



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: January 31, 2028

Certificate Number: 4798.01

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<sup>1,6</sup>:

I. Acoustical Quantities

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
Sound Level – Measure <sup>3</sup>  (35 to 100) dB (Low Range)  (65 to 130) dB (High Range)	1 kHz	0.48 dB  0.37 dB	Cirrus research sound level meter CR151
Sound Level Meters – Measuring Equipment <sup>3</sup>  94 dB  114 dB	1 kHz	0.69 dB  1.2 dB	Extech sound level calibrator 407766

## II. Chemical Quantities

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Electrolytic Conductivity – Measuring Equipment <sup>3</sup>	1 µS ± 10 % µS 5 µS ± 10 % µS 10 µS ± 10 % µS 100 µS ± 10 % µS 1000 µS ± 10 % µS 1413 µS ± 10 % µS 10 000 µS ± 10 % µS 150 000 µS ± 10 % µS 200 000 µS ± 10 % µS	0.32 µS 0.57 µS 0.56 µS 2.2 µS 4.8 µS 5.3 µS 44 µS 550 µS 740 µS	Conductivity solutions
Gaseous Ethanol Concentration – Measuring Equipment (Ethylometers)	0.2 g/L 0.5 g/L 1.0 g/L 1.5 g/L	0.017 g/L 0.017 g/L 0.02 g/L 0.024 g/L	ACS reference solutions & breath simulator
pH – Measuring Equipment <sup>3</sup>	4 pH 7 pH 10 pH	0.012 pH 0.012 pH 0.012 pH	pH calibration buffer solutions
Sodium (Na) Concentration – Measuring Equipment <sup>3</sup>	10 ppm in 2 % NHO <sub>3</sub> 100 ppm in 2 % NHO <sub>3</sub> 500 ppm in 2 % NHO <sub>3</sub> 1000 ppm in 2 % NHO <sub>3</sub>	0.15 µg/ml 1 µg/ml 5 µg/ml 10 µg/ml	Using accredited solutions
Turbidity – Measuring Equipment <sup>3</sup>	1 NTU 2 NTU 3 NTU 4 NTU 5 NTU 10 NTU 20 NTU 50 NTU 100 NTU 500 NTU 1000 NTU	0.12 NTU 0.12 NTU 0.12 NTU 0.24 NTU 0.15 NTU 0.16 NTU 0.43 NTU 1.5 NTU 2.0 NTU 2.8 NTU 17 NTU	Accredited solutions

### III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,7</sup> (±)	Comments
Energy/Monophasic Defibrillator <sup>3</sup>	(10 to 360) J	1.2 % + 0.028 J	Fluke Impulse 7000 DP
Energy/Biphasic Defibrillator	(15 to 175) J	1.9 % + 0.028 J	Fluke Impulse 7000 DP
Patient Simulator Calibration			
ECG BPM	(10 to 400) bpm	1.2 % + 0.028 bpm	Fluke ProSim8
SPO2	(30 to 100) %	(3.7 % rdg + 0.028 %)	
NIBP	(0 to 300) mmHg	(3.7 % rdg + 0.028 %)	
IBP Channel 1	(0 to 300) mmHg	2 % + 0.028 mmhg	
IBP Channel 2	(0 to 300) mmHg	0.9 % + 0.028 mmhg	
Temperature	(30 to 42) °C	2.2 % + 0.028 °C	

### IV. Fluid Quantities

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Gas Concentration – Measure <sup>3</sup>			
O <sub>2</sub>	5.00 % 10.00 % 20.90 %	0.16 % Concentration 0.16 % Concentration 0.16 % Concentration	Apogee MO-200 with probe
CO <sub>2</sub>	5.00 % 10.00 % 20.00 %	0.37 % Concentration 0.66 % Concentration 1.2 % Concentration	GMP70 with GMP251 probe

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Gas Detection – Measuring Equipment <sup>3</sup>			
O <sub>2</sub>	5 % 10 % 20.90 %	2.0 % Concentration 2.0 % Concentration 2.0 % Concentration	Standard gases
CO <sub>2</sub>	5 % 10 % 20 %	2.0 % Concentration 2.1 % Concentration 2.3 % Concentration	
POVA (Piston/Plunger Operated Volumetric Apparatus) – Fixed & Variable Pipettes	(0.1 to 10) µL (10 to 100) µL  (100 to 1000) µL  (>1 to 10) mL	0.032 µL 0.033 µL  9.7 µL  12 µL	Gravimetric forward method ISO 8655-6  RADWAG MYA.21.4Y P.B. precision scale  Adam ABL 125 precision scale

#### V. Mechanical

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Barometric Pressure – Measuring Equipment <sup>3</sup>	(500 to 899) mbar (900 to 1100) mbar	0.11 mbar 0.12 mbar	Pressure calibrator ASC-400 with APM30
Centrifuge <sup>3</sup> – Measure			
Rotational Speed	(6 to <8300) rpm (8300 to <25 000) rpm (25 000 to 99 999) rpm	1.5 rpm 2.5 rpm 8.1 rpm	Digital tachometer
Temperature	(0 to <100) °C (100 to <420) °C (420 to 650) °C	0.036 °C 0.068 °C 0.077 °C	Digital thermometer
Timer	(1 to 7200) s	0.68 s	Stopwatch
Displacement (Vibration)	(0.0 to 4.8) mm/s (4.8 to 20) mm/s	0.24 mm/s 1.0 mm/s	TPI vibration meter

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Differential Pressure – Measure <sup>3</sup> (Environmental Chambers / Clean Rooms)	(0 to 2.0) psi (0 to 55.42) inH <sub>2</sub> O	0.0061 psi 0.17 inH <sub>2</sub> O	Extech 407910 with AMP30PSI ref &  Reed 3002
	(0 to 2.0) psi (0 to 166.25) inH <sub>2</sub> O	0.0070 psi 0.19 inH <sub>2</sub> O	Extech HD700
	(2.00 to 6.0) psi (0 to 166.25) inH <sub>2</sub> O	0.0061 psi 0.17 inH <sub>2</sub> O	Extech HD700
	(6.0 to 28.0) psi (166.25 to 775.81) inH <sub>2</sub> O	0.018 psi 0.50 inH <sub>2</sub> O	Extech 407910
Pneumatic Differential Pressure – Measuring Equipment <sup>3</sup>	(0.1 to 0.9) inH <sub>2</sub> O (1.0 to 9.0) inH <sub>2</sub> O (10 to 90) inH <sub>2</sub> O (100 to 140) inH <sub>2</sub> O	0.090 inH <sub>2</sub> O 0.090 inH <sub>2</sub> O 0.094 inH <sub>2</sub> O 0.093 inH <sub>2</sub> O	ASC-400 with Additel 681 gauges
Pneumatic Vacuum Gauges – Measuring Equipment <sup>3</sup>	(-5 to -25) psi (-34.37 to -172.37) kPa (-25 to -45) psi (-172.36 to -310.26) kPa (-45 to -85) psi (-310.26 to -568.05) kPa (-85 to -91) psi (58.05 to -627.423) kPa	0.18 psi 1.2 kPa 0.15 psi 1.0 kPa 0.12 psi 0.83 kPa 0.13 psi 0.90 kPa	Ametek/Jofra APC 500
Pneumatic Pressure Gauge – Measuring Equipment <sup>3</sup>	Up to 700 kPa Up to 101.56 psi (700 to 1400) kPa (101.5 to 203.05) psi (1400 to 2100) kPa (203.05 to 304.58) psi	0.76 kPa 0.1 psi 1.0 kPa 0.14 psi 1.2 kPa 0.17 psi	Digital pressure gauge: 300 PSI/2068 kPa crystal gage
	(2068 to 4836) kPa (299.94 to 701.40) psi (4836 to 10 342) kPa (701.40 to 1499.98) psi (10 342 to 13 790) kPa (1499.98 to 2000.07) psi (13 790 to 20 684) kPa (2000.07 to 2999.96) psi	2.0 kPa 0.29 psi 2.3 kPa 0.33 psi 2.7 kPa 0.39 psi 3.2 kPa 0.46 psi	3K PSI/20684 kPa crystal gage

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Pneumatic Pressure Gauge – Measuring Equipment <sup>3</sup> (cont)	(20 683.99 to 68 947.57) kPa (68 947.57 to 103 421.36) kPa (2999.96 to 10 000) psi (10 000 to 15 000) psi	5.4 kPa 5.4 kPa 0.78 psi 0.78 psi	Additel ADT681A-05-GP15K-PSI-N digital pressure gauge
Rotational Speed – Measure <sup>3</sup>	(6 to <8300) rpm (8300 to <25 000) rpm (25 000 to 99 999) rpm	1.5 rpm 2.5 rpm 8.1 rpm	Digital tachometer
Rotational Speed – Measuring Equipment			
Contact	6 rpm 50 rpm (50 to 100) rpm (100 to 1000) rpm (1000 to 3000) rpm (3000 to 5000) rpm (5000 to 8000) rpm	0.49 rpm 0.42 rpm 1.5 rpm 2.1 rpm 1.9 rpm 2.7 rpm 2.4 rpm	Digital tachometer calibrator -Sansel RPMC 1700
Non-Contact	(100 to <1000) rpm (1000 to 10 000) rpm (10 000 to 20 000) rpm (20 000 to 30 000) rpm (30 000 to 50 000) rpm (50 000 to 70 000) rpm (70 000 to 90 000) rpm (90 000 to 100 000) rpm	5.5 rpm 5.6 rpm 6.2 rpm 6.8 rpm 8.5 rpm 11 rpm 12 rpm 14 rpm	
Scales & Balances <sup>3</sup>			
In 1-2-5 Steps	(0.5 to 1) mg (1 to 2) mg (2 to 5) mg (5 to 10) mg (10 to 20) mg (20 to 50) mg (50 to 100) mg (100 to 200) mg	8.6 µg 10 µg 11 µg 11 µg 14 µg 17 µg 20 µg 25 µg	ASTM class E2 & class 1 weights



Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Temperature – Measure <sup>3,4</sup>	(-90 to 100) °C (100 to 420) °C (420 to 650) °C	0.036 °C 0.068 °C 0.077 °C	Digital thermometer with PRT
Temperature – Measuring Equipment <sup>3</sup>	(-90 to 100) °C (100 to 420) °C (420 to 650) °C	0.036 °C 0.068 °C 0.077 °C	Dry well with PRT

## VII. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Timing Devices <sup>3</sup>	60 s 300 s 600 s 900 s 1200 s 1500 s 1800 s 3600 s 7200 s 18 000 s 36 000 s 54 000 s 72 000 s	0.90 s 0.65 s 0.76 s 0.80 s 0.94 s 1.1 s 1.3 s 1.9 s 5.8 s 13 s 19 s 29 s 38 s	Sansel timer calibrator SCS DTC01

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service.

<sup>2</sup> 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.

<sup>3</sup> Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g., resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

<sup>4</sup> The contributions from the "best existing device" are not included in the CMC claim.

<sup>5</sup> 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.

<sup>6</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.

<sup>7</sup> 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. CMCs 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.



# Accredited Laboratory

A2LA has accredited

**KARAKOL N.V.**

*Willemstad, Curacao Dutch Caribbean*

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 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 5<sup>th</sup> day of May 2026.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 4798.01  
Valid to January 31, 2028

*For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.*