

McIntosh's New Receiver: Breeding Tells

Mac 4100 stereo FM/AM receiver, in case with simulated wood-grain finish. Dimensions: 18 $\frac{3}{8}$ by 5 $\frac{3}{4}$ inches (front), 14 inches deep plus clearance for controls and connections. AC convenience outlets: 2 switched plus 1 unswitched (600 watts total), 2 for auto-on turntable switching (100 watts total). Price: \$1,499; optional RMA-5 rack-mounting adapter, \$29. Warranty: three-year service contract, free with purchase of the receiver, has provisions comparable to typical "limited" warranties but covers normal wear and tear. Manufacturer: McIntosh Laboratory, Inc., 2 Chambers St., Binghamton, N.Y. 13903.

McIntosh has for some years kept a very low profile vis-à-vis the press. This hiatus in communications has fostered a polarization of opinion about McIntosh: Is the company still deserving of its reputation for superb engineering, or is it trading on past glories? One review can't provide a definitive answer, of course, but the Mac 4100 receiver can be taken as a positive sign of health in Binghamton.

The personality of this receiver is like that of an accomplished servant used to coping with pampered aristocrats who

demand the finest but are not always technically knowledgeable or manually dexterous. Accordingly, it takes responsibility in a manner that, paradoxically enough, is unassuming yet quite intolerant of intervention by its master. But once it has taken over, it performs virtually impeccably and can even ward off the consequences of ineptitude without noticeable fuss.

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Very little of the receiver's special quality is immediately apparent from the outside, though in hooking it up you get a clue from the convenience outlets. In addition to the conventional switched (black) and unswitched (red) ones, there are two green ones marked **TURNTABLE**, plus an **AUTO/MANUAL** switch. If you use the **AUTO** setting and a turntable plugged into one of the green sockets is turned on, the receiver and any outboarded equipment run off the switched outlets will come on automatically, even when the receiver's power switch is off, and all will turn off again when the turntable shuts down. Thus an automatic model can be made to turn off the whole system unattended. Since the feature works by sensing current drain through the turntable outlets, the switch serves to override it should the turntable be one of those that draw some current even when they are off.

The receiver's switching is handled by DC control voltages, actuated by the front-panel controls and fed to FETs that actually do the signal switching. There are two fundamental advantages to this approach: Switching transients are eliminated, and the short, direct signal paths made possible minimize noise pickup, RFI, and crosstalk. In all of these re-

spects the 4100 is above reproach. We seldom have RFI problems in our area, but we do often find that, for example, some audio from an FM tuner section will "leak" into the tape-monitor signals; none was detectable in the Mac.

The FM section is unusual in that—in addition to conventional automatic stereo/mono switching—it has an automatic-blend feature that progressively reduces stereo separation (and hence out-of-phase noise) as signal strength drops. Since the full audio band is blended, the resulting stereo image may be a bit stabler than in the more usual high-blend solution, but the hiss seems a little more intrusive for a given degree of separation loss. On weak signals it does work, however—and, like so many features of the Mac, without drawing undue attention to itself. Similarly, the Automatic Frequency Lock gently holds onto an FM station that has been tuned correctly; were it not for the front-panel **AFL LED**, which lights when lock occurs, you would be unaware of its action. This LED acts as a tuning aid; when the muting is on, the LED announces arrival at a receivable station before the unmuting action (which is gentle and slightly delayed) allows any audio to pass. The

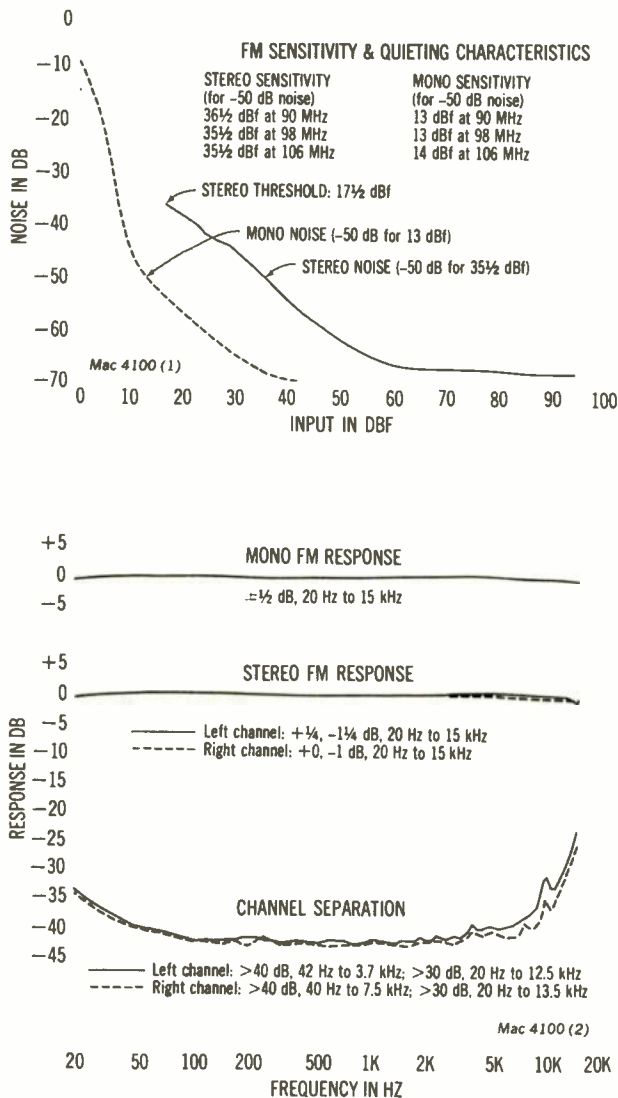
McIntosh Mac 4100 Receiver

Tuner Section

Capture ratio	2 dB		
Alternate channel selectivity	76 dB		
THD + N	L ch	R ch	mono
80 Hz	0.25%	0.25%	0.16%
1 kHz	0.17%	0.22%	0.15%
10 kHz	1.8%	1.7%	0.21%
IM distortion	0.06%		
19-kHz pilot	-63½ dB		
38-kHz subcarrier	-66½ dB		
S/N ratio (at 65 dBf)			
stereo	67 dB		
mono	71 dB		

Amplifier Section

Manufacturer's rated power	17½ dBW (75 watts)/ch.	
Power output at clipping (channels driven simultaneously)		
L ch	20 dBW (98 watts)	
R ch	20 dBW (98 watts)	
Dynamic headroom (at 1 kHz)	1½ dB	
Frequency response	+ ½, -¼ dB, 20 Hz to 20 kHz + ½, -3 dB, 13 Hz to 35 kHz	
RIAA equalization	± 1 dB, 20 Hz to 20 kHz	
Input characteristics (re 0 dBW (1 watt); noise A-weighted)		
	Sensitivity	S/N ratio
phono 1, 2	0.27 mV	76½ dB
aux 1, 2	30.0 mV	80 dB
tape 1, 2	30.0 mV	80 dB
Phono overload (clipping point)	88 mV at 1 kHz	
Damping factor at 50 Hz	100	



range of the signal-strength meter is well chosen as an aid in antenna orientation for best reception of problem stations.

The amplifier section, too, exemplifies the extra care that sets the receiver apart. Whether the option that enables switching in three speaker pairs simultaneously requires them or not, it has three distinct protection systems. The most conventional is triggered by a heat sensor and shuts down the output until the heat sink has cooled to within safe operating limits. The Sentry Monitor circuit reacts to abnormal current conditions by restricting the drive to the output transistors. And the Power Guard circuit responds to overdrive that normally would create hard clipping by shaving off the potentially dangerous harmonics—"softening" the clipping, so to speak. None impinges on normal operation; all minimize the effects—aural, thermal, or electrical—of abnormal operation.

The Power Guard, for example, limits peaks so smoothly that you are unlikely ever to hear this receiver overload, as such. The top LEDs in the front-panel power display—the one possible concession to fashion in the design—are Power Guard pilots; below that, the display is calibrated from 100 watts down to 0.1 watt in 5-dB steps. As we've said before, we're not convinced of the utility of such indicators, but the calibration points do seem relatively well chosen.

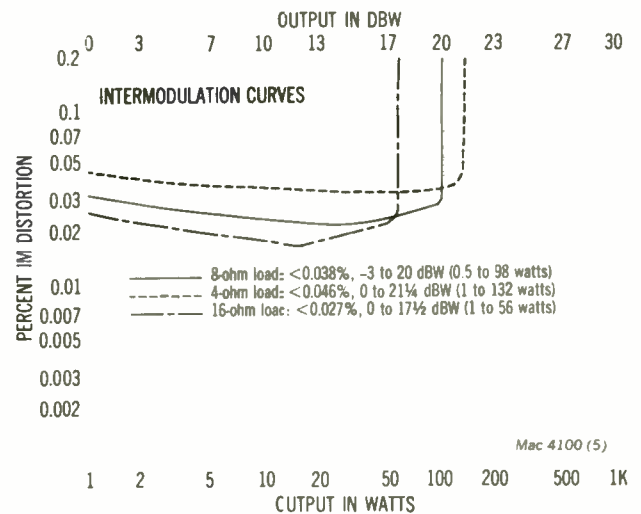
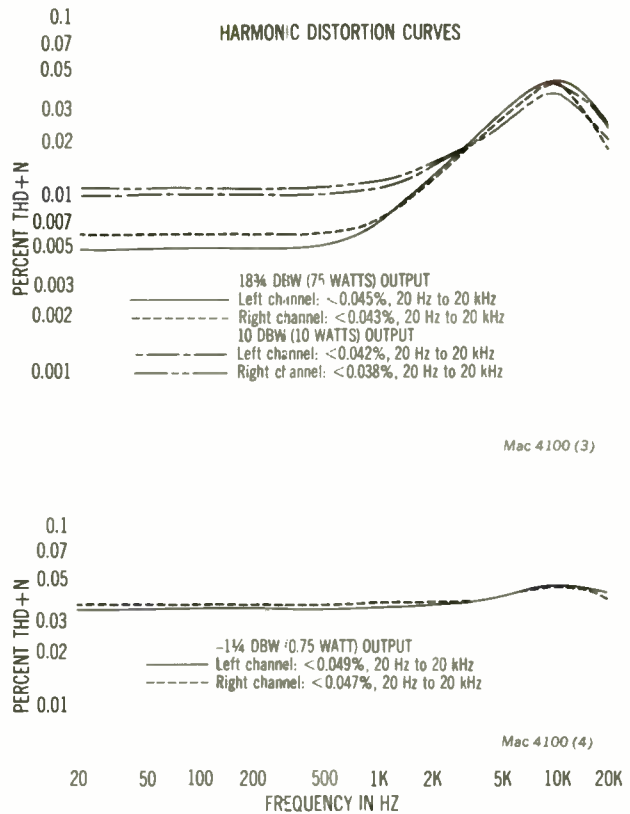
Two unusual features of the front panel are the equalizer/tone controls and the "loudness" knob. The latter might better be marked "contour" since it does not adjust midband level like most loudness controls, but simply adds boost in the deep bass plus some in the upper treble to compensate for low listening levels. Like other separate-knob schemes, this frees the loudness compensation from the volume control and makes it adjustable to the actual listening levels through the system; unlike some, the appropriate setting must be determined by ear alone—which is arguably the most reasonable approach.

The equalizer's five bands have maximum ranges of approximately ± 13 dB and are marked for center frequencies of 30, 150, 500, 1,500, and 10,000 Hz—making them, respectively, controls for subbass, bass, midrange, treble, and sparkle. The 30-Hz control is most effective as a rumble-filter/boom-boost control; the top one might be used as a hiss filter, though its maximum-cut setting dulls the upper treble a good deal. As an ensemble, they offer genuinely useful flexibility; all have detented center "flat" positions.

While the lab measurements give little clue to the "extras" from which the receiver's special qualities derive, they document its very solid performance. McIntosh appears to be thinking in terms of listening quality rather than specsmanship (an attitude we applaud), so distortion, for example, is only vanishingly low—not infinitesimally low. The frequency response has been intentionally cut off beyond the audio band to help maintain clean sound by inhibiting intermodulation with infrasonic and ultrasonic "garbage" (a design criterion that applies to the tuner section as well as the amplifier); though this, similarly, may dismay those who judge an amplifier by its square waves, the results with music seem all the better for it. Tuner data are likewise very good—even superb—with no offsetting cause for complaint of any kind.

It is obvious, too, that McIntosh has a clearly formed idea of the sort of user it is designing for: someone who, while he is uninterested in playing the "pro," cares very much about quality and craftsmanship. The cosmetics, the "feel," and the sound quality of the Mac 4100 are all superb; the controls are minimal for the degree of useful flexibility they provide, with little if any concession to users who simply like to putter. This tuner is a receiver for music lovers.

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NEW MEASUREMENT STANDARDS

In making comparisons between current reports and those published in the past, readers are cautioned to pay particular attention to the reference levels and similar test criteria cited. S/N ratios for electronics, in particular, are measured very differently now that we have adopted salient features of the new I-F amplifier-measurement standard. While we believe that the new technique—which also implies a saner approach to loading of all inputs and outputs) will result in measurements that more perfectly reflect audible in-use effects, they cannot be compared directly to the numbers resulting from the former, more conventional lab measurements.