CMCS

Operational Description

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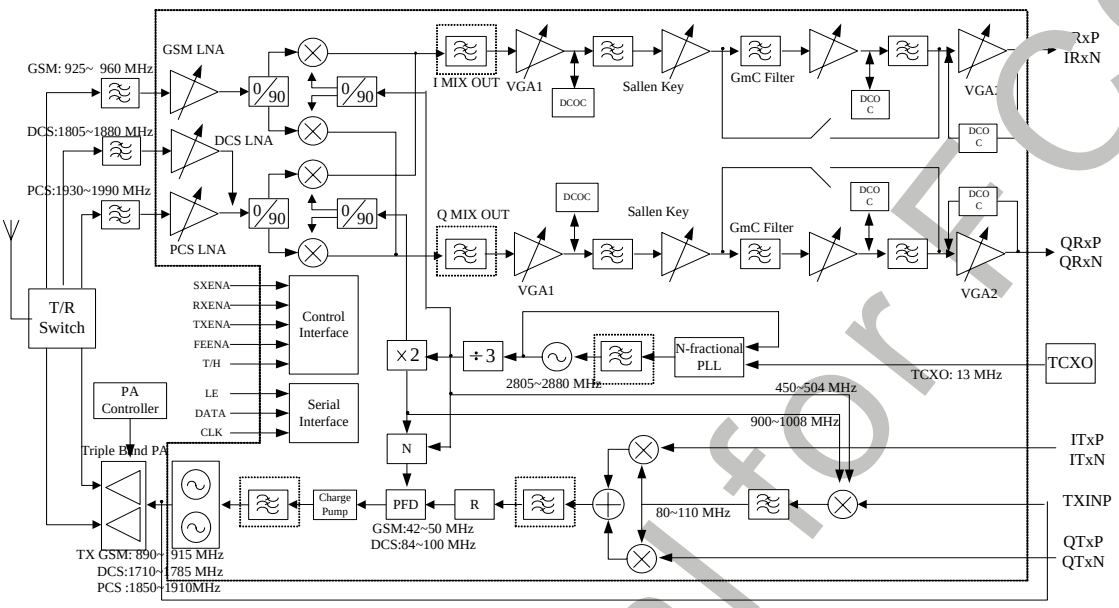
History

2003-07-14	Created by Alex Chen

RF Functional Descriptions

RF Block Diagram



The whole RF block includes RF transceiver, LDO, T/R switch, PA controller, and TCXO. We used the 13MHz TCXO for system internal clock.

The RF transceiver is a highly integrated device for GSM or GPRS applications. It includes receiver, transmitter and synthesizer features in single chip.

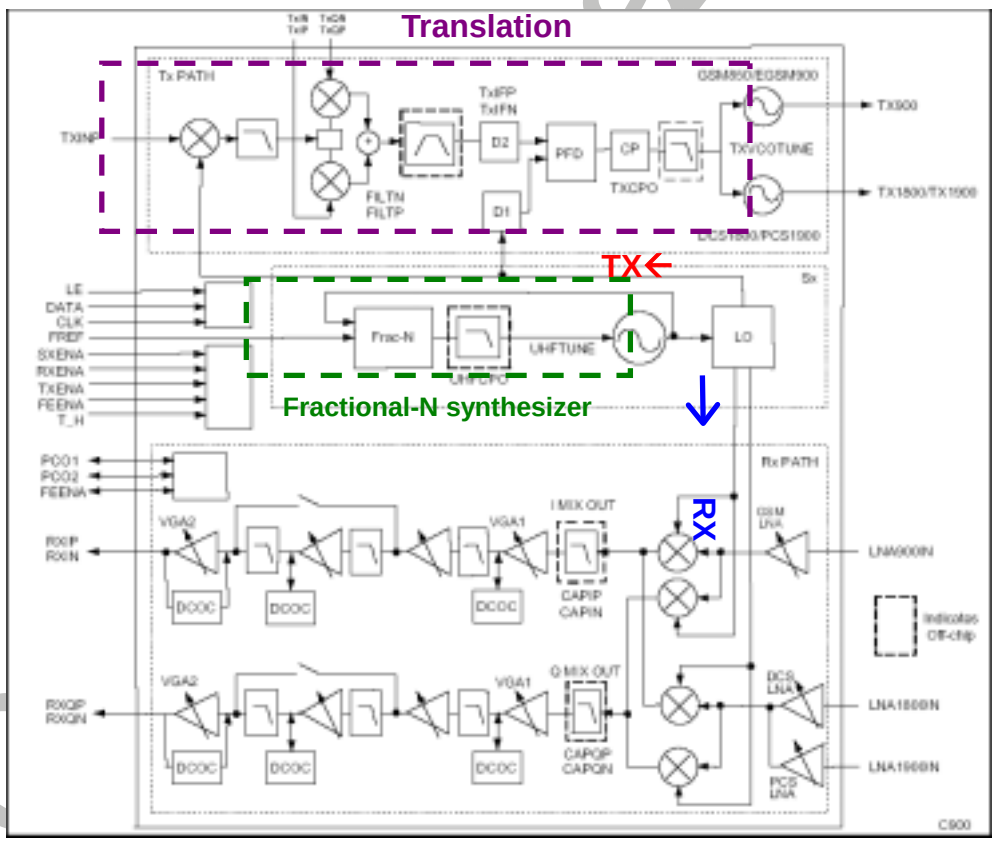
The transmit path implements an offset phase lock loop with fully integrated transmit VCO. It consists of an I/Q modulator, phase-frequency detector (PFD), charge pump, mixer, programmable divider, and high power transmit VCO. The I,Q signal from baseband passed into the modulator and through OPLL architecture of TX path, we can get GMSK modulated signal from TXVCO output. Then triple band PA amplifies the signal and we use the PA controller to control the specified output power level.

Synthesizer Electrical Characteristics

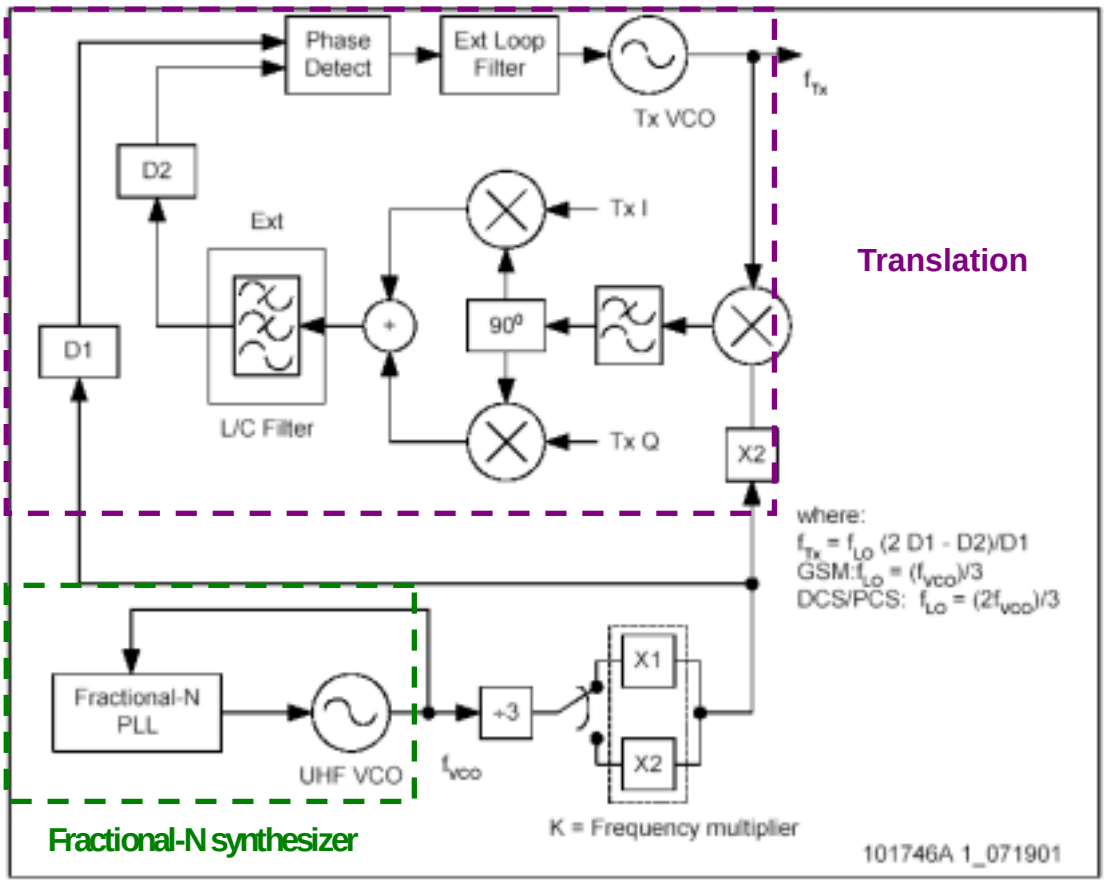
Introduction

The transceiver IC includes a single integrated fractional-N synthesizer, and a integrated frequency translation loop in the transmit path.

The fractional-N synthesizer can phase lock the local oscillator used in both the transmit and the receive path to a precision frequency reference source, TCXO. It contains a fast phase frequency detector, charge pump, high frequency prescaler, divider, and fully integrated wideband Ultra High Frequency(UHF) VCO. Fractional-N operation offers low phase noise and fast settling times, allowing for multiple slot applications such as GPRS.



The frequency translation loop can minimize the post-PA filtering requirements and provide high output spectral purity. It contains a Phase Frequency Detector(PFD), charge pump, mixer, modulator, two programmable dividers, and two integrated high power transmit Voltage Controlled Oscillators (VCOs).



Synthesizer electrical characterics

The frequency synthesizer are controlled by a 3-wire input signals CLK, DATA, and LE . The division ratios and charge pump currents in the fractional-N (SX Register1 & SX Register2) and translation loop (RX/TX Control Register) can be programmed using 24-bit words.

Rx section:	Channel	Rx Freq.	LO Freq.
GSM Band	62	947.4MHz	1421.1MHz
DCS Band	697	1842.2MHz	1381.65MHz
PCS Band	660	1959.8MHz	1469.85MHz

Tx section:	Channel	Tx Freq.	LO Freq.(U201 pin53,pin54)
GSM Band	62	902.4MHz	1489MHz
DCS Band	700	1747.8MHz	1388MHz
PCS Band	660	1879.8MHz	1492.8MHz