Both clipping headroom and dynamic headroom are quite high, indicating that the ATM-1 will play louder than one might expect.

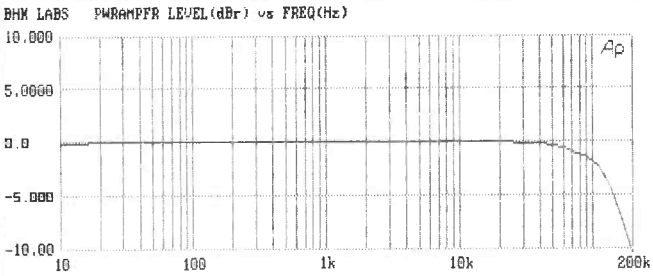

Fig. 1—Frequency response for 8-ohm loads on the 8-ohm taps.

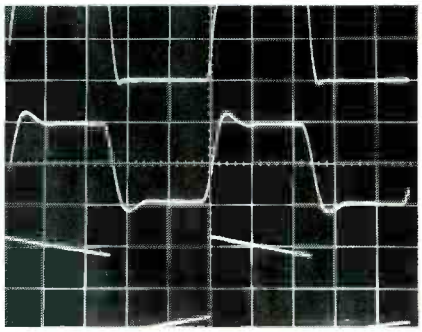

Fig. 2—Square-wave response at 8-ohm tap for 10 kHz into 8-ohm resistive load (top), 10 kHz into 8 ohms paralleled by 2 μF (middle), and 40 Hz into 8 ohms (bottom). Scales: Vertical, 5 V/div.; horizontal, 20 μS/div. for 10-kHz traces, 5 mS/div. for 40-Hz trace.

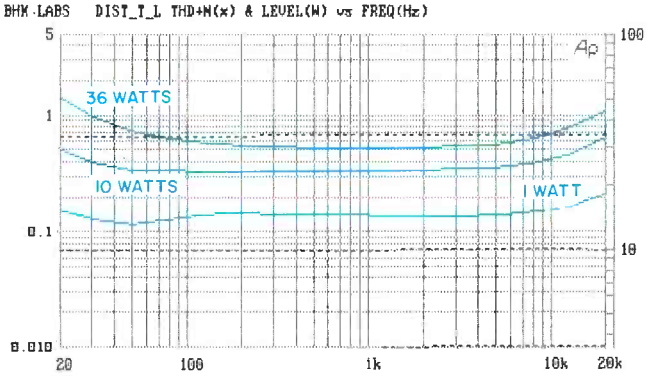

Fig. 3—THD + N (solid curves) and power output (dashed curves) vs. frequency, with 8-ohm loads on the 8-ohm taps. Read distortion from left-hand scale, power output from scales at right.

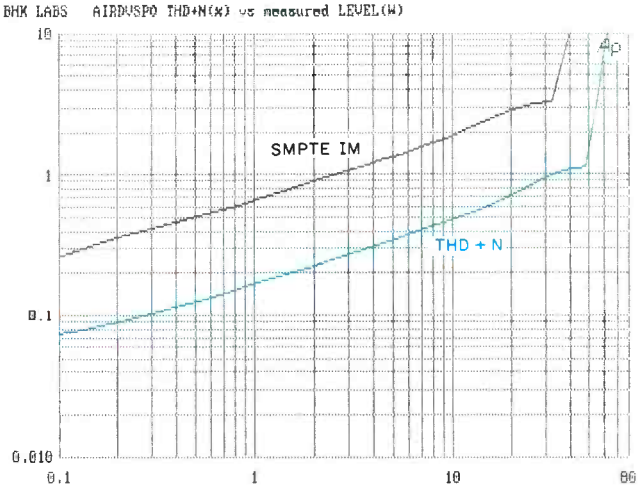

Fig. 4—SMPTE IM and 1-kHz THD + N vs. power output for 8-ohm load on 8-ohm tap.

Measurements

Voltage gain and IHF sensitivity were measured first. With 8-ohm loading on the 8-ohm taps, voltage gain for the two channels measured 30.1 and 30.3 dB for left and right channels, respectively. Corresponding IHF input sensitivities were 88.9 and 87.0 mV.

Frequency response at 1 watt output was very similar for both channels. Figure 1 shows the 1-watt frequency response for 8-ohm loading on the 8-ohm tap for one of the channels. Notable here is the wide bandwidth and the lack of any peaking in the response up to the upper frequency limit of my Audio Precision measurement set. Related to the frequency response is the response to square waves. My usual set of these is shown in Fig. 2. The top trace is for 10 kHz with 8-ohm resistive loading. Damping, or amount of overshoot, is quite good for a tube amplifier. The waveforms for open-circuit loading and for 4-ohm loading on the 8-ohm tap look substantially like the top trace in the figure. This uniformity of response shape with loading speaks well for the high-frequency stability margin of this design. The middle trace shows the effect of adding a 2-μF capacitor across the 8-ohm load resistor. The amount of ringing with this load is well controlled. Finally, in the bottom trace, response to a 40-Hz square wave is shown; there is somewhat more tilt than I've seen in some of the other tube amplifiers that I have reviewed. Judging from the high-frequency and square-wave response, it appears that the output transformers used in the ATM-1 power amp are of high quality.

Total harmonic distortion plus noise is shown in Fig. 3 for the left channel (which has slightly higher distortion than the right) as a function of frequency for three power levels. Distortion doesn't rise much with increasing frequency; I consider this a desirable amplifier characteristic. Both 1-