

RF CURRENT MONITORING PROBE

1 Introduction

The TBCP2-30K400 is a snap-on RF current monitoring probe, expanding the Tekbox product range of affordable EMC pre-compliance test equipment.

The probe has a flat response from 30kHz to 400 MHz and is characterized over the frequency range from 10 Hz to 500 MHz. The TBCP2-30K400 is for RF current monitoring applications that need higher sensitivity in the low frequency range, compared to our other current monitoring probe series. The higher sensitivity at low frequencies comes at the cost of a slightly reduced overall trans-impedance.



Picture 1: TBCP2-30K400 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is 3 dB Ohm with a 3dB bandwidth from 30kHz to 400 MHz.

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2 Specification

Characterized frequency range: 10 Hz to 500 MHz
Aperture diameter: 32 mm
Outside diameter: 73 mm
Height: 20 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 3 dB Ohm in the flat region, typ.
3 dB bandwidth: 30 kHz to 400 MHz, typ.
Max. primary current (DC - 400 Hz): 25 A
Max. primary current (RF): 2 A
Max. core temperature: 125 °C



3 Transfer impedance

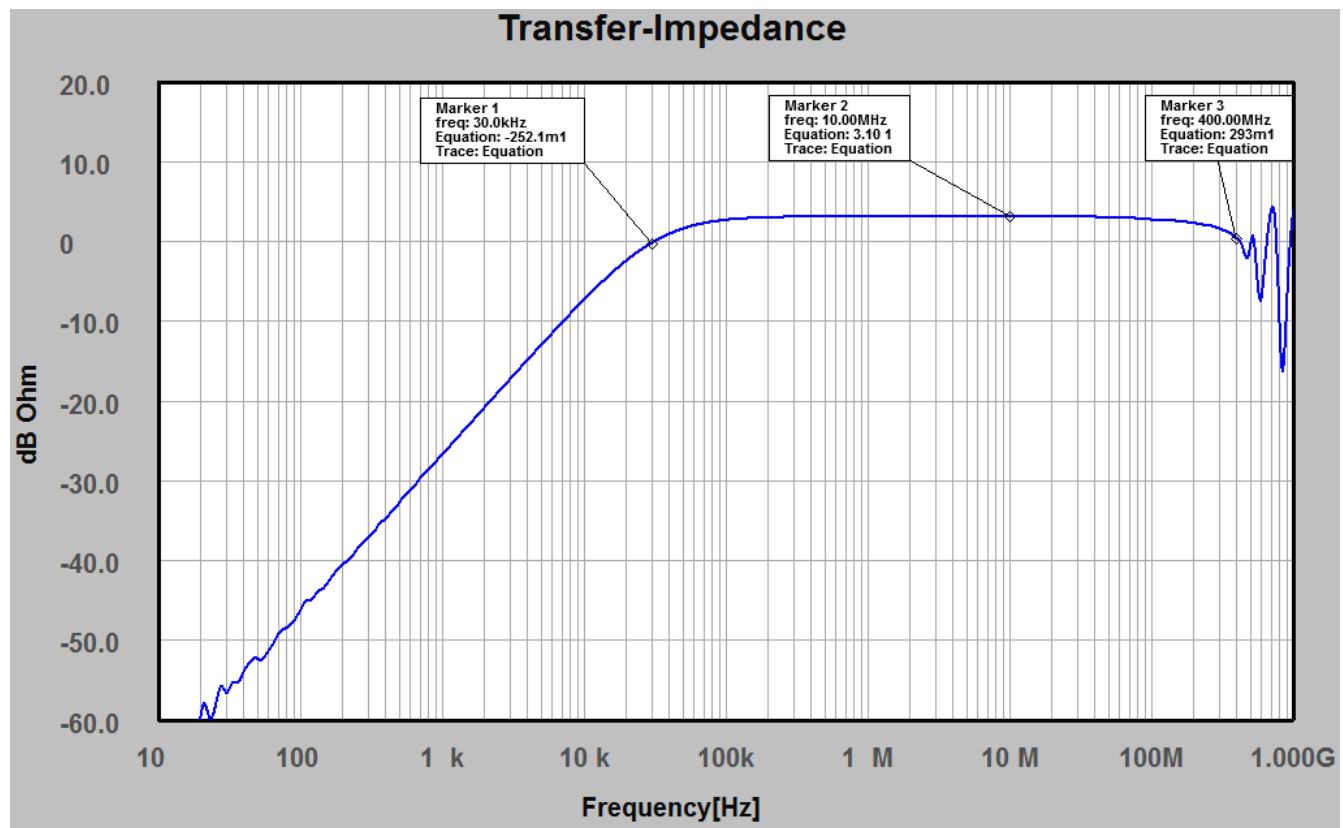


Figure1: typical transfer impedance

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4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP2-30K400 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]
0.00001	-62.61	10	3.1
0.000025	-58.59	25	3.1
0.00005	-52.37	50	2.97
0.000075	-48.81	75	2.87
0.0001	-46.31	100	2.69
0.00025	-38.71	125	2.64
0.0005	-32.82	150	2.52
0.00075	-29.22	175	2.41
0.001	-26.78	200	2.25
0.0025	-18.91	225	2.1
0.005	-13.03	250	1.96
0.0075	-9.68	275	1.79
0.01	-7.38	300	1.56
0.025	-1.15	325	1.24
0.05	1.15	350	1.1
0.075	2.32	375	0.71
0.1	2.64	400	0.29
0.25	3.01	425	-0.11
0.5	3.1	450	-1.35
0.75	3.1	460	-1.93
1	3.12	470	-2.24
2.5	3.11	480	-2.1
5	3.1	490	-1.14
7.5	3.1	500	-0.5

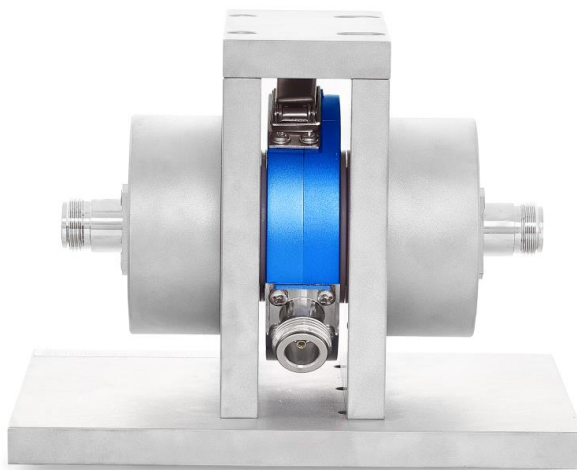
Table1: Transfer impedance: 10 Hz to 500 MHz, typical data



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5 Accessory

Tekbox supplies a calibrator suitable for the TBCP2-30K400 current probe:



Picture 2: TBCP2-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP2-30K400	Snap on RF current monitoring probe, woodenbox, calibration protocol 10 Hz – 500 MHz
TBCP2-CAL	Calibration fixture for TBCP2-30K400 current probe

7 History

Version	Date	Author	Changes
V 1.0	20.10.2021	Mayerhofer	Creation of the preliminary document
V 1.1	6.5.2022	Mayerhofer	Typo correction
V 1.2	26.3.2024	Mayerhofer	Typo correction

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RF CURRENT MONITORING PROBE

1 Introduction

The TBCP2-250 is a snap-on 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 300 MHz and is characterized and usable in the frequency range from 1kHz to 400 MHz.



Picture 1: TBCP2-250 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is 13 dB Ohm, with a 3 dB bandwidth from 300 kHz – 300 MHz.

RF CURRENT MONITORING PROBE

2 Specification

Characterized / usable frequency range: 1 kHz to 400 MHz

Aperture diameter: 32 mm

Outside diameter: 73 mm

Height: 20 mm

Weight: 320 g

Connector type: N female

Transfer impedance: 13 dB Ω in the flat region, typ.

3 dB bandwidth: 300kHz – 300 MHz, typ.

Max. primary current (DC - 400 Hz): 80 A

Max. primary current (RF): 3 A

Max. core temperature: 125 °C



3 Transfer impedance

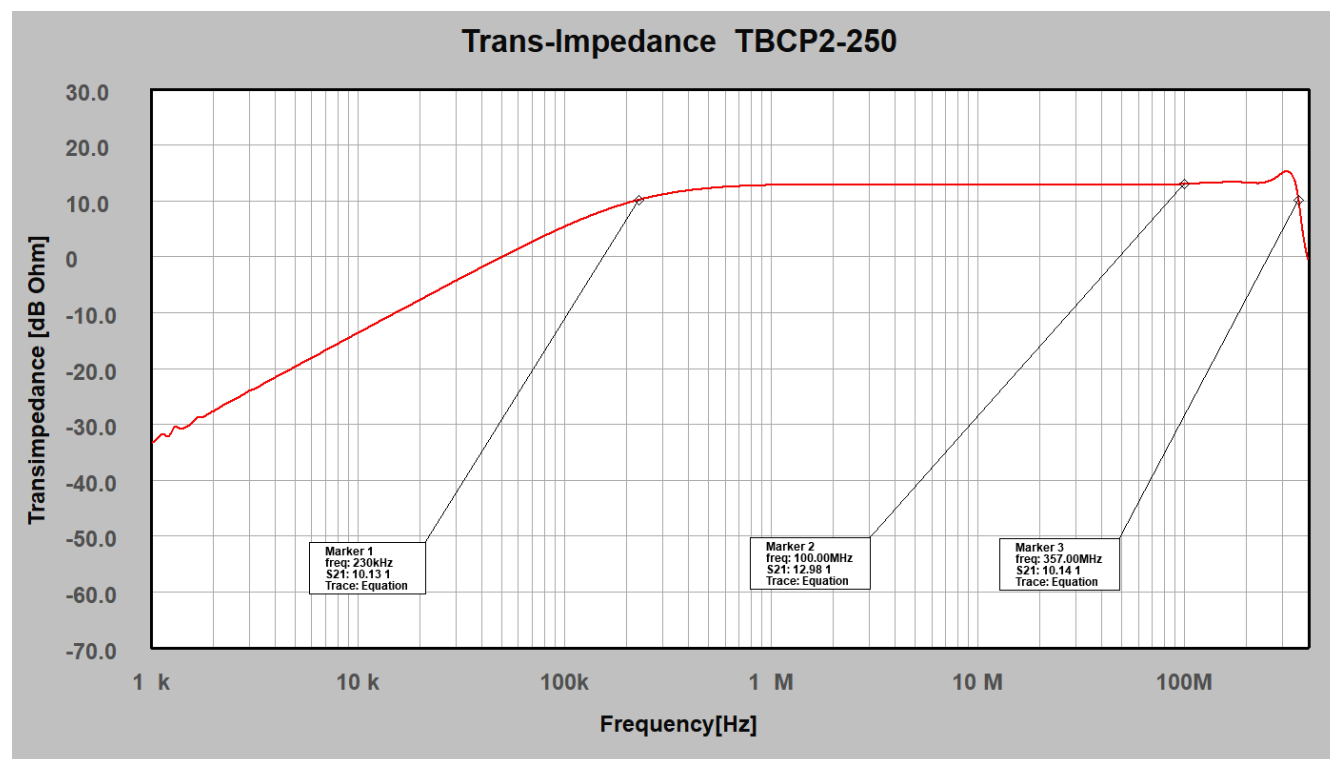


Figure1: typical transfer impedance: 1 kHz to 400 MHz

RF CURRENT MONITORING PROBE

4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP2-250 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.

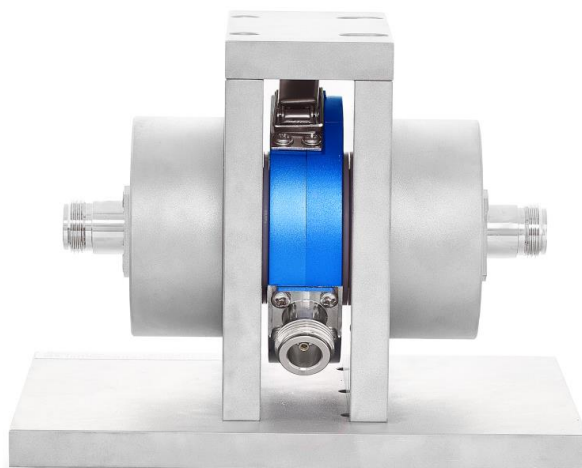
Frequency [MHz]	Transfer impedance [dBΩ]	Frequency [MHz]	Transfer impedance [dBΩ]
0.001	-33,53	25	12,83
0.0025	-25,74	50	12,82
0.005	-19,75	75	12,84
0.0075	-16,22	100	12,98
0.01	-13,74	125	13,13
0.0125	-11,80	150	13,27
0.015	-10,24	175	13,30
0.0175	-8,94	200	13,19
0.02	-7,79	225	13,11
0.025	-5,88	250	13,34
0.05	-0,08	260	13,55
0.075	3,17	270	13,82
0.1	5,32	280	14,20
0.125	6,83	290	14,63
0.15	8,85	300	15,00
0.175	9,52	310	15,20
0.2	11,08	320	15,12
0.25	11,82	330	14,70
0.5	12,21	340	13,82
0.75	12,64	350	12,08
1	12,79	360	9,16
2.5	12,83	370	5,70
5	12,78	380	2,72
7.5	12,80	390	0,52
10	12,81	400	-1,27

Table1: Transfer impedance: 1 kHz to 400 MHz, typical data

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5 Accessory

Tekbox supplies a calibrator corresponding with the TBCP2 series of snap on current probes:



Picture 2: TBCP2-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP2-250	Snap on RF current monitoring probe, wooden box, calibration protocol 1 kHz – 400 MHz
TBCP2-CAL	Calibration fixture for TBCP2 current probe series

7 History

Version	Date	Author	Changes
V 1.0	7.12.2020	Mayerhofer	Creation of the preliminary document
V 1.1	28.1.2021	Mayerhofer	Photo update
V 1.2	2.6.2021	Mayerhofer	data update after mechanical modification
V 1.3	25.3.2024	Mayerhofer	Extended data to 1kHz – 400 MHz

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RF CURRENT MONITORING PROBE

1 Introduction

The TBCP2-500 is a snap-on 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 1kHz to 600 MHz.



Picture 1: TBCP2-500 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is 16 dB Ohm, with a 3 dB bandwidth from 1 MHz to 500 MHz.

RF CURRENT MONITORING PROBE

2 Specification

Characterized / usable frequency range: 1 kHz to 600 MHz

Aperture diameter: 32 mm

Outside diameter: 73 mm

Height: 20 mm

Weight: 320 g

Connector type: N female

Transfer impedance: 16 dB Ω in the flat region, typ.

3 dB bandwidth: 1 MHz – 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

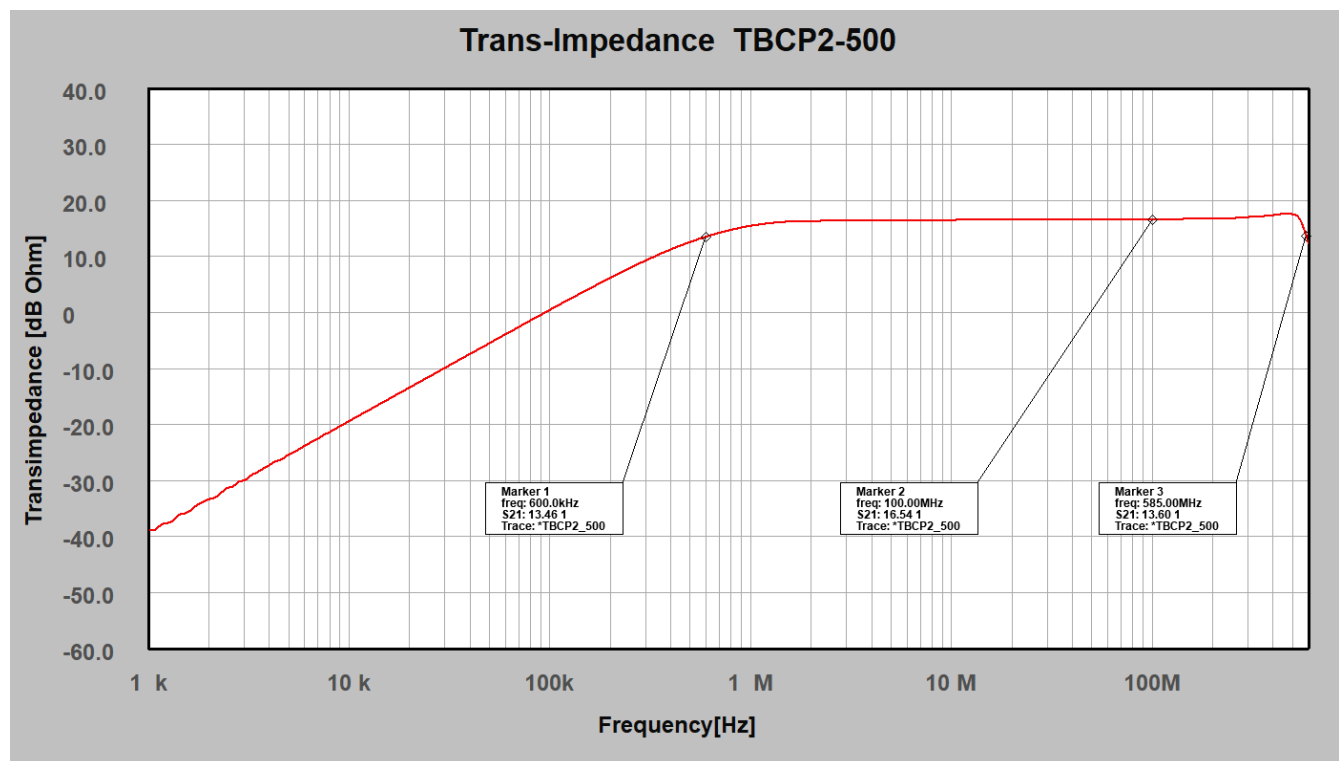


Figure1: typical transfer impedance, 1 kHz to 600 MHz

RF CURRENT MONITORING PROBE

4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP2-500 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.

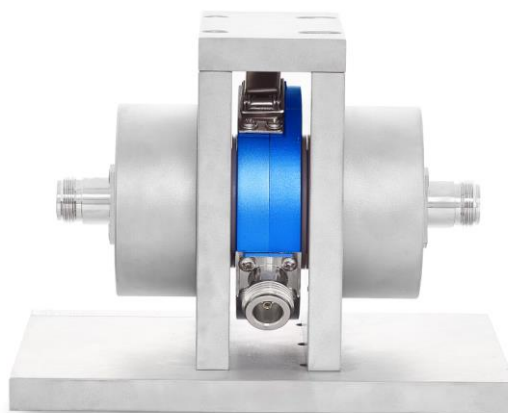
Frequency [MHz]	Transfer impedance [dBΩ]	Frequency [MHz]	Transfer impedance [dBΩ]
0.001	-38,83	100	16,54
0.0025	-31,38	125	16,57
0.005	-25,47	150	16,63
0.0075	-21,92	175	16,66
0.01	-19,48	200	16,66
0.0125	-17,53	225	16,71
0.015	-15,99	250	16,76
0.0175	-14,62	275	16,85
0.02	-13,48	300	16,96
0.025	-11,55	325	17,04
0.05	-5,56	350	17,10
0.075	-2,06	375	17,17
0.1	0,40	400	17,28
0.125	2,27	425	17,43
0.15	5,03	450	17,55
0.175	6,11	475	17,56
0.2	9,20	500	17,45
0.25	11,17	510	17,38
0.5	12,51	520	17,27
0.75	14,44	530	17,05
1	15,39	540	16,68
2.5	16,28	550	16,15
5	16,32	560	15,49
7.5	16,38	570	14,76
10	16,44	580	13,99
25	16,55	590	13,18
50	16,56	600	12,22
75	16,52		

Table1: Transfer impedance: 1 kHz to 600 MHz, typical data

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5 Accessory

Tekbox supplies a calibrator corresponding with the TBCP2 series of snap on current probes:



Picture 2: TBCP2-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP2-500	Snap on RF current monitoring probe, wooden box, calibration protocol 1 kHz to 600 MHz
TBCP2-CAL	Calibration fixture for TBCP2 current probe series

7 History

Version	Date	Author	Changes
V 1.0	7.12.2020	Mayerhofer	Creation of the preliminary document
V 1.1	28.1.2021	Mayerhofer	Photo update
V 1.2	2.6.2021	Mayerhofer	Data update after mechanical modification
V 1.3	4.8.2021	Mayerhofer	Table 1 corrected
V 1.4	25.3.2024	Mayerhofer	Extended data to 1 kHz – 600 MHz

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RF CURRENT MONITORING PROBE

1 Introduction

The TBCP2-750 is a snap-on 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 850 MHz and is characterized and usable in the frequency range from 1kHz to 1 GHz.



Picture 1: TBCP2-750 RF current monitoring probe

The aperture of the RF current monitoring probe is 32 mm. Its transfer impedance is 20 dB Ohm with a 3 dB bandwidth from 1.5 MHz to 850 MHz.

RF CURRENT MONITORING PROBE

2 Specification

Characterized frequency range: 1 kHz to 1 GHz
Aperture diameter: 32 mm
Outside diameter: 73 mm
Height: 20 mm
Weight: 320 g
Connector type: N female
Transfer impedance: 20 dBΩ in the flat region, typ.
3 dB bandwidth: 1.5 MHz – 850 MHz, typ.
Max. primary current (DC - 400 Hz): 80 A
Max. primary current (RF): 3 A
Max. core temperature: 125 °C



3 Transfer impedance

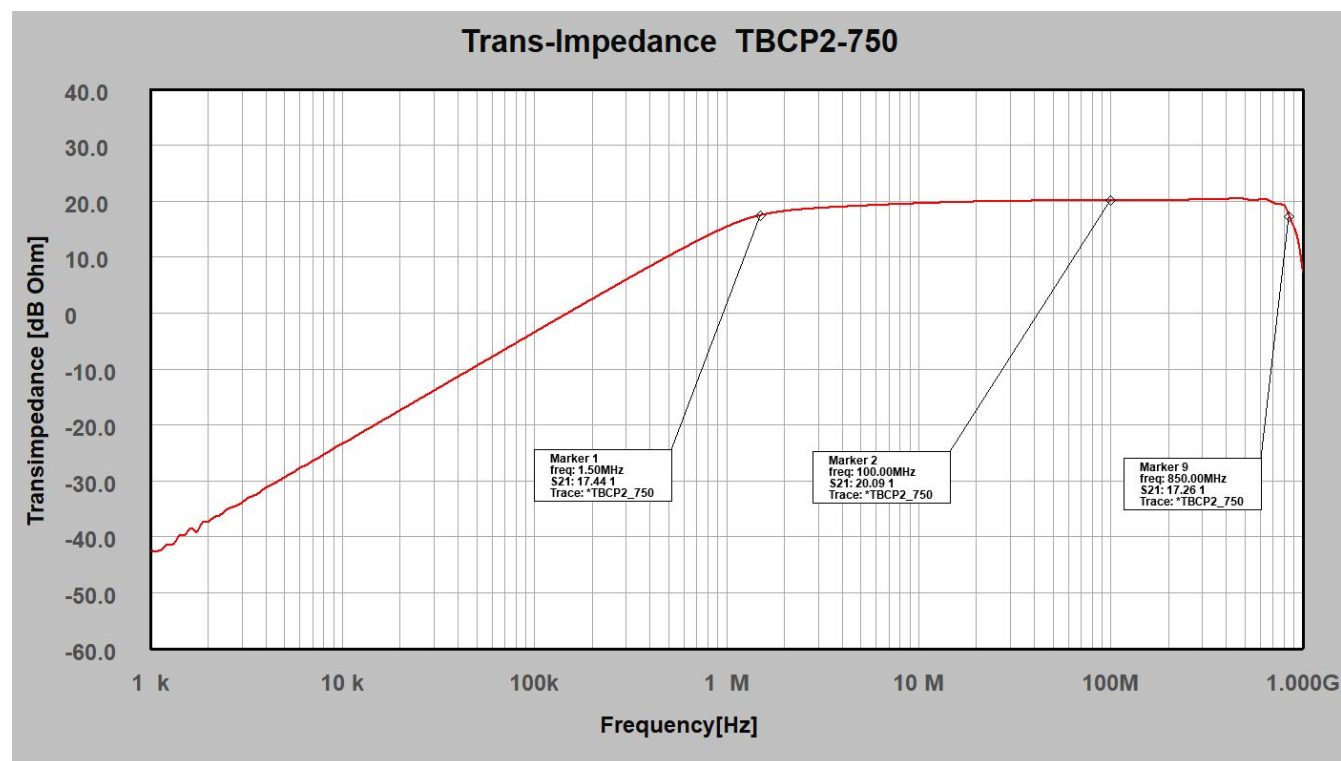


Figure1: typical transfer impedance: 1 kHz to 1 GHz

RF CURRENT MONITORING PROBE

4 Typical transfer impedance table

The table below shows typical transfer impedance data of a TBCP2-750 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.

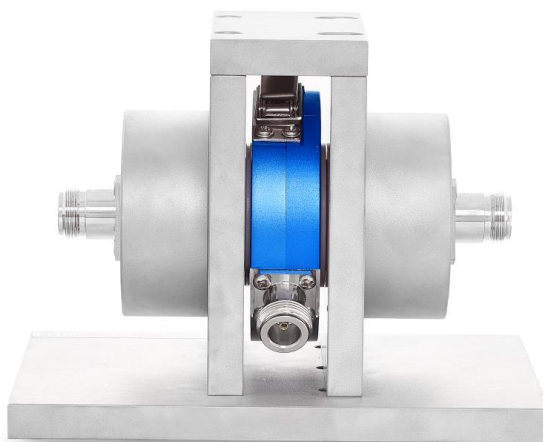
Frequency [MHz]	Transfer impedance [dBΩ]	Frequency [MHz]	Transfer impedance [dBΩ]
0.001	-42,54	325	20,30
0.0025	-35,22	350	20,27
0.005	-29,42	375	20,27
0.0075	-25,98	400	20,32
0.01	-23,40	425	20,42
0.025	-15,50	450	20,48
0.05	-9,50	475	20,44
0.075	-6,01	500	20,31
0.1	-3,50	525	20,16
0.25	4,35	550	20,09
0.5	10,13	575	20,15
0.75	13,33	600	20,29
1	15,36	625	20,35
2.5	18,52	650	20,24
5	19,13	675	19,97
7.5	19,40	700	19,64
10	19,56	725	19,44
25	19,94	750	19,38
50	20,06	775	19,35
75	20,07	800	19,13
100	20,09	825	18,41
125	20,11	850	17,26
150	20,13	875	16,12
175	20,12	900	15,20
200	20,11	925	14,10
225	20,14	950	12,36
250	20,19	975	9,99
275	20,26	1000	7,30
300	20,30		

Table1: Transfer impedance: 1 kHz to 1 GHz, typical data

RF CURRENT MONITORING PROBE

5 Accessory

Tekbox supplies a calibrator corresponding with the TBCP2 series of snap on current probes:



Picture 2: TBCP2-CAL RF current probe calibration fixture

6 Ordering Information

Part Number	Description
TBCP2-750	Snap on RF current monitoring probe, wooden box, calibration protocol 1 kHz – 1 GHz
TBCP2-CAL	Calibration fixture for TBCP2 current probe series

7 History

Version	Date	Author	Changes
V 1.0	7.12.2020	Mayerhofer	Creation of the preliminary document
V 1.1	28.1.2021	Mayerhofer	Photo update
V 1.2	2.6.2021	Mayerhofer	Data update after mechanical modification
V 1.3	26.3.2024	Mayerhofer	Extended data to 1 kHz – 1 GHz

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