Service Manual

Model : KC550

Internal Use Only

# Service Manual

# KC550

Date: May, 2008 / Issue 1.0

# REVISED HISTORY

| Editor | Date | Issue | Contents of Changes | S/W Version |
|---|---|---|---|---|
| Y.W.YUN | 5/26 | 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 KC550.

# Table Of Contents

# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KC550.

## 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°Øre 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 KC550 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 KC550 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 KC550 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 KC550 may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

## H. Electrostatic Sensitive Devices

### ATTENTION

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

## 1.3 ABBREVIATION

For the purposes of this manual, following abbreviations apply:

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

# 1. INTRODUCTION

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

# 2. GENERAL PERFORMANCE

## 2.1 H/W Feature

| Item | Feature | Comment |
|---|---|---|
| Standard Battery | Li-ion, 900mAh | |
| AVG TCVR Current | 260mA typ | @PL5 |
| Standby Current | 2 mA typ | @PP9 |
| Talk time | 6 hours (GSM TX Level 10) | |
| Standby time | Over 450 hours (Paging Period:9, RSSI: -85dBm) | |
| Charging time | Under 3 hours | |
| RX Sensitivity | EGSM : -105dBm↓ , DCS/PCS : -105dBm↓ | |
| TX output power | EGSM : 33dBm (@PL 5)<br>DCS/PCS: 30dBm (@PL 0) | |
| GPRS compatibility | Class 12 | |
| SIM card type | 3V Small | |
| Display | 240 x 320 pixels, 2.4 inch QVGA, 262K color, TFT | |
| Status Indicator | Soft icons, 0 ~ 9, #, *, Scroll, Send, End/PWR,<br>Clear AF/Camera double action, Volume Up,<br>Volume Down | |
| ANT | Built in antenna | |
| EAR Phone Jack | 18pin multi port Headset jack (W/O remote controller) | |
| 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">EGSM<br>• TX: 890 + 0.2 x n MHz<br>• RX: 935 + 0.2 x n MHz ( n = 1 ~ 124 )<br>• TX: 890 + 0.2 x (n-1024) MHz<br>• RX: 935 + 0.2 x (n-1024) MHz ( n = 975 ~ 1023 )<br>DCS1800<br>• TX: 1710 + ( n-511 ) x 0.2 MHz (n = 512 ~ 885)<br>• RX: TX + 95 MHz<br>PCS1900<br>• TX: 1850.2 + ( n-512 ) x 0.2 MHz (n = 512 ~ 810)<br>• RX: TX + 80MHz</td></tr>
<tr><td>2</td><td>Phase Error</td><td colspan="6">RMS < 5 degrees ,<br>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">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 | **EGSM** | |
| | (due to modulation) | 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 | **EGSM** | |
| | (due to switching transient) | 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<br>(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<br>BER (Class II) < 2.439% @-102dBm<br>DCS1800/PCS1900<br>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="12">13</td><td rowspan="12">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<br>- Normal ≤ 2 mA(@PP9) | |
| 21 | Talk Time | EGSM/Lvl 7 (Battery Capacity 900mA):180min<br>EGSM/Lvl12(Battery Capacity 900mA): 320min | |
| 22 | Standby Time | Under conditions, at least 300 hours:<br>1. Brand new and full 900mAh battery<br>2. Full charge, no receive/send and keep GSM in idle mode.<br>3. Broadcast set off.<br>4. Signal strength display set at 3 level above.<br>5. Backlight of phone set off. | |
| 23 | Ringer Volume | At least 65 dB under below conditions:<br>1. Ringer set as ringer.<br>2. Test distance set as 50 cm | |
| 24 | Charge Current | Fast Charge : < 450 mA<br>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 |

# 2. GENERAL PERFORMANCE

| Item | Description | Specification | |
|---|---|---|---|
| 26 | Battery Indicator | Battery Bar Number | Voltage( ±0.05V) |
| | | 3 | 3.76V~4.2V |
| | | 2 | 3.68V~3.75V |
| | | 1 | 3.55V~3.65V |
| | | 0 | 3.41V~ |
| 27 | Low Voltage Warning | 3.58V ↓ ±0.05V (Call) | |
| | | 3.51V ↓ ±0.05V (Standby) | |
| 28 | Forced shut down Voltage | 3.3± 0.05 V | |
| 29 | Battery Type | Li-ion Battery or Li-Polymer Battery<br>Standard Voltage = 3.7 V<br>Battery full charge voltage = 4.2 V<br>Capacity: 900mAh | |
| 31 | Travel Charger | Switching-mode charger<br>Input: 100 ~ 240 V, 50/60Hz<br>Out put: 5.1, 0.7A | |

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

| Item | Description | Specification | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | RMS EVM | ≤ 9% | | | | | |
| 2 | Peak EVM | ≤ 30% | | | | | |
| 3 | 95th Percentile EVM | ≤ 15% | | | | | |
| 4 | Origin Offset Suppression | ≥ 30dB | | | | | |
| 5 | Power Level | **EGSM** | | | | | |
| | | Level | Power | Toler. | Level | Power | Toler. |
| | | 5 | 27dBm | ±3dB | 13 | 17dBm | ±3dB |
| | | 6 | 27dBm | ±3dB | 14 | 15dBm | ±3dB |
| | | 7 | 27dBm | ±3dB | 15 | 13dBm | ±3dB |
| | | 8 | 27dBm | ±3dB | 16 | 11dBm | ±5dB |
| | | 9 | 25dBm | ±3dB | 17 | 9dBm | ±5dB |
| | | 10 | 23dBm | ±3dB | 18 | 7dBm | ±5dB |
| | | 11 | 21dBm | ±3dB | 19 | 5dBm | ±5dB |
| | | 12 | 19dBm | ±3dB | | | |
| | | **DCS1800, PCS1900** | | | | | |
| | | Level | Power | Toler. | Level | Power | Toler. |
| | | 0 | 26dBm | ±3dB | 8 | 14dBm | ±3dB |
| | | 1 | 26dBm | ±3dB | 9 | 12dBm | ±4dB |
| | | 2 | 26dBm | ±3dB | 10 | 10dBm | ±4dB |
| | | 3 | 24dBm | ±3dB | 11 | 8dBm | ±4dB |
| | | 4 | 22dBm | ±3dB | 12 | 6dBm | ±4dB |
| | | 5 | 20dBm | ±3dB | 13 | 4dBm | ±4dB |
| | | 6 | 18dBm | ±3dB | 14 | 2dBm | ±5dB |
| | | 7 | 16dBm | ±3dB | 15 | 0dBm | ±5dB |
| 6 | Output RF Spectrum (due to modulation) | **EGSM** | | | | | |
| | | 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 | |

# 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 | **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 KC550 Component Block diagram

KC550 is composed with 5 different PCB part such as main PCB, Key PCB, Key FPCB, LCD FPCB and Flash FPCB/

The functional component arrangement is mentioned below diagram.

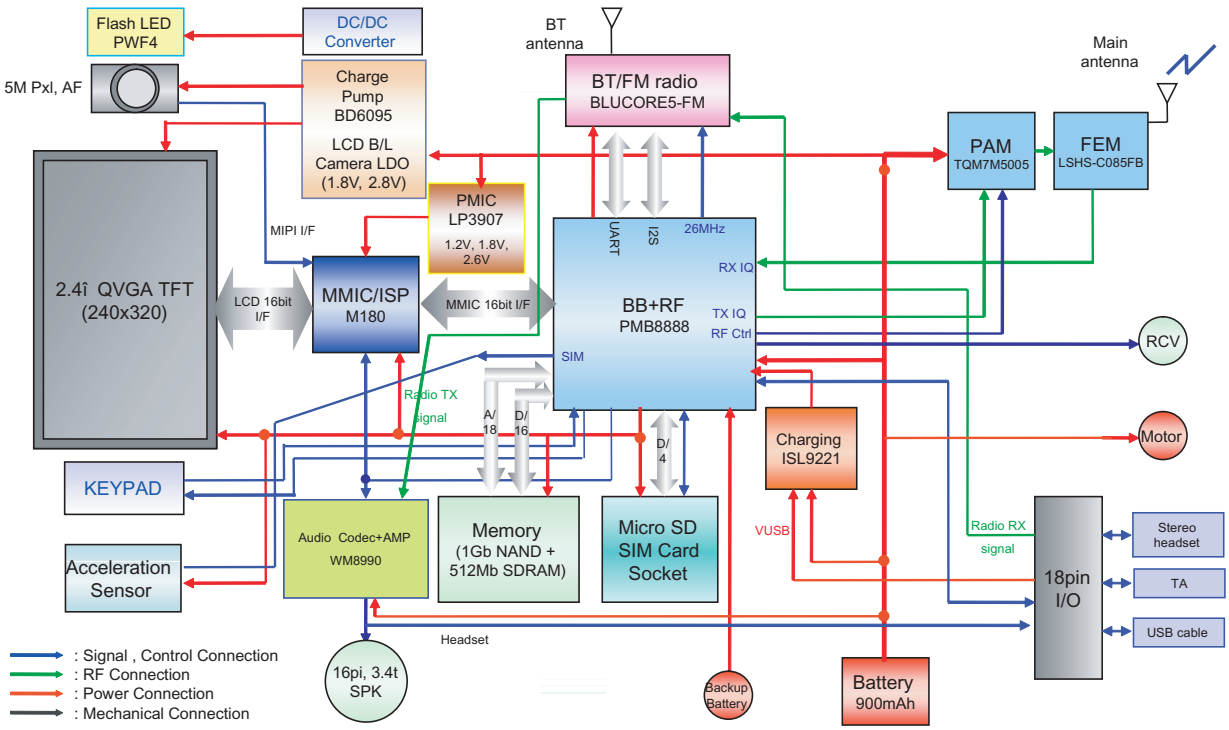



**Figure 1 KC550 Functional block diagram**

## 3.2 Main Chip Introduction

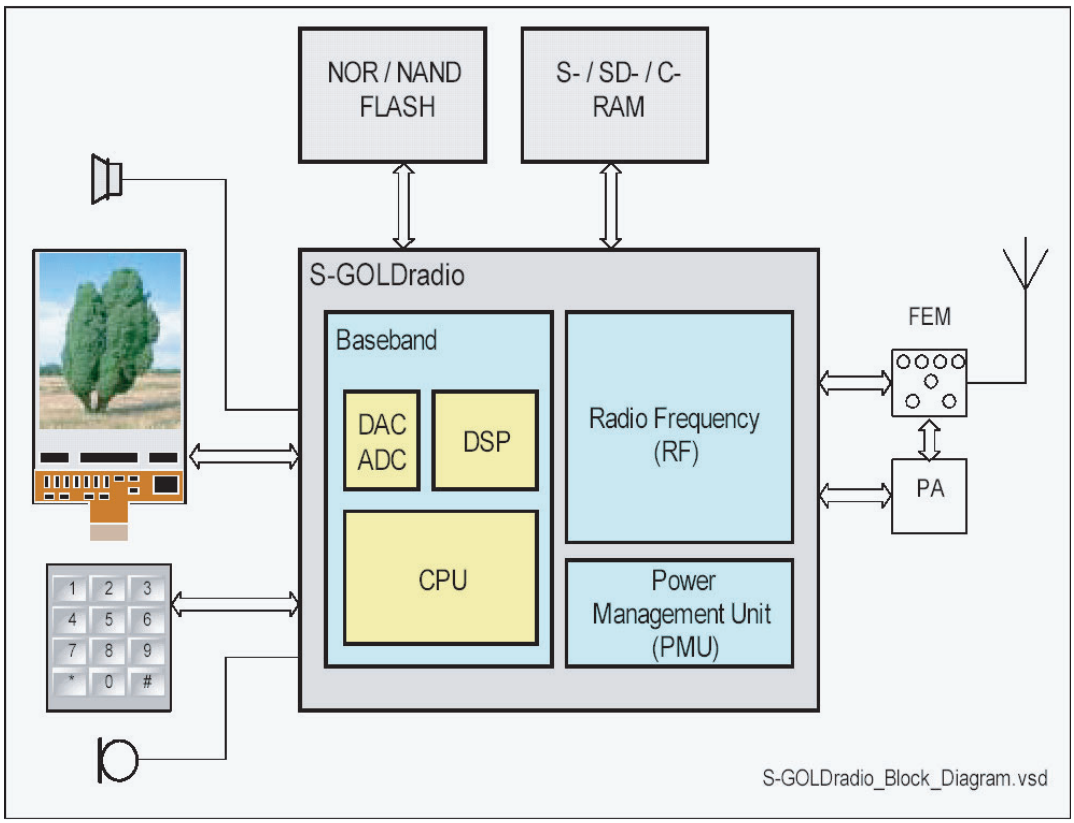



**Figure 2 Application View of the S-GOLDradioTM Block Diagram**

### 3.2.1 General Description

With the latest member of the S-GOLD family, S-GOLDradioTM, Infineon Technologies introduces the world's first single-chip solution for feature-rich mobile phones. The EDGE-capable device combines alldigital and analog functions of the baseband, a quad-band RF transceiver, and the power management circuitry into a single chip. With an option for memory stacking ("Package on Package", JEDEC compliant) the key functions of a mobile phone are now combined into a single device, providing all the benefits that come from a maximum level of integration. Full software re-use from the proven Infineon EDGE platform, MP-ELite, enables fast time-to-market using a comprehensive development kit available to all customers today.

S-GOLDradioTM is tailored to fit the requirements of EDGE-enabled feature phones with a standard set of multimedia applications such as:

• Still picture imaging up to 2 MPixel
• MPEG4 video encode/decode
• Video streaming
• MP3 playback
• Java applications.

This single chip solution allows for very small form factor phones with a high degree of power efficiency.

Its low cost structure makes multimedia feature-enhanced EDGE phones very affordable for price-sensitive market segments. S-GOLDradioTM°Øs small footprint, competitive cost position, and low power consumption also makes it the perfect fit for EDGE-capable data cards.

S-GOLDradioTM's baseband processing is powered by an ARM926EJ-S CPU and a TEAKLite® DSP core.

The ARM926EJ-S is a powerful standard controller and particularly suited for wireless systems. It is supported by a wide range of tools and application SW.

The TEAKLite® is an established DSP core for wireless applications with approved firmware for GSM signalprocessing. The Infineon Technologies DSP firmware and software modules for FR, HR, EFR and AMR-NB vocoding and channel encoding allow a short time to market. Additionally, S-GOLDradioTM supports multislot operation modes:

HSCSD (up to class 10), GPRS for high speed data applications (up to class 12) and EGPRS (up to class 12) without additional external hardware.

A wide choice of communication interfaces allows complex data and multimedia system designs.

Furthermore, S-GOLDradioTM contains its own Power Supply and Battery Management. Its design is optimized forall mobile platform needs (such as graphic displays with backlights) and internal needs (analog components, loudspeaker, USB, etc.). S-GOLDradioTM is driven directly from re-chargeable batteries such as Li-Ion or Li-Polymer batteries. S-GOLDradioTM Power Management provides different supply voltages by using highly efficient DCDC converters, DCDC boost converters and linear, low-dropout regulators (LDOs). In addition, it supports battery charging, generates stand-by voltages and supports different low power modes.

The S-GOLDradioTM RF capability features a quad-band transceiver for EGSM/GSM900/GSM1800/GSM1900, and it is designed for voice and data transfer applications. Its architecture consists of a direct conversion receiver and a quad-band polar transmitter for GSM/EDGE.

Accurate output power setting is ensured by an integrated power control loop, which supports linear and non-linear power amplifiers. The entirely integrated quad-band RF oscillator and Sigma-Delta synthesizer give the S-GOLDradioTM HSCSD and GPRS/EDGE capabilities.

Figure 2 shows a typical application example: The S-GOLDradioTM as a single chip solution acting as a multifunctional engine in a complete mobile phone platform.

## 3.3 Baseband Part Introduction

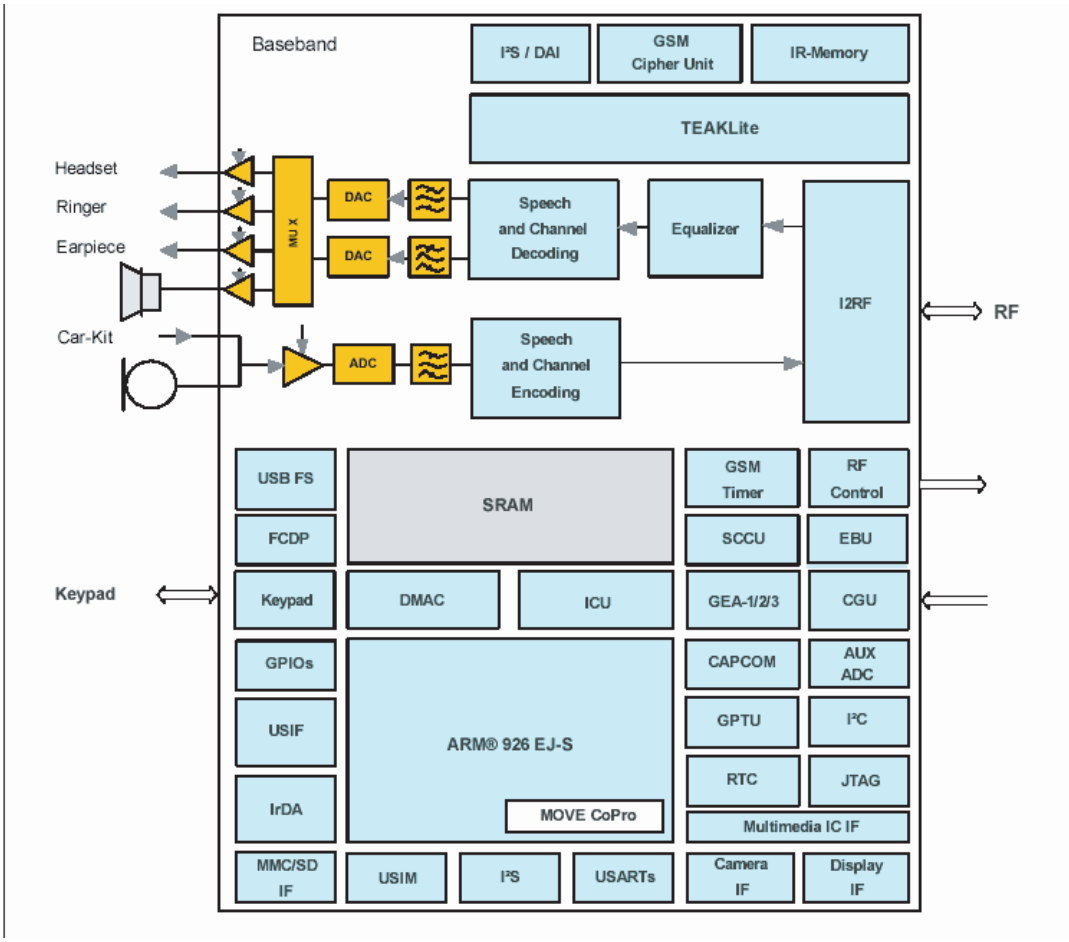



**Figure 3 S-GOLDradioTM Baseband Block Diagram**

### 3.3.1 Block Description

**Connectivity**

S-GOLDradioTM offers a variety of connectivity options common in today°Øs feature phone applications:

- USB 2.0 Full Speed (12 Mbps)
- IrDA Controller

Supports Infrared SIR Mode Transceivers

- RS-232 over a 16C550 compliant UART
- MMC/SD Memory Card Interface
  - Low Voltage Capable
  - SDIO expandable (using external components)

- Ready to connect to the Infineon's Bluemoon Family Bluetooth Transceivers
  - HCI (H5) optimized USIF (Universal Serial Interface)
  - Dedicated PCM-style digital audio interface (I2S)
  - Dedicated power supply
- Microcontroller-Like Extension Interface
  For multimedia companions (for example, complex display/camera modules or graphic accelerators)
- External Memory Interface
  Supporting:
  - SDRAM
  - Cellular RAM
  - Burst Flash
  - SRAM
  - NAND flashes (error correction capability in HW)
- User Interface (Keypad)
  Supporting up to 74 keys with multiple key-press capability
- SIM Card interface (USIM)
  ISO 7816 compatible
- Analogue Measurement Unit
  For various general purpose measurements such as battery voltage, battery, VCXO and environmental temperature, battery technology, transmission power, offset, on-chip temperature, etc.

**Security**

S-GOLDradioTM has the following security features:

- Secure Boot and Flash Update
- SHA1 HW acceleration
- Secure Debug
- 128-bit customer defined efuse key
- Anti-intrusion logic.

**Audio**

Besides the telephony voice CODECs supplied by the Firmware running on the TEAKLite® DSP core, the ARM926 core enables running high-quality audio CODECs such as MPEG-1/2 Layer-3 Decode (MP3), AAC+ or AAC++. Audio streaming is supported according to the 3GPP PSS Release 4 standard.

The output of audio and voice codecs can be mixed and routed to the integrated Hi-Fi Stereo voiceband supporting CD-Quality. Alternatively, the audio can also be sinked to a mono loudspeaker using the integrated hands-free amplifier.

**Video and Imaging**

S-GOLDradioTM allows connecting an external camera module over an ITU-R BT656 compliant interface and a display module over a microcontroller-like parallel or serial interface. Furthermore, ARM's MOVE coprocessor is integrated to accelerate video encoding algorithms (for example, H.263 or MPEG-4). This fulfills basic multimedia requirements and allows connecting commodity cameras and displays without the need of an additional multimedia IC. The computational power for encoding and decoding still pictures (JPEG) and video sequences (H.263 or MPEG-4) is provided by the integrated ARM926 core.

Over-the-air interface JPEG pictures and H.263 or MPEG-4 videos can be sent or received as MMS by means of (E)GPRS.

S-GOLDradioTM also enables video down-streaming because of its DSP and ARM performances.

Supported "still pictures" multimedia scenarios are:

- **View Finding for a Picture Snapshot:** Captured frames are transferred from the camera IF to the display IF at up to15 fps (depending on the camera used) in QCIF resolution (depending on the display used). Downscaling and color conversion is done by the camera and display interface logic. Therefore, view finding for a snapshot is possible without burdening the CPU. However, picture rotation and/or overlay are performed by SW if required.
- **Shooting:** The captured picture, with up to 1.31 MPixel resolution (SXGA 1280 x 1024), is transferred within 1/15 sec to external memory.1) Then, JPEG compression is done by SW, while the viewfinder is frozen so that the user can immediately see the snapshot on the display.
- **Photo Flash:** Under low light conditions usually a photo flash is required. To activate the flash at the right time, a general purpose timer unit (GTPU) can be used that is triggered by the frame synchronization signal (VSYNC) from the camera interface.
- **Processing:** JPEG thumbnail generation, picture overlay, picture rotation and other picture processing tasks are performed by SW.
- **Viewing:** A JPEG picture is decoded, down-scaled and format converted by SW and then transferred to the display interface. JPEG thumbnails can also be transferred directly to the display interface after decoding by SW without additional downscaling.
- **Storage:** JPEG pictures can be stored on an MMC/SD card, a Flash or a PC.
- **Sending/Receiving:** JPEG thumbnails can be sent/received as MMS (E-GPRS). Full resolution JPEG pictures can be sent/received as e-mail or downloaded from the internet.

  Supported "video sequence" multimedia scenarios:
- **Record Video Sequences:** Captured frames in QCIF resolution are transferred to internal memory at 15 fps. H.263 or MPEG-4 encoding is performed on-the-fly by SW with the support of the MOVE coprocessor.

  The audio recording is performed on the DSP (GSM AMR CODEC). Multiplexing of audio and video streams is performed by the ARM.

- **View Finding during Video Encoding:** During video recording the user needs to see what is being recorded. Therefore, the captured frames are not only encoded but also transferred to the display interface. If only every second frame from the camera is used for encoding, viewfinding is possible without burdening the CPU. However, if each frame from the camera has to be encoded, due to low camera frame rate, the YCbCr4:2:2 to YCbCr4:4:4 color conversion and further downscaling is performed by SW.
  Picture rotation and overlay has to be done in SW in any case.
- **Storage:** Compressed H.263 or MPEG-4 videos can be stored on an MMC/SD, a Flash or a PC.
- **Viewing:** De-multiplexing of audio and video streams is performed by the ARM. The H.263 or MPEG-4 decoding is also done by SW on the ARM and then the frames are transferred to the display interface.
  Audio decoding (GSM-AMR) is done on the DSP.
  The audio/video synchronization is done by time stamp feedback from the DSP to the ARM.
- Sending/Receiving: H.263 or MPEG-4 videos can be sent/received as MMS (E-GPRS), as e-mail or downloaded from the internet.

**Higher Multimedia Performance**

If higher multimedia performance is required, an external multimedia IC can be connected to S-GOLDradioTM because it contains a multimedia IC interface module. The camera and display interface pins are used in a multiplex mode to connect an external multimedia IC to the S-GOLDradioTM multimedia IC interface module. The display and camera are connected to the multimedia IC, which contains functions (in HW and/or SW) to process still images and video data. This configuration is intended for higher-end graphics features (for example, high quality video streaming, video conferencing, hardware-assisted 2D/3D graphics functions, etc.).

### 3.3.2 External Devices connected to memory interface

Table 1 Memory interface

| Device | Name | Maker | Remark |
|---|---|---|---|
| FLASH | K5D1G12ACE-D075 | SAMSUNG | 1G(128Mx8) NAND |
| SDRAM | K5D1G12ACE-D075 | SAMSUNG | 512M(32Mx16) SDRAM |
| LCD | TX08D13VM0AAA | TMD | 16bit access 2times transmission |
| Multimedia IC | 215-0638018 | AMD | Multimedia processing |

### 3.3.3 RF Interface

S-GOLDradio uses this interface to control RF IC and Peripherals. 6 signals are provided switch on/off RF ICs Periodically each TDMA frame.

Table 2. RF Interface Spec.

| T_OUT | | |
|---|---|---|
| **Resource** | **Interconnection** | **Description** |
| PABS | PA_BAND | TX RF band select |
| PAMODE | PA_MODE | PAM Mode select |
| FE1 | VC1 | FEM control |
| FE2 | VC2 | FEM control |
| PAEN | PA_EN | PAM Power on |
| VRAMP | TX_RAMP | APC |

### 3.3.4 USART Interface

KC550 have a UART Driver as follow :

- USART1 : Hardware Flow Control / SW upgrade / Calibration

Table 3. USIF Interface Spec.

| **USART_0(USART1)** | | |
|---|---|---|
| **Resource** | **Name** | **Remark** |
| USART0_TXD | UART_TX | Transmit Data |
| USART0_RXD | UART_RX | Receive Data |
| USART0_CTS | ACCEL_INT | Interrupt |
| USART0_RTS | MMC_DETECT | GPIO |
| DSPOUT_0 | JACK_DETECT | Interrupt |

### 3.3.5 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 | BATT_ID | Battery IC check |
| M1 | RF_TEMP | RF block temperature measure |
| M2 | N.C. | |
| M7 | H/W VERSION | S-GOLDradio H/W version detect |
| M8 | VSUPPLY | Battery supply voltage measure |
| M9 | N.C. | |
| M10 | REMOTE_ADC | Remote control key detect |

### 3.3.6 GPIO map

Over a hundred allowable resources, KC550 is using as follows except dedicated to SIM and Memory. KC550 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<br>#Keypad | Net Name | Description |
|---|---|---|
| KP_IN0 | NONE | |
| KP_IN1 | KP_IN(1) | |
| KP_IN2 | KP_IN(2) | |
| KP_IN3 | KP_IN(3) | |
| KP_IN4 | KP_IN(4) | |
| KP_IN5 | KP_IN(5) | |
| KP_IN6 | KP_IN(6) | |
| KP_OUT0 | KP_OUT(0) | |
| KP_OUT1 | KP_OUT(1) | |
| KP_OUT2 | KP_OUT(2) | |
| KP_OUT3 | KP_OUT(3) | |
| #USART0 | | |
| USART0_RXD | UART_RX | |
| USART0_TXD | UART_TX | |
| USART0_RTS_N | MMC_DETECT | |
| USART0_CTS_N | ACCEL_INT | |
| DSPOUT0 | JACK_DETECT | |
| #USB | | |
| USB_DPLUS | USB_DP | |
| USB_DMINUS | USB_DM | |
| #CIF:Camera Interface | | |
| CIF_D0 | MM_AD0 | |
| CIF_D1 | MM_AD1 | |
| CIF_D2 | MM_AD2 | |

| | | |
|---|---|---|
| CIF_D3 | MM_AD3 | |
| CIF_D4 | MM_AD4 | |
| CIF_D5 | MM_AD5 | |
| CIF_D6 | MM_AD6 | |
| CIF_D7 | MM_AD7 | |
| CIF_PCLK | | |
| CIF_HSYNC | MM_WAIT | |
| CIF_VSYNC | | TP |
| CLKOUT2 | GPO_CTRL1 | |
| CIF_PD_GPIO | HS_SEL | N.A |
| CIF_RESET_GPIO | GPO_CTRL2 | |
| #Display_Interface | | |
| DIF_D0 | MM_AD8 | |
| DIF_D1 | MM_AD9 | |
| DIF_D2 | MM_AD10 | |
| DIF_D3 | MM_AD11 | |
| DIF_D4 | MM_AD12 | |
| DIF_D5 | MM_AD13 | |
| DIF_D6 | MM_AD14 | |
| DIF_D7 | MM_AD15 | |
| DIF_CS1 | MM_CS0 | |
| DIF_CS2 | REMOTE_INT | |
| DIF_CD | MM_A16 | |
| DIF_WR | MM_WR | |
| DIF_RD | MM_RD | |
| DIF_HD | MM_INT | |
| DIF_VD | BT_INT | |
| DIF_RESET1_GPIO | HOOK_DETECT | |
| #I2C | | |
| I2C_SCL | I2C_SCL | |
| I2C_SDA | I2C_SDA | |
| PM_INT | NONE | |

| | | |
|---|---|---|
| #Chip Card (USIM1) | | |
| CC_IO | SIM_IO | |
| CC_CLK | SIM_CLK | |
| CC_RST | SIM_RST | |
| #MMCI: Multimedia Card IF | | |
| MMCI_CMD | MMCI_CMD | |
| MMCI_DAT0 | MMCI_DAT0 | |
| MMCI_CLK | MMCI_CLK | |
| #USIF: Universal Serial IF | | |
| USIF_TXD_MTSR | UART_BT_TX | |
| USIF_RXD_MRST | UART_BT_RX | |
| USIF_SCLK | BT_VCXO_EN | |
| #I2S1: DAI-PCM | | |
| I2S1_CLK0 | I2S1_CLK | |
| I2S1_RX | I2S1_RX | |
| I2S1_TX | I2S1_TX | |
| I2S1_WA0 | I2S1_WA0 | |
| #MMCI: SD-Extension | | |
| MMCI_DAT1 | MMCI_DAT1 | |
| MMCI_DAT2 | MMCI_DAT2 | |
| MMCI_DAT3 | MMCI_DAT3 | |
| #Voiceband: Analog Interface | | |
| EP_N | SND_L | |
| EP_P | SND_R | |
| HS_N | EAR_N | |
| EP_CM | NA | |
| HS_P | EAR_P | |
| MIC1_N | MIC_N | |
| MIC1_P | MIC_P | |
| MIC2_N | HS_MIC_N | |
| MIC2_P | HS_MIC_P | |
| VMIC | VMIC | |

| | | |
|---|---|---|
| #Measurement | | |
| M0 | BAT_ID | |
| M1 | RF_TEMP | |
| M2 | JACK_TYPE | |
| M7 | GND | |
| M8 | VBAT | |
| M9 | LOAD | |
| M10 | REMOTE_ADC | |
| #Bandgap reference: Analog Interface | | |
| VREF2 | GND | |
| IREF2 | GND | |
| #JTAG | | |
| TDO | TDO | |
| TDI | TDI | |
| TMS | TMS | |
| TCK | TCK | |
| TRST_n | TRST_N | |
| RTCK | RTCK | |
| #Debug | | |
| TRIG_IN | TRIG_IN | |
| MON1 | MON1 | |
| MON2 | MON2 | |
| #External Bus Interface (EBU) | | |
| #FCDP: Flash Controller DMA Port | | |
| FCDP_RBN FCDP | | |
| #GSM TDMA Timer: GSM Control | | |
| T_OUT1 | NONE | |
| T_OUT2 | NONE | |
| T_OUT3 | UART_BT_RTS | |
| T_OUT4 | UART_BT_CTS | |
| T_OUT5 | FLIP_OPEN | |
| T_OUT6 | PA_MODE_2 | |

| | | |
|---|---|---|
| T_OUT7 | KP_OUT(4) | |
| T_OUT8 | DSR | |
| #Other Functional Pins: Clocks and control | | |
| CLKOUT0 | LCD_ID | |
| F26M | NONE | |
| F32K | F32K | |
| OSC32K | OSC32K | |
| RESET_N | nRESET | |
| VDD_FUSE_FS | GND | |
| RTC_OUT | NONE | |
| PMU_SCMODE_OUT | NONE | |
| VCXO_EN | NONE | |
| #Extra I/Os & Interrupt Inputs | | |
| DSPIN0 | CLK32K | |
| DSPIN1 | CHG_EOC | |
| #Digital Power supply | | |
| VDD_MAIN | VSD1_1V5 | |
| VSS_MAIN | GND | |
| VDDP_EBU1 | VSD2_1V8 | |
| VSSP_EBU | NONE | |
| VDDP_DIG | NONE | |
| VDDP_SIM | NONE | |
| VDDP_MMC | NONE | |
| VDD_RTC | NONE | |
| VSS_RTC | NONE | |
| VDD_PLL | NONE | |
| VDD_USB | NONE | |
| #Analog Power Supply | | |
| VAUDIO | VAUDIO_2V5 | |
| VSS_MS | GND | |
| VSS_EP | GND | |
| AGND_MS1~2 | GND | |

| #RF Front-end | | |
|---|---|---|
| TX2 | TXHB | |
| TX1 | TXLB | |
| RX1 | EGSM_RXP | |
| RX1X | EGSM_RXN | |
| RX2 | GSM900_RXP | |
| RX2X | GSM900_RXN | |
| PABIAS | NA | |
| PABS | PA_BAND | |
| RX3 | DCS1800_RXP | |
| VDET TP | | |
| PAMODE | PA_MODE | |
| RX3X | DCS1800_RXN | |
| FE1 | VC1 | |
| FE2 | VC2 | |
| PAEN | PA_EN | |
| RX4 | PCS1900_RXP | |
| VRAMP | TX_RAMP | |
| RX4X | PCS1900_RXN | |
| #Baseband I/0 | | |
| FSYS3 | 26M_OUT | |
| FSYS2 | 26M_BT | |
| #Reference Oszillator / PLL | | |
| REFR | NA | |
| XOX | 26MHz | |
| XO | 26MHz | |
| #Power Supply | | |
| VDDTX | VRF3_2V85 | |
| VDDVCO | VRF3_2V85 | |
| VDDTRX | VRF2_1V5 | |
| VDDDIG | VRF3_2V85 | |
| VDDMS | VRF3_2V85 | |

| | | |
|---|---|---|
| VDDXO | VRF1_2V85 | |
| VDDPLL | VRF3_2V85 | |
| VDDRX | VRF3_2V85 | |
| #Ground Balls | | |
| VSSRF1 | GND | |
| VSSRF2 | GND | |
| VSSRF3 | GND | |
| VSSRF4 | GND | |
| VSSRF5 | GND | |
| VSSRF6 | GND | |
| VSSRF7 | GND | |
| VSSRF8 | GND | |
| VSSRF9 | GND | |
| VSSRF10 | GND | |
| VSSRF11 | GND | |
| VSSRF12 | GND | |
| VSSRF13 | GND | |
| VSSRF14 | GND | |
| #Linear Voltage Reulators | | |
| VAUDIO | VAUDIO_2V5 | |
| VBAT_AUDIO | VBAT | |
| VSS_AUDIO | GND | |
| VLED | TP | |
| VAUX | VAUX_2V9 | |
| VVIB | VVIB_2V8 | |
| VBAT_LDO1 | VBAT | |
| VSS_LDO1 | GND | |
| VMMC | VMMC | |
| VUSB | VUSB_3V1 | |
| VBAT_BSW_USB_MMC | VBAT | |
| VIO | VIO_2V82 | |
| VIOb | NONE | |

| | | |
|---|---|---|
| VSIM | VSIM_2V8 | |
| VBAT_LDO2 | VBAT | |
| VSS_LDO2 | GND | |
| VPLL | VPLL_1V5 | |
| VRF2 | VRF2_1V5 | |
| VDD_RF2PLL | VBAT | |
| VRF1 | VRF1_2V85 | |
| VRF3 | VRF3_2V85 | |
| VBAT_RF13 | VBAT | |
| VSS_LDO3 | GND | |
| #Charger and RTC | | |
| CH_SOURCE | GND | |
| CH_GATE | NA | |
| SENSE_IN1 | VBAT | |
| SENSE_IN2 | VBAT | |
| VDD_REF | GND | |
| VDDCHARGE | VCHG, VBUS_USB | |
| VSS_CHARGER | NONE | |
| CHARGE_UC / SCAN_IN1 | VRTC_2V0 | |
| VRTC | NONE | |
| #Reference | | |
| IREF1 | GND | |
| A_GND | GND | |
| VREF1 | | |
| #LED's | | |
| BL1_PWM / VSENSE1 | TP | |
| BL2_PWM | TP | |
| BL3_PWM | TP | |
| FLASH_ON | NONE | |
| TXONPA | NONE | |
| VSS_FLASH | GND | |
| FLASH_SINK | KEY_BL | |

| | | |
|---|---|---|
| #Step Down Converter 1 (SD1) | | |
| VBAT_SD1 | VBAT | |
| VSD1 | VSD1_1V5 | |
| SD1_FB | VSD1_1V5 | |
| SD2_SD1_SUBST | GND | |
| VSS_SD1 | GND | |
| SD1_FBL | GND | |
| VDDANA_SW | NONE | |
| VSSANA_SW | NONE | |
| #Step Down Converter 2 (SD2) | | |
| VBAT_SD2 | VBAT | |
| VSD2 | VSD2_1V8 | |
| SD2_FB | VSD2_1V8 | |
| SD2_FBL | GND | |
| VSS_SD2 | GND | |
| SD2_SD1_SUBST | GND | |
| #Step Up Converter (SU1) | | |
| SU_GATE | NA | |
| SU_GND | GND | |
| SU_FB | NA | |
| SU_ISENSE | NA | |
| VBAT_SU | NA | |
| VSS_SU | GND | |
| #Control Logic | | |
| LPBCL_ECHO | NA | |
| WDOG / SCAN_IN2 | NONE | |
| ON_OFF / SCAN_RESET | PWRON | |
| ON_OFF2 / SCAN_CLK | NONE | |
| VSS_DIG | NONE | |
| ON_OFF_OUT | NONE | |
| RESET2_N / VSENSE2 | NA | |
| PO_RESET_N / SCAN_OUT2 | PO_RESET | |

| | | |
|---|---|---|
| SLEEP_N / SCAN_ENABLE | NONE | |
| SCANMODE | NONE | |
| I2C_INT / SCAN_OUT1 | NONE | |
| I2C_CLK | NONE | |
| I2C_DAT | NONE | |
| #Audio Loudspeaker Amplifier | | |
| VBAT_MONO NA | | |
| VSS_MONO NA | | |
| MONO_OUTP NA | | |
| MONO_OUTN NA | | |
| MONO_INP NA | | |
| MONO_INN NA | | |

## 3.4 Power Management Unit

### 3.4.1 General Description

S-GOLDradio integrates a Power Management Unit for Lithium-Ion battery driven applications that require different power rails. The S-GOLDradio PMU provides two fully integrated, highly efficient, step-down converters for the main loads such as cores and memories. Both step-down converters support low power modes (PFM) for maximum efficiency at all times, the output voltages are stable under all load conditions.

For supply voltages higher than the battery voltage, the S-GOLDradio PMU provides a step-up converter.

This step-up converter provides the supply voltage to, for example, serial connected LED°Øs used in display backlight. A number of LDOs are available to provide different supply rails for different needs.

In addition, the S-GOLDradio PMU supports charging of the battery and generates the power-on reset. It also provides stand-by voltages and supports different low power modes. See Figure 4.

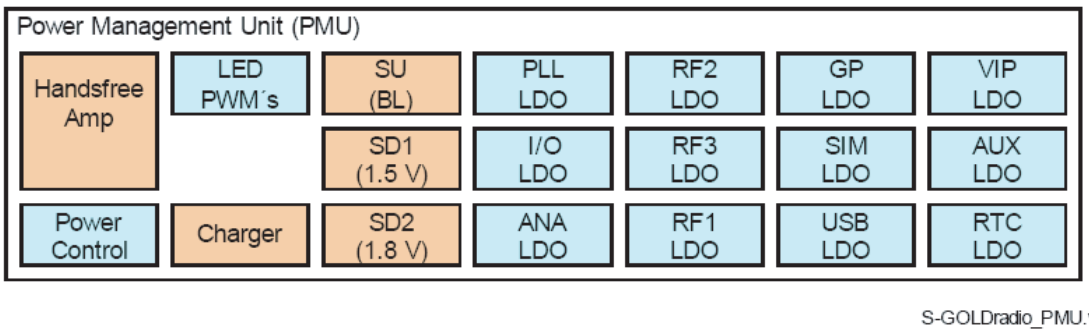



**Figure 4 S-GOLDradioTM PMU Block Diagram**

**General Features**

• Software controlled charging of Lithium-Ion batteries

• Different low power modes for very low power consumption

• Temperature monitoring with built-in over-temperature warning.

**Switched Power Supplies**

• Two fully integrated step-down converters with PFM low power modes:

- 400 mA high efficiency step-down converter (SD1) with 1.5 V output voltage
- 300 mA high efficiency step-down converter (SD2) with 1.8 V output voltage

• One step-up converter:

- 5.6 V ... 25 V, 120 mA step-up converter (SU1) for the main LCD backlight, keypad backlight and photo flash.

**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:

- 2.5V, 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).

**LED Control**

• 3x PWM modulated control signal

• Current Sink Support for photo flash LED driver

• Support for serial connected LEDs

• Support for Trickle and Indicator LED

**Charger**

The charger unit controls the charging of LiON batteries. It generates the power-on reset after battery insertion or charger connection.

- Constant current charging (active trickle charge mode)
- Pre-charge for deep discharged batteries (trickle charge mode)
- Charging through USB
- Charging up to 10 V charger voltage
- Withstands charger voltages up to 15 V
- Switched charging (charge current/voltage adjusted in the charger unit)
- Charger detection
- Battery over-voltage detection, battery voltage monitoring
- Power-on reset
- Software controlled charging
- Common Charge and Accessory Pin.

**Motor Driver**

- Single ended linear controlled 140 mA motor driver for 2.8 V vibrator
- Optional PWM controlled, internal pass device used as a switch.

**Audio Amplifier**

- Battery driven 400 mW differential audio amplifier for driving 8 ohm loudspeaker
- Three gain stages including overdrive for ringing tones
- >90 dB PSRR (4 kHz).

**Interfaces**

- I2C control interface for device configuration
- PMU is configured in software via registers
- Power-on reset generation
- Interrupt (event) line to indicate status change.

**Control Unit**

- Pulse width modulated (PWM) LED driver for dimmed light
- Device ON/OFF switching
- Over-temperature warning
- System start-up state machine
- Under-voltage shut down with defined system behavior
- Charger detection
- Battery insertion/removal detection
- Independent LDO switch on
- Software and hardware programmable voltages
- System watchdog timer with on-chip oscillator.

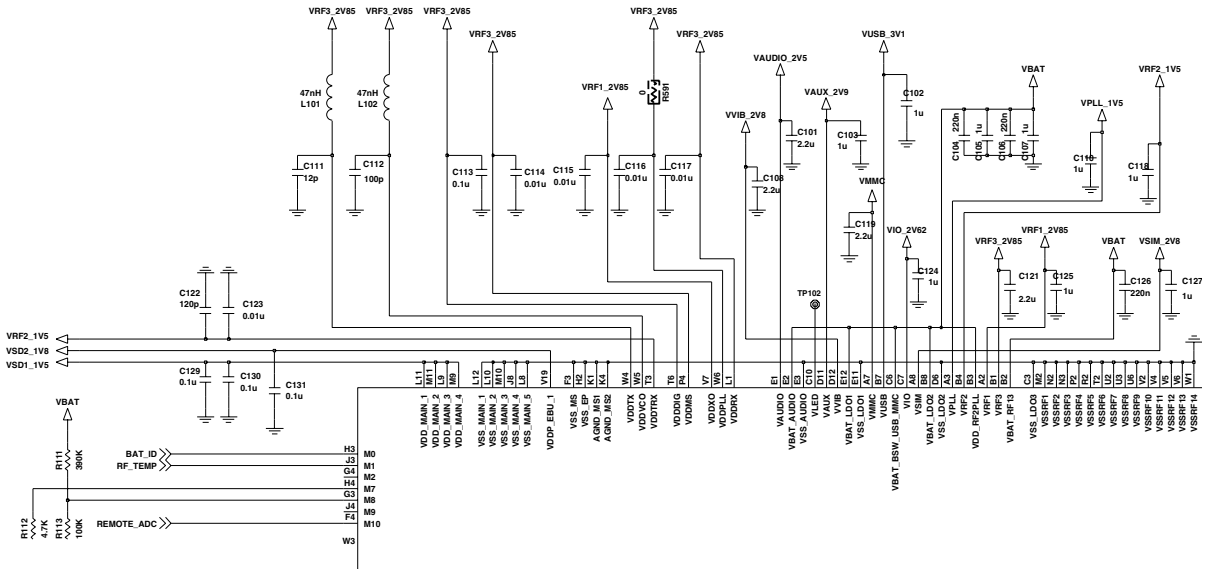



**Figure 5 S-GOLDradio PMU circuit diagram**

## 3.4.2 Charging

SM-POWER provides together with an external p-channel FET Siliconix NDC652P an external AC-adapter a complete charge control function for charging of Li-Ion or Li-Ion-Polymer batteries. Either a 1-cell Li-Ion or Li-Ion-Polymer battery with 4.1, 4.2 or 4.4 Volts may be used.


**Figure 6 Battery Block Indication**

1. Charging method : CC-CV
2. Charger detect voltage : 4.0V
3. Charging time : 3h
4. Charging current : 450mA
5. CV voltage : 4.2V
6. Cutoff current : 100mA
7. Full charge indication current (icon stop current) : 100mA
8. Recharge voltage : 4.15V
9. Low battery alarm
   a. Idle : 3.58V~3.48V
   b. Dedicated : 3.51V~3.41V
10. Low battery alarm interval
    a. Idle : 3min
    b. Dedicated:1min
11. Switch-off voltage : 3.35V
12. Charging temperature adc range
    a. ~ -20 °C:  low charging voltage operation (3.8V ~ 4.0V) .
    b. -20°C ~ 60°C: standard charging (up to 4.2 V)
    c. 60°C ~ : low charging voltage operation (3.8V ~ 4.0V)

## 3.5 Power ON/OFF

### 3.5.1 ON/OFF Switching Sequence

After the ON-trigger (either from ON_OFF1/2 pin or charger) SGR PMU Subsystem follows a well-defined startup sequence to ensure a proper system start up.

State power supply is connected and ON is triggered: (enter point of System Startup Statem Machine)

- ON_OFF1 is low (or ON_OFF2 is high, or VCH>3.2V)
- VRTC is active
- I2C_INT is high
- On-chip oscillator calibrated and running, reference and bias calibrated and running Startup Sequence from System Startup State Machine
- Start SD1 in active mode
- After time TE1 start SD2 in active mode
- After TDEL1 delay, start LDOs in the sequence: VRF1, VIO, VPLL, VAUX (all started with delay to each other)
- After TE2 delay (settling of the DCXO) force signal I2C_INT to low. Comparator for VAUX voltage supervision is enabled
- After TE3 (settling S-GOLDradio Power Management Unit GPIOs) RESET_N/RESET2_N are released

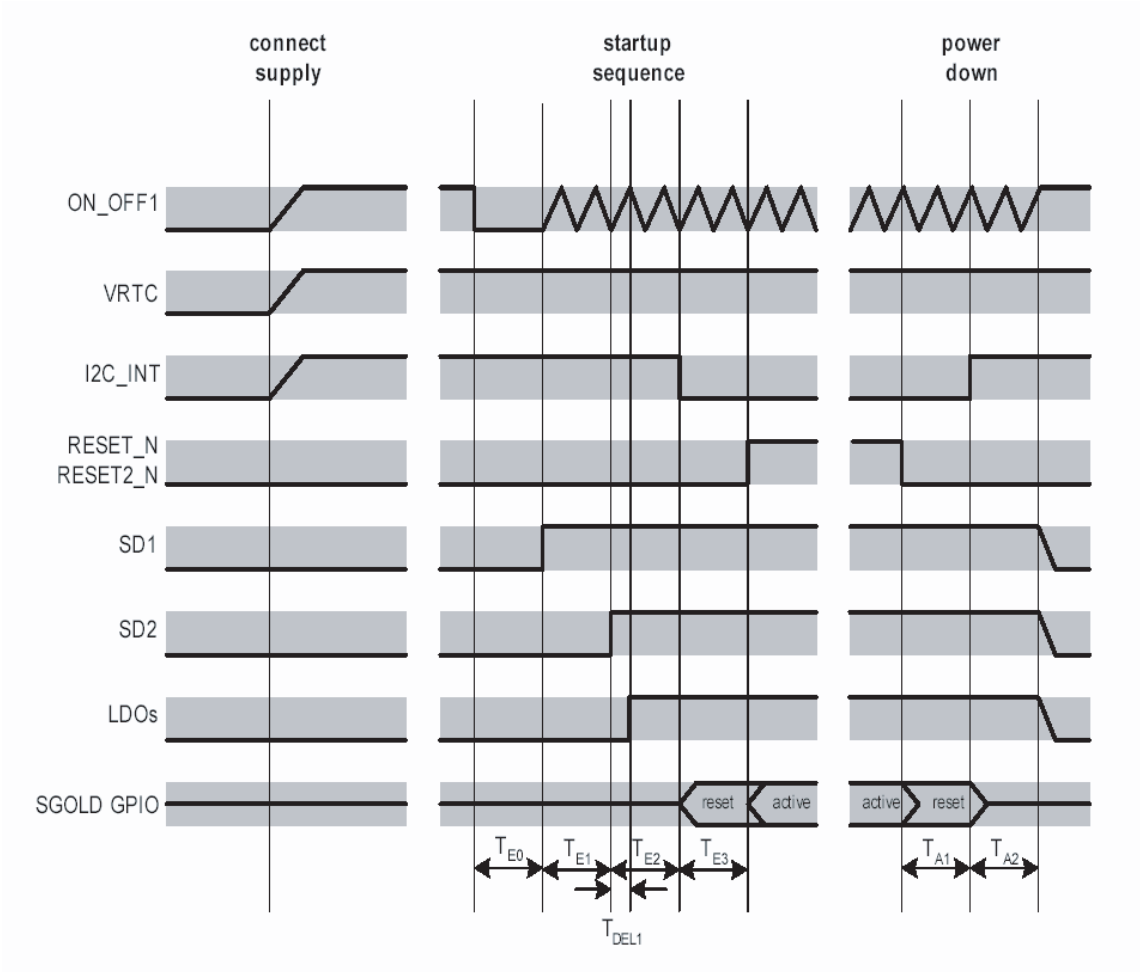



**Figure 7 Power Up and Down Sequence triggered by ON_OFF1**

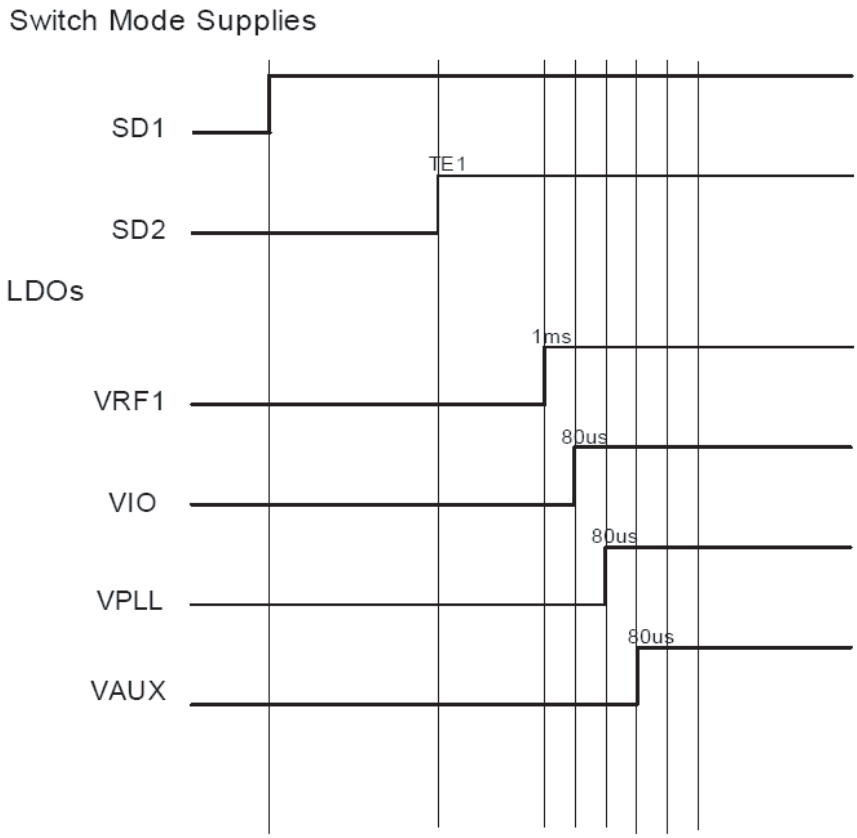



**Figure 8 Power supply start up**

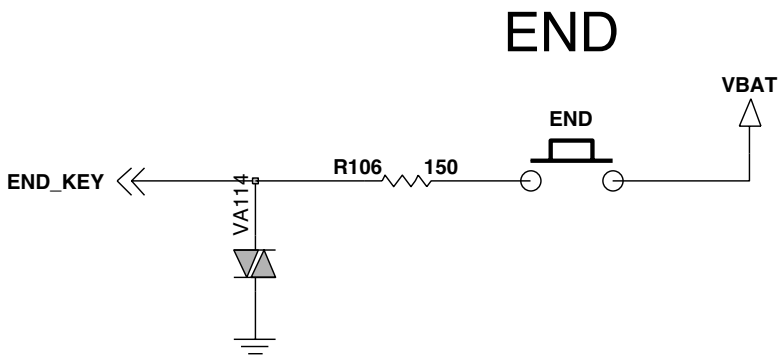



**Figure 9 Remote power on and End-key power on circuit**

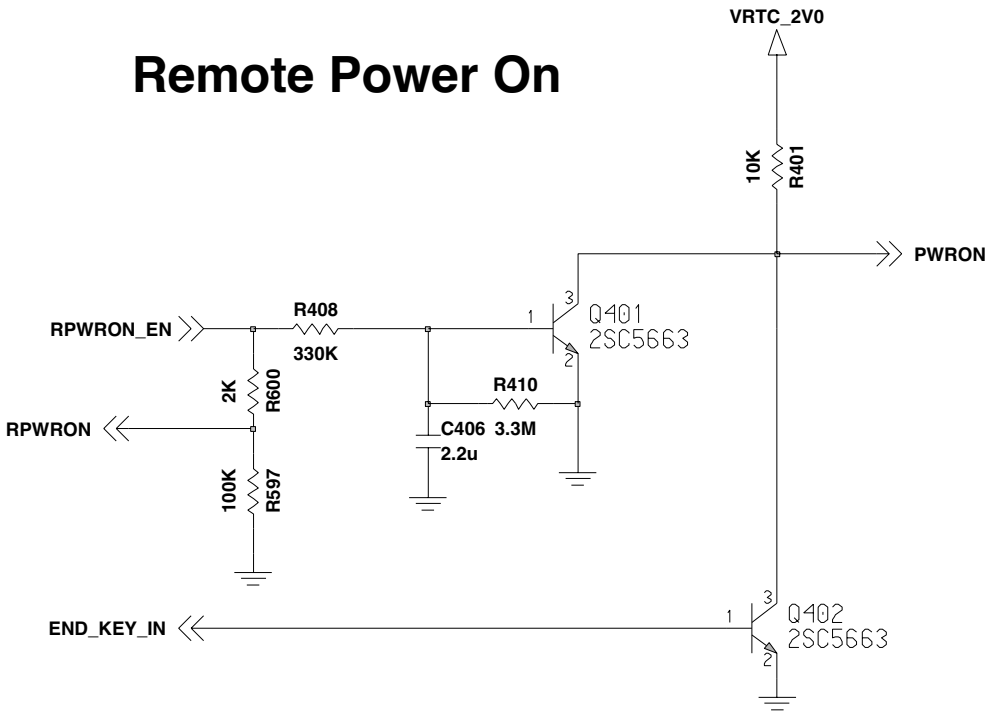



**Figure 10 Remote power on and End-key power on circuit**

## 3.6 SIM interface

KC550 supports 1.8V & 3V plug in SIM, SIM interface scheme is shown in (Figure 10).
SIM_IO, SIM_CLK, SIM_RST ports are used to communicate with BBP(S-GOLDradio) and the SIM power supply enabled by BBP (_SIM_EN).

SIM Interface

SIM_CLK : SIM card reference clock

SIM_RST : SIM card Async /sync reset

SIM_IO : SIM card bidirectional reset

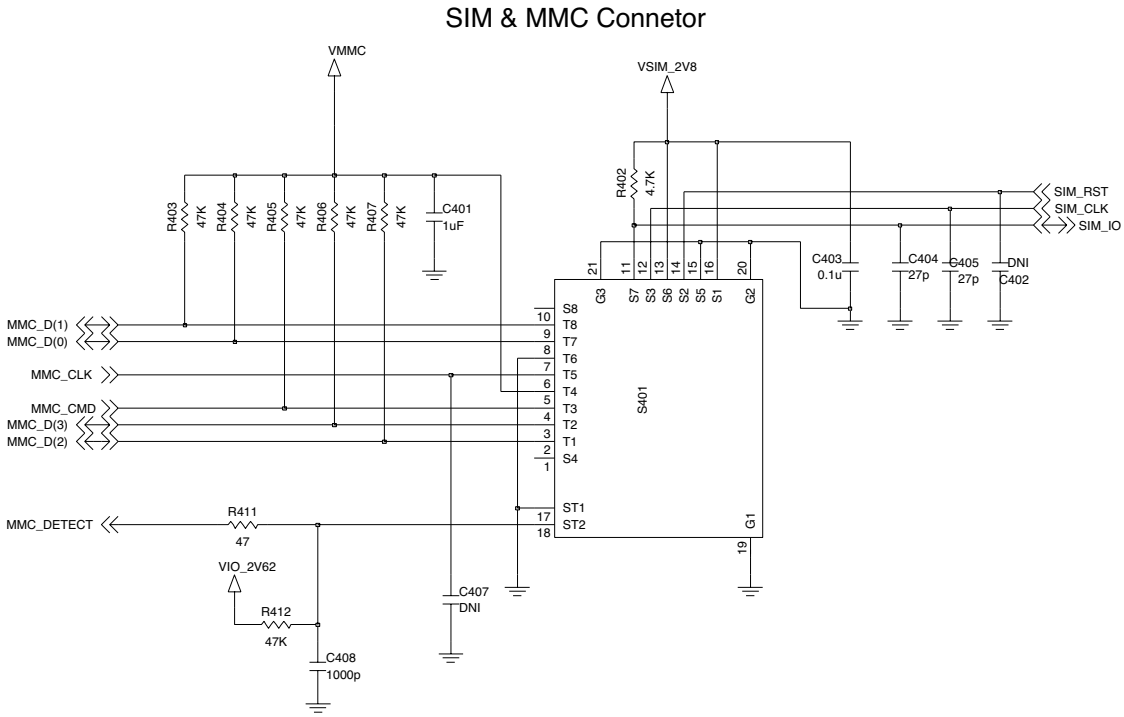



**Figure 11 SIM CARD Interface**

## 3.7 Memory

The K5D1G12ACE is a Multi Chip Package Memory which combines 1Gbit Nand Flash Memory and 512Mbit synchronous high data rate Dynamic RAM.

Offered in 128Mx8bits, the NAND Flash is 1Gbit with spare 32Mbit capacity. The device is offered in 1.8V Vcc. Its NAND cell provides the most cost-effective solutIon for the solid state mass storage market. A program operation can be performed in typical 200$\mu$s on the 528-bytes and an erase operation can be performed in typical 2ms on a 16K-bytes block. Data in the page can be read out at 42ns cycle time per byte. The I/O pins serve as the ports for address and data input/output as well as command input. The on-chip write control automates all program and erase functions including pulse repetition, where required, and internal verification and margining of data. Even the write-intensive systems can take advantage of the device's extended reliability of 100K program/erase cycles by providing ECC(Error Correcting Code) with real time mapping-out algorithm. The device is an optimum solution for large nonvolatile storage applications such as solid state file storage and other portable applications requiring non-volatility.

The 512Mb Mobile SDRAM is 536,870,912 bits synchronous high data rate Dynamic RAM organized as 4 x 8,388,608 words by 16 bits, fabricated with SAMSUNG's high performance CMOS technology. Synchronous design allows precise cycle control with the use of system clock and I/O transactions are possible on every clock cycle. Range of operating frequencies, programmable burst lengths and programmable latencies allow the same device to be useful for a variety of high bandwidth and high performance memory system applications.

1G NAND(Small Block x8bit) +512M SDR SDRAM

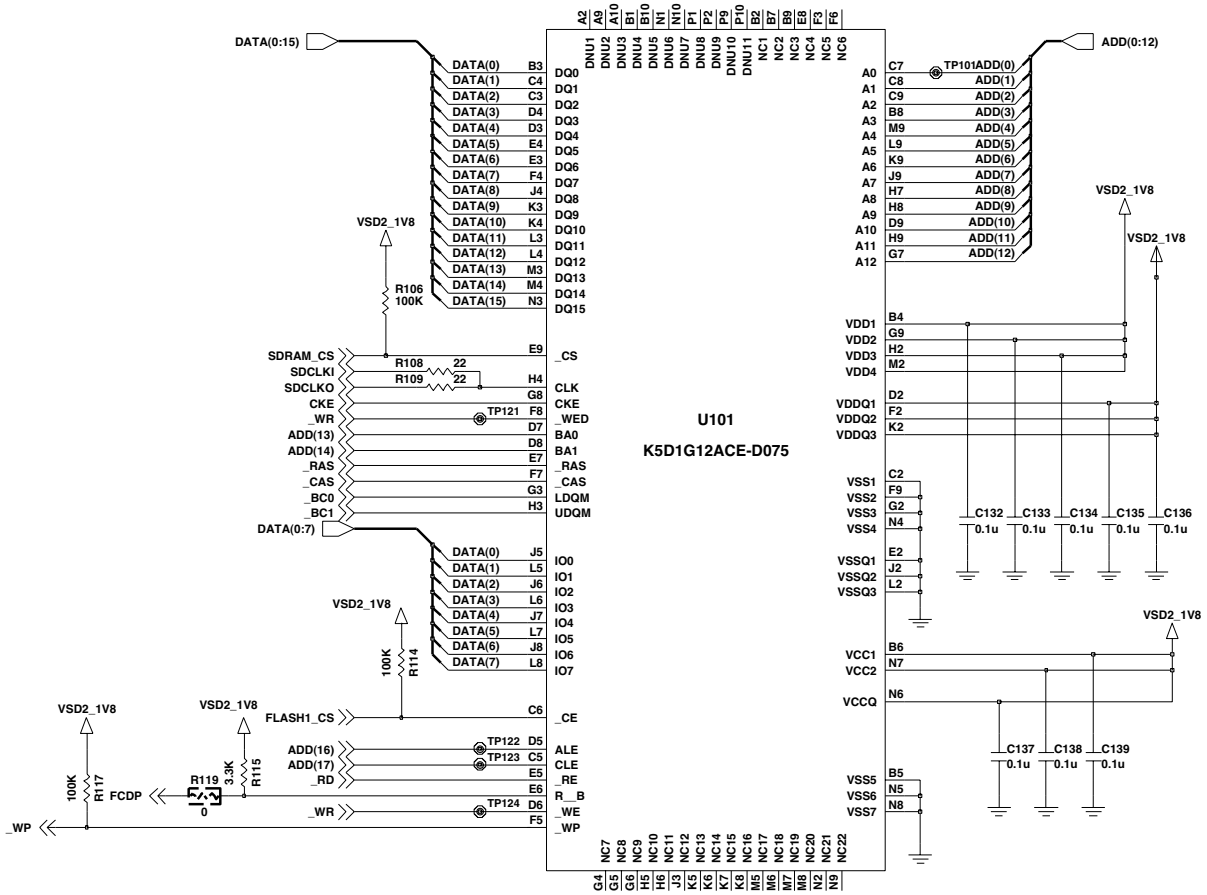



**Figure 12 NAND Flash memory & SDRAM MCP circuit diagram**

## 3.8 LCD Display

LCD module include:

- LCD : 240 x 320 262K Colors TFT LCD
- Backlight : 5 piece of white LED illumination

LCD module is connected to main board thru 37 pins connector.

Table 6 LCD FPC 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 | [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 |
| 24 | D2 | I/O | Data[2] for LCD |

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 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 |

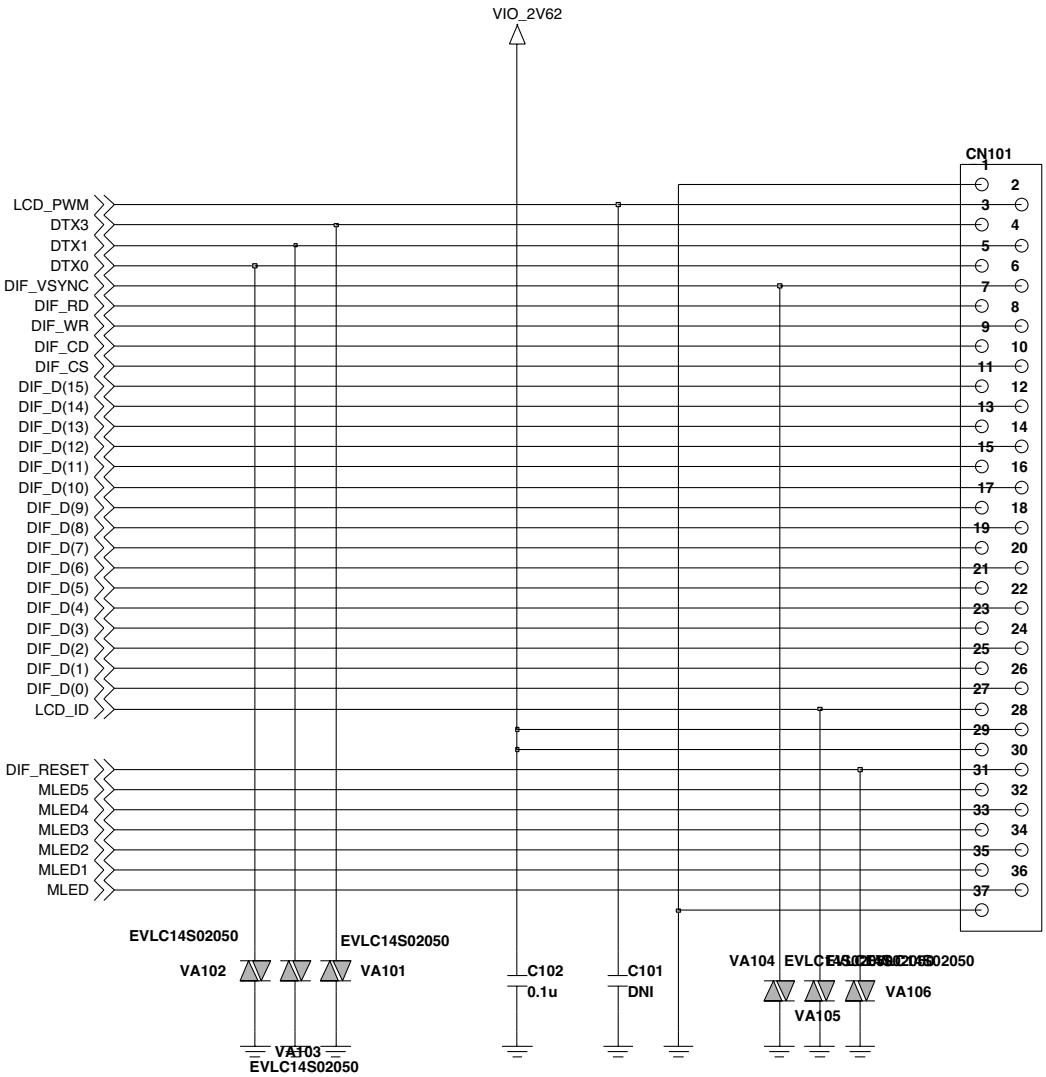



**Figure 13 37pin LCD connector circuit**

## 3.9 Keypad Switching & Scanning

The keypad interface is a peripheral which can be used for scanning keypads up to 5 rows (outputs from Port Control Logic) and 6 columns (inputs to PCL). The number of rows and columns depend on settings of the PCL.

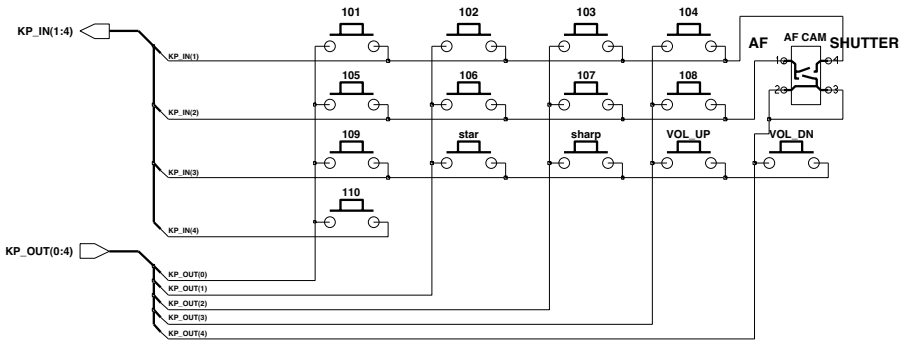



**Figure 14 Key FPCB part key matrix**

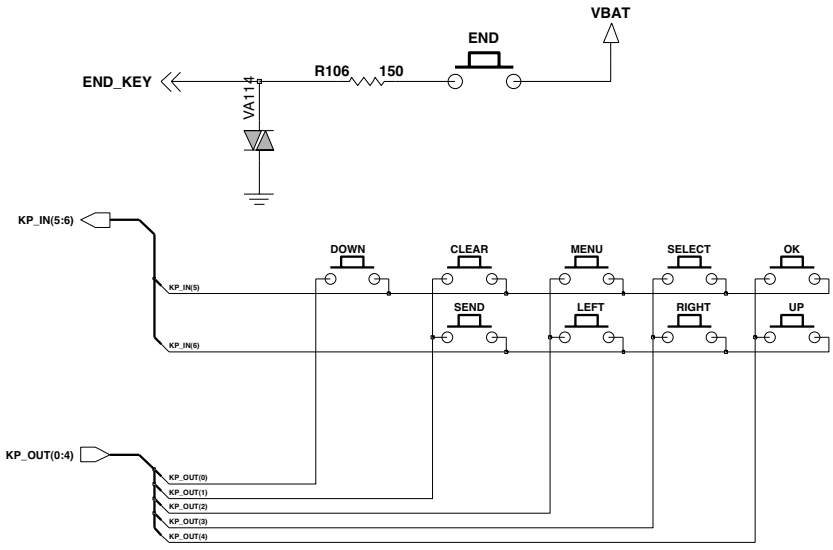



**Figure 15 Key PCB part key matrix**

Volume up & down, Clear, Send, End/Power on keys are located on the Key PCB. And MP3 hot key, Camera AF trigger & shutter, numeric keys are connected by Key FPCB.

## 3.10 Keypad back-light illumination

There are two kind of white LEDs on the Key FPCB and Key PCB for keypad illumination. Keypad Back-light is controlled by GPIO port of the S-GOLDRADIO(KEY_BL) and by Backlight charge pump IC(BD6095).

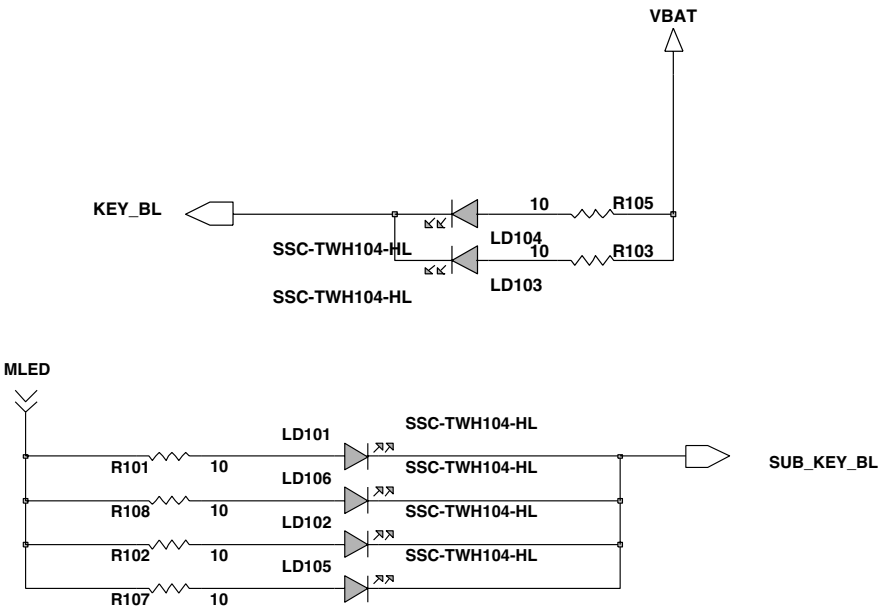



**Figure 16 Key PCB Back-light LEDs**

# KEY BACKLIGHT

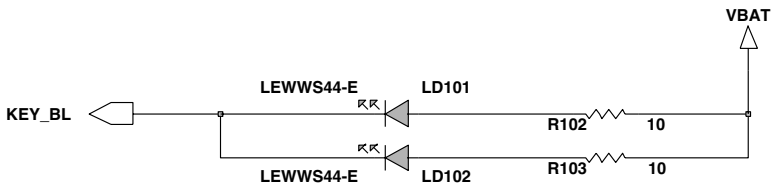



**Figure 17 Key FPCB Back-light LEDs**

## 3.11 LCD back-light illumination

Employed the BD6095 is a dual charge pump designed to support both the white LED backlight and flash applications for systems operating with lithium-ion/polymer batteries. The backlight charge pump is capable of driving up to five LEDs at a total of 65mA for backlight. 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, 1.33X, 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.

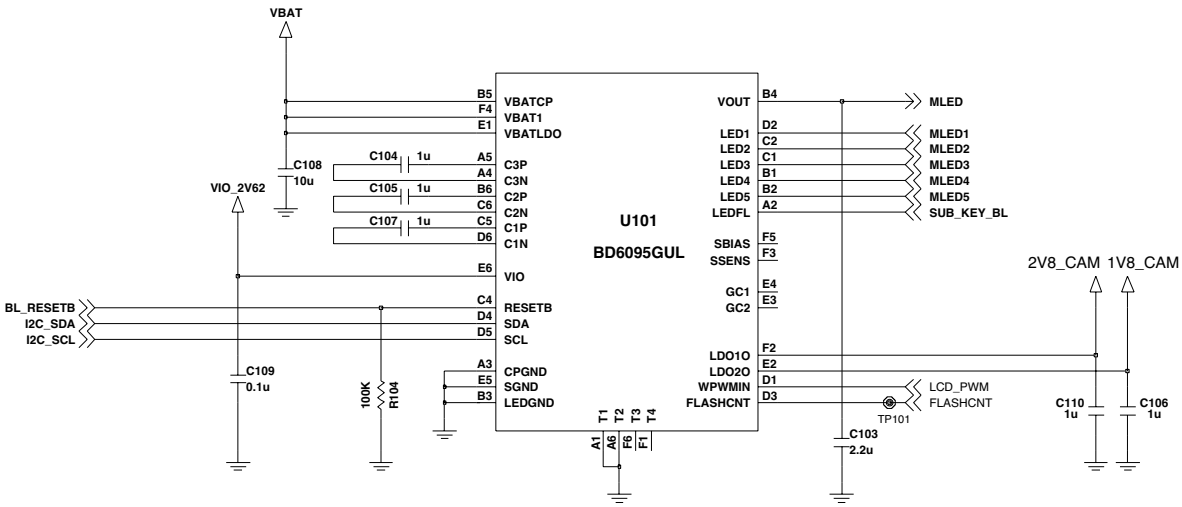



**Figure 18 LCD Back light unit and Key backlight charge pump IC**

Table 8 Charge pump IC LCD part current setting table

The writing/reading operation is based on the $I^2C$ slave standard.

- Slave address

| A7 | A6 | A5 | A4 | A3 | A2 | A1 | R/W |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1/0 |

| Address | W/R | Register data | | | | | | | | Function |
|---|---|---|---|---|---|---|---|---|---|---|
| | | D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | |
| 00h | W | - | - | - | - | - | - | - | SFTRST | Software Reset |
| 01h | W | - | LED5MD(1) | LED5MD(0) | LED4MD | - | WPWMEN | ALCEN | MLEDMD | LED, ALC Control |
| 02h | W | FLASHEN | TORCHEN | SLEDEN | MLEDEN | - | - | LDO2EN | LDO1EN | Power Control |
| 03h | W | - | IMLED(6) | IMLED(5) | IMLED(4) | IMLED(3) | IMLED(2) | IMLED(1) | IMLED(0) | "Main Group" LED Current Setting at non-ALC mode |
| 04h | W | - | ISLED(6) | ISLED(5) | ISLED(4) | ISLED(3) | ISLED(2) | ISLED(1) | ISLED(0) | "Sub Group" LED Current Setting |
| 05h | W | - | - | - | IFTLED(4) | IFTLED(3) | IFTLED(2) | IFTLED(1) | IFTLED(0) | Flash LED "Torch mode" Current Setting |
| 06h | W | - | - | - | IFFLED(4) | IFFLED(3) | IFFLED(2) | IFFLED(1) | IFFLED(0) | Flash LED "Flash mode" Current Setting |
| 07h | W | LDO2VSEL(3) | LDO2VSEL(2) | LDO2VSEL(1) | LDO2VSEL(0) | LDO1VSEL(3) | LDO1VSEL(2) | LDO1VSEL(1) | LDO1VSEL(0) | LDO1, LDO2 Vout Setting |
| 08h | W | THL(3) | THL(2) | THL(1) | THL(0) | TLH(3) | TLH(2) | TLH(1) | TLH(0) | Main Current transition |
| 09h | - | - | - | - | - | - | - | - | - | - |
| 0Ah | - | - | - | - | - | - | - | - | - | - |
| 0Bh | W | ADCYC(1) | ADCYC(0) | GAIN(1) | GAIN(0) | STYPE | VSB | MDCIR | SBIASON | ALC mode setting |
| 0Ch | W | SOFS(3) | SOFS(2) | SOFS(1) | SOFS(0) | SGAIN(3) | SGAIN(2) | SGAIN(1) | SGAIN(0) | ADC Data adjustment |
| 0Dh | R | - | - | - | - | AMB(3) | AMB(2) | AMB(1) | AMB(0) | Ambient level |
| 0Eh | W | - | IU0(6) | IU0(5) | IU0(4) | IU0(3) | IU0(2) | IU0(1) | IU0(0) | Main Current at Ambient level 0h |
| 0Fh | W | - | IU1(6) | IU1(5) | IU1(4) | IU1(3) | IU1(2) | IU1(1) | IU1(0) | Main Current at Ambient level 1h |
| 10h | W | - | IU2(6) | IU2(5) | IU2(4) | IU2(3) | IU2(2) | IU2(1) | IU2(0) | Main Current at Ambient level 2h |
| 11h | W | - | IU3(6) | IU3(5) | IU3(4) | IU3(3) | IU3(2) | IU3(1) | IU3(0) | Main Current at Ambient level 3h |
| 12h | W | - | IU4(6) | IU4(5) | IU4(4) | IU4(3) | IU4(2) | IU4(1) | IU4(0) | Main Current at Ambient level 4h |
| 13h | W | - | IU5(6) | IU5(5) | IU5(4) | IU5(3) | IU5(2) | IU5(1) | IU5(0) | Main Current at Ambient level 5h |
| 14h | W | - | IU6(6) | IU6(5) | IU6(4) | IU6(3) | IU6(2) | IU6(1) | IU6(0) | Main Current at Ambient level 6h |
| 15h | W | - | IU7(6) | IU7(5) | IU7(4) | IU7(3) | IU7(2) | IU7(1) | IU7(0) | Main Current at Ambient level 7h |
| 16h | W | - | IU8(6) | IU8(5) | IU8(4) | IU8(3) | IU8(2) | IU8(1) | IU8(0) | Main Current at Ambient level 8h |
| 17h | W | - | IU9(6) | IU9(5) | IU9(4) | IU9(3) | IU9(2) | IU9(1) | IU9(0) | Main Current at Ambient level 9h |
| 18h | W | - | IUA(6) | IUA(5) | IUA(4) | IUA(3) | IUA(2) | IUA(1) | IUA(0) | Main Current at Ambient level Ah |
| 19h | W | - | IUB(6) | IUB(5) | IUB(4) | IUB(3) | IUB(2) | IUB(1) | IUB(0) | Main Current at Ambient level Bh |
| 1Ah | W | - | IUC(6) | IUC(5) | IUC(4) | IUC(3) | IUC(2) | IUC(1) | IUC(0) | Main Current at Ambient level Ch |
| 1Bh | W | - | IUD(6) | IUD(5) | IUD(4) | IUD(3) | IUD(2) | IUD(1) | IUD(0) | Main Current at Ambient level Dh |
| 1Ch | W | - | IUE(6) | IUE(5) | IUE(4) | IUE(3) | IUE(2) | IUE(1) | IUE(0) | Main Current at Ambient level Eh |
| 1Dh | W | - | IUF(6) | IUF(5) | IUF(4) | IUF(3) | IUF(2) | IUF(1) | IUF(0) | Main Current at Ambient level Fh |

## 3.12 JTAG interface connector

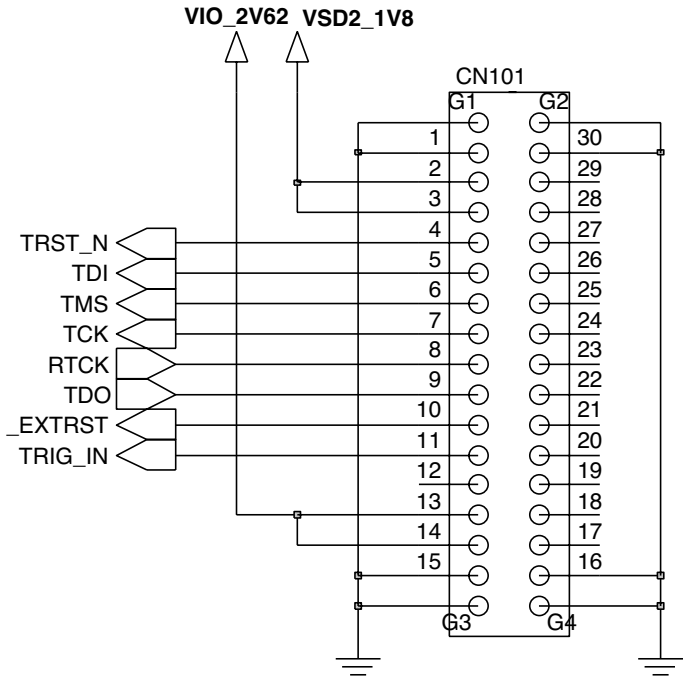



**Figure 19 JTAG interface connector**

In case of KC550 mass production, the JTAG interface connector will not be mount on board. That is only for developing and software debugging purpose.( It will not be mounted on mass production PCB)

## 3.13 Audio

KC550 Audio signal flow diagram as following diagram.

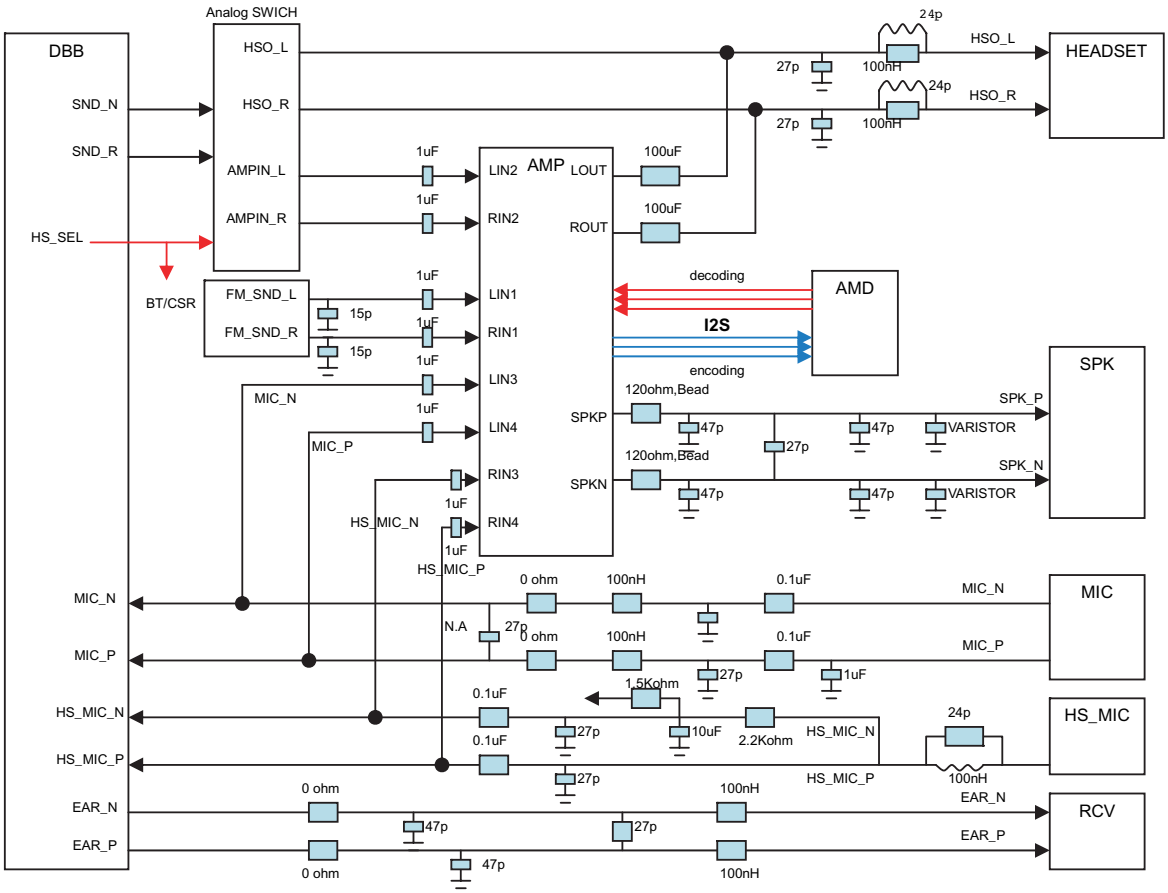



**Figure 20 Audio signal flow diagram**

## 3.13.1 Audio amplifier sub system IC with Codec

The WM8990 is an ultra-low power hi-fi Codec designed for multimedia handsets. A powerful 1W speaker driver can operate in class D or AB modes, providing total flexibility to the system designer. Low leakage, high PSRR and pop/click suppression enable direct battery connection for the speaker supply. A flexible input configuration supports two microphone inputs (single-ended or differential), a stereo line input, and a mono differential line input. Four headphone drivers support fully differential headset drive, providing excellent crosstalk performance and bass response, maximising stereo effects, and allowing the removal of large and expensive headphone capacitors. The headphone outputs can also be configured to drive an ear speaker. A fully differential path to these outputs direct from the input pins is available to maximise signal quality and minimise power consumption. Stereo 24-bit sigma-delta ADCs&DACs provide hi-fi quality audio playback, with a flexible digital audio interface supporting most commonly-used clocking schemes. An integrated low power PLL provides additional flexibility.

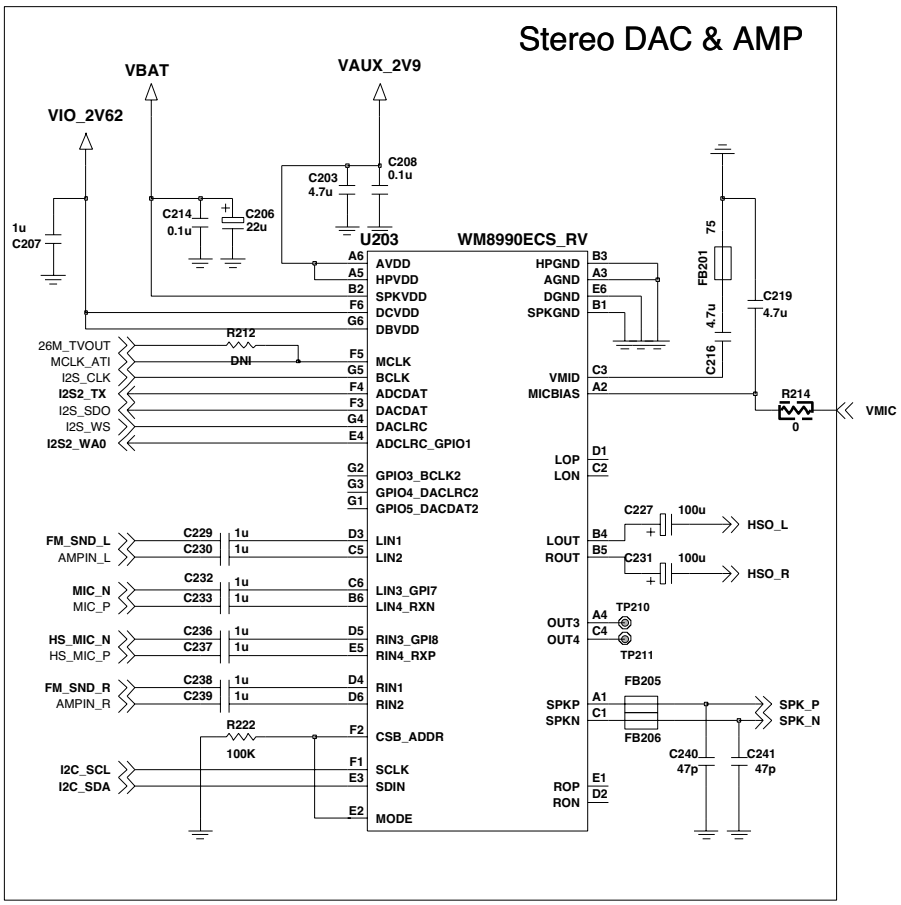



**Figure 21 Audio amplifier Sub-system IC**

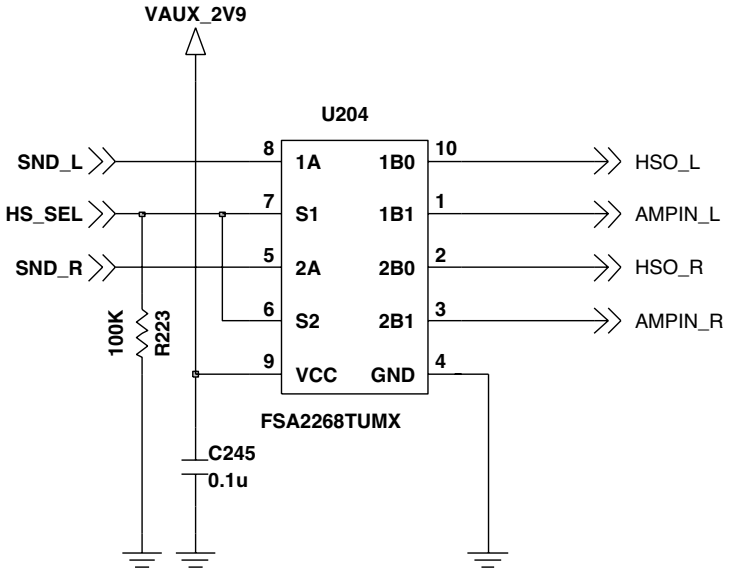



**Figure 22 Audio signal distribute analog switch**

## 3.13.2. Microphone circuit

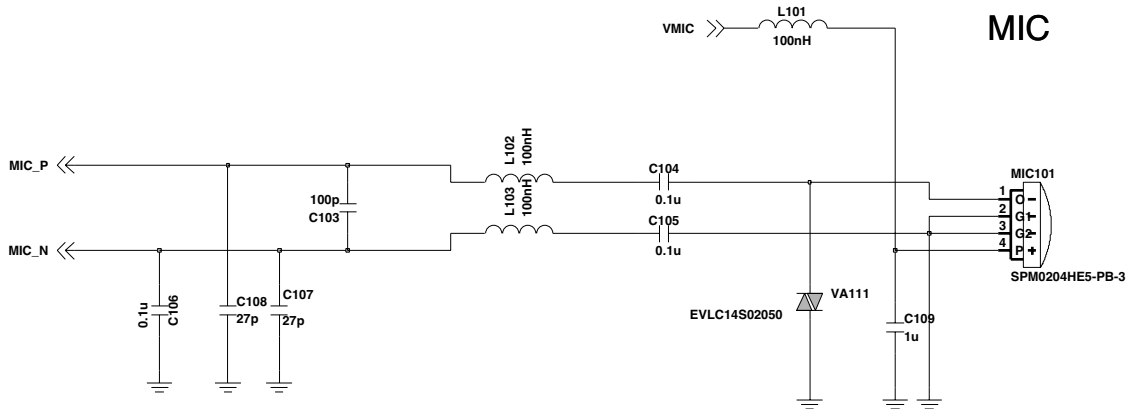



**Figure 23 Microphone circuit**

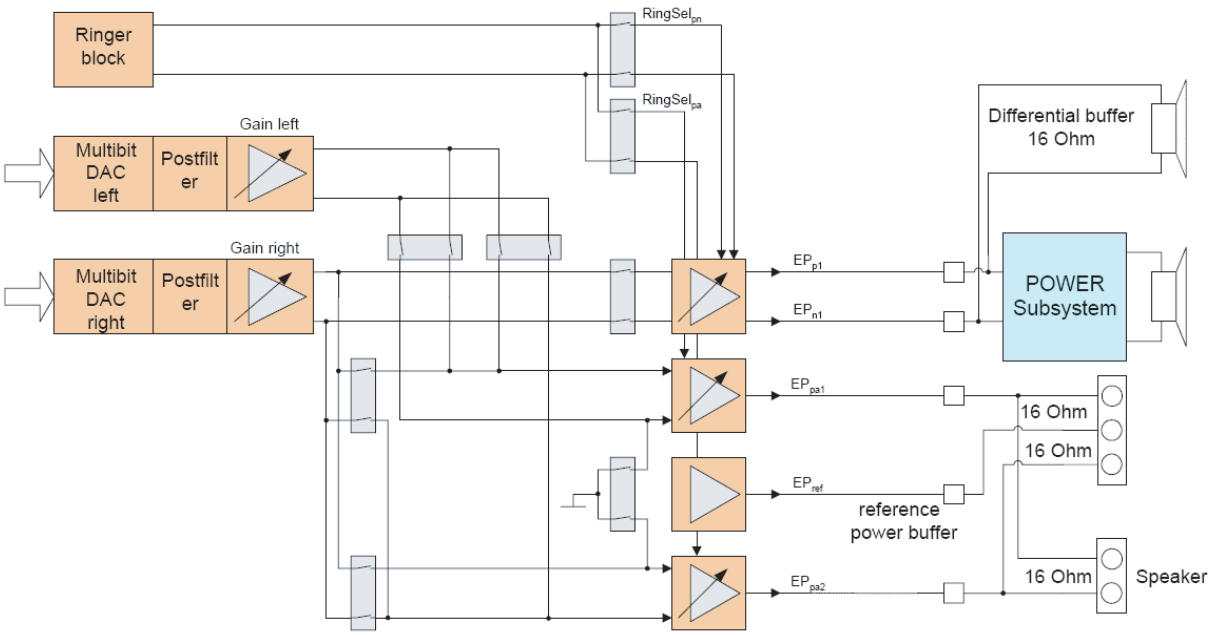



**Figure 24 S-GOLDradioTM Audio Front End Block Diagram**

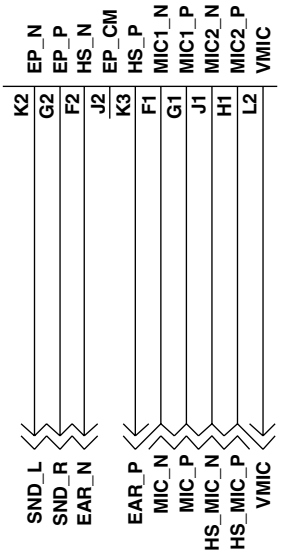



**Figure 25 S-GOLDradioTM Audio Front End Circuit**

## 3.14 USB charging circuit

The USB charging circuit is a fully integrated USB VBUS voltage single-cell Li-ion battery charger circuit.

The charger uses a CC/CV charge profile required by Li-ion batteries. CC charging current and End of charging current is programmable IREF & IMIN resistors.

IREF resistor between this pin and the GND pin to set the charge current limit determined by the following equation:software debugging purpose.

ICC = 6820/33K = 207mA

The End Of Charging current is set by IMIN That can be programmed by the as following equation:

IEOC = 550/5.1K = 107mA

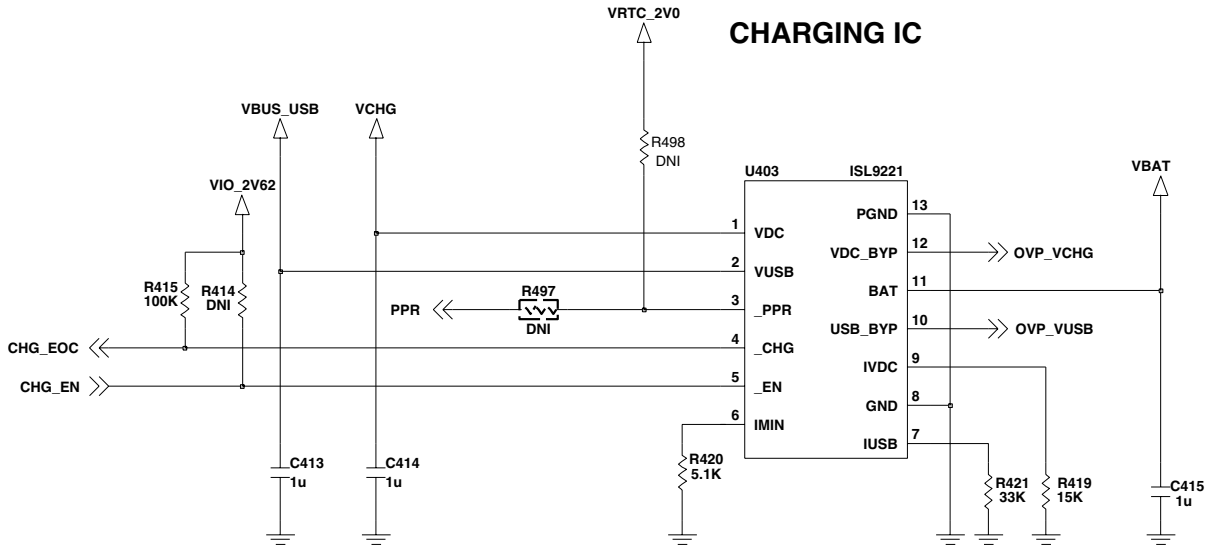



**Figure 26 USB charging circuit**

## 3.15 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.

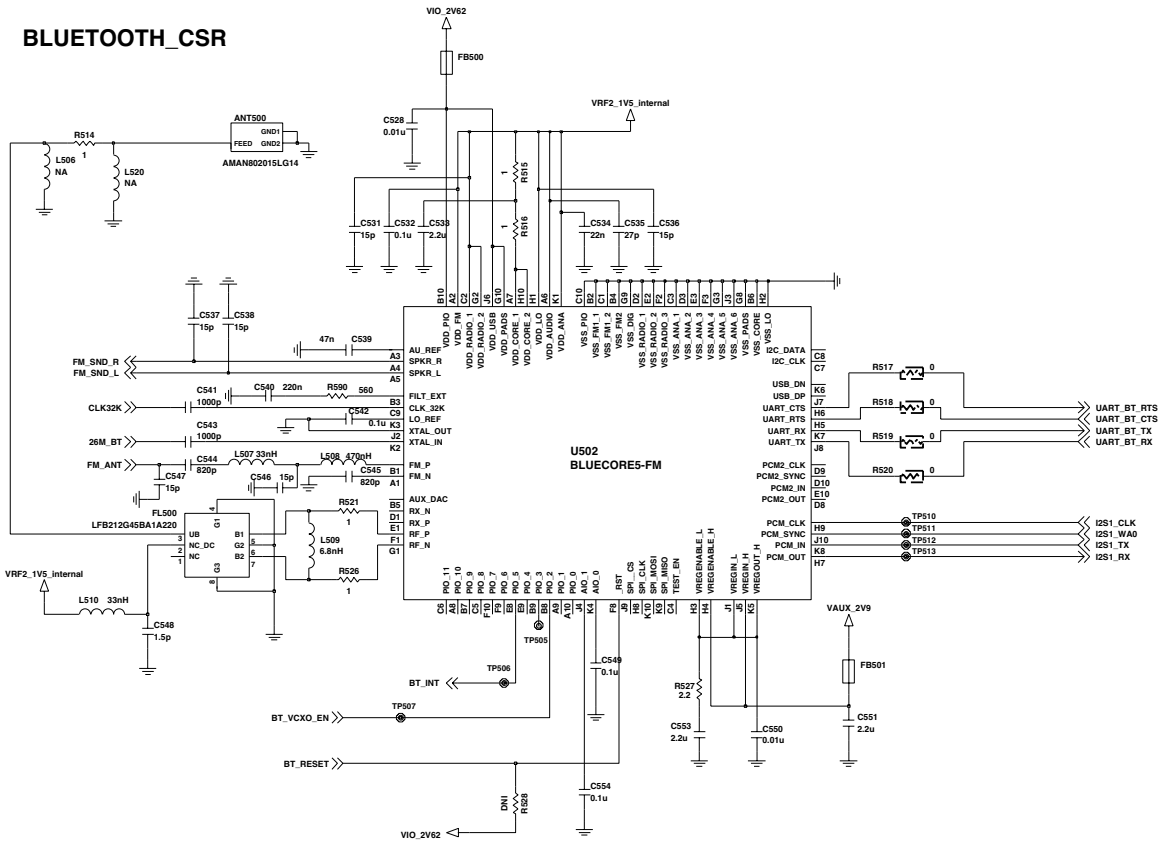



**Figure 27. Bluetooth / FM Radio Circuit Diagram**

# 3. TECHNICAL BRIEF

**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)

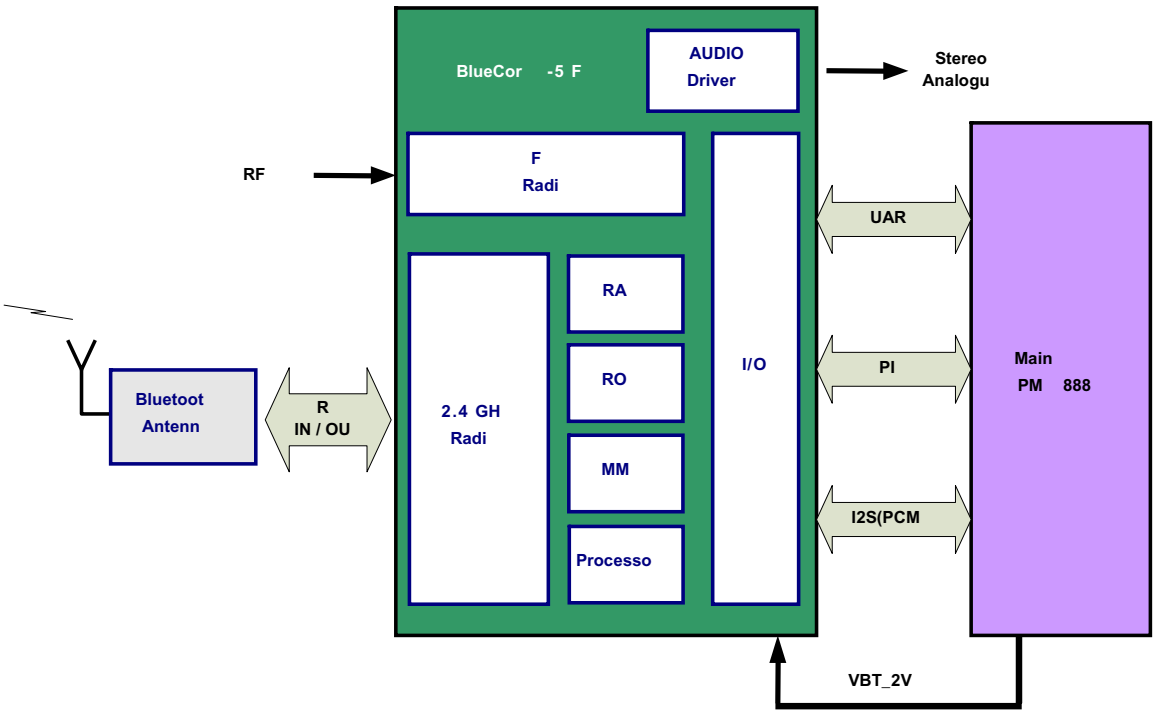



**Figure 28. Bluetooth / FM Radio Block Diagram**

## 3.16 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

## 3.17 Micro SD external memory card slot

The MicroSD Memory Module has eight exposed contacts on one side. The S-GOLDradio is connected to the module using a dedicated eight-pin connector
Table 7 Micro SD memory pad assign.

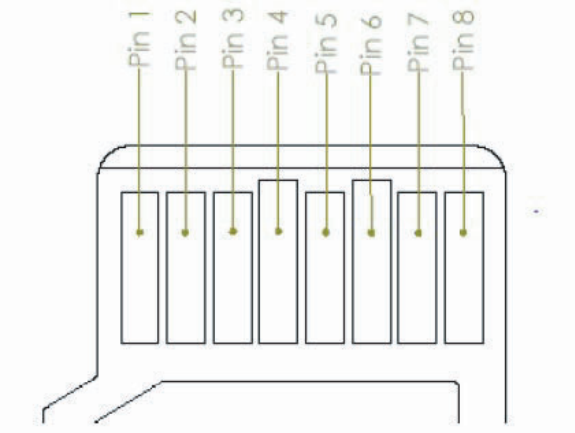



**Figure 39 Micro SD pin assignment**

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

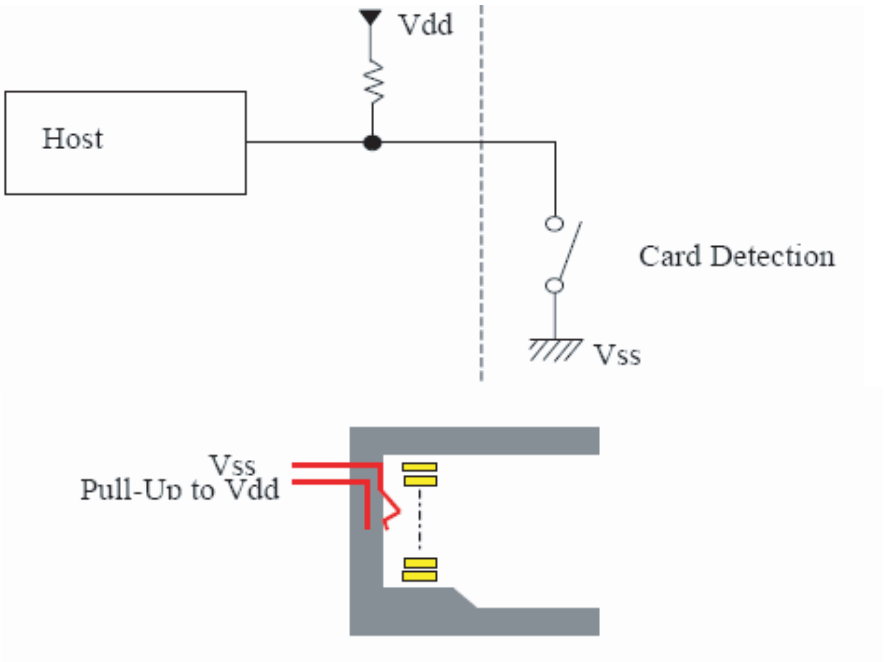



Table 8 Micro SD memory card detect truth table.

| | Micro SD card status | |
|---|---|---|
| | it is removed | it is inserted |
| TF_DETECT | High | Low |

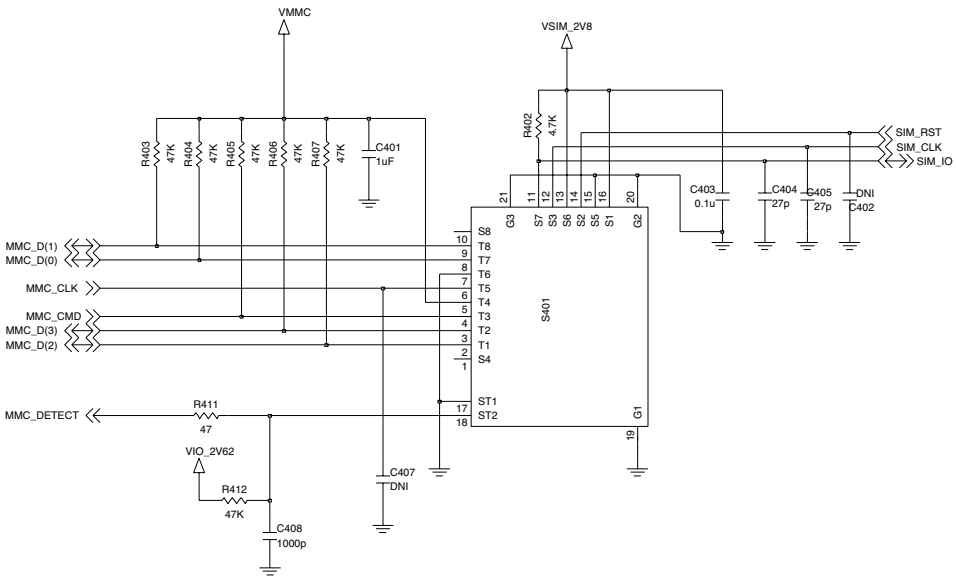



**Figure 30 Micro SD socket circuit with power control**

## 3.18 18pin Multi Media Interface connector

Table 9 Multi media interface pin assign

| KC550 MMI | | |
|---|---|---|
| | **Pin Function** | **Description** |
| 1 | FM_ANT | FM radio antenna / Audio ground |
| 2 | HS_MIC | Headset microphone signal |
| 3 | TV_OUT | TV_OUT signal |
| 4 | HSO_L | Headset left sound |
| 5 | HSO_R | Headset right sound |
| 6 | USB_DP/ REMOTE_INT | USB+/ Remote control interrupt |
| 7 | USB_DM/ REMOTE_ADC | USB-/ Remote control Key ADC |
| 8 | JACK_DETECT | Headset detect (active low) |
| 9 | VBAT | Battery voltage |
| 10 | VBAT | Battery voltage |
| 11 | RPWRON | Remote power on (active high. 2.0~V) |
| 12 | VCHG | Charger voltage |
| 13 | VCHG | Charger voltage |
| 14 | DSR | DSR |
| 15 | VBUS_USB | USB VBUS |
| 16 | UART_TX | Trace TX data(Debug) |
| 17 | UART_RX | Trace RX data(Debug) |
| 18 | GND | Power GND |

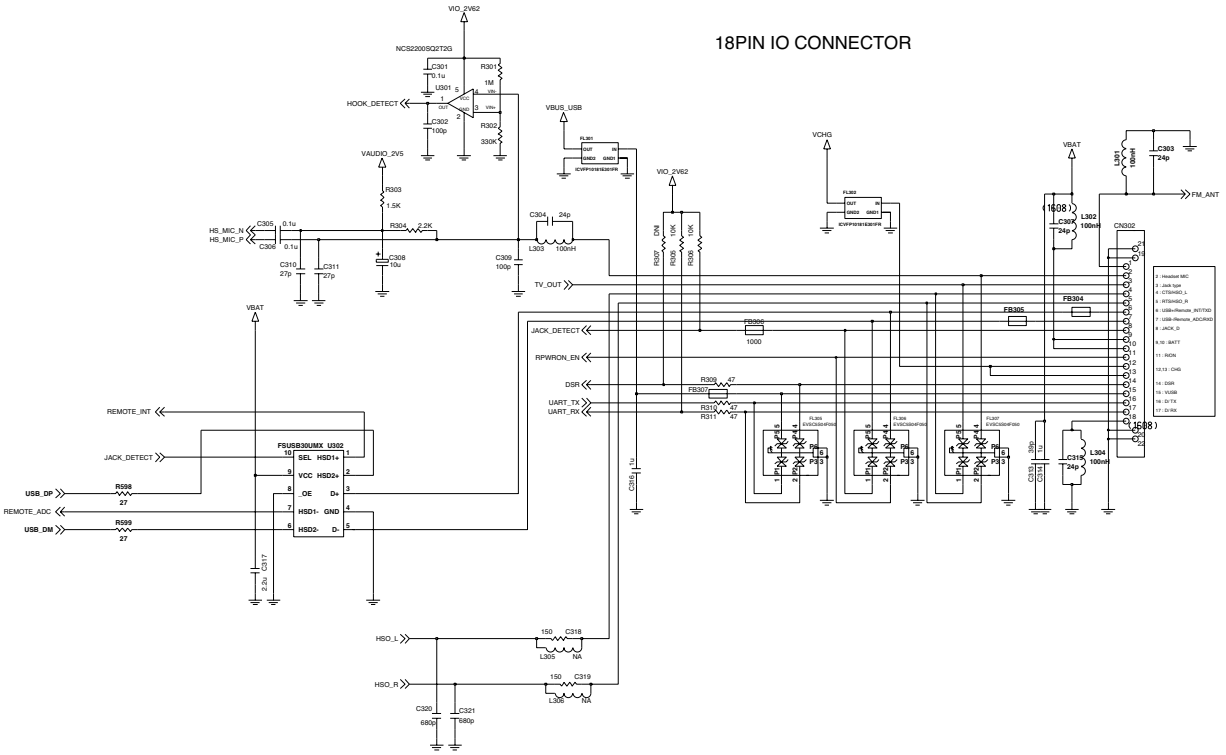



**Figure 31 MMI 18pin connector circuit**

# 4. RF circuit technical brief

## 4.1 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.

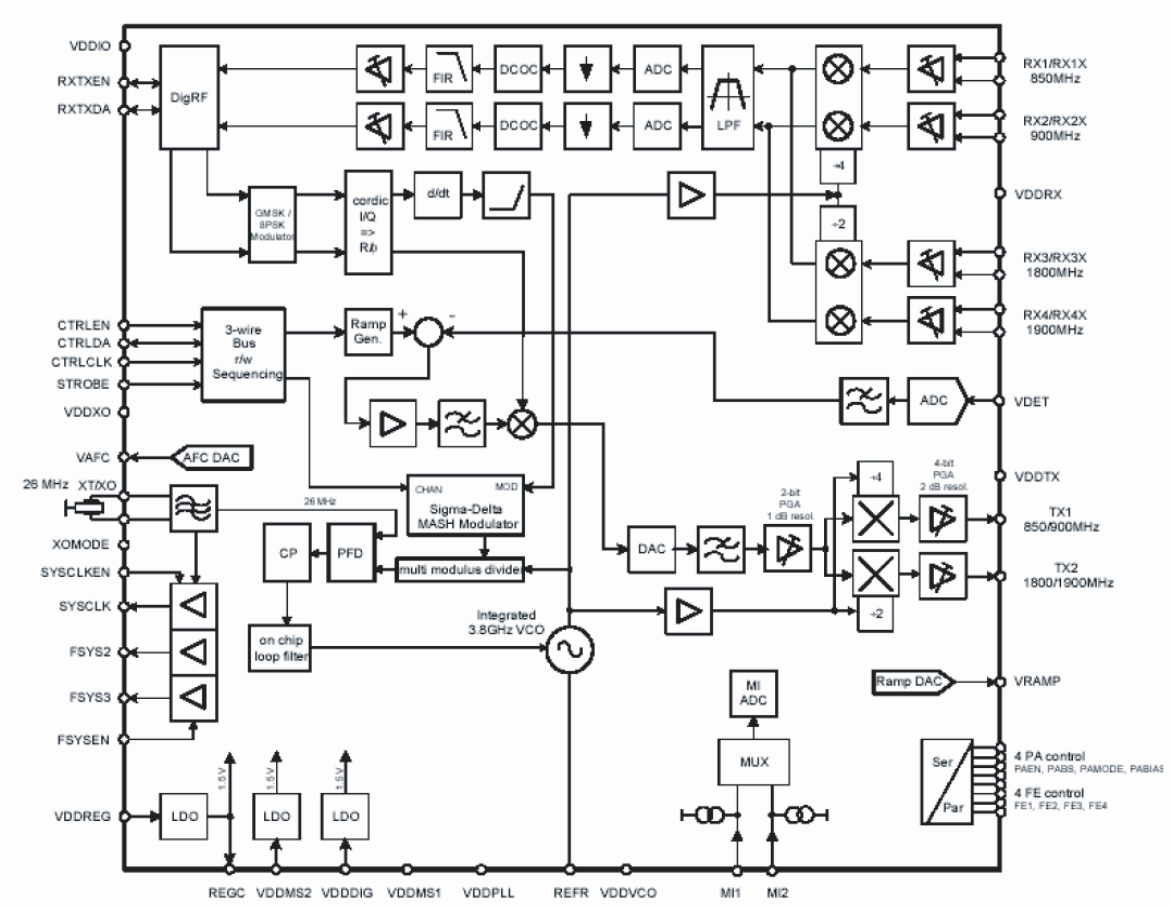



**Figure 32. PMB 6272 Function Block Diagram**

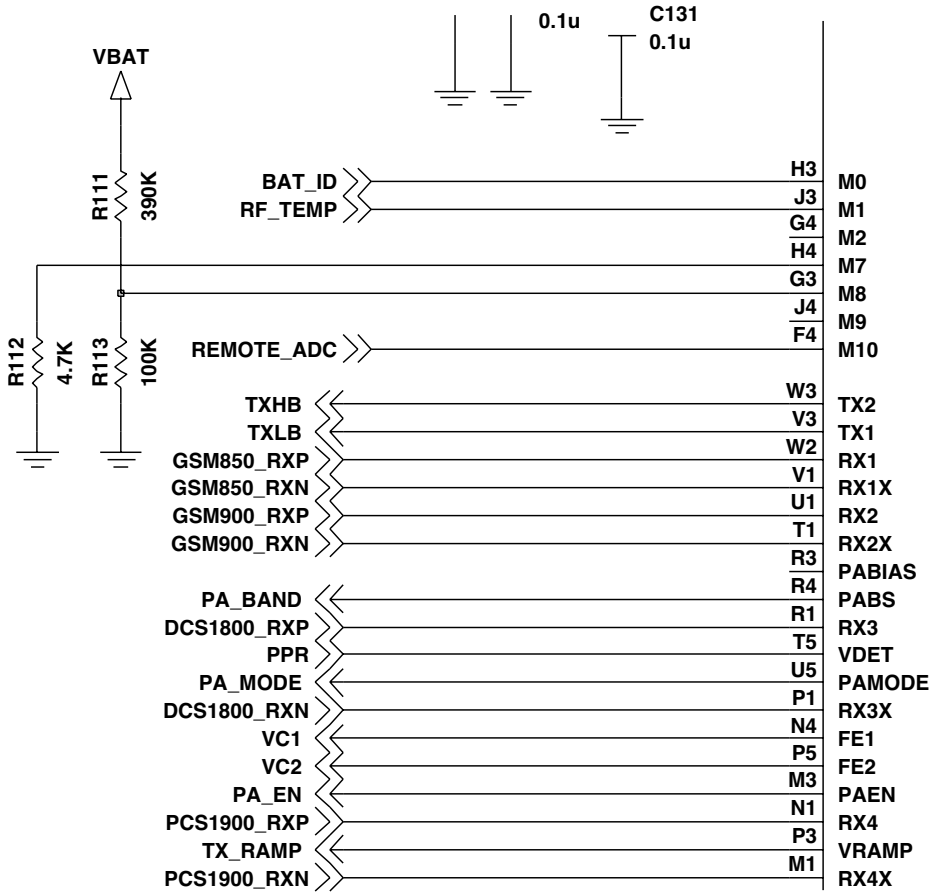



**Figure 33 TX IQ**

## 4.2 Receiver part

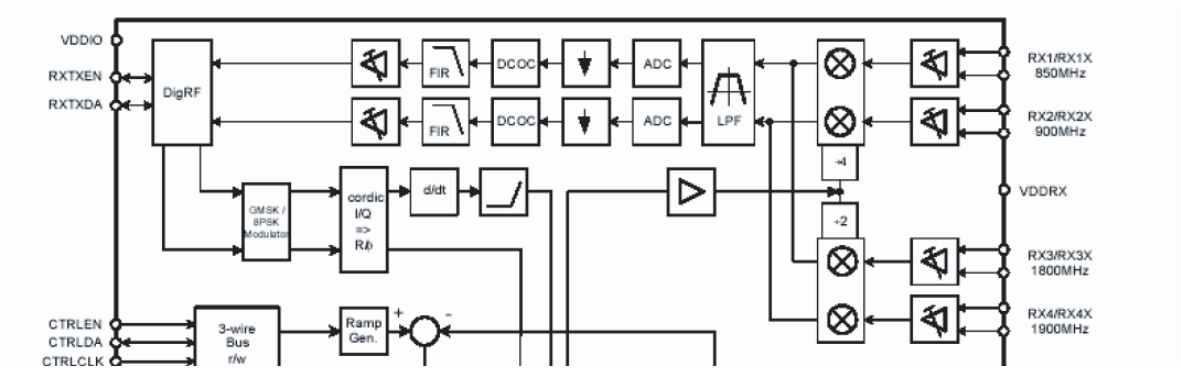



**Figure 34. Receiver Block Diagram of S-GOLDradio**

The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 30). 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.

## 4.3 Transmitter part

The GMSK transmitter supports power class 4 for GSM850 and GSM900 as well as power class 1 for DCS1800 and PCS1900. The digital transmitter architecture is based on a very low power fractional-N Sigma-Delta synthesizer without any external components (see Figure39). The analog I/Q modulation data from the baseband is converted to digital, filtered and transformed to polar coordinates. The phase/frequency signal is further on processed by the Sigma-Delta modulation loop. The output of its associated VCO is divided by four or two, respectively, and connected via an output buffer to the appropriate single ended output pin. This configuration ensures minimum noise level. The 8PSK transmitter supports power class E2 for GSM850 and GSM900 as well as for DCS1800 and PCS1900. The digital transmitter architecture is based on a polar modulation architecture, where the analog modulation data (rectangular I/Q coordinates) is converted to digital data stream and is subsequently transformed to polar coordinates by means of a CORDIC algorithm. The resulting amplitude information is fed into a digital multiplier for power ramping and level control. The ready processed amplitude signal is applied to a DAC followed by a low pass filter which reconstructs the analog amplitude information. The phase signal from the CORDIC is applied to the Sigma-Delta fractional-N modulation loop. The divided output of its associated VCO is fed to a highly linear amplitude modulator, recombining amplitude and phase information. The output of the amplitude modulator is connected to a single ended output RF PGA for digitally setting the wanted transmit power. The PA interface of SMARTi-PM supports direct control of standard dual mode power amplifiers (PA's) which usually have a power control input VAPC and an optional bias control pin VBIAS for efficiency enhancement. In GMSK mode, the PA is in saturated high efficiency mode and is controlled via its VAPC pin directly by the baseband ramping DAC. In this way both up- / down-ramping and output power level are set. In 8PSK mode, the ramping functionality is assured by an on-chip ramping generator, whereas output power is controlled by the PGA's as described above.

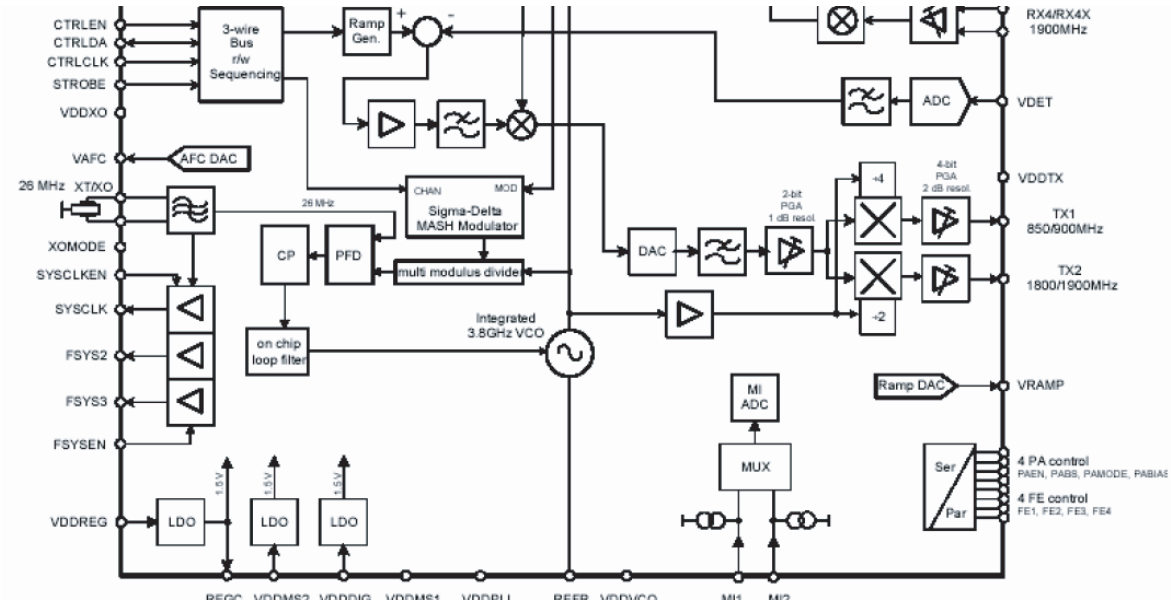



**Figure 35. Transmitter Architecture Block Diagram**

## 4.4 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 (OLGA²). 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.

## 4.5 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").

## 4.6 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.

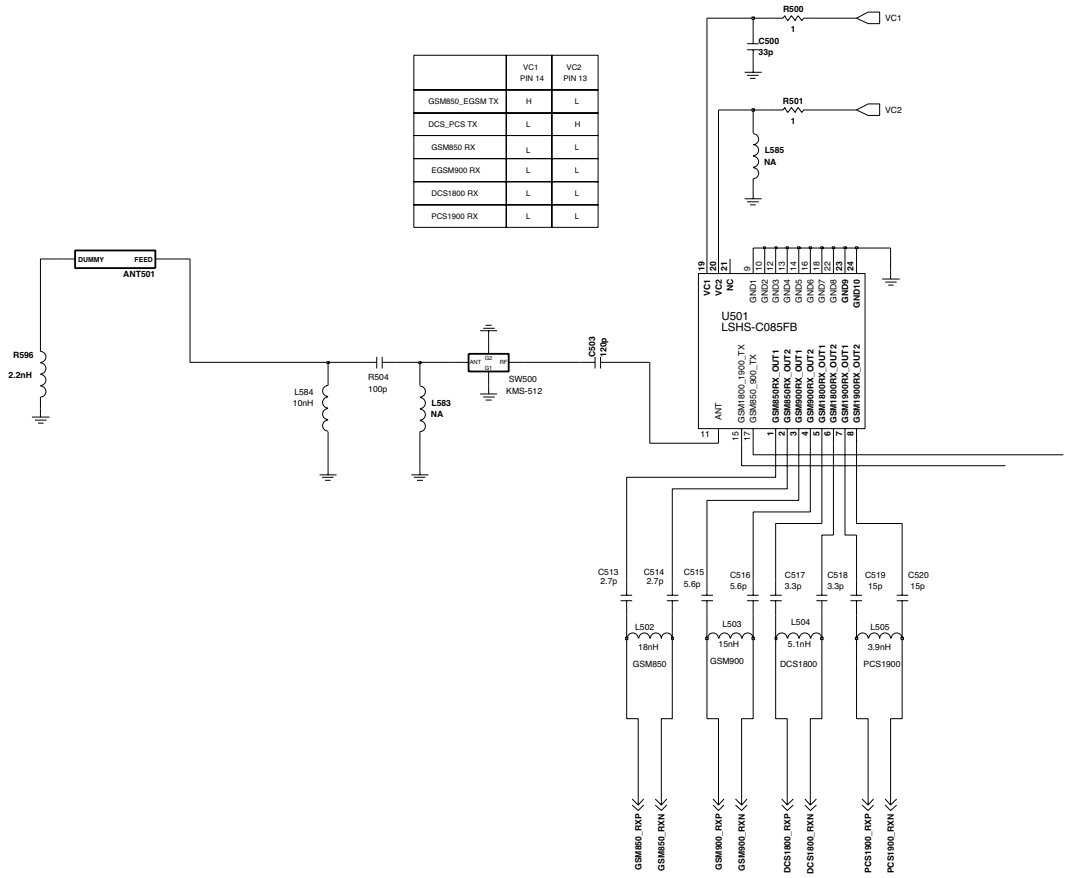



**Figure 36. FEM Circuit Diagram**

## 4.7 Power Amplifier Module

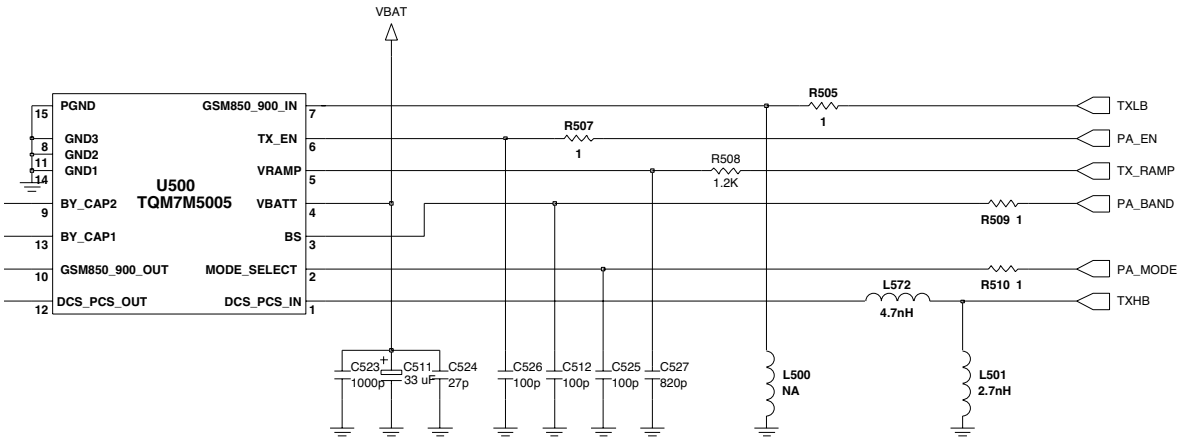



**Figure 37. PA Module**

subsystems

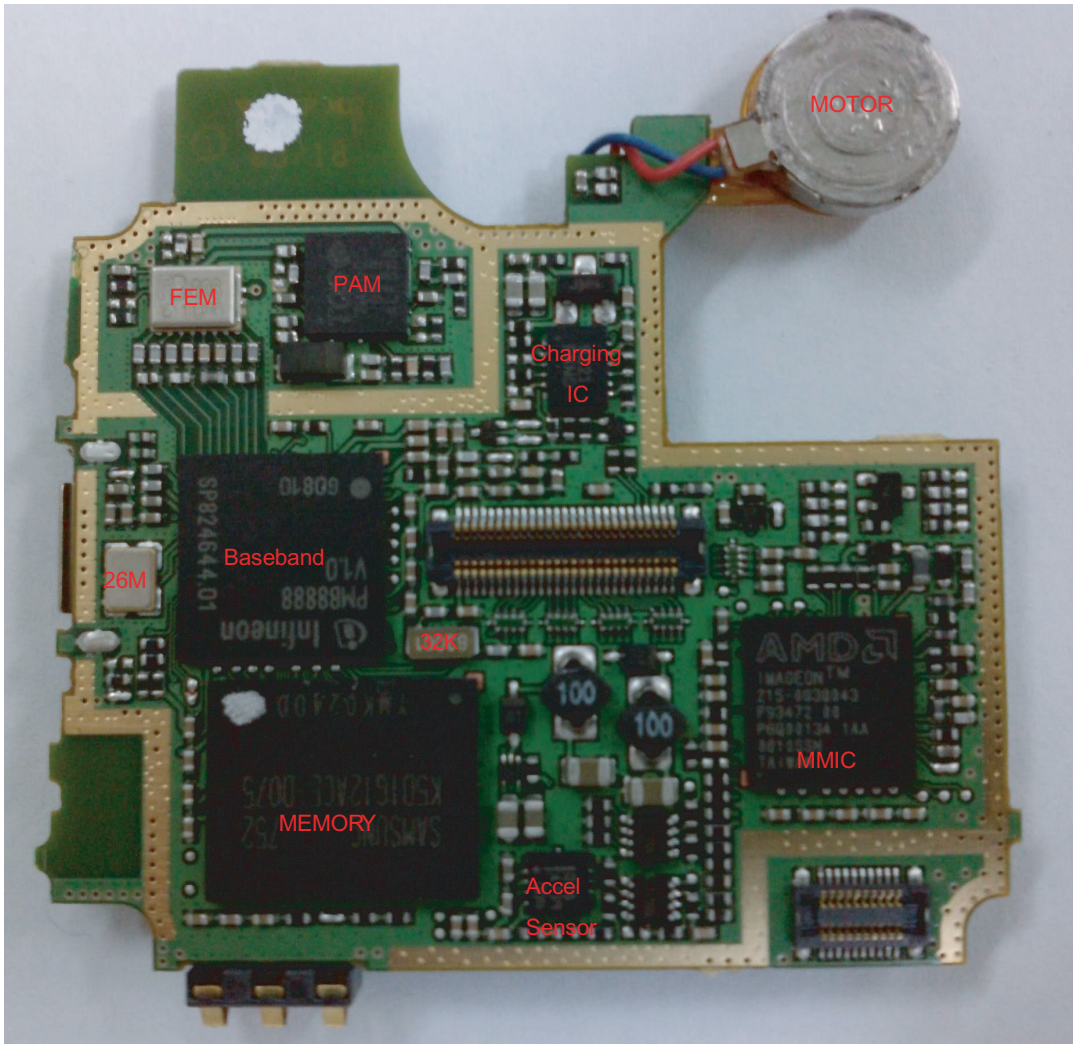
| PIN | Name | Description |
|---|---|---|
| 1 | MODE GMSK/EDGE | Power control mode. L=GMSK, H=EDGE |
| 2 | DCS/PCS_IN | RF input(DCS/PCS) DC Blocked |
| 3 | BS | Band Select |
| 4 | REVD1 | Reserved |
| 5 | VBATT | DC Supply |
| 6 | VRAMP | Analog PA Bias Control(All Bands, EDGE Mode)<br>Analog Output 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 |
| 13~15 | GND | Ground |
| 16 | DCS/PCS_OUT RF | Output(DCS/PCS) DC BlockedD |
| Pad | GND PAD GRID | Ground pad grid is device underside. |

## 4.8 Mode Selection

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

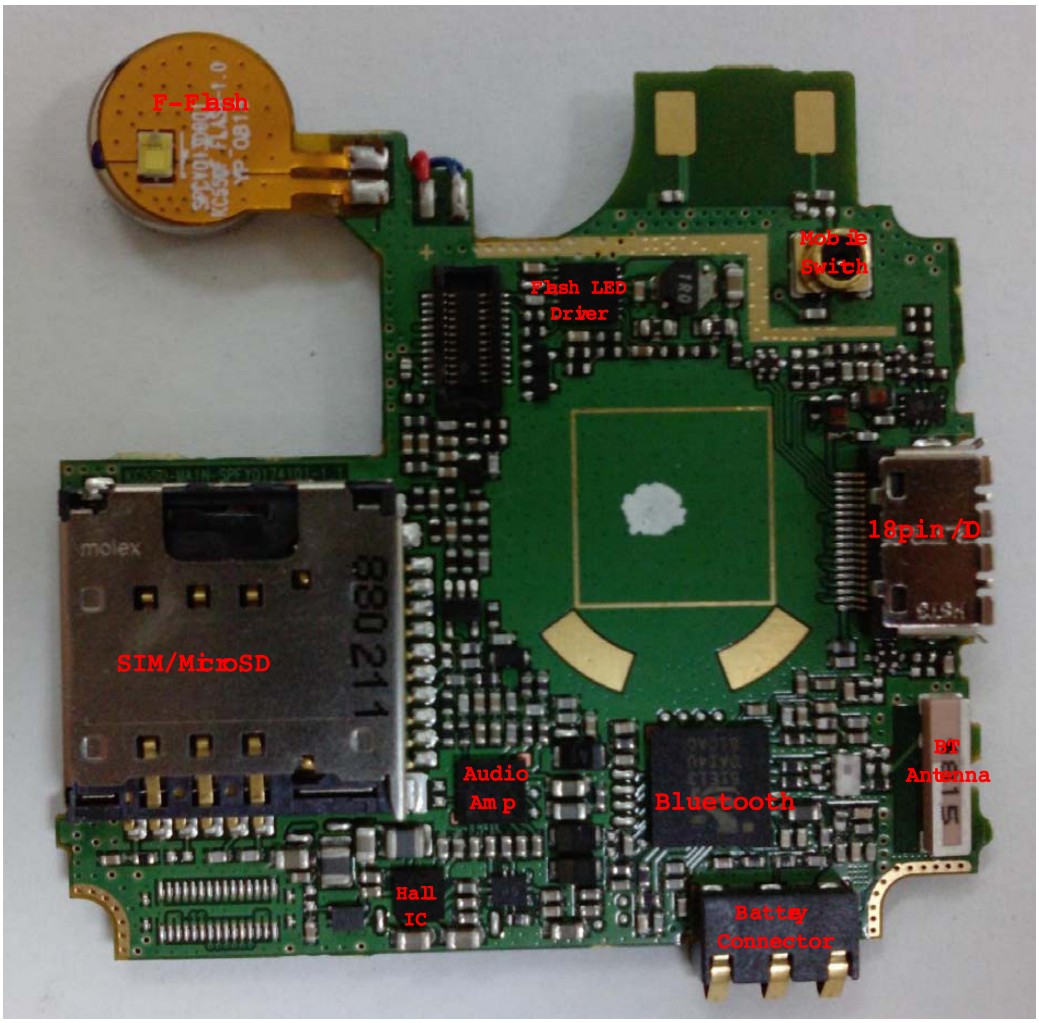
# 5. PCB layout

## 5.1 Main PCB component placement

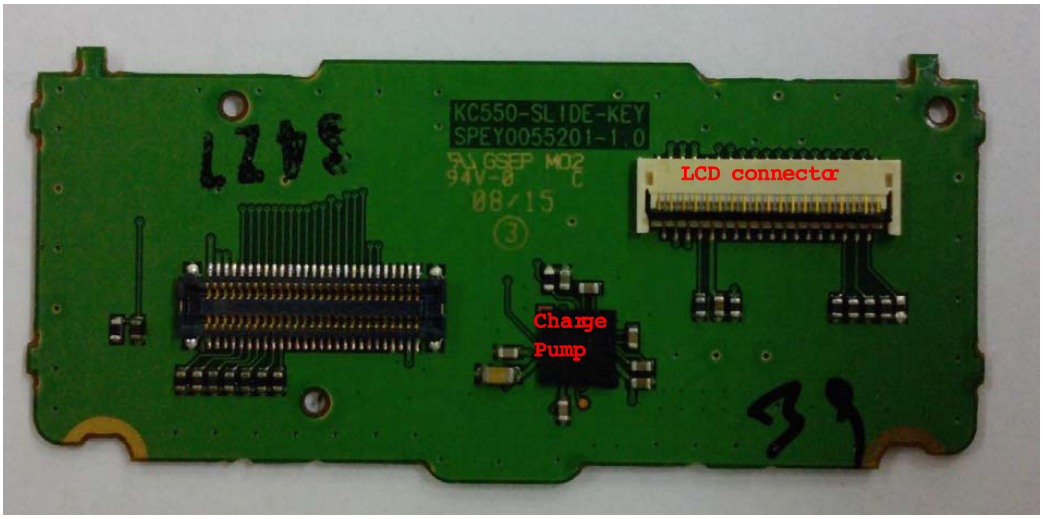



**Main PCB Top**

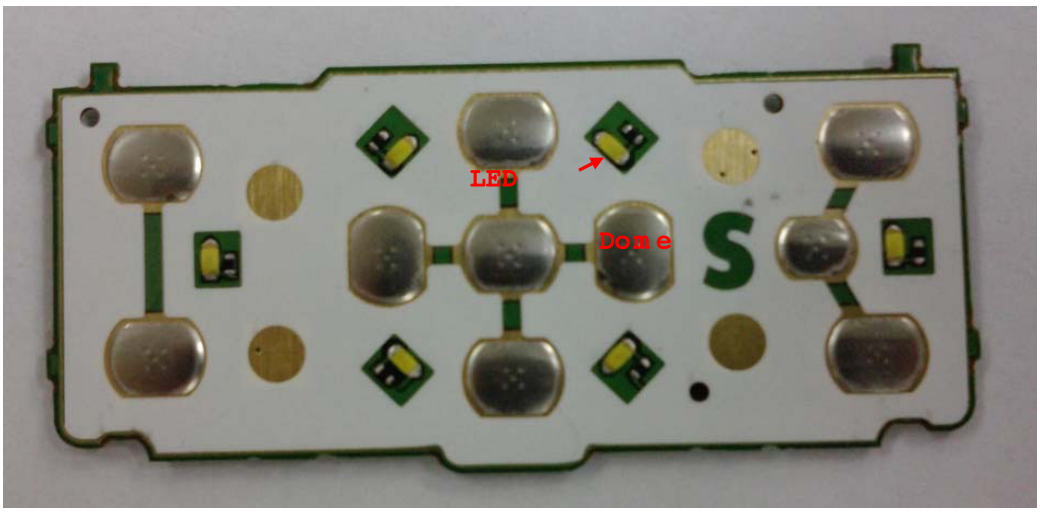
## 5. PCB layout




**Main PCB bottom**

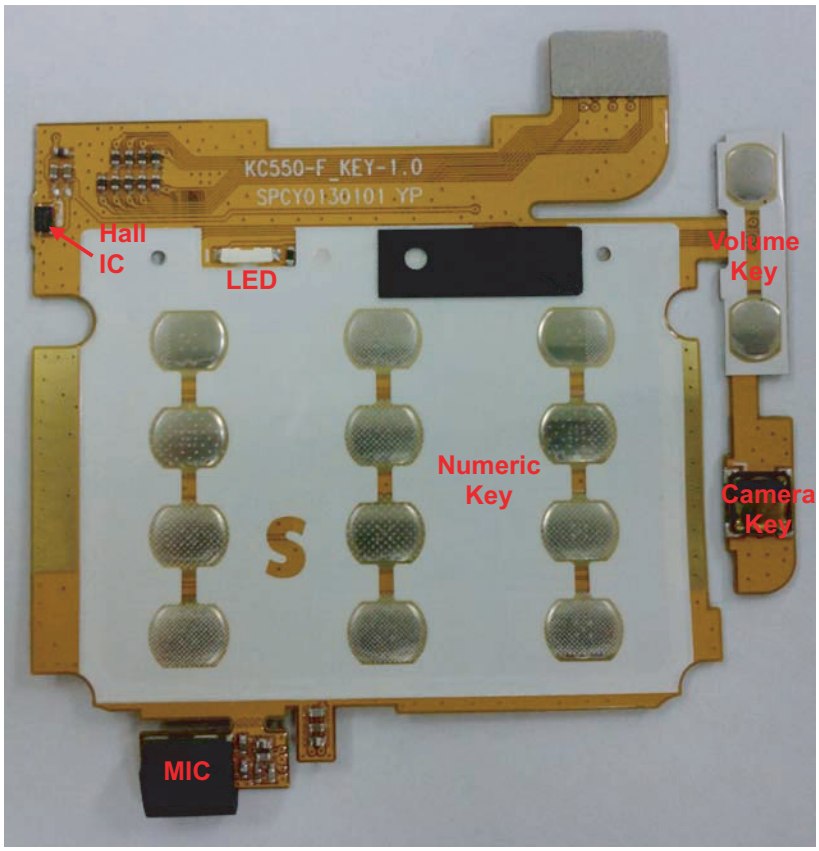



**KEY PCB Bottom**

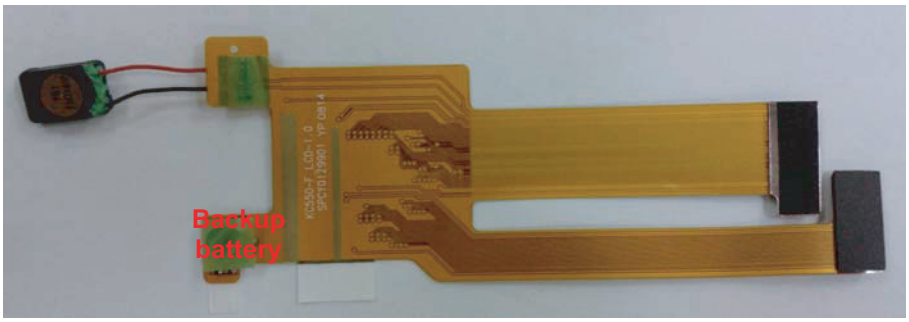



**KEY PCB TOP**

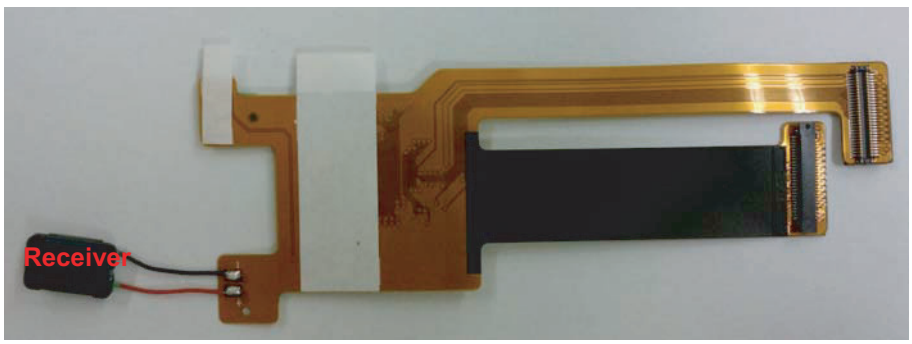
## 5. PCB layout




**F-KEY TOP**



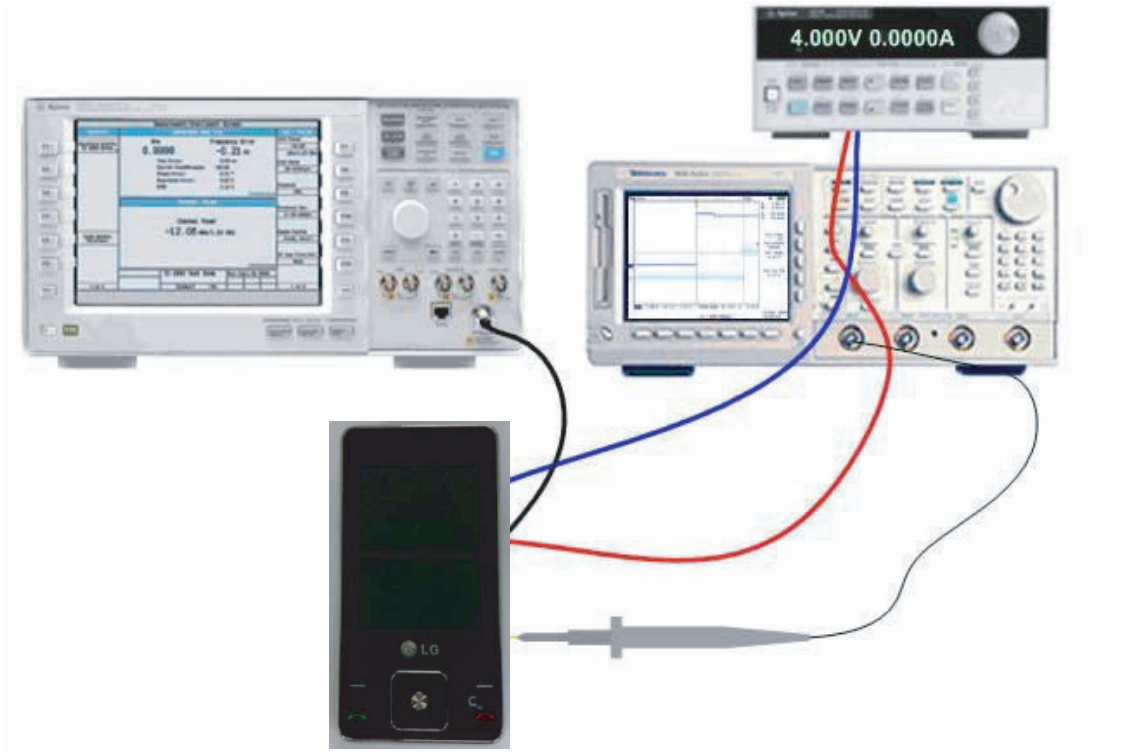

**F-LCD TOP**




**F-LCD Bottom**

# 6. Trouble shooting

## 6.1 Trouble shooting test setup




**Equipment setup**

Power on all of test equipment

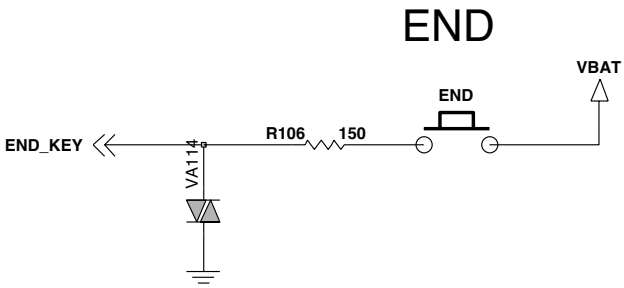
- Connect PIF-UNION JIG or dummy battery to the DUT for power up.
- Connect mobile switch cable between Communication test set and DUT when you need to make a phone call.
- Follow trouble shooting procedure

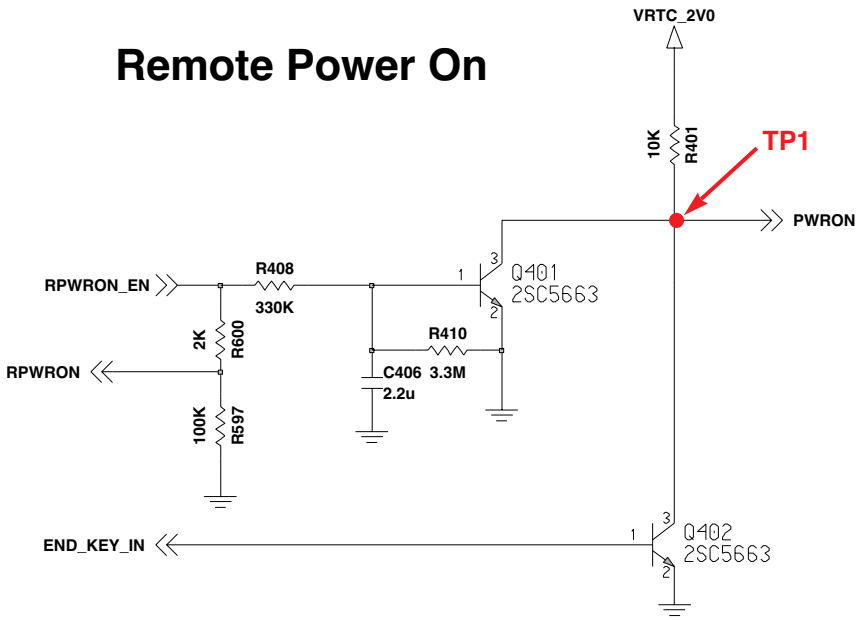
## 6.2 Power on Trouble

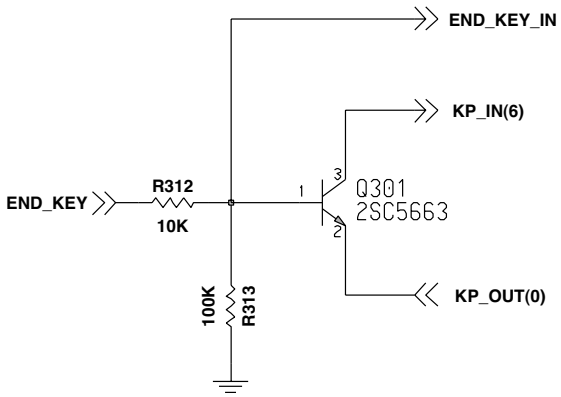
**Check Points**

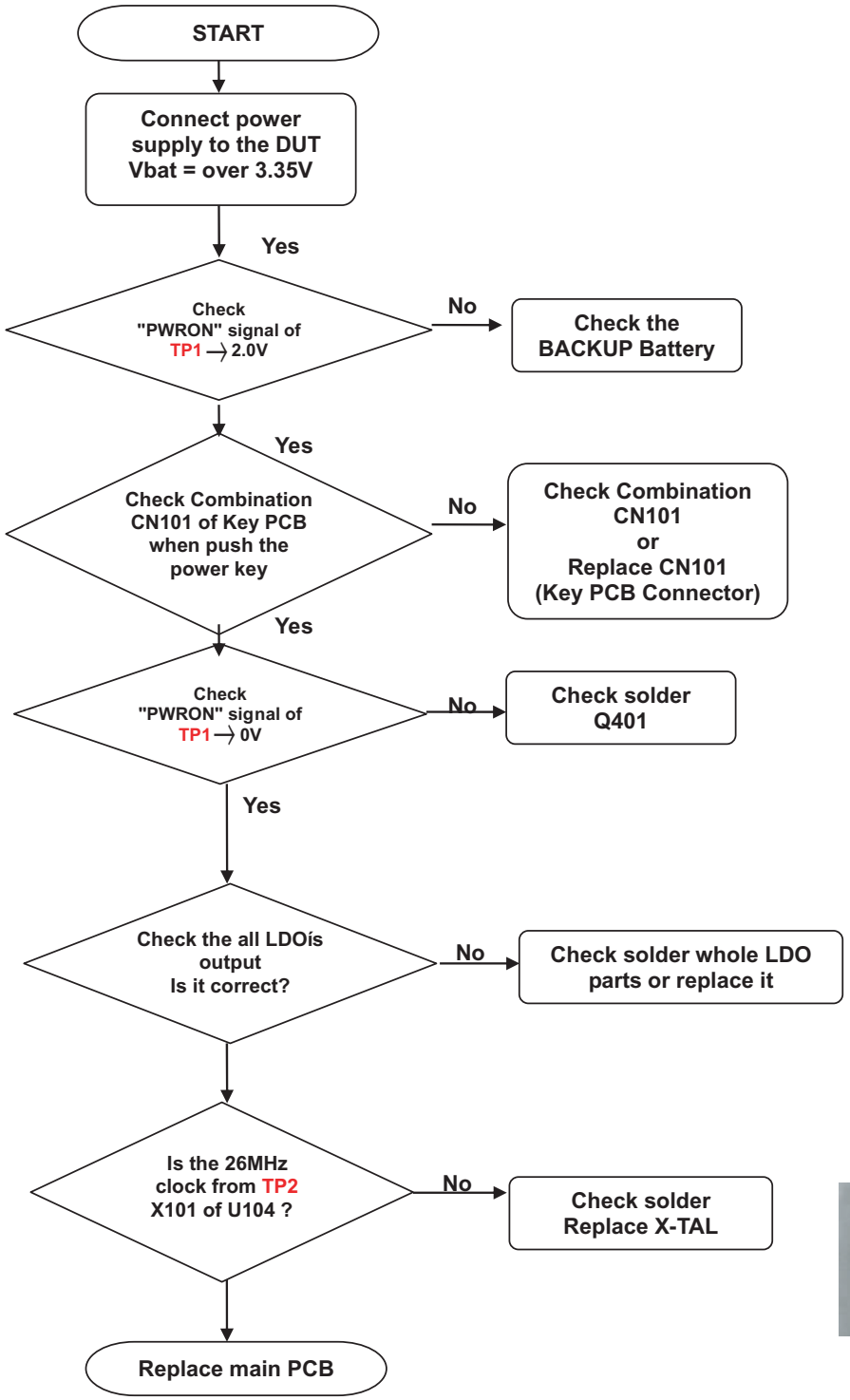
-Battery Voltage( Need to over 3.35V)

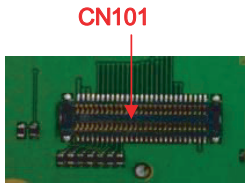
-Power-On Key detection (PWRON signal)

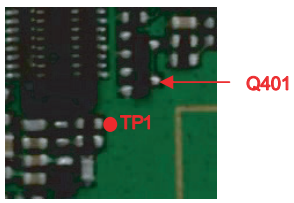




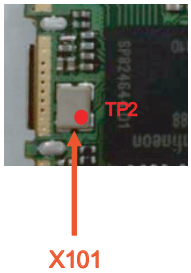




**Linear Low Dropout (LDO) Regulators**

- 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

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  - 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**)
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  - 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**).

## 6.3 Charging trouble

**Check Points**

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

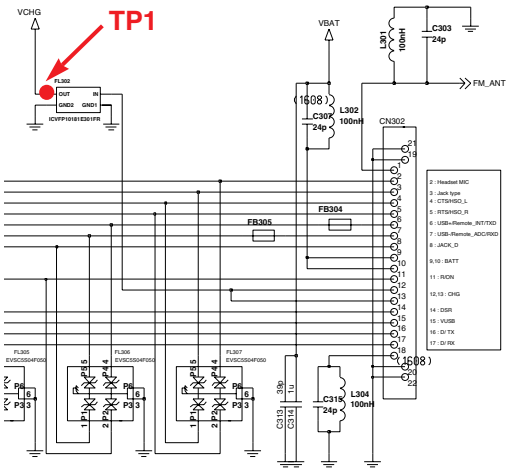
1 Charging method : CC-CV
2 Charger detect voltage : 4.0 V
3 Charging time : 3h
4 Charging current : 450 mA
5 CV voltage : 4.2 V
6 Cutoff current : 100 mA
7 Full charge indication current (icon stop current) : 100 mA
8 Recharge voltage : 4.15 V

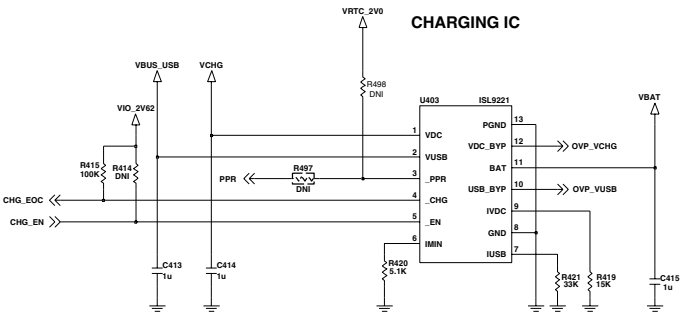
**4.2V~3.76V**

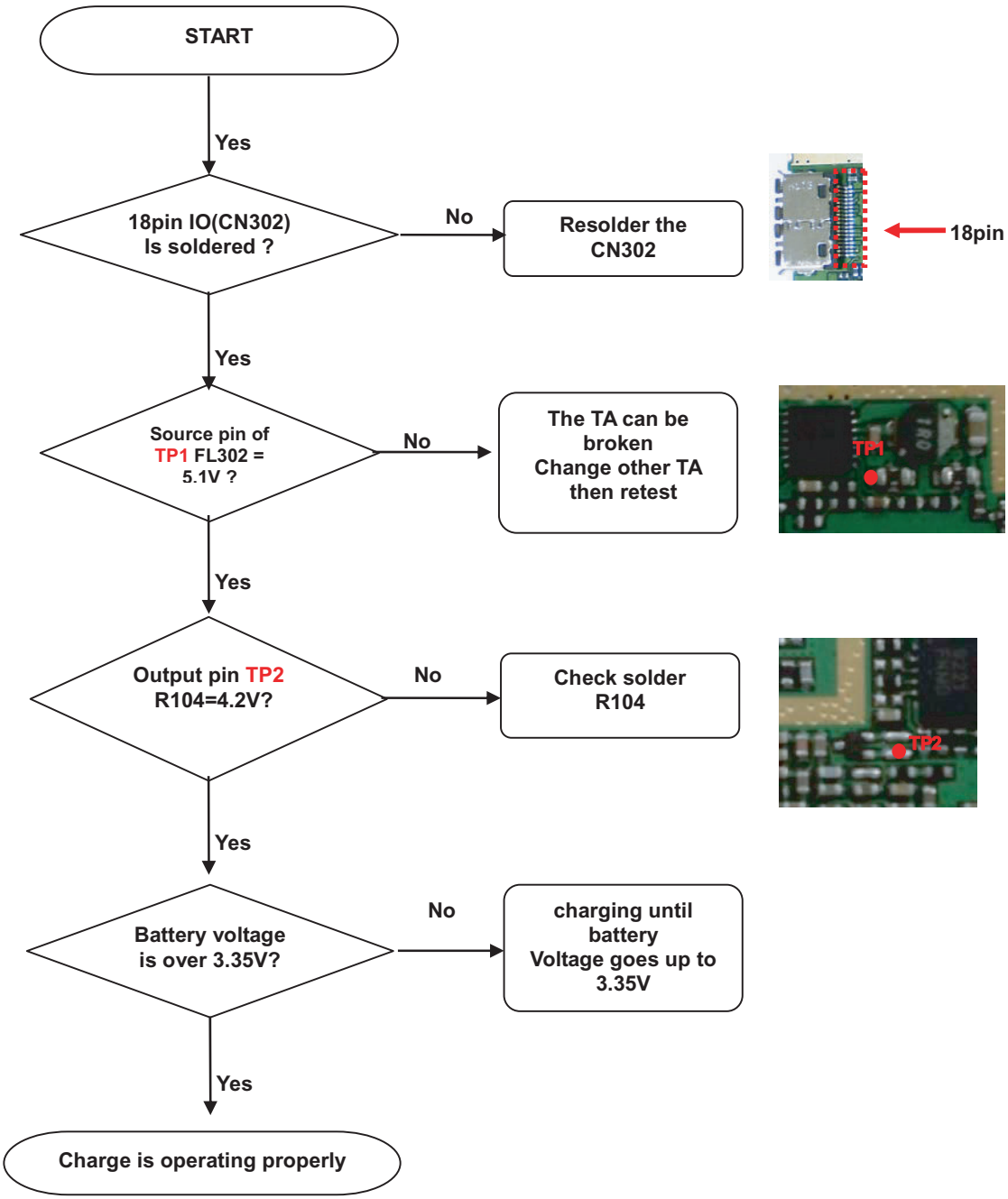
**3.75V~3.68V**

**3.65V~3.41V**

**3.51V~3.41V**



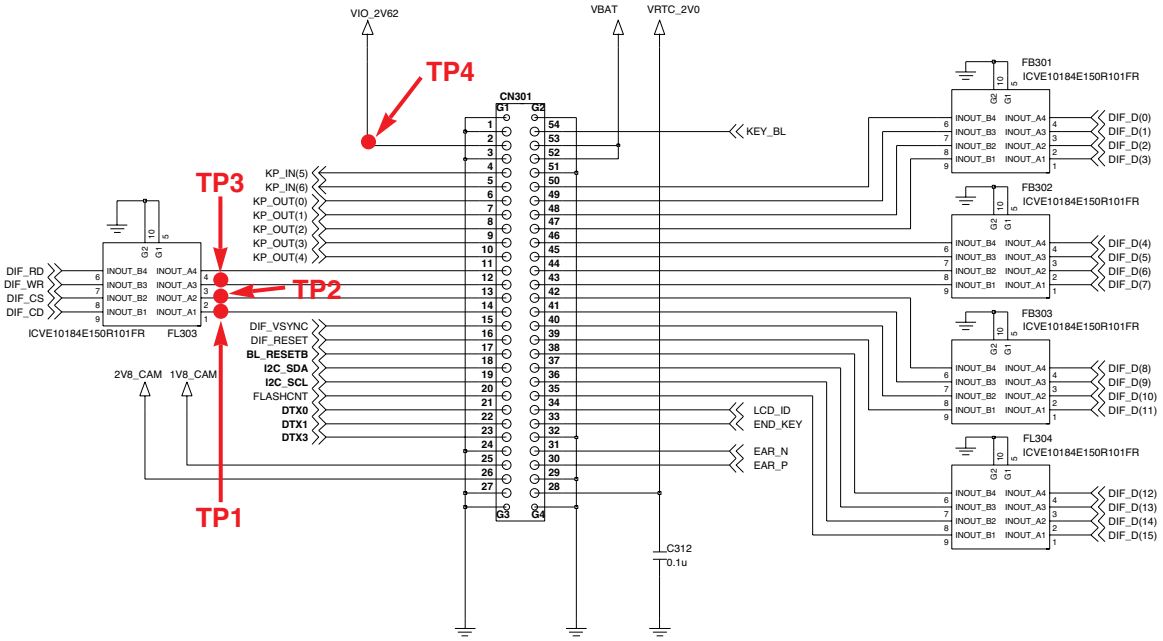



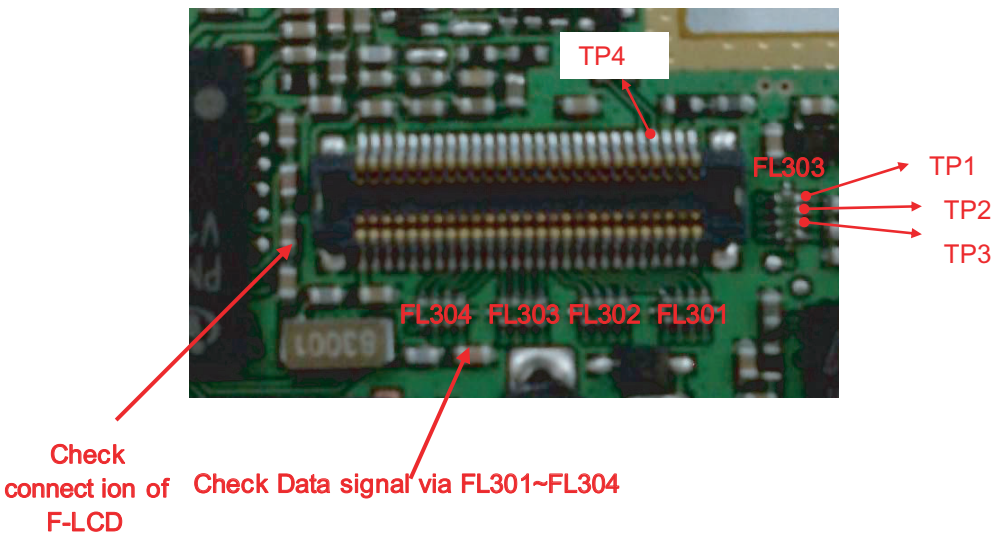


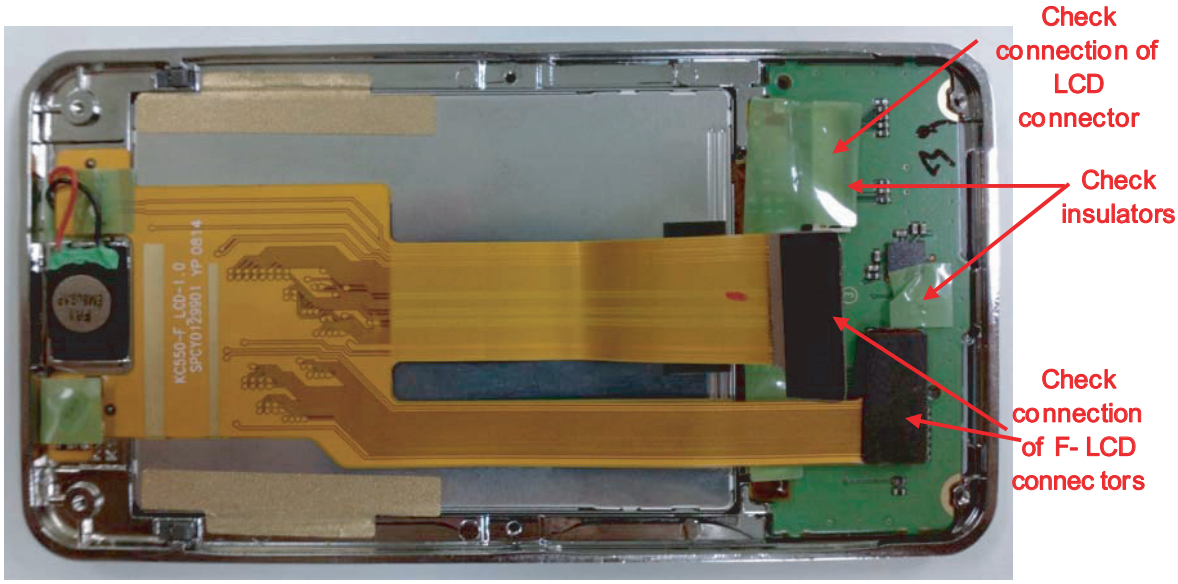
## 6.4 LCD display trouble

**Check Points**

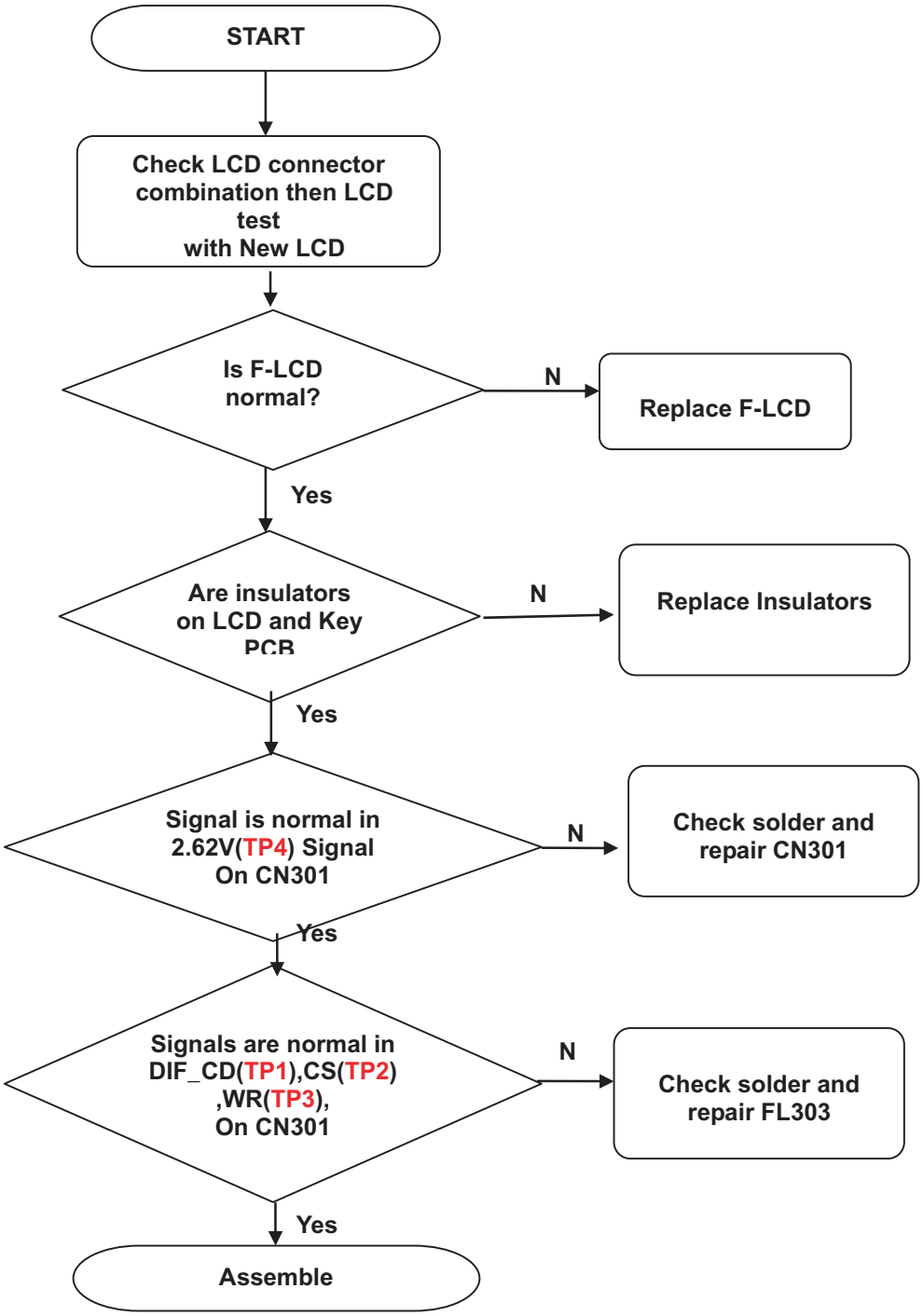
- LCD assembly status ( LCD FPCB, Connector on FPCB)
- EMI filter and connector soldering
- Connector combination





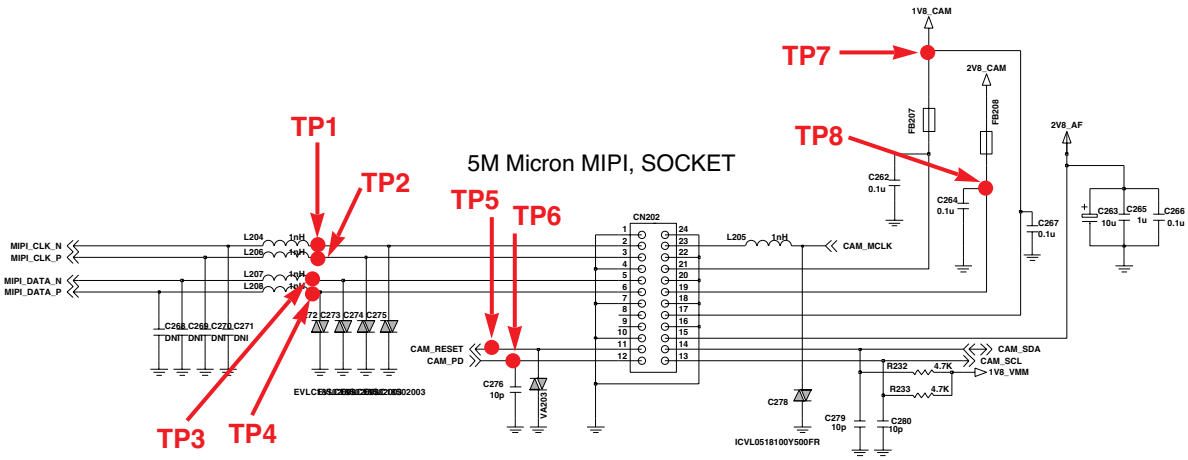
# 6. Trouble shooting

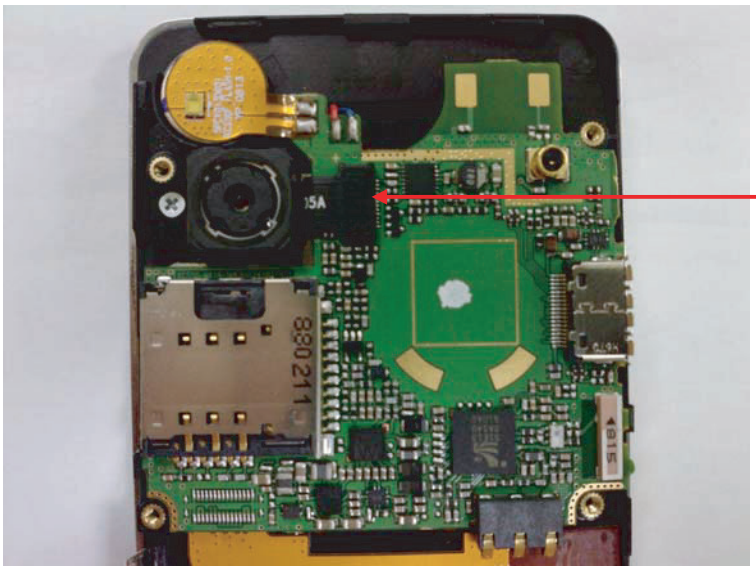


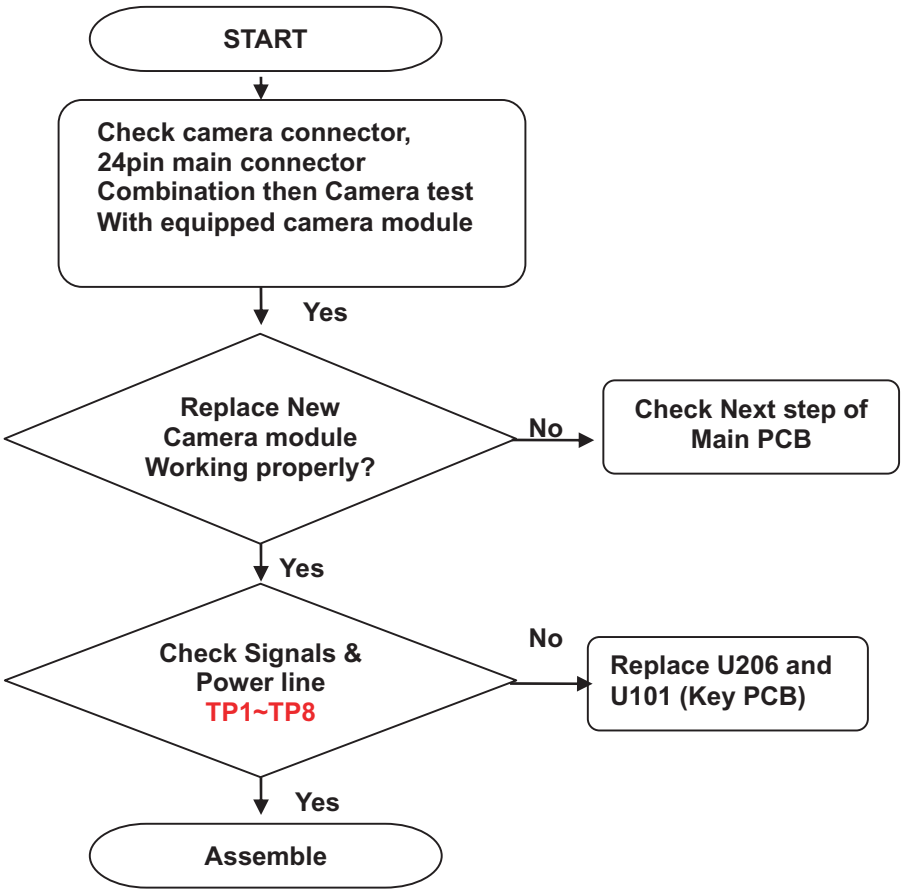
## 6.5 Camera Trouble

**Check Points**

- Connectors combination
- FPCB status





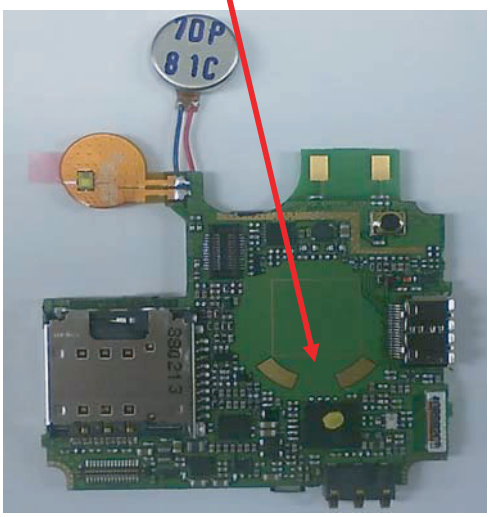
## 6.6 Receiver & Speaker trouble

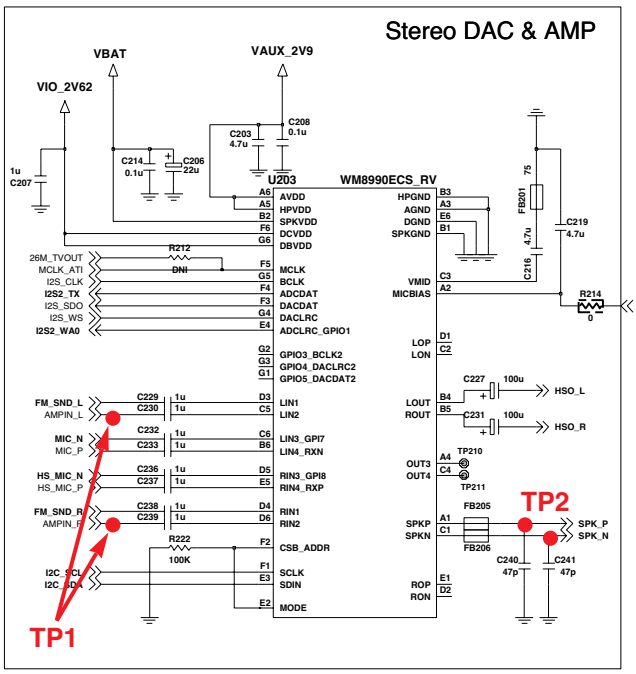
**Check Points**

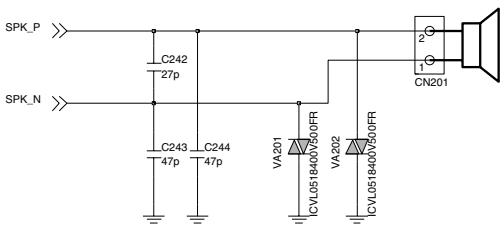
-Speaker pin contact

-Audio amp soldering

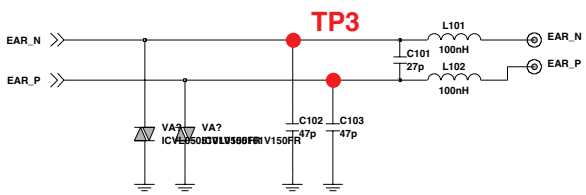
-SUB PMIC soldering



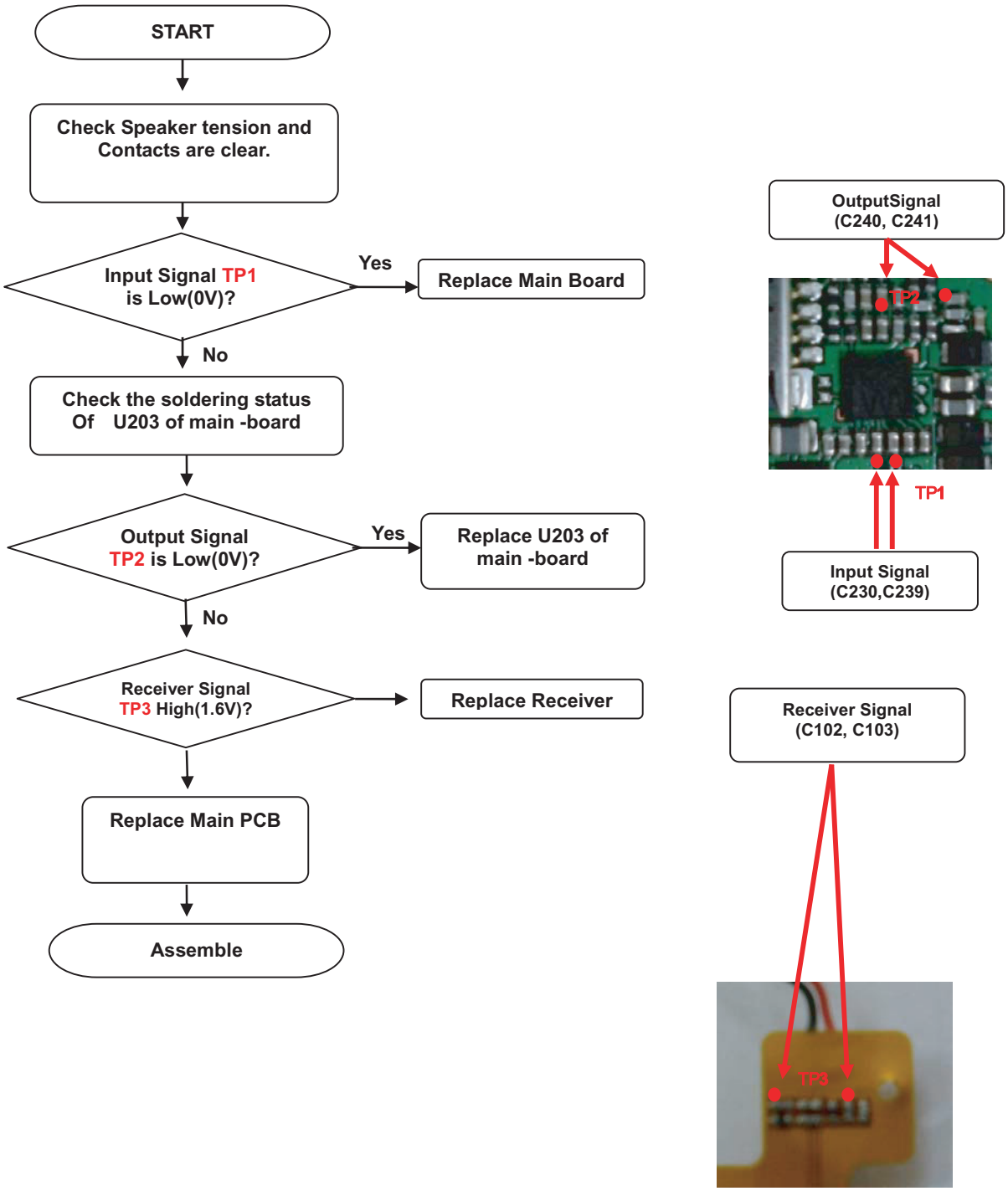



**RECEIVER**



# 6. Trouble shooting



## 6.7 Microphone trouble

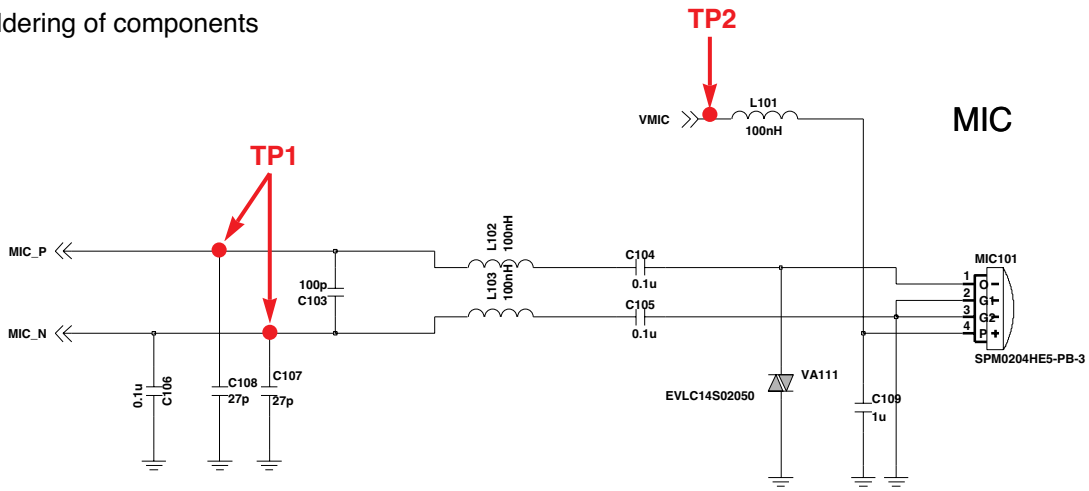
**Check Points**

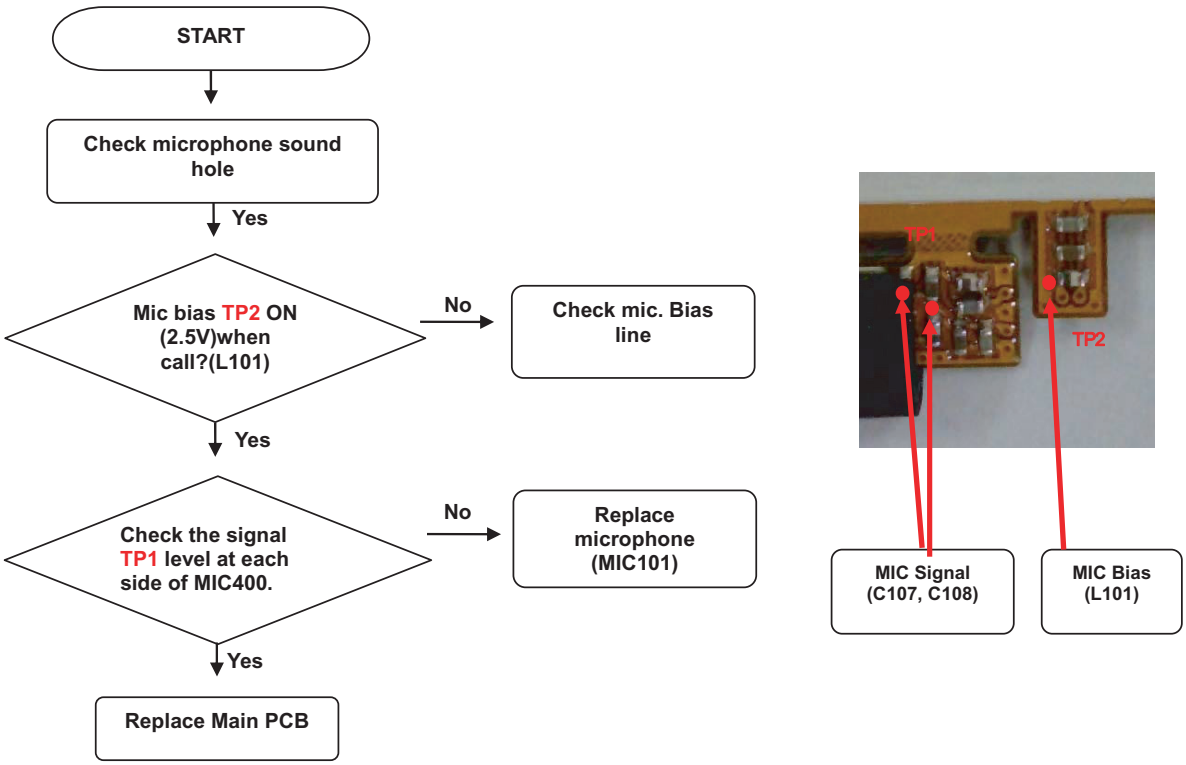
-Microphone hole

-MICBIAS & Signal come from

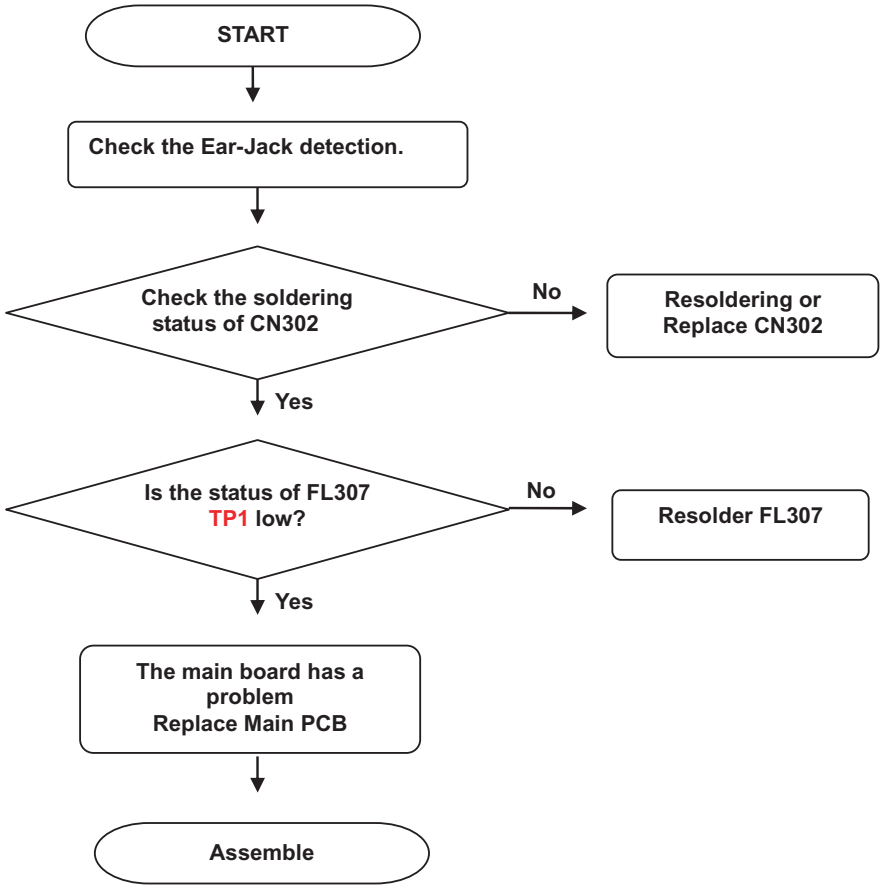
-Audio signal level of the Microphone

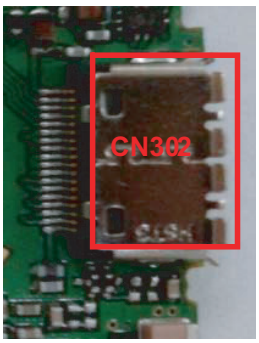
-Soldering of components

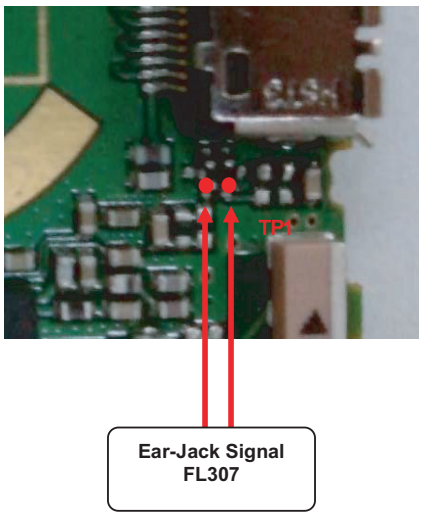


## 6.8 Ear-Mic Jack Detection trouble



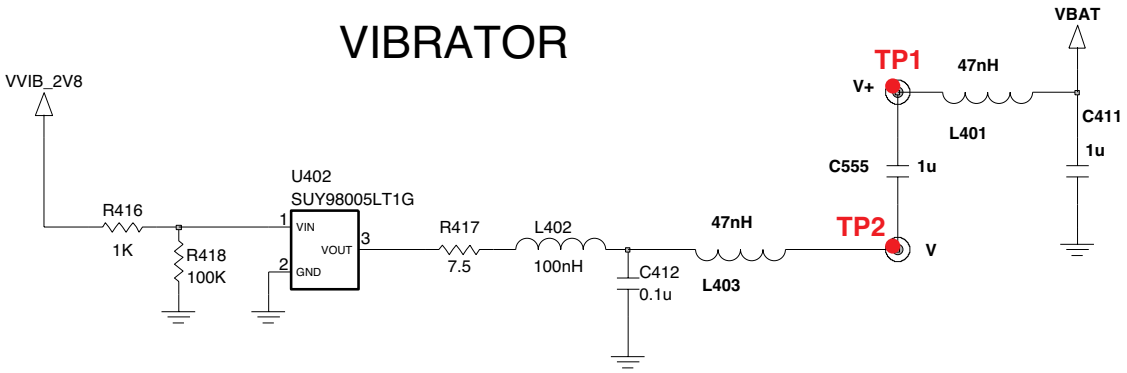



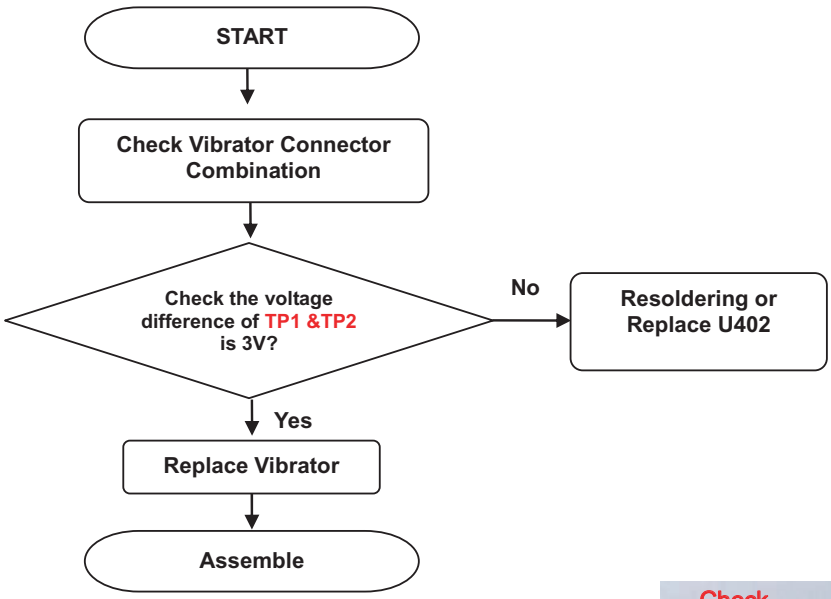



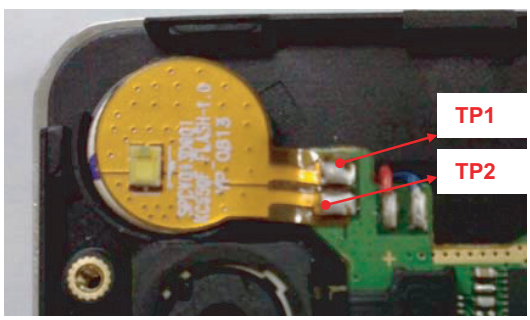
## 6.9 Vibrator trouble

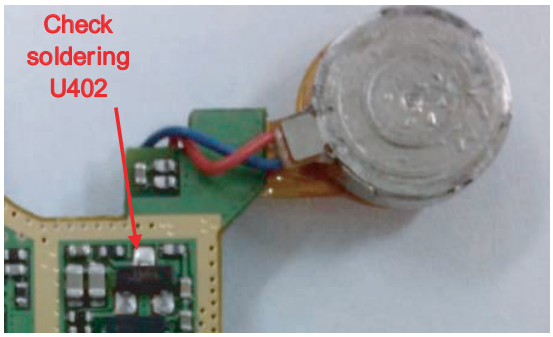
**Check Points**

-Connectors combination



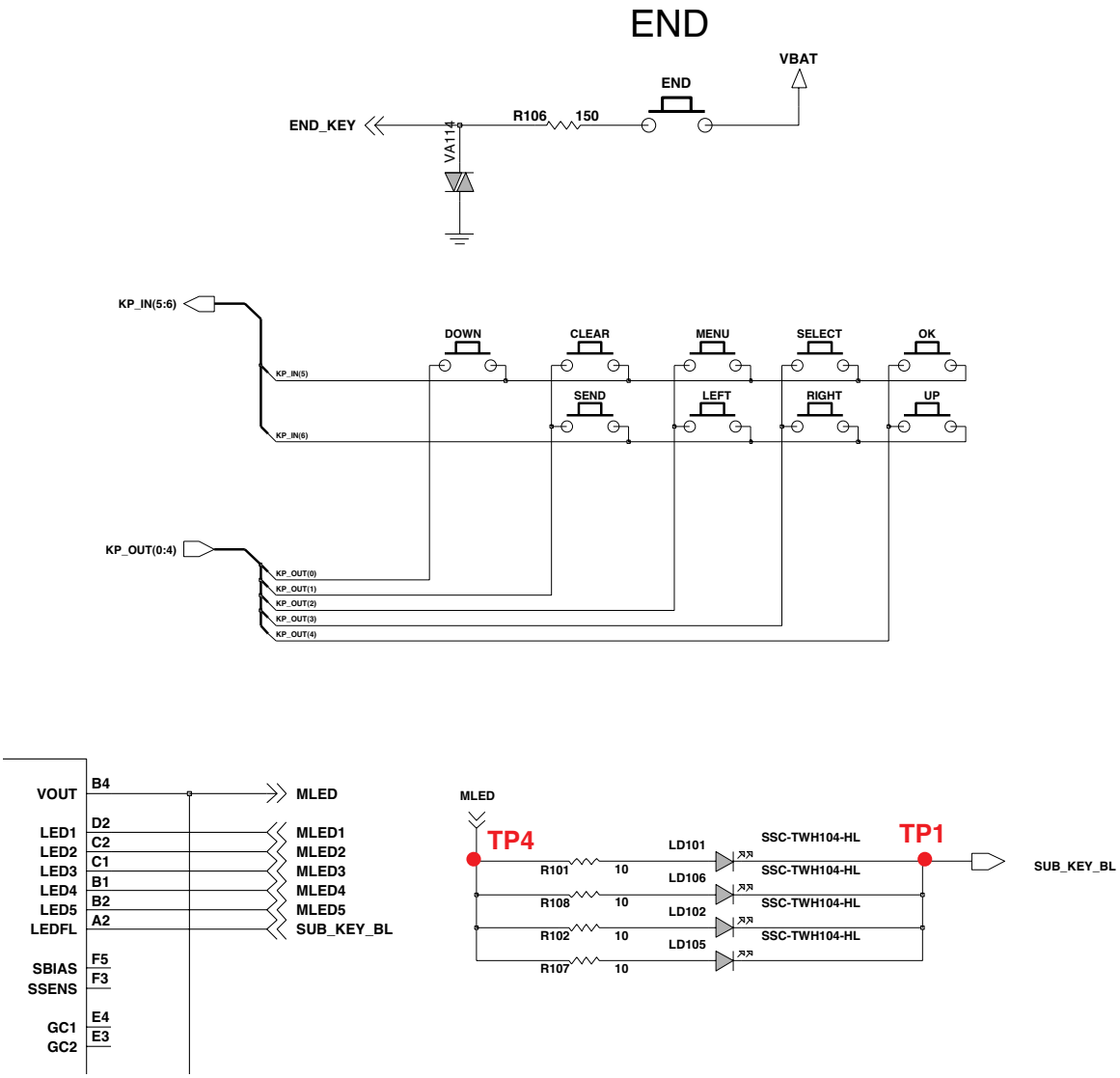



## 6.10 Keypad back light trouble

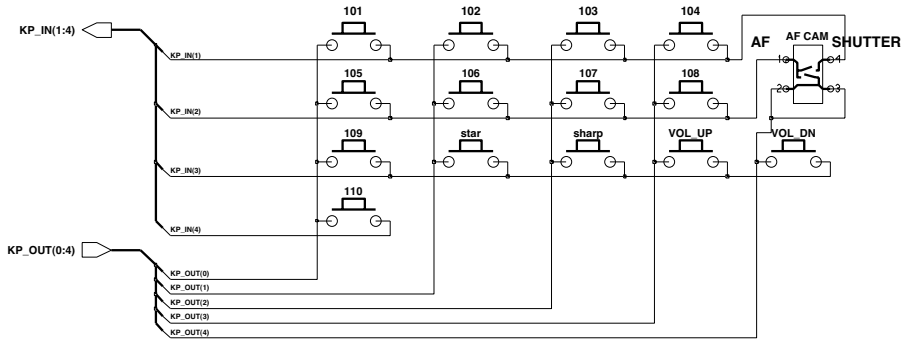
**Check Points**

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

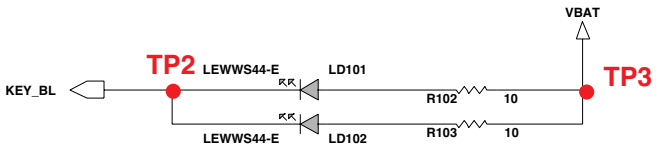


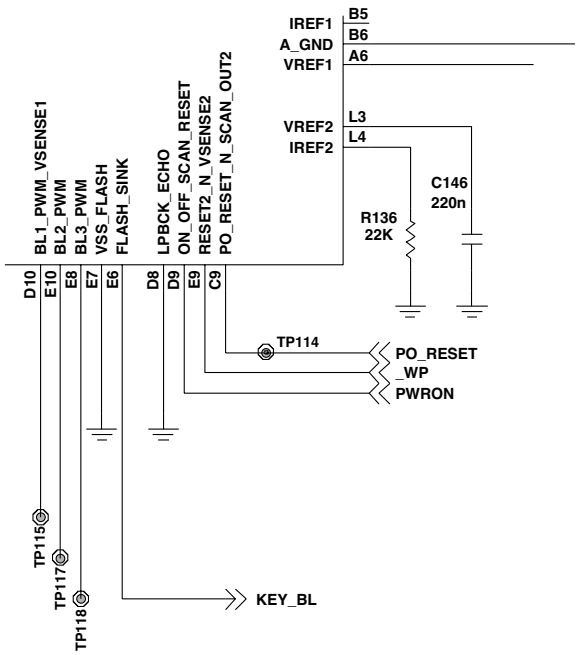

**Key Matrix and LEDs on KEY PCB**

## KEYPAD

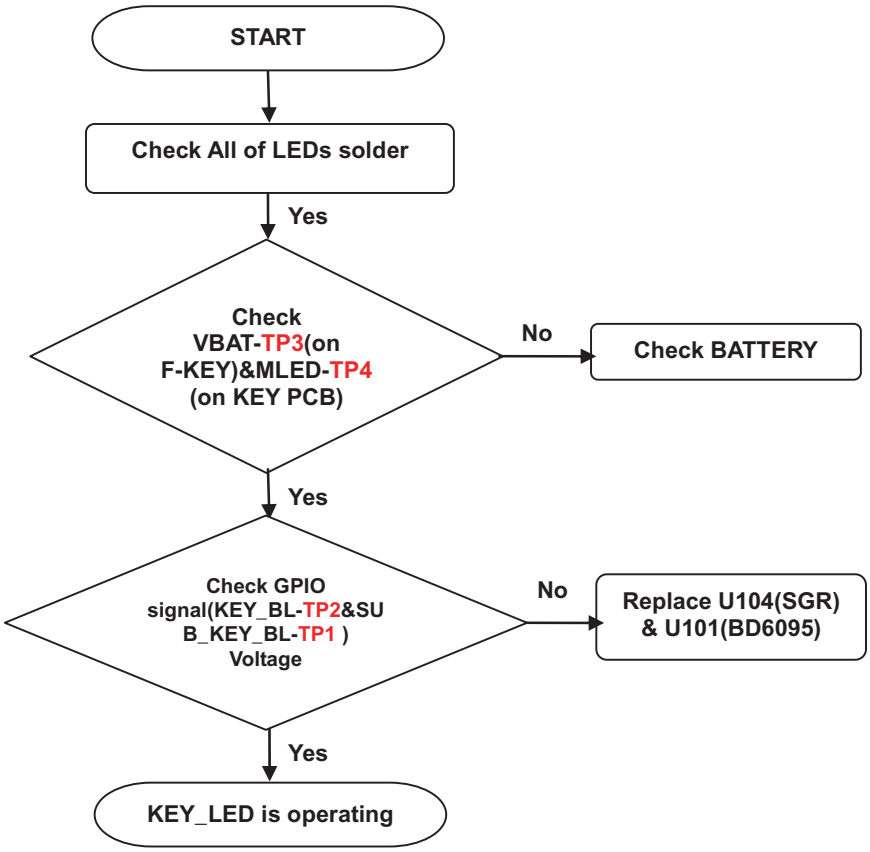



## KEY BACKLIGHT




**Numeric Key Matrix and LEDs on F-KEY**



## 6.11 SIM & uSD trouble

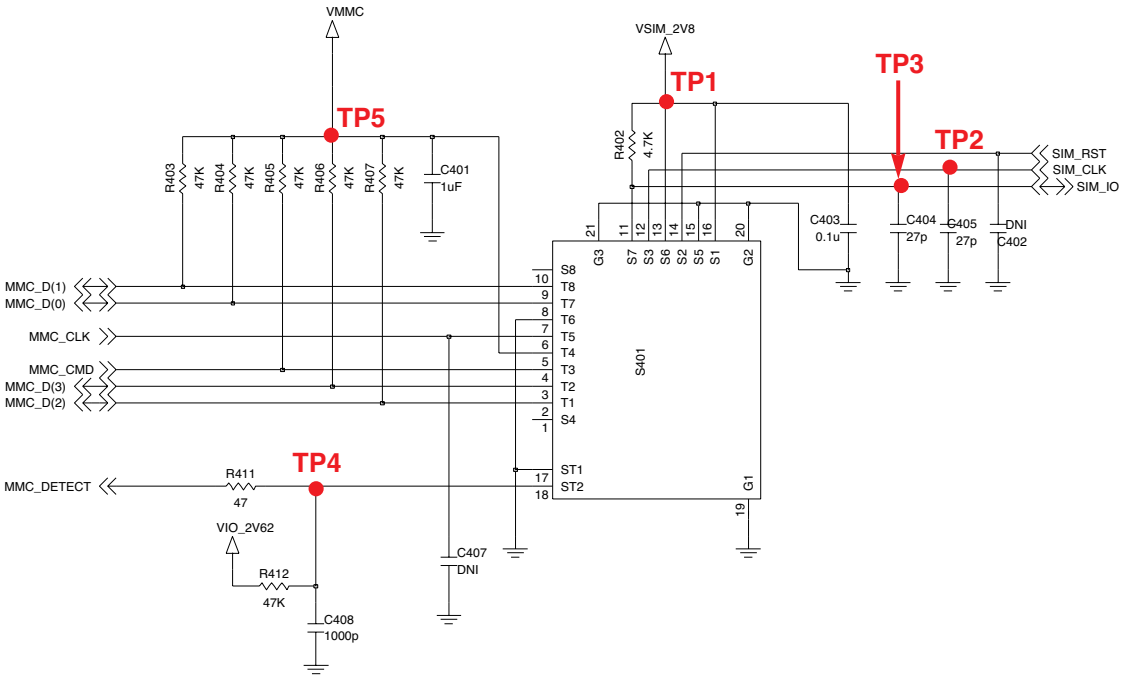
**SIM Check Points**

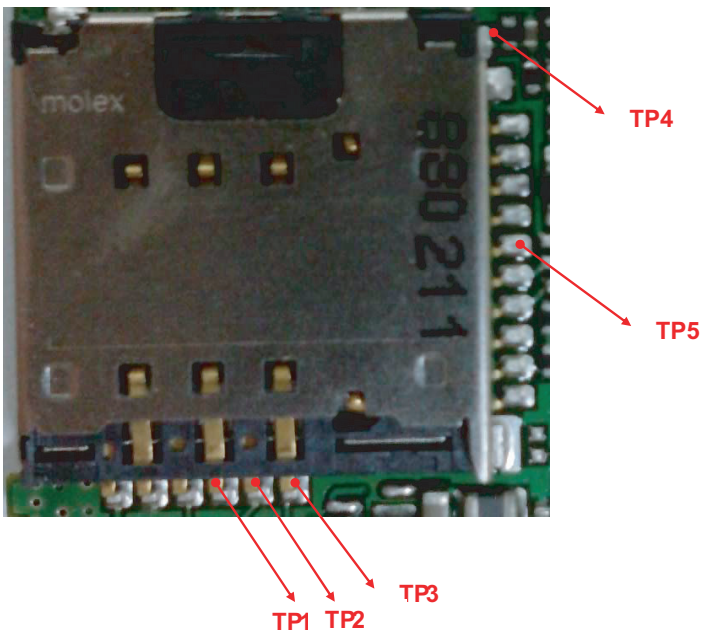
-Power is working

-Socket soldering

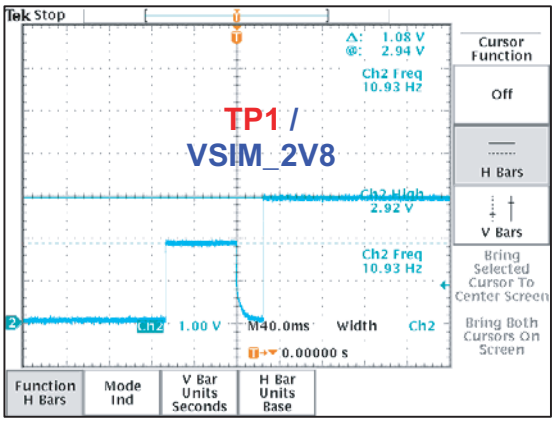
-Proper SIM is used

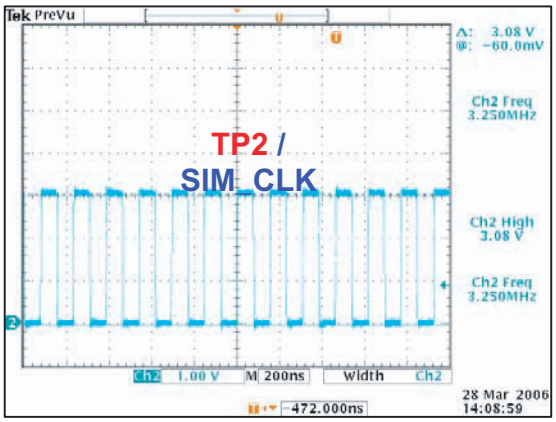
SIM & MMC Connetor

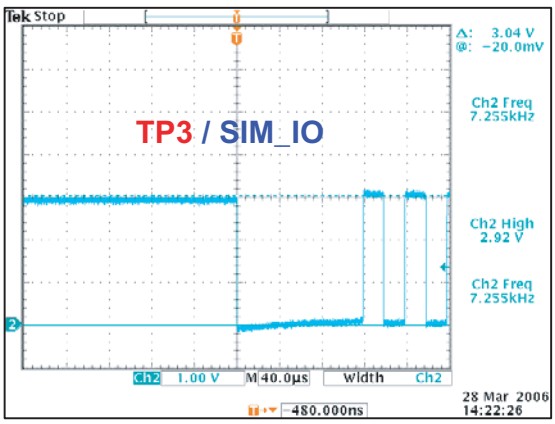


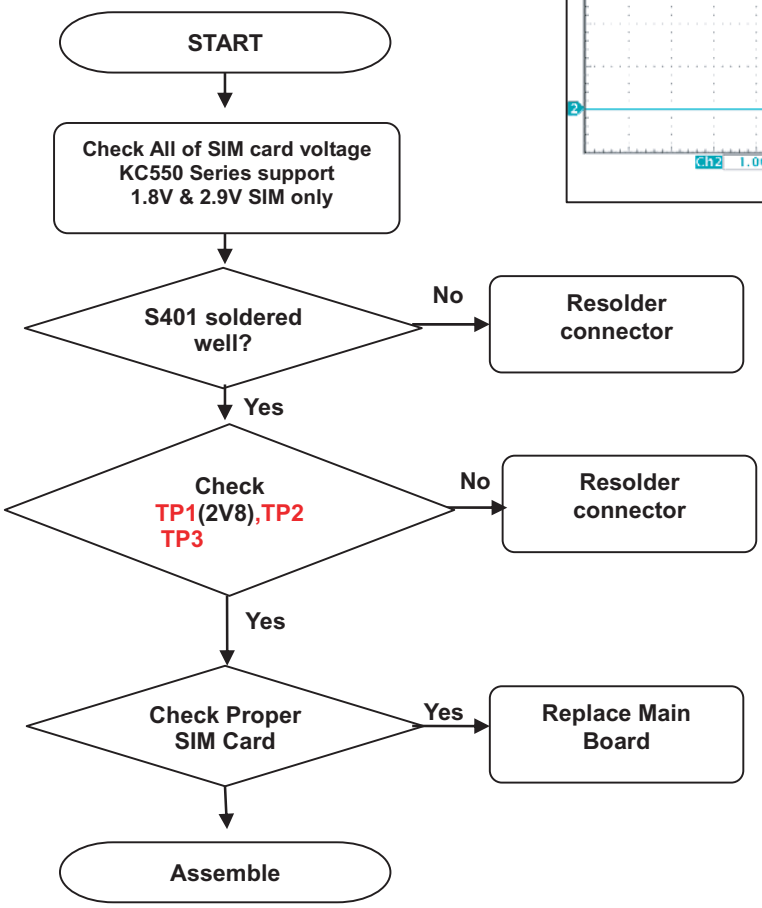



# 6. Trouble shooting



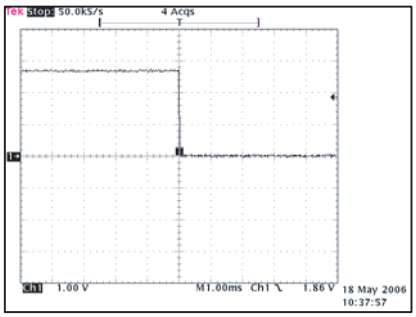
**uSD Check Points**

-Power is working

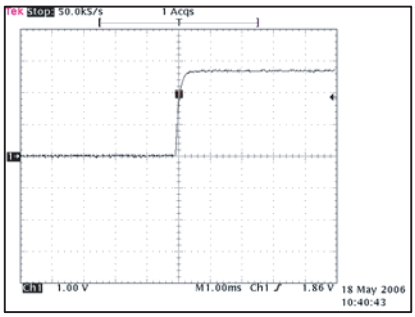
-Socket soldering

-Card detect is working

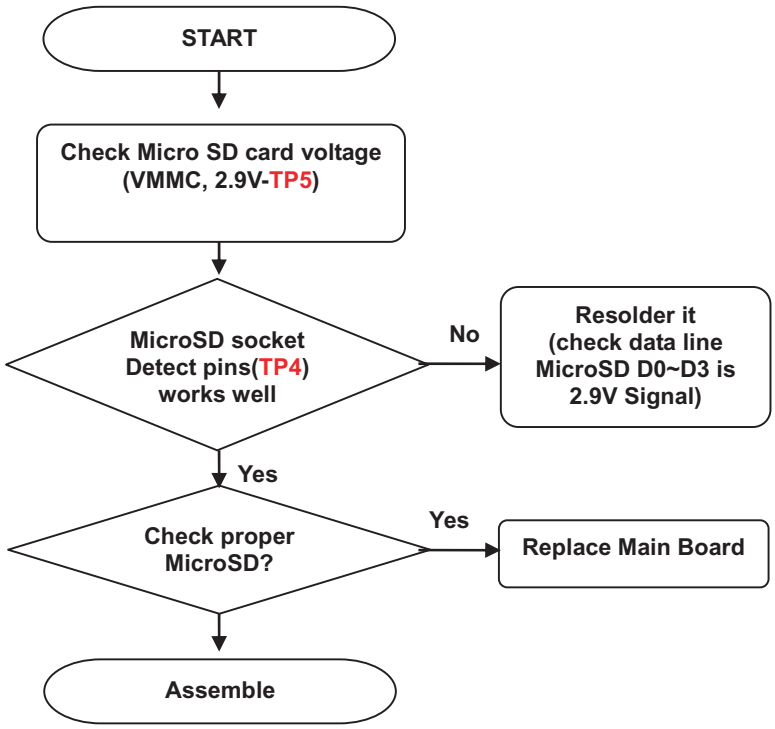
MicroSD_DETECT SIGNAL



Card insert



Card eject



## 6.12 RF Troubleshooting

### 6.12.1 General Circuits Troubleshooting

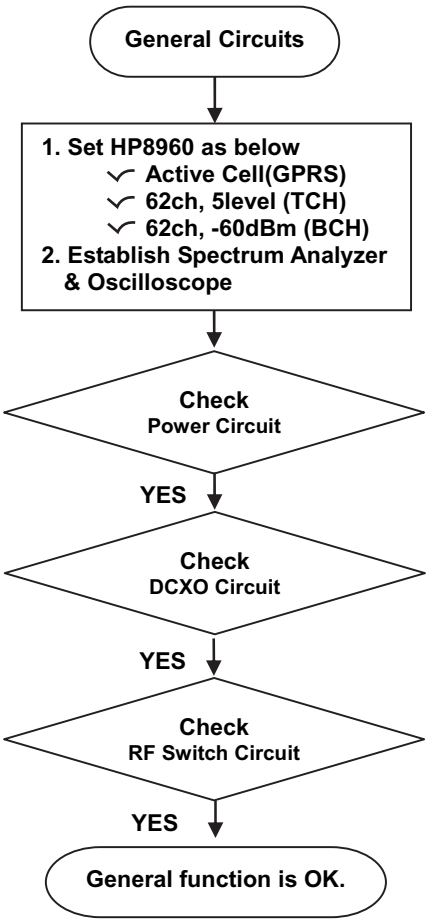



**Fig 1 Troubleshooting flowchart of general circuits**

## 6.12.2 Power circuit

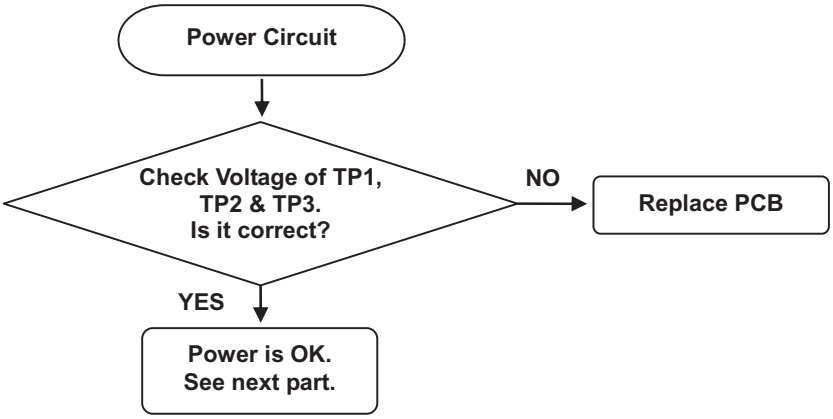



**Fig 2 Debugging flowchart of Power circuit**

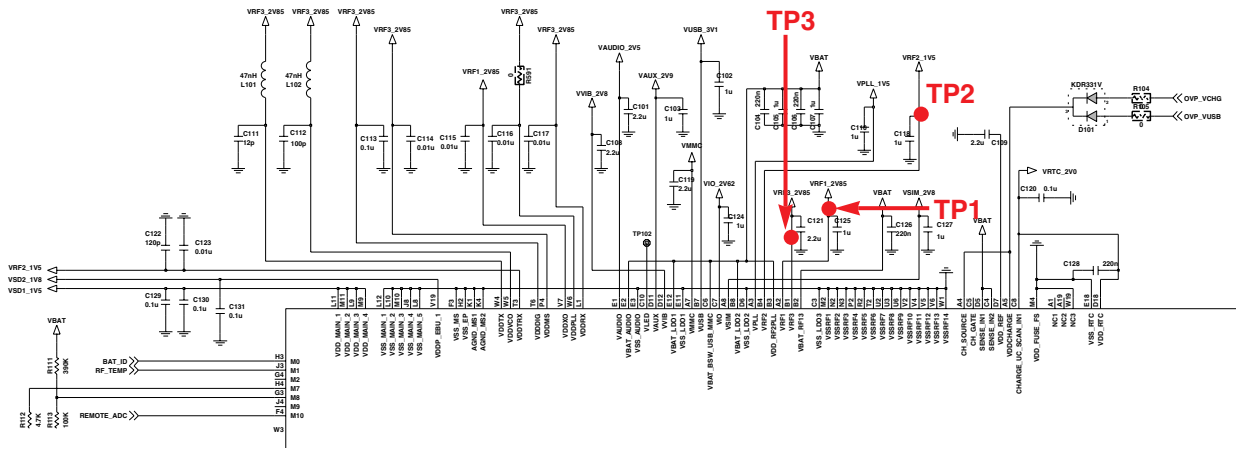
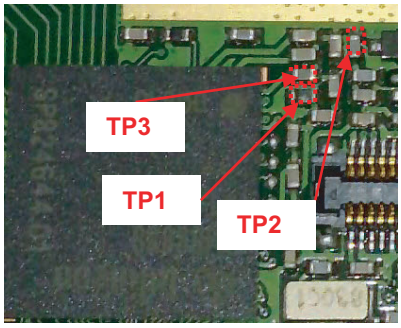



**Fig 3 Power circuit (U104)**

√ Output voltage (=LDO output of U102)
- check LDO output voltage of U102
→ I.e. VRF1_2V85 (C125),
VRF2_1V5 (C118),
VRF3_2V85 (C121)



## 6.12.3 DCXO circuit

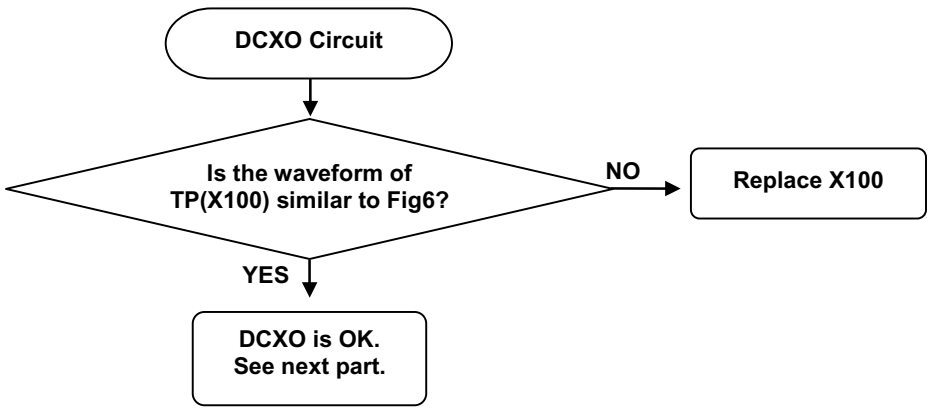



**Fig 4 Debugging flowchart of DCXO circuit**

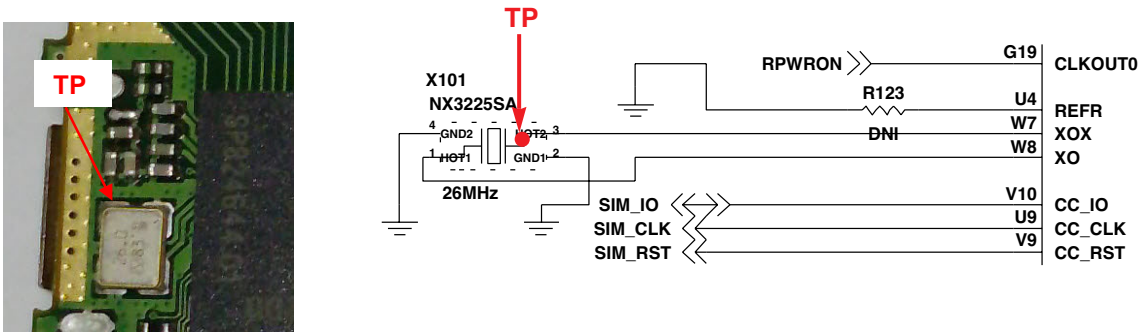



**Fig 5 DCXO circuit (X100)**

√ The output voltage of X100 is 820mV$_{p\text{-}p}$.

**Fig 6 Waveform of DCXO**

## 6.12.4 RF Switch (Mobile Switch) circuit

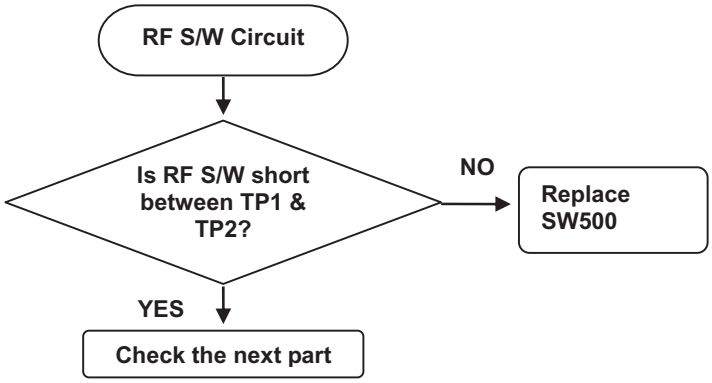



**Fig 7 Debugging flowchart of RF S/W circuit**

√ Part Description of RF Switch

SW500: Mobile Switch (RF S/W) Connector

U104: Baseband Processor including RF transceiver

√ Check point of RF S/W (Mobile S/W)

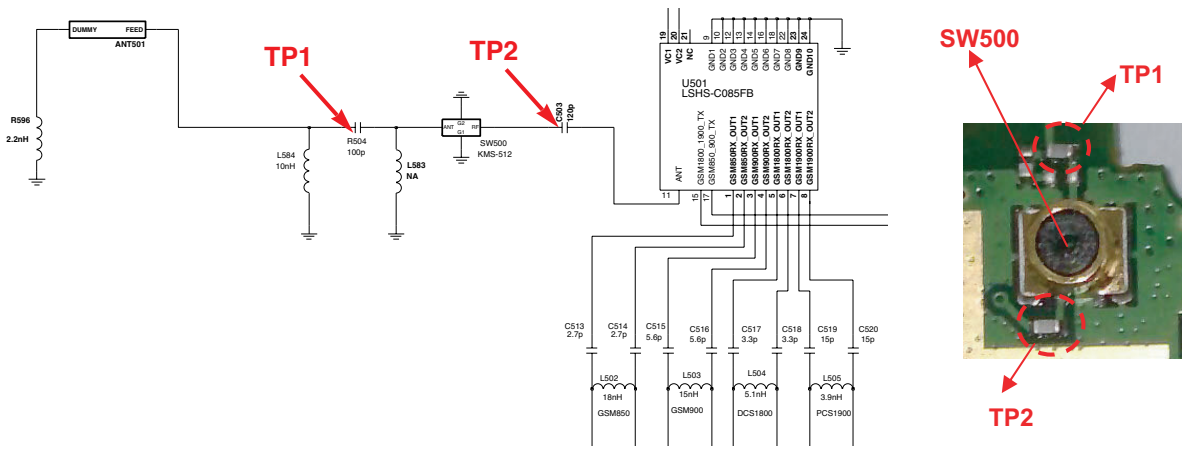



**Fig 8 RF S/W circuit (U501)**

## 6.13 RF Receiver path Troubleshooting

### 6.12.4 RF

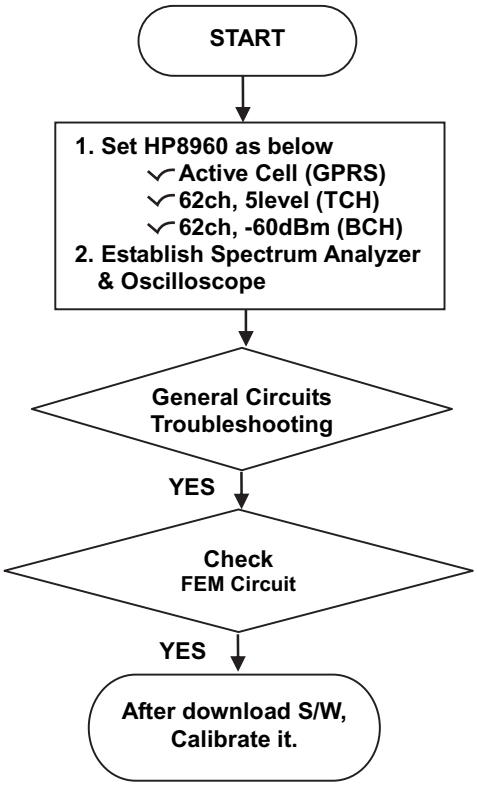



**Fig 9 Troubleshooting flowchart of RF Receiver path**

## 6.13.1 FEM Circuit

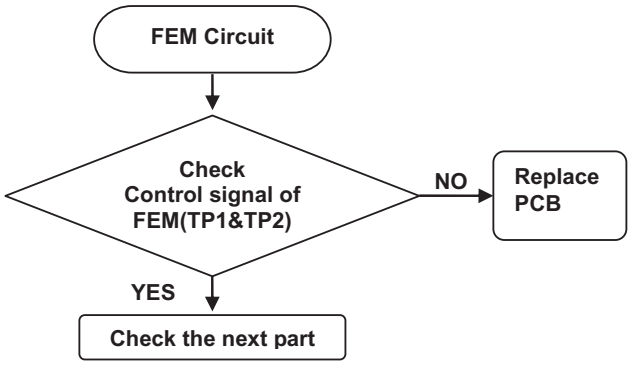



**Fig 10 Debugging flowchart of FEM circuit**

√ Part Description of FEM

| Application | Mode | VC1 | VC2 |
|---|---|---|---|
| **EGSM** | Tx | High | Low |
| | Rx | Low | Low |
| **DCS1800** | Tx | Low | High |
| **PCS1900** | Rx | Low | Low |

√ Check point of FEM

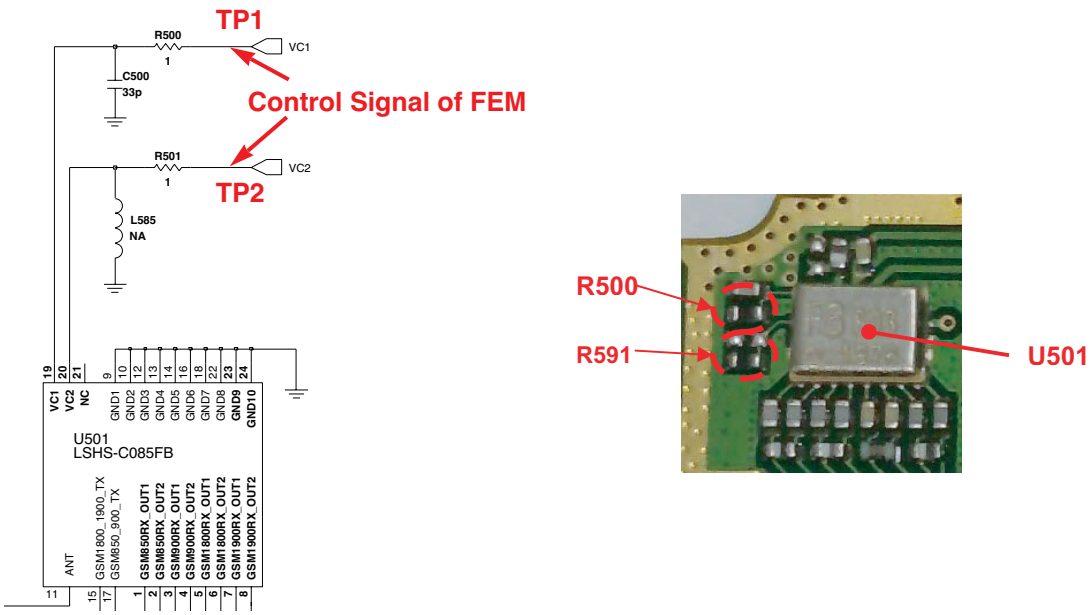
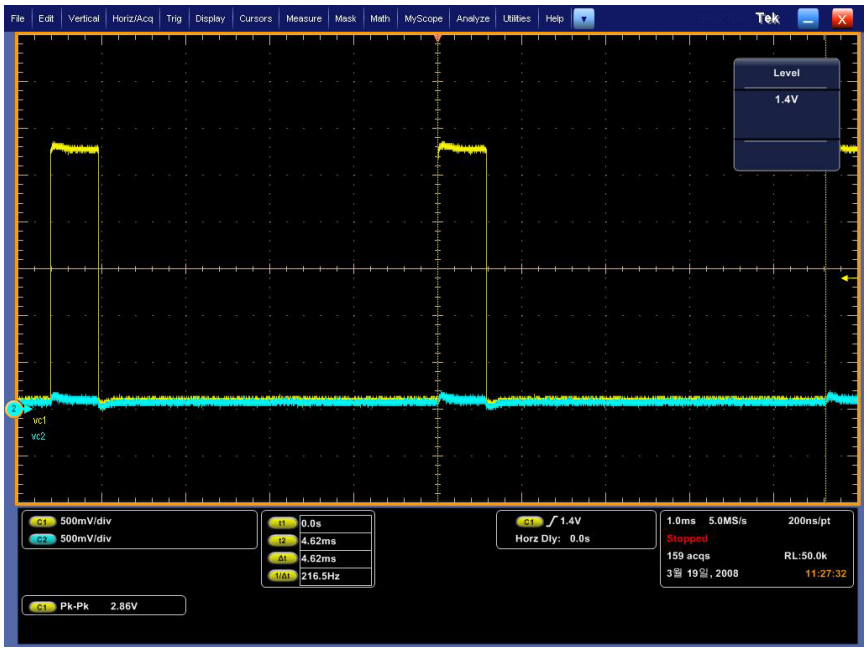


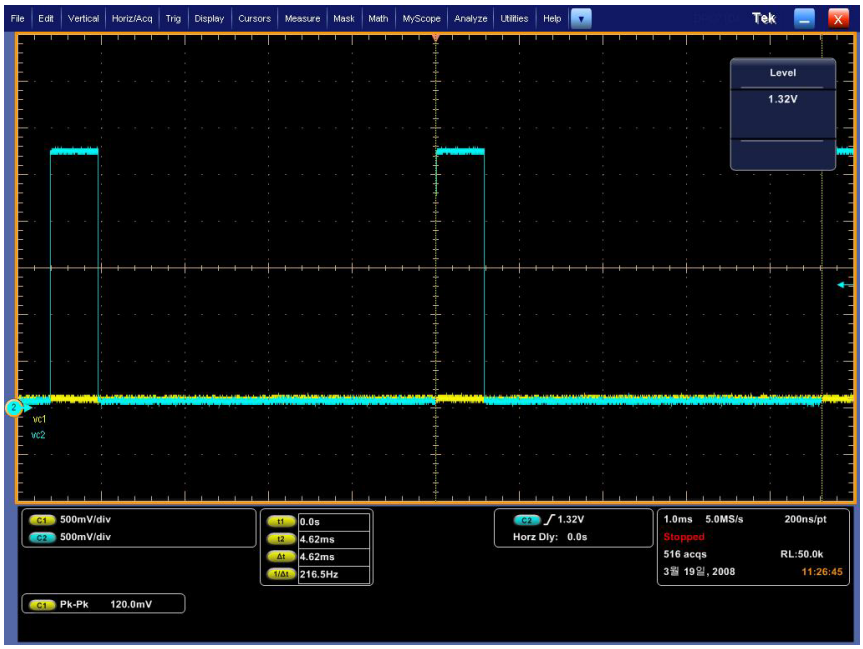

**Fig 11 FEM circuit (U501)**

# 6. Trouble shooting

√ When GSM band called, it must seem as below. (yellow is VC1, blue is VC2)




√ When D/PCS band called, it must seem as below. (yellow is VC1, blue is VC2)



## 6.14 RF Transmitter path Troubleshooting

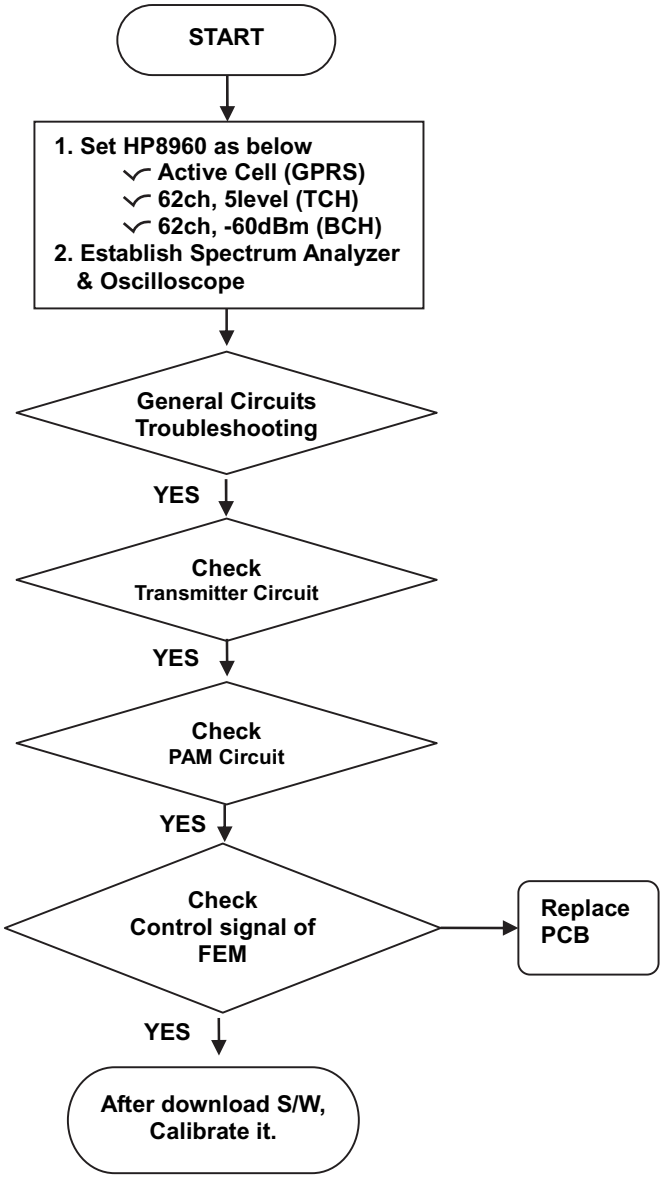
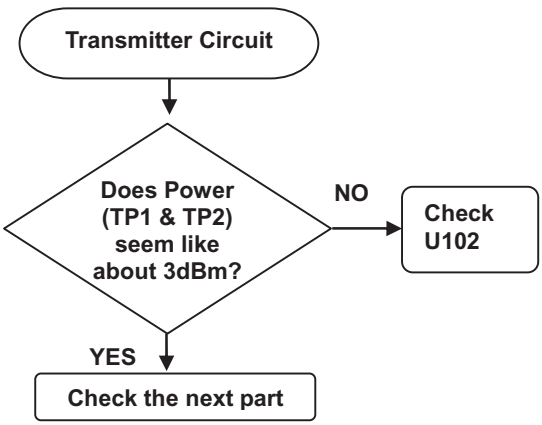



**Fig 12 Troubleshooting flowchart of RF Transmitter path**

## 6.14.1 Transmitter Circuit



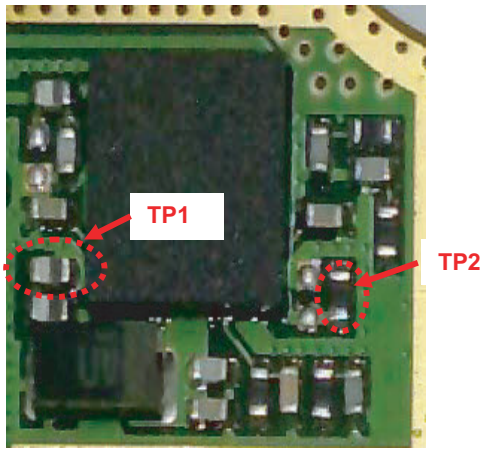
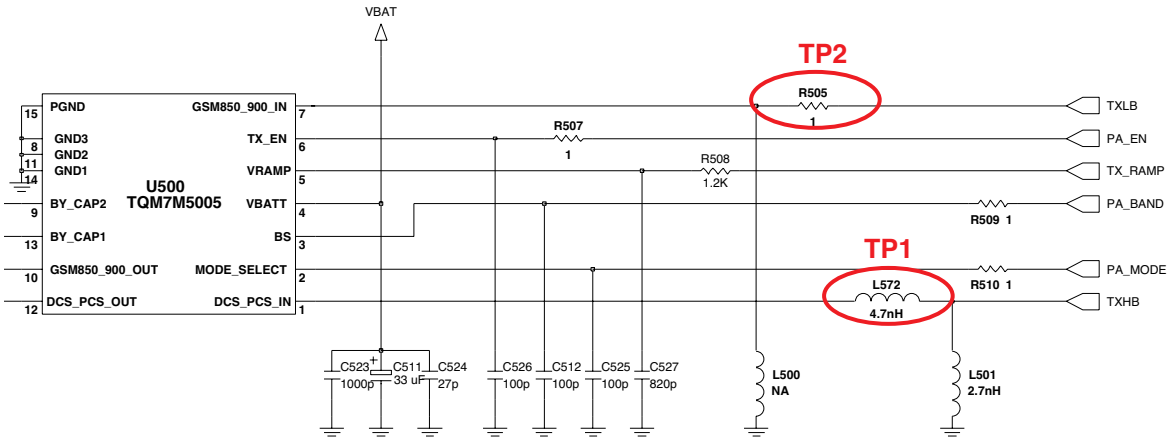




**Fig 13 Transmitter circuit (U104)**




√ Check point of PAM

- Transmitter output power (=R505, L572) is approximately 3dBm.

## 6.14.1 PAM Circuit

√ PAM circuit contains as below

- Band select switching circuitry (BS) to select GSM (Logic 0) and DCS/PCS (Logic1).
- VRAMP controls the level of output power for GMSK modulation and shape of Tx burst.
- For GMSK operation, set the PA_EN input High, and PA_MODE2 low(0.5v)

| Operational status | PA_EN | PA_BAND | PA_MODE2 | TX_RAMP |
|---|---|---|---|---|
| Standby/PA off | 0 | X | X | X |
| Low Band GMSK Tx | 1 | 0 | 0 | Active |
| Low Band EDGE Tx | 1 | 0 | 1 | X |
| High Band GMSK Tx | 1 | 1 | 0 | Active |
| High band EDGE Tx | 1 | 1 | 1 | X |

X= don't care

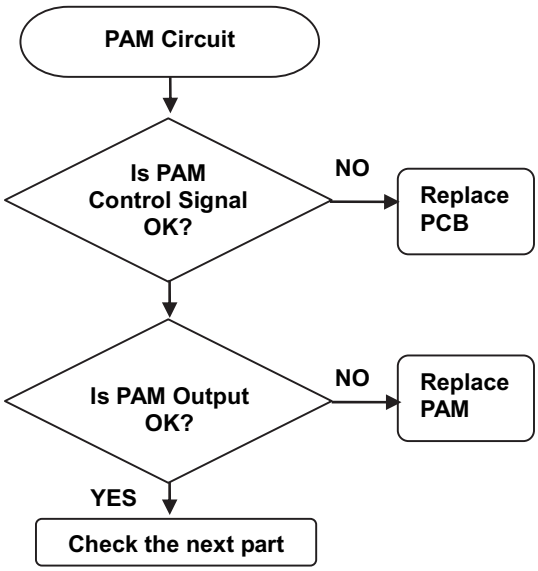
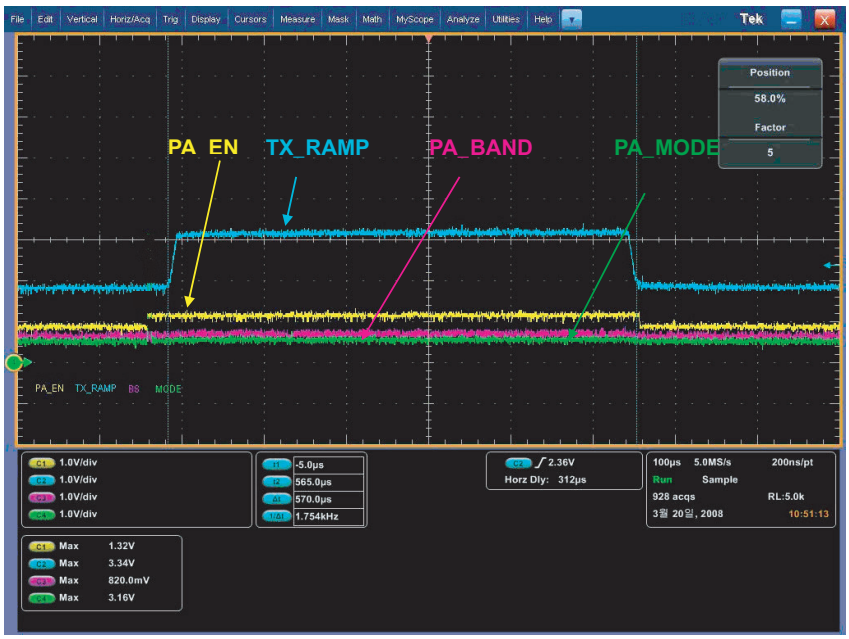
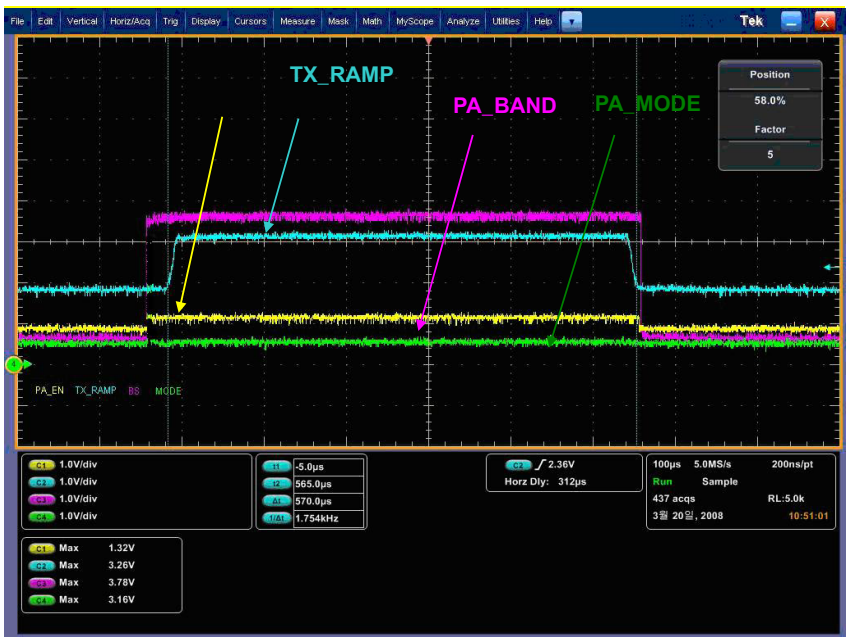



**Fig 14 Debugging flowchart of PAM circuit**

√ When EGSM band called, it must seem as below.




√ When D/PCS band called, it must seem as below.



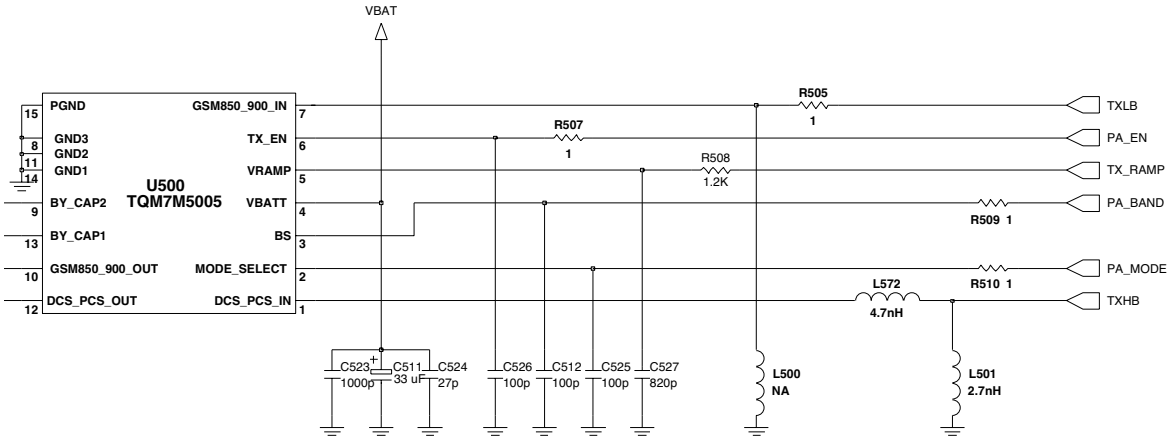



**Fig 15 PAM circuit (U500)**

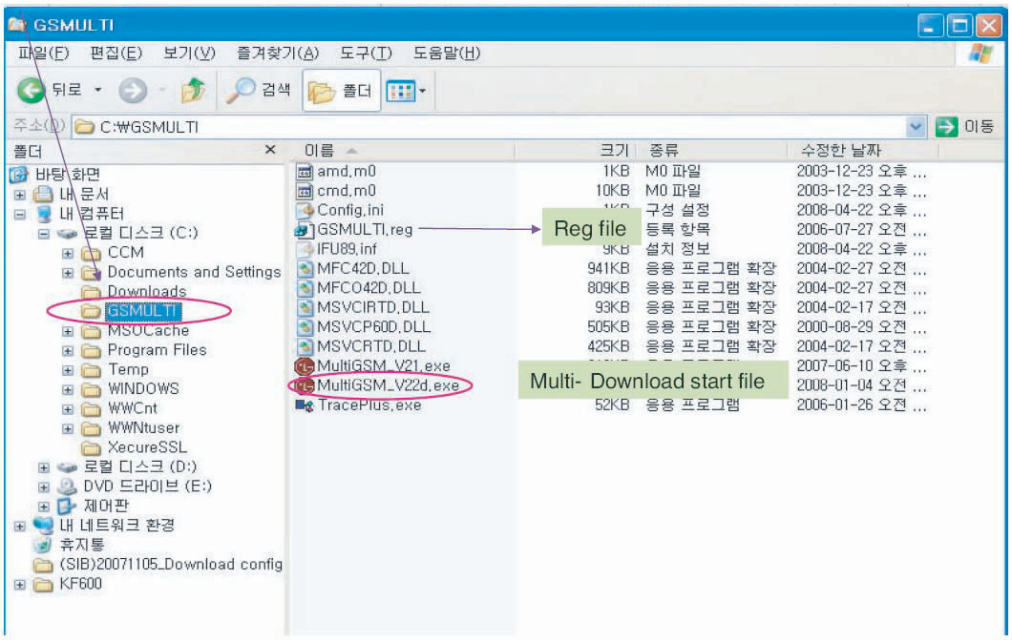
## 6.14.3 FEM Circuit

See the 1.2.1 FEM Circuit.

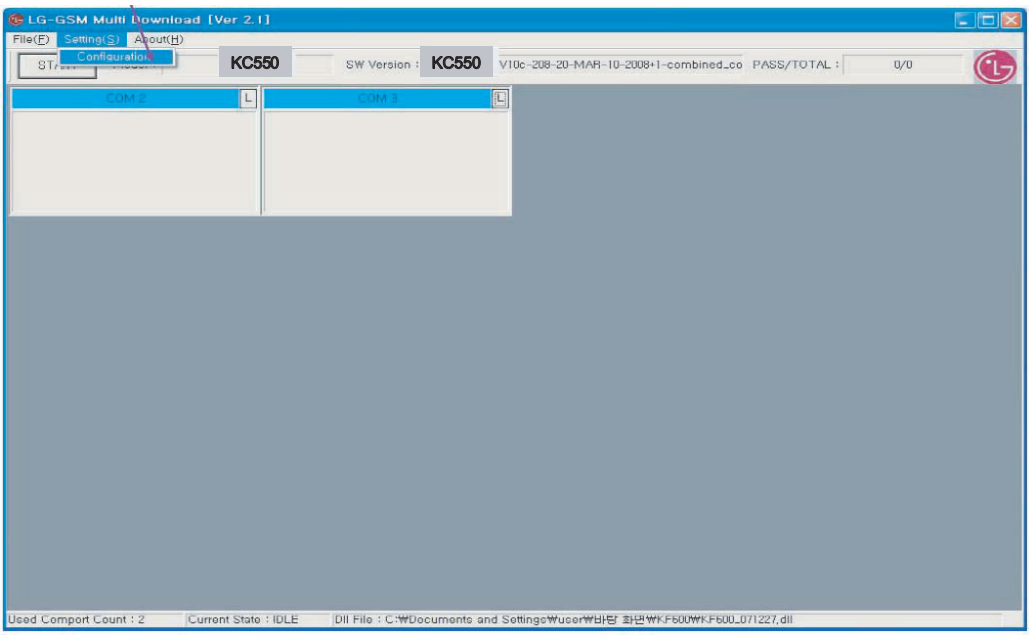
# 7. Download & S/W upgrade

## 7.1 Download program user guide

### 1.After “GSMULTI” folder copy, paste C:\

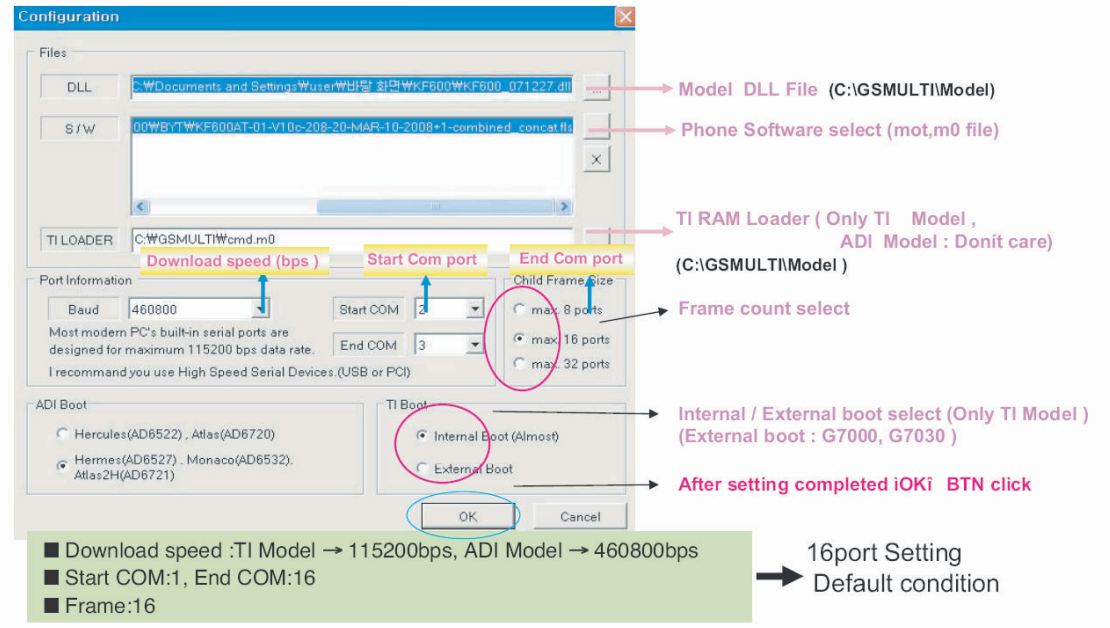



### 2. “MultiGSM.exe” execution file execute

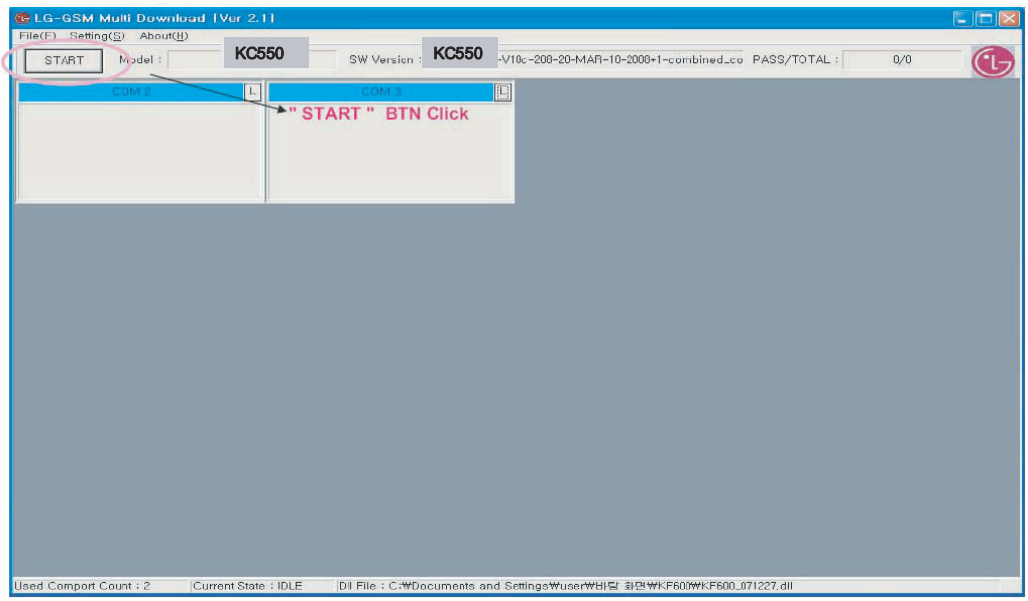


## 7.2 Multi-Download Program Setting(Model-Base)

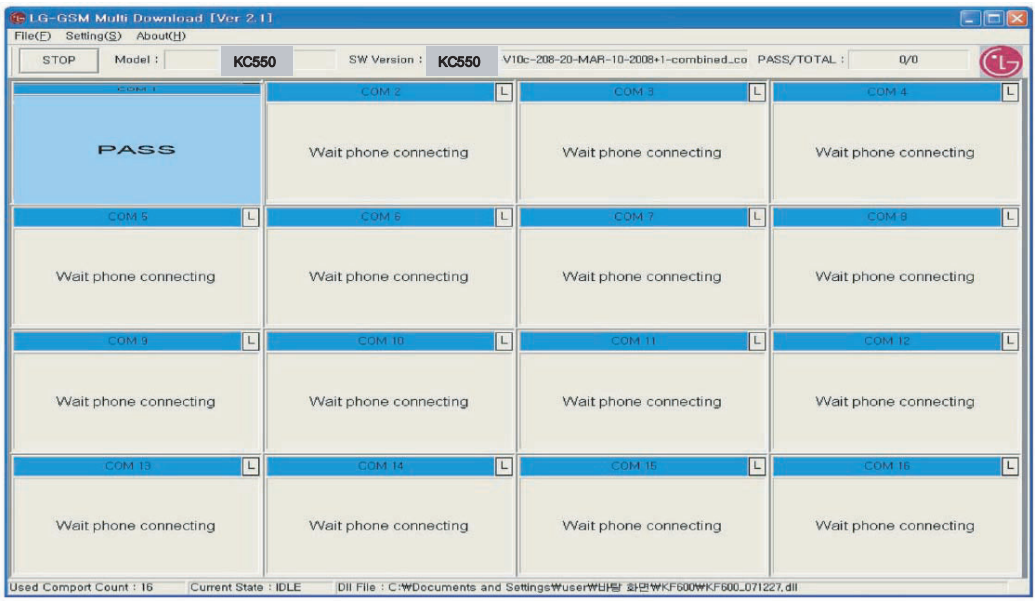
### ■ Multi-Download Program Execution → Setting : Configuration



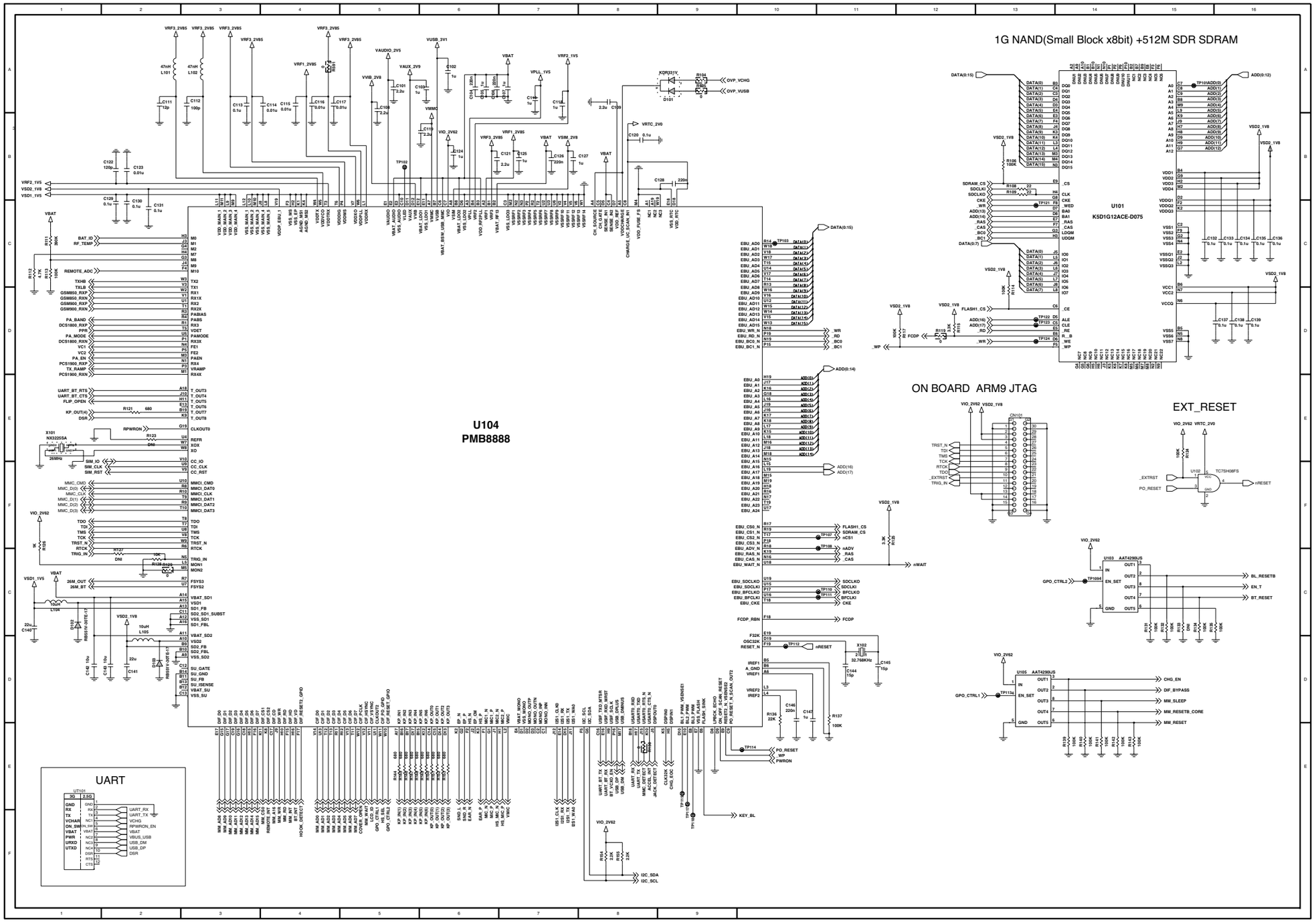

### ■ Setting Completed



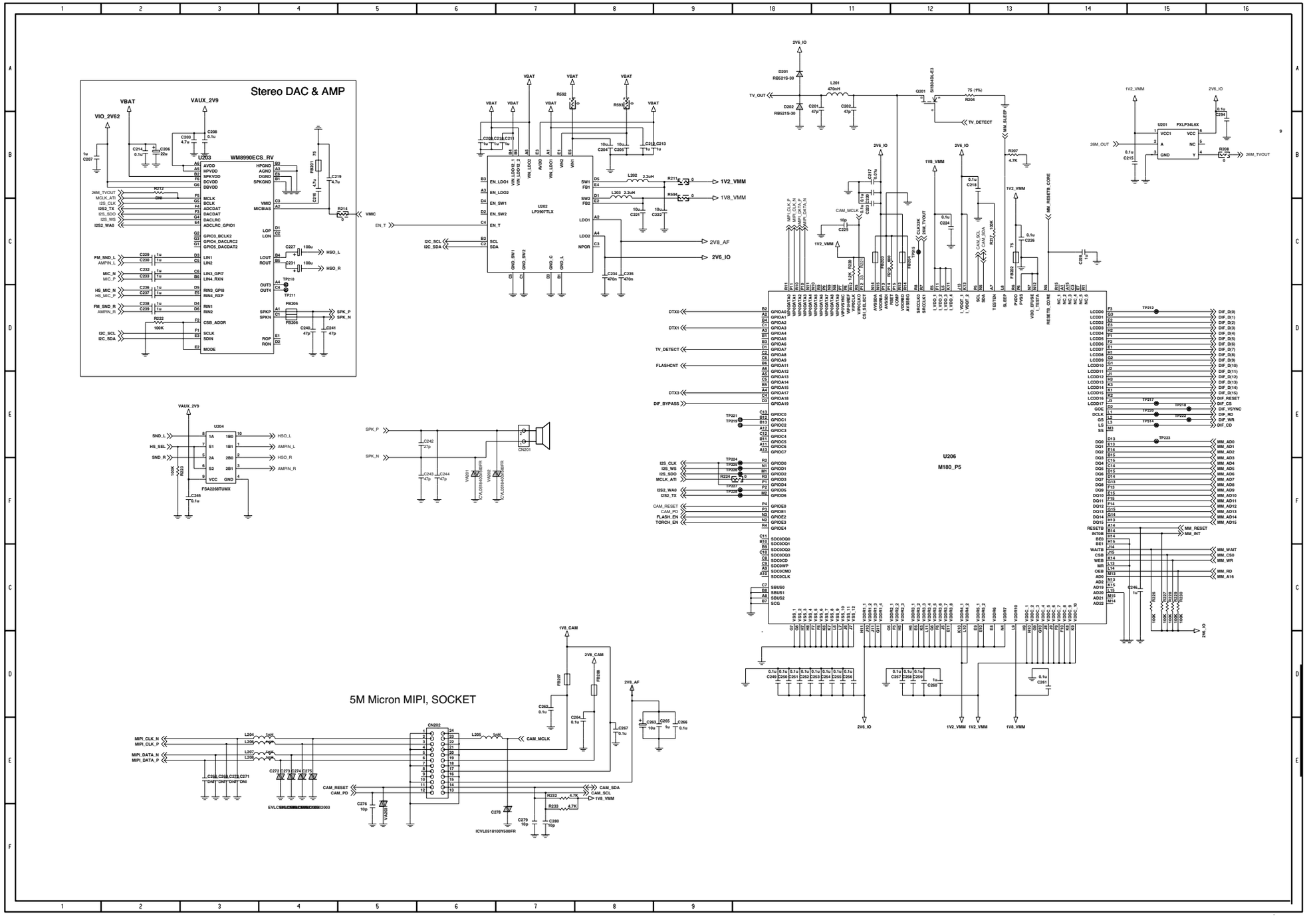
■ **Stand-by Condition: “Wait phone connecting” confirm → Phone connection**



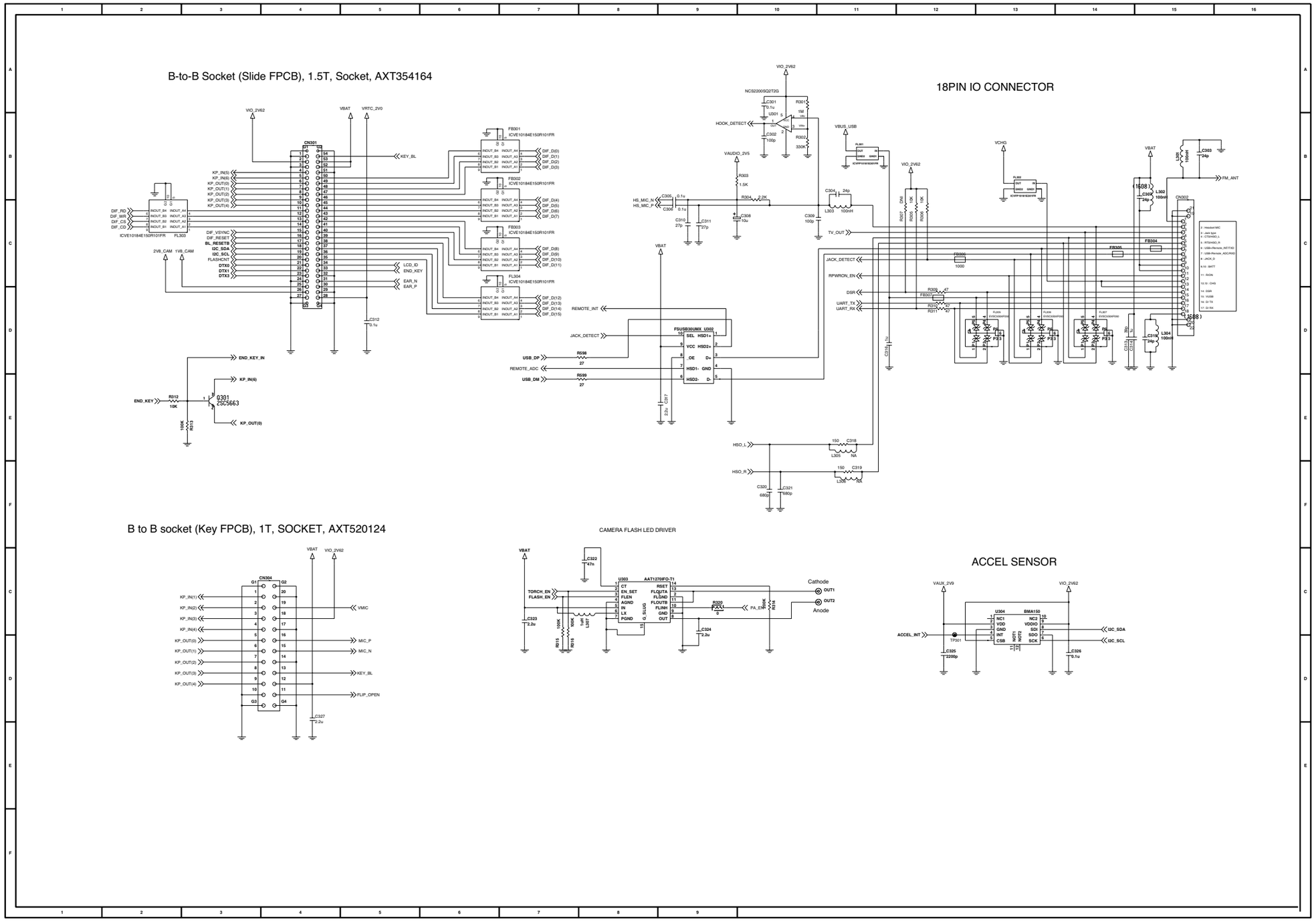
# 8. CIRCUIT DIAGRAM



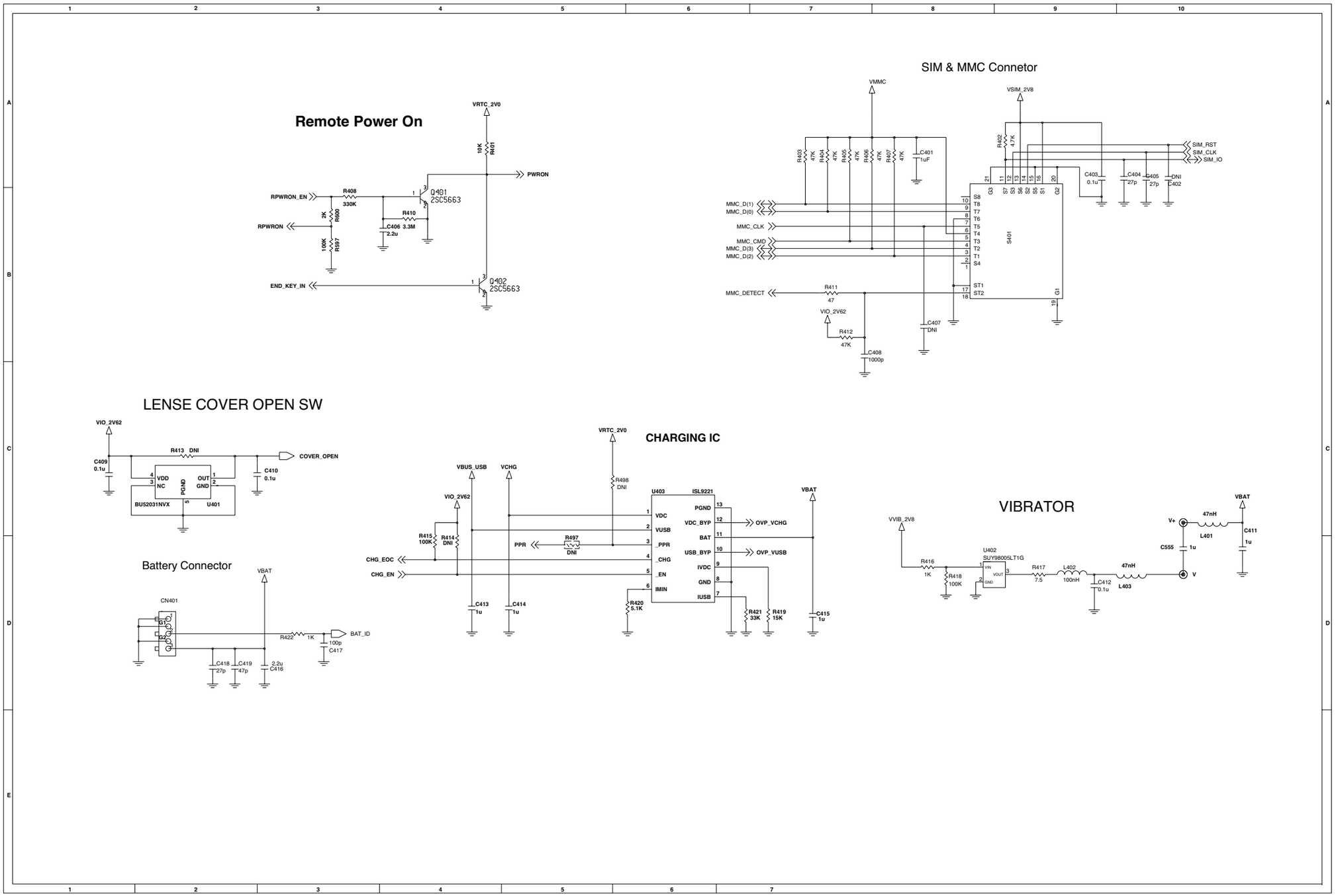
# 8. CIRCUIT DIAGRAM



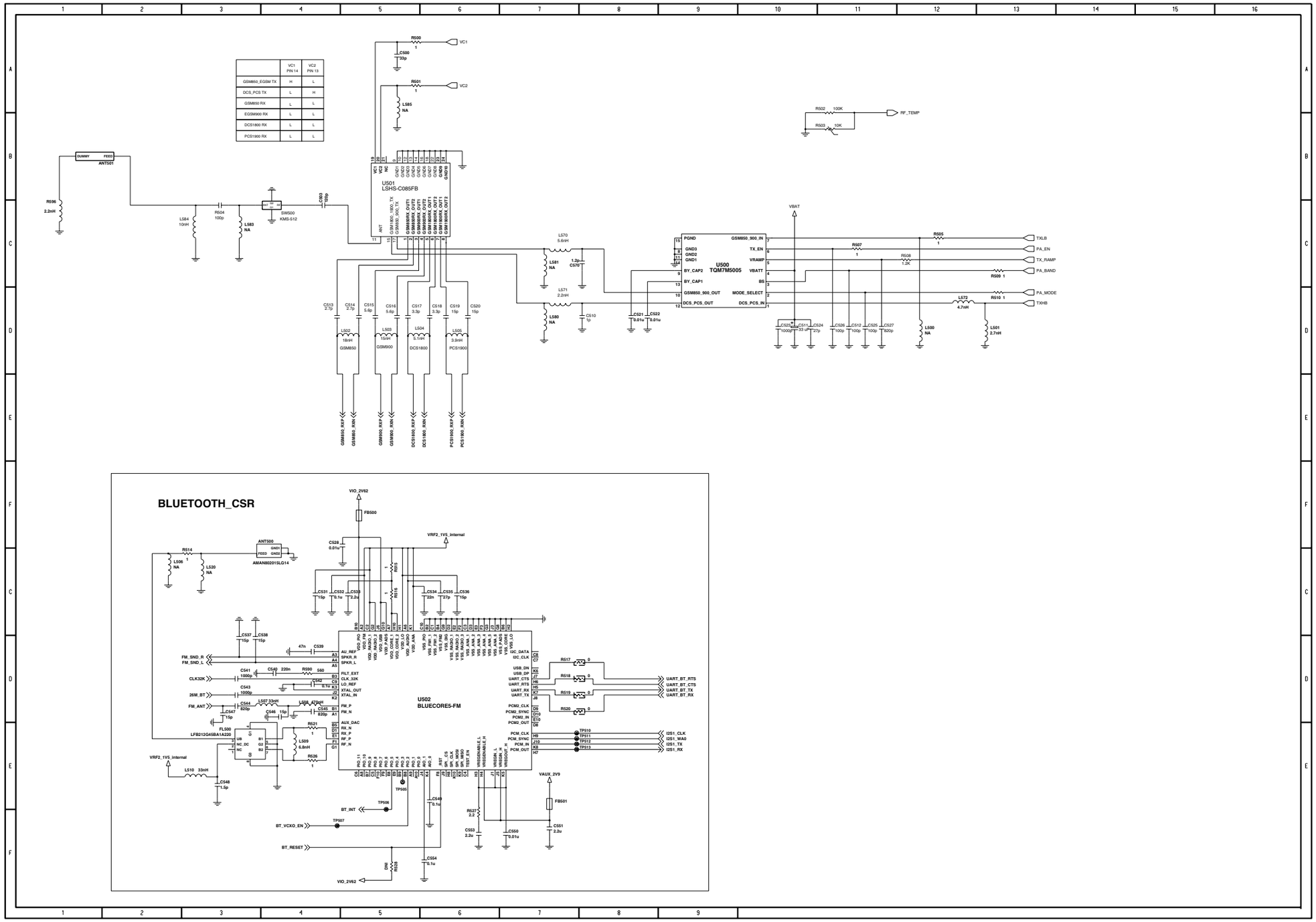
# 8. CIRCUIT DIAGRAM



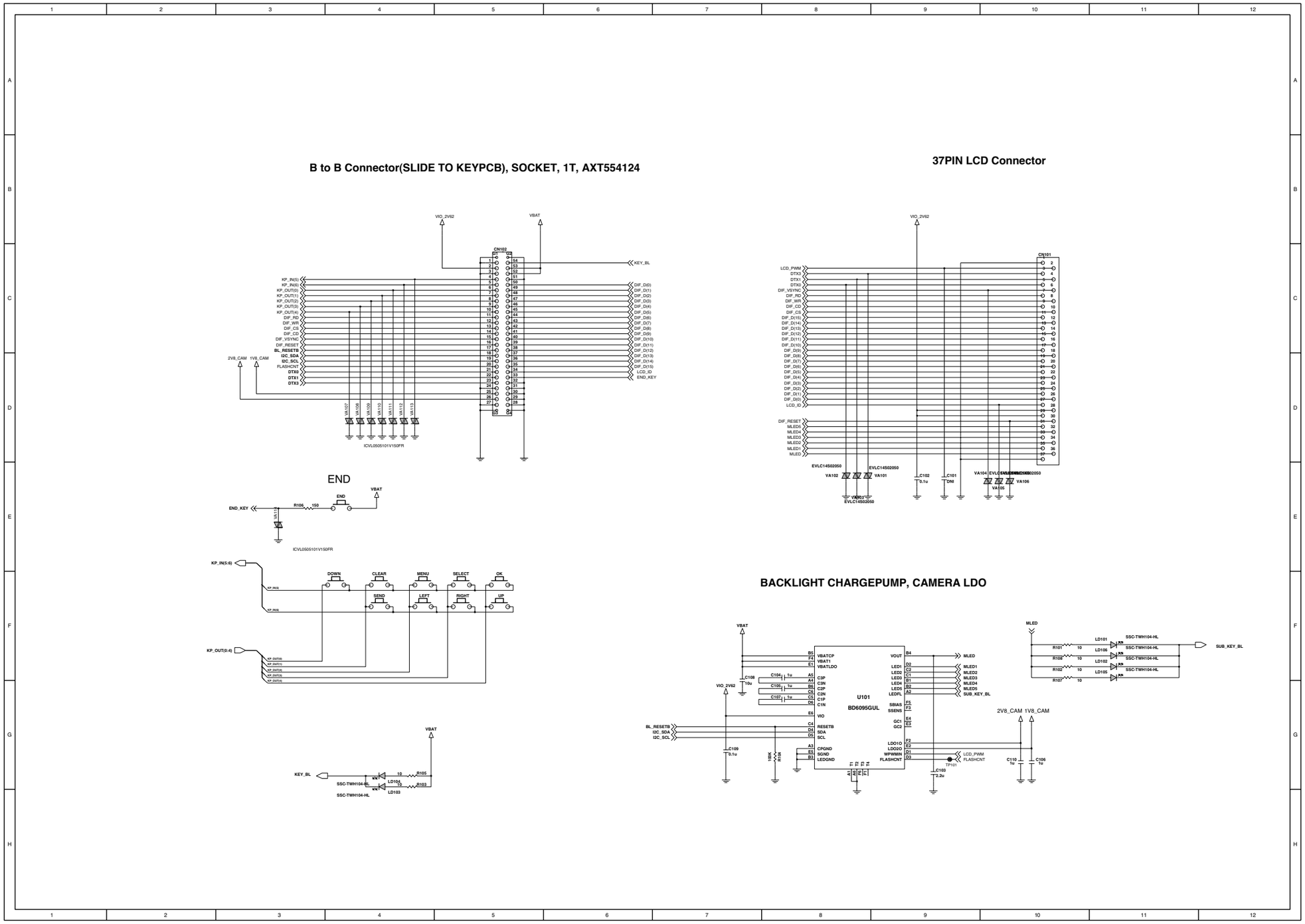
# 8. CIRCUIT DIAGRAM



# 8. CIRCUIT DIAGRAM

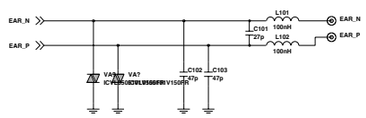


# 8. CIRCUIT DIAGRAM

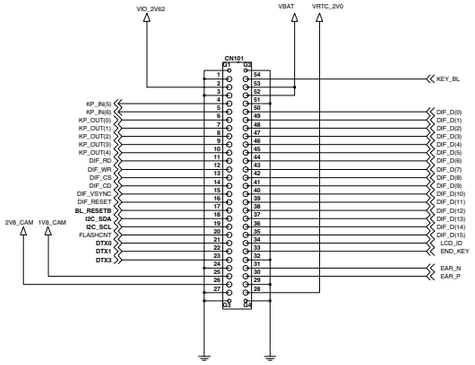


# 8. CIRCUIT DIAGRAM

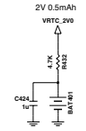
**RECEIVER**



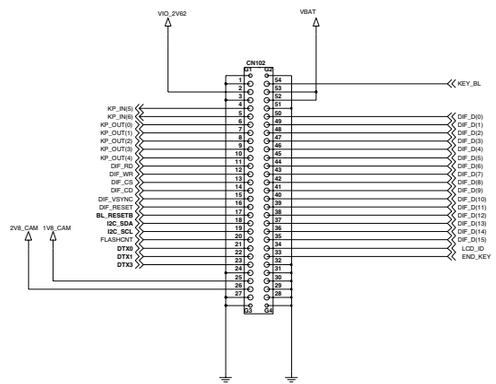

**B to B Connector(MAIN TO SLIDE), HEADER, 1.5T, AXT454164**




**BACKUP BATTERY**

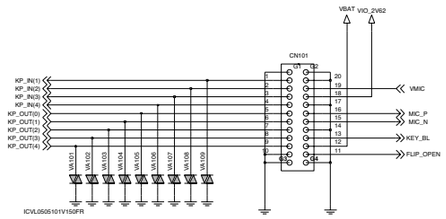



**B to B Connector(SLIDE TO KEYPCB), HEADER, 1T, AXT654124**

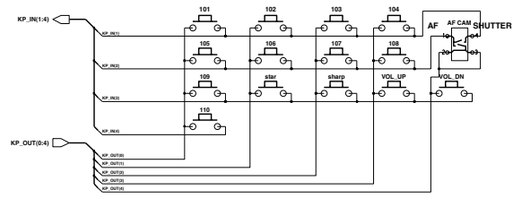


# 8. CIRCUIT DIAGRAM

**B to B , PLUG, 1T, AXT620124**

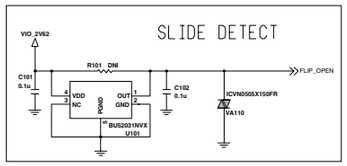



**KEYPAD**

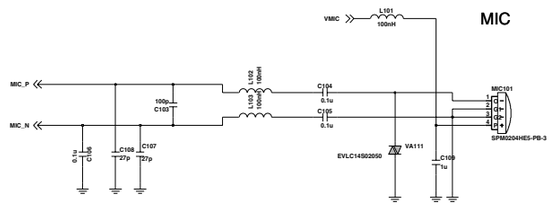



**KEY BACKLIGHT**

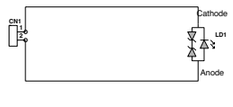

**SLIDE DETECT**




**MIC**

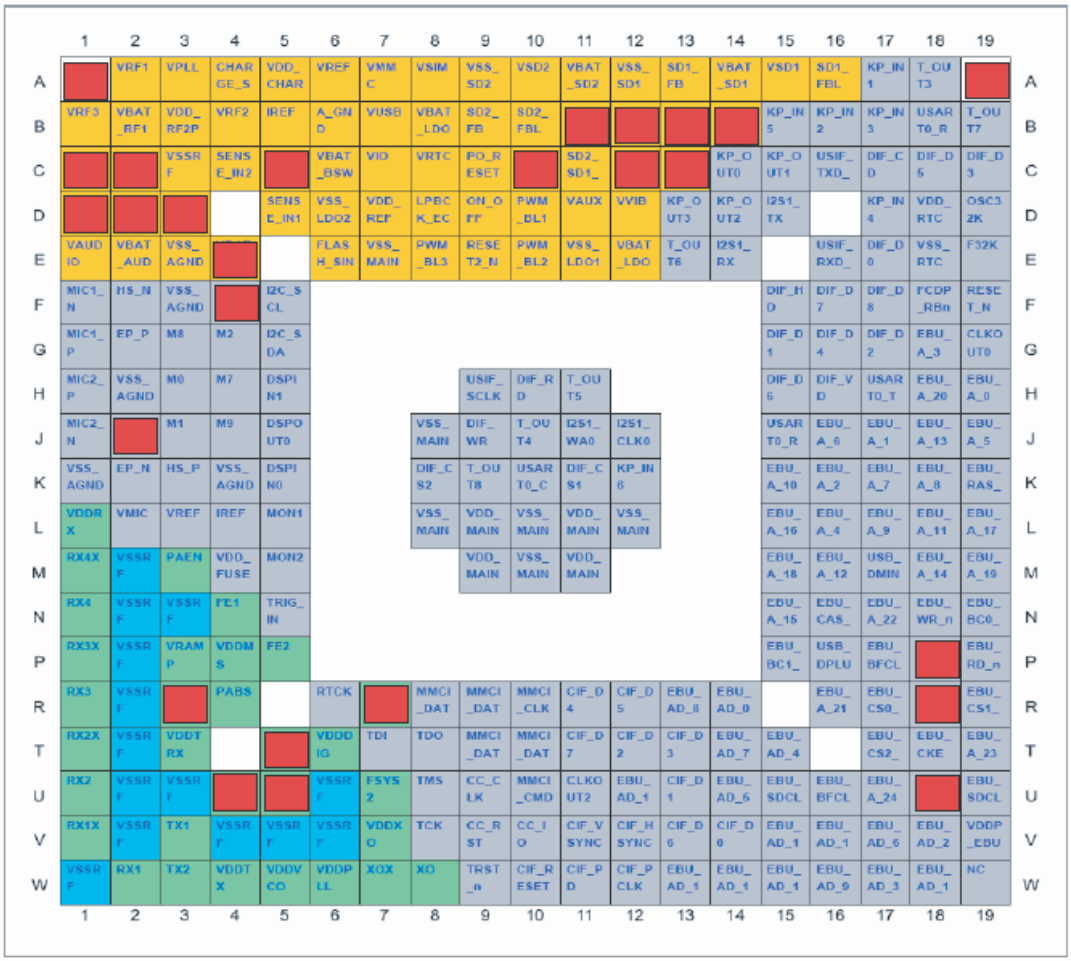


# 8. CIRCUIT DIAGRAM



# 9. BGM Pin Map

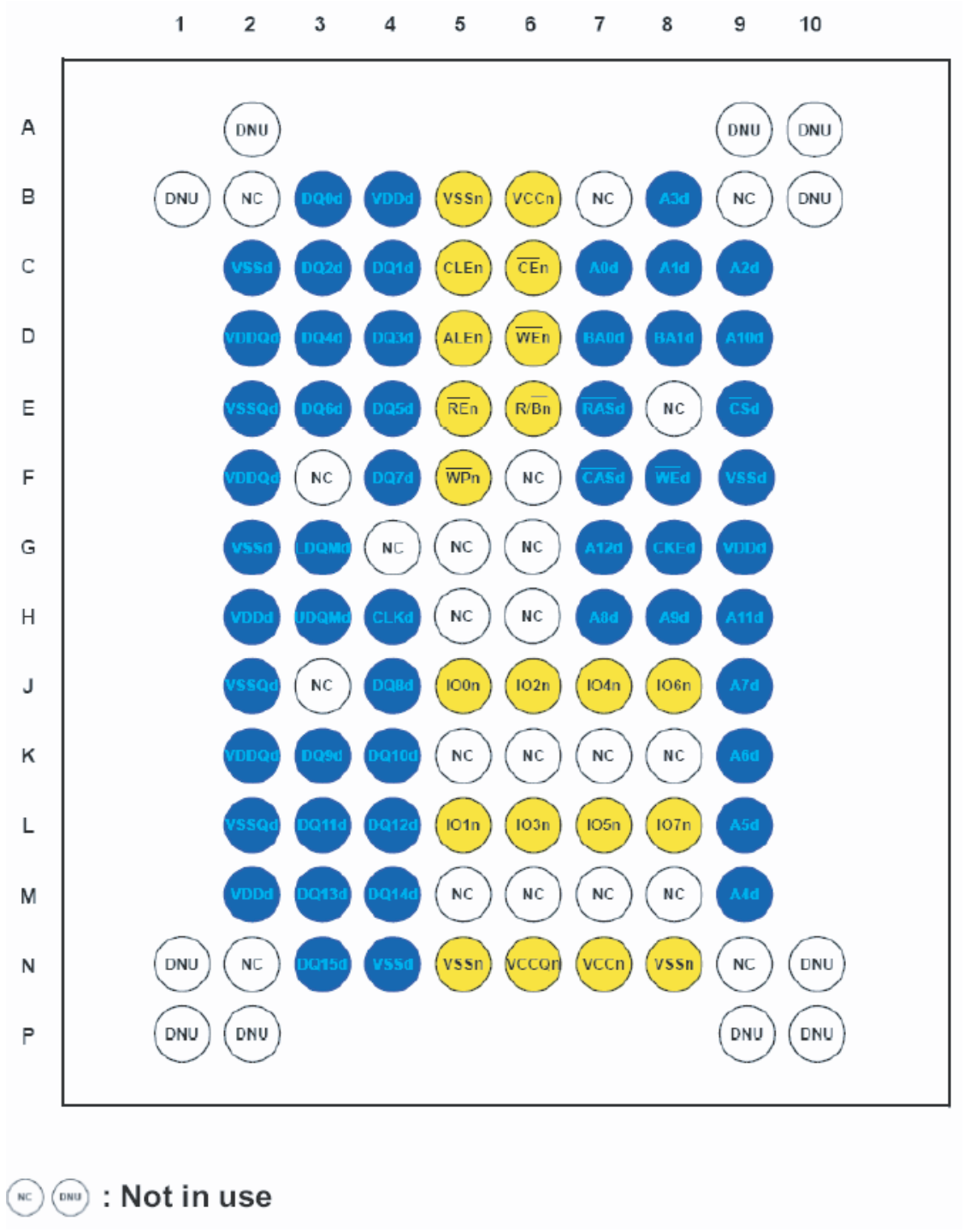
## BGA IC Pin Check (U104, PMB8888)



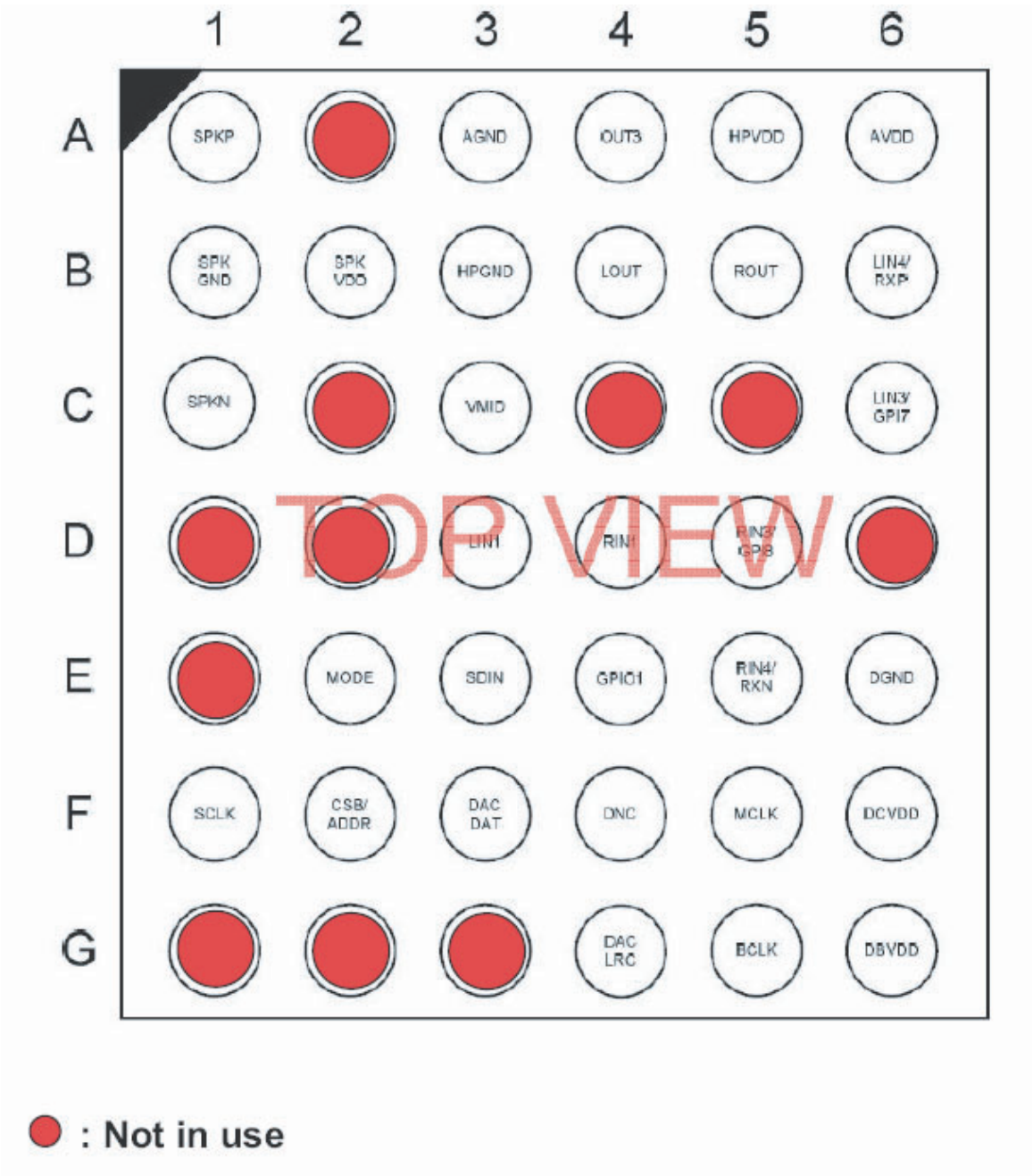

: Not in use

## 9. BGM Pin Map

### BGA IC Pin Check (U101, K5D1G12ACE-D075)

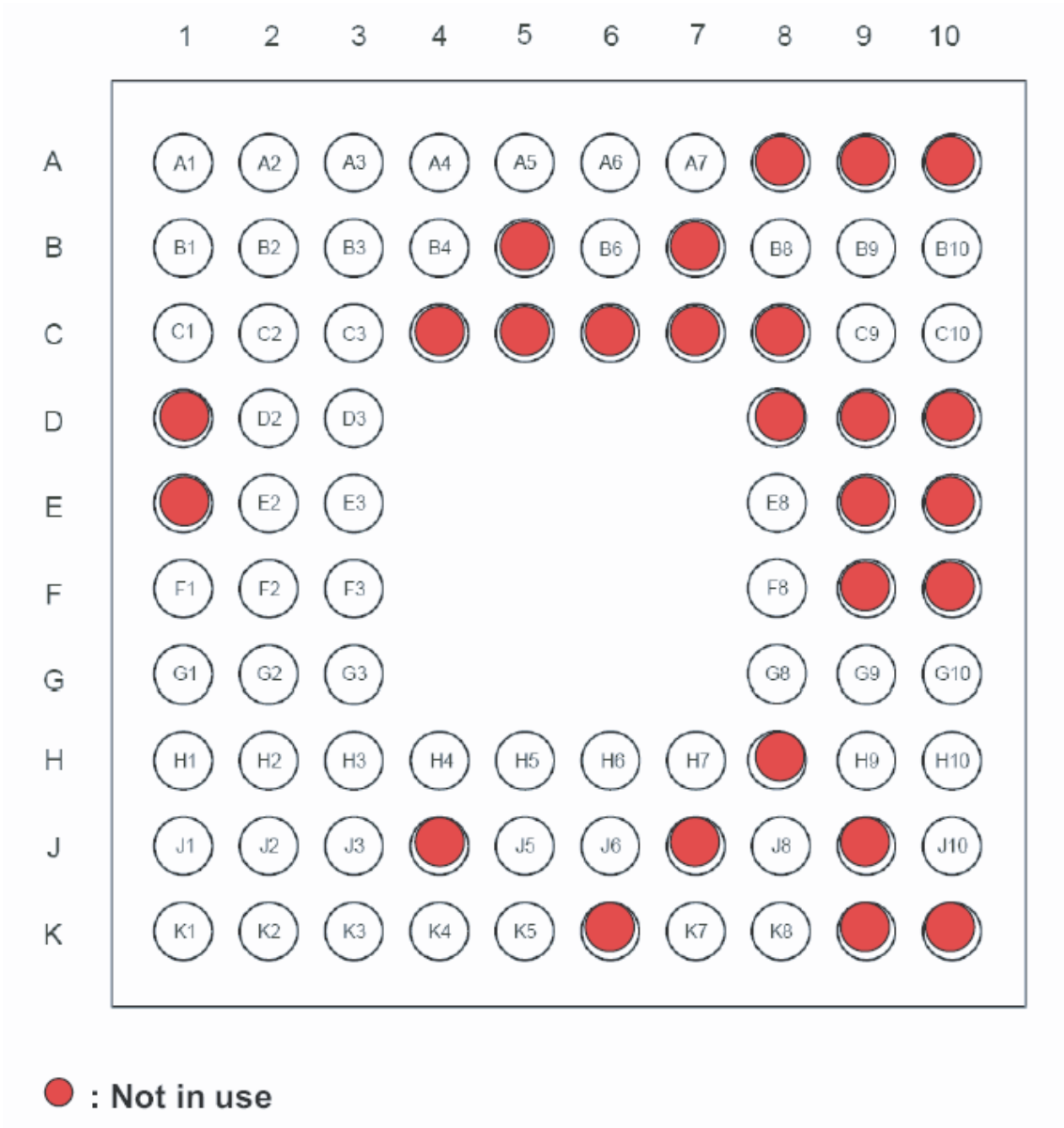


## BGA IC Pin Check (U203, WM8990)

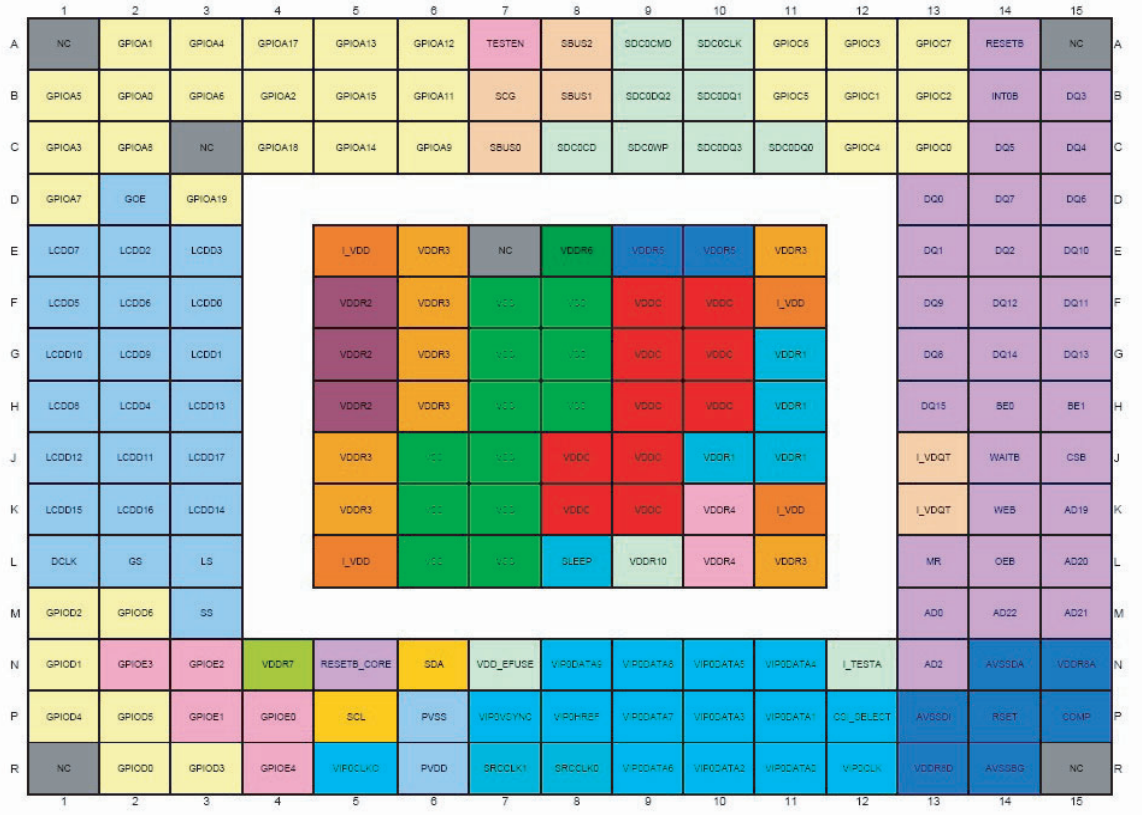


## 9. BGM Pin Map

### BGA IC Pin Check (U502, BC5FM)



## BGA IC Pin Check (U206, M180)

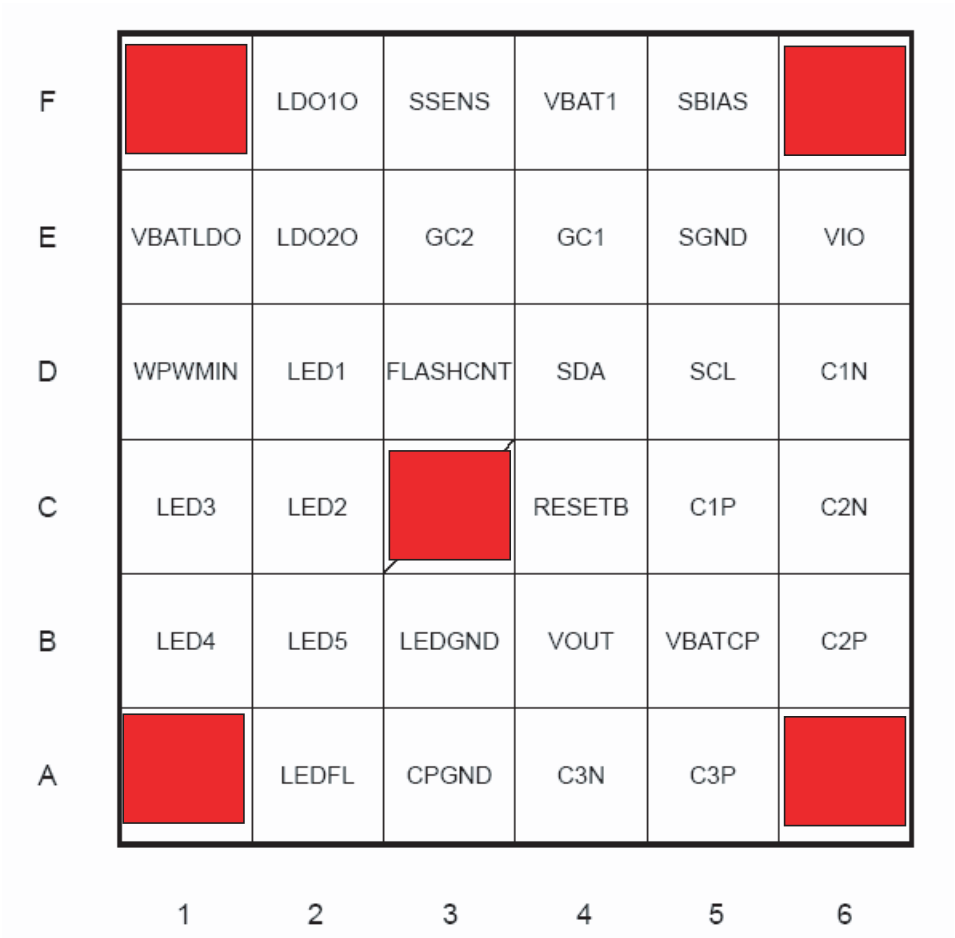


| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | NC | GPIOA1 | GPIOA4 | GPIOA17 | GPIOA13 | GPIOA12 | TESTEN | SBUS2 | SDC0CMD | SDC0CLK | GPIOC6 | GPIOC3 | GPIOC7 | RESETB | NC | A |
| B | GPIOA5 | GPIOA0 | GPIOA6 | GPIOA2 | GPIOA15 | GPIOA11 | SCG | SBUS1 | SDC0DQ2 | SDC0DQ1 | GPIOC5 | GPIOC1 | GPIOC2 | INT0B | DQ3 | B |
| C | GPIOA3 | GPIOA8 | NC | GPIOA18 | GPIOA14 | GPIOA9 | SBUS0 | SDC0CD | SDC0WP | SDC0DQ3 | SDC0DQ0 | GPIOC4 | GPIOC0 | DQ5 | DQ4 | C |
| D | GPIOA7 | GCE | GPIOA19 | | | | | | | | | | DQ0 | DQ7 | DQ6 | D |
| E | LCDD7 | LCDD2 | LCDD3 | | I_VDD | VDDR3 | NC | VDDR6 | VDDR5 | VDDR5 | VDDR3 | | DQ1 | DQ2 | DQ10 | E |
| F | LCDD5 | LCDD6 | LCDD0 | | VDDR2 | VDDR3 | VSS | VSS | VDDC | VDDC | I_VDD | | DQ9 | DQ12 | DQ11 | F |
| G | LCDD10 | LCDD9 | LCDD1 | | VDDR2 | VDDR3 | VSS | VSS | VDDC | VDDC | VDDR1 | | DQ8 | DQ14 | DQ13 | G |
| H | LCDD8 | LCDD4 | LCDD13 | | VDDR2 | VDDR3 | VSS | VSS | VDDC | VDDC | VDDR1 | | DQ15 | BE0 | BE1 | H |
| J | LCDD12 | LCDD11 | LCDD17 | | VDDR3 | VCC | VSS | VDDC | VDDC | VDDR1 | VDDR1 | | I_VDQT | WAITB | CSB | J |
| K | LCDD15 | LCDD16 | LCDD14 | | VDDR3 | VCC | VSS | VDDC | VDDC | VDDR4 | I_VDD | | I_VDQT | WEB | AD19 | K |
| L | DCLK | GS | LS | | I_VDD | VCC | VSS | SLEEP | VDDR10 | VDDR4 | VDDR3 | | MR | OEB | AD20 | L |
| M | GPIOD2 | GPIOD6 | SS | | | | | | | | | | AD0 | AD22 | AD21 | M |
| N | GPIOD1 | GPIOE3 | GPIOE2 | VDDR7 | RESETB_CORE | SDA | VDD_EFUSE | VIP0DATA9 | VIP0DATA8 | VIP0DATA5 | VIP0DATA4 | I_TESTA | AD2 | AVSSDA | VDDR8A | N |
| P | GPIOD4 | GPIOD5 | GPIOE1 | GPIOE0 | SCL | PVSS | VIP0VSYNC | VIP0HREF | VIP0DATA7 | VIP0DATA3 | VIP0DATA1 | CC_SELECT | AVSSDI | RSET | COMP | P |
| R | NC | GPIOD0 | GPIOD3 | GPIOE4 | VIP0CLKO | PVDD | SRCCLK1 | SRCCLK0 | VIP0DATA6 | VIP0DATA2 | VIP0DATA0 | VIP0CLK | VDDR9D | AVSSBG | NC | R |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |

: Not in use

## 9. BGM Pin Map

### BGA IC Pin Check (U101 in Key PCB, BD6095)



| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| F | | LDO1O | SSENS | VBAT1 | SBIAS | |
| E | VBATLDO | LDO2O | GC2 | GC1 | SGND | VIO |
| D | WPWMIN | LED1 | FLASHCNT | SDA | SCL | C1N |
| C | LED3 | LED2 | | RESETB | C1P | C2N |
| B | LED4 | LED5 | LEDGND | VOUT | VBATCP | C2P |
| A | | LEDFL | CPGND | C3N | C3P | |

: Not in use

# 10. PCB LAYOUT

U500 TQM7M5005
(Power amp)
Tx Power NO service

U501 Rx SAW Filter
GSM Rx sensitivity
No service

U104 PMB8888 (BB)
No Power on
No Sound, No display
No service

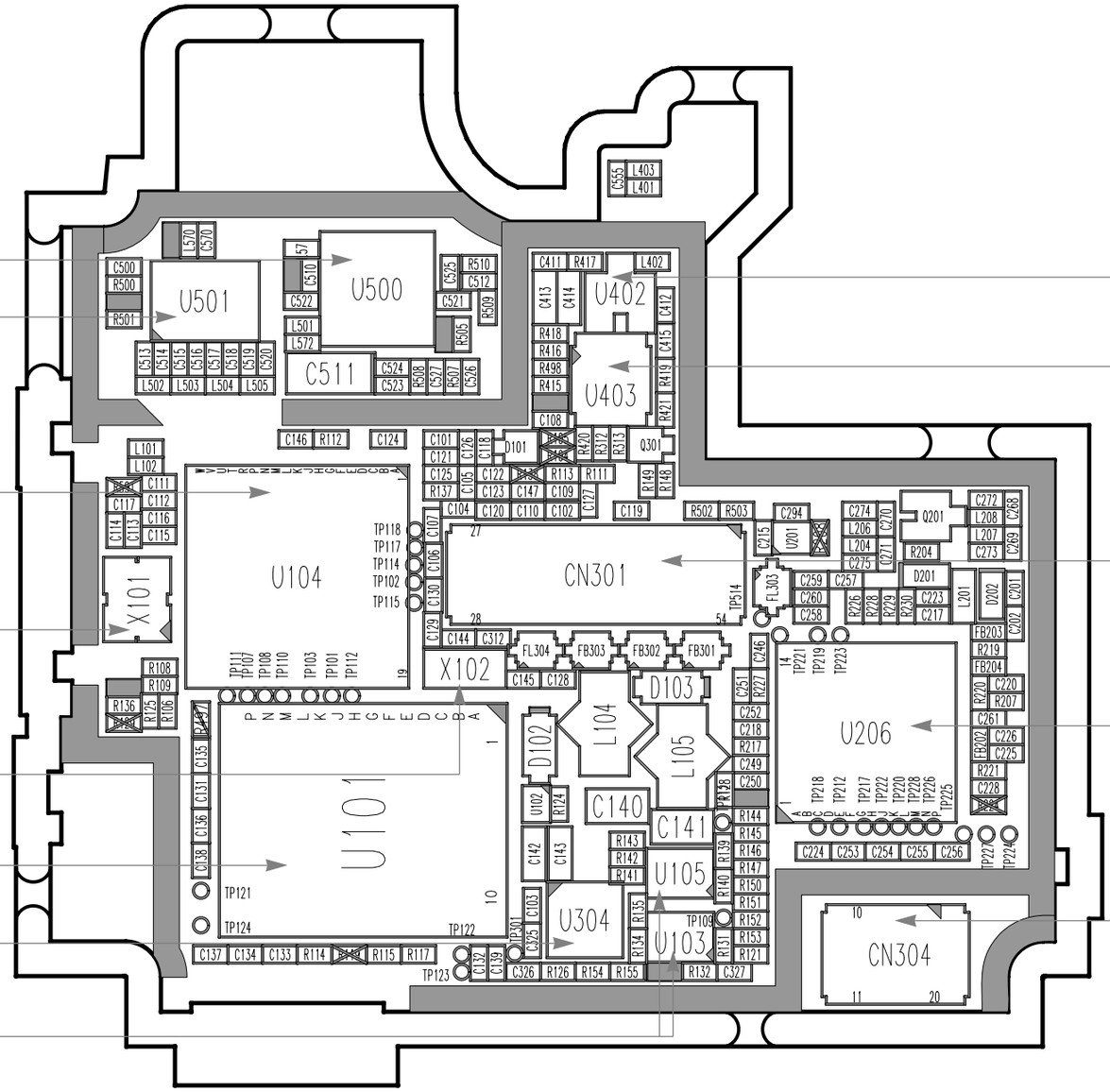
X101 NX3225SA
(26MHz)
No Power on
No Service

X102 Crystal
No booting

U101 Memory
No booting

U304 Accel IC
No accel sensing

U304 Accel IC
No accel sensing




U402 SUY98005LT1G
No Vibrator

U403 Charging IC
No Charging
No Booting
No Service

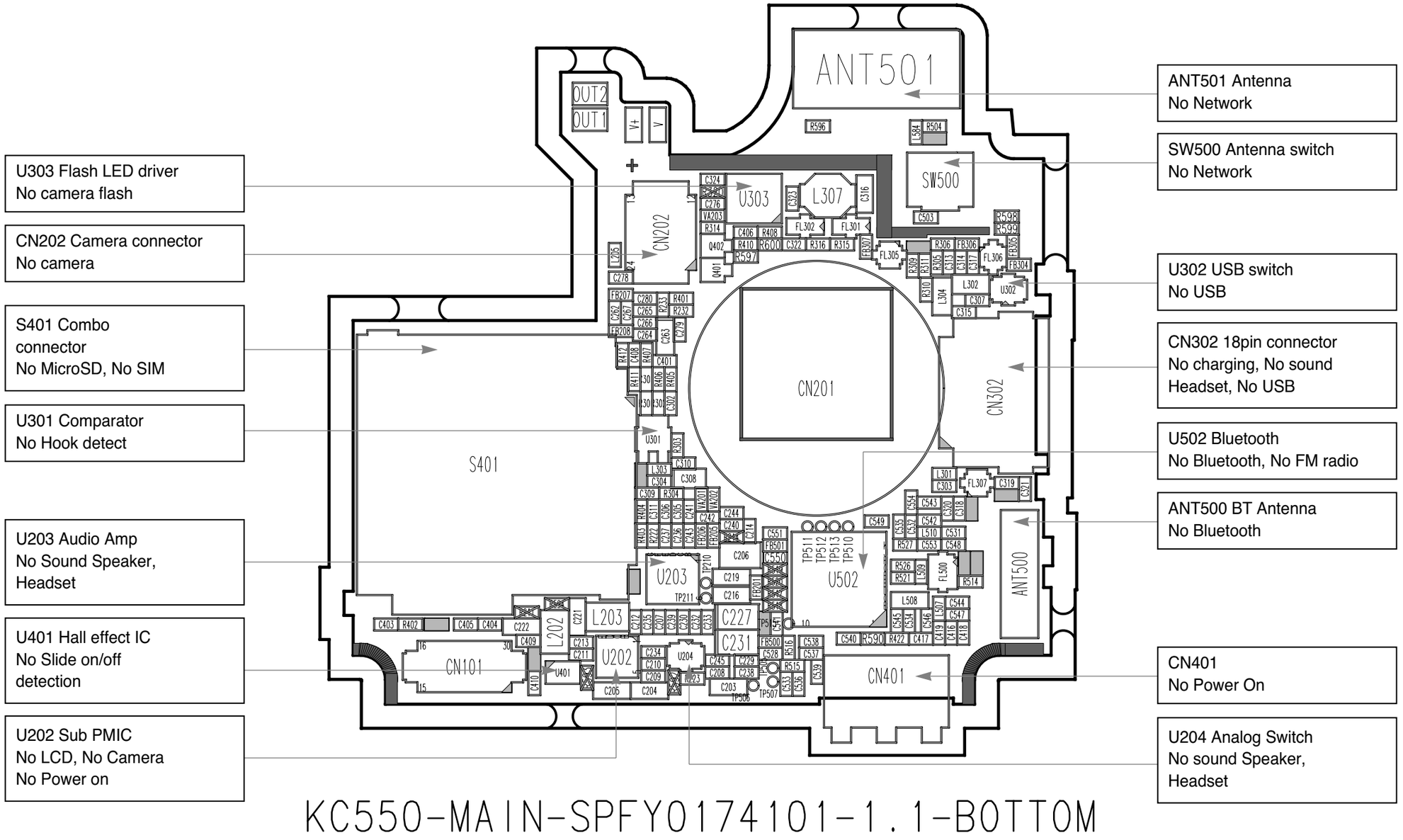
CN301 Slide FPCB Conn
No display
No Power on
No Service

U206 M180_P5
(MM Chip)
No Display
No Camera
No Multi Media

CN304 Key FPCB Conn
No MIC
No numeric key

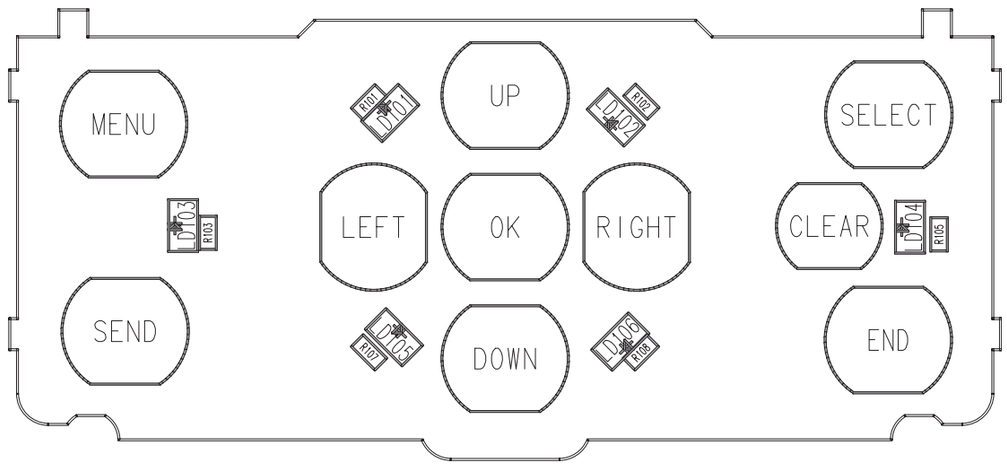
KC550-MAIN-SPFY0174101-1.1-TOP

# 10. PCB LAYOUT

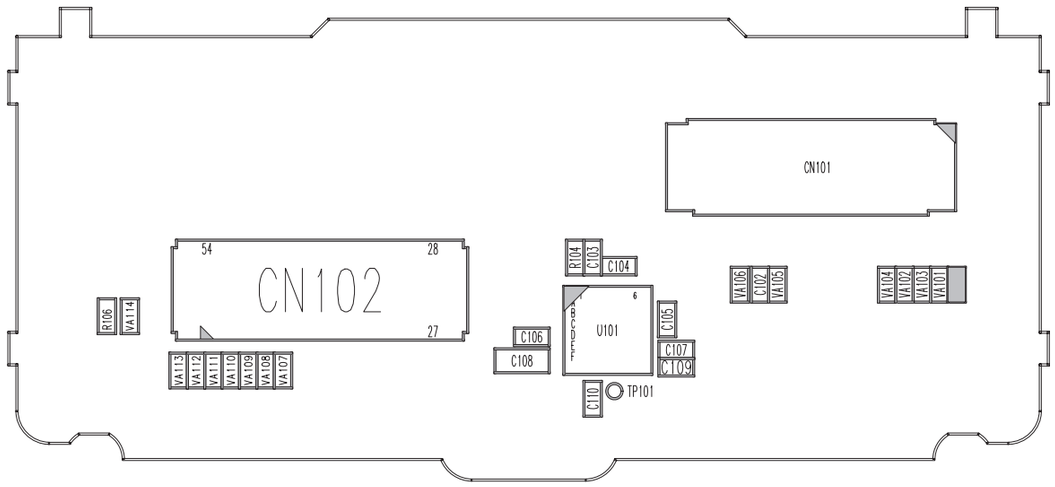



KC550-MAIN-SPFY0174101-1.1-BOTTOM

## 10. PCB LAYOUT

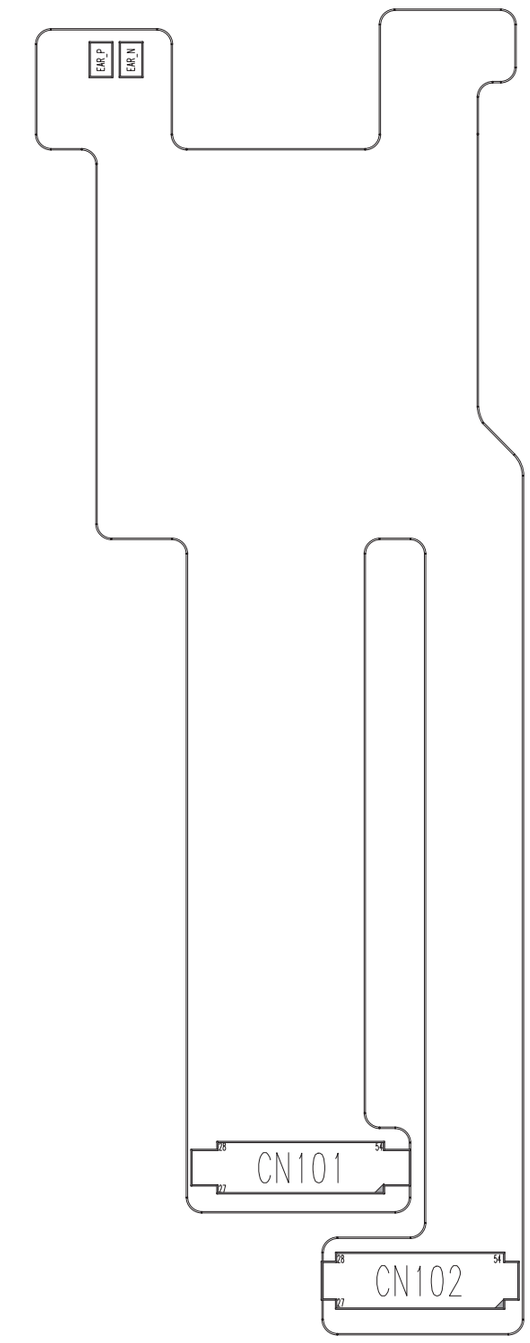



KC550-SLIDE-KEY-1.0-TOP



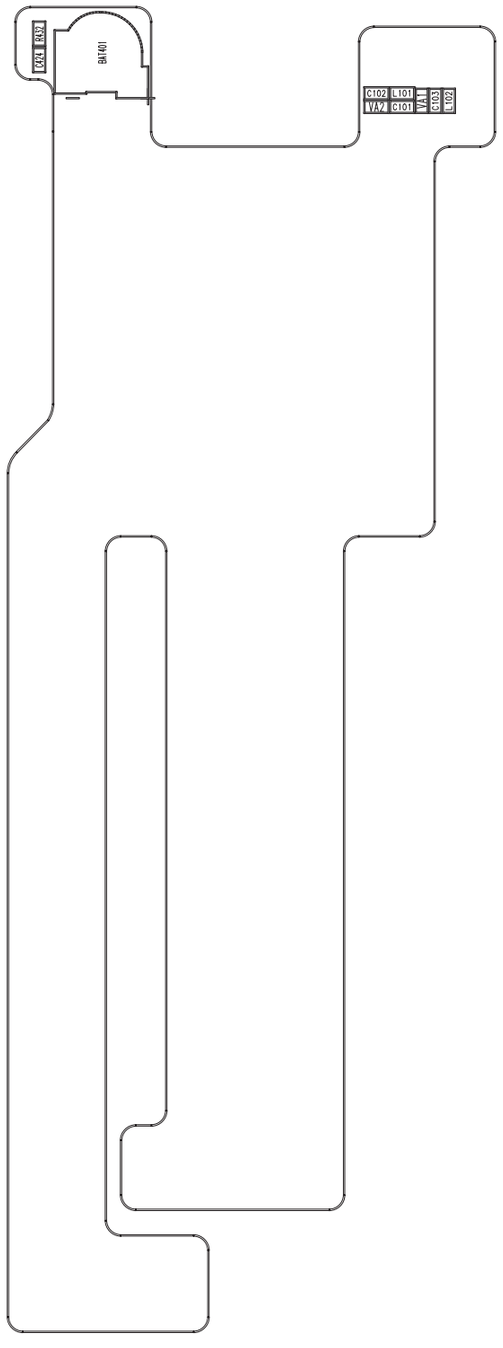

KC550-SLIDE-KEY-1.0-BTM

## 10. PCB LAYOUT

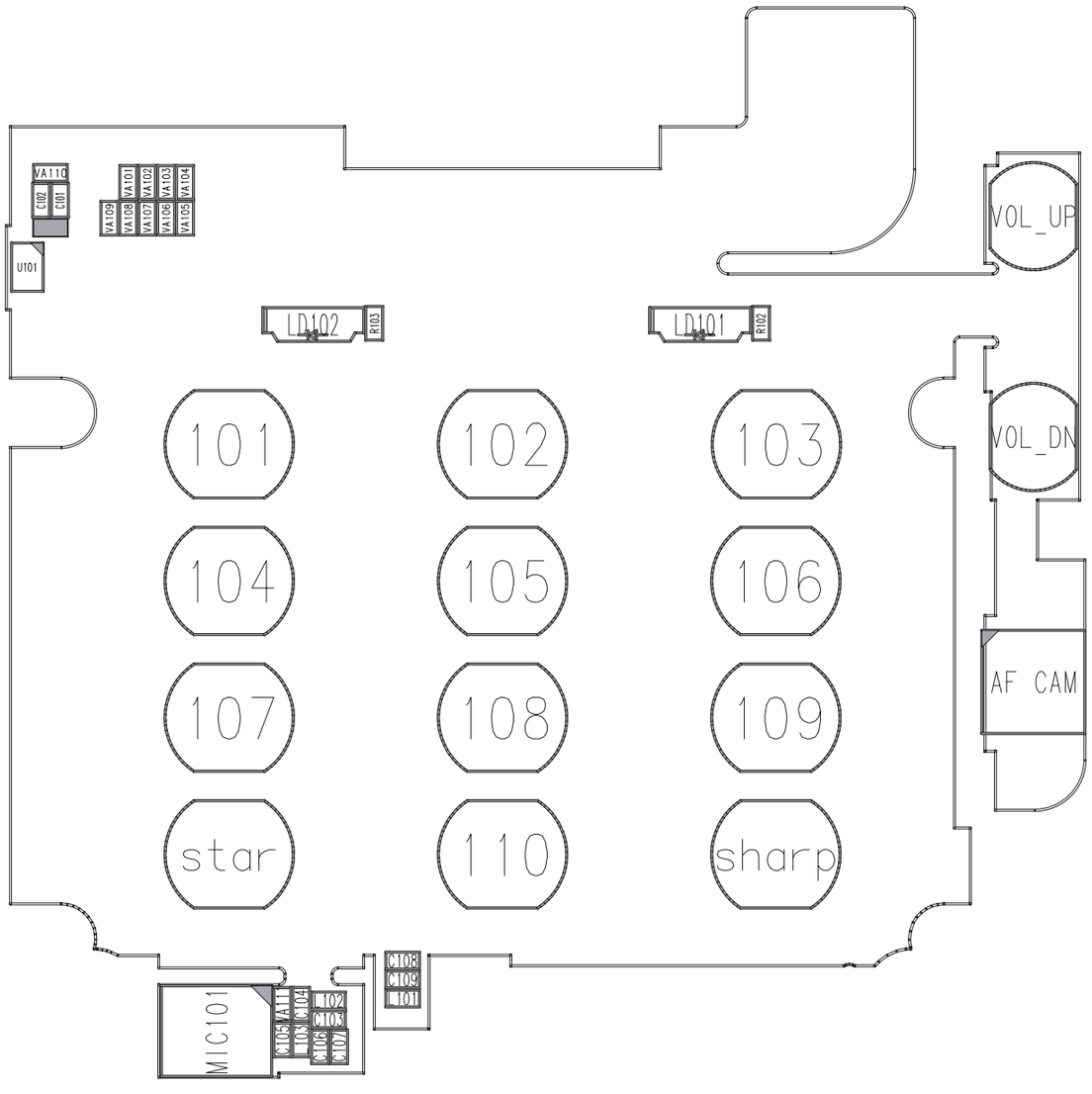



KC550-SPCY0129901-1.0

# 10. PCB LAYOUT

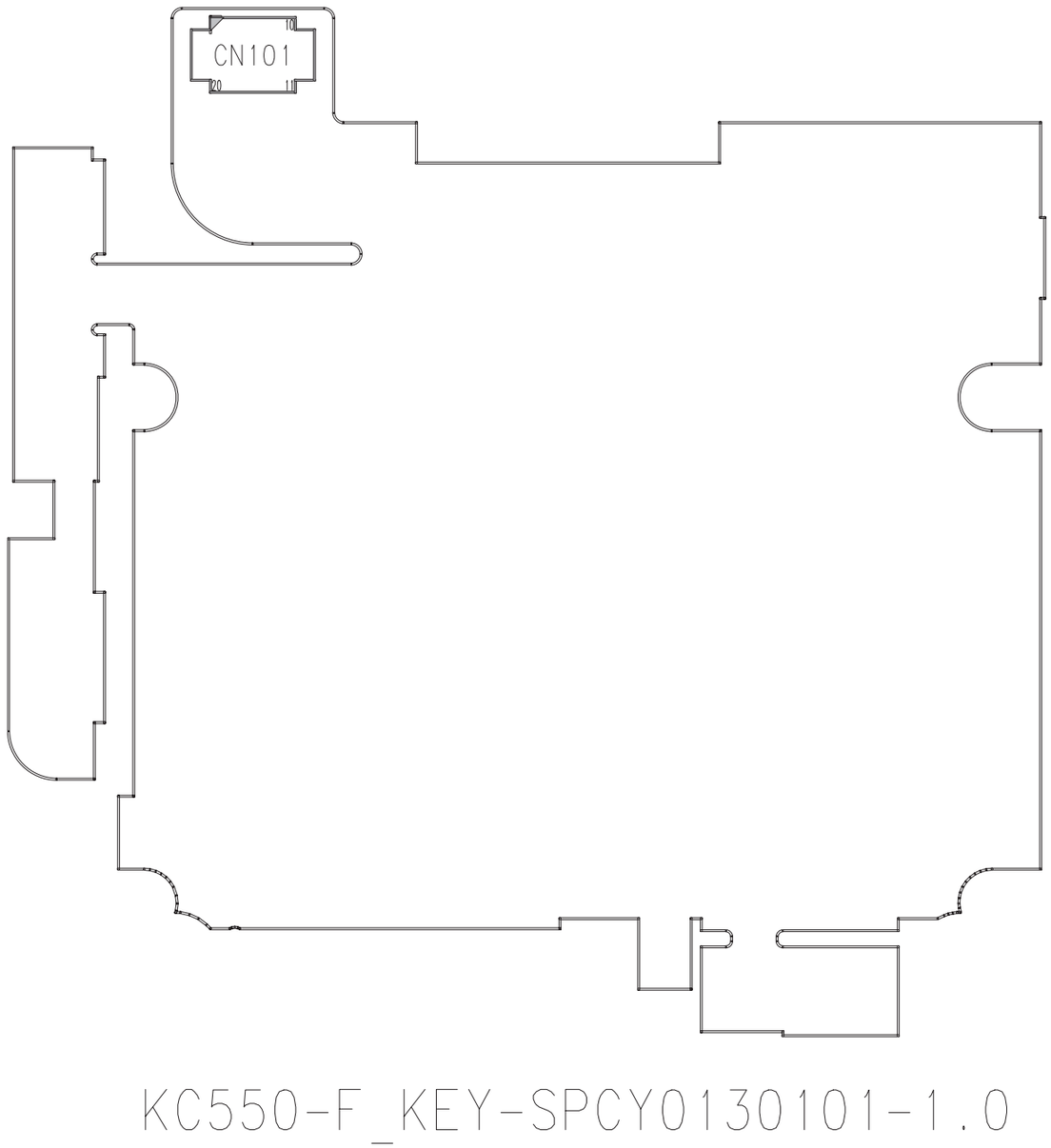


# 10. PCB LAYOUT

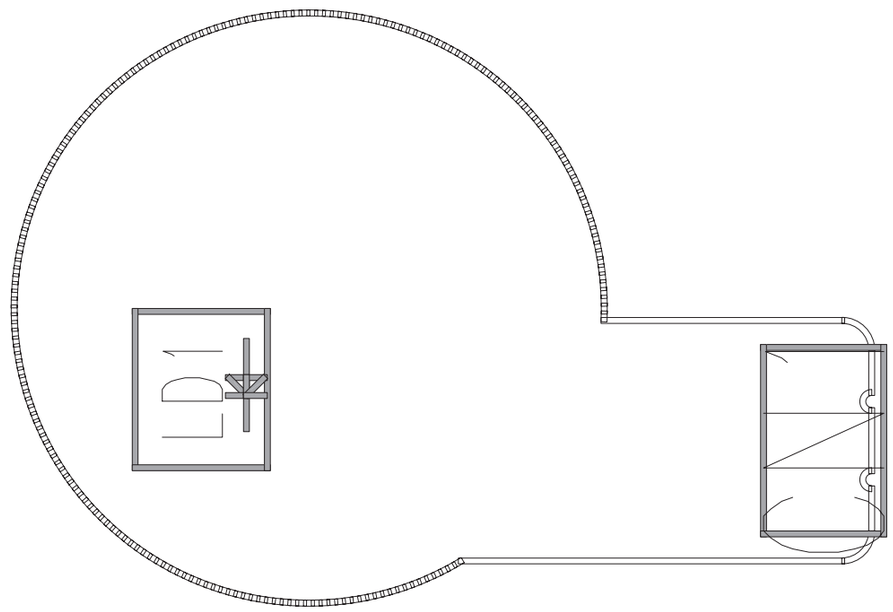



KC550-F_KEY-SPCY0130101-1.0

# 10. PCB LAYOUT



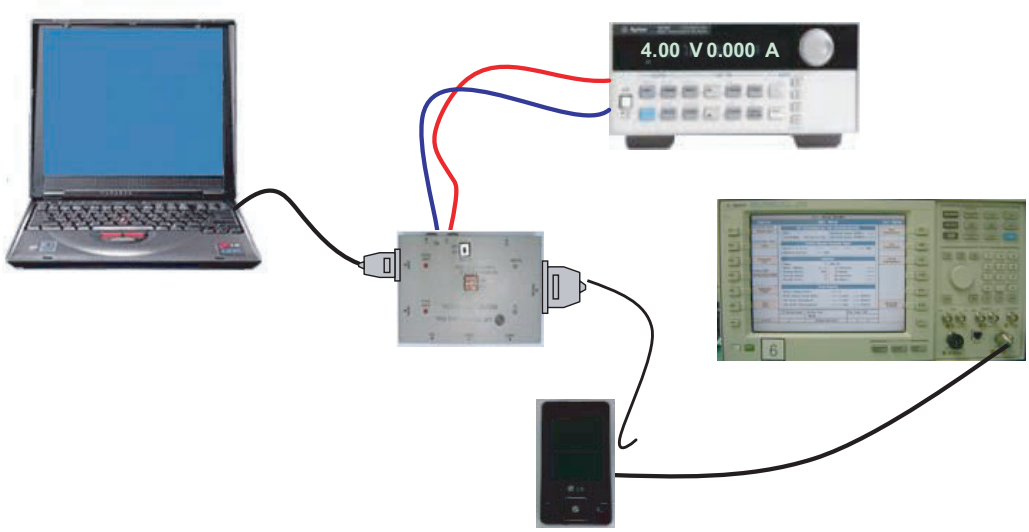
# 10. PCB LAYOUT




KC550-SPCY013000I-1.0

# 11. RF Calibration

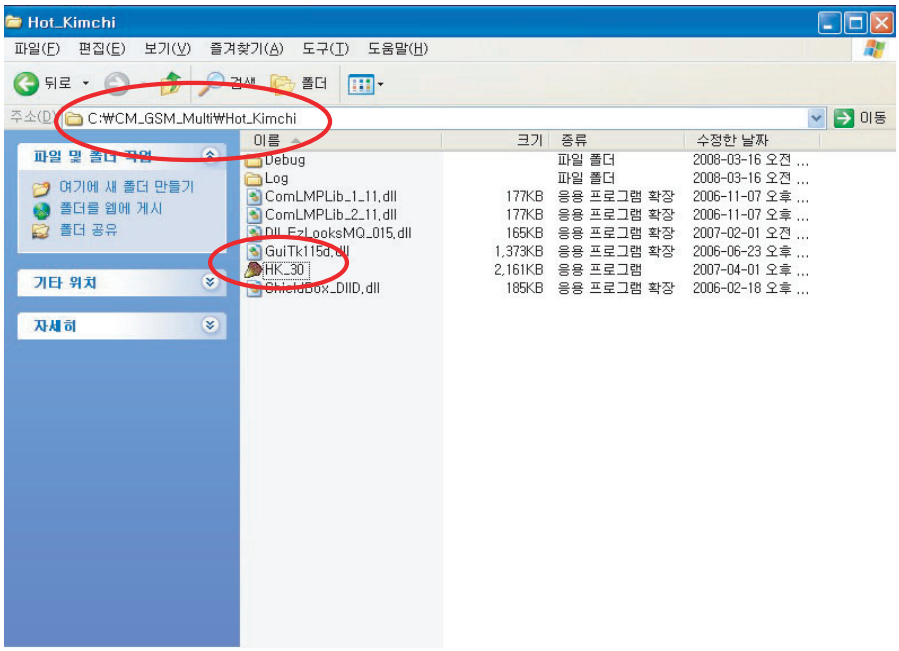
## 11.1 Test Equipment Setup



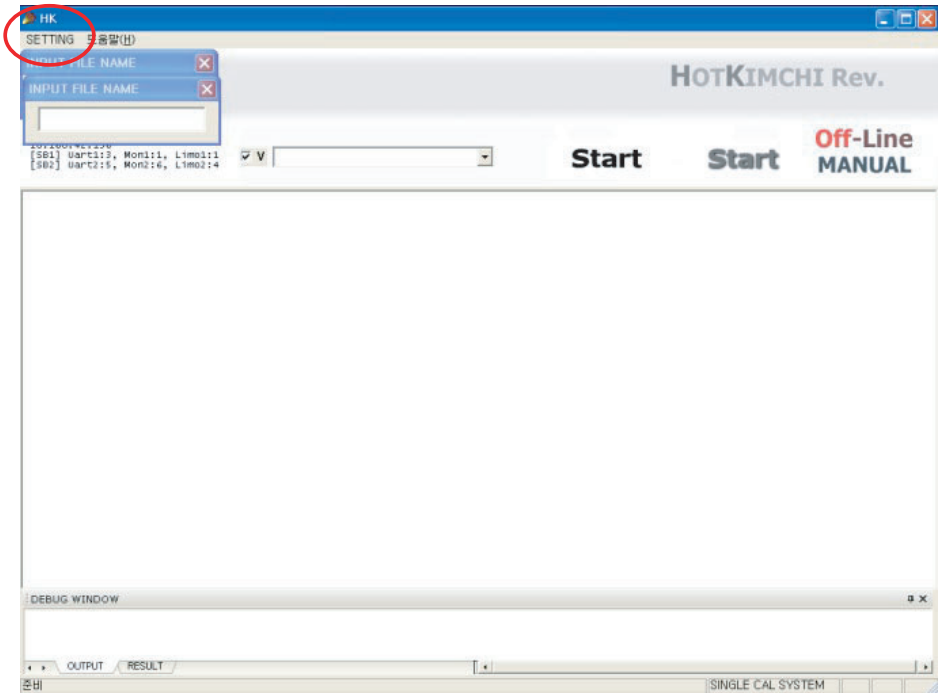

## 11.2 Calibration Step

### 11.2.1 Turn on the Phone.

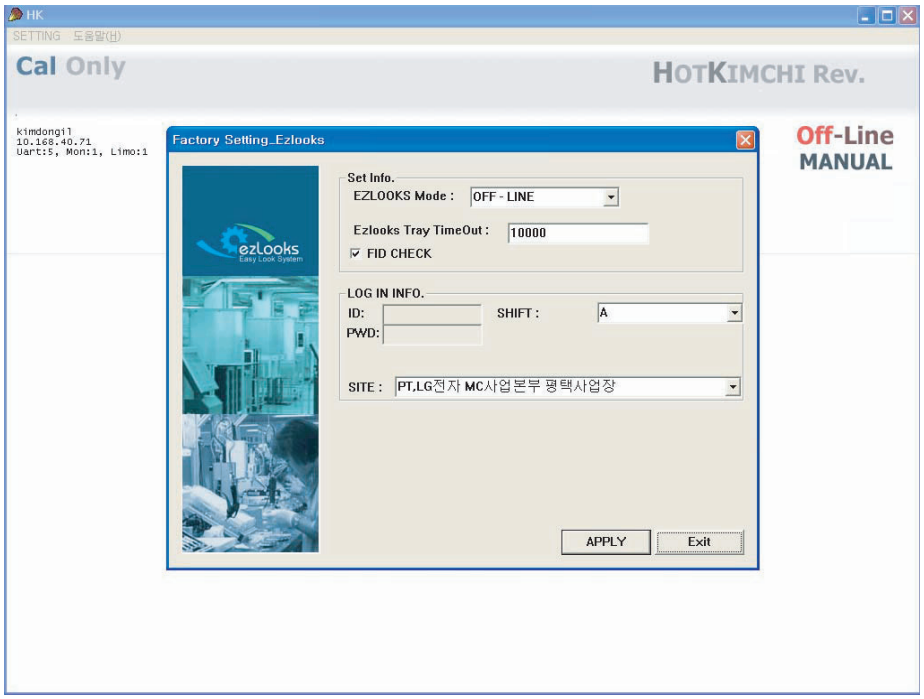
### 11.2.2 Execute “HK_30.exe”



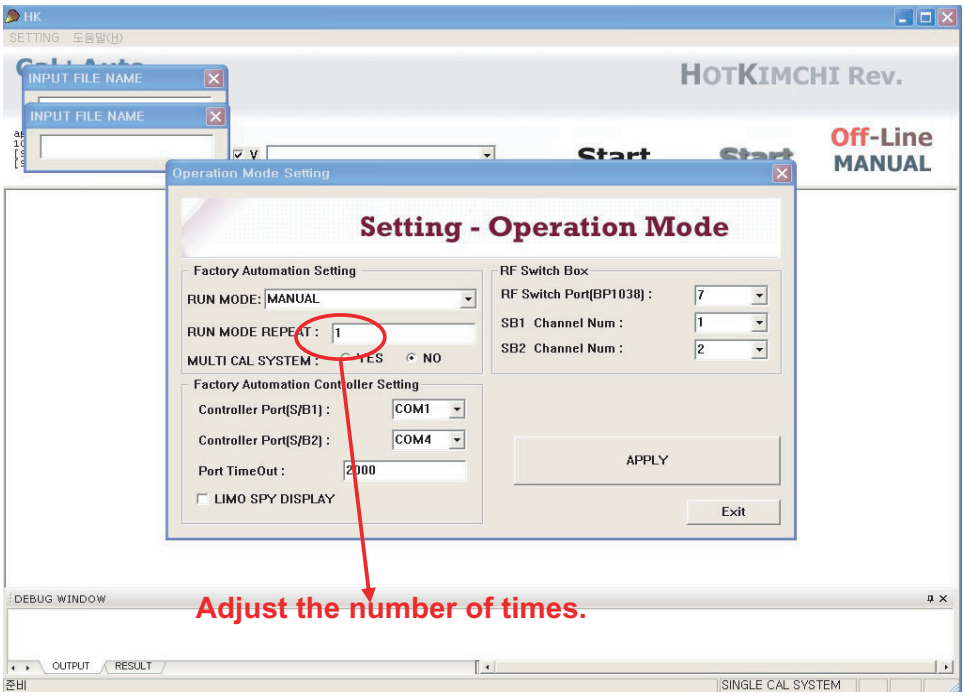
### 11.2.3 Click “SETTING” Menu



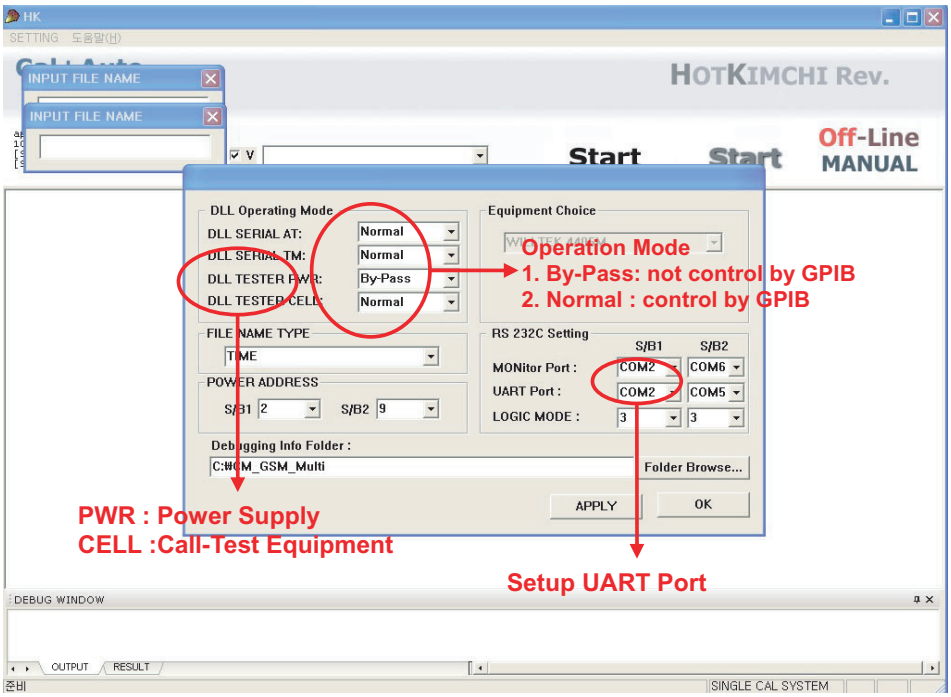

### 11.2.4 Setup “Ezlooks’ menu such as the following figure



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

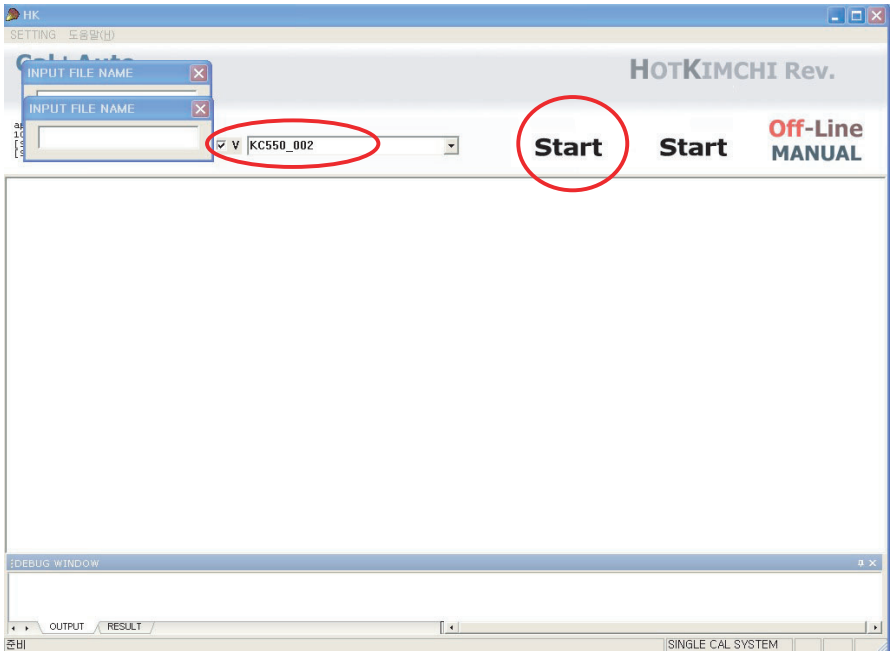



### 11.2.6 Setup Logic operation such as the following figure

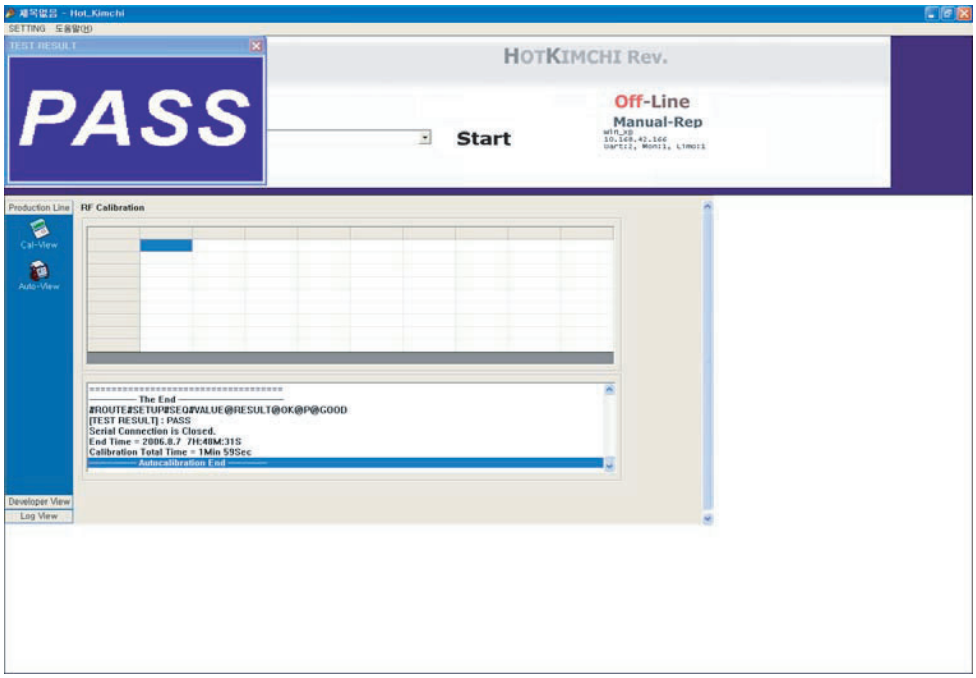


### 11.2.7 Select “MODEL”.

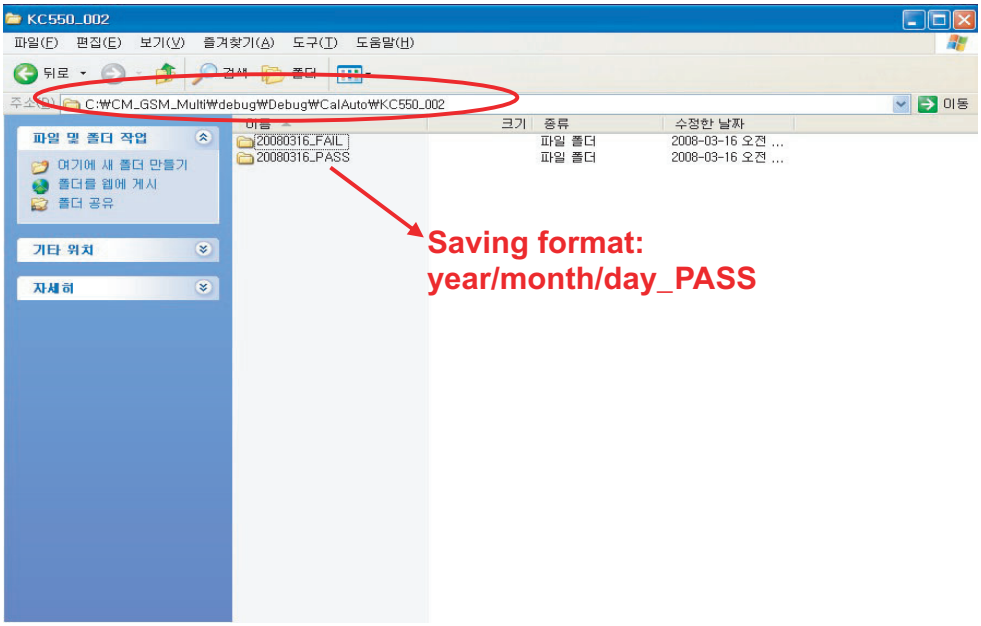
### 11.2.8 Click “START” for RF calibration




### 11.2.9 RF Calibration finishes.



### 11.2.10 Calibration data will be saved to the following folder.



# 11. 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

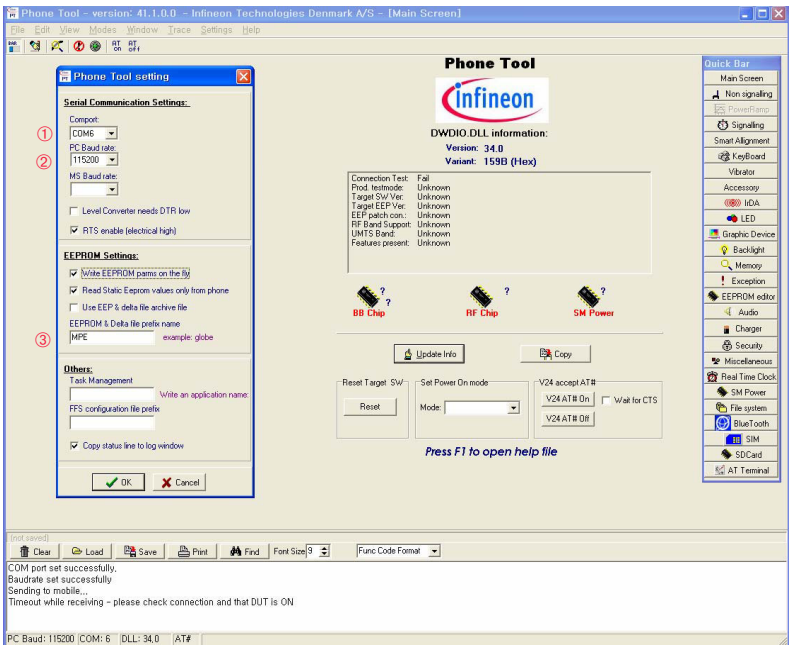

**< Normal Mode >**


**< ptest Mode>**

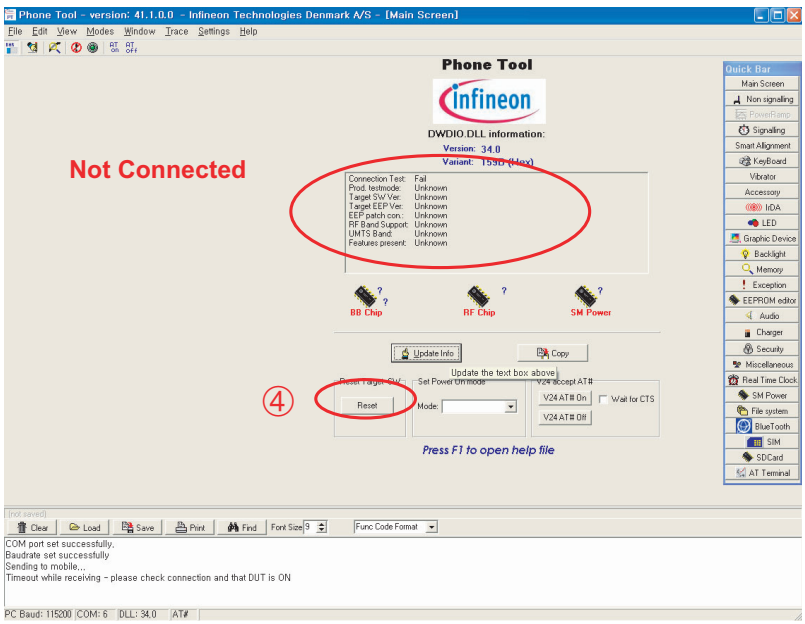
# 12. Stand-alone Test

## 12.1 Test Program Setting

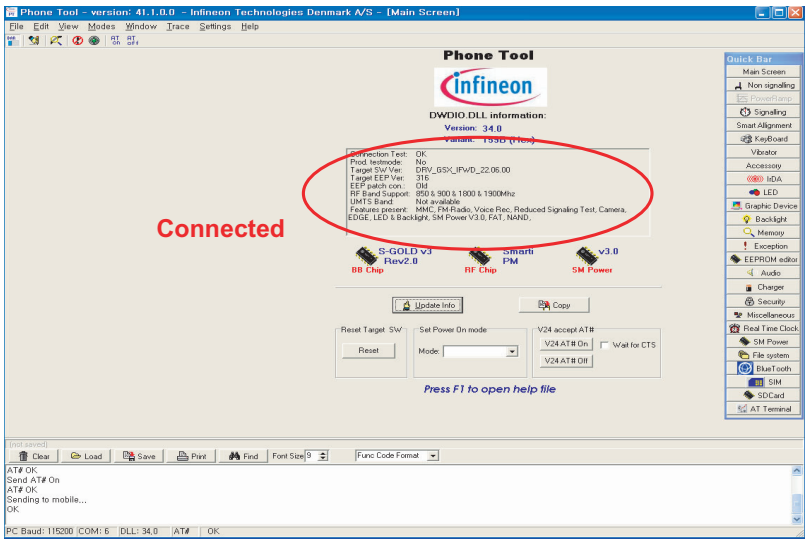
① Set COM Port.
② Check PC Baud rate.
③ Confirm EEPROM & Delta file prefix name.(mpelite)




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

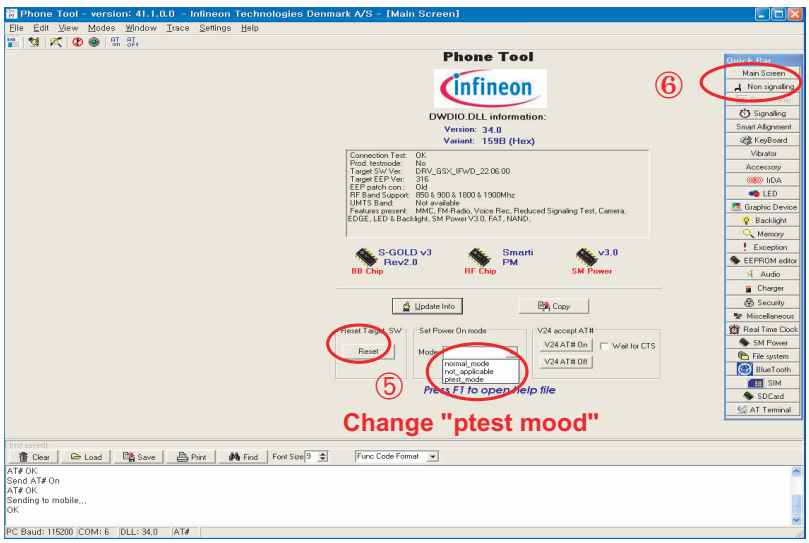


# 12. Stand-alone Test



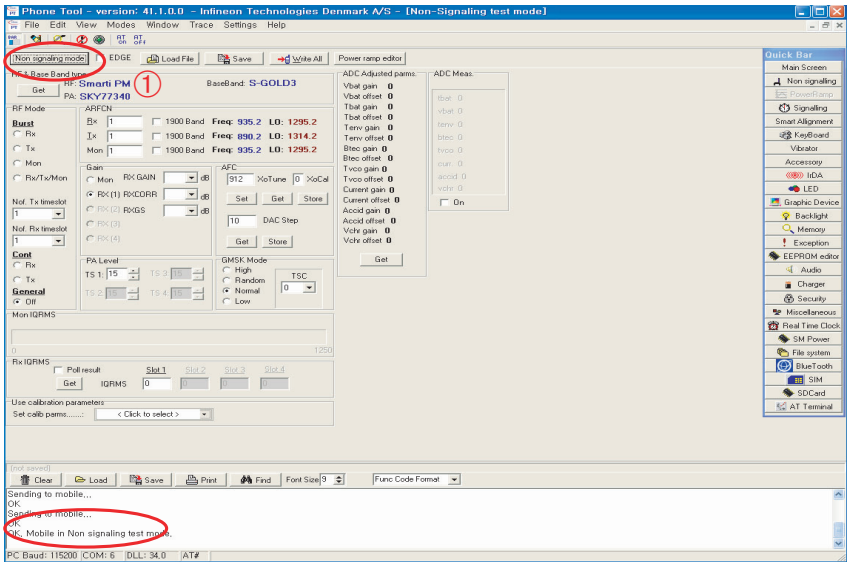

⑤ For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “ “Reset” bar.

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



## 12.2 Tx Test

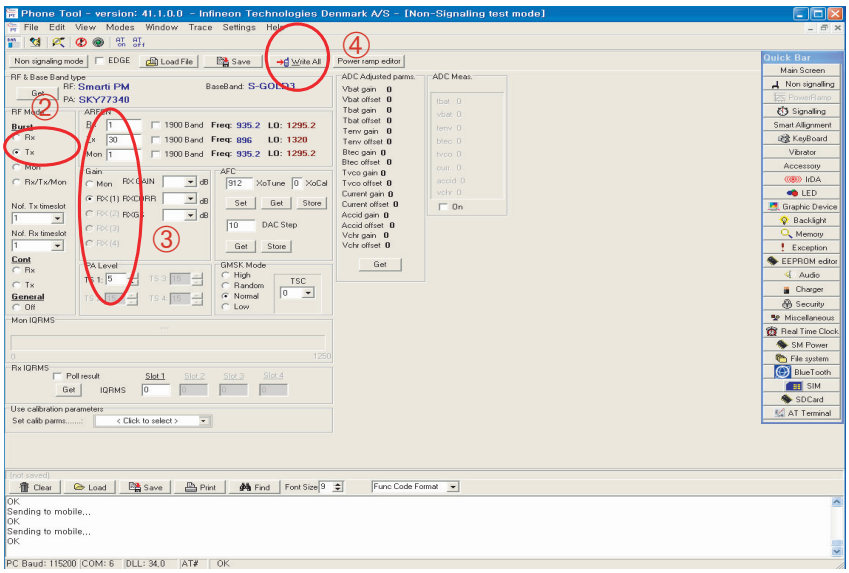
① Click “Non signaling mode” bar and then confirm “OK” text in the command line.




② Put the number of TX Channel in the ARFCN.

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

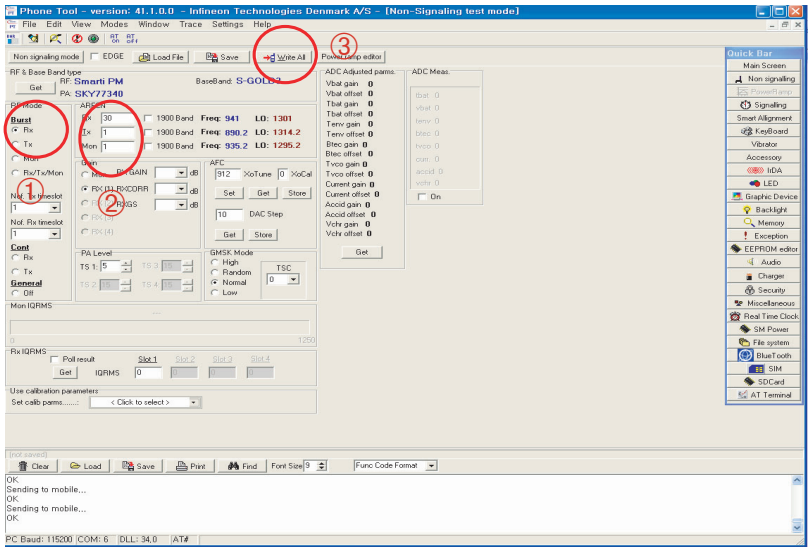
④ Finally, Click “Write All” bar and try the efficiency test of Phone.



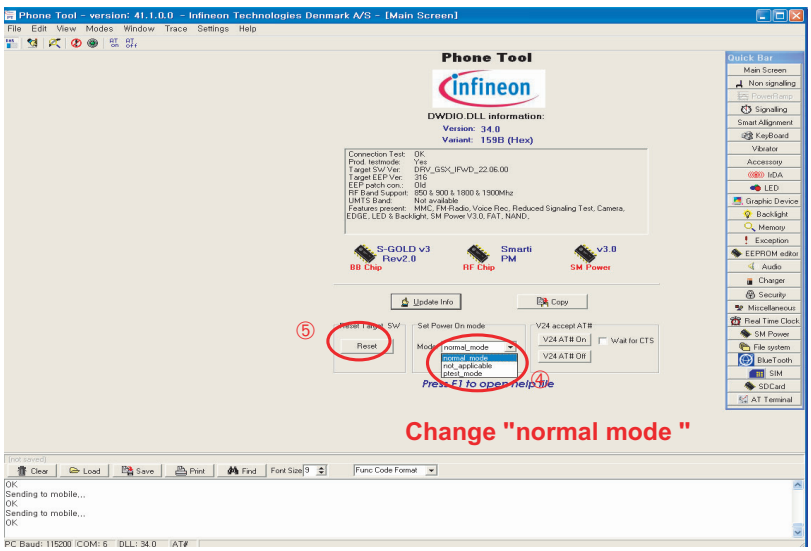
# 12. Stand-alone Test

## 12.3 Rx Test

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




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



# 13. ENGINEERING MODE

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

### [1] BB TEST

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

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

### [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] EGSM**

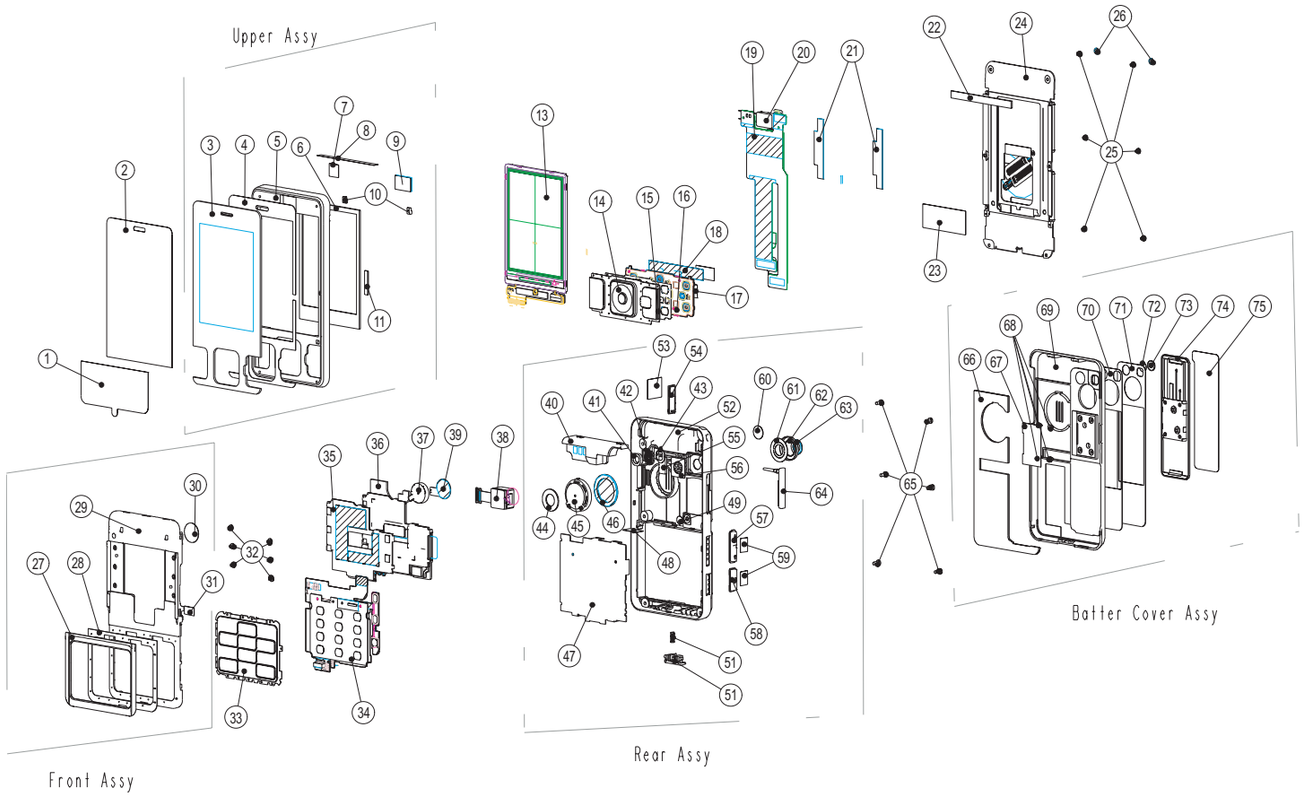
**[7-3] EGSM**

**[7-4] DCS**

**[7-5] PCS**

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

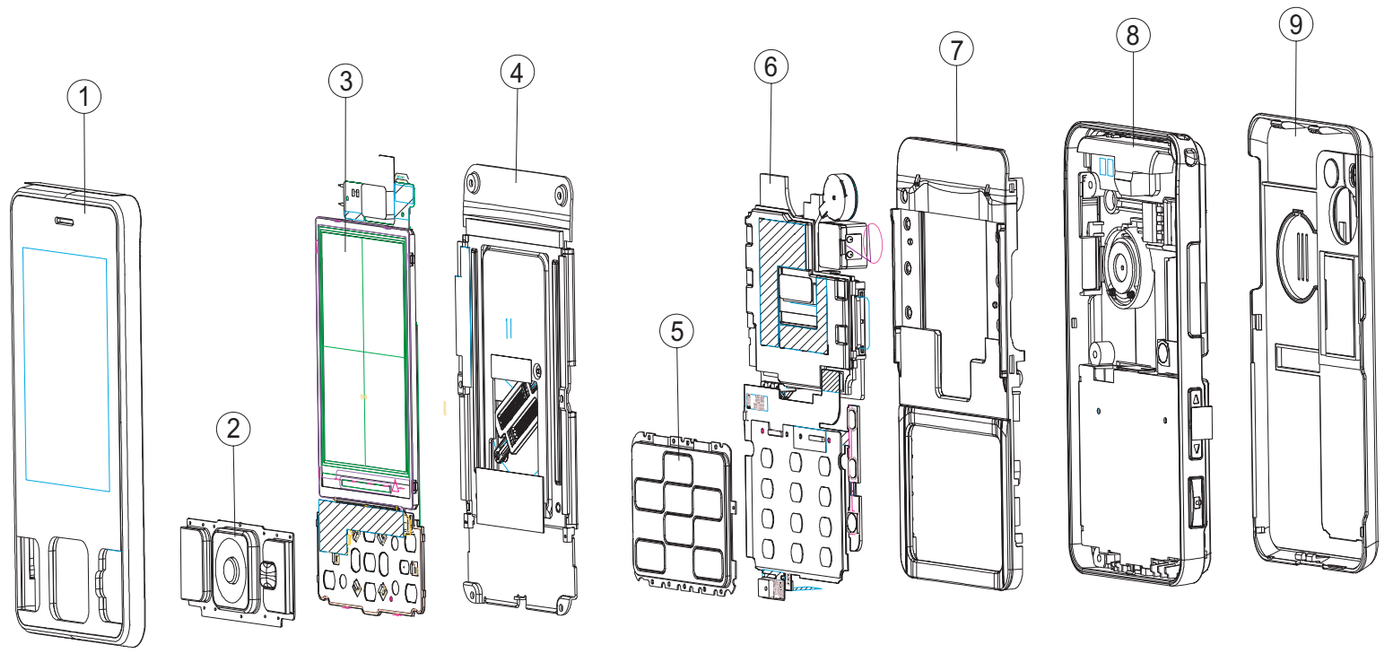
## 14.1 EXPLODED VIEW




| NO. | DESCRIPTION | Q'TY | DRAWING NO. | | REMARK |
|---|---|---|---|---|---|
| #6 | BATTERY COVER ASSY | 1 | ACGA0021601 | | |
| #5 | COVER ASSY, REAR | 1 | ACGM0107401 | | |
| #4 | COVER ASSY, FRONT | 1 | ACGK0105701 | | |
| #3 | COVER ASSY, SLIDE(LOWER) | 1 | ARDY0004701 | | |
| #2 | COVER ASSY, SLIDE(UPPER) | 1 | ACGS0016701 | | |
| #1 | COVER ASSY SLIDE | 1 | ACGQ0023501 | | |
| NO. | DESCRIPTION | Q'TY | ACGS0015801 | | REMARK |

| NO. | DESCRIPTION | Q'TY | DRAWING NO. | REMARK |
|---|---|---|---|---|
| 75 | TAPE, PROTECTION | 1 | MTAB0245201 | |
| 74 | RAIL ASSY, SLIDE | 1 | ARDY0004801 | |
| 73 | DECO, CAMERA(MIRROR) | 1 | MDAD0036601 | |
| 72 | TAPE, DECO | 1 | MTAA0156401 | |
| 71 | DECO, CAMERA(PLATE) | 1 | MDAD0035601 | |
| 70 | TAPE, DECO | 1 | MTAA0153101 | |
| 69 | COVER, BATTERY | 1 | MCJA0058201 | |
| 68 | SCREW MACHINE | 4 | GMZZ0019003 | |
| 67 | CAP, SCREW | 1 | MCCH0130401 | |
| 66 | DECO(내열 SHEET) | 1 | MDAY0039001 | |
| 65 | SCREW MACHINE | 6 | GMEY0011201 | |
| 64 | CAP, MULTIMEDIA CARD | 1 | MCCG0011001 | |
| 63 | WINDOW, CAMERA | 1 | MWAE0032601 | |
| 62 | DECO, CAMERA | 1 | MDAD0035501 | |
| 61 | TAPE, WINDOW | 1 | MTAD0081401 | |
| 60 | CAP, MOBILE SWITCH | 1 | MCCF0051501 | |
| 59 | INSULATOR(BUTTON) | 2 | MTAB0213101 | |
| 58 | BUTTON, CAMERA | 1 | MBJL0057201 | |
| 57 | BUTTON, VOLUME | 1 | MBJL0052701 | |
| 56 | PAD, CAMERA | 1 | MPBT0055801 | |
| 55 | PAD, CONNECTOR(CAMERA) | 1 | MPBU0023201 | |
| 54 | CAP, EARPHONE JACK | 1 | MCCC0052601 | |
| 53 | INSULATOR(MMI CAP) | 1 | MTAB0228001 | |
| 52 | COVER, REAR | 1 | MCJN0080801 | |
| 51 | SPRING, LOCKER | 1 | MSDC0008301 | |
| 50 | LOCKER, BATTERY | 1 | MLEA0044601 | |
| 49 | LABEL, A/S | 1 | MLAB0004801 | |
| 48 | TAPE, SHIELD | 1 | MTAC0069401 | |
| 47 | FRAME | 1 | MFEZ0015501 | |
| 46 | FILTER, SPEAKER | 1 | MFBC0039301 | |
| 45 | SPEAKER | 1 | SUSY0024801 | |
| 44 | PAD, SPEAKER | 1 | MPBN0054401 | |
| 43 | TAPE, FLASH LENS | 1 | MTAD0085201 | |
| 42 | LENS, FLASH | 1 | MLCE0009101 | |
| 41 | PAD, FLASH LED | 1 | MPBZ0204001 | |
| 40 | ANTENNA, GSM, FIXED | 1 | SNGF0035302 | |
| 39 | PCB ASSY, FLEXIBLE | 1 | SACY0073801 | |
| 38 | CAMERA | 1 | SVCY0017101 | |
| 37 | VIBRATOR, MOTOR | 1 | SJMY0008405 | |
| 36 | PCB ASSY, MAIN | 1 | SAFY0257201 | |
| 35 | CAN ASSY, SHIELD | 1 | ACKA0008601 | |
| 34 | PCB ASSY, FLEXIBLE | 1 | SACY0073701 | |
| 33 | KEYPAD, MAIN | 1 | MKAG0006401 | |
| 32 | SCREW MACHINE | 1 | GMZZ0019007 | |
| 31 | PAD, CONNECTOR(F-KEY) | 1 | MPBU0023301 | |
| 30 | TAPE, MOTOR | 1 | MTAF0016101 | |
| 29 | COVER, FRONT | 1 | MCJK0083901 | |
| 28 | TAPE, DECO | 1 | MTAA0153001 | |
| 27 | DECO, FRONT | 1 | MDAG0034601 | |
| 26 | CAP, SCREW | 2 | MCCH0127901 | |
| 25 | SCREW MACHINE | 6 | GMZZ0026401 | |
| 24 | RAIL ASSY, SLIDE | 1 | ARDY0004701 | |
| 23 | PAD | 1 | MPBZ0208401 | |
| 22 | PAD | 1 | MPBZ0211901 | |
| 21 | TAPE, SHIELD | 2 | MTAC0066801 | |
| 20 | RECEIVER | 1 | SURY0013401 | |
| 19 | PCB ASSY, FLEXIBLE | 1 | SACY0075601 | |
| 18 | INSULATOR | 1 | MIDZ0162301 | |
| 17 | INSULATOR(SHORT 방지) | 1 | ADCA0079701 | |
| 16 | PCB ASSY, KEYPAD | 1 | SAEY0061501 | |
| 15 | DOMESHEET, SUB | 1 | ADCA0079701 | |
| 14 | KEYPAD ASSY, SUB | 1 | AKAD0001001 | |
| 13 | LCD MODULE | 1 | SVLM0027801 | |
| 11 | MAGNET, SWITCH | 1 | MMAA0000901 | |
| 10 | STOPPER | 2 | MSGY0024001 | |
| 9 | PAD, RCV(FILTER) | 1 | MFBB0025001 | |
| 8 | INSULATOR(TOP SIDE) | 1 | MIDZ0173601 | |
| 7 | INSULATOR(SHORT 방지) | 1 | MIDZ0162201 | |
| 6 | PAD LCD | 1 | MPBG0072801 | |
| 5 | COVER SLIDE UPPER | 1 | MCJW0016901 | |
| 4 | TAPE WINDOW | 1 | MTAD0081301 | |
| 3 | MAIN WINDOW LCD | 1 | MWAC0094201 | |
| 2 | SLIDE UPPER PROTECTION | 1 | MTAB0213001 | |
| 1 | KEYPAD PROTECTION | 1 | MIDZ0168202 | |
| NO. | DESCRIPTION | Q'TY | DRAWING NO. | REMARK |

## ASS'Y EXPLODED VIEW




| NO. | DESCRIPTION | Q'TY | ACGS0015801 | REMARK |
|---|---|---|---|---|
| 9 | BATTERY COVER ASSY | 1 | ACGA0021601 | |
| 8 | COVER ASSY, REAR | 1 | ACGM0107401 | |
| 7 | COVER ASSY, FRONT | 1 | ACGK0105701 | |
| 6 | PCB ASSY MAIN | 1 | SAFY0257201 | |
| 5 | BUTTON ASSY MAIN | 1 | MKAG0006401 | |
| 4 | SLIDE HINGE ASSY | 1 | ARDY0004701 | |
| 3 | PCB ASSY SUB | 1 | SAEY0061501 | |
| 2 | BUTTON ASSY SUB | 1 | AKAD0001001 | |
| 1 | COVER ASSY, SLIDE(UPPER) | 1 | ACGS0016701 | |

## 14.2 Replacement Parts <Mechanic component>

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

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 1 | | GSM(SLIDE) | TGLL0016401 | | Black | |
| 2 | AAAY00 | ADDITION | AAAY0293801 | | Black | |
| 3 | ACGA00 | COVER ASSY,BATTERY | ACGA0021601 | | Black | I, #6 |
| 4 | ARDY00 | RAIL ASSY,SLIDE | ARDY0004801 | CAMERA COVER | TITAN GRAY | 74 |
| 4 | GMZZ00 | SCREW MACHINE | GMZZ0019003 | 3.5 mm,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating (ZnB-BLACK) | Black | 68 |
| 4 | MCCH00 | CAP,SCREW | MCCH0130401 | MOLD, PC LUPOY SC-1004A, , , , , | Black | 67 |
| 4 | MCJA00 | COVER,BATTERY | MCJA0058201 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 69 |
| 4 | MDAD00 | DECO,CAMERA | MDAD0035601 | COMPLEX, (empty), 0.3, , , , | Transparent | 71 |
| 4 | MDAD01 | DECO,CAMERA | MDAD0036601 | ELECTROFORMING, Cu, 0.3, , , , | Transparent | 73 |
| 4 | MDAY00 | DECO | MDAY0039001 | CUTTING, NS, 1.05mm, , , , | Black | 66 |
| 4 | MTAA00 | TAPE,DECO | MTAA0153101 | COMPLEX, (empty), , , , , | Without Color | 70 |
| 4 | MTAA01 | TAPE,DECO | MTAA0156401 | COMPLEX, (empty), , , , , | Without Color | 72 |
| 4 | MTAB00 | TAPE,PROTECTION | MTAB0245201 | COMPLEX, (empty), 0.35, , , , | Without Color | 76 |
| 2 | APEY00 | PHONE | APEY0562901 | | Black | |
| 3 | ACGM00 | COVER ASSY,REAR | ACGM0107401 | | Black | H, #5 |
| 4 | MBJL00 | BUTTON,SIDE | MBJL0052701 | COMPLEX, (empty), , , , , | Black | 57 |
| 4 | MBJL01 | BUTTON,SIDE | MBJL0057201 | COMPLEX, (empty), , , , , | Black | 58 |
| 4 | MCCC00 | CAP,EARPHONE JACK | MCCC0052601 | COMPLEX, (empty), , , , , | Black | 54 |
| 4 | MCCF00 | CAP,MOBILE SWITCH | MCCF0051501 | CUTTING, NS, 0.2, , , , | Black | 60 |
| 4 | MCCG00 | CAP,MULTIMEDIA CARD | MCCG0011001 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 64 |
| 4 | MCJN00 | COVER,REAR | MCJN0080801 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 52 |
| 4 | MDAD00 | DECO,CAMERA | MDAD0035501 | ELECTROFORMING, Cu, 0.3, , , , | Silver | 62 |
| 4 | MFBC00 | FILTER,SPEAKER | MFBC0039301 | COMPLEX, (empty), , , , , | Black | 46 |
| 4 | MFEZ00 | FRAME | MFEZ0015501 | PRESS, STS, , , , , | Silver | 47 |
| 4 | MIDZ00 | INSULATOR | MIDZ0179801 | 5PI X 1.5PI X 0.05T | Yellow | |
| 4 | MLAB00 | LABEL,A/S | MLAB0004801 | PRINTING, (empty), , , , , | Without Color | 49 |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 4 | MLCE00 | LENS,FLASH | MLCE0009101 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 42 |
| 4 | MLEA00 | LOCKER,BATTERY | MLEA0044601 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 50 |
| 4 | MPBN00 | PAD,SPEAKER | MPBN0054401 | COMPLEX, (empty), , , , , | Black | 44 |
| 4 | MPBT00 | PAD,CAMERA | MPBT0055801 | COMPLEX, (empty), , , , , | Black | 56 |
| 4 | MPBU00 | PAD,CONNECTOR | MPBU0023201 | COMPLEX, (empty), , , , , | Black | 55 |
| 4 | MPBZ00 | PAD | MPBZ0204001 | CUTTING, NS, 1.4, , , , | White | 41 |
| 4 | MSDC00 | SPRING,LOCKER | MSDC0008301 | | Without Color | 51 |
| 4 | MTAB00 | TAPE,PROTECTION | MTAB0213101 | COMPLEX, (empty), 0.35, , , , | Without Color | 59 |
| 4 | MTAB01 | TAPE,PROTECTION | MTAB0228001 | COMPLEX, (empty), 0.35, , , , | Without Color | 53 |
| 4 | MTAC00 | TAPE,SHIELD | MTAC0069401 | COMPLEX, (empty), , , , , | Silver | 48 |
| 4 | MTAD00 | TAPE,WINDOW | MTAD0081401 | COMPLEX, (empty), , , , , | Without Color | 61 |
| 4 | MTAD01 | TAPE,WINDOW | MTAD0085201 | COMPLEX, (empty), , , , , | Without Color | 43 |
| 4 | MWAE00 | WINDOW,CAMERA | MWAE0032601 | MOLD, Tempered Glass, , , , , | Black | 63 |
| 3 | ACGQ00 | COVER ASSY,SLIDE | ACGQ0023501 | | Black | #1 |
| 4 | ACGK00 | COVER ASSY,FRONT | ACGK0105701 | | Black | G, #4 |
| 5 | MCJK00 | COVER,FRONT | MCJK0083901 | MOLD, PC LUPOY SC-1004ML, , , , , | Black | 29 |
| 5 | MDAG00 | DECO,FRONT | MDAG0034601 | MOLD, POM LUCEL FW-700A, , , , , | Black | 27 |
| 5 | MICZ00 | INSERT | MICZ0021601 | M1.4XL2.5 | Silver | |
| 5 | MPBU00 | PAD,CONNECTOR | MPBU0023301 | COMPLEX, (empty), , , , , | Black | 31 |
| 5 | MTAA00 | TAPE,DECO | MTAA0153001 | COMPLEX, (empty), , , , , | Without Color | 28 |
| 5 | MTAF00 | TAPE,MOTOR | MTAF0016101 | COMPLEX, (empty), , , , , | Without Color | 30 |
| 4 | ACGS00 | COVER ASSY, SLIDE(UPPER) | ACGS0016701 | | Black | A, #2 |
| 5 | MCJW00 | COVER,SLIDE(UPPER) | MCJW0016901 | CASTING, Al Alloy, , , , , | Black | 5 |
| 5 | MFBB00 | FILTER,RECEIVER | MFBB0025001 | COMPLEX, (empty), , , , , | Without Color | 9 |
| 5 | MIDZ00 | INSULATOR | MIDZ0162201 | COMPLEX, (empty), , , , , | Without Color | |
| 5 | MIDZ001 | INSULATOR | MIDZ0173601 | COMPLEX, (empty), , , , , | Without Color | 8 |
| 5 | MMAA00 | MAGNET,SWITCH | MMAA0000901 | G7000 12x2x0.7t | Metal Silver | 11 |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 5 | MPBG00 | PAD,LCD | MPBG0072801 | COMPLEX, (empty), , , , , | Without Color | 6 |
| 5 | MSGY00 | STOPPER | MSGY0024001 | COMPLEX, (empty), , , , , | Black | |
| 5 | MTAD00 | TAPE,WINDOW | MTAD0081301 | COMPLEX, (empty), , , , , | Without Color | 4 |
| 5 | MWAC00 | WINDOW,LCD | MWAC0094201 | MOLD, PMMA HI835M, , , , , | Without Color | 3 |
| 4 | AKAD00 | KEYPAD ASSY,SUB | AKAD0001001 | SLIDE FUNCTION | Black | B, 14 |
| 4 | ARDY00 | RAIL ASSY,SLIDE | ARDY0004701 | | TITAN GRAY | D, #3, 24 |
| 5 | MIDZ00 | INSULATOR | MIDZ0175901 | COMPLEX, (empty), , , , , | Without Color | |
| 5 | MIDZ01 | INSULATOR | MIDZ0175902 | INSULATOR MOVING PLATE | Without Color | |
| 5 | MIDZ02 | INSULATOR | MIDZ0175903 | INSULATOR BUMPER | Without Color | |
| 5 | MSGY00 | STOPPER | MSGY0024001 | COMPLEX, (empty), , , , , | Black | 10 |
| 4 | GMZZ00 | SCREW MACHINE | GMZZ0019007 | M1.4,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating , , , , , , , , , | WHITE SILVER | 32 |
| 4 | GMZZ01 | SCREW MACHINE | GMZZ0026401 | 1.4 mm,1.7 mm,MSWR3(FZW) ,A ,+ ,- , ,; ,RWH ,+ ,1.4 ,1.7 ,NYLON ,WHITE ,[empty] ,[empty] | White | 25 |
| 4 | MCCH00 | CAP,SCREW | MCCH0127901 | MOLD, PC LUPOY SC-1004A, , , , , | Silver | 26 |
| 4 | MIDZ01 | INSULATOR | MIDZ0162201 | COMPLEX, (empty), , , , , | Without Color | 7 |
| 4 | MIDZ02 | INSULATOR | MIDZ0162301 | COMPLEX, (empty), , , , , | Without Color | 18 |
| 4 | MIDZ03 | INSULATOR | MIDZ0168202 | COMPLEX, (empty), , , , , | Without Color | 1 |
| 4 | MKAG00 | KEYPAD,MAIN | MKAG0006401 | COMPLEX, (empty), , , , , | Black | E, 33 |
| 4 | MLAZ00 | LABEL | MLAZ0038303 | PRINTING, (empty), , , , , | White | |
| 4 | MPBZ00 | PAD | MPBZ0208301 | CUTTING, NS, 1.4, , , , | White | |
| 4 | MPBZ01 | PAD | MPBZ0208401 | CUTTING, NS, 1.4, , , , | White | 23 |
| 4 | MPBZ05 | PAD | MPBZ0211901 | CUTTING, NS, 1.4, , , , | Without Color | 22 |
| 4 | MRDY00 | REINFORCE | MRDY0000601 | COMPLEX, (empty), , , , , | White | |
| 4 | MTAB00 | TAPE,PROTECTION | MTAB0213001 | COMPLEX, (empty), , , , , | Without Color | 2 |
| 4 | MTAC00 | TAPE,SHIELD | MTAC0066801 | COMPLEX, (empty), , , , , | Gold | 21 |
| 4 | MTAK00 | TAPE,CAMERA | MTAK0009801 | COMPLEX, (empty), , , , , | Black | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | MIDZ00 | INSULATOR | MIDZ0162201 | COMPLEX, (empty), , , , , | Without Color | |
| 6 | MPBU00 | PAD,CONNECTOR | MPBU0024701 | COMPLEX, (empty), , , , , | Black | |
| 6 | MPBU01 | PAD,CONNECTOR | MPBU0024801 | COMPLEX, (empty), , , , , | Black | |
| 6 | ADCA00 | DOME ASSY,METAL | ADCA0079201 | KC550 main. 5pi D(LGF) | White | |
| 6 | MPBH00 | PAD,MIKE | MPBH0037001 | COMPLEX, (empty), , , , , | Black | |
| 6 | ADCA00 | DOME ASSY,METAL | ADCA0079701 | KC550 slide. 5pi D | White | 15, 17 |
| 6 | MTAC00 | TAPE,SHIELD | MTAC0074101 | COMPLEX, (empty), , , , , | Gold | |
| 6 | MTAC01 | TAPE,SHIELD | MTAC0074102 | COMPLEX, (empty), , , , , | Gold | |
| 3 | GMEY00 | SCREW MACHINE,BIND | GMEY0011201 | 1.4 mm,3 mm,MSWR3(BK) ,N ,+ ,NYLOK | Without Color | 65 |
| 3 | MLAK00 | LABEL,MODEL | MLAK0006301 | LG (30.5x21.5  4-1R) | Pearl White | |
| 5 | ACKA00 | CAN ASSY,SHIELD | ACKA0008601 | KC550 SHIELD CAN ASSY | Silver | 35 |
| 6 | MCBA00 | CAN,SHIELD | MCBA0031001 | PRESS, STS, , , , , | Without Color | |
| 6 | MIDZ00 | INSULATOR | MIDZ0174501 | COMPLEX, (empty), , , , , | Green | |
| 6 | MIDZ01 | INSULATOR | MIDZ0174701 | COMPLEX, (empty), , , , , | Blue | |
| 6 | MIDZ02 | INSULATOR | MIDZ0174801 | COMPLEX, (empty), , , , , | Blue | |
| 6 | MTAC00 | TAPE,SHIELD | MTAC0072601 | COMPLEX, (empty), , , , , | Silver | |
| 5 | MLAZ00 | LABEL | MLAZ0038301 | PID Label 4 Array | Without Color | |

## <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 | SNGF0035302 | 3.0 ,-2.0 dBd,, ,internal, GSM900/1800/1900 ,; ,TRIPLE ,-2.0 ,50 ,3.0 | | 40 |
| 4 | SUSY00 | SPEAKER | SUSY0024801 | PIN ,8 ohm,90 dB,16 mm,3.4T, Spring Contact ,; , , , , , , ,CONTACT | | 45 |
| 4 | SACY00 | PCB ASSY,FLEXIBLE | SACY0075601 | F-LCD | | 19 |
| 5 | SACB00 | PCB ASSY, FLEXIBLE,INSERT | SACB0046801 | F-LCD | | |
| 5 | SACE00 | PCB ASSY,FLEXIBLE,SMT | SACE0070201 | F-LCD | | |
| 6 | SACC00 | PCB ASSY,FLEXIBLE,SMT BOTTOM | SACC0046801 | F-LCD | | |
| 7 | BAT401 | BATTERY,CELL,LITHIUM | SBCL0001701 | 2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free | | |
| 7 | C101 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 7 | C102 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 7 | C103 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 7 | C424 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | L101 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 7 | L102 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 7 | R432 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | VA1 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA2 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 6 | SACD00 | PCB ASSY,FLEXIBLE,SMT TOP | SACD0059701 | F-LCD | | |
| 7 | CN101 | CONNECTOR,BOARD TO BOARD | ENBY0039001 | 54 PIN,0.4 mm,ETC , ,H=1.5, P4S Header | | |
| 7 | CN102 | CONNECTOR,BOARD TO BOARD | ENBY0044601 | 54 PIN,0.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,[empty] , , | | |
| 6 | SPCY | PCB,FLEXIBLE | SPCY0129901 | POLYI ,0.2 mm,DOUBLE ,F_LCD ,; , , , , , , , , , | | |
| 4 | SACY01 | PCB ASSY,FLEXIBLE | SACY0073701 | F_KEY | | 34 |
| 5 | SACB00 | PCB ASSY, FLEXIBLE,INSERT | SACB0045401 | F_KEY | | |
| 5 | SACE00 | PCB ASSY,FLEXIBLE,SMT | SACE0068301 | F_KEY | | |
| 6 | SACC00 | PCB ASSY,FLEXIBLE,SMT BOTTOM | SACC0045401 | F_KEY | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 7 | CN101 | CONNECTOR,BOARD TO BOARD | ENBY0043601 | 20 PIN,0.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,[empty] , , | | |
| 6 | SACD00 | PCB ASSY,FLEXIBLE,SMT TOP | SACD0057701 | F_KEY | | |
| 7 | AFCAM | SWITCH,TACT | ESCY0005301 | 1 V,1 A,HORIZONTAL ,1 G, ,; ,10C2P ,[empty] ,[empty] ,[empty] , ,[empty] | | |
| 7 | C101 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C102 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C103 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 7 | C104 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C105 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C106 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C107 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 7 | C108 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 7 | C109 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | L101 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 7 | L102 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 7 | L103 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 7 | LD101 | DIODE,LED,CHIP | EDLH0013701 | WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P | | |
| 7 | LD102 | DIODE,LED,CHIP | EDLH0013701 | WHITE ,ETC ,R/TP ,SIDEVIEW ,; ,[empty] ,2.9~3.75 ,30mA , , ,120mW ,[empty] ,[empty] ,2P | | |
| 7 | MIC101 | MICROPHONE | SUMY0010603 | PIN ,42 dB,4.72*3.76*1.25 ,MEMS MIC , , , ,OMNI ,1.5TO5V , ,SMD | | |
| 7 | R102 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R103 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | U101 | IC | EUSY0362601 | SSON004 ,4 ,R/TP ,Hall IC ,; ,IC,CMOS | | |
| 7 | VA101 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA102 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA103 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA104 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA105 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA106 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA107 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA108 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 7 | VA109 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA110 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA111 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 6 | SPCY01 | PCB,FLEXIBLE | SPCY0130101 | POLYI ,0.2 mm,DOUBLE ,F_KEY ,; , , , , , , , , , | | |
| 4 | SAEY00 | PCB ASSY,KEYPAD | SAEY0061501 | | | C, 17 |
| 5 | SAEB00 | PCB ASSY, KEYPAD,INSERT | SAEB0025601 | | | |
| 5 | SAEE00 | PCB ASSY,KEYPAD,SMT | SAEE0028701 | | | |
| 6 | SAEC00 | PCB ASSY,KEYPAD,SMT BOTTOM | SAEC0027201 | | | |
| 7 | C102 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C103 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 7 | C104 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | C105 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | C106 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | C107 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | C108 | CAP,CERAMIC,CHIP | ECCH0005604 | 10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm | | |
| 7 | C109 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 7 | C110 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 7 | CN101 | CONNECTOR,FFC/FPC | ENQY0014301 | 37 PIN,0.3 mm,STRAIGHT , , ,; , ,0.30MM ,FFC/FPC ,STRAIGHT ,BOTH ,SMD ,[empty] ,[empty] , | | |
| 7 | CN102 | CONNECTOR,BOARD TO BOARD | ENBY0044701 | 54 PIN,0.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,[empty] , , | | |
| 7 | R104 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R106 | RES,CHIP,MAKER | ERHZ0000420 | 150 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | U101 | IC | EUSY0230104 | CSP ,36 PIN,R/TP ,SUB PMIC,ALC,2LDO_150mA,1.33X ,; ,IC,Sub PMIC | | |
| 7 | VA101 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA102 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA103 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA104 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA105 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA106 | VARISTOR | SEVY0001001 | 14 V, ,SMD ,50pF, 1005 | | |
| 7 | VA107 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 7 | VA108 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA109 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA110 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA111 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA112 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA113 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 7 | VA114 | VARISTOR | SEVY0003601 | 5.6 V, ,SMD ,100pF, 1005 | | |
| 6 | SAED00 | PCB ASSY,KEYPAD,SMT TOP | SAED0026701 | | | |
| 7 | LD101 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | LD102 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | LD103 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | LD104 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | LD105 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | LD106 | DIODE,LED,CHIP | EDLH0011901 | WHITE ,1608 ,R/TP ,PB-FREE(ZENER) | | |
| 7 | R101 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R102 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R103 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R105 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R107 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 7 | R108 | RES,CHIP,MAKER | ERHZ0000402 | 10 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | SPEY00 | PCB,KEYPAD | SPEY0055201 | FR-4 ,0.5 mm,BUILD-UP 4 , ,; , , , , , , , , , | | |
| 4 | SURY00 | RECEIVER | SURY0013401 | ASSY ,107 dB,32 ohm,11*07 , ,; , , , , , ,CONNECTOR , | | 20 |
| 4 | SVCY00 | CAMERA | SVCY0017101 | CMOS ,MEGA ,5M AF [Micon 1/3.2", MI5130, MIPI, FPCB] | | 38 |
| 4 | SVLM00 | LCD MODULE | SVLM0027801 | MAIN ,240*320 ,42.2*60*1.5t ,262k ,TFT ,TM ,uPD161707 , | | 13 |
| | | LCD MODULE | SVLM0027802 | MAIN ,240*320 ,42.2*60*1.5t ,262k ,TFT ,TM ,uPD161707 , | | |
| 3 | SAFY00 | PCB ASSY,MAIN | SAFY0257201 | | | F, 36 |
| 4 | SAFB00 | PCB ASSY,MAIN,INSERT | SAFB0085901 | | | |
| 5 | SACY00 | PCB ASSY,FLEXIBLE | SACY0073801 | F_FLASH | | 39 |
| 6 | SACE00 | PCB ASSY,FLEXIBLE,SMT | SACE0068401 | F_FLASH | | |
| 7 | SACD00 | PCB ASSY,FLEXIBLE,SMT TOP | SACD0057801 | F_FLASH | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 8 | EDLM00 | DIODE,LED,MODULE | EDLM0009501 | white ,1 LED,2.0x1.6x0.7t ,R/TP , | | |
| 7 | SPCY01 | PCB,FLEXIBLE | SPCY0130001 | POLYI ,0.2 mm,DOUBLE ,F-FLASH ,; , , , , , , , , , | | |
| 5 | SJMY00 | VIBRATOR,MOTOR | SJMY0008405 | 3 V,.08 A,10pi*2.7t ,12mm ,; ,3V , , ,12000rpm , , , ,31ohm | | 37 |
| 4 | SAFF01 | PCB ASSY,MAIN,SMT | SAFF0173701 | | | |
| 5 | SAFC00 | PCB ASSY,MAIN,SMT BOTTOM | SAFC0108101 | | | |
| 6 | ANT500 | ANTENNA,GSM,FIXED | SNGF0036701 | 3.0 ,-2.0 dBd,, ,internal, bluetooth chip ,; ,SINGLE ,-2.0 ,50 ,3.0 | | |
| 6 | C203 | CAP,CERAMIC,CHIP | ECCH0006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C204 | CAP,CERAMIC,CHIP | ECCH0005604 | 10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm | | |
| 6 | C205 | CAP,CERAMIC,CHIP | ECCH0005604 | 10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm | | |
| 6 | C206 | CAP,TANTAL,CHIP | ECTH0001704 | 22 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,2.2X1.25X1.2MM ,[empty] ,[empty] ,[empty] | | |
| 6 | C207 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C208 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C209 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C210 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C211 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C212 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C213 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C214 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C216 | CAP,CERAMIC,CHIP | ECCH0006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C219 | CAP,CERAMIC,CHIP | ECCH0006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,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,CERAMIC,CHIP | ECCH0005604 | 10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm | | |
| 6 | C227 | CAP,TANTAL,CHIP | ECTH0005202 | 100 uF,4V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty] | | |
| 6 | C229 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C230 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C231 | CAP,TANTAL,CHIP | ECTH0005202 | 100 uF,4V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,[empty] ,[empty] ,[empty] ,[empty] | | |
| 6 | C232 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C233 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C234 | CAP,CHIP,MAKER | ECZH0001217 | 470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C235 | CAP,CHIP,MAKER | ECZH0001217 | 470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C236 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C237 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C238 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C239 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C240 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C241 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C242 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C243 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C244 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C245 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C262 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C263 | CAP,TANTAL,CHIP | ECTH0004807 | 10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty] | | |
| 6 | C264 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C265 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C266 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C267 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C276 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |
| 6 | C278 | VARISTOR | SEVY0004301 | 18 V, ,SMD ,10pF, 1005 | | |
| 6 | C279 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |
| 6 | C280 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |
| 6 | C301 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C302 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C303 | CAP,CHIP,MAKER | ECZH0000901 | 24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C304 | CAP,CHIP,MAKER | ECZH0000901 | 24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C305 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C306 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C307 | CAP,CHIP,MAKER | ECZH0000901 | 24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C308 | CAP,TANTAL,CHIP | ECTH0004807 | 10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty] | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C309 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C310 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C311 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C313 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C314 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C315 | CAP,CHIP,MAKER | ECZH0000901 | 24 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C316 | CAP,CHIP,MAKER | ECZH0003503 | 1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP | | |
| 6 | C317 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C318 | RES,CHIP,MAKER | ERHZ0000420 | 150 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | C319 | RES,CHIP,MAKER | ERHZ0000420 | 150 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | C320 | CAP,CHIP,MAKER | ECZH0001122 | 680 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C321 | CAP,CHIP,MAKER | ECZH0001122 | 680 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C322 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C323 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C324 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C401 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C403 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,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 | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C408 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C409 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C410 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C416 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C417 | CAP,CHIP,MAKER | ECZH0000813 | 100 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 | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C503 | CAP,CERAMIC,CHIP | ECCH0000129 | 120 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C528 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C531 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C532 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C533 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C534 | CAP,CERAMIC,CHIP | ECCH0000179 | 22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP | | |
| 6 | C535 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C536 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C537 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C538 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C539 | CAP,CERAMIC,CHIP | ECCH0002002 | 47000 pF,10V ,K ,B ,HD ,1005 ,R/TP | | |
| 6 | C540 | CAP,CHIP,MAKER | ECZH0001216 | 220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C541 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C542 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C543 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C544 | CAP,CHIP,MAKER | ECZH0001126 | 820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C545 | CAP,CHIP,MAKER | ECZH0001126 | 820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C546 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C547 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C548 | CAP,CHIP,MAKER | ECZH0000822 | 1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C549 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C550 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C551 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C553 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C554 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | CN202 | CONNECTOR,BOARD TO BOARD | ENBY0034201 | 24 PIN,0.4 mm,ETC , ,GB042 H=1.0, Socket | | |
| 6 | CN302 | CONNECTOR,I/O | ENRY0006401 | 18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type | | |
| 6 | CN401 | CONNECTOR,ETC | ENZY0016301 | 3 PIN,3.0 mm,ETC , ,H-2.0 | | |
| 6 | FB201 | FILTER,BEAD,CHIP | SFBH0007103 | 75 ohm,1005 ,CHIP BEAD, 300mA | | |
| 6 | FB205 | FILTER,BEAD,CHIP | SFBH0007101 | 120 ohm,1005 ,Ferrite Bead | | |
| 6 | FB206 | FILTER,BEAD,CHIP | SFBH0007101 | 120 ohm,1005 ,Ferrite Bead | | |
| 6 | FB207 | FILTER,BEAD,CHIP | SFBH0000909 | 60 ohm,1005 , | | |
| 6 | FB208 | FILTER,BEAD,CHIP | SFBH0000909 | 60 ohm,1005 , | | |
| 6 | FB304 | FILTER,BEAD,CHIP | SFBH0008103 | 1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP | | |
| 6 | FB305 | FILTER,BEAD,CHIP | SFBH0008103 | 1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | FB306 | FILTER,BEAD,CHIP | SFBH0008103 | 1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP | | |
| 6 | FB307 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FB500 | FILTER,BEAD,CHIP | SFBH0008101 | 600 ohm,1005 , | | |
| 6 | FB501 | FILTER,BEAD,CHIP | SFBH0008101 | 600 ohm,1005 , | | |
| 6 | FL301 | FILTER,EMI/POWER | SFEY0007101 | SMD ,1CH,1608Feedthru ESD/EMI filter for power Pb-free | | |
| 6 | FL302 | FILTER,EMI/POWER | SFEY0007101 | SMD ,1CH,1608Feedthru ESD/EMI filter for power Pb-free | | |
| 6 | FL305 | VARISTOR | SEVY0008302 | 5.5 V,30% ,SMD ,1409Size (4CH) | | |
| 6 | FL306 | VARISTOR | SEVY0008302 | 5.5 V,30% ,SMD ,1409Size (4CH) | | |
| 6 | FL307 | VARISTOR | SEVY0008302 | 5.5 V,30% ,SMD ,1409Size (4CH) | | |
| 6 | FL500 | 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 | L202 | INDUCTOR,SMD,POWER | ELCP0010001 | 2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP | | |
| 6 | L203 | INDUCTOR,SMD,POWER | ELCP0010001 | 2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP | | |
| 6 | L205 | INDUCTOR,CHIP | ELCH0004703 | 1 nH,S ,1005 ,R/TP , | | |
| 6 | L301 | INDUCTOR,CHIP | ELCH0009114 | 100 nH,J ,1005 ,R/TP ,coil | | |
| 6 | L302 | INDUCTOR,CHIP | ELCH0010302 | 100 nH,J ,1608 ,R/TP ,chip coil | | |
| 6 | L303 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 6 | L304 | INDUCTOR,CHIP | ELCH0010302 | 100 nH,J ,1608 ,R/TP ,chip coil | | |
| 6 | L307 | INDUCTOR,SMD,POWER | ELCP0009404 | 1 uH,M ,2.8*2.6*1 ,R/TP ,Power inductor ,; ,1uH ,20% ,. ,1.3A ,0.072ohm ,. ,. ,SHIELD ,2.8X2.6X1MM ,[empty] ,[empty] ,Inductor,Wire Wound,Chip | | |
| 6 | L507 | INDUCTOR,CHIP | ELCH0004730 | 33 nH,J ,1005 ,R/TP , | | |
| 6 | L508 | INDUCTOR,CHIP | ELCH0003823 | 470 nH,K ,1608 ,R/TP ,chip coil,PBFREE | | |
| 6 | L509 | INDUCTOR,CHIP | ELCH0004713 | 6.8 nH,J ,1005 ,R/TP , | | |
| 6 | L510 | INDUCTOR,CHIP | ELCH0004730 | 33 nH,J ,1005 ,R/TP , | | |
| 6 | L584 | INDUCTOR,CHIP | ELCH0001409 | 10 nH,J ,1005 ,R/TP ,PBFREE | | |
| 6 | Q401 | TR,BJT,NPN | EQBN0017601 | VMT3 ,0.15 W,R/TP , | | |
| 6 | Q402 | TR,BJT,NPN | EQBN0017601 | VMT3 ,0.15 W,R/TP , | | |
| 6 | R211 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R214 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | R222 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R223 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R232 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R233 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R301 | RES,CHIP,MAKER | ERHZ0000407 | 1000 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R302 | RES,CHIP,MAKER | ERHZ0000467 | 330 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R303 | RES,CHIP,MAKER | ERHZ0000529 | 1.5 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R304 | RES,CHIP,MAKER | ERHZ0000443 | 2200 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R305 | RES,CHIP,MAKER | ERHZ0000405 | 10 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R306 | RES,CHIP,MAKER | ERHZ0000405 | 10 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R309 | RES,CHIP,MAKER | ERHZ0000483 | 47 ohm,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 | R314 | RES,CHIP,MAKER | ERHZ0000439 | 200 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R315 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R316 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R320 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R401 | RES,CHIP,MAKER | ERHZ0000405 | 10 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R402 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R403 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R404 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R405 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R406 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R407 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R408 | RES,CHIP,MAKER | ERHZ0000467 | 330 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R410 | RES,CHIP | ERHY0000298 | 3.3M ohm,1/16W,J,1005,R/TP | | |
| 6 | R411 | RES,CHIP,MAKER | ERHZ0000483 | 47 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R412 | RES,CHIP,MAKER | ERHZ0000486 | 47 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R422 | RES,CHIP,MAKER | ERHZ0000404 | 1 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R504 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | R514 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | R515 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R516 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R517 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R518 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R519 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R520 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R521 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R526 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R527 | RES,CHIP,MAKER | ERHZ0000456 | 2.2 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R590 | RES,CHIP,MAKER | ERHZ0000496 | 560 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R592 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R593 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R594 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R596 | INDUCTOR,CHIP | ELCH0004721 | 2.2 nH,S ,1005 ,R/TP , | | |
| 6 | R597 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R598 | RES,CHIP,MAKER | ERHZ0000451 | 27 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R599 | RES,CHIP,MAKER | ERHZ0000451 | 27 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R600 | RES,CHIP,MAKER | ERHZ0000236 | 2000 ohm,1/16W ,F ,1005 ,R/TP | | |
| 6 | S401 | CONN,SOCKET | ENSY0018601 | 16 PIN,ETC , ,2.54 mm,UIM 8P, Micro SD Dupli-Socket | | |
| 6 | SW500 | CONN,RF SWITCH | ENWY0002304 | STRAIGHT ,SMD ,0.8 dB,MUSE MODEL | | |
| 6 | U202 | IC | EUSY0270602 | MICRO SMD ,24 PIN,R/TP ,2BUCK 2LDO,2.5x2.5 ,; ,IC,Sub PMIC | | |
| 6 | U203 | IC | EUSY0343501 | CSP ,42 PIN,R/TP ,Audio CODEC with Class AB,D dual speaker driver, Dual DAC ,; ,IC,Audio Codec | | |
| 6 | U204 | IC | EUSY0340301 | uMLP ,10 PIN,R/TP ,typ Rdson 0.4ohm, 1.4X1.8 ,; ,IC,Analog Switch | | |
| 6 | U301 | IC | EUSY0250501 | SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701 | | |
| 6 | U302 | IC | EUSY0338301 | uMLP ,10 PIN,R/TP ,High Speed USB Siwitch 2.0 3.7pF 6.5ohm 1.4X1.8 | | |
| 6 | U303 | IC | EUSY0264502 | DFN ,14 PIN,R/TP ,700mA Boost converter ,; ,IC,DC,DC Converter | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | U401 | IC | EUSY0362601 | SSON004 ,4 ,R/TP ,Hall IC ,; ,IC,CMOS | | |
| 6 | U502 | MODULE,ETC | SMZY0015801 | 84 Ball 0.5pitch, BGA , Bluetooth+FM (6.0*6.0*1.0) | | |
| 6 | VA201 | VARISTOR | SEVY0004401 | 18 V, ,SMD ,40pF, 1005 | | |
| 6 | VA202 | VARISTOR | SEVY0004401 | 18 V, ,SMD ,40pF, 1005 | | |
| 6 | VA203 | VARISTOR | SEVY0004301 | 18 V, ,SMD ,10pF, 1005 | | |
| 5 | SAFD00 | PCB ASSY,MAIN,SMT TOP | SAFD0106601 | | | |
| 6 | C101 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C102 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C103 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C104 | CAP,CHIP,MAKER | ECZH0001216 | 220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C105 | CAP,CHIP,MAKER | ECZH0001215 | 1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C106 | CAP,CHIP,MAKER | ECZH0001216 | 220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C107 | CAP,CHIP,MAKER | ECZH0001215 | 1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C108 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C109 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C110 | CAP,CHIP,MAKER | ECZH0001215 | 1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C111 | CAP,CHIP,MAKER | ECZH0000816 | 12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C112 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C113 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C114 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C115 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C116 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C117 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C118 | CAP,CHIP,MAKER | ECZH0001215 | 1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C119 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C120 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C121 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C122 | CAP,CERAMIC,CHIP | ECCH0000129 | 120 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C123 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,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 | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C127 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C128 | CAP,CHIP,MAKER | ECZH0001216 | 220 nF,10V ,K ,X5R ,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,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C140 | CAP,CHIP,MAKER | ECZH0025502 | 22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP ,; ,0.85t ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] | | |
| 6 | C141 | CAP,CHIP,MAKER | ECZH0025502 | 22000000 pF,6.3V ,M ,X5R ,HD ,2012 ,R/TP ,; ,0.85t ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] | | |
| 6 | C142 | CAP,CERAMIC,CHIP | ECCH0005604 | 10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 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 | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C145 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 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 | C201 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C202 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C215 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C217 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C218 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C220 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C223 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C224 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C225 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C226 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C228 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C246 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C249 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C250 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C251 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C252 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C253 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C254 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C255 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C256 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C257 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C258 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C259 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C260 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C261 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C272 | VARISTOR | SEVY0004001 | 18 V, ,SMD ,3pF, 1005 | | |
| 6 | C273 | VARISTOR | SEVY0004001 | 18 V, ,SMD ,3pF, 1005 | | |
| 6 | C274 | VARISTOR | SEVY0004001 | 18 V, ,SMD ,3pF, 1005 | | |
| 6 | C275 | VARISTOR | SEVY0004001 | 18 V, ,SMD ,3pF, 1005 | | |
| 6 | C294 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C312 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C325 | CAP,CERAMIC,CHIP | ECCH0000147 | 2.2 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C326 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C327 | CAP,CERAMIC,CHIP | ECCH0000198 | 2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C411 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C412 | CAP,CHIP,MAKER | ECZH0003103 | 0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C413 | CAP,CHIP,MAKER | ECZH0003503 | 1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP | | |
| 6 | C414 | CAP,CHIP,MAKER | ECZH0003503 | 1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP | | |
| 6 | C415 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C500 | CAP,CHIP,MAKER | ECZH0000830 | 33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C510 | CAP,CHIP,MAKER | ECZH0000802 | 1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | C511 | CAP,TANTAL,CHIP | ECTH0004804 | 33 uF,10V ,M ,L_ESR ,3216 ,R/TP | | |
| 6 | C512 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C513 | CAP,CERAMIC,CHIP | ECCH0000175 | 2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C514 | CAP,CERAMIC,CHIP | ECCH0000175 | 2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C515 | CAP,CERAMIC,CHIP | ECCH0000185 | 5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C516 | CAP,CERAMIC,CHIP | ECCH0000185 | 5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C517 | CAP,CERAMIC,CHIP | ECCH0000180 | 3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C518 | CAP,CERAMIC,CHIP | ECCH0000180 | 3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C519 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C520 | CAP,CERAMIC,CHIP | ECCH0000112 | 15 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C521 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C522 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C523 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C524 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C525 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C526 | CAP,CHIP,MAKER | ECZH0000813 | 100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C527 | CAP,CHIP,MAKER | ECZH0001126 | 820 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | C555 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C570 | CAP,CERAMIC,CHIP | ECCH0000701 | 1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | CN301 | CONNECTOR,BOARD TO BOARD | ENBY0039101 | 54 PIN,0.4 mm,ETC , ,H=1.5, P4S Socket | | |
| 6 | CN304 | CONNECTOR,BOARD TO BOARD | ENBY0043701 | 20 PIN,0.4 mm,STRAIGHT , , ,; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,[empty] , , | | |
| 6 | D101 | DIODE,SWITCHING | EDSY0017301 | VSM ,15 V,100 mA,R/TP ,PB-FREE | | |
| 6 | D102 | DIODE,SWITCHING | EDSY0010001 | UMD2 ,30 V,2 A,R/TP ,SCHOTTKY BARRIER DIODE | | |
| 6 | D103 | DIODE,SWITCHING | EDSY0010001 | UMD2 ,30 V,2 A,R/TP ,SCHOTTKY BARRIER DIODE | | |
| 6 | D201 | DIODE,SWITCHING | EDSY0011901 | EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V) | | |
| 6 | D202 | DIODE,SWITCHING | EDSY0011901 | EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V) | | |
| 6 | FB202 | FILTER,BEAD,CHIP | SFBH0007103 | 75 ohm,1005 ,CHIP BEAD, 300mA | | |
| 6 | FB203 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FB204 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FB301 | FILTER,EMI/POWER | SFEY0010501 | SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | FB302 | FILTER,EMI/POWER | SFEY0010501 | SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free | | |
| 6 | FB303 | FILTER,EMI/POWER | SFEY0010501 | SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free | | |
| 6 | FL303 | FILTER,EMI/POWER | SFEY0010501 | SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free | | |
| 6 | FL304 | FILTER,EMI/POWER | SFEY0010501 | SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free | | |
| 6 | L101 | INDUCTOR,CHIP | ELCH0003827 | 47 nH,J ,1005 ,R/TP ,chip coil | | |
| 6 | L102 | INDUCTOR,CHIP | ELCH0003827 | 47 nH,J ,1005 ,R/TP ,chip coil | | |
| 6 | L104 | INDUCTOR,SMD,POWER | ELCP0007403 | 10 uH,M ,2.8*2.8*1.0 ,R/TP ,Coil type , Shield type | | |
| 6 | L105 | INDUCTOR,SMD,POWER | ELCP0007403 | 10 uH,M ,2.8*2.8*1.0 ,R/TP ,Coil type , Shield type | | |
| 6 | L201 | INDUCTOR,CHIP | ELCH0003823 | 470 nH,K ,1608 ,R/TP ,chip coil,PBFREE | | |
| 6 | L204 | INDUCTOR,CHIP | ELCH0004703 | 1 nH,S ,1005 ,R/TP , | | |
| 6 | L206 | INDUCTOR,CHIP | ELCH0004703 | 1 nH,S ,1005 ,R/TP , | | |
| 6 | L207 | INDUCTOR,CHIP | ELCH0004703 | 1 nH,S ,1005 ,R/TP , | | |
| 6 | L208 | INDUCTOR,CHIP | ELCH0004703 | 1 nH,S ,1005 ,R/TP , | | |
| 6 | L401 | INDUCTOR,CHIP | ELCH0004722 | 47 nH,J ,1005 ,R/TP , | | |
| 6 | L402 | INDUCTOR,CHIP | ELCH0005009 | 100 nH,J ,1005 ,R/TP , | | |
| 6 | L403 | INDUCTOR,CHIP | ELCH0004722 | 47 nH,J ,1005 ,R/TP , | | |
| 6 | L501 | INDUCTOR,CHIP | ELCH0001056 | 2.7 nH,S ,1005 ,R/TP ,PBFREE | | |
| 6 | L502 | INDUCTOR,CHIP | ELCH0001402 | 18 nH,J ,1005 ,R/TP ,Pb Free | | |
| 6 | L503 | INDUCTOR,CHIP | ELCH0001031 | 15 nH,J ,1005 ,R/TP ,PBFREE | | |
| 6 | L504 | INDUCTOR,CHIP | ELCH0009110 | 5.1 nH,J ,1005 ,R/TP ,chip coil | | |
| 6 | L505 | INDUCTOR,CHIP | ELCH0001057 | 3.9 nH,S ,1005 ,R/TP ,PBFREE | | |
| 6 | L570 | INDUCTOR,CHIP | ELCH0004718 | 5.6 nH,S ,1005 ,R/TP , | | |
| 6 | L571 | INDUCTOR,CHIP | ELCH0004721 | 2.2 nH,S ,1005 ,R/TP , | | |
| 6 | L572 | INDUCTOR,CHIP | ELCH0004704 | 4.7 nH,S ,1005 ,R/TP , | | |
| 6 | Q201 | TR,FET,N-CHANNEL | EQFN0005201 | SOT-323 ,.29 W,25 V,.7 A,R/TP ,N-Channel MOSFET, Pb free | | |
| 6 | Q301 | TR,BJT,NPN | EQBN0017601 | VMT3 ,0.15 W,R/TP , | | |
| 6 | R104 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R105 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R106 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | R108 | RES,CHIP,MAKER | ERHZ0000441 | 22 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R109 | RES,CHIP,MAKER | ERHZ0000441 | 22 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R111 | RES,CHIP,MAKER | ERHZ0000477 | 390 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R112 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R113 | RES,CHIP,MAKER | ERHZ0000204 | 100 Kohm,1/16W ,F ,1005 ,R/TP | | |
| 6 | R114 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R115 | RES,CHIP,MAKER | ERHZ0000267 | 3300 ohm,1/16W ,F ,1005 ,R/TP | | |
| 6 | R117 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R119 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R121 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R124 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R125 | RES,CHIP,MAKER | ERHZ0000267 | 3300 ohm,1/16W ,F ,1005 ,R/TP | | |
| 6 | R126 | RES,CHIP,MAKER | ERHZ0000404 | 1 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R128 | RES,CHIP,MAKER | ERHZ0000405 | 10 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R129 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R131 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R132 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R134 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R135 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R136 | RES,CHIP,MAKER | ERHZ0000444 | 22 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R137 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R138 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R139 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R140 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R141 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R142 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R143 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R144 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R145 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R146 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | R147 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R148 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R149 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R150 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R151 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R152 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R153 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R154 | RES,CHIP,MAKER | ERHZ0000443 | 2200 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R155 | RES,CHIP,MAKER | ERHZ0000443 | 2200 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R204 | RES,CHIP,MAKER | ERHZ0000509 | 75 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R207 | RES,CHIP,MAKER | ERHZ0000485 | 4700 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R208 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R217 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R219 | RES,CHIP,MAKER | ERHZ0000505 | 680 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R220 | RES,CHIP,MAKER | ERHZ0000412 | 1200 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R221 | RES,CHIP,MAKER | ERHZ0000463 | 33 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R224 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | R226 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R227 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R228 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R229 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R230 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R312 | RES,CHIP,MAKER | ERHZ0000405 | 10 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R313 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R415 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R416 | RES,CHIP,MAKER | ERHZ0000404 | 1 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R417 | RES,CHIP,MAKER | ERHZ0000540 | 7.5 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R418 | RES,CHIP,MAKER | ERHZ0000406 | 100 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R419 | RES,CHIP | ERHY0000128 | 15K ohm,1/16W,F,1005,R/TP | | |
| 6 | R420 | RES,CHIP,MAKER | ERHZ0000530 | 5.1 Kohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R421 | RES,CHIP,MAKER | ERHZ0000268 | 33 Kohm,1/16W ,F ,1005 ,R/TP | | |

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 6 | R500 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R501 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R502 | RES,CHIP,MAKER | ERHZ0000204 | 100 Kohm,1/16W ,F ,1005 ,R/TP | | |
| 6 | R503 | THERMISTOR | SETY0006301 | NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE | | |
| 6 | R505 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R507 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R508 | RES,CHIP,MAKER | ERHZ0000412 | 1200 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R509 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R510 | RES,CHIP,MAKER | ERHZ0000434 | 1 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R591 | PCB ASSY,MAIN,PAD SHORT | SAFP0000501 | | | |
| 6 | SPFY | PCB,MAIN | SPFY0174101 | FR-4 ,0.8 mm,STAGGERED-10 , ,; , , , , , , , , , | | |
| 6 | U101 | IC | EUSY0294203 | FBGA ,107 PIN,ETC ,FULLY 1.8V 1G(128Mx8) NAND+512M(32Mx16) SDRAM ,; ,IC,MCP | | |
| 6 | U102 | IC | EUSY0227901 | SON5-P-0.35(fSV) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free | | |
| 6 | U103 | IC | EUSY0173801 | SC70JW ,8 PIN,R/TP ,5 Individual Load Switch | | |
| 6 | U104 | IC | EUSY0347801 | BGA ,293 PIN,R/TP ,EDGE RF BB PM Onechip BB ,; ,IC,Digital Baseband Processor | | |
| 6 | U105 | IC | EUSY0173801 | SC70JW ,8 PIN,R/TP ,5 Individual Load Switch | | |
| 6 | U201 | IC | EUSY0240001 | MICROPAK ,6 PIN,R/TP ,SINGLE BIT UNIT-DIRECTIONAL TRANSLATOR / PB FREE | | |
| 6 | U206 | IC | EUSY0351801 | BGA ,193 PIN,R/TP ,5M Camera,D1,Audio,MIPI ,; ,IC,Digital Signal Processors | | |
| 6 | U304 | IC | EUSY0345201 | 3*3 QFN ,10 PIN,R/TP ,3xis Accelerometer ,; ,IC,A/D Converter | | |
| 6 | U402 | IC | EUSY0160401 | SOT-23 ,3 PIN,R/TP ,DC MOTOR DRIVER / INTEGERATED RELAY | | |
| 6 | U403 | IC | EUSY0351601 | DFN ,12 PIN,R/TP ,Dual Charger IC (Bypass) ,; ,IC,Charger | | |
| 6 | U500 | PAM | SMPY0017901 | dBm, %, A, dBc, dB,5x5 ,SMD ,IFX Linear Edge ,; , , , , , , , ,R/TP ,R/TP , | | |
| 6 | U501 | FILTER,SEPERATOR | SFAY0011401 | 850.900 ,1800.1900 , dB, dB, dB, dB,4532 ,GSM Quad band FEM. | | |
| 6 | X101 | 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 | X102 | X-TAL | EXXY0024301 | 32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,-40'C ~ +85'C, C0 1.05pF, C1 fF ,; ,32.768 ,20PPM ,12.5 , , ,SMD ,R/TP | | |

# 14. EXPLODED VIEW & REPLACEMENT PART LIST

## 14.3 Accessory

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

| Level | Location No. | Description | Part Number | Spec | Color | Remark |
|---|---|---|---|---|---|---|
| 3 | ADEY00 | DATA KIT | ADEY0015501 | KC550 DATA KIT FOR GBR | Without Color | |
| 3 | SBPL00 | BATTERY PACK,LI-ION | SBPL0094902 | 3.7 V,900 mAh,1 CELL,PRISMATIC ,553443,INNERPACK,EUROP ,; , , , ,PRISMATIC , , ,BLACK , ,EUROP Type | Black | |
| | | BATTERY PACK,LI-ION | SBPL0095802 | 3.7 V,900 mAh,1 CELL,PRISMATIC ,553443,INNERPACK,EUROP ,; , , , ,PRISMATIC , , ,BLACK , , | Black | |
| 3 | SGDY00 | DATA CABLE | SGDY0010904 | ; ,[empty] ,[empty] ,[empty] ,18 ,BLACK ,6.2mm Plug Datacable ,[empty] | | |
| 3 | SGEY00 | EAR PHONE/EAR MIKE SET | SGEY0003721 | ; ,RMS 20mW(0.56V,RMS) ,16Ohm+/-2.4Ohm 1KHZ ,116dB+/-3dB 1KHZ,3mW ,116dB 1KHZ ,96dB 100HZ ,[empty] ,BLACK ,18P MMI CONNECTOR , ,Earphone,Stereo | | |
| 3 | SSAD00 | ADAPTOR,AC-DC | SSAD0025001 | 100-240V ,5060 Hz,5.1 V,.7 A,CE ,AC-DC ADAPTOR ,; ,85Vac~264Vac ,5.1V, +0.15V, -0.2V ,700mA ,5060 , ,WALL 2P ,I/O CONNECTOR , | | |
| | | ADAPTOR,AC-DC | SSAD0025002 | 100-240V ,5060 Hz,5.1 V,.7 A,CE ,AC-DC ADAPTOR ,; ,85Vac~264Vac ,5.1V +0.15V, -0.2V ,700mA ,5060 , ,WALL 2P ,I/O CONNECTOR , | | |

## Note