



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Copper Mountain Technologies

631 East New York Street
Indianapolis, IN 46202
(and the satellite location listed on the scope)

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.

Jason Stine, Vice President

Expiry Date: 01 July 2026

Certificate Number: AC-2060



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)

Copper Mountain Technologies

631 East New York Street
Indianapolis, IN 46202
Joshua Arvin 317-222-5400
joshua.a@coppermountaintech.com

CALIBRATION

Valid to: **July 1, 2026**

Certificate Number: **AC-2060**

Electrical - RF/Microwave

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
RF Absolute Power – Measure ²	0 dBm DC to 33 GHz (33 to 54) GHz (-20 to +20) dBm DC to 33 GHz (33 to 54) GHz	0.1 dB + M 0.25 dB + M 0.15 dB + M 0.3 dB + M	Thermal Power Sensors: R&S NRP-Z51 R&S NRP-Z52 R&S NRP110T

Electrical – RF/Microwave

Parameter/ Equipment	Reflection Magnitude ¹			
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220ET, S5243ET, FET1854ET Calibration Kits: 03CK010-150, 05CK010-150, 08CK010-150, 09CK010-150			
Range	Expanded Uncertainty of Measurement (+/-)			
Frequency	Measured VRC Magnitude (Linear)			
	0 to ≤ 0.4	> 0.4 to ≤ 0.6	> 0.6 to ≤ 0.8	> 0.8 to ≤ 1
(DC to 10) GHz	0.004	0.005	0.006	0.008
(10 to 33) GHz	0.006	0.007	0.009	0.012
(33 to 50) GHz	0.009	0.011	0.014	0.019
(50 to 54) GHz	0.016	0.018	0.022	0.027

Electrical – RF/Microwave

Parameter/ Equipment	Reflection Phase				
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220ET, S5243ET, FET1854ET Calibration Kits: 03CK010-150, 05CK010-150, 08CK010-150, 09CK010-150				
Range	Expanded Uncertainty of Measurement (+/-)				
Frequency	Measured VRC Magnitude (Degrees)				
	(0.01 to 0.02)	(0.02 to 0.05)	(0.05 to 0.1)	(0.1 to 0.2)	(0.2 to 1)
(DC to 10) GHz	10 °	4 °	2 °	1 °	0.5 °
(10 to 33) GHz	15 °	6 °	3 °	2 °	1 °
(33 to 50) GHz	26 °	10 °	5 °	2.5 °	1.5 °
(50 to 54) GHz	–	19 °	10 °	5 °	2 °

Electrical – RF/Microwave

Parameter/ Equipment	Transmission Magnitude						
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220ET, S5243ET, FET1854ET Calibration Kits: 03CK010-150, 05CK010-150, 08CK010-150, 09CK010-150						
Range	Expanded Uncertainty of Measurement (+/-)						
Frequency	Measured VRC Magnitude (dB)						
	0	10	20	30	40	50	60
(DC to 20) GHz	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB
(20 to 44) GHz	0.1 dB	0.1 dB	0.1 dB	0.1 dB	0.1 dB	0.1 dB	0.1 dB
(44 to 50) GHz	0.11 dB	0.11 dB	0.11 dB	0.11 dB	0.11 dB	0.11 dB	0.15 dB
(50 to 54) GHz	0.15 dB	0.15 dB	0.15 dB	0.15 dB	0.15 dB	0.15 dB	0.17 dB



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Electrical – RF/Microwave

Parameter/ Equipment	Transmission Phase						
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220ET, S5243ET, FET1854ET Calibration Kits: 03CK010-150, 05CK010-150, 08CK010-150, 09CK010-150						
Range	Expanded Uncertainty of Measurement (+/-)						
Frequency	Measured VRC Magnitude (Degrees)						
	0	10	20	30	40	50	60
(DC to 20) GHz	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °
(20 to 44) GHz	1 °	1 °	1 °	1 °	1 °	1 °	1 °
(44 to 50) GHz	1.1 °	1.1 °	1.1 °	1.1 °	1.1 °	1.1 °	1.5 °
(50 to 54) GHz	1.5 °	1.5 °	1.5 °	1.5 °	1.5 °	1.5 °	1.7 °

Time and Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Frequency – Source	10 MHz	130 nHz/Hz	Frequency Counter: Agilent 53181A, opt. 010
Frequency – Measure	1 Hz to 60 GHz	100 nHz/Hz	Frequency Counter: Keysight 53181A, opt. 010; Spectrum Analyzer: Keysight E4407B; Harmonic Mixers: Keysight 11970A, Keysight 11970U



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Services performed at satellite location

Copper Mountain Technologies EMEA

Eleftheriou Venizelou 48
Paphos 8021 Cyprus

Electrical - RF/Microwave

Parameter/ Equipment	Reflection Magnitude ¹			
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220 Calibration Kits: 03CK010-150, 05CK010-150			
Range	Expanded Uncertainty of Measurement (+/-)			
Frequency	Measured VRC Magnitude (Linear)			
	0 to ≤ 0.4	> 0.4 to ≤ 0.6	> 0.6 to ≤ 0.8	> 0.8 to ≤ 1
(DC to 10) GHz	0.004	0.005	0.006	0.008
(10 to 20) GHz	0.006	0.007	0.009	0.012

Electrical - RF/Microwave

Parameter/ Equipment	Reflection Phase				
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220 Calibration Kits: 03CK010-150, 05CK010-150				
Range	Expanded Uncertainty of Measurement (+/-)				
Frequency	Measured VRC Magnitude (Degrees)				
	(0.01 to 0.02)	(0.02 to 0.05)	(0.05 to 0.1)	(0.1 to 0.2)	(0.2 to 1)
(DC to 10) GHz	10 °	4 °	2 °	1 °	0.5 °
(10 to 20) GHz	15 °	6 °	3 °	2 °	1 °

Electrical - RF/Microwave

Parameter/ Equipment	Transmission Magnitude						
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220 Calibration Kits: 03CK010-150, 05CK010-150						
Range	Expanded Uncertainty of Measurement (+/-)						
Frequency	Measured VRC Magnitude (dB)						
	0	10	20	30	40	50	60
(DC to 10) GHz	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB
(10 to 20) GHz	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.05 dB

Electrical - RF/Microwave

Parameter/ Equipment	Transmission Phase						
Reference Standard, Method, and/or Equipment	Vector Network Analyzers: C1220 Calibration Kits: 03CK010-150, 05CK010-150						
Range	Expanded Uncertainty of Measurement (+/-)						
Frequency	Measured VRC Magnitude (dB)						
	0	10	20	30	40	50	60
(DC to 10) GHz	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °
(10 to 20) GHz	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °	0.5 °

Electrical - RF/Microwave

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
RF Absolute Power – Measure ²	0 dBm DC to 33 GHz	0.1 dB + M	Thermal Power Sensors: R&S NRP33T
	(-20 to +20) dBm DC to 33 GHz	0.15 dB + M	

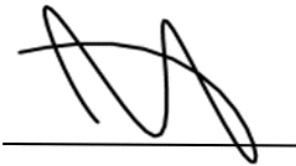
Time and Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Frequency – Source	10 MHz	100 nHz/Hz	Frequency Counter: Keysight 53181A, opt. 010
Frequency – Measure	1 Hz to 26.5 GHz	100 nHz/Hz	Frequency Counter: Keysight 53181A, opt. 010; Spectrum Analyzer: Keysight E4407B

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. Unitless linear measure.
2. M: Mismatch between Standard and UUT.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-2060.



Jason Stine, Vice President

