

RSGB EMC COMMITTEE WEB SITE REFERENCE SECTION

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Part of Appendix 7 of *The RSGB Guide to EMC*

TECHNICAL TERMS AND ABBREVIATIONS

The meanings given are those normally used in informal technical discussion.

ADSL Asymmetric Digital Subscriber Line. A system of transmitting digital signals over telephone lines without affecting normal voice operation. The asymmetry refers to the fact that large amounts of data pass down to the customer in response to relatively short signals in the other direction.

Aerial Same as 'antenna'. Widely used in the UK in relation to domestic radio and TV etc. ('Antenna' is used for most engineering purposes.)

Antenna A radiator or collector of electromagnetic energy.

AMU Antenna matching unit. Same as ATU.

ASCII American National Standard Code for Information Interchange.

ATU Antenna (or aerial) tuning unit. Device to tune out the reactance of an antenna, and match the radiation resistance to the load or source – usually 50Ω.

Balun Balance-to-unbalance transformer. Often used to connect an unbalanced (coaxial) feeder to a balanced antenna.

BCI Interference to broadcast radio reception.

Beryllia Beryllium oxide. A white ceramic used in power transistors etc. Very toxic when in the form of fine particles.

Breakthrough Used (particularly by radio amateurs) to describe interference caused by the legitimate radiation from a transmitter entering a piece of equipment which has insufficient immunity.

Bond To connect together by a low-impedance path.

Braid The woven outer conductor of coaxial cables. The woven screen around screened cables. A woven (flat) conductor which gives a large conductor area and hence a low inductance.

Capture area The hypothetical area of space from which a receiving antenna can draw power.

CE mark The letters 'CE' in the form of an specific mark. The mark indicates that the product is manufactured to comply with the relevant regulations of the European Community. On almost all electronic equipment this includes the EMC regulations. In some cases the mark may be on the instructions for use or the packing instead of the item itself.

Characteristic impedance The resistive impedance presented to an RF

signal by an infinitely long transmission line or by a transmission line terminated in a resistance equal to the characteristic impedance.

Choke An inductor used to restrict the flow of AC.

Code Often used by amateurs (particularly in the USA) as an abbreviation for Morse code.

Common-mode currents Currents flowing in one direction on two or more conductors, in contrast to the go-and-return differential signals.

Counterpoise A wire suspended some distance above the ground, insulated from earth, and connected to an antenna system in place of a true earth.

CW Short for 'continuous wave' telegraphy. Signalling by keying the carrier on and off. In amateur use it usually means Morse code.

Earth (radio) A conductor buried in the ground. Assumed to be at zero potential for radio frequencies.

Earth (mains) The protective conductor (at nominal earth potential).

EMC Electromagnetic compatibility. The ability of electronic devices and systems to operate without mutual interference.

EMC regulations (European) Regulations covering the EMC performance of products sold within the European Community.

EMI Electromagnetic interference.

EMP Electromagnetic pulse. A large pulse of electromagnetic energy caused by lightning or nuclear explosion.

ERP Effective radiated power. The power radiated in the direction of maximum radiation. The power supplied to the antenna multiplied by the gain.

Far field The field at a distance where the energy is no longer affected by the antenna. The electric and magnetic fields are at right-angles to one another, and to the direction of propagation. Also known as the 'radiation field'.

Feedthrough capacitor A capacitor which mounts directly onto a screen and has a lead passing through it.

Feeder A transmission line used to transfer the power from a transmitter or ATU to the antenna. Usually a coaxial cable or open-wire line.

Ferrite Magnetic material which can be manufactured with a wide range of properties. Usually it has a high electrical resistance.

Filter A circuit which allows some frequencies to pass with a small loss, while attenuating other frequencies.

Ground (radio) Same as earth.

Ground (signal) The path by which an unbalanced signal returns to its source.

Ground (system) Zero potential to which other potentials are referred. Chassis potential.

Ground, clean A ground connection reserved for small-signal operation. (Separate from the main ground).

Ground plane (of a circuit) A large area of copper comprising all or most of one side of a PCB. Effectively connects together points of nominal zero potential by a low-impedance path. The 0V power supply rail is usually connected to the ground plane.

Harmonic A spurious emission harmonically related to the carrier.

Image interference Interference caused by an unwanted signal, which is on the opposite side of the local oscillator to the wanted signal, beating with the local oscillator to give the IF.

Intermods Short for 'intermodulation products'. Outputs (usually unwanted) caused by two or more signals mixing in a non-linear circuit.

Instability Unwanted oscillation, or a tendency to oscillate.

ISM (industrial, scientific, medical) A radio band allocated for these purposes.

Mains The domestic electricity supply.

Mode conversion (in data transmission systems) The conversion of differential currents to common-mode currents due to imperfections in a nominally balanced system.

Near field The field relatively close to an antenna, where energy is exchanged between the field and the antenna. The relationship between the electric and magnetic fields is complex.

Parasitic oscillations An unwanted oscillation involving circuit conditions incidental to the main design aims.

Pass band The band of frequencies passed by a filter with small loss.

PCB Printed circuit board.

PCB Polychlorinated biphenyl: oil used at one time in certain types of transformers and capacitors etc. Highly toxic; can be absorbed through the skin.

PIPs Passive intermodulation products. Intermods caused by corroded contacts in passive metalwork such as masts and gutters.

PME Protective multiple earthing (see Appendix 1).

PMR Private mobile radio. Radio communication for business purposes.

Polarisation (of radio wave) The direction of the electric field. May be linear (eg horizontal or vertical), circular (rotating) or elliptical (a combination of linear and circular).

Primary user This is an official definition. So far as amateurs are concerned, it is the service which has the 'right of way' on a shared band.

Protected service So far as amateurs are concerned, this means a service which can expect official action to be taken against sources of interference. Amateur radio is not a protected service.

Radiation resistance A fictitious resistance which would dissipate the same power as that radiated by a particular antenna when transmitting or which would be the source resistance when receiving.

Radiation field Same as 'far field'.

Rail A power supply line, eg +5V rail; -12V rail; 0V rail etc.

RFI Radio-frequency interference.

SCART A 21-pin connector used on television receivers and similar equipment. It stands for 'Société de Constructeurs d'Appareils Radio récepteur et Téléviseurs'. Also known as 'Peritel' or 'Euroconnector'.

Screen Conductive enclosure or partition. Sometimes used instead of 'braid' to describe a woven outer conductor.

Secondary user This is an official definition. So far as amateurs are concerned, it is the service which does not have 'right of way'. On a shared band, where the Amateur Service is a secondary user, amateurs must not cause interference to the primary user.

Second-channel interference An old name for image interference.

Selectivity The ability to reject unwanted, off-tune signals while receiving the wanted one.

Shield Same as screen.

Splatter Spurious emissions relatively close to the nominal carrier frequency. Caused by non-linearity (often due to overdriving) in an SSB transmitter.

Spurious Short for 'spurious emission'. Any radiation outside the normal bandwidth of the transmission.

Stop band Frequencies which are attenuated by a filter. Frequencies outside the pass band.

Transmatch Same as ATU.

Transmission line Conductors arranged to convey RF energy between different parts of an installation. Usually coaxial cable or open-wire line.

TVI Interference to TV reception.

VCR Video cassette recorder.

VDSL Very High Speed Digital Subscriber Line. A proposed system which would enable high-speed data to be passed over telephone lines.

White noise Noise which can be resolved into a continuous spectrum of component frequencies. The power in equal bandwidths at any part of the spectrum is the same. Called 'white' by analogy with white light which contains all colours.

0V (rail) Zero potential to which other potentials are referred. Normally the 0V terminal of the power supply is connected to this rail. Often used interchangeably with 'ground'.