

## Modifying a DAP-310 for optimum AM

When our station received a Dorrough model 310. Discriminate Audio Processor from a sister station, we tried it on the air, and it became apparent that because it was designed for both AM and FM use, its performance on AM was compromised.

As the unit comes from the factory, the frequency bands used in it are: LOW-20-120Hz, MID-20-6500Hz, HIGH-6.5-15kHz.

These frequencies are fine for FM use, but it is obvious that most of the audio energy used in AM is in the mid band with very little coming from the two other bands. We decided to modify the unit to optimize its features for AM use.

The first modification involved component changes in the crossover card in the unit. The following changes were made:

C-16 was changed from .022uf to .047uf.

C-12 was changed from 1uf to .75uf.

C-7 was changed from 470pf to .001uf.

C-20 was changed from 6uf to 2uf.

C-3 was changed from .03uf to .016uf (.001 in parallel with .015uf).

\*The work reported here was carried out by the author when he was chief engineer at WGSM-AM/WCTO-FM, Long Island, NY. He is now with WLKW, Providence, RI.

Also, a 470pf capacitor was connected across R-9.

This modification changed the frequency bands to:

50-200Hz, 200-3200Hz, 3200-7500Hz.

The unit had a roll off above 7500Hz.

The next modification occurred in the peak limiter card. The unit has 4 1n914 diodes connected as a soft clipper. My experience has been that a hard clipper is more desirable than a soft one because you do not need nearly as much hard clipping as soft for the same amount of peak control.

The clipper card was modified as follows:

This converts the clipper from a soft to a hard clipper.

If this modification is done, however, the output transformer in the unit must be changed, because the one that comes in it produces a lot of ringing and overshoot. I replaced it with a UTC A-21 wired 50:500Ω, with the 50Ω side going to C-10 in the output circuit. This also gives the unit about 6dB more output.

These modifications produced a noticeable improvement in both loudness and quality when the unit was used with our Gates BC5-P2 transmitter. With a newer transmitter the results should be even more dramatic.

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