

Two-way Radio Basics

Glossary

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An excerpt from the book.

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• **Acronyms** •

73	Best regards. A Ham Radio custom when ending a communication.
2 Tone	See Selective Calling
5 Tone	See Selective Calling
AC	Alternating Current
AF	Audio Frequency
AM	Amplitude modulation
ANI	Automatic Number Identification
APRS	Automatic Position Reporting System
ARRL	American Radio Relay League
ARS	As used in this book, Amateur Radio Service
BCL	Busy channel lock-out
BNC	BNC Connector
CB	Citizens Band Radio Service
CPS	Cycles Per Second
CTCSS	Continuous Tone Controlled Squelch System
CW	Continuous wave or Morse Code
dB	Decibel
DC	Direct Current
DCS	Digitally Coded Squelch
DPL	Digital Private Line
DSP	Digital Signal Processing
DTMF	Dual-tone multi-frequency

DX	Long distance radio communication
Emcomm	Emergency Communications
EME	Earth-Moon-Earth; using the moon as a passive reflector to establish a signal path; moon-bounce
EMI	Electromagnetic interference
EMP	Electromagnetic pulse
EMF	Electromotive force
EOM	End of Message
ERP	Effective Radiated Power
FM	Frequency modulation
FPP	Front panel programming
FRN	FCC Registration Number
FRS	Family Radio Service
GMRS	General Mobile Radio Service
HF	High Frequency band from 3 to 30 MHz
HT	Handheld transceiver
Hz	Hertz
ID	Identification (call sign)
IRLP	Internet Radio Linking Project
KHz	Kilohertz
LOS	Line of sight
LMR	land mobile radio
LSB	Lower side band

LTR	Logic Trunked Radio
MDC	Motorola Data Communications
MHz	Megahertz
MIL-SPEC	See military standard
MIL-STD	See military standard
MON	Monitor mode
MURS	Multi-Use Radio Service
NBFM	See narrow band
NCS	Net control station
NMO	New Motorola mount. A type of mount for mobile radio antennas.
NOAA	National Oceanic and Atmospheric Administration
NWR	National Weather Radio
NWS	National Weather Service
NXDN	See Nexedge or IDAS
Omni	Omni-directional
OST	Operator selectable tone
P25	Project 25
PEP	Peak envelope power
PL	Private Line
PSK	Phase shift keying
PTT	Push to talk
QT	Quiet talk

RACES	Radio Amateur Civil Emergency Service
RDF	Radio direction finding
REACT	Radio Emergency Associated Communications Teams
RF	Radio Frequency
RFI	Radio frequency interference
RX	Receive
SAME	Specific Area Message Encoding
SAR	Search and rescue
SMA	Sub miniature antenna connector
SWR	Standing Wave Ratio
TOT	Time Out Timer
TX	Transmit
UHF	Ultra-high frequency
ULS	Universal Licensing System
USB	Upper side band
V AC	Volts alternating current
V DC	Volts direct current
VHF	Very High Frequency
VoIP	Voice over Internet Protocol
VOM	Volt ohm meter
VOX	Voice Operated Transmit
WBFM	Wide-band frequency modulation. See wide band.
WSPR	Weak Signal Propagation Reporter

• **Symbols** •

λ	Wavelength
μ	Microvolt

• **Glossary** •

Absorption	The reduction in radio signal strength while traveling through physical objects or in the atmosphere.
Adjacent channel interference	That condition when a receiver is tuned to a particular frequency and interference is received from signals on adjacent frequencies.
Affirmative (or Affirm)	Yes or correct.
AGM	A type of sealed lead acid battery that is often used for powering two-way radios. Such 12 VDC rechargeable batteries can be mounted in any orientation, require little maintenance and can power mobile or base stations. The correct charger must be used.
Alternating current (AC)	An electric current that periodically reverses direction. This is opposed to direct current (DC), which flows only in one direction. AC is commonly used to power homes and businesses, where devices are plugged into an electrical outlet. DC, on the other hand, is commonly used in flashlight or car batteries.
Amateur operator	A person who is licensed to operate an amateur station. In order to obtain a license, a test is required.
Amateur Radio Service (ARS)	Also known as Ham Radio, a non-commercial radio service authorized in the U.S. and many other countries. Many different frequency bands, types of Amateur Stations , emissions and power levels are authorized, depending on the operator privileges. Amateur radio is defined under part 97 of the FCC Rules and Regulations.

Amateur station	A radio station designed to provide communications in the amateur radio service for a licensed amateur radio operator. This may include a fixed, mobile, or portable station. Such stations may be operated from land, vessels at sea, on board aircraft, or from space.
American Radio Relay League (ARRL)	The long-standing national association for amateur radio operators.
Ammeter	An instrument used to measure the current in a circuit. Electric currents are measured in amperes.
Ampere (A)	The ampere, often shortened to “amp”, is the basic unit of electrical current. Amperes are used to express the flow rate of electrical charge.
Amplifier (Amp)	An electronic device that increases the power of a signal.
Amplitude	The power (or strength) of an RF carrier wave.
Amplitude modulation (AM)	In amplitude modulation, the strength (amplitude) of the RF carrier from a transmitter is varied in accordance with the modulating signal. When someone speaks into the microphone of an AM transmitter, the microphone converts their voice into a varying voltage. This voltage is amplified and then used to vary the strength of the transmitter's output.
Analog modulation	Any continuous signal for which the time varying feature (variable) of the signal is a representation of some other time varying quantity. An analog signal uses some property of the medium to convey the signal's information. For example, the voltage, current, or frequency of the signal may be varied to represent the information. Analog voice systems fall under two primary types, amplitude modulation (AM) and frequency modulation (FM) .
Antenna	A device that intercepts or radiates radio frequency energy. Manufactured antennas are commonly available in full wave, 5/8 wave, 1/2 wave and 1/4 wave lengths.
Antenna Analyzer	Equipment used for checking the efficiency of and troubleshooting antennas and feedlines. Also used for tuning their performance.

Antenna switch	A switch used to connect or disconnect transmitters or receivers to various antennas.
Antenna tuner	A device that matches the antenna impedance to the receiver or transceiver output impedance. Normally this is used for HF communications.
Arrestor	A device for protecting sensitive electrical equipment from high voltage surges, such as lightning or EMP.
Attenuation	A reduction in the strength of a signal. For example, a radio signal can be attenuated by passing through a building, a filter, or a length of cable. Normally measured in decibels.
Attenuator	A device that reduces the strength of a radio signal. An attenuator is effectively the opposite of an amplifier.
Audio check	A report of the audio quality of a radio transmission being received. See also Signal Check .
Audio frequency	20 to 20,000 hertz, the human hearing range.
Automatic Number Identification	In two-way radio systems, ANI is more commonly known as PTT ID, or push to talk identification. Used in public safety and business radio systems, it is not authorized for use in the personal radio services.
Automatic Position Reporting System (APRS)	A digital system that transmits and displays position and other data on maps and computer screens.
Auto-patch	A device that interfaces a repeater to the telephone system to permit repeater users to make telephone calls. May be called a “patch” or a “phone patch”.
Auto power off	A function available to automatically turn off radio equipment if unused for a set period of time. This function is normally programmable and is used to conserve battery life.
Back channel	A secondary, pre-determined, channel for communications related to, or in support of, the primary channel.

Band	A range of frequencies allotted for a particular use (e.g., VHF or UHF). Bands may be referred to by acronym (e.g., VHF or UHF), frequency (900 MHz) or wavelength (10 meters).
Band pass	The 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.
Bandwidth	Signal Processing: A measure of the width of frequencies that a transmission occupies, measured in hertz.
Bank	See Memory bank .
Base station	A radio station located at a fixed location for the purpose of communicating with other base or mobile stations.
Base loading	A loading coil at the bottom of an antenna to achieve a lower resonant frequency.
Battery	A device that converts chemical energy into electrical energy.
Battery life	The battery life specification for most portable radios is based on an industry standard of 5/5/90. This is when the radio is receiving a signal 5% of the time, transmitting 5% of the time and is in stand-by mode 90% of the time. If the transmit and receive usage is different, the battery life may also change.
Beam antenna	A directional antenna. A beam antenna must be rotated to provide coverage in different directions.
Birdie	Spurious emissions 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.
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 Connector	A miniature quick-connect type connector commonly used for coaxial cable. The BNC connector, which is normally used with VHF/UHF equipment, was named for its inventors, Bayonet Neil-Concelman.
Break	Used to interrupt a conversation. If non-urgent, simply interject your call sign. Some operators use it to mean there will be a short break in a message. Others use it to indicate they need to break in due to an emergency call. It is recommended to use "emergency traffic" or "priority traffic" if needed. Note: Since there are many meanings for the term "break", it is best not to use the term. See also Precedence .
Broadcasting	The distribution of audio or video content to the general public in a one-way type of communication. This commonly takes the form of an electronic mass communication media, such as radio, TV, or cable TV. Two-way communications do not qualify for broadcasting, which is prohibited by the FCC Rules for amateur (Part 97), GMRS or CB (Part 95), as well as all commercial (Part 90) radio services. Only Part 74, Remote Broadcast Pickup stations are allowed to receive transmissions and broadcast them.
Bubble pack radio	Slang for hybrid FRS/GMRS consumer radios that were introduced with 22 channels, instead of the 14 channels originally associated with FRS. On this type of radio, transmitting on shared FRS/GMRS channels 1–7 required a license if using more than 0.5 watt. Channels 8–14 are strictly license-free FRS channels. Transmitting on GMRS-only channels 15–22 required a license. It is the responsibility of the radio user to read and understand all applicable rules and regulations regarding GMRS. These consumer grade radios are often referred to as "bubble pack" radios, since they are often packed in a plastic shell, for hanging on a display shelf. The massive sales of these radios have led to the term "bubble-pack pirates", persons who use GMRS without a license. Such radios are now classified by new FCC regulations as FRS radios with a maximum power output of 2 watts.
Busy channel lockout	Function that prevents transmit on a frequency that is in use.
Call alert	An audible tone transmitted by a two-way radio to alert a group of stations.

Calling frequency	A recognized standard frequency where stations attempt to contact each other, then move to another frequency for longer conversations. In Marine radio (ships), known as a hailing frequency.
Call Sign	A unique designation of letters or letters and numbers which identify a licensed radio operator or station. In the U.S., such call signs are assigned by the FCC. See also Tactical Call Sign .
Candy store	Slang term for the local ham or two-way radio store.
Capacitance	The ability of an electrical device to hold, store, or accommodate electricity.
Capacitor	An electronic component composed of two or more conductive plates separated by an insulating material. A capacitor stores energy in an electric field.
Capture effect	An effect of FM reception, in which the stronger signal will be heard and the weaker signal will be blocked.
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 .
Carrier operated relay (COR)	Circuitry that causes a repeater to transmit in response to any received signal above the squelch threshold.
CB Radio Service	Also known as Citizens Band. A radio service designed for personal or business activities. The CBRS uses 40 channels in the HF band, using the AM, FM or SSB mode. Portable, mobile and base stations may be used. There is a maximum of 4 watts AM or FM and 12 watts SSB authorized. No license is required.
Center frequency	The unmodulated carrier frequency of an FM transmitter.
Center loading	A loading coil at the center of a vertical antenna to achieve a lower resonant frequency.
Channel	A channel is a frequency or pair of frequencies which are used for a two-way communication talk path. A channel may contain several settings, which include transmit and receive frequencies, tone codes, bandwidth, name, etc. If any of the settings are different, another channel is used.

Chassis ground	The common connection for all parts of a circuit that connect to the negative side of the power supply. In a mobile installation, the ground (or black wire) on a two-way radio is connected to the negative pole of a vehicle battery or the chassis.
Community Emergency Response Team (CERT)	A program, authorized by local government and promoted by the Federal Emergency Management Agency, which allows citizens to organize into neighborhood teams to assist in major emergencies or disasters.
Clear	Indicates a station is done transmitting and the frequency is clear for use.
Clear and monitoring	Used to indicate a station is done transmitting and will be actively listening for other calls.
Clipping	An effect of a limiter circuit, which allows audio signals below a certain level to pass but will lower the peak of stronger signals. When clipping occurs, the audio is cut off during the peaks to prevent overmodulation .
Cloning	Copying radio settings from one radio to another.
Closed repeater	A repeater whose access is limited to a select group. See also Open Repeater .
Closed circuit	A complete electrical circuit, providing a continuous path through which current can flow. For example, turning a light switch on will close the circuit.
Coaxial cable	Coaxial cable, or coax, is a type of cable that has a center conductor surrounded by insulation. The insulation is then surrounded by a grounded metal shield, which minimizes electrical and RF interference. For two-way radio, an impedance of 50 ohms is normally used.
Codeplug	A file that is loaded into a radio transceiver to provide instructions. The file, normally developed using radio programming software, includes parameters such as transmit and receive frequency, narrow or wide band, CTCSS, etc.
Coil	A conductor wound into a series of loops.

Color code	1. 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. 2. Color codes are also used in DMR repeaters, much like analog repeaters use CTCSS or DCS tones. See digital mobile radio .
Communication grade	A report that the signal and audio of a transmitter is adequate to pass a message.
Companing	A process that allows an audio signal to be transmitted on a channel with limited dynamic range. The signal is compressed at the transmitter and expanded at the receiver.
Conductor	A type of material that allows the flow of electrical current in one or both directions. A metal wire is an example of a conductor.
Continuous Tone Controlled Squelch System (CTCSS)	A series of sub-audible tones used to filter out undesired interference or radio transmissions in receivers. In addition, some repeaters use CTCSS to control access. There are 38 standardized tones available. There are many other specific manufacturer related terms, such as PL (Private Line, a registered trademark of Motorola).
Controller	The control system for a repeater. Normally, the controller functions may include turning the repeater on and off, timing transmissions, sending the identification signal, controlling the auto patch and CTCSS encoder/decoder.
Control operator	The radio operator designated to "control" the operation of the repeater or remote base station.
Control point	The location at which the control operator function is performed.
Control Station	A base station authorized to operate through a repeater station in the same way as a mobile station. The station may be used to control the operation of the repeater using different methods.
Controlled Environment (RF)	Related to RF exposure limits required by FCC regulations. May apply to Amateur Radio Operators and GMRS operators, depending on the transmitter power.

Controlled net	Also known as a directed net. A net, operated by a net control station (NCS), in which all traffic is authorized by the NCS. Stations check into and out of the net and all communications go through the NCS. Stations must obtain permission from the NCS to communicate with other stations.
Conventional system	A radio system that uses one or a set of individual frequencies for talk paths. See also trunked system .
Copy	Indication that a message was received and understood. May also be used as a question, "Did you copy (understand)?"
Courtesy tone	Also known as a courtesy beep. An audible indication that a repeater user may go ahead and transmit. This usually also resets the timer.
Coverage	The geographic area that is within usable repeater range.
CQ	Calling any amateur radio station, may be sent in CW, phone or some digital modes. Not used for GMRS or other radio services.
Cross-band	The process of transmitting on one band and receiving on another. Used in the Amateur Radio Service.
Crystal	A small, polished slice of quartz that is used to control the frequency of radio transmitters. Normally packaged in small metal cases, they offer high stability and accuracy.
Crystal oscillator	A device that uses a quartz crystal to keep the frequency of a transmitter constant.
Current	A flow of electrons in an electrical circuit.
Cutoff frequency	The frequency at which a filter will begin to reject signals.
Cycles per second (CPS)	Term used for measuring frequency prior to when it was replaced by the term Hertz.
DC ground	In vehicular radio installations, a connection directly to the chassis or negative battery post.

Decibel (dB)

A basic unit used to measure the intensity of sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale. (1/10 of a Bel). A 3 decibel (3 dB) increase in signal level is a doubling of signal power. It is useful in describing a wide range of signal levels. See below:

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

dBd - Decibels above or below a dipole antenna.

dBi - Decibels above or below an isotropic antenna.

Demodulator

A demodulator is an electronic circuit (or computer program in a software-defined radio) that is used to recover the information content from the modulated carrier wave. There are many types of modulation so there are many types of demodulators. The signal output from a demodulator may represent sound (an analog audio signal), images (an analog video signal) or binary data (a digital signal).

De-sense

Desensitization. The reduction of receiver sensitivity due to overload from a nearby transmitter. See also **front-end overload**.

Detector

The stage in a receiver in which the modulation (voice or other information) is recovered from the RF signal. See also **discriminator** or **demodulator**.

Deviation

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

Digital Coded Squelch (DCS)

A digital advancement to CTCSS. DCS adds a sub-audible bit stream to the audio in a radio transmission. It can be used in same way as CTCSS to filter out unwanted interference or radio signals. There are 83 standard DCS codes, but some systems use non-standard.

Digital Mobile Radio (DMR)

An open standard digital two-way radio system, which uses Time-Division Multiple Access (TDMA), to obtain two voice or data channels in a single frequency. Not permitted in the personal radio services.

Digital modulation	A mode of communications where voice is converted into a stream of digital information (ones and zeros). The bit stream is then inserted into the carrier and sent via radio. There are currently many different types of digital communications. Modern radio equipment can use either analog or digital modulation. It is possible to put standard analog FM in a 12.5 kHz channel by using band width narrowing techniques. However, analog FM in a 6.25 kHz channel is not considered workable, so digital modulation must be employed. There are many advantages in digital communications. Signal quality is generally considered better, with no static or hiss being heard. However, due to the reduced bandwidth of digital, there is less than full sound quality. Thus, voice over digital sounds less than natural. Such modulation is not permissible in the GMRS , FRS , or CB radio services, except as provided in FCC regulations.
Digital Private Line	A term trademarked by Motorola for its version of digital coded squelch.
Digital Quiet Talk	A term used by Kenwood for its digital coded squelch.
Digital Signal Processing (DSP)	The process of digitally analyzing and manipulating an analog signal. The signal must first be digitized with an analog-to-digital converter. This provides for filtering, noise reduction, audio equalization, etc.
Diplexer	A frequency splitting and isolation device. Typically used to couple two transceivers to a single antenna, thus allowing one to receive on one transceiver and transmit on the other transceiver. The typical application is 2M and 440MHz transceivers into a dual band antenna.
Dipole	A basic antenna consisting of a length of wire or tubing, open and fed at the center. The entire antenna is one half wavelength long at the desired operating frequency. This antenna often used as a standard for calculating gain. See Decibel (dBd).
Direct Current (DC)	An electric current of constant direction, having a magnitude that does not vary or varies only slightly. Direct current is produced by sources such as batteries, power supplies, solar cells, or dynamos.
Directional	Refers to an antenna that focuses a majority of radio power in a specific direction.

Director	An element in front of the driven element in a Yagi or Quad and some other directional antennas.
Discriminator	The stage in a receiver in which the modulation (voice or other information) is recovered from the RF signal. See also demodulator and detector .
Dispatch center	The facility from which emergency units (police/fire/EMS) are dispatched for a particular jurisdiction or multi-jurisdictional area. It may or may not be combined with a Public safety answering point (PSAP) .
Distress call	An emergency message transmitted by any station. Also known as an SOS or MAYDAY call.
Doubling (Double)	This occurs when two stations transmit at the same time on the same frequency. FM radio has a characteristic whereby a stronger signal "captures" and over-rides the weaker one. However, if two such stations are transmitting with <u>similar</u> signal strength, it may cause the signals to mix in the receiver and result in an unintelligible transmission.
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.
Driven element	In a multi-element antenna, such as a Yagi, the driven (or active) element is the element in the antenna which is electrically connected to the receiver or transmitter.
Dropping out	A repeater requires a minimum signal in order to transmit. When a signal does not have enough strength to keep the repeater transmitting, it is said to have "dropped out".
Dual-band antenna	Antenna designed for use on two different bands.
Dual-tone Multi-frequency (DTMF)	The series of tones generated from a keypad on a radio transceiver (or a telephone). Uses 2-of-7 or 2-of-8 tones; often referred to by Bell's trademark Touchtone.

Dual watch	A capability of certain receivers to receive two separate channels simultaneously.
Dummy load	A device which simulates an antenna during tests on a transmitter. It converts radio energy to heat instead of radiating energy. Causes a match to the transmitter output impedance.
Duplex	A communication mode in which a radio transmits on one frequency and receives on another. See also simplex .
Duplexer	A device commonly used in repeater systems which allows a single antenna to transmit and receive simultaneously. This is typically for isolation of a system within the same band. Duplexers must be tuned for the correct frequency.
Duty cycle	Duty Cycle is the amount of time, represented by a percent of operating time, that a radio can transmit. It is generally dependent on how well the transmitter can shed the heat from the heat sink on the rear of the radio and other factors. For example, a radio that has a 25% / 50 watt duty cycle can transmit continuously for 25% of the time at 50 watts output. A radio that has a 100% / 25 watt duty cycle can transmit continuously for 100% of the time at 25 watts output.
Dynamic range	A measurement of receiver performance. It measures the ability of the receiver to handle a range of signal strength, from the weakest to the strongest. This includes several factors, including sensitivity and selectivity.
Earth ground	An electrical connection to a ground rod or interconnected rods driven into the earth for safety purposes.
Echolink	A network protocol which uses Voice Over Internet Protocol (VoIP). This program allows worldwide connections to be made between Amateur stations, from computer to station, or from computer to computer.
Effective isotropic radiated power (EIRP)	The measured radiated power of an antenna. It is also called Equivalent Isotropic Radiated Power. The EIRP takes into account the output power, losses in transmission line and the gain of the antenna. It is represented in dB , that is expressed relative to an ideal (theoretical) isotropic antenna.

Effective Radiated Power (ERP)	The product of the output of the transmitter power plus the gain of the antenna minus antenna transmission line losses. Represented in dB and expressed relative to an ideal half-wave dipole antenna. The ERP is required on certain FCC forms.
Electromagnetic spectrum	The electromagnetic spectrum is comprised of all the frequencies of electromagnetic radiation that propagate energy and travel through space in the form of waves. This includes the portion of the spectrum that we can see, known as the visible spectrum as well as those waves that are invisible to human eye. These consist of ultra-violet light, radio, x-rays, etc. Some waves, referred to as ionizing radiation, are harmful to humans and those which are not harmful, are known as non-ionizing radiation.
Electromotive force (EMF)	The difference in electrical potential between two points that compels electricity to flow to an area of lower potential, in order to equalize the charge. It is measured in volts.
Electron	A stable sub-atomic particle with a negative elementary electric charge. It acts as the primary carrier of electricity in all conductive solids.
Elmer	A mentor; an experienced operator who tutors newer radio operators.
Emergency message	As defined by the FCC, "Communications concerning the immediate safety of life or protection of property".
Emergency Communications (Emcomm)	The ARRL's program in emergency communication, which includes continuing education. See also emergency traffic .
Emergency Medical Services (EMS)	Also known as ambulance or paramedic services. A type of service providing acute medical care in the field and may provide transport to a hospital.
Emergency Net	A controlled net established to handle emergency operations or pass emergency traffic .
Emergency traffic	Messages relating to an emergency or disaster situation. See Precedence .
Emission	The type of transmitted signal from a radio station, such as AM, FM or single sideband.

Emission designator	FCC classification codes which indicate the bandwidth, method of modulation, nature of the modulating signal and type of information transmitted on the carrier signal. It is included in licensing information.
Encryption	A privacy function available in many modern commercial and professional grade two-way radios. Digital encryption makes a message unintelligible except to a receiver configured to match the transmitter. This method of voice or data scrambling converts digitized signals into unintelligible noise. This is a very secure way of providing communications security. Encryption is not permissible in the ARS , GMRS , FRS , or CB radio services.
Equipment grade	The grade of radio equipment is determined, generally, by quality and functionality. Most two-way equipment is either consumer, commercial or professional grade. See the text in the sub-chapter "Equipment is not all the same".
Exercise	The term "this is an exercise" or "drill", used on two-way radio, normally is associated with an operational test being conducted. These may involve emergency management agencies, the Red Cross, REACT, or other groups involved in emergency preparedness.
Eyeball	Slang for a face-to-face meeting between radio operators or when a visual is made with a specific person or vehicle.
Factory reset	An action in a two-way radio that will return it back to the original factory specifications. This should be taken with caution, as a factory reset will usually delete all previous settings and code plug information.
False or deceptive messages	Messages that are prohibited by FCC regulations, which include messages or identification which are false or intended to mislead.
Family Radio Service (FRS)	A short-range radio service designed for personal, family and group communications. This personal radio service uses 22 channelized UHF frequencies. FRS radios use narrow-band FM (NBFM) and are limited to 2 watts, according to FCC regulations. FRS stations may communicate with GMRS stations on shared channels. Only portable stations with non-removable antennas may be used. Voice and limited data transmissions are permitted. No license is required.

Federal Registration Number (FRN)	A unique number that the FCC assigns to each licensee or applicant.
Federal Communications Commission (FCC)	The U.S. government agency which regulates the radio spectrum and licenses non-federal users. The Commission is a board of seven Presidential appointees created by the Communications Act of 1934.
Feedback	A high-pitched sound generated when a speaker and open microphone are too close to each other. For example, a portable radio left on in a car seat while transmitting on the mobile radio.
Feed line	In a radio antenna, the feed line is the cable or other transmission line that connects the antenna with the radio transmitter or receiver. In a transmitting antenna, it feeds the RF current from the transmitter to the antenna, where it is radiated as radio waves.
Field strength meter	A test instrument used to show the presence of RF energy and the relative strength of the RF field.
Filter	In two-way radio, a circuit or device that will allow certain frequencies to pass while rejecting others.
Final	1. The last transmission by a station during a contact prior to signing off. 2. The last amplifying stage of a transmitter.
Fixed station	A radio station at a fixed location, which is used for the purpose of communicating only with other fixed stations.
Fox hunt	A contest to locate a hidden transmitter. See also radio direction finding .
Frequency	The number of times an RF wave cycles per second. It is the rate of oscillation (vibration). Audio and radio wave frequencies are measured in Hertz (cycles per second). Also, designates a certain point in the electromagnetic spectrum. See below: kHz - kilohertz, thousands of cycles per second. MHz - megahertz, millions of cycles per second. GHz - gigahertz, billions of cycles per second.

Frequency Coordinator	An individual or organization that keeps records and makes recommendations for radio frequency assignment, in order to minimize interference in specific geographical areas. In some cases, such as the Amateur Radio Service (Part 97), the recommendation is only for repeater stations. In other cases, such as the Business Radio Service (Part 90), the recommendation includes all types of stations.
Frequency modulation (FM)	The encoding of information in a carrier wave by varying the frequency of the wave. In analog frequency modulation of an audio signal, the deviation (the difference between the frequency of the carrier and its center frequency) is proportional to the modulating signal. In radio transmission, an advantage of frequency modulation is that it has a greater signal-to-noise ratio and therefore rejects radio frequency interference better than an equal power amplitude modulation (AM) signal.
Front-end overload	The effect on a receiver when a strong, local signal, interferes with proper reception. A receiver with poor selectivity, the ability to keep unwanted signals filtered out, may appear to have reduced or no audio due to this effect.
Front panel programming	A function available on some radio equipment that allows re-programming from the front panel, without the necessity of using software and a codeplug. An operator is responsible to assure that any changes are in compliance with FCC rules for that radio service.
Full duplex	A communications mode in which a radio transmits and receives at the same time using two separate frequencies. For example, a cell phone is a full duplex device since both parties can talk at once. See also half duplex and simplex .
Full quieting	A received signal that contains no static or noise.
Fuse	A thin metal strip mounted in a holder. When excessive current passes through the fuse, the metal strip melts and opens the circuit, thereby protecting the components. Fuses are rated in amperes.
Gain (antenna)	A performance measurement which combines the antenna's directivity and electrical efficiency. The gain describes how well the antenna focuses radio waves. It is measured in decibels (dB).

Gain (generic)	A measurement of the amount of signal amplification. This is normally a decibel (dB) measurement of amplitude. For example, a signal has gain (is amplified) whenever it passes through an amplifier circuit or gain-type antenna.
Gel cell	A type of sealed lead acid battery that is often used for powering two-way radios. Such 12 VDC rechargeable batteries can be mounted in any orientation, require little maintenance and can power mobile or base stations. Gel cells may operate better in high heat applications. The correct type of charger must be used.
General Mobile Radio Service (GMRS)	A land-mobile radio service consisting of 22 UHF channels designed for personal and family two-way communication. There are an additional 8 frequencies designated for repeater input use only. It requires a license in the U.S., but a license will not be issued to a business or organization. An adult individual and his or her immediate family members are covered by one license for ten years. Some stations may use up to 50 watts of output power. GMRS stations may communicate with FRS stations on shared channels. Voice is permitted using portable, mobile, base, fixed and repeater stations. Limited data applications are allowed using only portable units with permanently attached antennas. See the text for more detailed information.
Go ahead	Send your transmission. Telling another operator, it's their "turn" to speak.
Go for	One method of stating an operator is ready to receive a call. As an example, if one radio operator is calling for Unit 2, then Unit 2 or an operator that is with Unit 2 would state, "go for Unit 2".
Ground	Common zero-voltage reference point. See also Earth Ground .
Ground plane	An antenna ground plane is a conductive surface that is mostly flat or may be constructed of radials. The surface acts as a reflector for radio waves. Although not required, it is beneficial for the ground plane to be connected to an electrical or chassis ground. This helps reduce static electricity. The ground plane shape and size help to determine the antenna radiation pattern. See also the text about antenna placement for more information.

Ground rod	A copper or other metallic rod placed into the ground used for electrical grounding. See also earth ground .
Ground wave propagation	Radio waves that travel along the surface of the earth, even beyond the horizon.
Group Calling	See Selective Calling .
Half duplex	A communications mode in which a radio transmits and receives using two separate frequencies. The radio transmits and receives at different times. See also full duplex and simplex .
Half-wave dipole	This type of antenna commonly consists of two identical conductive elements such as metal wires or rods. A common form of dipole is the half-wave dipole, in which each of the two rod elements is approximately 1/4 wavelength long, so the whole antenna is a half-wavelength long. The radiation pattern of a vertical dipole is omnidirectional.
Ham	Common term for an amateur radio operator.
Ham-fest	A social and commercial event at which hams meet to buy, sell, and swap equipment.
Handheld	Also known as a portable, handie-talkie or walkie-talkie. A two-way radio that is small enough to be held in your hand.
Handle	A radio operator's name or informal designation. Many ham operators use the term. Also, an old CB radio term.
Hang time	The short period following a received transmission in which a repeater continues to transmit. This allows other operators who want to access a repeater the chance to do so. On some repeaters, a courtesy beep sounds when the timer has reset, and it is ready to accept another transmission.
Harmonics	Unwanted signals from a transmitter, which are exact multiples (2x, 3x, etc.), of the primary operating frequency. As an example, with a primary frequency of 150.000 MHz, the 2 nd harmonic would be 300.000 MHz.
Heat sink	A passive heat exchanger that transfers the heat generated by radio equipment and allows it to dissipate.

Hertz (Hz)	The basic unit used for measuring frequency. One cycle per second.
High frequency (HF)	High Frequency band from 3 to 30 MHz. May exhibit ground wave or skywave propagation.
IDAS	The Icom implementation of NXDN. A digital communication system that uses Frequency-Division Multiple Access (FDMA) in two-way radio equipment. The NXDN standard, developed by Kenwood and Icom, is able to provide two voice or data channels in a 12.5 KHz bandwidth.
Impedance	The opposition that an electronic circuit, component or system presents to AC or DC current. Impedance is measured in ohms. The higher the impedance, the more resistance to current is provided. The typical impedance for a two-way radio, antenna or coaxial cable is 50 ohms.
Input frequency	The frequency of a repeater receiver. This would be the transmit frequency of a mobile or hand-held station using a repeater.
Interference eliminator code	See Continuous Tone Controlled Squelch System (CTCSS) .
IP Rating	IP, or ingress protection, ratings are set by certain national standards organizations and define levels of effectiveness applied to electrical enclosures to seal out material, such as moisture, dust, dirt, etc. See the text about equipment standards and protection for more information.
Jamming (Jam)	To intentionally cause interference to or block signals from other radio users.
Keypad lock	A function that locks the keys on a two-way radio, so that the settings cannot be accidentally changed. The method is different for various manufacturers.
Key up	To start transmitting by pressing the push to talk (PTT) button on a radio. When using a repeater, it also causes the repeater to transmit.
Kill	See remote functions.
Kilohertz (kHz)	The frequency of a radio transmission. Kilohertz is one thousand cycles. Previously known as kilocycles.

Land mobile radio	According to the FCC, private land mobile radio includes public safety agencies, utilities, railroads, manufacturers or other businesses using two-way radio. These services come under Part 90 of the FCC Rules.
Line of sight	Relating to radio wave propagation where signals travel in a direct path from the transmitter to the receiver. This is mostly in VHF and UHF frequencies. In some cases, there is absorption and reflection of signals that will cause a change in the propagation.
Li-on	See Lithium-ion battery.
Lithium-ion battery	A type of rechargeable battery commonly used for mobile electronics and electric vehicles. Such batteries have a self-discharge rate of only 1.5 to 2% per month. Must be charged correctly.
Logic trunked radio (LTR)	An analog trunked radio system that was developed by the E.F. Johnson Company. Control information is transmitted as sub-audible tones. Used in business radio systems.
Lone worker	A two-way radio functionality, in some equipment, for use when workers or volunteers are located in remote or hazardous areas. The lone worker function sounds a beep at selected time intervals and requires the worker to press a button on the radio. If the worker fails to do so, the radio will send an alert to a supervisor or dispatch center.
Loss	Relating to RF signal, the reduction of power due to various problems in connectors, coaxial cable or antennas.
Machine	Slang for a repeater.
Magnetic mount	Also, a mag-mount. An antenna which has a magnetic base, designed for quick temporary use on a mobile station.
Man down	A function available on some two-way radio equipment that will activate a tone in the following conditions: Worker is not moving, or the radio is in an unusual position. If the worker does not press a button within a specified time, the radio will send an alert to a supervisor or dispatch center. Normally used in business or industrial applications.
Megahertz (MHz)	The frequency of a radio transmission. Megahertz is one million cycles. Previously known as megacycle.

Memory bank	Also known as a zone. Channels in a transceiver organized into a related group.
Microphone gain	A measure of the relative sensitivity of a microphone. Some two-way radios allow for programming the gain. Normally the higher the number, the higher the gain (loudness) when transmitting.
Military Standard	US military standards issued by the Department of Defense. Standardization helps to assure that equipment meets certain requirements and is compatible with other equipment. These standards are also used by other government and industrial organizations. Some standards, such as MIL-STD 810, apply to how the environment affects equipment. A specification (spec) sheet or data sheet for a commercial or professional grade two-way radio may list what standards are met.
Mobile station	A station not at a fixed location, such as a mobile unit in a vehicle or a portable unit.
Monitor mode	A function on some transceivers that allows selection of receive with a CTCSS tone setting or without. When monitor mode is selected, all stations are received. FCC rules require checking if a frequency is in use, before transmitting.
Monitoring	A station is actively listening for all radio traffic. Open to receiving a call.
Monitoring for emergency traffic	A station is actively monitoring only for emergency calls.
Morse code	International Morse code is a method used to communicate the entire alphabet and numbers 0-9, using a sequence of tones. The tones are known as a dot (short tone) and a dash (long tone). Morse code is used by Amateur Radio Operators to send entire messages or for the ID of repeaters or other transmitters.
Motorola Data Communications	Also known as MDC-600 or MDC-1200. A functionality designed for business use available in some radio equipment. Certain information, such as unit ID, status and selective calling, is sent on voice channels as a data burst. Such data transmissions are not allowed in the GMRS and should be de-selected in programming. This type of transmission is allowed in MURS .

Multi-Use Radio Service (MURS)	A short distance voice or data two-way radio service designed for personal or business communication. MURS consists of 5 VHF FM channels with a maximum power of 2 watts. No license required. Portable, mobile and base stations are permitted.
Narrow band	A transmit setting to use narrow 12.5 KHz or less bandwidth. There is a requirement of the FCC for Part 90 commercial stations to change radio equipment from the legacy wideband (25 KHz bandwidth) to narrowband (12.5 KHz) or equivalent by January 1, 2013.
National Oceanic and Atmospheric Administration (NOAA)	A federal agency, part of the U.S. Department of Commerce. It is the parent agency for the National Weather Service.
National Weather Radio	NOAA weather radio is a nationwide system of VHF stations broadcasting weather information and bulletins for the public. Some two-way radio equipment has the capability to also receive these broadcasts. This system has the ability to issue specific area alerts known as SAME (Specific Area Message Encoding).
National Weather Service	A U.S. federal agency responsible for weather forecasts and alerts. Some two-way radio equipment has the functionality to monitor the National Weather Radio for bulletins.
Net	A group of stations that meet on a specific radio frequency, normally at scheduled times. May be conducted by a net control station. Different nets include a controlled net and an informal net.
Net control station	A station that is responsible for conducting a net .
NEXEDGE	The Kenwood implementation of NXDN, a digital communication system that uses Frequency-Division Multiple Access (FDMA) in two-way radio equipment. The NXDN standard, developed by Kenwood and Icom, is able to provide two voice or data channels in a 12.5 KHz bandwidth. Used in business or public safety communication systems.
Ni-Cad	See nickel cadmium battery.

Nickel cadmium battery	At one time, sealed NiCad batteries were in common use for portable electronic devices. Battery packs were used to power hand-held two-way radios. It has mostly been replaced by the newer Nickel metal hydride or lithium-ion batteries.
NiMH	See Nickel metal hydride battery.
Nickel metal hydride battery	A type of rechargeable battery. More than two times the capacity of Ni-Cad batteries.
Noise cancelling microphone	A microphone that is designed to pick up a voice well and filter out ambient or background noise.
Nothing heard	A response when no reply is heard from a called station. Informs other stations, you will no longer be calling, and the frequency is open.
Omni-directional	Refers to an antenna that radiates an equal amount of radio power in all directions parallel to the radiating element.
On the side	A station is done transmitting and the frequency is clear for use.
Open repeater	A repeater that is open for use by all licensed operators.
Open repeater initiative	An idea initially promoted in the early 2000s to increase the number of open repeaters available and to utilize a national standard tone code (141.3 Hz). This would allow those operators traveling the country to have more local repeaters that would be available for use.
Operator	The user of a two-way radio.
Operator Selectable Tone (OST)	A function on some two-way radio equipment that allows a user to select multiple tones (CTCSS/DCS) on a single channel. This can be done without having to program many channels with different tones.
Out	Stated by a radio operator when done with a message and signing off (leaving the air). No reply is needed.
Overmodulation	The condition when the modulating signal in a transmitter exceeds 100% modulation of the carrier. It may result in spurious emissions or distortion of the received signal. A result from audio input that is too high.

Peak envelope power

The power output of a **single sideband** transmitter is measured in peak envelope power. The mean power produced during peak conditions employing full modulation.

Personal Radio Services

Those radio services authorized by the FCC that allow individuals, families or groups to operate radio equipment. Some require a license and other, low-power services, do not. The most well-known services are GMRS, FRS, MURS and the CBRS (CB radio).

Picket fencing

The rapid fluttering sound heard from the weak signal of a mobile unit (while moving). This occurs when the unit does not have a strong signal and sounds much like a stick hitting a picket fence.

Plain language

Voice communications without codes or coded messages intended to provide a hidden meaning. Foreign languages and commonly known radio operating words and phrases, such as “ten four” and “roger,” not intended to provide a hidden meaning, are not considered codes or coded messages. (Ref: FCC Sec. 95.303)

Portable

A hand-held or otherwise portable two-way radio.

Powerpole

An electrical connector series from the Anderson Power Products company. The connectors are used for DC power connection in many two-way radios.

Power supply

A power converter that changes 120 VAC to 12 VDC. A power supply unit may be part of a transceiver or may be separate.

Precedence

Emergency	Any message relating to a situation in which life or property is in immediate danger and assistance is needed. For example, a station requesting assistance for or relaying a medical emergency call.
Priority	Important or urgent messages, which may be related to a previous emergency message. Includes official advisory messages. For example, weather warning or watch bulletins.
Welfare	An inquiry as to the health and welfare of an individual. Includes all messages relating to checking and reporting on a person’s welfare. For example, checking on an elderly person in a disaster area.
Routine	Most normal traffic. Only communicate routine traffic after all higher precedence messages have been handled.

Privacy tone or code	See Continuous Tone Controlled Squelch System (CTCSS) .
Private Line (PL)	A registered trademark of Motorola relating to CTCSS in their products. See Continuous Tone Controlled Squelch System (CTCSS) .
Propagation	The behavior of radio waves as they travel. Such waves can be affected by absorption, refraction, reflection and scattering.
Public Safety Answering Point (PSAP)	A call center responsible for receiving calls to the 9-1-1 emergency number for a specific area. Center staff may dispatch emergency units or may transfer the call to another agency.
Push-to-talk	Relating to the button on a microphone that causes a transceiver to begin transmitting.
Q-Codes	A list of three letter codes used by Ham radio operators. See below for an example: QRM –Abbreviation for interference. QSL –Transmission is received and understood. Also, means a card or other documentation confirming reception of a signal. QSO – An abbreviation for a radio contact.
Quick Call	See Selective calling .
Quiet talk	(1) Motorola A sub-audible tone used in some radio equipment, in addition to CTCSS/DCS, to further restrict reception of signals only from a particular group. It is a 55 Hz tone sent periodically and only works when each radio in the group has the function enabled. (2) Kenwood: The term used for the Kenwood CTCSS system.
Radio check	A term often used, when meaning a signal check or audio check .
Radio quiet zone	An area where radio transmissions are highly restricted to protect scientific research or a vital communications station.

Radio direction finding (RDF)	The measurement of the direction from which a received signal was transmitted. By combining the information from two or more properly situated receivers, the source of the transmission may be located using triangulation. RDF is used in locating illegal or interfering transmitters, finding lost persons, emergency locator beacons, tracking wildlife and other purposes. There are some radio groups that have RDF contests.
Radio Emergency Associated Communication Teams (REACT)	REACT International began as a CB emergency channel monitoring organization in 1962. Now, REACT utilizes many other types of radio systems, including GMRS, Amateur and business land mobile to augment its work assisting with disaster communications, storm spotting and other activities.
Radio Frequency	Electromagnetic energy with a frequency between 3 kilohertz and 300 gigahertz. See Electromagnetic Spectrum .
Radio traffic	The existence of radio messages being sent and received, including the density and type of transmissions.
Radio wave	Radio signals, generated by transmitters, are made up of radio waves. The waves have a frequency as well as an electrical wavelength. The wavelength is the distance from one peak of the wave's electrical field to the next and is inversely proportional to the frequency of the wave.
Range	The distance that two-way radios can communicate effectively. There are several factors that can affect range. Whether the radio system is communicating simplex without a repeater or through a repeater. Other factors include frequency, power output, terrain, obstructions and the antenna system. For repeaters, see also coverage .
Receive	The process of receiving radio waves. See also receiver.
Receiver	A device that receives radio waves and converts that information to a usable form, such as sound.
Reflected power	RF power that is reflected back towards a transmitter. This may be dissipated in heat or may cause damage to the transmitter. It means that the match between a transceiver and the antenna system is not optimal. Also see Standing Wave Ratio (SWR) .

Reflection	A type of propagation in which radio waves are reflected off a surface.
Reflector	An element behind the driven element in a Yagi antenna.
Refraction	A certain type of propagation in which radio waves can be bent or change directions after entering a substance. Much like visible light changes direction in water.
Remote functions	Many commercial or professional grade two-way radios have programmable options that allow remote control of the unit. These include remote stun, revive or kill options in the event the radio is lost or stolen. Once a unit receives a stun command, it will no longer operate normally. If it is relocated, it can be sent a revive command, which will allow it to operate again. If the equipment is believed to be permanently lost, it can be issued the kill command, which disables the radio. In emergency situations, there are other remote functions, such as listen in.
Repeater	Radio equipment that receives a signal on one frequency and re-transmits it on another for the purpose of extending range. Repeaters are normally used for VHF or UHF stations and situated at locations high above the average terrain.
Repeater etiquette	The commonly accepted method and terminology when using a repeater.
Repeater linking	When a repeater is linked to other repeaters, this causes a signal received on one repeater to send it to another repeater, where it is re-transmitted again. This allows for wide area coverage. Repeaters can be linked by internet connection or RF links.
Repeater offset	See repeater separation.
Repeater separation	Repeaters receive on one frequency and re-transmit on another. The difference between the two frequencies is known as the separation, also known as offset. For example, in the GMRS, a repeater would receive a mobile radio on 467.550 MHz and re-transmit the signal on 462.550 MHz. The difference, or separation, between the two frequencies is 5.0 MHz.

Reset (repeater)	When a repeater time out timer is reset or a momentary delay in transmitting to reset a timer.
Revive	See remote functions.
Rig	Slang for a radio transceiver.
Roger	I have received your message. Originally, phonetic for “R” or received. Does not mean “correct” or “affirmative”.
Roger beep	An audible tone added to the end of a transmission, indicating the radio operator is done speaking.
Rubber duck antenna	A short, flexible antenna which consists of an inner helical (or spring-like) wire, which is covered by rubber. The antenna replaces longer ¼ wave or telescoping antennas used on a hand-held or portable radio.
Scan	A function which continuously searches selected frequencies for a signal. It is a function available on many modern two-way radios. There are various types of scan settings. See below:
Normal scan	Sequentially scans the selected channels
Scan list	Channels that are selected for scanning
Scan delay	Time delay (in seconds) after a signal is received, before scan is resumed
Priority scan	Checks a selected channel while a signal is being received on another channel
Nuisance delete	Ability to temporarily delete a channel from the scan list, as needed
Talk back	Allows user to transmit on the channel the scan has stopped on
Start/Stop/Pause	User can start, stop or pause scan
Automatic	Scan begins immediately upon power up
Edit scan list	Allows user to edit the scan list from the front panel
Vote scan	Finds the strongest repeater signal
Group scan	Allows for multiple group scan lists

Scanner receiver	A radio receiver that automatically checks multiple programmed frequencies for a signal. It stops when a signal is detected, sends the audio to the speaker, and then continues scanning once the signal ends.
Scrambler	A function available in many commercial and professional grade two-way radios that transposes, inverts or otherwise encodes the message in a signal. The message is unintelligible except in equipment designed and configured to receive it. Voice inversion, for example, provides minimal security of communications. Scrambling is not permissible in the ARS, GMRS or CB Radio Service. See also encryption .
Selective Calling	Selective calling allows one radio operator to call an entire group of operators at once or to contact a specific radio operator. There are various methods of selective calling in the use of analog two-way radio. The first is CTCSS or DCS. There are also tone burst, single tone, DTMF, two-tone sequential, MDC-600 and MDC-1200. In addition, a Motorola trademarked system, Quick-Call I or II also performs this function and is used with pagers.
Selectivity	A measure of the ability of a receiver to only allow signals on the correct frequency and reject nearby signals on other frequencies. Measured in dB. The higher the number, the better the selectivity.
Sensitivity	The measurement of how well a receiver can detect weaker signals. Usually measured in microvolts (uV). The lower the number, the more sensitive.
Shack	Slang for a room or building that is used to operate a two-way radio station.
Signal Check	A report of the readability of a transmitters signal. Weak, strong, etc.
Signal Strength Meter	A meter or indication on the display of a receiver or transceiver that indicates the relative strength of a signal being received. For a meter, the further to the right the needle goes, the stronger the signal. When bars are used, the more bars the stronger the signal.
Simplex	Transmitting and receiving on the same frequency without using a repeater. Direct communication between two or more radios.

Single sideband	An amplitude modulated (AM) signal has two identical sidebands. Bandwidth is wasted by using two identical sidebands on each side of the carrier. In single sideband, one of the sidebands is eliminated. A bandpass filter is added as a component in the system, which removes the extra sideband. By removing the duplicated sideband, the bandwidth is reduced by half. By reducing the bandwidth, double the number of channels may be placed in the same frequency band.
Skip	See Skywave.
Skywave	Also known as skip. Under certain random conditions, radio waves in HF bands can travel up to the ionosphere and be reflected to earth. Sometimes contacts can be made to hundreds or even thousands of miles. The CB Radio Service and Ham radio are able to transmit in HF bands.
Smart PTT	Smart push to talk is a feature on some programmable two-way radios when busy channel lock-out is used. If the PTT button is double-clicked, it will over-ride the busy channel lock-out function.
S-Meter	Short for signal strength meter.
Software defined radio (SDR)	A radio system in which components have previously been enabled by hardware in the past, but now use software.
Specification sheet (Spec sheet)	Also called a data sheet. A list of specifications of two-way radio equipment. Normally issued by a manufacturer for a specific model or series. The list includes various details, such as power output, frequency range, number of channels, various standards met, etc. Such sheets are issued for commercial and professional grade equipment, not available for consumer grade.
Split tone	The capability of a transceiver to utilize one CTCSS/DCS tone for transmit and another for receive on the same channel.
Spurious signal	A spurious emission transmitted on an unselected frequency. Such a transmission is an undesired effect that may cause interference to other authorized users.
Squelch	A function in a radio receiver that causes audio silence until a certain signal level is reached.

Squelch tail	The short burst of white noise heard at the end of an FM radio transmission. In some cases, the use of CTCSS/DCS eliminates this noise upon receive.
Standing Wave Ratio (SWR)	A measure of the load impedance relative to the impedance of the transmission line (cable) in use. Usually measured with an instrument known as an SWR meter or antenna analyzer. Any such meter can only measure the impedance it “sees” in terms of SWR for which it has been designed. Most coaxial cables for two-way radio have an impedance of 50 ohms and most such meters are set for this. It is important for the impedance and frequency band of the meter to match the radio and transmission line. The SWR should be checked on all base and mobile antenna installations. By measuring the magnitude of impedance mismatch at the transmitter output, problems with the antenna, cable or connections can be revealed. Some meters also display the forward and reflected RF power.
Station	Equipment able to engage in radio communications. A station may be a base, repeater, fixed or mobile transmitter.
Stun	See remote functions.
Sub-code	See Continuous Tone Controlled Squelch System (CTCSS) .
Sub-miniature antenna connector (SMA)	A small RF connector that is used with hand-held radios, mobile phone and WiFi systems.
Tactical call sign	A word or word and number radio designation used to identify a location or function, usually during an event or incident net.
Talk around	A function available on many two-way radios that allows simplex communication on a repeater output frequency when out of range or in case the repeater has failed.
Tone burst selected transmit (TBST)	Sends a tone pulse at a specific frequency to open a dormant repeater. No longer in use for most areas.

Time out timer (TOT)	A programmable function that causes a transmitter, such as a repeater, to stop transmitting after a set period of time. This function limits transmit time, so that a transmission will not be continuous. An operator must stop transmitting and let the repeater reset.
Tone scan	A function on some two-way radios or scanner receivers in which a frequency is scanned and the CTCSS/DCS tone is displayed when a signal is received. This allows the radio operator to either automatically or manually select the tone and speak to the other station transmitting.
Transceiver	A device that is a combination of a transmitter and a receiver in one unit.
Transmit	To send a radio signal.
Transmission	The process of a transmitter sending electromagnetic energy to an antenna, which radiates a signal in the form of waves. May also refer to a specific signal.
Transmitter	An electronic device that produces radio waves to be sent to an antenna on a select frequency.
Travel Tone	The CTCSS tone of 141.3, used as a common tone in GMRS, for mobile stations that are traveling from place to place.
Trunked system	A radio system, which may be analog or digital, that automatically selects the talk path (group) and the repeater for mobile users. Used for business or government stations.
Type acceptance	The FCC rules require that radio equipment, and some other electronic equipment, obtain certification. The old term was known as type acceptance. The certification process confirms that equipment complies with requirements of FCC Part 15 or other parts. The FCC logo may be included with the instructions or as a label on the equipment. A nameplate or label with the FCC ID must be attached to the equipment to verify compliance.
Ultra-high frequency (UHF)	Radio frequencies from 300 MHz to 3 GHz. Known for line-of-sight propagation. May exhibit reflection characteristics involving mountains, buildings or other surfaces. Refraction when signals travel through other substances may occur.

Universal Licensing System	An on-line portal to the wireless licensing system of the FCC in the US.
User set mode	A mode in a transceiver that allows the operator to change certain settings, such as back light, beep level, squelch, mic gain, etc.
Vehicular repeater	A repeater , operated from a car or truck, that extends range from a portable radio to other two-way radios.
Very High Frequency (VHF)	A band with radio frequencies from 30 MHz to 300 MHz. Known for line-of-sight propagation. May exhibit some reflection characteristics involving mountains, buildings or other surfaces.
Voice annunciator	A programmable function in some two-way radios that uses an audible voice to announce changes made. For example, if a knob is changed to channel 3, the radio will announce “channel 3”.
Voice operated transmit (VOX)	In transceivers, a VOX is a switch that automatically starts transmitting when the audio level reaches a specific threshold.
Voice over Internet Protocol (VoIP)	Technology that allows telephone voice connections over the internet, rather than an analog phone line. Voice is converted from analog to digital data and sent through the internet. Voice and data can then be transmitted with the same system. The connection of two-way radio equipment and repeaters is also possible.
Voltage	The force from an electrical circuit’s power source that moves charged electrons (current) through a conducting loop. This force allows work to be done, such as powering equipment. The unit of measure is the volt (v). The common abbreviations used are VAC (voltage in alternating current) and VDC (voltage in direct current).
Watt	The unit of power that is used to quantify the rate of energy transfer.
Wavelength	The physical length of a radio wave. The wavelength is the distance from one peak of the wave’s electrical field to the next and is inversely proportional to the frequency of the wave. It is normally measured in meters.

Weak Signal Propagation Reporter	A program designed for Ham radio operators to test propagation paths using low power transmissions in HF bands.
Weather mode	A built-in national weather radio (NWR) receive capability in a two-way radio.
Weather alert	Capability in a two-way radio to receive weather alerts transmitted by the National Weather Service with NWR.
Wide band	In type accepted equipment, wideband is referred to by the FCC as a 25 KHz or, in some cases, a 20 KHz bandwidth. Narrowband is 12.5 KHz bandwidth or the equivalent.
Zone	See Memory bank .