

RF CURRENT MONITORING PROBE

1 Introduction

The TBCP4-500 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 500 MHz and is characterized and usable over the frequency range from 10kHz to 500 MHz.



Picture 1: TBCP4-500 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is close to 16 dB Ohm in the range from 400 kHz to 500 MHz.

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2 Specification

Characterized frequency range: 10 kHz to 500 MHz
Aperture diameter: 32 mm
Outside diameter: 73 mm
Height: 20 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 16 dBΩ
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C

3 Transfer impedance

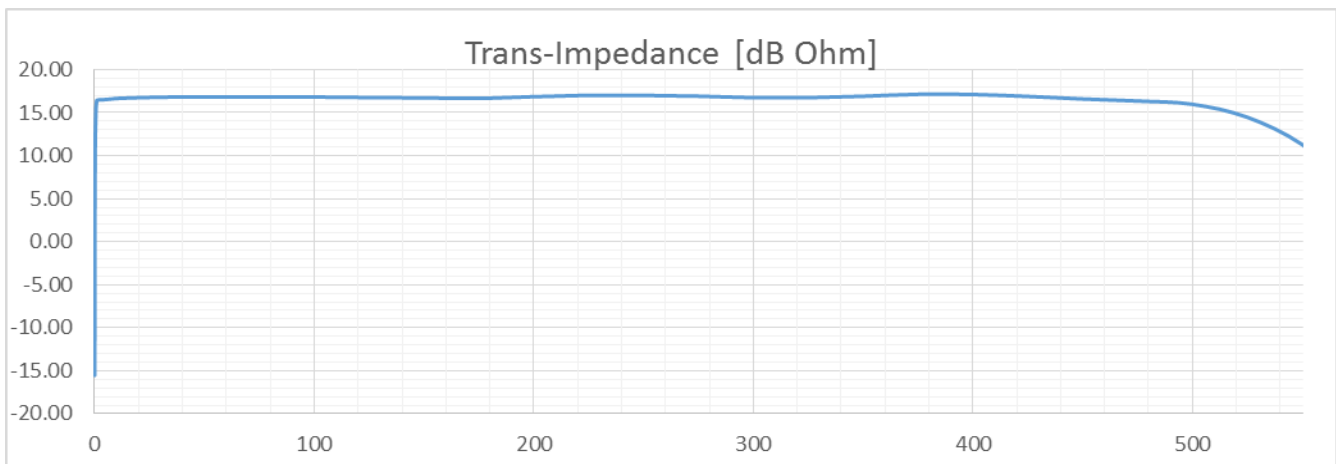


Figure1: typical transfer impedance: 10 kHz to 550 MHz, linear

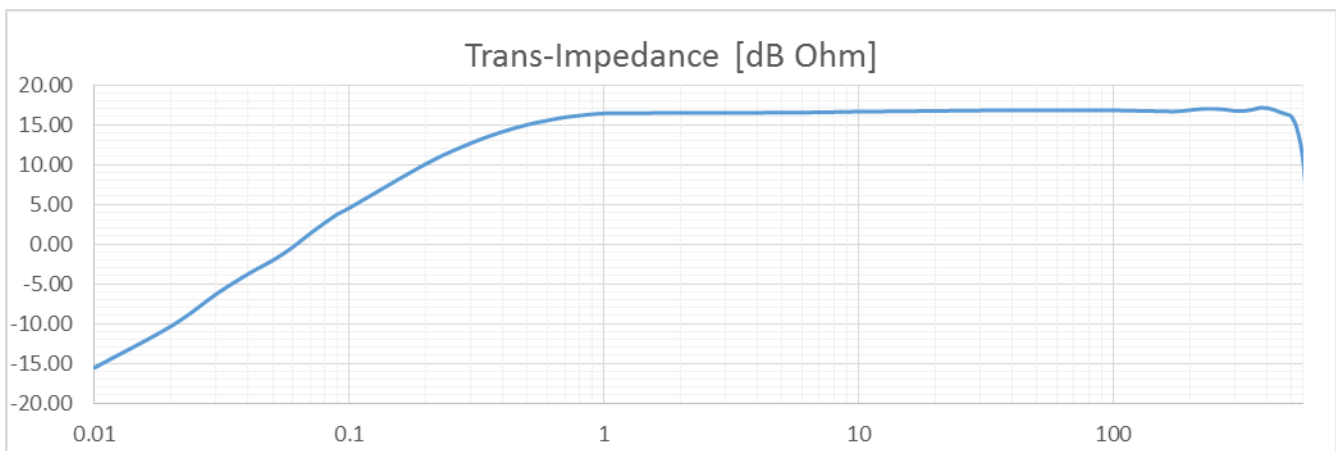


Figure2: typical transfer impedance: 10 kHz to 550 MHz, logarithmic

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP4-500 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	-15.53	50	16.82
0.02	-10.30	60	16.84
0.03	-6.29	70	16.83
0.04	-3.76	80	16.84
0.05	-2.05	90	16.83
0.06	-0.37	100	16.82
0.07	1.31	110	16.79
0.08	2.66	120	16.77
0.09	3.79	130	16.74
0.1	4.55	140	16.73
0.2	10.10	150	16.71
0.3	12.70	160	16.69
0.4	14.14	170	16.67
0.5	15.02	180	16.69
0.6	15.55	190	16.77
0.7	15.94	200	16.85
0.8	16.16	225	17.00
0.9	16.33	250	17.00
1	16.44	275	16.91
2	16.49	300	16.74
3	16.50	325	16.74
4	16.51	350	16.90
5	16.53	375	17.13
6	16.55	400	17.11
7	16.58	425	16.89
8	16.60	450	16.59
9	16.63	475	16.35
10	16.65	500	15.97
20	16.74	525	14.46
30	16.80	550	11.29
40	16.82	600	2.33

Table1: Transfer impedance: 10 kHz to 550 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
TBCP4-500	Snap on RF current monitoring probe, beech-wood box, calibration protocol
TBCP4-CAL	Calibration fixture for TBCP4 RF 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	28.01.2021	Mayerhofer	Chapter 5 updated
V 1.3	4.08.2021	Mayerhofer	Correction in table 1

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