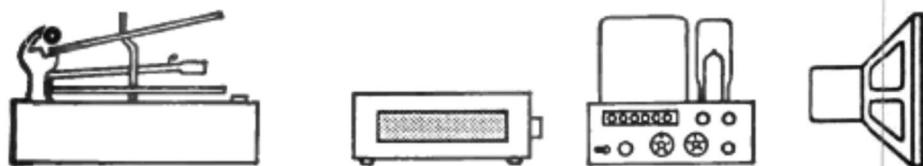


EQUIPMENT



PROFILE

McINTOSH FM-STEREO TUNER, MODEL MR67

The McIntosh MR67 is an FM-sterco tuner intended for the very finest of high-fidelity systems, and well qualified for its role.

Unquestionably, it fulfills its design goal visually; it is as elegant in appearance as any unit we know of. (Glance at Fig. 1.) That black upper portion, contrasted against the gold-colored metal of the bottom section, plus the greenish indicators on the left and the red FM MULTIPLEX legend on the right (in the presence of a multiplex signal), all combine to make an impressive facade.

But there's more to the MR67 than meets the eye. Underneath that gold and black exterior beats an FM tuner that is unexcelled by any other tuner we have had occasion to test in recent years. In details, perhaps one brand or another may provide slightly better performance, but in aggregate the MR67 is superb.

One non-performance feature of the MR67 was most impressive: The Panloc mounting system. Fundamentally this mounting system is similar to the professional rack mount shelf, with the added convenience of being able to slide the tuner in and out by pressing two buttons on the front panel. This mounting system makes the tuner easily available for servicing, or whatever. We would like to see this mounting method used on all components.

The performance feature of the MR67 we think most ingenious is the multipath indicator. The upper green bars of the tuning indicator play a dual role: A signal-strength indicator and a multipath indicator. Either of these functions is selectable by means of a slide switch. Of course, being able to locate the antenna at the minimum multipath position is extremely valuable in locations where multipath is a problem, such as in metropolitan areas. It is even more valuable to be able to do this at the tuner by means of a rather simple visual indication.

Circuit Description

The front end of the MR67 is quite straight-forward in concept; tuned input circuit feeding a cascode r.f. amplifier consisting of two triodes, plus a triode oscillator and a triode mixer. The unusual part of this arrangement is that a 6DS4 Nuvistor is used as the "cas" section of the cascode amplifier, with the "code" section being half a 12AT7. The remaining half of the 12AT7 is used as a low-noise mixer and a 6AB4 is used as an oscillator.

Following the front end are four i.f. stages, the last two also acting as limiters. The first three i.f. stages use 6AU6's and the last i.f. is a 6SC6. The latter is also part of the unusually effective muting circuit, in conjunction with a 6AV6. The stage after the i.f. is the discriminator utilizing a pair of 1N572 diodes.

The multiplex decoder is of the peak detector variety. This type of circuit, as used in the MR67, does not require any critical adjustments and is quite reliable. The triode section of a 6U8 is used as a 19-ke amplifier to drive a rather clever circuit utilizing a transistor as a switch to turn the multiplex indicator lamp on or off.

The output of the decoder is supplied to a pair of 6BL8 triode-pentodes, each being a single-ended audio amplifier. Feedback is used to reduce distortion and lower the output impedance.

The signal strength-multipath indicator circuit is rather simple and clever; it consists of a signal-strength indicating circuit (from second i.f. to indicator tube) with the final capacitor switchable—in for signal strength, out for multipath. With that capacitor out of the circuit, the signal to the indicator tube varies when the multipath signals are closer in level to the primary signal and settles down when the strongest signal is located by the antenna position. With that capacitor in the circuit, the variations are removed and only the maximum signal at the particular antenna position is shown. As simple as this system sounds, it does work and is worthy of

nomination for the "Clever Circuit of the Year" award.

A feature of the circuit which doesn't appear on the schematic is the unusually high quality of components and construction practice; unquestionably this feature is of paramount importance in making the intelligent engineering of the circuit available to the user and for a long, long time. In our opinion it is precisely this, quality construction and parts, which make the MR67 a superb product, as contrasted to a well-engineered product.

The Panloc System

Installing the MR67, because of Panloc system, is a simple procedure. A heavy plastic template makes it easy to lay out the cutout and hole locations, and the only tool required is a pencil (that pencil does need a sharp point though). After the cutout is cut out, and the mounting holes drilled, one need only mount the supplied metal shelf, slide in the MR67, and that is all.

The simplicity of this installation is overshadowed in our mind by the sheer accessibility of the unit afterwards. No more groping around in dark and relatively inaccessible places with one hand while trying to balance a heavy piece of equipment with the other. No more scratched up furniture, and resultant ruffled female feathers. That alone is worth the price.

Performance

The tuning "feel" of the MR67 is the most perfect we have experienced; it is neither too easy nor too difficult to tune. The importance of this feature is that it facilitates accurate tuning. For instance, suppose the tuning indicator informs us that we must rotate the tuning knob in order to achieve the exact position where the eye-tube bars are closest. Most of us have experienced the free-wheeling effect of some flywheel energized knobs which make it nearly impossible to stop at the exact place you want to. Probably you have also experienced the other end of the scale, where so much force is required that it is almost impossible to tune sensitively. And there are many gradations in between. In our estimation, the MR67 is just perfect in this respect. And it is important. What good is an accurate electronic tuning indicator if the mechanical tuning arrangement doesn't let you take advantage of it?

The measured performance of the MR67 is quite consistent with the claims of the company; sensitivity 2.4 μ v by the IHF method, total harmonic distortion less than 0.4 per cent, audio frequency response within 0.5 db from 20 to 20,000 cps (both mono and stereo), capture ratio 1.9 db, hum and noise 72 db down (100 per cent modulation), stereo separation of 35 db at 1000 cps (measured from either right to left or left to right), 63 db of quieting between stations with the muting circuit on, drift a maximum of 22 kc, and AM suppression of 41 db.

Of course, as we have noted before, measurements do not necessarily tell the quality of an FM tuner. In fact we have heard a story about a tuner deliberately designed to have excellent statistics. It can be done, and probably is. The McIntosh MR67 is certainly not in that category. Indeed, in over-all performance it seems to be better than the measurements indicate. For instance, the sensitivity figure doesn't appear to be unusual compared to many another we have reported on. Yet, on our standard antenna, we are able to receive 37 stations loud and clear, more than most of the apparently more sensitive units. Obviously, in



Fig. 1. The McIntosh FM-Stereo Tuner, Model MR67.

this case numbers do not really indicate relative performance.

In any case it is quite clear that the McIntosh is a superb FM-stereo tuner. The sound it produces is excellent, it is staunchly resistant to interfering noises, and it adds virtually no distortion of its own. Combining these factors with its ability to pull in a large number of stations makes the MR67 well worth the consideration of the audiofan. The price is about \$300, including the Panloec equipment. **B-16**