

# COLOR CONNECT

COLOR-CODED INTERCONNECTS






Maury Microwave  
is ISO: 9001:2015/  
AS9100D Certified.

# WE COMPLETE YOUR LAB WITH BEST-IN-CLASS SOLUTIONS



# THE STORY BEHIND COLORCONNECT™



*We all know of engineers (not us, right?) and technicians who have at times been unsure whether two adapters mated, whether cable assemblies could be connected, and what torque wrench to use. With this uncertainty comes an underlying fear of damaging equipment, reducing measurement accuracy and wasting precious time. If only these interconnects, which are so similar to the untrained eye, could be easily labeled and identified.*



John Bies of Redstone Arsenal certainly did; he lobbied the establishment to adopt a “standardized method to rapidly identify high frequency coaxial connectors.”

His report included a short list of possible results from misidentifying connectors and attempting to mate two incompatible connectors, including damaged equipment, degraded equipment reliability, degraded performance, degraded mission readiness, increased maintenance time, increased maintenance actions and lost efficiency. Additionally, even if two connectors could mate, their operational frequencies might differ, as is the case with mechanically compatible 3.5mm and 2.92mm connectors where the highest common operational frequency may only be 26.5 GHz.

John went on to state that the benefits of color-coding high frequency coaxial connectors would include the elimination of

damages to equipment, a greater confidence in connector identification and use, a financial saving in training time and costs (John estimated \$5.8M and 5000 man-hours per year in the US military/government agencies alone), an increase in efficiency, reliability and readiness and an improvement in personnel safety.

An Institute of Electrical and Electronics Engineers (IEEE) Coaxial Connector Rapid ID Working Group was established in June 2008; a proposed color code schema was developed in August 2008; IEEE project authorization request P1802 was submitted for review in January 2009 and approved in May 2009. The working group is now referred to as IEEE P287 with mandate to review the 287-2007 standards for coaxial connectors. With no other reason than selecting a familiar color scheme known to engineers across the globe, the standard resistor color-code

BBROYGBVGW was proposed for high frequency coaxial connectors (increasing resistor value compared to increasing frequency).

Maury Microwave has used color bands for over twenty years to identify 75ohm N Type connectors, and in 2012 decided to extend its offering with the launch of ColorConnect™ precision adapters, color-coded StabilityPlus™ cable assemblies, and TW-series torque wrenches.



# COLOR GUIDE

## BROWN

Fmax = 18 GHz  
SMA Connector  
Torque: 5 in-lb

## RED

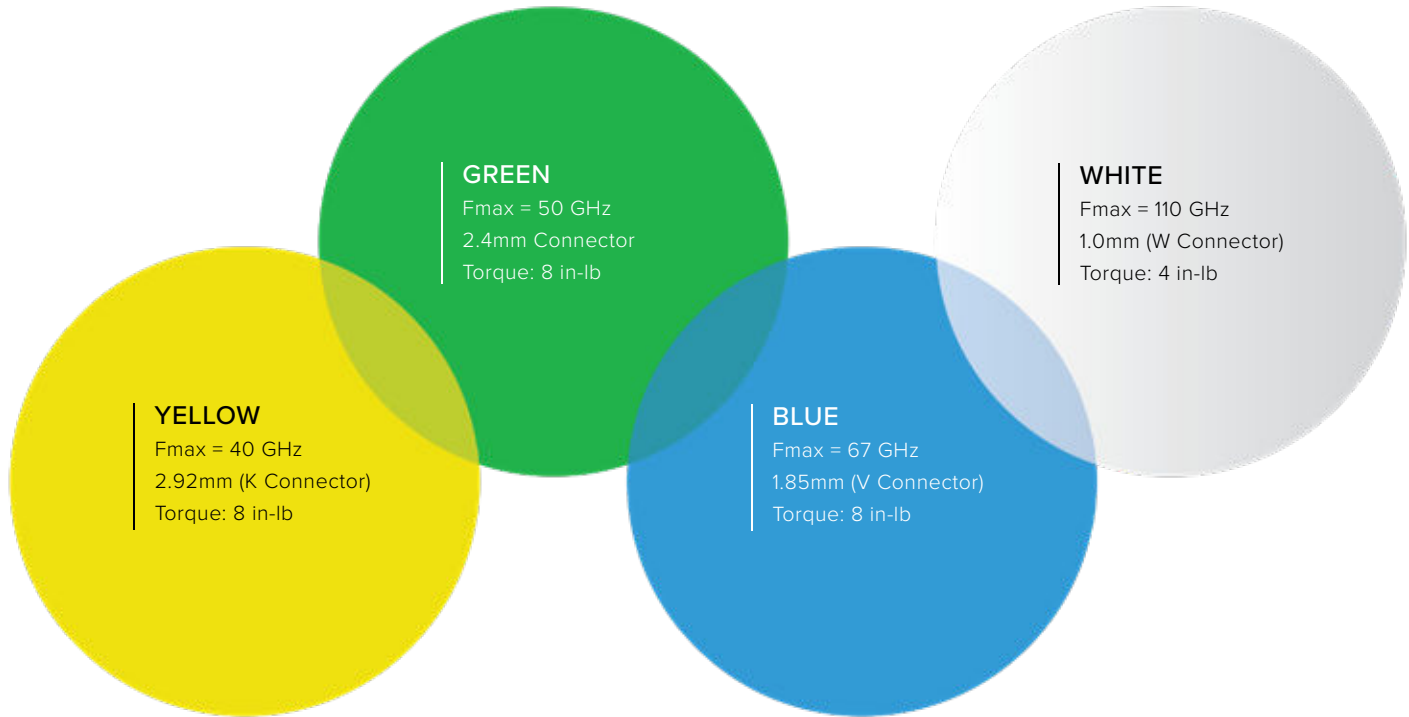
Fmax = 18 GHz  
Precision Type N  
Connector  
Torque: 12 in-lb

## VIOLET

Fmax = 18 GHz  
GPC-7 Connector  
Torque: 12 in-lb

## ORANGE

Fmax = 26.5 GHz  
3.5mm Connector  
Torque: 8 in-lb



# COLORCONNECT™ PORTFOLIO







## COLORCONNECT™ PRECISION ADAPTERS

ColorConnect™ Precision Adapters are truly in a category of their own. The only commercially available adapters to employ the IEEE working group color-coding concept, these adapters offer improved VSWR specifications bridging the gap between calibration-grade metrology adapters and daily-use lab adapters. Compensated beads maintain an accurate 50Ohm transmission line for improved VSWR performance. Compensated female contacts extend the usable lifetime to over 500 matings. Critical pin-depth and position-tolerance prevents performance degradation (due to “gap-fit”) and component damage (due to

“interference-fit”). Inner and outer conductors finish and materials ensure high conductivity with reduced signal loss. Mating surface flatness and finish minimizes signal loss. Orbital consistency and concentricity ensure proper alignment and best repeatability. ColorConnect™ Precision Adapters are available in SMA, N Type, 3.5mm, 2.92mm, 2.4mm and 1.85mm in-series and between-series.

“THE INDUSTRY’S  
ONLY COMPLETE  
LINE OF COLOR-  
CODED COAXIAL  
ADAPTERS”





## STABILITYPLUS™ CABLE ASSEMBLIES

StabilityPlus™ sets the standard for high-performance ruggedized cable assemblies. Designed specifically for phase-stable and amplitude-stable applications, StabilityPlus™ offers best-in-class measurement repeatability even after cable flexure. With a ruggedized, durable construction, StabilityPlus™ will outlast and outperform other assemblies resulting in a reduced total cost-of-test. StabilityPlus™ light weight, superior flexibility and small form factor make it ideal for daily use with VNA's, test instruments, bench-top testing and ATE systems.

Cable assemblies are used in a wide range of applications and by a user-base with varying degrees of experience and training. As with the adapters, how can one be certain that the cable assembly about to be connected is in fact compatible, and that damage to both the assembly and system will not occur? Listening to its customers, Maury implemented its ColorConnect™ color-coding to its StabilityPlus™ line of cable assemblies.

“THE INDUSTRY’S  
MOST PHASE-STABLE  
WITH FLEXURE CABLE  
ASSEMBLY”





## STABILITYBENCH™ CABLE ASSEMBLIES

Maury Microwave's StabilityBench™ series sets the standard for high-end all-purpose test and measurement cable assemblies. Designed for general testing applications, StabilityBench™ offers excellent value with its low cost, low insertion loss, excellent return loss, flexibility, and amplitude and phase stability. StabilityBench™ is the ideal interconnection for reliable and repeatable measurements when mated with test instruments including bench-top testing, on-wafer characterization and ATE systems. StabilityBench™ cable assemblies are now part of the ColorConnect™ family! Following the proposed IEEE high-

frequency connector/adaptor color convention, StabilityBench™ cable assemblies are among the first commercially available assemblies to offer clear indications of compatibility and intermatability. ColorConnect™ makes it a simple matter to avoid and eliminate damaged equipment, degraded equipment reliability, degraded performance and lengthy maintenance times due to improper mating (and attempted mating) of incompatible interconnects.

“HIGH-END GENERAL PURPOSE  
TEST & MEASUREMENT CABLE  
ASSEMBLIES TO 26.5 GHz”





## COLORCONNECT™ PRECISION ATTENUATORS

Maury Microwave's AT-series of fixed coaxial attenuators are used to reduce the power of a RF, MW or mmW signal without distorting its signal quality/waveform. Attenuators are often used to lower the amplitude of a signal to a measurable level or to protect a measurement instrument from damage. Attenuators are also used to improve matching between components by improving the return loss (twice insertion loss) and effectively reducing the VSWR seen by adjacent components. Key attenuator parameters include attenuation, frequency bandwidth, power handling, VSWR and quality/repeatability of connector. Maury AT-series attenuators are part of the ColorConnect™ family. Following the proposed

IEEE high-frequency connector/adaptor color convention, AT-series attenuators are the first commercially available attenuators to offer clear indications of compatibility and intermateability. ColorConnect™ makes it a simple matter to avoid and eliminate damaged equipment, degraded equipment reliability, degraded performance and lengthy maintenance times due to improper mating (and attempted mating) of incompatible interconnects.

“THE INDUSTRY’S  
ONLY COLOR CODED  
ATTENUATORS”



PRECISION  
ATTENUATORS



## TW-SERIES TORQUE WRENCHES

Most, if not all, 5/16"-hex high-frequency connectors look similar from the outside but vary greatly in performance and design. Sub-Miniature version A (SMA) connectors use a polytetrafluoroethylene (PTFE) dielectric which contacts along the mating plane, which along with the variances in design and construction can cause mating uncertainties and introduce a possible air gap. Because of the possible variances in materials used (i.e. brass versus stainless steel) and the possibility of the thin outer wall (conventional SMA design), it is

generally accepted that SMA connectors require a torque value of 5 in-lb in order to limit possible damage. Other 5/16"-hex high-frequency connectors implement an air-dielectric and are named after the diameter of said dielectric; 3.5mm, 2.92mm, 2.4mm and 1.85mm. 3.5mm and 2.92mm employ center pins of equal size and are thereby mechanically mateable, along with the SMA. However, due to the design and specifications of the connector which includes a stronger wall (0.021 inches in the case of the male versions), 8 in-lb torquing is recommended.

With a common 5/16" hex interface, how does one tell the difference between 5 in-lb torque wrenches designed for SMA connectors, and 8 in-lb wrenches designed for the rest? Maury offered a color-coded handle, black for 5 in-lb and blue for 8 in-lb, but it was often confusing to remember which was which. Maury's new line of TW-series torque wrenches employ color-banded handles, with the 5 in-lb handle striped with a brown band, and the 8 in-lb handle striped with orange, yellow, green and

blue stripes. TW-series wrenches employ a "break" design making it difficult to over-torque a coupled junction. Each Maury torque wrench is factory preset to the proper in-lbs value and have a variance of +/- 10%. With its high quality, low cost and color code, engineers can match up the paint stripes on the wrench handle with the color bands on the ColorConnect™ adapters and StabilityPlus™ cable assemblies and be guaranteed a proper torque each and every time.



VISIT OUR WEB STORE TO LEARN MORE ABOUT

**COLORCONNECT™**



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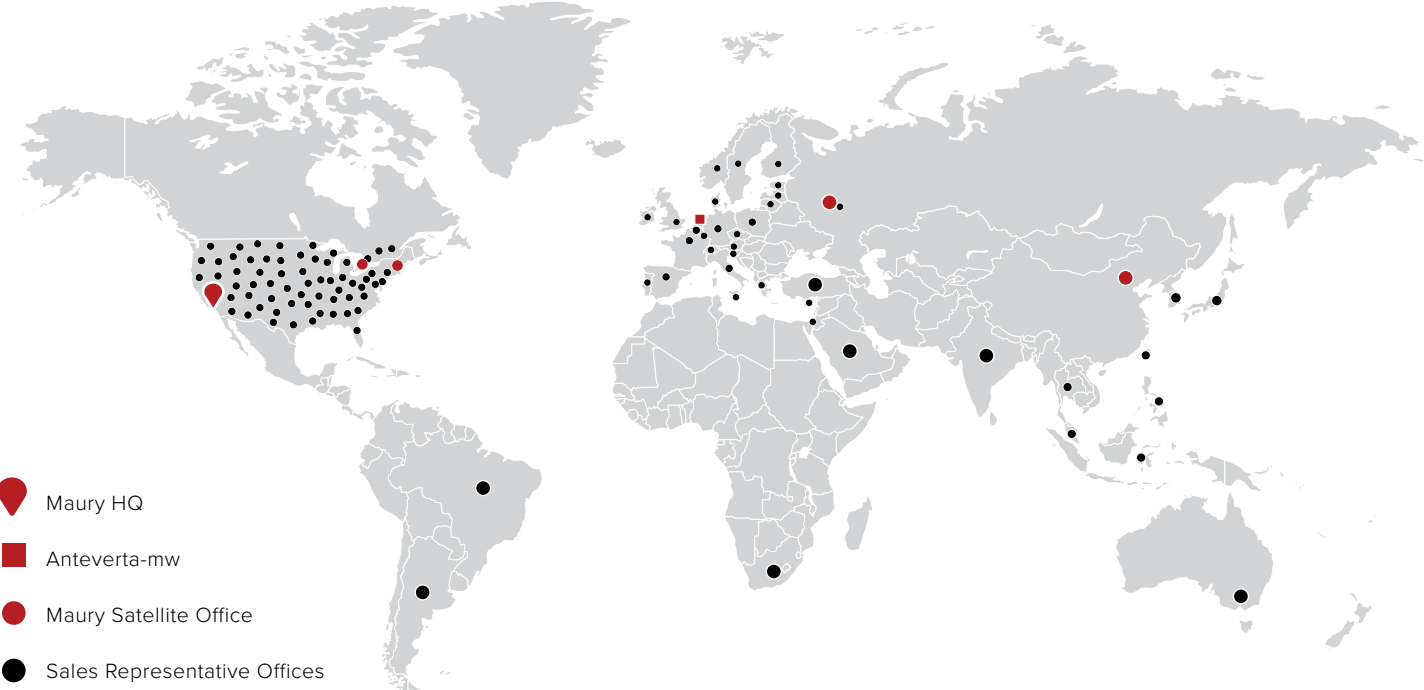
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Corporation**

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# WHERE YOU CAN FIND US



THANK  
YOU!



[maurymw.com](http://maurymw.com)



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