

## **F3-Convorsor Transmitter**

### **USA Frequency Band 216MHz**

#### **Circuit Diagram Description:**

This circuit description should be read in conjunction with the circuit diagram (PCB01AKZ.) from Convorsor Limited.

The F3- Convorsor transmitter is a phase lock loop (PLL), narrow band, frequency modulated (FM) radio transmitter operating in 216MHz frequency band and is used for transmitting audio signal.

There are two possible ways to input the audio signal into the F3-Convorsor transmitter and they are by Microphone mounted in the device (Con2) or direct connection socket (Con1). The microphone Mic-EL3078 is a two port device, directional and omidirectional and by mechanically (TS1) closing the omidirectional port of the microphone, the device become highly directional selective.

IC1 and its associated circuitry form an audio amplifier, filtering and buffering circuit. This part of the circuit also form an audio input limiter with limiting diodes. There are two possible audio amplifier gains, "LOW" or "HIGH" and they can be selected by using slide switch (SW1) that also switch "ON" or "OFF" the F3- Convorsor Transmitter. The device's ON, OFF, or low battery states is indicated by the green LED (D2) on the F3- Convorsor Transmitter.

TR2 and its associated circuitry form the Voltage Controlled Oscillator (VCO) that generated the transmitted radio frequency or the carrier frequency signal. The VCO centre frequency is set by variable capacitor (VC1). The transmitted radio frequency is controlled and locked by IC2 that is programmed by IC3 with a 10 MHz reference frequency oscillator (TCXO). IC2 and its associated circuitry form the is the phase lock loop (PLL).

IC3 is a microcontroller that is pre-programmed (Con5) to control and set the transmitted radio signal using IC2. The locking radio transmitted frequency data is programmed into the IC2.

VD1 is used to module the audio signal on the radio frequency signal and also to control the transmitted radio frequency with IC2.

TR3 and its associated circuitry form a buffer RF amplifier and a band pass filter. TR4 and it associated circuit form the RF power amplifier with a band pass filter that is tuned using variable capacitor (VR2).

IC4 and its associated circuitry is a DC-DC converter with a battery output voltage range 1.2V to 1.5V that convert to a fixed output voltage of 3.3V. The battery is charged by the connector (Conn4) and is protected by fuse (F1).