G4HUP Panoramic Adaptor Installation – IC756 Pro III

These instruction cover installation of the PAT board in the 1st IF of the ICOM IC756 Pro III – 64.455MHz – this gives access to all receiver options on the main receiver. Information given here should enable PAT installation in of the family of IC756 rigs.

Although the rig uses separate mixers in the Rx and Tx paths, the 1st IF filter (FL1701) is common to both directions. The connections shown here pick up the output of the filter directly, which means Tx signals will also be present. It is recommended that PAT is powered from the R8V line, which will automatically mute it on transmit (unless you want to see your Tx signal…)

Basic instructions are given for installing the PAT as an IF Panoramic Adaptor Tap – used in this mode your SDR must be tuned to the 1st IF of the radio, and then your display will track the tuning of your rig – however, the displayed frequency will be that of the IF, not the radio. Because the connection point on the IC756 Pro III is after the IF filter, the bandwidth available to display is restricted by the filter.

There is a TMP socket available on the PCB, but connection at this point will be pre the filter, and thus although the viewable bandwidth on the SDR will be greater, you will also see unwanted mixer products too. Some other websites giving connection detail do use this pick-up point.

1. Build and test the PAT kit – use a 9v supply and you should measure a gain of approx 1dB at 70MHz.
2. Remove bottom cover from the IC 756 Pro III
3. It is easy on this rig to mount a suitable connector (SMA) on the rear panel – there is plenty of space. A convenient location is at the bottom left of the rear panel (as viewed from the back of the rig), near the two RCA phono jacks. This keeps the cable run to the PAT reasonably short. Choose the SMA location carefully, since the inside of the cast panel is contoured, rather than flat – see Fig 6.
   Mark the rear panel, and centre punch for drilling – be careful to keep swarf out of the rig! Mount the SMA as shown in Fig 1. The centre of the SMA is 25mm from the edge of the rear panel, and 8mm above the bottom edge of the case.

Fig 1 – position of SMA connector on rear panel

4 The PAT board can be located on a screening can just beside the 4 way power connector, and close to the rear panel. It could be located on any of those cans shown in Fig 2, and would perhaps be best located on the one most to the right of the picture – this would keep the unscreened input lead to the shortest length.

5 The PAT board is held in place by double sided tape, so can easily be removed should it become necessary

Fig 2 – Location of PAT inside IC756 Pro III

6 The 1st IF filter is accessible from the upper side of the RF-B Unit PCB, and is shown in Fig 3. Whilst a better signal could be extracted from the output of the 1st IF amplifier stage, Q1751, this is not accessible without removing the PCB from the rig.
The black wire in Fig 3 is the PAT input signal, whilst the red wire is the power, taken from the R8V line.

7 While working on the RF-B Unit PCB, temporarily remove the ribbon cable that plugs into J451, to avoid any possibility of damage to the cable.

8 The PAT power connection is picked up from the SMD ferrite beads associated with connector J451, as shown in Figs 3 and 4. Fig 5 shows the detail of the RF-B Unit layout extracted from the IC756 Pro III Service Manual, and this can be compared with the photographic view in Figs 3 and 4.

9 The output connection from PAT to the rear panel will need approx 200mm of RG178A miniature coax. This can loop neatly round to the output connection. Dimensions for preparing the ends of the cables are given in Table 1 and Fig 9. Do not pigtail the ends of the coax, but make them off as in Fig 2. See also details at the end of this note.

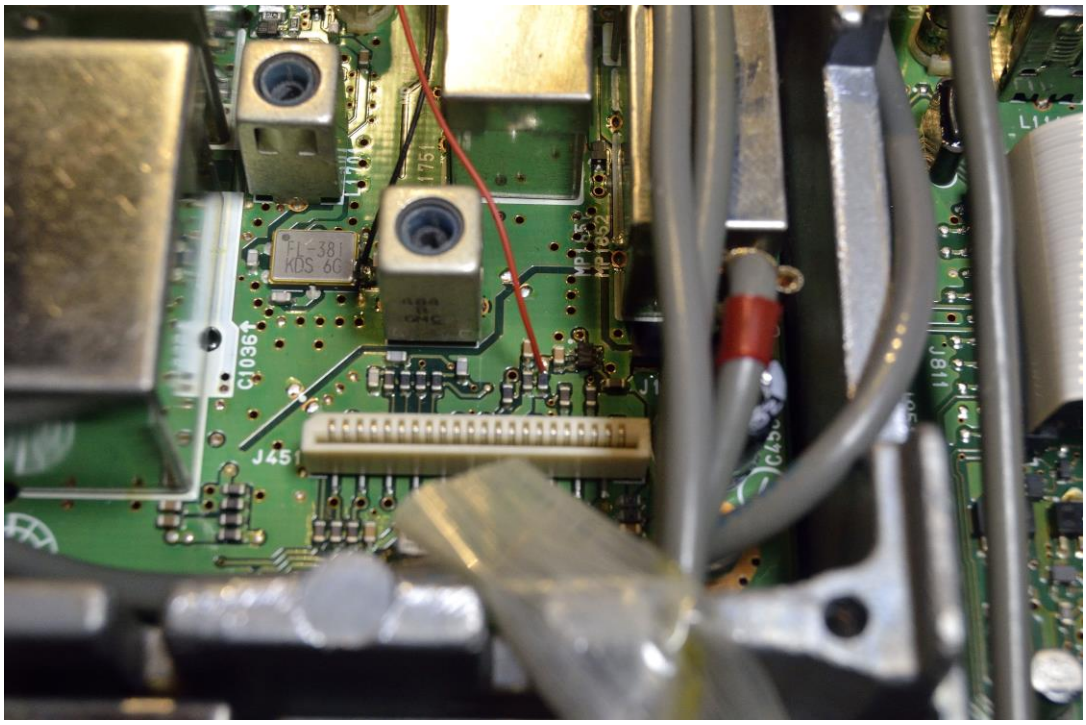

Fig 3 – PAT input connection (black wire) from the 1st IF filter FL1701

10 Reconnect the ribbon cable into J451, replace the covers, and test with your SDR

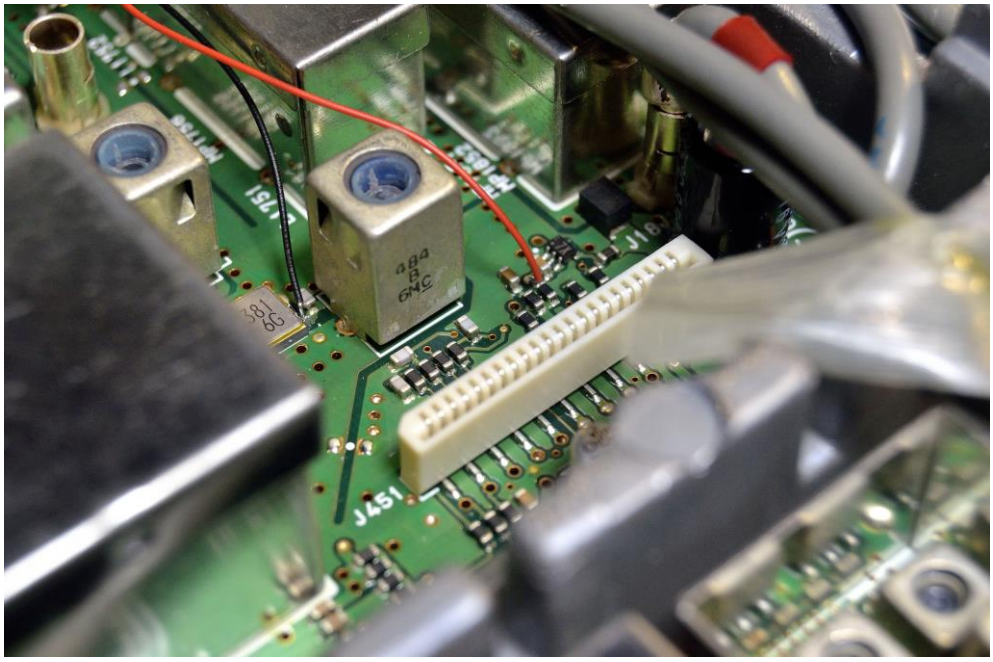

Fig 4 – Power (Vcc – red wire) connection at J451

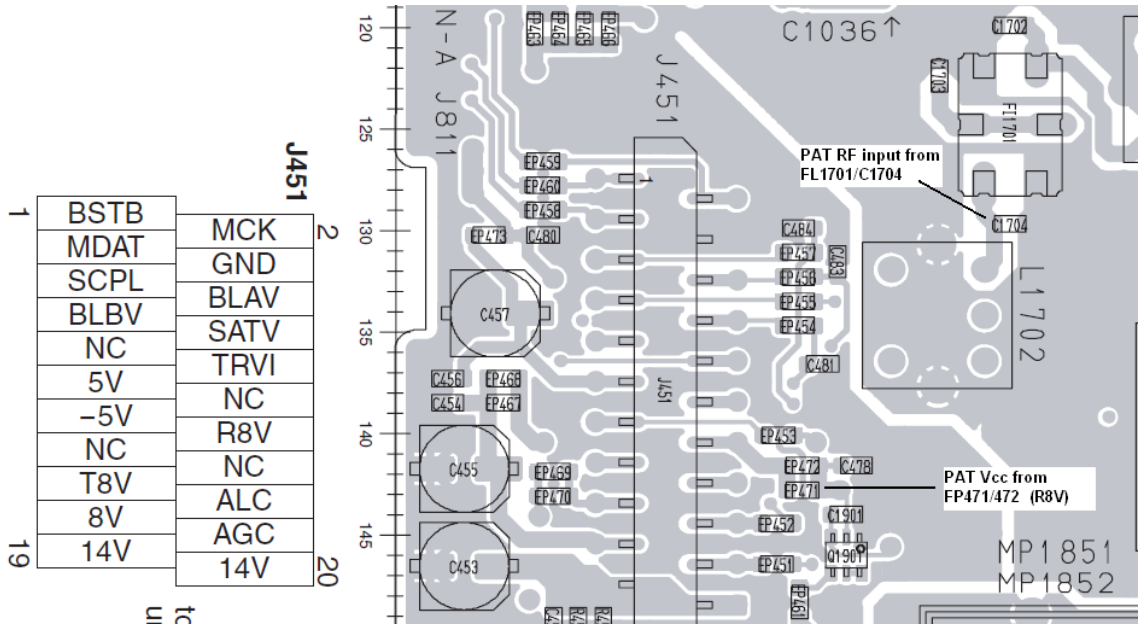

Fig 5 – PAT connections on RF-B Unit PCB

Terminating PTFE Coax cables

These instructions could be used, with suitable modification, to correctly terminate any of the PTFE coax cables, such as RG142, RG178, RG188, RG196, RG316, etc. The termination method ensures good quality RF connections up to higher microwave frequencies

- Using a scalpel, cut the sheath back at the required length.
- With a hot iron, tin the exposed braid fully.
- With the scalpel, score around the point where the braid must end.
- Use long-nose pliers to bend the end of the coax outside the score line – the braid will crack on the score line and the excess can be slid off the dielectric.
- Strip the dielectric to reveal the inner.

Fig 6 shows a correctly terminated cable installed in the IC756 Pro III; other examples may be seen in the other instruction sheets posted.

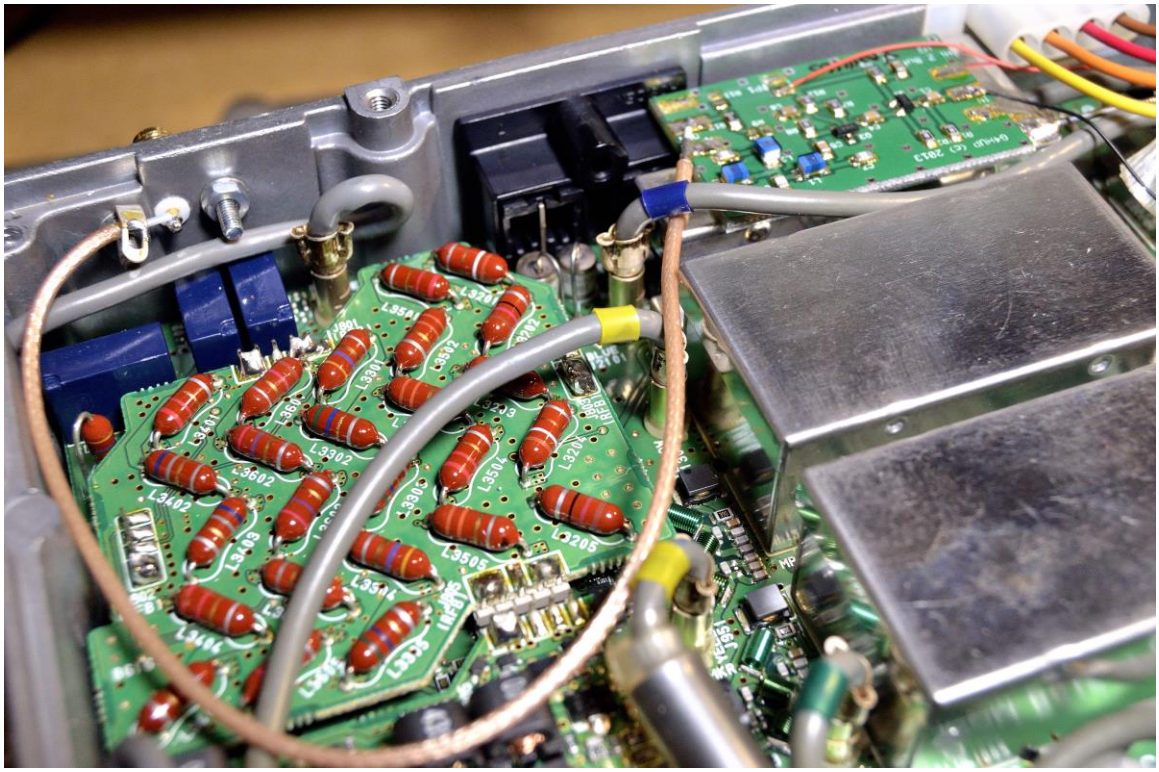

Fig 6 – Routing and termination for the RG178 cable

Table 1 below shows the measurements recommended for the cable end preparation for the IC756 installation and Fig 7 below gives further clarification.

Cable	IC756 Connection	Sheath	Braid	Dielectric	Inner
Output	PAT	9mm	3.5mm	2mm	3.5mm
Output	SMA	9mm	3.5mm	2mm	3.5mm

Table 1 – Cable stripping details for IC756 installation

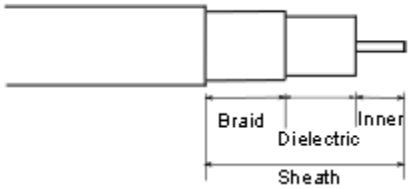

Fig 7 – Cable termination preparation details