

## *Product Note 60*

# **0.04 to 7GHz TRL VNA Calibration Kit with 7/16 Connectors**

### **Introduction**

TRL Cal Kits provide the best calibration accuracy for VNAs which is essential for RF measurements especially of highly reflective devices such as tuners.

Focus Microwave's Coaxial TRL (Through-Reflect-Line) Calibration Kits (calkits) are very accurate, robust and easy to use. They cover 0.04 to 50 GHz in different bands and connector types and provide state of the art calibrations of Network Analyzers.

The TRL calkits of Focus Microwaves are available in six connector types: GPC-7, -3.5, -2.9 (K®), -2.4mm, -N and 7/16.

Focus calkits are compatible with all Hewlett-Packard® and Wiltron® network analyzers with the TRL/TRL\*<sup>(1)</sup>, LRL and LRM software option.



### **Description of the 7/16 TRL Calkit**

The 7/16 TRL calibration kit includes

- one precision coaxial Delay Line with a proprietary Connector Extender,
- two phase equal 7/16 Shorts (one male and one female),
- two 50Ω Loads (one male and one female) and
- two APC-7 to 7/16 adapters to connect with ordinary APC-7 VNA cables,
- one floppy diskette with Calkit parameters and
- one Operation and Service Manual.

The entire frequency range 0.04 to 7 GHz is covered with one single Delay Line standard, included in the calkit. There is no need for a second “low frequency” standard, as suggested by HP or the NIST. Excellend calibration results are obtained with the supplied standards alone (see figures 2 and 3 on page 2 of this note.

<sup>(1)</sup> For the HP-8720 and 8753D/E, three detector network analyzers with TRL\* software option, the Calkit can be ordered with two additional 10 dB attenuators with GPC-7 or -3.5 connectors in order to improve source match.

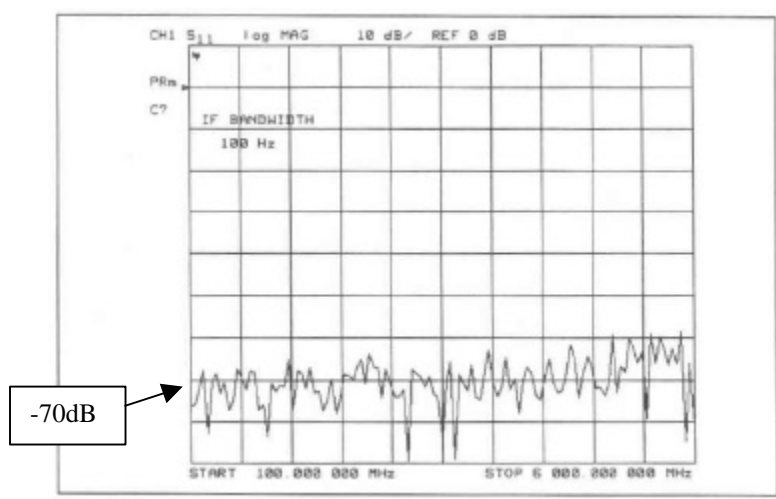


Figure 2: Residual Reflection (Source Match) of a Through Line connection after calibration, 0.1 to 6 GHz. Scale=10dB/div

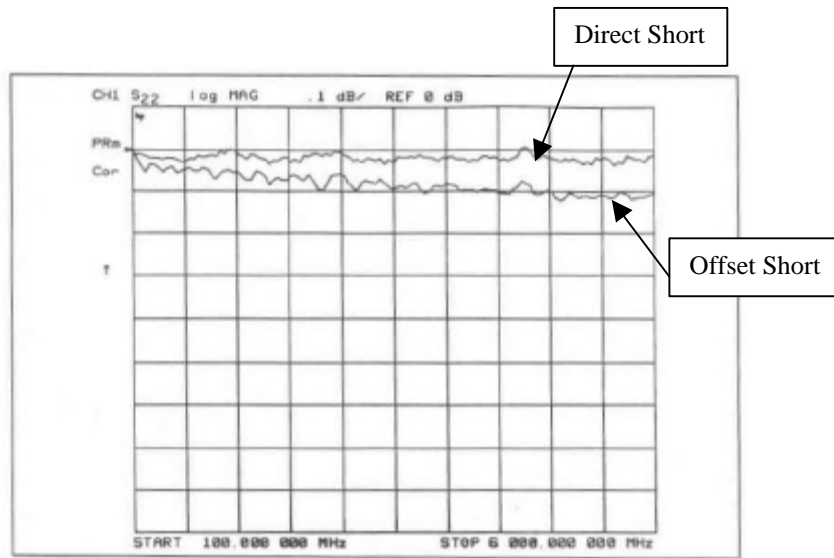


Figure 3: Offset Short Ripple (peak to peak < 0.05dB) using a 12" coaxial extension line, 0.1 to 6 GHz. Scale =0.1dB/div