

RF CURRENT MONITORING PROBE

1 Introduction

The TBCP1-250 is a fixed aperture RF current monitoring probe, expanding the Tekbox product range of affordable EMC pre-compliance test equipment. The probe has a very flat response with a 3dB bandwidth of 250 MHz and is characterized and usable over the frequency range from 1 kHz to 300 MHz.



Picture 1: TBCP1-250 RF current monitoring probe

The aperture of the RF current monitoring probe is 25 mm. Its transfer impedance is $> 16 \text{ dB Ohm}$ in the range from 300 kHz to 250 MHz.

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2 Specification

Characterized frequency range: 1 kHz to 300 MHz
Aperture diameter: 25 mm
Outside diameter: 76 mm
Height: 31 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 18 dB Ω in the flat region, typ.
3 dB bandwidth: 300 kHz - 250 MHz, typ.
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C



3 Transfer impedance

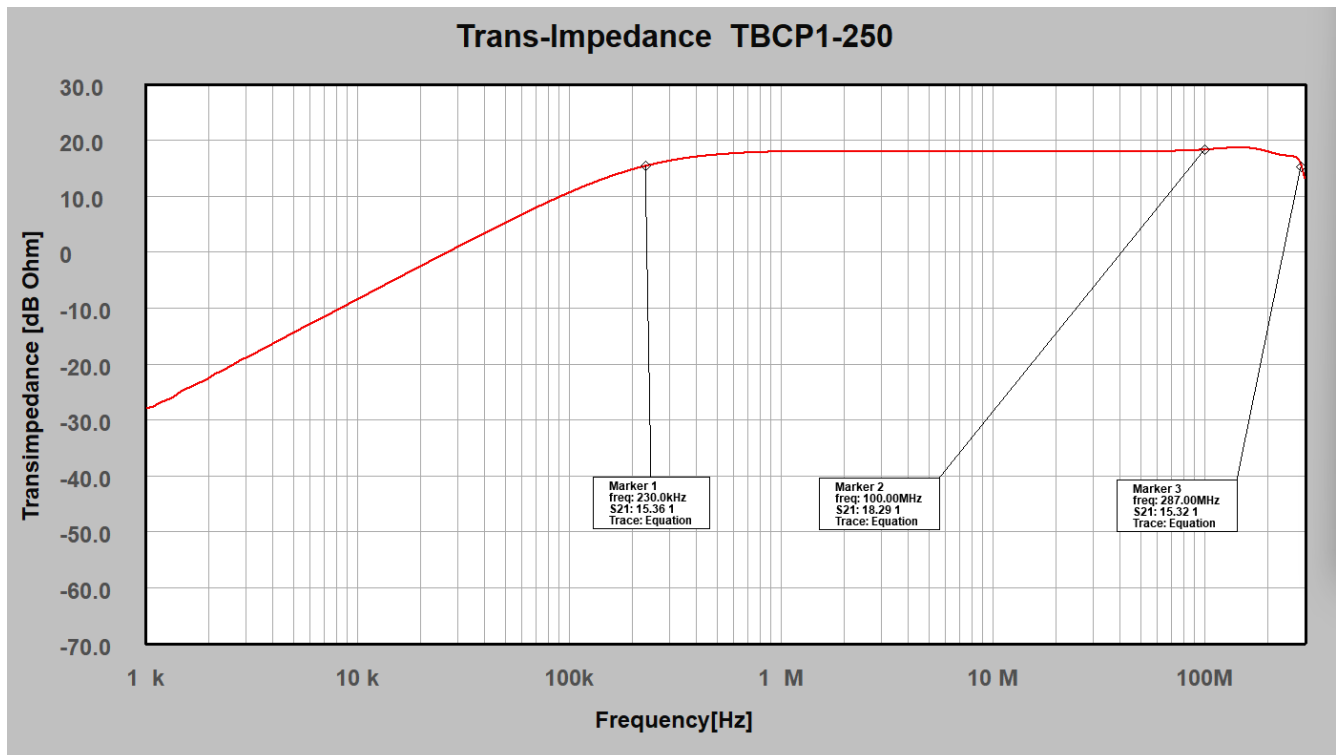


Figure1: typical transfer impedance: 1 kHz to 300 MHz

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP-250 current probe. Each current probe is delivered with its corresponding measurement protocol. This data can be used for the creation of a correction file for EMCview or similar EMC measurement software. The transfer impedance in dB Ω subtracted from the analyzer reading in dB μ V gives the corrected reading in dB μ A.

Refer to the application notes of EMCview on how to create a current probe correction file.

Frequency [MHz]	Transfer impedance [dB Ω]	Frequency [MHz]	Transfer impedance [dB Ω]
0.001	-27,90	50	17,98
0.0025	-20,56	75	18,09
0.005	-14,49	100	18,29
0.0075	-11,03	125	18,55
0.01	-8,51	150	18,65
0.025	-0,63	175	18,41
0.05	5,17	200	17,90
0.075	8,43	210	17,69
0.1	10,57	220	17,47
0.25	15,68	230	17,32
0.5	17,38	240	17,22
0.75	17,79	250	17,14
1	17,95	260	17,06
2.5	17,96	270	16,92
5	17,92	280	16,34
7.5	17,95	290	
10	17,97	300	
25	18,00		

Table1: Transfer impedance: 1 kHz to 300 MHz

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5 Accessory

Tekbox supplies a calibrator corresponding with the TBCP1 current probe series:



Picture 2: TBCP1-CAL RF current probe calibrator

6 Ordering Information

Part Number	Description
TBCP1-250	Fixed aperture RF current monitoring probe, wooden box, calibration protocol 1 kHz – 300 MHz
TBCP1-CAL	Current probe calibrator for the TBCP1 series

7 History

Version	Date	Author	Changes
V 1.0	6.05.2018	Mayerhofer	Creation of the document
V 1.1	28.1.2021	Mayerhofer	Chapter 5 added
V 1.2	26.3.2024	Mayerhofer	Extended data to 1 kHz – 300 MHz

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