

Electromagnetic Fields (EMFs) and us

Just to help to decode (and to remember) the many strange words, acronyms and other complicated terminology in next week's talk I've compiled a list here. It's in no particular order (and is probably incomplete) but all will appear at some stage.

ICNIRP International Commission on Non-Ionizing Radiation Protection

'ICNIRP 1998' and 'ICNIRP 2020' the "old" and the "new" ICNIRP "Guidelines"

Ofcom The Office of Communications (a quango) that calls the shots

EIRP Effective Isotropic Radiated Power ($= G_t P_t$) relative to an isotropic source

Isotropic The same in all directions

ERP Effective Radiated Power ($= G_t P_t$) relative to a halfwave dipole antenna

EIRP is always 2.15dB greater than ERP

Transmit antenna gain G_t

Transmitter power into the antenna P_t

PEP Peak Envelope Power

NF and FF Near-Fields and Far-Fields

'Lambda over two pi' ($\frac{\lambda}{2\pi}$) the boundary between NF and FF. measured in wavelengths

Power Density ($S = E \times H$), measured in watts per square metre (W/m^2)

E Electric field intensity in volts per metre (V/m)

H Magnetic field intensity in amps per metre (A/m)

Zo Intrinsic (or characteristic) impedance of free space ($Z_o = E/H = 377$ ohms) **always** in the FF; note that Zo can also mean the characteristic impedance of a transmission line – but not here.

Boresight The direction of the major lobe of the antenna's radiation pattern

Sidelobes All other lobes

Duty cycles When you transmit and when you receive (in percent)

Mode factor The fraction of your transmitted signal which hits its peak (PEP) value (always $\leq 100\%$)

Radiated and Stored energy Those far-fields and near-fields

Controlled Environment People within it have been informed of the existence of EMFs (i.e. "us")

Uncontrolled Environment Where the general public happens to be

Compliance Distance The minimum distance anyone has to be from a radiating antenna