RF CURRENT MONITORING PROBE

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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 very flat response from 30kHz to 400 MHz and is characterized over the frequency range from 10 Hz to 500 MHz. The TBCP5-30K400 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: 2 dB Ohm with a 3 dB bandwidth from 30 kHz to 400 MHz
Max. primary current (DC - 400 Hz): 25 A
Max. primary current (RF): 2 A
Max. core temperature: 125 °C

3 Transfer impedance

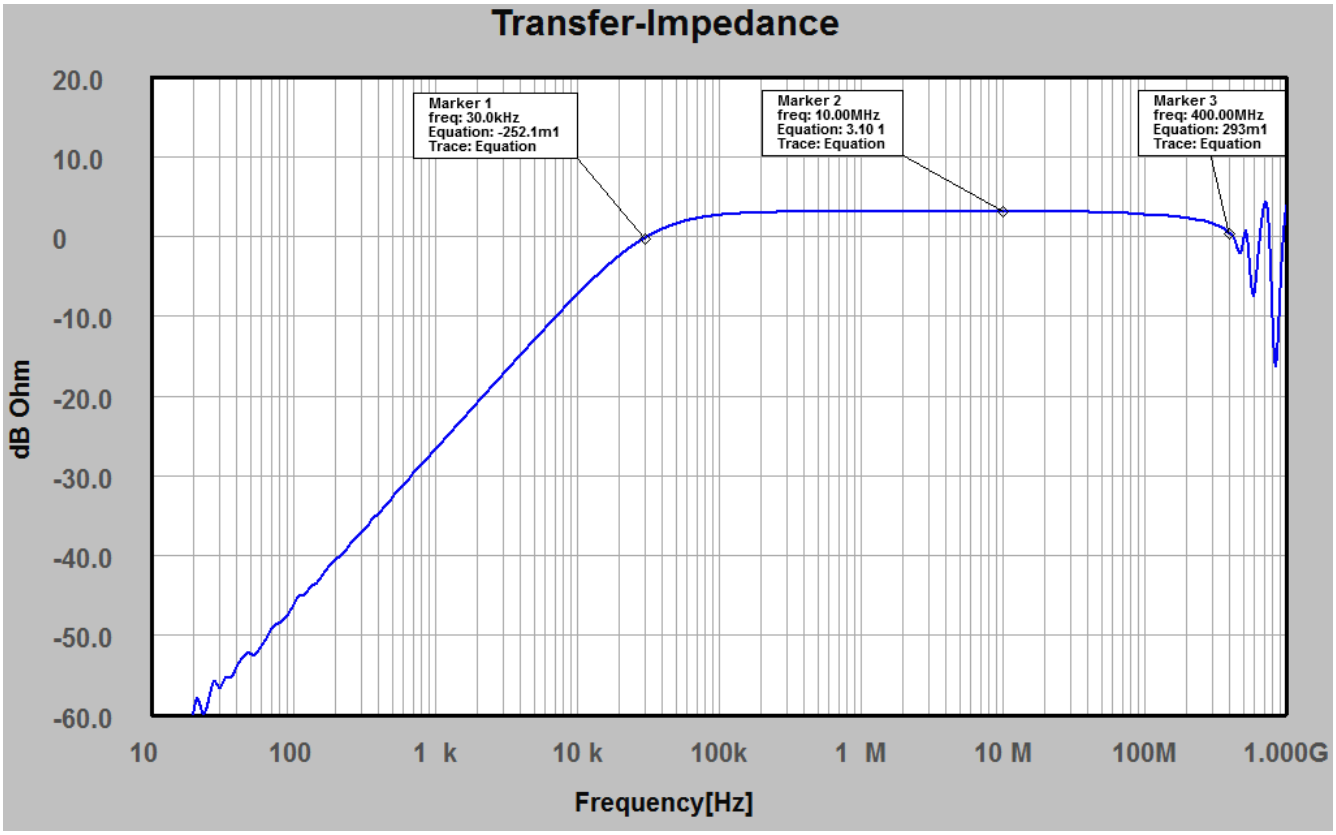


Figure1: typical transfer impedance

4 Typical transfer impedance table

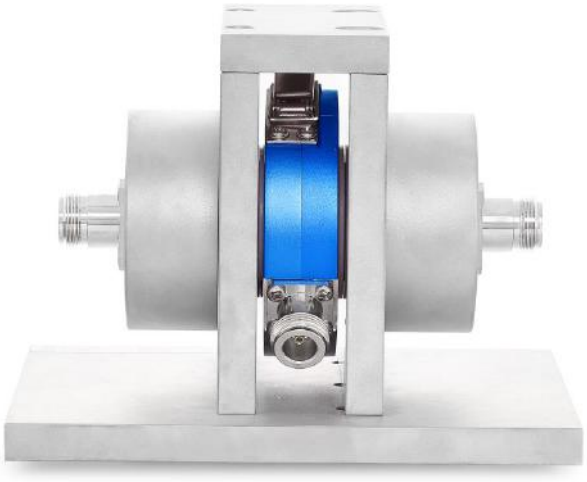
The table below shows typical transfer impedance data of a TBCP2-30K400 current probe. Each current probe is delivered with its corresponding measurement protocol. This data can be used for the creation of a correction file for EMCview or similar EMC measurement software. The transfer impedance in dBΩ 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 400 MHz, typical data

5 Accessory

Tekbox supplies a calibrator corresponding suitable for the TBCP2-30K300 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, beech-wood box, calibration protocol 10 Hz – 500 MHz
TBCP2-CAL	Calibration fixture for TBCP2-30K400 current probe

7 History

Version	Date	Author	Changes
V 1.0	20.10.2020	Mayerhofer	Creation of the preliminary document

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