

Technical Report
Transmitter Model XP6102
FCC ID# BRWXP6102

3.2 Block Diagram

(Reference is made to Figure 5.1)

The (up to) four control potentiometers are at the left side of the schematic drawing.

The control potentiometer, which is mechanically coupled to the control (joy) stick, is supplied with the regulated 5.0V voltage. The wiper on this pot is exactly centered in the neutral control stick position. All analog processing is performed as deviations from this center (reference) voltage.

After the mixing of each channel, control voltage is changed to Pulse Train, through encoder circuit.

The oscillator consists of an ECO type oscillator, excited by a quartz crystal. The crystal supports oscillation at the crystal's fundamental frequency (approximately 18MHz). The tuned circuit in the oscillator transistor's collector is tuned to the second harmonic of this frequency (approx. 36MHz).

Q12 acts as a frequency multiplier ($\times 2$)/buffer; it drives the Power Amplifier (PA). Its output frequency is $4\times$ crystal frequency.

The straight-through PA stage is followed by a matching and band pass/low-pass network. This network matches the low PA stage output impedance to the whip antenna.

The crystal load capacitance is affected by varicap D11, which is voltage-controlled by the "rounded-off square wave from the modulator transistor. The oscillator frequency is therefore switched in the rhythm of the modulate modulation pattern (FSK).

Two DC Supply Voltage enter the RF section: 9.6 Volt "law" battery voltage supplies the PA stage only. All other stages, and bias current for all stages, including the PA, are derived from the regulated 6.0 Volt source on the RF board.