

RF CURRENT MONITORING PROBE

1 Introduction

The TBCP1-200 is a fixed aperture RF current monitoring probe, expanding the Tekbox product range of affordable EMC pre-compliance test equipment.

The probe has a 3dB bandwidth of approximately 200 MHz and is characterized and usable over the frequency range from 1kHz to 500 MHz.



Picture 1: TBCP1-200 RF current monitoring probe

The aperture of the RF current monitoring probe is 25 mm. Its transfer impedance is > 17 dB Ohm with a 3 dB bandwidth from 40 kHz to 200 MHz.

RF CURRENT MONITORING PROBE

2 Specification

Characterized frequency range: 1 kHz to 500 MHz
Aperture diameter: 25 mm
Outside diameter: 76 mm
Height: 31 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 17 dB Ω in the flat region, typ.
3 dB bandwidth: 40 kHz -200 MHz, typ.
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C



3 Typical transfer impedance

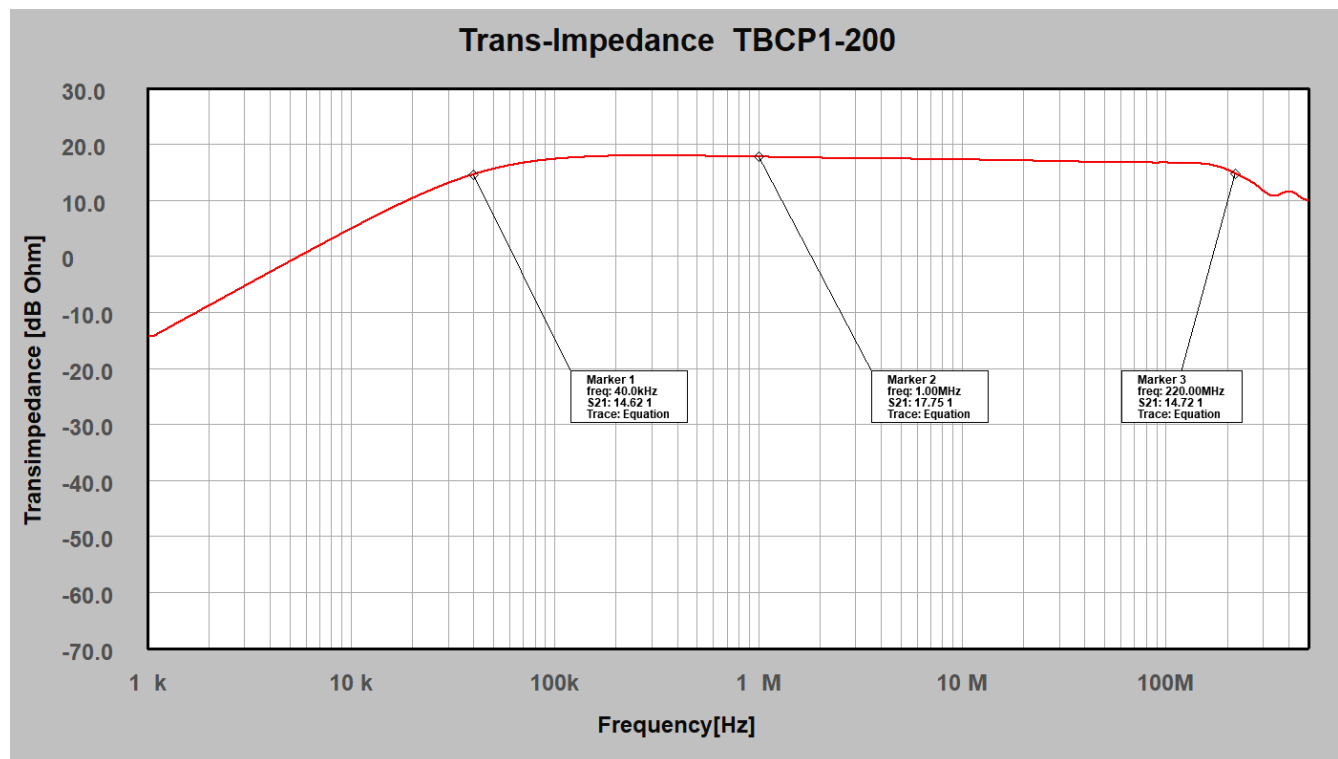


Figure1: Transfer impedance: 1 kHz to 500 MHz, typical data

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP-200 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 $\text{dB}\Omega$ subtracted from the analyzer reading in $\text{dB}\mu\text{V}$ gives the corrected reading in $\text{dB}\mu\text{A}$.

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

Frequency [MHz]	Transfer impedance [$\text{dB}\Omega$]	Frequency [MHz]	Transfer impedance [$\text{dB}\Omega$]
0.001	-14,27	150	16,51
0.0025	-6,91	175	16,10
0.005	-0,94	200	15,40
0.0075	2,51	225	14,53
0.01	4,91	250	13,66
0.025	11,90	275	12,75
0.05	15,59	300	11,65
0.075	16,83	325	10,88
0.1	17,36	350	10,82
0.25	17,96	375	11,26
0.5	17,90	400	11,51
0.75	17,82	410	11,49
1	17,75	420	11,37
2.5	17,50	430	11,18
5	17,39	440	10,94
7.5	17,31	450	10,68
10	17,25	460	10,43
25	16,99	470	10,23
50	16,78	480	10,10
75	16,69	490	10,03
100	16,70	500	9,97
125	16,66		

Table1: Transfer impedance: 1 kHz to 500 MHz, typical data

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5 Accessory

Tekbox supplies a calibration fixture corresponding with the TBCP1 current probe series:



Picture 2: TBCP1-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP1-200	Fixed aperture RF current monitoring probe, wooden box, calibration protocol 1kHz – 500 MHz
TBCP1-CAL	Calibration fixture for the TBCP1 series

7 History

Version	Date	Author	Changes
V 1.0	5.05.2019	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 1kHz – 500 MHz

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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 dB Ohm in the range from 300 kHz to 250 MHz.

RF CURRENT MONITORING PROBE

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

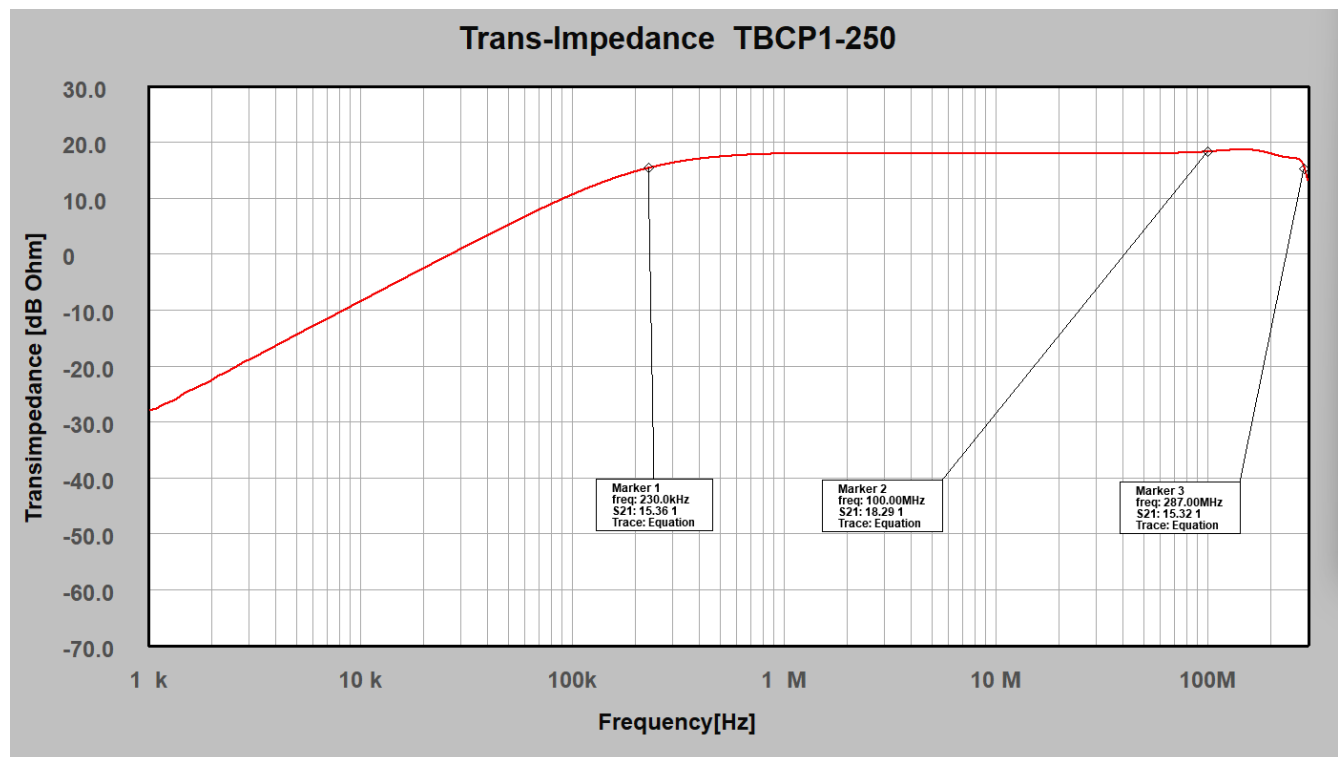


Figure1: typical transfer impedance: 1 kHz to 300 MHz

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]
0.001	-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

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, 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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RF CURRENT MONITORING PROBE

1 Introduction

The TBCP1-500 is a fixed aperture RF current monitoring probe, expanding the Tekbox product range of affordable EMC pre-compliance test equipment.

The probe has a flat response with a 3dB bandwidth of 500 MHz and is characterized and usable in the frequency range from 1 kHz to 500 MHz.



Picture 1: TBCP1-500 RF current monitoring probe

The aperture of the RF current monitoring probe is 25 mm. Its transfer impedance is 19 dB Ohm, with a 3 dB bandwidth of 500 MHz.

RF CURRENT MONITORING PROBE

2 Specification

Characterized frequency range: 1 kHz to 500 MHz
Aperture diameter: 25 mm
Outside diameter: 76 mm
Height: 31 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 19 dB Ω in the flat region, typ.
3 dB bandwidth: 400 kHz - 500 MHz, typ.
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C



3 Transfer impedance

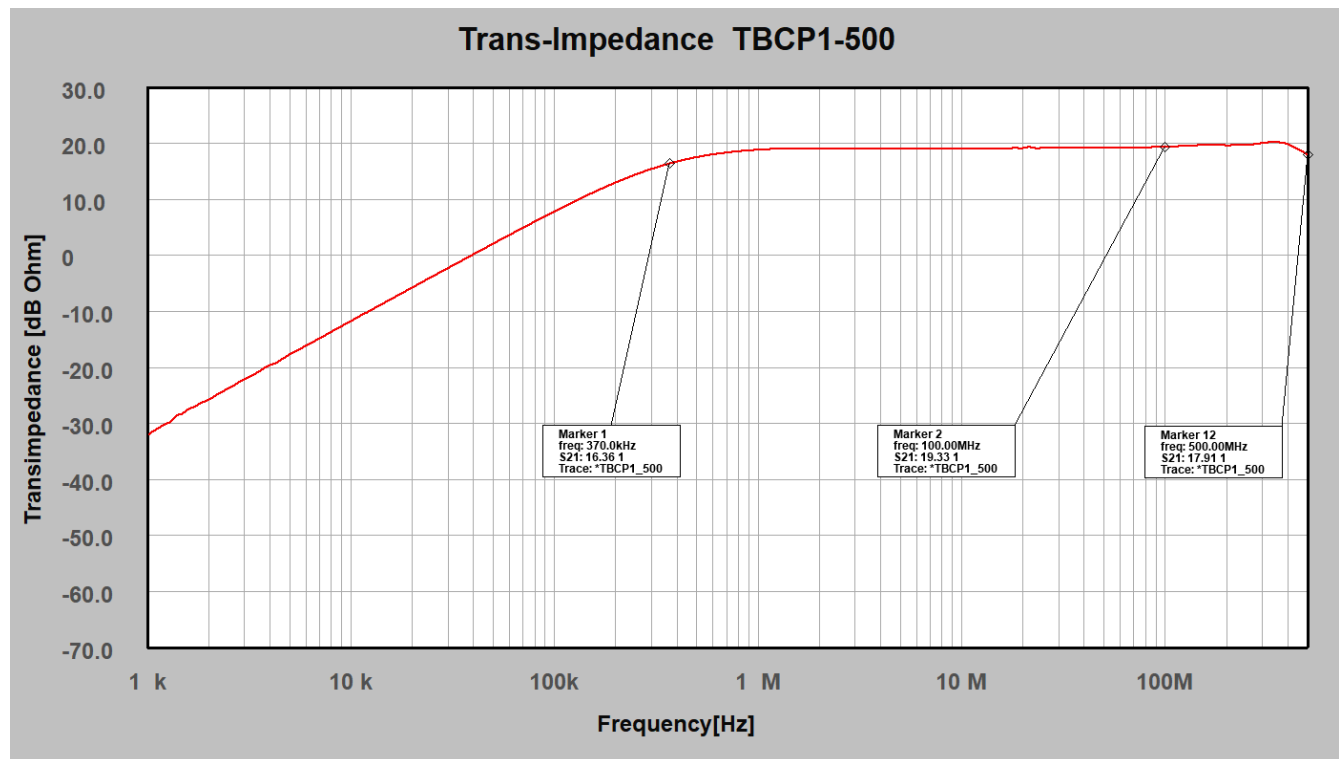


Figure1: typical transfer impedance: 1 kHz to 500 MHz

RF CURRENT MONITORING PROBE

4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP-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]
0.001	-32,22	150	19,62
0.0025	-23,79	175	19,68
0.005	-17,75	200	19,57
0.0075	-14,30	225	19,61
0.01	-11,80	250	19,69
0.025	-3,90	275	19,77
0.05	2,03	300	19,99
0.075	5,42	325	20,13
0.1	7,77	350	20,17
0.25	14,34	375	20,04
0.5	17,47	400	19,78
0.75	18,42	410	19,62
1	18,80	420	19,42
2.5	18,96	430	19,20
5	18,95	440	19,00
7.5	18,99	450	18,81
10	19,03	460	18,64
25	19,10	470	18,47
50	19,13	480	18,29
75	19,21	490	18,10
100	19,33	500	17,91
125	19,48		

Table1: Transfer impedance: 1 kHz to 500 MHz, typical data

RF CURRENT MONITORING PROBE

5 Accessory

Tekbox supplies a calibration fixture corresponding with the TBCP1 current probe series:



Picture 2: TBCP1-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP1-500	Fixed aperture RF current monitoring probe, wooden box, calibration protocol 1 kHz -500 MHz
TBCP1-CAL	Calibration fixture for TBCP1 series

7 History

Version	Date	Author	Changes
V 1.0	31.05.2020	Mayerhofer	Creation of the document
V 1.1	5.06.2020	Mayerhofer	Correction, chapter 1
V 1.2	19.06.2020	Mayerhofer	Correction, chapter 2
V 1.3	28.1.2021	Mayerhofer	Chapter 5 added
V 1.4	26.3.2024	Mayerhofer	Extended frequency range to 1 kHz -500 MHz

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