



ENIGMA BROADCAST Tracking Satellite Tuner Kit

Thank you for purchasing the Enigma Broadcast Satellite tuner kit. Please read these instructions carefully before assembly to prevent mistakes and ensure optimum performance.

Build time: 10-15 minutes.

Tools & Parts Required

- ✓ Mini side cutters
- ✓ 40-60W soldering iron
- ✓ File or sandpaper
- ✓ 15V 1A regulated DC power supply
- ✓ 850-1750MHz signal source or LNB, as required
- ✓ Oscilloscope or audio amplifier, as required

Assembly Instructions

1. Identify the four parts of the kit. They comprise the satellite tuner can, a PCB and two voltage regulators, 7805 and a 7812. See figure 1.

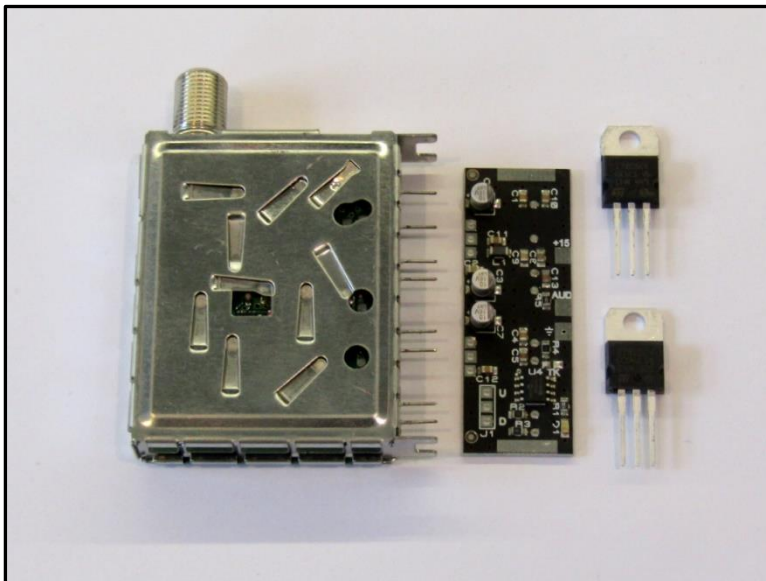


Figure 1: Individual kit components.

4. Solder the tabs of the tuner can to the long pads at each end of the PCB as shown in figures 4 & 5. Make sure there is a little clearance between the bottom of the PCB and the can as shown in figure 6.

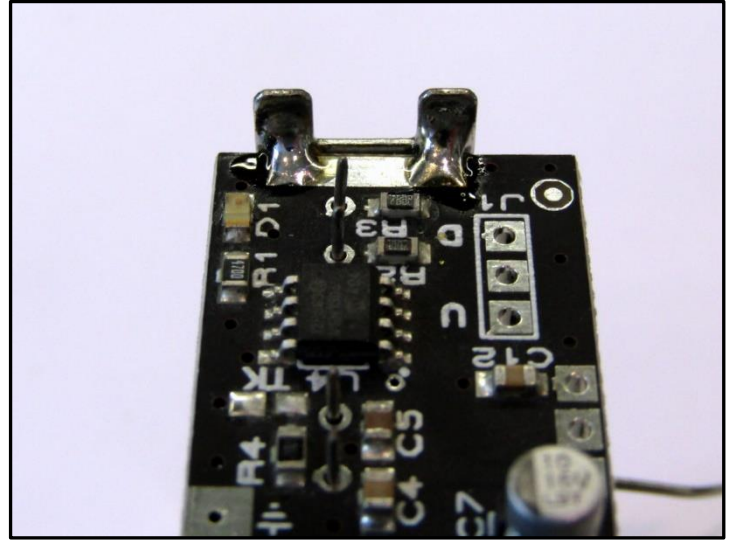
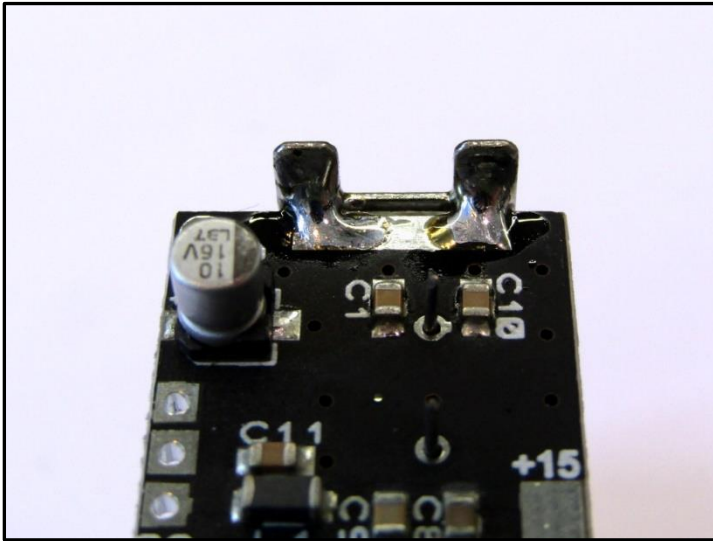


Figure 4 & 5: Soldering tuner PCB in place.

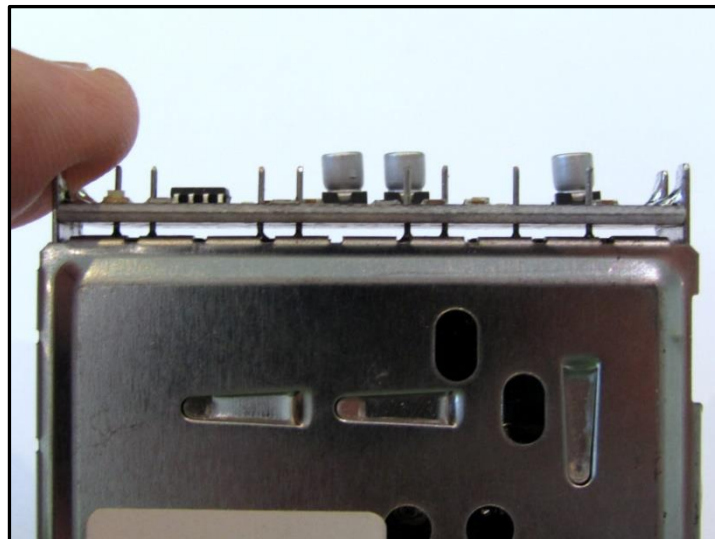


Figure 6: PCB Clearance required.

5. Solder all eight pins of the can to the PCB as shown in figure 7.

Caution: Some of the pins are quite close to surface-mounted components therefore rotate the whole can as necessary so that you can approach from a better angle. Once all eight pins are soldered trim the excess pin length using small side cutters.

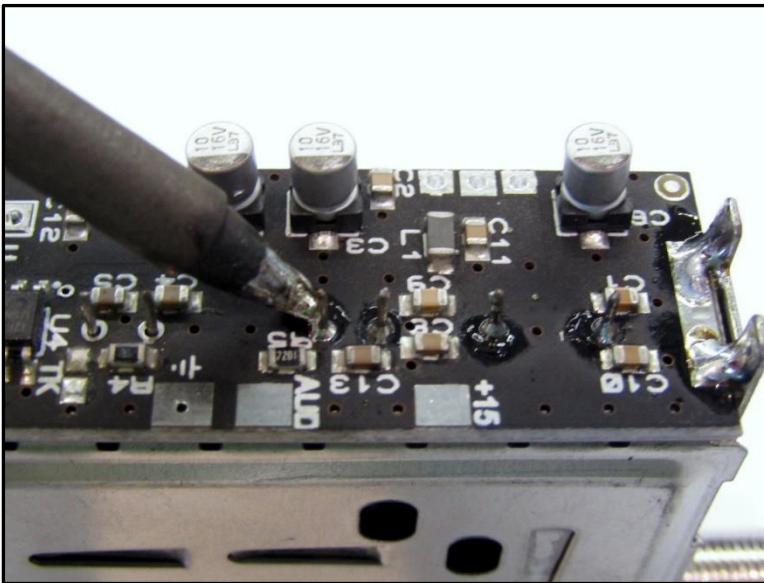
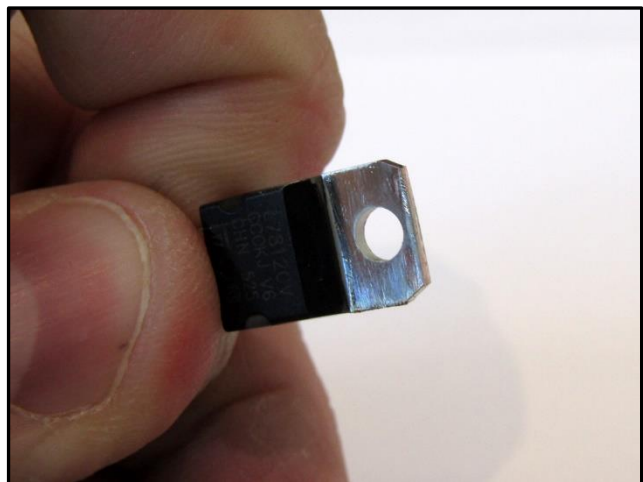
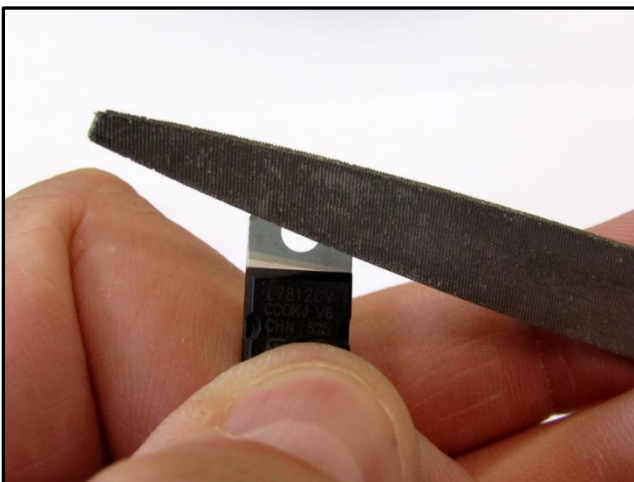


Figure 7: Soldering tuner can pins.

6. Using a file or sandpaper, rub the tabs of both voltage regulators along the top edge and also the flat surface nearest the part number. When finished, the tab should be shiny with some copper showing so that it can be soldered to. See figures 8 & 9.



Figures 8 & 9: Filing of regulator tabs.

7. Lie the can flat and insert the voltage regulators in to the PCB as shown in figure 10. The 7805 regulator is fitted to the LEFT and the 7812 to the RIGHT.

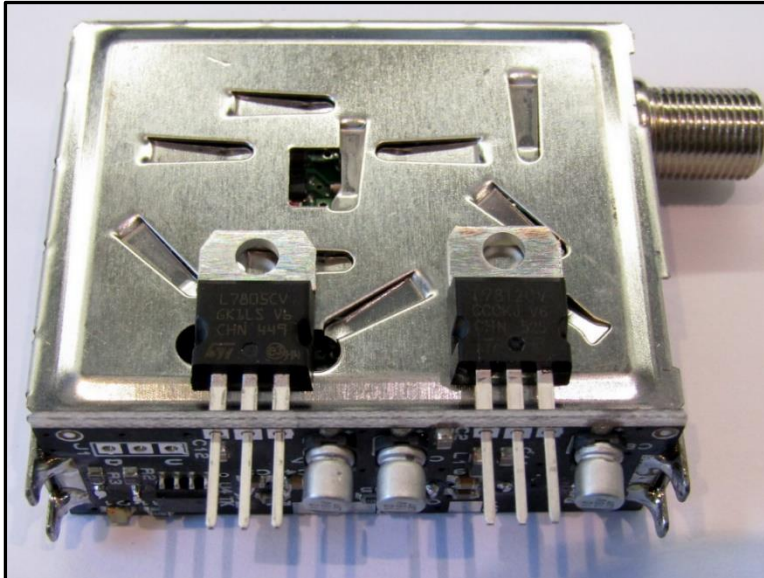


Figure 10: Voltage regulator position.

8. Solder both tabs of the voltage regulators to the silver body of the tuner can as shown in figure 11. Solder the pins of the regulators to the PCB and trim the legs with small side cutters.

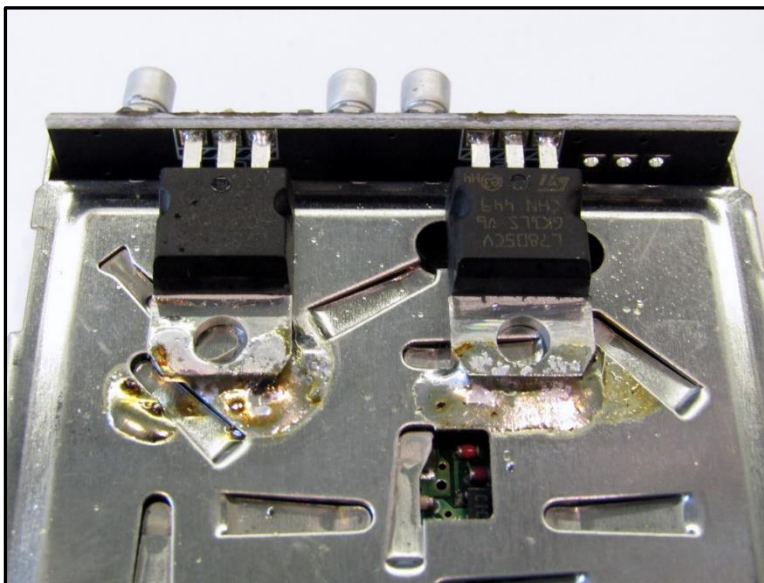


Figure 11: Soldering the voltage regulators.

The tuner kit is now complete and ready for testing.



ENIGMA BROADCAST Tracking Satellite Tuner Kit

Testing & use of the tuner can

1. Solder output wires from a 15V 1A regulated DC power supply to the PCB pad marked +15 and any ground connection, e.g. the casing of the can or the PCB pad with an earth symbol.
2. The baseband output is available on the PCB pad marked "Aud" and any ground point. Connect an audio amplifier or oscilloscope as necessary to listen to or view the output.
3. Attach an RF signal source from 850-1750MHz (or an LNB and microwave signal source as desired) to the RF input on the F-type connector at the end of the can.
Caution: When the module is powered on, a 12V DC LNB supply will appear at the centre of the RF input, therefore if testing using a signal generator insert a 1nF DC blocking capacitor in the coaxial line to prevent damage to the signal generator.
4. Switch on the DC power supply. The green LED should flash a few times and then stay on to indicate frequency lock. The default programmed frequency is 1200MHz and a carrier present at this frequency should cause quieting of the output. It is normal for little or no white noise to be heard at the output if an LNB is not connected, therefore, when using a signal generator to test reception, some modulation may need to be applied.
5. The input frequency may be changed in 1MHz steps by shorting the pads marked "U" (Up) or "D" (Down) to ground. These pads are found in a row near J1. The centre pin is ground. A momentary switch or buttons may be connected here as required. As the frequency is changed it is normal to hear a quiet thump at the output. If the inputs are held low continuously the frequency will continue to increase or decrease a few times per second.
6. Once the desired input frequency is selected, it will be stored to memory automatically and tune to the same frequency at next power on.
7. If the tracking function is required, short the two small PCB pads marked "TK" near the 8-pin SMT chip. A switch may also be used here to turn the tracking function on and off.

After power-up in tracking mode the LED will light continuously to show frequency lock then begin to flash twice to indicate it is in tracking mode and waiting for the signal to move.

As the receiver starts to follow a moving signal, the LED will light continuously then begin to flash twice once the signal has stopped moving.



ENIGMA BROADCAST Tracking Satellite Tuner Kit

The tracking function is primarily designed to track slowly moving signal sources such as Gunn oscillators as they drift with temperature. If the input signal moves too rapidly or moves outside the capture range the receiver may lose lock and it will return to the original programmed frequency.

Note: The frequency cannot be moved manually using the Up/Down pins whilst in tracking mode.

Testing of the receiver is now complete and it is ready to use.

For further information or questions, please email info@enigma-shop.com

Specifications

Power supply: 14-16V DC, 0.5A (250mA without LNB).

LNB supply: 12V.

Input frequency: 850-1750MHz, tunable in 1MHz steps.

Baseband output; 250mV RMS

Sensitivity: -85dBm (reduced -80dBm sensitivity for tracking to work effectively).

Tracking function: total 25MHz capture range (+/-12.5MHz from selected input frequency).

Dimensions: 70mm (L) x 54mm (H) x 19mm (W).

Tracking Satellite Tuner Schematic

