

HR2510 Hi-Power Modification

Increase the performance of this popular HF rig.

by Carl Merrill

After reading the high power modification originally published in *73 Amateur Radio Today* ("Beefing Up the Uniden and the HTX-100" by M. T. Stacey KC4HGH, September 1989, p. 48) and then changed by the original writer (*73 Amateur Radio Today*, "Updates," November 1989, p. 76), I discovered another method that is easier to implement and has given consistent results.

The modification in the 1989 article and update requires you to change the output transistor from a type MRF477 to a type MRF497 then change the pre-driver transistor Q134 from a type 2SC2086 to a type ECG-340.

I found that the ECG-340 didn't really give any more drive to the driver transistor, for it is an emitter-follower, with a gain of less than one, so I left the 2SC2086 portion of the circuit alone.

The Modification

The following modification will give you marked improvement in the power output of the HR2510 and is easy to implement:

1. Change the output from a MRF477 to a MRF497 and make the necessary bias adjustments as follows:

Connect the radio output to a 50 ohm dummy load and set the frequency to 28.005 MHz, USB mode, with no modulation.

Hook up a meter (0-100 mA scale) between test points TP4 (+) and TP3 (-) to monitor final amplifier current.

Key the transmitter with no modulation and adjust VR112 for 80 mA collector current (Q132).

Place the meter's negative lead on TP2 and check the driver current.

Adjust VR113 for a driver current of 50 mA, if necessary.

Replace shorting bars into TP4, TP3 and TP2.

while tuned to 28 MHz, adjust the AM power output to about 5 watts by adjusting VR107.

3. Turn off the power and locate Q134, the 2SC2086 amplifier transistor. Cut the foil (as shown in Figure 2) to remove the

network from the emitter. Remove the 0.01 uF capacitor (C135) from the collector of this transistor to ground. Bridge the foil from the open end of the network to the collector foil. Now, solder the removed 0.01 uF (C135) to the bottom of the board from the emitter to ground. See Figures 1 & 2 for details.

4. Check your work carefully for any solder bridges and turn on the power. The AM output will normally jump up to about 15 watts after this modification. Turn the AM power output down to about 12 to 13 watts by adjusting VR107. This is plenty for this radio and will sound real nice on the air. You should find that the SSB power will now be around 25 to 32 watts.

5. Adjust the SSB output for peak power by feeding a single 1 kHz tone (or dual tone) into the radio while adjusting VR104 (the SSB ALC pot).

6. If your radio needs further alignment, consult the appropriate service manuals for the HR2510 and the HTX-100. The MRF497 may be obtained from RF Parts Company, 435 So. Pacific Street, San Marcos, CA 92069. Tel. (760) 744-0700.

Results

The purpose of this change is to make the 2SC2086 provide gain, for in an emitter follower configuration, the gain is always less than 1. It works better, and saves the cost of the ECG-340. I have completed this modification on approximately eight different radios and they work fine. They can be heard in places they couldn't reach before.

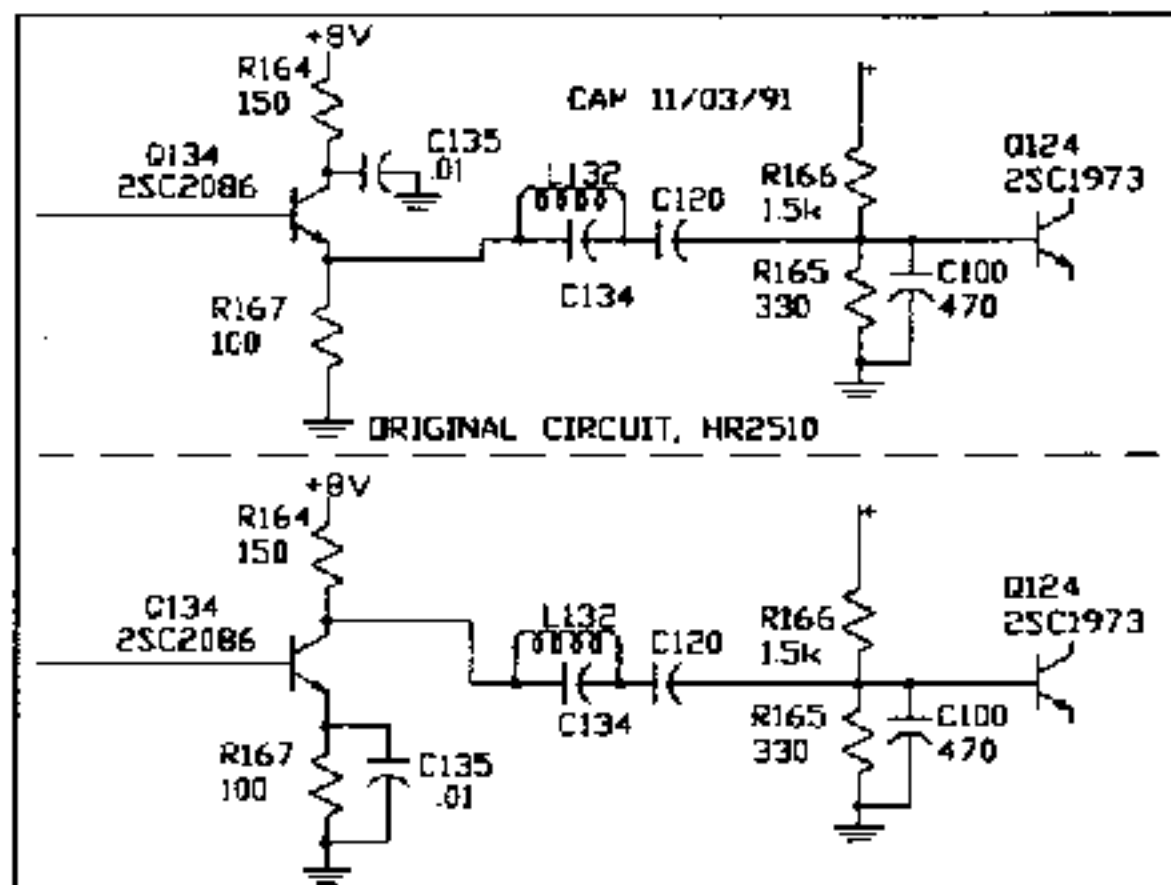


Figure 1. Modification for increased power for the Uniden HR2510. Top circuit is the original; bottom circuit is the modified version.

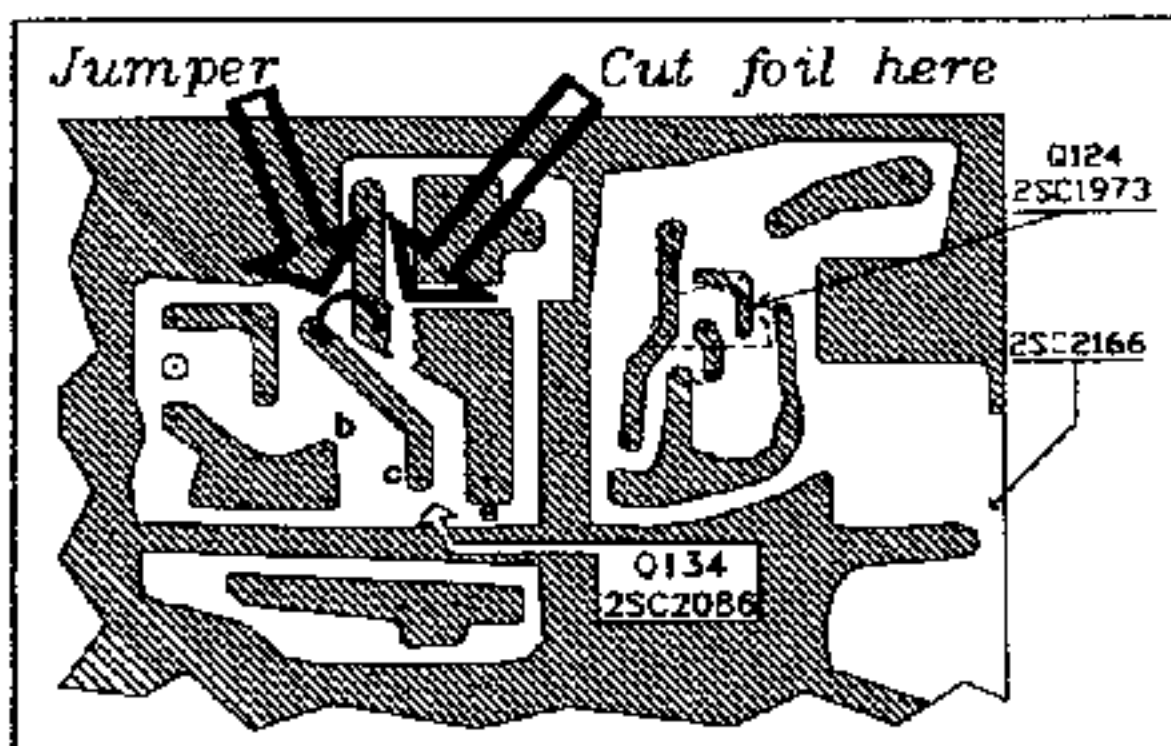


Figure 2. Modifications to the PC board, bottom view.