CERTIFICATE OF ACCREDITATION

This is to attest that

STANDARD METER LABORATORY, INC.

236 RICKENBACKER CIRCLE
LIVERMORE, CALIFORNIA 94551, U.S.A.

Calibration Laboratory CL-146

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date November 14, 2022

Expiration Date December 1, 2024

President

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STANDARD METER LABORATORY, INC.

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Accredited to ISO/IEC 17025:2017 *Effective Date November 14, 2022*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Mechanical			
Pressure Calibrators, Transmitters and Gauges	-1 inH_2O to 1 inH_2O -10 inH_2O to 0 inH_2O 0 inH_2O to 10 inH_2O -30 inH_2O to 0 inH_2O 0 inH_2O to 30 inH_2O	0.0002 inH_2O 0.0014 inH_2O 0.0013 inH_2O 0.0066 inH_2O 0.0066 inH_2O	Direct measurement method using Fluke 7250 LP Pressure Calibrator
	-14.5 psig to 0 psig 0 psig to 30 psig 0 psia to 0.2 psia 0.2 psia to 30 psia	0.0013 psig 0.0036 psig 0.0016 psia 0.0030 psia	Direct measurement method using Fluke PM600-A350K Pressure Measurement Module
	-14.5 psig to 0 psig 0 psig to 300 psig	0.0062 psig 0.033 psig	Direct measurement method using Fluke PM500-BG2M Pressure Measurement Module
Torque	4 ozf·in to 250 lbf·in	0.31 %	Direct measurement method using torque sensors: BMX-40z BMX-25i BMX-250i
	10 lbf·ft to 1000 lbf·ft	0.5 %	Direct measurement method using torque sensors: LTT-100F BMX-1000i

** If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Thermal			
Temperature Simulation			Direct measurement method using Fluke 5522A multifunction calibrator
Thermocouple			
Type B	600 °C to 799.99 °C	0.44 °C	
	800 °C to 999.99 °C	0.34 °C	
	1000 °C to 1549.99 °C	0.30 °C	
	1550 °C to 1820 °C	0.33 °C	
Type C	0 °C to 149.99 °C	0.30 °C	
	150 °C to 649.99 °C	0.26 °C	
	650 °C to 999.99 °C	0.31 °C	
	1000 °C to 1799.99 °C	0.50 °C	
	1800 °C to 2316 °C	0.84 °C	
Type E	-250 °C to -100.01 °C	0.50 °C	
	-100 °C to -25.01 °C	0.016 °C	
	-25 °C to 349.99 °C	0.14 °C	
	350 °C to 649.99 °C	0.16 °C	
	650 °C to 1000 °C	0.21 °C	
Type J	-210 °C to -100.01 °C	0.27 °C	
	-100 °C to -30.01 °C	0.16 °C	
	-30 °C to 149.99 °C	0.14 °C	
	150 °C to 759.99 °C	0.17 °C	
	760 °C to 1200 °C	0.23 °C	
Type K	-200 °C to -100.01 °C	0.33 °C	
	-100 °C to -25.01 °C	0.18 °C	
	-25 °C to 119.99 °C	0.16 °C	
	120 °C to 999.99 °C	0.26 °C	
	1000 °C to 1372 °C	0.40 °C	
Type L	-200 °C to -100.01 °C	0.37 °C	
	-100 °C to 799.99 °C	0.26 °C	
	800 °C to 900 °C	0.17 °C	
Type N	-200 °C to -100.01 °C	0.40 °C	
	-100 °C to -25.01 °C	0.22 °C	
	-25 °C to 119.99 °C	0.19 °C	
	120 °C to 409.99 °C	0.18 °C	
	410 °C to 1300 °C	0.27 °C	
Type R	0 °C to 249.99 °C	0.57 °C	
	250 °C to 399.99 °C	0.35 °C	
	400 °C to 999.99 °C	0.33 °C	
	1000 °C to 1767 °C	0.40 °C	

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Temperature Simulation continued			Direct measurement method using Fluke 5522A multifunction calibrator
Thermocouple			
Type S	0 °C to 249.99 °C	0.47 °C	
	250 °C to 999.99 °C	0.36 °C	
	1000 °C to 1399.99 °C	0.37 °C	
	1400 °C to 1767 °C	0.46 °C	
Type T	-250 °C to -150.01 °C	0.63 °C	
	-150 °C to -0.01 °C	0.24 °C	
	0 °C to 119.99 °C	0.16 °C	
	120 °C to 400 °C	0.14 °C	
Type U	-200 °C to -0.01 °C	0.56 °C	
	0 °C to 600 °C	0.27 °C	
RTD			
PT385, 100 Ω	-200 °C to 99.99 °C	0.07 °C	
	100 °C to 629.99 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	
PT3926, 100 Ω	-200 °C to -0.01 °C	0.05 °C	
	0 °C to 399.99 °C	0.10 °C	
	400 °C to 629.99 °C	0.12 °C	
PT3916, 100 Ω	-200 °C to -0.01 °C	0.05 °C	
	0 °C to 599.99 °C	0.10 °C	
	600 °C to 630 °C	0.23 °C	
PT385, 200 Ω	-200 °C to -259.99 °C	0.05 °C	
	260 °C to 630 °C	0.16 °C	
PT385, 500 Ω	-200 °C to 259.99 °C	0.06 °C	
	260 °C to 630 °C	0.11 °C	
PT385, 1000 Ω	-200 °C to 99.99 °C	0.04 °C	
	100 °C to 599.99 °C	0.07 °C	
	600 °C to 630 °C	0.23 °C	
PT385, 120 Ω	-80 °C to 99.99 °C	0.08 °C	
	100 °C to 260 °C	0.14 °C	
CU427, 10 Ω	-100 °C to 260 °C	0.3 °C	
Temperature – Measure[4]	-195.7 ºC to 0 ºC	0.004 ºC	Comparison method using 1502A/5628 M2801/IRTD-400
	0 ºC to 100 ºC	0.005 ºC	
	100 ºC to 400 ºC	0.007 ºC	

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
IR Thermometers	0 ºC	0.10 ºC	Direct measurement method using Ametek ATC-140A as a source
	35 ºC 100 ºC 200 ºC 350 ºC 500 ºC	0.22 ºC 0.24 ºC 0.33 ºC 0.53 ºC 0.8 ºC	Direct measurement method using Fluke 4181-156 calibrator as a source
Thermo Hygrometer	0 ºC to 60 ºC 0 %RH to 95 %RH	0.07 ºC 0.51 %RH	Direct measurement method using Ametek ATC-140A as a source
Electrical – DC/LF			
DC Voltage – Generate[3]	0 mV to 329.9999 mV 330 mV to 3.29999 V 3.3 V to 32.99999 V 30 V to 329.9999 V 100 V to 1020 V	20 µV/V + 1 µV 11 µV/V + 2 µV 12 µV/V + 20 µV 18 µV/V + 150 µV 18 µV/V + 1.5 mV	Direct measurement method using Fluke 5522A as a source
DC Voltage – Measure[4]	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	13 µV/V + 3 µV 17 µV/V + 0.3 µV 13 µV/V + 0.5 µV 15 µV/V + 30 µV 27 µV/V + 100 µV	Direct measurement method with HP3458A multimeter
DC High Voltage - Measure[4]	1 kV to 20 kV 20 kV to 35 kV	2 % 1 %	Using multimeter with Fluke 80K40 high voltage probe
	30 kV to 120 kV	0.46 %	Using multimeter with SML-150KV high voltage probe
DC Current - Generate[3]	0 µA to 329.999 µA 330 µA to 3.29999 mA 3.3 mA to 32.9999 mA 33 mA to 329.999 mA 330 mA to 1.09999 A 1.1 A to 2.99999 A 3 A to 10.9999 A 11 A to 20.5 A	150 µA/A + 0.02 µA 100 µA/A + 0.05 µA 100 µA/A + 0.25 µA 100 µA/A + 2.5 µA 200 µA/A + 40 µA 380 µA/A + 40 µA 500 µA/A + 500 µA 0.1 % + 750 µA	Direct measurement method using Fluke 5522A as a source
Clamp Meter Calibrations (DC)	10 A to 16.4999 A 16.5 A to 149.999 A 150 A to 1025 A	5 mA/A + 0.02 A 5 mA/A + 0.14 A 5 mA/A + 0.5 A	Using Fluke 5522A with 50-Turn Current Coil
DC Current - Measure[4]	Up to 100 nA 100 nA to 1 µA 1 µA to 10 µA 10 µA to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	35 µA/A + 40 pA 25 µA/A + 40 pA 25 µA/A + 100 pA 25 µA/A + 800 pA 25 µA/A + 5 nA 25 µA/A + 50 nA 40 µA/A + 500 nA 115 µA/A + 10 µA	Direct measurement method with HP3458A multimeter

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
DC Current - Measure[4] (continued)	1 A to 20 A	0.01 %	Indirect measurement method using HP3458A multimeter with Fluke Y5020 current shunt
DC Resistance – Generate[3]	0 Ω to 10.9999 Ω 11 Ω to 32.9999 Ω 33 Ω to 109.9999 Ω 110 Ω to 329.9999 Ω 330 Ω to 1.099999 kΩ 1.1 kΩ to 3.299999 kΩ 3.3 kΩ to 10.99999 kΩ 11 kΩ to 32.99999 kΩ 33 kΩ to 109.9999 kΩ 110 kΩ to 329.99999 kΩ 330 kΩ to 1.099999 MΩ 1.1 MΩ to 3.299999 MΩ 3.3 MΩ to 10.99999 MΩ 11 MΩ to 32.99999 MΩ 33 MΩ to 109.9999 MΩ 110 MΩ to 329.9999 MΩ 330 MΩ to 1100 MΩ	40 μΩ/Ω + 0.001 Ω 30 μΩ/Ω + 0.0015 Ω 28 μΩ/Ω + 0.0014 Ω 28 μΩ/Ω + 0.002 Ω 28 μΩ/Ω + 0.002 Ω 28 μΩ/Ω + 0.02 Ω 28 μΩ/Ω + 0.02 Ω 28 μΩ/Ω + 0.2 Ω 28 μΩ/Ω + 0.2 Ω 32 μΩ/Ω + 2 Ω 32 μΩ/Ω + 2 Ω 60 μΩ/Ω + 30 Ω 130 μΩ/Ω + 50 Ω 250 μΩ/Ω + 2.5 kΩ 500 μΩ/Ω + 3 kΩ 0.3 % + 100 kΩ 1.5 % + 500 kΩ	Direct measurement method using Fluke 5522A as a source
DC Resistance - Measure[4]	0 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	19 μΩ/Ω + 0.06 mΩ 13 μΩ/Ω + 0.6 mΩ 10 μΩ/Ω + 0.6 mΩ 15 μΩ/Ω + 2.4 mΩ 59 μΩ/Ω + 120 mΩ 0.058 % + 1.2 kΩ 1.8 % + 10 kΩ	Direct measurement method with HP3458A multimeter
AC Voltage – Generate[3]	1 mV to 32.999 mV (10 Hz to 45 Hz) (45 Hz to 10 kHz) (10 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 500 kHz) 33 mV to 329.999 mV (10 Hz to 45 Hz) (45 Hz to 10 kHz) 33 mV to 329.999 mV (10 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 500 kHz)	 800 μV/V + 6 μV 150 μV/V + 6 μV 200 μV/V + 6 μV 0.1 % + 6 μV 0.35 % + 12 μV 0.8 % + 50 μV 300 μV/V + 8 μV 145 μV/V + 8 μV 160 μV/V + 8 μV 350 μV/V + 8 μV 800 μV/V + 32 μV 0.2 %+ 70 μV	Direct measurement method using Fluke 5522A as a source

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Voltage – Generate[3] continued	0.33 V to 3.29999 V (10 Hz to 45 Hz) (45 Hz to 10 kHz) (10 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 500 kHz) 3.3 V to 32.9999 V (10 Hz to 45 Hz) (45 Hz to 10 kHz) (10 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) 33 V to 329.999 V (45 Hz to 1 kHz) (1 kHz to 10 kHz) (10 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) 330 V to 1020 V (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz)	 300 µV/V + 50 µV 150 µV/V + 60 µV 190 µV/V + 60 µV 300 µV/V + 50 µV 700 µV/V + 0.13 mV 0.24 % + 0.6 mV 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 190 µV/V + 2 mV 200 µV/V + 6 mV 250 µV/V + 6 mV 300 µV/V + 6 mV 0.2 % + 50 mV 300 µV/V + 10 mV 250 µV/V + 10 mV 300 µV/V + 10 mV	Direct measurement method using Fluke 5522A as a source
AC Voltage – Measure[4]	1 mV to 10 mV (1 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) 10 mV to 100 mV (1 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 1 MHz) (1 MHz to 2 MHz) 100 mV to 1 V (1 Hz to 40 Hz) (40 Hz to 1 kHz)	 0.03 % + 3 µV 0.02 % + 2 µV 0.03 % + 2 µV 0.12 % + 2 µV 0.58 % + 2 µV 4.6 % + 2 µV 0.008 % + 4 µV 0.008 % + 2 µV 0.02 % + 2 µV 0.03 % + 2 µV 0.09 % + 2 µV 0.35 % + 10 µV 1.2 % + 10 µV 1.7 % + 10 µV 0.008 % + 40 µV 0.008 % + 20 µV	Direct measurement method with HP3458A multimeter in synchronous sub-sample mode

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Voltage – Measure[4] continued	100 mV to 1 V (1 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 1 MHz) (1 MHz to 2 MHz) 1 V to 10 V (1 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 1 MHz) (1 MHz to 2 MHz) 10 V to 100 V (1 Hz to 40 Hz) (40 Hz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 1 MHz) 100 V to 700 V (1 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz)	 0.02 % + 20 µV 0.03 % + 20 µV 0.09 % + 20 µV 0.35 % + 100 µV 1.2 % + 100 µV 1.7 % + 100 µV 0.008 % + 0.4 mV 0.008 % + 0.2 mV 0.02 % + 0.2 mV 0.03 % + 0.2 mV 0.09 % + 0.2 mV 0.35 % + 1 mV 1.2 % + 1 mV 1.7 % + 1 mV 0.02 % + 4 mV 0.02 % + 2 mV 0.04 % + 2 mV 0.14 % + 2 mV 0.46 % + 10 mV 1.7 % + 10 mV 0.05 % + 40 mV 0.05 % + 20 mV 0.07 % + 20 mV 0.14 % + 20 mV 0.35 % + 20 mV	Direct measurement method with HP3458A multimeter in synchronous sub-sample mode
AC High Voltage – Measure[4] @ 60 Hz	1 kV_{rms} to 28 kV_{rms}	5 %	Using multimeter with Fluke 80K40 high voltage probe
	15 kV_{rms} to 60 kV_{rms}	2.3 %	Using multimeter with SML-150KV high voltage probe
AC Current – Generate[3]	29 µA to 329.99 µA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) (10 kHz to 30 kHz)	 0.2 % + 0.1 µA 0.15 % + 0.1 µA 0.13 % + 0.1 µA 0.3 % + 0.15 µA 0.8 % + 0.2 µA 1.6 % + 0.4 µA	Direct measurement method using Fluke 5522A as a source

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Current – Generate[3] continued	330 µA to 3.29999 mA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) (10 kHz to 30 kHz) 3.3 mA to 32.9999 mA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) (10 kHz to 30 kHz) 33 mA to 329.999 mA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) (10 kHz to 30 kHz) 330 mA to 1.09999 A (10 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) 1.1 A to 2.99999 A (10 Hz to 45 Hz) (45 Hz to 1 kHz) (1 kHz to 5 kHz) (5 kHz to 10 kHz) 3 A to 10.9999 A (45 Hz to 100 Hz) (100 Hz to 1 kHz) (1 kHz to 5 kHz) 11 A to 20.5 A (45 Hz to 100 Hz) (100 Hz to 1 kHz) (1 kHz to 5 kHz)	 0.2 % + 0.15 µA 0.13 % + 0.15 µA 0.1 % + 0.15 µA 0.2 % + 0.2 µA 0.5 % + 0.3 µA 1.0 % + 0.6 µA 0.18 % + 2 µA 0.09 % + 2 µA 0.04 % + 2 µA 0.08 % + 2 µA 0.2 % + 3 µA 0.4 % + 4 µA 0.18 % + 20 µA 0.09 % + 20 µA 0.04 % + 20 µA 0.10 % + 50 µA 0.20 % + 100 µA 0.40 % + 200 µA 0.18 % + 100 µA 0.05 % + 100 µA 0.6 % + 1 mA 2.5 % + 5 mA 0.18 % + 100 µA 0.06 % + 100 µA 0.6 % + 1 mA 2.5 % + 5 mA 0.06 % + 2 mA 0.10 % + 2 mA 3.0 % + 2 mA 0.12 % + 5 mA 0.15 % + 5 mA 3.0 % + 5 mA	Direct measurement method using Fluke 5522A as a source

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Clamp Meter Calibrations (AC)	10 A to 16.4999 A (45 Hz to 64 Hz) (65 Hz to 440 Hz) 16.5 A to 149.999 A (45 Hz to 64 Hz) (65 Hz to 440 Hz) 150 A to 1025 A (45 Hz to 64 Hz) (65 Hz to 440 Hz)	 0.56 % + 0.03 A 1 % + 0.03 A 0.56 % + 0.25 A 1 % + 0.25 A 0.56 % + 0.9 A 1 % + 0.9 A	Direct measurement method using Fluke 5522A and 5500A/Coil as a source
AC Current – Measure[4]	5 µA to 100 µA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 100 Hz) (100 Hz to 1 kHz) 100 µA to 1 mA (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 100 Hz) (100 Hz to 5 kHz) 100 mA to 1 A (10 Hz to 20 Hz) (20 Hz to 45 Hz) (45 Hz to 100 Hz) (100 Hz to 5 kHz) 1 A to 20 A (DC to 1 kHz)	 0.46 % + 0.03 µA 0.17 % + 0.03 µA 0.07 % + 0.03 µA 0.07 % + 0.03 µA 0.5 % + 0.2 µA 0.17 % + 0.2 µA 0.07 % + 0.2 µA 0.04 % + 0.2 µA 0.46 % + 200 µA 0.18 % + 200 µA 0.09 % + 200 µA 0.12 % + 200 µA 0.18 %	Direct measurement method with HP3458A multimeter in synchronous sub-sample mode Indirect measurement method using HP3458A multimeter with Fluke Y5020 current shunt
Capacitance – Generate[3,5]	220.0 pF to 399.9 pF (10 Hz to 10 kHz) 0.4 nF to 1.0999 nF (10 Hz to 10 kHz) 1.1 nF to 3.2999 nF (10 Hz to 3 kHz) 3.3 nF to 10.9999 nF (10 Hz to 1 kHz) 11 nF to 32.9999 nF (10 Hz to 1 kHz)	0.5 % +10 pF 0.5 % + 0.01 nF 0.5 % + 0.01 nF 0.25 % + 0.01 nF 0.25 % + 0.1 nF	Direct measurement method using Fluke 5522A as a source

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Capacitance – Generate[3,5] continued	33 nF to 109.999 nF (10 Hz to 1 kHz)	0.25 % + 0.1 nF	Direct measurement method using Fluke 5522A as a source
	110 nF to 329.999 nF (10 Hz to 1 kHz)	0.25 % + 0.3 nF	
	0.33 µF to 1.09999 µF (10 Hz to 600 Hz)	0.25 % + 1 nF	
	1.1 µF to 3.29999 µF (10 Hz to 300 Hz)	0.25 % + 3 nF	
	3.3 µF to 10.9999 µF (10 Hz to 150 Hz)	0.25 % + 10 nF	
	11 µF to 32.9999 µF (10 Hz to 120 Hz)	0.40 % + 30 nF	
	33 µF to 109.999 µF (10 Hz to 80 Hz)	0.45 % + 100 nF	
	110 µF to 329.999 µF (0 Hz to 50 Hz)	0.45 % + 300 nF	
	0.33 mF to 1.09999 mF (0 Hz to 20 Hz)	0.45 % + 1 µF	
	1.1 mF to 3.29999 mF (0 Hz to 6 Hz)	0.45 % + 3 µF	
	3.3 mF 10.9999 mF (0 Hz to 2 Hz)	0.45 % + 10 µF	
	11 mF to 32.9999 mF (0 Hz to 0.6 Hz)	0.75 % + 30 µF	
	33 mF to 110 mF (0 Hz to 0.2 Hz)	1.1 % + 100 µF	
Oscilloscope			Direct measurement method using Fluke 5522A W/SC1100 (1.1 GHz O-scope Option)
Leveled Sine Amplitude (50 kHz Reference)	5 mV to 5 V (p-p)	2.0 % + 0.30 mV	
Square Wave			
10 Hz to 10 kHz (into 50 Ω)	1.8 mV to 2.5 V (p-p)	3 % + 0.10 mV	
	1.8 mV to 55 V (p-p)	3 % + 0.10 mV	
Time Marker	5 s to 50 ms	(25 + t*1000) µs/s Where t is in seconds	

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Time and Frequency			
Frequency – Measure[4]	1 Hz to 39.99999 Hz 40 Hz to 10 MHz	0.05 % 0.01 %	Direct measurement method using HP 3458A
Frequency – Generate[3]	1 Hz to 2 MHz	0.00029 %	Direct measurement method using Fluke 5522A as a source

[1]The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

[2]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

[3]Capability is suitable for the calibration of measuring devices in the stated ranges.

[4]Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

[5]Stated uncertainties are valid for the ranges of frequencies given, but the actual frequency applied by the calibrator may be dependent on the measurement device under calibration.