



# CERTIFICATE OF ACCREDITATION

## ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

**Educate Design & Development, Inc. (ED&D)**  
**901 Sheldon Dr.**  
**Cary, NC 27513**

has been assessed by ANAB  
and meets the requirements of international standard

## ISO/IEC 17025:2005

while demonstrating technical competence in the field of

## CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations to which this accreditation applies.

AC-1425

Certificate Number

  
ANAB Approval

Certificate Valid: 12/22/2016-12/20/2017  
Version No. 003 Issued: 12/22/2016



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).



# ANSI-ASQ National Accreditation Board

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

### Educated Design & Development, Inc. (ED&D)

901 Sheldon Dr., Cary, NC 27513  
 Bill Bisenius Phone: 919 469 9434

#### CALIBRATION

Valid to: December 20, 2017

Certificate Number: AC-1425

#### I. Electromagnetic – DC/Low Frequency

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
AC Voltage Measure	<b>Up to 200 mV</b>		Keithley 2001	OEM
	(20 to 50) Hz	530 μV		
	(50 to 100) Hz	190 μV		
	(0.1 to 2) kHz	130 μV		
	(2 to 10) kHz	130 μV		
	(10 to 30) kHz	130 μV		
	(30 to 50) kHz	150 μV		
	(50 to 100) kHz	630 μV		
	(100 to 200) kHz	1.55 mV		
	(0.2 to 1) MHz	4.2 mV		
	(1 to 2) MHz	10.4 mV		
	<b>200 mV to 2 V</b>			
	(20 to 50) Hz	5.3 mV		
	(50 to 100) Hz	1.9 mV		
	(0.1 to 2) kHz	1.3 mV		
	(2 to 10) kHz	1.3 mV		
	(10 to 30) kHz	1.3 mV		
	(30 to 50) kHz	1.5 mV		
	(50 to 100) kHz	6.3 mV		
	(100 to 200) kHz	15.5 mV		
(0.2 to 1) MHz	42 mV			
(1 to 2) MHz	104 mV			





Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty( $\pm$ )]	Reference Standard or Equipment	Methods
AC Current Measure	<b>200 <math>\mu</math>A to 2 mA</b> (20 to 50) Hz (50 to 200)Hz 200 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz <b>(2 to 20) mA</b> (20 to 50) Hz (50 to 200)Hz 200 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz	6.3 $\mu$ A 3.3 $\mu$ A 2.7 $\mu$ A 2.7 $\mu$ A 5.3 $\mu$ A 6.3 $\mu$ A 10.3 $\mu$ A 63 $\mu$ A 33 $\mu$ A 27 $\mu$ A 27 $\mu$ A 53 $\mu$ A 63 $\mu$ A 103 $\mu$ A	Keithley 2001	OEM
AC Current Measure (Cont.)	<b>(20 to 200) mA</b> (20 to 50) Hz (50 to 200)Hz 200 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz <b>200 mA to 2 A</b> (20 to 50) Hz (50 to 200)Hz 200 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz (30 to 50) kHz <b>Up to 50 A</b> (50 to 60) Hz	0.63 mA 0.33 mA 0.27 mA 0.33mA 1.03 mA 2.03 mA 6.03 mA 7.3 mA 4.3 mA 6.3 mA 9.3 mA 30.3 mA 80.3 mA 0.219 A	Keithley 2001  Keithley 2001, Current Shunt	OEM
DC Current Measure	Up to 200 $\mu$ A 200 $\mu$ A to 2 mA (2 to 20) mA (20 to 200) mA 200 mA to 2 A Up to 50 A	0.105 $\mu$ A 0.84 $\mu$ A 8.4 $\mu$ A 104 $\mu$ A 1.84 mA 0.219 A	Keithley 2001  Keithley 2001, Current Shunt	OEM
Resistance Measure	Up to 20 $\Omega$ (20 to 200) $\Omega$ 200 $\Omega$ to 2 k $\Omega$ (2 to 20) k $\Omega$ (20 to 200) k $\Omega$ 200 k $\Omega$ to 2 M $\Omega$ (2 to 20) M $\Omega$ (20 to 200) M $\Omega$ 200 M $\Omega$ 1 G $\Omega$	1.58 m $\Omega$ 12.6 m $\Omega$ 108 m $\Omega$ 1.08 $\Omega$ 18.9 $\Omega$ 329 $\Omega$ 1.89 k $\Omega$ 4.02 M $\Omega$ 40.1 M $\Omega$	Keithley 2001	OEM

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty( $\pm$ )]	Reference Standard or Equipment	Methods
Hipot Testers	(500 to 5 000) V (0.025 to 20) mA	29 V 0.048 mA	Vitretek 4620B Keithley 2001	W5.4.1-33
Ground Continuity Testers	(0.01 to 0.2) $\Omega$ Up to 50A	1.57 m $\Omega$ 0.219 A	Resistor Array Keithley 2001 , Current Shunt	W5.4.1-56
Leakage Current Testers	AC Current Up to 200 $\mu$ A 200 $\mu$ A to 2 mA (2 to 20) mA Resistance Measure Up to 2 k $\Omega$ Frequency Measure Up to 1 MHz AC Voltage Measure Up to 400 mV	0.212 $\mu$ A 0.022 mA 0.048 mA 180 m $\Omega$ (0.002F) Hz 15.246 mV	Keithley 2001  Keithley 2001  Tektronix Scopemeter  Tektronix Scopemeter	W5.4.1-57, W5.4.1-58, W5.4.1-59
Electrical Simulation of Thermocouples				
Type J	(-300 to 0) $^{\circ}$ F (0 to 100) $^{\circ}$ F (100 to 2000) $^{\circ}$ F	(1.23 - 0.0047T) $^{\circ}$ F (1.23 + 0.0011T) $^{\circ}$ F (1.28 + 0.0006T) $^{\circ}$ F	Calibrator/Thermometer	OEM
Type K	(-300 to 0) $^{\circ}$ F (0 to 100) $^{\circ}$ F (100 to 1000) $^{\circ}$ F (1000 to 2500) $^{\circ}$ F	(1.29 - 0.0049T) $^{\circ}$ F (1.29 + 0.0011T) $^{\circ}$ F (1.36 + 0.0005T) $^{\circ}$ F (1.18 + 0.0006T) $^{\circ}$ F		
Type T	(-300 to 0) $^{\circ}$ F (0 to 100) $^{\circ}$ F (100 to 1000) $^{\circ}$ F	(1.27 - 0.0056T) $^{\circ}$ F (1.27 + 0.0006T) $^{\circ}$ F (1.32 + 0.0004T) $^{\circ}$ F		
Type E	(-300 to 0) $^{\circ}$ F (0 to 100) $^{\circ}$ F (100 to 1000) $^{\circ}$ F	(1.22 - 0.0045T) $^{\circ}$ F (1.22 + 0.0007T) $^{\circ}$ F (1.24 + 0.0006T) $^{\circ}$ F		

## II. Time and Frequency

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency Measure	Up to 1 MHz	(0.002F) Hz	Tektronix Scopemeter	OEM
Time Measure	Up to 2 400 s Above 2 400 s	0.31 s 0.71 s	Digital Stopwatch	W5.4.1-34 NIST SP 960-12
Stopwatches	Up to 2 400 s Above 2 400 s	0.31 s 0.71 s	Digital Stopwatch	W5.4.1-34 NIST SP 960-12

## III. Thermodynamic

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Temperature Measure	(-200 to 300) °C	0.14 °C	PRT Thermometer	OEM Sourced Methods
Humidity Measure	Up to 100 % RH	1.2 % RH	Digital Hygrometer	OEM Sourced Methods
Environmental Chambers	Up to 100 % RH (-200 to 300) °C	1.2 % RH 0.14 °C	PRT Thermometer Digital Hygrometer	OEM Sourced Methods

## IV. Mechanical

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Impact Balls	Mass Up to 2 000 g	202.72 mg	Digital Scale	OEM sourced procedures
Impact Hammers	Up to 0.25 J (0.25 to 1.0) J (1.0 to 2.1) J	0.01 J (0.015 + 0.002E) J (0.046 + 0.002E) J	Impact Hammer Calibrator	IEC 60068-2-75 and W.5.4.1-31
Impact Hammer Calibrators	Up to 0.25 J (0.25 to 1.0) J (1.0 to 2.1) J	0.004 J 0.008 J 0.013 J	Steel rule and Digital Scale	IEC 60068-2-75 and W.5.4.1-32
Pressure Gauges	(-14 to 0) psig Up to 15 psig Up to 30 psig	0.0773 psig 0.0886 psig 0.32 psig	Dwyer DPG-100 Dwyer DPG-102 Omega DPG1000B-30G	OEM

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Force Gauges	Up to 50 N (50 to 1 000) N	0.058 N 0.13 N	Class F Weights	W5.4.1-40
Force Measure	Up to 20 lb (20 to 45) lb	0.03 lb 0.09 lb	Digital Force Gauge	OEM
Ball Pressure Testers	Radius Up to 100 mm Force Up to 45 lb	9.6 µm 0.09 lb	Vision System Digital Force Gauge	W5.4.1-21
Mass	Up to 4 000 g	(36 + 1.2W) mg	Digital Scale	OEM
Gas Flow	Up to 2 L/m	0.076 L/m	Omega FMA 1816	OEM
Volumetric Flow, Liquids	(0.1 To 2) L/m (0.3to 9) L/m (4.0 to 120) L/m (38 to 380) L/m	(0.11L + 0.09) L/m (0.062L + 0.4001) L/m (1.01L + 0.831) L/m (0.031L + 1.16) L/m	Omega FTB601B Omega FTB602B Omega FTB606B Omega FTB694	OEM
IEC 60529 (IPX 3 and 4) Spray Nozzles	(9.5 to 10.5) L/m Length Up to 254 mm Length Up to 150 mm Angle (0 to 360) ° ID (14.7 to 15.3) mm Angle (0 to 45) °	0.187 L/m 6.5 µm 14.0 µm 0.025 ° 0.1276 mm 0.588 °	Omega FTB606B Vision System Caliper Vision System Gauge Pins Vision System	W5.4.1-35
IEC 60529 (IPX 5 and 6) Jet Nozzles	(11.9 to 13.1) L/m (95 to 105) L/m ID Up to 150 mm	0.393 L/m 1.541 L/m 14.0 µm	Omega FTB606B Omega FTB694B Caliper	W5.4.1-36
IEC 60529 (IP 5X and 6X) Dust Chambers	Up to 2 L/m Air Pressure (-14 to 0) psig Time Up to 2 400 s	0.076 L/m 0.0773 psig 0.31 s	Omega FMA 1816 Dwyer DPG-100 Stopwatch	W5.4.1-44
IEC 60529 (IPX 3 and 4) Oscillating Spray Testers	Angle (0 to 360) ° Length Up to 150 mm Length Up to 25 ft Time Up to 2 400 s ID Up to 0.4 mm Flow (0.56 to 3.0) L/m Flow (0.56 to 9.0) L/m	0.26 ° 14.0 µm 0.58 mm 0.31 s 14.0 µm (0.0062L + 0.4001) L/m (0.0094L + 0.4852) L/m	Digital Protractor Caliper Tape Measure Stopwatch Gauge Pin Omega FTB602B Omega FTB602B	W5.4.1-42

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
IEC 60529 (IPX 1 and 2) Drip Boxes	Length Up to 150 mm Flow (0.1 to 2) L/m	14.0 µm (0.025L + 0.026) L/m	Caliper Omega FTB601B	W5.4.1-43
UL Compliant Rain Test Apparatus	Length Up to 25 ft Angle (0 to 90) ° Pressure (0 to 15) psig Pressure (0 to 30) psig	0.5838 mm 0.26 ° 0.0886 psig 0.32 psig	Tape Measure Digital Protractor Dwyer DPG-102 Omega DPG1000B	W5.4.1-45
Turntables	Time Up to 2 400 s Load Up to 500 lb	0.31 s	Stopwatch Class F Weights	W5.4.1-46
Copper Blocks	Angle (0 to 360) ° Length Up to 254 mm ID Up to 0.5 mm Mass Up to 200 g	0.025 ° 6.5 µm 3.2 µm 17.33 mg	Vision System Gauge Pin Digital Scale Micrometer	W5.4.1-50
Tracking Testers	Angle (0 to 360) ° Length Up to 254 mm Length Up to 150 mm Diameter Up to 25.4 mm Voltage Up to 600 VAC Current Up to 2 AAC Force Up to 1.9 N Time Up to 2 400 s	0.025 ° 6.5 µm 14.0 µm 3.2 µm 1.5 mV/V 2.1 mA/A 1.98 mN 0.31 s	Vision System  Caliper Micrometer Keithley 2001  Digital Scale Stopwatch	W5.4.1-51
Glow Wire Testers	Force Up to 1.9 N Temp Up to 1 000 °C Time up to 2400 s	1.98 mN 3.65 °C 0.31 s	Digital Scale Silver foil Stopwatch	W5.4.1-52
Manual Sharp Edge Testers	Up to 24 oz	0.11 oz	Class F Weights	W5.4.1-64
Automated Sharp Edge Testers	Weight Up to 20 lb Time Up to 2400 s Diameter Up to 150 mm Surface Roughness- (0.03 to 6.35) µm	0.03 lb 0.31 s 14.0 µm 0.19 µm	Digital Force Gauge Stopwatch Caliper Profilometer	W5.4.1-66
Sharp Point Tester	Force Up to 20 lb Length Up to 254 mm Length Up to 150 mm	0.03 lb 6.5 µm 14.0 µm	Digital Force Gauge Vision System Caliper	W5.4.1-67
Surface Roughness Measurement	0.03 µm to 6.35 µm	(0.18 + 0.015R) µm	Profilometer	OEM



Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Tumbling Barrels	Length up to 150 mm Length up to 25 ft Angle up to 360 ° Time up to 2400 s	14.0 µm 0.58 mm 0.26 ° 0.31 s	Digital Caliper Tape Measure Digital Protractor Digital Stopwatch	W5.4.1-69
Cord Anchorage Torque Testers	Force up to 20 lb Length up to 254 mm Mass up to 200 g	0.03 lb 6.5 µm 17.33 mg	Force Gauge Vision System Digital Scale	W5.4.1-72
Socket Outlet Torque Balances	Length up to 254 mm Length up to 150 mm Length up to 25.4mm Mass up to 200 g	6.5 µm 14.0 µm 3.2 µm 17.33 mg	Vision System Digital Caliper Micrometer Digital Scale	W5.4.1-73
Iron Drop Testers	Force up to 20 lb Length up to 150 mm Time up to 2400 s Voltage up to 750 V Current up to 2A	0.03 lb 14.0 µm 0.31 2.21 V 20 mA	Force Gauge Digital Caliper Digital Stopwatch Multimeter Multimeter	W5.4.1-74

#### V. Dimensional

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Accessibility Probes Length Length Length Length Length Diameter Diameter Diameter Radius Angle	Up to 25.4 mm Up to 254 mm Up to 150 mm Up to 18 inch Up to 25 ft Up to 25.4 mm Up to 150 mm Up to 254 mm Up to 100 mm Up to 360 °	3.2 µm 6.5 µm 14.0 µm 0.5945 mm 0.5782 mm 3.2 µm 14.0 µm 6.5 µm 9.6 µm 0.025 °	Micrometer Vision System Caliper Steel Rule Tape Measure Micrometer Caliper Vision System Vision System Vision System	Laboratory Developed & Product Safety Standards including UL, CSA, IEC, & EN
Length	Up to 25.4 mm Up to 150 mm Up to 254 mm Up to 18 inch Up to 25 ft	3.2 µm 14.0 µm 6.5 µm 0.5945 mm 0.5782 mm	Micrometer Caliper Vision System Steel Rule Tape Measure	OEM sourced procedures
Diameter	Up to 25.4 mm Up to 150 mm Up to 254 mm	3.2 µm 14.0 µm 6.5 µm	Micrometer Caliper Vision System	OEM sourced procedures

Parameter/ Equipment	Range	Calibration and Measurement Capability [Expressed as Uncertainty(±)]	Reference Standard or Equipment	Methods
Radius	Up to 100 mm	9.6 µm	Vision System	OEM sourced procedures
Angle	Up to 360 °	0.025 ° 0.26 °	Vision System	OEM sourced procedures
Creepage & Clearance Gauges	Up to 25.4 mm	3.2 µm	Micrometer	W5.4.1-30
Angle Meters Digital Protractors	Up to 360 °	0.058 ° 0.06 °	Angle Blocks	W5.4.1-64
Tirrill Burners	Length Up to 150 mm	14.0 µm	Caliper	W5.4.1-48
Needle Flame Burner	Radius Up to 100 mm Length Up to 254 mm	9.6 µm 6.5 µm	Vision System	W5.4.1-49
Glow Wire Elements	Radius Up to 100 mm Length Up to 254 mm OD Up to 25.4 mm	9.6 µm 6.5 µm 3.2 µm	Vision System Micrometer	W5.4.1-53
Flame Height Gauges	Length Up to 254 mm Angle (0 to 360) °	6.5 µm 0.025 °	Vision System Caliper	W5.4.1-63
Choke Hazard Tester	Length Up to 254mm Length Up to 150mm	6.5 µm 14.0 µm	Vision System Caliper	W5.4.1-68

**Notes:**

1. Calibration and Measurement Capabilities (Expanded Uncertainty) are based on approximately a 95% confidence interval, using a coverage of k=2
2. The use of (E) signifies the reading in joules.
3. The use of (L) signifies the reading in liters per minute.
4. The use of (W) signifies the reading in grams.
5. The use of (T) signifies the reading in °F.
6. The use of (R) signifies the surface roughness reading in microns.
7. This scope is formatted as part of a complete document including the Certificate of Accreditation No. AC-1425

  


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 Vice President