**Common Ham Radio Terms**

**AGC:** Automatic Gain Control – a radio circuit that automatically adjusts receiver gain

**AM:** Amplitude Modulation

**Amateur Radio Service:** The FCC-sanctioned communication service for amateur radio operators.

**Antenna Gain:** An increase in antenna transmission and reception performance in a particular direction at the expense of performance in other directions; performance increase as compared to an isometric antenna or a dipole antenna.

**Antenna Farm:** An impressive array of multiple amateur radio antennas at a station.

**Antenna Party:** A ham radio tradition in which hams gather to assist in the erection of antennas or towers.

**AOS:** Acquisition of Signal – Satellite signal reception that occurs when the satellite comes up over the horizon.

**APRS:** Automatic Packet (or Position) Reporting System

**ARRL:** American Radio Relay League – Organization promoting and supporting amateur radio in the United States.

**Barefoot:** Operating a transmitter without an amplifier such that the output power is produced only by the base transmitter.

**BFO:** Beat Frequency Oscillator – a receiver component used to mix the intermediate frequency down to an audio frequency.

**Bird:** Informal reference to a satellite.

**Clipping:** The leveling or flattening of the upper and/or lower portion of a waveform due to the driving signal exceeding the output limits of a circuit, particularly an amplifier. (AKA “flat topping”)

**Coax:** Coaxial cable, commonly used as feedline between transceiver and antenna.

**CTCSS:** Continuous Tone Coded Squelch System – AKA “PL Tone,” a subaudible tone transmitted with a signal to a repeater that opens the squelch of the repeater station in order that the signal is received.

**CW:** Continuous Wave – a transmission mode employing an unmodulated transmission (continuous wave) and Morse Code patterns of transmission / interruption to send a signal.

**dB:** decibel – A unit of measure for comparing power measurements.

**DCS:** Digital Coded Squelch – a method of breaking the squelch of a receiver (especially a repeater station) using a digital code at the start of transmission.

**Deviation:** In Frequency Modulation, the variance from resting frequency of the modulated carrier signal. Deviation is driven by the amplitude of the audio input signal.

**Dipole:** A common antenna, typically wire, consisting of two segments: One attached to the conductive part of the feedline and one attached to the grounded part of the feedline. Usually ½ wavelength long, each of the two segments is ¼ wavelength.

**Digipeater:** A digital repeater that will temporarily store, then retransmit on the same frequency, a digital packet.
**Director:** On a Yagi or Quad directional antenna, any of the elements in front of the driven element.

**D-Layer:** The lowest layer of the ionosphere, approximately 25 to 55 miles high, that fades away at night and is often very weak during short winter days.

**Double:** On a repeater, two stations transmitting simultaneously.

**Downlink:** In satellite communication operations a frequency used for the satellite-to-earth channel.

**Driven Element:** The portion of an antenna to which the feedline attaches.

**Drop Out:** When a station transmitting to a repeater has insufficient power to consistently break the squelch of the receiver and the repeated communication is noisy and broken.

**DSP:** Digital Signal Processing – a method of filtering, noise reduction, or otherwise modifying received signals by converting received signals into digital form for manipulations.

**DTMF:** Dual Tone Multi-Frequency – audible tones produced with the keypad of a transceiver or telephone to affect dialing or to send control signals over the air.

**Dual Band:** An antenna designed for use on two different radio bands; a transceiver that operates on two different radio bands.

**Dummy Load:** In place of a radiating antenna, this device presents a matching impedance for a transmitter and converts transmission energy to heat rather than radiating a signal; useful for testing transceivers without radiating.

**Duplex:** A communication mode allowing simultaneous transmitting and receiving (on two different frequencies).

**Duplexer:** A repeater component allowing a single antenna to transmit and receive simultaneously by implementing sharply tuned filters to separate transmission and reception channels.

**DX:** A distant station, usually outside of a transmitting station’s country.

**DXCC:** ARRL award for confirmation of contacts made in a minimum of 100 different countries.

**DXpedition:** A radio expedition to another country, usually a rare or remote location.

**Earth Ground:** an electrical connection to the earth, usually to a metal rod driven into the earth.

**Echolink:** A voice over IP internet connection allowing radio stations and/or computers to be connected together for communications.

**E-Layer:** A layer of the ionosphere approximately 55 to 90 miles high that typically fades away after sunset. Responsible for “Sporadic E” communications with frequencies above 30 MHz (especially the 6 meter band).

**Elmer:** An experienced and knowledgeable amateur radio operator who guides or mentors newer operators.

**Eleven Meter Band:** The radio band in which citizens radio (CB radio) channels reside.

**EME:** Earth-Moon-Earth communication, in which signals are reflected off the moon back to earth; “Moon bounce”

**EMF:** Electromotive Force (E) – voltage; unit of measure is volts.

**ERP:** Effective Radiated Power – the power actually radiated by an antenna.
**E-Skip:** Also “Sporadic E” signal propagation using reflection by the E-Layer of the ionosphere.

**F-Layer:** The highest layers of the ionosphere, from approximately 90 to 250 miles high, that provide the longest propagation skips with HF frequencies of 30 MHz or lower. During daylight it is two layers, F1 and F2. At night it combines into a single F-Layer.

**FCC:** Federal Communications Commission – the US federal government agency that regulates radio spectrum and that sanctions the amateur radio service.

**FET:** Field Effect Transistor – Used as an amplifier or a switch in electronic circuits; an input voltage determines output current level.

**Field Day:** An annual amateur radio event to practice emergency communications (June)

**Field Strength Meter:** An instrument to indicate the relative strength or presence of an RF field

**Filter:** An electronic component or circuit that allows the passage of certain frequencies while blocking others.

**Final:** (transmission) – The last transmission of a station during a contact.

**Flat Topping:** Overmodulating the RF signal such that clipping of the waveform occurs and distorted audio results.

**FM:** Frequency Modulation

**Foxhunt:** A competition event in which hidden transmitters are sought with direction-finding equipment.

**Frequency:** The number of oscillation cycles per second of an electromagnetic wave or an alternating current. The unit of frequency measure is hertz.

**Frequency Coordinator:** An individual or a group who recommend frequency pair assignments to repeaters to coordinate repeater use of radio spectrum and to avoid interference between repeaters.

**FSTV:** Fast Scan Television: Used on 70 cm and higher frequency bands with NTSC (standard broadcast) signal to transmit television imagery on the amateur bands.

**Full Quieting:** Commonly used to describe repeater audio having no noise component, but referring to a received signal strength by the repeater that is sufficient to engage the receiver limiters.

**Gain:** With antennas, an increase in the effective radiated power in a specific direction as compared to a reference antenna, such as a half-wave dipole or an isometric antenna. With transistors, the increase in signal output of the transistor as compared to the input controlling signal.

**GHz:** Gigahertz, meaning one billion cycles per second.

**GOTA:** Get On The Air – An annual ARRL Field Day event in which non-licensed persons are provided an opportunity to transmit under the control operator supervision of a licensed ham.

**Gray Line:** The transition area line on the earth separating daylight and darkness and that promotes an enhanced propagation path for some RF bands.

**Green Stamp:** A US dollar mailed with a QSL card to pay for postage of a return QSL card.

**Ground:** The zero voltage reference point of a circuit.
**Ground Plane**: A horizontal conducting surface or radials extending from the base of an antenna (usually a quarter-wave vertical antenna) that produces a virtual image ground element for the antenna, enhancing performance.

**Ground Wave Propagation**: Radio frequency propagation along the earth’s surface that may extend beyond the visual horizon.

**Half-Wave Dipole**: A simple antenna fed at the center point with two one-quarter wave elements extending in opposite directions (one attached to the feedline conductor, one to the feedline ground/shield).

**Handheld**: (Handheld Transceiver / HT) – a small transceiver that can be carried in the hand.

**Hang Time**: The brief continued transmission of a repeater following the termination of a transmission to the repeater, and that is often denoted by the transmission of courtesy tones.

**Ham**: An amateur radio operator.

**Hamfest**: A ham festival or event at which hams and commercial businesses meet, trade, and display equipment or techniques.

**Hertz**: Cycles per second, the standard unit of frequency measure.

**HF**: High Frequency, defined to be 3 MHz to 30 MHz.

**Hi Hi**: A slang term used on the air as the equivalent of laughing. A CW-derived affectation that has been transferred into the phone modes.

**Homebrew**: Home built, as in home built equipment, antennas, etc.

**IC**: Integrated Circuit

**IF**: Intermediate Frequency – the lower frequency value within a superheterodyne receiver that results from VFO frequency mixing with received RF frequencies, and that is further processed by mixing and filtering to lower audio frequencies for sound production.

**Impedance**: The opposition to the flow of alternating current, measured in the unit ohms. In operations, impedance is desired to be matched, or equal, from transceiver to feedline to antenna for best system performance.

**Inductor**: An electronic component, typically a coil of wire, that stores energy in a magnetic field.

**Ionosphere**: The layers of the earth’s atmosphere in which charged particles are induced by the sun’s rays, and that is effective in bending radio frequencies back toward the earth’s surface, providing the long distance, weak signal “skip.”

**IRLP**: Internet Radio Linking Project – A system of repeaters around the earth that may be linked by Voice Over Internet Protocol (VOIP).

**ITU**: International Telecommunications Union – a United Nations organization that coordinates the use of electromagnetic spectrum between nations.

**JOTA**: Jamboree On The Air – an annual Boy Scout event in which scouts and hams team up to make contacts with other scouting groups all around the world with amateur radio.

**J-Pole Antenna**: a half-wavelength radiating element with a quarter-wave matching stub, popular on VHF and UHF frequencies and a popular homebrew item.
**Kilo:** Prefix meaning 1000

**Kerchunk:** a slang term for briefly pressing the PTT to activate a repeater without identifying.

**Key:** A switch, lever, or button for sending Morse Code; referenced by a “telegraph key.” Alternatively, to push-to-talk, as in to “key the mic” (also, “Key up”)

**Kilocycles:** thousands of cycles per second, or thousands of hertz (kilohertz)

**Ladder Line:** A twin-wire unshielded transmission line or feed line, usually with open space between the wires and thereby resembling a ladder.

**LED:** Light Emitting Diode, commonly used as a visual indicator on radio electronics.

**Limiter:** A processing stage in an FM repeater that limits the amplitude of received FM signals, thereby reducing receiver sensitivity to amplitude variations and noise.

**Line of Sight Propagation:** Radio frequency path of travel referring to a straight line path from one station to another.

**Load:** A device in an electric circuit that consumes, converts, or radiates energy. An antenna is sometimes referred to as a load on the transmitter circuit.

**LSB:** Lower Side Band – the single sideband used by convention for bands below 30-meters. (40, 80, 160)

**Machine:** a common reference to a repeater.

**Magnetic Mount (mag-mount):** An antenna that quickly installs on a car or metal surface using a magnetic attachment.

**MARS:** Military Affiliate Radio System – military affiliated amateur operators and stations that provide free communications for deployed military personnel and others in federal service.

**Mega:** Prefix meaning one million

**Megacycles:** Millions or cycles per second; megahertz

**Megahertz:** Million hertz

**Meteor Scatter:** Radio signal propagation by reflection from short-lived ionization trails of meteors in the atmosphere.

**Mic:** Abbreviation for microphone.

**Micro:** Prefix meaning 1/1,000,000 (one one-millionth)

**Microwave:** The portion of the RF spectrum 1 GHz and higher frequency.

**Milli:** Prefix meaning 1/1000 (one one-thousandth)

**Mixer:** An RF receiver component that combines two signals and outputs signals that are the sum and difference frequency of the two input frequencies. Used in superheterodyne receivers to produce the intermediate frequency.

**Mobile:** An amateur radio station installed in a vehicle that can be used while in motion; a verb used on the air to indicate you are transmitting from a mobile station.
Mode: The type of modulation being employed in transmission (FM, SSB, CW, AM, Digital, etc.). Alternative for satellite operations, the frequency ranges used for uplink and downlink for satellite communications.

Modulation: Encoding information into a radio frequency signal. Information may be Morse Code, voice, digital, or other forms.

MUF: Maximum Usable Frequency – the highest frequency for given conditions that will provide reflection from the ionosphere and promote skip propagation.

Multimode Transceiver: A transceiver with capacity to use more than one type of modulation: FM, SSB, CW, AM, Digital operations.

Negative: On-the-air term meaning “No” or “Incorrect”

Negative Offset: Repeater input frequency (transmit to) is lower than the repeater output (listen to) frequency.

Net: An organized, on-air meeting of multiple stations, usually convened at a scheduled time and usually directed by a net control station who manages the message traffic and transmissions in an orderly fashion.

NiCad: Nickel Cadmium, a common (older) type of rechargeable battery.

NiMH: Nickel Metal Hydride, a common type of rechargeable battery.

Node: An Echolink station via personal computer; alternatively a remotely controlled digipeater used to relay packet radio communications.

NTSC: National Television System Committee – US standard signal for broadcast TV, also used for amateur Fast Scan TV (FSTV).

NVIS: Near Vertical Incidence Skywave – propagation in which signals are reflected from the ionosphere from a steep vertical take-off angle, resulting in relatively short skywave skip distances, usually not more than a few hundred miles. NVIS is typical on low HF bands (40m, 80m, 160m) where horizontally polarized antennas are raised much less than a half-wavelength above the earth.

Odd Split: An unconventional pairing of frequencies, such as one VHF and one UHF frequency. Often used with satellite operations and cross-band repeater functions on some transceivers.

Offset: The frequency separation between a repeater input and output frequencies.

Ohm: The unit of measure for electrical resistance and electrical impedance.

Old Man: An on-air term of friendship.

Open Repeater: A repeater that may be used by any amateur; no restricted or exclusive use.

OSCAR: Orbiting Satellite Carrying Amateur Radio.

Oscillate: To vibrate with a regular period, such as an oscillating radio wave’s electric and magnetic fields.

Oscillator: A circuit typically employing an inductor and a capacitor for producing an alternating current of a desired frequency. May form the basis of a radio transmitter.
Oscilloscope: An electronic test instrument that receives voltage or current signals and displays a visual representation of variations in signals over time.

Output Frequency: For a repeater, the frequency of retransmission, or the “listen to” frequency.

Over: An on-air term used in two-way communications under noisy or difficult conditions to affirmatively alert another station of the end of transmission, and return of communications transmission back to the other station.


Paddle: A Morse Code key.

PCB: Printed Circuit Board – a board on which electrical contacts and connections have been imprinted for the electrical connectivity of electronic components to be mounted in a specific arrangement to affect an electronic circuit.

PEP: Peak Envelope Power – the average power of a signal over its largest amplitude peaks.

Phase: With RF waveforms, the relative position of the oscillations of electric and magnetic fields of compared waveforms. Phase is defined as a 360 degree cycle of oscillation.

Phase Modulation (PM): Encoding information into an RF signal by varying its wave phase characteristics.

Phone: A transmission mode encoding voice information into RF signals.

Phone Patch (Autopatch): A connection between a two-way radio and a telephone, commonly a utility of repeater stations allowing a radio-to-telephone connection.

Picket Fencing: A rapidly fluctuating sound or signal due to a station in motion during transmission and the associated interferences.

Pile-up: A condition in which multiple stations are attempting to call the same, singular station.

PL: Private Line (inaccurate implication), a term used for CTCSS tone implementation.

Portable: A station that may be easily moved from place to place, or a station being operated away from its home location. (A mobile station is one used while in motion; a portable station is a relocated stationary station.)

Positive Offset: A Repeater input frequency (transmit to) is higher than the repeater output (listen to) frequency.

Product Detector: A receiver circuit consisting of an oscillator and mixer used to receive SSB or CW signals.

Propagation: The travel path of RF signals or the means of travel of RF signals.

PSK31: Phase Shift Keying 31 – a digital mode using phase shifts to encode characters at 31.25 baud rate for computer keyboard-to-keyboard chatting. Very effective in high noise conditions such as HF SSB.

PTT: Push-to-Talk – switching on the microphone to transmit, or the radio circuit allowing transmission and microphone activation.

Q-Signal: Three-letter codes derived from Morse Code and used as abbreviations for common communication phrases and questions.

Quad: A type of directional antenna employing square element arrangements one-quarter wavelength separated.
QRP: A Q-signal referring to reduced power, or a low-power station operation, typically 5 watts or less.

QSL: A Q-signal meaning “acknowledge receipt” and commonly used to mean “I copy” or “I understand”

QSL Card: A card exchanged by station operators to confirm a contact and establish a record of it.

QSO: A Q-signal meaning a two-way radio communication or conversation.

Quagi: A directional antenna, commonly homebrewed, that combines elements of both Quad designs and Yagi designs.

RACES: Radio Amateur Civil Emergency Service – Volunteer operators that aid civil authorities during emergencies.

Rag Chew: An informal, often extended, on-air conversation. A casual conversation of duration.

RDF: Radio Direction Finding.

Reflector: In a Yagi or Quad directional antenna, the rear passive element. With IRLP, a server that allows multiple IRLP repeater nodes to be linked together simultaneously.

Refract: To bend. RF transmissions may be refracted by the ionosphere (not truly reflected, as with a mirror).

Repeater: A station that receives transmissions on one frequency and immediately retransmits the same signal on another frequency, usually at greater power and from a higher vantage point, extending the effective radio range.

Repeater Directory: A publication listing repeaters.

Resonance: An electrical condition promoting very efficient reinforcement of alternating current in a circuit.

RF: Radio Frequency

RFI: Radio Frequency Interference

Rig: Informal term for a station or radio.

RIT: Receiver Incremental Tuning (AKA Clarifier) – a transceiver control that allows adjustment of the receive frequency without changing the transmission frequency. Used extensively in SSB operations to tweak receive audio for tone.

Roger: On-air term meaning “I understand” or “100% received.”

Rover: In a radio contest, a station that moves among more than one grid square, counties, or other geographic units.

RST: Readability, Signal, Tone – a three digit report defining how well signals are being received.

RTTY: Radio Teletype, a digital mode of communication.

Rubber Duck: A short rubberized antenna used on a handheld transceiver.

Selectivity: A receiver’s ability to reject signals on frequencies adjacent to the tuned frequency. A measure of receiver quality.

Sensitivity: A receiver’s ability to detect and receive weak signals.

Shack: A ham station’s operations area, room, or building.

Silent Key: A deceased amateur radio operator.
**Simplex:** Communications in which transmission and reception is conducted on one single frequency.

**Skip Zone:** With ionosphere skip propagation, the region that is “inside the skip” but outside ground wave propagation, and therefore cannot be reached with the frequency in use.

**Sky Wave:** Propagation of radio emissions by ionosphere refraction.

**S-Meter:** Signal strength meter on a receiver or transceiver display.

**Splatter:** Interference from a station on nearby frequencies; transmissions from a station that exceed the necessary bandwidth for normal communications and that cause interference outside of normal bandwidth usage.

**Split Operating:** Transmitting on one frequency and listening on another, particularly on HF SSB operations, to avoid congestion on the transmit frequency.

**Sporadic E:** Irregular patches of E-layer ionosphere activation that randomly refract higher frequency signals than are normally refracted. The 6-meter band is commonly used for skip propagation during periods of Sporadic E.

**Spurious Emissions:** Undesired signals from a transmitter outside of the tuned frequency range.

**Squelch:** A control muting the audio output of a receiver when received signal strength is below a set value.

**SSB:** Single Sideband – A special type of AM mode utilizing only one of the two AM sidebands and deleting the carrier frequency from transmissions.

**SSTV:** Slow Scan TV – An amateur radio TV transmission using approximately 3 kHz of bandwidth and transmitting single frame images.

**Superheterodyne:** A type of radio receiver using frequency mixing with incoming signals to shift modulated signals to a lower, intermediate frequency for further processing into audio.

**SWR:** Standing Wave Ratio – a comparative measure of the energy sent from a transmitter with that reflected back to the transmitter from an antenna and feedline system.

**SWR Meter:** An instrument used to measure SWR in an antenna and feedline system.

**Third Party Communications:** Communications from one operator to a second operator on behalf of a third person; also commonly refers to allowing a non-licensed “third party” communicate on amateur frequencies under supervision of a licensed control operator.

**Ticket:** A slang term referring to an amateur radio license.

**Time-Out:** On a repeater, a timer circuit may be employed to avoid excessively long transmissions or “stuck mic” condition. The repeater may time-out, cutting off a long transmission. The time-out duration is determined by the repeater operator.

**Tone:** See CTCSS; the subaudible tone transmitted as a method of opening squelch of a receiver. Alternatively, see DTMF – a tone used to send activation codes.

**TNC:** Terminal Node Controller – a control box for interfacing a transceiver and a radio, particularly for packet operations.

**Traffic:** a message distributed via radio communications.
**Transceiver:** a combination of a transmitter and a receiver in one device; a radio that both transmits and receives.

**Tropospheric Ducting:** The propagation of VHF signals long distances along a ‘pipe’ created by a temperature inversion in the lowest layer of the atmosphere.

**UHF:** Ultra High Frequency; 300 – 3000 MHz frequency. Includes the 70cm band and higher frequencies.

**Uplink:** The frequency used for earth-to-satellite transmissions (See Downlink)

**USB:** Upper Sideband – in Single Sideband operations, the sideband comprised of frequencies above (higher than) the carrier frequency to which the transceiver is tuned.

**UTC:** Universal Time Coordinate, AKA Coordinated Universal Time; the 24 hour time reference based upon Greenwich, England’s time and the 0-degree Meridian.

**Volt:** the basic unit of electromotive force (EMF)

**VAC:** Volts Alternating Current

**VE:** Volunteer Examiner, who issues license exams in the amateur service

**VEC:** Volunteer Examiner Coordinator – an amateur radio organization coordinated with the FCC to operate and oversee all volunteer examiners

**VFO:** Variable Frequency Oscillator – a transceiver circuit used to tune the frequencies of transmission and reception

**Velocity Factor:** the speed of electromagnetic signal propagation through a feedline expressed as a percentage of the speed of light.

**VHF:** Very High Frequency - 30 – 300 MHz frequency. Includes the 6m to 1.25m amateur bands

**VLF:** Very Low Frequency – 3 – 30 kHz frequency

**VOX:** Voice Operated Transmitting

**VSWR:** Voltage Standing Wave Ratio; a common measure of SWR using voltages rather than power units.

**WAC:** Worked All Continents, an award from the IARU and administered by ARRL.

**WAS:** Worked All States, an ARRL award to confirm contact in all 50 US states.

**WAZ:** Worked All Zones, a CQ magazine award for confirmed contact with each of the 40 world zones.

**Work:** Ham slang meaning to communicate with, as in “I worked seven different countries this morning.”

**XIT:** Transmitter Incremental Tuning, provides slight changes in transmit frequency without effecting receive frequency

**XYL:** On-air slang for Ex-Young Lady, referring to one’s wife

**Yagi:** A directional or beam antenna of a specific design invented by Hidetsugu Yagi and Shintaro Uda in 1926

**YL:** Young Lady

**Zed:** a phonetic letter for “Z”
**Zero Beat:** An adjustment of two signals to be exactly equal in phase, and thereby producing no beat frequency.

**Zepp Antenna:** An end-fed wire that was reeled down and up from Zeppelin aircraft.

**Zulu:** An alternate term for referring to UTC.

**73:** Best regards

**88:** Love and kisses

**807:** A deceptive ham term for ale and also a popular transmitting tube of the early 20\textsuperscript{th} century.