



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

Davis Calibration

13440 S. Highway 71, Grandview, MO 64030
Walter Gilliam Phone: 816-761-0726

CALIBRATION

Valid to: January 31, 2010

Certificate Number: AC-1257

I. Electromagnetic - DC/Low Frequency⁴

| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|-----------------------|--|---|---------------------------------|--|
| DC Voltage - Source | (0 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 | 8 μV/V + 600 nV 7 μV/V + 1 μV 7 μV/V + 3.5 μV 7 μV/V + 6.5 μV 8 μV/V + 80 μV 9 μV/V + 500 μV | Fluke 5700A | OEM and GIDEP Sourced Calibration Procedures |
| DC Voltage - Measure | (10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV | 11 μV/V + 300 nV 10 μV/V + 300 nV 10 μV/V + 500 nV 12 μV/V + 30 μV 22 μV/V + 100 μV | HP 3458A | |
| DC Current - Source | Up to 220 μA 220 μA to 2.2 mA (2.2 to 22) mA (22 to 220) mA 220 mA to 2.2 A (2.2 to 11) A | 50 μA/A + 8 nA 50 μA/A + 8 nA 50 μA/A + 80 nA 60 μA/A + 800 nA 80 μA/A + 25 μA 600 μA/A + 330 μA | Fluke 5700A Fluke 5500A | |
| DC Current - Measure | 100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A | 25 μA/A + 5 nA 25 μA/A + 50 nA 40 μA/A + 500 nA 115 μA/A + 10 μA | HP 3458A | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|-----------------------|--|---|---------------------------------|--|
| Resistance – Source | 1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 k Ω 1.9 k Ω 10 k Ω 19 k Ω 100 k Ω 190 k Ω 1 M Ω 1.9 M Ω 10 M Ω 19 M Ω 100 M Ω | 95 $\mu\Omega$ 181 $\mu\Omega$ 280 $\mu\Omega$ 513 $\mu\Omega$ 1.7 m Ω 3.23 m Ω 13 m Ω 24.7 m Ω 120 m Ω 228 m Ω 1.4 Ω 2.66 Ω 20 Ω 40 Ω 400 Ω 893 Ω 11 k Ω | Fluke 5700A | OEM and GIDEP Sourced Calibration Procedures |
| Resistance - Measure | Up to 10 Ω (10 to 100) Ω 100 Ω to 1 k Ω (1 to 10) k Ω (10 to 100) k Ω 100 k Ω to 1 M Ω (1 to 10) M Ω (10 to 100) M Ω 100 M Ω to 1 G Ω | 18 $\mu\Omega/\Omega$ + 50 $\mu\Omega$ 13 $\mu\Omega/\Omega$ + 500 $\mu\Omega$ 11 $\mu\Omega/\Omega$ + 500 $\mu\Omega$ 11 $\mu\Omega/\Omega$ + 5 m Ω 11 $\mu\Omega/\Omega$ + 50 m Ω 15 $\mu\Omega/\Omega$ + 2 Ω 53 $\mu\Omega/\Omega$ + 100 Ω 503 $\mu\Omega/\Omega$ + 1 k Ω 5 m Ω/Ω + 10 k Ω | HP 3458A | |
| AC Voltage – Source | (0 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 | 550 $\mu\text{V}/\text{V}$ + 4.5 μV 210 $\mu\text{V}/\text{V}$ + 4.5 μV 105 $\mu\text{V}/\text{V}$ + 4.5 μV 370 $\mu\text{V}/\text{V}$ + 4.5 μV 850 $\mu\text{V}/\text{V}$ + 7 μV 1.1 mV/V + 13 μV 1.7 mV/V + 25 μV 3.4 mV/V + 25 μV | Fluke 5700A | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|----------------------------|-----------------------------|--|---------------------------------|-----------|
| AC Voltage – Source (cont) | (2.2 to 22) mV | | | |
| | (10 to 20) Hz | 550 μ V/V + 5 μ V | | |
| | (20 to 40) Hz | 210 μ V/V + 5 μ V | | |
| | 40 Hz to 20 kHz | 105 μ V/V + 5 μ V | | |
| | (20 to 50) kHz | 370 μ V/V + 5 μ V | | |
| | (50 to 100) kHz | 850 μ V/V + 7 μ V | | |
| | (100 to 300) kHz | 1.1 mV/V + 12 μ V | | |
| | (300 to 500) kHz | 1.7 mV/V + 25 μ V | | |
| | 500 kHz to 1 MHz | 3.4 mV/V + 25 μ V | | |
| | (22 to 220) mV | | | |
| | (10 to 20) Hz | 550 μ V/V + 13 μ V | | |
| | (20 to 40) Hz | 210 μ V/V + 8 μ V | | |
| | 40 Hz to 20 kHz | 105 μ V/V + 8 μ V | | |
| | (20 to 50) kHz | 320 μ V/V + 8 μ V | | |
| | (50 to 100) kHz | 850 μ V/V + 25 μ V | | |
| | (100 to 300) kHz | 1.1 mV/V + 25 μ V | | |
| | (300 to 500) kHz | 1.7 mV/V + 35 μ V | | |
| | 500 kHz to 1 MHz | 3.4 mV/V + 80 μ V | | |
| | 220 mV to 2.2 V | | | |
| | (10 to 20) Hz | 500 μ V/V + 80 μ V | | |
| | (20 to 40) Hz | 160 μ V/V + 25 μ V | | |
| | 40 Hz to 20 kHz | 75 μ V/V + 6 μ V | | |
| | (20 to 50) kHz | 120 μ V/V + 16 μ V | | |
| | (50 to 100) kHz | 250 μ V/V + 70 μ V | | |
| (100 to 300) kHz | 430 μ V/V + 130 μ V | | | |
| (300 to 500) kHz | 1.1 mV/V + 350 μ V | | | |
| 500 kHz to 1 MHz | 2.2 mV/V + 850 μ V | | | |
| (2.2 to 22) V | | | | |
| (10 to 20) Hz | 500 μ V/V + 800 μ V | | | |
| (20 to 40) Hz | 160 μ V/V + 250 μ V | | | |
| 40 Hz to 20 kHz | 75 μ V/V + 60 μ V | | | |
| (20 to 50) kHz | 120 μ V/V + 160 μ V | | | |
| (50 to 100) kHz | 250 μ V/V + 350 μ V | | | |
| (100 to 300) kHz | 500 μ V/V + 1.5 mV | | | |
| (300 to 500) kHz | 1.3 mV/V + 4.3 mV | | | |
| 500 kHz to 1 MHz | 2.7 mV/V + 8.5 mV | | | |

Fluke 5700A

OEM and GIDEP
Sourced Calibration
Procedures



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|-----------------------------|--|--|---------------------------------|--|
| AC Voltage – Source (cont.) | (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 | 500 μ V/V + 8 mV 160 μ V/V + 2.5 mV 80 μ V/V + 800 μ V 220 μ V/V + 3.5 mV 500 μ V/V + 8 mV 1.5 mV/V + 90 mV 4.7 mV/V + 90 mV 115 mV/V + 190 mV 400 μ V/V + 16 mV 80 μ V/V + 3.5 mV | Fluke 5700A | |
| AC Voltage – Measure | (1 to 10) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1MHz (1 to 4) MHz (4 to 8) MHz (10 to 100) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz | 300 μ V/V + 3 μ V 200 μ V/V + 1.1 μ V 300 μ V/V + 1.1 μ V 1 mV/V + 1.1 μ V 5 mV/V + 1.1 μ V 40 mV/V + 2 μ V 12 mV/V + 5 μ V 70 mV/V + 7 μ V 200 mV/V + 8 μ V 72 μ V/V + 4 μ V 72 μ V/V + 2 μ V 142 μ V/V + 2 μ V 302 μ V/V + 2 μ V 802 μ V/V + 2 μ V 30 mV/V + 10 μ V 10 mV/V + 10 μ V 15 mV/V + 10 μ V 40 mV/V + 8 μ V 150 mV/V + 100 μ V | HP 3458A | OEM and GIDEP Sourced Calibration Procedures |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|------------------------------|-----------------------|--|---------------------------------|--|
| AC Voltage – Measure (cont.) | 100 mV to 1 V | | HP 3458A | OEM and GIDEP Sourced Calibration Procedures |
| | (1 to 40) Hz | 72 μ V/V + 40 μ V | | |
| | 40 Hz to 1 kHz | 72 μ V/V + 20 μ V | | |
| | (1 to 20) kHz | 142 μ V/V + 20 μ V | | |
| | (20 to 50) kHz | 302 μ V/V + 20 μ V | | |
| | (50 to 100) kHz | 802 μ V/V + 20 μ V | | |
| | (100 to 300) kHz | 3 mV/V + 100 μ V | | |
| | 300 kHz to 1 MHz | 1 mV/V + 100 μ V | | |
| | (1 to 4) MHz | 15 mV/V + 100 μ V | | |
| | (4 to 8) MHz | 40 mV/V + 800 μ V | | |
| | (8 to 10) MHz | 150 mV/V + 1 mV | | |
| | (1 to 10)V | | | |
| | (1 to 40) Hz | 72 μ V/V + 400 μ V | | |
| | 40 Hz to 1 kHz | 72 μ V/V + 200 μ V | | |
| | (1 to 20) kHz | 142 μ V/V + 200 μ V | | |
| | (20 to 50) kHz | 302 μ V/V + 200 μ V | | |
| | (50 to 100) kHz | 802 μ V/V + 200 μ V | | |
| | (100 to 300) kHz | 3 mV/V + 1 mV | | |
| | 300 kHz to 1 MHz | 1 mV/V + 1 mV | | |
| | (1 to 4) MHz | 15 mV/V + 1 mV | | |
| | (4 to 8) MHz | 40 mV/V + 8 mV | | |
| | (8 to 10) MHz | 150 mV/V + 10 mV | | |
| | (10 to 100) V | | | |
| | (1 to 40) Hz | 200 μ V/V + 4 mV | | |
| 40 Hz to 1 kHz | 200 μ V/V + 2 mV | | | |
| (1 to 20) kHz | 0.2 mV/V + 2 mV | | | |
| (20 to 50) kHz | 350 μ V/V + 2 mV | | | |
| (50 to 100) kHz | 1.2 mV/V + 2 mV | | | |
| (100 to 300) kHz | 4 mV/V + 10 mV | | | |
| 300 kHz to 1 MHz | 15 mV/V + 10 mV | | | |
| (100 to 1 000) V | | | | |
| (1 to 40) Hz | 400 μ V/V + 40 mV | | | |
| 40 Hz to 1 kHz | 400 μ V/V + 20 mV | | | |
| (1 to 20) kHz | 600 μ V/V + 20 mV | | | |
| (20 to 50) kHz | 1.2 mV/V + 20 mV | | | |
| (50 to 100) kHz | 3 mV/V + 20 mV | | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|-----------------------|--------------------------------------|--|---------------------------------|-----------|
| AC Current – Measure | (5 to 100) μA | | | |
| | (10 to 20) Hz | 4 mA/A + 30 nA | | |
| | (20 to 45) Hz | 1.5 mA/A + 30 nA | | |
| | (45 to 100) Hz | 600 μ A/A + 30 nA | | |
| | 100 Hz to 1 kHz | 600 μ A/A + 30 nA | | |
| | 100 μA to 1 mA | | | |
| | (10 to 20) Hz | 4 mA/A + 200 nA | | |
| | (20 to 45) Hz | 1.5 mA/A + 200 nA | | |
| | (45 to 100) Hz | 600 μ A/A + 200 nA | | |
| | 100 Hz to 5 kHz | 300 μ A/A + 200 nA | | |
| | (5 to 20) kHz | 600 μ A/A + 200 nA | | |
| | (20 to 50) kHz | 4 mA/A + 400 nA | | |
| | (50 to 100) kHz | 5.5 mA/A + 1.5 μ A | | |
| | (10 to 20) Hz | 4 mA/A + 2 μ A | | |
| | (20 to 45) Hz | 1.5 mA/A + 2 μ A | | |
| | (45 to 100) Hz | 600 μ A/A + 2 μ A | | |
| | 100 Hz to 5 kHz | 300 μ A/A + 2 μ A | | |
| | (5 to 20) kHz | 600 μ A/A + 2 μ A | | |
| | (20 to 50) kHz | 4 mA/A + 4 μ A | | |
| | (50 to 100) kHz | 5.5 mA/A + 15 μ A | | |
| | (10 to 100) mA | | | |
| | (10 to 20) Hz | 4 mA/A + 20 μ A | | |
| | (20 to 45) Hz | 1.5 mA/A + 20 μ A | | |
| | (45 to 100) Hz | 600 μ A/A + 20 μ A | | |
| 100 Hz to 5 kHz | 600 μ A/A + 20 μ A | | | |
| (5 to 20) kHz | 600 μ A/A + 20 μ A | | | |
| (20 to 50) kHz | 4 mA/A + 40 μ A | | | |
| (50 to 100) kHz | 5.5 mA/A + 150 μ A | | | |
| 100 mA to 1 A | | | | |
| (10 to 20) Hz | 4 mA/A + 200 μ A | | | |
| (20 to 45) Hz | 1.6 mA/A + 200 μ A | | | |
| (45 to 100) Hz | 800 μ A/A + 200 μ A | | | |
| 100 Hz to 5 kHz | 1 mA/A + 200 μ A | | | |
| (5 to 20) kHz | 3 mA/A + 200 μ A | | | |
| (20 to 50) kHz | 10 mA/A + 400 μ A | | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|--|---------------------|--|---------------------------------|--|
| Electrical Simulation of Thermocouple Indicators | | | | |
| Type B | (600 to 800) °C | 0.51 °C | | |
| | (800 to 1 000) °C | 0.39 °C | | |
| | (1 000 to 1 550) °C | 0.35 °C | | |
| | (1 550 to 1 820) °C | 0.38 °C | | |
| Type C | (0°C to 150) °C | 0.35 °C | | |
| | (150 to 650) °C | 0.30 °C | | |
| | (650 to 1 000) °C | 0.36 °C | | |
| | (1 000 to 1 800) °C | 0.58 °C | | |
| | (1 800 to 2 316) °C | 0.97 °C | | |
| | (-100 to -25) °C | 0.19 °C | | |
| | (-25 to 350) °C | 0.16 °C | | |
| | (350 to 650) °C | 0.19 °C | | |
| | (650 to 1 000) °C | 0.24 °C | | |
| Type J | (-210 to -100) °C | 0.32 °C | Fluke 5500A | OEM and GIDEP Sourced Calibration Procedures |
| | (-100 to -30) °C | 0.19 °C | | |
| | (-30 to 150) °C | 0.17 °C | | |
| | (150 to 760) °C | 0.2 °C | | |
| | (760 to 1 200) °C | 0.27 °C | | |
| Type K | (-200 to -100) °C | 0.38 °C | | |
| | (-100 to -25) °C | 0.21 °C | | |
| | (-25 to 120) °C | 0.19 °C | | |
| | (120 to 1 000) °C | 0.3 °C | | |
| | (1 000 to 1 372) °C | 0.46 °C | | |
| Type L | (-200 to -100) °C | 0.43 °C | | |
| | (-100 to 800) °C | 0.3 °C | | |
| | (800 to 900) °C | 0.2 °C | | |
| Type N | (-200 to -100) °C | 0.46 °C | | |
| | (-100 to -25) °C | 0.25 °C | | |
| | (-25 to 120) °C | 0.22 °C | | |
| | (120 to 410) °C | 0.21 °C | | |
| | (410 to 1 300) °C | 0.31 °C | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|--|---|---|---------------------------------|--|
| Electrical Simulation of Thermocouple Indicators (cont.) | | | | |
| Type R | (0°C to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C | 0.66 °C 0.4 °C 0.38 °C 0.46 °C | | |
| Type S | (0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C | 0.54 °C 0.42 °C 0.43 °C 0.53 °C | | |
| Type T | (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C | 0.73 °C 0.28 °C 0.19 °C 0.17 °C | | |
| Type U | (-200 to 0) °C (0 to 600) °C | 0.65 °C 0.31 °C | Fluke 5500A | OEM and GIDEP Sourced Calibration Procedures |
| Electrical Simulation of RTDs | | | | |
| Pt 385 (100 Ω) | (-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C | 0.06 °C 0.08 °C 0.1 °C 0.12 °C 0.14 °C 0.27 °C | | |
| Pt 3926 (100 Ω) | (-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C | 0.06 °C 0.08 °C 0.1 °C 0.12 °C 0.14 °C | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|--------------------------|-----------------------------------|--|---------------------------------|--|
| Pt 3916 (100 Ω) | (-200 to -190) $^{\circ}\text{C}$ | 0.29 $^{\circ}\text{C}$ | Fluke 5500A | OEM and GIDEP Sourced Calibration Procedures |
| | (-190 to -80) $^{\circ}\text{C}$ | 0.05 $^{\circ}\text{C}$ | | |
| | (-80 to 0) $^{\circ}\text{C}$ | 0.06 $^{\circ}\text{C}$ | | |
| | (0 to 100) $^{\circ}\text{C}$ | 0.07 $^{\circ}\text{C}$ | | |
| | (100 to 260) $^{\circ}\text{C}$ | 0.08 $^{\circ}\text{C}$ | | |
| | (260 to 300) $^{\circ}\text{C}$ | 0.09 $^{\circ}\text{C}$ | | |
| | (300 to 400) $^{\circ}\text{C}$ | 0.1 $^{\circ}\text{C}$ | | |
| | (400 to 600) $^{\circ}\text{C}$ | 0.12 $^{\circ}\text{C}$ | | |
| | (600 to 630) $^{\circ}\text{C}$ | 0.27 $^{\circ}\text{C}$ | | |
| Pt 385 (1 000 Ω) | (-200 to 0) $^{\circ}\text{C}$ | 0.03 $^{\circ}\text{C}$ | | |
| | (0 to 100) $^{\circ}\text{C}$ | 0.05 $^{\circ}\text{C}$ | | |
| | (100 to 260) $^{\circ}\text{C}$ | 0.06 $^{\circ}\text{C}$ | | |
| | (260 to 300) $^{\circ}\text{C}$ | 0.07 $^{\circ}\text{C}$ | | |
| | (300 to 600) $^{\circ}\text{C}$ | 0.08 $^{\circ}\text{C}$ | | |
| Pt 385 (200 Ω) | (-200 to 100) $^{\circ}\text{C}$ | 0.05 $^{\circ}\text{C}$ | | |
| | (100 to 260) $^{\circ}\text{C}$ | 0.06 $^{\circ}\text{C}$ | | |
| | (260 to 300) $^{\circ}\text{C}$ | 0.14 $^{\circ}\text{C}$ | | |
| | (300 to 400) $^{\circ}\text{C}$ | 0.15 $^{\circ}\text{C}$ | | |
| | (400 to 600) $^{\circ}\text{C}$ | 0.16 $^{\circ}\text{C}$ | | |
| Pt 385 (500 Ω) | (600 to 630) $^{\circ}\text{C}$ | 0.18 $^{\circ}\text{C}$ | | |
| | (-200 to 80) $^{\circ}\text{C}$ | 0.05 $^{\circ}\text{C}$ | | |
| | (-80 to 100) $^{\circ}\text{C}$ | 0.06 $^{\circ}\text{C}$ | | |
| | (100 to 260) $^{\circ}\text{C}$ | 0.07 $^{\circ}\text{C}$ | | |
| | (260 to 400) $^{\circ}\text{C}$ | 0.09 $^{\circ}\text{C}$ | | |
| | (400 to 600) $^{\circ}\text{C}$ | 0.1 $^{\circ}\text{C}$ | | |
| PtNi 385 (120 Ω) | (600 to 630) $^{\circ}\text{C}$ | 0.13 $^{\circ}\text{C}$ | | |
| | (600 to 630) $^{\circ}\text{C}$ | 0.27 $^{\circ}\text{C}$ | | |
| | (-80 to 100) $^{\circ}\text{C}$ | 0.09 $^{\circ}\text{C}$ | | |
| | (100 to 260) $^{\circ}\text{C}$ | 0.16 $^{\circ}\text{C}$ | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|---|--|---|---------------------------------|--|
| Capacitance – Source 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz (50 to 400) Hz (50 to 400) Hz (50 to 200) Hz (50 to 100) Hz (50 to 100) Hz | (330 to 500) pF 500 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 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 | 5 mF/F + 10 pF 5 mF/F + 10 pF 5 mF/F + 10 pF 5 mF/F + 10 pF 2.5 mF/F + 100 pF 2.5 mF/F + 100 pF 2.5 mF/F + 300 pF 2.5 mF/F + 1 nF 3.5 mF/F + 3 nF 3.5 mF/F + 10 nF 4 mF/F + 30 nF 5 mF/F + 100 nF 7 mF/F + 300 nF 10 mF/F + 300 nF | Fluke 5500A-SC300 | OEM and GIDEP Sourced Calibration Procedures |
| Oscilloscopes Amplitude - DC Signal into 50 Ω Load into 1 M Ω Load Amplitude – Square Wave into 50 Ω Load into 1 M Ω Load Leveled Sine Wave - Flatness Relative to 50 kHz Time Marker into 50 Ω Load - Source Pulsed Sawtooth Wave | 0 V to \pm 2.2 V 0 V to \pm 33 V 1.8 mV to 2.2 V p-p 10 Hz to 10 kHz 1.8 mV to 105 V p-p 10 Hz to 10 kHz [5 mV to 5.5 V] 50 kHz to 100 MHz (100 to 300) MHz | 2.5 mV/V + 100 μ V 2.5 mV/V + 100 μ V 2.5 mV/V + 100 μ V 2.5 mV/V + 100 μ V 35 mV/V + 300 μ V 40 mV/V + 300 μ V | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|--|---|---|---------------------------------|--|
| Oscilloscopes (cont.) Sine Wave Edge Specs into 50Ω Load - Source Amplitude Frequency Wave Generator - Source Amplitude (10 Hz to 10 kHz) Square, Sine, Triangle into 1 MΩ Square, Sine, Triangle into 50 Ω Frequency | 4.5 mV to 2.75 V 1 kHz to 1 MHz 1.8 mV to 55 V p-p 1.8 mV to 2.5 V p-p 10 Hz to 10 kHz | 20 mV/V + 200 μV 25 μHz/Hz + 15 mHz 30 mV/V + 100 μV 30 mV/V + 100 μV 25 parts in 10 ⁶ + 15 mHz | Fluke 5500A | OEM and GIDEP Sourced Calibration Procedures |
| DC Power – Source 33 mV to 1 kV | (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) mA 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 11) A | 0.04 % of Watts Output 0.03 % of Watts Output 0.04 % of Watts Output 0.03 % of Watts Output 0.08 % of Watts Output 0.06 % of Watts Output 0.12 % of Watts Output 0.9 % of Watts Output | | |
| AC Power (45 to 65) Hz Source PF=1 (33 to 330) mV | (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) mA 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 11) A | 0.4 % of Watts Output 0.25 % of Watts Output 0.35 % of Watts Output 0.25 % of Watts Output 0.35 % of Watts Output 0.25 % of Watts Output 0.35 % of Watts Output 0.25 % of Watts Output | | |



| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|---|---|---|--|--|
| AC Power (45 to 65) Hz Source PF=1 330 mV to 1 kV | (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) mA 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 11) A | 0.25 % of Watts Output 0.15 % of Watts Output 0.25 % of Watts Output 0.15 % of Watts Output 0.25 % of Watts Output 0.15 % of Watts Output 0.2 % of Watts Output 0.15 % of Watts Output | Fluke 5500A | OEM and GIDEP Sourced Calibration Procedures |
| Frequency - Source | 10 MHz (0.01 to 120) Hz 120 Hz to 1.2 kHz (1.2 to 12) kHz (12 to 120) kHz 120 kHz to 1.2 MHz (1.2 to 2) MHz | 0.06 µHz/Hz 25 µHz/Hz + 1 mHz 26 µHz/Hz + 1 mHz 27 µHz/Hz + 1 mHz 28 µHz/Hz + 15 mHz 29 µHz/Hz + 15 mHz 30 µHz/Hz + 15 mHz | Datum 9390-6000 Fluke 5500A-SC300 | |

II. Thermodynamic

| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|------------------------------|--|---|--|--|
| Temperature | (-80 to 100) °C (-40 to 150) °C (20 to 300) °C | 0.025 °C 0.028 °C 0.036 °C | Hart 5612 w/ 1502 Tweener and Baths | OEM and GIDEP Sourced Calibration Procedures |
| Relative Humidity | (0 to 15) %RH (15 to 100) %RH | 1.59 %RH 1.9 %RH | Vaisala HMI 41/HMP 46 Indicator & Probe | |



III. Mechanical

| PARAMETER / EQUIPMENT | RANGE | BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)] | REFERENCE STANDARD OR EQUIPMENT | METHOD(S) |
|-----------------------|--|--|---|--|
| Vacuum | (1 to 30) in Hg | 0.018 % of reading | Pressurements T3550/3 Deadweight Tester | OEM and GIDEP Sourced Calibration Procedures |
| Pressure | (5 to 40) in H ₂ O (40 to 400) in H ₂ O | 0.006 in H ₂ O 0.018 % of reading | Pressurements T3550/3 Deadweight Tester | |
| | (2 to 10,000) psi | 0.02 % of reading | Pressurements M2200-3 Deadweight Tester | |
| Torque Tools | 5 in·lb to 1 000 ft·lb | 0.32 % of reading | CDI Suretest Torque Measuring System | |

Notes:

1. Best Measurement Capabilities (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of $k=2$.
2. This laboratory's capabilities include in-laboratory and field (on-site) calibration services. Since field conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected in the field than what is reported on the accredited scope.
3. The use of (t) signifies an expression of Time in seconds.
4. The uncertainties listed for Electromagnetic – DC/Low Frequency do not include possible contributions from the Unit Under Test.
5. This scope is part of and must be included with the Certificate of Accreditation No. AC-1257



Vice President

