AUDIO UPDATE

Can you hear the difference?

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WHEN I BECAME AN AUDIOPHILE IN THE early Fifties, the general performance level of almost all audio equipment was abysmally low. In 1952, one channel of any of today's $300 stereo receivers would have represented an astonishing breakthrough in FM sensitivity, power, S/N, distortion, and frequency response. (Of course, the second channel would have been a confusing redundancy because, of course, there was no stereo program material available.)

In any case, when I bought a new component in the Fifties, I expected that it was going to sound somewhat different—and I hope, better—than the unit it was replacing. It was a time of rapid audio evolution. Quality control was improving; the Europeans were regularly producing new tubes designed specifically for audio equipment; and each new generation of phono cartridges, tweeters, and tape heads seemed to deliver another octave or so of high-frequency performance. (Today's top cassette decks have better specifications at 1⅞ inches-per-second than my old 10½-inch open-reel Concertone had at 15 inches-per-second.)

Diminishing returns

At some point in time, the audible improvements achieved by each new generation of amplifiers seemed to diminish. That's not to say that there weren't plenty of low-powered, unstable, and distorted products still available. There were, but almost all the high-powered top-of-the-line power amplifiers that I dealt with began to sound pretty much alike on casual listening—and in fact sounded identical when I later got into critical listening with an A/B switch box. Of course, the best available program material, phono cartridges, and speakers of that time, fell somewhat short of today's sonic standards. And perhaps I tended to ignore subtle sonic differences among amplifiers simply because I was so distressed by the gross audible problems of most other components. In any case, my perceptions led me to become an early member of the "all amplifiers sound alike" school of audio criticism.

FIG. 1

I've not totally resigned from the "sound-alike" club, but my attitude has certainly been tempered by time. My position now is that there are no sonic differences among amplifiers that cannot be accounted for by non-esoteric and readily measurable factors—mostly frequency response. In my view, the esoteric varieties and sources of distortion discovered (or rediscovered and renamed) in recent years have done far more for advertising copywriters than they have for the listening quality of the products. I'm aware that the "I Love a Mystery" audiophiles believe firmly that an amplifier can measure well and—for unknown, and perhaps unknowable reasons—sound lousy; but as far as I'm concerned, that just doesn't happen when a design engineer knows what he's doing—and most design engineers are very good at their jobs.

The debate goes on

There are good psychological, psychoacoustic, and commercial reasons why the debate about amplifier sound quality continues. The essential audio-tweak challenge to the validity of lab tests is that they don't correlate very well with what critical ears hear. (Those ears—such as mine—that refuse to hear consistent differences among components are considered either uncritical, defective, or perverse.)

It is true that the EIA Amplifier Standard includes a series of lab tests that are performed using sine-wave test signals as inputs and non-inductive precision resistors as loads. Conversely, real-life listening with music and speakers involves a wide-band, constantly changing input signal and a complex reactive speaker load whose values shift wildly with frequency. Competent audio engineers certainly know that as well as anyone else, and for many years supplemented conventional sine-wave measurements with a wide variety of more dynamic real-world evaluations.

In short, there appear to be no mysterious differences in amplifier performance that are not readily subject to laboratory evaluation. When sonic differences between amplifiers do occur, they usually reflect a voltage or current inadequacy, or a simple departure from an ideal (flat) frequency response. For example, a slight rise in response above 10 kHz will cause an amplifier to sound more open, detailed, and airy, particularly with program material or speakers that fall slightly short on the high end.

The complex or very low-impedance loads presented by some speaker designs will produce small, but audible, frequency-response aberrations in the output of some amplifiers. However, those problems don't show up when either the speaker or the amplifier is measured by itself. Depending upon random conditions in a given setup, the aberration will add a subjectively desirable or an undesirable quality to the sound.

That all helps to account for the audiophile claim that certain speakers (or amplifiers) are particularly "revealing" in that they are able to disclose the flaws or positive qualities of other equipment. I strongly suspect that the special *reference* amplifiers or speakers used by some of the underground critics tend to create rather than reveal the differences between components undergoing listening evaluations. The random interaction effects would also account for the frequent disagreements among the Golden Ear critics with different "reference" equipment as to the specific audible virtues of equipment under evaluation.

To my ears, the sonic differences under discussion usually border on the trivial, meaning that they can be wiped out by the twitch of a tone-control knob. But when tone controls are considered anathema, and any sonic difference—whatever its cause—is enormously important, the ground rules of the argument b

come too amorphous to be resolved. I'm aware that there are many other aspects of audiophile-listening evaluations that I've not even touched on. Suffice it to say that I've read most of the discussions on the matter, pro and con; and I continue to hold to the opinion that the human ear is a marvelous instrument that along with its ability to hear minute differences also tends to create differences that don't exist. Descriptions of numerous scientifically conducted double-blind listening tests have proven to my satisfaction that trained listeners are unable to distinguish between well-designed amplifiers (although they imagine they are doing so) when their overload, amplitude, and frequency response levels are the same.

Next month I'm going to be discussing several of the test techniques that are used by a leading manufacturer in the audio industry so that they can reveal audible sonic differences between different components when they really do exist. R-F