



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Northwest Metrology
3040 H Street, Bakersfield, CA 93301

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017, Z540-1-1994 and Z540.3

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated 2017):

Dimensional, Electrical, and Thermodynamic Calibrations
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Initial Accreditation Date:

September 1, 2020

Issue Date:

April 26, 2022

Expiration Date:

May 31, 2024

Accreditation No.:

92198

Certificate No.:

L22-328

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjilabs.com



Certificate of Accreditation: Supplement

Northwest Metrology

3040 H Street, Bakersfield, CA 93301

Contact Name: Anthony Pace Phone: 661-863-0158

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Calipers ^F	0.05 in to 4 in	(1.67 + 7.09L) μ in	ASME Grade 00 Gauge Blocks NAVAIR 17-20MD-07
	4 in to 12 in	(2.55 + 4.88L) μ in	
	12 in to 48 in	(5.14 + 1.13L) μ in	
Micrometers ^F	0.05 in to 4 in	(1.67 + 7.09L) μ in	ASME Grade 00 Gauge Blocks NAVAIR 17-20MD-06
	4 in to 12 in	(2.55 + 4.88L) μ in	
	12 in to 48 in	(5.14 + 1.13L) μ in	

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure DC Voltage ^{FO}	0 mV to 100 mV	1 μ V	Transmille 8081 Procal Procedures based on Manufacturer's Specifications
	100 mV to 1 000 mV	9.4 μ V	
	1 V to 10 V	96 μ V	
	10 V to 100 V	1.2 mV	
	100 V to 1 000 V	13 mV	
Equipment to Output DC Voltage ^{FO}	1 mV to 202 mV	2.3 μ V/V	Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
	202 mV to 2 020 mV	3.3 μ V/V	
	2.02 V to 20.2 V	4.2 μ V/V	
	20.2 V to 202 V	2.1 mV/V	
	202 V to 1 020 V	11 mV/V	
Equipment to Measure DC Current ^{FO}	0 nA to 10 nA	0.16 nA	Transmille 8081/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
	10 nA to 100 nA	0.32 nA	
	100 nA to 1 000 nA	0.37 nA	
	1 μ A to 10 μ A	0.62 nA	
	10 μ A to 100 μ A	1.6 nA	
	100 μ A to 1 000 μ A	61 nA	
	1 mA to 10 mA	0.62 μ A	
	10 mA to 100 mA	5.6 μ A	
	100 mA to 1 000 mA	0.26 mA	
	1 A to 10 A	6.2 mA	
	10 A 30 A	29 mA	
	20 A to 30 A	0.039 A	



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Equipment to Output DC Current ^{F0}	1 μ A to 202 μ A	2.1 μ A/A	Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
	202 μ A to 2 020 μ A	3.7 μ A/A	
	2.02 mA to 20.2 mA	4.2 μ A/A	
	20.2 mA to 202 mA	3.2 μ A/A	
	202 mA to 2 020 mA	0.37 mA/A	
	2.02 A to 20.2 A	0.59 mA/A	
	20.2 A to 30 A	9 mA/A	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			Transmille 8081/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
10 Hz to 40 Hz	0 mV to 100 mV	0.05 % of reading	
40 Hz to 200 Hz	0 mV to 100 mV	0.021 % of reading	
200 Hz to 1 000 Hz	0 mV to 100 mV	0.017 % of reading	
1 kHz to 2 kHz	0 mV to 100 mV	0.017 % of reading	
2 kHz to 20 kHz	0 mV to 100 mV	0.025 % of reading	
20 kHz to 100 kHz	0 mV to 100 mV	0.054 % of reading	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			Transmille 8081/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
10 Hz to 40 Hz	100 mV to 1 000 mV	0.04 % of reading	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			
40 Hz to 200 Hz	1 V to 10 V	0.019 % of reading	
200 Hz to 1 000 Hz	1 V to 10 V	0.015 % of reading	
1 kHz to 2 kHz	1 V to 10 V	0.015 % of reading	
2 kHz to 20 kHz	1 V to 10 V	0.025 % of reading	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			Transmille 8081/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
20 kHz to 100 kHz	1 V to 10 V	0.06 % of reading	
100 kHz to 1 000 kHz	1 V to 10 V	1 % of reading	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			
40 Hz to 200 Hz	10 V to 100 V	0.05 % of reading	
Equipment to Measure AC Voltage ^{F0} (at the listed frequencies)			
40 Hz to 200 Hz	100 V to 1 000 V	0.02 % of reading	
200 Hz to 1 000 Hz	100 V to 1 000 V	0.018 % of reading	
1 kHz to 2 kHz	100 V to 1 000 V	0.018 % of reading	
2 kHz to 20 kHz	100 V to 1 000 V	0.03 % of reading	
20 kHz to 50 kHz	100 V to 1 000 V	0.08 % reading	



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Equipment to Measure AC Current ^{FO} (at the listed frequencies)			Transmille 8081/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
10 Hz to 40 Hz	0.1 nA to 1 000 nA	0.015 μ A + 0.05 % of reading	
4 Hz to 1 000 Hz	0.1 nA to 1 000 nA	0.012 μ A + 0.03 % of reading	
1 kHz to 10 kHz	0.1 nA to 1 000 nA	0.03 μ A + 0.07 % of reading	
Equipment to Measure AC Current ^{FO} (at the listed frequencies)			
10 Hz to 40 Hz	20 A to 30 A	12 mA + 0.08 % of reading	
40 Hz to 1 000 Hz	20 A to 30 A	9.2 mA + 0.07 % of reading	Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
10 Hz to 20 Hz	1 mV to 2.2 mV	2.6 mV/V	
20 Hz to 40 Hz	1 mV to 2.2 mV	1.6 mV/V	
40 Hz to 20 000 Hz	1 mV to 2.2 mV	2.1 mV/V	
20 kHz to 50 kHz	1 mV to 2.2 mV	4.8 mV/V	
50 kHz to 100 kHz	1 mV to 2.2 mV	7.4 mV/V	
100 kHz to 300 kHz	1 mV to 2.2 mV	6 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
10 Hz to 20 Hz	2.2 mV to 22 mV	0.4 mV/V	
20 Hz to 40 Hz	2.2 mV to 22 mV	0.39 mV/V	
40 Hz to 20 000 Hz	2.2 mV to 22 mV	0.45 mV/V	
20 kHz to 50 kHz	2.2 mV to 22 mV	2.2 mV/V	
50 kHz to 100 kHz	2.2 mV to 22 mV	1.7 mV/V	
100 kHz to 300 kHz	2.2 mV to 22 mV	5.6 mV/V	
300 kHz to 500 kHz	2.2 mV to 22 mV	4.7 mV/V	
500 kHz to 1 000 kHz	2.2 mV to 22 mV	5.2 mV/V	Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
10 Hz to 40 Hz	22 mV to 220 mV	2.3 μ V/mV	
40 Hz to 999 Hz	22 mV to 220 mV	2.3 μ V/mV	
1 kHz to 20 kHz	22 mV to 220 mV	2.2 μ V/mV	
20 kHz to 100 kHz	22 mV to 220 mV	2.4 μ V/mV	
100 kHz to 500 kHz	22 mV to 220 mV	2.6 μ V/mV	
500 kHz to 1 000 kHz	22 mV to 220 mV	14 mV/V	



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Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
10 Hz to 20 Hz	220 mV to 2 200 mV	0.55 mV/V	
20 Hz to 40 Hz	220 mV to 2 200 mV	0.5 mV/V	
40 Hz to 20 000 Hz	220 mV to 2 200 mV	0.5 mV/V	
20 kHz to 50 kHz	220 mV to 2 200 mV	0.82 mV/V	
50 kHz to 100 kHz	220 mV to 2 200 mV	4.1 mV/V	
100 kHz to 300 kHz	220 mV to 2 200 mV	12 mV/V	
300 kHz to 500 kHz	220 mV to 2 200 mV	7.7 mV/V	
500 kHz to 1 000 kHz	220 mV to 2 200 mV	8.9 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
10 Hz to 20 Hz	2.2 V to 22 V	0.68 mV/V	
20 Hz to 40 Hz	2.2 V to 22 V	0.68 mV/V	
40 Hz to 20 000 Hz	2.2 V to 22 V	0.73 mV/V	
20 kHz to 50 kHz	2.2 V to 22 V	0.86 mV/V	
50 kHz to 100 kHz	2.2 V to 22 V	2.2 mV/V	
100 kHz to 300 kHz	2.2 V to 22 V	5.5 mV/V	
300 kHz to 500 kHz	2.2 V to 22 V	18 mV/V	
500 kHz to 1 000 kHz	2.2 V to 22 V	18 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
20 Hz to 40 Hz	22 V to 220 V	0.82 mV/V	
40 Hz to 20 000 Hz	22 V to 220 V	0.91 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
15 Hz to 50 Hz	220 V to 250 V	0.76 mV/V	
50 Hz to 1 000 Hz	220 V to 250 V	0.68 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
50 Hz to 1 000 Hz	250 V to 750 V	0.51 mV/V	
Equipment to Output AC Voltage ^{FO} (at the listed frequencies)			
50 Hz to 1 000 Hz	750 V to 1 000 V	0.72 mV/V	



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Equipment to Output AC Current ^{FO} (at the listed frequencies)			Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
10 Hz to 20 Hz	1 μ A to 220 μ A	5.9 mA/A	
20 Hz to 40 Hz	1 μ A to 220 μ A	2.9 mA/A	
40 Hz to 1 000 Hz	1 μ A to 220 μ A	1.5 mA/A	
1 kHz to 5 kHz	1 μ A to 220 μ A	1.9 mA/A	
5 kHz to 10 kHz	1 μ A to 220 μ A	8.2 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)			
10 Hz to 20 Hz	220 μ A to 2 200 μ A	5.9 mA/A	
20 Hz to 40 Hz	220 μ A to 2 200 μ A	0.91 mA/A	
40 Hz to 1 000 Hz	220 μ A to 2 200 μ A	5 mA/A	
1 kHz to 5 kHz	220 μ A to 2 200 μ A	2 mA/A	
5 kHz to 10 kHz	220 μ A to 2 200 μ A	2 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)			
10 Hz to 20 Hz	2.2 mA to 22 mA	5.9 mA/A	
20 Hz to 40 Hz	2.2 mA to 22 mA	0.9 mA/A	
40 Hz to 1 000 Hz	2.2 mA to 22 mA	1.7 mA/A	
1 kHz to 5 kHz	2.2 mA to 22 mA	5 mA/A	
5 kHz to 10 kHz	2.2 mA to 22 mA	8.2 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)			Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
10 Hz to 20 Hz	22 mA to 220 mA	5.9 mA/A	
20 Hz to 40 Hz	22 mA to 220 mA	3.1 mA/A	
40 Hz to 1 000 Hz	22 mA to 220 mA	2.4 mA/A	
1 kHz to 5 kHz	22 mA to 220 mA	5 mA/A	
5 kHz to 10 kHz	22 mA to 220 mA	5 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)			
40 Hz to 1 000 Hz	220 mA to 1 000 mA	4.5 mA/A	
1 kHz to 5 kHz	220 mA to 1 000 mA	1.3 mA/A	
5 kHz to 10 kHz	220 mA to 1 000 mA	3.7 mA/A	



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Equipment to Output AC Current ^{FO} (at the listed frequencies)			Transmille 4010/Fluke 5522A Procal Procedures based on Manufacturer's Specifications
40 Hz to 1 000 Hz	1 A to 2.2 A	3.6 mA/A	
1 kHz to 5 kHz	1 A to 2.2 A	3.5 mA/A	
5 kHz to 10 kHz	1 A to 2.2 A	20 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)			
30 Hz to 99 Hz	2.02 A to 30 A	14 mA/A	
45 Hz to 99 Hz	2.02 A to 30 A	14 mA/A	
100 Hz to 1 000 Hz	2.02 A to 30 A	15 mA/A	
1 kHz to 5 kHz	2.02 A to 30 A	18 mA/A	
5 kHz to 10 kHz	2.02 A to 30 A	22 mA/A	
Equipment to Output AC Current ^{FO} (at the listed frequencies)- 2 Turn Coil			Transmille 4010 w/ Option EA002 Procal Procedures based on Manufacturer's Specifications
Up to 60 Hz	Up to 60 A	0.18 A + 1.04 % of reading	
Equipment to Output AC Current ^{FO} (at the listed frequencies)- 10 Turn Coil			
Up to 60 Hz	Up to 300 A	0.26 A + 1.24 % of reading	
Equipment to Output AC Current ^{FO} (at the listed frequencies)- 50 Turn Coil			Transmille 8081 Procal Procedures based on Manufacturer's Specifications
Up to 60 Hz	Up to 1 500 A	0.88 A + 0.98 % of reading	
Electrometer to Measure Resistance at 50 V ^{FO}	5 M Ω to 45 M Ω	0.014 % of reading	
	40 M Ω to 450 M Ω	0.045 % of reading	
	400 M Ω to 4 500 M Ω	0.18 % of reading	
	4 G Ω to 1 000 G Ω	2.3 % of reading	
Electrometer to Measure Resistance at 100 V ^{FO}	8 M Ω to 90 M Ω	0.014 % of reading	
	80 M Ω to 900 M Ω	0.041 6 % of reading	
	800 M Ω to 9 000 M Ω	0.181 % of reading	
	8 G Ω to 2 000 G Ω	2.3 % of reading	
Electrometer to Measure Resistance at 150 V ^{FO}	12 M Ω to 135 M Ω	0.013 5 % of reading	
	120 M Ω to 1 350 M Ω	0.046 % of reading	
	1 200 M Ω to 13 500 M Ω	0.49 % of reading	
	12 G Ω to 2 000 G Ω	1.766 7 % of reading	



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Electrometer to Measure Resistance at 200 V ^{FO}	20 M Ω to 180 M Ω	0.013 5 % of reading	Transmille 8081 Procal Procedures based on Manufacturer's Specifications
	160 M Ω to 1 800 M Ω	0.043 % of reading	
	1 600 M Ω to 18 000 M Ω	0.181 % of reading	
	16 G Ω to 2 000 G Ω	1.5 % of reading	
Electrometer to Measure Resistance at 250 V ^{FO}	25 M Ω to 225 M Ω	0.013 2 % of reading	
	200 M Ω to 2 250 M Ω	0.043 % of reading	
	2 000 M Ω to 22 500 M Ω	0.18 % of reading	
	20 G Ω to 2 000 G Ω	1.34 % of reading	
Electrometer to Measure Resistance at 300 V ^{FO}	30 M Ω to 270 M Ω	0.013 2 % of reading	
	240 M Ω to 2 700 M Ω	0.041 5 % of reading	
	2 400 M Ω to 27 000 M Ω	0.181 % of reading	
	24 G Ω to 2 000 G Ω	1.23 % of reading	
Equipment to Measure Resistance ^{FO}	1 Ω	0.001 5 % of reading	
	10 Ω	0.001 % of reading	
	100 Ω	0.000 9 % of reading	
	1 k Ω	0.000 8 % of reading	
	10 k Ω	0.000 95 % of reading	
	100 k Ω	0.001 % of reading	
	1 M Ω	0.001 1 % of reading	
Equipment to Measure Resistance ^{FO}	10 M Ω	0.001 5 % of reading	Transmille 8081/Agilent 3458A
Equipment to Output Resistance ^{FO}	0 Ω to 100 Ω	50 m Ω + 0.01 % of range	Transmille 4010/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
	100 Ω to 330 Ω	50 m Ω + 0.01 % of range	
	330 Ω to 1 000 Ω	50 m Ω + 0.01 % of range	
	1 k Ω to 3.3 k Ω	50 m Ω + 0.01 % of range	
	10 k Ω to 33 k Ω	50 m Ω + 0.01 % of range	
	33 k Ω to 100 k Ω	50 m Ω + 0.01 % of range	
	100 k Ω to 330 k Ω	50 m Ω + 0.01 % of range	
	330 k Ω to 1 000 k Ω	50 m Ω + 0.01 % of range	
	1 M Ω to 3.3 M Ω	50 m Ω + 0.01 % of range	
	3.3 M Ω to 10 M Ω	50 Ω + 0.01 % of range	
	10 M Ω to 33 M Ω	2.5 k Ω + 0.01 % of range	
	33 M Ω to 100 M Ω	100 k Ω + 0.05 % of range	



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Equipment to Output Resistance ^{FO}	100 M Ω to 330 M Ω	100 k Ω + 1 % of range	Transmille 4010/Agilent 3458A Procal Procedures based on Manufacturer's Specifications
	330 M Ω to 1 100 M Ω	500 k Ω + 2 % of range	
	0 Ω	0.005 Ω	
	0.1 Ω	0.005 Ω + 0.002 5 % set	
	1 Ω	0.005 Ω + 0.002 5 % set	
	10 Ω	0.005 Ω + 0.002 5 % set	
	100 Ω	0.005 Ω + 0.001 8 % of set	
	1 k Ω	0.005 Ω + 0.001 8 % of set	
	10 k Ω	0.05 Ω + 0.000 8 % of set	
	100 k Ω	0.5 Ω + 0.001 8 % of set	
	1 M Ω	5 Ω + 0.002 5 % of set	
	10 M Ω	100 Ω + 0.009 % of set	
	100 M Ω	2 000 Ω + 0.18 % of set	
1 000 M Ω	30 000 Ω + 1 % of set		
Equipment to Output Capacitance ^{FO}	1 nF	0.25 % of reading	Transmille 4010/Agilent 3458A
	2 nF	0.25 % of reading	
	5 nF	0.25 % of reading	
	10 nF	0.25 % of reading	
	100 nF	0.25 % of reading	
	1 μ F	0.4 % of reading	
Equipment to Output Capacitance ^{FO}	10 μ F	0.6 % of reading	Transmille 4010 w/ Option EA001A NAVAIR 17-20ST-208
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B ^{FO}	600 $^{\circ}$ C to 800 $^{\circ}$ C	1.5 $^{\circ}$ C	
	800 $^{\circ}$ C to 1 000 $^{\circ}$ C	1.3 $^{\circ}$ C	
	1 000 $^{\circ}$ C to 1 550 $^{\circ}$ C	1.1 $^{\circ}$ C	
	1 550 $^{\circ}$ C to 1 820 $^{\circ}$ C	1.1 $^{\circ}$ C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type C ^{FO}	0 $^{\circ}$ C to 150 $^{\circ}$ C	0.62 $^{\circ}$ C	
	150 $^{\circ}$ C to 650 $^{\circ}$ C	0.54 $^{\circ}$ C	
	650 $^{\circ}$ C to 1 000 $^{\circ}$ C	0.64 $^{\circ}$ C	
	1 000 $^{\circ}$ C to 1 800 $^{\circ}$ C	0.94 $^{\circ}$ C	
	1 800 $^{\circ}$ C to 2 316 $^{\circ}$ C	1.4 $^{\circ}$ C	



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Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E ^{FO}	-250 °C to -100 °C	1 °C	Transmille 4010 w/ Option EA001A NAVAIR 17-20ST-208
	-100 °C to -25 °C	0.2 °C	
	-25 °C to 350 °C	0.18 °C	
	350 °C to 650 °C	0.24 °C	
	650 °C to 1 000 °C	0.3 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J ^{FO}	-210 °C to -100 °C	0.46 °C	
	-100 °C to -30 °C	0.22 °C	
	-30 °C to 150 °C	0.18 °C	
	150 °C to 760 °C	0.28 °C	
	760 °C to 1 200 °C	0.38 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K ^{FO}	-200 °C to -100 °C	0.54 °C	
	-100 °C to -25 °C	0.3 °C	
	-25 °C to 120 °C	0.22 °C	
	120 °C to 1 000 °C	0.4 °C	
	1 000 °C to 1 370 °C	0.52 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type L ^{FO}	-200 °C to -100 °C	0.68 °C	
	-100 °C to 800 °C	0.66 °C	
	800 °C to 900 °C	0.68 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N ^{FO}	-200 °C to -100 °C	0.84 °C	
	-100 °C to -25 °C	0.4 °C	
	-25 °C to 120 °C	0.32 °C	
	120 °C to 410 °C	0.3 °C	
	410 °C to 1 300 °C	0.48 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R ^{FO}	0 °C to 250 °C	1.6 °C	
	250 °C to 1 000 °C	0.88 °C	
	1 000 °C to 1 760 °C	1.1 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S ^{FO}	0 °C to 250 °C	1.6 °C	
	250 °C to 1 000 °C	0.88 °C	
	1 000 °C to 1 760 °C	1.1 °C	



Certificate of Accreditation: Supplement

Northwest Metrology

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 Contact Name: Anthony Pace Phone: 661-863-0158

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T ^{FO}	-250 °C to -150 °C	1.2 °C	Transmille 4010 w/ Option EA001A NAVAIR 17-20ST-208
	-150 °C to 0 °C	0.2 °C	
	0 °C to 120 °C	0.18 °C	
	120 °C to 400 °C	0.22 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type U ^{FO}	-200 °C to 0 °C	0.84 °C	
	0 °C to 600 °C	0.6 °C	

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Scales and Balances ^{FO}	1 mg to 10 kg	$(5.0 \times 10^{-2} + 2.0 \times 10^{-2}Wt)$ g	ASTM 1 Weight Set NAVAIR 17-20MM-18 and 17-20MM-08
	25 lb	28 mg	ASTM 1 Weights
	50 lb	57 mg	NAVAIR 17-20MM-18 and 17-20MM-08
Weights ^{FO}	1mg to 600g	$(2.59 \times 10^{-4} + 1.00 \times 10^{-6}Wt)$ g	TA-220 GX-600 NAVAIR 17- 20MM-04
Force Measurement Devices ^F	500 lbf to 25 000 lbf	2.5 lbf	Morehouse NAVAIR 17-20MF-09

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Hydraulic Pressure Source/Measure ^F	0 psi to 1 000 psi	0.36 psi	RPM4-DWT NAVAIR 17-20MP-155
	0 psi to 30 000 psi	3.24 psi	
Pneumatic Pressure Source/Measure ^F	0 psia to 15 psia	0.006 psia	PPC2 AF NAVAIR 17-20MP-155
	0 psia to 30 psia	0.012 psi	
	0 psia to 50 psia	0.02 psi	
	0 psig/a to 300 psig/a	0.12 psig/a	
	0 psig/a to 600 psig/a	0.24 psig/a	
	0 psig/a to 1 000 psig/a	0.4 psig/a	
Vacuum Source/Measure ^F	-14.7 psig to 0 psig	0.006 psig	
Torque Wrenches ^F	0.84 ft-lb to 1 956 ft-lb	0.25% of reading	AKO TSD011, CDI 2000-14-0, & TSD1011 NAVAIR 17-20MU-81



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Accreditation is granted to the facility to perform the following calibrations:

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Source ^F	-30 to 33 °C	0.25 °C	Hart Scientific 7102, Fluke 9143, Ametek ATC-650B w/ PRT, & Ametek RTC-156C NAVAIR 17-20ST-208
	33 to 650 °C	0.11 °C	
Temperature IR Source ^F	50 °C to 100 °C	0.8 °C	Reed Instruments BX-500
	100 °C to 200 °C	0.2 °C	NAVAIR 17-20ST-190
	200 °C to 500 °C	0.4 °C	
Block Calibrator - Wet/Dry ^F	-200 °C to 500 °C	0.1 °C	Fluke 7102 w/Quartz Shielded SPRT GIDEP
Humidity Indicators ^F	11% RH 33% RH 75% RH	0.5 % RH 0.5 % RH 0.5 % RH	Vaisala HMK-15 GIDEP



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Accreditation is granted to the facility to perform the following calibrations:

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this calibration at its fixed location.
4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations via mobile lab. Example: Outside Micrometer^O would mean that the laboratory performs this calibration onsite at the customer's location.
5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
6. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.