OPERATIONAL DESCRIPTION

Model: ROCHE

The equipment under test (EUT) is a WCDMA/HSDPA and GSM/GPRS dual-mode mobile phone, conforming to the WCDMA standard (3GPP) and GSM/GPRS (release 1999, GSM850， GSM1900，GSM1800，GSM1900).

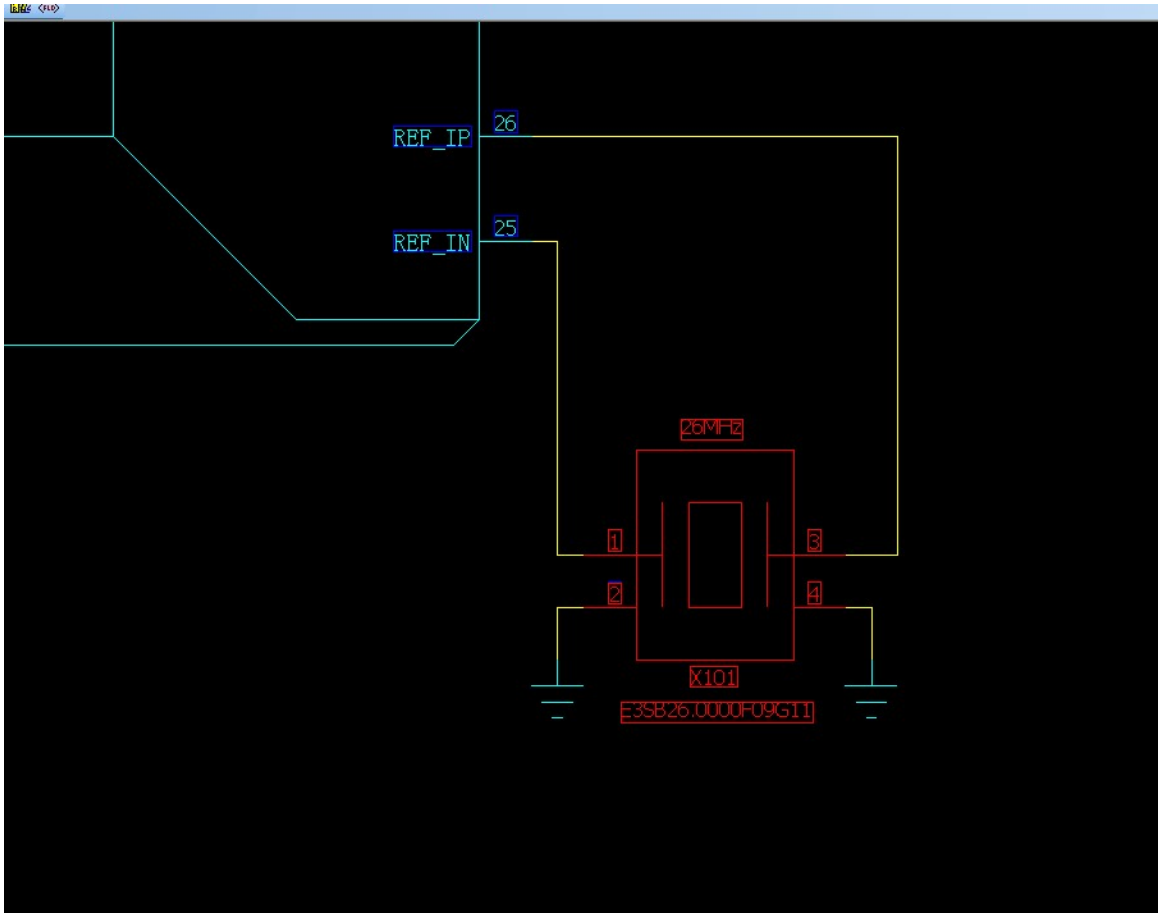
The majority of the phone circuitry consists : the baseband processor SC7701B, transceiver SR3131, FEM , WCDMA B2、B5 AMP and MCP IC (NAND+LPDDR1). The system is powered by a rechargeable lithium-ion battery with a nominal voltage of 3.7 volts.

The receiver consists of two distinct parts, the RF receiver front-end and the IF section. The RF receiver front-end amplifies the WCDMA B2 (1932.4-1987.6MHz), WCDMA B5 (871.6-981.4MHz), GSM850 (869-894MHz),E-GSM900 (925-960 MHz) , DCS1800 (1805-1880 MHz), PCS1900 (1930-1990MHz) aerial signal, converts the chosen channel down to a low IF of 0 kHz, and provides in addition more than 42 dB image rejection. Fully integrated LNAs in all receive bands and can be configured to allow 4-band functionality. The switched LNA will be used for roaming in different countries. Some selectivity is provided at this stage by an on-chip low-pass filter, and channel selectivity is provided by means of a high performance integrated band-pass filter. The IF section further amplifies the wanted channel performs gain control to tune the output level to the desired value and rejects DC. This DC rejection is realised with an active high pass circuit and operates either continuously or keeps the acquired offset correction during the burst depending on the programming.

The transmitter is fully differential using a direct up conversion architecture. It consists of a single side band power up mixer. Gain is controlled by 4 dB via 3-wire serial bus programming. The fully integrated VCO and the power mixer are designed to achieve LO suppression, quadrature phase error, quadrature amplitude balance and low noise floor specifications. Output balun components are integrated to drive a standard 50 ohms single ended load.

The local oscillator (LO) signals required are provided by an on chip VCO for operation of the receive and transmit sections. The VCO is fully integrated and self calibrating to reduce manufacturing tolerances. It consists of 64 differents frequency ranges that are selected internally depending on frequency programming. The frequencies of the RF VCO are set by an internal fractional N synthesiser PLL circuit, which are programmable via a 3-wire serial bus. Comparison frequency is 26 MHz (24 Hz step programmability) derived from the 26 MHz reference signal which is generated from the semi integrated reference oscillator. The

quadrature phase RF LO signals required for IQ mixers are generated internally.



26 MHz is the reference frequency. It is turned on when the supply voltage VTCXO is applied. After buffering a reference clock of 26 MHz is supplied to the other parts of the system through the pin XBUF.

The circuit can be powered-up into four different modes: RX, TX, SYN or REF mode, depending on supply voltages applied, the logical level at pin CTRL and the 3-wire bus serial programming. In RX (TX) mode, all sections required for receive (transmit) are turned on. The SYN mode is used to power-up the synthesiser and the RF-VCO prior to the RX or TX mode. In the SYN mode, some internal LO buffers are also powered-up such that VCO pulling is minimized when switching on the receiver or the transmitter. The reference oscillator (REF mode) is turned on by applying the supply voltage. Additionally band selection is done using the 3-wire bus serial programming allowing the proper enabling of the LNAs.

RF section also includes bluetooth chips RDA5876

Device features:

Bluetooth Features

■ Compliant with Bluetooth 2.1 + EDR specification

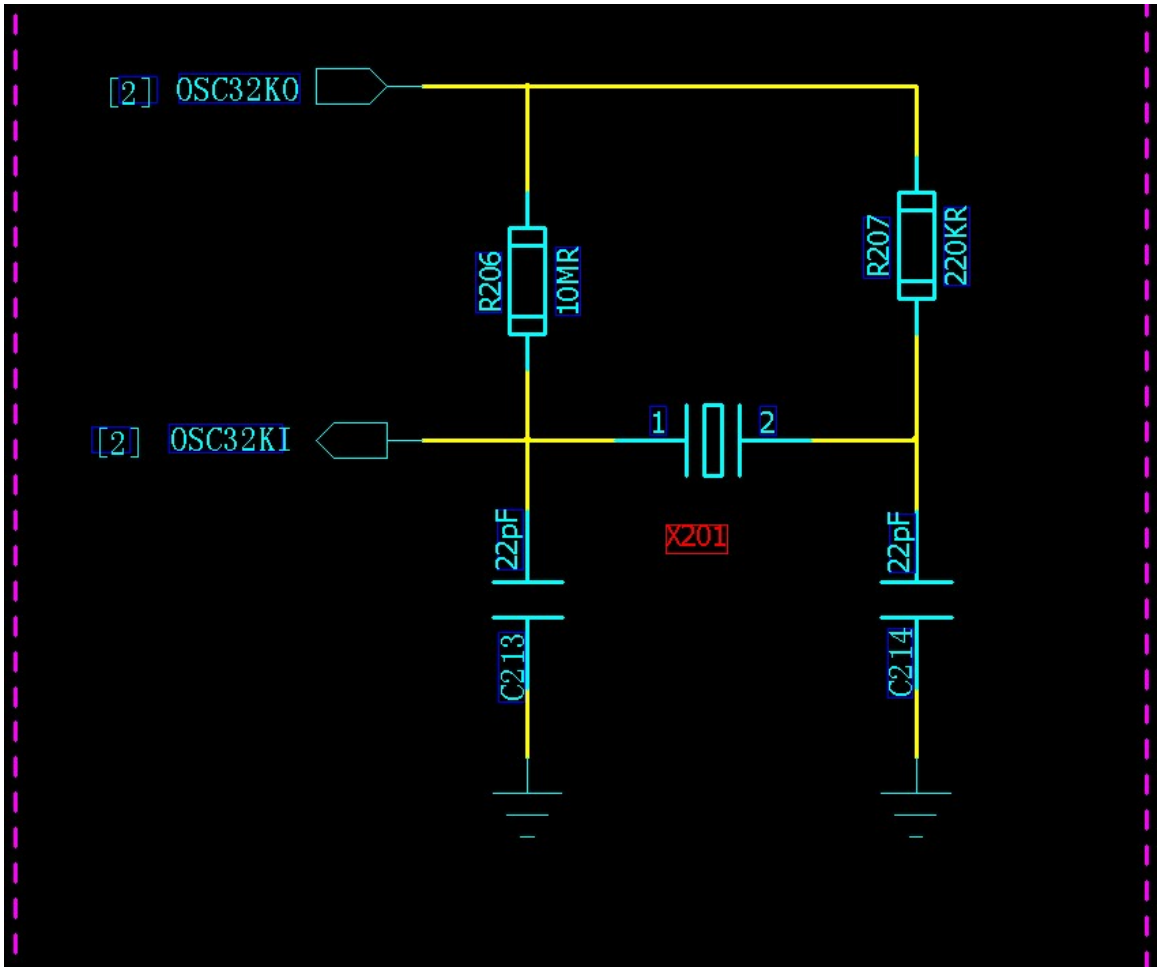
■ Bluetooth Piconet and Scatternet support
■ Meet class 2 and class 3 transmitting power requirement, support class1 operation with external power amplifier
■ NZIF receiver with -90dBm sensitivity

FM Features
■ Support worldwide frequency band
☆ 50 -115 MHz

SC7701B architecture is based on two processor subsystems, an MCU and a DSP, and other functional blocks are connected to one or both of the buses and provide various hardware accelerations and interfaces to other components in the system.

SC7701B can achieve high performance and low power for a lot of applications. Proprietary architectures and algorithms have been developed for low power ASIC design and power management. Unique techniques are used for noise/offset calibration and cancellation.

SC7701B Peripheral and connectivity interfaces
· Support dual-SIM cards, both 1.8 V and 3.0 V devices
· Support SDIO 2.0
· Support USB 2.0 High speed
· The UART interface supports hardware flow control as well as high-speed baud rate connection
· One SPI, support both master and slave, support 3-wire SPI, 4-wire SPI and synchronous SPI
· One IIS and PCM, for audio codec connection
· Support 6-column x 6-row keypad with internal pull-up resistors
· Four I2C interfaces
· More than 100 GPIO pins
· Four PWM outputs
· Nine auxiliary inputs to a 10-bit analog to digital converter (auxiliary ADC) for measurement purposes



The baseband processor handles all physical layer radio control signals and network interfaces. The 32 KHz clock oscillator operates the baseband IC from a backup battery when the main battery is removed. The baseband processor is a dual-core device that splits the processing between a DSP core and an ARM ™ processor. The DSP handles the physical and layer 1 processing, while the ARM executes the layer 2 and layer 3 protocol and the man-machine interface (MMI). The dual cores communicate through a dedicated block of dual port memory. It also communicates with the Subscriber Identity Module (SIM) through an interface to the mixed signal device. The baseband processor also communicates to the calibration system or external devices through a digital serial link that is available on the system connector. The other main signals on the system connector include the digital audio interface (DAI) and allows for an external battery charging voltage.

The MMI completes the phone design and includes the displays, keypads, vibration motor, speaker, microphone, and headset.