GUNNMOD2
PCB. ASSEMBLY AND COMMISSIONING INSTRUCTIONS

The Gunnmod 2 PCB. forms the heart of a compact, fully featured, low power consumption, stable, Gunn diode ATV. TX. It is suitable for most types and frequency Gunn diode oscillators up to 30mW. PCB. current consumption is aprox 20mA. A typical 10mW Gunn diode consumes approximately 90 to 125mA thus making the unit ideal for portable battery operation.

PCB. Mounting.
The PCB may be installed in plastic or metal enclosure, or even un-cased and mounted directly on to a length of wave guide. Mounting holes are not incorporated on the PCB. as these will depend on individual requirements. Small holes could be drilled at the corners of the PCB, or at other locations on the PCB. where they would not interfere with tracks or solder pads. Alternatively the PCB. could be supported on runners or by small solder tags soldered to the 0 volt track around the edge of the PCB. Alternativley double sided self adhesive foam tape could be used. Take care to ensure that the underside of the PCB. does not short out to the case.

Component fitting.
The component overlay drawing indicates the positions and where required, the polarity of the various components. There is no specific order in which to assemble the PCB. However it is recommended that fixed resistors are mounted first, followed by semiconductors, capacitors (**note**. C8 must be the 25v capacitor), the filter, variable resistors and finally inductors. Ceramic capacitors are provided with three mounting holes. This is because of the two common lead pitches. Select the holes to match your components.

Heat sinking Q2.
Q2 must be fitted with some form of heat sink to enable it to dissipate the heat generated in normal operation. (0.75W typical with a 10mW Gunn diode). If the PCB is to be mounted in a metal enclosure, fit the board by the side of the case and bolt Q2 to it with an insulating washer (Mica, silicone or with care, Selotape). Alternatively bolt a piece of aluminium at least 0.5mm thick with a surface area of 2 square inches minimum to Q2. In this case an insulating washer is not required, as long a the heat sink cannot short out to anything.

Controls.
The pre-set controls, with the possible exception of the audio gain, once set would not normally require adjustment. However, if required VR1 and VR4, may be panel mounted. Keep the leads short or use screened cable. The pre-emphasis may either be permanently linked in, out, or fitted with a switch.

External connections.
The component overlay indicates where the various connection are made to the PCB.
12V power.
Connect via an on off switch and if required a fuse. 250mA or 500mA Quick blow is most suitable. A power on, or transmit indicator is also useful. For piece of mind against accidents (they do happen) fit a 1N4001 or similar diode across the supply. Connect with the cathode to the positive supply side, after the fuse. (if fitted)
Gunn diode connection.
If the connection is short (< 8")a twisted pair may be used. For longer lengths co-ax cable is best. Most low power Gunn diodes have a characteristic impedance of around 70 - 90Ω. If the diode feed is greater than about 2 - 3 feet then cable of this impedance is best used. Incorrect impedance on very long runs may cause loss of definition, smearing or ghosting of the image.
With co-ax feed, due to the negative resistance characteristics of Gunn diodes, there is a possibility of parasitic oscillations developing in the Gunn oscillator. This can result in heavy interference or even total loss of the picture. If so it can simply be cured by fitting a 1KΩ damping resistor or a 560Ω in series with a 47nF ceramic capacitor from the Gunn diode connections to 0v. on the oscillator module.
Video input.
The video input impedance is 75Ω. Screened cable should be used and if longer than about 8" should be of 75Ω impedance. An input terminating resistor is not required.
Audio input
Screened cable should be used to prevent interference being picked up on the audio input.
Pre-emphasis in/out switch.
Unless the connections are very short, screened cable should be used