



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 200866-0

ELECTROMAGNETICS – DC/LOW FREQUENCY

NVLAP Code: 20/E02

AC Current

AC Current – Measuring Equipment

Range	Frequency(Hz)	Best Uncertainty (\pm) in % + A ^{note 1, 2}	Remarks
(2.2 to 11) A	5 to 10 k	0.37 % + 750 μ A	Fluke 5700A w/Fluke 5725A
	1 to 5 k	0.13 % + 380 μ A	Fluke 5700A w/Fluke 5725A
	0.04 to 1 k	0.06 % + 170 μ A	Fluke 5700A w/Fluke 5725A
(0.22 to 2.2) A	5 to 10 k	0.85 % + 200 μ A	Fluke 5700A w/Fluke 5725A
	1 to 5 k	0.08 % + 100 μ A	Fluke 5700A w/Fluke 5725A
	0.02 to 1 k	0.07 % + 40 μ A	Fluke 5700A w/Fluke 5725A
(22 to 220) mA	5 to 10 k	0.16 % + 100 μ A	Fluke 5700A
	1 to 5 k	0.07 % + 50 μ A	Fluke 5700A
	0.04 to 1 k	0.02 % + 4 μ A	Fluke 5700A
	20 to 40	0.04 % + 4 μ A	Fluke 5700A
	10 to 20	0.07 % + 5 μ A	Fluke 5700A
(2.2 to 22) mA	5 to 10 k	0.16 % + 10 μ A	Fluke 5700A
	1 to 5 k	0.07 % + 5 μ A	Fluke 5700A
	0.04 to 1 k	0.03 % + 400 nA	Fluke 5700A
	20 to 40	0.04 % + 400 nA	Fluke 5700A
	10 to 20	0.07 % + 500 nA	Fluke 5700A
(0.22 to 2.2) mA	5 to 10 k	0.16 % + 1000 nA	Fluke 5700A
	1 to 5 k	0.07 % + 500 nA	Fluke 5700A
	0.04 to 1 k	0.03 % + 40 nA	Fluke 5700A
	20 to 40	0.04 % + 40 nA	Fluke 5700A
	10 to 20	0.07 % + 50 nA	Fluke 5700A
(0 to 220) μ A	5 to 10 k	0.17 % + 100 nA	Fluke 5700A
	1 to 5 k	0.08 % + 50 nA	Fluke 5700A
	0.04 to 1 k	0.04 % + 20 nA	Fluke 5700A
	20 to 40	0.05 % + 25 nA	Fluke 5700A
	10 to 20	0.08 % + 30 nA	Fluke 5700A
Range	Frequency	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(11 to 20) A	20A @ (1 to 5 kHz)	2.3 % + 5 mA	Fluke 5520A
(11 to 20) A	20A @ (45 to 1000Hz)	0.13 % + 5 mA	Fluke 5520A

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Clamp-on Ammeter Torodial Type

Range	Frequency	Best Uncertainty (\pm)	Remarks
(150 to 1000) A	(65 to 440) Hz	1.3 % + 0.35 A	Fluke 5500A/Coil w/5520A
(150 to 1000) A	(45 to 65) Hz	0.37 % + 0.19 A	Fluke 5500A/Coil w/5520A
(20 to 150) A	(65 to 440) Hz	0.86 % + 77 mA	Fluke 5500A/Coil w/5520A
(20 to 150) A	(45 to 65) Hz	0.33 % + 35 mA	Fluke 5500A/Coil w/5520A

Clamp-on Ammeter Non-Torodial Type

Range	Frequency	Best Uncertainty (\pm)	Remarks
(150 to 1000) A	(65 to 440) Hz	1.44 % + 1.15 A	Fluke 5500A/Coil w/5520A
(150 to 1000) A	(45 to 65) Hz	0.61 % + 1.0 A	Fluke 5500A/Coil w/5520A
(20 to 150) A	(65 to 440) Hz	1.1 % + 0.3 A	Fluke 5500A/Coil w/5520A
(20 to 150) A	(45 to 65) Hz	0.59 % + 0.26A	Fluke 5500A/Coil w/5520A

AC Current – Measure

Range	Frequency (Hz)	Best Uncertainty (\pm) in % + A ^{note 1, 2}	Remarks
(0.1 to 1) A	0.1 to 5 k	0.10 % + 200 μ A	H.P. 3458A Opt. 002
	45 to 100	0.09 % + 200 μ A	H.P. 3458A Opt. 002
	20 to 45	0.16 % + 200 μ A	H.P. 3458A Opt. 002
	10 to 20	0.40 % + 200 μ A	H.P. 3458A Opt. 002
(10 to 100) mA	0.1 to 5 k	0.04 % + 20 μ A	H.P. 3458A Opt. 002
	45 to 100	0.07 % + 20 μ A	H.P. 3458A Opt. 002
	20 to 45	0.15 % + 20 μ A	H.P. 3458A Opt. 002
	10 to 20	0.40 % + 20 μ A	H.P. 3458A Opt. 002
(1 to 10) mA	0.1 to 5 k	0.04 % + 2 μ A	H.P. 3458A Opt. 002
	45 to 100	0.07 % + 2 μ A	H.P. 3458A Opt. 002
	20 to 45	0.15 % + 2 μ A	H.P. 3458A Opt. 002
	10 to 20	0.40 % + 2 μ A	H.P. 3458A Opt. 002
(0.1 to 1) mA	0.1 to 5 k	0.04 % + 200 nA	H.P. 3458A Opt. 002
	45 to 100	0.07 % + 200 nA	H.P. 3458A Opt. 002
	20 to 45	0.15 % + 200 nA	H.P. 3458A Opt. 002
	10 to 20	0.40 % + 200 nA	H.P. 3458A Opt. 002
(0 to 100) μ A	0.1 to 1 k	0.07 % + 30 nA	H.P. 3458A Opt. 002
	45 to 100	0.07 % + 30 nA	H.P. 3458A Opt. 002
	20 to 45	0.15 % + 30 nA	H.P. 3458A Opt. 002
	10 to 20	0.40 % + 30 nA	H.P. 3458A Opt. 002

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NVLAP Code: 20/E05
DC Current and Resistance

DC Current – Measuring Equipment

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(11 to 20) A	940 μ A/A + 750 μ A	Fluke 5520A
(2.2 to 11) A	420 μ A/A + 480 μ A	Fluke 5700A w/5725A Amplifier
(0.22 to 2.2) A	100 μ A/A + 30 μ A	Fluke 5700A
(22 to 220) mA	70 μ A/A + 1.0 μ A	Fluke 5700A
(2.2 to 22) mA	59 μ A/A + 100 nA	Fluke 5700A
(0.22 to 2.2) mA	61 μ A/A + 10 nA	Fluke 5700A
(0 to 220) μ A	63 μ A/A + 10 nA	Fluke 5700A

Clamp-on Ammeter Torodial Type

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(150 to 1000) A	0.31 % + 88 mA	Fluke 5500A/Coil w/Fluke 5520A
(20 to 150) A	0.30 % + 17 mA	Fluke 5500A/Coil w/Fluke 5520A

Clamp-on Ammeter Non-Torodial Type

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(150 to 1000) A	0.59 % + 0.54 A	Fluke 5500A/Coil w/Fluke 5520A
(20 to 150) A	0.58 % + 0.14 A	Fluke 5500A/Coil w/Fluke 5520A

DC Current – Measure

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(1 to 3) A	0.15% + 0.6 mA	HP 34401A
(0.1 to 1) A	130 μ A/A + 10 μ A	HP 3458A Opt. 002
(10 to 100) mA	42 μ A/A + 500 nA	HP 3458A Opt. 002
(1 to 10) mA	26 μ A/A + 50 nA	HP 3458A Opt. 002
(0.1 to 1) mA	26 μ A/A + 5 nA	HP 3458A Opt. 002
(0 to 100) μ A	28 μ A/A + 0.8 nA	HP 3458A Opt. 002

DC Resistance – Measuring Equipment and Measure

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(0.1 to 1) G Ω	0.6 % + 10 k Ω	H. P. 3458A Opt. 002
(10 to 100) M Ω	0.07 % + 1 k Ω	H. P. 3458A Opt. 002
(1 to 10) M Ω	60 μ Ω / Ω + 100 Ω	H. P. 3458A Opt. 002
(0.1 to 1) M Ω	211 μ Ω / Ω + 2 Ω	H. P. 3458A Opt. 002

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(10 to 100) k Ω	14 $\mu\Omega/\Omega$ + 50 m Ω	H. P. 3458A Opt. 002
(1 to 10) k Ω	12 $\mu\Omega/\Omega$ + 5 m Ω	H. P. 3458A Opt. 002
(0.1 to 1) k Ω	13 $\mu\Omega/\Omega$ + 0.5 m Ω	H. P. 3458A Opt. 002
(10 to 100) Ω	15 $\mu\Omega/\Omega$ + 0.5 m Ω	H. P. 3458A Opt. 002
(0.01 to 10) Ω	19 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	H. P. 3458A Opt. 002

DC Resistance – Measuring Equipment

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
(100 to 500) G Ω	4.2 %	Biddle 72-6349
(10 to 100) G Ω	1.2 %	Biddle 72-6349
(1 to 10) G Ω	0.60 %	Biddle 72-6349

NVLAP Code: 20/E06

DC Voltage

DC Voltage – Measuring Equipment

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
(0.22 to 1.1) kV	9.5 $\mu\text{V}/\text{V}$ + 500 μV	Fluke 5700A w/5725A
(22 to 220) V	8.6 $\mu\text{V}/\text{V}$ + 100 μV	Fluke 5700A
(11 to 22) V	8.2 $\mu\text{V}/\text{V}$ + 6.5 μV	Fluke 5700A
(2.2 to 11) V	7.4 $\mu\text{V}/\text{V}$ + 3.5 μV	Fluke 5700A
(0.22 to 2.2) V	7.4 $\mu\text{V}/\text{V}$ + 1.0 μV	Fluke 5700A
(0 to 220) mV	9.3 $\mu\text{V}/\text{V}$ + 0.6 μV	Fluke 5700A

DC Voltage – Measure

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
(20 to 100) kV	0.6 %	Hipotronics KVM100-A
(2 to 20) kV	0.5 % + 4 V	Vitrek 4600A
(1 to 2) kV	0.5 % + 0.4 V	Vitrek 4600A
(0.8 to 1) kV	21 $\mu\text{V}/\text{V}$ + 100 μV	HP 3458A Opt. 002
(500 to 800) V	14 $\mu\text{V}/\text{V}$ + 100 μV	HP 3458A Opt. 002
(100 to 500) V	11 $\mu\text{V}/\text{V}$ + 100 μV	HP 3458A Opt. 002
(10 to 100) V	7.6 $\mu\text{V}/\text{V}$ + 30 μV	HP 3458A Opt. 002
(1 to 10) V	5.2 $\mu\text{V}/\text{V}$ + 0.5 μV	HP 3458A Opt. 002
(0.1 to 1) V	5.2 $\mu\text{V}/\text{V}$ + 0.5 μV	HP 3458A Opt. 002
(0 to 100) mV	7.4 $\mu\text{V}/\text{V}$ + 0.5 μV	HP 3458A Opt. 002

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NVLAP Code: 20/E09

LF AC Voltage

AC Voltage – Measuring Equipment

Range	Frequency	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
(220 to 750) V	(50 to 100) kHz	0.23 % + 45 mV	Fluke 5700A w/5725A
	(30 to 50) kHz	0.06 % + 11 mV	Fluke 5700A w/5725A
(0.22 to 1.1) kV	(20 to 30) kHz	0.06 % + 11 mV	Fluke 5700A w/5725A
	(1 to 20) kHz	0.02 % + 6 mV	Fluke 5700A w/5725A
	(0.04 to 1) kHz	0.009 % + 4 mV	Fluke 5700A w/5725A
(22 to 220) V	(0.5 to 1) MHz	1.2 % + 190 mV	Fluke 5700A
	(300 to 500) kHz	0.47 % + 90 mV	Fluke 5700A
	(100 to 300) kHz	0.15 % + 90 mV	Fluke 5700A
	(50 to 100) kHz	0.05 % + 8 mV	Fluke 5700A
	(20 to 50) kHz	0.02 % + 3.5 mV	Fluke 5700A
	(0.04 to 20) kHz	0.009 % + 0.8 mV	Fluke 5700A
	(20 to 40) Hz	0.02 % + 2.5 mV	Fluke 5700A
	(10 to 20) Hz	0.05 % + 8 mV	Fluke 5700A
(2.2 to 22) V	(0.5 to 1) MHz	0.28 % + 8.5 mV	Fluke 5700A
	(300 to 500) kHz	0.14 % + 4.3 mV	Fluke 5700A
	(100 to 300) kHz	0.05 % + 1.5 mV	Fluke 5700A
	(50 to 100) kHz	0.03 % + 0.35 mV	Fluke 5700A
	(20 to 50) kHz	0.014 % + 0.16 mV	Fluke 5700A
	(0.04 to 20) kHz	0.008 % + 0.6 mV	Fluke 5700A
	(20 to 40) Hz	0.02 % + 0.25 mV	Fluke 5700A
	(10 to 20) Hz	0.05 % + 0.8 mV	Fluke 5700A
(0.22 to 2.2) V	(0.5 to 1) MHz	0.23 % + 850 μ V	Fluke 5700A
	(300 to 500) kHz	0.12 % + 350 μ V	Fluke 5700A
	(100 to 300) kHz	0.05 % + 130 μ V	Fluke 5700A
	(50 to 100) kHz	0.03 % + 70 μ V	Fluke 5700A
	(20 to 50) kHz	0.01 % + 16 μ V	Fluke 5700A
	(0.04 to 20) kHz	0.01 % + 6 μ V	Fluke 5700A
	(20 to 40) Hz	0.02 % + 25 μ V	Fluke 5700A
	(10 to 20) Hz	0.05 % + 80 μ V	Fluke 5700A
(22 to 220) mV	(0.5 to 1) MHz	0.35 % + 80 μ V	Fluke 5700A
	(300 to 500) kHz	0.18 % + 35 μ V	Fluke 5700A
	(100 to 300) kHz	0.12 % + 25 μ V	Fluke 5700A

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	(50 to 100) kHz	0.09 % + 25 μ V	Fluke 5700A
	(20 to 50) kHz	0.04 % + 8 μ V	Fluke 5700A
	(0.04 to 20) kHz	0.02 % + 8 μ V	Fluke 5700A
	(20 to 40) Hz	0.02 % + 8 μ V	Fluke 5700A
	(10 to 20) Hz	0.06 % + 13 μ V	Fluke 5700A
(2.2 to 22) mV	(0.5 to 1) MHz	0.36 % + 25 μ V	Fluke 5700A
	(300 to 500) kHz	0.21 % + 25 μ V	Fluke 5700A
	(100 to 300) kHz	0.14 % + 12 μ V	Fluke 5700A
	(50 to 100) kHz	0.11 % + 7 μ V	Fluke 5700A
	(20 to 50) kHz	0.07 % + 5 μ V	Fluke 5700A
	(0.04 to 20) kHz	0.04 % + 5 μ V	Fluke 5700A
	(20 to 40) Hz	0.04 % + 5 μ V	Fluke 5700A
	(10 to 20) Hz	0.07 % + 5 μ V	Fluke 5700A
(0 to 2.2) mV	(0.5 to 1) MHz	0.36 % + 25 μ V	Fluke 5700A
	(300 to 500) kHz	0.21 % + 25 μ V	Fluke 5700A
	(100 to 300) kHz	0.14 % + 13 μ V	Fluke 5700A
	(50 to 100) kHz	0.11 % + 7 μ V	Fluke 5700A
	(20 to 50) kHz	0.07 % + 4.5 μ V	Fluke 5700A
	(0.04 to 20) kHz	0.26 % + 4.5 μ V	Fluke 5700A
	(20 to 40) Hz	0.26 % + 4.5 μ V	Fluke 5700A
	(10 to 20) Hz	0.27 % + 4.5 μ V	Fluke 5700A

AC Voltage – Measure

Range	Frequency	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
(20 to 85) kV	60 Hz	1.0 %	Hipotronics KVM100-A
(2 to 20) kV	60 Hz	2.1 % + 20 V	Vitrek 4600A H. V. Meter
(1 to 2) kV	60 Hz	0.93 % + 2 V	Vitrek 4600A H. V. Meter
(100 to 700) V	(1 to 20) kHz	0.06 % + 20 mV	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.04 % + 20 mV	HP 3458A Opt. 002
	(1 to 40) Hz	0.04 % + 40 mV	HP 3458A Opt. 002
(10 to 100) V	(50 to 100) kHz	0.12 % + 2 mV	HP 3458A Opt. 002
	(20 to 50) kHz	0.04 % + 2 mV	HP 3458A Opt. 002
	(1 to 20) kHz	0.02 % + 2 mV	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.02 % + 2 mV	HP 3458A Opt. 002
	(1 to 40) Hz	0.02 % + 4 mV	HP 3458A Opt. 002
(1 to 10) V	(1 to 2) MHz	1.5 % + 1 mV	HP 3458A Opt. 002
	(0.3 to 1) MHz	1.0 % + 1 mV	HP 3458A Opt. 002

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	(100 to 300) kHz	0.30 % + 1 mV	HP 3458A Opt. 002
	(50 to 100) kHz	0.08 % + 200 μ V	HP 3458A Opt. 002
	(20 to 50) kHz	0.03 % + 200 μ V	HP 3458A Opt. 002
	(1 to 20) kHz	0.02 % + 200 μ V	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.008 % + 200 μ V	HP 3458A Opt. 002
	(1 to 40) Hz	0.01 % + 400 μ V	HP 3458A Opt. 002
(0.1 to 1) V	(1 to 2) MHz	1.5 % + 100 μ V	HP 3458A Opt. 002
	(0.3 to 1) MHz	1.0 % + 100 μ V	HP 3458A Opt. 002
	(100 to 300) kHz	0.30 % + 100 μ V	HP 3458A Opt. 002
	(50 to 100) kHz	0.08 % + 20 μ V	HP 3458A Opt. 002
	(20 to 50) kHz	0.03 % + 20 μ V	HP 3458A Opt. 002
	(1 to 20) kHz	0.02 % + 20 μ V	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.009 % + 20 μ V	HP 3458A Opt. 002
	(1 to 40) Hz	0.009 % + 40 μ V	HP 3458A Opt. 002
(10 to 100) mV	(1 to 2) MHz	1.5 % + 10 μ V	HP 3458A Opt. 002
	(0.3 to 1) MHz	1.0 % + 10 μ V	HP 3458A Opt. 002
	(100 to 300) kHz	0.30 % + 10 μ V	HP 3458A Opt. 002
	(50 to 100) kHz	0.08 % + 2 μ V	HP 3458A Opt. 002
	(20 to 50) kHz	0.04 % + 2 μ V	HP 3458A Opt. 002
	(1 to 20) kHz	0.02 % + 2 μ V	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.008 % + 2 μ V	HP 3458A Opt. 002
	(1 to 40) Hz	0.008 % + 4 μ V	HP 3458A Opt. 002
(0 to 10) mV	(100 to 300) kHz	4.0 % + 2 μ V	HP 3458A Opt. 002
	(50 to 100) kHz	0.50 % + 1 μ V	HP 3458A Opt. 002
	(20 to 50) kHz	0.11 % + 1 μ V	HP 3458A Opt. 002
	(1 to 20) kHz	0.05 % + 1 μ V	HP 3458A Opt. 002
	(0.04 to 1) kHz	0.02 % + 1 μ V	HP 3458A Opt. 002
	(1 to 40) Hz	0.03 % + 3 μ V	HP 3458A Opt. 002

NVLAP Code: 20/E10

LF Capacitance

Capacitance – Measuring Equipment

Range	Frequency (Hz)	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(0.33 to 1.09999) mF	20	0.47 % + 1 μ F	Fluke 5520A
(110 to 329.999) μ F	50	0.46 % + 0.3 μ F	Fluke 5520A
(33 to 109.999) μ F	80	0.46 % + 0.1 μ F	Fluke 5520A
(11 to 32.9999) μ F	120	0.41 % + 30 nF	Fluke 5520A
(3.3 to 10.9999) μ F	150	0.26 % + 10 nF	Fluke 5520A

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(1.1 to 3.29999) μ F	300	0.26 % + 3 nF	Fluke 5520A
(0.33 to 1.0999) μ F	600	0.26 % + 1 nF	Fluke 5520A
(110 to 329.999) nF	1 k	0.26 % + 0.3 nF	Fluke 5520A
(33 to 109.9999) nF	1 k	0.26 % + 0.1 nF	Fluke 5520A
(11 to 32.9999) nF	1 k	0.26 % + 0.1 nF	Fluke 5520A
(3.3 to 10.9999) nF	1 k	0.26 % + 0.01 nF	Fluke 5520A
(1.1 to 3.2999) nF	1 k	0.51 % + 0.01 nF	Fluke 5520A
(0.19 to 1.0999) nF	1 k	0.53 % + 0.01 nF	Fluke 5520A

NVLAP Code: 20/E20
Oscilloscopes

Sinewave Flatness

Range	Best Uncertainty (\pm) <small>note 1, 2, 4</small>	Remarks
(600 to 1100) MHz	5.1 % + 100 μ V	Fluke 5520A/SC1100
(300 to 600) MHz	4.1 % + 100 μ V	Fluke 5520A/SC1100
(100 to 300) MHz	2.2 % + 100 μ V	Fluke 5520A/SC1100
(0.05 to 100) MHz	1.7 % + 100 μ V	Fluke 5520A/SC1100

Rise Time

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
\leq 300 ps	2.6%	Fluke 5520A/SC1100

MECHANICAL

NVLAP Code: 20/M06
Force

Torque – Measure

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
5 in/lb to 250 ft/lb	1.0 %	C.D.I. 950-DT

NVLAP Code: 20/M08
Mass

Mass – Scales and Balances

Range	Best Uncertainty (\pm) <small>note 1, 2</small>	Remarks
2 kg	21 mg	ASTM Class 2 Mass Standards
1 kg	16 mg	ASTM Class 2 Mass Standards
500 g	12 mg	ASTM Class 2 Mass Standards

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200 g	1.3 mg	ASTM Class 2 Mass Standards
100 g	1.3 mg	ASTM Class 2 Mass Standards
50 g	1.3 mg	ASTM Class 2 Mass Standards
20 g	1.3 mg	ASTM Class 2 Mass Standards
10 g	1.3 mg	ASTM Class 2 Mass Standards
5 g	1.3 mg	ASTM Class 2 Mass Standards
2 g	1.3 mg	ASTM Class 2 Mass Standards
1 g	1.3 mg	ASTM Class 2 Mass Standards
500 mg	1.3 mg	ASTM Class 2 Mass Standards
200 mg	1.3 mg	ASTM Class 2 Mass Standards
100 mg	1.3 mg	ASTM Class 2 Mass Standards

Mass		
Range	Best Uncertainty (\pm) ^{note 1}	Remarks
20 kg	0.48 g	Echelon III
10 kg	0.26 g	Echelon III

Mass - Avoirdupois		
Range	Best Uncertainty (\pm) ^{note 1}	Remarks
50 lb	0.15 g	Echelon III
20 lb	0.11 g	Echelon III
10 lb	0.10 g	Echelon III

THERMODYNAMIC

NVLAP Code: 20/T03
Laboratory Thermometers

Temperature – Measure

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(-100 to 600) °C	0.018 °C	Hart 5626 w/Black Stack

Temperature – Measuring Equipment

Range	Best Uncertainty (\pm) ^{note 1, 2}	Remarks
(300 to 600) °C	0.35 °C + 0.005%	Hart 5626 w/Hart 7320 Bath
(150 to 300) °C	0.12 °C	Hart 5626 w/Hart 9122 Dry Block
(-20 to 150) °C	0.018 °C + 0.105%	Hart 5626 w/Hart 9122 Dry Block

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NVLAP Code: 20/T05

Pressure

Pressure – Pneumatic

Range

(-15 to 500) psi

Best Uncertainty (\pm) ^{note 1, 2}
75 μ psi/psi

Remarks

Ruska 7250xi Pressure Controller

Pressure – Hydraulic

Range

(500 to 15,000) psi

Best Uncertainty (\pm) ^{note 1, 2}
84 μ psi/psi

Remarks

Ametek T-150 Deadweight Tester

Pressure – Absolute

Range

(0 to 500) psiA

Best Uncertainty (\pm) ^{note 1, 2}
77 μ psi/psi + 0.001 psi

Remarks

Ruska 7250xi Pressure Controller

NVLAP Code: 20/T08

Thermocouple Devices

Thermocouple Type

Range

Best Uncertainty (\pm) ^{note 1, 2}

Remarks

Type B

(1550 to 1820) °C
(1000 to 1550) °C
(800 to 1000) °C
(600 to 800) °C

0.35 °C
0.32 °C
0.35 °C
0.45 °C

Fluke 5520A
Fluke 5520A
Fluke 5520A
Fluke 5520A

Type E

(650 to 1000) °C
(350 to 650) °C
(-25 to 350) °C
(-100 to -25) °C
(-250 to -100) °C

0.23 °C
0.19 °C
0.17 °C
0.19 °C
0.51 °C

Fluke 5520A
Fluke 5520A
Fluke 5520A
Fluke 5520A
Fluke 5520A

Type J

(760 to 1200) °C
(150 to 760) °C
(-30 to 150) °C
(-100 to -30) °C
(-210 to -100) °C

0.25 °C
0.20 °C
0.17 °C
0.19 °C
0.29 °C

Fluke 5520A
Fluke 5520A
Fluke 5520A
Fluke 5520A
Fluke 5520A

Type K

(1000 to 1372) °C
(120 to 1000) °C

0.41 °C
0.28 °C

Fluke 5520A
Fluke 5520A

2009-05-04 through 2010-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 200866-0

	(-25 to 120) °C	0.19 °C	Fluke 5520A
	(-100 to -25) °C	0.21 °C	Fluke 5520A
	(-200 to -100) °C	0.35 °C	Fluke 5520A
Type N	(410 to 1300) °C	0.29 °C	Fluke 5520A
	(120 to 410) °C	0.21 °C	Fluke 5520A
	(-25 to 120) °C	0.22 °C	Fluke 5520A
	(-100 to -25) °C	0.24 °C	Fluke 5520A
	(-200 to -100) °C	0.41 °C	Fluke 5520A
Type R	(1000 to 1767) °C	0.47 °C	Fluke 5520A
	(400 to 1000) °C	0.35 °C	Fluke 5520A
	(250 to 400) °C	0.36 °C	Fluke 5520A
	(0 to 250) °C	0.58 °C	Fluke 5520A
Type S	(1400 to 1767) °C	0.47 °C	Fluke 5520A
	(1000 to 1400) °C	0.38 °C	Fluke 5520A
	(250 to 1000) °C	0.37 °C	Fluke 5520A
	(0 to 250) °C	0.48 °C	Fluke 5520A
Type T	(120 to 400) °C	0.17 °C	Fluke 5520A
	(0 to 120) °C	0.19 °C	Fluke 5520A
	(-150 to 0) °C	0.26 °C	Fluke 5520A
	(-250 to -150) °C	0.64 °C	Fluke 5520A

TIME AND FREQUENCY

NVLAP Code: 20/F01
Frequency Dissemination

Frequency Measuring Equipment

Range	Best Uncertainty (\pm) ^{note 3}	Remarks
10 MHz	5.8×10^{-10}	Rubidium Frequency Standard

1. Represents an expanded uncertainty using a coverage factor, $k=2$ at an approximate level of confidence of 95%.
2. Onsite calibration is available.
3. Uncertainty values of derivatives of 10 MHz will differ due resolution, noise, and gating errors.
4. Referenced to 50 kHz

2009-05-04 through 2010-03-31

Effective dates

Sally S. Bruce

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