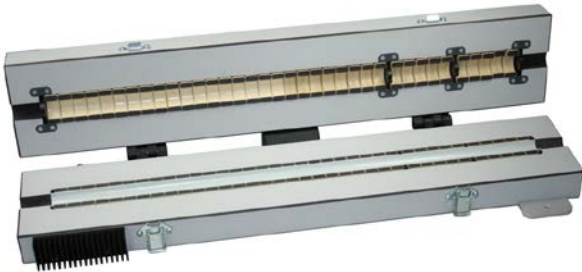


CDN-EMCL-20 / -35

EM clamp for immunity tests acc. EN 61000-4-6 Ed. 4.0

10 kHz – 1000 MHz

EMCL-20
for cable diameter up to 20 mm



EMCL-35
for cable diameter up to 35 mm



Features:

- EM clamp for immunity testing of cables with up to 20 (35) mm diameter
- High coupling factor: less than 15 watts amplifier output power is required to obtain a test level of 10 V
- Calibration unit and calibration data are supplied with each instrument

Description:

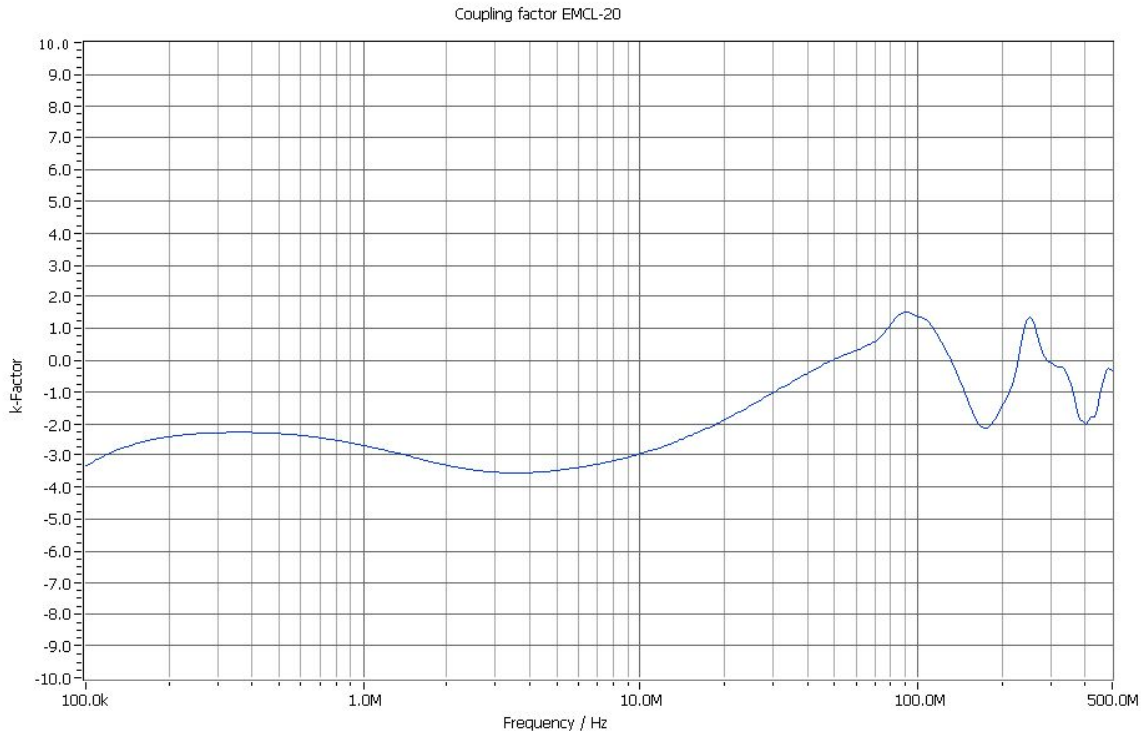
The preferred coupling and decoupling devices are the CDNs, for reasons of test reproducibility and protection of the AE. However, if they are not suitable or available, clamp injection should be used.

Often, clamp injection needs to be applied to multi-pair balanced cables because suitable CDNs might not be available.

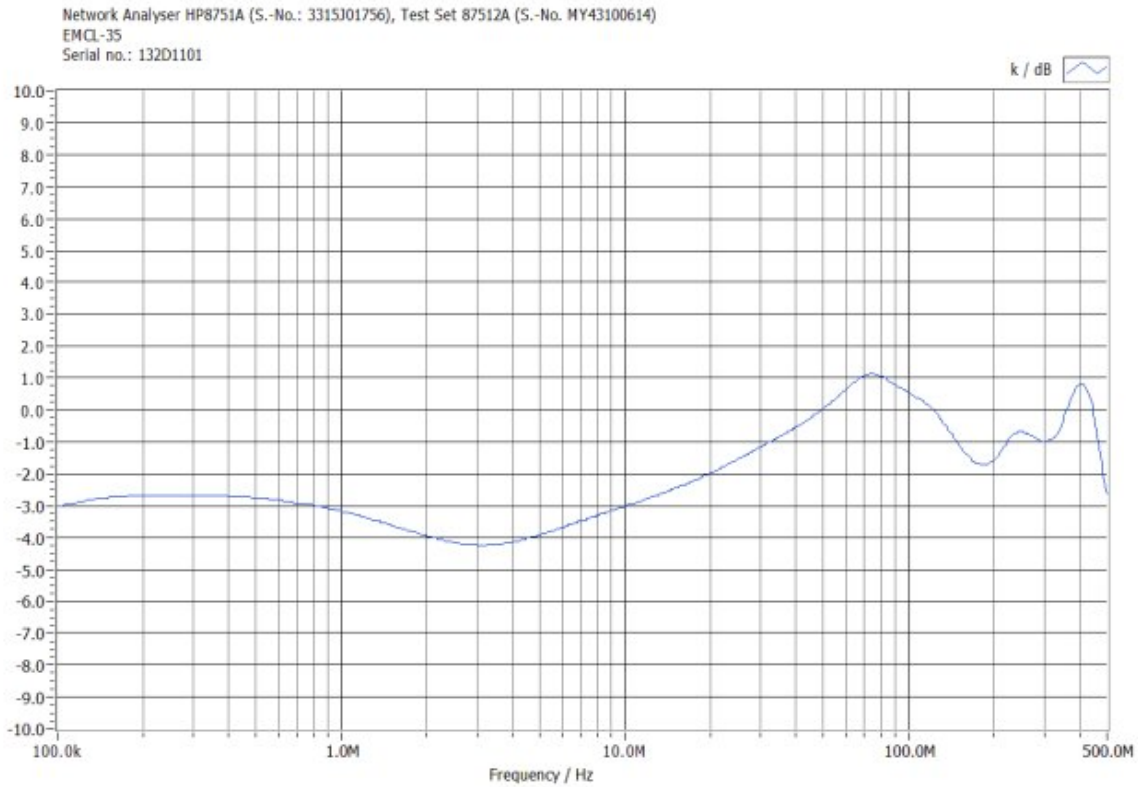
The EM clamp establishes both capacitive and inductive coupling to the cable connected to the EUT.

The EM clamp (in contrast to the conventional current injection clamp) has a directivity ≥ 10 dB, above 10 MHz, so that defined impedance between the common-mode point of the AE and the ground reference plane is no longer required. Above 10 MHz, the behaviour of the EM clamp is similar to that of a CDN.

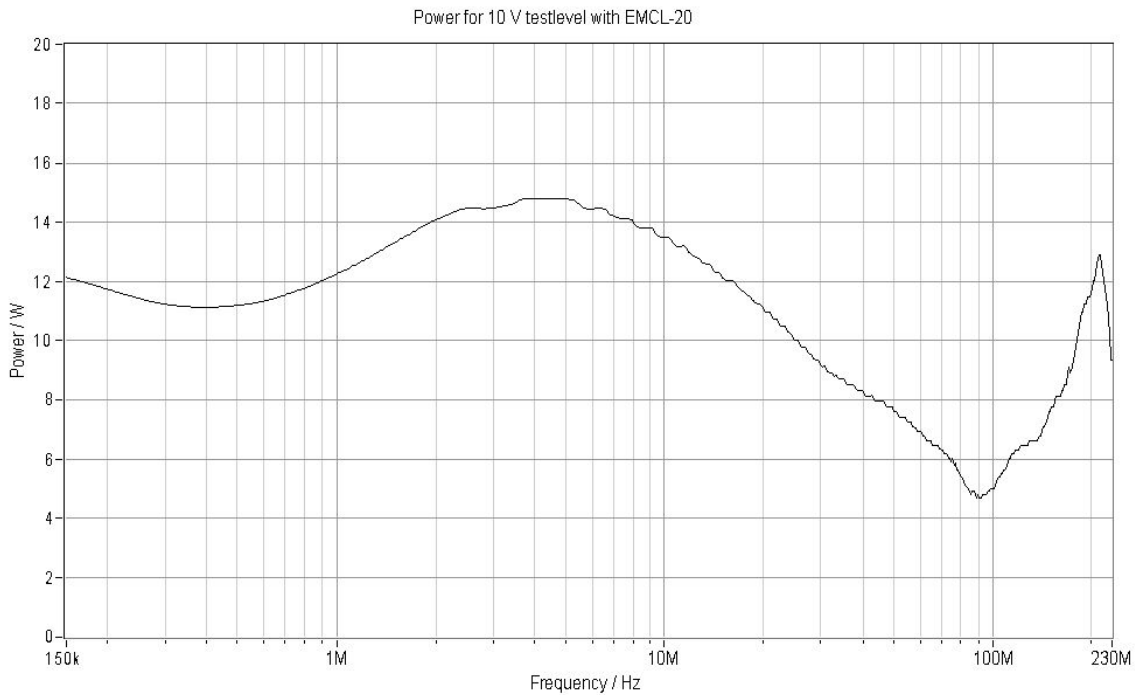
Typical coupling factor of the EM clamp (EMCL-20)



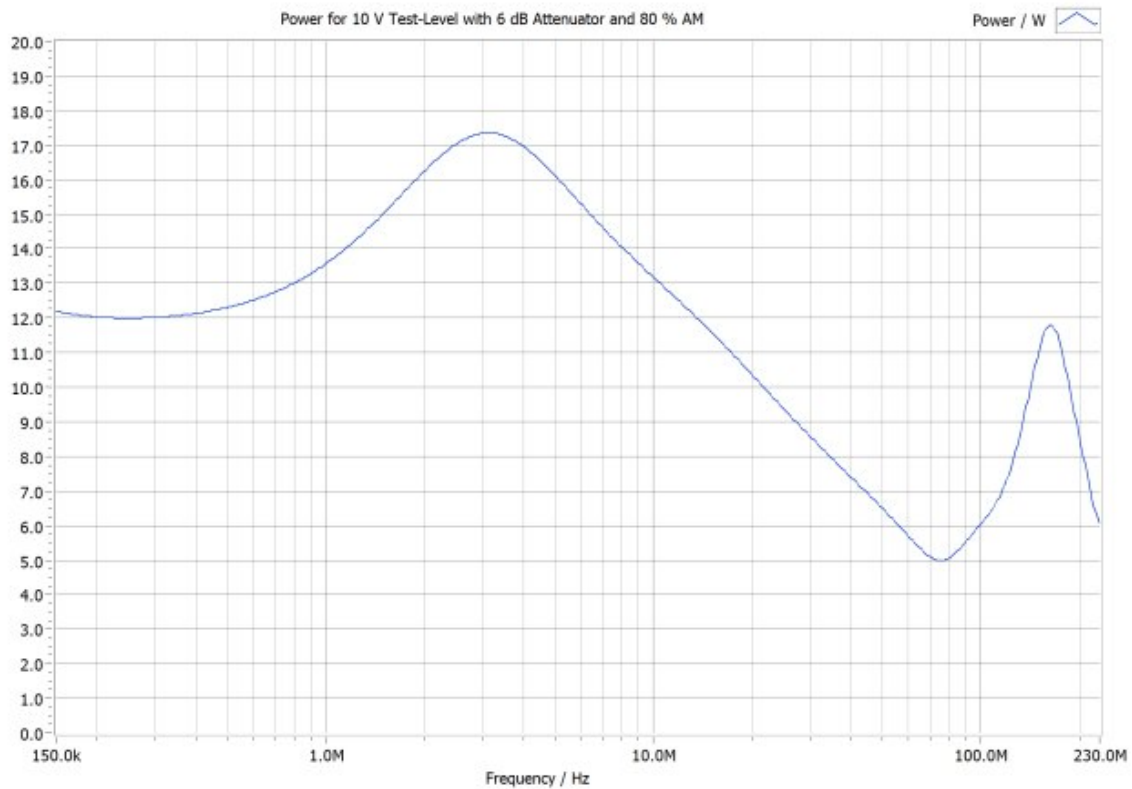
Typical coupling factor of the EM clamp (EMCL-35)



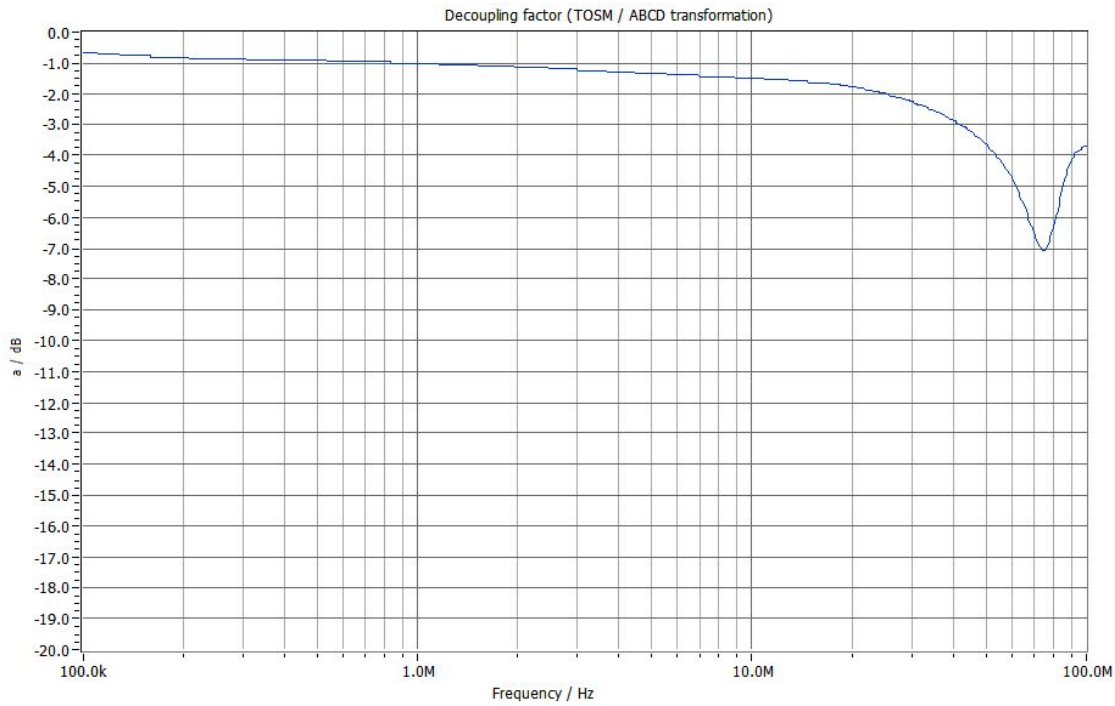
Measured amplifier output power to obtain a test level of 10 V.
6 dB attenuator and 80 % amplitude modulation depth are taken into account (EMCL-20).



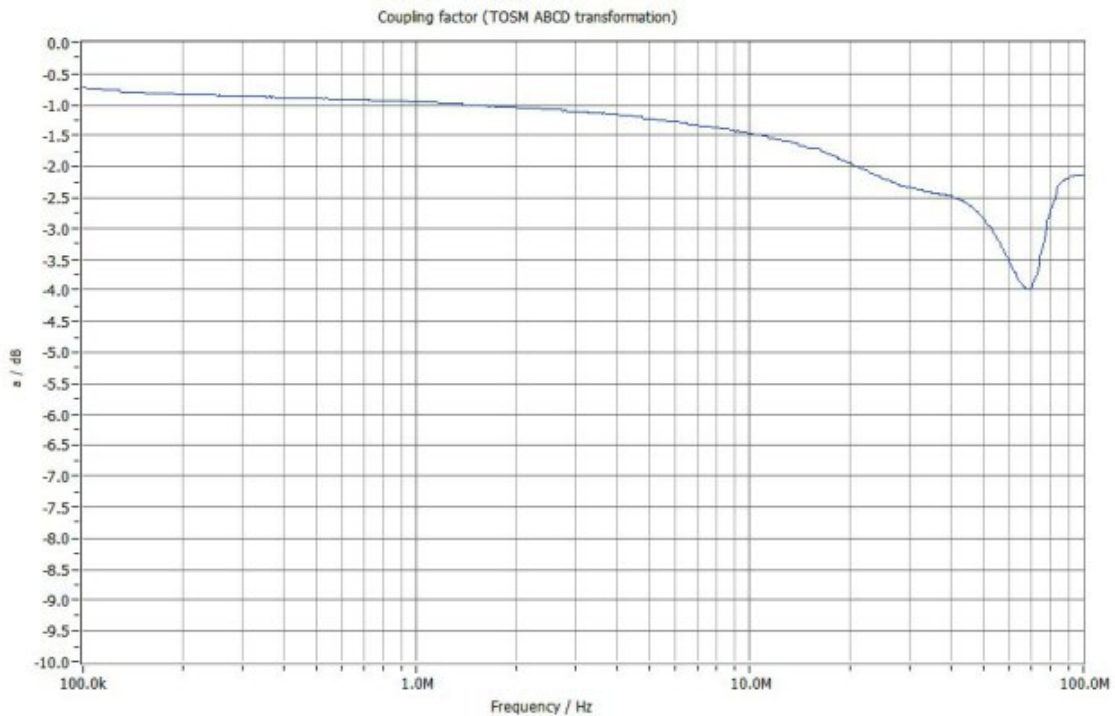
Measured amplifier output power to obtain a test level of 10 V.
6 dB attenuator and 80 % amplitude modulation depth are taken into account (EMCL-35).



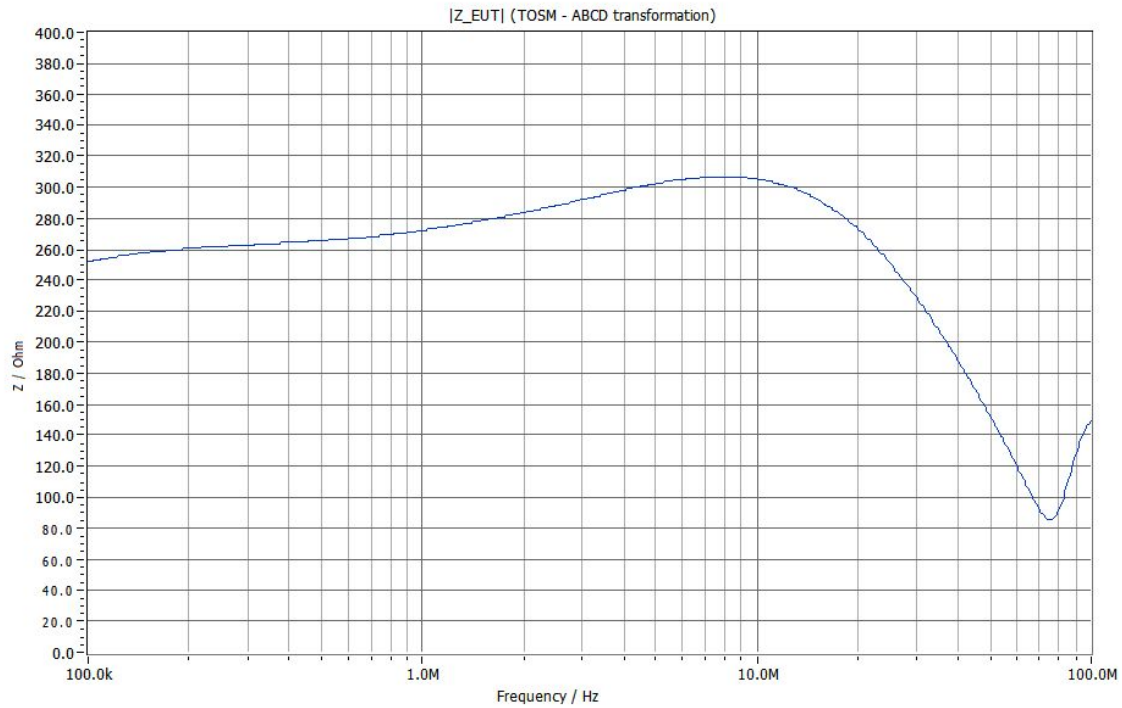
Typical decoupling factors (transformed) (EMCL-20)



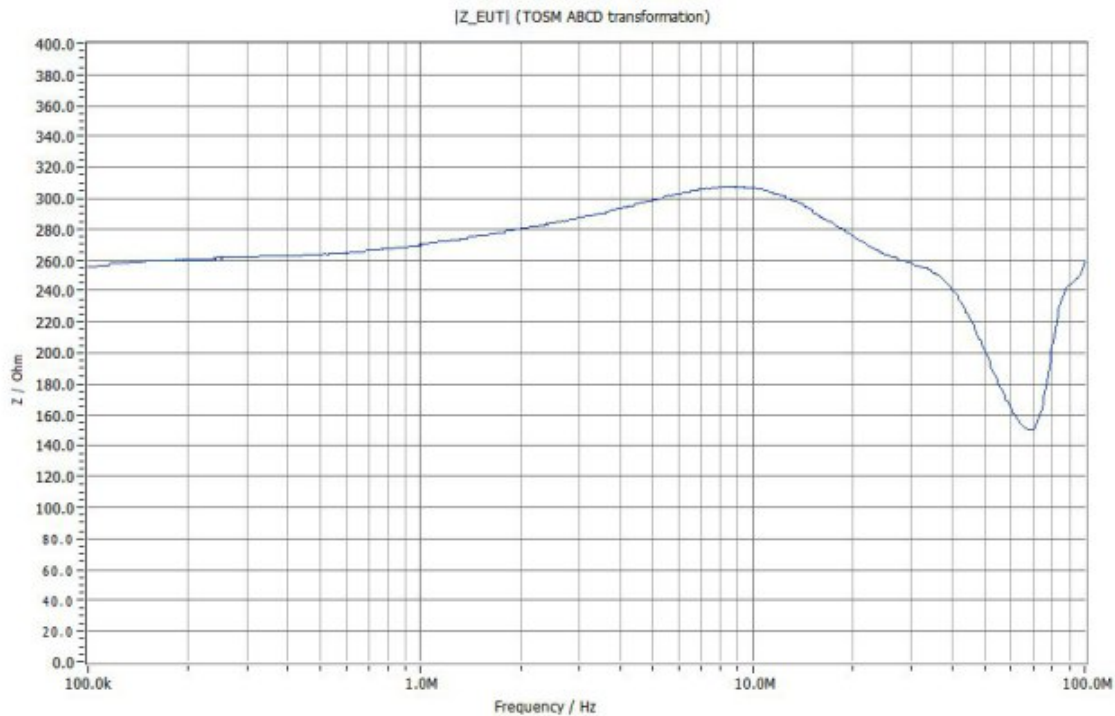
Typical decoupling factors (transformed) (EMCL-35)



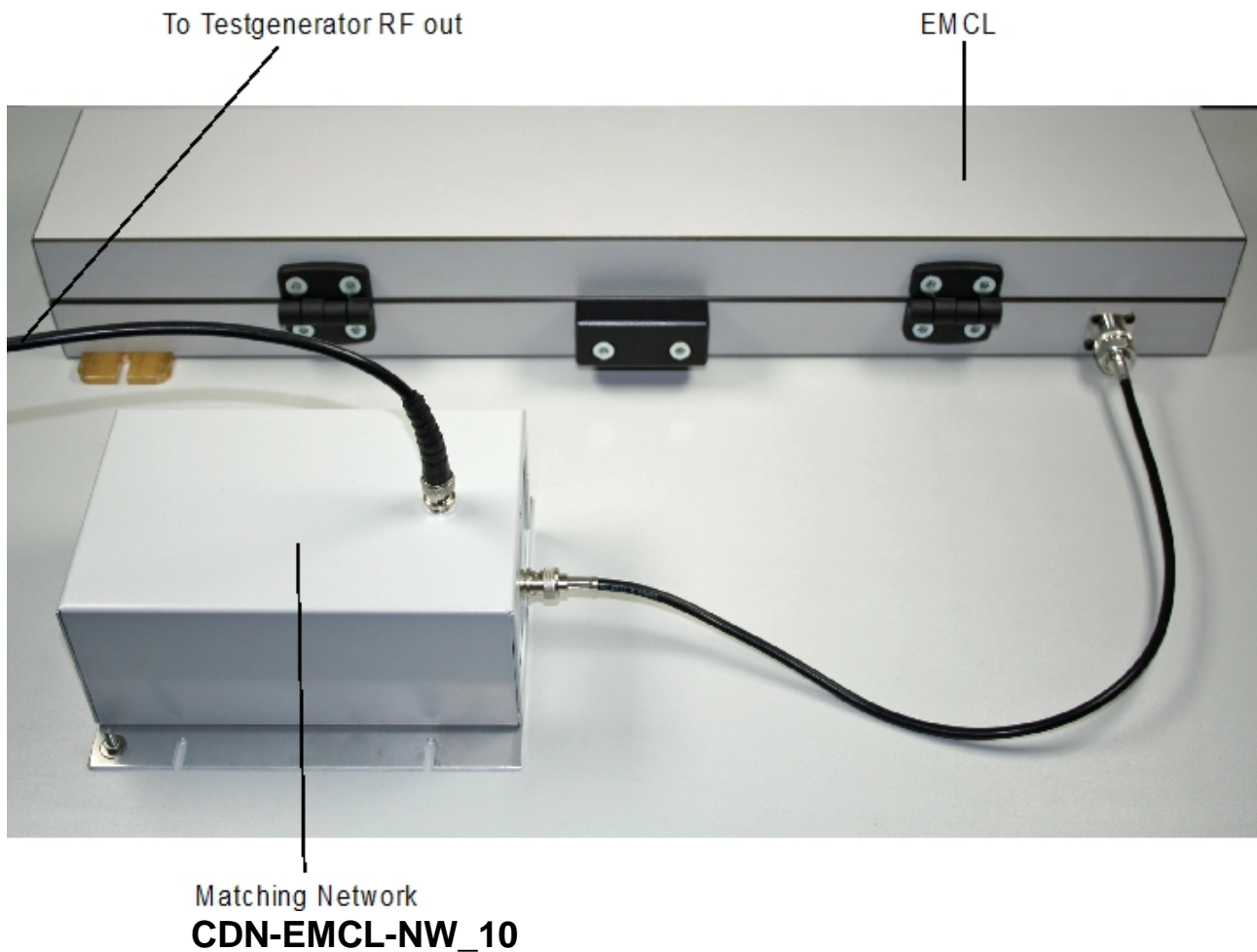
Typical clamp impedance (transformed) (EMCL-20)



Typical clamp impedance (transformed) (EMCL-35)

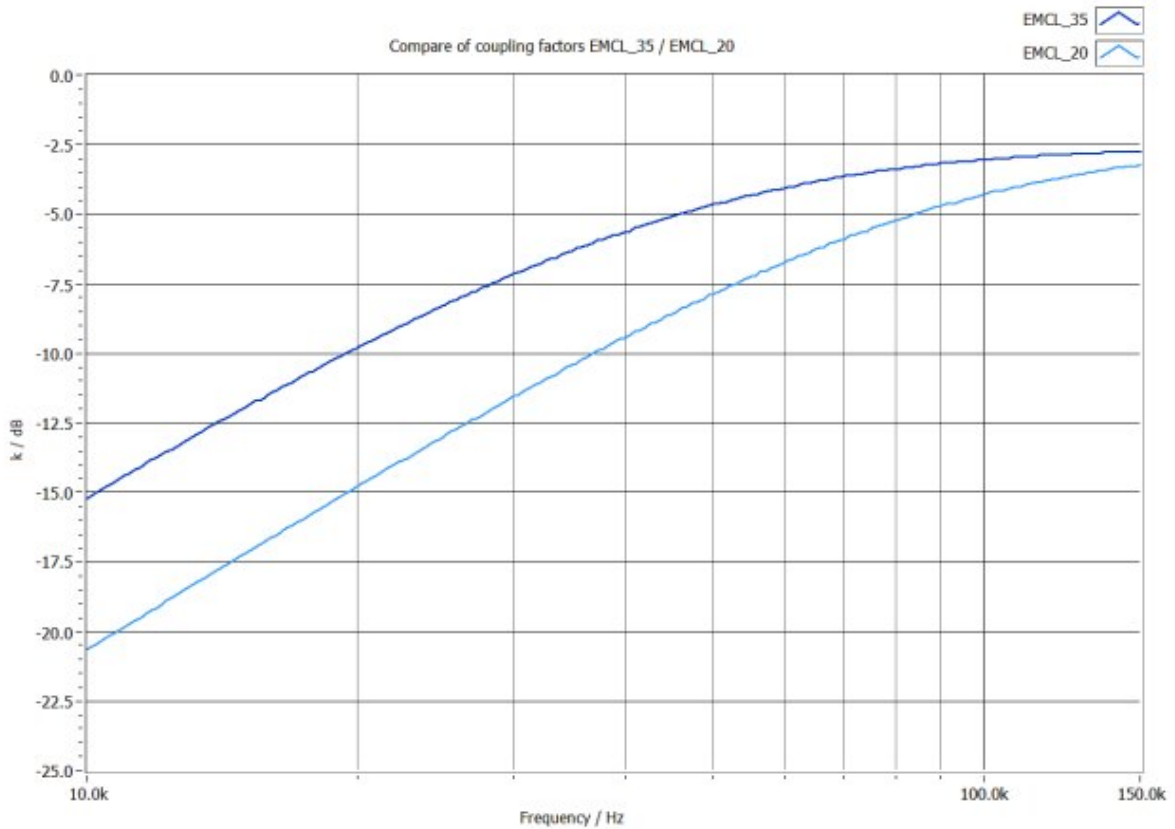


EMCL-20 **for frequency range 10 kHz - 150 kHz**



The EM clamp is developed for test frequencies above 150 kHz. For product standards with testing requirements in the frequency range of 10 kHz – 150 kHz the EM clamp cannot operate like normal with a 6dB attenuator. The insertion loss for an effective coupling is too high. Therefore, a matching network may be used. This network transforms the low impedance of the EM clamp to acceptable impedance for the amplifier. With this matching network reproducible tests are feasible till 10V at 80% AM – without the 6 dB attenuator.

Comparison of coupling factors of EMCL-35 / EMCL-20

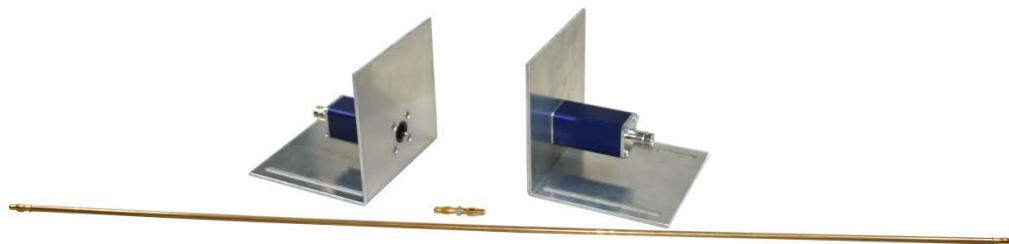


Due to the high coupling factor of EMCL-35 test level 3 (10 V) of EN 61000-4-6 is possible even at 10 kHz with test generator CDG 6000-75_10 or amplifier PA1020-75-250.

**Matching network CDN EMCL-NW_10
only need with EMCL-20**

Specifications	EMCL-20	EMCL-35
Frequency range	10 kHz - 1000 MHz	
Nominal impedance	50 Ohm	
Connector	N-type female	
Maximum input level	0,15 – 100 MHz 100 W, 15 min 100 – 230 MHz 100 W, 5 min 230 – 1000 MHz 50 W, 3 min	
Cable diameter	< 20 mm	< 35 mm
Dimension (L x W x D)	632 x 120 x 80	666 x 135 x 120
Weight	7 Kg	14 Kg

Calibration unit of CDN-EMCL-20 (included as standard)



Accessory (calibration unit)	
Mounting bracket incl. 150 Ω to 50 Ω adapter (2 pieces)	
BNC termination, 50 Ohm, 1 W	
Adaptor with two banana plugs, length 34mm	For calibration of network analyser
Brass rod 4 mm with banana plugs, length 672 mm	For setting of test level

Ordering information	
CDN-EMCL-20	EM clamp acc. EN 61000-4-6 for cables up to 20 mm diameter, incl. calibration unit and calibration data
CDN EMCL-NW_10	Matching network 10 kHz – 150 kHz, for using EMCL-20 from 10 kHz – 150 kHz
CDN-EMCL-35	EM clamp acc. EN 61000-4-6 for cables up to 35 mm diameter, incl. calibration unit and calibration data