

Note 6:

KM3000 Squelch setting (Yellow and Green board)

Yellow board

Disclaimer

This modification is carried out at your own risk. The resistor is very small and needs careful soldering to ensure the main board and components are not damaged. It is recommended that you attempt this modification with care if you are not conversant with SMD soldering work.

Background

The KM3000 2M radios sold by TVRG were originally used in remote locations as data radios. As the radios were just listening data all the time the squelch level was not considered important. Consequently, there is no squelch level adjustment on the main board. Used now for voice the default squelch setting may be considered unacceptable for amateur operation in simplex mode without CTCSS.

All yellow PCB radios sold by TVRG have had this modification carried out prior to sale. The following modification will set the squelch levels to around -115 / -118dB depending on the value of resistor chosen for (R97).

The modification is not difficult if carried out in a methodical way. The attached photographs show the process of adding the resistor and testing of the radio.

This modification can easily be completed in 30 minutes even if you are not familiar with these radios.

So, clean and clear the working area, prepare a container for the screws and small parts, turn on your soldering iron.

The components are going to look very small!

Tools required

Weller or Antex type temperature controlled soldering iron with 1mm tip max

Heated tweezers

22 SWG or thinner fluxed solder wire or SMD solder paste

SMT flux pen or SMD flux liquid

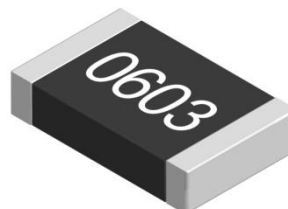
Magnifying lenses, strong glasses or bench microscope

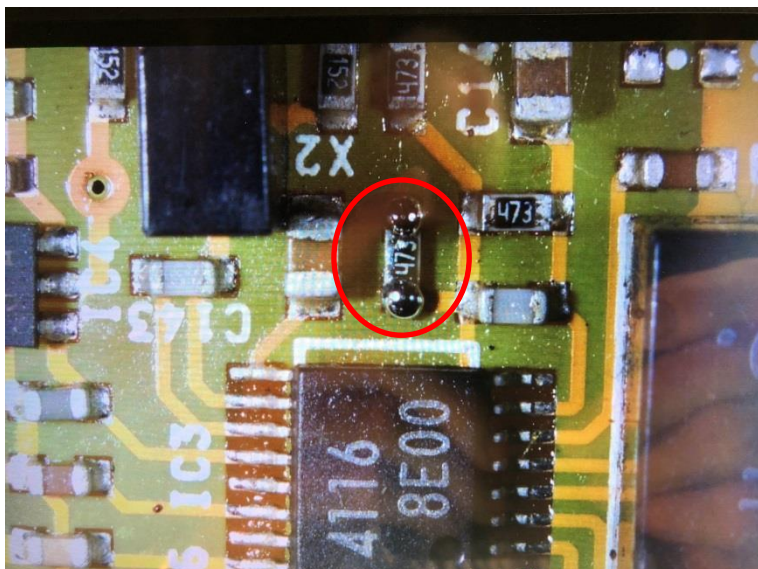
Philips screwdriver

Tweezers

Components required

SMD 0603 1/8W resistor 36K or 39K ohms





What to do

1. Locate the SMD 47K 0603 resistor *(R97) near the 4116 chip on the main board. This needs to be changed to around 38K ohms. This can be achieved in three ways.
2. Using heated tweezers or a heat gun remove the 47K SMD resistor *(R97) and replace with a resistor 39K SMD resistor. Note: if there are any additional resistors fitted at *(R97) position remove these as well and just fit one new 39K resistor.
3. After modification check the squelch operation using a calibrated RF signal generator for approx. operation at -119dB.
4. Should the squelch operation still be slightly too sensitive and not reliably closing remove and replace *(R97) with a 36K resistor

*R97 Original value 47K ohms

Green board

Disclaimer

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Background

The KM3000 2M radios sold by TVRG were originally used in remote locations as data radios. As the radios were just listening data all the time the squelch level was not considered important. Consequently, there is no squelch level adjustment on the main board. Used now for voice the default squelch setting may be considered unacceptable for amateur operation in simplex mode without CTCSS.

Unlike the yellow PCB radios discussed above the Green PCB version sold by TVRG did not require any modification to the squelch circuit to be carried out prior to sale. The value of squelch level is around -115 / -118dB already and was considered adequate for amateur use.

Recently, some purchasers have asked if there is a way to adjusting the squelch level to make the squelch less sensitive (lighter). A simple solution to this has now been produced requiring just one resistor to be added or changed on the board.

The modification is not difficult if carried out in a methodical way. The attached photographs show the process of adding the resistor and testing of the radio.

This modification can easily be completed in 30 minutes even if you are not familiar with these radios.

So, clean and clear the working area, prepare a container for the screws and small parts, turn on your soldering iron.

The components are going to look very small!

Tools required

Weller or Antex type temperature controlled soldering iron with 1mm tip max

Heated tweezers

22 SWG or thinner fluxed solder wire or SMD solder paste

SMT flux pen or SMD flux liquid

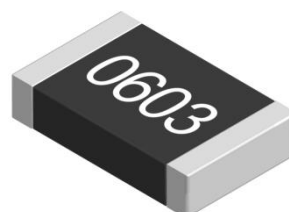
Magnifying lenses, strong glasses or bench microscope

Philips screwdriver

Tweezers

Components required

SMD 0603 1/8W resistor 4.7K ohms or 1.5K ohms



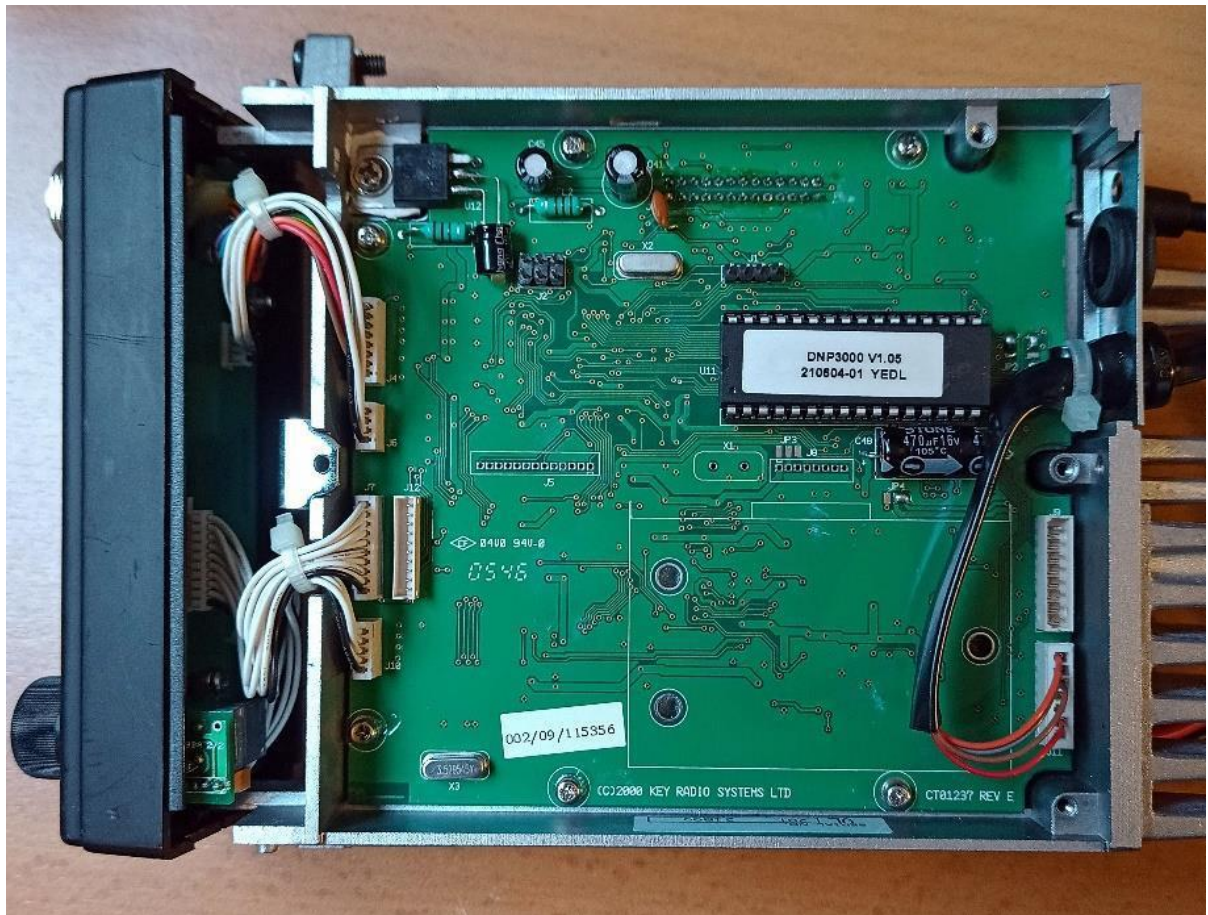


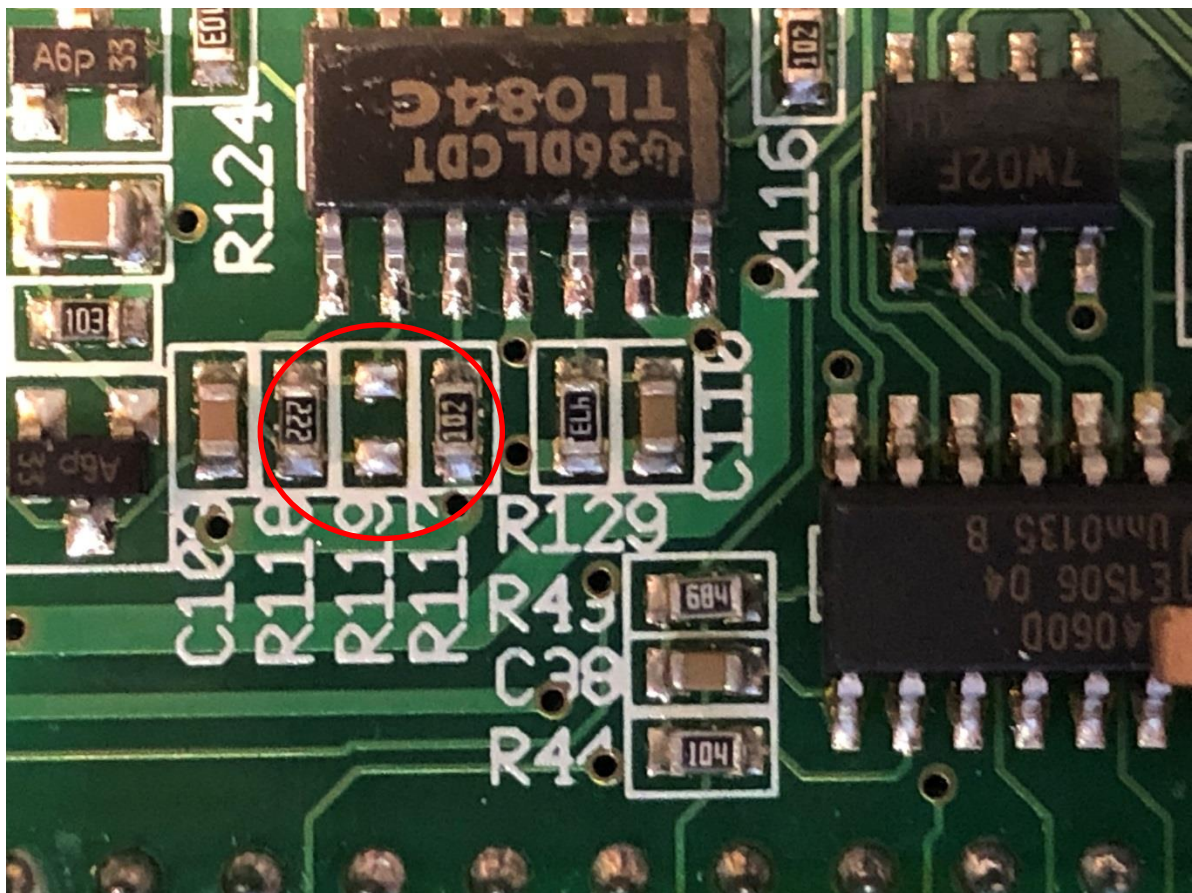
Figure 1 the logic board with the front panel released

1. Test KM3000 radio and check it is working correctly before starting.
2. Turn the radio over and remove the screw in the middle of the bottom cover near the front and loosen the rear screw.
3. Remove bottom cover.
4. Identify the 6 fixing screws holding the board down to the chassis.
5. Remove these screws including the black ground wire with the tag on it.
6. Remove the two copper earth clips
7. Remove the screw holding the LM7805 regulator to the chassis
8. Place all these parts in a storage tray to avoid loss of the screws.
9. Remove the two screws holding the RJ45 or MOLEX connector and unplug the connector from the board.
10. With connector removed gently ease the logic board upwards. Avoid bending the pins on the rear of board on the inter board connector.
11. Carefully ease the board out.
12. Remove the four connectors from the front of the board
13. Set the chassis aside for the time being.
14. Place the KMX logic board with the main EEPROM downwards on the bench

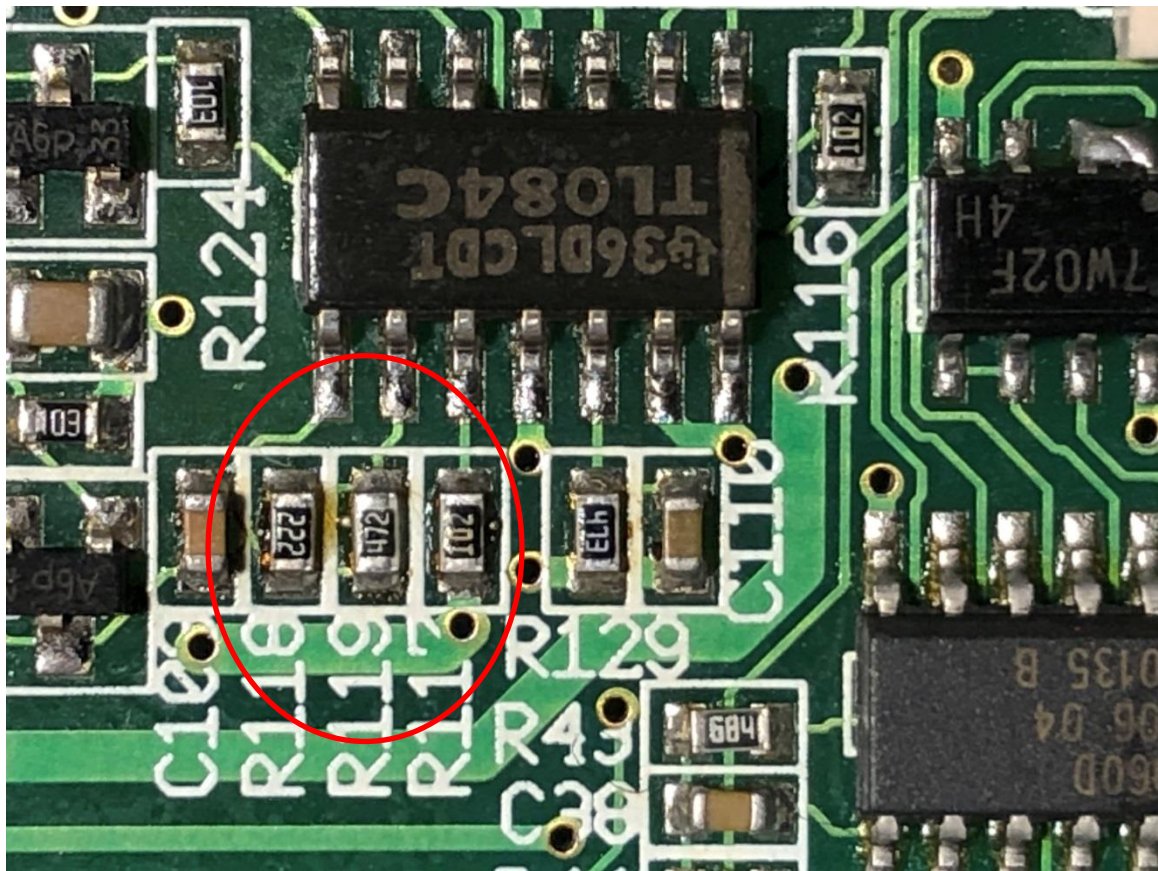
Adding the resistor

15. Carefully identify the TL084C IC and the location of R118 and R119
16. R118 and R119 are in parallel however R119 is not normally fitted and the position is blank. These resistors are directly across pins 8-9 of the TL084C IC.
17. As manufactured the value of R118 is 2.2K and can be changed to 1.5K to improve the squelch setting.
18. As these resistors are in parallel it is easy to just add a 0603 4.7K ohm resistor to the vacant pads at R119 making the total parallel resistance across pins 8-9 of the TL084C 1.5K ohms.
19. Alternatively, you could remove R118 and replace this with a 1.5K resistor depending what you have in stock.
20. This will now make the squelch operate at around -123/-124 dB
21. After modification reassemble the radio and check the squelch operation using a calibrated RF signal generator for approx. operation at -123/-124 dB

Green logic board showing empty pads at R119



Green logic board showing 4.7K resistor added at R119 position



(TVRG would like to thank Nigel (G4ZAL) for sharing this modification)

Note 6_KM3000 squelch setting yellow and Green PCB

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