



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

THE MODAL SHOP INC,
AN AMPHENOL COMPANY
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Cincinnati, OH 45215
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CALIBRATION

Valid To: April 30, 2028

Certificate Number: 2649.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations^{1,4}:

I. Acoustical Quantities

Parameter/Equipment	Frequency	CMC ² (±)	Comments
Condenser Microphone – Sensitivity (0.25 to 50) mV/Pa	250 Hz	0.25 dB	Microphone (transfer method)
Sound Calibrator – Sound Pressure Level (94 to 134) dB, re 20 µPA	250 Hz, 1 kHz	0.30 dB	Reference microphone
Reference Condenser Microphone w/ Preamp Installed in 9919C (In-situ Calibration) – Sensitivity (0.25 to 50) mV/Pa	(20 to 1000) Hz (1001 to 16 000) Hz (16 001 to 20 000) Hz	0.20 dB (1/4") 0.20 dB (1/2") 0.25 dB (1/4") 0.20 dB (1/2") 0.30 dB (1/4") 0.45 dB (1/2")	Microphone (comparison method)

Parameter/Equipment	Frequency	CMC ² (±)	Comments
Condenser/Array Microphone w/ Preamp – Sensitivity (0.25 to 50) mV/Pa	(20 to 1000) Hz	0.25 dB (1/4") 0.25 dB (1/2")	Microphone (comparison method)
	(1001 to 10 000) Hz	0.30 dB (1/4") 0.25 dB (1/2")	
	(10 001 to 16 000) Hz	0.30 dB (1/4") 0.30 dB (1/2")	
	(16 001 to 20 000) Hz	0.35 dB (1/4") 0.60 dB (1/2")	

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 3, 5} (±)	Comments
DC Voltage – Measure	100 mV to 100 V	0.12 %	DMM, waveform/function generator, calibrated capacitor, DAQ
AC Voltage Gain – Measure, (0.1 to 1000) x	100 mV to 10 V	0.12 %	DMM, waveform/function generator, calibrated capacitor, DAQ

III. Mechanical

Parameter/Equipment	Range	CMC ^{2, 5} (±)	Comments
Impulse Force Hammer	(1 to 5000) lbf	2.5 %	Data acquisition card accelerometer w/ calibrated masses
Force Sensor/Load Cell	(1 to 3.5) lbf	2.0 %	Data acquisition card w/ calibrated masses
Shock Accelerometer Calibration	(20 to 10 000) g	2.2 %	Data acquisition card shock reference shock exciter

Parameter/Equipment	Frequency	CMC ^{2, 5} (±)	Comments
Vibration Laser Primary – Frequency Response Magnitude Voltage Sensitivity (0.001 to 10 000) mV/g Charge Sensitivity (0.025 to 1000) pC/g			
Low Frequency	$(0.5 \leq f \leq 10)$ Hz	0.30 %	Data acquisition card w/ air bearing low frequency shaker
Mid to High Frequency	5 Hz $(5 < f < 100)$ Hz $(100 \leq f \leq 160)$ Hz $(160 < f \leq 1000)$ Hz $(1000 < f \leq 5000)$ Hz $(5000 < f \leq 15\ 000)$ Hz $(15\ 000 < f \leq 20\ 000)$ Hz	1.0 % 0.50 % 0.20 % 0.50 % 0.70 % 1.5 % 2.0 %	Data acquisition card w/ primary laser reference air bearing shaker <i>f</i> represents the calibration frequency
Vibration Laser Primary – Sensitivity Phase (-180° to +180°)			
Low Frequency	$(0.5 \leq f \leq 10)$ Hz	0.5°	Data acquisition card w/ air bearing low frequency shaker
Mid to High Frequency	$(5 \leq f < 5000)$ Hz $(5000 \leq f \leq 20\ 000)$ Hz	0.7° 2.1°	Data acquisition card w/ primary laser reference air bearing shaker

Parameter/Equipment	Frequency	CMC ^{2, 5} (±)	Comments
Vibration General Purpose – Frequency Response Magnitude			
Voltage Sensitivity (0.001 to 10 000) mV/g			
Charge Sensitivity (0.025 to 1000) pC/g			
Velocity Sensitivity (0.5 to 2500) mV/(in/s) (1 to 20) mA/(in/s)			Data acquisition card
Mid to High Frequency	(5 ≤ f ≤ 10) Hz (10 < f < 100) Hz 100 Hz (100 < f ≤ 920) Hz (920 < f ≤ 5000) Hz (5000 < f ≤ 10 000) Hz (10 000 < f ≤ 15 000) Hz (15 000 < f ≤ 20 000) Hz	1.7 % 1.2 % 0.75 % 1.0 % 1.4 % 1.9 % 2.2 % 2.8 %	w/ 396C10/C11 air bearing shaker
Low Frequency	(0.5 ≤ f ≤ 1) Hz (1 < f ≤ 10) Hz	1.1 % 0.8 %	w/ low frequency long stroke shaker w/ optical reference
Mid to High Frequency – Using Secondary Standard	(10 ≤ f < 100) Hz 100 Hz (100 < f ≤ 920) Hz (920 < f ≤ 2000) Hz	3.0 % 1.3 % 1.5 % 3.0 %	w/ MB CAL 50
Vibration General Purpose –			Data acquisition card
Sensitivity Phase (-180° to +180°)			
Mid to High Frequency	(5 ≤ f < 100) Hz (100 ≤ f < 5000) Hz (5000 ≤ f ≤ 20 000) Hz	1.5° 1.3° 2.8°	w/ 396C10/C11 air bearing shaker
Low Frequency	(0.5 ≤ f ≤ 10) Hz	1.0°	w/ low frequency long stroke shaker w/ optical reference

Parameter/Equipment	Frequency	CMC ^{2, 5} (±)	Comments
Calibration of Portable Vibration Calibrator (0.1 to 10) g	(5 ≤ f ≤ 10) Hz (10 < f ≤ 30) Hz (30 < f < 100) Hz 100 Hz (100 < f < 2000) Hz (2000 ≤ f ≤ 10 000) Hz	4.0 % 3.0 % 1.5 % 1.0 % 1.5 % 4.0 %	DMM, signal conditioner, standard accelerometer

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 In the stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMC's are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.

⁴ This scope meets A2LA's *P112 Flexible Scope Policy*.

⁵ The statement of CMC, percentages are to be read as percent of reading unless otherwise noted.



Accredited Laboratory

A2LA has accredited

THE MODAL SHOP INC, AN AMPHENOL COMPANY

Cincinnati, OH

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 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 19th day of March 2026.

A blue ink signature of Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2649.01
Valid to April 30, 2028

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