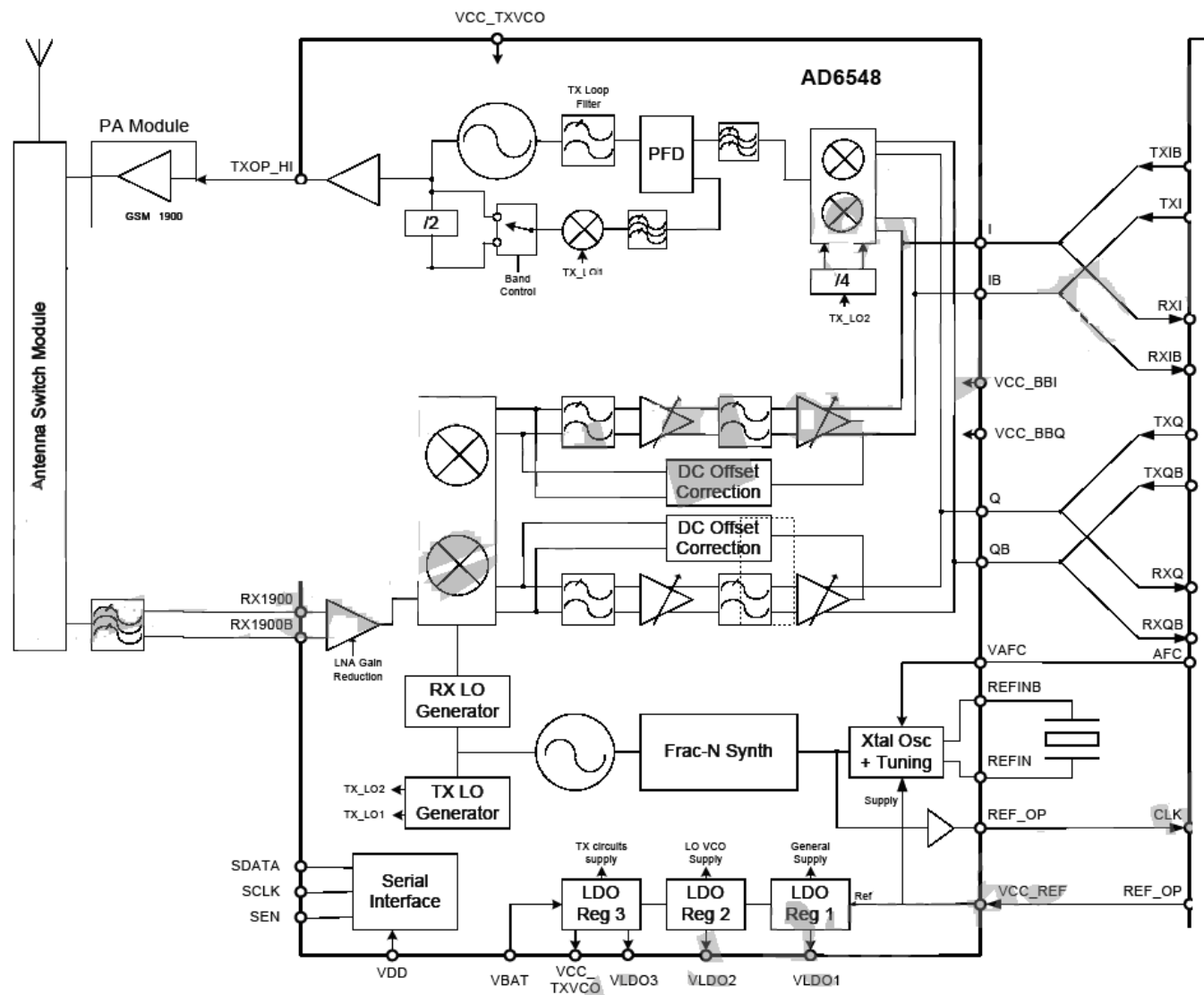# Circuit Description

1. Overview:

The GSM Voice Modem works at 1900 MHz GSM band And CPU runs at 26MHz, with 64M bits Flash Memory and 32Mbits SRAM. The main IC include CPU(MT6223D),Flash(M36W0R6050T3ZAQ),Transceiver(AD6548),PA(SKY77517)

System diagram Overview:

1.1. RF:

RF (Radio Frequency) section is in charge of the signal transmit and receiving, signal modulation and demodulation.
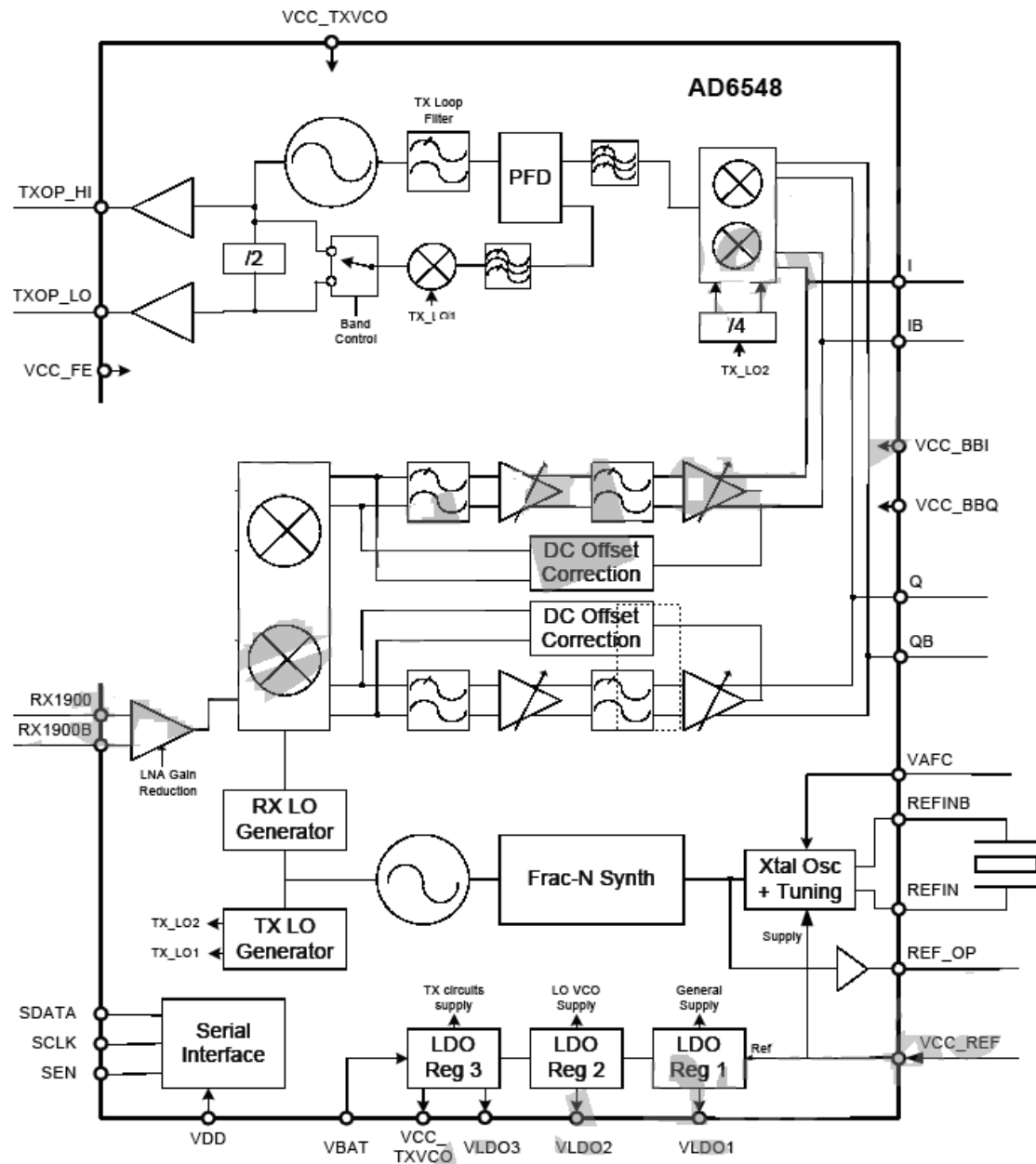
Product technical parameters:

GENERAL:

Items	PCS
Frequency allocation	TX (Uplink) : 1850M-1910M HZ RX (Downlink) : 1930M-1990M HZ
Channel band width	200KHz
Channel	512-810
Modulation	GMSK,BT=0.3
TX/RX channel space	80MHz

Signal Flow

Brief of the mobile signal flow as below:

3.1. Transceiver

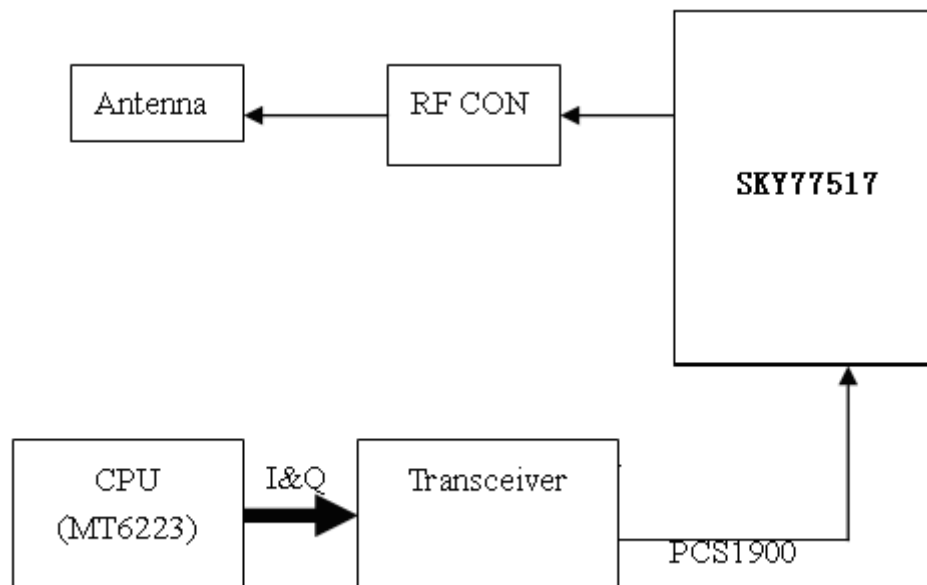Transceiver (AD6548) dedicates to signal modulation and demodulation.

Receiver mode: The receiver section includes 1900 MHz GSM band Low-Noise Amplifiers(LNAs), RF quadrature mixers, channel filters, Programmable-Gain Amplifiers(PGAs), and on-chip automatic DC-offset correction loops. The fully-integrated channel filters reject interference and blocking singals without any external components. The differential inputs are matched to external SAW filters using LC networks and the H/L gain step is 36dB. Following the LNAs are two quadrature RF mixers that down-convert

the RF signal to IF I/Q signals. The IF I/Q signals are then filtered and amplified through a low-pass filter and a PGA. The multi-stage PGA is implemented between filtering stages to control the gain of the receiver.

Transmitter mode: The transmitter section consists of Base-band (BB) I/Q filters, I/Q modulators, frequency dividers, output buffers and a bias-core circuit. BB I/Q signals are fed into the one-pole RC low-pass filter first for better out-of-the-band noise performance. The I/Q modulators are responsible for translating the BB I/Q signals to the transmitting frequencies. The low-noise divided-by-2/4 frequency dividers provide the necessary carriers for frequency translation while minimizing VCO pulling effect. The output buffers are adopted to amplify the modulator output signals to an adequate level to fulfill Pin requirement of Power Amplifiers.

3.3. Transmitter principle

TX signal flow chart(Figure 2)

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