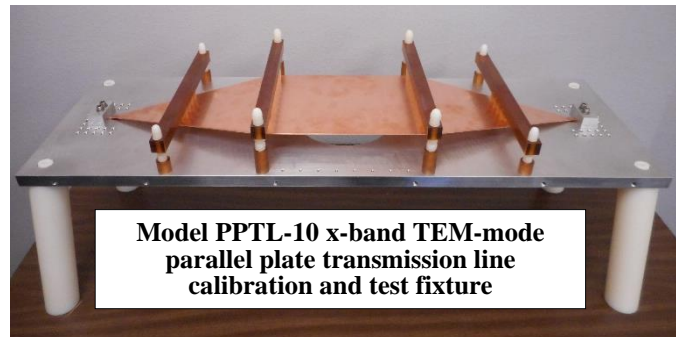




# Model PPTL-10

## Parallel Plate Transmission Line Calibration and Test Fixture

The Voss Scientific's Model PPTL-10 Parallel Plate Transmission Line Calibration and Testing Fixture is a versatile laboratory device designed primarily for calibration and validation of ground referenced electric and magnetic field sensors with responses into the multi-GHz regime. It can also be used as a test device for irradiating small volumes or devices under test with linearly-polarized plane-wave-like time or frequency domain signals. The PPTL-10 offers a demountable and customizable cylindrical geometry test plate that can accommodate structures with diameters up to 6 inches. It is also offered in a version that accommodates free-field sensors with center ground planes and mounting shafts up to ¼ inch diameter.



Signal launch, and receive, is from standard SMA connectors, with 50-ohm geometry maintained throughout. The Model PPTL-10 provides planar TEM-mode transmission line electromagnetic field in a 50 ohm geometry with a transfer function from input Voltage  $V_{in}$  (Volts) to test volume electric field  $E$  (V/m) according to:

$$E \text{ (V/m)} = V_{in} / d,$$

with calibration factor  $d \approx 3.2 \times 10^{-2}$  m, over a frequency band from DC to x-band. The factor  $d$  corresponds to the physical vertical gap, nominally 1.25 in., in the nominally 6-inch diameter test area in the center of the parallel plate transmission line. The PPTL-10 can be used in both time and frequency domain applications.

### Key features include:

- A free standing ground plane, 36 in x 12 in (91.4 cm x 30.5 cm), is configured with a 50-Ω parallel plate transmission line fed by SMA connectors for transmit and receive. A demountable 6-in circular sensor receiver plate is fully customizable to either sensor calibration or device susceptibility test applications;
- Test volume dimensions: 10.00 in longitudinal, 1.25 in vertical, 7.50 in horizontal;
- Usable cross-sectional test/calibration area (1/3 rule): 2.5 in x 0.42 in (6.4 cm x 1.1 cm);
- Sensor Receiver Plate usable diameter: 5.98 in (15.2 cm) - blanks available for modification as needed;
- SMA input and output connectors standard, 2.92 and 2.4 mm connectors available;
- Monitoring signal at termination port can be used to validate test fixture operation.

With the goal of simulating a plane wave irradiation in the frequency domain, the Model PPTL-10 geometry achieves these specifications for phase uniformity compared with an ideal plane wave:

- For sensor/DUT of widths to 2.5 in (6.4 cm), maximum frequency for 45° phase uniformity  $\approx$  9.5 GHz;
- For sensor/DUT of widths to 1.2 in (3.0 cm), maximum frequency for 45° phase uniformity  $\approx$  15.5 GHz.

### Safety Notice:

The Model PPTL-10 Parallel Plate Transmission Line Calibration and Test Fixture is an open geometry device in which scattering and radiation of electromagnetic energy can occur. It should be operated **only** by qualified microwave engineers. If average powers exceed +10 dBm (10 mW), the device should be operated in a electromagnetically shielded room remotely so that personnel are not potentially exposed to electromagnetic levels exceeding ANSI and/or other relevant safety standards.

Contact us ([info@vosssci.com](mailto:info@vosssci.com)) for price and delivery information.