

GLOSSARY OF COMMON AUDIO/VIDEO TERMS

ABSOLUTE PHASE: Correct polarity (direction of energy) over two stereo channels.

ABSORPTION : The weakening of radio wave strength by losses in various materials

ABSORPTION TRAP: A parallel-tuned circuit made of either capacitors or coils used to absorb and reduce interfering signals.

“ACADEMY” FILTER: A high frequency filter used in some advanced home theater controllers to compensate for the overly bright soundtrack of many earlier films.

AC (Alternating Current): An electrical current that periodically reverses direction. The rate of change is known as frequency and is measured in Hertz (cycles per second). Standard wall outlets supply alternating current.

ACOUSTICS: The science of sound.

ACOUSTIC Baffle: Padding designed to absorb sound and diminish the reflection of sound waves, often used in the side walls near the front of a home theater.

ACOUSTIC SUSPENSION (a.k.a. Air Suspension): Type of loudspeaker system that utilizes a sealed enclosure.

ADC (Analog-to-Digital Converter): Circuit that converts analog (varying amplitude) signal to a digital (pulse type) signal.

AE: (Audio Erase): The related circuit or the magnetic head that is placed ahead of the audio/control head. It functions to erase the audio track in preparation for a new sound recording.

AFC (Automatic Frequency Control): Circuit in a tuner that maintains a constant frequency regardless of changes in power supply or other conditions.

AGC (Automatic Gain Control): Circuit that maintains a constant luminance level regardless of input. In television, minimizes picture differences with changes in strength of incoming signals.

AHD (Audio High Density): System of digital audio recording on grooveless discs, employing an electronically guided capacitance pickup.

ALC (Automatic Level Control): Circuit that functions similar to AGC. As applied to audio, ALC action varies the gain to maintain relatively constant output signal over the normal range of sound levels.

AM (Amplitude Modulation): The type of transmission used in the standard radio broadcast band from 530 to 1705 kHz. A process which modulates the amplitude of a carrier wave according to a variation of the input voltage (signal).

AMBIANCE: Acoustical qualities of a room and its contents.

AMPERE (AMP): Unit of measurement of electrical current.

AMPLIFIERS

- **Pre-amplifier:** The first stage of an amplification system, which boosts the amplitude of a weak signal from a source (tuner, turntable, tape deck or CD player). It also may provide for tonal adjustment so that the signal may be fed into a power amplifier. Usually contains all audio controls.
- **Power Amplifier:** The second or final stage of an amplifier system, which regulates and increases low-level signals received from the preamplifier and feeds them to speakers.
- **Integrated Amplifier:** A component that combines a pre-amp and power amp in a single unit. An integrated amp combined with a tuner in a single unit is called a receiver.

AMPLITUDE: Magnitude or strength of a signal or wave.

ANALOG VS. DIGITAL: With analog recording and playback, a parameter such as the width of a movie soundtrack, the magnetic field on recording tape, or the side-to-side swings of the groove on a phonograph record varies in a way that is directly analogous to the sound waves of the original sound. These variations are translated to a varying electrical voltage which ultimately causes the loudspeakers' cones to move back and forth, recreating the original sound.

With digital recording and playback, points along the sound waves of the original sound are assigned numeric (or digital) values, which are represented as microscopic pits on CD's, magnetic pulses on tape, or microscopic dots on a

digital movie soundtrack. When the recording or soundtrack is played back, the numeric values are converted back to the varying electrical voltage needed to drive the speakers.

Digital

soundtracks can be very high quality, but take up much more room than analog. Sophisticated techniques such as DOLBY AC-3 are therefore necessary to make multi-channel digital sound a practical reality.

ANTENNA: A device used to send or receive electromagnetic waves through the air.

ANTENNA GAIN: Measure of antenna efficiency compared to a reference antenna, typically a 1/4 wave type.

ASPECT RATIO: The shape of the image projected onto the screen, as denoted by units of width in relation to units of height. A 16:9 aspect ratio denotes a widescreen format, while a 4:3 aspect ratio denotes the TV-standard pan-and-scanformat.

ATTENUATE: To reduce the level of a signal.

AUDIO MIXER: A unit that combines or blends several sound inputs.

AUDIO SPECTRUM: The full range of audio frequencies from the lowest to the highest. The audio spectrum humans can hear ranges from 20Hz to 20,000Hz (20 kHz).

AUX: Any nonspecific line input to a control unit or amplifier. May be used in connecting a tape deck or a CD player, for example.

ATMOSPHERES: Background sounds, such as wind or traffic noise, which add to the reality of a scene. These sounds are sometimes recorded right at the shooting location, creating what is called a wild track for mixing into the soundtrack later.

BAFFLE: Provides an acoustic seal which prevents the air from the front of the speaker from mixing with the air from the back of the speaker. This prevents a loss of bass response.

BALANCE: Uniformity of frequencies. In home audio, a control that changes the relative volume of the left and right channels.

BAND: A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for a specific use.

BAND PASS FILTER (BPF): A circuit, commonly having inductance and capacitance, that effectively passes a given range of frequencies above and below this range are attenuated.

BANDWIDTH: The frequency difference between the highest and lowest frequencies involved. The greater the band-width of a transmission channel, the more information it can carry.

BASKET: The conical part of a speaker that holds together the magnetic structure, voice coil, cone and spider.

BASS: Low-frequency sounds of around 160 Hz and below.

BASS FREQUENCY: The actual frequency of a crystal oscillator, usually then multiplied to some higher operating frequency.

BASS REFLEX: Type of loudspeaker system that uses a port in its enclosure. The port admits external air to ensure that the back wave is in phase with the front wave.

BELT DRIVE: Turntable drive system whose platter is rotated by a belt attached to a motor pulley. **BIAMPING:** Incorporating more than one power amp plus a crossover network for woofers and tweeters.

BIAS: In tape recording, the high frequency signal applied to a tape to raise its frequency response. Different tape formulations require different bias levels for optimum recording.

BIAS VOLTAGE: A fixed DC voltage which establishes the operating characteristic of a circuit element such as a transistor.

BINARY: Numbers based on the power of 2, represented by zeros and ones. Commonly used for digital circuits.

BIPOLE: A speaker that radiates from front and back in phase.

BITSTREAM CONVERTER: A one-bit or low-bit A/D and D/A oversampling conversion method developed by Philips

in which the audio signal is represented through PDM (pulse density modulation) or time averaging at a frequency of 11.3Mhz.

BI-WIRING: Connecting an amplifier to speakers using separate cables for woofers and tweeters.

BRIDGED MODE: Some amplifiers have the ability to be operated in a mode which inverts one channel of a stereo amplifier and places it in parallel with the other channel, in effect turning the amplifier into a mono unit.

CAPSTAN: Rotating shaft that pulls tape at a constant speed during record and playback.

CAPTURE RATIO: The ability of a tuner or receiver to select the stronger of two signals at or near the same frequency. Expressed in decibels, the lower the figure, the better.

CARBON FIBER: A strong synthetic material that is low in mass with excellent damping characteristics, used in the manufacture of tonearms.

CARRIER: The basic or unmodulated radio wave.

CARTRIDGE: Device to translate (transduce) styles motion to electrical energy in a phonograph, in three basic types moving magnet, moving coil, induced magnet. A phono cartridge is sometimes called a pickup. Also, a tape container for automatic tape systems.

CASSETTE: Audio or video magnetic tape container having two reels. Consumers can insert it for recording or playback without handling the tape itself.

CASSETTE DECK: A component for recording and/or playing back audio signals using a tape cassette as the recording medium; does not contain a power amplifier. A single-bay cassette deck has one tape transport and magnetic tape head assembly. A dual-bay cassette deck has two transports and two tape head assemblies.

CAV (Constant Angular Velocity): Laser disc operating format in which the disc rotates at a constant speed during play. CAV permits special effects, but this format is somewhat wasteful of disc space.

CD (COMPACT DISC): A 4.5-inch plastic disc containing a digital audio recording that is played optically on a laser-equipped player. Has a 16-bit quantization rate to produce audio with high-fidelity sound.

CD CHANGER: CD player that can store and play more than one CD. Two types are available: carousel (with CD's arranged on a platter) and magazine (with CD's stacked in a container).

CD-G: Music CD plus graphics. In addition to audio, the disc has subcodes that carry text (such as liner notes, lyrics) and pixilated, computer-like graphics. A player with the proper adapter is needed to access the subcode information. **CD-I (Compact Disc Interactive):** Sound and video are combined on a CD, the program of which depends on choices made by the consumer. Requires special playback units.

CD PLAYER: A component designed to play compact disc (CD) recordings using a laser optical pickup. The signal from a CD player usually requires amplification. If the amplifier does not have CD inputs, than Tape In or AUX jacks can be used.

CIRCUMAURAL: A type of headphone that surrounds the ear and almost totally isolates the listener from room sounds.

CLIPPING: Cutting off the signal peaks when too little amplitude is provided. This strains and can damage tweeters. **CLV (Constant Linear Velocity):** Laser disc operating format wherein the rotational speed of the disc varies as the laser pickup travels from the inner edge to the outer edge of the disc. CLV is the operating format for Compact Discs.

COLORATION: Cutting off the signal peaks when too little amplitude is provided. This strains and can damage tweeters.

COMPACT STEREO: A stereo system with tuner, amplifier, and often turntable, tape deck and CD player in the same housing, usually compact in size. Designed for non-portable use.

COMPONENT STEREO: A stereo system composed of separate elements, such as a tuner and amplifier, CD player and so on, each with its own power supply. Usually selected individually by the purchaser.

CONE: The surface that radiates sound in a direct-radiator speaker. Usually conical.

CROSSOVER FREQUENCY: The frequency at which a crossover network divides the audible spectrum and sends it to a speaker driver.

CROSSOVER NETWORK: A component that separates the frequency band and routes each frequency range to the correct driver or amplifier.

CROSSTALK: Undesirable interference noise caused by adjacent tracks. Results in loss of stereo channel separation due to leakage from one channel to the other.

CRT (Cathode-Ray Tube): Light sources used in directview TV's, computer monitors and some video projectors.

DAB (Digital Audio Broadcasting): Various digital systems designed to augment AM and FM analog broadcasting services.

DAC: (Digital-to-Analog Converter): A circuit that converts digital signals to analog (varying amplitude) signals.

DAMPING: The physical or electrical control of resonance.

DATA REDUCTION: Any technique that reduces the amount of digital data required to represent a given amount of information. Data reduction enables large amounts of information to be easily and efficiently stored and transmitted.

DAT (Digital Audio Tape): A digital recording/playback format. Also used to identify tapes, recorders and players which use this format. The cassettes are about half the size of standard audio cassettes and usually hold up to two hours of recording time. The performance of DAT is very high.

DBS (Direct Broadcasting Satellite): Digital satellite systems with highly compressed signals, using 18 to 34 inch dishes.

DC (Direct Current) An electrical current that flows in one direction, including battery power.

DCC (Digital Compact Cassette): An alternative form of digital tape recording which, unlike DAT (digital audio tape), utilizes standard sized compact cassettes. DCC hardware also can play back conventional analog cassettes but analog machines cannot play or record DCC tapes.

DECIBEL (dB): Unit of measure for sound. A logarithmic expression of the relative loudness of sound. One tenth of a Bel.

DE-EMPHASIS: A fixed equalization which typically rolls off high frequencies in the second step of a two-step noise reduction process.

DEMAGNETIZER: A device that removes magnetism generated in tape heads as a consequence of playback and recording activities. Also called "Degausser."

DEMODULATION: The recovery of the original modulating information from a radio signal.

DETECTOR: The circuitry that performs demodulation.

DEVIATION: The maximum frequency variation of an FM signal.

DIFFRACTION: The bending or partial reflection of radio waves by metal objects.

DIFFUSER PANELS: Wooden panels with recessed areas designed to diffuse sound throughout a room, often used on the rear wall of a home theater.

DIGITAL COAXIAL OUTPUT: An electrical output connection for the raw digital data stream.

DIGITAL RECORDING: A system of recording in which musical information is converted into a series of pulses that are translated into a binary code intelligible to computer circuits and stored on magnetic discs. Also called "PCM" (pulse code modulation).

DIGITAL LIGHT PROCESSING (DLP): An emerging video projection technology using thousands of tiny micromirrors that reflect light to create images on a screen.

DIGITAL SIGNAL PROCESSING (DSP): Manipulation of signals for equalization, compression/expansion and reverb in the digital domain. Resulting sound may replicate the acoustics of a club, hall, church, stadium, theater, etc.

DIRECT DRIVE: A kind of turntable drive system. Its platter is also the rotor of the motor assembly, and its platter is rotated directly by the stator coils of the motor.

DIRECTIONAL ANTENNA: A TV or FM antenna that picks up signals better from one direction than another. Usually has two or more sections or elements for increasing directivity and must be oriented according to the signal being received.

DIGITAL COAXIAL OUTPUT: An electrical output connection for the raw digital data stream.

DIPOLE: An antenna which is made up of two active elements.

DIRECTIONAL ANTENNA: A TV or FM antenna that picks up signals better from one direction than another. Usually has two or more sections or elements for increasing directivity and must be oriented according to the signal being received.

DISTORTION: Inexact reproduction of an audio signal.

DIVERSITY: Receiver design which picks up a radio signal simultaneously at multiple locations and intelligently switches or combines to yield the best continuous signal.

DOLBY AC-3: The multichannel coding technology used for Dolby Digital film soundtracks, the new Dolby Surround AC-3 laser disc, the upcoming US High Definition TV system, and numerous cable and satellite applications.

DOLBY, DIGITAL (a.k.a. AC-3): Dolby Laboratories' newest film sound format, which provides five full-range digital sound channels plus a bass effects channel on 35mm prints, in addition to, an analog track providing compatibility in all theaters.

DOLBY, NOISE REDUCTION: Complementary (recordplay) processing systems developed by Dolby Laboratories to reduce the noise inherent in recording media with minimal effect on the sound being recorded. Dolby NR includes the B-type, C-type, and S-type systems for consumer formats such as the audio cassette.

DOLBY, SURROUND: The home surround sound format derived from Dolby's multichannel analog film sound format.

DOLBY SURROUND AC-3: The new digital multichannel home format (page 13) derived from Dolby Digital film sound technology.

DOLBY, SURROUND PRO LOGIC: The advanced form of home theater decoder that not only recovers the surround information from Dolby Surround programming, but also provides a center channel to keep dialogue firmly centered on the TV screen regardless of viewer location. Originally expensive, low cost decoder chips today make Pro Logic affordable in all kinds of home theater products, from A/V receivers to TV sets themselves.

DRIVER: Any sound-producing device; an individual speaker.

DTS (Digital Theater Systems) SURROUND: A six-channel surround-sound playback format being used for some movie soundtracks and music recordings.

DUBBING STAGE: A specially-designed room resembling combined small movie theater and recording studio control room, used by film directors and sound engineers to create film soundtracks.

DVD (Digital Versatile Disc): The new 5-inch CD-like format used for storing movies with digital audio and video and interactive features. Future applications include DVD music titles and DVD-ROM for computers.

D-VHS (Digital VHS): A new videotape format due this fall, offering superb recording and playback of digital programming from digital broadcasts.

DYNAMIC RANGE: The range between the loudest and softest sounds a sound format or system can reproduce properly.

EFFECTS: Sound effects, i.e., the non-musical elements on a soundtrack other than dialogue.

EFFICIENCY: A measure of the percentage of electrical input that a loudspeaker converts into acoustic output. Most conventional home audio speakers are roughly 1-3%.

ELECTROSTATIC SPEAKER: A type of loudspeaker that creates sound via a vibrating surface that is electrically

charged.

EMPHASIS: A process that boosts the high-frequency component of a signal for recording.

ENCLOSURE: A box that holds a loudspeaker.

ENVELOPMENT: The characteristic of a listening space where the listener is surrounded by sound. Proper surround-channel envelopment of the audience is considered a very important characteristic of high-quality home and commercial theaters.

EQUALIZATION: The action or circuitry which selectively adjusts the level of certain audio frequencies to compensate for deficiencies in the system. Also called "compensation."

EQUALIZATION SWITCH: Tapes come with difference equalization or bias: normal, high or metal. This switch sets the tape deck's equalization to match that of the tape for best sound.

EQUALIZER: A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.

FIDELITY: The degree to which an electronic product accurately reproduces sound. A high fidelity system delivers sound as close as possible to the original.

FIELD: A distribution of energy in space (i.e. electric, magnetic, sound).

FIELD STRENGTH: The amplitude of a field at a given point, measured in volts per meter for electrical energy.

FILTER: A device that allows certain parts of signals to pass.

FIP: (Function Indicator Panel): Front display device. Also called FDP for Fluorescent Display Panel.

FLUTTER: Sound distortion resulting from fairly rapid irregularities in the speed of a phonograph record or tape recording.

FM: (Frequency Modulation) The form of modulation used for radio and television sound transmission in most of the world, for satellite video transmission, and for videotape recording. Less susceptible to interference than AM. The FM broadcast band covers 88 to 108 MHz.

FOLEY: The art of recreating incidental sound effects, such as footsteps or rustling clothes, synchronized with a moving picture. Named after one of its first practitioners.

FREQUENCY: The number of complete oscillations per second of an electromagnetic wave. The pitch of radio signal that distinguishes it from another.

FREQUENCY AGILE: Having the ability to change frequencies, tunable.

FREQUENCY RANGE: Measured in Hertz (Hz), the frequency range of an audio component is the range of frequencies it reproduces with a flat (linear) frequency response.

FREQUENCY RESPONSE: A specification indicating how evenly a range of frequencies is reproduced by a component or sound system. Usually expressed as a specific range (45 Hertz to 17,000 Hertz, for example) and combined with a plus/minus decibel figure indicating how evenly the frequencies in that range are reproduced. The audible range is considered to be 20 -20,000 Hertz. Hertz is synonymous with cycles per second.

FREQUENCY SYNTHESIZED TUNING: An FM tuning method that employs a reference quartz crystal oscillator for exceptional tuning accuracy often better than 0.003 percent.

FRONT CHANNELS: The path along which the sound travels to the front speakers. Home theater surround-sound systems generally have three front channels for left, right and center speakers.

FRONT END: Tuning or radio frequency section of a radio or TV set.

FRONT PROJECTION: The type of video display device used to project an image onto a facing screen, found in most very high-end home theaters.

GAIN: Degree of signal amplification, expressed in decibels.

GRAPHIC EQUALIZER: A device that permits altering the tonal balance of an audio component/system at several frequency levels, usually offering from 5 to 12 adjustments.

GROUND: A conducting path between an electrical circuit (or equipment) and the earth (or some conducting body serving in place of the earth).

GUARD BAND: The space between tracks on tape that keeps crosstalk to a minimum.

HARMONIC DISTORTION: Distortion that occurs when an audio component adds unwanted overtones to the original music tones.

HDTV (High-Definition Television): Super high-resolution television broadcasts as part of Digital TV services which began in 1998.

HEAD: The electronic component that makes contact with magnetic tape to convert electricity to magnetism (for recording) or magnetism to electrical signals (for playback). Heads are used to record, erase or play tape signals.

HEADROOM: Temporary output level beyond a component's continuous rating which it can handle for short periods of time without overload.

HEAD SWITCHING: Circuits that, in conjunction with 30Hz squarewaves (switching pulses), prevent the head from producing an amplified output signal that is not on tape.

HERTZ (HZ): The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.

HETERODYNE: To combine signals of various frequency in a manner that produces additional signals at frequencies which are sums and differences of the original frequencies.

HIGH FREQUENCY: In audio, the range from about 5 kHz to 20 kHz.

HOME AUTOMATION: The integration of electrical systems to operate under one convenient interface, often also applied to more convenient operation of various home theater components. **IC (Integrated Circuit):** An electronic circuit in the form of a microminature silicon chip, consisting of thousands or even millions of transistors (and other components), usually about the size of a fingernail or smaller. **IF (Intermediate Frequency):** A lower radio frequency (typically 10.7MHz) found in the middle stages of a receiver. **IM (Intermodulation):** Frequencies produced by combinations of other frequencies in non-linear devices (also **IMD: Intermodulation distortion**).

IMAGING: Extent to which a stereo system reproduces the location of instruments or vocalists as they were during recording.

IMPEDANCE: The opposition of current flow in an AC circuit which measured by the total resistance, capacitance and inductance in the circuit. Expressed in ohms.

IR (Infrared): A form of light.

INFRARED REPEATER SYSTEM: There is a device which is designed to receive an infrared signal at one location, convert it to an electrical signal for re-transmission by wire to a second location where the signal is then converted back to infrared.

INSERTION LOSS: A drop in signal level caused by the addition of a component to the audio signal path.

INSULATOR: A material that stops the flow of current.

INTEGRATED AMPLIFIER: A component that combines a pre-amp and power amp in a single unit. An integrated amp combined with a tuner in a single unit is called a receiver.

INTEGRATED CIRCUIT (IC): An electronic circuit in the form of a microminature silicon chip, consisting of thousands or even millions of transistors (and other components). Usually about the size of a fingernail or smaller.

INVERSE SQUARE LAW: Mathematical relationship in which one quantity is inversely proportional to the square of another quantity (i.e. signal strength decreases according to the distance squared).

JITTER: *Fluctuations in a digital signal resulting from speed variations during playback.*

Laser: *(Light Amplification by Stimulated Emission of*

Radiation): *A tightly focused beam of light used to play the signals stored on laser video discs or CD recordings.*

LASERDISC: *Twelve inch movie disc software with digital audio and analog video, which may be replaced by DVD.*

LCD (Liquid Crystal Display): *Technology used to create video displays on flat, thin screens, also used in remote control devices such as touchscreens.*

LCRS (Left, Center, Right, Surrounds): *The standard channel and speaker configuration for commercial and home theater systems. LED (Light Emitting Diode):* *A solid-state device that glows when current passes through it.*

LIMITER: *A circuit which limits the maximum level of a signal.*

LINE DOUBLER: *A video enhancement component, often used with front projection systems, appearing to double the number of scan lines to sharpen the image and increase brightness.*

LINE-LEVEL SIGNALS: *Audio signals from a tuner, CD player or tape deck that are at a level too low to drive speakers directly. Line-level signals must be amplified by a preamplifier and power amplifier (or receiver) before being sent to speakers.*

LINEAR DRIVE: *An analog tonearm for turntables or laser scanner for CD players that moves in a straight line instead of pivoting from a center point.*

LINEARITY: *The straightness of a frequency response curve as an indication of true or accurate sound reproduction.*

LOSS: *Decrease in signal strength during transmission, propagation or reception.*

LOW FREQUENCY: *Frequency below 160 Hz.*

LOW-MASS: *Low-weight phono cartridge or tonearm or tonearm/cartridge combination devised for operation with minimal downward pressure on record grooves.*

MAGNETIC FIELD: *The area surrounding a magnet, which is affected by it. The field created by magnets in telephones, electric motors, TV's and other consumer electronic products are usually only felt for a foot or two around them. Because video and audio tape are magnetic media, it is best to keep tapes away from magnetic fields.*

MAGNETIC SHIELDING: *The area surrounding a magnet, which is affected by it. The field created by magnets in telephones, electric motors, TV's and other consumer electronic products are usually only felt for a foot or two around them. Because video and audio tapes are magnetic media, it is best to keep tapes away from magnetic fields.*

MAGNETIC TAPE: *A ribbon of thin plastic coated with magnetic material used in both audio and video tape decks.*

MATRIX(ING): *The process of mixing two distinct signals with specific phase and amplitude relationships to form one signal so that the original components of the total signal can be separated at a later time. MD (MiniDisc) A 2.5-inch optical disc encased in a sleeve for use in audio MD players/recorders.*

MEMORY: *Circuitry and devices that hold information, in electrical or magnetic form, such as a preset radio station frequency in a frequency-synthesized tuner or programmed tracks in a CD player.*

METAL TAPE: *Tape whose coating is of iron particles; noted for its wide dynamic range and frequency response capability.*

MID-BASS: *Frequencies between 40 Hz and 80 Hz.*

MID-RANGE: *The audio frequencies between treble and bass.*

MINI SYSTEM: *An audio system that is downsized.*

MIX: *The blend of dialogue, music and effects which comprises a film's soundtrack. Also, when used as a verb, the process of assembling and balancing these elements electronically, thereby creating the final soundtrack.*

MIXER: *A unit that combines or blends several sound inputs.*

MODULATION: *Variation of a wave parameter (such as amplitude or frequency) to carry information.*