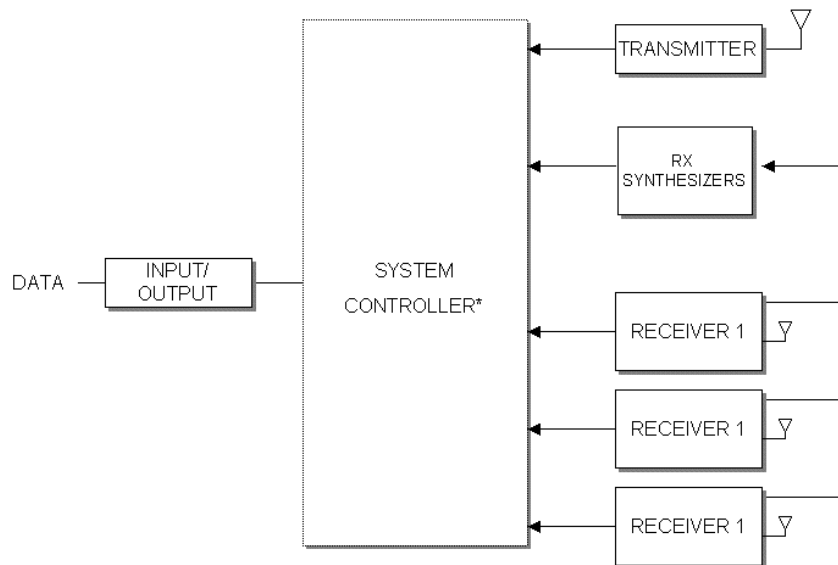**GENERAL BLOCK DIAGRAM**

*System Controller houses modem, diversity,
Ethernet, and transmit processing

General Block Diagram Definitions

For increased data security, the modem supports the U.S. Government developed Digital Encryption Standard (DES) data encryption and decryption protocols. This capability requires installation of third-party IP compliant DES encryption and decryption software.

The standard *IP*Series base station circuit board contains five (5) main sections defined below:

Input/Output   Circuitry associated with one of the following base station's data connectors:

❑   RS232 Serial Port DB9 Data Connector

❑   RJ45 Ethernet 10 Base T Interface Connection

System Controller   Houses the modem, diversity, and Ethernet circuitry. Manages the operation of the base station's modem providing transmit timeout protection in the event a fault causes the base station to become halted in the transmit mode. The system controller also handles the loading of selected transmit and receive frequencies into the injection synthesizer. Includes memory for storage through Electrically Erasable Programmable Read Only Memory (EEPROM) of the base station's operating parameters, which are retained after the base stations power is cycled off.

<u>Modems</u>	Convert data into an analog audio waveform for transmission and analog audio from the receiver to serial data interface. There is one (1) modem that is dedicated to the transmit operation and two (2) modems dedicated to the receive operation. The modem dedicated to the transmit supports a 115.2 KBPS data transmission rate on the serial port, SLIP protocol, and a 19.2 KBPS OR 9.6 KBPS over-the-air data transmission rate. Provides Forward Error Correction (FEC) and Error Detection (CRC), bit interleaving for more robust data communications, and third generation collision detection and correction capabilities.
<u>Diversity Reception</u>	Circuitry selects one of three (3) diversity receiver audio outputs for processing by the modem by comparing the Received Signal Strength Indication (RSSI) output from each receiver. Audio from the receiver with the highest RSSI value is passed to the modems.
RX Injection	The Injection Synthesizer board provides a highly stable local oscillator signal for the three (3) receivers. This displays a serial data input/output interface, synthesizer, and VCO.
Transmitter	Consists of an exciter and a power amplifier module covering various frequency bands in segments. A different power amplifier module is required for each segment. The transmitter power control is included with the power supply circuitry on the same board.
Receiver 1/Receiver 2/	Uses three (3) discrete receivers tuned to the same frequency.
Receiver 3	The three (3) receivers are required to support *IP*MobileNet's base station Diversity Reception System (DRS).
	NOTE: Some installations use only two (2) receivers.
	The receivers are double-conversion superhetrodynes with an Intermediate Frequency (IF) of 45 MHz. Each receiver consist of bandpass filters, RF amplifiers, a mixer, 45 MHz crystal filter, and a one-chip IF system. The injection synthesizer provides the first local oscillator signal and outputs from each receiver including RSSI and analog audio for Diversity Reception.
Power Supply	Power supply circuitry derives the various operating voltages required by the base station. Fixed voltage regulators are employed through the base station for this purpose.