 800) °C | 0.27 °C | |
| | (800 to 900) °C | 0.18 °C | |

Electromagnetic - DC/Low Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|---|---------------------|---|------------------------------------|
| Electrical Simulation of Thermocouples (cont.) Type N | (-200 to -100) °C | 0.41 °C | Fluke 5520A |
| | (-100 to -25) °C | 0.23 °C | |
| | (-25 to 120) °C | 0.20 °C | |
| | (120 to 410) °C | 0.19 °C | |
| | (410 to 1 300) °C | 0.28 °C | |
| Type R | (0 to 250) °C | 0.59 °C | |
| | (250 to 400) °C | 0.36 °C | |
| | (400 to 1 000) °C | 0.34 °C | |
| Type S | (1 000 to 1 400) °C | 0.41 °C | |
| | (1 400 to 1 767) °C | 0.48 °C | |
| Type T | (0 to 250) °C | 0.48 °C | |
| | (250 to 1 000) °C | 0.37 °C | |
| | (1 000 to 1 400) °C | 0.38 °C | |
| | (1 400 to 1 767) °C | 0.52 °C | |
| Type U | (-250 to -150) °C | 0.65 °C | |
| | (-150 to 0) °C | 0.25 °C | |
| | (0 to 120) °C | 0.16 °C | |
| | (120 to 400) °C | 0.14 °C | |
| Type U | (-200 to 0) °C | 0.58 °C | |
| | (0 to 600) °C | 0.28 °C | |

Time & Frequency

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|------------------|---|------------------------------------|
| Frequency - Source | 0.01 Hz to 2 MHz | 2.5 μ Hz/Hz + 5 μ Hz * | Fluke 5520A |

Mechanical

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|--|--|---|------------------------------------|
| Scales 0.1mg resolution 0.1 mg resolution 1 mg resolution | Up to 120 g 120 to 200 g Up to 300 g | 0.2 mg 0.24 mg 1.7 mg | Class 1 Weights |

Dimensional

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|-------------|---|------------------------------------|
| Micrometers | Up to 12 in | (57 + 9L) μ in | Gage Blocks |
| Calipers | Up to 40 in | (520 + 6.9L) μ in | |
| Height Gage | Up to 40 in | (283 + 4.7L) μ in | |

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Dimensional

| Parameter/ Equipment | Range | Calibration and Measurement Capability [Expressed as Uncertainty (\pm)] | Reference Standard or Equipment |
|-------------------------|-------------|---|------------------------------------|
| Micrometers | Up to 1 in | (70 + 1.8L) μ in | Gage Blocks |
| Calipers | Up to 6 in | (638 + 15.0L) μ in | |
| Height Gage | Up to 12 in | (327 + 4.5L) μ in | |

Notes:

1. Calibration and Measurement Capabilities (CMCs) (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of $k=2$.
2. This laboratory offers calibration services in its laboratory and on-site at customer-designated locations. 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.
3. Where annotated with an asterisk (*), listed Parameter/Equipment and Range does not include possible contributions to uncertainty from a "best available" unit under test, and/or contributions due to repeatability. In such cases, both contributors will be determined and included in final expanded uncertainties at time of calibration.
4. The use of (t) represents Time in seconds.
5. The use of (L) signifies Length in inches.
6. This scope is formatted as part of a single document including the Certificate of Accreditation No. AC-1417.



 Vice President

