

GLOSSARY OF RADIO TERMS:

The following is a compilation of terms and acronyms Law Enforcement officials often times hear. This information was collected from several sources. It should be used as a guide for understanding common radio terms.

I will update this with additional information as the process progresses. Please let me know if there are items you would like to see included on the list. The latest revision date will appear at the top of the form.

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AGC: Abbreviation for *automatic gain control*.

amplification: The process of increasing the strength of a radio signal.

backward compatibility Ability of new units to operate within an "old" system infrastructure or to directly intercommunicate with an "old" unit. [8]

bandwidth The difference between the limiting frequencies of a continuous frequency band. Typically measured in kilohertz. May be considered the amount in kilohertz required for a single communications channel.

bandpass: The frequency range that a receiver is currently tuning or that a filter permits to pass through it.

band pass filter: A filter that allows a certain range of frequencies to pass but which will reject frequencies below and above the desired range.

band plan: A plan to allocate different frequencies within a range for specific purposes and users.

calling frequency: An agreed-upon frequency where stations attempt to contact each other; once contact is made, stations move to a *working frequency*.

call sign: A group of letters and numbers used to identify a station and the country authorizing its operation.

Car to car: To communicate with another station without using a repeater. To transmit and receive on the same frequency. Also referred to as direct; or car to car.

carrier: The unmodulated output of a radio transmitter.

channel: The frequency on which a radio transmission takes place, or the input and output frequency pair used by a repeater station.

co-channel interference: Interference from stations on frequencies adjacent to the desired signal.

control point: The physical location from which a radio station's functions (setting frequency, turning the station off and on, etc.) are controlled.

dB: Abbreviation for *decibel*.

dead zone: A region where a radio signal cannot be received due to propagation difficulties.

decibel: The ratio between two power levels on a logarithmic scale. A 3 decibel increase is a doubling of power; a 20 decibel increase is a power increase of 100 times.

direct: To communicate with another station without using a repeater. To transmit and receive on the same frequency. Also referred to as simplex; or car to car.

duplex: To transmit on one frequency while listening for replies on another.

effective radiated power: The output of a transmitter multiplied by the gain of an antenna.

Encryption: The reversible transformation of data from the original (the plaintext) to a difficult to interpret format as a mechanism for protecting its confidentiality, integrity and sometimes its authenticity. Encryption uses an encryption algorithm and one or more encryption keys.

ERP: Abbreviation for *effective radiated power*.

feedline: The cable connecting a radio to an antenna.

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

fixed station: A station that always operates from a constant, specified land location.

frequency bands Frequency bands where land mobile radio systems operate in the United States including the following:

Low VHF 30-50 MHz

High VHF 150-174 MHz

Low UHF 450-470 MHz

700 MHz 764-776/794-806 MHz

800 MHz 806-869 MHz.

gain: The apparent increase in the strength of a signal radiated or received by an antenna caused by the antenna having better performance in some directions than others.

GHz: Abbreviation for *gigahertz*.

gigahertz: Unit equal to 1000 megahertz or 1,000,000 kilohertz

GMT: Abbreviation for *Greenwich mean time*.

ground: A connection to a point of zero voltage, like the Earth.

ground wave: A radio wave propagated along the surface of the Earth.

hertz: One complete cycle of a radio wave per second.

heterodyne: A high pitched "whistle" sound caused by two carriers interfering with each other. The pitch of the "whistle" depends on the frequency difference between the carriers.

Hz: Abbreviation for *Hz*.

ID: Abbreviation for "identification."

input frequency: The frequency on which a repeater station listens for signals to retransmit.

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

kHz: Abbreviation for *kilohertz*.

kilohertz: Unit equal to 1000 hertz.

kilowatt: Unit equal to 1000 watts of transmitter power.

megahertz: Unit equal to 1,000,000 hertz or 1000 kilohertz.

MHz: Abbreviation for *megahertz*.

mobile station: A two-way radio unit installed in a car, boat, plane, etc., and used while in motion or at various stops.

multiband antenna: An antenna suitable for operation on several different bands of frequencies.

notch filter: A circuit that takes a small "slice" out of the bandpass tuned by a receiver; this is useful for reducing interference from narrow bandwidth signals.

National Telecommunications and Information Administration (NTIA):

The Executive Branch agency that serves as the President's principal advisor on telecommunications and information policies and is responsible for managing the Federal Government's use of the radio spectrum.

omnidirectional antenna: An antenna that transmits and receives equally well in all directions.

output frequency: The frequency on which a repeater station will retransmit signals it hears on its input frequency.

P25: APCO Project-25 Digital Standard, also referred to as Common Air Interface (CAI). APCO Project 25, or "P-25" for short, is the public safety industry standard developed by the APCO International (Association of Public Safety Communications Officials) to provide a radio solution that would allow different agencies using different radio systems to interoperate according to a public safety industry standard and not by system manufacturer.

patch: A control center subsystem that permits a mobile or portable radio on one channel to communicate with one or more radios on a different channel through the dispatch console.

priority channel: A channel a scanner will immediately switch to when a signal is present.

propagation: The process of how a radio signal travels from a transmitting station to a

PTT Abbreviation for "Push-to-Talk," the switch on a subscriber unit which, when pressed, causes the subscriber unit to transmit.

repeater: A radio station that receives stations on a certain frequency and simultaneously retransmits them on another frequency.

simplex: To transmit and receive on the same frequency. Also referred to as direct; or car to car.

skip: Any type of sky wave propagation via ionospheric refraction.

squelch: A circuit in a radio receiver that quiets the receiver until the strength of a received signal exceeds a specified level.

squelch tail: A brief bit of noise heard between the end of a radio transmission and the reactivation of the receiver's squelch circuit.

telemetry: One-way radio transmissions used for tracking and measurement data.

time-out: To transmit too long in a single transmission, causing a repeater's timer circuit to stop further transmissions.

UHF: Abbreviation for *ultra high frequencies*.

UHF low: The frequency range from 450 to 470 MHz.

UHF high: The frequency range from 760 to 860 MHz. 760-806 MHz radios are often called 700 MHz radios, 806 to 860 MHz radios are often called 800 MHz radios. Radios that cover the entire spectrum are often called dual band radios.

very high frequencies: The frequency range from 30 to 300 MHz.

VHF: Abbreviation for *very high frequencies*.

VHF high band: The frequency range from 150 to 175 MHz. Most Public Safety radios operate in the 150-160 MHz range.

VHF low band: The frequency range from 30 to 50 MHz.

vocoder (Abbreviation for **voice-coder**): A device that usually consists of a speech analyzer, which converts analog speech waveforms into narrowband digital signals, and a speech synthesizer, which converts the digital signals into artificial speech sounds.

Yagi: A directional antenna consisting of a dipole connected to the receiver or transmitter and two additional elements, a slightly longer *reflector* and a slightly shorter *director*. Electromagnetic coupling between the elements focuses maximum power (or reception) in the direction of the director.