

The audio from the mic connector and into the balanced modulator of this radio is limited to >100Hz at the low end and to about 8.2KHz at the high end. These modifications extend the frequency response of the AM transmitted audio from about 40 hZ to 8+ KHz. This accomplished by reducing the low frequency roll-off of the audio fed into the balanced modulator and bypassing the 455KHz AM filter on transmit to reclaim the high end sidebands available from the balanced modulator.

Alternately, audio can be fed into the "DATA IN" input at the rear of the radio (Accy 2, Pin 11, labeled "ANI" on the IF board), bypassing the mic amp stage. Using this method requires a 500mV input level. Bypassing the mic amp extends the high end slightly more, to about 8.6 KHz.

Extending the low frequency roll-off is accomplished by the change of one capacitor at the input of the modulator. See Step 1 below. This extends the low end to about 40Hz for SSB (filter permitting) and AM only. The low end will still limit up around 250Hz if the PROCessor is turned on.

The full 8KHz high-end transmitted band-width is present in the 455KHz output of the modulator and is suppressed (and distorted) by the AM filter CF2. The "AM" filter is specified +/- 2.6KHz (about 5KHz overall). Mine tested more like 6.4 overall. This needs to be bypassed completely for XMIT only. This is bypassed with a simple diode switching circuit similar to that used to switch the filters normally. See Step 2 below. This modification is made easy by the ready availability of an AM transmit B+ provided by a logic chip on the IF board (Pin 14, IC10), labeled "AMT" on the schematic. I found no spurious getting through from this mod as the filter follows the balanced modulator, which is fed with a relatively clean VCO generated 455KHz.

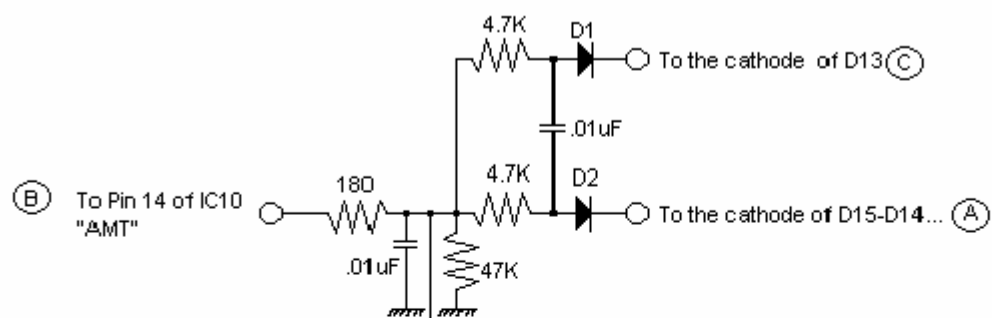
1/2010: A proposed change is added here, and shown below, which accommodates the later model TS440s with parallel input element filters. This requires that the filters be disabled, as well as bypassed, for this mod to work effectively. This modification has not been tested.

Step 1. The low end is restricted primarily by one capacitor, C135, which is a 0.1uF electrolytic located next to J32 on the IF board. Replace this with a 1.0uF electrolytic or equivalent.

Step 2. All of the connection points on the bottom of the IF board can be found within an inch of the filter, at the rear center of the board. I made a "flat pack" assembly of the parts, as per the schematic below, and tacked it onto the back of the board. I did insulate the longer leads with some "spaghetti" and also folded a piece of "fish" paper over the pack just in case, but there was more than enough room under the board.

The diodes used by Kenwood are 1S1587. I used 1S1555 as they had them from some other projects. Any reasonable small signal diode should work, even a 1N914 in a pinch. Do not use a Ge (1N34) they will leak signal in receive; not good. The 0.1uF I used were 50V Ceramic chiclets. Resistors were 1/4W (or less if you have 'em).

Good Luck.



(G) is ground

Proposed New Changes for later model filter.

