

CIRCUIT DESCRIPTION

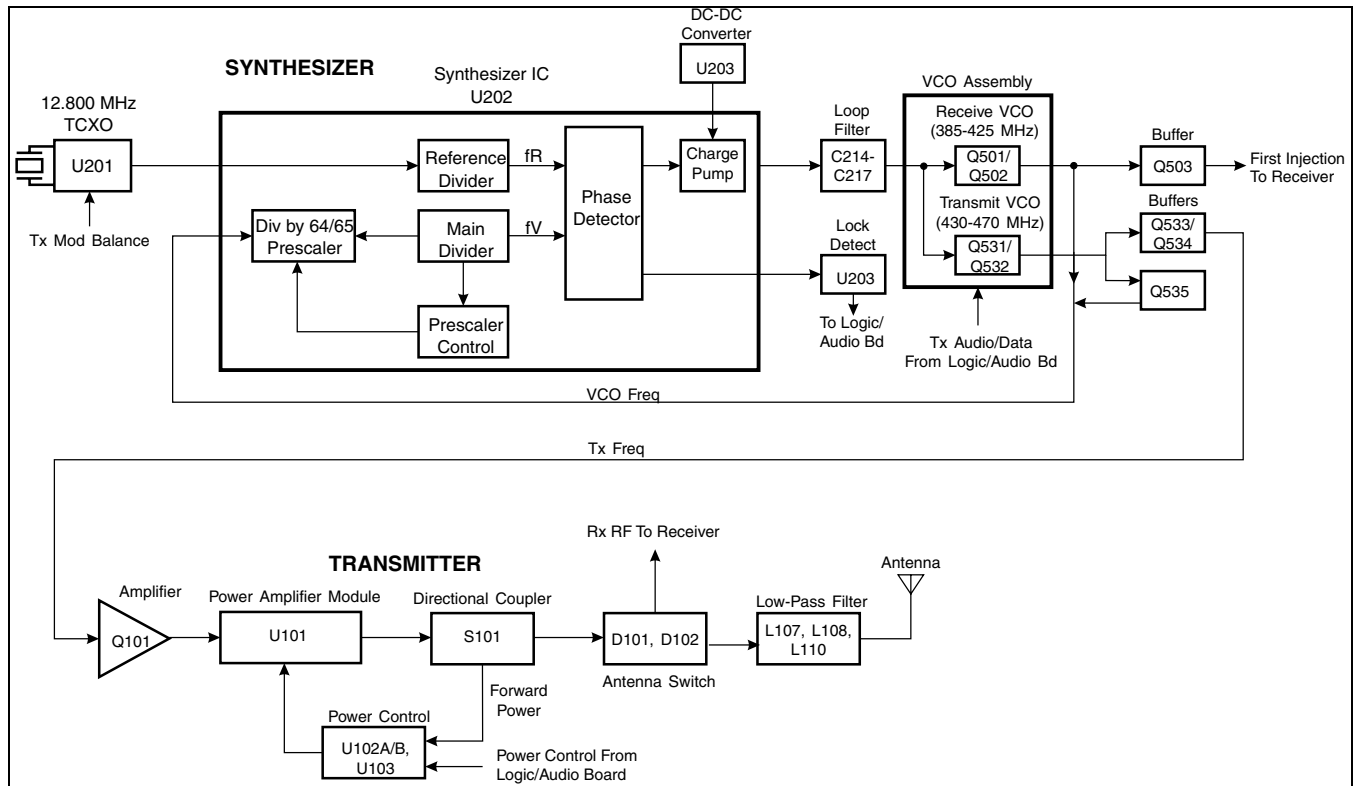


Figure 1 Synthesizer and Transmitter Block Diagram

GENERAL

The 7240 Portable is a compact two-way radio consisting of an RF board, Logic/Audio board, and Keypad/Display board. The RF board is shielded by a metal case. The radio is powered by a 7.5V NiMH battery pack and has a side connector that permits external access to many radio control functions and electrical connections.

The 4-watt transmitter operates in the 430-470 MHz range. It is modulated with microphone audio, subaudible signaling and squelch control signals, and in-band audio tones. To generate the fundamental transmitter frequency, the exciter incorporates phase lock technology to control the stability of the internal voltage controlled oscillator (VCO) with a very stable reference signal provided by an internal temperature compensated crystal controlled oscillator (TCXO). The synthesizer produces an output signal at the assigned transmitter frequency. A voltage-controlled oscillator (VCO) operating at the fundamental transmitter frequency produces this signal. A phase locked loop (PLL) controls and stabilizes the VCO frequency and locks it to the frequency of a high stability signal derived from a TCXO with 1.5 PPM stability that is located on the RF board. To suppress frequency pulling during transmission, the exciter isolates the frequency determining circuit from the rest of the transmitter chain with RF buffer amplifiers. If the synthesizer becomes unlocked, it sends a signal to the control logic on the Logic/Audio board which turns off the transmitter to prevent interference with other channels. A removable 3 dB gain antenna is mounted on the top of the radio for RF power transmission.

The circuit description which follows includes TCXO, VCO, Synthesizer/PLL, Exciter, RF Amplifier and Power Control sections.