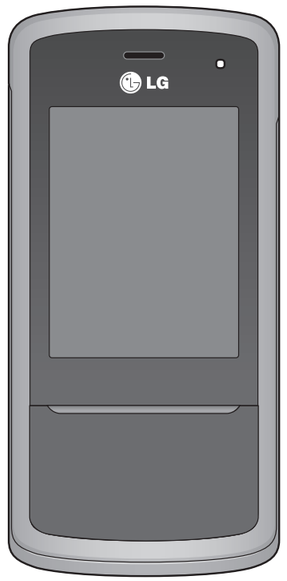
Service Manual

Model : KF510c/KF510d

Internal Use Only

Service Manual

KF510c/KF510d



Date: May, 2008 / Issue 1.0

REVISED HISTORY

Editor	Date	Issue	Contents of Changes	S/W Version
S.J.CHOI	4/10	0.1		

* The information in this manual is subject to change without notice and should not be construed as a commitment by LGE Inc. Furthermore, LGE Inc. reserves the right, without notice, to make changes to equipment design as advances in engineering and manufacturing methods warrant.

* This manual provides the information necessary to install, program, operate and maintain the KF510.

Table Of Contents

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KF510.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges you're your telecommunications services. System users are responsible for the security of own system.
There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. LGE does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. LGE will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure.
If these changes could reasonably be expected to affect the use of the KF600 or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on the KF510 must be performed only at the LGE or its authorized agents. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

The KF510 complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

An KF510 may interfere with sensitive laboratory equipment, medical equipment, etc.
Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contains Electrostatic Sensitive Device(ESD), are indicated by the sign.
Following information is ESD handling: Service personnel should ground themselves by using a wrist strap when exchange system boards.
When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded. Use a suitable, grounded soldering iron. Keep sensitive parts in these protective packages until these are used. When returning system boards or parts such as EEPROM to the factory, use the protective package as described.

1.3 ABBREVIATION

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
CLA	Cigar Lighter Adapter
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli-watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
EGPRS	Enhanced General Packet Radio Service
EL	Electroluminescence
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode

1. INTRODUCTION

LGE	LG Electronics
OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol
8PSK	8 Phase Shift Keying

2. GENERAL PERFORMANCE

2.1 H/W Feature

Item	Feature	Comment
Standard Battery	Li-ion, 800mAh	
AVG TCVR Current	255mA typ	@PL5
Standby Current	1.8mA typ	@PP9
Talk time	3 hours (GSM TX Level 5)	
Standby time	Over 350 hours (Paging Period: 9, RSSI: -85dBm)	
Charging time	Under 3 hours	
RX Sensitivity	EGSM : -105dBm↓, DCS/PCS : -105dBm↓	
TX output power	EGSM : 32.5dBm (@PL 5) DCS/PCS: 30/29.5dBm (@PL 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small	
Display	Main 240 x 320 pixels, 2.2” QVGA, 265K color,TFT	
Status Indicator	Navi, Send, Call End, Back and etc. Key are implemented by touchpad. CLEAR, SEND, END/PWR, MP3, AF/Camera double action, Volume Up, Volume Down, Lock	
ANT	Built in antenna	
EAR Phone Jack	18pin multi port Headset jack	
PC Synchronization	Yes	
Speech coding	HR/EFR/FR/AMR	
Data and Fax	Yes	
Vibrator	Yes	
Buzzer	No	
Voice Recoding	Yes	
C-Mic	Yes	
Receiver	Yes	
Travel Adapter	Yes	
Options	Data Kit, Data CD	

2.2 Technical specification

<table>
<tr><th>Item</th><th>Description</th><th colspan="6">Specification</th></tr>
<tr><td>1</td><td>Frequency Band</td><td colspan="6">GSM8500/GSM900
• TX: 890 + 0.2 x n MHz
• RX: 935 + 0.2 x n MHz (n = 1 ~ 124)
EGSM
• TX: 890 + 0.2 x (n-1024) MHz
• RX: 935 + 0.2 x (n-1024) MHz (n = 975 ~ 1023)
DCS1800
• TX: 1710 + (n-511) x 0.2 MHz (n = 512 ~ 885)
• RX: TX + 95 MHz
PCS1900
• TX: 1850.2 + (n-512) x 0.2 MHz (n = 512 ~ 810)
• RX: TX + 80MHz</td></tr>
<tr><td>2</td><td>Phase Error</td><td colspan="6">RMS < 5 degrees
Peak < 20 degrees</td></tr>
<tr><td>3</td><td>Frequency Error</td><td colspan="6">< 0.1ppm</td></tr>
<tr><td rowspan="20">4</td><td rowspan="20">Power Level</td><td colspan="6">GSM8500/GSM900/EGSM</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>5</td><td>33 dBm</td><td>±2dB</td><td>13</td><td>17 dBm</td><td>±3dB</td></tr>
<tr><td>6</td><td>31 dBm</td><td>±3dB</td><td>14</td><td>15 dBm</td><td>±3dB</td></tr>
<tr><td>7</td><td>29 dBm</td><td>±3dB</td><td>15</td><td>13 dBm</td><td>±3dB</td></tr>
<tr><td>8</td><td>27 dBm</td><td>±3dB</td><td>16</td><td>11 dBm</td><td>±5dB</td></tr>
<tr><td>9</td><td>25 dBm</td><td>±3dB</td><td>17</td><td>9 dBm</td><td>±5dB</td></tr>
<tr><td>10</td><td>23 dBm</td><td>±3dB</td><td>18</td><td>7 dBm</td><td>±5dB</td></tr>
<tr><td>11</td><td>21 dBm</td><td>±3dB</td><td>19</td><td>5 dBm</td><td>±5dB</td></tr>
<tr><td>12</td><td>19 dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">DCS1800/PCS1900</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>0</td><td>30 dBm</td><td>±2dB</td><td>8</td><td>14 dBm</td><td>±3dB</td></tr>
<tr><td>1</td><td>28 dBm</td><td>±3dB</td><td>9</td><td>12 dBm</td><td>±4dB</td></tr>
<tr><td>2</td><td>26 dBm</td><td>±3dB</td><td>10</td><td>10 dBm</td><td>±4dB</td></tr>
<tr><td>3</td><td>24 dBm</td><td>±3dB</td><td>11</td><td>8 dBm</td><td>±4dB</td></tr>
<tr><td>4</td><td>22 dBm</td><td>±3dB</td><td>12</td><td>6 dBm</td><td>±4dB</td></tr>
<tr><td>5</td><td>20 dBm</td><td>±3dB</td><td>13</td><td>4 dBm</td><td>±4dB</td></tr>
<tr><td>6</td><td>18 dBm</td><td>±3dB</td><td>14</td><td>2 dBm</td><td>±5dB</td></tr>
<tr><td>7</td><td>16 dBm</td><td>±3dB</td><td>15</td><td>0 dBm</td><td>±5dB</td></tr>
</table>

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	**GSM8500/GSM900/EGSM**	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600 ~ 1,200	-60
		1,200 ~ 1,800	-60
		1,800 ~ 3,000	-63
		3,000 ~ 6,000	-65
		6,000	-71
		DCS1800/PCS1900	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600 ~ 1,200	-60
		1,200 ~ 1,800	-60
		1,800 ~ 3,000	-65
		3,000 ~ 6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	**GSM8500/GSM900/EGSM**	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

2. GENERAL PERFORMANCE

<table>
<tr><th>Item</th><th>Description</th><th colspan="3">Specification</th></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Output RF Spectrum
(due to switching transient)</td><td colspan="3">DCS1800/PCS1900</td></tr>
<tr><td>Offset from Carrier (kHz).</td><td colspan="2">Max. (dBm)</td></tr>
<tr><td>400</td><td colspan="2">-22</td></tr>
<tr><td>600</td><td colspan="2">-24</td></tr>
<tr><td>1,200</td><td colspan="2">-24</td></tr>
<tr><td>1,800</td><td colspan="2">-27</td></tr>
<tr><td>7</td><td>Spurious Emissions</td><td colspan="3">Conduction, Emission Status</td></tr>
<tr><td>8</td><td>Bit Error Ratio</td><td colspan="3">EGSM
BER (Class II) < 2.439% @-102dBm
DCS1800/PCS1900
BER (Class II) < 2.439% @-100dBm</td></tr>
<tr><td>9</td><td>Rx Level Report accuracy</td><td colspan="3">± 3 dB</td></tr>
<tr><td>10</td><td>SLR</td><td colspan="3">8 ± 3 dB</td></tr>
<tr><td rowspan="10">11</td><td rowspan="10">Sending Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>0</td><td>-12</td></tr>
<tr><td>1,000</td><td>0</td><td>-6</td></tr>
<tr><td>2,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,400</td><td>4</td><td>-9</td></tr>
<tr><td>4,000</td><td>0</td><td>-</td></tr>
<tr><td>12</td><td>RLR</td><td colspan="3">2 ±3 dB</td></tr>
<tr><td rowspan="11">13</td><td rowspan="11">Receiving Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>2</td><td>-7</td></tr>
<tr><td>500</td><td>*</td><td>-5</td></tr>
<tr><td>1,000</td><td>0</td><td>-5</td></tr>
<tr><td>3,000</td><td>2</td><td>-5</td></tr>
<tr><td>3,400</td><td>2</td><td>-10</td></tr>
<tr><td>4,000</td><td>2</td><td></td></tr>
<tr><td colspan="3">* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.</td></tr>
</table>

Item	Description	Specification	
14	STMR	13 ±5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	System frequency (26 MHz) tolerance	≤ 2.5ppm	
19	32.768KHz tolerance	≤ 30ppm	
20	Power consumption	Standby - Normal ≤ 2 mA(@PP9)	
21	Talk Time	EGSM/Lvl 5 (Battery Capacity 800mA):180 min EGSM/Lvl10(Battery Capacity 800 mA):300min	
22	Standby Time	Under conditions, at least 300 hours: 1. Brand new and full 800mAh battery 2. Full charge, no receive/send and keep GSM in idle mode. 3. Broadcast set off. 4. Signal strength display set at 3 level above. 5. Backlight of phone set off.	
23	Ringer Volume	At least 65 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
24	Charge Current	Fast Charge : < 500 mA Slow Charge: < 100 mA	
25	Antenna Display	Antenna Bar Number	Power
		7	>-92 dBm ~
		5	-97dBm ~ -93dBm
		4	-100dBm ~ -98dBm
		2	-103dBm ~ -101dBm
		1	-105dBm ~ -104dBm
		0	< -106 dBm
		Off	No Service

2. GENERAL PERFORMANCE

Item	Description	Specification	
26	Battery Indicator	Battery Bar Number	Voltage(±0.05V)
		3	3.69V ~ 4.2V
		2	3.53V ~ 3.69V
		1	3.43V ~ 3.53V
		0	3.30V ~ 3.43V
27	Low Voltage Warning	3.48V ↓ ±0.05V (Call)	
		3.43V ↓ ±0.05V (Standby)	
28	Forced shut down Voltage	3.3± 0.05 V	
29	Battery Type	Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 800mAh	
30	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 5.1V, 0.7A	

*** EDGE RF Specification (Option: is not serviced for "EDGE mode")**

<table>
<tr><th>Item</th><th>Description</th><th colspan="6">Specification</th></tr>
<tr><td>1</td><td>RMS EVM</td><td colspan="6">≤ 9%</td></tr>
<tr><td>2</td><td>Peak EVM</td><td colspan="6">≤ 30%</td></tr>
<tr><td>3</td><td>95th Percentile EVM</td><td colspan="6">≤ 15%</td></tr>
<tr><td>4</td><td>Origin Offset Suppression</td><td colspan="6">≥ 30dB</td></tr>
<tr><td rowspan="20">5</td><td rowspan="20">Power Level</td><td colspan="6">GSM8500/GSM900/EGSM</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>5</td><td>27dBm</td><td>±3dB</td><td>13</td><td>17dBm</td><td>±3dB</td></tr>
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<tr><td>12</td><td>19dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">DCS1800/PCS1900</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>0</td><td>26/25dBm</td><td>±3dB</td><td>8</td><td>14 dBm</td><td>±3dB</td></tr>
<tr><td>1</td><td>26/25dBm</td><td>±3dB</td><td>9</td><td>12 dBm</td><td>±4dB</td></tr>
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<tr><td>7</td><td>16 dBm</td><td>±3dB</td><td>15</td><td>0 dBm</td><td>±5dB</td></tr>
<tr><td rowspan="11">6</td><td rowspan="11">Output RF Spectrum
(due to modulation)</td><td colspan="6">GSM8500/GSM900/EGSM</td></tr>
<tr><td colspan="4">Offset from carrier(kHz)</td><td colspan="2">Max. dBc</td></tr>
<tr><td colspan="4">100</td><td colspan="2">+0.5</td></tr>
<tr><td colspan="4">200</td><td colspan="2">-30</td></tr>
<tr><td colspan="4">250</td><td colspan="2">-33</td></tr>
<tr><td colspan="4">400</td><td colspan="2">-54</td></tr>
<tr><td colspan="4">600 ~ <1,200</td><td colspan="2">-60</td></tr>
<tr><td colspan="4">1,200 ~ <1,800</td><td colspan="2">-60</td></tr>
<tr><td colspan="4">1,800 ~ <3,000</td><td colspan="2">-63</td></tr>
<tr><td colspan="4">3,000 ~ <6,000</td><td colspan="2">-65</td></tr>
<tr><td colspan="4">6,000</td><td colspan="2">-71</td></tr>
</table>

2. GENERAL PERFORMANCE

Item	Description	Specification	
6	Output RF Spectrum	**DCS1800/PCS1900**	
	(due to modulation)	Offset from carrier(kHz)	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-54
		600 ~ <1,200	-60
		1,200 ~ <1,800	-60
		1,800 ~ <3,000	-63
		3,000 ~ <6,000	-65
		6,000	-71
7	Output RF Spectrum	**GSM8500/GSM900/EGSM**	
	(due to switching transient)	Offset from carrier(kHz)	Max. dBm
		400	-23
		600	-26
		1,200	-27
		1,800	--30
		DCS1800/PCS1900	
		Offset from carrier(kHz)	Max. dBm
		400	-23
		600	-26
		1,200	-27
		1,800	-30

3. TECHNICAL BRIEF

3.1 KF510 Functional Block diagram

The functional component arrangement is mentioned below diagram.

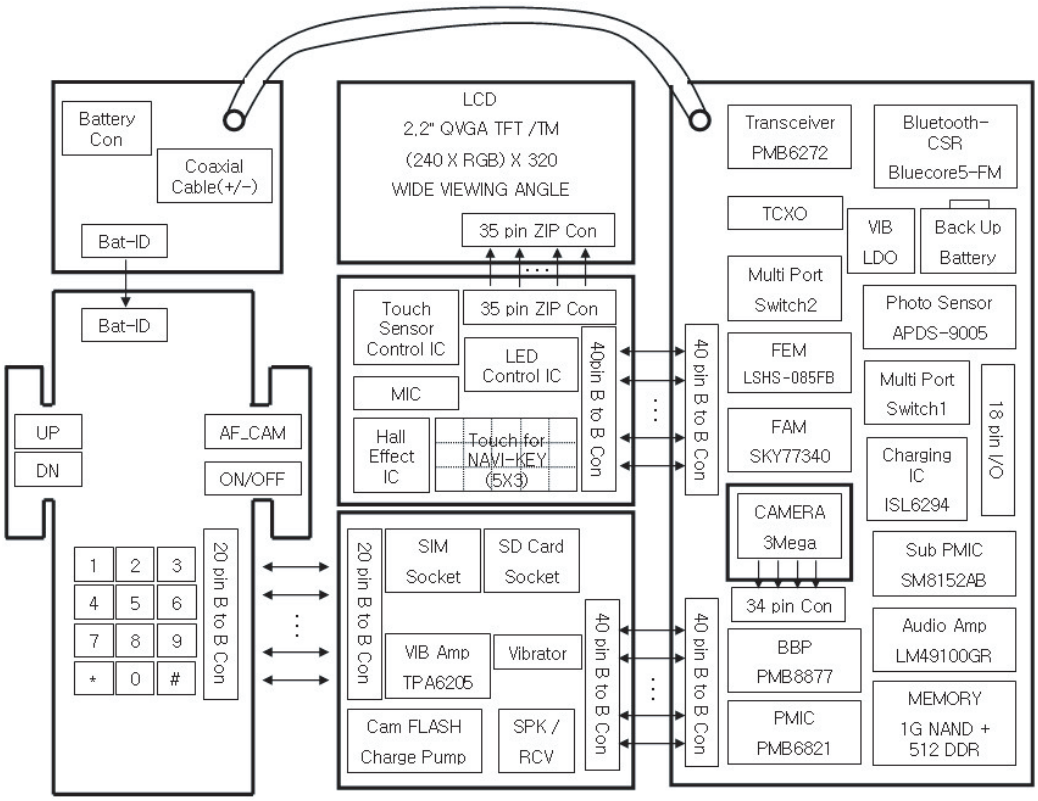


Figure 2 KF510 Functional block diagram

3.2 Baseband Processor (BBP) Introduction

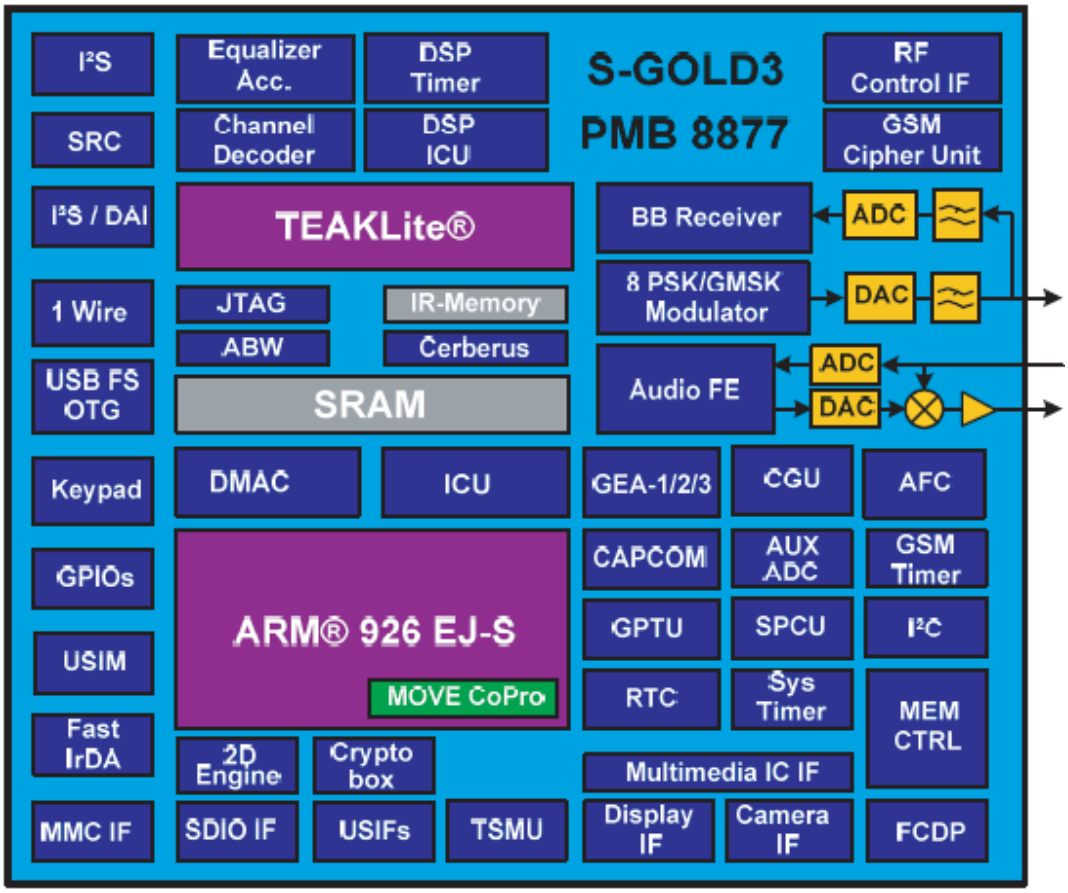


Figure 3 Top level block diagram of the S-GOLD3™ (PMB8877)

3.2.1 General Description

S-GOLD3™ is a GSM/EDGE single chip mixed signal Baseband IC containing all analog and digital functionality of a cellular radio. Additionally S-GOLD3™ Provides multimedia extensions such as camera, software MIDI, MP3 sound. It is designed as a single chip solution, integrating the digital and mixed signal portions of the base band in 0.09um, 1.2V technology.

The chip will fully support the FR, EFR, HR and AMR-NB vocoding.

S-GOLD3™ support multi-slot operation modes HSCSD (up to class 10), GPRS for high speed data application (up to class 12) and EGPRS (up to class 12) without additional external hardware.

3.2.2 Block Description

• Processing core
ARM926EJ-S 32 bit processor core for controller functions. The ARM926EJ-S includes an MMU, and the Jazelle Java extension for Java acceleration.
- TEAKLite DSP core

• ARM-Memory
- 32k Byte Boot ROM on the AHB
- 96k Byte SRAM on the AHB, flexibly usable as program or data RAM
- 16k Byte Cache for Program (internal)
- 8k Byte tightly coupled memory for Program(internal)
- 8k Byte Cache for Data(internal)
- 8k Byte tightly coupled memory for Data(internal)

• DSP-Memory
- 104K x 16bit Program ROM
- 8k x 16bit Program RAM
- 60k x 16bit Data ROM
- 37k x 16bit Data RAM
- Incremental Redundancy(IR) Memory of 35904 words of 16bit

• Shared Memory Block
1.5K x 32bit Shared RAM(dual ported) between controller system and TEAKLite.

• Controller Bus system
The processor cores and their peripherals are connected by powerful buses.
Multi-layer AHB for connecting the ARM and the other master capable building blocks with the internal and external memories and with the peripheral buses.

• Clock system
The clock system allows widely independent selection of frequencies for the essential parts of the S-GOLD3. Thus power consumption and performance can be optimized for each application.

• Functional Hardware block
- CPU and DSP Timers
- MOVE coprocessor performing motion estimation for video encoding algorithms (H.263, MPEG-4)
- Programmable PLL with additional phase shifters for system clock generation
- GSM Timer Module that off-loads the CPU from radio channel timing
- GMSK / 8-PSK Modulator according to GSM-standard 05.04 (5/2000)
- GMSK Modulator: gauss-filter with B*T=0.3
- EDGE Modulator: 8PSK-modulation with linearized GMSK-Pulse-Filter
- Hardware accelerators for equalizer and channel decoding.
- Incremental Redundancy memory for EDGE class 12 support
- A5/1, A5/2, A5/3 Cipher unit
- GEA1, GEA2, GEA3 Cipher Unit to support GPRS data transmission
- Advanced static and dynamic power management features including TDMA-Frame synchronous low power mode and enhanced CPU modes(idle and sleep modes)

- Pulse Number Modulation output for Automatic Frequency Correction(AFC)
- Serial RF Control interface: support of direct conversion RF
- A Universal Serial Interface(USIF) enabling asynchronous (UART) of synchronous (SPI) serial data transmission
- 1 Serial Synchronous SPI compatible interfaces in the controller domain
- 1 Serial Synchronous SPI compatible interface in the TEAKLite domain
- 2 USART with autobaud detection, hardware flow control and integrated IrDA controller supporting IrDA's SIR standard (up to 115.2Kbps)
- A dedicated Fas IfDA Controller supporting IrDA's SIR,MIR and FIR standards (up to 4Mbps)
- I2C-bus interface (e.g. connection to S/M power)
- A fast display interface supporting serial and parallel interconnection
- An ITU-R BT.656 compatible Camera interface.
- Programmable clock output for a camera
- An multimedia/Secure Digital Card Interface (MMCI/SD: SDIO capable)

3.2.3 External Devices connected to memory interface

Table 1. Memory interface

Device	Name	Maker	Remark
NAND FLASH	K5E1H12ACM-D075	Samsung	Synchronous / A synchronous
SDRAM	K5E1H12ACM-D075	Samsung	Synchronous 133MHz
LCD	IM220DBN8A	LGIT	16bit access
CAMERA	C3AA-M197B	LGIT	8bit data Interface

3.2.4 RF Interface (T_OUT)

S-Gold3 uses this interface to control RF IC and Peripherals. 13 signals are provided switch on/off RF ICs Periodically each TDMA frame.

Table 2. RF Interface Spec.

T_OUT		
Resource	**Interconnection**	**Description**
T_OUT0	TXON_PA	PAM Power on
T_OUT1	FE2	FEM control
T_OUT2	PA_BAND	TX RF band select
T_OUT3	FE1	FEM control
T_OUT4	Other operation	-
T_OUT5	Other operation	-
T_OUT6	PA MODE	PAM Mode select

3.2.5 USART Interface

KF510 have three USIF Drivers as follow :

- USIF1 : Hardware Flow Control / SW upgrade / Calibration
- USIF2 : MON used Rx, Tx and CTS, RTS use BT Interface
- USIF3 : BT Interface

Table 3. USIF Interface Spec.

Resource	Name	Remark
USIF1		
USIF1_TXD	UART_TX	Transmit Data
USIF1_RXD	UART_RX	Receive Data
USIF1_CTS	USB_DP	
USIF1_RTS	USB_DM	
USIF2		
USIF2_TXD	MON_TX	Trace data tx
USIF2_RXD	MON_RX	Trace data rx
USIF2_CTS	BT_CTS	
USIF2_RTS	BT_RTS.	
USIF3		
USIF3_TXD	BT_TX BT	Transmit tx
USIF3_RXD	BT_RX BT	Receive rx

3.2.6 ADC channel

BBP ADC block is composed of 7 external ADC channel. This block operates charging process and other related process by reading battery voltage and other analog values.

Table 4. S-Gold3 ADC channel usage

ADC channel		
Resource	**Interconnection**	**Description**
M0	BAT_ID	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	REMOTE_ADC	Remote Control
M3	JACK_TYPE	Accessory type detect
M4	FB_KEY	ALC Feedback Voltage
M5	BAND SELECTION	850,900 band selection
M6	N.C	
M7	ICLD	S-Gold H/W version detect
M8	VSUPPLY	Battery supply voltage measure
M9	LOAD	Current consumption measure
M10	N.C	

3.2.7 GPIO map

Over a hundred allowable resources, KF510 is using as follows except dedicated to SIM and Memory. KF600 GPIO(General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table

Table 5 S-Gold3 GPIO pin Map

Port Function KEY MATRIX	Net Name	Description
KP_IN0	KP_IN(0)	
KP_IN1	KP_IN(1)	
KP_IN2	KP_IN(2)	
KP_IN3	KP_IN(3)	
KP_IN4	KP_IN(4)	
KP_IN5	KP_IN(5)	
KP_OUT5	KP_OUT(5)	
KP_OUT0	KP_OUT(0)	
KP_OUT1	KP_OUT(1)	
KP_OUT2	KP_OUT(2)	
KP_OUT3	KP_OUT(3)	
USIF1		
USIF1_RXD	RXD	UART, RS232 Data
USIF1_TXD	TXD	UART, RS232 Data
USIF1_RTS_N	USB_DP	USB Data
USIF1_CTS_N	USB_DM	USB Data
USIF2		
USIF2 _RXD		Not used
USIF2 _TXD		Not used
USIF2_RTS_N	BT_RTS	Bluetooth RTS
USIF2_CTS_N	BT_CTS	Bluetooth CTS
USIF3		
USIF3 _RXD	BT_RXD	Bluetooth RX
USIF3 _TXD	BT_TXD	Bluetooth TX
CLK		
CLK32K	CLK32k	For FM Radio, BT CLK32K
GPIO_22		Not used
CAMERA I/F		
CIF_D0	CIF_D(0)	Camera DATA[0]
CIF_D1	CIF_D(1)	Camera DATA[1]
CIF_D2	CIF_D(2)	Camera DATA[2]
CIF_D3	CIF_D(3)	Camera DATA[3]

CIF_D4	CIF_D(4)	Camera DATA[4]
CIF_D5	CIF_D(5)	Camera DATA[5]
CIF_D6	CIF_D(6)	Camera DATA[6]
CIF_D7	CIF_D(7)	Camera DATA[7]
CIF_PCLK	CIF_PCLK	Camera pixel clock
CIF_HSYNC	CIF_HS	Camera H sync
CIF_VSYNC	CIF_VS	Camera V sync
CLKOUT	CIF_MCLK	Camera main clock
CIF_PD	CIF_PD	Camera power down(active high)
CIF_RESET	CIF_RESET	Camera reset
LCD I/F		
DIF_D0	DIF_D(0)	LCD data[0]
DIF_D1	DIF_D(1)	LCD data[1]
DIF_D2	DIF_D(2)	LCD data[2]
DIF_D3	DIF_D(3)	LCD data[3]
DIF_D4	DIF_D(4)	LCD data[4]
DIF_D5	DIF_D(5)	LCD data[5]
DIF_D6	DIF_D(6)	LCD data[6]
DIF_D7	DIF_D(7)	LCD data[7]
DIF_D8	DIF_D(8)	LCD data[8]
DIF_CS1	DIF_MAIN_CS	MAIN LCD chip select
DIF_CS2	DIF_SUB_CS SUB	LCD chip select
DIF_CD	DIF_CD	Command Data switch
DIF_WR	DIF_WR	LCD Write
EINT7	HOOK_DETECT	Ear-Mic hook detection
DIF_RESET1	DIF_RESET	LCD Reset
GPIO_108	CAM_LDO_EN	For CAM Core 1.8V, 2.8V LDO
I2C		
I2C_SCL	SCL	For FM/BT/Amp/Camera
I2C_SDA	SDA	For FM/BT/Amp/Camera
PM_INT (EINT)	PM_INT	
SIM I/F		
CC_IO	SIM_IO	SIM CARD I/O
CC_CLK	SIM_CLK	SIM CARD CLOCK
CC_RST	SIM_RST	SIM CARD RESET
I2S2		
I2S2_CLK0		Not used
GPIO_102 _	WP	Not used
I2S2_RX		Not used
I2S2_TX		Not used
I2S2_WA0		Not used

GPIO_103		Not used
External Memory		
MMCI_CMD	TF_CMD	T-flash
MMCI_DAT[0]	TF_DAT0	T-flash
MMCI_CLK	TF_CLK	T-flash
GPIO_109	USB_EOC	USB End of charging detect (High: EOC, Low: charging)
IrDA		
GPIO_110	RPWRON Remote	power on detect (High: Remote, Low: Normal)
GPIO_109	SPK_RCV_SEL	Audio pass select(high: Speaker, Low: Receiver)
I2S1		
I2S1_CLK0	I2S1_CLK	For Bluetooth
GPTU0_0	FLASH_EN	For Camera Flash LED
I2S1_RX	I2S1_RX	For Bluetooth
I2S1_TX	I2S1_TX	For Bluetooth
I2S1_WA0	I2S1_WA	For Bluetooth
External Memory		
MMCI_DAT[1]	TF_DAT1	T-flash
MMCI_DAT[2]	TF_DAT2	T-flash
MMCI_DAT[3]	TF_DAT3	T-flash
Audio I/F		
EPN1	RCV_N	For Receiver
EPP1	RCV_P	For Receiver
EPPA1	BBP_SND_L	For Speaker
EPREF		Reference
EPPA2	BBP_SND_R	For Speaker
MICN1	MIC1_N	For Mic
MICP1	MIC1_P	For Mic
MICN2	MIC2_N	For Headset Mic
MICP2	MIC2_P	For Headset Mic
VMICP	VMICP	Power for MIC
VMICN	VMICN	Power for MIC
ADC		
M0	BAT_ID	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	REMOTE_ADC	Remote Control
M3	JACK_TYPE	Accessory type detect
M7	H/W VERSION	S-Gold H/W version detect
M8	VSUPPLY	Battery supply voltage measure
M9	I_MONITOR	Current consumption measure
M10	N.C	
Reference		

VREF		
IREF		
JTAG I/F		
TDO	TDO	JTAG
TDI	TDI JTAG	
TMS	TMS	JTAG
TCK	TCK	JTAG
TRST_n	_TRST	JTAG
RTCK	RTCK	JTAG
ETM I/F		
TRIG_IN	TRIG_IN	ETM (Embedded Trace Macro Cell)
MON1	MON1	ETM
MON2	MON2	ETM
TRACESYNC	TRACESYNC	ETM
TRACECLK	TRACECLK	ETM
PIPESTAT[2]	PIPESTAT2	ETM
PIPESTAT[1]	PIPESTAT1	ETM
PIPESTAT[0]	PIPESTAT0	ETM
TRACEPKT[0]	TRACEPKT(0)	ETM
TRACEPKT[1]	TRACEPKT(1)	ETM
TRACEPKT[2]	TRACEPKT(2)	ETM
TRACEPKT[3]	TRACEPKT(3)	ETM
TRACEPKT[4]	TRACEPKT(4)	ETM
TRACEPKT[5]	TRACEPKT(5)	ETM
TRACEPKT[6]	TRACEPKT(6)	ETM
TRACEPKT[7]	TRACEPKT(7)	ETM
Memory		
MEM_AD[0]	D(0)	
MEM _AD[1]	D(1)	
MEM _AD[2]	D(2)	
MEM _AD[3]	D(3)	
MEM _AD[4]	D(4)	
MEM _AD[5]	D(5)	
MEM _AD[6]	D(6)	
MEM _AD[7]	D(7)	
MEM _AD[8]	D(8)	
MEM _AD[9]	D(9)	
MEM _AD[10]	D(10)	
MEM _AD[11]	D(11)	
MEM _AD[12]	D(12)	
MEM _AD[13]	D(13)	

MEM _AD[14]	D(14)	
MEM _AD[15]	D(15)	
MEM _WR_n	_WR	
MEM _RD_n	_RD	
MEM _BC0_n	_BC0	
MEM _BC1_n	_BC1	
MEM _A[0]	A(0)	
MEM _A[1]	A(1)	
MEM _A[2]	A(2)	
MEM _A[3]	A(3)	
MEM _A[4]	A(4)	
MEM _A[5]	A(5)	
MEM _A[6]	A(6)	
MEM _A[7]	A(7)	
MEM _A[8]	A(8)	
MEM _A[9]	A(9)	
MEM _A[10]	A(10)	
MEM _A[11]	A(11)	
MEM _A[12]	A(12)	
MEM _A[13]	A(13)	
MEM _A[14]	A(14)	
MEM _A[15]	A(15)	
MEM _A[16]	A(16)	
MEM _A[17]	A(17)	
MEM _A[18]	A(18)	
MEM _A[19]	A(19)	
MEM _A[20]	A(20)	
MEM _A[21]	A(21)	
MEM _A[22]	A(22)	
MEM _A[23]	A(23)	
MEM _A[24]	A(24)	
MEM _CS0_n	_FLASH1_CS	INTEL NOR (64MB)
MEM _CS1_n	_RAM_CS	INTEL SDRAM (64MB)
MEM _CS2_n	_FLASH2_CS	Not used
MEM _CS3_n	_CS3	Not used
MEM _ADV_n	_ADV	
MEM _RAS_n	_RAS	
MEM _CAS_n	_CAS	
MEM _WAIT_n	_WAIT	
MEM _SDCLKO	SDCLKO	For Burst mode
MEM _SDCLKI	SDCLKI	For Burst mode

MEM _BFCLKO	BFCLKO	For Burst mode
MEM _BFCLKI	BFCLKI	For Burst mode
MEM _CKE	CKE	
Memory		
FCDP_RBn	FCDP	
TDMA I/F		
T_OUT0	TXON_PA	PAM
GPIO_44	VIB_EN	
T_OUT2	PA_BAND	PAM
T_OUT3	ANT_SW1	
T_OUT4	ANT_SW2	
T_OUT5	ANT_SW3	
T_OUT6	MODE	PAM
KP_OUT4	KP_OUT(4)	
EINT7	JACK_DETECT	
CC1CC3IO	LCD_BACKLIGHT	LCD Backlight control
GPIO_53	LCD_ID	LCD ID check
GPIO_54	_FM_RESET	
RF I/F		
RF_STR0	RF_EN	
CC1CC5IO	SLIDE_DETECT	Slide on/off detection
RF_DATA	RF_DA	
RF_CLK	RF_CLK	
System Port		
AFC	AFC	
CLKOUT0[<=26MHz]		Not used
F26M	26MHZ_MCLK	26M Main Clock
F32K		to 32k crystal
OSC32K		to 32k crystal
RESET_n	_RESET	
TRIG_OUT	TRIG_OUT	
RTC_OUT	RTC_OUT	
VCXO_EN	VCXO_EN	
DSP		
GPIO_61	_BT_RESET	
GPIO_62	SLED_BACKLIGHT	Navi key LED Backlight Control
GPIO_63	_SIM_EN	

3.3 Power management IC

3.3.1 General Description

SM-POWER is a highly integrated Power and Battery Management IC for mobile handsets. It has been specially designed for usage with S-Gold3. Although optimized for usage with the Infineon S-GOLD baseband device it is suitable for the S-GOLD lite and the E-GOLD+ baseband devices as well. It also supports the cellular RF devices like SMARTi-DC, SMARTi-DC+, SMARTi-SD and the Bluemoon Single, Infineon's single chip solution for Bluetooth. If used with S-GOLD3 it provides all power supply functions (except for the RF PA) for a complete advanced GSM Edge smart phone minimizing external device count.

Block Description

- Highly efficient step-down converter for main digital baseband supply including Core, DSP and memory interface (External Bus Unit).
- Support of S-GOLD standby power-down concept
- Low-drop-out (LDO) regulators for Flash and mobile RAM memory devices
- Voltage independent switching of two SIM cards
- LDO regulators for baseband I/O supply
- LDO regulator for analog mixed-signal section of S-GOLD
- Low-noise LDO regulators for RF devices
- Supply for Bluemoon Single, Infineon's single chip solution for Bluetooth
- Audio amplifier 8 Ohms for handsfree operation and ringing
- Charge Control for charging Li-Ion/Polymer batteries under software control
- Pre-charge current generator with selectable current level
- RTC regulator with ultra-low quiescent current
- USB interface support for peripheral and mini-host mode
- Backlight LEDs driver with current selection and PWM dimming function
- Two single LED driver outputs for signaling
- Vibrator driver with adjustable voltage
- Fully controlable by software via I2C - Bus
- Temperature and battery voltage sensors
- Interrupt channels for peripherals
- System debug mode
- VQFN 48 package with heat sink and non-protruding leads
- Compatible with the Infineon E-GOLD+ V2 and V3

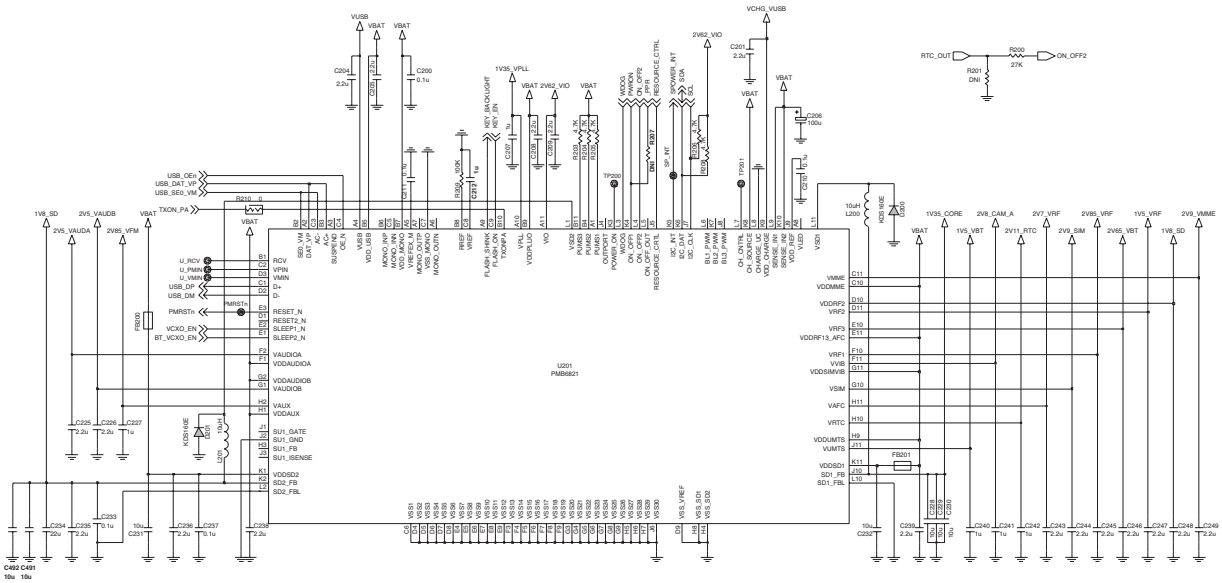
SM-POWER is a further step on the successful E-Power product line with enhanced and optimized functionality.
SM-POWER features a baseband supply concept with a DC/DC step-down converter cascaded by two linear regulators
- SM-POWER's DC/DC converter makes up to 40 % reduction of battery current for smart phone functions (e.g. organizer functions, games, MP3 decoding) possible.
- SDBB has high efficiency up to 95% and also a power save mode.
- Memory Interface is directly supported by the SDBB
- SDBB can also act as main supply voltage for E-GOLD+ or S-GOLDlite baseband devices.
- For S-GOLD two linear regulators for DSP and Core are cascaded after the SDBB.

SM-POWER supports the standby power-down concept of S-GOLD by temporarily switching off the linear regulator for the DSP during mobile standby whenever this subsystem is not used. In this phase the ARM controller and most peripherals including parts of the on-chip SRAM are kept powered-up withpower being supplied by the other linear regulator.
SM-POWER includes a fully differential audio amplifier able to drive loads down to a nominal value of 8 Ohm for usage in hands-free phones and for ringing
- 450 mW maximum output power
- adjustable gain
- mute switch SM-POWER also integrates a charging function for Li-Ion, Li-Polymer batteries
- click and pop -protection SM-POWER also integrates a charging function for Li-Ion, Li-Polymer batteries
- Precharge current source with two current levels
- Constant current / constant voltage charging with 3 different termination voltages
- Programable charge current limitation for use with different batteries
- Freely programable pulse charging to reduce the thermal power dissipation in the constant voltage charging phase
- Top-off charge current sensing SM-POWER completes the USB interface of S-GOLD
- Regulated voltage for S-GOLD USB interface including reverse current and overvoltage protection
- Switch to supply USB pull-up resistor
- Mini-host pull down resistor functionality
- Charge pump with internal switching capacitor for USB host VBUS supply voltage SM-POWER fully supports LED and Vibra Motor functionality
- no external components needed
- driver for backlight LEDs adjustable in steps up to 140mA and with soft turn on and off by PWM dimming
- two driver outputs for single LEDs for precharge indication and signaling with i.e. change of colour
- driver for Vibra Motor with adjustable voltages, soft startup / shutdown and current limitation SM-POWER offers several control functions

- Power-on Reset Generator with logic state machine
- I2C bus interface
- I2C bus configurable mode control logic with ON (push-button or RTC), VCXOEN and LRF3EN (wake-up by Bluetooth) inputs
- Programable interrupt channels to handle peripherals like SIM, MMC and USB
- Monitoring of charging functions
- Undervoltage Shut-Down
- Errorflags (volatile or non-volatile) from many power-supply functions and thermal sensor in order to debug system
- Overtemperature Shut-Down
- Overtemperature Warning
- Support of S-GOLD standby power-down concept
- Support of S-GOLD Power-Down Pad Tristate Function

Table 6. LDO Output Table of SM-Power

LDO	Net name	Output Voltage	Output Current	Usage
SD1	1V35_Core	1.35V	600mA	Core & for LDO
SD2	1V8_SD	1.8V	300mA	Memory
VAUX	2V85_VAF	2.85V	100mA	Cam Auto Focus
VIO	2V62_VIO	2.62V	100mA	Peripherals
VSIM	2V9_SIM	2.9V	70mA	SIM card
VMME	2V8_VMME	2.9V	150mA	u-SD
VUMTS	2V85_AMP	2.85V	110mA	Headset AMP
VUSB	VUSB	3.1V	40mA	Not used
VLED	VLED	2.9V	10mA	Not used
VAUDIOa	2V5_VAUDA	2.5V	200mA	Stereo headset, Mono earpiece
VAUDIOb	2V5_VAUDB	2.5V	50mA	Analog parts of S-Gold
VRF1	2V85_VRF	2.85V	150mA	2.85 V supply for SMARTi-PM RF transceiver
VRF2	1V5_VRF	1.53V	100mA	1.5 V supply for SMARTi-PM RF transceiver
VRF3	2V65_VBT	2.7V	150mA	Bluetooth
VPLL	1V35_VPLL	1.35V	30mA	S-GOLD3 PLL
VRTC	2V11_RTC	2.11V	4mA	Real Time Clock
VAFC	2V7_VRF	2.65V	5mA	Not used
VVIB	2V8_CAM_A	2.8V	140mA	CAMERA



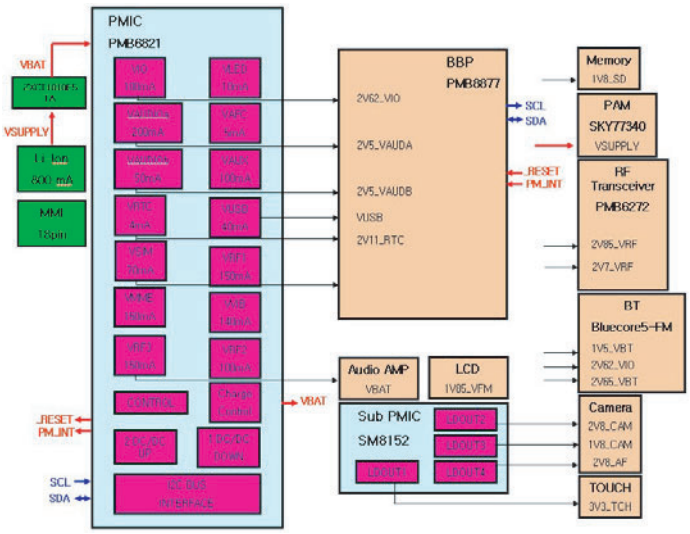
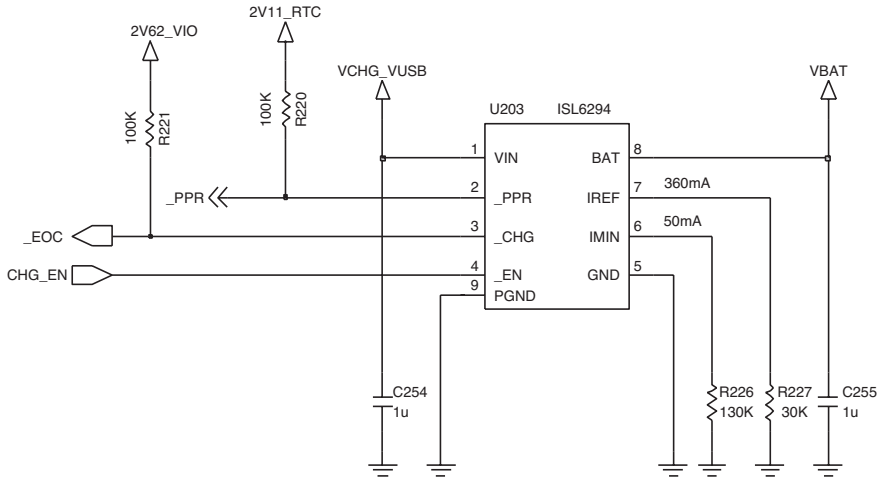


Figure 5 SM-Power Circuit Diagram of KF510

CHARGING IC



Current Monitor

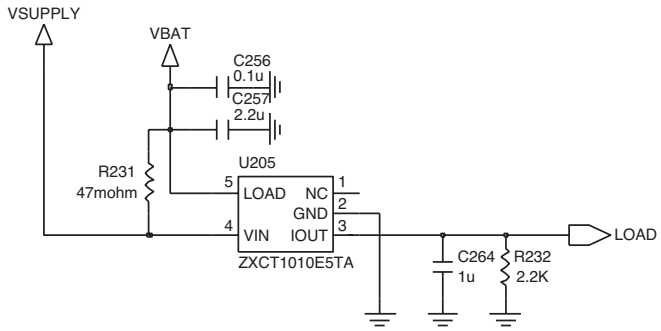


Figure 6 SM-Power circuit diagram with charging part

3.3.2 Charging

SM-POWER provides together with an external p-channel FET Siliconix Si3455 an external AC-adapter a complete charge control function for charging of Li-Ion or Li-Ion-Polymer batteries. Either a 1-cell Li-Ion or Li-Ion-Polymer battery with 4.1, 4.2 or 4.4 Volts may be used.

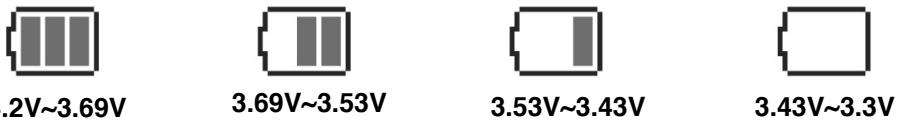


Figure 7. Battery Block Indication

1. Charging method : CC-CV
2. Charger detect voltage : 4.0 V
3. Charging time : 2h 30m
4. Charging current : 400mA
5. CV voltage : 4.2 V
6. Cutoff current : 86mA
7. Full charge indication current (icon stop current) : 86mA
8. Recharge voltage : 4.15 V
9. Low battery alarm
   a. Idle : 3.43 V ~ 3.3 V
   b. Dedicated : 3.48 V ~ 3.3 V
10. Low battery alarm interval
    a. Idle : 3 min
    b. Dedicated : 1 min
11. Switch-off voltage : 3.3 V
12. Charging temperature adc range
    a. ~ -10°C : low charging voltage operation (3.6 V ~ 3.9 V).
    b. -10°C ~ 60°C : standard charging (up to 4.2 V)
    c. 60°C ~ : low charging voltage operation (3.6V ~ 3.9V)

3.4 Power ON/OFF

KF510 Power State : Defined 3cases as follow

- ▶ Power-ON : Power key detect (SM-Power's ON port)
- ▶ Power-ON-charging : Charger detect.

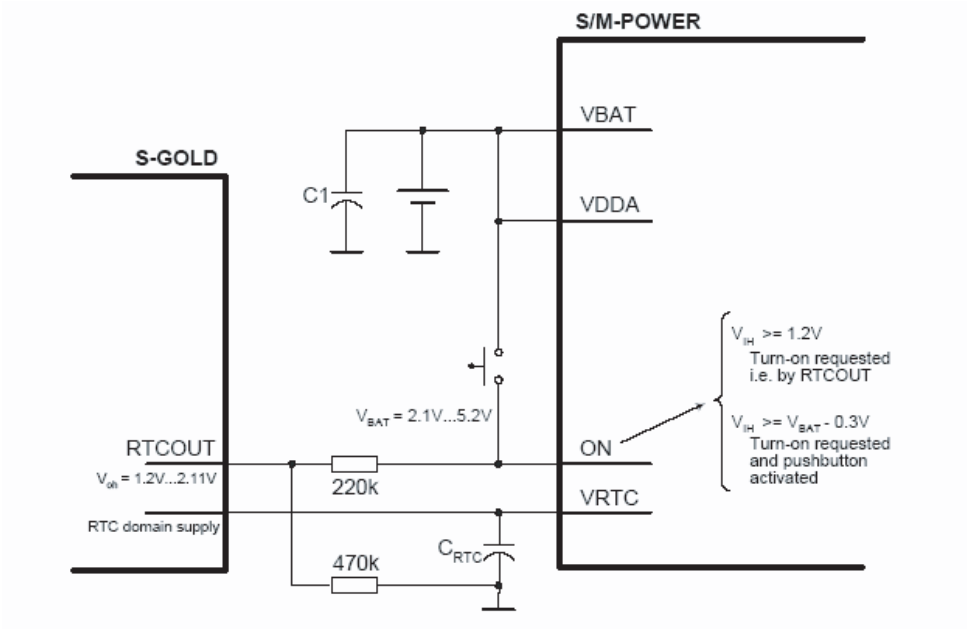


Figure 8 Power on application.

Input ON is a power-on input for SM-POWER with 2 active high levels (see Figure 8). It might be triggered by a push button or by the RTCOUT output of the S-GOLD device as well. To detect if the push-button is pressed during system operation the logical level at pin ON or its change (if Bit 1 EION in INTCTRL2 is asserted) is recorded in bit LON of the ISF register. If the high level of voltage at pin ON does not reach VIHdet (Vbat-0.8 ~ Vbat-0.3) the above-mentioned bit won't be set.
To support Remote power on function for factory mass production, applied an analog switch as following figure. As monitoring the RPWRON and Key matrix KP_OUT(2) & KP_IN(0), KF510 system recognize whether remote power on or End-key pushed

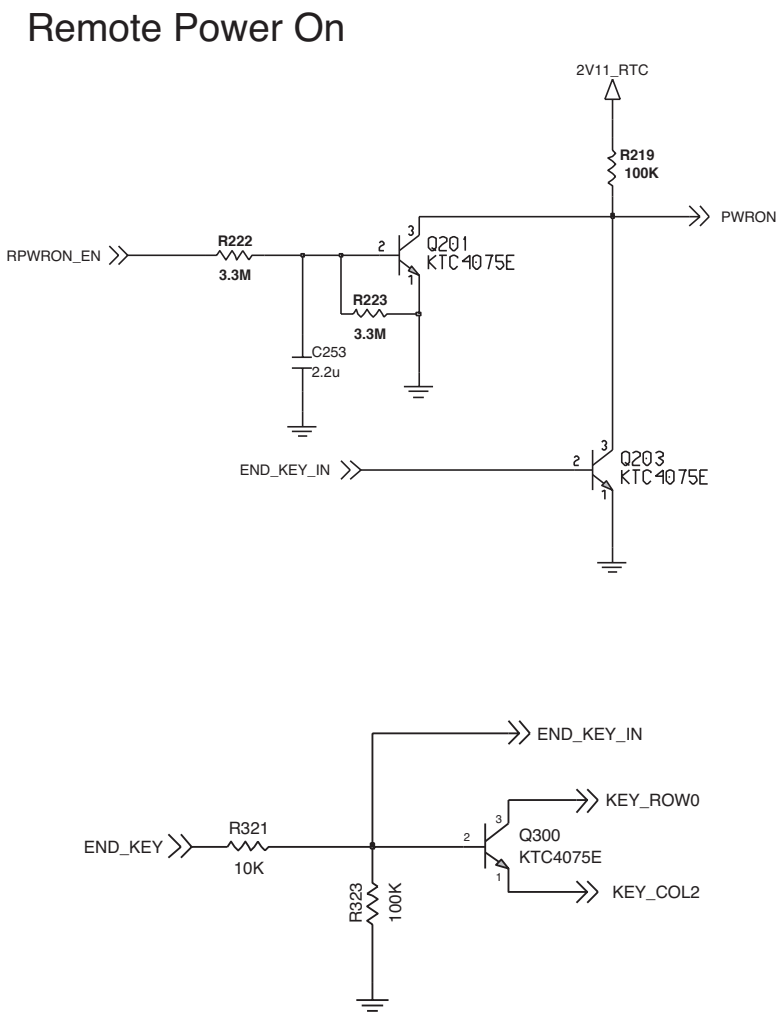


Figure 8 Power on application.

3.5 SIM & uSD interface

KF510 supports 1.8V & 2.9V plug in SIM, SIM interface scheme is shown in (Figure 10).
SIM_IO, SIM_CLK, SIM_RST ports are used to communicate with BBP(S-Gold3) and the SIM power supply enabled by PMIC.

SIM Interface

SIM_CLK : SIM card reference clock
SIM_RST : SIM card Async /sync reset
SIM_IO : SIM card bidirectional reset

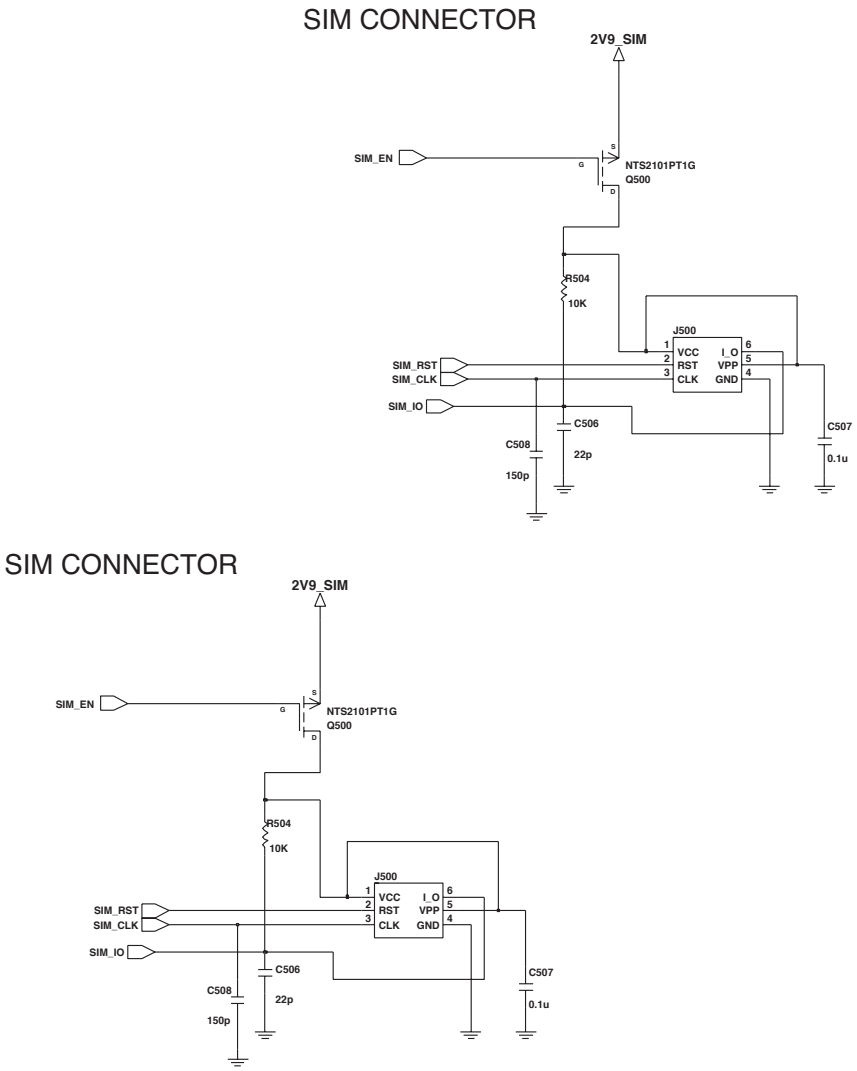
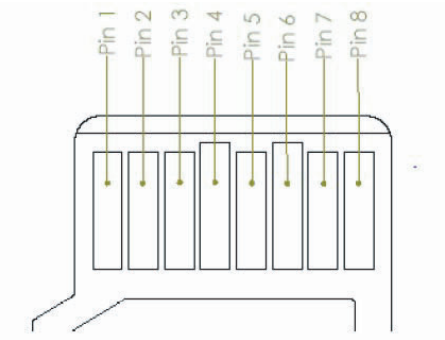


Figure 10 SIM & Micro SD Circuit

The Micro SD Memory Module has eight exposed contacts on one side. The S-Gold3 is connected to the module using a dedicated eight-pin connector



Micro SD Memory Card Detection Scheme

Table 7 Micro SD memory pad assign.

SD mode			
Pin No.	**Name**	**Type**	**Description**
1	DAT2	I/O	Data bit [2]
2	CD/DAT3	I/O	Data bit [3]
3	CMD	I/O	Command response
4	VDD	Power	Power supply
5	CLK	I	Clock
6	VSS	Ground	Power ground
7	DAT0	I/O	Data bit [0]
8	DAT1	I/O	Data bit [1]

Table 8 Micro SD memory card detect truth table.

	Micro SD card status	
	it is removed	it is inserted
MMC_DETECT	High	Low

3.6 Memory

1Gbit NAND & 512Mbit DDRAM employed on KF510 with 8 & 16 bit parallel data bus thru ADD(0) ~ ADD(28). The 1Gbit NAND Flash memory with DDRAM stacked device family offers multiple high-performance solutions.

1G NAND(Large Block x16bit) +512M DDR SDRAM

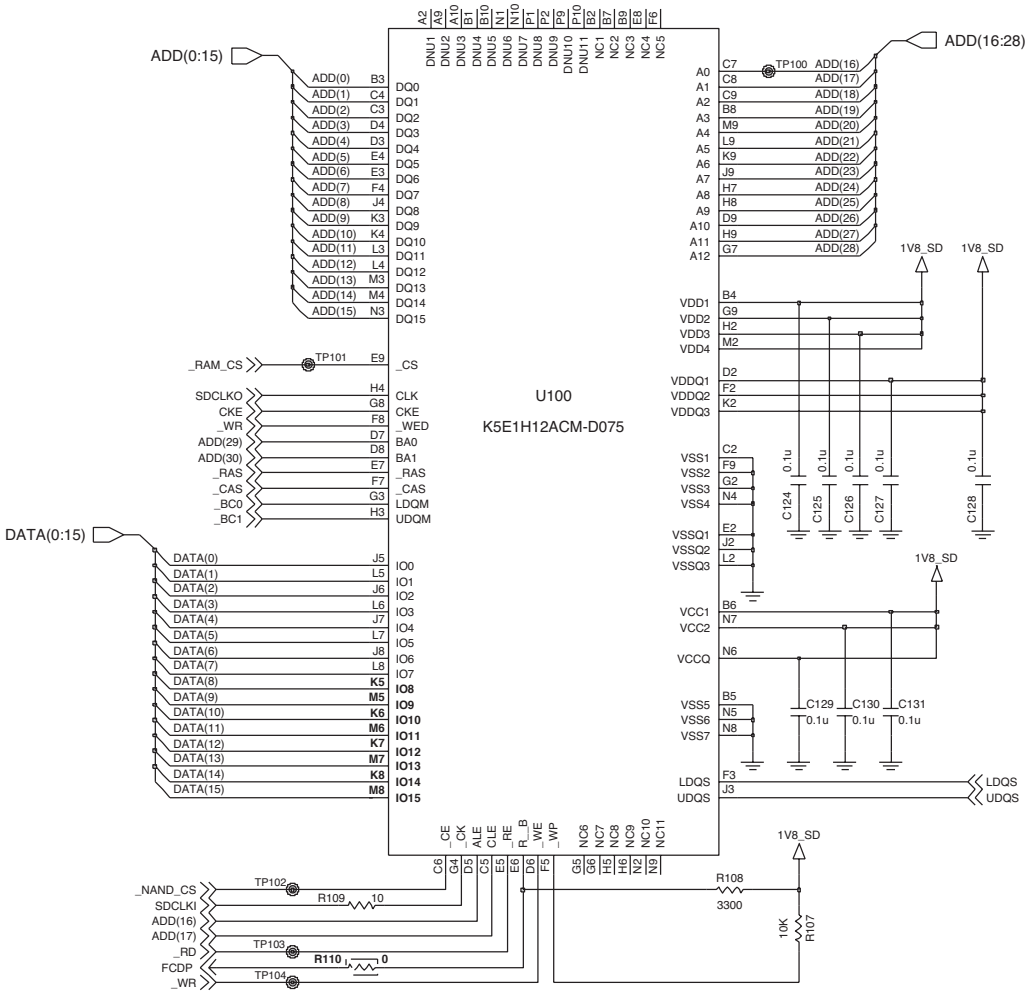


Figure 11 Flash memory & DDR RAM MCP circuit diagram

3.7 LCD Display

LCD module include:

- Main LCD: 2.2” 240x320 QVGA, 260K color TFT
- Backlight : 4 piece of white LED

LCD FPC Interface Spec:

Table 9 LCD FPC Interface Spec.

Pin No.	Pin Name	I/O	Description
1	2V85_VFM		VCC
2	2V85_VFM		VCC
3	LCD_ID	I	LCD Vendor detection
4	DIF_D0	I/O	Data Bus (Instruction & Display Data)
5	DIF_D1	I/O	Data Bus (Instruction & Display Data)
6	DIF_D2	I/O	Data Bus (Instruction & Display Data)
7	DIF_D3	I/O	Data Bus (Instruction & Display Data)
8	DIF_D4	I/O	Data Bus (Instruction & Display Data)
9	DIF_D5	I/O	Data Bus (Instruction & Display Data)
10	DIF_D6	I/O	Data Bus (Instruction & Display Data)
11	DIF_D7	I/O	Data Bus (Instruction & Display Data)
12	DIF_D8	I/O	Data Bus (Instruction & Display Data)
13	GND		Ground
14	GND		Ground
15	GND		Ground
16	GND		Ground
17	GND		Ground
18	GND		Ground
19	GND		Ground
20	GND		Ground
21	_DIF_RESET	O	Reset
22	_DIF_WR	O	Write Strobe
23	2V85_VFM		Read Strobe (Pull-up)

Pin No.	Pin Name	I/O	Description
24	_DIF_CS1	O	Chip Select
25	DIF_CD	I	Command/Data Selection
26	2V85_VFM		18bit Interface (Pull-up)
27	GND		Ground
28	GND		Ground
29	DIF_VSYNC	O	Frame Head Pulse Signal
30	GND		Ground
31	MLED4		Ground for LED
32	MLED3		Ground for LED
33	MLED2		Ground for LED
34	MLED1		Ground for LED
35	MLED		Power Supply for Main LED

3.8 Keypad Switching & Scanning

END key, Volume up/down Key, Camera Key and Numeric keys and are located on the Keypad FPCB and Touch sensor is on the LCD FPCB. Both Keypad FPCB and LCD FPCB is connected Main PCB via board to board connector.

The keypad interface is a peripheral which can be used for scanning keypads up to 8 rows and 8 columns. The number of rows and columns used depends on the settings of the port control logic. A standard keypad matrix of up to 8 x 8 keys can be used. The port control logic PCL for all column inputs selected by the input multiplexer must be programmed to input and pull-up. The PCL ensures that, for all inputs to the keypad kernel not selected by the input multiplexer, the col_i_x signals are high. See section 'Pad Control and Port Logic'. To save input pins extra keys between columns and ground can be used. If for instance 18 keys are required a standard matrix of 6x3 (rows x columns) with 9 pins can be used. An alternative is to use a 5X3 matrix and 3 extra keys connected to ground with a total of 8 pins.

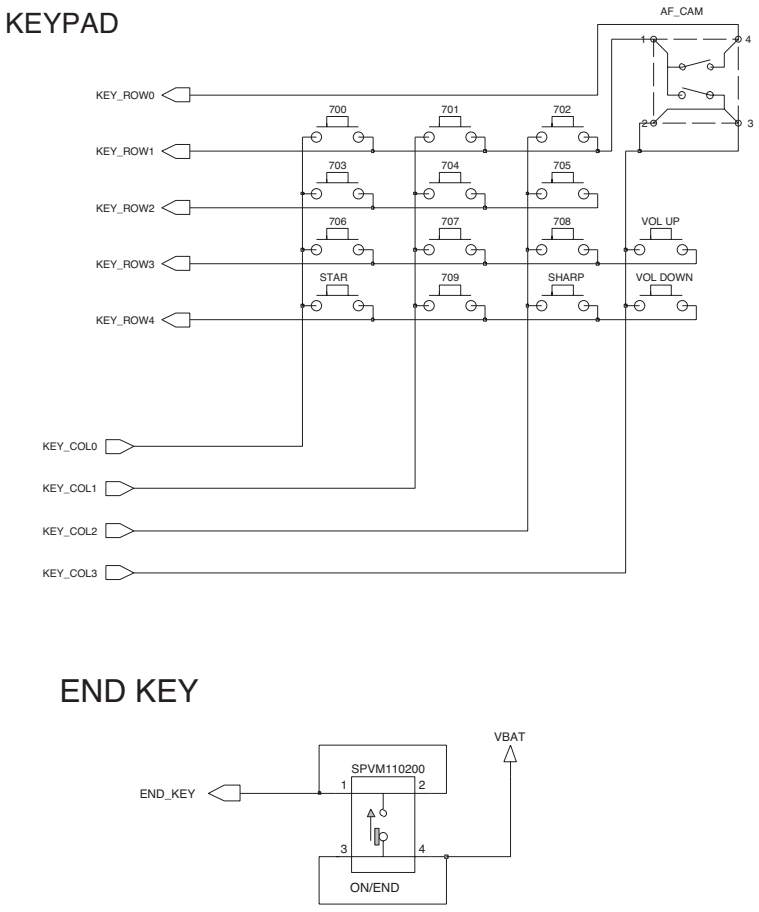
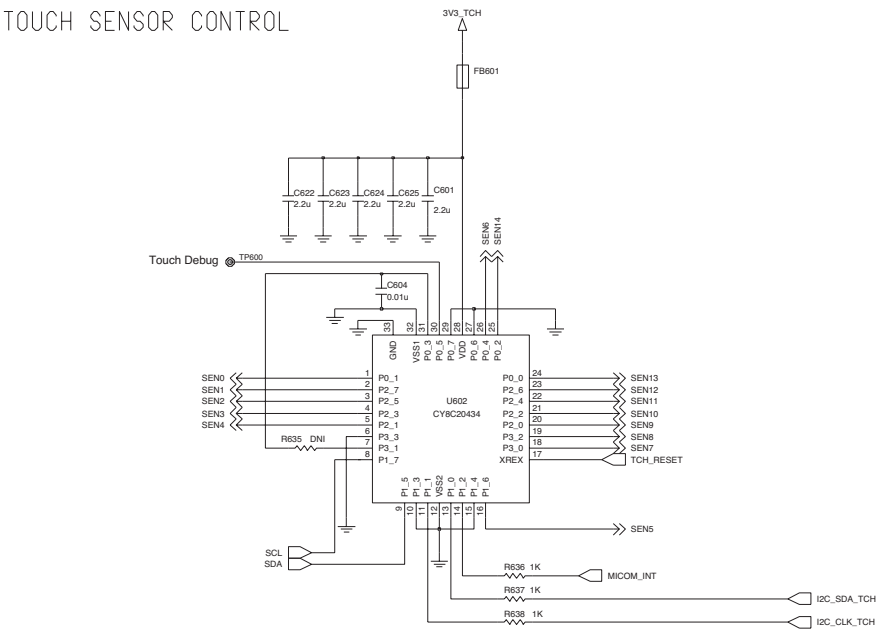


Figure 12 Key pad part key matrix

3. TECHNICAL BRIEF

The PSoC¢, family consists of many Mixed-Signal Array with On-Chip Controller devices. These devices are designed to replace multiple traditional MCU-based system components with one, low cost single-chip programmable component. A PSoC device includes configurable blocks of analog and digital logic, as well as programmable interconnect. This architecture allows the user to create customized peripheral configurations, to match the requirements of each individual application. Additionally, a fast CPU, Flash program memory, SRAM data memory, and configurable IO are included in a range of convenient pin outs.

The PSoC architecture, as illustrated on the left, is comprised of four main areas: the Core, the System Resources, the Digital System, and the Analog System. Configurable global bus resources allow all the device resources to be combined into a complete custom system. Each CY8C21x34 PSoC device includes four digital blocks and four analog blocks. Depending on the PSoC package, up to 28 general purpose IO (GPIO) are also included. The GPIO provide access to the global digital and analog interconnects.



SENSOR FOR TOUCH
(3 X 5)

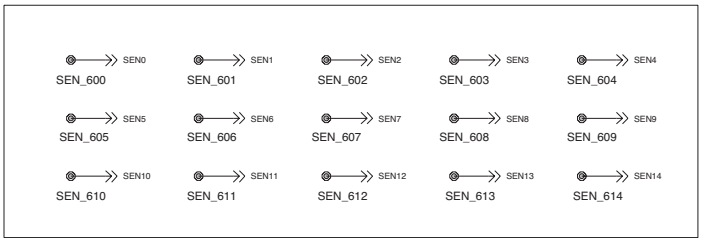


Figure 13 Touch Sensor on LCD FPCB

3.9 Keypad back-light illumination

There are 2 snow white color LEDs on Key FPCB for keypad illumination. Keypad Back-light is controlled by SM-Power Flash LED port which has constant current control function. The whole configuration of the SM-POWER Flash LED drivers is shown in below Figure14.

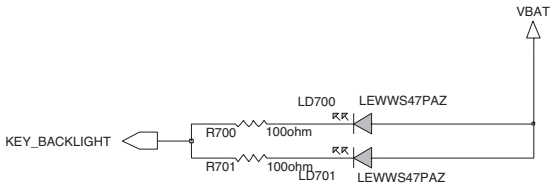
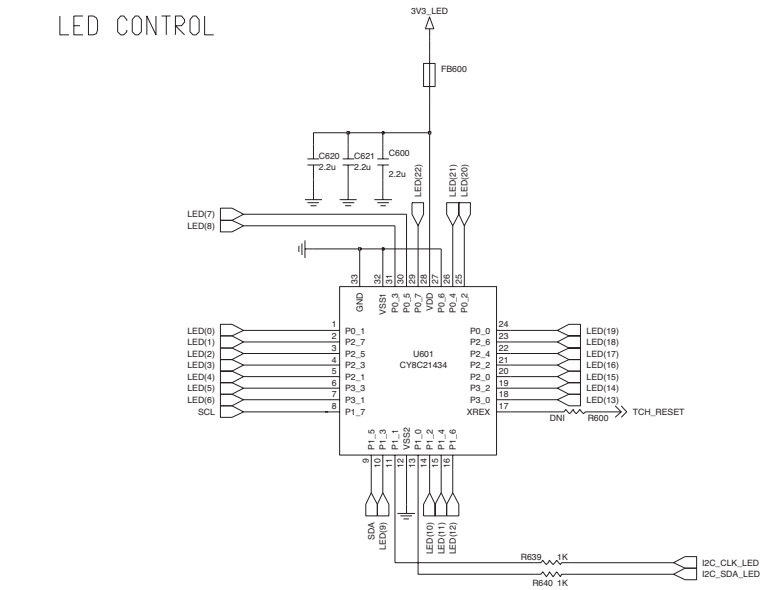


Figure 14 Keypad Back-light LEDs



Side View LEDs : LD602, LD611, LD613, LD624

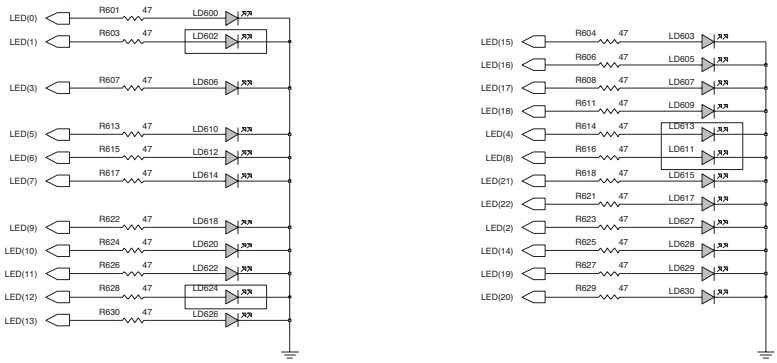
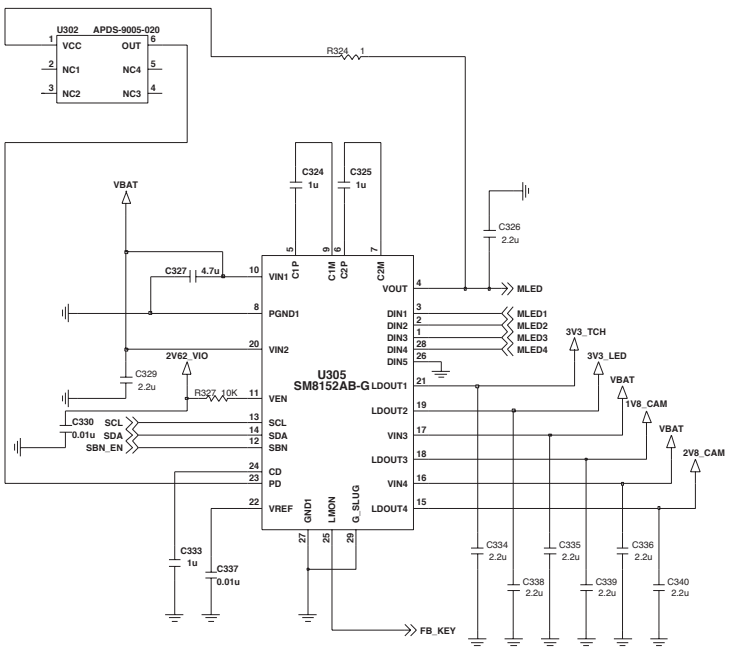


Figure 15 Touch pad Back-light LEDs

3.10 LCD back-light illumination

The SM8152A is a power management IC with charge pump type white LED driver, 2-system programmable LDO (Low Dropout Regulator), and 2-system programmable LLDO (Low supply LDO) for operation at low voltages. The white LED driver provides constant-current drive for 1 to 4 backlight white LED connected in parallel and 1 torch/strobe LED. The charge pump automatically switches between x1 mode, x1.5 boost mode, and x2 boost mode in response to battery voltage, LED drive current, and VF LED(LED forward bias voltage drop) conditions in order to extend battery drive life. An ALC (Automatic Luminance Control) function is built-in that automatically adjusts the dimming in response to the brightness of the surroundings. Conventional dimming control that does not employ the ALC can also be selected. The programmable LLDO operates at 1.8V to reduce the loss at low output voltages. The SM8152A operating mode settings are accessed using an I2C interface, allowing LED drive current, LDO voltage, output ON/OFF, and other settings to be controlled from a microcontroller.

LCD BACKLIGHT & CAMERA FLASH LED DRIVER



CAMERA FLASH LED

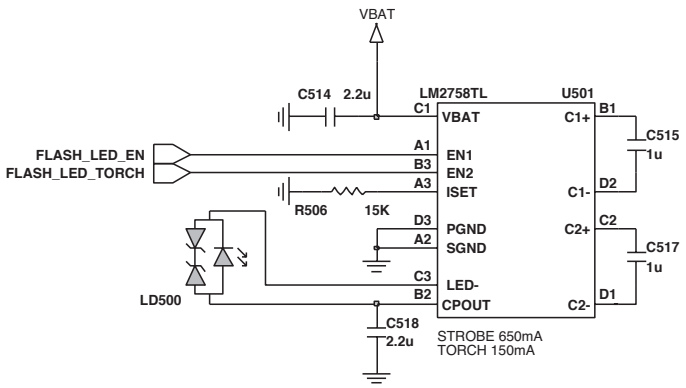


Figure 16 LCD Back light & LDO unit & Camera Flash

The SM8152A switches between 3 charge pump operating modes; x1 mode (VIN through mode), x1.5 mode(x1.5 charge pump boost), and x2 mode (x2 charge pump boost), reducing the total power dissipation. These switching occurs automatically in internal circuits, and cannot be controlled by external signals. If the LED current drops below the setting value while operating in x1 or x1.5 mode, each LED drive circuit detects the undercurrent condition and the operating mode is automatically switched x1 → x1.5, x1.5 → x2. This occurs even if only one LED undercurrent condition is detected among the 5-channel LED drive circuits, thus it is recommended that LED has small VF variation to optimize the total efficiency. In x1.5 or x2 mode operating, the SM8152A generates "a mode reset signal" internally once every 1 second. This signal forces to switch the mode x1.5 → x1, x2 →σ x1.5.

3.11 ALC

The automatic luminance control (ALC) circuit adjusts the LED dimming by changing the LED current automatically in response to the brightness of the surroundings. An external photodiode or similar luminance sensor must be connected for the ALC automatic control to function. The luminance sensor is connected to PD and must be set to increase the PD input current in response to increasing luminance of the surroundings. In the typical application circuit in section 13, the SM8152A VREF terminal is used and the luminance sensor photodiode is connected between PD and VREF

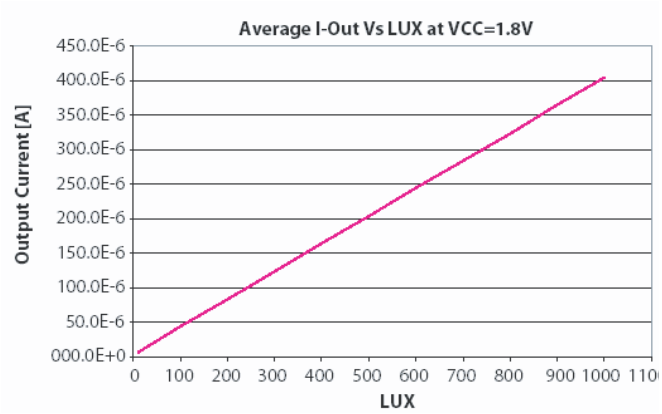


Figure 17 Average Iout vs Lux on photo sensor

3.12 Battery current consumption monitor

KF510 use a current monitoring function to calculate the battery capacity and the remaining time, as monitoring current flow from the battery thru 47mohm resistor.

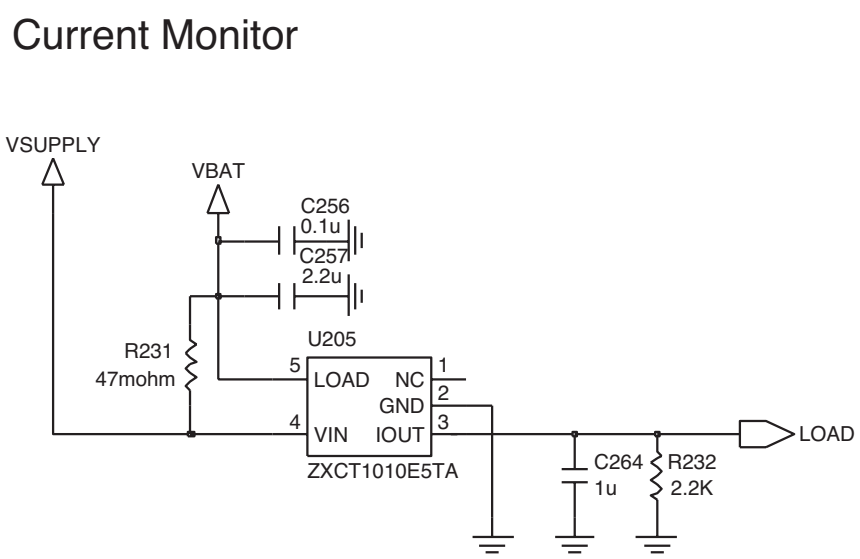


Figure 18 Current monitor circuit

3.13 JTAG & ETM interface connector

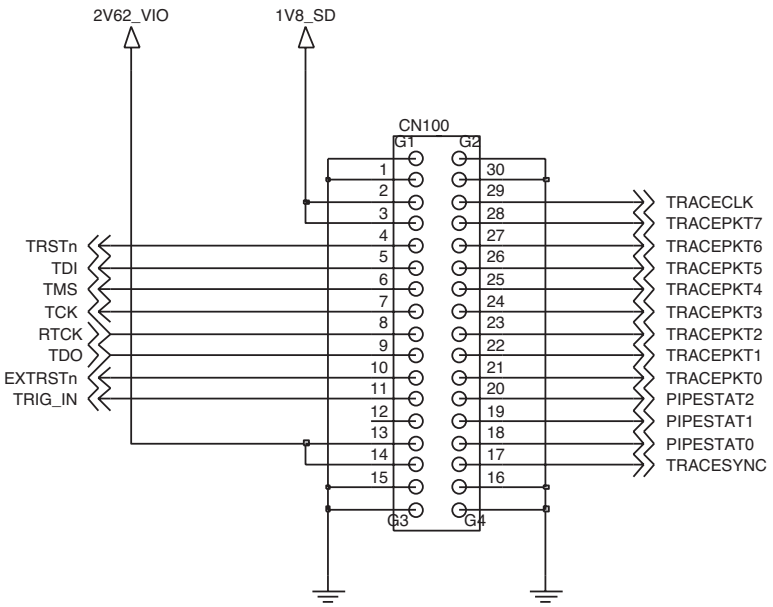


Figure 19 JTAG & ETM(Embedded Trace Module) interface connector

In case of KF510 mass production, the JTAG & ETM interface connector will not be mount on board. That is only for developing and software debugging purpose.(It will not be mounted on mass production PCB)

3.14 Audio

KF510 Audio signal flow diagram as following diagram.

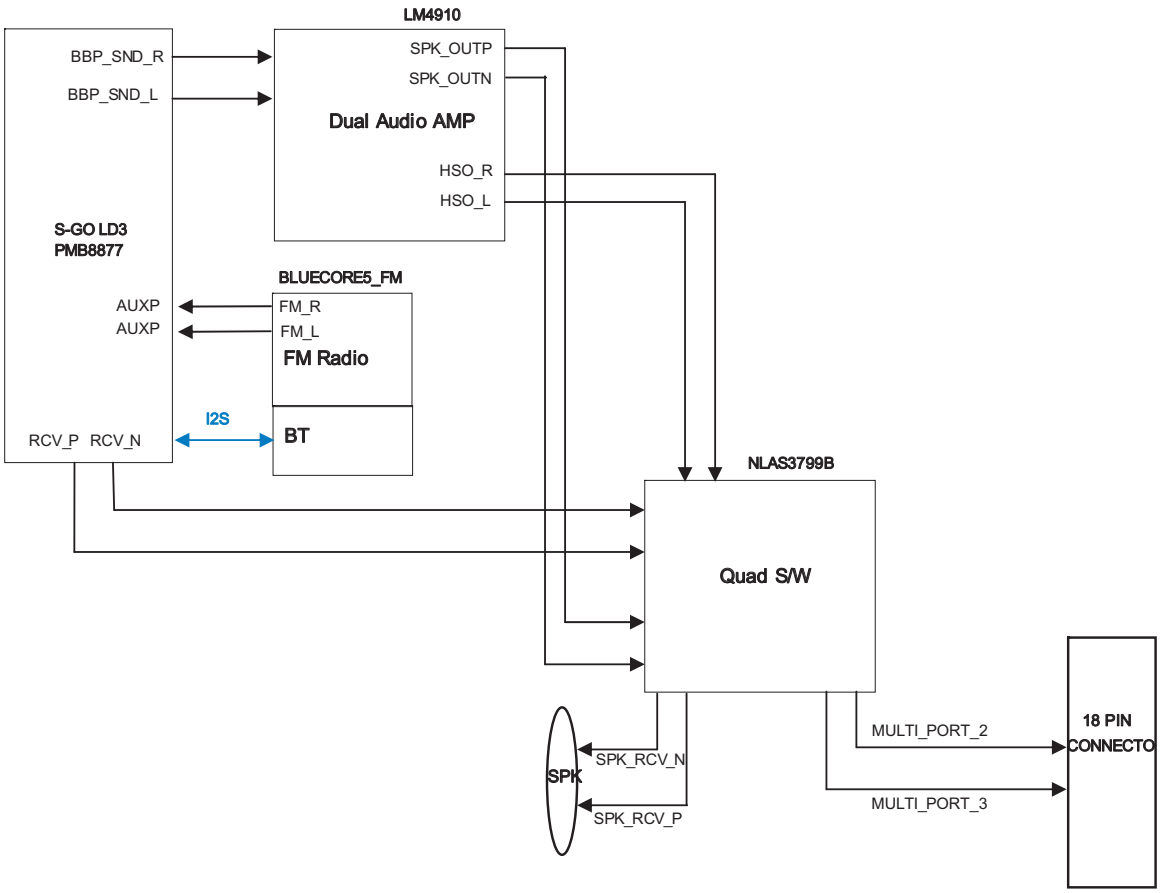


Figure 20 Audio signal flow diagram

3.14.1 Audio amplifier

Audio amplifier sub system IC is an audio power amplifier capable of delivering 1.2 W of continuous average power into a mono 8Ω load, 50mW per channel of continuous average power into stereo 32Ω single-ended (SE) loads. The LM49100 features a 32-step digital volume control and ten distinct output modes. The digital volume control, output modes (mono/SE/OCL) are programmed through a two-wire I2C interface that allows flexibility in routing and mixing audio channels.

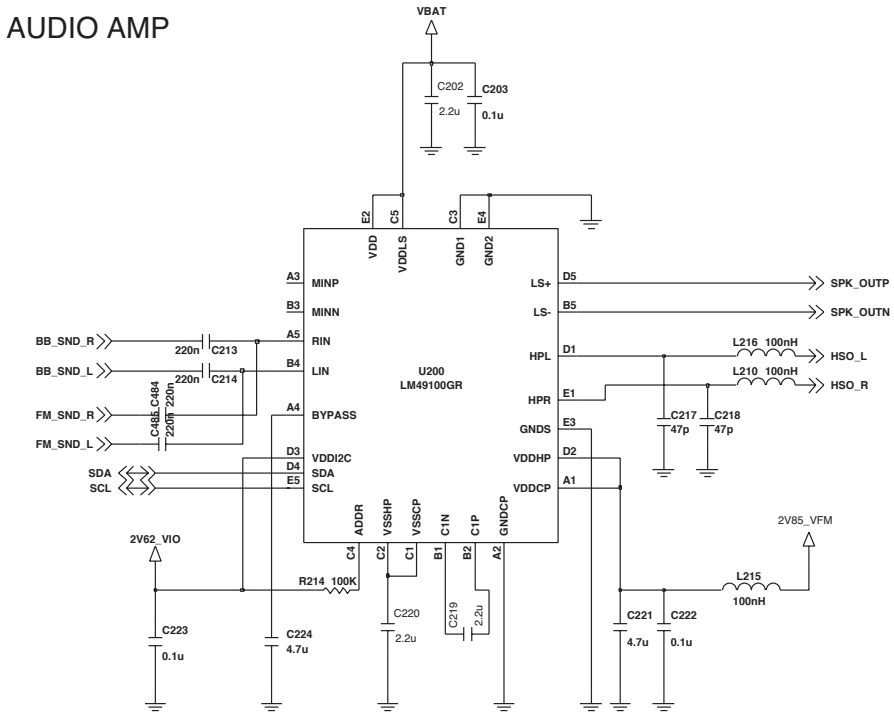


Figure 21 Audio amplifier Sub-system IC

3.14.2 Microphone circuit

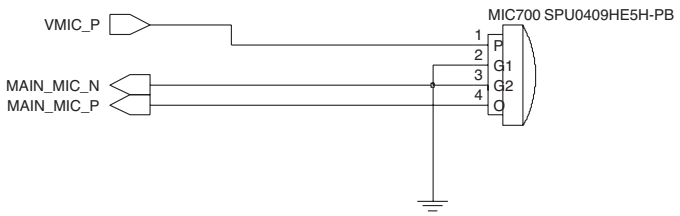


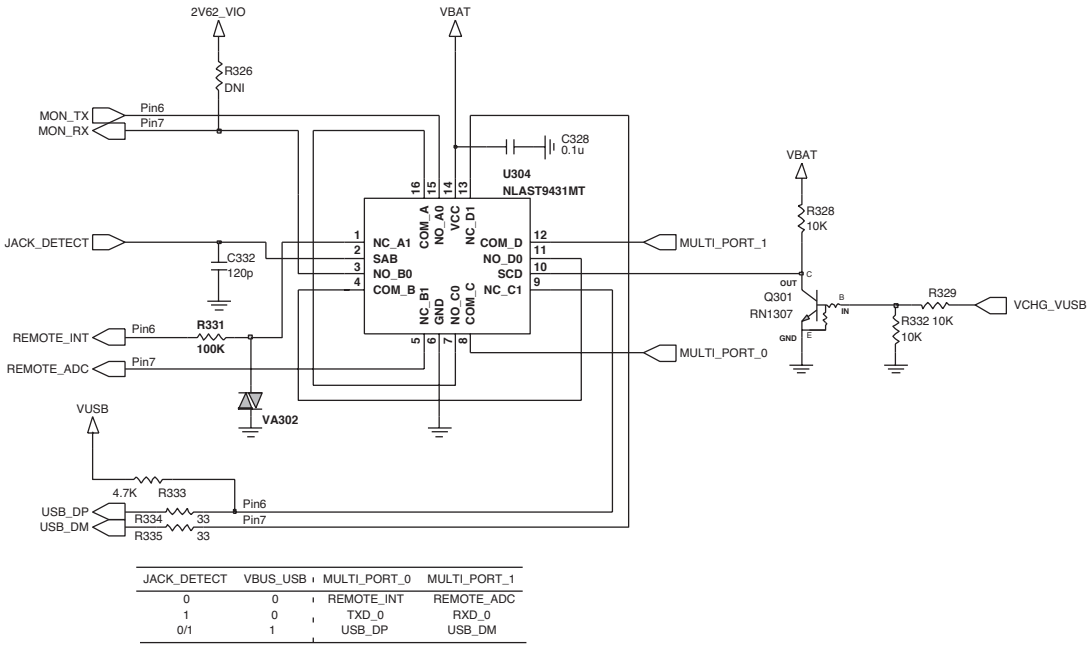
Figure 22 Microphone circuit

3.15 Multi port switch

Multi port switch has employed to decrease MMI(Multi Media Interface) connector's pin number. USB, USART, and Headset are connected via these multi port switchs. Each pin is defined by the status of JACK_DETECT and VBUS_USB pin. Refer to the Table 8

Table 10 Multi port switch truth table

JACK_DETECT	VBUS_USB	MULTI_PORT_0	MULTI_PORT_1
0	0	REMORT_INT	REMORT_ADC
1	0	TXD_0	RXD_0
0/1	0	USB_DP	USB_DM



JACK_DETECT	VBUS_USB	MULTI_PORT_0	MULTI_PORT_1
0	0	REMOTE_INT	REMOTE_ADC
1	0	TXD_0	RXD_0
0/1	1	USB_DP	USB_DM

Figure 22. Charging Circuit Diagram

3.16 Charging circuit

ISL6294 accepts one power inputs, normally one from a USB (Universal Serial Bus) port or the other from a desktop cradle.
The ISL624 features 28V and 7V maximum voltages for the cradle and the USB inputs respectively. Due to the 28V rating for the cradle input, low-cost, large output tolerance adapters can be used safely.

CHARGING IC

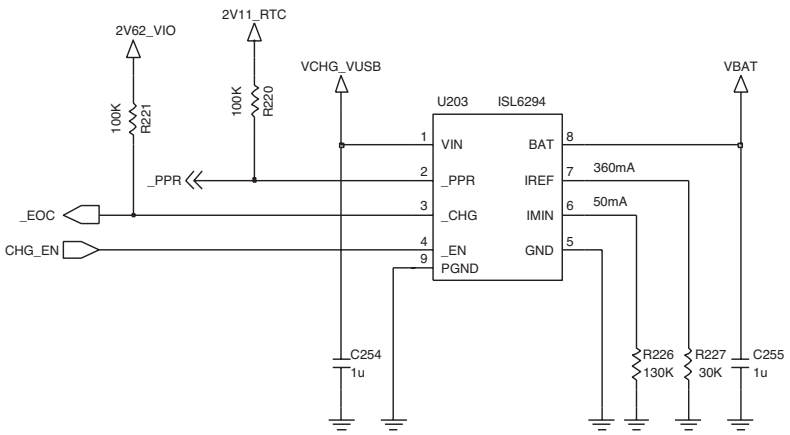


Figure 24 charging circuit

3.17 FM radio & BLUETOOTH

FM radio

Simultaneous operation with Bluetooth

- Support of US/Europe (87.5 to 108 MHz) and Japanese (76 to 90 MHz) FM band
- Wide dynamic range AGC
- Soft mute and stereo blend
- Adjustment-free stereo decoder and AFC
- Autonomous search tuning function (up/down) with programmability (threshold setting)
- RDS demodulator
- Audio output available over Bluetooth audio interface or dedicated audio output
- Control of FM via Bluetooth HCI or I2C
- Adaptive filter to suppress narrow band interference in the FM channel

Bluetooth

General Features

The BlueCore 5-FM BGA is a single chip radio and baseband IC for Bluetooth 2.4 GHz systems including enhanced data rates (EDR) to 3Mbits/s. It includes an integrated FM receiver with stereo audio output stage and an RDS demodulator.

With the on-chip CSR Bluetooth software stack, it provides a fully compliant Bluetooth system to v2.0+EDR of the specification for data and voice communications.

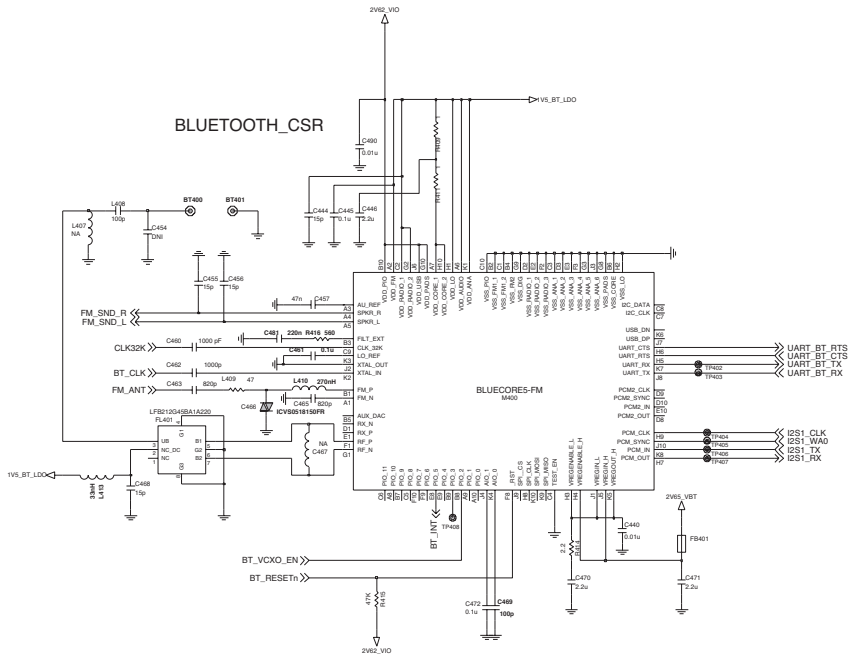


Figure 25 Bluetooth / FM Radio Circuit Diagram

Bluetooth Radio

- Common TX/RX teminal simplifies external matching, eliminates external antenna switch
- No external trimming is required In production
- Bluetooth v2.0 + EDR Specification compliant

Bluetooth Transmitter

- +6 dBm RF Transmit power with level control from on-chip 6-bit DAC over a dynamic range > 30dB
- Class 2 and Class 3 support without the need for an external power amplifier or TX/RX switch.

Bluetooth Receiver

- Integrated channel filters
- Digital demodulator for improved sensitivity and co-channel rejection
- Real time digitized RSSI available on HCI interface
- Fast AGC for enhanced dynamic range
- Channel classification for AFH

Synthesiser

- Fully integrated synthesizer requires no external VCO varactor diode, resonator or loop filter
- Compatible with crystals between 7.5 and 40MHz(in multiples of 250KHz) or an external clock

Audio

- Single-ended stereo analogue output
- 16-bit 48 kHz digital audio bit stream output

Baseband and Software

- Internal 48Kbyte RAM, allows full speed data transfer, mixed voice and data, and full piconet operation, including all medium rate packet types
- Logic for forward error correction, header error control, access code correlation. CRC, demodulation, encryption bit stream generation, whitening and transmit pulse shaping. Supports all Bluetooth v 2.0 + EDR features incl. ESCO and AFH
- Transcoders for A-law, u-law and linear voice from host and A-law, u-law and CVSD voice over air

Physical Interfaces

- Synchronous serial interface up to 4Mbits/s for system debugging
- UART interface with programmable baud rate up to 4Mbits/s with an optional bypass mode
- USB v1.1 interface
- I2C slave for FM
- Two audio PCM interfaces (input and output)
- Analogue stereo (output only)

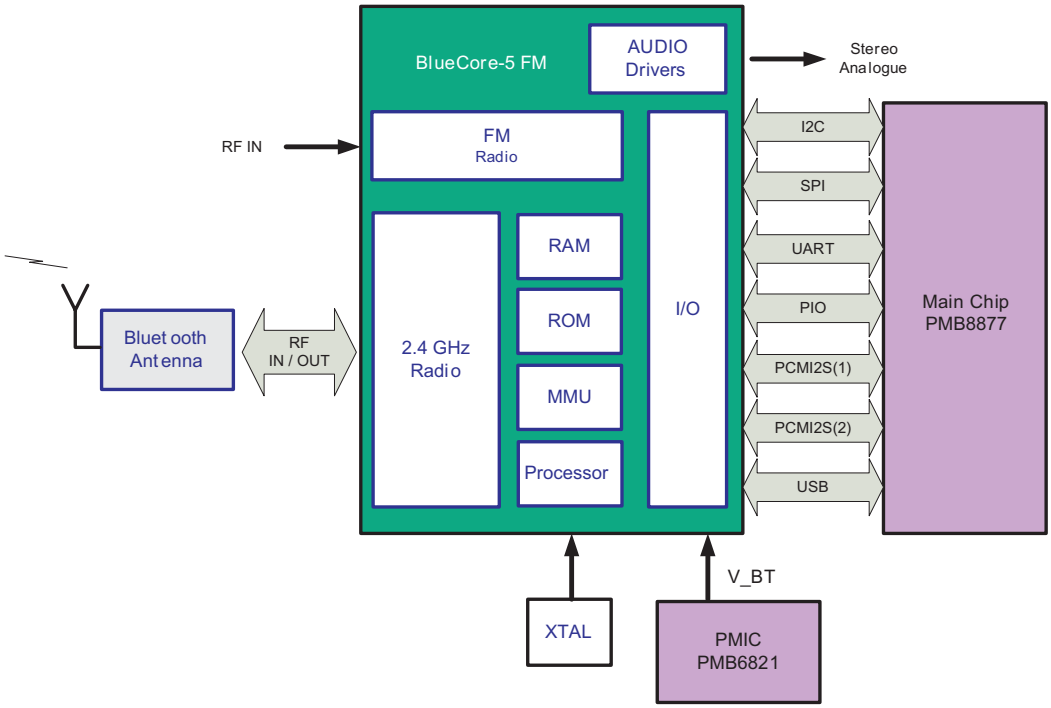


Figure 26 Bluetooth / FM Radio Block Diagram

3.17.1 General Features

- The BlueCore5-FM BGA is a single Chip radio and baseband IC for Bluetooth 2.4 GHz systems including enhanced data rates(EDR) to 3Mbits/s. It includes an integrated FM receiver with stereo audio output stage and an RDS demodulator.
- Fully Qualified Bluetooth V2.x+EDR system
- Integrated FM Radio receiver with RDS demodulator
- Stereo audio output stage
- Fully-Speed Bluetooth operation with full piconet support
- Scatternet support
- Minimum external components
- Packages:
  - 6 x 6 x 1 mm(84-bal VFBGA)
- Low-power 1.5V operation, 1.8V to 3.6V I/O
- Integrated 1.8V and 1.5V regulators
- USB v1.1 and UART with Dual port bypass mode to 4Mbits/s
- Support for 802.11 Coexistence

3.18 Touch PAD

Touch operation is divided to two parts. One is Touch Sensor, the other is LED Controller.
If touch is detected, LED is operated with scenario.

3.18.1 Touch Sensor Operation

Cypress CY8C20434 chip is used for Touch IC on KF510. CY8C20434 device includes a dedicated CapSense block that provides sensing and scanning control circuitry for capacitive sensing pplications.
This is communicated with I2C & Interrupt to BB(S-Gold3).
Touch Communication(I2C & Interrupt) Interface Configuration and is as follow :

- VCC : 3.3V
- SDA : Data
- SCL : Clock (up to 400kHz)
- INT : Interrupt
- GND : Ground

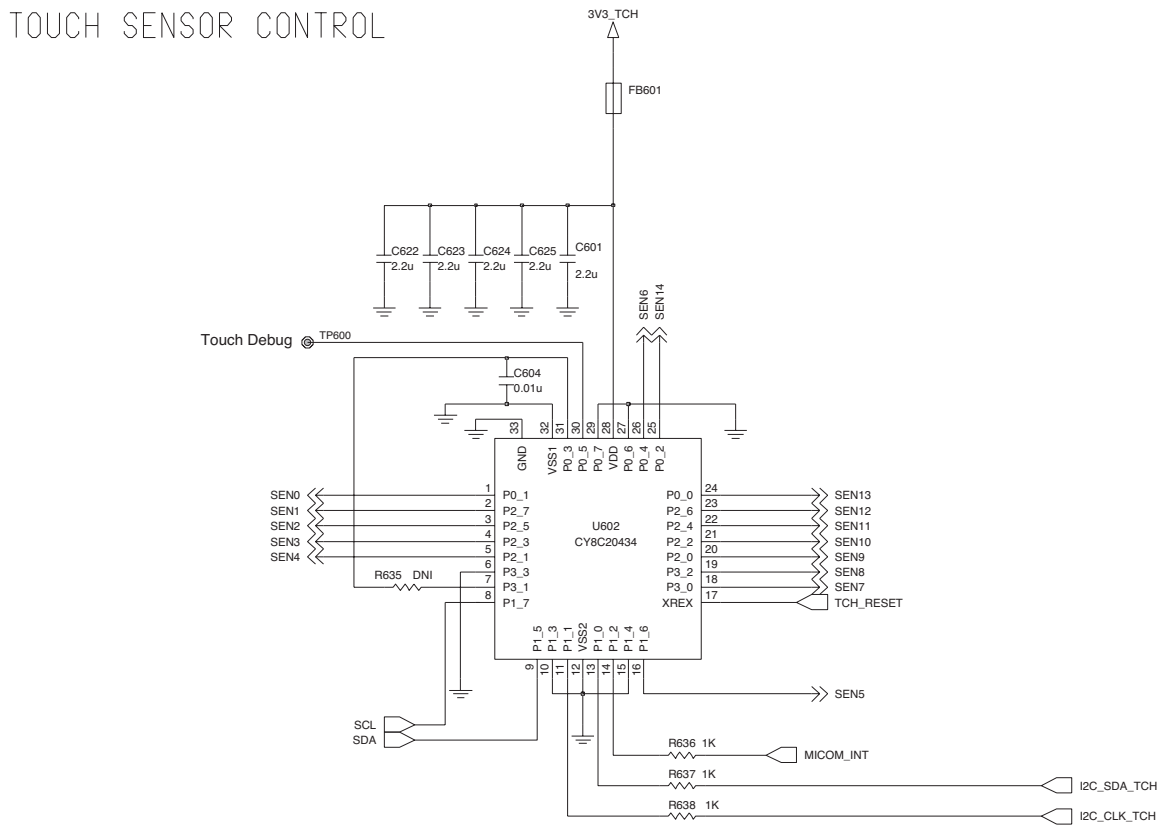


Figure 27 Touch sensor control

3.18.2 Touch LED Operation

Cypress CY8C29666 chip is used for LED Controller on KF510.

This is also communicated with I2C to BB(S-Gold3) If S-Gold3 detects touch operation from Touch IC, S-Gold3 sends command to LED Controller into I2C according to proper scenario. .

LED Controller Communication(I2C) Interface Configuration and is as follow :

- VCC : 3.3V
- SDA : Data
- SCL : Clock (up to 400kHz)
- GND : Ground

Also total 27 LEDs is composed on KF510.

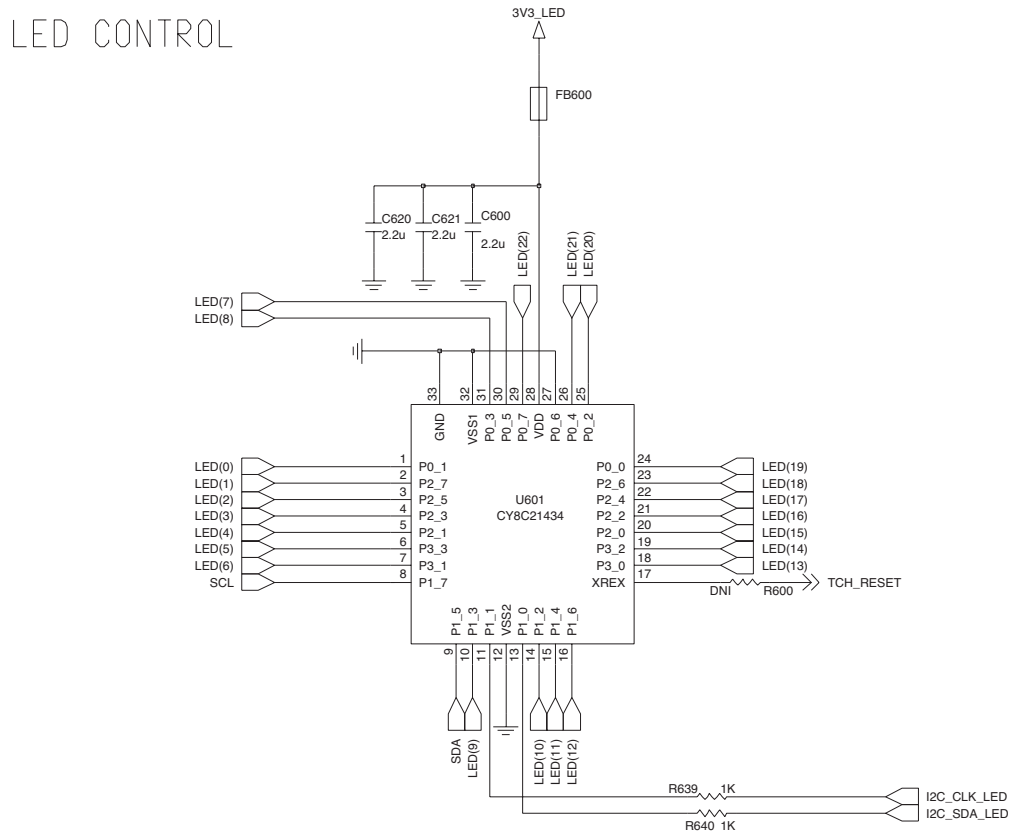


Figure 28 Touch LED control

3.19 18pin Multi Media Interface connector

Table 11 Multi media interface pin assign

KM380 series MMI		
	Pin Function	**Description**
1	FM_ANT	FM radio antenna / Audio ground
2	HS_MIC	Headset microphone signal
3	JACK_TYPE	Accessory type detect
4	HSO_L	Headset left sound
5	HSO_R	Headset Right sound
6	UART_TX/USB_DP/ REMOTE_INT	UART / USB/ Remote control interrupt
7	UART_RX/USB_DM/ REMOTE_ADC	UART / USB/ Remote control Key ADC
8	JACK_DETECT	Headset detect (active low)
9	VSUPPLY	Supply Voltage
10	VSUPPLY	Supply Voltage
11	RPWRON_EN	Remote power enable
12	VCHG	Charger voltage
13	VCHG	Charger voltage
14	DSR	N.C.
15	VBUS_USB	USB VBUS
16	MON_TX	Trace TX data(Debug)
17	MON_RX	Trace RX data(Debug)
18	GND	Power GND

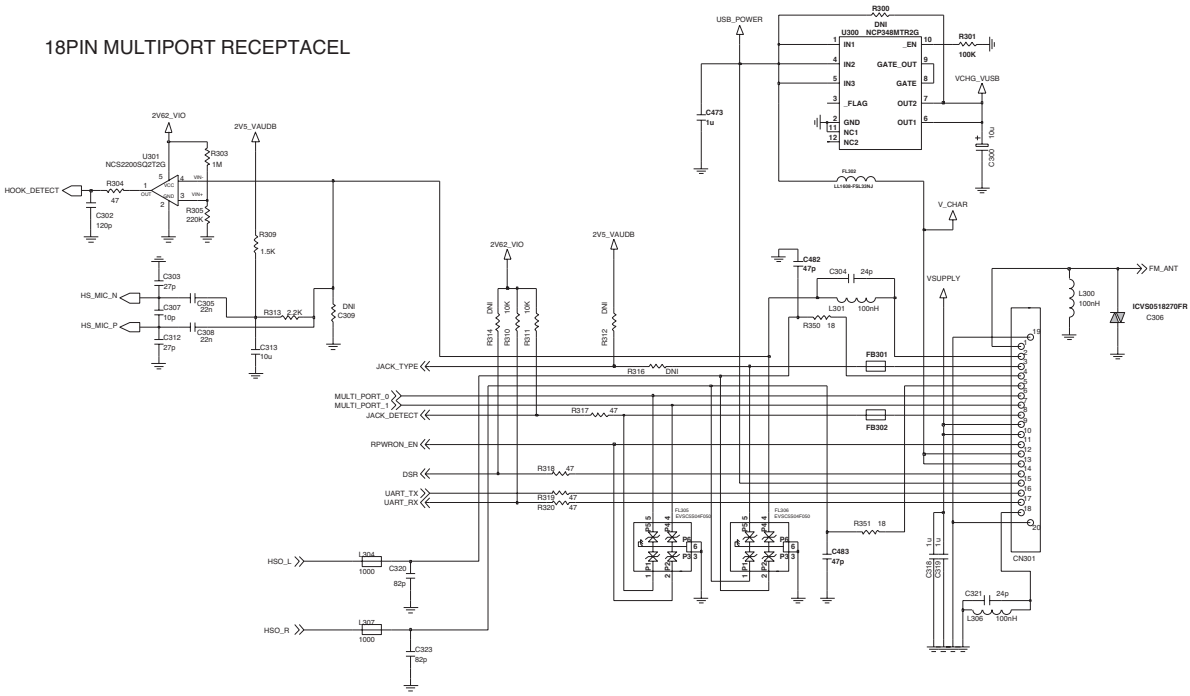


Figure 29 MMI 18pin connector circuit

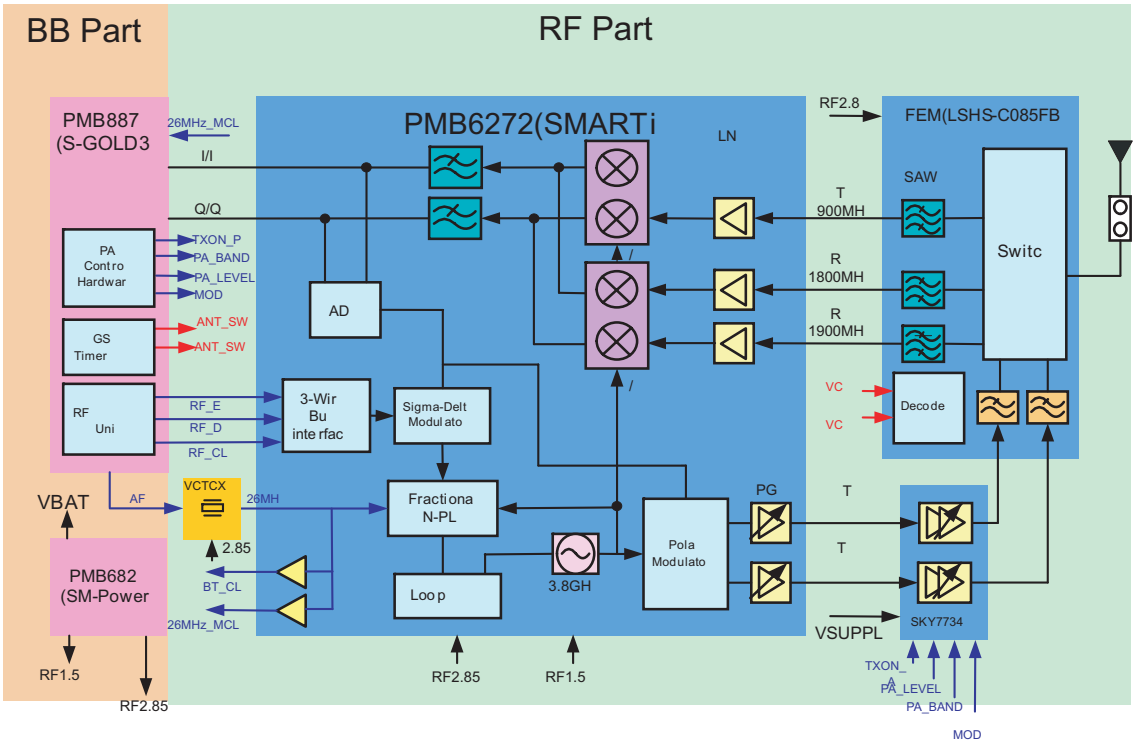


Figure 30 KF510 RF block diagram

3.20 General Description

The RF transceiver (PMB 6272 SMARTi-PM) is an integrated single chip, quad-band transceiver for GSM850/GSM900/GSM1800/GSM1900 designed for voice and data transfer applications. The transceiver provides an analog I/Q baseband interface and consists of a direct conversion receiver and a quad-band polar transmitter for GSM and EDGE with integrated PGA functionality. Further on a completely integrated SD-synthesizer with HSCSD and GPRS/EDGE capability, a digitally controlled reference oscillator with three outputs, a fully integrated quad-band RF oscillator and a three wire bus interface with all necessary control circuits complete the transceiver.

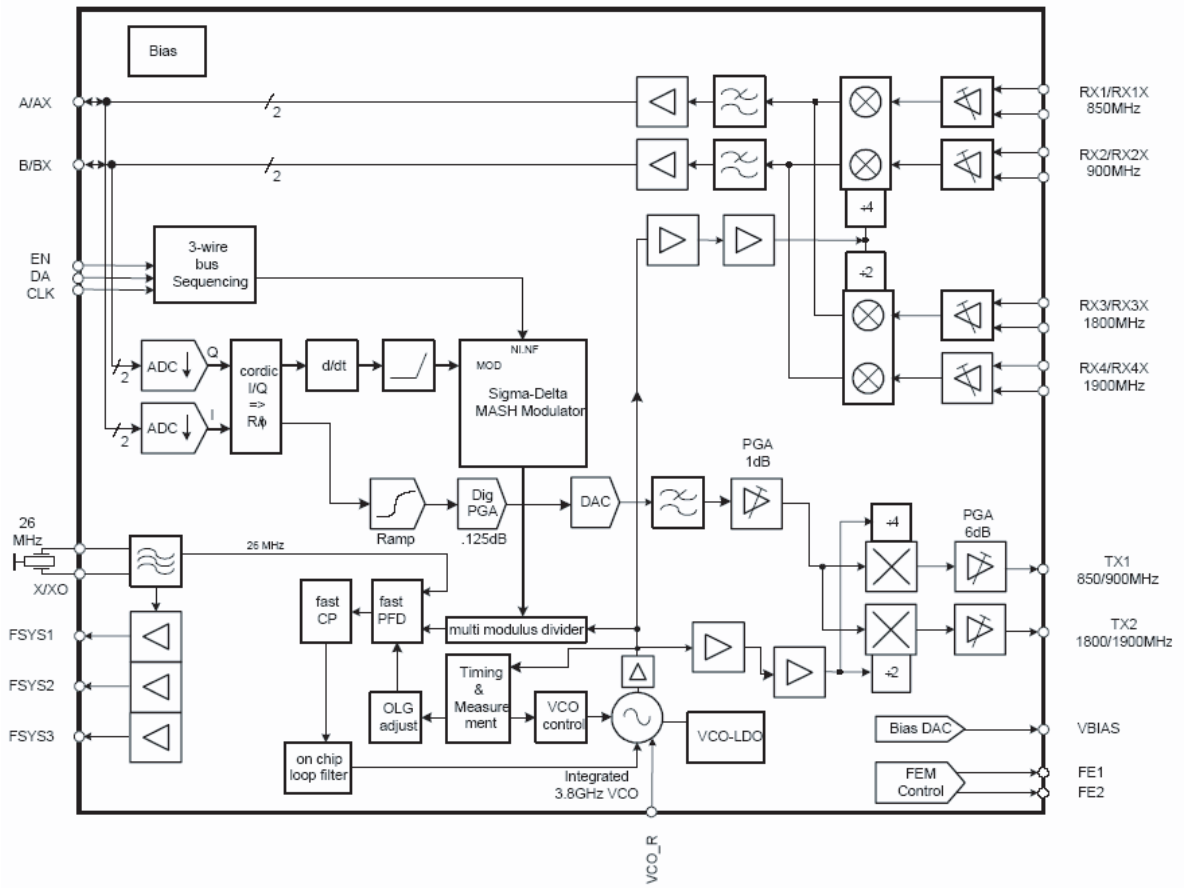


Figure 31 RF transceiver PMB6272 SMARTi-PM functional block diagram

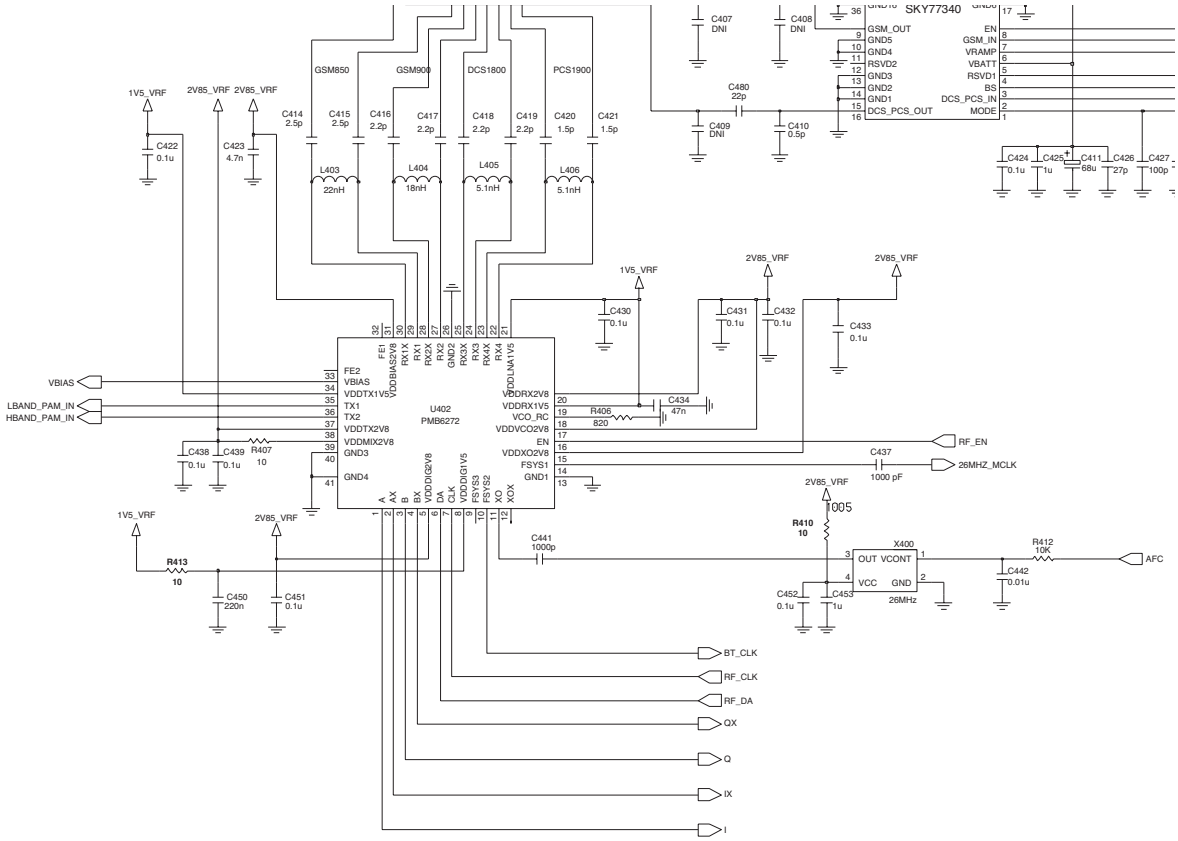


Figure 32 RF transceiver PMB6272 SMARTi-PM schematic

3.21 Receiver part

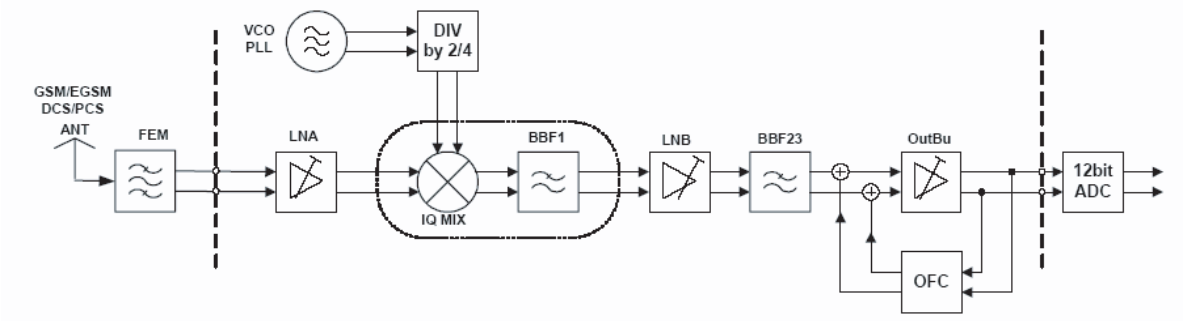


Figure 33 Receiver part block diagram

The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 33). The GSM850/900/DCS1800/ PCS1900 LNAs with balanced inputs are fully integrated. No inter-stage filtering is needed. The orthogonal LO signals are generated by a divider-by-four for GSM850/900 band and a divider-by-two for the DCS1800/PCS1900 band. Down conversion to baseband domain is performed by low/high band quadrature direct down conversion mixers. The baseband chain contains a LNB (low noise buffer), channel filter, output buffer and DC-offset compensation. The 3rd order low pass filter is fully integrated and provides sufficient suppression of blocking signals as well as adjacent channel interferers and avoids anti-aliasing through the baseband ADC. The receive path is fully differential to suppress on-chip interferences. Several gain steps are implemented to cope with the dynamic range of the input signals. Depending on the baseband ADC dynamic range, single- or multiple gain step switching schemes are applicable. Furthermore an automatic DC-offset compensation can be used (depending on the gain setting) to reduce the DC-offset at baseband-output. A programmable gain correction can be applied to correct for front end- and receiver gain tolerances.

3.22 Transmitter part

The GMSK transmitter supports power class 4 for GSM850 and GSM900 as well as power class 1 for DCS1800 and PCS1900. The digital transmitter architecture is based on a very low power fractional-N Sigma-Delta synthesizer without any external components (see Figure34). The analog I/Q modulation data from the baseband is converted to digital, filtered and transformed to polar coordinates. The phase/frequency signal is further on processed by the Sigma-Delta modulation loop. The output of its associated VCO is divided by four or two, respectively, and connected via an output buffer to the appropriate single ended output pin. This configuration ensures minimum noise level. The 8PSK transmitter supports power class E2 for GSM850 and GSM900 as well as for DCS1800 and PCS1900. The digital transmitter architecture is based on a polar modulation architecture, where the analog modulation data (rectangular I/Q coordinates) is converted to digital data stream and is subsequently transformed to polar coordinates by means of a CORDIC algorithm. The resulting amplitude information is fed into a digital multiplier for power ramping and level control. The ready processed amplitude signal is applied to a DAC followed by a low pass filter which reconstructs the analog amplitude information.
The phase signal from the CORDIC is applied to the Sigma-Delta fractional-N modulation loop. The divided output of its associated VCO is fed to a highly linear amplitude modulator, recombining amplitude and phase information. The output of the amplitude modulator is connected to a single ended output RF PGA for digitally setting the wanted transmit power. The PA interface of SMARTi-PM supports direct control of standard dual mode power amplifiers (PA's) which usually have a power control input VAPC and an optional bias control pin VBIAS for efficiency enhancement. In GMSK mode, the PA is in saturated high efficiency mode and is controlled via its VAPC pin directly by the baseband ramping DAC. In this way both up- / down-ramping and output power level are set. In 8PSK mode, the ramping functionality is assured by an on-chip ramping generator, whereas output power is controlled by the PGA's as described above.

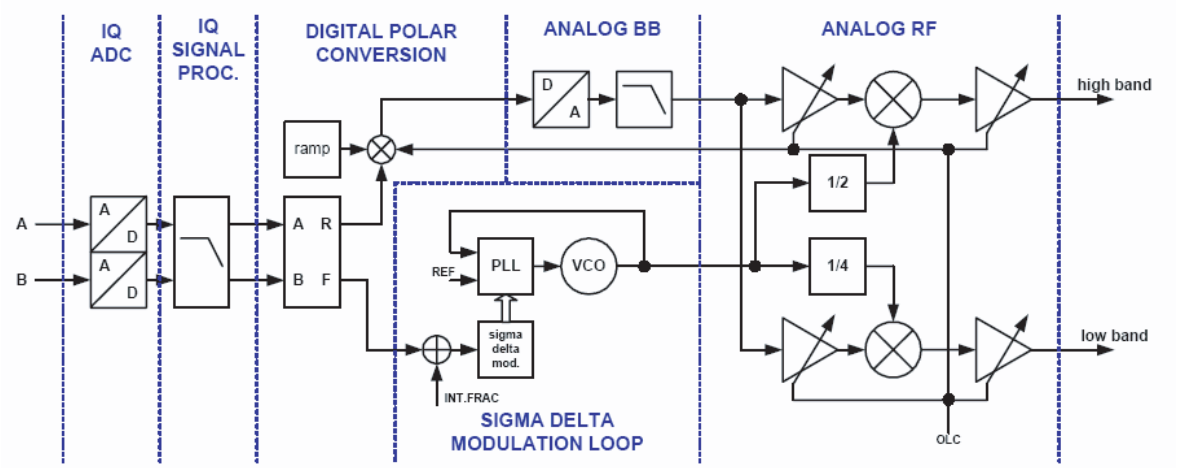


Figure 34 Transmitter part block diagram

3.23 RF synthesizer

The transceiver contains a fractional-N sigma-delta synthesizer for the frequency synthesis in the RX operation mode. For TX operation mode the fractional-N sigma-delta synthesizer is used as Sigma-Delta modulation loop to process the phase/frequency signal. The 26MHz reference signal is provided by the internal crystal oscillator. This frequency serves as comparison frequency of the phase detector and as clock frequency for all digital circuitry.The divider in the feedback path of the synthesizer is carried out as a multi-modulus divider (MMD). The loop filter is fully integrated and the loop bandwidth is about 100 kHz to allow the transfer of the phase modulation. The loop bandwidth is automatically adjusted prior to each slot (OLGA©˜). To overcome the statistical spread of the loop filter element values an automatic loop filter adjustment (ALFA) is performed before each synthesizer startup. The fully integrated quad-band VCO is designed for the four GSM bands (850, 900, 1800, 1900 MHz) and operates at double or four times transmit or receive frequency. To cover the wide frequency range the VCO is automatically aligned by a binary automatic band selection (BABS) before each synthesizer startup.

3.24 VCTCXO

The VCTCXO (X400) supply 26MHz reference clock and controlled by AFC input to generate a strict system clock. The 26MHz clock is used to Transceiver(U402), Bluetooth chip(M400) and S-Gold3 (U101).

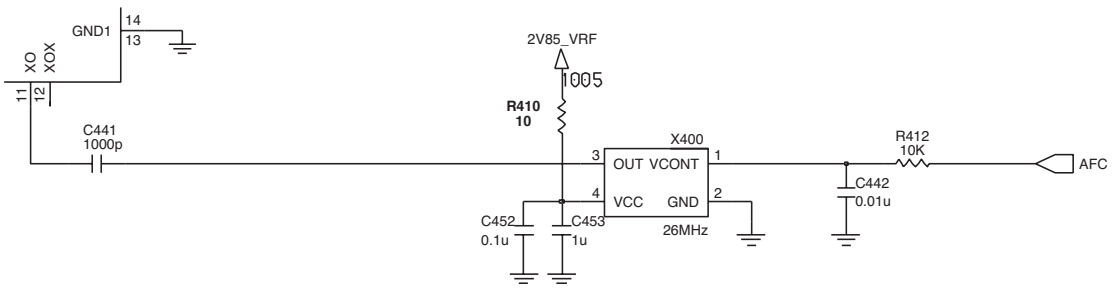


Figure35 VCTCXO Schematic

3.25 Front End Module control

Implemented in the S-Gold3 (FL400) are three outputs which are FE1, FE2 for direct control of front end modules with two logic input pins to select RX and TX mode as well as low and high band operation.

Table 12 FEM Control Logic

MODE	Tx 1GHz	Tx 2GHz	Rx GSM	Rx EGSM	Rx DCS	TX PCS
VDD	ON	ON	ON	ON	ON	ON
VC1	ON	OFF	OFF	OFF	OFF	OFF
VC2	OFF	ON	OFF	OFF	OFF	OFF

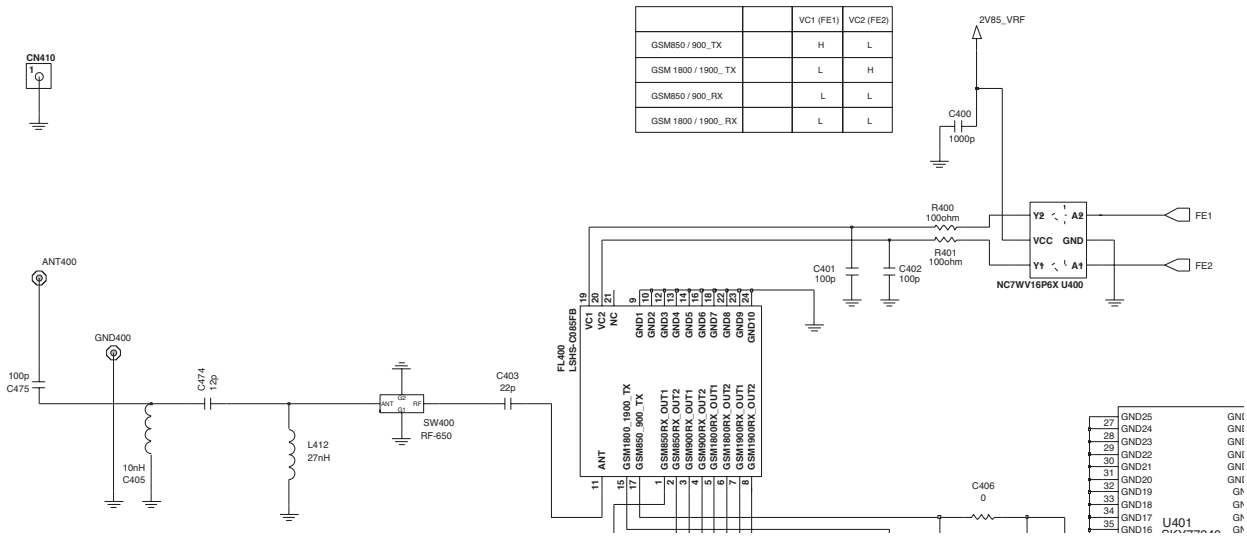


Figure 36 FEM schematic

3.26 Power Amplifier Module

The SKY77340 (U401) designed in a compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, PCS1900, supporting GMSK and linear EDGE modulation. The module consists for a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance-matching circuitry for 50 ohms input and output impedances, and a Multi-function Power Amplifier Control(MFC) block.
Two separate Heterojunction Bipolar Transistor9HBT) PA blocks are fabricated onto InGaP die. One supports the GSM850.900 bands, the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. RF input and output ports are internally matched to 50 ohms to reduce the number of external components.

Table 13 PAM pin description

Pin	Mame	Description
1	MODE	GMSK/EDGE Power control mode. L=GMSK, H=EDGE
2	DCS/PCS_IN	RF input(DCS/PCS) DC Blocked
3	BS	Band Select
4	REVD1	Reserved
5	VBATT	DC Supply
6	VRAMP	Analog PA Bias Control(All Bands, EDGE Mode) Analog Output Power Control(All Bands, GMSK Mode)
7	GSM_IN	RF input(EGSM) DC Blocked
9	GSM_OUT	RF Output(EGSM) DC Blocked
10,11	GND	Ground
12	REVD2	Reserved
13,14,15	GND	Ground
16	DCS/PCS_OUT	RF Output(DCS/PCS) DC Blocked
Pad	GND PAD GRID	Ground pad grid is device underside.

3.27 Mode Selection

Table 14 Mode Selection

MODE	MODE	RF INPUT	VRAMP	TX ENABLE
GSM	Low	Fixed	Vramp control output Power	High
EDGE	High	Ramp Burst Control	Vramp sets PA bias condition, fixed gain PA	High

MODE circuitry selects GMSK modulation (logic 0) or EDGE modulation (logic 1).
VRAMP controls the output power for GMSK modulation and provides bias optimization for EDGE modulation depending on the state of MODE control.

3.28 PAM Schematic

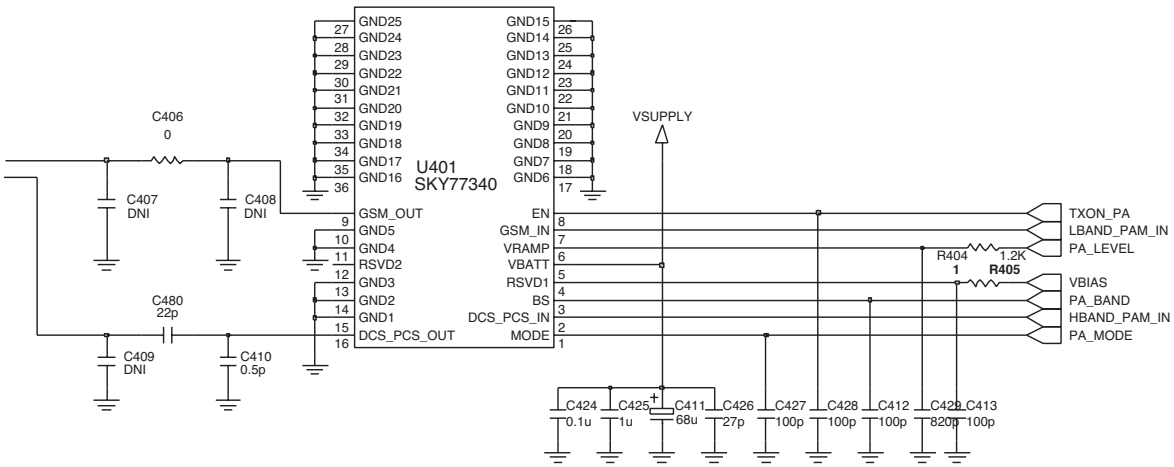
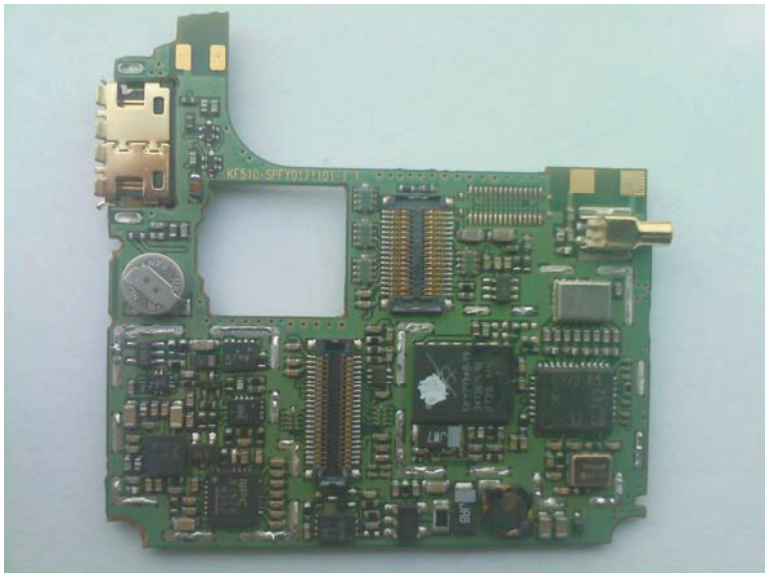


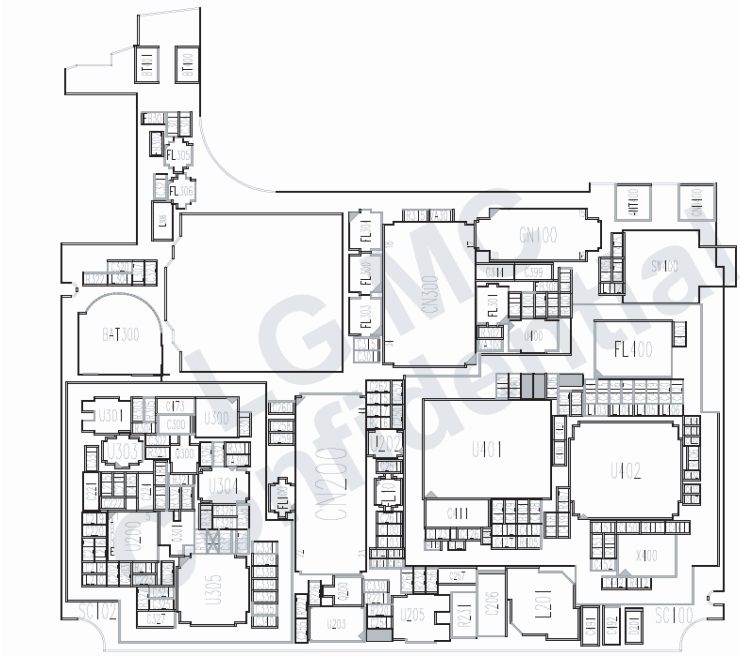
Figure 37 PAM schematic

4. PCB layout

4.1 Main & Sub PCB component placement

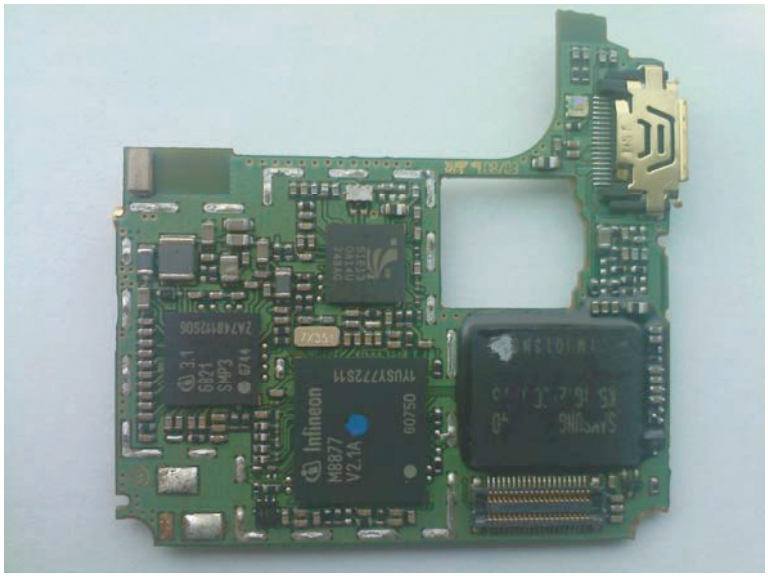


Main PCB Top

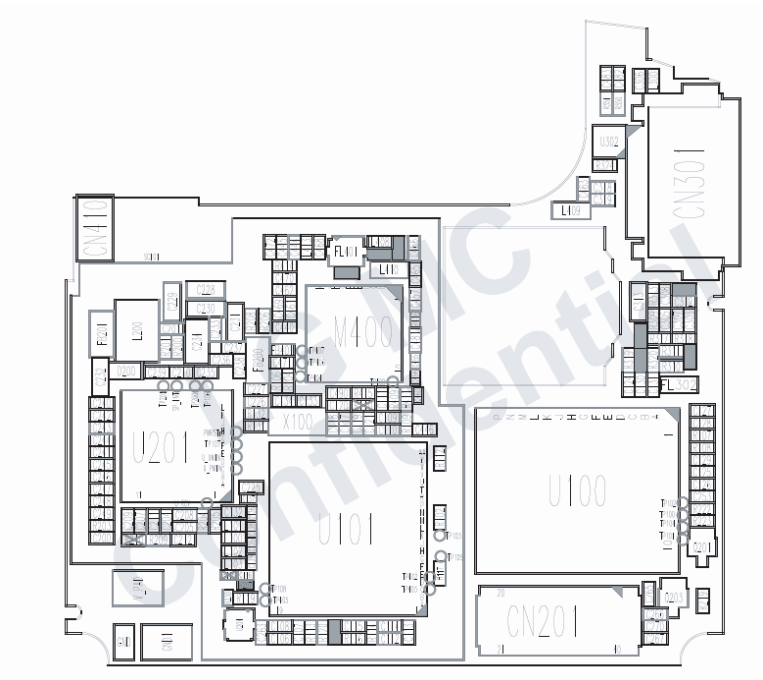


Main PCB Top placement

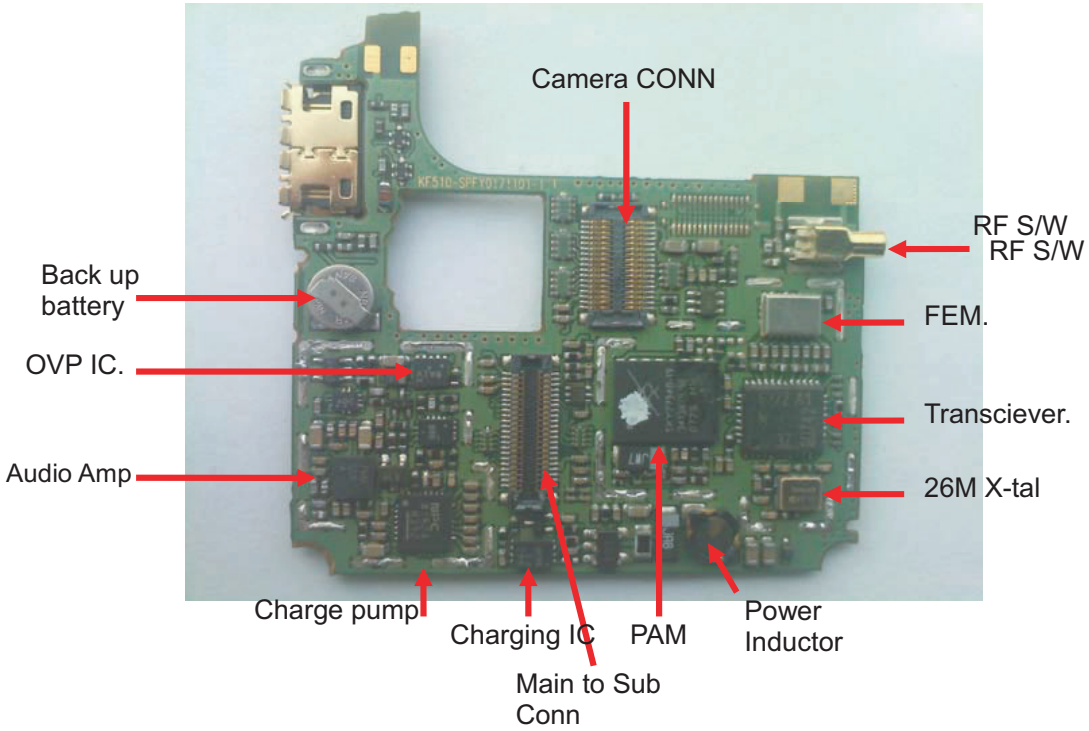
4. PCB layout

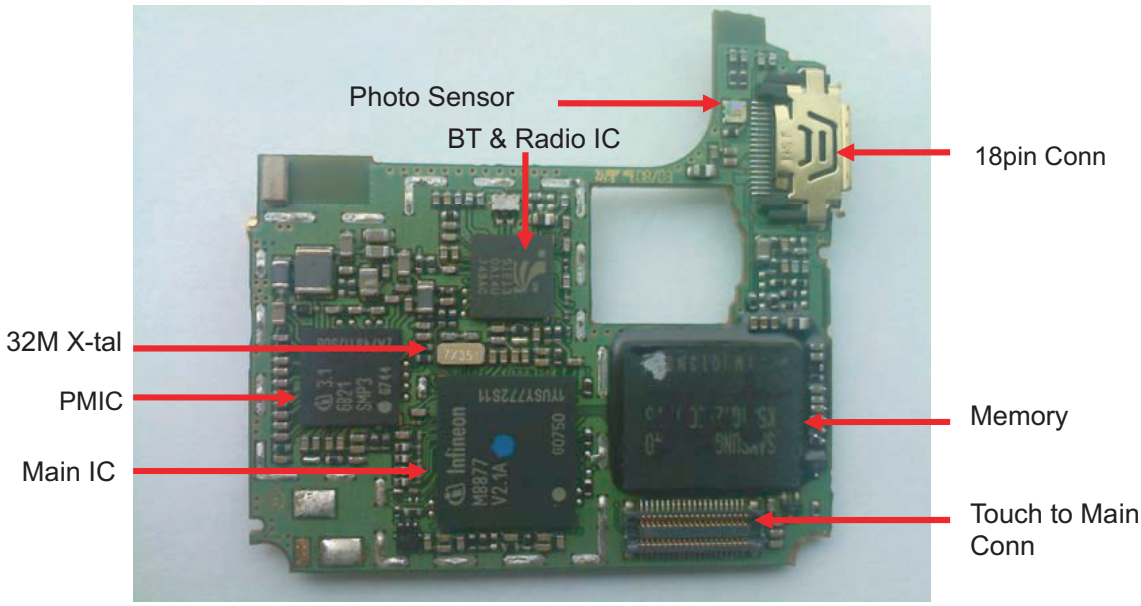


Main PCB bottom

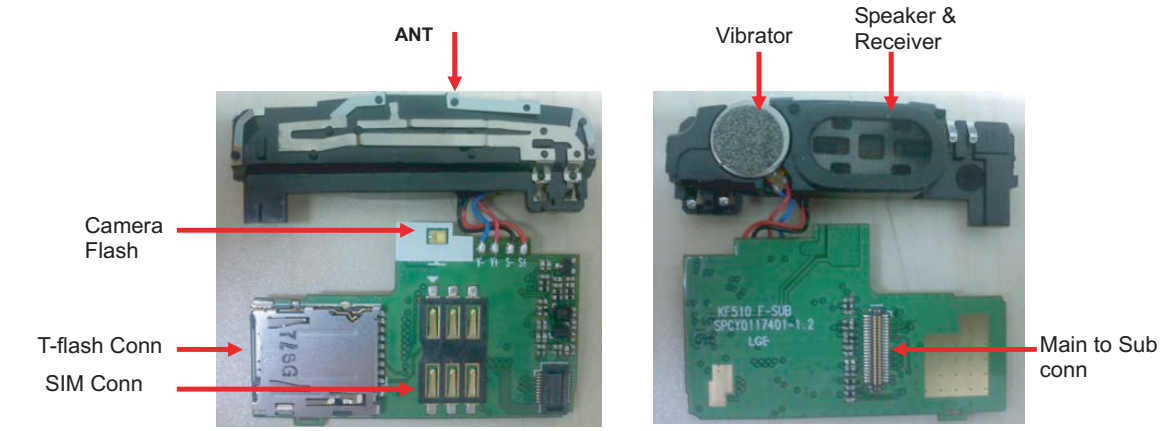


Main PCB bottom placement

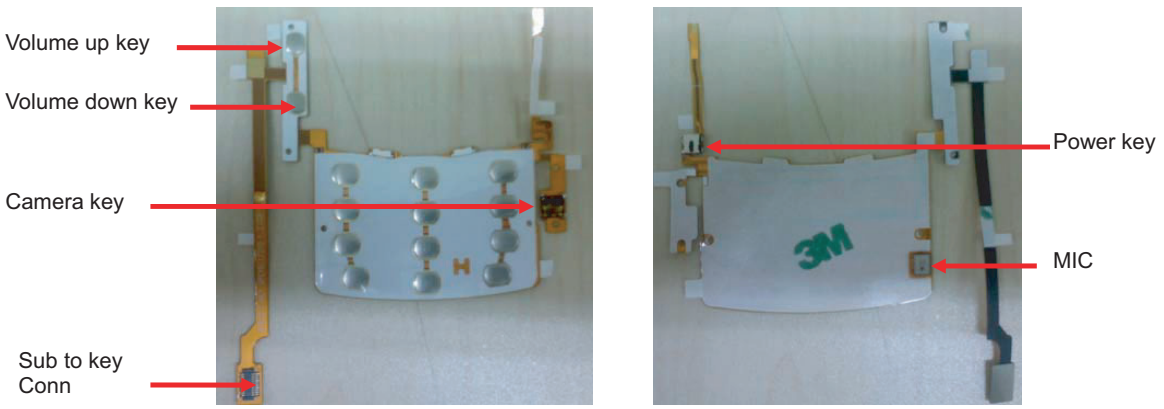




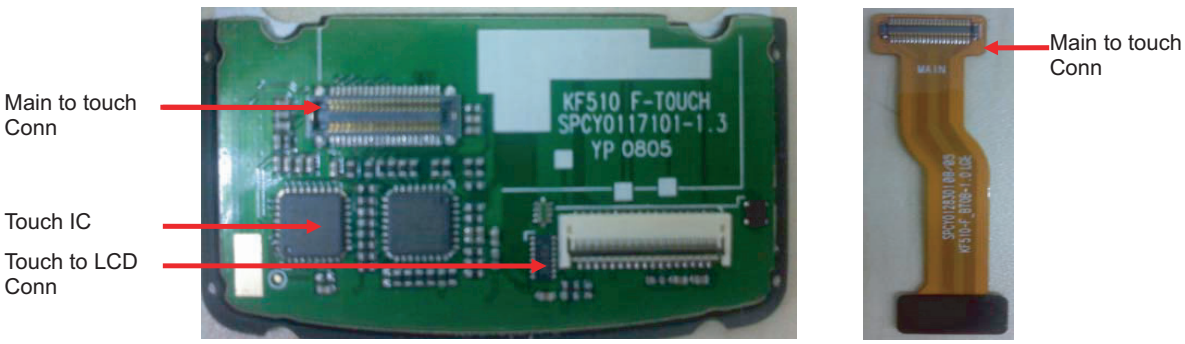
4. PCB layout



Sub FPCB



Key FPCB

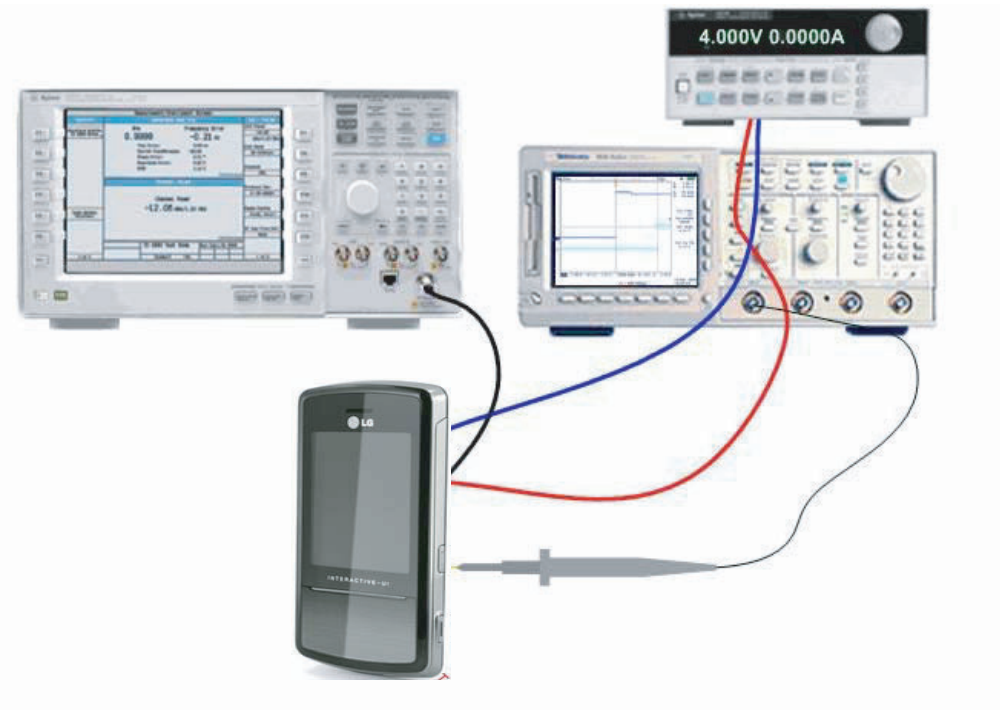


Touch FPCB

B to B Conn

5. Trouble shooting

5.1 Trouble shooting test setup



Equipment setup

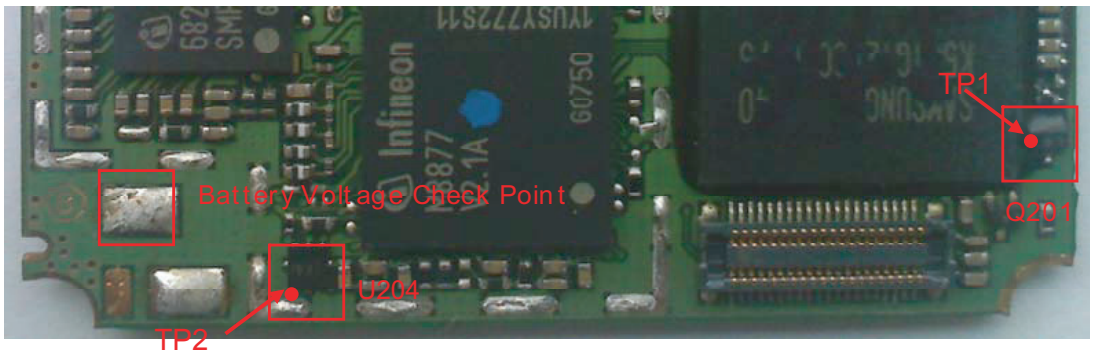
Power on all of test equipment

- Connect PIF-UNION JIG or dummy battery to the DUT for power up.
- Connect mobile switch cable between Communication test set and DUT when you need to make a phone call.
- Follow trouble shooting procedure

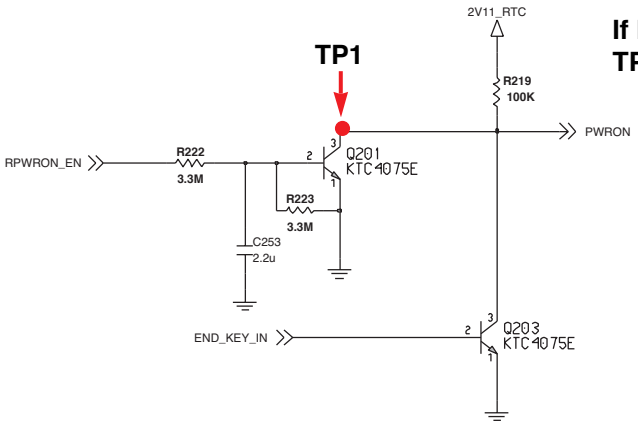
5.2 Power on Trouble

Check Points

- Battery Voltage(Need to over 3.35V)
- Power-On Key detection (PWRON signal)
- Outputs of LDOs from PMIC

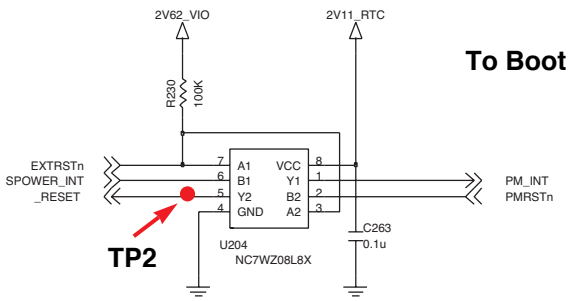


Remote Power On

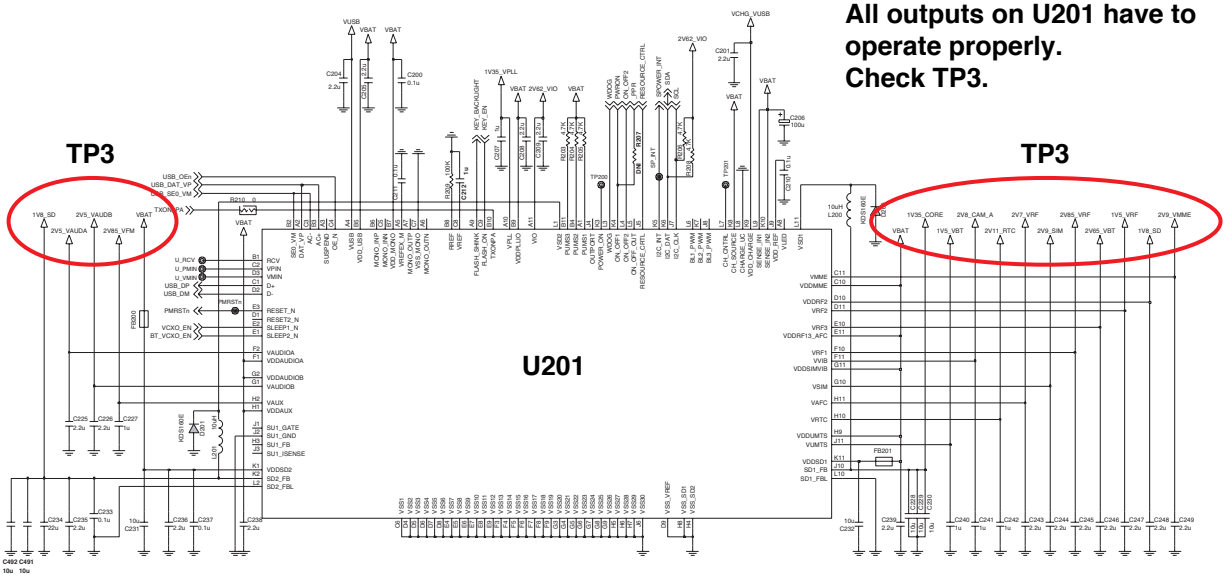


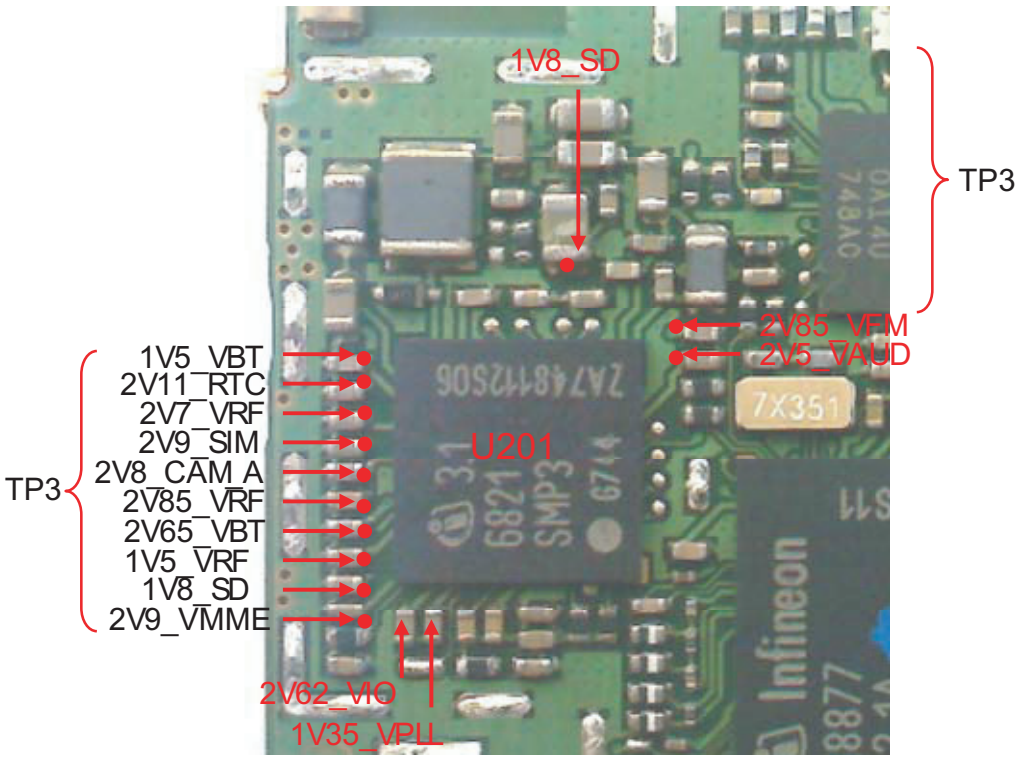
If Power On Key is pressed, TP1 is low

EXTERNAL RESET



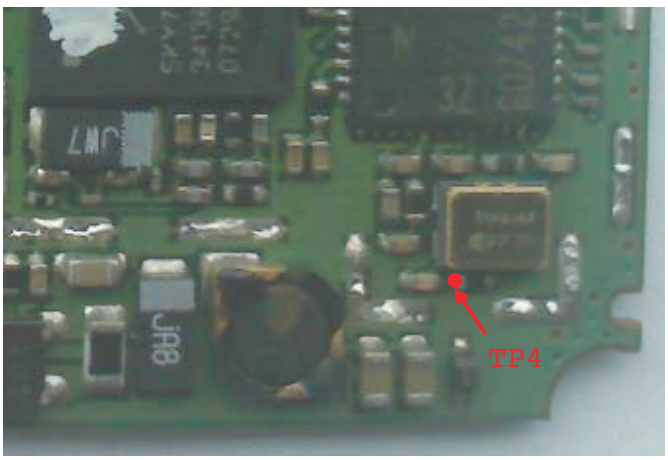
To Boot the phone, TP2 signal is high

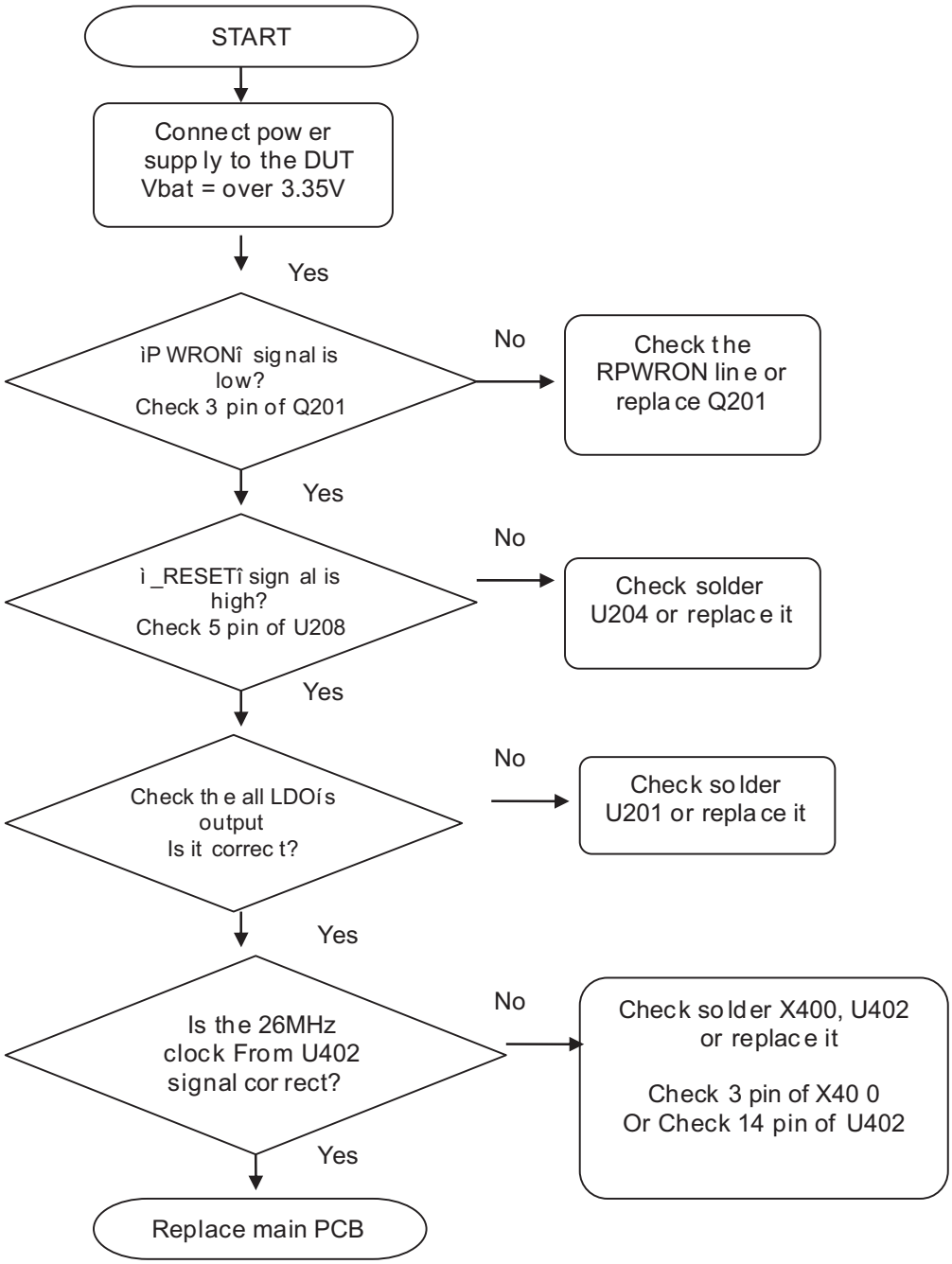




All Port on U201 have to output proper voltage level.

LDO	Net name	Output Voltage	Output Current	Usage
VSD1	1V35_Core	1.35V	600mA	S-Gold3 Core & for LDO
VSD2	1V8_SD	1.8V	300mA	Memory
VAUX	2V85_VFM	2.85V	100mA	FM Radio & LCD signal
VIO	2V62_VIO	2.62V	100mA	Peripherals
VSIM	2V9_SIM	2.9V	70mA	SIM card
VMME	2V9_VMME	2.9V	150mA	u-SD
VUMTS	1V5_VBT	2.85V	110mA	Headset AMP
VUSB	VUSB	3.1V	40mA	USB Signal line
VLED	N.A.	2.9V	10mA	Not used
VAUDIOa	2V5_VAUDA	2.5V	200mA	Stereo headset, Mono earpiece
VAUDIOb	2V5_VAUDB	2.5V	50mA	Analog parts of S-Gold
VRF1	2V85_VRF	2.85V	150mA	2.85 V supply for PMB6272 RF transceiver
VRF2	1V5_VRF	1,53V	100mA	1.5 V supply for PMB6272 RF transceiver
VRF3	2V65_VBT	2.7V	150mA	Bluetooth
VPLL	1V35_VPLL	1.35V	30mA	S-GOLD3 PLL
VRTC	2V11_RTC	2.11V	4mA	Real Time Clock
VAFC	2V7_VRF	2.65V	5mA	Not used
VVIB	2V8_CAM_A	2.8V	140mA	Camera Analog Part





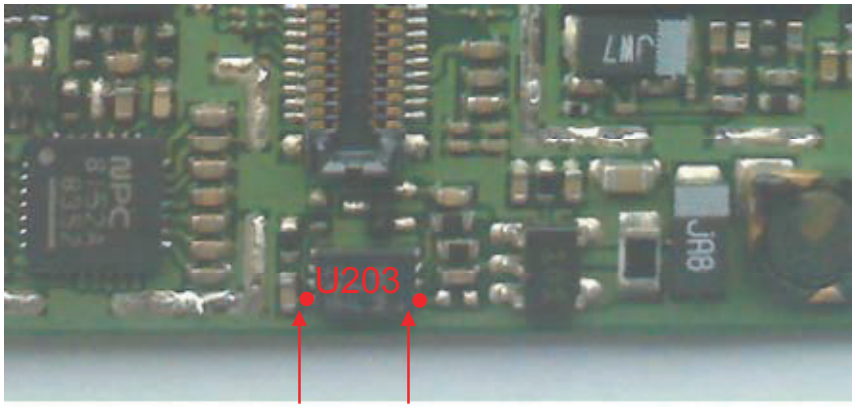
5.3 Charging trouble

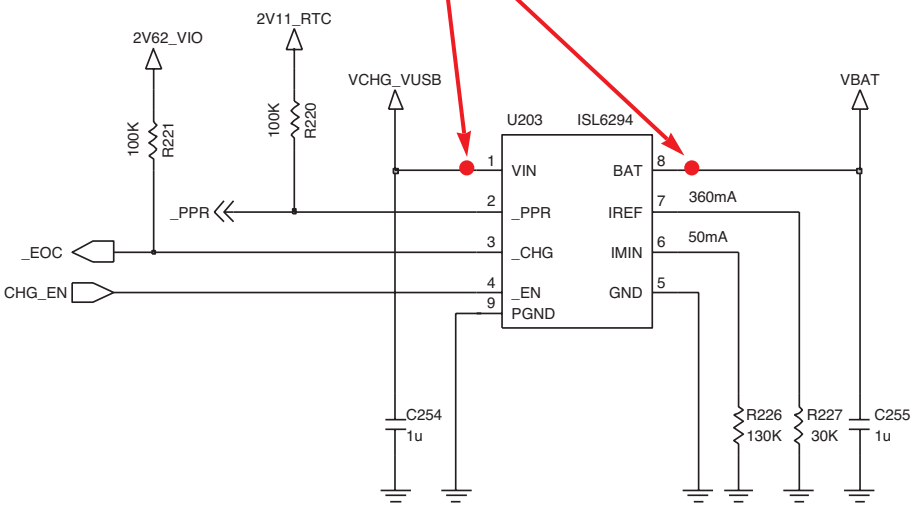
Check Points

- Connection of TA (check TA voltage 4.8V)
- Check the Voltage drop on Charging Current Path
- Battery voltage

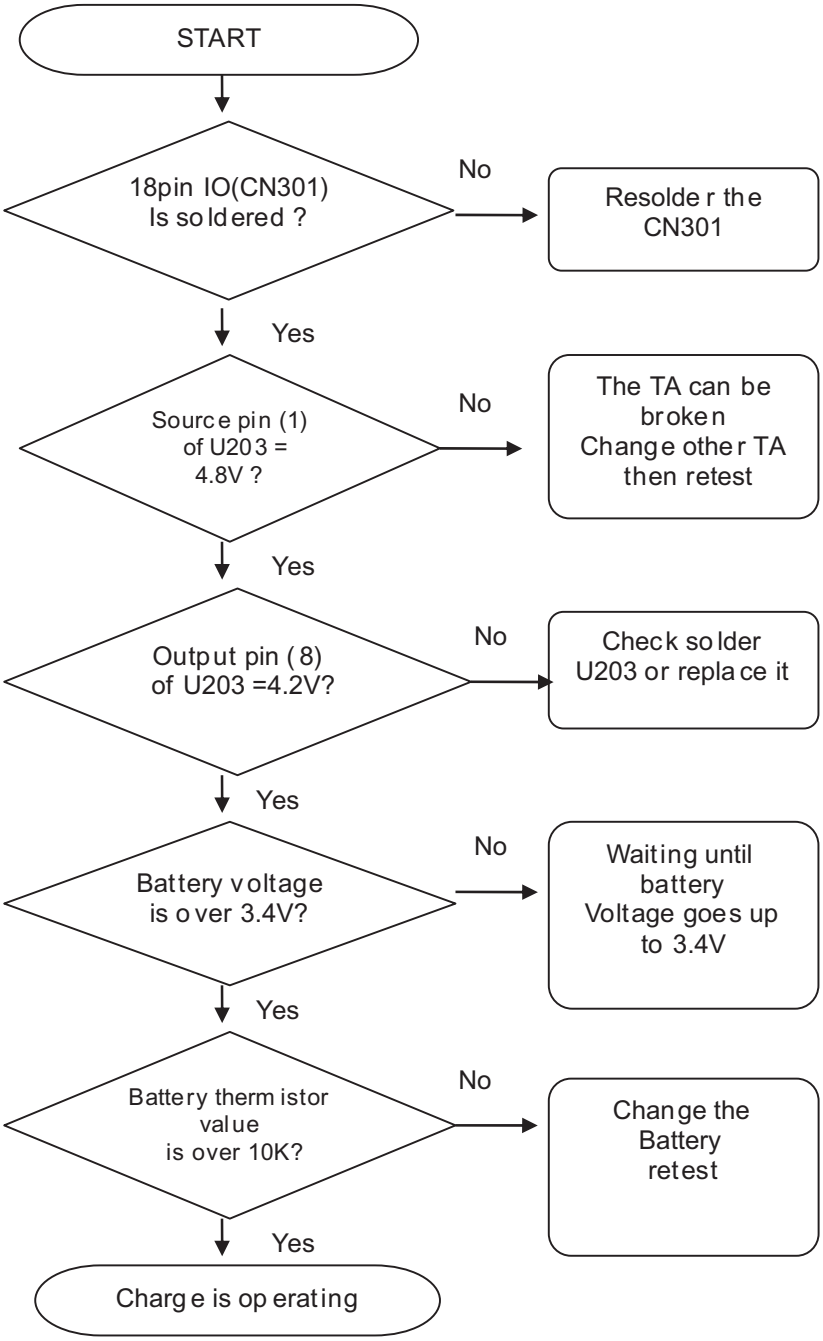
1 Charging method : CC-CV
2 Charger detect voltage : 4.0 V
3 Charging time : 2h 30m
4 Charging current : 400 ~ 500 mA
5 CV voltage : 4.2 V
6 Cutoff current : 85 mA
7 Full charge indication current (icon stop current) : 85 mA
8 Recharge voltage : 4.15 V

4.2V~3.69V **3.69V~3.53V** **3.53V~3.43V** **3.43V~3.3V**





5. Trouble shooting

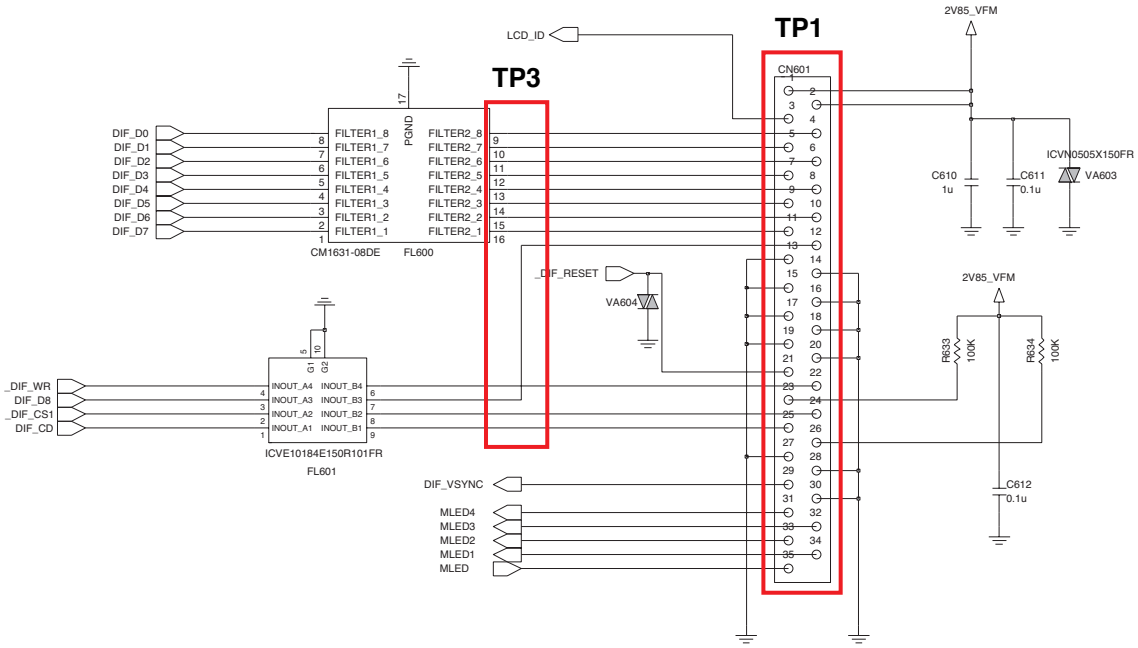


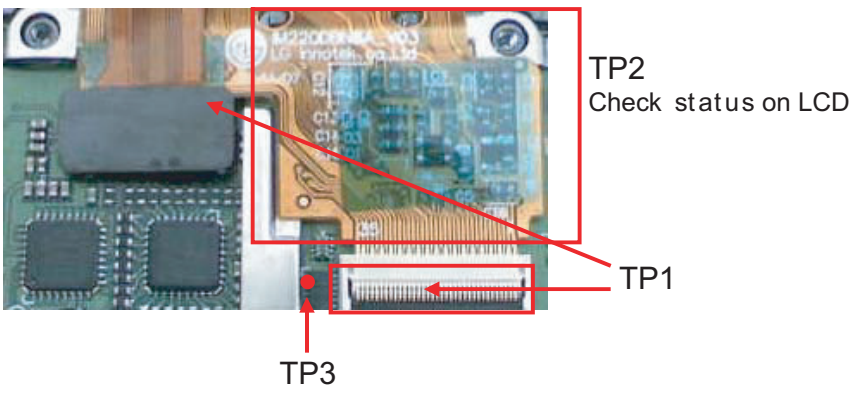
5.4 LCD display trouble

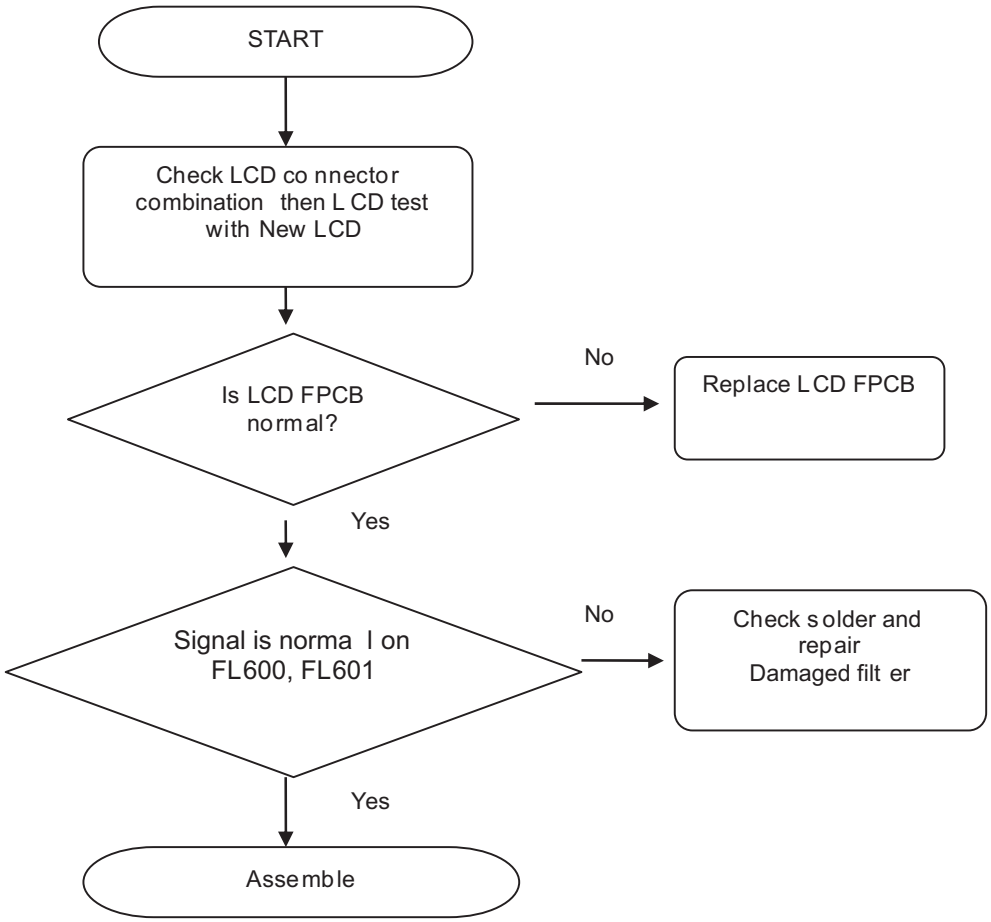
Check Points

- LCD assembly status (LCD FPCB, Connector on FPCB)
- EMI filter soldering
- Connector combination

LCD CONNECTOR





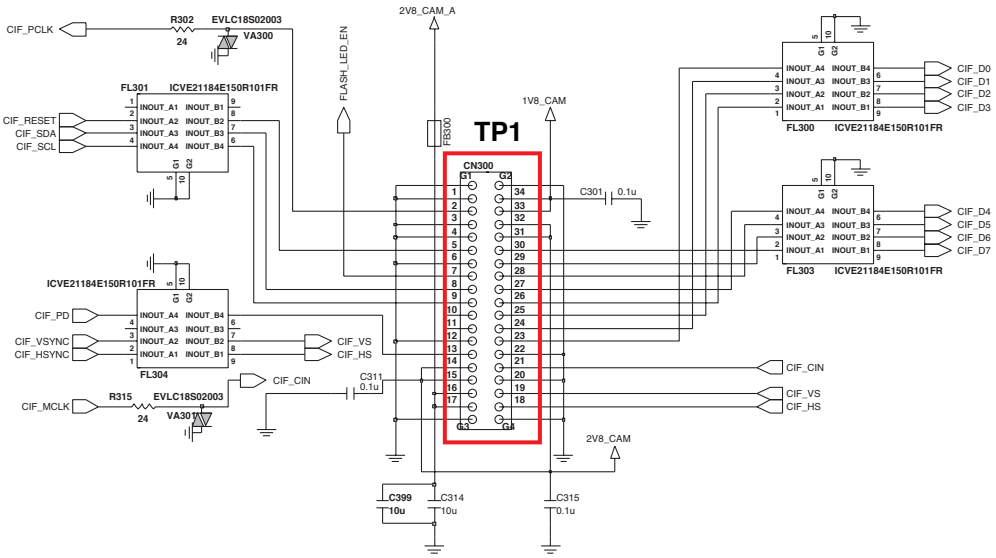


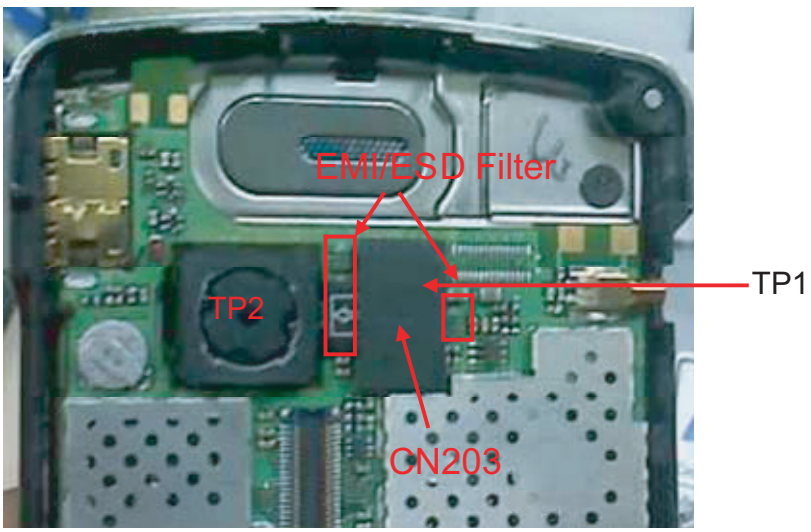
5.5 Camera Trouble

Check Points

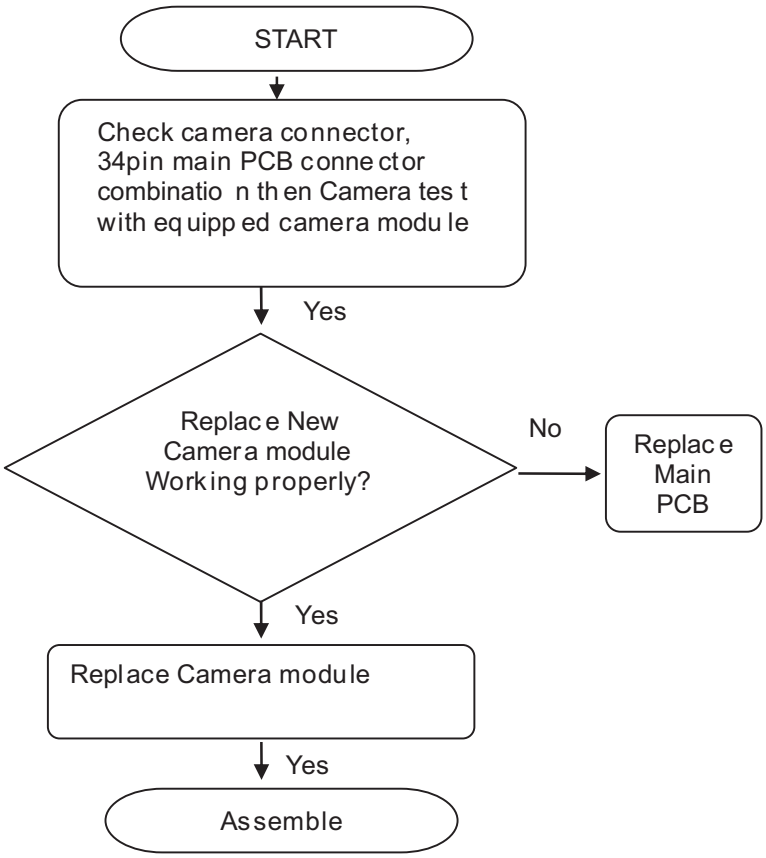
- Connectors combination
- FPCB status

3M Camera Sensor





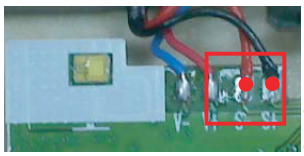
5. Trouble shooting



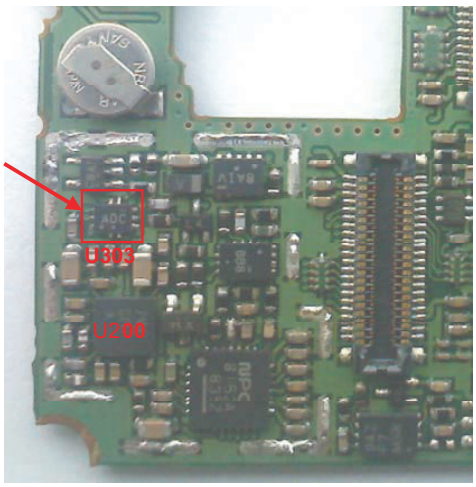
5.6 Receiver & Speaker trouble

Check Points

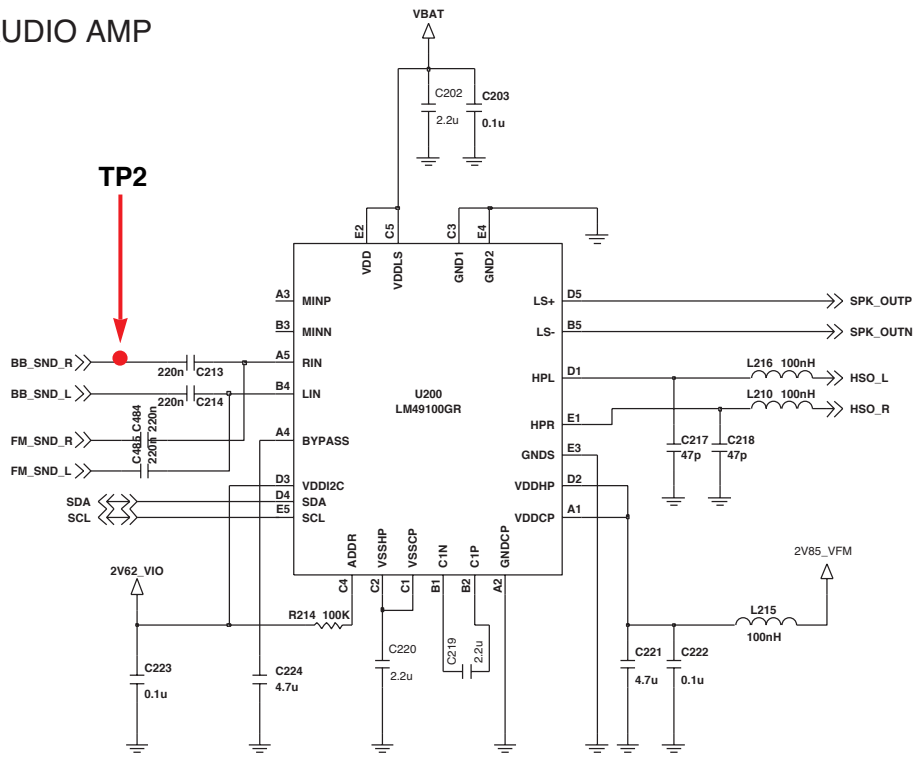
- Speaker soldering status
- Audio amp & Analog switch soldering status



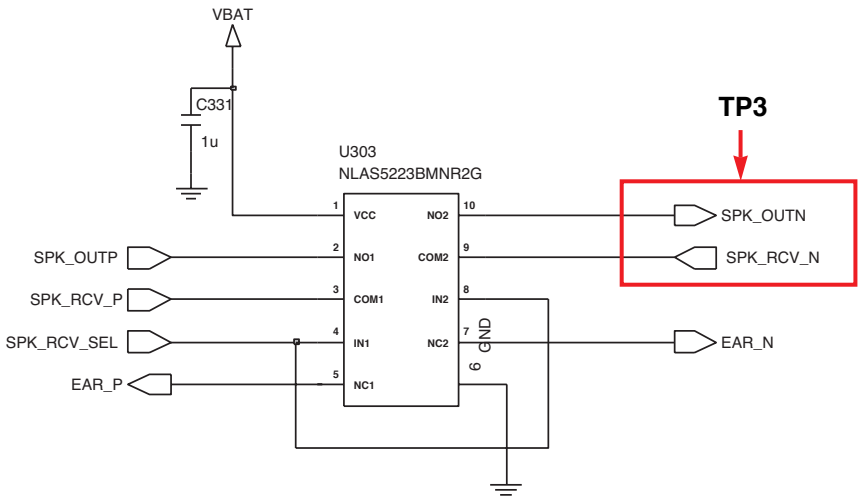
TP1 Check soldering status
TP4 Check signal status



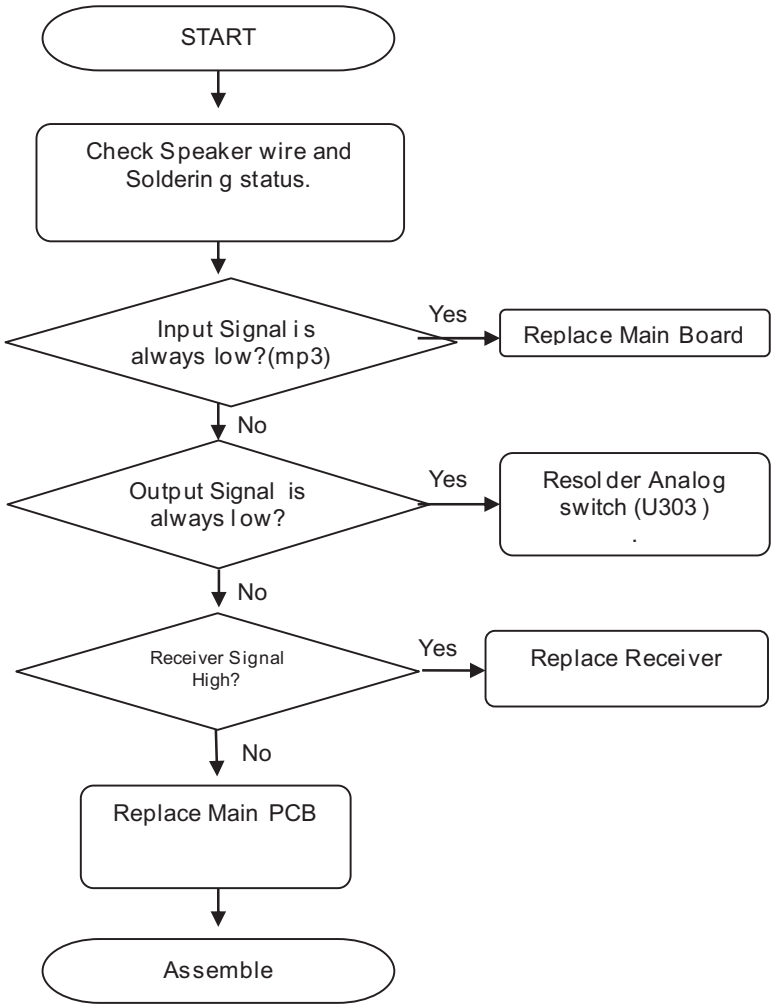
AUDIO AMP



MULTI-PORT SWITCH 2



SPK_RCV	HSO	Pin6	Pin7	Application
H / L				
	L	HSO_L	HSO_R	HEADSET
H	H / L	SPK_OUTP	SPK_OUTN	SPEAKER
L		EAR_P	EAR_N	RECEIVER

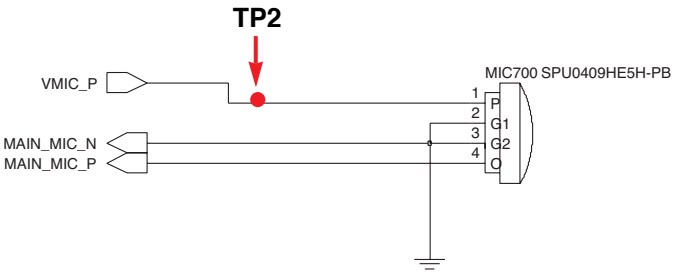


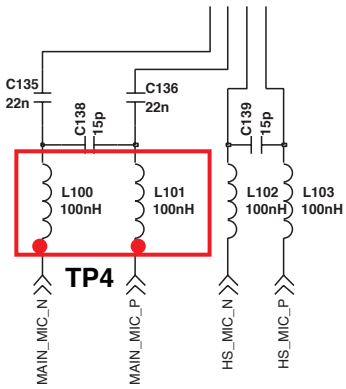
5.7 Microphone trouble

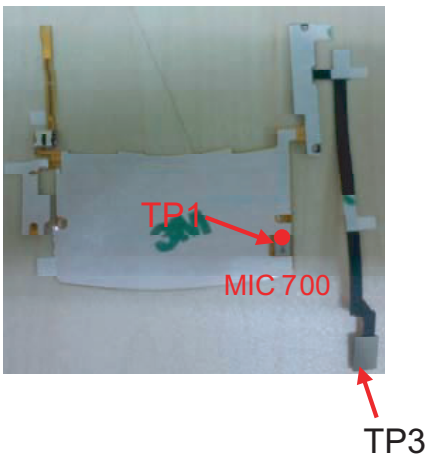
Check Points

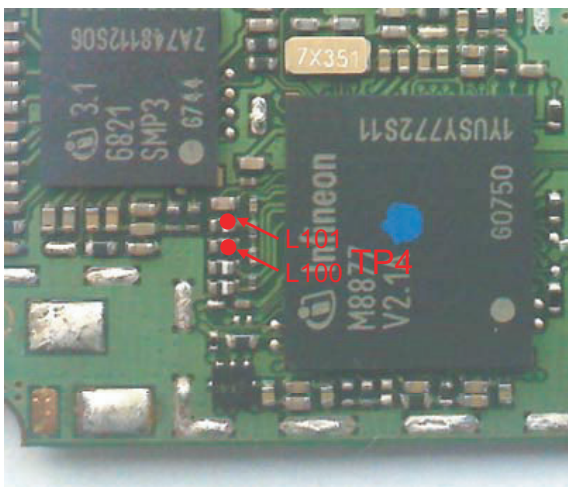
- Microphone hole
- Mic. Bias voltage level & signal line

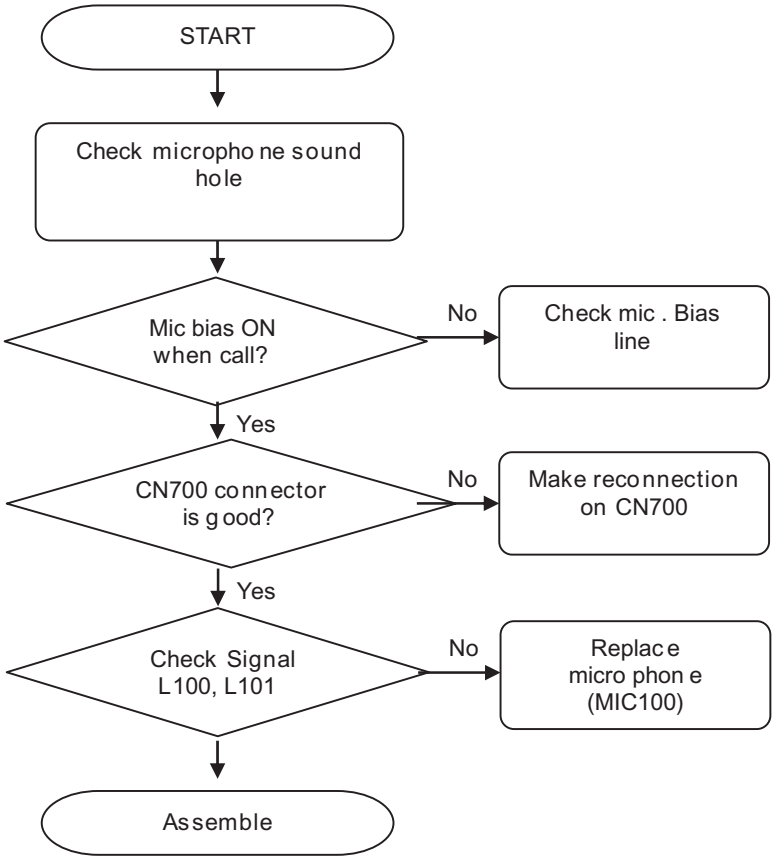
MAIN MIC











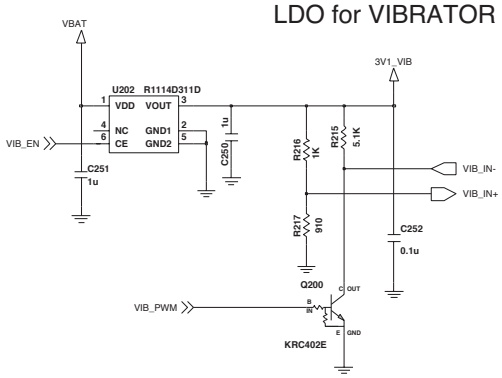
5.8 Vibrator trouble

Check Points

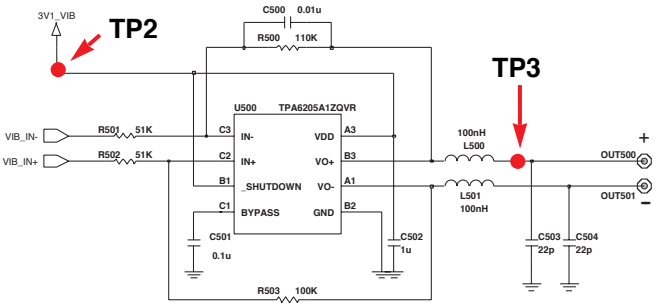
-Vibrator soldering

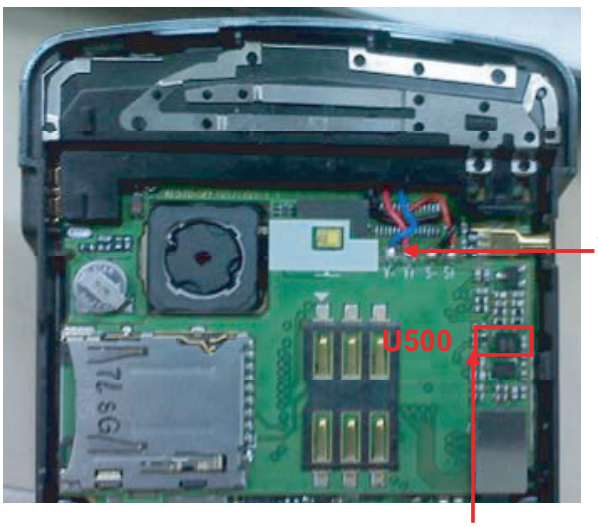
-IC is working correct

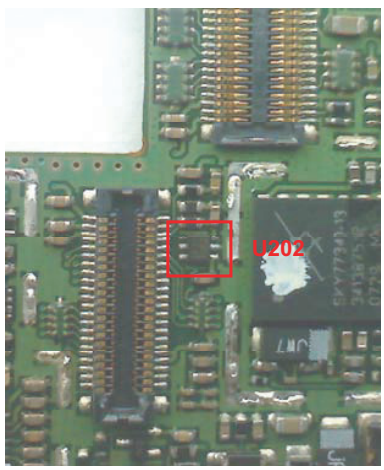
LDO for VIBRATOR



VIBRATOR

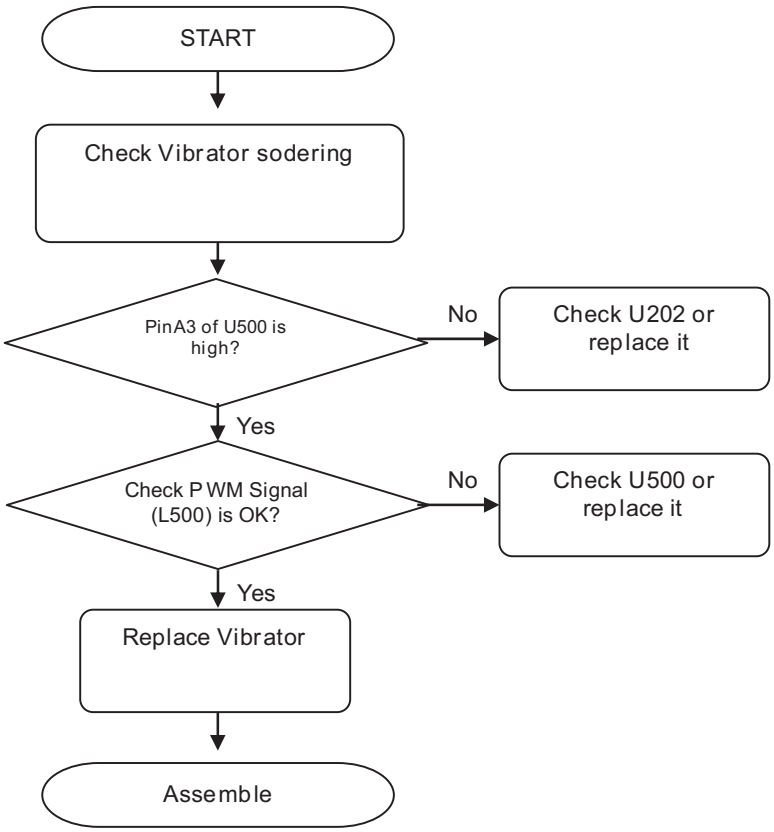






TP2 Check Pin A3

TP3 Check Pin A1,B3

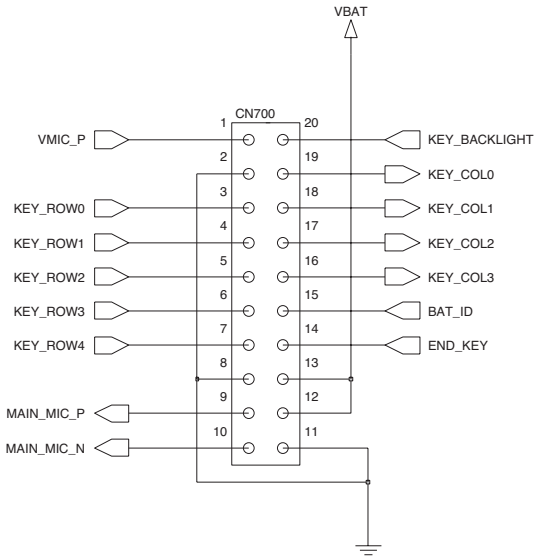


5.9 Keypad back light trouble

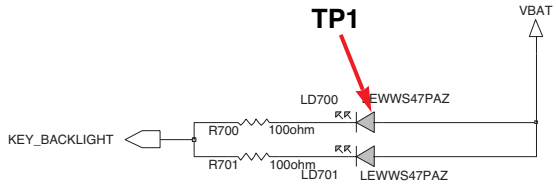
Check Points

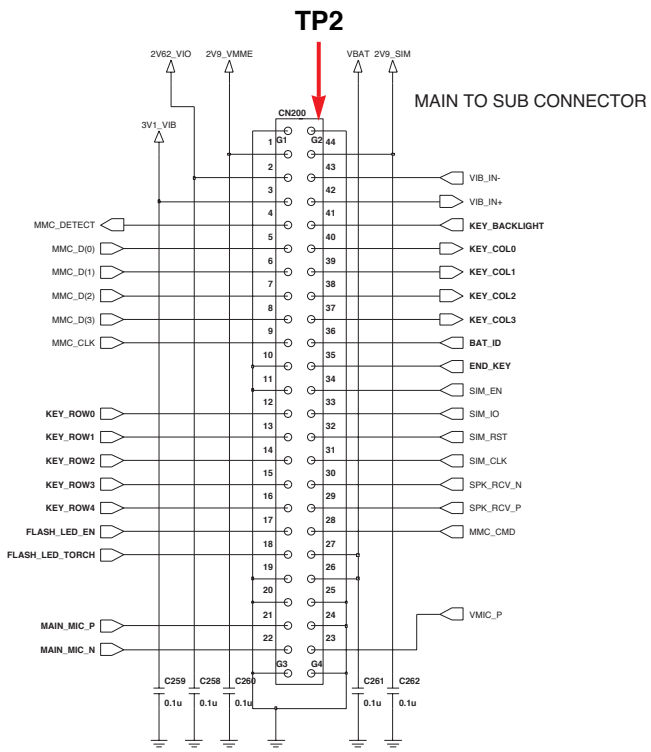
- Signal path is connected well
- Analog SW is working properly

NUMBER TO SUB CONNECTOR



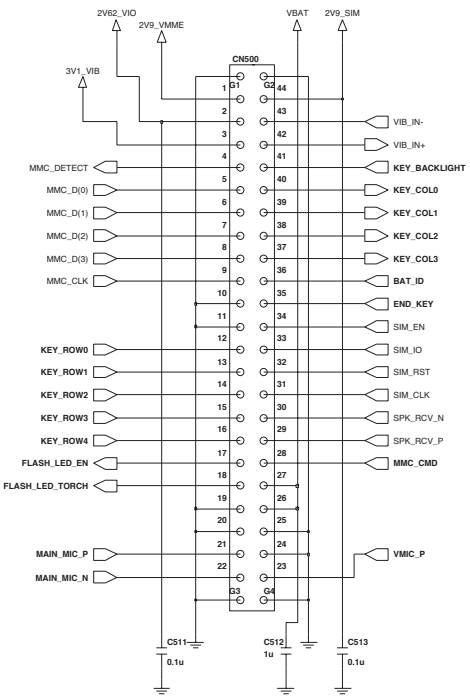
KEY BACKLIGHT

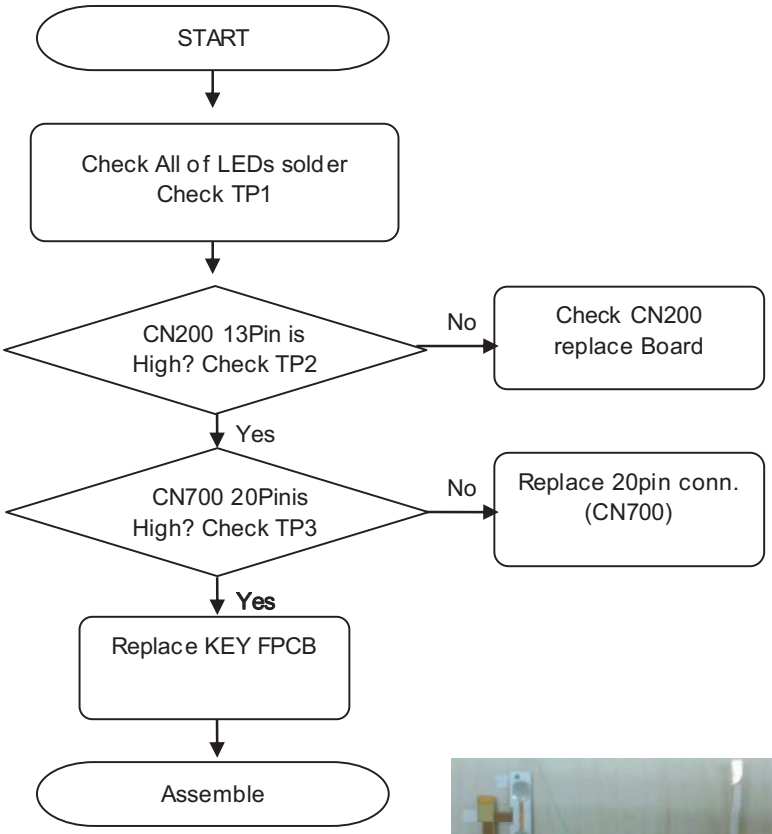


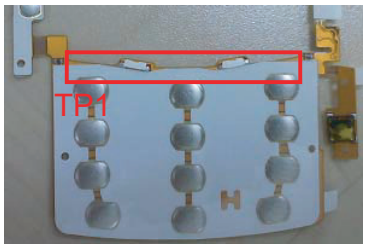


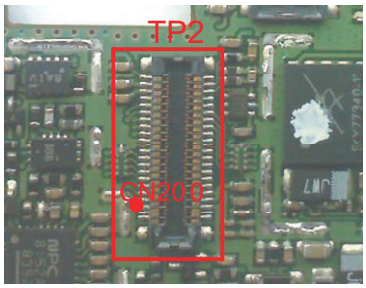
MAIN TO SUB CONNECTOR

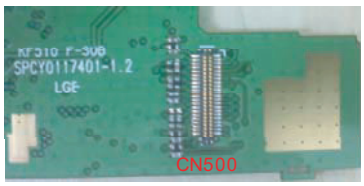
SUB TO MAIN CONNETOR

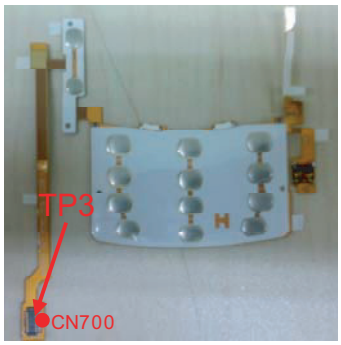


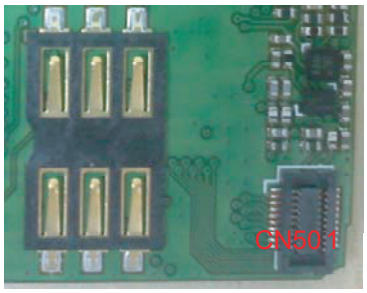










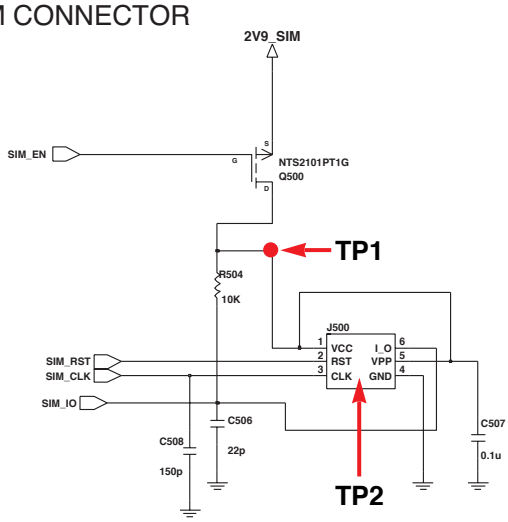


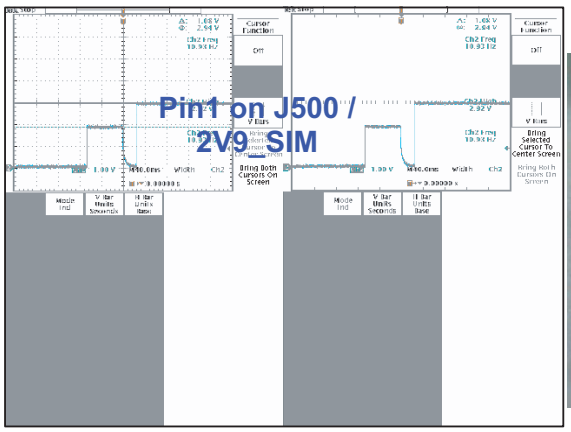
5.10 SIM & uSD trouble

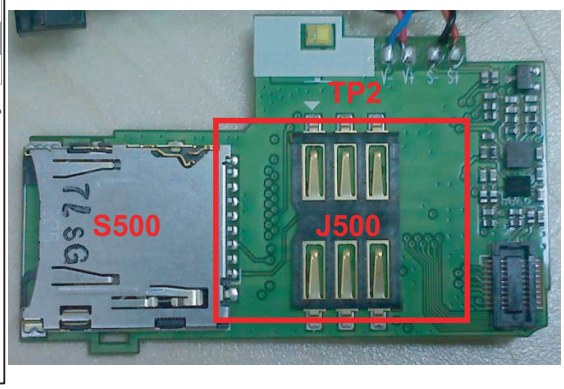
SIM Check Points

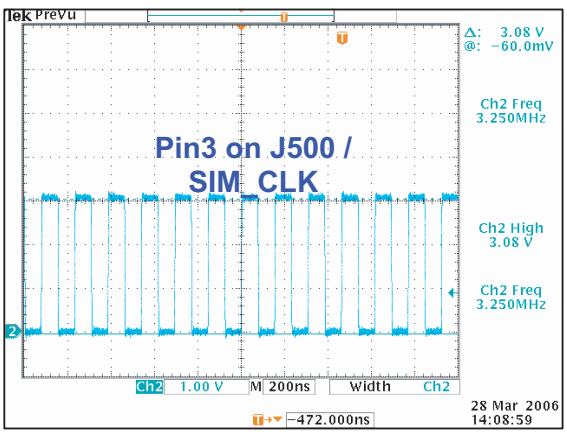
- Power is working
- Socket soldering
- Proper SIM is used

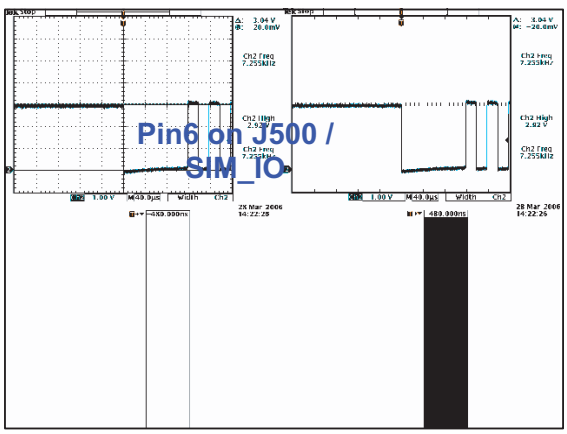
SIM CONNECTOR







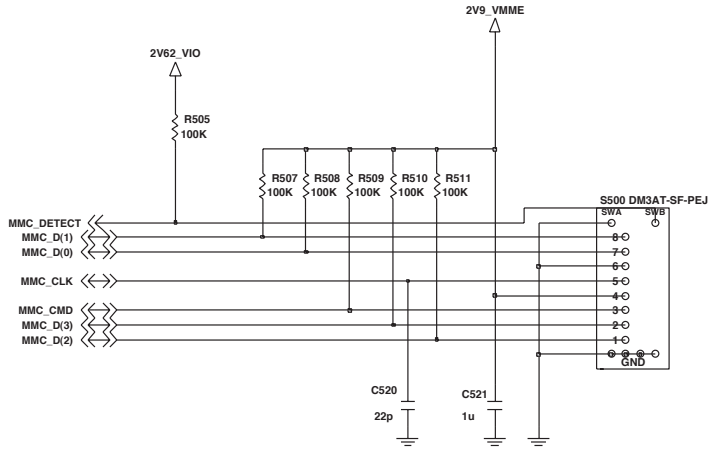


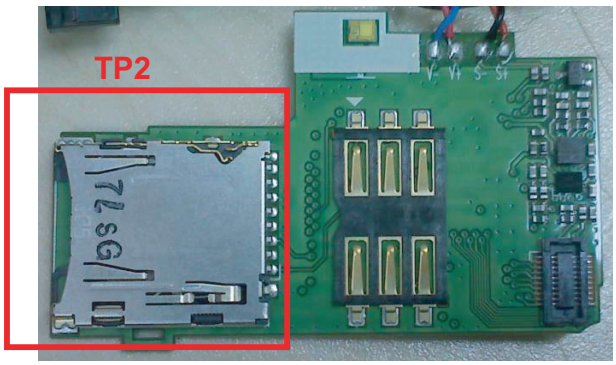


uSD Check Points

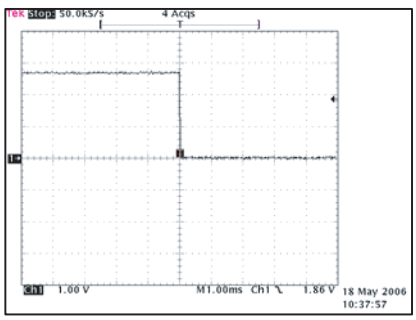
- Power is working
- Socket soldering
- Card detect is working

T-Flash CONNECTOR

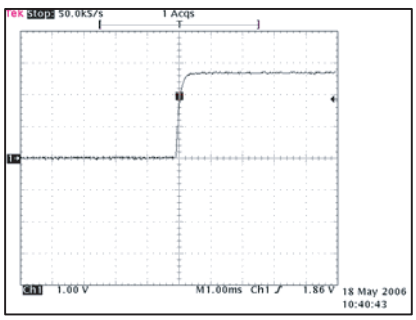




PIN SWB on S500 waveform

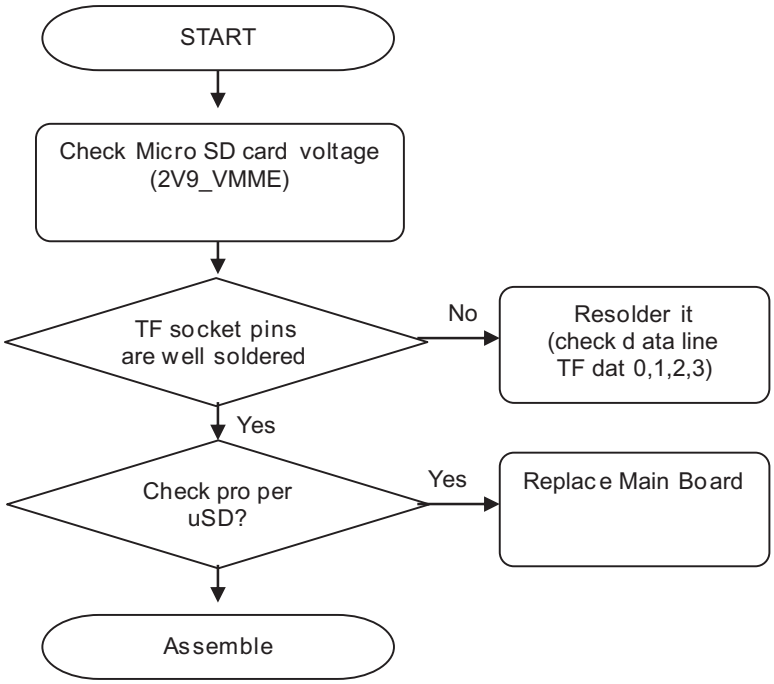


Card insert



Card eject

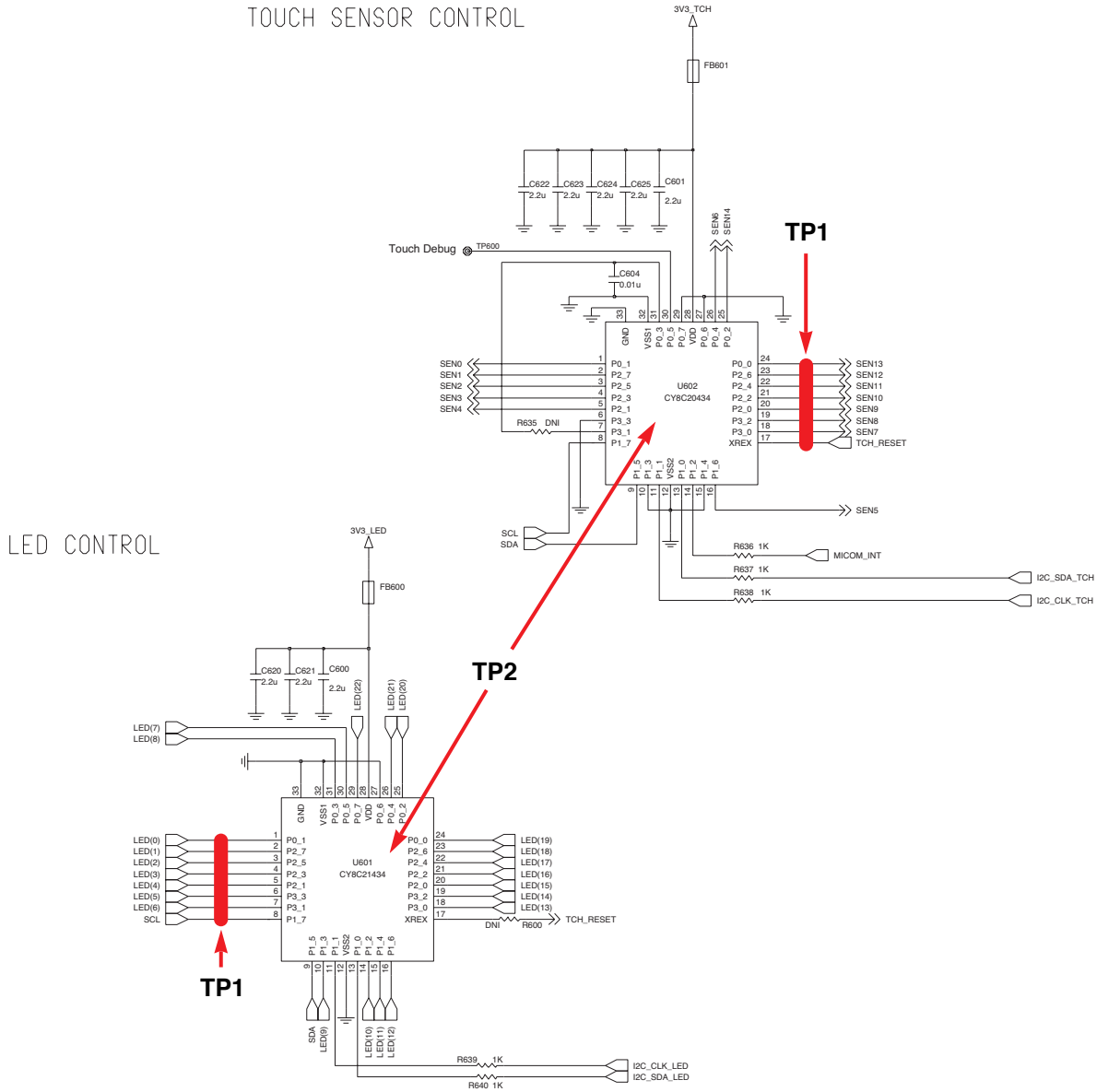
5. Trouble shooting



5.11 Touch pad trouble

SIM Check Points

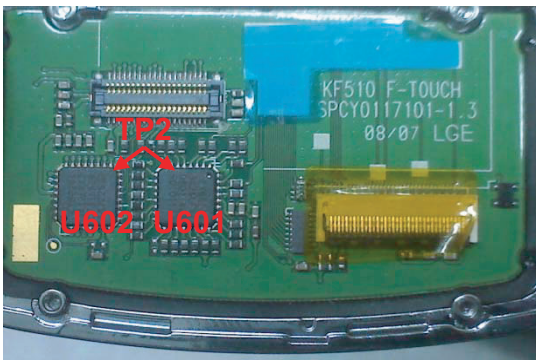
- Connectors combination`
- FPCB Crack

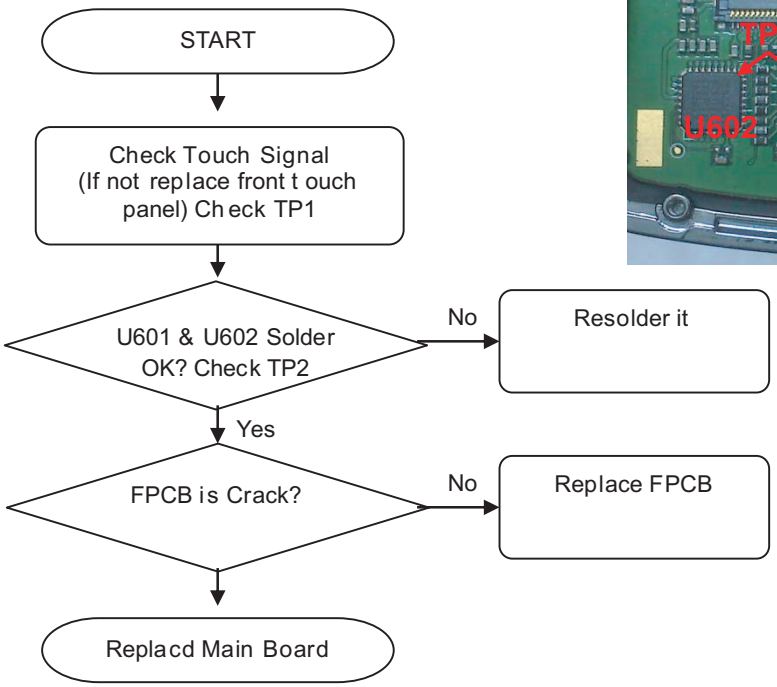


This fault mainly depend on Touch-panel Conn.

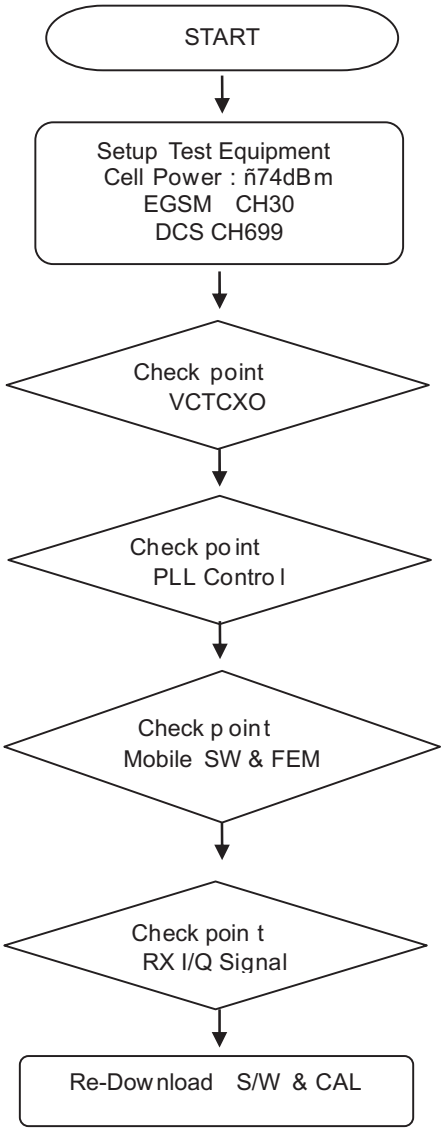
Almost of all case, Replace LCD FPCB.

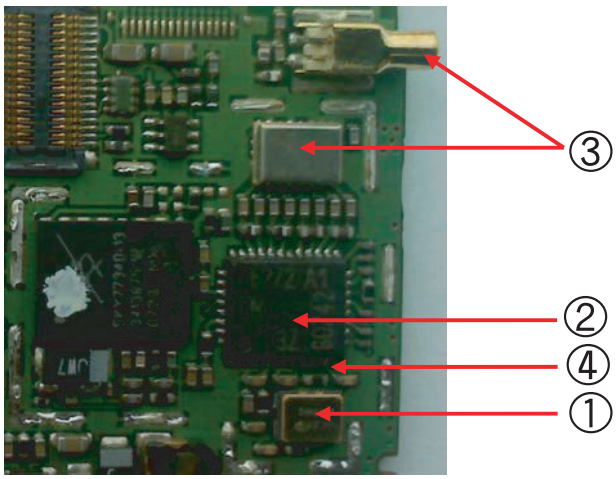
5. Trouble shooting





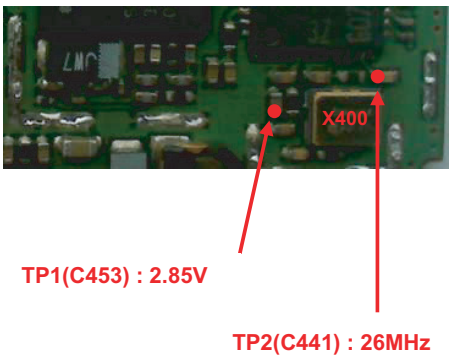
5.12 Trouble Shooting of Receiver Part

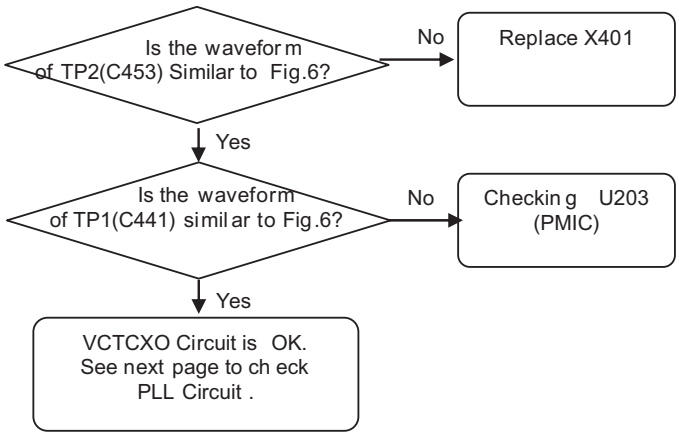


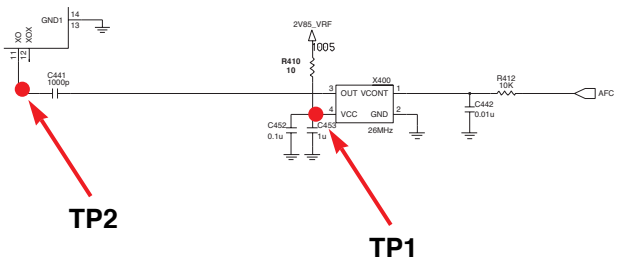


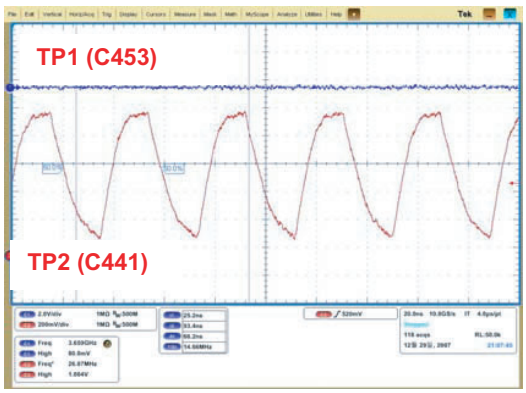
Main PCB Bottom Top

5.12.1 Checking VCTCXO Circuit

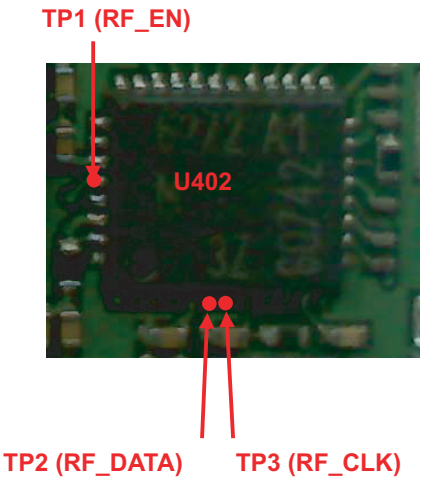


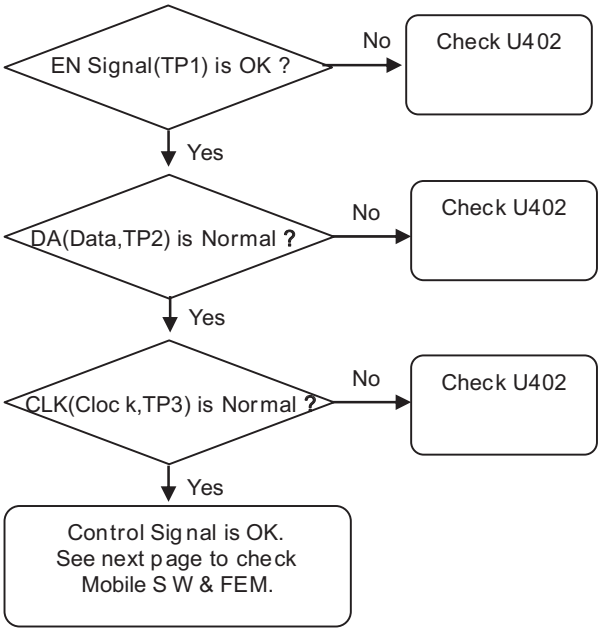


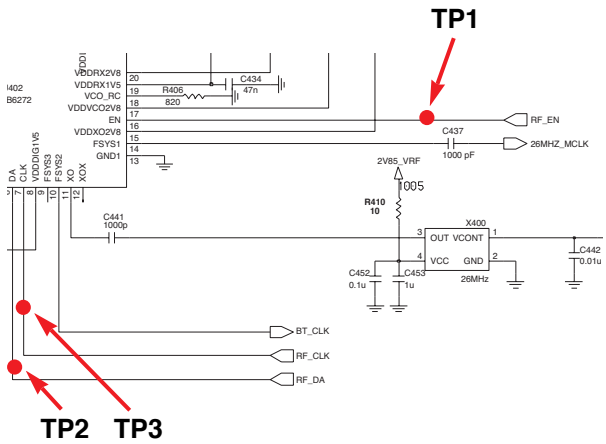




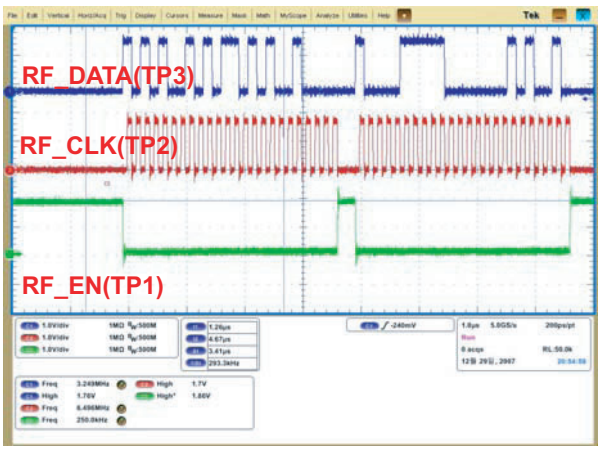
5.12.2 Checking PLL Control signals





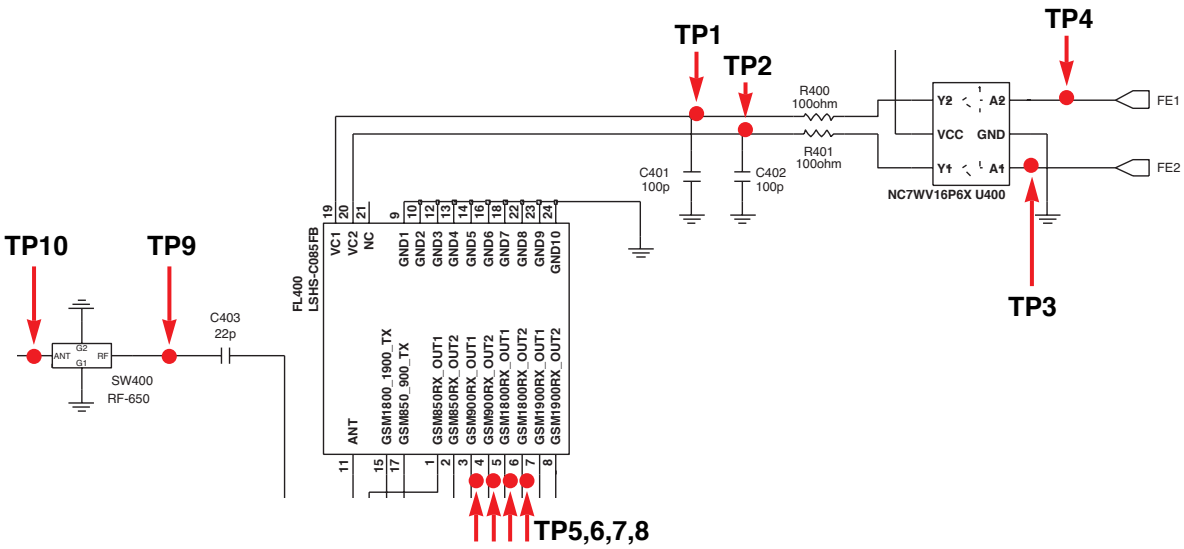


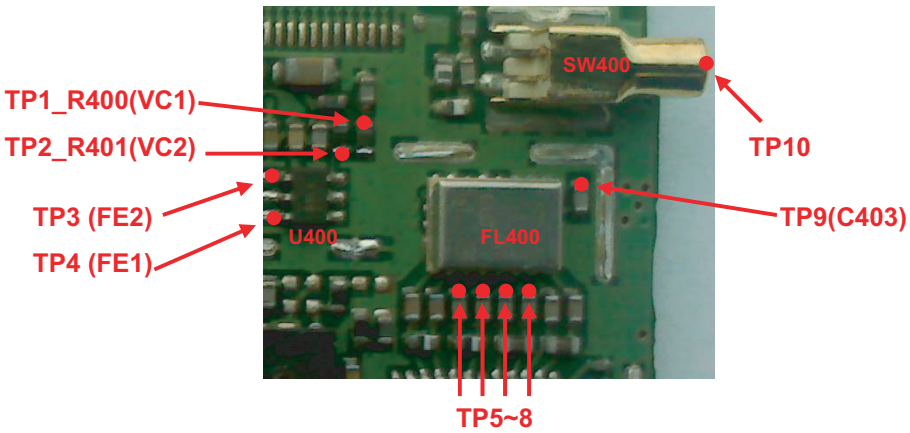
RF Transceiver Circuit Diagram



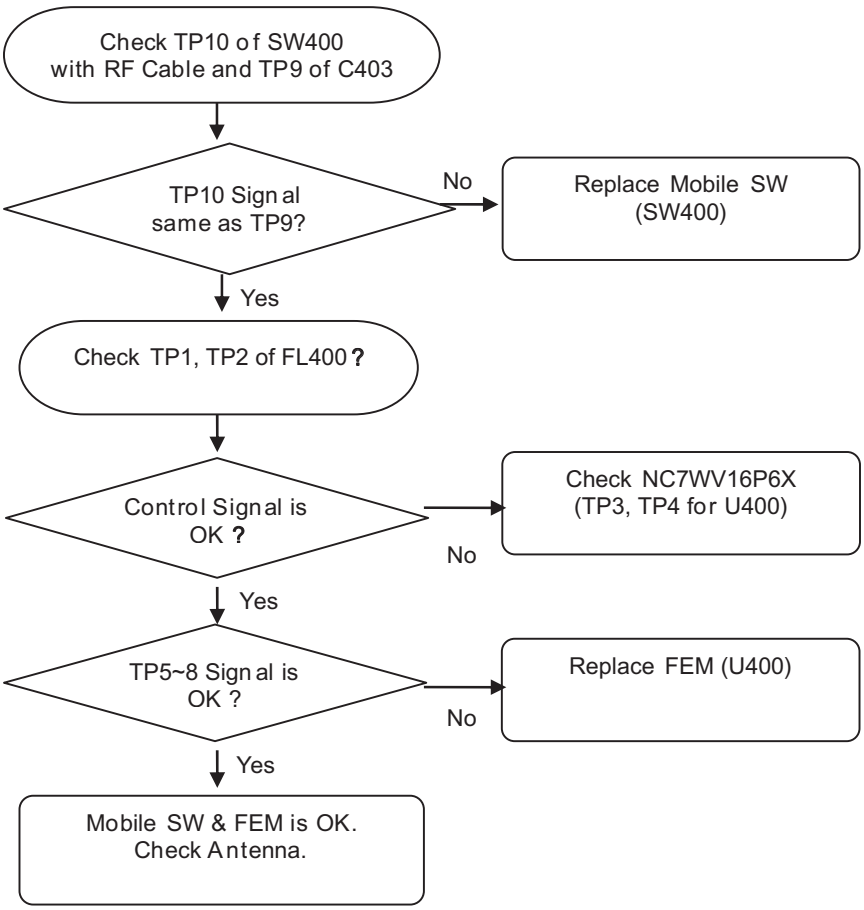
PLL Control Waveform

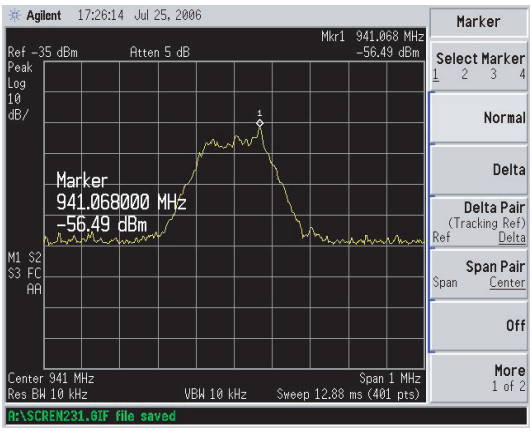
5.12.3 Checking Mobile SW & FEM



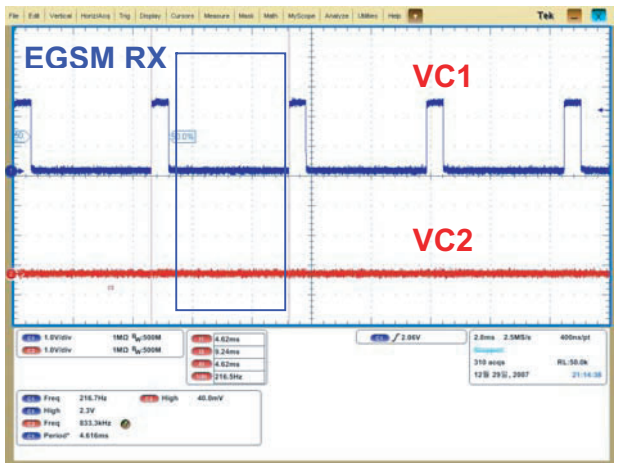


RX Mode	EGSM	DCS	PCS
VC1	Off	Off	Off
VC2	Off	Off	Off



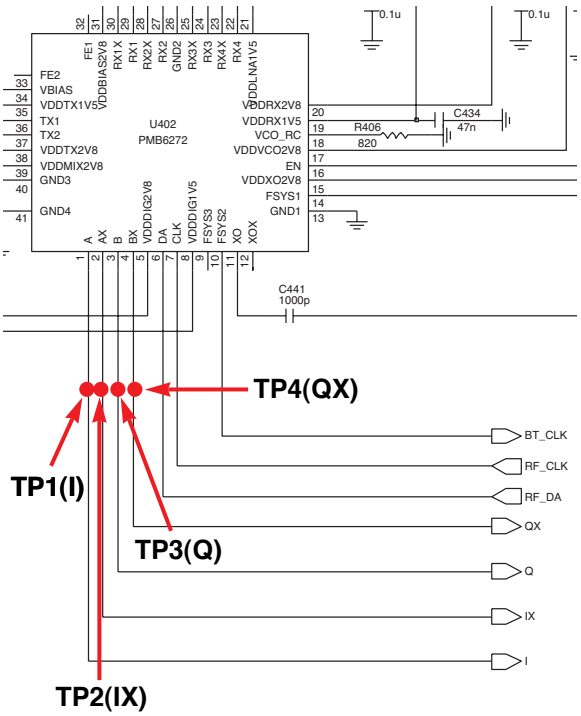


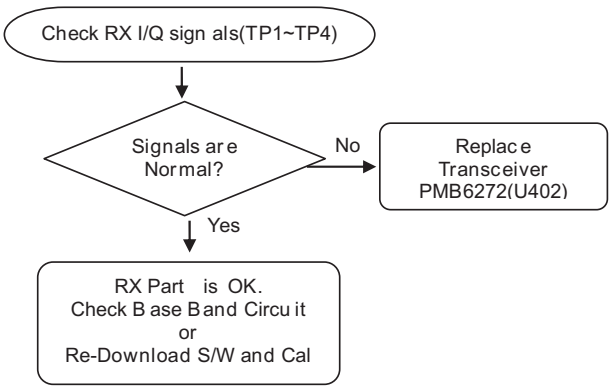
Mobile SW (R403)

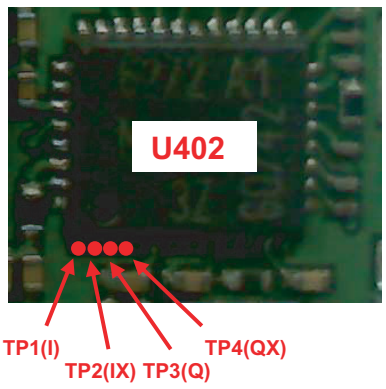


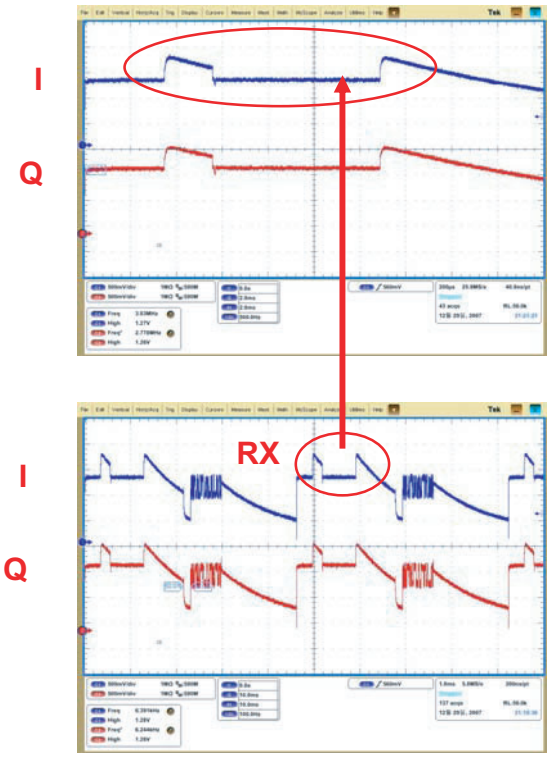
FEM Control Signals

5.12.4 Checking RX I/Q Signals

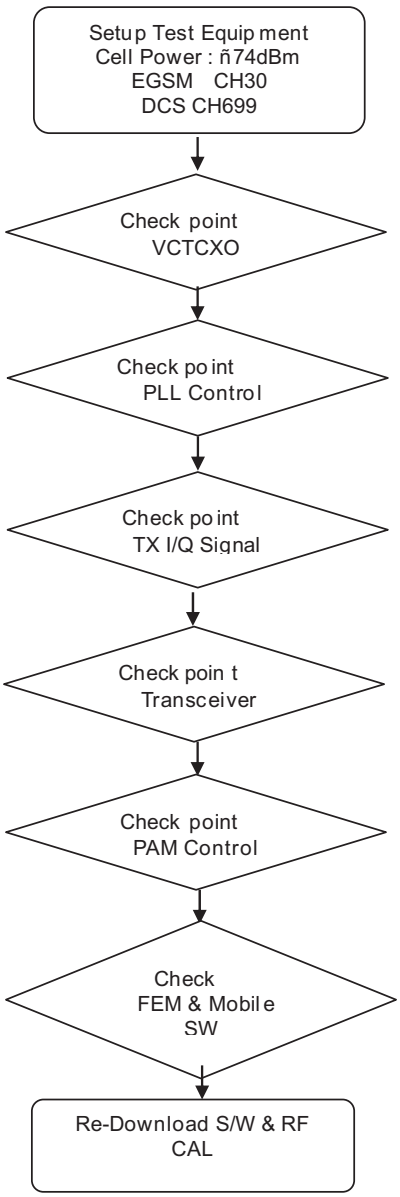


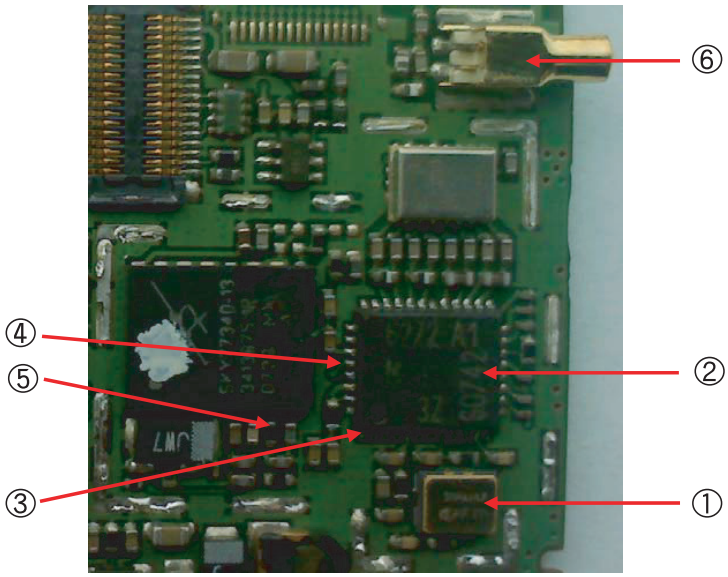






5.13 Trouble Shooting of Transmitter Part





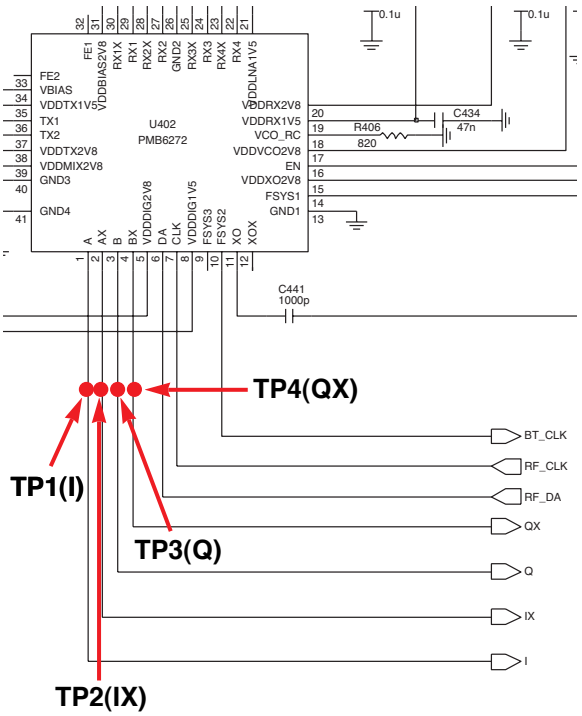
5.13.1 Checking VCTCXO Circuit

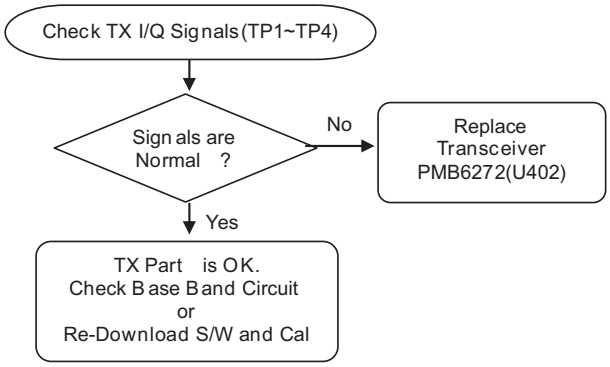
See RX Part “1. Checking VCTCXO Circuit”

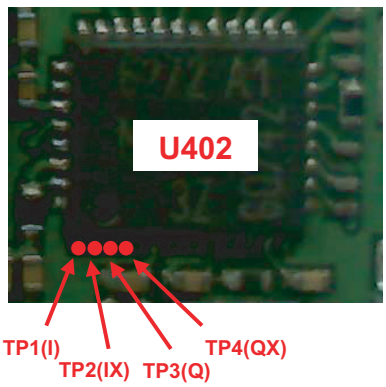
5.13.2 Checking PLL Control Signal

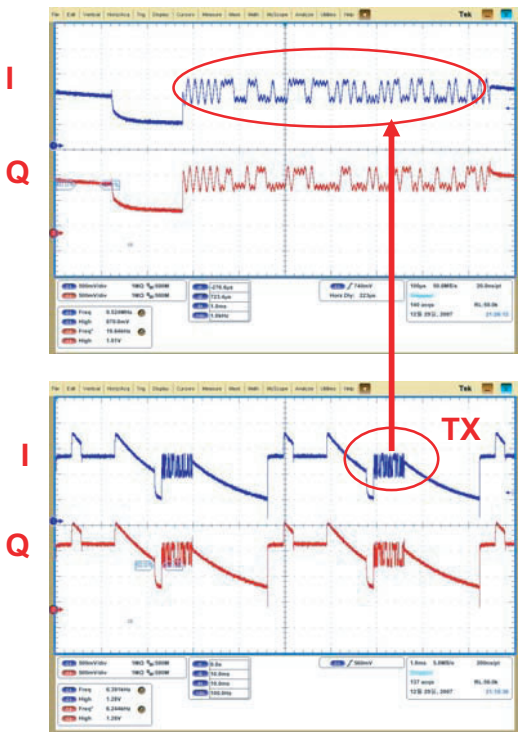
See RX Part “2. Checking PLL Control Signal”

5.13.3 Checking TX I/Q Signals

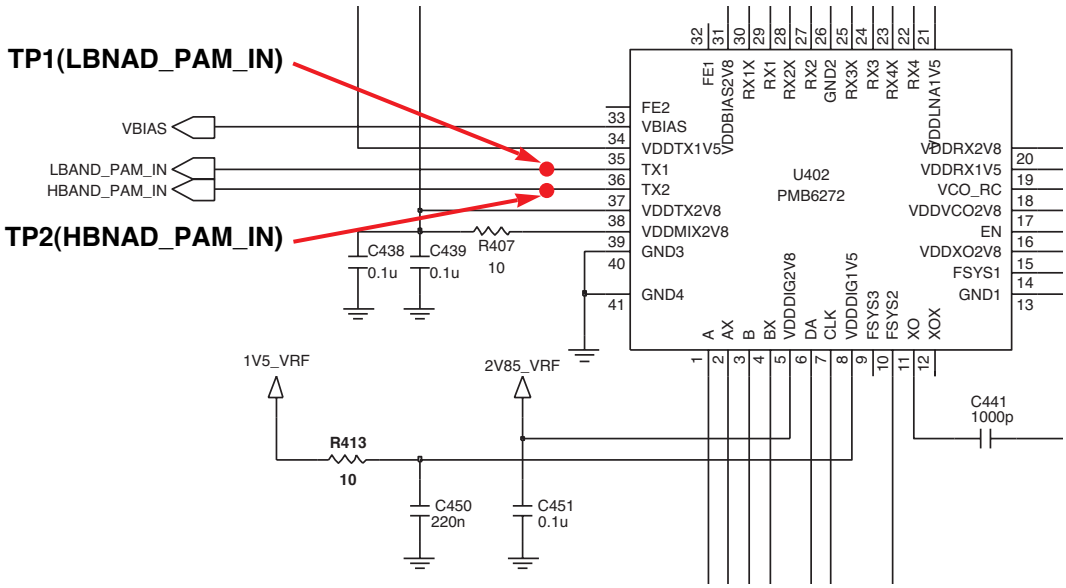




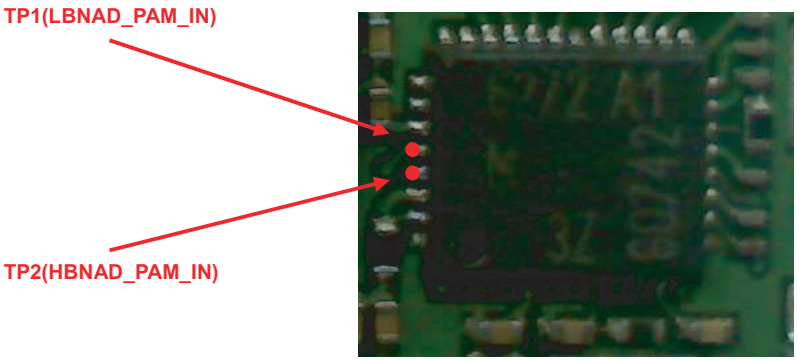




5.13.4 Checking Transceiver Output Signals



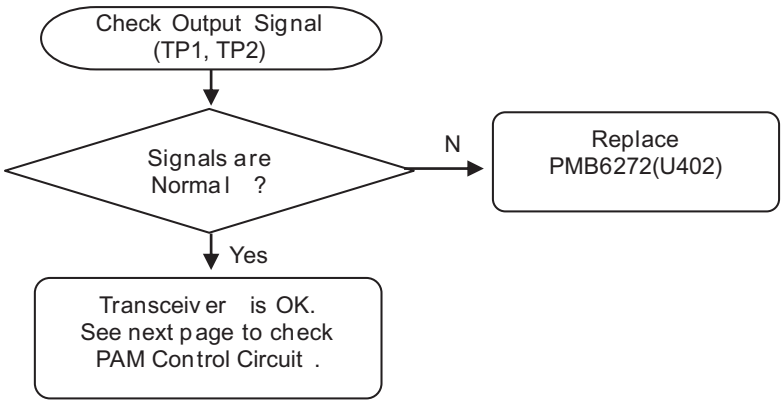
Transceiver Output Circuit



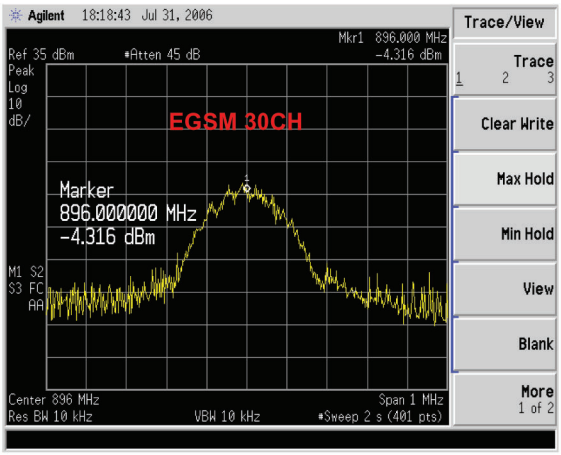
Transceiver Output

MODE	Transceiver Output
GSMK	Fixed
8PSK	Ramp Burst Control

Transceiver Output Operation

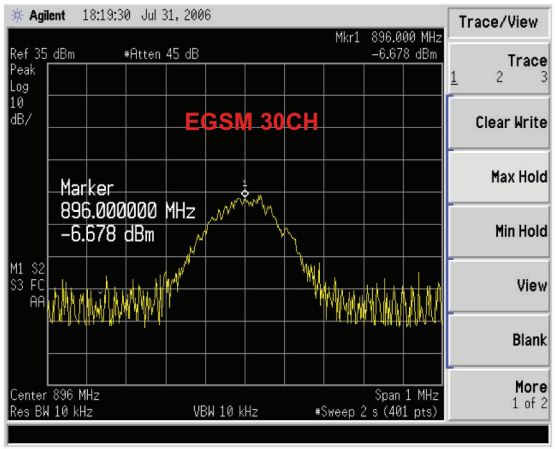


LBAND_PAM_IN (MODE: GMSK) : TP1



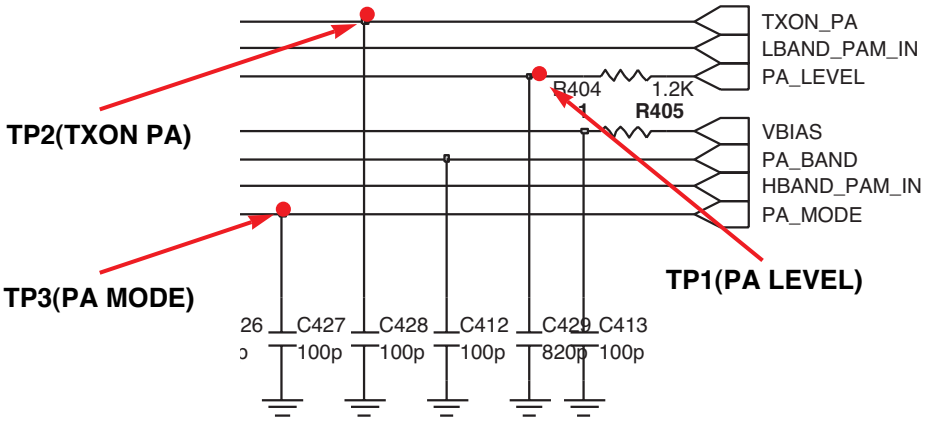
Transceiver Output (GMSK)

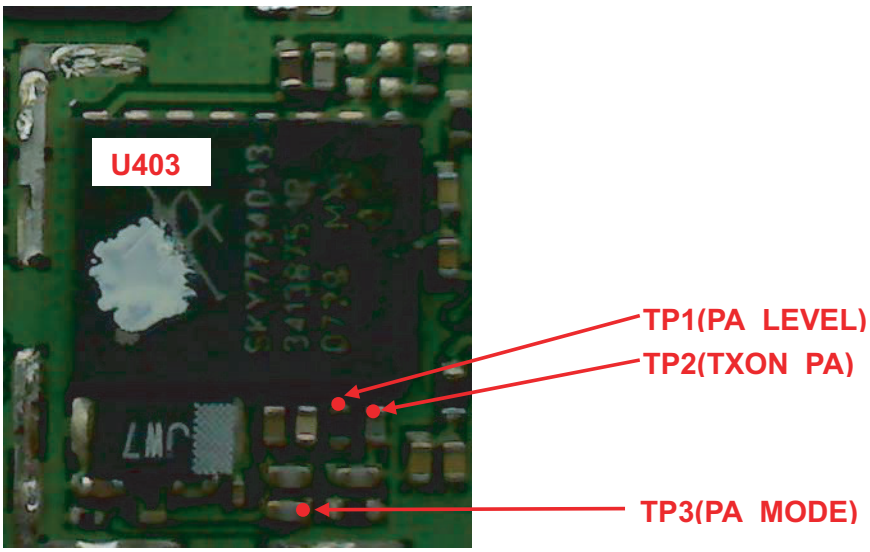
LBAND_PAM_IN (MODE: 8PSK) : TP1



Transceiver Output (8PSK)

5.13.5 Checking PAM Control Signals

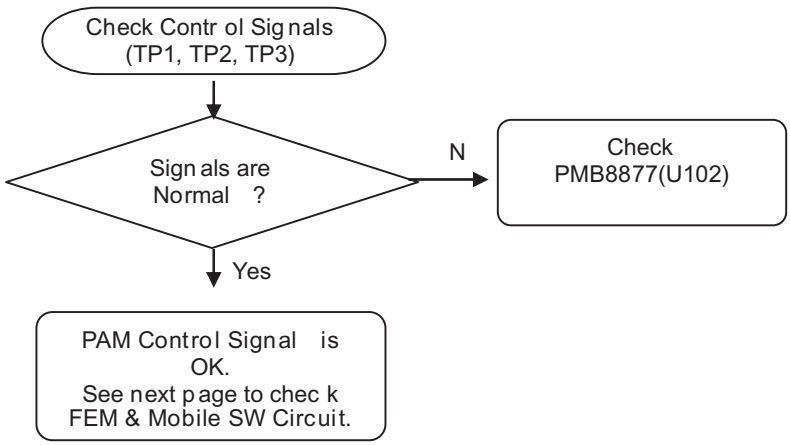




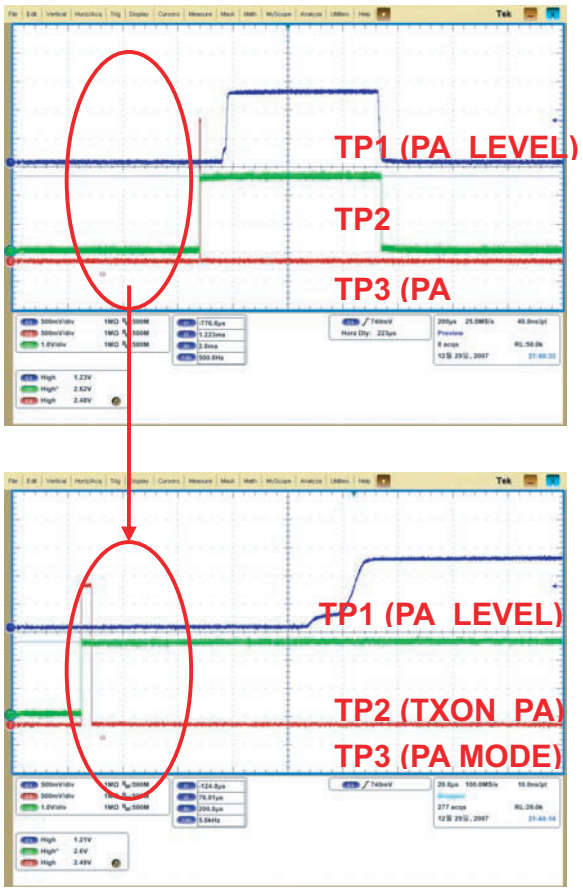
Transceiver Output

MODE	MODE	PA_LEVEL	TXON_PA
GMSK	LOW	Ramp Burst Control	HIGH
8PSK	HIGH	Control Amp bias	HIGH

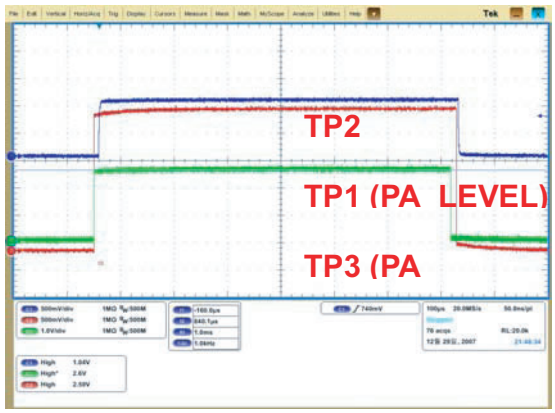
PAM Mode Operation



GSMK Control Signal

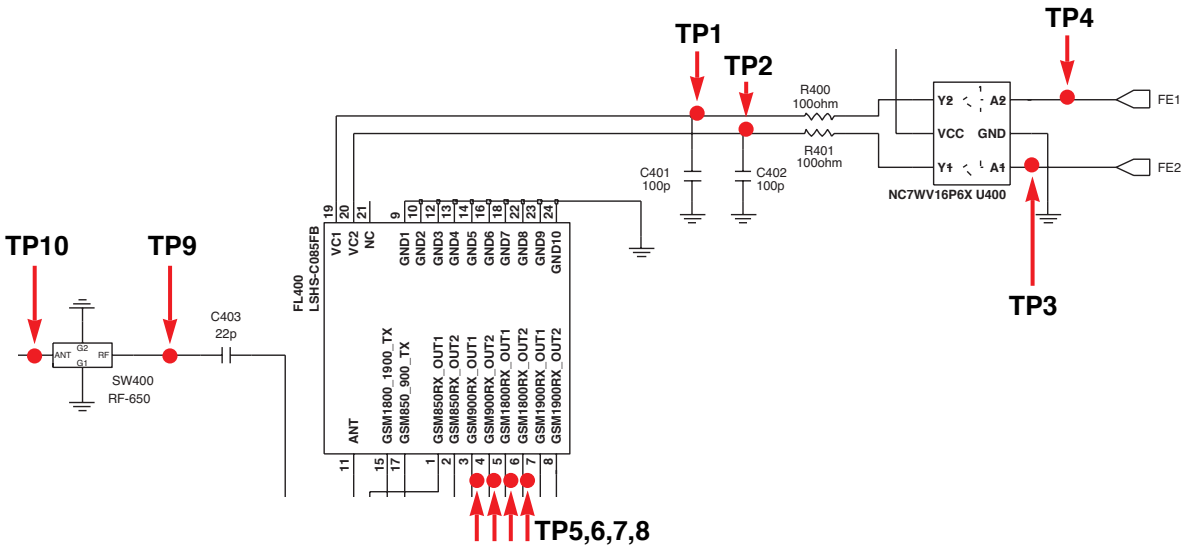


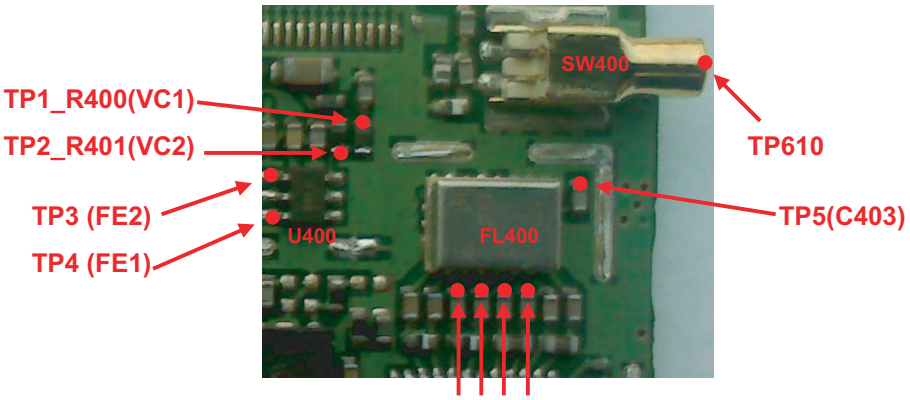
8PSK Control Signal



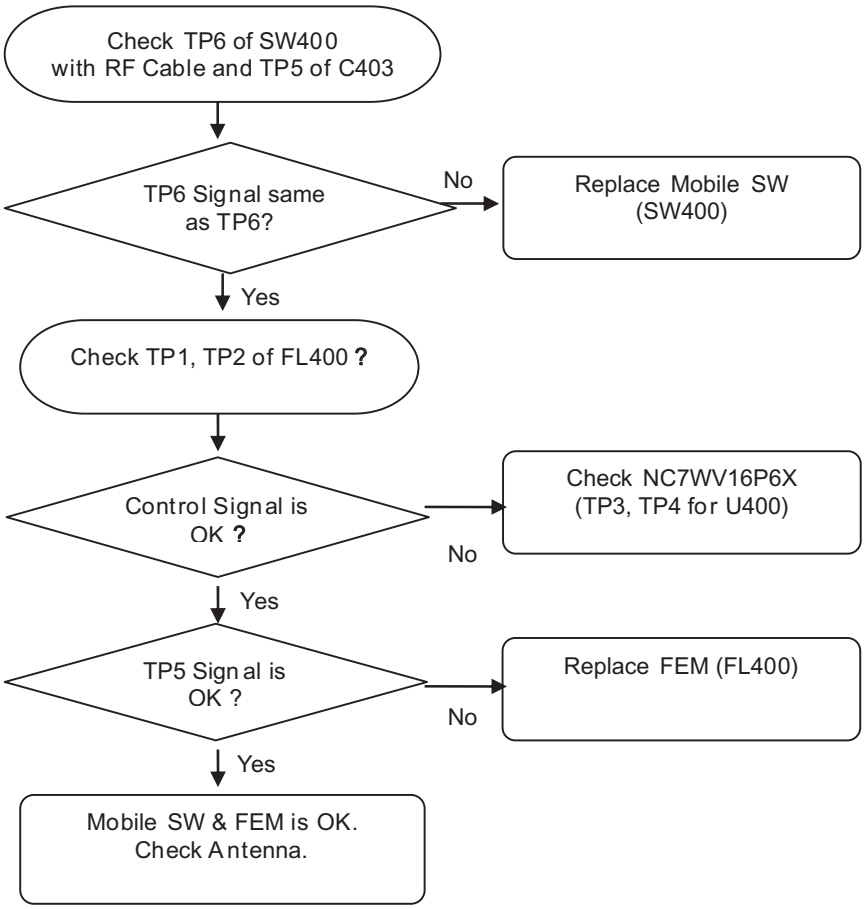
TP3 (PA MODE) : C427
TP1 (PA_LEVEL) : R404
TP2 (TXON_PA) : R428

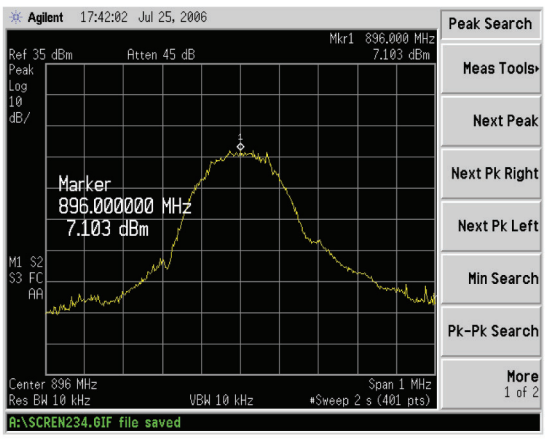
5.13.6 Checking FEM & Mobile SW



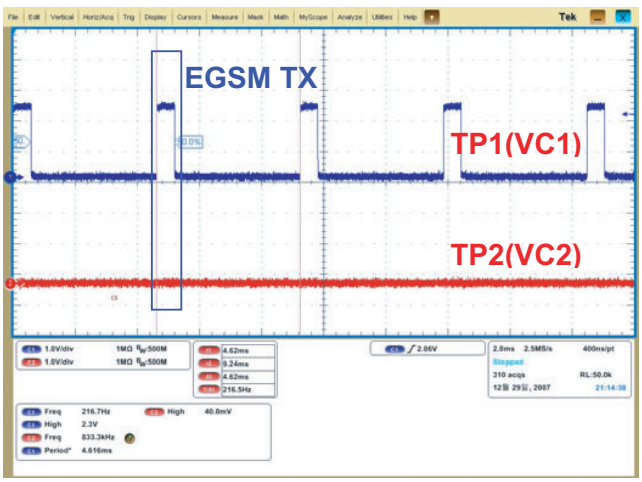


RTX Mode	EGSM	DCS	PCS
VC1	On	Off	Off
VC2	Off	On	On





Mobile SW (R403)



FEM Control Signals

6. Download & S/W upgrade

6.1 S/W download setup

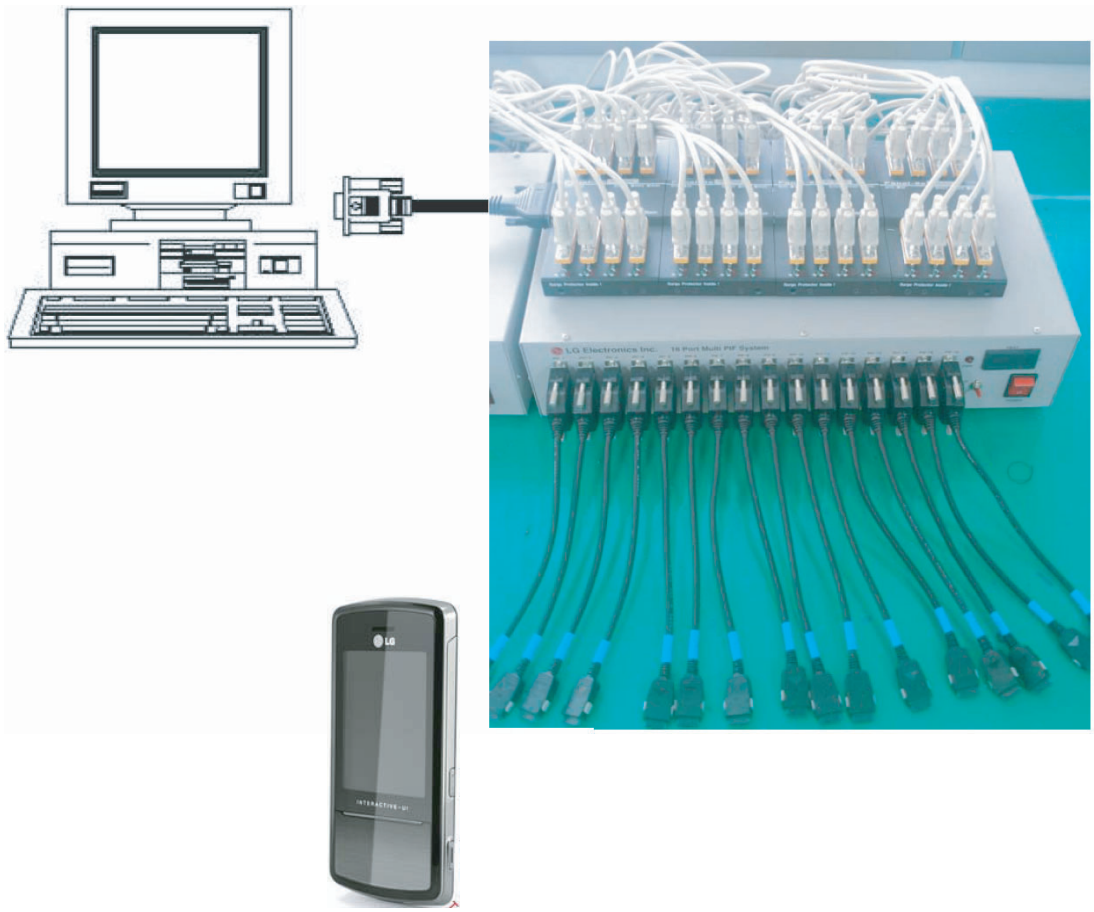
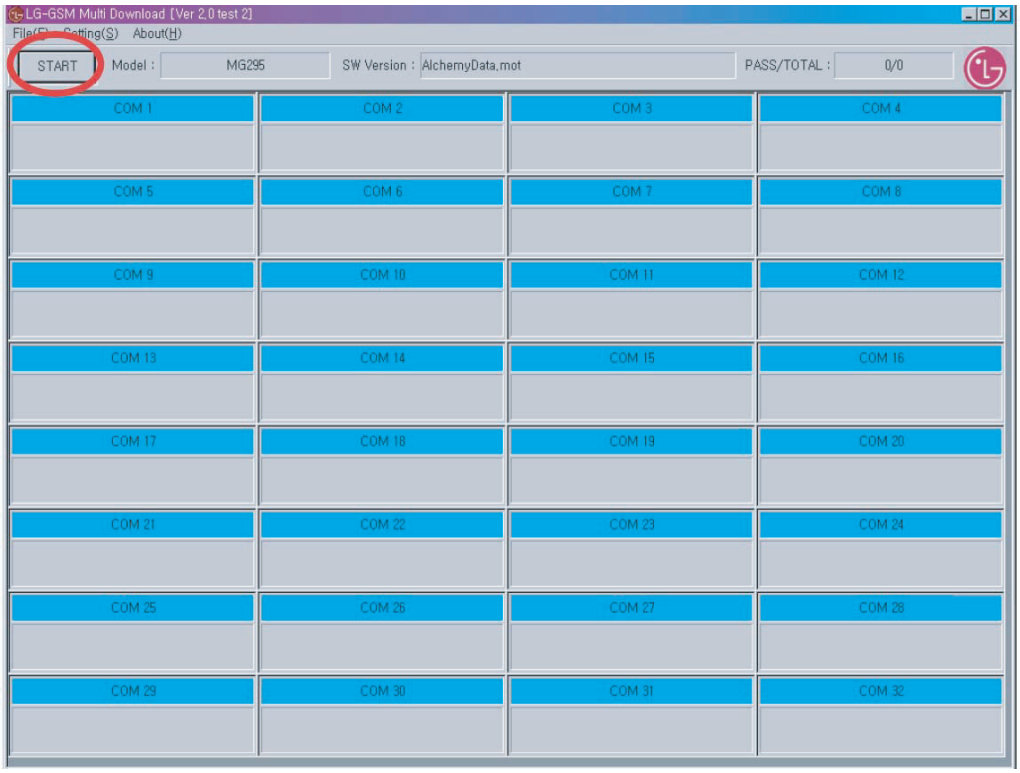


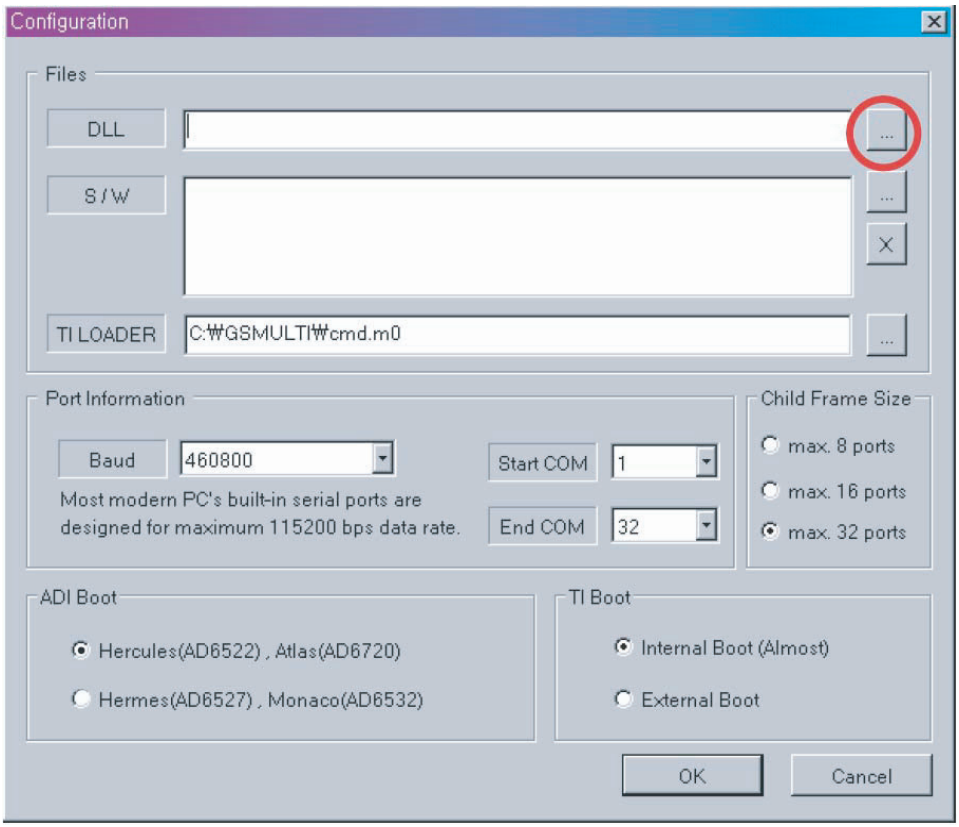
Figure 6.1 describes download and upgrade setup on KF510

6.2 Multi Download Procedure

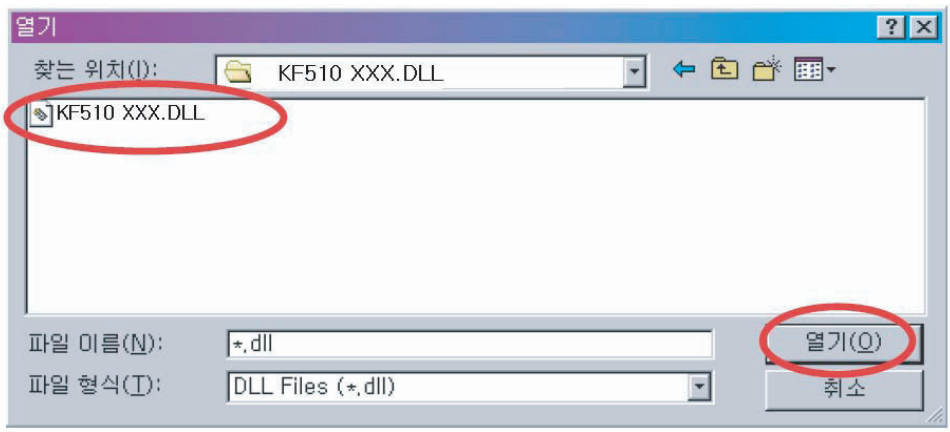
1. Run GSM Multi Download program and select Setting



2. Select Configuration sub menu from the main menu then you may see below window

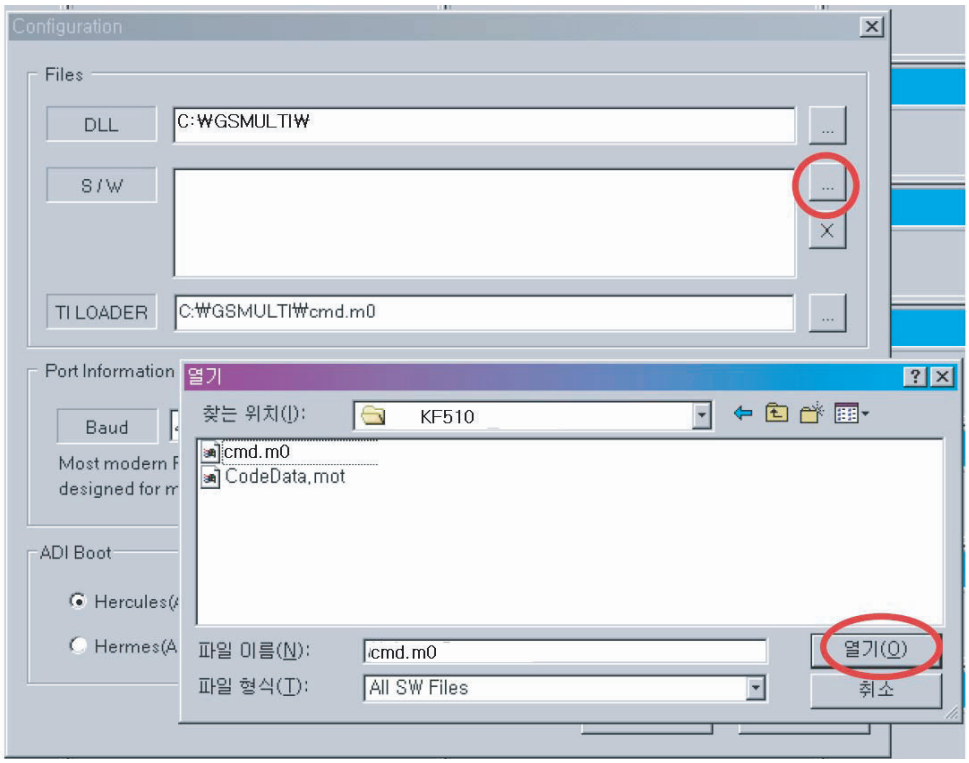


3. Press ... key to select DLL file and press Open

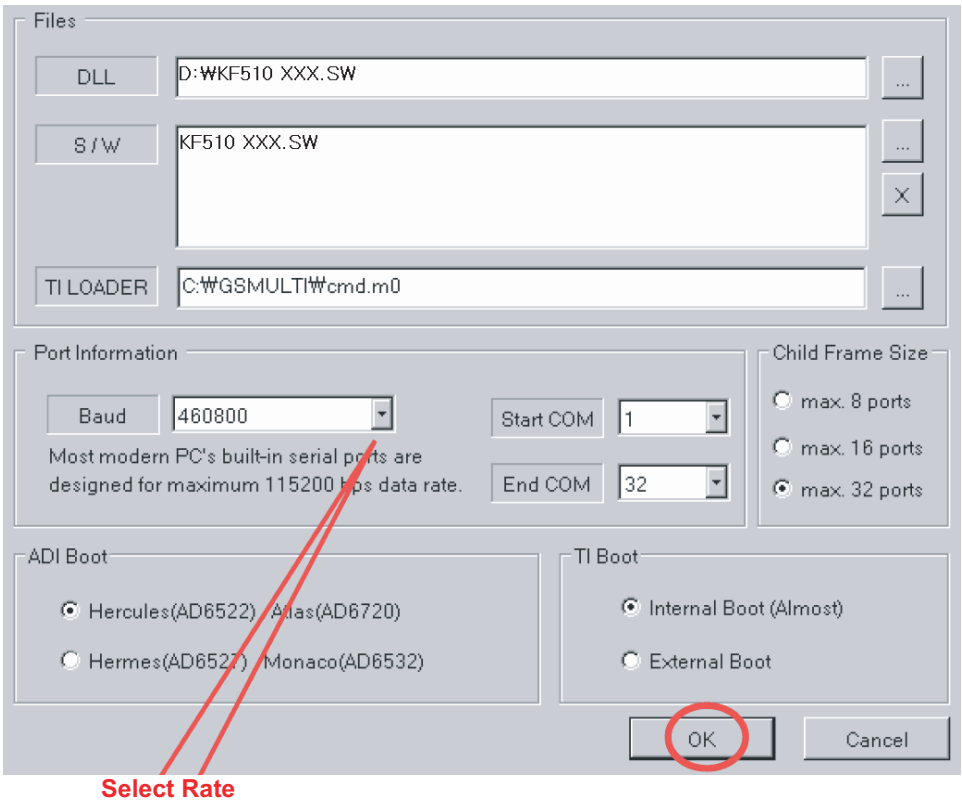


4. Press ... key to select the m0 files

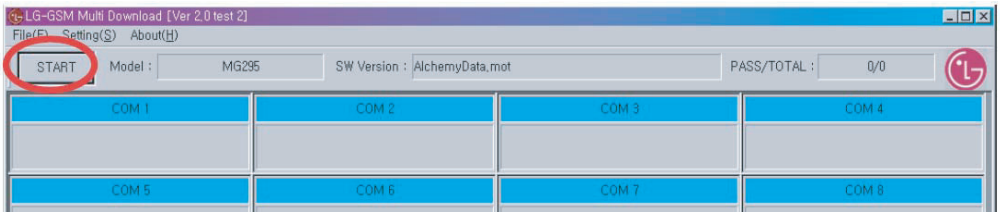
5. Select cmd.m0 and press open

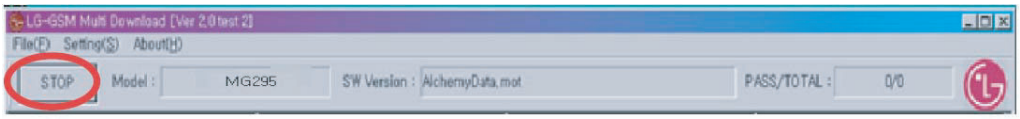


6. Check if the ADI option is set to Hermes
7. Press OK to end Configuration

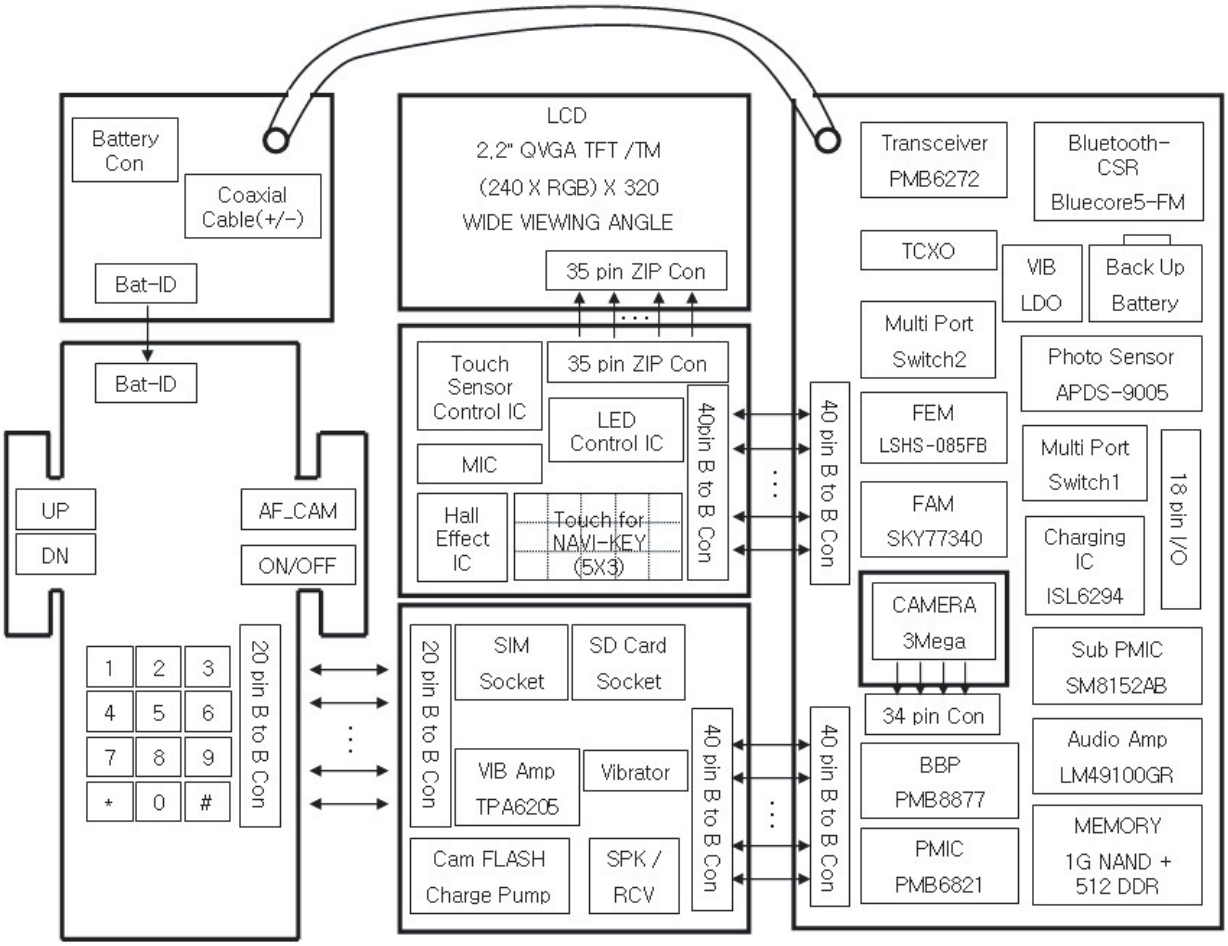


8. Press START to execute download
9. During the download, press STOP button to keep from re-downloading after downloading is complete

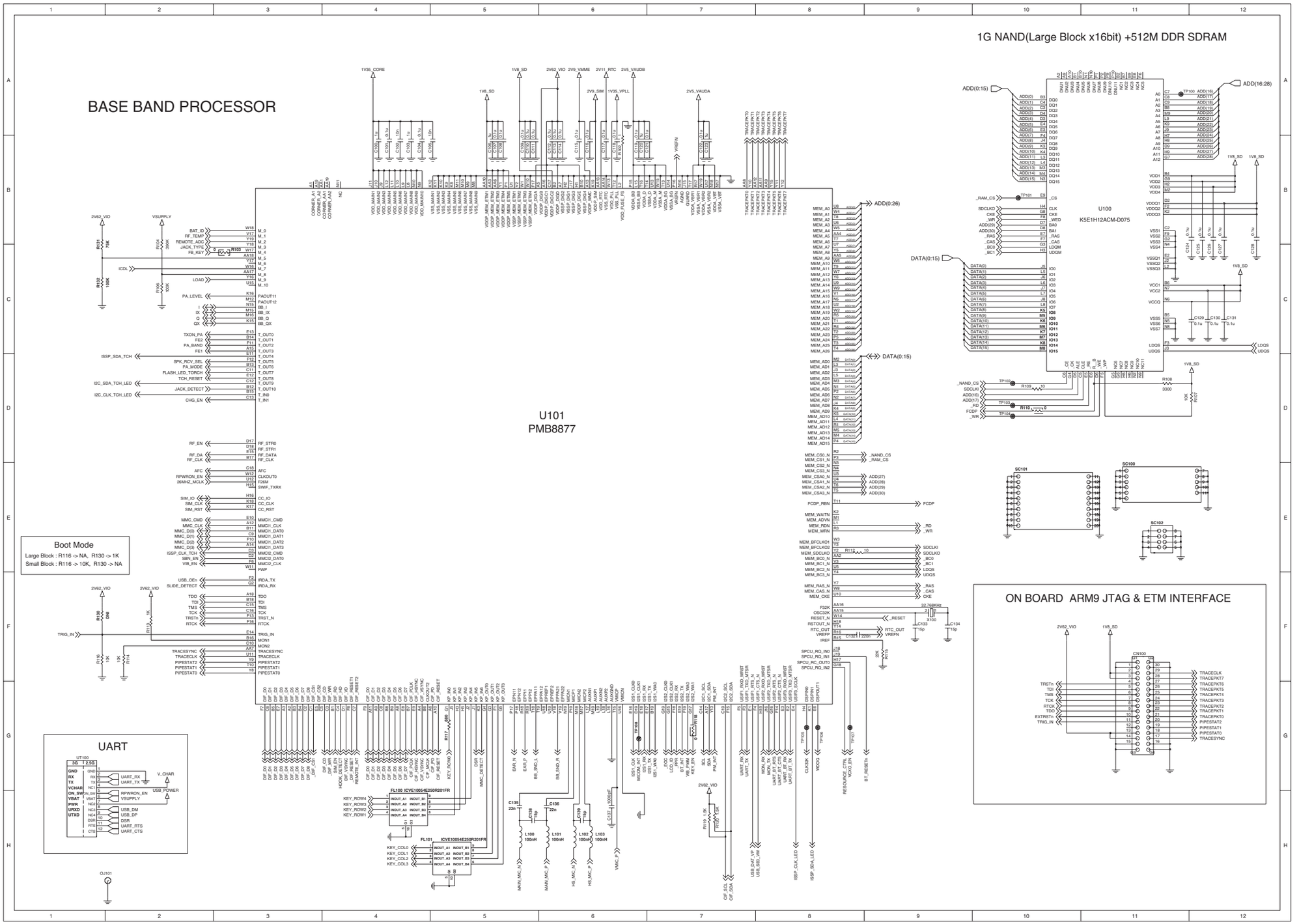




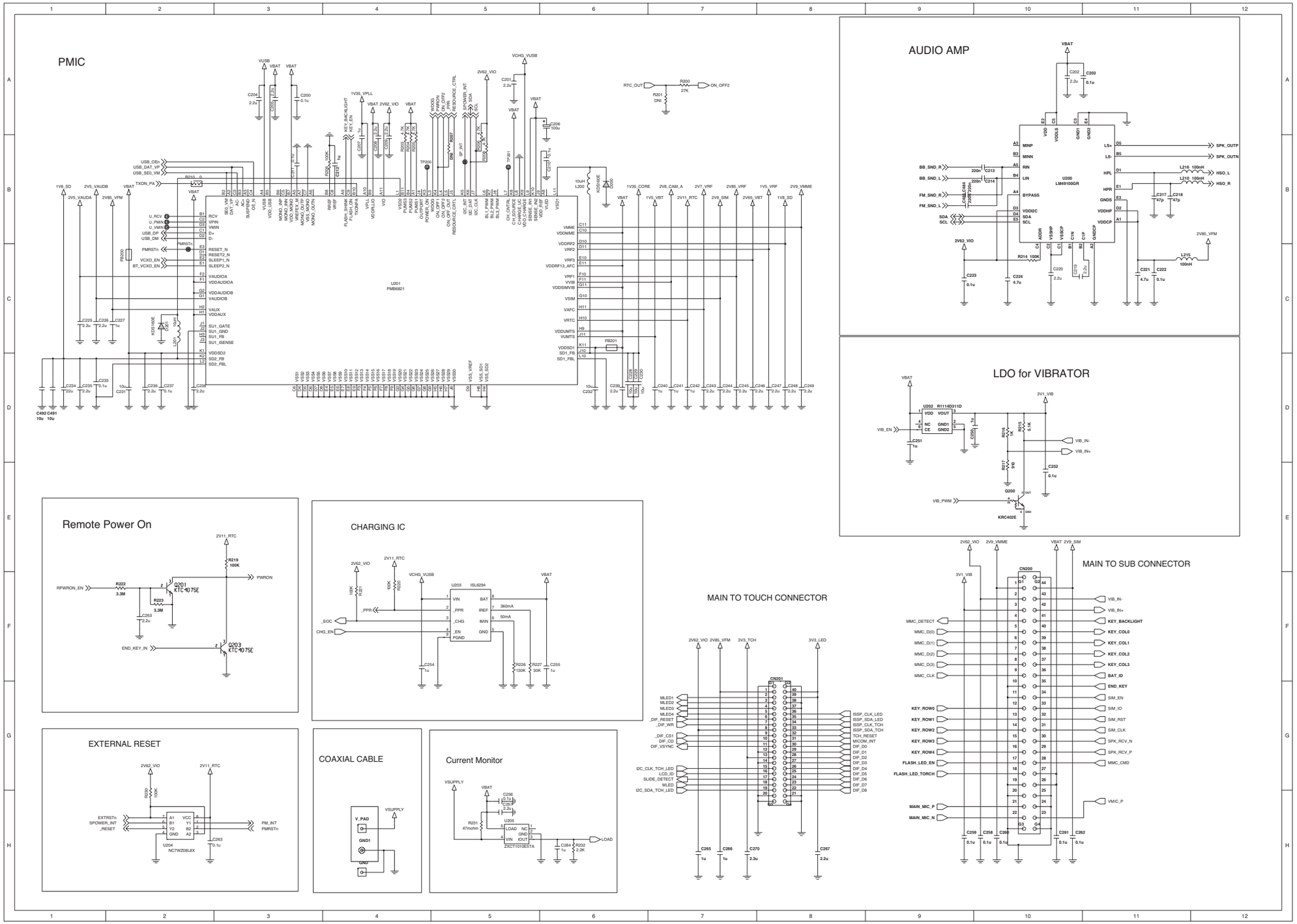
7. Block Diagram



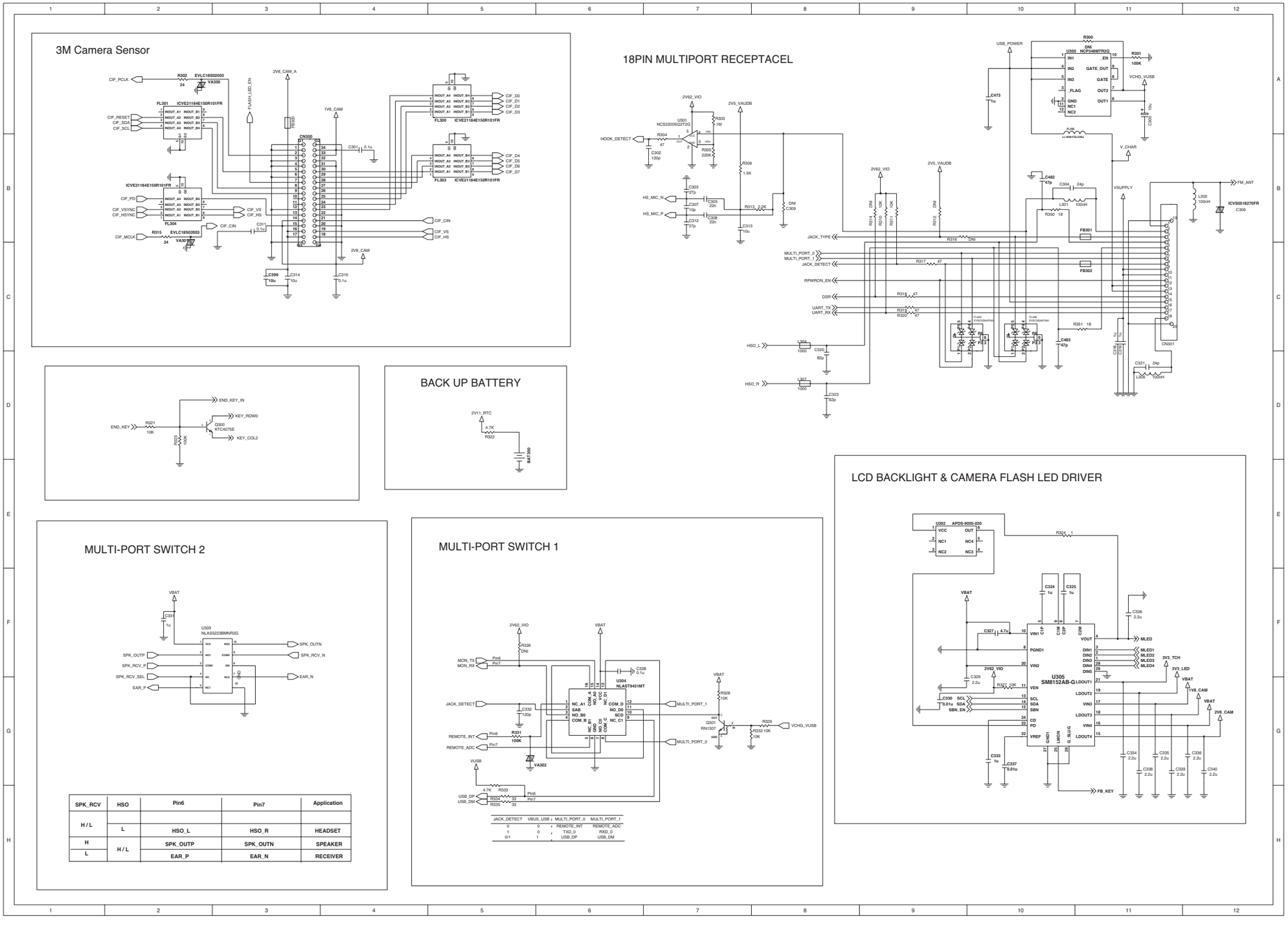
8. CIRCUIT DIAGRAM



8. CIRCUIT DIAGRAM

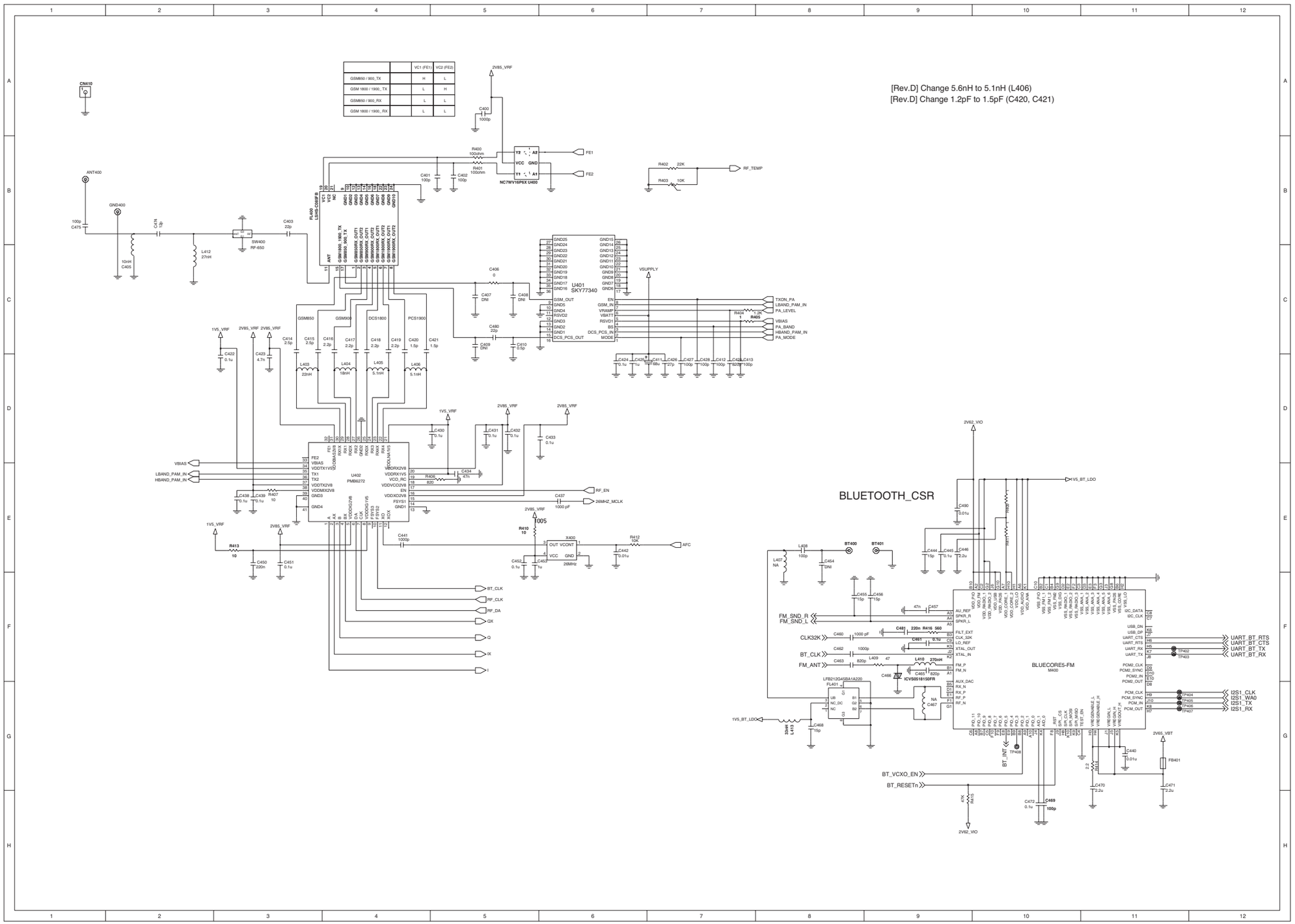


8. CIRCUIT DIAGRAM



SPK_RCV	HSO	Pin6	Pin7	Application
H / L	L	HSO_L	HSO_R	HEADSET
H	H / L	SPK_OUTP	SPK_OUTN	SPEAKER
L		EAR_P	EAR_N	RECEIVER

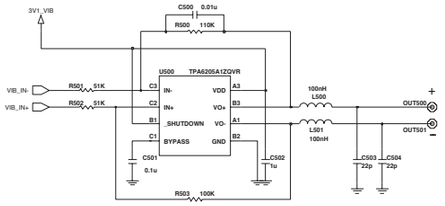
8. CIRCUIT DIAGRAM



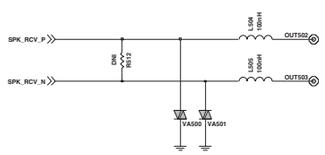
		VC1 (FE1)	VC2 (FE2)
GSM850 / 900_TX		H	L
GSM 1800 / 1900_TX		L	H
GSM850 / 900_RX		L	L
GSM 1800 / 1900_RX		L	L

8. CIRCUIT DIAGRAM

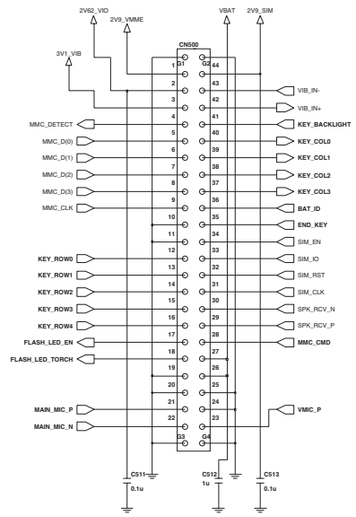
VIBRATOR



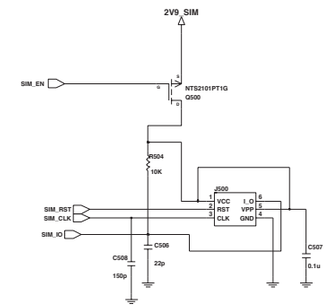
RCV / SPK



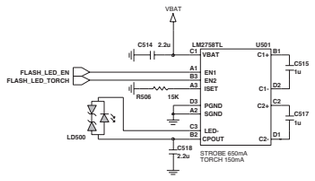
SUB TO MAIN CONNETOR



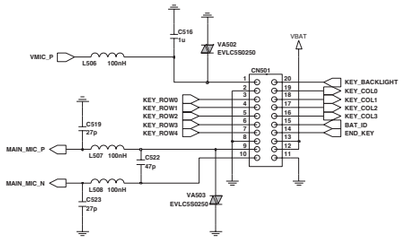
SIM CONNECTOR



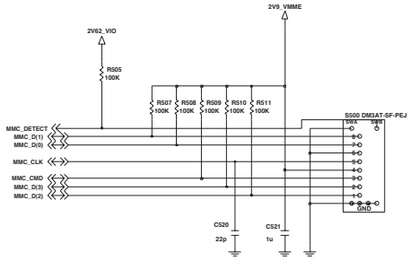
CAMERA FLASH LED



SUB TO KEY CONNECTOR

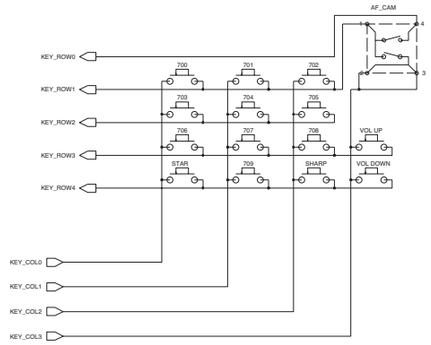


T-Flash CONNECTOR

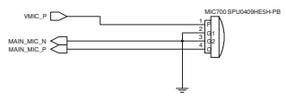


8. CIRCUIT DIAGRAM

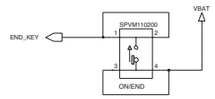
KEYPAD



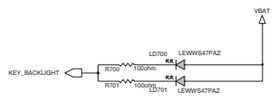
MAIN MIC



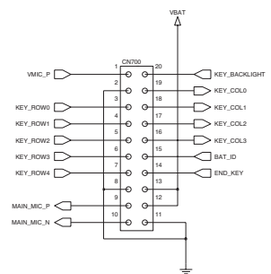
END KEY



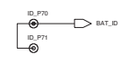
KEY BACKLIGHT



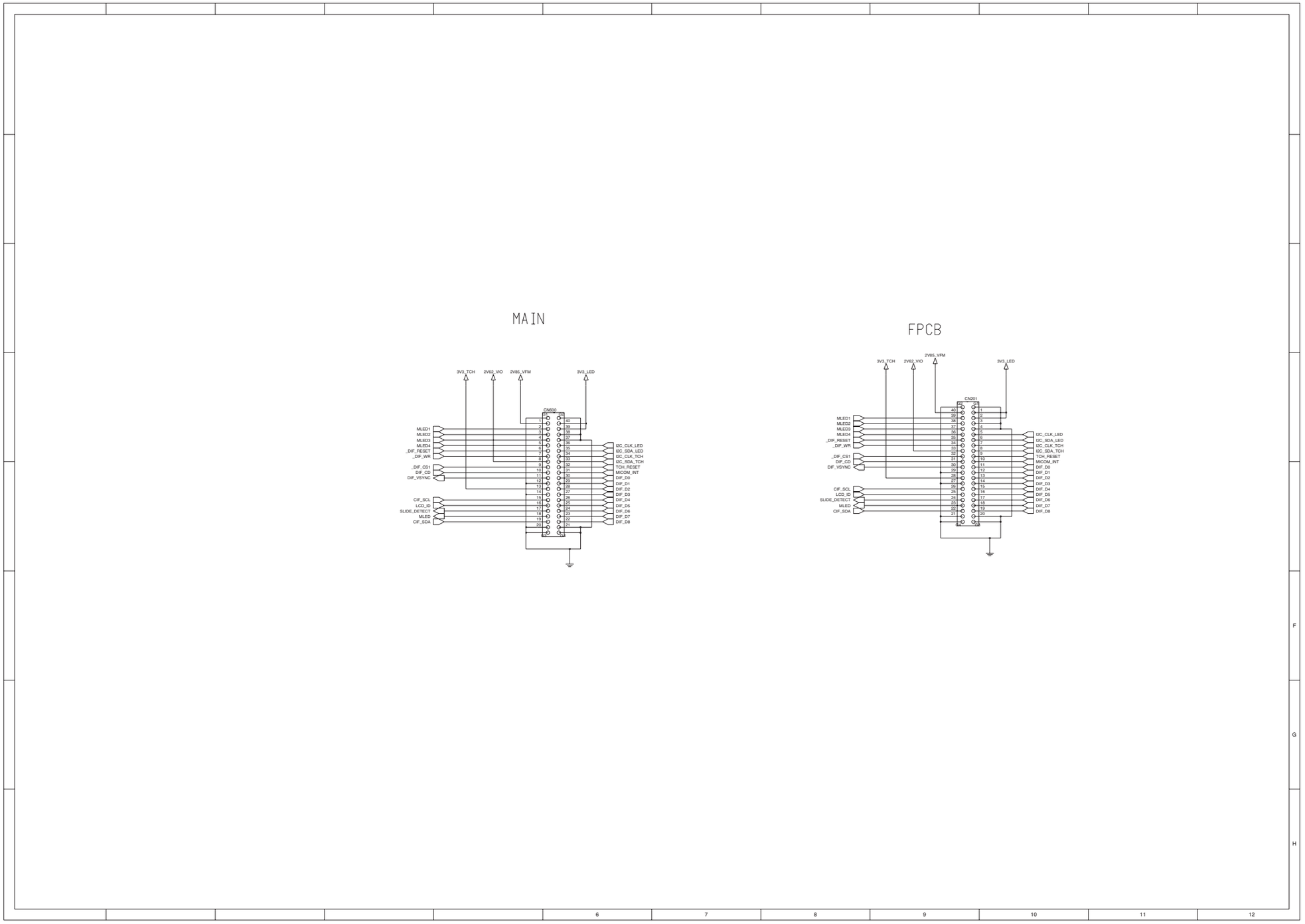
NUMBER TO SUB CONNECTOR



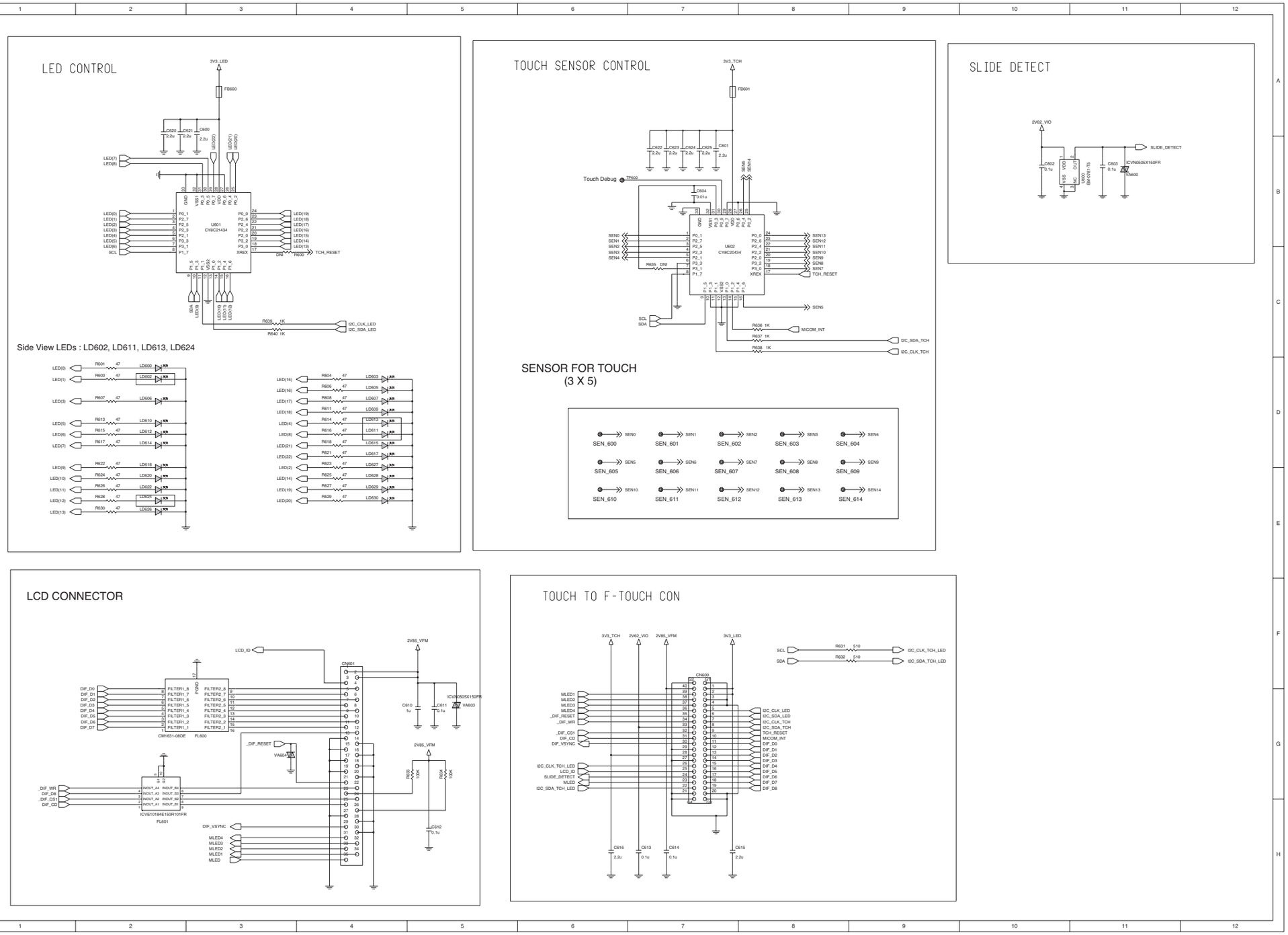
SOLDERING PAD for BAT_ID



8. CIRCUIT DIAGRAM

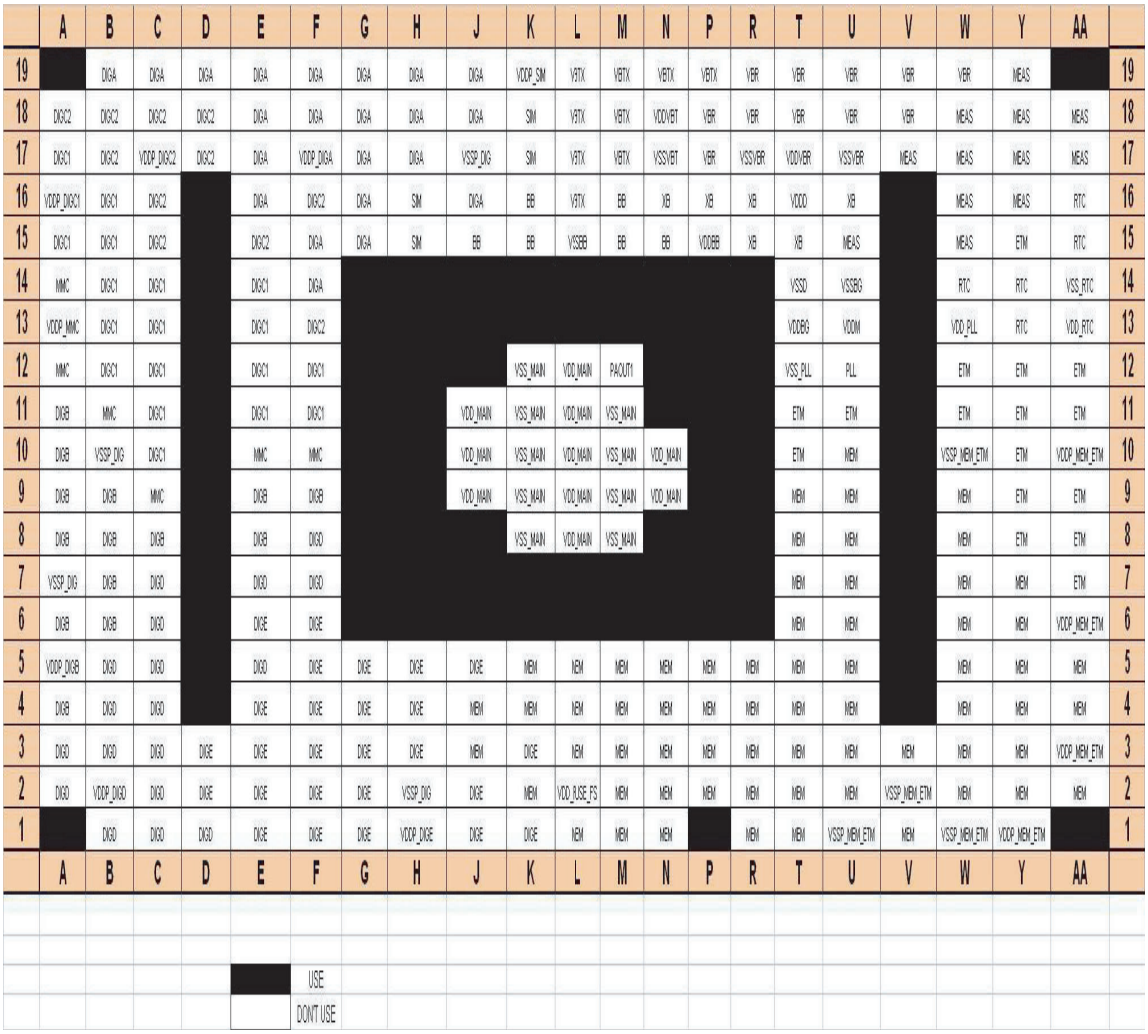


8. CIRCUIT DIAGRAM

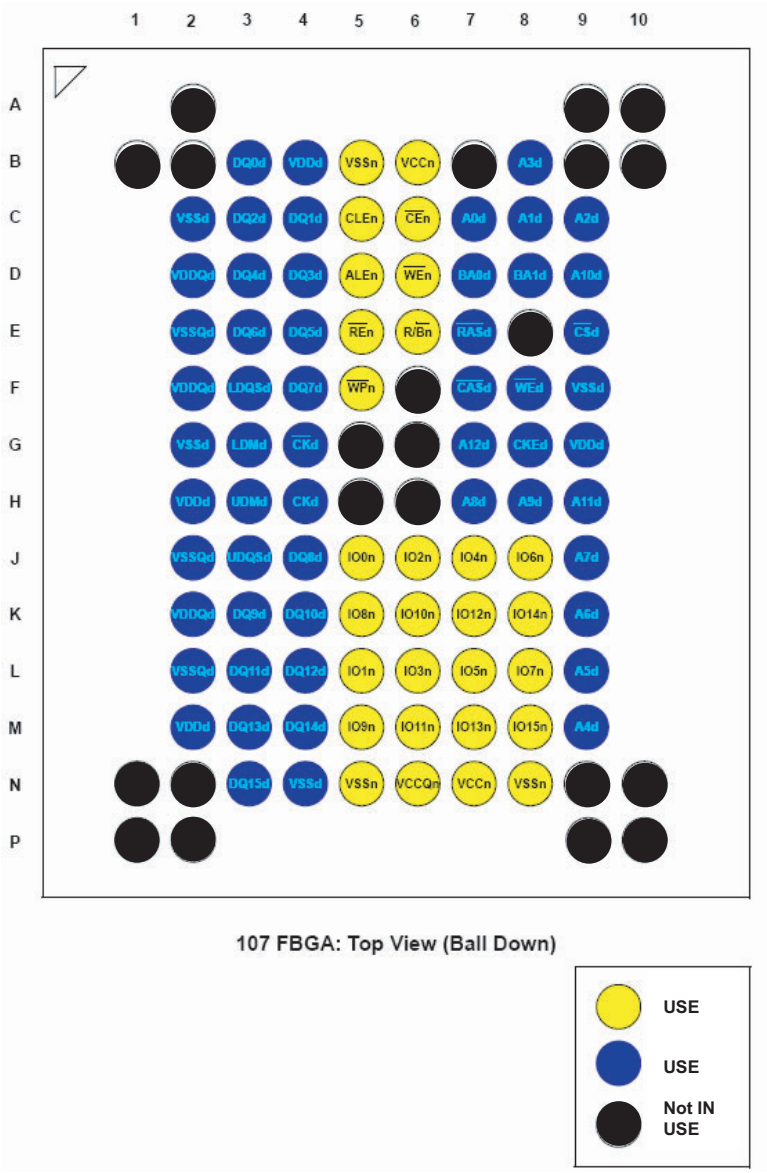


9. BGM Pin Map

S-gold3 Pin MAP

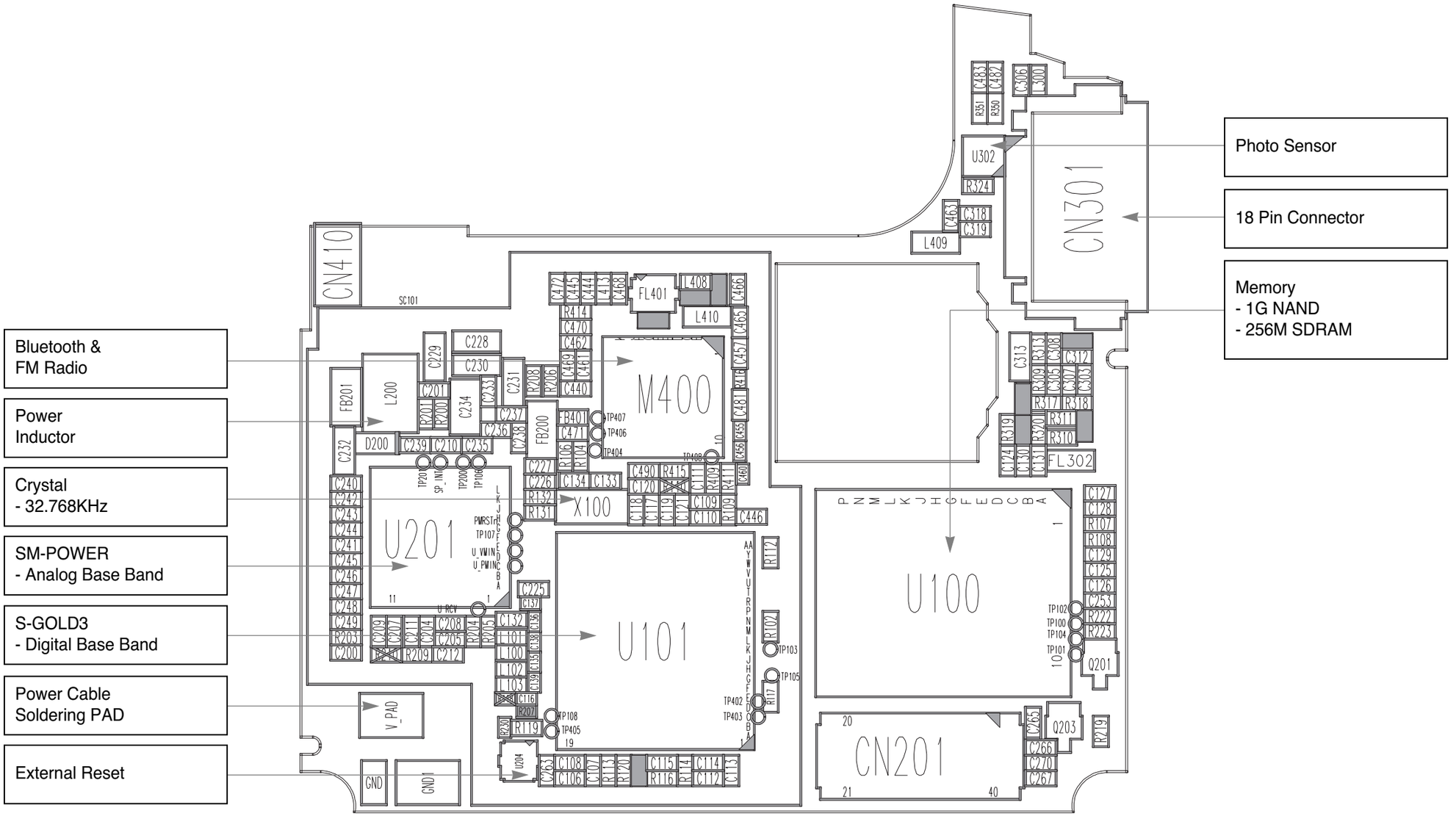


Memory Pin Out

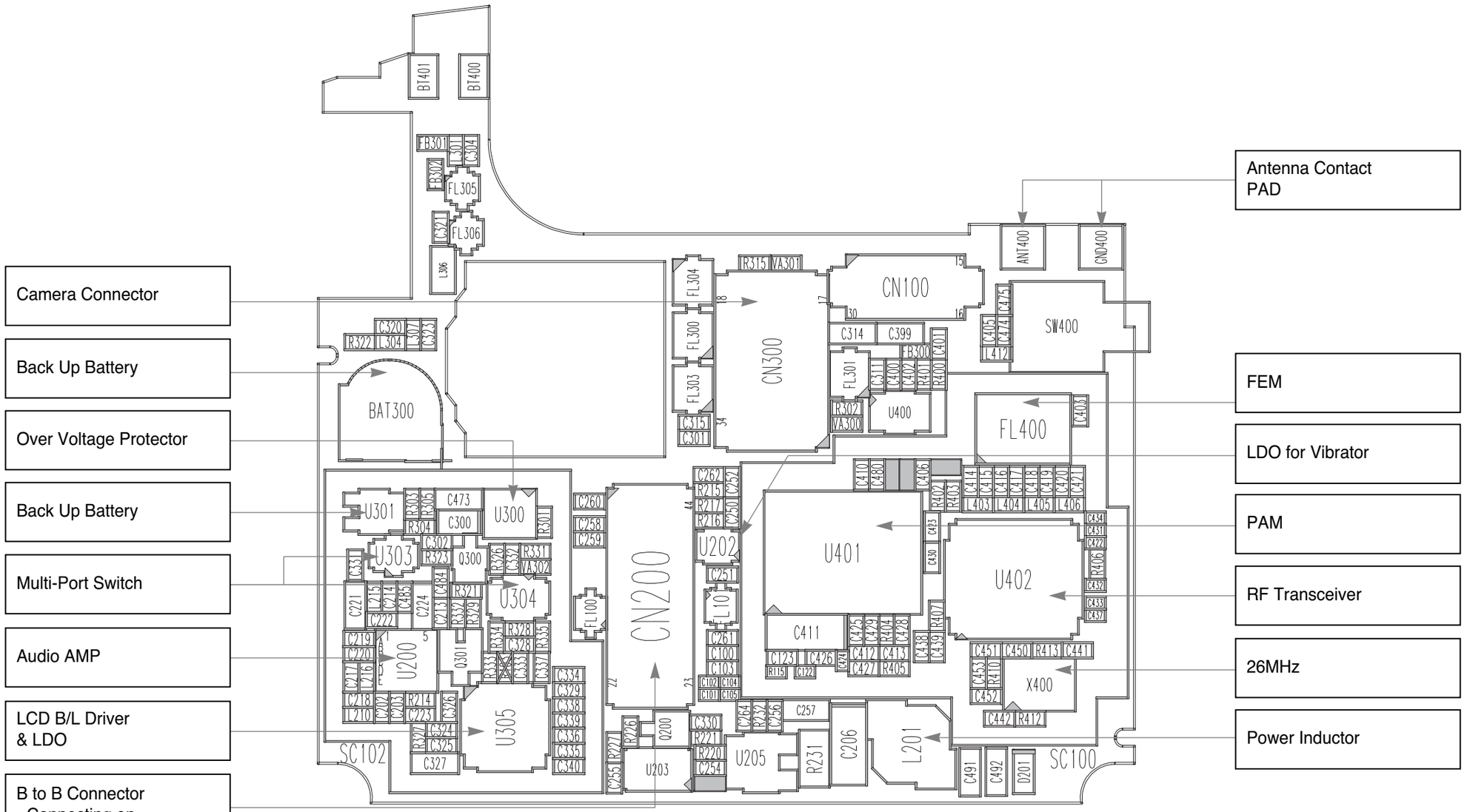


107 FBGA: Top View (Ball Down)

10. PCB LAYOUT

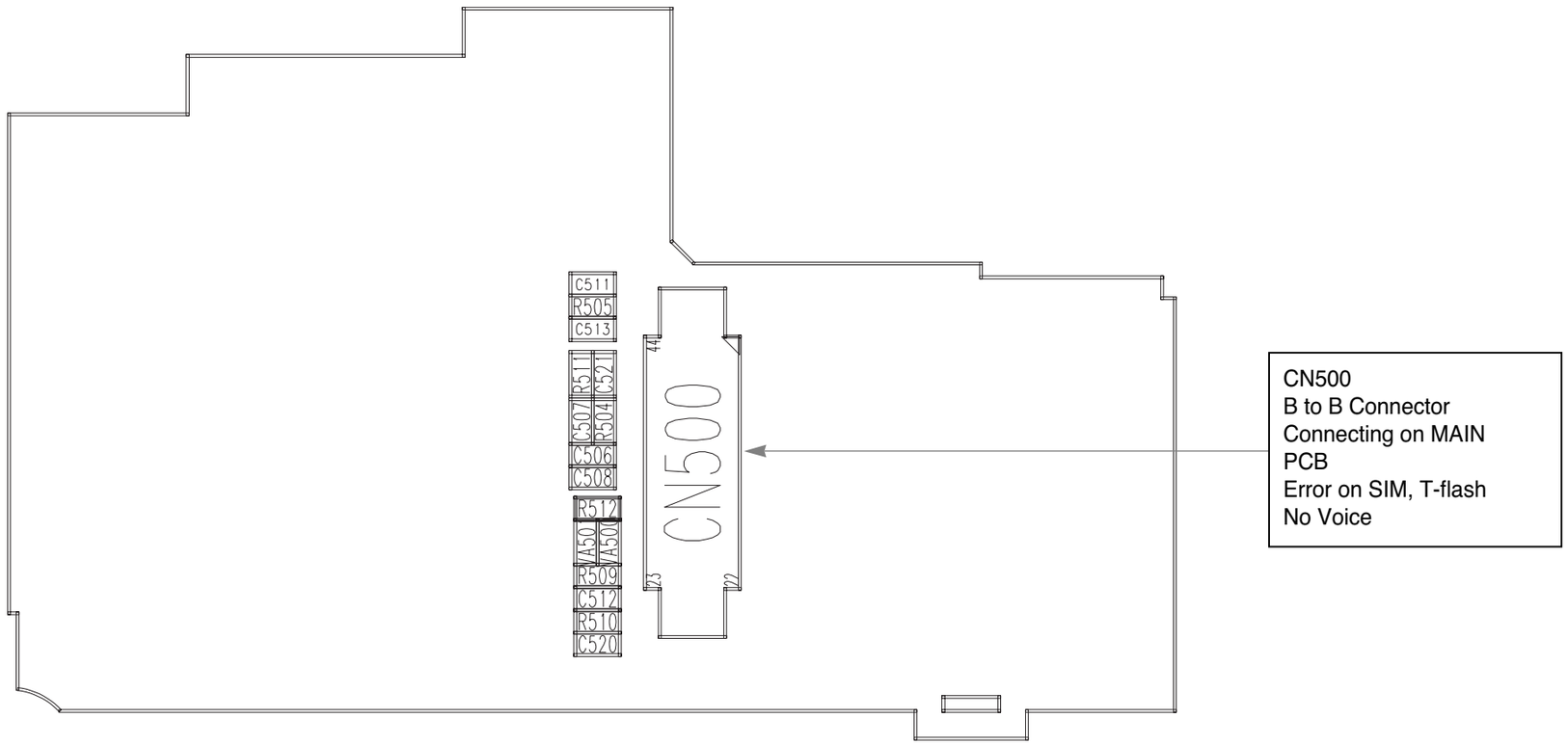


10. PCB LAYOUT



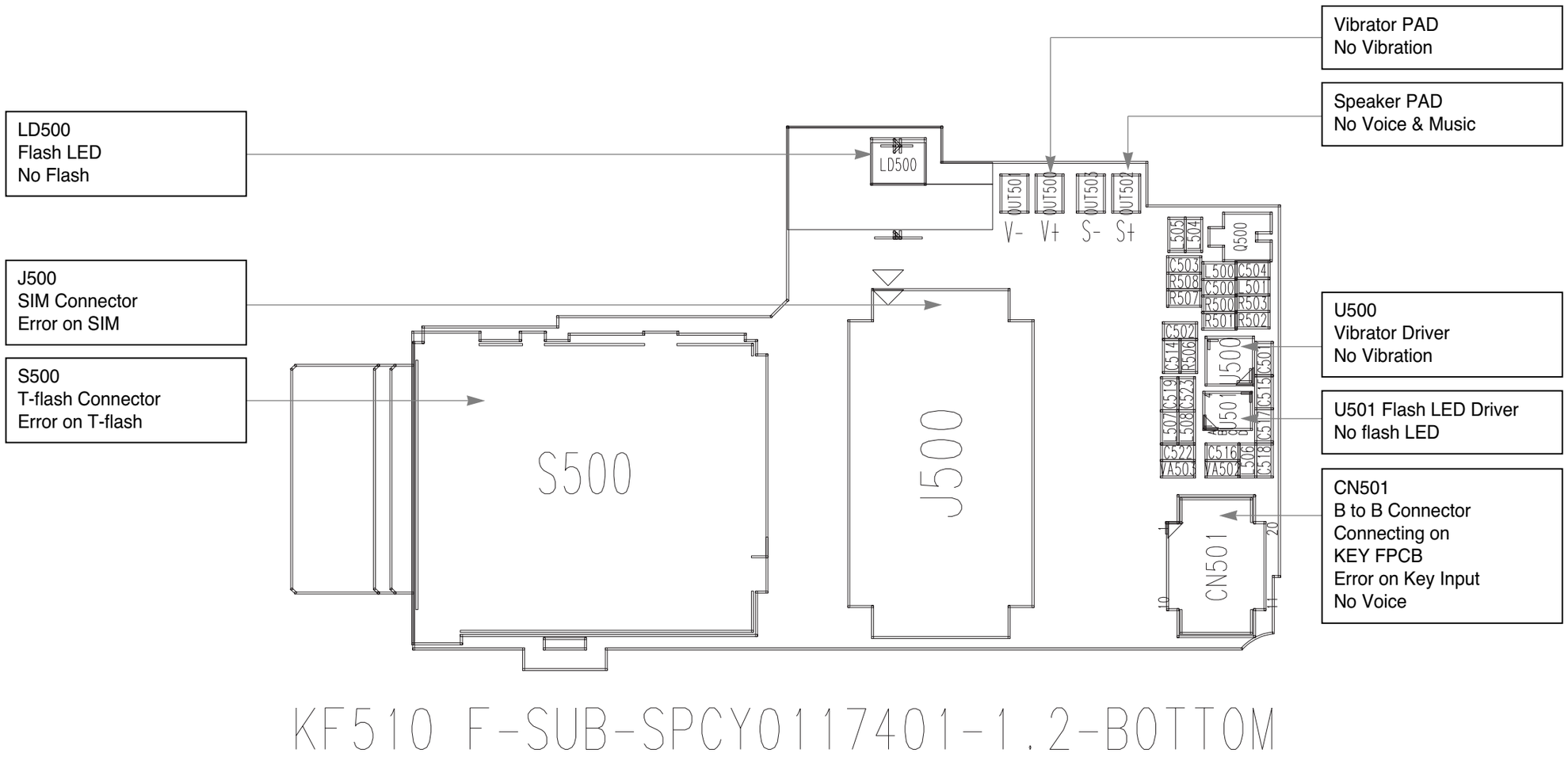
TH-MAIN(KF510)-1.1-BOT

10. PCB LAYOUT

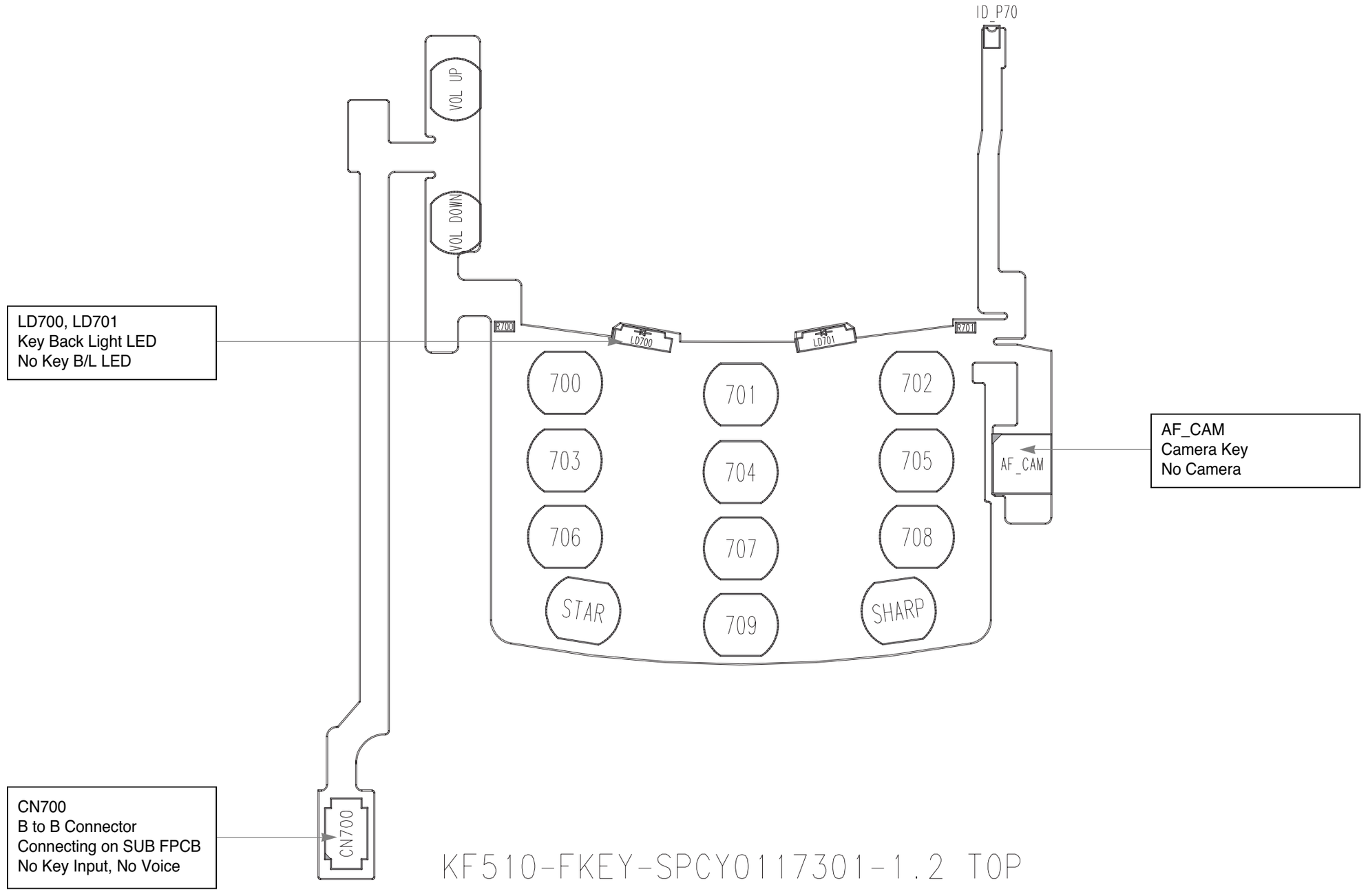


KF510 F-SUB-SPCY0117401-1.2-TOP

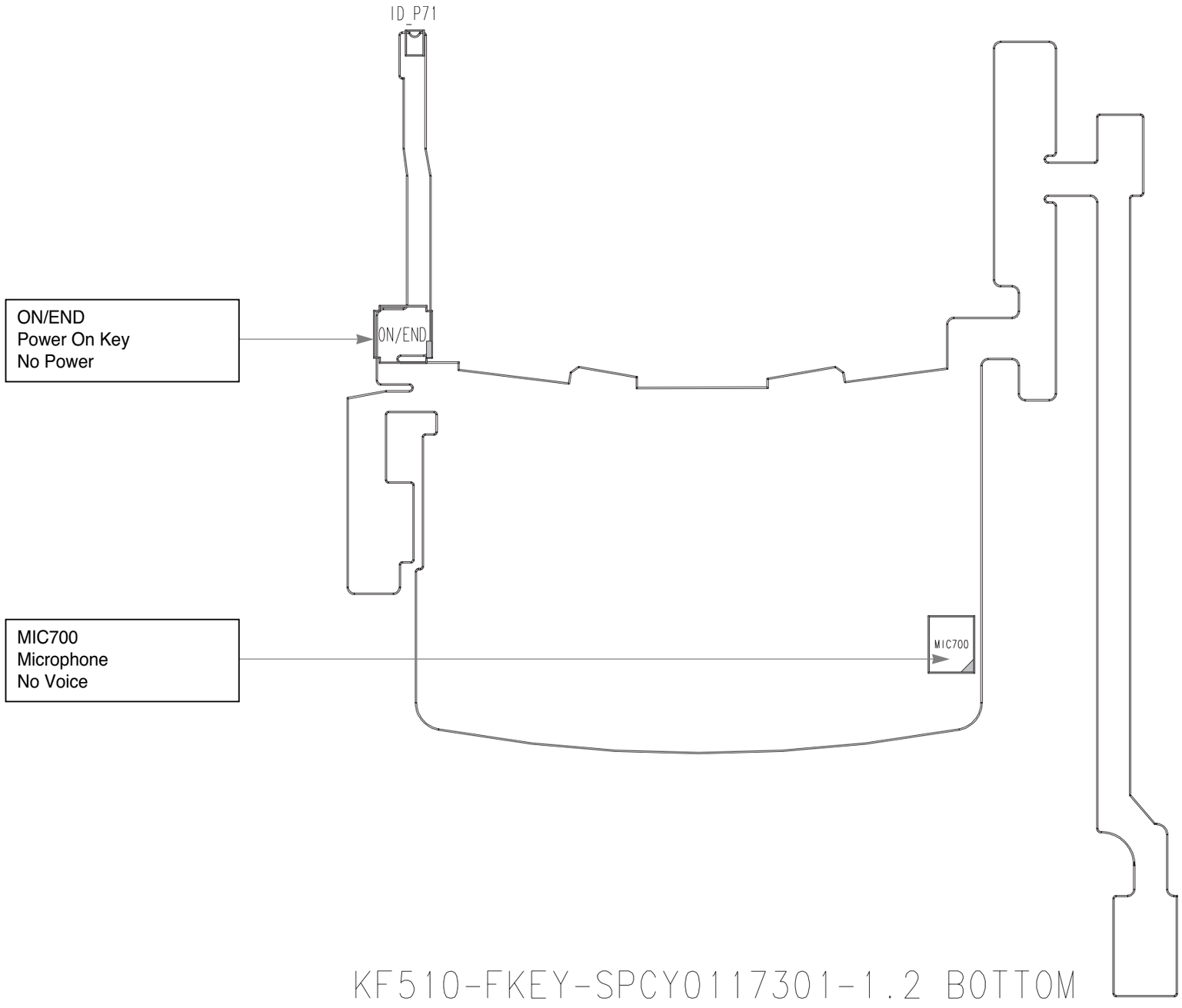
10. PCB LAYOUT



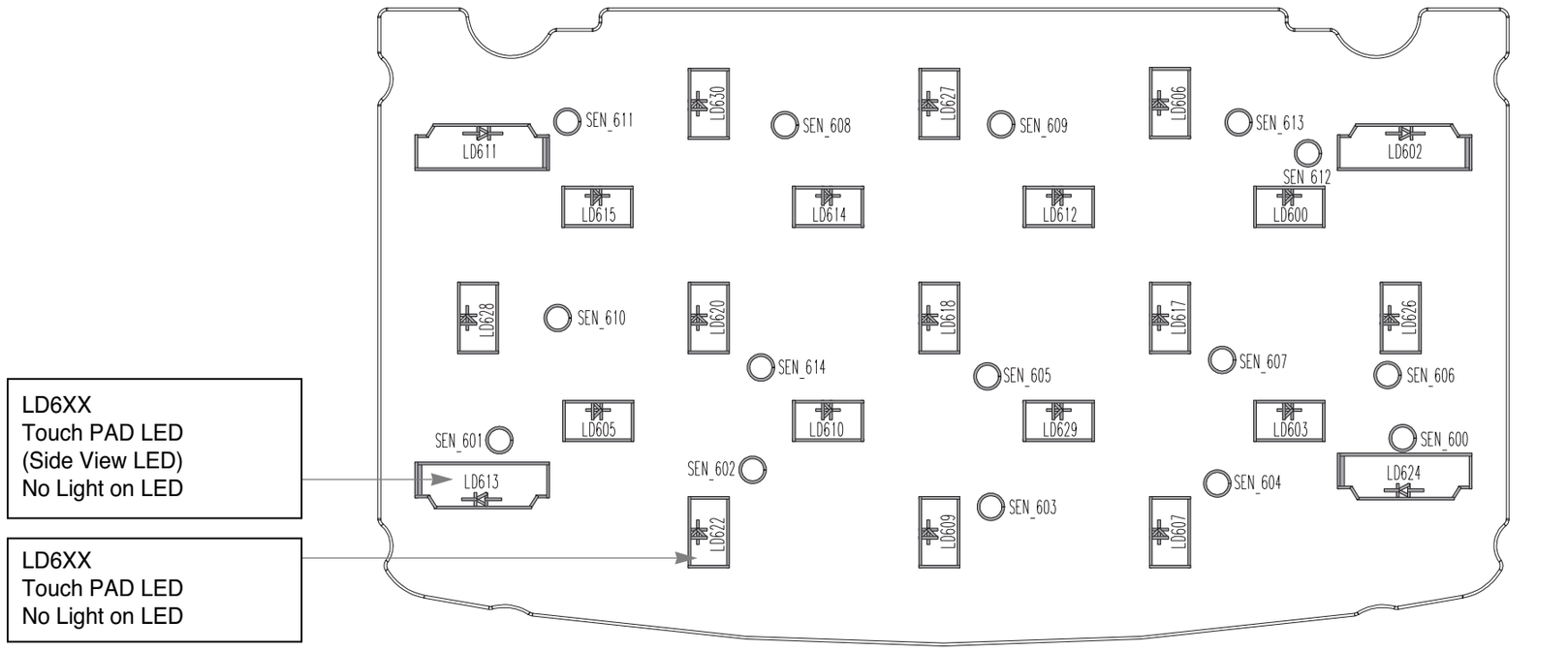
10. PCB LAYOUT



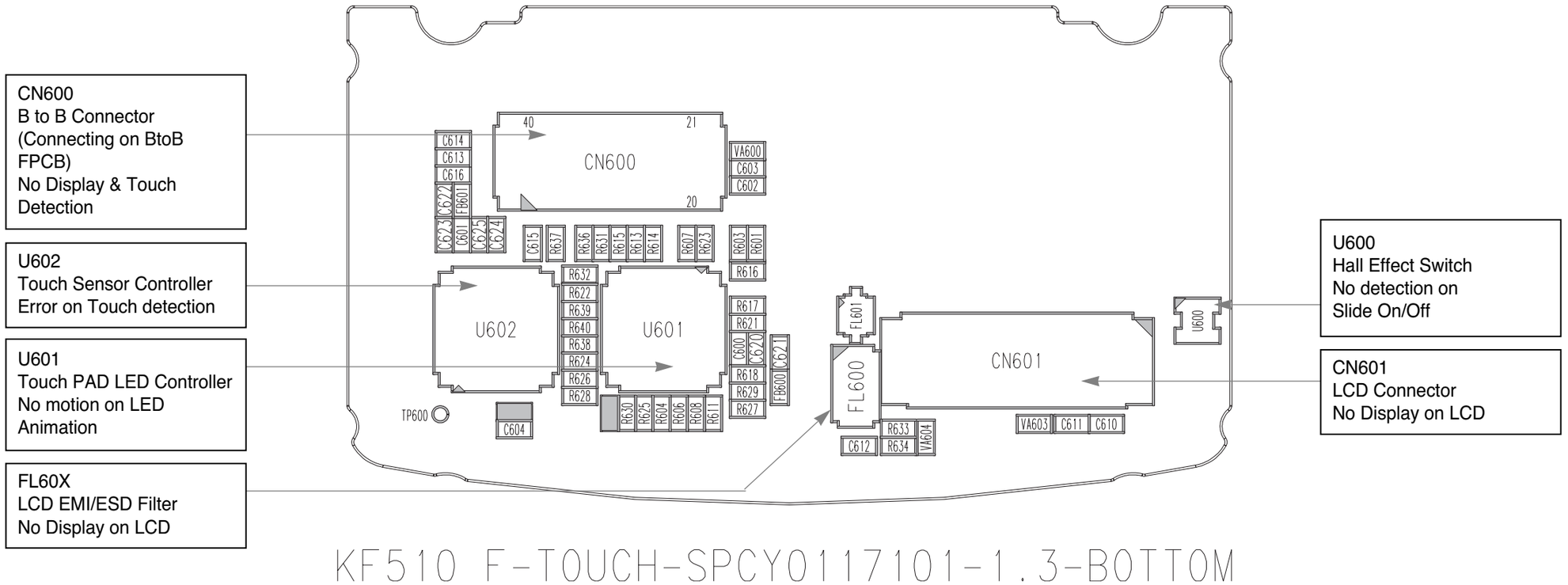
10. PCB LAYOUT



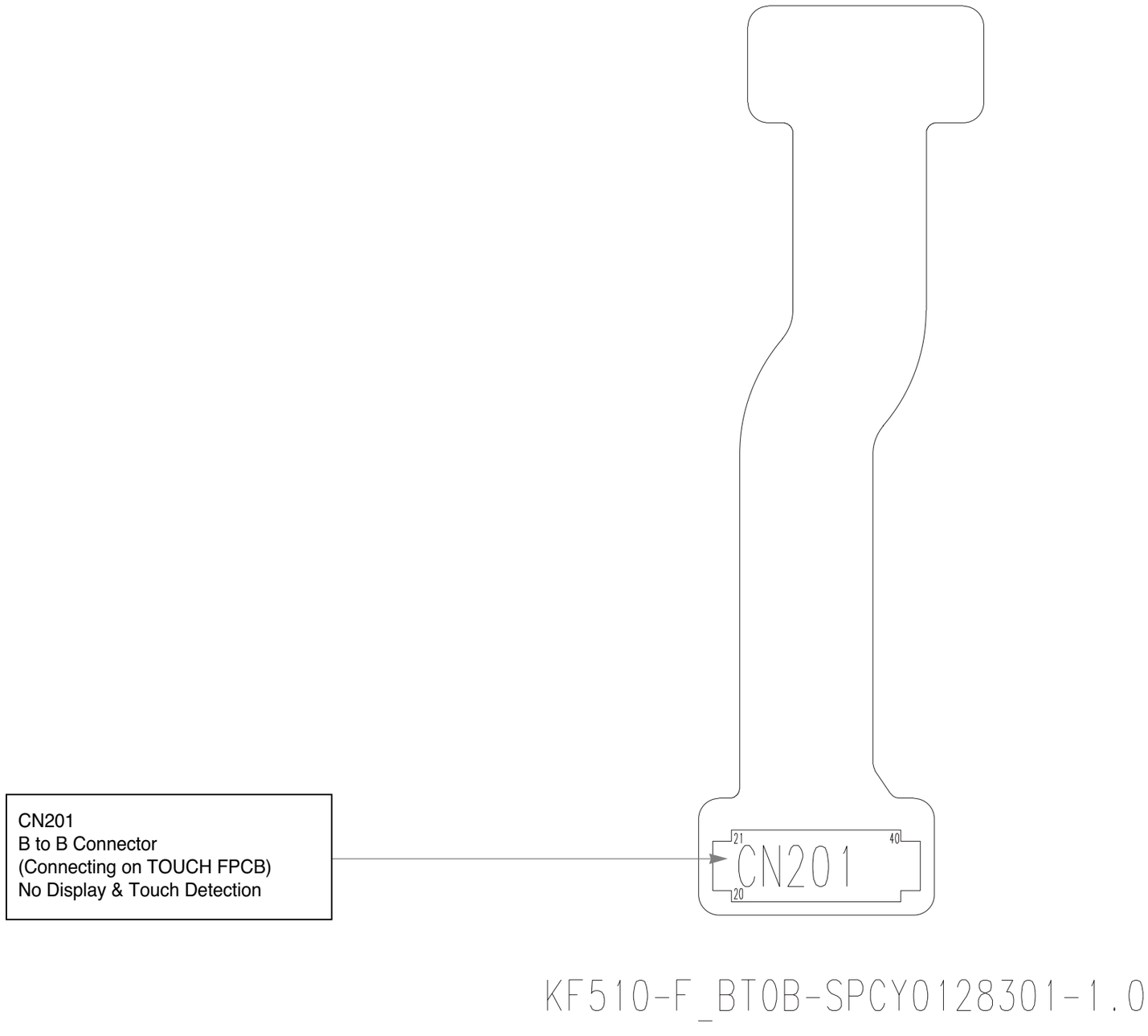
10. PCB LAYOUT



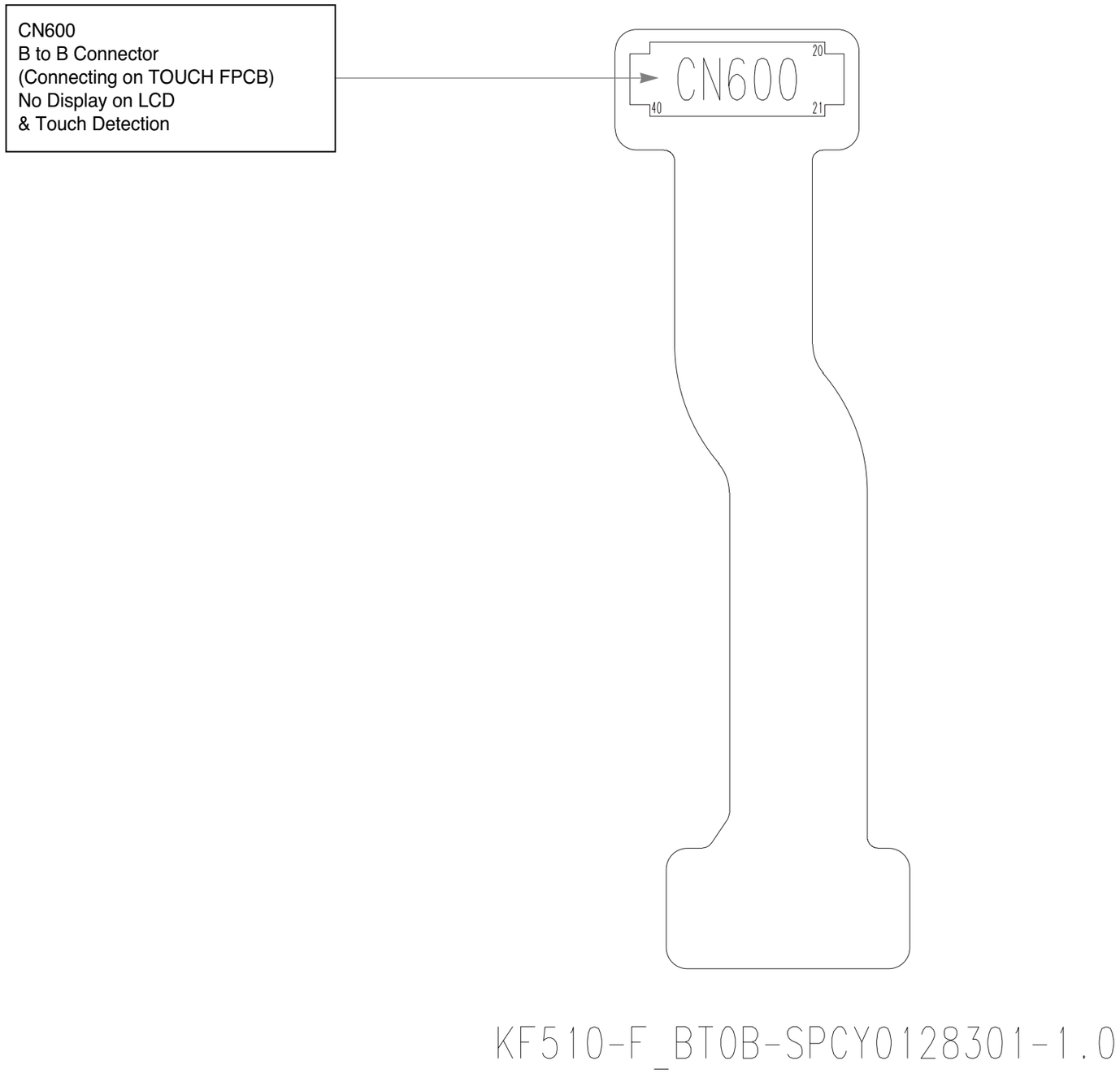
10. PCB LAYOUT



10. PCB LAYOUT

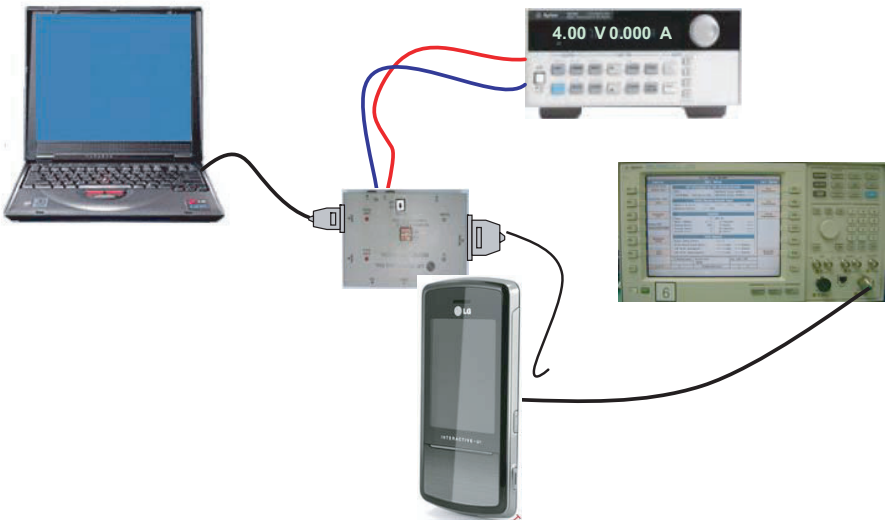


10. PCB LAYOUT



11. RF Calibration

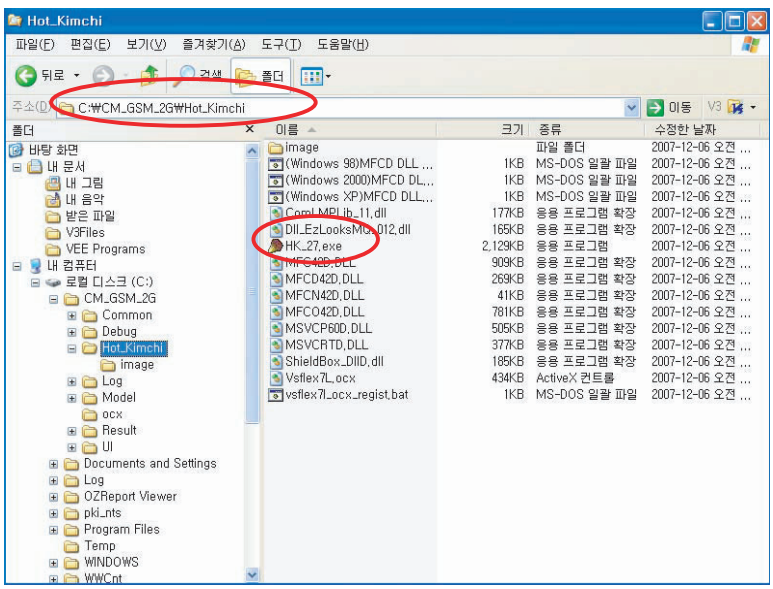
11.1 Test Equipment Setup



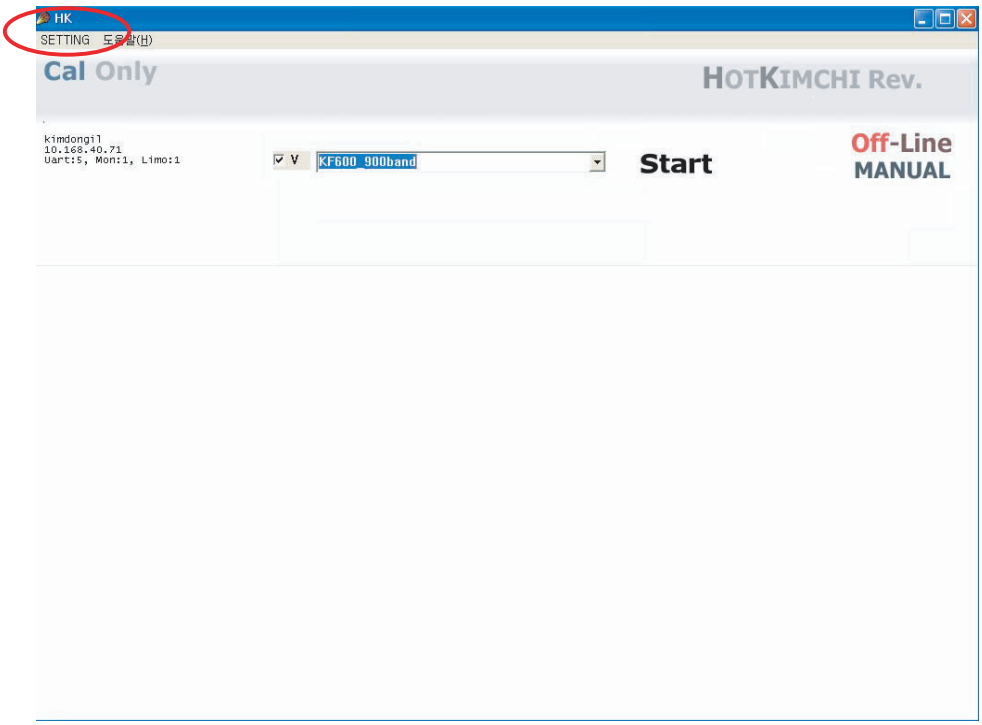
11.2 Calibration Step

11.2.1 Turn on the Phone

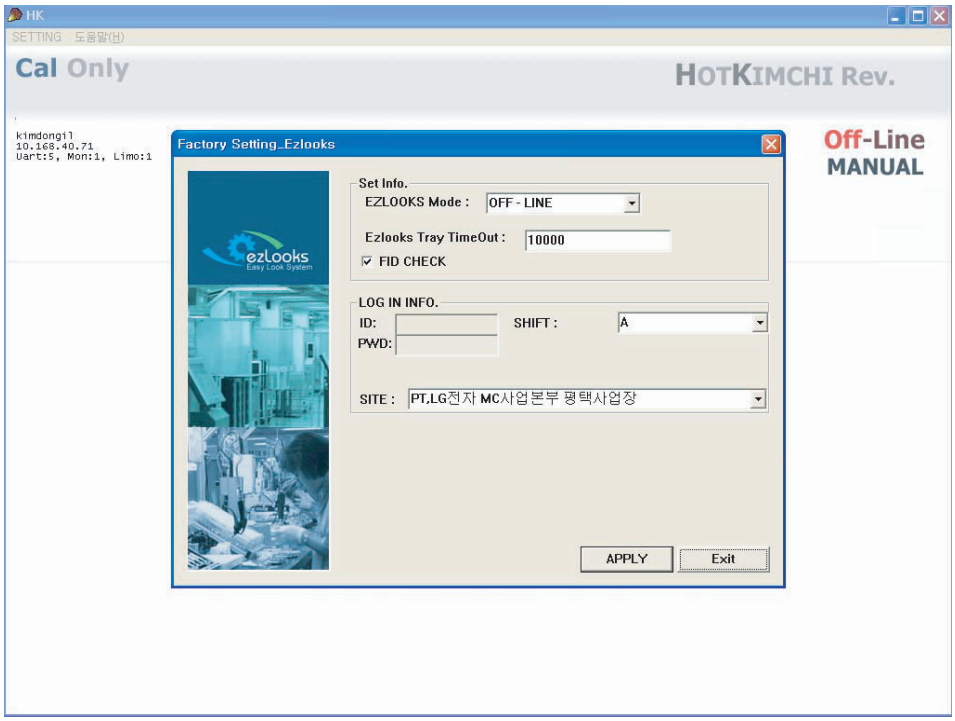
11.2.2 Execute “HK_27.exe”



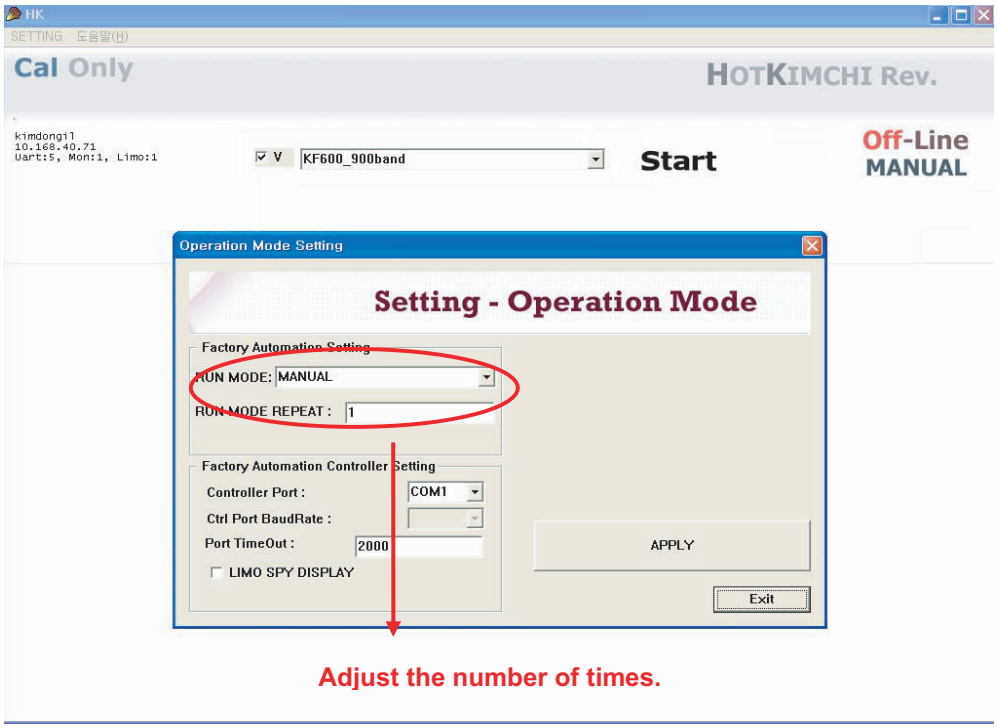
11.2.3 Click “SETTING” Menu



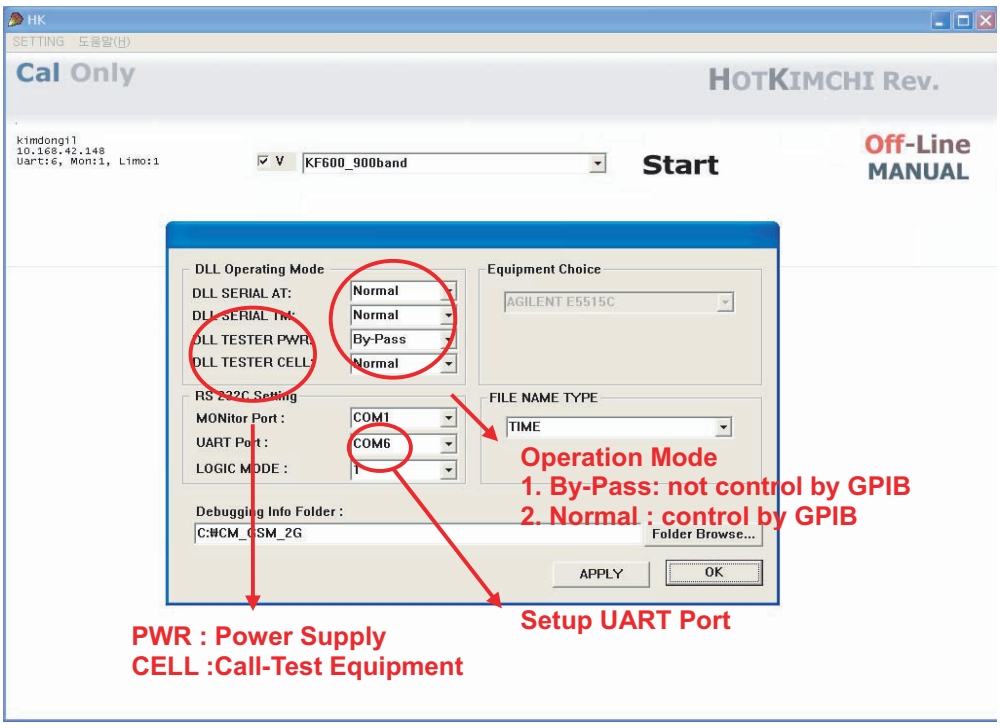
11.2.4 Setup “Ezlooks” menu such as the following figure



11.2.5 Setup “Line System” menu such as the following figure

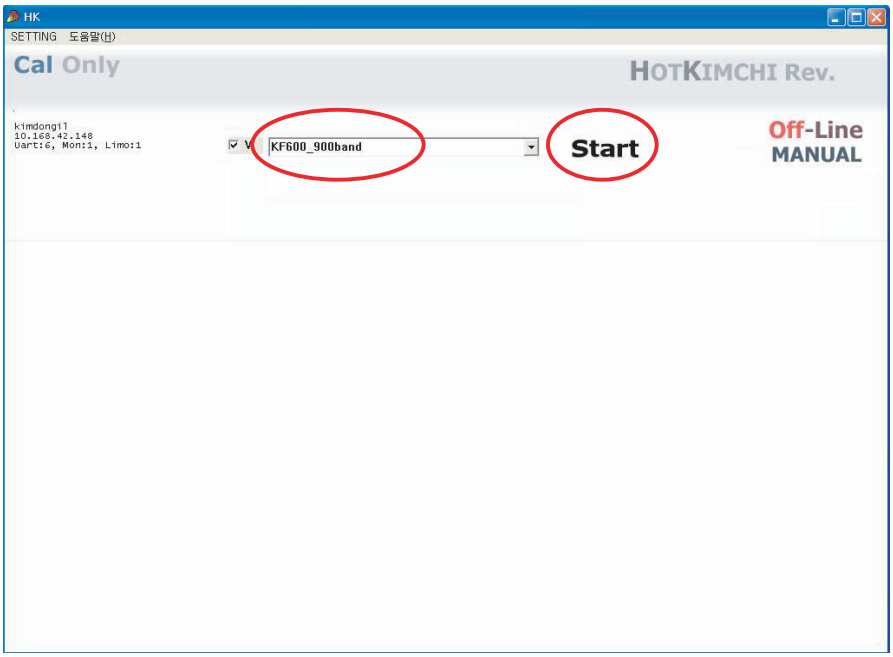


11.2.6 Setup Logic operation such as the following figure

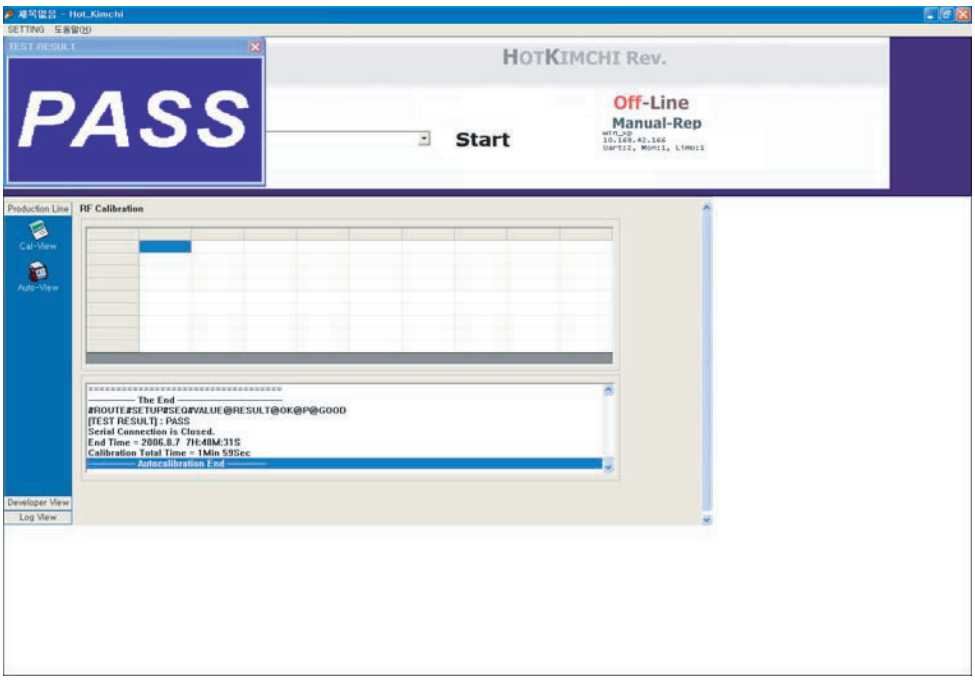


11.2.7 Select “MODEL”

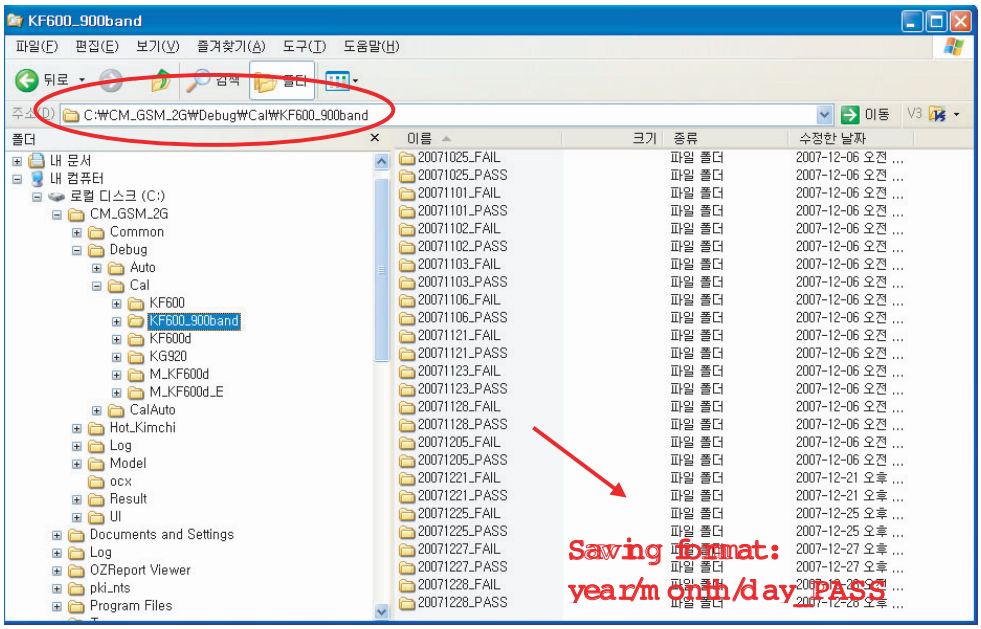
11.2.8 Click “START” for RF calibration



11.2.9 RF Calibration finishes.



11.2.10 Calibration data will be saved to the following folder



Notices:

1. The state of Phone is “test mode” during the CALIBRATION.
2. Calibration program automatically changes either “normal mode” or “ptest mode”.
3. RF Calibration steps as follow:

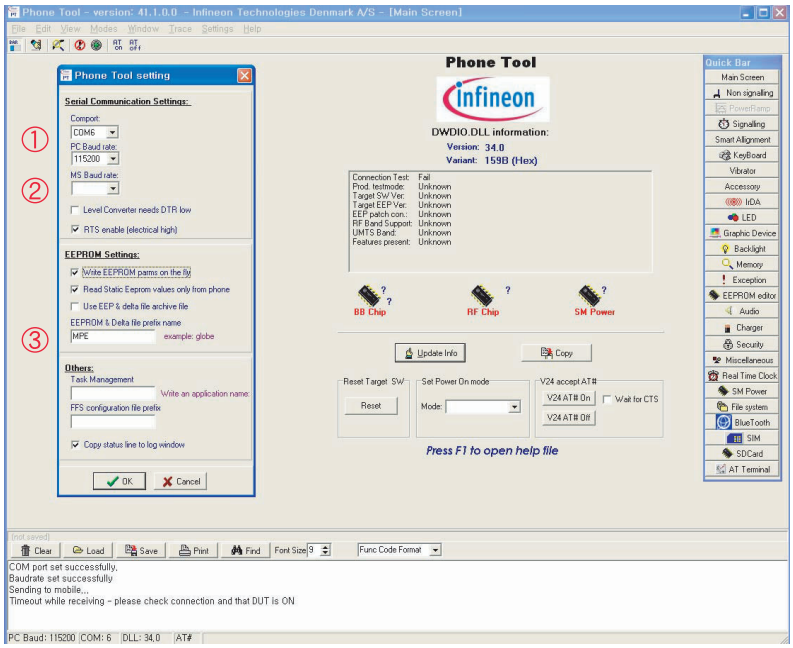
   TX Channel compensation: EGSM->DCS->PCS->EDGE EGSM->EDGE DCS->EDGE PCS

   RX Channel compensation: EGSM->DCS->PCS
4. Phone Operation Mode

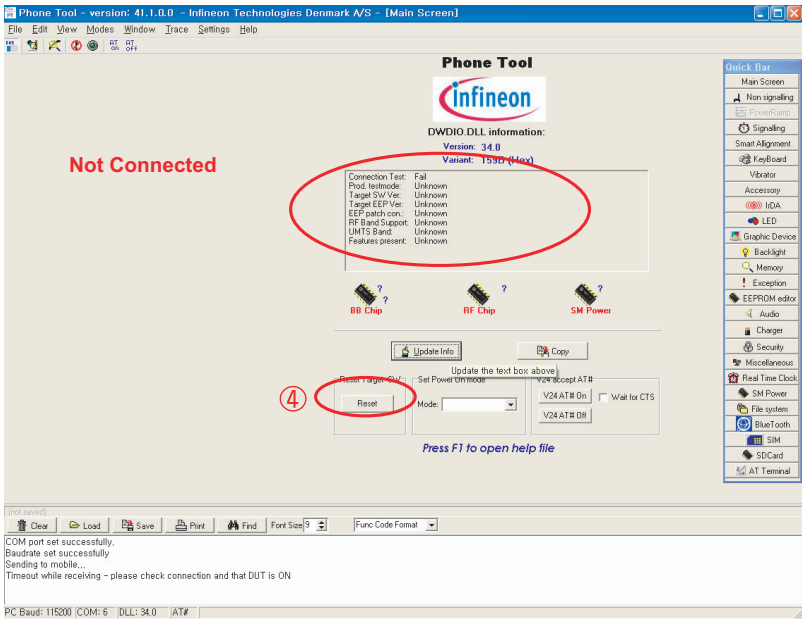
12. Stand-alone Test

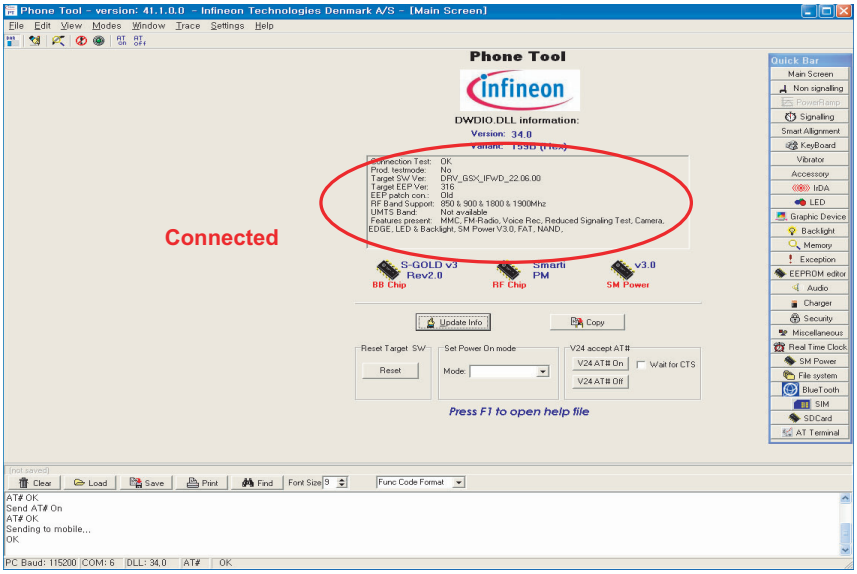
12.1 Test Program Setting

① Set COM Port.
② Check PC Baud rate.
③ Confirm EEPROM & Delta file prefix name.



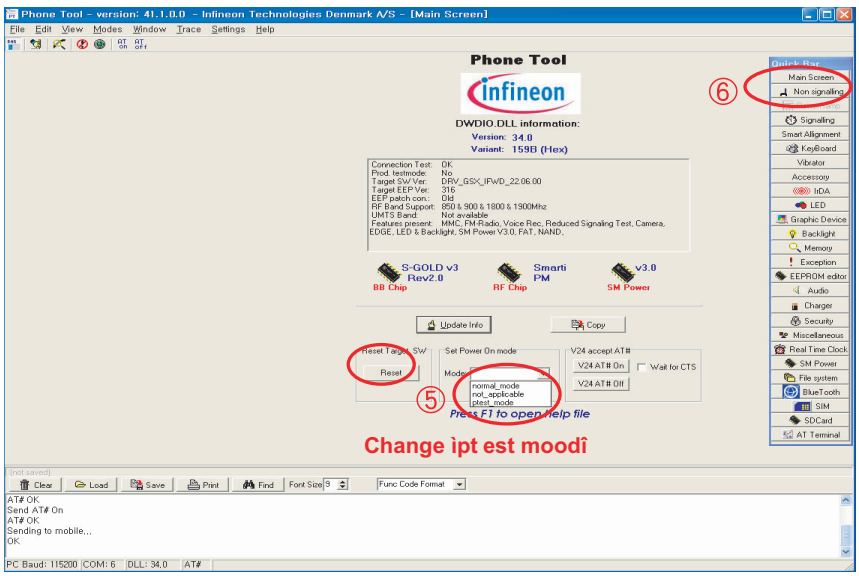
④ Click “Update Info” for communicating Phone and Test-Program.





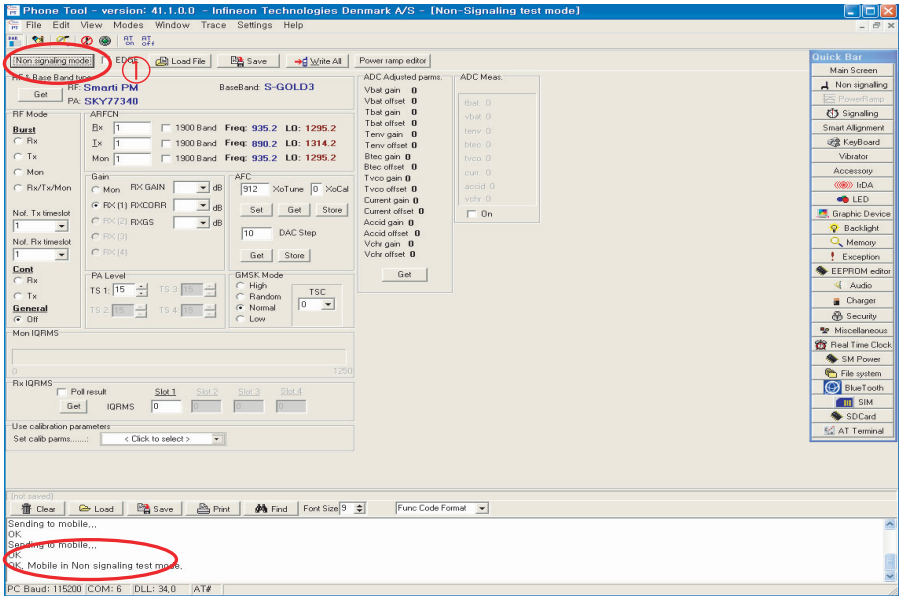
⑤ For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “Reset” bar.

⑥ Select “Non signaling” in the Quick Bar menu. Then Standalone Test setup is finished.



12.2 Tx Test

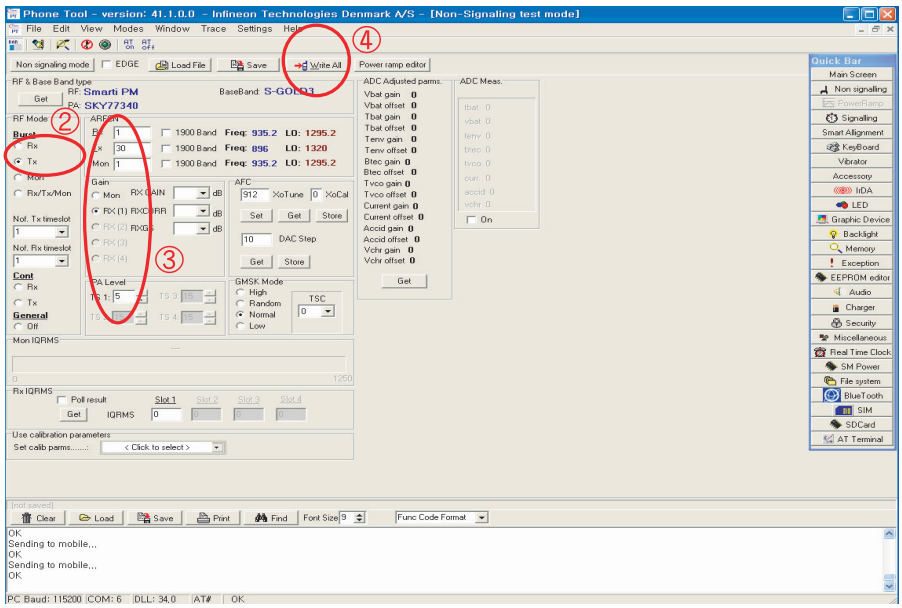
① Click “Non signaling mode” bar and then confirm “OK” text in the command line.



② Put the number of TX Channel in the ARFCN.

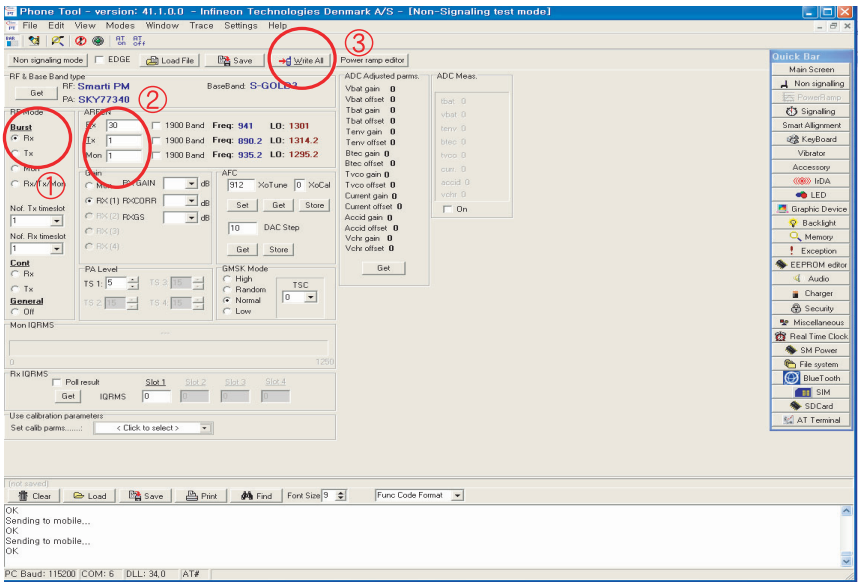
③ Select “Tx” in the RF mode menu and “PCL” in the PA Level menu.

④ Finally, Click “Write All” bar and try the efficiency test of Phone.

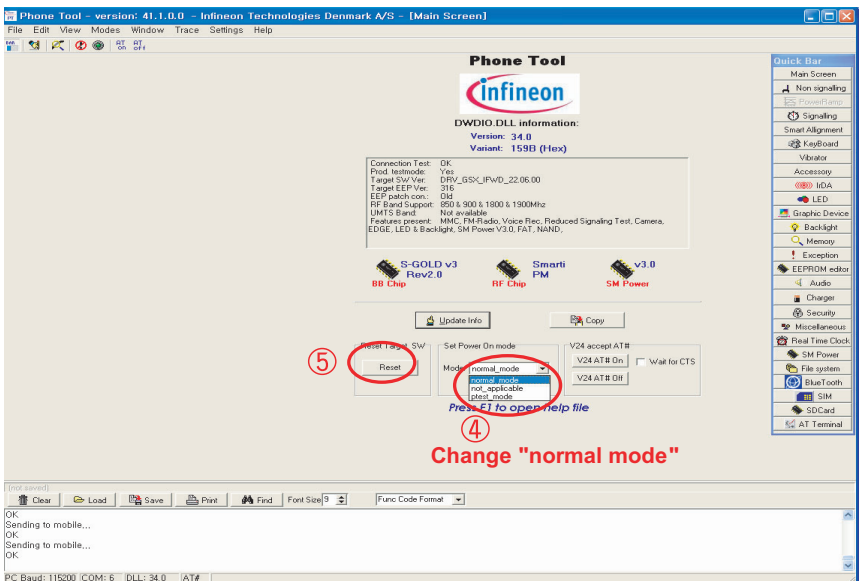


12.3 Rx Test

① Put the number of RX Channel in the ARFCN.
② Select “Rx” in the RF mode menu.
③ Finally, Click “Write All” bar and try the efficiency test of Phone.



④ The Phone must be changed “normal mode” after finishing Test.
⑤ Change the Phone to “normal mode” and then Click the “Reset” bar.



13. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is “2945#*#” Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back key will switch back to the original test menu.

[1] BB TEST

[1-1] Battery Info
[1-1-1] BattInfo

[1-2] Bluetooth Test
[1-2-1] Enter Test Mode
[1-2-2] OnOff Test
[1-2-3] Headset Test
[1-2-4] BT Test1
[1-2-5] BT Test2
[1-2-6] Xhtml Compose Print
[1-2-7] Xhtml Print Test

[1-3] ADTouch Test
[1-3-1] ADTouch Version
[1-3-2] ISSP Download
[1-3-3] Animation
[1-3-4] ADTouch reset
[1-3-5] Scroll

[1-4] ALC Setting
[1-4-1] ALC OFF
[1-4-2] ALC Power Saving
[1-4-3] ALC indoor
[1-4-4] ALC outdoor
[1-4-5] SLEEP

[1-5] Voice Clarity
[1-5-1] Voice Clarity On
[1-5-2] Voice Clarity Off

[2] Model Version

[2-1] Version

[3] Eng Mode

[3-1] Cell environ.

[3-2] PS Layer Info
[3-2-1] Mobility
[3-2-2] RadioRes
[3-2-1] Gprs

[3-3] Layer1 Info

[3-4] Reset Information
[3-4-1] Excpt

[3-5] Memory Configurarion

[3-6] MemGenConf

[3-7] MemAllUse

[3-8] MemDetUse

[3-9] MemDump

[3-10] Change Frequency Band

[4] Call Timer

[5] Factory Reset

[6] MF TEST

[6-1] All Auto Test

[6-2] Backlight
[6-2-1] BacklightOn
[6-2-2] BacklightOff

[6-3] Audio
[6-3-1] Audio Test

[6-4] Vibrator
[6-4-1] VibratorOn
[6-4-2] VibratorOff

[6-5] LCD
[6-5-1] Auto LCD
[6-5-2] Manual LCD

[6-6] Key pad

[6-7] Mic Speaker

[6-8] Camera
[6-8-1] Camera Main Preview
[6-8-2] FlashOn
[6-8-3] FlashOff
[6-8-4] CameraFlashBunning

[6-9] FM Radio
[6-9-1] FM Radio Test

[6-10] Touchpad Test

[7] Network selection

[7-1] Automatic

[7-2] GSM850

[7-3] EGSM

[7-4] DCS

[7-5] PCS

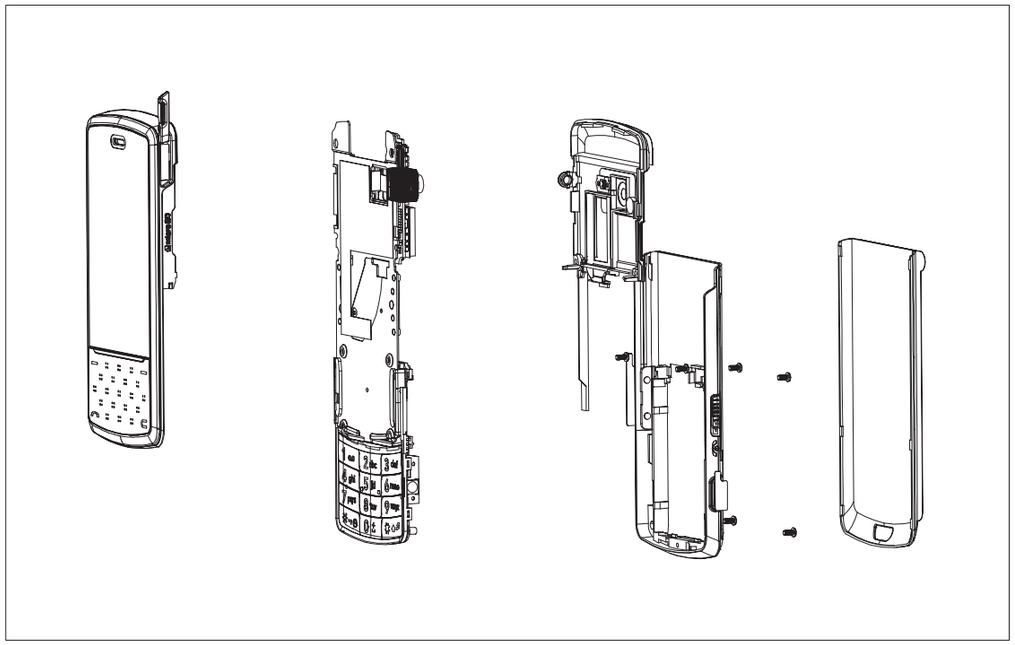
[8] MMI Test

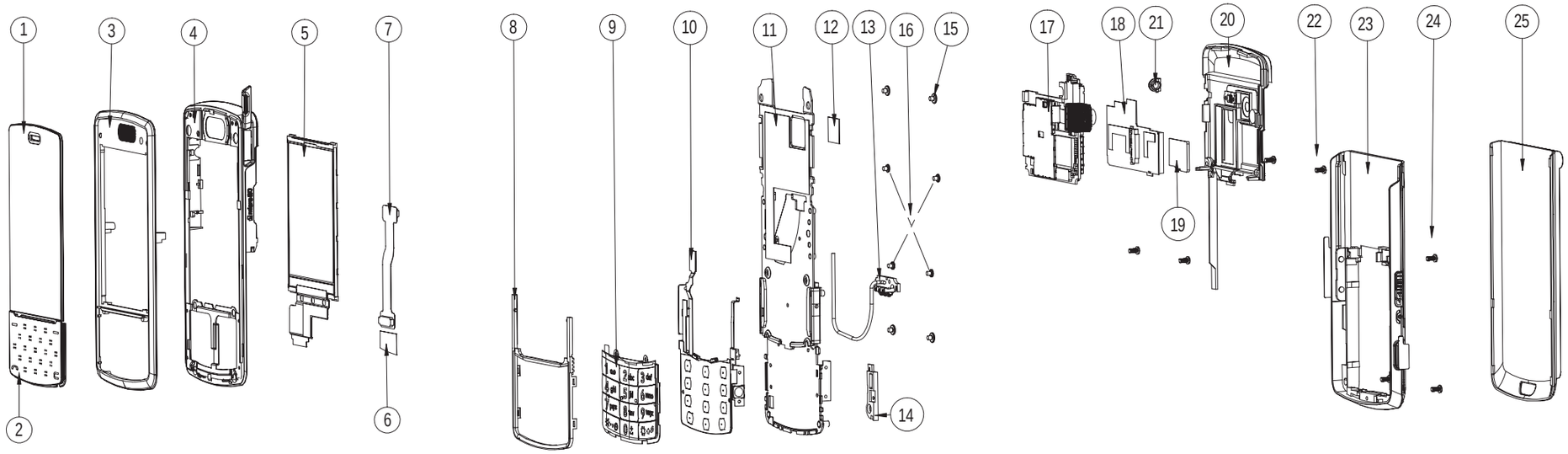
[8-1] SMS memory full

14. EXPLODED VIEW & REPLACEMENT PART LIST

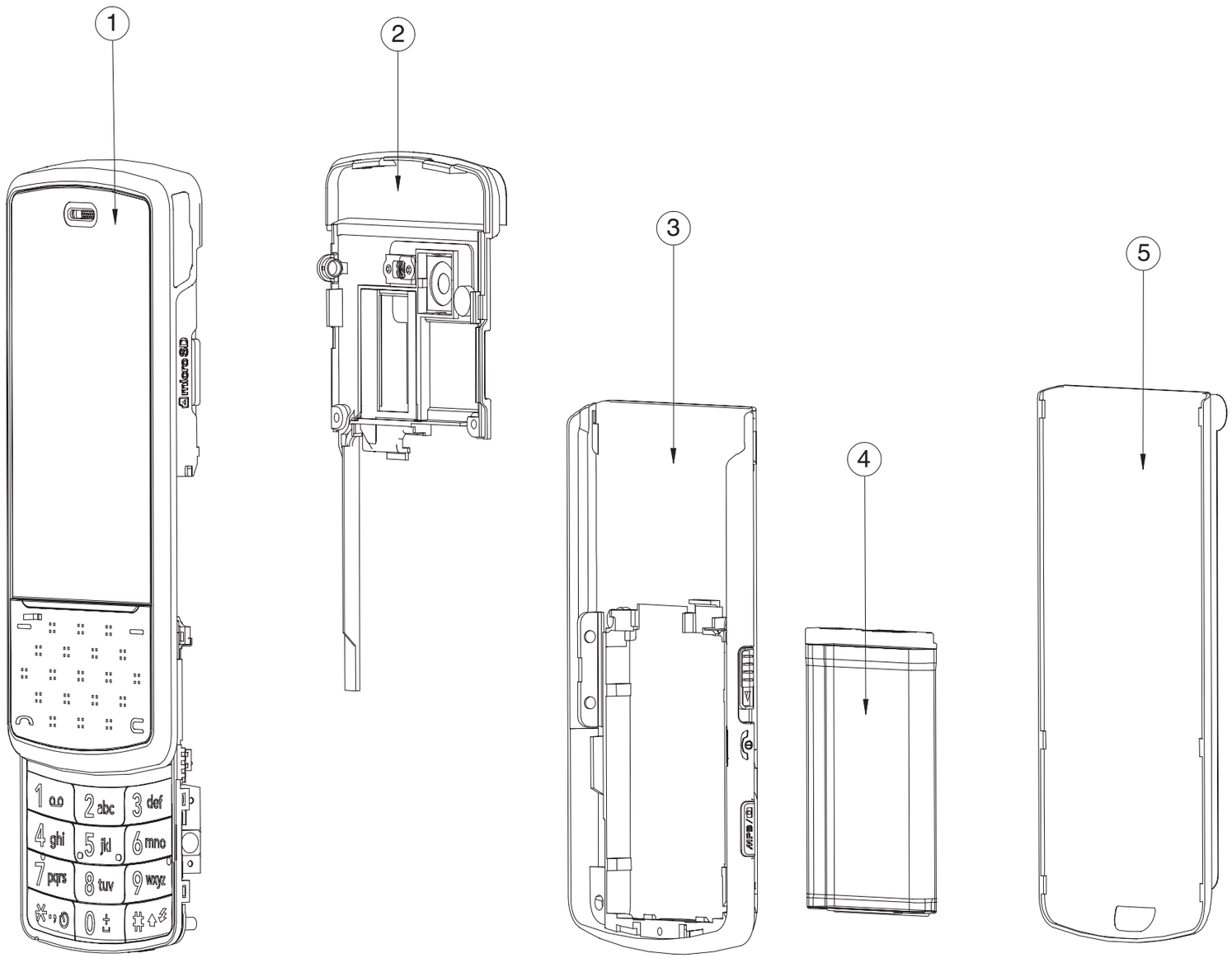
14.1 EXPLODED VIEW

25	Cover Assy, Battery	1	ACGA0021401
24	Screw Machine Bind	4	GMZZ0017702
23	Cover Assy, Rear	1	ACGM0105401
22	Screw Machine Bind	2	GMZZ0017702
21	Cap Mobile Switch	1	MCCF0049301
20	Cover Assy, Lower	1	ACGR0014301
19	Dummy SD Card	1	MPHY0012101
18	PCB Assy, Sub	1	SACY0070401
17	PCB Assy, Main	1	SAFY0238105
16	Screw Machine Bind	4	GMZZ0019003
15	Screw Machine Bind	4	GMEY0018101
14	Holder, Assy	1	AHCZ0001901
13	PCB Assy, Battery	1	SAJY0029801
12	Tape, Camera	1	MTAK0008101
11	Rail Slide	1	MRAA0005201
10	KeyPCB Assy	1	SACY0070301
9	Keypad Assy, Main	1	MKAG0005701
8	Deco, Front	1	MDAG0033601
7	B to B Connector	1	SACY0070201
6	Tape, LCD connector	1	MIDZ0154301
5	LCD, Module	1	SVLM0027501
4	Cover Assy, Upper	1	ACGS0016401
3	Deco Assy	1	ADBY0012501
2	Keypad Assy, Multi	1	SACY0070501
1	Window Assy, LCD	1	AWAB0031101





ASS'Y EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
5	Cover Assy, Battery	1	ACGA0021403	
4	BATTERY PACK,LI-ION	1	SBPL0085603	
3	Cover Assy, Rear	1	ACGM0105401	
2	Cover Assy,Slide(Lower)	1	ACGR0014301	
1	Cover Assy, Slide	1	ACGQ0026005	

14.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
1		GSM(SLIDE)	TGLL0015953		Dark Gray	
2	AAAY00	ADDITION	AAAY0291202		Dark Gray	
3	ACGA00	COVER ASSY,BATTERY	ACGA0021401		Dark Gray	25
4	MCJA00	COVER,BATTERY	MCJA0055601	PRESS, Al, 0.6, , , ,	Dark Gray	
4	MTAB00	TAPE,PROTECTION	MTAB0227801	COMPLEX, (empty), , , , ,	Without Color	
2	APEY00	PHONE	APEY0476005		Dark Gray	
3	ACGQ	COVER ASSY,SLIDE	ACGQ0026001		Dark Gray	A
4	ACGM00	COVER ASSY,REAR	ACGM0105401		Dark Gray	C, 23
5	MBJL00	BUTTON,SIDE	MBJL0051001	COMPLEX, (empty), , , , ,	Without Color	
5	MBJL01	BUTTON,SIDE	MBJL0051101	COMPLEX, (empty), , , , ,	Without Color	
5	MBJL02	BUTTON,SIDE	MBJL0051801	COMPLEX, (empty), , , , ,	Dark Gray	
5	MCJN00	COVER,REAR	MCJN0078701	CASTING, Al Alloy, , , , ,	Dark Gray	
5	MHHA00	HOUSING,LOWER	MHHA0025801	MOLD, ABS MP-220, , , , ,	Without Color	
5	MLAB00	LABEL,A/S	MLAB0000601	PRINTING, (empty), , , , ,	Without Color	
5	MLEA00	LOCKER,BATTERY	MLEA0044401	MOLD, PC LUPOY SC-1004A, , , , ,	Dark Gray	
5	MPGY00	PLUNGER	MPGY0006401	MOLD, POM LUCEL FW-700A, , , , ,	Without Color	
5	MSDB00	SPRING,COIL	MSDB0005201	COMPLEX, (empty), , , , ,	Without Color	
5	MSDB01	SPRING,COIL	MSDB0005101	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB00	TAPE,PROTECTION	MTAB0229601	COMPLEX, (empty), , , , ,	Without Color	
5	MTAZ01	TAPE	MTAZ0206701	COMPLEX, (empty), , , , ,	Without Color	
5	MTAZ02	TAPE	MTAZ0206801	COMPLEX, (empty), , , , ,	Without Color	
4	ACGR00	COVER ASSY,SLIDE(LOWER)	ACGR0014301		Dark Gray	B, 20
5	MBFZ00	BRACKET	MBFZ0029401	MOLD, PC LUPOY SC-1004A, , , , ,	Without Color	
5	MCJV00	COVER,SLIDE(LOWER)	MCJV0014501	MOLD, PC LUPOY SC-1004A, , , , ,	Dark Gray	
5	MLCE00	LENS,FLASH	MLCE0008801	MOLD, PMMA HI835M, , , , ,	Without Color	
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0032001	COMPLEX, (empty), , , , ,	Without Color	
5	MPBT00	PAD,CAMERA	MPBT0052801	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB00	TAPE,PROTECTION	MTAB0232301	COMPLEX, (empty), , , , ,	Without Color	
5	MTAE00	TAPE,WINDOW(SUB)	MTAE0033701	COMPLEX, (empty), , , , ,	Without Color	
5	MWAE00	WINDOW,CAMERA	MWAE0031701	MOLD, Tempered Glass, , , , ,	Dark Gray	
5	MWAE01	WINDOW,CAMERA	MWAE0032801	CUTTING, PMMA MR 200, , , , ,	Dark Gray	
4	ACGS00	COVER ASSY,SLIDE(UPPER)	ACGS0016401		Dark Gray	4

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
5	MCCC00	CAP,EARPHONE JACK	MCCC0051301	COMPLEX, (empty), , , , ,	Dark Gray	
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0016601	MOLD, PC LUPOY SC-1004A, , , , ,	Dark Gray	
6	MFEZ00	FRAME	MFEZ0015001	PRESS, STS, 0.3, , , ,	Without Color	
5	MSIY00	SHAFT	MSIY0001501	PRESS, STS, , , , ,	Dark Gray	
5	MTAB00	TAPE,PROTECTION	MTAB0229101	COMPLEX, (empty), , , , ,	Without Color	
4	ADBY00	DECO ASSY	ADBY0012501		Dark Gray	3
5	MDAP00	DECO,SLIDE(UPPER)	MDAP0001601	CASTING, Al Alloy, , , , ,	Dark Gray	
5	MFBC00	FILTER,SPEAKER	MFBC0036701	COMPLEX, (empty), , , , ,	Without Color	
4	AHCZ00	HOLDER ASSY	AHCZ0001901		Without Color	14
5	MHGF00	HOLDER,MIKE	MHGF0005101	MOLD, Urethane Rubber S190A, , , , ,	Without Color	
5	MMAA00	MAGNET,SWITCH	MMAA0009201	COMPLEX, (empty), , , , ,	Without Color	
5	MTAA00	TAPE,DECO	MTAA0159701	COMPLEX, (empty), , , , ,	Without Color	
5	MTAA01	TAPE,DECO	MTAA0163701	COMPLEX, (empty), , , , ,	Without Color	
4	AWAB00	WINDOW ASSY,LCD	AWAB0031101		Dark Gray	1
5	MTAB00	TAPE,PROTECTION	MTAB0222801	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB01	TAPE,PROTECTION	MTAB0237101	COMPLEX, (empty), , , , ,	Without Color	
5	MTAD00	TAPE,WINDOW	MTAD0080001	COMPLEX, (empty), , , , ,	Without Color	
5	MTAE00	TAPE,WINDOW(SUB)	MTAE0033301	COMPLEX, (empty), , , , ,	Without Color	
5	MWAC00	WINDOW,LCD	MWAC0091701	MOLD, Tempered Glass, , , , ,	Dark Gray	
4	MCCF00	CAP,MOBILE SWITCH	MCCF0049301	COMPLEX, (empty), , , , ,	Dark Gray	21
4	MDAG00	DECO,FRONT	MDAG0033601	MOLD, POM TX-31, , , , ,	Dark Gray	8
5	MTAA00	TAPE,DECO	MTAA0155801	COMPLEX, (empty), , , , ,	Without Color	
4	MIDZ00	INSULATOR	MIDZ0154301	COMPLEX, (empty), , , , ,	Without Color	6
4	MIDZ01	INSULATOR	MIDZ0165301	COMPLEX, (empty), , , , ,	Without Color	
4	MIDZ02	INSULATOR	MIDZ0165501	COMPLEX, (empty), , , , ,	Without Color	
4	MIDZ03	INSULATOR	MIDZ0169301	COMPLEX, (empty), , , , ,	Without Color	
4	MKAG00	KEYPAD,MAIN	MKAG0005701	COMPLEX, (empty), , , , ,	Dark Gray	9
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , , ,	White	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0032301	COMPLEX, (empty), , , , ,	Without Color	
4	MPBJ00	PAD,MOTOR	MPBJ0050501	COMPLEX, (empty), , , , ,	Without Color	
4	MPBZ00	PAD	MPBZ0196301	COMPLEX, (empty), , , , ,	Without Color	
4	MPBZ01	PAD	MPBZ0203401	COMPLEX, (empty), , , , ,	Without Color	
4	MRAA00	RAIL,SLIDE	MRAA0005201	PRESS, STS, 0.5, , , ,	Without Color	11
5	MFBD00	FILTER,MIKE	MFBD0029101	COMPLEX, (empty), , , , ,	Without Color	
5	MGAE00	GASKET,DUST	MGAE0001001	COMPLEX, (empty), , , , ,	Without Color	
5	MTAZ00	TAPE	MTAZ0213301	COMPLEX, (empty), , , , ,	Without Color	
4	MRDY00	REINFORCE	MRDY0000601	COMPLEX, (empty), , , , ,	White	

Level	Location No	Description	Part Number	Spec	Color	Remark
4	MTAB00	TAPE,PROTECTION	MTAB0227901	COMPLEX, (empty), , , , ,	Without Color	
4	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0007301	COMPLEX, (empty), , , , ,	Without Color	
4	MTAJ01	TAPE,FLEXIBLE PCB	MTAJ0007401	COMPLEX, (empty), , , , ,	Without Color	
4	MTAJ02	TAPE,FLEXIBLE PCB	MTAJ0009001	COMPLEX, (empty), , , , ,	Without Color	
4	MTAK00	TAPE,CAMERA	MTAK0008101	COMPLEX, (empty), , , , ,	Without Color	12

14. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
4	GMEY00	SCREW MACHINE,BIND	GMEY0018101	1.4 mm,1.5 mm,SWCH18A ,B ,TRI , ,; ,[empty] ,[empty] , , ,SWCH ,BLACK ,[empty] ,[empty]	Silver	15
4	GMZZ00	SCREW MACHINE	GMZZ0019003	3.5 mm,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating (ZnB-BLACK)	Black	16
4	GMZZ01	SCREW MACHINE	GMZZ0017702		Silver	22, 24
4	SACY	PCB ASSY,FLEXIBLE	SACY0070401	KF510 F-SUB		18
5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0043902			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0064701	KF510 SUB-FPCB		
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0042801			
7	C500	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C501	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C502	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C503	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C504	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C514	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C515	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C516	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C517	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C518	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C519	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C522	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C523	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	CN501	CONNECTOR,BOARD TO BOARD	ENBY0039601	20 PIN,0.4 mm,ETC , ,H=1.0, Socket		
7	J500	CONN,SOCKET	ENSY0021301	6 PIN,ANGLE , , mm,		
7	L500	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L501	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L504	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
7	L505	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
7	L506	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L507	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L508	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	LD500	DIODE,LED,MODULE	EDLM0009501	white ,1 LED,2.0x1.6x0.7t ,R/TP ,		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	Q500	TR,FET,P-CHANNEL	EQFP0007301	SOT-323(SC-70) ,0.29 W,-8 V,-1.4 A,R/TP ,Low Rds Power MOSFET, Pb free		
7	R500	RES,CHIP,MAKER	ERHZ0000331	110 Kohm,1/16W ,F ,1005 ,R/TP		
7	R501	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
7	R502	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
7	R503	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R506	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
7	R507	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R508	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	S500	CONN,SOCKET	ENSY0020901	8 PIN,STRAIGHT , , mm,		
7	U500	IC	EUSY0349001	BGA ,8 PIN,R/TP ,Class AB SPK AMP ,; ,IC,Audio Amplifier		
7	U501	IC	EUSY0357101	CSP ,12 PIN,R/TP ,1.514x1.996x0.6t ,; ,IC,Charge Pump		
7	VA502	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
7	VA503	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0054301			
7	C506	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C507	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C508	CAP,CERAMIC,CHIP	ECCH0000187	150 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C511	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C512	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C513	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C520	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C521	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN500	CONNECTOR,BOARD TO BOARD	ENBY0038701	44 PIN,0.4 mm,ETC , ,H=1.5, P4S Plug		
7	R504	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R505	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R509	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R510	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R511	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	VA500	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
7	VA501	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	SPCY00	PCB,FLEXIBLE	SPCY0117401	POLYI ,0.29 mm,MULTI-4 ,TH-F_SUB ,; , , , , , , , , ,		
4	SACY00	PCB ASSY,FLEXIBLE	SACY0070201	KF510 F-BtoB		7
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0064601			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0042701			

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	CN600	CONNECTOR,BOARD TO BOARD	ENBY0045601	40 PIN,0.4 mm,ANGLE , , ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,[empty] , ,		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0054201			
7	CN201	CONNECTOR,BOARD TO BOARD	ENBY0045601	40 PIN,0.4 mm,ANGLE , , ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,[empty] , ,		
6	SPCY01	PCB,FLEXIBLE	SPCY0128301	POLYI ,0.2 mm,DOUBLE , ,; , , , , , , , , ,		
4	SACY01	PCB ASSY,FLEXIBLE	SACY0070301	KF510 F-KEY		10
5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0043701			
6	ADCA00	DOME ASSY,METAL	ADCA0075201		Without Color	
5	SAEE00	PCB ASSY,FLEXIBLE,SMT	SACE0066301			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0043701			
7	MIC700	MICROPHONE	SUMY0010608	UNIT ,42 dB,3.76*2.95*1.1 ,MEMS mic ,; , , ,OMNI ,[empty] , ,[empty]		
7	ON/END	SWITCH,TACT	ESCY0005001	5 V,1 A,HORIZONTAL ,1 G, ,; ,1C2P ,[empty] ,[empty] ,[empty] , ,[empty]		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0055601			
7	AF_CAM	SWITCH,TACT	ESCY0005301	1 V,1 A,HORIZONTAL ,1 G, ,; ,10C2P ,[empty] ,[empty] ,[empty] , ,[empty]		
7	CN700	CONNECTOR,BOARD TO BOARD	ENBY0039501	20 PIN,0.4 mm,ETC , ,H=1.0, Plug		
7	LD700	DIODE,LED,CHIP	EDLH0013403	WHITE ,ETC ,R/TP ,3.8*1.2*0.6T ,; ,[empty] ,2.9~3.2V ,20mA ,1200~1400mcd , ,126mW ,[empty] ,[empty] ,2P		
7	LD701	DIODE,LED,CHIP	EDLH0013403	WHITE ,ETC ,R/TP ,3.8*1.2*0.6T ,; ,[empty] ,2.9~3.2V ,20mA ,1200~1400mcd , ,126mW ,[empty] ,[empty] ,2P		
7	R700	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R701	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	SPCY00	PCB,FLEXIBLE	SPCY0117301	POLYI ,0.35 mm,MULTI-2 ,TH-F_KEY ,; , , , , , , , , ,		
4	SACY03	PCB ASSY,FLEXIBLE	SACY0070501	KF510 F-Touch		2
5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0043901			
6	ABGG00	BUTTON ASSY,SUB	ABGG0001501		Dark Gray	
7	MTAB00	TAPE,PROTECTION	MTAB0228201	COMPLEX, (empty), , , , ,	Without Color	
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0064501			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0042601			
7	C600	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C601	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C602	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C603	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C604	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C610	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C611	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C612	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C613	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C614	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C615	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C616	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C620	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C621	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C622	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C623	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C624	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C625	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	CN600	CONNECTOR,BOARD TO BOARD	ENBY0045701	40 PIN,.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,[empty] , ,		
7	CN601	CONNECTOR,FFC/FPC	ENQY0013901	35 PIN,0.3 mm,STRAIGHT , , ,; , ,0.30MM ,FPC ,STRAIGHT ,BOTH ,SMD ,R/TP ,[empty] ,		
7	FB600	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
7	FB601	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
7	FL600	FILTER,EMI/POWER	SFEY0015101	SMD ,Pb-free_8ch_TVS_EMI_ESD ,; ,Filter,LCR		
7	FL601	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
7	R601	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R603	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R604	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R606	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R607	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R608	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R611	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R613	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R614	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R615	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R616	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R617	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R618	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R621	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R622	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R623	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		

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Level	Location No	Description	Part Number	Spec	Color	Remark
7	R624	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R625	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R626	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R627	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R628	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R629	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R630	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R631	RES,CHIP,MAKER	ERHZ0000491	510 ohm,1/16W ,J ,1005 ,R/TP		
7	R632	RES,CHIP,MAKER	ERHZ0000491	510 ohm,1/16W ,J ,1005 ,R/TP		
7	R633	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R634	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R636	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R637	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R638	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R639	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R640	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	U600	IC	EUSY0313401	QFN ,4 PIN,R/TP ,1.8X1.2X0.5 size wide input voltage Hall Switch		
7	U601	IC	EUSY0277001	Cap sense Inputs device ,32 PIN,R/TP ,5*5 Capsense TrackPad		
7	U602	IC	EUSY0350801	QFN ,32 PIN,R/TP ,Cap.sensor IC(28Pin IO) ,; ,IC,CMOS		
7	VA600	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
7	VA603	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
7	VA604	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0054001			
7	LD600	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD602	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
7	LD603	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD605	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD606	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD607	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD609	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD610	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD611	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
7	LD612	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD613	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	LD614	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD615	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD617	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD618	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD620	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD622	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD624	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
7	LD626	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD627	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD628	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD629	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD630	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
6	SPCY01	PCB,FLEXIBLE	SPCY0117101	POLYI ,0.38 mm,SBL-5(2-4) ,TH-F_Touch,PSR ,; , , , , , , , , ,		
4	SAFY00	PCB ASSY,MAIN	SAFY0238105		Black Blue	17
5	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0083001			
6	MCBA00	CAN,SHIELD	MCBA0029201	PRESS, STS, , , , ,	Without Color	
6	MCBA01	CAN,SHIELD	MCBA0029301	PRESS, STS, , , , ,	Without Color	
6	MCBA02	CAN,SHIELD	MCBA0029401	PRESS, STS, , , , ,	Without Color	
6	MPBF00	PAD,FLEXIBLE PCB	MPBF0031701	COMPLEX, (empty), , , , ,	Without Color	
6	MPBF01	PAD,FLEXIBLE PCB	MPBF0031801	COMPLEX, (empty), , , , ,	Without Color	
5	SAFF00	PCB ASSY,MAIN,SMT	SAFF0155205			
6	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
6	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0112601			
7	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C108	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C109	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C110	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C111	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C112	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C113	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C114	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C115	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C116	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C117	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

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Level	Location No	Description	Part Number	Spec	Color	Remark
7	C118	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C119	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C120	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C121	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C124	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C125	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C126	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C127	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C128	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C129	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C130	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C131	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C132	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C133	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
7	C134	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
7	C135	CAP,CERAMIC,CHIP	ECCH0009110	22 nF,6.3V ,K ,X7R ,TC ,0603 ,R/TP		
7	C136	CAP,CERAMIC,CHIP	ECCH0009110	22 nF,6.3V ,K ,X7R ,TC ,0603 ,R/TP		
7	C137	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
7	C138	CAP,CERAMIC,CHIP	ECCH0009520	15 pF,25V ,J ,X7R ,TC ,0603 ,R/TP		
7	C139	CAP,CERAMIC,CHIP	ECCH0009520	15 pF,25V ,J ,X7R ,TC ,0603 ,R/TP		
7	C200	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C201	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C204	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C205	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C207	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C208	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C209	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C210	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C211	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C212	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C225	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C226	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C227	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C228	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C229	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C230	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C231	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C232	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C233	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C234	CAP,CHIP,MAKER	ECZH0025502	22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP ,; ,0.85t ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
7	C235	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C236	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C237	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C238	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C239	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C240	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C241	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C242	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C243	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C244	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C245	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C246	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C247	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C248	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C249	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C253	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C263	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C265	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C266	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C267	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C270	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C303	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C305	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
7	C306	VARISTOR	SEVY0005403	18 V,30% ,SMD ,27pF,1005		
7	C307	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
7	C308	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
7	C312	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C313	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C318	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C319	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C440	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C444	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
7	C445	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C446	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C455	CAP,CERAMIC,CHIP	ECCH0009520	15 pF,25V ,J ,X7R ,TC ,0603 ,R/TP		
7	C456	CAP,CERAMIC,CHIP	ECCH0009520	15 pF,25V ,J ,X7R ,TC ,0603 ,R/TP		
7	C457	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
7	C460	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
7	C461	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C462	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
7	C463	CAP,CHIP,MAKER	ECZH0001126	820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
7	C465	CAP,CHIP,MAKER	ECZH0001126	820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
7	C466	VARISTOR	SEVY0005401	18 V, ,SMD ,15pF,1005		
7	C468	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
7	C469	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C470	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C471	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C472	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C481	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C482	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C483	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C490	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	CN201	CONNECTOR,BOARD TO BOARD	ENBY0045701	40 PIN,.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,[empty] , ,		
7	CN301	CONNECTOR,I/O	ENRY0006501	18 PIN,0.4 mm,ETC , ,1.2 Offset		
7	CN410	CONNECTOR,ETC	ENZY0018801	PIN, mm,ETC , ,RCS=1.35		
7	D200	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
7	FB200	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
7	FB201	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
7	FB401	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
7	FL302	INDUCTOR,CHIP	ELCH0004204	33 nH,J ,1608 ,R/TP ,PBFREE		
7	FL401	FILTER,DIELECTRIC	SFDY0002601	2450 MHz,2.0*1.25*1.0 ,SMD ,2400M~2500M, IL 3.8, 8pin, U-B, 34.2_j95, BT (CSR BC41B143A) ,; ,BPF ,2450 ,100 ,SMD ,R/TP		
7	L100	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L101	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L102	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L103	INDUCTOR,CHIP	ELCH0001430	100 nH,J ,1005 ,R/TP ,PBFREE		
7	L200	INDUCTOR,SMD,POWER	ELCP0006703	10 uH,M ,3.2*2.6*1.0 ,R/TP ,		
7	L300	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L408	CAP,CHIP,MAKER	ECZH0000813 ELCH0001405	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP 3.3nH, 50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	L409	RES,CHIP	ERHY0000415	47 ohm,1/16W,J,1608,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	L410	INDUCTOR,CHIP	ELCH0001556	270 nH,J ,1608 ,R/TP ,		
7	L413	INDUCTOR,CHIP	ELCH0004730	33 nH,J ,1005 ,R/TP ,		
7	M400	MODULE,ETC	SMZY0015801	84 Ball 0.5pitch, BGA , Bluetooth+FM (6.0*6.0*1.0)		
7	Q201	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
7	Q203	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
7	R102	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
7	R104	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
7	R106	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R107	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R108	RES,CHIP,MAKER	ERHZ0000465	3300 ohm,1/16W ,J ,1005 ,R/TP		
7	R109	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R112	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R113	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
7	R114	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R116	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R117	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R119	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
7	R120	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
7	R131	RES,CHIP	ERHY0000277 ERHZ0000423	75K ohm,1/16W,J,1005,R/TP 150K ohm,1/16W,J,1005,R/TP		
7	R132	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R200	RES,CHIP	ERHY0000137	27K ohm,1/16W,F,1005,R/TP		
7	R203	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R204	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R205	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R206	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R208	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R209	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R219	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
7	R222	RES,CHIP	ERHY0000298	3.3M ohm,1/16W,J,1005,R/TP		
7	R223	RES,CHIP	ERHY0000298	3.3M ohm,1/16W,J,1005,R/TP		
7	R230	RES,CHIP	ERHY0009536	100 Kohm,1/20W(0.05W) ,F ,0603 ,R/TP		
7	R309	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
7	R310	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R311	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R313	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R317	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R318	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	R319	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R320	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R324	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
7	R350	RES,CHIP,MAKER	ERHZ0000428	18 ohm,1/16W ,J ,1005 ,R/TP		
7	R351	RES,CHIP,MAKER	ERHZ0000428	18 ohm,1/16W ,J ,1005 ,R/TP		
7	R409	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
7	R411	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
7	R414	RES,CHIP,MAKER	ERHZ0000456	2.2 ohm,1/16W ,J ,1005 ,R/TP		
7	R415	RES,CHIP,MAKER	ERHZ0000287	47 Kohm,1/16W ,F ,1005 ,R/TP		
7	R416	RES,CHIP	ERHY0009530	560 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
7	SC101	FRAME,SHIELD	MFEA0020701	PRESS, STS, , , , ,	Without Color	
7	U100	IC	EUSY0335802	FBGA ,107 PIN,ETC ,FULLY 1.8V 1G(128Mx8) NAND+512M(DDR/8Mx4x16) SDRAM ,; ,IC,MCP		
7	U101	IC	EUSY0322801	BGA ,293 PIN,R/TP ,Multimedia Extension EDGE BB		
7	U201	IC	EUSY0323901	BGA PG-WFSGA ,121 PIN,R/TP ,SMPOWER3		
7	U204	IC	EUSY0102802	Micropak ,8 PIN,R/TP ,Daul 2 input AND gate,		
7	U302	IC	EUSY0331801	Photo sensor IC, 6 PIN, Vcc 1.8 to 5.5V ,6 PIN,R/TP ,Photo sensor IC		
7	X100	X-TAL	EXXY0024301	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,-40'C ~ +85'C, C0 1.05pF, C1 fF ,; ,32.768 ,20PPM ,12.5 , , ,SMD ,R/TP		
6	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0111201			
7	BAT300	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
7	C100	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C101	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C102	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
7	C103	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C104	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C105	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
7	C122	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C123	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C202	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C203	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C206	CAP,TANTAL,CHIP	ECTH0005702	100 uF,6.3V ,M ,L_ESR ,3216 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty]		
7	C213	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C214	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C217	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C218	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C219	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C220	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C221	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C222	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C223	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C224	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C250	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C251	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C252	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C254	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C255	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C256	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C257	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
7	C258	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C259	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C260	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C261	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C262	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C264	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C300	CAP,TANTAL,CHIP	ECTH0005601	10 uF,10V ,M ,L_ESR ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty]		
7	C301	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C302	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
7	C304	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C311	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C314	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C315	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C320	CAP,CERAMIC,CHIP	ECCH0000127	82 pF,50V,J,NP0,TC,1005,R/TP		
7	C321	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C323	CAP,CERAMIC,CHIP	ECCH0000127	82 pF,50V,J,NP0,TC,1005,R/TP		
7	C324	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C325	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C326	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C327	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C328	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C329	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C330	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C331	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C332	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
7	C333	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C334	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C335	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C336	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C337	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C338	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C339	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C340	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C399	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C400	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
7	C401	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C402	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C403	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C405	INDUCTOR,CHIP	ELCH0001048 ECZH0000802	10 nH,J ,1005 ,R/TP ,PBFREE 1pF,J ,1005 ,R/TP ,PBFREE		
7	C406	RES,CHIP	ERHY0000101 ECZH0000813	0 ohm,1/16W,F,1005,R/TP 100pF,1/16W,F,1005,R/TP		
7	C410	CAP,CHIP,MAKER	ECZH0001002 ELCH0003819	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP 12nH,50V ,B ,NP0 ,TC ,1005 ,R/TP		
7	C411	CAP,TANTAL,CHIP	ECTH0005706	68 uF,6.3V ,M ,L_ESR ,3216 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty]		
7	C412	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C413	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C414	CAP,CERAMIC,CHIP	ECCH0004906	2.5 pF,50V ,C ,X7R ,TC ,1005 ,R/TP		
7	C415	CAP,CERAMIC,CHIP	ECCH0004906	2.5 pF,50V ,C ,X7R ,TC ,1005 ,R/TP		
7	C416	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C417	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C418	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C419	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C420	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C421	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C422	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C423	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
7	C424	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C425	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C426	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C427	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C428	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	C429	CAP,CHIP,MAKER	ECZH0001126	820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
7	C430	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C431	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C432	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C433	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C434	CAP,CERAMIC,CHIP	ECCH0009201	47 nF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
7	C437	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
7	C438	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C439	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C441	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
7	C442	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C450	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C451	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C452	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C453	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C473	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
7	C474	CAP,CHIP,MAKER	ECZH0000816 ECZH0000813	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP 100pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C475	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C480	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C484	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C485	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C491	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	C492	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
7	CN200	CONNECTOR,BOARD TO BOARD	ENBY0038901	44 PIN,0.4 mm,ETC , ,H=1.5, P4S Socket		
7	CN300	CONNECTOR,BOARD TO BOARD	ENBY0015601	34 PIN,0.4 mm,STRAIGHT ,AU ,0.9MM HEIGHT		
7	D201	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
7	FB300	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
7	FB301	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
7	FB302	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
7	FL100	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
7	FL101	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
7	FL300	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
7	FL301	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
7	FL303	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		
7	FL304	VARISTOR	SEVY0005501	18 V, ,SMD ,4ch. R-Varistor Array(100Ohm,15pF)		

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	FL305	VARISTOR	SEVY0008302	5.5 V,30% ,SMD ,1409Size (4CH)		
7	FL306	VARISTOR	SEVY0008302	5.5 V,30% ,SMD ,1409Size (4CH)		
7	FL400	FILTER,SEPERATOR	SFAY0011401	850.900 ,1800.1900 , dB, dB, dB, dB,4532 ,GSM Quad band FEM.		
7	L201	INDUCTOR,SMD,POWER	ELCP0006811	10 uH,M ,3.8*3.8*1.3 ,R/TP ,power inductor 750mA ,; ,10uH ,20% ,. ,750mA ,0.28 ,; ,; ,SHIELD ,3.8X3.8X1.3MM ,[empty] ,[empty] ,Inductor,Wire		
7	L210	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L215	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L216	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L301	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L304	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
7	L306	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
7	L307	FILTER,BEAD,CHIP	SFBH0000912	1000 ohm,1005 ,		
7	L403	INDUCTOR,CHIP	ELCH0001413	22 nH,J ,1005 ,R/TP ,PBFREE		
7	L404	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
7	L405	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
7	L406	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
7	L412	INDUCTOR,CHIP	ELCH0004715 ELCH0001426	27 nH,J ,1005 ,R/TP , 8.2nH,J ,1005 ,R/TP ,		
7	Q200	TR,BJT,NPN	EQBN0012401	ESM ,100 mW,R/TP ,NPN TRANSISTOR		
7	Q300	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
7	Q301	TR,BJT,NPN	EQBN0007001	SC-70 ,.1 W,R/TP ,Pb free		
7	R103	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
7	R110	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
7	R115	RES,CHIP	ERHY0009517	22 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
7	R118	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
7	R210	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
7	R214	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R215	RES,CHIP,MAKER	ERHZ0000530	5.1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R216	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R217	RES,CHIP,MAKER	ERHZ0000518	910 ohm,1/16W ,J ,1005 ,R/TP		
7	R220	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R221	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R226	RES,CHIP	ERHY0000283	130K ohm,1/16W,J,1005,R/TP		
7	R227	RES,CHIP,MAKER	ERHZ0000460	30 Kohm,1/16W ,J ,1005 ,R/TP		
7	R231	RES,CHIP	ERHY0011901	47 mohm,1/4W ,F ,2012 ,R/TP		
7	R232	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	R301	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R302	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
7	R303	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
7	R304	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R305	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
7	R315	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
7	R321	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R322	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R323	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R327	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R328	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R329	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R331	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R332	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R333	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R334	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
7	R335	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
7	R400	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R401	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R402	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
7	R403	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
7	R404	RES,CHIP,MAKER	ERHZ0000412	1200 ohm,1/16W ,J ,1005 ,R/TP		
7	R405	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
7	R406	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
7	R407	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R410	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R412	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
7	R413	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
7	SC100	FRAME,SHIELD	MFEA0020801	PRESS, STS, , , , ,	Without Color	
7	SC102	FRAME,SHIELD	MFEA0020901	PRESS, STS, , , , ,	Without Color	
7	SPFY00	PCB,MAIN	SPFY0171101	FR-4 ,0.8 mm,STAGGERED-10,16bit-MEMORY , ,; , , , , , , , , , ,		
7	SW400	CONN,RF SWITCH	ENWY0004601	,SMD , dB,H=2.8, Angle type		
7	U200	IC	EUSY0336601	CSP ,25 PIN,R/TP ,1.1W Class AB SPK AMP, Capless HP AMP		
7	U202	IC	EUSY0294801	SON1612-6 ,6 PIN,R/TP ,3.1V 150mA LDO Pb-Free		
7	U203	IC	EUSY0292601	DFN ,8 PIN,R/TP ,Li-ion charger IC, 8 Ld 2 x 3 DFN, Pb-free		

14. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
7	U205	IC	EUSY0286901	SOT23-5 ,5 PIN,R/TP ,2.5V Sense voltage(max), current monitor		
7	U300	IC	EUSY0319201	DFN ,10 PIN,R/TP ,OVP		
7	U301	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
7	U303	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
7	U304	IC	EUSY0342401	WQFN16 ,16 PIN,R/TP ,Dual DPDT Analog Switch ,; ,IC,Analog Switch		
7	U305	IC	EUSY0264802	QFN ,28 PIN,R/TP ,4ch,1ch(Flash),4LDO,ALC		
7	U400	IC	EUSY0279801	SC70 ,6 PIN,R/TP ,Dual Buffer, Pb Free		
7	U401	PAM	SMPY0012301	dBm, %, A, dBc, dB, ,SMD ,		
7	U402	IC	EUSY0274801	VQFN ,40 PIN,R/TP ,GPRS, EDGE TRANSCEIVER		
7	VA300	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
7	VA301	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
7	VA302	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
7	X400	VCTCXO	EXSK0008201	26 MHz,2 PPM, pF,SMD ,32*25*10.5 , ,; , ,2PPM ,2.85V ,32 ,25 ,10.5 , ,SMD ,P/TP		
6	WSYY00	SOFTWARE	WSYY0786701			
4	SAJY00	PCB ASSY,SUB	SAJY0029801			13
5	SAJB00	PCB ASSY,SUB,INSERT	SAJB0015201			
6	SWCC00	CABLE,COAXIAL	SWCC0005201	77.5 mm, LINE, ,; ,[empty] ,[empty] ,[empty] , ,[empty] , ,[empty]		
5	SAJE00	PCB ASSY,SUB,SMT	SAJE0023401			
6	SAJC00	PCB ASSY,SUB,SMT BOTTOM	SAJC0022201			
6	SAJD00	PCB ASSY,SUB,SMT TOP	SAJD0024901			
7	CN1	CONNECTOR,ETC	ENZY0016301	3 PIN,3.0 mm,ETC , ,H-2.0		
6	SPJY00	PCB,SUB	SPJY0049901	FR-4 ,1.1 mm,MULTI-4 ,TH Bat. Con PCB ,; , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0007105	3 V,0.08 A,10*2.7 ,12mm ,; ,3V , , ,12000 RPM , , , ,		
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0030503	3.0 ,-2.0 dBd,, ,internal, GSM900/1800/1900+bluetooth ,; ,QUAD ,-2.0 ,50 ,3.0		
4	SVCY00	CAMERA	SVCY0016201	CMOS ,MEGA ,3M AF [Micron 1/4" SOC3130, FPCB]		
4	SVLM00	LCD MODULE	SVLM0027502	MAIN ,240*320 (2.2 ,37.64*56.02*1.5t ,262k ,TFT ,TM ,R61516 (Renesas) ,BM, LGD Panel		
3	MLAK00	LABEL,MODEL	MLAK0018616	KG110 MADE IN KOREA	Without Color	
3	MPHY00	PROTECTOR	MPHY0012101	MOLD, PC LUPOY SC-1004A, , , , ,	Without Color	19

14.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
3	SBPL00	BATTERY PACK,LI-ION	SBPL0085603	3.7 V,800 mAh,1 CELL,PRISMATIC ,CMW PJT BATT, Innerpack, Europe Label, Pb-Free ,; ,3,7 ,800 ,0.2C ,PRISMATIC ,43x34x46 , ,ALLTEL SILVER ,Innerpack ,CMW Bar	Without Color	D
3	SGDY00	DATA CABLE	SGDY0010908	; ,[empty] ,[empty] ,[empty] ,18pin 6.2mm. NYX Box Package ,BLACK , ,N		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0005569	, , , , , , , , ,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0024506	100-240V ,5060 Hz,5.1 V,.7 A,CE ,18pin MMI, Nyx packing, Europe ,; , , , , , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0024507	100-240V ,5060 Hz,5.1 V,.7 A,CE ,18pin, Europe, Viewty packing ,; , ,5.1V ,0.7A , , ,WALL 2P ,I/O CONNECTOR ,		

Note