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Subject: AR 7030 Sync Detector - Use in crowded band conditions

It is possible for the synchronous detector to get confused as to which signal you wish it to lock on to when other strong carriers are near by.

The 7030's sync detector will be able to cope with this, but the problem is in the automatic capture / tuning phase of the tuning strategy of the radio. During this period (a few seconds after sync mode starts) the receiver looks at quite a wide secion of spectrum (a few kHz) and is influenced by any signals it finds. As the auto-sync process progresses the receiver narrows its loop bandwidth down to a few Hz around the signal carrier. I suspect in your case that there is a steady carrier a few hundred Hz from the MW station you are tuning. The problem is exacerbated if the station is broadcasting AM stereo since the phase- modulated carrier is seen as a noisy signal by the receiver, and a nearby steady signal will be chosen preferentially.

So what to do? There are three things worth trying:-

1. Restrict the bandwidth the receiver uses during its capture phase by selecting the 2.2kHz filter in sync mode before tuning the station. If the receiver syncs correctly then you can widen the filter after capture (when the mode indicator returns to "Snc").

2. Wait for the capture phase to finish (the mode indicator will change from "(S)" to "Snc") and then *slowly* tune the receiver so that the pitch of the heterodyne reduces until it reaches zero beat. If you tune too quickly the receiver will move back into AM mode and then start capture all over again. Once zero beat is found the sync detector will lock and track the new carrier.

3. Abandon the auto-sync altogether, set the sync detector to narrow mode (use the Config menu) and tune the receiver manually. This should work fine, but you may have to re-tune the receiver slightly from time to time to maintain optimum reception. (The auto system normally does this for you).

I hope that one of the above provides food for thought.

Best regards, John. <jt@aor.co.uk>