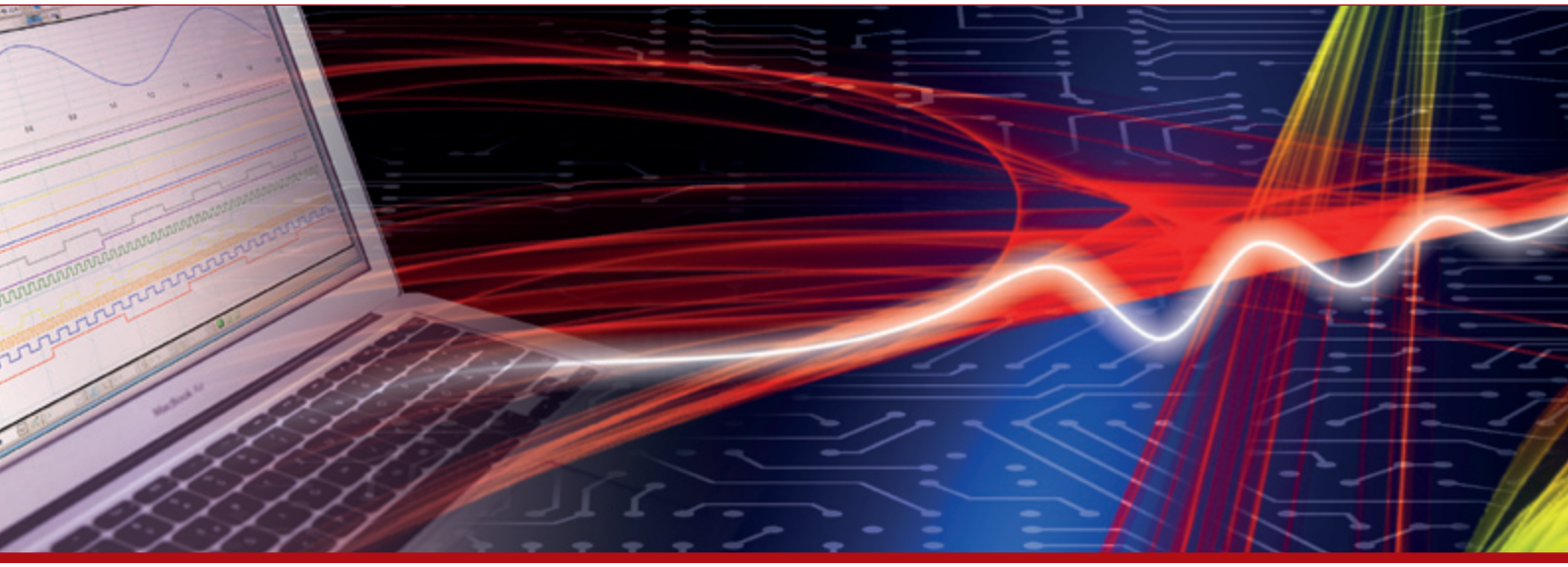
Product Datasheet - Technical Specifications



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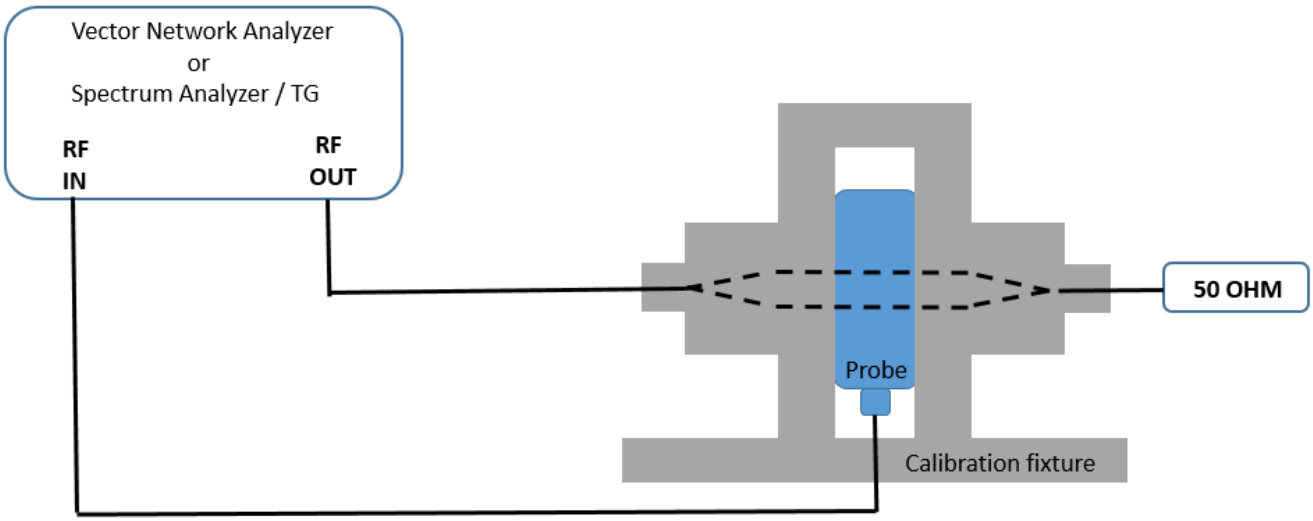
RF CURRENT MONITORING PROBE CALIBRATION FIXTURES

1 Introduction

The TBCP1_CAL, TBCP2_CAL, TBCP3_CAL and TBCP4_CAL are calibration fixtures corresponding with the TBCP1, TBCP2, TBCP3 and TBCP4 series of RF current monitoring probes.
RF current probe calibration fixtures are used in combination with a Vector Network Analyzer or Spectrum Analyzer equipped with tracking generator in order to measure the transfer impedance of RF current monitoring probes.
Every Tekbox RF current monitoring probes is shipped together with a corresponding calibration sheet containing the transfer impedance values vs frequency. Consequently there is no acute need to acquire a calibration fixture together with the probe. Calibration fixtures can be used for periodic inspection of the probes or for health checks, in case that a probe dropped and there is suspect that its ferrite core may have suffered damage.

2 Operation

A calibration fixtures in combination with the installed probe represents a coaxial line with an impedance of approximately 50 Ohm. One side of the probe is connected to the signal source and the other side is terminated with 50 Ohm. The Vector Network Analyzer or Spectrum Analyzer receiver port is connected to the RF current probe. The output signal of the current probe is a function of the current flowing through the probe fixture and can be converted to obtain the trans-impedance characteristics of the probe.



Picture 1: calibration set up

Set the Vector Network Analyzer or Spectrum Analyzer / Tracking Generator to the frequency range of interest and make a through calibration including the two coaxial cables.
Connect the RF output to the calibration fixture and the receiver input to the current probe and measure S21 (insertion loss / coupling).

The transfer impedance Z_t is calculated using the formula below:

Z_t [dBΩ] = P_{in} [dBm] – P_{probe} [dBm] +34 dB

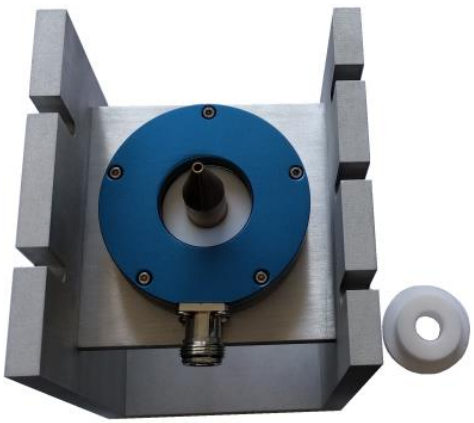
or simply

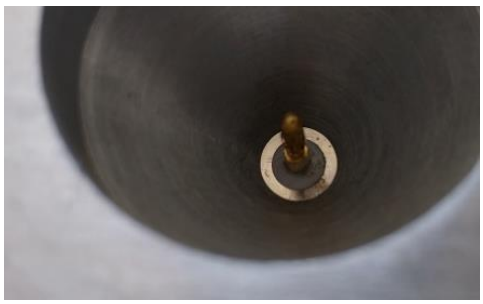
Z_t [dBΩ] = S_{21} [dB] +34 dB

3 Handling Instructions

TBCP1-CAL, TBCP3-CAL, TBCP4-CAL:

These calibration fixtures for fixed aperture current monitoring probes use a vertical arrangement. The female N-connectors are equipped with gold plated 2.5 mm plugs which slide into the center conductor of the fixture.
In order to insert or remove a probe, loosen the four clamping levers and gently lift off the top plate. When lifting the top plate, keep it leveled, as tilting the plate may bend or damage the 2.5mm plug attached to the N-connector. After removing the top plate, remove the upper Teflon spacer and the probe.
Upper and lower Teflon spacers are turned to slightly different dimensions. The lower Teflon spacer has a short collar to keep it attached to the bottom plate. It also provides a tight fit to the center conductor, to keep it attached to the bottom section when pulling the top plate. The inner diameter and the collar of the upper Teflon spacer are turned to a loose fit with respect to the center conductor and top plate.





When closing the fixture, keep the top plate leveled. Don´t apply force, as when correctly leveled, it will smoothly slide over the center conductor. If you feel any resistance, or the top plate cannot be placed into correct position, inspect the N-connector plug for straightness. Remove the N-connector and check, if the center conductor is centered with respect to the opening for the N-connector. With the top plate attached, slide the N-connector into the center connector and fasten it.

TBCP2-CAL:

This calibration fixture is designed for the TBTC2 snap-on current probe series. In order to insert the probe, remove the four screws of the top plate and clamp the probe over the Teflon spacers. Re-attach the top plate for the measurement.

4 Models

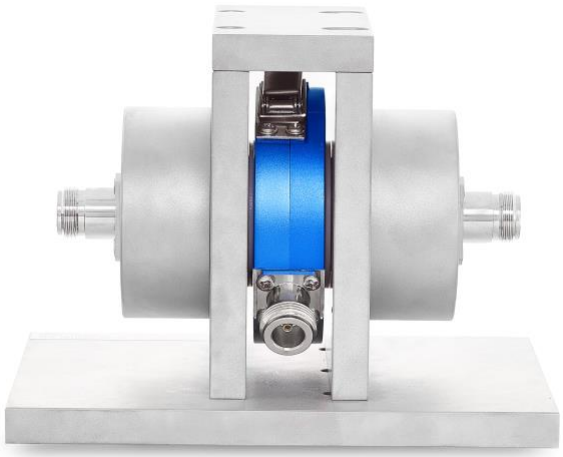
TBCP1-CAL:

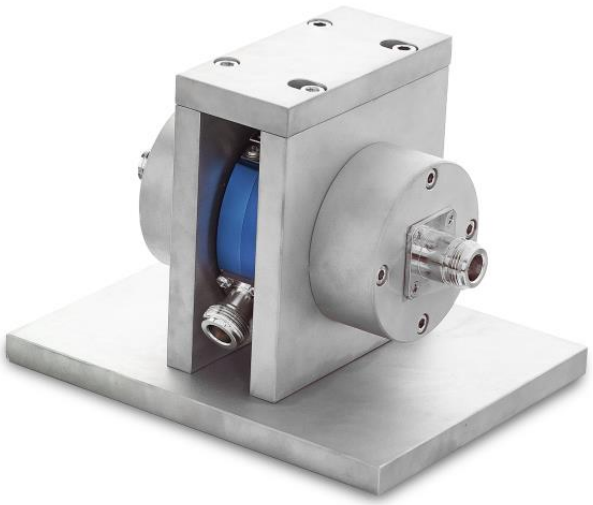
For TBCP1 current monitoring probe series; DC to 500 MHz

RF CURRENT MONITORING PROBE CALIBRATION FIXTURES

TBCP2-CAL:

For TBCP2 current monitoring probe series; DC to 750 MHz



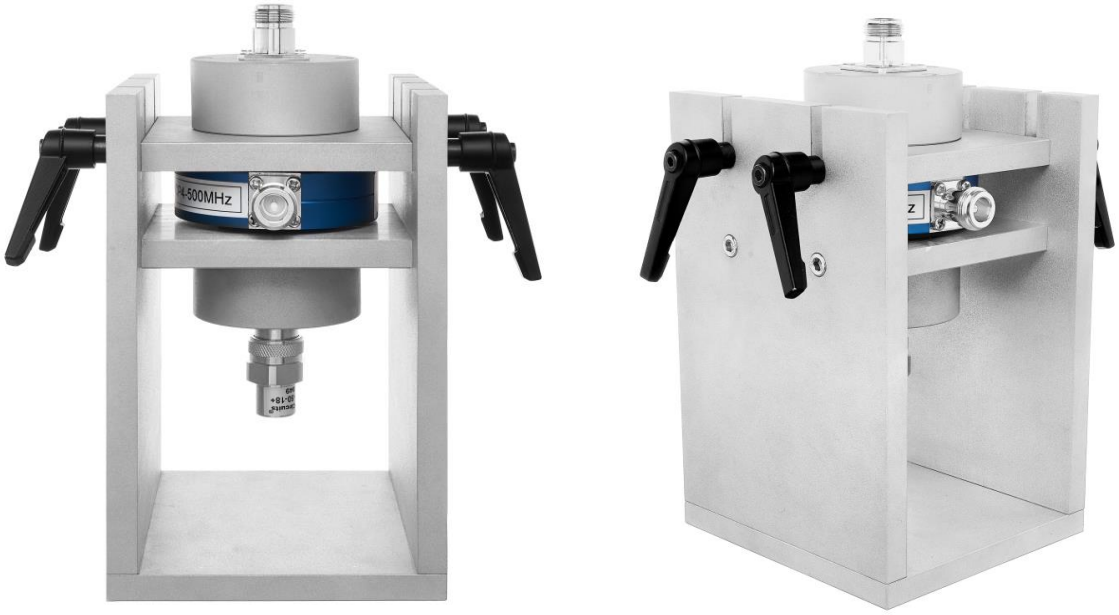


TBCP3-CAL:

For TBCP3 current monitoring probe series; DC to 1 GHz

TBCP4-CAL:

For TBCP4 current monitoring probe series; DC to 750 MHz



5 Ordering Information

Part Number	Description
TBCP1-CAL	Calibration fixture for TBCP1 current probe series, 50 Ω termination
TBCP2-CAL	Calibration fixture for TBCP2 current probe series, 50 Ω termination
TBCP3-CAL	Calibration fixture for TBCP3 current probe series, 50 Ω termination
TBCP4-CAL	Calibration fixture for TBCP4 current probe series, 50 Ω termination
TBCP4-CAL	Calibration fixture for TBCP4 current probe series, 50 Ω termination
TBCP4-CAL	Calibration fixture for TBCP4 current probe series, 50 Ω termination
TBCP1_3-CAL_N	Spare N-connector for TBTC1 and TBTC4 calibration fixtures
TBCP2_4-CAL_N	Spare N-connector for TBTC2 and TBTC3 calibration fixtures

6 History

Version	Date	Author	Changes
V 1.0	28.1.2021	Mayerhofer	creation