

## 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 30kHz to 250 MHz.



*Picture 1: TBCP1-250 RF current monitoring probe*

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

# RF CURRENT MONITORING PROBE

## 2 Specification

Characterized frequency range: 30 kHz to 250 MHz  
Aperture diameter: 25 mm  
Outside diameter: 76 mm  
Height: 31 mm  
Weight: 320 g  
Connector type: N female  
Transfer impedance: 0 to 18 dBΩ  
Max. primary current (DC - 400 Hz): 80 A  
Max. primary current (RF): 3 A  
Max. core temperature: 125 °C

## 3 Transfer impedance

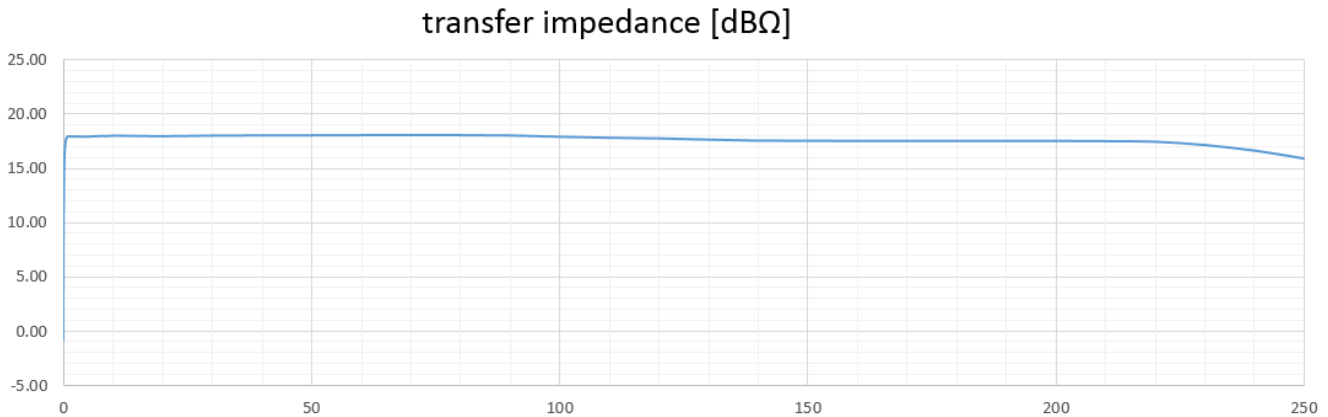


Figure1: typical transfer impedance: 30 kHz to 250 MHz, linear

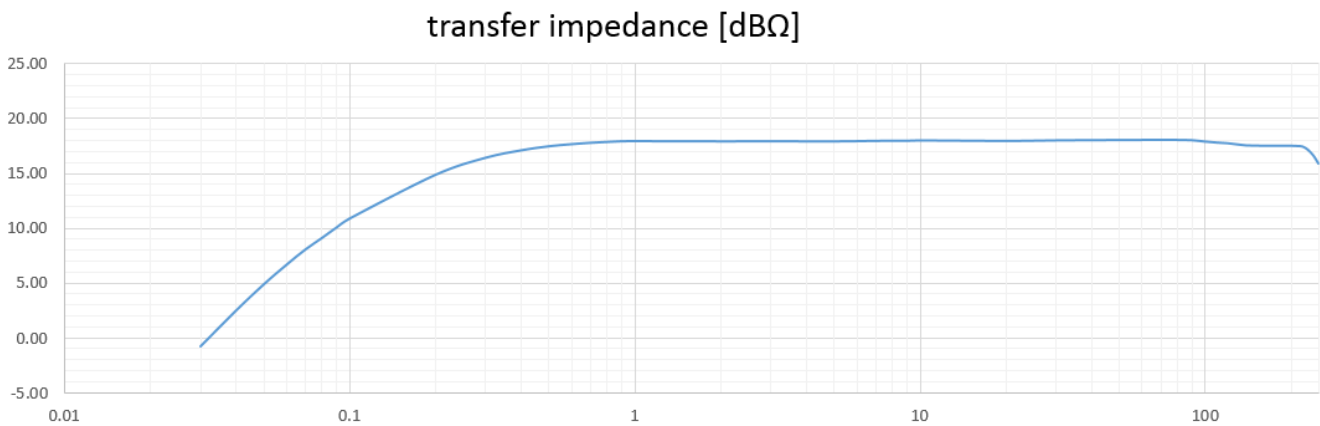


Figure2: typical transfer impedance: 30 kHz to 250 MHz, logarithmic

## RF CURRENT MONITORING PROBE

### 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 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            | -0.79                    | 10              | 18.01                    |
| 0.04            | 2.49                     | 20              | 17.97                    |
| 0.05            | 4.87                     | 30              | 18.02                    |
| 0.06            | 6.65                     | 40              | 18.04                    |
| 0.07            | 8.06                     | 50              | 18.05                    |
| 0.08            | 9.11                     | 60              | 18.06                    |
| 0.09            | 10.07                    | 70              | 18.06                    |
| 0.1             | 10.88                    | 80              | 18.06                    |
| 0.2             | 14.87                    | 90              | 18.03                    |
| 0.3             | 16.43                    | 100             | 17.91                    |
| 0.4             | 17.11                    | 110             | 17.82                    |
| 0.5             | 17.48                    | 120             | 17.76                    |
| 0.6             | 17.67                    | 130             | 17.65                    |
| 0.7             | 17.80                    | 140             | 17.56                    |
| 0.8             | 17.88                    | 150             | 17.54                    |
| 0.9             | 17.94                    | 160             | 17.53                    |
| 1               | 17.95                    | 170             | 17.52                    |
| 2               | 17.93                    | 180             | 17.52                    |
| 3               | 17.94                    | 190             | 17.53                    |
| 4               | 17.93                    | 200             | 17.53                    |
| 5               | 17.93                    | 210             | 17.51                    |
| 6               | 17.95                    | 220             | 17.46                    |
| 7               | 17.97                    | 230             | 17.15                    |
| 8               | 17.99                    | 240             | 16.64                    |
| 9               | 17.98                    | 250             | 15.91                    |

Table1: Transfer impedance: 30 kHz to 250 MHz

## RF CURRENT MONITORING PROBE

### 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, beech-wood box, calibration protocol |
| 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          |

[www.tekbox.com](http://www.tekbox.com)

**TekBox Digital Solutions Vietnam Pte. Ltd.**

Factory 4, F5, Lot I-3B-1, Saigon Hi-Tech Park, Tan Phu Ward, District 9, Ho Chi Minh City, Vietnam