

Technical Report  
Transmitter Model XP7202  
FCC ID# BRWXP7202

## 2.0 ENCODER THEORY OF OPERATION

Reference is made to Figure 5.1, Transmitter Block Diagram.

The functions of the encoder are to:

- \* accept the analog voltages from the control inputs (joysticks, toggle switch).
- \* process the analog voltages to create control mixing, adding, reversing, etc., as desired by the user.
- \* sample these voltages in a cyclic rhythm under control of the system's internal timing generator.  
(This process is called commutation.)
- \* process these analog voltages into binary weighted digital control words by means of an Analog-to-Digital Converter (ADC).
- \* store these digital representations of the analog control input into a temporary memory (RAM).
- \* supply this serial data stream to a buffer-driver for modulation of the RF Transmitter.
- \* provide "housekeeping" of the encoding process by means of a quartz crystal controlled internal clock.
- \* provide supply voltages to the RF section ( $V_{cc} = 9.6V$  battery voltage;  $V_{reg} = 5.0V$  regulated voltage).

The entire program which controls the timing housekeeping, parallel-to-serial conversion process, and insertion of synchronization words and error detection codes is governed by a Central Processing Unit (CPU) under control by an internally stored program residing in Read-Only Memory (ROM). The CPU, RAM and ROM are all part of a single-chip microprocessor.

Resolution of the Analog-to-Digital conversion process is ten (10) bits for a control accuracy of  $1:2^{10}$