

FR4003

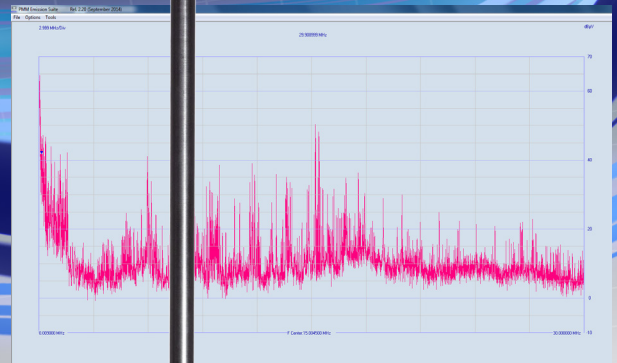
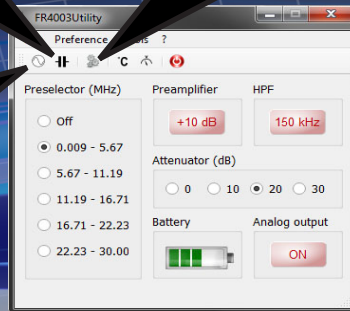
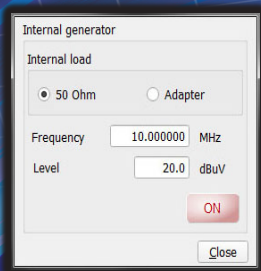
Field Receiver



Start auto calibration

Receiver (ADC) Front End (BNC)

	Frequency (MHz)	Att.0 Voltmeter high Z (dB)	Att.0 Antenna (dB)	Att.10 Voltmeter high Z (dB)	Att.10 Antenna (dB)
1	0.009	2.68	-6.52	2.90	-6.52
2	0.01	2.70	-6.31	2.92	-6.31
3	0.02	2.69	-5.57	2.90	-5.57
4	0.05	2.69	-5.33	2.89	-5.33
5	0.08	2.71	-5.27	2.92	-5.27
6	0.1	2.71	-5.25	2.92	-5.25
7	0.15	2.72	-5.24	2.92	-5.24
8	0.2	2.70	-5.24	2.91	-5.24
9	0.5	2.70	-5.22	2.89	-5.22
10	0.8	2.69	-5.20	2.87	-5.20



Main Features

- 9 kHz to 30 MHz frequency range
- Antenna CISPR 12, CISPR 16, CISPR 25, MIL-STD, DO-160 fully compliant
- Internal full CISPR 16-1-1 receiver
- Embedded Attenuator, Preamplifier and Preselectors
- Fiber optic serial link to 9010F series or directly to PC
- Grounding Effectiveness Auto-Diagnostic Capability
- On board tracking generator and antenna CISPR adapter
- Automatic diagnostic and calibration
- Scattering free
- PC softwares
- RF Front-End Output
- On board capacitance meter
- Replaceable Li-Ion battery



The FR4003 is a new reference in measuring electric fields up to 30 MHz. Thanks to its innovative approach it replaces traditional rod antennas adding several benefits. It fully meets all MIL-STD and CISPR specifications of the rod antenna and it is a real full compliant CISPR 16-1-1 receiver with the capability of working, via fiber optic link, either stand alone when connected to a PC or connected to a PMM receiver. Nonetheless, it can maintain full legacy with any standard receiver, because it also has the traditional coaxial cable output. However, this way is not recommended as the cable has a significant influence, such as scattering, which is one of the major drawbacks of rod antennas. The internal receiver structure features preselectors, attenuators and preamplifiers fully controlled either by the internal firmware or manually by the operator. Hence, a test set-up does not need any additional receiver. Moreover, an internal tracking generator allows performing a self-calibration procedure which always guarantees optimum performances, ensuring the accuracy of measurements. The same internal tracking generator is part of an internal capacitance meter that becomes essential not only for the self-calibration, but also for verifying the grounding effectiveness of the antenna. Last but not least, the FR4003 can become a field generator. In this case the antenna broadcasts the signal made by the internal signal generator and can thus be used to characterize environments or other receiving set-ups.

In addition to the standard PEMS software, the FR4003 comes also with a controlling software, which can be used when connected to a standard receiver. Thanks to its replaceable Li-Ion battery, the FR4003 can work for several hours with no connection having thus unperturbed field.

FR4003

Field Receiver

SPECIFICATIONS

Frequency range	9 kHz to 30 MHz	
Resolution	1 Hz	
Frequency accuracy	< 1 ppm	
RF Input	High impedance N fem.	
Attenuator	Built-in 0 dB to 30 dB (10 dB steps)	
HPF	Built-in 9 kHz or 150 kHz HPF (selectable)	
Preamplifier	Built-in 20 dB gain (selectable)	
Max input level	BNC analog output (1 dB compression point @ 1MHz) (SD Spectral Density)	Internally processed signal (SD Spectral Density with Preselector ON)
100/104 cm rod (Preamp OFF, Att 30 dB)	380 V/m CW 137 dB μ V/m/MHz SD	38 V/m CW 128 dB μ V/m/MHz SD
N input (50 Ω term., Preamp OFF, Att 10 dB)	137 dB μ V CW 103 dB μ V/MHz SD	117 dB μ V CW 94 dB μ V/MHz SD
Damage level	500 V/m CW (Min. Att. 20 dB)	
Noise level	100/104 cm rod	N input (50 Ω term.)
Preamp ON, Att 0 dB, 10 kHz RBW	13 dB μ V/m PK 2 dB μ V/m AVG	-1 dB μ V PK -12 dB μ V AVG
Manual Mode, Tune 1 MHz	DANL -38 dB μ V/m(Hz)	DANL -52 dB μ V(Hz)
Spurious response	< -10 dB μ V (Att 0 dB, 50 Ω termination, AVG, Hold Time 10 ms, RBW auto)	
Measurement accuracy	9 kHz to 30 MHz \pm 0.8 dB	
Preselector	Two Bandpass filters: 9 kHz to 30 MHz	150 kHz to 30 MHz
	Five bandpass filters: 9 kHz to 5,67 MHz	5,67 MHz to 11,19 MHz
	11,19 MHz to 16,71 MHz	16,71 MHz to 22,23 MHz
	22,23 MHz to 30 MHz	
Internal Receiver	Fully digital. Operates both in conjunction with PMM 9010F receiver and in stand alone.	
IF bandwidth	3, 10, 30, 100, 300 kHz	
6 dB bandwidth	200 Hz, 9 kHz (CISPR 16-1-1) 1, 10 kHz (MIL-STD-461)	
Level measuring time	CISPR 16-1-1 as default.	
(Hold time)	0,2 ms to 120 s	
Detectors	Peak, Quasi-Peak, Average, RMS, RMS-Average (Optional), C-Average Smart Detector function	
Antenna Factor	At BNC auxiliary analog output 0 dB/m (Att 0 dB PreAmp ON)	
Analog output	50 Ω BNC fem.	
Internal generator	Tracking & CW generator (for auto calibration, capacitance meter and field source)	
Frequency range	9 kHz to 30 MHz	
Frequency resolution	1 Hz	
Level range	65 to 95 dB μ V	
Level resolution	1 dB	
Level accuracy	0,3 dB	
Internal capacitance meter		
Range	0 to 100 pF	
Resolution	0,01 pF	
Calibration	Automatic (Calibration fixtures included)	
Auto test	Automatic at power on	
Auto calibration	Through internal generator and matching network	
Fiber optic connection	RP-02 series serial optical interface 115 kbaud 9010F series high speed optical interface PMM Emission suite – PMM FR4003 Utility	
PC softwares	dBm, dB μ V, dB μ A, dBpW, dB μ V/m, dB μ A/m, dBpT	
Display units	80 to 200 dB selectable dynamic range	
With PMM Emission Suite SW	CISPR 16-1-1, MIL-STD-461F full compliant on board receiver.	
Standard conformity	CISPR 12, CISPR 25, MIL-STD-461F, DO-160 full compliant rod antenna	
FW updating	Through the optical link by USB	
Power Supply	7,4 V – 6,9 Ah Li-Ion rechargeable & interchangeable battery (8h avg. Operating time, 4h avg. Charging time); 100 - 240 Vac / 50 – 60 Hz to 12 Vdc – 2,5 A universal adapter/charger.	
Operating temperature	-10° to 60° C	
Storage temperature	-30° to 75° C	
Operating humidity	0 to 98% (without condensation)	
Tripod support	Threaded insert UNC 1/4"	
Dimensions and weights		
(Overall W x D x H)	Receiver 134 x 285 x 84 mm	2,40 kg
	Counterpoise 600 x 600 x 1,5 mm	4,15 kg
	Rod (\varnothing 20 x 1000 mm)	\varnothing 29 x 1020 mm
	Rod extension (40 mm)	\varnothing 20 x 47 mm
	TOTAL (w rod ext.)	600 x 600 x 1122 mm
		7,10 kg



Ordering Information:

FR4003 Field Receiver
Include: 50 ohm to rod capacitance fixture for CISPR calibration; 15 pF fixture for capacitance meter calibration; MIL-STD 40 mm rod extension; 600x600 mm counterpoise, battery pack; AC adapter/charger; PC softwares; 20 m high speed fiber optic for PMM 9010F receiver; 10 m plastic fiber optic for PC; USB-fiber optic adapter; certificate of calibration; operating manual.

Optional accessories:

- Li-ion Battery Pack BP-01
- High speed Fiber optic cable 9010/FO-20 (length: 20m)
- High speed Fiber optic cable 9010/FO-50 (length: 50m)
- High speed Fiber optic cable 9010/FO-100 (length: 100m)
- 10 m plastic fiber optic for PC
- 20 m plastic fiber optic for PC
- 40 m plastic fiber optic for PC
- USB-fiber optic adapter
- TR-01 Wooden tripod extensible 60 - 180 cm

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
- 9010: EMI Receiver 10 Hz to 30 MHz
- 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
- 9010/Click4E: Four Channels Click Meter

Antennas

- BC-01: Biconical Antenna 30 to 200 MHz
- LP-02: Log Periodic Antenna 200 MHz to 3 GHz
- LP-03: Log Periodic Antenna 800 MHz to 6 GHz
- VDH-01: Van der Hoofden test-head 20 kHz to 10 MHz
- TR-01: Antenna Tripod
- Antenna Set AS-02 (BC01+LP02+TR01)
- Antenna Set AS-03 (BC01+LP02+LP03+TR01)
- RA01: Rod Antenna 9 kHz to 30 MHz
- RA01-HV: Rod Antenna 150 kHz to 30 MHz
- RA01-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
- L2-D: Delta LISN for telecom, 2 A, 150 Ω
- 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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