

Features:

- Frequency ranges: 9 kHz 30 MHz and 30 MHz 6 GHz
- Fully compliant acc. to CISPR 16-1-1
- Fast measurements by new digital design
- Integrated 20dB pre-amplifier
- Integrated pulse limiter up to 30 MHz
- · Detectors: peak, quasi-peak, average, RMS, RMS-average, CISPR-average
- · Automatic scan and manual mode
- USB and RS-232 interface
- Powerful software for full-automatic emission measurements including control of turntable and antenna masts
- Pre-programmed test runs acc. to CISPR standards





Description

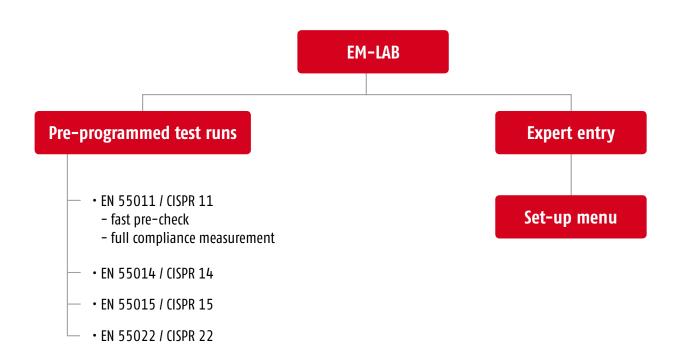
The "CORE-6" is a very compact (19", 1 RU), new digital EMI receiver which enables the user to make frequency-sweeps within a few seconds what saves hours of measuring time during developments.

The receiver is full-compliant acc. to CISPR 16-1-1 and includes all important detectors like peak, quasi-peak, average, RMS, RMS-average and CISPR-average. The powerful software "EM-LAB" allows very comfortable, pre-programmed test runs acc. to CISPR/EN-standards as well as an "Expert entry".

The preset test runs are intended for those engineers who don't carry out EMC tests every day and are therefore not aware of all requirements specified in the relevant standards. With help of EM-LAB you simply select your standard and start

the test run for a "fast pre-check" or for the final "full compliant measurement". Additionally professional EMC engineers have the possibility to use the "Expert entry" in which they can set their own parameters for limit-lines, correction factors, IF-bandwidth, detectors, measuring times, manual mode, frequency-lists, etc...

A 20dB pre-amplifier from 9 kHz to 6 GHz as well as a pulse-limiter for conducted EMI-measurements are already integrated in the CORE-6. The EMI receiver is available together with accessories like single or three-phase LISN's, voltage-probes, coupling networks, antennas, near-field-probes or the Van der Hoofden test-head. A frequency-extension up to 18 GHz (CORE-18) will be available in short.



Secolation O. Hiz O. Mitz O	Technical specifications			
Residution 0.1 Hz 100 Hz	Input			
Reference frequency	Frequency range			
Fingut Z _m 50 Ω, BMC (em. Z _m 50 Ω, B (em. Z _m 2 Z _m 2	Resolution			
10 dB RF att.	· · ·	< 1 ppm < 2 ppm		
10 dB RF att.	RF input	Z_{in} 50 Ω , BNC fem.	Z_{in} 50 Ω , N fem.	
2	VSWR			
Water Description Descri	10 dB RF att.		•	
Pulse limiter built-in, selectable n. a. a. 20 dB 20 dB, 15 dB above 1 GHz ver-amplifier gain 20 dB 20 dB, 15 dB above 1 GHz vara input level without equipment damage) increase Ac voltage Pulse pectral density 97 dBuW MHz 97 dBuW MHz 137 dBuV (LW) spectral density 97 dBuW MHz 150 kHz 30 MHz 172 MHz 150 kHz 150 kHz 150 kHz 173 MHz 10 174 MHz 150 kHz 173 MHz 10 16 kHz 150 kHz 173 MHz 10 16 kHz 10 KHZ	0 dB RF att.	< 2 ; < 3 above 3 GHz		
Asa input level Asa input	Attenuator	0 dB to 35 dB (5 dB steps) 0 dB to 55 dB (5 dB steps)		
Max input level	Pulse limiter	built-in, selectable n. a.		
### Without equipment damage) ### A voltage Pulse ### Good A voltage Pulse ### Sindow (1W) ###	Pre-amplifier gain	20 dB	20 dB, 15 dB above 1 GHz	
Sector S	Max input level			
Preceived density 97 dBuV/ MHz	(without equipment damage)			
Verselector	Sinewave AC voltage Pulse	137 dBuV (1W)		
Sequency ranges	Spectral density	97 dBuV/ MHz		
150 kHz to 500 kHz 500 kHz to 3 MHz 173 MHz to 1416 MHz 3 MHz to 1416 MHz 1 MHz to 15 MHz 1 MHz to 15 MHz 1 MHz to 15 MHz 1 MHz to 16 MHz 20 MHz to 30 MHz 3 GHz to 6 GHz F bandwidth 3, 10, 30, 100, 300 kHz (3dB) 3, 10, 30, 100, 300 kHz (6dB) 20 Mz - 9 kHz ((SPR 16-1-1)) 10, 100 Hz - 1, 10 kHz (MIL-ST0-461) (Option) 1 MHz (B-imp) Peak, Quasi-peak, Average, RMS, RMS-average and CISPR-average Roise level 30 to 300 MHz < 10 dBuV (QP) (120 kHz BW) < 7 dBuV (QP) (120 kHz BW) < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 0,15 to 30 MHz < -4 dBuV (QP) (120 kHz BW) (200 Hz BW) < -10 dBuV (QP) (120 kHz BW) (200 Hz BW) < -10 dBuV (QP) (120 kHz BW) (120 kHz	Preselector	(six bandpass filters)	(Four tracking filters and two bandpass filters)	
SOO kHz to 3 MHz	Frequency ranges	9 kHz to 150 kHz	30 MHz to 72 MHz	
3 MHz to 10 MHz		150 kHz to 500 kHz	72 MHz to 173 MHz	
10 MHz to 20 MHz 20 MHz to 30 MHz 3 GHz to 3 GHz 3 GHz to 6 GHz 3, 10, 30, 100, 300 kHz (3dB) 3, 10, 30, 100, 300 kHz (6dB) 120 MHz (ISPR 16-1-1) 10, 100 Hz - 1, 10 kHz (MIL-STD-461) (Option) 1 MHz (B-imp) Peak, Quasi-peak, Average, RMS, RMS-average and CISPR-average Roise level 30 to 300 MHz < 10 dBuV (QP) (120 kHz BW) < 7 dBuV (QP) (120 kHz BW) < 10 dBuV (QP) (120 kHz BW) < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 15 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 9 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 7 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 3000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000 MHz < 10 dBuV (QP) (120 kHz BW) Preamplifier ON 300 to 6000		500 kHz to 3 MHz	173 MHz to 416 MHz	
20 MHz to 30 MHz 3 GHz to 6 GHz 3 GHz to 6 GHz to 6 GHz to 6 GHz 3 GHz to 6 G		3 MHz to 10 MHz	416 MHz to 1 GHz	
## Description		10 MHz to 20 MHz	1 GHz to 3 GHz	
200 Hz - 9 kHz (CISPR 16-1-1) 120 kHz (CISPR 16-1-1) 10, 100 Hz - 1, 10 kHz (MIL-STD-461) (Option) 1 MHz (B-imp)		20 MHz to 30 MHz	3 GHz to 6 GHz	
200 Hz - 9 kHz (CISPR 16-1-1) 120 kHz (CISPR 16-1-1) 10, 100 Hz - 1, 10 kHz (MIL-STD-461) (Option) 1 MHz (B-imp)	IF bandwidth	3. 10. 30. 100. 300 kHz (3dB)	3. 10. 30. 100. 300 kHz (6dB)	
10, 100 Hz - 1, 10 kHz (MIL-STD-461) (Option) 1 MHz (B-imp)				
Peak, Quasi-peak, Average, RMS, RMS-average and CISPR-average				
Solic Soli	Netectors		· · · · · · · · · · · · · · · · · · ·	
30 to 300 MHz < 10 dBuV (QP)		r cur, quasi peur, aveiuge, mis,	mis average and eist it average	
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(9 kHz BW) < 5 dBuV (AV) 3000 to 6000 MHz < 15 dBuV (QP) (120 kHz BW) < 10 dBuV (AV) 30 to 300 MHz < - 9 dBuV (AV) 9 to 150 kHz < -8 dBuV (QP) (120 kHz BW) (200 Hz BW) < -15 dBuV (AV) 9 to 150 8 dBuV (AV) 0.15 to 30 MHz < -4 dBuV (QP) (120 kHz BW) (9 kHz BW) < -10 dBuV (AV) 300 to 3000 MHz < -7 dBuV (AV) (120 kHz BW) (9 kHz BW) < -10 dBuV (AV) 3000 to 6000 MHz < -1 dBuV (AV) (120 kHz BW) 40 dBuV, < 10 dBuV above 150 kHz 41 dBuV, < 15 dBuV above 2 GHz 42 dBuV, < 10 dBuV, < 10 dBuV above 2 GHz 43 to 1000 MHz ± 1.0 dB 1 to 3 GHz ± 1.5 dB 3 to 6 GHz ± 2.0 dB 40 interface 40 USB; RS-232; user port for accessories 40 or to 40° 50 or to 40°	Plealiphilei orr	0.154-20 MIL- 4.11 dp.//(0p)	·	
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(120 kHz BW) < 10 dBuV (AV) 30 to 300 MHz < - 9 dBuV (AV) 9 to 150 kHz < -8 dBuV (QP) (200 Hz BW) < -15 dBuV (AV) (200 Hz BW) < -15 dBuV (AV) 0.15 to 30 MHz < -4 dBuV (QP) (120 kHz BW) (9 kHz BW) < -10 dBuV (AV) 3000 to 6000 MHz < -1 dBuV (AV) 3000 to 6000 MHz < -1 dBuV (AV) (120 kHz BW)		(9 KHZ BW) < 5 dBuV (AV)	2000 (2000 ()) (27 (27 ())	
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(9 kHz BW) < -10 dBuV (AV) 3000 to 6000 MHz < - 1 dBuV (AV) (120 kHz BW) 40 dBuV, < 10 dBuV above 150 kHz 40 dBuV, < 15 dBuV above 2 GHz 40 dBuV, < 15 dBuV above 2 GHz 41 to 3 GHz ± 1.0 dB 41 to 3 GHz ± 1.5 dB 42 to 6 GHz ± 2.0 dB 43 to 6 GHz ± 2.0 dB 44 to 6 GHz ± 2.0 dB 45 to 6 GHz ± 2.0 dB 46 to 6 GHz ± 2.0 dB 47 to 40° 48 to 6 GHz ± 2.0 dB 48 to 6 GHz ± 2.0 dB 49 to 6 GHz 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W 40 to 240 VAC - 50/60 Hz - 20 W	Preamplifier ON			
3000 to 6000 MHz < - 1 dBuV (AV) (120 kHz BW) 40 dBuV, < 10 dBuV above 150 kHz 410 dBuV, < 15 dBuV above 2 GHz 30 to 1000 MHz ± 1.0 dB 5/N > 20 dB 1 to 3 GHz ± 1.5 dB 3 to 6 GHz ± 2.0 dB 7/0 interface USB; RS-232; user port for accessories 10 perating temperature 100 to 240 VAC - 50/60 Hz - 20 W 100 interface 100 to 240 VAC - 50/60 Hz - 20 W 100 to 240 VAC - 50/60 Hz - 20 W 100 to 240 VAC - 50/60 Hz - 20 W 100 to 240 VAC - 50/60 Hz - 20 W		-	(120 kHz BW)	
(120 kHz BW)		(9 kHz BW) < -10 dBuV (AV)		
Sepurious response < 0 dBuV, < 10 dBuV above 150 kHz < 10 dBuV, < 15 dBuV above 2 GHz			3000 to 6000 MHz < - 1 dBuV (AV)	
Measurement accuracy 30 to 1000 MHz ± 1.0 dB 5/N > 20 dB ± 1.0 dB 1 to 3 GHz ± 1.5 dB 6/O interface USB; RS-232; user port for accessories Operating temperature 0° to 40° Power supply 100 to 240 VAC - 50/60 Hz - 20 W Dimensions standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)			(120 kHz BW)	
### 1.0 dB ### 1.0 dB ### 1 to 3 GHz ± 1.5 dB ### 3 to 6 GHz ± 2.0 dB ### 4 Power supply ### 50 to 40° ### 50 to 240 VAC - 50/60 Hz - 20 W ### 50 VAC - 50/60 Hz - 20 W ### 50 VAC - 50/60 Hz - 20 W ### 50 VAC -	Spurious response	< 0 dBuV, < 10 dBuV above 150 kHz	< 10 dBuV, $<$ 15 dBuV above 2 GHz	
3 to 6 GHz ± 2.0 dB Vo interface USB; RS-232; user port for accessories Operating temperature O° to 40° Ower supply 100 to 240 VAC - 50/60 Hz - 20 W Standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)	Measurement accuracy		30 to 1000 MHz ± 1.0 dB	
USB; RS-232; user port for accessories Operating temperature Oo to 40° Ower supply 100 to 240 VAC - 50/60 Hz - 20 W Standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)	S/N > 20 dB	± 1.0 dB	1 to 3 GHz ± 1.5 dB	
Operating temperature 0° to 40° Power supply 100 to 240 VAC - 50/60 Hz - 20 W Dimensions standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)			3 to 6 GHz ± 2.0 dB	
Operating temperature 0° to 40° Power supply 100 to 240 VAC - 50/60 Hz - 20 W Dimensions standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)	I/O interface	USB; RS-232; user port for accessories		
Power supply 100 to 240 VAC - 50/60 Hz - 20 W Dimensions standard EIA Rack unit (1RU) - 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)	Operating temperature			
Standard EIA Rack unit (1RU) – 482 mm (19" w) x 45 mm (1.75" h) x 362 mm (14.3" d)				
	Dimensions			
	Weight	5 kg		

Pre-programmed test runs

The comfortable "pre-programmed test runs" are the fastest access to EMI-measurements. Just select your product standard from the list and start the measurement for conducted or radiated emission. Frequency-range, limit-lines, detector, automatic attenuation and other relevant settings are already pre-set in the software.

With the "Fast pre-check" you are getting an overview about the emission of your EUT in a few seconds by use of the "Peak-detector". Select "Full compliance measurement" for example at the end of a new development, to make a test run with all settings acc. to your product standard.

Expert entry

With the "expert entry" you have full access to all possible settings of the CORE-6. Create your own limit-lines, insert antenna factors and correction factors, set your frequency-range, select different detectors and different measuring times, control turn-tables and antenna masts,

use the "manual-", "spectrum-", or "sweep mode", create frequency-tables ...

The "EM-LAB" control software offers all possibilities to do professional emission measurements.

Set-up menu

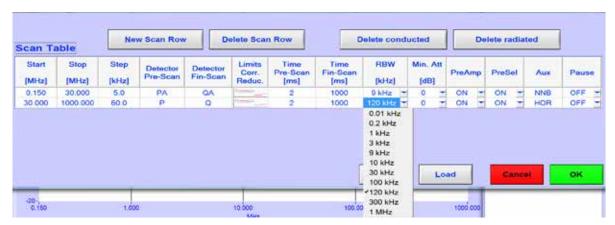
In the set-up menu you may create your own "Scantables", which can be stored and loaded on request. Standard settings for tests acc. to EN/CISPR product standards are

already stored in the software and can be simply loaded via the "Pre-programmed test runs" entry.

A scan-table does define

- Start-, stop-frequency
- Frequency-steps
- Detectors for pre-scan and final-scan
- Hold time for pre-scan and final-scan
- Resolution bandwidth

- Attenuators
- Pre-amplifier ON/OFF
- Pre-selection ON/OFF
- Auxiliary equipment, like LISN, antenna ...
- Limit lines and correction factors



Detector selection

Detectors can be defined via a scan-table or manually in the "Detector-selection-menu". It is possible to select different detectors for the "Pre-scan" and for the "Final-scan" in order to reduce measuring time.

Pre-Scan PEAK QPEAK AVERAGE RMS RMS-AVG C-AVG	Final-Scan PEAK PEAK PEAK AVERAGE RMS RMS-AVG C-AVG	Data-Reduction Acceptance level	QK Cancel		
1. Limit file	c:\EM-LAB\Limits\EN55011B-QP_V.lim				
2. Limit file	c:\EM-LAB\Limits\EN55011B-AV_V.lim				
LISN	c:\EM-LAB\Correc	c:\EM-LAB\Corrections\C2-16.ako			
Antenna					
Cable correction	c:\EM-LAB\Correc	c:\EM-LAB\Corrections\test.kko			
Gain / attenuation					
Correlation					

Detector selection

Correction factors

Correction factors for antennas, cables, voltage probes, etc. can easily be created over the relevant frequency-band. Simply insert the frequency and correction value in a list; in parallel you can see the "correction curve" in a

diagram. These correction factors have to be created once and can simply be loaded for measurement runs or are already stored in scan tables.

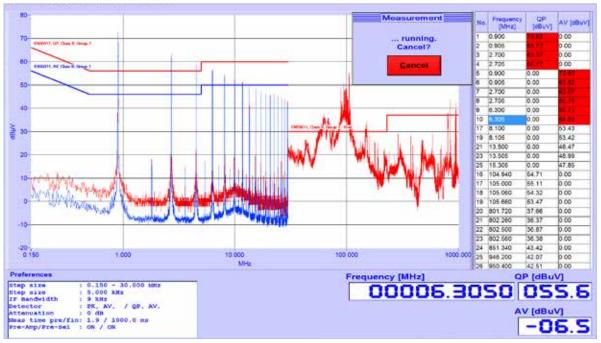


Antenna correction

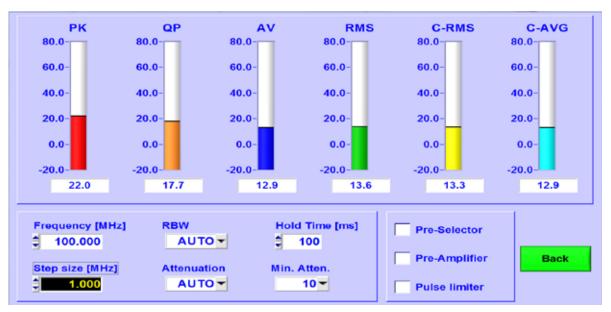
Measurement run (pre-scan and final scan)

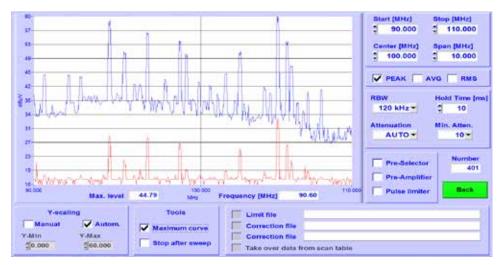
Once the receiver settings have been made by loading a scan table, selecting a product standard or by manual settings it is possible to start the measurement. Usually the measurement starts with a pre-scan which shows the measuring results of the selected frequency band directly on the

screen. After the pre-scan it is possible to decide whether to continue with the final-scan or to stop. When starting the final scan a frequency-list will be created which shows the frequencies with the highest peaks and the value in dBµV.



Measurement run





Spectrum analysis

Accessories

LISN

- Type C2-16, 9 kHz to 30 MHz, single-phase, 2 x 16A
- Type (4-32, 9 kHz to 30 MHz, three-phase, 4 x 32A



Antennas

- Type SAX-10, active rod-antenna for E-field measurements, 9 kHz to 30 MHz
- Type LAX-10, active loop-antenna for H-field measurements, 9 kHz to 30 MHz
- Type ALX-4000, broadband antenna, 25 MHz to 4 GHz
- Type MAX-9, double-stacked log.-per.-antenna, 700 MHz to 10.5 GHz
- Type HAX-6, broadband horn antenna, 500 MHz to 6 GHz
- \bullet Type HAX–18, broadband horn antenna, 800 MHz to 18 GHz
- Type HAX-40, broadband horn antenna, 14 GHz to 40 GHz
- Type LWL, Van Veen Loop antenna for magnetic-field measurements, 9 kHz to 30 MHz

Near-field probe set

- Type NFS-100, consisting of
 - E-field probe 1 MHz 500 MHz
 - H-field probe 1 MHz 500 MHz



Voltage probes

• Type CVP-1, 30 dB attenuation, 9 kHz - 30 MHz

Absorbing clamp

• Type ACF-01B, 30 MHz to 1000 MHz (CISPR 14)

Van der Hoofden test-head

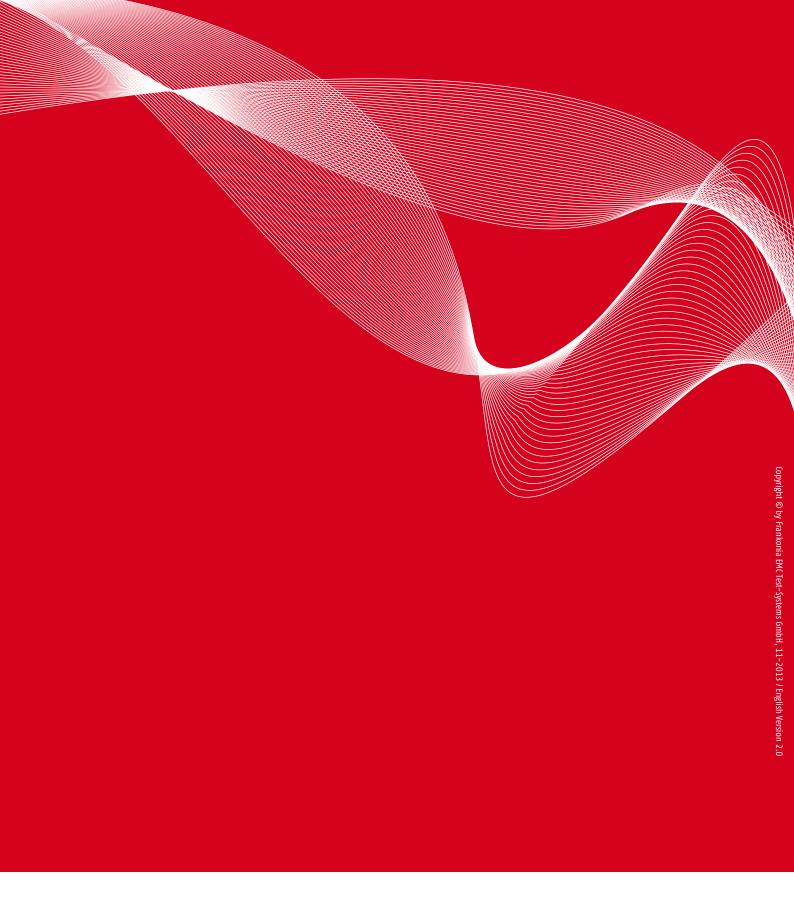
Type HTH-01 (IEC 62493)

Coupling networks acc. to EN 55015

• 150 kHz to 300 MHz, for different lines

Emission reference source

 Type RSE-1000, incl. calibration data for a full-compliance OATS for 3.0 m measuring distance in vertical and horizontal polarization, 30 MHz to 1000 MHz





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