

MFJ 1270B Modifications

[Labeled picture of modifications](#)

These modifications affect only the transmit audio circuitry of the mfj1270b and also clean up a few "gotchas" in the use of the tnc. The main modification is to bring the deviation levels of the low tone and the high tones closer together, remove the default 6db/octave pre-emphasis implemented in the tnc and increase the tx drive level.

In the unmodified circuit of several mfj1270b tested and modified so far, the audio output levels resulted in an approximate FM deviation of 1.8kHz for the low tone and 4.8kHz for the high tone, the deviation difference being 3kHz.

After modification, the low and high tone transmit audio output levels are such that the FM deviation levels are within 200Hz of each other. This is particularly critical when connecting to tnc's that use the exar 2206/2211 chipset for the modem, (as the mfj1270b does) as the demod chip of the set will NOT decode if the recovered low and high tone signal levels are too different.

The output circuitry of the mfj1270b has two monolithic capacitors in series in the signal path; c71 (4.7nF) which provides 6dB per octave pre-emphasis (which will add to the 6dB/octave pre-emphasis done in the radio if the tx audio goes through the mic amplifier) and c73 (0.33uF) which decouples the transmit audio output of the xr2206 modem.

The four components (c71, c73, r56 & r57) of the tx audio path form a filter whose response is frequency dependent. Changing the capacitor values changes the filter's effect on the low and high tones, changing the resistance values increases the tx audio level.

The output deviation level mod as shown is to short out c71, change r56 (7.5k) to 2.7k, remove r57 (560r) and change c73 (0.33uF) to 0.47uF. The analogue loopback feature provided by jmp7 is unaffected by this modification.

After modification the difference between the low and the high tone levels is approx 200Hz.

Adding an 1n4001 diode in series as shown with the dc input (using the pcb pads provided) protects the mfj1270b much better than the original design which is a shunt diode (cr22, 1n4001) because there is no reliance on an external fuse (how many people fuse their tncs?). Adding a series diode is cheap protection, having repaired two mfj that have had reverse dc applied.

The other "gotcha" is the hf/vhf modem select switch sw3. If it's pushed in (by accident of course) the hf modem is selected. This is not really useful for vhf work. Lifting the retaining clip as shown means sw3 will not lock in, selecting the vhf modem by default.

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