

RF CURRENT MONITORING PROBE

1 Introduction

The TBCP4-250 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 10kHz to 250 MHz.



Picture 1: TBCP4-250 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is close to 14 dB Ohm in the range from 400 kHz to 250 MHz.

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2 Specification

Characterized frequency range: 10 kHz to 250 MHz
Aperture diameter: 32 mm
Outside diameter: 73 mm
Height: 20 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 14 dBΩ
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C

3 Transfer impedance

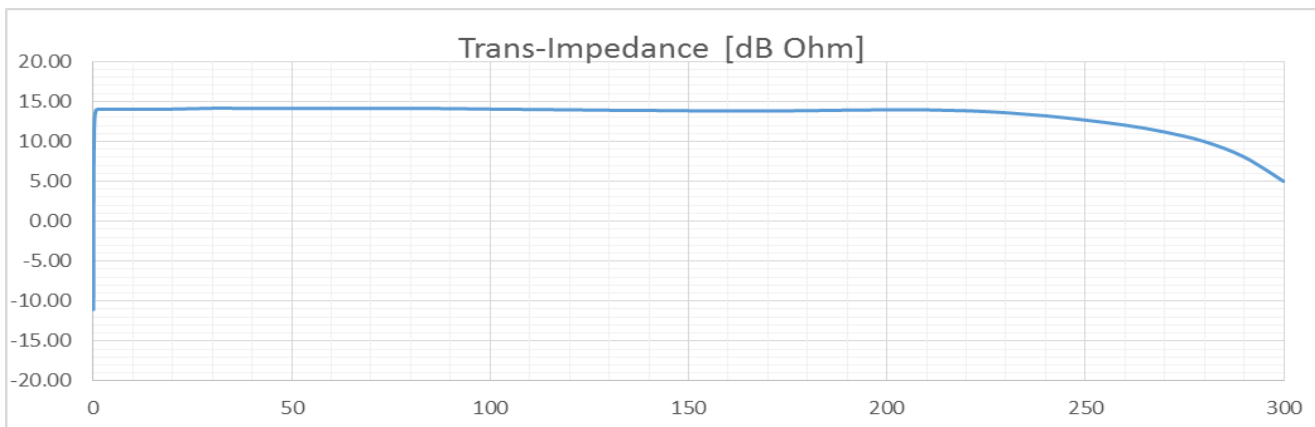


Figure1: typical transfer impedance: 10 kHz to 300 MHz, linear

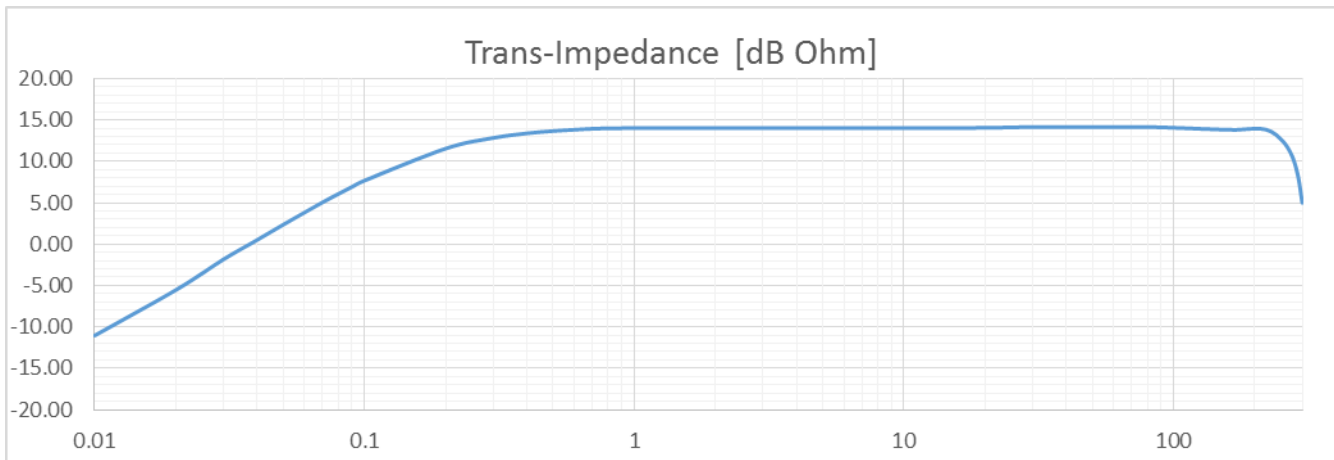


Figure2: typical transfer impedance: 10 kHz to 300 MHz, logarithmic

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP4-250 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 dBΩ subtracted from the analyzer reading in dBμV gives the corrected reading in dBμA.

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

Frequency [MHz]	transfer impedance [dBΩ]	Frequency [MHz]	transfer impedance [dBΩ]
0.01	-11.04	30	14.16
0.02	-5.53	40	14.15
0.03	-1.84	50	14.16
0.04	0.51	60	14.13
0.05	2.36	70	14.14
0.06	3.83	80	14.15
0.07	5.06	90	14.12
0.08	6.07	100	14.06
0.09	6.93	110	14.01
0.1	7.68	120	13.97
0.2	11.55	130	13.92
0.3	12.84	140	13.89
0.4	13.39	150	13.85
0.5	13.67	160	13.83
0.6	13.83	170	13.81
0.7	13.95	180	13.87
0.8	13.99	190	13.93
0.9	14.01	200	13.97
1	14.03	210	13.96
2	14.03	220	13.85
3	14.02	230	13.61
4	14.02	240	13.22
5	14.03	250	12.68
6	14.02	260	12.05
7	14.02	270	11.19
8	14.02	280	9.99
9	14.02	290	8.06
10	14.02	300	5.00
20	14.06		

Table1: Transfer impedance: 10 kHz to 300 MHz

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5 Accessory

Tekbox supplies a calibration fixture corresponding with the TBCP4 RF current probe series:



Picture 2: TBCP4-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP4-250	TBCP4 RF current monitoring probe, beech-wood box, calibration protocol
TBCP4-CAL	Calibration fixture for TBCP4 current probe series

7 History

Version	Date	Author	Changes
V 1.0	11.12.2020	Mayerhofer	Creation of the preliminary document
V 1.1	15.01.2021	Mayerhofer	Photo update
V 1.2	28.1.2021	Mayerhofer	Chapter 5 updated

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