G4HUP Panoramic Adaptor Installation – IC706Mk2

These instruction cover installation of the PAT board in the 1st IF of the IC706Mk2 – 69.0115MHz – this gives access to all receiver options on the main receiver.

If you have an IC706 Mk2g, there are some board differences – have a look at this link: http://www.geekshed.co.uk/icom-ic-706mk2g-if-tap/

The IC706 is a very compact rig, and there is very little room to play with. Please take this into account, and make sure you have appropriate tools for the fine work involved. Most of the work you will be doing is carried out on the Main board, which is towards the front of the transceiver, and the filter location for the first IF filter is at the left hand side of the board, as shown in Fig 1 below.

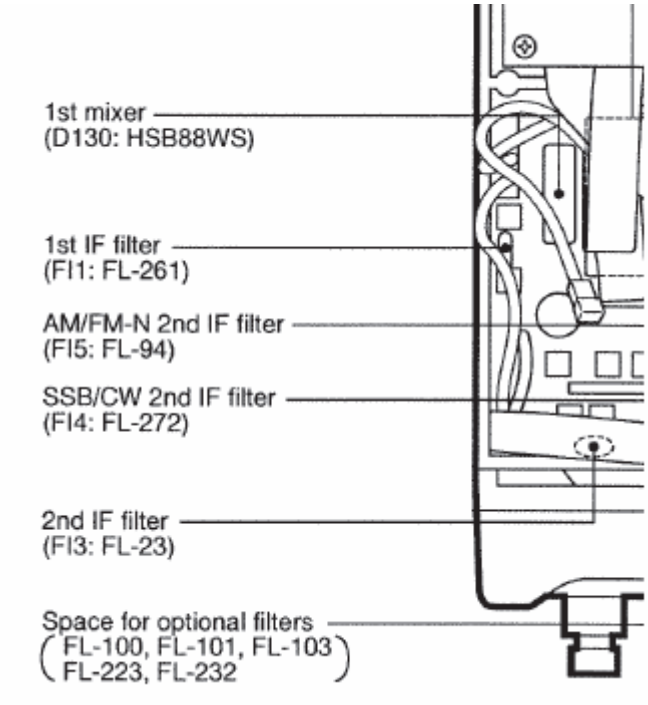

Fig 1 – First IF filter location

The IC706 models use a common IF for transmit and receive, so some care is needed in the connection point to avoid the possibility of high level signals into your SDR during transmit. Following the connections given here will avoid that risk.

1. Build and test the PAT kit – use an 8 to 10v supply and you should measure a gain of approx 1dB at 70MHz.
2. Remove top cover from IC706 (5 screws). Carefully disconnect the speaker plug as you remove the cover.
3. The rear panel of the IC706 does not have any space to locate a fixed socket, therefore the Installation kit contains a coax lead with a crimp type SMA connector already attached.

4 The PAT board mounts conveniently on top of the crystal filter - see Fig 2. From this position, the input and output connections are accessible, and no internal adjustments are obstructed by the mounting position.

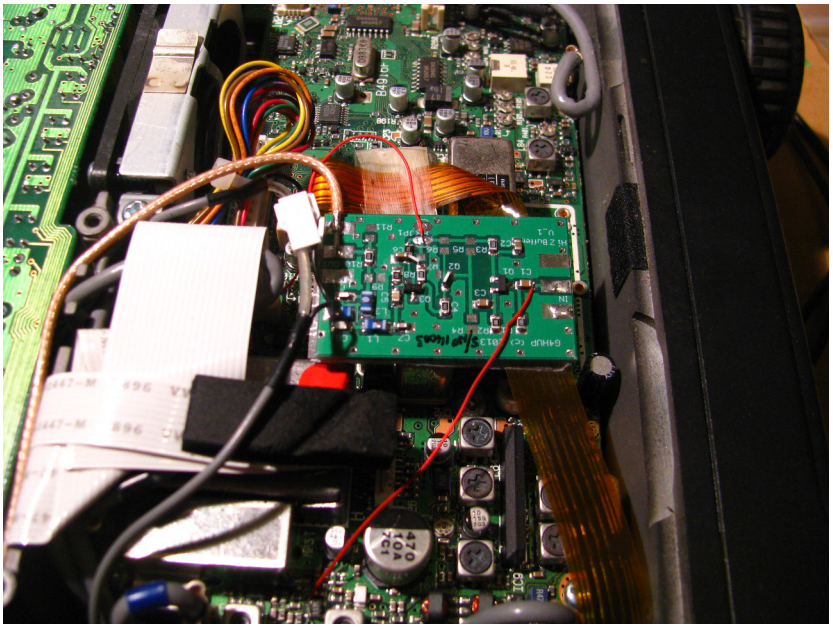

Fig 2 – Mounting position of the PAT board in IC706Mk2 – note that the PAT input is to the right in this picture

5 The PAT board is held in place by double sided tape, so can easily be removed should it become necessary. It is recommended to use DS tape to hold a layer of card to the filter can, then a second piece of DS tape to hold the PAT board in place.

6 The RF input to the board comes from output side of the IF filter, at the diode T/R switch. The actual connection is taken from the common connection of the diode– see Figs 3, 4 and 5. This is in the bi-directional T/R path, so both Tx and Rx signals will be present at this point.

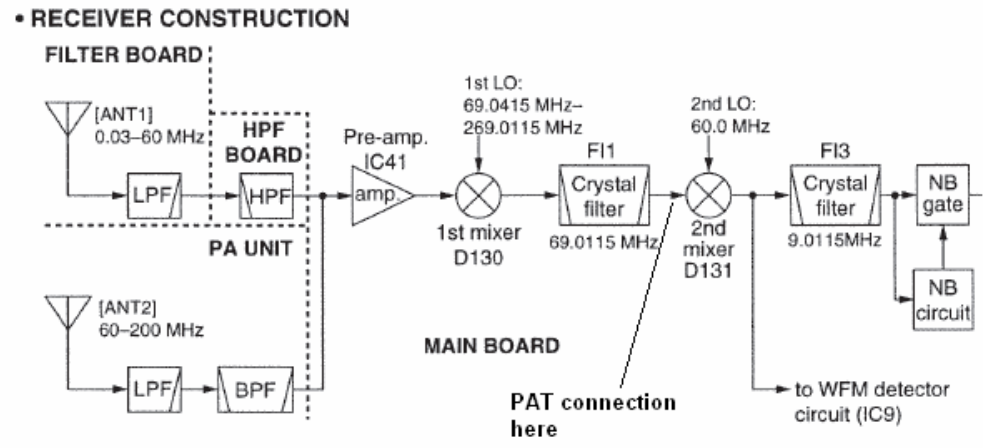

Fig 3 – Connection point for RF input between Filter output and second mixer

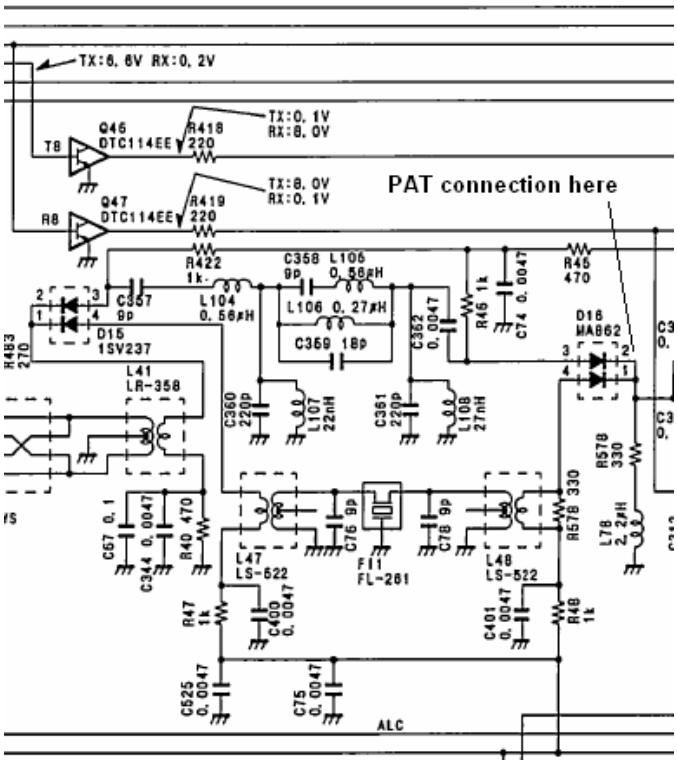

Fig 4 – First IF Filter circuit showing PAT connection at D16 common side

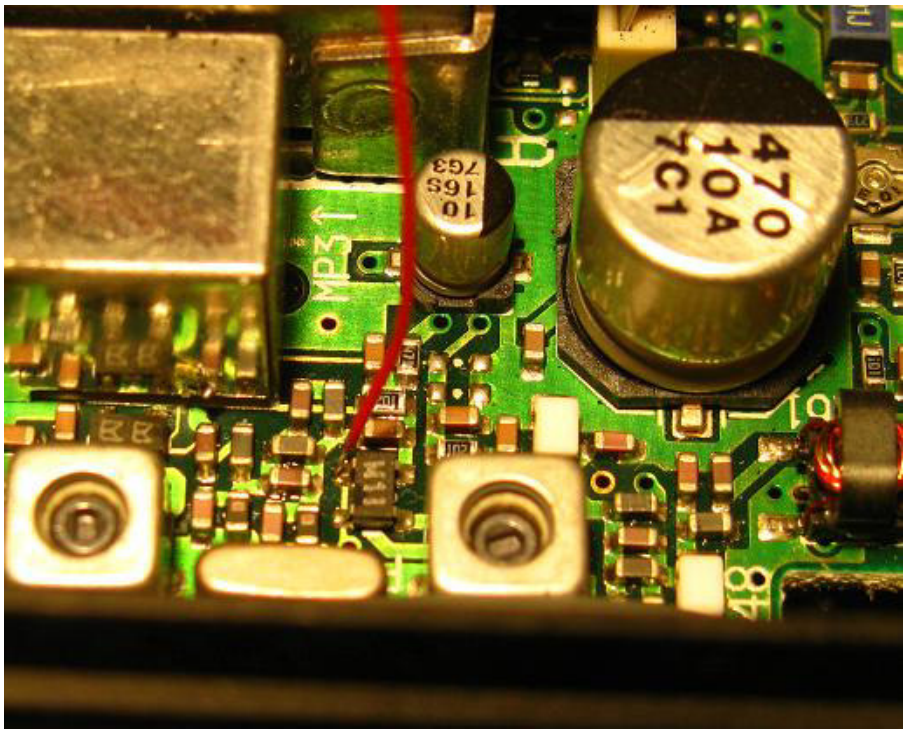

Fig 5 – Picking up the filter output from the common side of D16. The device is marked M11

7 Note that the input to PAT is taken using a length of unshielded wire-wrap wire (supplied). There is not sufficient room to terminate a coax cable on the pins of the diode D16. You can see the input wire to PAT in Fig 2 above.

8 Next the power for PAT must be picked up. Positive supply Vcc needs to be from the R8 line, so that is only powered on Rx. R8 is available on connector J8, which sits at the rear of the Main board, just in front of the fan. R8 is the second pin from the left side, as shown in Fig 6 below, and the connected wire is shown in Fig 7. Use a piece of the red wire supplied to make the connection.

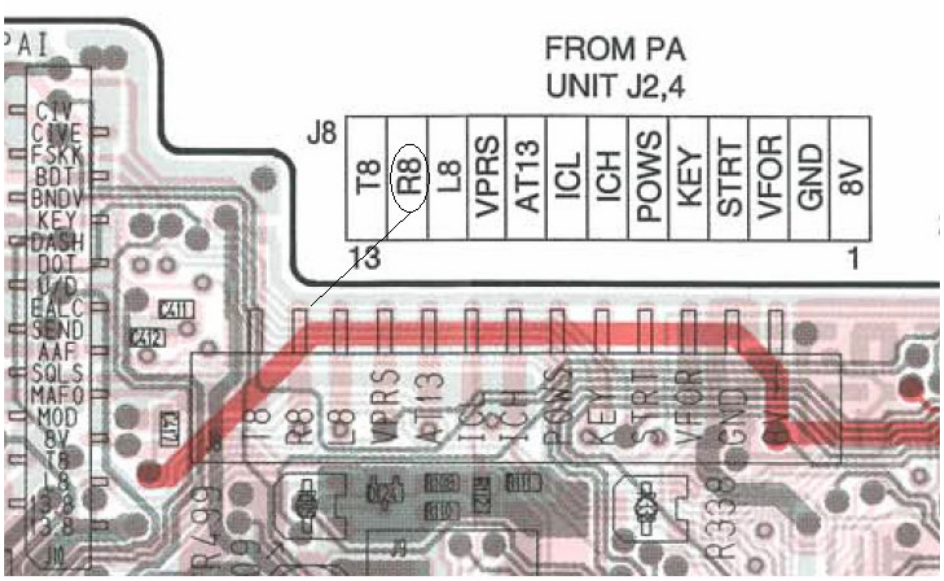

Fig 6 – Location of R8 supply

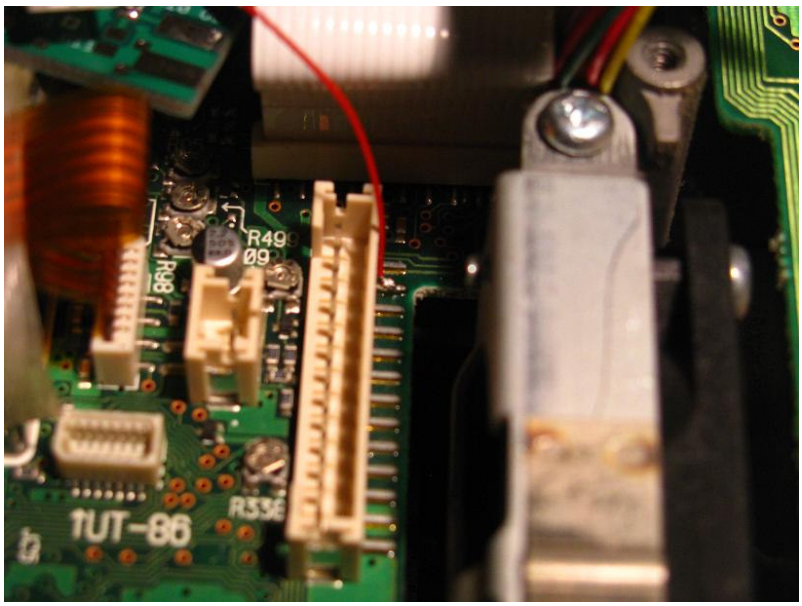

Fig 7 - R8 connection on Mainboard

Since there is no coax used for the PAT input, you also need to provide a 0v connection for ground. Next to the crystal filter on which PAT is mounted, there is a

grounding screw – remove this and place the solder tag under it – Fig 8. Be careful to bend the tag up quite sharply, as the area of exposed copper next to the ground point **is not ground! Check with a multimeter before applying power!**
Use the black wire supplied to make the 0v connection to PAT

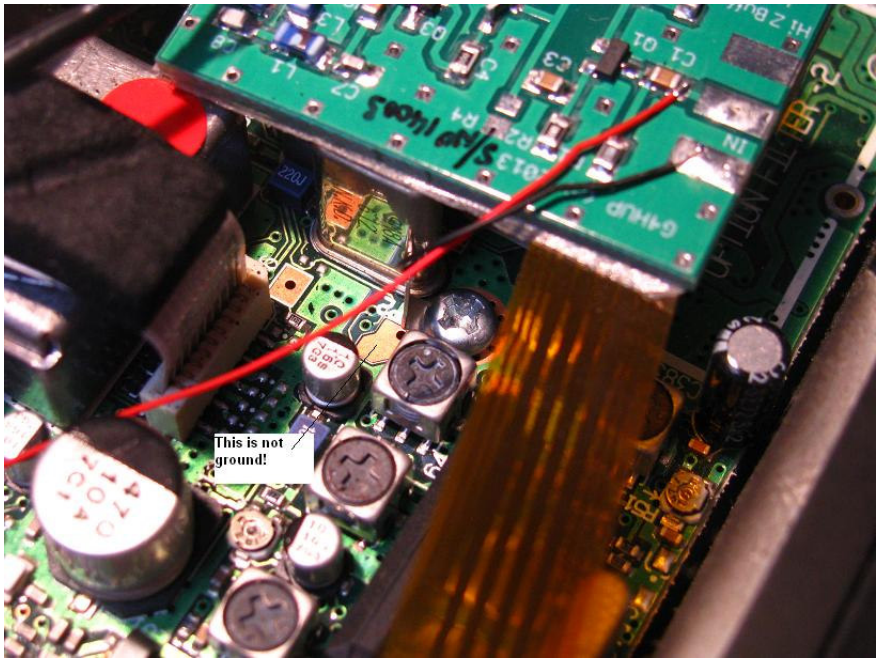

Fig 8 – 0v connection – beware adjacent exposed pad!

9 Prepare the unterminated end of the coax cable supplied. Strip back 8mm of the cable sheath, taking care not to damage the braid, and fully tin the exposed braid. With a sharp blade, score round the braid 3.5mm from the end of the sheath – be careful not to cut through the braid, as you will damage the dielectric.
Now use a pair of pliers to bend the end of the braid, so that it cracks round the scored line – the loose piece of braid will easily slide off the dielectric. Carefully cut through the dielectric 2mm from the end of the braid – again, it is very easy to damage the inner. Slide off the dielectric, twist up the braid and tin it.

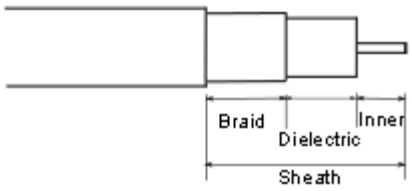

Fig 9 – Cable termination preparation details

10 Before the cable can be attached to the PAT board, it must be routed through the rig, from the back panel. The route is shown in Fig 10. Pass the free cable end between the Key socket and the side casting and lay it alongside the PCB. A sharp bend is needed at the front to take the cable across to one of the notches in the central casting so it can pass through to the Main board area.

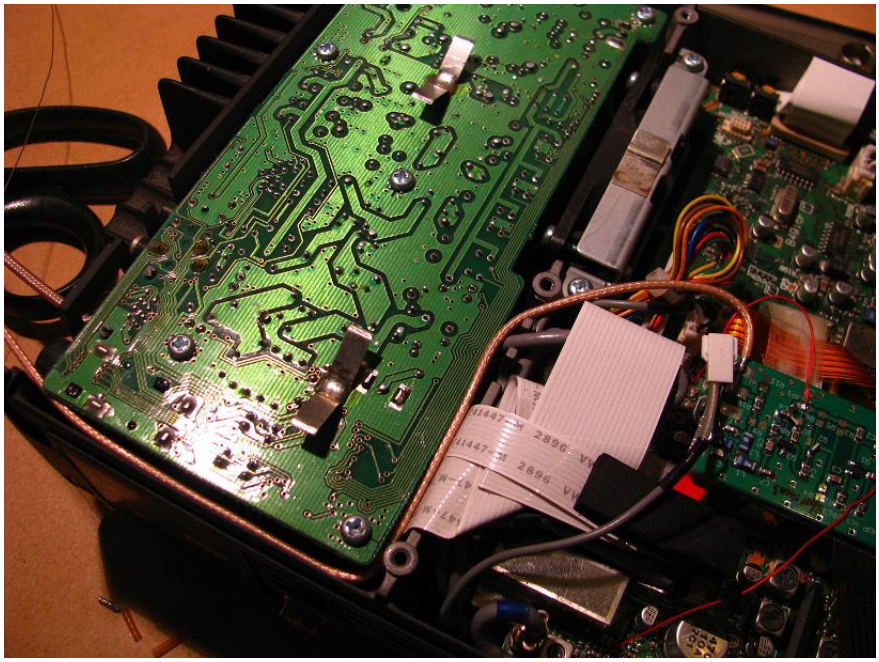

Fig 10 – Route of PAT output cable

11 Replace the cover, connect and test. Remember to re-connect the speaker leads!