2G/3G Opertation Description

Model: Syreni 50DC II

Band: GSM850,GSM900,DCS1800,PCS1900,WCDMA 850

1. Scope

   This document shows and provides the basic information about the platform we used.The more detail information about RF section are also included.

   Syreni 50DC II product is new phone designed by ODX The baseband circuit is based on MTK MT6572 and RF circuit is included Transceiver named MT6166 ,Blacksand PA and RDA PA.It works at six bands,GSM850,GSM900,DCS1800,PCS1900,WCDMA 850

2. Platform

   MT6572 is based on RF band support WCDMA+GSM and support LPDDR1 and NAND flash device.

   - Baseband functions,including multiple hardware cores.
   - Single platform that provides dedicated support for all market leading codecs and other multimedia formats to support carrier deployments around the word.
   - High-quality digital still image camera performance with up to 8-megapixel resolution.
   - HS-USB core with built-in PHY eliminates additional USB components.
   - DC power reduction using innovative technique.

3. Transceiver **MT6166**

   - radioOne RF transceiver functions(Rx and Tx,both eliminating their intermediate frequency components).
   - WCDMA(Release 6/7,HSDPA 7.2M,HSUPA 5.8M) and GSM(Rel'99,GPRS).
   - Wireless connectivity and analog functions-Bluetooth 4.0 ,FM radio.
   - RF transmitters: The transmitter is based on a direct upconversion architecture that enables the use of low cost multiband,multimode power amplifier(PAS) for WCDMA and EDGE transmission.GSM modulation is applied through the TX PLL using the direct modulation approach.Because of its low noise design,the transmitter is able to operate without filtering in 2G and 3G modes.It is also able to operate in power class 4 for GSM850/900,power class 1 for DCS1800/PCS1900,and class 3 for WCDMA.
   - RF receivers: supports GSM850,GSM900,DCS1800,PCS1900,WCDMA850 operation with primary receiver path,using a differential configuration to maximize common-mode rejection,Tx isolation,out-of-band suppression,and second-order intermodulation performance.There are Five quadrature downconverters and digital baseband interfaces to the device. .

4. PA

   GSM

   RF3234 is a Multi-State non-Linear GPRS PAM designed for use with the Braodcom **MT6166** GPRS solutions and compact form factor for quad-band cellular handsets comprising GSM850/900,DCS1800,and PCS1900 operation.

Table 2. Recommended Operating Conditions

Parameter	Minimum	Nominal	Maximum	Unit
Supply Voltage	3	3.6	4.5	V
Logic control "High"	1.5			V
Logic control "Low"			0.5	V
Input RF Power	1		6	dBm
Operating Temperature	-20	+25	+80	°C

Table 3. Truth Table

	CTR2	CTR1	CTR0	TXEN	RAMP
Default	0	0	0	0	-
Power Down	0	0	0	0	
GSM TX On	0	1	0	1	-
DCS TX On	0	1	1	1	-
RX1 On	1	0	0	0	-
RX2 On	0	1	0	0	-
TRX1 On	0	1	1	0	-
TRX2 On	0	0	1	0	-

WCDMA

Blacksand BST3401/BST3405 supports multimode application UMTS Band1/Band5 and meets stringent linearity requirements up to 28.25dBm output power for UMTS Rel'99.The PA contains internal DC blocking capacitors for RF input and output ports.The BST3401/BST3405 supports 3 power modes-active low power,mid power and high power modes.A directional coupler is integrated into the module and both coupling and isolation ports are available externally,supporting daisy chain.The BST3401/BST3405 has intergrated on-chip Vre on-module bias switch ,so an external constant voltage source is not required.All of the digital control inputs pins such as the EN,M1 and M2 are fully CMOS compatible.The power amplifier is manufactured on an advanced CMOS technology.

TABLE 1. Absolute Minimum and Maximum Ratings*

Specification	Symbol	Min	Typ	Max	Units
Supply voltage (no RF input)	V_{BAT}			5.0	V
Input/Output pins	V_{IO}	-0.5		3.5	V
RF input power	P_{IN}			+10	dBm
Operating temperature (case temperature at ground pad)	T_{CMAX}	-40		+110	°C
Storage temperature (ambient)	T_A	-55		+150	°C

TABLE 2. Mode Control

Specification		Logic	Min	Typ	Max	Units
Power Down (PD)	EN	0	0.0		0.5	V
	M1	X	-		-	-
	M2	X	-		-	-
High Power Mode (HPM) (P_{OUT}≤27.5dBm)	EN	1	1.4		3.3	V
	M1	0	0.0		0.5	V
	M2	0	0.0		0.5	V
Medium Power Mode (MPM) (P_{OUT}≤19dBm))	EN	1	1.4		3.3	V
	M1	1	1.4		3.3	V
	M2	0	0.0		0.5	V
Low Power Mode (LPM) (P_{OUT}≤8dBm))	EN	1	1.4		3.3	V
	M1	1	1.4		3.3	V
	M2	1	1.4		3.3	V

Description of Operation for BT/Wi-Fi

EUT is a Bluetooth/WIFI device, This device is compliant with a MT6627. This device provided 1/11/6/54/65/135 Mbps of transmitting speed and supports WIFI Direct（WFA P-2-P standard）. The device of RF carrier is DQPSK, DBPSK, CCK and OFDM. The device integrated PA. The antenna is internal Antenna。

MT6627 provides the best and most convenient connectivity solution among the industry. MT6627 implements advanced and sophisticated Radio Coexistence algorithms and hardware mechanisms. It supports single antenna sharing among 2.4GHz antenna for Bluetooth, WLAN and 1.575GHz for GPS. The enhanced overall quality is achieved for simultaneous voice, data, and audio/video transmission on mobile phones and Media Tablets. It is an IEEE 802.11b/g/n Wireless LAN. It allows your phone to connect to a wireless network.

Operation in, its standard compliance ensures that it can communicate with any 802.11b/g/n network. The more details related operations, please refer to the user manual.