



INTERNATIONAL RADIO

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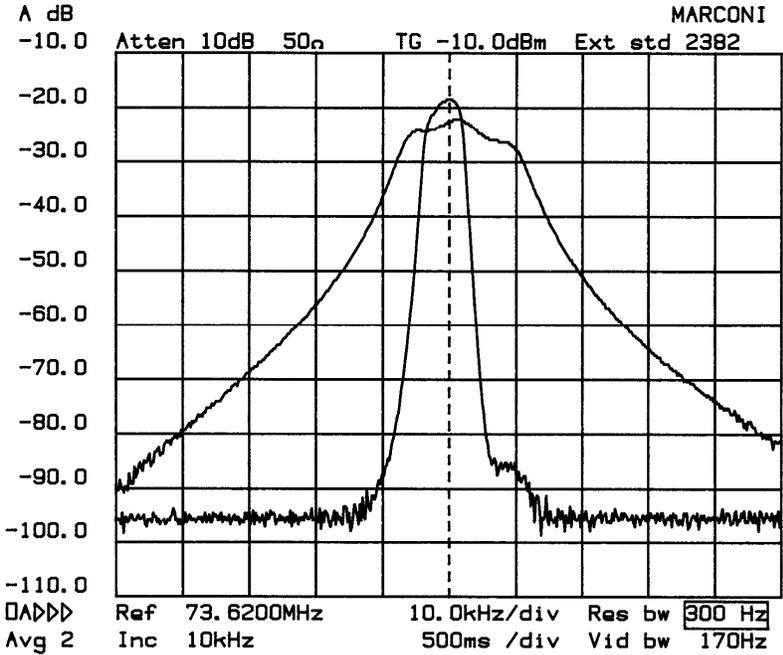
**FT-1000 and FT-1000D Roofing Filter
Installation Instructions**

INTRODUCTION

The FT-1000 roofing filter mod consists of a 6 pole, 4 kHz wide filter followed by a high dynamic range, feedback amplifier. The amplifier provides enough gain to override the filter insertion loss plus a dB or two.

The plot below shows the sweep frequency response of the RF board in an FT-1000 radio. The wider curve is the OEM response and the narrow curve is with the Inrad roofing filter mod added. In the FT-1000, the most important part of the roofing filter characteristic is from the pass band down about 35 or 40 dB on each side.

FT1000



The result of the bandwidth improvement shown above is the reduction of close in intermodulation from multiple signals. The IMD dynamic range will be improved up to 10 dB for some tone spacings. The main receiver audio response will be reduced about 100 Hz in the SSB mode. Operating the noise

blanker will not result in as much degradation of the dynamic range. Adding the bonus mod to the CW audio low pass filter lowers the noise floor by 1 or 2 dB by restricting the internal noise.

1. What can you expect from this mod?

Less IMD in crowded band conditions, particularly from stations at offset frequencies of 2 to 10 kHz either side of the operating frequency.

2. Will it defeat the noise blanker?

No, the roofing filter is in the circuit before the noise blanker sample is taken. The filter delay is added to both signal and noise. Since less noise and fewer strong signals are able to reach the noise blanker, it actually improves its operation.

3. Will this mod allow for wide band SSB, AM and FM reception?

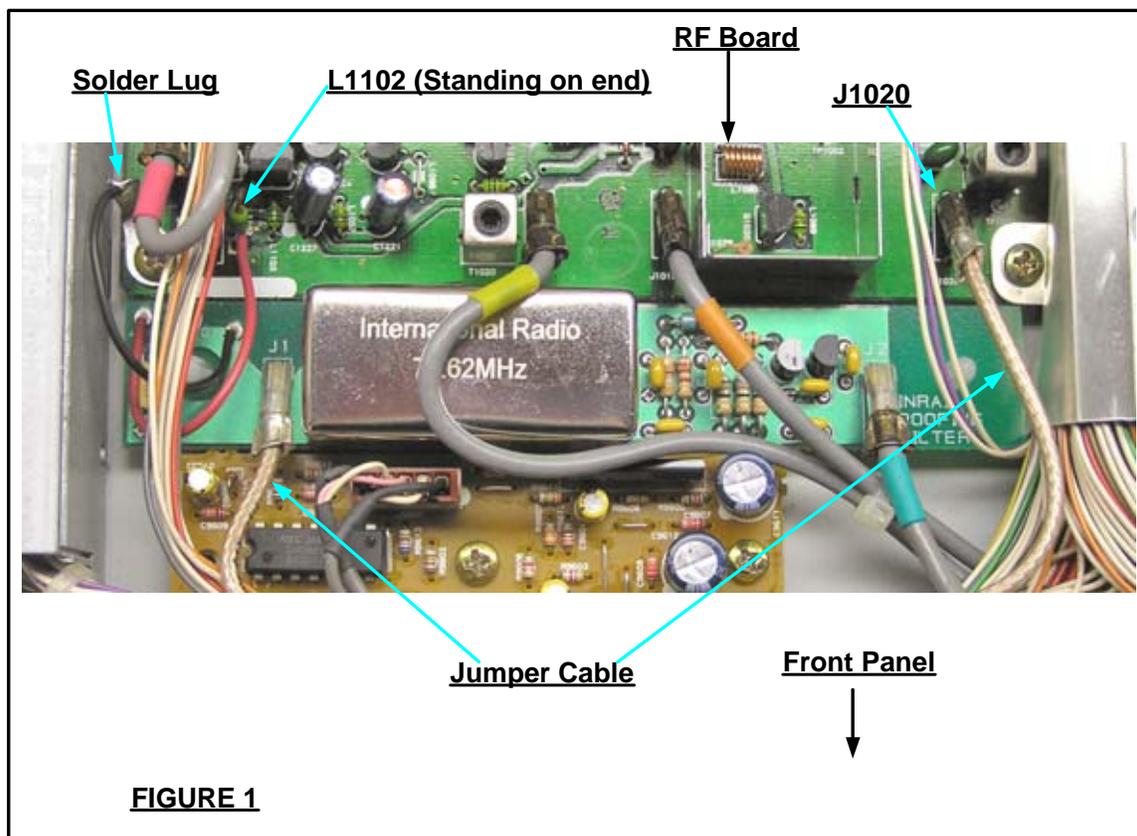
There will be some narrowing of the audio passband in the main receiver as the overall widest bandwidth of the receiver will be determined by the roofing filter, which is about 4 to 5 kHz. Those modes will still be available for reception with the sub receiver.

INSTALLATION INSTRUCTIONS

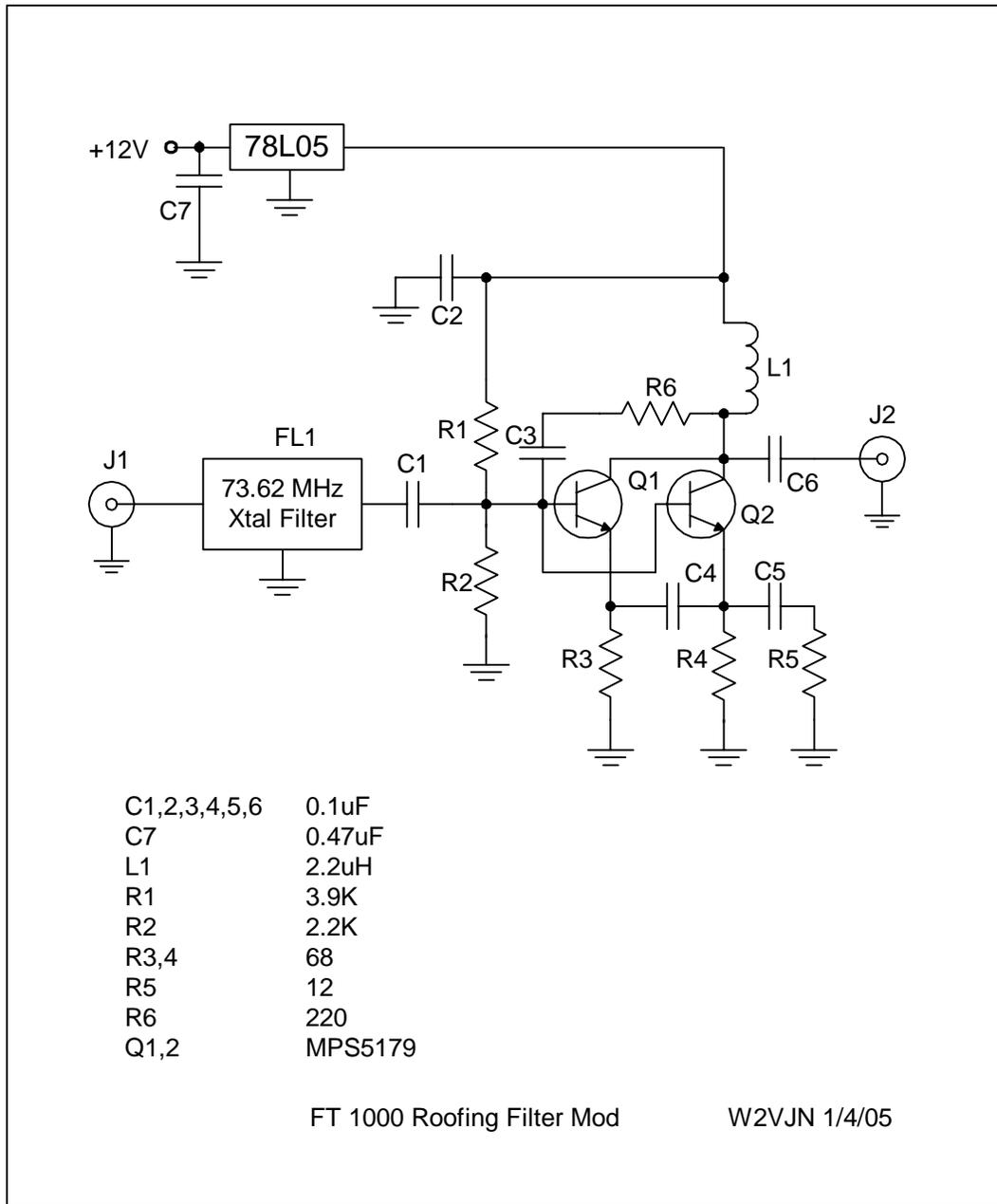
Warning: Modern radios contain components which may be damaged by static discharge. Precautions must be taken to eliminate any static electricity buildup between the operator and the radio before any of the internal circuits are touched. If you are not familiar with the proper techniques for this, consult the Radio Amateurs Handbook.

- __1. Remove the AC line cord from the transceiver.
- __2. Remove the bottom cover and set the radio with its front panel towards you.
- __3. Three boards are visible. The right front board is the IF board. The right rear board is the audio board. The RF board is to the left.
- __4. Locate J1020 on the RF board. See figure 1. There is a green coded coax cable plugged into it. Pull this cable end. Also, unplug the orange cable from J1019 and the yellow cable from J1018. Dress these cables towards the front panel, out of the way for now.
- __5. The bare chassis space between the RF board and a smaller pc board towards the front panel is where the Roofing filter mod will be mounted.
- __6. Snap the plastic board mounts through the mounting holes on the Roofing filter pc board from the bottom.
- __7. On the Roofing filter board solder the red wire to the +12 V pad and the black wire to the GND pad.

- __8. Remove the safety papers from the plastic mounts. Carefully position the Roofing filter board into the bare chassis space with J1 on the left and J2 on the right.
- __9. Bend the solder lug at 90 degrees and install under the RF board corner screw. See fig 1.
- __10. Using care not to burn any nearby wires, solder the black wire to the solder lug.
- __11. Locate L1102, an inductor standing on end, just to the right of the solder lug. Form a small hook on the end of the red wire and fasten it to the bottom side of the inductor. This is +12V.
- __12. Reconnect the yellow and orange coax cables.
- __13. Plug the green coded coax into J2 on the Roofing filter board.
- __14. Plug one end of the supplied coax into J1 on the Roofing filter board and the other end into J1020 on the RF board.
- __15. Dress all cables and wires so they do not get crushed by the bottom cover.
- __16. Install the bottom cover.



International Radio Corp. © 2005. Modifications done at your own risk; seek help if you are not qualified. International Radio Corp. assumes no responsibility for any damages or injuries resulting from improper installation of this modification kit.



PARTS LIST

- Assembled Roofing Filter board (Inrad 117)**
- 8" Coax cable**
- 2 Board mounts**
- 0.047 uF Mylar capacitor**
- 6" red and black wire**
- Solder lug**