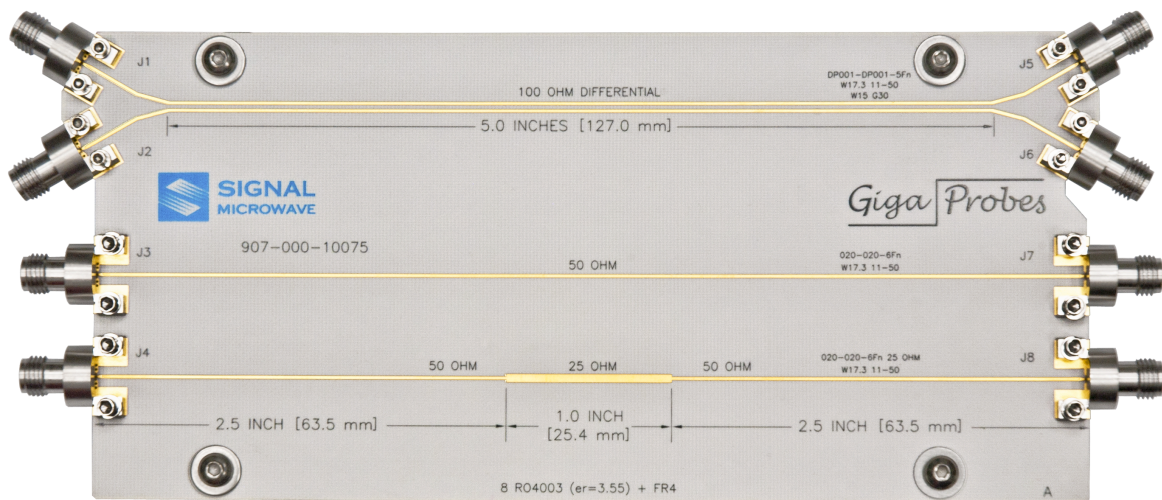


Signal Microwave and GigaProbes Joint Press Release.

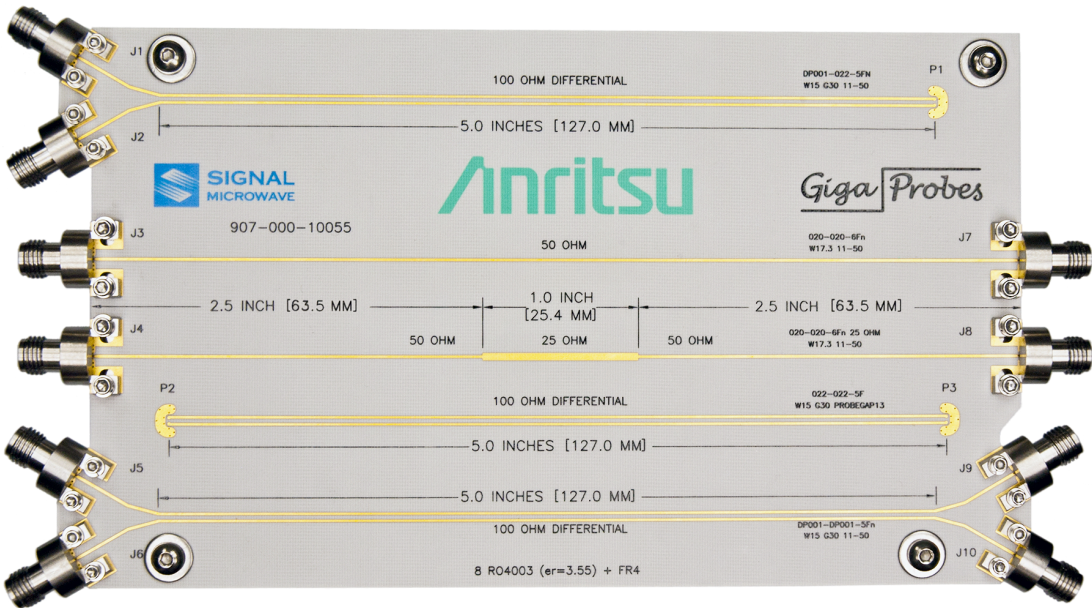
Signal Microwave and Giga-Probes are introducing a new line of high frequency test boards, 40 GHz and 70 GHz, for use with VNAs. These boards have a known performance response over frequency and can be used to verify VNA calibrations, check for measurement drift, and are teaching tools for VNA users. The basic boards include a 50 ohm line, a 50 ohm line with a 25 ohm section for verification of time domain measurements, and a 100 ohm differential line. Other versions include differential probe lines with both a probe to connector line and a probe to probe line.



VNA Calibration Verification:

When a VNA does a calibration it sweeps through multiple frequency points and at every point it locks the frequency to a reference, levels the power, then makes a measurement. During calibration two major parameters are accounted for by using a cal kit as a reference, the instrument's system noise is taken out of the measurement, and the characteristic impedance of 50 ohms is established. For VNA calibration verification many operators use only a low loss through adapter. This method only verifies that the system noise was removed by the calibration. A "golden unit" with known response over the frequency range of the calibration should be used to verify that the calibration was also successful in the calibration "teaching" the VNA how to make an accurate measurement over the frequency range of the calibration.

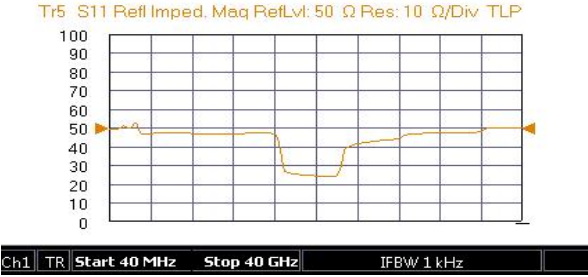
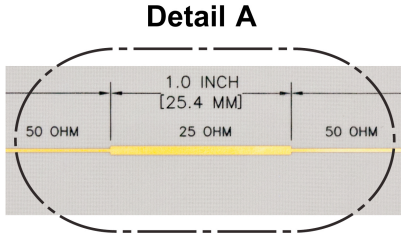
Board Versatility:



The nature of the board design lends it to easily create many versions.

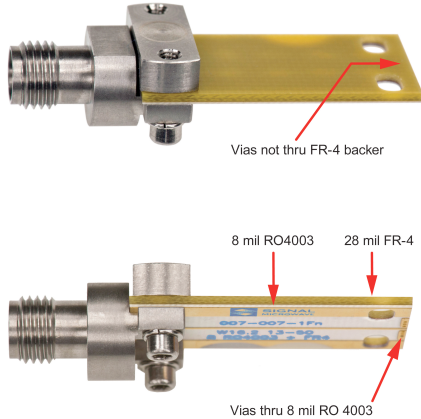
One version of the board is an expanded version of the basic board which includes test lines for the Gigaprobe 40 GHz DVT40 differential probe. The board allows a user to verify 4 port VNA calibration using a 100 ohm connector to connector test line. Then the user can move to a similar 100 ohm differential line that is connector to probe so each probe can be evaluated.

This version of the board also includes a 25 ohm “Beatty” line for verification of a TDR measurement using a VNA. This is useful in verifying that the VNA calibration is done to be able to perform an accurate TDR transformation for impedance measurement along a transmission line.



Reasons for the high performance

It starts with the high performance connectors manufactured by Signal Microwave. These edge launch connectors are designed using 3D modeling and RF transmission line analysis instead of just a mechanical solution. The next component leading to the high performance is the board launch design. The board launch is the transition from the board to the connector. The launch structure on the board starts with a Grounded Coplanar Waveguide (GCPWG) section which incorporates a top ground launch that transitions the ground to an inner layer as it transitions to a microstrip line. The launch design is also done by Signal Microwave using 3D modeling to match the board to high performance connectors and this service is available for customers that are using the connectors in their own products.



Another factor in the high performance of the board is the material and the way it is manufactured. The material is Rogers RO4003 with a thickness of 8 mils and 1/2 ounce copper. The finish on the board is electroless nickel with a top layer of immersion gold (ENIG). The Rogers material performs excellently through 70 GHz and the plating provides a corrosion free surface. The next step in the manufacturing process is the 8 mil RO4003 is processed completely by itself including drilling to vias required and the plating. Then the panel is laminated to an FR4 backer for mechanical stiffness without having to backdrill any vias which can cause problems at frequencies as high as the 70 GHz bandwidth of the board.

Magnetic feet

The board also incorporates custom design stand-off with magnets installed at the end. When placed on a magnetic plate it holds the board securely to the plate. The plates are available from Giga-probes and are very useful in securing the board for measurements with probes.



New LRL and LRM Calibration Boards



Offering an alternative solution to software de-embedding, we are introducing a new 40GHz LRM board with probe test pads to calibrate the VNA to set the reference plane to the end of the new DVT40A 40GHz differential probe tips. A new 70GHz LRL board will also be introduced with 3" traces and demonstrated with the Anritsu Vector Star. This board is used to train customers how to make LRL calibrations and how to set reference plane to the middle or end of a 3" trace without modifying the measurements. The LRL and LRM boards can be used to train engineers how to use the Vector Star menu system to establish these calibration techniques.