Confidence in RF Measurements: Verified Calibration for Reliable RF Testing

All vector network analyzers (VNAs) exhibit imperfections that must be corrected to produce high-integrity RF and microwave measurements. Calibration characterizes and corrects these systematic errors, shifting the reference plane from the VNA test ports to a user-defined reference plane. This process ensures S-parameter data reflects DUT behavior rather than the behavior from the measurement system. A critical part in a measurement workflow is calibration verification, which confirms that the calibration was performed correctly and that the standards fall within specifications. Without verification, users cannot be confident that the calibration will yield accurate results or meet compliance and quality requirements.

This demonstration highlights the importance of both calibration and calibration verification in achieving reliable RF and microwave measurements using Maury Microwave calibration and calibration verification kits. Maury offers coaxial and waveguide calibration solutions across polynomial SOLT, characterized device (CD) SOLT, and TRL methodologies, supported by the Maury Insight software that enhances VNA calibration, validation, measurement, visualization and analysis. With every VNA measurement depending on the accuracy of its calibration, Maury solutions help engineers establish and maintain high-confidence data.

Demo Setup

Target Users

Target users include RF and microwave design and quality engineers who need reliable VNA calibration and calibration verification to perform accurate, repeatable S-parameter measurements.

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Product Overview

Calibration Kits

Maury offers coaxial and waveguide VNA calibration kits. Coaxial calibration kits are offered in Polynomial SOLT, Characterized Device (CD) SOLT, and TRL, depending on the connector series. Where available, CD kits improve calibration accuracy when compared to SOLT kits based on polynomial definitions as each calibration kit is provided with individually characterized short, open and fixed load standards, whose S-parameters can be loaded into commercial VNAs directly or when used with Maury's Insight™ software platform. When combined with Insight™, users will be able to quantify the uncertainty contribution of their calibration kit to their overall measurements. CD cal kits result in TRL-like accuracy with fixed-load SOLT ease-of-use.

KEY SPECIFICATIONS AND FEATURES:

- Directly compatible with most commercial VNAs
- Available as polynomial and characterized device kits
- Measure S-parameters with uncertainty when used in conjunction with the Maury Insight software platform

Verification Kits

Characterized Device (CD) Calibration Verification Kits are designed for 1-port and 2-port VNA calibration validation for well-matched and mismatched DUTs. Each kit comes with individually characterized verification standards and is used for calibration validation by comparing the S-parameters of the appropriate verification standard measured by the user and the S-parameters measured at the factory. When combined with Insight™, users will be able to use overlapping uncertainty boundaries to validate a VNA calibration with increased confidence. Verification kits are available with Type N, 7mm, 3.5mm, 2.92mm and 2.4mm connectors.

KEY SPECIFICATIONS AND FEATURES:

- S-parameters comparison of user-characterized and factory-characterized verification standards with measurement uncertainty boundaries
- Includes beaded airline, mismatch airline, offset shorts, and fixed loads

More Resources

Visit maurymw.com/info/mapcon-2025 to learn more about Maury solutions.

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