



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

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CALIBRATION

Valid To: August 31, 2025

Certificate Number: 3035.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,4}:

I. Acoustical Quantities

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
Calibrate Acoustical Calibrator – Sound Pressure Level: Frequency THD	 (31 to 10 000) Hz (0.5 to 8) %	 0.34 % 0.02 %	 Acoustical calibrator calibration system
Sound Level Meters – Electrical Calibration: (31 to 10 000) Hz Acoustical Calibration: (31 to 10 000) Hz	 (75 to 140) dB (70 to 130) dB	 1.2 % 0.14 %	 Functional generator Acoustical calibrator

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
Accelerometer – Voltage Sensitivity	(10 to 50) Hz (51 to 100) Hz (101 to 1000) Hz (1001 to 5000) Hz (5001 to 10 000) Hz	2.1 % 1.8 % 1.7 % 2.0 % 3.6 %	Accelerometer system

II. Fluid Quantities

Parameter/Equipment	Range	CMC ^{2, 3, 5} (±)	Comments
Velocity – Measuring Equipment	50 SFPM (51 to 600) SFPM (601 to 1800) SFPM (1801 to 3600) SFPM (3601 to 6000) SFPM (50 to 599) SFPM (600 to 1799) SFPM (1800 to 2999) SFPM (3000 to 5399) SFPM (5400 to 6000) SFPM	4.0 SFPM 27 SFPM 140 SFPM 120 SFPM 200 SFPM 4.4 SFPM 59 SFPM 110 SFPM 140 SFPM 120 SFPM	Flotek 360 wind tunnel with thermo-anemometer TSI standard Pacer
ISO Standard Dust Concentration – Measuring Equipment	(0 to 6.5) mg/m ³ (6.6 to 8.0) mg/m ³ (8.1 to 50) mg/m ³	1.4 mg/m ³ 2.6 mg/m ³ 3.4 mg/m ³	Laminar dust chamber system, gravimetric standard
Calibrate Flow Calibrators	(5 to 50) mLPM (51 to 200) mLPM (201 to 500) mLPM (0.5 to 5) LPM (5.1 to 15) LPM (15.1 to 30) LPM	3.8 % 8.9 % 1.2 % 0.03 % 0.04 % 1.4 %	Piston provers ML800-10 ML800-44

Parameter/Equipment	Range	CMC ^{2, 3, 5} (±)	Comments
Calibration of Air Sampling Pump – Air Flow			Piston Provers
	(0.5 to 50) mLPM	4.3 %	Definer 220L low flow
	(51 to 200) mLPM	7.2 %	
	(201 to 495) mLPM	4.3 %	
	(0.5 to 1.9) LPM	0.11 %	Definer 220M medium flow
	(2.0 to 4.4) LPM	0.42 %	
	4.50 LPM	0.94 %	
	5 mLPM to 5 LPM	0.14 %	Definer 220H high flow
	(5.1 to 15) LPM	0.23 %	
	(15.1 to 30) LPM	0.65 %	

Parameter/Equipment	Range	CMC ^{2, 5} (±)	Comments
Mass Flow Meters	(0.1 to 0.5) SLPM	0.03 SLPM	Mass flow meter – TSI 4146C
	(0.6 to 5) SLPM	0.12 SLPM	
	(5.1 to 10) SLPM	0.29 SLPM	
	(10.1 to 15) SLPM	0.49 SLPM	
	(15.1 to 20) SLPM	0.48 SLPM	
	(1 to 39.9) SLPM	0.08 SLPM	Mass flow meter – TSI 4043F
	(40 to 99.9) SLPM	0.73 SLPM	
	(100 to 149.9) SLPM	2.3 SLPM	
	(150 to 200) SLPM	4.9 SLPM	
Flow (Air) – Measure	(400 to 807) CFM (808 to 1032) CFM (1033 to 1508) CFM (1509 to 1805) CFM (1806 to 1905) CFM	39 CFM 35 CFM 31 CFM 33 CFM 91 CFM	Dwyer manometer calibrated using TSI air velocity transducer (flow hood)

III. Magnetic Quantities

Parameter/Equipment	Range	CMC ² (±)	Comments
Gauss Meter –			
Axial Probe	(1 to 100) G (100.1 to 290) G (290.01 to 500) G (500.10 to 2000) G (2000.1 to 2600) G	1.3 G 2.2 G 10 G 16 G 16 G	F.W. Bell
Flat/ Transverse Probe	(7 to 24) G (100 to 290) G (291 to 1000) G (1001 to 5000) G (5001 to 10 000) G	1.1 G 10 G 10 G 16 G 56 G	

IV. Mechanical

Parameter/Equipment	Range	CMC ^{2,3, 5} (±)	Comments
Pressure – Measuring Equipment (Pneumatic)	(-9 to -53) inH ₂ O (-54 to -153) inH ₂ O	0.26 % 0.22 %	Ametek dead weight tester
Vacuum	(-154 to -253) inH ₂ O (-254 to -403) inH ₂ O (-404 to -630) inH ₂ O	0.85 % 1.0 % 1.3 %	
Pressure	(9 to 53) inH ₂ O (54 to 153) inH ₂ O (154 to 253) inH ₂ O (254 to 403) inH ₂ O (404 to 630) inH ₂ O	0.18 % 0.22 % 0.59 % 0.89 % 0.98 %	

Parameter/Equipment	Range	CMC ^{2,3, 5} (±)	Comments
Force – Measuring Equipment			
Tension	(10 to 20) lbf (20.1 to 60) lbf (60.1 to 100) lbf (100.1 to 160) lbf (160.1 to 200) lbf	0.50 lbf 0.32 lbf 0.58 lbf 0.69 lbf 1.3 lbf	PCE load cell with universal testing machine
Compression	(10 to 20) lbf (20.1 to 60) lbf (60.1 to 100) lbf (100.1 to 160) lbf (160.1 to 200) lbf	0.43 lbf 0.78 lbf 0.39 lbf 0.72 lbf 0.46 lbf	
Torque – Wrenches	Clockwise: (5 to 20) lbf·ft (21 to 250) lbf·ft (251 to 500) lbf·ft (501 to 750) lbf·ft (751 to 1000) lbf·ft Counterclockwise: (5 to 20) lbf·ft (21 to 250) lbf·ft (251 to 500) lbf·ft (501 to 750) lbf·ft (751 to 2000) lbf·ft	5.4 lbf·ft 16 lbf·ft 40 lbf·ft 52 lbf·ft 50 lbf·ft 0.98 lbf·ft 2.4 lbf·ft 4.5 lbf·ft 4.1 lbf·ft 42 lbf·ft	AKO AKO

V. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 5} (±)	Comments
Temperature – Measuring Equipment	(32 to 60) °F	0.16 °F	Rotronics
	(61 to 90) °F	0.14 °F	
	(91 to 120) °F	0.19 °F	
	(20 to 30) °F	0.51 °F	Temp/humidity chamber w/ Vaisala HMT 333 (E)
	(31 to 60) °F	0.49 °F	
	(61 to 80) °F	0.48 °F	
	(81 to 100) °F	0.74 °F	
	(101 to 140) °F	0.61 °F	
Humidity – Measuring Equipment	(20 to 60) °F	1.2 °F	Temp/humidity chamber w/ Vaisala HMT 333 (H)
	(61 to 90) °F	1.2 °F	
	(91 to 140) °F	1.2 °F	
	(10 to 18) % RH	0.19 % RH	Rotronics
	(19 to 50) % RH	0.58 % RH	
	(51 to 90) % RH	2.1 % RH	
	(10 to 26) % RH	0.73 % RH	Humidity chamber w/ Vaisala HMT 333 (E)
	(27 to 40) % RH	0.75 % RH	
	(41 to 60) % RH	0.77 % RH	
	(61 to 95) % RH	0.74 % RH	
	(10 to 12) % RH	2.0 % RH	Humidity chamber w/ Vaisala HMT 333 (H)
	(13 to 40) % RH	1.6 % RH	
	(41 to 60) % RH	3.0 % RH	
	(61 to 90) % RH	5.8 % RH	

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 statement of CMC, percentages are percentages of the reading/output, unless otherwise noted.

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

- 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.



Accredited Laboratory

A2LA has accredited

CIH EQUIPMENT COMPANY, INC

Clearwater, FL

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 17th day of October 2023.

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3035.01
Valid to August 31, 2025

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