

YAESU FT-847 roofing filter mod

----- Original Message -----

Subject: [INRAD] YAESU FT-847 ROOFING FILTER MOD

Date: Fri, 02 Jun 2006 14:54:39 -0500

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To: List@inrad.net

Hi All:

This is a modification to incorporate an INRAD roofing filter and performance board into the Yaesu FT-847 1st IF.

The INRAD roofing filter performance board used is the Icom 765 type with INRAD's FT-847 Yaesu 45.705 Mhz crystal roofing filter. On the INRAD board R8 is unsoldered at the junction of C7, J2 and soldered to the ground plane. This allows a current path to ground for switching.

The +8 volts for the INRAD board was derived by soldering an LM7808 to the input and ground leads of Q1111. It is positioned over Q1111 and held in place by the soldered leads.. The output lead is bent over and a wire soldered to it for positive 8 volts. The transceivers +8 volt buss had too much noise and hash to be utilized.

A simple means of switching the filter in or out can be had by installing a miniature toggle switch into the external die cast enclosures cover and supplying it with the +8 volts mentioned. A more complex method using the transceivers mode button switches can also be employed. Epoxy glue two 2N5447 PNP TO92 transistors top down near CF1002 The emitters are soldered together and tied to the +8 volts described. The collectors have individual wires soldered to them and routed through the top rear air slot behind the transceivers RF section and to +8T and +8R on the INRAD board. One base goes through a 4.7 K ohm 1/8 or 1/4 watt resistor soldered vertically to TP1013. Test pads TP1014 and TP1015 each have shortened cathode leads of 1N4148 diodes soldered to them. These are mounted upright.

The anodes tie together and go through a 4.7 K ohm 1/8 or 1/4 watt resistor to the other transistor base. When CW or SSB is selected these test points go low. When AM or FM is selected TP1013 goes low. The transceiver uses its +8 volt buss for switching filters so utilizing this switching scheme using PNP transistors the added supply can't be higher than the buss voltage. Be very careful in construction if using this method of switching as the test pads and circuit traces are extremely fragile! The RF cable at J3009 on the RF board is unplugged from the AF/CNTL board and routed through the upper rear air slot behind the RF board.

I purchased an RF cable from Yaesu and pulled its connectors off. Then I reamed the pins with a miniature drill bit and soldered the connectors to a 19 inch long RG-188A/U 50 ohm Teflon coax. This cable is routed from J1001 on the AF/CNTL board to the transceivers upper side and out the upper rear air slot also. The RF cable connectors are replaceable with RFM-2100-1 which are available from online sources. Powell Electronics or jkelect.com were a couple of sites. If INRAD kit's this mod they may supply the RF cable with connectors. The die cast enclosure used is a Hammond 1590M, Mouser part # 546-1590M. Looking at the back measure 1.820 inward from the right edge. Measure .780 from the lower edge. Where these points intersect drill a #20 hole. Countersink it on the enclosures inside for a 4 mm x 16 mm flathead screw. This screw is available at most hardware stores. On the vertical edge of the enclosure facing the transceivers center measure .300 inch from the upper lip where the cover goes. From the lower edge measure .830 inch. From the upper edge measure .830 inch. At these intersecting points drill two 3/16 inch holes and slot them inline with the enclosures side.

This is so the RF cable connectors will clear. Between the upper slotted hole and the upper edge drill a clearance hole for the +8 volt wire or 2 filter switching wires to go through. Drill four #34 through holes in the enclosures back for mounting the performance board and use 4-40 screws, an internal tooth LW plus 6-32 and 4-40 nuts inside for board stand offs. The die cast enclosure is fastened to the transceivers ground lug with the 4 mm flathead screw using a 10-32 nut between the enclosure and ground lug as a spacer. If additional support is esired one can also drill a #34 hole in the transceivers side cast ear and through the die cast enclosure side for a 4-40 screw, LW and nut. Do all the drilling on the die cast enclosure before mounting it to keep the transceiver free of metal chips.

The miniature drill bit mentioned in the mod is a pin vise type with several very small diameter drill bits in its body and is normally used as a tip cleaner for acetylene torches. These can be purchased at any welding supply. Specify the drill bit type if purchasing a set. They are also great for cleaning solder from thru holes on PC boards. A drill bit of desired size is chucked in the pin vise and turned by hand.

I will be adding this modification to dk.mods with photo's. My Nikon digital camera is in for repair at the present time. The FT-847 does have an exceptionally quiet receiver. Gleaning over the RF section Yaesu did use some very low noise figure transistors (2SC3356) in the first two stages.

73's Charlie W5VIN

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