

EM27 CB on 10 Meters



Do this entirely at your own risk, if things go wrong I am not liable !

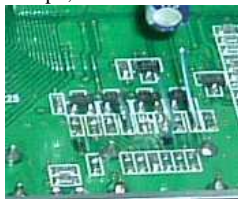
The following is a step by step guide to modifying the EM27 CB to work on 10 Meters as well as EU and UK CB. The radios vary somewhat and you may find yours in not capable of working from 26.5 to nearly 30Mhz. When modified the software will try and tune from 25 to 29.650Mhz, the VCO and RF filters are not capable of this. Frequencies below 26.5Mhz will always be unusable for transmit even after the modification.

STEP 1) Test the radio! Make sure it works correctly as a CB, plug in an SWR meter and dummy load. Check the radio produces round about 4W of TX power and mark this position on the SWR meter. If your meter is the type with a sensitivity control then set it to read full scale.

STEP 2) Relink the CPU board. The CPU has a number of lines with links to tell the computer what modes it should use. With the radio face down and unplugged from power set the 1st, 2nd and 8th from the left only. Link number 3 contains a capacitor(4th from left), do not remove it. The rightmost pad pair isn't used hence the X. On most boards the links are labelled, but some board revisions are completely blank.

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| | . C . . . | .
2 1 4 3 8 7 6 5 X
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Step2, Front board links



CPU Board



Click on picture for larger image, PCB View



STEP 3) The CPU link pattern is known as the Stealth mod here at Normsweb.com Thanks to Norm for some great information. Assuming the links are correctly set its time to test its working OK. Power the radio on in the normal way, check that pressing F1 now displays UK/EU in the F6 Position. Press F6 and check that the UK/EU toggles correctly. The radio should work as a standard CB.

Turn the radio off. Holding the F4 Button push power (don't release F4 yet), wait for the radio to power up and let go of F4. You should now be in the lots of channels mode. Pressing F1 followed by F6 will step in big steps, the radio should now tune 25 to 29.65 Mhz. To get the frequencies aligned to 10Khz spacing press and hold F1 and press F6 once. You may need to try these combinations a few times to get the knack.

Side note: On one model of radio I've found its not possible to use 10Khz channel steps, soldering a 33pf Capacitor across the pins of the 3.6Mhz XTAL will pull the radio almost exactly half a channel to the left, the display will be wrong though and CB frequencies would be off tune.

STEP 4) Tune for TX power over the maximum bandwidth. Refer to the larger image above marked "PCB View". Start by removing the inductor slug from T3 completely. This is not a nice thing to do, the designer added two filters here not one. My spectrum analyser indicates this has negligible effect on the TX output, if you have the facilities to check look for the 2nd and 3rd harmonics of the transmitted frequency.

To tune up transmit into the SWR meter and dummy load, adjust T1 for maximum reading - this coil brings the first RF power transistor into resonance. As you adjust in and out you should see a point where the signal peaks, if for some reason you can't get enough power to read properly adjust T2 a bit and work back to T1.

Now T1 is peaked up its time to get useful power up and down the band. Start by tuning to 27Mhz, adjust T2 for a high reading. Next move up the band to 29.6Mhz and adjust T2 again. You should find that your able to get reasonable power all the way between 26.5 and 29.6Mhz. Keep moving between the lowest useful point 26.5 and the highest 29.650 while tweaking the coil.



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STEP 5) Adjust the inductor directly in front of the 3.6Mhz XTal. The XTAL is used to clock the CPU on the front board and as the reference to the PLL. The inductor (coloured green on my board) is used to finetune the clock, use the correct plastic tool as sticking anything metal in the inductor causes the oscillator to collapse and the CPU to crash. Use a frequency counter or another radio to get the set on tune.

End All done with the hard stuff. [If you need to refer back to the old article click here](#)

Optional LED Modification) Remove the lightbulbs from the front panel, replace them with 3mm white LEDs with 1k series resistors. This gives a white with a blue tinge to the display, I like the look but some people don't.



Notes on using the radio:

Power + F4 Multi Channel Mode

F1 + F6 10Khz Channel steps

Press M7 with FUN flashing puts radio in repeater mode.

The RPT symbol should appear. This allows you to transmit on one frequency and receive on another. To use, select the desired TX frequency, press M7 so RPT is displayed, and then select the desired RX frequency. When you press the mike the radio will jump to the TX freq then return to RX freq when you release the mike.

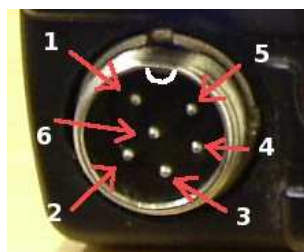
Some useful internal pots (thanks again to Norm)

VR1 = TX Power

VR301 = RX Meter

VR501 = Squelch Threshold

VR850 = FM Deviation



MIC WIRING

PIN	FUNCTION	COLOUR (original mic)
1	Audio	White
2	Receive	Black
3	-Transmit	Red
4	Mic Functions	Blue
5	Ground	Braid
6	+8Vdc	Green