NEWSLETTER ARCHIVES

MODIFICATIONS TO A PHILIPS BROADCAST RECEIVER FOR USE ON TOPBAND

by Phil Fuller G0PVQ

This article is for those who remember the topband transmitter designed and built ugly bug fashion by Derek G3GRO, of which I produced an exact clone, the components being mounted via small stick-on pads of pcb material on to a larger piece of board. After completion of the TX it was duly taken over to Derek for testing, and proved to be ok with no major problems.

Having proved my worth as a constructor it was time to look around for a companion receiver. Several suggestions were made but one made me think, and it seemed quite easy to do, using an old type Philips push button car radio! The suggestion and help I received were from Reg G3RMK.

After locating a suitable receiver from the junk in the shack, work was started on changing the inductor cores in the front end of the receiver. All three cores were carefully removed without breaking them, as these are iron dust cores, and needed for measurement of the new cores. The next job was to fashion three brass screws the exact length and diameter of the extracted cores. This was done using an electric drill held in the vice, and with a screw in the chuck I filed the thread off until the brass diameter slid into the inductors, not too tightly, just so that they slid in and out without becoming jammed. After removal from the drill chuck I left a quarter of an inch of thread on the screw, as this is the part that will be glued into place when all set up and alignment is done.

With all three replacement brass cores now inserted we are ready for the alignment

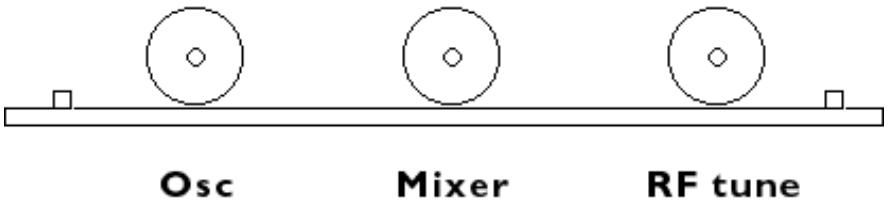

Fig 1. Looking at receiver from the front - It is assumed that not all receivers are in this order

Using an RF signal generator, or another 160m transmitter, a signal is fed into the receiver. Then, adjusting the tuning dial you listen for the whistle and hash noise, and then very carefully move the oscillator, RF tune and mixer adjustment screws in or out until you can hear the whistle at the top and bottom end of the160 m band. Also do not forget that there is an aerial sensitivity (tuning) control through the receiver front panel, which will need adjusting for best received signal.

You may find, as I did on my receiver, that the bottom end of the band will only go down to about 1.81 MHz to give you 2.0 MHz at the other end. However, once you feel that you have top and bottom ends tuned, re-connect your antenna and look for some signals. There will be lots of bleeps and bloops up around 1.9MHz, cw around 1.810 MHz, and you may also hear some broadcast stations. These are image responses and can be blocked out by using a high pass filter, which Derek has kindly installed at the antenna socket of the receiver. Also do not forget that you will need to re-calibrate the tuning scale of the receiver.

If you know someone active on Top Band get them to send you some signals and give a final tweek to all three or four screws until you are satisfied with the results. Once this is done glue all three brass screws into the plastic holders, and leave to set before using the receiver.

Now what you have is a small Topband AM receiver, which by a small mod and the addition of a BFO- come- product detector at 470 kHz, can also receive sideband and CW as well.

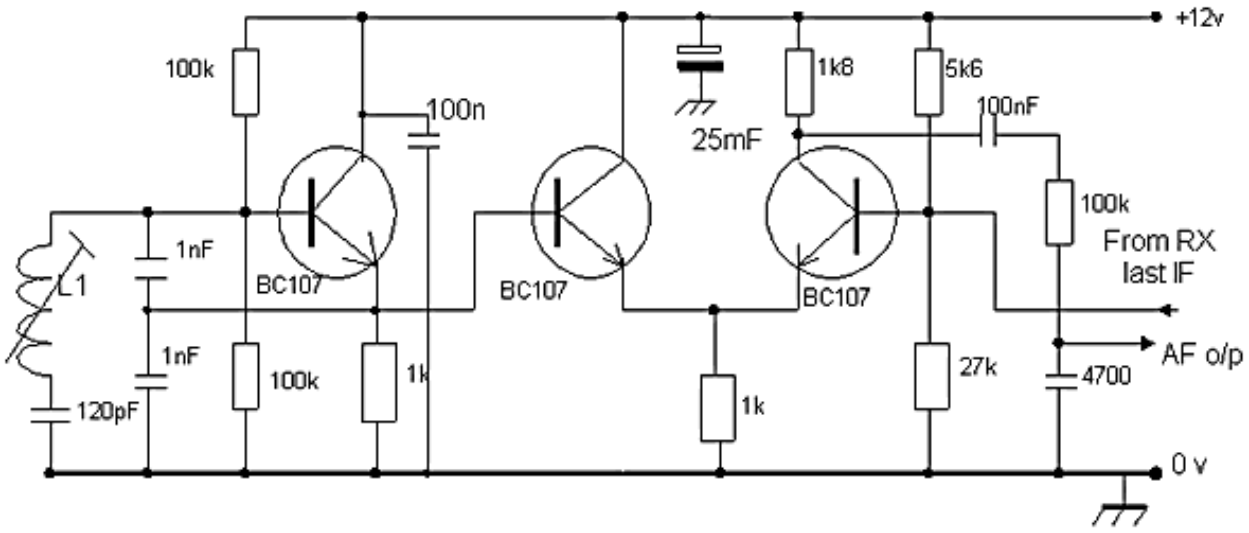

Fig 2. Additional BFO and Product Detector Circuit

Another useful addition is an LED noise limiter that also acts as a netting indicator by looking for the null when tx and rx are zero beat with each other.

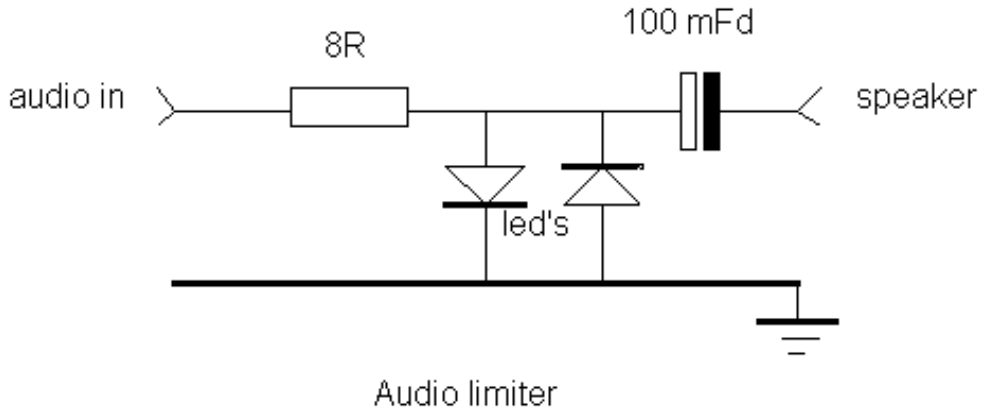

Fig 3. LED netting indicator and audio noise limiter

Many thanks to fellow Crawley Club members Reg G3RMK, for providing the original idea, and to Derek G3GRO for the additional items. Additional information on operation, club net and so on will be given at a later date.

I look forward to hearing from anyone else who carries out this mod to a broadcast car radio receiver, and to comparing results with them.

Phil G0PVQ

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