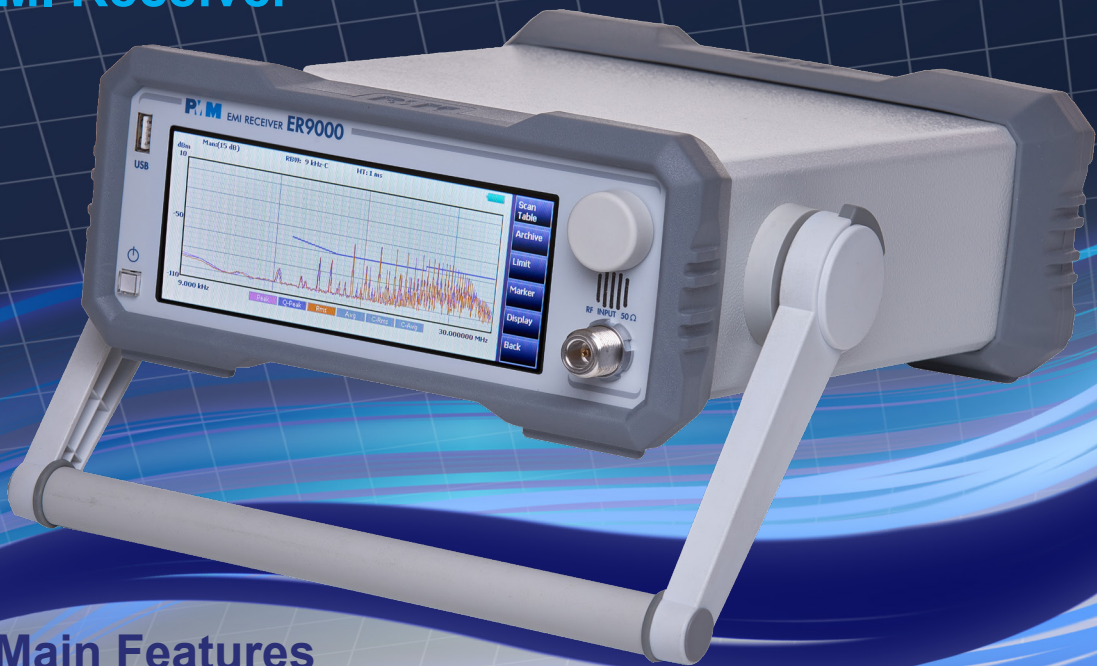


# ER9000

## 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 $\mu$ 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	10 Hz to 9 kHz 1 kHz to 9 kHz 9 kHz to 150 kHz 150 kHz to 7.5 MHz 7.5 MHz to 15 MHz 150 kHz to 15 MHz 15 MHz to 22.5 MHz 22.5 MHz to 30 MHz 15 MHz to 30 MHz 30 MHz to 96.6 MHz tracking 96.6 MHz to 311 MHz tracking 311 MHz to 1000 MHz tracking 1 GHz to 3 GHz
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, low noise preamplifiers ON, Ht 1s 9 kHz to 150 kHz (200 Hz RBW) < -17 dBμV 0.15 MHz to 30 MHz (9 kHz RBW) < 0 dBμV 30 MHz to 300 MHz (120 kHz RBW) < 4 dBμV 300 MHz to 3 GHz (120 kHz RBW) < 10 dBμV
Preselector OFF, preamplifiers OFF, Ht 1s	Preselector ON, preamplifiers OFF, 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 ON, Ht 1s	Preselector ON, low sat. preamplifiers ON, Ht 1s 9 kHz to 150 kHz (200 Hz RBW) < -27 dBμV 0.15 MHz to 30 MHz (9 kHz RBW) < -14 dBμV 30 MHz to 300 MHz (120 kHz RBW) < -5 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)
Level measuring time	(Hold time)
Measurement accuracy	S/N > 20 dB
Stand alone main measure function	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
Or with free system SW PMM Emission Suite	
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 Base T 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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