

# P03 Operational Description

## EPH Encoder Transmitter

The EPH encoder transmitter incorporates a synthesized narrowband FM transmitter designed to operate from 447 to 473MHz.

The oscillator is a phase locked loop (pll) consisting of a voltage controlled oscillator, a synthesizer, and a 14.4MHz reference oscillator. While transmitting the vco is locked to the desired carrier frequency by this pll circuitry. When the synthesizer indicates “phase lock” three amplifiers are activated for the 20mw version and an additional two amplifiers are activated for the 450mw version.

Both the vco and the 14.4 MHz ref oscillator are modulated simultaneously using direct frequency shift keying (FSK). A low pass filter is used to condition the digital data produced in the microprocessor before it is applied to the varactor tuned vco and the reference oscillator.

The microprocessor is used to generate frequency selection for the synthesizer via an I2C serial buss. This microprocessor also reads in switch and control data along with system addressing information stored in the EEPROM, as well as generating the serial digital output data used to modulate the carrier frequency. The RF signal is fed through a harmonic filter to the transmit antenna.

## P03 Controls

All paddles on the P03 are spring loaded so that they automatically return to the off position when released.