



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

**Davis Calibration**

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**CALIBRATION**

Valid to: March 26, 2012

Certificate Number: AC-1139

**I. Electromagnetic – DC/Low Frequency**

<b>PARAMETER / EQUIPMENT</b>	<b>RANGE</b>	<b>BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]</b>	<b>REFERENCE STANDARD OR EQUIPMENT</b>	<b>METHOD(S)</b>
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	7.5 μV/V + 400 nV 5 μV/V + 700 nV 3.5 μV/V + 2.5 μV 3.5 μV/V + 4 μV 5 μV/V + 40 μV 6.5 μV/V + 400 μV	Fluke 5720A Opt 03 Fluke 5725A	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	5.5 μV/V + 300 nV 5.1 μV/V + 300 nV 4.6 μV/V + 500 nV 6.5 μV/V + 30 μV 16.5 μV/V + 100 μV	HP 3458A Opt 002	
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 (11 to 20.5) A	40 μA/A + 6 μA 35 μA/A + 7 μA 35 μA/A + 40 μA 45 μA/A + 700 nA 80 μA/A + 12 μA 500 μA/A + 500μA 1000 μA/A + 750μA	Fluke 5720A Opt 03  5520A/SC1100	
DC Current – Measure	100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	20 μA/A + 5 nA 20 μA/A + 50 nA 35 μA/A + 500 nA 105 μA/A + 10 μA	HP 3458A Opt 002	



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Resistance – Source	1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	95 μΩ 181 μΩ 230 μΩ 437 μΩ 1 mΩ 1.9 mΩ 8.5 mΩ 16.2 mΩ 85 mΩ 162 mΩ 1.1 Ω 2.09 Ω 20 Ω 40 Ω 400 Ω 893 Ω 10 kΩ	Fluke 5720A Opt 03	OEM and GIDEP Sourced Calibration Procedures
Fixed Points	0.01 Ω 0.1 Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ	1.16 mΩ 1.16 mΩ 1.18 mΩ 1.39 mΩ 3.5 mΩ 24.5 mΩ 234 mΩ 2.32 Ω	Electro Scientific RS 925 D Decade Resistance Box	
Resistance – Measure	Up to 10 Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ 100 MΩ to 1 GΩ	18 μΩ/ Ω + 50 μΩ 13 μΩ/ Ω + 500 μΩ 11 μΩ/ Ω + 500 μΩ 11 μΩ/ Ω + 5 mΩ 11 μΩ/ Ω + 50 mΩ 15 μΩ/ Ω + 2 Ω 53 μΩ/ Ω + 100 Ω 503 μΩ/ Ω + 1 kΩ 5 mΩ/ Ω + 10 kΩ	HP 3458A Opt 002	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Source	<p><b>Up to 2.2 mV</b></p> <p>(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</p> <p><b>(2.2 to 22) mV</b></p> <p>(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</p> <p><b>(22 to 220) mV</b></p> <p>(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</p> <p><b>220 mV to 2.2 V</b></p> <p>(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</p>	<p>240 μV/V + 4 μV 90 μV/V + 4 μV 80 μV/V + 4 μV 200 μV/V + 4 μV 500 μV/V + 5 μV 1 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV</p> <p>240 μV/V + 4 μV 90 μV/V + 4 μV 80 μV/V + 4 μV 200 μV/V + 4 μV 500 μV/V + 5 μV 1 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV</p> <p>240 μV/V + 12 μV 90 μV/V + 7 μV 80 μV/V + 7 μV 200 μV/V + 7 μV 460 μV/V + 17 μV 900 μV/V + 20 μV 1.4 mV/V + 25 μV 2.7 mV/V + 45 μV</p> <p>240 μV/V + 40 μV 90 μV/V + 15 μV 45 μV/V + 8 μV 75 μV/V + 10 μV 110 μV/V + 30 μV 420 μV/V + 80 μV 1 mV/V + 200 μV 1.7 mV/V + 300 μV</p>	Fluke 5720A Opt 03	OEM and GIDEP Sourced Calibration Procedures

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Source (cont.)	<b>(2.2 to 22) V</b> (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 <b>(22 to 220) V</b> (15 to 50) Hz 50 Hz to 1 kHz	240 μV/V + 400 μV 90 μV/V + 150 μV 45 μV/V + 50 μV 70 μV/V + 100 μV 100 μV/V + 200 μV 275 μV/V + 600 μV 1 mV/V + 2 mV 1.5 mV/V + 3.2 mV 300 μV/V + 16 mV 70 μV/V + 3.5 mV	Fluke 5720A Opt 03	OEM and GIDEP Sourced Calibration Procedures
AC Voltage -- Source (Wideband Option) 30 Hz to 500 kHz	1.1 mV (-46 dBm) 3 mV (-3 dBm) 11 mV (-26 dBm) 33 mV (-17 dBm) 110 mV (-6.2 dBm) 330 mV (+3.4 dBm) 1.1 V (+14 dBm) 3.5 V (+24 dBm)	18 μV 42.4 μV 154.8 μV 397 μV 1.32 mV 3.3 mV 11 mV 28 mV		
AC Voltage -- Source (Wideband Option) Flatness	<b>1.1 mV</b> (10 to 30) Hz 30 Hz to 120 kHz 120 kHz to 2 MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz <b>3 mV</b> (10 to 30) Hz 30 Hz to 120 kHz 120 kHz to 2 MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz	3 mV/V 1 mV/V 2 mV/V + 3 μV 4 mV/V + 3 μV 6 mV/V + 3 μV 105 mV/V + 15 μV 3 mV/V 1 mV/V 1 mV/V + 3 μV 3 mV/V + 3 μV 5 mV/V + 3 μV 105 mV/V + 3 μV		

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage -- Source (Wideband Option) Flatness (cont.)	<b>3 mV to 3.5 V</b> (10 to 30) Hz 30 Hz to 120 kHz 120 kHz to 2 MHz (2 to 10) MHz (10 to 20) MHz (20 to 30) MHz	3 mV/V 1 mV/V 1 mV/V + 3 $\mu$ V 2 mV/V + 3 $\mu$ V 4 mV/V + 3 $\mu$ V 10 mV/V + 15 $\mu$ V	Fluke 5720A II	OEM and GIDEP Sourced Calibration Procedures
AC Voltage – Measure	<b>(1 to 10) mV</b> (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 <b>(10 to 100) mV</b> (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 <b>100 mV to 1 V</b> (1 to 10) Hz (10 to 40)Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	300 $\mu$ V/V + 3 $\mu$ V 200 $\mu$ V/V + 1.1 $\mu$ V 300 $\mu$ V/V + 1.1 $\mu$ V 1 mV/V + 1.1 $\mu$ V 5 mV/V + 1.1 $\mu$ V 40 mV/V + 2 $\mu$ V 12 mV/V + 5 $\mu$ V 70 mV/V + 7 $\mu$ V 200 mV/V + 8 $\mu$ V  72 $\mu$ V/V + 4 $\mu$ V 72 $\mu$ V/V + 2 $\mu$ V 142 $\mu$ V/V + 2 $\mu$ V 302 $\mu$ V/V + 2 $\mu$ V 802 $\mu$ V/V + 2 $\mu$ V 3 mV/V + 10 $\mu$ V 10 mV/V + 10 $\mu$ V 40 mV/V + 70 $\mu$ V 40 mV/V + 80 $\mu$ V 150 mV/V + 100 $\mu$ V  150 $\mu$ V/V + 60 $\mu$ V 115 $\mu$ V/V + 10 $\mu$ V 90 $\mu$ V/V + 10 $\mu$ V 75 $\mu$ V/V + 10 $\mu$ V 110 $\mu$ V/V + 10 $\mu$ V 220 $\mu$ V/V + 20 $\mu$ V 570 $\mu$ V/V + 100 $\mu$ V 3 mV/V + 1mV 10 mV/V + 10mV 40 mV/V + 700 $\mu$ V 40 mV/V + 800 $\mu$ V 150 mV/V + 1 mV	HP 3458A Opt 002	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Measure (cont.)	<b>(1 to 10) V</b> (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 <b>(10 to 100) V</b> (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 <b>100 V to 1 kV</b> (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	72 μV/V + 400 μV 72 μV/V + 200 μV 142 μV/V + 200 μV 302 μV/V + 200 μV 802 μV/V + 200 μV 3 mV/V + 1 mV 10 mV/V + 1 mV 40 mV/V + 7 mV 40 mV/V + 8 mV 150 mV/V + 10 mV  200 μV/V + 4 mV 200 μV/V + 2 mV 200 μV/V + 2 mV 350 μV/V + 2 mV 1.2 mV/V + 2 mV 4 mV/V + 10 mV 15 mV/V + 10 mV  400 μV/V + 40 mV 400 μV/V + 20 mV 600 μV/V + 20 mV 1.2 mV/V + 20 mV 3 mV/V + 20 mV	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures
AC Current – Source	<b>(9 to 220) μA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>220 μA to 2.2 mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	250 μA/A + 16 nA 160 μA/A + 10 nA 120 μA/A + 8 nA 280 μA/A + 12 nA 1.1 mA/A + 65 nA  250 μA/A + 40 nA 160 μA/A + 35 nA 120 μA/A + 35 nA 200 μA/A + 110 nA 1.1 mA/A + 650 nA	Fluke 5720A Opt 03 Fluke 5725A	



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current – Source (cont.)	<b>(2.2 to 22) mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(22 to 220) mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>220 mA to 2.2 A</b> 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(2.2 to 3) A</b> (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(3 to 11) A</b> (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz <b>(11 to 20.5) A</b> (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	250 $\mu$ A/A + 400 nA 160 $\mu$ A/A + 350 nA 120 $\mu$ A/A + 350 nA 200 $\mu$ A/A + 550 nA 1.1 mA/A + 5 $\mu$ A  250 $\mu$ A/A + 4 $\mu$ A 160 $\mu$ A/A + 3.5 $\mu$ A 120 $\mu$ A/A + 2.5 $\mu$ A 200 $\mu$ A/A + 3.5 $\mu$ A 1.1 mA/A + 10 $\mu$ A  260 $\mu$ A/A + 35 $\mu$ A 450 $\mu$ A/A + 80 $\mu$ A 7 mA/A + 160 $\mu$ A  1.8 mA/A + 100 $\mu$ A 600 $\mu$ A/A + 100 $\mu$ A 6 mA/A + 1 mA 25 mA/A + 5 mA  600 $\mu$ A/A + 2 mA 1 mA/A + 2 mA 30 mA/A + 2 mA  1.2 mA/A + 5 mA 1.5 mA/A + 5 mA 30 mA/A + 5 mA	Fluke 5720A Opt 03 Fluke 5725A       Fluke 5520A/SC1100	OEM and GIDEP Sourced Calibration Procedures
AC Current - Measure	<b>(5 to 100) <math>\mu</math>A</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	4 mA/A + 30 nA 1.5 mA/A + 30 nA 600 $\mu$ A/A + 30 nA 600 $\mu$ A/A + 30 nA	HP 3458A Opt 002	



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current – Measure (cont.)	<b>100 <math>\mu</math>A to 1 mA</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>(1 to 10) mA</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>(10 to 100) mA</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>100 mA to 1 A</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	4 mA/A + 200 nA 1.5 mA/A + 200 nA 600 $\mu$ A/A + 200 nA 300 $\mu$ A/A + 200 nA 600 $\mu$ A/A + 200 nA 4 mA/A + 400 nA 5.5 mA/A + 1.5 $\mu$ A  4 mA/A + 2 $\mu$ A 1.5 mA/A + 2 $\mu$ A 600 $\mu$ A/A + 2 $\mu$ A 300 $\mu$ A/A + 2 $\mu$ A 600 $\mu$ A/A + 2 $\mu$ A 4 mA/A + 4 $\mu$ A 5.5 mA/A + 15 $\mu$ A  4 mA/A + 20 $\mu$ A 1.5 mA/A + 20 $\mu$ A 600 $\mu$ A/A + 20 $\mu$ A 300 $\mu$ A/A + 20 $\mu$ A 600 $\mu$ A/A + 20 $\mu$ A 4 mA/A + 40 $\mu$ A 5.5 mA/A + 150 $\mu$ A  4 mA/A + 200 $\mu$ A 1.6 mA/A + 200 $\mu$ A 800 $\mu$ A/A + 200 $\mu$ A 1 mA/A + 200 $\mu$ A 3 mA/A + 200 $\mu$ A 10 mA/A + 400 $\mu$ A	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Power - Source	<b>33 mV to 1 kV</b> 330 μA to 330 mA 330 mA to 3 A (3 to 20.5) A	2.3 mV/V of Watts Output 2.2 mV/V of Watts Output 700 μV/V of Watts Output	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
AC Power - Source (33 to 330) mV PF=1 (45 to 65) Hz	(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 20.5) A	1.4 mV/V of Watts Output 1 mV/V of Watts Output 1.4 mV/V of Watts Output 1 mV/V of Watts Output 1.3 mV/V of Watts Output 1.1 mV/V of Watts Output 1.3 mV/V of Watts Output 1.1 mV/V of Watts Output		
AC Power - Source 330 mV to 1 kV PF=1 (45 to 65) Hz	(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 20.5) A	1.2 mV/V of Watts Output 800 μV/V of Watts Output 1.2 mV/V of Watts Output 800 μV/V of Watts Output 1.1 mV/V of Watts Output 900 μV/V of Watts Output 1.2 mV/V of Watts Output 1 mV/V of Watts Output		
Electrical Simulation of Thermocouple Indicators Type B	(600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C	0.51 °C 0.39 °C 0.35 °C 0.38 °C		
Type C	(0 to 150) °C (150 to 650) °C (650 to 1 000) °C (1 000 to 1 800) °C (1 800 to 2 316) °C	0.35 °C 0.3 °C 0.36 °C 0.58 °C 0.97 °C		

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Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.58 °C 0.19 °C 0.16 °C 0.19 °C 0.24 °C	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C	0.32 °C 0.19 °C 0.17 °C 0.2 °C 0.27 °C		
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C	0.38 °C 0.21 °C 0.19 °C 0.3 °C 0.46 °C		
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1 300) °C	0.46 °C 0.25 °C 0.22 °C 0.21 °C 0.31 °C		
Type R	(0 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	0.66 °C 0.31 °C		

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)	
Electrical Simulation of RTDs	Pt 385 (100 Ω)	(-200 to 0) °C	0.06 °C	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
		(0 to 100) °C	0.08 °C		
		(100 to 300) °C	0.1 °C		
		(300 to 400) °C	0.12 °C		
		(400 to 630) °C	0.14 °C		
		(630 to 800) °C	0.27 °C		
	Pt 385 (200 Ω)	(-200 to 100) °C	0.05 °C		
		(100 to 260) °C	0.06 °C		
		(260 to 300) °C	0.14 °C		
		(300 to 400) °C	0.15 °C		
		(400 to 600) °C	0.16 °C		
		(600 to 630) °C	0.18 °C		
	Pt 385 (500 Ω)	(-200 to -80) °C	0.05 °C		
		(-80 to 100) °C	0.06 °C		
		(100 to 260) °C	0.07 °C		
		(260 to 400) °C	0.09 °C		
		(400 to 600) °C	0.1 °C		
		(600 to 630) °C	0.13 °C		
	Pt 385 (1000 Ω)	(-200 to 0) °C	0.03 °C		
		(0 to 100) °C	0.05 °C		
		(100 to 260) °C	0.06 °C		
		(260 to 300) °C	0.07 °C		
		(300 to 600) °C	0.08 °C		
		(600 to 630) °C	0.27 °C		
Pt 3916 (100 Ω)	(-200 to -190) °C	0.29 °C			
	(-190 to -80) °C	0.05 °C			
	(-80 to 0) °C	0.06 °C			
	(0 to 100) °C	0.07 °C			
	(100 to 260) °C	0.08 °C			
	(260 to 300) °C	0.09 °C			
	(300 to 400) °C	0.1 °C			
	(400 to 600) °C	0.12 °C			
(600 to 630) °C	0.27 °C				

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
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	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
PtNi 385 (120 Ω)	(-80 to 100) °C (100 to 260) °C	0.09 °C 0.16 °C		
Capacitance – Source (190 to 400) pF 400 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 μF (1.1 to 3.3) μF (3.3 to 11) μF (11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	10 Hz to 10 kHz 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	5 mF/F + 10 pF 5 mF/F + 10 pF 5 mF/F + 10 pF 2.5 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 2.5 mF/F + 3 nF 2.5 mF/F + 10 nF 4 mF/F + 30 nF 4.5 mF/F + 100 nF 4.5 mF/F + 300 nF 4.5 mF/F + 1 μF 4.5 mF/F + 3 μF 4.5 mF/F + 10 μF 7.5 mF/F + 30 μF 11 mF/F + 100 μF		
<b>Oscilloscopes</b> Amplitude- DC Signal Into 50 Ω Load Into 1 MΩ Load  Amplitude- Squarewave 50 Ω Load  1 MΩ Load	(-6.6 to 6.6) V (-130 to 130) V  ±1 mV to ±6.6 Vp-p 10 Hz to 10 kHz  ±1 mV to ±130 Vp-p 10 Hz to 10 kHz	2.5 mV/V + 40 μV 500 μV/V + 40 μV  2.5 mV/V + 40 μV  1 mV/V + 40 μV		



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
<b>Oscilloscopes (cont.)</b> Leveled Sine Wave Relative to 50 kHz [5 mV to 5.5 V] p-p  [5 mV to 5.5 V] p-p  Time Marker into 50 Ω Load - Source  Edge Specs into 50 Ω Load-Source Rise Time (50 Ω load) Range (p-p) Frequency  Wave Generator – Source -- Amplitude (10 Hz to 10 kHz) Square, Sine, Triangle into 1 MΩ Square, Sine, Triangle into 50 Ω  Pulse Generator – Source Width Period	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz  5 s to 50 ms 20 ms to 1 ns  ≤ 350 ps 5 mV to 2.5 V 1 kHz to 10 MHz  1.8 mV to 55 Vp-p 1.8 mV to 2.5 Vp-p  4 ns to 500 ns 20 ms to 200 ns (50 Hz to 5 MHz)	15 μV/V + 100 μV 20 μV/V + 100 μV 40 μV/V + 100 μV 50 μV/V + 100 μV  (25 + 1 000t) μs/s 2.5 μs/s  +0 ps/ -100 ps 20 mV/V + 200 μV 2.5 μHz/Hz  30 mV/V + 100 μV 30 mV/V + 100 μV  10 ms/s + 2 ns 2.5 μs/s	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
Inductance - Source	1 mH 10 mH 100 mH 1 H 11.1 H	1.6 % of Indicated Value 1.6 % of Indicated Value 1.6 % of Indicated Value 1.6 % of Indicated Value 1.6 % of Indicated Value	General Radio 1491-D Decade Inductance Box	
Capacitance - Source	10 pF 100 pF 1000 pF 1 nF 10 nF 100 nF 1000 nF	100 mF/F 10 mF/F 1.4 mF/F 1 mF/F 990 μF/F 990 μF/F 990 μF/F	General Radio 1413 Decade Capacitance	



## II. Time & Frequency

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency – Source*	10 MHz	1 part in $10^{-12}$	HP 58503A	OEM and GIDEP Sourced Calibration Procedures
Frequency - Measure	0.1 Hz to 225 MHz	1 part in $10^{-8}$	HP 53132A	

## III. Thermodynamic

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature - Measure	(-197 C to 420) °C	0.07 °C	Hart Scientific 1502 w/5614 RTD Probe	OEM and GIDEP Sourced Calibration Procedures
Humidity – Source*	35 %RH 50 %RH 80 %RH	0.5 %RH 0.9 %RH 1.2 %RH	Rotronic Standard Humidity Solutions (non-saturated LiCl)	
Humidity – Measure*	(15 to 80) %RH	1.4 %RH	Vaisala HMT335	

## IV. Mechanical

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pressure – Source & Measure	(-15 to 0) psi (0 to 1 000) psi	0.24 % 0.013 %	Ruska 7215 XI	OEM and GIDEP Sourced Calibration Procedures
Pressure – Source	(5 to 15 000) psi	0.03 %	Ametek T-150-1	
Pressure – Source – Low	(0 to 2) in H <sub>2</sub> O (0 to 2) in Hg	0.0007 in H <sub>2</sub> O 0.0007 in Hg	Dwyer Microtector	

<b>PARAMETER / EQUIPMENT</b>	<b>RANGE</b>	<b>BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]</b>	<b>REFERENCE STANDARD OR EQUIPMENT</b>	<b>METHOD(S)</b>
Torque Tools	(10 to 400) in·oz (5 to 1 000) in·lb (25 to 600) ft·lb	1.04 % 1.04 % 1.04 %	CDI Digitest Torque Calibration System	OEM and GIDEP Sourced Calibration Procedures
Torque Transducers and Calibrators	( Up to 280) in·oz (5 to 100) in·lb (5 to 290) ft·lb (50 to 2000) ft·lb	0.34 % 0.16 % 0.03 % 0.06 %	Class F Weights w/ Radius Wheels, Butterfly, and Arm	
Force	Up to 640 lb·f	0.13 %	Class F Weights	
Mass / Weights	(1 to 100) mg 100 mg to 200 g (200 to 300) g (300 to 500) g 500 g to 1 kg (1 to 2) kg (2 to 3) kg (3 to 5) kg	20 µg/g of range 8 mg 12 mg 20 mg 40 mg 80 mg 120 mg 200 mg	Class 1 Weights	

#### V. Dimensional

<b>PARAMETER / EQUIPMENT</b>	<b>RANGE</b>	<b>BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]</b>	<b>REFERENCE STANDARD OR EQUIPMENT</b>	<b>METHOD(S)</b>
Bench Micrometers	Up to 1 in	17 µin	Grade 2 Gage Blocks	OEM and GIDEP Sourced Calibration Procedures
Micrometers	Up to 4 in (4 to 10) in	69 µin 107 µin	Grade 2 Gage Blocks with Optical Flats	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY ( $\pm$ )]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Micrometers (cont.)	(10 to 20) in (20 to 48) in	188 $\mu$ in 835 $\mu$ in	Grade 2 Gage Blocks with Optical Flats	OEM and GIDEP Sourced Calibration Procedures
Calipers	Up to 6 in (6 to 18) in (18 to 48) in	580 $\mu$ in 649 $\mu$ in 841 $\mu$ in	Grade 2 Gage Blocks	
Height Gages	Up to 4 in (4 to 10) in (10 to 20) in (20 to 48) in	108 $\mu$ in 136 $\mu$ in 206 $\mu$ in 835 $\mu$ in	Grade 2 Gage Blocks with Surface Plate	
Indicators	Up to 4 in	86 $\mu$ in	Grade 2 Gage Blocks	

*Notes:*

1. *Best Measurement Uncertainties (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. *Capabilities denoted by an asterisk (\*) are laboratory only, not available for field calibration activity.*
4. *The use of (t) signifies an expression of Time in seconds.*
5. *The Best Measurement Capabilities for Electromagnetic – DC/Low Frequency do not include possible contributors from the unit under test.*
6. *The use of (%) signifies percent of reading.*
7. *This scope is part of and must be included with the Certificate of Accreditation No. AC-1139*




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Vice President

