

**SAMSUNG**

# GSM TELEPHONE

## SGH-Z370

# **SERVICE** *Manual*

### GSM TELEPHONE



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**SAMSUNG  
ELECTRONICS**



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# 1. Specification

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## 1-1. GSM/WCDMA General Specification

|                                     | <b>EGSM 900<br/>Phase 2</b> | <b>DCS1800<br/>Phase 1</b> | <b>PCS1900</b>           | <b>WCDMA</b>                      |
|-------------------------------------|-----------------------------|----------------------------|--------------------------|-----------------------------------|
| Freq. Band[MHz]<br>Uplink/Downlink  | 880~915<br>925~960          | 1710~1785<br>1805~1880     | 1850~1910<br>1930~1990   | 1920~1980<br>2110~2170            |
| ARFCN range                         | 0~124 &<br>975~1023         | 512~885                    | 512~810                  | 10562~10838                       |
| Tx/Rx spacing                       | 45 MHz                      | 95 MHz                     | 80 MHz                   | 190 MHz                           |
| Mod. Bit rate/<br>Bit Period        | 270.833 kbps<br>3.692 us    | 270.833 kbps<br>3.692 us   | 270.833 kbps<br>3.692 us | 3.84 Mcps/s                       |
| Time Slot<br>Period/Frame<br>Period | 576.9 us<br>4.615 ms        | 576.9 us<br>4.615 ms       | 576.9 us<br>4.615 ms     | 10 ms                             |
| Modulation                          | 0.3 GMSK                    | 0.3 GMSK                   | 0.3 GMSK                 | UL:2BPSK<br>DL:QPSK               |
| MS Power                            | 33 dBm~5 dBm                | 30 dBm~0 dBm               | 30 dBm~0 dBm             | MAX:24(+1,-3) dBm<br>MIN:<-50 dBm |
| Power Class                         | 5 pcl ~ 19 pcl              | 0 pcl ~ 15 pcl             | 0 pcl ~ 15 pcl           | CLASS3                            |
| Sensitivity                         | -102 dBm                    | -100 dBm                   | -100 dBm                 | -106.7 dBm                        |
| TDMA Mux                            | 8                           | 8                          | 8                        | -                                 |
| Cell Radius                         | 35 Km                       | 2 Km                       | -                        | -                                 |

## 1-2. GSM TX power class

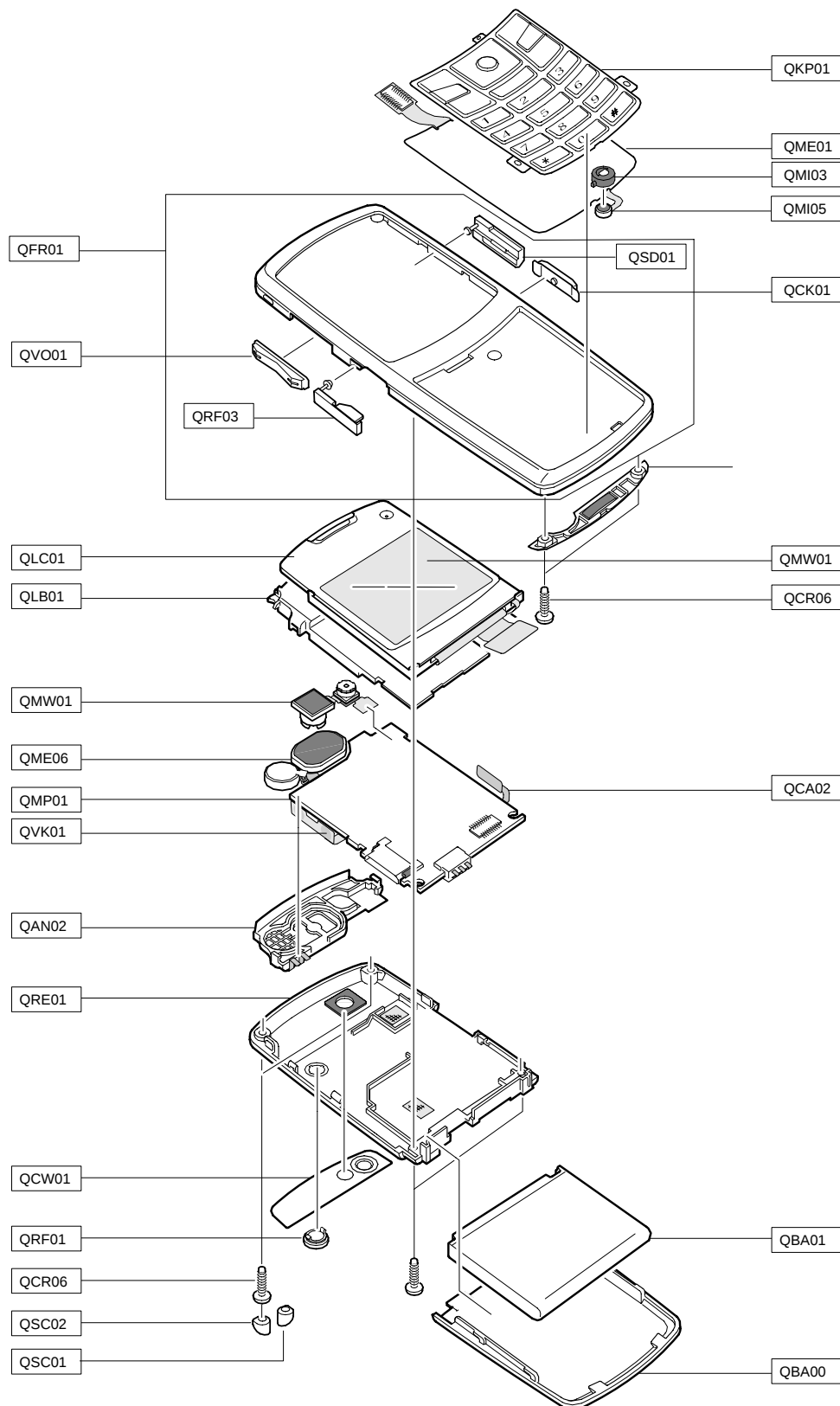
| TX Power control level | EGSM900  | TX Power control level | DCS1800  | TX Power control level | PCS1900  |
|------------------------|----------|------------------------|----------|------------------------|----------|
| 5                      | 33±2 dBm | 0                      | 30±3 dBm | 0                      | 30±3 dBm |
| 6                      | 31±2 dBm | 1                      | 28±3 dBm | 1                      | 28±3 dBm |
| 7                      | 29±2 dBm | 2                      | 26±3 dBm | 2                      | 26±3 dBm |
| 8                      | 27±2 dBm | 3                      | 24±3 dBm | 3                      | 24±3 dBm |
| 9                      | 25±2 dBm | 4                      | 22±3 dBm | 4                      | 22±3 dBm |
| 10                     | 23±2 dBm | 5                      | 20±3 dBm | 5                      | 20±3 dBm |
| 11                     | 21±2 dBm | 6                      | 18±3 dBm | 6                      | 18±3 dBm |
| 12                     | 19±2 dBm | 7                      | 16±3 dBm | 7                      | 16±3 dBm |
| 13                     | 17±2 dBm | 8                      | 14±3 dBm | 8                      | 14±3 dBm |
| 14                     | 15±2 dBm | 9                      | 12±4 dBm | 9                      | 12±4 dBm |
| 15                     | 13±2 dBm | 10                     | 10±4 dBm | 10                     | 10±4 dBm |
| 16                     | 11±3 dBm | 11                     | 8±4 dBm  | 11                     | 8±4 dBm  |
| 17                     | 9± 3dBm  | 12                     | 6±4 dBm  | 12                     | 6±4 dBm  |
| 18                     | 7±3 dBm  | 13                     | 4±4 dBm  | 13                     | 4±4 dBm  |
| 19                     | 5±3 dBm  | 14                     | 2±5 dBm  | 14                     | 2±5 dBm  |
|                        |          | 15                     | 0±5 dBm  | 15                     | 0±5 dBm  |

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## 2. Exploded View and Parts List

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### 2-1. Cellular phone Exploded View

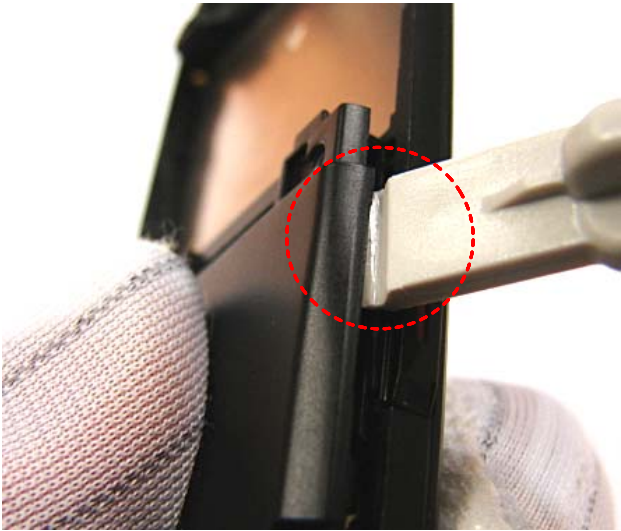
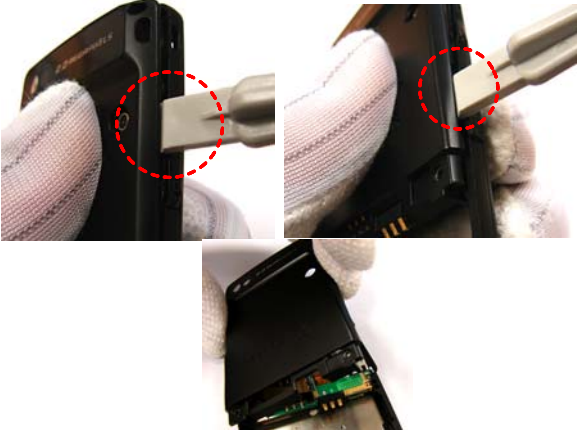


## 2-2. Cellular phone Parts list

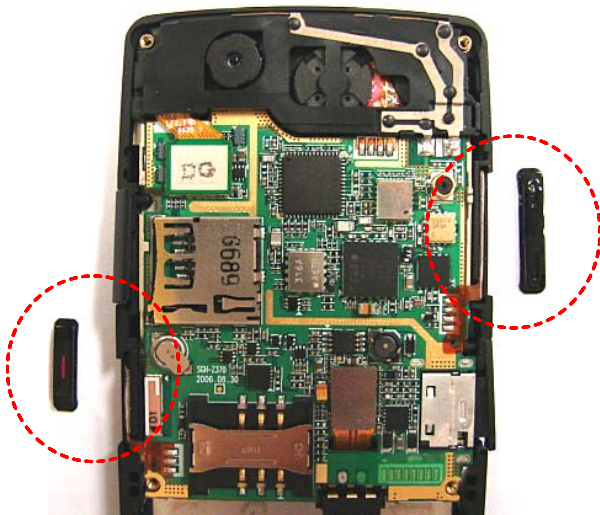
| Design LOC | Description               | SEC CODE    |
|------------|---------------------------|-------------|
| QAN02      | INTENNA-SGHZ370           | GH42-00932A |
| QBA00      | ASSY COVER-BATTERY        | GH98-02793C |
| QBA01      | INNER BATTERY PACK-900MAH | GH43-02398A |
| QCA01      | UNIT-SGHZ370 CAMERA       | GH59-03551A |
| QCA02      | UNIT-CAMERAKEY            | GH59-03381A |
| QCK01      | ASSY KEY-CAM              | GH98-02272C |
| QCR06      | SCREW-MACHINE             | 6001-001155 |
| QCR06      | SCREW-MACHINE             | 6001-001155 |
| QCR06      | SCREW-MACHINE             | 6001-001155 |
| QCW01      | PMO-COVER CAMERA WINDOW   | GH72-32220C |
| QFR01      | ASSY CASE-FRONT           | GH98-01388C |
| QKP01      | ASSY KEYPAD-(CCM/TSS)     | GH98-03117C |
| QLB01      | ASSY BRACKET-LCD          | GH98-01391A |
| QLC01      | LCD-MODULE SGHZ370        | GH07-00953C |
| QME06      | UNIT-SPK_MOT FPCB         | GH59-03520A |
| QMI03      | RMO-RUBBER MIC HOLDER     | GH73-08098A |
| QMI05      | ASSY CASE-MIC             | GH98-01833C |
| QMP01      | PBA MAIN-SGHZ370S         | GH92-02996A |
| QMW01      | AS-LCD WINDOW             | GH81-05667C |
| QRE01      | ASSY CASE-REAR            | GH98-01389C |
| QRF01      | PMO-COVER RF              | GH72-33246C |
| QRF03      | PMO-COVER EARJACK         | GH72-32212C |
| QSC01      | PMO-COVER SCREW R         | GH72-35365B |
| QSC02      | PMO-COVER SCREW L         | GH72-35366B |
| QSD01      | PMO-COVER SD CARD         | GH72-32560C |
| QVK01      | UNIT-VOLUMEKEY            | GH59-03382A |
| QVO01      | PMO-VOLUME KEY            | GH72-32219C |

| Description                    | SEC CODE    |
|--------------------------------|-------------|
| CBF INTERFACE-DATA LINK CABLE  | GH39-00444B |
| ADAPTOR-SGHE690,SIL,UK,A_TYPE  | GH44-01362B |
| MPR-VINYL BOHO LCD             | GH74-28570A |
| MANUAL USERS-SEA ENGLISH       | GH68-12837A |
| MANUAL USERS-SEA CHINESE       | GH68-12936A |
| S/W CD-SGHZ370 PC STUDIO 3.0   | GH46-00329A |
| BAG PE                         | 6902-000634 |
| LABEL(P)-IMEI                  | GH68-01335D |
| LABEL(R)-MAIN(EU)              | GH68-12458A |
| BOX(P)-UNIT MAIN(XEU)          | GH69-04470E |
| CUSHION-CASE-UK                | GH69-04472A |
| UNIT-EARPHONE,SGHZ370,SIL,A-TY | GH59-03679B |
| MPR-VINYL BOHO MAIN WINDOW     | GH74-26444A |
| AS-LCD TAPE                    | GH81-05668A |
| LABEL(P)-WATER SOAK            | GH68-02026A |
| RMO-RUBBER BATT CONT           | GH73-07777A |
| MPR-VINYL BOHO CAM             | GH74-23666A |
| MPR-TAPE BOHO J-TAG            | GH74-25773A |
| MPR-GASK TAPE                  | GH74-27265A |
| RMO-RUBBER LDI                 | GH73-08704A |
| MPR-SPONGE LDI                 | GH74-28627A |
| MPR-VINYL BOHO CAM             | GH74-23666A |
| MPR-VINYL BOHO CAM WINDOW      | GH74-26443A |
| LABEL(P)-WATER SOAK            | GH68-02026A |
| MPR-VINYL BOHO KEYPAD          | GH74-22928A |
| UNIT-EL KEY PBA,SKY/BLU        | GH59-03376C |
| AS-IC-MCP UMTS                 | GH81-06105A |

## 2-3. Disassembly

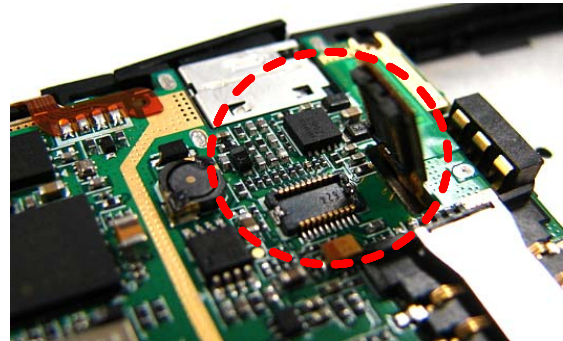
|                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b></p>                                                                                                                                                                           | <p><b>2</b></p>  <div data-bbox="1122 365 1468 617" style="border: 2px solid red; padding: 5px;"> <p>-Use the disjoining tool certainly.<br/>-Be careful a break at the time of disjoining because rear is soft material.</p> </div>                                                                                       |
| <p>1) Remove screw/RF cap of rear<br/>2) Unscrew 4 points of Rear</p> <p><b>* caution</b></p> <p>1) Disjoint the locker while pressing a crack of Rear camera part with disjoining tool.</p>                                                                               | <p>1) Disjoint the locker while pressing a crack of Rear camera part with disjoining tool.</p> <p><b>* caution</b></p> <p>1) Be careful not to be scratched or made scar on the SET.<br/>2) Be careful not to be damaged on the Rear at the time of disjoining.</p>                                                                                                                                          |
| <p><b>3</b></p>                                                                                                                                                                         | <p><b>4</b></p>                                                                                                                                                                                                                                                                                                          |
| <p>1) Disjoint the locker while pressing a crack of Rear SIM connector part with disjoining tool.</p> <p><b>* caution</b></p> <p>1) Be careful not to be scratched or made scar on the SET.<br/>2) Be careful not to be damaged on the Rear at the time of disjoining.</p> | <p>1) Disjoint the locker while pressing a crack of Rear Volume key part with disjoining tool.<br/>2) Disjoint the locker while pressing a crack of the right lower part of Rear with disjoining tool.<br/>3) Disassemble the rear.</p> <p><b>* caution</b></p> <p>1) Be careful not to be scratched or made scar on the SET.<br/>2) Be careful not to be damaged on the Rear at the time of disjoining.</p> |

5



- 1) Disassemble the camera key and the volume key.

6



- 1) Disconnect the EL key FPCB connector.

※ **caution**

- 1) When disassembling EL key FPCB, be careful not to be damaged on the FPCB.

7

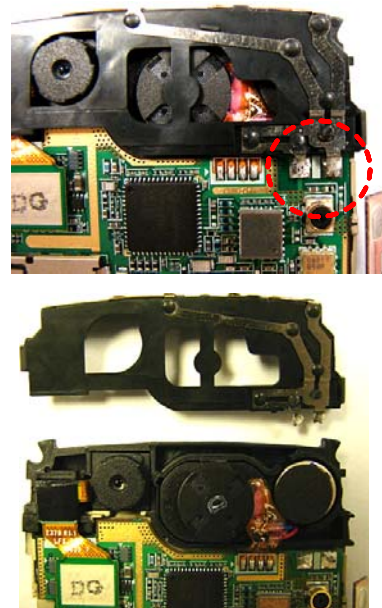


- 1) Disassemble the main PBA and front cover.

※ **caution**

- 1) Be careful not to be damaged on the main PBA and LCD part.

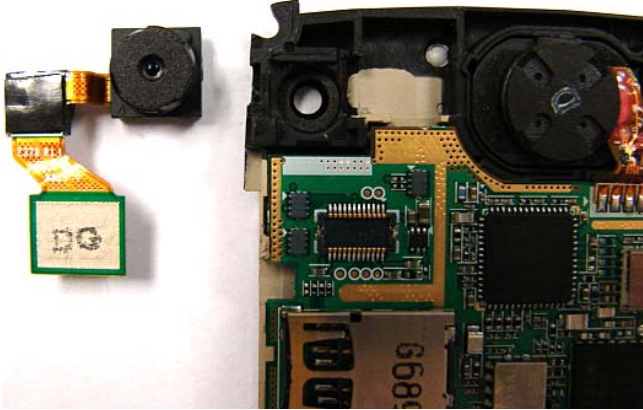
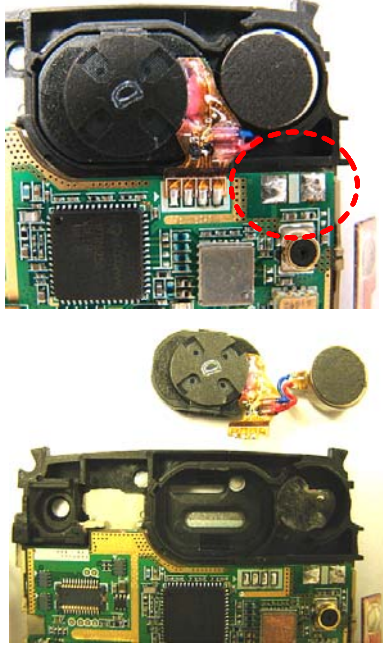
8



- 1) Disassemble the Intenna.

※ **caution**

- 1) Disassemble the intenna after removing the solder in soldering part.

|                                                                                                                                                   |                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <p><b>9</b></p>                                                  | <p><b>10</b></p>                            |
| <p>1) Disassemble the camera module.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to be damaged on the CAMERA.</p>                            | <p>1) Disassemble the SPK/MOT.</p> <p>※ <b>caution</b></p> <p>1) Disassemble after removing the solder in soldering part.</p> |
| <p><b>11</b></p>                                               | <p><b>12</b></p>                          |
| <p>1) Disassemble the LCD module and Main PBA.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to be damaged on the LCD module and Main PBA.</p> | <p>1) Disassemble the Gasket and LCD.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to be damaged on the LCD module.</p>   |

**13**

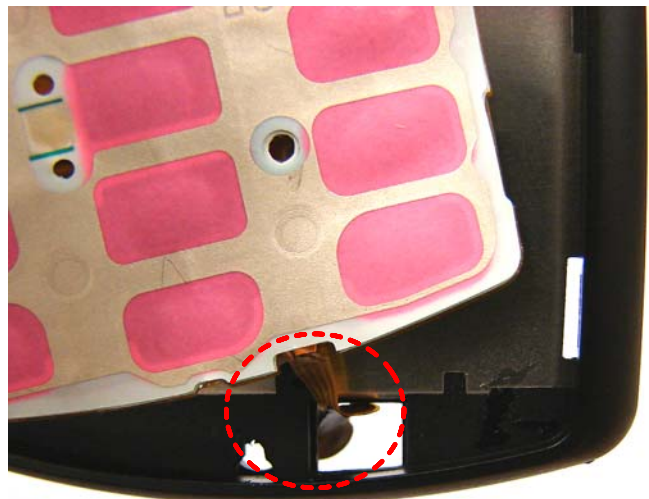
- 1) Disassemble the Mic cover.
- ※ **caution**
- 1) When disassemble the mic cover, do it after unscrew 2 points like the picture

**14**

- 1) Detach the Key pad.
- ※ **caution**
- 1) Be careful not to be damaged on the EL sheet.

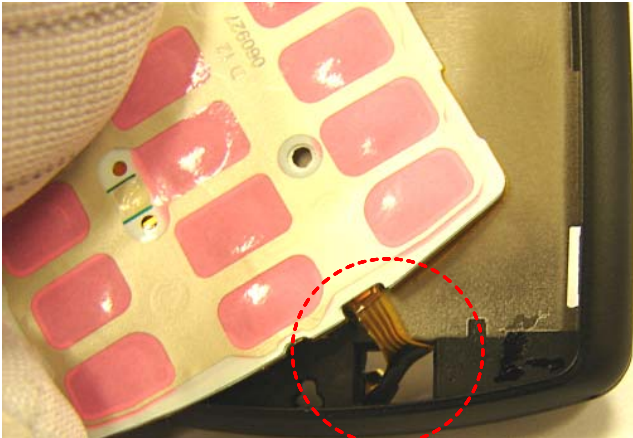
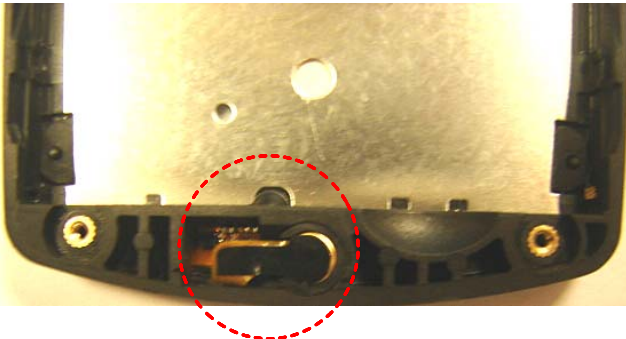
**15**

- 1) Detach the EL sheet.
- ※ **caution**
- 1) Be careful not to be damaged on the EL connector FPCB.

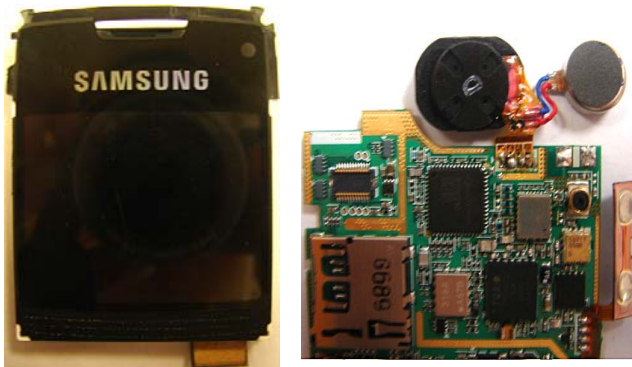
**16**

- 1) Disassemble the MIC.
- ※ **caution**
- 1) Be careful not to be damaged on the MIC FPCB.

## 2-4. Assembly

|                                                                                                                                                               |                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b></p>                                                              | <p><b>2</b></p>                                                                                                                                                 |
| <p>1) Insert the MIC of EL sheet in the hole on the lower of Front cover.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to be damaged on the MIC FPCB.</p> | <p>1) Insert the EL SHEET F-PCB in the hole of Front.</p> <p>2) Fix the EL KEY PAD on Front cover.</p> <p>※ <b>caution</b></p> <p>1) Insert FPCB in the hole before fixing the EL KEYPAD.</p> <p>2) Be careful not to be damaged on the FPCB.</p> |
| <p><b>3</b></p>                                                            | <p><b>4</b></p>                                                                                                                                               |
| <p>1) Fix the MIC in position like the picture.</p> <p>※ <b>caution</b></p> <p>1) Check the damage of F-PCB with an eye.</p>                                  | <p>1) Assemble the mic cover and then screw 2 points.</p> <p>2) Attach the KEY PAD.</p> <p>3) Press down the KEY PAD so as not to be detached it.</p> <p>※ <b>caution</b></p> <p>1) Check the connecting condition of KEY PAD.</p>                |

5



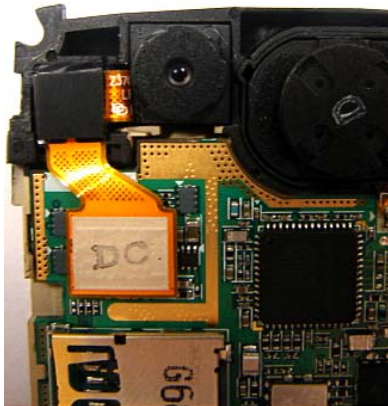
- 1) Attach the LCD on the LCD Bracket by guide lib of LCD.
- 2) Solder the SPK/MOT.

6



- 1) Assemble the LCD and the MAIN PBA.  
 ※ **caution**
- 1) Connect the LCD F-PCB connector on the MAIN PBA.

7



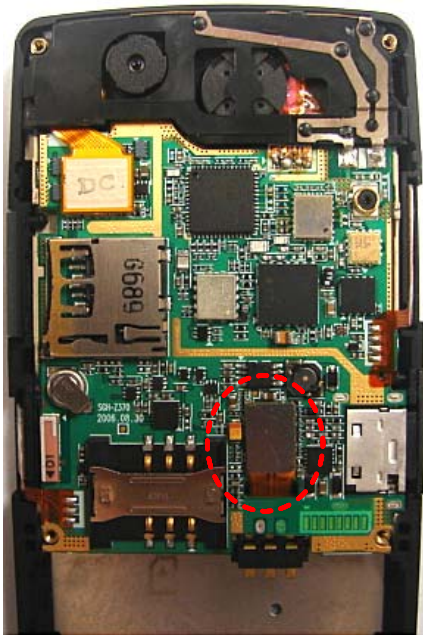
- 1) Assemble the CAMERA and connect it.  
 ※ **caution**
- 1) When insert the CAMERA, be careful not to be damaged on it.
- 2) When connect the CAMERA CON F-PCB, be careful not to be damaged on it.

8



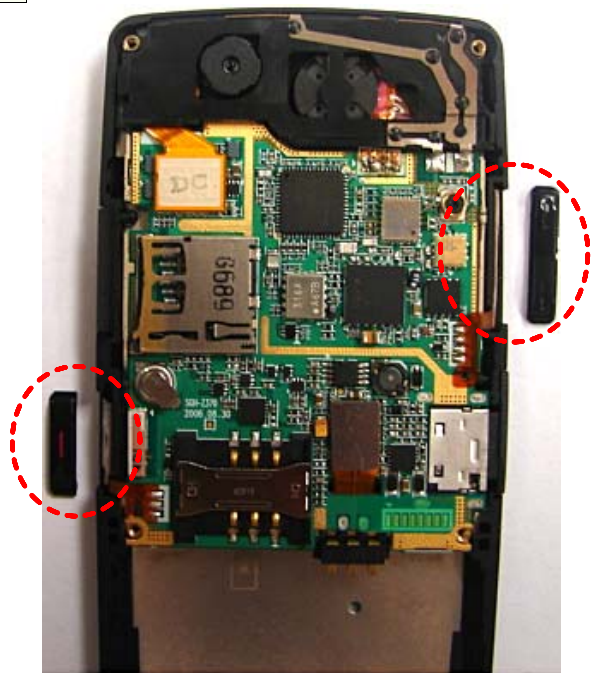
- 1) Assemble the ANTENNA ASS'Y and then solder it.

9



- 1) Assemble the MAIN PBA and the FRONT.  
**\* caution**
- 1) When insert the EL connector, be careful not to be damaged on it.
- 2) Check the connecting condition of CONNECTOR

10



- 1) Insert the Camera key and the Volume key.  
**\* caution**
- 1) After check the insertion direction, insert it.

11



- 1) Assemble the REAR and then screw 4 points.

12

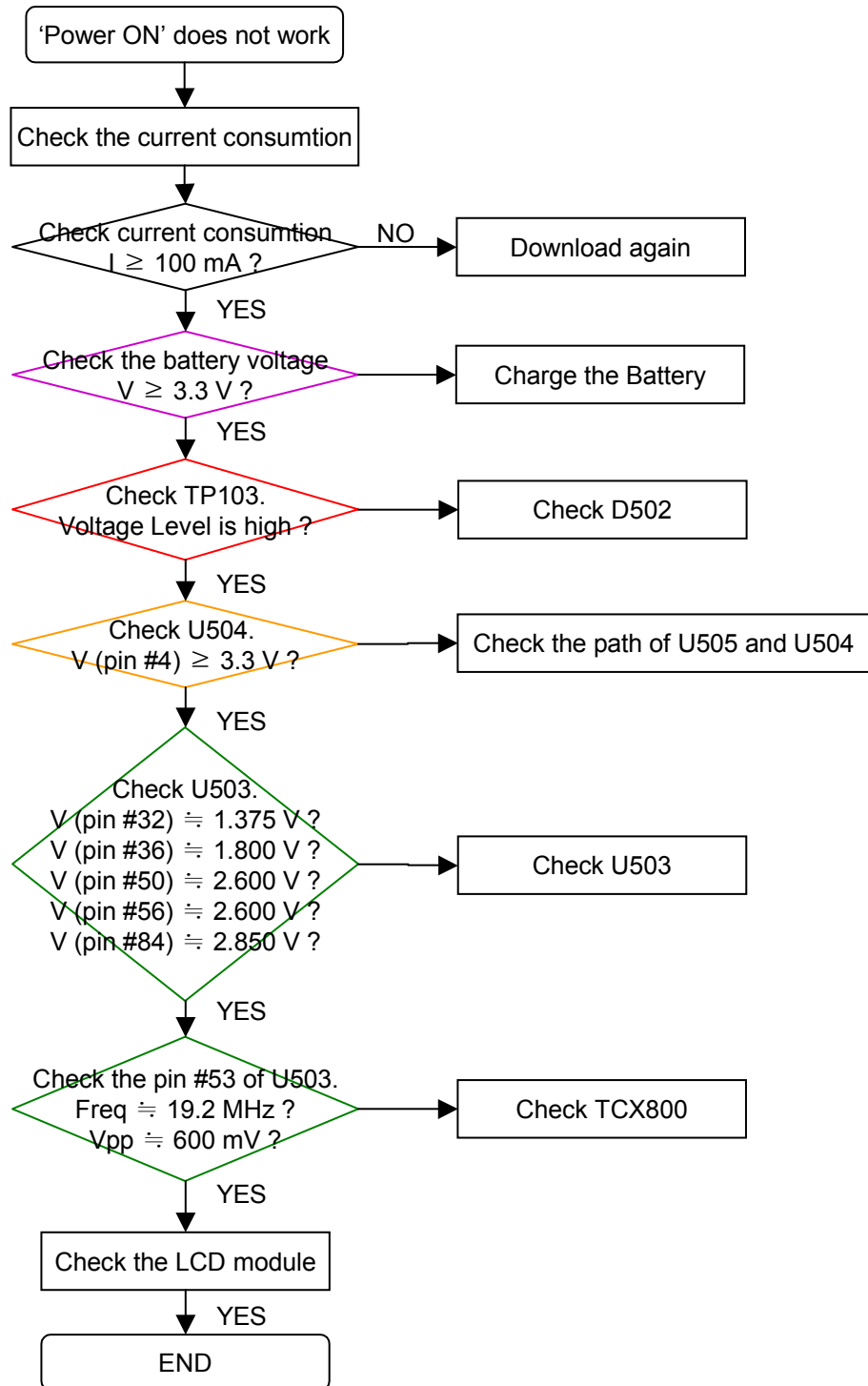


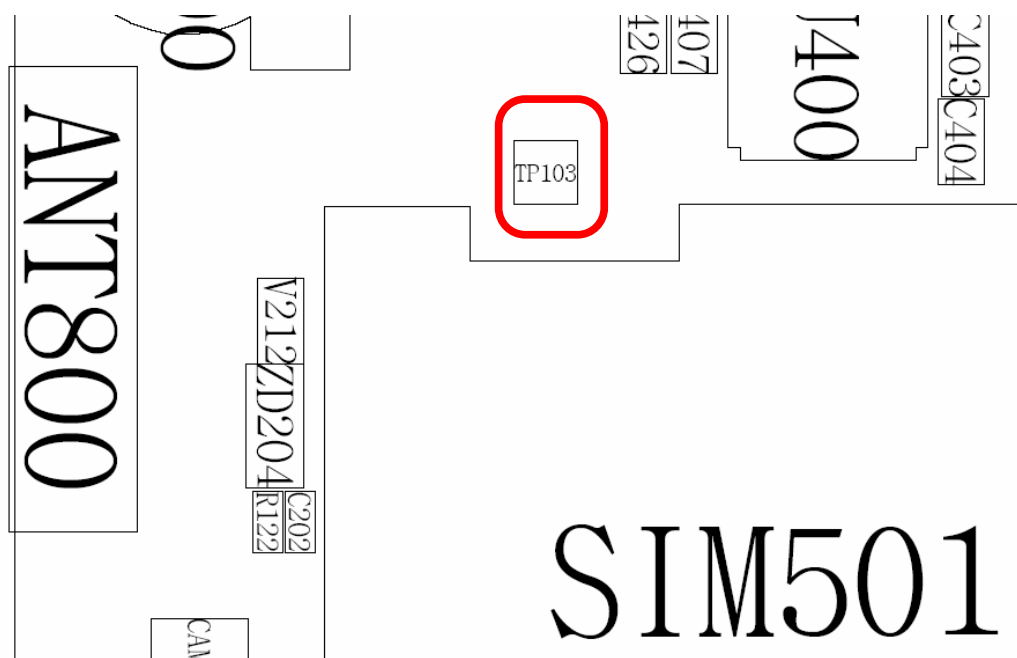
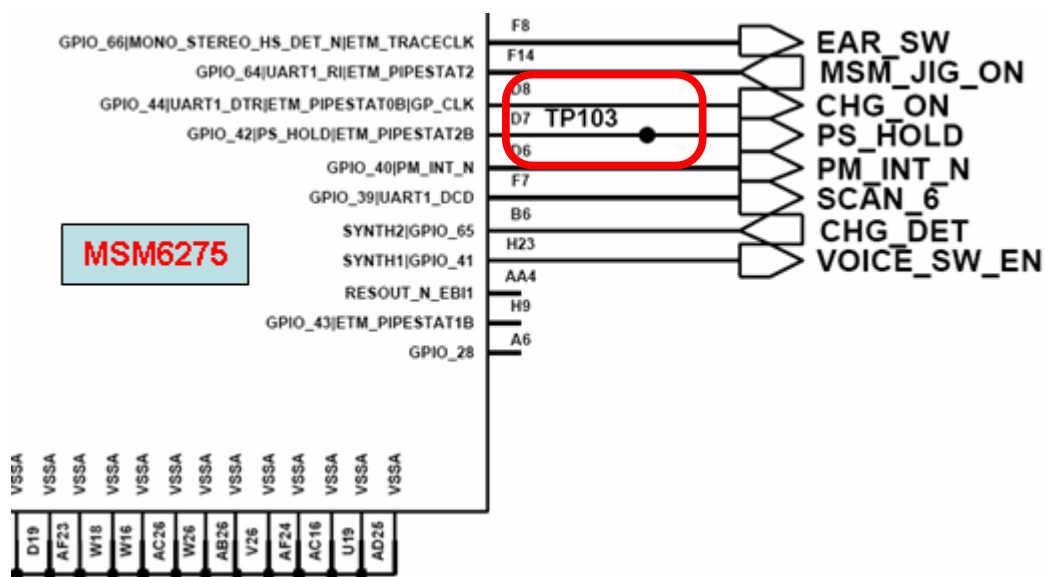
- 1) Insert the SCREW COVER and the RF COVER.  
**\* caution**
- 1) After check the insertion direction, insert the SCREW COVER.

## 3. Chart of Troubleshooting

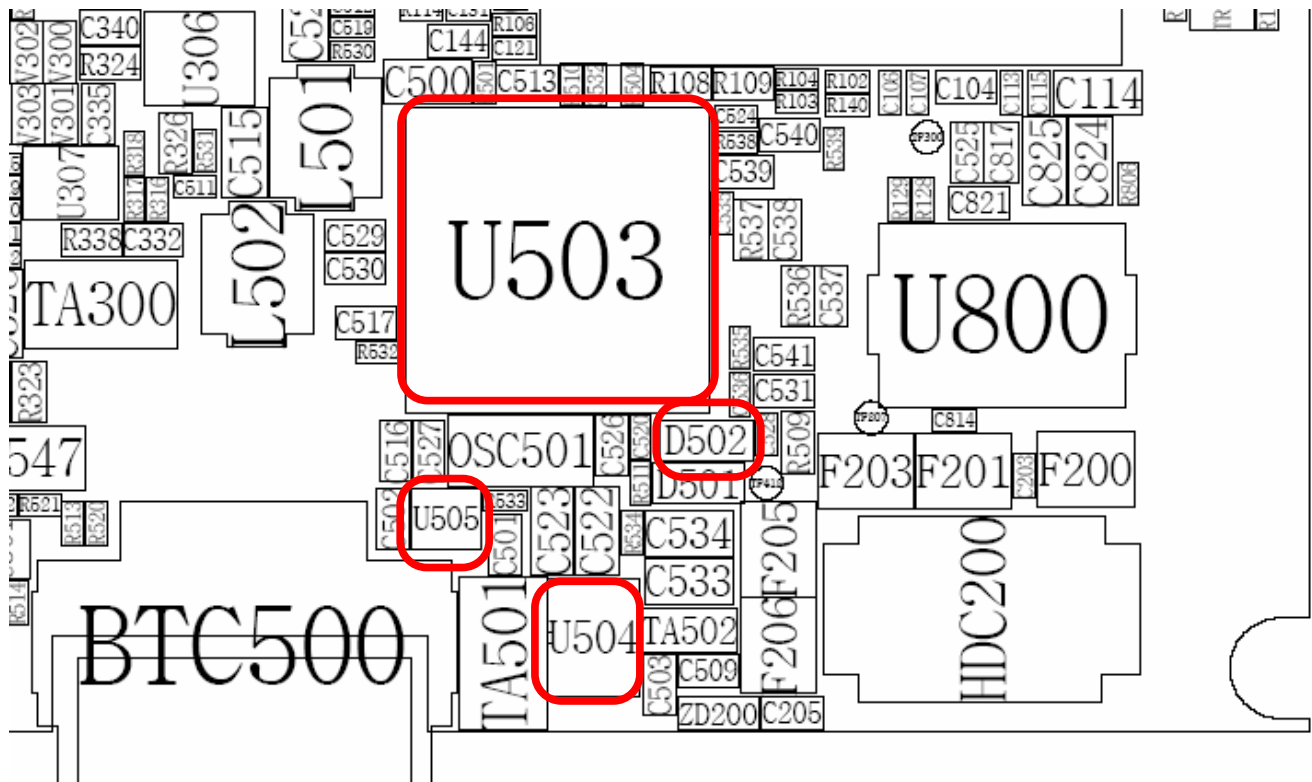
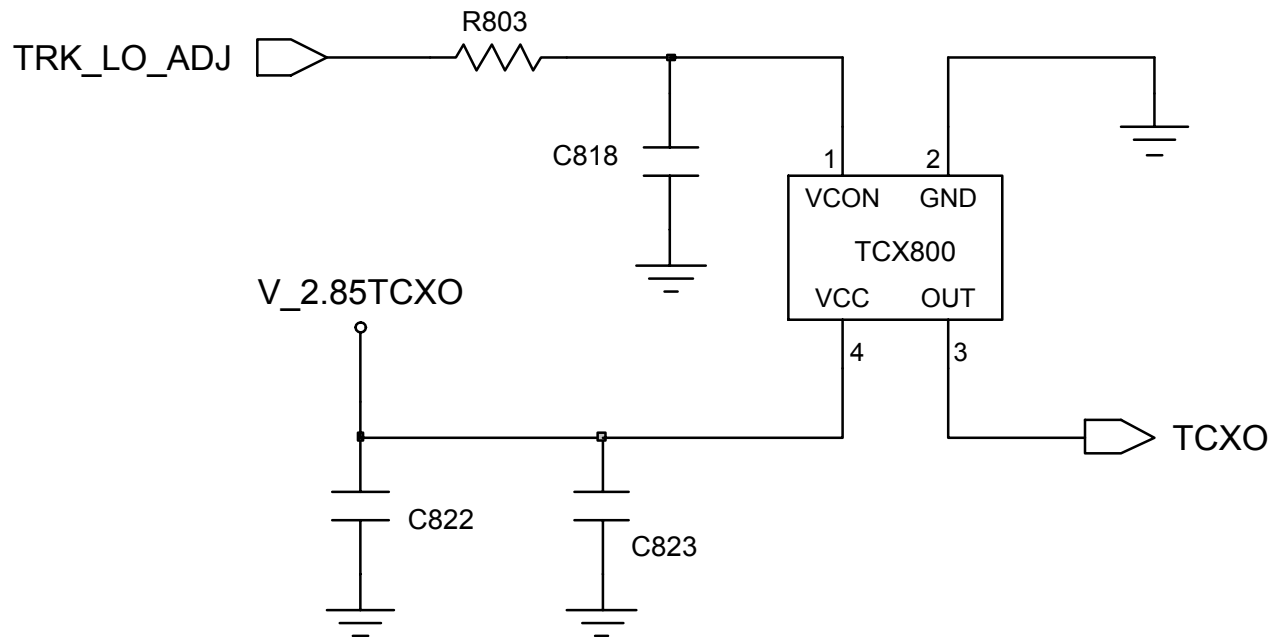
### 3-1.Baseband

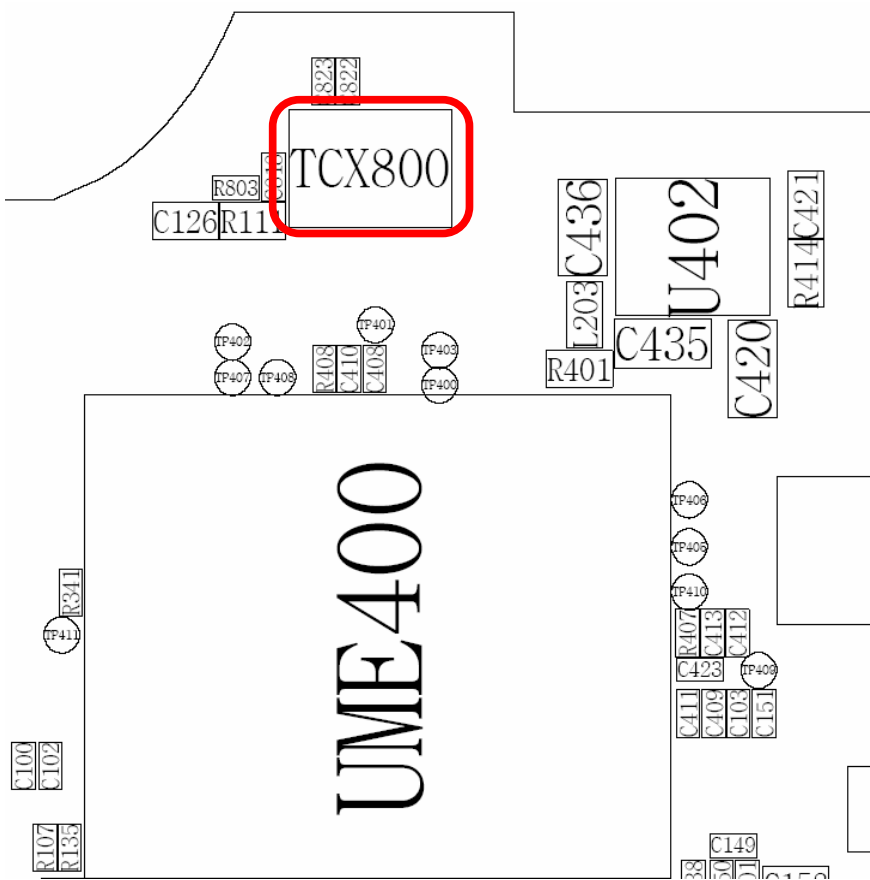
#### 3-1-1. Power ON



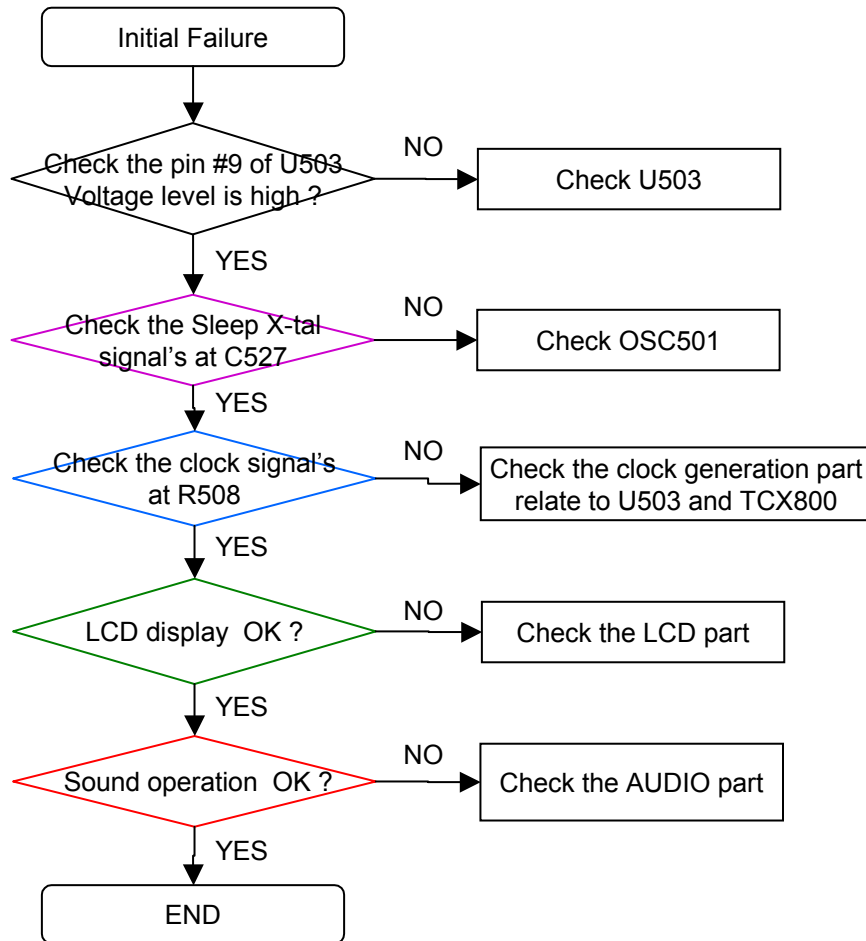


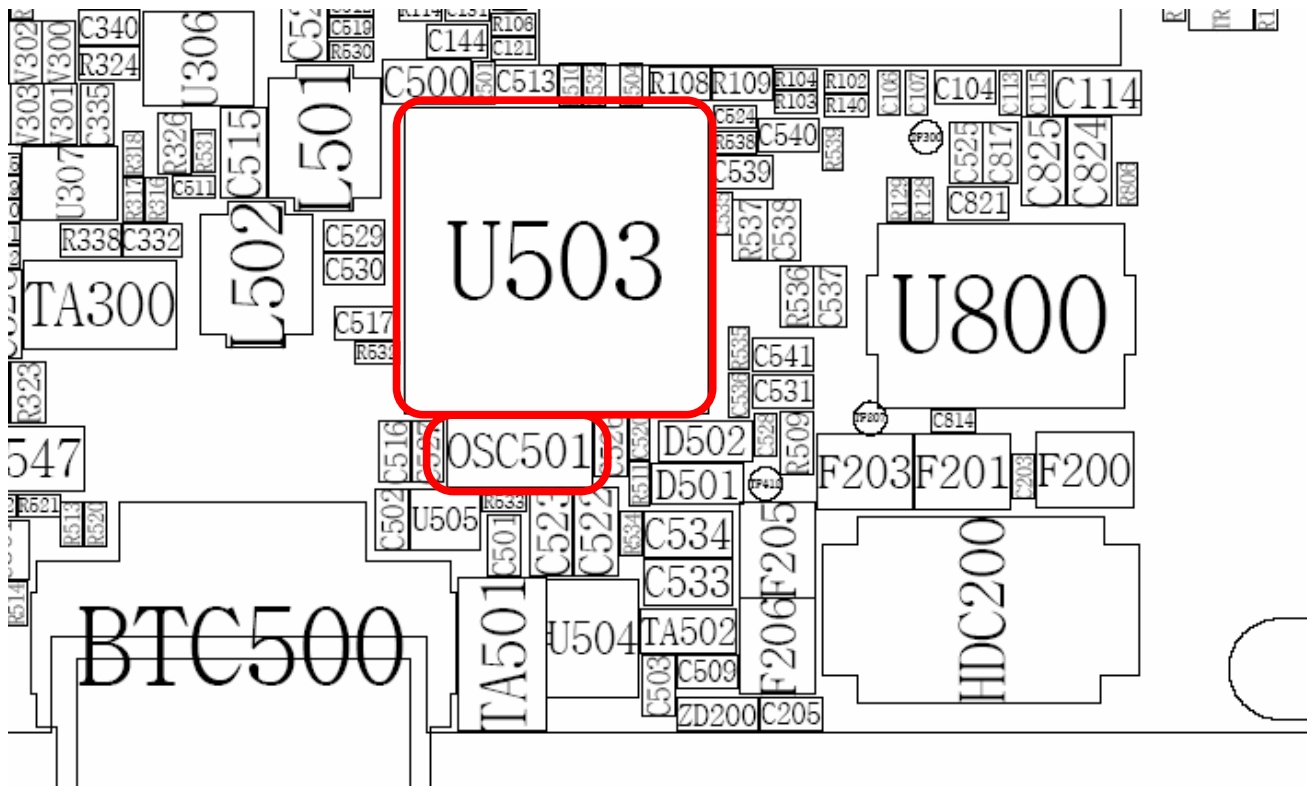




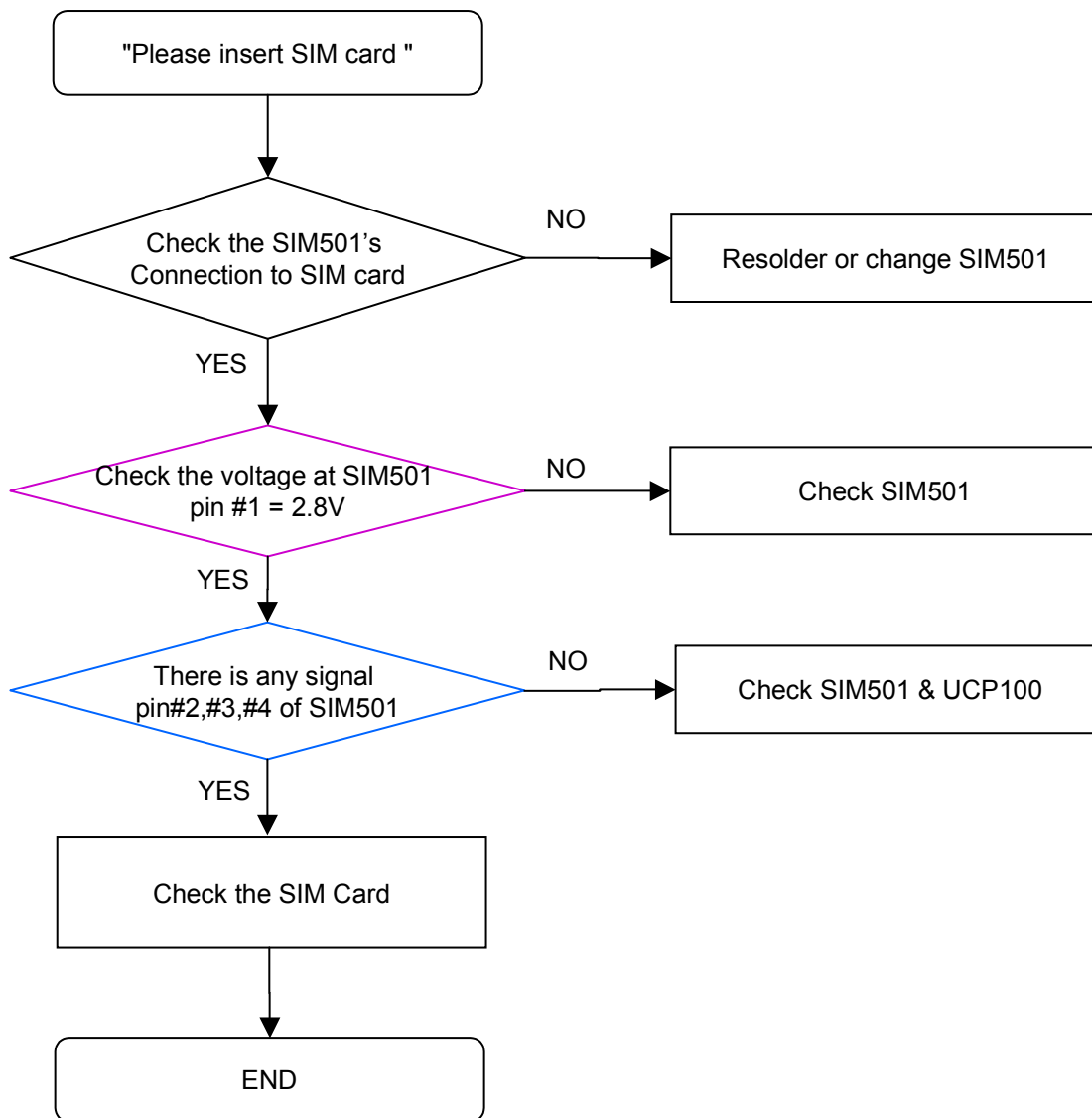


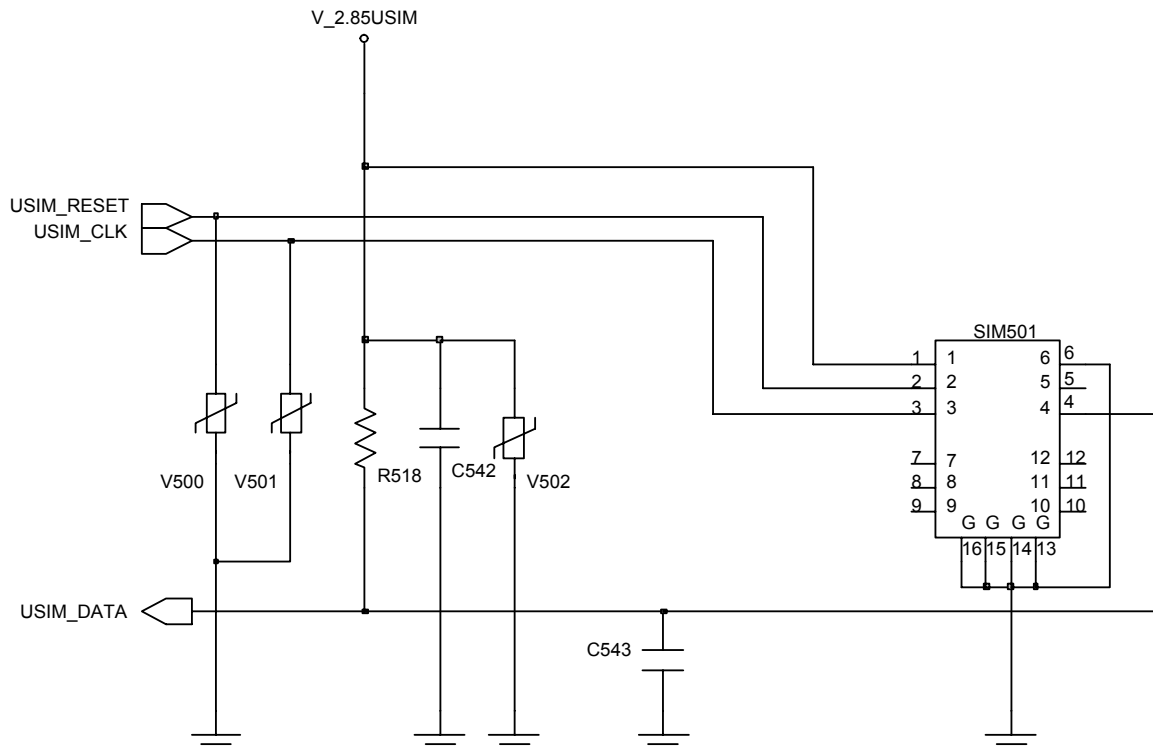
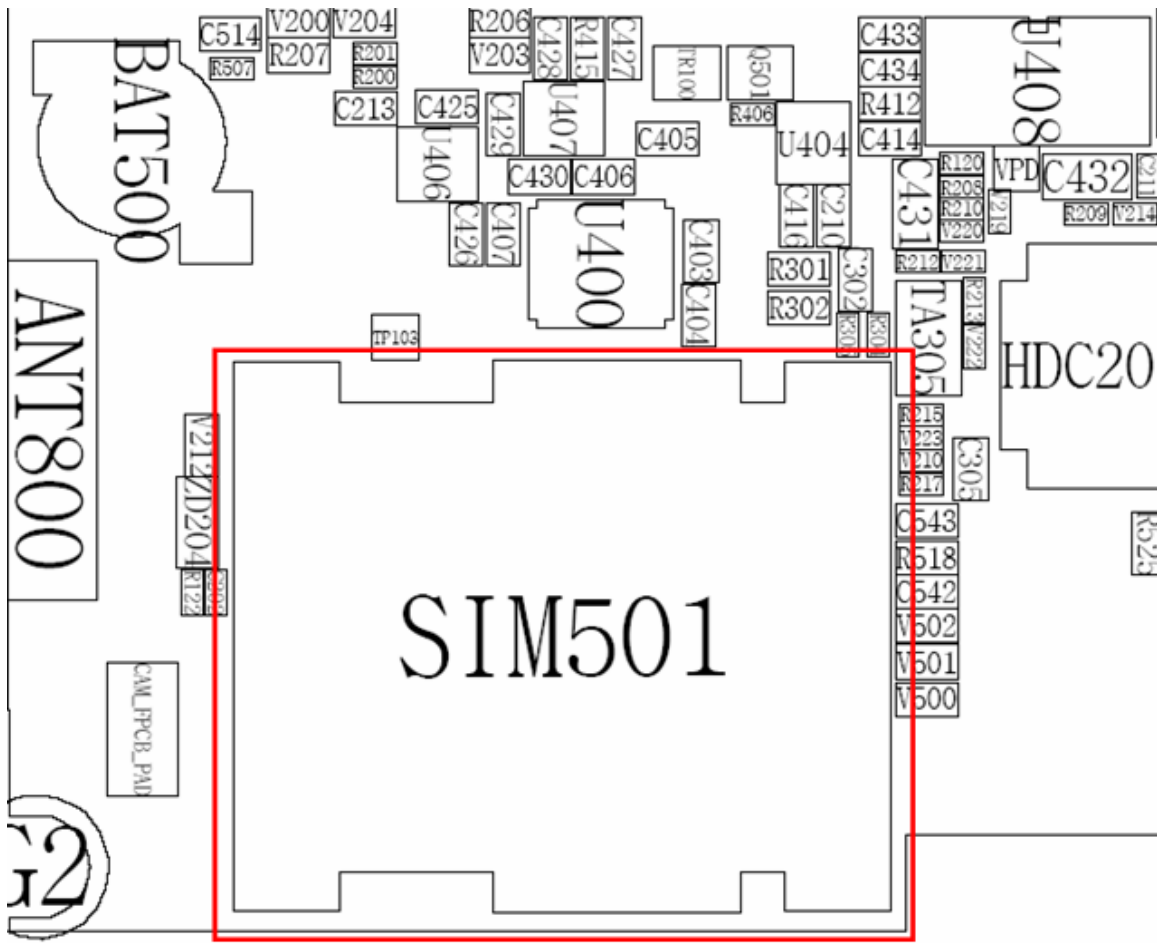
### 3-1-2. System Initial



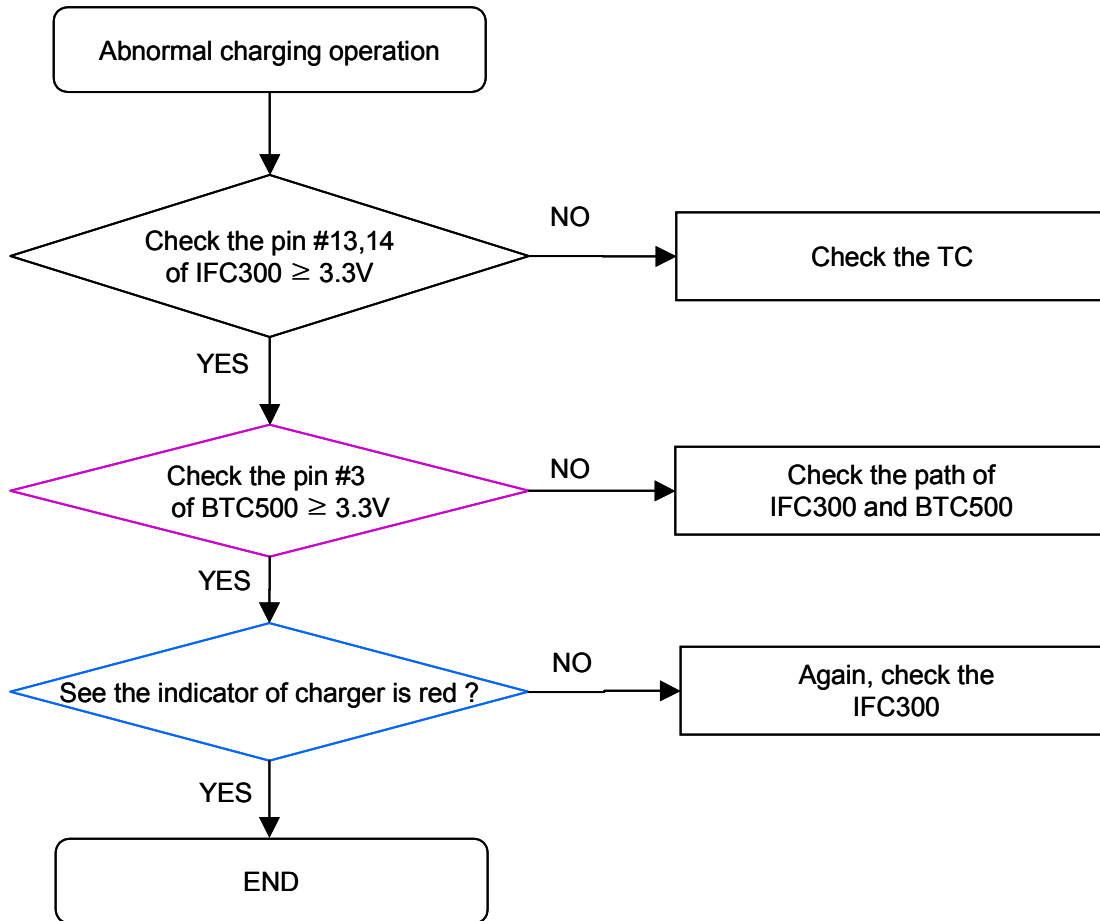


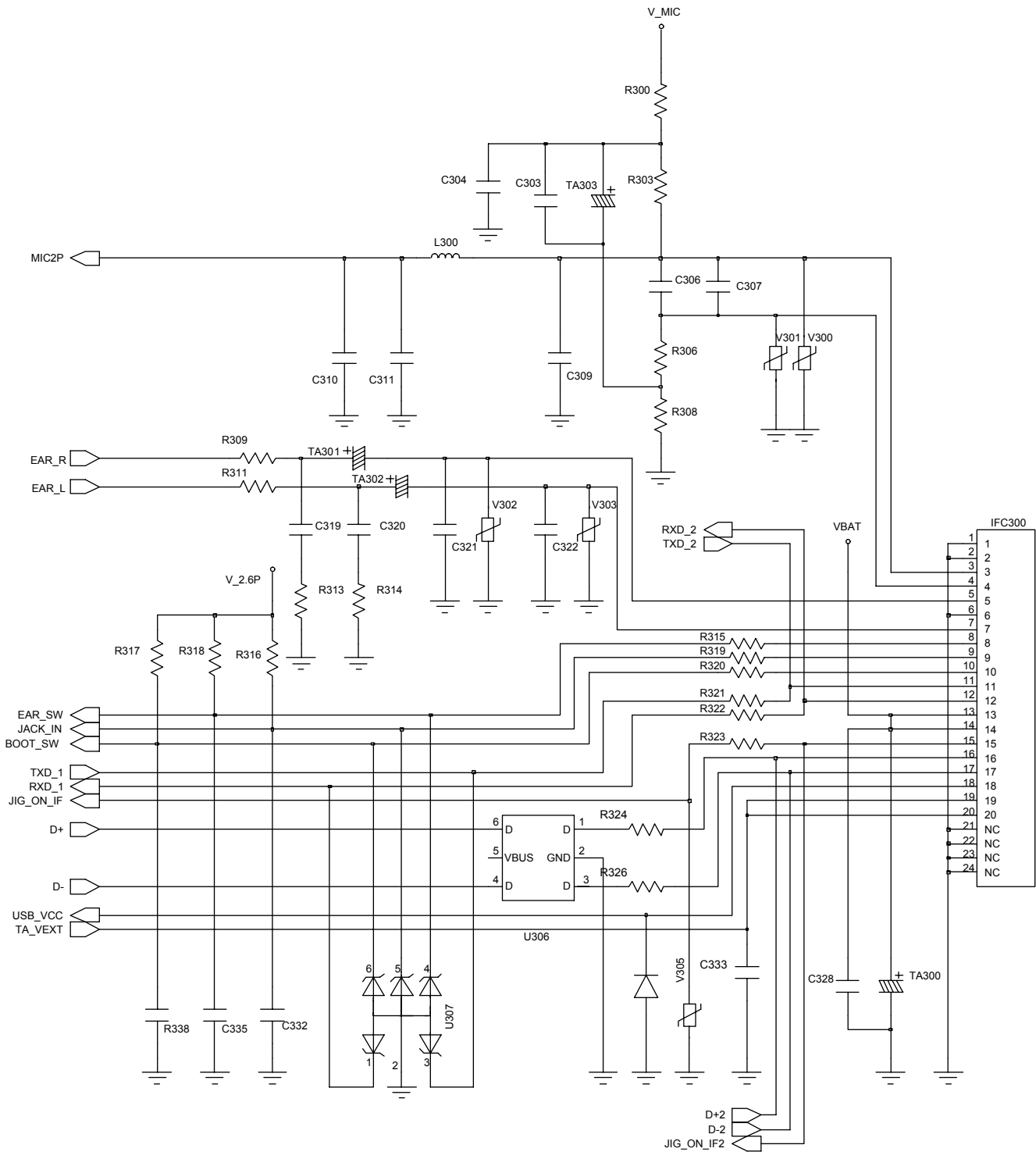
### 3-1-3. SIM Part

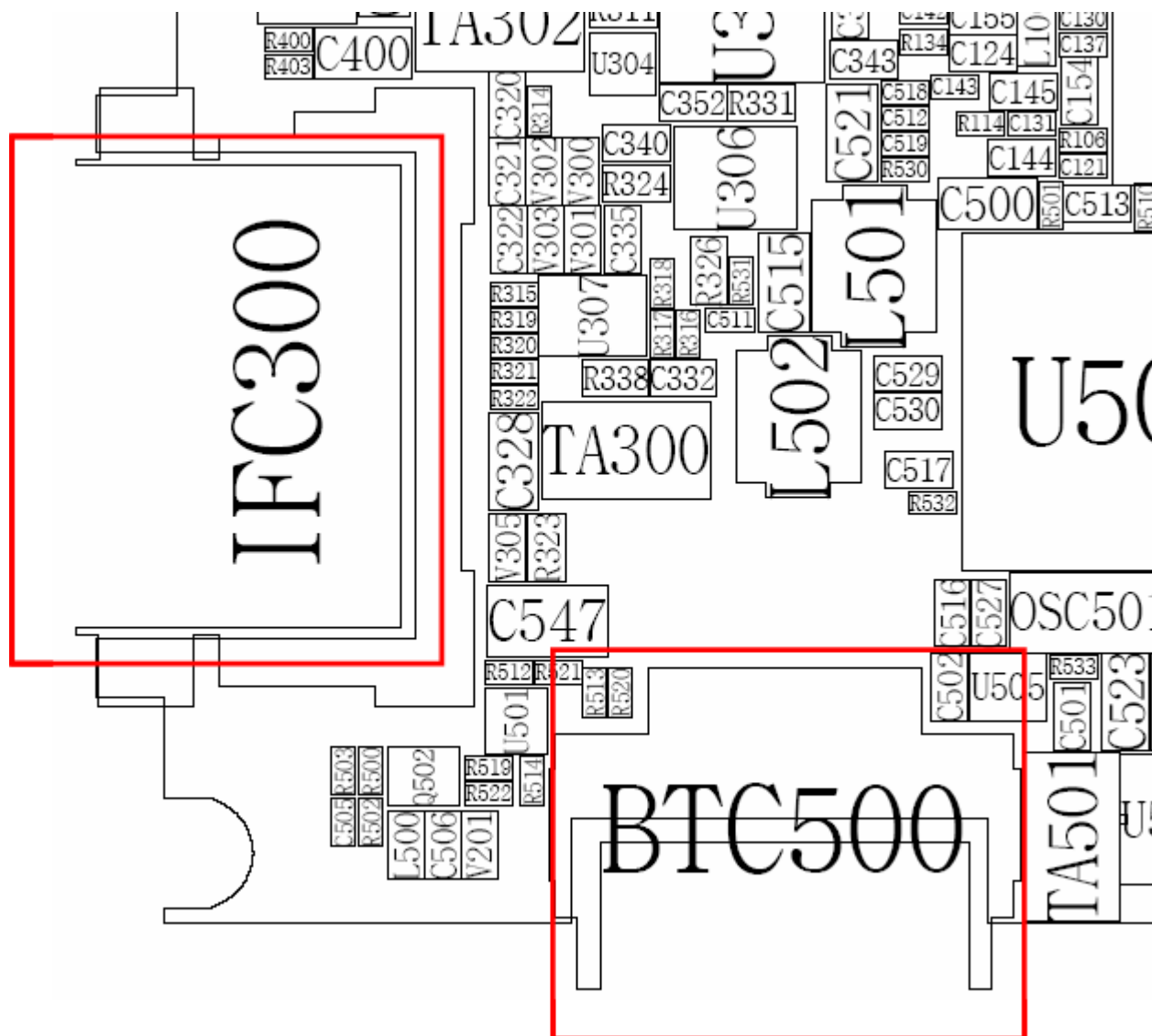


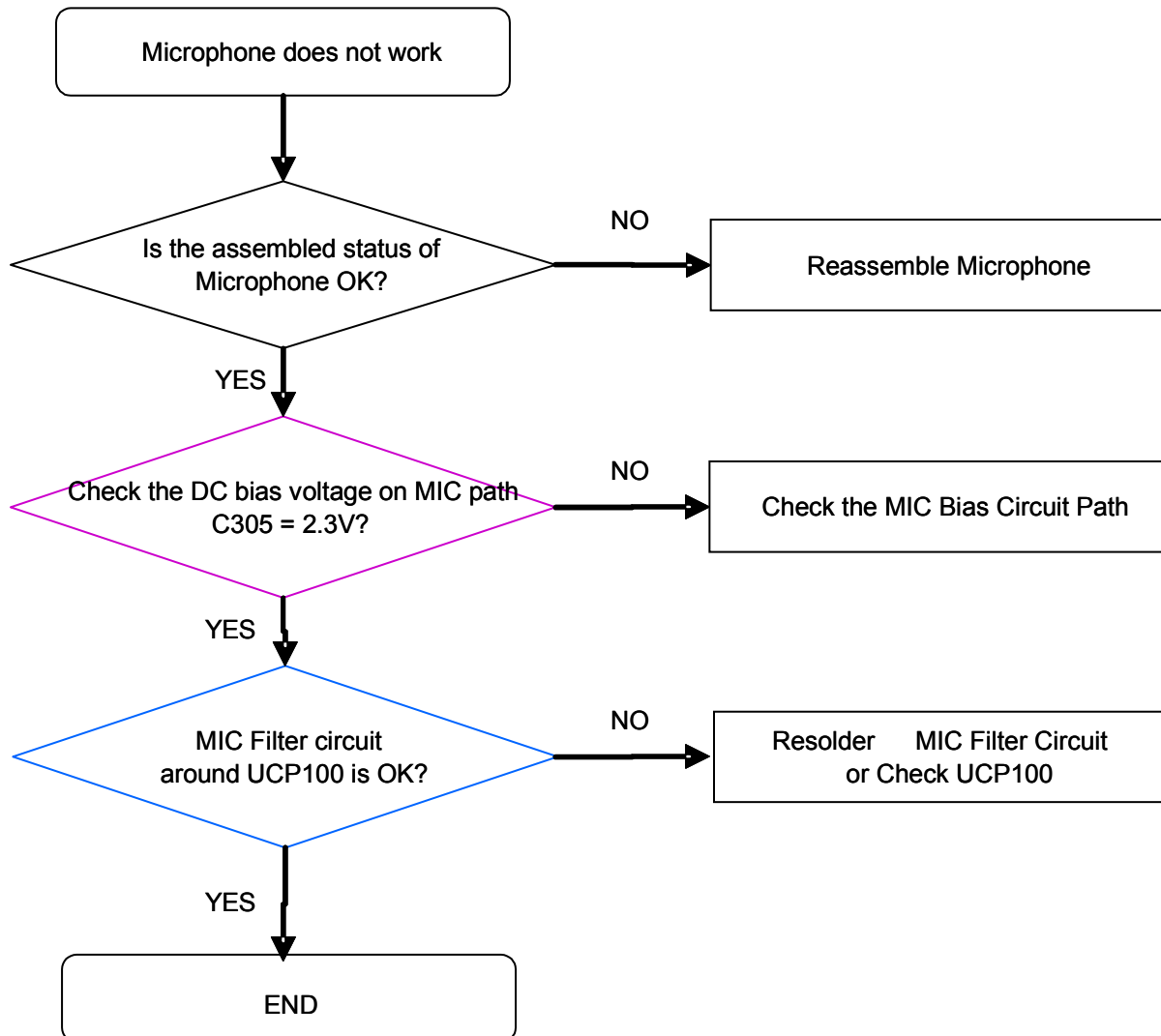


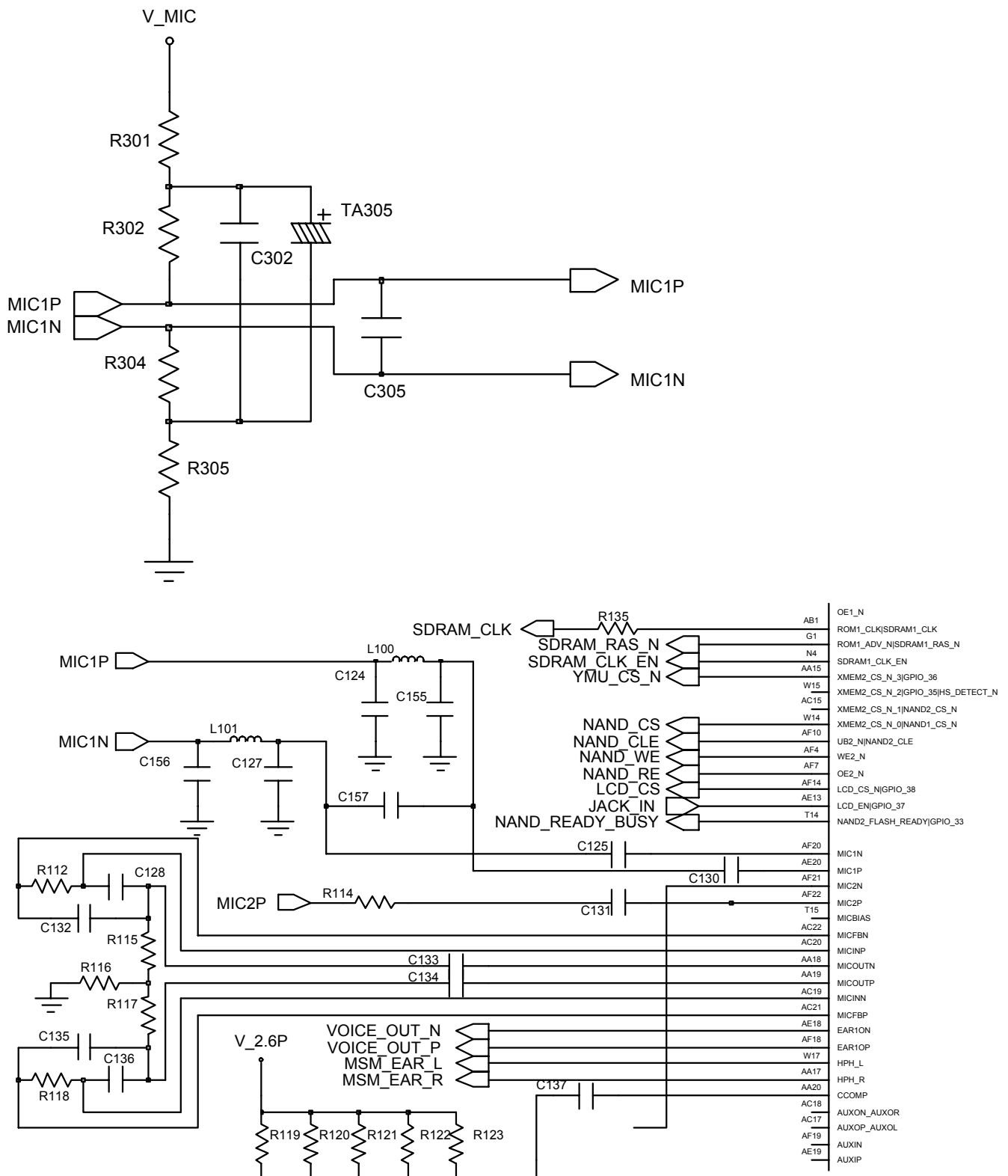
### 3-1-4. Charging Part

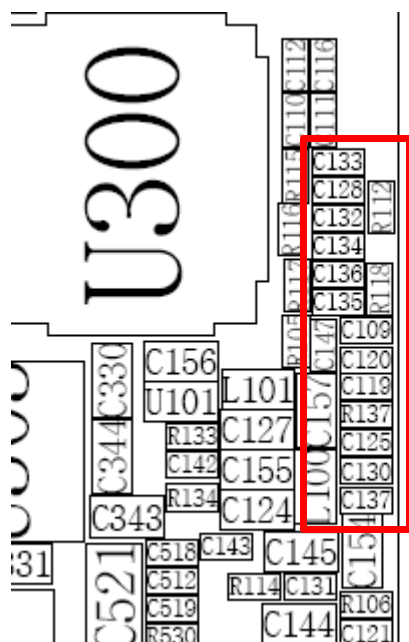
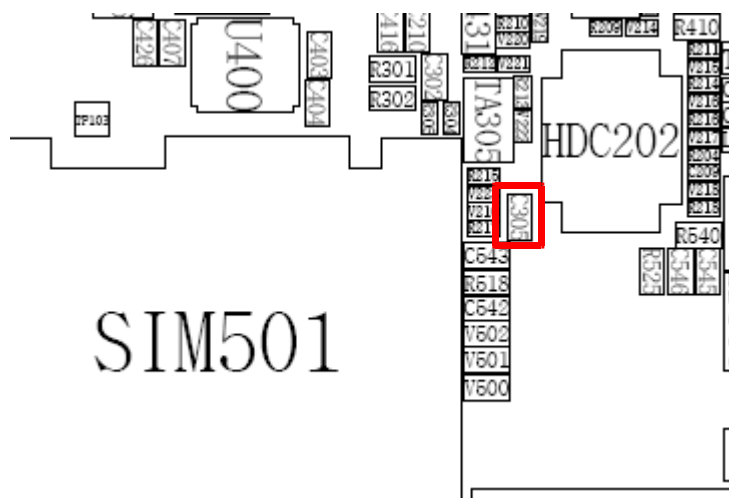






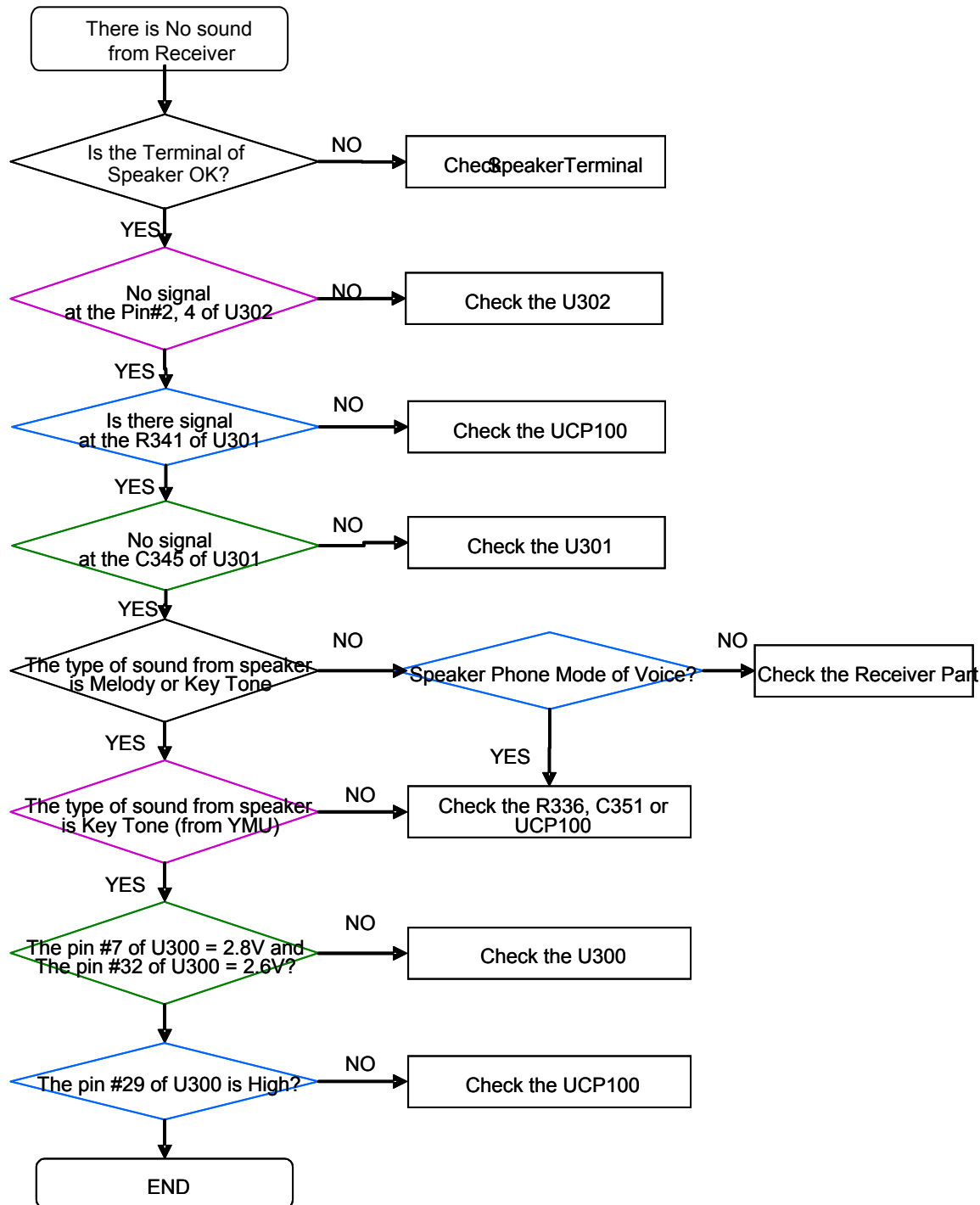
**3-1-5. Microphone Part**

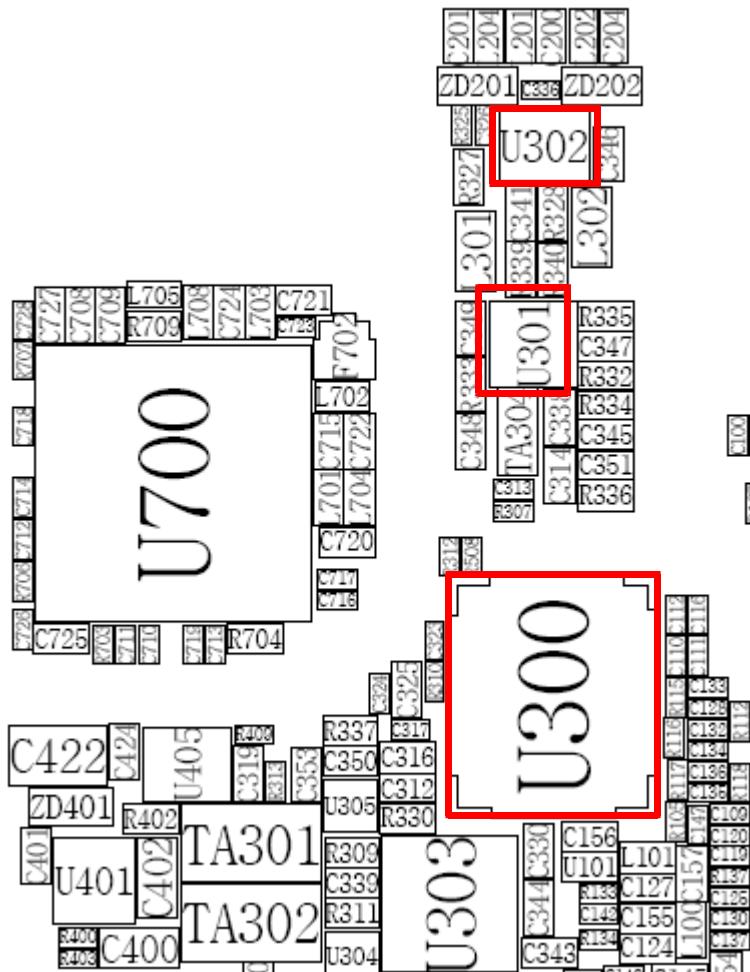


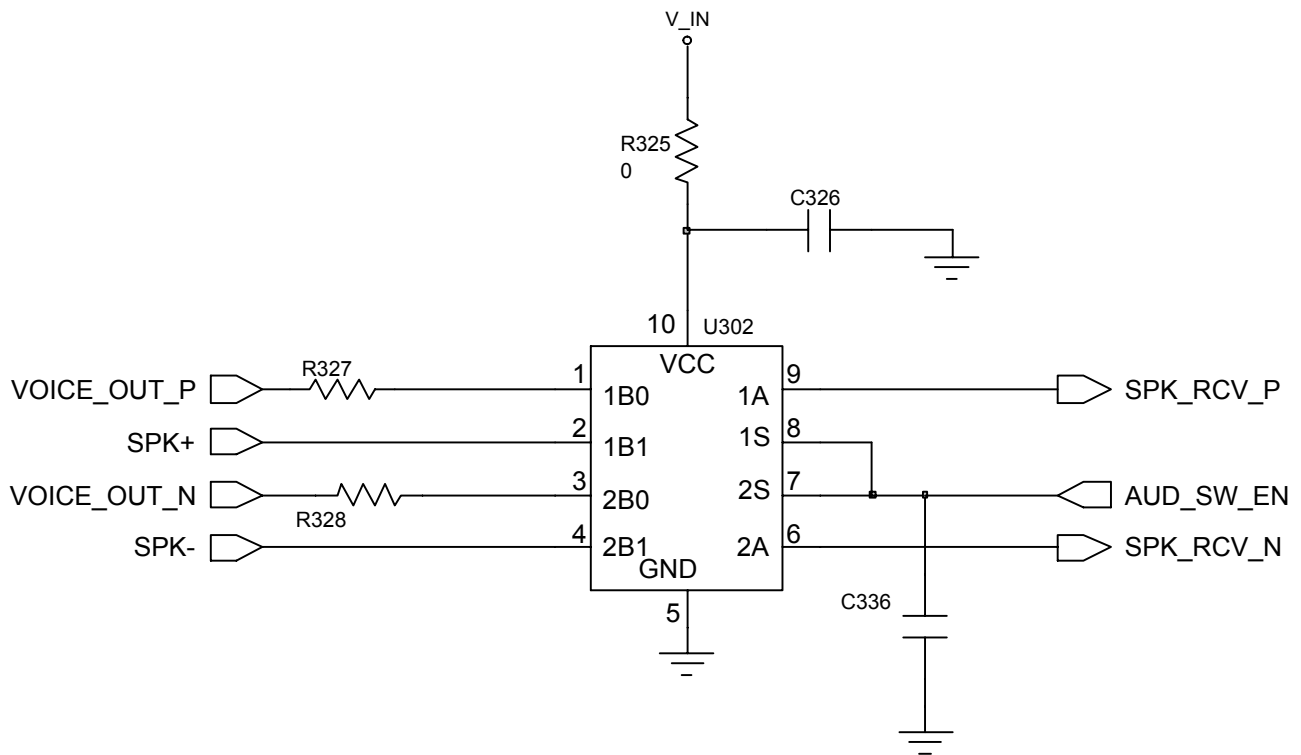
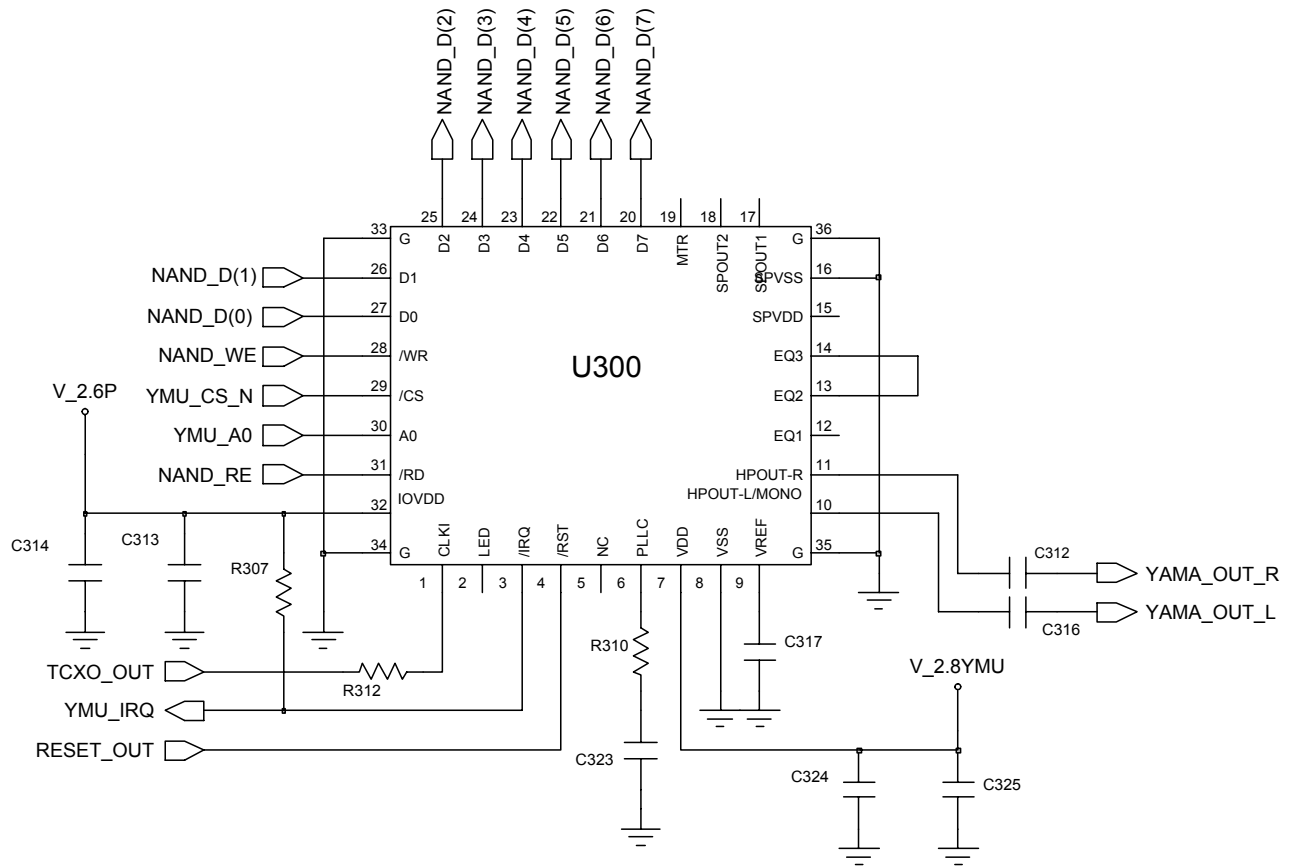


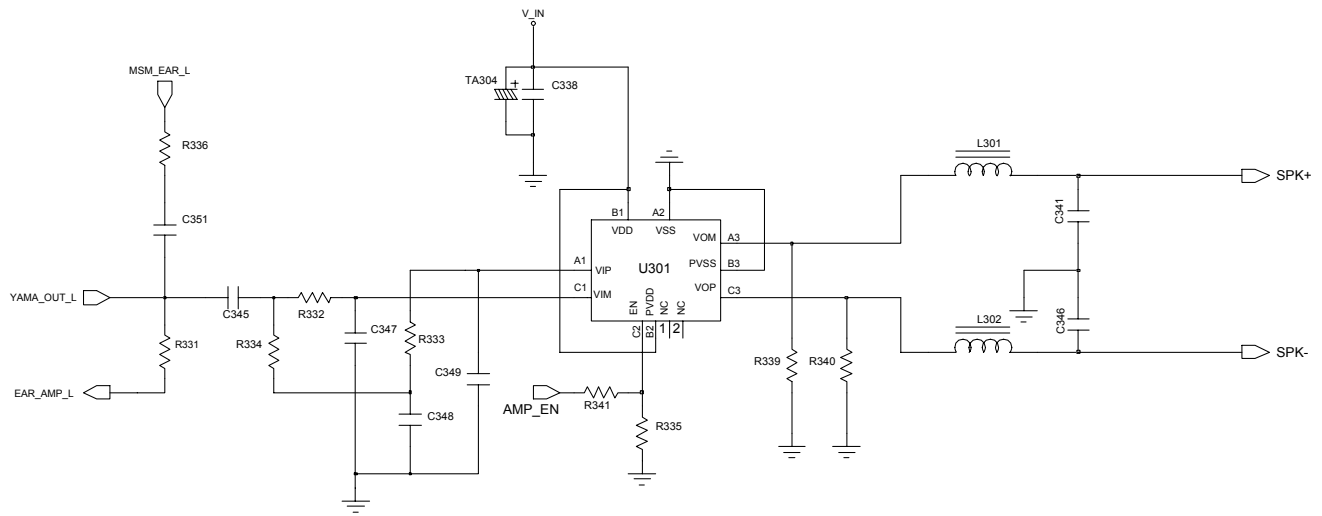
UCP100

### 3-1-6. Speaker Part

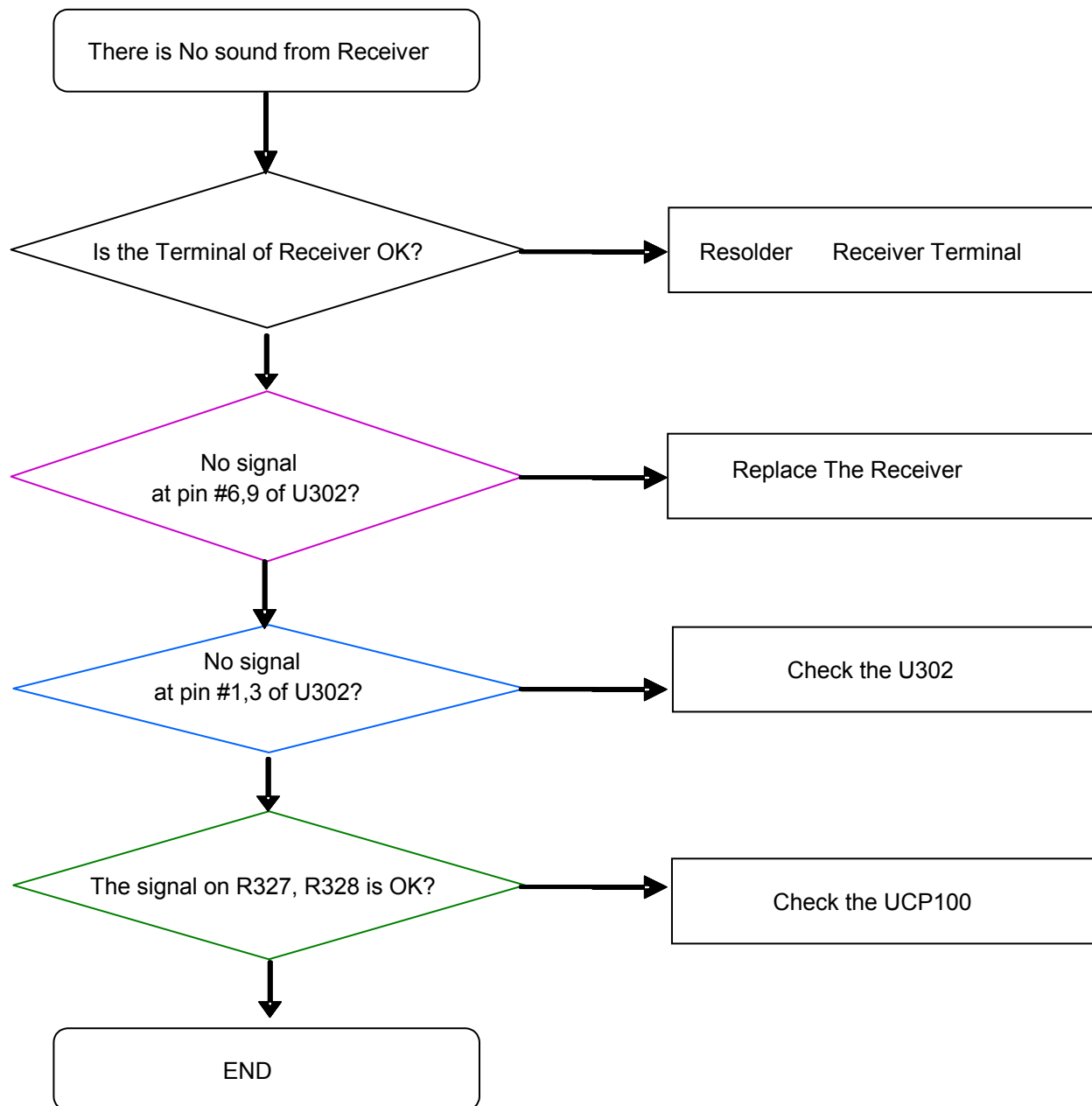


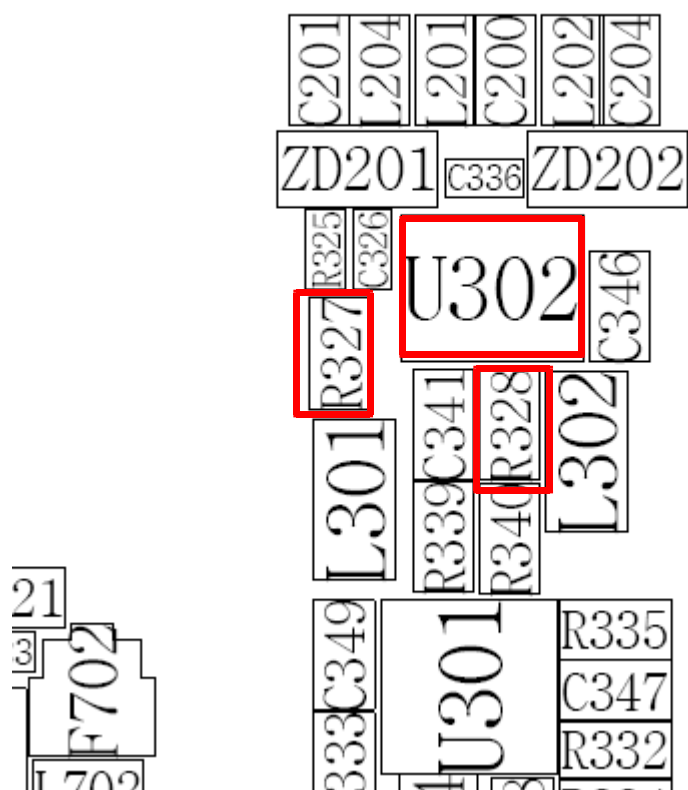






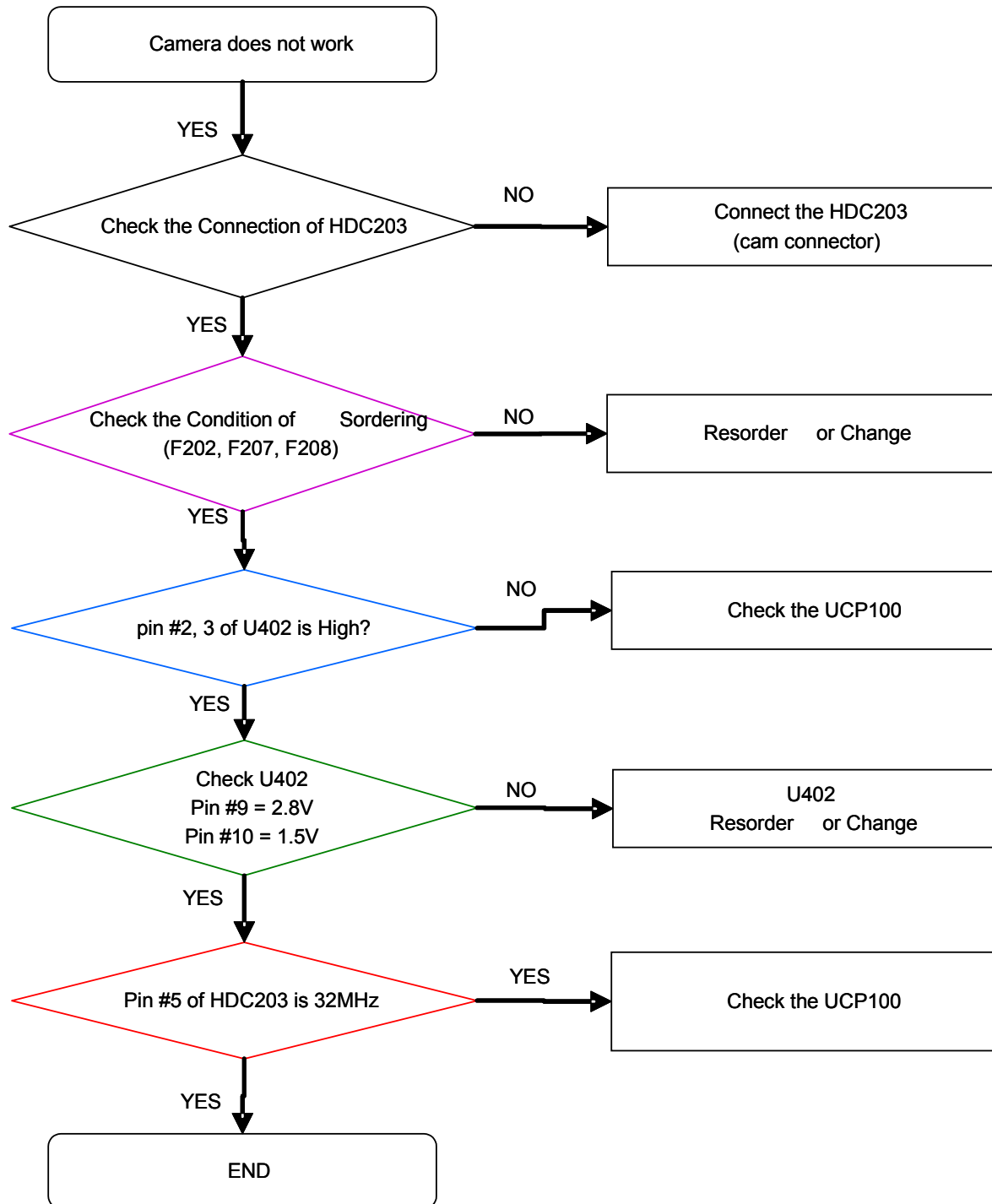
### 3-1-7. Receiver Part



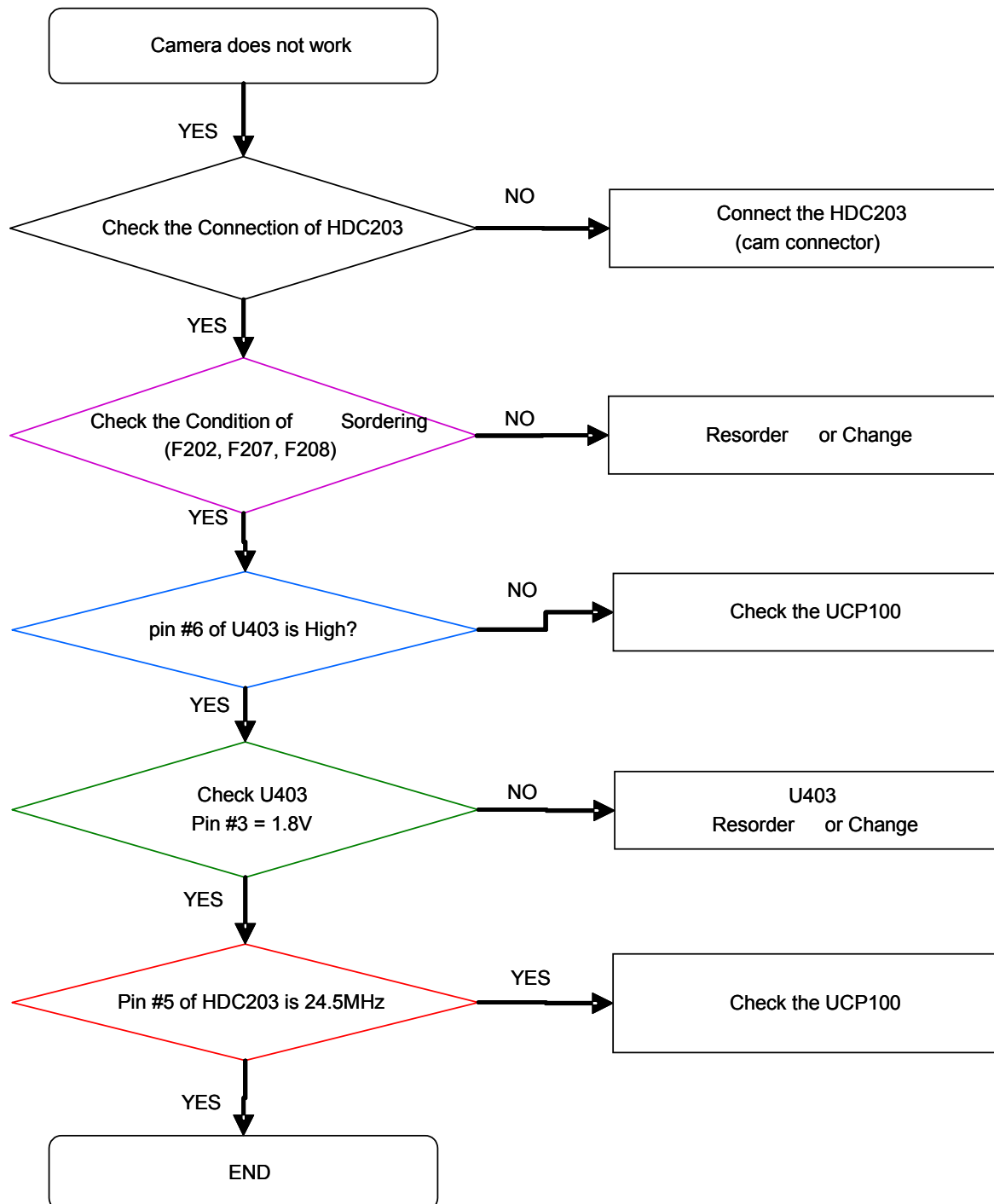


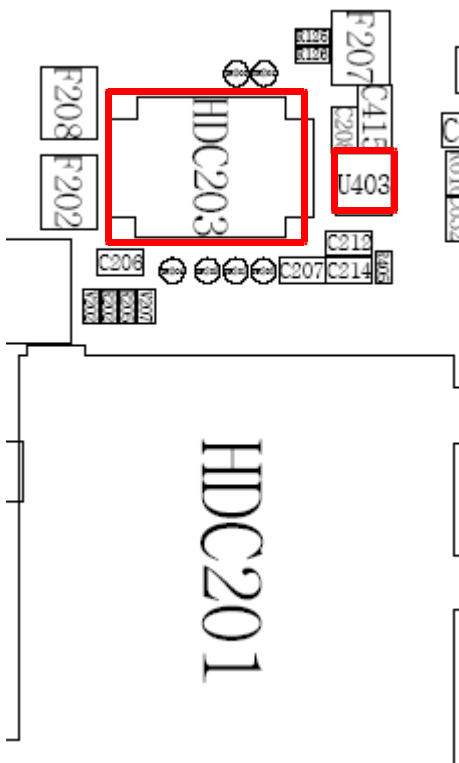
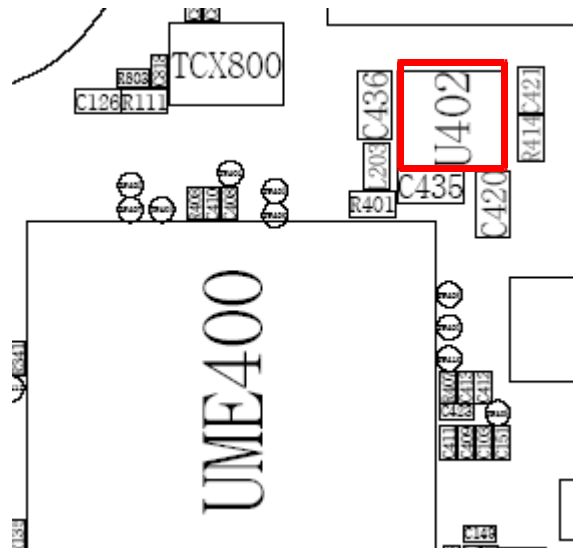
### 3-1-8. Camera Part

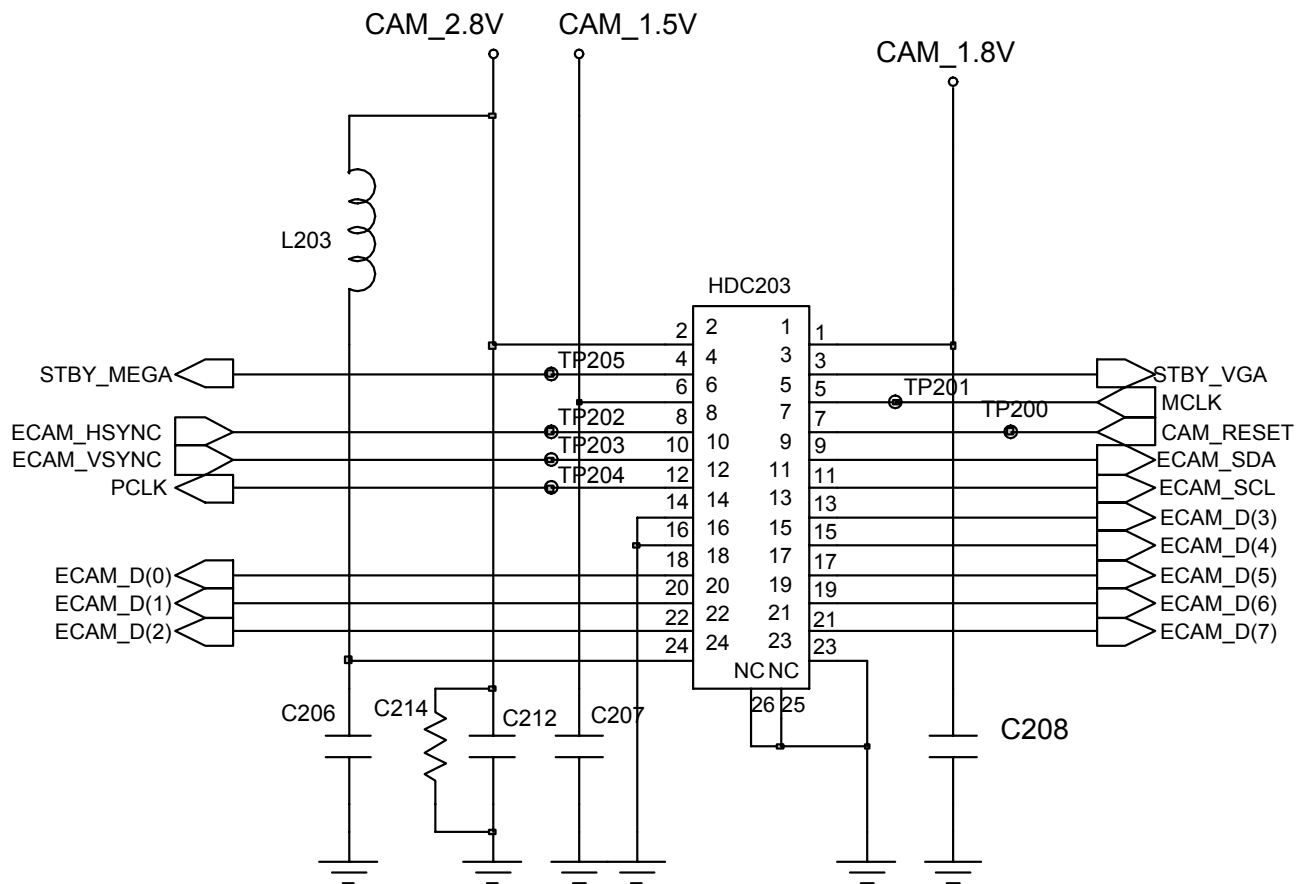
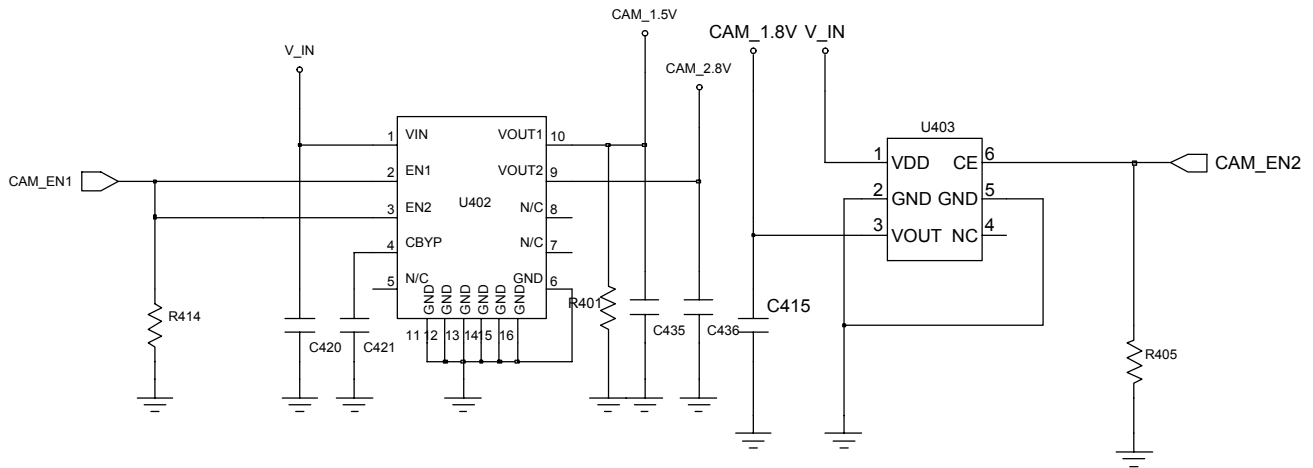
#### 1) 2Mega Camera



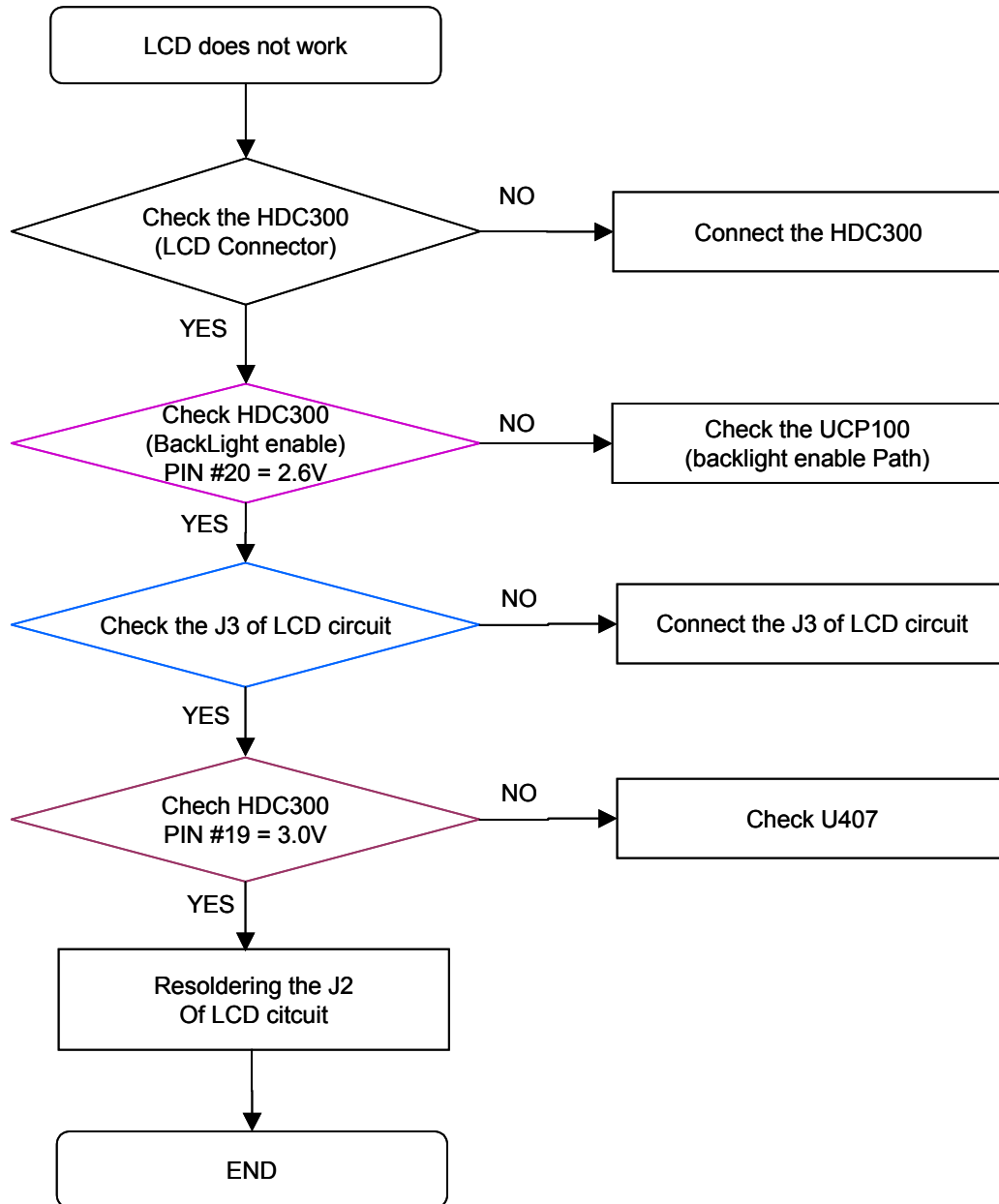
## 2) VGA Camera

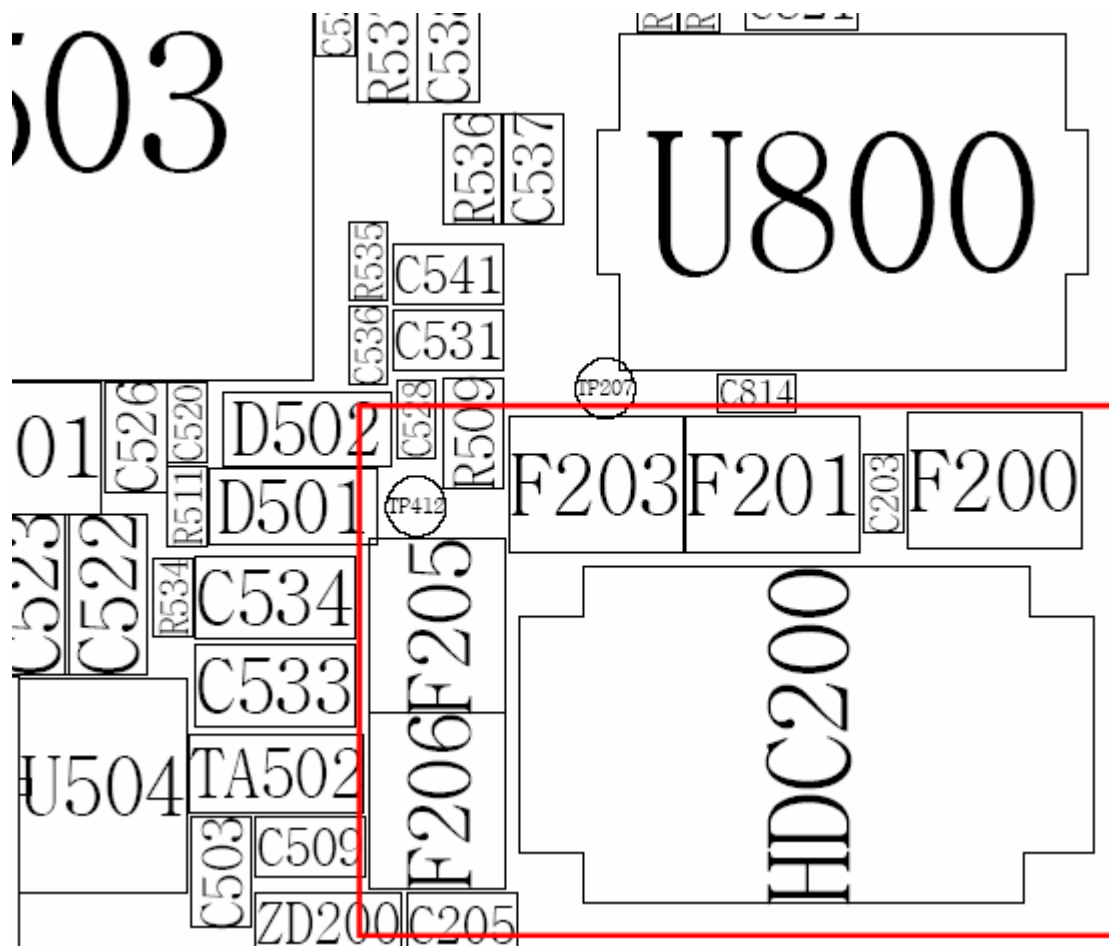


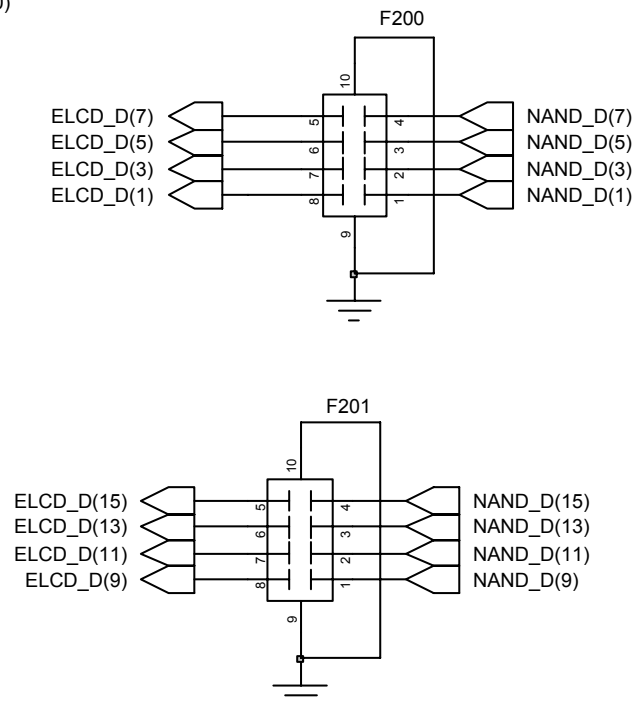
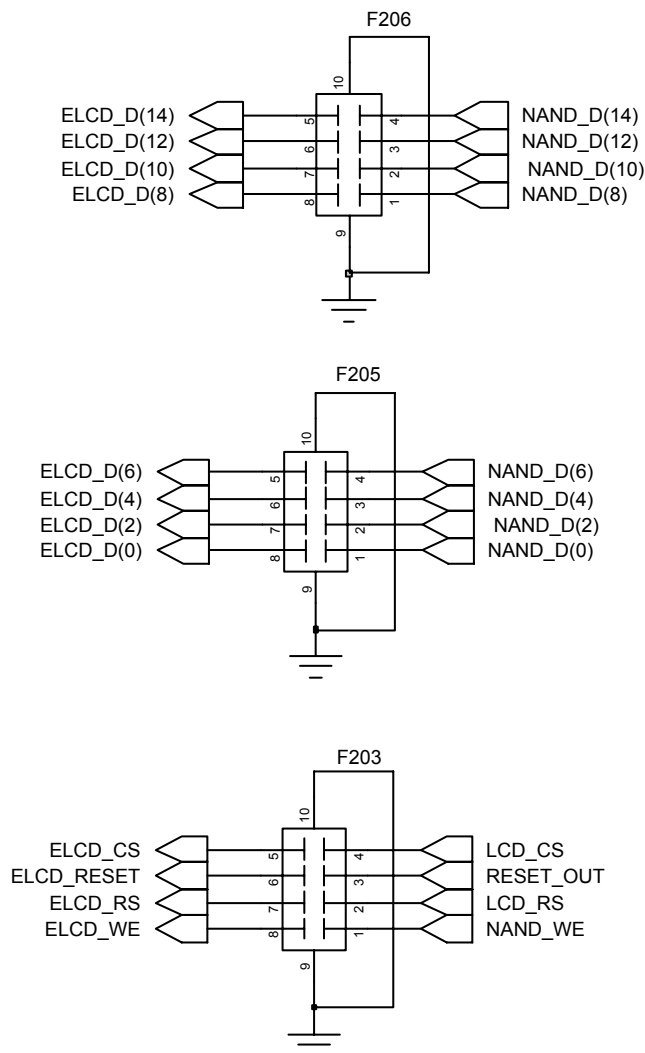
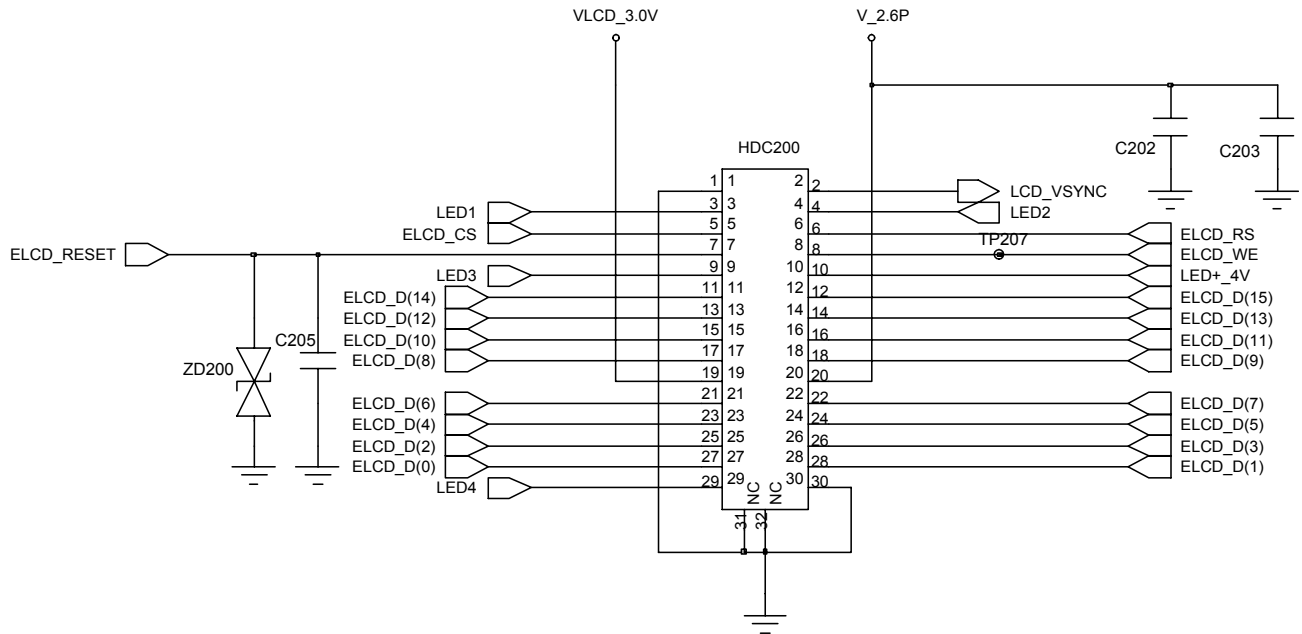


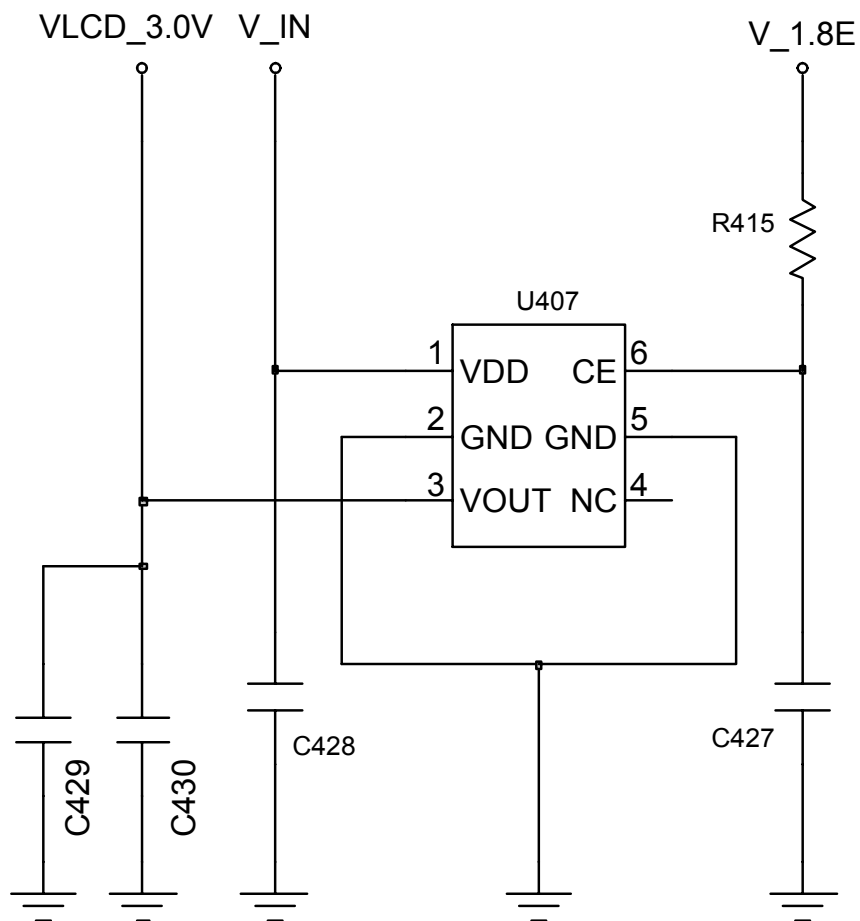


### 3-1-9. LCD



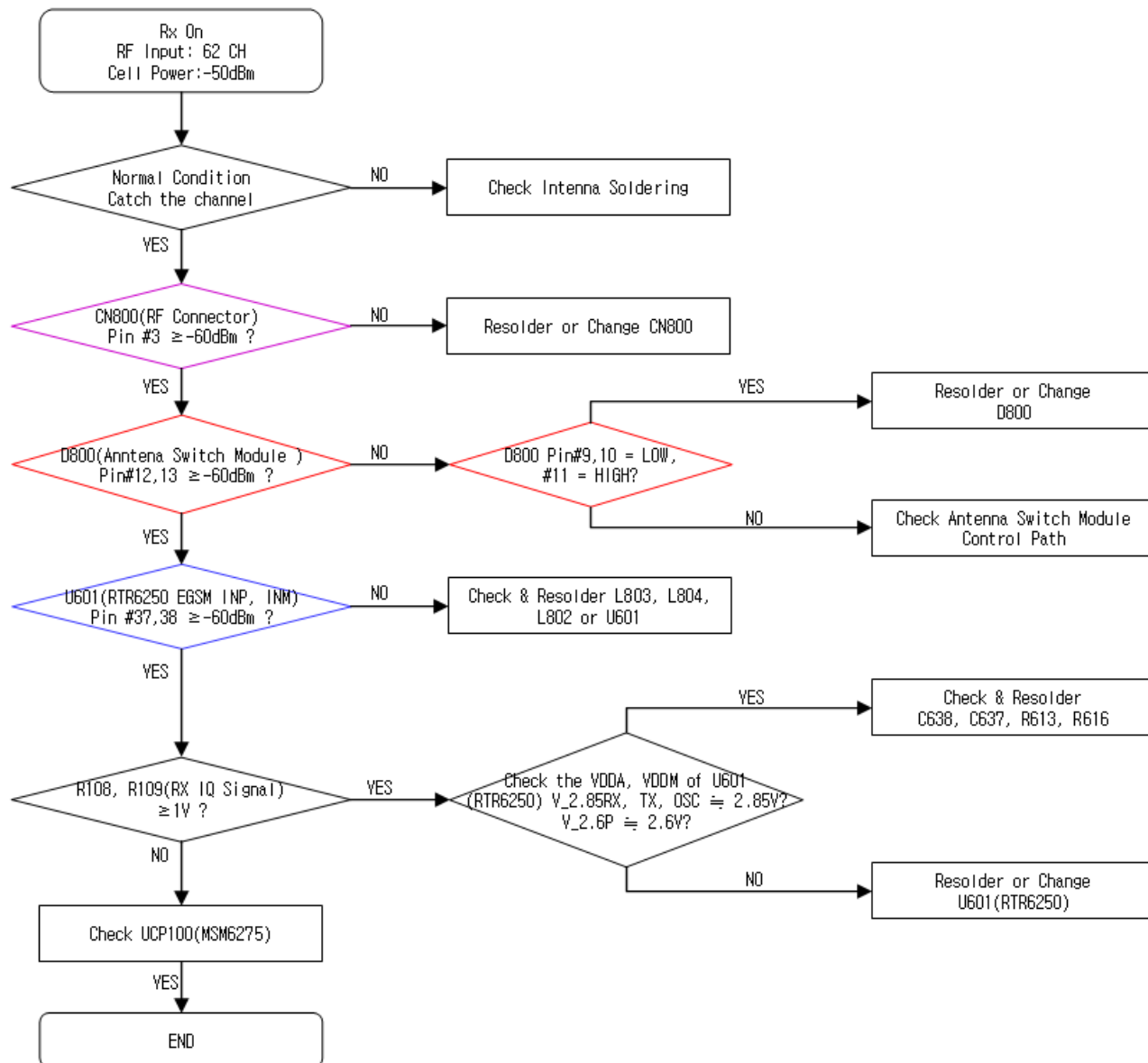




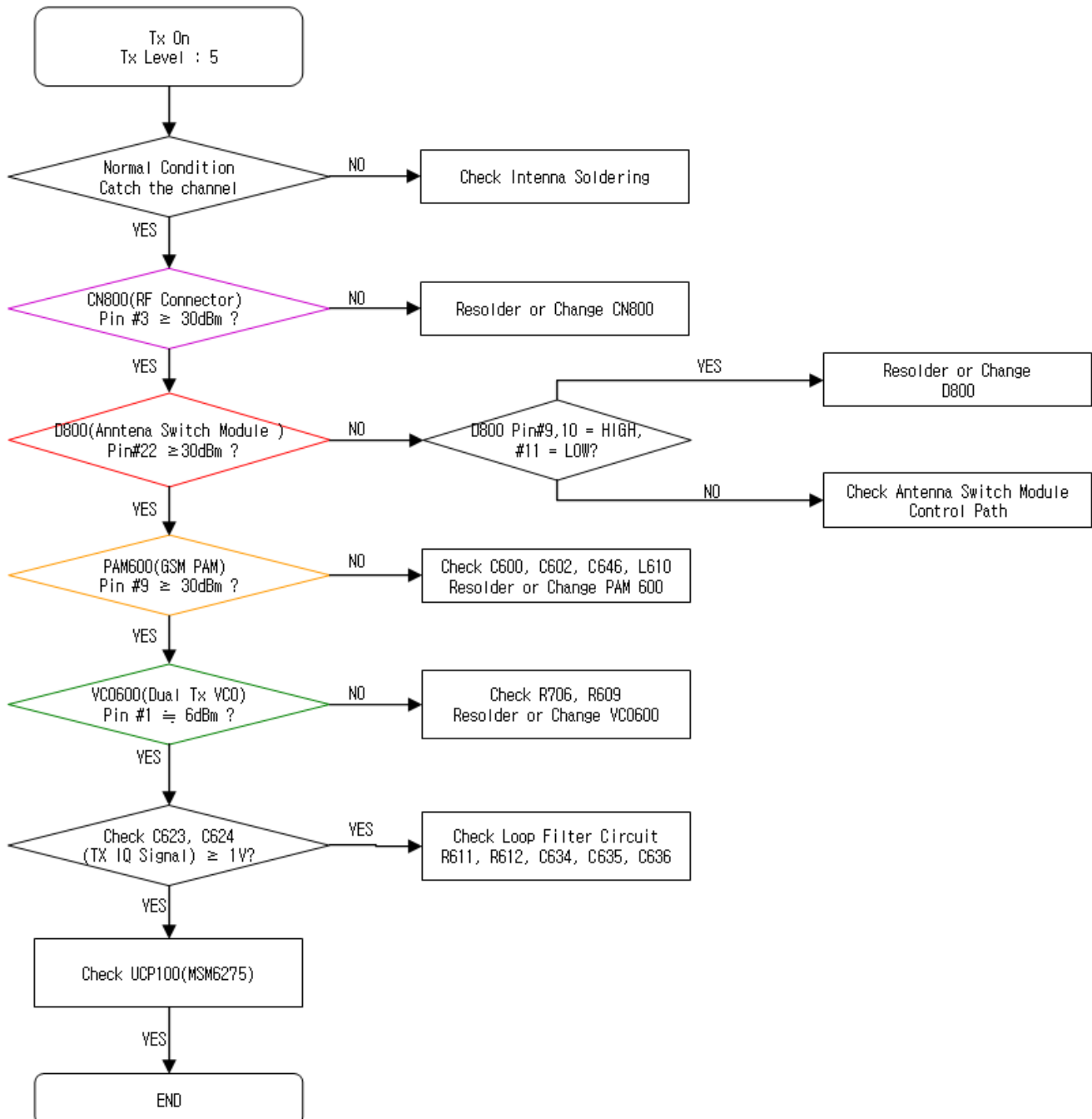


## 3-2.RF

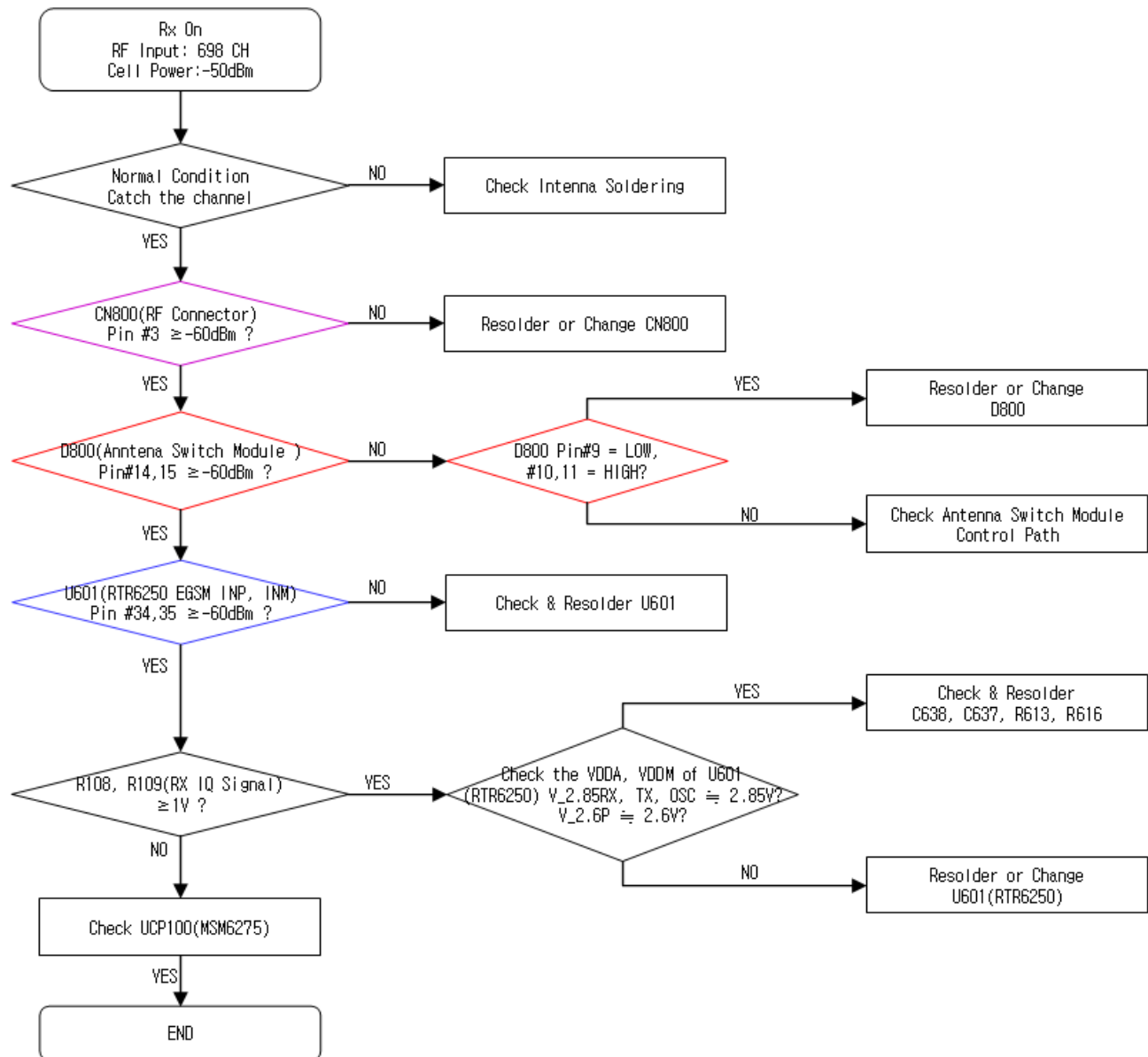
### 3-2-1. EGSM Receiver



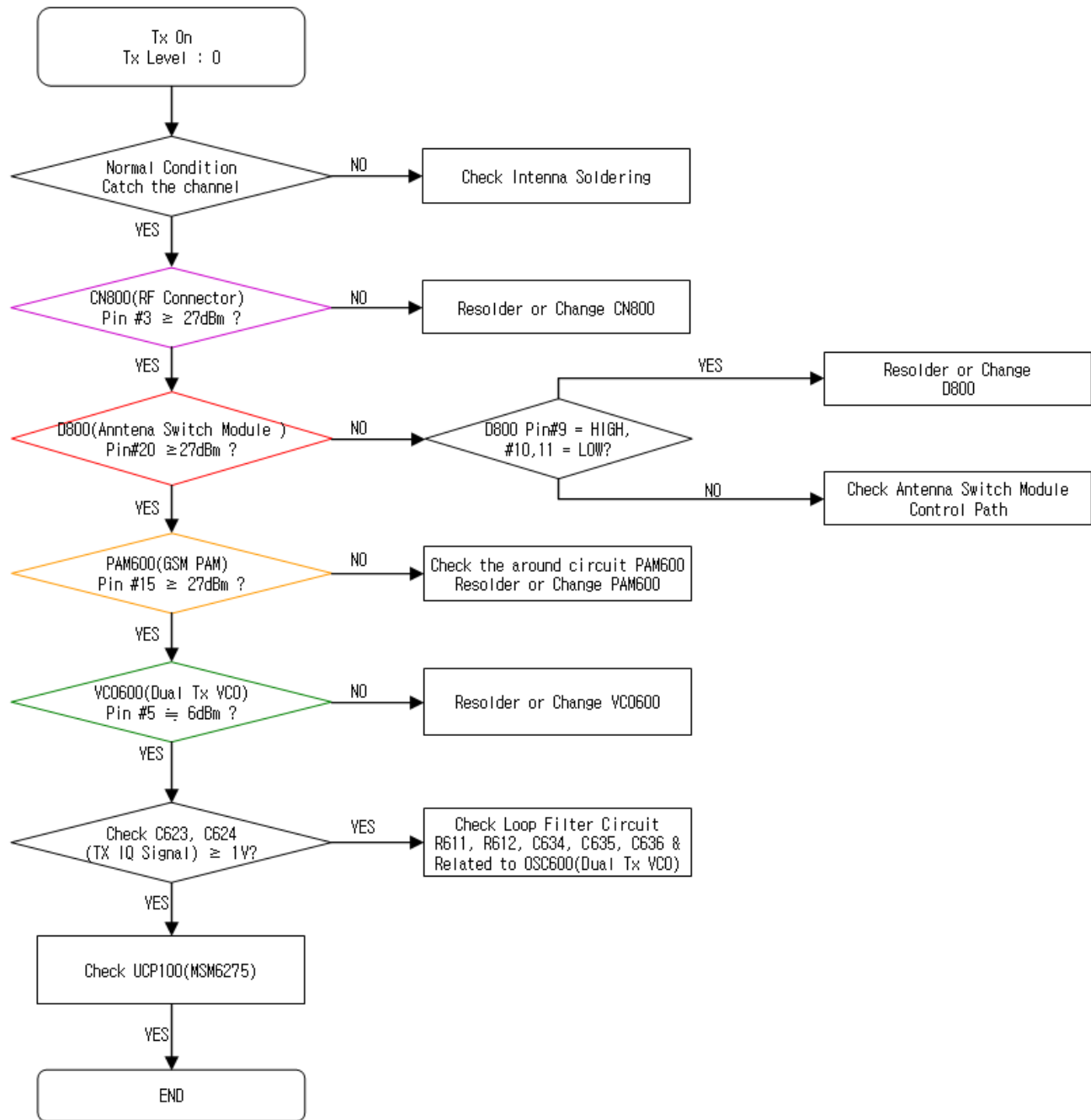
### 3-2-2. EGSM Transmitter



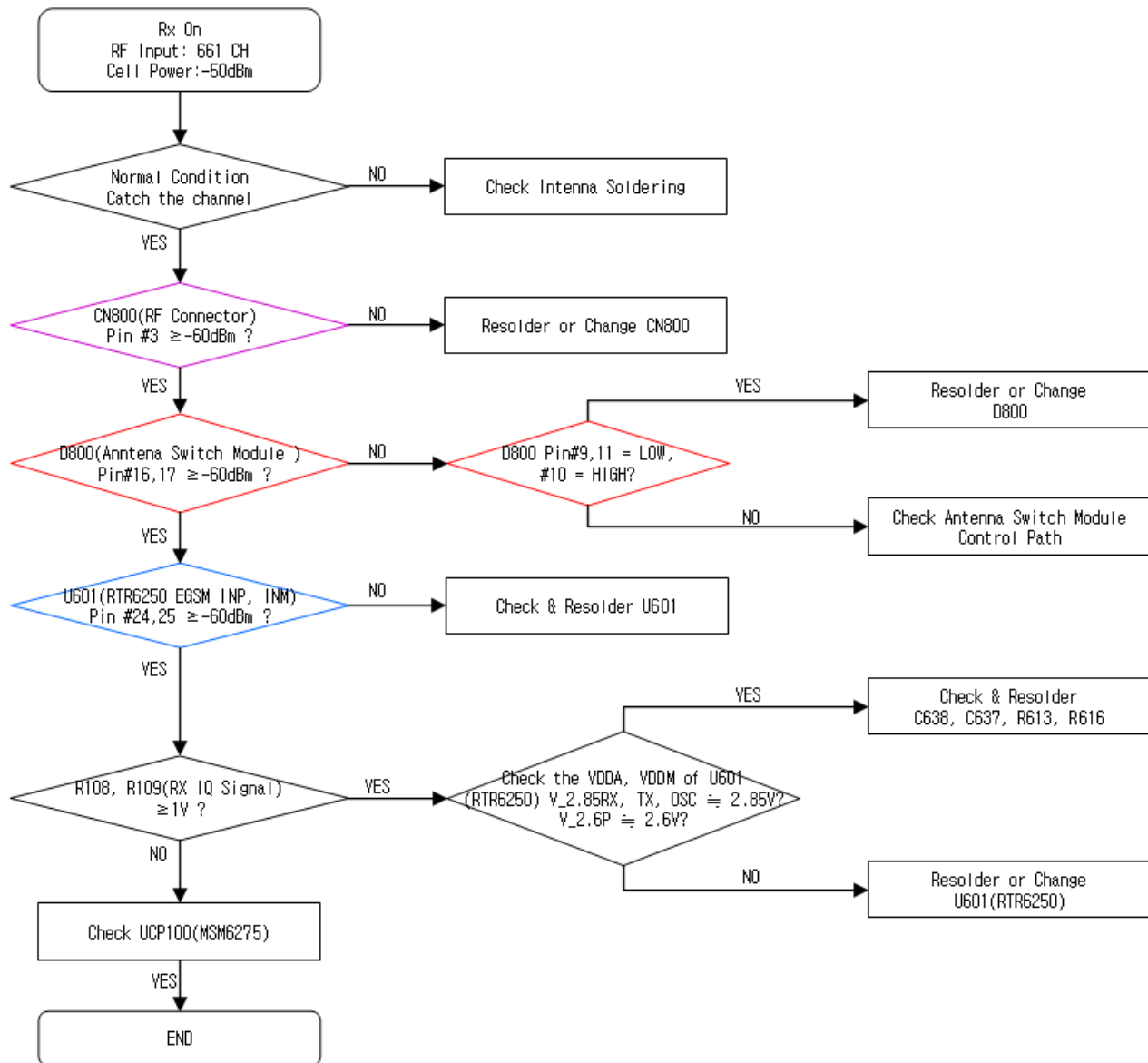
### 3-2-3. DCS Receiver



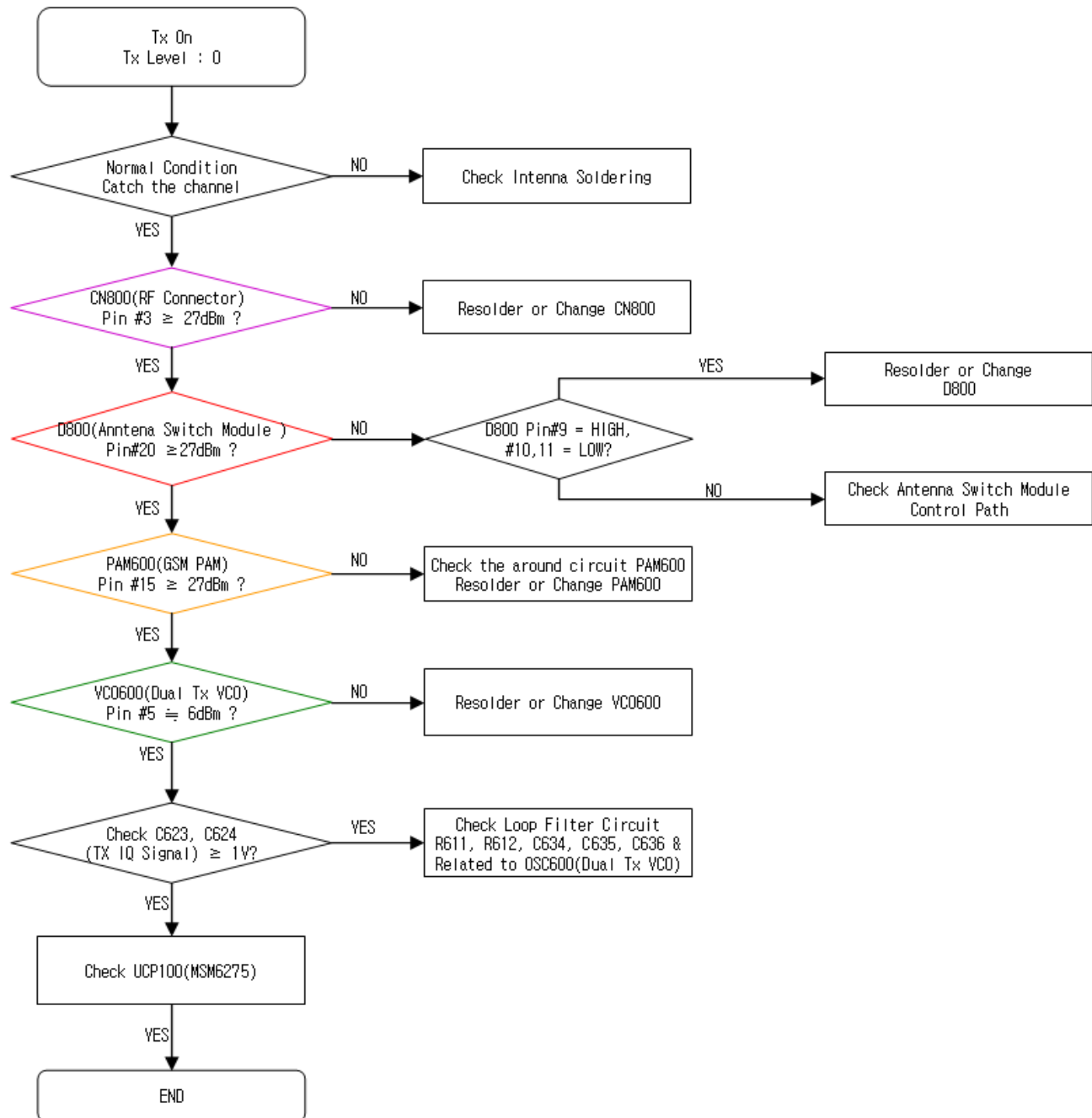
### 3-2-4. DCS Transmitter

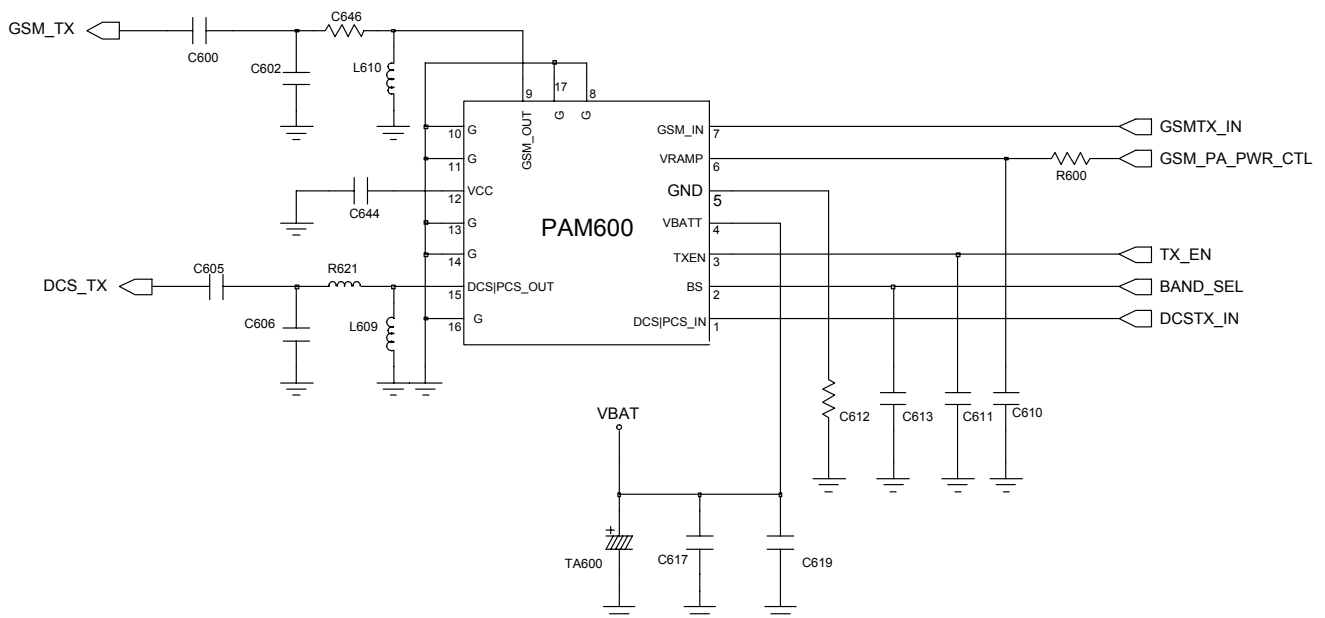
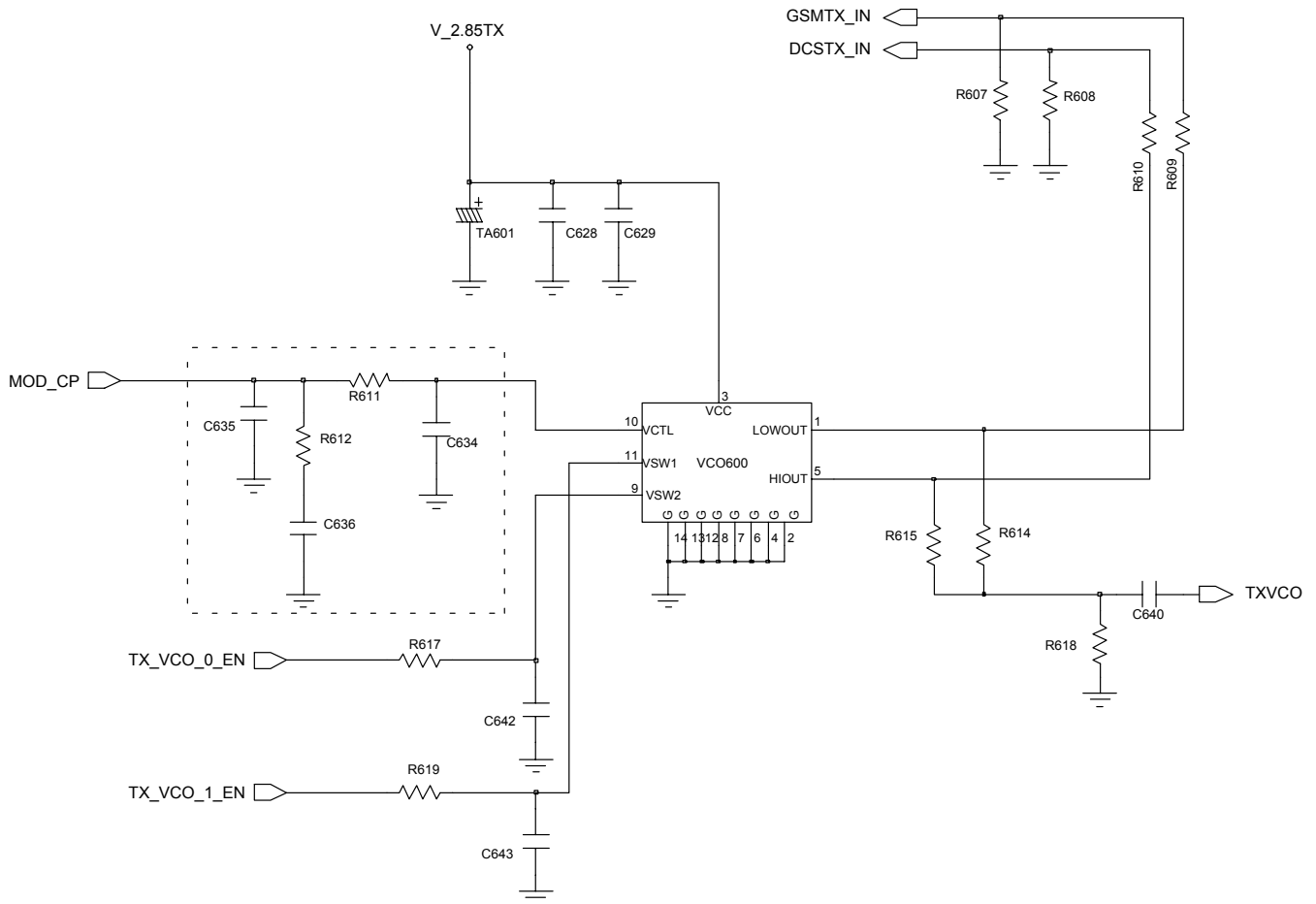


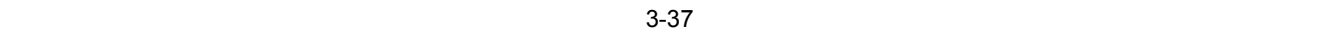
### 3-2-5. PCS Receiver

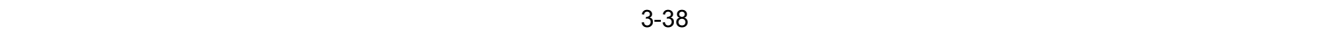


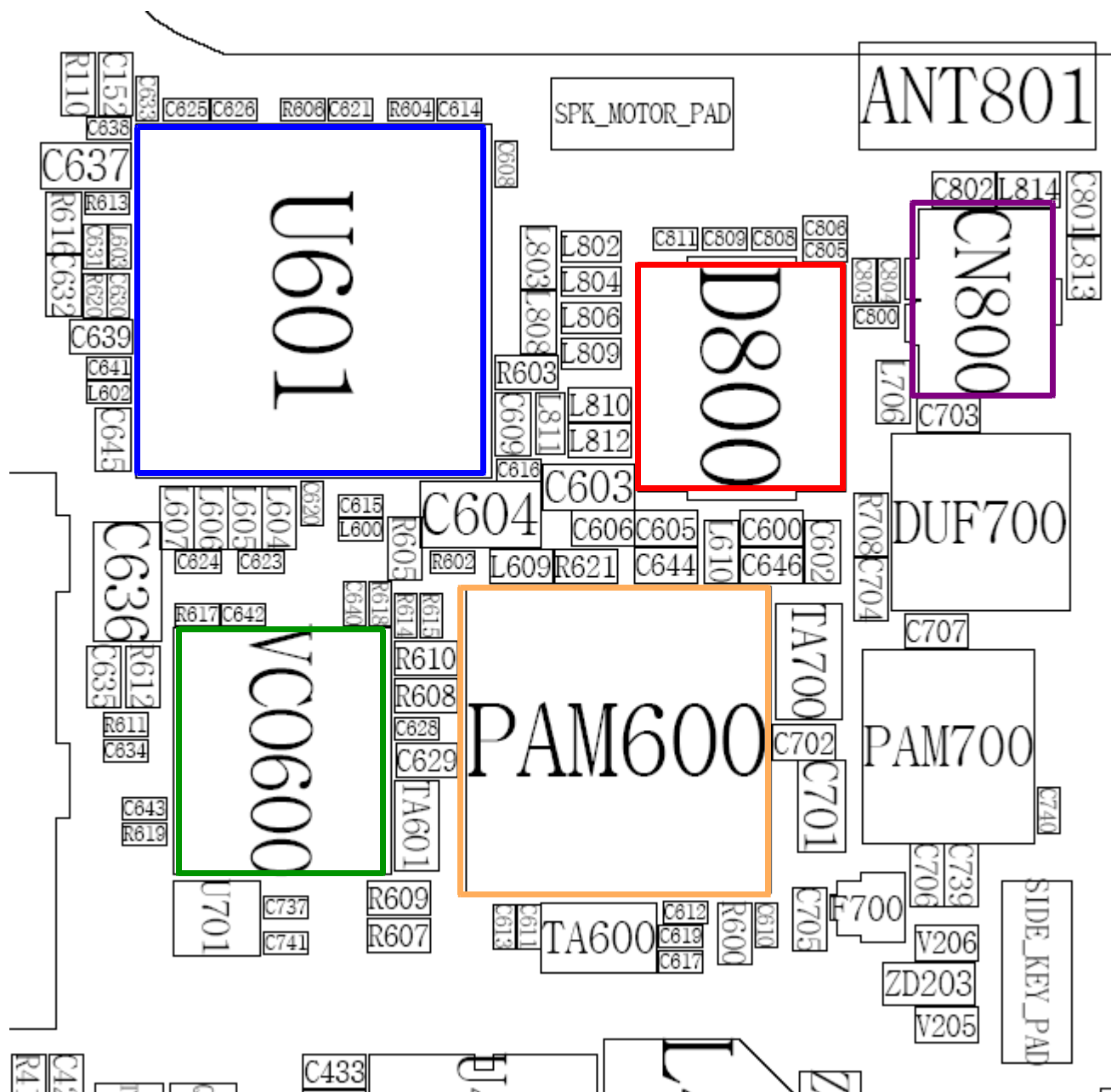
### 3-2-6. PCS Transmitter



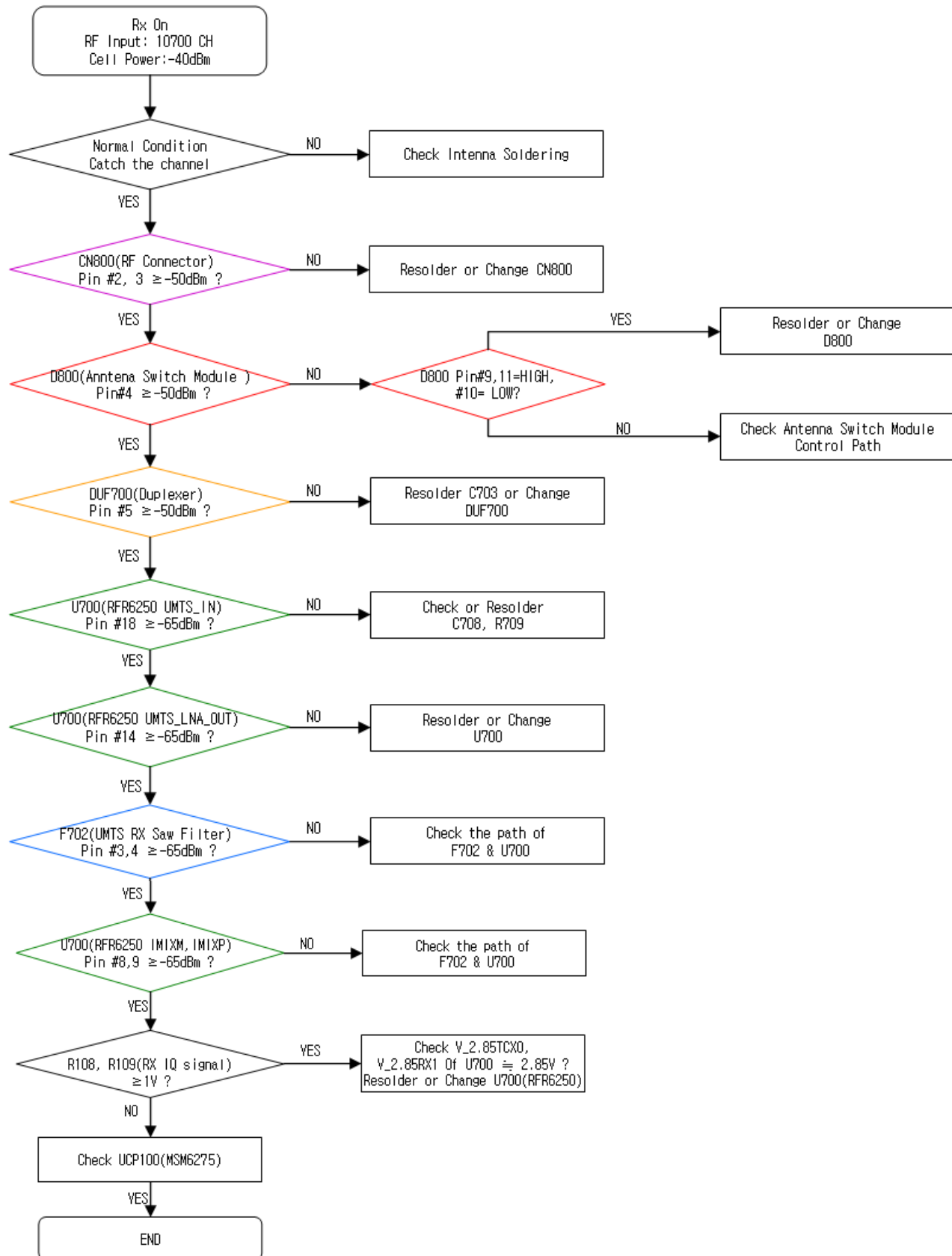




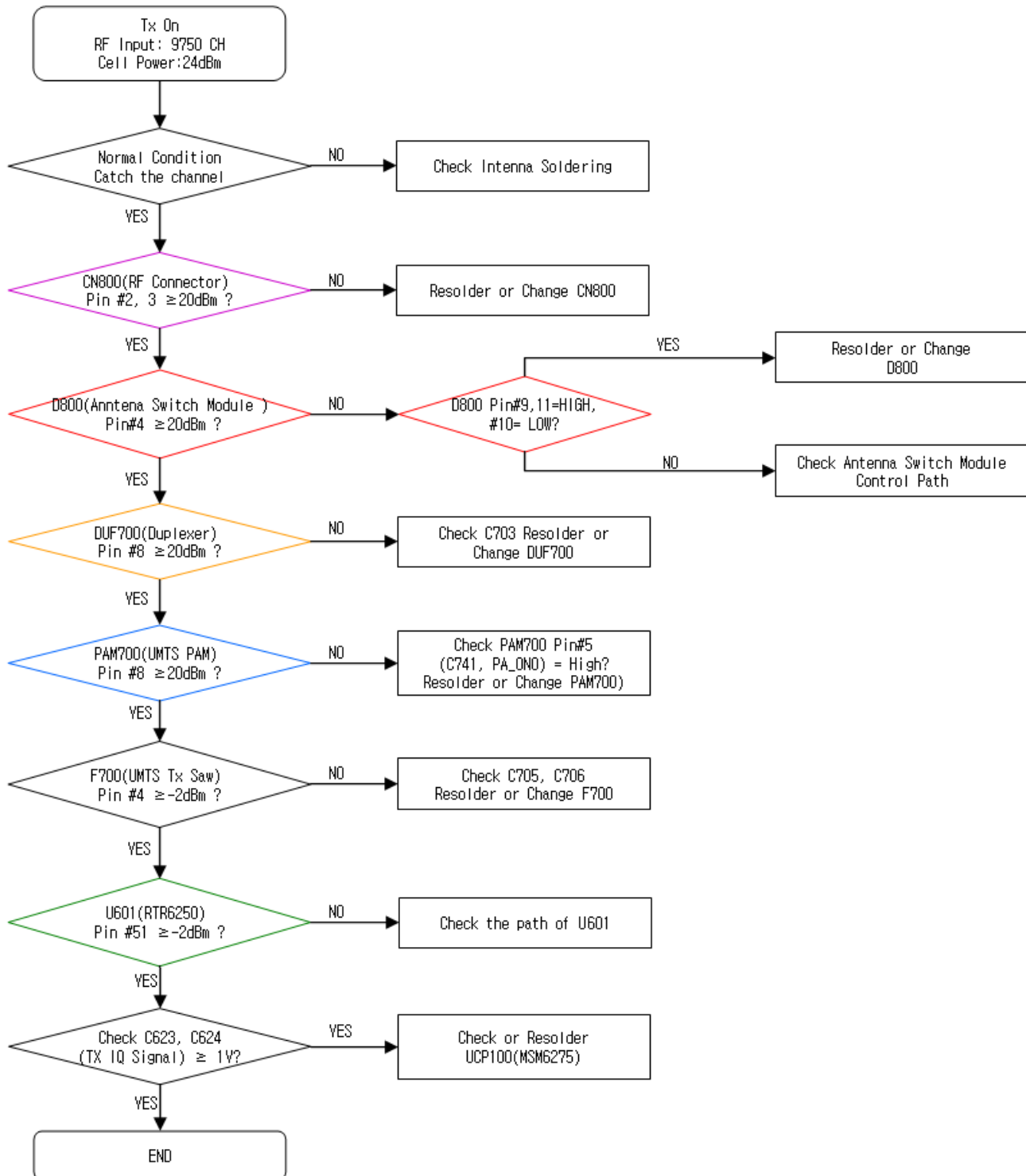


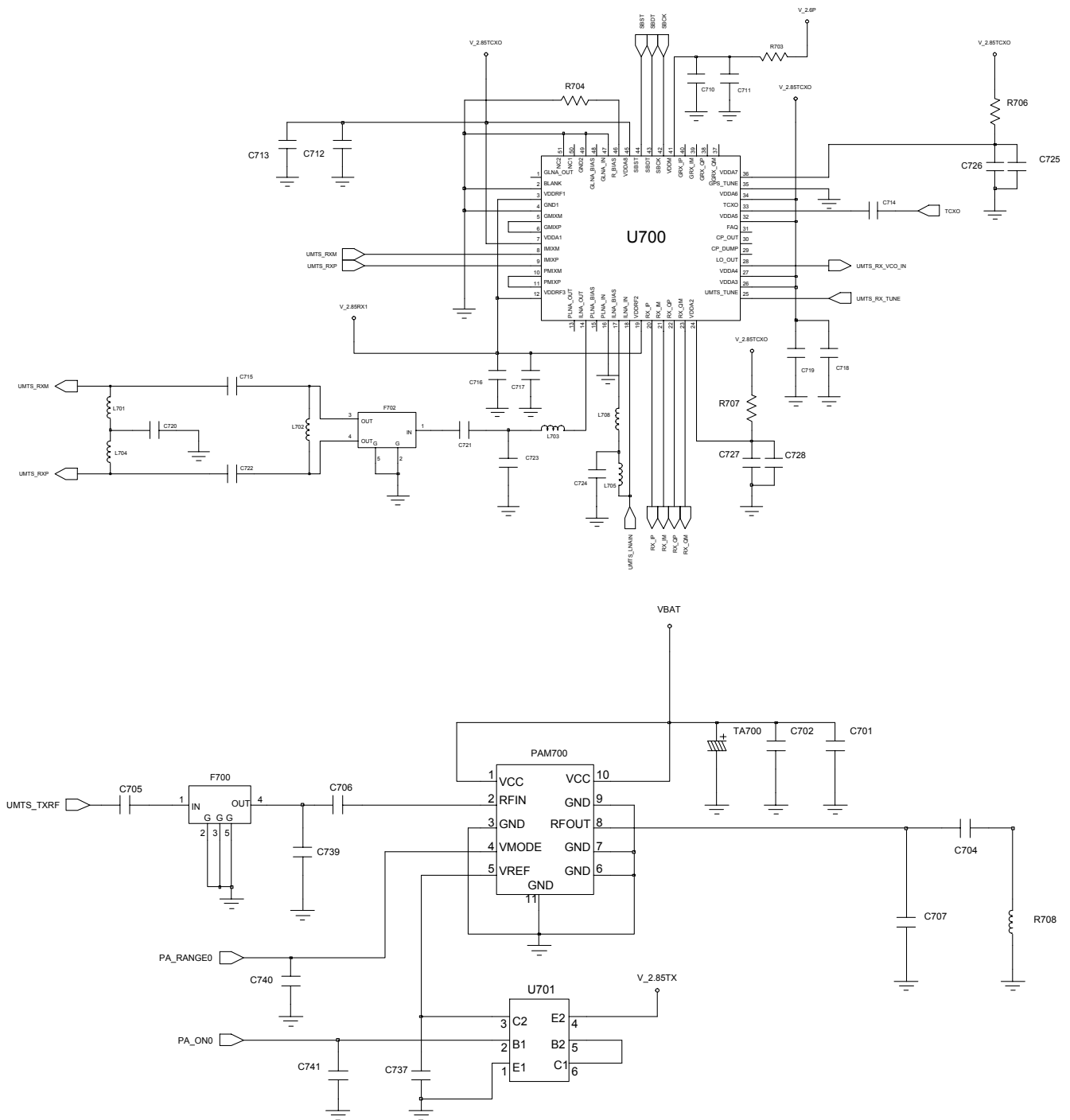


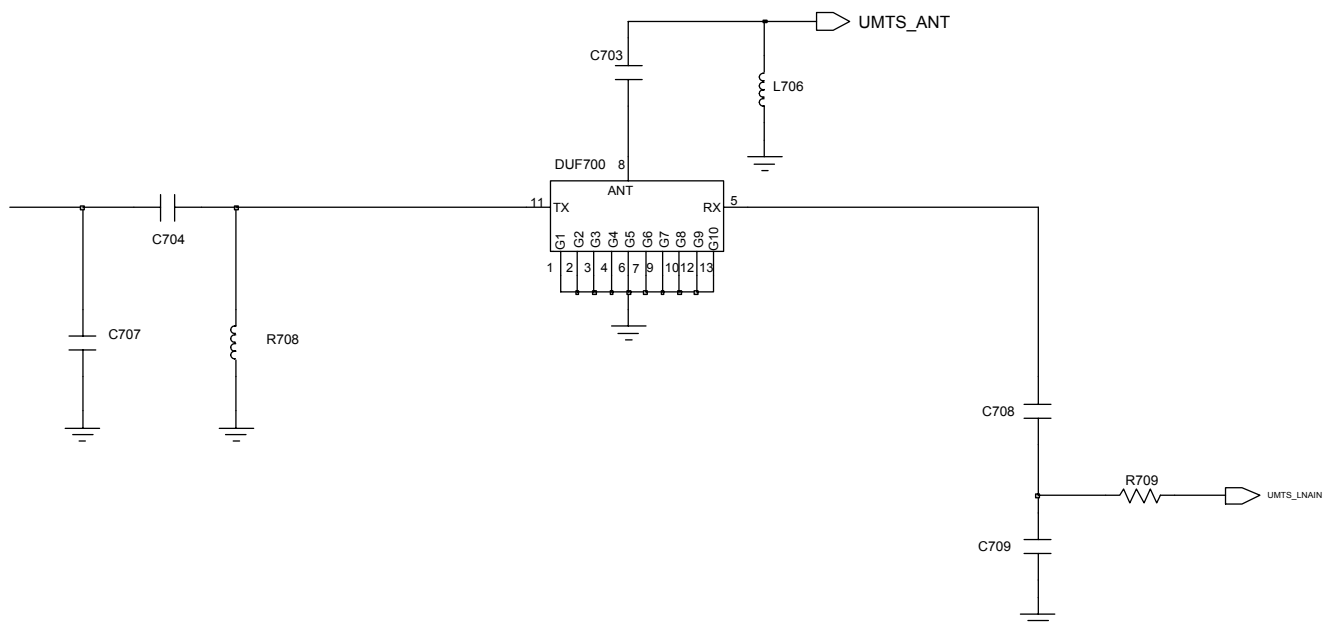
### 3-2-7. UMTS Receiver

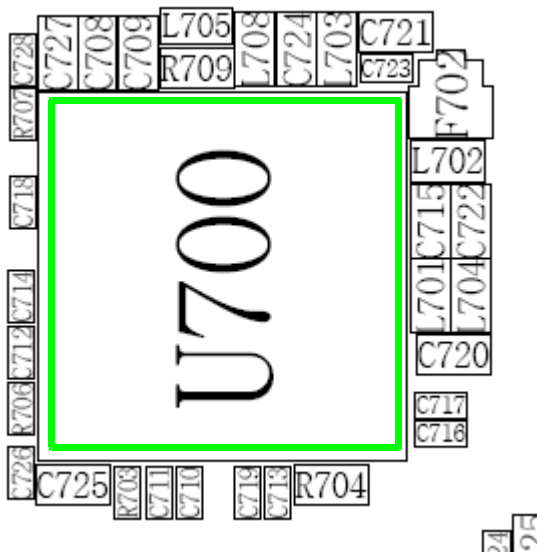
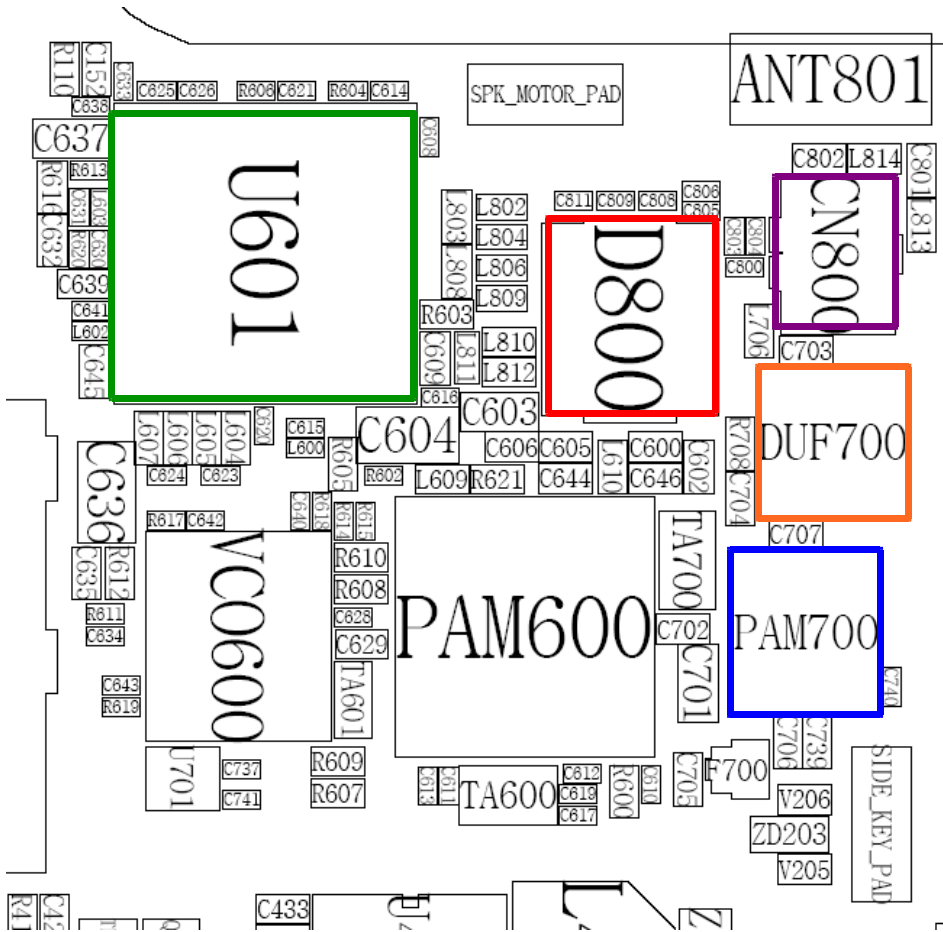


## 3-2-8. UMTS Transmitter

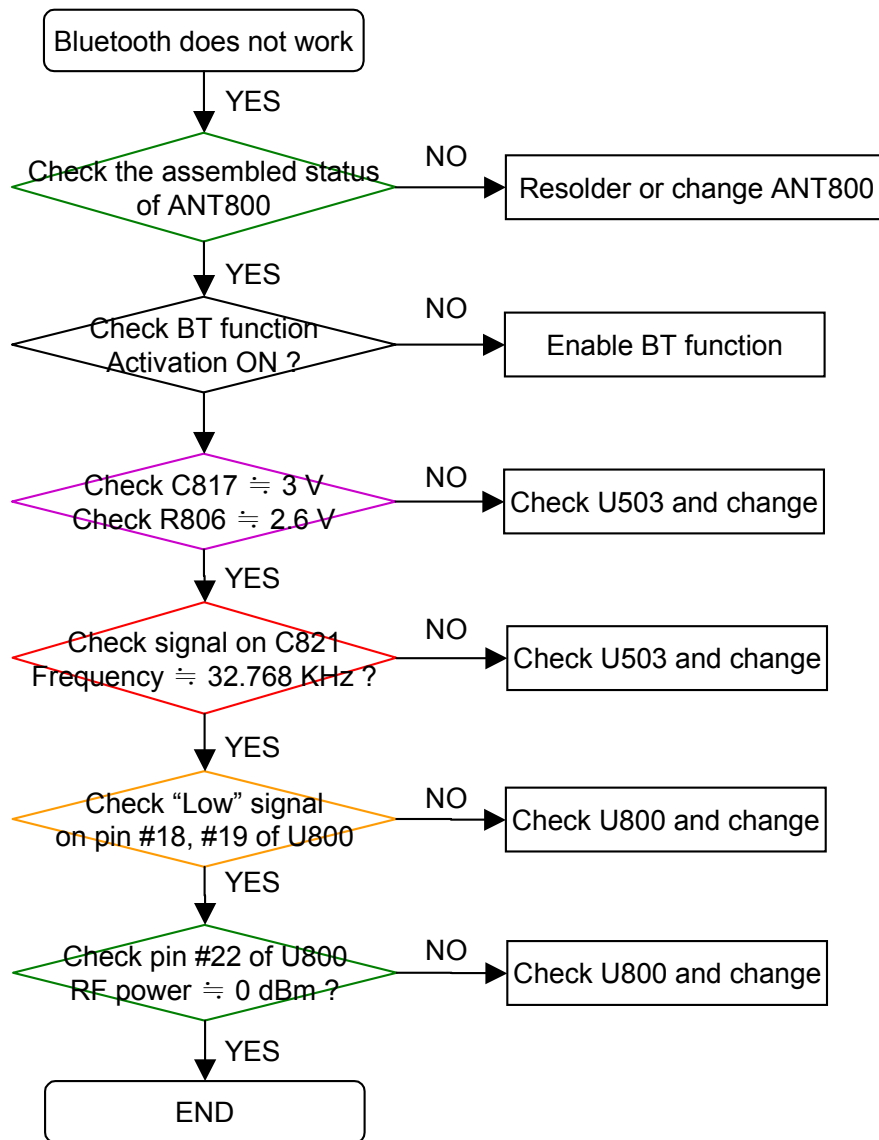


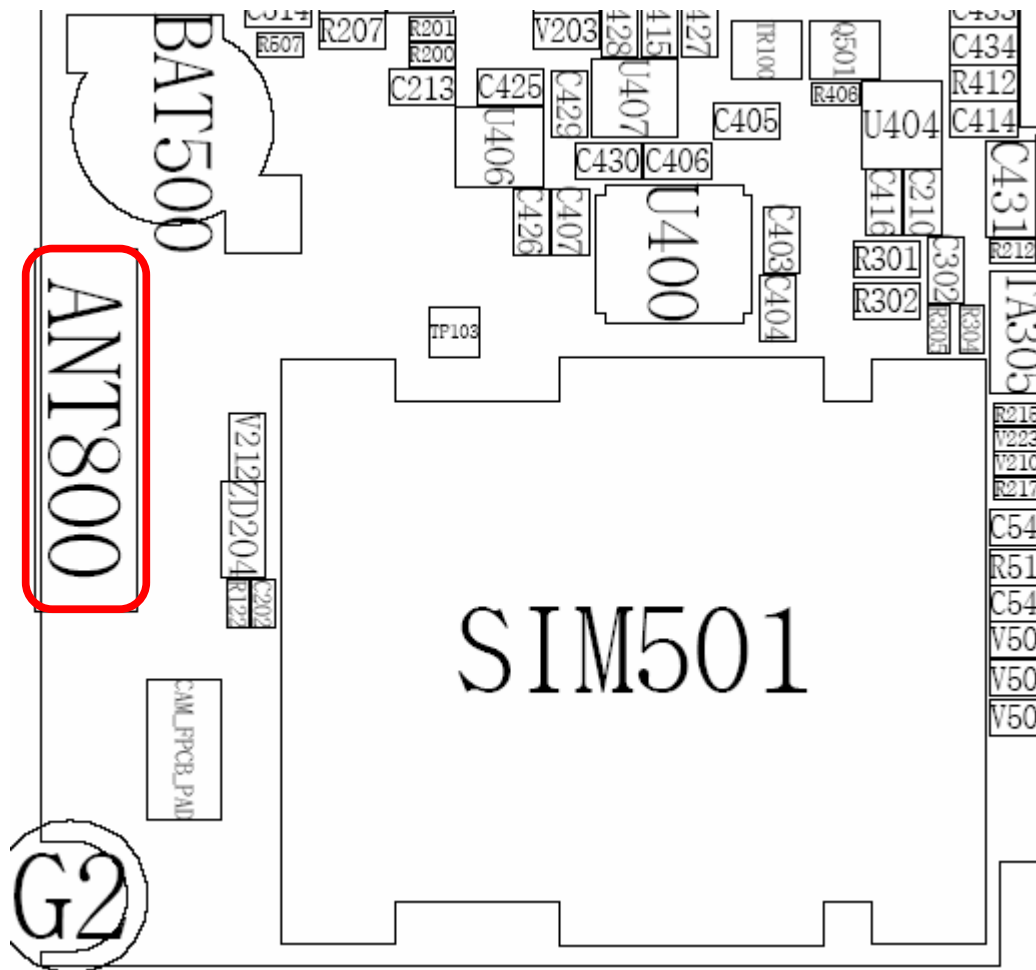
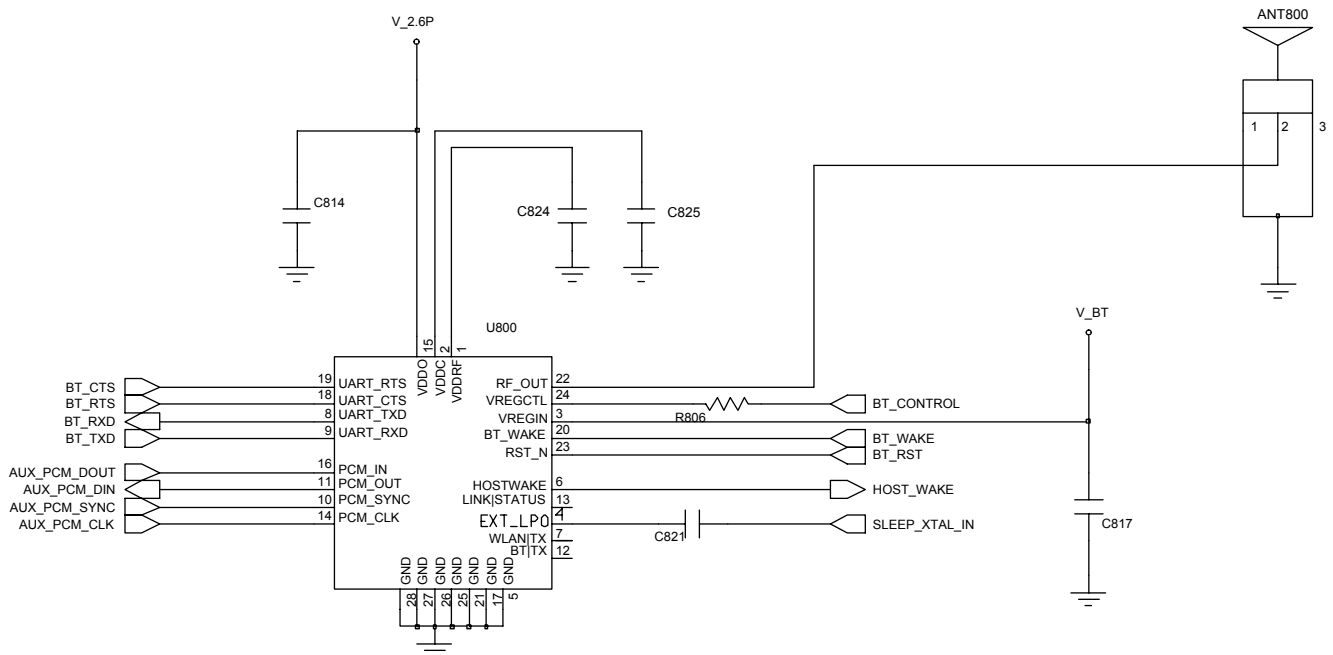


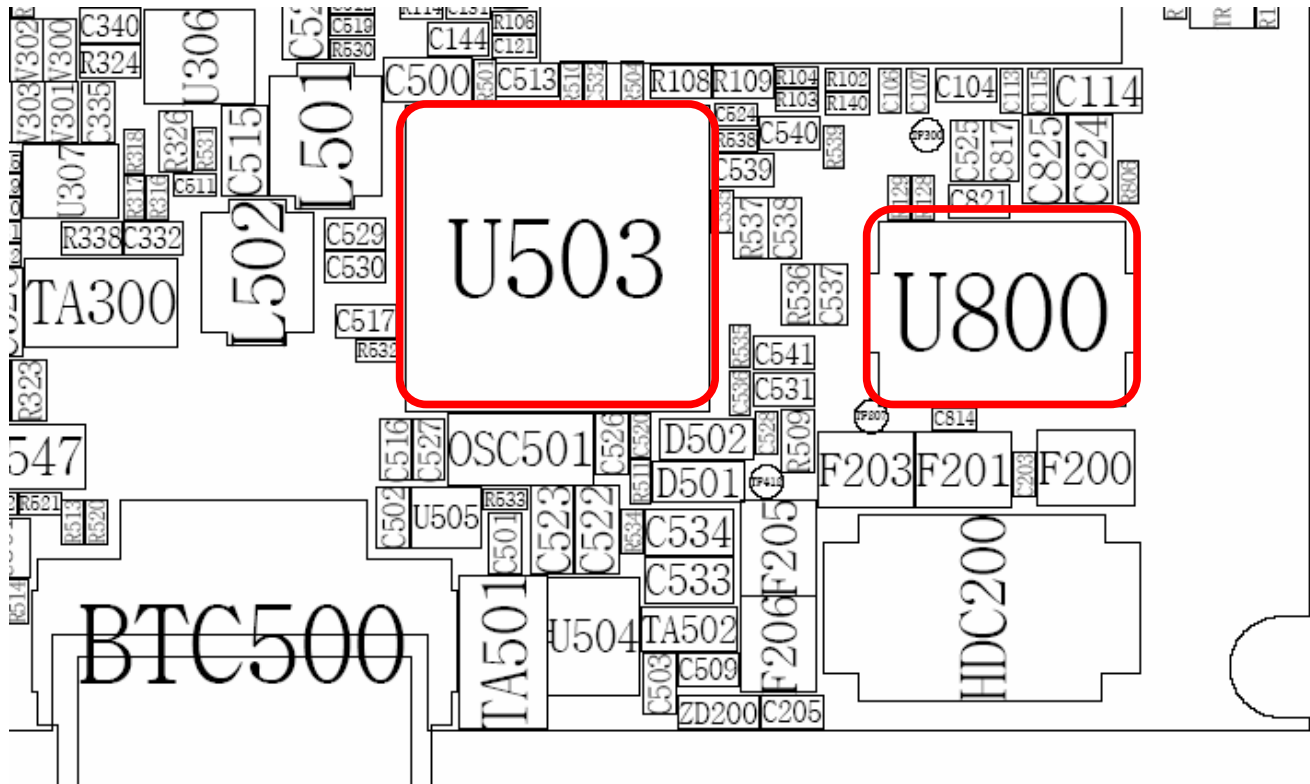




### 3-2-9. BLUETOOTH







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## 4. Array course control

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**Test Jig (GH80-03308A)**



**Test Cable (GH39-00478A)**



**RF Test Cable (GH39-00397A)**

## **Software Downloading**

### **4-1. Downloading Binary Files**

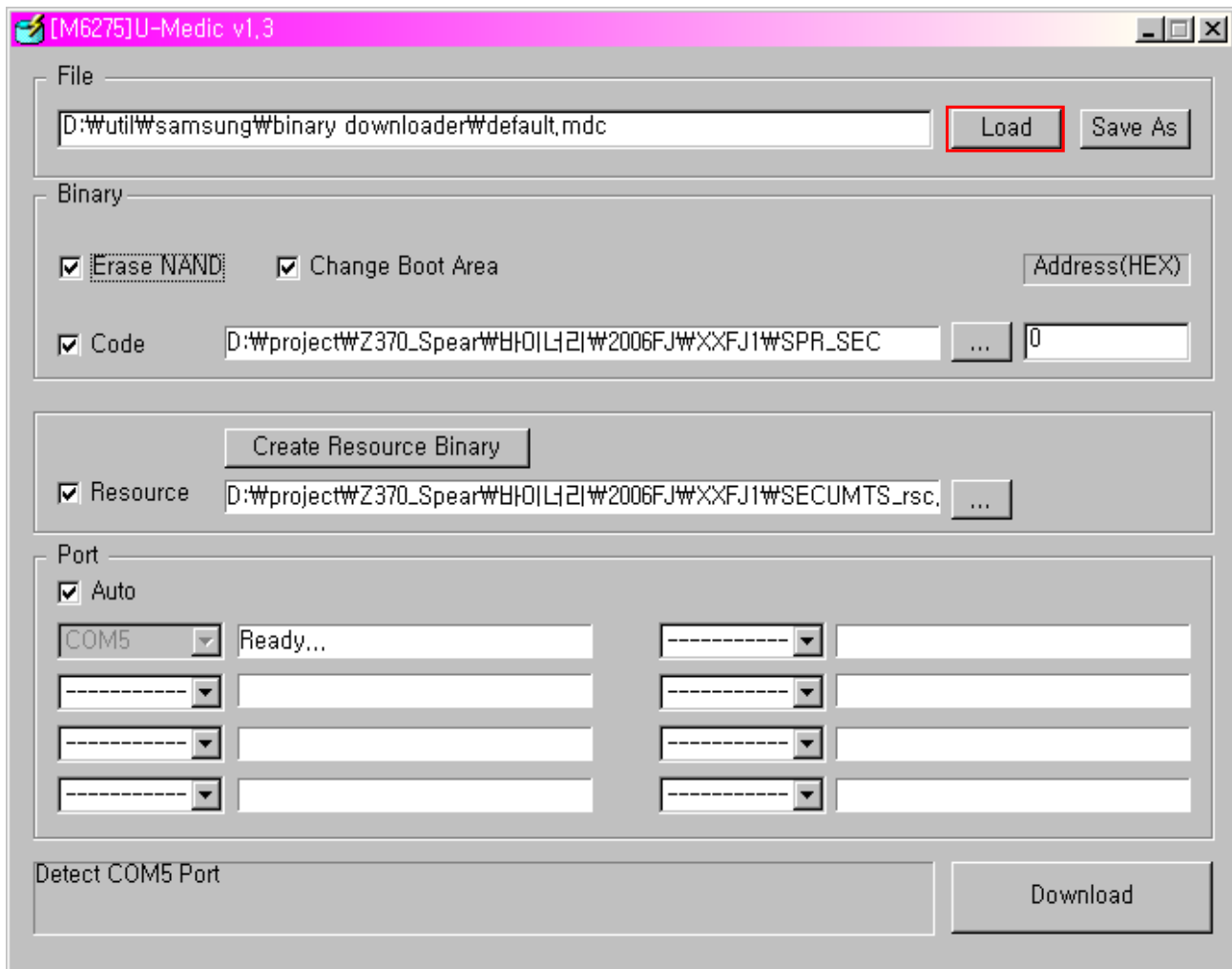
- Three binary files for downloading Z370.
  - SPR\_SEC : Main source code binary folder.
  - Z370XXYYY\_Rsc.bin : Resource file

### **4-2. Pre-requisite for Downloading**

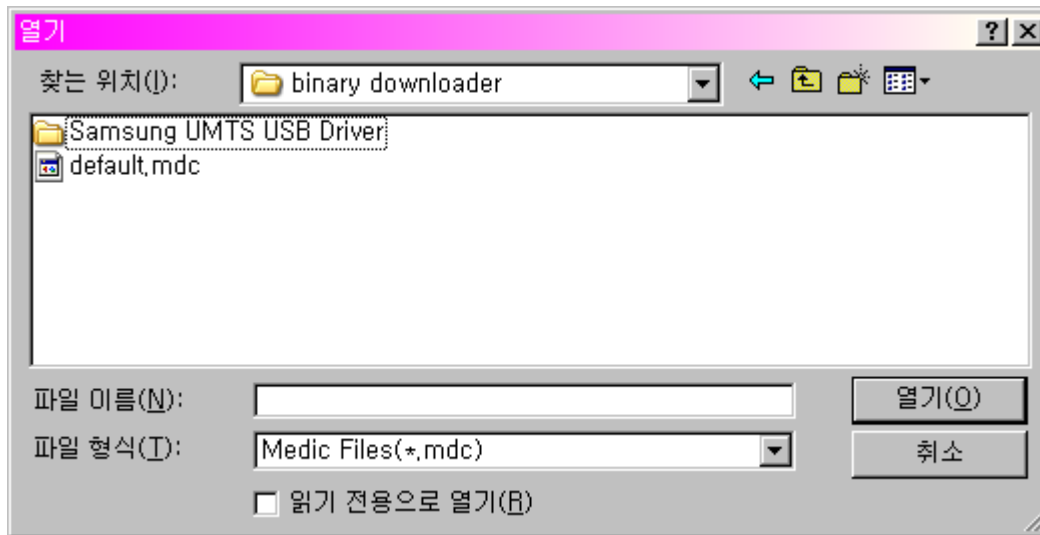
- Downloader Program([\[M6275\]U-Medic\\_v1\[1\].3.exe](#))
- Z370 Mobile Phone
- Data Cable
- Binary files

### 4-3. S/W Downloader Program

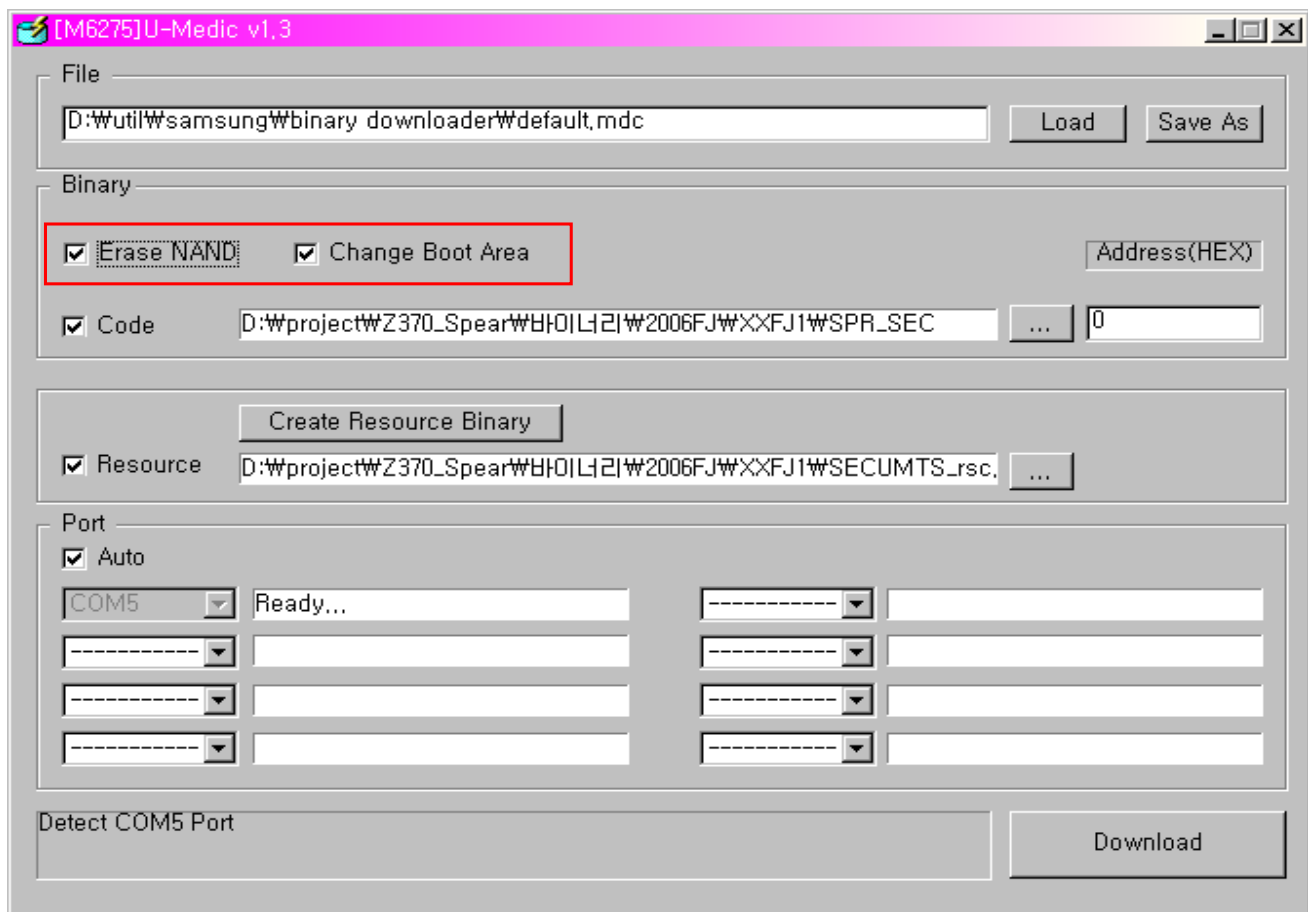
1. Load the binary download program by executing the “[M6275]U-Medic\_v1[1].3.exe”



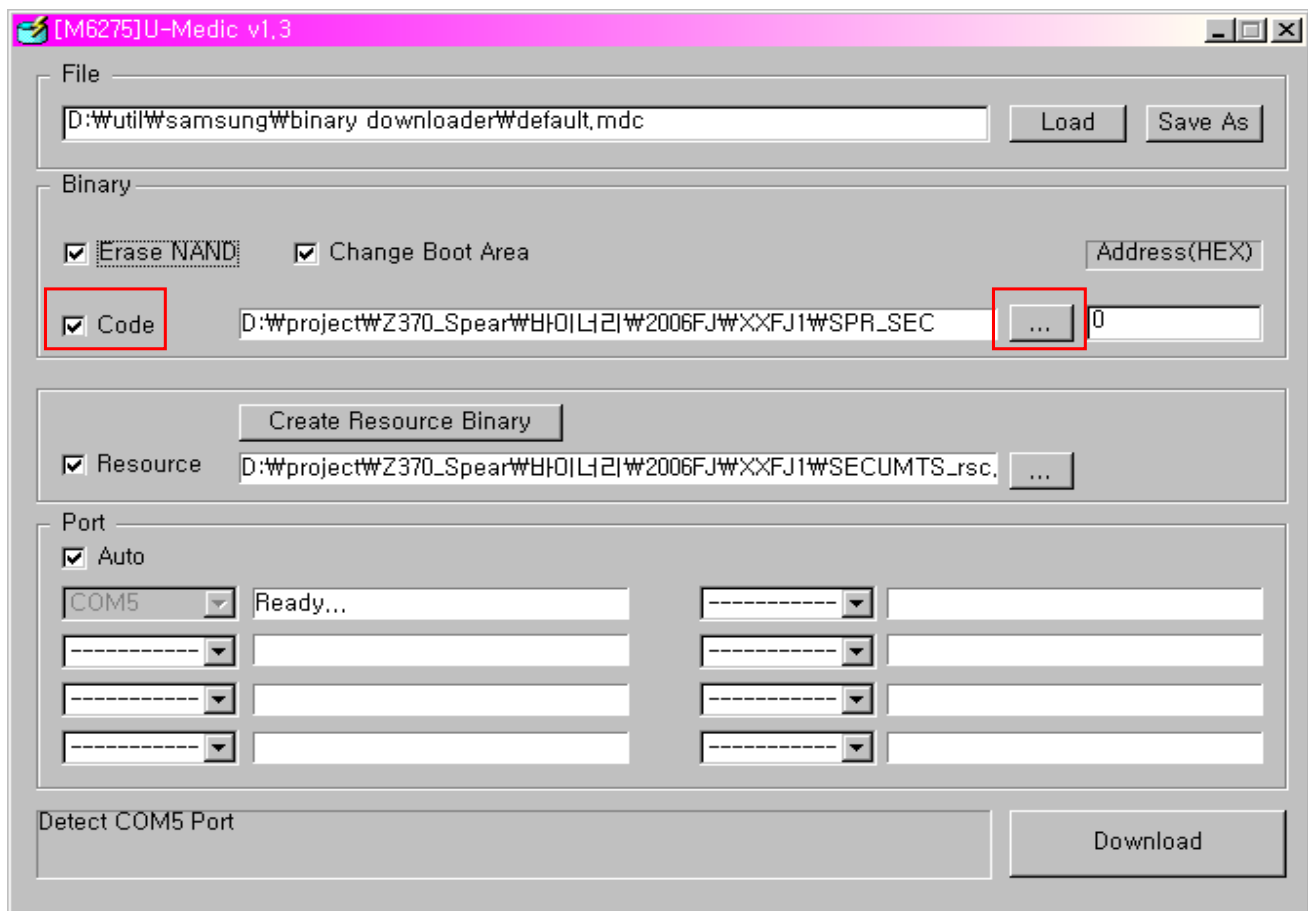
Click the "load" button, then choose the "default.mdc" file located in execution folder.



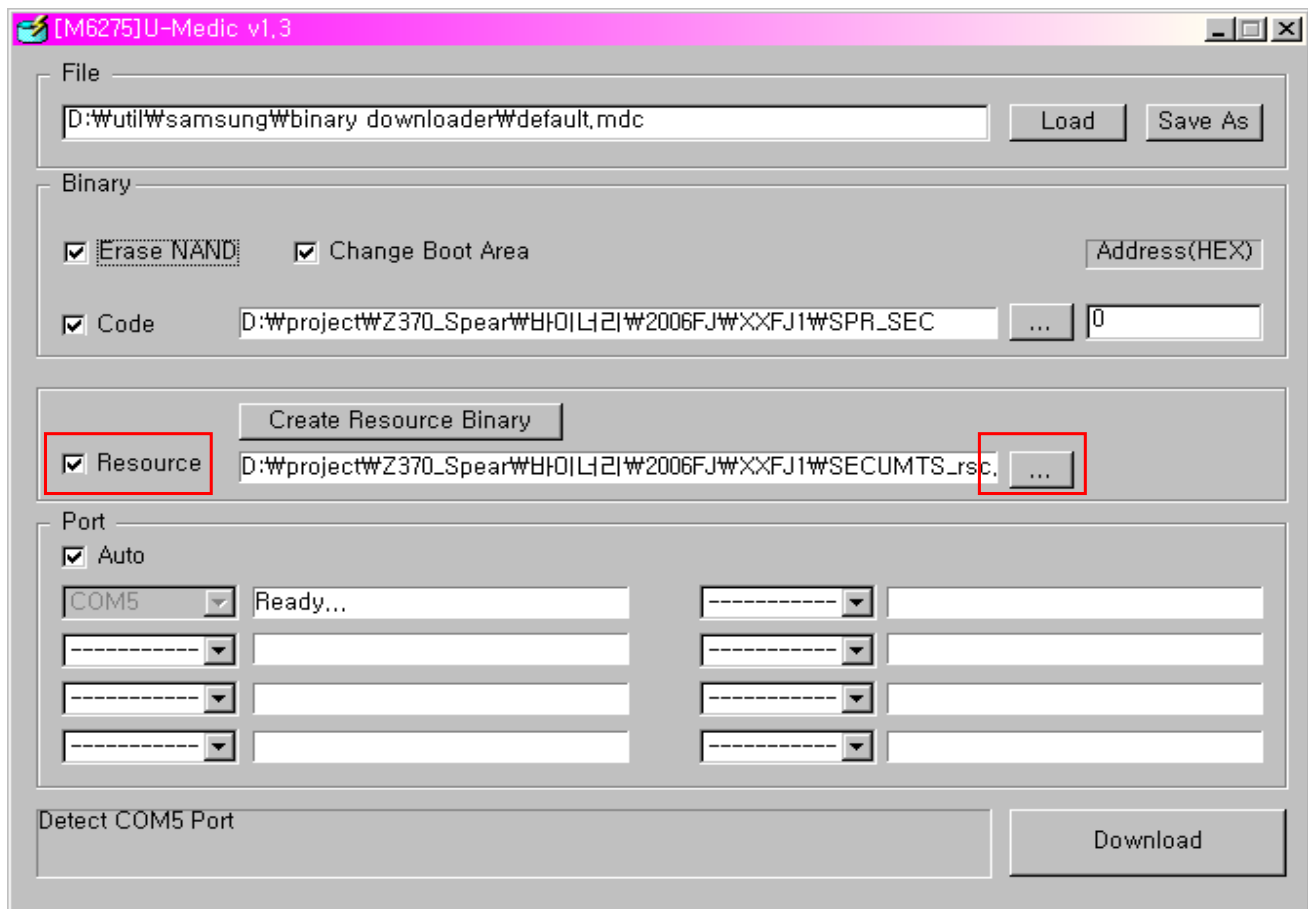
### 3. Check Erase NAND and Change Boot Area



### 4. Check Code and Select the binary folder.



## 5. Check Resource and Select the resource file.



## 6. Connect the download cable to the mobile.

Turn on the mobile phone pushing the "4" button at the same time.

When the phone is ready to download, you will see the "Ready...", Click the "Download" button.

If not, you have to install the samsung usb modem driver.

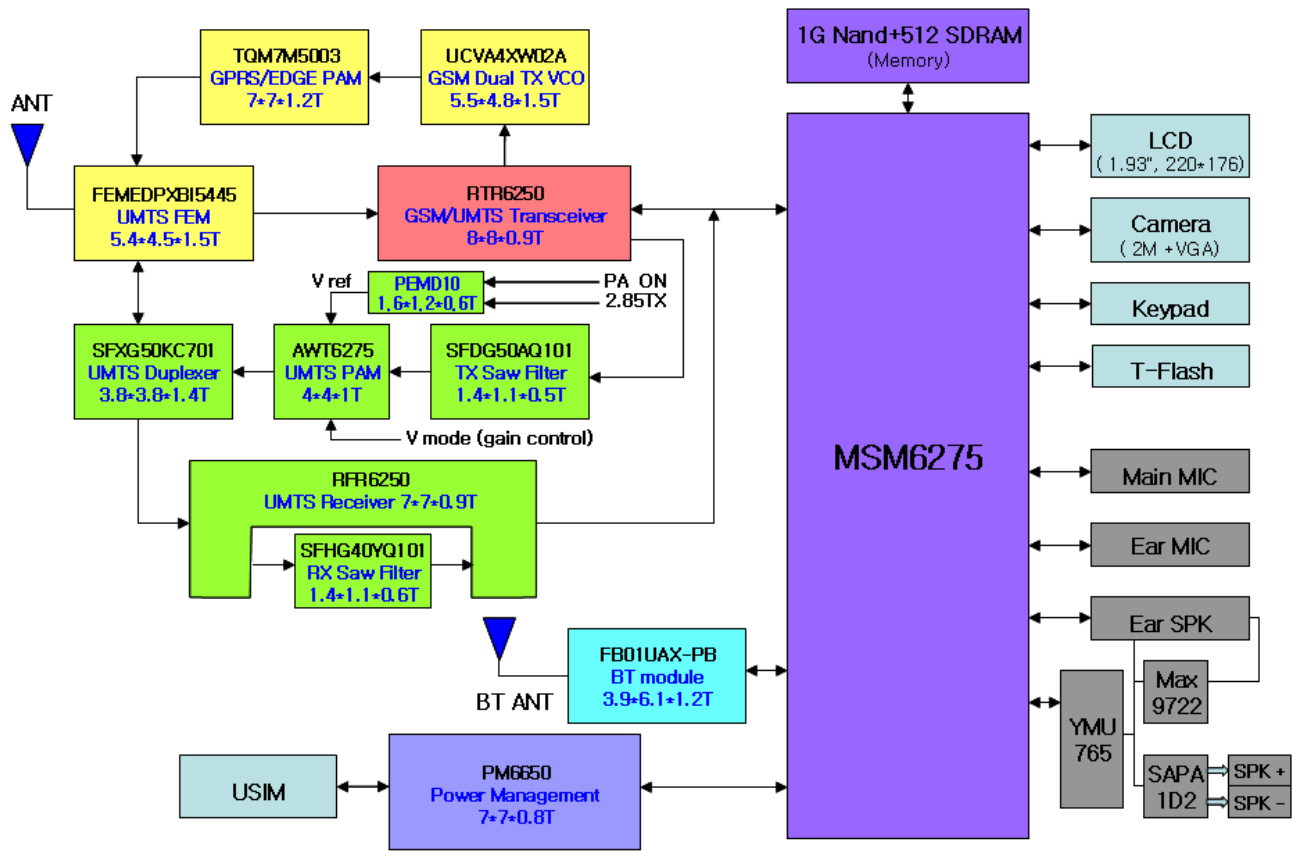
6. When downloading is finished successfully, there is a “ready...” message. ♪
7. After finishing downloading, Certain memory resets should be done to guarantee the normal performance.♪
8. Confirm the downloaded version name and etc. :♪

**\*#5002\*8376263#**♪

Full Reset : ♪

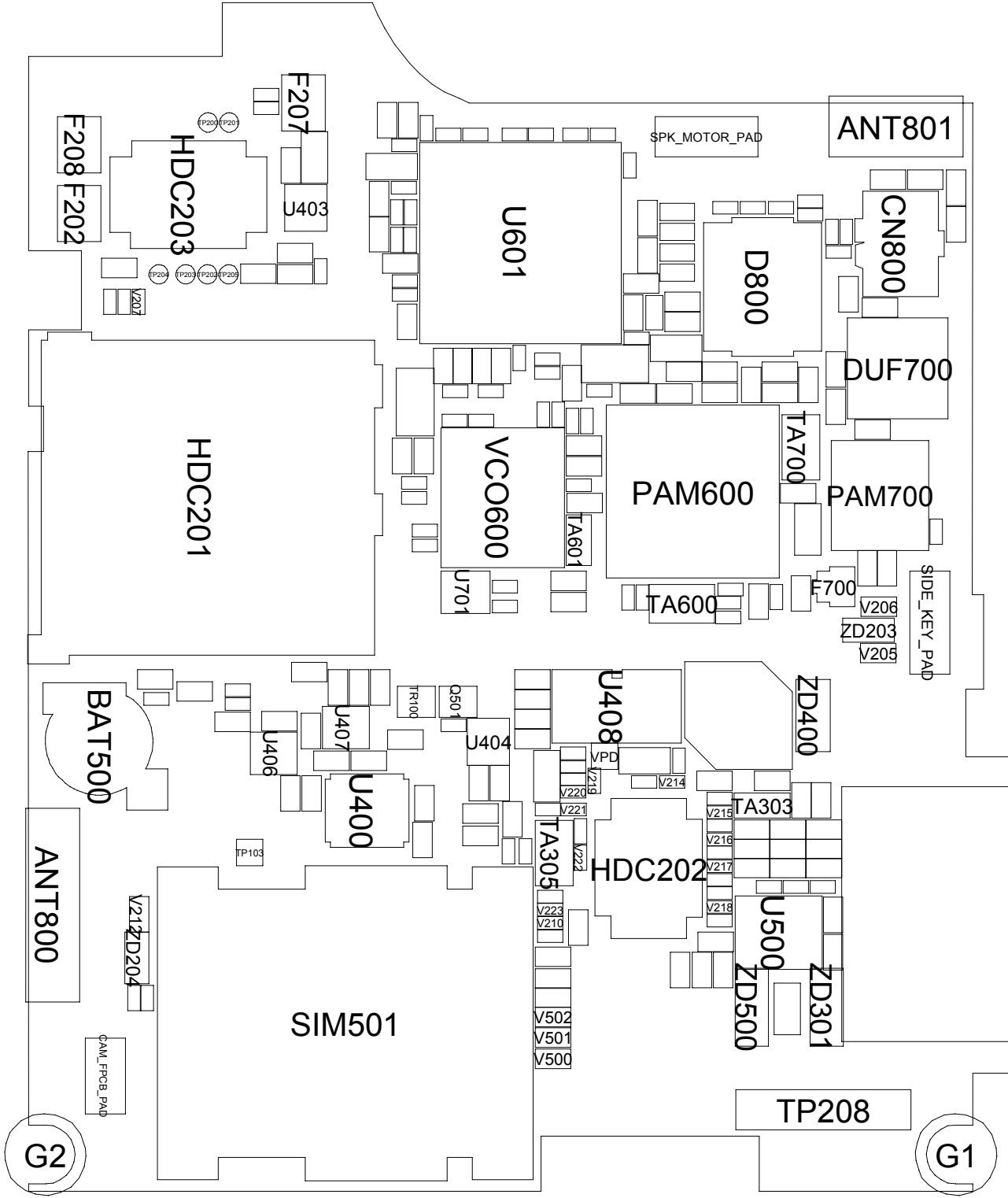
**\*2767\*3855#**

## 5. Block Diagrams



SGH-Z370 Block Diagram

## 6. PCB Diagrams



6-2

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## 7. MAIN Electrical Parts List

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| SEC CODE    | Design LOC | Discription         | STATUS |
|-------------|------------|---------------------|--------|
| 0403-001511 | ZD400      | DIODE-ZENER         | SA     |
| 0403-001547 | ZD301      | DIODE-ZENER         | SA     |
| 0403-001547 | ZD500      | DIODE-ZENER         | SA     |
| 0404-001172 | D100       | DIODE-SCHOTTKY      | SA     |
| 0404-001172 | D101       | DIODE-SCHOTTKY      | SA     |
| 0404-001172 | D502       | DIODE-SCHOTTKY      | SA     |
| 0404-001172 | ZD401      | DIODE-SCHOTTKY      | SA     |
| 0406-001201 | ZD201      | DIODE-TVS           | SA     |
| 0406-001201 | ZD202      | DIODE-TVS           | SA     |
| 0406-001201 | ZD203      | DIODE-TVS           | SA     |
| 0406-001201 | ZD204      | DIODE-TVS           | SA     |
| 0406-001208 | U307       | DIODE-TVS           | SA     |
| 0406-001210 | ZD200      | DIODE-TVS           | SA     |
| 0504-001113 | Q501       | TR-DIGITAL          | SA     |
| 0504-001113 | Q502       | TR-DIGITAL          | SA     |
| 0504-001113 | TR100      | TR-DIGITAL          | SA     |
| 0504-001113 | TR101      | TR-DIGITAL          | SA     |
| 0504-001151 | U701       | TR-DIGITAL          | SA     |
| 0505-001889 | U504       | FET-SILICON         | SA     |
| 0801-002995 | U501       | IC-CMOS LOGIC       | SA     |
| 1001-001265 | U304       | IC-ANALOG SWITCH    | SA     |
| 1001-001265 | U305       | IC-ANALOG SWITCH    | SA     |
| 1001-001336 | U302       | IC-ANALOG SWITCH    | SA     |
| 1003-001716 | U408       | IC-EL DRIVER        | SA     |
| 1006-001322 | U102       | IC-LINE TRANSCEIVER | SA     |
| 1108-000071 | UME400     | IC-MCP              | SA     |
| 1201-002195 | U303       | IC-AUDIO AMP        | SA     |
| 1201-002233 | U301       | IC-AUDIO AMP        | SA     |
| 1201-002288 | PAM600     | IC-POWER AMP        | SA     |
| 1201-002305 | PAM700     | IC-POWER AMP        | SA     |
| 1203-003275 | U402       | IC-MULTI REG.       | SA     |
| 1203-003531 | U405       | IC-POS.FIXED REG.   | SA     |
| 1203-003629 | U401       | IC-POS.FIXED REG.   | SA     |
| 1203-003688 | U403       | IC-POS.FIXED REG.   | SA     |
| 1203-003708 | U400       | IC-DC/DC CONVERTER  | SA     |
| 1203-003728 | U505       | IC-VOL. DETECTOR    | SA     |

| SEC CODE    | Design LOC | Discription         | STATUS |
|-------------|------------|---------------------|--------|
| 1203-003737 | U404       | IC-POSI.FIXED REG.  | SA     |
| 1203-003742 | U500       | IC-BATTERY          | SA     |
| 1203-003787 | U406       | IC-POSI.FIXED REG.  | SA     |
| 1203-003815 | U407       | IC-POSI.FIXED REG.  | SA     |
| 1203-004102 | U503       | IC-POWER SUPERVISOR | SA     |
| 1204-001915 | U306       | IC-FILTER           | SA     |
| 1204-002138 | U300       | IC-MELODY           | SA     |
| 1205-002645 | U601       | IC-TRANSCEIVER      | SA     |
| 1205-002781 | U700       | IC-RECEIVER         | SA     |
| 1205-002790 | UCP100     | IC-MODEM            | SA     |
| 1404-001224 | U101       | THERMISTOR-NTC      | SA     |
| 1405-001108 | V300       | VARISTOR            | SA     |
| 1405-001108 | V301       | VARISTOR            | SA     |
| 1405-001108 | V302       | VARISTOR            | SA     |
| 1405-001108 | V303       | VARISTOR            | SA     |
| 1405-001110 | V201       | VARISTOR            | SA     |
| 1405-001110 | V305       | VARISTOR            | SA     |
| 1405-001133 | V205       | VARISTOR            | SA     |
| 1405-001133 | V206       | VARISTOR            | SA     |
| 1405-001133 | V212       | VARISTOR            | SA     |
| 1405-001133 | V500       | VARISTOR            | SA     |
| 1405-001133 | V501       | VARISTOR            | SA     |
| 1405-001133 | V502       | VARISTOR            | SA     |
| 1405-001158 | F202       | VARISTOR            | SA     |
| 1405-001158 | F207       | VARISTOR            | SA     |
| 1405-001158 | F208       | VARISTOR            | SA     |
| 1405-001161 | F200       | VARISTOR            | SA     |
| 1405-001161 | F201       | VARISTOR            | SA     |
| 1405-001161 | F203       | VARISTOR            | SA     |
| 1405-001161 | F205       | VARISTOR            | SA     |
| 1405-001161 | F206       | VARISTOR            | SA     |
| 1405-001177 | V207       | VARISTOR            | SA     |
| 1405-001177 | V210       | VARISTOR            | SA     |
| 1405-001177 | V214       | VARISTOR            | SA     |
| 1405-001177 | V215       | VARISTOR            | SA     |
| 1405-001177 | V216       | VARISTOR            | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
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| 1405-001177 | V217       | VARISTOR    | SA     |
| 1405-001177 | V218       | VARISTOR    | SA     |
| 1405-001177 | V219       | VARISTOR    | SA     |
| 1405-001177 | V220       | VARISTOR    | SA     |
| 1405-001177 | V221       | VARISTOR    | SA     |
| 1405-001177 | V222       | VARISTOR    | SA     |
| 1405-001177 | V223       | VARISTOR    | SA     |
| 2007-000140 | R306       | R-CHIP      | SA     |
| 2007-000141 | R600       | R-CHIP      | SA     |
| 2007-000145 | R616       | R-CHIP      | SA     |
| 2007-000148 | C214       | R-CHIP      | SA     |
| 2007-000148 | R339       | R-CHIP      | SA     |
| 2007-000148 | R340       | R-CHIP      | SA     |
| 2007-000149 | R332       | R-CHIP      | SA     |
| 2007-000149 | R333       | R-CHIP      | SA     |
| 2007-000151 | R335       | R-CHIP      | SA     |
| 2007-000151 | R518       | R-CHIP      | SA     |
| 2007-000157 | R414       | R-CHIP      | SA     |
| 2007-000161 | R412       | R-CHIP      | SA     |
| 2007-000164 | R540       | R-CHIP      | SA     |
| 2007-000168 | R524       | R-CHIP      | SA     |
| 2007-000171 | C646       | R-CHIP      | SA     |
| 2007-000171 | R300       | R-CHIP      | SA     |
| 2007-000171 | R308       | R-CHIP      | SA     |
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| 2007-000171 | R311       | R-CHIP      | SA     |
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| 2007-000171 | R709       | R-CHIP      | SA     |
| 2007-000172 | R324       | R-CHIP      | SA     |
| 2007-000172 | R326       | R-CHIP      | SA     |
| 2007-000242 | R302       | R-CHIP      | SA     |
| 2007-000690 | R410       | R-CHIP      | SA     |
| 2007-000758 | R207       | R-CHIP      | SA     |
| 2007-001119 | R301       | R-CHIP      | SA     |
| 2007-001284 | R609       | R-CHIP      | SA     |
| 2007-001292 | R612       | R-CHIP      | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
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| 2007-001311 | R608       | R-CHIP      | SA     |
| 2007-001313 | R607       | R-CHIP      | SA     |
| 2007-001323 | R323       | R-CHIP      | SA     |
| 2007-001323 | R415       | R-CHIP      | SA     |
| 2007-001329 | R303       | R-CHIP      | SA     |
| 2007-001333 | R330       | R-CHIP      | SA     |
| 2007-001333 | R331       | R-CHIP      | SA     |
| 2007-003001 | R327       | R-CHIP      | SA     |
| 2007-003001 | R328       | R-CHIP      | SA     |
| 2007-007155 | R336       | R-CHIP      | SNA    |
| 2007-007155 | R337       | R-CHIP      | SNA    |
| 2007-007318 | R110       | R-CHIP      | SA     |
| 2007-007468 | R509       | R-CHIP      | SA     |
| 2007-007491 | R603       | R-CHIP      | SA     |
| 2007-007491 | R704       | R-CHIP      | SA     |
| 2007-007741 | R504       | R-CHIP      | SA     |
| 2007-007766 | R111       | R-CHIP      | SA     |
| 2007-007798 | R610       | R-CHIP      | SA     |
| 2007-008040 | R208       | R-CHIP      | SA     |
| 2007-008040 | R209       | R-CHIP      | SA     |
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| 2007-008040 | R212       | R-CHIP      | SA     |
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| 2007-008040 | R218       | R-CHIP      | SA     |
| 2007-008045 | R305       | R-CHIP      | SA     |
| 2007-008045 | R510       | R-CHIP      | SA     |
| 2007-008045 | R604       | R-CHIP      | SA     |
| 2007-008045 | R611       | R-CHIP      | SA     |
| 2007-008045 | R617       | R-CHIP      | SA     |
| 2007-008045 | R619       | R-CHIP      | SA     |
| 2007-008045 | R703       | R-CHIP      | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2007-008045 | R803       | R-CHIP      | SA     |
| 2007-008051 | R310       | R-CHIP      | SA     |
| 2007-008051 | R613       | R-CHIP      | SA     |
| 2007-008052 | R400       | R-CHIP      | SA     |
| 2007-008052 | R602       | R-CHIP      | SA     |
| 2007-008054 | R133       | R-CHIP      | SA     |
| 2007-008055 | R159       | R-CHIP      | SA     |
| 2007-008055 | R317       | R-CHIP      | SA     |
| 2007-008055 | R318       | R-CHIP      | SA     |
| 2007-008055 | R503       | R-CHIP      | SA     |
| 2007-008055 | R511       | R-CHIP      | SA     |
| 2007-008055 | R520       | R-CHIP      | SA     |
| 2007-008055 | R522       | R-CHIP      | SA     |
| 2007-008213 | R605       | R-CHIP      | SA     |
| 2007-008275 | R525       | R-CHIP      | SA     |
| 2007-008419 | R315       | R-CHIP      | SA     |
| 2007-008419 | R319       | R-CHIP      | SA     |
| 2007-008419 | R320       | R-CHIP      | SA     |
| 2007-008419 | R321       | R-CHIP      | SA     |
| 2007-008419 | R322       | R-CHIP      | SA     |
| 2007-008419 | R502       | R-CHIP      | SA     |
| 2007-008478 | R304       | R-CHIP      | SA     |
| 2007-008478 | R312       | R-CHIP      | SA     |
| 2007-008483 | R105       | R-CHIP      | SA     |
| 2007-008483 | R138       | R-CHIP      | SA     |
| 2007-008483 | R204       | R-CHIP      | SA     |
| 2007-008483 | R307       | R-CHIP      | SA     |
| 2007-008483 | R403       | R-CHIP      | SA     |
| 2007-008483 | R405       | R-CHIP      | SA     |
| 2007-008483 | R406       | R-CHIP      | SA     |
| 2007-008483 | R409       | R-CHIP      | SA     |
| 2007-008483 | R501       | R-CHIP      | SA     |
| 2007-008483 | R514       | R-CHIP      | SA     |
| 2007-008483 | R516       | R-CHIP      | SA     |
| 2007-008483 | R517       | R-CHIP      | SA     |
| 2007-008483 | R806       | R-CHIP      | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2007-008516 | R101       | R-CHIP      | SA     |
| 2007-008516 | R115       | R-CHIP      | SA     |
| 2007-008516 | R117       | R-CHIP      | SA     |
| 2007-008516 | R200       | R-CHIP      | SA     |
| 2007-008516 | R201       | R-CHIP      | SA     |
| 2007-008516 | R202       | R-CHIP      | SA     |
| 2007-008516 | R205       | R-CHIP      | SA     |
| 2007-008516 | R407       | R-CHIP      | SA     |
| 2007-008516 | R500       | R-CHIP      | SA     |
| 2007-008516 | R507       | R-CHIP      | SA     |
| 2007-008516 | R513       | R-CHIP      | SA     |
| 2007-008516 | R519       | R-CHIP      | SA     |
| 2007-008531 | R114       | R-CHIP      | SA     |
| 2007-008531 | R313       | R-CHIP      | SA     |
| 2007-008531 | R314       | R-CHIP      | SA     |
| 2007-008531 | R620       | R-CHIP      | SA     |
| 2007-008531 | R706       | R-CHIP      | SA     |
| 2007-008531 | R707       | R-CHIP      | SA     |
| 2007-008542 | C612       | R-CHIP      | SA     |
| 2007-008542 | R103       | R-CHIP      | SA     |
| 2007-008542 | R104       | R-CHIP      | SA     |
| 2007-008542 | R106       | R-CHIP      | SA     |
| 2007-008542 | R107       | R-CHIP      | SA     |
| 2007-008542 | R116       | R-CHIP      | SA     |
| 2007-008542 | R128       | R-CHIP      | SA     |
| 2007-008542 | R129       | R-CHIP      | SA     |
| 2007-008542 | R140       | R-CHIP      | SA     |
| 2007-008542 | R160       | R-CHIP      | SA     |
| 2007-008542 | R325       | R-CHIP      | SA     |
| 2007-008542 | R341       | R-CHIP      | SA     |
| 2007-008542 | R408       | R-CHIP      | SA     |
| 2007-008542 | R530       | R-CHIP      | SA     |
| 2007-008542 | R531       | R-CHIP      | SA     |
| 2007-008542 | R532       | R-CHIP      | SA     |
| 2007-008542 | R533       | R-CHIP      | SA     |
| 2007-008542 | R534       | R-CHIP      | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2007-008542 | R535       | R-CHIP      | SA     |
| 2007-008542 | R538       | R-CHIP      | SA     |
| 2007-008542 | R539       | R-CHIP      | SA     |
| 2007-008579 | R614       | R-CHIP      | SA     |
| 2007-008579 | R615       | R-CHIP      | SA     |
| 2007-008588 | R125       | R-CHIP      | SA     |
| 2007-008588 | R126       | R-CHIP      | SA     |
| 2007-008806 | R135       | R-CHIP      | SA     |
| 2007-008806 | R508       | R-CHIP      | SA     |
| 2007-008806 | R618       | R-CHIP      | SA     |
| 2007-008964 | R108       | R-CHIP      | SA     |
| 2007-008964 | R109       | R-CHIP      | SA     |
| 2007-009166 | R134       | R-CHIP      | SA     |
| 2007-009169 | R527       | R-CHIP      | SA     |
| 2007-009170 | R112       | R-CHIP      | SA     |
| 2007-009170 | R118       | R-CHIP      | SA     |
| 2007-009170 | R316       | R-CHIP      | SA     |
| 2007-009171 | R119       | R-CHIP      | SA     |
| 2007-009171 | R120       | R-CHIP      | SA     |
| 2007-009171 | R121       | R-CHIP      | SA     |
| 2007-009171 | R122       | R-CHIP      | SA     |
| 2007-009171 | R123       | R-CHIP      | SA     |
| 2007-009212 | R606       | R-CHIP      | SA     |
| 2007-009233 | R521       | R-CHIP      | SA     |
| 2007-009314 | R512       | R-CHIP      | SA     |
| 2203-000233 | C821       | C-CER,CHIP  | SA     |
| 2203-000233 | L813       | C-CER,CHIP  | SA     |
| 2203-000254 | C152       | C-CER,CHIP  | SA     |
| 2203-000254 | C205       | C-CER,CHIP  | SA     |
| 2203-000254 | C401       | C-CER,CHIP  | SA     |
| 2203-000254 | C702       | C-CER,CHIP  | SA     |
| 2203-000278 | C157       | C-CER,CHIP  | SA     |
| 2203-000330 | C705       | C-CER,CHIP  | SA     |
| 2203-000330 | C721       | C-CER,CHIP  | SA     |
| 2203-000386 | C124       | C-CER,CHIP  | SA     |
| 2203-000386 | C156       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-000386 | C306       | C-CER,CHIP  | SA     |
| 2203-000386 | C311       | C-CER,CHIP  | SA     |
| 2203-000386 | C526       | C-CER,CHIP  | SA     |
| 2203-000386 | C527       | C-CER,CHIP  | SA     |
| 2203-000438 | C341       | C-CER,CHIP  | SA     |
| 2203-000438 | C346       | C-CER,CHIP  | SA     |
| 2203-000489 | C153       | C-CER,CHIP  | SA     |
| 2203-000812 | C127       | C-CER,CHIP  | SA     |
| 2203-000812 | C144       | C-CER,CHIP  | SA     |
| 2203-000812 | C154       | C-CER,CHIP  | SA     |
| 2203-000812 | C155       | C-CER,CHIP  | SA     |
| 2203-000812 | C200       | C-CER,CHIP  | SA     |
| 2203-000812 | C204       | C-CER,CHIP  | SA     |
| 2203-000812 | C303       | C-CER,CHIP  | SA     |
| 2203-000812 | C305       | C-CER,CHIP  | SA     |
| 2203-000812 | C307       | C-CER,CHIP  | SA     |
| 2203-000812 | C309       | C-CER,CHIP  | SA     |
| 2203-000812 | C310       | C-CER,CHIP  | SA     |
| 2203-000812 | C321       | C-CER,CHIP  | SA     |
| 2203-000812 | C322       | C-CER,CHIP  | SA     |
| 2203-000812 | C600       | C-CER,CHIP  | SA     |
| 2203-000812 | C605       | C-CER,CHIP  | SA     |
| 2203-000812 | C703       | C-CER,CHIP  | SA     |
| 2203-000812 | C708       | C-CER,CHIP  | SA     |
| 2203-000995 | C506       | C-CER,CHIP  | SA     |
| 2203-000995 | C706       | C-CER,CHIP  | SA     |
| 2203-001072 | C433       | C-CER,CHIP  | SA     |
| 2203-001124 | C724       | C-CER,CHIP  | DNA    |
| 2203-002443 | C635       | C-CER,CHIP  | SA     |
| 2203-002668 | C602       | C-CER,CHIP  | SA     |
| 2203-002668 | C707       | C-CER,CHIP  | SA     |
| 2203-002668 | C802       | C-CER,CHIP  | SA     |
| 2203-002709 | C213       | C-CER,CHIP  | SA     |
| 2203-002709 | C720       | C-CER,CHIP  | SA     |
| 2203-003019 | C434       | C-CER,CHIP  | SA     |
| 2203-005053 | C609       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-005053 | C715       | C-CER,CHIP  | SA     |
| 2203-005053 | C722       | C-CER,CHIP  | SA     |
| 2203-005056 | C704       | C-CER,CHIP  | SA     |
| 2203-005138 | C347       | C-CER,CHIP  | SA     |
| 2203-005138 | C349       | C-CER,CHIP  | SA     |
| 2203-005249 | C333       | C-CER,CHIP  | SA     |
| 2203-005288 | C606       | C-CER,CHIP  | SA     |
| 2203-005344 | C145       | C-CER,CHIP  | SA     |
| 2203-005344 | C345       | C-CER,CHIP  | SA     |
| 2203-005344 | C348       | C-CER,CHIP  | SA     |
| 2203-005482 | C201       | C-CER,CHIP  | SA     |
| 2203-005482 | C210       | C-CER,CHIP  | SA     |
| 2203-005482 | C304       | C-CER,CHIP  | SA     |
| 2203-005482 | C338       | C-CER,CHIP  | SA     |
| 2203-005482 | C414       | C-CER,CHIP  | SA     |
| 2203-005482 | C421       | C-CER,CHIP  | SA     |
| 2203-005482 | C425       | C-CER,CHIP  | SA     |
| 2203-005482 | C429       | C-CER,CHIP  | SA     |
| 2203-005482 | C501       | C-CER,CHIP  | SA     |
| 2203-005482 | C502       | C-CER,CHIP  | SA     |
| 2203-005482 | C503       | C-CER,CHIP  | SA     |
| 2203-005482 | C509       | C-CER,CHIP  | SA     |
| 2203-005482 | C529       | C-CER,CHIP  | SA     |
| 2203-005482 | C530       | C-CER,CHIP  | SA     |
| 2203-005482 | C531       | C-CER,CHIP  | SA     |
| 2203-005482 | C537       | C-CER,CHIP  | SA     |
| 2203-005682 | C615       | C-CER,CHIP  | SA     |
| 2203-005682 | C631       | C-CER,CHIP  | SA     |
| 2203-005682 | C737       | C-CER,CHIP  | SA     |
| 2203-005682 | C740       | C-CER,CHIP  | SA     |
| 2203-005682 | C741       | C-CER,CHIP  | SA     |
| 2203-005682 | C800       | C-CER,CHIP  | SA     |
| 2203-005682 | C806       | C-CER,CHIP  | SA     |
| 2203-005682 | C808       | C-CER,CHIP  | SA     |
| 2203-005682 | C809       | C-CER,CHIP  | SA     |
| 2203-005682 | C811       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-005729 | C122       | C-CER,CHIP  | SA     |
| 2203-005729 | C123       | C-CER,CHIP  | SA     |
| 2203-005729 | C642       | C-CER,CHIP  | SA     |
| 2203-005729 | C643       | C-CER,CHIP  | SA     |
| 2203-005732 | C610       | C-CER,CHIP  | SA     |
| 2203-005736 | C326       | C-CER,CHIP  | SA     |
| 2203-005736 | C520       | C-CER,CHIP  | SA     |
| 2203-005736 | C634       | C-CER,CHIP  | SA     |
| 2203-005736 | C640       | C-CER,CHIP  | SA     |
| 2203-005736 | C711       | C-CER,CHIP  | SA     |
| 2203-005736 | C716       | C-CER,CHIP  | SA     |
| 2203-005736 | C718       | C-CER,CHIP  | SA     |
| 2203-005736 | C726       | C-CER,CHIP  | SA     |
| 2203-005736 | C728       | C-CER,CHIP  | SA     |
| 2203-005806 | C102       | C-CER,CHIP  | SNA    |
| 2203-005806 | C103       | C-CER,CHIP  | SNA    |
| 2203-005806 | C105       | C-CER,CHIP  | SNA    |
| 2203-005806 | C106       | C-CER,CHIP  | SNA    |
| 2203-005806 | C109       | C-CER,CHIP  | SNA    |
| 2203-005806 | C110       | C-CER,CHIP  | SNA    |
| 2203-005806 | C115       | C-CER,CHIP  | SNA    |
| 2203-005806 | C116       | C-CER,CHIP  | SNA    |
| 2203-005806 | C118       | C-CER,CHIP  | SNA    |
| 2203-005806 | C119       | C-CER,CHIP  | SNA    |
| 2203-005806 | C149       | C-CER,CHIP  | SNA    |
| 2203-005806 | C150       | C-CER,CHIP  | SNA    |
| 2203-005806 | C151       | C-CER,CHIP  | SNA    |
| 2203-005806 | C323       | C-CER,CHIP  | SNA    |
| 2203-005806 | C410       | C-CER,CHIP  | SNA    |
| 2203-005806 | C511       | C-CER,CHIP  | SNA    |
| 2203-005806 | C512       | C-CER,CHIP  | SNA    |
| 2203-005806 | C518       | C-CER,CHIP  | SNA    |
| 2203-005806 | C519       | C-CER,CHIP  | SNA    |
| 2203-005806 | C535       | C-CER,CHIP  | SNA    |
| 2203-005806 | C536       | C-CER,CHIP  | SNA    |
| 2203-005806 | C626       | C-CER,CHIP  | SNA    |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-005806 | C630       | C-CER,CHIP  | SNA    |
| 2203-005806 | C641       | C-CER,CHIP  | SNA    |
| 2203-005806 | C714       | C-CER,CHIP  | SNA    |
| 2203-005806 | C823       | C-CER,CHIP  | SNA    |
| 2203-005808 | C203       | C-CER,CHIP  | SA     |
| 2203-005808 | C608       | C-CER,CHIP  | SA     |
| 2203-005808 | C614       | C-CER,CHIP  | SA     |
| 2203-005808 | C616       | C-CER,CHIP  | SA     |
| 2203-005808 | C617       | C-CER,CHIP  | SA     |
| 2203-005808 | C633       | C-CER,CHIP  | SA     |
| 2203-005808 | C710       | C-CER,CHIP  | SA     |
| 2203-005819 | C431       | C-CER,CHIP  | SA     |
| 2203-005819 | C432       | C-CER,CHIP  | SA     |
| 2203-006047 | C126       | C-CER,CHIP  | SA     |
| 2203-006194 | C143       | C-CER,CHIP  | SA     |
| 2203-006194 | C209       | C-CER,CHIP  | SA     |
| 2203-006194 | C408       | C-CER,CHIP  | SA     |
| 2203-006194 | C409       | C-CER,CHIP  | SA     |
| 2203-006194 | C413       | C-CER,CHIP  | SA     |
| 2203-006194 | C505       | C-CER,CHIP  | SA     |
| 2203-006194 | C532       | C-CER,CHIP  | SA     |
| 2203-006194 | C611       | C-CER,CHIP  | SA     |
| 2203-006194 | C613       | C-CER,CHIP  | SA     |
| 2203-006194 | C822       | C-CER,CHIP  | SA     |
| 2203-006208 | C402       | C-CER,CHIP  | SA     |
| 2203-006208 | C515       | C-CER,CHIP  | SA     |
| 2203-006208 | C521       | C-CER,CHIP  | SA     |
| 2203-006208 | C522       | C-CER,CHIP  | SA     |
| 2203-006208 | C523       | C-CER,CHIP  | SA     |
| 2203-006260 | C319       | C-CER,CHIP  | SA     |
| 2203-006260 | C320       | C-CER,CHIP  | SA     |
| 2203-006260 | C332       | C-CER,CHIP  | SA     |
| 2203-006260 | C335       | C-CER,CHIP  | SA     |
| 2203-006260 | C427       | C-CER,CHIP  | SA     |
| 2203-006260 | C542       | C-CER,CHIP  | SA     |
| 2203-006260 | R338       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-006305 | C619       | C-CER,CHIP  | SA     |
| 2203-006307 | C547       | C-CER,CHIP  | SA     |
| 2203-006324 | C114       | C-CER,CHIP  | SA     |
| 2203-006324 | C328       | C-CER,CHIP  | SA     |
| 2203-006324 | C400       | C-CER,CHIP  | SA     |
| 2203-006324 | C420       | C-CER,CHIP  | SA     |
| 2203-006324 | C435       | C-CER,CHIP  | SA     |
| 2203-006324 | C436       | C-CER,CHIP  | SA     |
| 2203-006324 | C701       | C-CER,CHIP  | SA     |
| 2203-006324 | C824       | C-CER,CHIP  | SA     |
| 2203-006324 | C825       | C-CER,CHIP  | SA     |
| 2203-006361 | C422       | C-CER,CHIP  | SA     |
| 2203-006379 | C621       | C-CER,CHIP  | SA     |
| 2203-006423 | C100       | C-CER,CHIP  | SA     |
| 2203-006423 | C101       | C-CER,CHIP  | SA     |
| 2203-006423 | C107       | C-CER,CHIP  | SA     |
| 2203-006423 | C108       | C-CER,CHIP  | SA     |
| 2203-006423 | C111       | C-CER,CHIP  | SA     |
| 2203-006423 | C112       | C-CER,CHIP  | SA     |
| 2203-006423 | C113       | C-CER,CHIP  | SA     |
| 2203-006423 | C120       | C-CER,CHIP  | SA     |
| 2203-006423 | C121       | C-CER,CHIP  | SA     |
| 2203-006423 | C128       | C-CER,CHIP  | SA     |
| 2203-006423 | C133       | C-CER,CHIP  | SA     |
| 2203-006423 | C134       | C-CER,CHIP  | SA     |
| 2203-006423 | C136       | C-CER,CHIP  | SA     |
| 2203-006423 | C137       | C-CER,CHIP  | SA     |
| 2203-006423 | C142       | C-CER,CHIP  | SA     |
| 2203-006423 | C147       | C-CER,CHIP  | SA     |
| 2203-006423 | C148       | C-CER,CHIP  | SA     |
| 2203-006423 | C202       | C-CER,CHIP  | SA     |
| 2203-006423 | C313       | C-CER,CHIP  | SA     |
| 2203-006423 | C317       | C-CER,CHIP  | SA     |
| 2203-006423 | C324       | C-CER,CHIP  | SA     |
| 2203-006423 | C411       | C-CER,CHIP  | SA     |
| 2203-006423 | C412       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-006423 | C524       | C-CER,CHIP  | SA     |
| 2203-006423 | C528       | C-CER,CHIP  | SA     |
| 2203-006423 | C620       | C-CER,CHIP  | SA     |
| 2203-006423 | C625       | C-CER,CHIP  | SA     |
| 2203-006423 | C628       | C-CER,CHIP  | SA     |
| 2203-006423 | C712       | C-CER,CHIP  | SA     |
| 2203-006423 | C713       | C-CER,CHIP  | SA     |
| 2203-006423 | C717       | C-CER,CHIP  | SA     |
| 2203-006423 | C719       | C-CER,CHIP  | SA     |
| 2203-006423 | C805       | C-CER,CHIP  | SA     |
| 2203-006423 | C814       | C-CER,CHIP  | SA     |
| 2203-006423 | C818       | C-CER,CHIP  | SA     |
| 2203-006556 | C623       | C-CER,CHIP  | SA     |
| 2203-006556 | C624       | C-CER,CHIP  | SA     |
| 2203-006562 | C104       | C-CER,CHIP  | SA     |
| 2203-006562 | C117       | C-CER,CHIP  | SA     |
| 2203-006562 | C158       | C-CER,CHIP  | SA     |
| 2203-006562 | C206       | C-CER,CHIP  | SA     |
| 2203-006562 | C207       | C-CER,CHIP  | SA     |
| 2203-006562 | C208       | C-CER,CHIP  | SA     |
| 2203-006562 | C302       | C-CER,CHIP  | SA     |
| 2203-006562 | C312       | C-CER,CHIP  | SA     |
| 2203-006562 | C316       | C-CER,CHIP  | SA     |
| 2203-006562 | C330       | C-CER,CHIP  | SA     |
| 2203-006562 | C339       | C-CER,CHIP  | SA     |
| 2203-006562 | C340       | C-CER,CHIP  | SA     |
| 2203-006562 | C343       | C-CER,CHIP  | SA     |
| 2203-006562 | C344       | C-CER,CHIP  | SA     |
| 2203-006562 | C350       | C-CER,CHIP  | SA     |
| 2203-006562 | C351       | C-CER,CHIP  | SA     |
| 2203-006562 | C403       | C-CER,CHIP  | SA     |
| 2203-006562 | C405       | C-CER,CHIP  | SA     |
| 2203-006562 | C406       | C-CER,CHIP  | SA     |
| 2203-006562 | C407       | C-CER,CHIP  | SA     |
| 2203-006562 | C416       | C-CER,CHIP  | SA     |
| 2203-006562 | C424       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription | STATUS |
|-------------|------------|-------------|--------|
| 2203-006562 | C426       | C-CER,CHIP  | SA     |
| 2203-006562 | C428       | C-CER,CHIP  | SA     |
| 2203-006562 | C513       | C-CER,CHIP  | SA     |
| 2203-006562 | C514       | C-CER,CHIP  | SA     |
| 2203-006562 | C544       | C-CER,CHIP  | SA     |
| 2203-006562 | C545       | C-CER,CHIP  | SA     |
| 2203-006562 | C546       | C-CER,CHIP  | SA     |
| 2203-006562 | C629       | C-CER,CHIP  | SA     |
| 2203-006562 | C632       | C-CER,CHIP  | SA     |
| 2203-006562 | C639       | C-CER,CHIP  | SA     |
| 2203-006562 | C645       | C-CER,CHIP  | SA     |
| 2203-006562 | C725       | C-CER,CHIP  | SA     |
| 2203-006562 | C727       | C-CER,CHIP  | SA     |
| 2203-006617 | C132       | C-CER,CHIP  | SA     |
| 2203-006617 | C135       | C-CER,CHIP  | SA     |
| 2203-006648 | C125       | C-CER,CHIP  | SA     |
| 2203-006648 | C130       | C-CER,CHIP  | SA     |
| 2203-006648 | C131       | C-CER,CHIP  | SA     |
| 2203-006824 | C500       | C-CER,CHIP  | SA     |
| 2203-006824 | C533       | C-CER,CHIP  | SA     |
| 2203-006824 | C534       | C-CER,CHIP  | SA     |
| 2203-006825 | C415       | C-CER,CHIP  | SA     |
| 2203-006838 | C540       | C-CER,CHIP  | SA     |
| 2203-006847 | C638       | C-CER,CHIP  | SA     |
| 2203-006872 | C212       | C-CER,CHIP  | SA     |
| 2203-006872 | C314       | C-CER,CHIP  | SA     |
| 2203-006872 | C325       | C-CER,CHIP  | SA     |
| 2203-006872 | C352       | C-CER,CHIP  | SA     |
| 2203-006872 | C353       | C-CER,CHIP  | SA     |
| 2203-006872 | C430       | C-CER,CHIP  | SA     |
| 2203-006872 | C516       | C-CER,CHIP  | SA     |
| 2203-006872 | C517       | C-CER,CHIP  | SA     |
| 2203-006872 | C525       | C-CER,CHIP  | SA     |
| 2203-006872 | C538       | C-CER,CHIP  | SA     |
| 2203-006872 | C539       | C-CER,CHIP  | SA     |
| 2203-006872 | C541       | C-CER,CHIP  | SA     |

| SEC CODE    | Design LOC | Discription    | STATUS |
|-------------|------------|----------------|--------|
| 2203-006872 | C817       | C-CER,CHIP     | SA     |
| 2301-001200 | C636       | C-FILM,SMD-PPS | SA     |
| 2301-001213 | C604       | C-FILM,SMD-PPS | SA     |
| 2301-001735 | C603       | C-FILM,SMD     | SA     |
| 2301-001807 | C637       | C-FILM,SMD     | SA     |
| 2404-001225 | TA601      | C-TA,CHIP      | SA     |
| 2404-001377 | TA303      | C-TA,CHIP      | SA     |
| 2404-001381 | TA304      | C-TA,CHIP      | SA     |
| 2404-001381 | TA502      | C-TA,CHIP      | SA     |
| 2404-001406 | TA300      | C-TA,CHIP      | SA     |
| 2404-001406 | TA501      | C-TA,CHIP      | SA     |
| 2404-001411 | TA600      | C-TA,CHIP      | SA     |
| 2404-001414 | TA305      | C-TA,CHIP      | SA     |
| 2404-001430 | TA700      | C-TA,CHIP      | SA     |
| 2404-001448 | TA301      | C-TA,CHIP      | SA     |
| 2404-001448 | TA302      | C-TA,CHIP      | SA     |
| 2703-001724 | L814       | INDUCTOR-SMD   | SA     |
| 2703-001750 | L703       | INDUCTOR-SMD   | SA     |
| 2703-001751 | L810       | INDUCTOR-SMD   | SA     |
| 2703-001751 | L812       | INDUCTOR-SMD   | SA     |
| 2703-001752 | L803       | INDUCTOR-SMD   | SA     |
| 2703-001990 | L701       | INDUCTOR-SMD   | SA     |
| 2703-001990 | L704       | INDUCTOR-SMD   | SA     |
| 2703-001990 | L708       | INDUCTOR-SMD   | SA     |
| 2703-002198 | R708       | INDUCTOR-SMD   | SA     |
| 2703-002205 | L702       | INDUCTOR-SMD   | SA     |
| 2703-002208 | R621       | INDUCTOR-SMD   | SA     |
| 2703-002268 | L609       | INDUCTOR-SMD   | SA     |
| 2703-002269 | L610       | INDUCTOR-SMD   | SA     |
| 2703-002309 | L201       | INDUCTOR-SMD   | SA     |
| 2703-002309 | L202       | INDUCTOR-SMD   | SA     |
| 2703-002313 | L100       | INDUCTOR-SMD   | SA     |
| 2703-002313 | L101       | INDUCTOR-SMD   | SA     |
| 2703-002313 | L204       | INDUCTOR-SMD   | SA     |
| 2703-002313 | L300       | INDUCTOR-SMD   | SA     |
| 2703-002597 | L802       | INDUCTOR-SMD   | SA     |

| SEC CODE    | Design LOC | Discription           | STATUS |
|-------------|------------|-----------------------|--------|
| 2703-002597 | L804       | INDUCTOR-SMD          | SA     |
| 2703-002608 | L806       | INDUCTOR-SMD          | SA     |
| 2703-002608 | L809       | INDUCTOR-SMD          | SA     |
| 2703-002608 | L811       | INDUCTOR-SMD          | SA     |
| 2703-002700 | L705       | INDUCTOR-SMD          | SA     |
| 2703-002782 | L501       | INDUCTOR-SMD          | SA     |
| 2703-002782 | L502       | INDUCTOR-SMD          | SA     |
| 2703-002819 | L604       | INDUCTOR-SMD          | SA     |
| 2703-002819 | L605       | INDUCTOR-SMD          | SA     |
| 2703-002819 | L606       | INDUCTOR-SMD          | SA     |
| 2703-002819 | L607       | INDUCTOR-SMD          | SA     |
| 2703-002870 | C804       | INDUCTOR-SMD          | SA     |
| 2703-002870 | L600       | INDUCTOR-SMD          | SA     |
| 2703-002870 | L602       | INDUCTOR-SMD          | SA     |
| 2703-002870 | L603       | INDUCTOR-SMD          | SA     |
| 2703-002966 | L400       | INDUCTOR-SMD          | SA     |
| 2801-004466 | OSC501     | CRYSTAL-SMD           | SA     |
| 2802-001182 | OSC101     | RESONATOR-CERAMIC     | SA     |
| 2806-001377 | VCO600     | OSCILLATOR-VCO        | SA     |
| 2809-001274 | TCX800     | OSCILLATOR-VCTCXO     | SA     |
| 2904-001658 | F700       | FILTER-SAW            | SA     |
| 2904-001702 | F702       | FILTER-SAW            | SA     |
| 2910-000010 | DUF700     | DUPLEXER-SAW          | SA     |
| 2911-000048 | D800       | DUPLEXER-FEM          | SA     |
| 3301-001158 | L301       | BEAD-SMD              | SA     |
| 3301-001158 | L302       | BEAD-SMD              | SA     |
| 3301-001534 | L500       | BEAD-SMD              | SA     |
| 3301-001534 | R536       | BEAD-SMD              | SA     |
| 3301-001534 | R537       | BEAD-SMD              | SA     |
| 3301-001659 | L203       | BEAD-SMD              | SA     |
| 3705-001421 | CN800      | CONNECTOR-COAXIAL     | SA     |
| 3709-001344 | HDC201     | CONNECTOR-CARD EDGE   | SA     |
| 3709-001447 | SIM501     | CONNECTOR-CARD EDGE   | SA     |
| 3710-002363 | IFC300     | SOCKET-INTERFACE      | SA     |
| 3711-005643 | HDC203     | HEADER-BOARD TO BOARD | SA     |
| 3711-005659 | HDC202     | HEADER-BOARD TO BOARD | SA     |

| SEC CODE    | Design LOC | Discription           | STATUS |
|-------------|------------|-----------------------|--------|
| 3711-005728 | HDC200     | HEADER-BOARD TO BOARD | SA     |
| 3711-006256 | BTC500     | HEADER-BATTERY        | SA     |
| 4202-001210 | ANT800     | ANTENNA-CHIP          | SA     |
| 4302-001130 | BAT500     | BATTERY-LI(2ND)       | SA     |
| 4709-001460 | U800       | BLUETOOTH MODULE      | SA     |

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## 8. Reference data

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### 8-1. Reference Abbreviate

**AAC:** Advanced Audio Coding.

**AVC :** Advanced Video Coding.

**BER :** Bit Error Rate

**BPSK:** Binary Phase Shift Keying

**CA :** Conditional Access

**CDM :** Code Division Multiplexing

**C/I :** Carrier to Interference

**DMB :** Digital Multimedia Broadcasting

**EN :** European Standard

**ES :** Elementary Stream

**ETSI:** European Telecommunications Standards Institute

**MPEG:** Moving Picture Experts Group

**PN :** Pseudo-random Noise

**PS :** Pilot Symbol

**QPSK:** Quadrature Phase Shift Keying

**RS :** Reed-Solomon

**SI :** Service Information

**TDM :** Time Division Multiplexing

**TS :** Transport Stream

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## 9. Safety Precautions

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### 9-1. Repair Precaution

- Repair in Shield Box, during detailed tuning.  
Take specially care of tuning or test,  
because specipcty of cellular phone is sensitive for surrounding interference(RF noise).
- Be careful to use a kind of magnetic object or tool,  
because performance of parts is damaged by the influence of manetic force.
- Surely use a standard screwdriver when you disassemble this product,  
otherwise screw will be worn away.
- Use a thicken twisted wire when you measure level.  
A thicken twisted wire has low resistance, therefore error of measurement is few.
- Repair after separate Test Pack and Set because for short danger (for example an  
overcurrent and furious flames of parts etc) when you repair board in condition of  
connecting Test Pack and tuning on.
- Take specially care of soldering, because Land of PCB is small and weak in heat.
- Surely tune on/off while using AC power plug, because a repair of battery charger is  
dangerous when tuning ON/OFF PBA and Connector after disassembling charger.
- Don't use as you pleases after change other material than replacement registered on SEC  
System.  
Otherwise engineer in charge isn't charged with problem that you don't keep this rules.

## 9-2. ESD(Electrostatically Sensitive Devices) Precaution

Several semiconductor may be damaged easily by static electricity. Such parts are called by ESD(Electrostatically Sensitive Devices), for example IC,BGA chip etc. Read Precaution below. You can prevent from ESD damage by static electricity.

- Remove static electricity remained your body before you touch semiconductor or parts with semiconductor. There are ways that you touch an earthed place or wear static electricity prevention string on wrist.
- Use earthed soldering steel when you connect or disconnect ESD.
- Use soldering removing tool to break static electricity. , otherwise ESD will be damaged by static electricity.
- Don't unpack until you set up ESD on product. Because most of ESD are packed by box and aluminum plate to have conductive power,they are prevented from static electricity.
- You must maintain electric contact between ESD and place due to be set up until ESD is connected completely to the proper place or a circuit board.

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## 10. Product Function

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### Main Function

- 3G
- Camera and Camcorder
- Media player
- Photo printing
- Bluetooth
- File viewer
- Web browser
- Name card
- Multimedia Message Service (MMS)
- Email
- Java
- Calendar
- Voice recorder