



# CERTIFICATE OF ACCREDITATION

## The ANSI National Accreditation Board

Hereby attests that

**Norway Labs, Inc.**  
**7913 SW Cirrus Drive**  
**Beaverton, OR 97008**

Fulfills the requirements of

**ISO/IEC 17025:2017**

and national standard

**ANSI/NCSL Z540-1-1994 (R2002)**

In the field of

**CALIBRATION**

This certificate is valid only when accompanied by a current scope of accreditation document.  
The current scope of accreditation can be verified at [www.anab.org](http://www.anab.org).

A handwritten signature in black ink, appearing to be 'Jason Stine', is positioned above a horizontal line.

Jason Stine, Vice President

Expiry Date: 17 October 2026

Certificate Number: AC-3316



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.  
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).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017  
AND  
ANSI/NCSL Z540-1-1994 (R2002)**

**Norway Labs, Inc.**

7913 SW Cirrus Drive  
Beaverton, OR 97008

Bob Bluhm bob@norwaylabs.com

**CALIBRATION**

ISO/IEC 17025 Accreditation Granted: **17 October 2024**

Certificate Number: **AC-3316**

Certificate Expiry Date: **17 October 2026**

**Electrical – DC/Low Frequency**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
DC Voltage Measure <sup>1</sup>	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1 000) V	0.05 $\mu$ V/mV + 3.5 $\mu$ V 38 $\mu$ V/V + 8.9 $\mu$ V 35 $\mu$ V/V + 52 $\mu$ V 45 $\mu$ V/V + 0.76 mV 44 $\mu$ V/V + 11 mV	Comparison to Keysight 34461A Digital Multimeter
Resistance <sup>1</sup>	(40 to 90) $\Omega$ 90 $\Omega$ to 800 k $\Omega$ 800 k $\Omega$ to 1.2 M $\Omega$	0.1 % of reading 0.5 % of reading 0.1 % of reading	Comparison to Fluke 9500B Oscilloscope Calibrator
Oscilloscope <sup>1</sup> Bandwidth/Leveled Sine Wave –High Frequency Flatness	5 mVp-p to 5.0 Vp-p 50 MHz to 30 GHz (>30 to 40) GHz	7.5 % of reading 8.7 % of reading	Comparison to Keysight U2064X Power Sensor Pasternack PE20DV1056 Power Divider
Oscilloscopes <sup>1</sup> Leveled Sine Flatness	0.01 Hz to 300 MHz (300 to 550) MHz (0.55 to 1.1) GHz (1.1 to 3.2) GHz	4.2 % of reading 4.2 % of reading 5.1 % of reading 5.1 % of reading	Comparison to Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes <sup>1</sup> DC Square Volts < 10 kHz 9530 Active Head into 50 Ω	10 mVp-p to 5 Vp-p	0.1 % of reading + 10 μV	Comparison to Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
DC Square Volts < 10 kHz into 1 MΩ	10 mVp-p to 200 Vp-p	0.1 % of reading + 10 μV	
Oscilloscopes <sup>1</sup> Leveled Sine Amplitude into 50 Ω at single Ref Frequency	5 mVp-p to 5 Vp-p 0.1 Hz to 550 MHz 5 mVp-p to 3 Vp-p 550 MHz to 2.5 GHz 5 mVp-p to 2 Vp-p 2.5 GHz to 3.2 GHz	1.5 % of reading 1.5 % of reading 1.5 % of reading	Comparison to Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
Oscilloscopes <sup>1</sup> DC Voltage – Generate into 50 Ω Generate into 1 MΩ	1 mV to 5 V 1 mV to 200 V	0.034 % of reading + 27 μV 0.029 % of reading + 27 μV	
Oscilloscopes <sup>1</sup> Time Markers/Square Marker - Generate into 50 Ω	10 ns to 1 μs >1 μs to 10 ms (>10 to 100) ms	1.1 E <sup>-07</sup> μs/s 1.1 E <sup>-04</sup> μs/s 0.011 μs/s	Comparison to Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head Referenced to Hewlett Packard Z3805A GPS

**Time and Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency - Measure	Up to 225 MHz	0.087 mHz/MHz + 0.5 mHz	Comparison to Agilent 53181A Frequency Counter Referenced to Hewlett Packard Z3805A GPS
Frequency - Source	10 MHz	0.015 Hz	Comparison to Referenced to Hewlett Packard Z3805A GPS

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ( $k=2$ ), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.



Jason Stine, Vice President

