R&S®EZ-17
CURRENT PROBE

Electromagnetic emission and susceptibility measurements from 20 Hz to 100 MHz (245 MHz)

Data Sheet
Version 04.01

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AT A GLANCE

Wanted and unwanted currents on supply and control lines of equipment and systems can be measured contact-free with current probes clamped onto the conductors. The current probe forms a transformer, where the current-carrying conductor represents the primary winding. A voltage proportional to the primary current is provided at the RF output of the current probe.

Key facts

- Frequency range from 20 Hz to 100 MHz (245 MHz)
- Maximum load capacity of 300 A for DC or AC currents
- Inner diameter of 30 mm
- Simple clamping thanks to spring-loaded mechanism
- Calibrated in line with CISPR 16-1-2

Fields of application

Current probes are used for EMC measurements especially where other coupling networks, such as line impedance stabilization networks, are either not available or not suitable for practical reasons. Current probes are also used to measure the electromagnetic susceptibility of equipment and systems. Current probes inject sine-wave or pulsed RF current into lines or cable bundles. The shielding effectiveness of RF cables can also be easily measured with current probes.

Two models for diverse applications

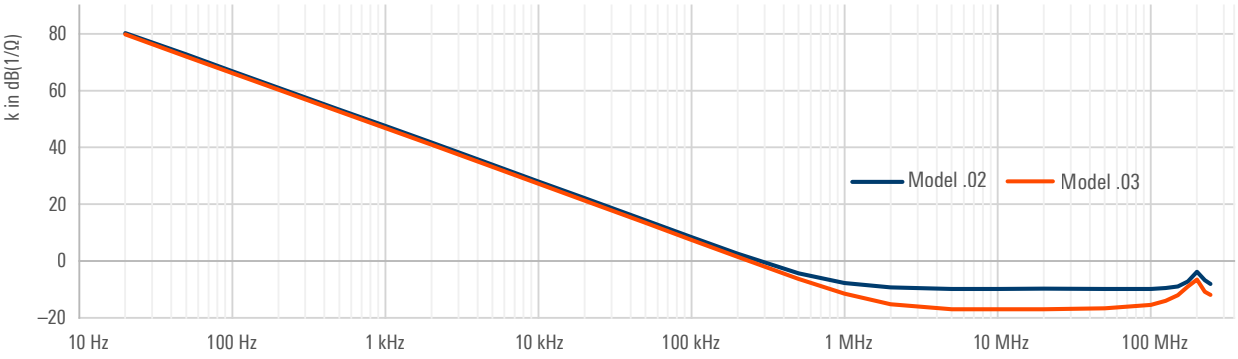
Both models are suitable for the following applications in the frequency range from 20 Hz to 100 MHz (245 MHz):

- Model .02 complies with the CISPR 16-1-2 standard. It has a flat frequency response above 1 MHz and an internal impedance of 50 Ω. This makes it ideal for emission measurements in line with CISPR 14-1, CISPR 25, CISPR 32 and MIL-STD-461 as well as for measuring shielding effectiveness.
- Due to its small transducer factor in the range from 1 MHz to 200 MHz, model .03 is particularly suitable for emission measurements with stringent sensitivity requirements, e.g. VG 95373-20 and RTCA/DO-160. Due to its high load capacity, it is also recommended for EMS measurements.

Use on power lines up to 300 A

Due to their high magnetic overload capacity, the R&S®EZ-17 current probes can be used on power lines with currents up to 300 A without any adverse effects on RF current measurement results. Despite the large inner diameter, the small outer dimensions and the simple clamping mechanism allow the current probes to be used even in tight spaces.

Typical transducer factors k of the R&S®EZ-17 current probes



Specifications in brief

Frequency range		20 Hz to 100 MHz (245 MHz) [1]
Range with constant transducer factor	model .02	1 MHz to 100 MHz
	model .03	2 MHz to 100 MHz
Transducer factor reduced by 20 dB/decade in range	model .02	20 Hz to 1 MHz
	model .03	20 Hz to 2 MHz
RF connector		N female
Internal impedance	model .02, f ≥ 10 MHz	50 Ω
	model .03	reactive
VSWR	model .02, f > 10 MHz	< 2
	model .03	—
Insertion impedance	model .02	≤ 0.8 Ω
	model .03	1 Ω
Transfer impedance Z_T		
Range with constant transducer factor	model .02	3.16 Ω
	model .03	7.1 Ω
Transducer factor k [1] in range with flat frequency response	model .02	–10 dB (1/Ω)
	model .03	–17 dB (1/Ω)
Influence due to external magnetic fields		
Attenuation of currents from conductors next to the probe		> 40 dB
Load capacity (RF current measurement)		
Maximum DC current or peak AC current	f < 1 kHz	300 A
RMS value of RF current	model .02, f > 1 MHz	2 A
	model .03, f > 1 MHz	1 A
Load capacity (EMS measurement)		
AC	RMS value, f < 1 kHz	6 A
Dropping to	model .02, up to 1 MHz	0.2 A
	model .03, 1 MHz	0.45 A
Above	model .02, f > 1 MHz	2 W
	model .03, f > 1 MHz, 50 W for max. 15 min	10 W
General data		
Temperature	operating temperature range	0 °C to +45 °C
	storage temperature range	–25 °C to +70 °C
	maximum permissible core temperature	+80 °C
Mechanical resistance	shock	40 g shock spectrum, in line with MIL-STD-810G
	vibration	in line with MIL-PRF-28800F, class 5; EN 60068-2-6
Dimensions	W × H × D	84 mm × 26 mm × 95 mm (3.30 in × 1.02 in × 3.74 in)
	inner diameter	30 mm (1.18 in)
Weight	with cable	0.6 kg (1.32 lb)
Electrical safety	observe safety instructions in manual	in line with EN IEC 61010-2-032

Ordering information

Designation	Type	Order No.
Current probe, 20 Hz to 100 MHz (245 MHz) emission measurement	R&S®EZ-17	0816.2063.02
Current probe, 20 Hz to 100 MHz (245 MHz) EMS measurement	R&S®EZ-17	0816.2063.03
Accessories supplied		
RF connecting cable with N connectors (length: 1 m), user manual, calibration report with transducer factor		

Service options

Extended warranty, one/two/three/four year(s)	R&S®WE1/2/3/4	Contact your local Rohde & Schwarz sales office.
Extended warranty with calibration coverage, one/two/three/four year(s)	R&S®CW1/2/3/4	
Extended warranty with accredited calibration coverage, one/two/three/four year(s)	R&S®AW1/2/3/4	

[1] The scope of delivery includes an individual table with the transducer factor from 20 Hz to 245 MHz.
The transducer factor k is calculated as $k = 20\log(1/Z_T)$, where Z_T is the transfer impedance.

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Sustainable product design

- Environmental compatibility and eco-footprint
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