



ANSI-ASQ National Accreditation Board/AClass

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

Davis Calibration

Timonium Business Park 1946 Greenspring Dr., Suite A Timonium, MD 21093
Evan Doughty Phone: 410-842-1000

CALIBRATION

Valid to: November 21, 2009

Certificate Number: AC-1121

I. Electromagnetic – DC/Low Frequency

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Voltage – Source _s Fixed Points	(0 to 220) mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V (220 to 1 100) V 10 V	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 4 μV	Fluke 5720A Opt 03 Fluke 5725A Fluke 732A	Surecal 5.0 Software, OEM and GIDEP Sourced Calibration
DC Voltage – Measure _s	Up to 200 mV 200 mV to 2 V (2 to 20) V (20 to 200) V (200 to 1 050) V Up to 120 kV	5 μV/V + 100 nV 3.5 μV/V + 400 nV 3.5 μV/V + 4 μV 5.5 μV/V + 40 μV 5.5 μV/V + 500 μV 0.1 %	Fluke 8508A Opt 01 Ross VD120-6.2Y	
DC Voltage - Measure Fixed Points	100 mV 1 V 10 V 100 V 1 000 V 100 mV	2 μV 2.2 μV 6 μV 224 μV 2.34 mV 2 μV	Fluke 732A with 752A and 8508A OPT 01	
DC Current – Source _s	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 3) A (3 to 11) A (11 to 20.5) A	40 μA/A + 6 nA 35 μA/A + 7 nA 35 μA/A + 400 nA 45 μA/A + 700 nA 80 μA/A + 12 μA 380 μA/A + 40 μA 360 μA/A + 480 μA 1 mA/A + 750 μA	Fluke 5720A OPT 03 Fluke 5520A Fluke 5725A Fluke 5520A	OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Resistance – Source ₅ Fixed Points (cont.)	100 Ω 1 k Ω 10 kΩ 100 kΩ 100 MΩ	320 μΩ 2.7 mΩ 27 mΩ 190 mΩ 1.3 kΩ	Electro Scientific RS 925 D Decade Resistance	OEM and GIDEP Sourced Calibration Procedures
Resistance – Measure ₅	Up to 2 Ω (2 to 20) Ω (20 to 200) Ω 200 Ω to 2 kΩ (2 to 20) kΩ (20 to 200) kΩ 200 kΩ to 2 MΩ (2 to 20) MΩ (20 to 200) MΩ 200 MΩ to 1 GΩ (1 to 10) GΩ (10 to 100) GΩ 100 GΩ to 1 TΩ (1 to 10) TΩ (10 to 100) TΩ	7.2 μΩ/ Ω 3.2 μΩ/ Ω 3.2 μΩ/ Ω 2.7 μΩ/ Ω 2.7 μΩ/ Ω 1.9 μΩ/ Ω 8.5 μΩ/ Ω 16.4 μΩ/ Ω 14.5 μΩ/ Ω 500 μΩ/ Ω 700 μΩ/ Ω 1 mΩ/ Ω 2 mΩ/ Ω 3 mΩ/ Ω 5 mΩ/ Ω	Guildline 9336 with Fluke 8508A OPT 01 Fluke 8508A OPT 01 with standard resistors Guildline 6500	
AC Voltage – Source ₅	(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 (2.2 to 22) 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	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 1.1 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV 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 1.1 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV	Fluke 5720A Opt 03	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Source (Cont.)	(22 to 220) 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 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 (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 to 1 100) V (15 to 50) Hz 50 Hz to 1 kHz	240 $\mu\text{V}/\text{V} + 12 \mu\text{V}$ 90 $\mu\text{V}/\text{V} + 7 \mu\text{V}$ 80 $\mu\text{V}/\text{V} + 7 \mu\text{V}$ 200 $\mu\text{V}/\text{V} + 7 \mu\text{V}$ 460 $\mu\text{V}/\text{V} + 17 \mu\text{V}$ 900 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 1.4 $\text{mV}/\text{V} + 25 \mu\text{V}$ 2.7 $\text{mV}/\text{V} + 45 \mu\text{V}$ 240 $\mu\text{V}/\text{V} + 40 \mu\text{V}$ 90 $\mu\text{V}/\text{V} + 15 \mu\text{V}$ 45 $\mu\text{V}/\text{V} + 8 \mu\text{V}$ 75 $\mu\text{V}/\text{V} + 10 \mu\text{V}$ 110 $\mu\text{V}/\text{V} + 30 \mu\text{V}$ 420 $\mu\text{V}/\text{V} + 80 \mu\text{V}$ 1 $\text{mV}/\text{V} + 200 \mu\text{V}$ 1.7 $\text{mV}/\text{V} + 300 \mu\text{V}$ 240 $\mu\text{V}/\text{V} + 400 \mu\text{V}$ 90 $\mu\text{V}/\text{V} + 150 \mu\text{V}$ 45 $\mu\text{V}/\text{V} + 50 \mu\text{V}$ 70 $\mu\text{V}/\text{V} + 100 \mu\text{V}$ 100 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 275 $\mu\text{V}/\text{V} + 600 \mu\text{V}$ 1 $\text{mV}/\text{V} + 2 \text{mV}$ 1.5 $\text{mV}/\text{V} + 3.2 \text{mV}$ 240 $\mu\text{V}/\text{V} + 4 \text{mV}$ 90 $\mu\text{V}/\text{V} + 1.5 \text{mV}$ 52 $\mu\text{V}/\text{V} + 600 \mu\text{V}$ 80 $\mu\text{V}/\text{V} + 1 \text{mV}$ 150 $\mu\text{V}/\text{V} + 2.5 \text{mV}$ 900 $\mu\text{V}/\text{V} + 16 \text{mV}$ 4.4 $\text{mV}/\text{V} + 40 \text{mV}$ 8 $\text{mV}/\text{V} + 80 \text{mV}$ 300 $\mu\text{V}/\text{V} + 16 \text{mV}$ 70 $\mu\text{V}/\text{V} + 3.5 \text{mV}$	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 – Measure ₅	<p>(1 to 10) mV</p> <p>(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</p> <p>(10 to 100) mV</p> <p>(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</p> <p>(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</p> <p>(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 $\mu\text{V}/\text{V} + 3 \mu\text{V}$ 200 $\mu\text{V}/\text{V} + 1.1 \mu\text{V}$ 300 $\mu\text{V}/\text{V} + 1.1 \mu\text{V}$ 1 $\text{mV}/\text{V} + 1.1 \mu\text{V}$ 5 $\text{mV}/\text{V} + 1.1 \mu\text{V}$ 40 $\text{mV}/\text{V} + 2 \mu\text{V}$ 12 $\text{mV}/\text{V} + 5 \mu\text{V}$ 70 $\text{mV}/\text{V} + 7 \mu\text{V}$ 200 $\text{mV}/\text{V} + 8 \mu\text{V}$</p> <p>72 $\mu\text{V}/\text{V} + 4 \mu\text{V}$ 72 $\mu\text{V}/\text{V} + 2 \mu\text{V}$ 142 $\mu\text{V}/\text{V} + 2 \mu\text{V}$ 302 $\mu\text{V}/\text{V} + 2 \mu\text{V}$ 802 $\mu\text{V}/\text{V} + 2 \mu\text{V}$ 3 $\text{mV}/\text{V} + 10 \mu\text{V}$ 10 $\text{mV}/\text{V} + 10 \mu\text{V}$ 15 $\text{mV}/\text{V} + 10 \mu\text{V}$ 40 $\text{mV}/\text{V} + 8 \mu\text{V}$ 150 $\text{mV}/\text{V} + 100 \mu\text{V}$</p> <p>72 $\mu\text{V}/\text{V} + 40 \mu\text{V}$ 72 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 142 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 302 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 802 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 3 $\text{mV}/\text{V} + 100 \mu\text{V}$ 1 $\text{mV}/\text{V} + 100 \mu\text{V}$ 15 $\text{mV}/\text{V} + 100 \mu\text{V}$ 40 $\text{mV}/\text{V} + 800 \mu\text{V}$ 150 $\text{mV}/\text{V} + 1 \text{mV}$</p> <p>72 $\text{uV}/\text{V} + 400 \mu\text{V}$ 72 $\text{uV}/\text{V} + 200 \mu\text{V}$ 142 $\text{uV}/\text{V} + 200 \mu\text{V}$ 302 $\text{uV}/\text{V} + 200 \mu\text{V}$ 802 $\text{uV}/\text{V} + 200 \mu\text{V}$ 3 $\text{mV}/\text{V} + 1 \text{mV}$ 1 $\text{mV}/\text{V} + 1 \text{mV}$ 15 $\text{mV}/\text{V} + 1 \text{mV}$ 40 $\text{mV}/\text{V} + 8 \text{mV}$ 150 $\text{mV}/\text{V} + 10 \text{mV}$</p>	HP 3458A Opt 02	OEM and GIDEP Sourced Calibration Procedures



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Measure (Cont.)	<p>(10 to 100) V</p> <p>(1 to 40) Hz 40Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz</p> <p>(100 to 1 000) V</p> <p>(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz</p> <p>200 mV to 2 V</p> <p>(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 1 MHz</p> <p>(2 to 20) V</p> <p>(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 1 MHz</p>	<p>200 $\mu\text{V}/\text{V} + 4 \text{ mV}$ 200 $\mu\text{V}/\text{V} + 2 \text{ mV}$ 200 $\mu\text{V}/\text{V} + 2 \text{ mV}$ 350 $\mu\text{V}/\text{V} + 2 \text{ mV}$ 1.2 $\text{mV}/\text{V} + 2 \text{ mV}$ 4 $\text{mV}/\text{V} + 10 \text{ mV}$ 15 $\text{mV}/\text{V} + 10 \text{ mV}$</p> <p>400 $\mu\text{V}/\text{V} + 40 \text{ mV}$ 400 $\mu\text{V}/\text{V} + 20 \text{ mV}$ 600 $\mu\text{V}/\text{V} + 20 \text{ mV}$ 1.2 $\text{mV}/\text{V} + 20 \text{ mV}$ 3 $\text{mV}/\text{V} + 20 \text{ mV}$ 135 $\mu\text{V}/\text{V} + 4 \mu\text{V}$ 340 $\mu\text{V}/\text{V} + 8 \mu\text{V}$ 765 $\mu\text{V}/\text{V} + 20 \mu\text{V}$</p> <p>150 $\mu\text{V}/\text{V} + 120 \mu\text{V}$ 115 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 90 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 75 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 110 $\mu\text{V}/\text{V} + 20 \mu\text{V}$ 220 $\mu\text{V}/\text{V} + 840 \mu\text{V}$ 570 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 3 $\text{mV}/\text{V} + 2 \text{ mV}$ 10 $\text{mV}/\text{V} + 2 \text{ mV}$</p> <p>150 $\mu\text{V}/\text{V} + 1.2 \text{ mV}$ 115 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 90 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 75 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 110 $\mu\text{V}/\text{V} + 200 \mu\text{V}$ 220 $\mu\text{V}/\text{V} + 8.4 \text{ mV}$ 570 $\mu\text{V}/\text{V} + 2 \text{ mV}$ 3 $\text{mV}/\text{V} + 20 \text{ mV}$ 10 $\text{mV}/\text{V} + 20 \text{ mV}$</p>	<p>HP 3458A Opt 02</p> <p>Fluke 8508A OPT 01</p>	<p>OEM and GIDEP Sourced Calibration Procedures</p>



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage – Measure (Cont.)	(20 to 200) V (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 1 MHz (200 to 1 000) V (1 to 10) Hz (10 to 40)Hz 40 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	150 μ V/V + 12 mV 115 μ V/V + 2 mV 90 μ V/V + 2 mV 75 μ V/V + 2 mV 110 μ V/V + 2 mV 220 μ V/V + 84 mV 570 μ V/V + 20 mV 3 mV/V + 200 mV 10 mV/V + 200 mV 150 μ V/V + 70 mV 120 μ V/V + 20 mV 115 μ V/V + 20 mV 225 μ V/V + 40 mV 580 μ V/V + 200 mV		Surecal 5.0 Software, OEM and GIDEP Sourced Calibration Procedures
AC Voltage - Measure	Up to 80 kV @60 Hz	0.5 %	Ross VD120-6.2Y	
AC Voltage Flatness -- Measure Up to 3 V	10 Hz 100 Hz to 100 kHz 300 kHz to 1 MHz (3 to 10) MHz (20 to 30) MHz 50 MHz 70 MHz 80 MHz 100 MHz	1 mV/V 500 μ V/V 870 μ V/V 800 μ V/V 1.7 mV/V 4.1 mV/V 6.2 mV/V 7.1 mV/V 8.4 mV/V	By comparison to Thermal Voltage Converters With HP 3458A	



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current – Source 5	<p>(9 to 220) μA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz</p> <p>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</p> <p>(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</p> <p>(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</p> <p>220 mA to 2.2 A 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz</p> <p>(2.2 to 11) A 40 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz</p> <p>(11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz</p>	<p>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</p> <p>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</p> <p>250 μA/A + 400 nA 160 μA/A + 350 nA 120 μA/A + 350 nA 200 μA/A + 550 nA 1.1 mA/A + 5 μA</p> <p>250 μA/A + 4 μA 160 μA/A + 3.5 μA 120 μA/A + 2.5 μA 200 μA/A + 3.5 μA 1.1 mA/A + 10 μA</p> <p>260 μA/A + 35 μA 450 μA/A + 80 μA 7 mA/A + 160 μA</p> <p>400 μA/A + 170 μA 950 μA/A + 380 μA 3.6 mA/A + 750 μA</p> <p>1.2 mA/A + 5 mA 1.5 mA/A + 5 mA 30 mA/A + 5 mA</p>	<p>Fluke 5720A</p> <p>Fluke 5725A</p> <p>Fluke 5520A</p>	<p>OEM and GIDEP Sourced Calibration Procedures</p>



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current – Measure 5	<p>Up to 200 μA (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz</p> <p>200 μA to 2 mA (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz</p> <p>(2 to 20) mA (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz</p> <p>10 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>25 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>50 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>100 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p>	<p>250 μA/A + 20 nA 250 μA/A + 20 nA 600 μA/A + 20 nA 4 mA/A + 20 nA</p> <p>250 μA/A + 200 nA 250 μA/A + 200 nA 600 μA/A + 200 nA 4 mA/A + 200 nA</p> <p>250 μA/A + 2 μA 250 μA/A + 2 μA 600 μA/A + 2 μA 4 mA/A + 2 μA</p> <p>205 μA/A 48 μA/A 48 μA/A 78 μA/A</p> <p>205 μA/A 48 μA/A 48 μA/A 82 μA/A</p> <p>205 μA/A 48 μA/A 53 μA/A 87 μA/A</p> <p>205 μA/A 48 μA/A 53 μA/A 87 μA/A</p>	<p>Fluke 8508A OPT 01</p> <p>Holt HCS-1</p>	<p>OEM and GIDEP Sourced Calibration Procedures</p>



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current - Measure (Cont.)	250 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 500 mA Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 1 A Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 2.5 A Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 5 A Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 10 A Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz 20 A Range (10 to 400) Hz 400 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz	205 μ A/A 48 μ A/A 53 μ A/A 87 μ A/A 205 μ A/A 48 μ A/A 53 μ A/A 91 μ A/A 206 μ A/A 53 μ A/A 68 μ A/A 128 μ A/A 212 μ A/A 73 μ A/A 77 μ A/A 137 μ A/A 212 μ A/A 73 μ A/A 87 μ A/A 185 μ A/A 216 μ A/A 82 μ A/A 102 μ A/A 147 μ A/A 222 μ A/A 97 μ A/A 122 μ A/A 171 μ A/A	Holt HCS-1	OEM and GIDEP Sourced Calibration Procedures
AC Phase – Measure	10 Hz to 50 kHz	0.005 deg	K-H 6610	



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Electrical Simulation of Thermocouple Indicators Type "B" Type "C" Type "E" Type "J" Type "K" Type "L" Type "N" Type "R"	(600 to 800) °C	0.44 °C	Fluke 5520A/SC 1100	OEM and GIDEP Sourced Calibration Procedures
	(800 to 1 000) °C	0.34 °C		
	(1 000 to 1 550) °C	0.30 °C		
	(1 550 to 1 820) °C	0.33 °C		
	(0 to 150) °C	0.30 °C		
	(150 to 650) °C	0.26 °C		
	(650 to 1000) °C	0.31 °C		
	(1 000 to 1 800) °C	0.50 °C		
	(1 800 to 2 316) °C	0.84 °C		
	(-250 to -100) °C	0.50 °C		
	(-100 to -25) °C	0.16 °C		
	(-25 to 350) °C	0.14 °C		
	(350 to 650) °C	0.16 °C		
	(650 to 1 000) °C	0.21 °C		
	(-210 to -100) °C	0.27 °C		
	(-100 to -30) °C	0.16 °C		
	(-30 to 150) °C	0.14 °C		
	(150 to 760) °C	0.17 °C		
	(760 to 1 200) °C	0.23 °C		
	(-200 to -100) °C	0.33 °C		
	(-100 to -25) °C	0.18 °C		
	(-25 to 120) °C	0.16 °C		
	(120 to 1 000) °C	0.26 °C		
	(1 000 to 1 372) °C	0.40 °C		
	(-200 to -100) °C	0.37 °C		
	(-100 to 800) °C	0.26 °C		
	(800 to 900) °C	0.17 °C		
	(-200 to -100) °C	0.40 °C		
(-100 to -25) °C	0.22 °C			
(-25 to 120) °C	0.19 °C			
(120 to 410) °C	0.18 °C			
(410 to 1 300) °C	0.27 °C			
(0 to 250) °C	0.51 °C			
(250 to 400) °C	0.35 °C			
(400 to 1 000) °C	0.33 °C			
(1 000 to 1 767) °C	0.40 °C			

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)		
Type "S"	(0 to 250) °C (250 to 1 000) °C (1 000 to 1400) °C (1 400 to 1 767) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C	Fluke 5520A/SC 1100	OEM and GIDEP Sourced Calibration Procedures		
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				
Type "U"	(-200 to 0) °C (0 to 600) °C	0.56 °C 0.27 °C				
Electrical Simulation of RTDs ₅						
Pt 395 (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 0.10 °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 0.10 °C 0.12 °C				
Pt 3916 (100 Ω)	(-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.25 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.08 °C 0.09 °C 0.10 °C 0.23 °C				
Pt 385 (200 Ω)	(-200 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.04 °C 0.05 °C 0.12 °C 0.13 °C 0.14 °C 0.16 °C				

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pt 385 (500 Ω)	(-200 to -80) °C (-80 to 100) °C (100 to 260) °C (260 to 400) °C (400 to 600) °C (600 to 630) °C	0.04 °C 0.05 °C 0.06 °C 0.08 °C 0.09 °C 0.11 °C	Fluke 5520A/SC 1100	OEM and GIDEP Sourced Calibration Procedures
Pt 385 (1 000 Ω)	(-200 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 600) °C (600 to 630) °C	0.03 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.23 °C		
PtNi 120 (120 Ω)	(-80 to 100) °C (100 to 260) °C	0.08 °C 0.14 °C		
CU 427 (10 Ω)	(-100 to 260) °C	0.3 °C		
Rise Time – Measure	(0 to 12.4) GHz (12.4 to 20) GHz	28.2 ps 17.5 ps	HP 83483A	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Calibration of Oscilloscopes 5				
Amplitude DC Signal into 50 Ω Load into 1 MΩ Load	(-6.6 to 6.6) V (-130 to 130) V	2.5 mV/V + 40 μV 500 μV/V + 40 μV	Fluke 5520A/SC 1100	OEM and GIDEP Sourced Calibration Procedures
Amplitude Squarewave 50 Ω Load	±1 mV to ±6.6 Vp-p 10 Hz to 10 kHz	2.5 mV/V + 40 μV		
1 MΩ Load	±1 mV to ±130 Vp-p 10 Hz to 1 kHz (1 to 10) kHz	1.0 mV/V + 40 μV 2.5 mV/V + 40 μV		
Rise Time	≤300 ps	+0 ps/ -100 ps		
Leveled Sine Wave Relative to 50 kHz [5 mV to 5.5 V] p-p	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1 100) MHz	35 μV/V + 300 μV 40 μV/V + 300 μV 60 μV/V + 300 μV 70 μV/V + 300 μV		
Time Marker into 50 Ω Load-Source	5 s to 50 ms 20 ms to 1 ns	(25 + 1000t) parts in 10 ⁶ 2.5 parts in 10 ⁶		
Edge Specs into 50 Ω Load-Source Rise Time 50 Ω load Range (p-p)	≤ 350 ps 5.0 mV to 2.5 V	(0 /-100) ps 20 mV/V + 200 μV		
Wave Generator – Source Amplitude (10 Hz to 10 kHz) Square, Sine, Triangle into 1 MΩ Square, Sine, Triangle into 50 Ω	1.8 mV to 55 Vp-p 1.8 mV to 2.5 Vp-p	30 mV/V + 100 μV 30 mV/V + 100 μV		

II. Electromagnetic - RF/Microwave

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
RF Power – Source ₅ 50 Ω load	1 dB (0.001 to 100) Hz 100 kHz to 20 MHz	0.1 dB 0.4 dB	HP 3325B	Surecal 5.0 Software, OEM, and GIDEP Sourced Calibration Procedures
	(2 to 8) dB (0.001 to 100) Hz 100 kHz to 10 MHz	0.2 dB 0.5 dB		
	(2 to 4) dB (10 to 20) MHz (10 to 20) MHz	0.6 dB 0.9 dB		
	(5 to 8) dB (10 to 20) MHz (10 to 20) MHz	0.6 dB 0.9 dB		
	(+10 to -110) dBm (10 to 50)MHz 50 MHz to 2.6 GHz (2.6 to 18) GHz (18 to 20) GHz (20 to 26.5) GHz	0.91 dB 0.61 dB 0.48 dB 0.74 dB 0.93 dB	HP 83630A w/ 8902A, 11722A, 11792A and 11793A	
	(+10 to -10) dBm (20 to 40) GHz	0.9 dB	HP 83650A	
	(+2.5 to -10) dBm (40 to 50) GHz	1.7 dB		
	(-10 to -60) dBm (20 to 40) GHz (40 to 50) GHz	1.2 dB 2.0 dB		
	(-60 to -110) dBm (20 to 40) GHz (40 to 50) GHz	1.7 dB 2.5 dB		

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
RF Power Measure ₅ 50 Ω load	(+10 to -20) dBm 10 MHz to 2.6 Hz (2.6 to 18) GHz (18 to 20) GHz (20 to 26.5) GHz	0.07 dBm + M 0.06 dBm + M 0.06 dBm + M 0.10 dBm + M	HP 8902A w/ 11793A, 11722A, and 11792A Sensors (M = mismatch error between ports.)	Surecal 5.0 Software, OEM, and GIDEP Sourced Calibration Procedures
	(+10 to +20) dBm 10MHz to 18GHz (18 to 26.5)GHz	0.08 dBm + M 0.12 dBm + M	HP 436A w/ 8481A HP 436A w/ 8485A	
	(-20 to -70) dBm 10MHz to 6GHz (6 to 15) GHz (17 to 18) GHz	0.17 dBm + M 0.13 dBm + M 0.15 dBm + M	HP 436A w/ 8481D	
	(-30 to +20) dBm 100 kHz to 4.2 Hz	0.23 dBm + M	HP 436A w/ 8482A	
	(+30 to -20) dBm (26.5 to 50) GHz	2.9 %	HP 437B w/ 8487A	
	(-20 to -70) dBm (26.5 to 50) GHz	3.3 %		
Power Reference (1 mW) ₅	50 MHz	3.7 μW	HP 478-H76 thermistor mount	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Phase Modulation – Measure ₅ Carrier Frequency: 150 kHz to 10 MHz 10 MHz to 26.5 GHz	200 Hz to 10 kHz 200 Hz to 20 kHz	5 % 4 %	HP 8902A w/ 11722A HP 8902A w/ 11793A	Surecal 5.0 Software, OEM, and GIDEP Sourced Calibration Procedures
Amplitude Modulation - Generate ₅ Rate: 50 Hz to 10 kHz Depths: 5 % to 99 %	(100 to 1 280) MHz	2.3 %	HP 8902A w/ 8662A	
Rate: 1 kHz Depths: 30 %	10 MHz to 50 GHz	5.8 %	HP 83650A	
Rate: DC to 10 kHz Depths: 0 % to 90 %	(26.5 to 50) GHz	2.3 %	HP 83650A	
Amplitude Modulation -- Measure ₅ Rate: 20 Hz to 10 kHz, to 99 % 50 Hz to 10 kHz (5 to 99) % 20 Hz to 10 kHz, to 99 % 50 Hz to 10 kHz (5 to 99) %	150 kHz to 10 MHz 150 kHz to 10 MHz (10 to 1 300) MHz (10 to 1 300) MHz	3.5 % 2.3 % 3.5 % 1.2 %	HP 8902A w/ 11722A HP 8902A w/ 11793A	
Frequency Modulation -- Generate ₅ Modulation Rate: 20 Hz to 10 kHz 50 Hz to 100 kHz 20 Hz to 200 kHz Rate: 100 kHz to 8 MHz Dev.: < 10 MHz	250 kHz to 10 MHz (10 to 1 300) MHz (10 to 1 300) MHz (26.5 to 50) GHz	2.4 % 1.3 % 5.8 % 10 %	HP 8902A w/ 8662A HP83650A	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency Modulation -- Measure ₅ Modulation Rate: 20 Hz to 10 kHz 50 Hz to 100 kHz 20 Hz to 200 kHz	250 kHz to 10 MHz (10 to 1 300) MHz (10 to 1 300) MHz	2.4 % 1.3 % 5.8 %	HP 8902A	Surecal 5.0 Software, OEM, and GIDEP Sourced Calibration Procedures
Insertion Loss ₅ (0 to 110) dB	2.5 MHz to 26.5 GHz	0.10 dB + M	HP 8902A w/ 11793A, 11722A, and 11792A	
RF Attenuation – Source ₅ Fixed Values (0 to 40) dB 50 dB 10 dB 20 dB (+10 to -20) dBm (-20 to -70) dBm (-70 to -120) dBm	30 MHz DC to 20 GHz (26.5 to 50) GHz (26.5 to 50) GHz (26.8 to 40) GHz	0.017 dB 0.01 dB 0.61dB 0.72 dB 2.9 % 3.3 % 4 dB	HP 11812A Verification Kit HP 84906K w/ 11713A Driver HP 437B w/8487A HP 437B w/8487D HP 8564E	

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
RF Attenuation (Cont.)				
30 dB	(20 to 26.5) GHz	0.83 dB	HP 84906K w/ 11713A Driver	Surecal 5.0 Software, OEM, and GIDEP Sourced Calibration Procedures
40 dB		1.21 dB		
50 dB		1.45 dB		
60 dB		1.89 dB		
70 dB		2.16 dB		
80 dB		3.17 dB		
90 dB		3.43 dB		
10 dB		0.64 dB		
20 dB		0.75 dB		
30 dB		0.88 dB		
40 dB		1.28 dB		
50 dB	1.52 dB	HP 84906K w/ 11713A Driver		
60 dB	1.95 dB			
70 dB	2.24 dB			
80 dB	3.18 dB			
90 dB	3.51 dB			
1 dB	0.48 dB			
2 dB	0.59 dB			
3 dB	0.82 dB			
4 dB	0.82 dB			
5 dB	0.82 dB			
6 dB	0.82 dB			
7 dB	0.93 dB			
8 dB	0.93 dB			
9 dB	0.99 dB			
10 dB	1.05 dB			
11 dB	1.28 dB			
1 dB	(20 to 26.5) GHz	0.48 dB		
2 dB		0.59 dB		
3 dB		0.82 dB		
4 dB		0.82 dB		
5 dB		0.82 dB		
6 dB		0.82 dB		
7 dB		0.93 dB		
8 dB		0.93 dB		
9 dB		0.99 dB		
10 dB		1.05 dB		
11 dB		1.28 dB		
Distortion – Measure 5 Fundamental Frequency	20 Hz to 20 kHz (20 to 100) kHz	1.19 dB 2.38 dB	HP 8903B	



III. Time & Frequency

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency – Measure ₅ * Note: Datum 9390-6000 GPS Frequency Standard is not used on-site.	10 MHz DC to 500 MHz 500 MHz to 46 GHz	6 parts in 10 ⁸ 6 parts in 10 ⁸ 6 parts in 10 ⁹	Datum 9390-6000 HP 5335A HP 5352B	OEM and GIDEP Sourced Calibration Procedures

IV. Thermodynamic

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature – Source	Ambient to 200 °C (-80 to 100) °C (-40 to 150) °C (20 to 300) °C (60 to 550) °C	0.016 °C 0.018 °C 0.017 °C 0.023 °C 0.031 °C	Hart 5680 SPRT, 1590 and the following baths; Erteo TCS-200-35 Hart 7380 Hart 7341 Hart 6022 Hart 6050	OEM, GIDEP, NIST, and ASTM Sourced Calibration Procedures
Fixed Points	-195 °C -38.83319 °C 231.9278 °C 419.5268 °C	0.004 °C 0.004 °C 0.004 °C 0.004 °C	NBPLN2 Hart T.P. Hg Cell Hart F.P. Sn Cell Hart F.P. Zn Cell	
*Triple Point of Water	0.01 °C	0.0001 °C	Triple Point Cell	
Temperature -- Measure	-190 °C -39 °C 0.01 °C 231 °C 420 °C	0.004 °C 0.009 °C 0.003 °C 0.009 °C 0.018 °C	Hart 5680 SPRT with Hart 1590 Super Thermometer	
Infrared Non-contact Temperature - Source	(-20 to 150) °C (150 to 1 000) °C	0.5 °C (0.8 to 1.65) °C	Mikron M340 Blackbody Source Mikron M360A Blackbody Source	
Relative Humidity – Measure	0 to 100 %RH	1.2 %	Vaisala HMI41/HMP46	
Relative Humidity - Source	(10 to 50) %RH (50 to 95) %RH	0.35 % 0.35 %	Thunder Scientific 2500 Humidity Generator	

V. Optical Radiation

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Luminance Measuring Equipment	(5 to 460) ft-lambert	3.5 % of reading	Labsphere USS-600V System	OEM and GIDEP Sourced Calibration Procedures
Fiber Optic Measuring Equipment Power	(-80 to +3) dBm (1 000 to 1 650) nm	4 % + 50 pW	HP 81521B w/ HP 81533B	
Attenuation (dB)	(0 to 60) dB (1 200 to 1 700) nm	0.05 dB	HP 8156A	
Wavelength (nm)	(700 to 1 650) nm	1.3 parts in 10 ⁶	HP 86120B	
Laser Source (Power Stability)	(1 310 to 1 550) nm (1 450 to 1 590) nm	0.017 dB 0.035 dB	Agilent 81654A HP 8168F	

VI. Mechanical

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pressure	0.025 in H ₂ O (0.05 to 0.3) in H ₂ O 0.4 in H ₂ O 0.5 in H ₂ O 0.6 in H ₂ O 0.7 in H ₂ O 0.8 in H ₂ O 0.9 in H ₂ O 1 in H ₂ O 1.1 in H ₂ O 1.2 in H ₂ O 1.3 in H ₂ O 1.4 in H ₂ O 1.5 in H ₂ O 1.6 in H ₂ O 1.625 in H ₂ O 1.65 in H ₂ O 1.7 in H ₂ O 1.8 in H ₂ O 1.9 in H ₂ O 2.1 in H ₂ O 2.6 in H ₂ O 3.6 in H ₂ O	0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00040 in H ₂ O 0.00042 in H ₂ O 0.00043 in H ₂ O 0.00043 in H ₂ O 0.00044 in H ₂ O 0.00046 in H ₂ O 0.00049 in H ₂ O 0.00054 in H ₂ O 0.00065 in H ₂ O 0.00086 in H ₂ O	Ruska V1600/3D Deadweight Tester	OEM and GIDEP Sourced Calibration Procedures



PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pressure (Cont.)	3.8 in H ₂ O	0.00090 in H ₂ O	Ruska V1600/3D Deadweight Tester	OEM and GIDEP Sourced Calibration Procedures
	3.9 in H ₂ O	0.00093 in H ₂ O		
	3.95 in H ₂ O	0.00095 in H ₂ O		
	3.975 in H ₂ O	0.00096 in H ₂ O		
	4 in H ₂ O	0.00096 in H ₂ O		
	4 in H ₂ O	0.00092 in H ₂ O		
	4.025 in H ₂ O	0.00094 in H ₂ O		
	4.05 in H ₂ O	0.00094 in H ₂ O		
	4.1 in H ₂ O	0.00095 in H ₂ O		
	4.2 in H ₂ O	0.00096 in H ₂ O		
	4.3 in H ₂ O	0.00099 in H ₂ O		
	4.5 in H ₂ O	0.00103 in H ₂ O		
	5 in H ₂ O	0.00113 in H ₂ O		
	6 in H ₂ O	0.00132 in H ₂ O		
	9 in H ₂ O	0.00197 in H ₂ O		
	14 in H ₂ O	0.00315 in H ₂ O		
	24 in H ₂ O	0.00524 in H ₂ O		
	44 in H ₂ O	0.01011 in H ₂ O		
	54 in H ₂ O	0.01322 in H ₂ O		
	59 in H ₂ O	0.01483 in H ₂ O		
	61 in H ₂ O	0.01555 in H ₂ O		
	62 in H ₂ O	0.01588 in H ₂ O		
	63 in H ₂ O	0.01625 in H ₂ O		
	63.5 in H ₂ O	0.01642 in H ₂ O		
	63.7 in H ₂ O	0.01651 in H ₂ O		
	63.8 in H ₂ O	0.01654 in H ₂ O		
	63.9 in H ₂ O	0.01656 in H ₂ O		
	63.95 in H ₂ O	0.01658 in H ₂ O		
	63.975 in H ₂ O	0.01658 in H ₂ O		
	64 in H ₂ O	0.01526 in H ₂ O		
	(0.2 to 25) psia	25 parts in 10 ⁶	Ruska Deadweight Testers	
	(0.2 to 25) psig	16 parts in 10 ⁶		
	(25 to 100) psig	22 parts in 10 ⁶		
(100 to 1 000) psig	22 parts in 10 ⁶	DHI RPM3		
(1 to 4) kpsig	38 parts in 10 ⁶			
(4 to 20) kpsig	100 parts in 10 ⁶			
(20 to 40) kpsig	183 parts in 10 ⁶			
0 psig / 15 psia	0.002 psi			
15 psig / 30 psia	0.004 psi			
35 psig / 50 psia	0.007 psi			
100 psig / 100 psia	0.014 psi			
200 psig / 200 psia	0.028 psi			
300 psig / 300 psia	0.042 psi			
Vacuum	(-14.7 to 0) psig	0.002 psi	DHI RPM3	



PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Force Measuring Equipment	Up to 700 lbf	0.13 % of reading	Class F Weights	OEM and GIDEP Sourced Calibration Procedures
Torque Wrenches	(5 to 50 in oz)	0.61 % of reading	CDI Suretest Torque	
	4 in-lb to	0.32 % of reading	Calibration System	
Torque Transducers and Calibrators	2 000 ft-lb (Up to 280) in-oz (5 to 100) in-lb (5 to 290) ft-lb (50 to 2 000) ft-lb	0.34 % of reading 0.16 % of reading 0.03 % of reading 0.06 % of reading	Class F weights w/ 2.5 in. radius wheel 5 in. radius wheel 10 in. radius butterfly 40 in. radius arm	NIST and ASTM Calibration Procedures
*Mass – Measure	30 kg 25 kg 20 kg 10 kg 5 kg 3 kg 2 kg 1 kg 500 g 300 g 200 g 100 g 50 g 30 g 20 g 10 g 5 g 3 g 2 g 1 g 0.5 g 0.3 g 0.2 g 0.1 g 0.05 g 0.03 g 0.02 g 0.01 g 0.005 g (0.003 to 0.001) g	14 mg 13 mg 14 mg 2.8 mg 1.7 mg 1 mg 1.2 mg 0.2 mg 0.12 mg 0.081 mg 0.088 mg 0.066 mg 0.051 mg 0.022 mg 0.029 mg 0.024 mg 0.0047 mg 0.0021 mg 0.0018 mg 0.0014 mg 0.0011 mg 0.0011 mg 0.00082 mg 0.0013 mg 0.0008 mg 0.00077 mg 0.00075 mg 0.00081 mg 0.00068 mg 0.00065 mg	Class 0 Weights w/ KA30-3/ID7-MC Comparator Class 0 Weights w/ PR10003 Comparator Class 0 Weights w/ AX1004 Comparator Class 0 Weights w/ AE240 Comparator Class 0 Weights w/ MX5 Comparator	

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pipettes	1 µl to 5 ml (5 to 25) ml	0.006 µl 20 µl	M-T MX5 M-T AX205DR With M-T pipette software	OEM and GIDEP Sourced Calibration Procedures
Mass Flow of Gases	Up to 100 sccm Up to 1 000 sccm Up to 20 slm Up to 40 slm Up to 80 slm	0.2 % of reading or 0.02 % full scale (whichever is greater)	DHI molbloc/ molbox Mass Flow System	
Air Velocity Air Flow	(0 to 5 000) fpm (0 to 25) mps	1.3 % of reading + 1 digit	Airflow Ultrasonic Anemometer	



VII. Dimensional

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
*Single Axis Dimensional Gaging – Inside	(0.02 to 4) in (4 to 12) in	(2.4 + 1.65 <i>L</i>) μin (1.2 + 3.3 <i>L</i>) μin	P&W Labmaster with 00 gage blocks	OEM and GIDEP Sourced Calibration Procedures
*Single Axis Dimensional Gaging – Outside	Up to 4 in (4 to 12) in	(2.4 + 1.65 <i>L</i>) μin (1.2 + 3.3 <i>L</i>) μin	P&W Labmaster with 00 gage blocks	
*Thread Pitch – Outside	Up to 4 in (4 to 12) in	(152 + <i>L</i>) μin (152 + <i>L</i>) μin	P&W Labmaster with 00 gage blocks and thread wires	
Calipers – Inside and Outside	Up to 4 in (4 to 20) in	(152 + <i>L</i>) μin (758 + 1.1 <i>L</i>) μin	Comparison with 00 Gage Blocks	
Micrometers – Inside, Outside, and Depth	Up to 4 in (4 to 20) in	(86 + 1.7 <i>L</i>) μin (111 + 5 <i>L</i>) μin		
Height Gages	Up to 20 in	(69.4 + 5.3 <i>L</i>) μin		
Protractors	(0 to 360) °	36 arc seconds	Angle Blocks, Cylindrical Square	
Rulers	25 inch increments	(1.2 + 0.02 <i>L</i>) thousandths of an in	Max Levy Microrule	

