

Stereo Scene

By Art Salsberg
(Ralph Hodges returns next month.)

AUDIO POTPOURRI

HERE ARE some kernels of audio information, ranging in variety from adjusting speaker-system level controls to the different hearing perceptions of left-handed and right-handed people.

Loudspeaker Behavior. Loudspeakers and drivers were once designed by intuition and practical experience. The empirical approach is disappearing, however. With the growing use of mathematical models, cone geometry and material can be chosen to obtain a specific frequency response.

Phillips Research Labs (in the Netherlands), for example, uses a computer program to solve driver behavior problems, such as determining frequency characteristics of the sound wavefront and radiated power as a function of cone material. Theoretical results are verified by viewing driver motion holographically. Typical results are shown in Figs. 1 and 2. At low frequencies, the cone vibrates as a rigid surface. But above a certain point, standing waves begin to appear on the cone. For example, Fig.

1 reveals loops and nodes beginning to appear at the periphery of an 8-inch (20.3-cm) cone driven at 2000 Hz. When the input signal is raised to 9000 Hz, as pictured in Fig. 2, the entire surface is covered with loops and nodes, and little sound is radiated.

Setting Speaker Level Controls. Literature from Speakerlab of Seattle, WA, sets down an interesting method of adjusting speaker level controls—you know, those tweeter and midrange level controls usually on the rear of the enclosure. According to author Pay Snyder, the center settings of these controls do not necessarily provide flat response, due to production variations in speaker sensitivities. (Room acoustics can play a part, too!)

He suggests setting amplifier tone controls to "flat" and the balance control so that only one speaker is playing. Listen to a familiar piece of music with the level controls at minimum, which should leave you with sound coming only from the woofer. Slowly turn up the midrange control until you hear sound coming from this driver as well as the woofer. Continue increas-

ing the level until the sounds from the two drivers blend and seem to come from a point midway between the two.

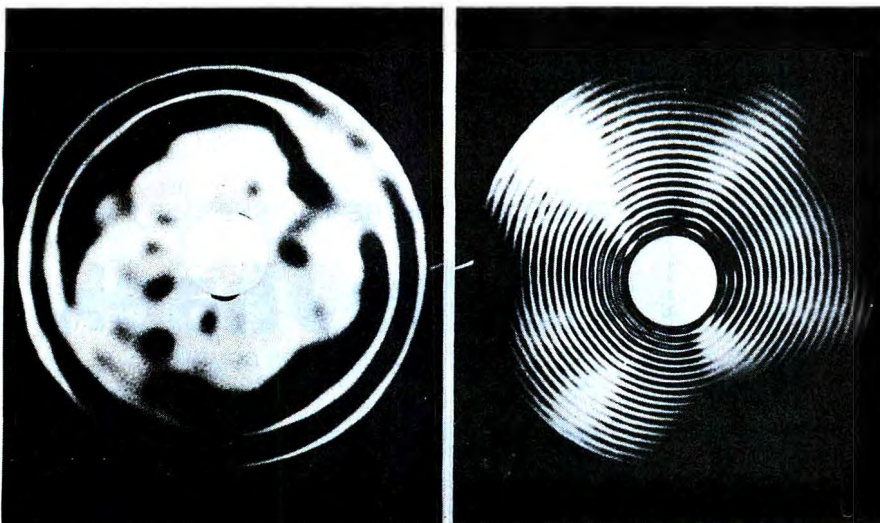
Next, follow the same procedure with the tweeter level control, increasing it until the tweeter's output blends with that of the other two, and does not appear to be coming from a separate point source. Snyder suggests adjusting the speaker in place to compensate for reflections, keeping your head down close to the enclosure. This method doesn't require test instruments, and equally important, it saves a lot of energy expended by jumping up and down to "hear" the system with a new setting!

New Audio Power Ruling. The FTC has a new interpretation of its "Rule on Audio Power Disclosure." The agency has backed off from its original requirement that amplifiers be operated at $\frac{1}{3}$ rated power for one hour before testing. This is not the way amplifiers are used in the home, where musical passages require peak power for only short periods of time, and the average power seldom reaches the $\frac{1}{3}$ conditioning level. So, fuses popped, relays opened, or output transistors overheated during the pre-test conditioning, especially in high-power amplifiers.

If the ruling was maintained, many manufacturers faced the choice of de-rating their products' power outputs, or improving thermal transfer through extra heat sinking or forced-air cooling. The former would place some manufacturers at a competitive disadvantage, while the latter course would have substantially increased costs.

Bedeviled by this requirement, nearly two-dozen manufacturers requested a reinterpretation of the conditioning procedure, supporting their contentions with test data. In response, the FTC approved automatic recycling, allowing equipment to cut off or go on automatically until a total of one hour of "on" time is accumulated. Furthermore, if thermal buildup is a problem, tests may commence at low output power to permit cooling.

Live Recording. If you've ever struggled with miking live performances (and haven't we all!), you'll appreciate the tips offered by Shure Bros., 222 Hartrey Ave., Evanston, IL 60204, in its free brochure #AL 493. It describes in nontechnical terms how to mike voices and instruments, in-



Figs. 1. (left) and 2. Holograms of motion in drivers.