CORNET Microsystems ED-15 Quick user's manual: 02/08/'08

CORNET ED-15 Electrosmog meter is designed for quick measurement of high frequency (RF) Electromagnet wave field strength and power density for living environment, excellent for individual or company with Electromagnetic wave safety concerns. It has broad bandwidth 100MHz to 3GHz useful detection range, high sensitivity of -55dBm to 0dBm and quick response time.

Applications:

- High frequency (RF) Electromagnetic wave field strength measurement
- Mobile phone base station antenna radiation power density measurement
- Wireless communication applications (AM/FM, TDMA, GSM, DECT, CDMA)
- RF power measurement for transmitters
- Wireless LAN (Wi-Fi), Bluetooth, Ultra-wide-band detection, installation
- Spy camera, wireless bug finder
- Cellular/Cordless phone radiation safety level
- Microwave oven leakage detection
- Personal living environment EMF safety

Features:

-Broad Frequency range: 100MHz to 3GHz useful detection range
-High Dynamic range: 60 dB
-High sensitivity: -55dBm to 0dBm (25mv/m to 14.8V/m)
-Peak power density measurement: 1.5uw/m^2 to 0.58w/m^2
-LCD digital power level and power density level display
-Histogram, and Bar segment signal level display
-8 high brightness LED to display power density level with 3 safety range indications
-Continues wave (AM/FM) and high speed burst RF (GSM, TDMA, PCS, CDMA, Wi-Fi)
-Super fast response time with easy reading color LED segment display
-LCD back light (30 seconds auto-off)
-Small, compact handheld design 13cmx6.5cmx3cm
-Battery operated (9V DC) *(9V alkaline battery recommended, not included in the package)

Usage guide:

(1) Put the 9V battery in the ED15, Handle the ED15 with right hand in vertical direction, and push the power switch button.
(2) The RF sensor is located in the left hand side of the ED15; please do not cover the RF sensor area with hand or other objects.
(3) Measured RF field strength/power density is shown on the digital LCD display (with dBm and mw/m^2).
(4) 8 LED lights. With Red, Yellow, and Green color on the right hand side of LCD window is used for quick RF signal level Indications. 3 Red LEDs are used to indicate the 3 safety range. The power level of each LED can be found in the table on the ED15 front panel.
(5) Histogram of previous 32 signal level readings are recorded and shown as moving graph on the LCD display
(6) Bar segment display can be used for relative signal strength indication.
(7) Most high frequency RF antenna such as Mobile phone base station is vertical polarized (in vertical direction), therefore the ED15 is normally used in vertical direction. Please rotate the ED15 to find the maximum power reading direction to take care of high frequency RF wave reflections. The ED15 can also be used to find the signal source location.
(8) Most of modern communication devices (Mobile phone, Wireless LAN, Wi-Fi, etc.,) use digital communication technology with burst RF signals. When measuring this type of RF signals, several LED lights will blinking at the same time. This is normal and can be used as an indication of burst type of RF signals. For continues waves (AM/FM) signals, the LED light will stable. ED15 measures peak power density of signal with very quick response time. It is more accurate than the needle style of readout which only shown the average value of signal power most of the time.
(9) ED15 is a broadband High frequency (RF) type of Electrical field measuring device. It is used for applications such as Mobile phone base station antenna radiation, Microwave oven, Cellular/cordless phone, Radio transmitters, and WiFi wireless LAN installation aid. It is not for low frequency magnetic field measurement (AC power transformer, high voltage power transmission line, motor ...) which should be measured with Gauss-meters.

Field strength/power density readout:

ED15 use 8 high brightness LED to indicate the measured power density. With 3 safety range indications.

LED color	Power level	Power density	Indication	Action
RED3	-5 dBm	0.18 w/m^2	Safety range#3 Italy standard (0.1w/m-sq)	Caution!
RED2	-10 dBm	0.058 w/m^2	Safety range#2 Swiss standard (0.04w/m-sq)	Caution!
RED1	-15 dBm	0.018 w/m^2	Safety range#1 Russian standard (0.02w/m-sq)	Caution!
YELLOW3	-20 dBm	0.0058 w/m^2		safe
YELLOW2	-25 dBm	1.8 mw/m^2		safe
YELLOW1	-30 dBm	0.58 mw/m^2		safe
GREEN3	-35 dBm	0.18 mw/m^2	Wireless LAN, WiFi typically in this range	safe
GREEN2	-40 dBm	0.06 mw/m^2	Some signal source around	safe

NOTE:

* Electromagnetic wave field strength/power density decades very fast with distance (distance square), keep a good distance from the high frequency RF signal source can reduce the high frequency radiation effect. Alumina foil or window sun reflector film (silver color) can be used as a effective and cheap shielding material for most of RF radiations.
* ED15 is designed for quick living environment RF radiation evaluation and reference only. Official RF safety radiation measurement procedure is complicate and should be handled by trained technical person with lab instruments. Safety range standard are listed here as a reference only. ED15 is not a medical instrument, Please do not use it in medical, legal or other related applications.

The European Community provided general guidelines in its Council Recommendation of July 1999.[1] ICNIRP published similar guidelines in April 1998.[2] Table I gives a sampling of the international and national field-strength limit values for the general public and continuous exposure

		950Mhz	1850Mhz
International	Council Recommendation 1999/519/EC	42 V/m ($4.75W/m^2$)	59 V/m ($9.25W/m^2$)
International	ICNIRP Guidelines, April 1998	42 V/m ($4.75W/m^2$)	59 V/m ($9.25W/m^2$)
Austria	ÖNORM S1120	49 V/m ($6.33W/m^2$)	61 V/m ($10W/m^2$)
Belgium	Belgisch Staatsblad F.2001-1365	21 V/m ($1.18W/m^2$)	30 V/m ($2.31W/m^2$)
Germany	26. Deutsche Verordnung	42 V/m ($4.75W/m^2$)	59 V/m ($9.25W/m^2$)
Italy	Decreto n. 381, 1998	6 V/m ($0.1W/m^2$) 20 V/m ($1W/m^2$)	6 V/m ($0.1W/m^2$) 20 V/m ($1W/m^2$)
The Netherlands	Health Council	51 V/m ($6.92W/m^2$)	83 V/m ($18W/m^2$)
Switzerland	Verordnung 1999	4 V/m ($0.04W/m^2$)	6 V/m ($0.1W/m^2$)
United States	IEEE C95.1	49 V/m ($6.33W/m^2$)	68 V/m ($12W/m^2$)
China	Draft: National Quality Technology Monitoring Bureau	49 V/m ($6.33W/m^2$)	61 V/m ($10W/m^2$)
Japan	Radio-Radiation Protection Guidelines, 1990	49 V/m ($6.33W/m^2$)	61 V/m ($10W/m^2$)

A sampling of international and national field-strength limits for mobile communications frequencies.

Specification:

Sensor type: Electric field sensor
Frequency range: 100MHz to 3GHz useful detection range
Sensitivity: -55dBm to 0dBm (25mv/m to 14.8v/m)
Dynamic range: 60 dB
Peak power measurement: 1.5uw/m² to 0.58w/m²
Display type: digital LCD display, LED color segment display
Unit of measurements: dBm, uw/m², mw/m², w/m²
LCD back light: 15 seconds auto-off
Display of data: LCD 3 and 5 digit, 8 LED color segment,
Histogram of 32 reading, LCD Bar segment
Safety standard indication: 3 safety range indication by 3 Red LED
Battery used: 9V alkaline battery, not included
Battery life: >20 hours