



## Instructions and recommendations for using the 3-Axis Radio Frequency Meter 50MHz – 3.5GHz

This 3- Axis RF meter is a great tool for finding radio frequency (RF) electromagnetic fields (also known as electro-smog or pollution) in your environment. Sources of radio frequencies include mobile phones, tablets, Wi-Fi routers and devices, Bluetooth, cordless phones, smart meters, baby monitors, with many new devices coming on to the market all the time.

**Quick start instructions for using this meter** – (More complex instructions from the manufacturer also included in the meters box)

1/ Insert 9V battery (included in box) by opening the panel at the rear of the meter.

2/ The accepted measurement for RF in Australia is W/m<sup>2</sup> so once you have turned your meter on (green button) push the “Unit Enter” button twice so you are in W/m<sup>2</sup> mode.

The meter will auto-range to whatever level of RF is being detected. For instance:

- **W/m<sup>2</sup>** indicates you are measuring in Watts per square meter
- **mW/m<sup>2</sup>** indicates you are measuring in milli-watts per square meter (1000<sup>th</sup> of a watt)
- **μ W/m<sup>2</sup>** indicates you are measuring in micro-watts per square meter (1000 000<sup>th</sup> of a watt)

### Here is more useful information regarding radio/microwave frequencies

Radio Frequencies have been classified as a possible carcinogen by the World Health Organization (WHO).

In addition to this here is a list of other health disorders that have been linked to RF:

- Sleep problems (insomnia, difficulty falling asleep, night waking, nightmares)
- Stress, agitation, anxiety, irritability
- Headaches, sharp pain or pressure in the head
- Ringing in the ears, ear pain, high pitched ringing
- Concentration, memory or learning problems
- Fatigue, muscle or physical weakness
- Disorientation, dizziness, or balance problems
- Eye problems, including eye pain, pressure in the eyes,
- Cardiac symptoms, heart palpitations, heart arrhythmias, chest pain
- Leg cramps, or neuropathy
- Arthritis, body pain, sharp, stabbing pains
- Nausea, flu-like symptoms
- Sinus problems, nose bleeds
- Respiratory problems, cough, asthma
- Skin rashes, facial flushing
- Urinary problems
- Endocrine disorders, thyroid problems, diabetes
- High blood pressure
- Changes in menstrual cycle
- Hyperactivity or changes in children’s behavior
- Seizures
- Recurrence of cancer

Once you know the sources of RF in your environment you can take action to minimize your exposure to them.

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## Exposure Standards for Radio Frequencies

For radio frequencies between 3KHz and 300GHz many countries including Australia have adopted standards set by the International Commission on Non-Ionising Radiation (ICNIRP) which have been endorsed by WHO.

### There are two ways to measure Radiofrequency/microwaves

**1/ Near Field Exposure**, is used to calculate the Specific Absorption Rate (SAR), which is the rate at which mobile phone users absorb energy from the handset. Measuring near field exposure is very complex and requires sophisticated and expensive equipment and calculations. It is measured in watts per kilogram of tissue. **N.B.** this 3-axis meter **will not** measure near field exposure

**2/ Far Field Exposure** which measures radio/microwaves at a distance such as from cordless phone base stations, wireless routers etc. The commonly accepted standard for measurement is watts per square metre (W/m<sup>2</sup>) – **N.B** This 3-axis RF meter **will** measure far field exposure

Here are the exposure guidelines set by ICNIRP and adopted by ARPANSA (Australian Radiation Protection and Nuclear Safety Agency)

Frequency Range	Public Exposure Limit	Occupational Exposure Limit
GSM <ul style="list-style-type: none"> <li>• 900MHz</li> <li>• 1800MHz</li> </ul>	4.5 W/m <sup>2</sup> (4.5 million μW/m <sup>2</sup> ) 9 W/m <sup>2</sup> (9 million μW/m <sup>2</sup> )	22.5 W/m <sup>2</sup> (22.5 million μW/m <sup>2</sup> ) 45 W/m <sup>2</sup> (45 million μW/m <sup>2</sup> )
3 G Base Stations <ul style="list-style-type: none"> <li>• 2100 MHz</li> </ul>	10 W/m <sup>2</sup> (10 million μW/m <sup>2</sup> )	
4 G Base Stations <ul style="list-style-type: none"> <li>• 900 MHz</li> </ul>	4.5 W/m <sup>2</sup> (4.5 million μW/m <sup>2</sup> )	

**Please note** the above standards have been heavily influenced by industry and are completely inadequate according to many experts. For more information on the dodgy processes used to set standards in industry we recommend reading “The Procrustean Approach” By Don Maisch PhD – It can be downloaded from the internet as a PDF.

The Australian College of Environmental Sciences [www.aces.edu.au](http://www.aces.edu.au) recommends the following levels of RF for living spaces.

	Living Area	Sleeping Area
Pulsed Radio Frequency/ Microwaves	< 10 μW/m <sup>2</sup>	< 5 μW/m <sup>2</sup>

As you can see Building Biology Standards are millions of times lower than those set by authorities.