ROBOTIS

#1505,1506, Ace High End Tower No.3, 371-50 Gasandong
Geumcheongu, Seoul, Korea
Tel.+82-70-8671-2600/ Fax. +82-70-8230-1336

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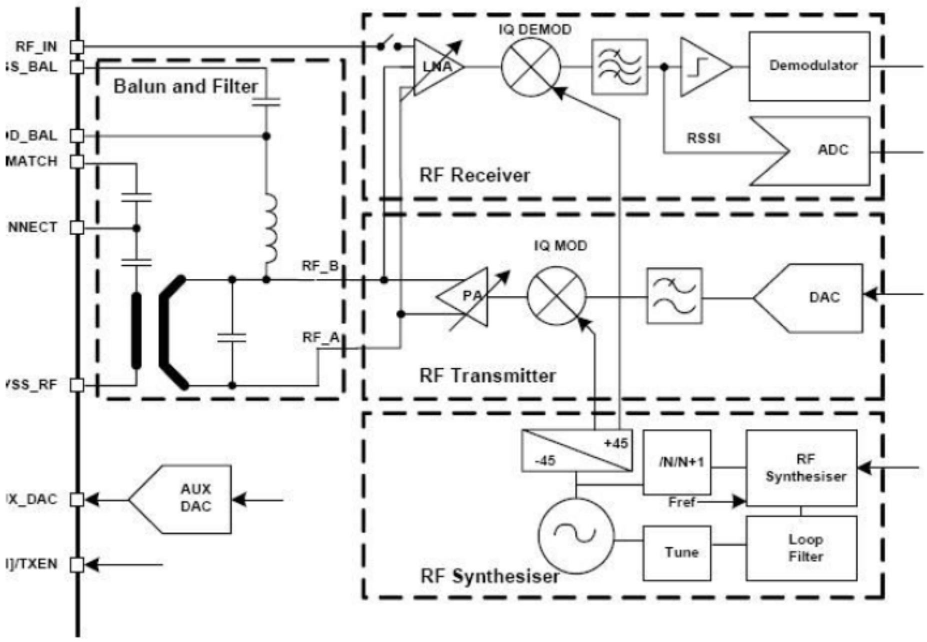
1. Operation Description



1) General Description It supports Bluetooth v2.1+EDR Specification radio transmission without the need for an external Power amplifier. Fully integrated synthesizer without external VCO varacter diode,resonator or loop filter. It has designed for use in voice application such as hands-free kits. It has designed with low power consumption and most of can be controlled by microprocessor.
2) Radio Architecture
   (1) Transmitter Architecture

   -The Transmitter uses a conventional IQ modulator The Baseband Bluetooth signal is generated digitally and modulated in accordance with GFSK&π/4 DQPSK&8DPSK modulation scheme employed in Bluetooth.

   -The baseband signal is up-converted in the in-phase and quadrature (IQ) modulator to 2.4GHz. An RF amplifier then boosts the signal level and drivers differential RF_A and RF_B.

-A conventional PLL synthesizer provides the local oscillator drive to the IQ modulator. The synthesizer produces signals at around 1.2GHz, which are then doubled to 2.4GHz. The 2.4GHz signal passes through a 90° phase splitter to provide the IQ driver to the modulator. The loop filter components for the synthesizer are internal to the chip.

(2) Receiver Architecture

-The receiver features a near-zero Intermediate Frequency (IF) architecture that allows the channel filters to be integrated on to the die.
-A receiver of a double conversion design, which uses the same synthesizer as the transmitter. The RF switch enables the use of inputs from either the differential or signal-ended receive ports. The differential ports are the same RF_A and RF_B ports utilized by the transmitter. Single-ended inputs used the RF_IN port.
-Both differential and single-ended inputs are amplified by a low noise amplifier (LNA) and passed to an IQ demodulator. This signal is amplified and filtered. The signal is limited, sampled and then digitally demodulated. 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.