

New Equipment Reports

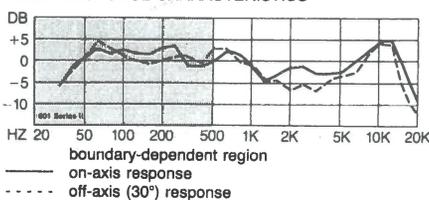
Preparation supervised by Michael Riggs, Robert Long, and Edward J. Foster.
 Laboratory data (unless otherwise noted) supplied by Diversified Science Laboratories.



A Bose for All Systems

Bose 601 Series II floor-standing loudspeaker system.
 Dimensions: 14 by 29½ inches (front), 13 inches deep. Price: \$890 per pair. Warranty: "full," five years parts and labor. Manufacturer: Bose Corp., 100 The Mountain Road, Framingham, Mass. 01701.

ROOM RESPONSE CHARACTERISTICS



SENSITIVITY (at 1 meter; 2.8-volt pink noise, 250 Hz to 6 kHz) 87 dB SPL

AVERAGE IMPEDANCE (250 Hz to 6 kHz) 17.9 ohms

FOUNDED IN THE mid-Sixties by its namesake, Dr. Amar Bose (then, as now, a professor of engineering at the Massachusetts Institute of Technology), the Bose Corporation has gone on to become one of the world's largest manufacturers of high fidelity loudspeakers. Dr. Bose started his research in acoustics and loudspeaker design largely out of a sense of frustration: As a music lover and amateur musician, he felt that even the most highly rated loudspeakers failed to convey a realistic impression of live music. His investigations led him to the conclusion that most of the sound should reach a listener indirectly, via reflections off the walls and ceiling of the room, to simulate the conditions of a concert performance. And that finding prompted a radical departure from conventional design tenets, which was embodied in the company's first important consumer product: the Bose 901 Direct/Reflecting loudspeaker.

Instead of a tweeter to reproduce the high frequencies and a woofer to handle the lows, the 901 used a multitude of identical full-range drivers electronically equalized for flat frequency response. Eight of these were distributed over two angled panels that formed the rear of the enclosure, while a

ninth was placed on a flat front baffle. The rear drivers faced the wall and generated a large amount of reflected sound; the function of the single front-firing driver was to provide enough direct sound radiation to establish stereo localization.

That is the way the top-of-the-line Model 901 (now up to Series IV) is constructed to this day. The four other models in the Bose line are also Direct/Reflecting loudspeakers, although some compromises have been made for the sake of economy. (For example, they use separate woofers and tweeters, rather than equalized full-range drivers.) One step below the 901 is the speaker under consideration here, the Bose 601 Series II. The 601 is a low, floor-standing tower designed for placement two to five feet from the nearest side wall and within a foot of the rear wall. The body of the 601 is a ported enclosure for two 8-inch woofers. One of the woofers faces forward, while the other is mounted on top of the enclosure, tilted back about 60 degrees, forming part of what Bose calls a Free Space Array. The array is completed by four 3-inch tweeters carefully aimed to establish an essentially omnidirectional radiation pattern.



A carefully balanced mix of direct and reflected sound is the goal of Bose's Free Space Array, which includes four tweeters aimed in different directions and a woofer tilted back approximately 60 degrees.

To make the transition from the woofers to the tweeters, Bose uses what it calls a Dual-Frequency crossover network, which enables both sets of drivers to operate together (at slightly reduced levels) over almost an octave. This is said to improve the smoothness and spaciousness of the 601's midrange reproduction. The tweeters begin operating at about 1.5 kHz, and the woofers start rolling off at about 2.5 kHz. In addition, each woofer is loaded by its own subenclosure, which is molded into the main enclosure. These subenclosures are ported into the interior of the loudspeaker and function to smooth the woofers' response through the midbass, to prevent boominess. Bose 601 Series II loudspeakers come in mirror-image pairs with walnut-grain vinyl side panels. Amplifier connections are made via thumbscrew terminals on the rear of the enclosure.

Diversified Science Laboratories took its measurements with a 601 Series II speaker placed about three inches out from the rear wall. The 601's power-handling ability proved excellent: It accepted without distress the full 58-volt peak output of DSL's amplifier—equivalent to 26¼ dBW (420 watts) into 8 ohms—in the 300-Hz pulse test and the 28.3-volt (rms) maximum level—equivalent to 20 dBW (100 watts) into 8 ohms—of the 300-Hz continuous-signal test. Consequently, we were not surprised to find that the speaker produced very low distortion. At a moderately high sound pressure level of 85 dB, total harmonic distortion (THD) remained less than 1¼% over DSL's entire 30 Hz to 10 kHz test range and averaged only about ½%. Even at 95 dB SPL, THD never rose to more than 3¾% and averaged less than 1½%. It wasn't until DSL jacked the output up to a thunderous 100 dB SPL that significant distortion began to appear. These are excellent results.

The 601 Series II's sensitivity is fairly

high, as is its average impedance. Ranging from a minimum of 7 ohms at 33 Hz to a maximum of 31 ohms at 60 Hz, the impedance dips below 8 ohms only twice, at 33 and 140 Hz; by the standard rating method, the 601's "nominal" impedance would be 7.5 ohms. These figures indicate that the 601 Series II should be an easy load for any decent amplifier, and we would have no qualms about running two pairs in parallel from the same amp.

Both the on- and off-axis frequency response curves lie within a range of approximately $\pm 5\frac{1}{2}$ dB from 35 Hz to 16 kHz. Moreover, the two curves are quite similar, even at very high frequencies, where conventional speakers become increasingly directional. Response is especially smooth through the bass and midrange, varying only $\pm 2\frac{1}{2}$ dB from 40 Hz to 1 kHz on axis and barely more than that off axis.

After some experimentation, we placed the 601s several feet from the side walls and about a foot out from the rear wall for our listening tests. The overall sound of the 601 Series II is rich, warm, and spacious—a hallmark of Bose loudspeakers. Bass response, particularly, is full and very extended. Reproduction of instruments with considerable treble energy—especially plucked strings—is sometimes less clear and detailed than we are accustomed to. On the other hand, there is none of the shrillness or harshness that is sometimes apparent in loudspeakers with more prominent treble response.

Taken as a whole, the 601 Series II is a fine loudspeaker and a worthy next-in-line to the more elaborate and expensive 901. Moreover, its physical, electrical, and acoustical characteristics make it easily adaptable to most home stereo systems and listening environments—a highly desirable feature. If the price is within your budget, you owe it to yourself to take a listen.

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