

2.1 Description of Circuit Function

2.1.1 General Description

Bluetooth operates in the unlicensed ISM band at 2.4 GHz. A frequency hop transceiver is applied to combat interference and fading. A shaped, binary FM modulation is applied to minimize transceiver complexity. The symbol rate is 1 Ms/s. A slotted channel is applied with a nominal slot length of 625 μ s. For full duplex transmission, a Time-Division Duplex (TDD) scheme is used. On the channel, information is exchanged through packets. Each packet is transmitted on a different hop frequency. A packet nominally covers a single slot, but can be extended to cover up to five slots. The Bluetooth protocol uses a combination of circuit and packet switching. Slots can be reserved for synchronous packets. Bluetooth can support an asynchronous data channel, up to three simultaneous synchronous voice channels, or a channel which simultaneously supports asynchronous data and synchronous voice. Each voice channel supports a 64 kb/s synchronous (voice) channel in each direction. The asynchronous channel can support maximal 723.2 kb/s asymmetric (and still up to 57.6 kb/s in the return direction), or 433.9 kb/s symmetric. The Bluetooth system consists of a radio unit, a link control unit, and a support unit for link management and host terminal interface functions.

2.1.2 Specific Information about the RF module

The Bluetooth Radio PMB 8760 from Infineon is a short-range microwave frequency radio transceiver for Bluetooth communication links. Provided in a compact LFBGA package. The Bluetooth Radio offers a combination of compact size, low power consumption, and cost effective assembly. The PMB 8760 integrates a 13 MHz low power oscillator with on-chip PLL and a voice encoding (PCM, CVSD). There is a on-chip 2.4 GHz RF driver amplifier with 4 dBm output power. State-of-the-art CMOS technology is used.