

Operational description

The uBlue transceiver is specifically designed for both PC peripherals and ultra low power applications such as sports and wellness sensors. For sensor applications, the ultra low power consumption and advanced power management enables battery lifetimes up to several years on a coin cell battery.

The ISP091201D module size measures 8 x 12 x 1.5 mm. The module integrates all the decoupling capacitors, the 16 MHz crystal and load capacitors plus the RF matching circuit and antenna in addition to the transceiver. As the module has several end applications, the antenna was designed to be compatible with several ground plane sizes including that of a USB dongle and a cell phone. The module can operate as a standalone Bluetooth sensor node with the addition of a transducer, a small external microprocessor to run application software, a 32 kHz crystal and a DC power source.

Bluetooth low energy:

Bluetooth low energy technology operates in the same spectrum range (the 2.400GHz-2.4835GHz ISM band) as Classic Bluetooth technology, but uses a different set of channels. Instead of Bluetooth technology's 79 1-MHz wide channels, Bluetooth low energy technology has 40 2-MHz wide channels. Within the channel, data is transmitted using Gaussian frequency shift modulation, similar to Classic Bluetooth's Basic Rate scheme. The bit rate is 1Mbps, and the maximum transmit power is 10mW. Bluetooth low energy technology uses frequency hopping to counteract narrowband interference problems and is classified as a system using digital modulation techniques or a direct-sequence spread spectrum. The data rate over the air is 1 Mbit/s. Further details are given in the Bluetooth Core Specification V4.0.