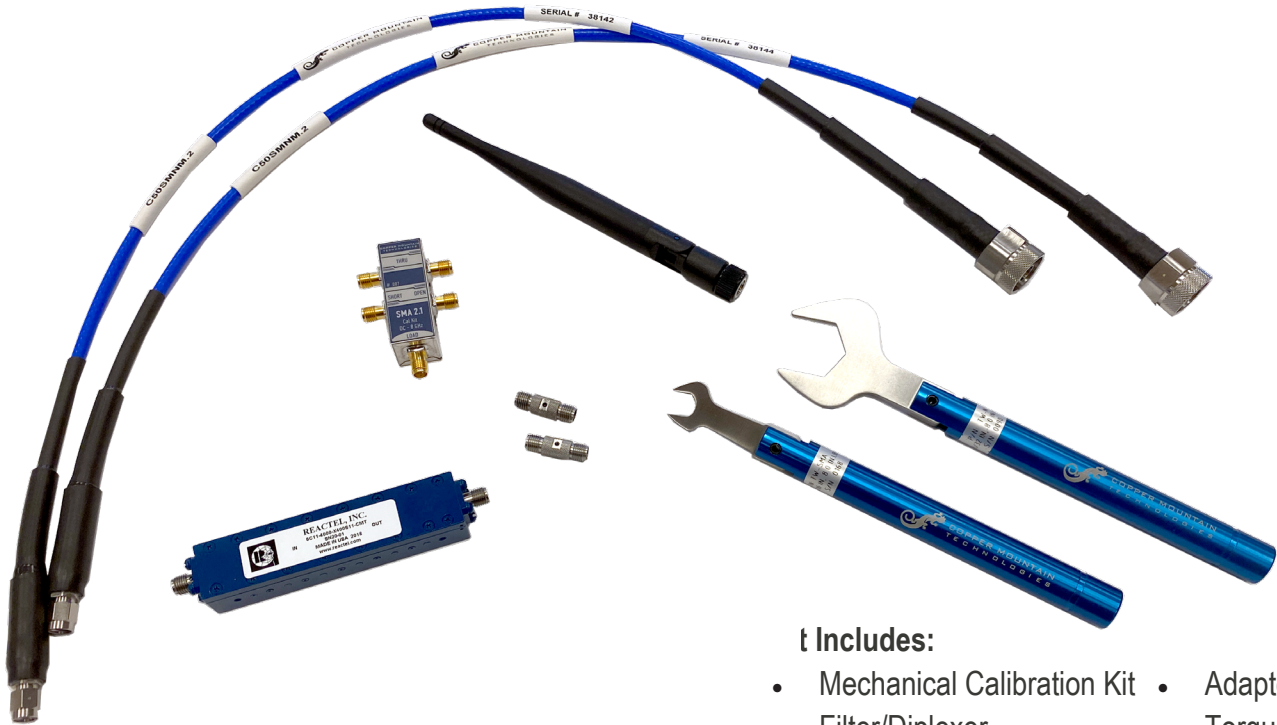


RF Teaching Kit



COPPER MOUNTAIN®
TECHNOLOGIES



It Includes:

- Mechanical Calibration Kit
- Filter/Diplexer
- Antenna
- Cables
- Adapters
- Torque Wrenches
- Class Curriculum

- **RF teaching solution** that backs RF theory with a robust **hands-on VNA experience** and sample labs for classes
- Exclusively offered to **educational institutions teaching RF**
- Practical approach to a variety of measurements that will prepare students for a **wide range of industry engineering jobs**
- CMT can assist with **creating labs** designed by applications engineers to walk students through common VNA measurements
- **CMT software is free** to download on an unlimited number of PCs
- Students can **perform measurement preparations and post-process results** on their own computers without the measurement module

Kit Accessory Specifications

Filters by Reactel

Since it was established in 1979, Reactel, Incorporated has become one of the industry leaders in the design and manufacture of RF and Microwave filters, diplexers, and sub-assemblies. Through a continuous process of research and development, they have established a full line of filters of all types. They offer the generally known tubular, LC, cavity, and waveguide designs, as well as state of the art high performance Suspended Substrate models. Reactel uses the latest in CAD/CAM methods and equipment in all of their design and manufacturing processes. Reactel is a trusted RF manufacturer which is why CMT partnered with them for the University Kit to provide a quality filter or diplexer for testing with the University Kit.

Included with 3 GHz Kit

Passband	1425 - 1575 MHz
Center Frequency	1500 MHz
VSWR (at Passband)	$\leq 1.5:1$
Insertion Loss (at Passband)	≤ 0.6 dB
Rejection at 1275 and 1680 MHz	≥ 50 dB
Connectors	SMA Female
Size	1 x 1.5 x 3.5" (nominal excluding connectors)



Included with 8 GHz Kit

Passband	3800-4200 MHz
Center Frequency	4000 MHz
VSWR (at Passband)	$\leq 1.5:1$
Insertion Loss (at Passband)	≤ 0.6 dB
Rejection at 3400 and 4500 MHz	≥ 50 dB
Connectors	SMA Female
Size	1 x 0.75 x 2.75" (nominal excluding connectors)



Kit Accessory Specifications

Calibration Kit

Electrical Data

Impedance	50Ω
Frequency Range	DC to 8 GHz
Connector Type	SMA female

Environmental Data

Operating temperature	15°C to 35°C
Storage temperature	-40°C to 75°C
Humidity	90% at 25°C (77°F)
Atmospheric Pressure	70.0 kPa to 106.7 kPa

Effective System Data (typical) ^{2,3}

Directivity	30 dB
Source match	28 dB
Load match	30 dB
Reflection tracking	0.1 dB
Transmission tracking	0.1 dB

[1] All specifications subject to change without notice. [2] VNA maximum effective parameters after calibration. [3] All parameters are determined in the temperature range of 23±5 °C with the temperature variation after calibration of no more than ±1 °C.

Dual Band WiFi Stick Antenna

Electrical Specifications

Frequency range	2400-2500 MHz 5150-6000 MHz
Nominal Impedance	50Ω
VSWR	2.0 Max
Peak Gain (2400-2500 MHz)	2.2 dBi
Peak Gain (5150-6000 MHz)	3.5 dBi
Average Efficiency (2400-2500 MHz)	65%
Average Efficiency (5150-6000 MHz)	70%
Polarization	Linear

Mechanical Specifications

Antenna Body	TPEE
Color	Black
Ingress Protection	IP67
Weight	17.2 g
Overall Length	3.92 inches
Connector Type	SMA Male

Mechanical Data

Mating Cycles	> 500 times
Coupling torque	0.56 Nm
Open-end wrench size	8 mm

Coefficients

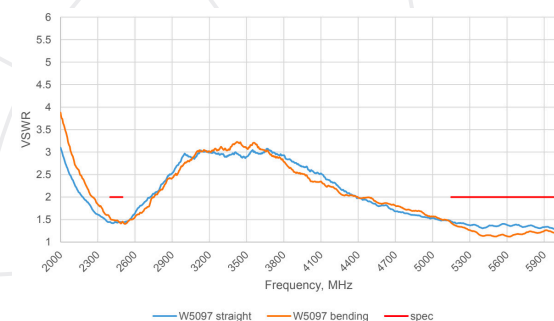
Open	$C_0 = -14.869 \times 10^{-15} \text{ F}$	
	$C_1 = 16054 \times 10^{-27} \text{ F/Hz}$	
	$C_2 = -3842 \times 10^{-36} \text{ F/Hz}^2$	
	$C_3 = 256.5 \times 10^{-45} \text{ F/Hz}^3$	
	Offset delay	60.435 ps
	Offset loss	3.9 GΩ/s
Short	$L_0 = 31.74 \times 10^{-12} \text{ F}$	
	$L_1 = 35652 \times 10^{-24} \text{ F/Hz}$	
	$L_2 = 8306 \times 10^{-33} \text{ F/Hz}^2$	
	$L_3 = -533 \times 10^{-42} \text{ F/Hz}^3$	
	Offset delay	59.954 ps
	Offset loss	3.5 GΩ/s
Thru	Electrical delay	161.12 ps
	Offset loss	4.07 GΩ/s
Load	Data Based	



Environmental Specifications

Operating temperature ³	-40°C to 85°C
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VSWR vs Frequency



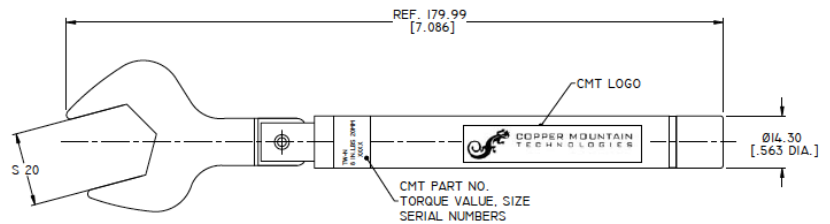
Kit Accessory Specifications

TW-N N-Type Torque Wrench

The TW-N is a N-Type, proof coupling torque wrench used to properly install or disassemble a wide range of coaxial connectors.



HEX	Torque	Description
19mm - 3/4"	1.35 Nm - 12 in. lbs	N stainless to N stainless (CMT R60, R140, R180, N612, and N912 is equipped with N male and 19mm HEX. 19mm is also used for APC-7 / 7mm connectors)
19mm - 3/4"	0.9 Nm - 8 in. lbs	N stainless to N nickel/silver plated (DUT) (19mm is also used for APC-7 / 7mm connectors)
20mm - 25/32"	1.35 Nm - 12 in. lbs	N stainless to N stainless
20mm - 25/32"	0.9 Nm - 8 in. lbs	N / NMD stainless to NMD stainless or N nickel/silver plated (DUT)



TW-S SMA-Type Torque Wrench

The TW-S is a SMA Type, proof coupling torque wrench used for SMA 3.5mm, 2.92mm, 2.4mm and 1.85mm Type Connectors.



HEX	Torque	Description
8mm - 5/16"	0.9 Nm - 8 in.lbs	3.5mm stainless to 3.5mm stainless (This type is also used for the following types in stainless - SMA / 3.5mm / 2.92mm / 2.4mm / 1.85mm)
8mm - 5/16"	0.56 Nm - 5 in. lbs	3.5mm stainless to SMA gold/silver plated DUT or SMA gold/silver plated to SMA gold/silver plated

