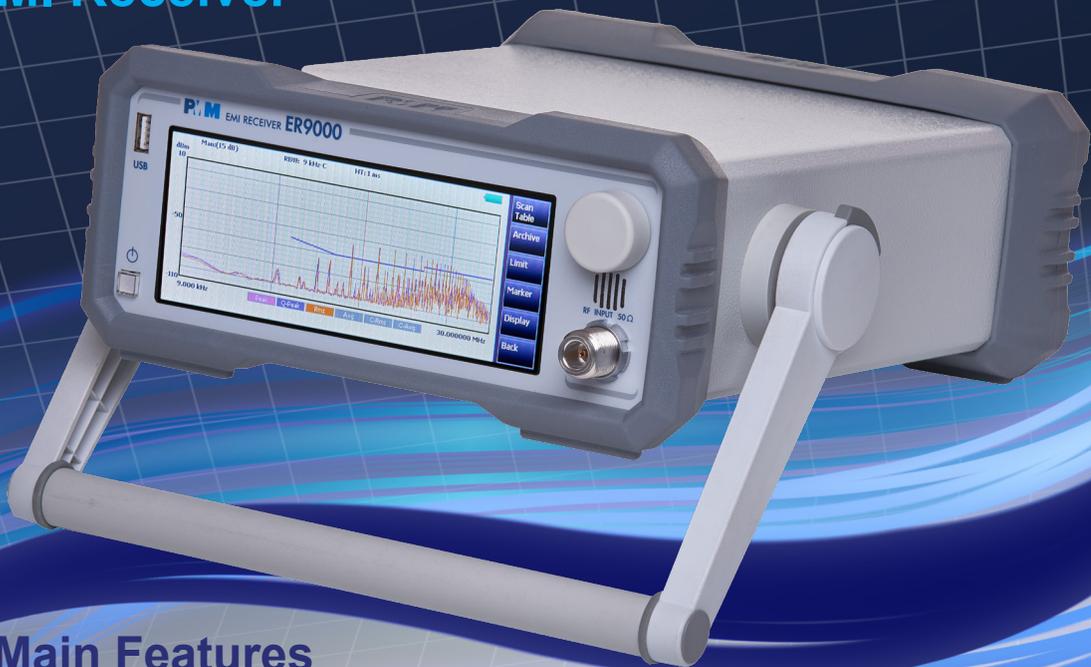


ER9000

EMI Receiver



Main Features

- ER9000 Opt.00: 10 Hz to 30 MHz frequency range
- ER9000 Opt.01: 10 Hz 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
- User port for driving external LISNs and ancillaries
- Internal CW generator and CISPR pulse generator
- 140 dB μ V (2 W) maximum input level without damage
- Touchscreen color display
- Free PES PMM Emission Suite Software with Smart Detector function
- Robust, compact construction, battery operated

Top performance and superb accuracy make the full CISPR 16-1-1 compliant EMI receiver PMM ER9000 the ideal instrument for any conducted and radiated measurement from 10 Hz up to 3 GHz. Despite its compact size, the PMM ER9000 features a built-in battery and touch-screen color display, making it even easier and faster to use this portable receiver for debugging and certification tests in any EMC laboratory.

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 and two-stage preamplifier for lower noise or lower saturation, for outstanding performance, and a user port suited for external devices like LISNs and switching boxes for even faster testing times.

Very easy to operate, the PMM ER9000 features an internal CW generator that can be used for self-calibration routines and for generating RF signals (e.g. for EUT testing), and a CISPR pulse generator perfect for assessing receiver performance in accordance with CISPR standards. Effective communication is ensured by a traditional Ethernet port as well as a fiber optic port. An external DDA Click Analyzer makes the use of this measurement system more attractive and profitable than ever.

The compact size and rugged yet lightweight design make the PMM ER9000 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 and spectrogram for all EMI applications, test measurement and EUT debugging.

The receiver can be ordered with two different frequency ranges: 10 Hz to 30 MHz (PMM ER9000 opt. 00), or 10 Hz to 3 GHz (PMM ER9000 opt. 01). Users can upgrade from version opt. 00 to version opt. 01 at any time.

ER9000

EMI Receiver

SPECIFICATIONS



Frequency range	10 Hz to 30 MHz (Opt. 00) 10 Hz to 3 GHz (Opt. 01)															
Range	0.1 Hz; 10Hz above 30 MHz															
Resolution	< 1 ppm															
Reference frequency																
Spectrum method analysis	FFT, size up to 8192, minimum overlap 89%															
RF Input	Zin 50 Ω, N fem.															
VSWR	< 1.2; < 2 above 1 GHz < 1.6; < 2 above 30 MHz															
10 dB RF att.	0 dB to 55 dB (5 dB steps)															
0 dB RF att.	20 dB; 10 dB above 30 MHz Low saturation preamplifier (after preselector)															
Attenuator	20 dB; 10 dB above 30 MHz Low noise preamplifier (before attenuator)															
Preamplifier gain	Built in (selectable) below 30 MHz															
Pulse limiter																
Max input level (without equipment damage)	140 dBμV (2 W); 137 dBμV (1 W) above 30 MHz															
Sinewave AC	176 dBμV/MHz below 150 kHz; 130 dBμV/MHz below 30 MHz; 97 dBμV/MHz below 1 GHz															
Voltage pulse spectral density	200V (≤ 20 μs)															
Max. pulse voltage	25V; 50V above 1 kHz															
Max. DC voltage																
Preselector	(Thirteen BP filters – 7.5 / 15 MHz BW to ADC)															
Frequency ranges	<table border="0"> <tr> <td>10 Hz to 9 kHz</td> <td>150 kHz to 15 MHz</td> <td>30 MHz to 96.6 MHz tracking</td> </tr> <tr> <td>1 kHz to 9 kHz</td> <td>15 MHz to 22.5 MHz</td> <td>96.6 MHz to 311 MHz tracking</td> </tr> <tr> <td>9 kHz to 150 kHz</td> <td>22.5 MHz to 30 MHz</td> <td>311 MHz to 1000 MHz tracking</td> </tr> <tr> <td>150 kHz to 7.5 MHz</td> <td>15 MHz to 30 MHz</td> <td>1 GHz to 3 GHz</td> </tr> <tr> <td>7.5 MHz to 15 MHz</td> <td></td> <td></td> </tr> </table>	10 Hz to 9 kHz	150 kHz to 15 MHz	30 MHz to 96.6 MHz tracking	1 kHz to 9 kHz	15 MHz to 22.5 MHz	96.6 MHz to 311 MHz tracking	9 kHz to 150 kHz	22.5 MHz to 30 MHz	311 MHz to 1000 MHz tracking	150 kHz to 7.5 MHz	15 MHz to 30 MHz	1 GHz to 3 GHz	7.5 MHz to 15 MHz		
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7.5 MHz to 15 MHz																
IF bandwidth	10 Hz, 20 Hz, 30 Hz, 50 Hz, 100 Hz, 200 Hz, 300 Hz, 500 Hz, 1 kHz, 2 kHz, 3 kHz, 5 kHz, 10 kHz, 20 kHz, 30 kHz, 50 kHz, 100 kHz, 200 kHz, 300 kHz, 500 kHz, 1 MHz, 2 MHz, 3 MHz															
3 and 6dB																
CISPR 16-1-1	200 Hz, 9 kHz, 120kHz, 1 MHz															
Displayed Average Noise Level																
Preselector OFF, preamplifiers OFF, Ht 1s	Preselector OFF, low noise preamplifiers ON, Ht 1s															
9 kHz to 150 kHz (200 Hz RBW)	< -32 dBμV															
0.15 MHz to 30 MHz (9 kHz RBW)	< -19 dBμV															
30 MHz to 300 MHz (120 kHz RBW)	< -9 dBμV															
300 MHz to 3 GHz (120 kHz RBW)	< -4 dBμV															
Preselector ON, preamplifiers OFF, Ht 1s	Preselector ON, low sat. preamplifiers ON, Ht 1s															
9 kHz to 150 kHz (200 Hz RBW)	< -14 dBμV															
0.15 MHz to 30 MHz (9 kHz RBW)	< 3 dBμV															
30 MHz to 300 MHz (120 kHz RBW)	< 1 dBμV															
300 MHz to 3 GHz (120 kHz RBW)	< 6 dBμV															
300 MHz to 3 GHz (120 kHz RBW)	< 0 dBμV															
Detectors	Peak, Quasi-Peak, Average, RMS, RMS-Average, C-Average. Smart Detector function above 30 MHz															
Scan time	A band (9 kHz to 150 kHz) 200 Hz RBW < 2 s (Hold time 1 s) < 3 s (Hold time 2 s) B band (150 kHz to 30 MHz) 9 kHz RBW < 3 s (Hold time 1 s) < 5 s (Hold time 2 s) C band (30 MHz to 300 MHz) 120 kHz RBW < 20 s (Hold time 1 s) < 40 s (Hold time 2 s) D band (300 MHz to 1 GHz) 120 kHz RBW < 40 s (Hold time 1 s) < 80 s (Hold time 2 s) E band (1 GHz to 3 GHz) 1 MHz RBW < 160 s (Hold time 1 s) < 320 s (Hold time 2 s)															
SWEEP MODE (CISPR: preselector ON, QP detector)																
ANALYZER MODE (preselector OFF, Peak detector, Hold time lowest)	< 50 ms (Hold time 27 ms) < 10 ms (Hold time 525 μs) < 100 ms (Hold time 32 μs) < 500 ms (Hold time 32 μs) < 400 ms (Hold time 4 μs)															
Level measuring time (Hold time)	CISPR 16-1-1 as default. 2 us to 120 s															
Measurement accuracy	10 Hz to 9 kHz ± 1.0 dB (typ.) 9 kHz to 30 MHz ± 0.8 dB 30 MHz to 1 GHz ± 1.0 dB 1 to 3 GHz ± 1.5 dB															
S/N > 20 dB																
Stand alone main measure function Or with free system SW PMM Emission Suite	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, Auto calibration, Test reporting															
Units (80 to 200 dB selectable dynamic)	dBm, dBμV, dBμA, dBpW, BμV/m, dBμA/m, dBpT															
Demodulation	AM – FM Internal loudspeaker															
RF output	Zout 50 Ω, BNC fem.															
Tracking (manual mode) & CW generator	10 Hz to 30 MHz 60 to 90 dBμV (0.1 dB step) 0.5 dB															
Frequency range																
Level range																
Level accuracy																
CISPR pulse generator	1 to 1000 Hz < 0.1%															
PFR																
PRF uncertainty																
Autocalibration	Internal reference source															
Display	Color 6.2" TFT LCD touch panel															
I/O Interface	RS-232 DB9, USB 2.0 type B, User port DB15 (Drives PMM LISNs and accessories), USB type A for memory stick, Serial Optical interface RP02, Ethernet 10/100 BaseT RJ45															
Operating temperature	-5° to 45°C															
Power supply	10 - 15 Vdc, 2.5A with AC universal adapter/charger; Li-Ion rechargeable & replaceable battery															
Dimensions	235 x 105 x 300 mm															
Weight	5.0 kg															

Ordering information:

ER9000 Option 00 (10 Hz to 30 MHz)
ER9000 Option 01 (10 Hz to 3 GHz)
Includes: RS232 cable, USB-RS232 serial converter, USB cable, BNC-BNC cable, N-m to BNC-Fadapter, 10 m plastic fiber optic for PC, USB-fiber optic adapter, AC/DC power adapter, 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
9010/CC Rigid Carrying Case.
Upgrades:
ER9000/00/UP/01 from ER9000 Opt. 00 to ER9000 Opt. 01 (10 Hz to 3 GHz)

Related products

Receivers

- 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
- ER8000/00: EMI Receiver 9 kHz to 30 MHz
- ER8000/01: EMI Receiver 9 kHz 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 / TR-01 A: 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
- L1-500/690V: single phase AMN, 500 A
- L3-500/690V: 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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