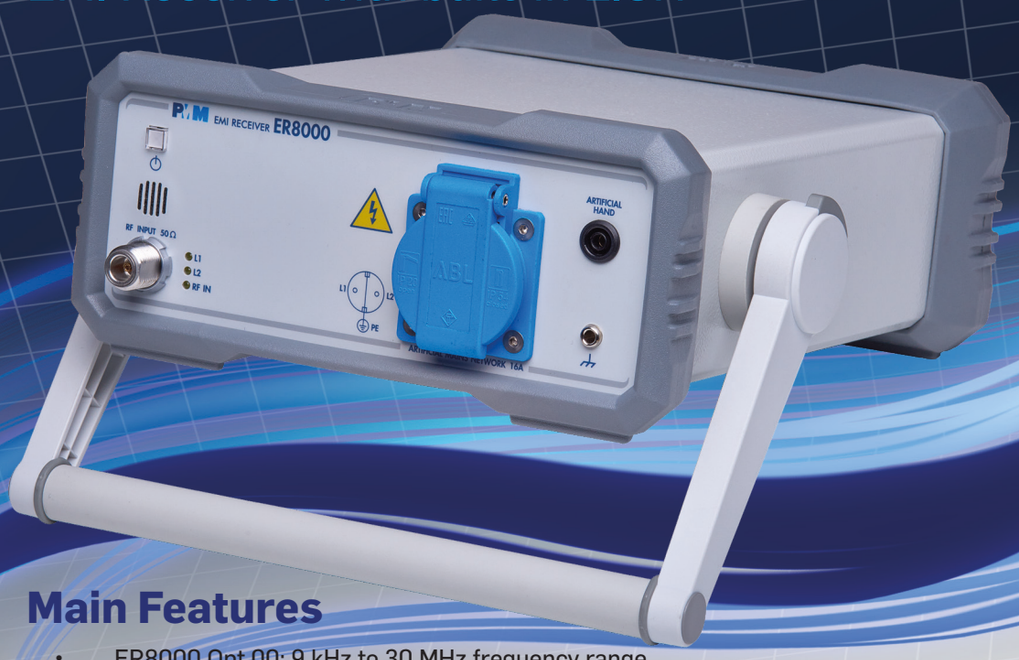
ER8000

EMI Receiver with built-in LISN



Main Features

- ER8000 Opt.00: 9 kHz to 30 MHz frequency range
- ER8000 Opt.01: 9 kHz to 3 GHz frequency range
- Compliant with CISPR 16-1-1, MIL-STD-461, ANSI C63.2 and FCC
- Compliant with CISPR 14-1 when in conjunction with CA0010
- Conducted and radiated emission tests
- Direct analog to digital conversion up to 30 MHz
- Combination of EMI test receiver and spectrum analyzer
- Operates gapless FFT
- Very fast measuring time
- Built-in Lines Impedance Stabilization Networks (LISN)
- User port for driving external LISNs and ancillaries
- Free PES PMM Emission Suite Software
- Robust, compact construction
- 140 dBµV (2 W) maximum input level without damage

Extra compact, flexible and easy-to-use, ER8000 is a high performance, full CISPR 16-1-1 compliant EMI receiver perfect for any conducted and radiated measurement from 9 kHz up to 3 GHz.

A full compliant span as fast as two seconds in band B and as fast as one minute in bands C+D is the result of a state-of-the-art design featuring FFT architecture to optimize measurement speed.

Other technical improvements include an extremely effective front end with efficient preselector, for outstanding performance, and a user port suited for external devices like LISNs and switching boxes for even faster testing times.

The ER8000 also features an internal built-in 16 A LISN (Line Impedance Stabilization Network), so this compact setup can perform conducted emission measurement tests and characterize EUTs quickly and effectively, whether in the design lab during product development or in an EMC laboratory for the certification of EMI measurements. An optional DDA Click Analyzer makes this measurement system more attractive and profitable than ever.

The compact size and rugged yet lightweight design make the ER8000 the perfect solution for in-situ testing.

PMM Emission Suite software (included free of charge) is the ideal companion for this high performance receiver, featuring a full set of user-friendly functions for all EMI applications.

The receiver can be ordered with two different frequency ranges: 9 kHz to 30 MHz (ER8000 opt. 00), or 9 kHz to 3 GHz (ER8000 opt. 01). Users can upgrade from version opt. 00 to version opt. 01 at any time.

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SPECIFICATIONS

Frequency range	9 kHz to 30 MHz (Opt.00) 9 kHz to 3 GHz (Opt.01)				
Resolution	1 Hz; 100 Hz above 30 MHz				
Frequency accuracy	< 2.5 ppm				
Spectrum method analysis	FFT, size up to 8192, minimum overlap 89%				
RF Input	Zin 50 Ω, N fem.				
VSWR 10 dB RF att.	< 1.2; < 2 above 1 GHz				
0 dB RF att.	< 2				
Attenuator	0 dB to 45 dB (5 dB steps)				
Preamplifier gain	20 dB; 10 dB above 30 MHz Low saturation preamplifier (after preselector)				
Pulse limiter	Built in (selectable) below 30 MHz				
Max input level (without equipment damage)					
Sinewave AC	140 dBµV (2 W); 137 dBµV (1 W) above 30 MHz				
Voltage pulse spectral density	176 dBµV/MHz below 150 kHz; 130 dBµV/MHz below 30 MHz; 97 dBµV/MHz below 1 GHz				
Max. pulse voltage	200V (≤ 20 µs)				
Max. DC voltage	50V				
Preselector (permanent built-in)	(Seven BP filters - 15 MHz BW to ADC)				
	9 kHz to 150 kHz	30 MHz to 96.6 MHz tracking			
	150 kHz to 15 MHz	96.6 MHz to 311 MHz tracking			
	15 MHz to 30 MHz	311 MHz to 1000 MHz tracking			
		1 GHz to 3 GHz			
IF bandwidth					
6dB bandwidth	100Hz, 300Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz				
CISPR 16-1-1	200 Hz, 9 kHz, 120kHz, 1 MHz				
Displayed Average Noise level	Preselector OFF, preamplifiers OFF	Preselector ON, preamplifiers OFF	Preselector ON, preamplifier ON		
9 kHz to 150 kHz (200 Hz RBW)	< -17 dBµV	< -14 dBµV	< -27 dBµV		
0.15 MHz to 30 MHz (9 kHz RBW)	< 0 dBµV	< 3 dBµV	< -14 dBµV		
30 MHz to 300 MHz (120 kHz RBW)	< 4 dBµV	< 1 dBµV	< -5 dBµV		
300 MHz to 3 GHz (120 kHz RBW)	< 10 dBµV	< 6 dBµV	< 0 dBµV		
Detectors	Peak, Quasi-Peak, Average, RMS, RMS-Average (Optional), C-Average Smart Detector function above 30 MHz				
Scan time	A band (9 to 150 kHz) (200 Hz RBW)	B band (150 kHz to 30 MHz) (9 kHz RBW)	C band (30 to 300 MHz) (120 kHz RBW)	D band (300 MHz to 1 GHz) (120 kHz RBW)	E band (1 to 3 GHz) (1 MHz RBW)
SWEEP MODE (CISPR: preselector ON, QP)	< 2 s (Ht 1 s) < 3 s (Ht 2 s)	< 3 s (Ht 1 s) < 5 s (Ht 2 s)	< 20 s (Ht 1 s) < 40 s (Ht 2 s)	< 40 s (Ht 1 s) < 80 s (Ht 2 s)	< 160 s (Ht 1 s) < 320 s (Ht 2 s)
ANALYZER MODE (preselector OFF, PK, Ht lowest)	< 50 ms (Ht 27 ms)	< 10 ms (Ht 525 µs)	< 100 ms (Ht 32 µs)	< 500 ms (Ht 32 µs)	< 400 ms (Ht 4 µs)
Level measuring time (hold time)	CISPR 16-1-1 as default 2 µs to 120 s				
Measurement accuracy					
S/N > 20 dB	9 kHz to 1 GHz ± 1.2 dB 1 to 3 GHz ± 1.6 dB				
Main measuring functions (With included PMM Emission Suite SW)	• Manual, spectrum analyser and sweep modes • Waterfall • Standard and user definable limits • Conversion and correction factors • Control of DDA (Click) analyser, LISNs and other accessories • Auto diagnosis; • Test reporting				
Demodulation	AM – FM Internal loudspeaker				
I/O Interface (protocol available for SW developers)	USB 2.0 type B, RS-232 DB9, user port DB15 (drives PMM LISNs and accessories)				
Operating temperature	-5° to 45°C				
Power supply	10 - 15 Vdc, 2.5A with AC universal adapter/charger				
Built-in LISN (compliant to CISPR 16-1-2)					
Frequency range	150 kHz to 30 MHz				
Continuous rated output current	16A				
Max permissible operating voltage	250 Vac – 350 Vdc				
AC supply frequency range	DC to 60 Hz				
CISPR equivalent circuit	50 Ω // (5 Ω + 50 µH)				
Test socket	Schuko 2P+E				
Line plug	IEC 60320 C20				
Artificial hand	4 mm plug				
RF Output	Internal receiver or BNC fem.				
Dimensions (W x H x D)	235 x 105 x 300 mm				
Weight	5,2 kg				

Ordering information:

ER8000 Option 00 (9 kHz to 30 MHz)
ER8000 Option 01 (9 kHz to 3 GHz)
Includes: LISN mains cable, RS232 cable, USB-RS232 serial converter, USB cable, N-m to BNC-f adapter, AC/DC converter with plug adapters, PES PMM Emission Suite Software, soft carrying case, user's manual, standard calibration certificate

Optional accessories:

9010/RAV RMS-Avg detector
9010-RMA rack mount adapter for 19" rack
ER8000/GND Ground connection
9010/CC Rigid Carrying Case.
Upgrades:
ER8000/00/UP/01 from ER8000 Opt. 00 to ER8000 Opt. 01 (9 kHz to 3 GHz)

Related products

Receivers

- 7010/00: EMI Receiver 150 kHz to 1 GHz
- 7010/01: EMI Receiver 9 kHz to 1 GHz
- 7010/02: EMI Receiver 9 kHz to 30 MHz
- 7010/03: EMI Receiver 9 kHz to 3 GHz
- 9010F: EMI Receiver 10 Hz to 30 MHz
- 9010/03P: EMI Receiver 10 Hz to 300 MHz
- 9010/30P: EMI Receiver 10 Hz to 3 GHz
- 9010/60P: EMI Receiver 10 Hz to 6 GHz
- 9030: EMI Receiver 30 MHz to 3 GHz
- 9060: EMI Receiver 30 MHz to 6 GHz
- 9180: EMI Receiver 6 GHz to 18 GHz
- ER9000/00: EMI Receiver 10 Hz to 30 MHz
- ER9000/01: EMI Receiver 10 Hz to 3 GHz
- FR4003: Field Receiver 9 kHz to 30 MHz
- CA0010: Click Analyzer 150 kHz to 30 MHz

Antennas

- BC-01: Biconical Antenna 30 to 200 MHz
- BL-01: Biconical Log Periodic Antenna 30 MHz to 6 GHz
- DR-01: Double-ridged Horn Antenna 6 to 18 GHz
- LP-02: Log Periodic Antenna 200 MHz to 3 GHz
- LP-03: Log Periodic Antenna 800 MHz to 6 GHz
- LP-04: Log Periodic Antenna 200 MHz to 6 GHz
- VDH-01: Van der Hoofden Test Head 20 kHz to 10 MHz
- TR-01: Antenna Tripod
- Antenna Set AS-02 / AS-03 / AS-04 / AS-05 / AS-06 / AS-07 / AS-08
- RA-01: Rod Antenna 9 kHz to 30 MHz
- RA-01-HV: Rod Antenna 150 kHz to 30 MHz
- RA-01-MIL: Rod Antenna 9 kHz to 30 MHz

LISN/Probes

- L2-16B: single phase AMN, 16 A
- L3-32: 4 lines, 3-phase AMN, 32 A
- L3-64: 4 lines, 3-phase AMN, 63 A
- L3-64/690V: 4 lines, 3-phase AMN, 63 A
- L3-100: 4 lines, 3-phase AMN, 100 A
- L1-150M: single-path, 50 Ohm AMN, 150 A
- L1-150M1: single-path, 50 Ohm AMN, 150 A
- L1-500: single phase AMN, 500 A
- L3-500: 4 lines, 3-phase AMN, 500 A
- SBRF4: RF Switching Box
- SHC-1/1000: Voltage probe, 1000 Vac, 35 dB
- SHC-2/1000: Voltage probe, 1000 Vac, 30 dB

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