

## Ham Radio Terminology and Notes

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A (Alpha)

A - Ampere - Unit of current measurement. Current is a measure of the electron flow through a circuit per unit of time.  $6.24 \times 10^{18}$  electrons moving past a point in one second, equals one ampere. Abbreviated as amps.

A Battery -- in early radio, batteries were the prime source of power - The A battery provided the filament voltage, the B-battery furnished the B+ or the Voltage to the plates of the tubes, and the C battery provided the grid-bias voltage for the tubes.

absorption - The reduction in a radio signal strength in the ionosphere.

AC - Alternating Current

access code - (Repeater Term) A code to activate a repeater function e.g. auto patch, link etc.. One or more numbers and/or symbols are keyed in with a telephone key pad and transmitted to the repeater.

A/D - Analog-to-Digital

Aerial - Used in the early days of radio - sometimes referring to an outdoor antenna. Still used in the UK.

AF - Audio Frequency 20 to 20,000 hertz, the human hearing range. Also abbreviation for Africa

AFC - Automatic frequency control. Used in FM receivers to prevent drift.

AFSK - Audio frequency shift keying (as opposed to frequency shift keying, FSK)

A-index - An index of the conditions of the Earth's magnetic field as measured at Boulder, Colorado. Propagation generally improves with lower measurement numbers. URL:Propagation

AGC - Automatic Gain Control. A feedback voltage in the receiver circuit to prevent fading

ALC - Automatic level control. A feedback voltage in the transmitter's output amplifier used to prevent amplifier overload. Also used as feedback from a linear amplifier back to the exciter to prevent overdriving.

alligator - A repeater that transmits further than it can receive, big mouth, small ears! Also used in reference to a repeater timer timeout. If you talk on the repeater too long, an internal timer will cut you off, and jargon for this is "The alligator got you!" Also in contesting circles to refer to a station (usually running high power and under noisy receive conditions) whose transmit signal is greater than their receive capability.

amateur- a person licensed to operate in the amateur bands.

amateur radio - A non-commercial radio service as set by a recognized cognizant government agency. In the USA, amateur radio is defined under part 97 of the FCC Rules and Regulations - See URL: Part 97

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amateur service: a radio communication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

ampere (A) : the basic unit of electrical current. Current is a measure of the electron flow through a circuit per unit of time.  $6.24 \times 10^{18}$  electrons moving past a point in one second, equals one ampere. Abbreviated as amps.

AM - Amplitude Modulation See URL: Modulation Modes

A.M.- ante meridian (before noon).

AMSAT - Radio Amateur Satellite Corporation - See URL: AMSAT

AMTOR - Amateur Teleprinter Over Radio. A version of RTTY. - See URL: AMTOR Also used commercially as SITOR (Simplex Teleprinter Over Radio).

ANARC - Association of North American Radio Clubs. See ANARC

antenna: a device that intercepts or radiates radio frequency energy.

antenna farm - Ham's dream -- lotsa room for big, long, antennas

antenna tuner: Impedance-matching device that matches the antenna system input impedance to the transmitter, receiver, or transceiver output impedance.

appliance operator : Hams who neither build nor experiment with radio equipment, but merely operate commercial equipment, perhaps without understanding how it all works.

APRS - Automatic Packet Position Reporting System - See URL: APRS

ARA - Amateur Radio Association

ARC - Amateur Radio Club. Military Designation for Avionics (Aviation Radio Composite)

ARES - Amateur Radio Emergency Service - See URL: ARES

ARRL - American Radio Relay League , the national amateur radio organization in the USA - See URL: ARRL

ARQ - Automatic repeat request used in AMTOR.

ASCII - American Standard Code for Information Interchange. The ASCII 7-bit code represents 128 characters including 32 control characters.

ASR - Automatic send-receive. An RTTY terminal mode that allows message composition while receiving text from the another station.

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ATT - Attenuator, often expressed in dB of reduction.

ATV - Amateur Television, also known as fast scan television - See URL: ATV

auroral propagation - Propagation above 30 MHz by means of refraction by highly ionized regions around the Earth's poles. See URL: Propagation

autopatch - (Repeater Term) a device that interfaces a repeater to the telephone system to permit repeater users to make telephone calls. Often just called a "patch."

AVC - Automatic Volume Control - A feedback scheme to level out the receiver audio volume.

AWG - American Wire Gauge - standard for describing the diameter of wire by which the wire size increases as the gauge number decreases.

### B (Bravo)

B - Battery -- in early radio, batteries were the prime source of power - The A battery provided the filament voltage, the B battery furnished the B+ or the Voltage to the plates of the tubes, and the C battery provided the grid-bias voltage to the tubes.

balanced line: A feed line with two conductors having equal but opposite voltages, with neither conductor at ground potential.

balanced modulator: a mixer circuit used in a single-sideband suppressed-carrier transmitter to combine a voice signal and the RF carrier. The balanced modulator isolates the input signals from each other and the output, so that only the sum and the difference of the two input signals reach the output. The original carrier signal and the audio signal are suppressed.

balun - balance to unbalance , a device used to couple a balanced antenna to an unbalanced feed line (e.g., dipole to coax)

band - a range of frequencies allotted for a particular use (e.g., 20 Meter Band) See Ham bands

bandpass - range of frequencies permitted to pass through a filter or receiver circuit.

band-pass filter: a circuit that passes a range of frequencies and attenuates signals above and below this range

base -- a radio station located at a fixed location as opposed to a mobile. Used to identify the control location in a network of radio stations.

barefoot - transmitting with a transceiver alone and no linear amplifier

base loading - A loading coil at the bottom of an antenna to achieve a lower resonant frequency.

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BAUD - The unit of digital-signal speed.

Baudot: a five-bit digital code used in teleprinter application.

BBC - British Broadcasting Corporation. See BBC

BBS - Bulletin Board System

BCI - Broadcast radio interference.

beam - an antenna that gives a directional beam pattern. See Yagi

beacon: A station that transmits one-way signals for the purpose of navigation, homing, and propagation condition determination. See URL: Beacons

Benton Harbor Lunch Box - A portable transceiver made by Heathkit Co. Band choices were 2, 6, or 10 meters - AM operation.

BFO - Beat frequency oscillator. Used to mix with the incoming signal to produce an audio tone for CW reception. A BFO is needed to copy CW and SSB signals.

Bird - nickname for satellite. Also a brand name of a high-end, high quality directional wattmeter.

birdie - Spurious signals produced in a receiver - usually a product of mixed intermediate frequencies within the radio.

bleed over- Interference caused by a station operating on an adjacent channel

bleeder resistor: a large-value resistor connected across the filter capacitor in a power supply to discharge the filter capacitors when the supply is turned off.

block diagram: a drawing using rectangles to represent major sections of electronic circuits. The diagram shows signal flow and the function of the sections.

BNC - Coax connector commonly used with VHF/UHF equipment -- Bayonet Niell-Concelman (standard connector type used on COAX cable, named for its inventors).\

BPL - BroadBand Over Power Lines

bps - Bits per second

BPSK - Binary Phase Shift Keying; digital DSB suppressed carrier modulation.

birdie: A false or spurious signal in a receiver inadvertently produced by the receiver's circuitry.

boat anchor - antique ham equipment -- So named because of weight and size. See BoatAnchors

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bootlegger - Someone, usually not a Ham but a wannabe, making up a callsign, one usually not in the callbook, and getting on the air. Sometimes it is someone who already bought a radio, took the test and flunked, and then gets on the air anyway.

bounce - reflections of a radio wave off of an object, (e.g., the ionosphere or the moon)

breadboard - Early experimenters used a wood board or bread board to lay out circuits. Now used to describe an experimental layout on whatever media -- like PC boards.

break - (Repeater Term) used to interrupt a conversation on a repeater to indicate that there is an emergency or urgent message. If non-urgent, simply interject your callsign.

break break (Repeater Term) used to intercede in an existing conversation with emergency communications.

broadcasting: transmissions intended for the general public. Broadcasting is prohibited on the Amateur Radio Bands, other than QST's which are of interest to all Amateur Stations, example W1AW code practice transmissions.

bug - a semi-automatic mechanical code key

bunny hunt - (see "fox hunt") See Fox Hunting

bureau - International Amateur organizations set up to process QSL cards between countries. Provides an inexpensive way to send and receive QSL cards - See URL: Bureaus

burro - International QSL forwarding bureau.

Busted Call -- An incorrectly logged callsign

C (Charlie)

C- Battery -- in early radio, batteries were the prime source of power - The A battery provided the filament voltage, the B battery furnished the B+ or Voltage to the plates of the tubes, and the C battery provided the grid-bias voltage to the tubes.

california kilowatt - a power setting above the legal limit

call book - a publication or CD ROM that lists licensed amateur radio operators See URL: CALLBOOK

calling frequency: A defacto standard frequency where stations attempt to contact each other. Example -- 146.52 is the USA National FM simplex calling frequency See Calling Frequencies

candy store -- ham term for the local Ham Radio Dealer. -- See Ham Stores

cans -- headphones

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cap - capacitor (formerly condenser)

CAP - Civil Air Patrol

capacitor: an electronic component composed of two or more conductive plates separated by an insulating material. A capacitor stores energy in an electric field.

carrier - a pure continuous radio emission at a fixed frequency, without modulation and without interruption. Several types of modulation can be applied to the carrier, See AM and FM. See URL: [Modulation Modes](#)

carrier-operated relay (COR) - (Repeater Term) circuitry that causes the repeater to transmit in response to a received signal.

CATV - Cable Television (originally Community Television)

CATVI - Cable Television Interface.

CBA - Callbook Address

CC&R's - Covenants, Conditions, and Restrictions - an extensive set of rules drawn up by homeowner's associations and their lawyers which, among other things, typically restrict or completely prohibit a homeowner from having most forms of antennas on their property.

CCW - Coherent CW

center frequency - The unmodulated carrier frequency of an FM transmitter.

center loading - A loading coil at the center of an antenna to achieve a lower resonant frequency

centi: the metric prefix for  $10^{-2}$ , or divide by 100.

channel - (Repeater Term) the pair of frequencies (input and output) used by a repeater.

chassis ground: the common connection for all parts of a circuit that connect to the negative side of the power supply.

chirp - Changes in the carrier frequency of a CW transmitter, resulting in a chirping sound

clear -- used to indicate a station is done transmitting

closed repeater - (Repeater Term) a repeater whose access is limited to a select group (see open repeater).

cloud warmer - an antenna which radiates most of the transmitted energy nearly straight up.

CMOS - Complementary-symmetry metal-oxide semiconductor.

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coax, coaxial cable A type of wire that consists of a center wire surrounded by insulation and then a grounded shield of braided wire. The shield minimizes electrical and radio frequency interference. 50-ohm and 72 ohm characteristic impedances are typical. See Coax Types

code - usually refers to Morse code, but used for others such as baudot.

coil: a conductor wound into a series of loops. See also inductor

color code: a system in which numerical values are assigned to various colors. Colored stripes are painted on the body of resistors and other components to show their value. See Color Code

condenser - Old term for capacitor - basic unit is farads, which is generally too large so usually expressed in microfarads or picofarads. An electronic component composed of two or more conductive plates separated by an insulating material. A capacitor stores energy in an electric field.

controller: (Repeater Term) the control system within a repeater -- usually includes turning the repeater on-off, timing transmissions, sending the identification signal, controlling the auto patch and CTCSS encoder/decoder.

control operator - (Repeater Term) the Amateur Radio operator designated to "control" the operation of the repeater, as required by FCC regulations.

copy -- indication of how well communications are received. "I have a good copy on you"

also used as a question, as in "did you copy" - understand all"

copying -- used to indicate one is monitoring as in "I was copying the mail" which means

I was listening in on the conversation

core: the material used in the center of an inductor coil, where magnetic fields is concentrated.

courtesy beep - (Repeater Term) an audible indication that a repeater user may go ahead and transmit, usually resets the timer

coverage - (Repeater Term) the geographic area that the repeater provides communications.

CPS - Cycles Per Second, this terminology was replaced by "Hertz" (see "Hertz")

CQ - calling any amateur radio station, may be sent in CW, phone or some digital modes

CR - Carriage return

critical angle - The angle at which a radio signal is refracted in the ionosphere. Lower angles generally result in greater distance transmissions.

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critical frequency: the highest frequency at which a vertically incident radio wave will return from the ionosphere. Above the critical frequency radio signals pass through the ionosphere instead of returning to Earth.

cross-band: the process of transmitting on one band and receiving on another.

CRT - Cathode-ray tube

crystal - a piezoelectric device that tends to resonate at a frequency dependent on its material, dimensions, and temperature

crystal filter - A network of piezoelectric crystals used to obtain high rejection of unwanted signals.

crystal oscillator: a device that uses a quartz crystal to keep the frequency of a transmitter constant.

CSCE - Certificate of Successful Completion of Examination (U.S.), a certificate certifying a person has successfully passed one or more of the amateur radio license examinations

CTCSS - (Repeater Term) abbreviation for continuous tone-controlled squelch system, a series of subaudible tones that some repeaters use to restrict access. See CTCSS Codes

current: a flow of electrons in an electrical circuit.

cutoff frequency - The frequency at which a filter will begin to reject signals.

CW - Continuous Wave, see carrier. In truth a continuous wave is an unmodulated, uninterrupted RF wave. However in common usage refers to Morse code emissions or messages which is an interrupted wave. See URL: Modulation Modes

cycles (cps) term used for measuring frequency prior to the term Hertz replaced it - hence kc, Mc, etc.

D (Delta)

dB - Decibel (1/10 of a Bel); unit for the ratio of two power measurements. - See URL: decibel

dBc - In terms of RF signals, dBc is Decibels relative to the carrier level.

dBd - Decibels above or below a dipole antenna.

dBi - Decibels above or below an isotropic antenna.

DC - Direct current

de -- Morse code for "from" e.g., AC6V de WA0PPP

deci: the metric prefix for  $10^{-1}$ , or divide by 10.

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delta-loop antenna: a variation of the cubical quad with triangular elements.

desense (desensitization): the reduction of receiver sensitivity due to overload from a nearby transmitter.

detector - the stage in a receiver in which the modulation (voice or other information) is recovered from the RF signal. Called a discriminator in FM

deviation - The change in the carrier frequency of a FM transmitter produced by the modulating signal.

deviation ratio - the ratio between the maximum change in RF-carrier frequency and the highest modulating frequency used in an FM transmitter. Also see modulation Index.

digipeater - A store-and-forward digital repeater which will receive and transmit a data packet on the same frequency.

dip meter - or grid dip meter -- a device used to determine the resonant frequency of an electronic circuit

diplexer - A frequency splitting and isolation device. Typically used to couple two transceivers to a single or dual band antenna , thus allowing one to receive on one transceiver and transmit on the other transceiver. Typical application 2M and 440MHz transceivers into a dual band antenna for satellite work. Thus typically an isolation device for use on 2 or more different bands.

dipole - the basic antenna consisting of a length of wire or tubing, open and fed at the center. The entire antenna is  $\frac{1}{2}$  wavelength long at the desired operating frequency. This antenna often used as a standard for calculating gain, dBd.

director - an element in front of the driven element in a Yagi or Quad and some other directional antennas.

doubling -- (Repeater Term) On a repeater if two stations transmit simultaneously, the signals mix in the repeater's receiver and results in a raspy signal. FM has a characteristic whereby the stronger signals "captures" and over-rides the weaker one.

downlink - Channel used for satellite-to-earth communications.

double-pole, double-throw (DPDT) switch - switches two different circuit lines to two different points.

double-pole, single-throw (DPST) switch - switches two different circuit lines on or off.

DPSK - Differential Phase Shift Keying; a form of BPSK where only data transitions are transmitted.

D-region - D-layer: The lowest region of the ionosphere found approximately 25 to 55 miles above Earth; it fades away quickly after sunset and sometimes does not form at all on short winter days. The main impact of the D-layer on radio propagation is to absorb energy from signals passing through it. -- See URL: Propagation

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driven element - antenna element that connects directly to the feed line.

dropping out - (Repeater Term) a repeater requires a minimum signal in order to transmit, when a signal does not have enough strength to keep the repeater transmitting, it "drops out"

DSP - Digital Signal Processing - allows for filtering, noise reduction, audio equalization, etc

DTMF - (Repeater Term) abbreviation for dual-tone multi-frequency, the series of tones generated from a keypad on a ham radio transceiver (or a regular telephone). Uses 2-of-7 or 2-of-8 tones; often referred to by Bell's trademark Touchtone. See DTMF Tones

dual-band antenna - antenna designed for use on two different Amateur Radio bands.

dummy load - a device which substitutes for an antenna during tests on a transmitter. It converts radio energy to heat instead of radiating energy. Offers a match to the transmitter output impedance.

Dupe - A duplicate contact -- As in Contesting

duplex - (Repeater Term) a communication mode in which a radio transmits on one frequency and receives on another (also see full duplex, half duplex, and simplex)

duplexer - (Repeater Term) a device used in repeater systems which allows a single antenna to transmit and receive simultaneously. Thus typically for isolation on a system on the same band.

DVM - Digital voltmeter

DX - (noun) distant station; (verb) to contact a distant station

DXer - An Amateur radio operator who actively pursues contacting distant and rare Amateur Radio stations. Also applied to Short Wave Listeners.

DXCC - Award offered by ARRL for contacting and confirming 100 or more different countries first introduced in 1937. DXCC is copyright ARRL and its use here is printed with permission of the ARRL. See DXCC

DXpedition - Radio expedition to remote and rare locations -- See Current DX Operations

dynamic range: How well a receiver can handle strong signals with overloading; any measure of over 100 decibels is considered excellent.

E (Echo)

earth ground - a circuit connection to a ground rod driven into the earth

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Echolink Uses a network protocol called VoIP (Voice over IP). This program allows worldwide connections to be made between stations, from computer to station, or from computer to computer. There are more than 96,000 registered users in 128 countries worldwide! URL: EchoLink

ECSSB - Exalted-carrier single sideband.

Edison Effect - Thomas A. Edison discovered the electron flow from a glowing cathode to an anode in an evacuated glass bulb and was called the 'Edison-effect' This led to the development of the vacuum tube.

EEPROM - Electrically-erasable programmable read-only memory

E-layer: The region of the ionosphere found approximately 55 to 90 miles above Earth; it fades away a few hours after sunset. The main impact of the E-layer on radio propagation is to absorb energy from signals passing through it, although sporadic-E propagation makes possible distant communications on frequencies above 30 MHz. See URL: Propagation

EHF - Extremely High Frequency (30 - 300 GHz)

EIRP - Effective isotropic radiated power.

elephant - a repeater that receives further than it can transmit, big ears, small mouth!

ELF - Extremely Low Frequency (30 - 300 Hz)

elmer - a mentor; an experienced operator who tutors newer operators See URL: ELMERS

eleven meters - currently the CB band, once a Ham band

EME - Earth-Moon-Earth; using the moon as a passive reflector to establish a signal path; moonbounce. - See URL: EME

EMF Electromotive force; voltage.

EMI - Electromagnetic interference.

emission mode - the form of a radio emission, such as AM, FM, or single sideband - See URL: Modulation Modes

EMP - Electromagnetic pulse; a extremely high-energy magnetic field. Such as the current flow caused by a lightning strike or nuclear explosion.

ERP - Effective Radiated Power

E-skip - Sporadic E-layer ionospheric propagation see URL: Propagation

ether - Old theory for the medium once believed to conduct radio waves. The existence of the ionosphere is first discovered by the English physicist, Appelton in 1924.

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Eu - Europe

eyeball - A face-to-face meeting between two ham radio operators.

F (Foxtrot)

FAA - Federal Aviation Administration (USA). See FAA

F-layer: The region of the ionosphere found approximately 90 to 400 miles above Earth and which is responsible for most long distance propagation on frequencies below 30 MHz. During the daytime (especially in summer), solar heating can cause the F-layer to split into two separate layers, the F1-layer and the F2-layer. See URL: Propagation

FAQ - Frequently Asked Questions

far field of an antenna - that region of the electromagnetic field surrounding an antenna where the field strength as a function of angle (the antenna pattern) is essentially independent of the distance from the antenna. In this region (also called the free-space region), the field has a predominantly plane-wave character. That is, locally uniform distributions of electric field strength and magnetic field strength are in a plane perpendicular to the direction of propagation.

Farnsworth - a method of sending Morse code characters. Example characters are sent at 13 words per minute but the spacing is adjusted so that the overall code speed is 5 words per minute.

fax - facsimile, a digital mode for transmitting images - See URL: Modulation Modes

FB - Fine Business, good, fine, OK

FCC - Federal Communications Commission, the governmental body in the U.S. which regulates the radio spectrum See URL: FCC

feedline - wire or cable connecting a radio to an antenna

FET - Field-effect transistor

field day - Amateur Radio activity in June to practice emergency communications.

field strength meter - a test instrument used to show the presence of RF energy and the relative strength of the RF field.

filter - A circuit or device that will allow certain frequencies to pass while rejecting others.

final - The last transmission by a station during a contact. Also the last amplifying stage of a radio transmitter.

fire bottle - any electronic vacuum tube

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first personal - first name - CB jargon that has crept into Ham jargon - old timers shudder

fist - early spark transmitters showered the operator with sparks - so Marconi's key lever was lengthened and the padded end was beaten with the 'fist' of the operator to send dots and dashes. Also a CW ops' reference to another ops' keying characteristic

F.I.S.T.S. - An organization of CW enthusiasts. See FISTS

flat topping -- overmodulating so as to distort a waveform

flutter - Rapid variation in the signal strength of a station, usually due to propagation variations.

FM - Frequency Modulation - See URL: Modulation Modes

FOC - First Class CW Operators Club -- See FOC

fox hunt - a contest to locate a hidden transmitter - See URL: FOXHUNT

frequency - the rate of oscillation (vibration). Audio and radio wave frequencies are measured in Hertz. (cycles per second)

frequency coordinator - (Repeater Term) an individual or group responsible for assigning frequencies to new repeaters without causing interference to existing repeaters

FSK Frequency-shift keying. Modulating the transmitter by using the RTTY data signal to shift the carrier frequency. Mark and Space. See URL: Modulation Modes

FSTV - Fast-Scan TV. Same as commercial broadcast TV.

full-break in (QSK) - allows a station to break into the communication without waiting for the transmitting station to finish.

full duplex - a communications mode in which a radios can transmit and receive at the same time by using two different frequencies (see "duplex" and half duplex)

full gallon - (see gallon)

full quieting -- (Repeater Term) a phenomenon on FM transmissions where the incoming signal is sufficient to engage the receiver limiters - thus eliminating the noise due to amplitude fluctuations.

full-wave bridge rectifier - a full-wave rectifier circuit that uses four diodes and does not require a center-tapped transformer. Converts AC to DC

full-wave rectifier - a circuit basically composed of two half-wave rectifiers. The full wave rectifier allows the full ac waveform to pass through; one half of the cycle is reversed in polarity. This circuit requires a center-tapped transformer. Converts AC to DC

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fuse - a thin metal strip mounted in a holder. When excessive current passes through the fuse, the metal strip melts and opens and protects the circuit. Fuses are rated in amperes and voltage and time to activate - fast blow or slow blow.

G (Golf)

gallon - slang for transmitter output power -- legally either 1000 watts CW or 1500 watts PEP

GaAs -- Gallium arsenide; used in high-speed semiconductors.

gain, antenna - an increase in the effective power radiated by an antenna in a certain desired direction, or an increase in received signal strength from a certain direction. This is at the expense of power radiated in, or signal strength received from, other directions.

GCR - General Certification Rule. Most award sponsors allow GCR in lieu of actually wanting to see your cards. You need to have the cards! GCR usually means getting the signatures of two witnesses who certify that you possess the cards and that the information you state on the application is correct.

GHz - gigahertz - billion (1,000,000,000) hertz (see Hertz)

giga - the metric prefix for  $10^9$  or times 1,000,000,000.

GMRS - General Mobile Radio Service.

GOTA - Get on the Air -- A category in the annual ARRL Field Day event. The GOTA station may be operated by Novice, Technicians or generally inactive hams under their existing operating privileges, or under the direction of a Control Operator with appropriate privileges, as necessary. Non-licensed persons may participate under the direct supervision of an appropriate control operator. See URL: ARRL FIELD DAY

GPS - Global Positioning System -- See GPS

gray line - a band around the Earth that separates daylight from darkness. It is a transition region between day and night. One of the many types of propagation paths.

great circle route - The shortest path by radio between any two points on Earth.

green stamp - U.S. dollar bill sent along with a QSL card (instead of an IRC) to offset postage costs of a return card.

grid dip meter -- Test Equipment that causes a meter decrease (dip) when near resonant circuits

ground - Common zero-voltage reference point.

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ground-plane antenna - a vertical antenna built with the central radiating element one-quarter-wavelength long and several radials extending horizontally from the base. The radials are slightly longer than one-quarter wave, and may droop toward the ground.

ground wave propagation - radio waves that travel along the surface of the earth, even beyond the horizon. See URL: Propagation

H (Hotel)

half duplex - (Repeater Term) a communications mode in which a radio transmits and receives on two different frequencies but performs only one of these operations at any given time (see "duplex" and "full duplex")

half-wave dipole - the basic antenna consisting of a length of wire or tubing, open and fed at the center. The entire antenna is  $\frac{1}{2}$  wavelength long at the desired operating frequency.

half-wave rectifier - a circuit that allows only half of the applied ac waveform to pass through it.

hand-held - (Repeater Term) a small, lightweight portable transceiver small enough to be carried easily; also called HT (for Handie-Talkie, a Motorola trademark).

hang time - (Repeater Term) the short period following a transmission that allows others who want to access the repeater a chance to do so; a courtesy beep sounds when the repeater is ready to accept another transmission.

ham - an amateur radio operator. See Origins

hamfest - ham festival, a social and commercial event at which hams meet to buy, sell, and swap equipment - See URL: HamFests

handle - A radio operator's name. Kinda unnecessary -- just say the name is. But lotsa old timers use handle.

harmonic - a signal at a multiple of the fundamental frequency. Also a slang term for the children of an Amateur.

HDTV - High Definition Television

HDX - Half-duplex. A communication system in which stations take turns transmitting and receiving.

Hertz - the standard unit used to measure frequency (one Hertz equals one complete cycle per second)

HF - High Frequency - 3 MHz to 30 MHz

hi hi - ha ha (laughter)

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"hi hi" is the Morse equivalent of a laugh as in Morse it sounds like someone chuckling ("hehhehhehheh hehheh"). That is ditditditdit dit dit --- or dot dot dot dot dot dot. You really have to listen to it sent in Morse to appreciate its laugh like sound. It is most commonly used in CW (Morse Code), but has carried over to voice as well. Many CW expressions have carried over to voice -- such as 73 (Best Regards) and 88 (love and Kisses), etc. The origin probably dates back before radio to the telegraph days. And since Hams used Morse long before voice became practical-- the sound of the Morse characters HI HI was used to resemble a laugh sound. In some sense it is equivalent of a smiley. It's onomatopoeic -- that is the naming of a thing or action by a vocal imitation of the sound associated with it (as buzz, hiss) The definitive answer might be found in the "Dodge's The Telegraph Instructor Manual" circa 1850 to 1900. However, I have never been able to find a copy of this document. Wish I could as it would help to see the transitions from telegraph to radio usage. So that is my best guess -- based on what old time telegraphers have told me

high-pass filter - a filter designed to pass high frequency signals, while blocking lower frequency signals.

homebrew - term for home-built, noncommercial radio equipment.

hop - communication between stations by reflecting the radio waves off of the ionosphere.

horizontally polarized wave - an electromagnetic wave with its electric lines of force parallel to the ground.

HT - (Repeater Term) Handi-Talkie - a small hand held radio

Hz - (see Hertz)

I (India)

I (intensity) symbol for current in an electric circuit, measured in Amperes

IARU - International Amateur Radio Union - worldwide ham radio organization whose members consist of the official radio society from each participating country. See IARU

IC - Integrated circuit.

ID -- Identification, as announcing station callsign at intervals specified by Part 97 of the FCC Rules and Regulations.

IF - Intermediate Frequency -- Intermediate frequency, resultant frequency from heterodyning the carrier frequency with an oscillator, mixing incoming signals to an intermediate frequency enhances amplification, filtering and the processing signals. Desirable to have more than one IF.

image - A false signal produced in a superheterdyne receiver's circuitry.

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impedance: The opposition to the flow of electric current and radio energy; it is measured in ohms (symbol is Z). For best performance, the impedance of an antenna, the feedline, and the antenna connector on a radio should be approximately equal.

inductance - a measure of the ability of a coil to store energy in a magnetic field.

inductor - an electrical component usually composed of a coil of wire wound on a central core. An inductor stores energy in a magnetic field.

input frequency - (Repeater Term) the frequency of the repeater's receiver (and your transceiver's transmitter).

intermod - Short for "intermodulation," this means false or spurious signals produced by two or more signals mixing in a receiver or repeater station.

intermodulation distortion (IMD -- (Repeater Term) the unwanted mixing of two strong RIF signals that causes a signal to be transmitted on an unintended frequency.

I/O - Input/Output

ionosphere - The electrically charged region of the Earth's atmosphere located approximately 40 to 400 miles above the Earth's surface that refracts radio signals.

IOTA - Islands On The Air - See URL: IOTA

IRC - International Reply Coupon: A coupon that can be purchased at post offices which can be exchanged in foreign countries for return postage for a surface mail letter to the country that issued the coupon. See IRC's

IRLP Radio Linking Project. Uses a network protocol called VoIP (Voice over IP). There are now nearly 800+ repeaters around the world connected by the internet through the Amateur radio internet radio linking project, 24 hours per day, 7 days a week. URL: IRLP

isotropic - Theoretical "Single Point" antenna used calculate gain.

ITU - International Telecommunications Union, the body which specifies worldwide guidelines concerning the use of the electromagnetic spectrum for communications purposes. See ITU

J (Juliet)

J antenna (J pole) - a mechanically modified version of the zepp (zeppelin) antenna. It consists of a half-wavelength radiator fed by a quarter-wave matching stub. This antenna does not require the ground plane that  $\frac{1}{4}$ -wave antennas do to work properly.

jam - cause intentional interference

## Ham Radio Terminology and Notes

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JFET - Junction field-effect transistor.

JOTA - Jamboree on the Air -- an annual event in which about 500,000 Scouts and Guides all over the world make contact with each other by means of amateur radio. See URL: ARRL JOTA

jug -- Large transmitting tubes, klystrons, magnetrons

jury rig -- Fix in an unorthodox manner

K (Kilo)

kc - (see "kilocycles")

kilo - the metric prefix for  $10^3$ , or times 1,000

K- index - A measure of the Earth's magnetic field as measured at Boulder, Colorado. Propagation conditions improve with lower measurement numbers. See URL: Propagation

kerchunking - activating a repeater without identifying or modulating the carrier.

key - (noun) any switch or button, usually refers to a telegraph or Morse code key

key - (verb) to press a key or button

keyer - Electronic device for sending Morse Code semi-automatically; connects to a key (see above). Dits are sent by pressing one paddle of the key, dahs sent by pressing the other one paddle.

key up - (Repeater Term) to turn on a repeater by transmitting on its input frequency.

key up - (verb) to activate a transmitter or repeater

kilocycles - thousand cycles per second. Replaced by kiloHertz (kHz)

kilohertz - one thousand hertz (see "hertz")

L (Lima)

ladder line -- an open wire transmission line -- 600, 450 ohm characteristic impedances are typical.

landline -- ham slang for telephone (lines)

LCD - Liquid Crystal Display

LED - Light-emitting diode

LF - Low Frequency - 30 kHz to 300 kHz

## Ham Radio Terminology and Notes

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lid - a poor operator, one who does not follow proper procedures or sends sloppy morse code.

limiter - (Repeater Term) a stage of an FM receiver that clips the tops of the FM signal thus makes the receiver less sensitive to amplitude variations and pulse noise.

linear - an amplifier used after the transceiver output. So named for its purity of amplification. Linear, in the mathematical sense, means that what comes out is directly proportional to what goes in. As far as linear amps go, if you double the input, the output is doubled and so on. This does not generate any additional frequency byproducts. If the amp is nonlinear, sums, differences and all combinations of those are generated also.

line-of-sight propagation - the term used to describe propagation in a straight line directly from one station to another.

load - an electrical device which consumes, converts, or emanates energy

local oscillator (LO) - a receiver circuit that generates a stable, pure signal used to mix with the received RF to produce a signal at the receiver intermediate frequency (IF).

long path - short path -- in degrees - the direct great signal bearing path between two locations. Long path is the reciprocal bearing.

lollipop - ham term for an Astatic D-104 microphone

LORAN - Long Range Aid to Navigation.

lowfer - One who experiments at very low frequencies (typically 1750 Meters, which is 160-190 kHz and can be used under FCC Part 15).

low-pass filter - a filter that allows signals below the cutoff frequency to pass through and attenuates signals above the cutoff frequency.

LSB - Lower Side Band - See URL: Modulation Modes - the common single-sideband operating mode on the 40, 80, and 160 meter amateur bands.

LW - Long Wave 150 - 300 KHz

M (Mike)

mA milliampere (1/1,000 ampere)

machine - a repeater

magnetic mount or mag-mount - (Repeater Term) an antenna with a magnetic base that permits quick installation and removal from a motor vehicle or other metal surface.

## Ham Radio Terminology and Notes

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mA/h - milliampere per hour

making the trip -- jargon for "successfully transmitting a readable message"

MARS - Military Affiliate Radio System, military affiliated amateurs who provide free communications for overseas GIs and other Federal services. MARS operators are licensed under DOD. Established 1948.

matchbox - Normally called an Antenna Tuner. Impedance-matching device that matches the antenna system input impedance to the transmitter, receiver, or transceiver output impedance.

MC - (see megacycles)

MCW - Modulated Continuous Wave, a fixed audio tone modulates a carrier, older method of sending Morse code - See URL: Modulation Modes

mega - the metric prefix for  $10^6$ , or times 1,000,000.

megacycles - million cycles per second. This terminology has been replaced by MegaHertz (MHz)

megahertz - million hertz (see Hertz)

meteor scatter - ionized trails of meteors used as a reflecting media See URL: Propagation

MF - Medium Frequency - (300-3,000 kHz)

mic (mike) - microphone - a device that converts sound waves into electrical energy.

micro - the metric prefix for  $10^{-6}$ , or divide by 1,000,000.

microwave - the region of the radio spectrum above 1 giga hertz (GHz).

mil 1/1000 of an inch. Also mill a special typewriter used by radio operators in copying messages

milli - the metric prefix for  $10^{-3}$ , or divide by 1,000.

mixer - a circuit that takes two or more input signals, and produces an output that includes the sum and difference of those signal frequencies.

mW - milliwatt (1/1,000 watt)

mobile - an amateur radio station installed in a vehicle - a mobile station can be used while in MOTION. A portable station is one that is designed to be easily moved from place to place but can only be used while stopped.

mode - (see emission mode)

modem - short for modulator/demodulator. A modem modulates a radio signal to transmit data and demodulates a receive signal to recover transmitted data.

## Ham Radio Terminology and Notes

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modulate - create a radio emission so that it contains information (voice, Morse code, music, binary, ascii)- See URL: Modulation Modes

modulation Index - (Repeater Term) the ratio between the maximum carrier frequency deviation and the audio modulating frequency at a given instant in an FM transmitter.

MOSFET - Metal-oxide-semiconductor-field-effect transistor

motorboating -- an undesirable low frequency feedback resulting in a motorboat sound on the audio

MUF - Maximum Usable Frequency, a measure of the highest frequency that will support transmissions off of the ionosphere.

multimode transceiver - transceiver capable of SSB, CW, AM, and FM operation.

mV - millivolt (1/1,000 volt)

MW - Medium Wave - 300 - 3000 kHz. Also used for the AM broadcast band - 530-1710 kHz

N (November)

NB - Narrow band. Also noise Blanker

NBFM - narrow band FM

NCS - Net Control Station

near field of an antenna - the region of the electromagnetic field immediately surrounding an antenna where the reactive field dominates and where the field strength as a function of angle (antenna pattern) depends upon the distance from the antenna. It is a region in which the electric and magnetic fields do not have a substantial plane-wave character, but vary considerably from point-to-point.

negative - no, incorrect

negative copy - unsuccessful transmission

negative feedback - the process in which a portion of the amplifier output is returned to the input, 180 degrees out of phase with the input signal. Improves linearity and reduces distortion.

negative offset - the repeater input frequency is lower than the output frequency.

net - A group of stations that meet on a specified frequency at a certain time. The net is organized and directed by a net control station, who calls the net to order, recognizes stations entering and leaving the net, and authorizes stations to transmit.

## Ham Radio Terminology and Notes

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NiCad - Nickel Cadmium, generally refers to a type of rechargeable battery

nickels -- used on DX nets as a signal report 5x5

NiMH - Nickel Metal Hydride, generally refers to a newer type of rechargeable battery

NODE - A remotely controlled TNC/digipeater - used as a connect point in packet radio.

NPN - A type of transistor that has a layer of P-type semiconductor material sandwiched between layers of N-type

semiconductor material.

NTS - National Traffic System - an amateur radio relay system for passing messages.

NTSC - National Television System Committee (NOT National Television Standards Committee) - USA and others TV Standards.

NVIS - near-vertical-incidence-skywave, a propagation mode where signals are reflected back down from directly overhead. Useful for relatively short-distances, overcoming the limitations of the usual "skip-zone" distance" (See Skip Zone)

O (Oscar)

OC - Oceania

odd split - unconventional frequency separation between input and output frequencies.

offset - (Repeater Term) In order to listen and transmit at the same time, repeaters use two different frequencies. On the 2 metre ham band these frequencies are 600 kilocycles/second (or 600 kilohertz) apart. As a general rule, if the output frequency (transmit) of the repeater is below 147 Mhz then the input frequency (listening) is 600 kilohertz lower. This is referred to as a negative offset. If the output is above 147 Mhz then the input is 600 kilohertz above. This is referred to as a positive offset.

Ohm - The fundamental unit of resistance. one Ohm is the resistance offered when a potential of one Volt results in a current of one Ampere.

old man (OM) - friendship term, friend, pal or buddy

OM - (see old man)

OO - Official Observer volunteer who monitors the Amateur Bands for infractions

open repeater - (Repeater Term) a repeater whose access is not limited.

OSCAR - Orbiting Satellite Carrying Amateur Radio.

## Ham Radio Terminology and Notes

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oscillate - vibrate, generate an AC or other periodic signal

oscilloscope - an electronic test instrument used to observe wave forms and voltages on a cathode-ray tube. Displays time on the X-axis and amplitude on the Y-axis, Z-axis is intensity of the CRT spot.

OT - old timer - been around ham radio for a long time

OTC - Old Timer's Club

OTS - Official Traffic Station

output frequency - (Repeater Term) the frequency of the repeater's transmitter (and your transceiver's receiver).

over - used during a two way communication under difficult copy - to alert the other station that you are returning the communication back to them. Other terms are Cambio (change), microphone to you, and in CW the letter K is used as an invitation to transmit. Not necessary on 2 Meter FM repeaters, as the courtesy beep serves this function.

P (Papa)

P-P Peak-to-peak; as in peak-to-peak voltage

PA - Power amplifier

packet cluster - A Network of automated packet radio stations for disseminating DX and contest reports

packet radio - a system of digital communication whereby information is transmitted in short bursts. The bursts ("packets") also contain callsign, addressing and error detection information.

paddle - Morse code key

PAL - Phase Alteration Line. Television standard used in parts of Europe.

parallel circuit - an electrical circuit in which the electrons follow thru more than one path in going from the negative supply terminal to the positive terminal.

parallel-conductor feed line - feed line constructed of two wires held at a constant distance apart; either incased in plastic or constructed with insulating spacers placed at intervals along the line.

parasitic beam antenna - another name for the beam antenna.

parasitic element - part of a directive antenna that derives energy from mutual coupling with the driven element. Parasitic elements are not connected directly to the feed line.

## Ham Radio Terminology and Notes

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parasitic - Oscillations in a transmitter on frequencies other than the desired one; these can produce spurious signals from the transmitter.

path noise - (Repeater Term) A term used in repeaters to indicate that the signal is so weak that the limiters have not engaged thus noise on the signal will be heard -- this is referred to as path noise and sometimes as (incorrectly) White Noise (See Same)

PBBS - Packet Bulletin Board System

PC - Printed Circuit

PCM - pulse code modulation based on the Shannon's communication theory or "information theory" that describes his "sampling theorem"

PEP - Peak envelope power - the average power of a signal at its largest amplitude peak.

peak-inverse-voltage (PIV) - the maximum voltage a diode can withstand when it is reverse biased (not conducting).

personal - first name - as in "the personal here is Bob" -- CB jargon that has crept into Ham jargon - old timers shudder

phase - the time interval between one event and another in a regularly recurring cycle.

phase modulation - varying the phase of an RF carrier in response to the instantaneous changes in an audio signal.

phone - voice modulation - See URL: Modulation Modes

phone patch - A connection between a two-way radio unit and the public telephone system.

PIC - PIC is a family of Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC1640 originally developed by General Instrument's Microelectronics Division. The name PIC initially referred to "Programmable Interface Controller".

picket fencing - (Repeater Term) A condition experienced on VHF and above where a signal rapidly fluctuates in amplitude causing a sound akin to rubbing a stick on a picket fence. If a repeater user's signal isn't strong enough to maintain solid access to the machine's input (such as when operating from a vehicle passing beneath underpasses or through hilly terrain), the signal would be hard to copy because of a pronounced, rapid fluttery or choppy characteristic.

pico - the metric prefix for  $10^{-12}$ , or divide by 1,000,000,000,000.

## Ham Radio Terminology and Notes

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pileup - multiple stations calling a DX or contest station

PIN Positive-intrinsic-negative (transistor or diode)

ping jockey - Slang for meteor-scatter operator

pirate - Station using an existing callsign and illegally operating on the air

PL - (Repeater Term) Private Line (same as CTCSS)-- low frequency audio tones used to alert or control receiving stations. PL, an acronym for Private Line, is Motorola's proprietary name for a communications industry signaling scheme call the Continuous Tone Coded Squelch System, or CTCSS. It is used to prevent a repeater from responding to unwanted signals or interference. Tone is an electronic means of allowing a repeater to respond only to stations that encode or send the proper tone. Any station may be set up to transmit this unique low frequency tone that allows the repeater to operate. Also used during the AutoPatch mode. See PL

PLL- Phase-lock loop

PM - Phase Modulation, similar to Frequency Modulation - See URL: Modulation Modes

P.M. - Post Meridian (after noon).

PNP - a type of transistor that has a layer of N-type semiconductor sandwiched between layers of P-type semiconductor material.

pole-pig - another name for a step down transformer used by power transmission companies. Some surplus units can be reverse wired and used as the transformers in a Ham radio high voltage supplies.

portable - A mobile is a amateur radio station installed in a vehicle - a mobile station can be used while in MOTION. A portable station is one that is designed to be easily moved from place to place but can only be used while stopped. Portable operation is away from the home base station.

positive offset - (Repeater Term) the repeater input frequency is higher than the output frequency.

pot - Potentiometer - Continuously variable resistor often used for adjusting levels, as in volume control.

PRB - Private Radio Bureau, administers Amateur services

product detector - A receiver circuit consisting of a beat frequency oscillator and additional circuitry for enhanced reception of SSB signals.

PROM Programmable read-only memory

propagation - the means or path by which a radio signal travels from a transmitting station to a receiving station - See URL Propagation

PSK31 - A digital transmission mode -- Phase Shift keying with low rate 31.25 baud rate - See PSK31

## Ham Radio Terminology and Notes

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PTO Permeability tuned oscillator

PTT - Push To Talk, the switch in a transmitter circuit that activates the microphone and transmission circuitry

pull the plug -- shut down the station

Q (Quebec)

Note that many Hams use Q-Signals verbally, but they originated in CW communications, QTH is "my Location", "QSY is change frequency", etc -- See Q-Signals

Q - A figure of merit for tuned circuits. For antennas, the Q is inversely proportional to useable bandwidth, with reasonable SWR.

quad - A directional antenna consisting of two one-wavelength "squares" of wire placed a quarter-wavelength apart.

Q-signals - a set of three-letter codes which are used by amateurs as abbreviations. Commonly used on both CW and phone. See URL: Q-Signals

QCWA - Quarter Century Wireless Association -- requires 25 years of amateur service for membership.

QRP - Low power operation, usually 5 watts output or 10 watts input power. See QRP operation

QSL - to acknowledge receipt. Commonly used to indicate "I understand", "I copied your transmission (or report) all OK". Also used as a term for sending cards by mail to confirm a two way contact with a station, such as QSL via the bureau. (See BURRO or bureau). See URL: QSLing

QSL Manager - A person, usually an Amateur Radio operator, who manages the receiving and sending of QSL cards for a managed station). A QSL Manager is needed because the managed station either has difficulty handling the volume of incoming QSL cards, or the station is geographically located such that it is difficult or impossible for that station to accept and/or send QSL cards. It is very common for "rare" DX stations and DXpeditions to have a QSL Manager.

QSO - two way conversation

Quagi -- an antenna constructed with both quad and yagi elements

R (Romeo)

RADAR - Radio detection and ranging.

RAC - Radio Amateurs of Canada, a national amateur radio organization in Canada - See leagues

## Ham Radio Terminology and Notes

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RACES - Radio Amateur Civil Emergency Service - See Emergency Pages

radio check - query from a station desiring a report on his stations signal strength and audio quality

ragchewing - chatting informally via radio

RAM - Random Access Memory

R/C - Radio-control

RCC Rag Chewers Club

rcvr - receiver

RDF - Radio Direction Finding

reactance - the opposition to current that a capacitor or inductor creates in an ac circuit.

reading the mail - to listen to a QSO without participating

reflector - (1.an element behind the driven element in an Yagi and some other directional antennas. (2. IRLP Reflector -- a server that allows multiple nodes (repeaters) to be linked together at the same time. (3. a mail list that forwards news to the subscribers, e.g., DX Reflector, Contest Reflector.

refract - to bend. Electromagnetic energy is refracted when it passes through a boundary between different types of material much as light is refracted as it travels from air into water or from water into air.

repeater - A repeater is a receiver/transmitter that listens for your transmission and re-transmits it. Repeaters usually enjoy the advantage of height and power to extend the range of your transmission. Repeaters listen on one frequency and transmit on another. The separation between these two frequencies is referred to as the Offset. See Repeater Operation

repeater directory - an annual ARRL publication that lists repeaters in the US, Canada and other areas. See ARRL Repeater Directory

resonance - A condition where  $X_c = X_L$ , establishing a resonant circuit - used for selectivity (parallel circuit) or a maximum impedance circuit (series)

reset applies to when a repeater timer is reset back to zero and normally occurs when the carrier of the transmitter drops.

## Ham Radio Terminology and Notes

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Rettysnitch - A fictional torture device for bad hams.

RF - Radio Frequency, emissions in the radio portion of the electromagnetic spectrum

RFI - Radio Frequency Interference

RG - As in RG-8 Coax -- RG = (1) Radio Guide or (2) Radio Group as opposed to Electrical Group or Telephone Group

rice box - equipment made in Japan or the Orient

rig - a radio (transmitter, receiver, or transceiver)

RIT - Receiver incremental tuning. Also known as a Clarifier

RMS - Root mean square

roger -- I understand - Received 100% In CW "R" -- See Origins

roger beep - a dit-dah-dit sent at the end of a transmission

ROM - Read-only memory

rotor - (see "rotator")

rotator - a device attached to an antenna mast which rotates it so that the antenna can point in different directions. Years ago this device was simply called a "rotor"

Rover - A station that operates from several grid squares or counties during a contest

RS-232 Computer interface standard set by the Electronics Industries Association (EIA).

RST - "Readability, Signal, and Tone", a three-digit report indicating how well an operator's emissions are being received. See RST System

RTMA - Radio Television Manufacturers Association.

RTTY - radio teletype - A form of digital communications.

rubber duck - A shortened flexible antenna used with hand-held scanners and transceivers.

rx - receiver, receive

S (Sierra)

SAREX - Shuttle Amateur Radio EXperiment, communicating with astronauts in space. See SAREX

SASE - Self-addressed, stamped envelope

## Ham Radio Terminology and Notes

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SEC - Section Emergency Coordinator

SECAM Séquentiel Couleur Avec Mémoire (French Color TV Standard)

selectivity - Ability of a receiver to reject signals adjacent to tuned signal.

sensitivity - A receivers ability to receive weak signals.

separation or split the difference (in kHz) between a repeater's transmitter and receiver frequencies. Repeaters that use unusual separations, such as 1 MHz on 2 m, are sometimes said to have "oddball splits."

series circuit - an electrical circuit in which all the electrons must flow through every part of the circuit. There is only one path for the electrons to flow.

SFI - Solar Flux Index - See Propagation

shack - Ham station operating area

SHF - Super High Frequency 3 - 30 GHz

short path -- in degrees - the direct great signal bearing path between two locations. Long path is the reciprocal bearing.

signal - a radio emission

silent key - a deceased amateur operator

simplex - a communications mode in which a radio transmits and receives on the same frequency

SINAD - Signal to noise and distortion ratio

single-pole, double-throw (SPDT) switch : a switch that connects one center contact to one of two other contacts.

single-pole, single-throw (SPST) switch : a switch that only connects one center contact to another contact.

SINPO - A reporting system used by radio hobbyists to indicate how well a station was received:

S=Strength, I=Interference, N=Noise, P=Propagation, O=Overall

SITOR-A - Simplex teleprinting over radio system, mode A

SITOR-B - Simplex teleprinting over radio system, mode B (FEC mode)

SK - Silent Key, an amateur term for indicating that a ham has passed away. Also one of the prosigns -- meaning "end of contact", See prosigns at URL: Prosigns

skip zone - dead zone, too far for ground wave propagation and too near for sky wave propagation

## Ham Radio Terminology and Notes

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skyhook - antenna

sky wave propagation - the transmitting of radio waves which reflect off of the ionosphere - See Propagation

slim - Someone pretending to be a DX station, usually rare, that is supposed to be on the air. For example, someone in southern Argentina pretending to be on Heard Island

slop jar - an electrolytic rectifier - electrolytic rectifiers were common in the late '20s and early 30s. One "cell" consisted of two strips of dissimilar metals in a caustic potash (lye) solution. Many cells were needed for a high voltage supply.

SM - Section Manager

S-Meter - Signal Strength Meter -- See S-Units at URL: S-Units

S/N - Signal-to-noise ratio

spark gap - an early transmitter design which used electrical sparks to generate radio frequency oscillations

spectrum - the electromagnetic spectrum or some portion of it

speech processor - A circuit that increases the average level of the modulating signal applied to a transmitter.

splatter - a type of interference to stations on nearby frequencies. Splatter occurs when a transmitter is overmodulated.

split or separation - (Repeater Term) the difference (in kHz) between a repeater's transmitter and receiver frequencies. Repeaters that use unusual separations, such as 1 MHz on 2 m, are sometimes said to have "oddball splits."

split - DX stations often operate split -- that is transmitting on one frequency and listening at a different frequency or range of frequencies. This avoids congestion on the DX transmit frequency.

sporadic-E - Random patches of intense ionization that form in the E-layer of the ionosphere and refract higher frequency signals that normally cannot be refracted by the ionosphere.

SPST - Single Pole Single Throw (switch)

spurs - Spurious Signals - Undesired signals and frequencies in the output of a transmitter.

SQL - Squelch - A circuit that mutes the receiver when no signal is present, thereby eliminating band noise

squelch tail - (Repeater Term) A brief bit of noise heard between the end of a radio transmission and the reactivation of the receiver's squelch circuit.

## Ham Radio Terminology and Notes

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SSB - Single Side Band - See URL: Modulation Modes

SSBSC - Single side band - suppressed carrier.

SSN - Sunspot Number -- See Propagation

SSTV - Slow Scan Television

straight key - a non-electronic Morse code key with one paddle

stub - A transmission line 'stub' is a length of transmission line that is open or shorted at one end. It is effectively a capacitor or inductor, depending on length, and can be used to achieve a match [VSWR = 1:1] if connected at a selected point in the basic transmission line.

superheterodyne - a radio receiver scheme which beats or heterodynes a second radio frequency to the incoming radio signals. The combined frequencies form an intermediate (IF) third frequency. Aids in selectivity characteristics.

SW - Short Wave

SWL - Short Wave Listening -- See SWL

SWR - Standing Wave Ratio, a measure of how much radio energy sent into an antenna system is being reflected back to the transmitter. See SWR

SWR meter - a device used to determine the Standing Wave Ratio of an antenna system

synch. detection - Synchronous detection is an ingenious method of processing an AM signal to improve audio quality and reduce interference from adjacent stations.

T (Tango)

TCXO - Temperature-compensated crystal oscillator.

telegraphy - the transmission of information in Morse code format - See URL: Modulation Modes

telephony - the transmission of information in voice format - See URL: Modulation Modes

third-party communications - messages passed from one amateur to another on behalf of a third person.

third-party communications agreement - an official understanding between the United States and another country that allows amateurs in both countries to participate in third-party communications. See 3rd Party Agreements

TI - Talk-In Frequency

## Ham Radio Terminology and Notes

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ticket - slang for an amateur radio license

timer - repeaters often incorporate a timer or transmit time limiter to control the length of a single transmission from a user. The time limit is set by the repeater owner.

time-out - Excessively long transmission on a repeater causing the repeater's timer circuit to stop further transmissions (Slang - the alligator gottcha)

tone pad an array of 12 or 16 numbered keys that generate the standard telephone dual tone multifrequency (DTMF) dialing signals. Resembles a standard telephone keypad. (see autopatch)

TOR - Telex over radio.

TNC - Terminal Node Controller, a device which interfaces a computer to a transceiver and performs a function similar to a modem

TNC - Threaded Niell-Concelman (standard connector type used on Coax cable, named for its inventors).

top band -- 160 Meter Ham Band (highest number meter band)

TP - test point

traffic - a message or messages sent by radio

transceiver - a radio that both transmits and receives

triplexer -- see diplexer.

tropospheric ducting - Propagation of signals above 30 MHz via bending and ducting along weather fronts in the lowest layer of the Earth's atmosphere, the troposphere.

TRX - Transceiver

TTL Transistor-Transistor Logic

TV - Television

TVI - Television interference

twisted pair - ham slang for telephone or telephone lines

two-tone test - A method of testing a side-band transmitter by feeding two audio tones into the microphone input of the transmitter and observing the output on an oscilloscope.

tx - transmit, transmitter

U (Uniform)

## Ham Radio Terminology and Notes

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UHF - Ultra High Frequency 300 - 3000 MHz

Uncle Charlie - The FCC

unun - "unbalance - unbalance", a device which couples an unbalanced antenna of one impedance to an unbalanced feed line of another impedance

uplink - Channel used for earth-to-satellite communications.

URL - Universal Resource Locator

USB - Upper Side Band the common single-sideband operating mode on the 20, 17, 15, 12, and 10 meter HF amateur bands, and all the VHF and UHF bands.

UTC - Coordinated Universal Time , the time (expressed in 24-hour format) at the 0-degree Meridian, which passes through Greenwich, England.

utility stations - Stations other than broadcast, or amateur stations; these stations are not intended to be heard by the public. They include aircraft communications, radiotelephone, marine, embassy, and military communications.

V (Victor)

V - Volt (unit of electromotive force {EMF}).

VA - Volt Amperes - measure of apparent power. (Note true power is  $I^2 \times R$ )

VAC - Volts Alternating Current.

varactor diode - a component whose capacitance varies as the reverse bias voltage is changed.

VCO - Voltage-controller oscillator

VDT - Video-display terminal

VE - Volunteer Examiner, a person authorized to administer examinations for amateur radio licenses

VEC - Volunteer Examiner Coordinator, an amateur radio organization empowered by the FCC to recruit, organize, regulate and coordinate Volunteer Examiners.

VFO - Variable Frequency Oscillator

velocity factor - the speed at which radio waves travel in a particular feedline, expressed as a percent of the speed of light

VHF - Very High Frequency 30 - 300 MHz

## Ham Radio Terminology and Notes

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VIS - Vertical Interval Signaling. Digital encoding of the transmission mode in the vertical sync portion of an SSTV image.

VLF - Very Low Frequency 3 - 30 KHz

VMOS - Vertical metal-oxide semiconductor

VOA - Voice Of America.

VOM - Volt-ohm-meter

VOX - Voice Operated Transmit

VSWR - Voltage standing wave ratio

VTVM - Vacuum tube voltmeter

VXO - Variable crystal oscillator

W (Whiskey)

WAC - Worked All Continents award from the IARU, administered by ARRL. See WAC

wallpaper - QSL cards, awards, special event certificates

WARC - World Administrative Radio Conference -- See Note 1

WARC Bands - An expression to indicate the bands allocated in 1979 -- 17M, 12M and 30M

WAS - Worked All States award from ARRL for confirmed contact with each of 50 states. See WAS

WAZ - Worked All Zones award from CQ magazine for confirmed contact with each of 40 zones. See CQ Awards

WEFAX - Weather facsimile, reconstructed satellite images and photographs. See WEFAX

WFWL -- DXing term used when the validity of a DX station is in doubt. Work First Worry Later"

white noise (Repeater Term) is a scientific term used to describe a spectrum of broad band noise generated in a receiver's detector and sampled to control the receiver's squelch. This term is often incorrectly used in repeater work to describe the sounds heard when the received transmission is noisy and hard to understand, usually attributed to a weak signal and the repeater receiver limiters are not engaged.

wilco - Will comply

wireless - radio (As opposed to wired - telegraph)

## Ham Radio Terminology and Notes

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Wouff Hong -the Wouff Hong was a weapon against poor operating dreamed up by old time QST author, "The Old Man" (later discovered to be Hiram Percy Maxim, W1AW, himself). See Wouff Hong

work - To communicate with another radio station, a valid two way contact

WPM - Words per minute; as in Morse code or typing speed

WSJT - "Weak Signal communication, by K1JT". A software package for meteor scatter and EME communications - See WSJT

WWV - National Bureau of Standards radio station (time signals). See NIST NIST = National Institute of Standards and Technology for the USA

WWVB - NIST radio station (broadcasts time signals).

WWVH - NIST radio station (broadcasts time signals- Hawaii).

WX - weather

X (X-ray)

XCVR- Transceiver

XFMR - Transformer

XIT - Transmit Incremental Tuning control; allows for slightly changing the transmit frequency while leaving the receive frequency the same. Useful for split operations.

XTAL - Crystal

XVTR - Transverter -- configures a transceiver to operate on other bands

XYL - Ex-Young Lady, wife

Y (Yankee)

Yagi - 1926 Hidetsugu Yagi and Shintaro Uda invent the "beam" antenna array. A directional antenna consisting of a dipole and two additional elements, a slightly longer reflector and a slightly shorter director. Electromagnetic coupling between the elements focuses maximum power (or reception) in the direction of the director.

YL - Young Lady, any female amateur radio operator or the significant other of a amateur.

## Ham Radio Terminology and Notes

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Z (Zulu)

zed - a phonetic for letter "Z"

zero beat - Adjust the frequencies of two signals so that they are exactly equal and in phase

Zepp antenna - The end-fed 'zepp' antenna was simply a weighted wire reeled down and up from early lighter-than-Zeppelin air-ships.

Zulu - Coordinated Universal Time. Also the phonetic for the letter Z

NUMBERS 0-9

Ø Slashed Zero - distinguishes a ZERO from the letter "O". Resolves ambiguity in callsigns like "KØOF". Press Alt+0216 on your PC numeric keyboard.

73 - Best regards

88 - Love and kisses

807 - Deceptive Ham term for a beer. Also a popular transmitting tube of the mid 1900's

Source: <http://www.ac6v.com>

## Ham Radio Terminology and Notes

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### Glossary Addendum and Technician Exam Notes (by Dave Meyer)

**APRS** –

**ARES** –

**Attenuation** – ratio of power sent versus received

**BER – Bit Error Rate**

**Check** – number of words

**CSCCE** – Certificate of Successful Completion of Examination for ham license.

**CTCSS – Continuous Tone Coded Squelch System**, sub-audible tone transmitted with normal voice audio to open the squelch of a receiver.

**DSP – Digital Signal Processing**, allows for filtering, noise reduction and audio equalization.

**FCC** – Federal Communications Commission.

**FM Simplex at 70 cm Band = 446 MHz**

**Frequency Coordinator** -

**Grid Locator** – numeric code based on geography

**HF – High Frequency**, 3 – 30 MHz

**VHF – Very High Frequency**, 30 – 300 MHz

**IRLP Node** – use the keypad to transmit the IRLP Node ID

**ITU – International Telecommunications Union**, a United Nations body that specifies worldwide guidelines for electromagnetic communications

**LEO – Low Earth Orbit**

**Maximum Permissible Exposure Limit** –

**MFSK** - , form of digital communications

**Part 97 Rule** – FCC rules for ham radio

**PEP – Peak Envelope Power**, the average power of a signal at its largest amplitude.

**PL-259 Coax Connector** – screw-on, for HF connection

**PSK** – Phase Shift Keying

**PSK31** -

**QRP** – Low Power Operation, 5 watts

**QSL** – acknowledge receipt, “I understand”, “I copied the transmission okay.”

**RACES – Radio Amateur Civil Emergency Service**

## Ham Radio Terminology and Notes

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**RIT – Receiver Incremental Tuning**

**RTTY – Radio Teletype**, form of digital (data) transmission.

**SSB – Single Side Band**, a form of amplitude modulation (AM) using one side band of a frequency while suppressive the other sideband to reduce bandwidth consumption and increase power efficiency. Use LSB on 160, 75 and 40 meters and USB above 20 meters and VHF and UHF.

**SWR – Standing Wave Ratio**, a ratio of energy sent to an antenna that is reflected back to the transmitter.

**Telecommand** – one way transmission to initiate, modify or terminate functions of a device at a distance.

**Terminal Node Control** – connect a PC and Transmitter for packet transmission

**VHF Phone Band**, 5-15 kHz

**VOX – Voice Operated Relay**, foe hands free operation.

### Frequencies and Bands:

- 6 Meters = 52.525 MHz
- 2 Meters = 146.52 MHz, Repeater +/- 600,  $\frac{1}{4}$  wave antenna = 19"
- 1.25 Meters = 223.50 MHz, (Tech license can do Data)
- 70 cm = 443.350 MHz, Repeater +/- 5 MHz (fast scan TV = 6 MHz, FM Simplex = 446.0000 MHz)
- 23 cm = 1296 MHz

## Ham Radio Terminology and Notes

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### Q Codes

QRA -- What is the name of your station?

QRG -- What is my exact frequency?

QRH -- Does my frequency vary?

QRI -- How is my tone? (1-3)

**QRK -- What is my signal intelligibility? (1-5)**

QRL -- Are you busy?

**QRM -- Is my transmission being interfered with?**

QRN -- Are you troubled by static?

QRO -- Shall I increase transmitter power?

QRP -- Shall I decrease transmitter power?

QRQ -- Shall I send faster?

QRS -- Shall I send slower?

QRT -- Shall I stop sending?

QRU -- Have you anything for me? (Answer in negative)

QRV -- Are you ready?

QRW -- Shall I tell ..... you are calling him?

QRX -- When will you call again?

QRZ -- Who is calling me?

QSA -- What is my signal strength? (1-5)

QSB -- Are my signals fading?

QSD -- Is my keying defective?

QSG -- Shall I send ..... messages at a time?

QSK -- Can you work breakin?

## Ham Radio Terminology and Notes

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**QSL -- Can you acknowledge receipt?**

QSM -- Shall I repeat the last message sent?

QSO -- Can you communicate with ..... direct?

QSP -- Will you relay to ..... ?

QSV -- Shall I send a series of V's?

QSW -- Will you transmit on ..... ?

QSX -- Will you listen for ..... on ..... ?

**QSY -- Shall I change frequency?**

QSZ -- Shall I send each word/group more than once? (Answer, send twice or ..... )

QTA -- Shall I cancel number ..... ?

QTB -- Do you agree with my word count? (Answer negative)

QTC -- How many messages have you to send?

QTH -- What is your location?

QTR -- What is your time?

QTV -- Shall I stand guard for you ..... ?

QTX -- Will you keep your station open for further communication with me?

QUA -- Have you news of ..... ?