In this article I'll define several terms related to sound reinforcement systems, room acoustics and sound.

AUDIO GLOSSARY

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AMBIENCE Room acoustics, early reflections, and reverberation. Also, the audible sense of a room or environment surrounding a recorded instrument.

AMBIENCE MICROPHONE A microphone placed relatively far from its sound source to pick up ambience.

AMPLITUDE, PEAK On a graph of a sound wave, the sound pressure of the waveform peak. On a graph of an electrical signal, the voltage of the waveform peak. The amplitude of a sound wave or signal as measured on a meter is 0.707 times the peak amplitude.

ANALOG-TO-DIGITAL (A/D) CONVERTER A circuit that converts an analog audio signal into a stream of digital data (bitstream).

ASSIGN To route or send an audio signal to one or more selected channels.

ATTACK The beginning of a note. The first portion of a note's envelope in which a note rises from silence to its maximum volume.

ATTACK TIME In a compressor, the time it takes for gain reduction to occur in response to a musical attack.

ATTENUATE To reduce the level of a signal.

AUXILIARY BUS (AUX BUS) A bus or channel that contains a mix of the aux-send signals of the input modules in a mixer. An aux bus is used to send signals to an effects unit or monitor system. See Effects Bus.

AUXILIARY SEND (AUX-SEND) A control in a mixer's input module used to send that module's signal to an aux bus. The aux-send level adjusts the amount of effects heard on an instrument, or adjusts the loudness of that instrument in the monitor system.

BAFFLED-OMNI A stereo miking arrangement that uses two ear-spaced omnidirectional microphones separated by a hard padded baffle.

BALANCE The relative volume levels of various tracks or instruments.

BALANCED LINE A cable with two conductors surrounded by a shield, in which each conductor is at equal impedance to ground. With respect to ground, the

conductors are at equal potential but opposite polarity; the signal flows through both conductors.

BANDPASS FILTER In a crossover, a filter that passes a band or range of frequencies but sharply attenuates or rejects frequencies outside the band.

BI-AMPLIFICATION (BI-AMPING) Driving a woofer and tweeter with separate power amplifiers. An active crossover is connected ahead of these power amplifiers.

BIDIRECTIONAL MICROPHONE A microphone that is most sensitive to sounds arriving from two directions-in front of and behind the microphone. It rejects sounds approaching either side of the microphone. Sometimes called a cosine or figure-eight microphone because of the shape of its polar pattern.

BINAURAL RECORDING A 2-channel recording made with an omnidirectional microphone mounted near each ear of a human or a dummy head, for playback over headphones. The object is to duplicate the acoustic signal appearing at each ear.

BOARD See Mixing Console.

BOUNDARY MICROPHONE A microphone designed to be used on a boundary (a hard reflective surface). The microphone capsule is mounted very close to the boundary so that direct and reflected sounds arrive at the microphone diaphragm in phase (or nearly so) for all frequencies in the audible band.

BUS A common connection of many different signals. An output of a mixer or submixer. A channel that feeds a tape track, signal processor, or power amplifier.

BUS IN An input to a program bus, usually used for effects returns.

BUS MASTER In the output section of a mixing console, a potentiometer (fader or volume control) that controls the output level of a bus. Also called Group Fader.

BUS OUT The output connector of a bus.

BUZZ An unwanted edgy tone that sometimes accompanies audio, containing high harmonics of 60Hz.

CARDIOID MICROPHONE A unidirectional microphone with side attenuation of 6dB and maximum rejection of sound at the rear of the microphone (180 degrees off-axis). A microphone with a heart-shaped directional pattern.

CARVE: Apply an EQ dip.

CHANNEL A single path of an audio signal. Usually, each channel contains a different signal.

CHANNEL ASSIGN See Assign.

CLEAN Free of noise, distortion, overhang, leakage. Not muddy.

CLEAR Easy to hear, easy to differentiate. Reproduced with sufficient high frequencies.

COINCIDENT-PAIR A stereo microphone, or two separate microphones, placed so that the microphone diaphragms occupy approximately the same point in space. They are angled apart and mounted one directly above the other.

COMB-FILTER EFFECT The frequency response caused by combining a sound with its delayed replica. The frequency response has a series of peaks and dips caused by phase interference. The peaks and dips resemble the teeth of a comb.

COMPLEX WAVE A wave with more than one frequency component.

COMPRESSION 1. The portion of a sound wave in which air molecules are pushed together, forming a region with higher-than-normal atmospheric pressure. 2. In signal processing, the reduction in dynamic range or gain caused by a compressor. 3. Data compression or data reduction is an encoding scheme to reduce the size of a data file by throwing away audio data deemed inaudible because of masking. ATRAC, MP3, MLP, AAC, RealAudio, OGG, and Microsoft Media are examples of compressed data formats.

COMPRESSION RATIO (SLOPE) In a compressor, the ratio of the change in input level (in dB) to the change in output level (in dB). For example, a 2:1 ratio means that for every 2dB change in input level, the output level changes 1dB.

COMPRESSOR A signal processor that reduces dynamic range or gain by means of automatic volume control. An amplifier whose gain decreases as the input signal level increases above a preset point.

CONDENSER MICROPHONE A microphone that works on the principle of variable capacitance to generate an electrical signal. The microphone diaphragm and an adjacent metallic disk (called a backplate) are charged to form two plates of a capacitor. Incoming sound waves vibrate the diaphragm, varying its spacing to the backplate, which varies the capacitance, which in turn varies the voltage between the diaphragm and backplate.

CONNECTOR A device that makes electrical contact between a signal-carrying cable and an electronic device, or between two cables. A device used to connect or hold together a cable and an electronic component so that a signal can flow from one to the other.

CONSOLE See Mixing Console.

CONTACT PICKUP A transducer that contacts a musical instrument and converts its mechanical vibrations into a corresponding electrical signal.

COVERAGE, COVERAGE ANGLE See Dispersion Angle.

DATA COMPRESSION A data encoding scheme for reducing the amount of data storage on a medium. Same as Data Reduction. See Compression, ATRAC, and MP3.

DAW Abbreviation for digital audio workstation.

dB Abbreviation for decibel.

DEAD Having very little or no reverberation.

DECAY The portion of the envelope of a note in which the envelope goes from maximum to some midrange level. Also, the decline in level of reverberation over time.

DECAY TIME See Reverberation Time.

DECIBEL The unit of measurement of audio level. Ten times the logarithm of the ratio of two power levels. Twenty times the logarithm of the ratio of two voltages. dBV is decibels relative to 1 volt, dBu is decibels relative to 0.775 volt, dBv is decibels relative to 0.7746 volt, dBm is decibels relative to 1 milliwatt, dBFS is decibels, full scale (all bits on or off), dBSPL is decibels of sound pressure level, and dBA is decibels, A weighted. See Weighted.

DELAY The time interval between a signal and its repetition. A digital delay or a delay line is a signal processor that delays a signal for a short time.

DESIGN CENTER The portion of fader travel (usually shaded), about 10 to 15dB from the top, in which console gain is distributed for optimum headroom and signal-to-noise ratio. During normal operation, each fader in use should be placed at or near design center.

DESIGNATION STRIP A strip of paper taped near console faders to designate the instrument that each fader controls. Also called a Scribble Strip.

DESK The British term for mixing console.

DI Short for direct injection, recording with a direct box.

DIGITAL AUDIO An encoding of an analog audio signal in the form of binary digits (ones and zeroes).

DIGITAL AUDIO WORKSTATION (DAW) A computer, audio interface, and recording software that allows you to record, edit, and mix audio programs entirely in digital form. A standalone DAW is a digital multitrack recorder-mixer. Standalone DAWs include real mixer controls; computer DAWS have virtual controls on-screen.

DIGITAL RECORDING A recording system in which the audio signal is stored as binary digits (ones and zeroes).

DIGITAL-TO-ANALOG (D/A) CONVERTER A circuit that converts a digital audio signal into an analog audio signal.

DIRECT BOX A device used for connecting an amplified instrument directly to a mixer mic input. The direct box converts a high-impedance unbalanced audio signal into a low-impedance balanced audio signal.

DIRECT INJECTION (DI) Recording with a direct box.

DIRECTIONAL MICROPHONE A microphone that has different sensitivity in different directions. A unidirectional or bidirectional microphone.

DIRECT OUTPUT, DIRECT OUT An output connector following a mic preamplifier, fader, and equalizer, used to feed the signal of one instrument to one track of a multitrack recorder.

DIRECT SOUND Sound traveling directly from the sound source to the microphone (or to the listener) without reflections. Also, DirectSound is an audio driver for the Windows operating system, intended as an enhancement to MultiMedia Extensions (MME).

DISPERSION ANGLE Also called Coverage, this is the angle off-axis of a loudspeaker at which the SPL (sound pressure level) is down 6 dB from the SPL on axis. It indicates how widely or narrowly a loudspeaker radiates its sound. For example, a loudspeaker with a 90-degree x 40 degree dispersion angle radiates sound over 90 degrees horizontally (+/- 45 degrees off axis) and 40 degrees vertically (+/- 20 degrees off axis).

DISTORTION An unwanted change in the audio waveform, causing a raspy or gritty sound quality. The appearance of frequencies in a device's output signal that were not in the input signal. Distortion is caused by recording at too high a

level, using improper mixer settings, components failing, or vacuum tubes distorting. (Distortion can be desirable, e.g., for an electric guitar.) In digital recording, distortion called quantization error can also occur at very low signal levels, where there are not enough bits to record the signal accurately. Also see Clip.

DRY Having no echo or reverberation. Referring to a close-sounding signal that has not yet been processed by a reverberation or delay device or plug-in.

DSP (Digital Signal Processing) Modifying a signal in digital form by doing calculations on the numbers. DSP is used for level changes, EQ, effects, and so on.

DYNAMIC MICROPHONE A microphone that generates electricity when sound waves cause a conductor to vibrate in a stationary magnetic field. The two types of dynamic microphones are moving coil and ribbon. A moving-coil microphone is usually called a dynamic microphone.

DYNAMIC RANGE The range of volume levels in a program from softest to loudest.

ECHO A delayed repetition of a signal or sound. A sound delayed 50msec or more that is combined with the original sound.

EDITING The cutting and rejoining of magnetic tape to delete unwanted material, to insert silent spaces, or to rearrange recorded material into the desired sequence. Also, the same actions performed on a digital recording with a DAW, hard-disk recorder, or MiniDisc recorder-mixer.

EFFECTS Interesting sound phenomena created by signal processors, such as reverberation, echo, flanging, doubling, compression, or chorus. See Sound Effects.

EFFECTS BUS The bus that feeds effects devices (signal processors).

EFFECTS LOOP A set of connectors in a mixer for connecting an external effects unit, such as a reverb or delay device. The effects loop includes a send section and a receive section. See Effects Send, Effects Return.

EFFECTS RETURN (AUX RETURN) In the output section of a mixing console, a control that adjusts the amount of signal received from an effects unit. Also, the connectors in a mixer to which you connect the effects-unit output signal. They might be labeled “bus in” instead. The effects-return signal is mixed with the program bus signal.

EFFECTS SEND (AUX SEND) In an input module of a mixing console, a control that adjusts the amount of signal sent to an effects device, such as a reverberation or delay unit. Also, the connector in a mixer that you connect to the input of an effects unit. The effects-send or aux-send control adjusts the amount of effects heard on each instrument.

ELECTRET-CONDENSER MICROPHONE A condenser microphone in which the electrostatic field of the capacitor is generated by an electret—a material that permanently stores an electrostatic charge.

END-ADDRESSED Referring to a microphone whose main axis of pickup is perpendicular to the front of the microphone. You aim the front of the mic at the sound source. See Side-Addressed.

ENVELOPE The rise and fall in volume of one note. The envelope connects successive peaks of the waves that make up the note. Each harmonic in the note might have a different envelope.

EQUALIZATION (EQ) The adjustment of frequency response to alter the tonal balance or to attenuate unwanted frequencies.

EQUALIZER A circuit (usually in each input module of a mixing console, or in a separate unit) that alters the frequency spectrum of a signal passed through it.

FADER A linear or sliding potentiometer (volume control), used to adjust signal level.

FEED 1. To send an audio signal to some device or system. 2. An output signal sent to some device or system.

FEEDBACK 1. The return of some portion of an output signal to the system's input. 2. The squealing sound you hear when a PA system microphone picks up its own amplified signal through a loudspeaker.

FILTER 1. A circuit that sharply attenuates frequencies above or below a certain frequency. Used to reduce noise and leakage above or below the frequency range of an instrument or voice. 2. A MIDI filter removes selected note parameters.

FLETCHER–MUNSON EFFECT Named after the two people who discovered it, the psychoacoustical phenomenon in which the subjective frequency response of the ear changes with program level. Because of this effect, a program played at a lower volume than the original level subjectively loses low- and high-frequency response.

FLUTTER ECHOES A rapid series of echoes that occurs between two parallel walls.

FREQUENCY The number of cycles per second of a sound wave or an audio signal, measured in hertz (Hz). A low frequency (for example, 100Hz) has a low pitch; a high frequency (for example, 10,000Hz) has a high pitch.

FREQUENCY RESPONSE 1. The range of frequencies that an audio device will reproduce at an equal level (within a tolerance, such as ±3dB). 2. The range of frequencies that a device (mic, human ear, etc.) can detect.

FUNDAMENTAL The lowest frequency in a complex wave.

FX Abbreviation for Effects.

GAIN Amplification. The ratio, expressed in decibels, between the output voltage and the input voltage, or between the output power and the input power.

GAIN STAGING Setting all the gain controls in a signal path to get the cleanest signal. At any stage in the signal path, the signal level should be set well above

GRAPHIC EQUALIZER An equalizer with a horizontal row of faders; the fader-knob positions indicate graphically the frequency response of the equalizer. Usually used to equalize monitor speakers for the room they are in. Sometimes used for complex EQ of a track.

GROUND LOOP 1. A loop or circuit formed of ground leads. 2. The loop formed when unbalanced components are connected together via two ground paths—the connecting-cable shield and the power ground. Ground loops cause hum and should be avoided.

GROUP See Submix. 1. To select several faders to make them act in unison. For example, select all the faders for the drum tracks to so that you can adjust the overall level of the drums by pushing one fader. 2. To assign the output of several input modules to a single group or bus, whose level is controlled by a single group fader. For example, assign all the input modules of the drum mics to a single “drums” group. 3. A bus or channel in a mixer that contains the signals from several input modules. For example, a drums group is a group of all the signals of the drum-set mics.

GROUP FADER(submaster fader) In the output section of a mixing console, a potentiometer (fader or volume control) that controls the output level of a bus or group.

HARD DISK A random-access storage medium for computer data. A hard-disk drive contains a stack of magnetically coated hard disks that are read by, and written to by, an electromagnetic head.

HARD-DISK RECORDER (hard-drive recorder) A device dedicated to recording digital audio on a hard-disk drive. A hard-disk recorder-mixer includes a built-in mixer.

HARMONIC An overtone whose frequency is a whole-number multiple of the fundamental frequency.

HD Abbreviation for hard-disk drive.

HEADPHONES A head-worn transducer that covers the ears and converts electrical audio signals into sound waves.

HERTZ (Hz) Cycles per second, the unit of measurement of frequency.

HIGHPASS FILTER A filter that passes frequencies above a certain frequency and attenuates frequencies below that same frequency. A low-cut filter.

HISS A noise signal containing all frequencies, but with greater energy at higher octaves. Hiss sounds like wind blowing through trees. It is usually caused by random signals generated by microphones, electronics, and magnetic tape.

HORN A megaphone-like structure in front of a tweeter (high-frequency compression driver) used to couple the tweeter's sound more efficiently to the air, and to control the radiation pattern (dispersion angle) of the tweeter's sound.

HOT 1. A high recording level causing slight distortion, may be used for special effect. 2. High average level on a CD making it relatively loud, produced by peak limiting and normalization, or by compression and normalization. 3. A condition in which a chassis or circuit has a potentially dangerous voltage on it. 4. Referring to the conductor in a microphone cable that has a positive voltage on it at the instant that sound pressure moves the diaphragm inward.

HUM An unwanted low-pitched tone (60Hz and its harmonics) heard in the monitors. The sound of interference generated in audio circuits and cables by AC power wiring. Hum pickup is caused by such things as placing audio cables near power cables or transformers, faulty grounding, poor shielding, and ground loops.

HYPERCARDIOID MICROPHONE A directional microphone with a polar pattern that has 12dB attenuation at the sides, 6dB attenuation at the rear, and two nulls of maximum rejection at 110 degrees off-axis.

IMPEDANCE The opposition of a circuit to the flow of alternating current. Impedance is the complex sum of resistance and reactance. Abbreviated as Z.

INPUT The connection going into an audio device. In a mixer or mixing console, a connector for a microphone, line-level device, or other signal source.

INPUT MODULE In a mixing console, the set of controls affecting a single input signal. An input module usually includes an attenuator (trim), fader, equalizer, aux sends, and channel-assign buttons.

INPUT/OUTPUT (I/O) CONSOLE (IN-LINE CONSOLE) A mixing console arranged so that input and output sections are aligned vertically. Each module (other than the monitor section) contains one input channel and one output channel.

INPUT SECTION The row of input modules in a mixing console.

INSERT JACKS Two jacks (send and return) in a console input module or output module that allow access to points in the signal path, usually for connecting a compressor. Plugging into the access jacks breaks the signal flow and allows you to insert a signal processor or recorder in series with the signal. In many mixers, a single insert jack has both send and return terminals. Also called Access Jacks.

I/O Referring to Input and Output connectors.

iOS Apple's mobile operating system used in the iPad, iPod Touch and iPhone.

INSTRUMENT AMP: A small portable amplifier-speaker designed for acoustic instruments rather than electric guitars. An instrument amp tends to have a “hi-fi” or accurate sound and a high-frequency response extending to at least 15 kHz. Most electric-guitar amps roll off (lose level) above 4 kHz.

JACK A female or receptacle-type connector for audio signals into which a plug is inserted.

KILO A prefix meaning one thousand. Abbreviated k.

LEVEL The degree of intensity of an audio signal—the voltage, power, or sound pressure level. The original definition of level is the power in watts.

LEVEL SETTING In a recording system, the process of adjusting the input-signal level to obtain maximum level on the recording medium without distortion. A VU meter, LED meter, or other indicator shows recording level.

LIMITER A signal processor whose output is constant above a preset input level. A compressor with a compression ratio of 10:1 or greater, with the threshold set just below the point of distortion of the following device. Used to prevent distortion of attack transients or peaks. Also used to decrease the level of signal peaks so that the average level of a program can be raised. See Look-Ahead.

LINE LEVEL In balanced professional recording equipment, a signal whose level is approximately 1.23 volts (4dBm). In unbalanced equipment (most home hi-fi or semipro recording equipment), a signal whose level is approximately 0.316 volt (10dBV).

LIVE 1. Having audible reverberation. 2. Occurring in real time, in person.

LIVE RECORDING A recording made at a concert. Also, a recording made of a musical ensemble playing all at once, rather than overdubbing.

LOCALIZATION The ability of the human hearing system to tell the direction of a real or illusory sound source.

LOUDSPEAKER A transducer that converts electrical energy (the signal) into acoustical energy (sound waves).

LOWPASS FILTER A filter that passes frequencies below a certain frequency and attenuates frequencies above that same frequency. A high-cut filter.

M Abbreviation for mega, or one million (as in megabytes). Small m (m) is an abbreviation for milli, or one thousandth.

MASK To hide or cover up one sound with another sound. To make a sound inaudible by playing another sound along with it. Masking is used in many data reduction schemes.

MASTER FADER A volume control that affects the level of all program busses simultaneously. It is the last stage of gain adjustment before the 2-track recorder.

METER A device that indicates voltage, resistance, current, or signal level.

MIC An abbreviation for microphone.

MIC LEVEL The level or voltage of a signal produced by a microphone, typically 2 millivolts.

MIC PREAMP See Preamplifier.

MICROPHONE A transducer or device that converts an acoustical signal (sound) into a corresponding electrical signal.

MICROPHONE TECHNIQUES The selection and placement of microphones to pick up sound sources.

MIKE To pick up with a microphone.

MILLI A prefix meaning one thousandth, abbreviated m.

MIX 1. To combine two or more different signals into a common signal. 2. A control on an effects processor that varies the ratio between the dry (unprocessed) signal and the processed signal.

MIXDOWN The process of playing recorded tracks through a mixing console and mixing them to two stereo channels for recording on a two-track recorder. Also applies to a surround-sound mixdown to 6 or 8 channels.

MIXER A device that mixes or combines audio signals and controls the relative levels of the signals.

MIXING CONSOLE A large mixer with additional functions such as equalization or tone control, pan pots, monitoring controls, solo functions, channel assigns, and control of signals sent to external signal processors.

MONAURAL Referring to listening with one ear. Often incorrectly used to mean monophonic.

MONITOR A loudspeaker in a control room, or headphones, used for judging sound quality. Also, a video display screen used with a computer. Also, a loudspeaker on stage that lets the actors or performers hear themselves or pre-recorded music.

MONITORING Listening to an audio signal with a monitor.

MONO, MONOPHONIC 1. Referring to a single channel of audio. A monophonic program can be played over one or more loudspeakers, or one or more headphones. 2. Describing a synthesizer that plays only one note at a time (not chords).

MOVING-COIL MICROPHONE A dynamic microphone in which the conductor is a coil of wire moving in a fixed magnetic field. The coil is attached to a diaphragm that vibrates when struck with sound waves. Usually called a dynamic microphone.

MP3 (MPEG Level-1 Layer-3) A data compression format for audio. In an MP3 file (.mp3), the data has been compressed or reduced to one-tenth of its original size or less. Compressed files take up less memory, so they download faster. You download MP3 files to your hard drive, then listen to them. MP3 audio quality

at a 128kbps rate is nearly the same as that of CDs (depending on source material).

MUDDY Unclear sounding; having excessive leakage, reverberation, or overhang.

MULTIEFFECTS PROCESSOR See Multiprocessor.

MULTIPROCESSOR A signal processor that can perform several different signal-processing functions.

MULTITRACK Referring to a recorder with more than two tracks.

MUTE To turn off an input signal on a mixing console by disconnecting the input-module output from channel assign. During mixdown, the mute function is used to reduce tape noise and leakage during silent portions of tracks, or to turn off unused performances. During recording, mute is used to turn off mic signals.

NEAR COINCIDENT A stereo microphone technique in which two directional microphones are angled apart symmetrically on either side of center and spaced a few inches apart horizontally.

NOISE Unwanted sound, such as hiss from electronics or tape. An audio signal with an irregular, non-periodic waveform.

NONLINEAR 1. Referring to a storage medium in which any data point can be accessed or read almost instantly in a random fashion, rather than sequentially. Examples are a hard disk, compact disc, and MiniDisc. See Random Access. 2. Referring to an audio device that is distorting the signal.

OCTAVE The interval between any two frequencies where the upper frequency is twice the lower frequency.

OFF-AXIS Not exactly in front of a microphone or loudspeaker.

OMNIDIRECTIONAL MICROPHONE A microphone that is equally sensitive to sounds arriving from all directions.

ON-LOCATION RECORDING A recording made outside the studio, in a room or hall where the music usually is performed or practiced.

ORTF Named after the French broadcasting network (Office de Radio-diffusion Television Française), a near-coincident stereo mic technique that uses two cardioid mics angled 110 degrees apart and spaced 17cm horizontally.

OUTBOARD EQUIPMENT Signal processors that are external to the mixing console.

OUTPUT A connector in an audio device from which the signal comes and feeds successive devices.

OVERLOAD The distortion that occurs when an applied signal exceeds a system's maximum input level.

OVERTONE In a complex wave, a frequency component that is higher than the fundamental frequency.

PAD See Attenuator.

PAN POT Abbreviation for panoramic potentiometer. In each input module in a mixing console, a control that divides a signal between two channels in an adjustable ratio. By doing so, a pan pot controls the location of a sonic image between a stereo pair of loudspeakers.

PARAMETRIC EQUALIZER An equalizer with continuously variable parameters, such as frequency, bandwidth, and amount of boost or cut.

PATCH 1. To connect one piece of audio equipment to another with a cable. 2. A setting of synthesizer parameters to achieve a sound with a certain timbre.

PATCH BAY (PATCH PANEL) An array of connectors, usually in a rack, to which equipment inputs and outputs are wired. A patch bay makes it easy to interconnect various pieces of equipment in a central, accessible location.

PATCH CORD A short length of cable with a phone plug on each end, used for signal routing in a patch bay.

PCM Abbreviation for Pulse Code Modulation, a method of analog-to-digital conversion in which the instantaneous amplitude of an analog waveform is measured or sampled several thousand times a second, and each measurement is assigned a binary value of a certain number of bits (ones and zeroes).

PEAK On a graph of a sound wave or signal, the highest point in the waveform. The point of greatest voltage or sound pressure in a cycle.

PEAK AMPLITUDE See Amplitude, Peak.

PEAKING EQUALIZER An equalizer that provides maximum cut or boost at one frequency, so that the resulting frequency response of a boost resembles a mountain peak.

PHANTOM POWER A DC voltage (usually 12 to 48 volts) applied to microphone signal conductors to power condenser microphones.

PHASE The degree of progression in the cycle of a wave, where one complete cycle is 360 degrees.

PHASE CANCELLATION, PHASE INTERFERENCE The cancellation of certain frequency components of a signal that occurs when the signal is combined with its delayed replica. At certain frequencies, the direct and delayed signals are of equal level and opposite polarity (180 degrees out of phase), and when combined, they cancel out. The result is a comb-filter frequency response having a periodic series of peaks and dips. Phase interference can occur between the signals of two microphones picking up the same source at different distances, or can occur at a microphone picking up both a direct sound and its reflection from a nearby surface.

PHASE SHIFT The difference in degrees of phase angle between corresponding points on two waves. If one wave is delayed with respect to another, there is a phase shift between them of 2piFT, where pi = 3.14, F □ frequency in Hz, and T = delay in seconds.

PHONE PLUG A cylindrical, coaxial plug (usually 1/4-inch diameter). An unbalanced phone plug has a tip for the hot signal and a sleeve for the shield, which connects to ground. A balanced phone plug has a tip for the signal hot signal, a ring for the return signal, and a sleeve for the shield.

PHONO PLUG A coaxial plug with a central pin for the hot signal and a ring of pressure-fit tabs for the shield or ground. Also called RCA plug. Phono plugs are used on Tascam modular digital multitrack recorders and on consumer stereo equipment.

PICKUP A piezoelectric transducer that converts mechanical vibrations to an electrical signal. Used in acoustic guitars, acoustic basses, and fiddles. Also, a magnetic transducer in an electric guitar that converts string vibration to a corresponding electrical signal.

PITCH The subjective lowness or highness of a tone. The pitch of a tone usually correlates with the fundamental frequency.

PLUG A male connector that inserts into a jack. Also, short for Plug-in.

POLAR PATTERN The directional pickup pattern of a microphone. A plot of microphone sensitivity plotted versus angle of sound incidence. Examples of polar patterns are omnidirectional, bidirectional, and unidirectional. Subsets of unidirectional are cardioid, supercardioid, and hypercardioid.

POLARITY Referring to the positive or negative direction of an electrical, acoustical, or magnetic force. Two identical signals in opposite polarity are 180 degrees out-of-phase with each other at all frequencies.

POP 1. A thump or little explosion sound heard in a vocalist's microphone signal. Pop occurs when the user says words with "p," "t," or "b" so that a turbulent puff of air is forced from the mouth and strikes the microphone diaphragm. 2. A noise heard when a mic is plugged into a monitored channel, or when a switch is flipped.

POP FILTER A screen placed on a microphone grille that attenuates or filters out pop disturbances before they strike the microphone diaphragm. Usually made of open-cell plastic foam or silk, a pop filter reduces pop and wind noise.

POWER AMPLIFIER An electronic device that amplifies or increases the power level fed into it to a level sufficient to drive a loudspeaker.

POWER GROUND (SAFETY GROUND) A connection to the power company's earth ground through the U-shaped hole in a power outlet. In the power cable of an electronic component with a 3-prong plug, the U-shaped prong is wired to the component's chassis. This wire conducts electricity to power ground if the chassis becomes electrically hot, preventing shocks.

PREAMPLIFIER (PREAMP) In an audio system, the first stage of amplification that boosts a mic-level signal to line level. A preamp is a standalone device or a circuit in a mixer.

PRE-FADER/POST-FADER SWITCH A switch that selects a signal either ahead of the fader (pre-fader) or following the fader (post-fader). The level of a pre-fader signal is independent of the fader position; the level of a post-fader signal follows the fader position.

PRESSURE ZONE MICROPHONE A boundary microphone constructed with the microphone diaphragm parallel with, and facing, a reflective surface.

PROXIMITY EFFECT The bass boost that occurs with a single-D directional microphone when it is placed a few inches from a sound source. The closer the microphone, the greater the low-frequency boost due to proximity effect.

PURE WAVEFORM A waveform of a single frequency; a sine wave. A pure tone is the perceived sound of such a wave.

Q In a parametric equalizer, Q is the sharpness of the boost or cut. A Q of 1 is a broad boost or cut that covers a wide range of frequencies. A Q to 10 is a

narrow boost or cut that covers a small range of frequencies. Q or Quality factor is a filter's center frequency divided by the bandwidth.

RACK A 19-inch-wide wooden or metal cabinet used to hold audio equipment.

RADIO-FREQUENCY INTERFERENCE (RFI) Radio-frequency electromagnetic waves induced in audio cables or equipment, causing various noises in the audio signal.

RANDOM ACCESS Referring to a storage medium in which any data point can be accessed or read almost instantly. Examples are a hard disk, compact disc, and MiniDisc.

RAREFACTION The portion of a sound wave in which molecules are spread apart, forming a region with lower-than-normal atmospheric pressure. The opposite of compression.

RECORD To store an event in permanent form. Usually, to store an audio signal in magnetic form on magnetic tape or disk, or to store an audio signal in optical form on a CD-R or CD-RW. Recording is also possible on magneto-optical disk, on MiniDisc, in RAM, and on memory cards.

REFLECTED SOUND Sound waves that reach the listener after being reflected from one or more surfaces.

RELEASE The final portion of a note’s envelope in which the note falls from its sustain level back to silence.

RELEASE TIME In a compressor, the time it takes for the gain to return to normal after the end of a loud passage.

REMOVABLE HARD DRIVE A hard-disk drive that can be removed and replaced with another, used in a DAW or hard-drive recorder to store a program temporarily.

REVERBERATION Natural reverberation in a room is a series of multiple sound reflections that make the original sound persist and gradually die away or decay. These reflections tell the ear that you’re listening in a large or hard-surfaced room. For example, reverberation is the sound you hear just after you shout in an empty gymnasium. A reverb effect simulates the sound of a room—a club, auditorium, or concert hall-by generating random multiple echoes that are too numerous and rapid for the ear to resolve. The timing of the echoes is random, and the echoes increase in number with time as they decay. An echo is a discrete repetition of a sound; reverberation is a continuous fade-out of sound.

REVERBERATION TIME (RT60) The time it takes for reverberation to decay to 60dB below the original steady-state level.

RFI See Radio Frequency Interference.

RIBBON MICROPHONE A dynamic microphone in which the conductor is a long metallic diaphragm (ribbon) suspended in a magnetic field.

RIDE GAIN To turn down the volume of a microphone when the source gets louder, and turn up the volume when the source gets quieter, in an attempt to reduce dynamic range.

ROOM MODES See Standing Wave.

RT60 See Reverberation Time.

SAFETY GROUND See Power Ground..

SENSITIVITY 1. The output of a microphone in volts for a given input in sound pressure level. 2. The sound pressure level a loudspeaker produces at one meter when driven with 1 watt of pink noise. See also Sound Pressure Level.

SHELVING EQUALIZER An equalizer that applies a constant boost or cut above or below a certain frequency, so that the shape of the frequency response resembles a shelf.

SHIELD A conductive enclosure (usually metallic) around one or more signal conductors, used to keep out electrostatic fields that cause hum or buzz. A shield in a mic cable is a cylindrical mesh of fine wires.

SHOCK MOUNT A suspension system that mechanically isolates a microphone from its stand or boom, preventing the transfer of mechanical vibrations.

SIBILANCE In a speech recording, excessive frequency components in the 5 to 10kHz range, which are heard as an overemphasis of “s” and “sh” sounds.

SIDE-ADDRESSED Referring to a microphone whose main axis of pickup is perpendicular to the side of the microphone. You aim the side of the mic at the sound source. See also End-Addressed.

SIGNAL A varying electrical voltage that represents information, such as a sound.

SIGNAL PATH The path a signal takes from input to output in a piece of audio equipment.

SIGNAL PROCESSOR A device that is used to alter a signal in a controlled way.

SIGNAL-TO-NOISE RATIO (S/N) The ratio in decibels between signal voltage and noise voltage. An audio component with a high S/N has little background noise accompanying the signal; a component with a low S/N is noisy.

SINE WAVE A wave following the equation y = sin x, where x is degrees and y is voltage or sound pressure level. The waveform of a single frequency. The waveform of a pure tone without harmonics.

SLAP, SLAP BACK An echo following the original sound by about 50 to 200msec, sometimes with multiple repetitions..

SNAKE A multipair or multichannel mic cable. Also, a multipair mic cable attached to a connector junction box.

SOLO On an input module in a mixing console, a switch that lets you monitor that particular input signal by itself. The switch routes only that input signal to the monitor system.

SOUND Longitudinal vibrations in a medium (such as air) in the frequency range 20 to 20,000Hz.

SOUND EFFECTS Recordings of non-musical sounds—such as a door slam, gunfire, thunderstorm, car, or telephone—used in dramatic productions, radio spots and commercials. Not to be confused with Effects.

SOUND PRESSURE LEVEL (SPL) The acoustic pressure of a sound wave, measured in decibels above the threshold of hearing. The higher the SPL of a sound, the louder it is. dB SPL = 20 log(P/Pref), where P = the measured acoustic pressure and Pref = 0.0002 dyne/cm2.

SOUND WAVE The periodic variations in air pressure radiating from an object vibrating between 20Hz and 20,000Hz.

SPACED-PAIR A stereo microphone technique using two identical microphones spaced several feet apart horizontally, usually aiming straight ahead toward the sound source.

SPEAKER See Loudspeaker.

SPECTRUM The output level versus frequency of a sound source, including the fundamental frequency and overtones.

SPL See Sound Pressure Level.

STANDING WAVE An apparently stationary waveform created by multiple reflections between opposite room surfaces. At certain points along the

standing wave, the direct and reflected waves cancel, and at other points the waves add together or reinforce each other.

STEREO, STEREOPHONIC An audio recording and reproduction system with correlated information between two channels (usually discrete channels), meant to be heard over two or more loudspeakers to give the illusion of sound-source localization and depth.

STEREO BAR, STEREO MICROPHONE ADAPTER A microphone stand adapter that mounts two microphones on a single stand for convenient stereo miking.

STEREO MICROPHONE A microphone containing two mic capsules in a single housing for convenient stereo recording. The capsules usually are coincident.

SUBMASTER 1. A master volume control for an output bus. 2. A recorded tape that is used to form a master tape

SUBMIX A small preset mix within a larger mix, such as a drum mix, keyboard mix, vocal mix, floor mic mix, etc. Also a cue mix, monitor mix, or effects mix.

SUBMIXER A smaller mixer within a mixing console (or standalone) that is used to set up a submix, a cue mix, an effects mix, or a monitor mix.

SUPERCARDIOID MICROPHONE A unidirectional microphone that attenuates side-arriving sounds by 8.7dB, attenuates rear-arriving sounds by 11.4dB, and has two nulls of maximum sound rejection at 125 degrees off-axis.

SUSTAIN The portion of the envelope of a note in which the level is constant. Also, the ability of a note to continue without noticeably decaying, often aided by compression.

TAIL The end of a reverberation signal where the reverb fades down to silence.

3-PIN CONNECTOR A 3-pin professional audio connector used for balanced signals. Pin 1 is soldered to the cable shield, pin 2 is soldered to the signal hot or in-polarity lead, and pin 3 is soldered to the signal cold or opposite-polarity lead. See also XLR-Type Connector.

THREE-TO-ONE RULE (3:1 RULE) A rule in microphone applications. When multiple mics are mixed to the same channel, the distance between mics should be at least three times the distance from each mic to its sound source. This prevents audible phase interference.

THRESHOLD In a compressor or limiter, the input level above which compression or limiting takes place. In an expander, the input level below which expansion takes place.

TIGHT 1. Having very little leakage or room reflections in the sound pickup. 2. Referring to well-synchronized playing of musical instruments. 3. Having a well-damped, rapid decay.

TIMBRE The subjective impression of spectrum and envelope. The quality of a sound that allows us to differentiate it from other sounds. For example, if you hear a trumpet, a piano, and a drum, each has a different timbre or tone quality that identifies it as a particular instrument.

TONAL BALANCE The balance or volume relationships among different regions of the frequency spectrum, such as bass, mid-bass, midrange, upper midrange, and highs.

TRACK A path on magnetic tape containing a single channel of audio. A group of bytes in a digital signal (on tape, on hard disk, on compact disc, or in a data stream) that represents a single channel of audio or MIDI. Usually one track contains a performance by one musical instrument. The verb “to track” means to record tracks.

TRANSDUCER A device that converts energy from one form to another, such as a microphone or loudspeaker.

TRANSIENT A short signal with a rapid attack and decay, such as a drum stroke, cymbal hit, or acoustic-guitar pluck.

TRANSIENT RESPONSE The ability of an audio component (usually a microphone or loudspeaker) to follow a transient accurately.

TRIM 1. In a mixing console, a control for fine adjustment of level, as in a Bus Trim control. 2. In a mixing console, a control that adjusts the gain of a mic preamp to accommodate various signal levels.

TRS (Tip Ring Sleeve) A phone-plug connector used for aux send/return, unbalanced stereo, or balanced mono connections.

TUBE A vacuum tube, an amplifying component made of electrodes in an evacuated glass tube. Tube sound is characterized as being “warmer” than solid-state or transistor sound.

TWEETER A high-frequency loudspeaker.

UNBALANCED LINE An audio cable having one conductor surrounded by a shield that carries the return signal. The shield is at ground voltage.

UNIDIRECTIONAL MICROPHONE A microphone that is most sensitive to sounds arriving from one direction—in front of the microphone. Examples are cardioid, supercardioid, and hypercardioid.

UNITY GAIN A condition in which the input and output levels of a device are equal.

VALVE British term for vacuum tube. See Tube.

WAV (.WAV) A computer audio file format for Windows. It encodes sound without any data reduction, using pulse code modulation. Its audio resolution is 16-bit, 44.1kHz, or higher.

WAVEFORM A graph of a signal's sound pressure or voltage versus time. The waveform of a pure tone is a sine wave.

WAVELENGTH The physical length between corresponding points of successive waves. Low frequencies have long wavelengths; high frequencies have short wavelengths.

WEIGHTED Referring to a measurement made through a filter with a specified frequency response. An A-weighted measurement is taken through a filter that simulates the frequency response of the human ear.

WINDSCREEN See Pop Filter.

WOOFER A low-frequency loudspeaker.

XLR-TYPE CONNECTOR An ITT Cannon part number that has become the popular definition for a 3-pin professional audio connector. See alsoThree-Pin (3-Pin) Connector.

X-Y See Coincident-Pair.

Y-ADAPTER A cable that divides into two cables in parallel to feed one signal to two destinations.

Z Abbreviation for impedance.

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