



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994 & ANSI/NCSL Z540.3-2006

PCB PIEZOTRONICS OF NORTH CAROLINA, INC. d.b.a ENDEVCO
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CALIBRATION

Valid To: February 29, 2024

Certificate Number: 1862.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,6}:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 3, 5} (\pm)	Comments
DC Voltage – Measure	100 V 10 V 5 V 2 V 1 V 500 mV 200 mV 100 mV	0.082 % rdg 0.064 % rdg 0.066 % rdg 0.065 % rdg 0.067 % rdg 0.073 % rdg 0.081 % rdg 0.099 % rdg	Data acquisition card and voltage divider
DC Current – Measure	(0.5 to 100) mA	1.3 % rdg	Data acquisition card and standard resistor
AC Voltage – Measure	\pm 10 V \pm 5 V \pm 2 V \pm 1 V \pm 500 mV \pm 200 mV \pm 100 mV	0.064 % rdg 0.065 % rdg 0.065 % rdg 0.068 % rdg 0.071 % rdg 0.081 % rdg 0.087 % rdg	Data acquisition card

II. Mechanical

Parameter/Equipment	Range	CMC ^{2,4,5} (±)	Comments
Dynamic Force (Compression/Tension) – Measure	(0 to 10 000) lbf	1 % full scale (fs)	Reference load cell
Vibration General Purpose – Sensitivity Magnitude			
Accelerometers	(5 to 9) Hz (10 to 99) Hz (100 to 1999) Hz (2000 to 10 000) Hz (10 001 to 15 000) Hz (15 001 to 20 000) Hz	2 % rdg 1.5 % rdg 1 % rdg 2.5 % rdg 5 % rdg 9 % rdg	Reference accelerometer, back to back comparison method
Low Frequency – Sensors	(0.5 to 0.99) Hz (1 to 30) Hz (30.01 to 199) Hz (200 to 1000) Hz	1.8 % rdg 1 % rdg 1.5 % rdg 3 % rdg	Reference accelerometer with long stroke shaker, back to back comparison method
Vibration General Purpose – Acceleration Level			
Portable Shakers	(79.6 to 159.2) Hz	1.5 % rdg	Accelerometer, back to back comparison method
Vibration General Purpose – Sensitivity Phase – Measure			
Accelerometers	(≥5 to <10) Hz ≥10 Hz to <5 kHz (≥5 to <11) kHz (≥11 to <16) kHz (≥16 to ≤20) kHz	1° 0.75° 1.5° 2° 3°	Reference accelerometer, back to back comparison method
Low Frequency – Sensors	(≥0.5 to <10) Hz (≥10 to <200) Hz ≥200 Hz to ≤1 kHz	2.5° 0.75° 1.5°	Reference accelerometer with long stroke shaker, back to back comparison method

Parameter/Equipment	Range	CMC ^{2,5} (±)	Comments
Acceleration Amplitude Linearity, Shock – Measure	(100 to 2000) g; (0.5 to 2) ms	1.9 % rdg	Reference accelerometer with pneumatic shock tower, back to back comparison method
	(>2000 to 10 000) g; (0.1 to 0.5) ms	2.6 % rdg	
Impulse Force Sensitivity (Voltage/Force) – Measure	(0 to 5000) lb (0 to 1000) Hz	3.8 % rdg	Quartz reference accelerometer

III. Time & Frequency

Parameter/Equipment	Range	CMC ^{2,5} (±)	Comments
Angular Rate – Measuring Equipment	(-3000 to 3000) °/s	0.090 % rdg	Acutronic AC1120S

¹ This laboratory offers commercial calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ CMCs are expressed as either a specific value that covers the full range or as a percentage of the reading plus a fixed floor specification.

⁴ CMCs for Vibration parameters are for Sensitivity (accelerometer/sensor) or Acceleration level (shakers).

⁵ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

⁶ This scope meets A2LA's *P112 Flexible Scope Policy*.



Accredited Laboratory

A2LA has accredited

PCB PIEZOTRONICS OF NORTH CAROLINA, INC. d.b.a ENDEVCO

Halifax, NC

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and the requirements of ANSI/NCSL Z540.3-2006 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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 April 2017).



Presented this 15th day of March 2022.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1862.02
Valid to February 29, 2024

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.