

## Principle of Operation

AirEZY2411-BT (the Device) is a time-division-duplex wireless spread spectrum transceiver for computer data communication applications. The Device functions both as a transmitter and a receiver. The transmitting and the receiving operations are time-domain duplexed.

AirEzy2411 -BT employs direct sequence spread spectrum modulation. When operating in the transmitting mode, the Device takes digital data bits to be transmitted from a computer and feeds the bits into a spreader. The spreader employs the Complimentary-Code Keying (CCK). Every 8 bits of data is grouped into a symbol. CCK uses 6 bits from each symbol to select one of 64 complex CCK sequences, each 8-bit long, and uses the remaining two bits to QPSK modulate the sequence. Each bit in the CCK sequence is referred as a **chip**. The symbol clock rate is 1.375 MHz. The **chip** clock rate is 11 MHz. The Device then modulates the chips onto a radio frequency carrier. By combining CCK with QPSK modulation, a data rate of 11 Mbps is achieved. The transmitting power is less than 0.1 watts.

During the receiving mode operation, the Device receives the radio signal from an antenna and demodulates the received signal into a baseband signal corresponding to the chips sent from the transmitting end. The Device then feeds the baseband signal into a despreader which recovers the original information data bits from the chips and sends the digital information to a computer.

The data interface between AirEZY2411-BT and the computer is through a conventional Ethernet 10BaseT port. The transmitting computer sends the data to be transmitted through the Ethernet 10BaseT port to AirEZY2411-BT. On the receiving end AirEZY2411-BT sends the received data bits to the computer also through an Ethernet 10BaseT port.

AirEZY2411-BT employs the carrier sensing multiple access (CSMA) protocol to facilitate the networking function. Prior to each Device 's transmission of the signal, it has to ensure that there is no other transmission already in progress. AirEZY2411-BT employs packet data transmission with CRC to ensure data integrity.