



ANSI-ASQ National Accreditation Board/AClass

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

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CALIBRATION

Valid to: May 27, 2013

Certificate Number: AC-1105

I. Electromagnetic - DC/Low Frequency

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Voltage - Source	Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V 330 V to 1 kV	20 $\mu\text{V/V} + 1 \mu\text{V}$ 11 $\mu\text{V/V} + 2 \mu\text{V}$ 12 $\mu\text{V/V} + 20 \mu\text{V}$ 18 $\mu\text{V/V} + 150 \mu\text{V}$ 18 $\mu\text{V/V} + 1.5 \text{ mV}$	Fluke 5520A-SC1100	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	7 $\mu\text{V/V} + 300 \text{ nV}$ 6 $\mu\text{V/V} + 300 \text{ nV}$ 6 $\mu\text{V/V} + 500 \text{ nV}$ 8 $\mu\text{V/V} + 30 \mu\text{V}$ 8 $\mu\text{V/V} + 100 \mu\text{V}$	HP 3458A Opt 002	
DC Current - Source	Up to 330 μA 330 μA to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20.5) A	150 $\mu\text{A/A} + 20 \text{ nA}$ 100 $\mu\text{A/A} + 50 \text{ nA}$ 100 $\mu\text{A/A} + 250 \text{ nA}$ 100 $\mu\text{A/A} + 2.5 \mu\text{A}$ 200 $\mu\text{A/A} + 40 \mu\text{A}$ 380 $\mu\text{A/A} + 40 \mu\text{A}$ 500 $\mu\text{A/A} + 500 \mu\text{A}$ 1 mA/A + 750 μA	Fluke 5520A-SC1100	
DC Current - Measure	100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	25 $\mu\text{A/A} + 5 \text{ nA}$ 25 $\mu\text{A/A} + 50 \text{ nA}$ 40 $\mu\text{A/A} + 500 \text{ nA}$ 115 $\mu\text{A/A} + 10 \mu\text{A}$	HP 3458A Opt 002	



PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Source	<p>Up 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</p> <p>(33 to 330) 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</p> <p>330 mV to 3.3 V (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</p> <p>(3.3 to 33) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz</p> <p>(33 to 330) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz</p> <p>330 V to 1.1 kV 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz</p>	<p>800 μV/V + 6 μV 150 μV/V + 6 μV 200 μV/V + 6 μV 1 mV/V + 6 μV 3.5 mV/V + 12 μV 800 μV/V + 50 μV</p> <p>300 μV/V + 8 μV 145 μV/V + 8 μV 160 μV/V + 8 μV 350 μV/V + 8 μV 800 μV/V + 2 μV 2 mV/V + 70 μV</p> <p>300 μV/V + 50 μV 150 μV/V + 60 μV 190 μV/V + 60 μV 300 μV/V + 50 μV 700 μV/V + 125 μV 2.4 mV/V + 600 μV</p> <p>300 μV/V + 650 μV 150 μV/V + 600 μV 240 μV/V + 600 μV 350 μV/V + 600 μV 900 μV/V + 1.6 mV</p> <p>190 μV/V + 2 mV 200 μV/V + 6 mV 250 μV/V + 6 mV 300 μV/V + 6 mV 2 mV/V + 50 mV</p> <p>300 μV/V + 10 mV 250 μV/V + 10 mV 300 μV/V + 10 mV</p>	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures

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AC Voltage - Measure	<p>(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 1 MHz (1 to 4) MHz (4 to 8) MHz</p> <p>(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</p> <p>100 mV to 1 V (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</p> <p>(1 to 10) V (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</p>	<p>300 μV/V + 3 μV 200 μV/V + 1.1 μV 300 μV/V + 1.1 μV 1 mV/V + 1.1 μV 5 mV/V + 1.1 μV 40 mV/V + 2 μV 12 mV/V + 5 μV 70 mV/V + 7 μV 200 mV/V + 8 μV</p> <p>72 μV/V + 4 μV 72 μV/V + 2 μV 142 μV/V + 2 μV 302 μV/V + 2 μV 802 μV/V + 2 μV 3 mV/V + 10 μV 10 mV/V + 10 μV 40 mV/V + 70 μV 40 mV/V + 8 μV 150 mV/V + 100 μV</p> <p>72 μV/V + 40 μV 72 μV/V + 20 μV 142 μV/V + 20 μV 302 μV/V + 20 μV 802 μV/V + 20 μV 3 mV/V + 100 μV 10 mV/V + 100 μV 40 mV/V + 70 μV 40 mV/V + 800 μV 150 mV/V + 1 mV</p> <p>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 + 70 μV 40 mV/V + 8 mV 150 mV/V + 10 mV</p>	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure (cont.)	(10 to 100) V (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 (100 to 700) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	200 μ V/V + 4 mV 200 μ V/V + 2 mV 200 μ V/V + 2 mV 350 μ V/V + 2 mV 1.2 mV/V + 2 mV 4 mV/V + 10 mV 15 mV/V + 10 mV 400 μ V/V + 40 mV 400 μ V/V + 20 mV 600 μ V/V + 20 mV 1.2 mV/V + 20 mV 3 mV/V + 20 mV	HP 3458A Opt 002	
AC Current - Source	Up to 30 μA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz 30 μA to 3.3 mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (3.3 to 33) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (33 to 330) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	2 mA/A + 100 nA 1.5 mA/A + 100 nA 1.25 mA/A + 100 nA 30 mA/A + 150 nA 80 mA/A + 200 nA 160 mA/A + 400 nA 2 mA/A + 150 nA 1.25 mA/A + 150 nA 1 mA/A + 150 nA 2 mA/A + 200 nA 5 mA/A + 300 nA 10 mA/A + 600 nA 1.8 mA/A + 2 μ A 900 μ A/A + 2 μ A 400 μ A/A + 2 μ A 800 μ A/A + 2 μ A 2 mA/A + 3 μ A 4 mA/A + 4 μ A 1.8 mA/A + 20 μ A 900 μ A/A + 20 μ A 400 μ A/A + 20 μ A 1 mA/A + 50 μ A 2 mA/A + 100 μ A 4 mA/A + 200 μ A	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current - Source (cont.)	330 mA to 1.1 A (10 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz (1.1 to 3)A (10 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz (3 to 11) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz (11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	1.8 mA/A + 100 μ A j500 μ A/A + 100 μ A 6 mA/A + 1 mA 25 mA/A + 5 mA 1.8 mA/A + 100 μ A 600 μ A/A + 100 μ A 6 mA/A + 1 mA 25 mA/A + 5 mA 600 μ 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 5520A-SC1100	
AC Current - Measure	(5 to 100) μA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz 100 μA to 1 mA (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 (1 to 10) mA (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	4 mA/A + 30 nA 1.5 mA/A + 30 nA 600 μ A/A + 30 nA 600 μ A/A + 30 nA 4 mA/A + 200 nA 1.5 mA/A + 200 nA 600 μ A/A + 200 nA 300 μ A/A + 200 nA 600 μ A/A + 200 nA 4 mA/A + 400 nA 5.5 mA/A + 1.5 μ A 4 mA/A + 2 μ A 1.5 mA/A + 2 μ A 600 μ A/A + 2 μ A 300 μ A/A + 2 μ A 600 μ A/A + 2 μ A 4 mA/A + 4 μ A 5.5 mA/A + 15 μ A	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current - Measure (cont.)	(10 to 100) mA (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 100 mA to 1 A (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 + 20 μ A 1.5 mA/A + 20 μ A 600 μ A/A + 20 μ A 300 μ A/A + 20 μ A 600 μ A/A + 20 μ A 4 mA/A + 40 μ A 5.5 mA/A + 150 μ A 4 mA/A + 200 μ A 1.6 mA/A + 200 μ A 800 μ A/A + 200 μ A 1 mA/A + 200 μ A 3 mA/A + 200 μ A 10 mA/A + 400 μ A	jHP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures
Resistance - Source	Up to 11 Ω (11 to 33) Ω (33 to 111) Ω (110 to 330) Ω 330 Ω 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 330 k Ω 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 330 M Ω to 1.1 G Ω	40 $\mu\Omega$ / Ω + 1 m Ω 30 $\mu\Omega$ / Ω + 1.5 m Ω 28 $\mu\Omega$ / Ω + 1.4 m Ω 28 $\mu\Omega$ / Ω + 2 m Ω 28 $\mu\Omega$ / Ω + 2 m Ω 28 $\mu\Omega$ / Ω + 20 m Ω 28 $\mu\Omega$ / Ω + 20 m Ω 28 $\mu\Omega$ / Ω + 200 m Ω 28 $\mu\Omega$ / Ω + 200 m Ω 32 $\mu\Omega$ / Ω + 2 Ω 32 $\mu\Omega$ / Ω + 2 Ω 60 $\mu\Omega$ / Ω + 30 Ω 130 $\mu\Omega$ / Ω + 50 Ω 250 $\mu\Omega$ / Ω + 2.5 k Ω 500 $\mu\Omega$ / Ω + 3 k Ω 3 m Ω / Ω + 100 k Ω 15 m Ω / Ω + 500 k Ω	Fluke 5520A-SC1100	

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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 15 μΩ/ Ω + 500 μΩ 13 μΩ/ Ω + 5 mΩ 13 μΩ/ Ω + 5 mΩ 13 μΩ/ Ω + 50 mΩ 18 μΩ/ Ω + 2 Ω 53 μΩ/ Ω + 100 Ω 503 μΩ/ Ω + 1 kΩ 5 mΩ/ Ω + 10 kΩ	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures
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	0.44 °C 0.34 °C 0.3 °C 0.33 °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	0.3 °C 0.26 °C 0.31 °C 0.5 °C 0.84 °C		
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.5 °C 0.16 °C 0.14 °C 0.16 °C 0.21 °C		
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C	0.27 °C 0.16 °C 0.14 °C 0.17 °C 0.23 °C	Fluke 5520A-SC1100	
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	0.33 °C 0.18 °C 0.16 °C 0.26 °C 0.4 °C		
Type L	(-200 to -100) °C (-100 to 800) °C (800 to 900) °C	0.37 °C 0.26 °C 0.17 °C		

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Electrical Simulation of Thermocouple Indicators				
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1 300) °C	0.4 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C		
Type R	(0 to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C	0.57 °C 0.35 °C 0.33 °C 0.4 °C		
Type S	(0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C		
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.63 °C 0.24 °C 0.16 °C 0.14 °C	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
Type U	(-200 to 0) °C (0 to 600) °C	0.56 °C 0.27 °C		
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	0.05 °C 0.07 °C 0.09 °C 0.1 °C 0.12 °C 0.23 °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	0.05 °C 0.07 °C 0.09 °C 0.1 °C 0.12 °C		

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Electrical Simulation of RTDs (cont.)				
Pt 3916 (100 Ω)	(-200 to -190) °C	0.25 °C		
	(-190 to -80) °C	0.04 °C		
	(-80 to 0) °C	0.05 °C		
	(0 to 100) °C	0.06 °C		
	(100 to 260) °C	0.07 °C		
	(260 to 300) °C	0.08 °C		
	(300 to 400) °C	0.09 °C		
	(400 to 600) °C	0.1 °C		
Pt 385 (200 Ω)	(600 to 630) °C	0.23 °C		
	(-200 to 100) °C	0.04 °C		
	(100 to 260) °C	0.05 °C		
	(260 to 300) °C	0.12 °C		
	(300 to 400) °C	0.13 °C		
	(400 to 600) °C	0.14 °C	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
	(600 to 630) °C	0.16 °C		
Pt 385 (500 Ω)	(-200 to -80) °C	0.04 °C		
	(-80 to 100) °C	0.05 °C		
	(100 to 260) °C	0.06 °C		
	(260 to 400) °C	0.08 °C		
	(400 to 600) °C	0.09 °C		
	(600 to 630) °C	0.11 °C		
Pt 385 (1 000 Ω)	(-200 to 0) °C	0.03 °C		
	(0 to 100) °C	0.04 °C		
	(100 to 260) °C	0.05 °C		
	(260 to 300) °C	0.06 °C		
	(300 to 600) °C	0.07 °C		
	(600 to 630) °C	0.23 °C		
PtNi 385 (120 Ω)	(-80 to 100) °C	0.08 °C		
	(100 to 260) °C	0.14 °C		

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Capacitance - Source 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	(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	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 2.5 mF/F + 3 nF 2.5 mF/F + 10 nF 4 mF/F + 30 nF 5 mF/F + 100 nF 5 mF/F + 300 nF 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	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures
Capacitance - Measure (@ 1 kHz)	Up to 10 pF (10 to 100) pF 100 pF to 1 nF (1 to 10) nF (10 to 100) nF 100 nF to 1 µF (1 to 10) µF (10 to 100) µF	0.0027 pF 0.027 pF 0.47 pF 4.7 pF 47 pF 480 pF 2.9 nF 29 nF	Genrad 1689M	
Inductance - Measure (@ 1 kHz)	Up to 1 mH (1 to 100) mH 100 mH to 1H (1 to 10) H	330 nH 32 µH 810 µH 2.5 Mh		



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Oscilloscopes Amplitude DC Signal 50 Ω Load 1 MΩ Load Leveled Sine Wave - Flatness Relative to 50 kHz 5 mV to 5.5 V 5 mV to 3.5 V Time Marker into 50 Ω Load-Source Edge Specs into 50Ω Load Rise Time Amplitude Frequency Wave Generator - Source Amplitude Square, Sine, Triangle into 1 MΩ Square, Sine, Triangle into 50 Ω Frequency	1 mV to 6.6 Vp-p 10 Hz to 10 kHz 1 mV to 130 Vp-p 10 Hz to 10 kHz 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 600 MHz to 1.1 GHz 5 s to 50 ms 20 ms to 100 ns (50 to 20) ns 10 ns (5 to 1) ns Up to 300 ps 5 mV to 2.5V 1 kHz to 10 MHz (10 Hz to 10 kHz) 1.8 mV to 55 V p-p 1.8 mV to 2.5 V p-p 10 Hz to 100 kHz	2.5 mV/V + 40 μV 1 mV/V + 40 μV 15 mV/V + 100 μV 20 mV/V + 100 μV 40 mV/V + 100 μV 50 mV/V + 100 μV (25 + 1 000t) μs/s 2.5 μs/s 2.5 μs/s 2.5 μs/s 2.5 μs/s 0 ps to 100 ps 20 mV/V + 200 μV 2.5×10 ⁻⁶ Hz of setting 30 mV/V + 100 μV 30 mV/V + 100 μV 2.5×10 ⁻⁵ Hz + 15 mHz	Fluke 5520A-SC1100	
DC Power - Source	(33 to 1 000) V (0.33 to 330) mA (0.33 to 3) A (3 to 20.5) A	230 μW/W of Watts Output 220 μW/W of Watts Output 700 μW/W of Watts Output		OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Power - Source (45 to 65) Hz PF=1	(33 to 330) mV (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (0.33 to 0.9) A (0.9 to 2.2) A (2.2 to 4.5) A (4.5 to 20.5) A 330 mV to 1.02 V (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (0.33 to 0.9) A (0.9 to 2.2) A (2.2 to 4.5) A (4.5 to 20.5) A	1.4 mW/W of Watts Output 1 mW/W of Watts Output 1.4 mW/W of Watts Output 1 mW/W of Watts Output 1.3 mW/W of Watts Output 1.1 mW/W of Watts Output 1.3 mW/W of Watts Output 1.1 mW/W of Watts Output 1.2 mW/W of Watts Output 0.8 mW/W of Watts Output 1.2 mW/W of Watts Output 0.8 mW/W of Watts Output 1.1 mW/W of Watts Output 0.9 mW/W of Watts Output 1.2 mW/W of Watts Output 1 mW/W of Watts Output	Fluke 5520A-SC1100	OEM and GIDEP Sourced Calibration Procedures

II. Time & Frequency

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency - Source	0.01 Hz to 2 MHz *10 MHz 200 kHz to 2.2 GHz	$2.3 \times 10^6 \text{ Hz} + 5 \mu\text{Hz}$ $2.3 \times 10^{-12} \text{ Hz}$ 5.8 Hz	Fluke 5520A-SC1100 w/ Datum Datum 9390-6000 Wavetek 2520	OEM and GIDEP Sourced Calibration Procedures
Frequency - Measure	DC to 3 GHz	$1.15 \times 10^{12} \text{ Hz}$	Agilent 53132A Opt 010, 030	

III. Thermodynamic

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature - Measure Infrared Non-Contact	(10 to 660) °C (50 to 500) °C	0.02 °C 1.2 °C	Hart 5626 PRT w/ 2560 Module Hart 9132 Black Body	OEM and GIDEP Sourced Calibration Procedures
Relative Humidity - Source	Up to 90 %RH (90 to 100) %RH	1.58 %RH 2.34 %RH	Vaisala HMP46 with Salt Solutions	ASTM E104 OEM and GIDEP Sourced Procedures

IV. Mechanical

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Hardness Testers	45.12 30N	0.32	Hardness Test Blocks	OEM and GIDEP Sourced Calibration Procedures
	62.85 30N	0.47		
	79.55 30N	0.18		
	25.3 HRC	0.19		
	39.46 HRC	0.28		
	60.07 HRC	0.18		
	45.01 30T	0.25		
	61.17 30T	0.35		
	46.09 HRB	0.53		
	70.53 HRB	0.36		
93.23 HRB	0.43			
Pressure Gages and Transducers	Up to 15 psi	0.0012 % of reading + 0.00002 psi	DHI PPC2+ Pressure Calibrator	
	Up to 500 psia	0.0016 % of reading + 0.0015 psi	DHI PG7000	
	(725 to 30 000) psi	0.0042 % of reading + 0.0156 psi		
	(30 to 800) psi	0.03 % + 0.003 psi		
	(800 to 16 000) psi	0.03 % + 0.008 psi	Budenburg Deadweight Tester	

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Torque Tools	5 in-lb to 600 ft-lb (Up to 48) in-oz	1.04 % of reading 0.8 % of reading	CDI Suretest Model 5000ST	OEM and GIDEP Sourced Calibration Procedures
Torque Transducers and Calibrators	(5 to 100) in-lb (5 to 290) ft-lb (50 to 2000) ft-lb	0.16 % of reading 0.03 % of reading 0.06 % of reading	Radius Wheels, Arms, and Butterflies	
Force - Load Cells Compression and Tension	Up to 500 lb (500 to 1 000) lb (1 000 to 5 000) lb (1 000 to 10 000) lb (10 000 to 25 000) lb (25 000 to 50 000) lb (50 000 to 100 000) lb	0.058 lb 0.128 lb 0.69 lb 1.36 lb 2.98 lb 6.12 lb 12.04 lb	Interface Load Cell System	
Scales and Balances	Up to 5 kg Up to 5 000 lb	0.58R 0.58R	Class 2 and Class F Weights	

V. Dimensional

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Bench Micrometers	Up to 1 in	16.6 μ m	Grade 2 Gage Blocks	OEM and GIDEP Sourced Calibration Procedures
*Single Axis Dimensional Gaging - Outside Gaging - Inside	Up to 39.4 in Up to 15 in	8.6 + 12.3L μ m 9.6 + 12.3L μ m	Trimos Labconcept 1000 Grade 2 Gage Blocks	
*Thread Plug Gage- Simple Pitch Diameter	Up to 10 in	15.6 + 12.3L μ m	Trimos Labconcept 1000 Grade 2 Gage Blocks with Thread Wires	

PARAMETER / EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY (\pm)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
*Thread Ring Gage- Simple Pitch Diameter	Up to 4 in	58 μ in	Setting Plugs	OEM and GIDEP Sourced Calibration Procedures
Micrometers - Outside - Inside	Up to 4 in (4 to 48) in Up to 10 in (10 to 48) in	(53.3 + 5.7L) μ in (38.4 + 28.6L) μ in (581 + 2L) μ in (564 + 16L) μ in	Grade 2 Gage Blocks with Spheres, P&W Super Micrometer, Grade 2 Gage Blocks	
Calipers	Up to 4 in (4 to 48) in	579 μ in (509 + 17L) μ in	Grade 2 Gage Blocks	
Surface Plate Flatness	Up to 30 ft Diagonal	45 μ in	Mahr Federal EMD-832P-48-W1 Digital Leveling System	
Height Gages	Up to 48 in	(57 + 26.6L) μ in	Grade 2 Gage Blocks, Surface Plate Pratt & Whitney Super Micrometer with Grade 2 Gage Blocks	
*Pin Gages	Up to 1 in	(64 + 6L) μ in		
Indicators	Up to 4 in	(53.3 + 5.7L) μ in		
Optical Comparators	Up to 12.5 in	(400 + 0.2L) μ in	Quality Vision Magnification Check Kit and Grade 2 Gage Blocks	

Notes:

1. Calibration and Measurement Capabilities (CMC) (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. Parameters denoted by an asterisk (*) are laboratory-only, not available for on-site calibration.
4. CMC for Electromagnetic - DC/Low Frequency do not include possible contributions from a "best available" unit under test.
5. The use of (L) signifies an expression of Length in inches.
6. The use of (R) indicates Resolution of the unit under test.
7. The use of (t) stands for Time in seconds.
8. This scope is part of and must be included with the Certificate of Accreditation No. AC-1105.

Vice President

