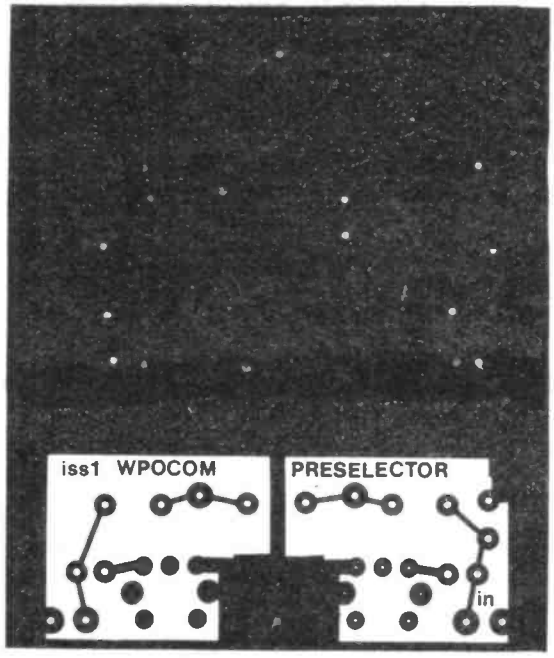
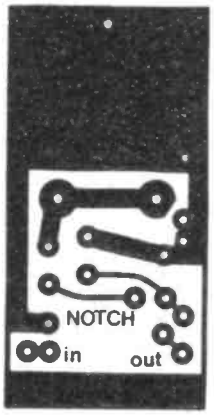


Above: PCB artwork for preselector unit. The large area of copper is for mounting the variable capacitor, VC1



Left: PCB artwork for notch filter. The board mounts on the 50pF variable capacitor.

VC1 goes in last. The lugs at the rear of the stator plates are inserted through the large holes in the PCB until they just protrude from the underside, then soldered, making sure that the capacitor is exactly at right angles to the board. A still piece of 18 or 20 swg wire then links the earth terminal on VC1 to the hole provided on the PCB.

Testing

To test and align the unit, connect it up to the CIFPU, using a short length of miniature 50 ohm coaxial cable. The filter ends of the cable are connected to the underside of the PCB, and it is important that the input and output are the correct way round.

Turn VC1 to maximum capacity and repeak IFT3 and IFT4 on the CIFPU for maximum signal strength. If a heterodyne is now found, it should be possible to reduce it to negligible levels (depending on its strength). To adjust RV1, tune in a carrier so that the beat note is about 1kHz. Adjust VC1 for best rejection, then adjust RV1 for any improvement (the effect may be small). Repeat the adjustments until no further improvement is possible.

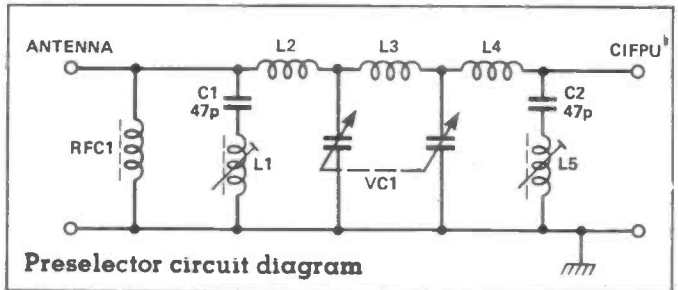
This completes adjustment of the filter. When not in use, VC1 should be left at maximum capacity. The IF transformers on the CIFPU either side of the notch filter circuitry will require slight adjustment after fitting the notch unit.

PRESELECTOR MODULE

This module uses the same circuit as for the *Synthesised General Coverage Transceiver* design published in the January, February and March issues. It is a bit of a departure from standard designs by being a tunable low pass filter arrangement, rather than bandpass. However, it is very effective, and removes the need for banks of switched tuned circuits, leaving only one control to peak across the whole coverage of the Transceiver. At higher frequencies it does give a bandpass response. In conjunction with an ATU, ultimate rejection will exceed 100dB.

RFC1 simply removes any static voltages from the aerial by providing a DC bypass, and C1/L1, and C2/L5 are series tuned IF traps at 10.7MHz. The preselector proper comprises L4, L5 and L6 plus VC1, a 500pF twin gang air spaced capacitor. The inductors are wound on Amidon Dust-iron cores type T37-6.

The operation of the filter can be seen from the diagram — as the capacity reduces, the preselector response transforms from lowpass, through an intermediate stage of wide bandpass to fairly narrow bandpass at minimum capacity.



Preselector circuit diagram

Construction

The preselector is built on a single sided PCB, with VC1 also mounted on the board. As there are a large number of different ways in which the twin gang capacitors can mount, depending on their make, a variety of holes have been provided. If none of these suit your capacitor, you will have to drill some more. Which side of the board the capacitor spindle projects from is immaterial, but the capacitor should be positioned so that the connections to the stators from the PCB pins are as short as possible (use stiff wire). If long leads have to be used for this, then a screen will have to be placed between the wires so that they cannot 'see' each other.

The three inductors are wound using 0.4mm enamelled copper wire, L2 and L4 each require a length of 29cm to complete the winding. L3 requires 61 cm — in the case of this coil it will not be possible to get all the turns on in one layer. Wind as many as possible as a single neat layer until the core is full, then wind the remaining turns over the first layer, spaced round the core.

When all the components are in place, the unit can be tested.

Alignment

Connect up the preselector to the CIFPU using miniature 50 ohm coaxial cable. When turned to a low frequency, the preselector response should be very broad. At high frequencies the bandpass characteristic should become apparent — on 21 or 28MHz, there