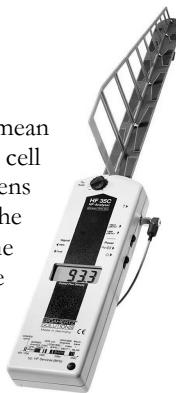


RF METERS

To measure RadioFrequency radiation (what some people mean when they say "RF" or "Microwaves") from wi-fi routers, cell phones or cell towers, laptops, smart meters or microwave ovens we use an RF meter. RF meters measure the strength of the radiation *at the location of the meter*. To know the intensity of the radiation at another location (such as at the source of the problem) you will need to take readings at that other location.

Because radiowaves are oriented in space, the position of the meter will affect the reading. RF meters can also be used to locate the source of a field, and to measure the performance of radiofrequency shielding. The source of the field will always be in the direction of the strongest signal. It is important to avoid being fooled by thinking that the meter points in the direction of the source.



When used indoors, or outdoors where there are many buildings nearby, the signal can reflect off of conductive surfaces and create confusing patterns of high and low intensity. In addition, there may be many simultaneous sources of radiation. Patient use of your meter and persistent testing can reveal the ultimate source(s) of the radiation in your environment.

Most RF meters are "far field" meters. They are designed to be used at some distance from the source of radiation. In the middle of a room, for example. You may notice that a far field meter will get false readings when its antenna is placed close to a surface, even if that surface is not a transmitter. If you want to measure the radiation *up close to the source*, use a "near field" meter, see page 79 for an example.

Sometimes it is useful to know the frequency of the signal(s). Choose either a meter which shows the strength of the predominant signal (page 80), or a spectrum analyzer (page 81) which shows all the frequencies present.

The main features to consider when choosing an RF meter are:

- **Readout type:** lights, sound, numbers, needle gauge
- **Refresh rate:** some digital signals exhibit extremely short bursts. A meter with a faster refresh rate is required to correctly measure these short bursts
- **Range:** how sensitive on the low end, and the upper limit on the high end
- **Axis:** 1-axis only, 3-axis only, switchable 1-axis and 3-axis
- **Accuracy:** While high accuracy is desirable, it is not often necessary for locating "hot spots".
- **Outputs:** voltage output or PC interface for data logging
- **Near field vs. far field** some meters can be used both ways by changing antennas
- **Other features:** alarm, memory, spectrum analysis, etc.