



RF CURRENT MONITORING PROBE



1 Introduction

The TBCP3-1000 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 1 GHz and is characterized and usable over the frequency range from 30kHz to 1 GHz.



Picture 1: TBCP3-1000 RF current monitoring probe

The aperture of the RF current monitoring probe is 17 mm. Its transfer impedance is close to 20 dB Ohm in the range from 3 MHz to 1 GHz.

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2 Specification

Characterized frequency range: 30 kHz to 1 GHz
Aperture diameter: 17 mm
Outside diameter: 52 mm
Height: 14 mm
Weight: 55 g
Connector type: SMA female
Transfer impedance: 20 dBΩ
Max. primary current (DC - 400 Hz): 30 A
Max. primary current (RF): 4 A
Max. core temperature: 125 °C

3 Transfer impedance

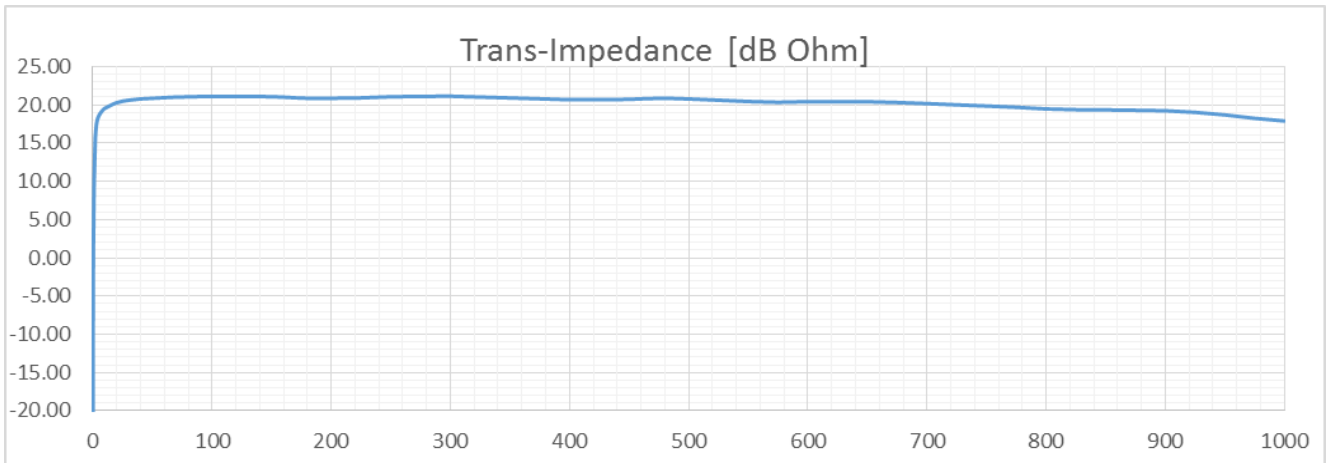


Figure 1: typical transfer impedance: 10 kHz to 1000 MHz, linear

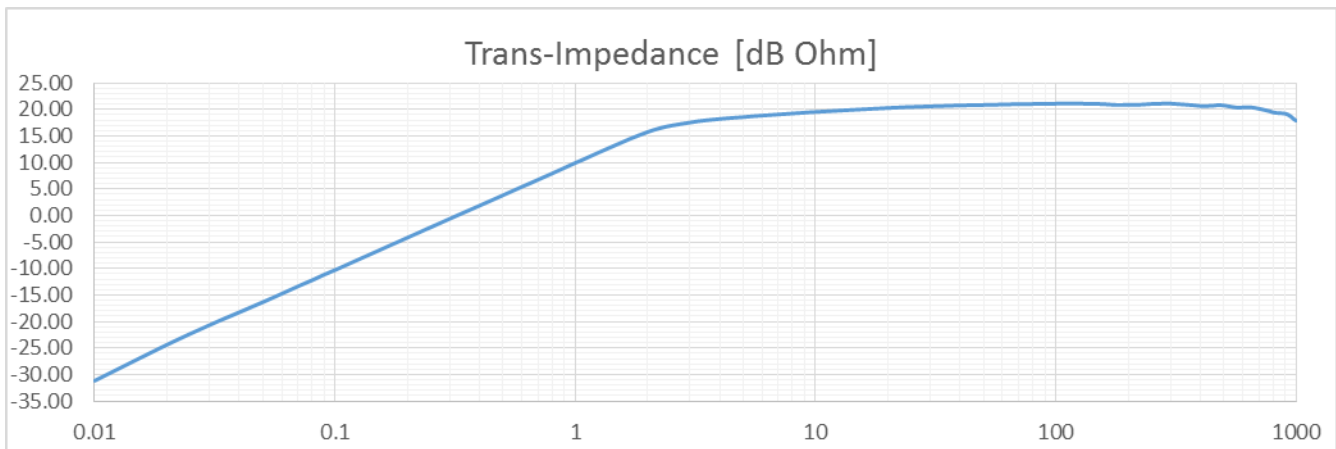


Figure 2: typical transfer impedance: 10 kHz to 1000 MHz, logarithmic

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP3-1000 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] |
|-----------------|--------------------------|-----------------|--------------------------|
| 0.03 | -20.67 | 150 | 21.07 |
| 0.04 | -18.23 | 160 | 21.01 |
| 0.05 | -16.34 | 170 | 20.93 |
| 0.06 | -14.74 | 180 | 20.87 |
| 0.07 | -13.36 | 190 | 20.87 |
| 0.08 | -12.23 | 200 | 20.87 |
| 0.09 | -11.15 | 225 | 20.92 |
| 0.1 | -10.27 | 250 | 21.06 |
| 0.2 | -4.16 | 275 | 21.11 |
| 0.3 | -0.61 | 300 | 21.13 |
| 0.4 | 1.89 | 325 | 21.02 |
| 0.5 | 3.84 | 350 | 20.91 |
| 0.6 | 5.44 | 375 | 20.80 |
| 0.7 | 6.77 | 400 | 20.67 |
| 0.8 | 7.93 | 425 | 20.67 |
| 0.9 | 9.00 | 450 | 20.72 |
| 1 | 9.93 | 475 | 20.86 |
| 2 | 15.77 | 500 | 20.77 |
| 3 | 17.56 | 525 | 20.61 |
| 4 | 18.23 | 550 | 20.44 |
| 5 | 18.59 | 575 | 20.34 |
| 6 | 18.87 | 600 | 20.42 |
| 7 | 19.08 | 625 | 20.40 |
| 8 | 19.27 | 650 | 20.41 |
| 9 | 19.42 | 675 | 20.31 |
| 10 | 19.55 | 700 | 20.16 |
| 20 | 20.29 | 725 | 20.00 |
| 30 | 20.61 | 750 | 19.85 |
| 40 | 20.78 | 775 | 19.69 |
| 50 | 20.87 | 800 | 19.47 |
| 60 | 20.95 | 825 | 19.37 |
| 70 | 21.02 | 850 | 19.34 |
| 80 | 21.05 | 875 | 19.29 |
| 90 | 21.09 | 900 | 19.23 |
| 100 | 21.11 | 925 | 19.03 |
| 110 | 21.12 | 950 | 18.69 |
| 120 | 21.11 | 975 | 18.24 |
| 130 | 21.11 | 1000 | 17.90 |
| 140 | 21.09 | | |

Table1: Transfer impedance, 30 kHz to 1000 MHz

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5 Accessory

Tekbox supplies a calibration fixture corresponding with the TBCP3 current monitoring probe:



Picture 2: TBCP3-CAL RF current probe calibration fixture

6 Ordering Information

| Part Number | Description |
|-------------|---|
| TBCP3-1000 | TBCP3 RF current monitoring probe, beech-wood box, calibration protocol |
| TBCP3-CAL | Calibration fixture for TBCP3 current probe series |

7 History

| Version | Date | Author | Changes |
|---------|-----------|------------|--------------------------------------|
| V 1.0 | 5.1.2021 | Mayerhofer | Creation of the preliminary document |
| V 1.1 | 28.1.2021 | Mayerhofer | Chapter 5 updated |

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