



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.





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 dB Ω Max. primary current (DC - 400 Hz): 80 A Max. primary current (RF): 3 A Max. core temperature: 125 °C

3 Transfer impedance



Figure 1: typical transfer impedance: 10 kHz to 550 MHz, linear

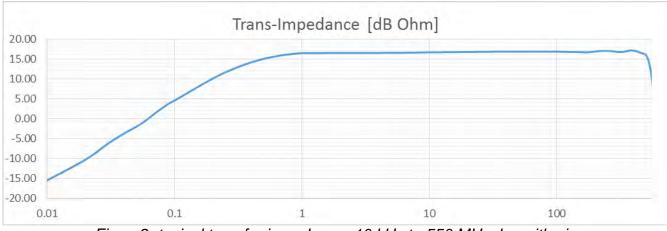


Figure2: typical transfer impedance: 10 kHz to 550 MHz, logarithmic



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 dB Ω subtracted from the analyzer reading in dB μ V gives the corrected reading in dB μ A.

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

0.01 11.33 10.02 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 0.02 10.10 150 16.71 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 51.502 190 16.77 0.6 15.55 190 16.77 0.7 15.94 200 16.83 0.8 16.16 225 17.00 1	Frequency [MHz]	transfer impedance [dBΩ]	Frequency [MHz]	transfer impedance [dBΩ]
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 16.83 0.07 1.31 110 16.77 0.08 2.66 120 16.77 0.09 3.79 130 16.74 0.1 4.55 140 16.73 0.02 10.10 153 16.74 0.3 12.70 160 16.73 0.4 4.41 170 1667 0.3 12.70 160 16.67 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 16.83 0.8 16.16 225 17.00 0.9 16.33 250 17.00 0.9 16.33 250 16.91	0.01		50	16.82
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 16.77 0.08 2.66 120 16.77 0.09 3.79 130 16.74 0.1 4.55 140 16.73 0.22 10.10 150 16.74 0.3 2.270 160 16.73 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 16.49 300 16.74 1.6 16.55 300 16.74 1.6 16.51 350 16.90	0.02	-10.30	60	16.84
0.05 -2.05 90 16.83 0.06 -0.37 100 16.82 0.07 1.31 110 16.82 0.07 1.31 110 16.82 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 16.59 0.4 14.14 170 16.69 0.5 15.02 180 16.67 0.6 15.55 190 16.77 0.7 15.94 200 16.85 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 16.74 1 16.44 275 16.91 1 16.55 400 17.13	0.03	-6.29	70	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 16.79 0.4 14.14 170 16.69 0.4 14.14 170 16.69 0.4 15.5 190 16.69 0.5 15.02 180 16.69 0.6 15.55 190 16.77 0.7 15.94 200 16.85 0.8 16.61 225 17.00 0.9 16.33 250 17.00 0.9 16.53 325 16.91 1 16.44 275 16.91 1 16.53 335 17.33 1 16.53 375 17.33 <	0.04	-3.76	80	16.84
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 16.71 0.3 12.70 160 16.67 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 0.9 16.33 250 16.74 1 16.44 275 16.91 1 16.45 300 16.74 1 16.45 350 16.91 1 16.45 300 16.74 1 16.45 350 16.91 1	0.05	-2.05	90	16.83
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 16.73 0.4 14.14 170 166 0.5 15.02 180 16.67 0.5 15.02 180 16.69 0.6 15.55 190 16.71 0.7 15.94 200 16.85 0.8 16.16 225 17.00 0.9 16.33 250 17.00 0.9 16.33 250 16.91 1 16.44 275 16.91 1.6 16.50 325 16.74 1.6 16.51 350 16.90 1.6 16.55 400 17.11 1.6 16.55 400 17.11 1.6 16.55 400 16.59	0.06	-0.37	100	16.82
0.09 3.79 130 16.74 0.1 4.55 140 16.73 0.2 10.10 150 1671 0.3 12.70 160 16.69 0.4 14.14 170 1665 0.5 15.02 180 16.69 0.6 15.55 190 16.77 0.6 15.55 190 16.77 0.7 15.94 200 16.83 0.8 16.16 225 17.00 0.9 16.33 250 17.00 0.9 16.33 250 16.91 1 16.44 275 16.91 1 16.45 350 16.74 1 16.50 325 16.74 1 16.51 350 16.91 1 16.51 350 16.91 1 16.51 350 16.91 1 16.55 400 17.13 1	0.07	1.31	110	16.79
0.1 4.55 140 16.73 0.2 10.10 150 16.71 0.3 12.70 160 16.69 0.4 14.14 170 166 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 0.9 16.33 250 17.00 1 16.44 275 16.91 1 16.43 255 16.91 1 16.44 275 16.91 1 16.45 350 16.74 1 16.51 350 16.91 1 16.51 350 16.91 1 16.53 375 17.13 1 16.53 400 17.11 1 16.55 400 16.59 1	0.08	2.66	120	16.77
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 0.9 16.33 250 17.00 0.9 16.33 250 17.00 0.9 16.33 250 17.00 1 16.44 275 16.91 1 16.44 275 16.91 1 16.45 350 16.74 1 16.50 325 16.74 1 16.51 350 16.90 1 16.55 400 17.11 1 16.55 400 17.11 1 16.55 400 15.97 1	0.09	3.79	130	16.74
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 0.9 16.33 250 17.00 0.9 16.33 250 17.00 0.9 16.33 250 17.00 0.9 16.33 250 17.00 0.9 16.33 250 16.91 1 16.44 275 16.91 1 16.44 275 16.91 1 16.51 350 16.74 1 16.51 350 16.91 1 16.55 400 17.11 1 16.55 400 17.13 1 16.55 400 15.97 1 <td>0.1</td> <td>4.55</td> <td>140</td> <td>16.73</td>	0.1	4.55	140	16.73
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 16.91 4 16.51 350 16.74 5 16.53 375 16.91 6 16.55 400 116.74 7 16.53 375 16.91 6 16.55 400 17.13 6 16.55 400 17.11 7 16.58 425 16.89 8 16.60 450 16.53 9 16.63 500 15.97 10 16.65 500 15.97 10	0.2	10.10	150	16.71
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 16.91 4 16.51 350 16.74 5 16.53 375 16.91 6 16.55 400 17.11 7 16.58 425 16.89 6 16.55 400 17.11 7 16.58 425 16.89 6 16.55 500 15.97 6 16.65 500 15.97 7 16.65 500 15.97 9 16.65 500 15.97 10 16.65 500 15.97 10 <	0.3	12.70	160	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 16.91 4 16.51 350 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 16.55 10 16.65 500 15.97 20 16.74 525 14.46 30 16.80 550 11.29	0.4	14.14	170	16.67
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 16.74 5 16.53 375 16.90 16.55 400 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 16 16.55 500 15.97 16.51 500 15.97 16.35 10 16.65 500 15.97 20 16.74 555 1446 30 16.89 500 11.29	0.5	15.02	180	16.69
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 16.91 4 16.51 335 16.74 5 16.51 350 16.90 5 16.53 375 16.90 6 16.55 400 17.13 6 16.55 400 17.11 7 16.58 425 16.89 9 16.63 475 16.55 9 16.65 500 15.97 16 16.74 525 14.46 30 16.89 550 11.29	0.6	15.55	190	16.77
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 16.55 500 15.97 16.35 16.65 500 15.97 14.46 30 16.80 550 14.46	0.7	15.94	200	16.85
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 16.59 9 16.63 475 16.35 9 16.63 475 16.35 10 16.65 500 15.97 20 16.74 525 14.46 30 16.80 550 11.29	0.8	16.16	225	17.00
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	0.9	16.33	250	17.00
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	1	16.44	275	16.91
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	2	16.49	300	16.74
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	3	16.50	325	16.74
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	4	16.51	350	16.90
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	5	16.53	375	17.13
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	6	16.55	400	17.11
9 16.63 475 16.35 10 16.65 500 15.97 20 16.74 525 14.46 30 16.80 550 11.29	7	16.58	425	16.89
10 16.65 500 15.97 20 16.74 525 14.46 30 16.80 550 11.29	8	16.60	450	16.59
20 16.74 525 14.46 30 16.80 550 11.29	9	16.63	475	16.35
30 16.80 550 11.29	10	16.65	500	15.97
30 16.80 550 11.29	20	16.74	525	14.46
			550	11.29
	40	16.82	600	2.33

Table1: Transfer impedance: 10 kHz to 550 MHz





Accessory 5

Tekbox supplies a calibration fixture corresponding with the TBCP4 RF current probe series:



Picture 2: TBCP4-CAL RF current probe calibration fixture

Ordering Information 6

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

For More Information:



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