

# Increase Confidence in Measurements Using Maury **Microwave 7mm** **Calibration, Validation and** **Interconnect Solutions**

SOLUTIONS BROCHURE / 1E-004



**Maury Microwave**

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# Confidence in Measurements

In today's competitive market, many companies are losing customer trust because the product they promise, or the product they ship, does not match customer expectations, or customer's own validation. Equally, many companies are losing market share because they are taking too long to release products due to multiple design cycles or prolonged qualification due to measurement variations or inconsistencies. Finally, many companies face production yield challenges due to built-in buffers to ensure passed parts pass, or due to inconsistent pass/fail data resulting in higher rejection rate. The root cause is often caused by inconsistencies: inconsistencies between measured data and simulations or expectations, inconsistencies related to measurement variability over time, or inconsistencies related to measurements across multiple test benches at one or more sites. These inconsistencies often lead to a lack of trust, or confidence, in measurements.

Our mission is to give our customers confidence in their RF through THz measurements and models. We have developed and offer all aspects of measurement and modeling systems with the primary objective of ensuring our customers have confidence in their measurements and models. We complete your lab with:

## Calibration, validation and measurement solutions including

- > Coaxial and waveguide VNA calibration kits which empower the highest calibration accuracy
- > Calibration verification kits to validate VNA calibrations with an unambiguous go/no-go decision
- > Software to drive the VNA calibration, validation and S-parameter measurement process with an emphasis on characterized measurement uncertainties

## Interconnect solutions including

- > VNA test port, phase-stable and general-purpose cable assemblies designed to reduce measurement uncertainties
- > Calibration-grade (metrology), color-coded precision and general purpose in-series and between-series adapters, and color-coded precision attenuators, emphasizing improved VSWR and MIL-spec pin depth and concentricity for improved connection repeatability
- > Torque wrenches and gage kits to ensure accurate and repeatable connections each time

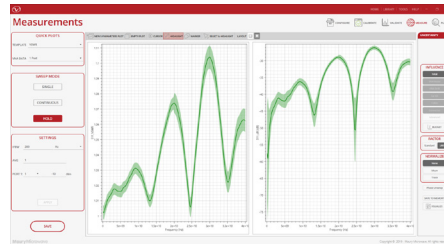
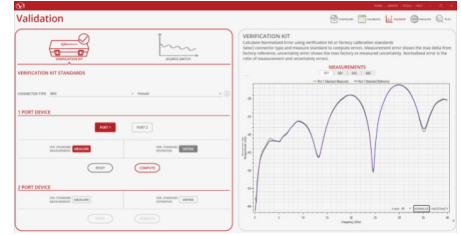
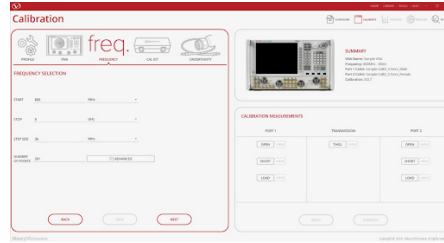
## Device characterization solutions

- > For more information on Maury's device characterization solutions, please visit [www.maurymw.com](http://www.maurymw.com)



## Calibration, Validation and Measurement Solutions

Insight is the industry's first software suite designed to empower VNA users and help them make better decisions. Insight represents a paradigm shift in the way users approach VNA calibration, validation, measurement, visualization and analysis. A single software platform standardizes the interface for all generations of VNA models and adds an intuitive GUI and wizard which walks users through every step. Advanced VNA calibration identifies and quantifies the individual sources of measurement uncertainty and can be used to improve measurement accuracy. Calibration validation uses uncertainty boundaries to definitively identify good and bad calibrations. Real-time measurements with uncertainty boundaries allow users to better understand their devices. Advanced visualization and analysis helps users make better decisions which results in bringing the best products to market faster.



Maury's new characterized device (CD) VNA calibration kits and verification kits are designed to improve confidence in your S-parameters measurements.

With individually characterized standards, CD cal kits result in calibrations with TRL-like accuracy and SOL ease-of-use, thereby improving your measurements while reducing the opportunity for potential user errors. Cal kits come with factory-characterized uncertainty data and can be used with Maury's Insight software to quantify its contribution on the overall DUT measurement uncertainty.

Maury's new verification kits include multiple standards with similar characteristics to different types of DUTs, thereby increasing the meaningfulness of the validation. Like the cal kits, verification kits come with factory-characterized uncertainty and can be used with Insight to conclusively determine the validity of a VNA calibration.

### 7mm VNA calibration kits

2650CK40 – fixed load SOLT kit (polynomial definitions)



2650CK50 – characterized device (CD) fixed load SOLT kit



### 7mm calibration verification kits

2650CK60 – characterized verification kit

















# Interconnect Solutions

Measurement uncertainty can be seen as the potential variability between measurements caused by all aspects of a measurement system. Objectively, the two largest contributors to measurement uncertainty are cables and connectors as they impact the repeatability of a measurement.

The signal passing through a cable assembly will change in magnitude and phase as the cable is moved. Measuring a device with the cable in a certain position may yield different results from the same measurement with the cable in a second, third and fourth position. The more the measurement changes with flexure, the higher the cable's measurement uncertainty contribution.

Similarly, signal changes caused by connector mating repeatability will directly impact measurement uncertainty. A connector's ability to offer repeatable connections stems from pin depth and concentricity, and mating force. Recessed or non-concentric center pins lead to reduced measurement accuracy and repeatability and hence an increased uncertainty. Protruding center pins will damage your mating connector. Hand-threading an RF connector often leads to inconsistent mating between connectors and an increased measurement uncertainty.

Maury Microwave's Interconnect Solutions offering consists of cable assemblies, adapters and attenuators developed specifically to reduce measurement uncertainty, and gages and torque wrenches to ensure accurate and repeatable measurements.

Configuration	Frequency Range	Adapter Series	
		Calibration-Grade / Metrology	
NMD2.4mm female to 7mm	18 GHz	7909C1	
NMD3.5mm female to 7mm		2633C1	
2.4mm female to 7mm		7922A1	
2.4mm male to 7mm		7922B1	
2.92mm female to 7mm		8725A	
2.92mm male to 7mm		8725B	
3.5mm female to 7mm		8022S1	
3.5mm male to 7mm		8022T1	
7mm to Type N female		2606C	
7mm to Type N male		2606D	
7mm to TNC female		2622A1	
7mm to TNC male		2622B	
7mm to SMA female		2625A	
7mm to SMA male		2625B	

## Connector Gages

Connector gages are an essential tool to ensure connectors pins are flush and concentric. Maury's connector gage kits provide an easy to use, direct reading, self-checking, and accurate way to measure the critical linear interface dimensions of most coaxial connectors. These kits consist of gages with specially adapted dial indicators, plus the correct bushings and pins needed to mate with specified connectors. A master setting gage is used to adjust the dial indicator to zero, before a push-on or thread-on gage is mated with a connector to measure the distance from a given interface (female or male contact location) to the outer conductor mating plane.

### 7mm gages



*A028F – 7mm digital connector gage kit*



*A028D – 7mm analog connector gage kit*



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## Torque Wrenches

Torque wrenches are a simple and inexpensive tool to ensure repeatable force is applied to the connection each time, thereby ensuring a proper and secure connection and reducing measurement uncertainty. Maury torque wrenches employ a "break" design so it is impossible to over-torque a coupled junction, and torque can be applied in either direction. Each Maury torque wrench is factory preset to the proper in/lbs for tightening its coaxial connector type, and the color-coded handles make it easy to select the correct wrench from your toolbox at a glance.

### 7mm torque wrench



*TW-12 – 0.75 hex torque wrench  
with 12 in/lb torque*



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We are proud to announce our new partnerships with manufacturers of leading edge and disruptive technologies. These technologies drive the latest innovations for our customers.

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