


Ham Radio Glossary and Definitions

Ham radio jargon and terminology can be cryptic, exclusive, and confusing. This informal, brief, and semi-non-technical glossary of terms might help.

- Hover over a word in green for a brief clarification
- Click on a picture to display a larger or clearer version
- Includes many of the terms found on the licensing exams
- Some of these terms are not unique to ham radio, but might be used heavily in the ham community
- For fun, click *Collapse all sections* and browse the pictures.

Collapse all sections

A

A-index / A index / A_P-index
: See **geomagnetic index**

absorption
- Intake or assimilation (acceptance, unlike either **reflection** or passing through) of **radio waves** by the **ionosphere** or other object
- Rate or amount of **radiation** deposited in the human body as a result of **RF** exposure

AC
: *alternating current* : electric charge flow (**current**) that periodically reverses direction; see also AC on Wiki

AC coupling
: See **capacitive coupling**

AC line noise / AC line interference
: See **power line noise**

AC power
: See **household power**

AC power line / AC line
: See **power line**

across the pond
: Slang for ***the other side of the ocean*** or ***across the ocean*** (typically the *Atlantic*, and often between the US and the UK, but not necessarily)
: *We might need to start sending **QSL cards** across the pond again*

ACSSB
: *amplitude-companded single-sideband* : narrowband **SSB modulation** technique that uses **companding** to compresses an **audio** signal and **combine** it with a pilot signal prior to transmission, then expand (decompress) the signal during reception, using the pilot signal as a reference, which improves the effective audio range of the **voice** signal; see also ACSSB on Wiki

activation
: Act of alerting, intiating, mobilizing, and setting in motion a trained **emergency** service (such as **ARES** and **RACES**) to provide their services in a timely manner

active element
: See **driven element**

active power
: See **power factor**

adaptive filter
: **Audio filter** used in **digital signal processing** to remove unwanted **noise** from a received **SSB** signal; see also adaptive filter on Wiki

ADC
: ***analog-to-digital converter***

admittance
: Quantity of allowance for **current** flow in a circuit, expressed in *siemens* (symbol S) and defined as the reciprocal of **impedance**, such that Y = G + jB, in which Y is the admittance, G is the real **conductance**, j is the imaginary unit, and B is the **susceptance** see also admittance on Wiki

aerial
: **antenna**

AF
: ***audio frequency***

affirmative / affirm
: *yes*; see also voice procedure on Wiki

AFSK
: *audio frequency-shift keying* : type of **FSK** in which digital **data** is represented by changes in the frequency (pitch) of an **audio** tone (typically from a sound card) to shift the **frequency** of the transmitted (typically **SSB**) signal; see also AFSK on Wiki and types of radio emissions on Wiki

again
: *repeat it* : request to repeat a **call sign** or other identifying information
  Again? (please repeat that)
  Again, again? (please repeat that at least two more times)

AGC
: ***automatic gain control***

AGM
: *absorbed glass mat* : type of **VRLA battery** whose acid electrolyte is held in fiberglass mesh mats that surround conductive lead plates, and often used in **ham** radio **stations** as **standby** electric storage; see also AGM on Wiki

AIP
: *advanced intercept point* : **receiver amplifier** feature introduced by Kenwood™, in which the **third-order intercept point** can be manually adjusted, to help extend its **dynamic range** while reducing both nearby signal **interference** and **intermodulation distortion**

air waves
: Slang for organized ***radio waves*** or **radio frequency** in general; see also **on the air** and **over the air** and **off the air**
  You should announce that over the air waves

A_L / AL
: See **inductance index**

ALC
: ***automatic level control***

ALE
: ***automatic link establishment***

alien
- Person residing in the US, but is not a US citizen (also called a *resident alien*)
- Person living within the borders of a country, but is not a citizen of that country; see also alien on Wiki

alien reciprocal operation
: See **reciprocal operation**

alkaline batteries

alkaline
: Most popular type of non-rechargeable battery (there are some rechargeable ones, too) that offers a higher energy density and longer shelf life than do carbon-zinc batteries, but at a higher cost; see also alkaline battery on Wiki

alligator
: Slang for a **transmitter**, especially a **repeater**, that seems to transmit farther than it could receive a signal (think *big mouth, little ears*); see also **elephant**

AllStar
: Software-based system that **links ham** radio **stations** around the world through your cell phone or other computing device using Voice over IP; see also Radio over IP on Wiki and the official AllStar Link website

alpha
: **Bipolar junction transistor** parameter (also known as *common-base current gain*, symbol α) defined as the change in collector **current** with respect to emitter current; see also alpha and beta on Wiki and **beta**

alphabet
: See **phonetic alphabet**

altazimuth
: See **az-el**

AM
: ***amplitude modulation***

amateur
: - Person who is **licensed** to **operate** a **radio station** for **two-way** communication within the **amateur radio frequency** spectrum, often synonymous with **ham**; i.e., a ham **radio** operator
  - Practitioner, hobbyist, or promoter who is not paid for performing a particular service

Amateur Auxiliary
: American **amateur** radio organization consisting at one time, of **official observers** and now **volunteer monitors**, and operated by the **ARRL**, working in conjunction with the **FCC** to **monitor amateur radio frequencies** in the US to help **operators** self-police their compliance with rules; see also Amateur Auxiliary on Wiki and Amateur Auxiliary on ARRL

Amateur Extra
: Highest level **ham** radio **license class** obtainable in the US and some other countries, whose privileges cover all **frequencies** of all **amateur bands**, and that certifies the **licensee** as one having a much greater understanding of **FCC** regulations, operating practices, and electronics than that of a **General** class licensee; see also Extra license on ARRL

amateur radio
: Type of **radio** operation, distinguished from **broadcast**, **commercial**, and **official** radio, and implies that the **operator** is not paid for radio services; often synonymous with **ham** radio; see also amateur radio on Wiki and amateur radio on ARRL

amateur radio club
: Organized group of people (also called *amateur radio society*) who have (at least) **amateur radio** as a common interest, whether or not the individuals are **licensed hams** (because, for example, they're related to a ham or know one); see also ham radio clubs and ARRL-affiliated club search

Amateur Radio Emergency Service
: Corps of trained **amateur radio operator** volunteers organized to assist in public service and **emergency communication**; see also ARES on Wiki and ARES on ARRL

amateur radio satellite
: **Satellite** placed in orbit to serve (at least) **amateur radio** purposes; see also amateur radio satellite on Wiki and **OSCAR**

Amateur Radio Service
: See **Part 97**

amateur radio society
: See **amateur radio club**

amateur radio station
: See **station**

DC ammeter

ammeter
: Instrument that measures electric **current** by connecting it in series with the circuit, and is usually one of the functions found in a **multimeter**; see also ammeter on Wiki

amp
: - Short or abbreviation for ***ampere***

*There are 2 amps flowing through that **resistor***

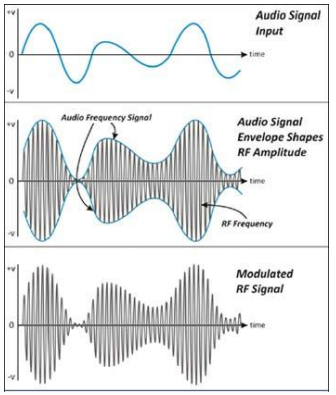
- Short for ***amplifier***

  My amp is starting to get warm

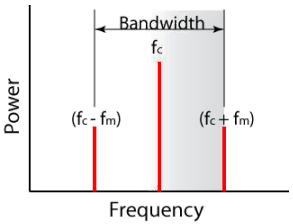
ampere / amperes
: See **current**

amplifier
- Device or circuit that outputs a signal that is identical to, but increased in intensity of, its input signal, the ratio of its output to input strength referred to as the amplifier **gain**, expressed in **dB**; see also amplifier on Wiki
- See **power amplifier**

amplitude modulation
: Method of combining an information signal (your **voice**, **CW**, **data** packets, etc.) with an **RF** signal of constant **frequency** (the **carrier**), so that the amplitude of the output signal varies with the information signal; see also AM on Wiki and **modulation**



AM waveform
© *HamRadioSchool.com*



AM spectrum

AMSAT
: **Amateur radio satellite** organization (officially *Radio Amateur Satellite Corporation*) that designs, builds, arranges launches for, controls, and maintains satellites with **amateur radio** payloads, including the **OSCAR** series of satellites; see also
  - AMSAT on Wiki
  - AMSAT on ARRL
  - main AMSAT website

AMTOR
: *amateur teleprinting over radio* : once fast-growing and pioneering **data** transmission **mode** that was an improvement over **RTTY** by using **FSK**, **FEC**, and **ARQ**, but is rarely used today; see also AMTOR on Wiki and AMTOR [PDF] on ARRL

analog / analogue
: Type of circuit or signal whose operational **voltage** levels vary continuously with time, such as that of an **integrated circuit operational amplifier** (op-amp); see also analog device on Wiki

analog-to-digital converter
: Device or circuit that converts an **analog** signal to a digital one by creating a digital value that represents each **voltage** amplitude; see also ADC on Wiki

analyzer
: See **antenna analyzer**

ANCS
: *assistant net control station* : the **station** or person who assists the **NCS** with **net** control responsibilities

Anderson connector
: See **Powerpole**

Andrew coax / Andrew cable / Andrew Heliax
: See **Heliax**

ANF
: *automatic notch filter* : circuit that, when enabled, performs the function of a **notch filter** by removing (filtering out) any continuous **carrier** signal that might be present in the **receiver IF passband**

angle modulation
: Process of varying (**modulating**) the phase angle of a sinusoidal **carrier** wave to transmit information, of which **frequency modulation** and **phase modulation** are two types; see also angle modulation on Wiki

angle of radiation
: Angle (often called *takeoff angle*), with respect to level **ground**, of the strongest or average **RF** field delivered from an **antenna system**; see also **far-field**

ANL

automatic noise limiter

anode

Positive terminal or **electrode** of a device or component, into which **current** flows; see also anode on Wiki (and **cathode**)

ANT

antenna

antenna

Device that converts electrical **power** into **radio waves** and vice versa; a piece of **radio** equipment by which radio waves are transmitted and / or received; see also antenna on Wiki

Some antenna types

- **beam**
- **Beverage**
- **Carolina Windom**
- **cubical quad**
- **delta loop**
- **dipole**
- **discone**
- **double Zepp**
- **doublet**
- **EH**
- **end-fed**
- **extended double Zepp**
- **fan dipole**
- **folded dipole**
- **G5RV**
- **half-wave dipole**
- **horizontal loop**
- **inverted-L**
- **inverted-V**
- **J-pole**
- **log-periodic**
- **magnetic loop**
- **NVIS**
- **off-center-fed**
- **quagi**
- **random wire**
- **rhombic**
- **skywire**
- **sloper**
- **T**
- **telescopic**
- **terminated folded dipole**
- **trap vertical**
- **whip**
- **Windom**
- **Yagi**
- **Zepp**

Some antenna categories

- **collinear**
- **directional**
- **ground plane**
- **monopole**
- **omnidirectional**
- **parabolic**
- **top-loading**
- **vertical**

Criteria antennas

- **dummy antenna**
- **isotropic antenna**
- **rubber duck**
- **sense antenna**

ham radio antenna

antenna symbol

antenna analyzer

Device that measures **antenna** and **feedline** characteristics, such as **impedance**, **SWR** (**efficiency**), and **bandwidth**; see also antenna analyzer on Wiki

antenna analyzer

antenna array

Multiple **antennas** installed or configured so that the combination results in a unit that exhibits greater **gain** and **directivity** than each might otherwise realize on its own; see also antenna array on Wiki

antenna array

antenna coupler

See **antenna tuner**

antenna current

See **common-mode current**

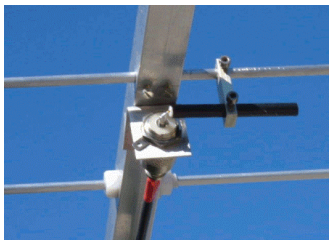
antenna efficiency
: Ratio of the total power radiated by an **antenna** with respect to the net power input to the antenna, equal to the ratio of the antenna's **radiation resistance** to its total (ohmic plus radiation) resistance, often expressed in **decibels** or as a percentage; see also antenna efficiency on Wiki

antenna element
: See **element**


antenna farm of JH4UYB

antenna farm
- Location dedicated to the placement of (usually many) **radio** and TV **antennas**; see also antenna farm on Wiki
- Geographical location, with established boundaries, in which **antenna** structures with a common impact on aviation may be grouped, as defined by **Part 17** of the **FCC** rules, section 2; see also section 8; of the same Part

antenna feed
: See **feed point**

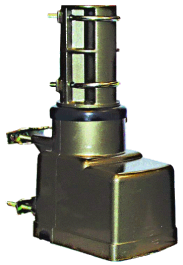

antenna (gamma) match

antenna match
: Device or circuit that modifies (***matches***) the **impedance** of the **antenna** to that of the **feedline** and / or **transmitter**, often achieved by an **antenna tuner**; see also antenna match on Wiki

antenna mount
: Device used to connect or install an **antenna** to a fixture, such as a **tower**, a building, or a vehicle, and includes such types as **mag-mount** and **NMO**

antenna party
: Event in which **hams** gather to help another ham erect an **antenna**, especially a **tower** or large **mast**

antenna pattern
: See **radiation pattern**


antenna rotator

antenna rotator / antenna rotor
: Device that changes the aim of a **directional antenna** by rotating the **antenna** assembly; see also antenna rotator on Wiki

antenna rotator controller / antenna rotator control unit / antenna rotor controller
: Electrical device that changes the aim of a **directional antenna** by sending signals to a **rotator** attached to the **antenna** assembly

antenna rotator controller

antenna switch

antenna switch
: Device (also called *coax switch* and *antenna selector*) that allows connection between the **transceiver feed line** and that for any one of several **antennas**, or between an antenna and one of several transceivers

antenna system
: Collection of components and interconnected devices that support the delivery and conversion of an electrical signal into an **RF** field, or reception of an RF field, for conversion into an electrical signal, often including but not limited to a **feedline**, **tuner**, **antenna** (including **elements**, **match**, and **traps**), **grounding**, **mast**, **tower**, **guys**, and associated **connectors** (can also include a **wattmeter** and an **SWR** meter, but does not typically include an **amplifier** or **analyzer**)

beam antenna atop an antenna tower

antenna tower
: Self-supporting structure used to support one or more **radio antennas**, and/or other equipment; see also antenna tower on Wiki

antenna trap
: See **trap**

(manual) antenna tuner

antenna tuner
: Device (also known as an *antenna tuning unit* or *antenna coupler* or *feedline coupler* or *matchbox* or *transmatch*) that **matches** the **impedance** of the **antenna** system with that of the **transceiver** to maximize **power** transfer from the transmitter to the antenna; see also antenna tuner on Wiki and antenna tuner operation on ARRL

antennae
: Outdated plural for ***antenna***; more than one antenna

anti-aliasing filter / anti-alias filter
: **Filter** circuit that prevents or reduces the (usually) undesirable effect known as aliasing, which is the construction of a false (an *alias*) signal from a sample of the original signal, usually the result of under-sampling; see also anti-aliasing fliter on Wiki and anti-aliasing in decimation on Wiki

apparent power
: See **power factor**

appliance operator
- Typically derogatory term for an **amateur radio** operator who possesses little desire to **build**, tinker with, or repair **radio** equipment, or one who has little desire to increase understanding of internal radio equipment operation or radio theory; so-called because the person is content with *operating* a piece of equipment that has been purchased (*appliance*) to perform a specific function, with little desire to understand more about the equipment and the **craft** than what the **licensing** examination had required

- **Amateur radio** operator who frequently relies on others to configure or repair **radio** equipment because of unfamiliarity with the controls or settings necessary to perform satisfactorily

APRS
: *Automatic Packet Reporting System* : digital communication **protocol** (**packet** radio) for exchanging information among a large number of **ham** radio **stations** covering a relatively large area; see also APRS on Wiki and APRS on ARRL

AR
: **Morse code prosign** for ***the end***, to indicate the end of a formal message; see also prosigns on Wiki

ARC
: ***amateur radio club***

arcing / electric arcing
: Electrical breakdown of one or more gases to produce a plasma discharge, caused by electric current flowing through air, which is normally non-conductive; at one time called *voltaic arcing*; see also electric arc on Wiki
Note: arcing can also occur in a vacuum, but vacuum arcing is due to a slightly different set of circumstances


arcing between wires


lightning, a form of arcing

ARDF
: ***amateur radio direction-finding***

AREDN
: ***Amateur Radio Emergency Data Network***

ARES
: ***Amateur Radio Emergency Service***

ARISS
: *Amateur Radio on the International Space Station* : program that allows **ham** radio **operators** on earth to communicate with astronauts aboard the **ISS** for educational purposes; see also
  - ARISS on Wiki
  - ARISS on ARRL
  - main ARISS

ARL number
: See **ARRL radiogram number**

ARQ
: *automatic repeat request* or *automatic repeat query* : technique for controlling **data** transmission errors by requesting a re-transmission of the same data; see also ARQ on Wiki

array
: See **antenna array**

arrester / arrestor
: See **lightning arrester**

ARRL
: *American Radio Relay League* : non-profit association of **amateur radio** enthusiasts, and the primary representative organization of amateur radio **operators** to the US government; see also ARRL on Wiki

ARRL radiogram number
: Shorthand code (abbreviated *ARL number*) used in composing formal written ARRL radiograms, as part of the **NTS** program; see also ARRL Numbered Radiogram on Wiki

ARRL Section
: Any one of the American and Canadian geographic areas, as defined and designated by the **ARRL**; see also Sections on ARRL and ARRL Section map

ARS
- ***Amateur Radio Service***
- ***automatic repeater shift***
- ***amateur radio society***

artificial ground

- Device or circuit that presents an **RF** reference or in the absence of an actual **earth ground** connection, to allow an **antenna** to be **mounted** above ground level (such as on a tower or multi-story apartment building), for example
- Device or circuit (also known as a *virtual ground*) that maintains a reference **voltage** at a specific point in the circuit without being directly connected to the actual **ground** point; see also virtual ground on Wiki

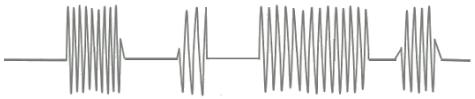
artificial ground

ARTS
: *Auto-Range Transponder System* : automatic polling and reporting system in which multiple **transceivers** communicate with each other through a **protocol** (*handshake*) that helps one transceiver determine whether other similarly equipped transceivers are located, within a predefined physical proximity sufficient for reliable communication, found primarily in Yaesu® transceivers, but supported in Motorola™, TYT™, and other radio makes as well

ASCII
: *American Standard Code for Information Interchange* : seven- or eight-bit code for representing text characters in computers, text-based communication equipment, and **data** transmissions; see also ASCII on Wiki

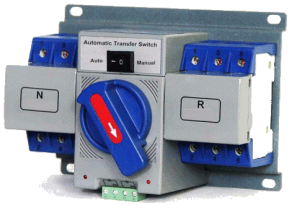

Input binary sequence

ASK
: *amplitude-shift keying* : low-rate **data** transmission **mode** that combines **digital communication** with **amplitude modulation**; see also ASK on Wiki


ASK Modulated output wave

astable multivibrator
: Circuit whose signal continuously alternates between two states without an external clock (also known as an **oscillator**) and can itself function as a clock circuit; see also astable multivibrator on Wiki

atmospheric noise
: Radio noise that originates from natural atmospheric processes, primarily lightning discharges in thunderstorms; see also atmospheric noise on Wiki and radio noise on Wiki



ATS
: *automatic transfer switch* : electrical device that automatically **switches** the path of electrical **power** from one **source** (typically **building main power**) to another (such as **battery** or generator) without manual intervention; see also ATS on Wiki

attenuation / attenuate
: **Loss** or reduction of signal strength; see also attenuation on Wiki

ATU
: ***antenna tuning unit***

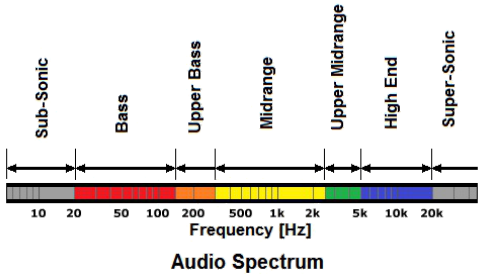
ATV
: *amateur television* : video and **audio** (**television**, also known as *fast-scan television*) transmissions made on **amateur radio frequencies**, usually on the **70 cm**, **33 cm**, and **23 cm bands**, in that order by popularity; see also ATV on Wiki and ATV on ARRL

audio
- Audible (**audio frequency**) sound, which is **modulated** and **transmitted** by one **station**, then **received** and **demodulated** by another, to reproduce the audible sound
  *A **product detector** is well-suited for demodulating **SSB** signals to generate the audio*
- Sound quality or level (volume)
  *Your audio is very loud, but has a lot of **steam***

audio check / audio report
: **Test** for (*report* on) **sound quality**, such as loudness, understandability, **distortion**, background **noise** (such as **static**, **steam**, and **hum**), echo, distance from the **microphone** whether you're **cutting out** or **dropping out**, or are using sufficient **microphone gain**; see also **radio check** and **signal check**
  This is KNØJI...may I please get an audio check?

audio frequency

Non-**electromagnetic** vibration **frequency** range audible to the human ear, encompassing roughly 20 to 20,000 Hz; see also audio frequency on Wiki



Audio Spectrum

audio FSK
See **AFSK**


Aurora Borealis

aurora
- Visible natural phenomenon resulting from the interaction between charged particles in the **solar wind** and the **ionosphere** (primarily the **E layer**), where the earth's magnetic field has deflected the particles toward the regions surrounding its magnetic poles, the display near the north magnetic pole called *Aurora Borealis* (northern lights) and the one near the south magnetic pole called *Aurora Australis* (southern lights); see also aurora on Wiki
- Type of **skip propagation** made possible by **radio waves** reflecting off the charged ceiling produced by an aurora (auroral **scatter**), resulting in a fluttery or raspy sounding signal, making **CW** possibly the best **mode** of **radio** communication applicable to this phenomenon; see also auroral skip on Wiki

auroral-E / auroral E
Type of **auroral propagation** that occurs as **radio waves** are **reflected** off the **ionospheric E layer** near the earth's magnetic poles, normally during the time of day as auroral activity begins to diminish

auto repeater
See **automatic repeater shift**

auto tuner

auto tuner / autotuner / automatic tuner
Type of **antenna tuner** that requires little user-intervention to perform the **tuning** functions; see also auto tuners [1994 PDF] on ARRL

automatic control
Type of **station** control in which the **control operator** is not physically at the **control point** and *not actively manipulating* the station controls, such as **repeater** operation (when the operator begins actively manipulating the controls, the control type becomes **remote control**)

automatic gain control
Self-controlling **receiver** circuit that attempts to maintain a constant level of **audio** output by automatically adjusting the **gain** of the input signal; see also AGC on Wiki

automatic level control
Self-controlling **transmitter** circuit that attempts to maintain a constant level of **power** output by automatically adjusting the **gain** of the **amplifier** to prevent it from overloading, thereby reducing **distortion** and possible physical damage to the **final stage** due to excessive **drive**

automatic link establishment
Digital communication protocol for **automatically** (without **operator** assistance) initiating and sustaining **HF** communication, to provide a rapid but reliable contact between **stations** in spite of changing **ionospheric propagation**, reception **interference**, and **band** congestion; see also ALE on Wiki and ALE [PDF] on ARRL

automatic noise limiter / automatic noise-limiter / automatic noise limiting
Circuit that reduces wide-band (often **FM**) **receiver** impulse and **static noise** peaks by limiting their amplitude (sets the **clipping** level) according to the incoming signal strength; see also limiter on Wiki

*Note: because the two are often confused, **ANL** filters the unwanted signal by limiting amplitude while **NB** filters it by attenuating the signal for the duration of the noise*

automatic repeater shift

Technique that allows a **transceiver** to automatically set the **repeater** shift (**offset**) and **direction** for a manually tuned **frequency**, with assumptions based on a local (national) **band plan**

autopatch

Interface between a **repeater** and the local telephone service (also known as a *phone patch*), allowing you to make regular phone calls from your **ham** radio by the use of **DTMF** tones; see also autopatch on Wiki and autopatch guidelines on ARRL

*Note: one type of autopatch, known as **simplex** autopatch (or **simpatch**) is implemented through a non-repeater **station** connected to the local telephone service*

AUXCOMM

Auxiliary Communications or *Auxiliary Emergency Communications* : intense, multiple-day training course by the Department of Homeland Security that augments local **emergency** communication types that include, but is not limited to, **amateur radio**; see also

- AUXCOMM training by DHS
- article on ARRL's take [PDF]
- main AUXCOMM website

auxiliary remote base

See **remote base**

auxiliary station

Amateur station that **remotely controls** controls another station over a **radio link**; see also remote base station on Wiki and auxiliary stations on ARRL

AVC

automatic volume control : former name for ***AGC***

average power

- Also called *mean power*, the total amount of energy expended, dissipated, absorbed, transferred, or required in a given amount of time, or $\overline{P} = \Delta E / \Delta t$; see also average power on Wiki
- Quantity of **real power** in an **AC** circuit

AWG

American wire gauge

- American *standard* for diameter, size, thickness, or **current**-carrying capability of wire and other materials; see also AWG on Wiki
- American *designation* (also abbreviated *gauge*) for the diameter, size, thickness, or **current**-carrying capability of a particular electrical wire model, as in *12 AWG*

AX.25

Amateur X.25 : **digital communication protocol** designed for **amateur radio** and used by **APRS** to transmit and receive **packet** frames that contain **beacon data** (location information); see also

- AX.25 on Wiki
- AX.25 on ARRL (as it applies to APRS)
- main AX.25 website

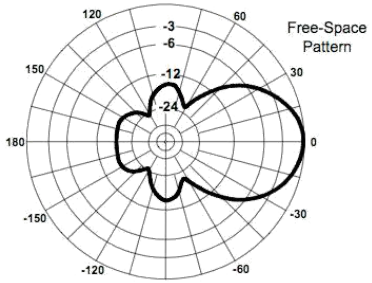
az-el rotator shown on a satellite antenna mount

az-el / azel

azimuth-elevation : description (also called *altazimuth*) of an **antenna mount** or other equipment that is capable of aiming an **antenna** not only radially but also up at an angle toward the sky, useful in activities such as **EME**, **satellite**, and **space station** communication; see also altazimuth mount on Wiki

azimuthal / azimuth

Radial appearance of something as you look down at it from above; for example, an azimuthal **radiation pattern** of an **antenna** is its transmission strength pattern as seen looking down on it from above the antenna; see also azimuth on Wiki and **E-plane** and **H-plane**



an antenna's azimuthal radiation pattern

B

backlash current
: See **reflection**

backscatter / back scatter
: **Scattered radio wave reflection** off the **ionosphere**, often received on a **frequency** above the **MUF**; see also backscatter on Wiki and auroral backscatter on Wiki

bacon frying
: See **steam**

bad solder joint
: See **cold solder joint**

bail-out bag / bail out bag
: See **go-kit**

balanced feedline / balanced feed line / balanced line
: Pair of electrical **transmission line** conductors, both of the same size, shape, and material (and therefore the same **impedance**) their entire lengths, whose chief advantage is **noise** rejection, and of which **twin-lead**, **ladder line**, and twisted-pair are examples; see also balanced feedline on Wiki and **unbalanced feedline**

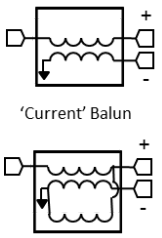
balanced modulator
: Circuit whose input is a **carrier** signal and the **modulating** signal, and whose output is **double-sideband, suppressed-carrier** (the two **amplitude-modulated** sidebands without the carrier); see also balanced modulator on Wiki

balanced tuner / balanced-line tuner
: Type of **antenna tuner** whose symmetrical output circuit presents conductors with identical impedances with respect to **ground**, meaning they appear as though they contain separate tuning circuits for each conductor, but are adjusted in parallel, to ensure equal impedance presentation; see also balanced tuner on Wiki

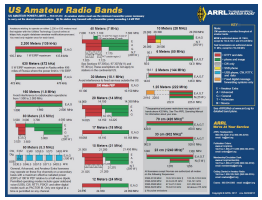
balun
: Type of **transformer** inserted between a **balanced feedline** (such as **ladder line**) or **antenna** (such as a **dipole**) and an **unbalanced feedline** (such as **coaxial cable**) to either provide an **impedance match** (***voltage balun***) between the two, or to function as an **RF isolator** (***current balun***) to prevent the feedline from radiating; see also balun on Wiki and **unun**

current balun


balun cutaway



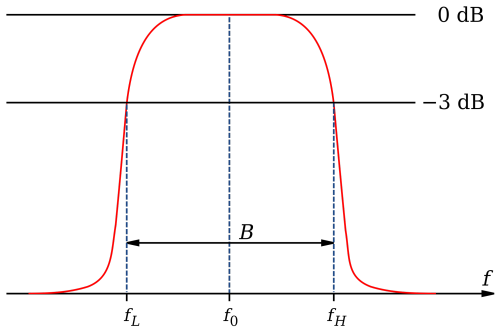
band
: One or more sets of continuous **frequencies** within the **electromagnetic spectrum** that have been allocated by the **FCC** or **ITU** for communication purposes by specific groups, such as **amateur radio**, or specfic uses, such as **radar**; see also the FCC Amateur Radio Frequency Band Allocation Chart [PDF] for all **ham** radio bands and band on Wiki



band allocation chart

band conditions
: Atmospheric (weather, etc.), **geomagnetic**, **solar**, and other activity that in concert affect **RF propagation** for a particular **band**

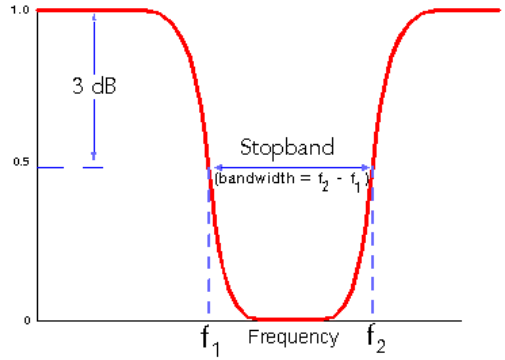
band-pass filter / bandpass filter / band pass filter
: Circuit or device that **filters** out most or all signals of **frequencies** outside a particular **passband**, thereby allowing only signals within the **bandwidth** to *pass through* the device, useful for **tuning** and other applications that require receiving or transmitting within a relatively narrow frequency range; see also band-pass filter on Wiki



band-pass filter graph

band plan
: Voluntary allocation of a **band**, usually specified for a particular geographical location, to avoid **interference** between incompatible **modes**; see also amateur bandplan on Wiki and band plan on ARRL

band-reject filter / band-stop filter / band reject filter / bandstop filter
: Circuit or device that **filters** out most or all signals of **frequencies** within a particular **stopband**, thereby allowing all signals except those within the **bandwidth** to *pass through* the device, useful for the removal of an interfering frequency such as the **carrier** signal; see also band-stop filter on Wiki



band-reject filter graph

band segment
: See **sub-band**

vintage receiver with bandspread tuning control

bandspread / / band-spread / band spread
- Mechanical or electrical fine-tuning control on older (***vintage***, *obsolete*) **receivers** and **transceivers** whose primary **tuning** is very coarse for the **band** size; see also bandspread on Wiki
- Granularity (resolution) of **tuning** required to select a single **frequency** on a particular **receiver** (how close together the **stations** seem to be)

bandstop filter / band-stop filter / band stop filter
: See **band-reject filter**

bandwidth
- Absolute value difference between the highest and lowest **frequencies** you are using; see also bandwidth on Wiki
- Continuous range of **frequencies** being used by a particular transmission or piece of **radio** equipment
  *Many **FM** transmissions are limited to a 12.5 kHz bandwidth*
- Continuous range of frequencies allocated for use in a particular **band**
  *The **phone** section of the **12-meter band** has a bandwidth of 60 kHz*

barefoot
: Slang for ***without an amplifier***
: *I was able to **contact** Japan barefoot*

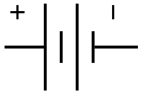
base station
- **Transceiver** that is typically too large to be normally carried around by hand or installed in a vehicle
- **Transceiver** that is installed in a home or other fixed location, regardless of transceiver size or facility type; see also base station on Wiki
- **Amateur radio station** (also called *fixed station*) that is established in a permanent structure with equipment not intended for **portable** operation; see also fixed station on Wiki


base station transceiver

baseband / base band
- **Frequency** components present in the **modulating** signal (in other words, the original unmodulated signal); see also baseband on Wiki
- **Bandwidth** of an **unmodulated** signal

battery
: **DC** electric energy **source** consisting of one or more electrochemical cells that convert stored chemical energy into electrical energy; see also battery on Wiki and battery sizes on Wiki


batteries


battery symbol

battle box / battle-box
: See **go-kit**

baud
- Number of **data** symbols transmitted per second, also known as *symbol rate*; see also baud on Wiki
- Modulation rate of **data** transmission, expressed in *bits per second*

Baudot code
: Outdated 5-bit code for representing text characters in teletype and other text-based communication equipment; see also Baudot code on Wiki

bayonet
: Common (with many light bulbs, data cables, CD packaging spindles, and camera lenses) fastening mechanism used by some **coaxial cable** connectors, such as **BNC connectors**, characterized by a push-and-turn attachment method; see also bayonet mount on Wiki

BBHN
: ***Broadband-Hamnet***

BCI
: *broadcast interference* : **electromagnetic interference** originating from a **broadcast radio** or **television transmitter** and picked up by an **amateur radio station** because of **crosstalk** or **front-end overload**

BCL
- *broadcast listening* : hobby of listening to **broadcast radio stations** primarily for informational or entertainment purposes
- *broadcast listener* : outdated term for a person who participates in *broadcast listening*

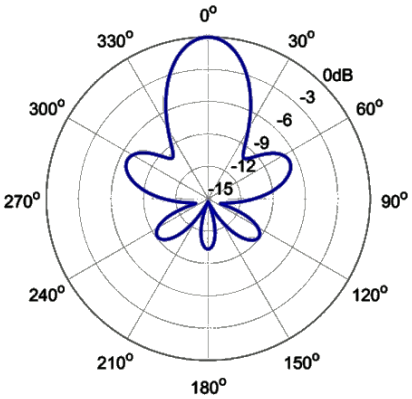
beacon
- **Amateur radio station** that transmits information about **band openings** and **satellites**, and can be used to test equipment, perform experiments, and observe **propagation** and reception ability; see also radio propagation beacon on Wiki
- **Transmitter** used or automatically enabled during a time of distress or **emergency**, to alert others (especially **Search and Rescue**, military, or other emergency personnel); see also **emergency locator transmitter**

beam antenna
: Type of **Yagi directional antenna** that possesses high transmission and reception performance while exhibiting relatively large **interference** reduction; see also beam antenna on Wiki and HF beam antennas on ARRL


beam antenna

beamwidth / beam width

Angle between the half-power (-3 **dB**) points on the main lobe of an **antenna**'s **radiation pattern**; see also beamwidth on Wiki



antenna pattern showing approximately 34° beamwidth

beat frequency oscillator

Circuit or device in a **radio receiver** that converts **SSB** and **CW** signals to **audio frequency** (see **demodulation**); see also BFO on Wiki

BER

- *bit error rate* : number of received data stream bits per second unintentionally altered due to **noise**, **interference**, **distortion**, or bit synchronization errors, often expressed as a percentage; see also BER on Wiki
- *bit error ratio* : ratio of the number of received data stream bits unintentionally altered, to the total number of bits transmitted, often expressed as a percentage

beta

Bipolar junction transistor parameter (also known as *common-emitter current gain*, symbol β) defined as the change in collector **current** with respect to base current, and is the parameter most commonly associated with transistor **gain** (ability to amplify a signal); see also alpha and beta on Wiki and **alpha**

Beverage antenna

Type of very long and low directional receiving **antenna** made primarily for **HF** and **MF frequencies** and is characterized by its large size, often extending for miles and has comprised some of the world's largest continuous antennas, but is not typically used for transmitting due to high **losses** compared with that of other antennas; see also Beverage antenna on Wiki


modern 160-meter Beverage antenna, about 280 m in length

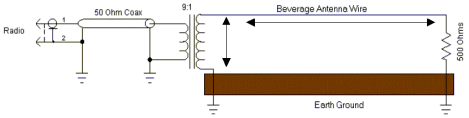


diagram for a Beverage antenna about 6 feet above ground and at least 1 wavelength long

BFO

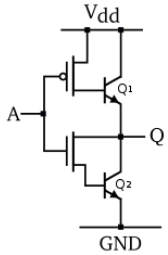
beat frequency oscillator

BFSK

binary frequency-shift keying : low-rate **data** transmission **mode** in which the signal is shifted between two **frequencies** to convey the information, in which a **1** is identified by the **mark** frequency and a **Ø** is identified by the **space** frequency; see also FSK on Wiki and FSK (and other digital modes) on ARRL

BiCMOS

bipolar complementary metal-oxide-semiconductor : **integrated circuit** logic family that uses both **bipolar** and **CMOS transistors**, to offer the high input **impedance** of CMOS and the low output impedance of bipolar transistors; see also BiCMOS on Wiki



BiCMOS internal schematic

bilateral agreement / bilateral arrangement / bilateral operating agreement

Set of rules agreed upon by two countries to authorize **amateur** radio operation in one or both countries by a person who is not a citizen of (***alien** to*) one or both countries

bipolar junction transistor

Transistor characterized by low input **impedance**, using emitter, base, and collector **electrodes**, and whose **current** flow characteristics are determined by the contacts of different **semiconducting** materials in the device; see also bipolar junction transistor on Wiki

bird

Slang for ***satellite***, especially one used as a **ham** radio **repeater**; see **satellite** and **OSCAR** (unrelated to the BIRD satellite)

birdie / birdy

Slang for a phantom (false) chirping or **quiet audio** that is produced by a **superheterodyne receiver** being **tuned** to a **frequency** that is a multiple of the output frequency of one of its own **oscillators**, and can often be hidden by increasing the **squelch** level

BJT

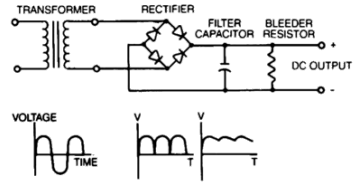
bipolar junction transistor

black hole

See **dark side of the moon**

bleeder resistor

Resistor that is connected in parallel with the output of a high-**voltage power supply** to discharge the energy stored in the supply's **filter capacitor**, improving output voltage **regulation** when the supply is on, and to *bleed off* the remaining electric charge when the supply is off, to allow for safe handling; see also bleeder resistor on Wiki



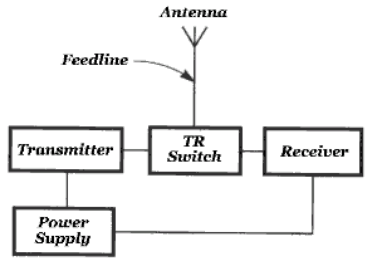
schematic showing bleeder arrangement

blind zone

See **skip zone**

block diagram

Drawing or other visual aid containing boxes, figures, or shapes to graphically display the high-level interconnection, interdependency, or interoperability between the **stages** or other major functional sections of a device; see also block diagram on Wiki



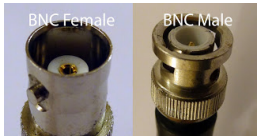
transceiver block diagram

blocking dynamic range

Difference in **dB** between the **noise floor** and the level of an incoming signal that will result in **1 dB** of **gain compression**

BNC

bayonet Neill-Concelman : model name for a common quick connect / disconnect 50 Ω or 75 Ω **coaxial cable feedline connector** used in **VHF** and **UHF** applications; see also BNC connector on Wiki and RF connector on Wiki



BNC connectors

Hallicrafters boat anchor

Heathkit boat anchor

boat anchor / boatanchor

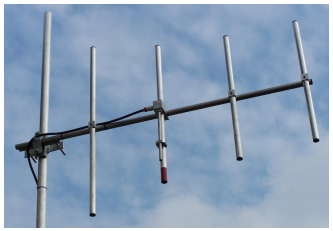
Slang for a heavy, old (***vintage***, *antique*, *obsolete*) ***tube radio*** that's typically powered by **AC** (**house current**) for its internal **power supply**, which lends to its extra weight; see also boat anchor on Wiki

bonding

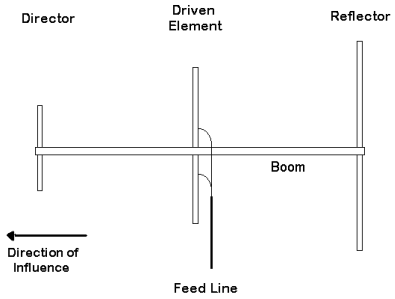
Practice of electrically connecting all exposed metallic items not normally designed to carry electric **current** in a room, building, or system, as a protection from electric shock by ensuring they are at the same electric potential, particularly **ground** potential if possible; see also bonding on Wiki

boom

Rigid crossbar, **beam**, or other member for supporting the weight, shape, and placement of the **active**, **parasitic**, and other **antenna elements**, along with any other component necessary for the design and function of the particular antenna, and can be either conductive or non-conductive, depending on element placement



vertical Yagi antenna showing its elements held in place by the boom



boom placement with respect to Yagi elements

booming
: Slang for ***clear and very strong signal***; action of sounding **10 over 9** or better
: *This guy was booming from Ohio on **80 meters***

bootleg
: Older slang that describes some sort of illegal (indicating intentional) activity involving radio; see also **pirate radio** and bootleg radio on Wiki
- *bootleg* : describes illegally modified equipment or illegal radio operation
- *bootlegger* : person who operates on an **amateur radio frequency** either without an amateur **license** or uses a call sign not belonging to the operator
- *bootlegging* : operation on an **amateur radio frequency** without an amateur **license** or operation of a radio station containing illegally modified equipment (once applied primarily to **CB** operation)

bottle
: Older slang for ***vacuum tube***
: *I'm using a three-bottle **amplifier***

BPSK
: *binary phase-shift keying* : low-rate **data** transmission **mode** that uses **phase modulation** to shift between two phase angles of an **RF** signal to convey the information, and at one bit per symbol is the simplest form of **phase-shift keying**; see also BPSK on Wiki

braid / braided strap
: See **ground braid**

brass pounder
: Older slang for **telegraph operator** who uses a **straight key** instead of a **paddle** or **bug** to send **Morse code**

break
- Message announcement of great urgency, formerly (unfortunately still common) used to request entry into a current **QSO**
  : *Break! Break! Break! This is an **emergency**; all **operators** will please clear this **frequency***
  : *Note: the ARRL discourages using the word **break** except during an emergency (click **Joining a Conversation in Process**)*
- Pause between **station key-ups**

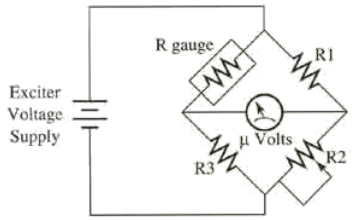
break-in / break in
: Attempt to transmit during a brief pause between two separate transmissions by others (or another), and have that transmission be heard or detected by them

breakdown voltage
: Minimum reverse **voltage** applied to a **diode** or **transistor** to cause the component to conduct in the reverse direction; see also breakdown voltage on Wiki

breaker
- See **circuit breaker**
- CB slang for an announcement by a transmitting operator who wants to start a conversation
- CB slang for a **radio operator** who wants to join a conversation in progress

breaking station
: **Radio station** that is attempting to join (**break in**) a conversation in progress

bridge circuit
: Electric circuit in which two circuit branches, typically in parallel with each other, are connected (*bridged*) by a third branch connected between the first two branches at some intermediate point along them, to measure a **voltage** null (zero volts), which confirms an **impedance match** between the two branches; see also bridge circuit on Wiki



bridge circuit

bridge rectifier
: See **full-wave bridge**

Broadband-Hamnet
: See **HSMM**

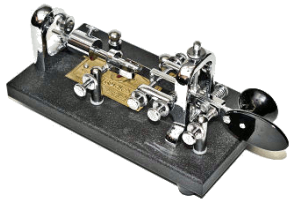
broadband noise
: As it applies to **radio** (as opposed to audio), type of **radio frequency interference** that has unusually large **bandwidth** or that is experienced in many **frequency** ranges over an unusually large spectrum

broadcast
- Type of one-way **radio** communication that is meant to be transmitted to the general public, also known as *broadcasting*; see also radio broadcasting on Wiki
- Transmit to the general public; making a one-way **radio** communication intended for the general public

broadside / broad-side / broad side
: Side of an object presenting the greatest amount of surface area, such as flat-facing sides of a **dipole antenna**, rather than its ends

$\overline{\text{BT}}$
: **Morse code prosign** for ***end of paragraph***, to indicate the end of a thought, idea, or thread, and the beginning of the subsequent one; see also prosigns on Wiki
Note: the code for $\overline{\text{BT}}$ is exactly the same as that for an equal ('=') sign

BTH
: See **OTH**


Vibroplex™ bug

bug
: Slang for a sideways-motion semi-automatic and non-electronic telegraph **key** made for high-speed **CW** transmissions; see also **Vibroplex** and bug on ARRL and **cootie**

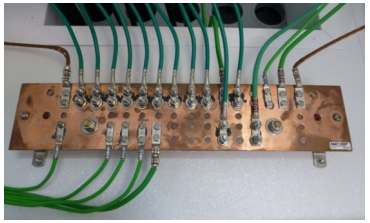
bug-out bag / bug out bag
: See **go-kit**

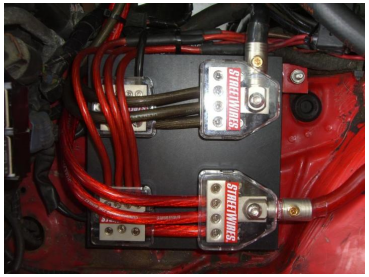
bullet connector
: See **SAE connector**

bureau
: Short for ***QSL bureau***

BURO
: ***QSL bureau***; see also **Morse code abbreviation**

bus
: Electrical conductor (sometimes misspelled *buss*) that provides multiple electrical devices a common connection or pathway, and is often un-**insulated**, but sufficiently heavy compared with the conductors that attach to it; see also electrical bus on Wiki
  - *ground bus* : thick, heavy plate or bar (*busbar*) that provides a common connection point for the **chassis ground** of multiple pieces of equipment, and that is typically **bonded** with **earth ground**
  - *power bus* : single, relatively large conductor (*distribution block*) that provides **power** (sufficient **current** at the intended **voltage**) distribution to multiple devices (some distribution blocks provide both positive and negative sides to devices)


ground bus



power distribution block with both a

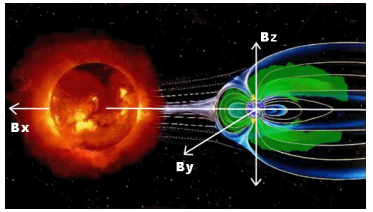
positive bus and a negative bus

business band
: See **commercial**

busted call
: Slang for a **log** entry that was entered incorrectly, usually during **contesting**

BW
: ***bandwidth***

B_Z / B sub Z
: Direction and strength of the **interplanetary magnetic field vector** component that is perpendicular to the ecliptic plane, with a southward orientation indicating an increased likelihood that incoming solar particles will cause disturbed **radio** conditions, such as **interference**



IMF diagram showing B_X, B_Y, B_Z components

C

C
- **Morse code prosign** for ***affirmative*** (*correct*)
- ***chirpy*** *signal* or *unstable signal*, when added to an **RST** report; see also **Morse code abbreviation**

CØG / C0G
: See **NPØ**

C4FM
: *continuous 4-level frequency modulation* : **data** transmission **mode** standard created by Yaesu® using **FSK** at two bits per **baud** to create its four **frequency** states; see also
  - C4FM on Utah VHF Society
  - main C4FM website

Cabrillo
: Text file format standard for **logging ham** radio **contacts** targeted for **contesting** submission or simple record-keeping; see also Cabrillo format on ARRL

California kilowatt
: Older slang for magnitude of transmitting **power** that exceeds the **legal limit**

call sign
: Unique combination of letters and decimal digits assigned to a **licensed radio operator** for identification, in the format XXNYYY for the US, of which XX is one or two letters, N is a decimal digit, and YYY is one, two, or three letters; see also
  - call sign on Wiki
  - call sign chart on Wiki
  - call sign rules on W5YI
  - **special event call sign**
  - **tactical call sign**
  - **vanity call sign**

calling frequency
: General **simplex frequency** (of which a **national calling frequency** is one) that is recognized across the US by a *gentleman's agreement* for incidental use, requesting non-urgent assistance, true **emergencies**, testing, and whose use in making casual or first-time **contacts** is encouraged; see also band plan on ARRL, which includes some calling frequencies, and a chart of amateur calling frequencies [PDF]

candy store
: Slang for a store or dealer that sells **ham** radio **gear**

cans
- Slang for ***cavity filters***
- Older slang for ***headphones***

CAP
: *Civil Air Patrol* : Civillian auxiliary of the US Air Force made of volunteers focused on **emergency** and **search and rescue** operations from an aviation perspective, and much of which involves **radio** communication; see also CAP on Wiki and the main CAP website

capacitance
: Property of a device that defines its ability to store electric energy in an electric field to resist changes in the **voltage** across it, expressed in *farads* (symbol F); see also capacitance on Wiki

capacitance hat
: Device (also known as a *capacity hat* or *roof capacitor*) that complements or counteracts the **inductance** of a **loading coil** for an electrically shortened (typically **vertical**) **antenna** by presenting a roof capacitance


capacitance hat

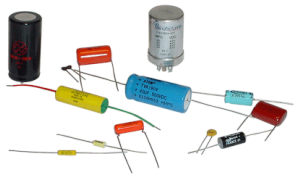
capacitive coupling
: Also known as *AC coupling*, effect of two or more conductors not connected to each other being close enough to allow an **AC voltage** present in one conductor to result in an AC voltage at the others, with respect to signal **ground**; see also capacitive coupling on Wiki

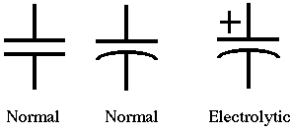
capacitive reactance
: Imaginary quantity of opposition to **current** flow in a circuit (**reactance**) due to **capacitance**, that varies with **frequency** and is expressed in *ohms* (symbol Ω) and defined as $\mathbf{X_C} = 1 / \omega C$, in which C is the capacitance and ω is the frequency in radians ($\omega = 2\pi f$, in which f is the frequency in Hz); see also capacitive reactance on Wiki

capacitive time constant
: See **time constant**

capacitive top-loading / capacitance loading
: See **top-loading antenna**

capacitor
: Electrical component (formerly *condenser*) that resists changes in the **voltage** across it and stores energy in an electric field; usually contains two electric conductors separated by a non-conducting **dielectric**; see also capacitor on Wiki


assorted capacitors



capacitor symbols

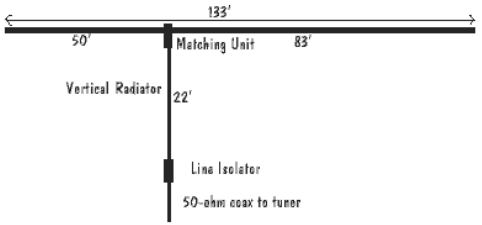
capacity hat / capacity top hat / capacity top-hat
: See **capacitance hat**

capture effect
: Phenomenon of a **receiver** demodulating the stronger of multiple received **FM** signals and completely suppressing the weaker ones; see also capture effect on Wiki

car-to-car
: See **talk-around**

card checker
: Person who is authorized by the **ARRL** to verify that the **contacts** made by a US **ham** toward an award (such as **DXCC**, **WAS**, or **WAC**) are authentic, according to the **QSL cards** collected by the candidate; see also card checker search on ARRL and **checkpoint**

Carolina Windom antenna
: Type of **Windom** (**OCF**) **antenna** that uses a portion of its **feedline** as a **vertical radiating element**, typically resulting in a lower angle of radiation than that of a plain Windom antenna



Carolina Windom antenna diagram

carrier
: **RF** signal that is **modulated** with an input signal, such as your **voice**, to enable the resulting signal to be transmitted through space; see also carrier signal on Wiki

carrier delay
- Amount of time (also called *hang time* and *drop-out delay*) a **repeater** continues to transmit a **carrier** signal after the sending **station** has **un-keyed**, typically in number of seconds
  The hang time on that repeater is pretty long
- Time period between the moment when the sending **station** has **un-keyed** and the **repeater** has terminated its transmission, during which the repeater might transmit a **courtesy tone** or **linked** system information
  *I heard somebody **key up** during the repeater's hang time*

carrier squelch

Muting (**squelch**) of a **receiver**'s **audio** when no **carrier** signal is being received at the **frequency** for which the receiver is set with at least the signal strength for which the squelch level is set; see also carrier squelch on Wiki

CAT

Computer Aided Transceiver : standard created by Yaesu® (formerly Vertex) to provide a serial interface between a computer and a **transceiver** that supports the **protocol**, to control functions such as **frequency**, **mode**, **filtering**, and setting memory

cathode

Negative terminal or **electrode** of a device or component, from which **current** flows; see also cathode on Wiki (and **anode**)

cathode-ray tube / cathode ray tube

Vacuum tube whose **cathode** emits a stream (ray) of electrons (negatively charged particles) onto a phosphorescent screen to display images; see also CRT on Wiki

cathode-ray tube

cat's whisker / cat's whiskers / cat whisker / cats whisker

- Adaptation of the **fan dipole antenna**, in which the active **elements** spread out radially from a central point, rather than parallel to each other
- Type of **loop antenna**, in which the looped **elements** are spread out by non-conductive spacing rods that resemble a cat's whiskers when viewed **broadside**
- Thin conductor of the **anode** side of a **diode**, especially that of a crystal detector in a **crystal radio**

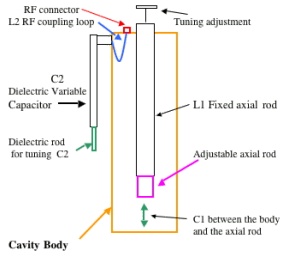
cat's whiskers antenna

diode showing cat's whisker

cavity filter

Type of **high-Q filter** that exhibits high **selectivity** and stability, used mostly in **repeater duplexers** to prevent transmitting **interference** to, or receiving interference from, other nearby repeaters and **noise** sources, and are typically implemented as **band-pass** or **notch** type; see also cavity filter on Wiki

band-pass cavity filters



cavity filter diagram

CB

Citizens Band

CBRS

See **Citizens Band**

CCD

charge-coupled device

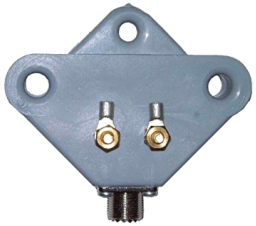
CC&R / CC&Rs / CCRs

Covenants, Conditions, and Restrictions : set of rules that dictate the conditions under which you can occupy a home, which conditions might include the prohibition of, or limitations on, the installation of **ham** radio **antennas** or other related equipment, and often enforced by a local **HOA**; see also CC&R on Wiki

center-fed Zepp antenna / center fed Zepp antenna / centerfed Zepp antenna

See **double Zepp antenna**

center insulator
: Non-conductive support component to which the two **radiating elements** and the **feedline** of a **dipole anttenna** are connected, but can be used for other antenna types as well



dipole center insulator

center tap
: See **tap**

centi
: Prefix, or units modifier, to indicate ÷ 100 or × 10^{-2}, and is often abbreviated c

CEPT
: *European Conference of Postal and Telecommunications Administrations* : agreement between the US and European nations to allow an American **amateur** to operate legally within participating countries without a special **license** or permit; see also CEPT on ARRL and **IARP**

certificated / certification / certified
: Formerly *type-accepted* and *type-acceptance*, as it applies to a **radio**, indicates **FCC** *Certification* or *Declaration of Conformity* for meeting certain requirements to legally transmit outside the **amateur bands** (simply put, all radios, and some types of radio support equipment, such as **antennas**, must be *type-accepted* or *certificated* for an **operator** to use them to legally transmit outside the amateur bands); see also
  - product certification on Wiki
  - **Part 90 certification**
  - Part 15 myths on ARRL

CFA
: *crossed field antenna* : controversial type of compact-sized **antenna** intended to exhibit the same **efficiency** as conventional antennas; see also CFA on Wiki

cfm
: Short for ***confirm***

channel / channelized
: Organization of a **band** or continuous set of **frequencies** that are accessible at a specific, pre-defined subset of those frequencies, known as *channels*, and often assigned alphanumeric designators (*channel 13*, *channel A5*, etc.); see also RF channels on Wiki

characteristic impedance
: Quantity of opposition to **current** flow (**impedance**) in a **transmission line** dependent on the line's physical properties and geometry (its *characteristics*), but not its length; see also characteristic impedance on Wiki

charge controller
: Electric device that controls or limits the rate of electric **current** through a **battery**, to prevent overcharging, and can protect against overvoltage, which can reduce battery performance and lifespan; see also charge controller on Wiki

solar charge controller

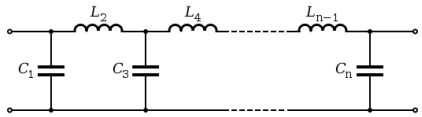
charge-coupled device / charge coupled device
: Electronic device that uses a combination of analog and digital circuitry to sample, convert, and store a numerous array of electric charges into digital signals, often used as an image detector in a digital camera; see also CCD on Wiki

chasing DX
: See **DXing**

chassis
: Typically metallic enclosure or frame of an electrical instrument or other machine that forms the basic external shape (*footprint*) of the device, protects inside workings from unwanted intrusion, and shields the **operator** from potentially dangerous contact with internal components

chassis ground
: Type of **ground** identified by connection between metallic frames or enclosures of different **shack** equipment, especially a **transceiver**, **power supply**, and other associated devices; see also chassis ground on Wiki

Chebyshev filter
: Type of **low-pass filter** that exhibits a very sharp **cutoff** (steep roll-off) and a ripple in its **passband**; see also Chebyshev filter on Wiki



Chebyshev filter schematic

check
- Word count in the **preamble** of a **formal traffic message**
- Last two digits of the first year in which a **operator** was **licensed**, for **logging contacts** during some **contests**
- **Test** for communication quality, as in **radio check**, **signal check**, or **audio check**

check in / check-in / checking in
: Act of participating in a **net** by announcing your **call sign**, and possibly other information, upon request by **net control**

checkpoint
: Person who is authorized by CQ Amateur Radio to verify that the **contacts** made by a **ham** toward an award (such as **WAZ** or *CQ DX*) are authentic; see also **card checker**

cheerleading
: Slang for the practice of advertising, promoting, or **broadcasting** information about another **ham** radio **station**'s **frequency** and location to aid other stations in making many **contacts** in a short period of time, which practice is generally prohibited during **contesting**; see also **spotting** and **self-spotting**

chicken band
: Slang for ***Citizens Band***

chicken net
: Slang for a **net** in which participants do little more than **check in** periodically (but is still useful for testing equipment, **propagation**, skill, etc.)

chip / chipset
: See **integrated circuit**

chirp / CHIRP
- *chirp* : small change in a **transmitter**'s **Morse code frequency** each time the transmitter is **keyed**, typically due to poor stability in the **RF oscillator**; see also key chirp on Wiki
- *CHIRP* : free, open-source software tool for **programming** an **amateur radio** with **frequencies**, **offsets**, and **tones** of your choice; see also the main CHIRP website

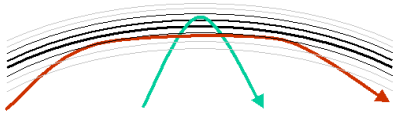
choke / filter choke
: **Inductor** that blocks higher-**frequency alternating current** in a circuit; see also choke on Wiki


assorted chokes


choke symbol

choke balun
: See **current balun**

chordal hop
: **Radio wave propagation** between two points by two or more successive **refractions** through the **ionosphere** before arriving at its destination, resulting in a signal that exhibits less loss than the same signal, had it traveled through the dense ground atmosphere twice; see also chordal hop in the 160-meter band on Wiki

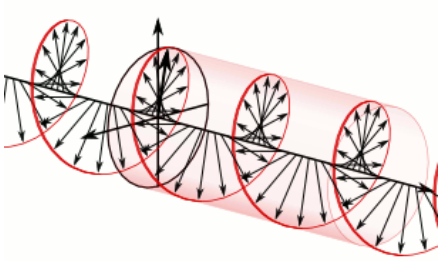

red = chordal hop
green = typical radio wave hop

circuit breaker
: Automatically operated electrical **switch** (often shortened *breaker*) that interrupts the flow of **current** through a circuit when the current exceeds a specified rating for a particular amount of time, to protect the powered equipment in case of overload, and is typically re-usable after being **tripped**; see also circuit breaker on Wiki and **fuse**


typical household circuit breaker

circuit Q

See **Q**



circular polarization

Continuously rotating alignment of a signal's **electric field** around the axis of **propagation** directed away from the **transmitter**, and a signal with such an alignment is said to be *circularly polarized*; see also

- circular polarization on Wiki
- **horizontal polarization**
- **vertical polarization**
- **elliptical polarization**

circulator

Type of **repeater duplexer** that routes **RF** signals from the **transmitter** to the **antenna**, and from the antenna to the **receiver**, while preventing the signals from passing directly from transmitter to receiver, to reduce or eliminate **intermodulation interference** produced by another nearby transmitter; see also circulator on Wiki and isolator circulator on Wiki

Citizens Band

Set of 40 **channelized**, low-**power**, **license**-free, and short-distance (typically 5 miles or less from base to mobile or 2 miles or less from mobile to mobile) **11-meter frequencies** (also called *CBRS*, for *Citizens Band Radio Service*); see also CB on Wiki

- CB on Wiki
- CB on CFR Part 95
- chart of assigned CB frequencies [PDF]

city power

See **household power**

CL

Morse code abbreviation (not technically a **prosign**) for ***closing station***, to indicate the **operator** is going **off the air**; see also prosigns on Wiki

clarifier

See **RIT**

class

Amateur radio license category or classification that defines the **licensee**'s transmitting privileges, of which **Technician**, **General**, and **Amateur Extra** can currently be earned, and Advanced and **Novice** are still recognized; see also license classes on ARRL and current license classes on Wiki

*Note: to prevent confusion, the term **course** more appropriately refers to a classroom experience, even online*

Class A amplifier

Linear amplifier that is characterized by low **distortion**, and therefore appropriate for amplifying **phone** signals, in spite of being relatively **inefficient**; see also Class A amplifier on Wiki

Class AB amplifier

Type of **amplifier** that is much more **efficient** than a **Class A amplifier** because it operates on less than the full (greater than 180° and less than 360°) signal cycle; see also Class AB amplifier on Wiki

Class C amplifier

Non-**linear** amplifier that is characterized by high **efficiency**, and therefore appropriate for amplifying **CW modulated** signals, but not those of **single-sideband**; see also Class C amplifier on Wiki

Class D amplifier

Type of **amplifier** that uses switching technology to achieve high **efficiency**, thereby requiring less **power** to operate, compared with that of other amplifier types; see also Class D amplifier on Wiki

Class X / Class-X

See **X-class**

clear

- *I hereby relinquish this frequency for others to use* (does not indicate whether you actually intend to stop speaking), or to a lesser extent, *I have finished speaking and am **leaving the air***; see also voice procedure on Wiki

  *I'll be clear and **monitoring** this **frequency***
- Description of a **frequency** or **channel** that appears to be free of transmissions (available for use) at the moment

*Let's **QSY** to a clear **frequency***

climbing harness
: See **fall arrest**

clipping / clip-distortion
: Form of **distortion** defined by limits on a signal at a specific threshold, often caused by excessive **drive**, more applicable to **single sideband** than to **FM**; see also clipping on Wiki

closed
- *closed circuit* : circuit that makes a complete **current** flow path
- *closed repeater* : **repeater** that is available for use only to a specific group or by sending an access code
  The 448.325 is a closed repeater

CLOVER / CLOVER-II / CLOVER-2000 / CLOVER 2000 / CLOVER-400
: Series of **data** transmission **modes** that were specifically designed for use on **HF**; see also
  - CLOVER 2000 on Wiki
  - CLOVER on ARRL
  - CLOVER-2000 on ARRL

cloud warmer / cloud-warmer / cloudwarmer
: Older slang for ***NVIS antenna***

club
: See **amateur radio club**

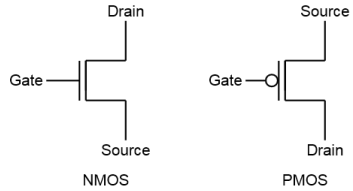
club trustee
: See **trustee**

CMC
: ***common-mode current***

CME
: ***coronal mass ejection***

CMOS
: *complementary metal-oxide-semiconductor* : **integrated circuit** technology that makes use of **semiconductor** material for constructing **transistors** in most of today's **microprocessors**, **microcontrollers**, static memory, and many other digital logic circuits that require high-speed switching with very low **power** consumption; see also CMOS on Wiki

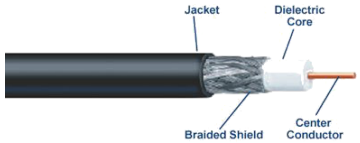
CMOS chip



CMOS transistor symbols

coax
: Short for ***coaxial cable***

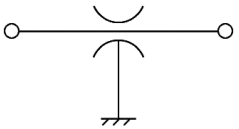
coaxial cable
: **Unbalanced cable** made of an inner conductor surrounded by an **insulating** layer, which is then surrounded by a conducting **shield**, all of which share the same cylindrical axis (hence the term *co-axial*), and used most often as a **ham** radio **feedline**, the purpose of the shield to prevent **coupling** of unwanted signals to or from the wire; see also
  - coaxial cable on Wiki
  - chart of coax cable loss and capacity [PDF] for selected **bands**
  - coax calculator



coaxial cable

coaxial capacitor
: Electrical component (part of a class of **capacitor** called a *feed-through capacitor*) made of an uninterrupted wire or other conductor completely surrounded by a **dielectric** material, which is then completely wrapped in a cylindrical metal sleeve, such that all three pieces share a common axis along the length of the wire; the wire at the center typically used to conduct **DC** supply **current** in a circuit, while the sleeve is connected to **ground**, thus **filtering** out high-**frequency** **noise** (such as alternator noise) in the DC path; see also coaxial capacitor on Wiki
  *Note: the geometry and function of **coaxial cable** gives the appearance of a coaxial capacitor, but the capacitance of coax used in feedlines typically range in pF, while that of coaxial capacitors typically range in µF*

coaxial capacitor


coaxial capacitor symbol

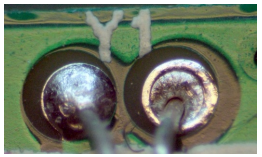
coax switch
: See **antenna switch**

code

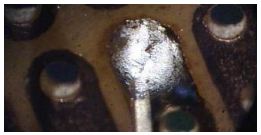
Short for ***Morse code***

code plug / codeplug
: Binary file that contains **transceiver** configuration information, plus **programming frequencies**, **offsets**, **tones**, **power levels**, **timeout values**, and other settings, for the proper operation of a particular **radio** model, and so-called because originally much of the settings (code) were hard-wired on a small device (plug) that you can insert into a compatible transceiver, to perform the configuration and programming

cold solder joint
: Poorly soldered union of two or more electrical conductors, often resulting in an unsound connection or intermittent contact, and can have a grainy appearance; see also cold solder joint on Wiki



cold solder joint (right)

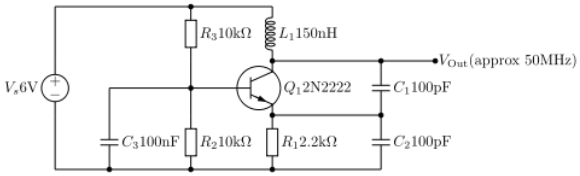

cold (grainy) solder joint

collinear antenna
: Multiple **antennas** arranged such that their primary radiating **elements** are positioned along a common line, to form an antenna whose **gain** is greater than that of each section alone; see also collinear antenna on Wiki


vertical, two-element collinear antenna

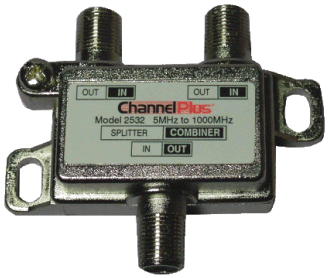
color code / color-code / colorcode
- Set of colored stripes or dots painted, marked, or otherwise applied to an electrical component, to represent its functional quantity value; see also color code on Wiki
- Setting that represents a **CTCSS** value for **DMR repeater** access, allegedly so-called because the settings were once set by physical color-coded **plugs**

Colpitts oscillator
: **Oscillator** circuit that achieves its **waveform** generation by **positive feedback** supplied through a **capacitive** divider, and is one of (at least) three oscillator circuits used in **amateur radio** equipment, commonly in **VFO** applications; see also Colpitts oscillator on Wiki



circuit employing a Colpitts oscillator

combiner
: Device or circuit (sometimes *RF combiner*) that brings together two or more **RF** signals (often of differing **frequencies** within the same **band**) into one signal, to be transmitted through an **antenna** or forwarded to another circuit or **stage** for further processing (not to be confused with **diplexer**); see also power combiner on Wiki
  Note: a combiner can often be used as a splitter (sometimes RF splitter), to perform the reverse function



combiner / splitter

come back
: *please reply* : request or demand for a response
  *Come back with your **call sign again, again***

come in
: *begin speaking now* or *can you hear me?*; see also voice procedure on Wiki

come on in
: *please join our conversation* : CB slang for invitation to begin transmitting during a conversation already in progress

commercial
: Type of *local* **two-way radio** communication for use in corporate, industrial, or educational environments, such as construction sites, warehouse stores, mass transit vehicles, and school buses; see also business band on Wiki

common-mode current / common-mode signal
: Electric behavior in a two-conductor **cable** or other **transmission line** such that the **current** in one conductor is not perfectly equal and opposite that of the other conductor (also called *antenna current*, *imbalance current*, or *secondary-mode current*), resulting in energy **radiation** produced by the difference in the currents, often the cause of **feedline** radiation; see also common-mode signal on Wiki; the following articles are recommended for a better understanding of this concept, as well as ***differential-mode current***:
  - Common-Mode vs. Differential-Mode
  - Common-Mode Current (good private article)
  - *How Common-Mode Currents are Created* [PDF] (article)

common-mode choke
: See **RF choke**

companding / companded / compander
: **Modulation** technique (named from ***com****pressing* - *ex****panding***) that involves compressing an **audio** signal prior to transmission, then expanding (decompressing) it at the **receiver** to improve the **signal-to-noise ratio** of the signal; see also companding on Wiki

comparator
: See **voting repeater system**

complex number
: Sum of a real number and the imaginary unit multiplied by another real number, as in *a* + *jb*, with a and b being real numbers and j being the imaginary unit; see also complex number on Wiki

compliance
: Conformance by a **radio station** owner in behalf of **transmitting** equipment and its **operations** to the **FCC** safety limits of maximum human exposure to **RF** fields (determination of which is known as a *compliance evaluation* or *exposure evaluation*, and similar determination following equipment change known as *re-evaluation*); see also
  - RF health effects on Wiki
  - exposure regulations on ARRL
  - **controlled**
  - **uncontrolled**

compliance evaluation
: See **compliance**

compression
: See **gain compression**

condenser
: See **capacitor**

condenser microphone
: See **electret microphone**

conditions
: See **band conditions**

conductance
: Real component of **admittance**, or quantity of allowance for **current** flow in a circuit, expressed in *siemens* (symbol S) and is the reciprocal of **resistance** in a purely resistive circuit; see also conductance on Wiki

connector
: For **RF** (especially **coax**) connectors, see
  - **BNC**
  - **FME**
  - **N**
  - **PL-259**
  - **SO-239**
  - **SMA** and **RP-SMA**
  - **TNC** and **RP-TNC**

  For power, see
  - **Anderson™ Powerpole**
  - **MC4**
  - **Molex™**
  - **SAE**
  - **T connector**
  - DC connector on Wiki

  For other types, see
  - **DE-9** (serial port)
  - **NMO** (**antenna mount**)
  - **RCA™** (**audio**, also called *phono*)
  - **RJ-11**
  - **RJ-45**
  - **USB**

  See also
  - RF connector on Wiki
  - RF connector types on Wiki

- electrical connector on Wiki

contact
: Verified **two-way radio** communication between two **ham** radio **operators**; see also **QSO** and contact on Wiki
  *I made a contact on **160 meters** last night*

Contestia
: Type of **MFSK data** transmission **mode** (**protocol**) that is a derivation of **Olivia** but is twice as fast; see also Contestia on Wiki and the main Contestia website

contesting
: Competitive activity (also called *radiosport*) pursued by **ham** radio **operators** in seeking and **logging** as many **contacts** as possible within the timeframe, **bands**, and **mode** specified by contest rules, also known as a type of radiosport on Wiki; see also
  - contesting on Wiki
  - contesting primer on ARRL
  - contesting on ARRL
  - contesting calendar on ARRL
  - contesting and radiosport home
  - Noji's contesting page

contest-style / contest style
: Slang for a relatively formal **station** operating plan (typically in reference to a **DXpedition** or **special event** station), in which **on-air** operation is organized according to a specific schedule (date, time, **frequency**, **mode**) during the event; unlike **holiday-style** or **vacation-style**

control grid
: See **grid**

control operator
: Person (often abbreviated *operator* or simply *op*) who has access to the **primary** control functions of a **station** and one designated by the station **licensee** as the party responsible for station transmissions, whose **license** grant appears in the **ULS**, and whose license **class** determines the transmitting privileges of an **amateur** station; see also amateur radio operator on Wiki

control point
: Location at which **control operator** functions are performed

controlled
: Any environment, area, or situation in which humans presumably have control over their exposure to **RF radiation**, including primarily the **station operator** household, its occupants, and surrounding property, to ensure their 6-minute exposure levels remain within the *controlled **MPE** limits*; see also
  - controlled / uncontrolled exposure on ARRL
  - FCC controlled / uncontrolled compliance document and worksheet [PDF]
  - abbreviated controlled / uncontrolled compliance chart
  - **uncontrolled**

CONUS
: *continental United States* : lower (contiguous) forty-eight states of the US

convention
: See **hamfest**

coordinated universal time
: See **UTC**

cootie key
: See **sideswiper**

copper strap
: See **ground strap**

copy
: *Understand and acknowledge*, similar to **roger**; see also voice procedure on Wiki
  Copy / copy that (got it)
  How copy? (how well did you get that?)
  No copy (didn't hear it well enough to understand it)

core
: See **inductor core**

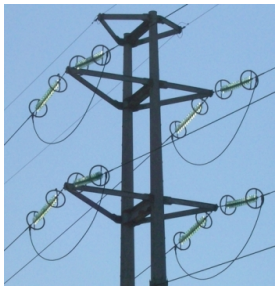
corner frequency
: See **cutoff frequency**

corona ball / corona ring / corona cap
: High-**voltage**, high-**current**, or high-**power** conductor, usually near the termination of a **transmission line** or connection with another conductor, employing a curved shape to prevent localized concentration of strong electric fields

and therefore undesirable **corona discharge**; see also coronal ring on Wiki

Note: the end of a whip or similar antenna might be equipped with a small ball that looks like a corona ball, but is typically installed to prevent stabbing people and other things with its sharp point

corona ball



corona rings

corona discharge

Electrical discharge caused by the ionization of gases surrounding a conductor of high electric charge when the strength of the electric field around a high-**voltage**, high-**current**, or high-**power** conductor is large enough to form a conductive region around the conductor, and presents significant energy losses, possible health hazards, and causes embrittlement of nearby insulators, but not strong enough to cause **arcing**; see also coronal discharge on Wiki

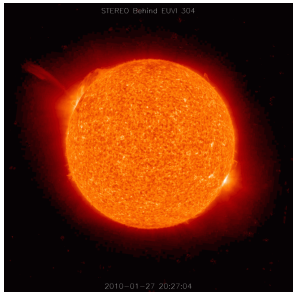
corona discharge around a ring

coronal hole

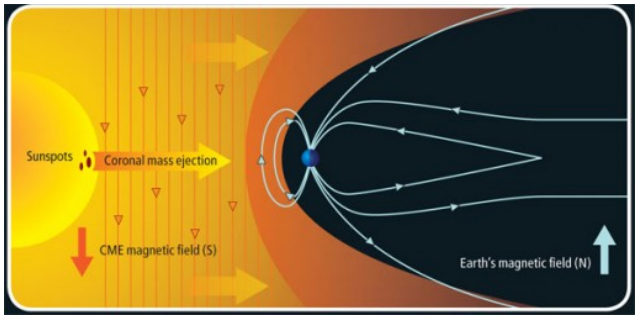
Area in the sun's corona where the magnetic field is not strong enough to prevent a larger-than-normal quantity of charged solar particles (known as the **solar wind**) from being ejected into space at high velocity, which, in turn can disturb **HF** communication when those particles reach the earth; see also coronal hole on Wiki

coronal mass ejection

Massive burst of charged solar particles, which take 20 to 40 hours to reach earth after being discharged, disturbing **HF** and **GPS** communication, and affecting other **radio wave propagation**; see also CME on Wiki and a video



coronal mass ejection



COTA

Castles on the Air : award program for **ham** radio enthusiasts who set up transmitting **stations** (*activators*) in, on, or nearby historical buildings (medieval castles and fortresses in particular) or contact those who do so (*chasers*), in conjunction with the WCA program, to help draw attention to these sites; see also COTA-PA website

counterpoise

Earth ground or network of suspended wires, cables (**radials**), or other conductive material or surface used as a substitute for earth ground in a **radio antenna** system, functioning as one plate of a large **capacitor**, with the conductive layers of the earth acting as the other plate; see also counterpoise on Wiki

coupling

- Physical association or connection between two systems, to transfer energy or information between them; see also
  - electronic coupling on Wiki
  - **capacitive coupling**
  - **inductive coupling**
  - **crosstalk**
  - coupling on Wiki
- Electrical **connector** type or connection method

  *The coupling between my **coax** and my **lightning arrester** is a **PL-259 connector***

courtesy tone / courtesy beep

Audible tone or *beep* transmitted by a **repeater** shortly after a sending **station** has **un-keyed**, indicating when another station can begin transmitting

CQ

calling any station, anywhere : general call to request **contact** with, or get the attention of, any listening **station**, without regard to location; see also CQ on Wiki and historical terms on ARRL

CQ CQ CQ...this is K-N-Ø-J-I

CQ <country name>

calling any station within <country name> only : general call to request **contact** with, or get the attention of, any listening **station** within <country name>

CQ Japan...CQ Japan...this is K-N-Ø-J-I

CQ Zone

Any one of 40 geographic areas of the world, as defined and named numerically by CQ Amateur Radio for the purpose of obtaining specific awards, such as **WAZ**; see also CQ Zones of the World map

CQDX / CQ DX

calling any station outside my country : general call to request **contact** with, or get the attention of, any listening **station** outside the local area, especially outside one's own country or continent; see also **DXing**

craft / the craft

Hobby, service, skill, education, endeavor, design, building, and/or art of **amateur radio** participation, promotion, or activity

CRC

cyclic redundancy check : code used in a **digital communication protocol** to detect an unintentional alteration of transmitted **data** by comparing a computed *check* of the received data with the check that was received in the transmission; see also CRC on Wiki

cross-band / crossband

Communication method in which a radio **station** receives a signal on one **band** (or **frequency**) and simultaneously retransmits the signal on another band (or frequency), similar to the action performed by a **repeater**; see also crossband operations on Wiki

cross-modulation / cross modulation

Undesirable result from the **modulation** of one strong signal being transferred onto other signals being received, often resulting in hearing an unintended station in the background of the sound from the intended station

crosstalk / cross-talk

Typically undesirable presence of a signal in a circuit or **radio** medium, due to unintentional **coupling** between the **receiver** and the signal source; see also crosstalk on Wiki

CRT

cathode-ray tube

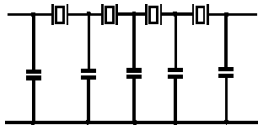
crystal

- See **quartz crystal**
- See **crystal oscillator**
- Short for ***crystal radio***

I actually heard the game on the crystal last night

crystal ladder filter / crystal filter / crystal lattice filter

Electronic **filter** that uses **quartz crystals** for its **resonators**, resulting in narrow **bandwidth** and steep **skirts**; see also crystal filter on Wiki

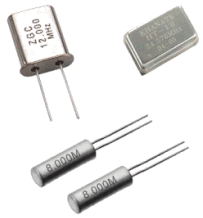


crystal ladder filter diagram

crystal oscillator / crystal resonator

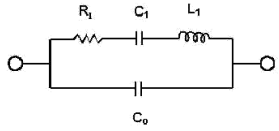
Electronic **oscillator** circuit that uses the mechanical vibrations of a **quartz crystal** to create an electrical signal with a very precise **frequency**; see also crystal oscillator on Wiki and crystal-controlled VFO on Wiki

*Note: many conventional oscillator circuits use quartz crystals as their resonators, so the terms **quartz crystal** and **crystal oscillator** are often interchangeable*



crystal oscillators

crystal oscillator symbol



equivalent circuit, showing

R_1 = motional resistance

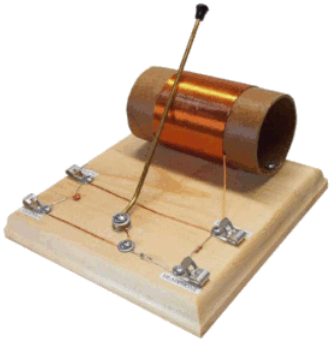
C_1 = motional capacitance

L_1 = motional inductance

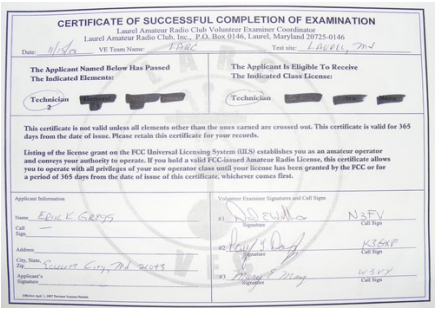
C_0 = shunt capacitance

crystal radio

Radio receiver that uses a **quartz crystal** or **diode** as a **detector** and is **powered** completely by **radio waves** that arrive at its **antenna**; see also crystal radio on Wiki



crystal radio set



CSCE
: *Certificate of Successful Completion of Examination* : document that certifies the named person as having successfully passed a **ham** radio **license** examination; see also CSCEs for Exam Element Credit on ARRL

CSQ
: ***carrier squelch***

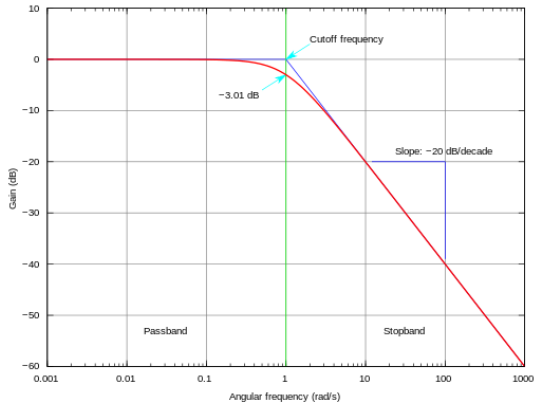
CTCSS
: *continuous tone-coded squelch system* : circuitry that adds a **sub-audible** (formerly ***PL*** and ***sub-channel***) tone to the **audio** signal prior to **modulation** and subsequent transmission, to be received by a **repeater** or other **receiver** that requires the tone, so that it will accept the signal and **squelch** all others; see also CTCSS on Wiki and **DCS**

cubical quad antenna
: See **quad antenna**

current
: Quantity of electric flow in a circuit, expressed in *amperes* (symbol A); see also electric current on Wiki

current balun
: Type of **RF isolator** inserted as a **balun** (also called *choke balun*) to reduce or control undesirable **common-mode current** between a **radiating element** and a **feedline**; so-called because it attempts to balance the output currents (make them equal and opposite) regardless of the load impedances

cutoff frequency
- **Frequency** (also known as the *corner frequency*) at which energy through a system or circuit begins to be **attenuated** from one frequency to another by 3 **dB** (output is -3 dB, or half the strength of the input signal); see also cutoff frequency on Wiki and **rolloff**
- **Frequency** below which a **radio wave** is unable to penetrate a layer of the **ionosphere** by **reflection** at an incidence angle required for **RF** transmission between two given points; see also cutoff frequency on Wiki



cutoff frequency for a filter response

cut out / cutting out
: Slang for intermittent **audio** or signal continuity during transmission
: *I could hear most of what you said, but you were cutting out*

CVE
: *Contact Volunteer Examiner* : **VE** in charge of other VEs in a particular **amateur radio examination session**; the main contact between the **VEC** and the group of local examiners

CW
: *continuous wave* : primary **mode** for International **Morse code** transmission, in which a steady (*continuous*) **carrier** signal is essentially switched off and on; see also CW on Wiki

D

D layer / D region
: Lowest (closest to the surface of the earth) section of the **ionosphere**, and one that absorbs **RF** signals of **frequencies** lower than about 7.5 MHz, resulting in difficult daytime long-distance communication on the **40-meter**, **60-meter**, **80-meter**, and **160-meter bands**; see also D layer on Wiki

DAB
: *digital audio broadcasting* : standard for digital **broadcast radio** using **OFDM** between 174 to 240 MHz and 1452 to 1492 MHz, adopted primarily by countries in Europe and Asia Pacific; see also DAB on Wiki

dark side of the moon
: CB slang for a location (also called *black hole*) that is within the **shadow** of a **repeater** or other **RF** signal source
: *I'm moving into the dark side of the moon, so my signal will start degrading quickly*

data
: Short for ***digital communication mode***, any of several communication formats, such as **packet**, **PSK31**, **PACTOR-III**, **MFSK**, and **RTTY**, for transmitting and receiving digitized information over **radio waves**
: *Technicians are permitted to operate both data and **phone** on a portion of the **10-meter band***

data emission
: See **data**

dB
: ***decibel***

DB-9 / DB9
: See **DE-9**

dBc
: Ratio of the **power** amplitude of a signal with respect to the power amplitude of the **carrier** signal, and expressed in **decibels**; see also dBc on Wiki

dBd
: **Gain** of an **antenna** with respect to that of a **half-wave dipole** antenna, expressed in **decibels**, and is calculated to be approximately 2.15 dB greater than the gain of an **isotropic radiator**; see also dBd on Wiki

dBi
: **Gain** of an **antenna** with respect to that of an **isotropic radiator**, a hypothetical point source of **radio waves**, and expressed in **decibels**; see also dBi on Wiki

dBm
: Ratio of the **power** amplitude with respect to a reference power amplitude in milliwatts, and expressed in **decibels**; see also dBm on Wiki

dBu
: **RMS Voltage** amplitude with respect to that of a reference RMS voltage, expressed in **decibels**; see also dBu on Wiki

dBμ / dBμV/m
: **Electric field** strength relative to one microvolt per meter, expressed in **decibels**; see also dBμ on Wiki

DC
: *direct current* : the unidirectional flow of electric charge (**current**) in a circuit; see also DC on Wiki

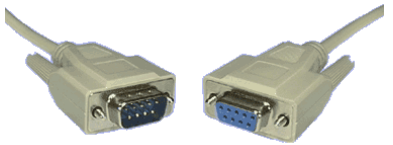
DC resistance
: See **resistance**

DCS
: *digital-coded squelch* : circuitry that adds a digitally encoded **sub-audible tone** to the **audio** signal prior to **modulation** and subsequent transmission, to be received by a **repeater** or other **receiver** that requires the tone, so that it will accept the signal and **squelch** all others; see also DCS on Wiki and **CTCSS**

DDS / DDFS
: ***direct digital synthesizer***

DE
: *this is* or *from*; see also **Morse code abbreviation**
: *KR5LYS DE KNØJI (KR5LYS, this is KNØJI)*

DE-9 / DE9
: Model name for a once-common serial port **connector**, often mistakenly called *DB-9* (and also properly called *D-sub* or *D-subminiature*); see also DE-9 on Wiki



DE-9 connectors

de-emphasis / deemphasis
: See **emphasis**

dead air / dead-air
: Period of silence during a transmission by a **mode** (such as **AM** or **FM**) that sends a **carrier** signal, or moment between transmissions of a mode (such as **SSB**) that does not; see also dead air on Wiki

dead carrier
: Slang for transmission of an un-**modulated carrier** signal (also called an *open carrier*, although an open carrier is often thought to be accidental while a dead carrier is typically a deliberate transmission, such as for testing, and *deadkey* by **CB** operators), which is simply a sine wave of a particular frequency, similar to **dead air**
: *If you give me a dead carrier, I can give you a more accurate signal report*

dead key / deadkey
: CB slang for **dead carrier**

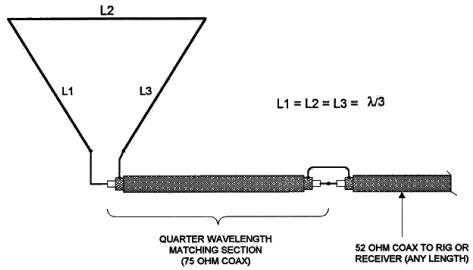
dead zone
: See **skip zone**

decibel
: Ten times the base-10 logarithm of a value, which value is typically a ratio of two other values; $10\log_{10}(P_{out}/P_{in})$, for example; see also decibel on Wiki

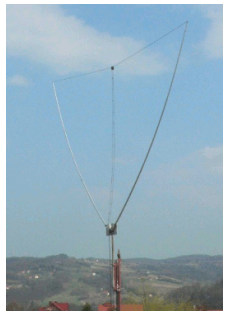
decimation
: Process of reducing the effective sample rate of a signal by removing samples; for example, **interpolate** a digital signal by three, then *decimate* it by four, to adjust its sampling rate by a factor of 3/4; see also decimation on Wiki

decimator
: Device or circuit that uses an **anti-aliasing filter** to perform the **digital signal processing** function of **decimation**; that is, reduces the sampling rate of a signal; see also decimation on Wiki

delta loop antenna / delta-loop antenna
: Variation of the **quad antenna**, but with three sides per **element**, each side (*leg*) being 1/3-**wavelength** long for a *symmetrical* delta loop

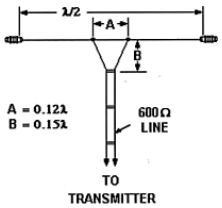


delta loop antenna diagram



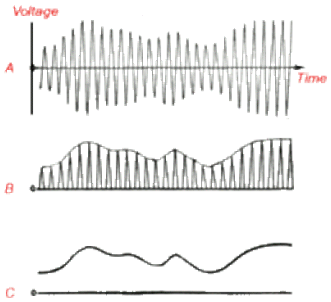
delta loop antenna

delta match



delta match diagram

delta match / delta matching system / delta matching network
: **Impedance matching** technique that matches a higher-impedance **transmission line** with a lower-impedance **antenna** by connecting the **feedline** to the **driven element** in two places spaced a fraction of the intended **wavelength** each side of the element center



demodulation steps of an AM signal

demodulation / demodulate
: Process of extracting the original information signal, such as your **voice**, from within a **modulated RF** signal (using a **detector** for an **AM** signal, for example); see also demodulation on Wiki

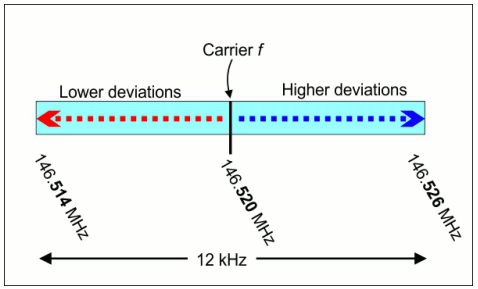
depletion-mode FET
: **field-effect transistor** that exhibits a **current** flow between **source** and drain when no gate **voltage** is applied; see also depletion-enhancement on Wiki

desensitization / desensing / desense / de-sense
: Undesirable effect by an **RF** signal of a **frequency** that is close to your expected (receive) frequency and strong enough to overload your **receiver** circuitry, often because the transmitting source is too close to your receiver (you and your spouse are unable hear each other, even though you're in the same house), or is transmitting with too much **power**, or the **bandwidth** of your receiver is set too wide, overcoming your receiver's ability to reject the signal, resulting in **audio distortion** and reduced receiver **sensitivity**, as well as poor **dynamic range**
: : *Note: desensitization is very similar to **fundamental overload**, except that desensing usually results in a severe reduction in receiver sensitivity, whereas fundamental overload many times results in the receiver shutting down its ability to function at all*

destinate / destinated
: Slang for ***having arrived*** at a particular location
: : *I've destinated, so **7-3** to you*

detector
: **Receiver** circuit (often called a **mixer**, even though many mixers are not detectors) that recovers (**demodulates**) information contained in a **modulated radio wave**; see also detector on Wiki

detune / de-tune
: In most senses of the word, opposite of **tune**, or action of deviating from a tuned state, also known as a **mis-match**



deviation and bandwidth

DF / DF-ing
: ***direction-finding***

dielectric
: Non-conducting (electrically **insulating**) material that separates the two conductors of a **capacitor**; see also dielectric on Wiki

differential-mode current / differential-mode signal
: Electrical behavior in a two-conductor **cable** or other **transmission line**, such that the **current** in one conductor is perfectly equal and opposite that of the other conductor, resulting in a complete lack of energy **radiation** produced by the currents; see also **common-mode current**

digipeater
: Short for ***digital repeater*** (and sometimes called *packet repeater*), **packet radio repeater** dedicated to receiving, storing, then re-transmitting digital **data** packets; see also digipeater on Wiki

digital communication
: Communication by transmission and reception of digitized information, called ***digital radio*** when using **radio waves** as the medium and formatted in an **amateur radio mode**; see also data communication on Wiki

digital decimator
: See **decimator**

digital mobile radio
: Open **radio** standard for **time-division multiplexing** two digital voice signals on a 12.5 kHz **repeater channel**, originally used by Professional Mobile Radio, but widely adopted by many **amateur radio** manufacturers for **phone**, **packet**, and **trunking** applications; see also DMR on Wiki

digital mode
: See **data**

digital radio
: Communication by transmission and reception of digitized information over **radio waves** using an **amateur radio mode** (also called ***data***); see also digital radio on Wiki

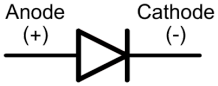
digital signal processing
: Numerical manipulation of a **radio** signal to prepare it for transmission or to **filter** the **noise** from it; see also digital signal processing on Wiki

digital signal processor
: Specialized **microprocessor** that **filters noise** from a **radio** signal by converting the signal from **analog** to digital and using **digital signal processing** methods; specifically, automatic **notching** of **interfering carriers**; see also digital signal processor on Wiki

digital synthesizer / digital synthesis
: See **direct digital synthesizer**

diode
: Electronic **semiconductor** component (often employed as a **rectifier**) that allows **current** to flow in only one direction through it (the ordinary **semiconductor diode** type also known as a *silicon diode* and *junction diode*), and whose two **electrodes** are called the **anode** and the **cathode**, the cathode end being identified with a stripe; other types of diodes include the **Zener diode**, the **Schottky diode**, the **tunnel diode**, the **varactor diode**, and the **PIN diode**; see also diode on Wiki


silicon diode



silicon diode symbol

DIP
: ***dual in-line package***

dip meter
: Instrument that measures the **resonant frequency** of an **RF** circuit, also known as a *grid dip meter* and *grid dip oscillator*; see also dip meter on Wiki

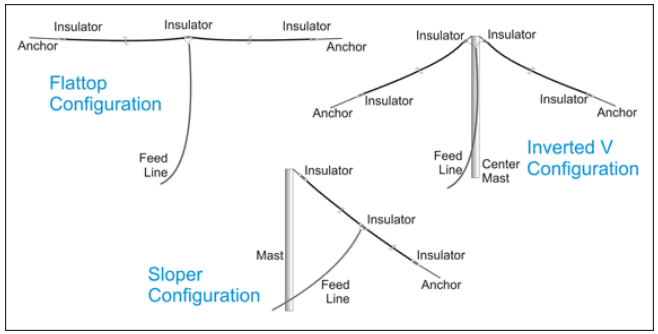
dip meter

diplexer
: Device that allows a single dual-band **transceiver** to operate on two different **antennas** that support different **bands**, or two transceivers of different bands to operate on a single dual-band antenna, or two transceivers of different bands to operate two different antennas using the same **feedline** (not to be confused with *splitter* or *combiner*, both of which normally function on the same band or set of frequencies, or **duplexer**); see also diplexer on Wiki

mis-labeled diplexer

dipole
: Type of **antenna** that consists of two, usually bilaterally symmetrical, conductive **elements**, of which the **half-wave dipole** is perhaps the simplest and most widely used **ham** radio antenna, and another common type being the **off-center-fed** dipole; see also dipole antenna on Wiki

stick trapped dipole



dipole configurations

dipole center insulator
: See **center insulator**

direct digital synthesizer / direct digital frequency synthesizer
: Electronic circuit or device used for **synthesizing** an arbitrary **waveform** (method known as *direct digital synthesis*) from a single, fixed-**frequency** reference clock, and whose lookup tables contain amplitude values that represent an output waveform, such as a sine wave; see also DDS on Wiki

direct FSK
: Type of **FSK modulation** in which the digital signal is applied to the **transmitter VFO** for a (typically **FM**) signal; see also types of radio emissions on Wiki and voice vs. data on Wiki

direct radio
: See **talk-around**

direct sampling
: Method of **digital signal processing** that involves placing an **analog-to-digital converter** as close as possible to the incoming signal, reducing or eliminating the need for signal **down-conversion**, essentially replacing the **receiver superheterodyne** circuitry, the term *direct* indicating an attempt to digitize the incoming analog signal directly (without modification) before presenting the signal for further processing (**filtering**, **mixing**, **demodulation**, etc.)

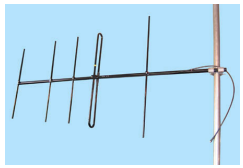
direct-sequence spread-spectrum / direct sequence spread spectrum
: Technique of **spread-spectrum** communication that uses a high-speed binary bit stream to shift the phase of the transmitted signal **carrier frequency**; see also DSSS on Wiki

directed net
: **Net** that is under the direction of a **net control station**, meaning that all communication during the net is directed to and regulated by *Net Control* unless otherwise requested; see also directed net on Wiki

direction-finding
: Location of a radio **station** (also called *amateur radio direction-finding* or *DF-ing*) by detecting the direction of its signal source, often used in **fox hunts** and to locate sources of **noise interference** or jamming; see also DF on Wiki

directional antenna

Type of **antenna** that radiates greater **electromagnetic energy** in one direction than in others, or has greater **sensitivity** from one direction over others (**directivity**); see also directional antenna on Wiki

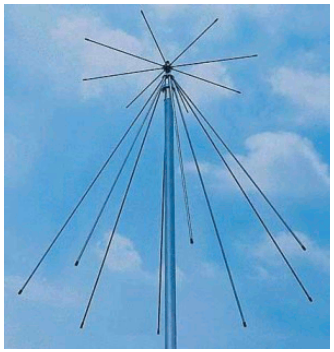

directional antenna

directional wattmeter
: See **wattmeter**

directivity
: Quality of an **antenna** that describes its transmitting **gain**, receiving **sensitivity**, and **efficiency** of converting **RF power** into radiated power in a particular direction compared with the same in other directions; see also directivity on Wiki

director element
: Shortest **parasitic element** of a **beam** or other **Yagi antenna**, and one that **electromagnetically** adds to the **mutually induced** signal originating from the **driven element**; see also parasitic element on Wiki

disaster kit / disaster-kit
: See **go-kit**


discone antenna of rods


discone antenna of sheet metal

discone antenna
: Type of **omnidirectional antenna** (version of biconical antenna) that consists of a disc on top and downwardly open cone underneath, both made from sheet metal or sets of rods, but separated from each other by an **insulator**; see also discone antenna on Wiki

discriminator
: Circuit used in many **FM receivers** for **detecting** (**demodulating**) FM signals by converting **IF amplifier** signals to **audio** signals; see also discriminator on Wiki

dish antenna
: See **parabolic antenna**

dissipator / dissipater
: See **lightning dissipator**

distortion
: Undesirable modification of an **audio** or **radio frequency** signal, which can result in **spurious emissions**; see also distortion on Wiki

dither
: Small amount of **noise** added to the input signal to allow more precise representation of the signal over time; see also dither on Wiki

diversity reception / diversity operation / diversity combining
: See **voting repeater system**

DIY
: *do-it-yourself* : term (also known as *homebrew*) that refers to building your own **ham** radio gear, especially **antennas**; see also homebrew on Wiki and DIY on ARRL

DMM
: *digital multimeter* : **multimeter** that displays its readings digitally (that is, with decimal digits)

DMR
: ***digital mobile radio***

dogbone insulator / dog bone insulator / dog-bone insulator
: Non-conductive component that physically connects two or more items that should not be connected electrically, such as **radiating elements**, **guy wires**, and structural braces, typically part of an **antenna** system; see also **egg insulator**

dogbone insulators

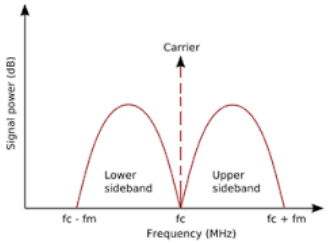
Doppler shift
: Observed change in signal **frequency** due to relative motion between a **satellite** and the observer; see also Doppler shift on Wiki

double
- Unintentional or **deliberate interference** of one **ham** radio **operator** with another, by transmitting at the same **frequency** simultaneously, usually resulting in both parties sounding mostly unintelligible (note that this term applies more to **FM** transmissions on **2-meter** and **70-cm bands** than to **SSB** transmissions on **HF** bands, in which case the result is usually more of a **pileup**)
  I believe there was a double with your transmission
- Action of transmitting at the same time as another **operator** on the same **frequency**
  You just doubled with somebody

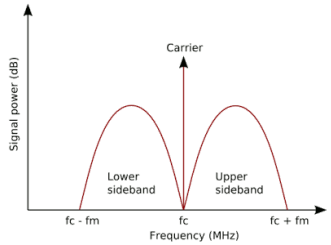
double extended Zepp antenna
: See **extended double Zepp antenna**

double-pole, double-throw
: See **switch**

double-pole, single-throw
: See **switch**

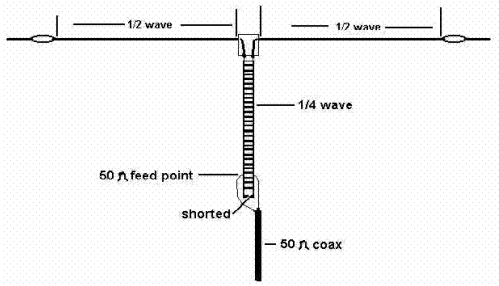


double-sideband without carrier



compare with full AM

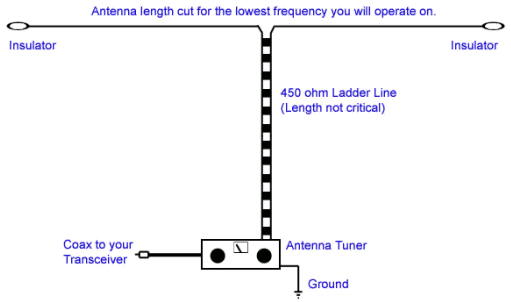
double-sideband / double sideband
: Form of **amplitude modulation** in which both **sidebands** are present, but the **carrier** signal has been suppressed, also known as *DSB-SC* (double-sideband, suppressed-carrier); see also DSB-SC on Wiki



double Zepp antenna diagram

double Zepp antenna
: Center-fed **dipole antenna** of two half-wave horizontal **elements** that attach to the **feedline** through a quarter-wave vertical **radiating element** often constructed from **ladder line**, making the appearance of two back-to-back **Zepp antennas**
  *Note: the double Zepp seems to be identical to the **doublet antenna**, except in the doublet the quarter-wave vertical section is allegedly not supposed to radiate*

doublet antenna
- Center-fed **dipole antenna** of two half-wave horizontal **elements** that attach to the **feedline** through a vertical **ladder line**
  *Note: the doublet antenna seems to be identical to the **double Zepp antenna**, except in the doublet the quarter-wave vertical section is allegedly not supposed to radiate*
- Classification of **antenna**, whose radiating **elements** are a pair of conductors that form an **open DC** circuit, of which the **dipole** is an example



doublet antenna diagram

down-conversion / down conversion / downconversion
- Process of modifying a signal by changing it to a lower **frequency**, allowing for convenient signal manipulation by **analog** circuitry, one step in the **superheterodyne** process, and integral to **frequency-division multiplexing**
- Process of modifying a signal by changing it to a lower frequency **band**, thereby extending the **frequency** spectrum available to a **transceiver**

down-converter / down converter / downconverter
: Device or circuit that performs the **down-conversion** function by changing the **frequency** of an operating signal to one of a lower frequency, often part of a **transverter**; see also downconverter on Wiki

down in the mud
: See **mud**

downlink / down link / down-link
: See **satellite downlink**

DPDT
: ***double-pole, double-throw***

DPSK
: *differential phase-shift keying* : low-rate **data** transmission **mode** that uses **phase modulation** to shift the phase angle of an **RF carrier** signal to convey the information; see also DPSK on Wiki

DPST
: ***double-pole, single-throw***

DR
: *dear* : *beloved* or *good*, often used as a salutation or greeting, or to describe somebody who is beloved, as in *dear friend*; see also **Morse code abbreviation**

drift
: See **frequency drift**

drive
- Quantity of **power** applied to the input of an **amplifier**, and known as *overdrive* if the quantity exceeds the amplifier's specification or capability
  : *Your amp's drive is currently at 20 watts*
- Quantity of signal strength (typically **power**, also known as *minimum drive*, or **voltage**) applied to a circuit sufficient to enable its primary function, such as **amplification**, **filtering**, or **switching**
  : *The drive required for your **tube** array is 80 watts*

driven element
: Sometimes called the *active element*, the conductor in a **beam** or other **Yagi antenna** that is electrically connected to the **transmitter** or **receiver** by the **feedline**; see also driven element on Wiki

DRM
: *Digital Radio Mondiale* : set of digital **audio broadcasting** technologies designed to work on the **bands** currently used for **analog radio** broadcasting, particularly the **shortwave** bands, making more **efficient** use of the bands; see also DRM on Wiki and the main DRM website

drop out / drop off / dropping out / dropoff / dropout
: Slang for abrupt termination of **audio** or signal transmission
  I could hear most of what you said, but you dropped out near the end

drop-out delay / dropout delay / drop out delay
: See **carrier delay**

dropout timer

See **timeout timer**

DSB-SC / DSBSC

double-sideband, suppressed-carrier

DSP

- ***digital signal processing***
- ***digital signal processor***

DSSS

direct-sequence spread-spectrum

D-STAR

Digital Smart Technologies for Amateur Radio : digital **voice** and **data protocol** specification made for **amateur radio**; see also D-STAR on Wiki

DTMF

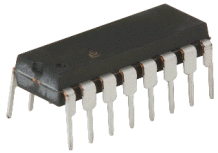
dual-tone multi-frequency : telecommunication signaling technology (known as *Touch-Tone*® in push-button telephones) used to send control commands to the destination device, such as an **IRLP** node or a **repeater**; see also DTMF on Wiki

dual-band / dual band / dualband

See **multiband**

dual in-line package

Type of through-hole electronic component package for **integrated circuits** made with two parallel rows of connecting pins on opposite sides of the package; see also DIP on Wiki



DIP IC example

dual-watch / dual watch / dualwatch

Receiver feature that allows the listener to **monitor** two different **frequencies** simultaneously

duck

Slang or short for ***rubber duck***

ducting

See **tropospheric ducting**

dummy antenna

- Circuit applied in place of an **antenna** to simulate its **impedance** while testing a **receiver** with an instrument such as a signal generator, to prevent inaccurate receiver circuirty alignment
- See **dummy load**

dummy load

Device (sometimes called a *dummy antenna*) usually made of a non-**inductive resistor** and a heat sink, used in place of an **antenna** to simulate an electric **load** and prevent the radiation of signals when testing a **transmitter**; see also dummy load on Wiki

dummy load

duplex

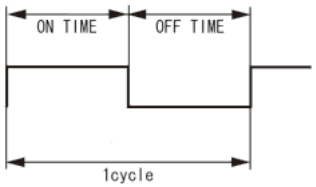
In **radio** communication, operation of **stations** transmitting and receiving on different **frequencies**, such as in normal **repeater** operations; see also duplex on Wiki

duplexer

- Device that uses a **cavity filter** to isolate the **transmitter** and **receiver** on a **repeater** while permitting them to share a common **antenna**; see also duplexer on Wiki
- Mis-labeled **diplexer**

duty cycle / duty factor

Ratio of the amount of time a periodic event is active (the *on* time) to the entire period (total *on* plus *off* time), often expressed as a percentage; see also duty cycle on Wiki



duty cycle

DX

distant or *long distance* : typically refers to a **radio station** or **contact** located outside one's own country, and usually *overseas*, to Americans also refers to *any* station outside the continental US and Canada (in many American circles DX can refer to a station located in Hawaii or Alaska, yet not Canada or Mexico); see also **DXing** and **Morse code abbreviation**

DX QSL manager
: See **QSL manager**

DX window
: **Sub-band** specified by a voluntary **band plan** that is reserved for **DXing**, and should not be used for **contacts** between **stations** within the forty-eight **contiguous** United States

DXCC
: *DX Century Club* : award given to a **ham** who makes verifiable **DX contacts** with 100 different countries; see also DXCC on Wiki and DXCC on ARRL

DXCC Entity / DXCC Zone / DXCC Country / DXCC List / DXCC Prefix
: Location of an **amateur station** officially recognized by the **ARRL** with whom another station in a different entity can make a verifiable **DX contact** for **contesting** and other **ham** radio purposes; see also
  - DXCC Entities on ARRL
  - DXCC List on ARRL
  - DXCC Entities on Wiki

DXer / DX-er / DX'er
: Slang for a **ham** radio **operator** (also called a *DX chaser*) who makes **DX contacts** with distant radio **stations** (**DXing**), on a regular basis as a hobby

DXing / DX-ing / DX'ing
: Hobby of making **DX contacts** with distant radio **stations**, particularly those located outside one's own country, also known as *chasing DX*; see also DXing on Wiki and chasing DX on ARRL

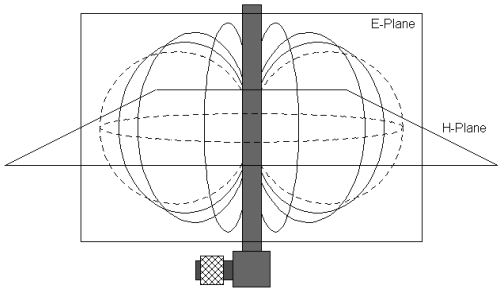
DXpedition / DX-pedition / DX'pedition
: Journey (expedition) by one or more **ham** radio **operators** to a distant, exotic, remote, difficult, or sparsely inhabited location or **grid**, often to set up **stations** at locations that have few hams, in an effort to provide the opportunity for hams world-wide to make **contacts** with a station in those locations; see also DX-pedition on Wiki

dynamic range
: Ratio of the largest to smallest signals **detectable** by a **receiver**, and expressed in **dB**; see also dynamic range on Wiki

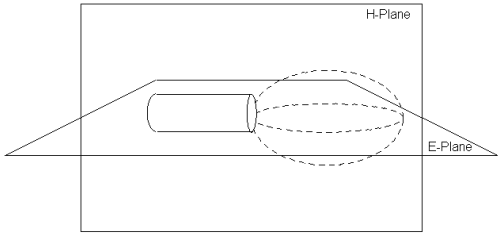
E

E region / E layer
: Section of the **ionosphere** responsible for **radio wave propagation** that can reach up to approximately 1200 miles along the earth's surface normally covered in one **hop**; see also E (Heaviside) region on Wiki

E-plane / E plane
: Flat geometric surface defined by the electric wave component of an **electromagnetic wave** in a particular direction, also known as the *vertical plane* or *elevation plane* of a **vertically polarized antenna**, or the *horizontal plane* or ***azimuthal*** *plane* of a horizontally polarized antenna; see also E-plane on Wiki



E and H planes for a vertical antenna



E and H planes for a Yagi antenna

early-out / early
: Slang for announcement or request to check into a **net** then leave prior to its conclusion; similarly spoken as *in-and-out*, *out after roll* (for a **roll-call net**), and *short-time*
  Could you please give me an early-out tonight?
  This is KNØJI and I'm in-and-out
  This is KNØJI, out after roll
  This is KNØJI for short-time

earphones
: See **headphones**

earth ground
: See **ground**

earth-moon-earth
: See **EME**

earth station
: **Ham** radio **station** located on, or within 50 km of, the earth's surface and intended for communication with **space stations** or other earth stations by means of one or more objects in space

EAS
: ***Emergency Alert System***

EchoLink
: Software-based system that **links ham** radio **stations** around the world through your cell phone or other computing device using Voice over IP; see also EchoLink on Wiki and the official EchoLink website

Edison effect
: See **thermionic emission**

effective isotropic radiated power
: Quantity of **power** (also called *equivalent isotropic radiated power*) required to transmit a signal in all directions equally, from a theoretical spherically radiating **source** (total power radiated from an isotropic source, as observed by a distant **receiver**, making EIRP = ERP X 1.64, or EIRP is ERP + 2.15 dB); see also EIRP on Wiki

effective radiated power
: Realized amount of **station** output **power** radiating from the **antenna** *in a particular direction* when compared with a reference antenna, especially a **half-wave dipole antenna**; see also ERP on Wiki and ERP relative to a dipole on Wiki

efficiency
: Measure of a system output compared with its input, expressed as a ratio or percentage; as it relates to electric **power**, it is defined as the useful power output divided by the total power input to a circuit or device, and often represented by the symbol η; for example, the efficiency of an **RF** power **amplifier** can be calculated by dividing the RF output power by the **DC** input power; see also electrical efficiency on Wiki and **antenna efficiency**

EFHW
: ***end-fed*** *half-wave*

egg insulator
: Non-conductive component that physically connects two or more items that should not be connected electrically, such as **radiating elements**, **guy wires**, and structural braces, but provides for the connection in such a way that, should the insulator become damaged or be destroyed, the conductors will maintain their structural connection after their electrical separation is compromised, typically part of an **antenna** system; see also **dogbone insulator**


egg insulator

EH antenna
: Specially designed **crossed field antenna** that produces electric (E) waves and magnetic (H) waves that travel both in phase and perpendicular to each other, to improve **efficiency**, thereby allowing for a smaller construction while maintaining the performance of conventional antennas; see also a technical description of the EH antenna

EHAAT
: See **HAAT**

EHF
: *extremely high frequency* : overall **frequency** range of 30 GHz to 300 GHz; see also EHF on Wiki and the RF spectrum

EIRP
: ***effective isotropic radiated power***

electret
: Stable **dielectric** material that produces an electrostatic field originating from a permanently embedded **static electric** charge (unlike a magnet, which produces a magnetic field); see also electret on Wiki

electret microphone
: Type of electrostatic **capacitor**-based **microphone** (sometimes called an *electret condenser microphone* as a result), that eliminates the need for a polarizing **power supply** by using permanently charged **electret** material; see also electret microphone on Wiki

electric field
: Physical influence originating from an electrically charged particle, surface, or changing / moving **magnetic field**, and one that can exert a force on another electrically charged object; see also electric field on Wiki

electric shock / electrical shock
: Physiological reaction or injury caused by **current** flowing through body tissue, and can range in severity from a barely perceptible tingling sensation to electrocution; see also electric shock on Wiki

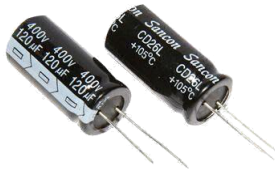
electrical grid
: Interconnected network (often shortened *the grid*) of **transmission lines** that deliver **AC** electrical **power** (sometimes called *line voltage*) from multiple **sources** to the many consumers that require it, and is the primary source of commercially available **household power** to homes, businesses, and facilities; see also electrical grid on Wiki

electrical service
: Distribution box and meter (often shortened *service*), typically located outside a building, for providing **household power** from the power company or **electrical grid** to the building or facility; see also service drop on Wiki

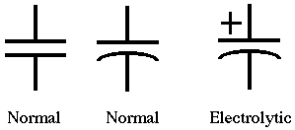
electrical service drop

electrode
: Wire or other electrical conductor that provides a **current** path to an electric device or circuit, some conductors labeled according to path function, such as those for a **transistor** (emitter, base, collector, **source**, drain, gate, etc.) or **diode** (**anode** and **cathode**); see also electrode on Wiki

electrolytic capacitor
: Type of polarized **capacitor** that is often used in **power supply** circuits to **filter** the **rectified AC** due to its ability to present a high **capacitance** for a given volume; see also electrolytic capacitor on Wiki



electrolytic capacitors

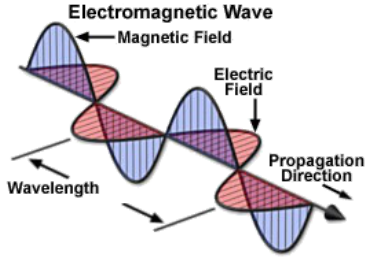


capacitor symbols

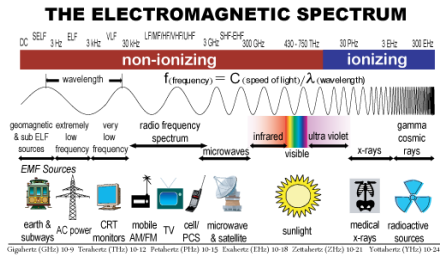
electromagnetic compatibility
: Ability of an eletrical device or system to function acceptably in its electromagnetic environment, by limiting unintentional **RF** generation, **propagation**, and reception of **electromagnetic energy**; see also EMC on Wiki

electromagnetic interference
: Undesirable disturbance of normal **RF** operation by the introduction of electromagnetic **induction** or **electromagnetic radiation**; see also EMI on Wiki and **RFI**

electromagnetic radiation
: Form of energy consisting of electromagnetic waves, which are synchronized **oscillations** of **electric** and **magnetic** fields that **propagate** at the speed of light and oscillate perpendicular to each other; see also electromagnetic radiation on Wiki



electromagnetic spectrum
: Range of all possible **frequencies** of **electromagnetic radiation**; see also electromagnetic spectrum on Wiki



electromotive force

Electrical force (pressure, or **voltage**) that moves **current** through a circuit, expressed in *volts*; see also EMF on Wiki

electron tube

Older term for **vacuum tube**

electrostatic discharge

Sudden flow of **static** electricity (of which **lightning** is an extreme example) between two or more electrically charged objects when the difference in charge **potential** overcomes the ability to prevent (by distance or **material** type) the transfer of energy; see also electrostatic discharge on Wiki

element

- Either **active** or **parasitic antenna** conductor section whose length, shape, and size help determine the **radiation pattern** of the antenna
- Numerical designation for a set of **amateur radio** examination questions that are presented to a candidate, such that currently *Element 2* represents the **Technician license class**, *Element 3* represents the **General** license class, and *Element 4* represents the **Amateur Extra** license class; see also exam element credit on ARRL and FCC rules for exam element credit
- Dot or dash in **CW**
- See **Keplerian elements**

elephant

Slang for a **receiver**, especially a **repeater**, that seems to receive farther than it could transmit a signal (think *big ears, little mouth*); see also **alligator**

elevation

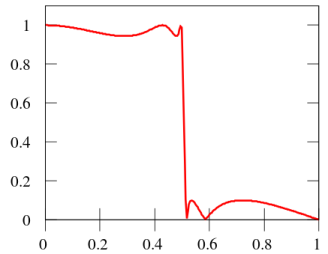
- Angle of incline from horizontal, with respect to level **ground**
- Appearance of something as you look at it from its side; for example, an elevation **radiation pattern** of an **antenna** (often called its **angle of radiation** or *takeoff angle*) is its transmission strength pattern as seen looking at it from the side of the antenna; see also **far-field**

ELF

extremely low frequency : overall **frequency** range of 3 Hz to 30 Hz, which is lower than that considered part of the regular radio frequency range, and has been used to communicate with submarines due to its ability to penetrate deep seawater; see also ELF on Wiki and the RF spectrum

elliptic filter / elliptical filter

Signal **filter** that produces a response with a very narrow **transition band** (very sharp transition), coupled with equal ripples in the **passband** and **stopband** sides; see also elliptic filter on Wiki

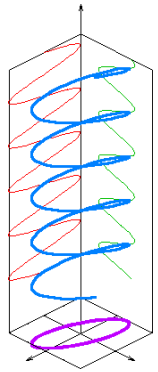


elliptic filter response

elliptical polarization

Polarization of **electromagnetic radiation** in which the travel path of the electric field describes an ellipse in relation to the direction of travel; see also

- elliptical polarization on Wiki
- **vertical polarization**
- **horizontal polarization**
- **circular polarization**


blue = electric field path
orange = side view of the electric field
purple = resulting apparent ellipse

elmer

Slang for a (usually experienced) ***mentor*** or ***tutor*** who offers personal guidance, technical knowledge, assistance, and encouragement to **ham** radio **operators**, especially newcomers and potential hams

ELT

emergency locator transmitter : device (**beacon**) that transmits a signal to indicate location or position during a time of **emergency** or distress; see also ELT on Wiki

EMC
: ***electromagnetic compatibility***

EMCOMM / EMCOM
: *emergency communication* : communication of any type and by any means during a **net**, a drill, or an actual **emergency**; see also EMCOMM on Wiki and EMCOMM on ARRL

EME
: *earth-moon-earth* : **radio** communication technique that relies on the **weak-signal radio wave propagation mode** of signals from an earth-based **transmitter** to an earth-based **receiver** by reflecting the signal off the surface of the moon, often referred to as *moonbounce*; see also EME on Wiki and EME on ARRL

emergency
: **Incident** of unusual or serious concern, alarm, or danger, often associated with a situation that has compromised, or poses an immediate risk to health, life, property, or environment; see also
  - emergency on Wiki
  - disaster on Wiki
  - steps to take during an actual emergency

Emergency Alert System
: Dual-purpose national (established through the **FCC**) public warning system that 1) directs a variety of wireless, cable, and **satellite** broadcasters to provide the President of the United States the ability to address the nation within ten minutes and 2) coordinates with FEMA and NOAA's NWS to warn the public on a more local level about **emergencies**, such as imminent severe weather or other environmental conditions that affect public well-being; see also EAS on Wiki and the main EAS website

emergency traffic
: See **traffic**

Emergency War Powers
: See **War Powers Act**

EMF
- ***electromotive force***
- *electromagnetic field* : physical influence, consisting of an **electric field** and a **magnetic field**, emanating from an electrically charged object; see also EMF on Wiki

EMI
: ***electromagnetic interference***

emission
: Transmitted **RF** field (one that is *emitted* from a location); see also emission types on Wiki and emission types on ARRL

EMP
: *electromagnetic pulse* : short burst of (usually high-energy) **electromagnetic radiation** that can be disruptive or damaging to electronic equipment, primarily due to the high amount of **current** it can **induce** in them; see also EMP on Wiki and Noji's EMP page

emphasis
: Modification of the amplitude-vs.-**frequency** characteristics of a signal to reduce the adverse effects of **noise**, using a pre-emphasis network to increase (boost) the amplitude of higher **audio** frequencies with respect to that of lower frequencies, and a de-emphasis network to decrease the amplitude of higher audio frequencies with respect to that of lower frequencies; see also emphasis on Wiki

encryption / encrypted
: Encoding of a message, transmission, or its information, such that it can only be read or understood by a receiver that is capable of decoding, or authorized to decode, the message; see also encryption on Wiki

end-fed antenna

end-fed
: Type of **antenna** design whose **feedline** connects to one end of a **radiating element**, as in those of a **monopole**, **J-pole** or even a **random wire** configuration; see also encryption on Wiki

end-fed Zepp antenna / endfed Zepp antenna
: See **Zepp antenna**

entity
: See **DXCC Entity**

EOC
: *emergency operations center* : central command and control facility responsible for implementing emergency preparedness and emergency management functions at an upper-management level during an **emergency** or other **incident**; see also EOC on Wiki

equivalent isotropic radiated power
: See **effective isotropic radiated power**

equivalent radiated power
: See **effective radiated power**

ERC
: *Emergency Response Communications* : department of the LDS Church responsible for **emergency** communication and its preparation and training; see also ERC and Lindon Bishops' Storehouse

ERP
: ***effective radiated power***

E_S / Es
: Abbreviation for ***sporadic E***

ES
: **Morse code abbreviation** (not technically a **prosign**) for *and* or *also*
: ***TNX*** *ES* ***73***

ESD
: ***electrostatic discharge***

E-skip / E skip
: See **sporadic E**

ESR
: *equivalent series resistance* : total **AC resistance** effect of an electrical component or circuit (device) at a given **frequency**, as though the resistance is in series with the device; see also ERS on Wiki

evaluation
: See **compliance**

event
: See **special event**

exam session / examination session
: Formal and official arrangement to assess a candidate for **licensing** knowledge and qualification through an **amateur radio** examination

excessive drive
: Signal strength (typically **power** or **voltage**, known as **drive**) applied to a circuit greater than the amount the circuit can tolerate, possibly resulting in **clipping** (on **single sideband**), malfunction, overload, or even permanent damage

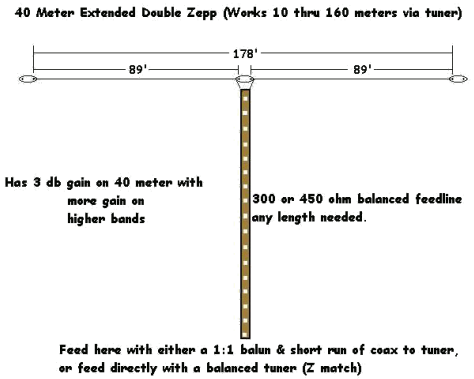
excessive deviation
: See **overdeviation**

exchange
: Predetermined trade of information transmitted and received during a **contest** to verify the **contact** for **logging**, and usually includes your **call sign**, but often includes a sequence number, general location indicator, or **signal report**

exciter
- Once-popular device or circuit of a **tube transmitter** that combines an **oscillator** with the **modulator** to create its output signal
- Device or circuit that **drives** the **final amplifier** of a **transceiver** or **power amplifier**

exposure evaluation
: See **compliance**

extended double Zepp antenna
: Center-fed **dipole antenna** of two 5/8-wave horizontal **elements** that attach to the **feedline** through a quarter-wave vertical **radiating element** often constructed from **ladder line**, making it a little longer than the **double Zepp antenna**



Extra
: See **Amateur Extra**

extraordinary wave
: One of two types of **elliptically polarized radio waves** (also known as an *X-wave*) that results from the interaction with the **ionosphere** and the one that is polarized by the influence of earth's magnetic field; see also birefringence on Wiki and **ordinary wave**

eyeball QSO
: Slang for an in-person **contact** (face-to-face meeting) between **hams** without the use of **radios**
: *We had an eyeball QSO the other day*

EZNEC / EZ-NEC
: Variation of the **NEC** design modeling and **radiation pattern** simulation software; see also antenna modeling on ARRL and the main EZNEC website

F

F10.7 Index
: See **solar flux**

F region / F layer
: Highest section of the **ionosphere**, and the one mainly responsible for the longest **radio wave propagation**, which can reach up to approximately 2500 miles along the earth's surface normally covered in one **hop**; see also F region on Wiki

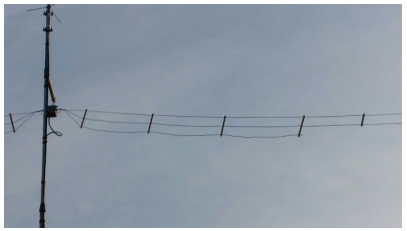
FAA
: *Federal Aviation Administration* : agency of the federal government responsible for regulating every aspect of civil aviation, including the construction and operation of airports and air traffic management; see also FAA on Wiki


fall arrest climbing harness

fall arrest / fall arrester / fall arrestor
: Type of climbing harness designed to safely stop a climber who is already in process of falling, and one of the major forms of fall protection; see also fall arrest on Wiki

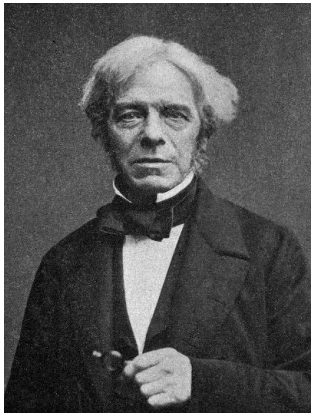
fall protection
: See **fall arrest**

fan dipole antenna
: Type of **multiband dipole antenna**, in which multiple parallel radiating **elements** join at a common point on each side



fan dipole antenna

far-field / far field
: View of a **radiation pattern** for an **antenna** or other object capable of **emitting electromagnetic radiation**, as seen from a relative distance, to observe the overall behavior of the field; see also far field radiation on Wiki (or far field on Wiki for a very technical description)



Michael Faraday

Faraday, Michael
: English scientist whose contributions to the fields of electromagnetism and electrochemistry led to the discovery of **electromagnetic radiation**, which forms the basis of **radio waves**; see also Faraday on Wiki

fast Fourier transform
: Digital process applied to **I and Q signals** in order to recover the **baseband modulation** information, essentially converting the digital signals from the time domain to the **frequency** domain; see also FFT on Wiki

fast-scan television
: See **ATV**

FB
: *fine business* : *OK* or *alright*; see also **Morse code abbreviation**

FCC
: *Federal Communications Commission* : agency of the US government that regulates communication in general; see also FCC on Wiki

FDM
: ***frequency-division multiplexing***

FDMA
: ***frequency division multiple access***

FEC
: *forward error correction* : technique for controlling **data** transmission errors during unreliable or **noisy** communication; see also FEC on Wiki and FEC in MFSK on ARRL

feeder
: Short (primarily British) term for ***feedline***

feed line / feedline
: Electrical wire or set of wires that transfers **radio frequency** signals between your **transmitter** and your **antenna**; see also feed line on Wiki

feedline coupler / feed line coupler
: See **antenna tuner**

feed point / feedpoint
: Point in an **antenna** system (sometimes *antenna feed*) where the **feedline** meets the **radiating element** or other **active elements**; see also feed point on Wiki

feed-through capacitor / feedthrough capacitor
: See **coaxial capacitor**

ferrite choke / ferrite bead

Type of **choke** that uses a ferrite ceramic **core** to suppress high **frequency noise** in circuits; while *ferrite chokes* and *ferrite beads* are usually regarded as the same electrically, *ferrite beads* often refer to the ferrite ceramic core without the wire **inductor** winding; see also ferrite bead on Wiki

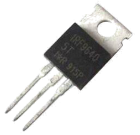

snap-on ferrite chokes

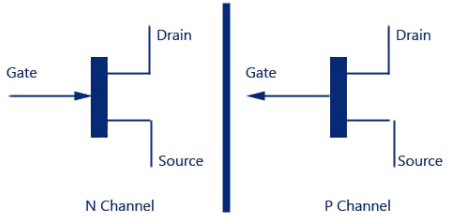

built-on ferrite choke


ferrite beads

FET
field-effect transistor
FFT
fast Fourier transform
FHSS
frequency-hopping spread-spectrum
Field Day
Annual twenty-four-hour period, usually the last weekend in June, in which **hams** engage in a **contest** to collect as many verifiable **contacts** with other hams as they could **log**, to promote training for rapid deployment of **emergency communication** equipment; see also Field Day on Wiki and Field Day on ARRL

field-effect transistor
Transistor characterized by a high input **impedance**, using **source**, gate, and drain **electrodes** (the gate electrode creating an electric field to control the **current** flow through the device), and whose general operating characteristics most resemble that of a vacuum tube; see also FET on Wiki


field-effect transistor



FET symbols

field-programmable gate array
Programmable **integrated circuit** designed to be configured by a customer after being manufactured, to create complex logic functions in a single integrated circuit; see also FPGA on Wiki

FPGA

field strength meter / field-strength meter
Electronic device that measures the **electric field** intensity at a distance from a **transmitter antenna**, once used to determine an antenna's **radiation pattern** and monitor relative **RF** output when making antenna and transmitter adjustments; see also field strength meter on Wiki

field strength meter

filament
Heating element of a **vacuum tube**
filter

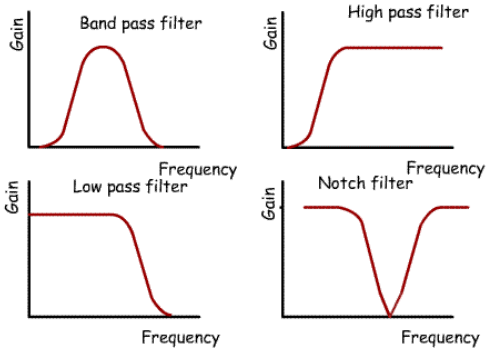
Circuit used to improve a **radio** signal (by removing **noise** from the signal, for example) or process a signal (between the **balanced modulator** and the **mixer** in a **single sideband phone transmitter**, for example); see also electronic filter on Wiki

Some filter types

- **low-pass filter**
- **high-pass filter**
- **band-pass filter**
- **band-reject (band-stop) filter**
- **notch filter**
- **peak filter**
- **Chebyshev filter**
- **crystal ladder / lattice filter**
- **elliptic filter**

Some application-specific filters

- **noise blanker**
- **preselector**
- **anti-aliasing filter**
- **roofing filter**



graphs of various filter types

filter choke

See **choke**

filter skirt

See **transition band**

final

- Slang for a concluding transmission before leaving the **air**
  *I'll be **clear** on your final*
- Short for ***final amplifier***, especially the **transistor** or **tube** used for **power amplification**
  *After troubleshooting my **rig**, I had discovered that its finals were blown*

final amplifier

Device or circuit placed in a **transmitter** where the output signal meets the **feedline**, and can be little more than a **transistor** in the **amplifier stage** of an **HT** or as large as a separate **power amplifier** unit

finite impulse response

Type of **digital signal processing filter** whose impulse response is *finite*, in that it will eventually reach zero, resulting in a filter that is easier to design, and delays all **frequency** components of the signal by the same amount; see also FIR on Wiki

FIR

finite impulse response

fist

Older slang for a **CW operator**'s **keying** style
*I can tell by his fist that he's new at operating **code***
*It's fun to **work** an **operator** with a good fist*

five-and-nine

See **5 by 9**

five-by-five

See **5 by 5**

five-by-nine

See **5 by 9**

five-over-nine

See **5 over 9**

fixed station / fixed-station

See **base station**

flash conversion ADC / flash ADC

Type of **ADC** that uses a linear **voltage** ladder and a comparator to measure the input voltage with respect to successive reference voltages; see also flash ADC on Wiki

flat braid

See **ground braid**

flat strap

See **ground strap**

flat-topping / flat topping
: See **clipping**

float voltage
: **Voltage** at which a **battery** is maintained after being fully charged, to compensate for self-discharge, and which can vary significantly between battery types; see also float voltage on Wiki

FM
: ***frequency modulation***

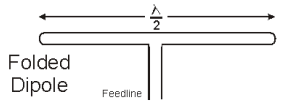
FME
: *for mobile equipment* : model name for a common 50 Ω (primarily **RG-58**) **coaxial cable feedline connector** used for **VHF frequencies** in **mobile** applications; see also FME connector on Wiki

FME connectors

foldback / fold back
: Device (**power supply**, **amplifier**, or **transmitter** of a **transceiver**) output circuit that attempts to limit the amount of **current** being drawn by the **load**, to help protect the device from overload; see also foldback on Wiki

folded dipole antenna
: Type of half-wave **dipole antenna** typically constructed from one wavelength of wire forming a very thin loop, whose **feed point impedance** is approximately 300 Ω; see also folded dipole antenna on Wiki

folded dipole antenna



folded dipole antenna diagram

formal traffic message
: Urgent or important **radio** message specifically formatted with a **preamble** (including the **check**), address (name and address of the intended recipient), text (actual message), and signature (identifies the originator); see also formal traffic message on ARRL and **NTS**

fox hunt / foxhunt / foxhunting / fox hunting
: Also called *T-hunting*, **contesting** activity in which participants attempt to locate a hidden **transmitter** by means of **radio direction-finding**, using a **directional antenna**; see also fox hunting on Wiki

FPGA
: ***field-programmable gate array***

FPIS
: ***forward propagation ionospheric scatter***

frequency
: Number of wave cycles that occur in one second, expressed in *Hertz* (symbol Hz), and can be approximated by the equation f = 300 ÷ λ, in which λ is the **wavelength** in meters and f is the frequency in MHz; see also the RF spectrum chart for frequency designations and frequency on Wiki

frequency coordinator
: Volunteer person or group that is selected by local **amateur stations** to recommend transmit / receive **channels** and other parameters for **auxiliary** and **repeater** stations; see also frequency coordination on Wiki and frequency coordinators on ARRL

frequency counter
: Instrument that measures the precise **frequency** of an input signal; see also frequency counter on Wiki

frequency counter

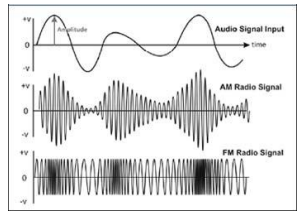
frequency deviation
: See **deviation**

frequency division multiple access
: Method of accessing a particular **data** channel of a **frequency-division multiplexing** transmission system that requires high-performance **filters** for reliable communication; see also FDMA on Wiki

frequency-division multiplexing / frequency division multiplexing
: Communication technique by which a **band** is subdivided into a series of non-overlapping **frequency** sub-bands, each of which is used to carry a separate (either **analog** or digital) signal, thereby giving the appearance of transmitting signals of multiple frequencies simultaneously on a single **transmission line**; see also FDM on Wiki

frequency drift
: Undesirable and arbitrary change in **oscillator nominal frequency**, often due to temperature variation and component aging, and expressed in *Hz/s*; see also frequency drift on Wiki

frequency-hopping spread-spectrum / frequency hopping spread spectrum
: Technique of **spread-spectrum** communication in which the **carrier frequency** of the transmitted signal is changed very rapidly according to a particular sequence that's also used by the receiving station; see also FHSS on Wiki

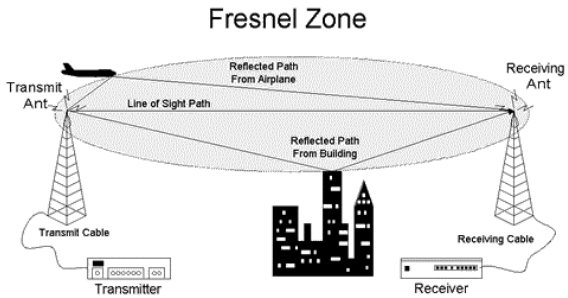


AM and FM waveforms compared

frequency modulation
: Method of combining an information signal (your **voice**, **CW**, **data** packets, etc.) with an **RF** signal of constant amplitude, so that the **frequency** of the output signal varies with the information signal; see also FM on Wiki and **modulation**

frequency multiplier
: See **multiplier**

frequency synthesis
: Creation of multiple **frequencies** (*synthesized frequencies*) or **bands** from a single reference (often a **crystal oscillator**-based) frequency signal, rather than from a continuously-**tunable oscillator** circuit or multiple **crystals**, the two primary methods being **phase-locked loop** synthesis and **direct digital synthesis**; see also frequency synthesis on Wiki



Fresnel zone
: Roughly ellipsoidal (football-shaped) region of space between a **transmitter** and a **receiver** defined by potential object (obstruction) locations lying *off* the **line-of-sight**, resulting in possible constructive (aided by *in-phase*) or destructive (**attenuated** by *out-of-phase*) **interference** patterns, as in **multipath**, often resulting in **picket-fencing** and other irritating sound effects; see also Fresnel zone on Wiki

front end / front-end
: Generic term for all the **receiver** circuitry between the **antenna system** and the **mixer**; typically, all the components in the receiver that process the original incoming **RF** signal before it is converted to a lower **intermediate frequency**; see also RF front end on Wiki

front end filter / front-end filter
: Portion of a **receiver front end** that provides a **band-pass filter**, to reduce strong, out-of-band signals and **image response**

front end overload / front-end overload

See **fundamental overload**

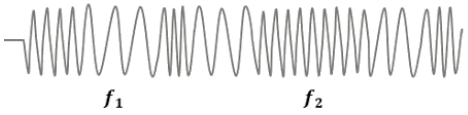
FRS

Family Radio Service : set of **channelized UHF frequencies** allocated by the **FCC** under **Part 95** for **two-way**, **license**-free, and short-distance use, primarily in **walkie-talkies**; see also FRS on Wiki and a chart of assigned FRS/GMRS frequencies [PDF]

Input binary sequence

FSK

frequency-shift keying : low-rate **data** transmission **mode** in which the signal is transmitted through changes in a **carrier** wave **frequency**, of which **audio FSK** and **direct FSK** are the two major **modulation** types, and with **MFSK** and **BFSK** being most applicable forms to (relatively) modern **ham** radio; see also FSK on Wiki



FSK Modulated output wave

FSK441

frequency-shift keying, 441 baud : type of **MFSK data** transmission **mode** (**protocol**) at 441 **baud**, designed to support communication using **meteor scatter** events; see also FSK441 on Wiki

FSTV

fast-scan television

FT4

Franke-Taylor, 4-FSK : type of **FSK data** transmission **protocol** (specifically, **AFSK modulation**) designed to support very **weak signal** communication by decoding signals many **dB** below the **noise floor** (low **signal-to-noise** conditions) using **FEC**, is less sensitive than **JT9** or **JT65**, but transmitting at 6-second intervals, which is 2.5 times faster than **FT8** in **contact** completion; see also

- FT8 on Wiki
- FT4 on ARRL
- FT4 description

FT8

Franke-Taylor, 8-FSK : type of **FSK data** transmission **protocol** (specifically, **AFSK modulation**) designed to support very **weak signal** communication by decoding signals many **dB** below the **noise floor** (low **signal-to-noise** conditions) using **FEC**, is less sensitive than **JT9** or **JT65**, but transmitting at 15-second intervals, which is four times faster in **contact** completion; see also

- FT8 on Wiki
- FT8 on ARRL
- FT8Call website

full break-in / full break in

CW operating **protocol** (also called **QSK**) that allows a listening **station** to **break in** between the very **key-ups** of a transmitting station's individual dots and dashes, making the communication resemble **full-duplex** operation; likewise, allows the transmitting station to receive a transmission between sending code **elements** and characters; see also full break-in on Wiki

full-duplex / full duplex

Communication method that allows sending and receiving transmissions simultaneously; see also full-duplex on Wiki

full gallon

See **gallon**

full-quieting

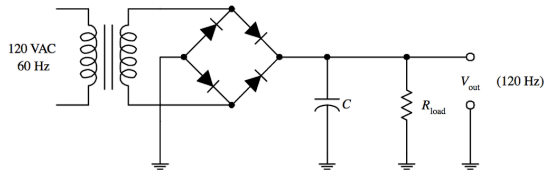
Signal that's clean enough for the receiving **station** to **squelch** all perceptible **atmospheric noise**, **static**, and other **interference**, such that the transmitting station is understood clearly; see **5 by 9**

full-wave bridge

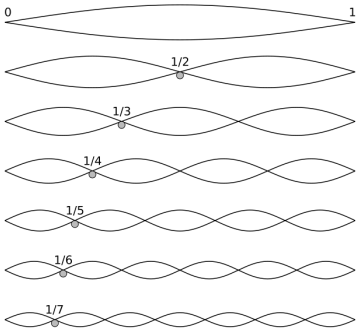
Full-wave rectifier that is constructed from a network of **diodes** to perform the **rectification** function; see also diode bridge on Wiki and bridge circuit on Wiki

full-wave rectifier

Rectifier, such as a **full-wave bridge**, that converts the entire input **waveform**, instead of only a portion of it (see **half-wave rectifier**), into **DC**; see also full-wave rectification on Wiki



full-wave rectifier circuit



fundamental and its overtones

fundamental

- Lowest **frequency** signal of a periodic **waveform**; see also fundamental on Wiki
- Older slang for *parent*

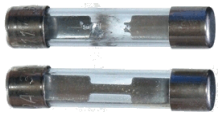
fundamental overload

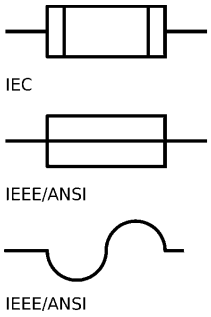
Undesirable effect by an **RF** signal that is strong enough to overload your **receiver** circuitry (overcome your receiver's ability to reject it) by entering your receiver through its components rather than through the **antenna**, possibly because the transmitting source is too close to your receiver or is transmitting with too much **power**, resulting in **distortion** of your **audio** or even shutting down

*Note: fundamental overload is very similar to **desensitization**, except that desensing usually results in a severe reduction in receiver **sensitivity**, whereas fundamental overload many times results in the receiver shutting down its ability to function at all*

fuse

Automatically operated electrical device, typically placed in series with a conductor that supplies **power** to a circuit, that interrupts the flow of **current** through the circuit when the current exceeds a specified rating for a particular amount of time, to protect the powered equipment in case of overload, and is typically not re-usable after being blown; see also fuse on Wiki and **circuit breaker**


glass tube fuses
top = 'blown'
bottom = 'good'



fuse symbols

Fusion

See **System Fusion**

G

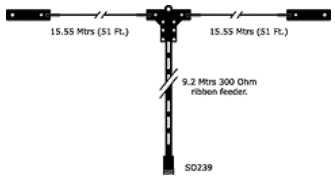
G5

Most severe level of **geomagnetic storm** measurable (labeled *extreme*), in **space weather** terms

G5RV

Shortened version of the **double Zepp antenna** and adaptation of the **doublet antenna**, **multi-band**, **dipole antenna** fed with **coax** and a **balun** through a length of open-wire **transmission line** (such as **ladder line**), serving as one of its **radiating elements**; see also G5RV antenna on Wiki


G5RV antenna



G5RV antenna diagram

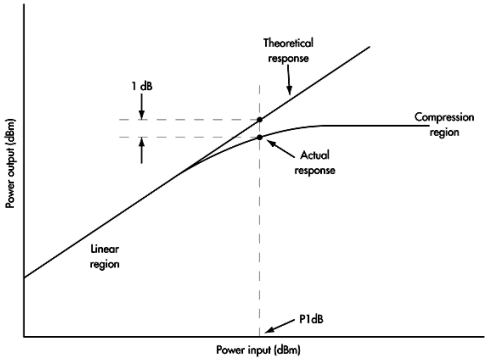
G5RV, Junior / G5RV Junior / G5RV, jr / G5RV jr

Version of the **G5RV antenna** physically shortened for space restrictions, and typically limited to **40 meters** and higher

gain

- Ratio of the radiated signal strength of an **antenna** *in the direction of maximum radiation* to that of a **reference antenna** (another way to look at it is the ratio of the amount of **power** required by an **isotropic radiator** with respect to the amount of power required by a particular **antenna** to produce the same field strength at a point, expressed in **dBi**, or the ratio of the amount of power required by a **dipole antenna** with respect to the amount of power required by a particular antenna to produce the same field strength at a point, expressed in **dBd**); see also antenna gain on Wiki

- Quantified ability of a **transistor** to amplify a signal

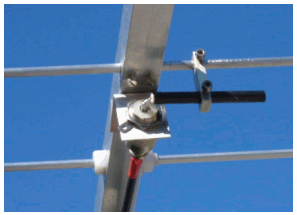


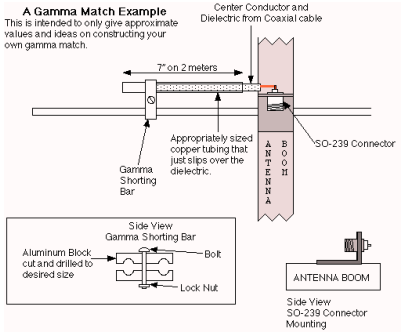
graph showing gain compression

gain compression
: Ratio of the amount of nonlinear **amplifier gain** (**distortion** due to **saturation**) with respect to its ideal linear gain, expressed in **db**, and often associated with **receivers** that have a wide **dynamic range** (not to be confused with dynamic range compression, a desirable audio process); see also gain compression on Wiki

gallon
- Slang for ***1000 watts*** (or often *full gallon* when referring to 1500 watts)
- Slang for ***1 kW*** when referring to **CW** or *1.5 kW* ***PEP*** when referring to **phone** or other **modes**
  *My **station**'s running a full gallon*

gamma match / gamma matching system / gamma matching network
: **Impedance matching** technique that matches an **unbalanced feedline** to an **antenna** by **capacitively** connecting the feedline to the antenna at both the center of the **driven element** and at a fraction of the intended **wavelength** to one side of the element center, the series capacitance intended to cancel the **inductive reactance** of the matching network


gamma match



gamma match diagram

gassy tube
: **Vacuum tube** into which some air molecules have penetrated, possibly changing some of the tube characteristics; see also vacuum tube reliability on Wiki

gateway
: **Ham** radio **station** that is used to connect other ham stations to the internet

gauge
: See **AWG**

Gaussian minimum-shift keying
: Form of **MSK data** transmission in which the data stream is shaped with a Gaussian filter prior to modulation; see also GMSK on Wiki

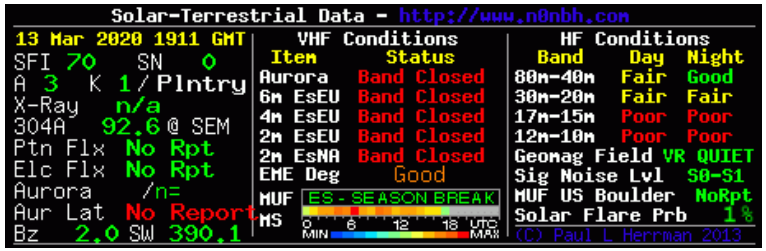
gear
- Slang or short for any kind of **ham** radio equipment
  *I plan to **pick up** some more gear at the next **hamfest***
- Slang or short for any kind of equipment
  Don't forget your snow gear on the way out

General
: Current mid-level **ham** radio **license class** whose privileges cover most **frequencies** of all **amateur bands**, and that certifies the **licensee** as one having a much greater understanding of FCC regulations, operating practices, and electronics than that of a **Technician** class licensee; see also General license on ARRL

general coverage
: Feature attributed to a **receiver** that can accept and **demodulate radio-frequency** signals outside the **amateur bands**, specifically (typically) 100 kHz to 30 MHz, often for **shortwave listening**

geomagnetic index / geomagnetic indices
: Semi-logarithmic quantification of disturbances in the earth's magnetic field, denoted primarily by the *K-index* (0 through 9), which can vary throughout the day (an indicator of the short-term stability of the

earth's magnetic field), and often accompanied by the *A-index* (0 through 400), which is a daily average (an indicator of the long-term stability of the earth's magnetc field); because measurements of these values could vary between earthly locations, the *planetary* (meaning global) *K_P-index* **K_P-index** and **A_P-index** are often provided instead; disturbances such as **geomagnetic storms** can affect **HF** radio communication greatly, with generally ***the higher the index the more HF communication is degraded***; see also K-index on Wiki

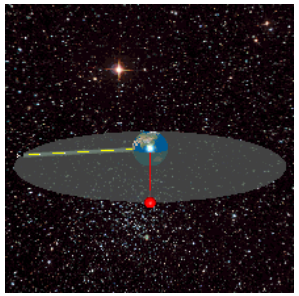


solar activity report showing the current planetary (globally averaged) indices K_P and A_P in the upper portion of the left column

geomagnetic storm
: Temporary disturbance in the earth's **magnetosphere**, resulting in both degraded high-latitude **HF propagation** and **auroras**, which can reflect **VHF** signals; see also geomagnetic storm on Wiki

geometrical horizon / geometric horizon
: See **horizon**

geostationary
: Appears to stay in one position, or does not appear to move, relative to the earth, referring to an object that is orbiting in a circle directly above the equator, applicable to **satellite** and **space station** orbits; see also geostationary orbit on Wiki
: *Note: a geostationary orbit is a special case of the geosynchronous orbit, in that not only is the orbiting object synchronized with the earth's rotation, but it's also orbiting 1) in a circle and 2) directly over the equator, making it appear motionless*


geostationary illustration

get kit / get-kit
: See **go-kit**

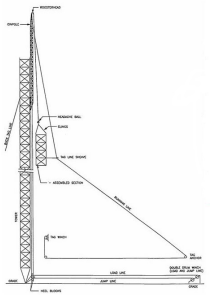
getter
: Reactive material deposited in a **vacuum tube** to absorb or chemically combine with air molecules that penetrate the evacuated enclosure, to maintain the tube's vacuum; see also getter on Wiki and getter construction on Wiki

GFCI
: ***ground-fault circuit interrupter***

GFI
: ***ground-fault interrupter***

giga
: Prefix, or units modifier, to indicate × 1,000,000,000 or × 10^9, and is abbreviated G


gin pole


gin pole use diagram

gin pole
: Rigid rod, or supported pole with a pulley system, to safely lift or hoist an **antenna**, **tower** section, or other equipment into a position where it can be secured to a structure or another section below it; see also gin pole on Wiki

glass-mount / glass mount / glassmount
: Type of **antenna mount** made from (typically) two metal pieces that adhere to opposite sides of a glass window or other non-conductive surface, and connect to each other by **capacitive coupling**, with one of the pieces forming the base of an

antenna, typically for **mobile** and **portable** applications

glass-mount antenna

glowbug

glowbug
: Slang for a **homebrew ham** or **shortwave radio** made with **vacuum tubes**; see also glowbug on Wiki and glowbugs on Wiki

GMRS
: *General Mobile Radio Service* : set of **channelized UHF frequencies** allocated by the **FCC** under **Part 95** for **two-way**, ***licensed***, and short-distance use, primarily in **walkie-talkies**; see also GMRS on Wiki and a chart of assigned FRS/GMRS frequencies [PDF]

GMSK
: ***Gaussian minimum-shift keying***

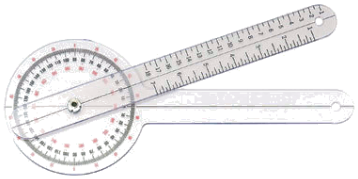
GMT
: See **UTC**

go ahead
: *begin speaking now*; see also voice procedure on Wiki

go-kit / go kit / gokit
: Type of **portable** survival equipment package (also known as *go-bag*, *72-hour kit*, *jump-kit*, *ready-kit*, *bug-out bag*, *grab-n-go kit*, *get-kit*, *disaster-kit*, *bail-out bag*, *go box*, and *battle box*, with the longer-term (as in several days) type more appropriately referred to as a survival kit) that can be quickly picked up and carried by an individual during a moment of **emergency** or other crisis, and usable for at least 72 hours; see also bug-out bag on Wiki

go-kit

goniometer
: Device that measures the angle between two distant objects with respect to a stationary position (similar to a protractor, but typically with moving parts) to aid in **radio direction-finding** by use of **triangulation**, for example; see also goniometer on Wiki



goniometer

GOTA
- *Get on the Air* : general invitation to **ham** radio **operators** to become active in the **craft**; see also GOTA on ARRL
- *Get-On-The-Air* : particular **station** set up in conjunction with **Field Day** to allow inactive or non-**licensed** individuals to participate in making **contacts**, subject to ARRL rules [PDF]

GPS
: *global positioning system* : government-sponsored and space-based **satellite** navigation system that provides location and time information anywhere on or near the earth within **line-of-sight** of four or more GPS satellites, regardless of weather conditions; see also GPS on Wiki

grab-n-go / grab and go / grab-and-go / grab & go
: See **go-kit**

grant
: Issue, award, or bestowal of a **license** or certificate, typically the result of proficiency demonstration or examination, such as a ***primary station*** *license grant*

Gray code
: Digital code (binary numeral system) in which the character preceding or following a particular character differs by only one bit, which facilitates error detection; see also Gray code on Wiki

gray-line / gray line / grayline / grey-line
: Type of **RF propagation** by enhanced **HF radio waves** along the **terminator** between daylight and darkness, which occurs around sunrise and sunset (**twilight**) when D-layer absorption (which absorbs HF signals of **frequencies** lower than 15 MHz) is weak, while **E-layer** and **F-layer** propagation remain strong; see also propagation of RF on ARRL and **ionosphere**

green stamp
: Slang for ***US dollar (USD) bill***

green stamp

grid
- Portion of a **vacuum tube** that controls the flow of electrons internally from the **cathode** to the **anode** (plate), or in other words, the flow of **current** internally from the anode to the cathode, and usually includes a *control grid*, *screen grid*, and *suppressor grid*; see also control grid on Wiki
- Slang or short for ***electrical grid***
- Short for ***grid locator***

grid current
: See **vacuum tube**

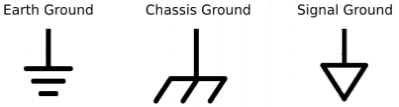
grid dip meter / grid-dip meter / grid-dip-meter / grid dip oscillator
: See **dip meter**

grid locator
: Also called *Maidenhead Locator* and ***QTH*** *locator*, world-wide system of letter-number designators assigned to a specific geographical area known as a ***grid square***, outlined by latitude and longitude boundaries; see also Maidenhead Locator System on Wiki

grid power
: See **household power**

grid square
: Letter-number designator assigned to a specific geographical area measuring 2.5 minutes latitude by 5 minutes longitude, by the **grid locator** system; see also grid square on ARRL

ground
- Reference point in a circuit by which **voltages** are measured; common return path for electric **current** in a circuit; see also electrical ground on Wiki and **grounding**
- Physical connection to earth **potential**, often called *earth ground*, and not to be confused with **bonding**, which ensures two points have the *same* potential, which *can be* earth ground potential



ground symbols

ground braid / grounding braid / flat braid
: Cable typically made of braided tinned copper or braided copper for **bonding**, which ensures two points (such as **radio** equipment) being connected have the same electric **potential**, which ideally is **earth ground** potential

ground braid

American GFCI outlet

ground-fault circuit interrupter

Type of fast-acting **circuit breaker** (formerly *GFI*, ground-fault interrupter, and outside the US often known as *RCD*, residual-current device) designed to shut off electric **power** in a circuit when it detects that more **current** is flowing through one conductor than through its return path conductor, indicating a possible imbalance, which typically occurs if part of the current is flowing through an unintended path, such as water or human tissue; see also GFCI on Wiki

grounded-grid amplifier / grounded grid amplifier

Type of **vacuum tube power RF amplifier**, with the **control grid** (and sometimes the screen grid) of the tube connected to **ground**, which configuration provides a low input **impedance** and simplifies design, while nearly eliminating the potential for self-**oscillation**, but suffers from relatively low **gain**; see also grounded-grid amplifier on Wiki

ground loop

Undesirable condition in which two points in a circuit that are supposed to be at the same (usually **earth ground**) **potential** are actually at different potentials; see also ground loop on Wiki

ground plane

- Type of **antenna** named for the electrically conductive surface or network (of rods, wires, cones, screens, etc.) attached to the antenna to compensate for lack of direct connection to **earth ground**
- Electrically conductive surface (**earth ground**, car body, refrigerator, etc.) or network (of rods, wires, cones, screens, etc.) that serves as the ground part of a (typically **vertical**) **antenna**; see also ground plane on Wiki
- Electrically conductive area of a printed circuit board or independent circuit that serves as the signal **ground** reference for the circuit

ground plane antenna

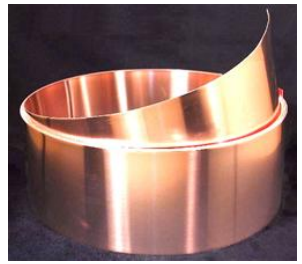
copper-clad ground rod

ground rod

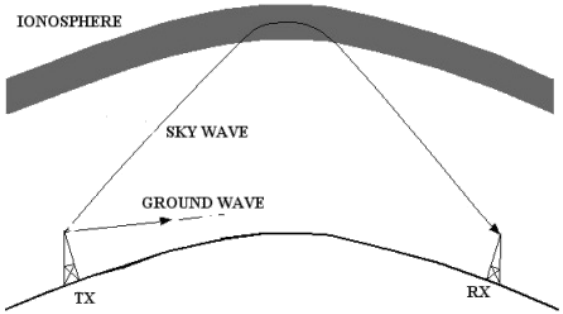
Metallic electrode installed in direct contact by relatively large surface-area with the **ground** (dirt), to provide a path to *earth ground* or electrical reference; see also ground rod on Wiki

ground strap / grounding strap / copper strap

Flat ribbon conductor made of copper (often called *flat strap* or *copper strap*) for **grounding** equipment in your **shack** to minimize losses in your **RF** grounding system



flat copper strap



ground wave / ground-wave
: Type of **RF propagation** (also called *surface wave*) that uses the area between the surface of the earth and the **ionosphere** for **radio** signal transmission, and can often follow the curvature of the earth for some distance, thereby extending beyond the **line of sight**; see also ground wave propagation on Wiki

grounding
- System of interconnected wires, **straps**, **rods**, and cabling that provides a stable electrical reference to **ground** (preferably *earth ground*); see also grounding system on Wiki
- Practice of providing or ensuring a connection to **ground** potential

guard
: Slang for aircraft **emergency frequencies** (121.5 MHz AM for civilian and 243.0 MHz AM for military) reserved for distress communication; see also aircraft emergency frequencies on Wiki

guide wire / guide-wire / guidewire
: Misspelling or mis-pronunciation of **guy-wire**

gummers
: Slang or short for ***GMRS***

Gunn diode
: Electronic **semiconductor** (also known as a *transferred electron device*) that is uniquely distinguished from other kinds of **diodes** because it presents a negative **resistance** with a positive applied **voltage**; used primarily in high-**frequency** applications such as **radar** speed guns, **microwave relay data link transmitters**, and microwave ovens; see also Gunn diode on Wiki

Gunn diodes

Gunn diode symbol

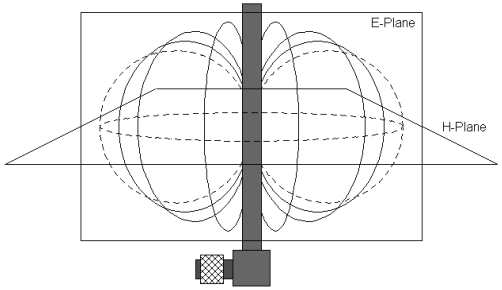
Gunn diode oscillator
: Circuit that is dependent on the negative **resistance** properties of a **Gunn diode** to produce **oscillations**; see also Gunn diode oscillator on Wiki

guy-wire / guy wire / guywire / guy-line
: Rope, cord, or other (typically flexible) cable used to support a **mast** or **tower** of a **radio antenna system**, to keep the structure in a particular position or prevent it from falling or from excessive motion, due to **wind load** or other movement; see also guy-wire on Wiki and guyed mast on Wiki

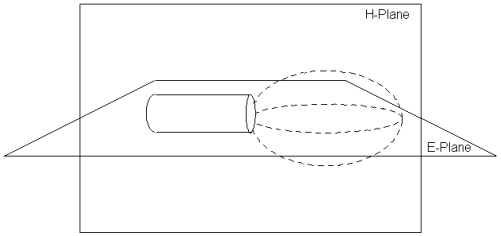
guy-wires supporting an antenna mast

H

H-plane / H plane
: Flat geometric surface defined by the magnetic wave component of an **electromagnetic wave** in a particular direction, also known as the *vertical plane* or *elevation plane* of a horizontally **polarized antenna**, or the *horizontal plane* or ***azimuthal*** *plane* of a **vertically** polarized antenna; see also H-plane on Wiki



E and H planes for a vertical antenna



E and H planes for a Yagi antenna

HAAT
: *height above average terrain* : difference (also known as EHAAT, or *effective height above average terrain*) in altitude of an **antenna** site and the altitude of the average surrounding landscape of interest, often used by **broadcast** engineers, but also used by those installing an **amateur repeater** to help determine repeater range; see also HAAT on Wiki

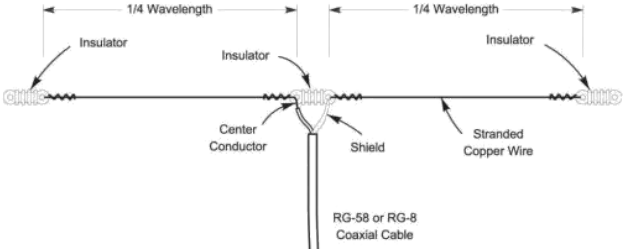
half-duplex / half duplex
: Communication method that allows sending and receiving transmissions one direction at a time, so that the listening **station** is unable to transmit until after the end of the currently transmitting signal; see also half-duplex on Wiki

half-power bandwidth / half power bandwidth / halfpower bandwidth
: See **3 dB bandwidth**

half-power beamwidth
: See **beamwidth**

half-wave dipole / halfwave dipole
: Type of **dipole antenna** that consists of two identical, and usually bilaterally symmetrical, conductive **elements** that together are measured to be one-half-**wavelength** of the intended **frequency** times the **velocity factor** of the element material, and is the antenna that provides the reference for **dBd gain** measurements


half-wave dipole antenna

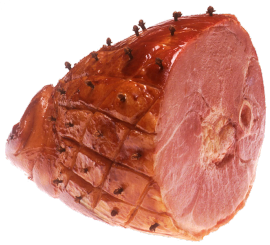


half-wave dipole antenna diagram

half-wave rectifier
: Circuit or device that converts (***rectifies***) exactly half of the input **waveform**, instead of the entire signal (see **full-wave rectifier**), into **DC**; see also half-wave rectification on Wiki

ham
- Slang for hobby, practice, or equipment associated with **amateur radio**, originally a taunt expressed by professional operators (some assert the unsubstantiated claim that *HAM* might be an acronym); see also
  - ham radio operator on Wiki
  - historical terms on ARRL for an explanation on the possible origin of the word
  - etymology of ham on Wiki for yet another explanation
  - history of amateur radio on Wiki

  *I enjoy ham **radio***
  *Richard owns a lot of ham **gear***
- Slang for ***amateur radio*** *hobbyist or practitioner*
  My father was also a ham



HamCation®
: Specific and unusually large **hamfest** held annually in Orlando, Florida; see also HamCation announcement on ARRL and the main HamCation website

ham cave / hamcave
: See **shack**

HamCon / Ham-Con

See **hamfest**

hamexpo
: See **hamfest**

hamfest
: Informal social gathering or convention (sometimes *hamvention* and *hamexpo* and *Ham-Con*) between people who are interested in **ham** radio, and can include exhibits, forums, and a **swap meet**; see also hamfest on Wiki and hamfest on ARRL

ham net / hamnet
: See **net**

ham police
: See **Amateur Auxiliary**

ham radio
: Nickname for ***amateur radio***

ham shack / hamshack
: See **shack**

hamspeak / ham speak
: Language, terminology, and slang used among **ham** radio **operators**, hobbyists, and enthusiasts

hamvention
: See **hamfest**

handheld transceiver
: **Portable transceiver** (also known as a *handy-talkie* or *HT* or *handy-scratchy* or simply *handy*) that is small enough to carry around in your hand; see also two-way radio on Wiki and **walkie-talkie**

handheld transceiver

handle
- Older slang for *first name*
- CB slang for *nickname*

handy-talkie / handy-scratchy
: See **handheld transceiver**

hang time / hangtime
: See **carrier delay**

hard line / hardline / hard-line
: Type of **coaxial cable** that consists of a solid outer conductor instead of braid, resulting in very low **loss**, typically used in **repeater** applications; see also hard line on Wiki

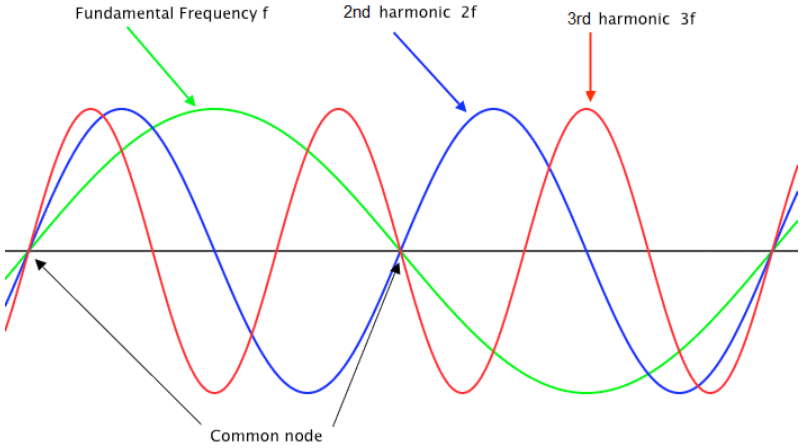
Heliax™ hardline

harmful interference
: Serious degredation, obstruction, repeated interruption (also called *willful interference* if it is deliberate), or excessive **noise** that prevents proper **radio** operation at any time, especially during an **emergency** or other critical moment (said to be *harmful* because a person's life could depend on your ability to communicate)

harmonic
- Integer multiple of a **fundamental frequency**, such that the fundamental frequency is the *first harmonic*, twice the fundamental frequency is the *second harmonic*, etc. (**overtones** do not include the

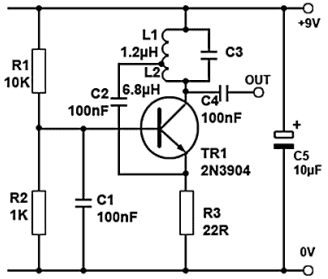
fundamental frequency); see also harmonic on Wiki

- Older slang for *child*, particularly that of a **ham**



Hartley oscillator

Oscillator circuit that generates a **waveform** using **positive feedback** supplied through a **tapped coil**, and is one of (at least) three primary oscillator circuits used in **amateur radio** equipment, commonly in a **VFO** circuit; see also Hartley oscillator on Wiki



circuit employing a Hartley oscillator

hash

Short for ***RF hash*** and older slang for ***broadband noise***

headphones / head phones

Pair of small speakers (sometimes *earphones* and *cans*) worn on or over the ears by a **station operator**, can also be a single speaker instead of a pair; see also headphones on Wiki

headphones

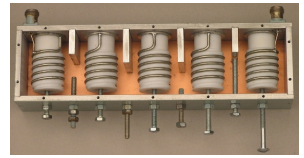
headset / head set

Combination of **headphones** and **microphone** used as a unit by a **station operator** for two-way communication; see also headset on Wiki

headset

heater
: Nickname for **vacuum tube filament**

Heliax®
: Brand name (often *Andrew™ Heliax®* or *Andrew™ cable*) of a very low-**loss**, rugged, and relatively expensive **hard line coaxial cable**, often characterized by a corrugated outer **shield** and a low-density foam (often abbreviated *LDF* in product names) or air **dielectric**



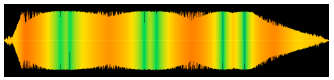
VHF helical resonator

helical resonator
: Type of **high-Q filter** used typically in a **repeater** to isolate or protect a particular **RF** signal from **interference** by other RF signals close in **frequency** to that used by nearby repeaters or other **transmitters** (such as **television** and telephone); see also helical resonator on Wiki and **cavity filter**

Hepburn map
: Graphical image to aid in predicting the probability of **tropospheric propagation** for **radio waves**

heterodyne / heterodyning
- **Mixing** (combining) of two **RF** signals to shift them into a **frequency** range that is easier to process, for purposes of **modulation** and **demodulation**; see also heterodyne on Wiki
- Audible rise and/or fall whine created by the **demodulation** of two mismatched signals that are attempting to combine into an **intermediate frequency**

audible heterodyning example



click to listen

HF
: *high frequency* : overall **frequency** range of 3 MHz to 30 MHz (although most **hams** also include the **160-meter** band when considering the HF spectrum); see also HF on Wiki and the HF frequency designation in the RF spectrum

HF scatter
: **Propagation** of **radio** signals as they are scattered into the **skip zone** through several different **radio wave** paths, often resulting in a wavering or **distorted** sound

HI HI / HIHI
: *ha ha* : laughter; see also **Morse code abbreviation**

high-pass filter
: Circuit or device that **filters** out most or all signals with **frequencies** lower than a particular *cut-off* frequency, thereby allowing signals of all higher frequencies to *pass through* the device, useful for preventing **DC** from entering sensitive circuits and low-frequency **RF** signals from interfering with the intended signal, such as with the case of **fundamental overload**; see also high-pass filter on Wiki

high-pass filter

high-speed multimedia radio

Wireless high-speed **data** network (*mesh*) over **amateur radio frequencies** using commercial off-the-shelf hardware such as a WiFi router or **D-STAR** equipment, for use in *Amateur Radio Emergency Data Network* (AREDN); see also

- HSMM on Wiki
- main Broadband-Hamnet™ (BBHN) / HSMM-Mesh website
- main AREDN (successor to BBHN) website
- mesh networking on Wiki

Hilbert transform filter / Hilbert-transform filter

Type of **digital signal processing filter** often used to generate a **single sideband radio** signal; see also Hilbert transform SSB filter on Wiki

hit the repeater / hitting the repeater

Slang for ***access the repeater*** or ***communicate with the repeater***, in an effort to make use of a **repeater**'s repeat and other functions (such as **IRLP** or **autopatch**)

*I can **copy** you, but you're not hitting the repeater*

HOA

homeowner association : corporation established by a real estate developer to market, manage, and sell homes and lots in a residential subdivision, which management can include enforcement of applicable **CC&Rs** that limit the installation of **ham** radio equipment; see also HOA on Wiki

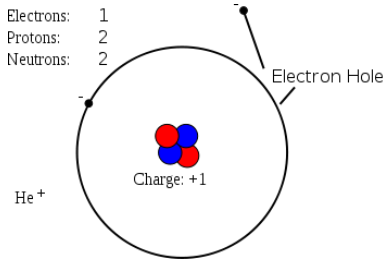
hold the repeater / holding the repeater

Slang for ***keep the repeater open*** or ***maintain repeater access***, in an effort to maintain continuous use of a **repeater**'s repeat and other functions (such as **IRLP** or **autopatch**); see also **open**

*I can **copy** you, but you're not holding the repeater*

hole

Lack of an electron at a position where one could exist in an atom or atomic lattice of a doped **semiconductor** material; see also electron hole on Wiki



hole left after an electron leaves an atom

hole-mount / hole mount

See **through-hole mount**

holiday-style / holiday style

Slang for a relatively relaxed **station** operating plan (typically in reference to a **DXpedition** or **special event** station), in which **on-air** operation might be seccondary to the intended journey, or that making contacts is not the station's first priority (the station will operate as time permits, in between activities, for example); often synonymous with **vacation-style**

homebrew / home brew

Slang for ***home-made***; see also homebrew on Wiki and **DIY** and the DIY page

hop

Travel path of a **radio wave** from the **transmitter** to the **ionosphere**, then **reflected** down to a **receiver** (**skip** refers to the **propagation** mode, while *hop* refers to the path of travel); see also **skip distance** and hop on Wiki

horizon

Perceived boundary between earth and sky from a given height

- *visual horizon* / *visible horizon* : also known as *skyline*, apparent line or circle that separates the earth from the sky, whose distance is approximately 8 percent greater than the geometrical horizon because of downward bending caused by atmospheric density variations; see also visible horizon on Wiki
- *radio horizon* : distance over which two **stations** can communicate by direct path (also known as *line-of-sight propagation* when applied to signals of frequencies higher than 30 MHz), approximately 15 percent greater than the geometrical horizon because of downward bending caused by atmospheric density variations; see also radio horizon on Wiki and effect of atmospheric refraction on Wiki
- *geometrical horizon* / *true horizon* : calculated boundary between a spherical body (such as a star, planet, or moon, but in most applications, a spherical earth) and its sky, assuming ideal (no atmosphere) conditions; see also geometrical horizon on Wiki

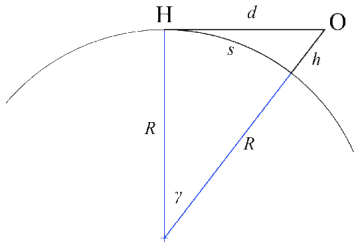


diagram showing geometrical horizon H to observer O of height h

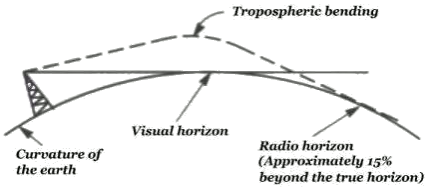
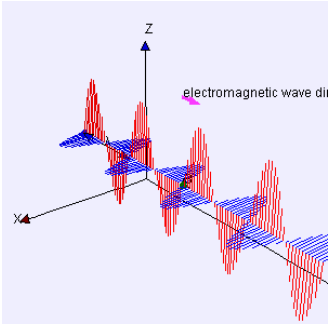


diagram showing radio horizon compared with visual horizon

horizontal loop

See **skywire antenna**



horizontal polarization
: Alignment of a signal's **electric field** parallel to the level surface of the earth (actually, perpendicular to the vector force of Earth's gravity), and a signal with such an alignment is said to be *horizontally polarized*; see also
- horizontally linear polarization on Wiki
- **vertical polarization**
- **elliptical polarization**
- **circular polarization**

hot
- Slang for wire or other conductor in a (particularly **AC**) electrical system that has electric **potential** relative to **ground**; see also hot on Wiki
  *The **circuit breaker** is inserted into the hot wire side of your **household electrical supply***
- Slang for over-**driven microphone** that results in **clipping**
  *Your **audio** is running hot*
- Slang for excessive amount of **RF** signal flowing in the **radio** cabinetry or housing; see also **RF feedback**
  *My **power supply** housing is way too hot (notice the reference here is not to temperature)*

hot-carrier diode / hot carrier diode
: See **Schottky diode**

hot mic
: Slang for **microphone** that is turned on
  *I accidentally **broadcast** some rather personal comments while my **mic** was hot*

house current / house power
: See **household power**

household power
: General-purpose household **AC** electrical **power** that is supplied to a home, business, or facility; see also household power on Wiki
  *Note: people in the UK tend to agree on the term **mains power** when referring to household electrical power, while we in the US are in general disagreement on what to call it, due primarily to the conflict between common modern usage and precise descriptive language, and so have come to use a variety of terms such as **house current**, **AC power**, **utility power**, **city power**, **wall power**, **outlet power**, **line voltage**, etc., for convenient reference*

HPSDR
: *high-performance software-defined radio* : open-source (GNU type) hardware and software project defining *next-generation* **software-defined radio** by a more modular approach (using a common bus); see also HPSDR on Wiki and the main OpenHPSDR website

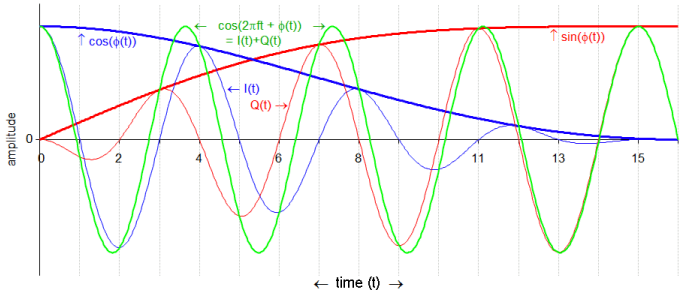
HSMM
: ***high-speed multimedia radio***

HT
: ***handheld transceiver***

hum
- Unwanted and often constant low-**frequency** sound, characteristic of an unintended **oscillation** or **ground loop** within a circuit
- See **power line noise**

I

I/Q data / IQ / I and Q signal
: *in-phase / quadrature* : components of a **modulated** signal that reflect changes in the amplitude and phase of a sine wave, used for **digital signal processing** or in analysis; see also I/Q on Wiki



I/Q components of a modulated signal

I signal / I data
See **I/Q data**


iambic keyer

iambic keyer / iambic paddle
Dual-paddle telegraph **key** that requires a (typically sideways) squeezing action to produce **CW** tones, unlike a **straight key**; see also iambic keyer on Wiki

IARP
International Amateur Radio Permit : permit that allows a licensed **amateur** of participating (North, South, Central American, plus Caribbean) countries to operate in any other participating country without an additional **license** or permit; see also IARP on ARRL and **CEPT**
*Note: operating an amateur **station** in an IARP country using **General** class or higher privileges requires demonstration of **Morse code** proficiency*

IARU
International Amateur Radio Union : international collection of national **amateur radio** organizations that provides a forum to address common concerns and represents issues to the **ITU**; see also IARU on Wiki and IARU / ITU region map

IC
- ***Incident Commander***
- ***integrated circuit***

ID
- *identification* : in most cases, a **call sign**
  *The **repeater**'s ID is K7UVA*
- State or send a **Call sign**
  You need to ID every ten minutes and at the end of your transmission

IF
intermediate frequency

IIR
infinite impulse response

image
Communication **mode** (such as **ATV** and **SSTV**) used for transmitting **analog** pictures over **radio waves**, often for reporting severe weather information, location announcements, and individual identification; see also image modes on ARRL

image rejection
Ability for a **superheterodyne receiver** to reject unwanted signals that result from **image response**; see also image rejection on Wiki

image response
Undesirable signal generated when a **superheterodyne receiver mixes** a **VFO frequency** with a received signal to produce an **IF** signal; in other words, the unwanted signal is a 'mirror image' of the receive signal in response to the mixing function; see also image response on Wiki and superheterodyne image response on Wiki

imbalance current
See **common-mode current**

IMD
intermodulation distortion

IMF
interplanetary magnetic field

IMI
intermodulation interference

impedance
Quantity of opposition to **current** flow in a circuit, expressed in *ohms* (symbol Ω) and defined as Z = R + jX, in which Z is the impedance, R is the real (**DC**) **resistance**, j is the imaginary unit, and X is the **reactance** see also impedance on Wiki and **admittance**

impedance matching
Practice of designing or adjusting the **impedance** of a circuit or signal **source** to maximize the amount of **power** transferred to its **load**, or minimize the amount of **reflection** returned from its load, the failure to properly match a load to its source called an *impedance mis-match*; see also impedance matching on Wiki

IMRR
image response rejection ratio : ratio of **IF** signal strength produced by the received signal with respect to that produced by the **image response**, expressed in **dB**; see also image rejection on Wiki

in-and-out
See **early-out**

in-phase / in phase / inphase
See **I/Q**

in the mud
See **mud**

incident
Situation, occurrence, or risk that poses a threat to health, life, property, or environment, and one that might require the services of an *Incident Management Team* or *Incident Response Team*; see also **emergency**

Incident Commander
Highest-level leader in the National Incident Management System during a particular **incident**, and the person in charge of managing and coordinating all resources in conjunction with the incident; see also ICS on Wiki and incident management on Wiki

inductance
Property of a conductor that defines its ability to store electrical energy in a magnetic field to resist changes in the **current** through it, expressed in *henries* (symbol H), and whose magnetic field can *induce* (create) a voltage in itself and one or more nearby conductors; see also inductance on Wiki

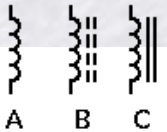
inductance index
Specification of **inductor core**, dependent upon its material **permeability**, dimensions, and shape, expressed in **inductance** per square turn

inductive coupling
Effect of two or more circuits not connected to each other being close enough that an **AC current** through one can result in an AC **voltage** across the others through **mutual inductance**; see also inductive coupling on Wiki

inductive reactance
Imaginary quantity of opposition to **current** flow in a circuit (**reactance**) due to **inductance**, that varies with **frequency** and is expressed in *ohms* (symbol Ω) and defined as $\mathbf{X_L}$ = ωL, in which L is the inductance and ω is the frequency in radians (ω = 2πf, in which f is the frequency in Hz); see also inductive reactance on Wiki

inductive time constant
See **time constant**


assorted inductors



inductor symbols
A = air-core
B = ferrite choke
C = iron-core

inductor
Electrical component that resists changes in electric **current** passing through it and stores energy in a magnetic field; these include air-**core chokes**, iron-core **toroids**, and **transformers**; see also inductor on Wiki

inductor core
Centrally located **inductor** section (sometimes called a ***slug***) of greatest magnetic field concentration, highly dependent on material type, of which soft iron, powdered metals, ferrite, air, and some special alloys are among the most common; see also magnetic core on Wiki

assorted inductor cores

inductor tap
: See **tap**

infinite impulse response
: Type of **digital signal processing filter** whose impulse response can be *infinite*, in that it might never reach zero, resulting in a filter that is generally easier to implement for a given set of **passband rolloff** requirements; see also IIR on Wiki

input-offset voltage / input offset voltage
: Differential input **voltage** of an **op-amp** required to bring its open-loop output voltage to zero; see also input-offset voltage on Wiki

input frequency
: Value of a **repeater**'s **frequency** at which it receives incoming signals to eventually re-transmit them on its **output frequency**; see also **repeater offset**

insertion loss
: Signal **loss** introduced by the addition of an electric component, such as a **connector**, **filter**, meter, **switch**, or **feedline** extension; see also insertion loss on Wiki

insulator
: Material that does not conduct electric **current** under working **voltages**, such as plastics and glass; see also insulator on Wiki

integrated circuit
: Device that combines several **semiconductors** and other components into a single package (*chip*) or collection of packages (*chipset*), which can be digital (such as a **digital signal processor**) or analog (such as a voltage **regulator**); see also integrated circuit on Wiki

intercept point
: See **third-order intercept point**

interference
: Anything that discrupts or modifies a **radio** signal; interruption or excessive **noise** in a radio transmission; see also **harmful interference** and interference on Wiki
  Your radio is putting out a lot of interference

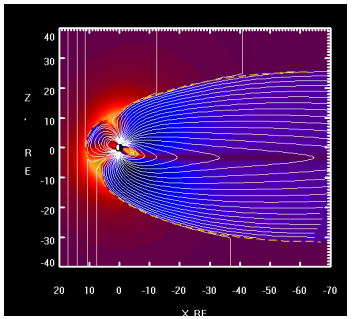
intermediate frequency
: **Frequency** to which a **carrier** signal is shifted as an intermediate step during transmission or reception to improve **selectivity**; see also intermediate frequency on Wiki

intermodulation distortion
: Undesirable signal (often abbreviated *intermod* and *IMD*) generated by the **amplitude modulation mixing** of two or more signals with different **frequencies**, arising from system nonlinearities, and resulting in **distortion** and **interference** (*IMI*) with an excessively large **bandwidth** (not to be confused with **harmonics**); see also IMD on Wiki and amplitude distortion on Wiki

intermodulation interference
: Undesirable **interference** effect (often abbreviated *IMI*) of **intermodulation distortion** (*IMD*)

international reply coupon
: Post office coupon that at one time could be exchanged for postage stamps representing the minimum return postage for a card or letter to the country that issued the coupon, but is no longer issued by US post offices; see also IRC on Wiki

interplanetary magnetic field
: Portion of the solar magnetic field that is carried by the **solar wind** among the planets of the solar system (*interplanetary space*); see also IMF on Wiki



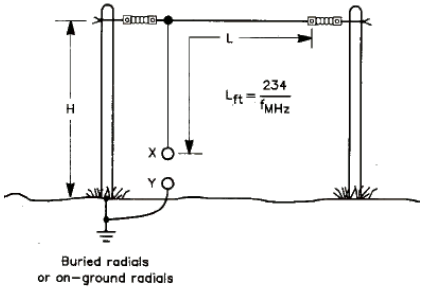
IMF interaction

interpolation
: Process of mathematically increasing the sample rate of a signal (*upsampling*); for example, *interpolate* a digital signal by three, then **decimate** it by four, to adjust its sampling rate by a factor of 3/4; see also interpolation on Wiki

intrinsic
: Meaning ***natural state***, as it applies to **semiconductors**, material or portion (region) of material that has not been doped, but exists in its extremely pure form, opposite of extrinsic; see also intrinsic semiconductor on Wiki

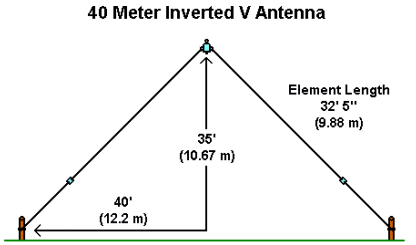
PIN diode diagram
showing intrinsic region i

inverted-L antenna / inverted L antenna / inverted ell antenna
: Type of **monopole antenna** whose **vertical radiating element** section is bent over and made parallel to the ground



inverted-L antenna diagram

inverted-V antenna / inverted V antenna / inverted vee antenna
: Type of **dipole antenna** whose **feed point** is the highest part of the structure, with **radiating element** sides slanted down toward the ground; see also inverted-V antenna on Wiki

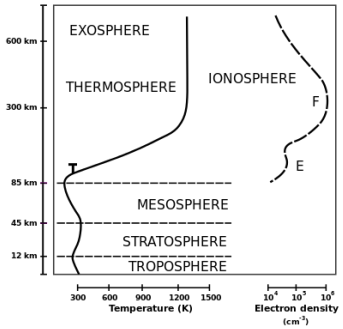


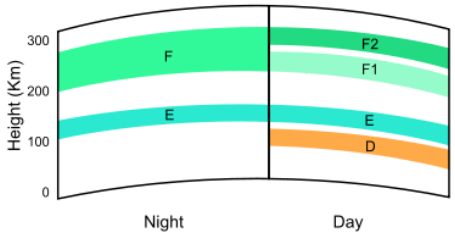
inverted-V antenna diagram

ionizing radiation
: **Radiation**, made of both energetic subatomic particles and high-**frequency electromagnetic radiation** (typically > 3 PHz), that possesses enough energy to *ionize* (free electrons from) the atoms and molecules of living tissue, which in turn can cause genetic damage; see also ionizing radiation on Wiki and non-ionizing radiation on Wiki

ionoscatter
: See **ionospheric scatter**

ionosphere
: Region of the upper atmosphere that is ionized by solar radiation and influences **radio wave propagation** to distant places on earth as a result, reaching its maximum height where the sun is overhead; see also ionosphere on Wiki





ionospheric layers

ionospheric scatter
: Form of **scatter propagation** (sometimes called *ionoscatter*) in which **radio waves** are **refracted** by the **E layer** of the **ionosphere**, allowing for communication between 25 MHz and 100 MHz as a result of irregularities or discontinuities in that atmospheric region

IOTA
: *Islands on the Air* : list of islands or island groups designated and labeled by the Radio Society of Great Britain (RSGB, the British counterpart of the **ARRL**) for **contesting** and other **ham** radio-related purposes; see also IOTA on Wiki

IP3
: See **third-order intercept point**

IRC
: ***international reply coupon***

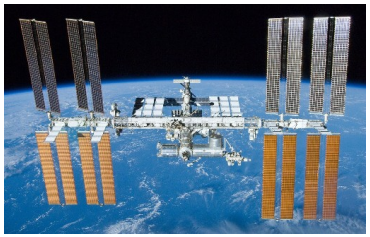
IRLP
: *Internet Radio Linking Project* : system that **links ham** radio **stations** around the world using Voice over IP by keying specific **DTMF** signals; see also IRLP on Wiki and the main IRLP website

isolator
: See **RF isolator**

isotropic antenna
: Theoretical **antenna** used as a reference for antenna **gain** measurements, and has no gain in any direction; see also isotropic antenna on Wiki

isotropic radiator
: Hypothetical point source of **radio waves**, used as a **gain** measurement reference for **antennas** and other **RF radiators**; see also isotropic radiator on Wiki

ISS
: *International Space Station* : habitable facility in permanent **low earth orbit**, used for testing and experimentation of a huge variety of cases under (seeming) gravity-free, out-of-atmosphere, and other physical conditions unique to those in earth orbit; see also
  - ISS on Wiki
  - **ARISS**
  - main ISS website



ITU
: *International Telecommunication Union* : United Nations agency responsible for issues that concern information and communication technologies, and coordinates the shared global use of the **radio** spectrum; see also ITU on Wiki

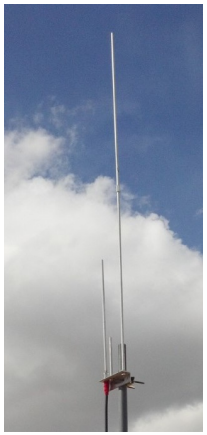
ITU Region
: Any one of 3 major geographic world areas, as defined and named numerically by the **ITU**; see also ITU Region map

ITU Zone
: Any one of 75 geographic areas of the world, as defined and named numerically by the **ITU**; see also ITU Zone map

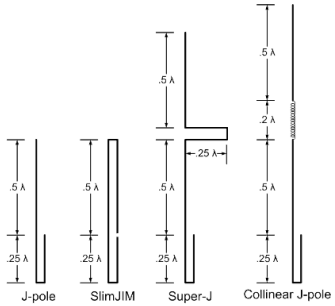
J

J-pole antenna
: **Omnidirectional vertical end-fed dipole antenna** (also *J antenna*) whose shape roughly resembles the letter J due to its half-**wavelength radiating element** and quarter-wavelength **tuning** stub; see also J-pole antenna on Wiki

2 m copper
J-pole antenna



dual-band open-stub
J-pole antenna



J-pole designs

jam / jamming
: Deliberate (*malicious*) **interference** of a radio signal by the use of **noise** or other signals, in an illegal attempt to disrupt communication; see also radio jamming on Wiki

Jones filter
: Variable-**bandwidth crystal lattice filter**, used as part of an **HF receiver IF stage**

JOTA
: *Jamboree on the Air* : annual scouting event that uses **ham** radio to connect scouts around the world, usually held on the third full weekend in October; see also
  - JOTA on Wiki
  - JOTA on ARRL
  - JOTA on BSA

JS8
: *Jordan Sherrer-designed 8-FSK* : type of **FSK data** transmission **protocol** similar to **FT8**, but adds keyboard-to-keyboard text messaging; see also the main JS8Call website

JT65 / JT-65
: *Joe Taylor, 65 tones* : type of **MFSK data** transmission **protocol** (specifically, **AFSK modulation**) designed to support **EME**, **tropospheric scatter**, and other very **weak signal** communication by decoding signals many **dB** below the **noise floor** using **FEC**; see also JT65 on Wiki

JT65-HF
: Alternative extension to the **JT65 data** transmission **protocol** designed for communication on **HF bands** at very low **power** levels; see also JT65-HF on Wiki

JT9 / JT-9
: *Joe Taylor, 9 tones* : type of **MFSK data** transmission **protocol** (specifically, **AFSK modulation**) designed to support very **weak signal** communication by decoding signals many **dB** below the **noise floor** using **FEC**; see also JT9 on Wiki and JT9 on ARRL

jump kit / jump-kit
: See **go-kit**

jump off
: Slang for an intention to leave the current conversation
  *I need to jump off, so **7-3** to you*

jumper
- Short length of **coaxial cable** (often called a *pigtail*, *patch cable*, or simply *patch*) for connecting two pieces of equipment with the same **connector** type, different connector types, or different genders of the same connector type, or for extending the length or reach of a cable
- Removable electrical component used for connecting two or more pins or posts that are installed on a printed circuit board or other surface, to make such a connection available

electrical jumpers

junction diode
: See **semiconductor diode**

junction transistor
: See **bipolar junction transistor**

K

K
: **Morse code prosign** for ***over***

K-index / K index / K_P-index
: See **geomagnetic index**

kc
: ***kilocycle***

Keplerian elements
: Parameters required to identify a specific orbit of a celestial body (such as a **satellite**); see also Keplerian elements on Wiki

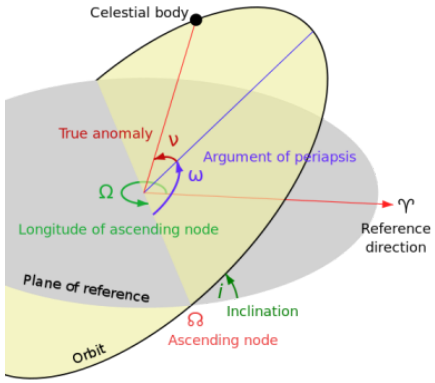


diagram showing all the Keplerian elements

keps
: Slang or short for ***Keplerian elements***

kerchunking
: Slang for momentarily pressing the **PTT** button on your **mic** or **transceiver** (often activating a **repeater**) without identifying yourself, a practice that is generally frowned upon

key
- Action of **keying up**
  Please key your mic when you're ready to transmit
- Telegraph key (sometimes *keyer*) used for **CW** communication; see also telegraph key on Wiki
- Action of pressing a telegraph key to produce a **CW** signal


straight telegraph key

key up / key-up
- Action of pressing a button on your **mic**, especially the **PTT** button, or (originally) engage the telegraph key
  You need to key up to transmit
- Press of the **PTT** button on your **mic** or, (originally) of engaging your telegraph key
  *I hear a **hum** with every key-up of his **mic***

keyer
- Person who communicates by **CW**
  Tom is a keyer
- Telegraph **key** used for **CW** communication; see also telegraph key on Wiki


keyer using a keyer

kilo

Prefix, or units modifier, to indicate × 1,000 or × 10^3, and is abbreviated k

kilocycle
: Outdated term for *kilohertz* (kHz)

KISS
: *keep it simple, stupid* : common **TNC** communication **protocol**; see also KISS protocol on Wiki

klystron
: Specialized **vacuum tube** that uses **velocity modulation** in high-**power VHF**, **UHF**, and **microwave television** and **radar amplifiers** and **transmitters**; see also klystron on Wiki

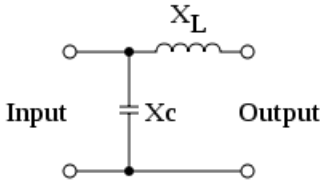

klystron

$\overline{\text{KN}}$
: **Morse code prosign** for *go ahead* or ***over***, or *back to you*, to indicate the **operator** is listening for, or returning control to, a specific **station**

knife-edge / knife edge / knife-edging / knife edging
: Form of diffraction in which a **radio wave** encounters an obstacle with a sharp boundary, such as a mountain range or the edge of a building, creating a new wavefront that seems to bend the original wave around the object and away from the **line-of-sight** with the signal source; see also knife-edge effect on Wiki

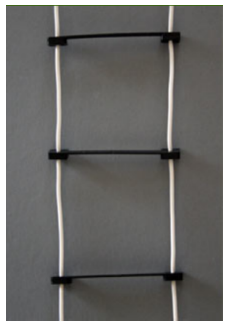
L

L network
: Circuit made from an **inductor** and a **capacitor**, one in series with the signal input, and the other in **shunt**, that serves to **match** an external **load impedance** with that of the signal **source**, and is the equivalent lumped-constant network for a hairpin matching system on a three-**element Yagi antenna**; see also L network on Wiki



L network

ladder line
: Type of **twin-lead balanced feedline** consisting of two **insulated** wires (often called *open-wire line* or abbreviated *OWL*) separated by insulators acting as spacers holding them together / apart every few inches, giving it the appearance of a ladder, and possessing lower signal loss than **coaxial cable** such as **RG-58** at **50 MHz** (*window line* is a type of ladder line in which the two conductors are separated by bands of molded plastic or similar, also called *ribbon line*); see also ladder line on Wiki


Ladder line

window lines

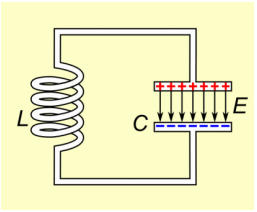
lamp
: Electric device capable of producing (typically incandescent) light; see also lamp on Wiki


small lamps


lamp symbol

LC circuit

Circuit (often called a *tank circuit* because of the resemblance to a tank full of electrons sloshing back and forth between one component and the other) made of **capacitors** and **inductors**, for use in **tuning**, **filtering**, and **mixing** signals; see also LC circuit on Wiki



LC (tank) circuit at resonance

LC oscillator
: **Oscillator** using an **inductor** and a **capacitor** connected (in a configuration often called a **tank circuit**) to determine its oscillating **frequency**; see also LC oscillator on Wiki

LCD
: *liquid-crystal display* : electronic device that displays images using the light-modulating properties of liquid crystals; see also LCD on Wiki

LCD mounted on a circuit board

LDF®
: *low-density foam* : model name / prefix for a common type of **dielectric** used in **Heliax** cable

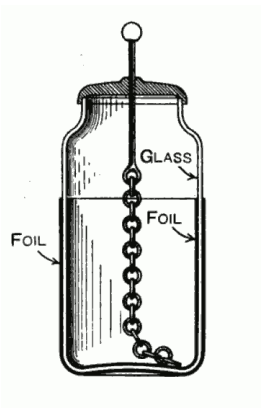
LED
: ***light-emitting diode***

legal limit
: The highest amount of **transmitter power** (**PEP**) allowed by the **FCC** for **amateur** use, or 1500 watts (1.5 kW); see CFR section 97.313(b)

LEO
: *low earth orbit* : earth orbit that is between 99 miles and 1200 miles above the surface of the earth; see also LEO on Wiki

Leyden jar / Leiden jar
: Crude passive electrical device once used for temporarily holding a high-**voltage** (estimated 20 kV to 60 kV) electric charge, and original complete forerunner of the modern **capacitor**, consisting basically of a sheet of foil that lines the inside of a glass jar, connected to a rod or other conductor that protrudes through the lid (and often topped by a **corona ball** to prevent or slow atmospheric charge leakage), plus another sheet of foil that wraps around the outside of the glass jar; see also Leyden jar on Wiki
  Note: the first Leyden jars merely consisted of a glass bottle partially filled with water or alcohol, plus a nail driven through the cork and immersed in the liquid; the experimenter's hand wrapped around the outside of the bottle provided the other capacitor plate conductor, and often gave the person a tremendous electrical shock when contacting the nail with the other hand


Leyden jar

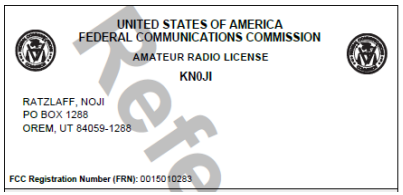


Leyden jar diagram

LF
: *low frequency* : overall **frequency** range of 30 kHz to 300 kHz; see also LF on Wiki and the RF spectrum and LF on ARRL

LFP
: See **LiFePO4**

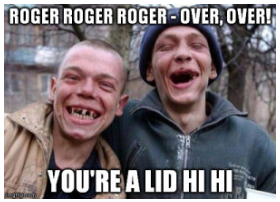
license / licensing
: Authorization by the **FCC** of an **amateur** to operate a radio **station** within **frequencies** and **bands** appropriate for the **class** of privileges granted to the **operator**; see also licensing on Wiki and licensing on ARRL


UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
AMATEUR RADIO LICENSE
KN0JI
RATZLAFF, NOJI
PO BOX 1288
OREM, UT 84059-1288
FCC Registration Number (FRN): 0015010283
Refe
reference copy of Noji's license [PDF]

license class

See **class**

licensee
: Radio **station** owner who holds a valid operating **license**, and the one presumed by the **FCC** to be the **control operator** of an **amateur** station



lid
: Insult akin to *moron*, usually directed at an inconsiderate **ham** radio **operator** or one who seems to regularly demonstrate sub-human intelligence by ignoring rules, making obscene remarks, or bullying new hams (originally meant *inept* when directed toward a new ham or raw beginner)

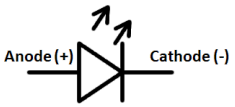
license trustee
: See **trustee**

LiFePO4 / $LiFePO_4$
: *lithium iron phosphate* : type of rechargeable battery (also called LFP for *lithium ferrophosphate*) that offers a longer lifetime than do other battery types, is safer, exhibits little or no memory effect, and is known for high energy density compared with that of other batteries, and relative low weight but high cost and high and constant charge / discharge rate compared with that of **Li-ion** batteries; see also $LiFePO_4$ on Wiki


$LiFePO_4$ batteries

light-emitting diode
: **Diode** that gives off light when it is forward-biased; see also LED on Wiki


assorted LEDs



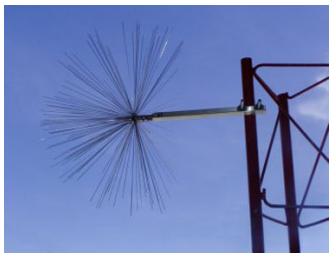
LED symbol

lightning
: Sudden **electrostatic discharge**, normally during an electrical storm, between electrically charged regions of a cloud, between a cloud and another cloud, or between a cloud and the **ground**, often referred to as a strike, and is a form of **arcing**; see also lightning on Wiki

lightning arrester / lightning arrestor / lightning protector
: Device (also called *surge protector*) inserted in a **feedline** to protect conductors and their insulation from the damaging effects of nearby **lightning** or other large **static discharge** by diverting much of the voltage surge to **ground**; see also
  - lightning arrester on Wiki
  - surge protector on Wiki (more applicable to amateur equipment)
  - surge arrester on Wiki (less applicable to amateur equipment)

lightning arrester

lightning dissipator / lightning dissipater
: Device that reduces the likelihood of **lightning** strike to a structure or craft by presenting the potential discharge with multiple sharp, conductive points, thereby preventing the build-up of **static** charge, which normally invites lightning
  Note: the usage and effectiveness of a lightning dissipator are somewhat controversial


lightning dissipator

Li-ion

lithium-ion : type of rechargeable battery that exhibits little or no memory effect and is known for high energy density compared with that of **NiCd** batteries, and relative low weight but high cost and high charge / discharge rate compared with that of **NiMH** batteries; see also Li-ion on Wiki

Li-ion batteries

limiter / limiting
: See **automatic noise limiter**

line
- See **feed line**
- See **power line**
- See **scan line**
- Any visible or imaginary path defined or identified for **propagation** purposes, such as **gray-line** or **line-of-sight**
- Any conductor of electrical energy, such as a **transmission line** or **power line** or **ground** line
- Pathway for communication (*communication line*), such as a telephone landline
  ***Open** a line to the chief*
- Row of characters forming a text message

Line A
: Imaginary line roughly parallel to, and south of, the US-Canadian border, north of which amateur stations are not permitted to transmit between 420 and 430 MHz; see also
  - Line A on ARRL
  - CFR section 97.3(a)(30) definition of Line A
  - map of Line A

line isolator
: See **RF isolator**

line noise
: See **power line noise**

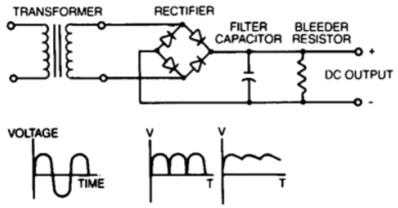
line-of-sight
: Type of **radio wave propagation** that occurs between two points in a straight, unobstructed (to radio waves, not to eyesight) path; see also line-of-sight propagation on Wiki and **horizon**

line voltage
: See **household power** and **electrical grid**


linear amplifier

linear amplifier
: **Amplifier** (often shortened *linear* and also called *power amplifier*) whose output preserves the input **waveform**, and is usually a **Class A amplifier**; see also linear amplifier on Wiki and amplifier vs. antenna [PDF] on ARRL


linear power supply



simple (unregulated) linear power supply schematic

linear power supply
: Type of **power supply** that converts electrical **AC power** to **DC** power directly, without pulsing the energy during the conversion process, and is typically much heavier and less efficient than a **switching power supply**, but also typically less (electrically) **noisy**

linear transponder
: See **transponder**

link
: Communication connection, typically by internet, **radio waves** of a much higher **frequency**, or being directly wired, between two **repeaters** or between one **station** and another, each point connected this way being called a ***node***
: *Your main repeater and ours are linked*

lip mount / lip-mount
: Type of **antenna mount** that combines an **antenna** attachment method with a fixture connection for installation on the edge of a sheet metal body, such as that of a vehicle trunk or metal cabinet or enclosure

NMO lip mount

Li-Po / LiPo / Li-poly / LiPol
: *lithium-polymer*, or more correctly, *lithium-ion polymer* : type of **lithium-ion** rechargeable battery that either contains a polymer electrolyte or is encased in a polymer package, and exhibits little or no memory effect; see also Li-Po on Wiki

Li-Po battery

liquid-crystal display / liquid crystal display
: See **LCD**

listen out
: Slang for *continue listening on this **frequency** until the end of the conversation*
: *You two continue with the **QSO** and I'll listen out*

LiTZ
: ***Long Tone Zero***

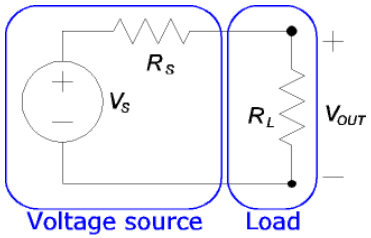
LMR-240
: Model name for a 50 Ω low-**loss coaxial cable** used as a **feedline** best-suited for **HF** and **VHF** applications; see also the coax chart [PDF]

LMR-400
: Model name for a 50 Ω (also available in 75 Ω) very low-**loss coaxial cable** used as a **feedline** well-suited for **HF**, **VHF**, and **UHF** applications; see also the coax chart [PDF]

LNA
: ***low-noise amplifier***

LO
: *local oscillator* : **oscillator** portion of a **mixer** circuit, used for converting a signal of one **frequency** to another; see also local oscillator on Wiki

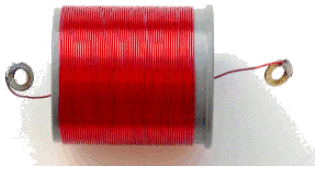
load
: Circuit that is connected to the output of a **source** circuit, such that typically the source circuit *provides* electric **power** to the load, and the load *consumes* the power from the source; see also electric load on Wiki



application of an electric load

loading
: Act of inserting an **inductor** (called a loading coil) in the radiating portion of an **antenna** to make it electrically longer, typically to permit **HF** operation with a shortened antenna

loading coil
: **Inductor** used in an **antenna**, or between an antenna and its **feedline** to make an electrically short antenna **resonant** at a specific **frequency** by canceling the **capacitive reactance**; see also loading coil on Wiki and loading for electrical length on Wiki



loading coil

local control
: Type of **station** control in which the **control operator** is physically at the **control point**; see also **automatic control** and **remote control**

log / logging
- File, submission, or other record of **contacts** made between two **ham** radio **operators**, and could include **call signs**, dates, times, **bands**, **modes**, and other pertinent information
- Action of recording such a contact

log-periodic antenna
Type of **directional** narrow-beam **antenna** that consists of a collection of **active elements** that are sized and spaced apart according to a somewhat logarithmic scale, and operates over a wide range of **frequencies** (has a wide **bandwidth**); see also log-periodic antenna on Wiki

log-periodic antenna

long-path / long path / longpath
Method of **RF propagation** that uses the path from your **station** to a **contact** station along the path in the opposite direction of the great circle arc of the earth, at times supported by all **HF bands**, and most frequently available on the **20-meter** band

Long Tone Zero / Long-tone Zero / Long Interval Tone Zero
Loosely defined alert method within the **Wilderness Protocol** in which a person in need of help can issue an alert by pressing and holding the **Ø** (zero) key on a **transmitter** keypad for three or more seconds to send a **DTMF** tone that can **open** a **repeater** that supports the **protocol**, or at the very least can alert another **ham** who might be **monitoring** the **frequency**

long wire antenna / long-wire antenna / longwire antenna
See **random wire antenna**

longwave
Frequency range broadly defined as having **wavelengths** greater than 1000 meters (frequencies below 300 kHz), which includes the entire **VLF** and **LF bands**; see also longwave on Wiki

LOS
line-of-sight

loss
Reduction in (**attenuation** of) signal strength; negative **gain**

loss resistance
See **motional resistance**

LOTW
Logbook of the World : online database implemented by the ARRL to provide a contact verification service for **ham** radio **operators** toward awards (such as **DXCC**, **WAS**, and **WAC**); see also LOTW on Wiki and LOTW on ARRL

loud and clear
audio is strong and perfectly understandable; see also voice procedure on Wiki

low-angle radiation
Primary or average **RF** field of an **antenna system** that is radiated at a relatively low predetermined angle, with respect to level **ground**; see also **far-field**

low band / lowband
Slang for ***HF***

low-noise amplifier
Electronic **amplifier** circuit for very weak **RF** signals, such as those that are received from a **feedline** and its attached **antenna**, and typically used in the **front end** of a **receiver** circuit; see also LNA on Wiki

low-pass filter
Circuit or device that **filters** out most or all signals with **frequencies** higher than a particular *cut-off* frequency, thereby allowing signals of all lower frequencies to *pass through* the device, useful for preventing **harmonics** generated by **HF** transceivers from interfering with household or neighboring devices; see also low-pass filter on Wiki


low-pass filter

lower sideband / lower-sideband
- Common **single sideband** operating **mode** derived from **AM** and is used on the **40-**, **80-**, and **160-meter bands**; see also sideband on Wiki

- Older slang for *younger sibling*

lowest usable frequency
: **Frequency** below which **radio waves** are completely absorbed by the **ionosphere**, making them unusable for transmission between two points; see also LUF on Wiki

LowFER / LOFER
: *low-frequency experimental radio*
- Experimental, **license**-free **longwave radio** communication practiced by hobbyists on **frequencies** below 300 kHz (**LF**), and more specifically between 160 kHz and 190 kHz (often called the *1750-meter band*) in the US and Canada, where the **antenna** length is limited to 50 feet and the **transmitter** output **power** is limited to 1 W; see also LowFER on Wiki and LowFER on ARRL and the main LowFER website
- Slang for a practitioner who experiments with communicating (also called *lowfing*) on **frequencies** below 300 kHz (**LF**)
  : *My dad was a LowFER until he retired from **radio** altogether*

LPDA
: *log-periodic dipole array* : most common type of **log-periodic antenna**, consisting of a number of **half-wave dipole driven elements**, mounted parallel and relatively close to each other

LSB
: ***lower sideband***

LTZ
: ***Long Tone Zero***

LUF
: ***lowest usable frequency***

M

machine
- Slang for **repeater**
  : *I heard the Blue Peak machine is down at the moment*
- Infrequently used slang for ***rig***
  : *Picked up a new machine the other day*

magic band
: Nickname for the **6-meter band** due to its high **condition** volatility and unpredictability

mag-mount / mag mount / magmount / magnetic mount / magnetic-mount
: Type of **antenna mount** made from a permanent magnet that is attached to the base of an antenna, typically for **mobile** and **portable** applications


mag-mount antenna

magnetic core
: See **inductor core**

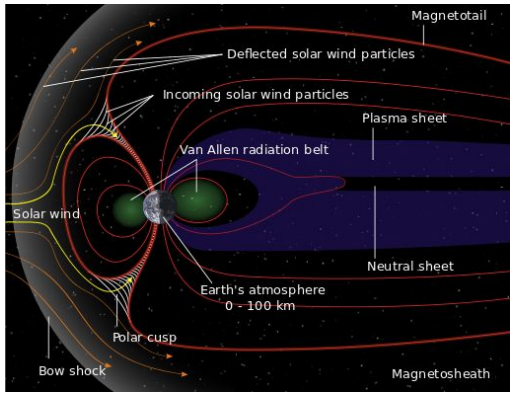
magnetic field
: Physical influence originating from a static magnetic source or changing / moving **electric field**, and one that can exert a force on an electrically charged object or another magnetic field; see also magnetic field on Wiki


magnetic loop antenna

magnetic loop antenna
: Type of **antenna** whose **radiating element** is bent into a roughly rectangular or curved into a roughly circular shape, to be operated from within a relatively small area, such as a house or backyard; see also magnetic loop antenna on Wiki

magnetosphere

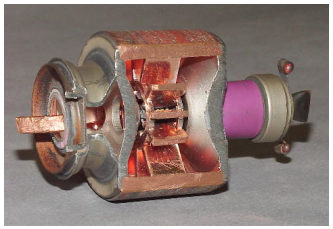
Area of space near the earth in which the behavior of charged particles are often controlled by the earth's magnetic field; see also magnetosphere on Wiki



magnetosphere diagram

magnetron oscillator

High-**power UHF** or **microwave oscillator** made from a **diode vacuum tube** with a specially shaped **anode** surrounded by a permanent magnet, to create an interaction between the resulting stream of electrons and the magnetic field; see also magnetron on Wiki


magnetron oscillator

Maidenhead Locator System

See **grid locator**

mains power

See **household power**

MARA

Mercury Amateur Radio Association : group of (mostly LDS) **amateur radio** sub-groups and **operators** that provide **emergency** communication around the world, but is not officially associated with, or sponsored by, the LDS Church; see also the main MARA website and a statement by the LDS Church regarding MARA

*Note: MARA was once sponsored and promoted by the LDS Church, but has since been replaced by **ERC***

Marconi, Guglielmo

Italian inventor and engineer, labeled by many as the *Father of Wireless Telegraphy*, the *Father of Radio*, and even credited with the invention of the **radio**, was known especially for his pioneering work on long-distance radio transmission; see also Marconi on Wiki


Guglielmo Marconi

mark

The higher **frequency** of a **BFSK data** signal, identifying the **1** bit

MARS

Military Auxiliary Radio System : (formerly *Military Affiliate Radio System* and *Auxiliary Amateur Radio System*) program sponsored by the US Department of Defense and serving as a civilian auxiliary to the US Army, Air Force, (at one time the US Navy), and Marine Corps, containing licensed **amateur radio operators** who are interested in assisting the military with communication on a local, national, and international basis, supplementing regular military communication; see also MARS on Wiki and the Army MARS website and the Navy MARS website

MARS/CAP modification / MARS/CAP mod

Modification made to a **transceiver**, enabling transmissions outside the **frequency** limits of the **amateur bands**, originally for use on military bands used by **MARS** and **CAP** operation, but can also extend to bands reserved for **GMRS**, **FRS**, **MURS**, Maritime, Aviation, and other communication

mast

Pole, stick, or other (typically rigid) structure used to support an **antenna**, **feedline**, **radials**, and/or other external **radio** components (usually unrelated to the type used on ships and other watercraft), and often held in place by **guy-wires**; see also mast on Wiki and **antenna tower**

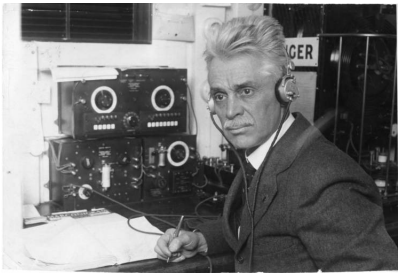
mast supporting a J-pole and its feedline

match / matching

- See **impedance matching** for the general practice or theory of matching **impedances**
- See **antenna match** for the **antenna**-specific application of matching **impedances**

matchbox / match box

Older slang for ***antenna tuner***



Hiram Percy Maxim

Maxim, Hiram Percy

American **radio** pioneer and inventor who founded the **ARRL** in response to the lack of **relay stations** that could pass messages via **amateur radio** at the time; see also Hiram Percy Maxim on Wiki

maximum permissible exposure

Greatest amount of **RF** exposure to the human body for a given **frequency** legally allowed by the **FCC**; see also MPE on FCC

maximum symbol rate

See **baud**

maximum usable frequency

Highest **radio frequency** that can be used for transmission between two points by **refraction** through the **ionosphere**, affected by location on earth, distance between **stations**, season of the year, time of day, and can be reduced dramatically by a **K-index** of 5 or greater (**ionospheric disturbances** as a result of solar radiation); see also MUF on Wiki

mayday

International distress call derived from the French *m'aider* or *m'aidé*, meaning *help me*; see also mayday on Wiki and historical terms on ARRL

mc

megacycle

MC4 connector

Multi-Contact™, 4 mm : model name for a water-resistant (IP68) and high-**voltage DC power connector** that is easy to connect but intentionally difficult to disconnect (to prevent accidental disconnection), commonly used for connecting **solar panels** together; see also MC4 connector on Wiki

MCW
: *modulated continuous wave* : tone-**modulated Morse code** (**CW**) **emission**, permitted only on **VHF** and **UHF bands**; see also MCW on Wiki

MDS
: *minumum discernible signal* : see **sensitivity**

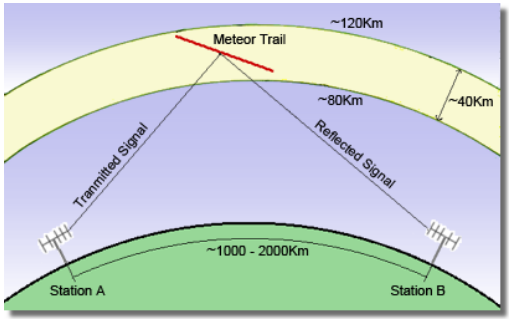
mean power
: See **average power**

mega
: Prefix, or units modifier, to indicate × 1,000,000 or × 10^6, and is abbreviated M

megacycle
: Outdated term for *megahertz* (MHz)

mesh network
: Nickname for ***high-speed multimedia radio***

meteor scatter
: Brief **propagation** of **radio waves**, particularly those between 30 MHz and 50 MHz, as they are **refracted** by the ionized trails of meteors in the **E layer** of the **ionosphere**; see also meteor burst communication on Wiki and meteor scatter on ARRL



meteor scatter

method of moments
: Numerical computational method of solving linear partial differential equations that have been formulated as integral equations (in boundary integral form), useful for modeling **antenna radiation patterns**; see also boundary element method of moments on Wiki

MF
: *Medium Frequency* : overall **frequency** range of 300 kHz to 3000 kHz; see also MF on Wiki and the MF frequency designation in the RF spectrum

MFSK
: *multiple frequency-shift keying* : low-rate **data** transmission **mode** in which the signal is shifted between more than two **frequencies** to convey the information, with MFSK16 being most applicable to **HF** due to its exceptional performance in **weak-signal** environments without the need for error correction; see also MFSK on Wiki and MFSK on ARRL

mic / mike
: ***microphone***

micro
: Prefix, or units modifier, to indicate ÷ 1,000,000 or × 10^{-6}, and is abbreviated µ

microcontroller
: Computer on a single **integrated circuit** designed for embedded (complete, self-contained) applications, and which can replace complex digital circuitry; see also microcontroller on Wiki

microcontroller

microphone
: Device (often abbreviated *mic* or *mike*) that converts sound into an electrical signal; see also microphone on Wiki

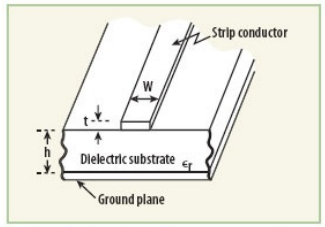
microphone gain / mic gain / mike gain
- Quantity of **microphone** electrical signal amplification
- Control that allows modification of the amount of **microphone** signal amplification

microphonics
: Electrical or signal **noise** resulting from the mechanical vibration of charged component parts, similar to the way a **microphone** transforms **audio** vibrations into electrical signals; for example, an undesirable change in **oscillator frequency** due to mechanical vibration; see also microphonics on Wiki

microprocessor
: Computer on a single **integrated circuit** designed for general purpose applications, such as a personal computer; see also microprocessor on Wiki

microprocessor

microstrip
: Type of **transmission line** that can be constructed as a precision printed circuit board lead separated from a **ground plane** by a **dielectric** substrate to provide constant **impedance** interconnects at **microwave frequencies**; see also microstrip on Wiki



Microstrip transmission lines consist of a strip conductor and a ground metal plane separated by a dielectric medium.

microwave
: Overall **frequency** range of 300 MHz to 300 GHz, encompassing most of **UHF**, **SHF**, and **EHF**, and typically limited to 1 GHz to 100 GHz for most **RF** applications; see also microwave on Wiki and the RF spectrum

military time
: Alternate term for ***24-hour clock***, in which local time is represented by twenty-four equal-length but uniquely designated time periods per day; see also military time on Wiki
Different formats representing 7:23 pm, for example:
- 1923 (military use)
- 19:23 (non-military use)
- 1923R (military use, with time zone suffix)

*Note: the military notation with the **Z** (zulu) suffix is equivalent to **UTC** time*

milli
: Prefix, or units modifier, to indicate ÷ 1,000 or × 10^{-3}, and is abbreviated m

mini-8 / mini 8
: See **RG-8X**

mini-RG-8 / mini RG-8
: See **RG-8X**

minimum discernible signal
: See **sensitivity**

minimum-shift keying
: Type of **FSK data** transmission that uses a continuous-phase method of **modulation** by encoding each bit as a half sinusoid; see also MSK on Wiki

MININEC / mini-NEC
: Variation of the **NEC** design modeling and **radiation pattern** simulation software; see also MININEC on Wiki and antenna modeling on ARRL

mis-match / mismatch
: See **impedance matching**

mixer
: Circuit that converts an **RF** signal of one **frequency** to that of another frequency in a **superheterodyne receiver**; see also **detector**

mixing
: Act of combining an **RF** signal of one **frequency** with a signal of an **intermediate frequency**, to create a new signal (often, the *product*, as in **modulation**), for which further manipulation and **amplification** are easier to design for and work with

MMIC
: *monolithic microwave integrated circuit* : **integrated circuit** that performs functions such as **mixing**, **filtering**, and **amplifying** at **microwave** (300 MHz to 300 GHz) **frequencies**; see also MMIC on Wiki


MMIC chip

mobile

- **Transceiver** that is usually too large to normally carry around by hand, but small enough to install in a vehicle; can also refer to any transceiver in your vehicle, regardless of size
  My mobile is a Yaesu FT-8800R
- Transmitting while traveling
  I'm mobile at the moment
- Primarily for use in or on vehicles
  *I have a mobile **antenna***

2 m mobile transceiver

mobile station

Amateur radio station that is installed in or on a vehicle; see also mobile station on Wiki

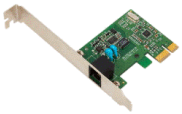
mode

- Short for ***modulation method***, type of **radio signal** communication format (along with specification and operating **protocol**), such as **AM**, **FM**, **PM**, and **CW**; see also
  - list of ham radio modes on Wiki
  - radio modes on Wiki
  - modes on ARRL
- Pair of **uplink** and **downlink frequency bands** used to communicate with a particular **amateur radio satellite**

modem

Device (from **mo**dulator / **dem**odulator) that can encode (**modulate**) an **audio** or **data** signal for transmission, and decode (**demodulate**) a received signal into an audio or data signal; see also modem on Wiki

external modem

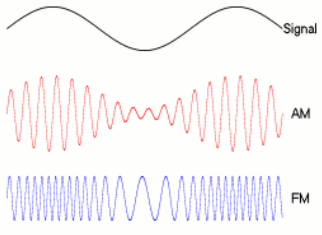


internal modem

modulation / modulate

Process of varying one or more properties of an **RF carrier** signal according to an information signal, such as your **voice**, in preparation for **radio** transmission, by combining them as a *product* (multiplying the functions, as in f(x)g(x) together) for **AM** or a *composite* (one signal as a function of the other, as in f(g(x)) combined) for **FM**, as examples

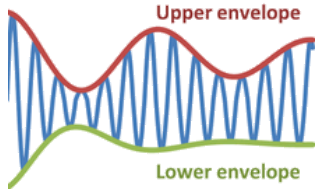
- modulation on Wiki
- **AM**
- **FM**
- **PM**



modulation examples

modulation envelope

Signal created by connecting the peak values of a **modulated** signal (boundary curve that encapsulates a modulated **waveform** of an **RF** signal); see also wave envelope on Wiki



modulated signal with its envelopes

modulation index

- **amplitude modulation** : ratio of the **modulating** signal amplitude to the **carrier** amplitude; see also AM modulation index on Wiki
- **frequency modulation** : ratio of the **frequency deviation** from the **carrier** frequency to the **modulating** signal frequency; see also FM modulation index on Wiki
- **phase modulation** : difference in phase angle **modulation** and the unmodulated **carrier** signal; see also PM modulation index on Wiki

Molex™ connector

Model name (from *Molex*) for a **DC power connector**, once commonly used to supply power to **amateur radio** equipment; see also Molex connector on Wiki

*Note: Molex produces numerous different connectors, but this particular model has probably been the most common DC connector found on older **solid-state** amateur **transceivers** such as the Kenwood® TS-450S and Yaesu® FT-840 and Icom® IC-746Pro*

Molex connectors

Molex™ T connector

See **T connector**

monitoring
: Announcement that you are not actively participating in a **QSO**, but simply listening in on a **frequency** in case somebody needs assistance; see also what it means to monitor a frequency and what monitoring means to the ARRL
: *I'll be **clear** and monitoring this frequency*

monopole antenna
: Class of **radio antenna** consisting of a (typically) straight rod-shaped conductor, often **mounted** perpendicularly over a conductive surface called a *ground plane*; see also monopole antenna on Wiki


monopole antenna

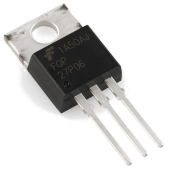
monostable multivibrator
: Circuit whose signal switches momentarily to the opposite binary state, then returns to its original state after a set time (also known as a *one-shot*); see also monostable multivibrator on Wiki

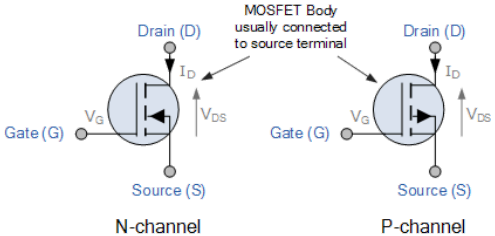
moonbounce / moon bounce
: See **EME**

Morse code
: Spoken or written language characters represented by a series of dots, dashes, and spaces (often simply *code*), and in **amateur radio** typically transmitted by a **mode** known as **CW**; see also Morse code on Wiki and the elimination of the Morse code requirement on amateur radio examinations

Morse code abbreviation
: Abbreviation or shortened version (one to four characters) of a commonly used word, originally for brevity in sending a message by **Morse code**, but also used in **phone** as part of the spoken or written **ham** vocabulary; see also Morse code abbreviations on Wiki and Morse code prosigns on Wiki

MOSFET
: *metal-oxide-semiconductor field-effect transistor* : (so-called due to its original basic construction of a metal layer deposited on an **insulating** —usually silicon dioxide— **dielectric** layer, which in turn is deposited on a **semiconducting** layer) is a type of **field-effect transistor** whose construction allows for high-speed switching at very low power consumption; see also MOSFET on Wiki


MOSFET



MOSFET symbols

motional capacitance

Effective **capacitance** in the series leg of the equivalent circit for a **crystal oscillator**

motional inductance
: Effective **inductance** in the series leg of the equivalent circit for a **crystal oscillator**

motional resistance
: Effective **resistance** in the series leg of the equivalent circit for a **crystal oscillator**

motorboating
: Slang for the undesirable rumbling sound that results from low-**frequency** feedback, once prevalent in tube-based **radios**; see also motorboating on Wiki

mount
- See **antenna mount**
- Installation, connector, or enclosure that allows the attachment of one piece of equipment to another, often more stable or environmentally protected fixture
- Install, attach, or connect one piece of equipment to another, either directly or by means of a bracket, cage, or other assembly


vehicle-mounted HT


enclosure-mounted HF rig

MOV
: ***metal-oxide varistor***

MPE
: ***maximum permissible exposure***

MSK
: ***minimum-shift keying***

MSK144
: *minimum-shift keying, 144 MHz* : type of brief **FSK data** transmission **mode** used for **meteor scatter propagation** at 50 MHz or higher **frequencies** (the *MSK144 sh* **protocol** used for communication at 144 MHz or higher); see also MSK144 on WSJT-X

mud
: Slang for ***at or below the current receiver noise level***, often used as part of *down in the mud*, or simply, *in the mud*
  *I tried to **work** him, but his signal was down in the mud*

MUF
: ***maximum usable frequency***

multiband / multi-band
- **Antenna** that will effectively support transmission and reception of **RF** signals on more than one **band**
- **Transceiver** that can transmit and receive **RF** signals on more than one **band**
- Superset of terms that define both transmission and reception support for more than one **band**, such as *dual-band* (two bands), *tri-band* (three bands), and *quad-band* (four bands)

multihop / multi-hop
: More than one **hop**; see also multihop on Wiki

multilateral agreement / multi-lateral agreement / multilateral arrangement / multilateral operating agreement
: Set of rules agreed upon by two or more countries to authorize **amateur** radio operation in all applicable countries by a person who is not a citizen of (***alien** to*) one or more of those countries

multimeter
: Instrument that combines the functions of a **voltmeter** to measure electric **voltage**, an **ammeter** to measure electric **current**, and an **ohmmeter** to measure **resistance**, usually with a digital readout (**DMM**); see also multimeter on Wiki


multimeter

multimode / multi-mode
: Capable of **SSB**, **CW**, and **FM** operation **modes**

multipath / multi-path
: Type of **interference** or **distortion** caused by a signal arriving at a **receiver** from different-length paths, resulting in part of one path signal canceling out part of another; see also multipath on Wiki

multiple receiver / multi-receiver
: See **voting repeater system**

multiplier
: Circuit in an **FM transmitter** that generates a **harmonic** (multiple) of a lower **frequency** signal to produce the desired operating frequency; see also frequency multiplier on Wiki

MURS
: *Multi-Use Radio Service* : set of **channelized VHF frequencies** allocated by the **FCC** for **two-way**, **license**-free, and short-distance use; see also MURS on Wiki and a chart of assigned MURS frequencies [PDF]

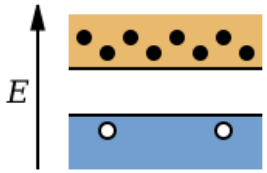
mutual inductance
: Magnetic **coupling** between two **inductors** that allows **current** flowing in one inductor to cause (induce) current to flow in the other nearby inductor, which a **transformer** exhibits when an **AC voltage** presented across its primary winding results in a voltage appearing across its secondary winding; see also mutual inductance on Wiki

N

N
: **Morse code prosign** for ***negative***

N connectors

N connector
: Classification for a 50 Ω weatherproof **connector** (also called *N-type connector*) used on **coaxial cable feedlines** for **UHF** applications; see also N connector on Wiki and RF connector on Wiki



n-type semiconductor effect
black circles = electrons
white circles = holes

n-type / N type
- Type of doped **semiconductor** material that contains excess electrons in the outer shell of electrons (larger electron concentration than **hole** concentration), resulting in a net negative charge and making electrons the majority **current** carriers in this type of material; see also n-type on Wiki
- ***N connector***

narrowband FM / narrow band FM / narrow-band FM / narrow FM
: **FM** signal whose peak **frequency deviation** is much larger than the **bandwidth** of its **modulating** signal, typically twice as large, and is the bandwidth type used in **FRS**, **MURS**, and most **commercial** radios; often regarded as being limited to 12.5 kHz; see also NFM on Wiki and narrowband on Wiki

narrow-band roofing filter
: See **roofing filter**

national calling frequency
: Subset of **calling frequencies** that is recognized across the US and reserved for incidental use, requesting non-urgent assistance, true **emergencies**, testing, and whose use in making casual or first-time contacts is encouraged
They are assigned as follows:

Band	Frequency (MHz)	Mode
6 m	50.125	SSB
6 m	50.400	AM
6 m	52.525 †	FM
2 m	146.520 †	FM
1.25 m	223.500 † *	FM
70 cm	446.000 †	FM
33 cm	906.500	FM
23 cm	1294.500 †	FM

† part of the proposed **Wilderness Protocol**
* Some question whether this 1.25-meter frequency has been *officially* adopted as an actual national calling frequency

National Radio Quiet Zone
: Large rectangle of land straddling the borders of Virginia and West Virginia surrounding the National Radio Astronomy Observatory, where radio transmissions are strongly restricted, to facilitate research for military intelligence and scientific advancement; see also NRQZ on Wiki

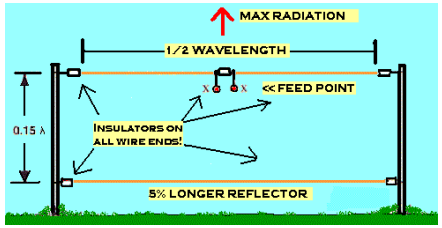
National Traffic System
: Network of **amateur radio stations** and others organized for the purpose of **relaying formal traffic messages** throughout the US and Canada during times of **emergency** or during a drill; see also NTS on Wiki and NTS on ARRL

NB
: ***noise blanker***

NBEMS
: *Narrow Band Emergency Messaging Software* : open-source software that allows **ham** radio **operators** to reliably send and receive **data** using a computer and radio pair; see also NBEMS on Wiki and NBEMS on ARRL

NCS
: ***net control station***

near vertical incidence skywave
- Type of **HF propagation** technique that promotes highly reliable short-range communication by transmitting its signal upward instead of outward; see also NVIS on Wiki and NVIS on ARRL
- Type of **antenna** (once called *cloud warmer*) used primarily for short-range **HF** communication by **directing** much of its signal straight up



NVIS antenna drawing

NEC
- *Numerical Electromagnetics Code* : popular **antenna** design modeling and **radiation pattern** simulation software that uses the **method of moments** approach for its calculations; see also
  - NEC on Wiki
  - antenna modeling on ARRL
  - **MININEC**
  - **EZNEC**
- *National Electrical Code* : regionally adopted standards for safe installation of American electrical wiring and equipment; see also NEC on Wiki
  Note: in spite of its name, the NEC is not adopted nationally, nor is it federal law

negative
: *no*; see also voice procedure on Wiki

net
- Short for ***network***, **on-air** gathering of **ham** radio **operators** who are organized socially or for a common interest, such as **emergency** preparedness; see also amateur radio net on Wiki and how to join a net
  Are you planning on checking in to the net tonight?
- Short for ***net control station***
  This is KNØJI...back to net

net control station
: Managing **station** of a **radio net**, charged with accepting check-ins, coordinating resources, and directing communication **traffic**, often under the direction of a **net manager** in a local net or **Incident Commander** during a drill or **emergency** net

net manager
: *Person* responsible for establishing a particular **radio net** (by coordinating and then advertising its frequencies and times, assigning a **net control station**, and overseeing its general operations), setting forth the **rules** and content of the net, and dictates when to start and terminate the net

newbie
: See **novice**

NFM / N-FM / NBFM
: ***narrowband FM***

NiCd / Ni-Cd / nicad
: *nickel-cadmium* : type of rechargeable battery that exhibits heavy memory effect and is known for low energy density but longer cycle life compared with that of **NiMH** batteries and relative low cost compared with that of **Li-ion** batteries; see also NiCd on Wiki

NiCd batteries


NiMH batteries

NiMH / Ni-MH
: *nickel-metal hydride* : type of rechargeable battery that exhibits little memory effect and is known for high energy density compared with that of **NiCd** batteries and relative low cost compared with that of **Li-ion** batteries; see also NiMH on Wiki

niner
: Alternate way of **speaking** the numeral 9
: : *My **call sign** is alpha-juliet-niner-romeo... **QSL**?*


NMO through-hole mount


NMO trunk-lip mount


NMO magnetic mount

NMO
: *New Motorola™* : model name for a common **antenna mount**, primarily for **mobile** applications; see also NMO mount on Wiki

node
: Point of interest in a particular system
- **IRLP** : dedicated computer and associated hardware that **links radio** to the internet; see typical IRLP node
- **EchoLink** : internet-capable device running software that **links radio** to the internet
- **HSMM (mesh)** : dedicated router that **links radio** to a local network that's attached to the internet; see mesh node
- **standing wave** : point along a **transmission line** where the amplitude is at its minimum

noise
: Any signal other than the one wanted or being monitored, such as **power line noise** or **phase noise**; see also
- audio noise on Wiki
- radio noise on Wiki
- electronic noise on Wiki

noise blanker / noise blanking / noise-blanker
: Circuit that **filters** high-amplitude, wide-band **noise** (spikes, pulses, etc.) at the **receiver front-end** without introducing ringing (which often plagues **band-pass filters**) by **attenuating** the signal only during the duration of the noise pulse
: : *Note: because the two are often confused, **ANL** filters the unwanted signal by limiting amplitude while **NB** filters it by attenuating the signal for the duration of the noise*

noise figure
: Ratio of the **noise** generated by a **receiver** with respect to the theoretical **noise floor**, expressed in **dB**, the lower the value, the better the receiver performance; see also noise figure on Wiki

noise floor
: Sum of all **noise** sources and other unwanted signals, such as **atmospheric noise**, and is the theoretical minimum noise at the input of a perfect **receiver** at room temperature, set at -174 dBm/Hz; see also noise floor on Wiki

nominal

By name only; for example, a D **battery** cell is typically labeled "1.5 volts" but might actually measure at 1.487 volts, so "1.5" is its *nominal* value; see also nominal value on Wiki

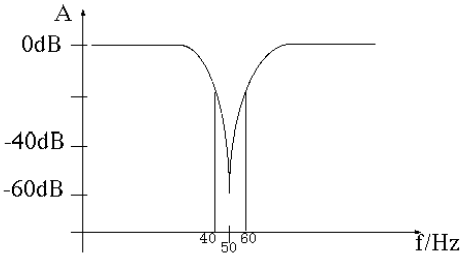
non-ionizing radiation
: See **ionizing radiation**

non-volatile
: Will maintain its stored information, even if its **power** is removed, especially in the case of computer memory; see also non-volatile memory on Wiki

noob
: See **novice**

northern lights
: See **aurora**

notch filter
: **Band-reject filter** with a very narrow **stopband**, or in other words, has a high **Q factor**, to reduce **interference** from **carrier** signals in the **receiver passband**; compare with **peak filter**



notch filter graph

novice
- *Novice* : former entry-level **ham** radio **license class**
  Decades ago I had my start in ham radio with a Novice class license
- Beginner, or person who is inexperienced at a craft or skill (also called *newbie*, ***rookie***, and *neophyte*); see also novice on Wiki
  *I'm a novice when it comes to building **antennas***

NPØ / NP0
: *negative-positive-zero* : ceramic **capacitor** classification (equivalent to the EIA category *CØG*) indicating the ability to maintain its **nominal capacitance** (in the negative direction or positive direction) with a large tolerance for temperature change (Ø °C change), which can be used to reduce thermal drift in **crystal oscillators**; see also ceramic capacitor on Wiki

NPN
: See **transistor**

NPOTA
: *National Parks on the Air* : event during 2016 in which **portable ham** radio **stations** located in pre-selected sites attempted to contact as many other NPOTA stations as they could, in conjunction with the National Park Service centennial celebration, subject to ARRL NPOTA rules; see also NPOTA on ARRL and the main NPOTA website

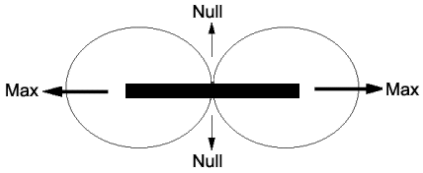
NRQZ
: ***National Radio Quiet Zone***

NTS
: ***National Traffic System***

NTSC
: *National Televsion System Committee* : name for analog **fast-scan** color **television** signals, which transmit 30 frames per second, each frame of which is made of 525 lines, and which typically requires approximately 6 MHz of **bandwidth** when transmitted on the **70-cm band**; see also NTSC on Wiki

nube
: See **novice**

null
- Area or direction in an **antenna radiation pattern** in which its signal is almost entirely canceled or nearly non-existent; see also null on Wiki
- Quantity of little or no **RF** signal



NVIS
: ***near vertical incidence skywave***

O

O-wave / O wave
: See **ordinary wave**

OB
: ***old boy***

OCF / OCFD
: ***off-center-fed***

OEM connector / OEM-T connector
: See **T connector**

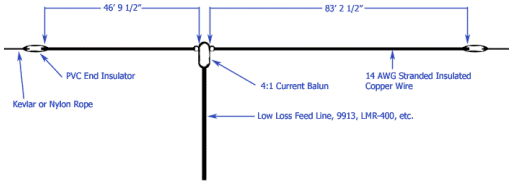
OET
: *Office of Engineering and Technology* : office within the **FCC** that manages allocations of the **electromagnetic spectrum** and advises the Commission on technical and engineering matters; see also OET on Wiki and the main OET website

OFDM
: ***orthogonal frequency division multiplexing***

off the air / off-the-air / off-air
: Slang for ***while not transmitting***; see also **on the air**
  Let's take our religious discussion off the air

off-center-fed
: Type of **dipole antenna** design in which the **feedline** connects to two radiating **elements** (wires) of different lengths, to support more than one **band**

OCF dipole antenna



OCF dipole diagram

official
: Type of **two-way radio** communication for use in a government or medical environment, such as police (public safety), fire, EMS, or hospitals

official observer
: Former volunteer person or group (humorously referred to as the *ham police*) once appointed by the **ARRL** within the **Amateur Auxiliary** to observe and investigate technical irregularities and accidental, annoying, or egregious and repeated violations of the **amateur radio rules** before they come to the attention of the **FCC**; see also OO on Wiki and OO on ARRL

official observer coordinator
: **OO** appointed by the **ARRL** Section Manager to supervise the activities of other OOs; see also OOC on Wiki and OOC on ARRL

offset
: See **repeater offset**

offset direction
: Sign of a **repeater**'s **offset**, positive or negative (also known as *shift direction*), determined by offset = f_{input} - f_{output}; see also repeater frequencies on Wiki and Noji's repeater page

ohm / ohms
: See **resistance**

Ohm's Law

Principle of electric circuitry that establishes a relationship between the **voltage** drop across a component and the **current** through the same component, such that they vary directly proportionally with each other by the **impedance** of the component for **AC** circuits (E = I**Z**), and by the **resistance** of the component for **DC** circuits (E = IR); see also Ohm's Law on Wiki

ohmic resistance
: See **resistance**

ohmmeter
: Instrument that measures electrical **resistance** and is usually one of the functions found in a **multimeter**; see also ohmmeter on Wiki

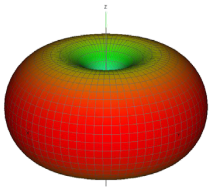
ohmmeter

Olivia
: Type of **MFSK data** transmission **mode** (**protocol**) that supports **RTTY** under difficult **conditions** events; see also Olivia on Wiki and the main Olivia website

OM
: *old man* : the husband if you are a couple; the dad if you have children, regardless of age; can also mean (male) *friend*; (also *OB* for *old boy*)

omnidirectional antenna
: **Antenna** that radiates **RF** energy equally in all directions outwards (rather than upwards); see also omnidirectional antenna on Wiki

omnidirectional antenna


omnidirectional antenna pattern

on the air / on-the-air / on-air
: Slang for ***actively transmitting***; see also **over the air** and **air waves** and **off the air**
  *Be sure to say your **call sign** when you're on the air*

on the side
: CB slang for an announcement that you need to leave the current conversation, but plan to listen when you can, so that you can rejoin the conversation later
  I'll be on the side for awhile

OO
: ***official observer***

OOC
: ***official observer coordinator***

OOK
: *on-off keying* : simplest form of **ASK data** transmission, which is simply the presence or absence of a **carrier** signal, and the type used in **CW** operation to send **Morse code** messages; see also OOK on Wiki

op
: Short for ***operator***

op-amp / opamp
: ***operational amplifier***

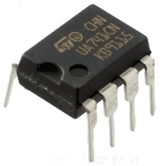
open
- *open band* : **band** that is available for **skip** communication
  *The **10-meter** band is really open right now*
- *open carrier* : see **dead carrier**
  *All I get on that **frequency** is an open carrier*
- *open circuit* : electrical circuit that does not make a complete **current** flow path
  *I believe my **feedline** has an open in it*
- *open net* : **net** that is available for any **licensed ham** to check in on, and one whose communication is not necessarily **directed** by a **controlling station**
  *This net is open to all **amateurs***
- *open repeater* : **repeater** that is available for use by any **licensed ham** within range, without restriction
  The '76 is an open repeater

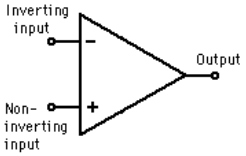
- *open squelch* : **squelch** circuitry that has been disabled (open-circuited), so that all radio **noise** can be heard near the receiver frequency
  *My squelch is opened so that I could hear **weak** signals*
- Creation or establishment of a communication pathway
  *Open a **channel** to the **IC***
  *You need to send a **tone** to open the **repeater***
  *Our telephone **lines** are open*

open-wire line / open-wire feed line / open wire feed line
: See **ladder line**

operate / operation
: Act of controlling **radio station** equipment to perform its intended function

operational amplifier
: High-**gain voltage** amplifier (abbreviated as *op-amp*) made from an **analog integrated circuit**; see also op-amp on Wiki


741 op-amp



op-amp symbol

operator
: See **control operator**

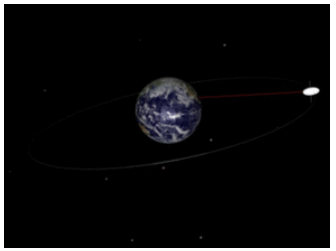
opposite sideband
: See **reverse sideband**

optical shaft encoder
: Device that detects the rotation and position of a control by interrupting a light source with a patterned wheel; see also optical rotary encoder on Wiki


optical shaft encoder

opto-isolator / optoisolator
: Device that uses light to transfer electrical signals between two isolated circuits, often to prevent high **voltages** from affecting the system receiving the signals; see also opto-isolator on Wiki

orbital period
: Length of time a **satellite** makes a single revolution around the Earth; see also orbital period on Wiki


orbital period illustration

ordinary wave
: One of two types of **elliptically polarized radio waves** (also known as an *O-wave*) that results from the interaction with the earth's magnetic field in the **ionosphere**, but behaves the same as without the influence the magnetic field; see also birefringence on Wiki and **extraordinary wave**

orientation
: **Antenna** electric field oscillation direction, which determines its **polarization**

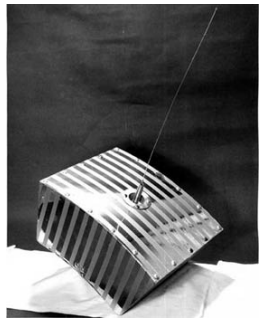
orthogonal frequency division multiplexing
: Digital **modulation** technique using subcarriers at **frequencies** chosen to avoid intersymbol **interference**, for use in high-speed digital **modes**; see also OFDM on Wiki

OSCAR

orbiting satellite carrying amateur radio : **LEO satellite** dedicated to **amateur radio** communication as a **repeater**; see also

- OSCAR on Wiki
- OSCAR [ARRL PDF]
- OSCAR 1 on Wiki
- OSCAR 2 on Wiki

OSCAR 1



OSCAR 2

oscillation

Continuous generation of a periodic electric (**AC**) or **electromagnetic** signal; see also oscillation on Wiki

oscillator

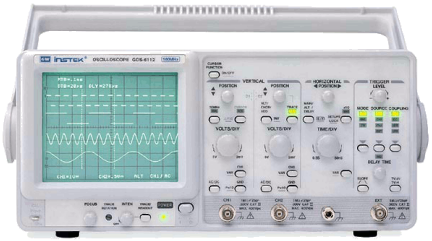
Circuit that generates a periodic, **oscillating** signal, the basic components of which are usually a **filter** and an **amplifier** operating in a feedback loop; see also oscillator on Wiki

Some oscillator types

- **Colpitts oscillator**
- **crystal oscillator**
- **Pierce oscillator**
- **Gunn diode oscillator**
- **Hartley oscillator**
- **LC oscillator**
- **magnetron oscillator**

Some application-specific oscillators

- **beat frequency oscillator**
- **variable-frequency oscillator**
- **voltage-controlled oscillator**



oscilloscope

Electronic test instrument (sometimes abbreviated *O-scope*) that can display and measure either a simple or complex **waveform**, to observe changes in an electrical signal over time; see also oscilloscope on Wiki

OT

old-timer : *older and experienced male*; see also **Morse code abbreviation**

OTH

over-the-horizon

out

*I have finished speaking and am **not** awaiting a reply*, similar to **clear**; see also voice procedure on Wiki

This is KNØJI, and I'm clear. Out.

out after roll / out after roll-call / out after roll call

See **early-out**

outlet power

See **household power**

output frequency

Value of a **repeater**'s **frequency** at which it re-transmits signals that it has received on its **input frequency**; see also **repeater offset**

over

I have finished speaking and am awaiting a reply; see also voice procedure on Wiki

This is KNØJI. Over.

overdeviation / over-deviation

Form of **FM distortion** (also called *excessive deviation*) in which the amplitude of the **modulating** signal produces a **deviation** that exceeds the **receiver**'s **bandwith**, which is typically limited by the **attenuating** effect of the **IF filter**, often resulting in irritating receiver **audio**

overdrive / over-drive

See **drive**

overload

See **fundamental overload**

overmodulation / over-modulation

Form of **distortion** in which the level of **modulating** signal exceeds the value necessary to produce 100% modulation, often resulting in **flat-topping** and excessive **bandwidth**; see also overmodulation on Wiki

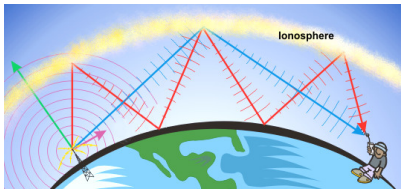
over the air / over the airwaves / over the air waves

Slang for using **radio waves** as a means of communication; see also over the air on Wiki

You should announce that over the air

over-the-horizon

- **Radio wave propagation** path over which signals are transmitted and received beyond the **visual horizon** by either **reflection** (bouncing) or **refraction** (bending)
- Type of long-range **radar** (often called *beyond the horizon*) system that can detect targets much farther than ordinary radar; see also OTH on Wiki



over-the-horizon signal by reflection off the ionosphere

the blue curve represents an over-the-horizon signal by refraction

overtone

Integer multiple of a **frequency** that is *higher* than the **fundamental** frequency (**harmonics** include the fundamental frequency); see also overtone on Wiki

OWL

open-wire line

P

P1dB

See **1 dB compression**

P25

Project 25 : suite of **digital mobile radio** communication standards (also known as *APCO-25*) designed primarily for **official** use by public safety (police, fire, EMS, etc.) in North America; see also P25 on Wiki

PA

power amplifier

packet

- Short for ***packet radio***, **data** transmission **mode** operated through a **terminal node controller** performing packet switching to convey the data over **radio waves**; see also packet radio on Wiki
- Bundle of formatted digital information sent over a medium, such as **radio waves**, as part of a larger message or data stream, and usually consists of a **preamble** (header), address, and payload; see also packet on Wiki
- A *packet radio station* is an **amateur radio station** that uses packet radio to communicate with another station

packet repeater

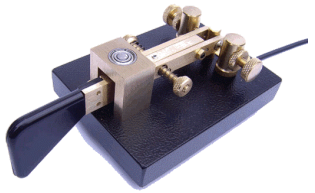
See **digipeater**

PACTOR / PACTOR-III / PACTOR 3

Low-rate **data** transmission **mode** using **FSK** to transfer data over **radio waves** by means of a **terminal node controller**, limited to approximately 2300 Hz of bandwidth at maximum data rate; see also PACTOR on Wiki and PACTOR-III on ARRL

paddle

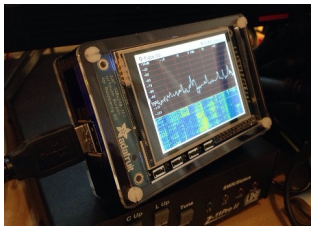
- Finger-sized, paddle-shaped tab typically mounted vertically on a **Morse code keyer** to create a horizontal motion during **CW** operation
- Alternate or short name for an entire **Morse code keyer** unit that features one or more paddles



keyer with a single paddle

pan adapter / panadapter / pan-adapter

Short for ***panoramic adapter***, device that graphically displays a portion of the **RF** spectrum being **detected** in a **receiver** by real-time spectral energy density and / or by a **waterfall**; see also pan adapter on Wiki

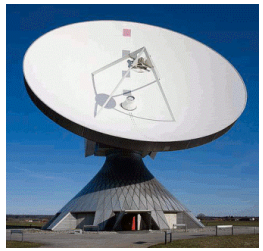


pan adapter display

parabolic antenna / parabolic dish

High-**directivity antenna** (often called *dish antenna*), whose reflector has the shape of a bowl or dish with a parabolic cross-section, resulting in the highest **gain** and narrowest **beamwidth** of just about any other antenna type; see also parabolic antenna on Wiki

small parabolic antenna



large parabolic antenna

parametric amplifier / paramp

Highly sensitive low-**noise amplifier** that relies on varying the **reactance** parameter to achieve amplification, used for **VHF**, **UHF**, and **microwave** applications such as **radar**, and also known as a *reactance amplifier*; see also parametric amplifier on Wiki

parasitic capacitance

See **stray capacitance**

parasitic element

Conductive rod, wire or other metal **antenna element**, also known as a *passive **radiating element***, that is not electrically connected to other parts of the antenna (such as in a **Yagi** or **quad** or **NVIS**), but serves to modify its **radiation pattern** by directing its **waves** as a beam, increasing the antenna's **gain** in that direction; see also parasitic element on Wiki

parasitic oscillation

Undesirable **oscillation** that results from feedback in an **amplifier** circuit and can produce **EMI**, reduce amplifier **efficiency**, and even damage amplifier components; see also parasitic oscillation on Wiki

parasitic suppressor

Circuit or electric device inserted in an **RF power amplifier** circuit to remove or reduce the effects of **parasitic oscillation**, and can be as simple as a **ferrite bead** in a **transistorized HF** amplifier

parrot repeater

See **simplex repeater**

Part 15 device

Unlicensed device that can emit low-**power radio** signals on **frequencies** used by a **licensed** service; see also Part 15 on Wiki and Part 15 devices on ARRL and CFR Part 15

Part 17

Titled *Construction, Marking, and Lighting of Antenna Structures*, portion of the US Government Code of Federal Regulations Title 47 that specifies and regulates construction, marking, and lighting of **antenna** structures; see also CFR Part 17

Part 90 certification

FCC certification of **commercial**, **official**, and other non-**amateur** radios for use in non-amateur **bands**; *many **ham** radio models that are capable of transmitting outside the amateur bands are Part 90-certified for commercial use, and many are not*; see also **type-acceptance** and land mobile radio service on Wiki and CFR Part 90

Part 95

Titled *Personal Radio Services*, portion of the US Government Code of Federal Regulations Title 47 that specifies and regulates personal (typically **channelized**) **radio** operations such as **CB**, **GMRS**, **FRS**, **MURS**, R/C, and medical devices; see also CFR Part 95

Part 97

Titled *Amateur Radio Service*, portion of the US Government Code of Federal Regulations Title 47 that specifies and regulates **amateur radio** operations; see also CFR Part 97

passband / pass band

Frequency band or region in which only signals of frequencies within that **bandwidth** are permitted to pass through a circuit; see also passband on Wiki and **band-pass filter**

passband tuning

Receiver control that allows an **operator** to adjust the **frequency** range of the **passband** to help eliminate **interference**

patch

- See **autopatch**
- See **jumper**

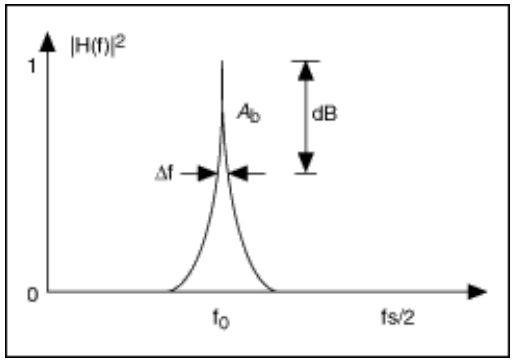
pattern
: See **radiation pattern**

PBT
: ***passband tuning***

PCB / PCBs
: ***polychlorinated biphenyl***

peak envelope power
: Highest **transmitter power** level supplied to the **antenna feedline** by a **transmitter**; see also PEP on Wiki

peak filter
: **Band-pass filter** with a very narrow **passband**, or in other words, has a high **Q factor**; compare with **notch filter**

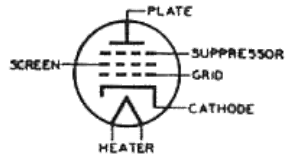


peak filter graph

pecuniary
: Outdated term relating to money or payment
: ***Hams** may not operate their **stations** for pecuniary reasons or interests*

pentode
: Electronic device, usually in the form of a **vacuum tube**, that has five **electrodes** (**anode** / plate, **cathode**, **control grid**, **screen grid**, and **suppressor grid**) plus a filament, and at one time often employed in an **amplifier** or **oscillator** circuit; see also pentode on Wiki


pentode tube



pentode symbol

PEP
: ***peak envelope power***

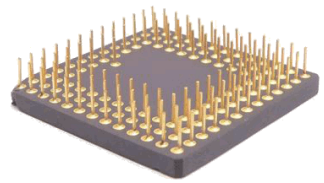
period
: See **orbital period**

permeability
: Measure of the ability of a material to conduct magnetic flux relative to the ability of air to conduct magnetic flux (measure of the ability of a material to support the formation of a magnetic field within itself), and therefore determines the **inductance** of **toroidal inductors**, **ferrite chokes**, and other ferrite-**core inductors**; see also permeability on Wiki

persistence
: Length of time an image remains on a **CRT** screen after its beam is turned off; see also persistence on Wiki

personal
: CB slang for *first name*
: *What's your personal?*

PGA
- *pin grid array* : type of **integrated circuit** packaging, in which the pins are typically arranged in a square or rectangular array pattern; see also PGA on Wiki
- See **field-programmable gate array**



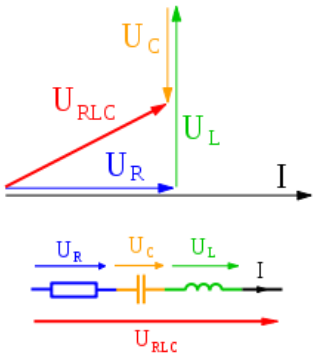
phase-locked loop / phase locked loop / phase lock loop
: Electronic circuit or control system that combines a phase detector (*comparator*), a **low-pass filter**, a **voltage-controlled oscillator**, and a stable reference **oscillator** in a feedback (servo) loop, to generate a stable high-**frequency** signal (method known as ***frequency synthesis***) from a fixed low-frequency signal; see also PLL on Wiki

phase modulation
: Method of changing the phase angle of an **RF** signal to convey information, and produced by a **reactance modulator** connected to an RF **power amplifier**; see also phase modulation on Wiki

phase noise
: Rapid, short-term, and random fluctuations (**noise**) in the phase of a **waveform** (also called *phase jitter*), expressed in **dBc**/Hz, often produced by phase variations in the reference **oscillator** signal, directly related to the short-term stability of the reference oscillator, and results in increased **bandwidth** required by the oscillator; see also phase noise on Wiki

phasing harness
: See **phasing line**

phasing line / phase line
: Conductor (typically a cable, and often called *phasing harness*) implemented on an **antenna** having multiple **driven elements**, such as an **array**, to ensure each driven element works in concert with the others to produce the desired **antenna pattern** (by ensuring the **HF currents** in all driven elements flow in phase and in the same direction); see also phased antenna array on Wiki



electrical schematic with accompanying phasor diagram

phasor diagram
: Graphical time-independent (time-invariant) **complex** value representation of a sinusoidal function, complete with amplitude and **frequency**, showing the phase relationship between circuit **impedances** and **resistances** at a given frequency; see also phasor on Wiki

phone
: **Audio** (**voice** or other audible) communication that is **modulated** and then transmitted over a **radio frequency**
  *Phone is not permitted on the **30-meter** band*

phone patch
: See **autopatch**

phonetic alphabet / phonetics
: Set of words (also called *standard phonetics*) adopted by the **ITU** to be **voiced** in place of Roman letters to clarify spellings or call signs, as follows:

Alfa	Hotel	Oscar	Victor
Bravo	India	Papa	Whiskey
Charlie	Juliet	Quebec	Xray
Delta	Kilo	Romeo	Yankee
Echo	Lima	Sierra	Zulu
Foxtrot	Mike	Tango	
Golf	November	Uniform	

see also phonetic alphabet on Wiki and phonetic alphabet on ARRL
  This is Kilo November Zero Juliet India

ITU Phonetic Alphabet

A - alfa	**N - november**
B - bravo	**O - oscar**
C - charlie	**P - papa**
D - delta	**Q - quebec**
E - echo	**R - romeo**
F - foxtrot	**S - sierra**
G - golf	**T - tango**
H - hotel	**U - uniform**
I - india	**V - victor**
J - juliett	**W - wisskey**
K - keelo	**X - xray**
L - leema	**Y - yankee**
M - mike	**Z - zulu**

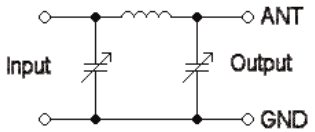
phono connector
: See **RCA connector**

photoconductivity
: Phenomenon in which a material, such as a **semiconductor**, becomes more electrically conductive when exposed to (illuminated by) **electromagnetic radiation** such as visible or untraviolet light; see also photoconductivity on Wiki

photovoltaic
: Related to the conversion of light energy into electrical energy using **semiconducting** materials that exhibit the photovoltaic effect; see also
  - photovoltaic effect on Wiki
  - **solar cell**

photovoltaic cell
: See **solar cell**

pi network
: Once-popular **filter** circuit made from two **L networks** connected back-to-back with the **inductors** in series and the **capacitors** in **shunt** at the input and output, and that served as an **antenna tuning unit** with good **harmonic attenuation**; see also pi network on Wiki



pi network

picket-fencing
: Slang for the undesirable rapid, fluttering sound sometimes heard from a **mobile station** that is moving while transmitting; see also picket-fencing on Wiki

pick it up
: Slang for a directive to join the conversation in progress (also *take one*) by being the next **station** to transmit
  Go ahead and pick it up, Dave

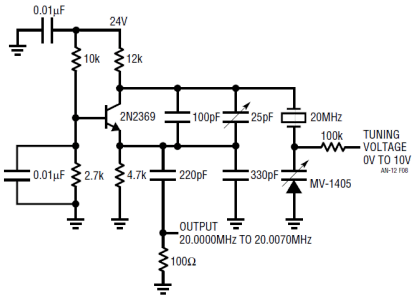
pick out
: Slang for the ability to *distinguish* one signal from another; see also **selectivity**
  *My **rig** can pick out two **CW stations** only 500 Hz apart*

pick up
- Slang for *detect* (*discern*)
  *My **rig** can pick up really faint **stations** at night*
- Slang for *collect* (*attract*)
  *Even short wires can pick up a lot of **static** during a storm*
  Unused equipment in my house seems to pick up a lot of dust quickly
- Slang for *purchase* or *borrow* or otherwise *acquire* (something not already in your possession)
  *I'm going to the **swap meet** to pick up a couple of Carl's **J-poles***
- Slang for *retrieve*

*I need to go home and pick up my **tuner** before I leave town*
My dad's coming to pick up my sister

pico
: Prefix, or units modifier, to indicate ÷ 1,000,000,000,000 or × 10^{-12}, and is abbreviated p

Pierce oscillator
: **Oscillator** circuit that generates a **waveform** using **positive feedback** supplied through a **quartz crystal**, and is one of (at least) three major oscillator circuits used in **amateur radio** equipment; see also Pierce oscillator on Wiki



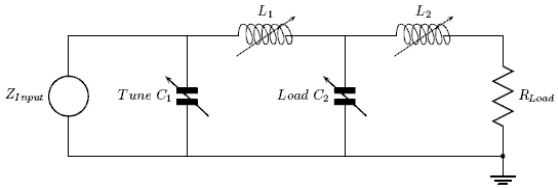
circuit employing a Pierce oscillator

piezoelectric effect
: Mechanical deformation of a material due to the application of a **voltage** or (conversely) the electric charge that accumulates in some solid materials in response to applied mechanical stress; see also piezoelectric effect on Wiki

pigtail
: See **jumper**

pileup / pile-up
: Slang for the sound of multiple **ham** radio **operators** who are attempting to contact the same operator on a particular **frequency** at the same time, most applicable to **HF** frequencies, due to the general absence of **squelch**
*You need to **work** this pileup*

pi-L network
: Once-popular circuit made from a **pi network** with an additional series **inductor** on the output, and that served to **match** an external **load impedance** with that of a circuit or signal **source**, but has greater harmonic suppression than a pi network when used between a **vacuum tube transmitter** and its **antenna**



pi-L network

PIN diode
: Electronic **semiconductor** component that performs the same function as a silicon **diode** at low **frequencies**, but performs like a variable **resistor** or **RF** switch at high frequencies, due primarily to its large region of **intrinsic** (normal, undoped semiconductor) material, its **attenuation** being controlled by a forward **DC** bias **current**; see also PIN diode on Wiki


PIN diodes

PIN diode symbol

pink slip
: Slang for written notification from a member of the **Amateur Auxiliary** for rules violation, which can be malicious or the result of equipment malfunction, or for exemplary operating behavior, in an attempt to help **amateur radio** operators self-police their compliance with the rules

pirate radio
: Illegal or unregulated **radio** transmission for entertainment, political, or other illicit purposes; see also **bootlegging** and pirate radio on Wiki

PL tone
: *Private Line™ tone* : former name of what we now call **CTCSS**; see also PL tone on Wiki

PL-259
: *plug 259* : model name for a common 50 Ω **coaxial cable feedline** male **connector** (plug) for **HF**, **VHF**, and **UHF** applications; see also UHF connector on Wiki and RF connector on Wiki


PL-259 connectors

plate

Anode of a **vacuum tube**

plate current
: Quantity of **current** entering the **anode** of a **vacuum tube**

PLD
: ***programmable logic device***

PLL
: ***phase-locked loop***

PM
- ***phase modulation***
- ***pulse (width) modulation***

PNP
: See **transistor**

PoE / POE
: *power over ethernet* : standard for systems that transfer both electric **power** and **data** on Ethernet cabling to devices such as IP cameras, **IP phones**, and **mesh** routers; see also PoE on Wiki

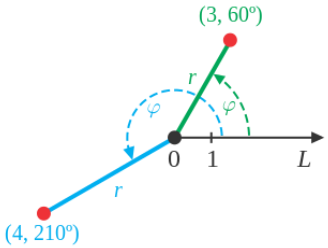
PoE injector / PoE power injector
: Type of **power sourcing equipment**, device that supplies electric **power** to a **PoE** device through an Ethernet cable

PoE injector

point-contact diode
: Type of **diode** constructed from a pointed metal wire (often called a *cat's whisker*) in contact with an **n-type semiconductor** or a crystal that contains n-type impurities, and can be used as an **RF detector**; see also point-contact diodes on Wiki

point-contact diode

polar coordinates
: Two-dimensional coordinate system whose points are defined by distances from a reference point and angles from a reference direction, often with each distance representing a *magnitude* and each angle representing a *phase*; see also polar coordinates on Wiki



polar coordinates examples

polarization
: Electric field **orientation** of an **antenna** relative to the level surface of the earth, and can be **vertical**, **horizontal**, **circular**, or **elliptical polarization**; see also polarization on Wiki

polychlorinated biphenyl
: Toxic material that might be present in some electronic components such as high-**voltage capacitors** and **transformers**; see also PCB on Wiki

pond
: See **across the pond**

portable
: Equipment configuration that allows for relatively rapid collection, transportation, and deployment of **ham** radio **gear**; see also portable operation on Wiki and portable on ARRL

portable station
: **Amateur radio station** that is set up temporarily at a particular location; see also portable station on Wiki

positive feedback
: Process in which a system or circuit output positively affects (is added to) its own input (known as a feedback loop), increasing (compounding) the resulting effect; see also positive feedback on Wiki

possum / possuming

CB slang for listening to **radio** communication without letting others know you are listening, so that you can eventually engage a conversation in which you feel you should contribute

*There are several **hams** who regularly possum on this **frequency***

*Note: the primary difference between possuming and **monitoring** or being **'on the side'** is that possuming is not announced*

POTA

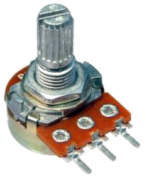
Parks on the Air : award program for **ham radio** enthusiasts who successfully make **contacts** with other hams from one or more designated or candidate parks around the world; see also the main POTA website

potential

Electric **voltage** level; see also electric potential on Wiki

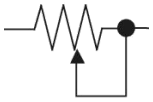
potentiometer / pot

Three-terminal **resistor** with a sliding contact that forms a **voltage** divider, and acts as a variable resistor if only the sliding contact and one of the end terminals are used; see also potentiometer on Wiki



potentiometer

potentiometer symbol



variable resistor symbol

pounding brass / pound brass

Older slang for **radio operation** using **Morse code**

Loren is upstairs pounding the brass

power

- Rate of energy absorbed, used, or dissipated per unit of time, expressed in *watts* (symbol W); see also power on Wiki

  *My **rig** transmits 75 W of power at its highest setting*
- Transmitter setting or level designation that represents a particular output wattage quantity or range, such as *1*, *2*, *3*, or *low*, *medium*, *high* or similar

  I've been transmitting on low power the whole time
- Action of applying energy to a device for an indeterminate amount of time

  *I use an **AGM battery** to power my **rig***
- Type of energy source

  *My **rig** runs on **solar power***
- Slang for operation at a power level greater than what is typically transmitted from a particular station (also, slang for *greater than **QRP*** level)

  Sounds to me like you're running with some power tonight

power amplifier

Device or circuit that outputs an **RF** signal whose output **waveform** is identical to, but increased in amplitude compared with that of its input signal, the two types most applicable to **ham** radio being the **Class A** and the **Class C** power amplifiers; see also RF power amplifier on Wiki

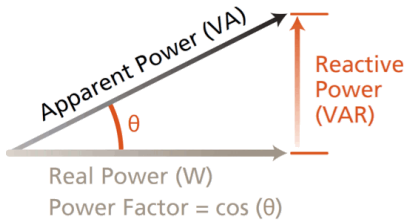
RF power amplifier

power factor

For **power** that is supplied to a **load**, ratio of the *real power* (also called *true power* or *active power* or *working power*) delivered, to the *apparent power* in the circuit performing the delivery (portion of the total supplied power that is performing useful work), with the Pythagorean relationship $apparent\ power^2 = real\ power^2 + reactive\ power^2$; in layman's terms,

- *apparent power* (expressed in *volt-amperes*, symbol VA) is the power you *experience* (*see* or *feel*, for example), and is the one that must be taken into account for circuit component capacity calculations, because it is the power input to the circuit
- *real power* (expressed in *watts*, symbol W) is the power that performs actual work (consumed), and so is power that residents pay for
- *reactive power* (expressed in *volt-amperes reactive*, symbol VAR) wattless, non-productive power that serves no useful purpose (cannot perform useful work) because it is repeatedly exchanged between the associated magnetic and electric fields but is not dissipated

see also power factor on Wiki and power components on Wiki



power line / powerline

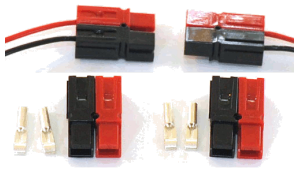
Wire, cable, or other conductor (also called *AC power line*) used to provide **AC household power** from the **grid** to the **electrical service** at a home, business, or facility; see also power line on Wiki

power line noise / power line hum

Unwanted and typically constant low-**frequency** sound, characteristic of an unintended **coupling** with an **AC** power **source**, such as **household power**; see also
- power line hum on Wiki
- power line noise on ARRL
- power line noise FAQ on ARRL

Powerpole® / Power pole

Brand name (often *Anderson™ Powerpole®*) for a gender-neutral electrical (primarily **DC**) **power connector** widely used in **ham** radio applications, particularly **go-kits** and **portable gear**; see also Anderson Powerpole on Wiki and Anderson Powerpole [PDF] on ARRL



Powerpole connectors

power supply

Source of electric energy for an electrical **load**; device used to deliver electric **power** to a **radio** or other device, the two most typical types for **amateur** applications being **linear** and **switching**, defined by their energy conversion methods; see also power supply on Wiki

30 A DC switching power supply

pre-emphasis / preemphasis

See **emphasis**

preamble

First part of a **formal traffic message**, and contains the **check** and other information needed to track the message as it passes through the **amateur radio** traffic handling system

preamplifier / pre-amplifier

Circuit or device typically installed between an **antenna** and a **receiver** (but can also be found following the input of a **microphone** or other weak-signal device) of a **transceiver** to convert the weak electrical input signal into a stronger one that can more easily be manipulated by relatively simple electronics for further processing (such as for **demodulation**) but more specifically designed to improve the **signal-to-noise ratio** of the incoming signal; see also preamplifier on Wiki

precedence

station category designator, for **logging contacts** during some **contests**

prefix

First part of a **call sign**, including the first set of letters and the following digit (some identify the prefix as being only the first set of letters); see also
- American prefixes
- ITU prefixes on ARRL
- ITU prefixes on Wiki for international considerations

preselector / pre-selector

Tunable narrow-**bandwidth filter** inserted between an **antenna** and a **receiver**, to reject nearby unwanted (out-of-**tune**) signals from entering the receiver, thereby improving receiver performance; see also preselector on Wiki

President's War Emergency Powers

See **War Powers Act**

primary

- Person who is an **amateur radio station licensee** (together with the transmitting equipment is known as a *primary station*), has the foremost responsibility for the proper operation of the station, and is the only person who can be designated as a **control operator** of an **amateur** station
- Input to a **transformer**, or its point of connection to a **power** or signal **source** (the output typically called the ***secondary***)
- **Band** or **sub-band** that is available (on a *primary basis*) to a specific group of users or **operators** who has priority use of the band over a **secondary** group
- Group or classification of users or **operators** that has been granted priority control (*primary control*) of a **band** or **sub-band** over that of a **secondary** group

product detector

AM and **SSB receiver** circuit used as a **demodulator** to recover information contained in a **modulated radio wave** by **multiplying** (hence the name *product*) the received modulated signal with that of a local **oscillator**; see also product detector on Wiki

program / programming

Action of setting your **radio** to a particular **frequency**, especially to communicate with a **repeater**, including setting the **offset**, **tone**, and **power** level, then possibly storing those settings in a memory channel; see also how to program a radio

Where could I go to get help with programming my radio?

programmable gate array

See **field-programmable gate array**

programmable logic device
: Collection of programmable logic gates and circuits in a single **integrated circuit**; electronic component used for building reconfigurable digital circuits; see also PLD on Wiki

propagation
: Behavior (**reflection**, **refraction**, **polarization**, **scatter**, etc.) of a **radio wave** as it travels from one point to another; see also radio propagation on Wiki

prosign
: **Morse code** representation of a word, phrase, or control used to indicate **CW** communication events such as $\overline{\text{CT}}$ for *attention*, $\overline{\text{KN}}$ for *go ahead*, $\overline{\text{SN}}$ for *roger*, and $\overline{\text{SK}}$ for *end of contact* (many of which are delivered without the normal **breaks** between individual characters, so represented here with the *overbars*); see also
  - prosigns on Wiki
  - **Morse code abbreviation**
  - historical terms on ARRL

protocol
: Format, technique, and system of rules by which a communication is achieved between two or more points; see also communication protocol on Wiki

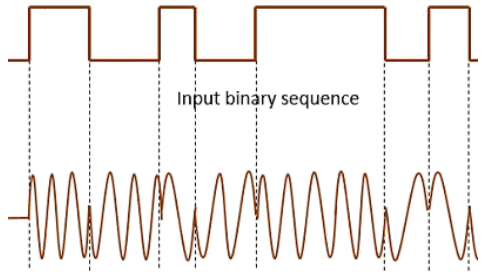
proton event / proton storm
: See **solar particle event**

PRS
: *personal radio service* : classification of **channelized VHF license**-free **radio** services that are characterized by low-**power** and general availability, and include **CB**, **FRS**, and **MURS** systems; see also PRS on Wiki

PSE
- *please*; see also **Morse code abbreviation**
- *power sourcing equipment* / *power-sourcing equipment* : device (such as an Ethernet switch) that provides electric **power** on an Ethernet cable; see also power sourcing equipment on Wiki

PSE QSL
: *please acknowledge* : request for a reply to a **contact** or postcard; see also **Morse code abbreviation**

PSK
: *phase-shift keying* : low-rate **data** transmission **mode** in which the phase of the signal is changed (shifted) to convey the information; see also PSK on Wiki



PSK Modulated output wave

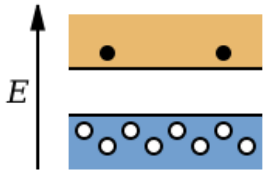
PSK31
: *phase-shift keying, 31 baud* : form of **PSK** with a very narrow **bandwidth** and whose **data** rate is designed to be close to typing speed, the '31' signifying the approximate **transmitted symbol rate**; see also
  - PSK31 on Wiki
  - PSK31 on ARRL
  - main PSK31 website

P-static / P static
: *precipitation static* : type of **static** charge build-up due to rubbing against (**triboelectric effect**) or proximity to moisture (rain, fog, snow, or high humidity), as is common during thunderstorms and when aircraft fly through clouds

PSU
: ***power supply unit***

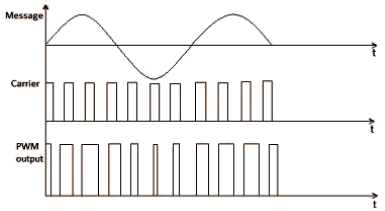
PTT
: ***push-to-talk***

p-type / P type
: Type of doped **semiconductor** material that contains excess **holes** in the outer shell of electrons (larger hole concentration than electron concentration), resulting in a net positive charge and making holes the majority **current** carriers in this type of material; see also p-type on Wiki



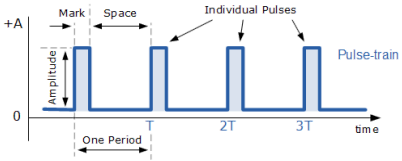
p-type semiconductor effect
black circles = electrons
white circles = holes

pull (a station) out / pull out / pull him out / pulled him out
: Slang for action of distinguishing a **station** apart from the surrounding **noise**, enough to make a verifiable or meaningful **contact** with the station
: *The **QRM** was so bad I couldn't pull him out*



pulse-width modulation

pulse-width modulation / pulse modulation
: Method of encoding an information signal (your **voice**, **data** packets, etc.) into a pulsing **RF** signal, so that the width of the output pulses varies with the information signal; see also PWM on Wiki



pulse waveform

pulse waveform
: Rectangular **waveform** made from narrow bursts of energy separated by periods of no signal; see also rectangular pulse waveform on Wiki

push-pull amplifier / push pull amplifier
: **Linear amplifier** that is characterized by low **distortion**, greater **efficiency** than a **Class A amplifier**, and reduces or eliminates even-order **harmonics**, and is therefore appropriate for amplifying **phone** signals; see also push-pull amplifier on Wiki

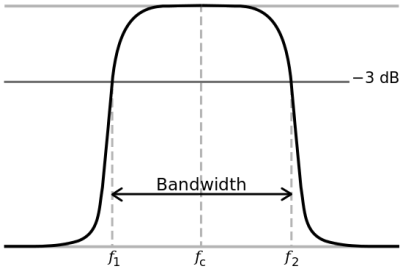
push-to-talk
- Communication operation method that requires the press of a momentary **switch** or button to enable transmission of your **voice**
  : ***Ham** radio typically requires push-to-talk operation while cell phone communication normally does not*
- Momentary button (often abbreviated *PTT*) on your **transceiver** or **mic** that enables transmission of your **voice** by switching the transceiver from receive mode to transmit mode; see also PTT on Wiki
  : *My **microphone** is equipped with two separate PTT buttons*

PV
: ***photovoltaic***

PWM
: ***pulse-width modulation***

Q

Q
: Unitless circuit characteristic that quantifies its general performance, also known as *Q factor* and *quality factor*, such that the higher the Q of a resonant circuit, the lower its losses and bandwidth; see also Q on Wiki



Q = $f_c/\Delta f$ for a resonant circuit

Q = X_L/R or X_C/R for series RLC circuits

Q = R/X_L or R/X_C for parallel RLC circuits

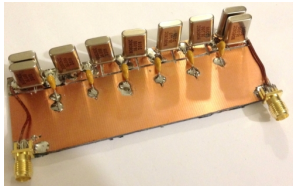
Q code
: Abbreviation for a common term used **on the air**, some of which can also be used as a question when followed by a question mark; see also Q code on Wiki and historical terms on ARRL

Q data
: See **I/Q**

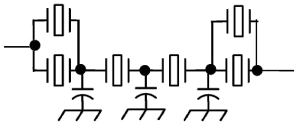
Q line / Q-line / Q section
: Linear **impedance matching transformer** applied to an **antenna** to **match** its input **impedance** to the **characteristic impedance** of the **feedline**; see also impedance matching devices on Wiki

Q signal
- See **Q code**
- See **I/Q**

QER filter
: *quasi-equiripple* : type of **crystal ladder filter** characterized by parallel **crystal oscillators** at each end of the crystal ladder, to reduce the **passband** ripple that normally plagues ladder filters



QER filter

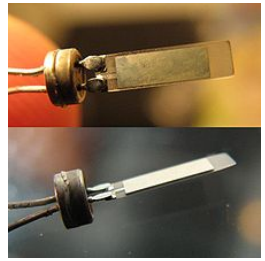


QER filter diagram

QPSK
: *quadrature phase-shift keying* : low-rate **data** transmission **mode** that uses **phase modulation** to shift between four phase angles of an **RF** signal to convey the information, and at two bits per symbol has twice the data rate of **DPSK** but at the same **bit error rate**; see also QPSK on Wiki

quartz crystal
- Man-made or natural quartz mineral whose **piezoelectric** properties make it useful as an **oscillator** in an electronic circuit; see also quartz crystal (piezoelectric) on Wiki
- See **crystal oscillator**

raw quartz crystal



quartz crystal in an oscillator

QRB
: The distance of your **QSO**
: *Our QRB is about 3500 miles*

QRG
: *Precise **frequency***
: QRG? = *What's my exact frequency?*

QRL

I'm busy
QRL? = *Are you busy?* or, more appropriately, *Is this **frequency** in use?*

QRM
interference
*I'm getting a lot of QRM on that **band***
*Note: the special designation of "<frequency> +/- QRM" indicates an instruction to **tune** to the specified **HF frequency**, plus or minus ~3 kHz, to shift away from interfering **stations** or to prevent interfering with another station*

QRN
*I'm hearing a lot of **static***

QRO
- Transmitting on high **power**, usually greater than 100 watts
- *Please increase your **transmitter power***

QRP
- Transmitting on low **power**, typically 5 watts or less for **CW**, and 10 watts or less for **SSB**; see also QRP operation on Wiki
- *I'm going to reduce my **transmitter power***
- Older slang for *child*

QRQ
Please send faster or *Please speed up*

QRS
Please send slower or *Please slow down*

QRT
Suspending operation or *Turning off the radio*

QRU
I don't have anything for you

QRV
I'm ready
QRV? = *Are you ready?*

QRX
Stand by or *Standing by*

QRZ
I'm calling you or, as it is applied in a **pileup**, *Next caller* or *Who's next?*

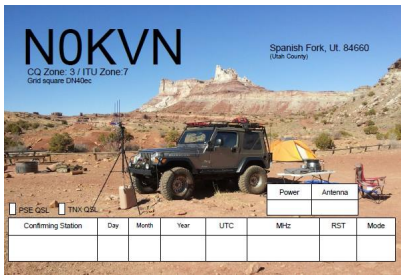
QSB
Your signal is fading or *Signals are beginning to fade*

QSK
- **full break-in**
- *I can hear you between signals*
  QSK? = *Can you hear me between **key-ups**?*
- *Go ahead* (rare)

QSL
Got it or *I acknowledge*
QSL? = *Do you **copy**?* or *Can you confirm?*

QSL bureau
See **QSL service**

QSL card
Written confirmation of a **contact** with another **ham** radio **operator** in the form of a postcard and acting as the ham's calling card, including the **call sign** plus date and time of the contact, now largely replaced by online submission and exchange of contact information; see also QSL card on Wiki



QSL card for NØKVN

QSL manager

Person or organization that performs the **QSL service** function, especially in a remote region or country that has limited or non-existent postal service (a ***DX QSL manager*** handles the receiving and sending of confirmation **cards** for a **DX station**)

QSL service
: Centralized (typically by nation) handling service for efficiently collecting and distributing **QSL cards** to save on the cost of sending them individually; see also QSL service on ARRL and QSL bureau on Wiki

QSO
: Conversation (pronounced CUE-soh); see also contact on Wiki
: *Thanks for the QSO*

QSO party
: **Amateur radio contest** relative to a particular state, province, region, or other grouping

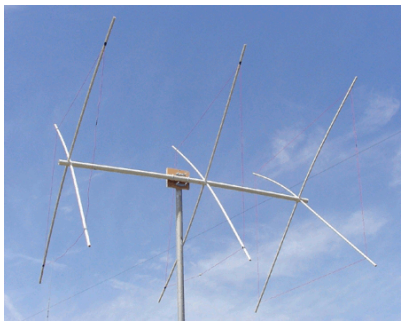
QST
: *Calling all **hams***
: *QST, QST, QST! This is **Net Control** calling for a **net***

QSY
: *Changing **frequency***
: *I'm going to QSY to 146.54*

QTC
: Practice of sharing or exchanging **contact** information with one or more other **hams**, mostly associated with European **stations** or **contests**

QTH
: Your current location (often in latitude and longitude coordinates)
: *What's your QTH?*

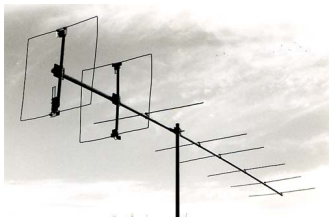
QTH locator
: See **grid locator**


quad antenna

quad antenna
: Type of **directional antenna** (sometime called *cubical quad*) that consists of a **driven element** and one or more **parasitic elements**, each formed into a square or rectangular loop, the lengths and spacings of which are dependent on transmitting **frequency**; see also quad antenna on Wiki

quad-band / quad band / quadband
: See **multiband**

quadrature phase
: See **I/Q**


70 cm quagi antenna

quagi antenna
: Type of **directional antenna** that is a hybrid of a **quad antenna** and a **Yagi antenna**, consisting of quad-type **driven** and **reflector elements**, plus **directors**

quality factor
: See **Q**

quartz crystal
: See **crystal oscillator**

Quiet Zone
: See ***National Radio Quiet Zone***

R

R
: **Morse code prosign** for ***roger***

RACES
: *Radio Amateur Civil Emergency Service* : **standby amateur radio** service that is **activated** (and replaces the conventional amateur radio service) during wartime when the **War Powers Act** is invoked; see also RACES on Wiki and RACES on ARRL

radar
: Originally an acronym for *radio detection and ranging*, object-detection system that uses **radio waves** to determine the range, altitude, direction, and speed of a moving object by transmitting **RF** signals in a particular direction and monitoring the **reflections** of those signals; see also radar on Wiki

radial
: Wire, rod, or other conductor that acts as a portion of **counterpoise**, or **capacitive** connection to a counterpoise, to provide the essential **ground** connection, completing the electrical reference portion of a (usually **vertical**) **antenna**; see also radial on Wiki and vertical radials on ARRL


antenna radials

radiating element
: Conductive, usually metallic, portion of an **antenna** intended to receive and/or transmit **radio waves**, also called the **driven element** in **beams** and other **Yagi** antennas

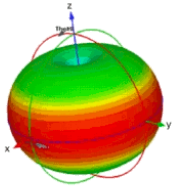
radiation
- Energy or particle (or both) given off (radiated, or **emitted**) from a source (such as **ionizing**, **non-ionizing**, **electromagnetic**, and solar radiation)
- As it applies to **ham** radio, the **emission** or transmission of **RF** energy as **radio waves**; see also radiation on Wiki

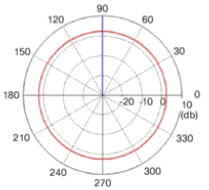
radiation angle
: See **angle of radiation**

radiation pattern
: Relative field strength of a transmitting **antenna** in a set of applicable directions or in all directions; see also radiation pattern on Wiki

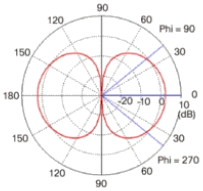
*Note: according to the principle of physics called **reciprocity**, an antenna's receiving pattern is identical to its radiation pattern*


(a) Dipole Antenna Model


(b) Dipole 3D Radiation Pattern



(c) Dipole Azimuth Plane Pattern



(d) Dipole Elevation Plane Pattern

radiation resistance
: That part of an **antenna**'s **feed point resistance** that results from the radiation of **electromagnetic** energy from the antenna; in other words, the value of a resistance that would dissipate the same amount of **power** as that radiated from an antenna; see also radiation resistance on Wiki

radiator
- See **radiating element**
- Any component or object that **emits electromagnetic radiation** (**radio waves**), such as an **antenna**, wire, or any conductive material

radio
- Wireless transmission of signals by means of **electromagnetic radiation**; see also radio on Wiki and wireless on Wiki
- Device that is capable of **transmitting** and **receiving radio frequency** signals (**transceiver**)
- Device that is capable of only **receiving radio frequency** signals (**receiver**)

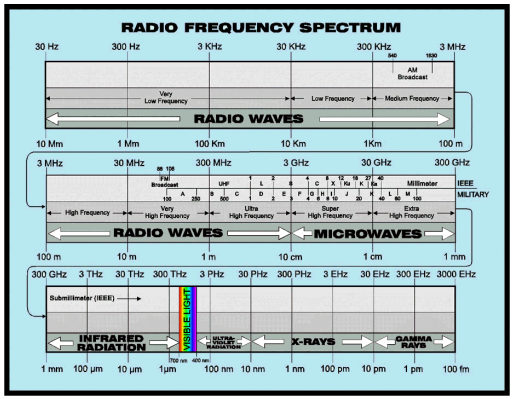
radio check

Test for (or *report on*) **radio equipment functionality** (workability), such as sufficient power level, ability to **hit the repeater**, **clipping** (on **single sideband**), **frequency drift**, or sufficient **microphone gain**; see also **audio check** and **signal check**

This is KNØJI, doing a radio check

radio direction-finding

See **direction-finding**



radio frequency

Signal of any type, whose **frequency** encompasses roughly 30 Hz to 300 GHz; see also RF on Wiki

radio frequency interference

Disruption of normal **radio** operation by the undesirable introduction of an external **RF** signal; see also

- RFI on Wiki
- RFI on ARRL
- **electromagnetic interference**

radio horizon

See **horizon**

radiolocation / radio location / radio-location

Process of detecting and locating distant objects by using **radio** signals; see also radiolocation on Wiki

radionavigation / radio navigation / radio-navigation

Service that applies **radio frequencies** to determine a position on the earth; see also radio navigation on Wiki

radio relay

See **relay station**

radio shack / radioshack

See **shack**

radiosport / radio sport

See **contesting**

radio station

See **station**

radio wave

Type of **electromagnetic radiation** whose **frequency** or frequencies are within the **radio frequency** spectrum; see also radio wave on Wiki

ragchew / ragchewing

Slang for smalltalk, gossip, or any other an extended, informal conversation between two or more **hams over the air**, akin to *shooting the breeze*, *shooting the bull*, or *chewing the fat*; see also chew the fat on Wiki and contact on Wiki

*We tend to use **80 meters** for mostly ragchewing*

rain scatter / rain-scatter

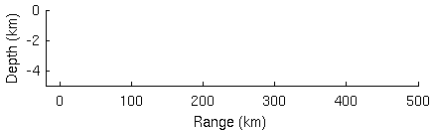
Type of **microwave propagation** in which signals are **refracted** by rain drops in a storm that is within **radio** range of both source and destination **stations**

random wire antenna / random-wire antenna

Type of **monopole antenna** consisting of a reasonably long wire, whose (*random* or arbitrary) length is typically selected for convenience rather than **wavelength**, and so is not as **efficient** as one whose length is adjusted to **resonate** within a specific **band**; see also random wire antenna on Wiki and random wire antenna on ARRL

random wire antenna with balun

rat tail
: See **tiger tail**



ray tracing example

ray tracing / ray-tracing
: Modeling of a **radio wave** path through the **ionosphere** by calculating its behavior through a system with regions of varying **propagation** velocity; see also ray tracing on Wiki

RCA jacks and plug

RCA connector
: Model name (from *Radio Corporation of America*) for a type of **audio** and video **connector** (also called *phono*), once commonly used in **amateur radio stations**; see also RCA connector on Wiki

RCD
: ***residual-current device***

RDF
: ***radio direction-finding***

reactance
: Imaginary component of **impedance**, or quantity of opposition to **current** flow in a circuit (symbol X), which varies with **frequency** and is expressed in *ohms* (symbol Ω) and defined as $X = \mathbf{X_L} - \mathbf{X_C} = \omega L - 1 / \omega C$, in which L is the **inductance** and C is the **capacitance** and ω is the frequency in radians ($\omega = 2\pi f$, in which f is the frequency in Hz); see also reactance on Wiki

reactance modulator
: Device or circuit that controls **modulation** by varying the **reactance** of a **transmitter** circuit and altering its phase angle, often used in **phase modulation** and **frequency modulation**

reactive power
: See **power factor**

reading you five
: *I hear you loud and clear*; see also voice procedure on Wiki

ready kit / ready-kit
: See **go-kit**

real power
: See **power factor**

receiver
: Device that can **detect** and **demodulate radio-frequency** signals and interpret them into information we can understand; see also receiver on Wiki

receiver overload
: See **fundamental overload**

receiver passband
: See **passband**

receiver voting system / receiver voter

See **voting repeater system**

receiving pattern / receive pattern

Relative field **sensitivity** of a receiving **antenna** in a set of applicable directions or in all directions

*Note: according to the principle of physics called **reciprocity**, an antenna's receiving pattern is identical to its radiation pattern*

reciprocal

- Mathematical inverse of a value, such that the value, if multiplied by its reciprocal, equals 1; see also reciprocal on Wiki

  Note: a reciprocal is not the same as an inverse function, in which the inverse reverses the functional operation of the original expression; for example, sin(x) and arcsin(x) are inverse functions of each other, but not reciprocals of each other
- Mutually agreed upon, governed, or controlled by more than one body or set of rules; equally binding between, or bearing on, parties of an agreement; see also **reciprocal agreement** and **reciprocal operation**

reciprocal agreement

Set of rules between two parties equally bearing on an individual; in the case of **amateur** radio operation, by both countries on a person who is not a citizen of (***alien** to*) one or both countries

reciprocal licensing

Amateur radio **licensing** that is governed by more than one set of rules; specifically, licensing of a person who is not a US citizen (***alien***), for operating privileges that are governed by the **FCC** and rules established by another country

reciprocal mixing

Undesirable **receiver** response to a strong signal it's *not* **tuned** to (the strong signal is outside the **passband**) **mixing** with the **phase noise** of a local **oscillator** (usually originating from the **frequency synthesizer**), over-powering (hiding or *masking*) a weaker signal that it *is* tuned to, often if the strong signal and the tuned signal differ by the **intermediate frequency**, resulting in perceived reduction of the receiver **signal-to-noise ratio**

reciprocal operation / reciprocal operating

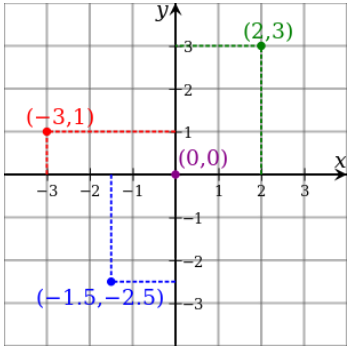
Amateur radio **station** operation that is governed by more than one set of rules (also known as *reciprocity*); *alien reciprocal operation* specifically referring to operation of a station in the US by a person who is not a US citizen (***alien***), whose operating privileges are governed by the **FCC** and rules established by another country

reciprocity

- Fundamental property of an **antenna**, which states that its receiving characteristics, such as **sensitivity pattern**, **gain**, **impedance**, **resonant frequency**, and **bandwidth**, are identical to its **far-field** transmit (radiation) characteristics; see also reciprocity on Wiki and antetnna reciprocity on Wiki
- Engagement between two parties (***reciprocal operation***) that operate under a mutually binding set of rules (***reciprocal agreement***)

rectangular coordinates

Two-dimensional coordinate system whose points are defined as ordered pairs of distances to its reference axes, often used to display the **resistive**, **inductive**, and/or **capacitive** components of **impedance**; see also rectangular coordinates on Wiki



rectangular coordinates examples

rectifier

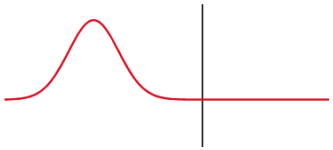
Circuit or device that converts **alternating current** into **direct current**; see also rectifier on Wiki

re-evaluation

See **compliance**

reflection

- Change in signal direction as it encounters a surface or medium that returns the signal to the original medium, but at a different angle, such as light on a mirror or a **radio wave** on the **ionosphere** or a building; see also reflection on Wiki
- Effect of some or all of a **transmission line** signal being returned to its **source** from its **load** due to an **impedance mismatch** between the source and the load (also once known by the slang *backlash current* and incorrectly *RF feedback*); see also transmission line reflection on Wiki and signal reflection on Wiki


partial reflection

reflection coefficient

Ratio of the **complex reflected** signal **voltage** to the complex forward signal voltage, indicating how much of an **electromagnetic** wave is reflected due to a difference in **impedance** between the **transmission line** and its **load**, also indicating how closely they are **matched**, and also used to determine the **SWR** of an **antenna** system (symbol Γ, uppercase gamma); see also reflection coefficient on Wiki

reflector
- Server using conferencing software dedicated to **linking amateur radio repeaters** with each other via **IRLP**, so that it appears to the receiving **station** that the transmitting station is communicating directly with the local repeater; see also IRLP on Wiki
- Longest **parasitic element** of a **beam** or other **Yagi antenna**, reflecting the transmitted signal back toward the **driven element** and beyond; see also parasitic element on Wiki

refraction
: Change in signal direction as it travels from one medium into a different medium (or within the same medium, but with a different density) much like light from air into water or a **radio wave** from one layer of the **ionosphere** to another; see also refraction on Wiki

regulator
: Circuit that controls (makes constant) the amount of **voltage** from a **power supply**; see also voltage regulator on Wiki

relay
- Convey a message or transmission to one **station** in behalf of another, possibly due to non-ideal conditions (poor location, low **power**, poor equipment, noisy environment, etc.) between the two stations
  *Please relay my message to **net control***
- Switch controlled by an electromagnet; see also relay on Wiki


assorted relays

relay station
: Any **radio station** installed permanently (such as a **repeater**) or used temporarily (like during an incident) for receiving and re-transmitting (***relaying***) information between two or more other stations that might have difficulty communicating with each other, because of distance, terrain, **conditions**, obstructions, **interference**, or other causes; see also radio relay station on Wiki

remote base
: Short for *remotely controlled base station*, a **radio station** that is either controlled through a **radio link** by an **auxiliary station** and that might be located apart from the auxiliary and regular stations during normal operation, or is itself a remotely located auxiliary station; see also remote base on Wiki

remote control
: Type of **station** control in which the **control operator** is not physically at the **control point**, but *is actively manipulating* station controls from another location, such as over the internet (when the operator is no longer actively manipulating the controls, and the station is still in operation, the control type becomes **automatic control**)

repeater
: Device that can receive and retransmit a signal in some enhanced or modified manner; see also Ham Radio Repeaters and repeater on Wiki

repeater offset
: Value difference between a **repeater**'s input **frequency** and its output frequency (also known as its *shift*), with offset = f_{input} - f_{output} determining both the repeater offset and **offset direction**, which is noted by the sign (plus or minus) of the offset; see also repeater frequencies on Wiki and Noji's repeater page

repeater timer
: See **timeout timer**

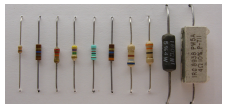
repeater trustee
: See **trustee**

report
- All or part of an **exchange** during a **contest**
  What's my report?
- **Signal strength** indicator during a **special event**, a **contest**, or even at the request of a **signal check**

resident alien
: See **alien**

resistance
: Real component of **impedance**, or quantity of opposition to **current** flow in a circuit, expressed in *ohms* (symbol Ω), also called ***DC** resistance* and *ohmic resistance*; see also resistance on Wiki

resistor
: Electrical component that resists the flow of **current** in a circuit, which changes **voltage** levels in the circuit; see also resistor on Wiki and the resistor color code chart [PDF]


assorted resistors


resistor symbol

resonance / resonant / resonate
: Electrical state in which a circuit's **reactance** equals zero at a particular **frequency**, resulting in minimum **impedance** for a series **tank circuit** and maximum impedance for a parallel one; see also resonance on Wiki and LC resonance on Wiki in particular

resonant frequency
: **Frequency** at which a circuit's **reactance** equals zero, and therefore reaches **resonance**

resonator
: As it applies to **amateur radio high-Q filter** that permits a signal to pass through it or prevents a signal from passing through it at one particular **frequency** (its **resonant frequency**) more than at others (similar to a **trap**, but with a

narrower **bandwidth**); see also resonator on Wiki

80-meter resonator

rettysnitch
: Legendary and fictional instrument of torture used to punish **hams** who demonstrate poor operating practices; see also **wouff hong**

rettysnitch

reverse
: **Transceiver** configuration (also called *reverse split*) in which the input and output **repeater frequency** settings are swapped, allowing the **operator** to listen to the transmission of another **station** that is attempting to transmit to the repeater by simulating the repeater's frequency configuration (the operator acting as the repeater)

reverse burst
: See **squelch tail elimination**

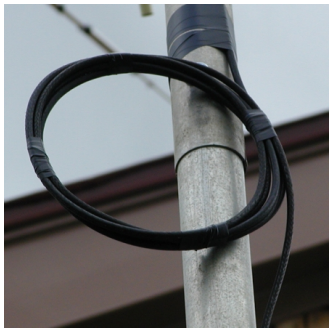
reverse sideband
: **Single sideband** operating **mode** opposite the convention of that of the **band** in consideration; **USB** for **40 meters**, **80 meters**, and **160 meters**, but **LSB** for all other bands

RF
: ***radio frequency***

RF burn
: Excessive heating of body tissue (*burn*) caused by prolonged contact with a conductor of **radio frequency** electric **current**; see also RF current properties on Wiki

*Note: an **RF burn** results from an interaction with electrical energy, while a **radiation burn** results from exposure to electromagnetic energy*

RF carrier
: See **carrier**



RF choke

RF choke
: **Choke** (sometimes *common-mode choke*), often air-core, applied to a **transmission line** or circuit, and often made from the same **cable** used for the transmission line, to prevent or **attenuate RF feedback** due to **common-mode current** on the transmission line back to the originating equipment; see also RF choke on Wiki

RF combiner
: See **combiner**

RF connector
: See **connector**

RF feedback
- Effect (sometimes called *shack RF* or *RF in the shack*) of an **RF** signal being **emitted** (and then possibly even **rectified**) and superimposed on the circuitry (**microphone**, **chassis**, controls, meter, speaker, headphone, etc.) or cabling of the **transmitter** generating the RF signal, or other household equipment, such as a computer speaker, **TV** set, telephone (land-line in particular), **broadcast** radio **receiver**, **headset** etc.
- Incorrect name for **RF** signal **reflection** on a **transmission line**

RF front end / RF front-end
: See **front end**

RF gain
: Circuit or device (**amplifier**) in a **receiver front end** (or its control) that increases or decreases the incoming signal strength (**gain**) prior to **mixing** with an **oscillator** (such as the **VFO**)

RF hash
: Older slang for ***broadband noise***

RF in the shack
: See **RF feedback**

RF isolator

RF isolator
: Device (often called a *line isolator*) that allows transmission of **RF** energy in one direction, and effectively shields (*isolates*) a circuit from external sources of RF energy, to prevent the **de-tuning** of a **transmitter** by a **mis-matched load**, for example; see also RF isolator on Wiki

RF overload
: See **fundamental overload**

RF power amplifier
: See **power amplifier**

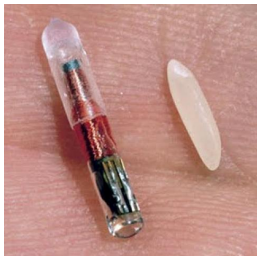
RF protector
: See **lightning arrester**

RF radiation
: See **radiation**

RF splitter
: See **combiner**

RF transformer
: See **voltage balun**

RFI
: ***radio frequency interference***


RFID microchip and a grain of rice

RFID
: *radio frequency identification*
  - Identification and tracking method that uses **radio waves** to transmit and / or receive information stored in a electronic device embedded in, or deposited on, an object such as an animal, moving target, or person, for that purpose; see also RFID on Wiki
  - ***Passive*** device that contains electronically stored information that can be retrieved by another device by means of **radio waves**, to identify or track an object; or ***active*** device (powered by a **battery** or other electrical source) that can transmit stored information or real-time data from an object being identified or tracked

RG
: *radio-grade* or *radio-guide* : prefix and unit indicator for **coaxial cable** model names (formerly military **radio** equipment designations), often suffixed with lettering such as */U*, meaning *for general utility use*

RG-58 / RG-58/U
: Model name for a common 50 Ω low-**power coaxial cable** used as a **feedline** in **HF** applications; see also RG-58 on Wiki and the coax chart [PDF]

RG-59
: Model name for a common 75 Ω low-**power coaxial cable** used as a **feedline** in video applications; see also RG-59 on Wiki and the coax chart [PDF]

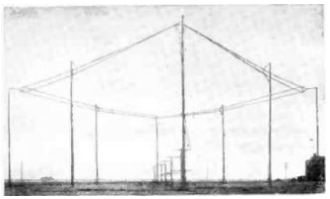
RG-8 / RG-8U / RG-8/U
: Model name for a common 50 Ω very low-**loss coaxial cable** used as a **feedline** well-suited for **HF**, **VHF**, and **UHF** applications; see also coaxial standards on Wiki and the coax chart [PDF]

RG-8 mini
: See **RG-8X**

RG-8X

Model name (also called *mini-RG-8* or *RG-8 mini* or *mini-8*) for a common 50 Ω low-cost, low-**power**, fairly low-**loss coaxial cable** used as a **feedline** in **HF** and temporarily (testing, for example) in **VHF** applications; see also the coax chart [PDF]

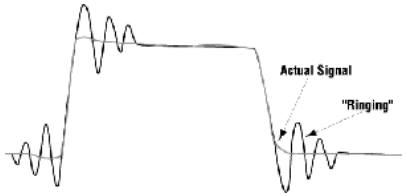
rhombic antenna
: **Directional**, wide-band wire **antenna** formed by four equal-length sides in a rhombic (diamond) shape parallel to the ground and characterized by high **gain**; see also rhombic antenna on Wiki


old rhombic antenna

ribbon line
: Slang for ***window line***

rig
: Slang for a ***radio transceiver***

ringing
: Undesirable oscillation added to a signal following a sudden change in the input (step response) due to **resonance** from **parasitic capacitances** and **inductances** in the circuit; see also ringing on Wiki



ringing example

RIT
: *receiver incremental tuning* : **receiver** circuit, also known as a *clarifier*, used for shifting the receive **frequency** away from the transmit frequency by a small amount, to compensate for frequency drift or related issues; see also **XIT** and RIT on Wiki

RJ-11 / RJ11
: *registered jack-11* : model name for a modular and keyed data communication **connector**, more properly called *6P2C* (6-position, 2-contact), but often mis-named for *6P4C* and *6P6C*, and often used in a variety of **amateur** radio equipment, such as separated control heads, **microphone** cords, and computer interface cables; see also RJ-11 on Wiki


RJ-11 connectors

RJ-45 / RJ45
: *registered jack-45* : model name for a modular and keyed data communication **connector**, more properly called *8P8C* (8-position, 8-contact), and often used in a variety of **amateur** radio equipment, such as **microphone** cords and computer interface cables; see also RJ-45 on Wiki


RJ-45 connectors

RMDR
: *reciprocal mixing dynamic range* : measurement of a **receiver**'s **dynamic range**, based on **reciprocal mixing**, rather than its **third-order intercept point**, and expressed in **dB**

RMS
: *root mean square* : **voltage** value for an **AC** signal that results in the same **power** dissipation as a **DC** voltage of the same value; see also RMS on Wiki

rock
: Older slang for **quartz crystal** or **crystal oscillator**

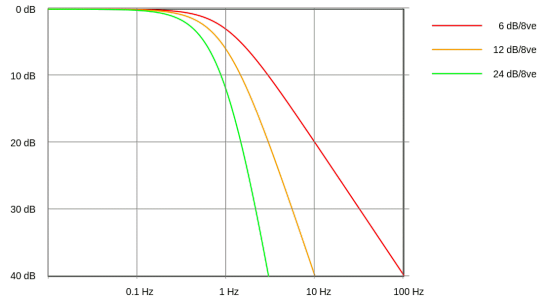
rock bound / rock-bound / rockbound
- Older slang for **transmitter** that requires manually swapping or changing its **crystals** (once nicknamed **rocks**) to change **frequency** ranges or switch **bands**
- Older slang for **transmitter** that's designed and built to transmit on a narrow, unchangeable **frequency** range due to its "hard-wired" **crystal oscillator** circuit

rod
: See **ground rod**

roger
- *I acknowledge* or *received*, similar to **copy**; see also voice procedure on Wiki
  : *Roger that* (got it)
  : *Roger, roger* (I for sure got it this time)
- *I agree*
  : *Roger that* (I agree with that)
  : *Roger, roger* (I completely agree)

roll-call net
: Type of **net** in which the **net control station** asks for check-ins by roll call; that is, by announcing the **call signs** listed on a roll

rolloff / roll-off
: Steepness (sharpness) in the rate of change of **filtering** ability from one **frequency** to another, especially in the transition between the **passband** and the **stopband** (known as the **transition band**); see also roll-off on Wiki and **cutoff frequency**



examples of various low-pass filter rolloff rates

ROM
: *read-only memory* : **non-volatile** digital **IC** often used to store programs that run on **microprocessors**; see also ROM on Wiki

roof capacitor
: See **capacitance hat**

roofing filter
: Circuit that limits the **passband** of the first **intermediate frequency stage** of an **RF receiver**, reducing **distortion** and overloading from signals outside the intended **frequency** range, thereby improving its **dynamic range**; see also roofing filter on Wiki

rookie
- **Contesting contact** designation indicating that the **operator** has been **licensed** for (typically) less than three years
- See **novice**

rotator / rotor / rotator unit
: See **antenna rotator**

rotator controller / rotor controller / rotator control unit / rotor control unit
: See **antenna rotator controller**

roundtable / round table / round-table
: Question-and-answer or discussion period during a **directed net**, but can also be an informal discussion between multiple **operators** not participating in a scheduled net

rover
: Type of **mobile radio station** that travels from one location to another, to make **contacts** with other stations from a variety of locations, often during **contesting** and often **operated** by a passenger, rather than the vehicle driver (also, a *rover station* is one that is typically designed with **gear**, such as laptop, **power supply**, **transceiver**, **tuner**, and **antennas**, that is appropriate for making occasional or even frequent contacts while traveling)

RP-SMA / RPSMA / RSMA
: *reverse polarity SMA* : variation of **SMA connector** that presents a pin for the female interface and a receptacle for the male interface; see also RP-SMA on Wiki

RP-TNC / RPTNC / RTNC
: *reverse polarity TNC* : variation of **TNC connector** that presents a pin for the female interface and a receptacle for the male interface; see also RP-TNC on Wiki

RR
: *roger, roger* : **Morse code** abbreviation for *I for sure got it this time*; see also **roger**

RST
: *readability-strength-tone* : shorthand system for reporting **CW** signal reports; used only as *readability-strength* when reporting **phone** signal reports, with **audio** readability measured from 1 through 5, **RF** strength from S1 through **S9** on the **S meter** (meaning roughly 6 **dB** between whole number levels), and CW tone from 1 to 9, as shown:

Level	R - Readability	S - Strength	T - Tone (CW only)
1	unreadable	barely perceptible	too rough

2	barely readble	very weak	very harsh
3	readable with difficulty	weak	very rough
4	readable with little difficulty	fair	rough
5	perfectly readable	fairly good	strong ripple
6	N/A	good	definite ripple
7	N/A	moderately strong	trace of ripple
8	N/A	strong	near-perfect tone
9	N/A	very strong	perfect tone

see also RST on Wiki and RST on ARRL

RTL
: *release-to-listen* : facetious (not completely serious) or alternate name for the same button on your **transceiver** or **mic** as your **PTT**, but performs the opposite function, more or less

RTL-SDR / RTLSDR
: *Realtek software-defined radio* : low-cost **SDR receiver** based on the Realtek™ RTL2832U **chipset**; see also RTL-SDR and RTLSDR

RTTY
: *radioteletype* : **data** transmission **mode** in which two or more computers can communicate with each other by **radio waves** using **modems**; see also radioteletype on Wiki

rubber duck antenna / rubber ducky antenna
: Electrically short **monopole antenna** used as a stock (shipped that way from the factory) antenna on many **HTs** to save space and cost, and does not transmit or receive as effectively as a full-sized antenna; see also rubber ducky on Wiki


rubber duck antenna

rules of reciprocity
: See **reciprocal agreement**

running
: Slang for making one **contact** after another in rapid succession, while remaining on a particular **frequency**, unlike a **sprint**, in which the frequency is changed

Rx / RX
: *receive*; see also **Morse code abbreviation**

S

S meter / S-meter
: *signal strength meter* : indicator on your **radio** or other instrument that displays the strength of a received signal, usually between S1 and **S9** of the **RST** system, with each graduation typically corresponding to approximately 6 **dB** of change in signal strength; see also S meter on Wiki

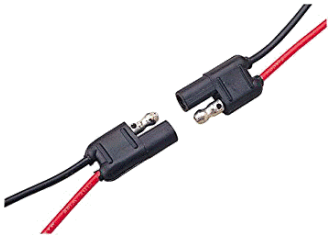
older S meter

S-parameters / S parameters / scattering parameters
: Elements of a scattering matrix that describe the electrical behavior of a linear two-port electrical network (port 1 — the input port — represents the point where the **transmitter** meets the **feedline**, and port 2 — the output port — represents the point where the feedline meets the **antenna**) with **matched loads**, and are defined as follows:
  - S_{11} = input voltage **reflection** coefficient (used for calculating **SWR**)
  - S_{12} = reverse voltage gain
  - S_{21} = forward voltage **gain**
  - S_{22} = output voltage **reflection** coefficient

  assuming the terminating **impedance matches** that of the **transmission line**; see also S-parameters on Wiki

S9
: Highest signal strength reading on the **S meter** scale using the **RST** system, typically calibrated to 50 µV of signal into 50 ohms of **receiver** input **impedance** (5 µV into 50 ohms for **VHF**); see also S9 on Wiki

SAE connector
: Model name (from *Society of Automotive Engineers*) for a gender-neutral **DC power connector** (also called *bullet connector* and *trailer plug*), once commonly used to supply power to **amateur radio** equipment; see also SAE connector on Wiki



SAE connectors

SAG
: *supply-and-gear* : race or event typically associated with long-distance bicycling, requiring crews of people (*support*) who provide water, food, spare bicycle parts (*gear*), and communication, often by **ham** radio, because of the large distances between aid stations; see also SAG on Wiki

SAR
- *specific absorption rate* : rate at which energy is absorbed by the human body when exposed to an **RF** field, expressed in *W/kg*; see also SAR on Wiki
- *search and rescue* : activity of searching for, and giving aid to, people or animals who are in distress or imminent danger; see also Search and Rescue on Wiki
- *Search and Rescue* : team of people who perform the search and rescue function; see Utah County Search and Rescue for an example; see also SAR on Wiki

SASE
: *self-addressed, stamped envelope*

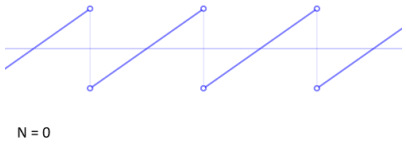
satellite in orbit

satellite
- See **amateur radio satellite**
- Device placed into orbit for communication, **global positioning**, weather, observation, research, and/or military purposes; see also satellite on Wiki
  Note: while there are natural satellites, this definition only refers to man-made satellites

satellite downlink
: **Frequency** or **band** and accompanying **protocol** by which an orbiting **satellite** transmits to an earth **station**; see also downlink on Wiki

satellite uplink
: **Frequency** or **band** and accompanying **protocol** by which an earth **station** transmits to an orbiting **satellite** station; see also uplink on Wiki

saturation / saturate
- Quantity of **amplifier** input **power** for which an increase will not produce a discernible or significant increase (**gain**) in output power; see also amplifier saturation on Wiki
- State of a **transistor** in which its output **voltage** is at or near that of the supply voltage; see also transistor saturation on Wiki
- State of an **inductor** whose ferrite **core**'s ability to store magnetic energy has been exceeded



sawtooth waveform animation

sawtooth wave
: Type of **waveform** that has a rise time significantly shorter than its fall time, or vice versa; see also sawtooth wave on Wiki

say again
: *repeat what you just said*; see also voice procedure on Wiki

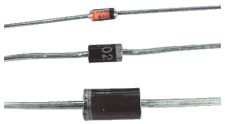
scan line / scanning line
: Visible row of display monitor pixels produced by **fast-scan TV** or other video technology; see also scan line on Wiki

scatter propagation
: See **HF scatter**

schematic / schematic diagram
: Graphical representation of a system of components and how they are interconnected; an electric circuit schematic diagram (electrical wiring diagram) uses **schematic symbols** to accurately represent the way components are interconnected; see also circuit diagram on Wiki

schematic symbol
: Name for the standardized representation of a component in an **electrical wiring diagram**; see also electronic symbols on Wiki

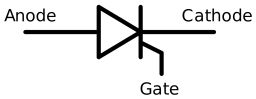
Schottky diode / Schottky barrier diode
: Electronic **semiconductor** component (formerly known as a *hot-carrier diode*, *surface carrier diode*, and *hot electron diode*) that performs the same function as a silicon **diode**, but has a very low forward **voltage** drop, lower **capacitance**, and very fast switching speed; see also Schottky diode on Wiki


Schottky diodes

Schottky diode symbol

SCR
: *silicon-controlled rectifier* : electronic **semiconductor** component (also known as *thyristor*) that acts as a bistable **switch**, which allows **current** flow in one direction if **voltage** is applied to its gate terminal; see also SCR on Wiki and thyristor on Wiki


SCR



SCR symbol

screen grid
: See **grid**

SDR
: ***software-defined radio***

secondary
- Output from a **transformer**, or its point of connection to a circuit, separating it from the **power** or signal **source** (the input typically called the ***primary***)
- **Band** or **sub-band** that is available (on a *secondary basis*) to a specific group of users or **operators** at a lower priority compared with that of a **primary** group
- Group of users or **operators** who has been granted a lower priority control (*secondary control*) of a **band** or **sub-band** compared with that of a **primary** group

secondary-mode current
: See **common-mode current**

segment
: See **sub-band**

selective fading
: Undesirable effect caused by partial cancellation of a **radio wave** within the received **pass band** due to the destructive **interference** resulting from the signal arriving at the same **receiver** but by multiple paths, while one or both of the paths is changing lengths; see also selective fading on Wiki

selectivity
: Ability of a **radio receiver** to distinguish between radio transmissions of different **frequencies** or to discriminate between multiple signals, such that the closer together the frequencies a receiver can distinguish, the greater its selectivity; see also selectivity on Wiki

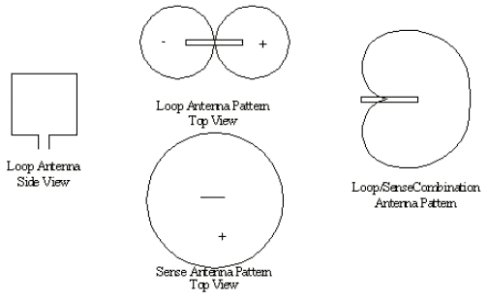
self-spotting
: Slang for the practice of advertising, promoting, or **broadcasting** your own **ham** radio **station**'s **frequency** and location to aid other stations in making many **contacts** in a short period of time, which practice is usually prohibited during **contesting**, but encouraged for **SOTA** activities; see also **spotting** and **cheerleading**

semi break-in / semi-break in
: **CW** operating **protocol** that allows a listening **station** to **break in** between the transmitting station's individual words (but not the individual dots, dashes, or even characters, as in **full break-in**); likewise, allows the transmitting station to receive a transmission between sending words; see also semi break-in on Wiki

semiconductor
: Class of **solid-state** electronic component whose electrical characteristics are determined by **current** flow through partially conducting materials, which include **transistors**, **diodes**, and **integrated circuits**; see also semiconductor device on Wiki

semiconductor diode
: Type of **diode** that is constructed with a metal-to-**semiconductor** junction, which can fail due to excessive temperature when excessive **current** passes through the diode; see also semiconductor diode types on Wiki

sense antenna
: **Omnidirectional antenna** placed closely to a **directional antenna** or added to a **DF antenna array** to provide a *null* (very weak transmission / reception point) in one direction; see also sense antenna on Wiki



effect of a sense antenna working with a loop antenna

sensitivity
: Ability of a **radio receiver** to **detect** the presence of a radio signal, also known as its *minimum discernible signal*, and is useful for measuring its ability to **pick up** weak radio transmissions, often expressed in *µV* for a given **SINAD** or **S/N** level, such that the weaker the signal a receiver is able to detect (the lower the value), the greater its sensitivity; see also sensitivity on Wiki

sequential
: Type of **call sign** selected and issued by the **FCC** from an alphabetically ordered list appropriate for the applicant's **license class** and residence location

sequential sampling
: **Digital signal processing** method used in analog-to-digital conversion, of sampling the **analog** signal at evenly spaced time intervals (*sequences*), whose rate is typically much greater than the **frequency** of the signal being sampled; see also DSP on Wiki and digital filtering on Wiki

service
- Slang or short for ***QSL service***
- Slang or short for ***electrical service***

SET
- *simulated emergency test* : general test of **emergency** preparedness systems, communication, volunteers, and personnel through a simulated incident to evaluate situation readiness
- *Simulated Emergency Test* : annual (first full weekend in October) 48-hour event used as a training exercise by **ARES** and **NTS** volunteers to test and evaluate communication readiness (and demonstrate the effectiveness of **amateur radio** to the public) by setting up a nation-wide **radio** communication network **linking** every major city in the US using any and all **modes** of radio communication; see also SET on Wiki and SET on ARRL
- *simulated emergency training* : **staged** drill or mock scenario to train volunteers in **emergency** handling procedures and communication ability

SFI
: ***solar flux index***


a ham and her shack

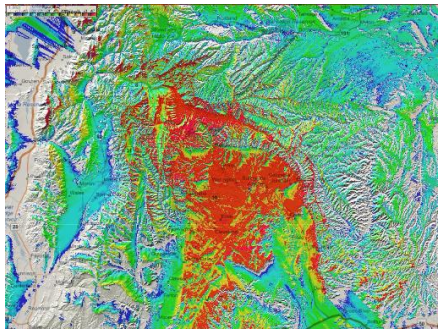
shack
: Slang for a room or area that contains your **ham** radio equipment, and /or the one in which you normally operate your ham radio **station**, also called a *ham shack* or *ham cave* or *radio shack*; see also radio shack on Wiki and ham station on Wiki

shack-in-a-box / shack in a box
- Single **transceiver** unit that is capable of transmitting and receiving communication on **HF** (including **160 meters** and **WARC bands**), **VHF**, and **UHF amateur frequencies**, typically up to, and including, the **70-cm** band; see also Noji's complete list of shack-in-a-box transceivers
- Single **kit**, box (sometimes *shack box*), bag, or other (typically **portable**) container that houses all the components (**transceiver**, **antenna**, **battery**, **feedline**, etc.) necessary to function as the equipment for a complete **amateur station**

shack RF
: See **RF feedback**

shadow
- Intention to accompany (or remain in close proximity to) a particular **leader** during a drill or **incident**, to communicate information at the moment the leader needs the communication made
  *Your job is to shadow the **Incident Commander***

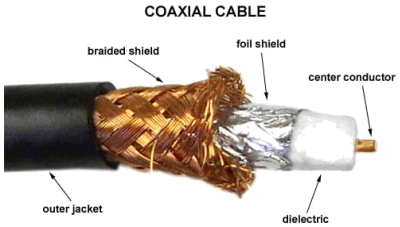
- Slang for a location where an **RF** signal is degraded to the point that communication is difficult or impossible
  *I believe I'm moving into the **repeater**'s shadow*



repeater propagation map showing shadows

shadow net
: **Radio net**, each of whose operators accompany (***shadow***), or at least remain in close proximity to, a particular **leader** during a drill or **incident**, to provide a network of radio communication between the leadership

SHF
: *super high frequency* : overall **frequency** range of 3 GHz to 30 GHz; see also SHF on Wiki and the RF spectrum



shield / shielding
: Tubular outer conductor of a **coaxial cable**, typically constructed from one or more layers of braided wire, and often surrounds a layer of foil or metallic tape

shift
: See **repeater offset**

shift direction
: See **offset direction**

shift register
: Clocked array of digital circuits that passes **data** in steps along the array; see also shift register on Wiki

shock
: See **electric shock**

shooting skip
: See **working skip**

short-time / short time
: See **early-out**

shortwave
: **Frequency** range broadly defined as 1.6 MHz through 30 MHz, which includes the entire **HF** spectrum, but typically sent and received in **AM**, and so-called because its **wavelengths** are shorter in length than those of lower-frequency **bands**; see also shortwave radio on Wiki and **shortwave listening**

shunt
- Component or conductor used to join two points in a circuit to provide an additional path for some of the **current** in the circuit
  *The higher-**frequency** shunt in the circuit is a **capacitor***
- Action of placing a component or conductor across two points in a circuit, to provide an additional path for some of the **current** in the circuit
  *The **capacitor** shunts the higher-**frequency** signal (to **ground**, for example)*

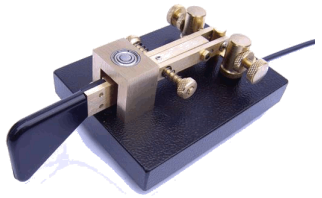
shunt capacitance
: Effective **capacitance** in the parallel leg of the equivalent circit for a **crystal oscillator**

SID
: ***sudden ionospheric disturbance***

sideband
- See **single sideband**
- Older slang for *sibling*, especially that of a **ham**

sideswiper / side-swiper

Slang for a sideways motion, manual, and non-electronic telegraph **key** (often *cootie key* or *slap key*) made for high-speed **CW** transmissions (horizontally operated **straight key**); see also **bug**



sideswiper ("cootie") key

signal check / signal report
: **Test** for (or *report on*) **radio signal quality** (integrity), such as **picket-fencing**, **clipping** (on **single sideband**), **full-quieting** (especially going into a **repeater** if using one), or choppy signal; see also
  - **audio check**
  - **radio check**
  - **RST**

  This is KNØJI...may I please get a signal check?

signal-to-noise ratio
: Amount of desired signal **power** with respect to the amount of **noise** power, expressed in **dB**; see also signal-to-noise ratio on Wiki

silent key
: Slang for a **ham** radio **operator** who has passed away

  My dad is a silent key

silicon diode
: See **diode**

simpatch
: See **autopatch**

simplex
: In **radio** communication, operation of involved **stations** transmitting and receiving on the same **frequency**

simplex repeater
: **Repeater** (sometimes called a *parrot repeater*) that receives a message on a **simplex frequency**, then re-transmits it on the same frequency, typically after some preset time delay; see also simplex repeater on Wiki

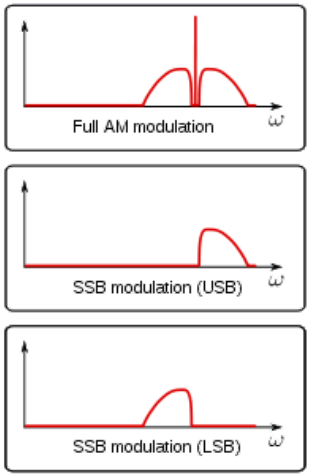
simulcasting
: See **voting repeater system**

SINAD
: *signal-to-noise and distortion* ratio : quality of a **receiver**'s **sensitivity**, expressed in **dB** (by convention 12 dB SINAD is used as a minimum level to compare receiver quality by **FM phone** and 10 dB **S/N** by **AM** or **SSB**); see also SINAD on Wiki and **distortion**

single-pole, double-throw
: See **switch**

single-pole, single-throw
: See **switch**

single-sideband / single sideband
: Form of **amplitude modulation** in which only the lower-**frequency** (**LSB**) portion or the upper-frequency (**USB**) portion of an **AM** signal is being transmitted, which excludes the opposite portion and the **carrier** signal; see also sideband on Wiki and single-sideband on Wiki



SK

- ***silent key***
- (SK) **Morse code prosign** for *end of contact* or ***clear***, to indicate the **operator** has concluded transmitting

sked

Slang or short for ***schedule***, and indicates a pre-arranged **contact** between **ham** radio **operators**; see also sked on Wiki and QSO Scheduling on QRZ

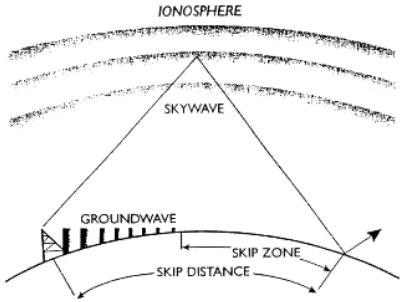
*Let's use **70 cm** for our sked tonight*

skin effect

Tendency of an **AC** signal within a conductor to become distributed with greater **current** density nearer to the surface of the conductor than to its center, such that the higher the **frequency** the greater the current density toward the surface; see also skin effect on Wiki

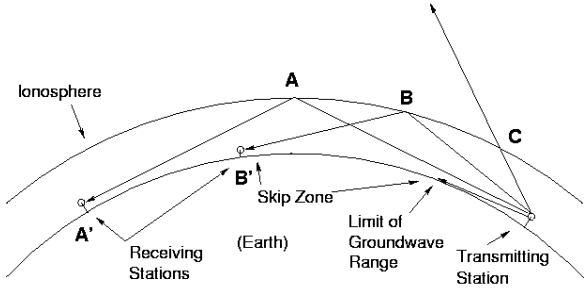
skip

Slang for ***skywave propagation***



skip distance

Distance along the curvature of the earth between a **transmitter** and a **receiver** for **radio waves** that are **reflected** back to earth from (or **refracted** through) the **ionosphere** (the distance of one **hop**); see also skip distance on Wiki



skip zone

Area along the curvature of the earth between the end of a **transmitter**'s **ground wave**; and the **receiver**, where its signal could not be received (also known as *dead zone* and *blind zone*); see also skip zone on Wiki

skirt

See **transition band**

skyhook / sky hook / sky-hook

- Slang for ***antenna***
- Hook or other support fashioned from available materials to hold an **antenna** in a particular position, **orientation**, or height

Skywarn

Volunteer program of the National Weather Service in which trained storm spotters use **amateur radio** and other means to submit reports of localized severe weather in an effort to improve the forecasting and warning processes; see also

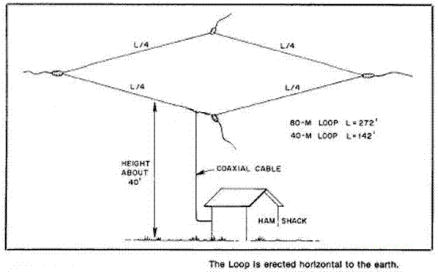
- Skywarn on Wiki
- Skywarn on ARRL
- main Skywarn website
- NOAA (official) Skywarn website

skywave / sky wave

Propagation of **radio waves reflected** back to earth from (or **refracted** through) the **ionosphere**, also called *skip communication* (***hop*** refers to the path while *skip* refers to the action of propagation); see also skip on Wiki and skywave on Wiki

skywire antenna

Also called *skywire loop*, *loop skywire*, and *horizontal loop*, adaptation of the **rhombic antenna** constructed with wires whose combined length totals greater than one full **wavelength**, and with all points of the wires installed at the same height off the ground



skywire antenna diagram

SLA

sealed lead-acid : type of lead-acid rechargeable battery whose contents are completely contained and isolated from external access (spillage) or exposure, and so can be placed in any orientation, and does not require constant maintenance, which provides an attractive and favorite **emergency** or **standby power** source for **ham** radio **operators**; see also SLA on Wiki

sealed lead-acid battery

slant

See **slash**

slash

Character / symbol (also *slant* and the British *stroke*) that separates a **call sign** from a designator *suffix* (or even *prefix*), to indicate a special function, classification, or operation (and at one time, a location); also outdated *interim* and *temporary*

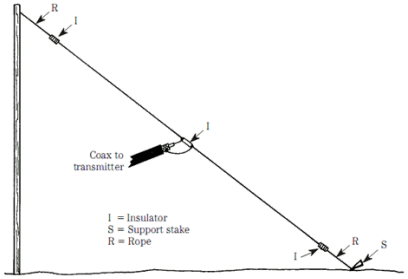
sled

Slang for ***removable battery case*** or ***battery holder*** capable of holding multiple **batteries**; see also battery holder on Wiki

empty battery sled

sloper antenna

Also called *slanted dipole* and *slipole*, type of **dipole antenna** whose **radiating element** section is installed at an angle to the ground; see also sloper antenna on Wiki



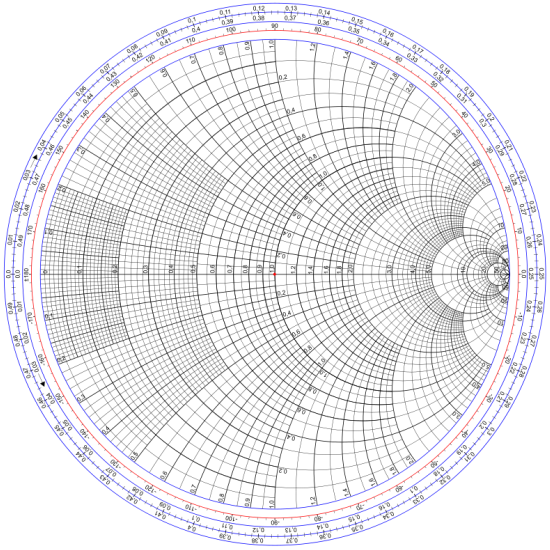
sloper antenna diagram

slug
: Metallic or powdered-metallic **inductor core**, inserted to increase or vary the **inductance** of the component (ferrite and brass cores are common among variable inductors that use them)
: *Note: brass can be used as slug material to actually decrease the inductance of the inductor*

inductor showing its slug core

SMA
: *SubMiniature A* : model name for a common 50 Ω **connector** used on **coaxial cable feedlines** for **VHF**, **UHF**, and **SHF** (3 to 18 GHz in this case) applications; see also SMA connector on Wiki and RF connector on Wiki
: *Note: SMA connectors are also available in **RP-SMA** type, with the center pin present in the female connector and absent in the male connector, as shown*

Smith chart
: Graphical aid for displaying **impedance** components of electric circuits and **transmission lines** on the complex plane; see also Smith chart on Wiki



Smith chart

SMPS
: ***switched-mode power supply***

snap-on ferrite choke
: See **ferrite choke**

SNR / S/N
: ***signal-to-noise ratio***

snubber capacitor
: Ordinary **capacitor** placed in a circuit to suppress (*snub*) or absorb transient **voltage** spikes and other rapid voltage changes; see also snubber on Wiki

SO-239

socket 239 : model name for a common 50 Ω **coaxial cable feedline** female **connector** (socket) for **HF**, **VHF**, and **UHF** applications; see also UHF connector on Wiki and RF connector on Wiki

SO-239 connector

software-defined radio

Transceiver in which most major signal processing functions (such as signal **mixing**, **filtering**, **detecting**, **modulating**, **demodulating**, **amplifying**) are performed by software and a **digital signal processor**; see also SDR on Wiki and SDR on ARRL

solar cell

Electric device (also known as a *photovoltaic cell*) that converts light energy into electrical energy by means of the photovoltaic effect; see also solar cell on Wiki

solar cell / photovoltaic cell

solar coronal hole

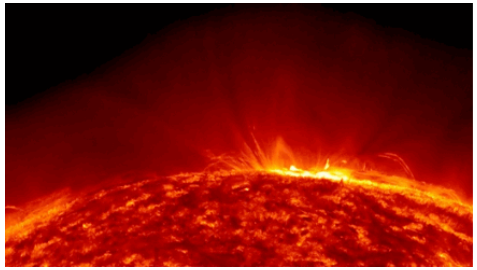
See **coronal hole**

solar cycle

See **sunspots**

solar flare

Sudden burst of high energy observed over the surface of the sun, ejecting clouds of electrons, ions, and atoms into space, and often followed by a large **coronal mass ejection**; see also solar flare on Wiki



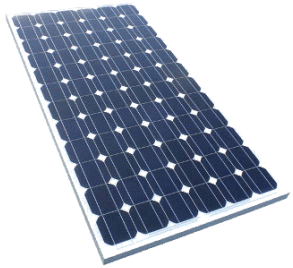
solar flare

solar flux / solar-flux

Solar emission at **radio frequencies**, the index (also called the *solar flux index* or *SFI*) of which is a measure of solar radiation at 2800 MHz (or 10.7 cm, also known as the *F10.7 Index*), which has a major effect on long-distance **10-meter**, **12-meter**, and **15-meter propagation**; see also solar flux on Wiki and solar radio flux on Wiki

solar panel

Array or collection of **solar cells** arranged in a sheet or other surface; see also solar panel on Wiki



solar panel

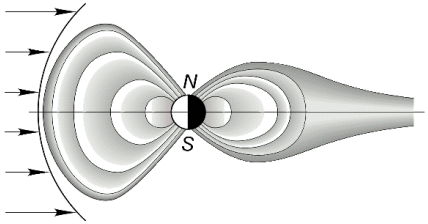
solar particle event

Highly disruptive solar storm that takes place when charged particles emitted by the sun become accelerated to very high energies, often associated with **coronal mass ejections**, and can be the source of disturbing or blocking all **ionospheric radio** communication; see also SPE on Wiki

solar power
: Source of electrical **power** provided by a device such as a **solar cell** or **solar panel**, often used through a **charge controller** or whose energy is stored in a **battery**

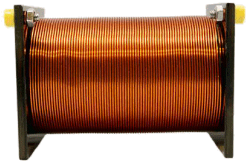
solar rotation
: See **sunspots**

solar wind
: Stream of charged particles released from the upper atmosphere of the sun, consisting mostly of electrons, protons, and alpha particles, which can **interfere** with **radio** transmission; see also solar wind on Wiki



solar wind diagrammed by arrows

solenoid / solenoid inductor
: Type of **inductor** formed by a coil of wire wound into a tightly packed helical shape; see also solenoid on Wiki


solenoid

solid-state / solid state
: Type of circuit or device in which all charge flows through solid material such as a **semiconductor**, an electrical component, a wire, or other metal, rather than a **vacuum**, the air, or other gas; see also solid-state electronics on Wiki

SOS
: Internationally recognized call and **Morse code prosign** to indicate distress and request for immediate assistance; see also
  - SOS on Wiki
  - historical terms on ARRL
  - prosigns on Wiki

SOTA
: *Summits on the Air* : award program for **ham** radio enthusiasts who summit and set up transmitting **stations** on specific mountain peaks (*activators*) or contact those who do so (*chasers*); see also
  - SOTA on Wiki
  - SOTA website
  - SOTAwatch website, which tracks logged summit activations

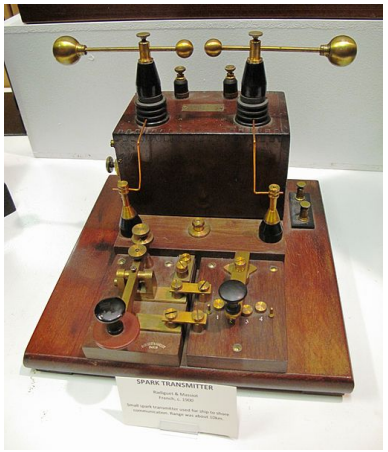
source
- Circuit connected to the input of a **load** circuit to present a **voltage** to the load, such that typically the source circuit *provides* electric **power** to the load, and the load *consumes* the power from the source; see also voltage source on Wiki
- One of the **electrodes** on a **FET**
- Point where **electromagnetic radiation** is **emitted**, such as a **radio transmitter antenna** or **noisy switch**

space
: The lower **frequency** of a **BFSK data** signal, identifying the **Ø** bit

space station
: **Ham** radio **station** located higher than 50 km above the earth's surface

space weather
: General study of the time varying conditions within the solar system arising from the interaction of solar particles and radiation with the fields and atmosphere of the earth; see also space weather on Wiki and the official space weather website

spark-gap / sparkgap
: Once-used type of **transmitter** that creates **electromagnetic radiation** from sparks that **arc** across a gap, and was among the first practical **radio** transmitters during the first three decades of radio; see also spark-gap transmitter on Wiki



spark-gap transmitter

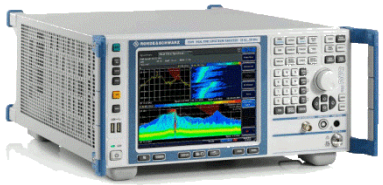
SPDT
: ***single-pole, double-throw***

SPE
: ***solar particle event***

special event / special-event
: Commemoration, observation, **convention**, festival, happening, **contest**, **incident**, party, or other celebration of a particular significant or historical occurrence, and includes an **on-air station** (known as a *special event station*) that **operators** not associated with the event can **contact** for contest credit or personal enjoyment; see also
  - special event station on Wiki
  - special event stations on ARRL
  - **special event call sign**

special event call sign
: Type of **call sign** issued temporarily to an **amateur radio station**, to commemorate a **special event**, and (in the US) is identified by a **1x1** format; see also the special event call sign website and the special event call sign database

Special Temporary Authority
: Temporary permit granted (typically no longer than six months) to an **amateur station** by the **FCC** for communication outside the operating limits authorized for the station **license**, for emergency or experimental purposes; see also STA on Wiki and STA on FCC


spectrum analyzer

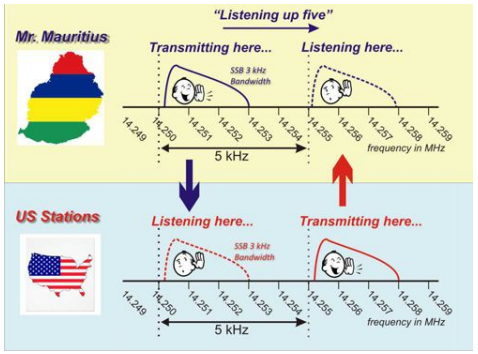
spectrum analyzer
: Instrument that measures the range of **power** levels of an input signal among a **frequency bandwidth** of interest, known as its *spectrum*; see also spectrum analyzer on Wiki

spike
: Sudden but short-lived increase (also called *surge*) of **voltage**, **current**, **power**, or energy in a device or circuit or field; see also spike on Wiki

spin fading
: Reduction in **satellite** communication signal strength due to the rotation of the satellite, such that its antenna becomes partially obstructed from the view of the **receiver** by the satellite body

splatter
: Type of **interference** from **stations** on nearby **frequencies**, caused primarily by **overmodulation** or **intermodulation distortion**; see also spectral splatter on Wiki and predistortion on Wiki (as a solution to splatter)

split / working split
- Operation **mode** in which a **station** transmits on one frequency and receives on another, often to prevent congestion on **HF bands**, and often when **working DX**; see also chasing DX on ARRL
- See **reverse**

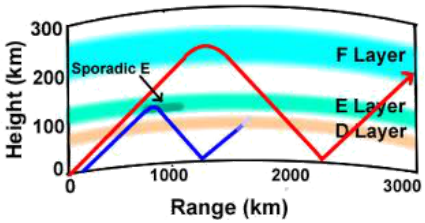


split mode operation illustration

splitter

See **combiner**

sporadic E / sporadic-E



- Layer of atmosphere (also known as E_S) located within the **ionosphere** and made from clouds of intense ionization that allow you to receive **VHF** signals from long distances at times; see also sporadic E layer on Wiki
- **Propagation mode** using the **E layer** of the **ionosphere** and commonly associated with occasional, strong over-the-horizon signals on the **10-**, **6-**, and **2-meter bands**; see also
  - sporadic E propagation on Wiki
  - E-skip on Wiki
  - E-skip on ARRL

spotting / spotter

Slang for the practice of locating a **ham** radio **station** by use of online or local software, known as *clustering* software or *spotters*, in order to make many **contacts** in a short period of time, which practice is usually prohibited during **contesting**; see also **self-spotting** and **cheerleading**

spread-spectrum

Communication technique by which a signal is transmitted on a number of preset **frequencies** one at a time within a defined **bandwidth**, by either **frequency-hopping** or **direct-sequence** (there are other methods, but these are the two most applicable to **amateur radio**), resulting in a transmission that is resistant to **interference** (because receivers suppress signals not using the spread algorithm), and at the same time prevents detection and limits **power** density, used today in **mesh radio** and Bluetooth technology; see also spread-spectrum on Wiki

sprint

Practice of making a **contact** and changing **frequency** immediately afterwards, before making the next one, a requirement for some **contests**

SPST

single-pole, single-throw

spur

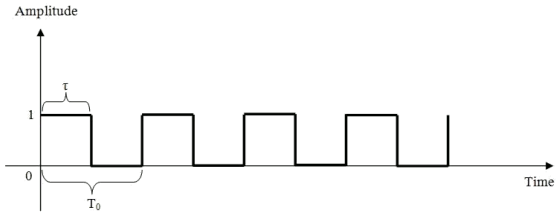
Slang or short for ***spurious emission***

spurious emission

Undesirable and (typically) unintentional transmission of a signal that can be reduced or removed without compromising the intended message (the word *spurious* means *false*, *imitation*, or *counterfeit*); see also spurious emission on Wiki

square wave

Non-sinusoidal periodic **waveform** in which the amplitude alternates at a steady **frequency** between fixed minimum and maximum values, with the same duration at minimum and maximum; see also square wave on Wiki



square wave

squelch

Circuit that **filters** out **interference** and **atmospheric noise** surrounding a particular **frequency**, as determined by signal strength, thereby mutung the **receiver** output when no signal is being received, and said to be **opened** when the squelch circuit is disabled (as in, open circuit); see also squelch on Wiki

squelch clamping

Undesirable operation of the **squelch** circuit in which it momentarily turns off the **audio** signal to mistakenly compensate for an increase in **modulation** level after confusing it with an increase of the **noise** level; the squelch circuit determines that no **FM** signal present when in fact an FM signal *is* present

squelch crash

See **squelch tail**

squelch tail

Sound of **atmospheric noise** heard from your **transceiver** during the brief moment when a **repeater** switches from **transmitter** mode to **receiver** mode; moment between the time the repeater stops transmitting and your **squelch** circuit activates

squelch tail elimination

Receiver feature that removes the **squelch tail** from your **transceiver** when a **repeater** switches from **transmitter** mode to **receiver** mode

SS

spread-spectrum

SSB

single sideband

SSTV

slow-scan television : **image** transmission **mode** used mainly by **amateur radio operators** to send and receive static pictures by **radio waves** using **ATV**; see also SSTV on Wiki

STA

Special Temporary Authority

stage

- **Transmitter** or **receiver** circuitry or section that performs a specific function that's part of a collection of operations required by a device
- Act of performing some operation that simulates an **incident** or other situation

  We decided to stage a drill today

  *The entire **broadcast** was staged*

stand by

*Wait and listen, but do not change **frequency***; see also voice procedure on Wiki

*Please stand by while I check the **log***

standard phonetics

See **phonetic alphabet**

standby

Something kept in reserve, or made readily available in case of an **emergency**

*I use **AGM batteries** for standby **power***

standing wave

Transmission line radio wave in which the **voltage**, **current**, or **RF** field strength at any point is defined by the sum of two (*forward* and *reflected*) waves of the same **frequency** but traveling in opposite directions; see also standing wave on Wiki

standing wave illustration
the (black) standing wave is the sum
of the two (red and blue) opposing waves

static

- Type of electricity (named in contrast to **current** electricity, and sometimes called *electrostatic*) that is formed by the imbalance of electric charge within or on the surface of a material, and remains until moved by **electrostatic discharge**, of which **lightning** is an extreme example; see also static electricity on Wiki
- Undesirable sound resulting from electrical switching or **electrostatic discharge**, which tends to **interfere** with normal communication; see also radio noise on Wiki

static crash

Undesirable **radio receiver** sound resulting from **static electricity** discharge, typically **lightning** or other type of **electrostatic discharge**

*Note: although this term contains the word **static**, the actual source of the receiver sound can arbitrarily be a non-static event, such as a spark (**arcing**) from an electrical **switch** or loose electrical connection*

station

- Physical equipment, apparatus, or software (including, but not limited to, **power supply**, **transceiver**, **feedline**, and **antenna**) that can transmit and receive information (a ***radio** station* is one that uses **radio waves** to communicate that information)
- Unit made of a **control operator** and an **RF transceiver** combined; see also amateur radio station on Wiki

steam
: Slang for background hissing sound heard during a **radio** communication, also sometimes referred to as *bacon frying*
: *You have quite a bit of steam in your transmission*

steep skirt
: See **transition band**

step on
: Slang for transmitting over somebody else's transmission or at the same time as another on the same **frequency**; see also **double**
: *I believe I just stepped on you*

step-start
: Circuit in a high-**voltage power supply** that limits the inrush current (*step*) on power-up by applying **power** at a reduced voltage, allowing the **filter capacitors** to charge gradually

stopband / stop band
: **Frequency band** or region in which signals of any frequency within that **bandwidth** are prevented from passing through a circuit; see also stopband on Wiki

store-and-forward / store and forward
: Method of **repeating** a transmission by first storing the incoming message, then re-transmitting the same message, a technique used by many **satellites**, **digipeaters**, and **simplex repeaters**; see also store-and-forward on Wiki

straight key
: Telegraph **key** that requires a traditional up-and-down action to produce **CW** tones, unlike a **bug**, **cootie**, or **iambic keyer**; see also straight key on Wiki


straight key

strap
: See **ground strap**

stray capacitance
: Undesirable and unavoidable **capacitance** that exists between two conductors in a circuit because of proximity to each other, which can prevent an actual circuit from behaving like an ideal one; see also parasitic capacitance on Wiki and stray capacitance on Wiki

street power
: See **household power**

stroke
: See **slash**

stud mount / stud-mount
: See **3/8-24**

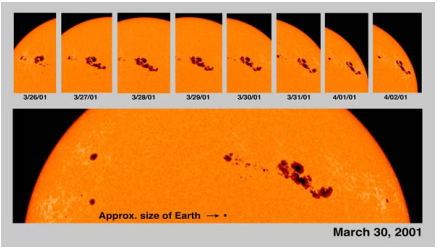
sub-audible / sub audible / subaudible
: Signal whose **frequency** is typically greater than 60 Hz and lower than 300 Hz, used in **amateur** applications primarily for **CTCSS** and **DCS** tones to help a **receiver** (such as that of a **repeater**) distinguish between wanted and unwanted signals of the same frequency
: *Note: technically, a 'sub-audible' frequency tone is within human hearing range, but because the audio below 300 Hz is typically filtered out during **demodulation**, a person using the receiver is unable to hear the tone*

sub-band / sub band / subband
: Subset or portion of an **amateur band** (often called a *band segment*, or simply, *segment*)
: *144.0 to 144.1 MHz is the **CW**-only sub-band of the **2-meter** band*

sub-channel
: See **CTCSS** and **DCS**

sudden ionospheric disturbance
: Abnormally high ionization density in the D region of the **ionosphere**, caused by a **solar flare**, and resulting in daytime disruption of signals on lower **HF frequencies** more than those on higher frequencies; see also SID on Wiki

sunspots
- The *sunspot cycle* / *solar cycle* is an approximately 11-year period in which the number of sunspots varies from none to a high of between 100 and 200, and is perhaps the phenomenon that affects **HF** communication the most; see also solar cycle on ARRL and **solar flux**
- The *sunspot number* is the measure of solar activity based on counting sunspots and sunspot groups, with high sunspot numbers enhancing long-distance communication in the upper **HF** to lower **VHF** range of **frequencies**
- The *solar rotation* (sun's rotation on its axis) causes **HF propagation** conditions to vary periodically in a 28-day cycle with the number of sunspots facing the earth



superheterodyne / superhet

Short for ***supersonic heterodyne***, **receiver** that uses **frequency mixing** to **down-convert** a received signal to a fixed **IF** signal, which can be more conveniently processed than the original **RF carrier** signal; the superheterodyne receiver being the most widely used application of **heterodyning**, and is made from a combination of **HF oscillator**, **mixer**, and **detector** in its simplest implementation; see also superheterodyne receiver on Wiki

suppressor grid
See **grid**

surface barrier diode / surface-barrier diode
See **Schottky diode**

surface wave
See **ground wave**

surge
See **spike**

surge protector / surge arrester / surge arrestor / surge suppressor
See **lightning arrester**

survival kit / survival-kit
See **go-kit**

susceptance
Imaginary component of **admittance**, or quantity of allowance for **current** flow in a circuit (symbol B), expressed in *siemens* (symbol S); see also susceptance on Wiki

swamp
Older slang for *drown out*, *overload*, *render helpless*, or otherwise *overwhelm* a signal, a circuit, or the **audio** output of a system
*We were close enough to each other, that your transmission completely swamped my **receiver**, so that I couldn't hear you*
*When I announced my **call sign**, I was immediately swamped by the **pileup***

swap-fest / swapfest
See **swap meet**


swap meet

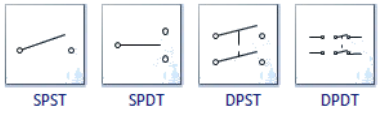
swap meet / swapmeet
Informal gathering (also called *swapfest*) of people who buy, sell, barter, display, or discuss **ham** radio **gear** or information or services, or simply observe their operation; see also flea market on Wiki and **hamfest**

swap net
Net whose primary purpose, or whose agenda includes as a major role, the announcing or advertising the availability of **ham radio** equipment for sale or trade

swing
CB slang for the largest difference in **transmitter power** between the output due to maximum **modulation** and that of a **dead carrier** (**deadkey**) from the same device, particularly in an **AM** transmission

switch
Electrical device that connects or opens the connection between two or more conductors in a circuit, of which the four most common switch classifications include
SPST — single-pole, single-throw : one conductor to one other conductor
SPDT — single-pole, double-throw : one conductor to either of two conductors
DPST — double-pole, single-throw : two conductors to a pair of conductors
DPDT — double-pole, double-throw : two conductors to either pair of conductors
see also switch on Wiki

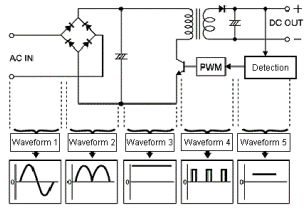

mechanical switches



switch classifications and symbols

switching power supply / switched-mode power supply / switcher
Type of **power supply** that converts electrical **AC power** to **DC** power by pulsing the energy during the conversion process, and is typically much lighter and more efficient than a **linear power supply**, but also typically (electrically) **noisier**

switching power supply



simple switching power supply schematic

SWL
: *shortwave listening* : hobby of listening to **shortwave radio broadcasts** primarily for informational or entertainment purposes, also referred to as *SWLing*; see also SWL on Wiki and the main SWLing website

SWR
: *standing wave ratio* : sometimes called VSWR (sometimes pronounced *viswar*) for **voltage** standing wave ratio, is the ratio of the maximum standing wave voltage with respect to the minimum standing wave voltage, and is related to how well **matched** your **transmitter** output **impedance** is to that of your **antenna** and **feedline**; see also SWR on Wiki for a more detailed, technical description

SWR bandwidth
: Difference (***bandwidth***) between the highest and lowest **frequencies** at which the **SWR** for an **antenna** is 2.0:1 and less; see also SWR bandwidth on Wiki

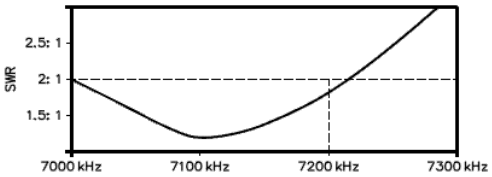


diagram showing an SWR bandwidth of about 215 kHz on the 40 meter band

symbol rate
: See **baud**

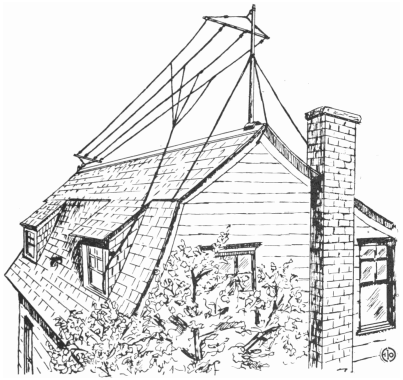
synchronous repeater / synchronous transmitter
: See **voting repeater system**

synthesized frequency
: See **frequency synthesis**

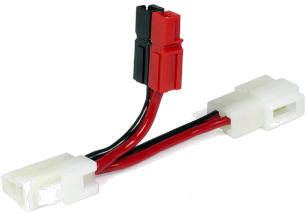
System Fusion™
: System (created by Yaesu®) of **amateur radio repeaters** and other **stations** that are interconnected by the **C4FM** digital protocol **mode** to transmit both **voice** and digital information **over the air**; see also digital voice modes on Wiki and the main Yaesu System Fusion website

T

T antenna / T-antenna
: Type of once-popular **vertical capacitively top-loaded monopole antenna**, known for its characteristic T shape, being constructed of several parallel wires, all of which are connected at the center by a single conductor (vertical **radiator**) to the **tuner** or **transmitter**, widely used at one time by **spark-gap** transmitters and **shortwave** radio (and was the primary communication antenna used on the *RMS Titanic*); see also T antenna on Wiki



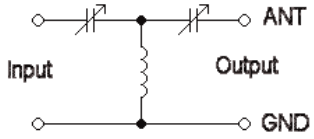
T antenna on a house



T connectors

T connector
: Model name for a **DC power connector** (also called *T plug* and *T-style* and *T-shaped* and *Molex™ T* and *OEM-T*) that has two blade pins mounted perpendicular to each other on the radio-side (often *jack*) connector, plus an exterior tab on the power-side (often *plug*) connector to prevent accidental disconnection

T-hunt / T-hunting
: See **fox hunt**



T network

T network / T-network
: Circuit made from series **capacitors** and a parallel **shunt inductor**, that serves as a **high-pass filter** capable of **matching** a large **impedance** range with relatively low-**losses**; see also T network on Wiki

T2FD
: ***tilted terminated folded dipole***

T3FD
: ***terminated 3-wire folded dipole***

tactical call sign
: Type of **call sign** (the word *tactical* meaning expedient, or related to a plan, incident, or event) assigned to a specific group, function, or location, for convenience (*Medical Team One* is normally easier to say and understand and remember than *KG7QKJ*) in connection with an **incident**, drill, or **special event**, and does not follow the rules for a regular call sign format; see also (police) tactical call sign on Wiki

tail
: See **squelch tail**

take one
: See **pick it up**

takeoff angle / take off angle / take-off angle
: See **angle of radiation**

talk-around / talk around / talkaround
: **Two-way radio** communication using a **repeater** output **frequency** for a **simplex** frequency (to talk *around* a repeater, or communicate by simplex on a **duplex channel**), also known as *direct radio* and *car-to-car* in some **commercial** and **official** applications; see also talk-around on Wiki

talk group / talkgroup
: Virtual **channel** that connects **amateur radio** operators through a **repeater** or over the internet, allowing the digital sharing of a single channel of one or more **trunked frequencies** without being heard by others who are on the same channel but not part of the group

talk-in / talk in / talkin
: Slang for a local **frequency** (often that of a **repeater**) that can be used by a group of **hams** as they converge on a location, for turn-by-turn directions to the destination, for information regarding the destination, or simply for **ragchewing** to pass the time while traveling
  Let's use 146.78 for a talk-in frequency
  Let's talk in on the 146.78 repeater
  Which frequency are you going to use for a talk-in?
  Can you talk us in on the 146.78?

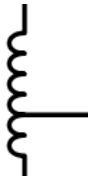
tank circuit
: See **LC circuit**

tap
- Electrical connection at a point in an **inductor** coil between its ends
- Incremental signal delay in a **digital signal processor** using **filter** algorithms such as **FIR**, such that the more taps a filter uses, the more finely the response can be **tuned**; see also tap on Wiki

tapped inductor / tapped coil

Coil **inductor** that allows connection to its conductor at one or more points (***taps***) as well as at the ends; see also coil tap on Wiki and center tap on Wiki

tapped inductor



tapped inductor symbol

TAPR
: *Tucson Amateur Packet Radio* : international **amateur radio** organization that researches, develops, and promotes **packet radio** and supporting software and hardware, such as **terminal node controllers** and **HPSDR**; see also TAPR on Wiki and the main TAPR website

TDM
: ***time-division multiplexing***

TDMA
: ***time division multiple access***

Technician
: Current entry-level **ham** radio **license class** that certifies the **licensee** as one having a basic understanding of **FCC** regulations, operating practices, and electronics, with a focus on **VHF** and **UHF** applications; see also Technician license on ARRL and what the Technician exam covers

telecommand
: One-way transmission to initiate, modify, or terminate functions of a device at a distance; see also telecommand on Wiki

telegraph key
: See **key**

telemetry
: One-way transmission of measurements at a distance from the measuring instrument; see also telemetry on Wiki

telescopic antenna / telescoping
: Type of **vertical omnidirectional whip antenna** made of multiple tubular sections that slide into each other, and is widely used on **HTs** and **broadcast** radio receivers

telescopic antenna

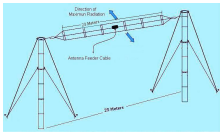
television
: Telecommunication medium that uses **radio waves** to transmit both **audio** and video; see also television on Wiki and **image**

ten code
: See **10 code**

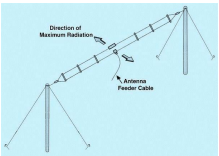
ten-four
: See **10-4**

TEP
: ***transequatorial propagation***

terminated folded dipole antenna / tilted folded dipole antenna
: Type of once-popular **horizontal folded dipole antenna** (abbreviated *T3FD* for the three-wire version or *T2FD* / *TTFD* for the two-wire version), in which the elements are made of parallel wires, one of which is terminated with a resistor, widely used at one time for **HF** and **shortwave** radio; see also T2FD antenna on Wiki



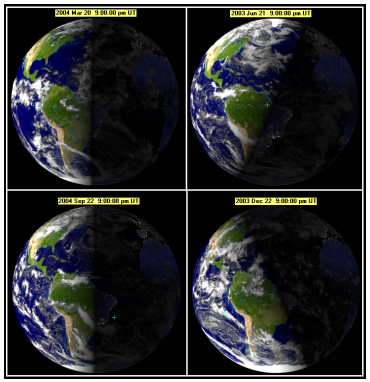
terminated 3-wire folded dipole antenna



tilted terminated folded dipole antenna

terminal node controller

Device used for **data** transmission through **radio waves** by converting digital messages into radio-ready data **packets**; see also TNC on Wiki



terminator
: Visible dividing line that separates daylight and darkness (night) on the earth, also known as the *gray line* (*grey line* to the British); see also terminator on Wiki

test
- Announcement (typically *testing*) to the general public, that the current message is being transmitted as part of a verification or experiment, to determine equipment functionality, audio quality, or signal integrity, and to inform listeners that the operator is probably not requesting or expecting a **contact** or other reply
- Short for ***contest***, and indicates (typically in **CW**) that the communication targets a particular contest

TFD
: ***terminated folded dipole***

TFT
: *thin-film transistor* : special type of **field-effect transistor** used for displays in many **transceivers**, **pan adapters**, and other devices; see also TFT on Wiki

theoretical noise
: See **noise floor**

thermal runaway / thermal-runaway
: Undesirable condition in an **amplifier** constructed from **BJTs**, in which normal operation results in a rise in temperature, which causes a significant increase in leakage **current**, which in turn raises the temperature even more, eventually destroying the **transistor** or amplifier; see also thermal runaway on Wiki

thermionic emission
: Thermally (heat) induced flow of electrons or ions from a surface with one **voltage potential** to another surface of a lower potential (also known as the *Edison effect*), and forms the basis of **vacuum tubes** that use hot filaments; see also thermionic emission on Wiki

thermionic valve
: See **vacuum tube**

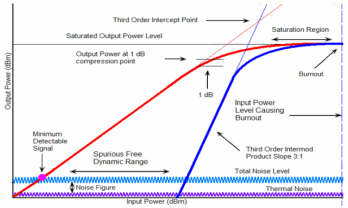
thermistor
: Electrical component that exhibits a controlled changed in **resistance** with temperature variations; see also thermistor on Wiki

assorted thermistors

thermistor symbol

THF
: *tremendously high frequency* : overall **frequency** range of 300 GHz to 3000 GHz, also known as *Terahertz Radiation*; see also THF on Wiki

third-order intercept point
: Calculated (indeed, *unmeasurable*) lowest **receiver amplifier power** level of nonlinear products that result from the third-order term (often shortened *intercept point* or abbreviated *IP3*) of a Taylor polynomial modeling the amplifier nonlinearity, compared with the result of a perfectly linear amplifier for the same power level, and often expressed in **dBm** (therefore, the higher the value, the more linear the receiver amplifier); see also third-order intercept point on Wiki



Graph showing the third-order intercept point for a particular receiver

third-party communication / third party communication

Transmission by a **licensed ham** radio **operator** in behalf of another person, or by an unlicensed operator under the direct and constant supervision of a licensed operator; see also international third-party communication on ARRL

through-hole mount
: Type of common **antenna mount**, primarily for **mobile** applications; see also NMO mount on Wiki


NMO through-hole mount

throw out
: Slang for *transmit* or *announce* ***over the air***, without regard to **mode** (in other words, by voice or **CW** or **digital**)
: *Go ahead an throw out your* ***call sign****, and see who answers*

THX
: See **TNX**

thyristor
: See **SCR**

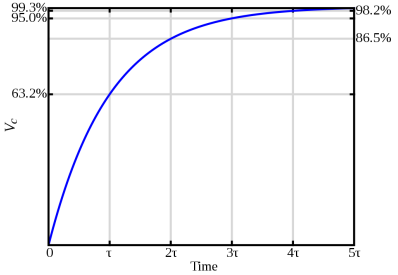
ticket
: Slang for a ***ham*** *radio* ***license***
: *I heard Jim got his ticket last week*

tie up
: Slang for *excessively occupy* a **repeater**, **frequency**, **channel**, or other communication medium or pathway, (typically temporarily) obstructing access to it

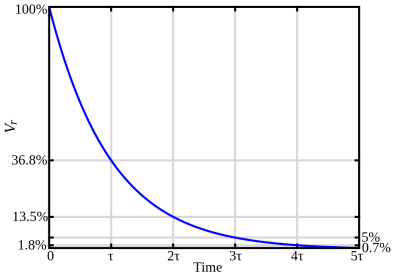
tiger tail
: Slang (also called *rat tail*) for a single-wire **counterpoise** that hangs from the point your **antenna ground** connects to your **radio**, typically an **HT**


tiger tail

time constant
: Amount of time for the **voltage** across a **capacitor** or an **inductor** to decrease (*fall*) from an initial value (the voltage at the start) to 1/e (about 0.368 or 36.8%) times the initial voltage value, or increase (*rise*) from an initial value to 1 - 1/e (about 0.632 or 63.2%) times the difference between the applied voltage and the initial voltage values; see also time constant on Wiki
: The four specific cases:
- Amount of time for the voltage across a capacitor in a series RC circuit to decrease 1/e times the initial voltage after the circuit voltage is removed, calculated as *RC* and expressed in seconds
- Amount of time for the voltage across an inductor in a series RL circuit to decrease 1/e times its initial value after the circuit voltage is applied, calculated as *L/R* and expressed in seconds
- Amount of time for the voltage across a capacitor in a series RC circuit to increase 1 - 1/e times the difference between the applied voltage and the initial voltage, calculated as *RC* and expressed in seconds
- Amount of time for the voltage across an inductor in a series RL circuit to decrease 1 - 1/e times the difference between the applied voltage and the final voltage, calculated as *L/R* and expressed in seconds



step response showing multiples of a capacitive time constant



step response showing multiples of an inductive time constant

time division multiple access
: Type of **time-division multiplexing** that involves multiple **transmitters** targeting a single **receiver**; see also TDMA on Wiki

time-division multiplexing
: Method of transmitting and receiving different signals over a single path between a **transmitter** and a **receiver** by means of synchronized switches at each end of the **transmission line**, thereby giving the appearance of transmitting multiple signals simultaneously; see also TDM on Wiki

timeout / time-out / time out

- Length of time (also *timeout amount*), after which a **transmitter** or other device will cease its intended operation; see also timeout on Wiki
- Action of causing a device to cease its intended operation once its predetermined operating period has elapsed
  *He talked so long that he timed out the **repeater***

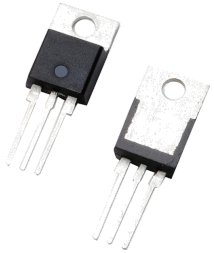
timeout timer
: Device or software application or (also called *TOT* or *time-out timer* or *time out timer*), especially on a **repeater** (but also on many **handheld transceivers**), that signals the **transmitter** to cease operations after a predetermined period of time, which is the ***timeout amount***

TNC
- ***terminal node controller***
- *threaded Neill-Concelman* : model name for a common 50 Ω **coaxial cable feedline connector** used in **RF** applications up to 11 GHz, and is the threaded version of the **BNC** connector; see also TNC connector on Wiki

TNC connectors

RP (reverse-polarity) TNC connectors

TNX
: *thanks*; see also **Morse code abbreviation**


transistors in TO-220 packages

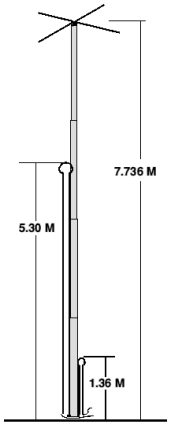
TO-220
: *transistor outline 220* : type of electronic component package characterized by a relatively large tab that aids in dissipating a large amount of heat away from the component, and three or more electrical leads, often used for a discrete device, such as a **transistor**, **regulator**, or a **semiconductor** of some sort; see also TO-220 on Wiki

TOA
: ***takeoff angle***

TOI
: ***third-order intercept***

tone
: See **CTCSS**


top-loading vertical antenna



top-loading vertical antenna diagram

top-loading antenna / top loading antenna / toploading antenna / top-loaded / top loaded / toploaded
: Typically **vertical antenna** with a metal disc or network of wires or rods, or a combination of these, attached near the top of the **radiating element** to function as a **capacitance hat**; see also top-loading on Wiki

toroidal inductor / toroid
: **Inductor** such as a **transformer** or **choke** that has a characteristic *donut* shape, whose advantages include large values of **inductance**, magnetic field containment within its **core**, and optimization of its magnetic properties for a specific range of **frequencies**; see also toroidal inductor on Wiki

toroidal inductors

TOT
: ***timeout timer***

tower
: See **antenna tower**

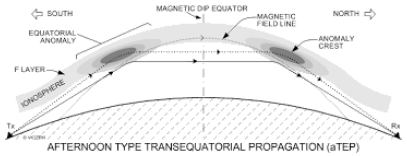
traffic
- **Formal messages** (also called *emergency traffic*) **relayed** between **amateur radio stations** and others as part of the **National Traffic System** during an **emergency** or a drill
- Important message of instruction or other significance given by an **Incident Commander** or other leader to be conveyed in his or her behalf
- Any message, announcement, or other information conveyed **on the air**, but not necessarily directed to a specific **station**, typically coordinated by the **net control** station

  This is KNØJI in North Orem; no traffic

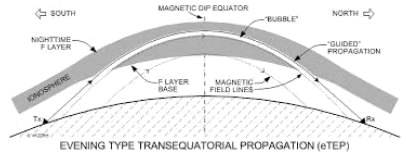
trailer plug
: See **SAE connector**

transceiver
: **Radio transmitter** and **receiver** combined into a single device; see also transceiver on Wiki and two-way radio on Wiki

transequatorial propagation
: **Radio wave propagation** between two mid-latitude points at approximately the same distance north and south of the magnetic equator, most noticeable in the afternoon or early evening, and whose maximum range can reach 5000 miles; see also TEP on Wiki

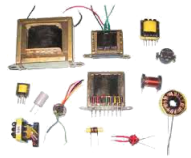


afternoon TEP

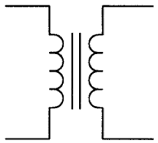


evening TEP

transformer
: Electrical device that transfers energy between two or more circuits through **mutual inductance**, and can convert electricity of one **voltage** into that of another voltage; see also transformer on Wiki



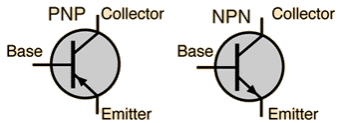
assorted transformers



transformer symbol

transistor
: Electronic **semiconductor** component that can control electric **current** flow, **amplify** signals, or act as an electronic switch, and of which the BJT (**bipolar junction transistor**) and FET (**field-effect transistor**) are most applicable to **ham** radio; see also transistor on Wiki

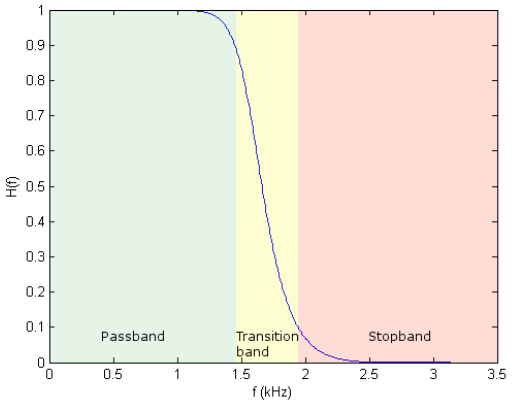
various transistors



transistor symbols

transition band
: In the **frequency** domain during **filtering**, transition from the **passband** to the **stopband** or vice versa, the half-power **bandwidth** therefore referred to as the *transition bandwidth*; see also transition band on Wiki

  *Note: when viewed graphically, some filter transitions are said to resemble one or both sides of a woman's **skirt**, so sharp transitions are known as **steep skirts***



transmatch / trans-match / trans match
: See **antenna tuner** and **antenna match**

transmission line
: Wire, cable, or any other electrically conductive medium (sometimes abbreviated as *T-line*) that can deliver **RF** signals or electrical **power** from one end to the other, requiring the wave nature of the electric **current** to be taken into account when conducting signals at higher **frequencies**; see also transmission line on Wiki

transmit pattern
: See **radiation pattern**

transmitter
: Device that produces **radio-frequency** signals that can be sent to a listening **receiver** by means of **radio waves**; see also transmitter on Wiki

transmitter hunting / transmitter-hunting
: See **fox hunt**

transmitter power
: Quantity of **RF power** (rate of energy per unit time) delivered from a **transmitter** at the point of connection with an **antenna system** or other device; see also transmitter power on Wiki

transponder
: Device or series of devices that form a communication channel between the receiving and transmitting **antennas** on a **satellite**, not unlike a **cross-band repeater**, but serving a wide range of **frequencies** instead of only two; in the case of a *linear transponder* the output frequency will adjust linearly according to the input frequency; see also transponder on Wiki

transverter
: Short for *transmitter converter*, device that converts an **HF** or **VHF transceiver** to operate on a **band** outside of which it normally operates, usually one of a higher **frequency**, thus extending its frequency range; see also transverter on Wiki

20 m antenna trap

trap
: Device that allows a single **antenna** to **resonate** on two different **bands** by presenting a high **impedance** on one of the bands by means of a **tank circuit** that resonates on that band, thereby permitting **multiband** operation; see also antenna trap on ARRL

trap vertical antenna / trapped vertical
: **Multiband vertical antenna** that uses **traps** to allow **radio** transmission on multiple **bands**; see also trap antennas on ARRL

vertical antenna with traps

triangulation
: Method of locating a signal source by using **antenna** headings from several different receiving locations; see also triangulation on Wiki

tri-band / tri band / triband
: See **multiband**

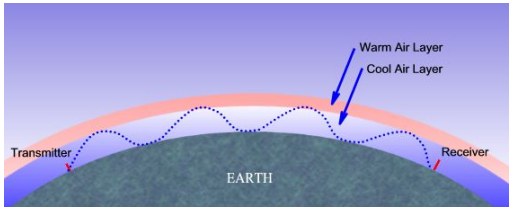
triboelectric effect
: Build-up of **static** electrical charge when two materials rub together, the most common source of static electricity build-up, of which **P-static** is one type; see also triboelectric effect on Wiki

trifecta
: Infrequently used slang for passing all three (**Technician**, **General**, and **Amateur Extra**) exams in a single **exam session**

trip
- Slang for the successfully completed communication path of a signal from a **transmitter** to a **receiver**, whether that path is direct (**line-of-sight**), by a **hop**, or through a **repeater**
  *My reply to his **CQ** never made the trip*
- Slang for the action of a **circuit breaker opening** when the **current** flowing through a device or circuit exceeds a specified rating (*pop* is used similarly)
  *My **tuner** stopped working as soon as the breaker tripped*

tri-state logic
: Digital logic that allows an output to assume a high **impedance** state in addition to the **Ø** and **1** logic levels, effectively removing the device from the circuit and providing for the ability to connect many device outputs to a single bus; see also tri-state logic on Wiki

troposphere
: One of the five major atmosphere layers and the layer closest to the surface of the earth; see also troposphere on Wiki

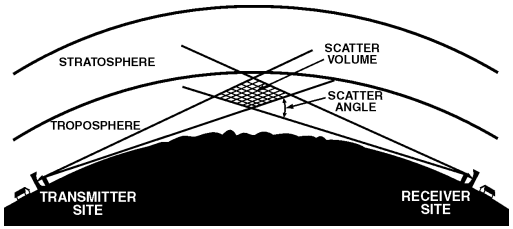


tropospheric ducting

tropospheric ducting
: Type of **RF propagation** of **VHF** signals for many hundreds of miles, promoted by temperature inversions in the **troposphere** region of the atmosphere; see also tropospheric ducting on Wiki

tropospheric propagation
: **Radio wave propagation** and behavior within the **troposphere**; see also tropospheric propagation on Wiki

tropospheric scatter / troposcatter
: **Propagation** of **radio** signals as they are scattered when they pass through the upper layers of the **troposphere** region of the atmosphere, and is the **mode** responsible for allowing over-the-horizon **VHF** and **UHF** communication to ranges of approximately 300 miles on a regular basis; see also tropospheric scatter on Wiki



tropospheric scatter

true horizon
: See **horizon**

true power
: See **power factor**

trunk-lip mount
: See **lip mount**

trunking
: Ability of **radio** transmissions to be served by a pool of free **channels**, whose availability is determined by an algorithmic **protocol**; see also trunking on Wiki

trustee
: Licensed **amateur** who is a) entrusted with the maintenance of an **amateur radio license** other than his or her own, and b) responsible for the proper operation of a **station** that uses the **call sign** associated with the entrusted license
  - *club trustee* : more formally known as the *license trustee*, the licensed amateur appointed by a **club** as the *club license custodian*, who applies for, and maintains the club station license and designates **control operators** during club activities and events
  - *repeater trustee* : licensed amateur who is responsible for the maintenance of the **repeater** license (not the repeater equipment itself) and appropriate repeater operation

TTFD
: ***tilted terminated folded dipole***

TTL
: *transistor-transistor logic* : class of digital circuits made primarily from **BJTs** and **resistors**, known for high switching speed and simple design; see also TTL on Wiki

TTX
: *table-top exercise* : **incident** or **emergency** preparedness training exercise discussion, analysis, and possible walk-through, unlike a staged **simulation** or drill

tube
- See **vacuum tube**
- See **CRT**

tune
- Change or adjust the **frequency** of your **transceiver** for any reason (to talk with a person on another frequency, to more closely match the frequency of another transmission, to move your conversation away from a **noisy** frequency or one that has a lot of **interference**, etc.)
  *I had to tune my **rig** to receive your signal better*
- Alter or modify the **impedance** of a circuit to match that of another circuit, such as is done by a **tuner**
- Alter or modify the **reactance** of a circuit, often to change its **resonant frequency**

tuner
- See **antenna tuner**
- Circuit or device that **filters** out all but a narrow **passband** in a **receiver** prior to processing into an **audio** or **data** signal; see also tuner on Wiki

tunnel diode / tunneling diode
: Electronic **semiconductor** component (also known as an *Esaki diode*) that performs the same function as a silicon **diode**, but is capable of has very fast operation; see also tunnel diode on Wiki


tunnel diode

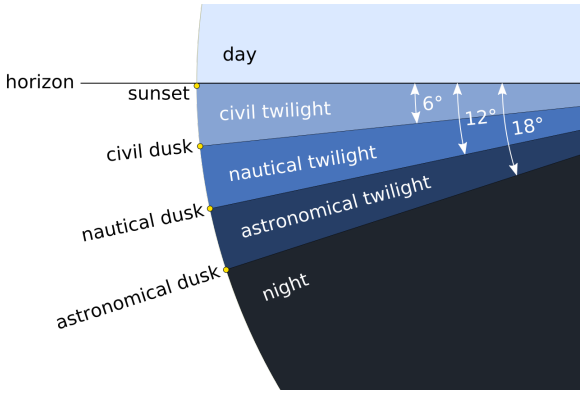
tunnel diode symbol

TV
: ***television***

TVI
: *television interference* : disruption (**interference**) of **television** reception by an an **RF** signal; see also TVI on Wiki and an article on how to eliminate TVI

twenty
: See **20**

twilight
: Time of day between daytime and night when the sun is below the horizon; see also twilight on Wiki



twin-lead
: Type of parallel-wire **balanced feedline** often used for **amateur radio transmission line**, with the advantage of having low **loss** and disadvantage of being vulnerable to **interference**, and of which **ladder line** is an example; see also twin-lead on Wiki


twin-lead

two-way radio
: **Radio** that can both transmit and receive signals (**transceiver**) for communication purposes; see also two-way radio on Wiki

Tx / TX
: *transmit*; see also **Morse code abbreviation**

tying
: See **tie up**

type-acceptance / type-accepted / type acceptance
: See **certificated**

type N connector / type-N connector
: See **N connector**

U

Ufer ground
: Now called *concrete-encased electrode*, type of **grounding** whose main conductor is embedded in concrete or passes through a layer of concrete, to form a better connection (lower **impedance**) to **earth ground** than might otherwise be achieved, in poorly conductive soil or soil located in a naturally dry climate; see also Ufer ground on Wiki

UHF
: *ultra high frequency* : overall **frequency** range of 300 MHz to 3000 MHz; see also UHF on Wiki and the RF spectrum

UHF connector
: See **PL-259** or **SO-239**

ULS
: *Universal Licensing System* : **FCC** online database and filing system of wireless **radio** applications and **licenses**, providing electronic filing and public access to licensing information; see also ULS on Wiki

unbalanced feedline / unbalanced feed line / unbalanced line
: Pair of electrical **transmission line** conductors of consistently unequal size, shape, or material (and therefore the unequal **impedance**) their entire lengths, of which **coaxial cable** and **microstrip** are examples; see also unbalanced feedline on Wiki and **balanced feedline**

uncontrolled
: Any environment, area, or situation in which humans presumably have no control over their exposure to **RF radiation**, including primarily the area outside the household and surrounding property of a **station operator**, to ensure their 30-minute exposure levels remain within the *uncontrolled **MPE** limits*; see also
  - controlled / uncontrolled exposure on ARRL
  - FCC controlled / uncontrolled compliance document and worksheet [PDF]
  - abbreviated controlled / uncontrolled compliance chart
  - **controlled**

unkey / un-key
: Action of releasing the **PTT** button on your **mic**

unnumbered information / unnumbered frame / unnumbered packet

Type of **packet** frame used to transmit **APRS beacon data** (location information), in which individual packet frames do not contain a sequence number to identify packet order, like an Information frame does; see also unnumbered information on Wiki (as it applies to APRS) and an example of its implementation

unun

Device that **matches** the **impedance** of an **unbalanced feedline** (such as a **coaxial cable**) to that of another **un**balanced one; see also **balun**

unun

up

Announcement by a **station** that it is listening (receiving) on a higher **frequency** (usually in kHz) than the one it is transmitting on; see also **split**

This is KNØJI listening up 5 (announcing station is listening 5 kHz higher than its transmitting frequency)

This is KNØJI listening up 5 to 10 (announcing station is listening 5 to 10 kHz higher than its transmitting frequency)

This is KNØJI listening up (announcing station is listening on an undetermined frequency higher than its transmitting frequency, requiring you to locate it)

up-conversion / up conversion / upconversion

- Process of modifying a signal by changing it to a higher **frequency**, allowing for convenient signal manipulation by **analog** circuitry, one step in the **superheterodyne** process, and integral to **frequency-division multiplexing**
- Process of modifying a signal by changing it to a higher frequency **band**, thereby extending the **frequency** spectrum available to a **transceiver**

up-converter / up converter / upconverter

Device or circuit that performs the **up-conversion** function by changing the **frequency** of an operating signal to one of a higher frequency, often part of a **transverter**; see also upconverter on Wiki

uplink / up link / up-link

See **satellite uplink**

upper sideband / upper-sideband

- Common **single sideband** operating **mode** derived from **AM** and is used on the **10-**, **12-**, **15-**, **17-**, **20-**, and **60-meter bands** and all the **VHF** and **UHF** bands; see also sideband on Wiki
- Older slang for *older sibling*

UPS

uninterruptible power supply or *uninterruptible power source* : electrical device that provides **emergency** electrical **power** when its input power source (typically **building main power**) fails, providing near-instantaneous protection from interruption of its input power by supplying the energy stored in **batteries** or other electrical storage device; see also UPS on Wiki

USB

- ***upper sideband***
- *universal serial bus* : model name for a common serial port **connector** (as well as the electrical and information **protocol** typically used with it); see also USB on Wiki

USB connector types

UTC

coordinated universal time : universally recognized time standard (that is, world-wide time, so that any moment in time is represented by the same time everywhere at that moment), also referred to as *zulu time* and sometimes **military time** (although *military time* often refers to local time represented on a 24-hour clock), and successor to *Greenwich Mean Time (GMT)*; an abbreviated American conversion chart:

To get	Do		To get	Do	Time Name
EST	UTC - 5	or	UTC	EST + 5	Eastern Standard
EDT	UTC - 4	or	UTC	EDT + 4	Eastern Daylight
CST	UTC - 6	or	UTC	CST + 6	Central Standard
CDT	UTC - 5	or	UTC	CDT + 5	Central Daylight
MST	UTC - 7	or	UTC	MST + 7	Mountain Standard

MDT	UTC - 6	or	UTC	MDT + 6	Mountain Daylight
PST	UTC - 8	or	UTC	PST + 8	Pacific Standard
PDT	UTC - 7	or	UTC	PDT + 7	Pacific Daylight
AST	UTC - 9	or	UTC	AST + 9	Alaska Standard
ADT	UTC - 8	or	UTC	ADT + 8	Alaska Daylight
HAT	UTC - 10	or	UTC	HAT + 10	Hawaii-Aleutian

see also
- UTC on Wiki
- Noji's page of times and dates
- Time Conversion Chart on ARRL

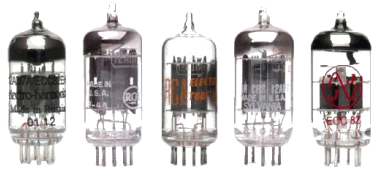
utility power
: See **household power**

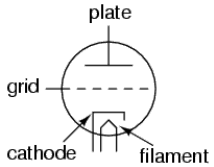
V

VAC
: ***volts alternating current***

vacation-style / vacation style
: Slang for a relatively relaxed **station** operating plan (typically in reference to a **DXpedition** or **special event** station), in which the station might not operate on a regular or preset schedule or set of **frequencies**; often synonymous with **holiday-style**

vacuum tube / vacuum-tube
: Electronic device that permits control of **current** flow internally from its ***anode*** (plate) to its ***cathode*** (technically, control of electron flow internally from its cathose to its plate) by **voltage** on, or current through, one or more ***grids*** inside a vacuum-sealed container (formerly *electron tube*, and known in British countries as *electron valve* or *thermionic valve*) to perform the control function of an active circuit such as a **rectifier**, **amplifier**, **oscillator**, **modulator**, **demodulator**, **regulator**, **detector**, or **switch**, and which has largely been replaced by **semiconductors**; see also vacuum tube on Wiki


vacuum tubes

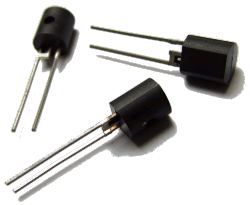


vacuum tube symbol

valve
: British term for ***vacuum tube***

Noji's vanity call sign
on personalized license plates

vanity call sign
: Special (personalized) **call sign** that is selected by a **licensed ham** radio **operator** or club and approved by the **FCC**, rather than selected by the FCC; see also vanity call signs on ARRL and how to apply for a vanity call sign


varactor diodes

varactor diode symbol

varactor diode / varicap diode
: Electronic **semiconductor** component (also known as a *variable capacitance diode*, *variable* ***reactance*** *diode*, and *tuning diode*) that performs the same function as a silicon **diode**, but whose **capacitance** varies with the applied **voltage** across it; see also varactor diode on Wiki


variable capacitor symbol

variable capacitor
: **Capacitor** whose value can be changed or controlled, often used for **tuning** or **filter** adjustment; see also variable capacitor on Wiki

variable capacitors

variable capacitor symbol

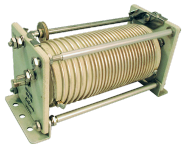
variable-frequency oscillator / variable frequency oscillator

- **Oscillator** whose **frequency** can be **tuned** over a particular range; see also VFO on Wiki
- Mode (setting or configuration) of your radio, in which you can manually or directly **tune** your radio to an arbitrary **frequency** within a particular range or **band**

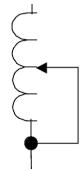
variable inductor

Inductor whose value can be changed or controlled, once used for **tuning**; see also variable inductor on Wiki

*Note: the type of variable inductor depicted and symbolized to the right uses a movable or variable **tap**, and is rare compared with today's variable inductors, which use a movable **core** instead*



variable inductor



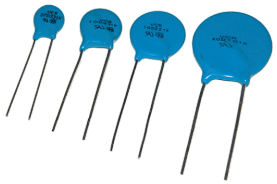
variable inductor symbol

variable resistor

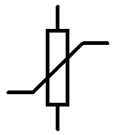
See **potentiometer**

varistor

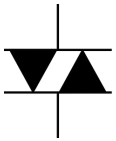
Electronic component whose **resistance** varies with the applied **voltage** across it, of which the *metal-oxide varistor* (MOV) is the most common; see also varistor on Wiki



varistors



varistor symbol



old varistor symbol

VCO

voltage-controlled oscillator

VDC

volts direct current

VE

- *Volunteer Examiner* : person who has been accredited by a **VEC** to administer **amateur radio** examinations; see also volunteer examiner on ARRL and how to become a VE and VE on Wiki
- Abbreviation for the provinces of Canada

VEC

Volunteer Examiner Coordinator : organization that acts as a liaison between the **FCC** and the exam applicants by overseeing the administration of **amateur radio** examinations to candidates and accrediting the **volunteer examiners** who administer the exams; see also VEC on ARRL and VEC on Wiki

vector

- In **rectangular coordinates**, expression that contains both magnitude and direction; see also vector on Wiki
- In **polar coordinates**, quantity with both a magnitude and an angular component; see also polar coordinates on Wiki

velocity factor

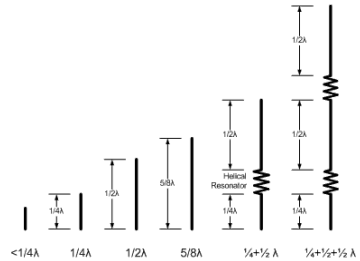
Ratio of the actual speed at which a signal travels through a **transmission line** with respect to the speed of light in a vacuum (free space); see also velocity factor on Wiki

velocity modulation

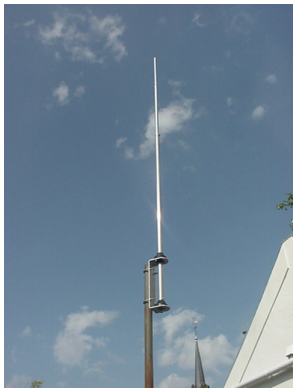
Process of varying (**modulating**) the velocity of a beam of electrons or ions by passing the beam through a high-**frequency** electric field

vertical antenna

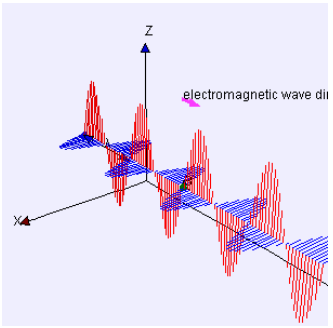
Omnidirectional antenna whose vertically **polarized** electric field is perpendicular to the surface of the earth; see also vertical antenna on Wiki and whip antenna on Wiki



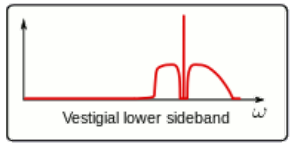
vertical antenna design dimensions

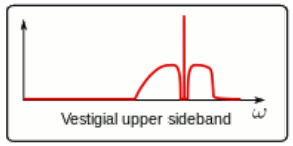


vertical antenna



vertical polarization
: Alignment of a signal's **electric field** perpendicular to the level surface of the earth (actually, parallel to the vector force of Earth's gravity), and a signal with such an alignment is said to be *vertically polarized*; see also
- vertically linear polarization on Wiki
- **horizontal polarization**
- **elliptical polarization**
- **circular polarization**





vestigial sideband
: Sideband signal that has been partially suppressed (can be vestigial lower sideband or vestigial upper sideband), and used in **television broadcasts** if the video is transmitted in **AM**; see also vestigial sideband on Wiki

VFO
: ***variable-frequency oscillator***

VHF
: *very high frequency* : overall **frequency** range of 30 MHz to 300 MHz; see also VHF on Wiki and the RF spectrum

Vibroplex™
: Manufacturer of **Morse code keyers**, **bugs**, and similar products; see also Vibroplex on Wiki and the main Vibroplex website

vintage
: Slang reference to a piece of equipment, most notably a **receiver**, **transmitter**, or **transceiver**, that relies on **vacuum tube** technology to perform its primary functions, often synonymous with *outdated*, *antique*, and sometimes *obsolete*; see also vintage amateur radio on Wiki

virtual ground
: See **artificial ground**

VIS
: *vertical interval signaling* : signal sent in an **SSTV** transmission to identify the signal mode (including image quality, gray / color level, and number of lines per frame); see also VIS on Wiki

visible horizon

See **horizon**

VLF

very low frequency : overall **frequency** range of 3 kHz to 30 kHz; see also VLF on Wiki and the RF spectrum

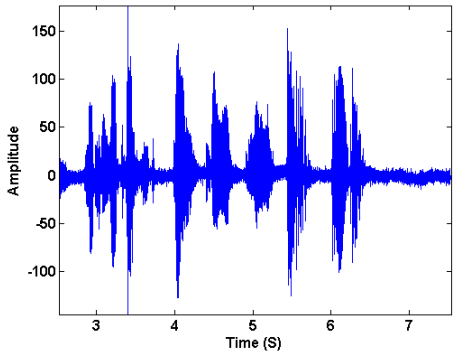
handheld VNA

VNA

vector network analyzer : measuring instrument that characterizes network parameters of electrical networks, in particular **scattering (S) parameters** (and often **impedance** components) for **RF** and **microwave transmission lines**; see also VNA on Wiki

VOACAP

Voice of America Coverage Analysis Program : **HF propagation** modeling software, useful for predicting **band** openings; see also VOACAP on Wiki and the main VOACAP website



"This is a test. 1, 2, 3, 4, over."

voice

Audio communication created by speech; see also **phone** and voice on Wiki

VoIP

voice over internet protocol : method and technology for sending **voice** communication over the internet; see also voice over IP on Wiki

voltage

Quantity of electrical pressure, or **electromotive force** in a circuit, expressed in *volts* (symbol V); see also voltage on Wiki

voltage balun

Type of **transformer** (also called *RF transformer*) inserted as a **balun** to **match** the **antenna** system **impedance** with the **feedline** impedance; so-called because it attempts to balance the output voltages (make them equal and opposite) regardless of the load impedances

voltage-controlled oscillator / voltage controlled oscillator

Electronic **oscillator** circuit whose **frequency** is controlled by its input **voltage**; see also VCO on Wiki

voltmeter

Instrument that measures electric potential or **electromotive force** by connecting it in parallel with the circuit; see also voltmeter on Wiki

voltmeter

Volunteer Monitor Program
: Organization instituted by agreement between the **ARRL** and the **FCC**, in which volunteers trained and accredited by the ARRL will monitor the **air waves** to collect reportable evidence of both rules violations and exemplary **amateur** operation, in an attempt to re-energize enforcement efforts; see also Volunteer Monitor Program on ARRL

voter / voted receiver system
: See **voting repeater system**

voting repeater system / voting receiver / voting system
: Also known as a *synchronous repeater system*, network of **repeaters** that re-transmits the strongest or **cleanest** of multiple signals received by all the repeaters in the system (also called *diversity operation*), dictated by a device known as a *comparator*, which uses a policy known as *voting* and *diversity combining* (they all transmit the signal "voted" best-received, this simultaneous transmission also known as *synchronous transmission* and *simulcasting*); see also
  - voting repeater systems on Wiki
  - diversity scheme on Wiki
  - diversity combining on Wiki
  - how a voting repeater system works (excellent article)

VOX
: *voice operated exchange* or *voice operated switch* : **voice**-activated **switch** that turns on the **transmitter** without requiring the press of the **PTT** button; see also VOX on Wiki

VRLA battery

VRLA
: *valve-regulated lead-acid* : type of **SLA battery** that includes formats such as **AGM** and Gel; see also VRLA on Wiki

VSB
: ***vestigial sideband***

VSWR
: *voltage standing wave ratio*; see **SWR**

VVV
- Indicates (typically in **CW**) the start of a **beacon** transmission
  : *VVV VVV VVV **DE** KNØJI/B*
  : *Note: the FCC no longer requires beacon stations to transmit /B or /BCN, but is shown here as an example, since many of them still transmit the suffix*
- *this is a test* : indicates (typically in **CW**) the start of a test transmission; also once prefaced many exams when **Morse code** was required to pass **amateur radio** exams

W

W
: Abbreviation for the continental (lower 48) United States

W/VE
: Abbreviation for the continental (lower 48) United States and the provinces of Canada

WAC
Worked All Continents


walkie-talkies

walkie-talkie
Short-range, **channelized**, and low-**power** handheld **two-way radio** (**HT**) typically using the **FRS** and **GMRS** **frequencies**, but can be made for any frequency; see also walkie-talkie on Wiki and a chart of assigned FRS/GMRS frequencies [PDF]

wallpaper / wall-paper
Older slang for collection of paper or other type of award, **QSL cards**, certificate, or plaque that announces or demonstrates some sort of **amateur radio** achievement, especially if it's wall-mounted

wall power
See **household power**

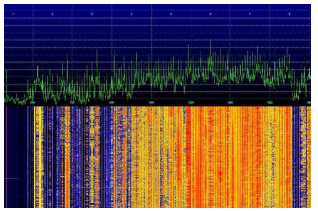
WAN
Worked All Neighbors

WARC
World Administrative Radio Conference
- Three portions of the **shortwave** radio spectrum, specificaly the **12-**, **17-**, and **30-meter bands**, allocated for **amateur radio** use; see also WARC bands on Wiki
- 1979 Geneva conference that established a set of **radio bands** allocated for **amateur** use; see also World Administrative Radio Conference on Wiki

WARD
World Amateur Radio Day : annual **event** held on April 18 to commemorate the formation of the **IARU** in Paris and to celebrate **amateur radio** in general by making contacts with other **hams** world-wide in a non-competitive (non-**contesting**) approach; see also WARD on ARRL and the main WARD website

War Powers Act / War Emergency Powers
American law (also called *Emergency War Powers Act*) that provides the President of the United States enormous **emergency** authority to make strategic governmental changes and take control of communication, including conventional **amateur radio** service, by the **activation** of **RACES** and other communication services; see also War Powers Act of 1941 on Wiki
FYI: the broad authority granted by the War Powers Act was later limited by the War Powers Resolution, which does not seem to affect RACES activation

WAS
Worked All States


waterfall display

waterfall
Graphical display of spectral density (also known as a spectrogram), such as that used in a **pan adapter**, to show where the stronger signals are located within a particular **band** by displaying energy levels over time and **frequency** together; see also waterfall plot on Wiki

watering hole
Older slang for ***frequency***, ***band***, or ***repeater*** on which (often a close-knit group of) **hams** tend meet consistently or frequently, typically for **ragchewing** or other casual **QSOs**
*I'll be over at the **40-meter** watering hole tonight*

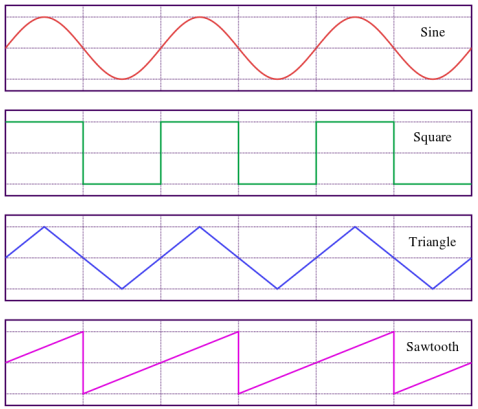
watt / watts
See **power**

wattmeter / watt meter
Instrument that measures (either average or peak) electrical **power** in watts of a circuit; a wattmeter is said to be *directional* if it can display or measure separate forward and **reflected** power in a **transmission line**, useful for showing whether the **feedline** and **antenna** are properly **matched**; see also wattmeter on Wiki

directional wattmeter

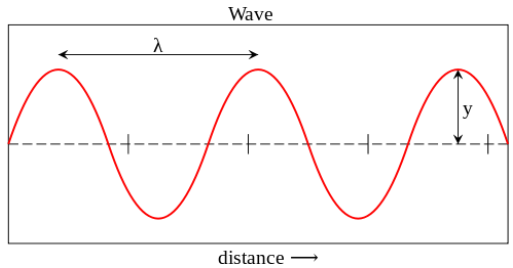
regular wattmeter

waveband / wave-band / wave band
: Outdated term for ***band***



various waveforms

waveform
: Shape and form or graph of a signal as viewed or displayed with respect to time; see also waveform on Wiki



λ = wavelength
y = amplitude

wavelength / wave length
: Distance a wave travels in one cycle, often denoted by the symbol λ, and can be approximated by λ ≈ 300 ÷ f, in which f is the **frequency** in MHz and λ is the wavelength in meters

WAZ
: ***Worked All Zones***

weak-signal / weak signal
- **Propagation mode** using signals with **RF power** levels of 5 watts or less, especially those used for **EME** or **meteor scatter** communication, often accompanied by software made for that purpose, such as **WSPR** and **WSJT**; see also weak-signal modes on ARRL and weak-signal communication on ARRL
- Signal whose strength is below the **receiver noise** level, such as with **EME** communication

WFM / W-FM / WBFM
: ***wideband FM***

whip antenna
: Type of straight, often flexible, **vertical omnidirectional monopole antenna** widely used on **HTs**, **walkie-talkies**, and **broadcast** radio receivers; see also whip antenna on Wiki

whip antenna

whisper
: See **WSPR**

white noise
: Random signal with a constant **power** spectral density across a specific **frequency** range or **band**, such as **AF** or **RF**; see also white noise on Wiki

wideband FM / wide band FM / wide-band FM / wide FM
: **FM** signal whose **modulating** signal **bandwidth** is much larger than its peak **frequency deviation**, typically twice as large, often regarded as being limited to 25.0 kHz, and not to be confused with broadband; see also WFM on Wiki and wideband on Wiki

Wilderness Protocol
: Recommendation by the **ARRL** to periodically announce your presence on any of a specific subset of the **national calling frequencies** while in a wilderness or back country location, with the intent to **monitor** the **frequency** and **relay emergency** information in case assistance is required; see also Wilderness Protocol (*QST*, Feb 1994, p. 99) and Wilderness Protocol on ARRL (p. 87)
: The recommended Wilderness Protocol frequencies are as follows:

Band	Frequency (MHz)	Mode
6 m	52.525	FM
2 m	146.520	FM
1.25 m	223.500	FM
70 cm	446.000	FM
23 cm	1294.500	FM

Wilkinson divider / Wilkinson power divider
: Circuit that distributes its input **power** equally among multiple output **loads** while maintaining electric isolation between the loads, preventing changes that might occur in one load from disturbing the power flow to the other output loads, and used mainly in **microwave** applications; see also Wilkinson power divider on Wiki

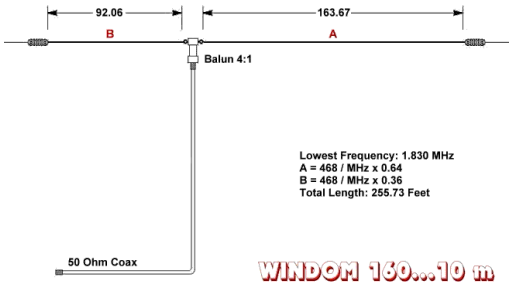
Wilkinson divider

willful interference
: See **harmful interference**

wind load / windload
- Quantity of force applied by the wind to a structure, such as an **antenna**, **tower**, **mast**, **guy-wires**, or a combination of these, per unit wind speed; see also wind load on Wiki
- Rating (more accurately, *wind-speed rating*) of an **antenna**, its **mast**, **tower**, **guy-wires**, or any combination of these, that indicates the amount of wind speed it can handle, such that the greater the wind load rating, the stronger (faster) a wind it can withstand

Windom antenna
: Type of **OCF antenna** whose **feed point** is positioned where the desired **bands** reach their highest radiating **currents** for the desired **frequency** ranges (of which the **Carolina Windom** uses a portion of its **feedline** as a **vertical radiating element**)

Windom antenna



Windom antenna diagram

window line
: See **ladder line**

WinLink
: Software-based email system that allows **ham** radio **stations** around the world to send and receive messages and attachments using **radio frequencies**; see also WinLink on Wiki and the official WinLink website

WINMOR
: Sound card **protocol** specified for **data** message transmission and is a complement to the **PACTOR modes** in the **HF** portion of the **WinLink** system; see also WINMOR on Wiki and WINMOR [PDF] on ARRL

WIRES
: *Wide-coverage Internet Repeater Enhancement System* : standard created by Yaesu® to **link ham** radio **repeaters** through the internet using **VoIP**; see also
  - WIRES on Wiki
  - how to disable WIRES [PDF] on your Yaesu **transceiver**
  - search for WIRES repeaters

WIRES-X
: *Wide-coverage Internet Repeater Enhancement System (Extended)* : standard created by Yaesu® to **link ham** radio **stations** through the internet using **VoIP** over **analog** and **C4FM**, intended to replace **WIRES**; see also
  - WIRES-X on Wiki
  - WIRES-X on Yaesu
  - search for WIRES repeaters

work / working
- Action of making radio **contact** with, and exchange verifiable information with, a **station**; see also contact on Wiki
  I worked a station in France the other day
- Attempt at making multiple **contacts** on a particular band
  *Joe was finally able to work **80 meters** last night*

Worked All Continents
: Award given to a **ham** who has made a **contact** with (**worked**) at least one other ham in each of the six continental areas of the world (Antarctica is excluded); see also WAC on Wiki and WAC on ARRL

Worked All Neighbors
: Fake (*tongue-in-cheek* / not an actual) award given to a **ham** who has accidentally made a **contact** with a neighbor's television set (**TVI**), sound system, computer, or other household electronic equipment

Worked All States
: Award given to a **ham** who has made a **contact** with (**worked**) at least one other ham in each of the fifty states of the US; see also WAS on Wiki and WAS on ARRL

Worked All Zones
: Award given to a **ham** who has made a **contact** with (**worked**) at least one other ham in each of the 40 **CQ Zones** of the world, as verified by an authorized **checkpoint**; see also WAZ on Wiki and the main WAZ website

working power
: See **power factor**

working skip
: Slang for the activity of making a **contact** with (**working**) a **station** by means of **skywave propagation** (also called *shooting skip* by **CB radio** enthusiasts)

worm burner / worm-burner
: Older slang for *very **inefficient antenna*** (exhibits a lot of **ground loss**)

wouff hong

Legendary and fictional instrument of torture used to punish **hams** who demonstrate poor operating practices, akin to the **rettysnitch** and ugerumf; see also wouff hong on ARRL

wouff hong

WPX

Worked All Prefixes : award given to **hams** who have made a **contact** with (**worked**) at least one other ham using each of the different **call sign** prefixes; see also official CQ WPX website and CQ WPX on ARRL

WSJT

Weak Signal - Joe Taylor : **ham** radio software used for **weak-signal** and low-**power** digital transmission **modes** using **protocols** for **EME** (**JT65**, JT4), **meteor scatter** (**FSK441**, JTMS), and **ionospheric scatter** (JT6M, ISCAT) communication; see also

- WSJT on Wiki
- WSJT on ARRL
- main WSJT website

WSJT-X

Weak Signal - Joe Taylor - experimental : **ham** radio software (allegedly 1.7 to 3 **dB** improvement in **sensitivity** over **WSJT**) used for **weak-signal** and low-**power** digital transmission **modes** using **protocols** for **EME** (**JT65**, **JT9**, JT4, QRA64), **FT8**, **meteor scatter** (**MSK144**), and **ionospheric scatter** (ISCAT) communication; see also

- WSJT-X on Wiki
- WSJT-X on ARRL
- main WSJT-X website

WSPR

Weak Signal Propagation Reporter : **ham** radio software (often pronounced *whisper*) used for **weak-signal** communication and originally designed to test **propagation** paths using low-**power** transmissions on the **MF** and **HF bands**; see also

- WSPR on Wiki
- WSPR on ARRL
- main WSPR website
- WSPR Net website

WWV / WWVH

Call signs of special radio **stations** that **broadcast official** US government **frequency** and time signals; see also WWV on Wiki and WWVH on Wiki

WWVB

Call sign of a special radio **station** that **broadcasts official** US government **frequency** and time signals based on an atomic clock, and intended for local time-keeping device synchronization; see also WWVB on Wiki

Wx / WX

weather; see also **Morse code abbreviation**

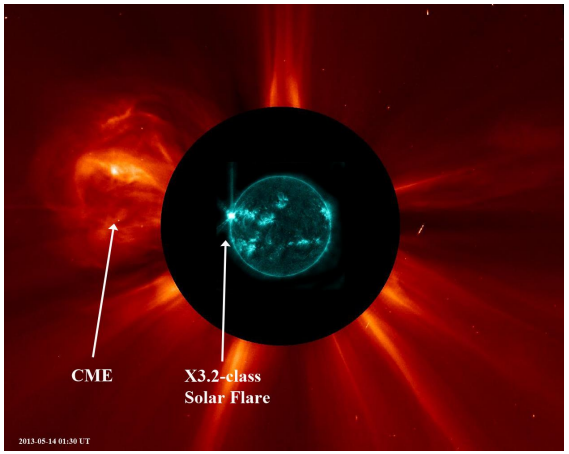
X

X

Symbol for the electrical quantity of **reactance**

X-class / X class

Largest of all classed **solar flares** (ten times the strength of an M-class flare and 100 times the strength of a C-class flare), whose relative strength is further designated by an appended decimal number representing a linear value for intensity, such as *X5.2* and *X3*, making an X2 flare twice as great as an X1 flare, and an X3 flare three times as great as an X1 flare, for example; see also solar flare classification on Wiki



X-wave / X wave
: See **extraordinary wave**

XBR
: - *cross-band repeat* : ability or feature (typically of a **transceiver** or **repeater**) to perform **cross-banding**
- *cross-band repeater* : **transceiver** capable of performing the **cross-band repeat** function

X_C
: Symbol for the electrical quantity of **capacitive reactance**

XE
: Abbreviation for the states of Mexico

XHF
: See **EHF**

XIT
: *transmitter incremental tuning* : **transmitter** circuit used for shifting the transmit **frequency** away from the receive frequency by a small amount, to compensate for frequency drift or related issues; see also **RIT** and XIT on Wiki

X_L
: Symbol for the electrical quantity of **inductive reactance**

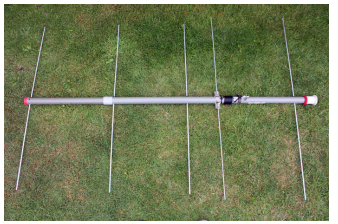
XLF
: See **ELF**

xtal
: Abbreviation for ***crystal***

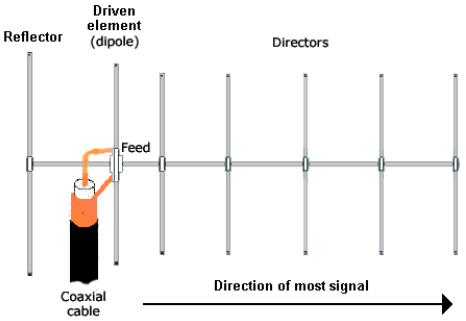
XYL
: - *ex-young lady* : (as in, *no longer a young lady or **YL***) *wife* if you're a couple or *mom* if you have children, regardless of age; see also **Morse code abbreviation**
- Older slang for *unlicensed female*, typically the wife of a **licensed** male **operator**

Y

Yagi antenna / Yagi-Uda antenna
: Type of **directional antenna** that consists of a **driven element** and one or more **parasitic elements**, such as a **reflector element** and one or more **director elements**, the lengths and spacings of which are dependent on transmitting **frequency**; see also Yagi antenna on Wiki



2 m Yagi antenna



Basic 'Yagi' antenna design

YHOTY
: *Young Ham of the Year* : annual award given to nominated **hams** age 18 or younger who have provided outstanding service to their nation, to their community, or to the betterment of the **craft** of **amateur radio**; see also the main YHOTY website

YL
: - *young lady* : *young and unmarried female*, sometimes *girlfriend*; see also **Morse code abbreviation** and an article on the alleged origin of YL
- Slang for *female ham radio operator*

YOTA
: *Youngsters on the Air* : social group of (mostly European) **ham** radio enthusiasts under 25 years old who plan and carry out activities centered around ham radio; see also the main YOTA website

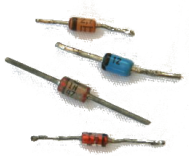
Z

Z
: Symbol for the electrical quantity of **impedance**

Z_0
: Symbol for the electrical quantity of **characteristic impedance**, which for most **amateur** radio equipment is 50 ohms

zed
: Alternate way of **speaking** the letter Z
: ***Roger**, you're **5 by 9** in Utah...thanks for calling and **7-3**...cue-are-zed*

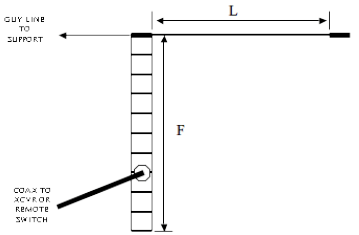
Zener diode
: Electronic **semiconductor** component that allows **current** to flow in only one direction through it like a silicon **diode**, but also allows current to flow in the opposite direction once the **voltage** across it reaches a specific value, known as the **breakdown voltage**; see also Zener diode on Wiki



Zener diodes

Zener diode symbol

Zepp antenna
: Short for ***Zeppelin***, **end-fed dipole antenna** of a half-wave horizontal **element** that attaches to the **feedline** through a quarter-wave vertical **radiating element** often constructed from **ladder line**



Zepp antenna diagram

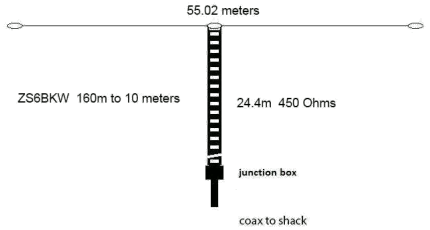
zero-beating
: Changing your transmit **frequency** to match the frequency of another **station**; most applicable in **CW**, to prevent your communication from occupying excessive **bandwidth**

zone
: See **CQ Zone**

zone of silence
: See **skip zone**

ZS6BKW antenna
: Adaptation of the **G5RV antenna**, but with somewhat improved **matching** characteristics on some **HF amateur bands**

ZS6BKW antenna



ZS6BKW antenna diagram

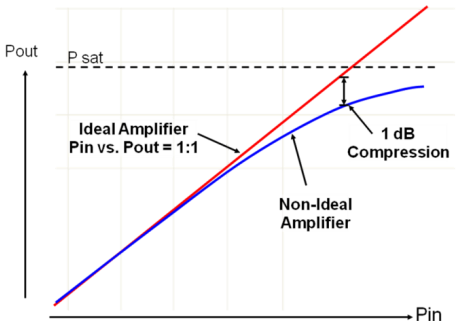
zulu time
: See **UTC**

Ø

Ø beating / 0 beating
: See **zero-beating**

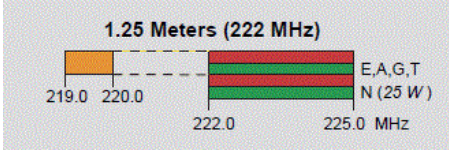
1

1 dB compression / -1 dB compression
: Quantity of input **power** to a **linear amplifier** that will result in a **gain compression** of -1 **dB** (also called *P1dB*, point at which the amplifier output power deviates by 1 dB, or about 20%, from perfectly linear)



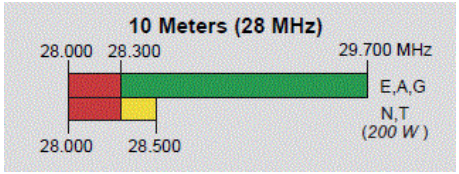
gain compression graph diagram showing the -1 dB compression point

1.25 meters
: **Amateur frequency band** from 219.000 to 220.000 MHz and 222.0 to 225.0 MHz; see also 1.25-meter band on Wiki



10 code
: Code word or number that represents a common word or phrase, and used primarily in **official** and **CB** communication, whose use is gradually being phased out, and is discouraged by the federal government (indeed, expressly forbidden within the Incident Command System) in favor of plain language; see also 10-code on Wiki

10 meters
: **Amateur frequency band** from 28.000 to 29.700 MHz, and the one perhaps most heavily affected by **sunspot** activity; see also 10-meter band on Wiki

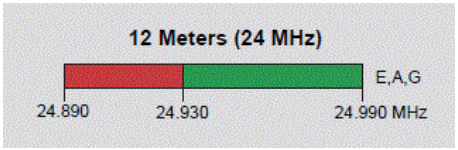


10 over 9
: Received signal that is 10 **dB** greater than **S9** on the **S meter**, which assumes a **readability** level of 5; see also S9 on Wiki

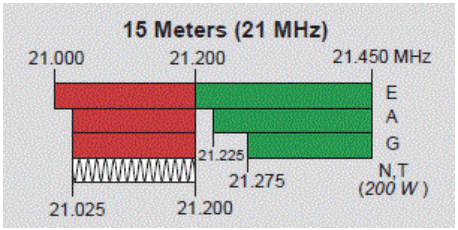
10-4
: **10 code** that means *I understand and acknowledge*, similar to **copy** and **roger**

11 meters
: Former **amateur frequency band** from 26.965 to 27.405 MHz, now assigned to **Citizens Band**; see also origins of CB on Wiki and a chart of assigned CB frequencies [PDF]

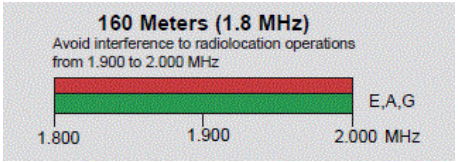
12 meters
: **Amateur frequency band** from 24.890 to 24.990 MHz; see also 12-meter band on Wiki



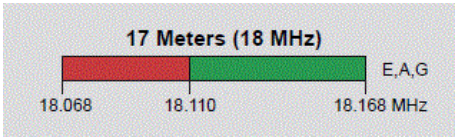
15 meters
: **Amateur frequency band** from 21.000 to 21.450 MHz; see also 15-meter band on Wiki



160 meters
: **Amateur frequency band** from 1.800 to 2.000 MHz; see also 160-meter band on Wiki



17 meters
: **Amateur frequency band** from 18.068 to 18.168 MHz; see also 17-meter band on Wiki

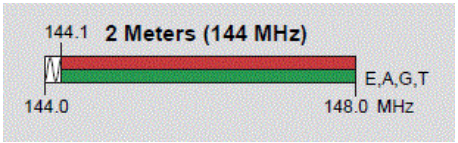


18650 battery, next to a AA battery for comparison

18650 battery
: Increasingly popular **Li-ion battery** known for high energy density (high-capacity and high-drain) and wide temperature tolerance, used in numerous applications, such as laptop computers, high-powered flashlights, and even electric vehicles; see also 18650 battery on Wiki

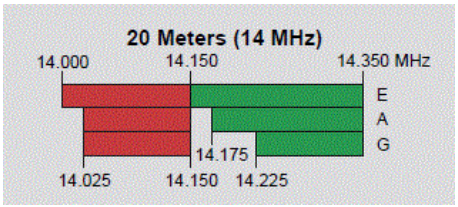
1x1
: Format of an American **special event call sign**

2

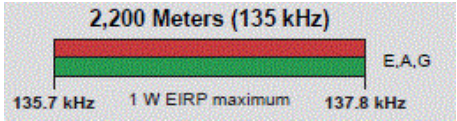


2 meters
: **Amateur frequency band** from 144.000 to 148.000 MHz; see also 2-meter band on Wiki

20
: CB slang and **10 code** abbreviation (short for *10-20*) for ***location***, similar to **QTH**
: *What's your 20?*

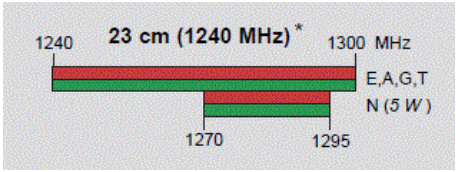


20 meters
: **Amateur frequency band** from 14.000 to 14.350 MHz; see also 20-meter band on Wiki



2200 meters
: **Amateur frequency band** (often called *600 meters*) from 135.7 kHz to 137.8 kHz, and whose transmissions are limited to 1 watt **EIRP**; see also 2200-meter band on Wiki

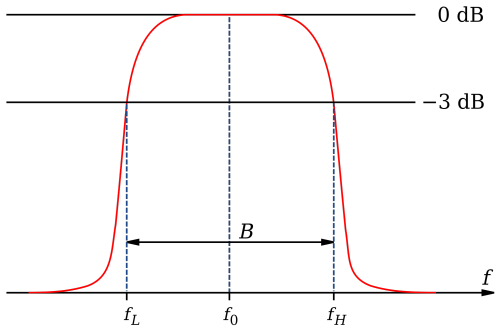
23 centimeters
: **Amateur frequency band** from 1240.000 to 1300.000 MHz; see also 23-cm band on Wiki



24-hour clock
: See **military time**

27
: Outdated radio code for ***priority*** or ***urgent***; see also 92 Code on Wiki

3

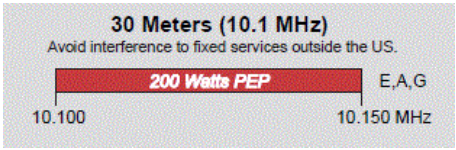


band-pass filter diagram showing the -3 dB bandwidth

3 dB bandwidth / -3 dB bandwidth
: **Bandwidth** of a **filter** defined by **frequencies** at which the output signal strength (**power** level) is half that of the input signal, so that the output signal is $10\log_{10}(1/2) \approx -3$ **dB** (or *3 dB down*); see also half-power point on Wiki

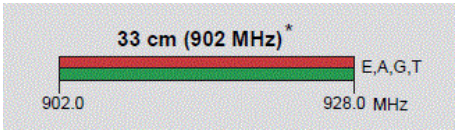
3-state logic / three-state logic
: See **tri-state logic**

30
: Outdated radio code for ***the end***; 92 Code on Wiki



30 meters
: **Amateur frequency band** from 10.100 to 10.150 MHz; see also 30-meter band on Wiki

33
: Outdated radio code for ***fondest regards***, typically used only between female **hams**; see also 92 Code on Wiki



33 centimeters
: **Amateur frequency band** from 902.000 to 928.000 MHz; see also 33-cm band on Wiki

3/8-24
: Common machine screw thread size (3/8 of an inch in diameter and 24 threads per inch) often used between a base and **element** pair of an **antenna mount** (sometimes called a *stud mount*)

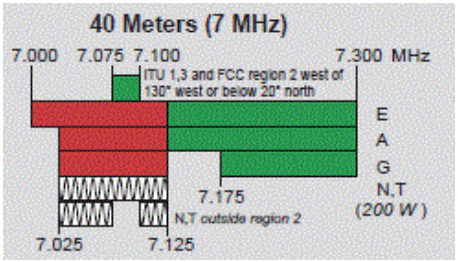

3/8-24 mount on a magnetic base


3/8-24 stud to SO-239

3OIP / 3IIP
See **third-order intercept point**

4

40 meters
Amateur frequency band from 7.000 to 7.300 MHz; see also 40-meter band on Wiki



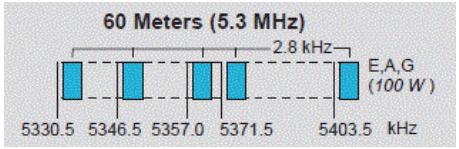
5

5 by 5 / 5-5 / five-five
Audio and **RF** signal report used primarily in non-**amateur radio** communication to indicate **loud and clear** (also *5 and 5*); see also five by five on Wiki
5 by 9 / 59 / 5-9 / five-nine
Audio and **RF** signal report using the **RST** system to indicate **loud and clear** (also *5 and 9*)
*You're 5 by 9 at my **QTH***
5 over 9
Received signal that is 5 **dB** greater than **S9** on the **S meter**, which assumes a **readability** level of 5; see also RST variations on Wiki

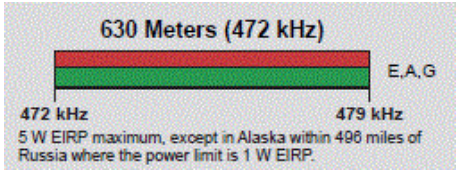
6

6 meters
Amateur frequency band from 50.000 to 54.000 MHz, and the one best suited to communicating via **meteor scatter**; see also 6-meter band on Wiki

60 meters
Amateur frequency band that uses five frequency **channels** centered at 5330.5, 5346.5, 5357.0, 5371.5, and 5403.5 kHz; see also 60-meter band on Wiki

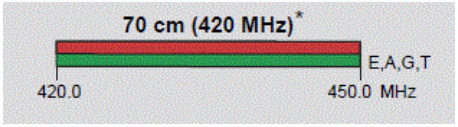


630 meters
Amateur frequency band (often called *600 meters*) from 472 kHz to 479 kHz, and whose transmissions are limited to 5 watts **EIRP**; see also 630-meter band on Wiki



7

70 centimeters
Amateur frequency band from 420.000 to 450.000 MHz; see also 70-cm band on Wiki

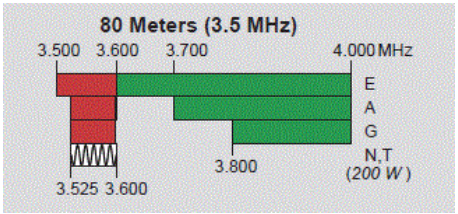


72-hour kit / 72-hour-kit
See **go-kit**
73 / 7-3
Radio code for ***best wishes*** or ***good luck***; see also 92 Code on Wiki and historical terms on ARRL

7-3, this is KNØJI

75 meters
: Outdated name for the **phone** portion (3.6 MHz to 4.0 MHz) of the **80 meter band**, and sometimes still used for such

8



80 meters
: **Amateur frequency band** from 3.500 to 4.000 MHz; see also 80-meter band on Wiki

800 MHz
: Non-**amateur frequency band** from 790 to 862 MHz, allocated for home security and control equipment and other short-ranged local-communication devices, but in recent years also allocated for migration by **official** radio services; see also 800 MHz Band on Wiki and the 800 MHz Directive

88 / 8-8
: Radio code for ***love and kisses*** or ***hugs and kisses***; see also 92 Code on Wiki

9

92 code
: Radio shorthand codes, most of which are outdated; see also 92 Code on Wiki

Questions? Ask Noji (KNØJI)

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(Version 1.0.5.2020-03-10 [GC 79:unknown])