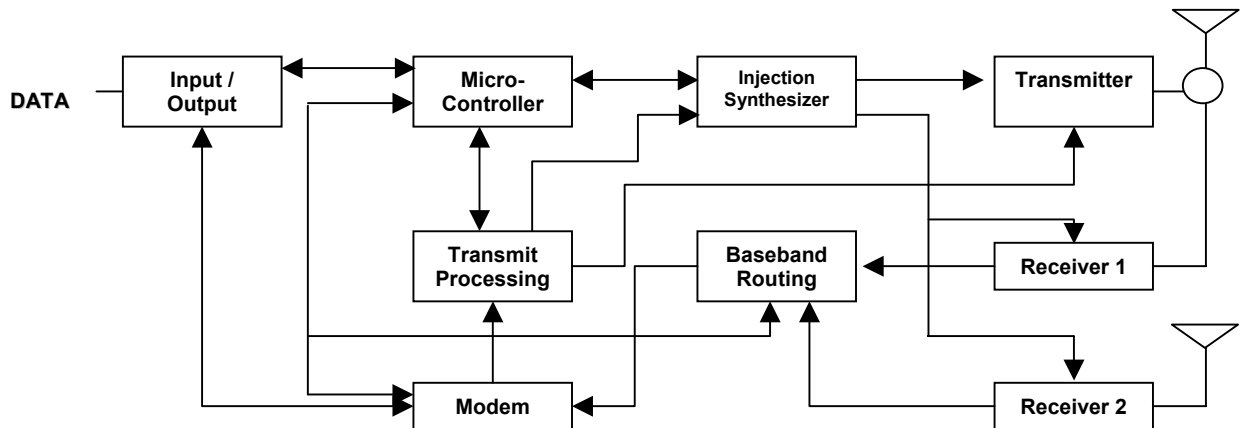


General Block Diagram

General Block Diagram Definitions

The standard IP circuit board contains ten (10) sections defined below.

- Input/Output** Circuitry associated with the radio's DB9 data connector providing all the RS232 data and handshake functions, including the necessary level changes.
- Microcontroller** Manages the operation of the radio loading the selected transmit/receive frequencies into the injection synthesizer, controls the operation of the modem, and determines which receiver provides a better signal from a given transmission. Also provides transmit time-out protection in the event a fault causes the radio to halt in the transmit mode.
- Transmit Modulation** Circuitry that amplifies the analog audio signal from the modem and uses it to modulate the voltage controlled oscillator (VCO) and 10 MHz reference oscillator in the injection synthesizer section. Modulating the VCO and reference oscillator simultaneously results in a higher quality FM signal.
- Modem** Converts serial data into an analog audio waveform for transmission and analog audio from the receiver to serial data. Serial data appears on the radio's RS232 port, which connects a Mobile Data Computer (MDC) or a Voice Interface Unit (VIU).
- The modem supports a 115.2 Kbps data transmission rate on the serial port, SLIP protocol, and up to 19.2 Kbps over-the-air rate. Within a single chip it provides forward error detection and correction, bit interleaving for more robust data communications, and third generation collision detection and correction capabilities.
- Injection Synthesizer** Provides programmable, ultra stable signals for the radio. One synthesizer incorporates phase lock loop technology used for both receiving and transmitting.

Low Side Injection	In the receive mode, the synthesizer provides a local oscillator signal of 45 MHz below the selected receive channel frequency.
Baseband Routing	Allows the microcontroller to select one of the two diversity receiver audio outputs for demodulation by the modem. Switching is done by the microcontroller comparing the Received Signal Strength Indication (RSSI) outputs from each receiver. Provision is also made for switching an external modulation source from the DB9 data connector to the transmitter input.
Transmitter/TR Switch	Consists of an exciter and power amplifier module. The transmitter circuitry includes a T/R switch switching the antenna between transmitter and receiver 1 (TX/RX1).
Receiver 1/Receiver 2	<p>Required to support the mobile DRS; two (2) discrete receivers are tuned to the same channel and use two (2) antennas.</p> <p><i>The receivers are double-conversion superheterodyne with a first Intermediate Frequency (IF) of 45 MHz and a second IF frequency of 455 KHz. Each receiver consists of bandpass filters, an RF amplifier, a crystal filter, a double-balanced mixer, and a one-chip IF system. The injection synthesizer provides the first local oscillator signal. Outputs from each receiver include RSSI and analog audio for the baseband routing circuitry and modem.</i></p>
Power Supply	Consists of circuitry that derives the various operating voltages for the radio. A group of fixed and adjustable voltage regulators are used for this purpose. The transmitter power control circuitry is also found in this section.