

Description of Functional Blocks

RF Receiver

1: Low Noise Amplifier

The LNA can be configured to operate in single ended or differential mode. Single ended mode is used for Class 1 Bluetooth operation and differential mode is used for Class 2 operation.

2: Analogue to Digital Converter

The analogue to digital converter (ADC) is used to implement fast automatic gain control (AGC). The ADC samples the Received Signal Strength Indicator (RSSI) voltage on a slot by slot basis. The front end LNA gain is changed according to the measured RSSI value, keeping the first mixer input signal within a limited range. This improves the dynamic range of the receiver, improving performance in interference in interference limited environments.

RF Transmitter

1: IQ Modulator

The transmitter features a direct IQ modulator to minimise the frequency drift during a transmit timeslot which results in a controlled modulation index. A digital baseband transmit filter provides the required spectral shaping.

2: Power Amplifier

The internal power amplifier (PA) has a maximum output power of +6dBm allowing BlueCore3-ROM to be used in Class 2 and Class 3 radios without an external RF PA. Support for transmit power control allows a simple implementation for Class 1 with an external RF PA.

3: Auxiliary DAC

An 8-bit voltage Auxiliary DAC is provided for power control of an external PA for Class 1 operation.