

## **Note 1:**

# **KEY KM3000 and KM4000 Power level adjustment (Yellow and Green) boards**

## **Disclaimer**

**This modification is carried out at your own risk. The PA components are very delicate and can be easily damaged. It is recommended that you attempt this adjustment with care if you are not conversant with small radio servicing work.**

## **Background**

The KM3000 and KM4000 VHF 2M radios sold by TVRG were originally used in remote locations as data radios. The power level of the radios sold by TVRG has been set at 15 Watts. This value is considered the preferred level for amateur operation to prevent the radio overheating during long overs. (The radios do normally run quite hot).

We have been asked if the power level can be reduced to around 5 Watts for data operation.

The adjustment is not difficult if carried out with care. The attached photographs show the location of the power level control potentiometer on the RF board. A small adjustment of this potentiometer is required to reduce the power level.

This modification can easily be completed in 20 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

## **Tools required**

Philips screwdriver

Small ceramic or plastic trimming tool or insulated jewellers screwdriver

0 - 25W RF Power meter covering 145MHz

50 Ohm dummy load

Patch leads

13.8v power supply (8 Amp)

## What to do next

Remove the top cover by releasing the cross headed screw near the front and loosening the rear screw.

Ease the cover up from the back of the radio first.

Identify what radio you have by the colour of the PCB (green or yellow) and using the attached photographs below locate the power control potentiometer.

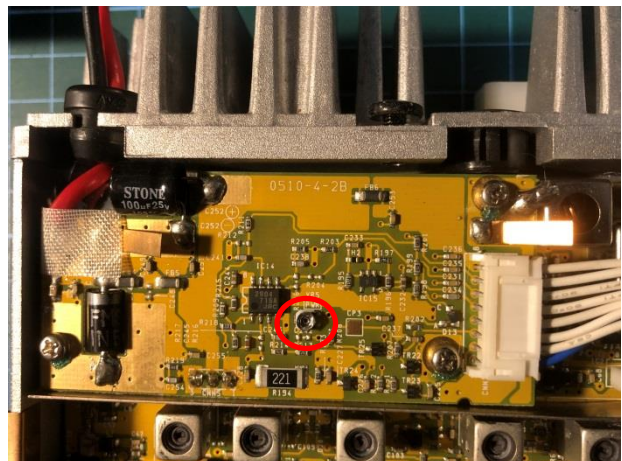
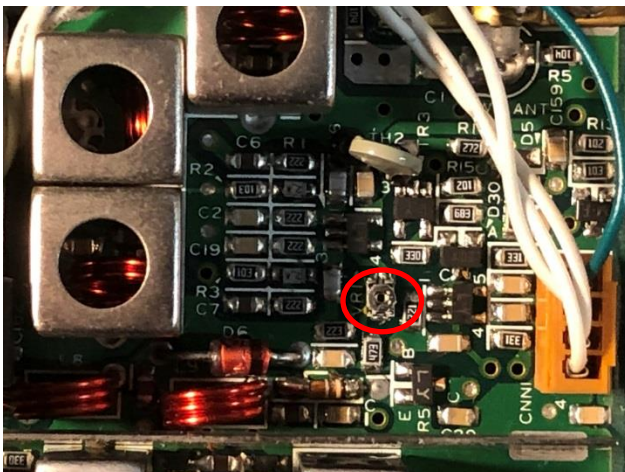


Connect the radio to a power meter and dummy load.

Remove the PA screening cover.

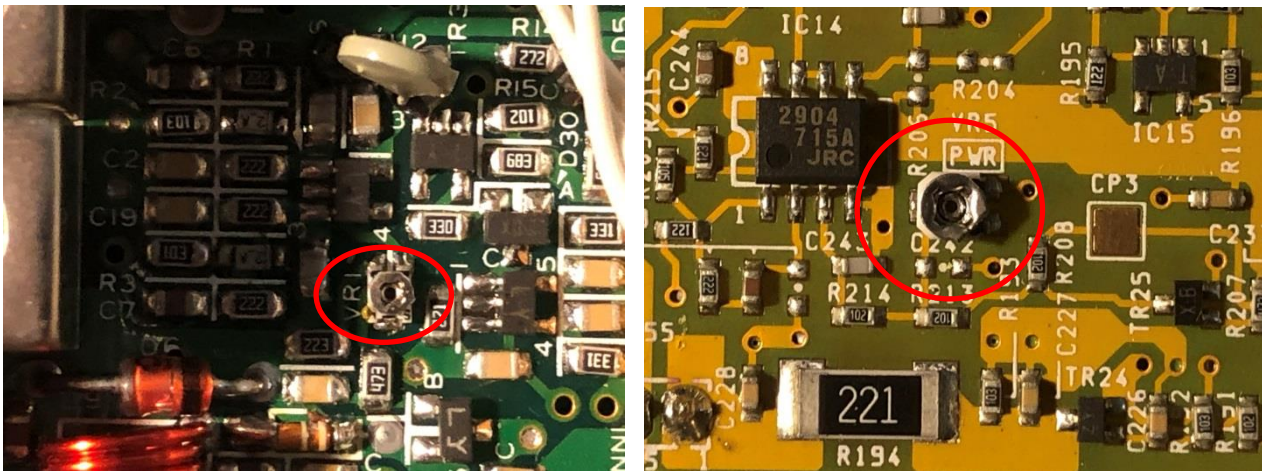
Power up the radio, press the PTT and measure the RF power output it should be around 15W

Locate the power control potentiometer. On the green PCB the power control is in the top right hand corner of the PA area marked VR1. On the yellow boards the power control is in the middle of the small daughter board in the PA area marked VR5. (See pictures)



Press the PTT and carefully adjust the power control potentiometer to the desired value.

(Green PCB, turn the potentiometer anticlockwise to decrease power, yellow PCB turn the potentiometer clockwise to decrease the power).



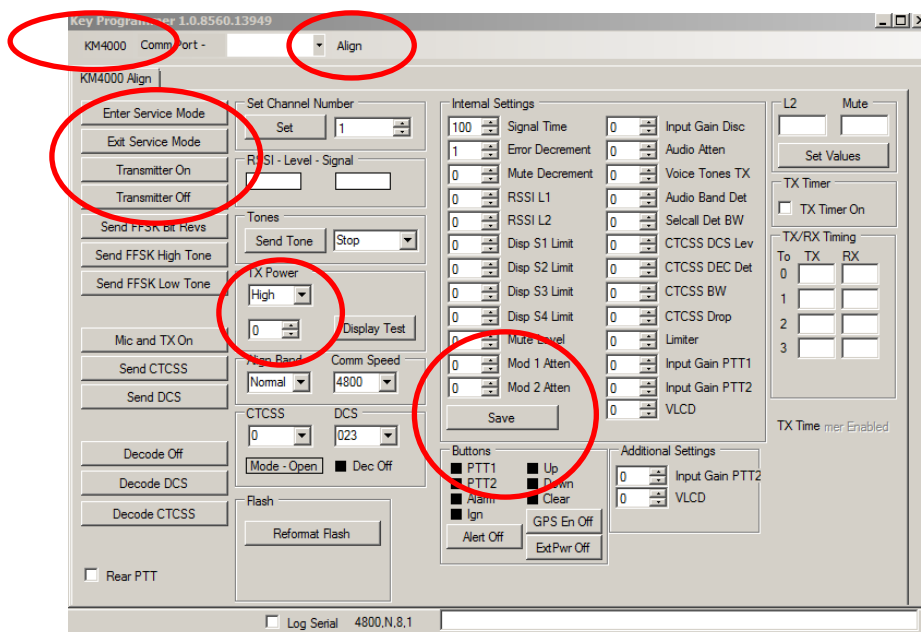
Once the radio is set to the desired power level turn off and replace the screening cover. The folded serrated edge goes towards the front of the radio.

Replace the top cover and gently tighten the two screws ensuring the cover is well seated.

Recheck the power level is what you require.

Note1: The yellow PCB radios can be affected by the screening cover and the power level may need setting slightly lower in the first instance as they can increase when the cover is replaced. (This is quite normal).

Note2: If you have a KM4000 radio the power adjustment can be changed as per the details above for the yellow PCB. Alternatively, the preferred method is to connect the radio to a computer using a suitable programming cable to the serial port and run the programming software. Connect the power meter and the radio to the 13.8v supply. Select KM4000 from the top left hand drop down box and go to the "Align" page of the programming software.



1. Press "Enter Service Mode"
2. The values in the radio will be read back into the software
3. Press "Transmitter On" and monitor the power level.
4. Whilst monitoring the power on the power meter, change the value of the "TX Power" setting in the box below the "TX Power" "High" box. It will probably be set to about 165, lower this value until the power is at the desired level.
5. Press "Transmitter Off" button.
6. Press the "Save" button in the middle of the page.
7. Now press "Exit Service Mode" and the radio will restart saving the settings to ram.
8. Disconnect the radio from the computer.
9. Press the PTT on the radio and the power level should now be the desired value.

***(When setting the power level keep the transmit time to a minimum to avoid getting the transmitter too hot and overheating).***

Job done!