LG

Service Manual

LG

Internal Use Only

Service Manual

KP502/KP550

Model : KP502/KP550

Date: June, 2009 / 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 KP502.

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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KP502.

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 KP502 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 KP502 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 KP502 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, 900mAh	
AVG TCVR Current	270mA typ	@PL5
Standby Current	2.3 mA typ	@PP9
Talk time	3 hours (GSM TX Level 7)	
Standby time	Over 250 hours (Paging Period:9, RSSI: -85dBm)	
Charging time	Under 3 hours	
RX Sensitivity	EGSM/GSM850:-105dBm↓, DCS/PCS:-105dBm↓	
TX output power	EGSM/GSM850 : 33dBm (@PL 5) DCS/PCS: 30dBm (@PL 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small	
Display	Main 240 x 400 pixels, 3” WQVGA, 262K color	
Status Indicator	Send Key, Shortcut Key, Volume Up/Down Key, PWR Key, Camera Key, Lock Key	
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	Bluetooth hands-free kit, Data Kit	

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">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">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)	**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)	**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 colspan="2">Offset from Carrier (kHz).</td><td>Max. (dBm)</td></tr>
<tr><td colspan="2">400</td><td>-22</td></tr>
<tr><td colspan="2">600</td><td>-24</td></tr>
<tr><td colspan="2">1,200</td><td>-24</td></tr>
<tr><td colspan="2">1,800</td><td>-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 ≤ 3 mA(@PP9)	
21	Talk Time	EGSM/Lvl 7 (Battery Capacity 800mA):180 min EGSM/Lvl12(Battery Capacity 800 mA):320min	
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 : < 400 mA Slow Charge: < 120 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	3.53V↓ ±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: 150 ~ 240 V, 50/60Hz Out put: 5.6, 0.4A	

*** 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">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>
<tr><td>6</td><td>27dBm</td><td>±3dB</td><td>14</td><td>15dBm</td><td>±3dB</td></tr>
<tr><td>7</td><td>27dBm</td><td>±3dB</td><td>15</td><td>13dBm</td><td>±3dB</td></tr>
<tr><td>8</td><td>27dBm</td><td>±3dB</td><td>16</td><td>11dBm</td><td>±5dB</td></tr>
<tr><td>9</td><td>25dBm</td><td>±3dB</td><td>17</td><td>9dBm</td><td>±5dB</td></tr>
<tr><td>10</td><td>23dBm</td><td>±3dB</td><td>18</td><td>7dBm</td><td>±5dB</td></tr>
<tr><td>11</td><td>21dBm</td><td>±3dB</td><td>19</td><td>5dBm</td><td>±5dB</td></tr>
<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>
<tr><td>2</td><td>26/25dBm</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>
<tr><td rowspan="11">6</td><td rowspan="11">Output RF Spectrum
(due to modulation)</td><td colspan="6">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	**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 KP502 Functional Block diagram

The functional component arrangement is mentioned below diagram.

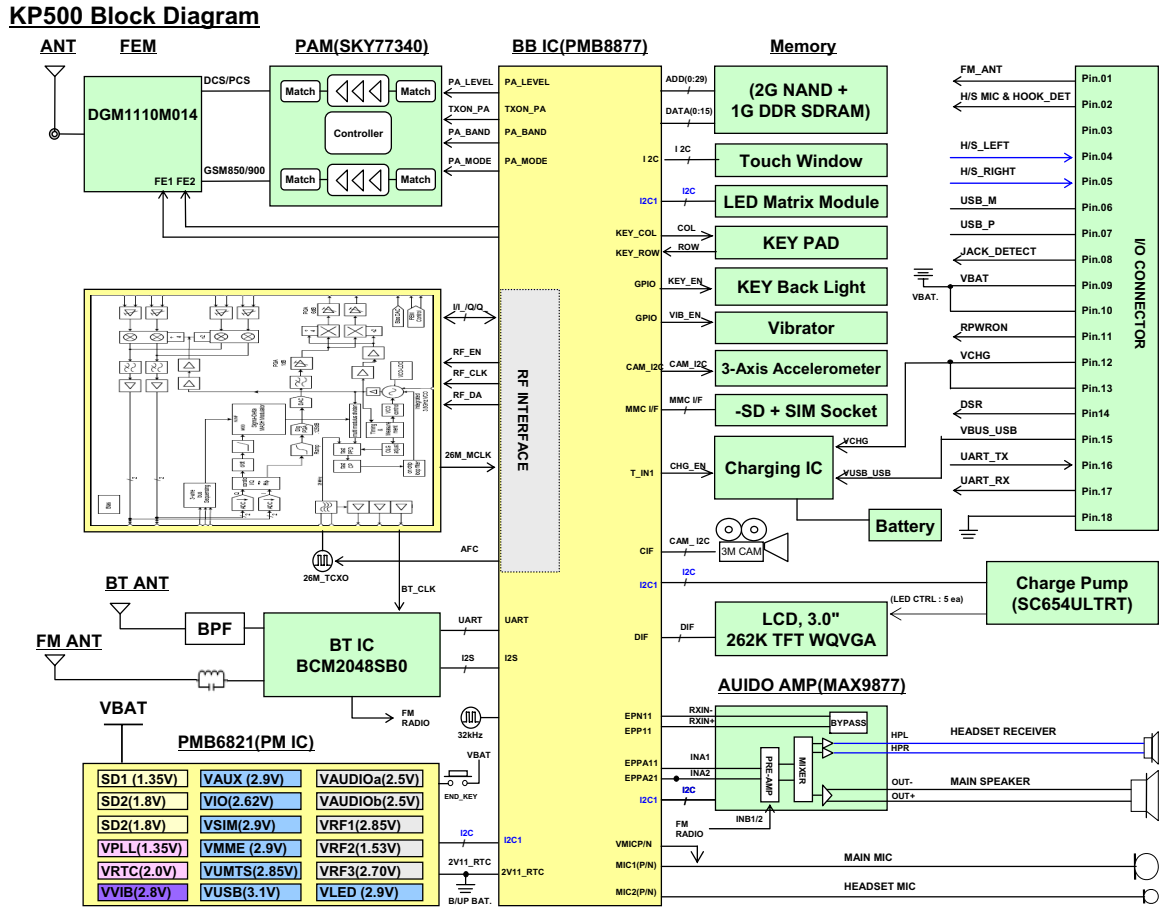


Figure 1 KP502 Functional block diagram

3.2 Baseband Processor (BBP) Introduction

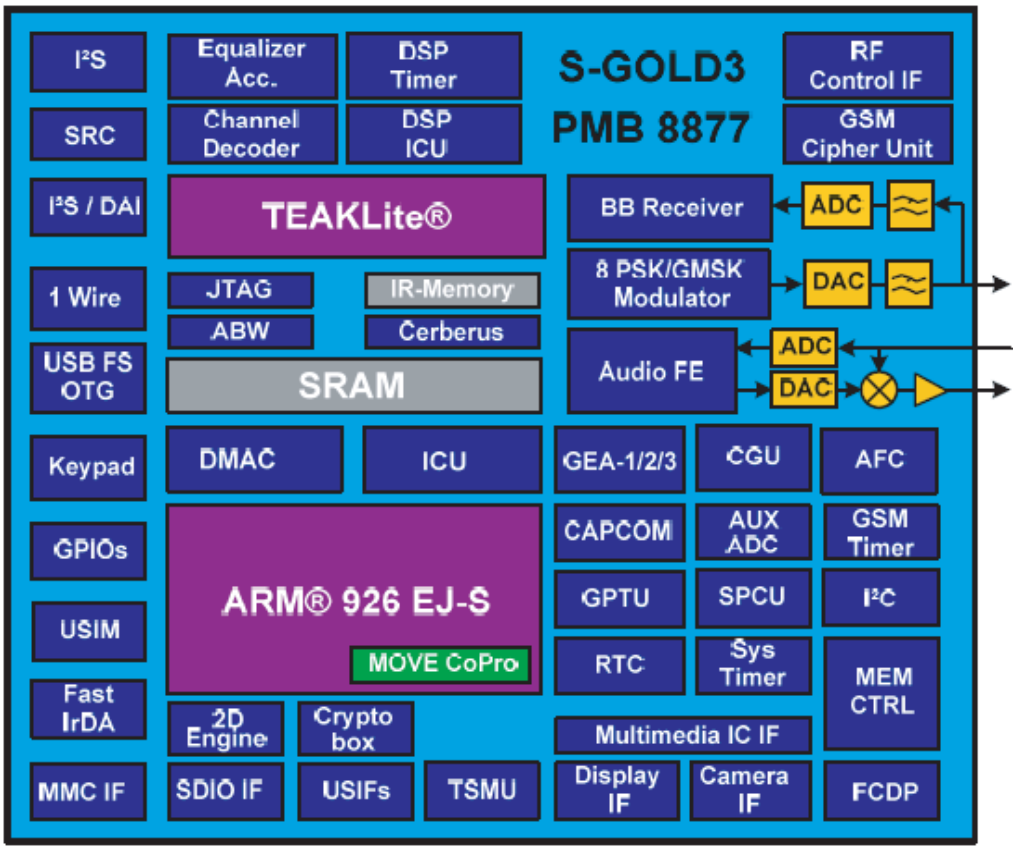


Figure 3 Top level block diagram of the S-GOLD3™ (PMB8877)

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
FLASH	K5E1G12ACA-D075	Samsung	Synchronous / A synchronous
DDR	K5E1G12ACA-D075	Samsung	Synchronous 133MHz
LCD	IM200DST2A	LGIT	8bit access 2 times transmission
Melody IC	Not Used	S/W	Infineon Software CODEC

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	Other function	-
T_OUT2	PA_BAND	TX RF band select
T_OUT3	ANT_SW1	FEM control
T_OUT4	ANT_SW2	FEM control
T_OUT5	ANT_SW3	FEM control
T_OUT6	MODE	PAM Mode select

3.2.5 USIF Interface

KF350 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	NC	NC
USIF2_RXD	NC	NC
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 10 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	N.C	
M3	JACK_TYPE	Accessory type detect
M4	N.C	
M5	H/W VERSION	S-Gold3 H/W version detect
M6	N.C	
M7	ICLD	
M8	VSUPPLY	Battery supply voltage measure
M9	N.C	
M10	N.C	

3.2.7 GPIO map

Over a hundred allowable resources, KF350 is using as follows except dedicated to SIM and Memory. KF350 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	N/A	
KP_IN1	N/A	
KP_IN2	N/A	
KP_IN3	KP_IN3	
KP_IN4	N/A	
KP_IN5	KP_IN5	
KP_OUT5	KP_IN6	
KP_OUT0	KP_OUT0	
KP_OUT1	LIN_INVERT	
KP_OUT2	KP_OUT2	
KP_OUT3	KP_OUT3	
USIF1		
USIF1_RXD	UART_RX	UART, RS232 Data
USIF1_TXD	UART_TX	UART, RS232 Data
USIF1_RTS_N	USB_DAT_VP	USB Data
USIF1_CTS_N	USB_SE0_VM	USB Data
USIF2		
USIF2 _RXD	ACCEL_INT	
USIF2 _TXD	N/A	Not used
USIF2_RTS_N	UART_BT_RTS	Bluetooth RTS
USIF2_CTS_N	UART_BT_CTS	Bluetooth CTS
USIF3		
USIF3 _RXD	UART_BT_RX	Bluetooth RX
USIF3 _TXD	UART_BT_TX	Bluetooth TX
GPIO_21	N/A	
MMCI2		
MMCI2_CMD	PCB_VER1	PCB Version1
MMCI2_DAT[0]	PCB_VER2	PCB Version2
MMCI2_CLK	VIB_EN	Vibrator LDO Enable
CAMERA I/F		
CIF_D0	CIF_D(0)	Camera DATA[0]
CIF_D1	CIF_D(1)	Camera DATA[1]

CIF_D2	CIF_DATA2	Camera DATA[2]
CIF_D3	CIF_DATA3	Camera DATA[3]
CIF_D4	CIF_DATA4	Camera DATA[4]
CIF_D5	CIF_DATA5	Camera DATA[5]
CIF_D6	CIF_DATA6	Camera DATA[6]
CIF_D7	CIF_DATA7	Camera DATA[7]
CIF_PCLK	CIF_PCLK	Camera pixel clock
CIF_HSYNC	CIF_HSYNC	Camera H sync
CIF_VSYNC	CIF_VSYNC	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_D0	LCD data[0]
DIF_D1	DIF_D1	LCD data[1]
DIF_D2	DIF_D2	LCD data[2]
DIF_D3	DIF_D3	LCD data[3]
DIF_D4	DIF_D4	LCD data[4]
DIF_D5	DIF_D5	LCD data[5]
DIF_D6	DIF_D6	LCD data[6]
DIF_D7	DIF_D7	LCD data[7]
DIF_D8	CAM_LDO_EN	Camera LDO Enable
DIF_CS1	DIF_MAIN_CS	MAIN LCD chip select
DIF_CS2	IF_MODE	Interface mode
DIF_CD	DIF_CD	Command Data switch
DIF_WR	DIF_WR	LCD Write
DIF_RD	DIF_RD	LCD Read
EINT7	HOOK_DETECT	Ear-Mic hook detection
GPIO_100	DIF_VSYNC	LCD Sync
GPIO_27 _	DIF_RESET	LCD Reset
EINT5	TOUCH_INT	Touch Sensor INT
#I2C1		
I2C_SCL	I2C_SCL	For Touch LDO/PMIC/Audio Amp
I2C_SDA	I2C_SDA	For Touch LDO/PMIC/Audio Amp
USIF2_RTS_N	UART_BT_RTS	Bluetooth RTS
USIF2_CTS_N	UART_BT_CTS	Bluetooth CTS
USIF3		
USIF3 _RXD	UART_BT_RX	Bluetooth RX
USIF3 _TXD	UART_BT_TX	Bluetooth TX
GPIO_21	N/A	
MMCI2		

MMCI2_CMD	PCB_VER1	PCB Version1
MMCI2_DAT[0]	PCB_VER2	PCB Version2
MMCI2_CLK	VIB_EN	Vibrator LDO Enable
CAMERA I/F		
CIF_D0	CIF_DATA0	Camera DATA[0]
CIF_D1	CIF_DATA1	Camera DATA[1]
CIF_D2	CIF_DATA2	Camera DATA[2]
CIF_D3	CIF_DATA3	Camera DATA[3]
CIF_D4	CIF_DATA4	Camera DATA[4]
CIF_D5	CIF_DATA5	Camera DATA[5]
CIF_D6	CIF_DATA6	Camera DATA[6]
CIF_D7	CIF_DATA7	Camera DATA[7]
CIF_PCLK	CIF_PCLK	Camera pixel clock
CIF_HSYNC	CIF_HSYNC	Camera H sync
CIF_VSYNC	CIF_VSYNC	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_D0	LCD data[0]
DIF_D1	DIF_D1	LCD data[1]
DIF_D2	DIF_D2	LCD data[2]
DIF_D3	DIF_D3	LCD data[3]
DIF_D4	DIF_D4	LCD data[4]
DIF_D5	DIF_D5	LCD data[5]
DIF_D6	DIF_D6	LCD data[6]
DIF_D7	DIF_D7	LCD data[7]
DIF_D8	CAM_LDO_EN	Camera LDO Enable
DIF_CS1	DIF_MAIN_CS MAIN	LCD chip select
DIF_CS2	IF_MODE	Interface mode
DIF_CD	DIF_CD	Command Data switch
DIF_WR	DIF_WR	LCD Write
DIF_RD	DIF_RD	LCD Read
EINT7	HOOK_DETECT	Ear-Mic hook detection
GPIO_100	DIF_VSYNC	LCD Sync
GPIO_27	_DIF_RESET	LCD Reset
EINT5	TOUCH_INT	Touch Sensor INT
#I2C1		
I2C_SCL	I2C_SCL	For Touch LDO/PMIC/Audio Amp
I2C_SDA	I2C_SDA	For Touch LDO/PMIC/Audio Amp
PM_INT (EINT)	PM_INT	

#I2C2		
I2C2_SCL	CIF_SCL	For Camera
I2C2_SDA	CIF_SDA	For Camera
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
IrDA		
USB_OEn	USB_OEn	
EINT3	N/A	
External Memory		
MMCI_CMD	MMC_CMD	T-flash
MMCI_DAT[0]	MMC_D0	T-flash
MMCI_CLK	MMC_CLK	T-flash
MMCI1_DAT[1]	MMC_D1	T-flash
MMCI1_DAT[2]	MMC_D2	T-flash
MMCI1_DAT[3]	MMC_D3	T-flash
I2S1		
I2S2_CLK0	I2S1_CLK	Bluetooth Clock
GPIO_102	MMC_DETECT	T-flash Detect
I2S2_RX	I2S1_RX	Bluetooth PCM RX
I2S2_TX	I2S1_TX	Bluetooth PCM TX
I2S2_WA0	2S1_WA0	Bluetooth Clock
I2S2		
EINT4	CHG_EOC	Charger
GPIO_102	LCD_ID	LCD ID
CC0CC1IO	_PPR	Charger
CC0CC7IO	BT_INT	Bluetooth INT
CC0CC3IO	N/A	
GPIO_103	KEY_EN	
Audio I/F		
EPN1	EAR_N	For Receiver
EPP1	EAR_P	For Receiver
EPPA1	BB_SND_L	For Speaker
EPREF	Reference	
EPPA2	BB_SND_R	For Speaker
MICN1	MAIN_MIC_N	For Mic
MICP1	MAIN_MIC_P	For Mic
MICN2	HS_MIC_N	For Headset Mic
MICP2	HS_MIC_P	For Headset Mic
VMICP	VMIC_P	Power for MIC

VMICN	VMIC_N	Power for MIC
#I/Q-Signale		
PAOUT1	PA_LEVEL	
BB_I	I	
BB_IX	IX	
BB_Q	Q	
BB_QX	QX	
ADC		
M0	BAT_ID	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	PCB_VER	
M3		
M7		
M8		
M9	LOAD	Current consumption measure
M10	N.C	
Reference		
VREFP	VREFN	
IREF		
JTAG I/F		
TDO	TDO	JTAG
TDI	TDI	JTAG
TMS	TMS	JTAG
TCK	TCK	JTAG
TRST_n	TRSTn	JTAG
RTCK	RTCK	JTAG
#Debug		
TRIG_IN	TRIG_IN	ETM (Embedded Trace Macro Cell)
MON1	2V62_VIO	ETM
MON2		
TRACESYNC	TRACESYNC	ETM
TRACECLK	TRACECLK	ETM
PIPESTAT[2]	PIPESTAT[2]	ETM
PIPESTAT[1]	PIPESTAT[1]	ETM
PIPESTAT[0]	PIPESTAT[0]	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_ADV_n	BA1	
MEM_RDN	_RD	Read
MEM_AD[0]	DATA0	
MEM _AD[1]	DATA1	
MEM _AD[2]	DATA2	
MEM _AD[3]	DATA3	
MEM _AD[4]	DATA4	
MEM _AD[5]	DATA5	
MEM _AD[6]	DATA6	
MEM _AD[7]	DATA7	
MEM _AD[8]	DATA8	
MEM _AD[9]	DATA9	
MEM _AD[10]	DATA10	
MEM _AD[11]	DATA11	
MEM _AD[12]	DATA12	
MEM _AD[13]	DATA13	
MEM _AD[14]	DATA14	
MEM _AD[15]	DATA15	
MEM_CS0_n	_NAND_CS	
MEM_CS1_n	_RAM_CS	
MEM_WRN	_WR	
MEM_A[16]	ADD[16]	
MEM_A[17]	ADD[17]	
MEM_A[18]	ADD[18]	
MEM_A[19]	ADD[19]	
MEM_A[20]	ADD[20]	
MEM_A[21]	ADD[21]	
MEM_A[22]	ADD[22]	
MEM_A[23]	ADD[23]	
MEM_A[24]	ADD[24]	
MEM_A[25]	ADD[25]	
MEM_A[26]	ADD[26]	
MEM_CSA0_n	ADD[27]	
MEM_CSA1_n	ADD[28]	
MEM_CSA2_n	ADD[29]	
MEM_CSA3_n	BA0	
MEM_BFCLKO1		
MEM_BFCLKO2	SDCLKI	

MEM_SDCLKO	SDCLKO	
MEM_BC0_n	_BC0	
MEM_BC1_n	_BC1	
MEM_BC2_n	LDQS	
MEM_BC3_n	UDQS	
MEM _A[0]	ADD[0]	
MEM _A[1]	ADD[1]	
MEM _A[2]	ADD[2]	
MEM _A[3]	ADD[3]	
MEM _A[4]	ADD[4]	
MEM _A[5]	ADD[5]	
MEM _A[6]	ADD[6]	
MEM _A[7]	ADD[7]	
MEM _A[8]	ADD[8]	
MEM _A[9]	ADD[9]	
MEM _A[10]	ADD[10]	
MEM _A[11]	ADD[11]	
MEM _A[12]	ADD[12]	
MEM _A[13]	ADD[13]	
MEM _A[14]	ADD[14]	
MEM _A[15]	ADD[15]	
MEM_RAS_n	_RAS	
MEM_CAS_n	_CAS	
MEM_CKE	CKE	
FCDP_RBn	FCDP	
FWP	_WP	
T_OUT0	TXON_PA	
T_OUT1	FE2	
T_OUT2	PA_BAND	
T_OUT3	FE1	
GPIO_47	BT_WAKEUP	Bluetooth wakeup
GPIO_48	VBUS_OVP	
T_OUT6	PA_MODE	
GPIO_50	For	Vibrator
GPIO_51	DSR	UART DSR
GPIO_52	LCD_BACKLIGHT_EN	LCD Backlight Enable
CC1CC7IO	JACK_DETECT	Jack Detect
GPIO_54	BT_LDO_EN	Bluetooth LDO Enable
#SPCU		
SPCU_RQ_IN0		
GPIO_118	BT_RESETn	Bluetooth Reset

SPCU_RC_OUT0	VCXO_EN	VCXO Enable
SPCU_RQ_IN2	RESOURCE_CTRL	
#RF Control Unit		
RF_STR0	RF_EN	
RF_STR1	LIN_PWM_MAG	For Vibrator
RF_DATA	RF_DA	
RF_CLK	RF_CLK	
other		
AFC		
GPIO_58	RPWRON	
F26M	26MHZ_MCLK	26MHz Clock
F32K	F32K	
OSC32K	OSC32K	
RESET_n	_RESET	
RTC_OUT	RTC_OUT	
#Extra I/Os		
CLK32K	CLK32K	For FM Radio, BT CLK32K
DSPOUT1	WDOG	

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-GOLDlite 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	VAFC	2.65V	5mA	Not used
VVIB	2V8_CAM_A	2.8V	140mA	LCD

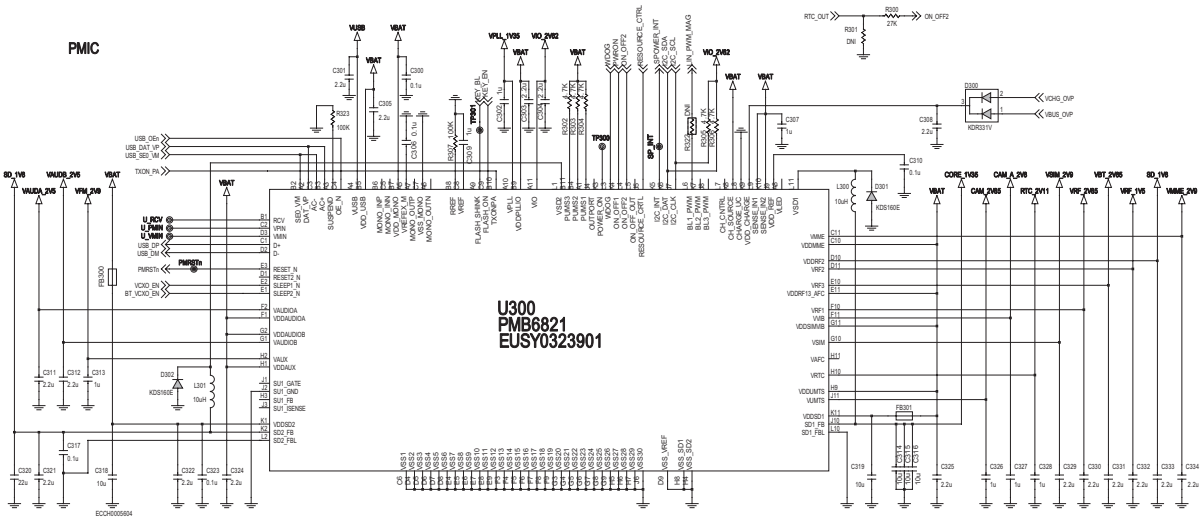


Figure 3. SM-Power Circuit Diagram of KP502

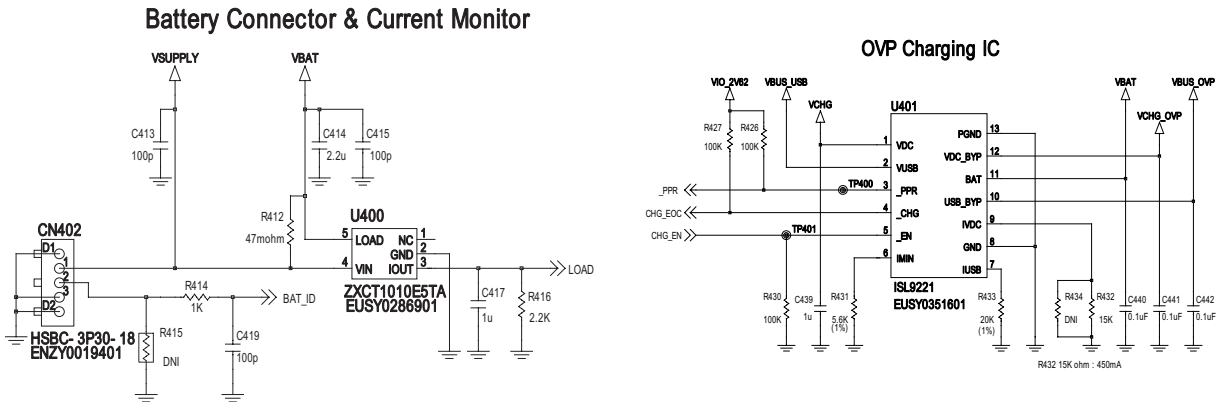


Figure 4 SM-Power Circuit Diagram with charging part

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.

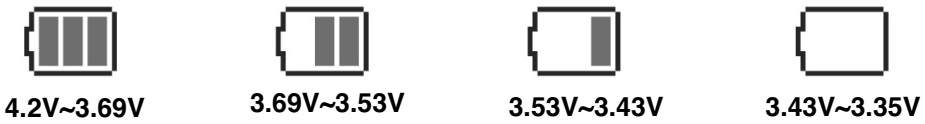


Figure 5 Battery Block Indication

1. Charging method : CC-CV
2. Charger detect voltage : 4.0 V
3. Charging time : 2h 40m
4. Charging current : 380 mA
5. CV voltage : 4.2 V
6. Cutoff current : 110 mA
7. Full charge indication current (icon stop current) : 110 mA
8. Recharge voltage : 4.16 V
9. Low battery alarm
   a. Idle : 3.43 V ~ 3.3 V
   b. Dedicated : 3.53 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. ~ -5°C : low charging voltage operation (3.6 V ~ 3.9 V) .
    b. -5°C ~ 50°C : standard charging (up to 4.2 V)
    c. 50°C ~ : low charging voltage operation (3.6V ~ 3.9V)

3.4 Power ON/OFF

KP502 Power State : Defined 3cases as follow

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

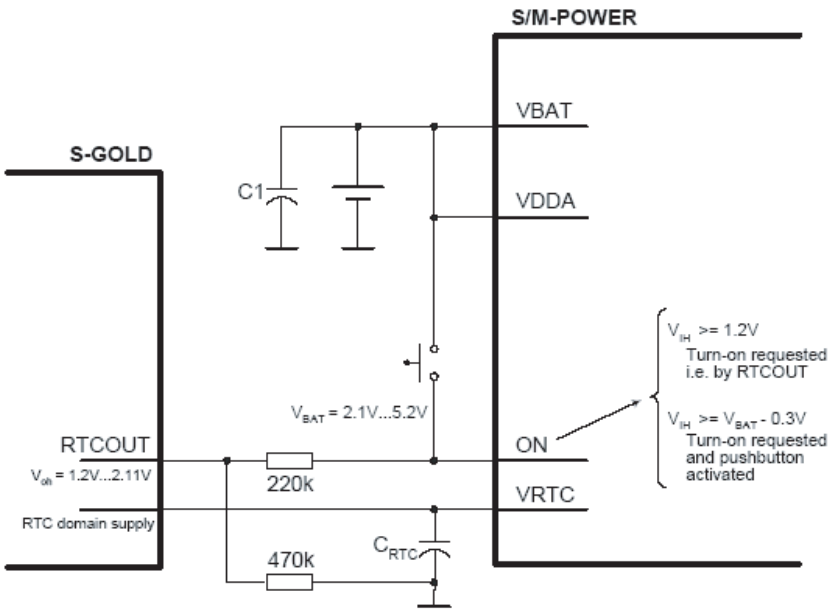


Figure 6 Power on application.

Input ON is a power-on input for SM-POWER with 2 active high levels (see Figure 6). 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), KF350 system recognize whether remote power on or End-key pushed

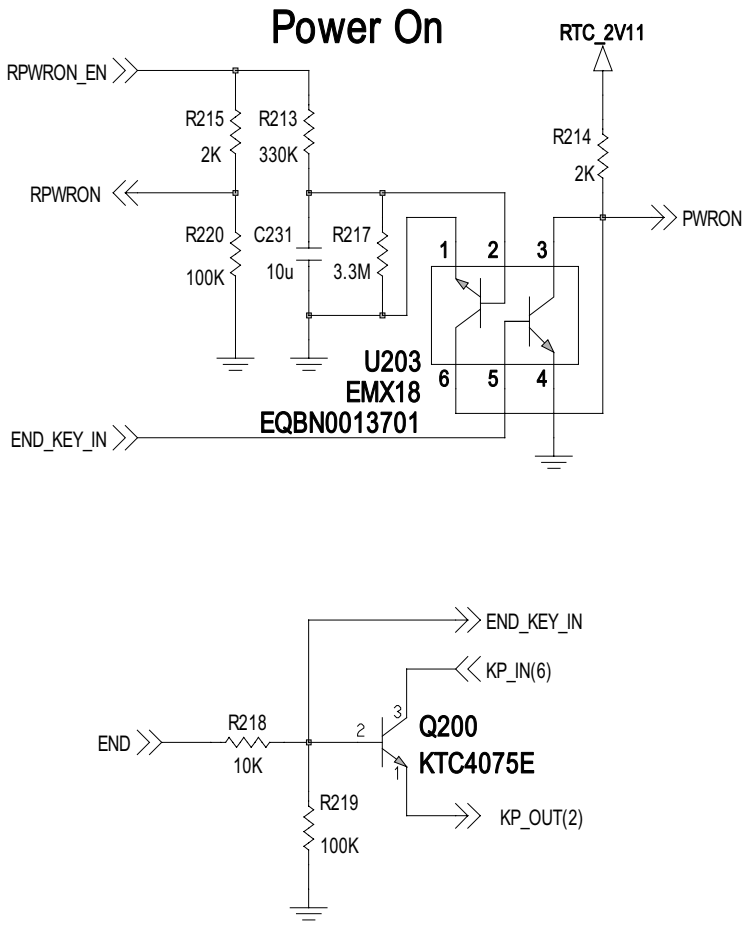


Figure 7 Remote power on and End-key power on circuit

3.5 SIM & uSD interface

KP502 supports 1.8V & 2.9V plug in SIM, SIM interface scheme is shown in (Figure 8).
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

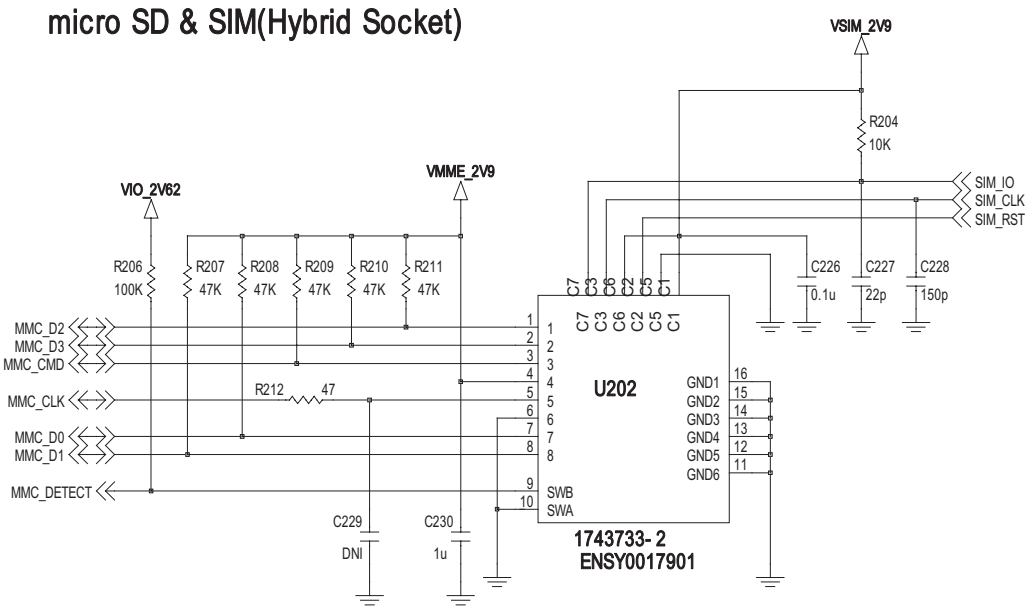
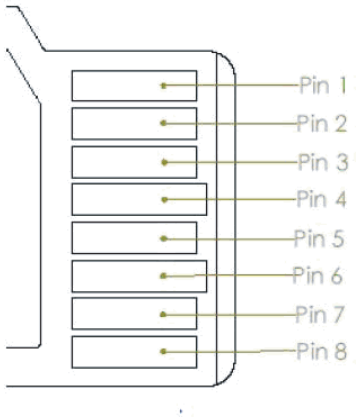


Figure 8 SIM & Micro SD Circuit

The MicroSD 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]

3.6 Memory

2Gbit NAND & 1Gbit DDRSDRAM employed on KF500 with 8 & 16 bit parallel data bus thru ADD(0) ~ ADD(29). The 1Gbit Nand Flash memory with DDRAM stacked device family offers multiple high-performance solutions.

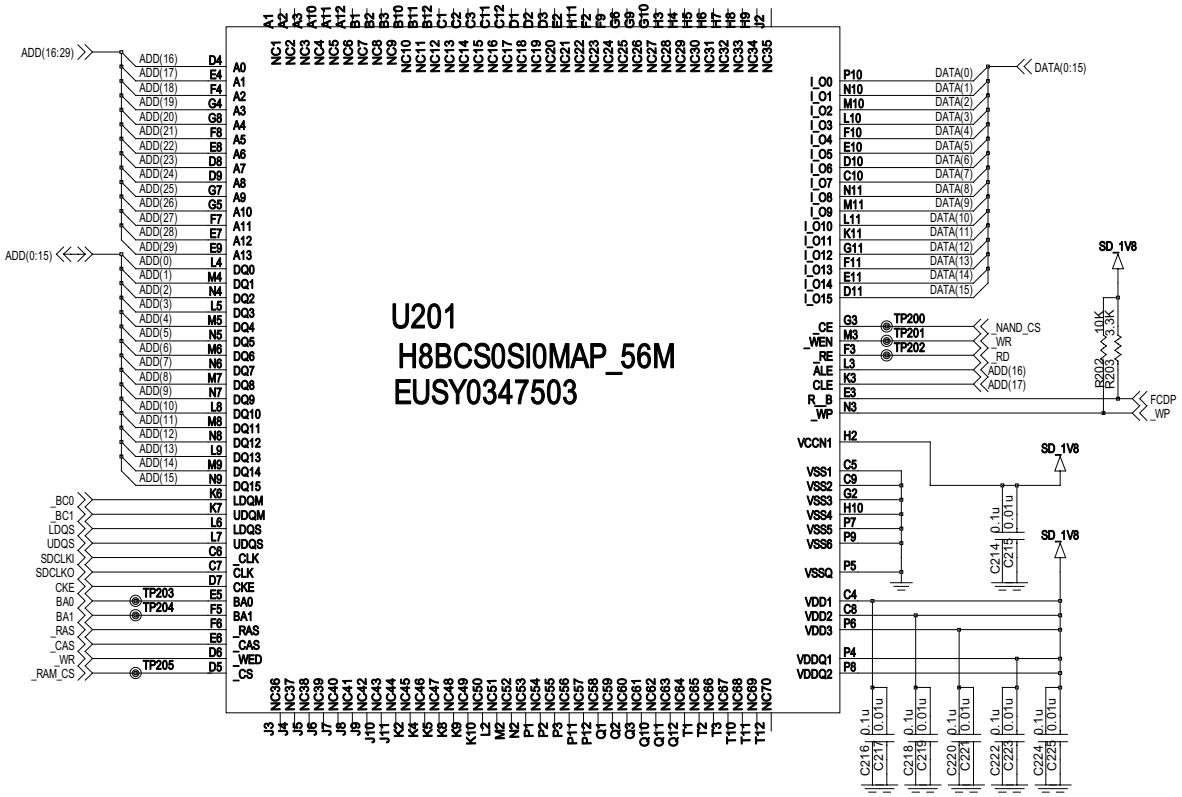


Figure 9 Flash memory & DDR RAM MCP circuit diagram

3.7 LCD Display

LCD module include:

- Main LCD: 3.0” 240x400 WQVGA, 262K color TFT
- Backlight : 5 piece of white LED

LCD FPC Interface Spec:

Table 9 LCD FPC Interface Spec.

Pin No	Symbol	Description	I/O	Remarks
1	GND	GND level pin	-	
2	VSYNC_IN	External VSYNC input	-	Unused :connected to VDDIO or GND
3	MARKER_ID	MARKER_ID pin = "LOW(GND)"	-	
4	LEDA	LED1~5 Anode Common	-	
5	LEDC1	LED1 Cathode	-	
6	LEDC2	LED2 Cathode	-	
7	LEDC3	LED3 Cathode	-	
8	LEDC4	LED4 Cathode	-	
9	LEDC5	LED5 Cathode	-	
10	GND	GND level pin	-	
11	IF_MODE_1	Bus width setting	I	Note 1)
12	RS	Data / Command selectable	I	High(VDDIO) : Access to data Low(GND) : Access to Index
13	CS	Chip Select	I	Low(GND) enable
14	RESETB	Reset enable	I	Low(GND) enable
15	RD	Read enable	I	Low(GND) enable
16	WR	Write enable	I	Low(GND) enable
17	VSYNC_O	Tearing Effect Output	O	
18	OPEN(OTP)	(OTP Program pin)	I	Don't care (open)
19	IF_MODE_0	Bus width setting	I	Note 1)
20	GND	GND level pin	-	
21	GND	GND level pin	-	
22	D15	Data Bus	I/O	
23	D14	Data Bus	I/O	
24	D13	Data Bus	I/O	
25	D12	Data Bus	I/O	
26	D11	Data Bus	I/O	
27	D10	Data Bus	I/O	
28	D9	Data Bus	I/O	
29	D8	Data Bus	I/O	
30	D7	Data Bus	I/O	
31	D6	Data Bus	I/O	
32	D5	Data Bus	I/O	
33	D4	Data Bus	I/O	
34	D3	Data Bus	I/O	
35	D2	Data Bus	I/O	
36	D1	Data Bus	I/O	
37	D0	Data Bus	I/O	
38	VCC	Power supply for analog	-	
39	VDDIO	Power supply for I/O	-	
40	GND	GND level pin	-	

3.8 Keypad Switching & Scanning

The keypad interface is a peripheral which can be used for scanning keypads up to 3 rows (outputs from Port Control Logic) and 2columns (inputs to PCL). The number of rows and columns depend on settings of the PCL.

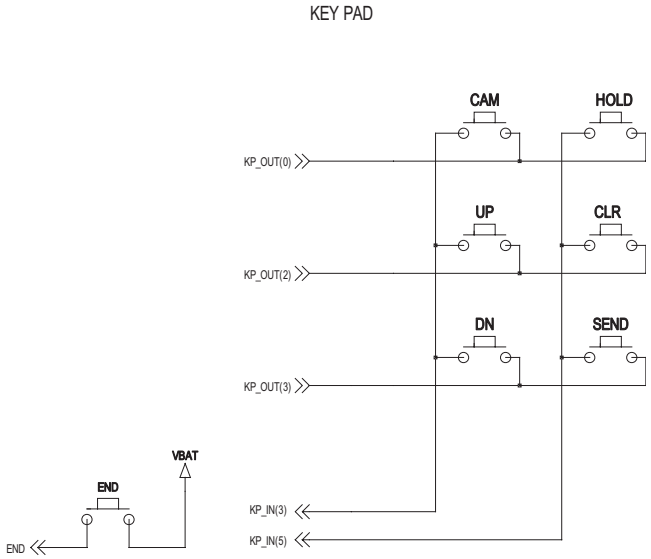


Figure 10 Key pad part key matrix

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 Figure11.

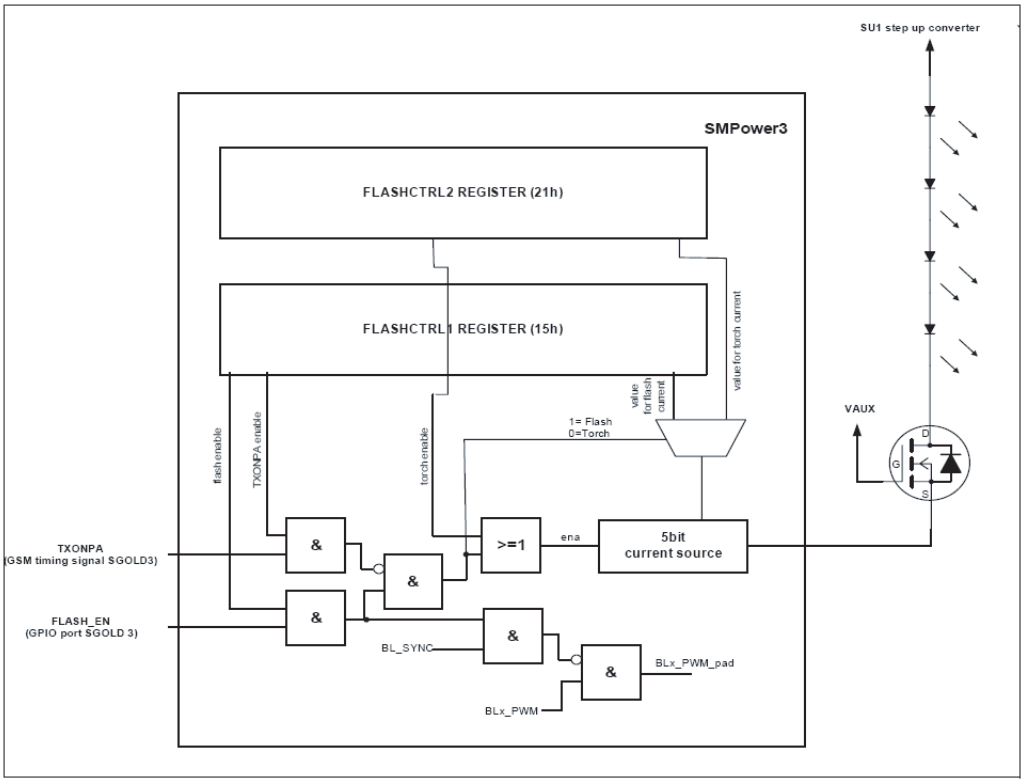


Figure 11 Keypad Back-light LEDs

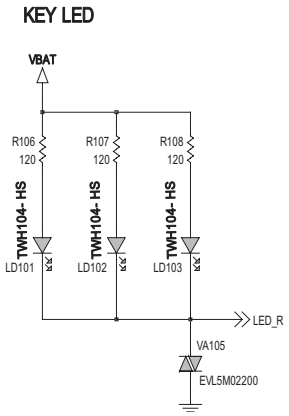


Figure 11 Keypad Back-light LEDs

3.10 LCD back-light illumination

The SC654 is a high efficiency charge pump LED driver using Semtech' s proprietary charge pump technology. Performance is optimized for use in single-cell Li-ion battery applications.

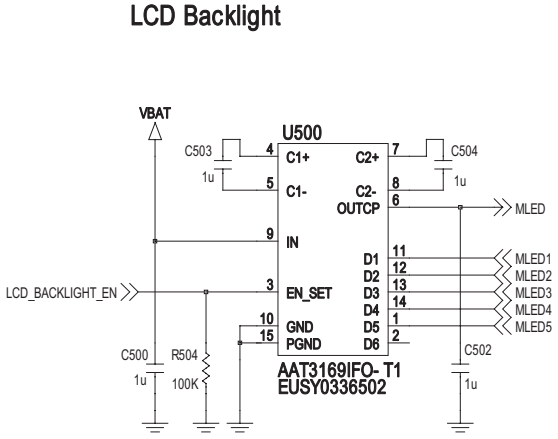


Figure 12 LCD Back light unit and Flash LED charge pump IC

The SC654 is a write-only single wire interface. It provides access to up to 32 registers that control device functionality.In this system, two sets of pulse trains are transmitted via the SPIF pin. The first pulse set is used to set the desired address. After the bus is held high for the address hold period, the next pulse set is used to write the data value. After the data pulses are transmitted the bus is held high again for the data hold period to signify the data write is complete. At this point the slave device latches the data into the address that was selected by the first set of pulses. The protocol for using this interface is described in the following subsection.

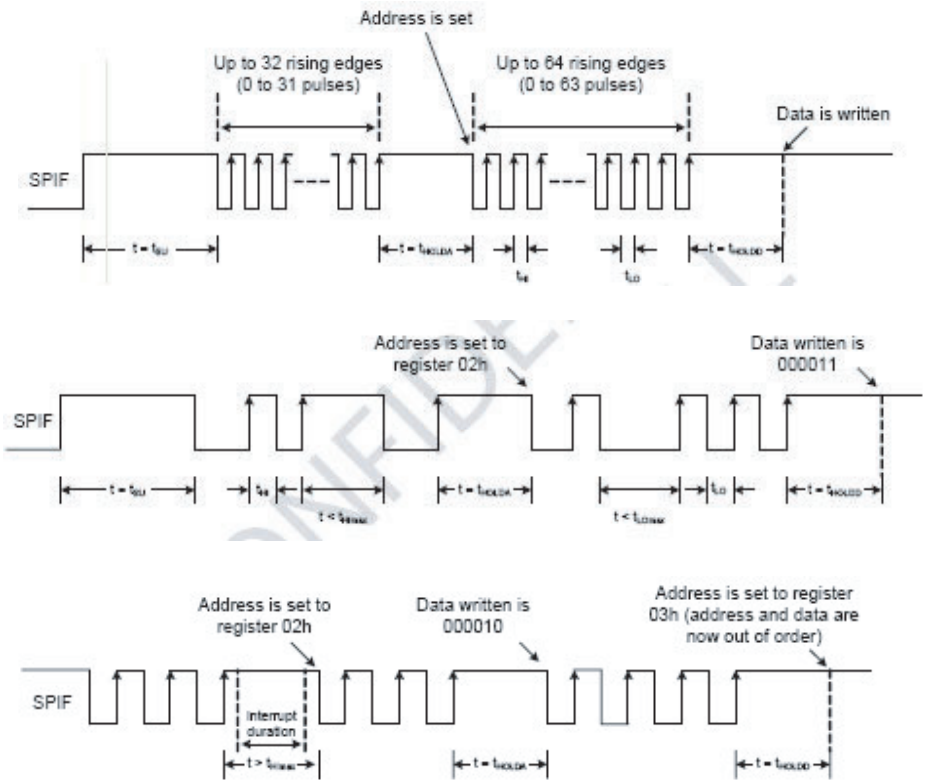


Figure 13 I2C Serial data port control method

3.11 JTAG & ETM interface connector

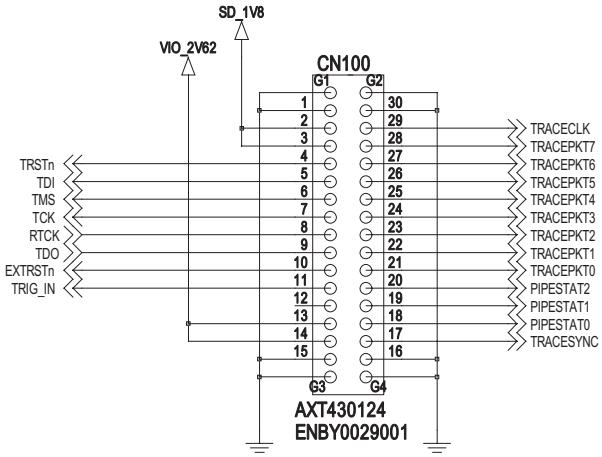


Figure 15 JTAG & ETM(Embedded Trace Module) interface connector

In case of KP502 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)

3.12 Audio

KP502 Audio signal flow diagram as following diagram.

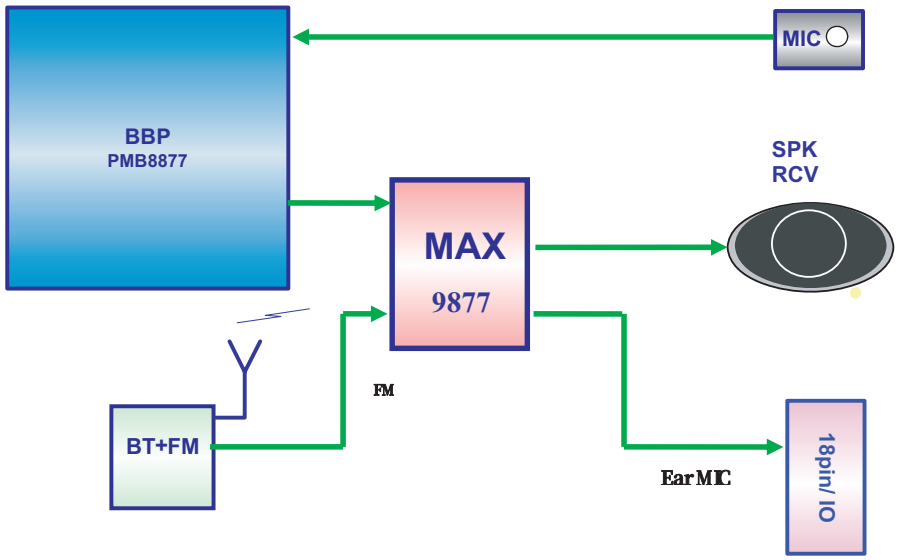


Figure 16 Audio signal flow diagram

3.12.1 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 MAX9877 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.

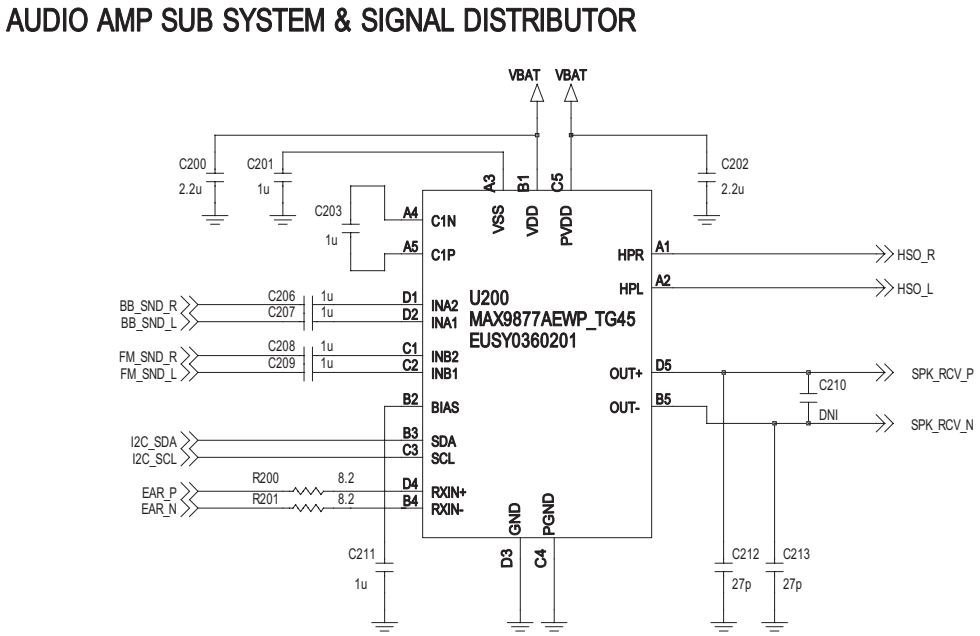


Figure 17 Audio amplifier PMIC

3.12.2 Microphone circuit

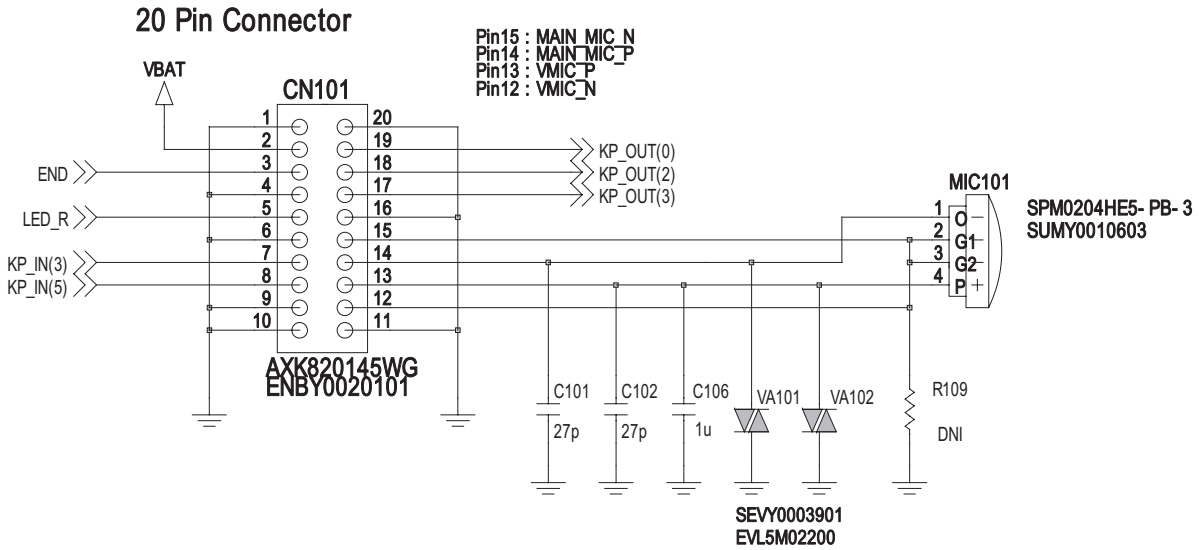


Figure 18 Microphone circuit

3.13 Charging circuit

ISL9221 accepts two power inputs, normally one from a USB (Universal Serial Bus) port and the other from a desktop cradle.
The ISL9221 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.

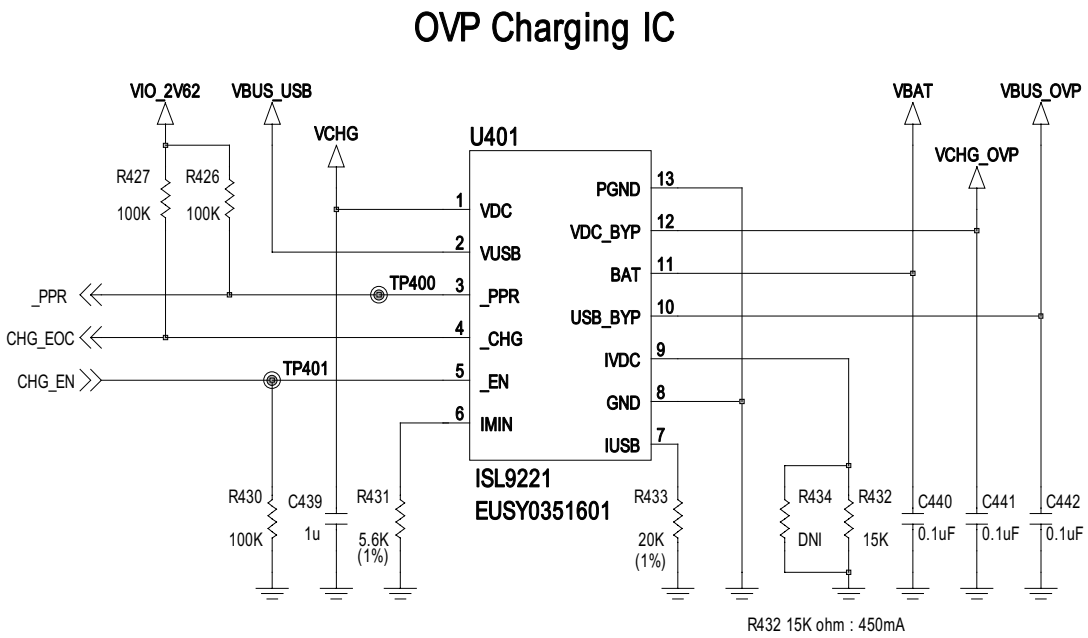


Figure 19 Charging circuit

3.14 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

- Small outline by LTCC substrate built-in RF function and Resin mold
- Integrated top BPF for Bluetooth and FM radio
- Integrated RDS/RBDS demodulator and decoder
- Bluetooth® 2.1+EDR conformity
- Secure Simple Pairing (SSP)
- Encryption Pause Resume (EPR)
- Enhance Inquiry Response (EIR)
- Link Supervision Time Out (LSTO)
- Sniff Sub Rating (SSR)
- Erroneous Data (ED)
- Packet Boundary Flag (PBF)
- WLAN coexistence including 802.15.2 three-wire coexistence support
- UART Interface
- PCM Interface
- I2S Interface
- I2C Interface

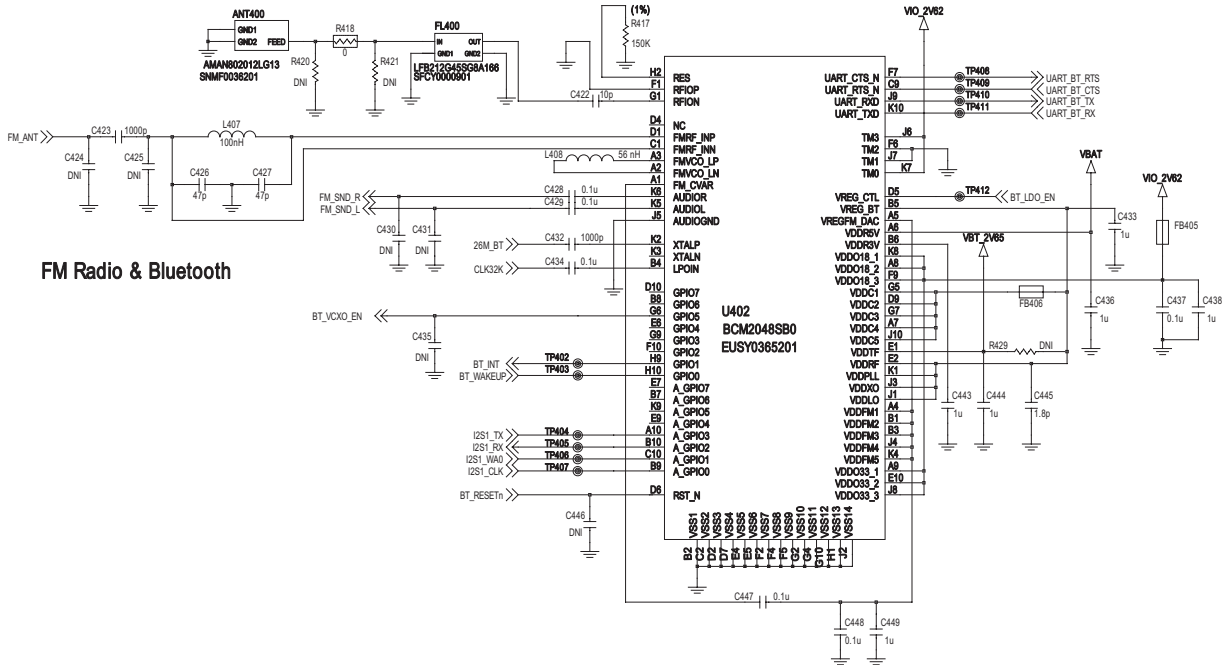


Figure 20. Bluetooth / FM Radio Circuit Diagram

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)

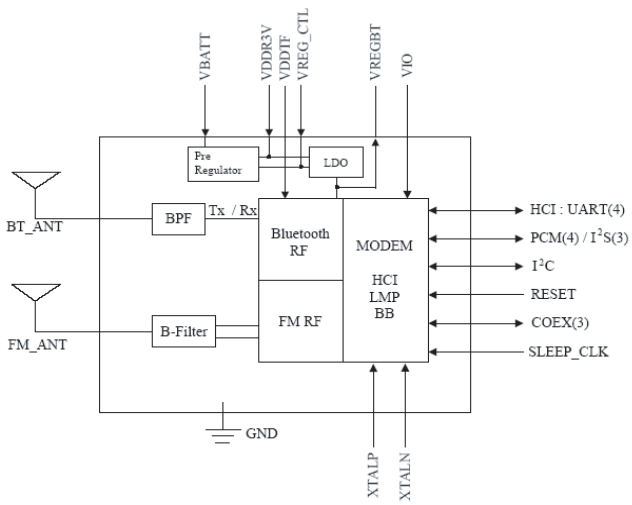


Figure 21. Bluetooth / FM Radio Block Diagram

3.15 18pin Multi Media Interface connector

Table 8. 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	Battery voltage
10	VSUPPLY	Battery voltage
11	RPWRON	Remote power on (active high. 2.8V)
12	VCHG	Charger voltage
13	VCHG	Charger voltage
14	DSR	N.C.
15	VBUS_USB	USB VBUS
16	TX	UART TX data
17	RX	UART RX data
18	GND	Power GND

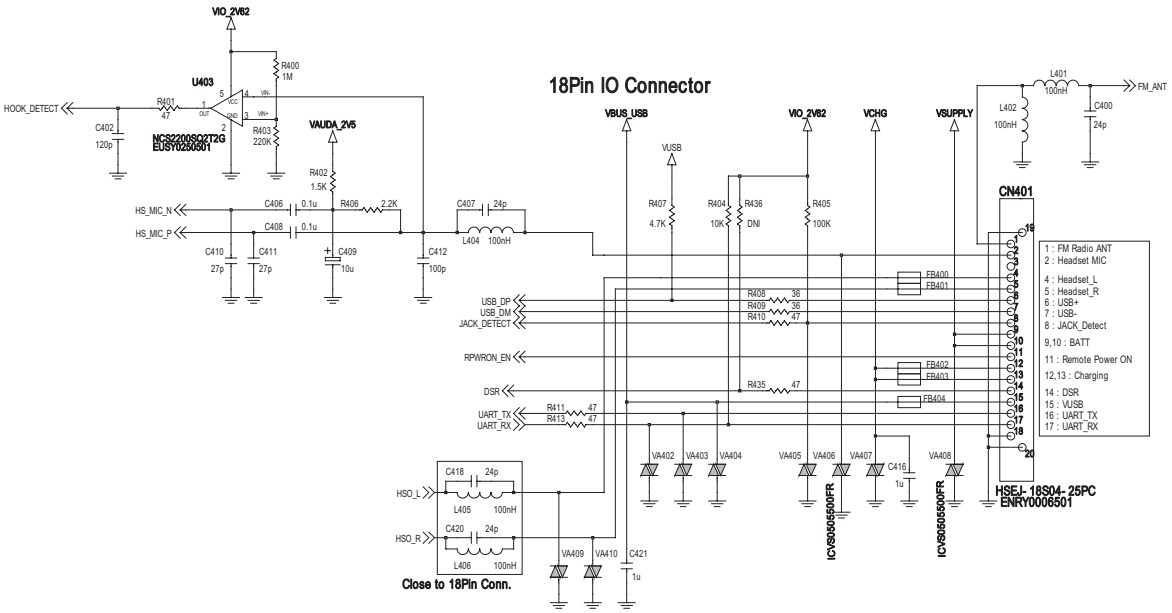


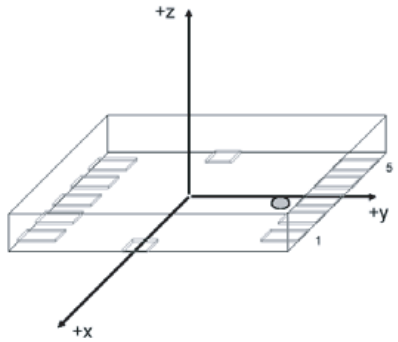
Figure 22. MMI 18Pin Connector circuit

3.16 Tri-axial, digital acceleration sensor

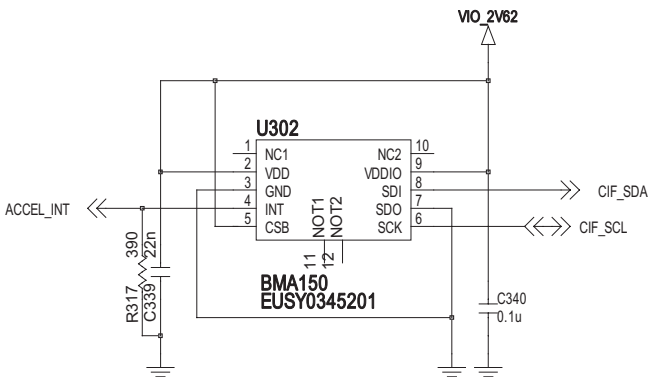
General description

The BMA150 is a tri-axial, low-g acceleration sensor IC with digital output for consumer market applications. It allows measurements of acceleration in perpendicular axes as well as absolute temperature measurement.
An evaluation circuitry converts the output of a three-channel micromechanical acceleration sensing structure that works according to the differential capacitance principle.
Package and interface have been defined to match a multitude of hardware requirements.
Since the sensor IC has small footprint and flat package it is attractive for mobile applications.
The sensor IC can be programmed to optimize functionality, performance and power consumption in customer specific applications.
The BMA150 senses tilt, motion and shock vibration in cell phones, handhelds, computer peripherals, man-machine interfaces, virtual reality features and game controllers.
The BMA150 is the LGA package version of the SMB380 triaxial acceleration sensor which is available in a 3mm x 3mm x 0.9mm QFN package.

Axes orientation of the BMA150



THREE- AXIS ACCELEROMETER



RF Block Diagram

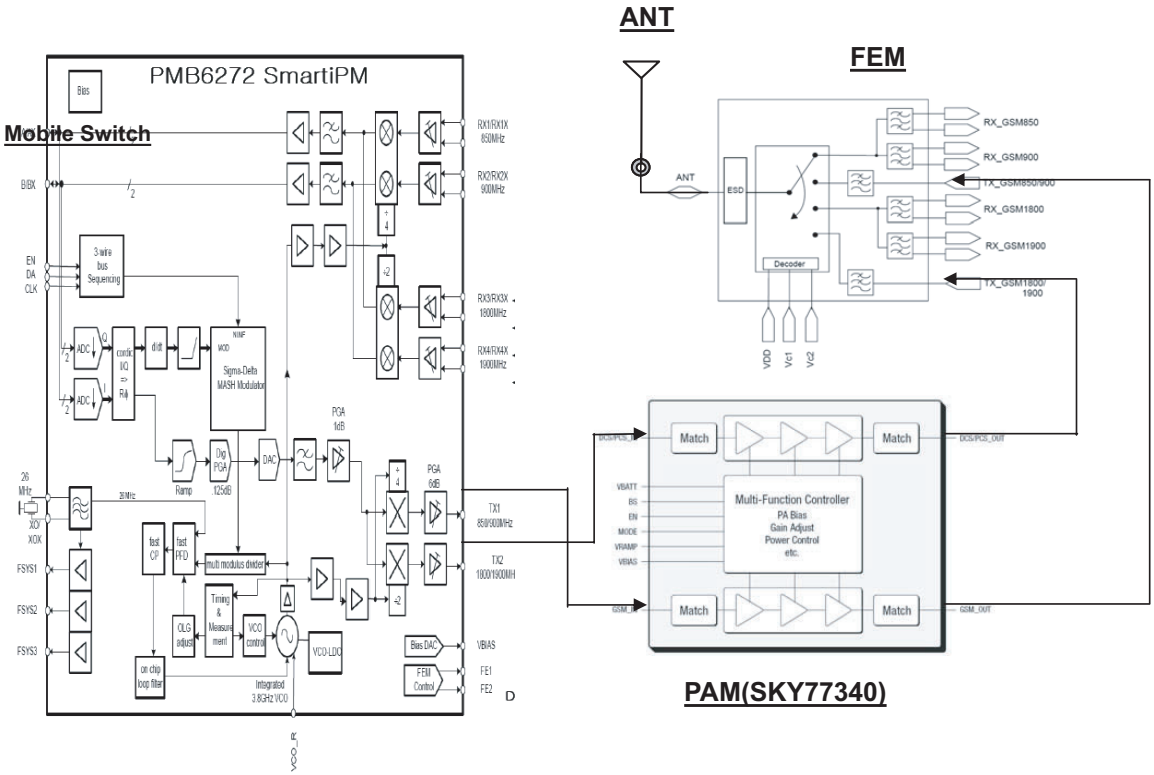


Figure 23 KF500 RF part Block Diagram

3.17 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.

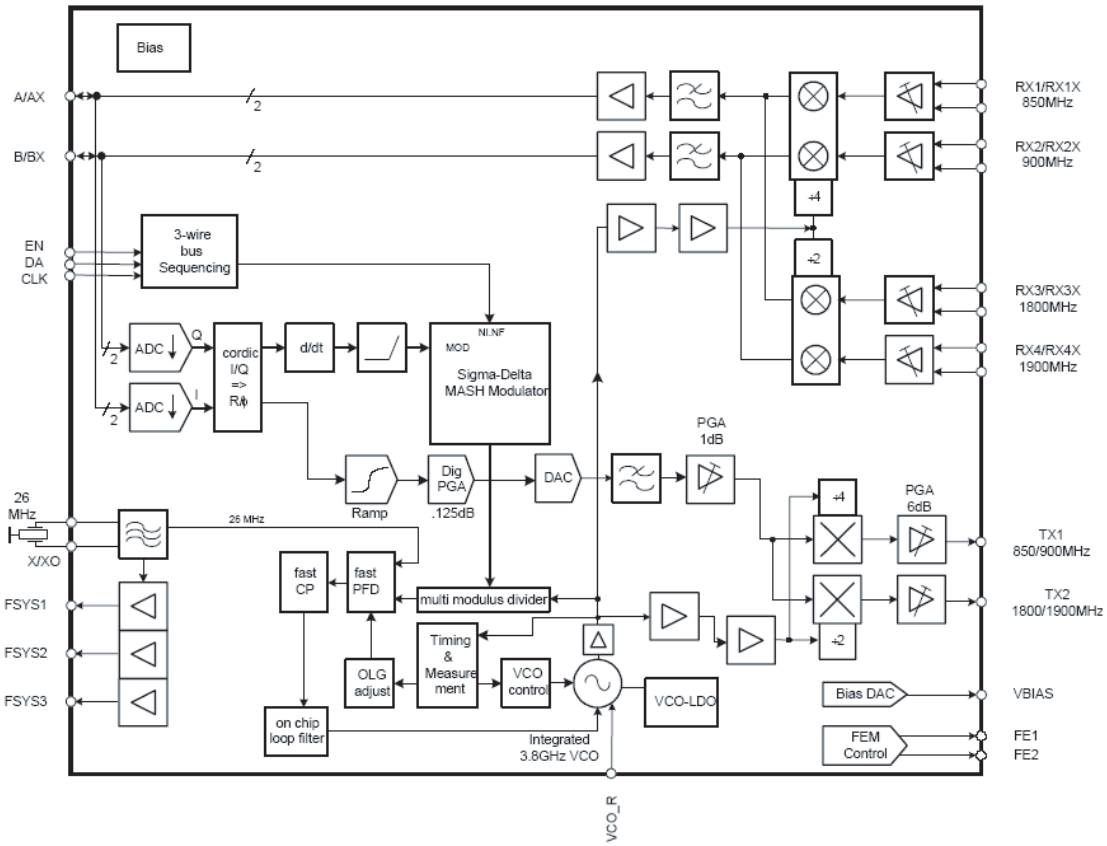


Figure 24 RF transceiver PMB6272 SMARTi-PM functional block diagram

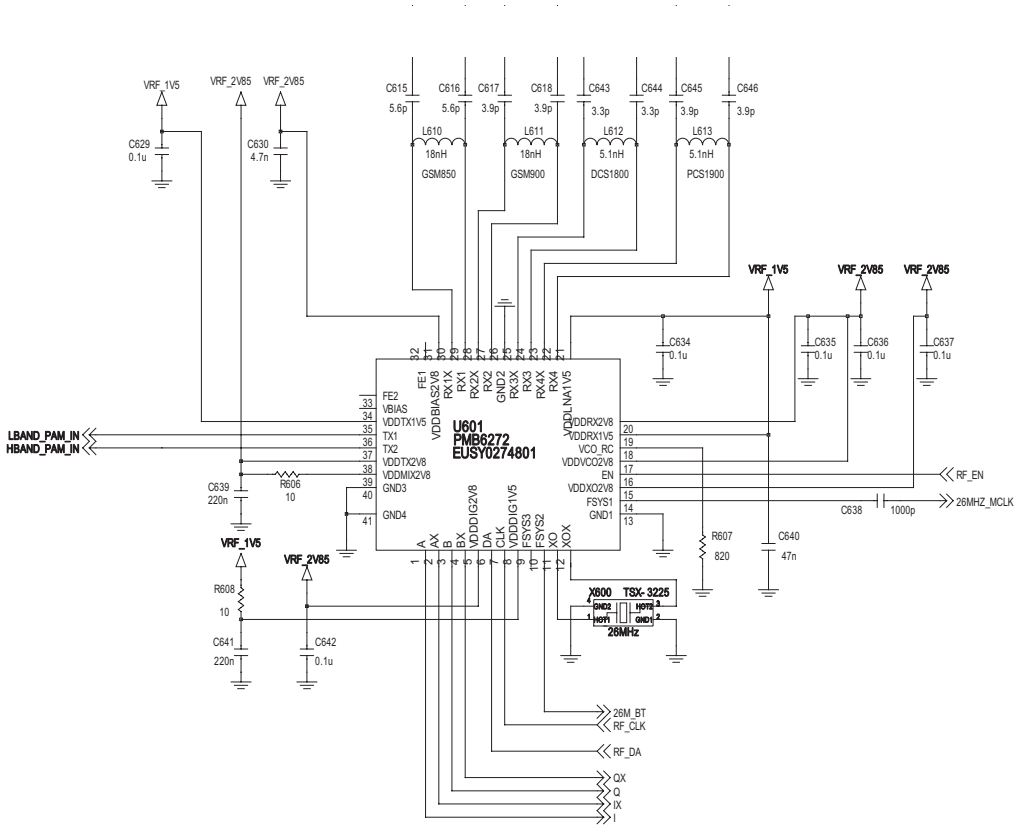


Figure 25 RF transceiver PMB6272 SMARTi-PM schematic

3.18 Receiver part

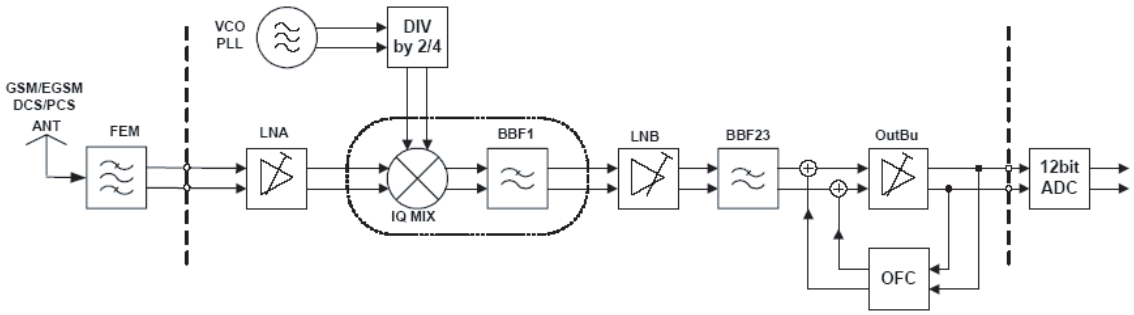


Figure 26 Receiver part block diagram

The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 39). 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.

3.19 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 Figure39). 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.

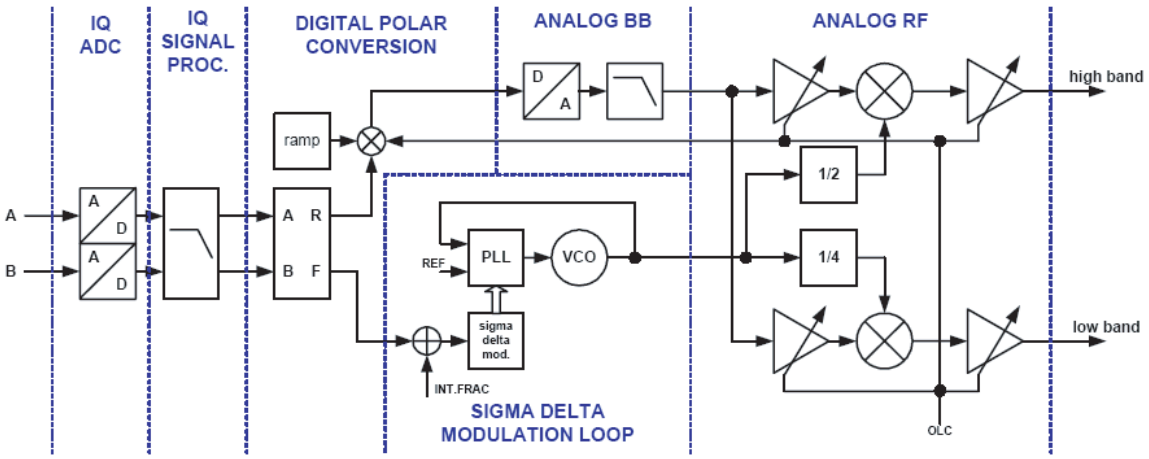


Figure 27 Transmitter part block diagram

3.20 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^2). 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.

3.21 VCTCXO

The SMARTiPM contains a fully integrated 26MHz digitally controlled crystal oscillator (DCXO) with three outputs for the system clock, one output for the GSM baseband and two additional for other subsystems (GPS, Bluetooth, etc.).The only external part of the oscillator is the crystal itself. The frequency tuning is performed along the selected subrange by programming the frequency control word (XO_TUNE) via the three wire bus (“3Wbus”)

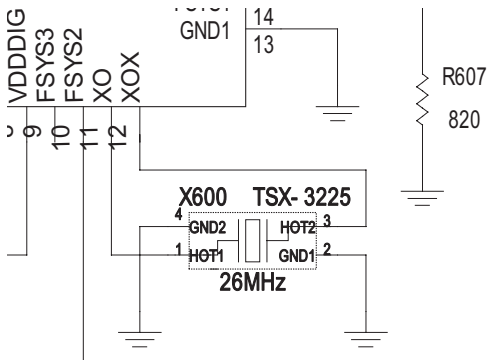


Figure 28 DCXO Schematic

3.22 Front End Module control

Implemented in the S-Gold3 (FL600) are two 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. FEM need 2V85_VRF supply.

Table 12 FEM Control Logic

MODE	Tx 1GHz	Tx 2GHz	Rx 1GHz	Rx 2GHz
VDD	ON	ON	ON	ON
VC1	OFF	ON	OFF	ON
VC2	ON	ON	OFF	OFF

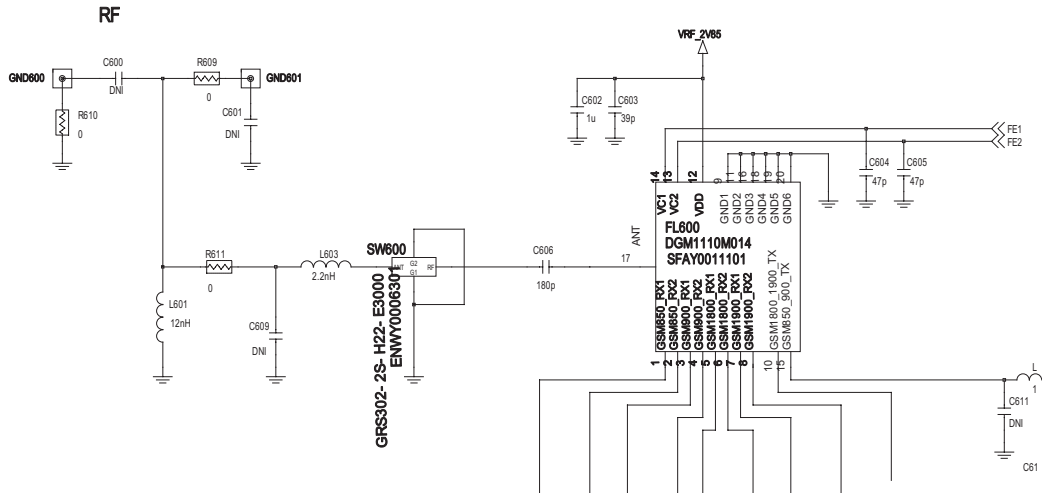


Figure 29 FEM schematic

3.23 Power Amplifier Module

The SKY77340 Power Amplifier Module(PAM) is designed in a compact from fact for quad-band cellular handsets comprising GSM850/900,DCS1800,PCS1900,supporting GMSK and linear EDGE modulation.
Class12 General Packet Radio Service(GPRS) multi-slot operation is also supported.
The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block,impedance matching circuitry for 50ohm input and output impedances, and a Multi-function Power Amplifier Control(MFC) block. A custom CMOS integrated circuit provides the internal MFC function and interface circuitry.
Two separate Heterojunction Bipolar Transistor(HBT) 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. The InGaP die, the silicon die, nad the passive components are mounted on a multi layer laminate substrate. The assembly is encapsulated with plastic overmold.
RF input and output ports are internally matched to 50ohm to reduce the number of external components Extremely low leakage current(2.5uA) maximizes handset standby time. Band select(BS) circuitry select GSM transmit frequency band(logic0) and DCS/PCS transmit frequency(logic1). MODE circuitry selects GMSK modulation (logic0) or EDGE modulation(logic1). VRAMP controls the output power for GMSK modulation and provides bias optimization for EDGE modulation depending on the state of MODE control.
The integrated multi-function(MFC) provides envelope amplitude control in GMSK mode, reducing sensitivity to input drive, temp, power supply, and process variation. In EDGE mode, the MFC configures the PA for fixed gain, and provides the ability to optimize the PA bias operation at different power levels, This circuitry regulates PA bias conditions, reducing sensitivity to temp., power supply, and process variation. The Enable input signal(pin8) provides a standby state to minimize battery drain.

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	VBIAS	Analog PA Bias Control(All Bands, EDGE Mode)
5	VBATT	DC Supply
6	VRAMP	Analog Output Power Control(All Bands, GMSK Mode)
7	GSM_IN	RF input(CEL/EGSM) DC Blocked
8	EN	Transmit Enable/Disable. Low=Disable
9	GSM_OUT	RF Output(CEL/EGSM) DC Blocked
*12	REVD2	Reserved
*10,11,13-15	GND	Ground
*16	DCS/PCS_OUT	RF Output(DCS/PCS) DC Blocked
Pad	GND PAD GRID	Ground pad grid is device underside.

3.24 PAM Schematic

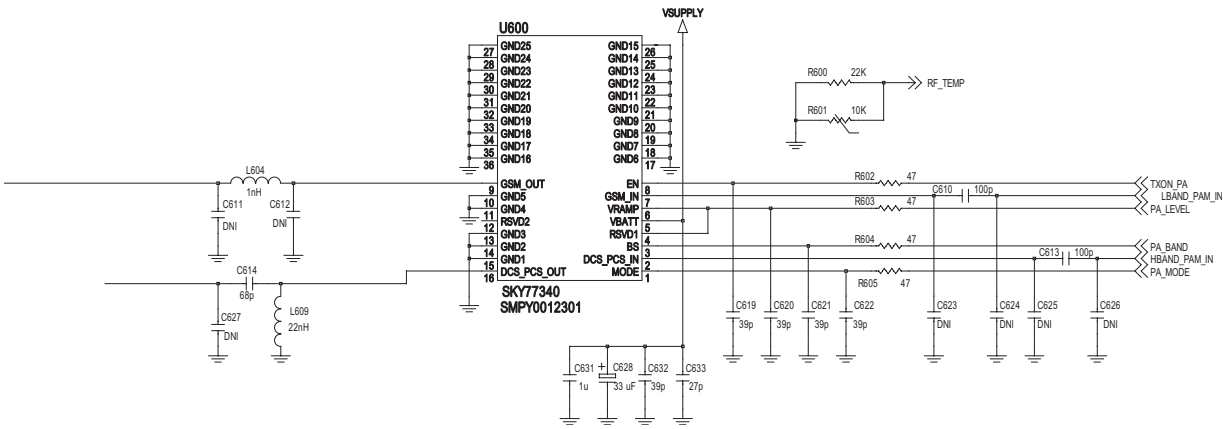
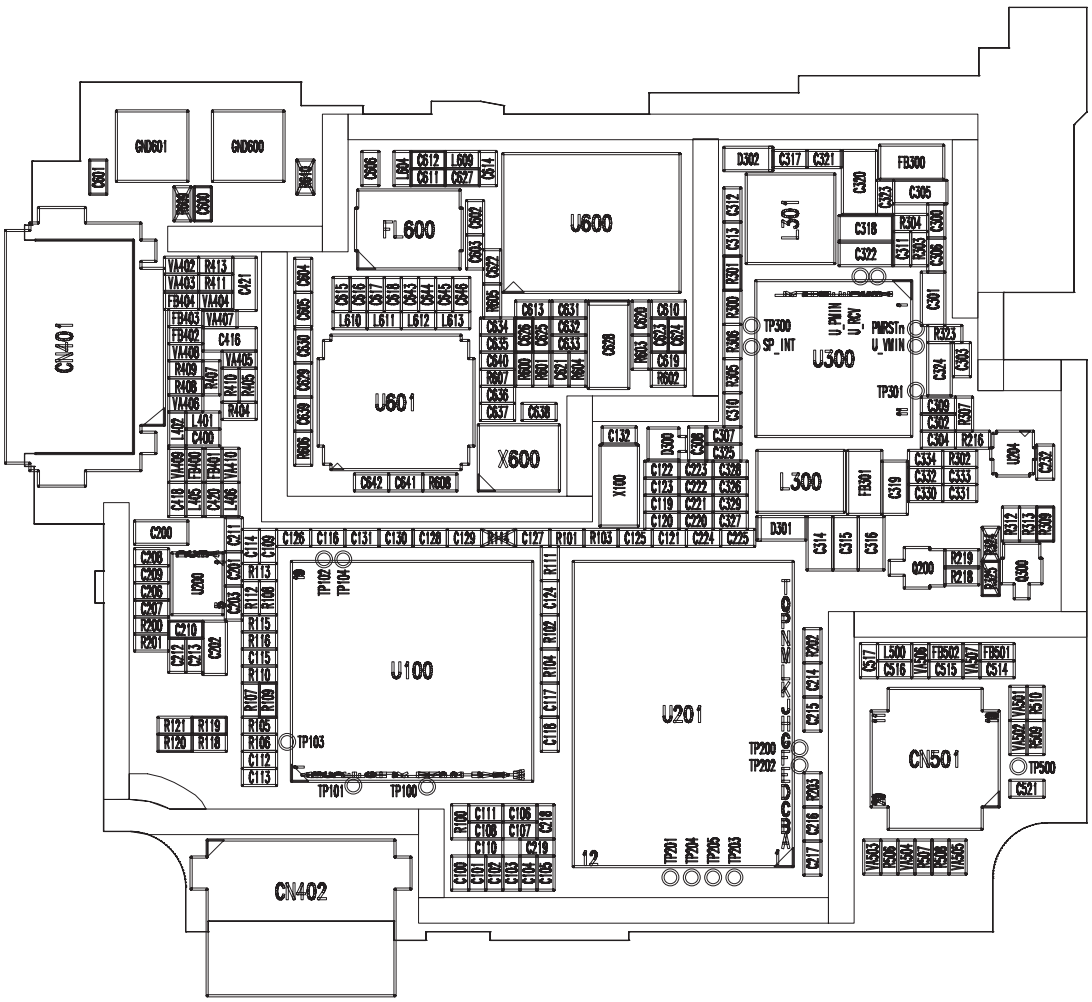


Figure 30 PAM schematic

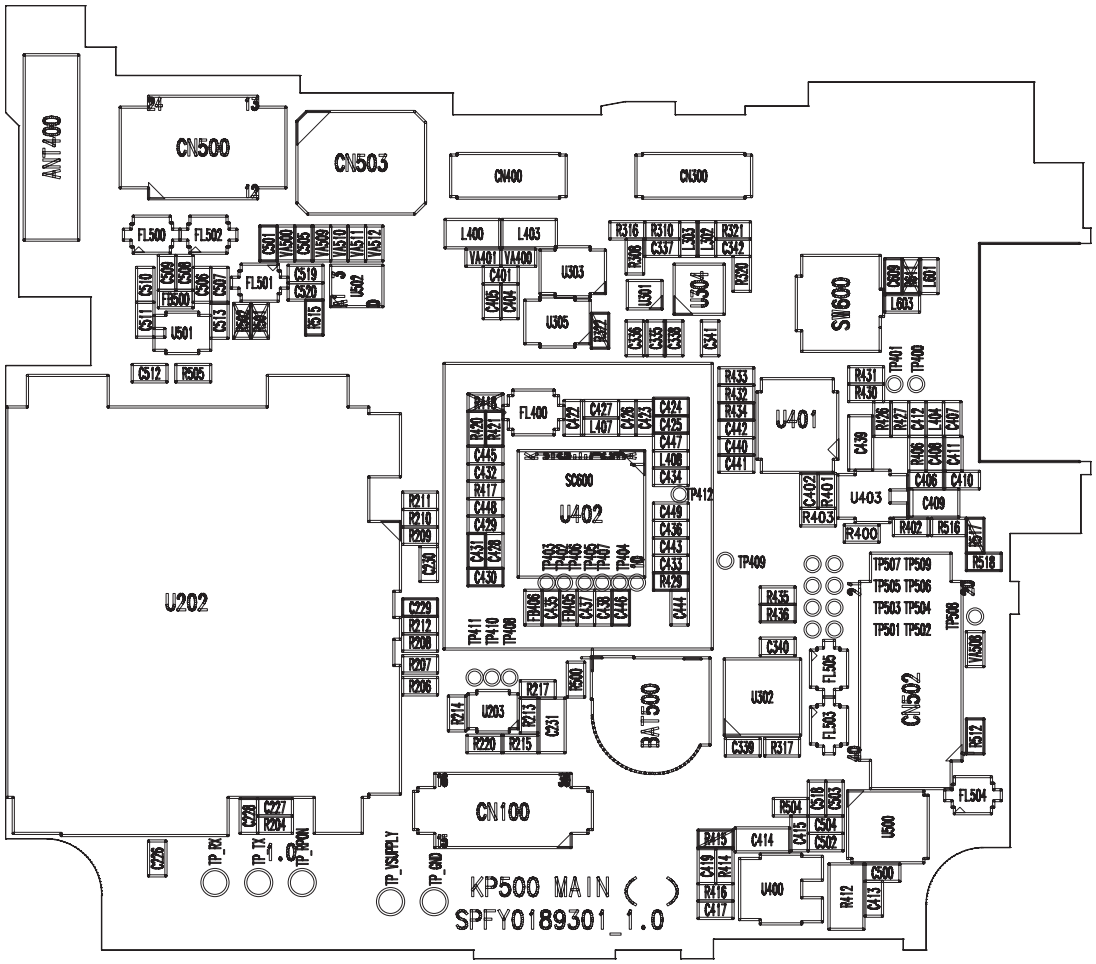
4. PCB layout

4.1 Main PCB component placement



Main PCB Top placement

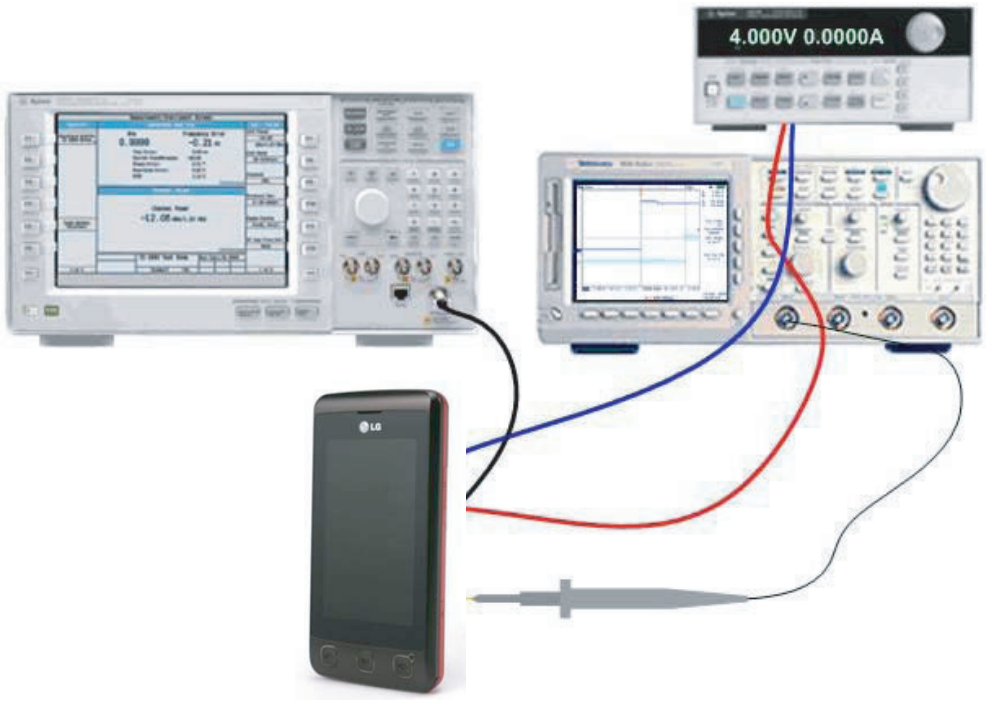
4. PCB layout



Main PCB bottom placement

5. Trouble shooting

5.1 Trouble shooting test setup



Equipment setup

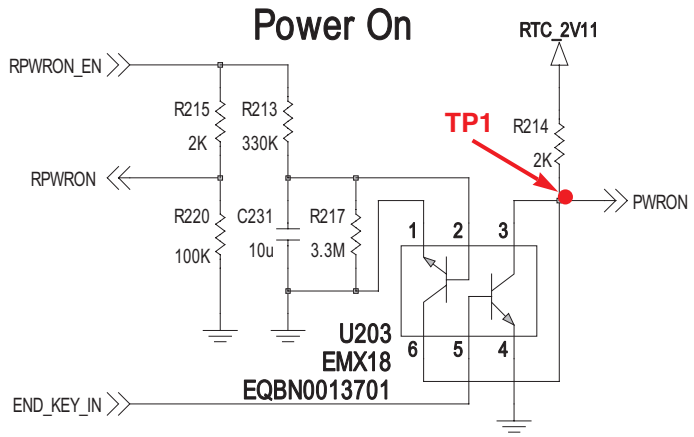
Power on all of test equipment

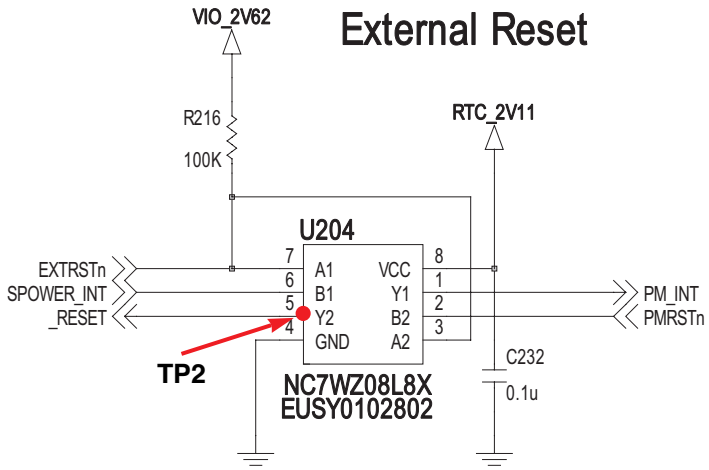
- Connect PIF-UNION JIG or dummy battery to the DUT for power up.
- Connect mobile switch cable between Communication test set and DUT when you need to make a phone call.
- Follow trouble shooting procedure

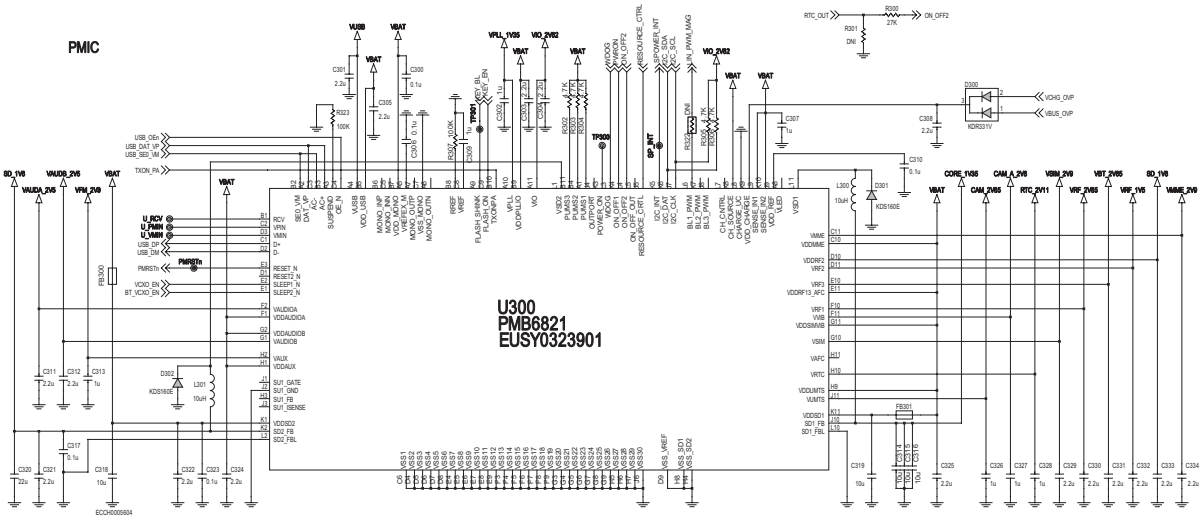
5.2 Power on Trouble

Check Points

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

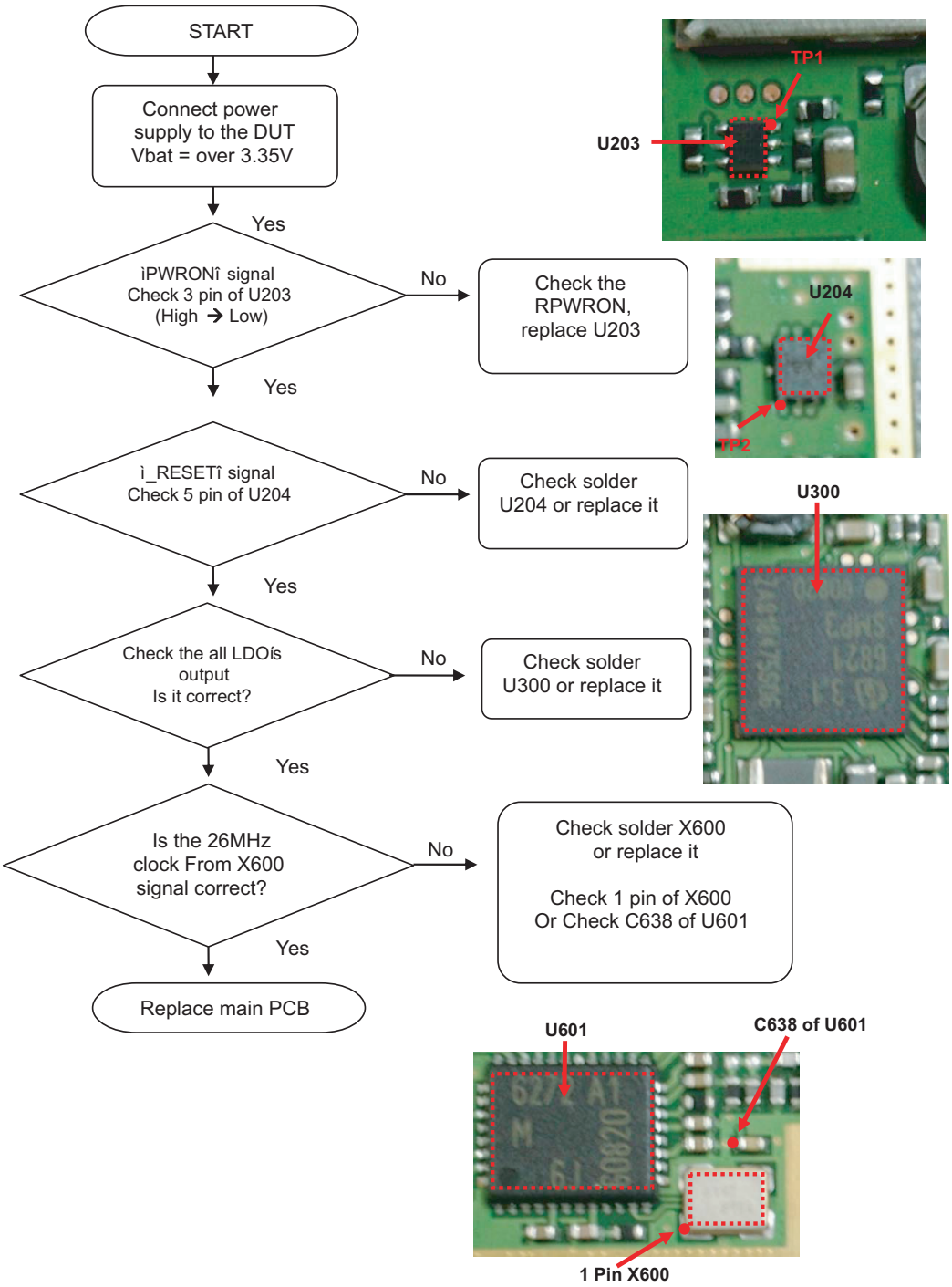






LDO	Net name	Output Voltage	Output Current	Usage
SD1	CORE_1V35	1.35V	600mA	Core & for LDO
SD2	SD_1V8	1.8V	300mA	Memory
VAUX	VFM_2V9	2.9V	100mA	Touch, LCD
VIO	VIO_2V62	2.62V	100mA	Peripherals
VSIM	VSIM_2V9	2.9V	70mA	SIM card
VMME	VMME_2V9	2.9V	150mA	u-SD
VUMTS	CAM_2V85	2.85V	110mA	Camera
VUSB	VUSB	3.1V	40mA	USB
VLED	VLED	2.9V	10mA	Not used
VAUDIOa		2.5V	200mA	Stereo headset, Mono earpiece
VAUDIOb	VAUDB_2V5	2.5V	50mA	Analog parts of S-Gold
VRF1	VRF_2V85	2.85V	150mA	2.85 V supply for SMARTi-PM RF transceiver
VRF2	VRF_1V5	1,53V 1	00mA	1.5 V supply for SMARTi-PM RF transceiver
VRF3	VBT_2V65	2.7V	150mA	BT/FM Radio
VPLL	VPLL_1V35	1.35V	30mA	S-GOLD3 PLL
VRTC	VRTC_2V11	2.11V	4mA	Real Time Clock
VAFC	VAFC	2.65V	5mA	Not used
VVIB	CAM_A_2V8	2.8V	140mA	Camera

5. Trouble shooting



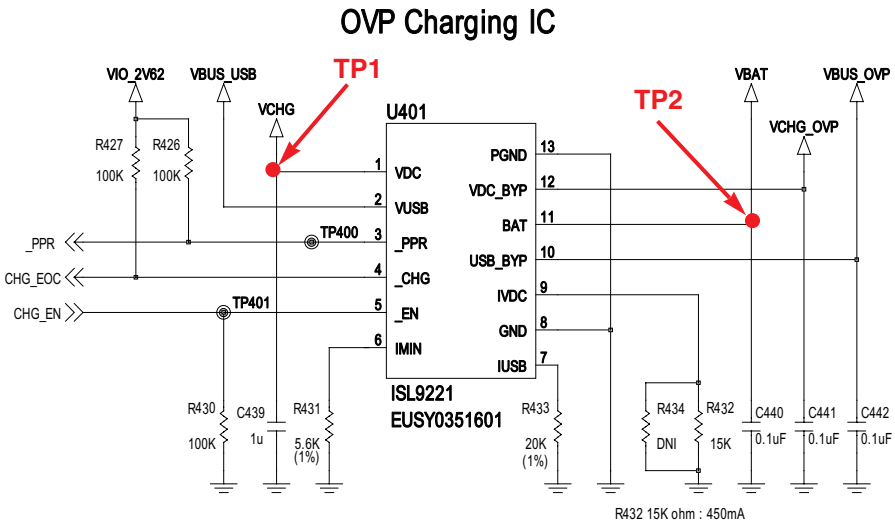
5.3 Charging trouble

Check Points

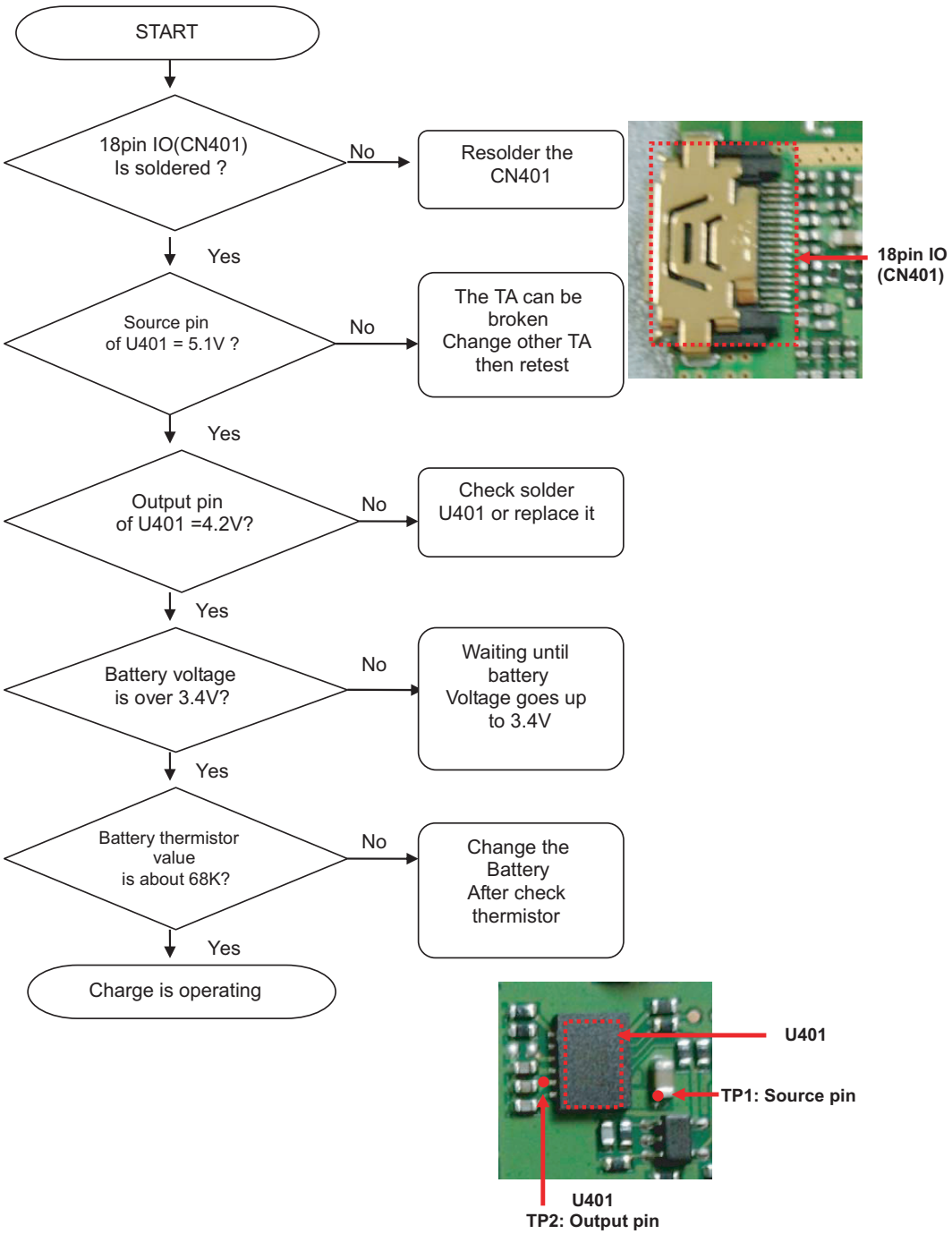
- Connection of TA (check TA voltage 5.1V)
- Charging Current Path component voltage drop
- Battery voltage

1 Charging method : CC-CV
2 Charger detect voltage : 4.0 V
3 Charging time : 2h 20m
4 Charging current : 550 mA
5 CV voltage : 4.2 V
6 Cutoff current : 110 mA
7 Full charge indication current (icon stop current) : 110 mA
8 Recharge voltage : 4.16 V

4.2V~3.71V **3.70V~3.55V** **3.54V~3.46V** **3.45V~3.31V**



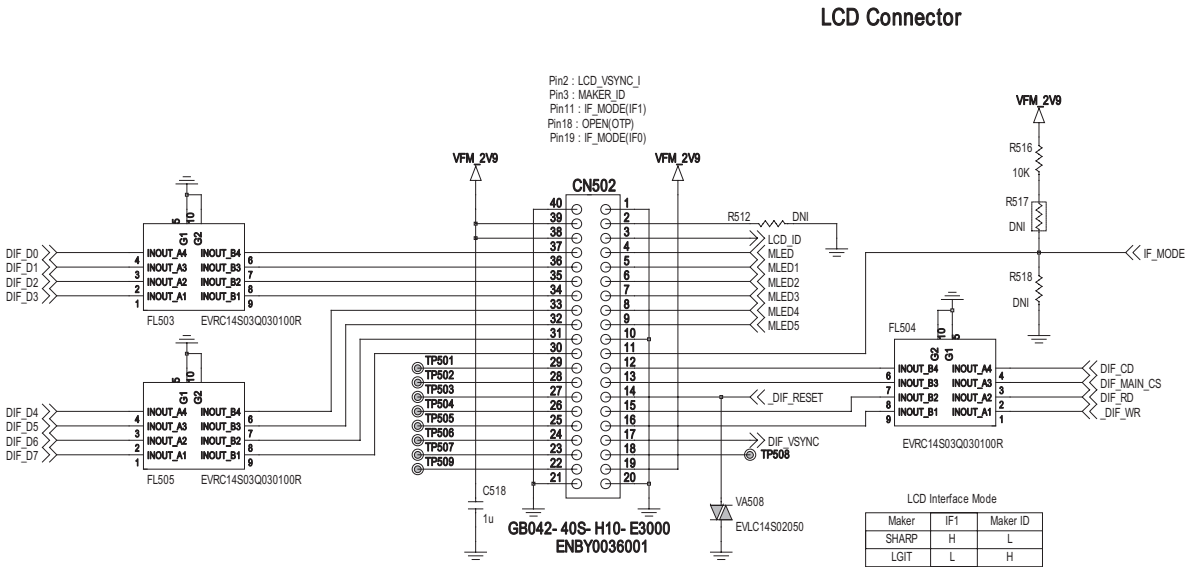
5. Trouble shooting

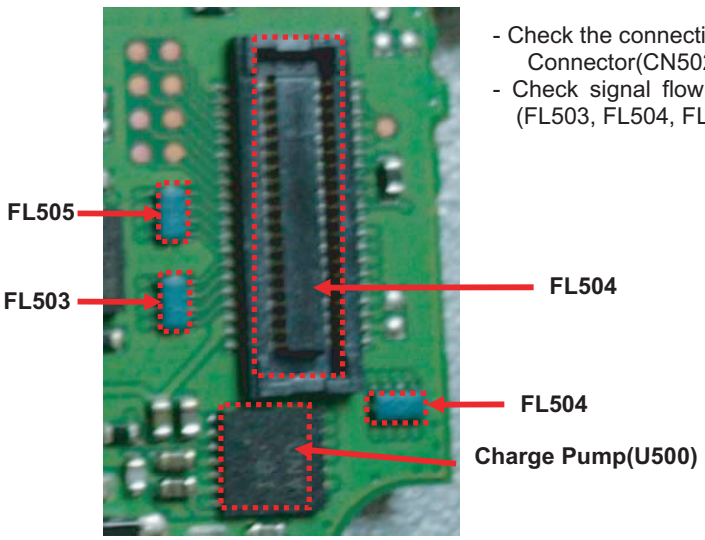


5.4 LCD display trouble

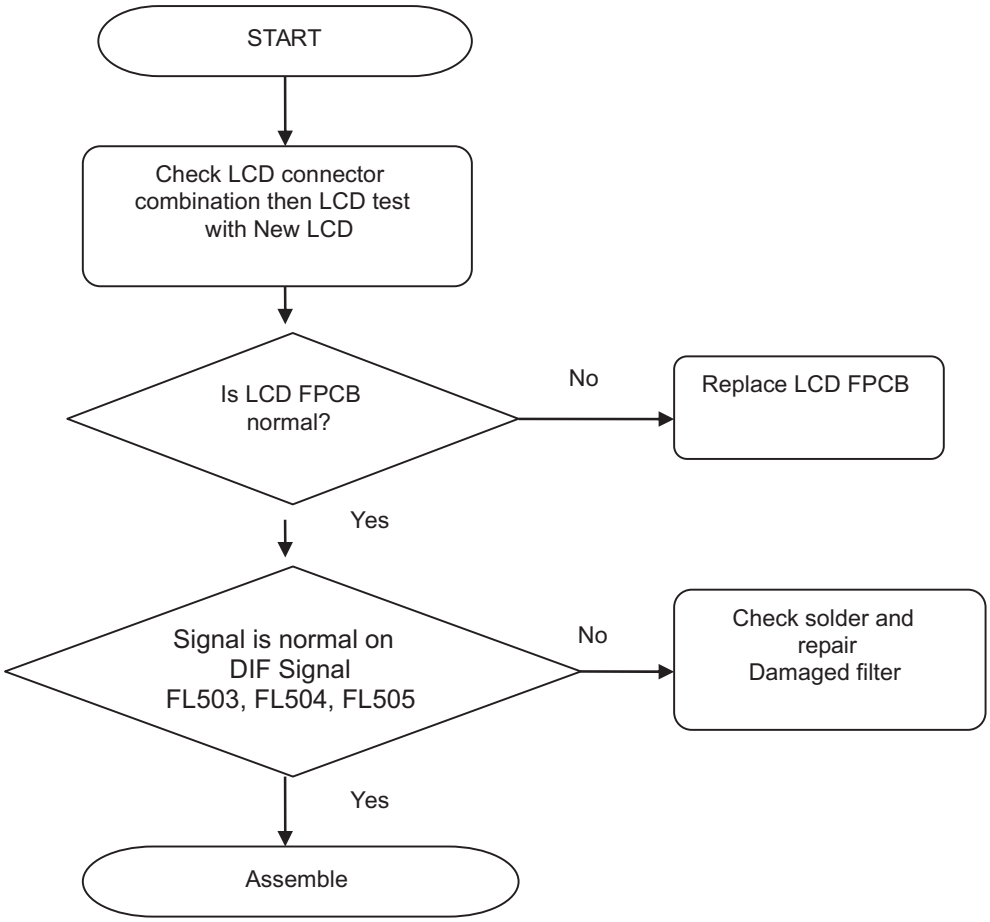
Check Points

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





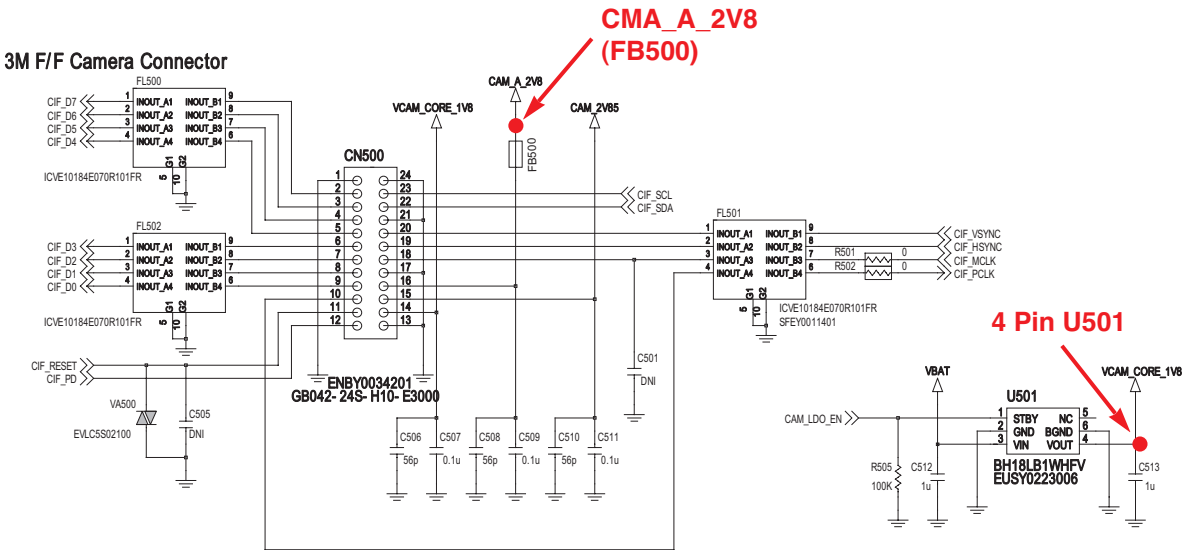
- Check the connection LCD FPCB Connector(CN502)
- Check signal flow via EMI filter (FL503, FL504, FL505)

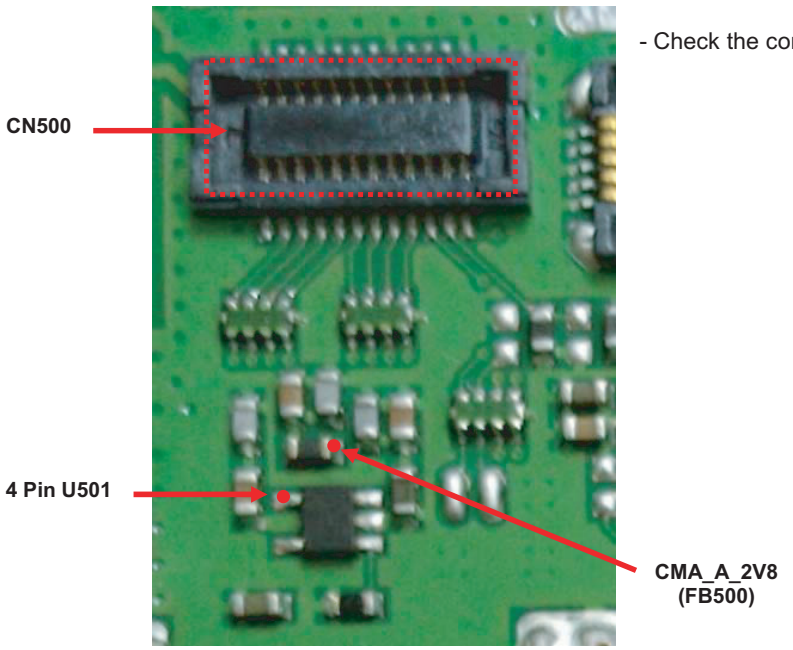


5.5 Camera Trouble

Check Points

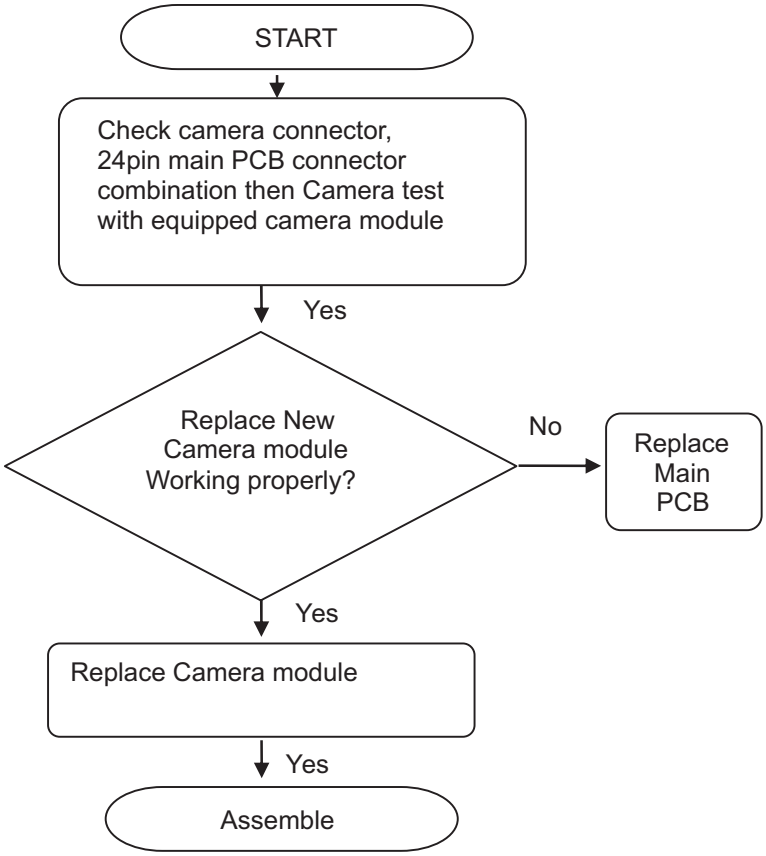
- Connectors combination
- FPCB status





- Check the connector combination(CN500)

5. Trouble shooting

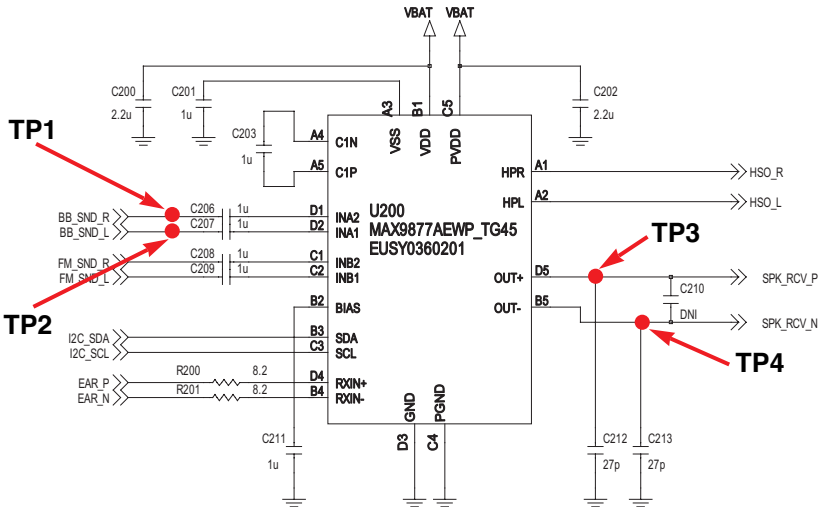


5.6 Receiver & Speaker trouble

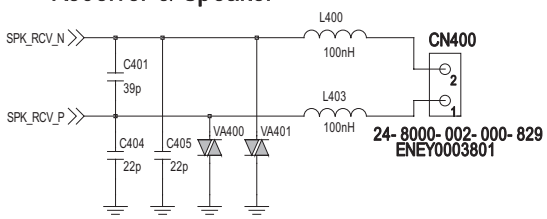
Check Points

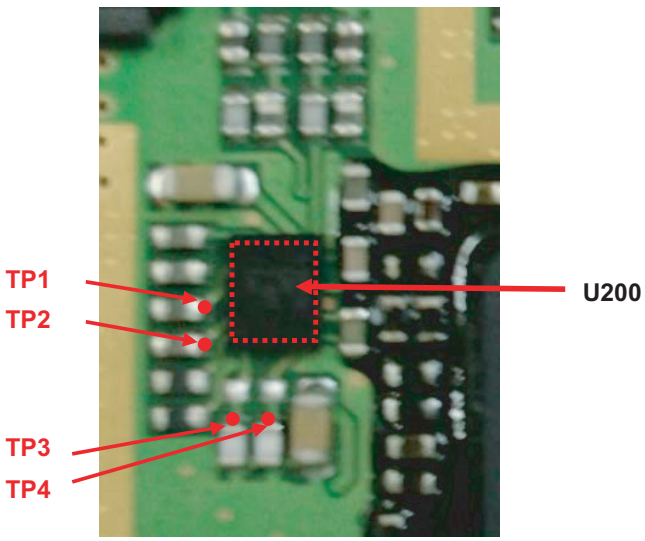
- Speaker soldering status
- Audio amp & Analog switch soldering status

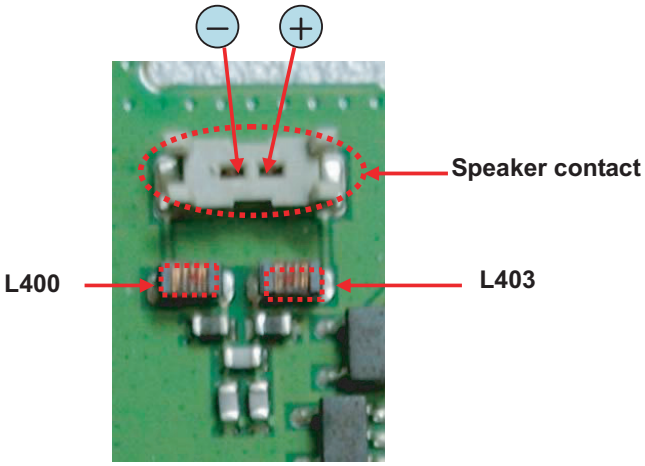
AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR

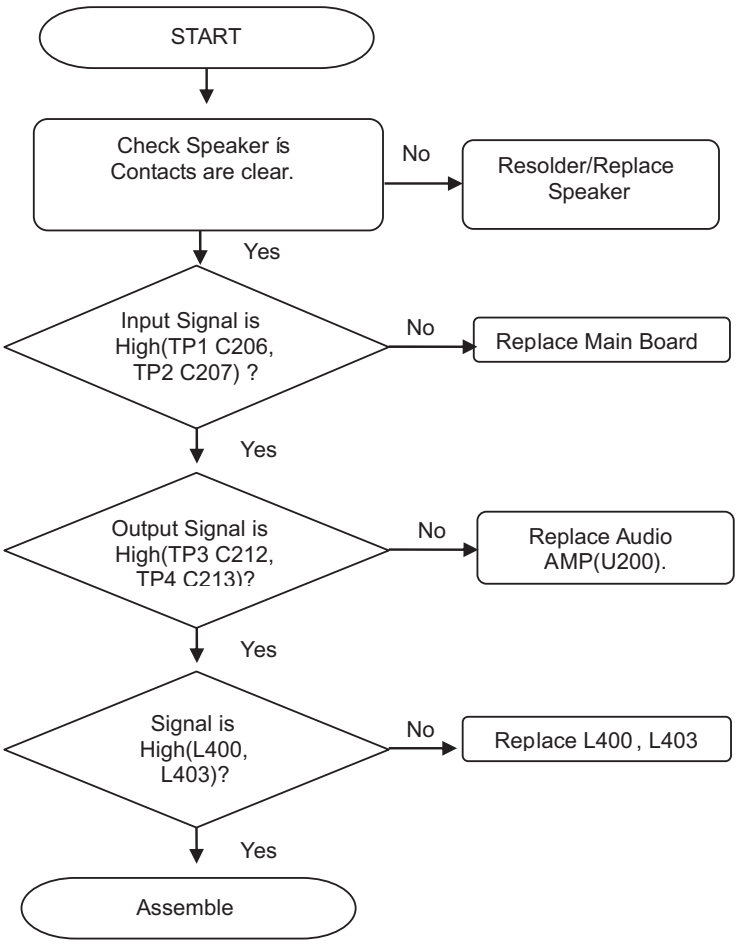


Receiver & Speaker





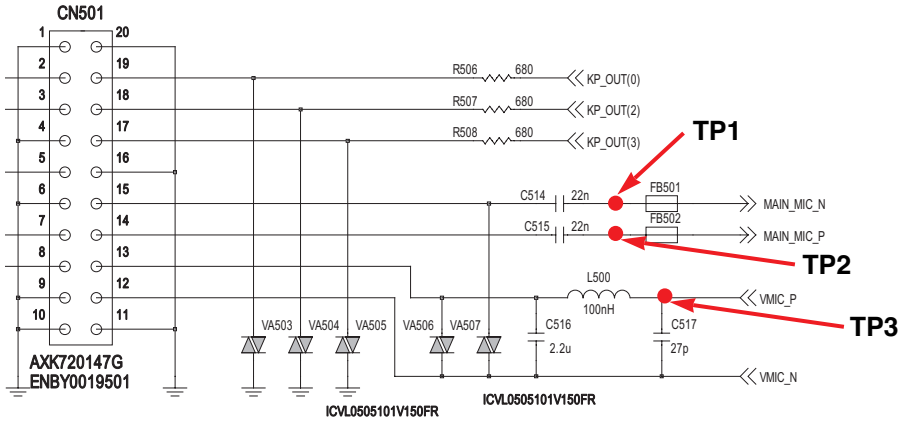


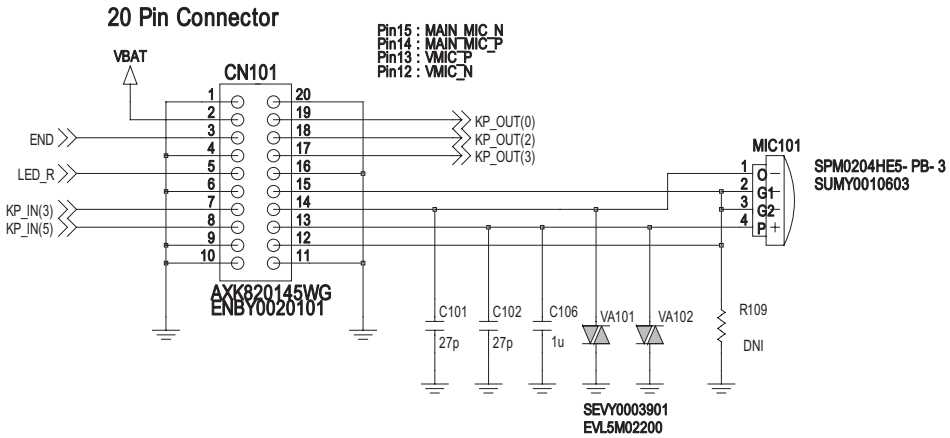


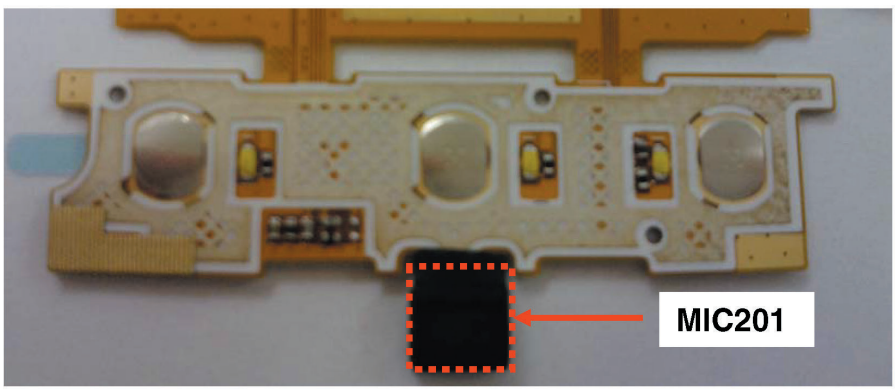
5.7 Microphone trouble

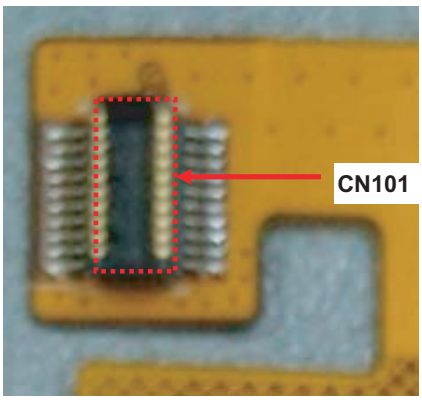
Check Points

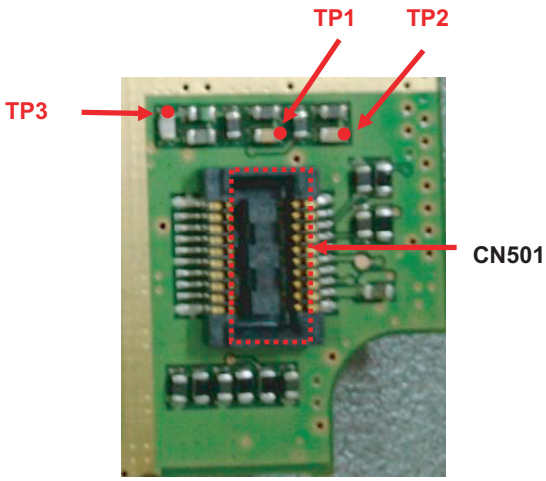
- Microphone hole
- Mic. Bias & signal line

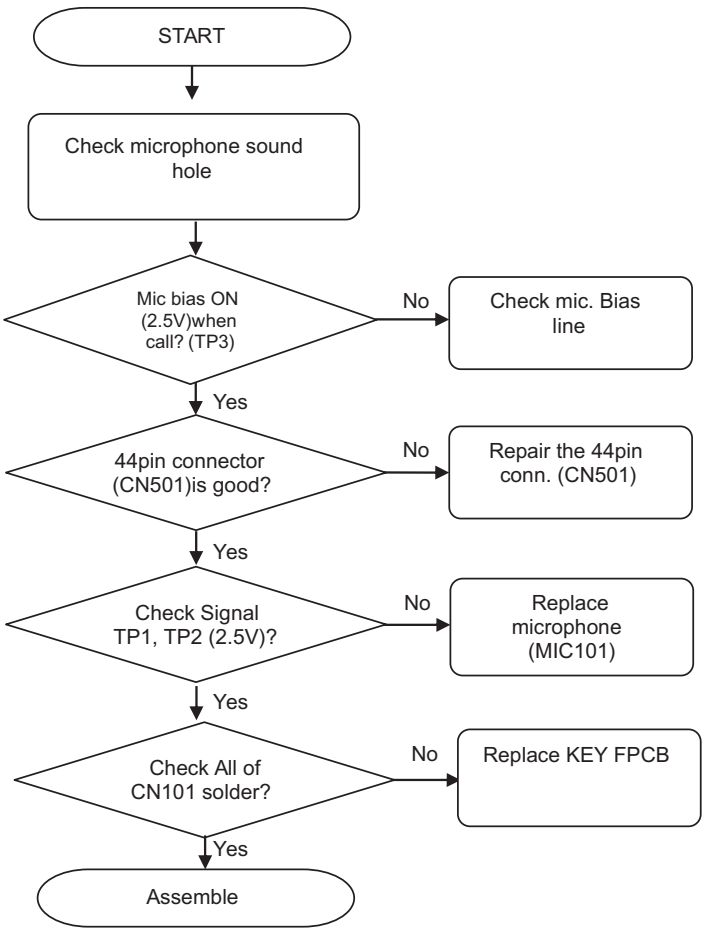








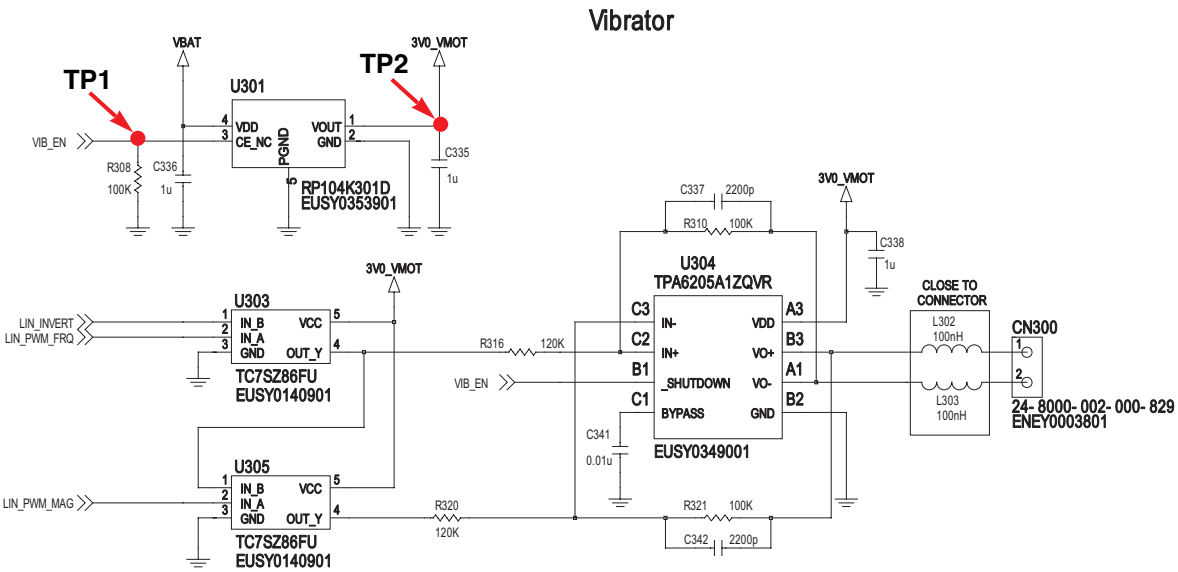


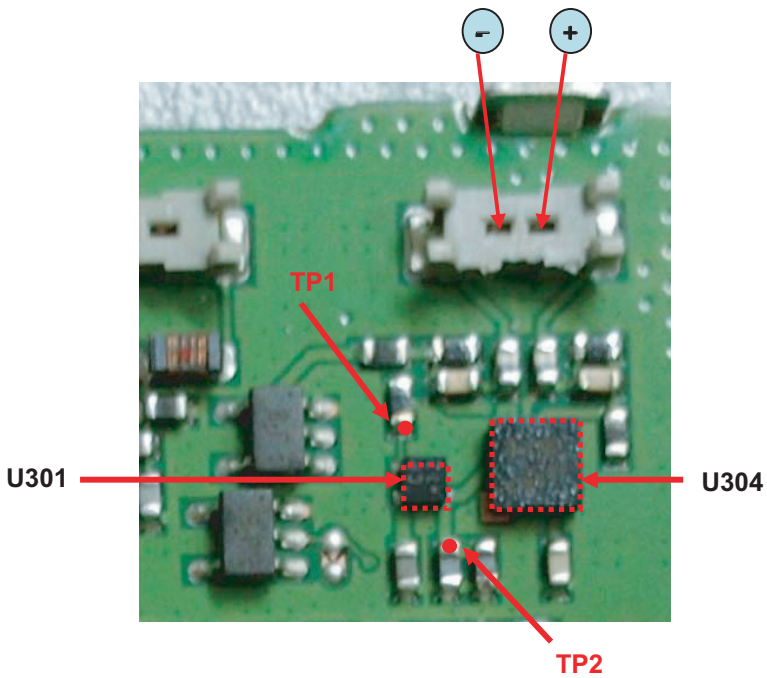


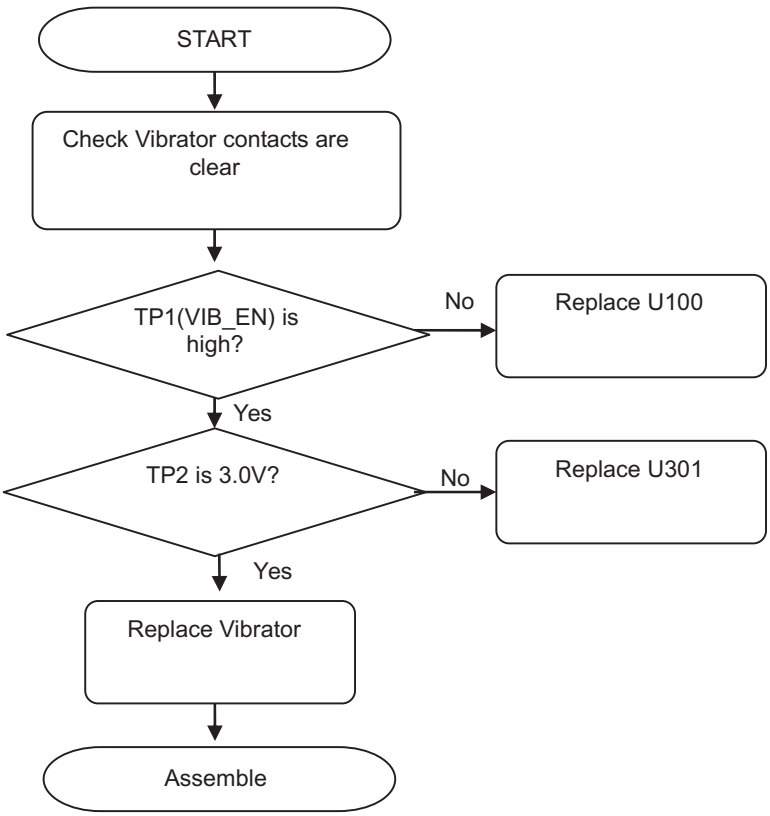
5.8 Vibrator trouble

Check Points

- Vibrator soldering
- IC is working correct





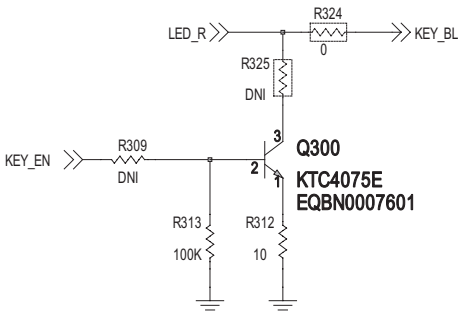


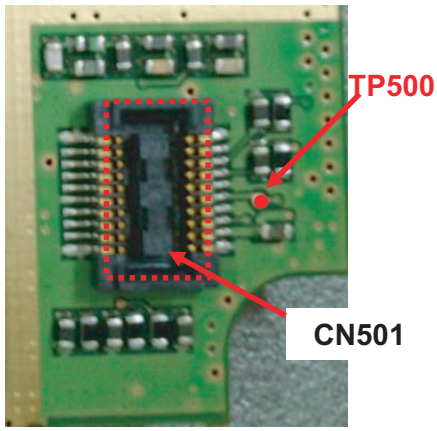
5.9 Keypad back light trouble

Check Points

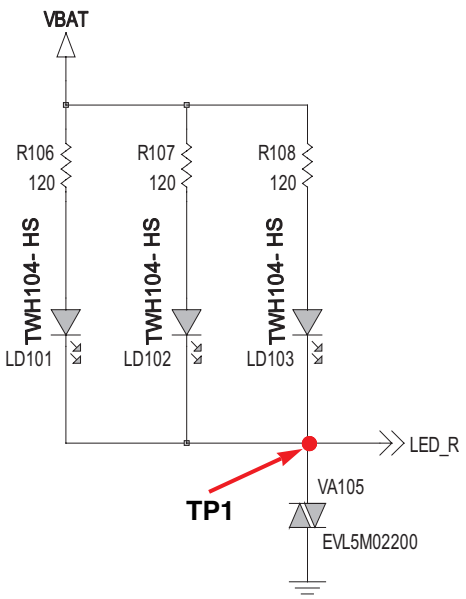
- Signal path is connected well

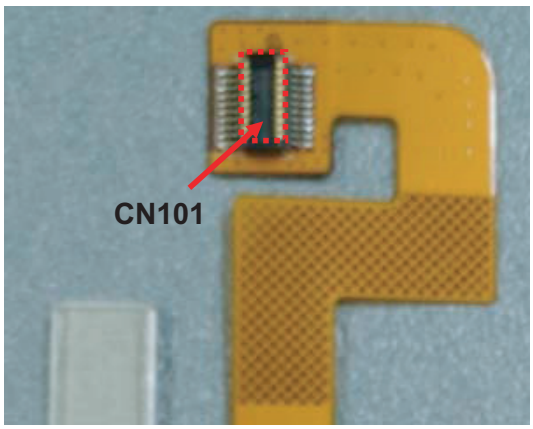
KEY Backlight LED **Main FPCB**

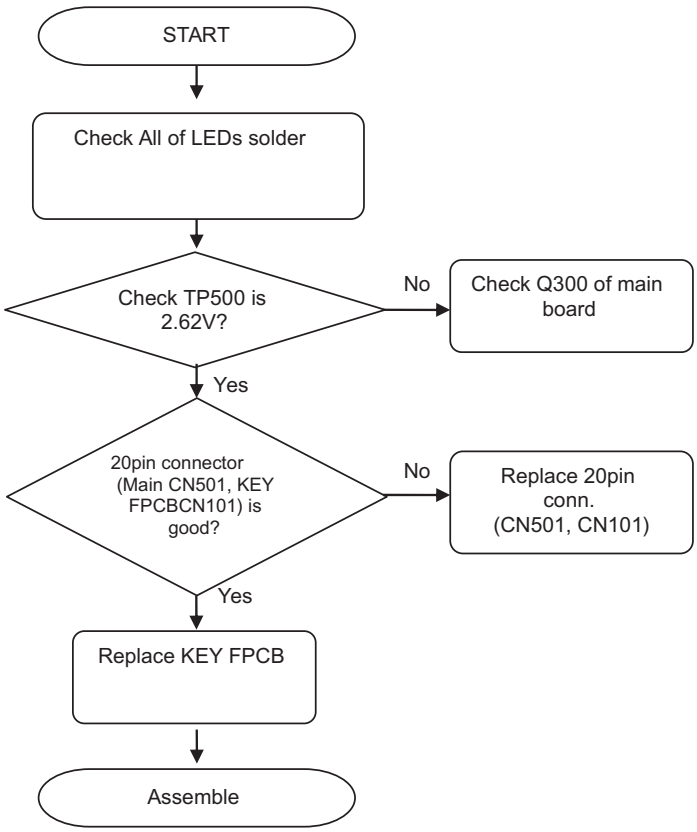


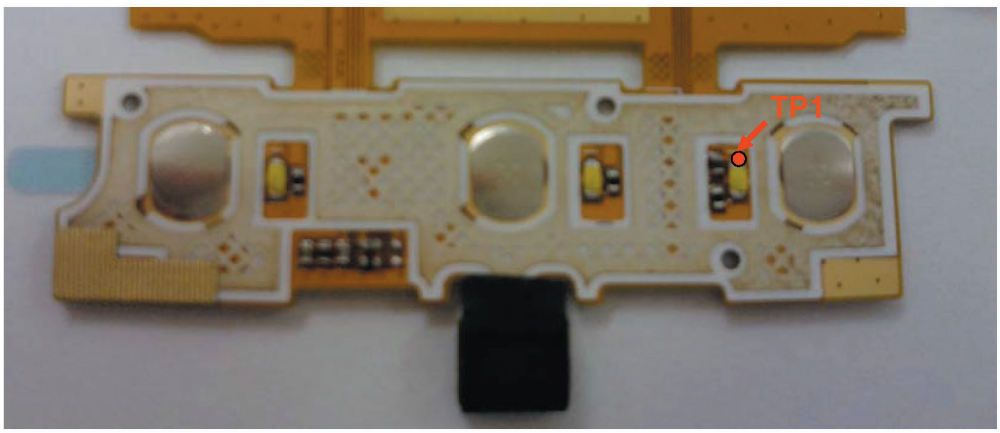


KEY LED **KEY FPCB**





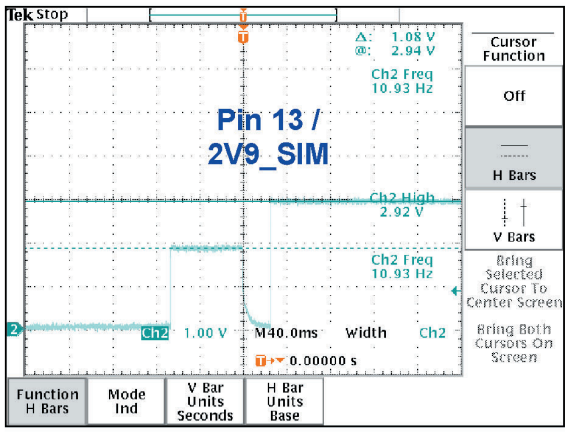


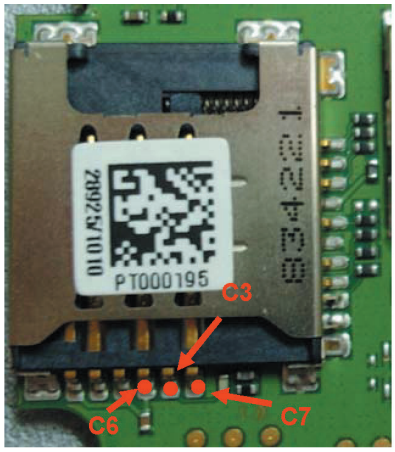


5.10 SIM & uSD trouble

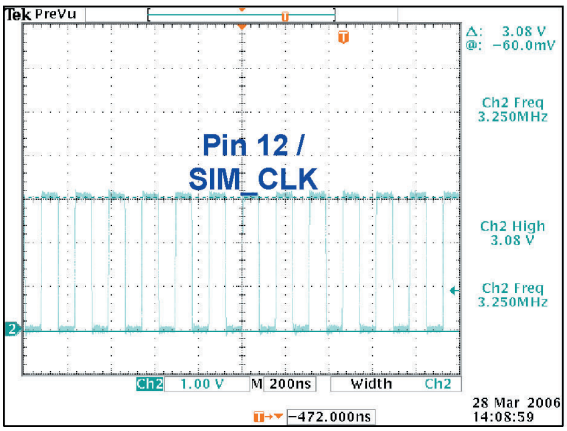
SIM Check Points

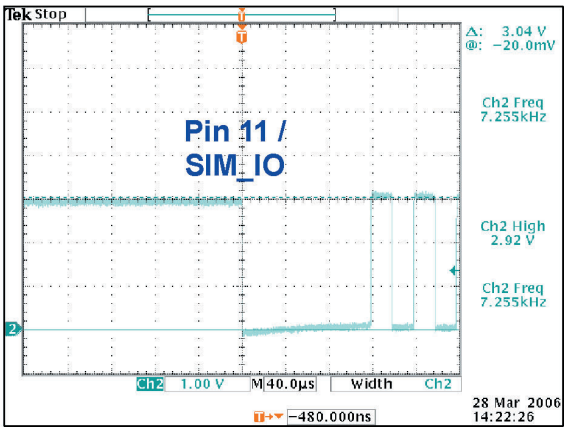
- Power is working
- Socket soldering
- Proper SIM is used



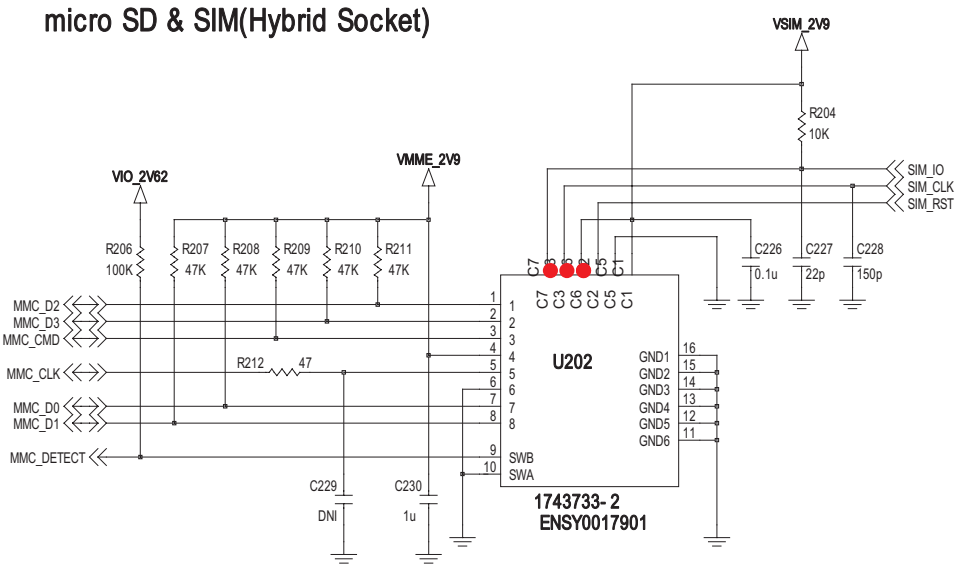


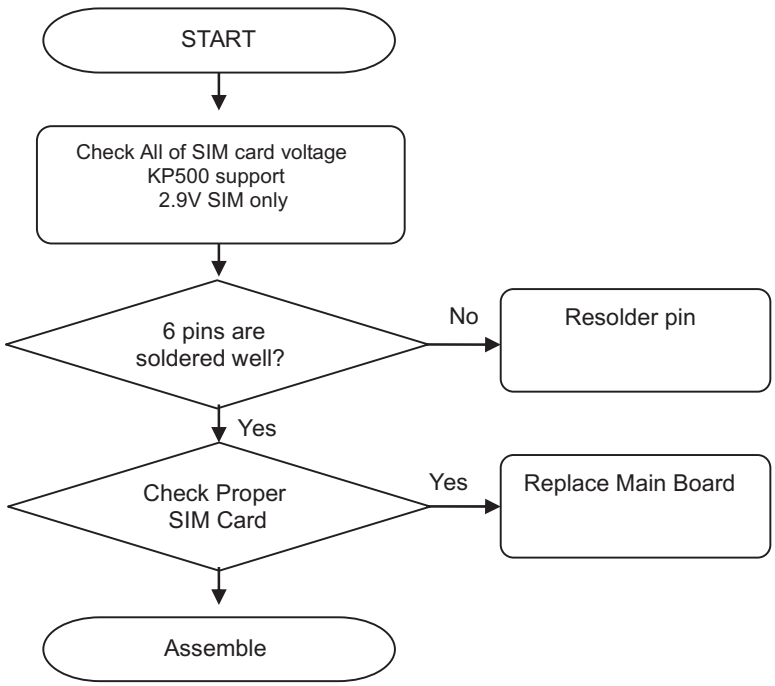
Check soldering all pin of socket





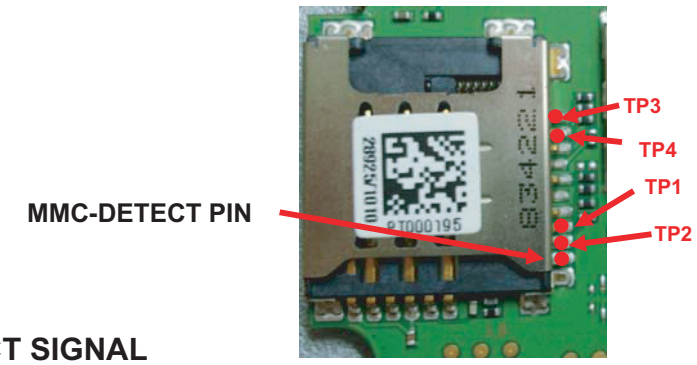
5. Trouble shooting



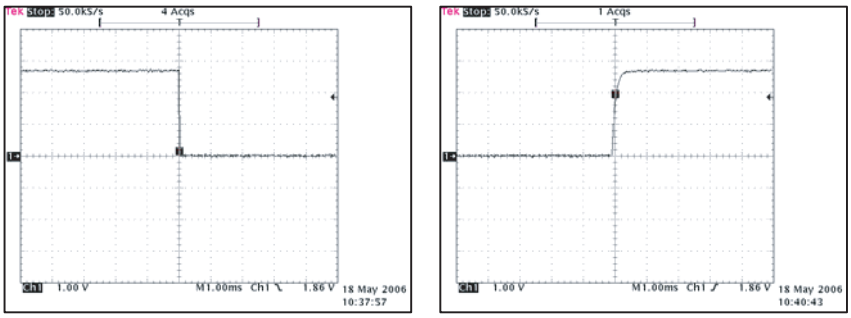


uSD Check Points

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

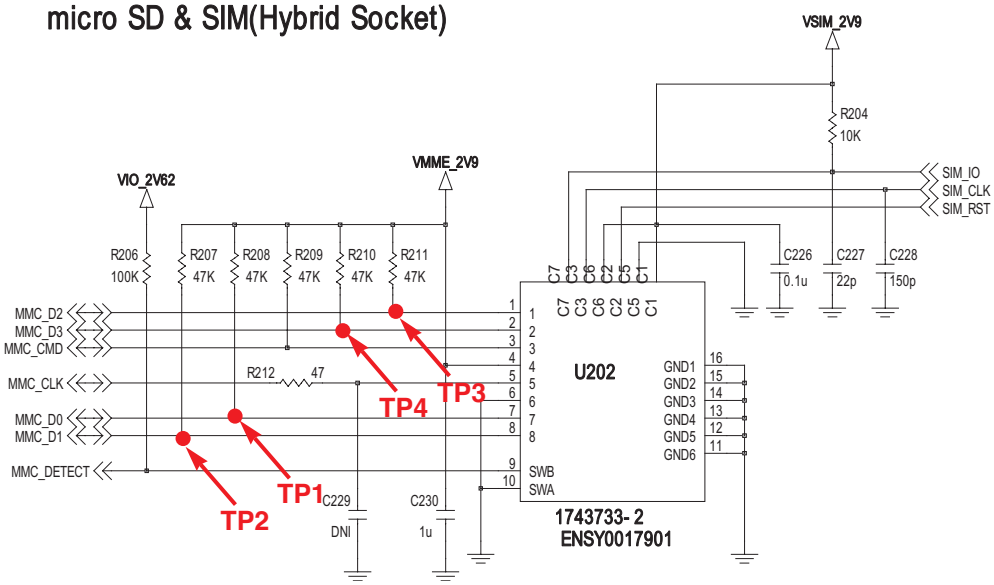


MMC_DETECT SIGNAL

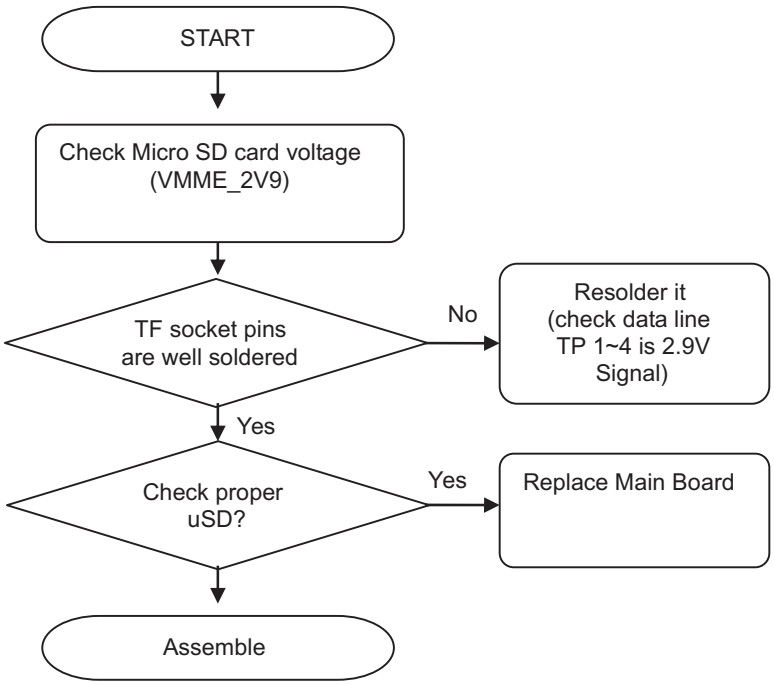


Card insert　　Card Deject

micro SD & SIM(Hybrid Socket)



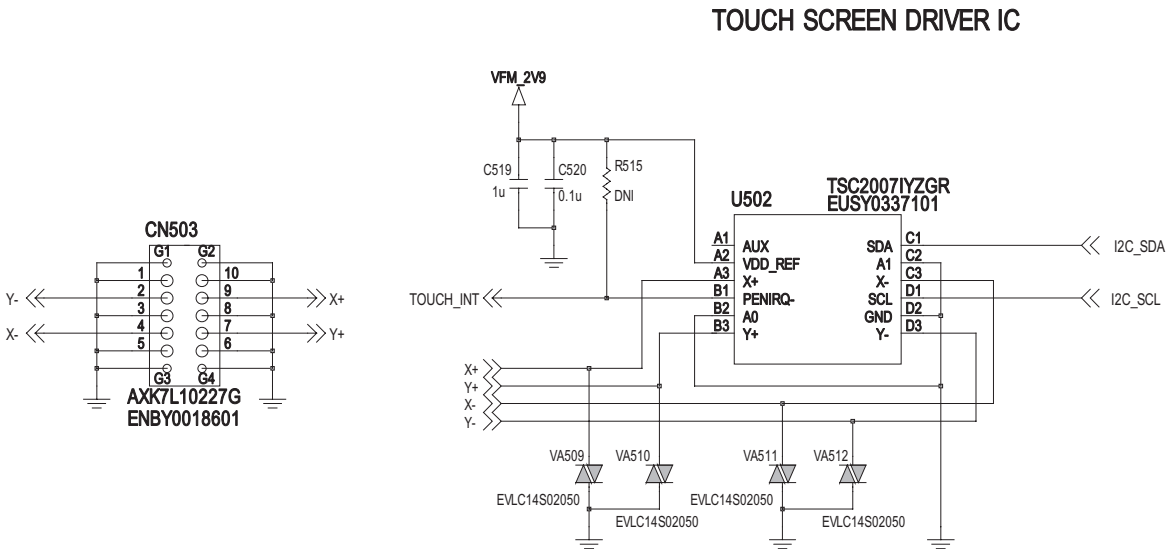
5. Trouble shooting

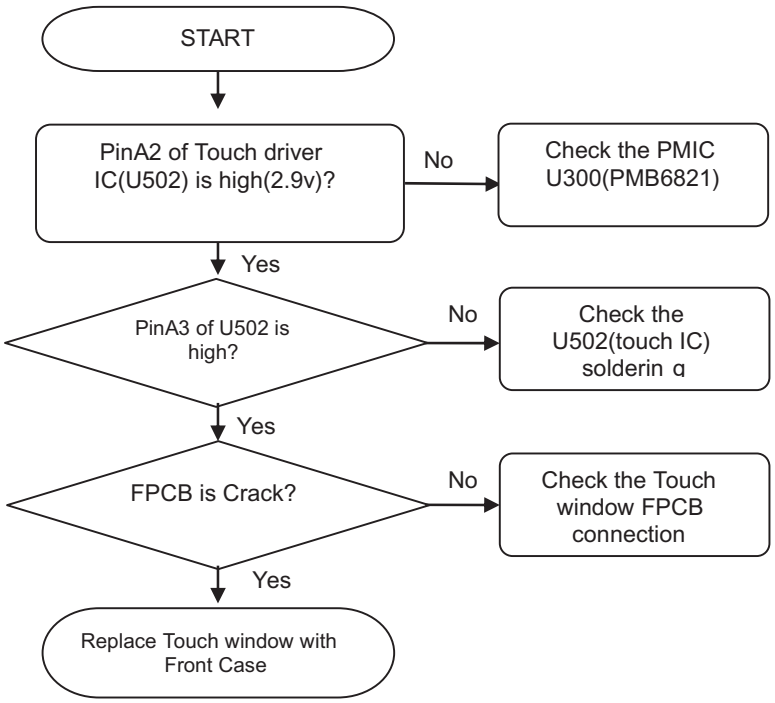


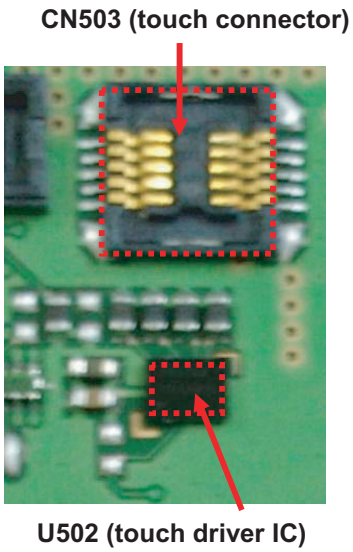
5.11 Touch pad trouble

SIM Check Points

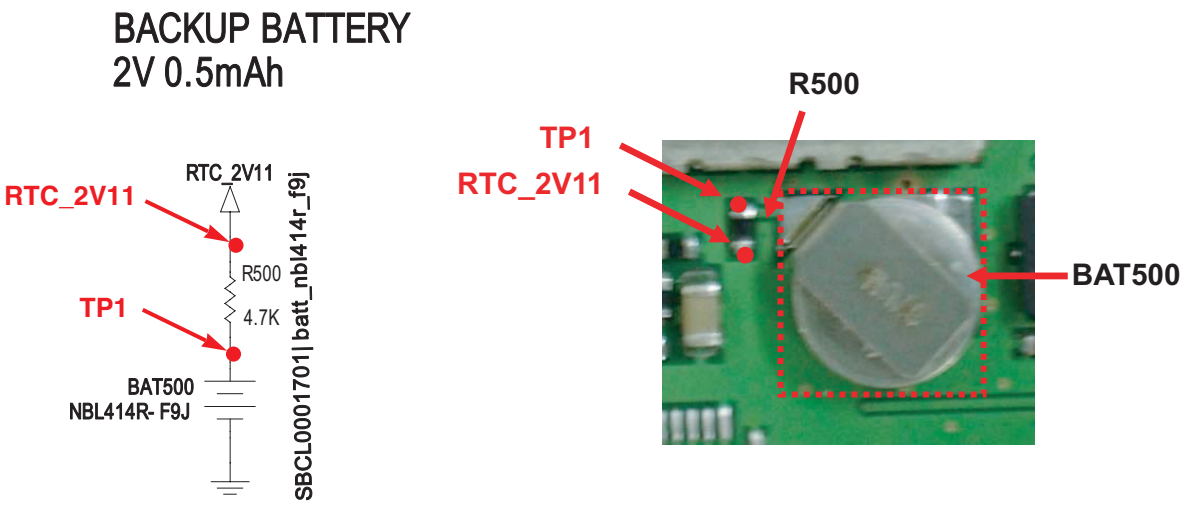
- Touch driver IC soldering`
- Touch FPCB Crack

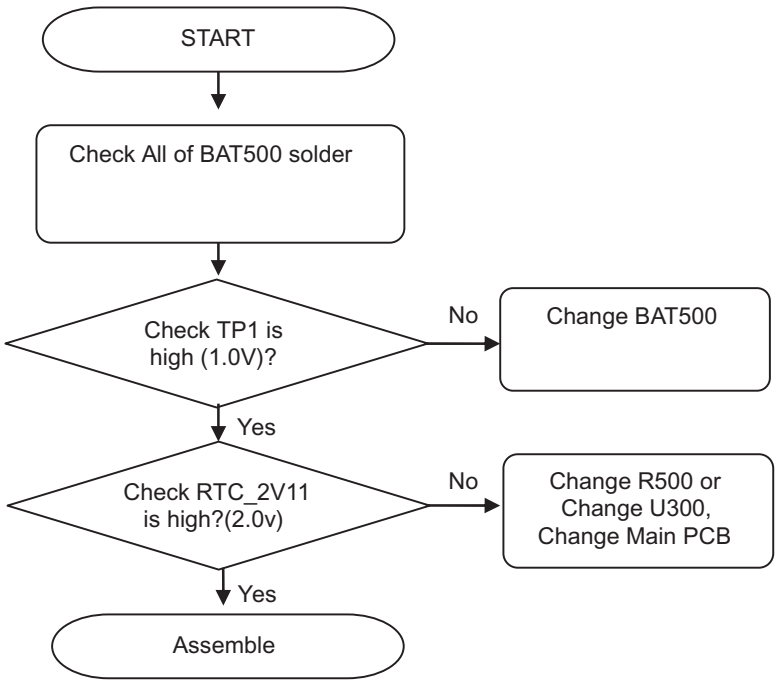






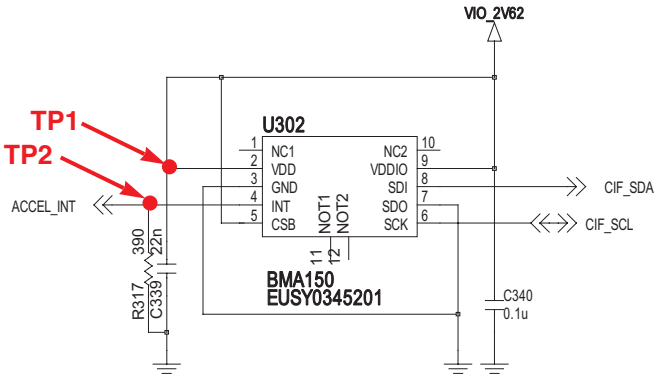
5.12 RTC trouble

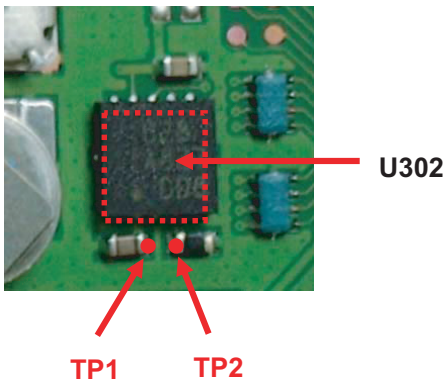


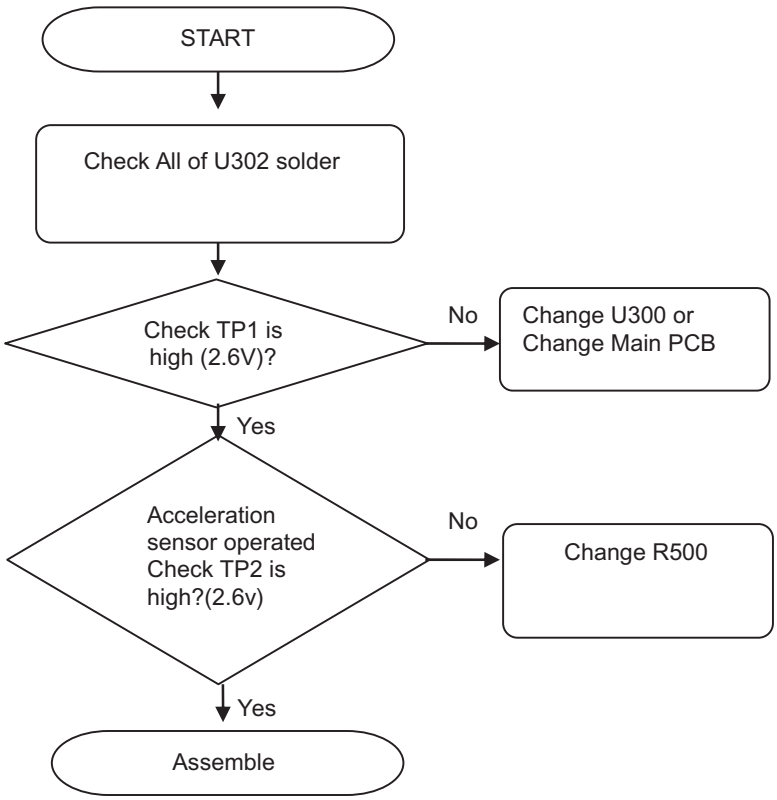


5.13 Tri-axial, digital acceleration sensor trouble

THREE- AXIS ACCELEROMETER

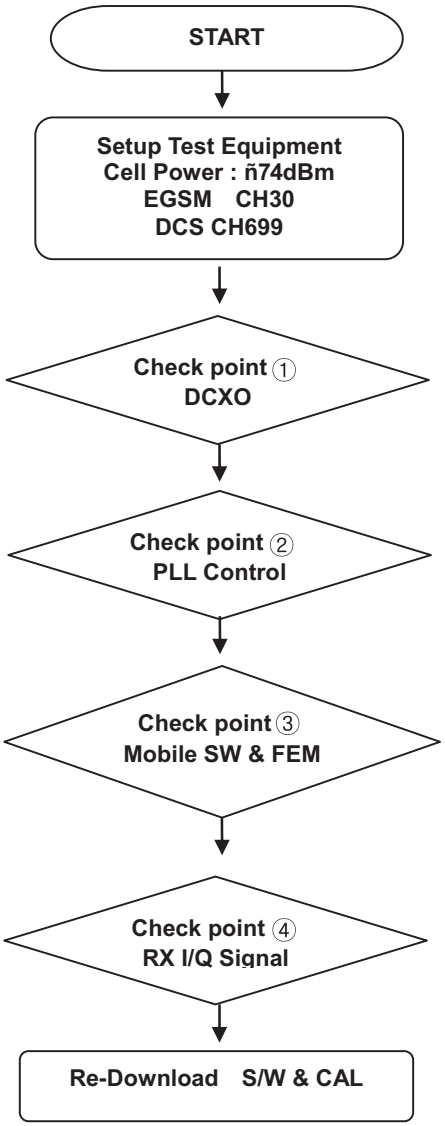






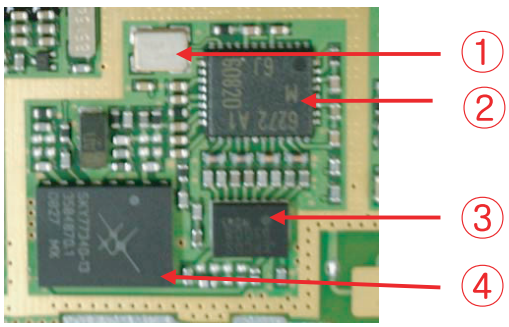
5.14 Trouble shooting of Receiver part

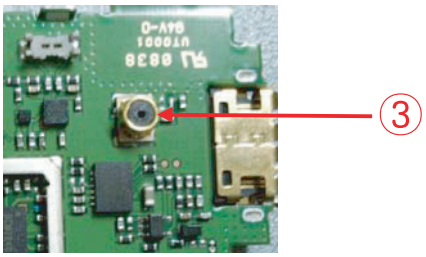
Checking Flow



Checking Points

Figure 1. Main PCB





5.14.1 Checking DCXO Circuit

Checking Points

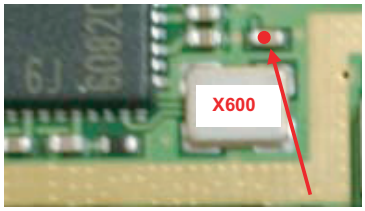
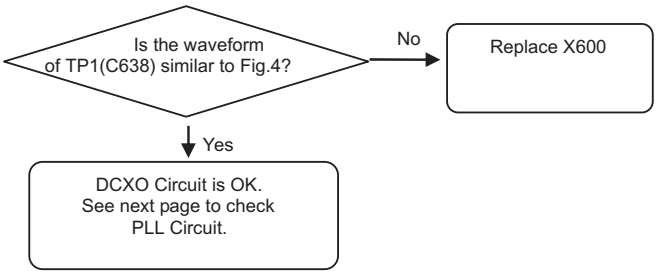


Figure2. DCXO

Checking Flow



DCXO Circuit Diagram

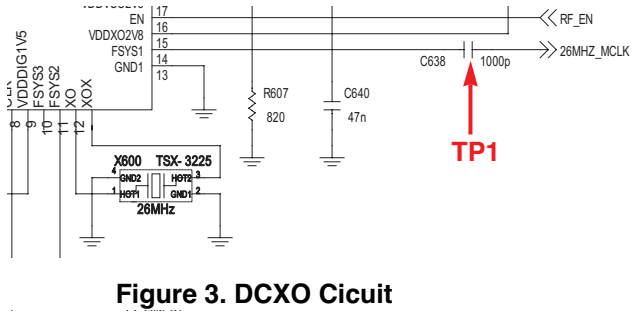


Figure 3. DCXO Cicuit

Waveform

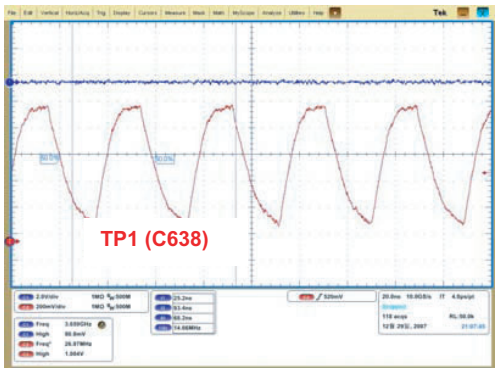


Figure 4. DCXO Waveform

5.14.2 Checking PLL Control signals

Checking Points

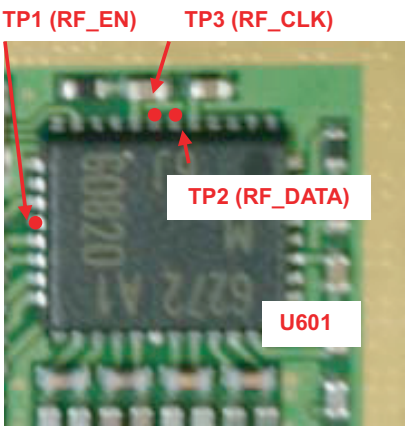
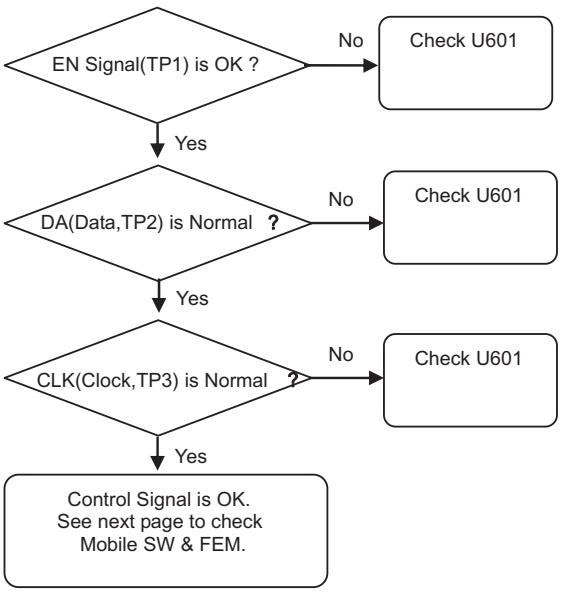


Figure 5. Transceiver

Checking Flow



RF Transceiver Circuit Diagram

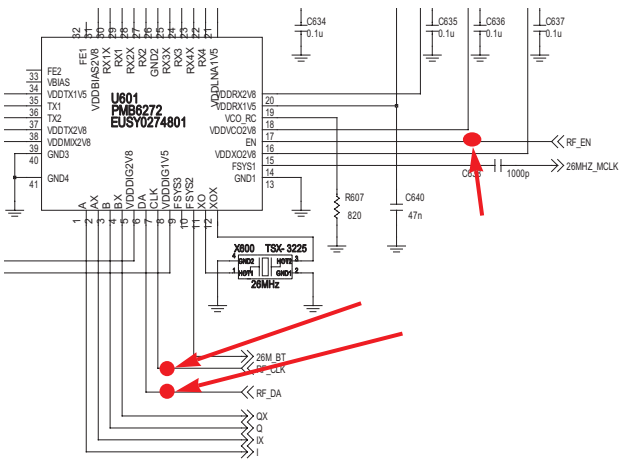


Figure 6. Transceiver Circuit

Waveform

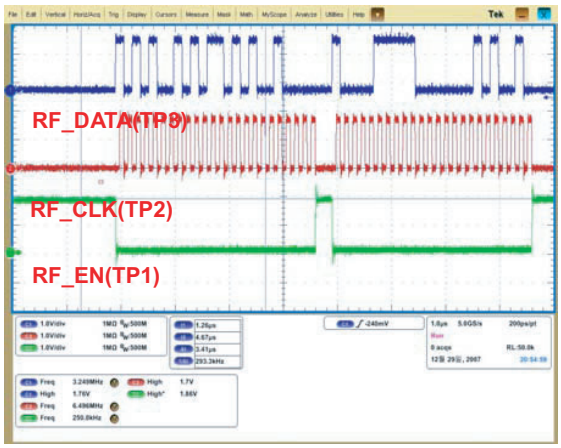


Figure 7. PLL Control Waveform

5.14.3 Checking Mobile SW & FEM

Mobile SW & FEM Circuit Diagram

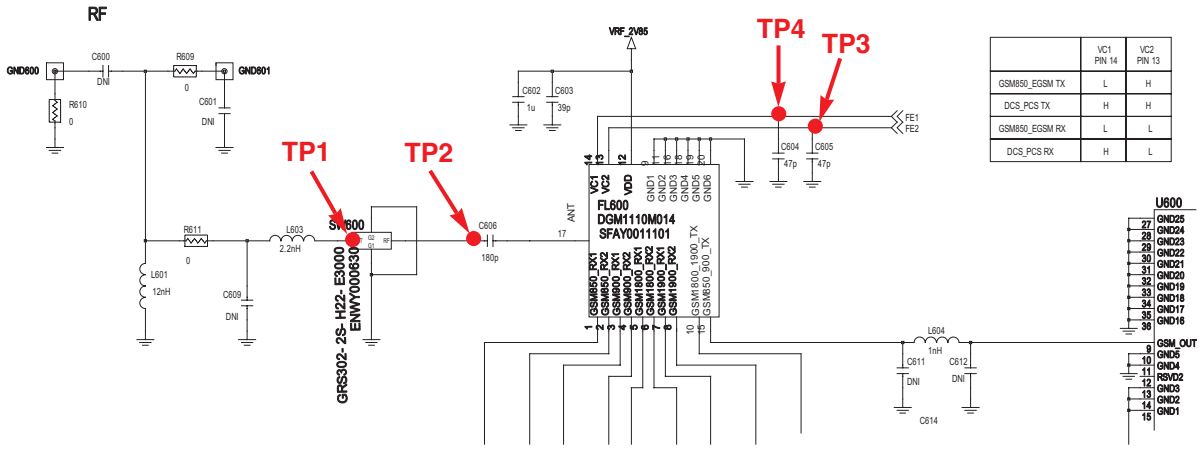


Figure 8. Mobile SW & FEM Circuit

Checking Points

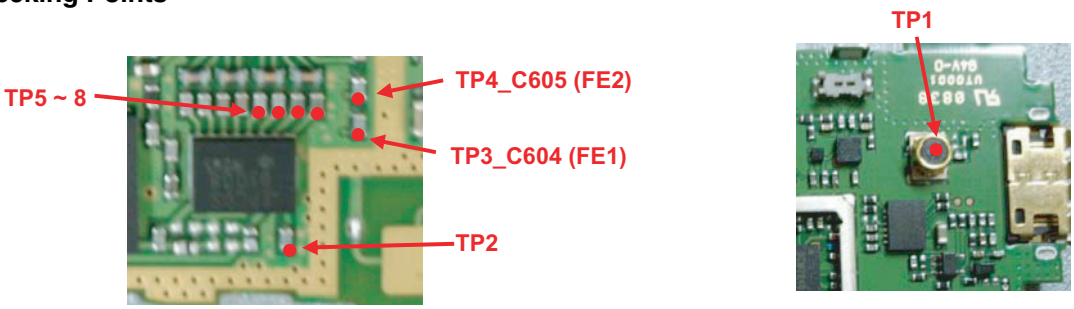
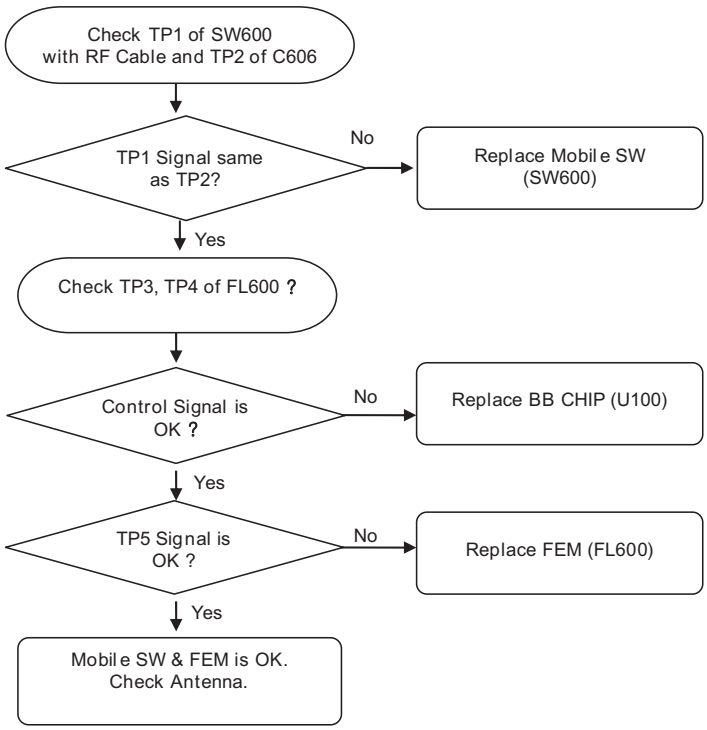


Figure 9. Mobile SW & FEM

	EGSM/GSM850	DCS/PCS
FE1	OFF	ON
FE2	OFF	OFF

Table 2. FEM RX Control Logic

Checking Flow



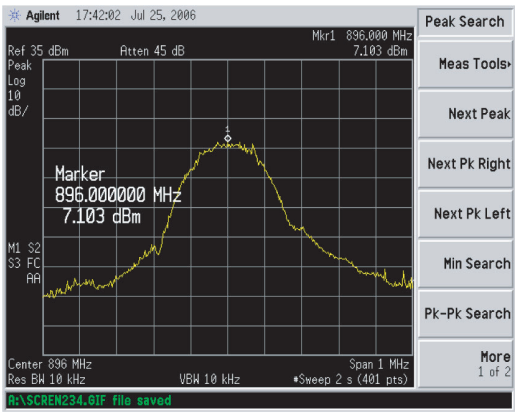


Figure 30 Mobile SW

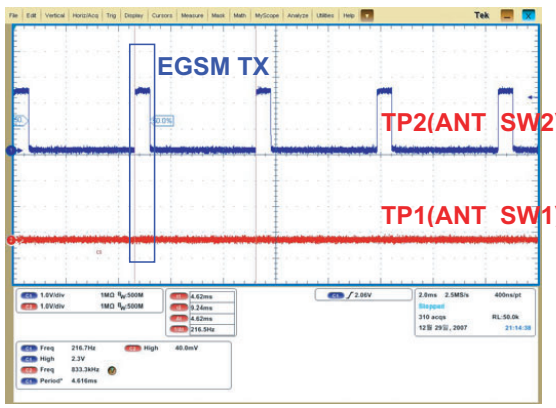


Figure 31 FEM Control Signals

5.14.4 Checking RX I/Q Signals

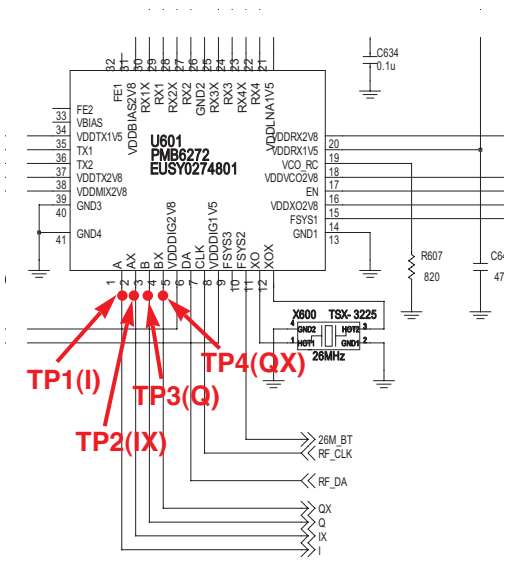
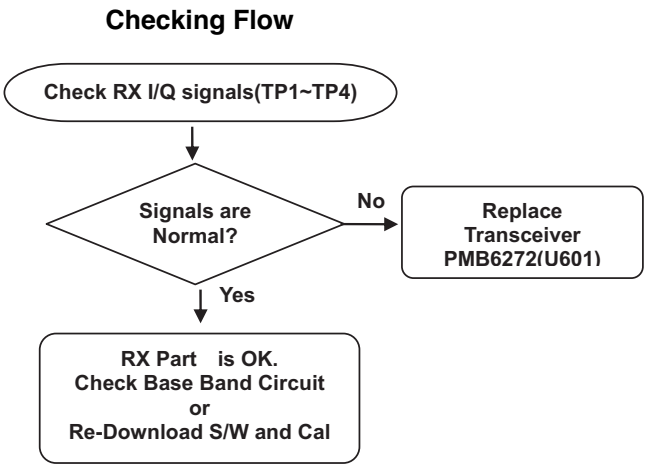


Figure 12. RX I/Q Circuit



Checking Points

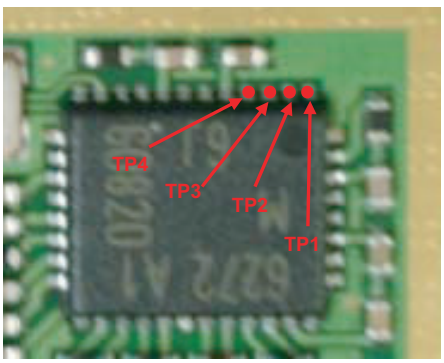


Figure 13. RX I/Q

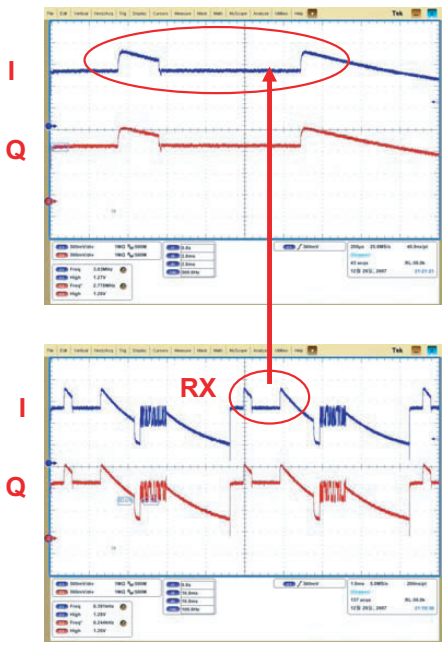
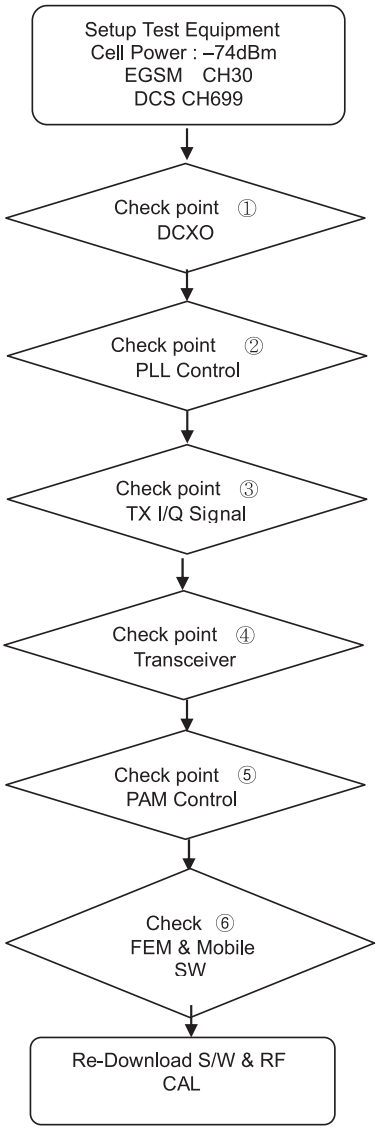


Figure 14. RX I/Q Waveform

5.15 Trouble Shooting of Transmitter Part

Checking Flow



Checking Points

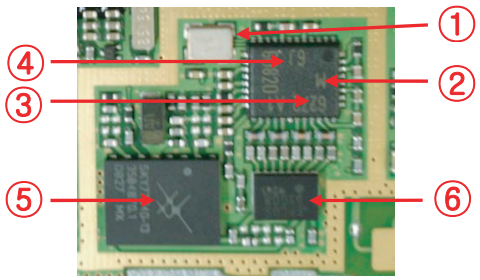


Figure 15. Main PCB

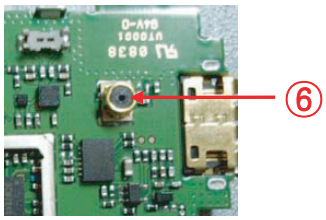


Figure 16. Main PCB

5.15.1. Checking VCTCXO Circuit

See RX Part “1. Checking DCXO Circuit”

5.15.2. Checking PLL Control Signal

See RX Part “2. Checking PLL Control Signal”

5.15.3. Checking TX I/Q Signals

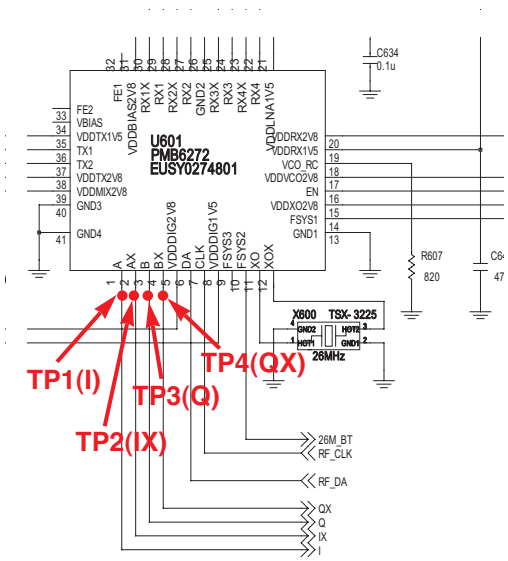
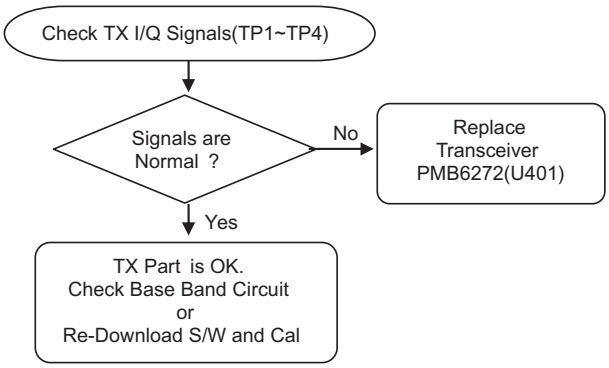


Figure 17. TX I/Q

Checking Flow



Checking Points

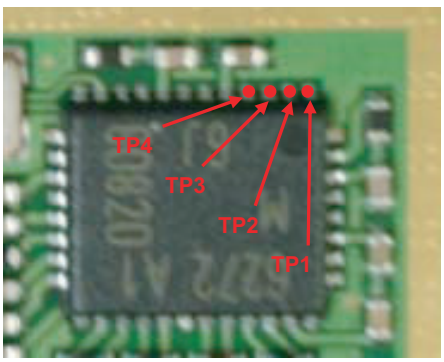


Figure 18. TX I/Q

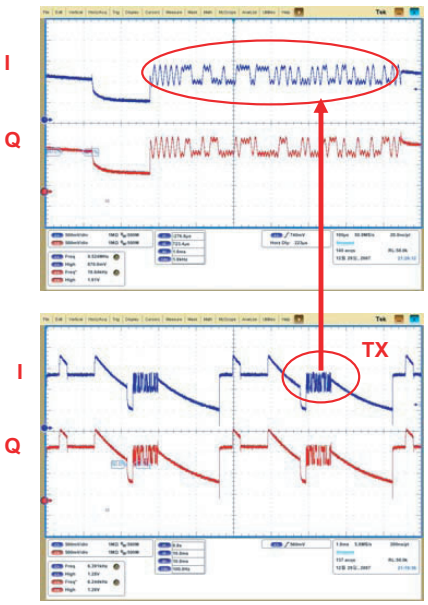


Figure 19. TX I/Q Waveform

5.15.4 Checking Transceiver Output Signals

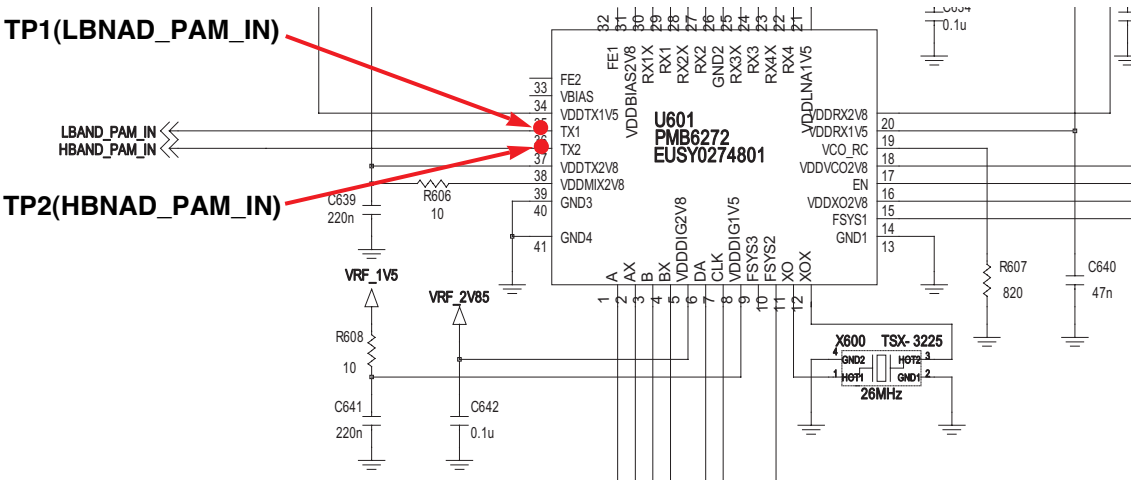


Figure 20. Transceiver Output Circuit

Checking Points

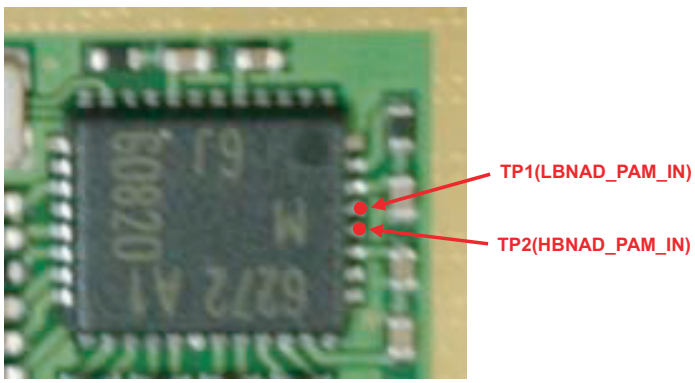
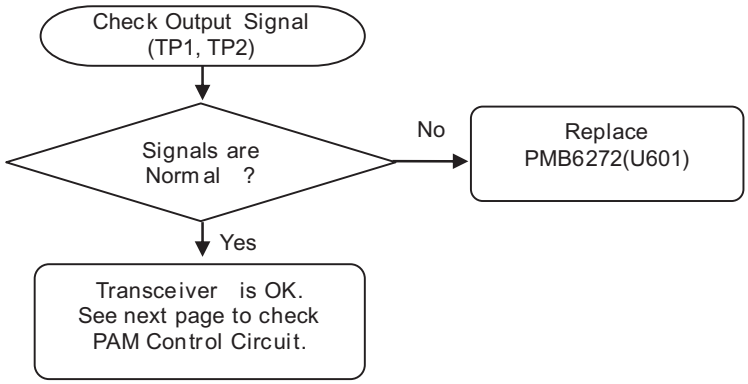


Figure 21. Transceiver Output

MODE	Transceiver Output
GSMK	Fixed
8PSK	Ramp Burst Control

Table 3. Transceiver Output Operation

Checking Flow



LBAND_PAM_IN (MODE: GMSK) : TP1

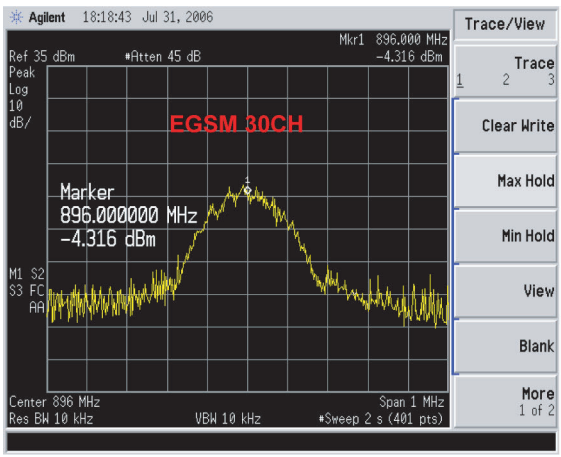


Figure 22. Transceiver Output (GMSK)

LBAND_PAM_IN (MODE: 8PSK) : TP1

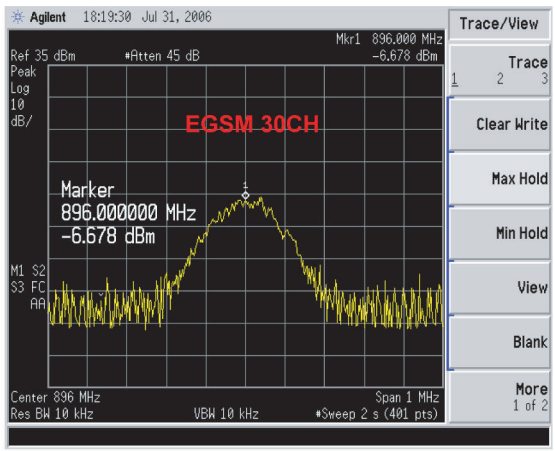


Figure 23. Transceiver Output (8PSK)

5.15.5 Checking PAM Control Signals

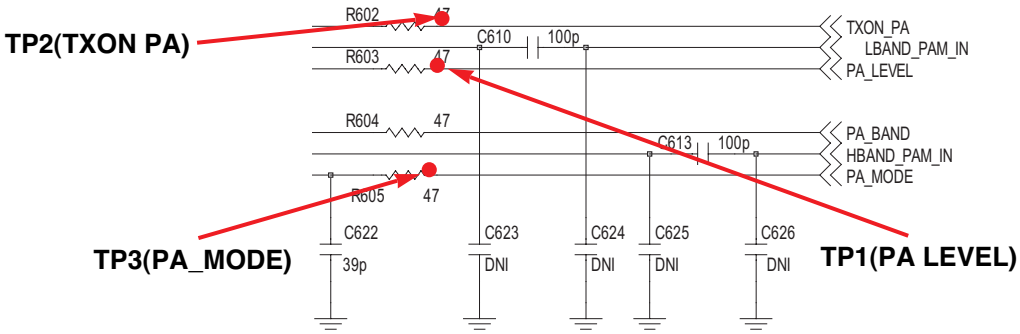


Figure 24. PAM Control Signals

Checking Points

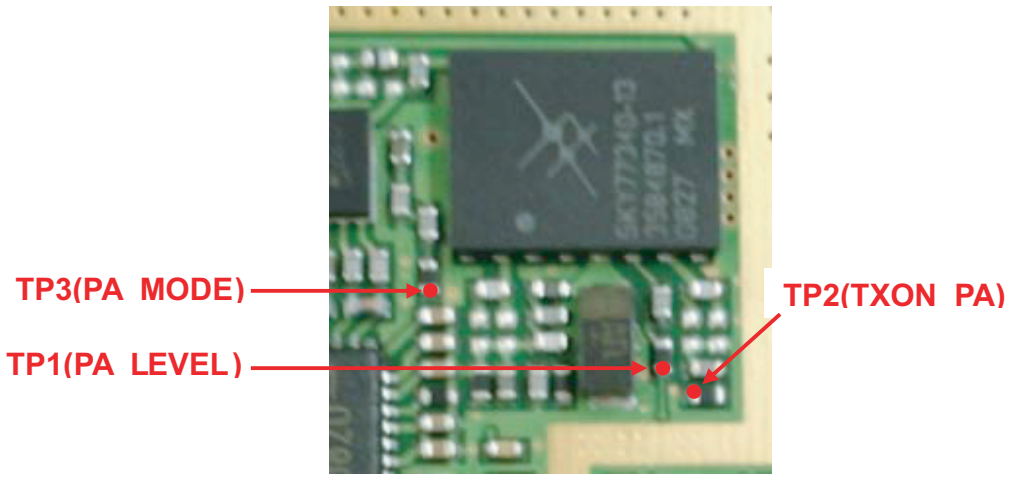


Figure 25. Transceiver Output

Table 4. PAM Mode Operation

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

Checking Flow

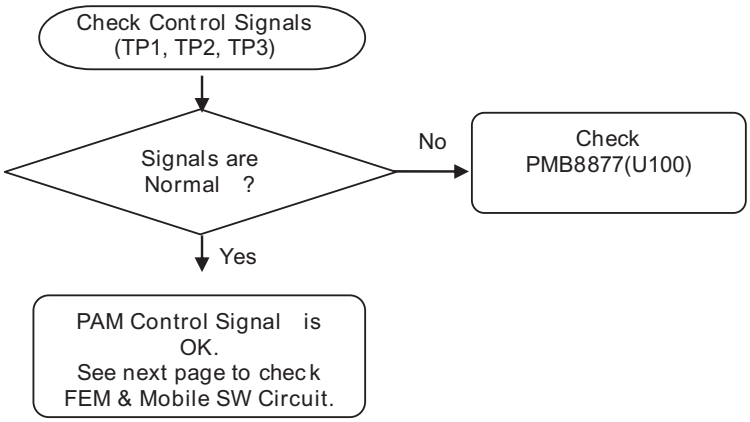


Figure 26. GSMK Control Signal

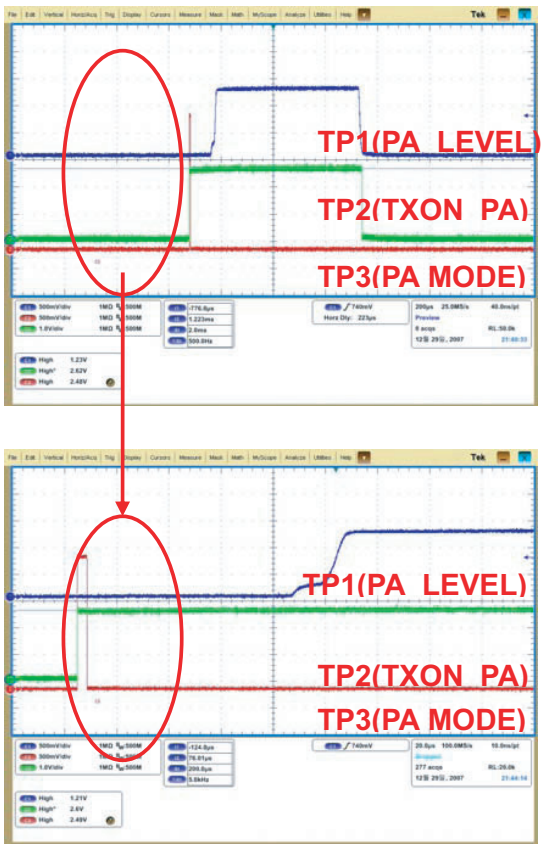
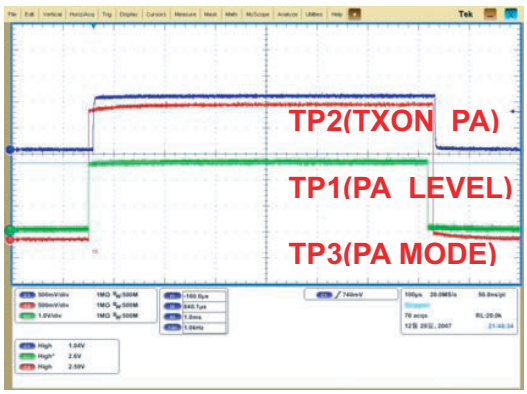


Figure 27. 8PSK Control Signal



TP3(PA MODE) : R605
TP1(PA_LEVEL) : R403
TP2(TXON_PA) : R602

5.15.6 Checking FEM & Mobile SW

Mobile SW & FEM Circuit Diagram

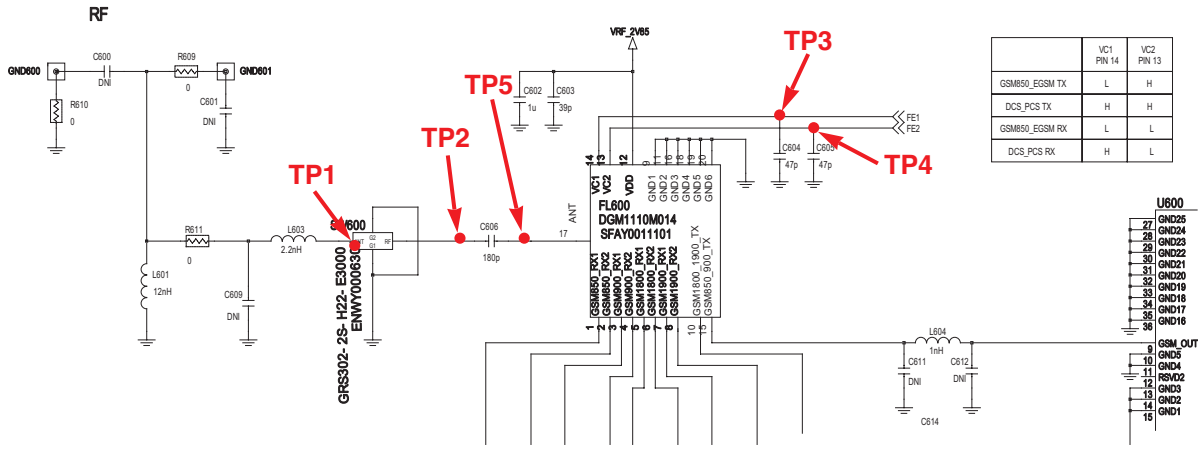


Figure 28. Mobile SW & FEM Circuit

Checking Points

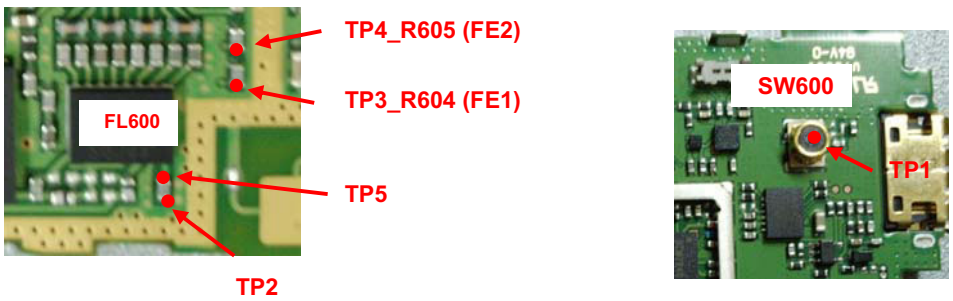
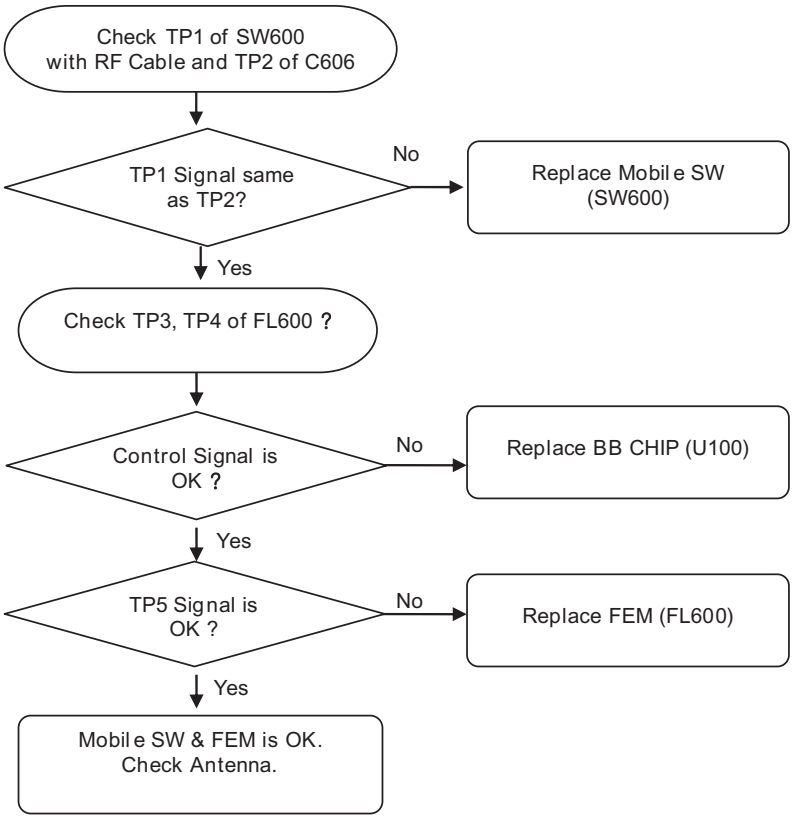


Figure 29 Mobile SW & FEM

	EGSM/GSM850	DCS/PCS
FE1	OFF	ON
FE2	ON	ON

Table 5. FEM TX Control Logic

Checking Flow



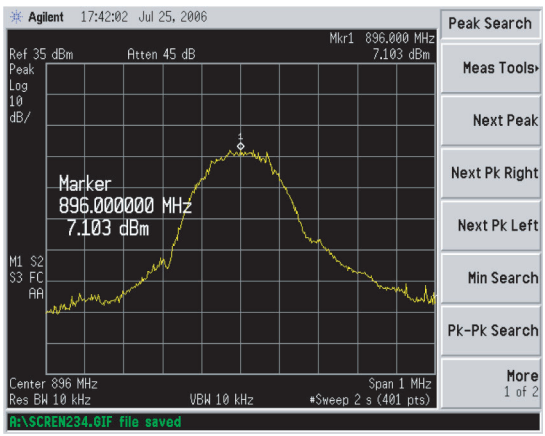


Figure 30 Mobile SW

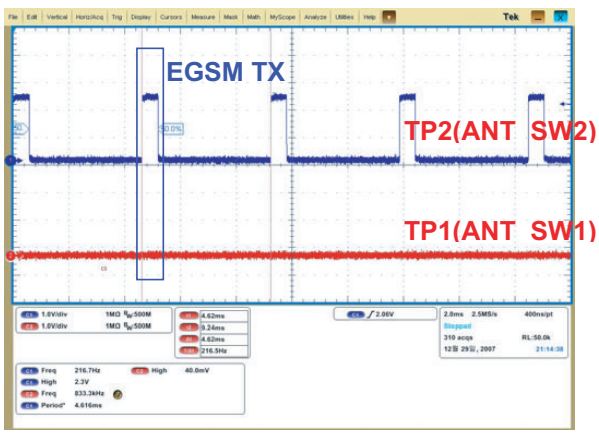
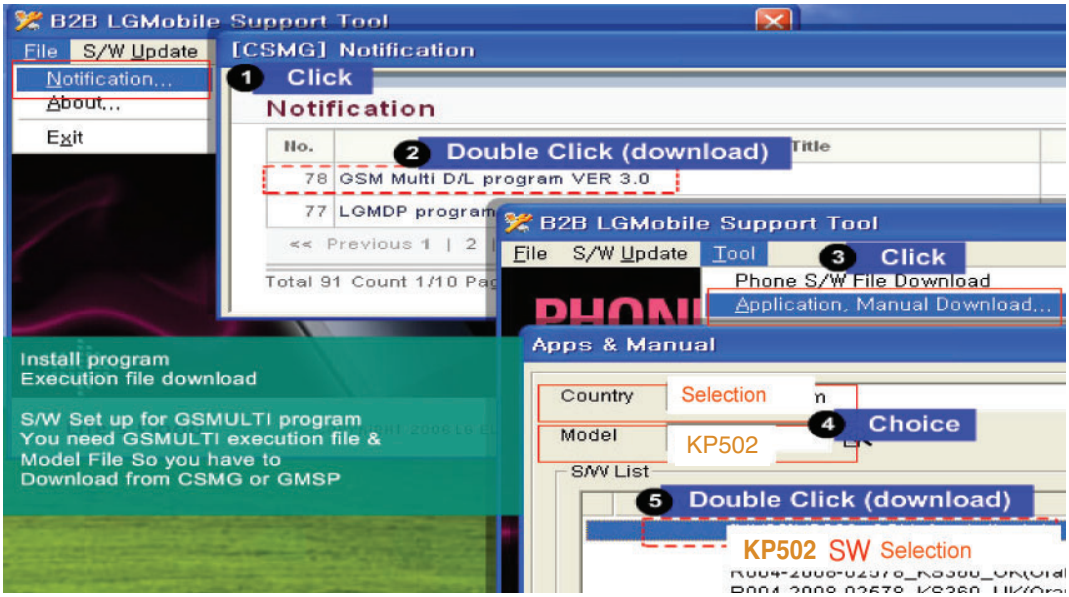
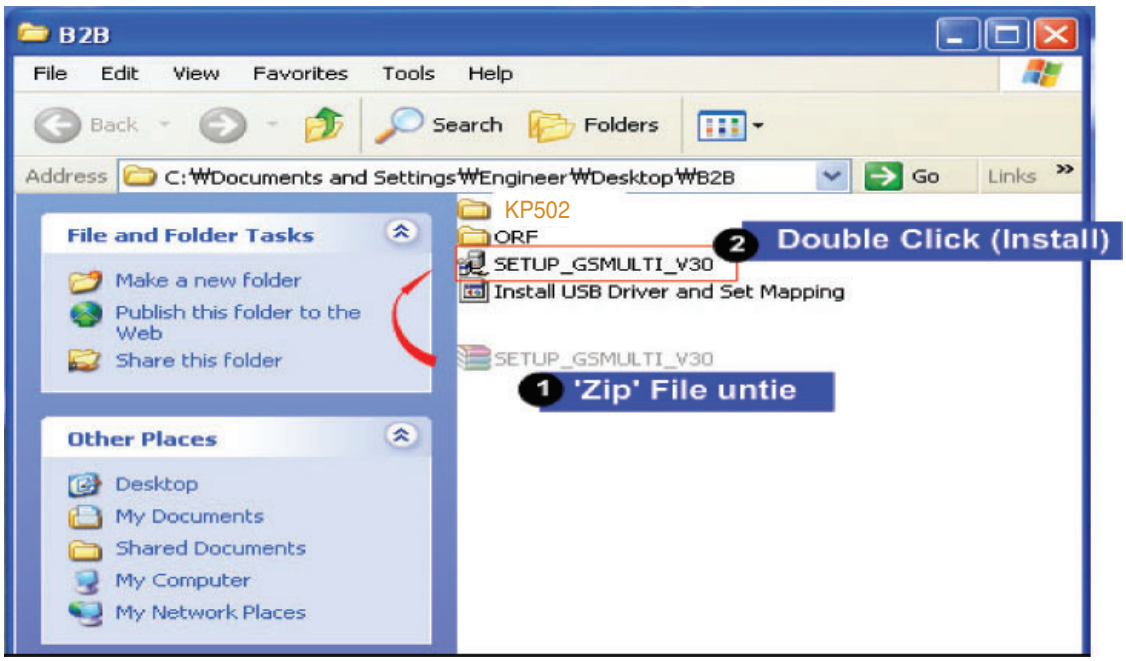


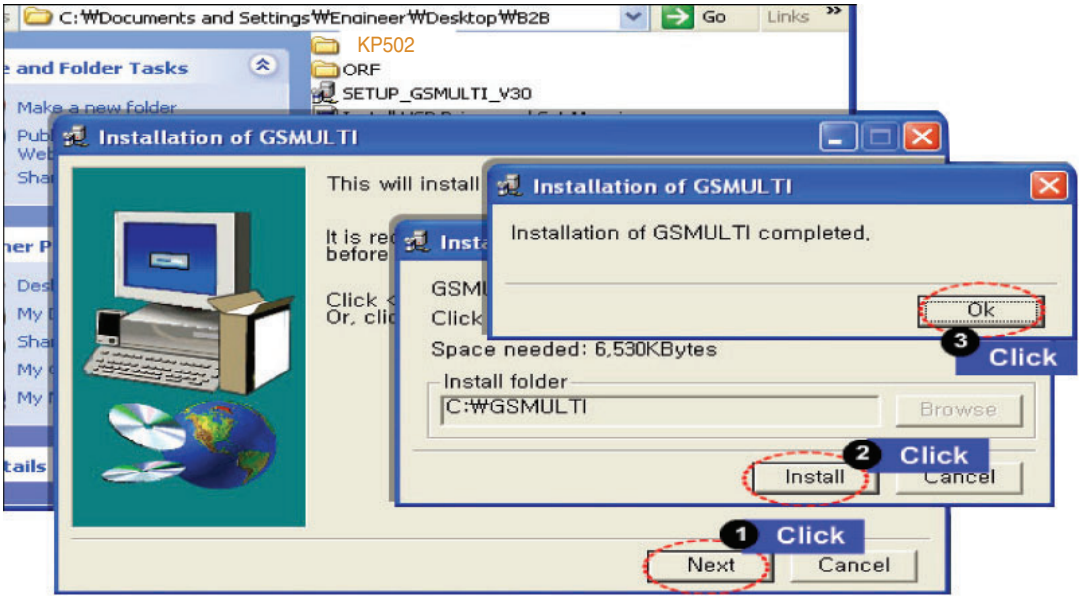
Figure 31 FEM Control Signals

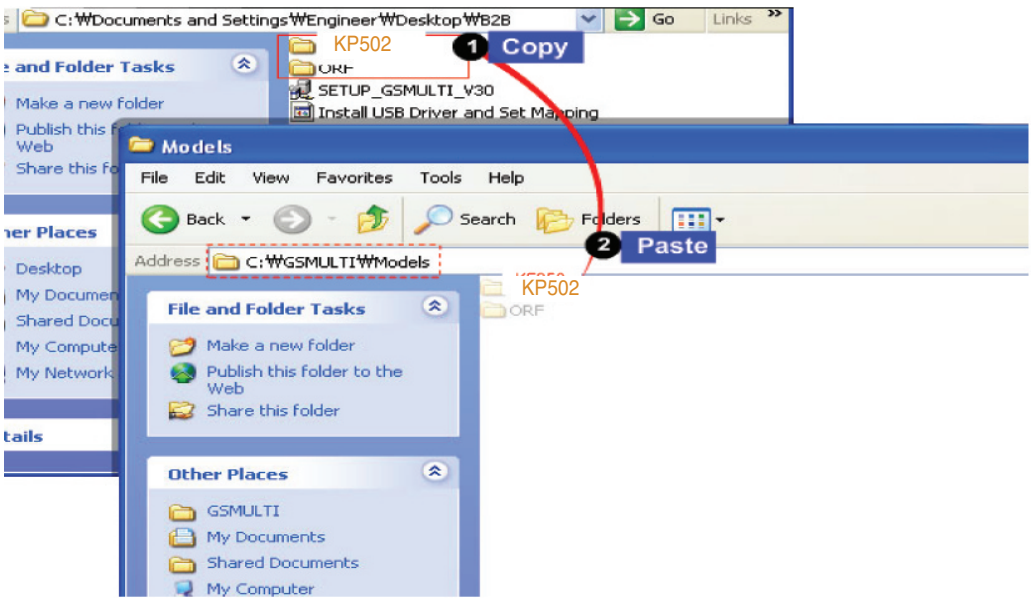
6. DOWNLOAD & S/W UPGRADE

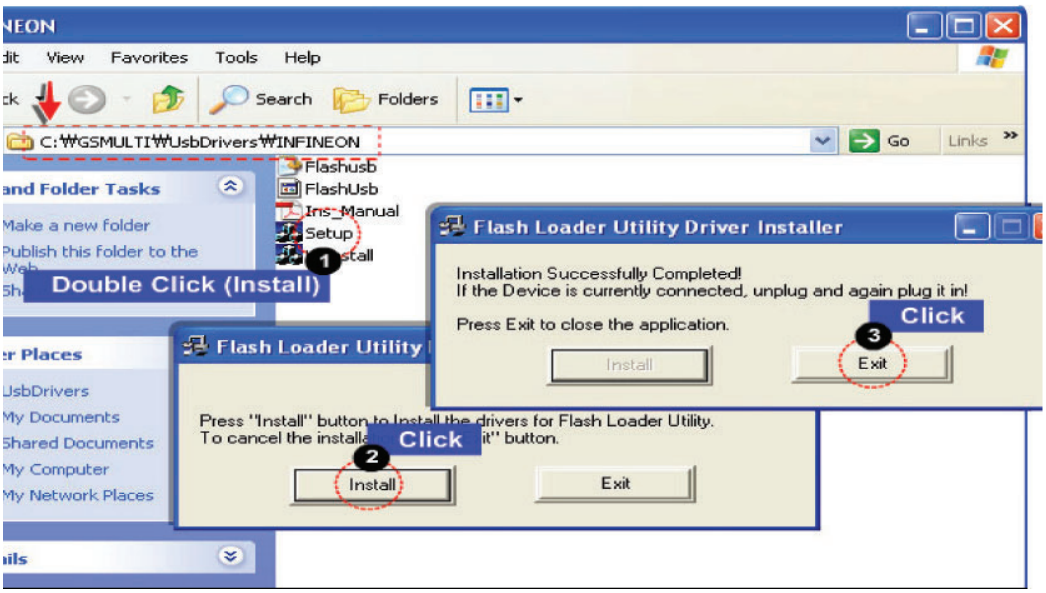


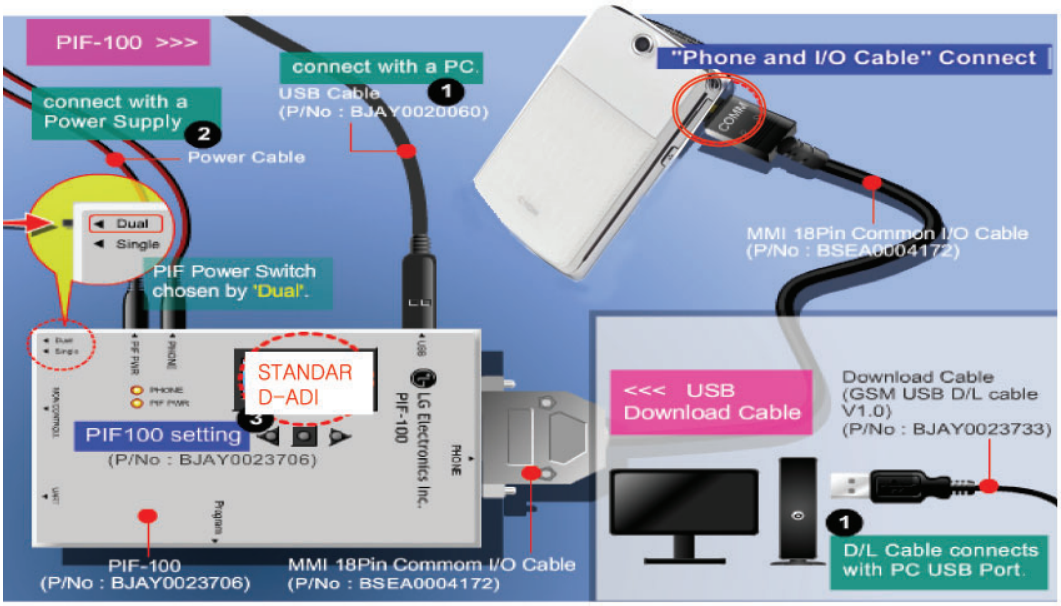


6. DOWNLOAD & S/W UPGRADE

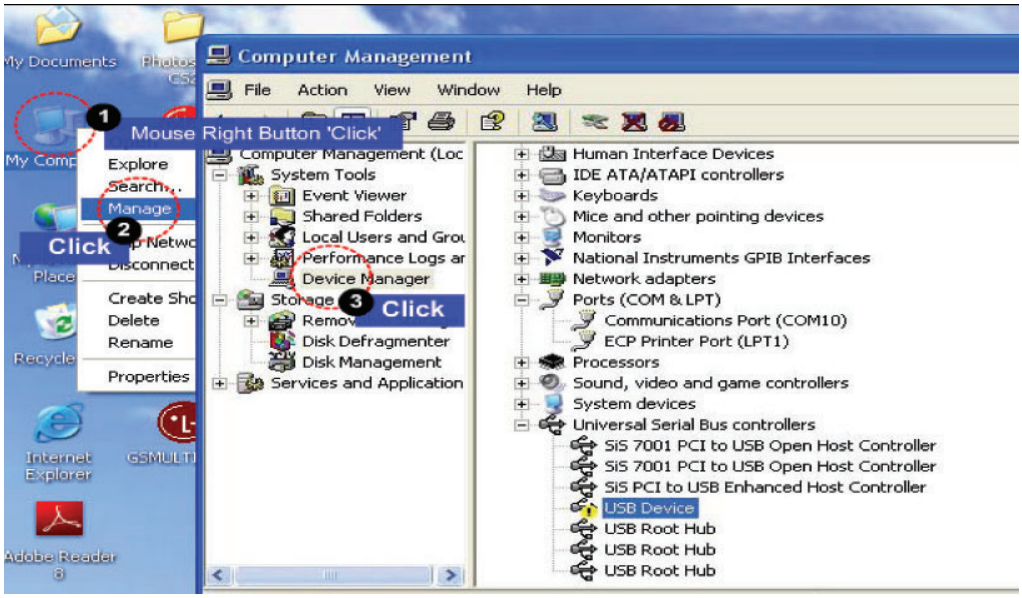


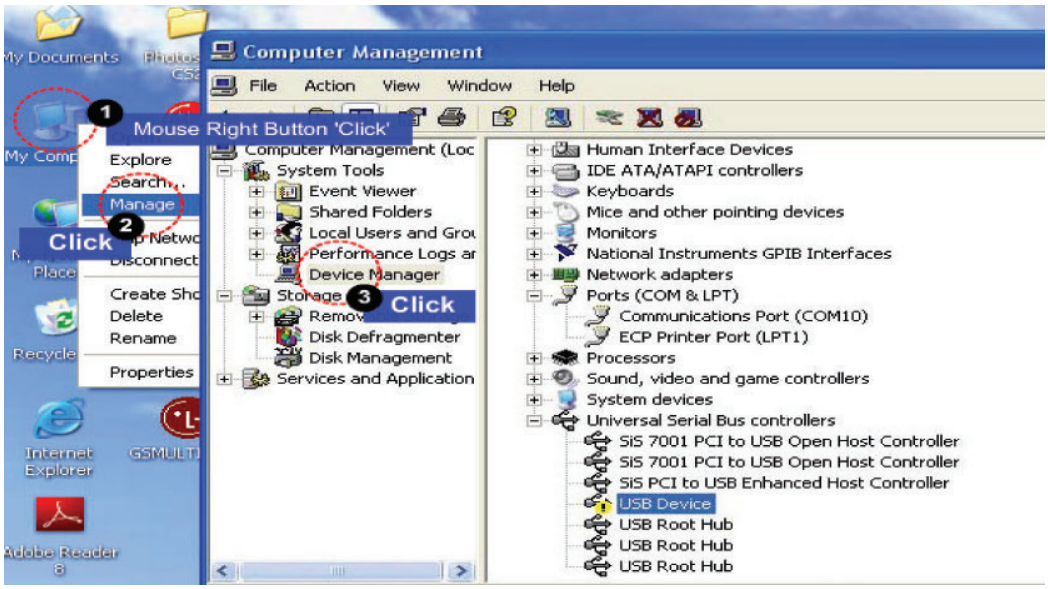


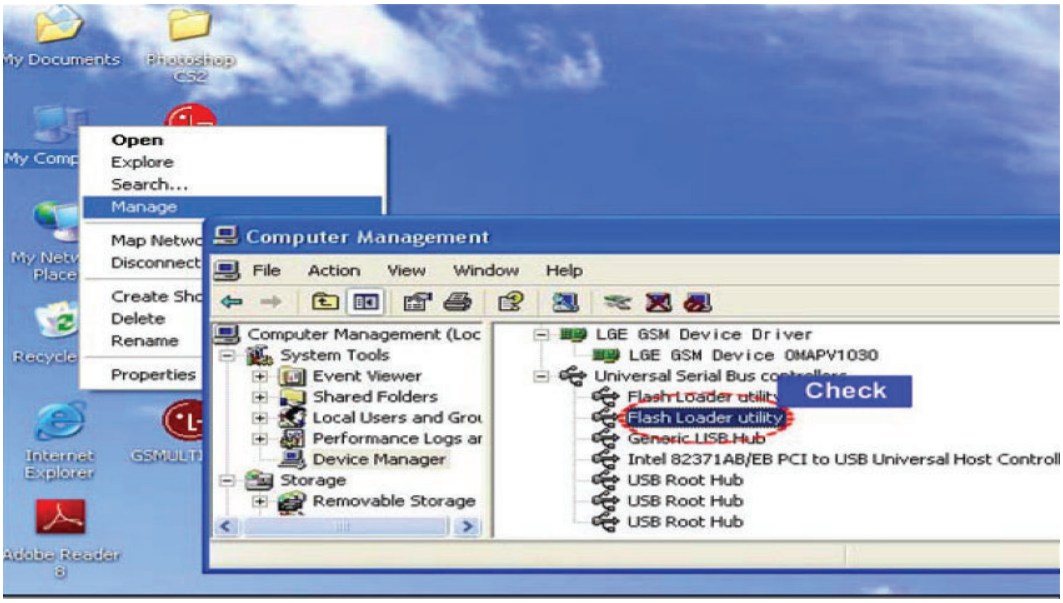




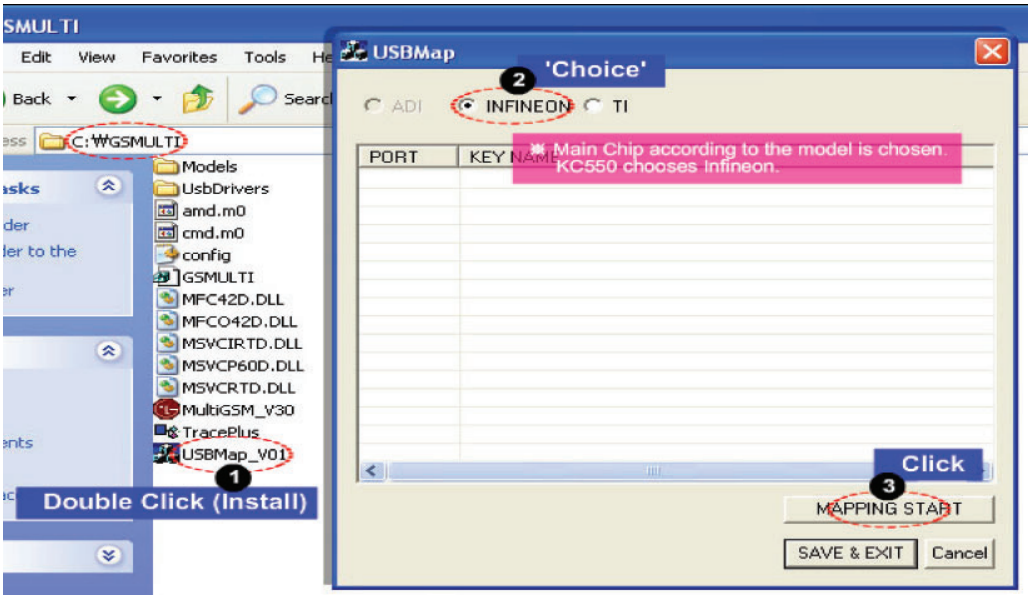
6. DOWNLOAD & S/W UPGRADE

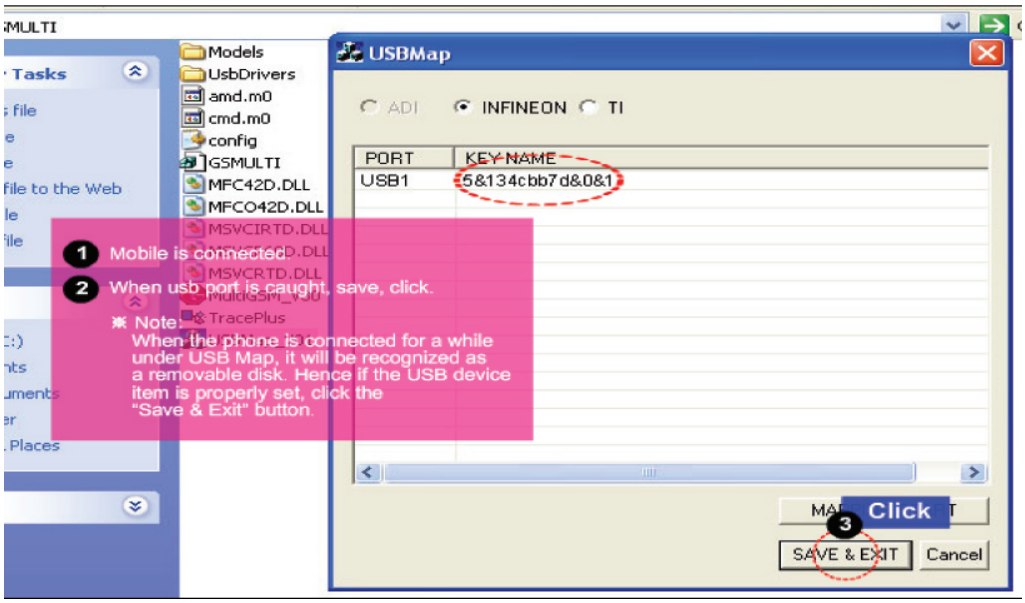




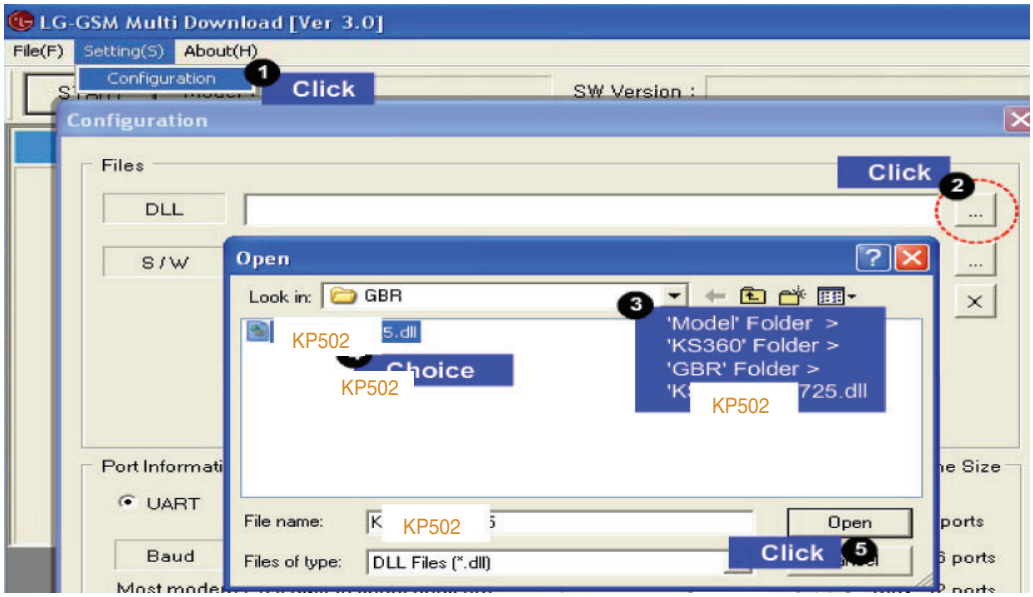


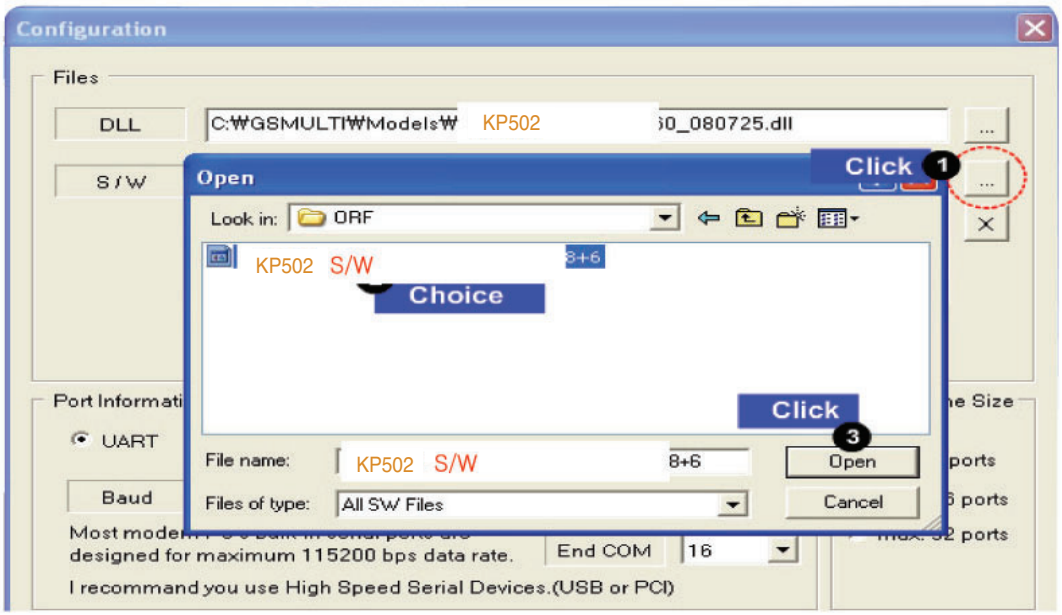
6. DOWNLOAD & S/W UPGRADE

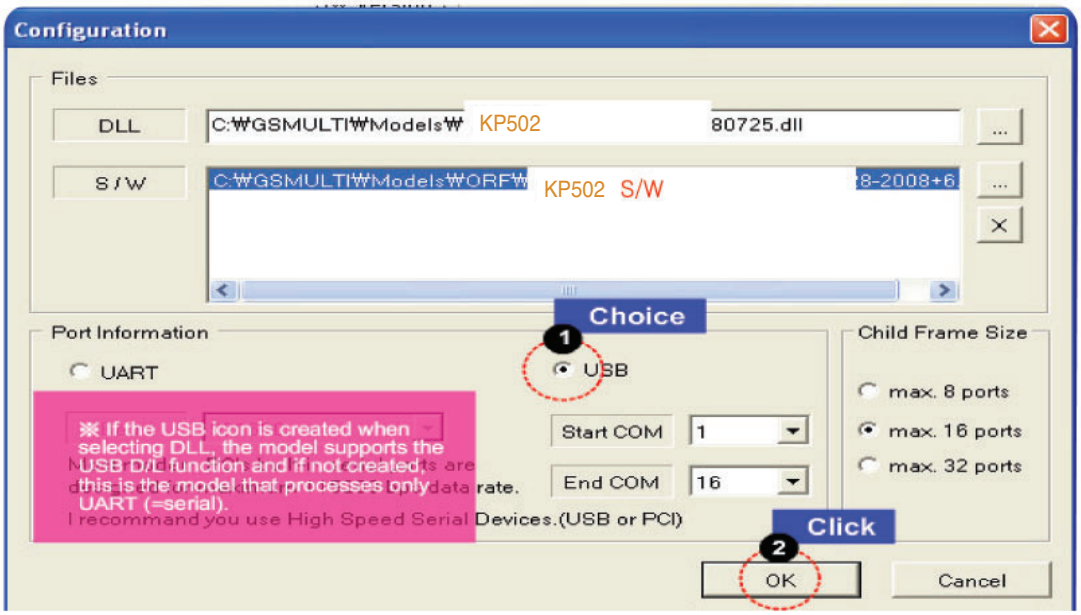


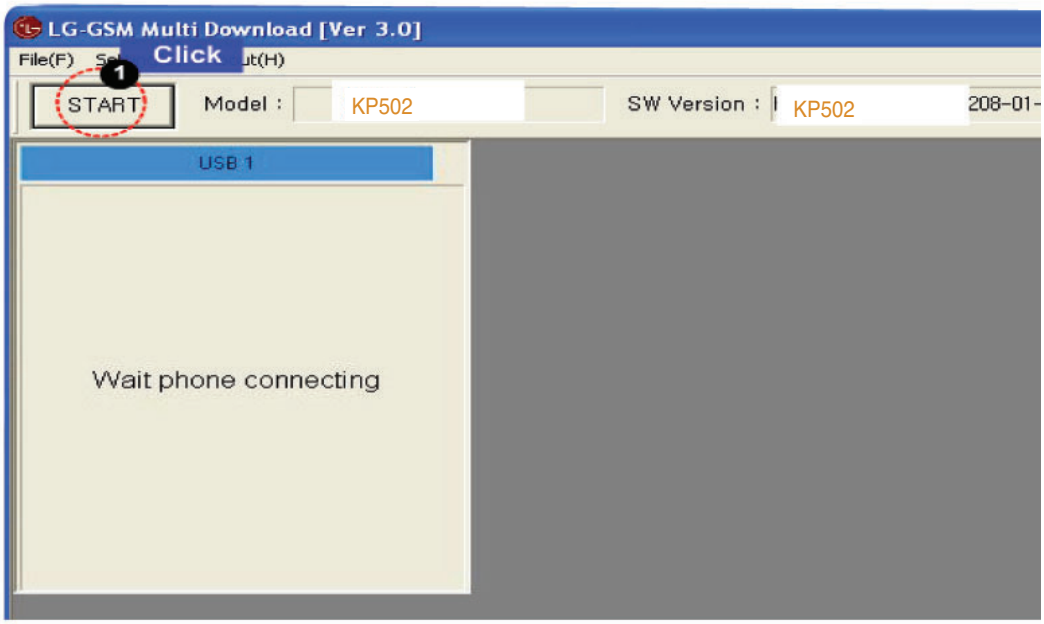


6. DOWNLOAD & S/W UPGRADE

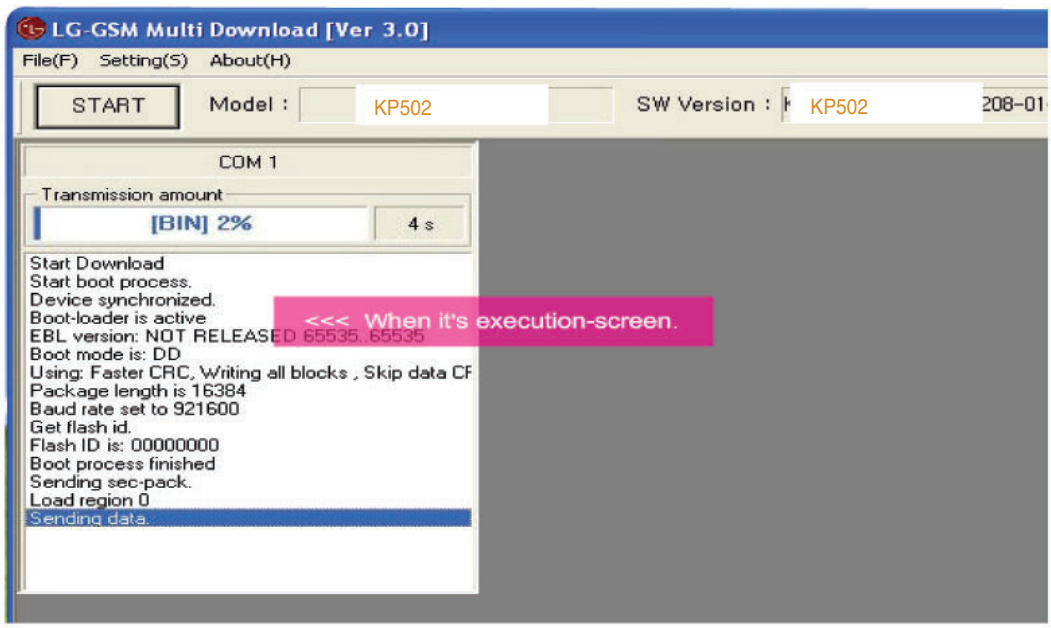


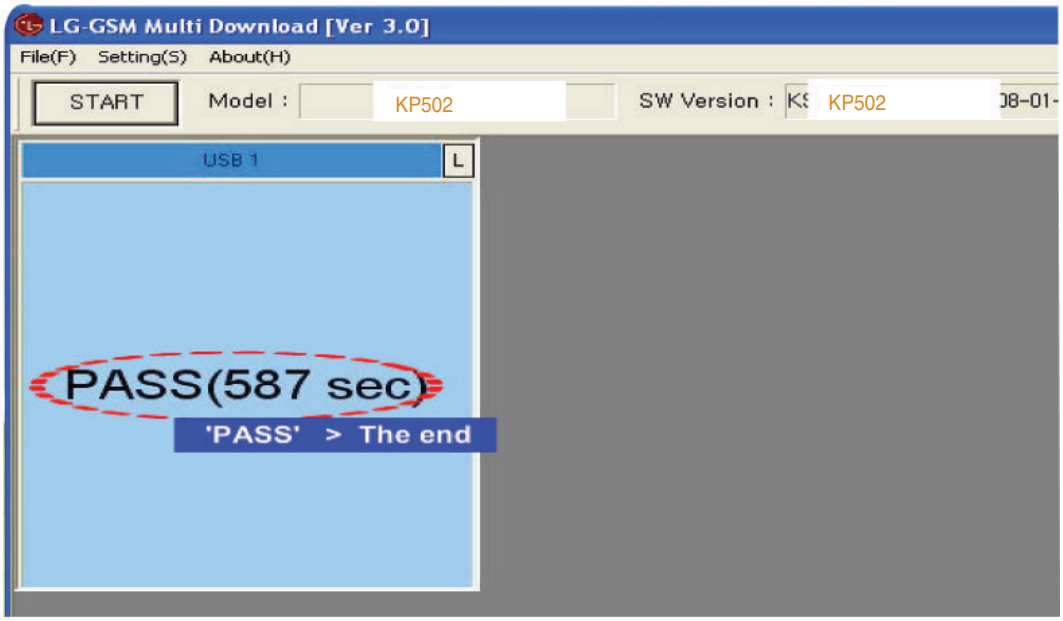




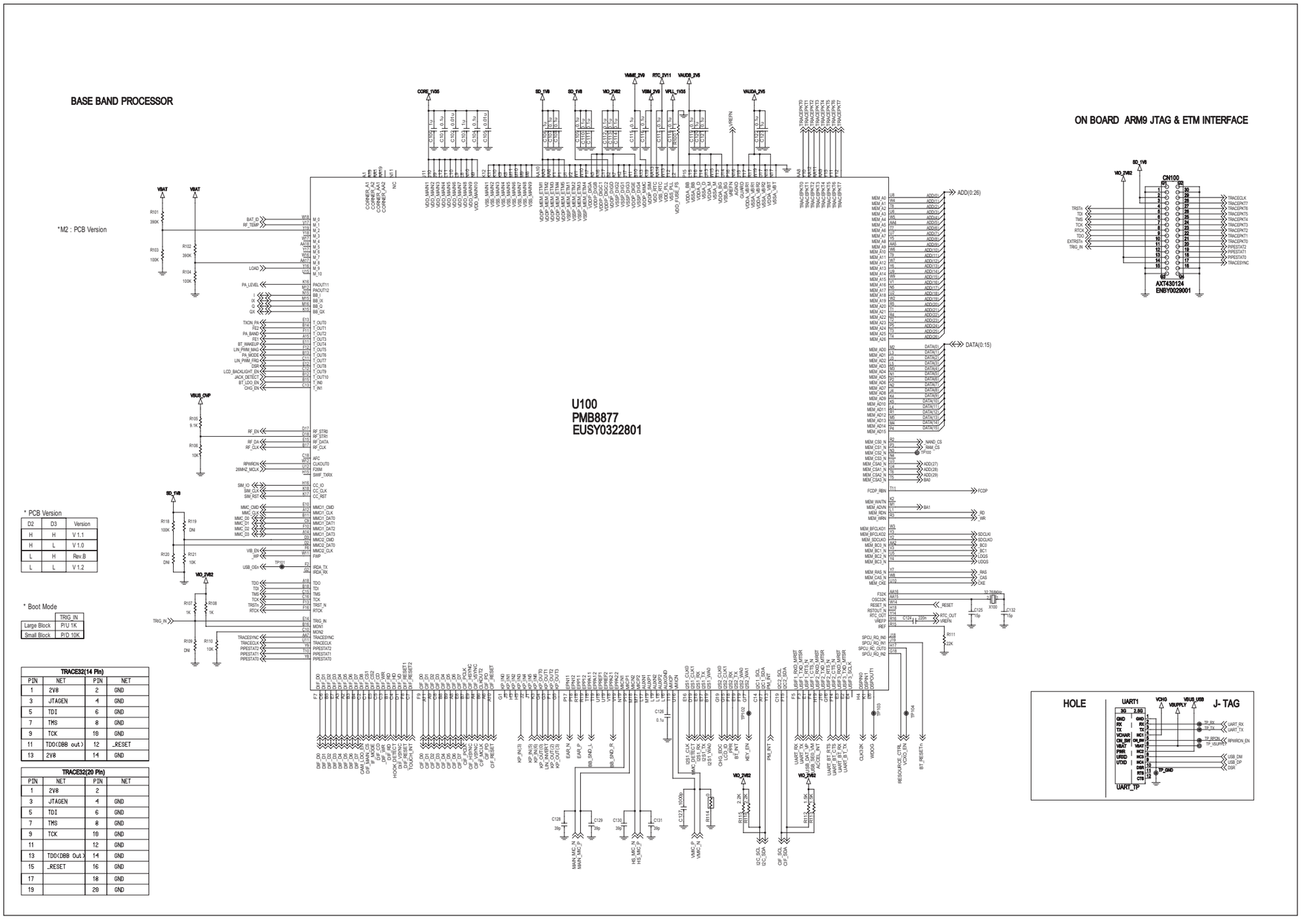


6. DOWNLOAD & S/W UPGRADE



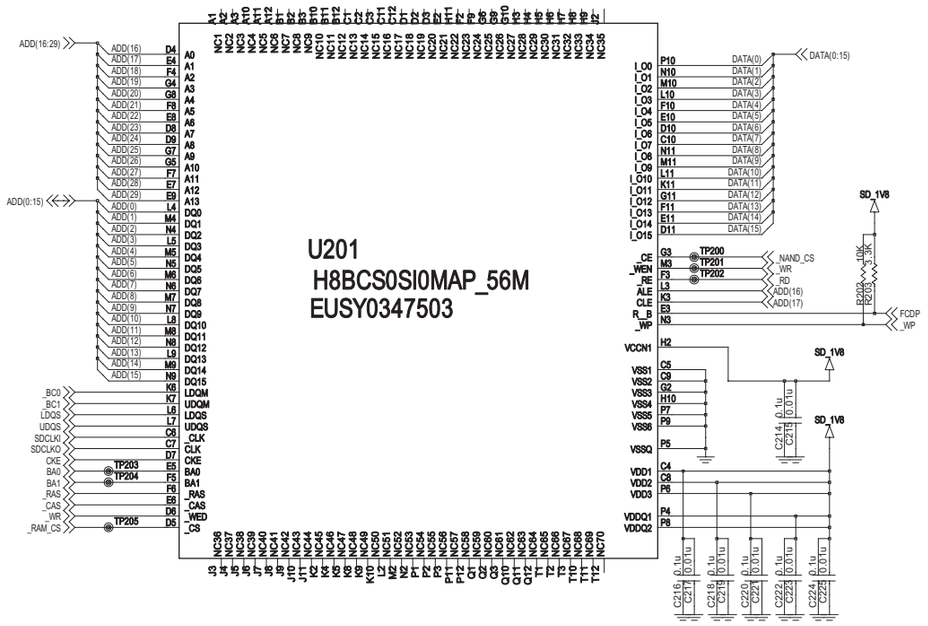


7. CIRCUIT DIAGRAM

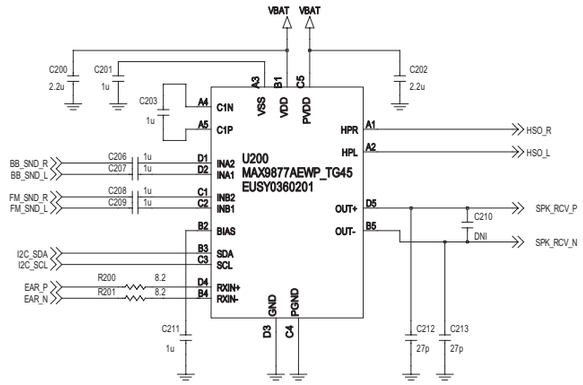


7. CIRCUIT DIAGRAM

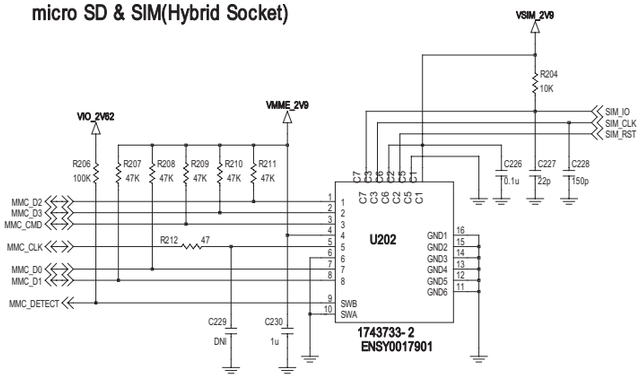
Large Block Memory
(2048Mbit NAND / 1024 Mbit DDR SDRAM, 1.8V I/O)



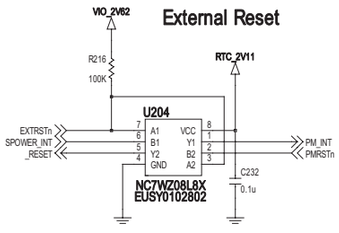
AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR



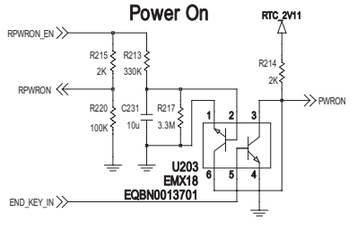
micro SD & SIM(Hybrid Socket)

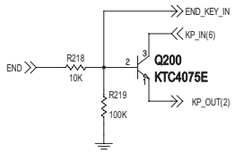


External Reset

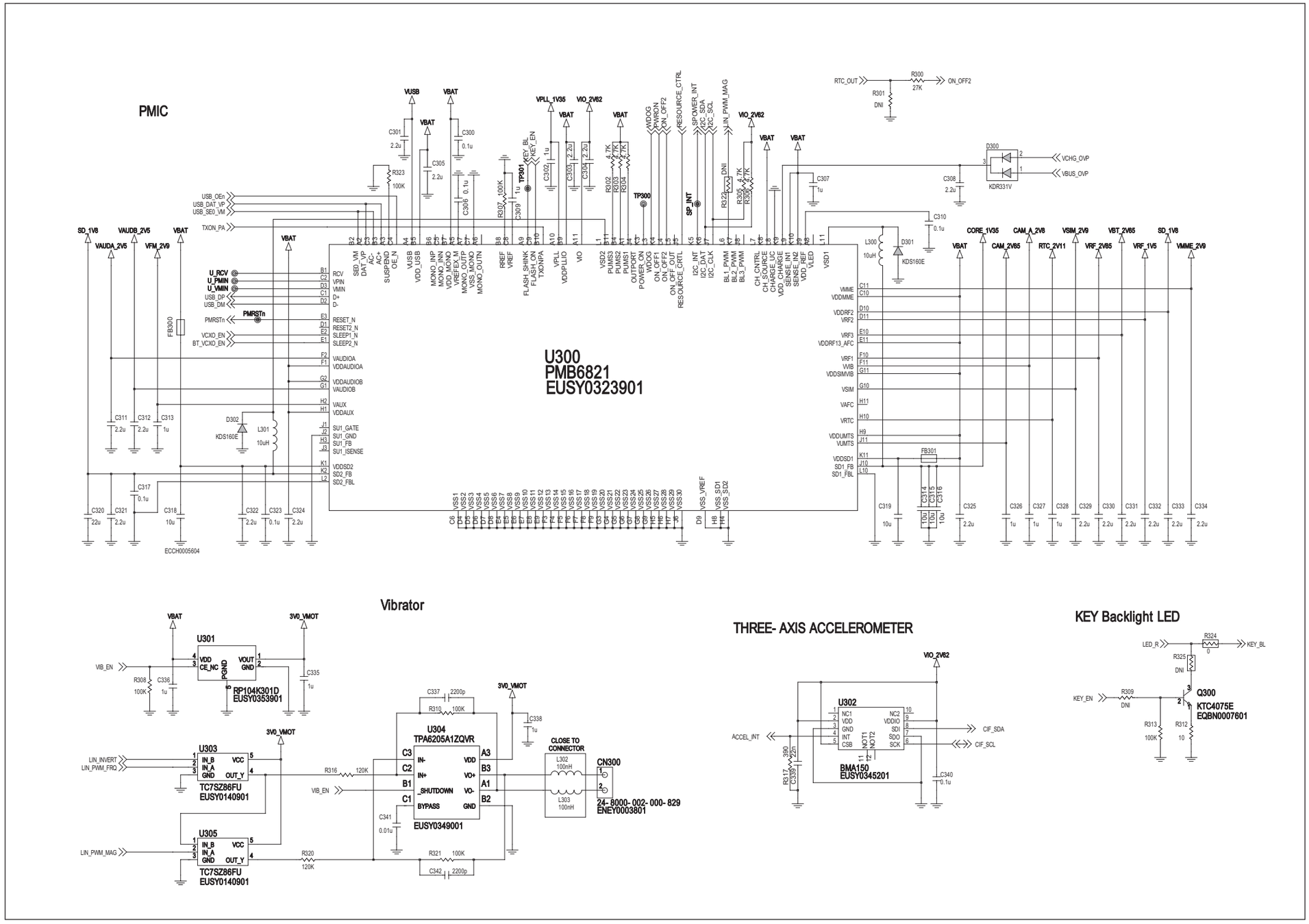


Power On

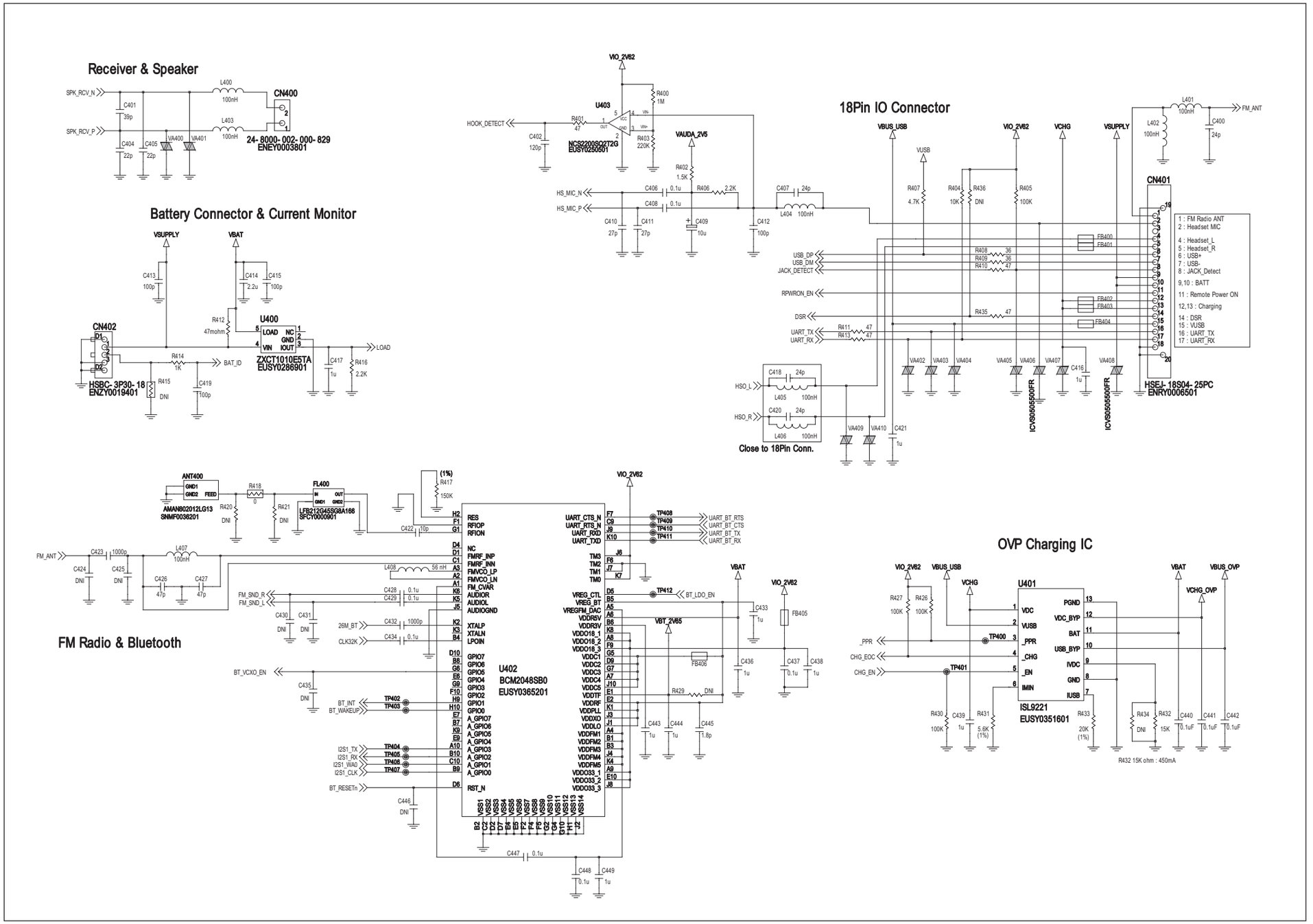




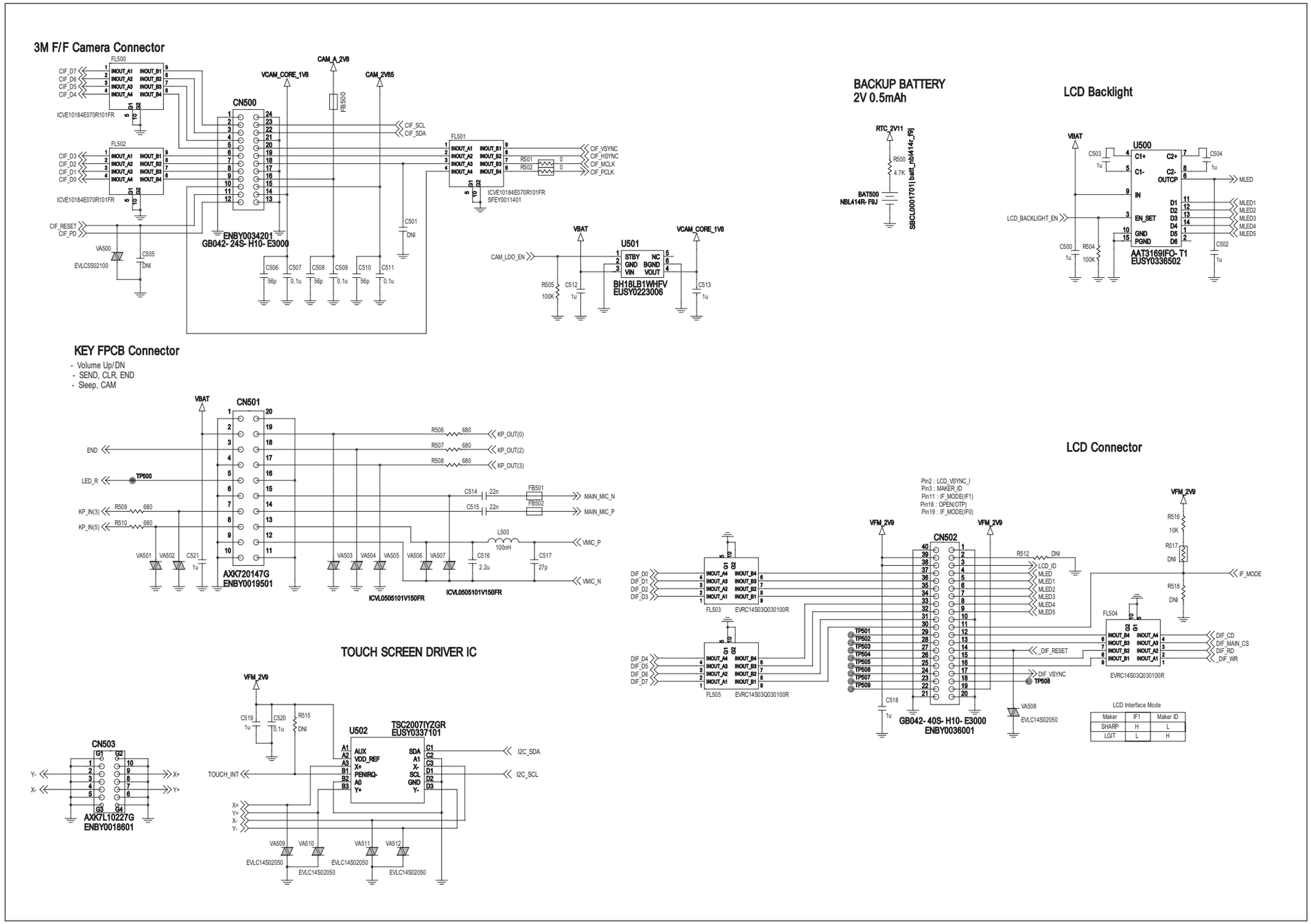
7. CIRCUIT DIAGRAM



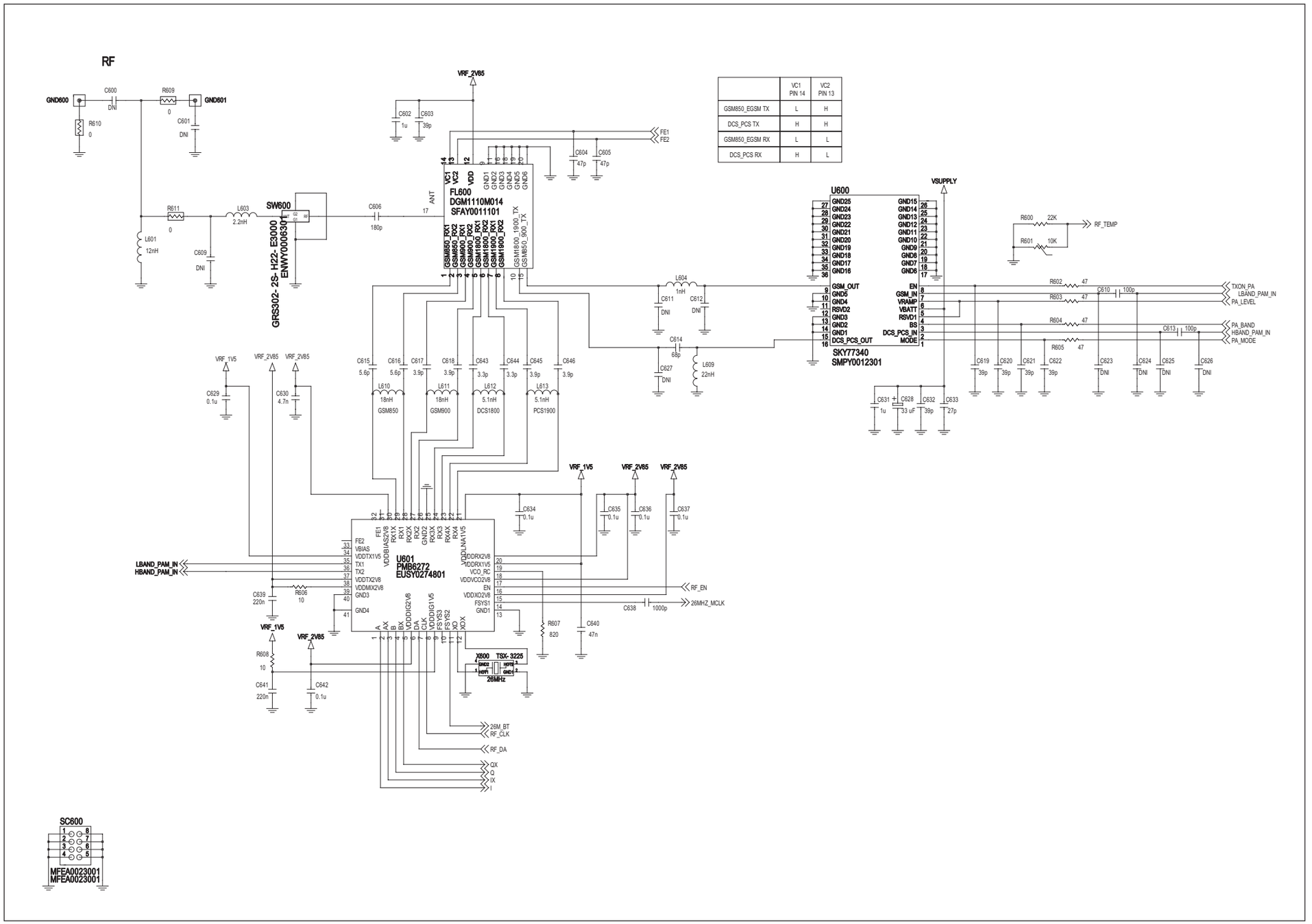
7. CIRCUIT DIAGRAM



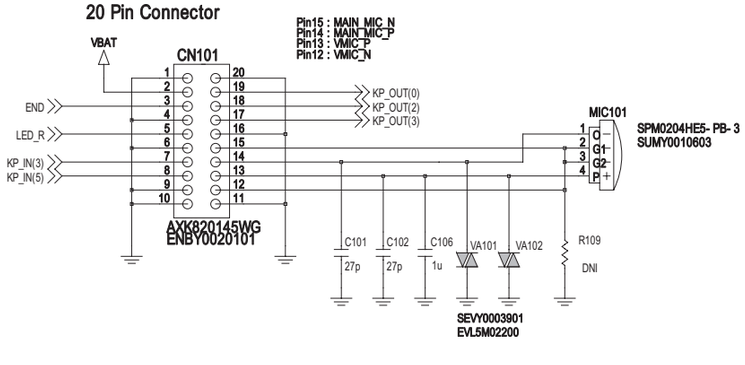
7. CIRCUIT DIAGRAM

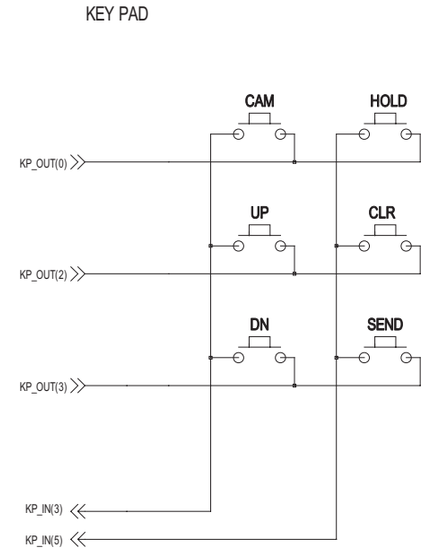


7. CIRCUIT DIAGRAM

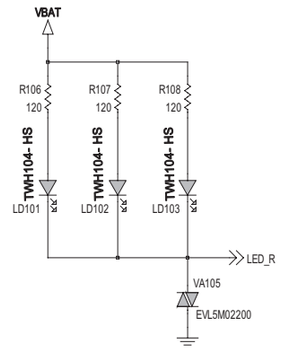


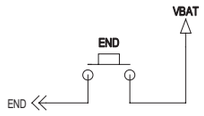
7. CIRCUIT DIAGRAM



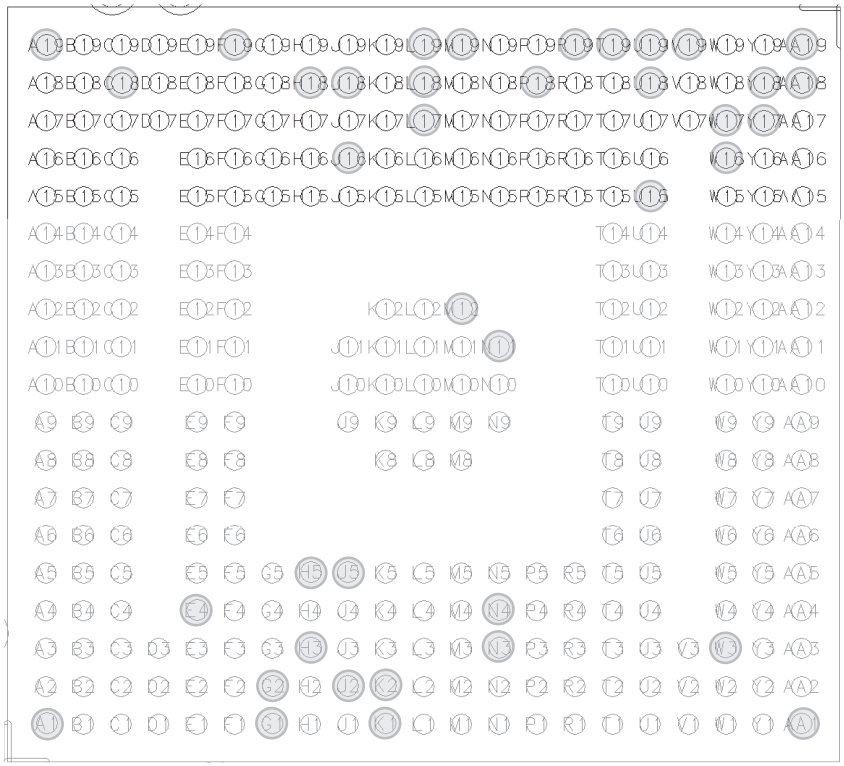


KEY LED





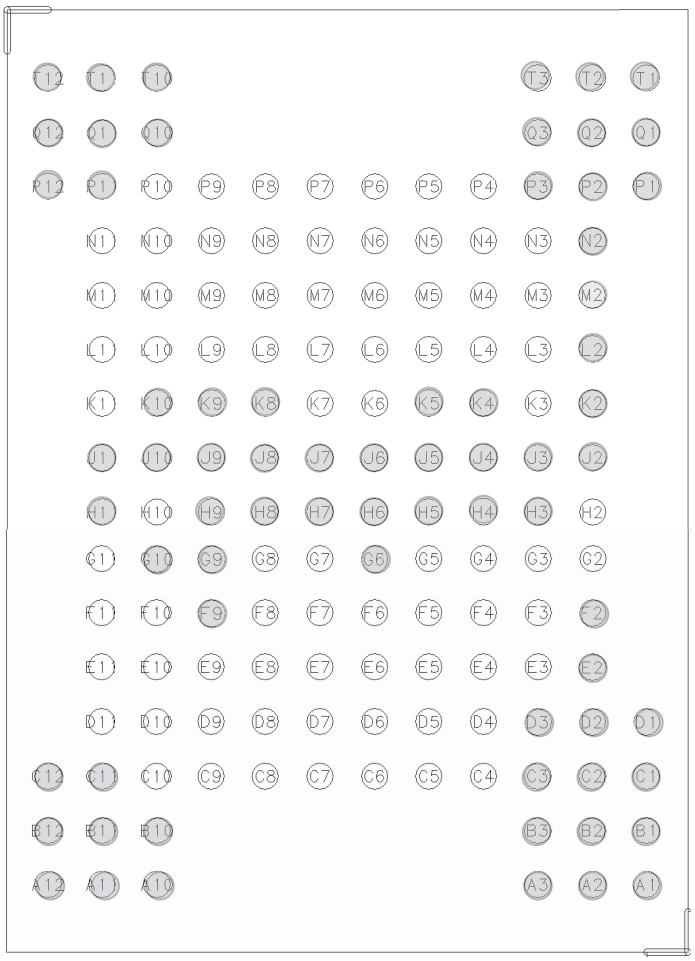
8. BGM Pin Map



○ : **Use**
○ : **Not Use**

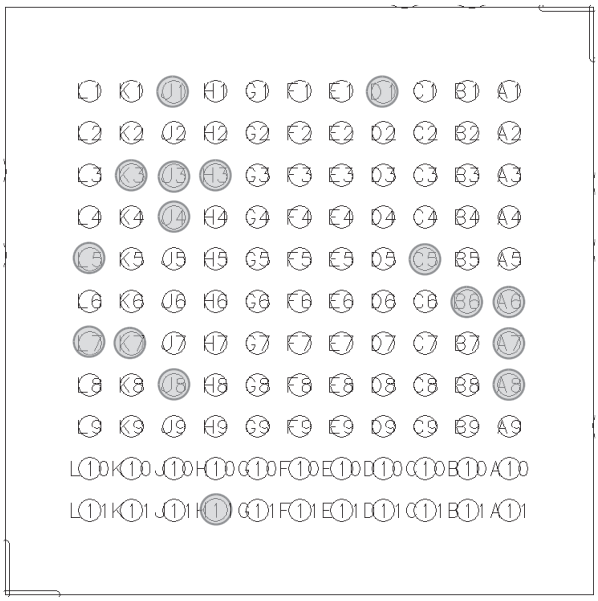
U100(PMB8877, EUSY0322801)

8. BGM Pin Map



○ : **Use**
○ : **Not Use**

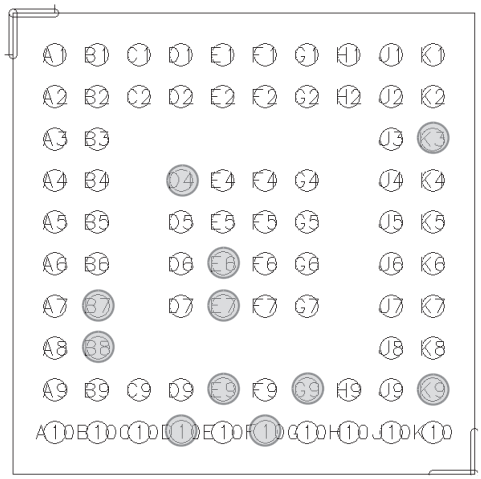
U201(H8BCS0SI0MAP_56M, EUSY0347503)



○ : **Use**
○ : **Not Use**

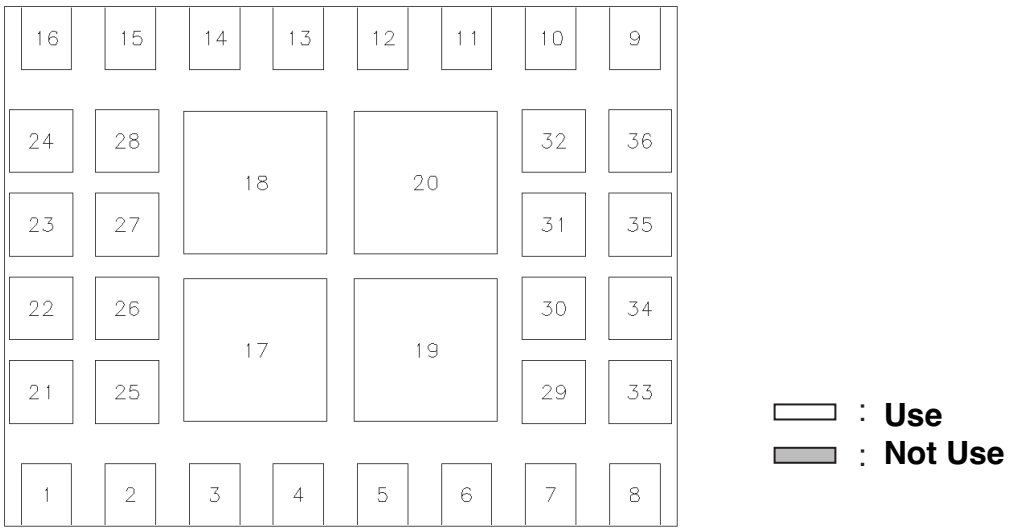
U300(PMB6821, EUSY0323901)

8. BGM Pin Map



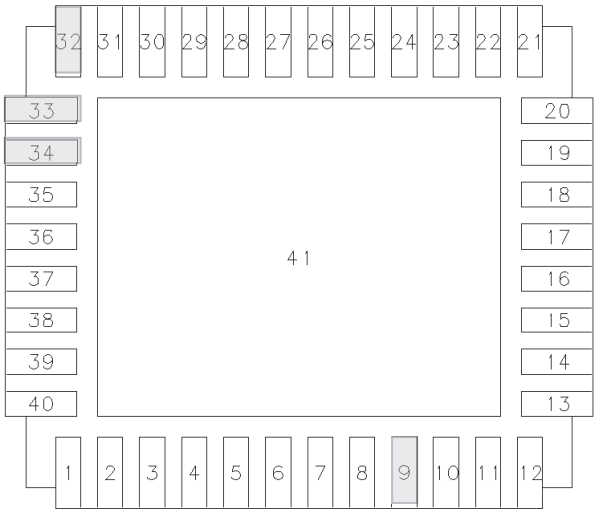
◯ : **Use**
◯ : **Not Use**

U402(BCM2048SB0, EUSY0365201)



U600(SKY77340, SMPY0012301)

8. BGM Pin Map



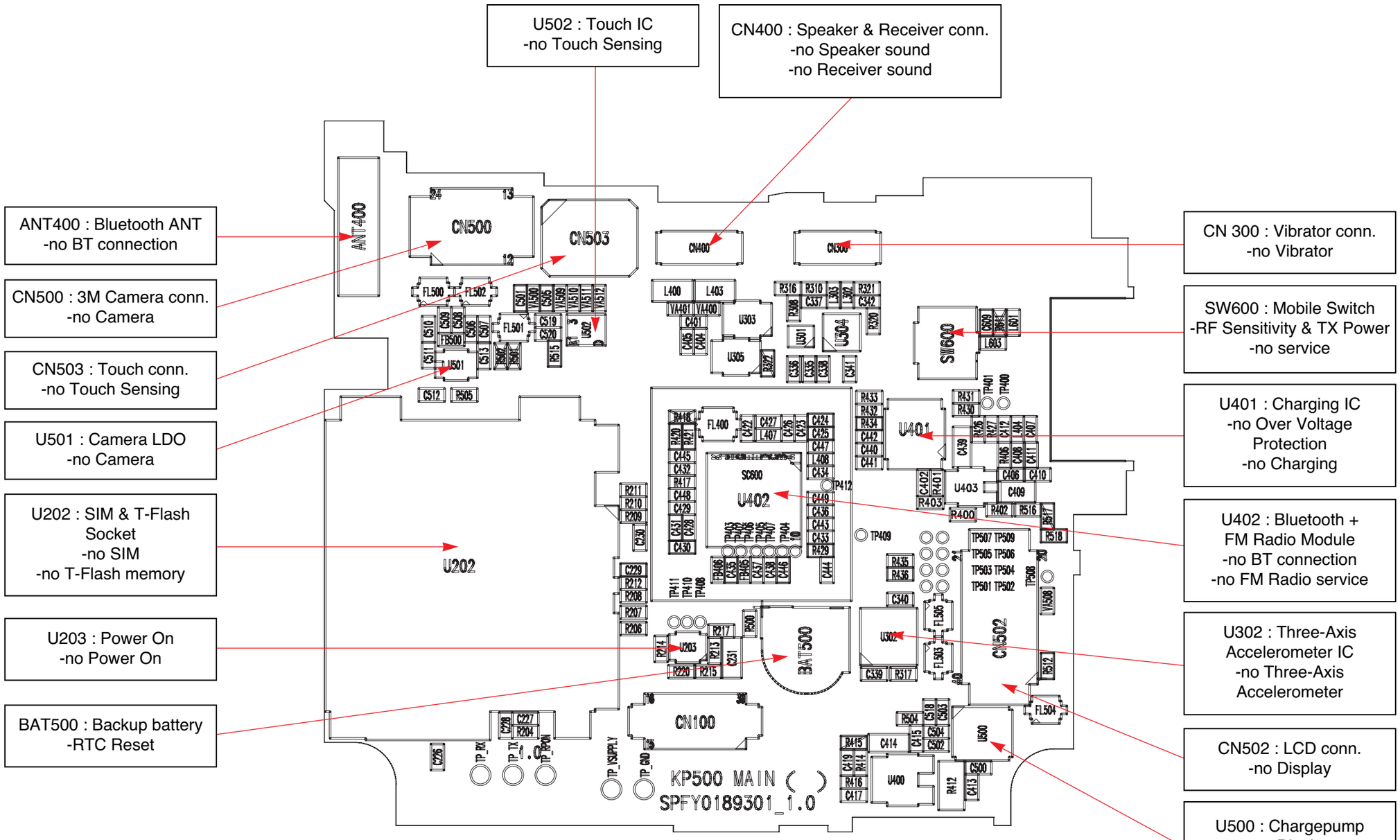
: **Use**
: **Not Use**

U601(PMB6272, EUSY0274801)

9. PCB LAYOUT

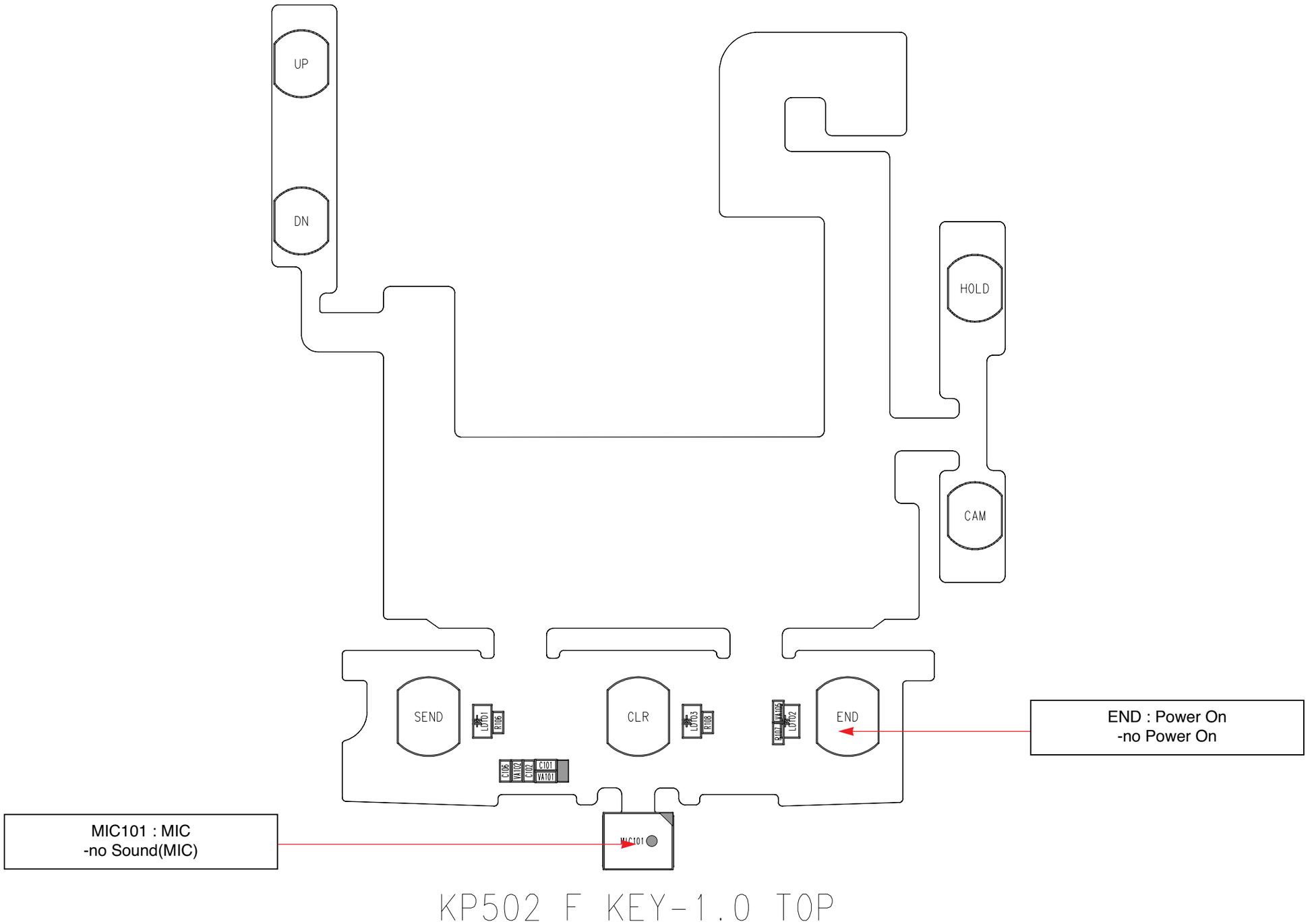
KP502 -MAIN_1.0-TOP

9. PCB LAYOUT

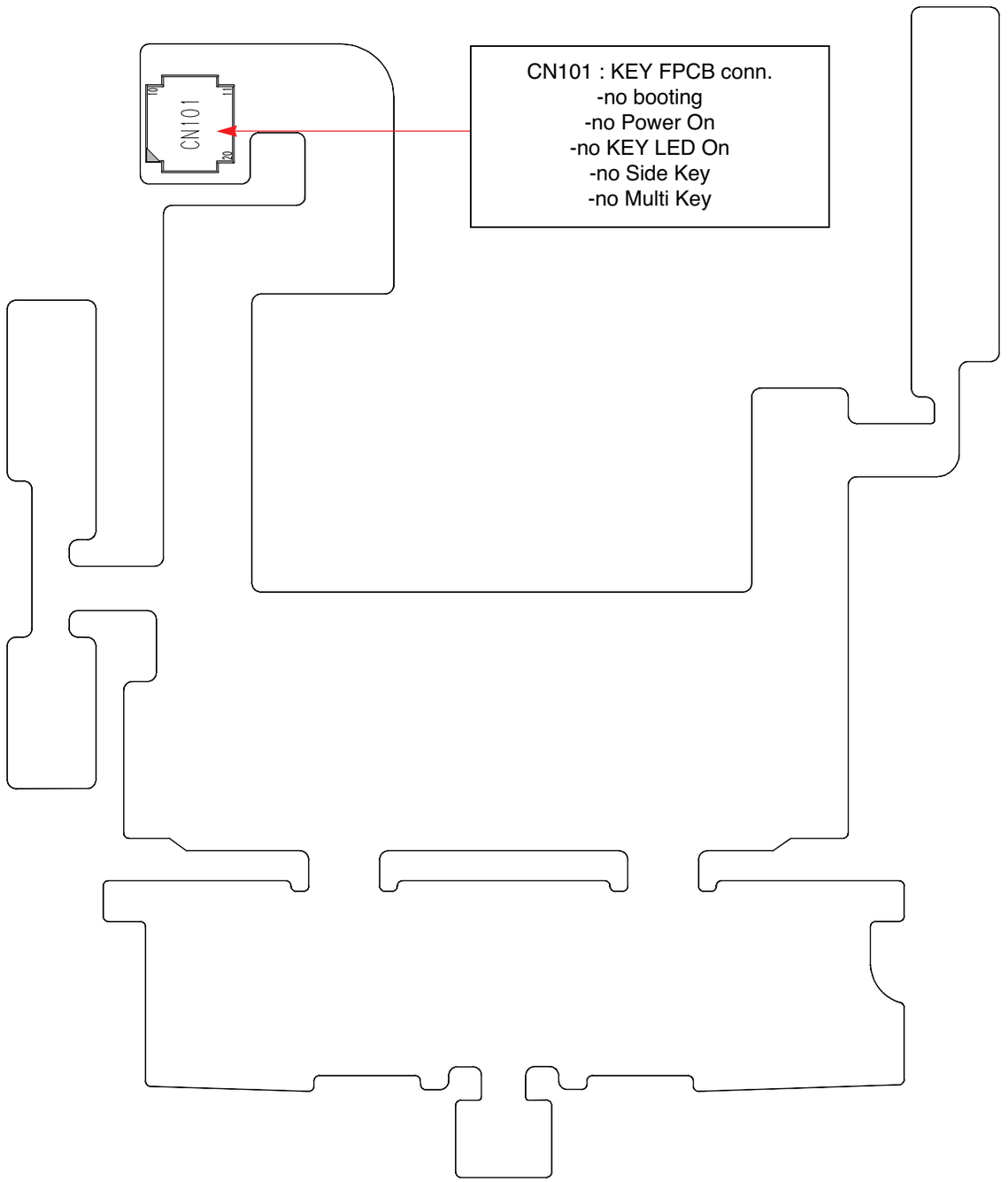


KP502 -MAIN_1.0-BTM

9. PCB LAYOUT

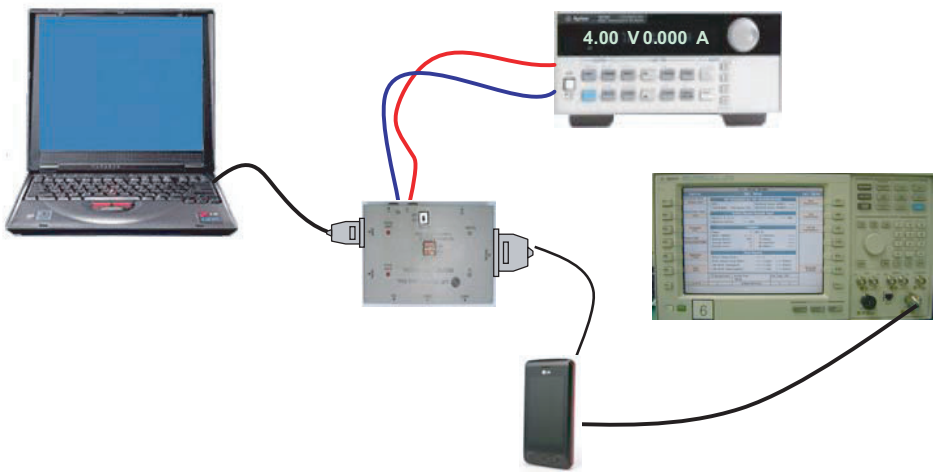


9. PCB LAYOUT



10. RF Calibration

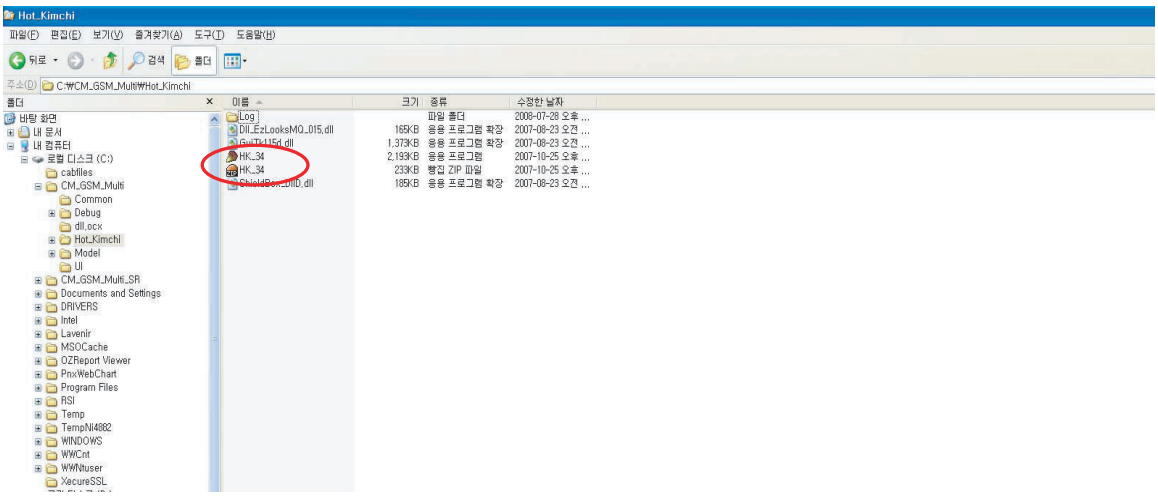
10.1 Test Equipment Setup



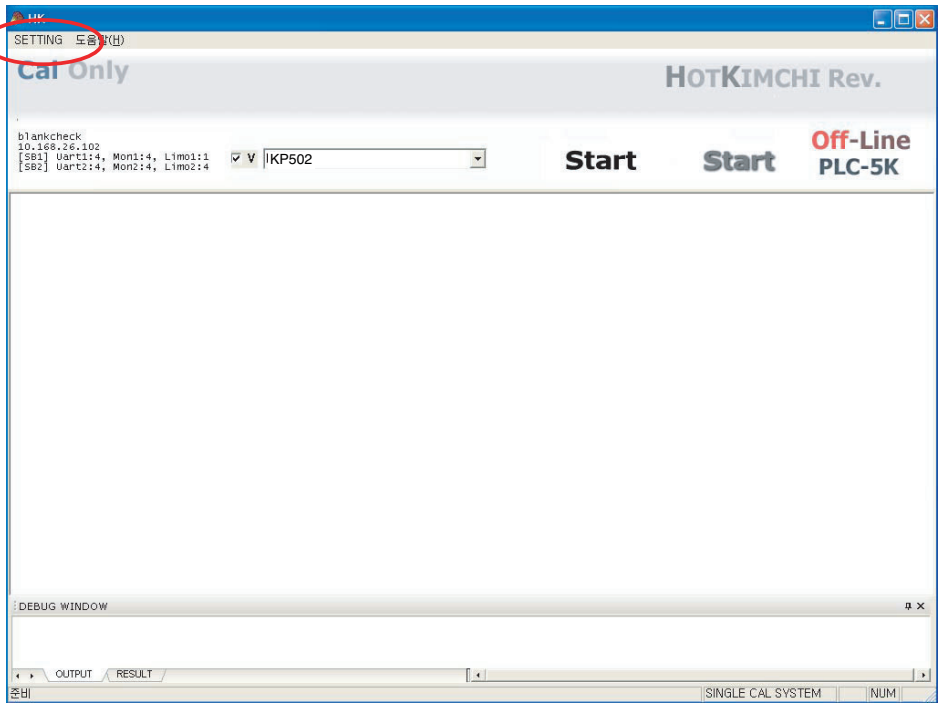
10.2 Calibration Step

10.2.1 Turn on the Phone

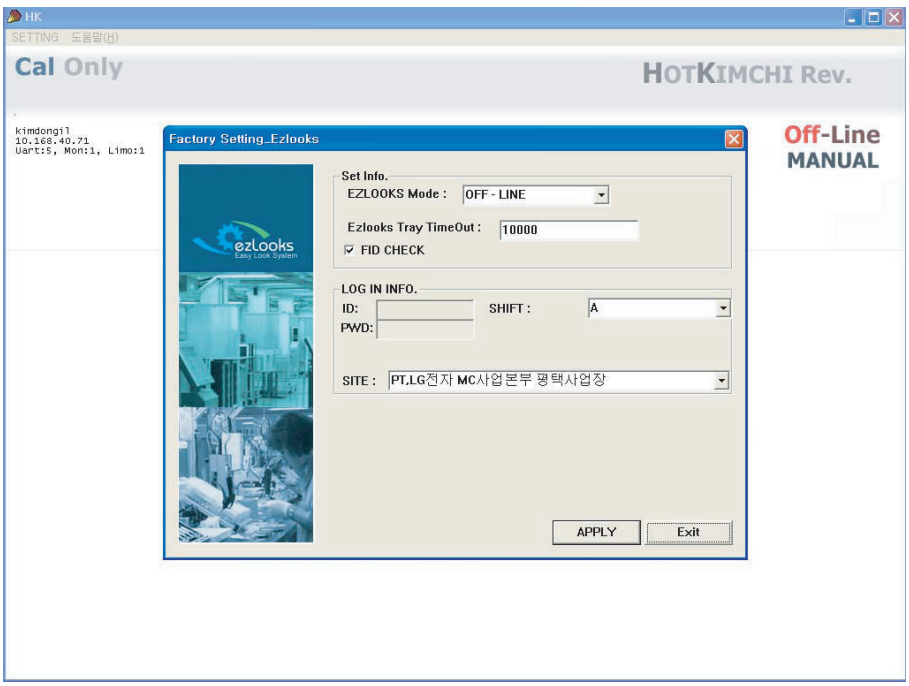
10.2.2 Execute “HK_34.exe”



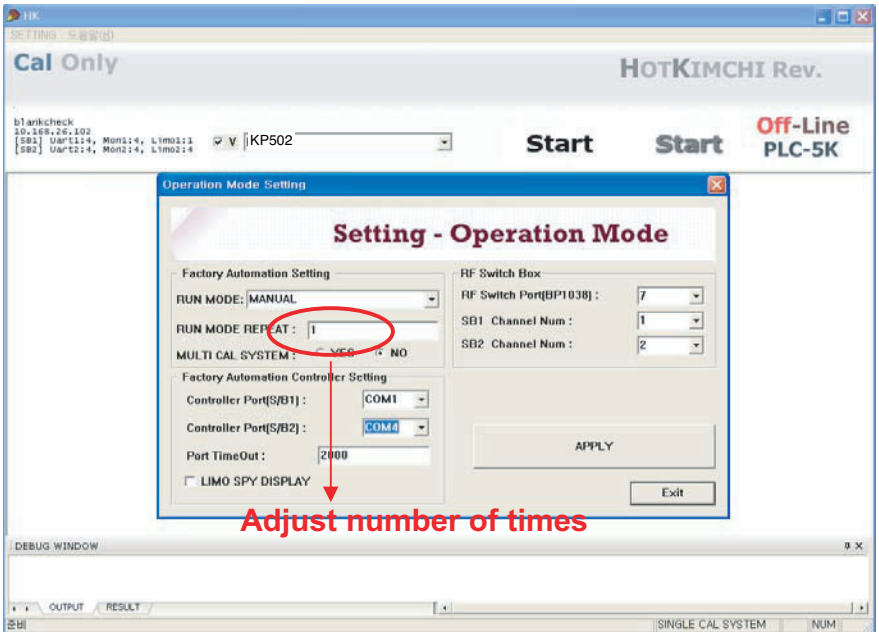
10.2.3 Click “SETTING” Menu



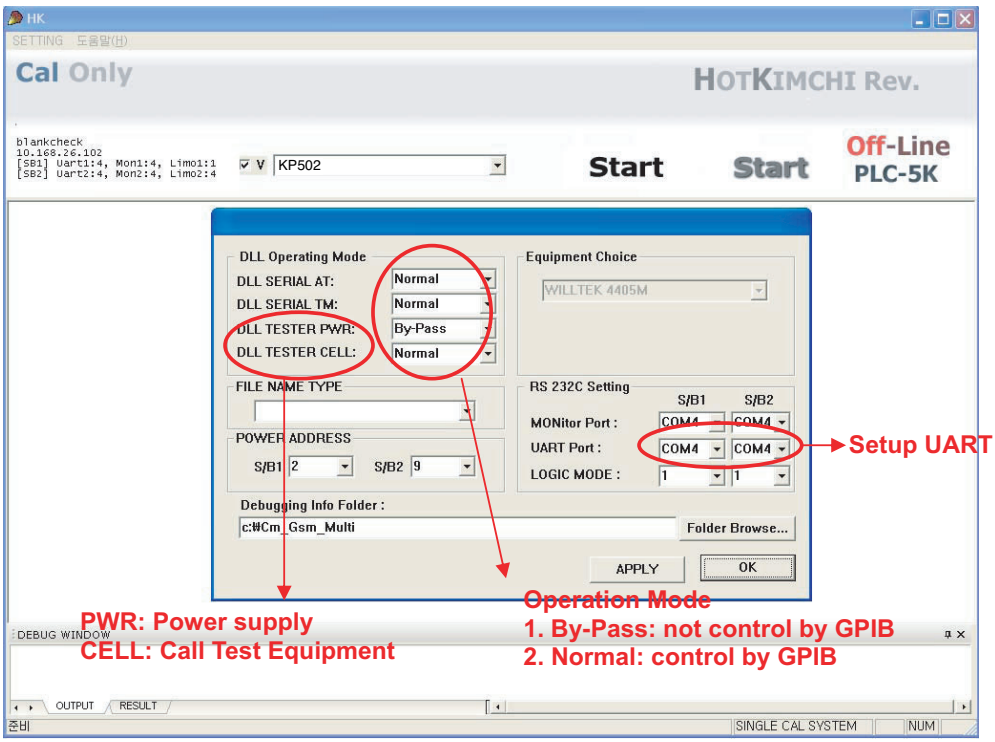
10.2.4 Setup “Ezlooks” menu such as the following figure



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

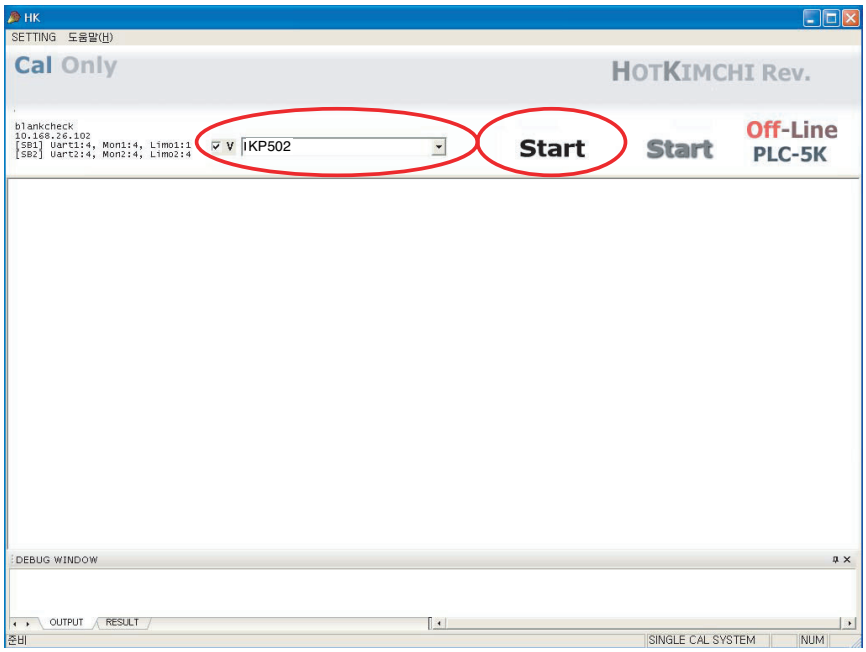


10.2.6 Setup Logic operation such as the following figure

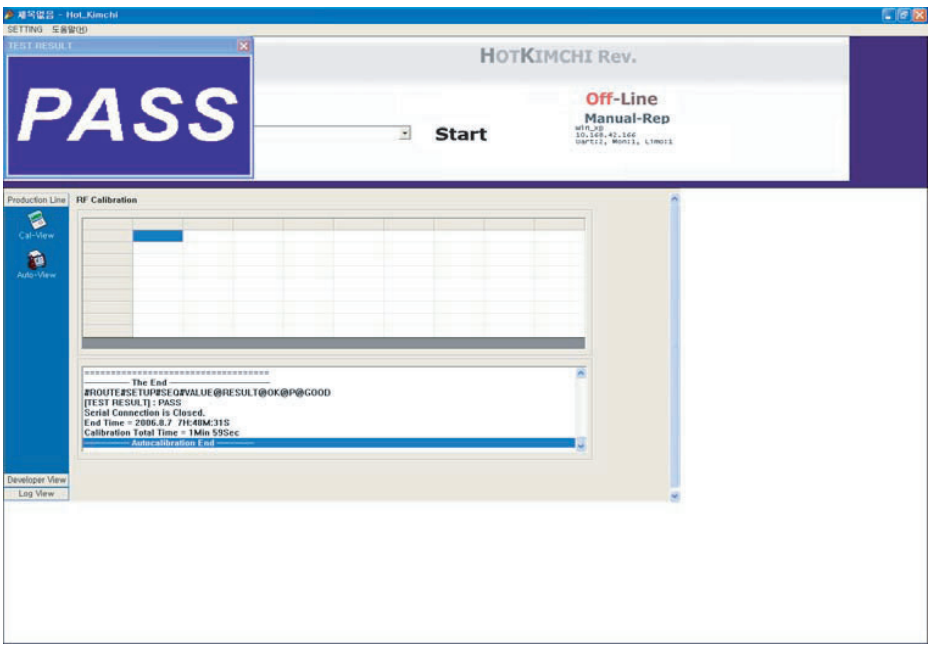


10.2.7 Select “MODEL”

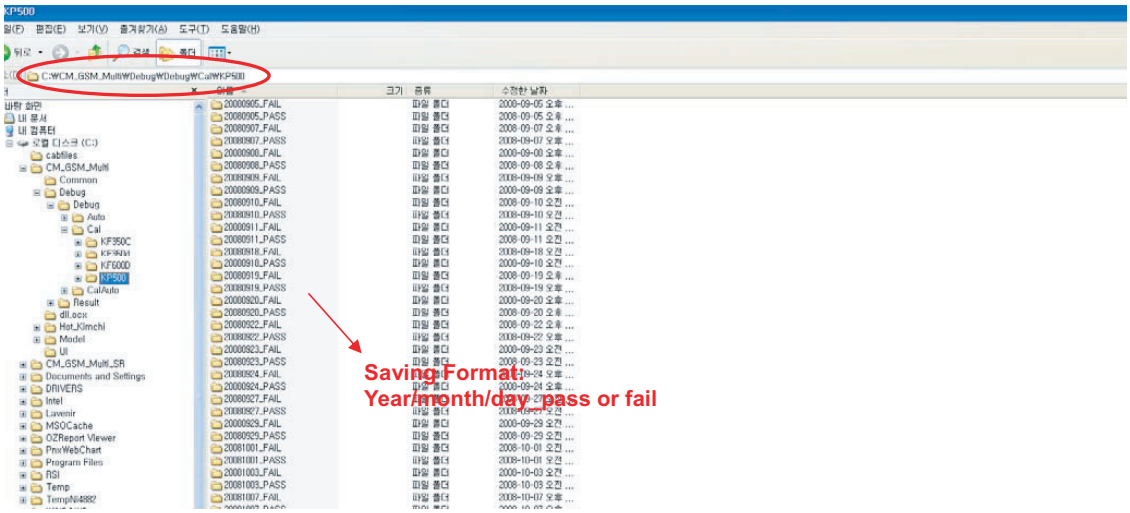
10.2.8 Click “START” for RF calibration



10.2.9 RF Calibration finishes.



10.2.10 Calibration data will be saved to the following folder

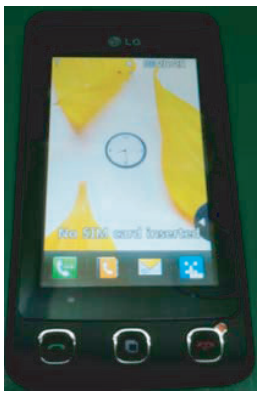


Notices:

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 → GSM850 → DCS → PCS → EDGE EGSM → EDGE GSM850 → EDGE DCS → EDGE PCS

   RX Channel compensation: EGSM → GSM850 → DCS → PCS
4. Phone Operation Mode



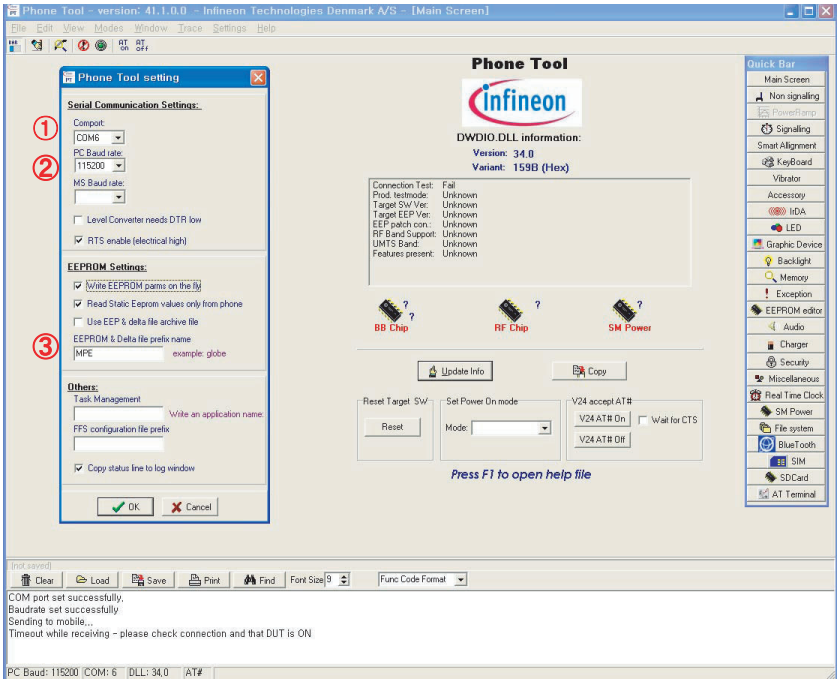
< Normal Mode >

< Ptest Mode>

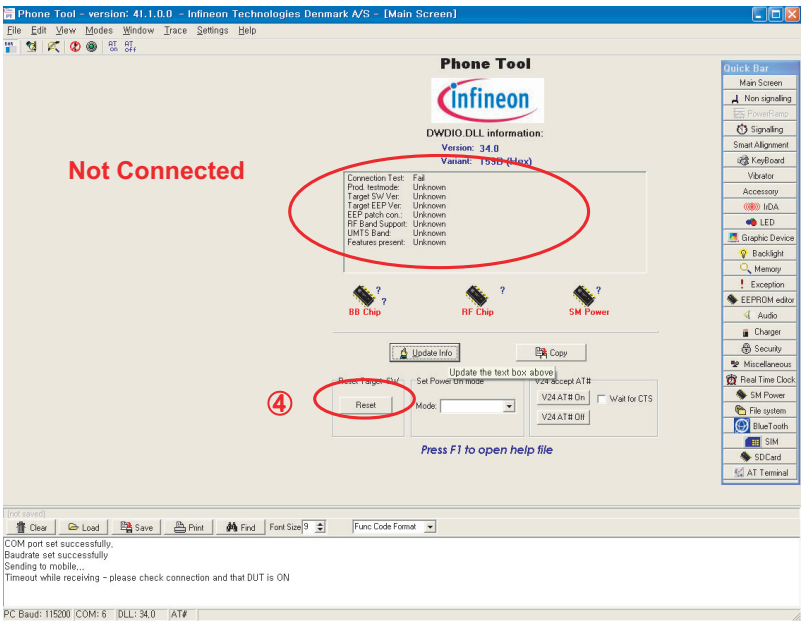
11. Stand-alone Test

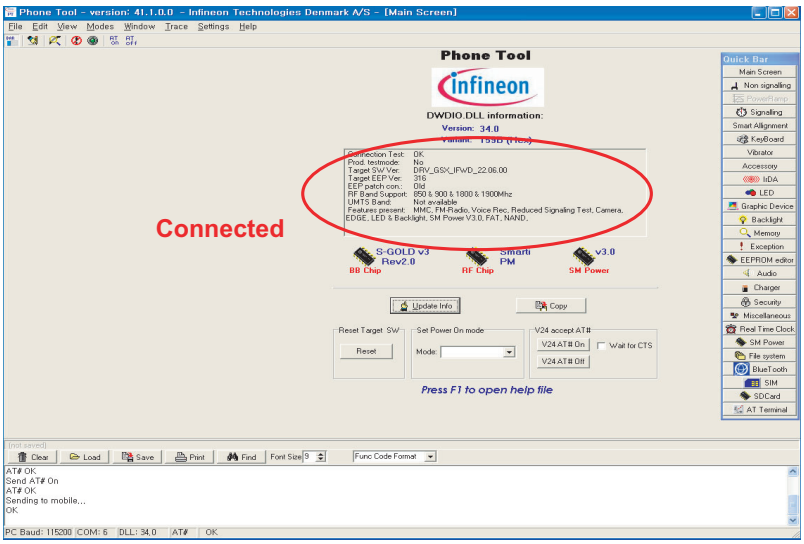
11.1 Test Program Setting

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



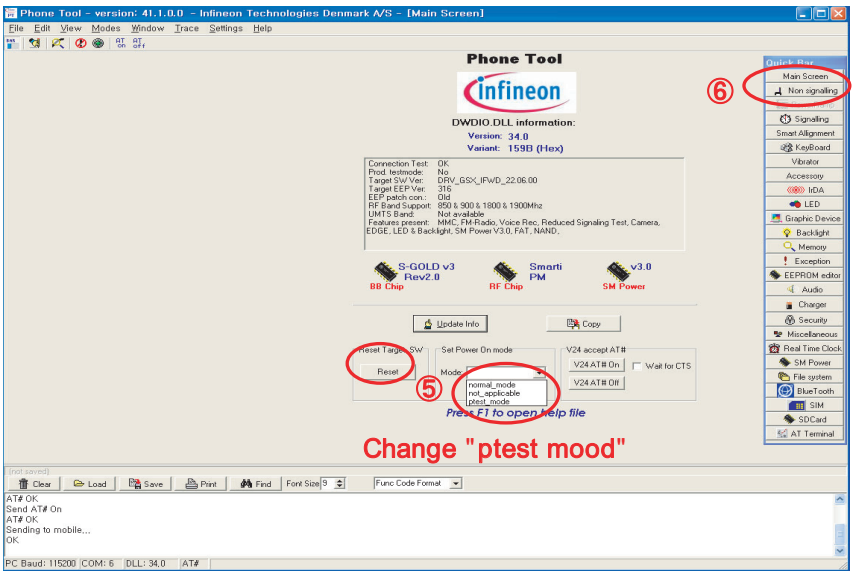
④ Click “Update Info” for communicating Phone and Test-Program.





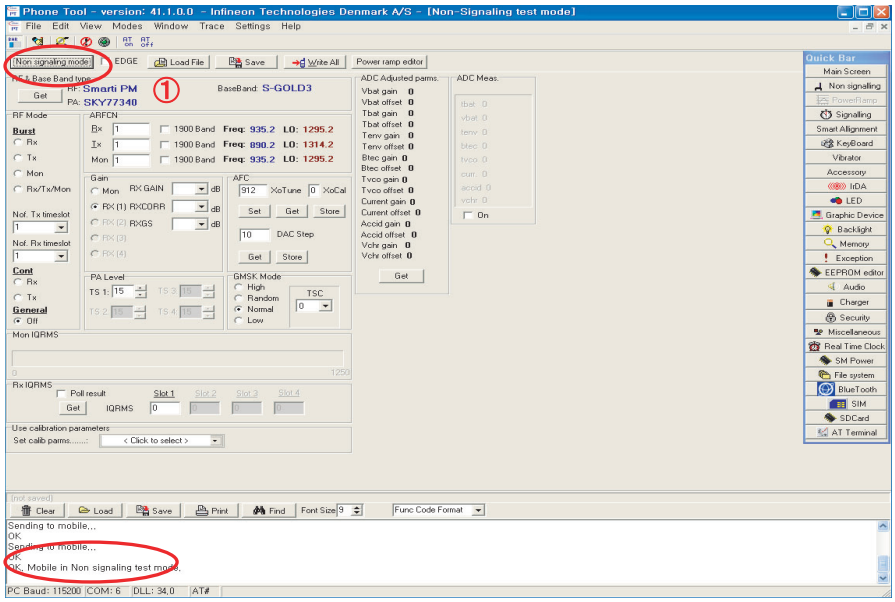
⑤ For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “Reset” bar.

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



11.2 Tx Test

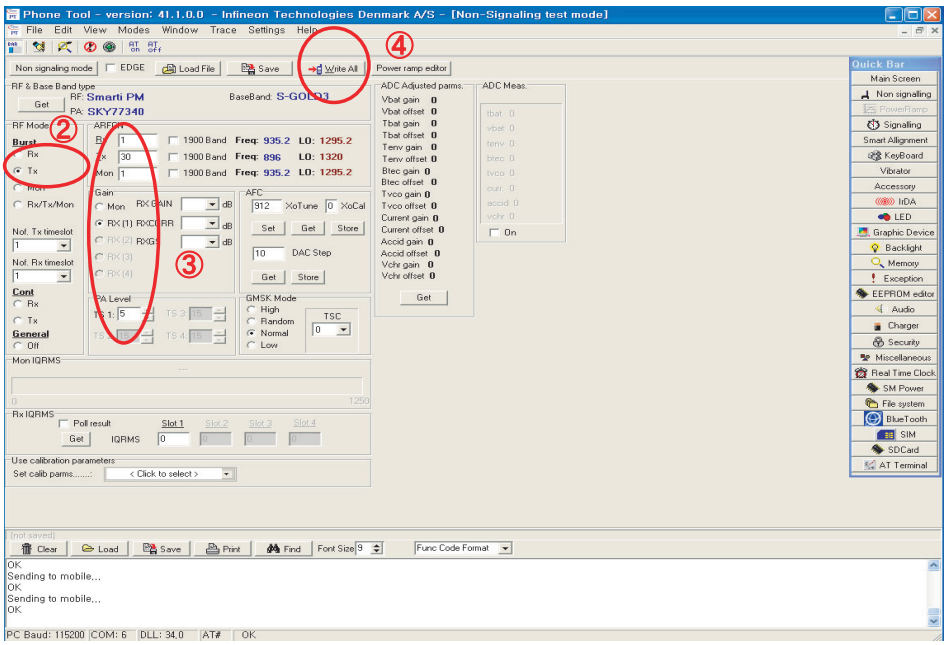
① Click “Non signaling mode” bar and then confirm “OK” text in the command line.



② Put the number of TX Channel in the ARFCN.

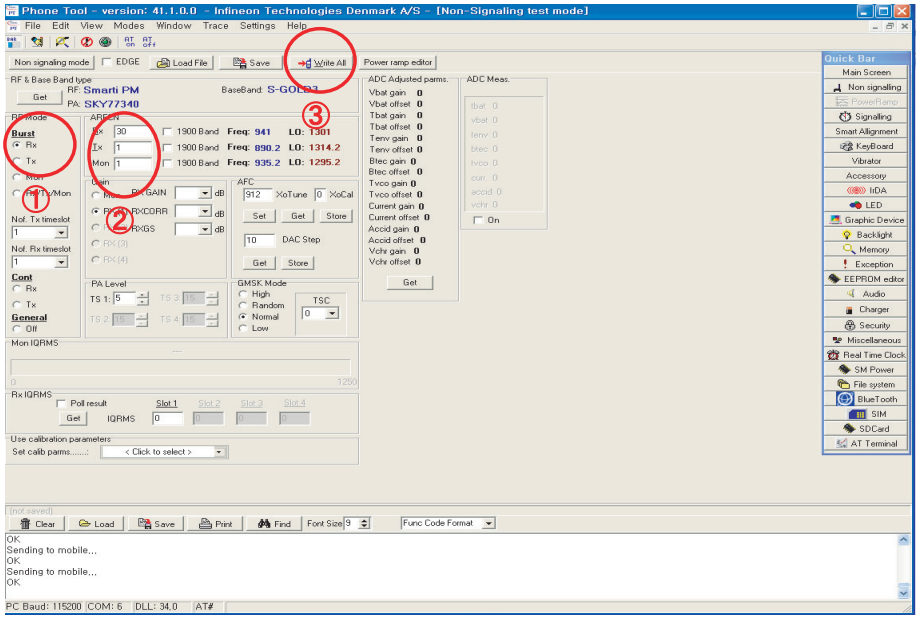
③ Select “Tx” in the RF mode menu and “PCL” in the PA Level menu.

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

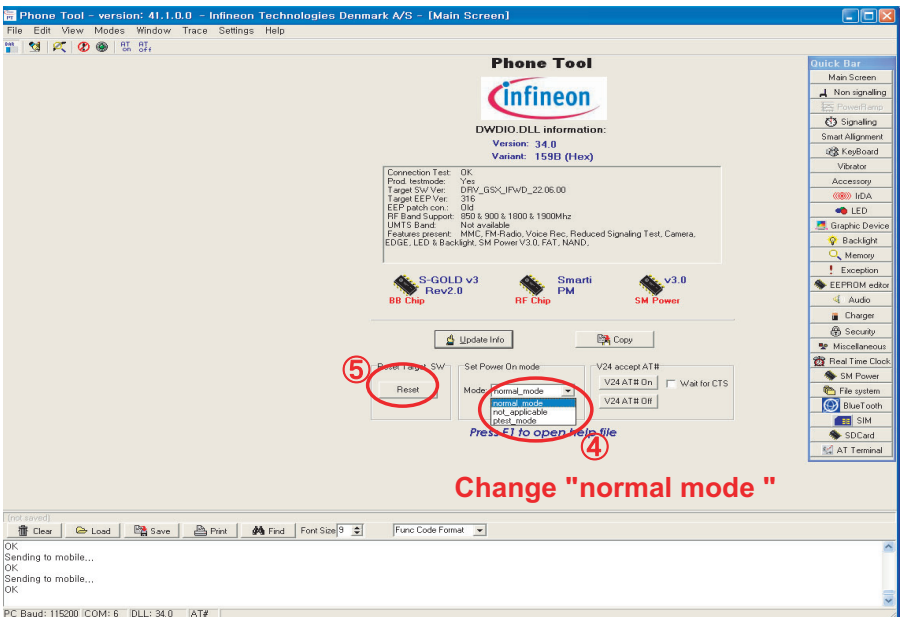


11.3 Rx Test

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.

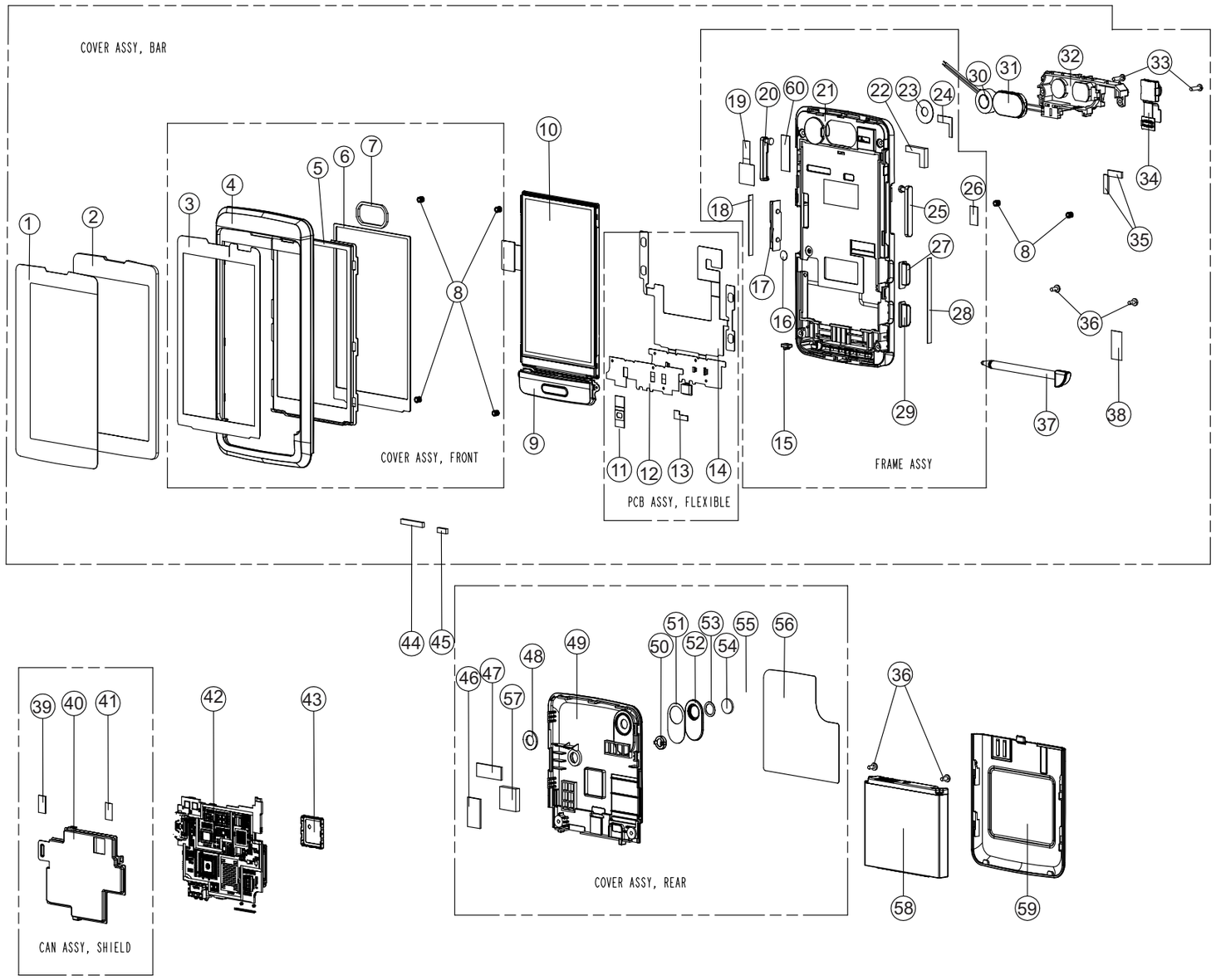


④ The Phone must be changed “normal mode” after finishing Test.
⑤ Change the Phone to “normal mode” and then Click the “Reset” bar.



12. EXPLODED VIEW & REPLACEMENT PART LIST

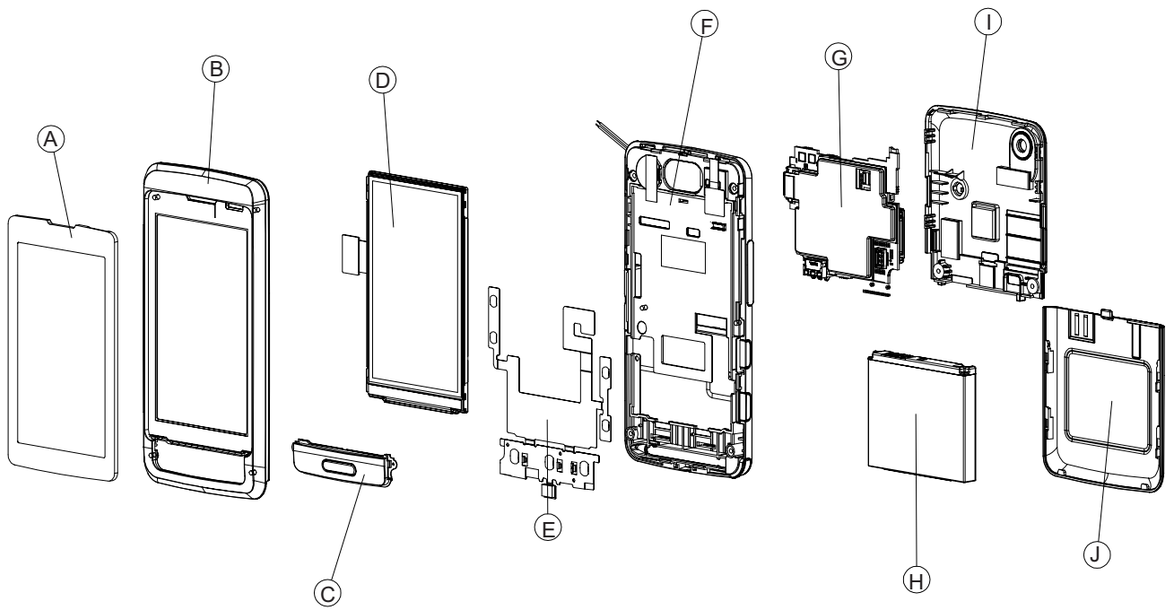
12.1 EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
60	GASKET, SHIELD FORM	1	MGAD0192801	
59	COVER,BATTERY	1	MCJA0070802	
58	BATTERY	1	SBPL0097501	
57	PAD,MSM	1	MPBL0007301	
56	TAPE,PROTECTION	1	MTAB0290101	
55	TAPE,PROTECTION(OUT)	1	MTAB0254801	
54	WINDOW,CAMERA	1	MWAE0039002	
53	TAPE,WINDOW	1	MTAD0092101	
52	DECO,CAMERA	1	MDAD0041601	
51	TAPE,DECO	1	MTAA0166201	
50	CAP,MOBILE S/W	1	MCCF0054002	
49	COVER,REAR	1	MCJN0089702	
48	PAD,CAMERA	1	MPBT0062901	
47	PAD,CONNTOR(CAMERA)	1	MPBU0037801	
46	PAD,CONNTOR(LCD)	1	MPBU0037701	
45	GASKET,SHIELD FORM(short)	1	MGAD0178701	
44	GASKET,SHIELD FORM(long)	1	MGAD0173601	
43	CAN ASSY,SHIELD	1	ACKA0010102	
42	PCB,MAIN	1	SAFY0338401	
41	INSULATOR	1	MIDZ0184101	
40	CAN SHIELD	1	MCBA0036901	
39	PAD,CONNENTOR	1	MPBU0042001	
38	GASKET,SHIELD FORM	1	MGAD0175301	
37	PEN ASSY,STYLUS	1	APKA0000402	
36	SCREW(L30)	4	GMZZ0019005	
35	PAD,CONNECTOR	2	MPBU0050201	
34	CAMERA	1	SVCY0018201	
33	SCREW(L50)	2	GMEY0009301	
32	INTENA	1	SNGF0040801	
31	SPEAKER	1	SUSY0028005	
30	VIBRATOR,MOTOR	1	SJMY0008506	
29	BUTTON,SIDE(CAMERA)	1	MBJL0065902	
28	TAPE,PROTECTION	1	MTAB0254401	
27	BUTTON,SIDE(HOLD)	1	MBJL0066002	
26	PAD,CONNTOR(KEYPCB)	1	MPBU0046701	
25	CAP,MICRO SD	1	MCCG0015502	
24	TAPE,CAMERA	1	MTAK0015701	
23	PAD,MOTOR	1	MPBJ0056801	
22	PAD,CONNTOR(FPCB-UP)	1	MPBU0037601	
21	DECO,FRONT	1	MDAG0040402	
20	CAP,EARPHONE JACK	1	MCCC0058502	
19	GASKET,SHIELD FORM(CAMERA)	1	MGAD0175201	
18	TAPE,PROTECTION(SHORT)	1	MTAB0254501	
17	BUTTON,SIDE(VOLUME)	1	MBJL0065702	
16	LABEL,AS	1	MLAB0001102	
15	HANGER	1	MHCY0002901	
14	KEYPCB	1	SACY0078603	
13	GASKET,SHIELD FORM	1	MGAD0179401	
12	DOME ASSY,METAL	1	ADCA0092002	
11	PAD,MIC	1	MPBH0040501	
10	LCD MODULE	1	SVLM0030201	
9	BUTTON,FUNCTION	1	MBJC0028501	
8	INSERT	6	MICC0010001	
7	PAD,SPEAKER	1	MPBN0060301	
6	PAD,LCD	1	MPBG0082101	
5	BRACKET,LCD	1	MBFF0021002	
4	COVER,FRONT	1	MCJK0100901	
3	TAPE,WINDOW	1	MTAD0092002	
2	WINDOW,LCD(MAIN)	1	MWAC0105901	
1	TAPE,PROTECTION	1	MTAB0254701	

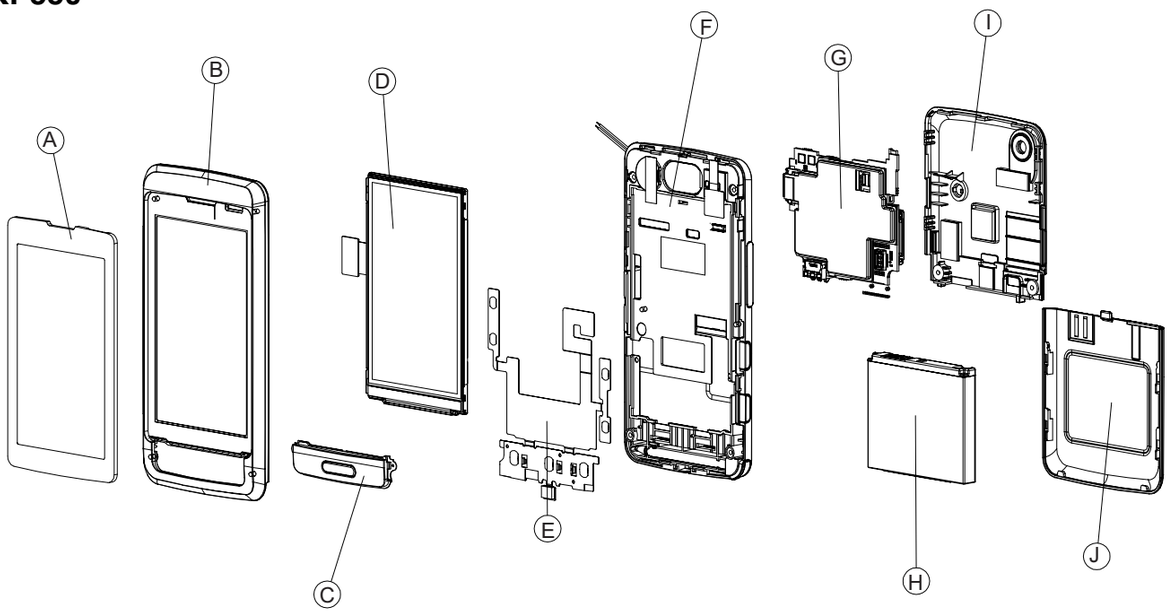
ASS'Y EXPLODED VIEW

KP502



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
J	COVER,BATTERY	1	MCJA0070802	
I	COVER ASSY,REAR	1	ACGM0117902	
H	BATTERY	1	SBPL0097501	
G	PCB ASSY	1	SAFY0326901	
F	FRAME ASSY	1	AFBZ0008902	
E	FPCB ASSY	1	SACY0078603	
D	LCD MODULE	1	SVLM0030201	
C	BUTTON, FUNCTION	1	MBJC0028501	
B	COVER ASSY, FRONT	1	ACGK0129601	
A	WINDOW, LCD	1	MWAC0105901	

KP550



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
J	COVER,BATTERY	1	MCJA0091301	
I	COVER ASSY,REAR	1	ACGM0136801	
H	BATTERY	1	SBPL0097501	
G	PCB ASSY	1	SAFY0338401	
F	FRAME ASSY	1	AFBZ0008901	
E	FPCB ASSY	1	SACY0078603	
D	LCD MODULE	1	SVLM0030201	
C	BUTTON, FUNCTION	1	MBJC0028501	
B	COVER ASSY, FRONT	1	ACGK0138201	
A	WINDOW, LCD	1	MWAC0105904	

12.2 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
2	APEY	PHONE	APEY0759901	Open KP502 SFRBK to see UADS	BLACK	
3	ACGM00	COVER ASSY,REAR	ACGM0117902		BLACK	I
4	MCCF00	CAP,MOBILE SWITCH	MCCF0054002	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK_GOLD	50
4	MCJN00	COVER,REAR	MCJN0089702	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK_GOLD	49
4	MDAD00	DECO,CAMERA	MDAD0041601	COMPLEX, (empty), , , , ,	BLACK	52
4	MPBL00	PAD,MSM	MPBL0007301	COMPLEX, (empty), , , , ,	BLACK	57
4	MPBT00	PAD,CAMERA	MPBT0062901	COMPLEX, (empty), , , , ,	VANDYKE BROWN	48
4	MPBU01	PAD,CONNECTOR	MPBU0037701	COMPLEX, (empty), , , , ,	VANDYKE BROWN	46
4	MPBU02	PAD,CONNECTOR	MPBU0037801	COMPLEX, (empty), , , , ,	VANDYKE BROWN	47
4	MTAA01	TAPE,DECO	MTAA0166201	COMPLEX, (empty), , , , ,	VANDYKE BROWN	51
4	MTAB00	TAPE,PROTECTION	MTAB0254801	COMPLEX, (empty), , , , ,	VANDYKE BROWN	55
4	MTAB01	TAPE,PROTECTION	MTAB0290101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	56
4	MTAD00	TAPE,WINDOW	MTAD0092101	COMPLEX, (empty), , , , ,	VANDYKE BROWN	53
4	MWAE00	WINDOW,CAMERA	MWAE0039002	CUTTING, Quartz Glass, 0.6, , , ,	WITHOUT COLOR	54
3	ACGV	COVER ASSY,BAR	ACGV0004001	KP502(VDF_BK)	BLACK	
4	ACGK00	COVER ASSY,FRONT	ACGK0129601	KP502(VDF_BK)	BLACK	B
5	MBFF00	BRACKET,LCD	MBFF0021002	PRESS, STS, , , , ,	BLACK	5
5	MCJK00	COVER,FRONT	MCJK0100901	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	4
5	MICC00	INSERT,FRONT(UPPER)	MICC0010001	D2.2 L2.0 KURL 45	Gold	8
5	MPBG00	PAD,LCD	MPBG0082101	COMPLEX, (empty), , , , ,	VANDYKE BROWN	6
5	MPBN00	PAD,SPEAKER	MPBN0060301	COMPLEX, (empty), , , , ,	VANDYKE BROWN	7
5	MTAD00	TAPE,WINDOW	MTAD0092002	COMPLEX, (empty), , , , ,	BLACK	3
4	AFBZ00	FRAME ASSY	AFBZ0008902		BLACK	F
5	MBJL00	BUTTON,SIDE	MBJL0066002	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	27

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MBJL01	BUTTON,SIDE	MBJL0065702	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	17
5	MBJL02	BUTTON,SIDE	MBJL0065902	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	29
5	MCCC00	CAP,EARPHONE JACK	MCCC0058502	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	20
5	MCCG00	CAP,MULTIMEDIA CARD	MCCG0015502	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	25
5	MDAG00	DECO,FRONT	MDAG0040402	MOLD, PC LUPOY SC-1004A, , , , ,	BLACK	21
5	MGAD01	GASKET,SHIELD FORM	MGAD0175201	COMPLEX, (empty), , , , ,	Gold	19
5	MHCY00	HANGER	MHCY0002901	MOLD, Urethane Rubber S195A, , , , ,	Black	15
5	MICC00	INSERT,FRONT(UPPER)	MICC0010001	D2.2 L2.0 KURL 45	Gold	
5	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	WHITE	16
5	MPBJ00	PAD,MOTOR	MPBJ0056801	COMPLEX, (empty), , , , ,	VANDYKE BROWN	23
5	MPBU00	PAD,CONNECTOR	MPBU0037601	COMPLEX, (empty), , , , ,	VANDYKE BROWN	22
5	MPBU01	PAD,CONNECTOR	MPBU0046701	COMPLEX, (empty), , , , ,	Black	26
5	MTAB00	TAPE,PROTECTION	MTAB0254501	COMPLEX, (empty), , , , ,	VANDYKE BROWN	18
5	MTAB01	TAPE,PROTECTION	MTAB0254401	COMPLEX, (empty), , , , ,	VANDYKE BROWN	28
5	MTAK00	TAPE,CAMERA	MTAK0015701	COMPLEX, (empty), , , , ,	VANDYKE BROWN	24
4	APKA00	PEN ASSY,STYLUS	APKA0000402		Black	37
4	GMEY01	SCREW MACHINE,BIND	GMEY0009301	1.4 mm,5.0 mm,MSWR3(BK) ,B ,+ ,head=2.7	BLACK	33
4	GMZZ00	SCREW MACHINE	GMZZ0019005	3.5 mm,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating , , , , , , , , ,	Without Color	
4	MBJC00	BUTTON,FUNCTION	MBJC0028501	COMPLEX, (empty), , , , ,	BLACK	C, 9
4	MGAD00	GASKET,SHIELD FORM	MGAD0173601	COMPLEX, (empty), , , , ,	VANDYKE BROWN	44
4	MGAD02	GASKET,SHIELD FORM	MGAD0178701	COMPLEX, (empty), , , , ,	Gold	45
4	MGAD03	GASKET,SHIELD FORM	MGAD0175301	COMPLEX, (empty), , , , ,	Gold	38
4	MGAD04	GASKET,SHIELD FORM	MGAD0192801	COMPLEX, (empty), , , , ,	GOLD	60
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , , ,	White	
4	MPBH	PAD,MIKE	MPBH0040502	COMPLEX, (empty), , , , ,	VANDYKE BROWN	
4	MPBU00	PAD,CONNECTOR	MPBU0050201	COMPLEX, (empty), , , , ,	VANDYKE BROWN	35
4	MTAB00	TAPE,PROTECTION	MTAB0254701	COMPLEX, (empty), , , , ,	Without Color	1

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MTAB01	TAPE,PROTECTION	MTAB0337101	COMPLEX, (empty), , , , ,	WITHOUT COLOR	
4	MWAC00	WINDOW,LCD	MWAC0105901	CUTTING, PMMA MR 200, , , , ,	Without Color	A, 2
6	ADCA00	DOME ASSY,METAL	ADCA0092002		WITHOUT COLOR	12
6	MGAD00	GASKET,SHIELD FORM	MGAD0179401	COMPLEX, (empty), , , , ,	VANDYKE BROWN	13
6	MPBH00	PAD,MIKE	MPBH0040501	COMPLEX, (empty), , , , ,	VANDYKE BROWN	11
6	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0013601	COMPLEX, (empty), , , , ,	Without Color	
6	MTAJ01	TAPE,FLEXIBLE PCB	MTAJ0013602	COMPLEX, (empty), , , , ,	Without Color	
3	GMZZ00	SCREW MACHINE	GMZZ0019005	3.5 mm,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating , , , , , , , , ,	Without Color	36
3	MLAK00	LABEL,MODEL	MLAK0018616	PRINTING, (empty), , , , ,	WITHOUT COLOR	
5	ACKA00	CAN ASSY,SHIELD	ACKA0010101		WITHOUT COLOR	
6	MCBA00	CAN,SHIELD	MCBA0036901	PRESS, STS, 0.3, , , ,	SILVER	40
6	MIDZ00	INSULATOR	MIDZ0184101	COMPLEX, (empty), , , , ,	Black	41
6	MPBU00	PAD,CONNECTOR	MPBU0042001	COMPLEX, (empty), , , , ,	Black	39
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	WITHOUT COLOR	
6	SC600	CAN ASSY,SHIELD	ACKA0010102	SMT TYPE	WITHOUT COLOR	43
7	MCBA00	CAN,SHIELD	MCBA0036801	PRESS, STS, 0.15, , , ,	VANDYKE BROWN	
7	MFEA00	FRAME,SHIELD	MFEA0023001	COMPLEX, (empty), , , , ,	WITHOUT COLOR	

12. 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
1		GSM,BAR/FILP	TGSM0070401		BLACK	
4	SACY00	PCB ASSY,FLEXIBLE	SACY0078603			E, 14
5	SACB	PCB ASSY,FLEXIBLE,INSERT	SACB0050403			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0076103			
6	SACC	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0051002			
7	CN101	CONNECTOR,BOARD TO BOARD	ENBY0020101	20 PIN,0.4 mm,ETC , ,H=1.5, Header		
6	SACD	PCB ASSY,FLEXIBLE,SMT TOP	SACD0062202			
7	C101	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C102	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	LD101	DIODE,LED,CHIP	EDLH0012504	Snow White ,1608 ,R/TP ,color concept		
7	LD102	DIODE,LED,CHIP	EDLH0012504	Snow White ,1608 ,R/TP ,color concept		
7	LD103	DIODE,LED,CHIP	EDLH0012504	Snow White ,1608 ,R/TP ,color concept		
7	MIC101	MICROPHONE	SUMY0010605	UNIT ,-42 dB,4.72*3.76*1.25 ,Top mems ,; , , ,OMNI ,[empty] , ,SMD		
		MICROPHONE	SUMY0010611			
7	R106	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
7	R107	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
7	R108	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
7	VA101	VARISTOR	SEVY0003901	5.5 V, ,SMD ,Vdc 5.5, Vb 8, Cp 420, 1.0*0.5*0.6 , ,5.5 , ,480 ,1.0*0.5*0.6 ,[empty] ,SMD ,R/TP		
7	VA102	VARISTOR	SEVY0003901	5.5 V, ,SMD ,Vdc 5.5, Vb 8, Cp 420, 1.0*0.5*0.6 , ,5.5 , ,480 ,1.0*0.5*0.6 ,[empty] ,SMD ,R/TP		
7	VA105	VARISTOR	SEVY0003901	5.5 V, ,SMD ,Vdc 5.5, Vb 8, Cp 420, 1.0*0.5*0.6 , ,5.5 , ,480 ,1.0*0.5*0.6 ,[empty] ,SMD ,R/TP		
6	SPCY	PCB,FLEXIBLE	SPCY0173701	POLYI ,0.15 mm,DOUBLE , ,; , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0008506	2.0 V,0.1 A,10*3.6 ,17mm elco8000 ,; ,3V , , , , , , ,		30
		VIBRATOR,MOTOR	SJMY0008511	2.0 V,90 mA,10*3.6 ,17mm conn. linear motor ,; ,3V , , , , , , ,		
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0040801	3.0 ,-5 dBd,, ,internal, GSM850/900/1800/1900 ,; ,QUAD ,-5.0 ,50 ,3.0		32

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SUSY00	SPEAKER	SUSY0028005	ASSY ,8 ohm,90 dB,1810 mm,3.0T 20mm elco8000 ,; , , , , , , ,CONNECTOR		31
4	SVCY00	CAMERA	SVCY0018201	CMOS ,MEGA ,3M FF SS-LSI(1/4"), 8.5x8.5x4.9,FPCB		34
4	SVLM00	LCD MODULE	SVLM0030201	Main ,3.0" ,240*400 ,44.88*74.9 ,262K ,TFT ,TM ,uPD161710 ,		D, 10
3	SAFY00	PCB ASSY,MAIN	SAFY0326901			G
4	SAFB	PCB ASSY,MAIN,INSERT	SAFB0081102		Black	
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0240801			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0106205			
6	C100	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C112	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C113	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C114	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C115	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C118	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C119	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C121	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C123	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C124	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C203	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C214	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C216	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C220	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C222	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C224	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C225	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C300	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C307	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C315	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C316	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C317	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C319	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C320	CAP,CERAMIC,CHIP	ECCH0000393	22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,1.25 mm		
6	C321	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C323	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C327	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C331	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C332	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C334	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C400	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C416	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C418	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C420	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C421	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C521	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C610	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C613	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C614	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C615	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C616	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C617	CAP,CERAMIC,CHIP	ECCH0000195	3.9 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C618	CAP,CERAMIC,CHIP	ECCH0000195	3.9 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C619	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C620	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C621	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C622	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C628	CAP,TANTAL,CHIP	ECTH0004804	33 uF,10V ,M ,L_ESR ,3216 ,R/TP		
6	C629	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C630	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C631	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C632	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C633	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C634	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C635	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C636	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C637	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C638	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C639	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C640	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C641	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C642	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C643	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C644	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C645	CAP,CERAMIC,CHIP	ECCH0000195	3.9 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C646	CAP,CERAMIC,CHIP	ECCH0000195	3.9 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	CN401	CONNECTOR,I/O	ENRY0006501	18 PIN,0.4 mm,ETC , ,1.2 Offset		
6	CN402	CONNECTOR,ETC	ENZY0019401	3 PIN,3.0 mm,ETC , ,H=5.3		
6	CN501	CONNECTOR,BOARD TO BOARD	ENBY0019501	20 PIN,.4 mm,ETC , ,H=1.5, Socket		
6	D300	DIODE,SWITCHING	EDSY0018701	1-1Q1A ,15 V,100 mA,R/TP , ,; ,0.5V ,15V ,200mA , , ,150mW ,[empty] ,[empty] ,3P ,2		
		DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		
6	D301	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
6	D302	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
6	FB300	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
6	FB301	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
6	FB400	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ,; ,1800ohm ,; ,[empty] ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FB401	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ,; ,1800ohm ,; ,[empty] ,R/TP		
6	FB402	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB403	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB404	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB501	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
6	FB502	FILTER,BEAD,CHIP	SFBH0007101	120 ohm,1005 ,Ferrite Bead		
6	FL600	FILTER,SEPERATOR	SFAY0011101	850.900 ,1800.1900 ,3.8 dB,4.1 dB, dB, dB,4532 ,4.5X3.2 Size Quad Band FEM		
6	L300	INDUCTOR,SMD,POWER	ELCP0006703	10 uH,M ,3.2*2.6*1.0 ,R/TP ,		
6	L301	INDUCTOR,SMD,POWER	ELCP0005104	10 uH,M ,3.8*3.8*1.8 ,R/TP ,power inductor/ 850mA		
		INDUCTOR,SMD,POWER	ELCP0011401	10 uH,M ,3.8*3.8*1.8 ,R/TP , ,; ,10 ,20% , , , , , ,[empty] ,3.8X3.8X1.8MM ,[empty] ,R/TP ,Inductor,Wire Wound,Chip		
6	L401	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L402	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L405	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L406	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L500	INDUCTOR,CHIP	ELCH0003842	100 nH,J ,1005 ,R/TP ,MLCI		
6	L604	INDUCTOR,CHIP	ELCH0001403	1 nH,S ,1005 ,R/TP ,PBFREE		
6	L609	INDUCTOR,CHIP	ELCH0001413	22 nH,J ,1005 ,R/TP ,PBFREE		
6	L610	INDUCTOR,CHIP	ELCH0009105	18 nH,J ,1005 ,R/TP ,COIL		
6	L611	INDUCTOR,CHIP	ELCH0009105	18 nH,J ,1005 ,R/TP ,COIL		
6	L612	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
6	L613	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
6	Q200	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
6	R100	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R101	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
6	R102	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
6	R103	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000519	9100 ohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R108	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R118	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000534	8.2 ohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000534	8.2 ohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R300	RES,CHIP,MAKER	ERHZ0000454	27 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R303	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R304	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R307	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R323	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R324	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R325	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R404	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R408	RES,CHIP,MAKER	ERHZ0000469	36 ohm,1/16W ,J ,1005 ,R/TP		
6	R409	RES,CHIP,MAKER	ERHZ0000469	36 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R410	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R506	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R507	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R508	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R600	RES,CHIP	ERHY0000132	22K ohm,1/16W,F,1005,R/TP		
6	R601	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	R602	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R603	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R604	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R605	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R606	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R607	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R608	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R609	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R610	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	U100	IC	EUSY0322801	BGA ,10 ,R/TP ,Multimedia Extension EDGE BB, 313 Ball , ,IC,Digital Baseband Processor		
6	U200	IC	EUSY0360201	CSP ,20 ,R/TP ,Class D(mono) + Capless HP + A/S ,; ,IC,Audio Sub System		
6	U201	IC	EUSY0347503	FBGA ,149 PIN,ETC ,FULLY 1.8V 2G(LB/128Mx16) NAND+1G(DDR/16Mx4x16) SDRAM ,; ,IC,MCP		
6	U204	IC	EUSY0102802	Micropak ,8 PIN,R/TP ,Daul 2 input AND gate,		
6	U300	IC	EUSY0323901	BGA PG-WFSGA ,121 PIN,R/TP ,SMPOWER3		
6	U600	PAM	SMPY0012301	dBm, %, A, dBc, dB, ,SMD ,		
6	U601	IC	EUSY0274801	VQFN ,40 PIN,R/TP ,GPRS, EDGE TRANSCEIVER		
6	VA402	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA403	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA404	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA405	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA406	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA407	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA408	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA409	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA410	VARISTOR	SEVY0005402	5.6 V, ,SMD ,1005 Siez , 50pF		
6	VA501	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA502	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA503	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA504	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA505	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA506	VARISTOR	SEVY0003601	5.6 V, ,SMD ,100pF, 1005		
6	VA507	VARISTOR	SEVY0003601	5.6 V, ,SMD ,100pF, 1005		
6	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	X600	X-TAL	EXXY0025701	26 MHz,10 PPM,8 pF,40 ohm,SMD ,32X25X0.6 ,X-Tal (Infinion chip), Pb-Free ,; , ,10PPM , , , ,SMD ,R/TP		
5	SAFD	PCB ASSY,MAIN,SMT TOP	SAFD0104705			
6	ANT400	ANTENNA,MOBILE,FIXED	SNMF0036201	3:1 ,-4 dB,Pb-free_Chip_BT Class1 ,; ,SINGLE ,-4 ,50 ,3:1		
6	BAT500	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
6	C226	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000187	150 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C335	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C336	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C337	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C338	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C340	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
6	C341	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C342	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C406	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C407	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C408	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C409	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C410	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C412	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C413	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C415	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C419	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C428	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C429	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C432	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C433	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C434	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C436	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C437	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C438	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C439	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C440	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C441	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C442	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C443	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C444	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C445	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C447	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C448	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C449	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C500	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C503	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C504	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C506	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C507	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C508	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C509	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C510	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C511	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C512	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C513	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C518	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C520	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	CN300	CONN,RECEPTACLE	ENEY0003801	2 PIN, , ,		
6	CN400	CONN,RECEPTACLE	ENEY0003801	2 PIN, , ,		
6	CN500	CONNECTOR,BOARD TO BOARD	ENBY0034201	24 PIN,0.4 mm,ETC , ,GB042 H=1.0, Socket		
6	CN502	CONNECTOR,BOARD TO BOARD	ENBY0036001	40 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	CN503	CONNECTOR,BOARD TO BOARD	ENBY0018601	10 PIN,.4 mm,STRAIGHT , ,H=0.9, SOCKET		
6	FB405	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FB406	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FB500	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL400	FILTER,CERAMIC	SFCY0000901	2450 MHz,2.00*1.25*0.95 ,SMD ,Bluetooth Band Pass Filter		
6	FL500	FILTER,EMI/POWER	SFEY0011401	SMD ,SMD, 18V, 4ch, EMI_ESD Filter (100 Ohm, 7.5pF)		
6	FL501	FILTER,EMI/POWER	SFEY0011401	SMD ,SMD, 18V, 4ch, EMI_ESD Filter (100 Ohm, 7.5pF)		
6	FL502	FILTER,EMI/POWER	SFEY0011401	SMD ,SMD, 18V, 4ch, EMI_ESD Filter (100 Ohm, 7.5pF)		
6	FL503	FILTER,EMI/POWER	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm		
6	FL504	FILTER,EMI/POWER	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm		
6	FL505	FILTER,EMI/POWER	SFEY0013201	SMD ,1608 ,EMI-ESD Filter, 4ch, 14V, 15pF, 100ohm		
6	L302	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L303	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L400	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
6	L403	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
6	L404	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L407	INDUCTOR,CHIP	ELCH0003842	100 nH,J ,1005 ,R/TP ,MLCI		
6	L408	INDUCTOR,CHIP	ELCH0012503	56 nH,J ,1005 ,R/TP ,1005,Coil-type,J		
6	L601	INDUCTOR,CHIP	ELCH0003819	12 nH,J ,1005 ,R/TP ,		
6	L603	INDUCTOR,CHIP	ELCH0005001	2.2 nH,S ,1005 ,R/TP ,		
6	PCB	PCB,MAIN	SPFY0189301	FR-4 ,.8 mm,STAGGERED-10 , ,; , , , , , , , , ,		
6	R204	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000467	330 Kohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP	ERHY0000298	3.3M ohm,1/16W,J,1005,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R308	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000414	120 Kohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP,MAKER	ERHZ0000474	390 ohm,1/16W ,J ,1005 ,R/TP		
6	R320	RES,CHIP,MAKER	ERHZ0000414	120 Kohm,1/16W ,J ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R322	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R400	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R401	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R402	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP	ERHY0011901	47 mohm,1/4W ,F ,2012 ,R/TP		
6	R414	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R415	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R417	RES,CHIP,MAKER	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP		
6	R418	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R426	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R427	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R430	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R431	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP		
6	R432	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R433	RES,CHIP,MAKER	ERHZ0000237	20 Kohm,1/16W ,F ,1005 ,R/TP		
6	R435	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R500	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R501	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R502	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R504	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R505	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R517	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R611	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	SW600	CONN,RF SWITCH	ENWY0006301	,SMD ,0.8 dB, ,; ,0.40MM ,STRAIGHT ,SOCKET ,SMD ,[empty] ,[empty] , ,		
6	U202	CONN,SOCKET	ENSY0017901	14 PIN,ETC , ,2.54 mm,Micro-SD, UIM Dupli Socket		
6	U203	TR,BJT,NPN	EQBN0013701	EMT6 ,150 mW,R/TP ,DUAL TRANSISTORS		
6	U301	IC	EUSY0353901	PLP1010-4 ,4 PIN,R/TP ,1x1 LDO, 3.0V , 150mA ,; ,IC,LDO Voltage Regulator		
6	U302	IC	EUSY0345201	3*3 QFN ,10 PIN,R/TP ,3xis Accelerometer ,; ,IC,A/D Converter		
6	U303	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U304	IC	EUSY0349001	BGA ,8 PIN,R/TP ,Class AB SPK AMP ,; ,IC,Audio Amplifier		
6	U305	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U401	IC	EUSY0351601	DFN ,12 PIN,R/TP ,Dual Charger IC (Bypass) ,; ,IC,Charger		
6	U402	IC	EUSY0365201	WFBGA ,80 ,R/TP ,BT2.1+ EDR, FM Rx(5.5*5.5*0.6) ,; ,IC,Bluetooth		
6	U403	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
6	U500	IC	EUSY0336502	, PIN,R/TP , ,; ,IC,Charge Pump		
6	U501	IC	EUSY0223006	HVSOF5 ,5 PIN,R/TP ,1.8V ,150mA LDO		
6	U502	IC	EUSY0337101	CSP ,12 PIN,R/TP ,Touchscreen Controller IC , ,IC,A/D Converter		
6	VA400	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA401	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA500	VARISTOR	SEVY0005202	5.5 V,+-30 ,SMD ,1005, 100 pF, Pb free		
6	VA508	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA509	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA510	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA511	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA512	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		