

TNC 2 - MFJ 1270 - Tone Calibration Procedure

Adapted from <http://gyld.online.se/mods/misc/MFJ1270>

The TNC 2 & Clones require three tones to be set:

1. 1200 Hz. - MARK TONE (Low tone)
2. 2200 Hz. - SPACE TONE (High tone)
3. 1685 Hz. - CENTER TONE (Demodulator)

On the CENTER FREQUENCY tone, it states in the TNC 2 Manual that 1700 Hz is ideal. Continued experimentation has shown that 1685 Hz is best. If you are experiencing a lot of retries, and having a difficult time with connects, chances are that your TNC is not generating compatible Mark and Space tones.

This procedure utilises the audio frequency counter facility in the TNC. In outline, the procedure is this:

1. Tell the TNC the frequency of the tone you want to calibrate to using the CALSET command
2. Feed the tone to be calibrated into the counter using the JMP9 jumper block
3. Make the TNC transmit the tone using the CAL command
4. The CON & STA LEDs indicate whether the tone is correct, too high, or too low:
 - o One LED is lit when the tone is too high
 - o The other LED is lit when the tone is too low
 - o Both LEDs are lit when the tone is correct

To calibrate the 1200 Baud tones on your TNC 2 or Clone. Follow these instructions:

1. Remove the cover of your TNC. Make sure the HF/VHF button is in the "VHF" position!
2. Get a screw driver small enough to adjust the trim pots R-76 through R-79 located toward the rear center of the TNC circuit board.
3. Boot up your computer, and enter Command Mode (CMD:) on your TNC.
4. Place a jumper on JMP7 to allow you to listen for the outgoing tones at the Speaker jack
5. Plug a set of headphones into the Speaker jack
6. Jumper JMP4 to override the watchdog timer circuit.
7. Enter this command from command mode:
CALSET 438
438 is the result of:
 $n = 525,000 / 1200 + 1$ (See the CALSET command)
8. Remove the jumper from JMP 8 and place on JMP 9 Pins 1 and 6. (If you are facing the front of your TNC pins 1 and 6 are on the far right).
9. Type CALIBRA or CAL. Hit the letter "K" and then the space key to get the lower of the two tones.
10. Adjust R-78 until the you hear a change in pitch of the transmitted tone, AND both the CON and STA led's light up and stay lit, or at least alternate back and forth the same rate. Ideally, they should both stay lit simultaneously.
11. Hit the "K" again, and then "Q" (to quit calibration) and then go back to CMD: mode.
12. Give the TNC the command:
CALSET 239
239 is the result of:
 $n = 525,000 / 2200 + 1$ (See the CALSET command)
13. Repeat step 9, but get the higher of the two tones.
14. Repeat step 10, but adjust R-77.
15. Repeat step 11.
16. Remove the jumper from JMP 9 (Pins 1 and 6) and place the jumper on Pins 2 and 5. - the center

two pins of JMP9.

17. Go to CMD: mode and type this:

CALSET 157

157 is the result of:

$n=262,500/1685+1$ (See the CALSET Command)

18. Repeat step 9, this time adjusting R-79 for the best condition of the CON and STA LEDs (both lit at same time).
19. Replace JMP 8 (from JMP9)
20. Remove the jumpers from JMP4 & JMP7.

Once you have done all of the above, you have successfully calibrated the TNC's tones. LAST BUT NOT LEAST...follow the MFJ or TNC 2 Manual on how to properly set the deviation level adjustment (R-76) so that your transmitter puts out in the neighborhood of 2.8 to 3.0 kHz of deviation.

See <http://meow.febo.com/layer-one/transmit.html> for an explanation of why and how to set the output level of a TNC.

Quick Summary:

1. Jumper JMP4 to Override watchdog timer
2. Jumper JMP7 to connect speaker jack
3. Remove JMP8 jumper for use on JMP9
4. Low Tone:
 - o JMP9: 1-6
 - o CALSET 438
 - o R78
5. High Tone:
 - o JMP9: 1-6
 - o CALSET 239
 - o R77
6. Demod Tone:
 - o JMP9: 2-5
 - o CALSET 157
 - o R79
7. Un-jumper JMP4 & JMP7
8. Replace JMP9 jumper on JMP8

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