



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.

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

Valid to: **October 17, 2026**

Certificate Number: **AC-3316**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage Measure	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1 000) V	0.05 μ V/mV + 3.5 μ V 38 μ V/V + 8.9 μ V 35 μ V/V + 52 μ V 45 μ V/V + 0.76 mV 44 μ V/V + 11 mV	Keysight 34461A Digital Multimeters
Resistance	50 Ω to 1 M Ω	0.1 % of reading	Fluke 9500B Oscilloscope Calibrator
Oscilloscope Bandwidth/Leveled Sine Wave –High Frequency Flatness	5 mVp-p to 2.0 Vp-p 50 MHz to 20 GHz	7 % of reading	Agilent E4418B Power Meter, Agilent E4413A Power Sensor, Anritsu K241B Splitter Based on Manufacturer Manual.
Oscilloscopes ¹ 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	Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
Oscilloscopes ¹ DC Square Volts < 10 kHz 9530 Active Head into 50 Ω	40 μ Vp-p to 1 mVp-p 1 mVp-p to 5 Vp-p	1 % of reading + 10 μ V 0.1 % of reading + 10 μ V	Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
DC Square Volts < 10 kHz into 1 m Ω	40 μ Vp-p to 1 mVp-p 1 mVp-p to 200 Vp-p	1 % of reading + 10 μ V 0.1 % of reading + 10 μ V	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 ¹ Leveled Sine Amplitude into 50 Ω at single Ref Frequency (50 kHz to 10 MHz)	5 mVp-p to 5 Vp-p 0.1 Hz to 550 MHz	1.5 % of reading	Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
	5 mVp-p to 3 Vp-p 550 MHz to 2.5 GHz	1.5 % of reading	
	5 mVp-p to 2 Vp-p 2.5 GHz to 3.2 GHz	1.5 % of reading	
Oscilloscopes ¹ DC Voltage – Generate into 50 Ω Generate into 1 MΩ	1 mV to 5 V 1 mV to 200 V	0.036 % of reading + 25 μV 0.029 % of reading + 25 μV	Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.
Oscilloscopes ¹ Time Markers/Square Marker - Generate into 50 Ω	10 ns to 10 ms	57 μs/s	Fluke 9500B Oscilloscope Calibration System with Fluke 9530 Active Head.


Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency - Measure	Up to 1 MHz (1 to 10) MHz (10 to 250) MHz	0.57 Hz 5.7 Hz 57 Hz	Agilent 53181A Frequency Counter Referenced to Hewlett Packard Z3805A GPS
Frequency - Source	10 MHz	0.015 Hz	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
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-3316.



Jason Stine, Vice President