

Buying Quality Audio Equipment. Techno - Jargon Revealed

Phoenix Roberts (March 2007)

Modern consumer electronics let everybody carry their favorite tunes almost anywhere and anytime. Audio gear comes in a wide variety of sizes and configurations. In order to get the best gear, consumers have to know what the technical data is and how it affects the system they're thinking about buying.

Modern consumer electronics really let freedom ring, allowing you to take your audio favorites just about anywhere! From iPods and MP3 players to car audio to home theaters, to get the right audio electronics, you will need to understand a few technical terms.

Volume

Measured in decibels (abbreviated dB), volume gauges both air pressure and sound. Think, "How hard do I have to hit the drum to make a noise that loud?" In theory, 0dB is the threshold of hearing -- the softest sounds people can hear, though many individuals' thresholds are actually higher or lower. Also, ears don't respond to all frequencies equally; the high notes and low notes more volume to sound like they're the same volume as midrange frequencies. Loud sounds can, of course, damage your hearing and hearing loss is usually permanent. Avoid anything over 90dB (jackhammers, airplane engines, exploding H-bombs) and do what your parents kept telling you to do when you were a teenager -- turn your stereo down!

Frequency

Measured in Hertz (Hz); 1 Hz = 1 cycle per second. Most humans can hear sounds between 20Hz to 20,000Hz. Frequency response is the range of sounds a speaker makes: Tweeters can get up to 20KHz. Mid-ranges are

500Hz-3KHz. Woofers reach 500-200Hz. Subwoofers go deep, close to 20Hz. An earthquake, for comparison, is around 5Hz; you can't really hear it, but you can feel it in your bones!

In theory, the response is steady. That is, 20Hz at 10 dB is as loud as 20KHz at 10dB, but perfection is still a few years off, so you may see "20Hz-20KHz +-3dB" meaning frequency response will vary by 3dB across the range. Better speakers have a wider frequency response with lower variance.

Impedance

Wires and microchips are solid objects that impede (ever so slightly) the flow of electricity. Think of a water pump connected to two pipes -- the larger pipe has lower impedance because more water can flow through. Impedance is measured in ohms (abbreviated by omega, the horseshoe-shaped Greek letter Ω). Stereo amplifiers and speakers are usually rated at 4, 8 or 16 ohms; they work best when the numbers match; mismatched components can give you bad sound or damage each other.

Power

The amount of electrical energy each speaker can use before exploding (okay, before being damaged) is measured in watts (W). It varies with the size of the system and may carry two numbers, normal and maximum

power (which is almost always twice normal power). A speaker rated for 75W at normal usage would be marked "75W RMS/150W peak power" or "75W continuous/150W peak" (RMS = "root-mean-square," a meaningless phrase unless you're an engineer). Cranking up the volume puts more energy through the speaker, causing more wear on the components. Think of wind -- your house might survive a steady 75-mile/hr wind (your basic hurricane) for several hours, but it's much less likely to hold up against 150-mile/hr gusts (Katrina revisited). Some people think there's no such thing as too much power, these are people who regularly buy new speakers and hearing aids.

Sensitivity

A measure of speaker efficiency, or how much volume a speaker puts out for a given voltage. There is no universal standard, it's simply a comparison the potential buyer must make. If speaker A's sensitivity is rated 3dB higher than speaker B's, then A needs less juice to put out the same volume as B. Higher sensitivity means a lower electrical bill, if one may put it so.

Signal-to-noise ratio (SNR or S/N)

This is about clarity. "Signal" is the sound you want to hear; "noise" is the unavoidable audio clutter in the background. SNR is usually measured in decibels (dB); the higher the ratio, the less noticeable the clutter.

Total harmonic distortion (THD)

Similar to SNR, imagine an amplifier as a copier set to enlarge; it won't make a perfect copy. These imperfections are called "distortion." THD is expressed as the percentage of distortion within the total sound. A good audio component has a THD around 1 percent; really good audio components are below 0.1 percent.

Technical Specifications

Tech specs are the listing of all the above measures or as many as the seller wants to display. The list may look something like this:

- Sensitivity: 86dB
- Frequency Response: 60-2000Hz
- RMS Power Handling: 70W
- Peak Power Handling: 140W
- Impedance: 4 Ohms
- SNR: 80 dB
- THD: 1.0%

A couple of other terms to be aware of:

Digital storage

A new thing, but an important one--it measures the capacity of your electronics. 1 megabyte (MB) = 1,000,000 bytes. 1 gigabyte (GB) = 1,000MB. A typical 1GB iPod or MP3 player can store 200-300 songs (depending on play length). A standard CD is 700MB (about 75 minutes of music). Among single layer discs: DVD is 4.7GB (just over 2 hours of video); HD-DVD is about 15GB and Blu-Ray is about 25GB. DVRs record onto a hard drive instead of disc or tape, their capacity will be measured in GB; many, many GB!

Surround sound

Not a scientific term, surround sound is a multi-speaker package, identified by a number: 5.1-channel, 6.1-channel or 7.1-channel. Channel is the number of distinct outputs or speakers. The ".1" is the subwoofer; the other numbers define how many speakers are in the set -- 5-channel has a center speaker, left & right main speakers and left & right surround speakers. 6-channel adds a single rear surround speaker, and 7-channel adds two rear surround speakers.

Remember, a 10-foot by 12-foot rectangular rooms needs a totally different sound set-up from a 10-foot

by 18-foot room with 6 corners and a vaulted ceiling. The bottom line is, as always: Do you like the sound? Will the sound fill your space? Can you wait

until the next holiday sale? If the answer to these questions is yes, you have found your new home theater.

About the Author

Phoenix Roberts has been a journalist, freelance writer and desktop publisher for over 10 years. Presently, he is an SEO Content Writer for Internet discount retailer Overstock.com, an (<http://www.overstock.com>).

[More.... Tips and Articles from Edis Trading](#)