

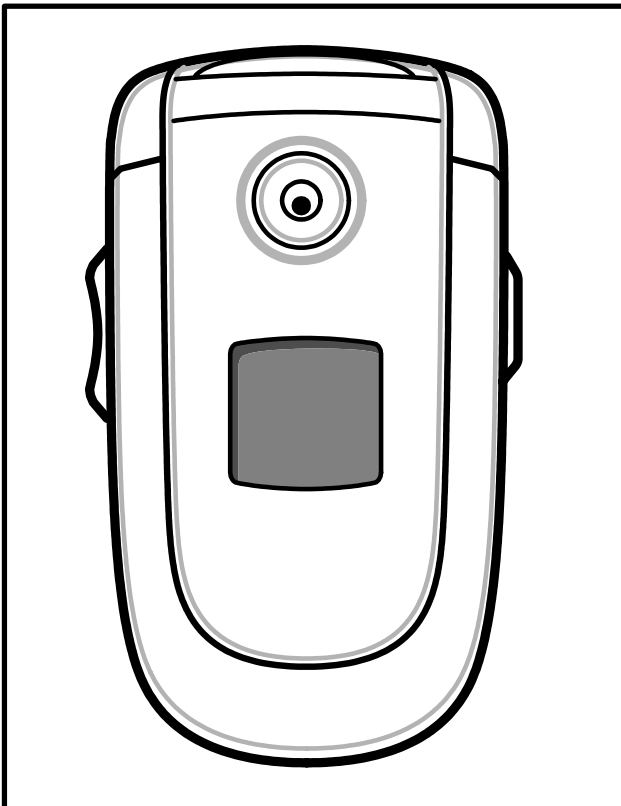
**SAMSUNG**

# GSM TELEPHONE

## SGH-X660

# ***SERVICE*** *Manual*

### GSM TELEPHONE



### CONTENTS

1. Specification
2. Flow Chart of Troubleshooting
3. Exploded Views and Parts List
4. Electrical Parts List
5. PCB Diagrams
6. Block Diagrams

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# 1. SGH-X660 Specification

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## 1-1. GSM General Specification

|                                     | <b>GSM900<br/>Phase 1</b> | <b>EGSM 900<br/>Phase 2</b> | <b>DCS1800<br/>Phase 1</b> | <b>PCS1900</b>         |
|-------------------------------------|---------------------------|-----------------------------|----------------------------|------------------------|
| Freq. Band[MHz]<br>Uplink/Downlink  | 890~915<br>935~960        | 880~915<br>925~960          | 1710~1785<br>1805~1880     | 1850~1910<br>1930~1990 |
| ARFCN range                         | 1~124                     | 0~124 &<br>975~1023         | 512~885                    | 512~810                |
| Tx/Rx spacing                       | 45MHz                     | 45MHz                       | 95MHz                      | 80MHz                  |
| Mod. Bit rate/<br>Bit Period        | 270.833kbps<br>3.692us    | 270.833kbps<br>3.692us      | 270.833kbps<br>3.692us     | 270.833kbps<br>3.692us |
| Time Slot<br>Period/Frame<br>Period | 576.9us<br>4.615ms        | 576.9us<br>4.615ms          | 576.9us<br>4.615ms         | 576.9us<br>4.615ms     |
| Modulation                          | 0.3GMSK                   | 0.3GMSK                     | 0.3GMSK                    | 0.3GMSK                |
| MS Power                            | 33dBm~5dBm                | 33dBm~5dBm                  | 30dBm~0dBm                 | 30dBm~0dBm             |
| Power Class                         | 5pcl ~ 19pcl              | 5pcl ~ 19pcl                | 0pcl ~ 15pcl               | 0pcl ~ 15pcl           |
| Sensitivity                         | -102dBm                   | -102dBm                     | -100dBm                    | -100dBm                |
| TDMA Mux                            | 8                         | 8                           | 8                          | 8                      |
| Cell Radius                         | 35Km                      | 35Km                        | 2Km                        | -                      |

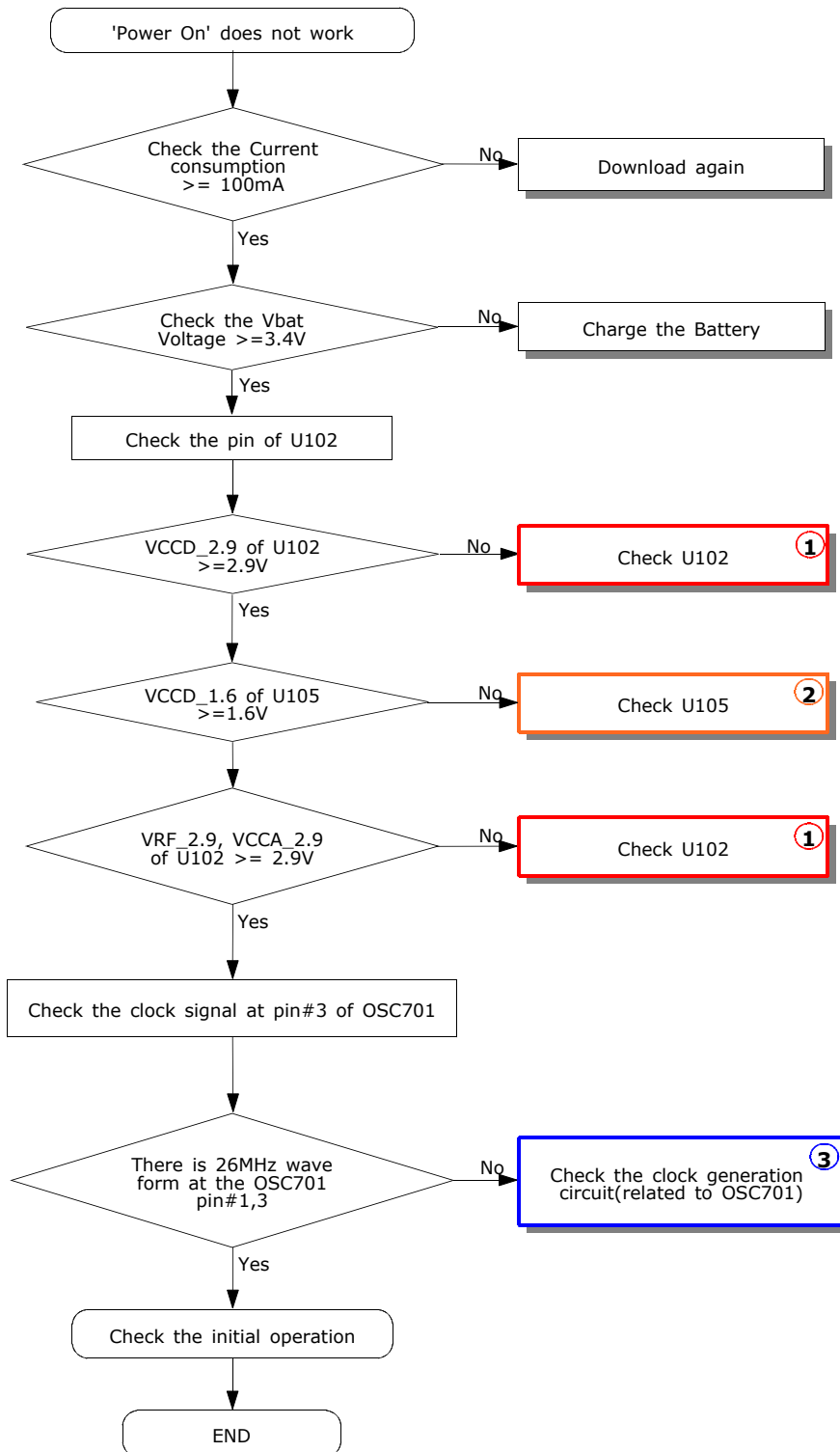
**1-2. GSM TX power class**

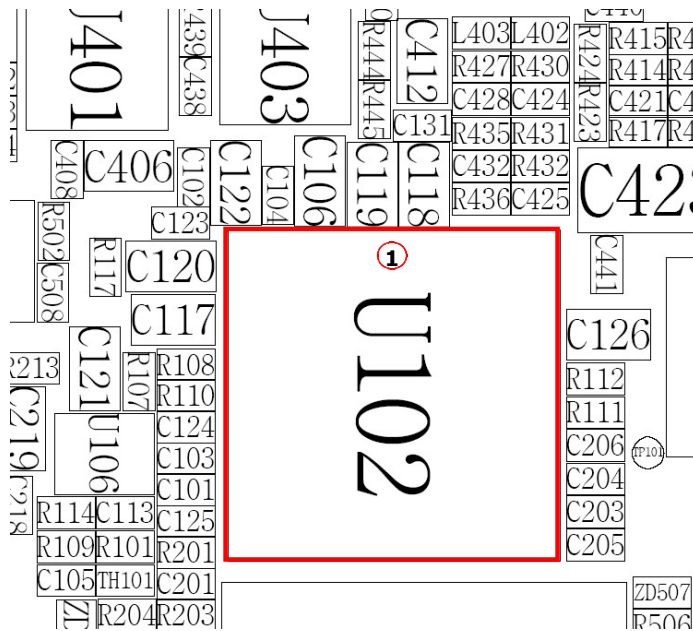
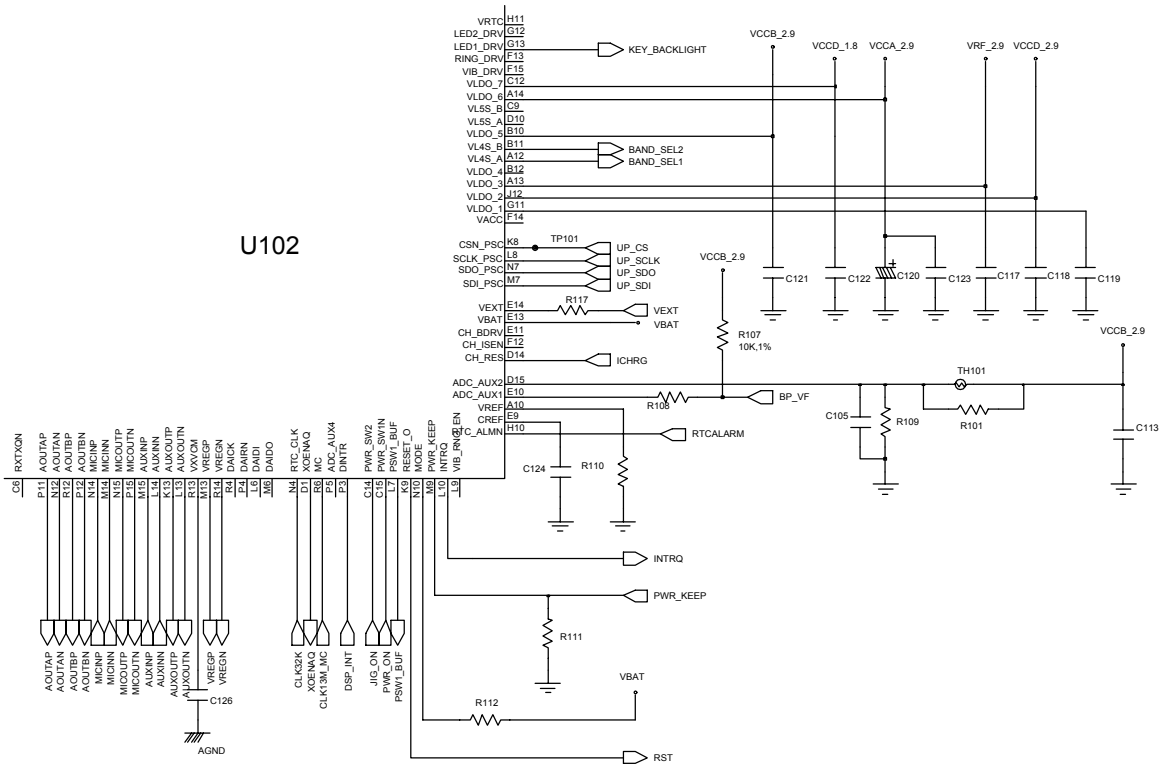
| <b>TX Power control level</b> | <b>GSM900</b> | <b>TX Power control level</b> | <b>DCS1800</b> | <b>TX Power control level</b> | <b>PCS1900</b> |
|-------------------------------|---------------|-------------------------------|----------------|-------------------------------|----------------|
| 5                             | 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        |

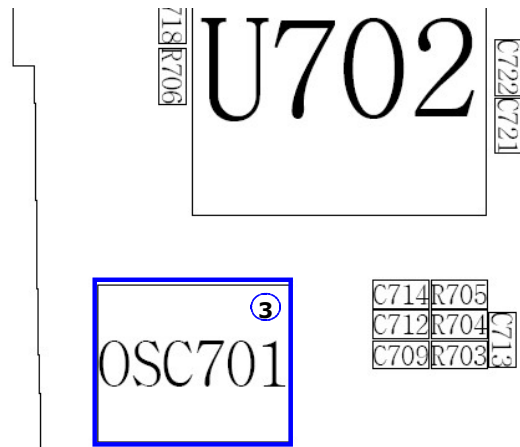
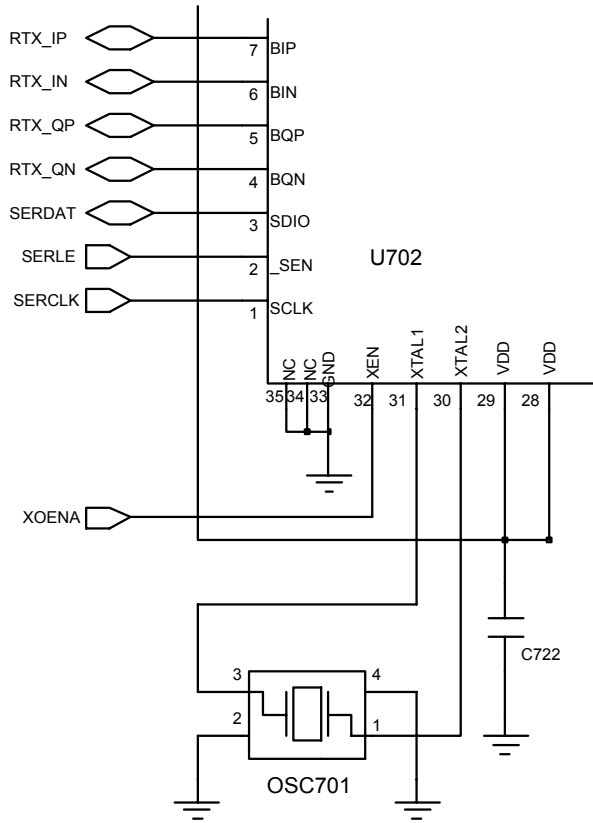
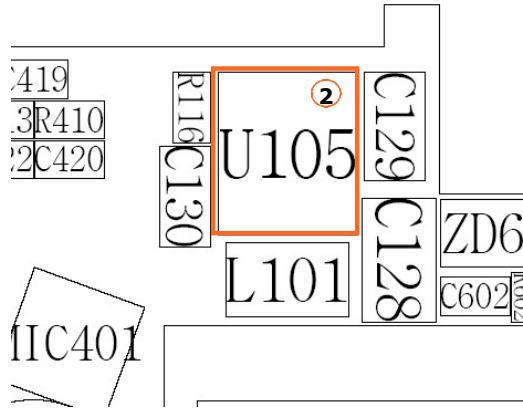
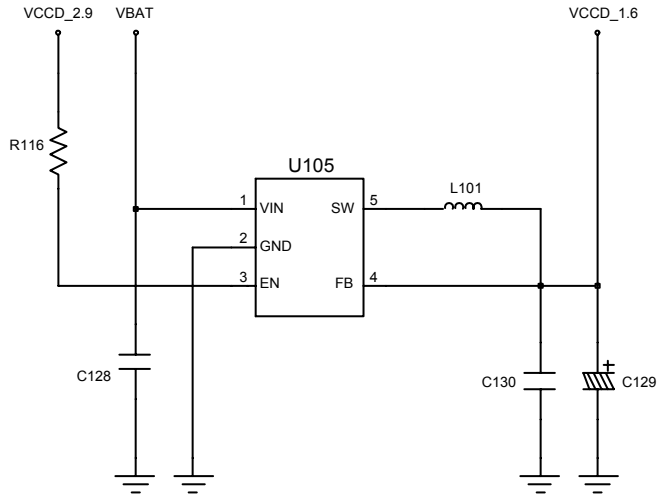
## 2. SGH-X660 Flow Chart of Troubleshooting

### 2-1.Baseband

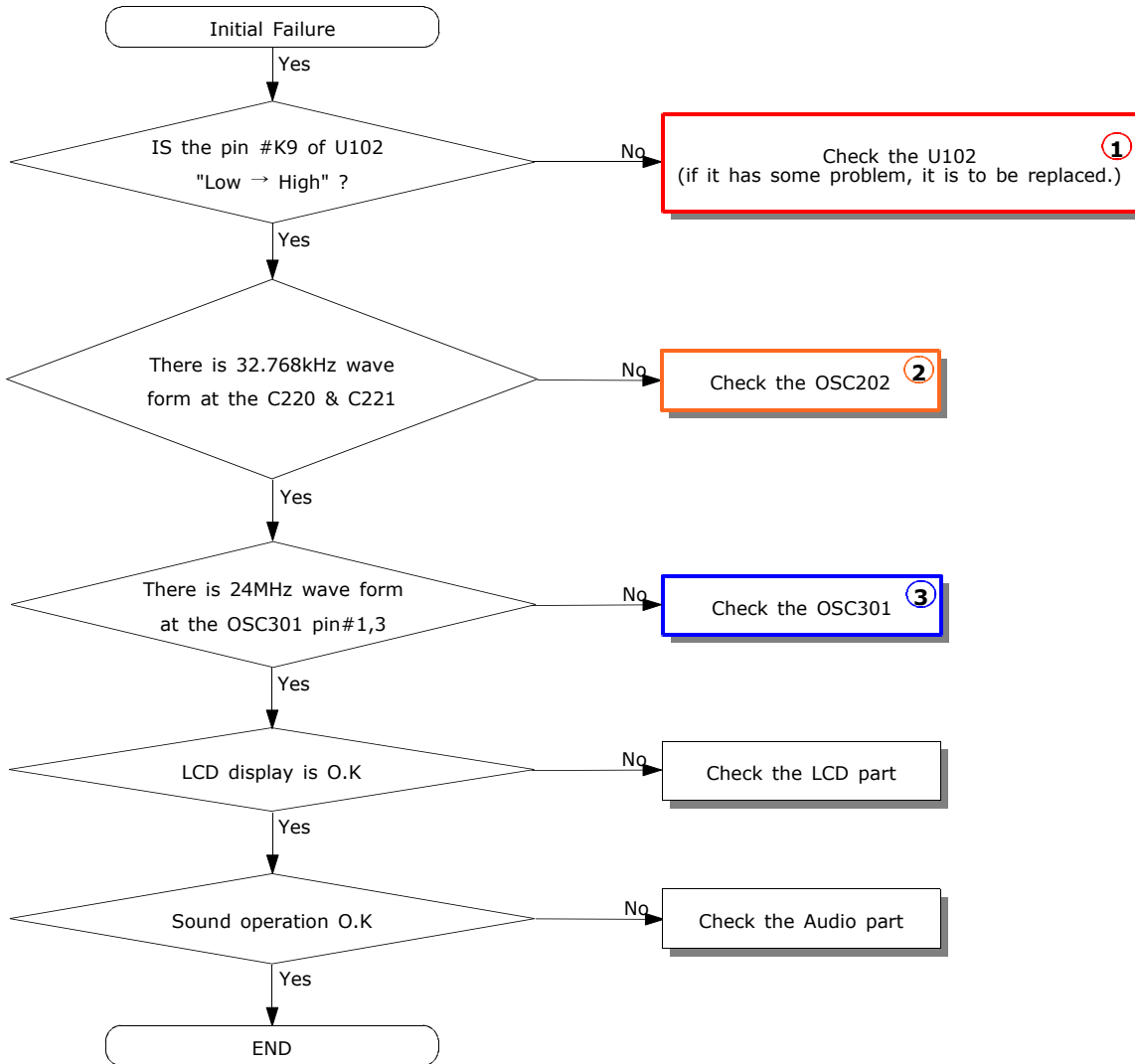
#### 2-1-1. Power ON

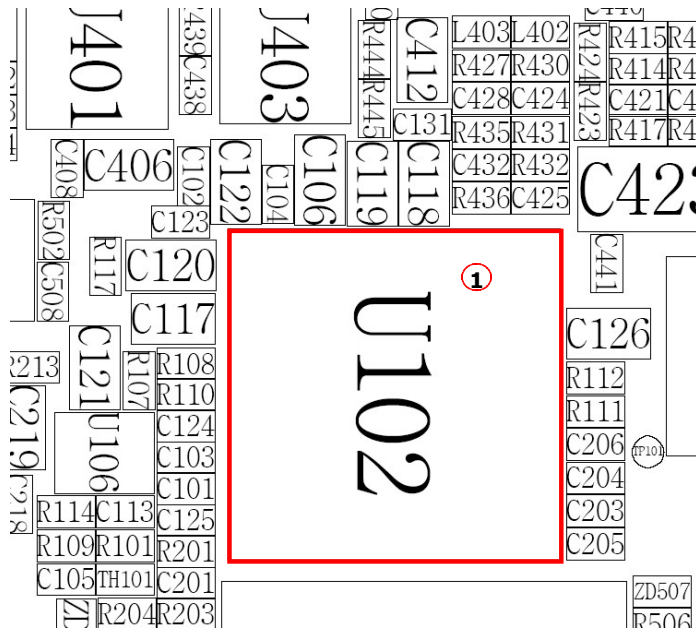
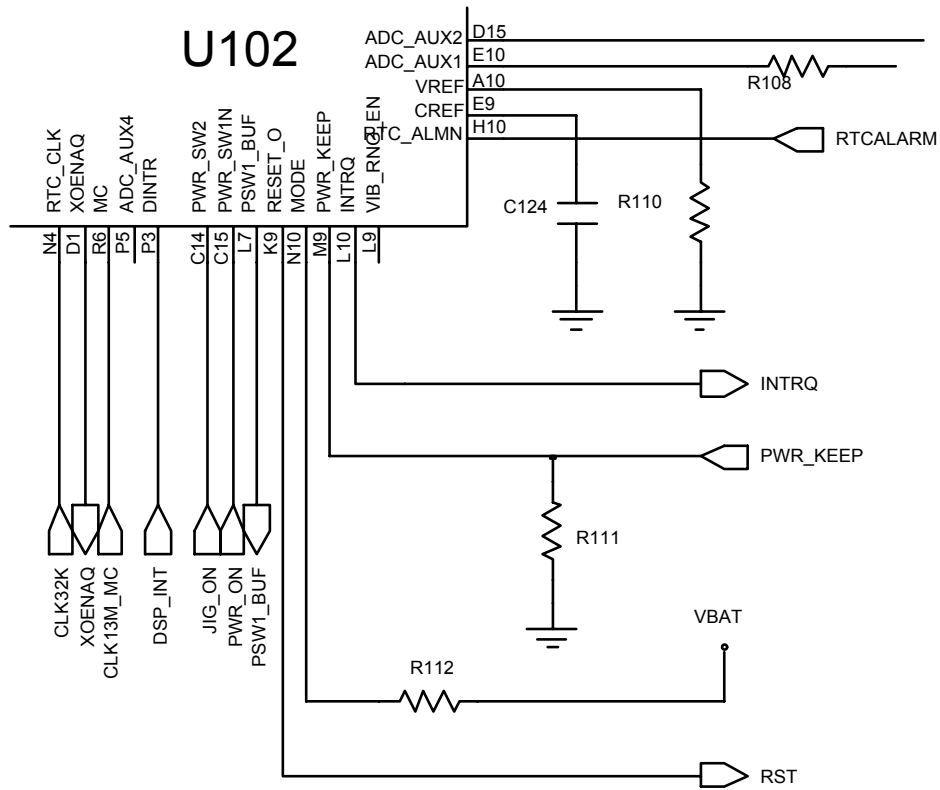




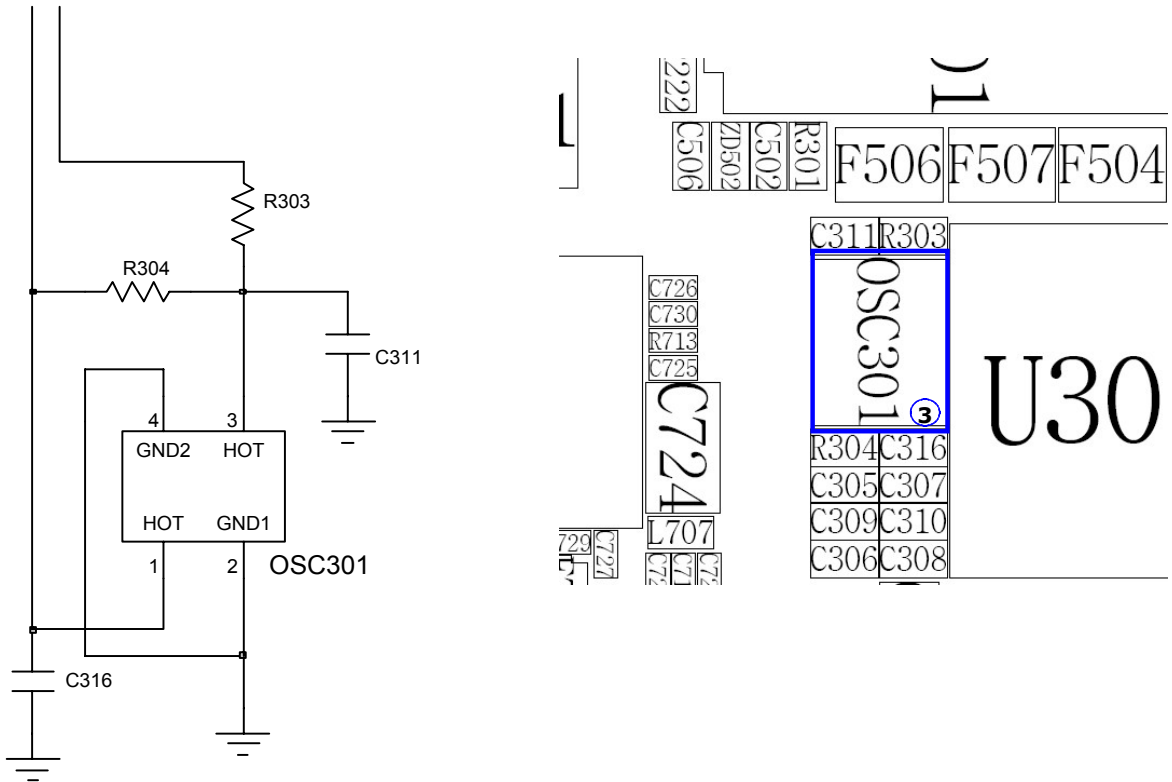
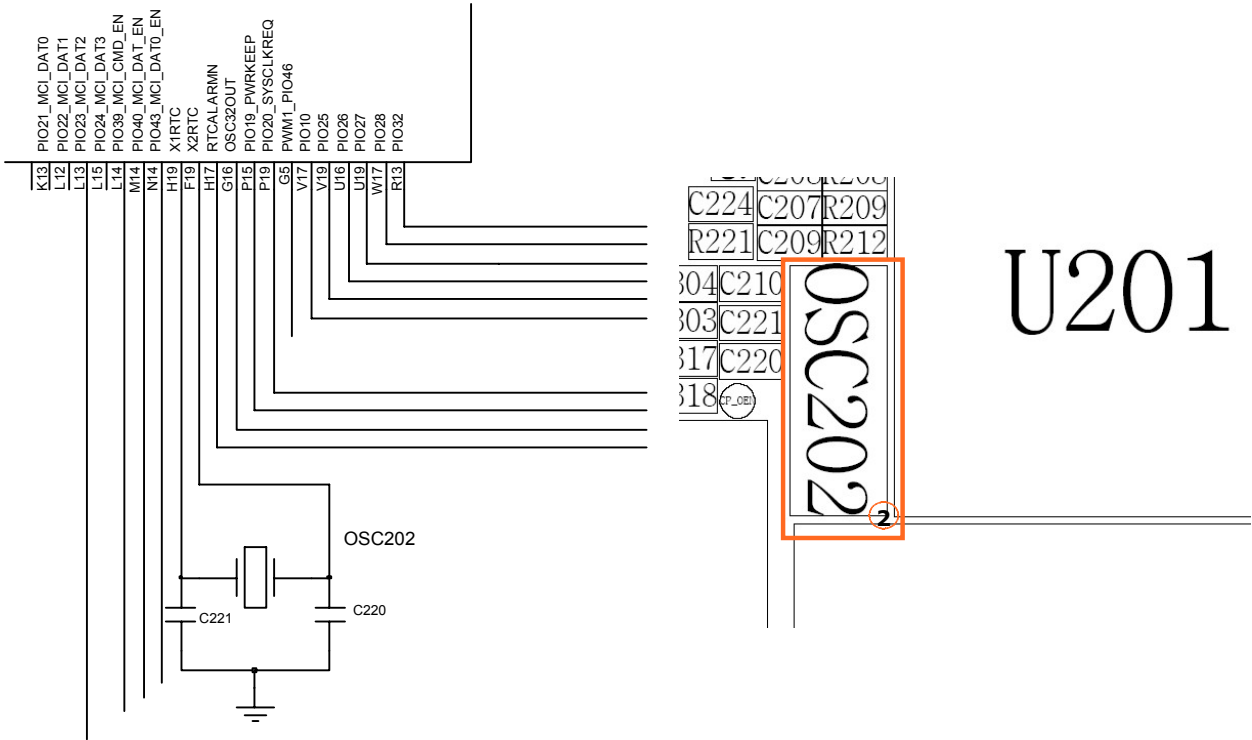


### 2-1-2. Initial

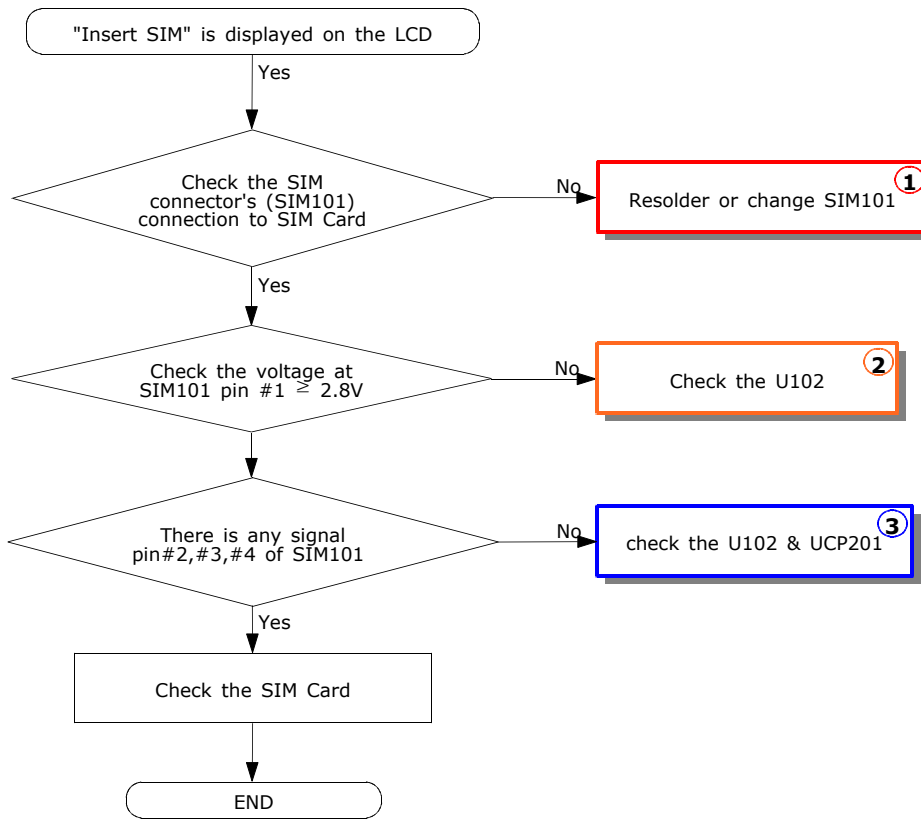


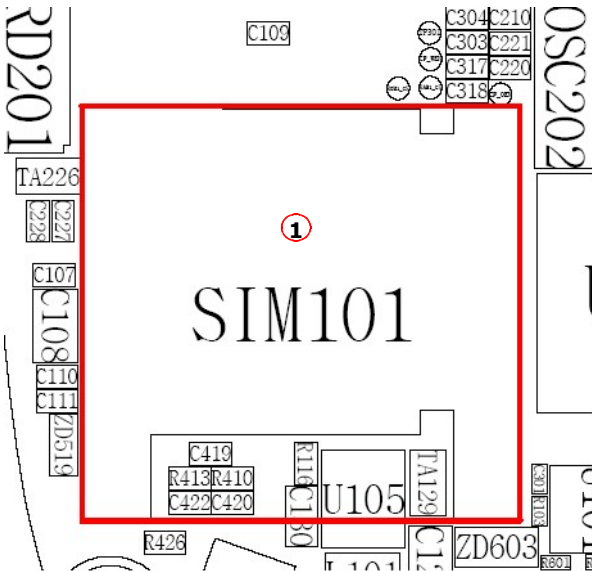
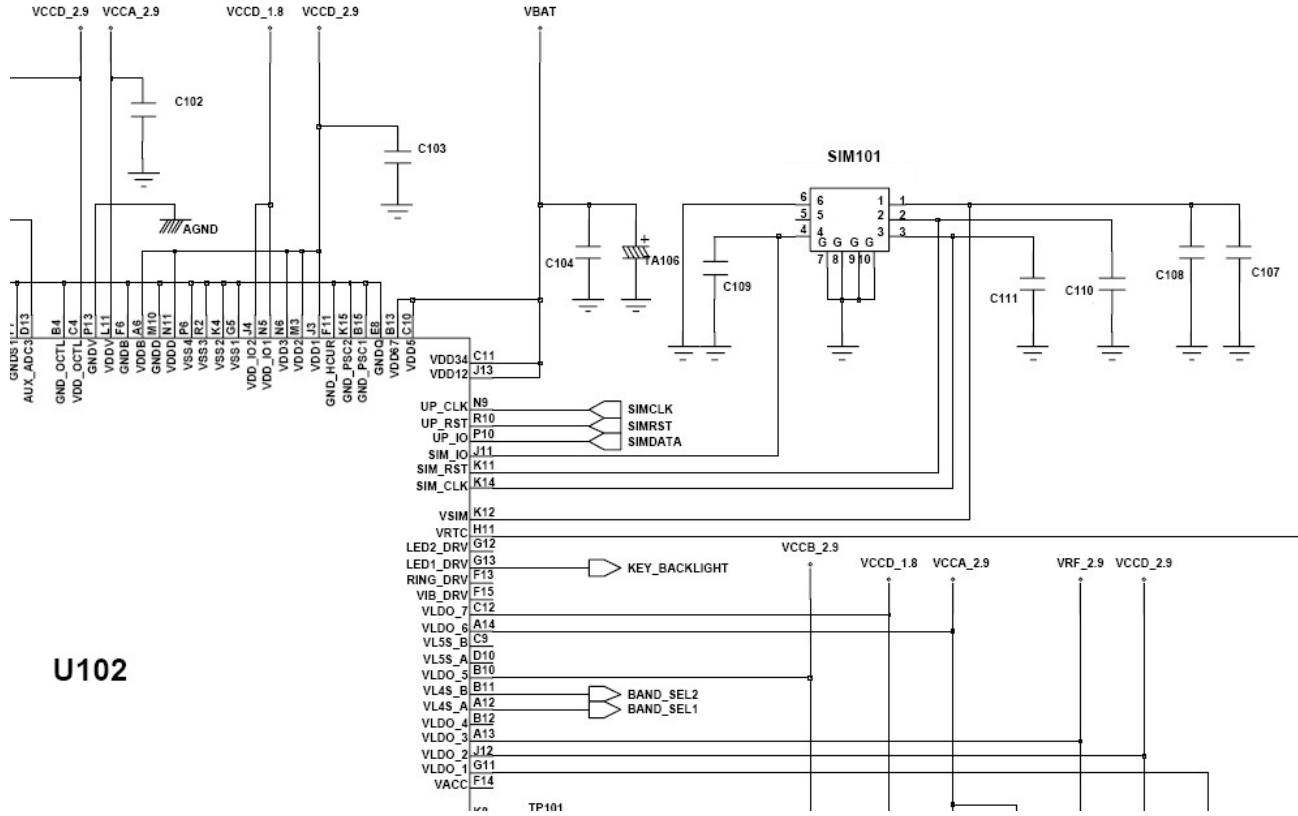






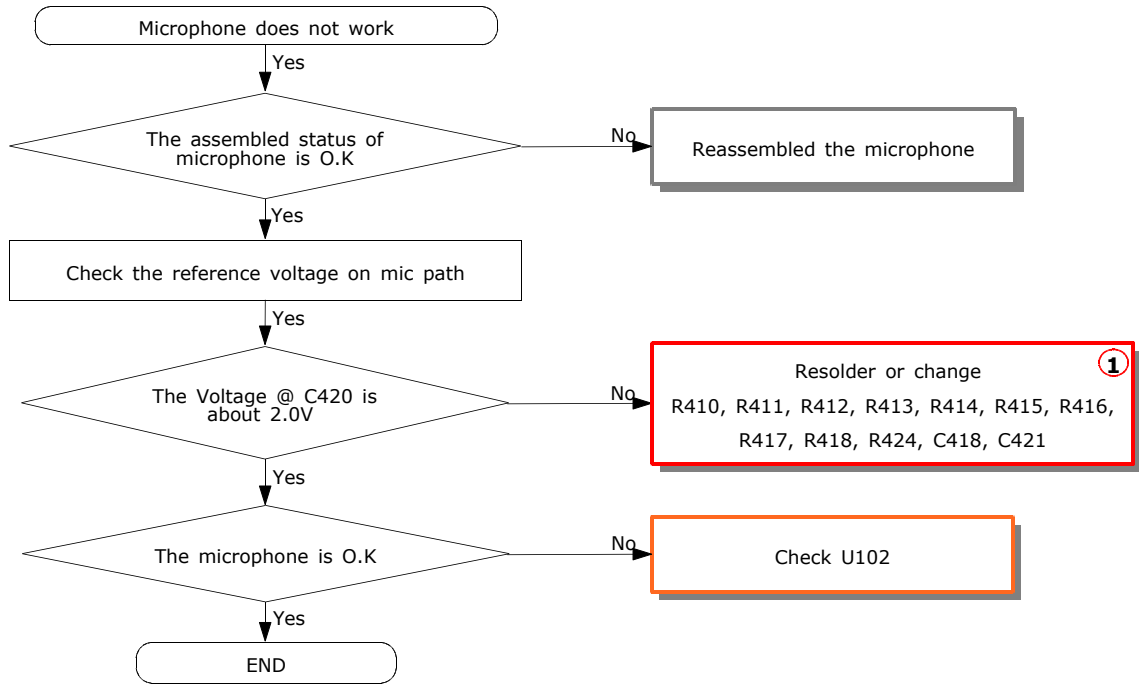
### 2-1-3. Sim Part

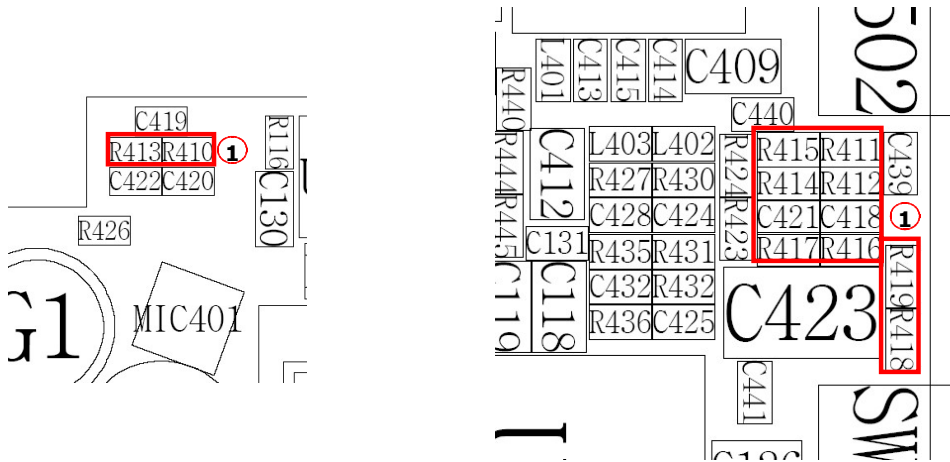
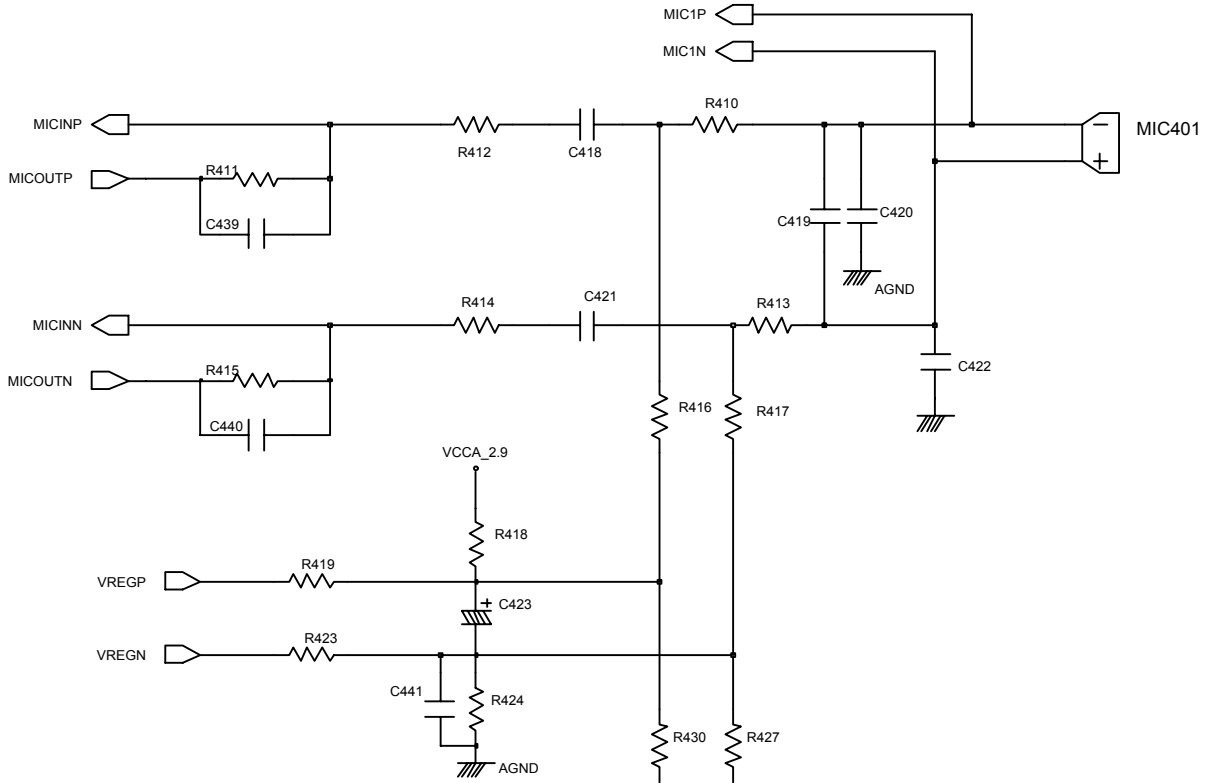




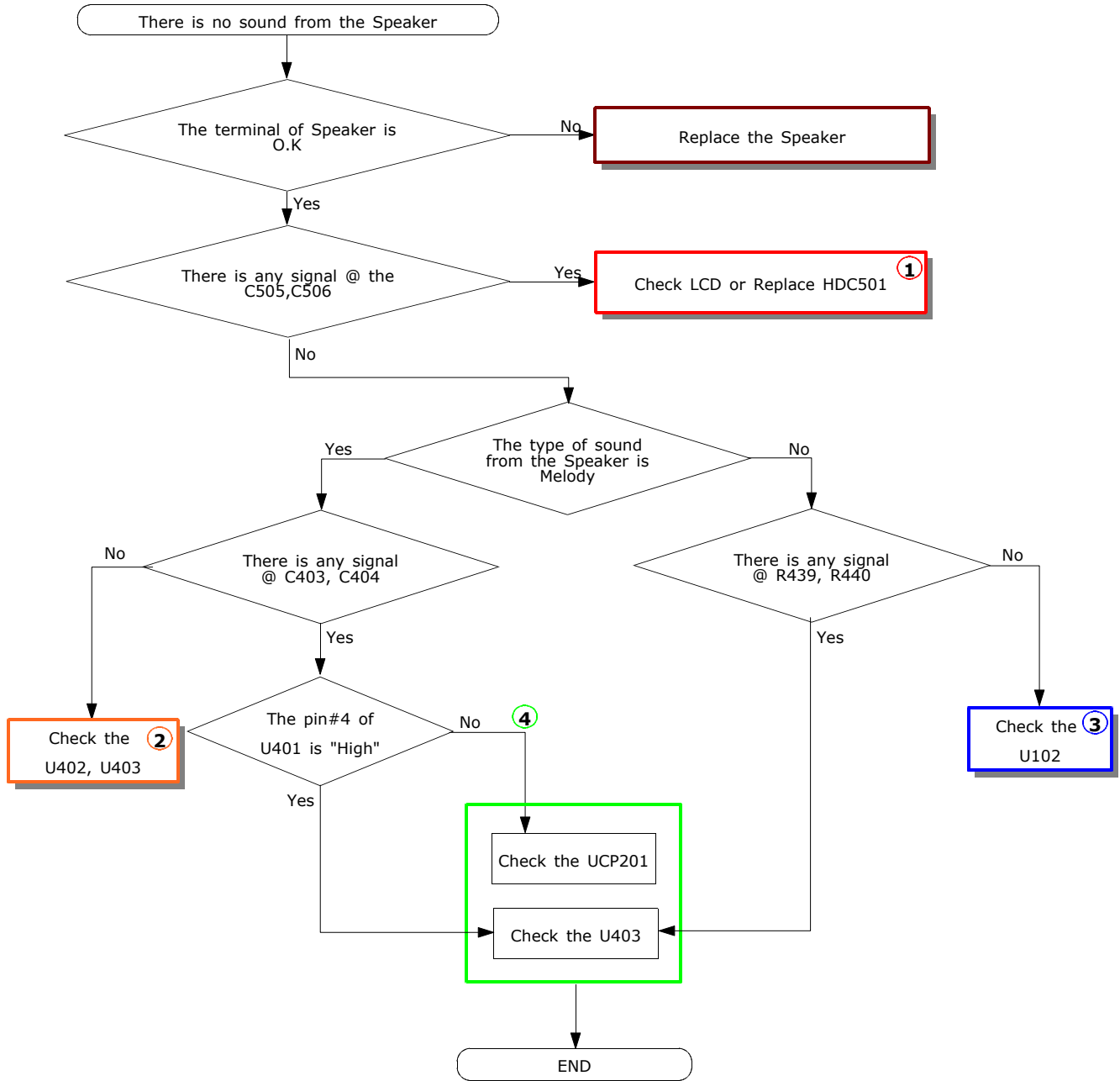


### 2-1-4. Microphone Part





### 2-1-5. Speaker Part

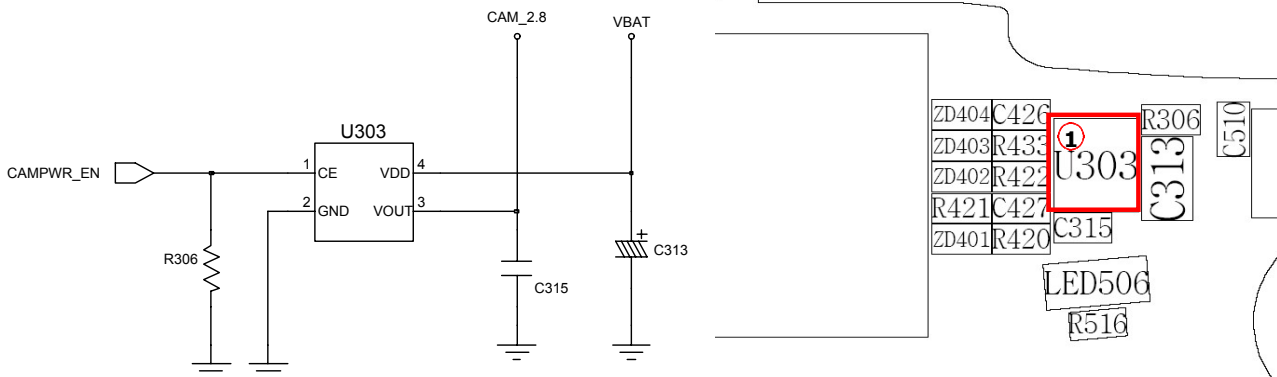
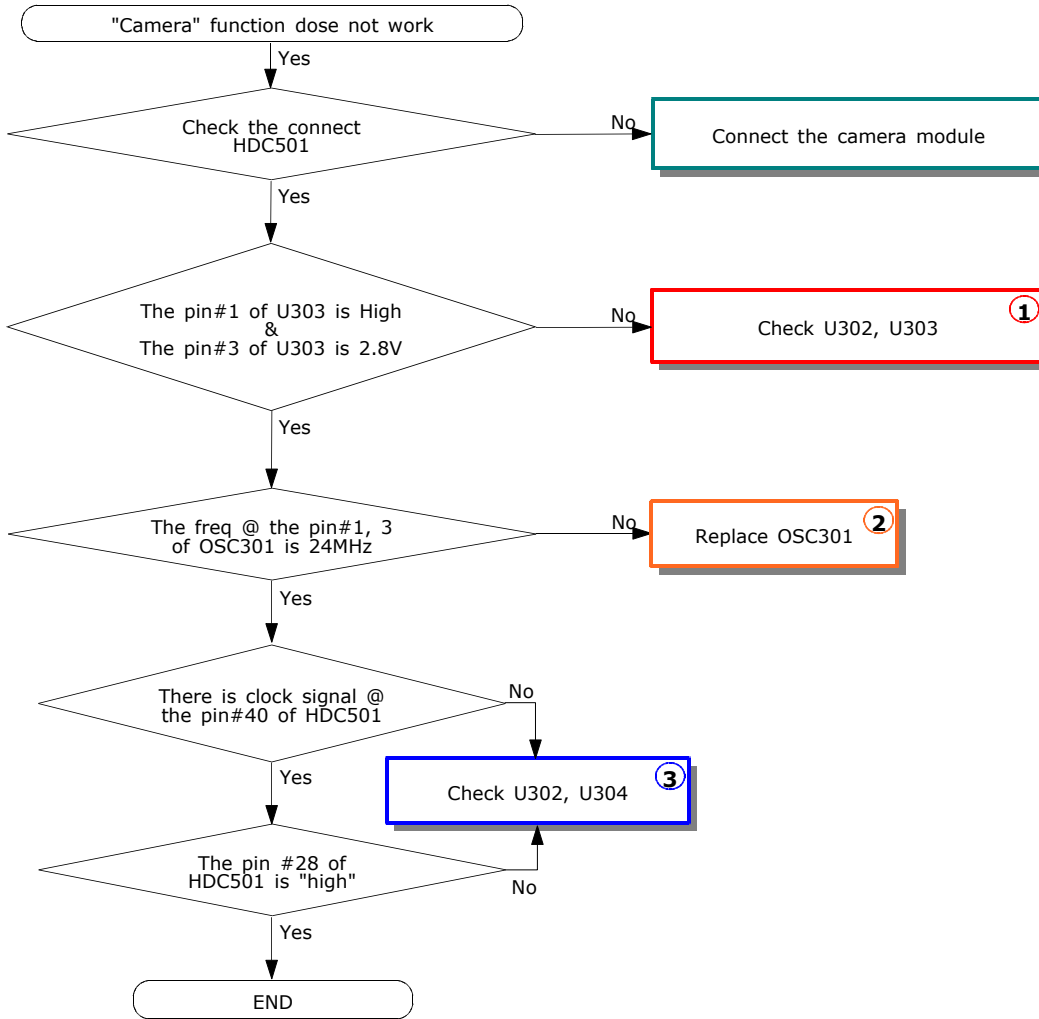


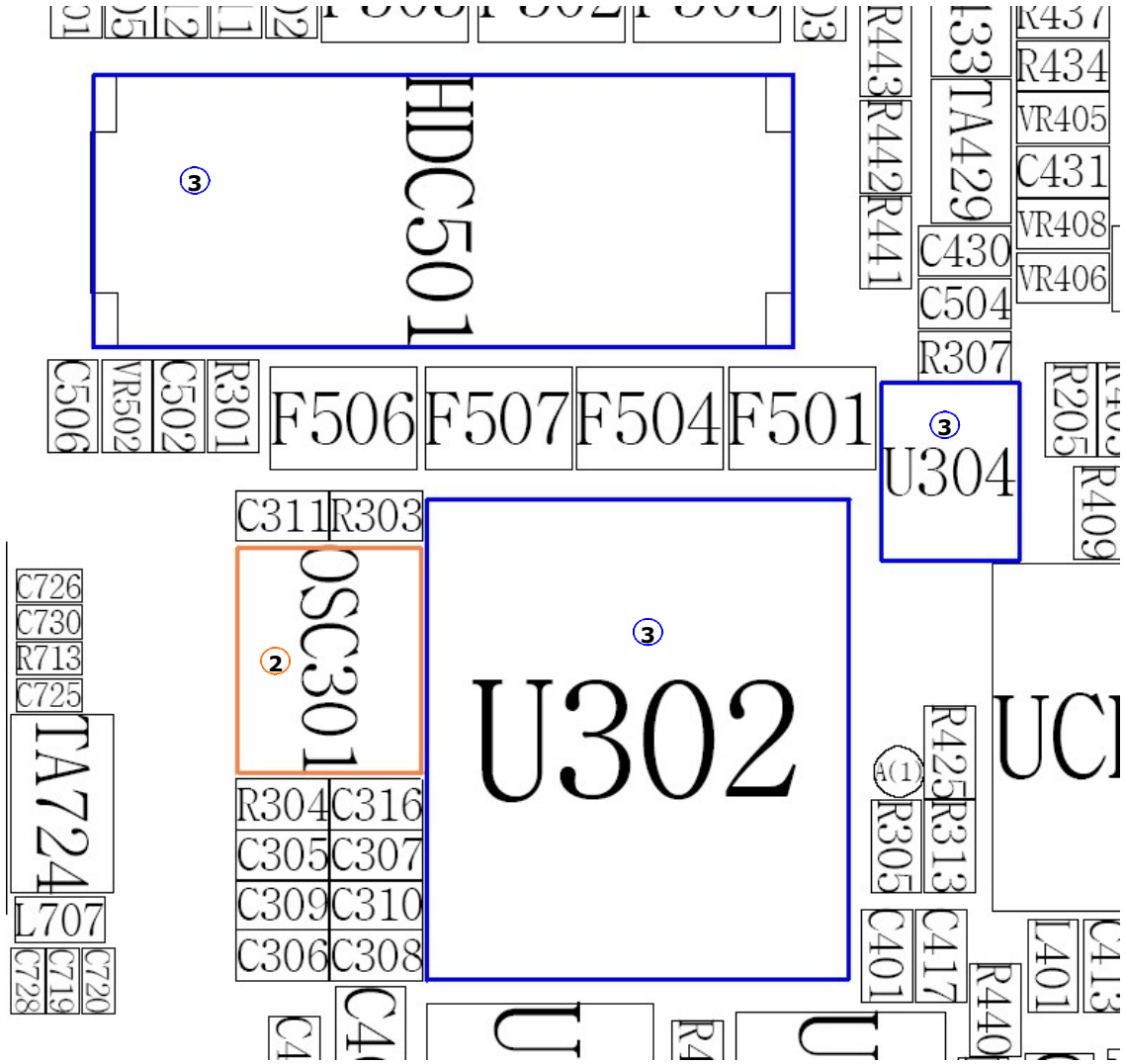






### 2-1-6. Camera Part

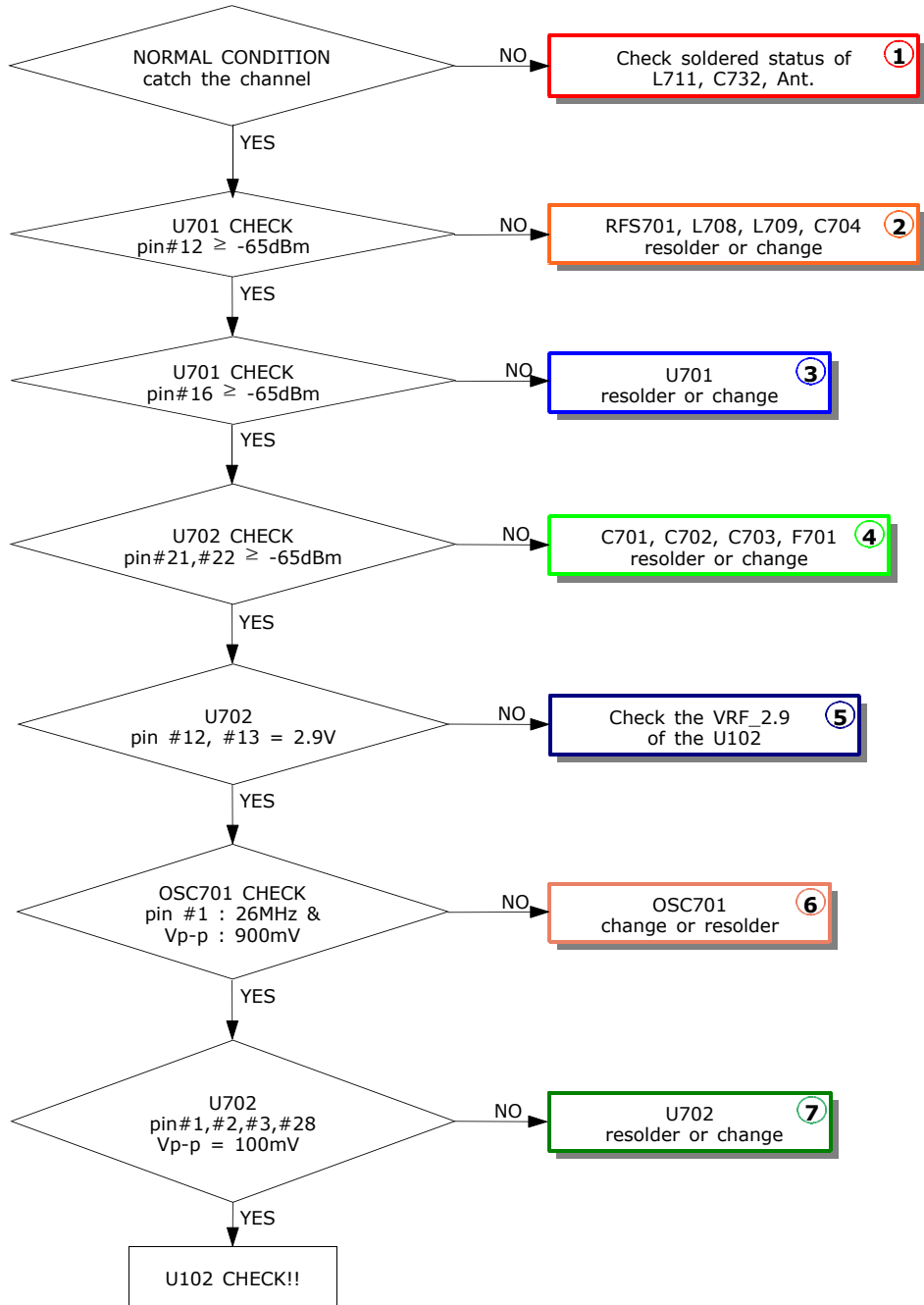




## 2-2.RF

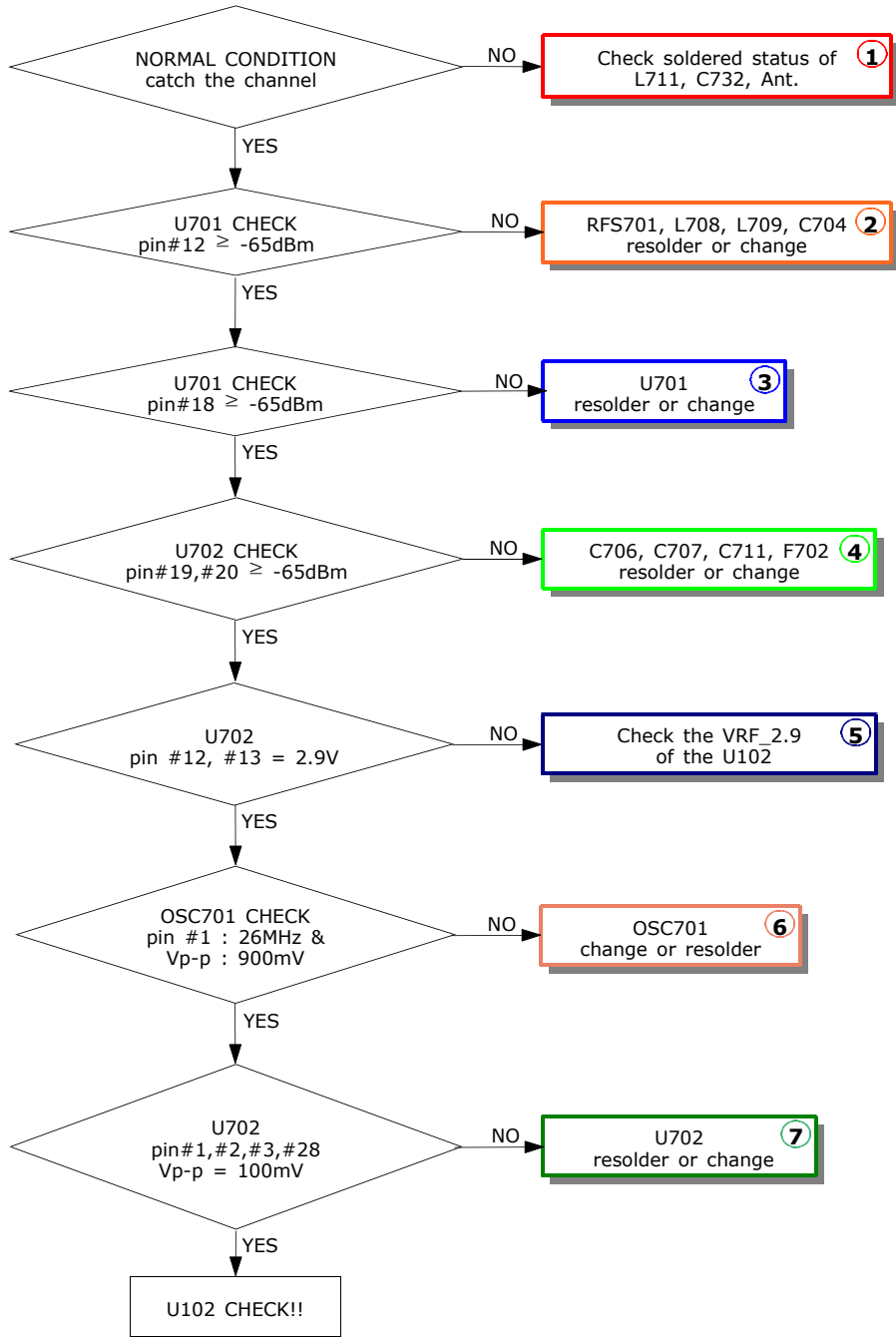
### 2-2-1. EGSM RX

CONTINUOUS RX ON  
RF INPUT : 62CH  
AMP : -50dBm



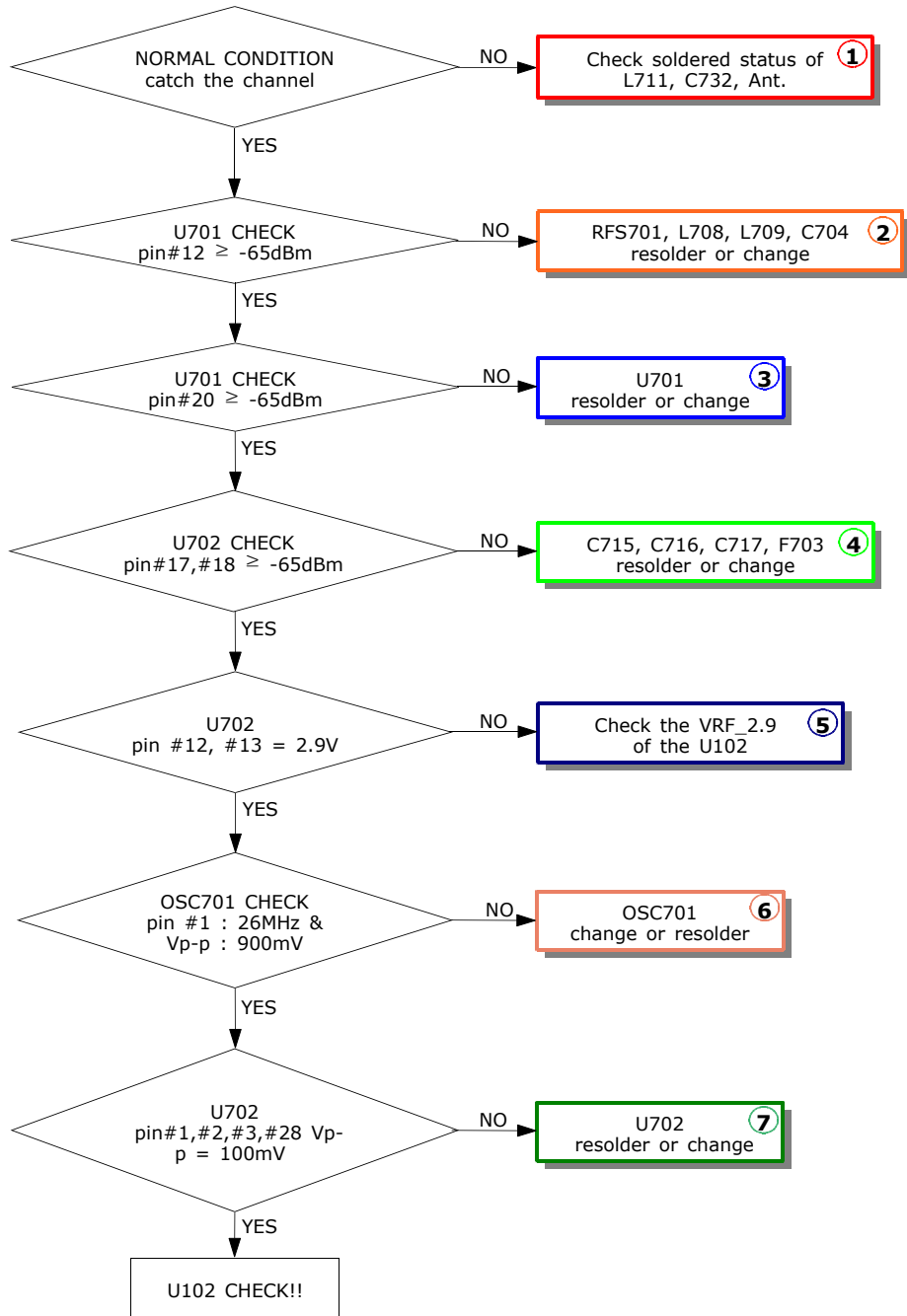
2-2-2. DCS RX

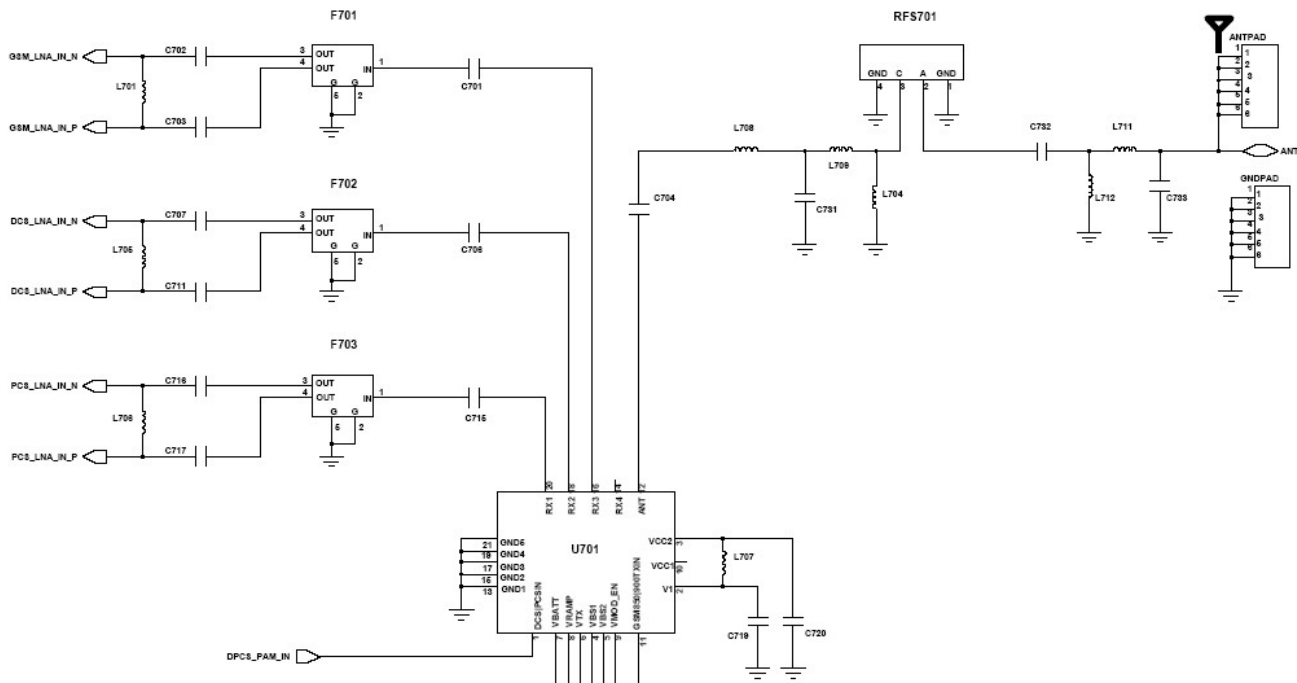
CONTINUOUS RX ON  
RF INPUT : 660CH  
AMP : -50dBm



2-2-3. PCS RX

CONTINUOUS RX ON  
 RF INPUT : 660CH  
 AMP : -50dBm

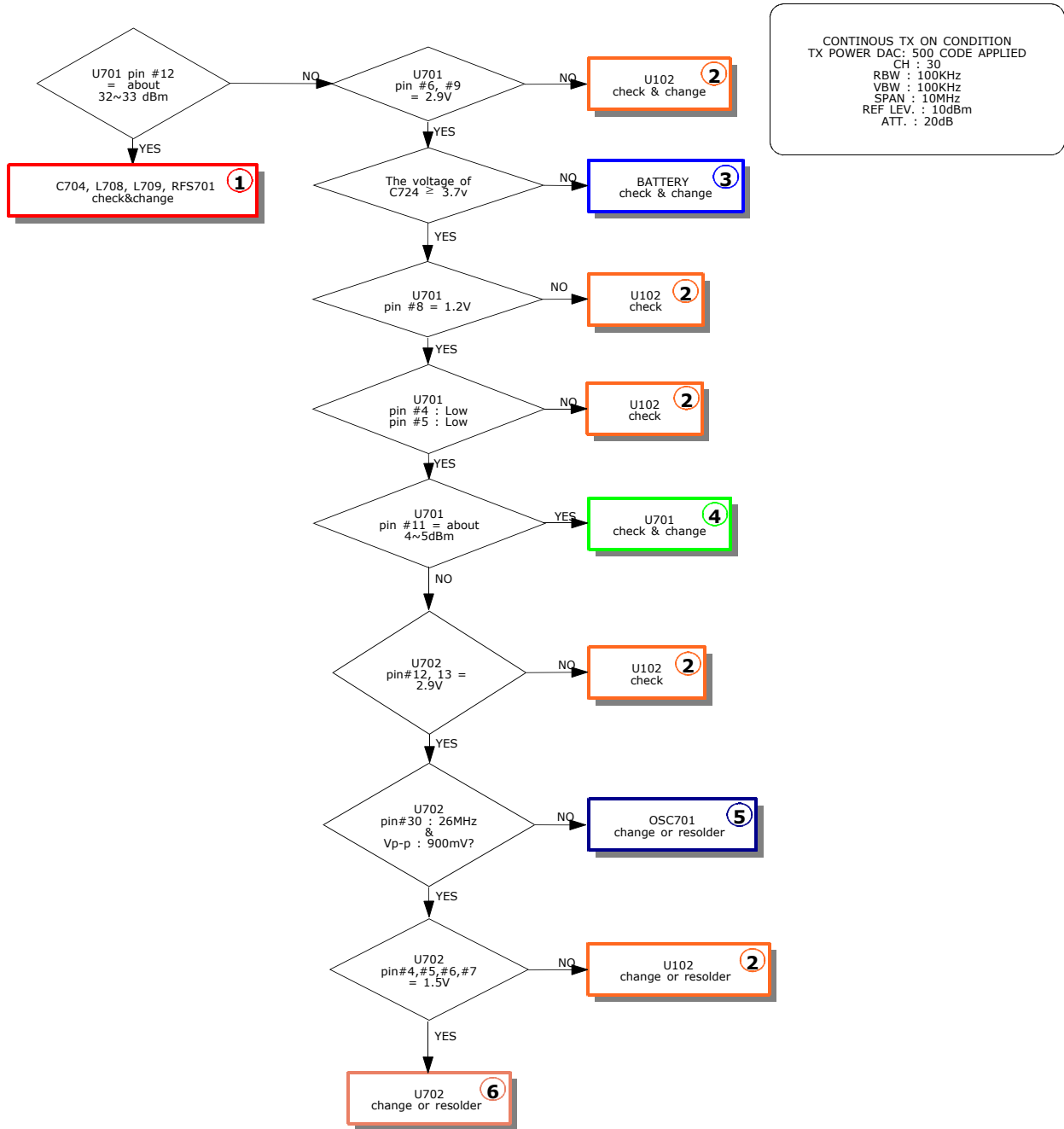




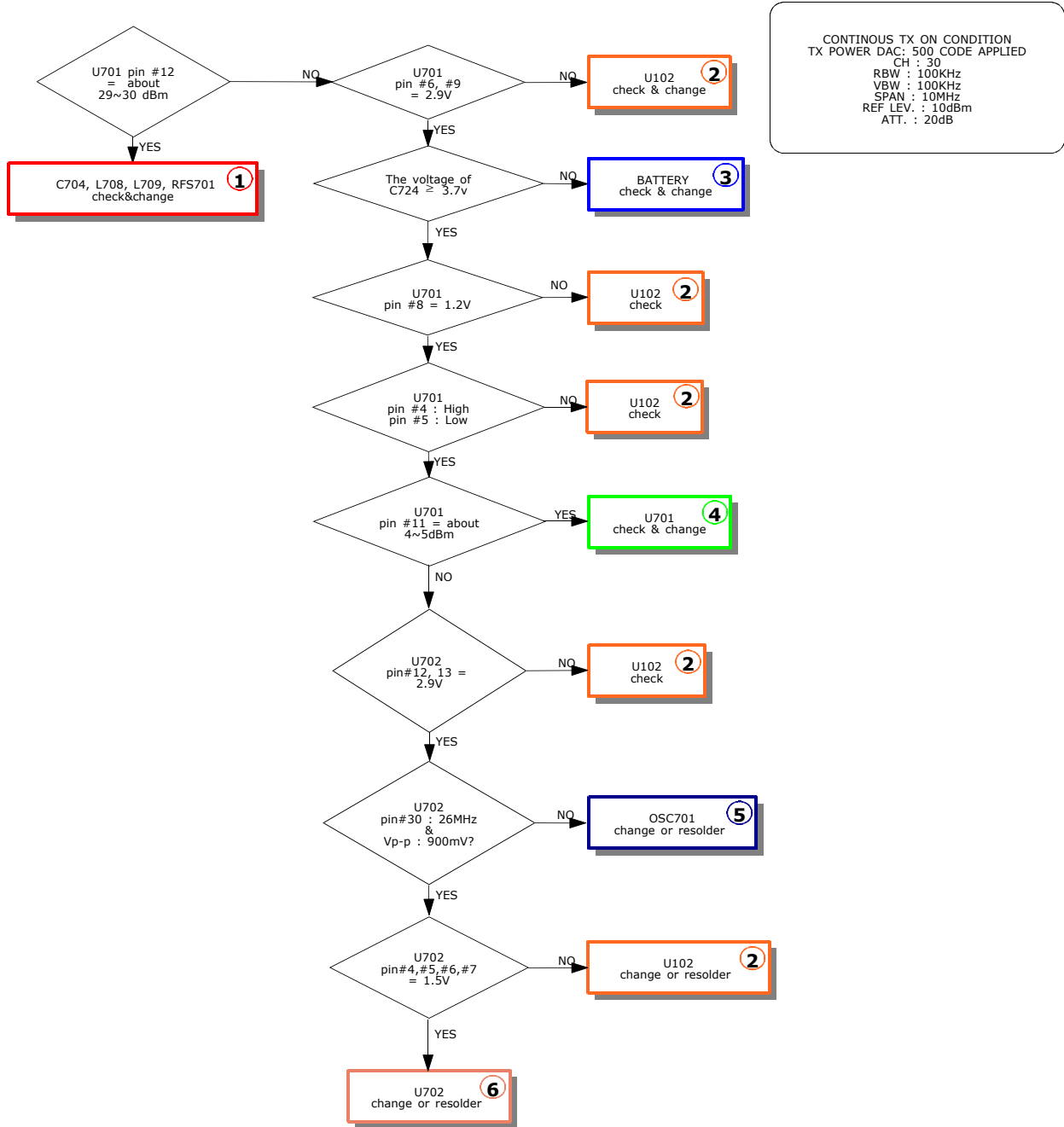


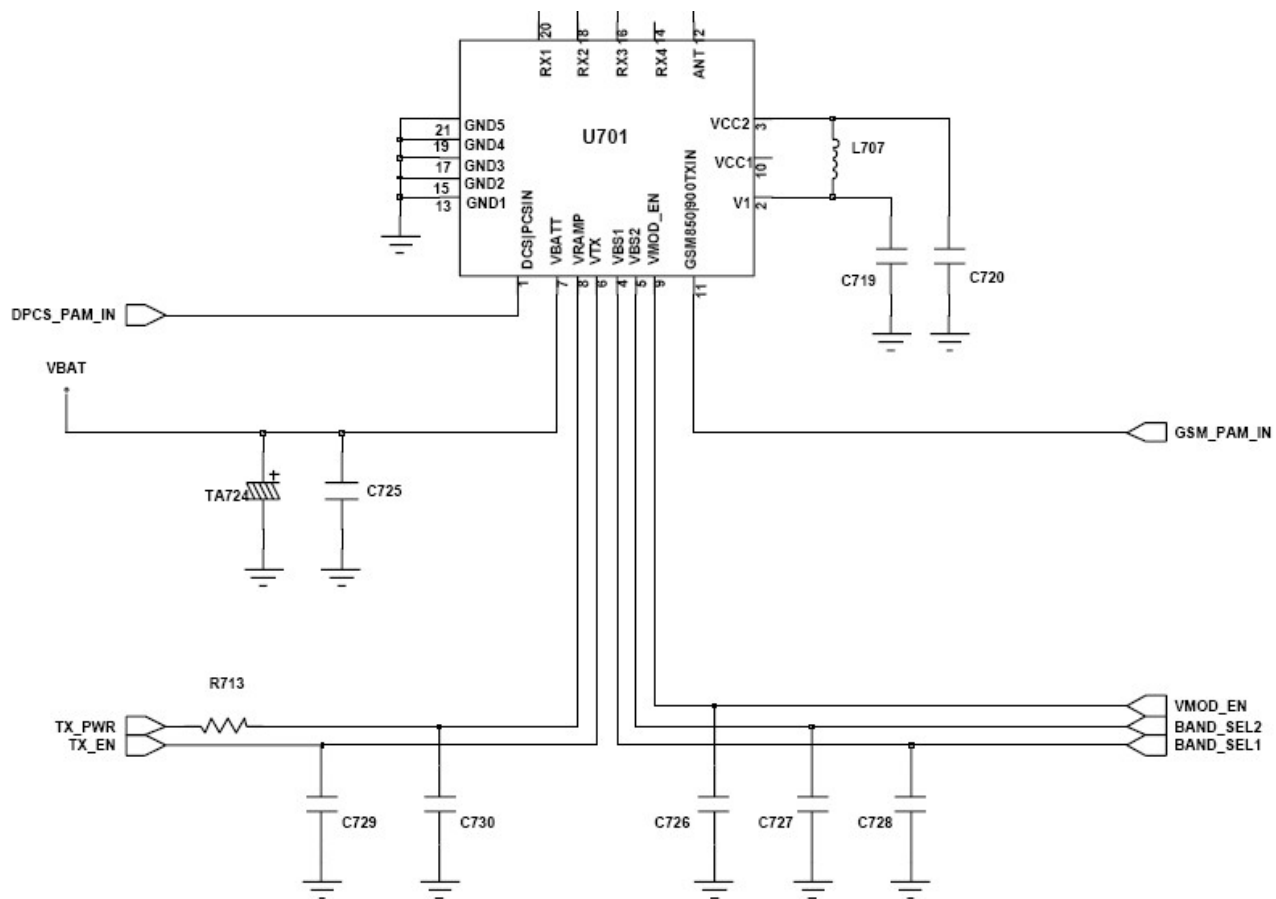


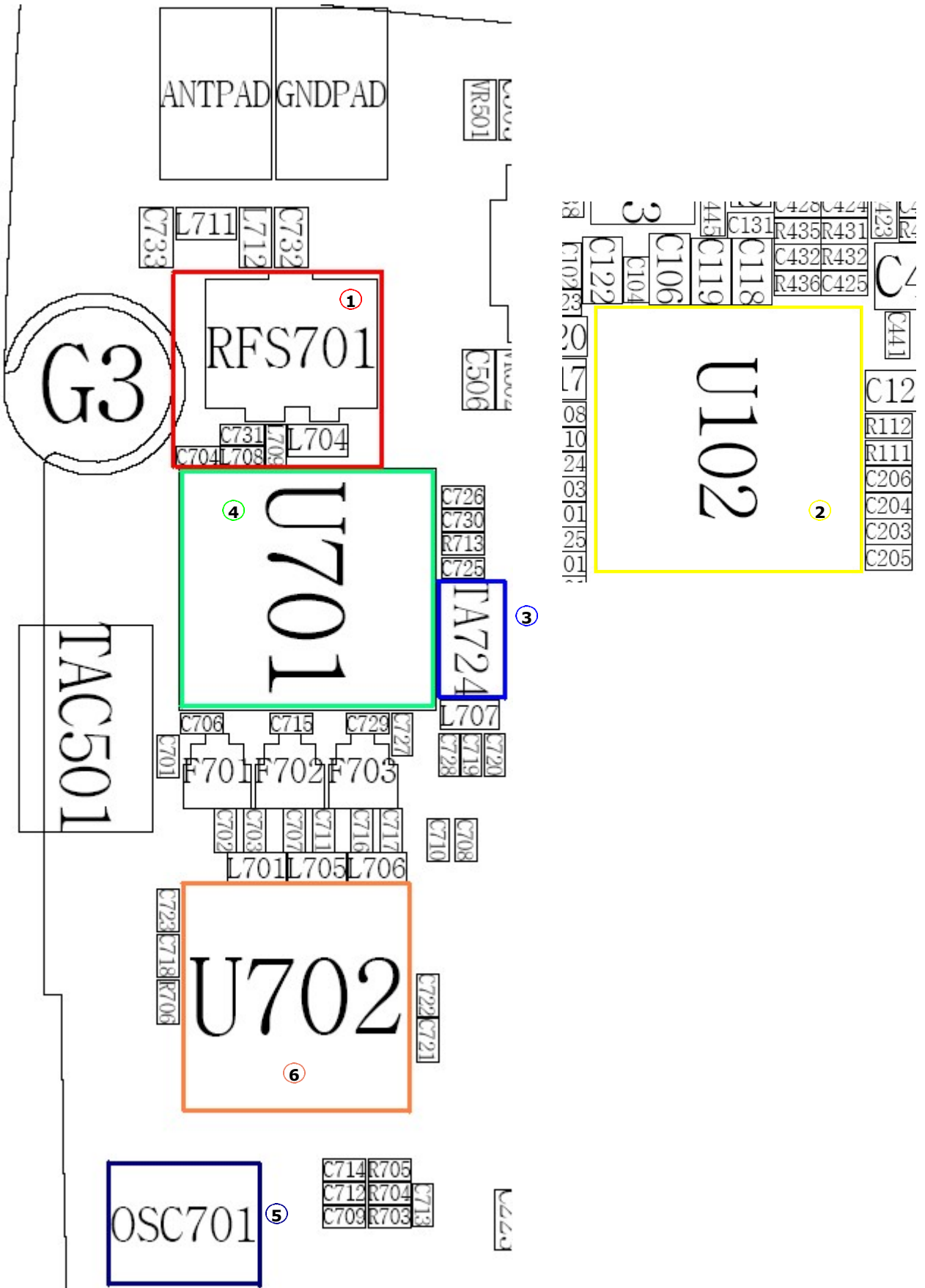
### 2-2-4. EGSM TX



2-2-5. DCS/PCS TX

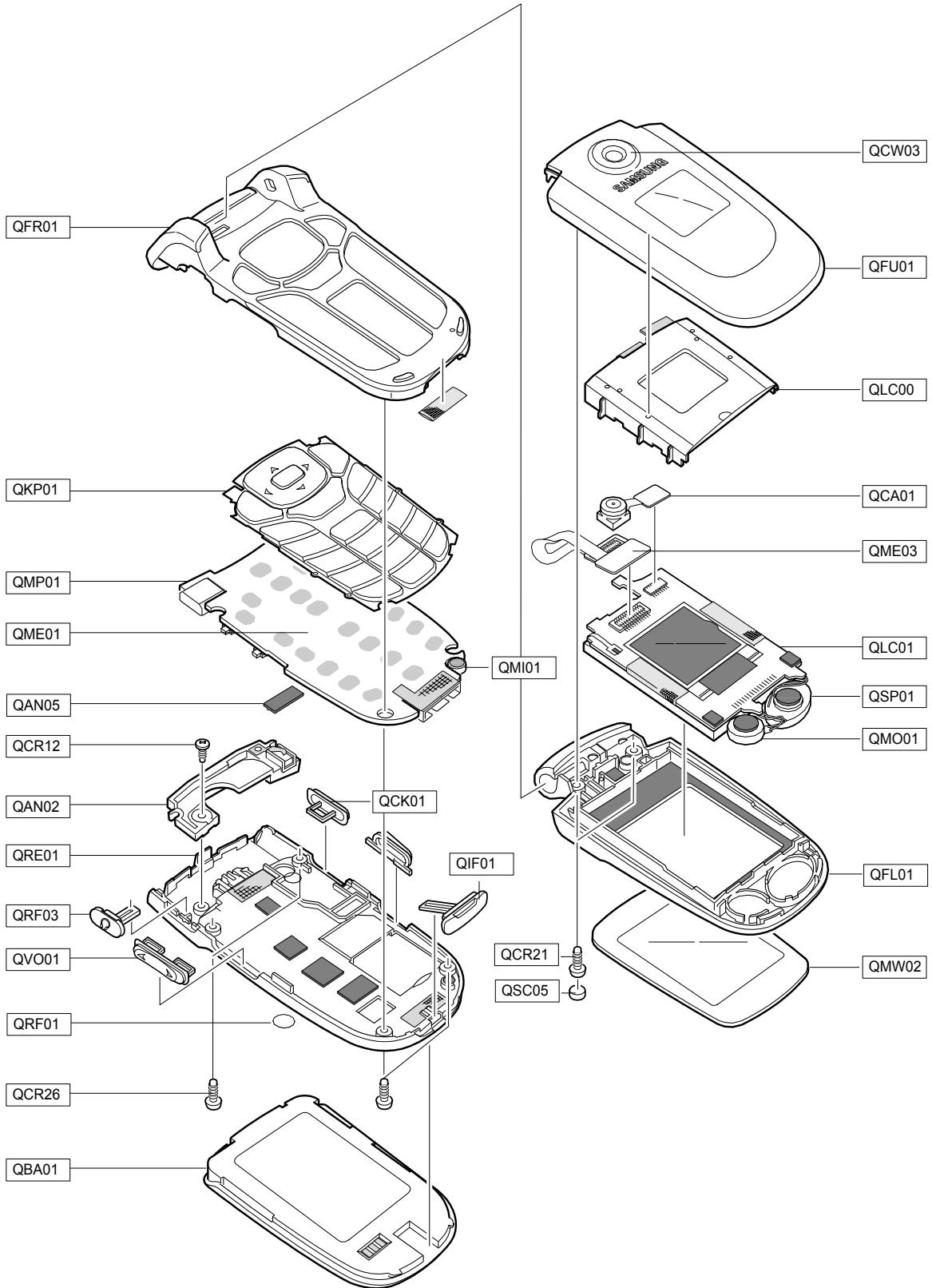






# 3. SGH-X660 Exploded View and Parts List

## 3-1. Cellular phone Exploded View



**3-2. Cellular phone Parts list**

| Location NO. |       | Description             | SEC CODE    |
|--------------|-------|-------------------------|-------------|
| QAN02        |       | INTENNA-SGHX660         | GH42-00658A |
| QAN05        |       | MEC-INTENNA CONTACT     | GH75-08168A |
| QBA01        |       | BATTERY-800MAH,BLK,EU,M | GH43-02061A |
| QCA01        |       | UNIT-CAMERA             | GH59-02307A |
| QCK01        |       | MEC-CAMERA KEY          | GH75-07566A |
| QCR12        |       | SCREW-MACHINE           | 6001-001530 |
| QCR21        |       | SCREW-MACHINE           | 6001-001507 |
| QCR26        |       | SCREW-MACHINE           | 6001-001850 |
| QFL01        |       | MEC-F/LOWER SUB         | GH75-07568A |
| QFR01        |       | MEC-FRONT SUB           | GH75-07569A |
| QIF01        |       | PMO-IF COVER V2         | GH72-24261A |
| QKP01        |       | MEC-KEYPAD              | GH75-07571A |
| QLC01        |       | LCD-SGHX660 MODULE      | GH07-00757A |
| QME01        |       | UNIT-METAL DOME         | GH59-02312A |
| QME03        |       | UNIT-CON TO CON ASSY    | GH59-02473A |
| QMI01        |       | MICROPHONE-ASSY-5.25MM  | GH30-00177C |
| QMO01        |       | MOTOR DC-SGHZ130        | GH31-00154A |
| QMP01        |       | PBA MAIN-SGHX660        | GH92-02278A |
| QMW02        |       | PMO-MAIN WINDOW         | GH72-23495A |
| QRF01        |       | MPR-TAPE RF SHEET       | GH74-16248A |
| QSC05        |       | PMO-FOLDER SCREW CAP    | GH72-23496A |
| QSP01        |       | SPEAKER                 | 3001-001819 |
| QVO01        |       | MEC-VOLUME KEY          | GH75-07572A |
| QRE01        |       | MEC-REAR SUB            | GH75-07564A |
|              | QRF03 | PMO-EAR JACK COVER      | GH72-23501A |
| QFU01        |       | MEC-F/UPPER SUB         | GH75-07565A |
|              | QCW03 | MEC-CAMERA RING         | GH75-07570A |
|              | QLC00 | NDC-LCD BRACKET         | GH71-05444A |

| Description              | SEC CODE    |
|--------------------------|-------------|
| BAG PE                   | 6902-000297 |
| ADAPTOR-SGHD500 BLK      | GH44-00954A |
| UNIT-EARPHONE            | GH59-02554A |
| LABEL(P)-WATER SOAK      | GH68-02026A |
| MANUAL-WEEE CARD         | GH68-07013A |
| MANUAL-USER              | GH68-07972A |
| LABEL(R)-MAIN (EU)       | GH68-08139A |
| CUSHION-CASE TA2 MA2     | GH69-03240A |
| BOX(P)-UNIT MAIN(EU)     | GH69-03259A |
| IPR-LOCKER SPRING        | GH70-10633A |
| PMO-BATT LOCKER          | GH72-23498A |
| MPR-BOHO VINYL LCD CONN  | GH74-15350A |
| MPR-BOHO VINYL F/U B     | GH74-16237A |
| MPR-SPONGE MOTOR         | GH74-16246A |
| MPR-SPONGE SPEAK         | GH74-16247A |
| MPR-BOHO VINYL MAIN WIN  | GH74-16249A |
| MPR-TAPE DUST PREVENTION | GH74-16258A |
| MPR-SPONGE LCD SIDE      | GH74-17618A |
| MPR-TAPE LCD DUST        | GH74-17619A |
| MPR-GASKET PBA A         | GH74-17623A |
| MPR-GASKET PBA B         | GH74-17624A |
| MPR-TAPE PBA ESD         | GH74-17625A |

### 3-3. Test Jig (GH80-03307A)



#### 3-3-1. RF Test Cable (GH39-00397A)



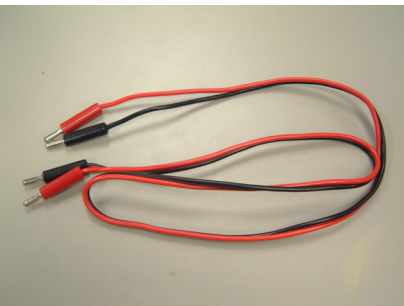
#### 3-3-2. Logic Test Cable (GH39-00369A)



#### 3-3-3. Serial Cable



#### 3-3-4. Power Supply Cable



#### 3-3-5. DATA Link CABLE (GH39-00331A)



#### 3-3-6. TA (GH44-00954A)





## 4. SGH-X660 MAIN Electrical Parts List

| SEC Code    | Description | Design LOC | STATUS |
|-------------|-------------|------------|--------|
| 0403-001427 | DIODE-ZENER | ZD603      | SA     |
| 0403-001547 | DIODE-ZENER | ZD601      | SA     |
| 0406-001203 | DIODE-TVS   | ZD519      | SA     |
| 0406-001208 | DIODE-TVS   | ZD604      | SA     |
| 0406-001208 | DIODE-TVS   | ZD605      | SA     |
| 0504-000168 | TR-DIGITAL  | TR106      | SA     |
| 0601-002053 | LED         | LED501     | SA     |
| 0601-002053 | LED         | LED502     | SA     |
| 0601-002053 | LED         | LED503     | SA     |
| 0601-002053 | LED         | LED504     | SA     |
| 0601-002053 | LED         | LED505     | SA     |
| 0601-002053 | LED         | LED506     | SA     |
| 0601-002053 | LED         | LED507     | SA     |
| 0601-002053 | LED         | LED508     | SA     |
| 0601-002053 | LED         | LED509     | SA     |
| 0601-002053 | LED         | LED510     | SA     |
| 0601-002053 | LED         | LED511     | SA     |
| 0601-002053 | LED         | LED512     | SA     |
| 0601-002053 | LED         | LED513     | SA     |
| 0601-002053 | LED         | LED514     | SA     |
| 0601-002053 | LED         | LED515     | SA     |
| 0601-002053 | LED         | LED516     | SA     |
| 0601-002053 | LED         | LED517     | SA     |
| 0601-002053 | LED         | LED518     | SA     |
| 0604-001291 | PHOTO-IRDA  | IRD201     | SA     |
| 0801-002529 | IC          | U103       | SA     |
| 0801-002975 | IC          | U304       | SA     |
| 1001-001306 | IC          | U403       | SA     |
| 1002-001441 | IC          | UCD402     | SA     |
| 1009-001010 | IC          | U204       | SA     |
| 1108-000036 | MEMORY      | UME301     | SA     |
| 1201-002240 | IC          | U401       | SA     |
| 1201-002278 | IC          | U701       | SA     |

| <b>SEC Code</b> | <b>Discription</b> | <b>Design LOC</b> | <b>STATUS</b> |
|-----------------|--------------------|-------------------|---------------|
| 1203-002557     | IC                 | U502              | SA            |
| 1203-003058     | IC                 | U501              | SA            |
| 1203-003109     | IC                 | U101              | SA            |
| 1203-003434     | IC                 | U105              | SA            |
| 1203-003585     | IC                 | U303              | SA            |
| 1203-003920     | IC                 | U102              | SA            |
| 1205-002272     | IC                 | U202              | SA            |
| 1205-002683     | IC                 | U702              | SA            |
| 1404-001165     | THERMISTOR         | TH101             | SA            |
| 1405-001082     | VARISTOR           | VR201             | SA            |
| 1405-001082     | VARISTOR           | VR401             | SA            |
| 1405-001082     | VARISTOR           | VR402             | SA            |
| 1405-001082     | VARISTOR           | VR403             | SA            |
| 1405-001082     | VARISTOR           | VR404             | SA            |
| 1405-001082     | VARISTOR           | VR405             | SA            |
| 1405-001082     | VARISTOR           | VR406             | SA            |
| 1405-001082     | VARISTOR           | VR407             | SA            |
| 1405-001082     | VARISTOR           | VR408             | SA            |
| 1405-001082     | VARISTOR           | VR602             | SA            |
| 1405-001082     | VARISTOR           | VR603             | SA            |
| 1405-001108     | VARISTOR           | VR501             | SA            |
| 1405-001108     | VARISTOR           | VR502             | SA            |
| 1405-001108     | VARISTOR           | VR505             | SA            |
| 1405-001108     | VARISTOR           | VR506             | SA            |
| 1405-001108     | VARISTOR           | VR507             | SA            |
| 1405-001108     | VARISTOR           | VR508             | SA            |
| 1405-001108     | VARISTOR           | VR509             | SA            |
| 1405-001108     | VARISTOR           | VR510             | SA            |
| 1405-001108     | VARISTOR           | VR511             | SA            |
| 1405-001108     | VARISTOR           | VR515             | SA            |
| 1405-001108     | VARISTOR           | VR516             | SA            |
| 1405-001108     | VARISTOR           | VR517             | SA            |
| 1405-001108     | VARISTOR           | VR518             | SA            |

| <b>SEC Code</b> | <b>Discription</b> | <b>Design LOC</b> | <b>STATUS</b> |
|-----------------|--------------------|-------------------|---------------|
| 2007-000137     | R-CHIP             | R409              | SA            |
| 2007-000138     | R-CHIP             | R108              | SA            |
| 2007-000138     | R-CHIP             | R112              | SA            |
| 2007-000139     | R-CHIP             | R215              | SA            |
| 2007-000139     | R-CHIP             | R216              | SA            |
| 2007-000139     | R-CHIP             | R418              | SA            |
| 2007-000141     | R-CHIP             | R416              | SA            |
| 2007-000141     | R-CHIP             | R417              | SA            |
| 2007-000141     | R-CHIP             | R427              | SA            |
| 2007-000141     | R-CHIP             | R430              | SA            |
| 2007-000142     | R-CHIP             | R102              | SA            |
| 2007-000143     | R-CHIP             | R301              | SA            |
| 2007-000143     | R-CHIP             | R302              | SA            |
| 2007-000146     | R-CHIP             | R203              | SA            |
| 2007-000146     | R-CHIP             | R402              | SA            |
| 2007-000146     | R-CHIP             | R403              | SA            |
| 2007-000148     | R-CHIP             | R401              | SA            |
| 2007-000148     | R-CHIP             | R406              | SA            |
| 2007-000148     | R-CHIP             | R407              | SA            |
| 2007-000157     | R-CHIP             | R116              | SA            |
| 2007-000157     | R-CHIP             | R213              | SA            |
| 2007-000157     | R-CHIP             | R446              | SA            |
| 2007-000157     | R-CHIP             | R502              | SA            |
| 2007-000157     | R-CHIP             | R505              | SA            |
| 2007-000159     | R-CHIP             | R411              | SA            |
| 2007-000159     | R-CHIP             | R415              | SA            |
| 2007-000162     | R-CHIP             | R204              | SA            |
| 2007-000162     | R-CHIP             | R211              | SA            |
| 2007-000162     | R-CHIP             | R212              | SA            |
| 2007-000162     | R-CHIP             | R306              | SA            |
| 2007-000162     | R-CHIP             | R420              | SA            |
| 2007-000162     | R-CHIP             | R421              | SA            |
| 2007-000162     | R-CHIP             | R422              | SA            |

| <b>SEC Code</b> | <b>Discription</b> | <b>Design LOC</b> | <b>STATUS</b> |
|-----------------|--------------------|-------------------|---------------|
| 2007-000170     | R-CHIP             | R304              | SA            |
| 2007-000171     | R-CHIP             | R201              | SA            |
| 2007-000171     | R-CHIP             | R205              | SA            |
| 2007-000171     | R-CHIP             | R206              | SA            |
| 2007-000171     | R-CHIP             | R207              | SA            |
| 2007-000171     | R-CHIP             | R311              | SA            |
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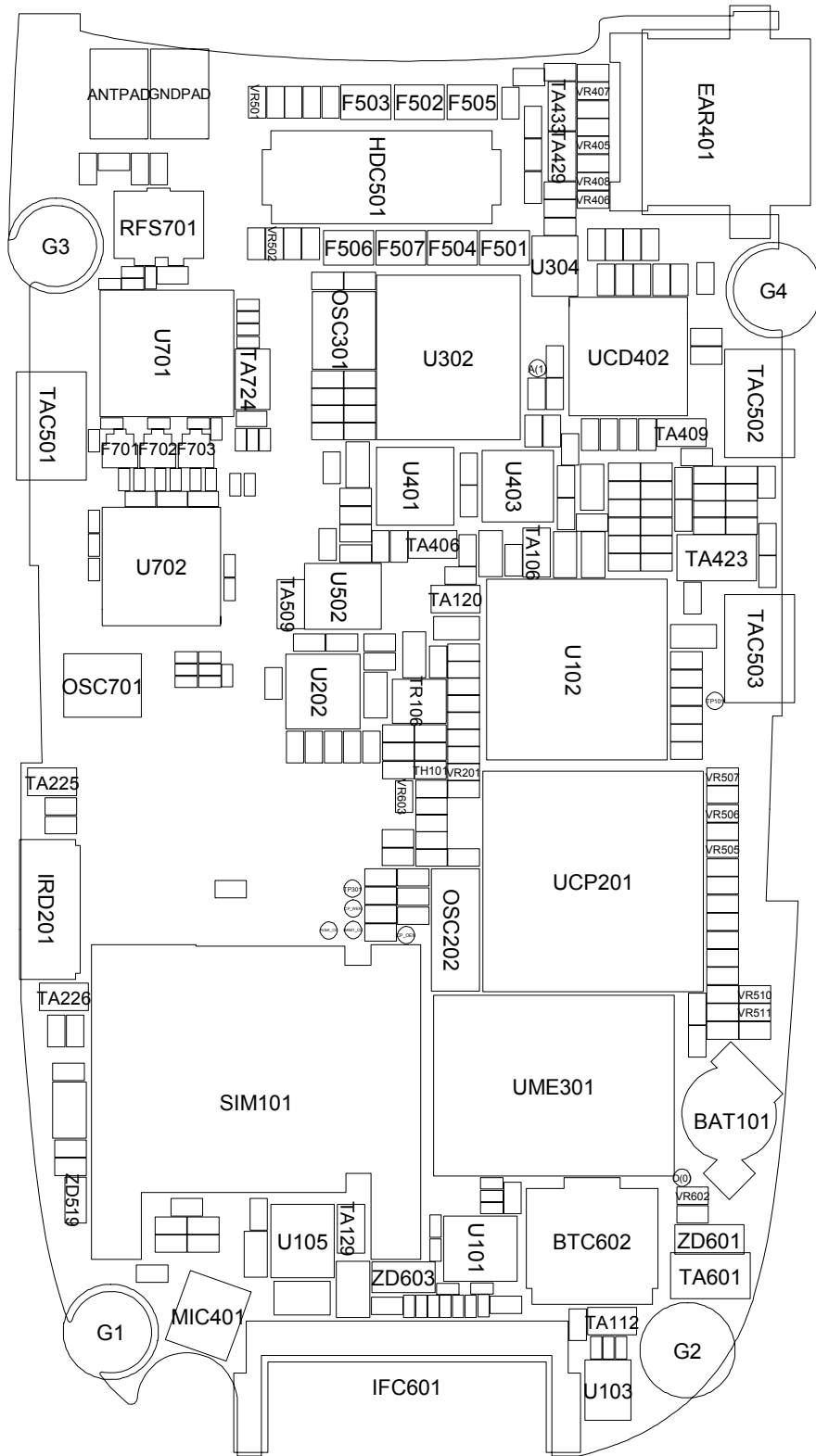
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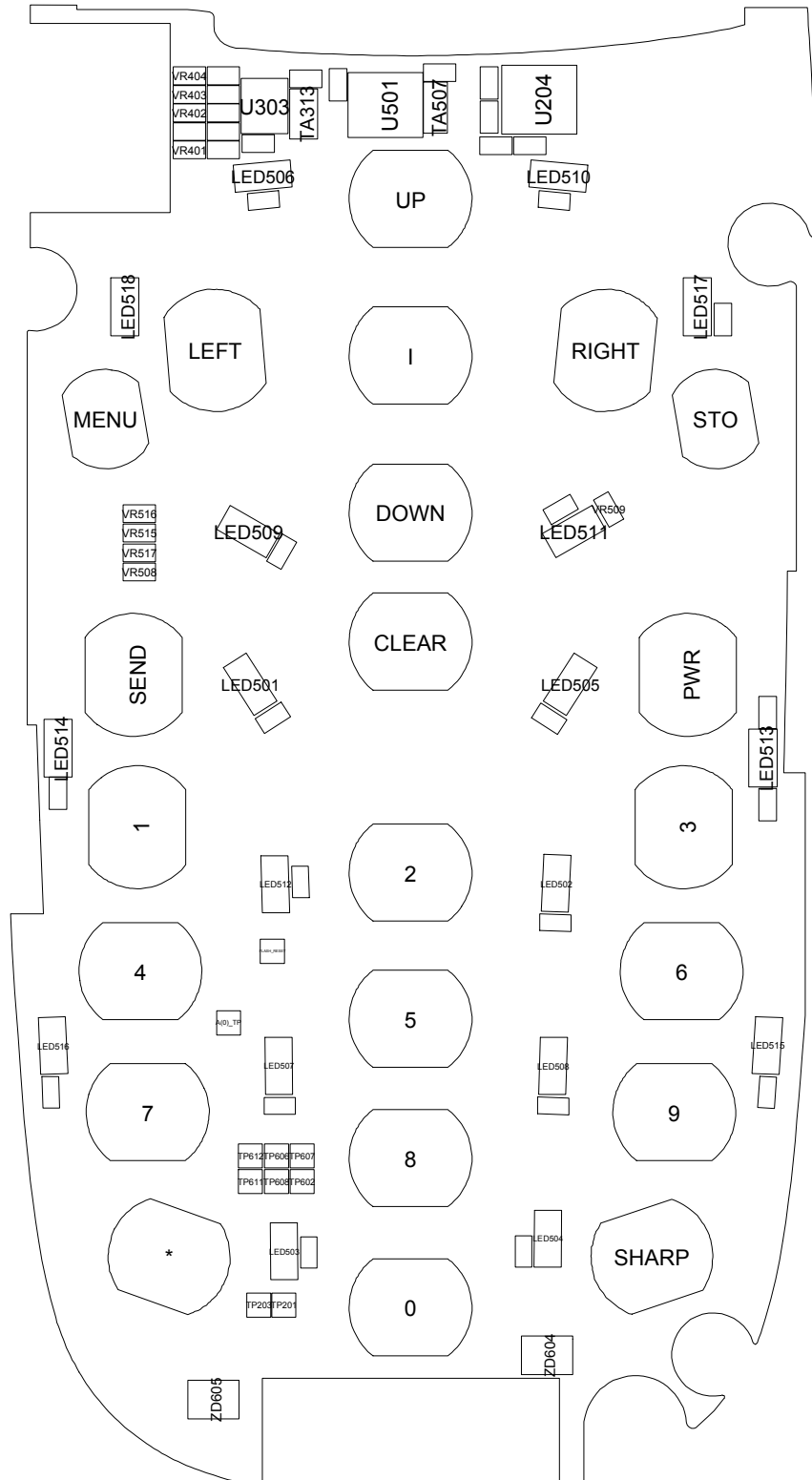
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| 2203-006836     | C-CERAMIC,CHIP     | C130              | SA            |
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| 2404-001225     | C-TA               | TA409             | SA            |
| 2404-001225     | C-TA               | TA429             | SA            |
| 2404-001225     | C-TA               | TA433             | SA            |
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| 2404-001339     | C-TA               | TA507             | SA            |

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| 2404-001394     | C-TA               | TA106             | SA            |
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| 2404-001394     | C-TA               | TA313             | SA            |
| 2404-001394     | C-TA               | TA406             | SA            |
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| 2703-001733     | INDUCTOR-SMD       | L711              | SA            |
| 2703-002313     | INDUCTOR-SMD       | L402              | SA            |
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| 2703-002313     | INDUCTOR-SMD       | L704              | SA            |
| 2703-002485     | INDUCTOR-SMD       | L701              | SA            |
| 2703-002544     | INDUCTOR-SMD       | L706              | SA            |
| 2703-002558     | INDUCTOR-SMD       | L707              | SA            |
| 2703-002603     | INDUCTOR-SMD       | L705              | SA            |
| 2703-002734     | INDUCTOR-SMD       | L101              | SA            |
| 2703-002858     | INDUCTOR-SMD       | L708              | SA            |
| 2703-002858     | INDUCTOR-SMD       | L709              | SA            |
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| 2801-004455     | CRYSTAL-UNIT       | OSC701            | SA            |
| 2801-004458     | CRYSTAL-UNIT       | OSC301            | SA            |
| 2901-001286     | FILTER-EMI SMD     | F501              | SA            |
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| 2904-001592     | FILTER-SAW         | F701              | SA            |
| 2904-001599     | FILTER-SAW         | F702              | SA            |

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| 3705-001358     | CONNECTOR-COAXIAL   | RFS701            | SA            |
| 3709-001365     | CONNECTOR-CARD EDGE | SIM101            | SA            |
| 3710-001994     | CONNECTOR-SOCKET    | IFC601            | SA            |
| 3711-005747     | CONNECTOR-HEADER    | HDC501            | SA            |
| 3711-005781     | CONNECTOR-HEADER    | BTC602            | SA            |
| 3722-002181     | JACK-PHONE          | EAR401            | SA            |
| 4302-001158     | BATTERY             | BAT101            | SA            |
| GH09-00040A     | IC                  | UCP201            | SA            |
| GH13-00029A     | IC                  | U302              | SA            |
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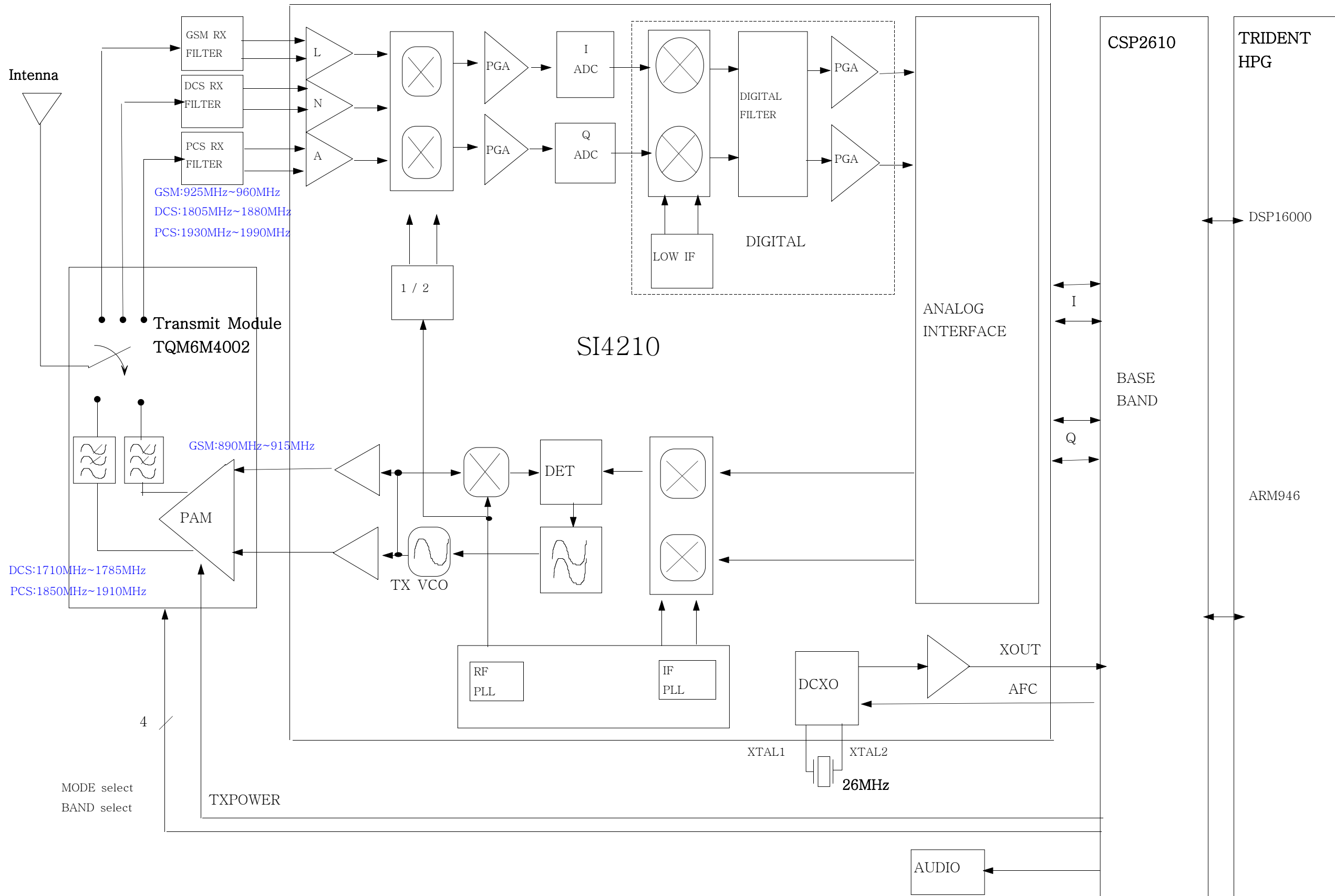
# 5. SGH-X660 PCB Diagrams



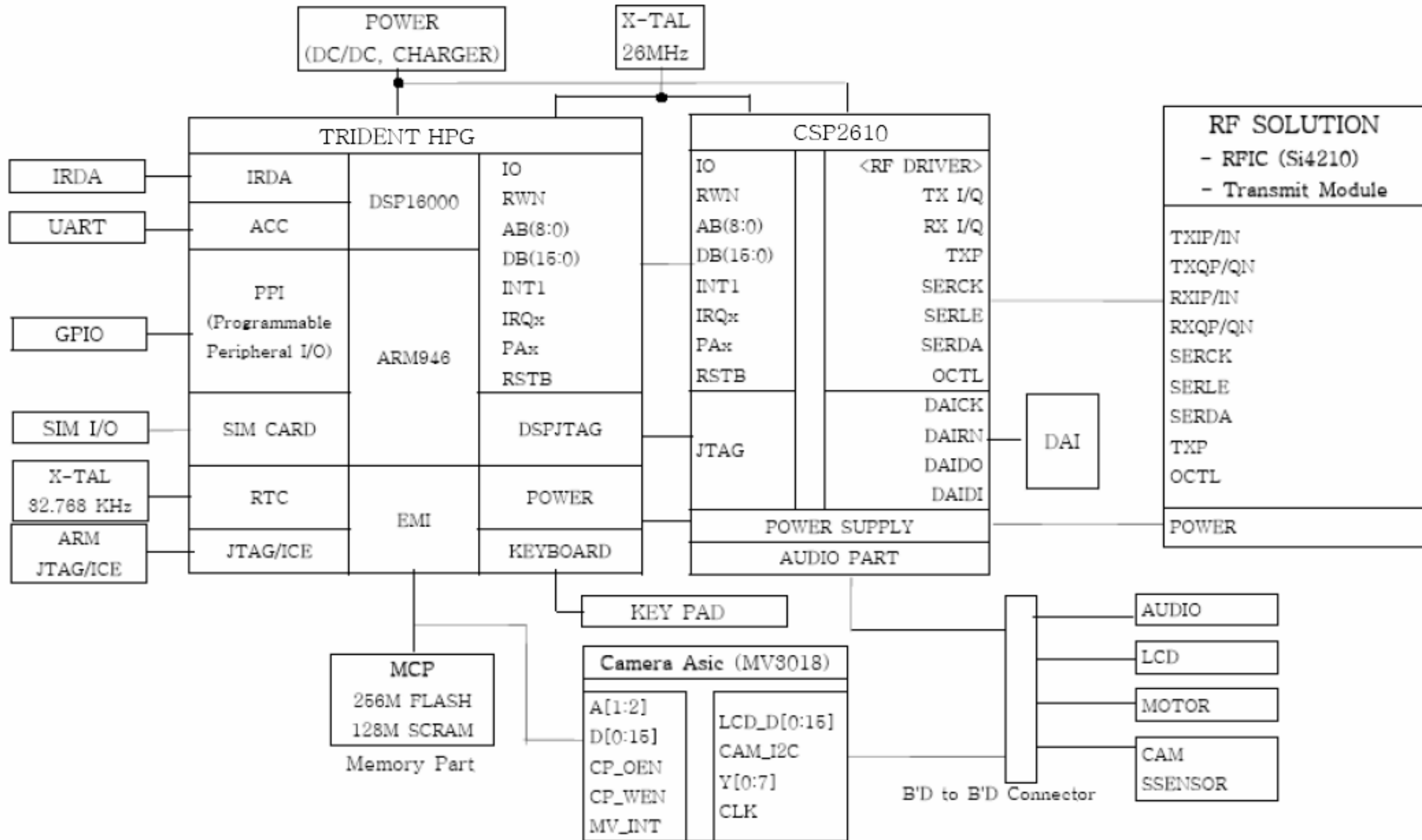


# 6. SGH-X660 Block Diagrams

## 6-1. RF PART



6-2. Base Band PART





**SAMSUNG  
ELECTRONICS**

