EQUIPMENT TEST REPORTS

By Hirsch-Houck Laboratories

Rectilinear 5 Speaker System

● THE Rectilinear 5 is a four-way speaker system whose 12-inch woofer operates in a sealed enclosure. At the unusually low frequency of 200 Hz there is a crossover to a 7-inch upper-bass/mid-range driver housed in a separate sealed chamber within the main enclosure. The next crossover, at 1,800 Hz, is to a 1½-inch dome tweeter, followed by a final crossover at 10,000 Hz to a 1-inch dome super-tweeter. Except for the woofer, each driver is permitted to operate over its full range above its low-frequency crossover. The frequency balance of the system is set at the factory by means of two screwdriver-slot adjustments in the rear of the cabinet. These are sealed to discourage tampering.

The Rectilinear 5 is nominally a 6-ohm system, rated for use with amplifiers delivering from 30 to 250 watts per channel. It is protected by a 3-ampere fast-blow fuse, and a clip in the rear of the cabinet holds a spare replacement fuse (a handy touch we would like to see adopted more widely).

The oiled walnut cabinet is 25 by 15 by 14½ inches and weighs about 55 pounds. The black cloth grille is removable, and the system can be installed horizontally or vertically. Although it is described as a "bookshelf/floor" system, few bookshelves are deep and sturdy enough to support this speaker. Recognizing this, Rectilinear offers an optional "dispersion base" for floor mounting. This tilts the face of the speaker upward about 10 degrees for more effective dispersion, and it is claimed to minimize room boundary effects on the mid-bass response. The Rectilinear 5 sells for $299, and the optional tilt base is $20.

● *Laboratory Measurements.* The composite frequency-response curve (roughly corresponding to the total-power response of the Rectilinear 5) was flat within ±2.5 dB from 38 to 6,000 Hz and had a broad rise between 6,000 and 17,000 Hz. Overall, the measured total response variation of ±5 dB from about 40 to 20,000 Hz represents a much better than average flatness for a loudspeaker in a "live"-room measurement. The bass distortion was about 1 per cent between 80 and 100 Hz (at a 1-watt constant input) and increased smoothly to a mere 5 per cent at 20 Hz, except for an inaudible rise to slightly below 4 per cent at 40 Hz. With a 10-watt input (a *very* loud level) the distortion was roughly twice as great as with a 1-watt input.

The minimum impedance of the Rectilinear 5 was 5 ohms at 100 Hz and above 15,000 Hz. The maximum was 10 ohms at the bass resonance of 40 Hz, and the average was about 8 ohms over most of the audio range. Although many speaker manufacturers would probably call this an 8-ohm speaker, we commend Rectilinear for their more realistic rating.

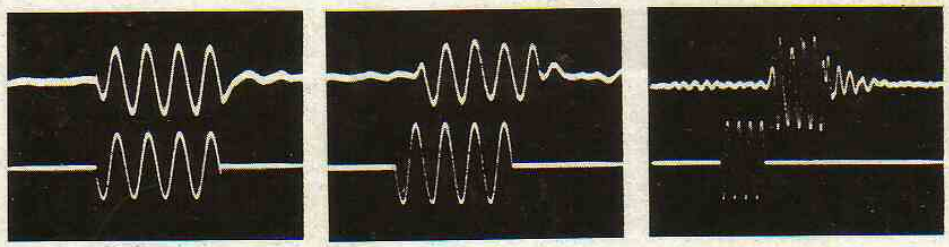
For an acoustic-suspension system, the Rectilinear 5 was quite efficient, producing a 92-dB sound-pressure level (SPL) at a distance of 1 meter with 1 watt of random-noise input in the octave centered at 1,000 Hz. Its tone-burst response was very good, with nearly ideal bursts at low and middle frequencies and only minor—and inaudible—ringing following a 5,000-Hz burst.

● *Comment.* The simulated live-*vs.*-recorded listening test confirmed the essential flatness and lack of coloration of the Rectilinear 5. The high-frequency emphasis revealed by our measurements added a trace of sparkle at the highest frequencies which could be removed, if desired, by a cut of 2 to 3 dB at frequencies above 8,000 Hz. The dispersion of the system was also very good, and without recourse to any special dispersion-enhancement design techniques.

We were especially interested in the relative performance of the Model 5 compared with the very early original Rectilinear Model III which earned itself a rave review in 1967. (Since that time the III has undergone numerous revisions and is now known as the IIIa). The measured curves of the original III and of the 5, though quite similar in their overall shape, indicate a slightly crisper sound in the Model 5. And when we made an A-B comparison against a pair of our Model III's, that is just what was heard. Not only is the Rectilinear 5 a trifle brighter at the extreme top end, but it has better dispersion and a much more powerful deep bass. Although it is a smaller system, the Model 5 has an acoustic-suspension woofer that is clearly able to go down lower in the audio spectrum, and with less distortion, than the ported woofer of the III. There was a notable absence of mid-bass coloration or "boominess," combined with a potent low-bass capability.

All in all, the Rectilinear 5 is a distinct improvement over its predecessors in the line, apparently without sacrifice of any their desirable qualities. We think it is noteworthy that this has been accomplished without a price increase, and with a substantial reduction in cabinet size.

Rectilinear® 5
Contemporary Laboratory Series



These oscilloscope photos show the fine tone-burst performance of the Rectilinear 5 at (left to right) 100, 1,000, and 5,000 Hz.

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