

OPERATIONAL DESCRIPTION

WCDMA Function Description (B2 /B4 /B5)

The UMTS receiving path includes LNA, an RF band pass filter. The receiver IC down-converts the received signal from RF to baseband using ZIF techniques. The analog baseband signal is processed by baseband processor (QM215).

The UMTS transmitting path consists of a transmitter, two power amplifiers (PA with HSPA capability), front end module (FEM), diplexer, duplexer and switch. Beginning with analog baseband signal out from baseband processor (QM215), the transmitter up-converts the baseband signal directly to RF signal by modulating with an internal LO which is generated by Phase Locked Loop (PLL) circuit.

The PLL circuit which is in WTR 2965L consists of a VCO, a frequency synthesizer, a loop filter, and a reference frequency oscillator. The TX up mixer is incorporated in the transmitter (WTR2965). After modulation in transmitter, the RF enters into the power amplifier circuit.

LTE Function Description (B2 /B4 /B5 /B12 /B66 /B71)

The B2 /B4 /B5 /B12 /B66 /B71 LTE receiving path includes switch and duplexers. The receiver IC down-converts the received signal from RF to baseband using ZIF techniques. The analog baseband signal is processed by baseband processor (QM215).

The B2 /B4 /B5 /B12 /B66 /B71 LTE transmitting path consists of a transmitter (WTR2965), power amplifier, duplexer and main switch. Beginning with analog baseband signal out from baseband processor (QM215), the transmitter up-converts the baseband signal directly to RF signal by modulating with an internal LO which is generated by Phase Locked Loop (PLL) circuit.

The PLL circuit which is in WTR 2965 consists of a VCO, a frequency synthesizer, a loop filter, and a reference frequency oscillator. The TX up mixer is incorporated in the transmitter (WTR2965). After modulation in transmitter, the RF signal is filtered by TX SAW filter and then enters into the power amplifier circuit.

WLAN Function Description

This WLAN device (BT and WLAN combo module) is adapted to 11a/b/g/n. Operation of each part is based and explained in a module RF Block diagram. The transceiver includes PLL, VCO, LNA, PA, modulator and demodulator. By using the reference signal (19.2MHz) currently used by the external clock input, stable RF signal and the baseband clock are generated.

The operating band is 2412-2462MHz for FCC / 2412-2472MHz for CE (2.4GHz).

A transmitting part is constituted in the WLAN block of WCN3615. The data signal is modulated by CCK / OFDM Modulator inside WCN3615 and the digital modulation signal is changed into the analog modulation signal by digital / analog converter (DAC).

Bluetooth Function Description

The Bluetooth transceiver includes PLL, VCO, LNA, PA, modulator and demodulator. The Bluetooth baseband signal processor incorporates hardware engines performs frequency hopping, error correcting, whitening, encrypting, data packet assembling and de-assembling. Bluetooth function is fully compliant with Bluetooth specification 4.0. Bluetooth basic rate use GFSK modulation, where an instantaneous data rate of 1 Mbit/s is possible. Bluetooth Enhanced Data Rate (EDR) adopts $\pi/4$ -DPSK and 8DPSK schemes, each with 2 and 3 Mbits/s respectively.

GPS Function Description

The GPS receiving path includes diplexer, band pass filter and duplexers. The receiver IC (WTR2965) down-converts the received signal from RF to baseband using ZIF techniques. The analog baseband signal is processed by baseband processor (QM215).

The GPS receiving path consists of a receiver (WTR2965), band pass saw filter, external LNA and diplexer which separate the WLAN and GPS signal. Beginning with RF signal received from GPS antenna, the RF signal is filtered by the SAW filter and amplified by the LNA.

Then the receiver down-converts the RF signal directly to baseband signal by modulating with an internal LO which is generated by Phase Locked Loop (PLL) circuit.

The PLL circuit which is in WTR2965 consists of a VCO, a frequency synthesizer, a loop filter, and a reference frequency oscillator. The GPS RX down mixer is incorporated in the receiver (WTR2965). After modulation in receiver, the analog baseband signal is processed by baseband processor (QM215).

OTT Function Description

The device supported a pre-installed application, Google DUO, whose features allow the option of voice-only communications. The Google DUO uses the audio codec as Opus and supports codec bit rate from 6kbps to 75 kbps. All air interfaces capable of a data connection were evaluated.