

Theory of Operation

The TiWi-uB2 / uBleu2 Module is a radio module that implements a dual mode Bluetooth (BT) and Bluetooth Low Energy (BLE) transceiver. A Texas Instruments CC2564 (System on Integrated Circuit) has one transceiver that can operate in either BT or BLE mode. All of the radio functions use an on-module 38.4 MHz Crystal Oscillator as the station frequency reference. An external 32 kHz clock signal is applied externally for low-power operation.

The data source/sink and command interface for the transceiver is through a 4-wire UART Host Control Interface (HCI).

The transmitter is based on a direct PLL modulation for the FSK-based modulations (BT 2.1 and BLE 4.0 signalling) and uses Polar modulation techniques for the higher EDR rates which employ differential phase-shift keying modulation. The receiver uses a near-zero IF architecture. Both the transmit and receive local oscillators are generated at two-times the carrier frequency and divided by two. A bandpass filter is included on the path between the CC2654 RF signal and the antenna terminal.

The radio transceiver power supplies are provided by on-module voltage regulators.