Operational Description of
SALCOM 1167 POCSAG transmitter.

Microprocessor logic.

The processor section consists of a low cost Microcontroller, a EEROM memory and a crystal oscillator. At power ON, the processor reads the button status, and encodes a POCSAG message according to the pre-programmed message held in EEROM. The processor then asserts PTT, enabling the RF crystal oscillator and buffer stages, and then frequency modulates the oscillator with the data. The data modulation is NRZ type.

Low battery condition is detected at this stage, by comparing a sample of the supply voltage with the regulated 5v rail, and is indicated by the LED flashing.

Radio Frequency section.

The crystal oscillator Q1 generates one third of the final output carrier frequency, and is modulated by using a switched capacitor in the crystal circuit. The modulation frequency shift is approx +/-1.33kHz giving +/-4kHz shift of the final carrier. The data modulation is NRZ type.

The output of the oscillator passes through a band pass filter, L4,L2, to remove the fundamental component, and pass the third harmonic. This is then amplified in two transistor stages Q2,Q7, to produce approx 100mW output. The final low pass filter L7,C14,C15 and tuned loop antenna removes other spurious frequency products from the transmission. EIRP is approximately 0.2mW.

The PTT output from the processor controls the bias to the oscillator and first amplifier. All other stages are Class C and draw current only when driven with RF. The processor can turn off the transmitter between transmissions using the PTT control line.

Power control and regulator.

Any button has the ability to enable the power control circuit and turn on the unit. Once power has reached the regulator and released the reset circuit, the processor can hold the power on, and only release it when the transmission is finished.

The battery supply input is protected from reverse polarity with a series diode.