LG

Service Manual

LG

Internal Use Only

Service Manual

KS360

Model : KS360

Date: August, 2008 / Issue 1.0

REVISED HISTORY

Editor	Date	Issue	Contents of Changes	S/W Version
J.P.Kim	Jul. 18. 2008	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 KS360 Series.

Table Of Contents

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KS360 Series.

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 KS360 Series 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 KS360 Series 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 KS360 Series 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 KS360 Series 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-Polymer, 800mAh	
AVG TCVR Current	250mA typ	@PL5
Standby Current	1.85 mA typ	@PP9
Talk time	5.6 hours (GSM TX Level 10)	
Standby time	Over 430 hours (Paging Period:9, RSSI: -85dBm)	
Charging time	Under 3 hours	
RX Sensitivity	EGSM: -105dBm↓, DCS/PCS: -105dBm↓	
TX output power	EGSM : 32.5dBm (@PL 5) DCS/PCS: 29.5/29.5dBm (@PL 0)	
GPRS compatibility	Class 12	
SIM card type	3V Small	
Display	Main 240x320 262K TFT 2.4”	
Status Indicator	Dial keys are implemented by touchpad. Navi, Send, Call End, Back, Volume Up, Volume Down, Camera, Touch hot Key and CLEAR Number key, Alphabet, OK, space bar, Function key are implemented by Qwertykey	
ANT	Built in antenna	
EAR Phone Jack	- 18pin multi port Headset jack (Call/Music)	
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="2">DCS1800/PCS1900</td><td></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 ≤ 2 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 : < 450 mA Slow Charge: < 200 mA	
25	Antenna Display	Antenna Bar Number	Power
		7	>-92 dBm ~
		7 → 5	-97dBm ~ -93dBm
		5 → 4	-100dBm ~ -98dBm
		4 → 2	-103dBm ~ -101dBm
		2 → 1	-105dBm ~ -104dBm
		1 → 0	< -106 dBm
		Off	No Service

2. GENERAL PERFORMANCE

Item	Description	Specification	
26	Battery Indicator	Battery Bar Number	Voltage(±0.05V)
		3	3.74V ~ 4.2V
		2	3.64V~3.73V
		1	3.45V ~ 3.63V
		0	3.35V ~ 3.44V
27	Low Voltage Warning	3.45V ↓ ± 0.05V (Call)	
		3.45V ↓ ± 0.05V (Standby)	
28	Forced shut down Voltage	3.35 ± 0.05 V	
29	Battery Type	Li-ion Battery or Li-Polymer Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 800mAh	
31	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 5.6V, 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>
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<tr><td>12</td><td>19dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">DCS1800, PCS1900</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>0</td><td>26/25dBm</td><td>±3dB</td><td>8</td><td>14 dBm</td><td>±3dB</td></tr>
<tr><td>1</td><td>26/25dBm</td><td>±3dB</td><td>9</td><td>12 dBm</td><td>±4dB</td></tr>
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<tr><td 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 KS360 series Component Block diagram

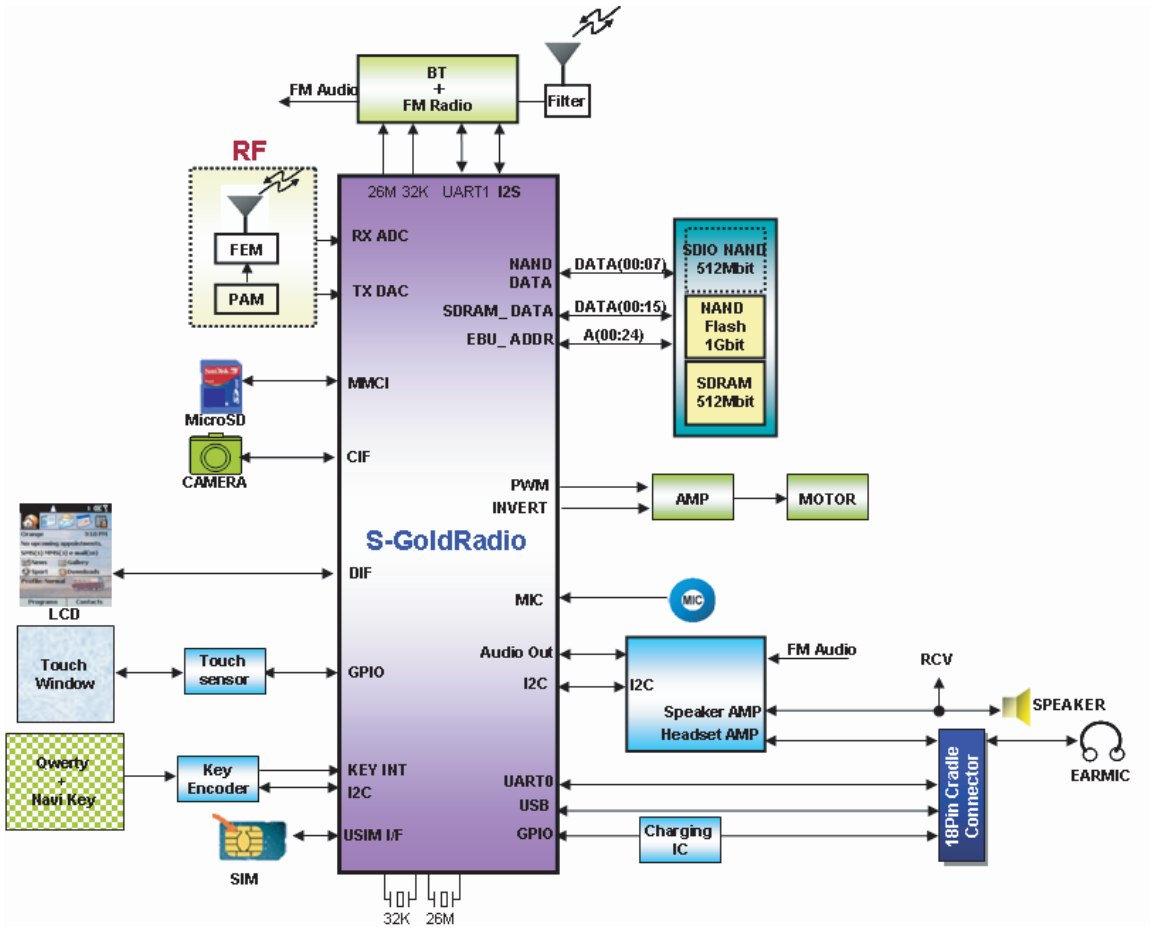


Figure 1. KS360 series Functional Block Diagram

3.2 Baseband Processor (BBP) Introduction

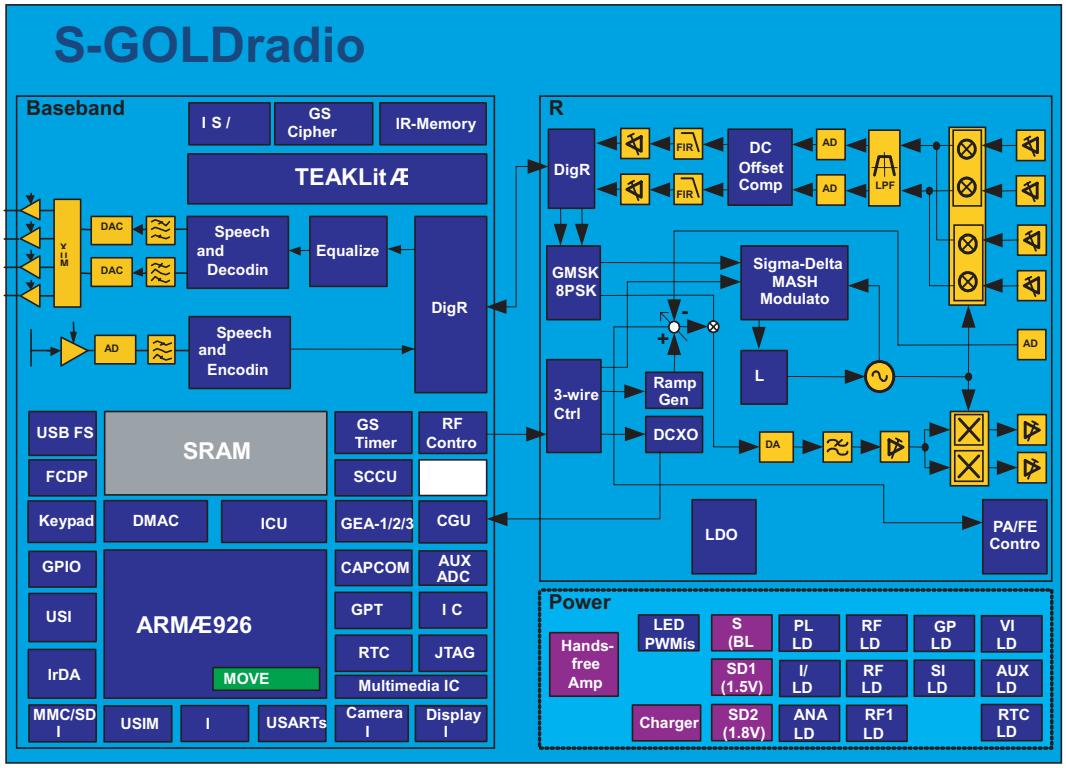


Figure 2. Top level block diagram of the S-GOLDRadio™ (PMB8888)

3.2.1 General Description

S-GOLDRadio™ is a GSM/EDGE single chip mixed signal Single Chip Radio IC containing all analog and digital functionality of a cellular radio. Additionally S-GOLDRadio™ 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 0.13um, 1.5V technology.

The chip will fully support the FR/HR/EFR/NB-AMR speech codec.

S-GOLDRadio™ support multi-slot operation modes CSD/GPRS/EGPRS (up to class 12) without additional external hardware.

3.2.2 Block Description

- Processing core ARM926EJ-S 32 bit processor core for controller functions. The ARM926EJ-S includes an MMU, and the Jazelle Java extension for Java acceleration.
  - TEAKLite DSP core
- ARM-Memory
  - 32k Byte Boot ROM on the AHB
  - 96k Byte SRAM on the AHB, flexibly usable as program or data RAM
  - 16k Byte Cache for Program (internal)
  - 8k Byte tightly coupled memory for Program(internal)
  - 8k Byte Cache for Data(internal)
  - 8k Byte tightly coupled memory for Data(internal)
- DSP-Memory
  - 104K x 16bit Program ROM
  - 8k x 16bit Program RAM
  - 60k x 16bit Data ROM
  - 37k x 16bit Data RAM
  - Incremental Redundancy(IR) Memory of 35904 words of 16bit
- Shared Memory Block
  1.5K x 32bit Shared RAM(dual ported) between controller system and TEAKLite.
- Controller Bus system
  The processor cores and their peripherals are connected by powerful buses. Multi-layer AHB for connecting the ARM and the other master capable building blocks with the internal and external memories and with the peripheral buses.
- Clock system
  The clock system allows widely independent selection of frequencies for the essential parts of the S-GOLD3. Thus power consumption and performance can be optimized for each application.
- Functional Hardware block
  - CPU and DSP Timers
  - MOVE coprocessor performing motion estimation for video encoding algorithms (H.263, MPEG-4)
  - Programmable PLL with additional phase shifters for system clock generation
  - GSM Timer Module that off-loads the CPU from radio channel timing
  - GMSK / 8-PSK Modulator according to GSM-standard 05.04 (5/2000)
  - GMSK Modulator: gauss-filter with B*T=0.3
  - EDGE Modulator: 8PSK-modulation with linearized GMSK-Pulse-Filter
  - Hardware accelerators for equalizer and channel decoding.
  - Incremental Redundancy memory for EDGE class 12 support
  - A5/1, A5/2, A5/3 Cipher unit
  - GEA1, GEA2, GEA3 Cipher Unit to support GPRS data transmission
  - Advanced static and dynamic power management features including TDMA-Frame synchronous low power mode and enhanced CPU modes(idle and sleep modes)
  - Pulse Number Modulation output for Automatic Frequency Correction(AFC)

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

3.2.3 External Devices connected to memory interface

Table 1. Memory interface

Device	Name	Maker	Remark
NAND FLASH	K5D1G12ACD-D075	Samsung	Synchronous / A synchronous
SDRAM	K5D1G12ACD-D075	Samsung	Synchronous 133MHz
LCD	IM200DBN7A	LGIT	8bit access 2times transmission

3.2.4 RF Interface

S-GOLDRadio 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.

Resource	Interconnection	Description
TX2	TXHB	Output High band(DCS/PCS) Tx
TX1	TXLB	Output Low band(850/900) Tx
RX1, RX1X	GSM850_RXP, GSM850_RXN	Input of GSM850 LNA
RX2, RX2X	GSM900_RXP, GSM900_RXN	Input of GSM900 LNA
RX3, RX3X	DCS1800_RXP, DCS1800_RXN	Input of DCS1800 LNA
RX4, RX4X	PCS1900_RXP, PCS1900_RXN	Input of PCS1900 LNA
PABS	PA_BAND	Select PAM operation band.
FE1, FE2	VC1, VC2	Control FEM operation band & mode
PAEN	PA_EN	PAM Enable
VRAMP	TX_RAMP	Tx Ramp signal
T_OUT6	PA_MODE	Select PAM operation mode (GSM/EDGE)

3.2.5 USART Interface

KS360 have two UART Drivers as follow :

- USART0 : SW upgrade / Calibration
- USIF : BT Interface.

Table 3. USIF Interface Spec.

Resource	Name	Remark
UART0		
UART0_TXD	UART_TX	Transmit Data
UART0_RXD	UART_RX	Receive Data
USIF		
USIF_TXD	UART_BT_TX	Transmit Data
USIF_RXD	UART_BT_RX	Receive Data
T_OUT3	UART_BT_RTS	Flow Control Signal
T_OUT4	UART_BT_CTS	Flow Control Signal

3.2.6 ADC channel

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

Table 4. S-GOLDRadio ADC channel usage

ADC channel		
Resource	Interconnection	Description
M0	BAT_ID	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	LCD_ID	LCD ID measure (Hitachi LCD_ID = 0)
M7	GND	
M8	VBAT	Battery supply voltage measure
M9	N.C	
M10	JACK_TYPE	JACK type measure (Not used)

3.2.7 GPIO map

Over a hundred allowable resources, KS360 is using as follows except dedicated to SIM and Memory. KS360 GPIO(General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table.

Table 5 S-GOLDradio GPIO pin Map

Port Function #Keypad	Net Name	Description
KP_IN1	KEY_I2C_SCL	Key coder IC control
KP_IN2	KEY_I2C_SDA	Key coder IC control
KP_IN3	DIF_RESET	LCD reset
KP_IN4	BT_RESET	BT reset
KP_IN5	IF_MODE3	LCD interface mode (Hitachi LCD => High)
KP_IN6	VIB_PWR_EN	Motor LDO enable
KP_OUT0	CAM_PWR_EN	Camera LDO enable
KP_OUT1	LIN_INVERT	Motor control
KP_OUT2	TOUCH_SCL	Touch IC control
KP_OUT3	TOUCH_SDA	Touch IC control
#USART0		
USART0_RXD	UART_RX	UART, RS232 data
USART0_TXD	UART_TX	UART, RS232 data
USART0_RTS_N	MMC_DET	Micro SD card Detect
USART0_CTS_N	HOOK_DETECT	Earmic hook key Detect
DSPOUT0	JACK_DET	Earmic Detect
#USB		
USB_DPLUS	USB_DP	USB +
USB_DMINUS	USB_DM	USB -
#CIF:Camera Interface		
CIF_D0	CAM_D(0)	Camera DATA(0)
CIF_D1	CAM_D(1)	Camera DATA(1)
CIF_D2	CAM_D(2)	Camera DATA(2)
CIF_D3	CAM_D(3)	Camera DATA(3)
CIF_D4	CAM_D(4)	Camera DATA(4)
CIF_D5	CAM_D(5)	Camera DATA(5)
CIF_D6	CAM_D(6)	Camera DATA(6)

CIF_D7	CAM_D(7)	Camera DATA(7)
CIF_PCLK	CAM_PCLK	Camera pixel clock
CIF_HSYNC	CAM_HS	Camera H sync
CIF_VSYNC	CAM_VS	Camera V sync
CLKOUT2	CAM_MCLK	Camera main clock
CIF_PD_GPIO	CAM_PWDN	Camera sensor power down
CIF_RESET_GPIO	CAM_RST	Camera reset
#Display_Interface		
DIF_D0	DIF_D(0)	LCD DATA(0)
DIF_D1	DIF_D(1)	LCD DATA(1)
DIF_D2	DIF_D(2)	LCD DATA(2)
DIF_D3	DIF_D(3)	LCD DATA(3)
DIF_D4	DIF_D(4)	LCD DATA(4)
DIF_D5	DIF_D(5)	LCD DATA(5)
DIF_D6	DIF_D(6)	LCD DATA(6)
DIF_D7	DIF_D(7)	LCD DATA(7)
DIF_CS1	DIF_CS	LCD chip select
DIF_CS2	BT_INT	BT interrupt
DIF_CD	DIF_CD	LCD command/data switch
DIF_WR	DIF_WR	LCD write
DIF_RD	DIF_RD	LCD read
DIF_HD	EOC	Indicating End of charging
DIF_VD	DIF_VSYNC	LCD V sync
DIF_RESET1_GPIO	KEY_INT	Key coder IC interrupt
#I2C		
I2C_SCL	I2C_SCL	For Sub-PMIC/Audio DAC/Camera
I2C_SDA	I2C_SDA	For Sub-PMIC/Audio DAC/Camera
#Chip Card (USIM1)		
CC_IO	SIM_DATA	SIM card I/O
CC_CLK	SIM_CLK	SIM card CLOCK
CC_RST	SIM_RST	SIM card RESET
#MMCI: Multimedia Card IF		
MMCI_CMD	MMC_CMD	uSD Card command/response
MMCI_DAT0	MMC_D0	uSD Card Data (0)
MMCI_CLK	MMC_CLK	uSD Card Clock

#USIF: Universal Serial IF		
USIF_TXD_MTSR	UART_BT_TX	BT UART data output
USIF_RXD_MRST	UART_BT_RX	BT UART data input
USIF_SCLK	BT_VCXO_EN	BT vcxo (26MHz) enable
#I2S1: DAI-PCM		
I2S1_CLK0	I2S1_CLK	BT synchronous data clock
I2S1_RX	I2S1_RX	BT synchronous data input
I2S1_TX	I2S1_TX	BT synchronous data output
I2S1_WA0	I2S1_WA0	BT synchronous data sync
#MMCI: SD-Extension		
MMCI_DAT1	MMC_D1	uSD Card Data (1)
MMCI_DAT2	MMC_D2	uSD Card Data (2)
MMCI_DAT3	MMC_D3	uSD Card Data (3)
#Voiceband: Analog Interface		
EP_N	BB_SND_L	For Speaker
EP_P	BB_SND_R	For Speaker
HS_N	RCV_N	For Receiver
EP_CM	NA	
HS_P	RCV_P	For Receiver
MIC1_N	MIC_N	For Mic
MIC1_P	MIC_P	For Mic
MIC2_N	HS_MIC_N	For Headset Mic
MIC2_P	HS_MIC_P	For Headset Mic
VMIC	MICBIAS	Power for MIC
#Measurement		
M0	BAT_ID	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	LCD_ID	LCD ID measure (Hitachi LCD_ID = 0)
M7	GND	
M8	VBAT	Battery voltage measure
M9	NA	
M10	JACK_TYPE JACK	type measure (Not used)
#JTAG		
TDO	TDO	JTAG
TDI	TDI	JTAG
TMS	TMS	JTAG

#FCDP:Flash Controller DMA Port		
FCDP_RBN	FCDP	
#GSM TDMA Timer: GSM Control		
T_OUT3	UART_BT_RTS	BT UART request to send
T_OUT4	UART_BT_CTS	BT UART clear to send
T_OUT5	TOUCH_INT	Touch IC interrupt
T_OUT6	PA_MODE	PAM
T_OUT7	RPWRON	Remote Power On
T_OUT8	LIN_PWM_FRQ	Motor control
#Other Functional Pins:		
Clocks and control		
CLKOUT0	CHG_EN	Charging enable
F32K		To 32KHz crystal
OSC32K		To 32KHz crystal
RESET_N	nRESET	
#Extra I/Os & Interrupt Inputs		
DSPIN0	CLK32K	BT 32kHz sleep clock
DSPIN1	SLIDE_OPEN	Slide open/close detect
#Baseband I/0		
FSYS3	NA	
FSYS2	26MHZ_BT	BT Main clock
#Reference Oscillator / PLL		
REFR	NA	
XOX	26MHz	26MHz Main clock
XO	26MHz	26MHz Main clock
#LED's		
BL1_PWM / VSENSE1	DBB_BL_PWM	Not used
BL2_PWM	LIN_PWM_MAG	Motor control
BL3_PWM	SUB_KEY_BL	Sub Key LED control
VSS_FLASH	GND	
FLASH_SINK	QWERTY_KEY_BL	Qwerty Key LED control
#Control Logic		
LPBCL_ECHO	GND	
ON_OFF / SCAN_RESET	PWRON	
RESET2_N / VSENSE2	M_RESET	Memory reset
PO_RESET_N / SCAN_OUT2	PO_RESET	

3.3 Power management IC

3.3.1 General Description

S-GOLDradio has a highly integrated Power and Battery Management block for mobile handsets.

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
- Vibrator driver with adjustable voltage
- Fully controlable by software via I2C - Bus
- Temperature and battery voltage sensors
- Interrupt channels for peripherals

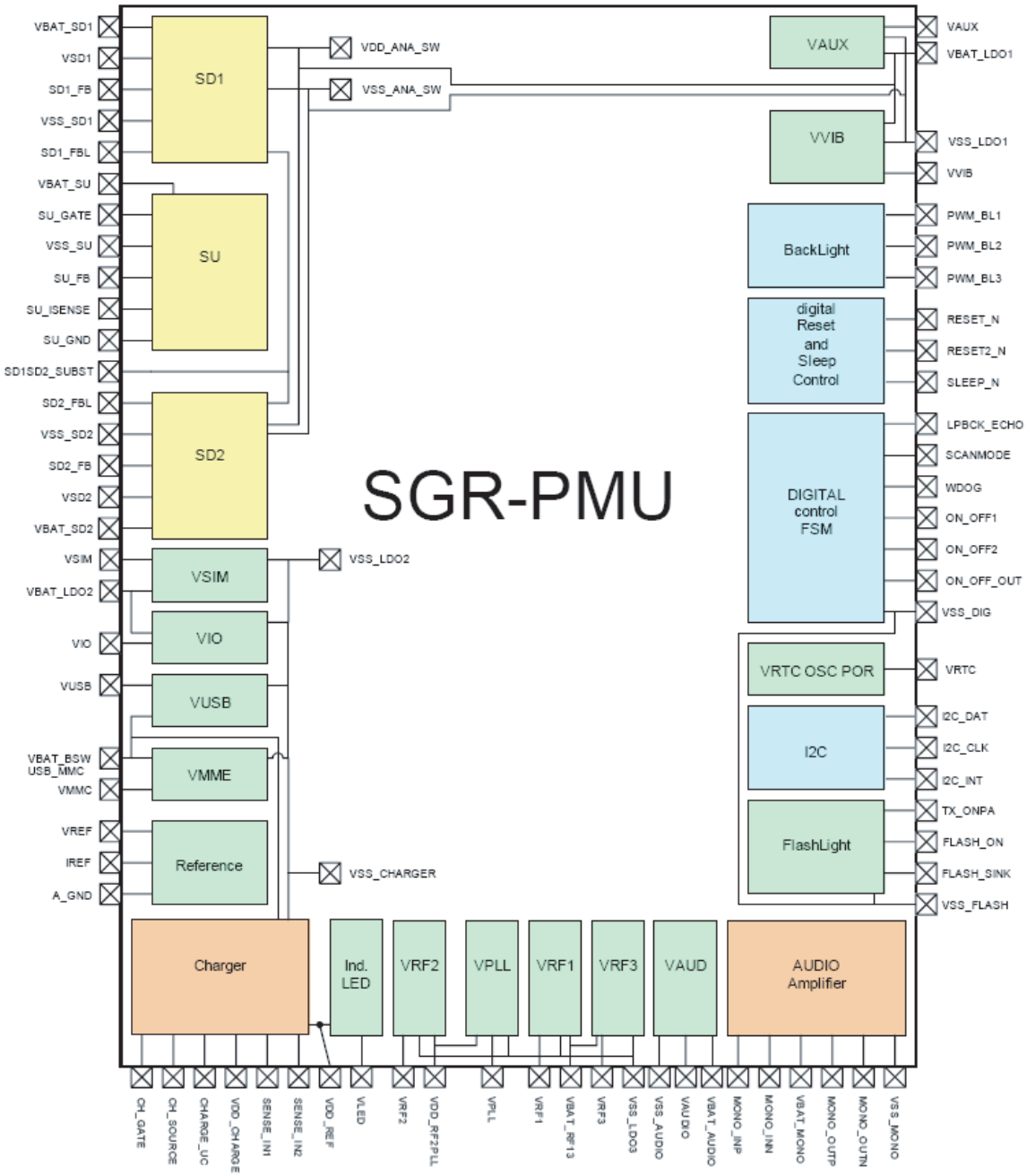


Figure 3. Top level block diagram of the PMU Block of PMB8888

3. TECHNICAL BRIEF

Table 6. LDOs Output Table of PMU Block of PMB8888

LDO	Net name	Output Voltage	Output Current	Usage
SD1	VSD1_1V5	1.5V	400mA	Core & for LDO
SD2	1V8_VSD2	1.8V	300mA	Memory
VAUX	2V9_VAUX	2.9V	150mA	BT Power
VIO	2V62_VIO	2.62V	100mA	Peripherals
VSIM	2V9_VSIM	2.9V	22mA	SIM card
VMME	2V9_VMMC	2.9V	150mA	SD Card
VAUDIO	2V5_VAUDIO	2.5V	220mA	Headset
VUSB	3V1_VUSB	3.1V	40mA	USB Switch
VRF1	2V85_VRF1	2.85V	150mA	
VRF2	1V5_VRF2	1.5V	80mA	
VRF3	2V85_VRF3	2.85V	150mA	
VPLL	1V5_VPLL	1.5V	20mA	S-GOLDRadio PLL
VRTC	2V0_VRTC	2.0V	4mA	RTC
VVIB	2V8_VVIB	2.8V	140mA	Touch

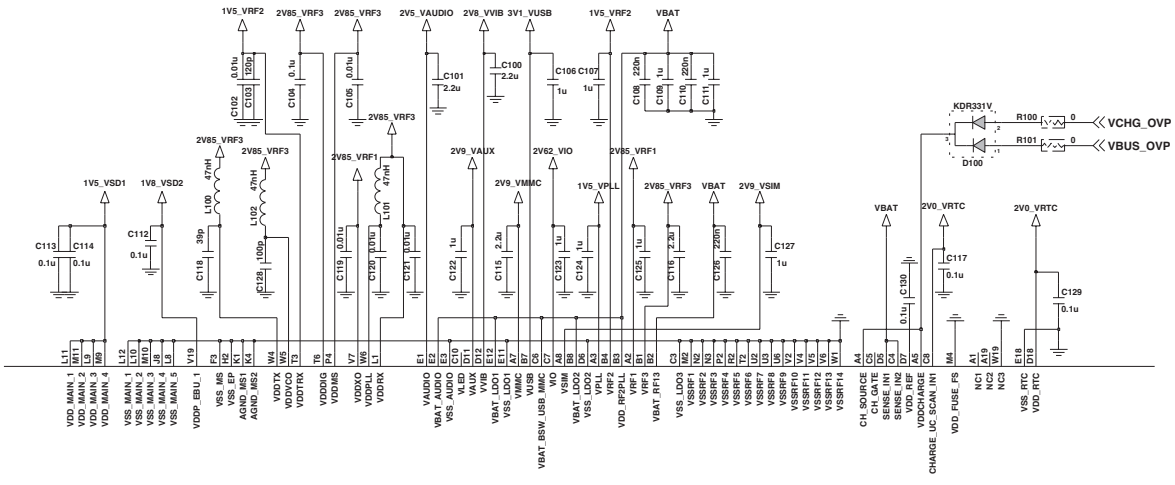


Figure 4. LDOs Circuit Diagram of KS360 series

3.3.2 Charging

KS360 charge the battery using an external charging IC of Intersil ISL9221 for Li-Polymer battery in 4.2 Volts level.

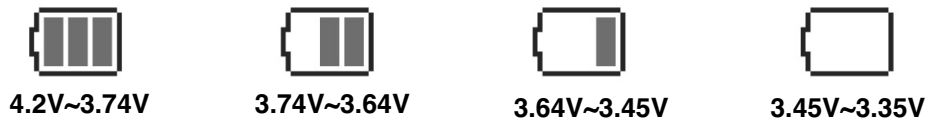


Figure 5. Battery Block Indication

1 Charging method : CC-CV
2 Charger detect voltage : 4.0 V
3 Charging time : 2h 30m
4 Charging current : 400 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 : 4.15 V
9 Low battery alarm
  a. Idle : 3.45 V ~ 3.35 V
  b. Dedicated : 3.45 V ~ 3.35 V
10. Low battery alarm interval
  a. Idle : 3 min
  b. Dedicated : 1 min
11. Switch-off voltage : 3.35 V
12. Charging temperature adc range
  a. ~ -5 : low charging voltage operation (3.6 V ~ 3.9 V)
  b. -5 ~ 50 : standard charging (up to 4.2 V)
  c. 50 ~ : low charging voltage operation (3.6V ~ 3.9V)

3.4 Power ON/OFF

KS360 series Power State : Defined 3cases as follow

- ▶ Power-ON : Power key detect (S-GOLDradio PWRON port)
- ▶ Power-ON-charging : Charger or USB detect.

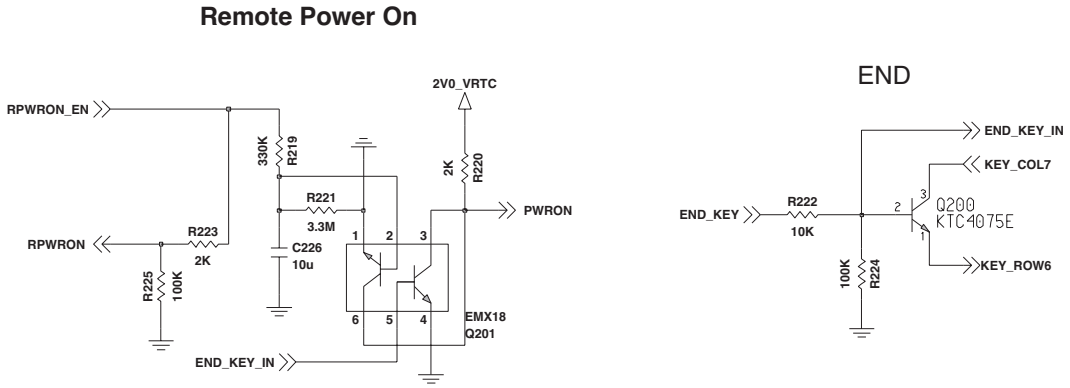


Figure 6. Remote power on and End-key power on circuit.

Input ON is a power-on input for S-GOLDradio with 2 active high levels (see Figure 6). It might be triggered by a push button. 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 BJT as following figure. As monitoring the RPWRON and Key matrix KEY_COL7 & KEY_ROW6, KS360 series system recognize whether remote power on or End-key pushed

3.5 SIM interface

KS360 supports 1.8V & 3V plug in SIM, SIM interface scheme is shown in (Figure 7). SIM_DATA, SIM_CLK, SIM_RST ports are used to communicate with BBP(S-GOLDRadio).

SIM Interface

SIM_CLK : SIM card reference clock

SIM_RST : SIM card Async /sync reset

SIM_DATA : SIM card bidirectional data

SIM CONNECTOR

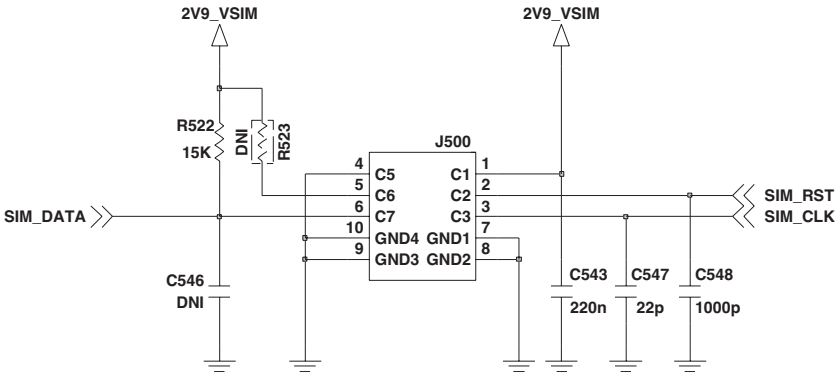


Figure 7. SIM Circuit

3.6 Micro SD external memory Interface

In KS360 series a Micro SD slot for external Memory is connected to PMB8888.

MICRO SD Connector

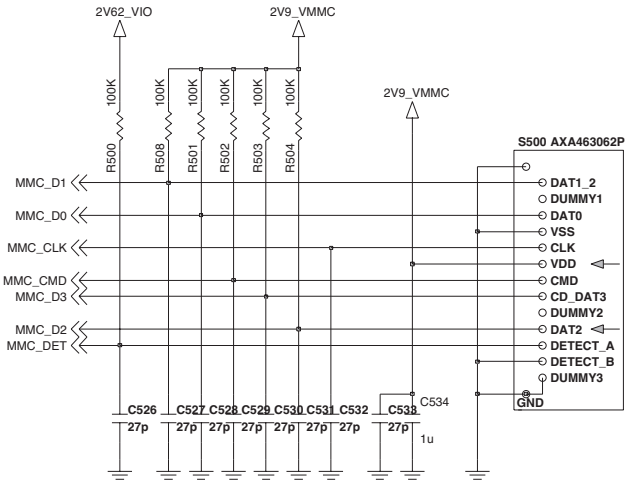


Figure 8. Micro SD Card Circuit

Micro SD memory pad assign.

SD mode			
Pin No.	**Name**	**Type**	**Description**
DAT1_2	MMC_D1	I/O	Data bit [1]
DUMMY1	NC		
DAT0	MMC_D0	I/O	Data bit [0]
VSS	GND	GND	Ground
CLK	MMC_CLK	I	Clock
VDD	2V9_VMMC	Power	Power
CMD	MMC_CMD	I/O	Command response
CD_DAT3	MMC_D3	I/O	Data bit [1]
DUMMY2	NC		
DAT2	MMC_D2	I/O	Data bit [2]
DETECT_A	MMC_DET		
DETECT_B	GND	GND	Ground
DUMMY3	GND	GND	Ground

3.7 Memory

1Gbit NAND Flash & 512Mbit SDRAM employed on KS360 series with 8 bit bus for NAND and 16bit bus for SDRAM thru ADD(0) ~ ADD(24). The 1Gbit NAND Flash memory with SDRAM stacked device family offers multiple high-performance solutions.

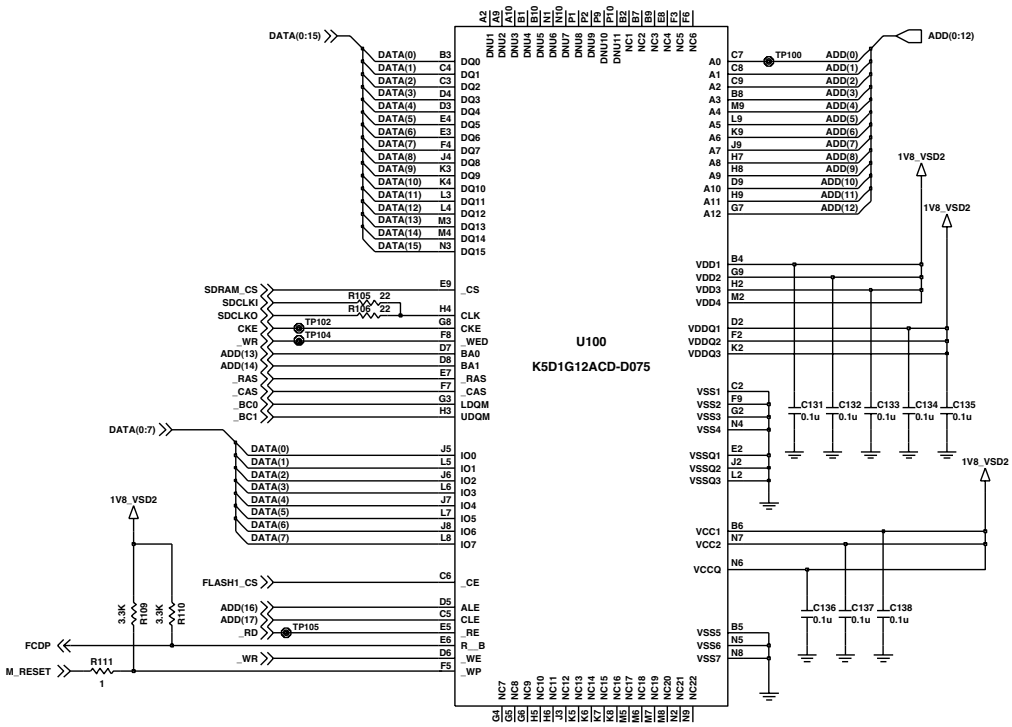


Figure 9. Memory Circuit

3.8 LCD Display

LCD module include:

- Main LCD: 240x320 262K TFT 2.4”
- Backlight : 5 piece of white LED

LCD Connector Interface Spec:

Table 7. LCD Connector Interface Spec.

Pin No.	Pin Name	I/O	Description
1	GND		Ground
2	PWM	O	PWM signal output for backlight control
3	DTX3	I	Interface Mode
4	DTX1	I	Interface Mode
5	DTX1	I	Interface Mode
6	VSYNC-O	O	Vsync Interface out
7	RD	O	Read
8	WR	I/O	Write
9	RS	I/O	Address/Data select
10	CS	I/O	Chip Select
11	D15	I/O	Data[15] for LCD
12	D14	I/O	Data[14] for LCD
13	D13	I/O	Data[13] for LCD
14	D12	I/O	Data[12] for LCD
15	D11	I/O	Data[11] for LCD
16	D10	I/O	Data[10] for LCD
17	D9	I/O	Data[9] for LCD
18	D8	I/O	Data[8] for LCD
19	D7	I/O	Data[7] for LCD
20	D6	I/O	Data[6] for LCD
21	D5	I/O	Data[5] for LCD
22	D4	I/O	Data[4] for LCD
23	D3	I/O	Data[3] for LCD

Pin No.	Pin Name	I/O	Description
24	D2	I/O	Data[2] for LCD
25	D1	I/O	Data[1] for LCD
26	D0	I/O	Data[0] for LCD
27	LCD-ID	I	Menufacture ID
28	VCC1	I	Logic
29	VCC1	I	Analog
30	RESET	I/O	LCD reset
31	MLED5	O	LED Cathode
32	MLED4	O	LED Cathode
34	MLED3	O	LED Cathode
34	MLED2	O	LED Cathode
35	MLED1	O	LED Cathode
36	MLED	I	LED Anode
37	GND	-	Ground

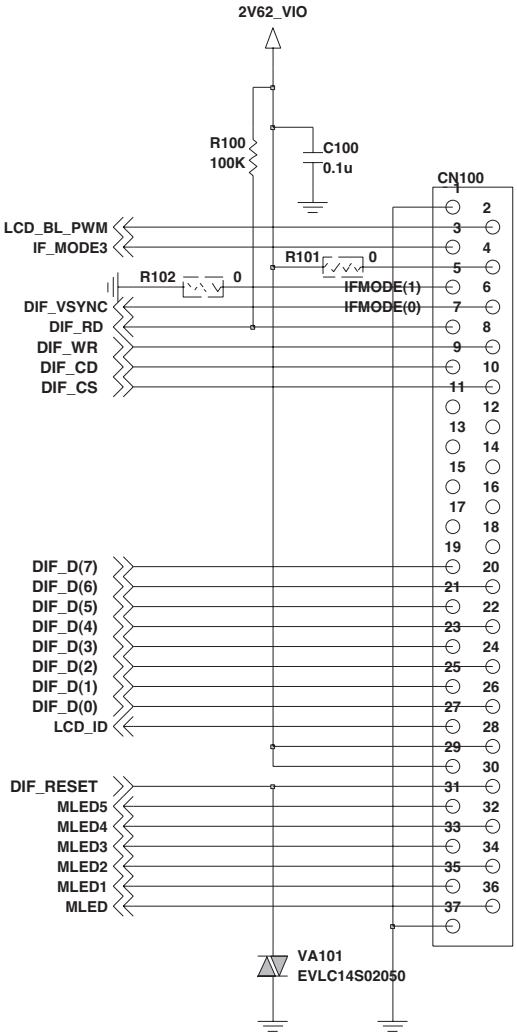


Figure 10. 37pin LCD connector circuit

3.9 Keypad Switching & Scanning

The keypad is controlled by a Key coder IC (PP2106M2). It can be used for scanning keypads up to 8 rows and 8 columns (max 64 keys). PMB8888 control PP2106M2 by KEY_I2C_SCL, KEY_I2C_SDA and KEY_INT.

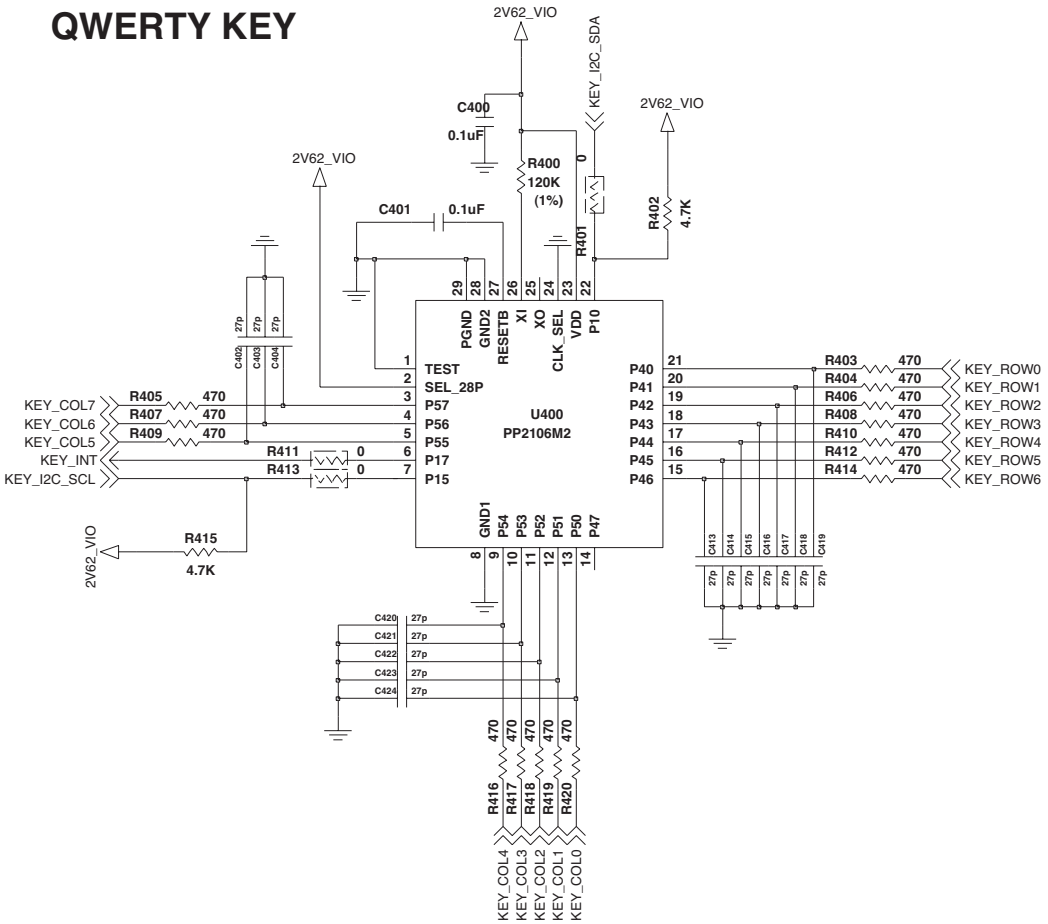


Figure 11-1. Keypad Configuration Circuit

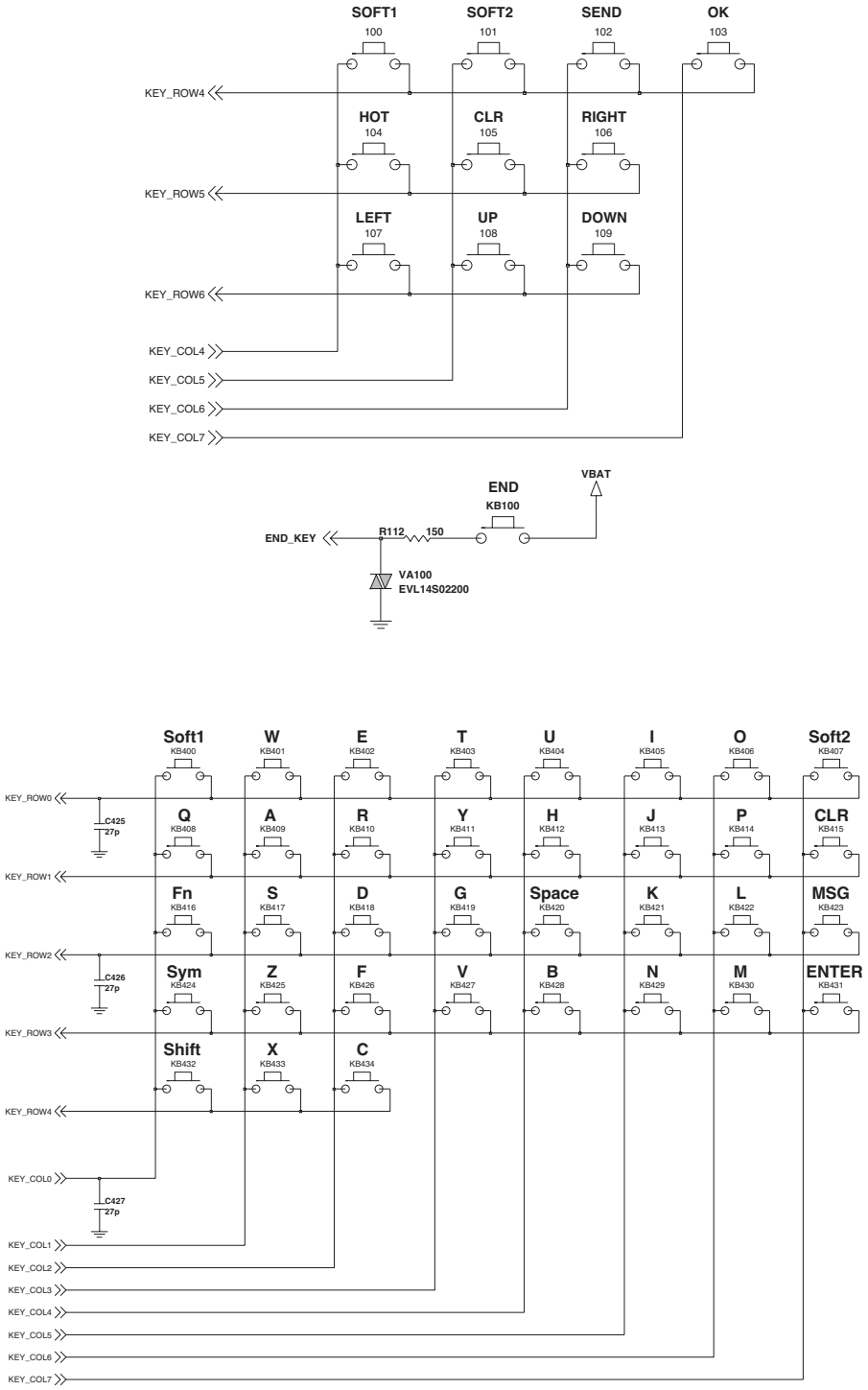
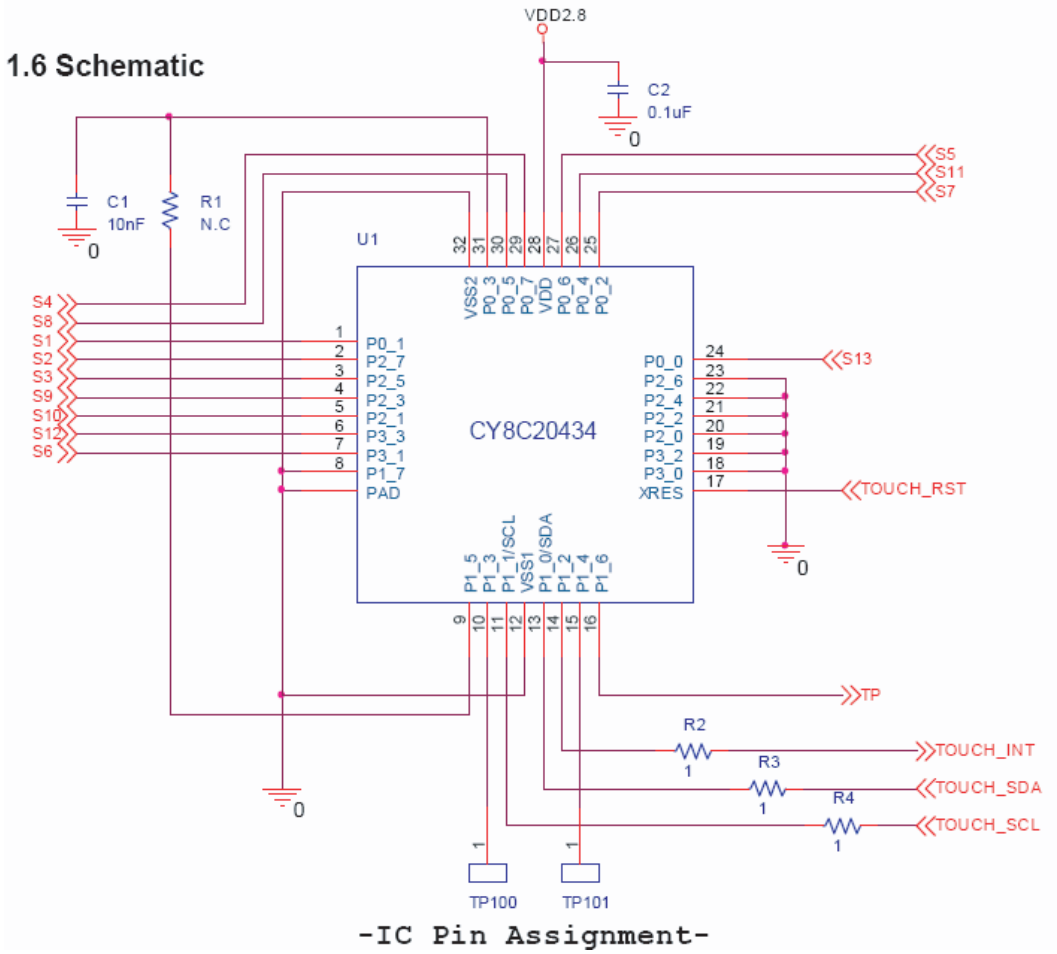
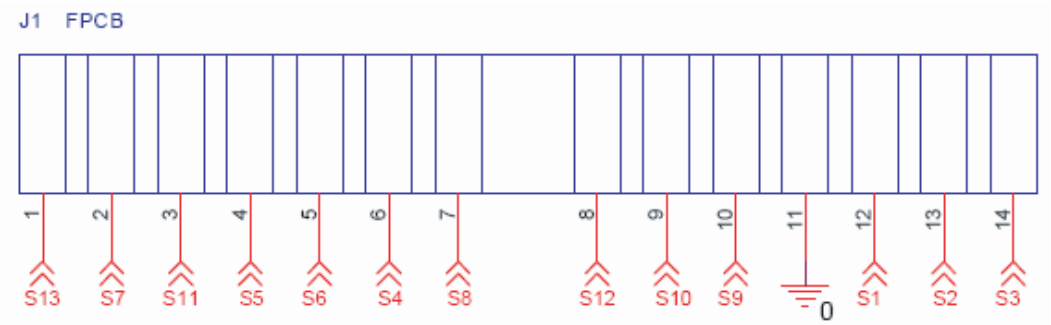


Figure 11-2. Keypad Configuration Circuit

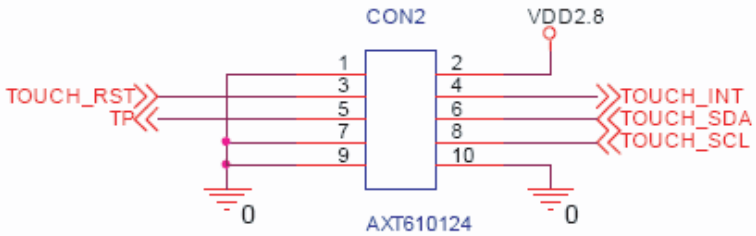
3.10 Touch KEY

The Touch keypad is controlled by CY8C20434. PMB8888 control CY8C20434 by TOUCH_SCL, TOUCH_SDA and TOUCH_INT.





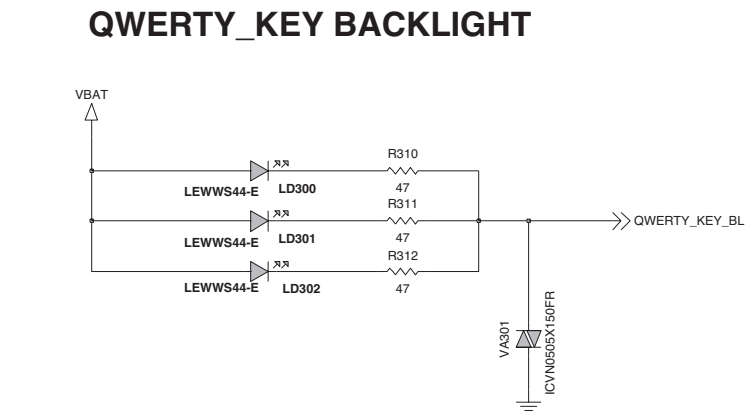
-FPCB Pin Map-



-B to B Pin Map-

3.11 Keypad back-light illumination

There are 3 snow white color LEDs on Main PCB and 7 blue color LEDs on Sub PCB for keypad illumination. Sub Keypad Back-light is controlled by S-GOLDradio PWM port which has a duty control function. And Main Keypad Back-light is controlled by S-GOLDradio FLASH_SINK port. The whole configuration of the S-GOLDradio Flash LED circuit is shown in below Figure12.



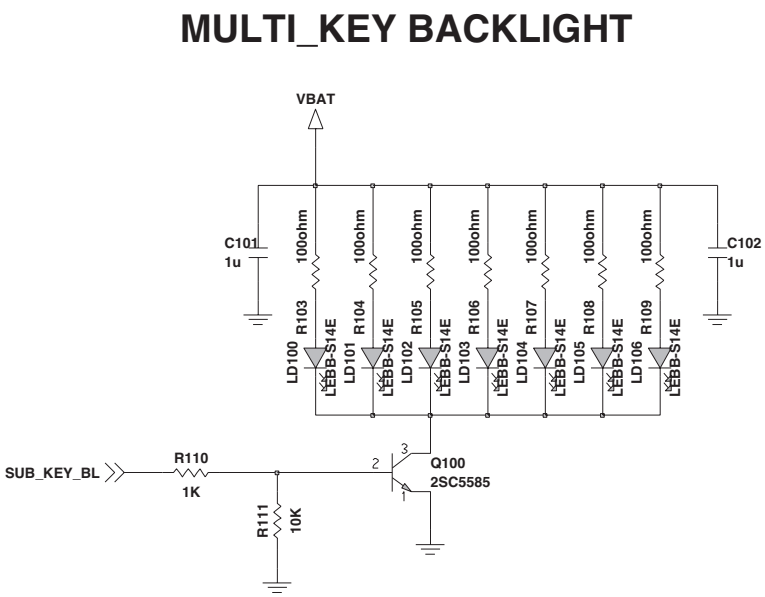


Figure 12. Qwerty + Multi_Keypad Backlight Circuit

3.12 LCD back light illumination

MAX8630W is a charge pump designed to support PWM control mode. And MAX8630W supports 5 white LEDs. The MAX8630W is capable of driving up to 5 LEDs at a total of 100mA(MAX8630W 100mA).

The current sinks may be operated individually or in parallel for driving higher current LEDs. To maximize power efficiency, the charge pump operates in 1X, 1.5X, or 2X mode, where the mode of operation is automatically selected by comparing the forward voltage of each LED with the input voltage.

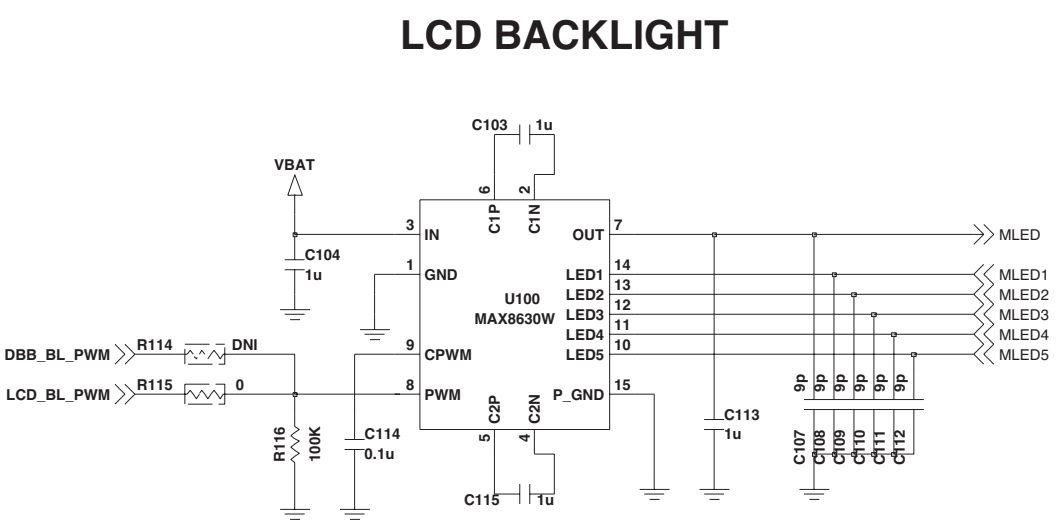


Figure 13. Charge-Pump Circuit

3.13 ISP(Image Signal Processor)

KS360 Series support Camera resolution up to 2M pixel. Camera Sensor I/F is integrated in the S-GOLDradio(PMB8888).

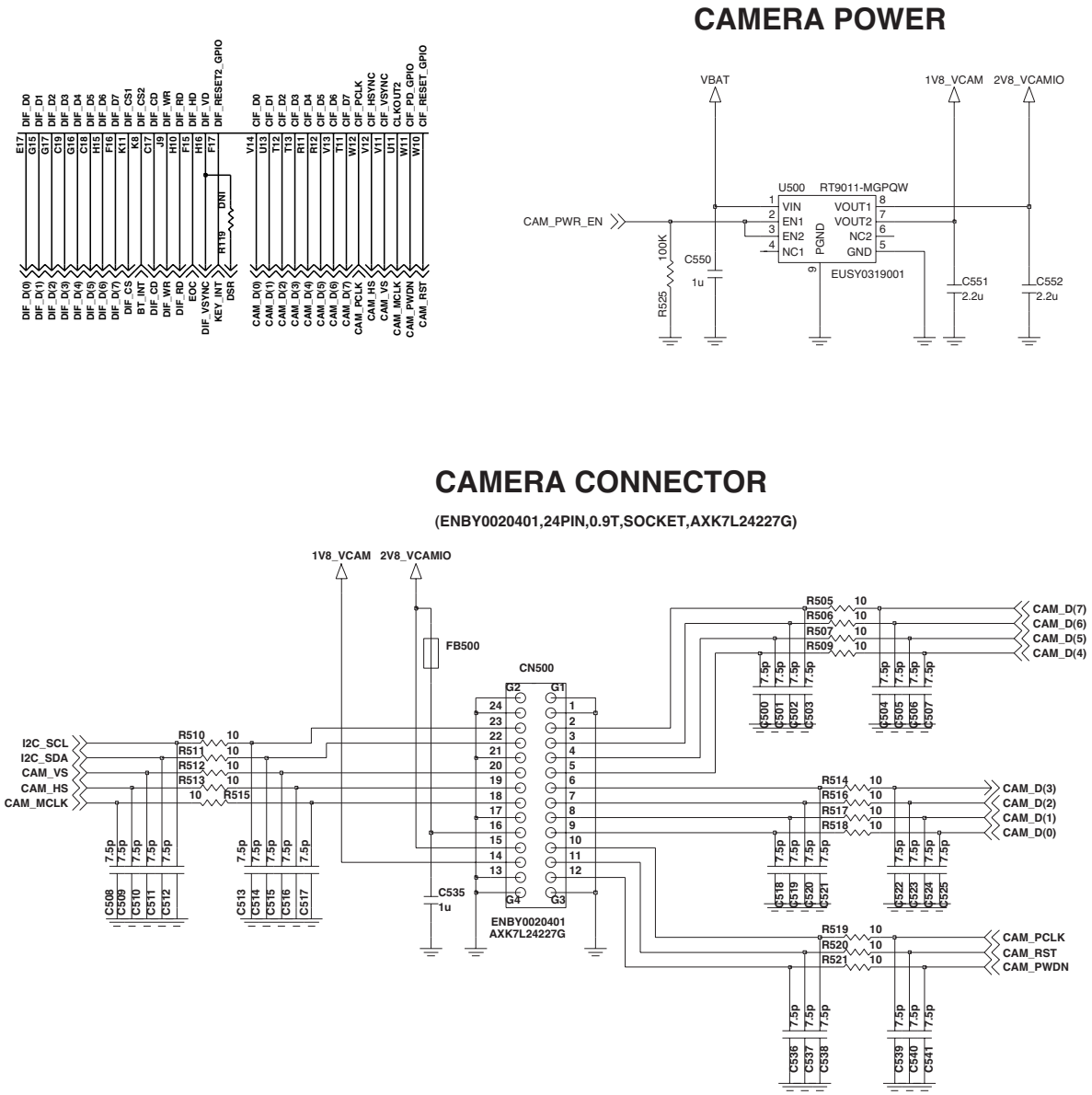


Figure 14. ISP & Camera Circuit

3.14 JTAG & ETM interface connector

In case of KS360 series mass production, the JTAG interface connector will not be mount on board. That is only for developing and software debugging purpose.

ON BOARD ARM9 JTAG & ETM INTERFACE

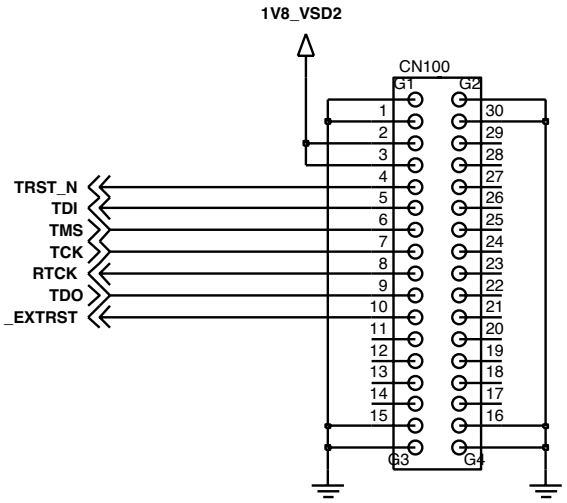


Figure 15. JTAG & ETM Interface Circuit

3.15 Audio

KS360 series Audio signal flow diagram as following diagram.

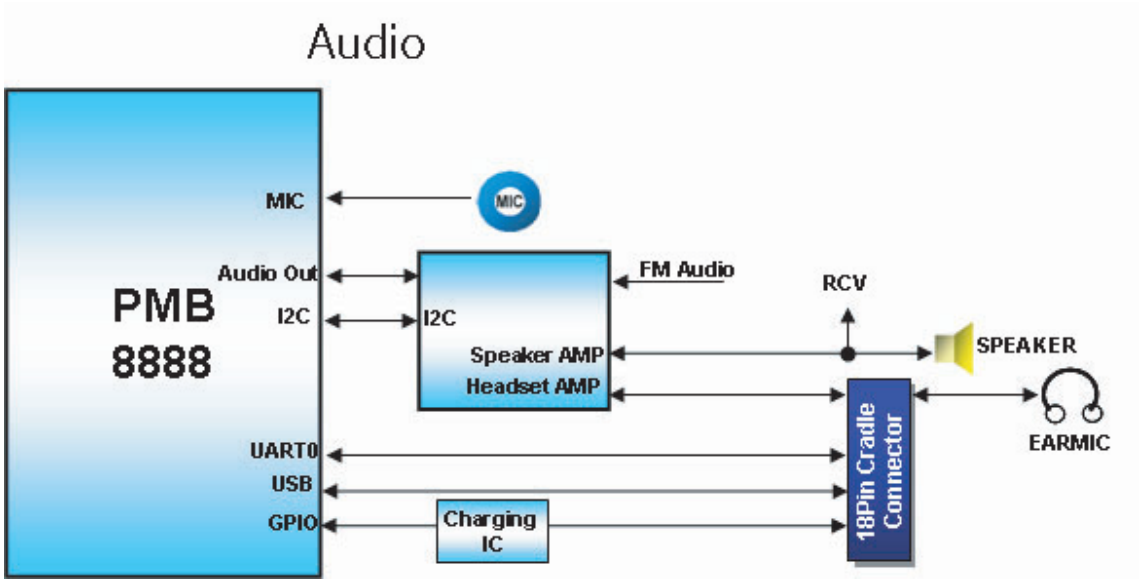


Figure 16. Audio Signal Flow Diagram

3.15.1 Audio amplifier

We use MAX9877 Audio AMP, which have speaker & headphone amplifiers. An audio signal path can be selected by I2C command.

AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR

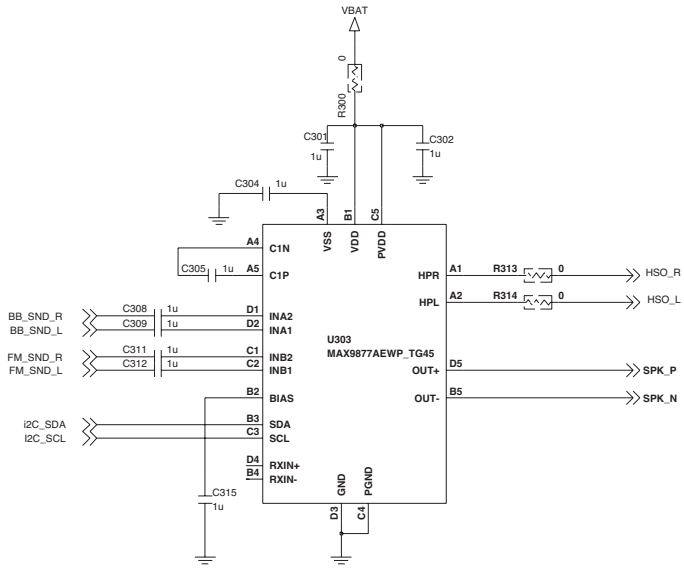


Figure 17. Audio AMP Circuit Diagram

3.15.2 Microphone circuit

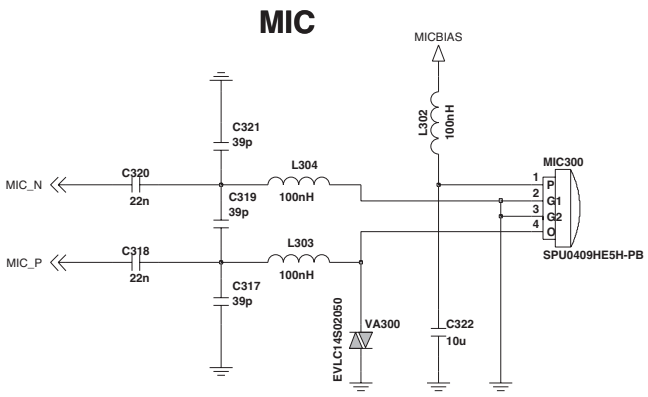


Figure 18. Microphone Circuit Diagram

3.16 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.
An over voltage protection functions are integrated in ISL9221 for USB & Charge

CHARGING IC OVP

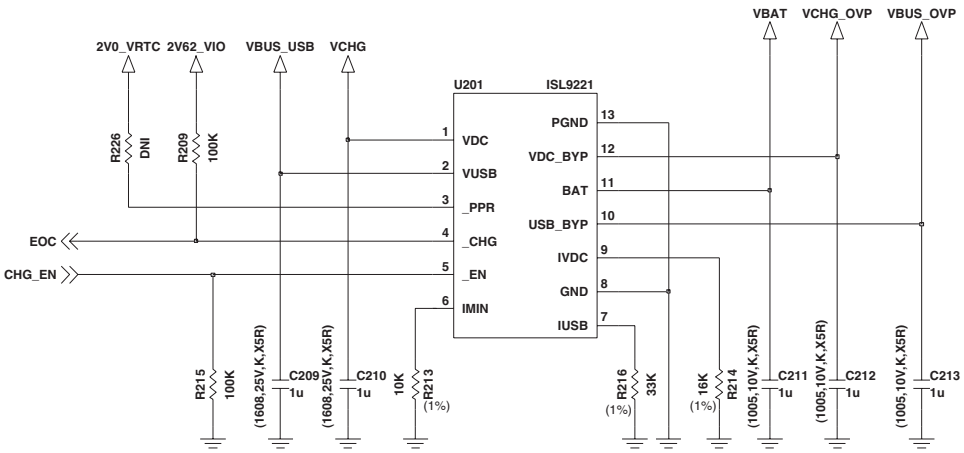


Figure 19. Charging Circuit Diagram

3.17 BLUETOOTH

General Features

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

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

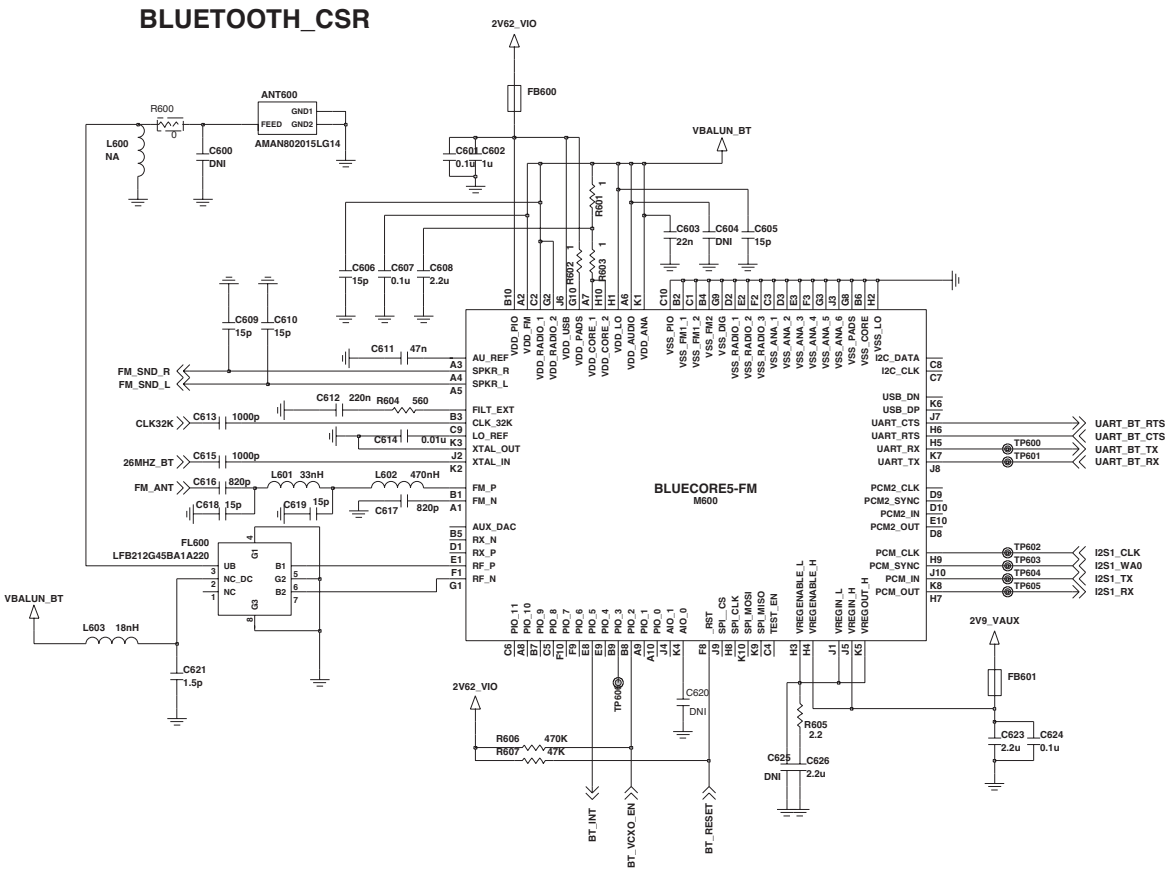


Figure 20. Bluetooth / FM Radio Circuit Diagram

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)

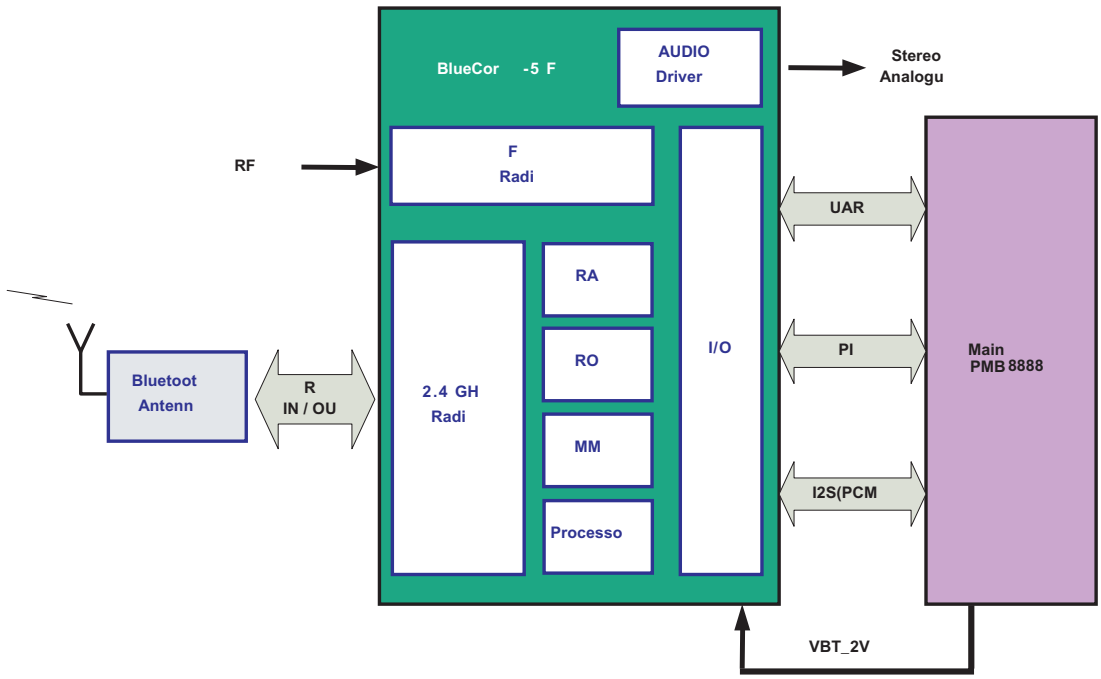


Figure 21. Bluetooth / FM Radio Block Diagram

3.18 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

3.19 18pin Multi Media Interface connector

Table 11. Multi media interface pin assign

	KM380 series MMI	
	Pin Function	**Description**
1	FM_ANT	FM radio antenna / Audio ground
2	HS_MIC	Headset microphone signal
3	JACK_TYPE	Not used
4	HS_OUT_L	Headset left sound
5	HS_OUT_R	Headset Right sound
6	USB_DP	USB_DP
7	UDB_DM	USB_DM
8	JACK_DET	Headset detect (active low)
9	VBAT	Battery voltage
10	VBAT	Battery voltage
11	RPWRON_EN	Remote power on (active high. 2.8V)
12	VCHG	Charger voltage
13	VCHG	Charger voltage
14	DSR	Not used
15	VBUS_USB	USB VBUS
16	UART_Tx	UART Tx
17	UART_Rx	UART Rx
18	GND	Power GND

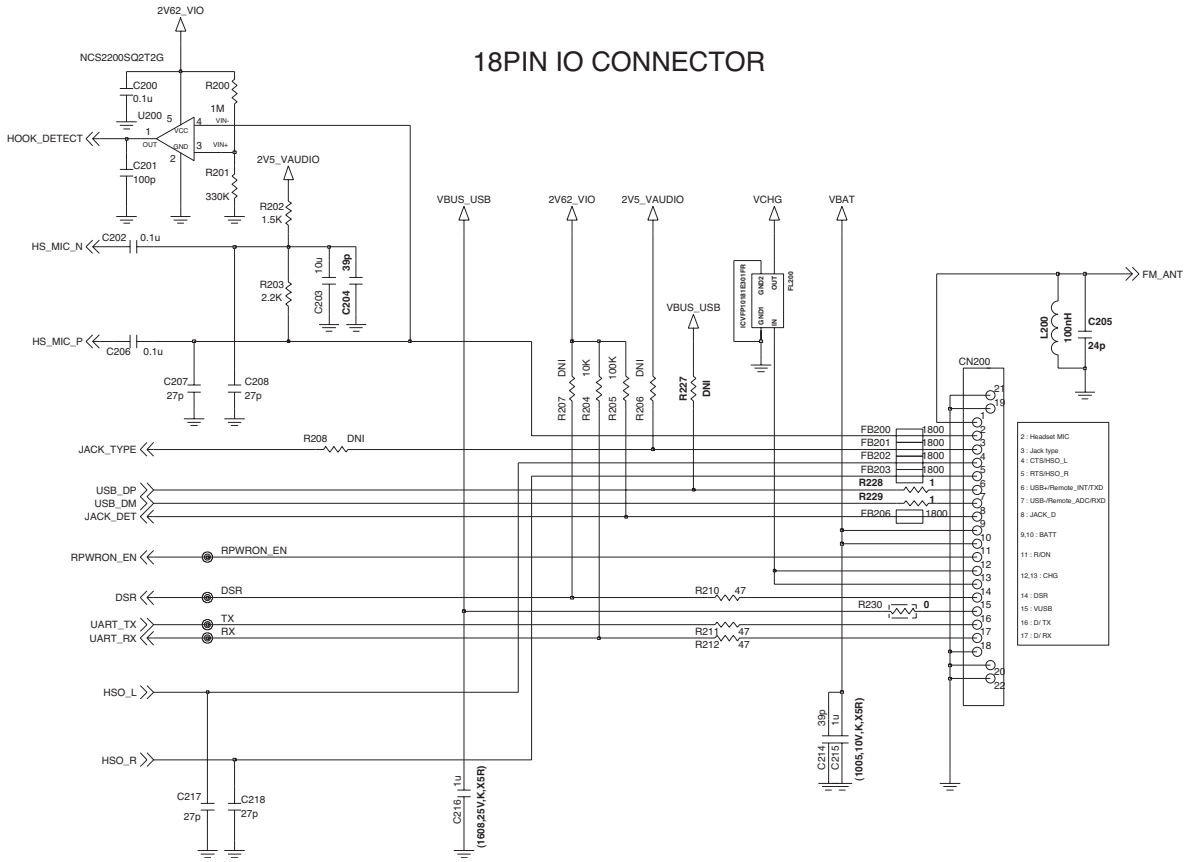


Figure 22. 18 Pin Multi port Circuit Diagram

3.20 General Description

The RF transceiver is integrated in S-GOLDradio(PMB8888),which suppors quad-band operation for voice and data transfer applications. The whole transceiver function is integrated in main IC, PMB8888 provides 4 LNA inputs for RF receiving and two outputs for PAM input for High/Low band. A direct conversion receiver and a quad-band polar transmitter for GSM and EDGE with integrated PGA functionality.

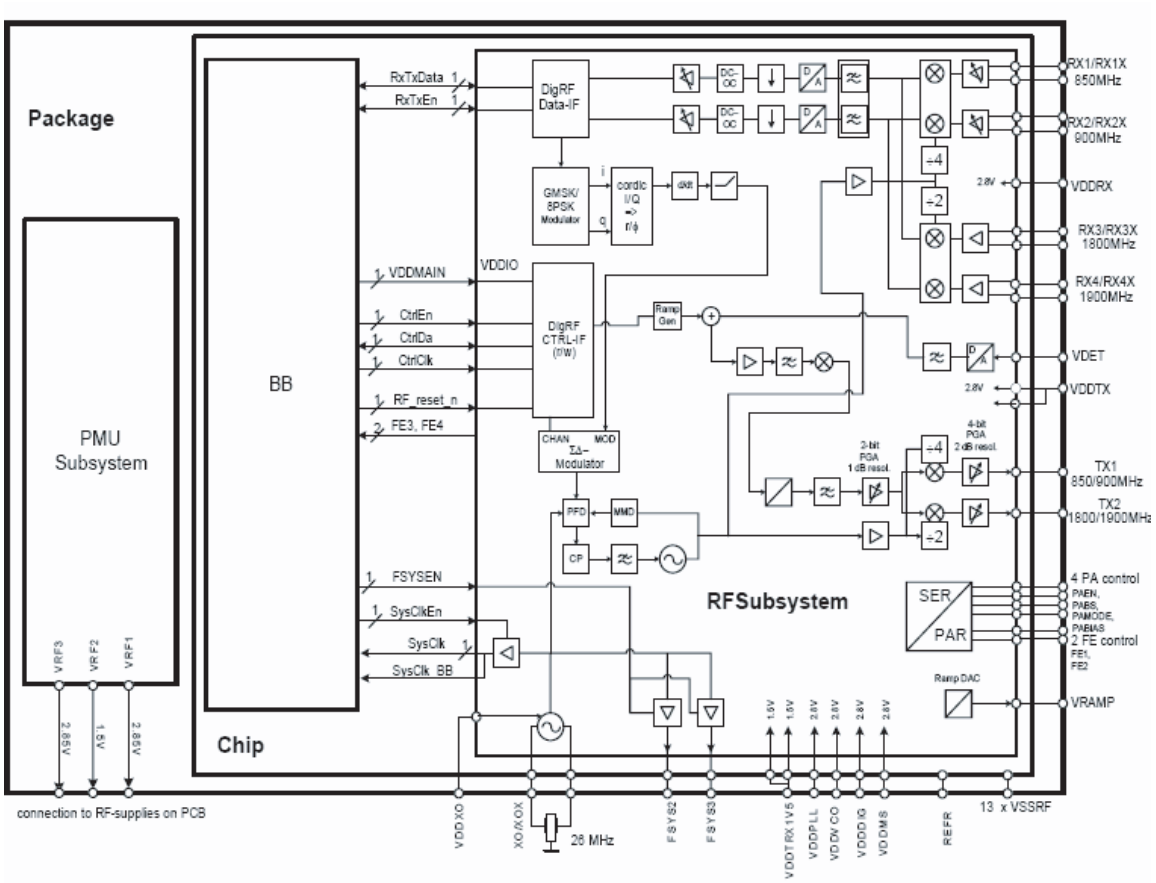


Figure 23. PMB 8888 Function Block Diagram

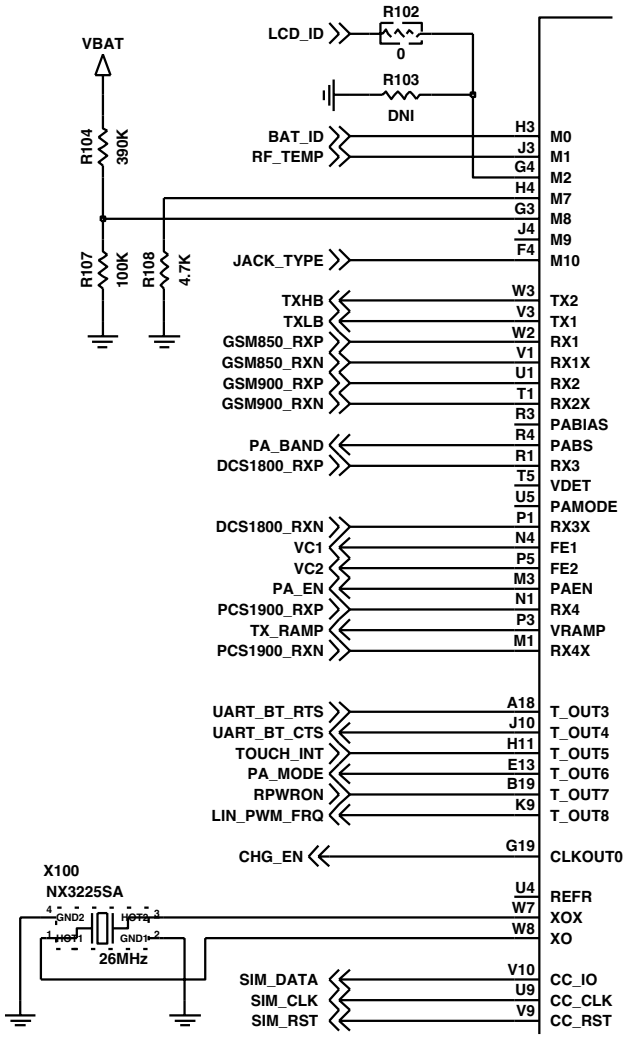


Figure 24. S-GOLD Radio Circuit Diagram

3.21 Receiver part

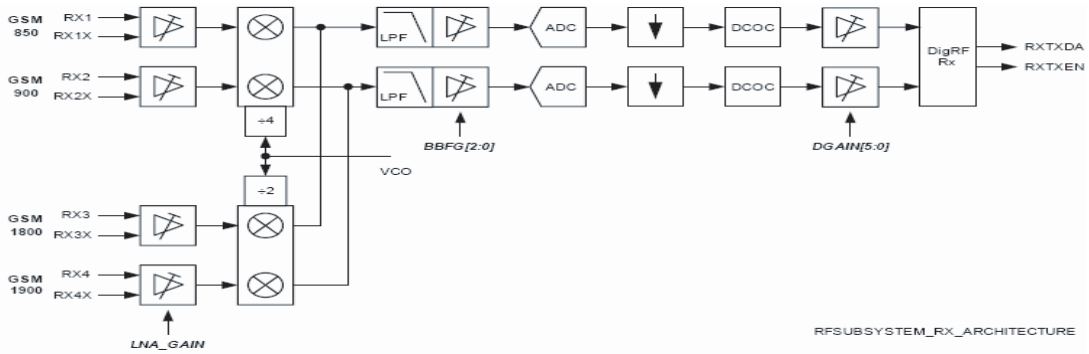


Figure 25. Receiver Block Diagram of S-GOLDradio

The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 25). The GSM850/900/DCS1800/ PCS1900 LNAs with balanced inputs are fully integrated. No inter-stage filtering is needed. The orthogonal LO signals are generated by a divider-by-four for GSM850/900 band and a divider-by-two for the DCS1800/PCS1900 band. Down conversion to baseband domain is performed by low/high band quadrature direct down conversion mixers. The baseband chain contains a LNB (low noise buffer), channel filter, output buffer and DC-offset compensation. The 3rd order low pass filter is fully integrated and provides sufficient suppression of blocking signals as well as adjacent channel interferers and avoids anti-aliasing through the baseband ADC. The receive path is fully differential to suppress on-chip interferences. Several gain steps are implemented to cope with the dynamic range of the input signals. Depending on the baseband ADC dynamic range, single- or multiple gain step switching schemes are applicable. Furthermore an automatic DC-offset compensation can be used (depending on the gain setting) to reduce the DC-offset at baseband-output. A programmable gain correction can be applied to correct for front end- and receiver gain tolerances.

3.22 Transmitter part

The GMSK transmitter supports power class 4 for GSM850 and GSM900 as well as power class 1 for DCS1800 and PCS1900. The digital transmitter architecture is based on a very low power fractional-N Sigma-Delta synthesizer without any external components (see Figure26). 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.

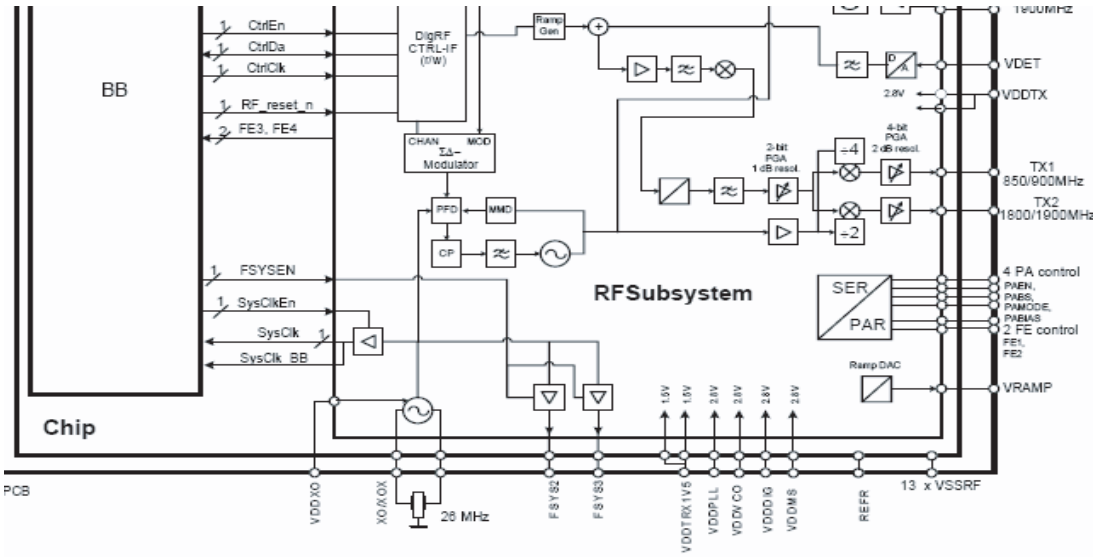


Figure 26. Transmitter Architecture Block Diagram

3.23 RF synthesizer

The transceiver contains a fractional-N sigma-delta synthesizer for the frequency synthesis in the RX operation mode. For TX operation mode the fractional-N sigma-delta synthesizer is used as Sigma-Delta modulation loop to process the phase/frequency signal. The 26MHz reference signal is provided by the internal crystal oscillator. This frequency serves as comparison frequency of the phase detector and as clock frequency for all digital circuitry.The divider in the feedback path of the synthesizer is carried out as a multi-modulus divider (MMD). The loop filter is fully integrated and the loop bandwidth is about 100 kHz to allow the transfer of the phase modulation. The loop bandwidth is automatically adjusted prior to each slot (OLGA^2). To overcome the statistical spread of the loop filter element values an automatic loop filter adjustment (ALFA) is performed before each synthesizer startup.

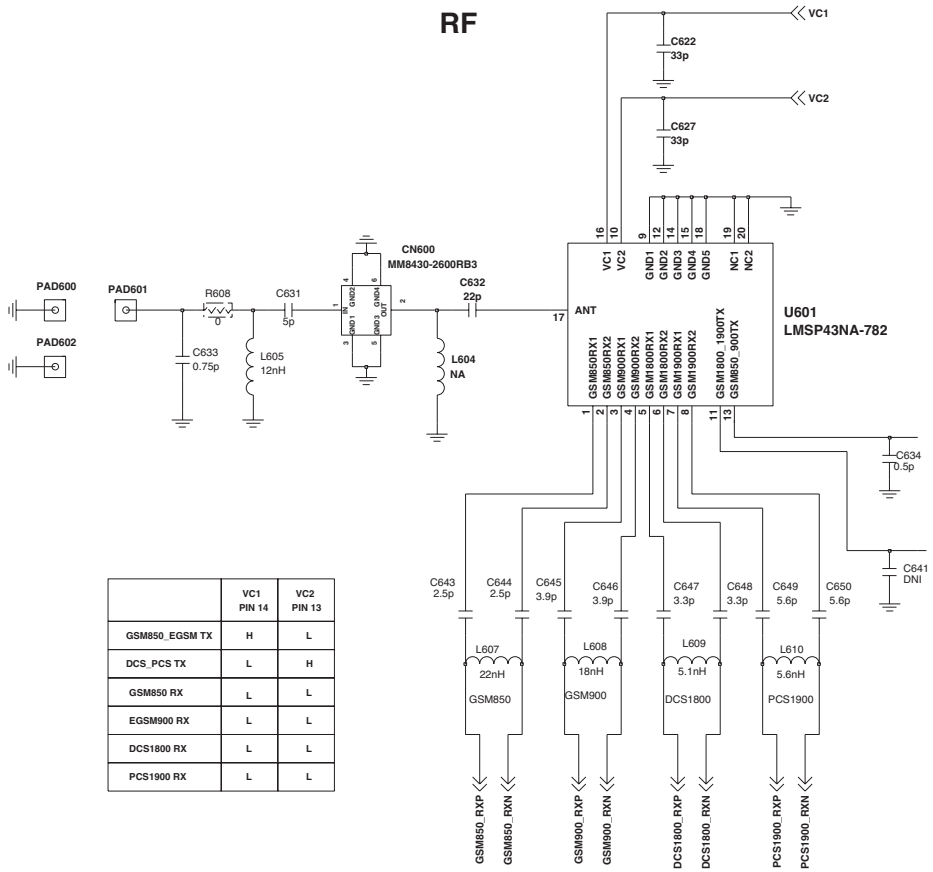
The fully integrated quad-band VCO is designed for the four GSM bands (850, 900, 1800, 1900 MHz) and operates at double or four times transmit or receive frequency. To cover the wide frequency range the VCO is automatically aligned by a binary automatic band selection (BABS) before each synthesizer startup.

3.24 DCXO

The transceiver 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 overall pulling range of the DCXO consists of eight subranges. The subrange closest to the '0ppm' at the middle AFC-value is selected during the calibration process in the mobile's production and is used for the rest of the lifetime. The frequency tuning is performed along the selected subrange by programming the frequency control word (XO_TUNE) via the three wire bus ("3Wbus").

3.25 Front End Module control

Implemented in the Transceiver are two outputs 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.



	VC1 PIN 14	VC2 PIN 13
GSM850_EGSM TX	H	L
DCS_PCS TX	L	H
GSM850 RX	L	L
EGSM900 RX	L	L
DCS1800 RX	L	L
PCS1900 RX	L	L

Figure 27. FEM Circuit Diagram

3.26 Power Amplifier Module

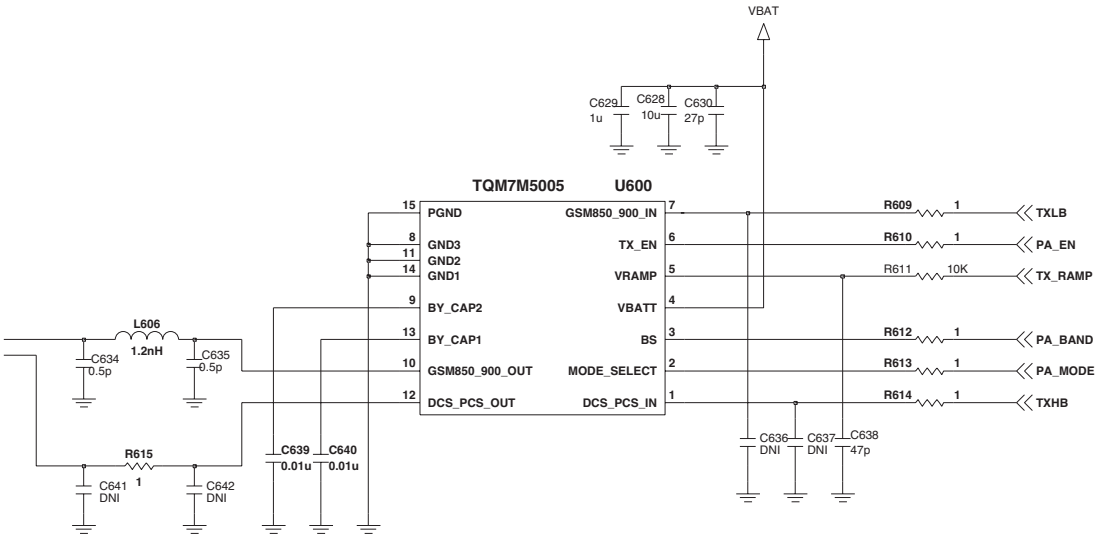


Figure 28. Power Amplifier Circuit Diagram

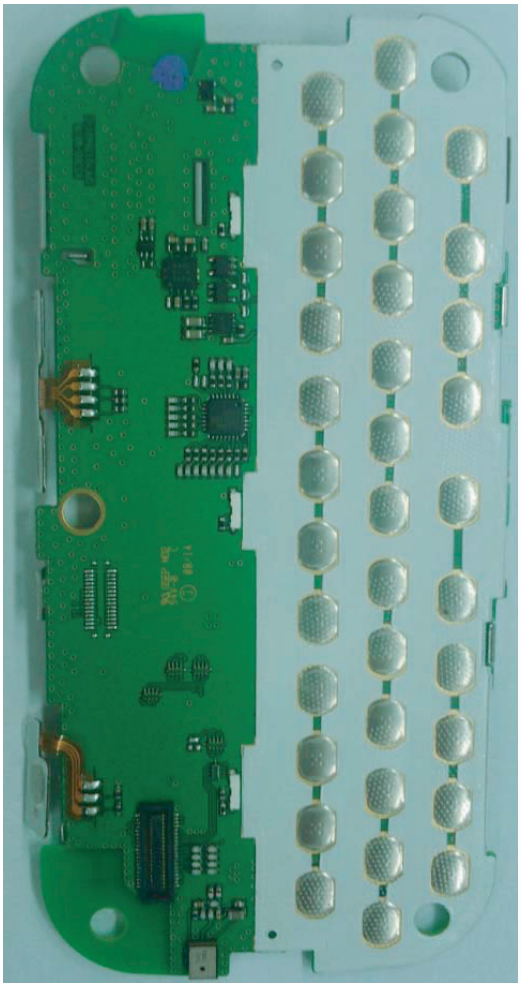
Table 10 PAM pin description

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

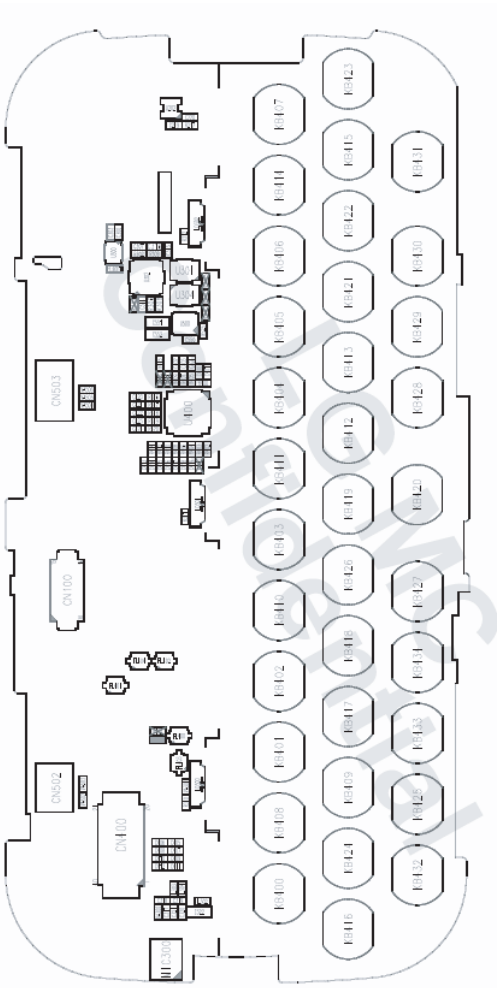
4. PCB layout

4.1 Main PCB component placement

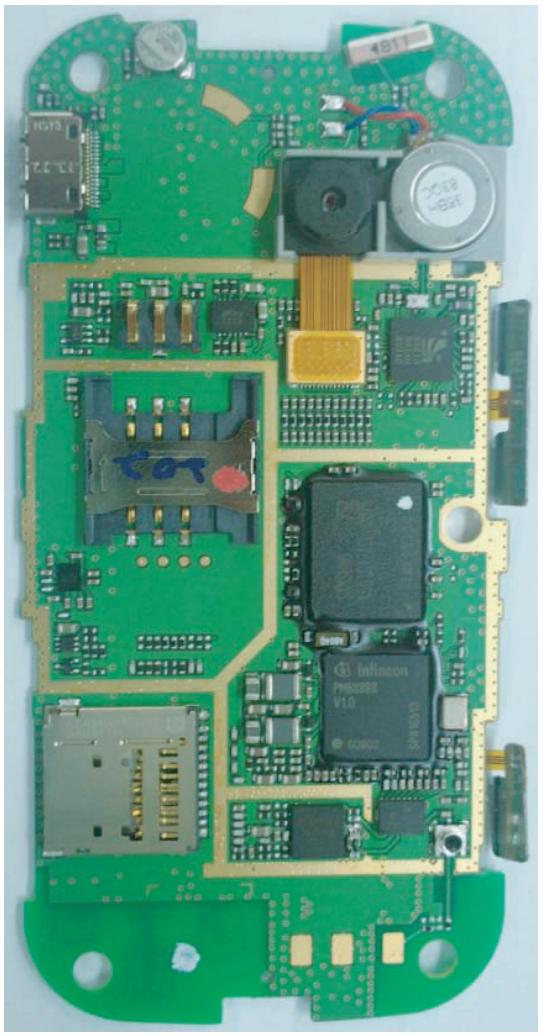
Main PCB Top



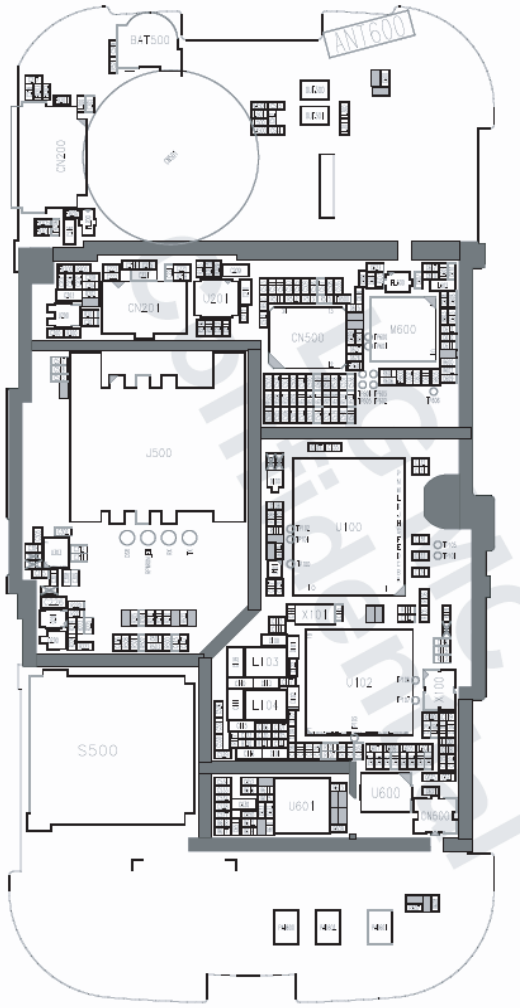
Main PCB Top placement



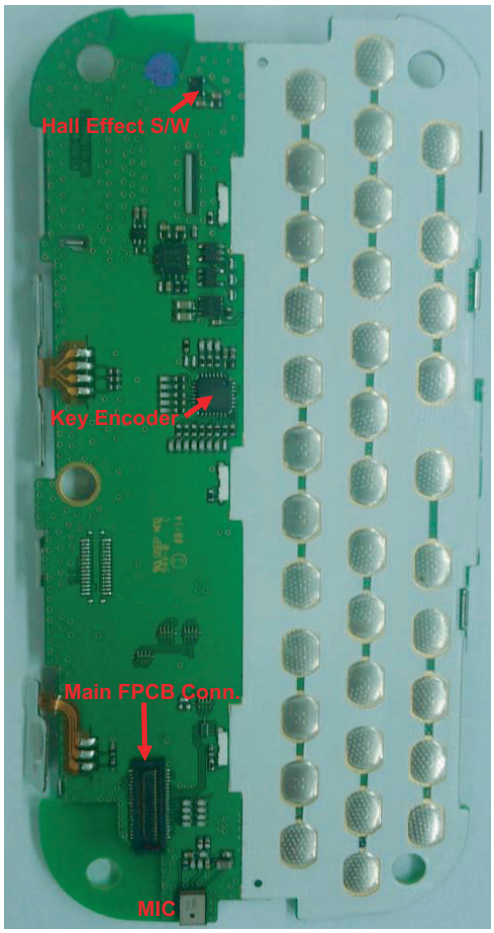
Main PCB bottom

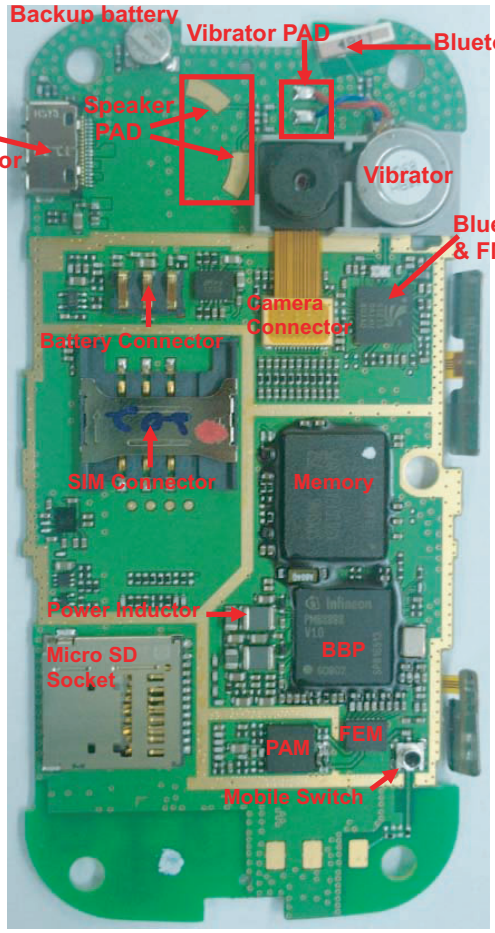


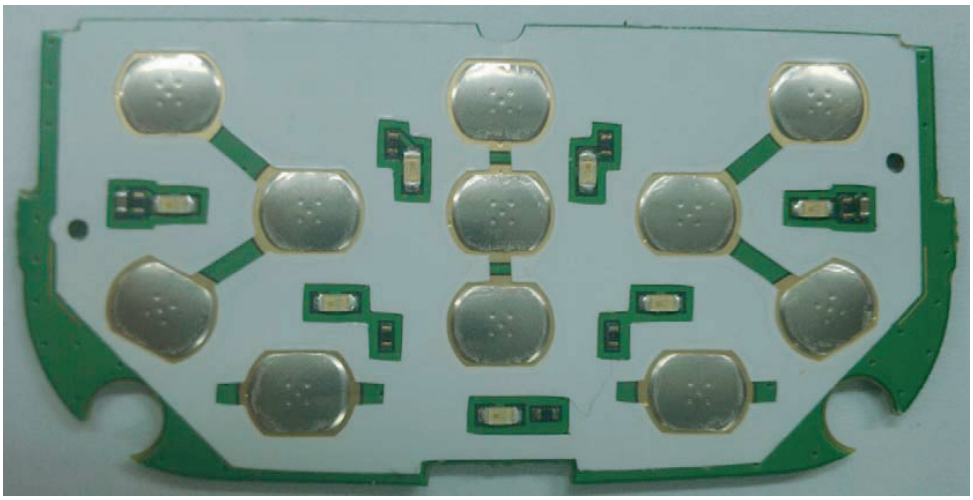
Main PCB bottom placement



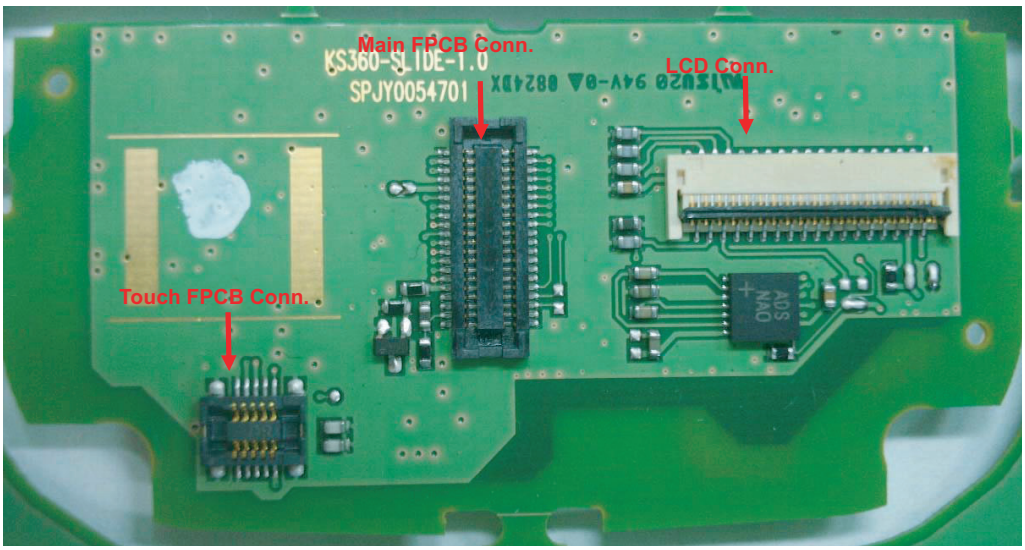
4. PCB layout







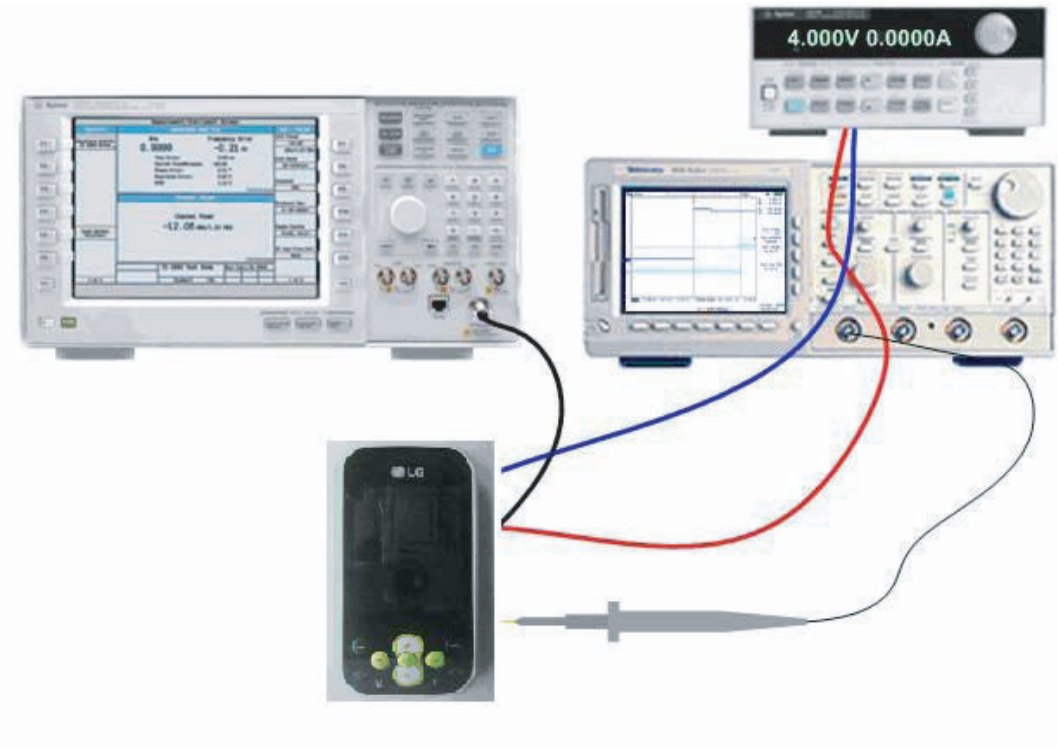
KEY PCB Top



KEY PCB Bottom

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 an phone call.

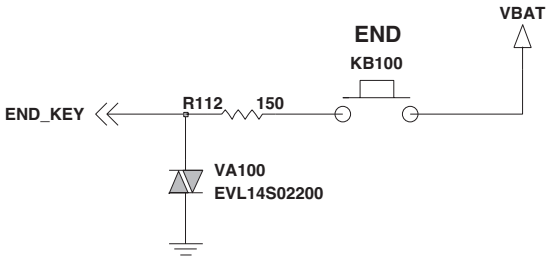
-Follow trouble shooting procedure

5.2 Power on Trouble

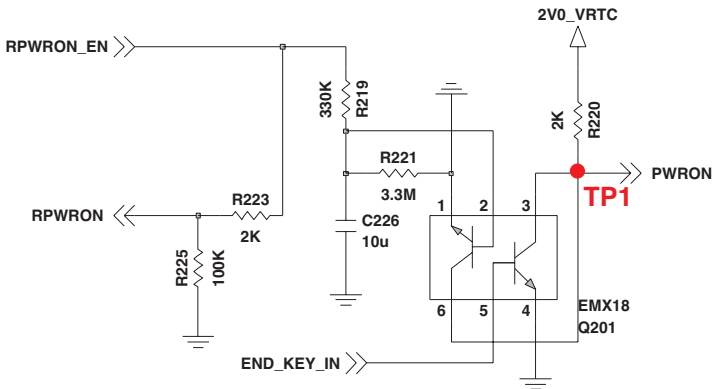
Check Points

-Battery Voltage(Need to over 3.35V)

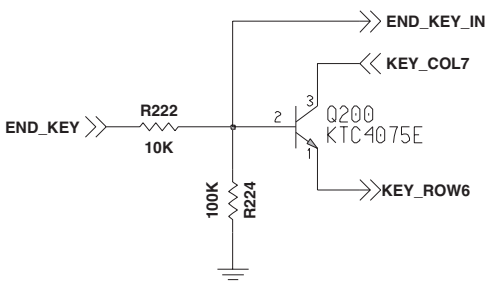
-Power-On Key detection (PWRON signal)



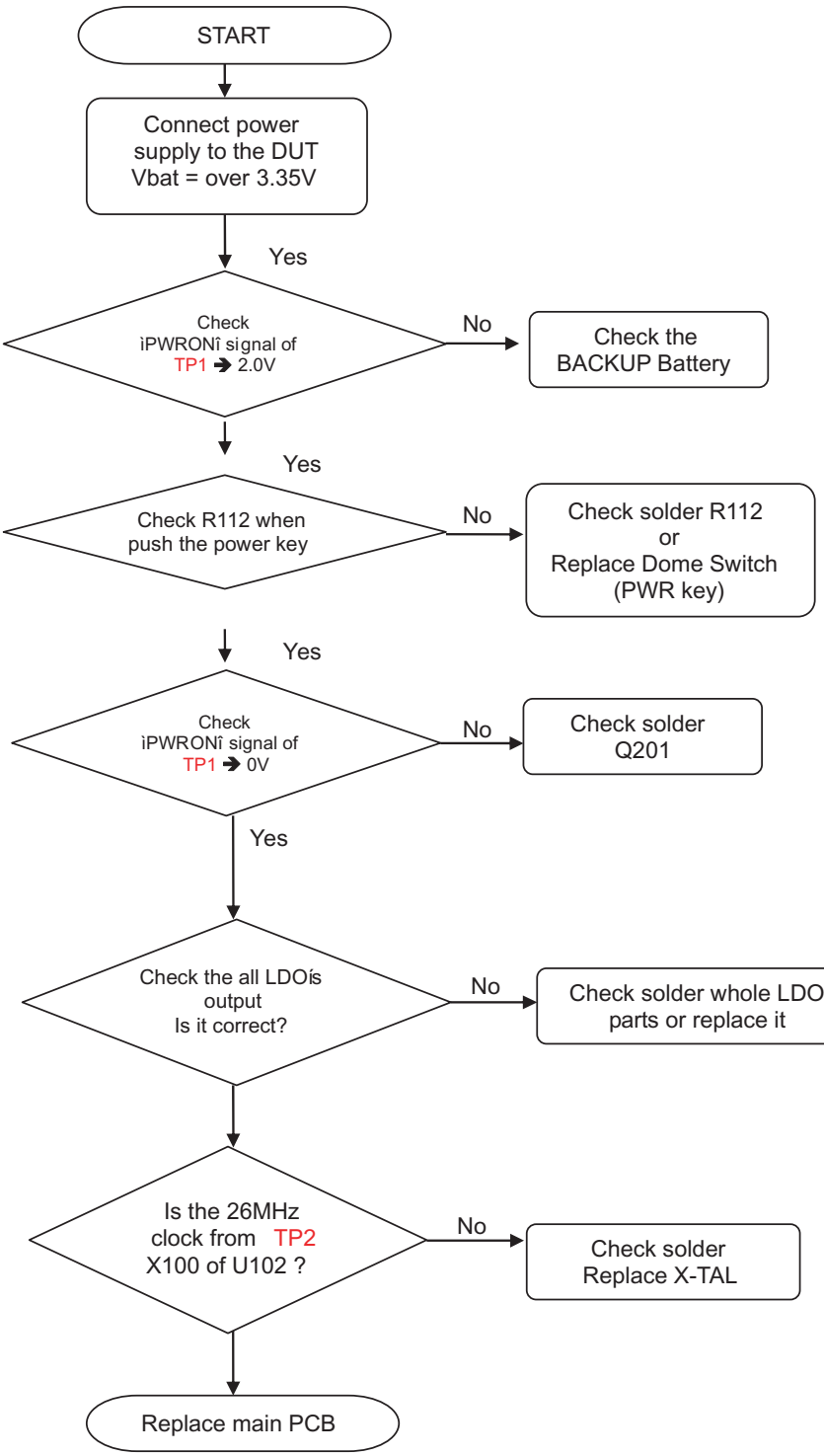
Remote Power On

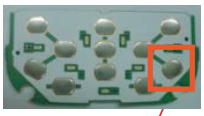


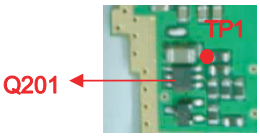
END



5. Trouble shooting







Linear Low Dropout (LDO) Regulators

- General Purpose LDOs:
  - 2.9 V, 150 mA, ultra low drop (**VAUX**)
  - 2.62 V, 100 mA (**VIO**)
  - 1.8 V / 2.9 V, 22 mA, ultra low drop (**VSIM**)
  - 1.8 V / 2.9 V, 150 mA, ultra low drop (**VMME**)
  - 2.8 V, 140 mA, ultra low drop (**VVIB**)
  - 3.1 V, 40 mA, ultra low drop (**VUSB**)
- Low Noise LDOs:
  - 2.5 V, 220 mA (**VAUDIOa**)
  - 2.85 V, 20 mA (**VRF1**)
  - 1.5 V, 80 mA (**VRF2**)
  - 2.85 V, 150 mA (**VRF3**)

Low Power LDOs

- 1.5 V, 20 mA (**VPLL**)
- 2.0 V, 4 mA (**VRTC**).

Linear Low Dropout (LDO) Regulators

- General Purpose LDOs:
  - 2.9 V, 150 mA, ultra low drop (**VAUX**)
  - 2.62 V, 100 mA (**VIO**)
  - 1.8 V / 2.9 V, 22 mA, ultra low drop (**VSIM**)
  - 1.8 V / 2.9 V, 150 mA, ultra low drop (**VMME**)
  - 2.8 V, 140 mA, ultra low drop (**VVIB**)
  - 3.1 V, 40 mA, ultra low drop (**VUSB**)
- Low Noise LDOs:
  - 2.5 V, 220 mA (**VAUDIOa**)
  - 2.85 V, 20 mA (**VRF1**)
  - 1.5 V, 80 mA (**VRF2**)
  - 2.85 V, 150 mA (**VRF3**)

Low Power LDOs

- 1.5 V, 20 mA (**VPLL**)
- 2.0 V, 4 mA (**VRTC**).

5.3 Charging trouble

Check Points

-Connection of TA (check TA voltage 5.6V)

-Charging Current Path component voltage drop

-Battery voltage

1 Charging method : CC-CV

2 Charger detect voltage : 4.0 V

3 Charging time : 2h 30m

4 Charging current : 420 mA

5 CV voltage : 4.2 V

6 Cutoff current : 100 mA

7 Full charge indication current (icon stop current) : 100 mA

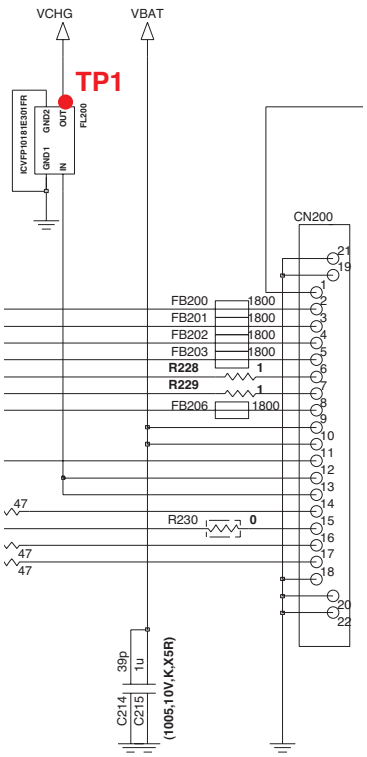
8 Recharge voltage : 4.15 V

4.2V~3.75V

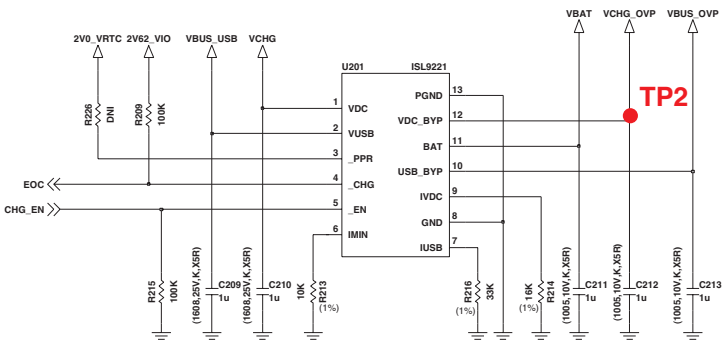
3.75V~3.64V

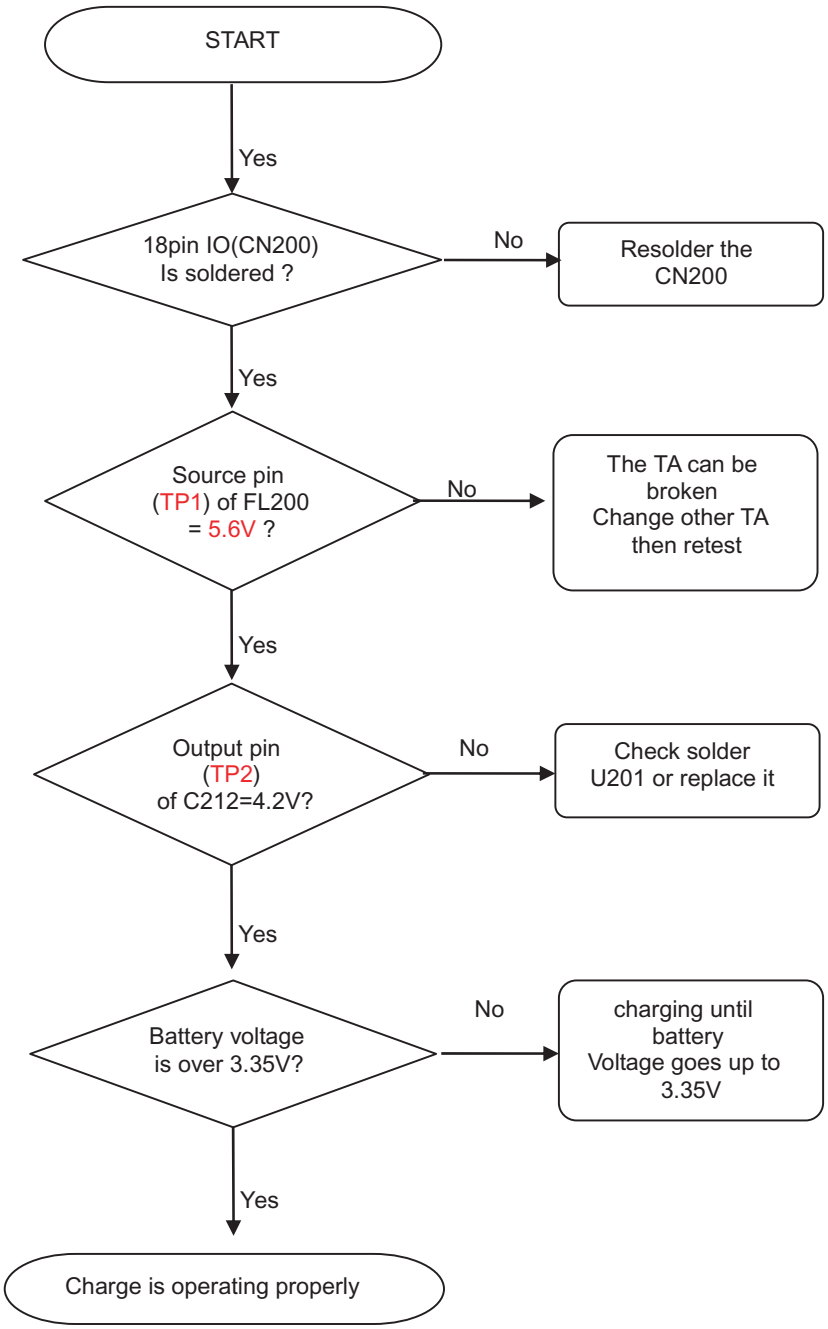
3.64V~3.45V

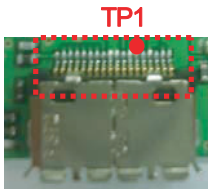
3.45V~3.35V

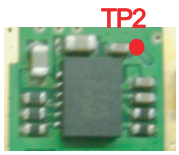


CHARGING IC OVP









5.4 LCD display trouble

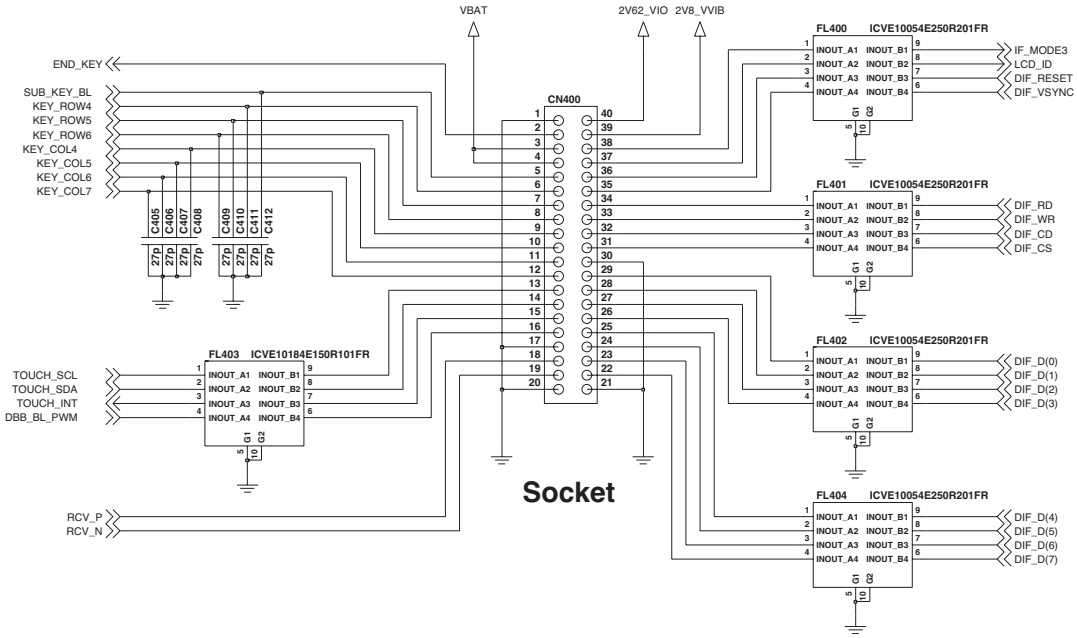
Check Points

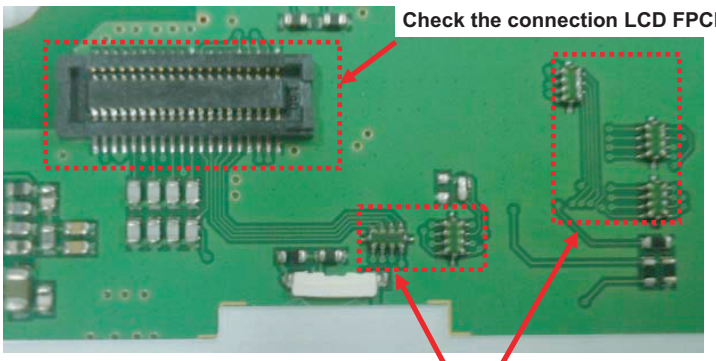
-LCD assembly status (LCD FPCB, Connector on FPCB)

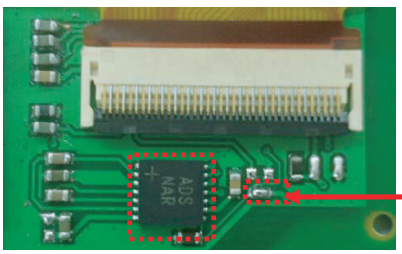
-EMI filter soldering

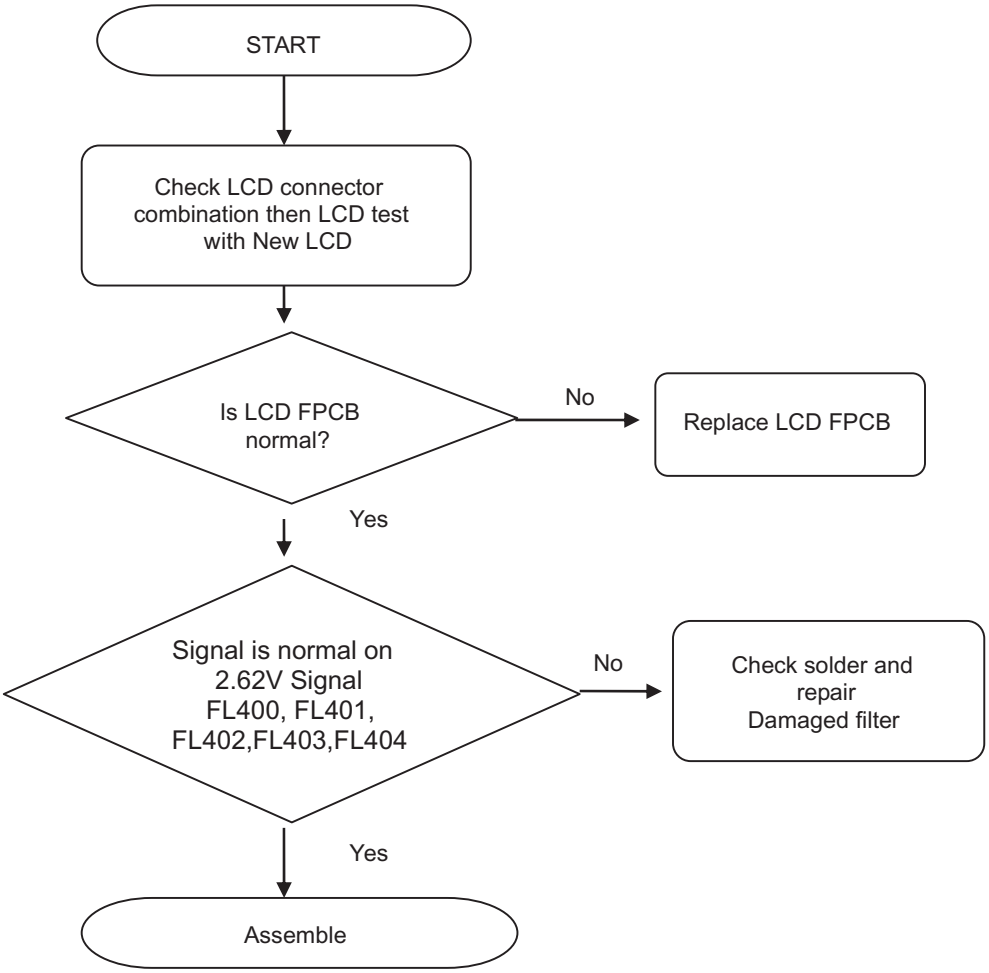
-Connector combination

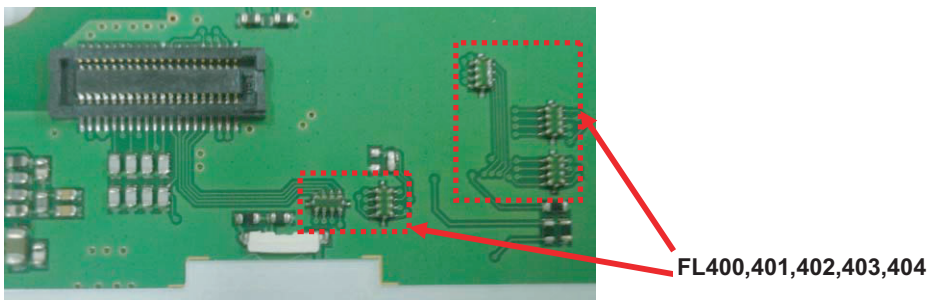
MAIN To FPCB Connector











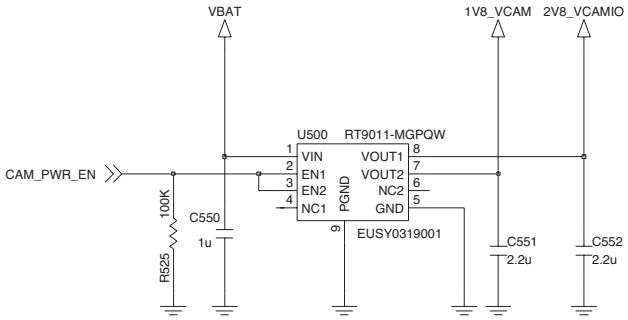
5.5 Camera Trouble

Check Points

-Connectors combination

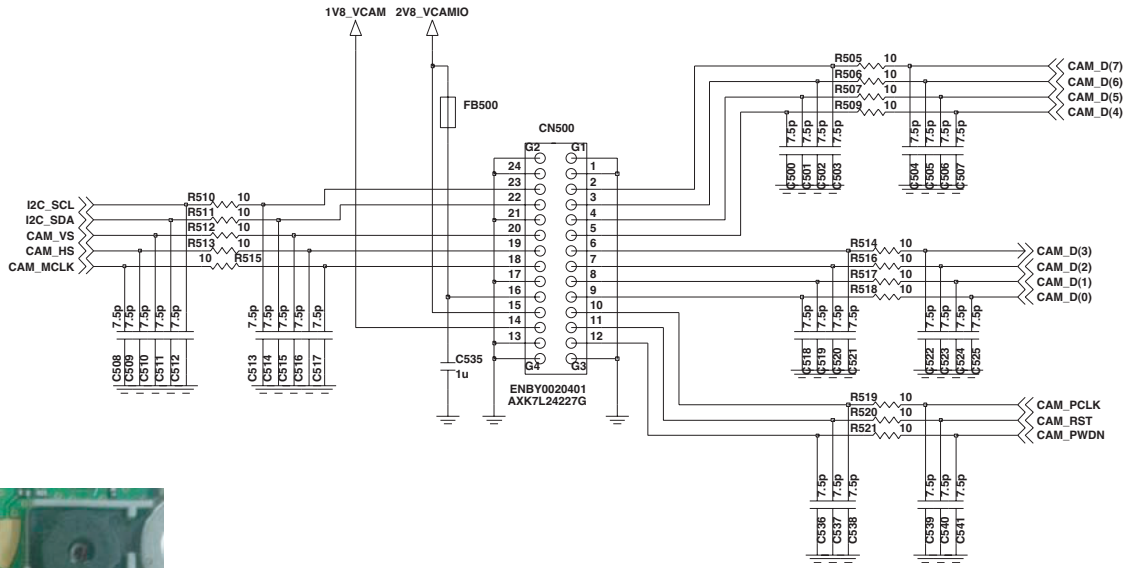
-FPCB status

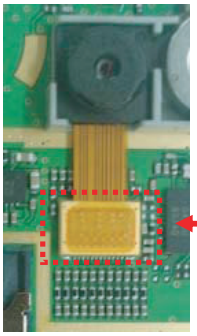
CAMERA POWER



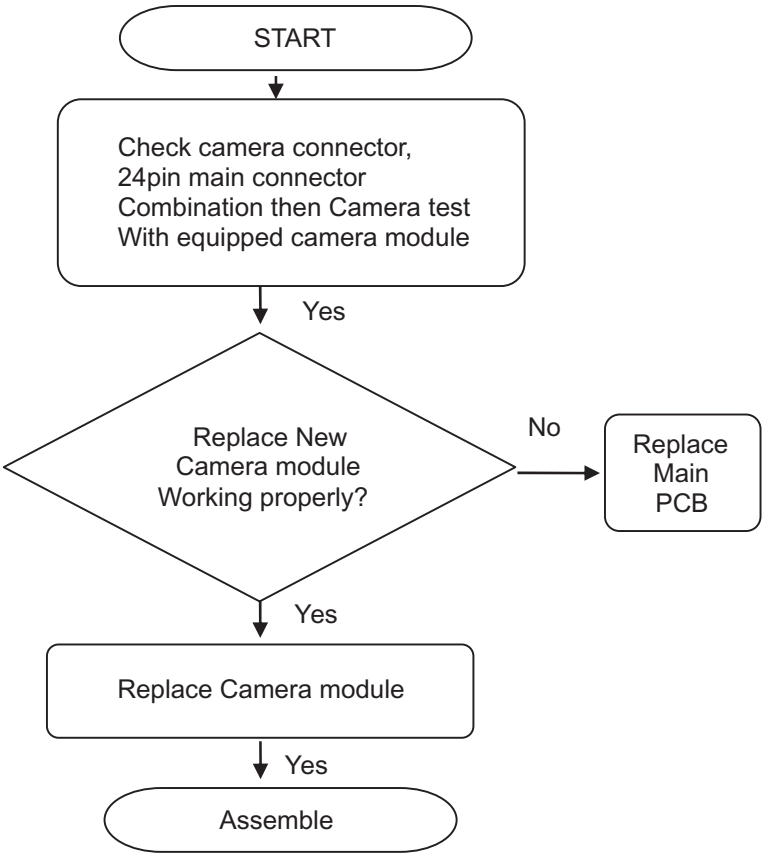
CAMERA CONNECTOR

(ENBY0020401,24PIN,0.9T,SOCKET,AXK7L24227G)





Check the connector combination



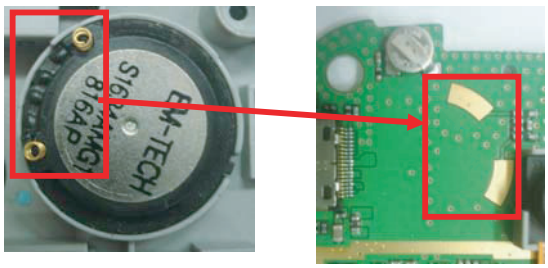
5.6 Receiver & Speaker trouble

Check Points

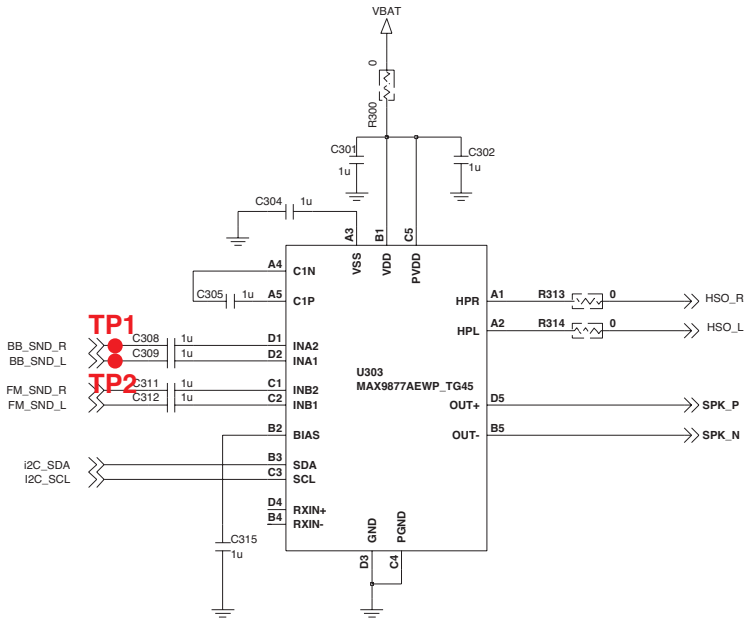
-Speaker pin contact

-Audio amp soldering

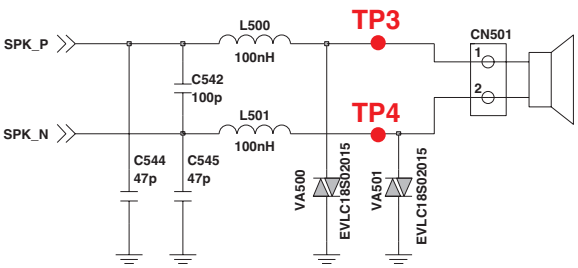
-SUB PMIC soldering



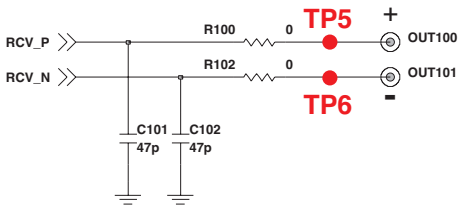
AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR

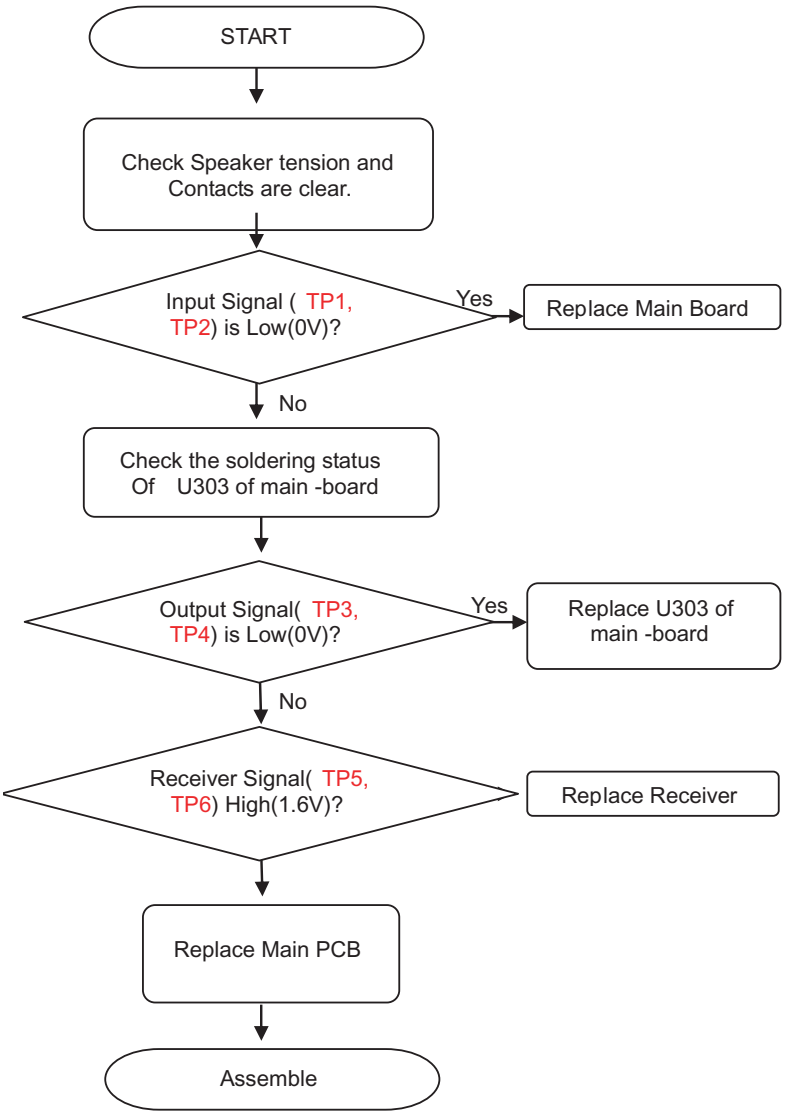


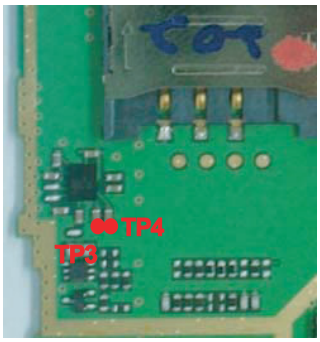
SPK

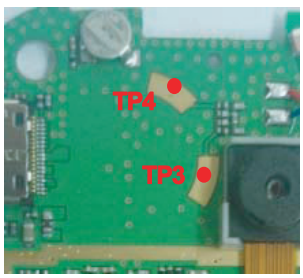


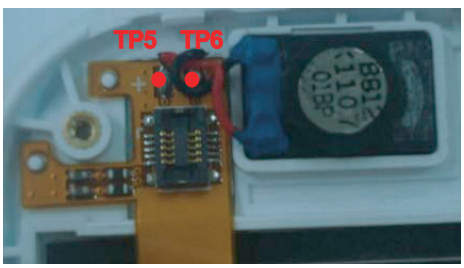
MAIN RECEIVER











5.7 Microphone trouble

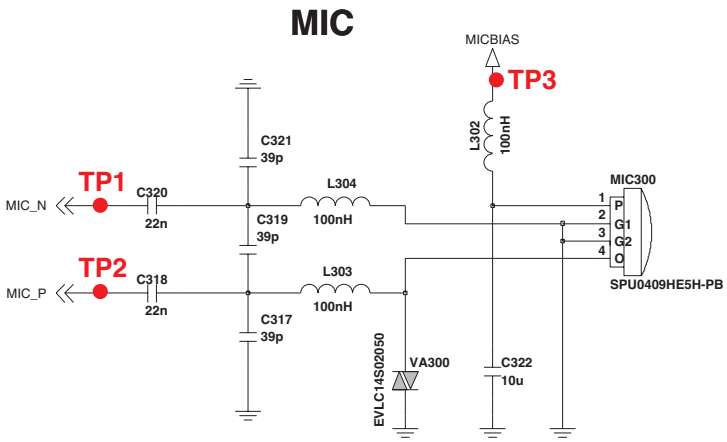
Check Points

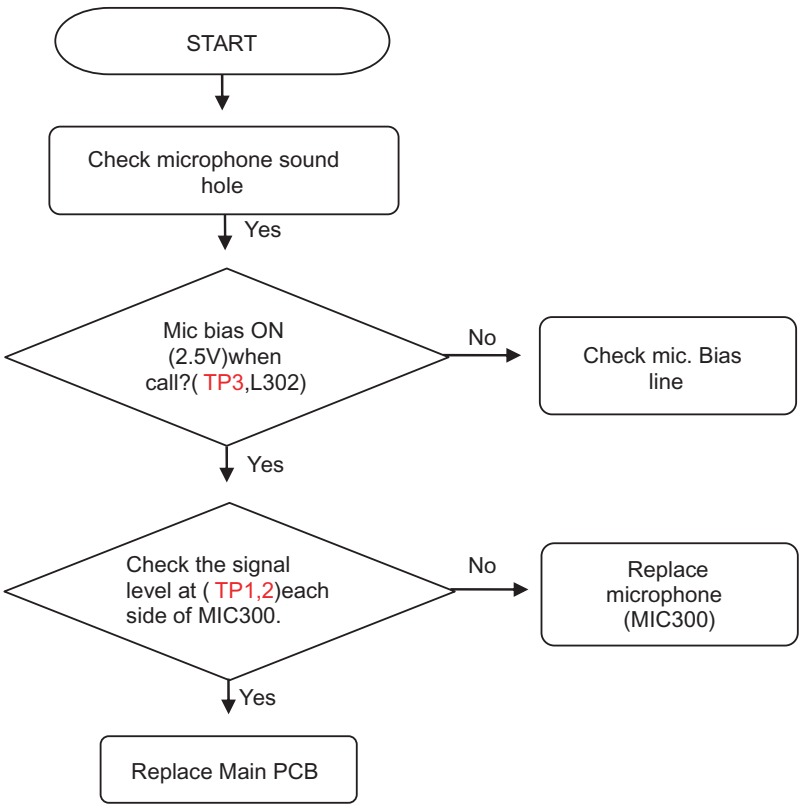
-Microphone hole

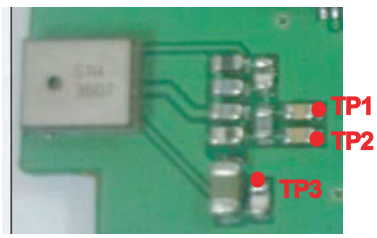
-MICBIAS & Signal come from

-Audio signal level of the Microphone

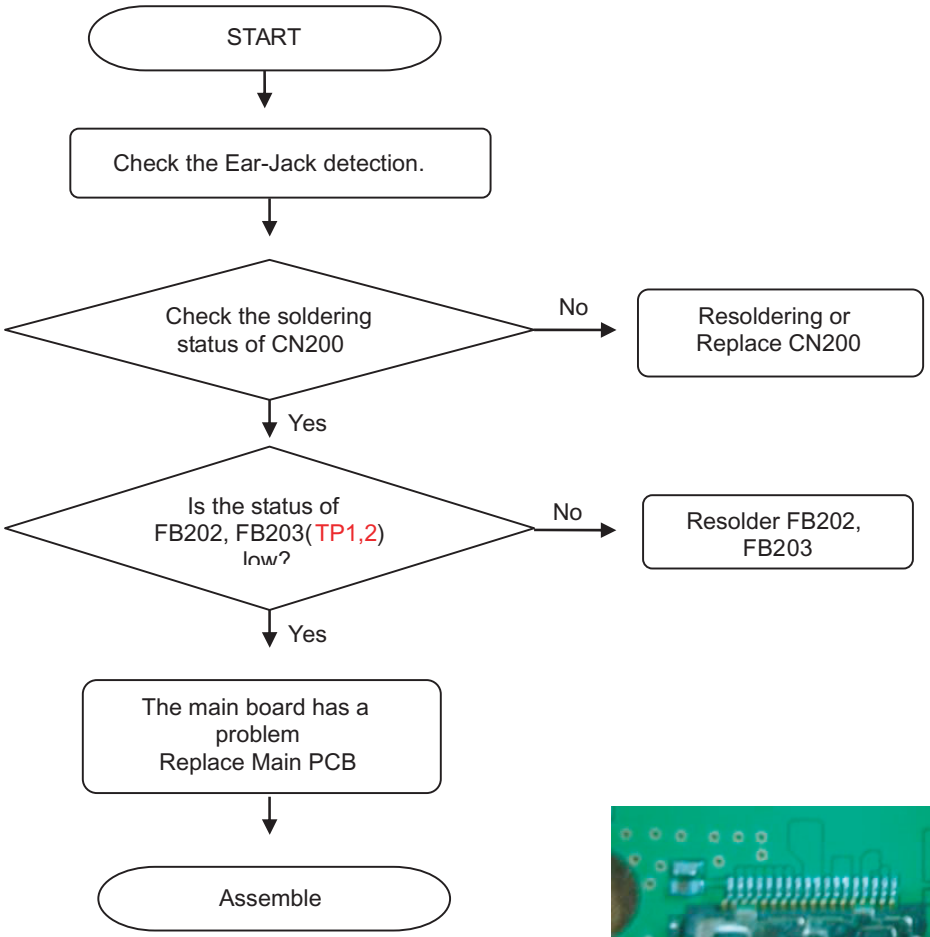
-Soldering of components

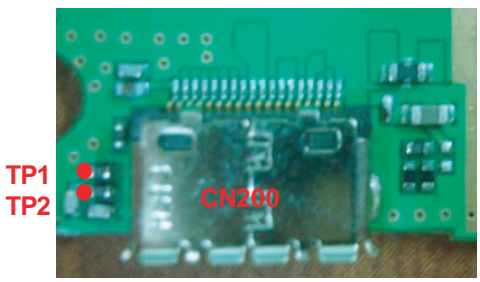






5.8 Ear-Mic Jack Detection trouble



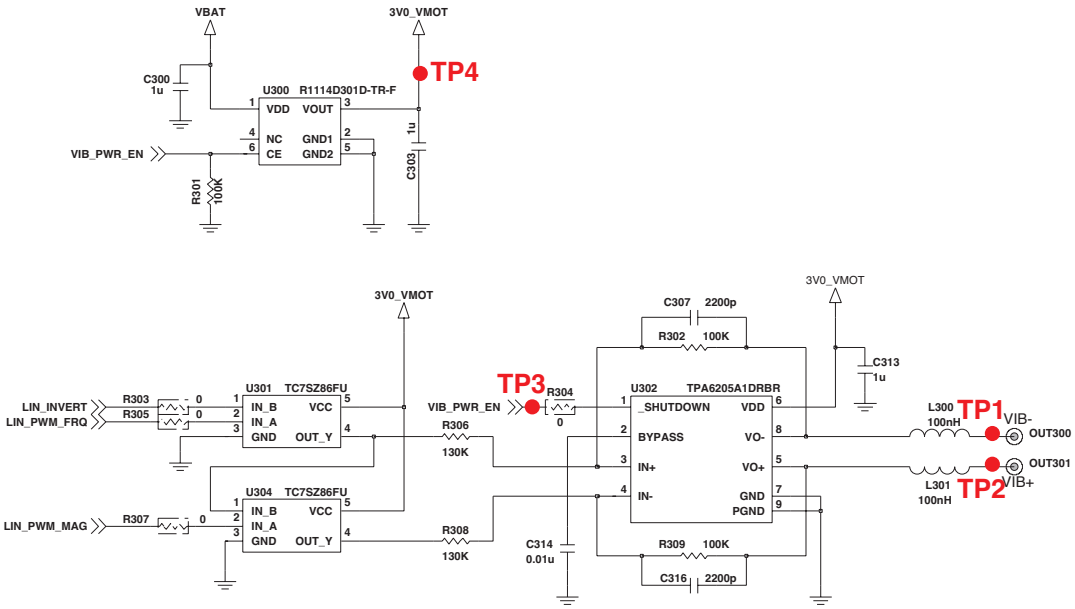


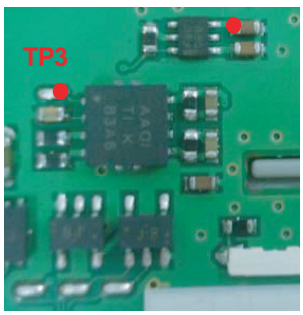
5.9 Vibrator trouble

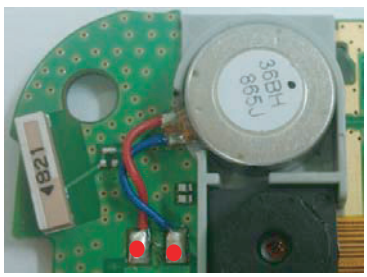
Check Points

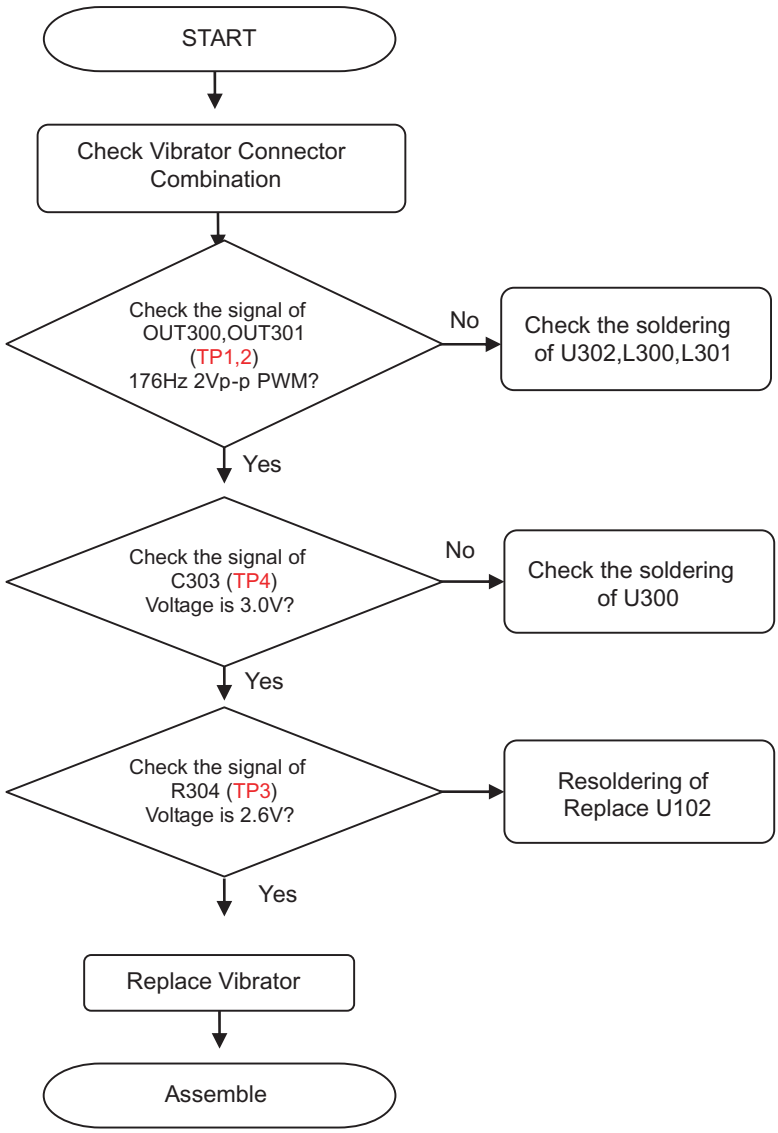
-Connectors combination

MOTOR CIRCUIT









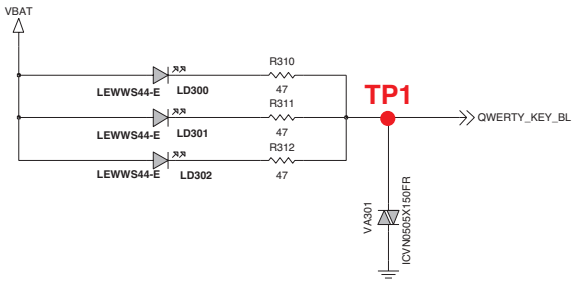
5.10 Keypad back light trouble

Check Points

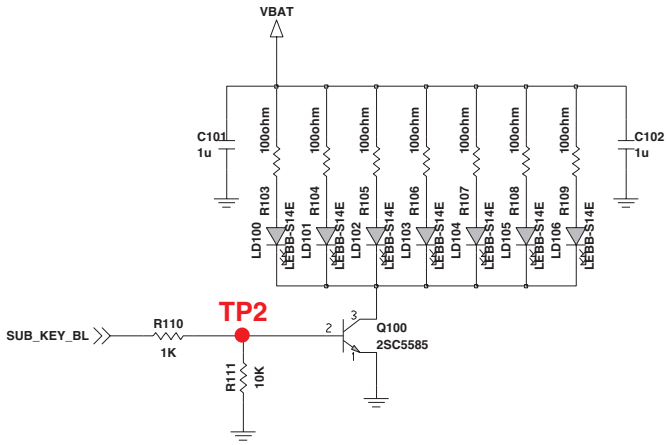
-Signal path is connected well

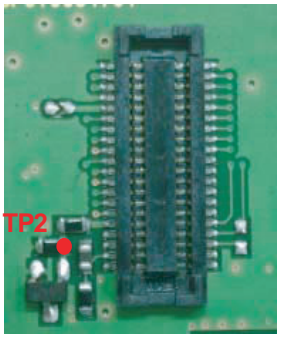
-TR is working properly

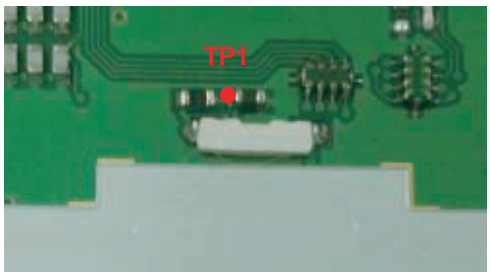
QWERTY_KEY BACKLIGHT

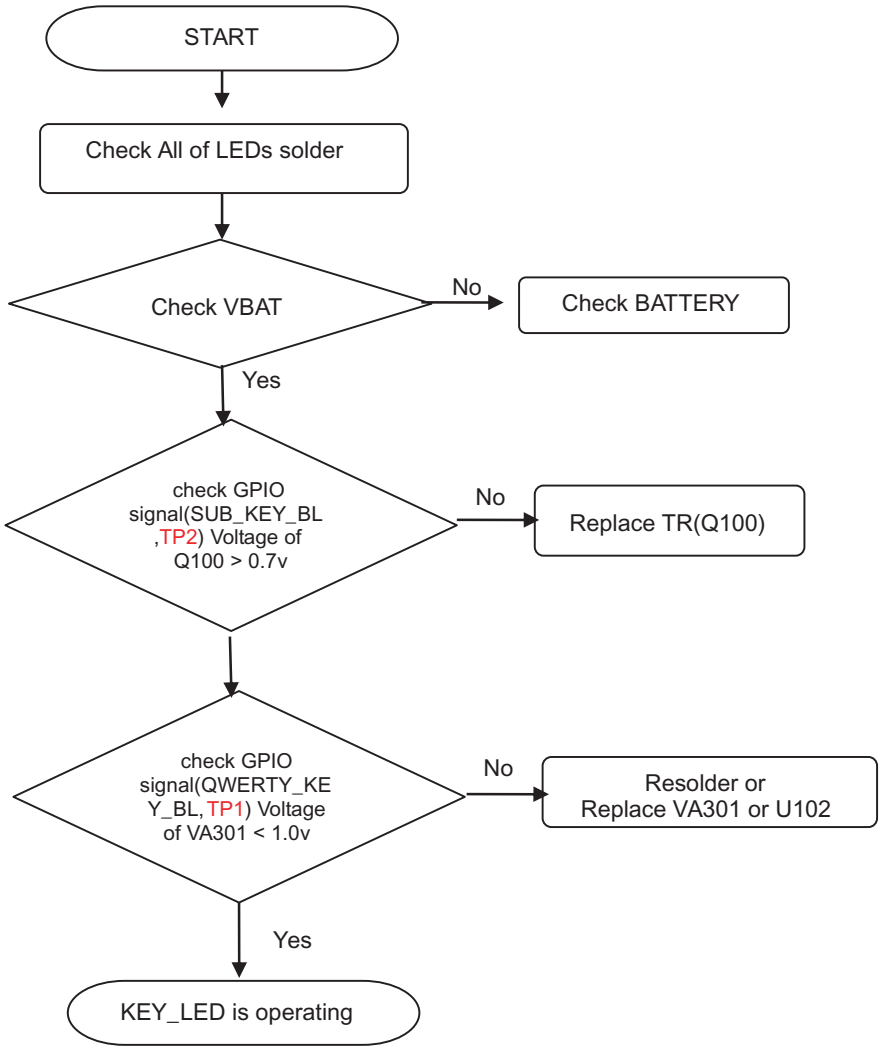


MULTI_KEY BACKLIGHT









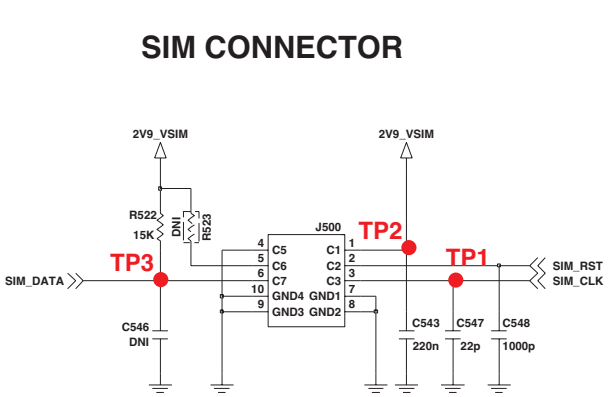
5.11 SIM & USD trouble

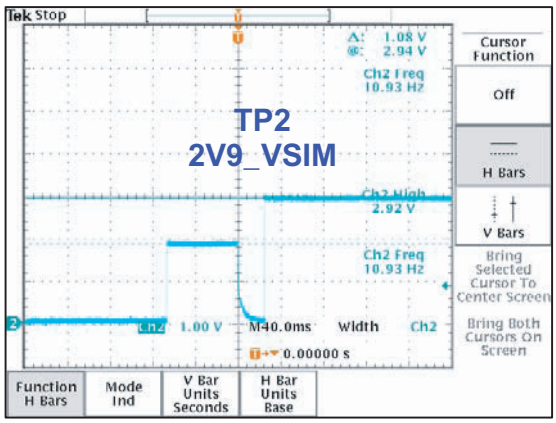
SIM Check Points

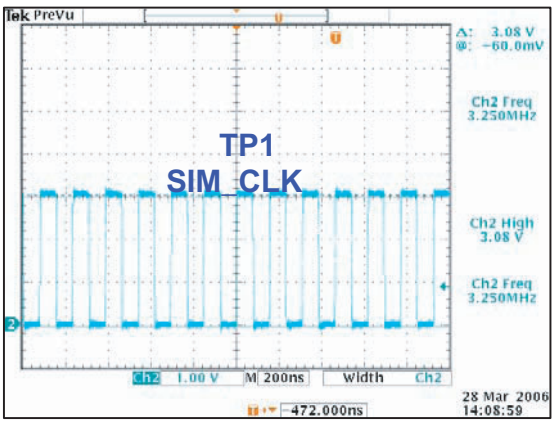
-Power is working

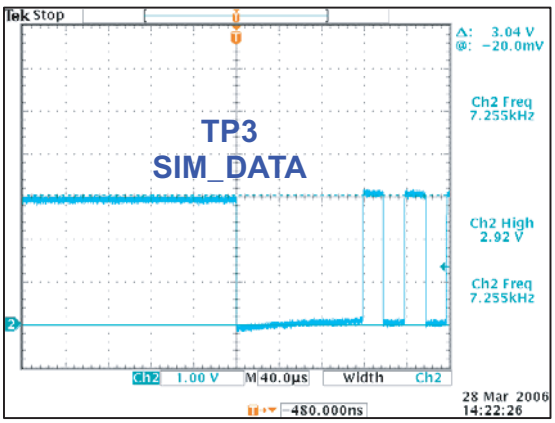
-Socket soldering

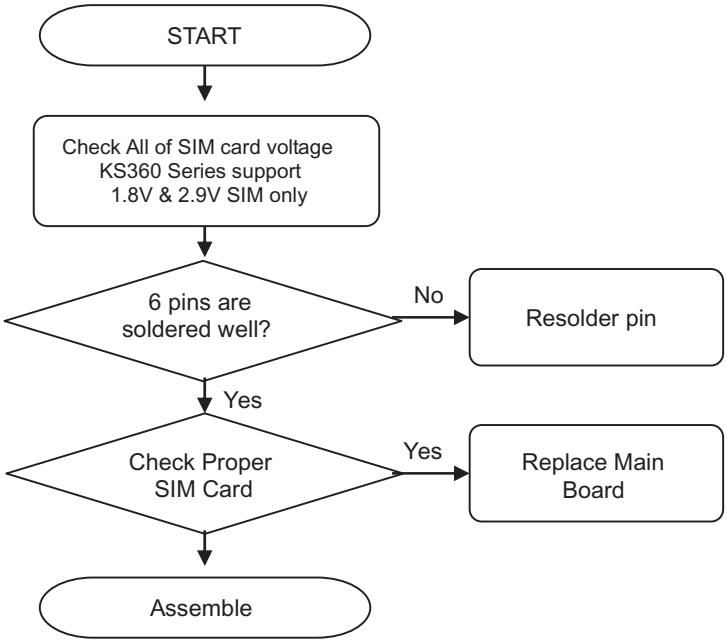
-Proper SIM is used











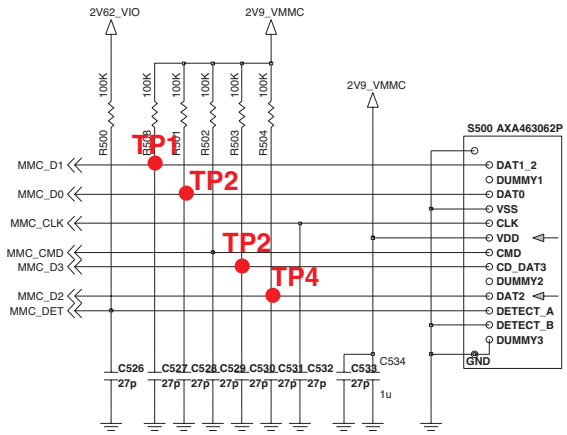
5. Trouble shooting

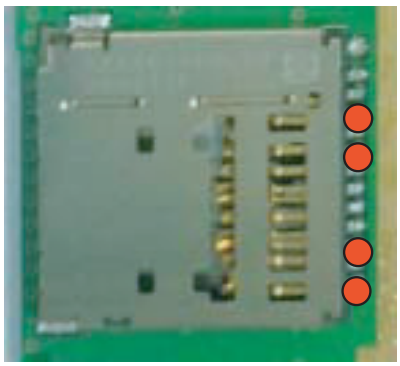
uSD Check Points

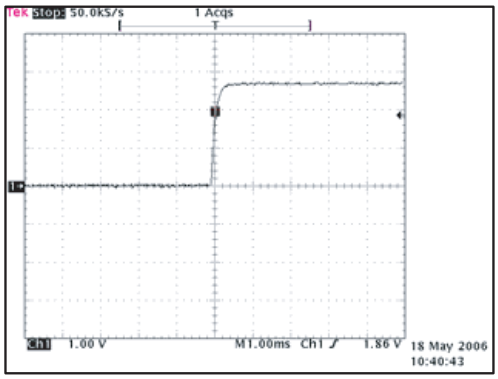
-Power is working

-Socket soldering

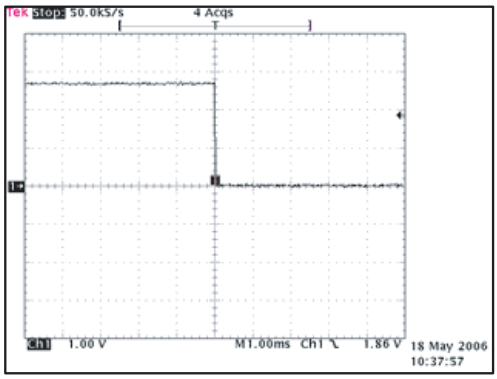
-Card detect is working



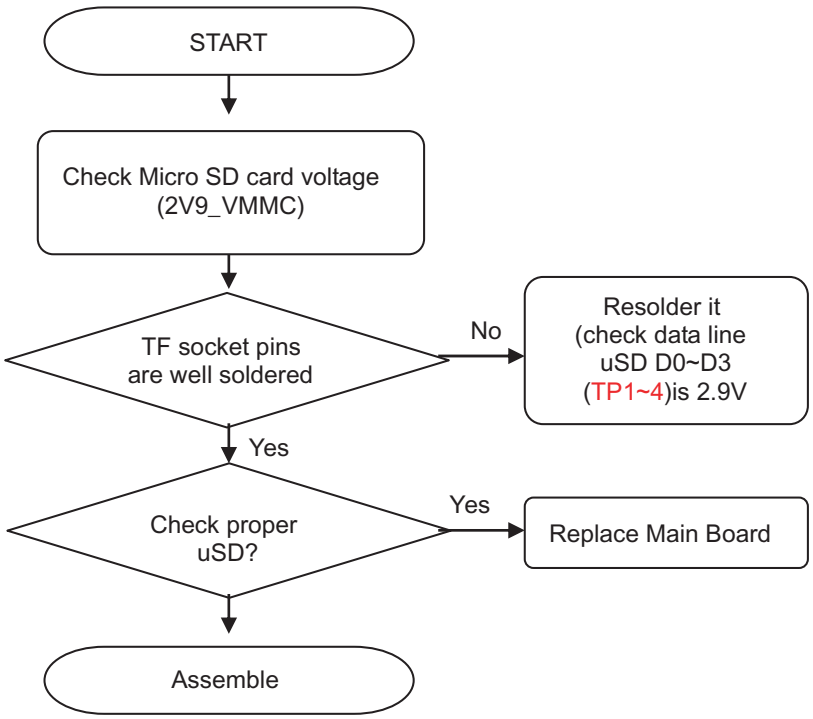




Card insert



Card eject



5.12 Touch trouble

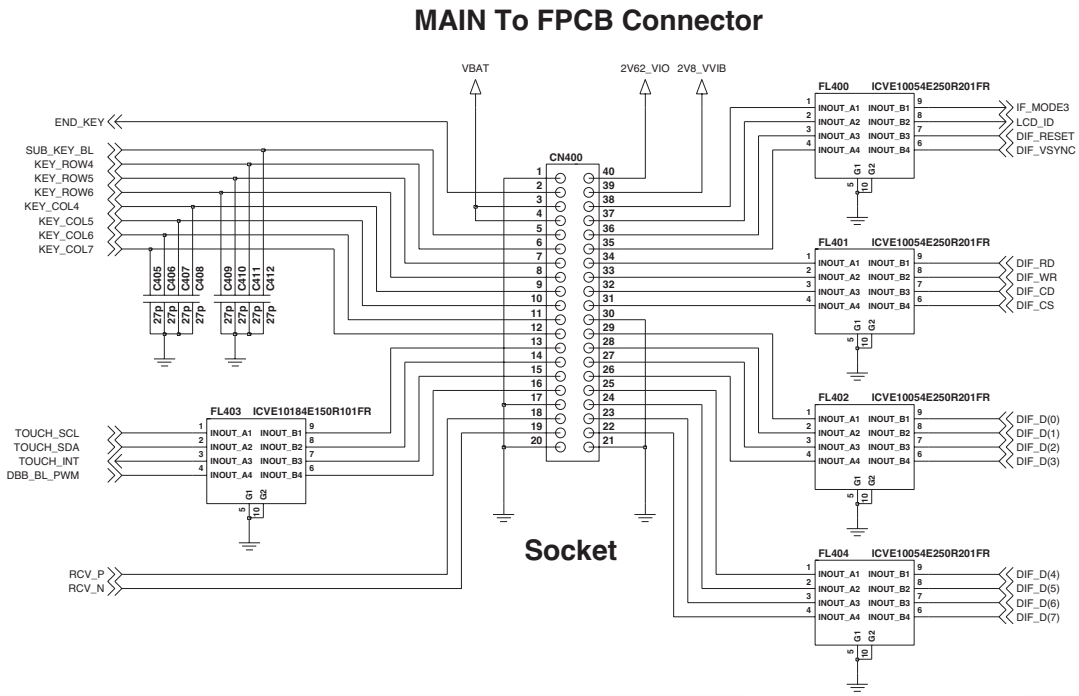
Touch Check Points

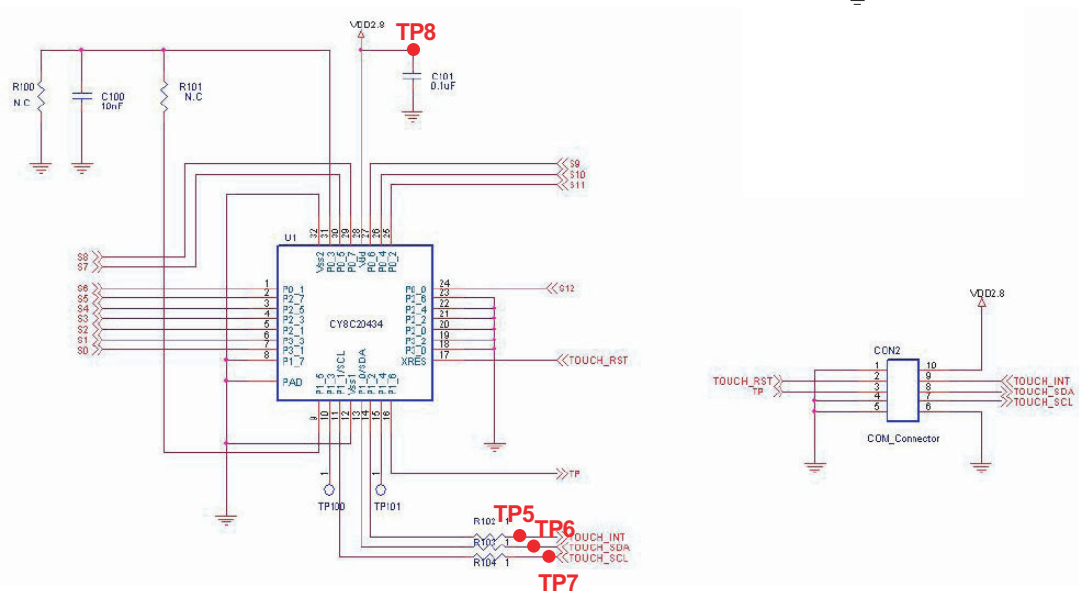
-Power is working

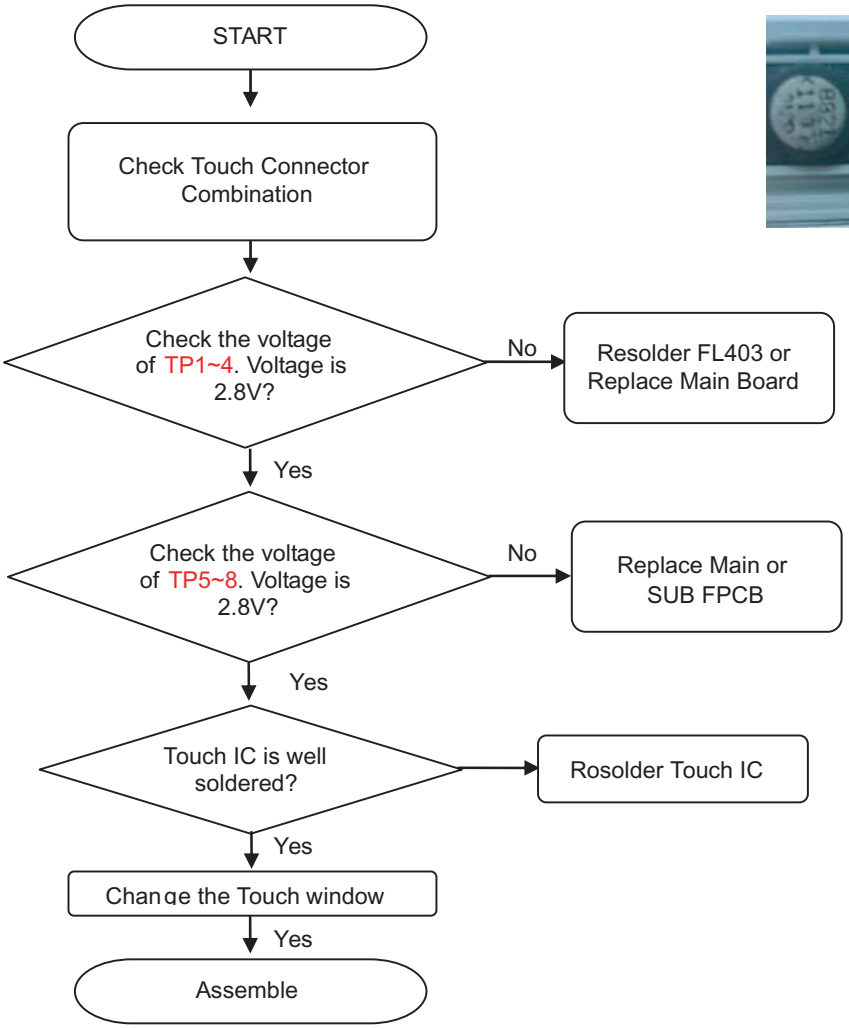
-Connector soldering

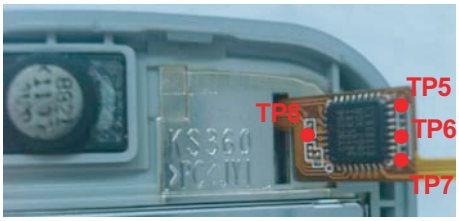
-Touch IC soldering

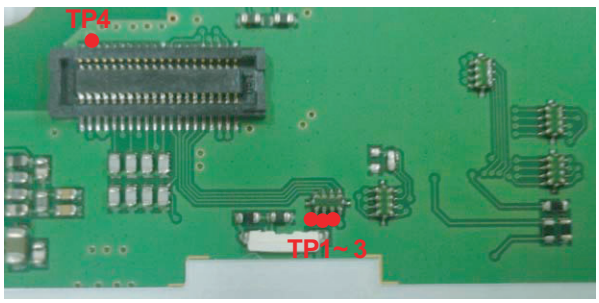
(* After press the touch hot key, Touch key will works)









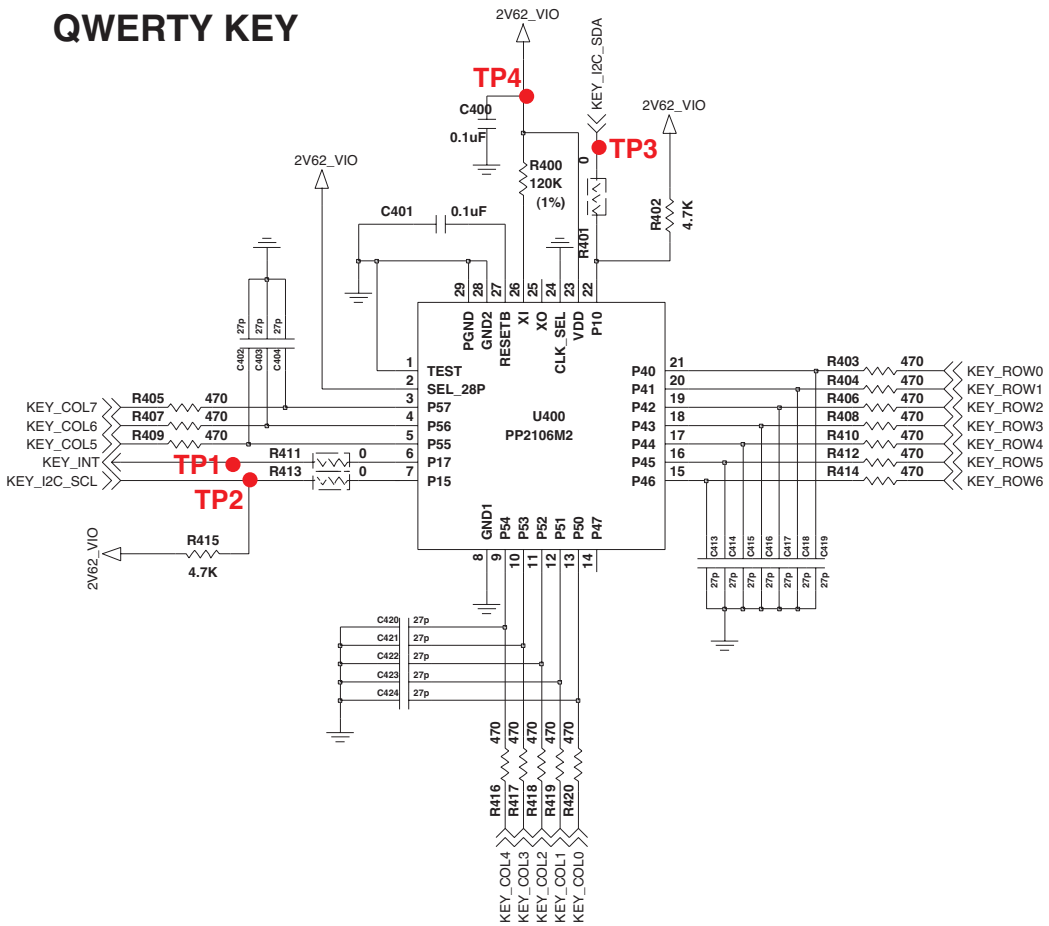


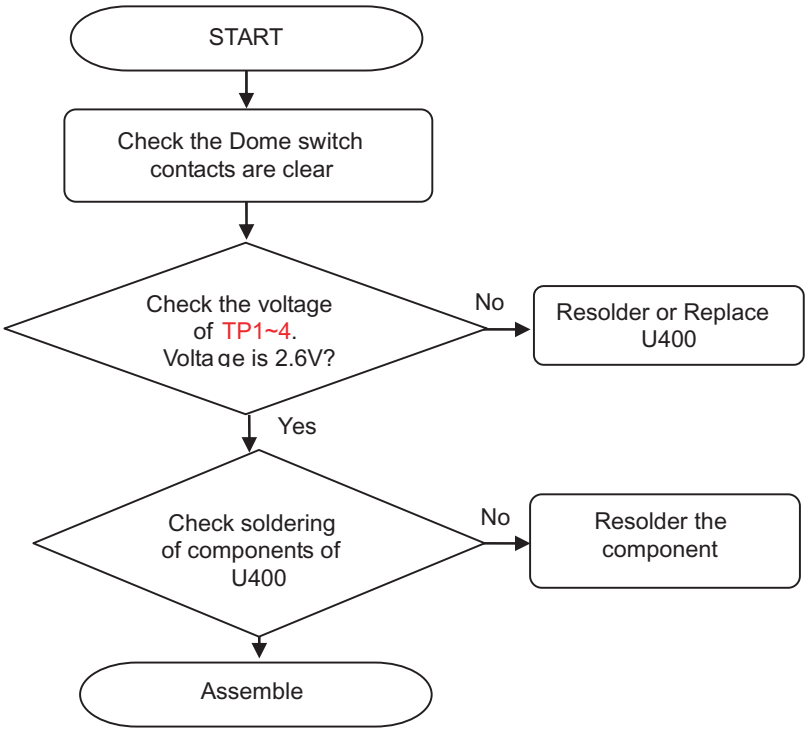
5.13 Qwerty Key trouble

Key Check Points

-Dome switch contacts

-Key coder IC soldering





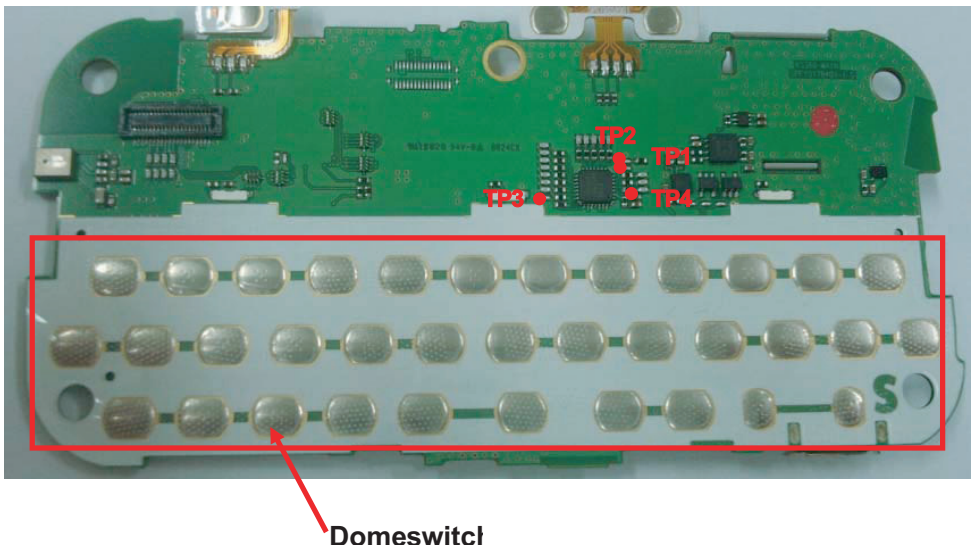
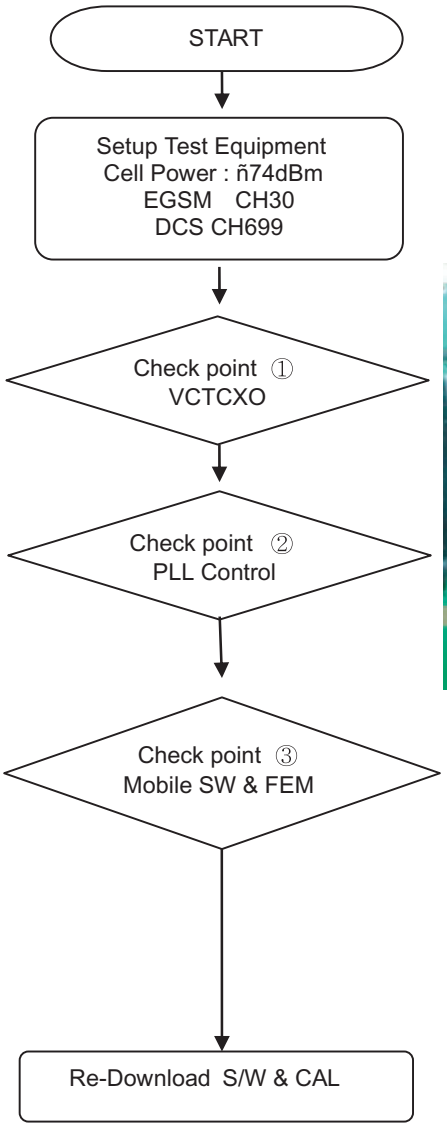
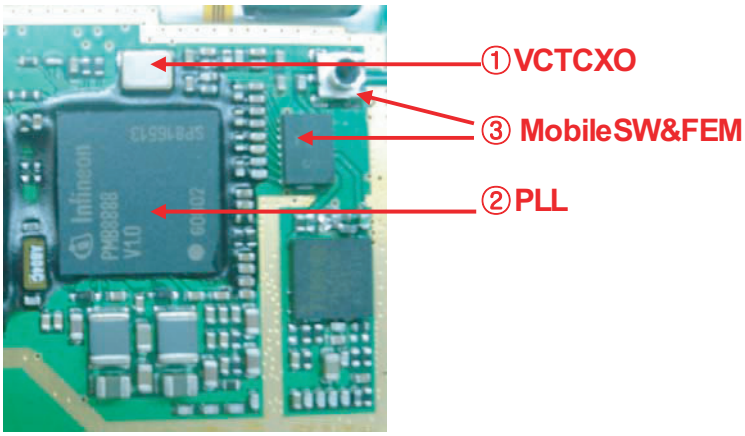


Fig 6 Waveform of DCXO

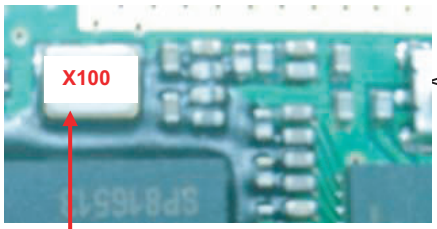
5.14 Trouble Shooting of Receiver Part

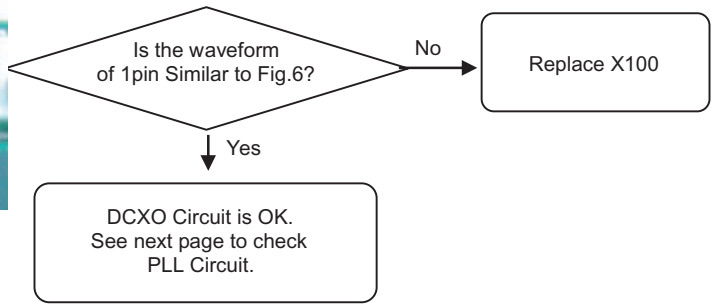




Main PCB Bottom

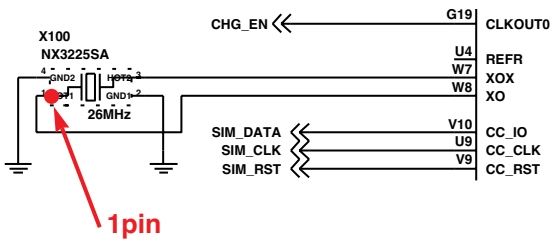
5.14.1 Checking DCXO Circuit



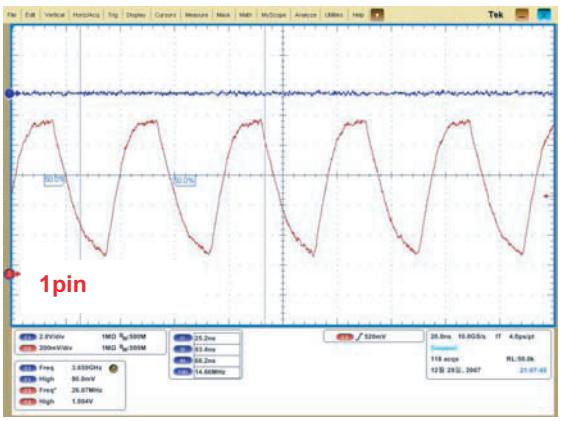


1pin : 26MHz

DCXO

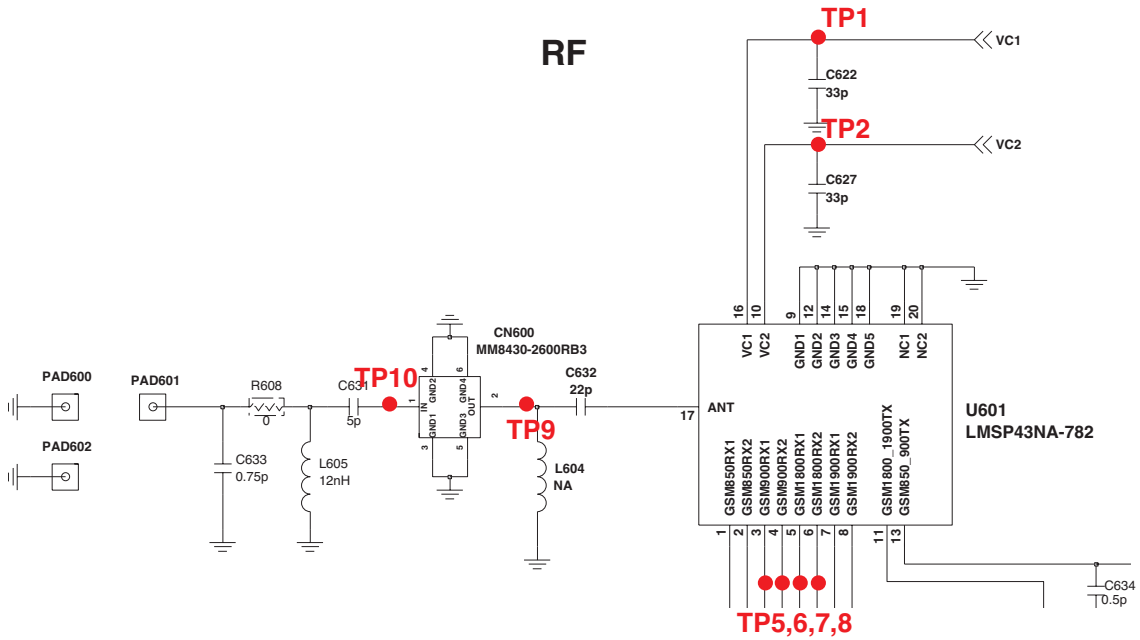


DCXO Cicuit

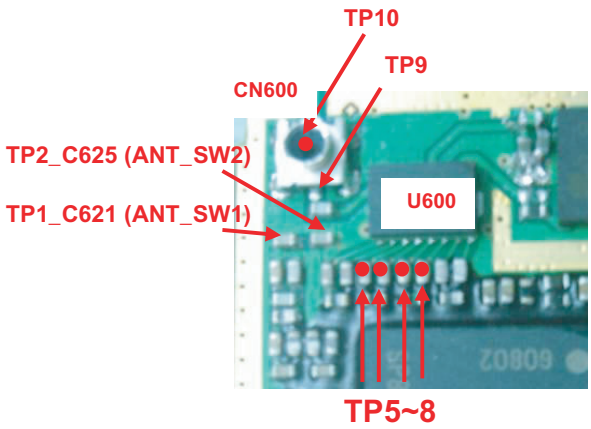


DCXO Waveform

5.14.2 Checking Mobile SW & FEM



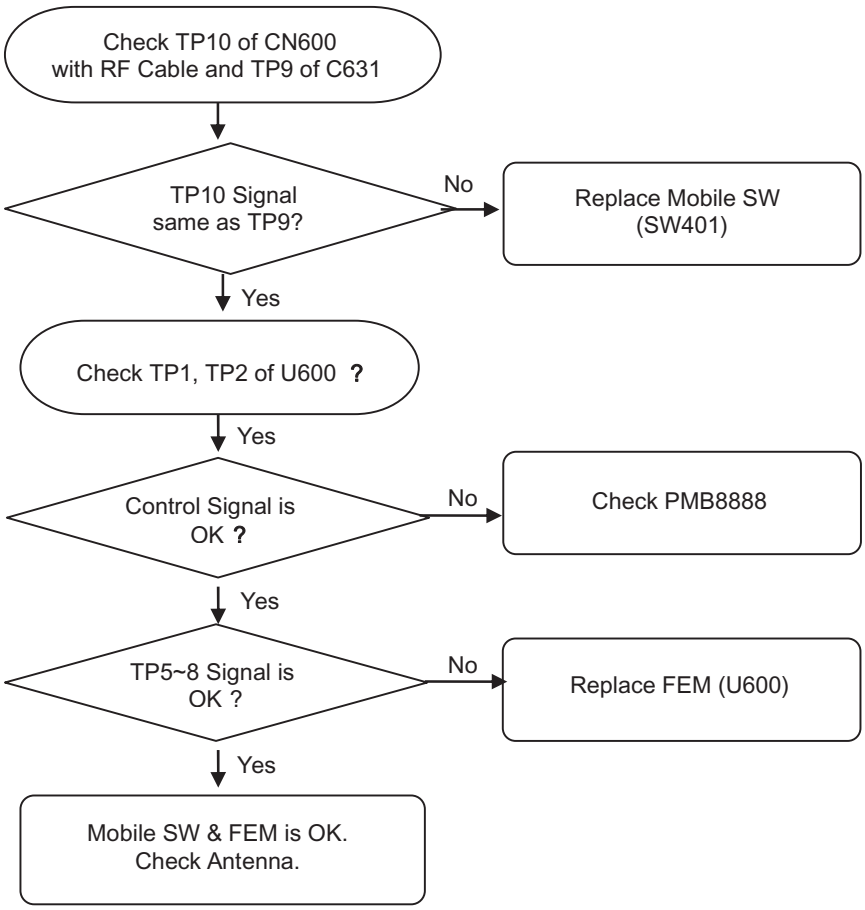
Mobile SW & FEM Circuit

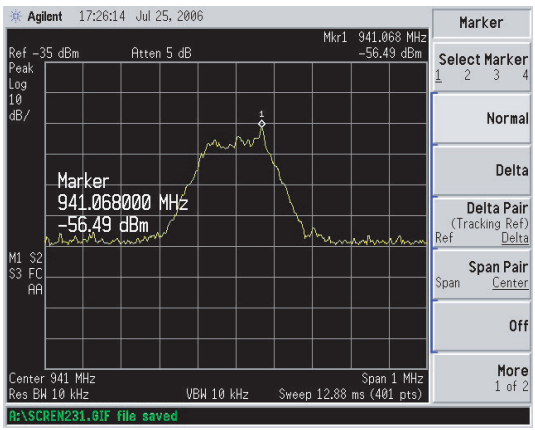


Mobile SW & FEM Check Points

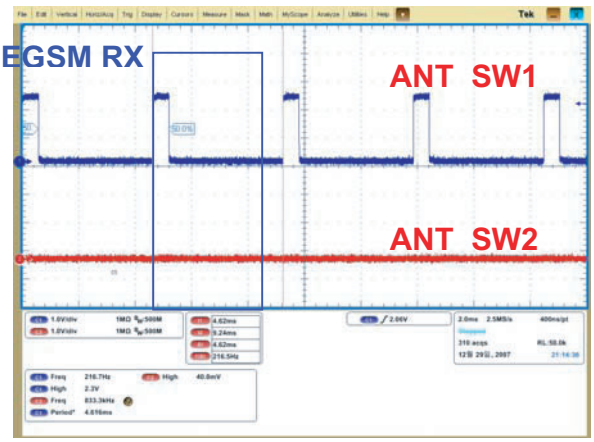
RX Mode	EGSM	DCS	PCS
ANT_SW1	Off	Off	Off
ANT_SW2	Off	Off	Off

FEM RX Control Logic



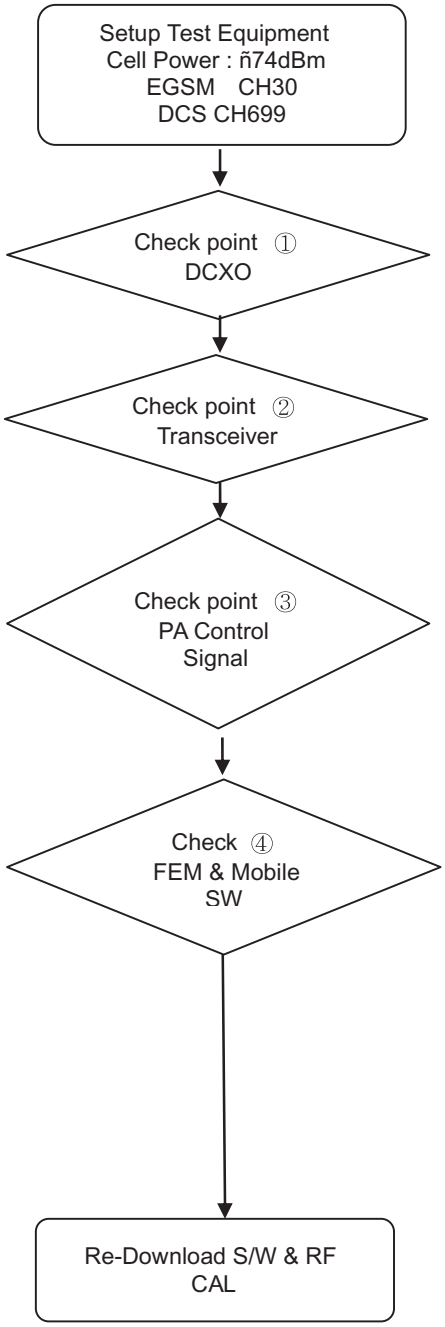


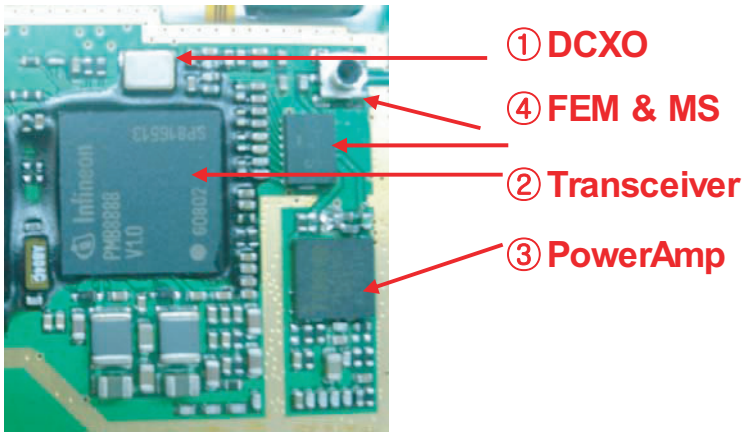
Mobile SW



FEM Control Signals

5.15 Trouble Shooting of Transmitter Part



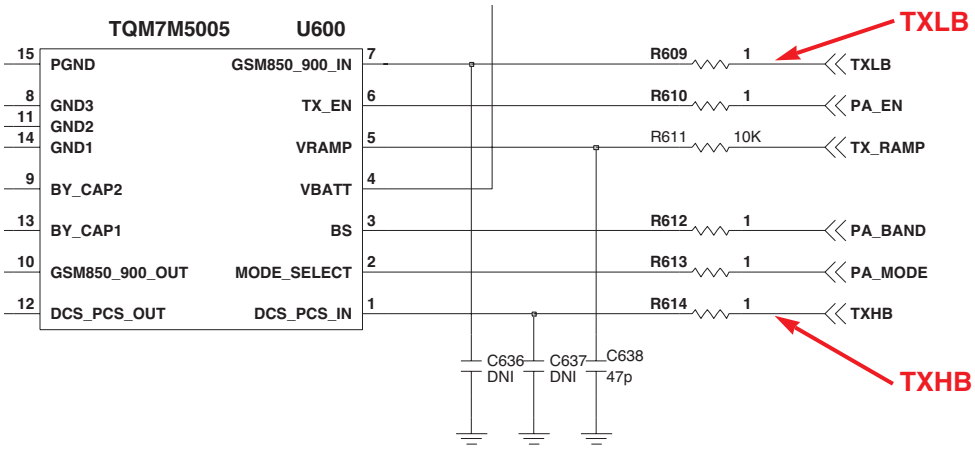


Main PCB Bottom

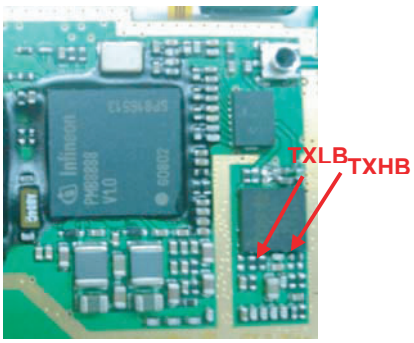
5.15.1 Checking DCXO Circuit

See RX Part “1. Checking DCXO Circuit”

5.15.2 Checking Transceiver Output Signals



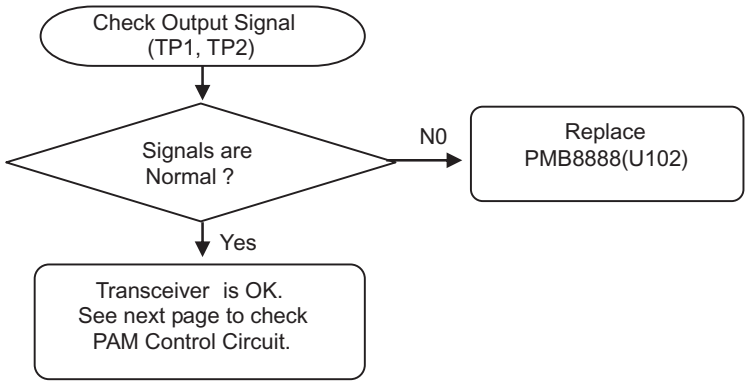
Transceiver Output Circuit



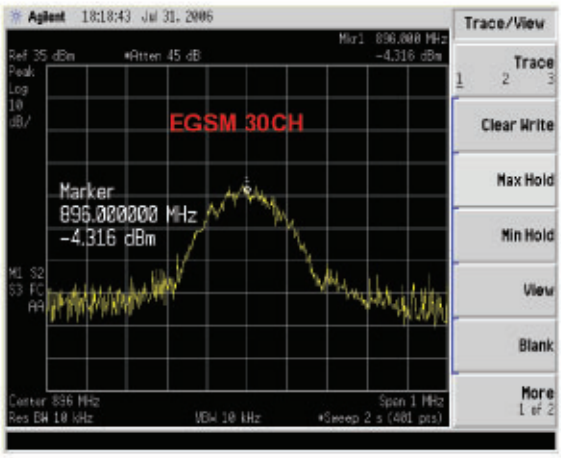
MODE	Transceiver Output
GSMK	Fixed
8PSK	Ramp Burst Control

Transceiver Output Operation

5. Trouble shooting

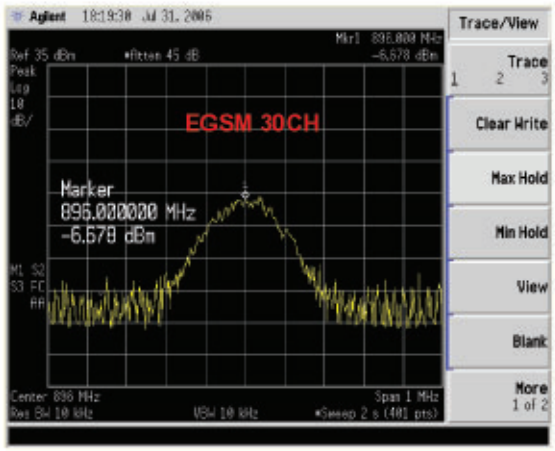


TXLB (MODE: GMSK) : TP1



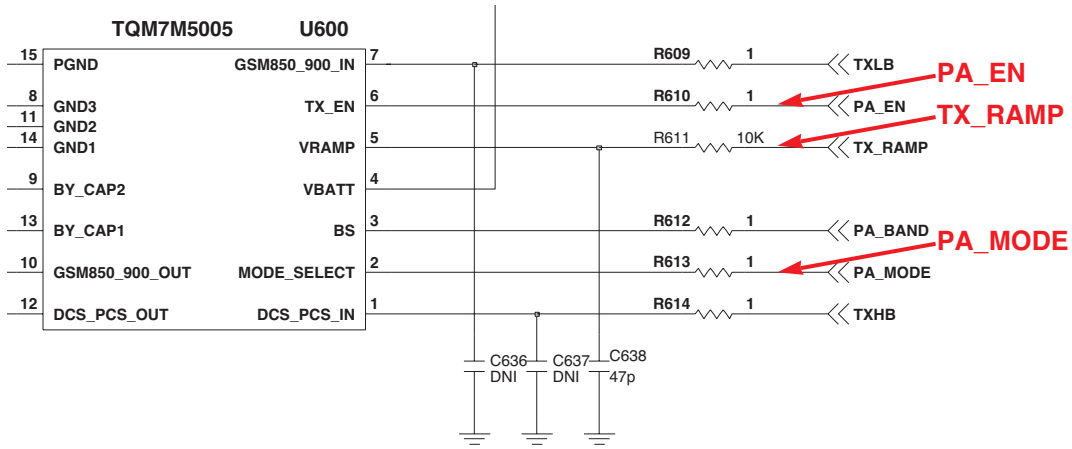
Transceiver Output (GMSK)

TXLB (MODE: 8PSK) : TP1

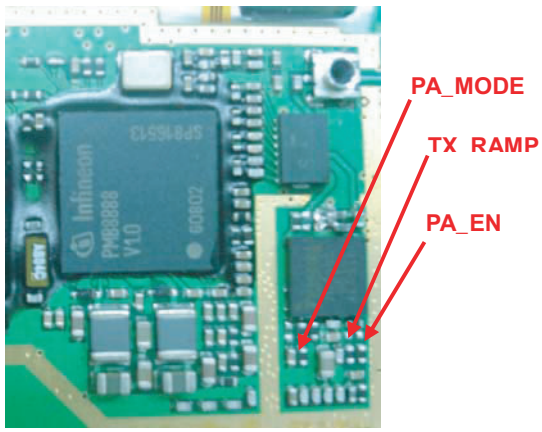


Transceiver Output (8PSK)

5.15.3 Checking PAM Control Signals



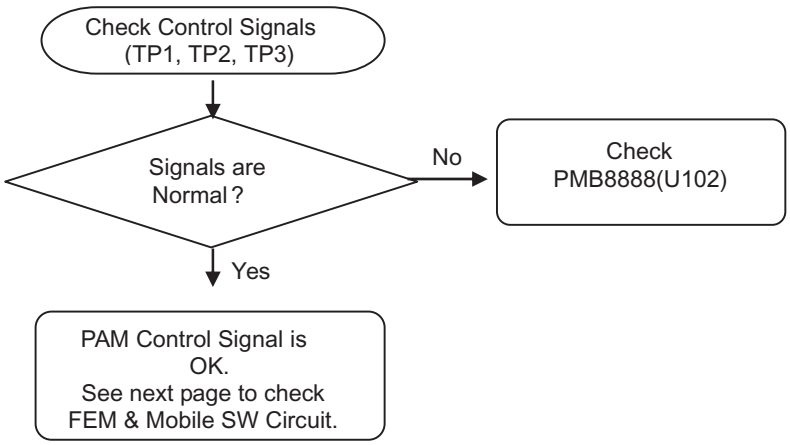
PAM Control Signals



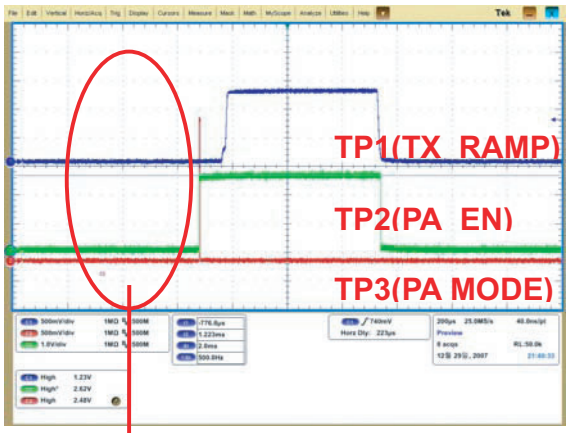
Transceiver Output

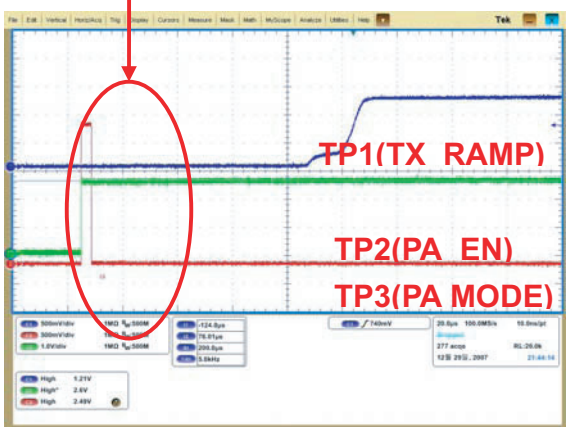
MODE	MODE	PA_LEVEL	TXON_PA
GMSK	LOW	Ramp Burst Control	HIGH
8PSK	HIGH	Control Amp bias	HIGH

PAM Mode Operation

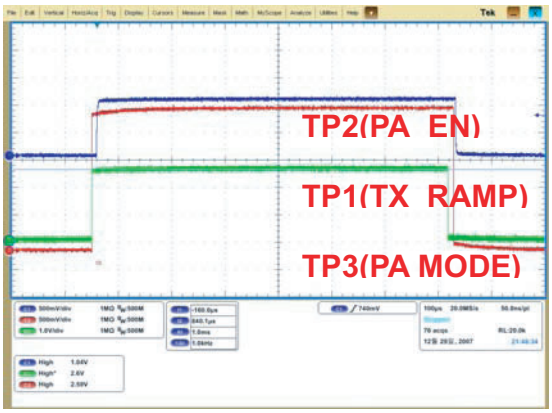


GSMK Control Signal



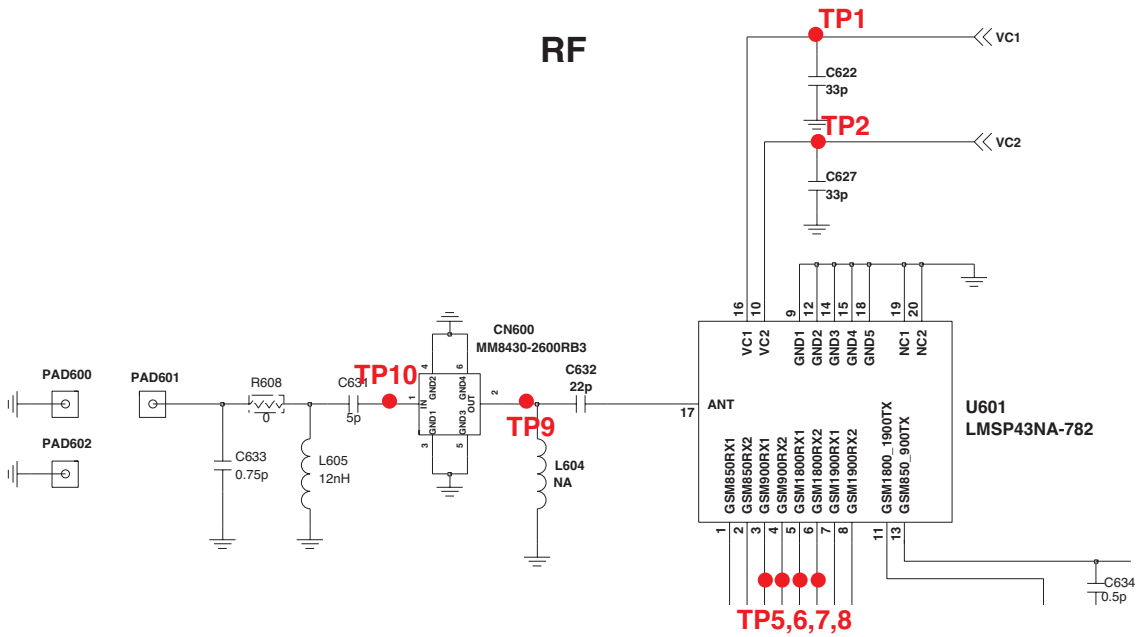


8PSK Control Signal

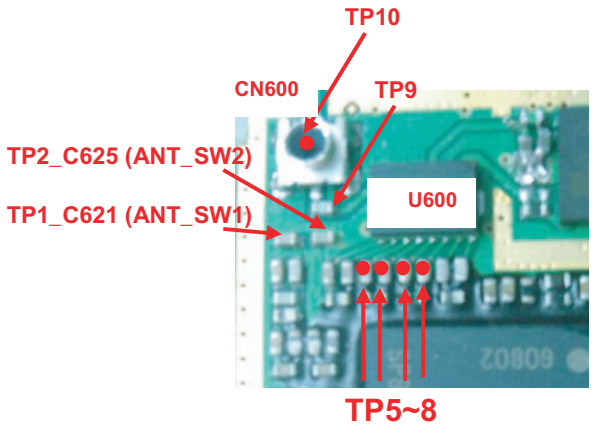


TP3(PA MODE) : R616
TP1(TX_RAMP) : R612
TP2(PA_EN) : R614

5.15.4 Checking FEM & Mobile SW



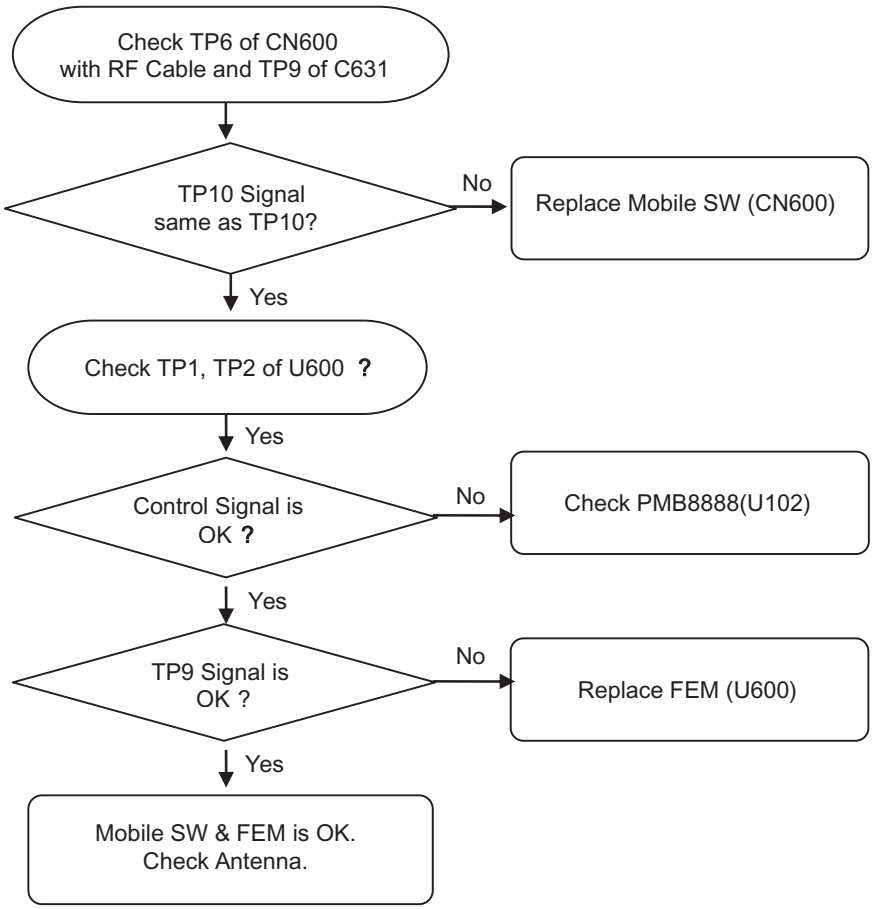
Mobile SW & FEM Circuit

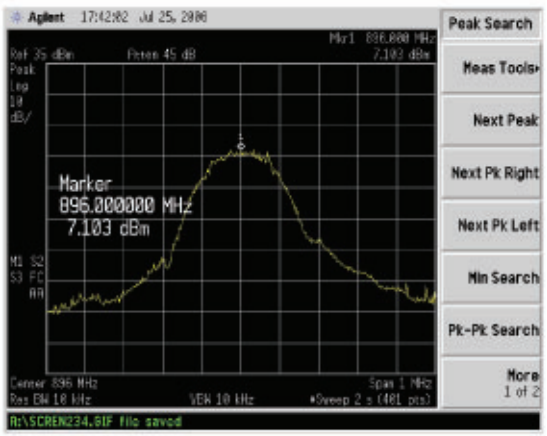


Mobile SW & FEM Checking Points

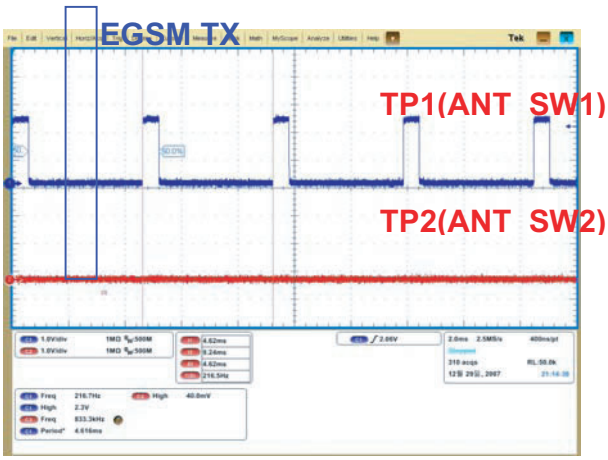
TX Mode	EGSM	DCS	PCS
ANT_SW1	On	Off	Off
ANT_SW2	Off	On	On

FEM TX Control Logic





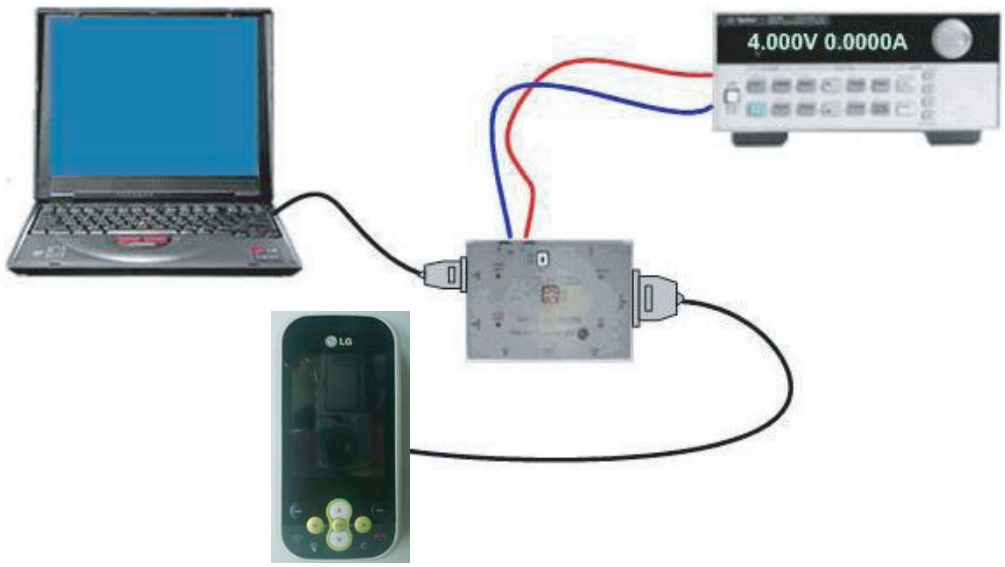
Mobile SW



FEM Control Signals

6. Download & S/W upgrade

6.1 S/W download setup



S/W download & upgrade setup

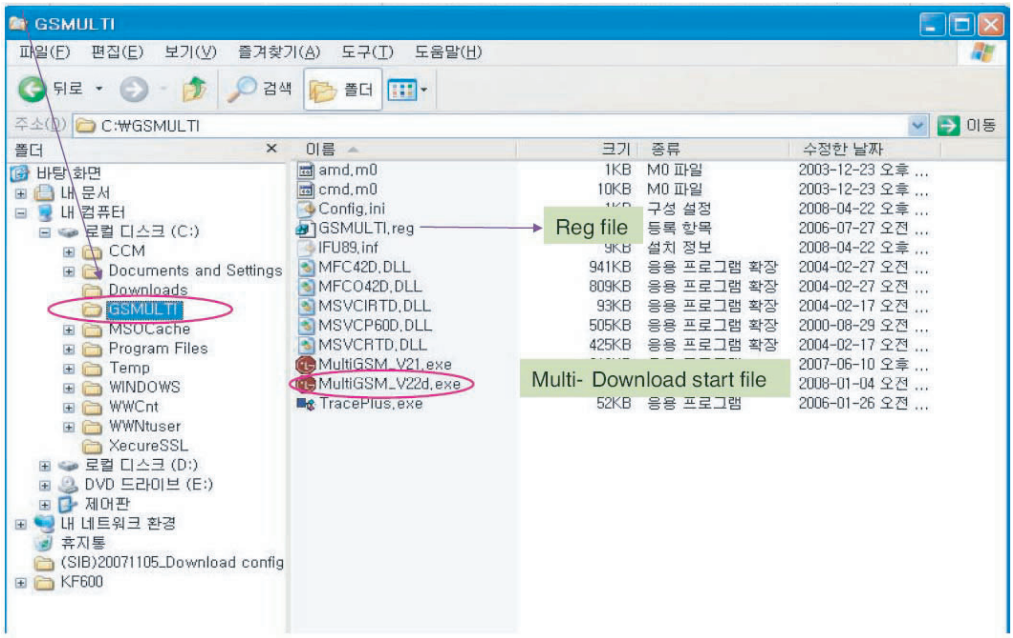
Preparation

- Target terminal
- PIF-Union
- RS-232 Cable and PIF-UNION to Phone interface Cable
- Power Supply or Battery
- PC supporting RS-232 with Windows 2000 or newer.

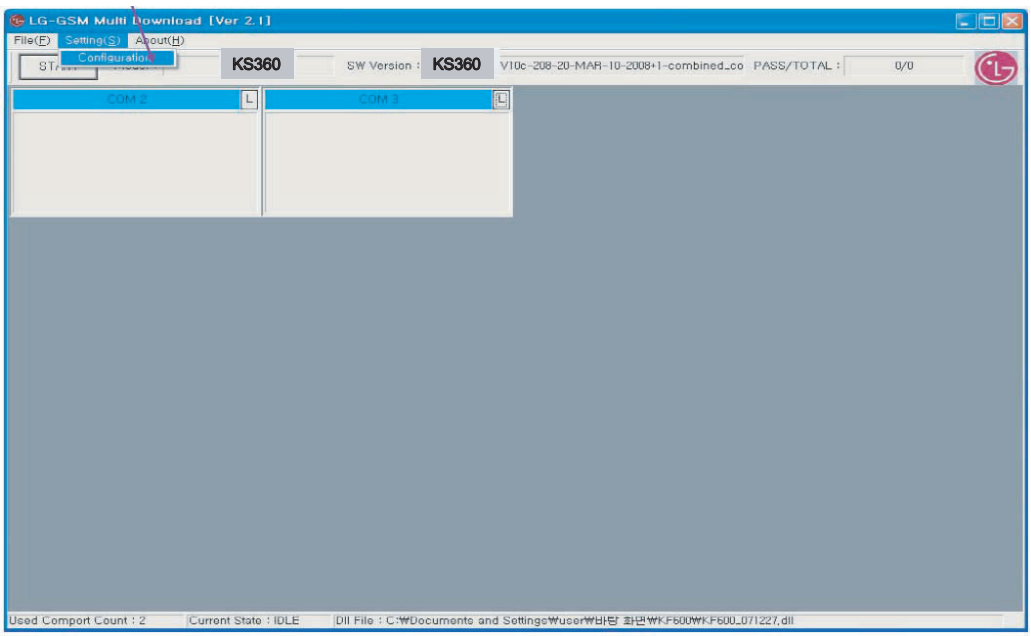
If you are going to use battery, the voltage of the battery should be over 3.7V for stable power supplying during S/W download.

6.2 Download program user guide

6.2.1 After “GSMULTI” folder copy, paste C:\

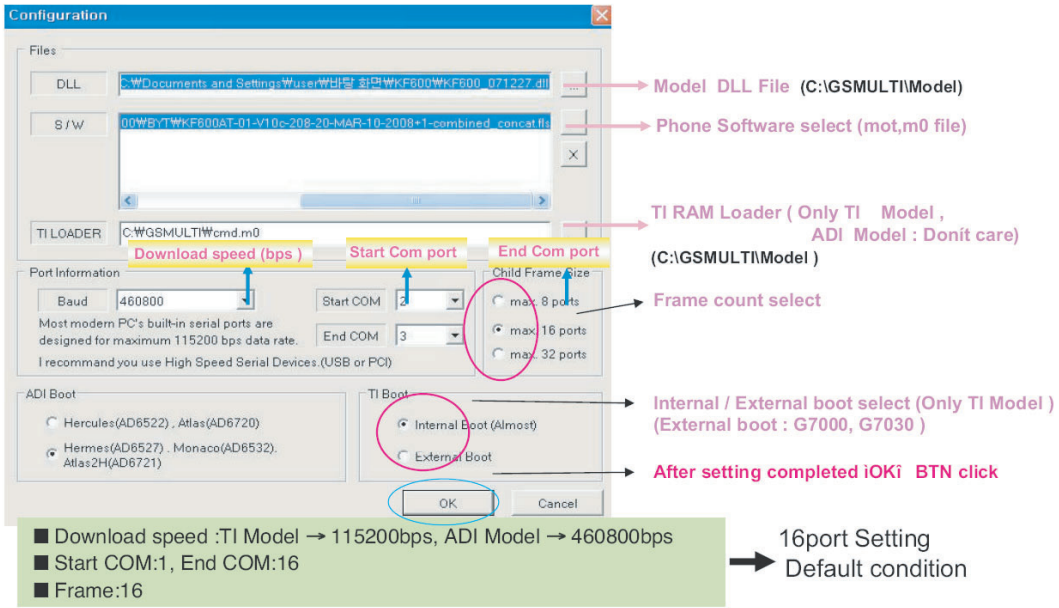


6.2.2 “MultiGSM.exe” execution file execute

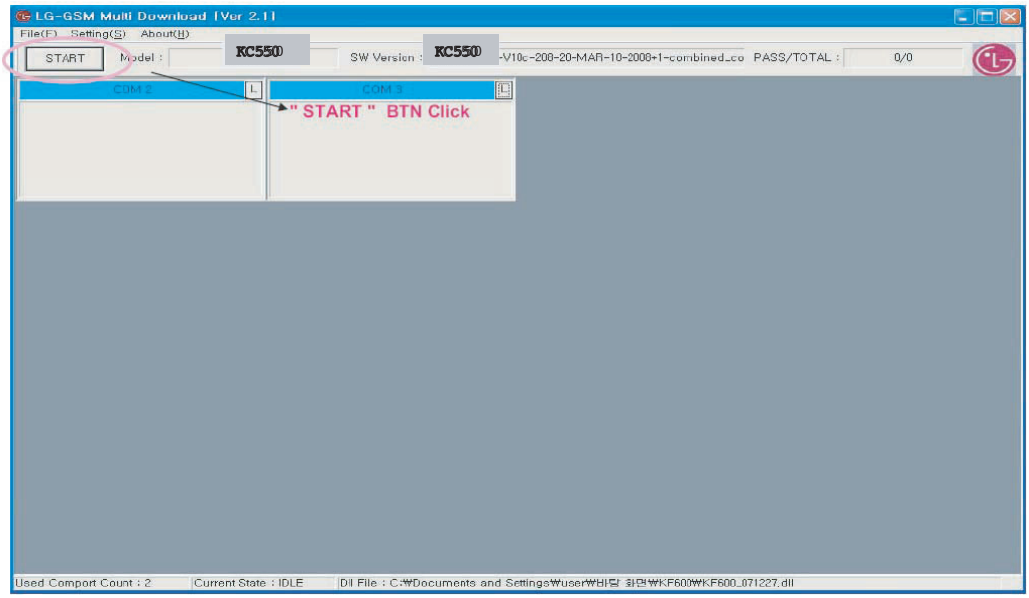


6.3 Multi-Download Program Setting(Model-Base)

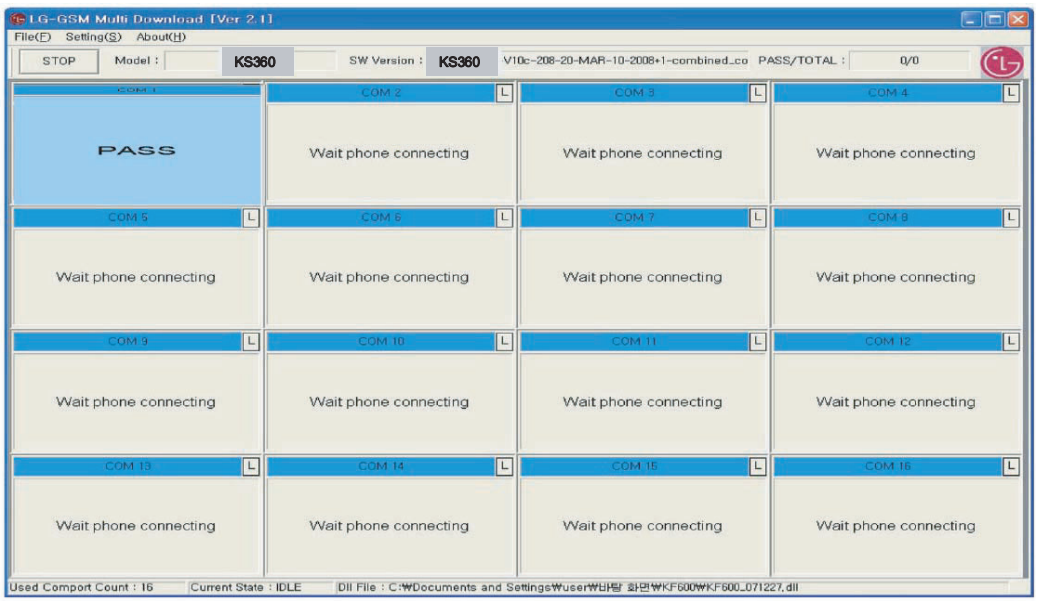
■ Multi-Download Program Execution → Setting : Configuration



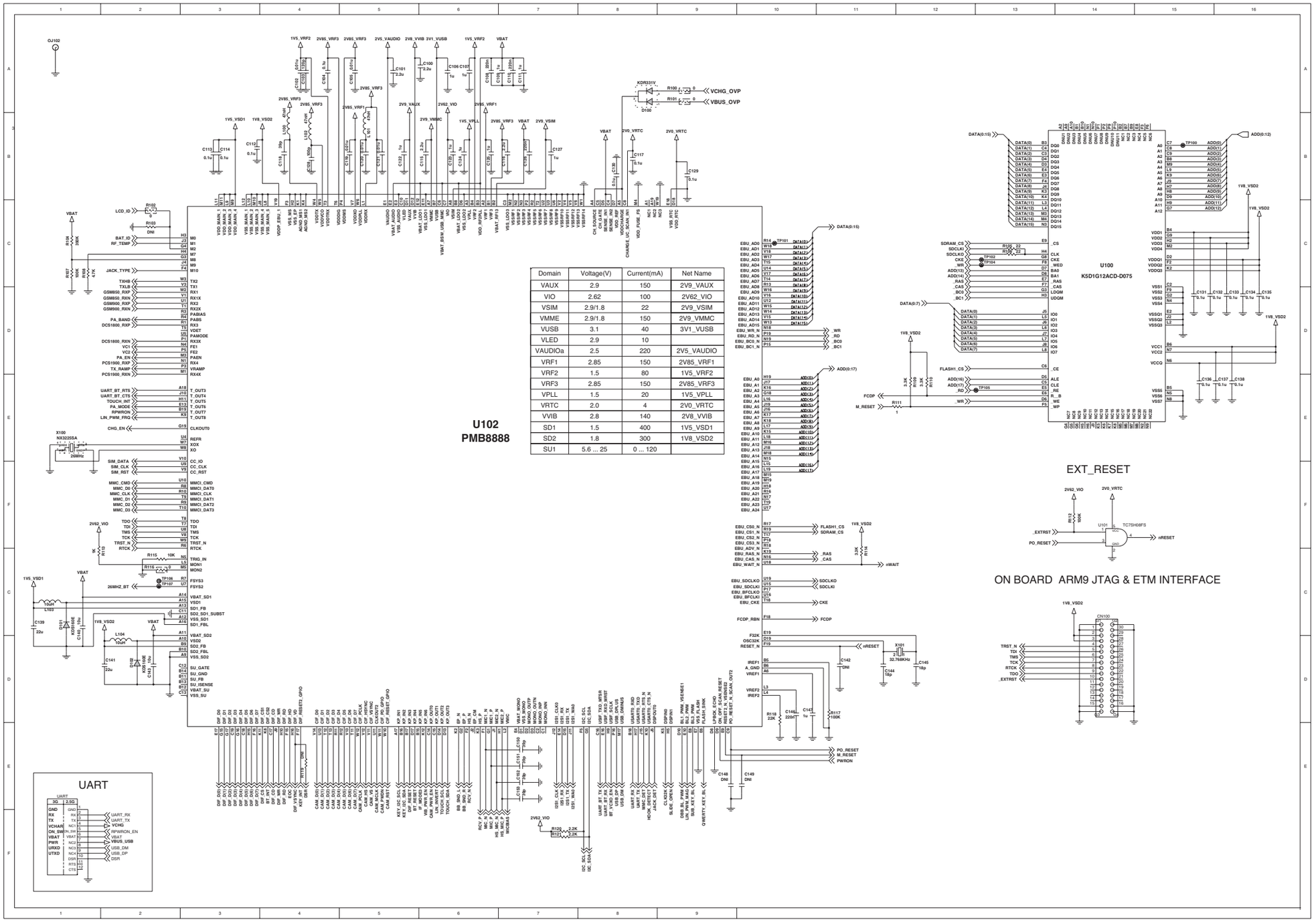
■ Setting Completed



■ **Stand-by Condition: “Wait phone connecting” confirm → Phone connection**

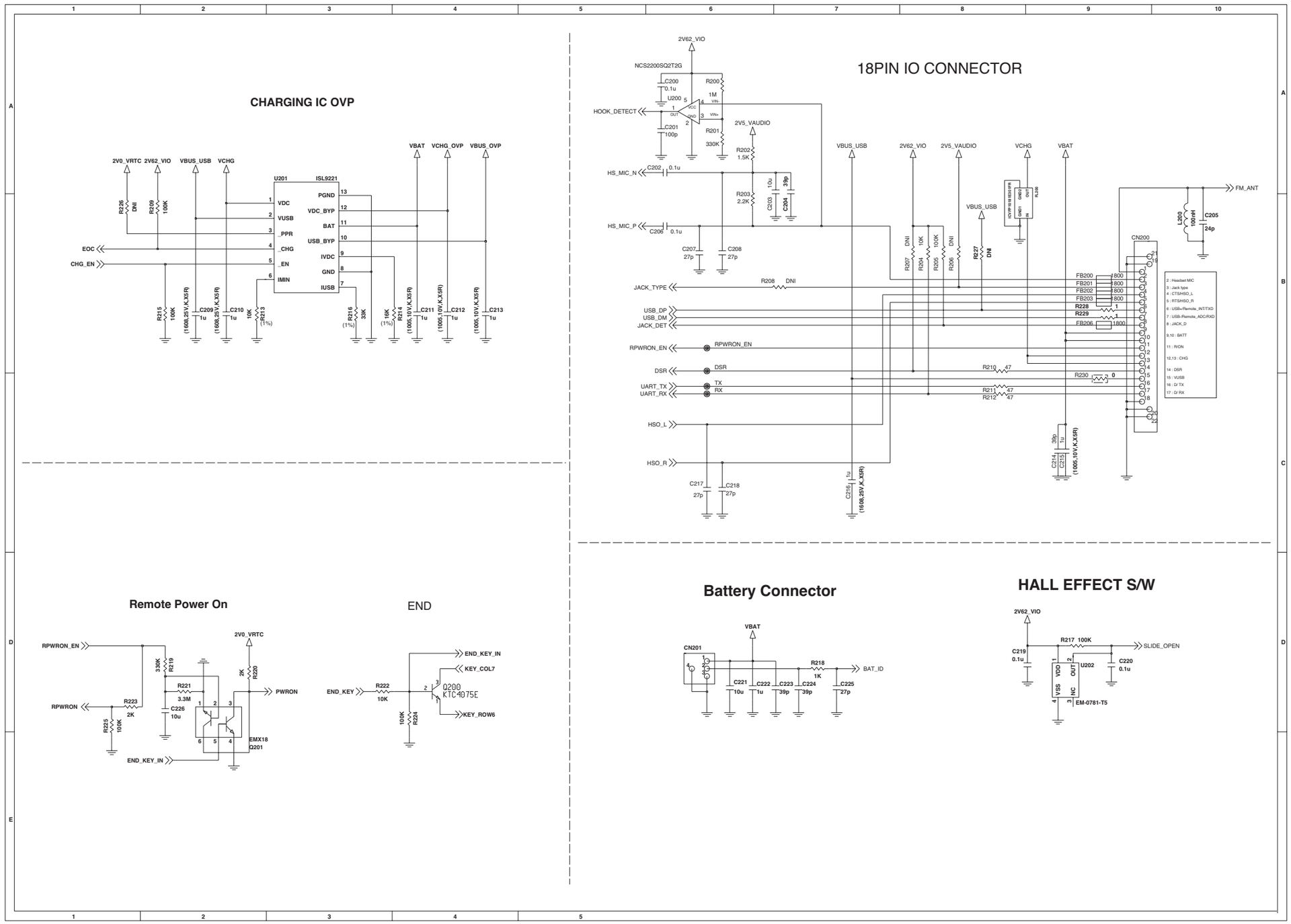


7. CIRCUIT DIAGRAM



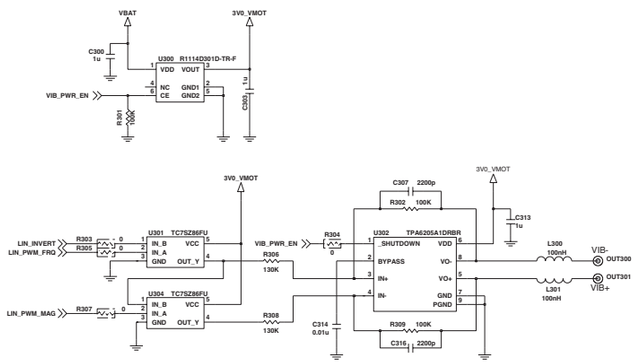
Domain	Voltage(V)	Current(mA)	Net Name
VAUX	2.9	150	2V9_VAUX
VIO	2.62	100	2V62_VIO
VSIM	2.9/1.8	22	2V9_VSIM
VMME	2.9/1.8	150	2V9_VMMC
VUSB	3.1	40	3V1_VUSB
VLED	2.9	10	
VAUDIOa	2.5	220	2V5_VAUDIO
VRF1	2.85	150	2V85_VRF1
VRF2	1.5	80	1V5_VRF2
VRF3	2.85	150	2V85_VRF3
VPLL	1.5	20	1V5_VPLL
VRTC	2.0	4	2V0_VRTC
VVIB	2.8	140	2V8_VVIB
SD1	1.5	400	1V5_VSD1
SD2	1.8	300	1V8_VSD2
SU1	5.6 ... 25	0 ... 120	

7. CIRCUIT DIAGRAM

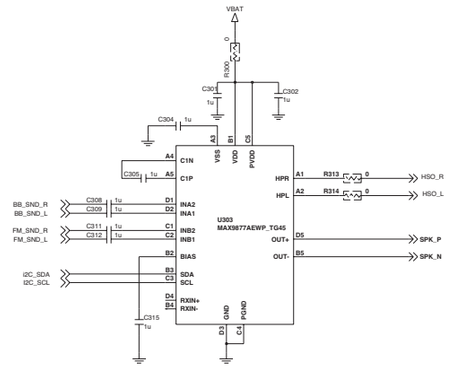


7. CIRCUIT DIAGRAM

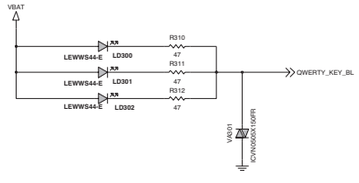
MOTOR CIRCUIT



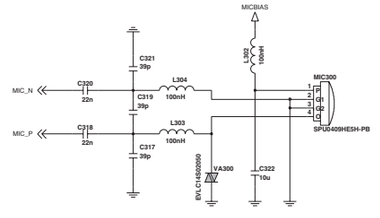
AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR



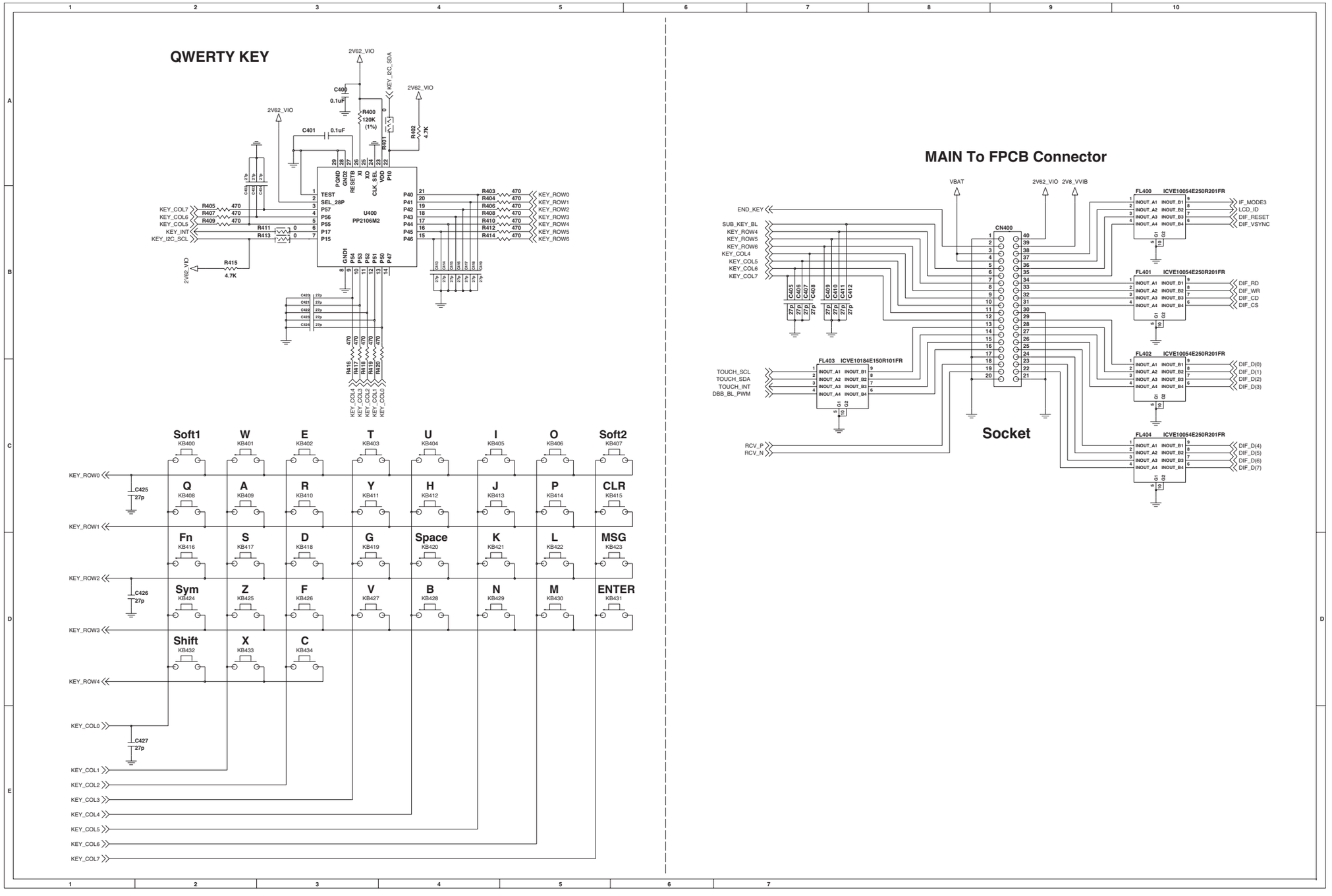
QWERTY_KEY BACKLIGHT



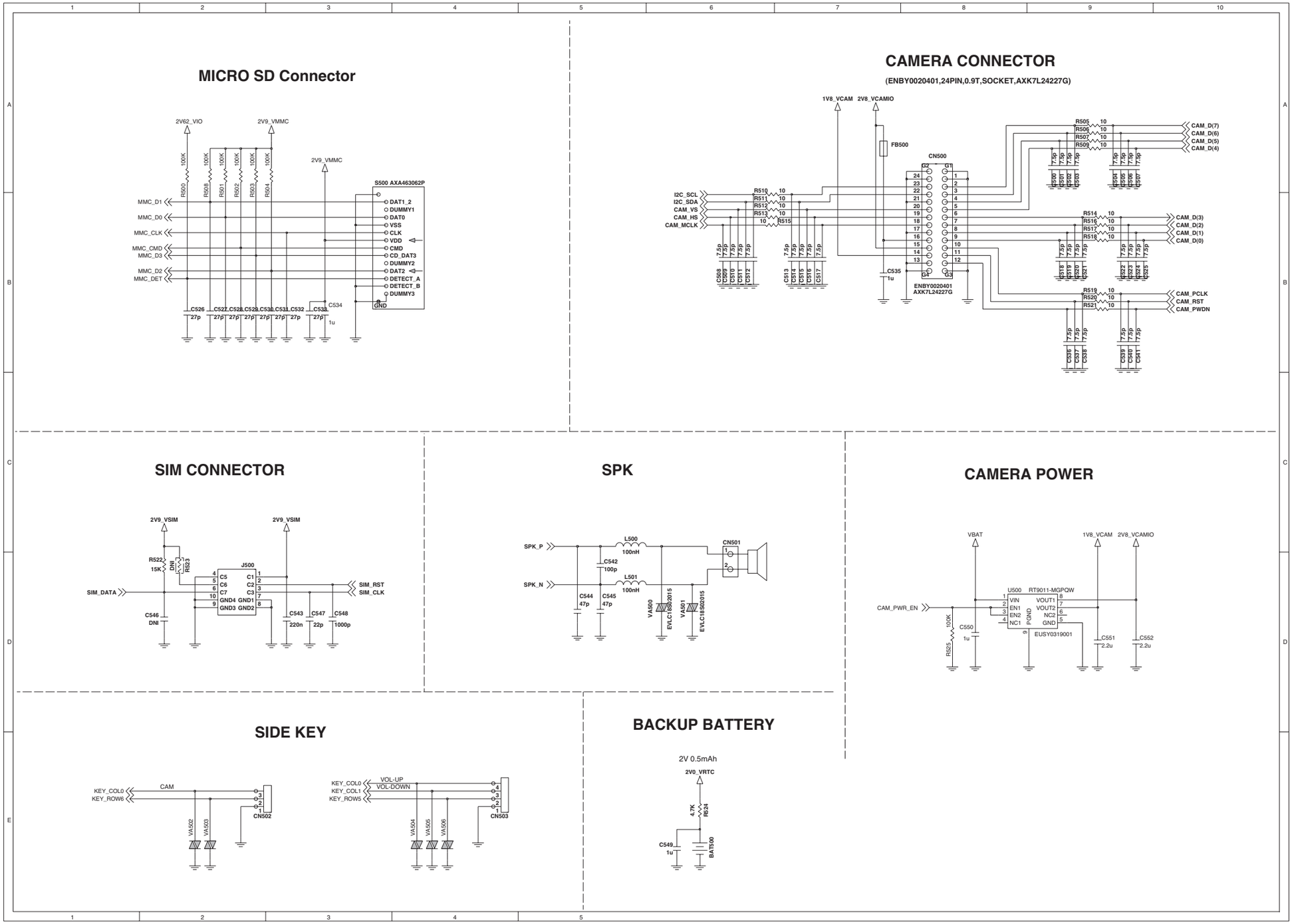
MIC



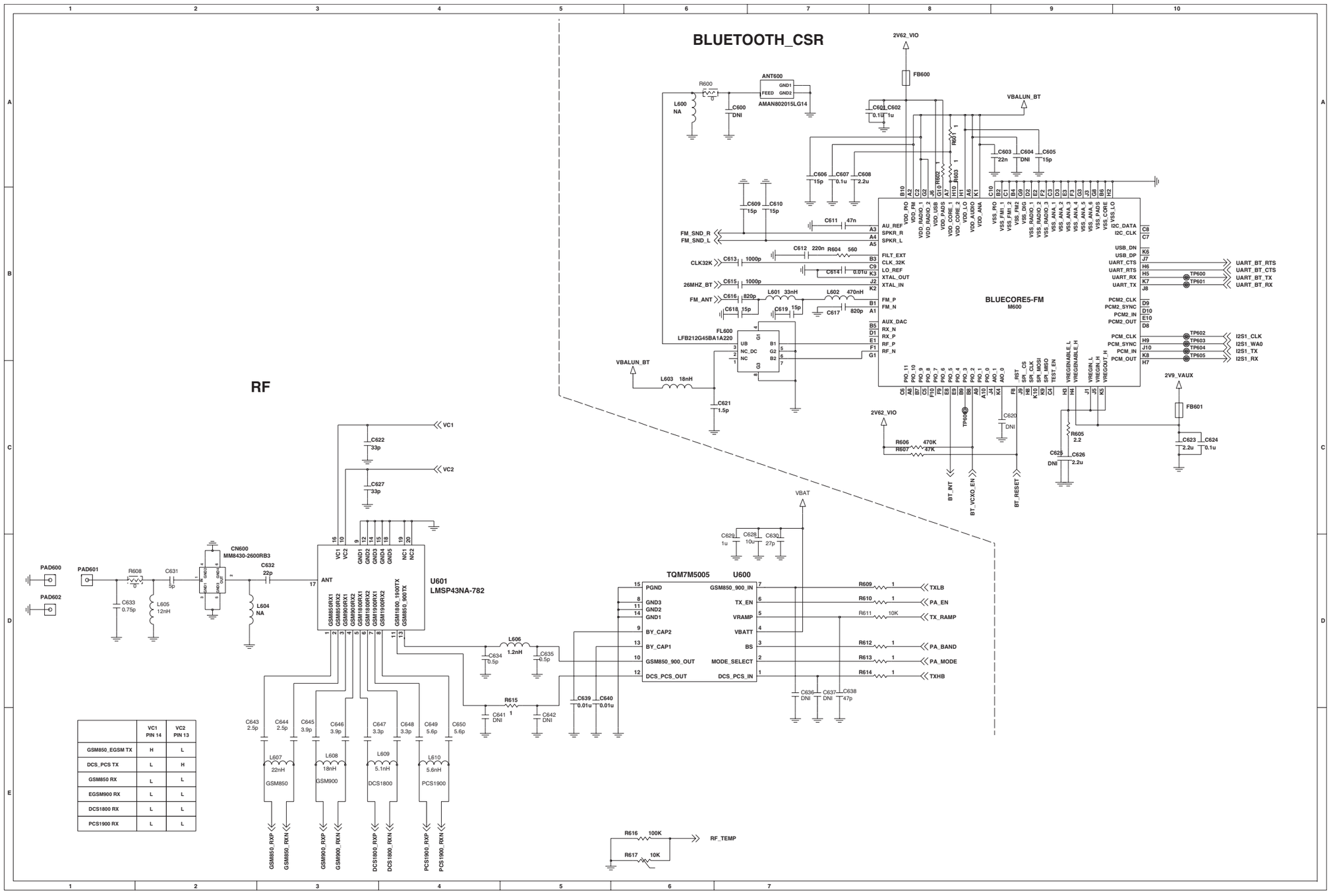
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

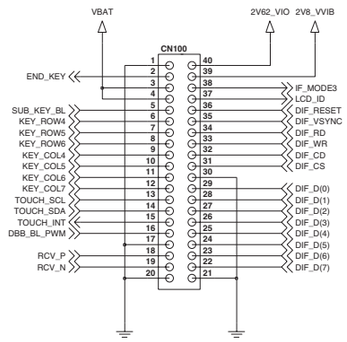


7. CIRCUIT DIAGRAM



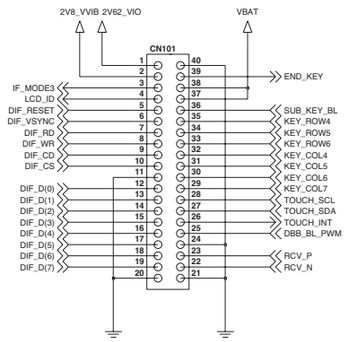
7. CIRCUIT DIAGRAM

MAIN To FPCB Connector



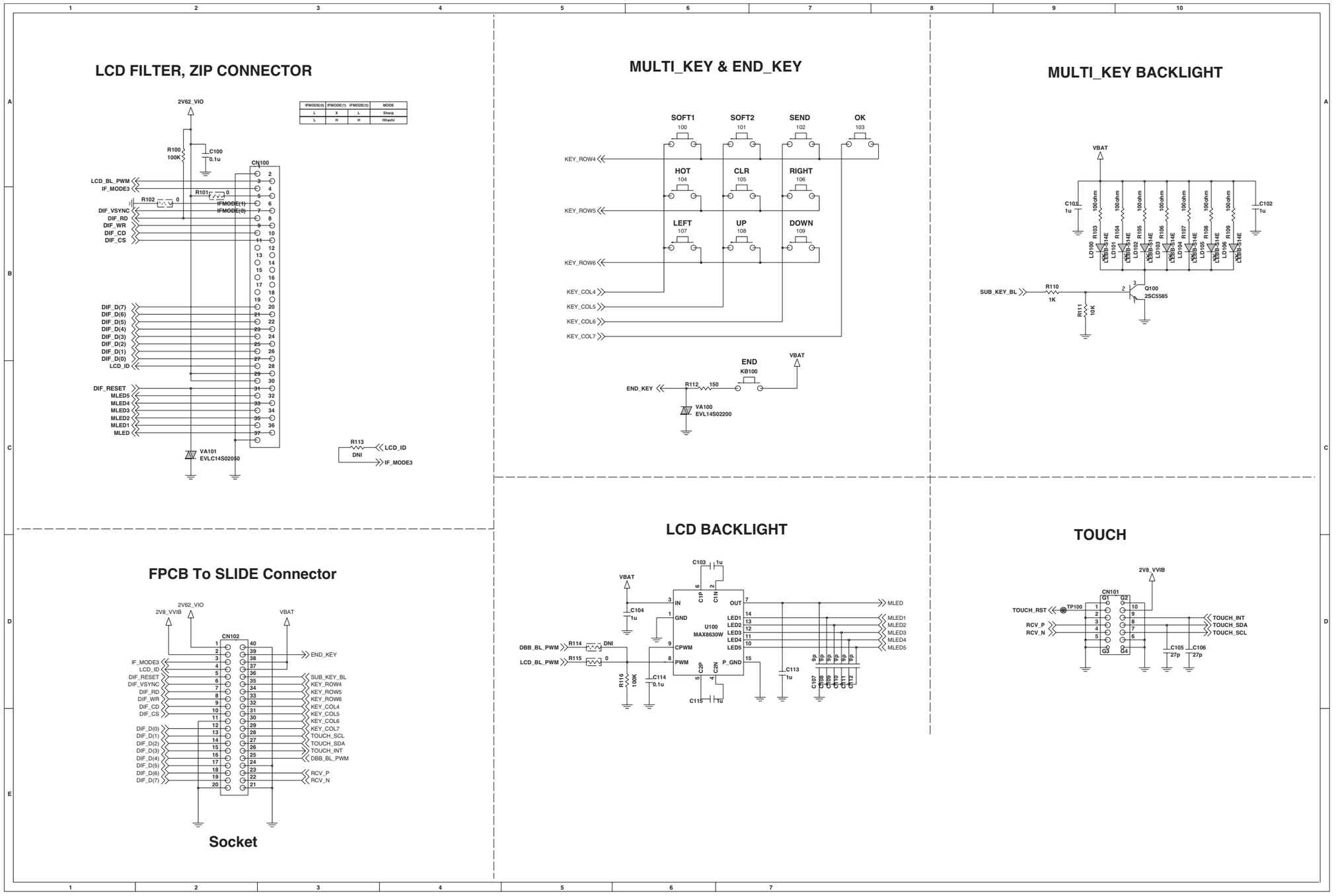
Header

FPCB To SLIDE Connector

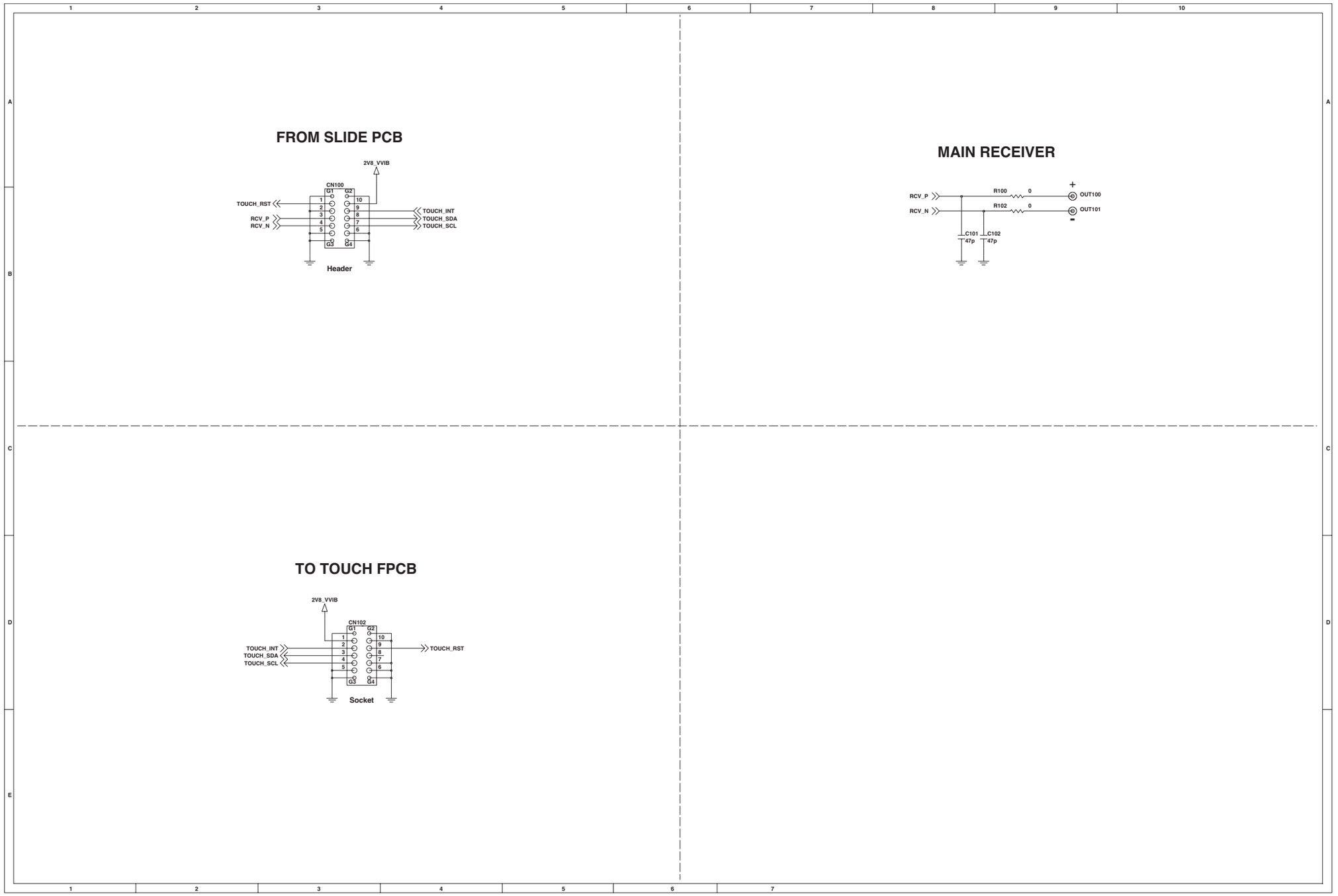


Header

7. CIRCUIT DIAGRAM

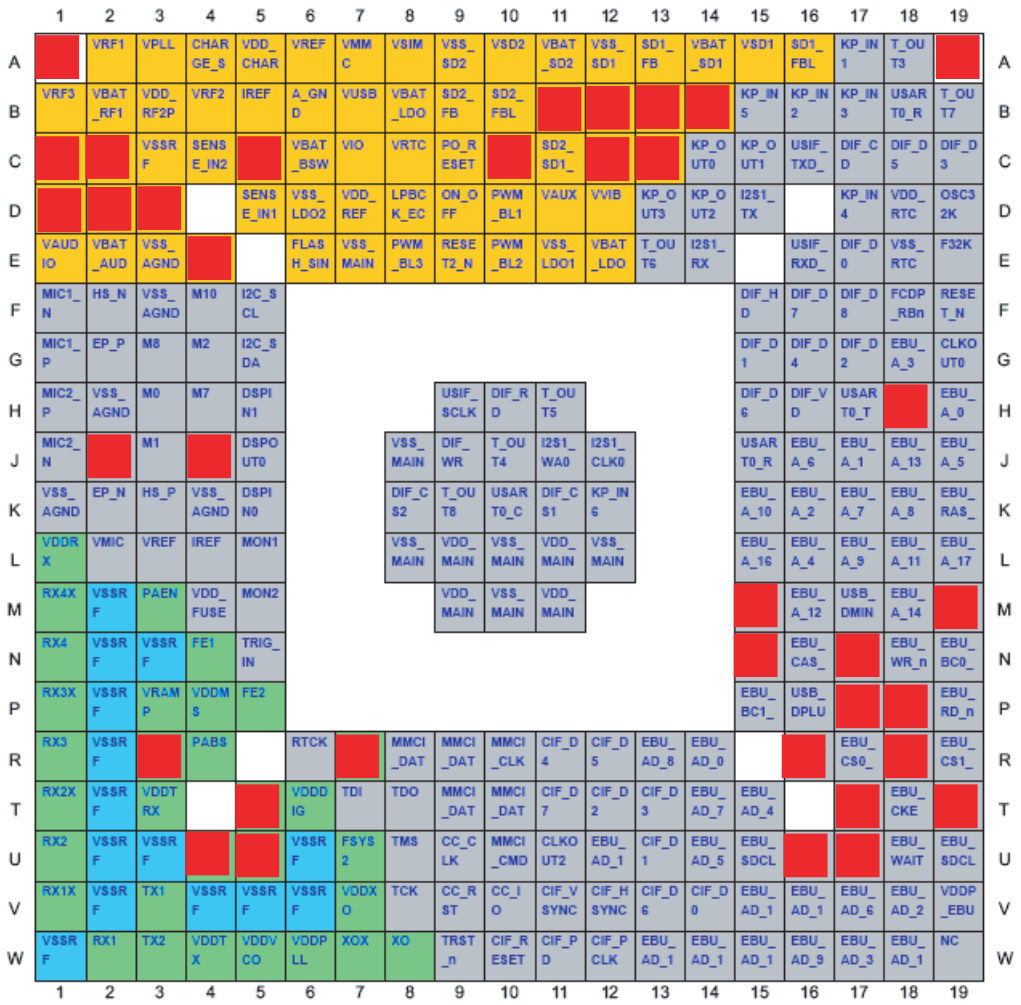


7. CIRCUIT DIAGRAM



8. BGM Pin Map

BGA IC pin check (U102, PMB8888)

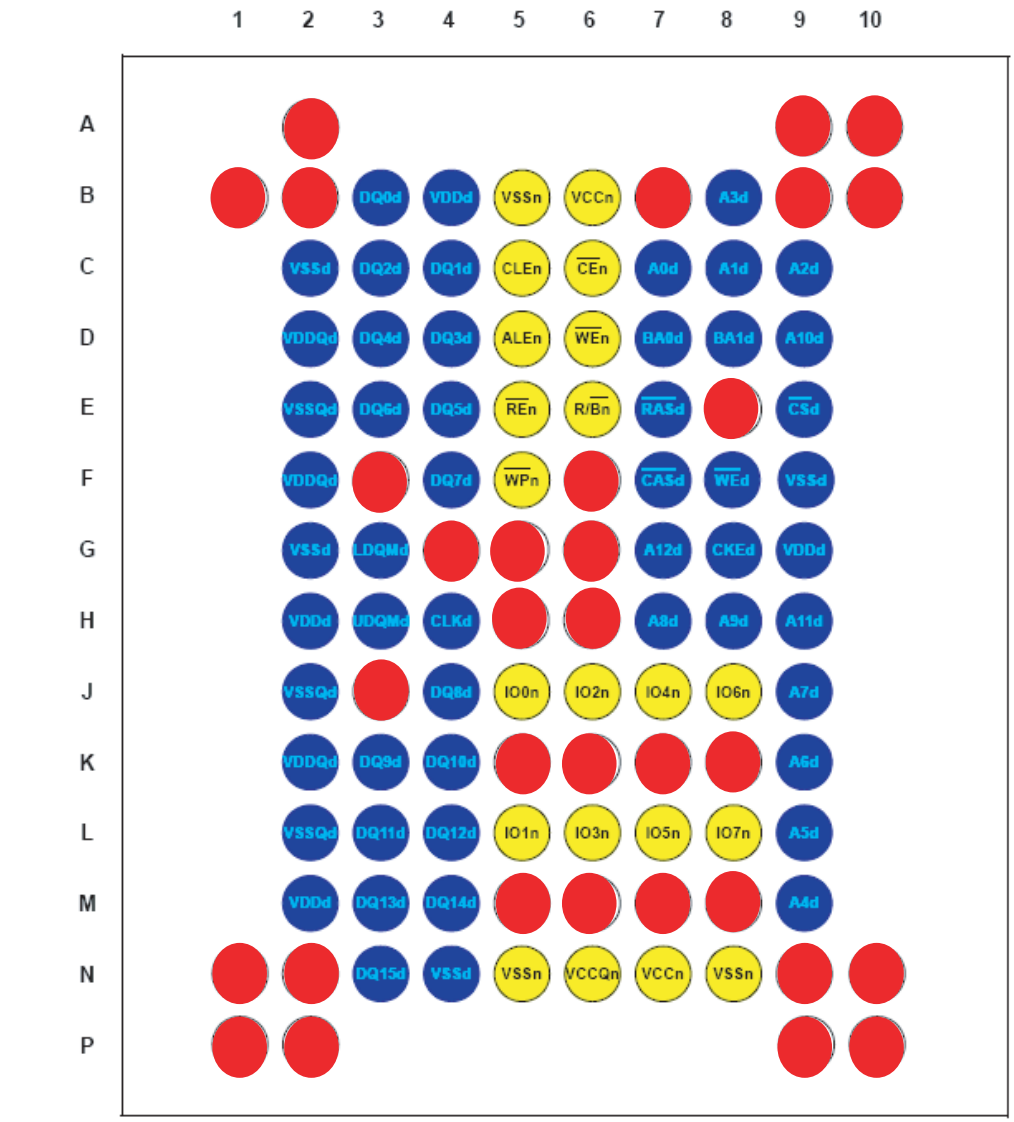


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
A		VRF1	VPLL	CHARGE_S	VDD_CHAR	VREF	VMMC	VSIM	VSS_SD2	VSD2	VBAT_SD2	VSS_SD1	SD1_FB	VBAT_SD1	VSD1	SD1_FBL	KP_IN1	T_OUT3		A
B	VRF3	VBAT_RF1	VDD_RF2P	VRF2	IREF	A_GND	VUSB	VBAT_LDO	SD2_FB	SD2_FBL					KP_IN5	KP_IN2	KP_IN3	USART0_R	T_OUT7	B
C			VSSRF	SENSE_IN2		VBAT_BSW	VIO	VRTC	PO_RESET		SD2_SD1_			KP_OUT0	KP_OUT1	USIF_TXD_	DIF_CD	DIF_D5	DIF_D3	C
D					SENSE_IN1	VSS_LDO2	VDD_REF	LPBCK_EC	ON_OFF	PWM_BL1	VAUX	VVIB	KP_OUT3	KP_OUT2	I2S1_TX		KP_IN4	VDD_RTC	OSC32K	D
E	VAUDIO	VBAT_AUD	VSS_AGND			FLASH_SIN	VSS_MAIN	PWM_BL3	RESET2_N	PWM_BL2	VSS_LDO1	VBAT_LDO	T_OUT6	I2S1_RX		USIF_RXD_	DIF_D0	VSS_RTC	F32K	E
F	MIC1_N	HS_N	VSS_AGND	M10	I2C_SCL										DIF_HD	DIF_D7	DIF_D8	FCDP_RBn	RESET_N	F
G	MIC1_P	EP_P	M8	M2	I2C_SDA										DIF_D1	DIF_D4	DIF_D2	EBU_A_3	CLKOUT0	G
H	MIC2_P	VSS_AGND	M0	M7	DSPIN1				USIF_SCLK	DIF_RD	T_OUT5				DIF_D6	DIF_VD	USART0_T		EBU_A_0	H
J	MIC2_N		M1		DSPOUT0			VSS_MAIN	DIF_WR	T_OUT4	I2S1_WA0	I2S1_CLK0			USART0_R	EBU_A_6	EBU_A_1	EBU_A_13	EBU_A_5	J
K	VSS_AGND	EP_N	HS_P	VSS_AGND	DSPIN0			DIF_CS2	T_OUT8	USART0_C	DIF_CS1	KP_IN6			EBU_A_10	EBU_A_2	EBU_A_7	EBU_A_8	EBU_RAS_	K
L	VDDRX	VMIC	VREF	IREF	MON1			VSS_MAIN	VDD_MAIN	VSS_MAIN	VDD_MAIN	VSS_MAIN			EBU_A_16	EBU_A_4	EBU_A_9	EBU_A_11	EBU_A_17	L
M	RX4X	VSSRF	PAEN	VDD_FUSE	MON2				VDD_MAIN	VSS_MAIN	VDD_MAIN					EBU_A_12	USB_DMIN	EBU_A_14		M
N	RX4	VSSRF	VSSRF	FE1	TRIG_IN											EBU_CAS_		EBU_WR_n	EBU_BC0_	N
P	RX3X	VSSRF	VRAMP	VDDMS	FE2										EBU_BC1_	USB_DPLU			EBU_RD_n	P
R	RX3	VSSRF		PABS		RTCK		MMCI_DAT	MMCI_DAT	MMCI_CLK	CIF_D4	CIF_D5	EBU_AD_8	EBU_AD_0			EBU_CS0_		EBU_CS1_	R
T	RX2X	VSSRF	VDDTRX			VDDDIG	TDI	TDO	MMCI_DAT	MMCI_DAT	CIF_D7	CIF_D2	CIF_D3	EBU_AD_7	EBU_AD_4			EBU_CKE		T
U	RX2	VSSRF	VSSRF			VSSRF	FSYS2	TMS	CC_CLK	MMCI_CMD	CLKOUT2	EBU_AD_1	CIF_D1	EBU_AD_5	EBU_SDCL			EBU_WAIT	EBU_SDCL	U
V	RX1X	VSSRF	TX1	VSSRF	VSSRF	VSSRF	VDDXO	TCK	CC_RST	CC_IO	CIF_VSYNC	CIF_HSYNC	CIF_D6	CIF_D0	EBU_AD_1	EBU_AD_1	EBU_AD_6	EBU_AD_2	VDDP_EBU	V
W	VSSRF	RX1	TX2	VDDTX	VDDVCO	VDDPLL	XOX	XO	TRST_n	CIF_RESET	CIF_PD	CIF_PCLK	EBU_AD_1	EBU_AD_1	EBU_AD_1	EBU_AD_9	EBU_AD_3	EBU_AD_1	NC	W
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

: Not in use

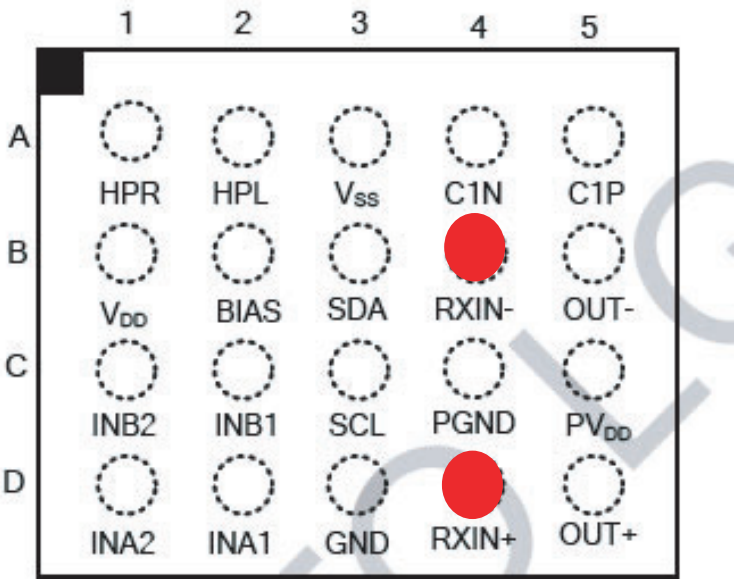
8. BGM Pin Map

BGA IC pin check (U100, K5D1G12ACD-D075)



: Not in use

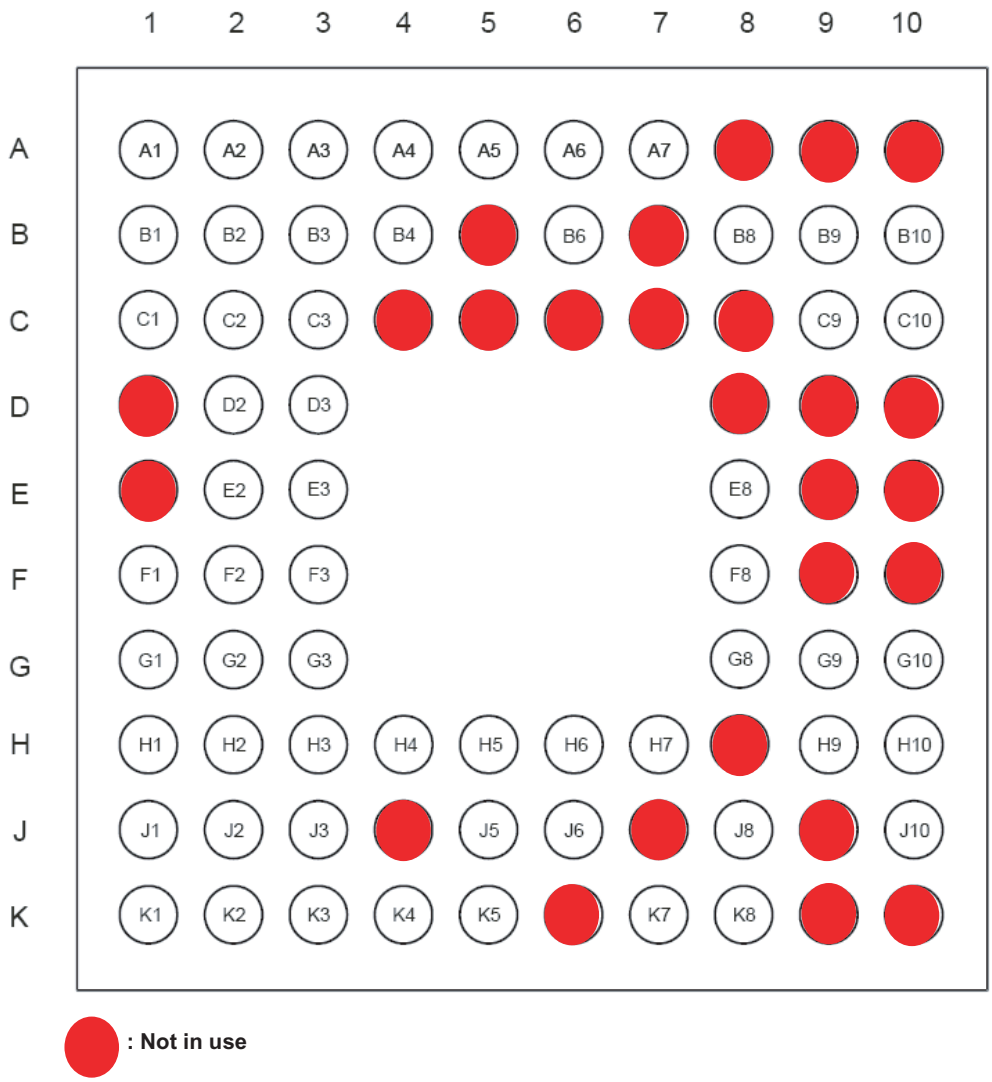
BGA IC pin check (U303, MAX9877)



: Not in use

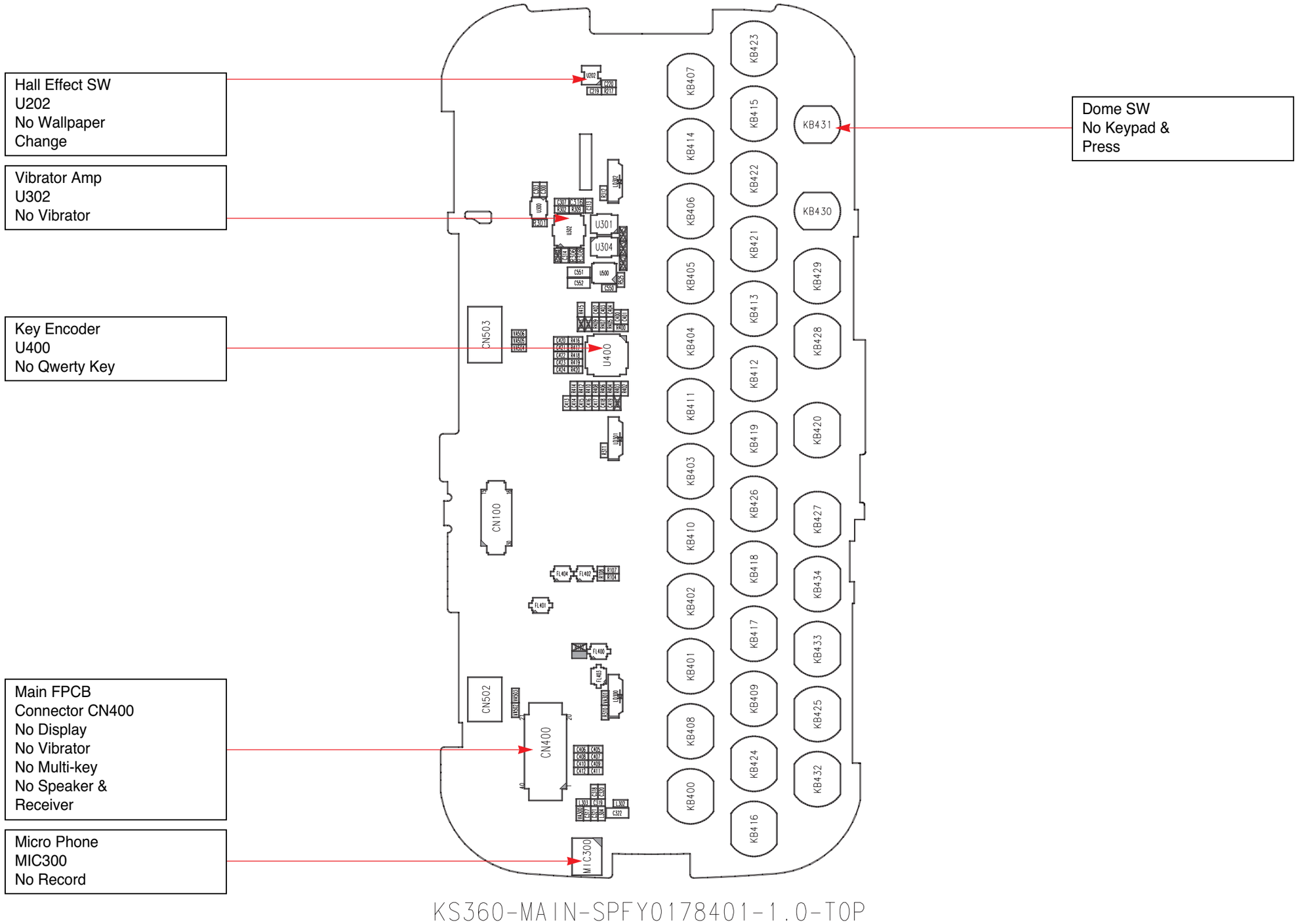
8. BGM Pin Map

BGA IC pin check (M600, BC5FM)



: Not in use

9. PCB LAYOUT



9. PCB LAYOUT

Backup Battery
BAT500
No Service

Speaker CN501
No Speaker
(Sound)

MMI Connector
CN200
No Ear Mic
No Speaker

Battery Connector
CN201
No Power

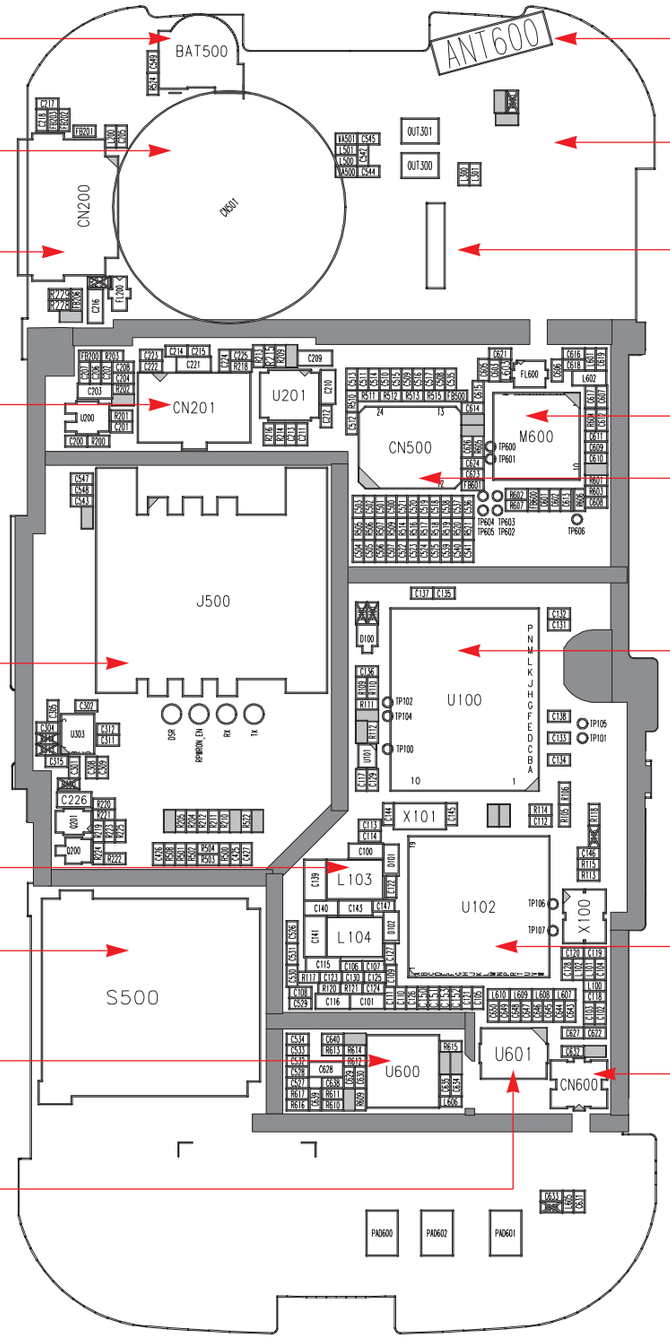
SIM Connector
J500
No Service

Power Inductor
L103,104
No Booting
No Power

Micro SD Socket
S500
No Micro SD

PAM U600
GSM TX Power
No Service

FEM U601
GSM RX
Sensitivitry & TX
Power



Bluetooth
Antenna ANT600
No BT Connect

Vibrator
No Vibrator

Camera Module
U500
No Camera

Bluetooth & FM
Radio Chip M600
BT Module
No Service

Camera
Connector
CN500
No Camera

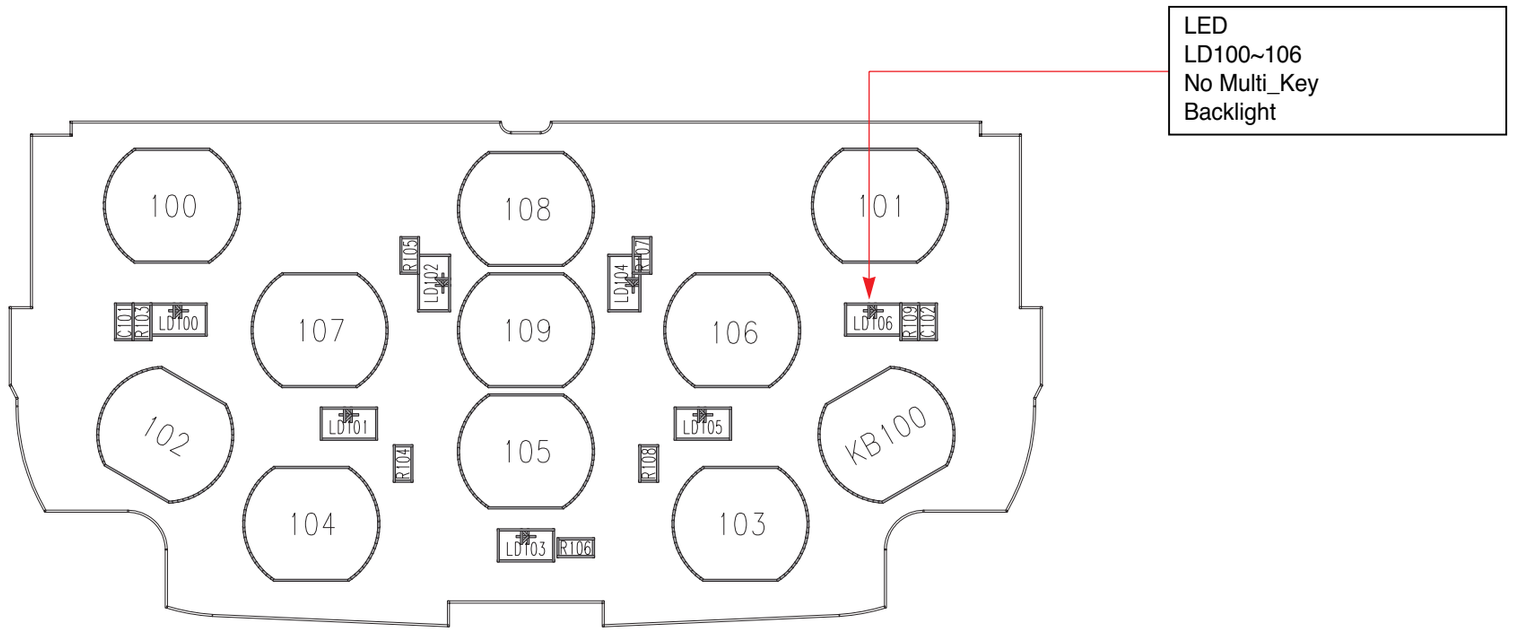
Memory
U100
No Booting

BB Chipset
U102 No Power
On No Display
No Service

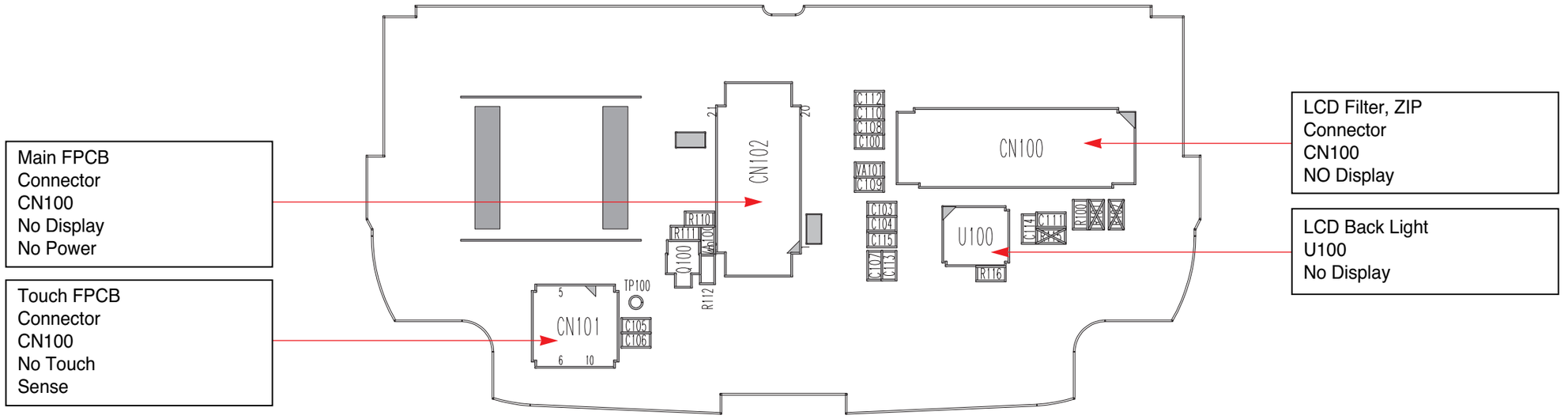
Mobile SW CN600
GSM TX Power
NO Service

KS360-MAIN-SPFY0178401-1.0-BOT

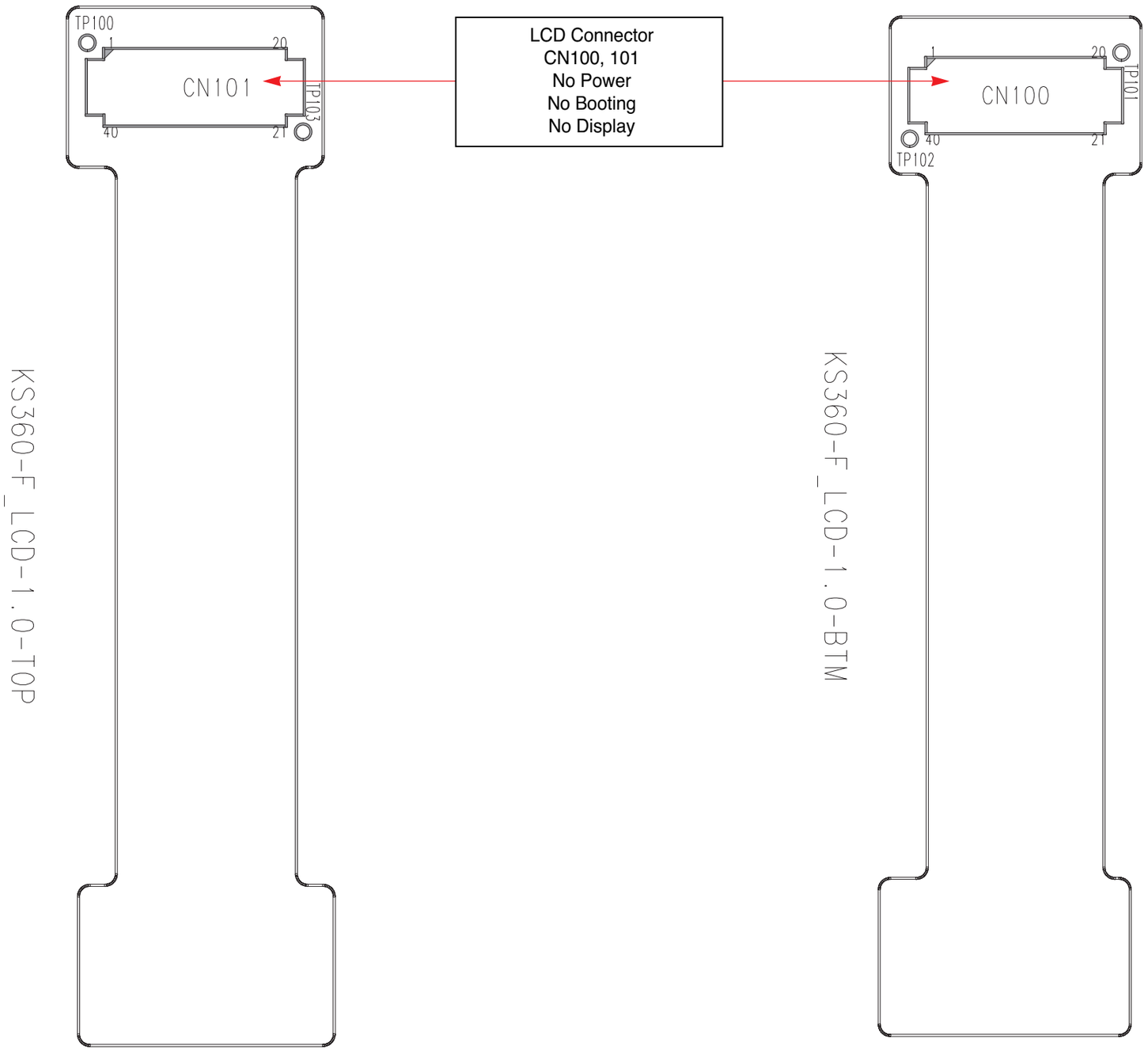
9. PCB LAYOUT



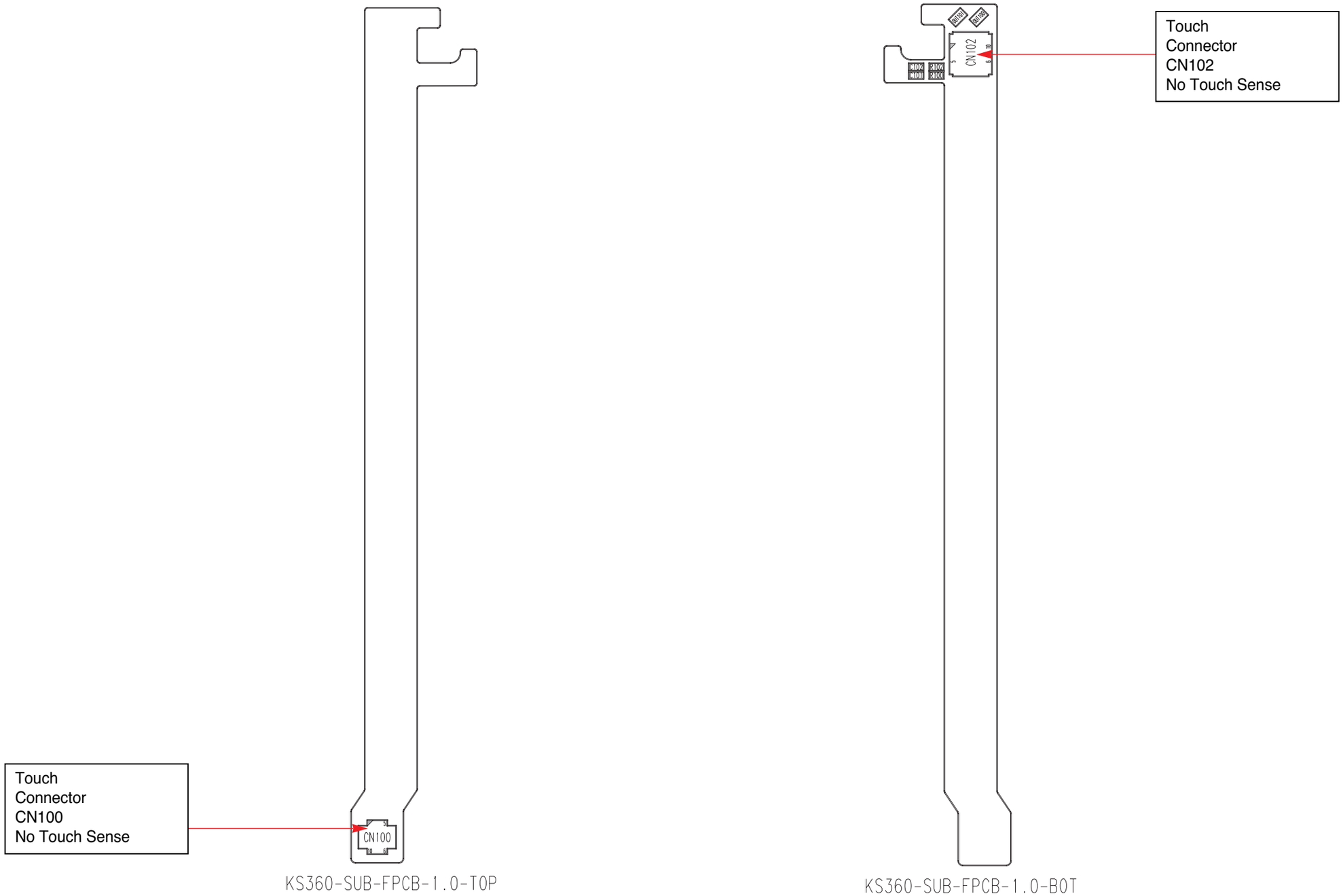
9. PCB LAYOUT



9. PCB LAYOUT

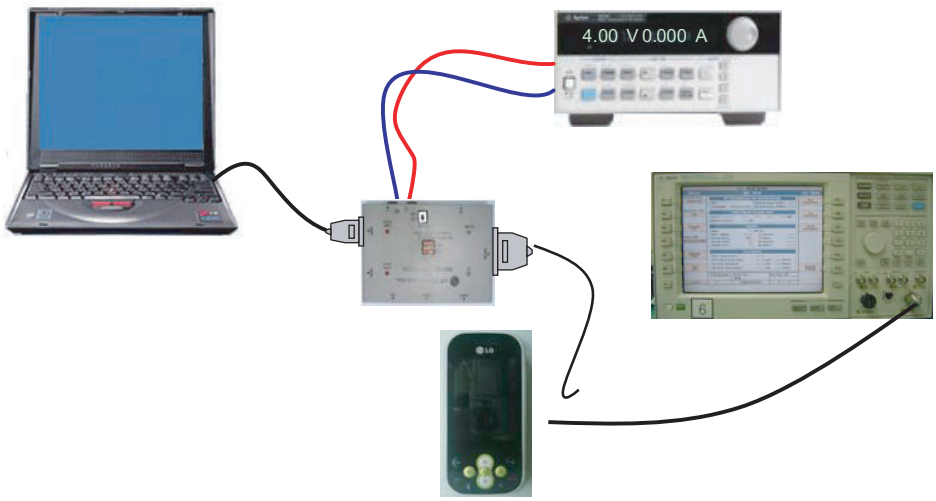


9. PCB LAYOUT



10. RF Calibration

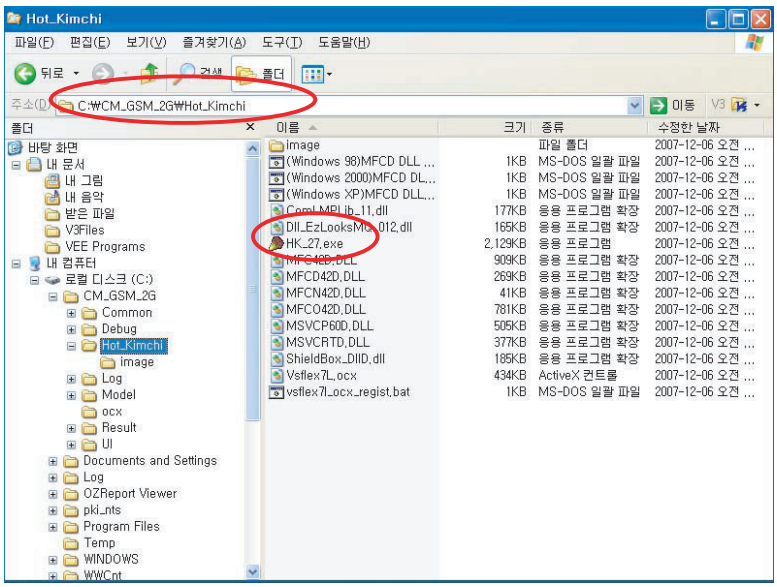
10.1 Test Equipment Setup



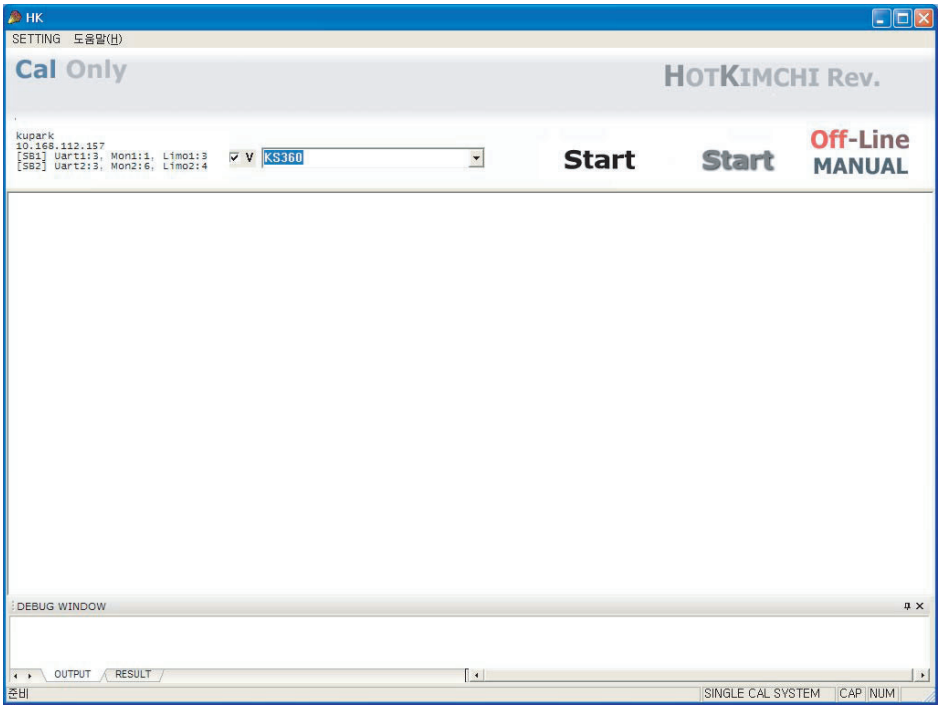
10.2 Calibration Step

10.2.1 Turn on the Phone

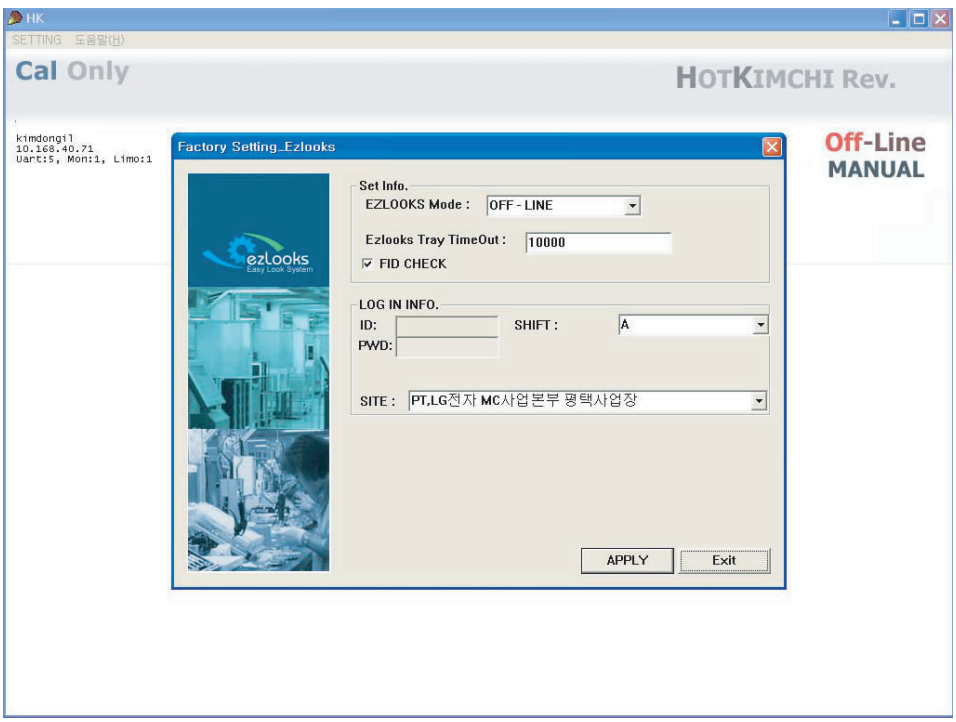
10.2.2 Execute “HK_27.exe”



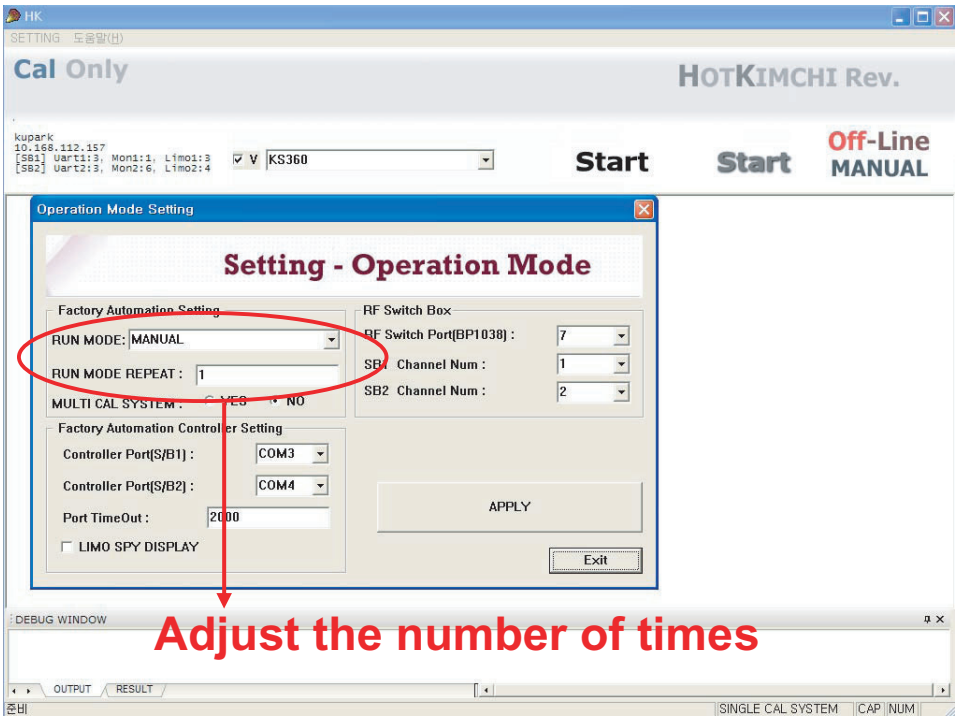
10.2.3 Click “SETTING” Menu



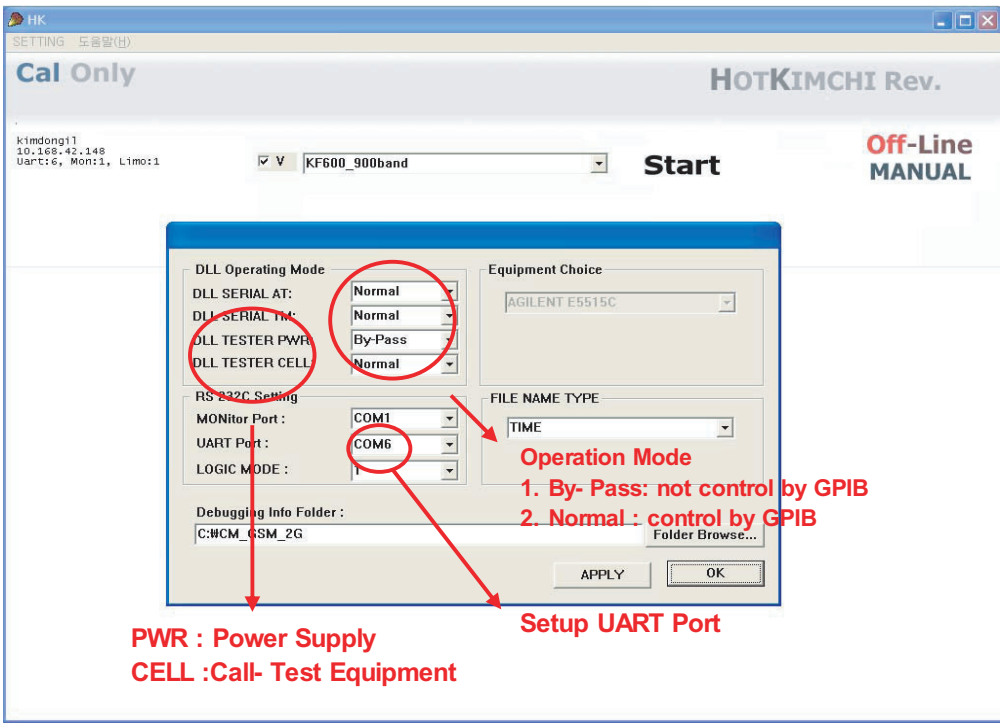
10.2.4 Setup “Ezlooks” menu such as the following figure



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

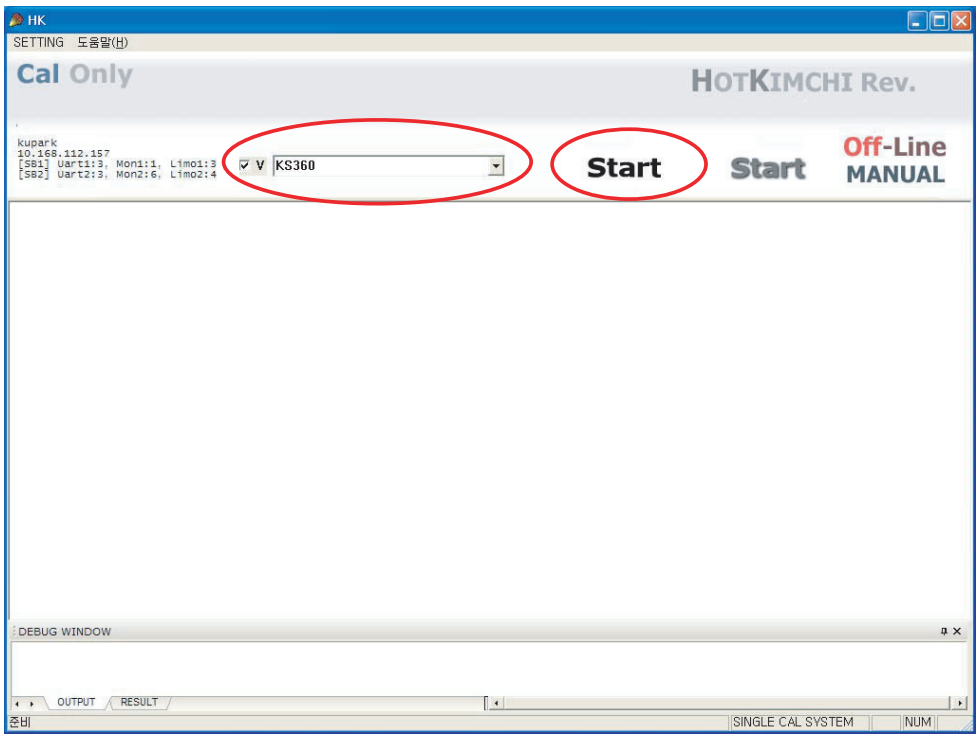


10.2.6 Setup Logic operation such as the following figure

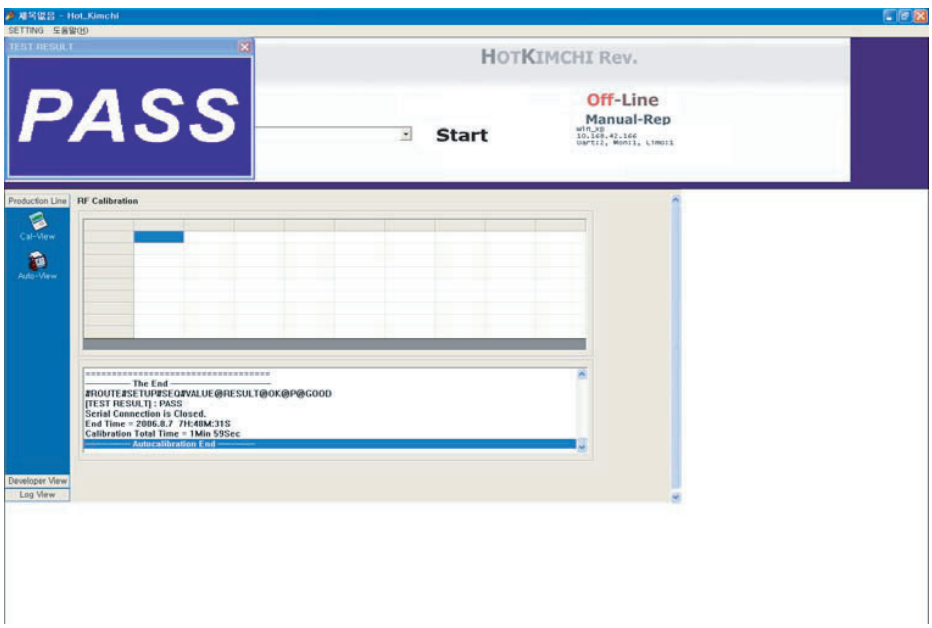


10.2.7 Select “MODEL”

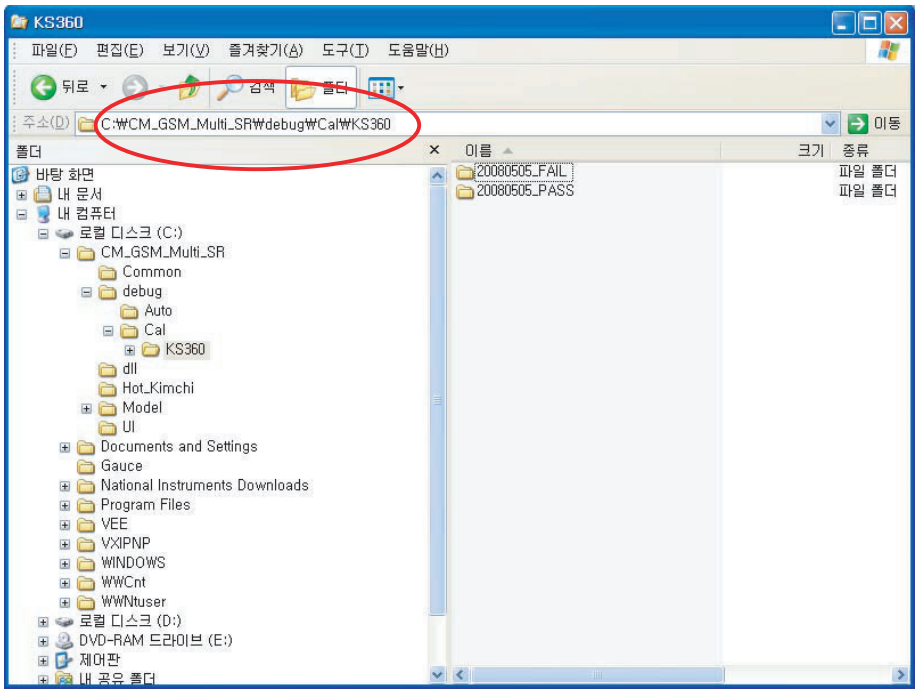
10.2.8 Click “START” for RF calibration



10.2.9 RF Calibration finishes.



10.2.10 Calibration data will be saved to the following folder



10. RF Calibration

Notices:

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

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

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

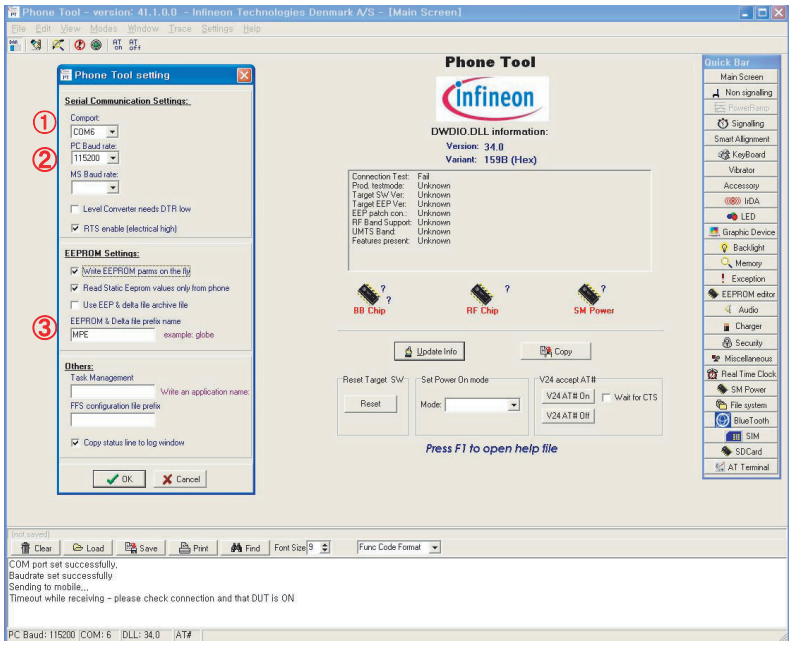
Normal Mode

ptest Mode

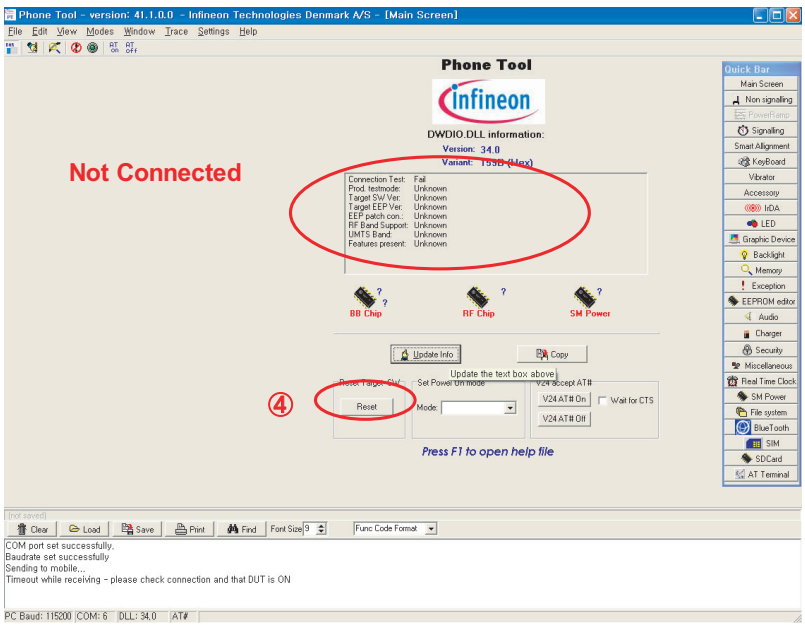
11. Stand-alone Test

11.1 Test Program Setting

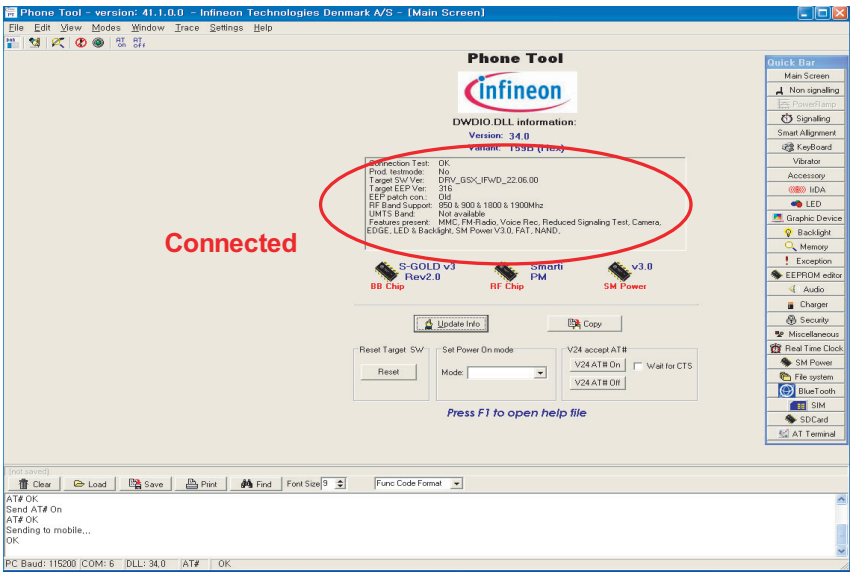
① Set COM Port.
② Check PC Baud rate.
③ Confirm EEPROM & Delta file prefix name.



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

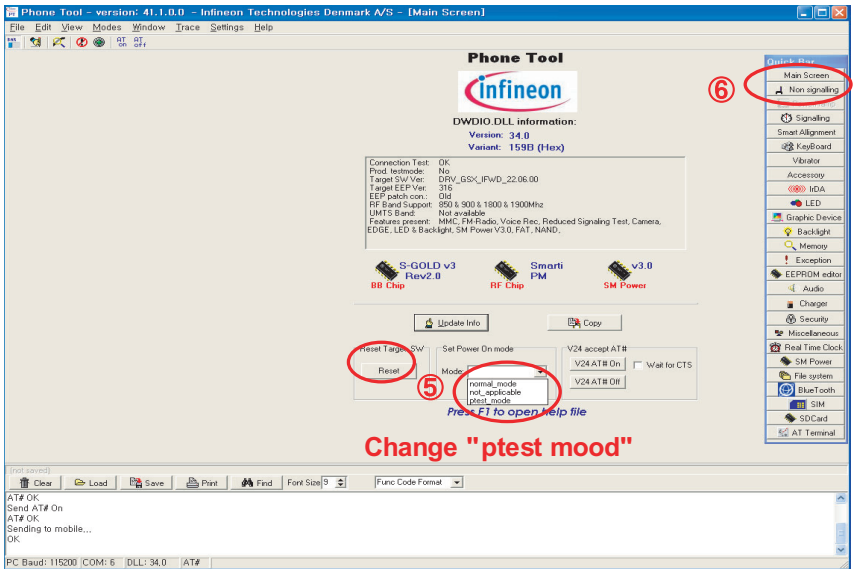


11. Stand-alone Test



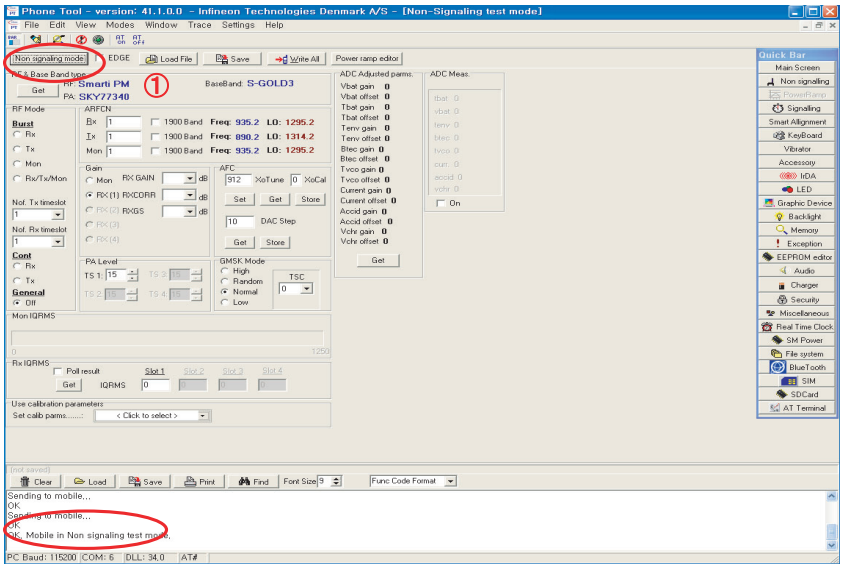
⑤ For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “Reset” bar.

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



11.2 Tx Test

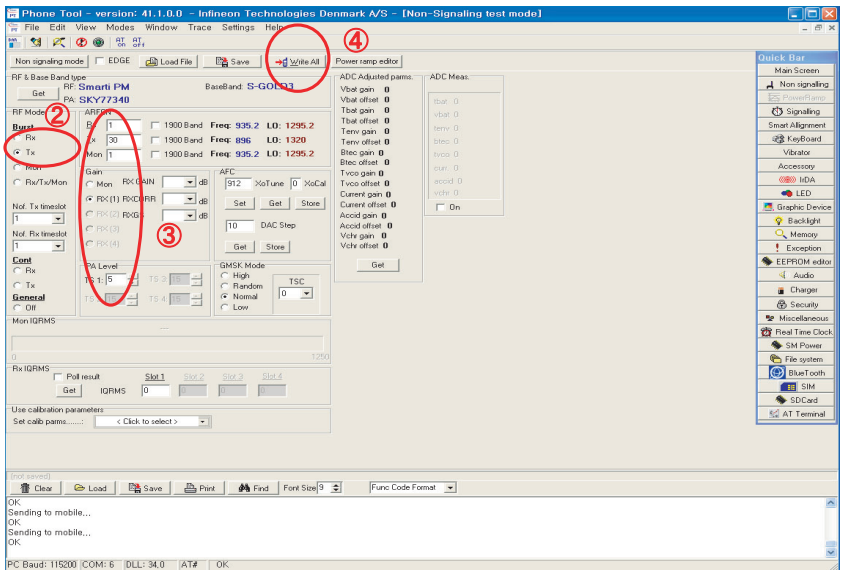
① Click “Non signaling mode” bar and then confirm “OK” text in the command line.



② Put the number of TX Channel in the ARFCN.

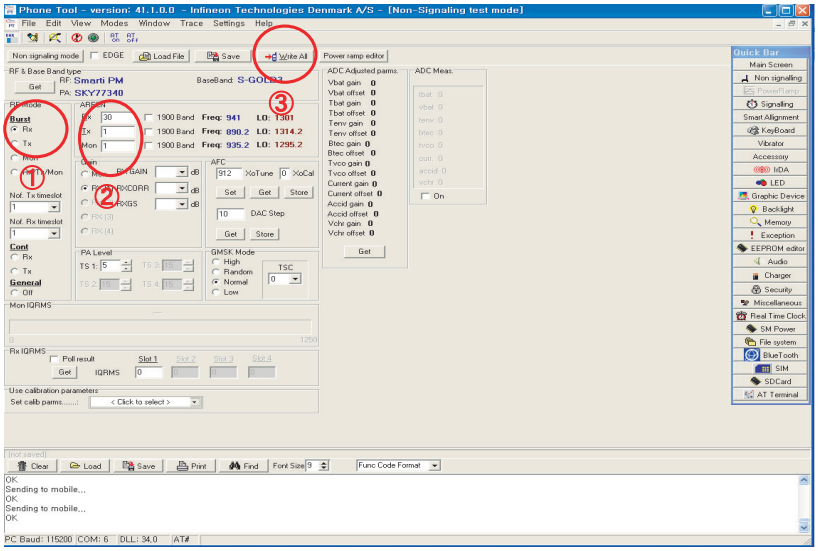
③ Select “Tx” in the RF mode menu and “PCL” in the PA Level menu.

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

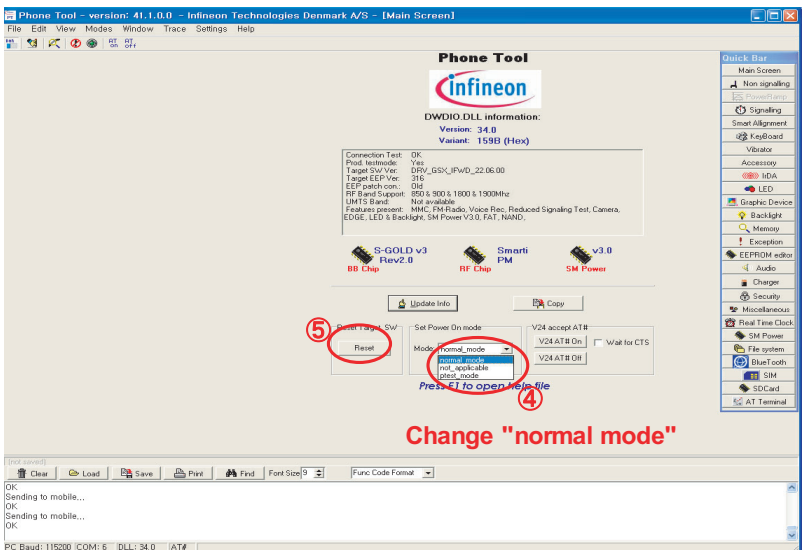


11.3 Rx Test

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. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is “1809#*360# “Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back key will switch back to the original test menu.

[1] BB TEST

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

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

[2] Model Version

[2-1] Version

[3] Eng Mode

[3-1] Cell environ

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

[3-3] Layer1 Info

[3-4] Reset Information

[3-5] Memory Configurarion

[3-6] MemGenConf

[3-7] MemAllUse

[3-8] MemDetUse

[3-9] MemDump

[3-10] Change Frequency Band

[4] Call Timer

[5] Factory Reset

[6] MF TEST

[6-1] All Auto Test

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

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

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

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

[6-6] Key pad

[6-7] Mic Speaker

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

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

[6-10] Touchpad Test

[7] Network selection

[7-1] Automatic

[7-2] GSM850

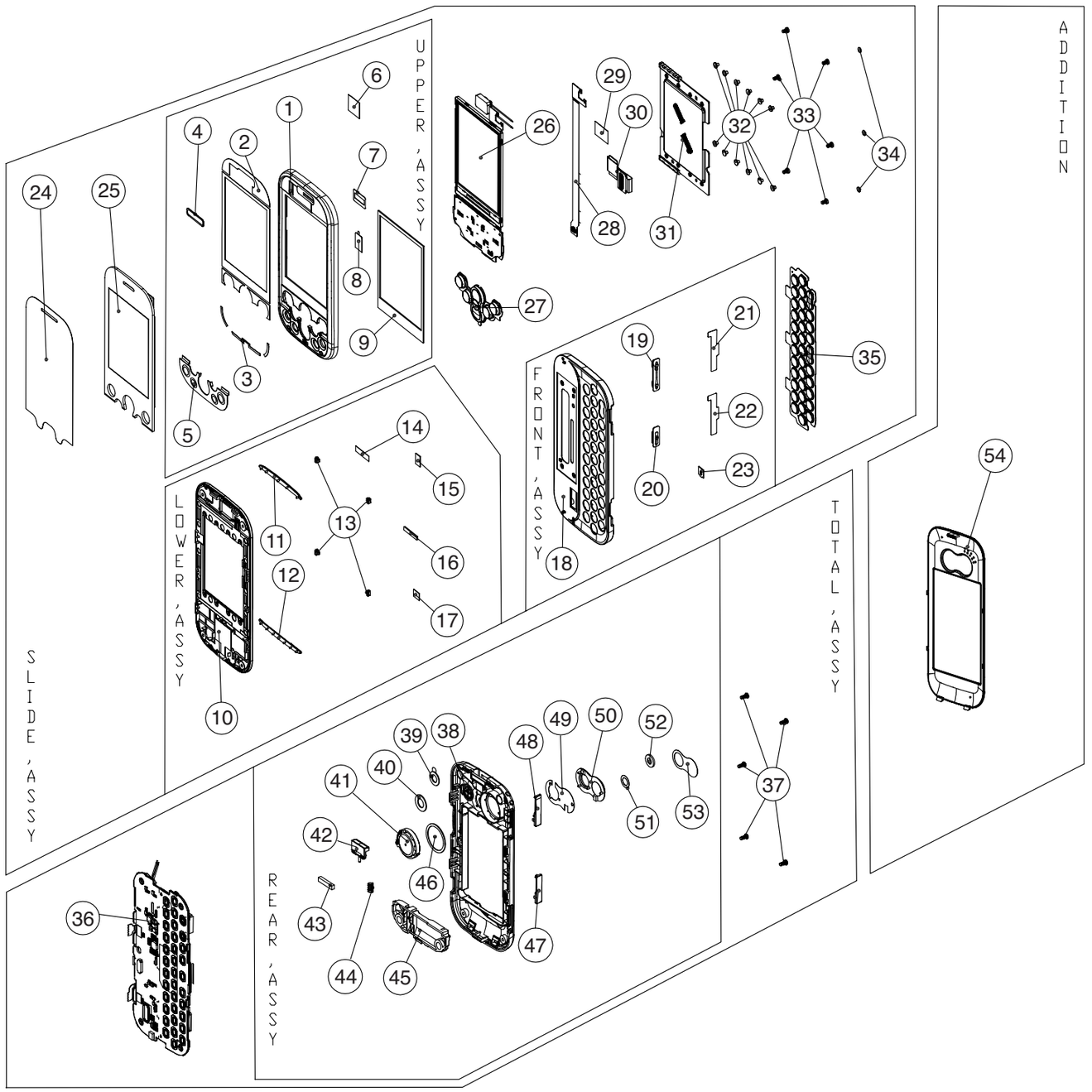
[7-3] EGSM

[7-4] DCS

[7-5] PCS

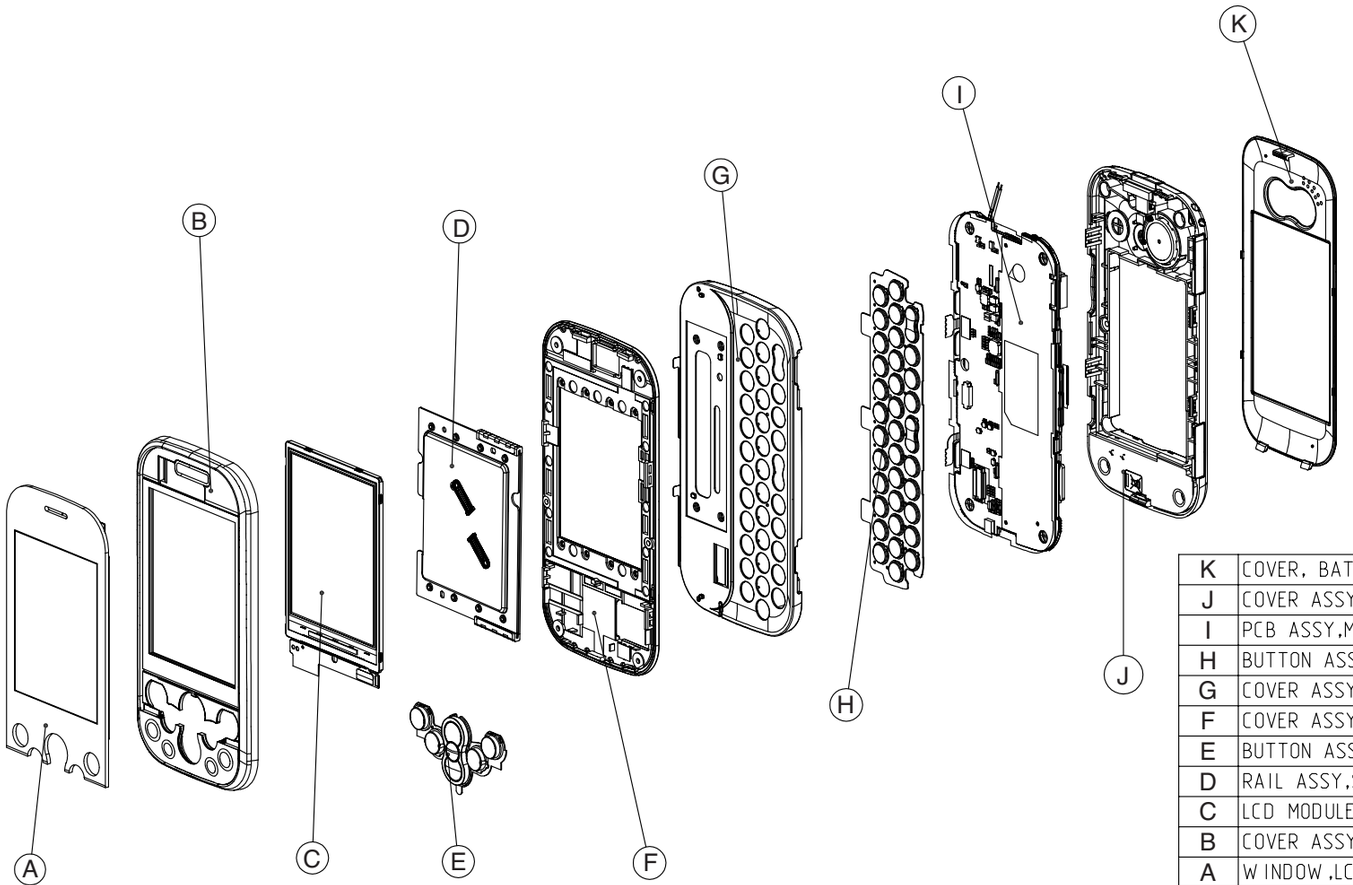
13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
54	COVER,BATTERY	1	MCJA0066901	
53	TAPE,PROTECTION (REAR)	1	MTAB0239701	
52	WINDOW,CAMERA	1	MWAE0036401	
51	TAPE,CAMERA(W/D)	1	MTAK0012201	
50	DECO,REAR	1	MDAK0015501	
49	TAPE,DECO	1	MTAA0161601	
48	CAP,MULTIMEDIA CARD	1	MCCG0013305	
47	CAP,EARPHONE JACK	1	MCCC0056105	
46	PAD,SPEAKER	1	MPBN0056601	
45	ANTENNA,GSM,FIXED	1	SNGF0036401	
44	SPRING,COIL	1	MSDB0001704	
43	PAD (SPEAKER ADD)	1	MPBZ0206803	
42	LOCKER,BATTERY	1	MLEA0046101	
41	SPEAKER	1	SUSY0024802	
40	PAD,MOTOR	1	MPBJ0054901	
39	PAD,CAMERA	1	MPBT0059301	
38	COVER,REAR	1	MCJN0086401	
37	SCREW MACHINE,BIND	5	GMEY0009201	
36	PCB ASSY,MAIN	1	SAFY0247502	
35	BUTTON ASSY,MAIN	1	ABGF0006301	
34	CAP,SCREW	3	MCCH0130601	
33	SCREW MACHINE(FOLDER)	6	GMEY0010601	
32	SCREW MACHINE(HINGE)	12	GMZZ0023501	
31	RAIL ASSY,SLIDE	1	ARDY0006105	
30	PCB ASSY,FLEXIBLE(MAIN)	1	SACY0079902	
29	TAPE,PROTECTION(FPCB)	1	MTAB0239601	
28	PCB ASSY,FLEXIBLE(SUB)	1	SACY0079901	
27	BUTTON ASSY,SUB	1	ABGG0004401	
26	PCB ASSY,KEYPAD	1	SAEY0060403	
25	WINDOW,LCD	1	MWAC0101401	
24	TAPE, PROTECTION(W/D)	1	MTAB0239301	
23	FILTER, MIKE	1	MFBD0031301	
22	TAPE,PROTECTION(SIDE BTN)	1	MTAB0239101	
21	TAPE,PROTECTION(SIDE BTN)	1	MTAB0239101	
20	BUTTON, SIDE(CAMERA)	1	MBJL0060801	
19	BUTTON, SIDE(VOLUME)	1	MBJL0060701	
18	COVER, FRONT	1	MCJK0089501	
17	PAD, SUB CNT.	1	MPBZ0211501	
16	MAGNET	1	MMAA0000901	
15	PAD, SUB FPCB CNT.	1	MPBZ0206802	
14	PAD, MAGNET	1	MPBZ0206801	
13	STOPPER	4	MSGY0024601	
12	GUIDE,LEFT	1	MGDA0013901	
11	GUIDE,RIGHT	1	MGDB0008701	
10	COVER,SLIDE(LOWER)	1	MCJV0016401	
9	PAD,LCD	1	MPBG0079501	
8	TAPE, FLEXIBLE PCB	1	MTAJ0007801	
7	TAPE (RECEIVER)	1	MTAZ0217901	
6	TAPE, PROTECTION(CHIP)	1	MTAB0239302	
5	BUTTON ASSY,SUB	1	ABGG0004901	
4	FILTER, RECEIVER	1	MFBB0026701	
3	TAPE, BUTTON	1	MTAG0008101	
2	TAPE, WINDOW	1	MTAD0088901	
1	COVER, SLIDE(UPPER)	1	MCJW0019901	

ASS'Y EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
K	COVER, BATTERY	1	MCJA0066901	
J	COVER ASSY, REAR	1	ACGM0114301	
I	PCB ASSY,MAIN	1	SAFY0247502	
H	BUTTON ASSY,MAIN	1	ABGF0006301	
G	COVER ASSY, FRONT	1	ACGK0114301	
F	COVER ASSY, LOWER	1	ACGR0016601	
E	BUTTON ASSY,SUB	1	ABGG0004401	
D	RAIL ASSY,SLIDE	1	ARDY0006101	
C	LCD MODULE	1	SVLM0027802	
B	COVER ASSY,SLIDE(UPPER)	1	ACGS0020601	
A	WINDOW,LCD	1	MWAC0101401	

13.2 Replacement Parts <Mechanic component>

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

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM(FOLDER)	TGFF0100802		White Green	
2	APEY	PHONE	APEY0623302		White Green	
3	ABGF00	BUTTON ASSY,MAIN	ABGF0005301	QWERTY ENGLISH WN	White Green	35
3	ACGM00	COVER ASSY,REAR	ACGM0114301		Color Unfixed	J
4	MCCC00	CAP,EARPHONE JACK	MCCC0056101	MOLD, Urethane Rubber S190A, , , , ,	White	47
4	MCCG00	CAP,MULTIMEDIA CARD	MCCG0013301	MOLD, Urethane Rubber S190A, , , , ,	White	48
4	MCJN00	COVER,REAR	MCJN0086401	MOLD, PC LUPOY SC-1004A, , , , ,	White	38
4	MDAK00	DECO,REAR	MDAK0015501	COMPLEX, (empty), , , , ,	White	50
4	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	White	
4	MLEA00	LOCKER,BATTERY	MLEA0046101	MOLD, PC LUPOY SC-1004A, , , , ,	Black	42
4	MPBJ00	PAD,MOTOR	MPBJ0054901	COMPLEX, (empty), , , , ,	Black	40
4	MPBN00	PAD,SPEAKER	MPBN0056601	COMPLEX, (empty), , , , ,	Black	46
4	MPBT00	PAD,CAMERA	MPBT0059301	COMPLEX, (empty), , , , ,	Black	39
4	MPBZ00	PAD	MPBZ0206803	COMPLEX, (empty), , , , ,	Without Color	43
4	MPBZ00	PAD	MPBZ0206804	COMPLEX, (empty), , , , ,	Without Color	
4	MSDB00	SPRING,COIL	MSDB0001701	G7000	Pearl White	4
4	MTAA00	TAPE,DECO	MTAA0161601	COMPLEX, (empty), , , , ,	Without Color	49
4	MTAB00	TAPE,PROTECTION	MTAB0239701	COMPLEX, (empty), , , , ,	Without Color	53
4	MTAK00	TAPE,CAMERA	MTAK0012201	COMPLEX, (empty), , , , ,	Without Color	51
4	MWAE00	WINDOW,CAMERA	MWAE0036401	CUTTING, PMMA MR 200, , , , ,	Without Color	52
3	ACGQ00	COVER ASSY,SLIDE	ACGQ0027601		Color Unfixed	
4	ABGG00	BUTTON ASSY,SUB	ABGG0004401		White Green	E, 27
4	ACGK00	COVER ASSY,FRONT	ACGK0114301		Color Unfixed	G

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MBJL00	BUTTON,SIDE	MBJL0060801	COMPLEX, (empty), , , , ,	Green	20
5	MBJL01	BUTTON,SIDE	MBJL0060701	COMPLEX, (empty), , , , ,	Green	19
5	MCJK00	COVER,FRONT	MCJK0089501	MOLD, PC LUPOY SC-1004A, , , , ,	Green	19
5	MFBD00	FILTER,MIKE	MFBD0031301	COMPLEX, (empty), , , , ,	Black	
5	MTAB01	TAPE,PROTECTION	MTAB0239101	COMPLEX, (empty), , , , ,	Green	21, 22
4	ACGR00	COVER ASSY, SLIDE(LOWER)	ACGR0016601		Color Unfixed	F
5	MCJV00	COVER,SLIDE(LOWER)	MCJV0016401	COMPLEX, (empty), , , , ,	Green	10
5	MGDA00	GUIDE,LEFT	MGDA0013901	MOLD, POM LUCEL N109-LD, , , , ,	Green	12
5	MGDB00	GUIDE,RIGHT	MGDB0008701	MOLD, POM LUCEL N109-LD, , , , ,	Green	11
5	MMAA00	MAGNET,SWITCH	MMAA0000901	G7000 12x2x0.7t	Metal Silver	16
5	MPBM00	PAD	MPBZ0211501	PRESS, NS, , , , ,	Black	17
5	MPBZ00	PAD	MPBZ0206801	COMPLEX, (empty), , , , ,	Without Color	14
5	MPBZ01	PAD	MPBZ0206802	COMPLEX, (empty), , , , ,	Without Color	15
5	MSGY00	STOPPER	MSGY0024601	MOLD, Urethane Rubber S190A, , , , ,	Green	13
4	ACGS00	COVER ASSY, SLIDE(UPPER)	ACGS0020601		Color Unfixed	B
5	ABGG00	BUTTON ASSY,SUB	ABGG0004901	FUNCTION	Without Color	5
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0019901	MOLD, PC LUPOY SC-1004A, , , , ,	White	1
5	MFBB00	FILTER,RECEIVER	MFBB0026701	COMPLEX, (empty), , , , ,	Black	4
5	MPBG00	PAD,LCD	MPBG0079501	COMPLEX, (empty), , , , ,	Black	9
5	MTAB00	TAPE,PROTECTION	MTAB0239302	COMPLEX, (empty), , , , ,	Without Color	6
5	MTAD00	TAPE,WINDOW	MTAD0088901	COMPLEX, (empty), , , , ,	Without Color	2
5	MTAG00	TAPE,BUTTON	MTAG0008101	COMPLEX, (empty), , , , ,	Without Color	3
5	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0007801	COMPLEX, (empty), , , , ,	Without Color	8
5	MTAZ00	TAPE	MTAZ0217901	PRESS, NS, , , , ,	Without Color	7
4	ARDY00	RAIL ASSY,SLIDE	ARDY0006101		White Green	D, 31
4	GMEY00	SCREW MACHINE,BIND	GMEY0010601	1.4 mm,2.5 mm,MSWR3(BK) ,N ,+ ,NYLOK	Black	32
4	GMZZ00	SCREW MACHINE	GMZZ0021901	3.0 mm,1.5 mm,SWCH18A ,N ,+ ,- ,	Black	

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MCCH01	CAP,SCREW	MCCH0130601	MOLD, PC LUPOY SC-1004A, , , , ,	Green	34
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , , ,	White	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0032501	COMPLEX, (empty), , , , ,	Black	
4	MTAB00	TAPE,PROTECTION	MTAB0239601	COMPLEX, (empty), , , , ,	Green	29
4	MTAB01	TAPE,PROTECTION	MTAB0239301	COMPLEX, (empty), , , , ,	Without Color	24
4	MTAZ00	TAPE	MTAZ0214201	COMPLEX, (empty), , , , ,	Green	
4	MWAC00	WINDOW,LCD	MWAC0101401	CUTTING, PMMA MR 200, 1.2, , , ,	Without Color	A, 25
3	GMEY00	SCREW MACHINE,BIND	GMEY0009201	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7mm	Black	37
3	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	ACKA00	CAN ASSY,SHIELD	ACKA0009101		Without Color	
6	MCBA00	CAN,SHIELD	MCBA0033101	PRESS, STS, , , , ,	Silver	
6	MGAD00	GASKET,SHIELD FORM	MGAD0171801	COMPLEX, (empty), , , , ,	Silver	
6	MIDZ00	INSULATOR	MIDZ0178701	COMPLEX, (empty), , , , ,	Without Color	
5	ACMY00	CAMERA ASSY	ACMY0006403		Without Color	
6	ABFZ	BRACKET ASSY	ABFZ0014401		Without Color	
7	MBFP00	BRACKET,CAMERA	MBFP0009201	MOLD, PC LUPOY SC-1004A, , , , ,	Gray	
7	MTAK00	TAPE,CAMERA	MTAK0012601	COMPLEX, (empty), , , , ,	Without Color	
7	MTAZ00	TAPE	MTAZ0214701	COMPLEX, (empty), , , , ,	Without Color	
5	ADCA00	DOME ASSY,METAL	ADCA0082101	MAIN	White	
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	

13. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

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

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0036402	3.0 ,-2.0 dBd,, ,internal, GSM900/1800/1900 ,; ,TRIPLE ,-2.0 ,50 ,3.0		45
4		SPEAKER	SUSY0024802	PIN ,8 ohm,91 dB,16 mm,3.4T spring contact ,; , , , , , , ,[empty]		41
4	SAEY00	PCB ASSY,KEYPAD	SAEY0060403			26
5	SAEB00	PCB ASSY, KEYPAD,INSERT	SAEB0023502			
6	ADCA00	DOME ASSY,METAL	ADCA0082001		White	
5	SAEE00	PCB ASSY,KEYPAD,SMT	SAEE0027603			
6	SAEC00	PCB ASSY,KEYPAD,SMT BOTTOM	SAEC0026103			
7	C100	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C103	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C104	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C105	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C106	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C108	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C109	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C110	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C112	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C113	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C114	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN100	CONNECTOR,FFC/FPC	ENQY0014301	37 PIN,0.3 mm,STRAIGHT , , ,; , ,0.30MM ,FFC/FPC ,STRAIGHT ,BOTH ,SMD ,[empty] ,[empty] ,		
7	CN101	CONNECTOR,BOARD TO BOARD	ENBY0045301	10 PIN,0.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,[empty] , ,		
7	CN102	CONNECTOR,BOARD TO BOARD	ENBY0036001	40 PIN,0.4 mm,ETC , ,H=1.0, Socket		
7	Q100	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
7	R100	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R101	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	R102	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
7	R110	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R111	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R112	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
7	R114	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
7	R115	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
7	R116	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	U100	IC	EUSY0263108	TDFN ,14 PIN,R/TP , ,; ,IC,Charge Pump		
7	VA100	VARISTOR	SEVY0000701	14 V, ,SMD ,120pF, 1005		
7	VA101	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	SAED00	PCB ASSY,KEYPAD,SMT TOP	SAED0025703			
7	C101	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C102	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	LD100	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD101	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD102	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD103	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD104	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD105	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD106	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	R103	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R104	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R105	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R106	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R107	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R108	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R109	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	SPJY00	PCB,SUB	SPJY0054701	FR-4 ,0.5 mm,MULTI-4 , ,; , , , , , , , , ,		
3	SAFY00	PCB ASSY,MAIN	SAFY0247503			I, 36
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0087301			

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	SVCY00	CAMERA	SVCY0018101	CMOS ,MEGA ,2M FF Toshiba(1/4'),8.5x8.5x4.6,FPCB		
5	SJMY00	VIBRATOR,MOTOR	SJMY0008504	2.0 V,0.1 A,10*3.6 ,12mm linear motor ,; ,3V , , , , , , ,		
5	SPKY00	PCB,SIDEKEY	SPKY0058801	POLYI ,0.2 mm,MULTI-2 , ,; , , , , , , , , , ,		
5	SPKY01	PCB,SIDEKEY	SPKY0058901	POLYI ,0.2 mm,MULTI-2 , ,; , , , , , , , , , ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0163703			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0104201			
6	ANT600	ANTENNA,GSM,FIXED	SNGF0036701	3.0 ,-2.0 dBd,, ,internal, bluetooth chip ,; ,SINGLE ,-2.0 ,50 ,3.0		
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	C100	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C104	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,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,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C108	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C111	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,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,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C122	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C129	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C130	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C132	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C133	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C134	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C135	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C136	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C137	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C138	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000393	22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,1.25 mm		
6	C140	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C141	CAP,CERAMIC,CHIP	ECCH0000393	22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,1.25 mm		
6	C143	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C144	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C145	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C146	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C147	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C150	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C151	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C152	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C153	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C200	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	C201	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C202	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C204	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C205	CAP,CHIP,MAKER	ECZH0000901	24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C206	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C210	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C211	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C213	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C215	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C216	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C222	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C301	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C302	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C311	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C425	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C500	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C501	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C502	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C503	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C504	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C505	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C506	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C507	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C508	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C509	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C510	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C511	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C512	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C513	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C514	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C515	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C516	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C517	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C518	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C519	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C520	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C521	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C522	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C523	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C524	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C525	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C526	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C527	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C531	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C535	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C537	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C538	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C539	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C540	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C541	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C542	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C543	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C544	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C547	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C548	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C549	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C601	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C607	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C608	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C609	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C610	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C611	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C612	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C613	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C614	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C615	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C616	CAP,CHIP,MAKER	ECZH0001126	820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C617	CAP,CHIP,MAKER	ECZH0001126	820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C618	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C619	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C621	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C622	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C623	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C624	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C626	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C627	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C628	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C629	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C630	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C631	CAP,CHIP,MAKER	ECZH0000806	5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C632	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C633	CAP,CERAMIC,CHIP	ECCH0000196	0.75 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C634	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C635	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C638	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C639	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C640	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C643	CAP,CERAMIC,CHIP	ECCH0004906	2.5 pF,50V ,C ,X7R ,TC ,1005 ,R/TP		
6	C644	CAP,CERAMIC,CHIP	ECCH0004906	2.5 pF,50V ,C ,X7R ,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	C647	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C648	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C649	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C650	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	CN200	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	CN201	CONNECTOR,ETC	ENZY0020401	3 PIN,2.5 mm,BOTTOM , ,		
6	CN500	CONNECTOR,BOARD TO BOARD	ENBY0020401	24 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	CN600	CONN,RF SWITCH	ENWY0001801	STRAIGHT ,SMD ,2 dB,3000PCS/REEL		
6	D100	DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		
6	D101	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
6	D102	DIODE,SWITCHING	EDSY0009901	ESC ,80 V,300 A,R/TP ,1.6*0.8*0.6(t)		
6	FB200	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB201	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB202	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB203	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB206	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB500	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB600	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB601	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FL200	FILTER,EMI/POWER	SFEY0007101	SMD ,1CH,1608Feedthru ESD/EMI filter for power Pb-free		
6	FL600	FILTER,DIELECTRIC	SFDY0002601	2450 MHz,2.0*1.25*1.0 ,SMD ,2400M~2500M, IL 3.8, 8pin, U-B, 34.2_j95, BT (CSR BC41B143A) ,; ,BPF ,2450 ,100 ,SMD ,R/TP		
6	J500	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
6	L100	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,		
6	L101	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,		
6	L102	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,		
6	L103	INDUCTOR,SMD,POWER	ELCP0006703	10 uH,M ,3.2*2.6*1.0 ,R/TP ,		
6	L104	INDUCTOR,SMD,POWER	ELCP0006703	10 uH,M ,3.2*2.6*1.0 ,R/TP ,		
6	L200	INDUCTOR,CHIP	ELCH0009114	100 nH,J ,1005 ,R/TP ,coil		
6	L300	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L301	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L500	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L501	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L601	INDUCTOR,CHIP	ELCH0004730	33 nH,J ,1005 ,R/TP ,		
6	L602	INDUCTOR,CHIP	ELCH0003823	470 nH,K ,1608 ,R/TP ,chip coil,PBFREE		
6	L603	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L605	INDUCTOR,CHIP	ELCH0003819	12 nH,J ,1005 ,R/TP ,		
6	L606	INDUCTOR,CHIP	ELCH0001411	1.2 nH,S ,1005 ,R/TP ,PBFREE		
6	L607	INDUCTOR,CHIP	ELCH0001413	22 nH,J ,1005 ,R/TP ,PBFREE		
6	L608	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
6	L609	INDUCTOR,CHIP	ELCH0003814	5.1 nH,S ,1005 ,R/TP ,5.1nH,1005		
6	L610	INDUCTOR,CHIP	ELCH0001036	5.6 nH,S ,1005 ,R/TP ,PBFREE		
6	M600	MODULE,ETC	SMZY0015801	84 Ball 0.5pitch, BGA , Bluetooth+FM (6.0*6.0*1.0)		
6	Q200	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
6	Q201	TR,BJT,NPN	EQBN0013701	EMT6 ,150 mW,R/TP ,DUAL TRANSISTORS		
6	R100	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R101	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R105	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R116	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R117	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP		
6	R120	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000467	330 Kohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R205	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000483	47 ohm,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	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000224	16 Kohm,1/16W ,F ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000268	33 Kohm,1/16W ,F ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000467	330 Kohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP	ERHY0000298	3.3M ohm,1/16W,J,1005,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R225	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R228	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R230	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R300	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R313	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R314	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R500	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R501	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R502	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R503	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R505	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R506	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R507	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R508	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R511	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R512	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R513	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R514	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R515	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R516	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R517	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R518	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R519	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R520	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R521	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R522	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R523	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R524	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R600	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R601	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R602	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R603	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R604	RES,CHIP,MAKER	ERHZ0000496	560 ohm,1/16W ,J ,1005 ,R/TP		
6	R605	RES,CHIP,MAKER	ERHZ0000456	2.2 ohm,1/16W ,J ,1005 ,R/TP		
6	R606	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R607	RES,CHIP,MAKER	ERHZ0000287	47 Kohm,1/16W ,F ,1005 ,R/TP		
6	R608	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R609	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R610	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R611	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R612	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R613	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R614	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R615	RES,CHIP,MAKER	ERHZ0000434	1 ohm,1/16W ,J ,1005 ,R/TP		
6	R616	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R617	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	S500	CONN,SOCKET	ENSY0021001	8 PIN,ANGLE ,Reverse , mm,		
6	U100	IC	EUSY0338202	FBGA ,107 PIN,ETC ,FULLY 1.8V 1G(LB/128Mx8) NAND+512M(8Mx4x16) SDRAM ,; ,IC,MCP		
6	U101	IC	EUSY0227901	SON5-P-0.35(fSV) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free		
6	U102	IC	EUSY0347801	BGA ,293 PIN,R/TP ,EDGE RF BB PM Onechip BB ,; ,IC,Digital Baseband Processor		
6	U200	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
6	U201	IC	EUSY0351601	DFN ,12 PIN,R/TP ,Dual Charger IC (Bypass) ,; ,IC,Charger		
6	U303	IC	EUSY0360201	CSP ,20 ,R/TP ,Class D(mono) + Capless HP + A/S ,; ,IC,Audio Sub System		
6	U600	PAM	SMPY0017901	dBm, %, A, dBc, dB,5x5 ,SMD ,IFX Linear Edge ,; , , , , , , , ,R/TP ,R/TP ,		
6	U601	FILTER,SEPERATOR	SFAY0012001	, , dB, dB, dB, dB,4532 ,IFX EDGE Quad Pin		
6	VA500	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA501	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	X100	X-TAL	EXXY0018404	26 MHz,10 PPM,8 pF,40 ohm,SMD ,3.2*2.5*0.6 ,12ppm at -30'C ~ +85'C, C0 1.0pF, C1 3.6fF ,; ,26 ,10PPM ,8 , , ,SMD ,R/TP		
6	X101	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0102601			
6	C219	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C220	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C300	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C316	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C317	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C319	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C400	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C401	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C402	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
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,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C415	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C423	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C550	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C551	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C552	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	CN400	CONNECTOR,BOARD TO BOARD	ENBY0036001	40 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	FL400	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL401	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL402	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL403	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL404	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	L302	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L303	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L304	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	LD300	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
6	LD301	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
6	LD302	DIODE,LED,CHIP	EDLH0013701	WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P		
6	MIC300	MICROPHONE	SUMY0010608	UNIT ,42 dB,3.76*2.95*1.1 ,MEMS mic ,; , , ,OMNI ,[empty] , ,[empty]		
6	R102	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R104	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R108	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R301	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R303	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R304	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R305	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R306	RES,CHIP	ERHY0000283	130K ohm,1/16W,J,1005,R/TP		
6	R307	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R308	RES,CHIP	ERHY0000283	130K ohm,1/16W,J,1005,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R400	RES,CHIP,MAKER	ERHZ0000213	120 Kohm,1/16W ,F ,1005 ,R/TP		
6	R401	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R402	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R404	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R408	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R409	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R410	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R411	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R412	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R414	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R416	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R420	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R525	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	SPFY	PCB,MAIN	SPFY0178401	FR-4 ,0.8 mm,STAGGERED-8 ,ETNA MAIN PCB ,; , , , , , , , , ,		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U202	IC	EUSY0313401	QFN ,4 PIN,R/TP ,1.8X1.2X0.5 size wide input voltage Hall Switch		
6	U300	IC	EUSY0232816	SON1612-6 ,6 PIN,R/TP ,3.0V ,150mA,LDO		
6	U301	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U302	IC	EUSY0335701	QFN ,8 PIN,R/TP ,1.2W, Mono, Differencial Audio AMP		
6	U304	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U400	IC	EUSY0300004	QFN ,28 ,R/TP ,Keycoder ic, 28pin, 64keys ,; ,IC,Analog Multiplexer		
6	U500	IC	EUSY0319001	WDFN-8L ,8 PIN,R/TP ,300mA/300mA 2.8V/1.8V Dual LDO		
6	VA300	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA301	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
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	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		

Note