



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

A.V.C. Laboratory, Inc.

16542 NW 54th Avenue, Miami Gardens, FL 33014

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

ISO/IEC 17025:2017

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 April 2017):

Acoustic, Dimensional, Electrical, Mass, Force, and Weighing Devices, Optical, Mechanical, Time & Frequency and Thermodynamic Calibration
(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:

August 11, 2016

Issue Date:

November 12, 2020

Expiration Date:

January 31, 2023

Accreditation No.:

83028

Certificate No.:

L20-692

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

A.V.C. Laboratory, Inc.

16542 NW 54th Avenue, Miami Gardens, FL, 33014
 Contact Name: Freddy Vergel Phone: 786-542-8710

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

Acoustical

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
Sound Level – Measure (Meters) ^{FO}	94 dB 114 dB	0.32 dB 0.32 dB	Sound Level Calibrator GIDEP

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 ^{FO}	0.05 in to 24 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks, Long Blocks GIDEP & AVP-100
	0.05 in to 24 in (Resolution: 0.000 5 in)	(72 + 3L) μ in	
Micrometers ^{FO}	0.05 in to 18 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks, Long Blocks, Optical Flat GIDEP & AVP-100
	0.05 in to 12 in (Resolution: 0.000 1 in)	(15 + 3L) μ in	
	0.05 in to 4 in (Resolution: 0.000 05 in)	(8 + 1.5L) μ in	
	0.05 in to 4 in (Resolution: 0.000 02in)	(2 + 0.5L) μ in	
Height Gages ^{FO}	0.001 in to 24 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks, Long Blocks GIDEP & AVP-100
	0.001 in to 24 in (Resolution: 0.000 5 in)	(72 + 3L) μ in	
	0.001 in to 24 in (Resolution: 0.000 1 in)	(15 + 3L) μ in	
	0.001 in to 24 in (Resolution: 0.000 05 in)	(8 + 1.5L) μ in	
Depth Gages ^{FO}	0.001 in to 12 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks, Long Blocks GIDEP & AVP-100
	0.001 in to 12 in (Resolution: 0.000 5 in)	(72 + 3L) μ in	
	0.001 in to 12 in (Resolution: 0.000 05 in)	(8 + 1.5L) μ in	
Tool Maker Microscope – Linearity ^{FO}	0.001 in to 2 in	(160 + 6L) μ in	Master Glass Scales GIDEP



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Indicators ^{FO}	0.001 in to 2 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks GIDEP & AVP-101
	0.001 in to 1 in (Resolution: 0.000 1 in)	(15 + 3L) μ in	
	0.001 in to 2 in (Resolution: 0.000 5 in)	(32 + 3L) μ in	
	0.001 in to 0.5 in (Resolution: 0.000 05 in)	(8 + 1.5L) μ in	
	0.000 01 in to 0.2 in (Resolutions: 0.000 01 in)	(2 + 0.5L) μ in	
End Rods ^{FO}	Up to 1 in	(9 + 1.5L) μ in	Starrett Multi-Axis w/Precision probe, Gage Blocks GIDEP & AVP-103
	2 in to 4 in	(15 + 3L) μ in	
	5 in to 8 in	(23 + 6L) μ in	
	9 in to 11 in	(30 + 6L) μ in	
	12 in to 18 in	(38 + 6L) μ in	
	19 in to 24 in	(45 + 6L) μ in	
Surface Plate – Repeatability ^{FO}	Up to 72 in diagonal	65 μ in	Repeat-o-meter, Starrett Multi-Axis GIDEP
Surface Roughness Tester - Ra ^{FO}	2 μ in to 500 μ in	1.0 μ in	Roughness Specimen GIDEP
Pin Gages ^{FO}	0.001 in to 1.000 in (Class ZZ) (Class Z) (Class X) (Class XX)	65 μ in 40 μ in 25 μ in 20 μ in	Z-Mike Laser Micrometer GIDEP & AVP-107
Steel Ruler & Master Scales ^{FO}	0.001 in to 36 in (Resolution: 0.001 in)	(145 + 6L) μ in	Gage Blocks, Long Blocks AVP-125
	0.001 in to 2 in (Resolution: 0.000 1 in)	(160 + 6L) μ in	
	0.001 in to 12 in (Resolution: 0.000 7 in)	(350 + 6L) μ in	



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Bore Measurement Devices ^{FO}	0.125 in to 4 in (Resolution: 0.000 1 in)	(15 + 3L) μ in	Gage Blocks Set Ring Gages Set GIDEP
	0.125 in to 4 in (Resolution: 0.000 5 in)	(72 + 3L) μ in	
Optical Comparator ^{FO}			Gage Blocks Set, Long Blocks, Angle Gage Blocks Set GIDEP & AVP-114
Linearity ^{FO}	0.001 in to 12 in	(350 + 6L) μ in	
Angular ^{FO}	0.01 ° to 360 °	5 arc s	
Crimp Tools ^{FO}	0.013 in to 0.073 in	0.000 07 in	Go/No Go Pin Set GIDEP & AVP-100
Almen Gages ^{FO}	0.001 in to 0.5 in (Resolutions: 0.000 1 in)	(15 + 3L) μ in	Gage Blocks, GIDEP & AVP-135
	0.001 in to 0.5 in (Resolutions: 0.000 05 in)	(8 + 1.5L) 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 ^F	0.6 mV to 100 mV	2.6 μ V/V + 3 μ V	Fluke 8846A GIDEP
	100 mV to 1 V	3.1 μ V/V + 1.4 μ V	
	1 V to 10 V	1.6 μ V/V + 13 μ V	
	10 V to 100 V	12 μ V/V + 1.9 mV	
	100 V to 1 000 V	11 μ V/V + 2.4 mV	
Equipment to Output DC Voltage ^F	0.6 mV to 330 mV	4 μ V/V + 1 μ V	Fluke 5520A GIDEP
	330 mV to 3.3 V	3 μ V/V + 2 μ V	
	3.3 V to 33 V	3 μ V/V + 20 μ V	
	33 V to 330 V	3 μ V/V + 150 μ V	
	330 V to 1 000 V	3 μ V/V + 1.5 mV	



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Equipment to Output DC Current ^F	0.1 mA to 3.29 mA	10 μ A/A + 0.1 μ A	Fluke 5520A GIDEP
	3.3 mA to 32.9 mA	10 μ A/A + 0.2 μ A	
	33 mA to 329.9 mA	20 μ A/A + 2.5 μ A	
	330 mA to 1.09 A	20 μ A/A + 40 μ A	
	1.1 A to 2.9 A	65 μ A/A + 40 μ A	
	3 A to 10.9 A	60 μ A/A + 500 μ A	
	11 A to 20.5 A	90 μ A/A + 750 μ A	
Equipment to Measure DC Current ^F	0.1 mA to 1 mA	0.04 % + 0.2 μ A	Fluke 8846A GIDEP
	1 mA to 10 mA	0.06 % + 2.9 μ A	
	10 mA to 100 mA	0.04 % + 20 μ A	
	100 mA to 400 mA	0.05 % + 0.1 mA	
	400 mA to 1 A	0.07 % + 0.3 mA	
	1 A to 3 A	0.08 % + 1.2 mA	
	3 A to 10 A	0.15 % + 7.4 mA	
Equipment to Output Resistance ^F	0.1 Ω to 10.9 Ω	10 $\mu\Omega/\Omega$ + 5 m Ω	Fluke 5520A GIDEP
	11 Ω to 32.9 Ω	6 $\mu\Omega/\Omega$ + 5 m Ω	
	33 Ω to 109.9 Ω	5 $\mu\Omega/\Omega$ + 5 m Ω	
	110 Ω to 329.9 Ω	5 $\mu\Omega/\Omega$ + 5 m Ω	
	330 Ω to 1.09 k Ω	5 $\mu\Omega/\Omega$ + 5 m Ω	
	1.1 k Ω to 3.29 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	3.3 k Ω to 10.9 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	11 k Ω to 32.9 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	33 k Ω to 109.9 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	110 k Ω to 329.9 k Ω	8 $\mu\Omega/\Omega$ + 5 m Ω	
	330 k Ω to 1.09 M Ω	6 $\mu\Omega/\Omega$ + 5 m Ω	
	1.1 M Ω to 3.29 M Ω	12 $\mu\Omega/\Omega$ + 5 m Ω	
	3.3 M Ω to 10.9 M Ω	18 $\mu\Omega/\Omega$ + 5 m Ω	
	11 M Ω to 32.9 M Ω	70 $\mu\Omega/\Omega$ + 5 m Ω	
	33 M Ω to 109.9 M Ω	85 $\mu\Omega/\Omega$ + 5 m Ω	
	110 M Ω to 329.9 M Ω	280 $\mu\Omega/\Omega$ + 5 m Ω	
330 M Ω to 1 100 M Ω	1 100 $\mu\Omega/\Omega$ + 5 m Ω		



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Equipment to Measure Resistance ^F	0.1 Ω to 10 Ω	60 μΩ/Ω + 2.3 mΩ	Fluke 8846A GIDEP
	10 Ω to 100 Ω	30 μΩ/Ω + 6.9 mΩ	
	100 Ω to 1 kΩ	13 μΩ/Ω + 0.052 Ω	
	1 kΩ to 10 kΩ	14 μΩ/Ω + 0.52 Ω	
	10 kΩ to 100 kΩ	14 μΩ/Ω + 5.2 Ω	
	100 kΩ to 1 MΩ	12 μΩ/Ω + 52 Ω	
	1 MΩ to 10 MΩ	16 μΩ/Ω + 1.2 kΩ	
	10 MΩ to 100 MΩ	43 μΩ/Ω + 47 kΩ	
	100 MΩ to 1 GΩ	560 μΩ/Ω + 8.7 MΩ	
Equipment to Output Capacitance ^F	0.19 nF to 0.39 nF	5 mF/F + 0.01 nF	Fluke 5520A GIDEP
	0.4 nF to 1.09 nF	2 mF/F + 0.01 nF	
	1.1 nF to 3.29 nF	1 mF/F + 0.01 nF	
	3.3 nF to 10.9 nF	1 mF/F + 0.01 nF	
	11 nF to 32.9 nF	1 mF/F + 0.1 nF	
	33 nF to 109.9 nF	1 mF/F + 0.1 nF	
	110 nF to 329.9 nF	1 mF/F + 0.3 nF	
	0.33 μF to 1.09 μF	1 mF/F + 1 nF	
	1.1 μF to 3.29 μF	1 mF/F + 3 nF	
	3.3 μF to 10.9 μF	1 mF/F + 10 nF	
	11 μF to 32.9 μF	1 mF/F + 30 nF	
	33 μF to 109.9 μF	1 mF/F + 100 nF	
	110 μF to 329.9 μF	1 mF/F + 300 nF	
	0.33 μF to 1.09 mF	1 mF/F + 1 μF	
	1.1 mF to 3.29 mF	1 mF/F + 3 μF	
	3.3 mF to 10.9 mF	1 mF/F + 10 μF	
	11 mF to 32.9 mF	1 mF/F + 30 μF	
	33 mF to 110 mF	1 mF/F + 100 μF	



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Equipment to Measure Capacitance	0.1 nF to 1 nF	1.2 % + 26 pF	Fluke 8846A GIDEP
	1 nF to 10 nF	0.3 % + 120 pF	
	10 nF to 100 nF	0.2 % + 1.2 nF	
	100 nF to 1 μ F	0.2 % + 12 nF	
	1 μ F to 10 μ F	0.2 % + 120 nF	
	10 μ F to 100 μ F	0.4 % + 1.2 μ F	
	100 μ F to 1 mF	0.4 % + 12 μ F	
	1 mF to 10 mF	0.4 % + 120 μ F	
	10 mF to 100 mF	1.0 % + 2.4 mF	
Equipment to Measure AC Voltage At the listed Frequencies ^F			
3 Hz to 5 Hz	0.1 mV to 100 mV	35 μ V/V + 0.05 mV	
5 Hz to 10 Hz	0.1 mV to 100 mV	35 μ V/V + 0.05 mV	
10 Hz to 20 kHz	0.1 mV to 100 mV	4.5 μ V/V + 0.05 mV	
20 kHz to 50 kHz	0.1 mV to 100 mV	5.8 μ V/V + 0.09 mV	
50 kHz to 100 kHz	0.1 mV to 100 mV	10 μ V/V + 0.4 mV	
100 kHz to 300 kHz	0.1 mV to 100 mV	30 μ V/V + 2.6 mV	
Equipment to Output AC Voltage At the listed Frequencies ^F			
10 Hz to 45 Hz	1 mV to 32.9 mV	100 μ V/V + 6 μ V	Fluke 5520A GIDEP
45 Hz to 10 kHz	1 mV to 32.9 mV	100 μ V/V + 6 μ V	
10 kHz to 20 kHz	1 mV to 32.9 mV	100 μ V/V + 6 μ V	
20 kHz to 50 kHz	1 mV to 32.9 mV	200 μ V/V + 6 μ V	
50 kHz to 100 kHz	1 mV to 32.9 mV	300 μ V/V + 12 μ V	
100 kHz to 500 kHz	1 mV to 32.9 mV	800 μ V/V + 50 μ V	
Equipment to Measure AC Voltage At the listed Frequencies ^F			
3 Hz to 5 Hz	100 mV to 1 V	0.29 % + 0.5 mV	Fluke 8846A GIDEP
5 Hz to 10 Hz	100 mV to 1 V	0.29 % + 0.5 mV	
10 Hz to 20 kHz	100 mV to 1 V	0.03 % + 0.5 mV	
20 kHz to 50 kHz	100 mV to 1 V	0.04 % + 1.0 mV	
50 kHz to 100 kHz	100 mV to 1 V	0.09 % + 4.0 mV	
100 kHz to 300 kHz	100 mV to 1 V	0.69 % + 2.6 mV	



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Equipment to Output AC Voltage At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 45 Hz	33 mV to 329.9 mV	30 μ V/V + 8 μ V	
45 Hz to 10 kHz	33 mV to 329.9 mV	30 μ V/V + 8 μ V	
10 kHz to 20 kHz	33 mV to 329.9 mV	30 μ V/V + 8 μ V	
20 kHz to 50 kHz	33 mV to 329.9 mV	50 μ V/V + 8 μ V	
50 kHz to 100 kHz	33 mV to 329.9 mV	80 μ V/V + 32 μ V	
100 kHz to 500 kHz	33 mV to 329.9 mV	240 μ V/V + 70 μ V	
Equipment to Measure AC Voltage At listed frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	1 V to 10 V	0.01 % + 0.5 mV	
5 Hz to 10 Hz	1 V to 10 V	0.01 % + 0.5 mV	
10 Hz to 20 kHz	1 V to 10 V	0.004 % + 0.5 mV	
20 kHz to 50 kHz	1 V to 10 V	0.009 % + 1.0 mV	
50 kHz to 100 kHz	1 V to 10 V	0.03 % + 4.0 mV	
100 kHz to 300 kHz	1 V to 10 V	0.04 % + 9.0 mV	
Equipment to Output AC Voltage At listed frequencies ^F			Fluke 5520A GIDEP
10 Hz to 45 Hz	0.33 V to 3.29 V	30 μ V/V + 50 μ V	
45 Hz to 10 kHz	0.33 V to 3.29 V	30 μ V/V + 60 μ V	
10 kHz to 20 kHz	0.33 V to 3.29 V	30 μ V/V + 60 μ V	
20 kHz to 50 kHz	0.33 V to 3.29 V	40 μ V/V + 50 μ V	
50 kHz to 100 kHz	0.33 V to 3.29 V	60 μ V/V + 125 μ V	
100 kHz to 500 kHz	0.33 V to 3.29 V	300 μ V/V + 600 μ V	
Equipment to Measure AC Voltage At listed frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	10 V to 100 V	0.11 % + 0.05 mV	
5 Hz to 10 Hz	10 V to 100 V	0.11 % + 0.05 mV	
10 Hz to 20 kHz	10 V to 100 V	0.03 % + 0.05 mV	
20 kHz to 50 kHz	10 V to 100 V	0.1 % + 0.1 mV	
50 kHz to 100 kHz	10 V to 100 V	0.3 % + 0.2 mV	
100 kHz to 300 kHz	10 V to 100 V	2.5 % + 0.4 mV	



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Equipment to Output AC Voltage At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 45 Hz	3.3 V to 32.9 V	30 μ V/V + 650 μ V	
45 Hz to 10 kHz	3.3 V to 32.9 V	30 μ V/V + 600 μ V	
10 kHz to 20 kHz	3.3 V to 32.9 V	30 μ V/V + 600 μ V	
20 kHz to 50 kHz	3.3 V to 32.9 V	45 μ V/V + 600 μ V	
50 kHz to 100 kHz	3.3 V to 32.9 V	75 μ V/V + 1 600 μ V	
Equipment to Output AC Voltage At the listed Frequencies ^F			Fluke 5520A GIDEP
45 Hz to 1 kHz	33 V to 329.9 V	40 μ V/V + 2 mV	
1 kHz to 10 kHz	33 V to 329.9 V	40 μ V/V + 6 mV	
10 kHz to 20 kHz	33 V to 329.9 V	40 μ V/V + 6 mV	
20 kHz to 50 kHz	33 V to 329.9 V	100 μ V/V + 6 mV	
50 kHz to 100 kHz	33 V to 329.9 V	2 000 μ V/V + 50 000 μ V	
Equipment to Measure AC Voltage At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	100 V to 1 000 V	0.11 % + 0.3 mV	
5 Hz to 10 Hz	100 V to 1 000 V	0.11 % + 0.3 mV	
10 Hz to 20 kHz	100 V to 1 000 V	0.07 % + 0.3 mV	
20 kHz to 50 kHz	100 V to 1 000 V	0.04 % + 0.3 mV	
50 kHz to 100 kHz	100 V to 1 000 V	0.4 % + 0.5 mV	
100 kHz to 300 kHz	100 V to 1 000 V	0.4 % + 0.5 mV	
Equipment to Output AC Voltage At the listed Frequencies ^F			Fluke 5520A GIDEP
45 Hz to 1 kHz	330 V to 1 020 V	35 μ V/V + 10 mV	
1 kHz to 5 kHz	330 V to 1 020 V	35 μ V/V + 10 mV	
5 kHz to 10 kHz	330 V to 1 020 V	35 μ V/V + 10 mV	
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	0.1 mA to 1 mA	0.03 % + 0.8 μ A	
5 Hz to 10 Hz	0.1 mA to 1 mA	0.03 % + 0.8 μ A	
10 Hz to 5 kHz	0.1 mA to 1 mA	0.008 % + 0.8 μ A	
5 kHz to 10 kHz	0.1 mA to 1 mA	0.02 % + 2.6 μ A	



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Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 20 Hz	0.029 mA to 0.329 mA	300 μ A/A + 0.1 μ A	
20 Hz to 45 Hz	0.029 mA to 0.329 mA	200 μ A/A + 0.1 μ A	
45 Hz to 1 kHz	0.029 mA to 0.329 mA	150 μ A/A + 0.1 μ A	
1 kHz to 5 kHz	0.029 mA to 0.329 mA	300 μ A/A + 0.2 μ A	
5 kHz to 10 kHz	0.029 mA to 0.329 mA	450 μ A/A + 0.2 μ A	
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	1 mA to 10 mA	0.03 % + 8 μ A	
5 Hz to 10 Hz	1 mA to 10 mA	0.03 % + 8 μ A	
10 Hz to 5 kHz	1 mA to 10 mA	0.01 % + 8 μ A	
5 kHz to 10 kHz	1 mA to 10 mA	0.01 % + 26 μ A	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 20 Hz	0.33 mA to 3.29 mA	250 μ A/A + 0.2 μ A	
20 Hz to 45 Hz	0.33 mA to 3.29 mA	200 μ A/A + 0.2 μ A	
45 Hz to 1 kHz	0.33 mA to 3.29 mA	150 μ A/A + 0.2 μ A	
1 kHz to 5 kHz	0.33 mA to 3.29 mA	150 μ A/A + 0.2 μ A	
5 kHz to 10 kHz	0.33 mA to 3.29 mA	900 μ A/A + 0.3 μ A	
10 kHz to 30 kHz	0.33 mA to 3.29 mA	900 μ A/A + 0.6 μ A	
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	10 mA to 100 mA	0.03 % + 81 μ A	
5 Hz to 10 Hz	10 mA to 100 mA	0.03 % + 81 μ A	
10 Hz to 5 kHz	10 mA to 100 mA	0.01 % + 81 μ A	
5 kHz to 10 kHz	10 mA to 100 mA	0.03 % + 0.26 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 20 Hz	3.3 mA to 32.9 mA	150 μ A/A + 3 μ A	
20 Hz to 45 Hz	3.3 mA to 32.9 mA	150 μ A/A + 2 μ A	
45 Hz to 1 kHz	3.3 mA to 32.9 mA	150 μ A/A + 2 μ A	
1 kHz to 5 kHz	3.3 mA to 32.9 mA	150 μ A/A + 2 μ A	
5 kHz to 10 kHz	3.3 mA to 32.9 mA	300 μ A/A + 3 μ A	
10 kHz to 30 kHz	3.3 mA to 32.9 mA	900 μ A/A + 4 μ A	



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A.V.C. Laboratory, Inc.

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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
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	100 mA to 400 mA	0.11 % + 0.43 mA	
5 Hz to 10 Hz	100 mA to 400 mA	0.11 % + 0.43 mA	
10 Hz to 5 kHz	100 mA to 400 mA	0.11 % + 2 mA	
5 kHz to 10 kHz	100 mA to 400 mA	0.30 % + 2 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 20 Hz	33 mA to 329.9 mA	150 μ A/A + 20 μ A	
20 Hz to 45 Hz	33 mA to 329.9 mA	150 μ A/A + 20 μ A	
45 Hz to 1 kHz	33 mA to 329.9 mA	150 μ A/A + 20 μ A	
1 kHz to 5 kHz	33 mA to 329.9 mA	150 μ A/A + 50 μ A	
5 kHz to 10 kHz	33 mA to 329.9 mA	300 μ A/A + 100 μ A	
10 kHz to 30 kHz	33 mA to 329.9 mA	900 μ A/A + 200 μ A	
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	400 mA to 1 A	0.03 % + 0.8 mA	
5 Hz to 10 Hz	400 mA to 1 A	0.03 % + 0.8 mA	
10 Hz to 5 kHz	400 mA to 1 A	0.02 % + 0.8 mA	
5 kHz to 10 kHz	400 mA to 1 A	0.03 % + 6.1 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 45 Hz	0.33 A to 1.09 A	100 μ A/A + 0.1 mA	
45 Hz to 1 kHz	0.33 A to 1.09 A	100 μ A/A + 0.1 mA	
1 kHz to 5 kHz	0.33 A to 1.09 A	150 μ A/A + 1.0 mA	
5 kHz to 10 kHz	0.33 A to 1.09 A	400 μ A/A + 5.0 mA	
Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	1 A to 3 A	300 μ A/A + 0.1 mA	
5 Hz to 10 Hz	1 A to 3 A	300 μ A/A + 0.1 mA	
10 Hz to 5 kHz	1 A to 3 A	400 μ A/A + 1.0 mA	
5 kHz to 10 kHz	1 A to 3 A	600 μ A/A + 5.0 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
10 Hz to 45 Hz	1.1 A to 2.99 A	1.8 mA/A + 100 μ A	
45 Hz to 1 kHz	1.1 A to 2.99 A	0.6 mA/A + 100 μ A	
1 kHz to 5 kHz	1.1 A to 2.99 A	6 mA/A + 1 000 μ A	
5 kHz to 10 kHz	1.1 A to 2.99 A	25 mA/A + 5 000 μ A	



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Equipment to Measure AC Current At the listed Frequencies ^F			Fluke 8846A GIDEP
3 Hz to 5 Hz	3 A to 10 A	0.05 % + 12 mA	
5 Hz to 10 Hz	3 A to 10 A	0.05 % + 12 mA	
10 Hz to 5 kHz	3 A to 10 A	0.02 % + 12 mA	
5 kHz to 10 kHz	3 A to 10 A	0.02 % + 12 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
45 Hz to 100 Hz	3 A to 10.99 A	300 μ A/A + 2 mA	
100 Hz to 1 kHz	3 A to 10.99 A	300 μ A/A + 2 mA	
1 kHz to 5kHz	3 A to 10.99 A	300 μ A/A + 2 mA	
Equipment to Output AC Current At the listed Frequencies ^F			Fluke 5520A GIDEP
45 Hz to 100 Hz	11 A to 20.5 A	250 μ A/A + 5 mA	
100 Hz to 1 kHz	11 A to 20.5 A	250 μ A/A + 5 mA	
1 kHz to 5 kHz	11 A to 20.5 A	300 μ A/A + 5 mA	
Phase Angle – Generation ^F			Fluke 5520A GIDEP
10 Hz to 65 Hz	0 ° to 360 °	0.05 °	
65 Hz to 400 Hz	0 ° to 360 °	0.05 °	
400 Hz to 5 kHz	0 ° to 360 °	0.20 °	
Equipment to Output rpm – Optical ^F	60 rpm to 600 rpm	0.000 06 rpm	Fluke 5520A LED fixture GIDEP
	600 rpm to 6 000 rpm	0.000 5 rpm	
	6 000 rpm to 60 000 rpm	0.007 rpm	
	60 000 rpm to 600 000 rpm	0.072 rpm	
Equipment to Measure rpm – Optical / Contact ^F	6 rpm to 99 999 rpm	0.48 rpm + 0.004 % of Reading	Fluke 5345A Motor GIDEP
Oscilloscope			Fluke 5520A/SC1.1G GIDEP
Level Sine Amp 50 kHz Ref. ^F	5 mV to 5 V _(p-p)	0.3 mV + 3 % of Reading	
Level Sine Flatness 5 mV to 5.5 V Relative to 50 kHz Reference ^F	50 kHz to 100 MHz	0.1 mV + 2 % of Reading	
	100 MHz to 300 MHz	0.1 mV + 2.5 % of Reading	
	300 MHz to 600 MHz	0.1 mV + 4.5 % of Reading	
	600 MHz to 1 100 MHz	0.1 mV + 5.5 % of Reading	



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Square Wave ^F 1 M Ω , 100 Hz	1 mV to 150 V _(p-p)	40 μ V + 0.2 % of Reading	Fluke 5520A/SC1.1G GIDEP
Square Wave ^F 50 Ω , 1 kHz	1 mV to 6.6 V _(p-p)	40 μ V + 0.35 % of Reading	
Time Marker Output Into 50 Ω ^F	1 ns to 20 ms	5 μ s/s	
Rise Time ^F	\leq 300 ps	(0/ps / - 100) ps	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type E ^F	-250 $^{\circ}$ C to -100 $^{\circ}$ C	0.5 $^{\circ}$ C	Electrical Simulation of Thermocouple Output Fluke 5520A GIDEP
	-100 $^{\circ}$ C to -25 $^{\circ}$ C	0.16 $^{\circ}$ C	
	-25 $^{\circ}$ C to 350 $^{\circ}$ C	0.14 $^{\circ}$ C	
	350 $^{\circ}$ C to 650 $^{\circ}$ C	0.16 $^{\circ}$ C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type J ^F	650 $^{\circ}$ C to 1 000 $^{\circ}$ C	0.21 $^{\circ}$ C	Fluke 5520A Electrical Simulation of RTD Output GIDEP
	-210 $^{\circ}$ C to -100 $^{\circ}$ C	0.27 $^{\circ}$ C	
	-100 $^{\circ}$ C to -30 $^{\circ}$ C	0.16 $^{\circ}$ C	
	-30 $^{\circ}$ C to 150 $^{\circ}$ C	0.14 $^{\circ}$ C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type K ^F	150 $^{\circ}$ C to 760 $^{\circ}$ C	0.17 $^{\circ}$ C	
	760 $^{\circ}$ C to 1 200 $^{\circ}$ C	0.23 $^{\circ}$ C	
	-200 $^{\circ}$ C to -100 $^{\circ}$ C	0.33 $^{\circ}$ C	
	-100 $^{\circ}$ C to -25 $^{\circ}$ C	0.18 $^{\circ}$ C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type T ^F	-25 $^{\circ}$ C to 120 $^{\circ}$ C	0.16 $^{\circ}$ C	
	120 $^{\circ}$ C to 1 000 $^{\circ}$ C	0.26 $^{\circ}$ C	
	1 000 $^{\circ}$ C to 1 372 $^{\circ}$ C	0.40 $^{\circ}$ C	
	-250 $^{\circ}$ C to -150 $^{\circ}$ C	0.63 $^{\circ}$ C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type T ^F	-150 $^{\circ}$ C to 0 $^{\circ}$ C	0.24 $^{\circ}$ C	
	0 $^{\circ}$ C to 120 $^{\circ}$ C	0.16 $^{\circ}$ C	
	120 $^{\circ}$ C to 400 $^{\circ}$ C	0.14 $^{\circ}$ C	
	-200 $^{\circ}$ C to -80 $^{\circ}$ C	0.04 $^{\circ}$ C	
Temperature Calibration Indication and Control Equipment used with RTD Pt 385 100 Ω ^F	-80 $^{\circ}$ C to 0 $^{\circ}$ C	0.04 $^{\circ}$ C	
	0 $^{\circ}$ C to 100 $^{\circ}$ C	0.04 $^{\circ}$ C	
	100 $^{\circ}$ C to 260 $^{\circ}$ C	0.05 $^{\circ}$ C	
	260 $^{\circ}$ C to 300 $^{\circ}$ C	0.12 $^{\circ}$ C	
	300 $^{\circ}$ C to 400 $^{\circ}$ C	0.13 $^{\circ}$ C	
	400 $^{\circ}$ C to 600 $^{\circ}$ C	0.14 $^{\circ}$ C	
	600 $^{\circ}$ C to 630 $^{\circ}$ C	0.16 $^{\circ}$ C	



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Temperature Calibration Indication and Control Equipment used with RTD Pt 3926 100 Ω^F	-200 °C to -80 °C	0.05 °C	Fluke 5520A Electrical Simulation of RTD Output GIDEP
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
Temperature Calibration Indication and Control Equipment used with RTD Pt 3916 100 Ω^F	-200 °C to -190 °C	0.25 °C	Fluke 5520A Electrical Simulation of RTD Output GIDEP
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.06 °C	
	100 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.09 °C	
	400 °C to 600 °C	0.1 °C	
Temperature Calibration Indication and Control Equipment used with RTD Pt 385 200 Ω^F	-200 °C to -80 °C	0.08 °C	
	-80 °C to 0 °C	0.08 °C	
	0 °C to 100 °C	0.08 °C	
	100 °C to 260 °C	0.1 °C	
	260 °C to 300 °C	0.24 °C	
	300 °C to 400 °C	0.26 °C	
	400 °C to 600 °C	0.28 °C	
	600 °C to 630 °C	0.32 °C	
Temperature Calibration Indication and Control Equipment used with RTD Pt 385 1 000 Ω^F	-200 °C to -80 °C	0.03 °C	
	-80 °C to 0 °C	0.03 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.06 °C	
	300 °C to 400 °C	0.07 °C	
	400 °C to 600 °C	0.07 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration Indication and Control Equipment used with RTD Ni 385 120 Ω^F	-80 °C to 0 °C	0.08 °C	
	0 °C to 100 °C	0.08 °C	
	100 °C to 260 °C	0.14 °C	



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Temperature Calibration Indication and Control Equipment used with RTD Cu 427 120 Ω ^F	-100 °C to 260 °C	0.3 °C	Fluke 5520A Electrical Simulation of RTD Output GIDEP
Temperature Measure RTD – Pt100 (DIN IEC 751, type 385)	-200 °C	0.05 °C	Fluke 8846A GIDEP
	-100 °C	0.05 °C	
	0 °C	0.03 °C	
	100 °C	0.05 °C	
	300 °C	0.07 °C	
	600 °C	0.13 °C	

Electrical – DC & Low Frequency

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
DC Voltage – Measure ^{FO}	1 kV to 40 kV	0.011 V	Fluke 8846A & 80K40 GIDEP
	1 A to 700 A	0.01 %	Fluke 8846A & Shunt GIDEP
DC Current – Measuring Equipment Clamp-On Only	0.1 A to 1 000 A	0.3 % + 0.5 A	Fluke 5520A with coil GIDEP
Inductance Measuring Equipment ^{FO} Fixed Values			GenRad 1482 Series GIDEP
1 mH	100 Hz to 1 kHz	1 μ H	
50 mH	100 Hz to 1 kHz	20 μ H	
100 mH	100 Hz to 1 kHz	40 μ H	
Distortion – Measure ^{FO} (0 to 99.9) dB Fundamental Freq 20 Hz to 100 kHz	50 Hz to 500 kHz	0.1 %	HP 8903B GIDEP
Edge Rise Time – Measure ^F	< 300 ps	24 ps	Tektronix TDS2012C GIDEP



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Electrical – RF & Microwave

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
Signal Level Measuring Equipment ^F			Output Level HP 3325B, GIDEP HP 8657B, GIDEP HP 8672A, GIDEP
(+23.98 to -56.02) dBm	0.1 Hz to 20 MHz	0.9 dB	
(+13.0 to -127.0) dBm	100 kHz to 2000 MHz	1.1 dBm	
(-10.0 to -90.0) dBm	2 GHz to 18 GHz	2.1 dBm	
Power Measurement – Amplitude ^F	-70dBm to +30 dBm	1.1 dBm	HP 438A/ 8482A/ 8481D/ 8481A/ 11708A GIDEP
Power Meters – Readout Calibration Zero Set Instrument Accuracy	3 μ W 10 μ W 3 μ W 30 μ W (100, 300) μ W (1, 2) mW (10, 30, 100) mW	0.25 % + 6.2 nW 0.25 % 0.25 % 0.25 % 0.25 % 0.25 % 0.25 %	HP 11683A GIDEP
Amplitude Modulation – Measure ^F			HP 8901B with 11722A GIDEP
Rate: 50 Hz to 10 kHz, Depths: 5 % to 99 %	150 kHz to 10 MHz	2 % + 1 digit	
Rate: 20 Hz to 10 kHz, Depths: 5 % to 99%	150 kHz to 10 MHz	3 % + 1 digit	
Rate: 20 Hz to 10 kHz, Depths: 5 % to 99%	10 MHz to 1.3 GHz	1 % + 1 digit	
Rate: 20 Hz to 100 kHz, Depths: 5 % to 99 %	10 MHz to 1.3 GHz	3 % + 1 digit	
Frequency Modulation – Measure ^F			
Rate: 20 Hz to 10 kHz, Dev.: \leq 40 kHz peak	0.25 to 10 MHz	4 % + 1 digit	
Rate: 50 Hz to 100 kHz, Dev.: \leq 400 kHz peak	10 MHz to 1.3 GHz	3 % + 1 digit	
Rate: 20 Hz to 200 kHz, Dev.: \leq 400 kHz peak	10 MHz to 1.3 GHz	6 % + 1 digit	



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Equipment to Output Electrical – RF & Microwave

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Output Level ^F	-6 dBm to 120 dBm	0.007 dB	Collins VOR/ILS Signal Generator GIDEP
Harmonics ^F VOR/LOC >30.00 dB	108 MHz to 118 MHz	0.007 dB	
Marker Beacon >30.00 dB	74 MHz to 76 MHz	0.007 dB	
Glideslope >25.00 dB	329 MHz to 335 MHz	0.007 dB	
Broadband Noise (SSB) ^F			
> 115 dBc/Hz	74 MHz to 76 MHz	0.2 dB	
> 111 dBc/Hz	108 MHz to 118 MHz	0.2 dB	
VOR Mode ^F			Collins VOR/ILS Signal Generator GIDEP
Frequency	30 Hz to 10 kHz	230 μ Hz	
Distortion (Audio) Preset < 0.25 % < 0.50 % < 1.00 %	30 Hz Ref. 9960 Hz and 1020 Hz Aux Audio	0.005 % 0.005 % 0.005 %	
Variable < 1.000 % < 1.500 % < 2.000 %	30 Hz 9960 Hz Aux Audio	0.005 % 0.005 % 0.005 %	
Radial Range	0 ° to 360 °	0.01 %	
Amplitude Modulation			
Frequency 30 Hz Var – Preset Aux 30 Hz – 14 kHz	1020 Hz 9960 Hz 30 Hz 14 kHz	23 μ Hz 230 μ Hz 69 μ Hz 0.03 Hz	
Total Distortion Preset < 1.00 % < 1.00 % < 1.50 % < 2.00 %	30 Hz 1020 Hz 9960 Hz Aux 30 Hz – 14 kHz	0.005 % 0.005 % 0.005 % 0.005 %	
Variable < 1.50 % < 2.00 % < 3.00 %	30 Hz 9960 Hz Aux 30 Hz – 14 kHz	0.005 % 0.005 % 0.005 %	



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Localizer Mode ^F Distortion (Audio) Preset < 0.25 % < 0.50 % < 1.00 %	90 Hz - 150 Hz 1020 Hz Aux Audio	0.005 % 0.005 % 0.005 %	Collins VOR/ILS Signal Generator GIDEP
Variable < 1.00 % < 1.50 %	90 Hz - 150 Hz Aux Audio	0.005 % 0.005 %	
Phase	90 Hz – 150 Hz	0.006 °	
Amplitude Modulation Preset 20.00 % Variable 40.00 % 1020 Hz (ident)	90 Hz – 150 Hz 90 Hz – 150 Hz 90 Hz – 150 Hz	0.03 % 0.06 % 0.05 %	
Aux Audio		0.05%	
Tone Distortion Preset < 1.00 % Variable < 1.50 % 1020 Hz (ident) < 1.00 %	90 Hz - 150 Hz 90 Hz – 150 Hz 90 Hz – 150 Hz	0.001 % 0.001 % 0.001 %	
Aux Audio		0.006 %	



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Glideslope Mode ^F Frequency	30 Hz 90 Hz 150 Hz 4 kHz	7 µHz 21 µHz 35 µHz 0.001 Hz	Collins VOR/ILS Signal Generator GIDEP
Distortion (audio)			
Preset < 0.25 % < 1.00 %	90 Hz – 150 Hz Aux Audio	0.006 % 0.006 %	
Variable < 1.00 % < 1.50 %	90 Hz – 150 Hz Aux Audio	0.006 % 0.006 %	
Phase	90 Hz – 150 Hz	0.006 °	
Amplitude Modulation			
Preset 40.00 % Variable 80.00 %	90 Hz – 150 Hz 90 Hz – 150 Hz	0.06 % 0.13 %	
Audio Aux			
Preset 40.00 % Variable 80.00 %		0.06 % 0.13 %	
Tone Distortion			
Preset < 1.20 % Variable < 3.00 %	90 Hz - 150 Hz 90 Hz – 150 Hz	0.006 % 0.006 %	
Aux Audio		0.006 %	



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Equipment to Output Electrical – RF & Microwave

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Marker Beacon ^F Frequency Preset			Collins VOR/ILS Signal Generator GIDEP
Outer Marker	400 Hz	92 µHz	
Middle Marker	1 300 Hz	322 µHz	
Inner Marker	3 000 Hz	690 µHz	
Amplitude Modulation	400 Hz 1 400 Hz 3 000 Hz	92 µHz 322 µHz 690 µHz	
Aux Audio	400 Hz 1 400 Hz 3 000 Hz	92 µHz 322 µHz 690 µHz	
Tone Distortion		0.006 %	
VHF Comm ^F			Collins VOR/ILS Signal Generator GIDEP
Frequency	30 Hz 1 020 Hz 10 kHz	69 µHz 235 µHz 0.002 Hz	
Amplitude Modulation	30 Hz 1 020 Hz 10 kHz	69 µHz 235 µHz 0.002 Hz	



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Mass, Force, and Weighing Devices

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Tension/Compression Force ^F	50 lbf to 500 lbf	0.029 % of Reading	Morehouse Load Cell PC-500-TC GIDEP & AVP-112
	200 lbf to 2 000 lbf	0.029 % of Reading	Morehouse Load Cell PC-2K-TC GIDEP & AVP-112
	1 000 lbf to 10 000 lbf	0.029 % of Reading	Morehouse Load Cell PC-10K-TC GIDEP & AVP-112
	5 000 lbf to 50 000 lbf	0.029 % of Reading	Morehouse Load Cell PC-50K-TC GIDEP & AVP-112
Analytical Balances ^F	1 mg to 120 g	0.06 mg	Stainless Steel Weight Set ASTM 0, Stainless Steel Weight ASTM 1 GIDEP, NIST HB44-2018 & AVP-105
Precision Balances ^F	1 mg to 620 g (d = 1 mg)	0.6 mg	
	1 g to 8 000 g (d = 1 g)	1.2 mg	
Bench Scale/ Balances ^{FO}	25 kg to 125 kg (d = 1 g)	0.21 g	NIST Class F Weights, GIDEP, NIST HB44-2018 & AVP-105
Volume Delivery Instruments (Pipettes) ^F	100 μ L to 1 000 μ L	0.12 % of Reading	Stainless Steel Weight Set ASTM 0 Analytical Scale d = 0.1 mg Capacity: 120 g Vaisala HM170 & HMP77 GIDEP, ISO 8655-6, ISO/TR 20461
	1 mL to 10 mL	0.025 % of Reading	
	10 mL to 100 mL	0.023 % of Reading	
Compression Force ^{FO}	30 000 lbf to 300 000 lbf	0.17 % of Reading	Honeywell Load Cell CG-94-300K GIDEP & AVP-112
Air Flow ^{FO}	10 SCCM to 100 SCCM	0.82 % of Reading	Alicat Scientific M-100SCCM, Alicat Scientific M1000SLPM Sierra Instruments 780S GIDEP & AVP-110
	100 SLPM to 1 000 SLPM	0.82 % of Reading	
Liquid Flow ^{FO}	0.1 GPM to 300 GPM	0.63 % of Reading	Flow Computers & Flow Turbines Set GIDEP & AVP-110



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Mechanical

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Pressure Gauge and Transducer ^{FO}	1.5 psi to 5 psi	0.17 % of full scale	M101-GN0005 GIDEP & AVP-102
	-15 psi to 30 psi	0.047 % of full scale	DPI104-2-30PSI GIDEP & AVP-102
	25 psi to 100 psi	0.072 % of full scale	DPI104-2-100PSI GIDEP & AVP-102
	75 psi to 300 psi	0.052 % of full scale	DPI104-2-300PSI GIDEP & AVP-102
	250 psi to 1 000 psi	0.072 % of full scale	DPI104-2-1000PSI GIDEP & AVP-102
	1 250 psi to 5 000 psi	0.089 % of full scale	DPI104-2-5000PSI GIDEP & AVP-102
	2 000 psi to 10 000 psi	0.079 % of full scale	DPI104-2-10000PSI GIDEP & AVP-102
	4 000 psi to 20 000 psi	0.04 % of full scale	DPI104-2-20000PSI GIDEP
Torque Wrench ^{FO}	20 lbf·in to 200 lbf·in	0.39 % Reading	TSD6000 / TSD011 GIDEP & AVP-104
	30 lbf·ft to 300 lbf·ft		TSD6000 / TSD321 GIDEP & AVP-104
	80 lbf·ft to 800 lbf·ft		TDS821 / TDS1250 GIDEP & AVP-104
Indirect Verification of Rockwell Hardness Testers ^{FO}	HRB: 55 HRB	0.28 HRB	Indirect verification per ASTM E18
	80 HRB	0.61 HRB	
	95 HRB	0.60 HRB	
	HRC: 25 HRC	0.57 HRC	
	55 HRC	0.54 HRC	
	63 HRC	0.53 HRC	
Air Data Test Set, Pitot Testers ^F	-30 in·Hg to 30 in·Hg	0.000 3 in·Hg	Druck PACE6000 Aeronautical Option & Control Module Aero w/ Barometric Reference Sensor GIDEP & AVP-116
Equipment to Output Vibration At listed frequencies ^F			Modal Shop 9100D GIDEP
7 Hz to 10 Hz	2 m/s ² to 10 m/s ²	4.2 % of reading	
10 Hz to 30 Hz	2 m/s ² to 10 m/s ²	3.2 % of reading	
30 Hz to 2 kHz	2 m/s ² to 10 m/s ²	1.9 % of reading	
2 kHz to 10 kHz	2 m/s ² to 10 m/s ²	4.2 % of reading	



Certificate of Accreditation: Supplement

A.V.C. Laboratory, Inc.

16542 NW 54th Avenue, Miami Gardens, FL, 33014
 Contact Name: Freddy Vergel Phone: 786-542-8710

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
Flow – Air Velocity ^F	4 m/s to 24 m/s	1.0 % of reading	Hot wire Anemometer GIDEP
Temperature Measurement – No Contact ^{FO}	-70 °C to 180 °C	0.08 °C	Vaisala HMI70/HMP77, GIDEP & AVP-108
Temperature Measurement – Contact ^{FO}	-100 °C to 450 °C	0.05 °C	Ultra Precise RTD Sensor, Fluke 8846A, GIDEP & AVP-108
Thermometer Calibration ^{FO}	-25 °C to 140 °C	0.50 % of reading	Fluke 9103 Dry-Well Calibrator, Ultra Precise RTD Sensor GIDEP & AVP-108
Oven/Fridge Temperature Mapping ^{FO}	-25 °C to 120 °C	0.16 °C	Fluke 2645A
	120 °C to 250 °C	0.26 °C	AMS2750 & AVP-108
Equipment to Measure Humidity ^{FO}	5 % RH to 100 % RH	0.6 % RH	Vaisala HMI70/HMP77, GIDEP & AVP-108
IR Thermometer & Thermal Video Devices ^{FO}	50 °C to 500 °C	0.5 % of reading	Infrared / Blackbody Calibrator GIDEP & AVP-108

Time & Frequency

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
Stopwatch/Timer ^{FO}	Direct comparison method 1 h to 24 h	0.000 6 % of calibration time	HP 5345A-counter NIST SP 960-12.2009 ed & AVP-129
	Totalize method 1 h to 24 h	0.000 04 % of calibration time	

Optical

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
Light (Light Meters) – Measure ^F			
UV	1 μ W/cm ² to 100 mW/cm ²	3 % of reading	Radiometer and sensors ASTM E2297
Visible	0 fc to 500 fc	3 % of reading	



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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 FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
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.