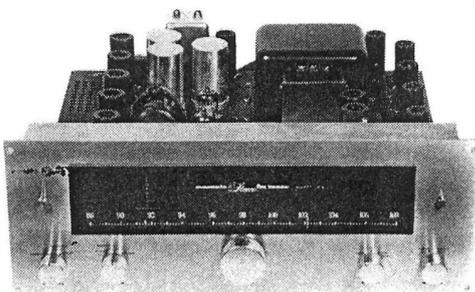


MARANTZ 10B FM STEREO TUNER

THE EQUIPMENT: Marantz 10B, a stereo FM tuner combined with signal display oscilloscope. Dimensions: front panel, 15 $\frac{3}{8}$ by 5 $\frac{3}{4}$ inches; chassis, 14 $\frac{3}{8}$ by 5 $\frac{1}{4}$ by 15 inches. Price: \$600. Manufacturer: Marantz, Inc., 25-14 Broadway, Long Island City, N.Y. 11106.

COMMENT: Large, heavy, and elaborate, the Marantz 10B is a uniquely designed, top-performing FM tuner that offers, in addition to superb monophonic and stereo reception, the added fillip of a built-in oscilloscope. This device serves as a tuning aid and also as a visual display of stereo separation and phase for FM signals and for external program material such as one's own tapes and discs. Although it is the most obviously "different" feature of the Model 10B, the scope is by no means its only outstanding aspect. The set is built around 21 tubes, a transistor, 39



diodes, 7 indicator and voltage regulator neon tubes, and the cathode-ray tube for the scope. Circuitry and construction, in the Marantz tradition, are first-rate; high-grade parts are used; wiring layout is exemplary; workmanship is of the highest order. The tuning dial, measuring 10 $\frac{1}{8}$ inches across the 88-to-108-megacycle range, is unusually large and clear, and—with visible markings down to each 0.2 megacycle—permits accurate and precise tuning.

The oscilloscope is located above the left-hand portion of the tuning dial; a stereo indicator is at the right. Two small scope adjustments flank the dial, while the main controls are grouped across the panel below the dial. These include the display control for use with the scope; a mode control; the station-tuning knob; a power off/on control combined with a panel lamp dimmer; and an interstation muting control.

In the TUNING position of the display switch, a trace pattern appears on the scope indicating relative signal strength and center-of-channel tuning accuracy. The trace, which varies from a dot to a horizontal line, also shows the degree of modulation employed by the station or the relative loudness of signals. The shape of the line changes to indicate the presence of multipath reflections, identical to TV "ghosts," in the received signal, and thus shows when the antenna needs reorientation. In the OUTPUT position of the display switch, the scope presents a stereo display (an "X-Y" graph plot, or Lissajous pattern) of the tuner's audio output, and may be used to check on stereo phasing and channel separation. The EXTERNAL position of the display switch permits a similar display on the scope for one's own program sources, such as tapes and records; a special set of input jacks for this use is provided on the chassis, behind the front panel. The owner's manual for the 10B contains instructions for using the oscilloscope

in its various functions, and one should have little difficulty in matching the sample trace patterns shown with actual patterns obtained during use.

Adjustments for the scope—such as intensity and brightness—are found on the chassis topside. In fact, all other adjustments for the tuner, as well as the audio output jacks, antenna terminals, and the fuse-holder are here, rather than on the rear apron. The antenna connections accept ordinary 300-ohm twin-lead, or shielded 300-ohm cable (a separate ground screw is provided). The manufacturer recommends, for best reception, using a Yagi or "log-periodic" type antenna; where these types are not possible, a simple rabbit-ear will suffice for local reception. Indeed, as tests conducted at United States Testing Company, Inc., and subsequent use-tests indicate, if any tuner can respond to a fair number of stations with a minimal antenna, the Model 10B certainly is one.

The novelty of the display scope aside, the Marantz tuner shapes up as topnotch equipment, offering superb FM reception that would qualify it for use as a professional instrument as well as in the most demanding of home installations. Dial calibration is excellent; tuning is simple and smooth, thanks to the heavy flywheel and large tuning knob. The set locks in on a station without any need for fine adjustment. The display indicator is a genuine aid in tuning and in evaluating the "stereoistic" quality of signals.

USTC's performance measurements of the Model 10B indicate that the set met most of its rated specifications, and on some counts, exceeded them. IHF sensitivity at 98 megacycles was found to be 1.9 microvolts, which of course places the Model 10B well up in the top ranks for this characteristic. Distortion was extremely low, and although there was the normal increase when switching from mono to

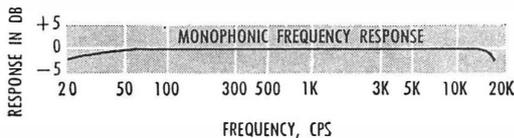
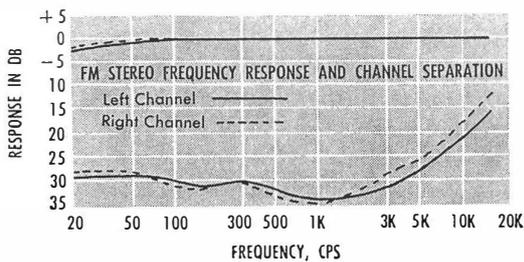
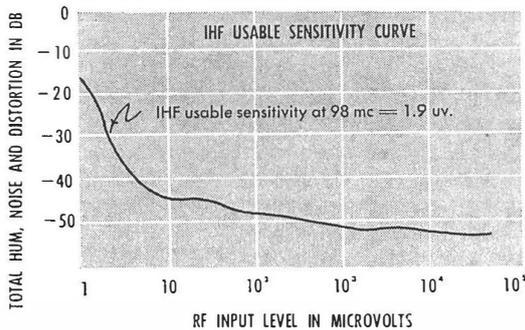
Marantz 10B FM Tuner

Lab Test Data

Performance characteristic	Measurement
IHF sensitivity	1.9 μ v at 98 mc; 2 μ v at 106 mc; 2.4 μ v at 90 mc
Frequency response, mono	+0, -2 db, 20 cps to 17.5 kc
THD, mono	0.2% at 400 cps; 0.26% at 40 cps; 0.26% at 1 kc
IM distortion	0.12%
Capture ratio	3
S/N ratio	77 db
Frequency response, stereo	
l ch	+0, -2 db, 20 cps to 15 kc
r ch	+0, -1.5 db, 20 cps to 15 kc
THD, stereo, l ch	0.43% at 400 cps; 0.6% at 40 cps; 0.31% at 1 kc
r ch	0.45% at 400 cps; 0.65% at 40 cps; 0.32% at 1 kc
Channel separation, l ch	29 db, 20 cps to 4 kc; 15 db at 15 kc
r ch	28 db, 20 cps to 3.3 kc; 11.5 db at 15 kc
19-kc pilot suppression	-42 db
38-kc subcarrier suppression	-49.5 db

stereo operation, the resultant figure still was quite low—in fact, as low as, or lower than, the distortion found in some tuners on mono operation. Other characteristics, shown on the accompanying charts, were all consistently excellent and in sum add up to as fine a tuner as seems possible at the present state of the art. From a listening standpoint, we would agree that the Model 10B is another FM tuner whose sound would be limited only by that of the broadcast itself.

We found the unusual placement of signal jacks and antenna terminals a real convenience as long as we were using the 10B out of its wooden case and "on the bench." For a more built-in or custom installation, the placement of these connections might prove less than convenient; at least one would have to exercise some dexterity in using them. We would prefer that the external input jacks for the scope be located on the front panel, and that the set also have a convenience AC outlet. Of course, these are—in the context of a superb product—relatively minor questions, and we doubt that they will keep anyone who can afford this type of equipment from buying it.



REPORTS IN PROGRESS

Fisher TX 200 Amplifier
Concord R-2000 Tape Recorder
Bozak B-4000 Speaker System

GARRARD AT60 AUTOMATIC TURNTABLE

THE EQUIPMENT: Garrard AT60, a four-speed automatic, intermix turntable with integral tone arm. Dimensions: chassis, 13 $\frac{1}{4}$ by 11 $\frac{1}{4}$ inches; allow clearances of 4 $\frac{7}{8}$ inches above, and 2 $\frac{7}{8}$ inches below, motor board. Price: \$59.50. Options: walnut base, \$4.95 (measures 14 $\frac{5}{8}$ by 12 $\frac{3}{4}$ by 3 $\frac{3}{4}$ inches); unfinished base, \$4.45; mounting board for drop-in installation, \$2.25; dust cover, \$4.95; 45-rpm spindle, \$3.80. Manufactured by Garrard of England; distributed in the U.S.A. by British Industries Corp., Westbury, L.I., N.Y. 11591.

COMMENT: The Garrard AT60 is a compact, reliable, and versatile entry in the class of automatic turntables. It may be used, by inserting either of two center spindles supplied, as an automatic changer or as a single-play manual unit. It has the intermix feature which permits including records of different diam-



eters in the same stack, and it operates at 16, 33, 45, and 78 rpm. Record changing is accomplished by a spindle with retracting lever in conjunction with an over-arm that must be placed over the top record in the pile.

The platter used in the AT60 is well balanced and weighs nearly 4 pounds, which—for a low-priced automatic—is fairly heavy. The driving and changing mechanism are both well constructed and the assembly operates flawlessly.

The tone arm is a metal tubular type fitted with a removable cartridge shell and an adjustable rear counterweight. The arm has a built-in stylus force gauge and a bias compensator or "anti-skating" device. Setting up for operation is fairly simple, thanks both to the clear instructions furnished and to the fact that everything works as it should.

In tests conducted at United States Testing Company, Inc., and in subsequent use tests, the AT60 proved its mettle as a performer. The platter spins smoothly and the arm moves freely with very low bearing friction. The automatic tripping mechanism was found to work satisfactorily at tracking forces as low as $\frac{3}{4}$ gram. Rumble, measured by the NAB standard (1.4 centimeters per second at 100 cps) was -36 db and inaudible. The tone arm had no significant resonances. Wow and flutter, at 0.07% and 0.05% respectively, were of no consequence. These tests, incidentally, were run using a Shure M55E cartridge—a high compliance, elliptical stylus model—and indicate the high degree of sensitivity and improved performance that have been built into a popular-priced automatic player.

The stylus force adjustment scale at the end of the tone arm is not numerically calibrated, but it can serve