

A-weighting A standard compensation (weighting) curve sometimes applied to audio measurements to account for the ear's response to low-level sound. Frequently applied to measurements of the residual noise levels of wireless microphone systems and other electronic devices. ("A-weighted noise.")

Absorption The conversion of sound or radio frequency (RF) energy into heat.

Absorption Loss For wireless microphones, the loss that occurs when a transmitted signal passes through a material that absorbs a portion of the RF energy, reducing the signal level available to the receiver.

Acoustic Phase Interference See Phase Cancellation.

Active Antenna An antenna with an integrated or attached RF preamplifier or RF line amplifier. There is no practical difference between an active antenna and an antenna connected to a separate RF preamplifier.

Active Circuit An electronic circuit which uses active devices such as transistors or integrated circuits for its operation and which requires a power source for operation.

Active Device Devices such as transistors, integrated circuits and vacuum tubes that require an external power source in order to perform an intended purpose, such as amplification.

Active Splitter An electronic device that consists of an RF signal splitter (power divider) preceded by an RF amplifier that compensates for the RF loss of the splitter. Used to allow one antenna to feed several receivers.

Adapter Mount Term used to describe gooseneck microphones with a 5/8"-27 threaded rotating collar which screws onto the 5/8"-27 threads of a mic stand, mounting stud, etc.

Adjacent Channel Rejection The ability of a radio receiver to reject interference from an undesired signal on another nearby channel frequency. In wireless, unless the frequency separation between the desired signal and the adjacent signal is specified, the term is generally not of any practical significance.

Alkaline Battery A type of battery often used in electronic equipment. Offers longer operating life than other types of readily-available batteries.

Anechoic Chamber An acoustic space without echo or reverberation. Often used for the acoustic testing of microphones and loudspeakers.

Antenna A conductive physical device designed to radiate RF energy from a transmitter, or to capture RF energy for application to a receiver.

Antenna Directivity The property of certain types of antennas that receive or transmit a greater signal in one direction as compared to other directions. Such antennas will have greater than unity (0 dB) gain in the preferred direction or directions and less than unity gain in other directions.

Antenna Diversity A form of diversity that uses three receiving antennas. Each antenna is isolated by an RF amplifier, then the three signals are combined into a single composite output signal which is applied to a non-diversity receiver. No longer used by any major manufacturer due to unpredictable and generally poor performance. This name is sometimes erroneously used for phasing diversity systems.

Antenna Efficiency The actual amount of RF energy received or transmitted by an antenna as compared to an ideal antenna. An antenna's efficiency can be reduced by it having incorrect dimensions for the frequency of operation, improper mounting, electrical losses and by other factors.

Antenna Gain The ratio of the signal, usually expressed in dB, received or transmitted by a given antenna as compared to an isotropic or dipole antenna. Antenna gain can only be achieved by making an antenna directional, that is, with better performance in one direction than in others.

Antenna Splitter An electronic device that consists of an RF signal splitter (power divider) preceded by an RF amplifier that compensates for the RF loss of the splitter. Used to allow one antenna to feed several receivers.

Attenuate To reduce the amount of energy contained in an electrical or radio frequency signal. Also, to reduce the intensity or level of sound waves.

Balanced Circuit A signal-carrying circuit with two active electrical conductors of equal impedance on which equal, but oppositely-phased signal components may exist. Usually both conductors are enclosed within an overall metallic shield, which does not carry the signal. Widely used to reduce the pickup of hum and noise in audio system cabling. Also referred to as a balanced line.

Band A range of frequencies, as defined by regulatory authorities or by commonly accepted usage.

Bargraph A display device indicating a value, usually by means of a row of LEDs or LCD segments. One or more LEDs or LCD segments illuminate to display the present value of the function being metered in relationship to the maximum value. Have replaced fragile and expensive mechanical meters for most purposes in audio equipment. See also VU Meter.

Beamwidth The angle in degrees over which a directive antenna will provide a gain within 3 dB of the value in the direction of maximum gain.

Bi-directional Operating primarily in two directions, 180 degrees apart. See Figure-8.

Bias Voltage A low DC voltage typically supplied by a body-pack wireless transmitter to power a condenser microphone. (Not the same as phantom power.)

BNC Connector A type of small "twist and lock" RF connector often used with coaxial cables and antennas in wireless systems.

Board See Console.

Booster See RF Line Amplifier.

Boundary Microphone A type of microphone that detects sound pressure level changes at a boundary of the acoustic space in order to reduce interference between direct and reflected sound.

Breathing An audible change in the level of background noise with varying audio levels. Most often used to describe an undesirable characteristic of companding systems. A faster, somewhat more noticeable form is called pumping.

Cable Loss The inherent loss of coaxial RF cables due to conductor resistances, absorptive losses in the insulating material and signal leakage between the braids of the outer shield.

Capsule The portion of a microphone that converts acoustic energy to electrical energy. Often includes shock mounts, acoustic isolators, protective covers and electronic circuitry in addition to the basic transducer. Also called an element.

Cardioid Describes the pickup pattern of one type of directional microphone, which is roughly in the shape of a heart. Such microphones are several dB less sensitive to sound arriving from sources at angles 90 degrees or greater away from its front.

Carrier A modulated RF signal; that is, one which is carrying audio or other information. Sometimes used in a general manner to refer to any RF signal.

Channel In wireless, a designated radio frequency available for use by the transmitter and receiver. In audio, the circuit path for a specific signal, or a functional unit that is designed to independently process a signal.

Clipping In audio equipment, severe distortion caused by a signal whose peak level exceeds the capabilities of the device processing the signal. Results in the flattening of the signal peaks as if they had been "clipped" off.

Coaxial Cable A cable designed to conduct RF, consisting of an inner conductor, a tubular outer conductor and an insulating material in between the inner and outer conductor. The outer conductor is usually a woven copper braid covered by an outer layer of protective plastic.

Companding or Compansion A technique used to reduce the effects of noise unavoidably introduced by signal losses, circuit limitations and interference during transmission of an audio signal. Companding is also used to increase the effective dynamic range of the audio signal without causing overmodulation or overdeviation of the transmitted RF signal. The signal to be transmitted is first dynamically compressed to reduce its overall dynamic range by a factor of, as an example, 2:1 ("2-to-1"). After the signal arrives at the reception point, it is dynamically expanded by a corresponding factor of 1:2, thereby restoring the original dynamic range. During the expansion process, transmission noise is reduced by a 2:1 factor such that noise that was, for example, 40 dB below maximum output will be reduced to 80 dB below maximum output.

Compression In wireless microphones, the process of reducing the dynamic range of the audio signal by a factor of 2:1 via a logarithmic compressor for transmission. In general audio use, a circuit to reduce circuit gain by a variable amount when the output begins to exceed some preset maximum.

Compressor A circuit to perform compression of an audio signal. May be either a variable or logarithmic (2:1) type.

Condenser Microphone A type of microphone in which the diaphragm is one plate of a capacitor (condenser) containing an electrical charge. An electrical output signal is generated by detecting the variations in the charge present in the capacitor resulting from movement of the diaphragm by sound waves. Some are called capacitor microphones.

Console A larger audio mixer with several input and output channels. Also known as a board.

Counterpoise The second half of an antenna, which "balances" the radiating element to launch the RF wave. Although not always readily apparent, a counterpoise always exists and its suitability can greatly affect the efficiency of the antenna. A ground plane, as found on ground plane antennas, is one type of counterpoise, as is the outer case or circuit board of a receiver using an attached whip antenna.

Crystal In wireless microphones and digital devices, a frequency stabilizing device consisting of a small quartz crystal in a holder. The natural vibrational frequency of the quartz can be made highly stable by external circuitry and is used to establish the operating frequency of wireless transmitters, receivers and other RF and digital equipment.

Crystal Controlled In wireless, equipment whose operating frequency is directly established by a crystal, rather than indirectly as in a frequency synthesizer. Also commonly used to refer to equipment which is only able to operate on one fixed frequency, as versus a number of synthesized frequencies.

DAT Digital Audio Tape.

dBm Decibels referred to 1 milliwatt.

dBu Decibels referred to the voltage equivalent of 0 dBm into a 600 ohm load. $0 \text{ dBu} = 0.775\text{V} = 2.2 \text{ dBV}$

dBV Decibels referred to 1 volt.

Decibel A ratio of two levels, based upon a logarithmic scale. Often abbreviated as dB.

De-emphasis In FM radio systems, the noise accompanying the received audio increases rapidly in the higher audio range. To offset this, at the transmitter the audio signal is pre-emphasized to raise the level of the higher audio frequencies relative to the lower audio frequencies. This allows the received audio to be de-emphasized, yielding an overall flat audio frequency response, while greatly reducing the effects of the noise introduced by the transmission process.

Demodulation The process of recovering the audio from the RF signal in a receiver.

Demodulator The circuit in a receiver which recovers the audio from a received RF signal. Also known as a detector.

Detector See Demodulator.

Deviation The process of varying the frequency of an RF signal to superimpose the audio to be transmitted. Also referred to as modulation or FM modulation. Deviation is also used to refer to the amount that the frequency of the RF signal is varied; usually expressed as a peak deviation in kHz.

Diaphragm The portion of a microphone which is mechanically moved by incident sound, thereby allowing conversion of sound energy to electrical energy.

Diffraction The process whereby RF signals or sound waves are, in certain circumstances, deflected from their normal straight-line path by physical objects.

Dipole A type of antenna with two defined opposing radiating elements, both of the proper length for the frequency of operation, and each forming the counterpoise for the other.

Distance Factor (DF) Provides an indication of a directional microphone's increased working distance, compared to a DF of "1.0" for an omnidirectional mic.

Directivity The property of transmitting or receiving energy more strongly in some directions than in others.

Disccone Antenna A type of antenna that is not directional and offers good performance over a 3:1 or greater bandwidth. Consists of a flat disk or radial rods arranged in the same shape mounted over a cone-shaped ground plane structure, which may also consist of rods.

Discriminator A type of FM Demodulator.

Diversity A method of reception providing protection from signal loss due to multipath nulls, which are localized small areas with a very low RF signal level caused by multipath propagation. See True Diversity and Phasing Diversity.

Dropout In wireless microphones, a loss of RF signal which results in loss of audio or audio that is noticeably noisy. Also refers to a small physical area where there is insufficient RF signal present to obtain satisfactory wireless operation. Dropouts are normally caused by multipath or signal blockage due to some type of obstruction.

Dual-receiver Diversity See True Diversity.

Dynamic Microphone. A type of microphone consisting of a diaphragm mechanically attached to a coil operating in a magnetic field. Sound pressure variations cause movement of the coil within the magnetic field, producing a small voltage across the coil terminals.

Dynamic Range The range in dB between the noise floor of a device and its defined maximum output level. The term applies to both audio devices and RF equipment, but the maximum output level is defined differently.

Electret Condenser Microphone A type of condenser microphone whose transducer contains an electret material that permanently retains an electrical charge, and does not require the external voltage source required by other types of condenser transducers to polarize the diaphragm.

Emission In wireless microphones, the radiation of an RF signal, whether intentional or not.

ERP Abbreviation for Effective Radiated Power. The amount of power actually radiated by a transmitter and antenna combination (the applied power multiplied by the efficiency of the antenna).

Expander A circuit to perform dynamic range expansion of an audio signal, usually in a logarithmic manner. The receive portion of a companding system.

Expansion In wireless microphones, the process of restoring the original dynamic range of the audio signal by means of a 1:2 logarithmic expander. See Companding.

FCC or Federal Communications Commission The U.S. Government agency charged with regulating and setting technical standards for communications, especially all types of radio communications.

F Connector An inexpensive, crimp-on type of connector widely used for TVs, VCRs and cable-system RF connections. Not suitable for wireless mic systems or other professional audio uses.

Feedback In acoustics, the undesirable leakage of audio from loudspeakers back into a microphone, resulting in a loud squeal or howling sound, or in less severe cases, a hollow ringing sound quality or whistles.

FET Field-effect transistor, typically used as an impedance converter at the element in a condenser microphone.

Figure-8 or Figure-of-8 A bi-directional microphone pattern, with two equal lobes 180 degrees apart. Also describes some antenna patterns, such as that of a dipole.

Frequency Diversity Use of different frequencies simultaneously for receiving, selecting the one with a better signal. Primarily used for military and large commercial applications. Wireless microphones typically use space diversity (see True Diversity).

Frequency Search A process of searching for wireless microphone frequencies that are free from interference caused by other frequencies in use at a particular location, and do not in turn interfere with the other used frequencies. Normally performed using a personal computer and a program designed for this purpose.

Frequency Stability In wireless, the accuracy to which the operating frequency is maintained over time and in the presence of environmental changes.

Frequency Synthesizer A circuit to generate a stable and precise RF output on any one of a number of preset (or programmable) frequencies. Synthesizers are

used as the local oscillators for receivers, and to set the output frequency of transmitters.

Frequency Test The process of testing a candidate frequency, usually by computer, to determine the likelihood of interference with, or from, existing frequencies at a location.

Front End The RF input stages of a receiver.

GaAsFET A type of low noise RF transistor sometimes used in wireless microphone receivers.

Gain Before Feedback The amount of total gain that can be achieved in an audio system, from microphone to speakers, before the onset of acoustic feedback.

Ground Effect A loss of operating range, sometimes significant, when wireless antennas are positioned near to the ground. Caused by partial signal cancellations due to RF energy reflected up from the ground mixing with the direct RF signal. Because of the shorter wavelengths involved, UHF frequencies usually are less affected than VHF frequencies.

Ground Lift Switch or Ground Lifter A switch to disconnect the shield of a balanced audio cable from the local equipment ground. In certain situations, can eliminate ground loop and hum problems.

Ground Loop A condition where the local grounds at each end of a length of cable are at a different AC potential. This sometimes causes hum and noise problems and may require the use of corrective measures such as a ground lift switch on the equipment.

Ground Loss See Ground Effect.

Ground Plane Antenna A type of antenna consisting of a defined radiating element, usually a 1/4 wave rod or wire, and a metallic ground plane. Commercial ground plane antennas often use a number of 1/4 wave or longer radial rods as the ground plane; the rods may be tilted downwards into a cone to improve the antenna pattern.

Handheld Transmitter A wireless microphone transmitter consisting of both a microphone capsule and the transmitter electronics in one integrated package. Similar in appearance to a handheld wired microphone.

Harmonic An exact integer multiple of a fundamental frequency or tone.

Harmonic Distortion Undesired signal harmonics at the output of a device which were not present at the input. See also T.H.D.

Headworn Microphone A miniature microphone mounted on a short boom and held in place near a performer's mouth by some type of headband or similar device. Useful for vocalists who need their hands free during dance numbers or to play an instrument.

Helical Antenna A type of antenna formed by a coiled small-diameter spring, usually covered in plastic and somewhat flexible. Physically shorter than a standard 1/4-wavelength whip antenna, but also considerably less efficient. Sometimes called a "rubber duckie."

Hi-Z (High impedance) A loosely-defined audio term used to describe devices whose input or output impedance is greater than approximately 5,000 ohms. High-impedance mics typically are 20,000+ ohms.

Hum A continuous undesired audio component at the frequency of the incoming AC power line, or a harmonic.

Hypercardioid Describes the pickup pattern of one type of directional microphone. Its front lobe is somewhat narrower than that of the cardioid microphone, and it possesses a small rear lobe in which the sound pickup is out-of-phase with that of the front lobe.

Hz An abbreviation for Hertz, the number of cycles per second of a signal.

IF or Intermediate Frequency Wireless receivers normally convert the incoming RF signal to a lower intermediate frequency such as 10.7 MHz for amplification and final filtering prior to demodulation.

Image Frequency In receivers, the process of converting the desired RF frequency to the IF frequency results in an undesired sensitivity at a second RF frequency, which is referred to as the image frequency. The RF filtering in the receiver is relied upon to reduce its susceptibility to spurious RF signals at the image frequency to acceptable levels.

Image Rejection The measure of a receiver's ability to reject signals at its image frequency. Normally expressed as the ratio, in dB, of the receiver's sensitivity at the desired frequency versus the sensitivity at the image frequency.

Impedance The opposition to the flow of an AC signal offered by a circuit or device. See also RF Impedance, Hi-Z, Lo-Z.

In-line A term used to describe microphone accessories that are connected between the mic and the mixer input.

Instrument In audio, generally refers to a musical instrument of some type.

Intercept Point A measure of the intermodulation performance of RF devices. Devices with high intercept points will generate lower levels of undesirable intermodulation products as compared to similar devices with lower intercept points.

Intermodulation A process whereby strong signals mix together in an active circuit to create undesired output frequencies that are not present at the input.

International Power Connector A type of internationally-approved power connector widely used for AC power input on audio equipment, allowing international use by means of power cords specific to particular countries. Also referred to as an IEC connector.

Isotropic In wireless, a theoretical "unity" (0 dB) gain antenna used as a measurement reference. Has the assumed characteristic of receiving or transmitting equally well in all directions. A dipole antenna roughly approximates an isotropic antenna.

kHz Kilohertz, 1,000 Hertz, or one thousand cycles per second.

Lavalier Microphone A type of miniature microphone that is usually worn fastened to clothing somewhere near the user's mouth. Also referred to as a clip-on or lapel microphone.

LCD Abbreviation for Liquid Crystal Display. A type of display, usually numerical, used in electronic equipment. Dark characters are formed on a lighter background. Requires external back lighting to be visible under low-light conditions.

LED Abbreviation for Light Emitting Diode. A semiconductor device that emits visible light when conducting current. Has replaced incandescent lamps as indicators in most electronic equipment.

Limiter In wireless microphones, a transmitter audio circuit that acts to limit the maximum modulation (deviation) of the transmitter in order to meet government regulations. In audio, a device that limits the maximum voltage or power to some preset value to protect speakers or other equipment.

Line Level Audio signals whose maximum average levels can exceed approximately 0.5 volts, or a circuit which can output or accept such signals.

Line Microphone See Shotgun Microphone.

Local Oscillator A circuit to generate a stable RF frequency that is mixed with the received RF signal to obtain an IF output signal. The local oscillator will operate at a frequency above (or below) the desired RF frequency by an amount equal to the IF frequency of the receiver.

Log Periodic Antenna A type of directive antenna that provides moderate over a wide frequency range. Typical units provide 7-10 dB of gain over a 2:1 bandwidth gain and have a beamwidth of approximately 60 degrees.

Loss In wireless microphones, most frequently refers to the energy lost in RF coaxial cables. See Cable Loss.

Lo-Z (Low impedance) A loosely-defined audio term used to describe devices whose input or output impedance is less than approximately 5,000 ohms. In microphones, Lo-Z commonly is 50 - 1,000 ohms.

MHz Megahertz, one million Hertz, or one million cycles per second.

Mic Level Audio signals whose level is similar to those of microphones, that is, generally ranging from roughly 0.001 volts (1 mV) to 5 volts.

Mini-plug A miniature phone plug, available in both "mono" and "stereo" versions. The most common size for audio use is 3.5 mm.

Mini-XLR Connector A Switchcraft® Tini-QG® connector, frequently called a mini-XLR, is available in several configurations. Be careful, the pins are numbered in the opposite direction from an XLR! Often used on small boundary microphones, and for the mic connections on some wireless body-pack transmitters. The connectors' wiring schemes are not standardized within the microphone industry.

Mismatch A term used in RF systems to describe the situation when two devices having different impedances are connected to each other. Mismatches cause excess signal losses and other problems.

Mixer A device for summing two or more electrical signals. In general audio usage, a device to control and sum the outputs of two or more microphones. In wireless microphones, the receiver circuit which mixes the RF signal with the local oscillator signal to obtain the IF output.

Modulator In wireless microphones, an electronic circuit to superimpose an audio signal on a RF signal, usually by varying its frequency in synchronization with the audio signal. Also called an FM modulator.

M/S Stereo Microphone Mid-side or mono-stereo microphone. A type of stereo microphone with both a cardioid transducer facing forward and a "figure-8" transducer which is mounted such that its maximum sensitivities are pointed "sideways." An electronic circuit is required to develop the two stereo channels from the two transducer outputs. With this technique, it is possible to combine the transducer outputs in such a manner as to vary the stereo image.

MOSFET A type of RF transistor often used in wireless microphone receivers.

Multichannel In wireless microphones, generally refers to a transmitter or receiver which has more than one user-selectable operating frequency.

Multicoupler An electronic device that consists of an RF signal splitter (power divider) preceded by an RF amplifier that compensates for the inherent RF loss of the splitter. Allows feeding several receivers from one antenna.

Multipath RF signals arriving at a location via different transmission paths, usually referring to a combination of direct and reflected signals. The direct and reflected signals are often opposite in phase, which can result in a significant signal loss due to mutual cancellation in some circumstances. Multipath is most troublesome indoors and in areas where many metallic surfaces are present.

Multipath Null A small area in space where direct and reflected RF signals from a transmitter cancel each other, resulting in little or no usable energy being available to a receiver antenna. See also Multipath and Dropout.

Multi-pattern Microphone A type of microphone with a switch to allow selection between more than one polar pattern.

Mute To turn off or silence an audio signal. In wireless, sometimes used to indicate the squelched condition for a receiver.

Neodymium A rare metallic element that can be made into particularly strong magnets. Superior to the magnetic materials more commonly used in dynamic microphones.

NiCad A type of rechargeable battery often used in electronic equipment. Typically provides only a small fraction of the operating time of alkaline batteries.

Noise Reduction Any technique for reducing the amount of undesired noise in an audio signal. Comanding is one of several such techniques.

Noise Squelch A squelch detection technique that monitors noise at frequencies above the audio range at the FM demodulator output. A high level of noise in this region indicates a weak or unusable RF signal, or some form of interference.

Non-diversity A standard single-channel RF receiver that is, one without diversity circuitry.

Omnidirectional Describes a device such as a microphone or antenna that operates equally well in all directions.

Oscillator An electronic circuit that generates a specific tone or frequency.

Overload A condition where the signal levels present exceed the capabilities of a device, causing an undesirable consequence.

Pa See Pascal.

Pad An attenuator, typically used to reduce mic output to avoid equipment input overload.

Pascal (Pa) A unit of measure for sound pressure. One Pascal equals 94 dB SPL.

Passive Lacking any active devices or active circuitry.

PCB Abbreviation for Printed Circuit Board. An insulating material with attached electrical conductors, and usually, various types of electronic devices.

Phantom Power A specific configuration for remotely powering a microphone containing active circuitry, especially a condenser microphone, by means of its audio cable. DC voltage is superimposed upon both conductors of a balanced line with respect to ground such that dynamic and other "non-phantom" microphones are not adversely affected. It should not be confused with other methods, especially those often used with wireless transmitters, that do not utilize a balanced line. These other techniques are usually referred to simply as "bias voltage."

Phase ("In-phase/Out-of-phase") Actually refers to the polarity of an electrical or acoustic signal. If two or more signals or devices are "out-of-phase" with respect to each other, cancellation or other disturbance of the combined output can result. Some examples of operating phase (polarity) definitions: "Positive sound pressure causes positive output" (microphones) or "positive input causes positive acoustic output" (speakers).

Phase Cancellation Undesirable dips and peaks in frequency response caused by mixing the outputs of two microphones which are picking up the same sound but with different arrival times. For example, this can occur when two microphones are placed near each other, but still with space between them; or when wireless microphone users stand next to each other. Also referred to as acoustic phase interference. See also "3:1 Rule".

Phase Lock Loop The control mechanism used in most frequency synthesizers. Operates by comparing the phase of a sample signal, usually the frequency-divided output of the RF oscillator, with a precision fixed reference frequency. The phase comparator output then drives a control loop which forces the RF oscillator frequency to be an exact multiple of the reference frequency. Changing the frequency divider ratio will lock the oscillator to a new frequency, changing the operating frequency of the synthesizer. See also Synthesizer.

Phasing Diversity A type of diversity where two antennas but only one receiver channel are used. The two antennas are electronically combined, which has the effect of creating a single virtual antenna whose electrical position is at some point in space other than the location of the two physical antennas. When the receiver detects a signal loss that might be due to a multipath dropout, it experimentally changes the electrical phase of one of the antennas. This has the effect of moving the electrical position of the virtual antenna in space. This action may correct the signal loss, have no effect, or make it worse, since the receiver cannot determine the actual cause of the signal loss or anticipate the effect of the phase change. The principal advantage of phasing diversity is low cost.

Phone Plug Connector A type of plug-in audio connector with a 1/4-inch (6.3 mm) diameter metal contact sleeve, and either one or two signal contacts. Widely used in the telephone industry, particularly in the past, hence the name.

Pilot Tone A specific tone frequency applied to a transmitter outside the audio range; used by tone coded squelch systems for receiver squelch control.

Plate Microphone See Boundary Microphone.

PLL Abbreviation for Phase Lock Loop.

Polarization Radio waves exhibit the property of polarization, which is the plane of their electrical fields. Polarization is typically referred to as being horizontal or vertical, but the actual polarization can be at any angle. Circular polarization is also possible. Receiving a horizontally polarized signal with an antenna oriented to be vertically polarized, or vice versa, will slightly reduce the amount of signal received.

Polarized In condenser microphones, the source of the charge contained in the microphone capsule. Transducers may be of the internally polarized (electret) type, or may require an outside source of polarizing voltage (externally-polarized).

Polar Pattern A plot of a device's sensitivity or efficiency as a function of the angle around the device. Widely used to characterize the performance of microphones, loudspeakers and antennas.

Pop An undesirable short duration microphone output, often caused by explosive exhalation of air during the formation of certain vocal sounds.

Pop Filter A material, usually some form of acoustically-transparent foam and/or mesh, used on or in microphones to reduce the effects of breath blasts and air currents.

Power Supply A source for the power needed for active electronic circuitry. Can consist of one or more batteries, or an electronic circuit which converts AC line voltage to the type of power required by a particular device.

Preamplifier A type of amplifier specifically designed to amplify low-level signals.

Pre-emphasis In FM radio systems the noise accompanying the received audio increases rapidly in the higher audio range. To offset this, the audio signal is pre-emphasized at the transmitter to raise the level of the higher audio frequencies relative to the lower audio frequencies. This allows the received audio to be de-emphasized, yielding an overall flat audio frequency response, while greatly reducing the effects of the noise introduced by the transmission process.

Processor A device which modifies an electrical signal, usually in a dynamic manner. In wireless, sometimes used to refer to companding.

Propagation The radiation of signal energy through a physical area or space.

Proximity Effect The exaggeration of low-frequency sounds in a directional microphone when it is very near the sound source.

Pumping Undesirable and objectionable gain or background noise level changes in a companding system. A slower, somewhat less noticeable form is called breathing.

Quadrature Detector A type of FM demodulator.

Quick Mount Term used to describe gooseneck microphones with an integral output connector which plugs into a matching jack.

Radiation In wireless, the conversion of the conducted RF signal in the transmitter to radio waves that can be propagated over distance.

Ratio Combining A technique used in true diversity receivers whereby the audio from the two receiver channels is mixed in varying ratios, depending upon which channel has the stronger signal. In the more common switching approach, the receiver simply selects the audio from the better channel by means of an electronic switch.

Ratio Detector A type of FM demodulator.

Reflection Radio waves are reflected by conductive surfaces, much as light is reflected by a mirror. Reflections can also occur in conductors carrying RF signals when there is an impedance mismatch.

Remote Power See Phantom Power.

RF Abbreviation for Radio Frequency. In wireless microphones, any signal above approximately 0.1 MHz in frequency.

RFI Abbreviation for Radio Frequency Interference.

RF Impedance For wireless microphones, the characteristic impedance of an antenna, cable or conductor, which is established by its mechanical dimensions. A value of 50 ohms is generally used for coaxial cables and RF interface points in wireless systems.

RF Line Amplifier For wireless microphones, an RF amplifier most frequently used to overcome the inherent signal losses of coaxial RF cables. Also referred to as an RF preamplifier or booster.

RF Preamplifier See RF Line Amplifier.

Rubber Duckie See Helical Antenna.

Selectivity The measure of a receiver's ability to reject interfering signals at frequencies near the operating frequency.

Sensitivity In wired microphones, phono cartridges, etc., the amount of output for a given input. In RF receivers, the amount of input signal a device requires in order to produce a reference quality of output.

Shock Mount In microphones, a mechanical device, usually incorporating some type of shock-absorbing elastic material, designed to acoustically isolate the transducer from shock, vibration and handling noise. Both internal and external shock mounts are commonly used.

Shotgun Microphone A type of highly-directive microphone having a very narrow elliptical pattern and extremely reduced pickup from the sides and rear.

Signal Level Squelch A form of receiver squelch that is based upon the amount of RF signal present at the receiver input. When the available RF signal is high enough, it is assumed that the output audio will be of acceptable quality and the receiver is unmuted.

Signal Strength Indicator A display which indicates the approximate amount of RF signal present at the input of a receiver.

Signal-to-noise Ratio or SNR The ratio, normally expressed in dB, between the level of the desired signal and the level of unwanted noise.

Skip An atmospheric phenomenon which occasionally allows RF transmissions to be received at unexpectedly great distances, usually for only brief periods of time.

SNR Abbreviation for Signal-to-noise Ratio.

Sound Pressure Fluctuations in air pressure due to the presence of a sound. This sound pressure is expressed in units such as Pascals, microbars, or dynes/cm².

Sound Pressure Level or SPL A standard measurement of the amplitude of sound, expressed as the ratio in decibels between the measured sound pressure and standard reference of 0 dB SPL = 20 microPascals = 0.0002 dynes/cm².

Space Diversity See True Diversity.

Spectrum A loosely-defined wide range of frequencies. See also Band.

Splitter In wireless microphones, a device that divides an RF signal into two or more smaller and approximately equal signals, usually while maintaining the desired impedance at the input and outputs.

Spurious Emission In RF, an unwanted radiated signal, usually considered to arise as an undesirable side effect of a process, or as a result of some imperfection. The spurious output of one device may become interference to another device.

Spurious Output In RF, an unwanted output signal, usually considered to arise as an undesirable side effect of a process, or as a result of some imperfection. May be a conducted signal or a spurious emission.

Squelch A receiver circuit designed to mute (squelch) the audio output when the received signal is too weak to provide acceptable audio or, in some cases, when the wrong signal is being received. See also Noise Squelch, Signal Level Squelch, Tone Coded Squelch.

Stability In wireless, the accuracy to which the operating frequency is maintained through temperature changes and over time.

Stereo Microphone A type of microphone with more than one internal transducer that is capable of generating a stereo output. See also M/S Stereo Microphone, X/Y Stereo Microphone.

Subcardioid Describes the pickup pattern of one type of directional microphone, which is only modestly directional but retains some degree of rejection of sounds arriving from the sides and rear. Provides a somewhat broader and less well-defined pattern than does a standard cardioid microphone.

Subcarrier A secondary tone or carrier which modulates a primary carrier. The subcarrier frequency is normally above the audio range, and may itself be modulated to transmit audio or other information.

Suspension The mounting for a microphone capsule, generally designed to provide some degree of mechanical isolation between the capsule or transducer and the microphone body in order to reduce handling noise.

Switching Diversity The most common implementation of a true diversity receiver, in which the audio from the better of two receiver channels is continuously selected by means of an electronic switch. See True Diversity.

Synthesizer In wireless microphones, a circuit which generates a stable and precise RF output on any one of a number of preset (or programmable) frequencies. Synthesizers are used as the local oscillators for receivers, and to set the output frequency of transmitters. See Frequency Synthesizer.

T.H.D. Abbreviation for Total Harmonic Distortion. The sum total of all undesired harmonic energy present in an output signal, usually expressed as a percentage of the total output signal.

Third Order Intermodulation One of several types of intermodulation products that can be created in electronic circuits. In this case, the second harmonic of an input frequency mixes with a second input frequency to yield a third output frequency which is not present at the input.

Thread Mount See Adapter Mount.

"3:1 Rule" ("3-to-1 Rule") Rule-of-thumb ratio for the minimum distance mics should be spaced apart ("3 times X"), compared to their distance from the sound source ("X"). See also Phase Cancellation.

Tini-QG See Mini-XLR Connector.

Tone Coded Squelch A form of receiver squelch that relies upon detection of a specific tone at a frequency above the audio range. If the tone is present at the FM demodulator output, it is assumed that it originates with the tone oscillator in the wireless transmitter and that the correct signal is being received. Usually combined with another type of squelch such as signal level squelch.

Transducer In audio, a device to convert sound to electrical energy or vice versa. Microphones and loudspeakers are two type of transducers. Also refers to the portion of a microphone that is directly involved with conversion of sound energy to electrical energy. A phono cartridge also is a transducer, one that converts mechanical energy (vibration of the stylus) into electrical energy.

Transformerless An electronic circuit capable of outputting or receiving a balanced audio signal without the use of a magnetic transformer. Transformerless circuits generally have wider frequency response and lower distortion than circuits using transformers.

True Diversity A form of diversity that uses two spaced antennas and two receiver channels tuned to the same frequency. Essentially eliminates signal loss (dropouts) due to multipath by instantaneously selecting the audio output from the receiver channel having the stronger RF input signal. Also referred to as space diversity or dual-receiver diversity.

TV Bands In wireless microphones, frequencies between 174 MHz and 216 MHz, and between approximately 494 MHz and 806 MHz. The lower range is referred to as the VHF TV high band, while the upper range is referred to as the UHF TV band. (Please note that these assignments are for the U.S.; other countries may use other frequencies, and may specify non-TV frequencies for wireless operation.)

UHF In wireless microphones, refers to systems with operating frequencies above approximately 450 MHz and below 952 MHz. In the U.S., most such systems operate somewhere between roughly 524 MHz and 806 MHz, or 944 MHz and 952 MHz; other countries may require different operating frequencies.

Ultimate SNR In wireless microphones, the highest SNR attainable from a receiver with an arbitrarily high RF input signal.

Unbalanced Refers to a signal-carrying circuit with one electrical conductor and an overall metallic shield. Also referred to as an unbalanced line.

Unidirectional Describes a device which radiates or receives energy more efficiently from a single direction than from all other directions.

VHF In wireless microphones, refers to systems with operating frequencies below approximately 300 MHz. In the U.S., most such systems operate somewhere between roughly 170 MHz and 216 MHz, with a few lower frequencies available for certain specialized applications. Other countries may require different operating frequencies.

VHF Connector A type of threaded RF connector sometimes used for VHF wireless equipment. Also referred to as PL-259 (cable plug) or SO-239 (panel jack).

VU Meter Originally, an audio output meter for broadcast and recording studio consoles with precisely defined reference level and ballistic characteristics. "VU meter" has become the common name for any audio output metering, particularly on mixers and related equipment. See also Bargraph.

Wall Power Supply A type of power supply, or in some cases AC transformer, that plugs into an AC outlet and provides low-voltage power to an electronic device.

Wall Transformer A type of power transformer that plugs into an AC outlet and provides safe low-voltage power to an electrical device. The term is also sometimes applied to power supplies that have direct current outputs. See also Wall Power Supply.

Wavelength The distance that a wave travels in the time it takes to go through one full 360 degree phase change, or one cycle. Audio: At room temperature, one wavelength at 100 Hz is approximately 11 feet (3.5 m); at 10 kHz, about 1.3 inches (3.4 cm). RF: One wavelength at 200 MHz is approximately 59 inches (1.5 m); at 700 MHz it is approximately 17 inches (43 cm).

Whip Antenna A type of antenna roughly 1/4 wavelength long and mounted on a receiver or transmitter, which is used as a counterpoise. May be rigid in construction or as flexible as a dangling wire.

X/Y Stereo Microphone A type of stereo microphone where two directional transducers are mounted such that their patterns are pointed outward at angles of approximately plus and minus 45-to-60 degrees from the front of the microphone.

XLR Connector Designation for a type of connector commonly used in professional audio. For balanced audio cables, particularly for microphones, the 3-pin versions, male and female, are most often used.

Yagi Antenna A type of directive antenna that provides moderate to high gain over a relatively limited frequency range. Typical units used for wireless provide 9-12 dB of gain over a 10% or so bandwidth and have a beamwidth of approximately 40 degrees.

Z Symbol for impedance.