

SAMSUNG

GSM TELEPHONE SGH-D600

SERVICE *Manual*

GSM TELEPHONE



CONTENTS

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

**SAMSUNG
ELECTRONICS**



This Service Manual is a property of Samsung Electronics Co.,Ltd.
Any unauthorized use of Manual can be punished under applicable
international and/or domestic law.

© Samsung Electronics Co.,Ltd. September. 2005
Printed in Korea.

Code No.: GH68-08500A
BASIC.

1. Specification

1-1. GSM General Specification

| | GSM850 phase1 | GSM900 Phase 1 | EGSM 900 Phase 2 | DCS1800 Phase 1 | PCS1900 |
|---------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Freq. Band[MHz] Uplink/Downlink | 824~849 869~894 | 890~915 935~960 | 880~915 925~960 | 1710~1785 1805~1880 | 1850~1910 1930~1990 |
| ARFCN range | 128~251 | 1~124 | 0~124 & 975~1023 | 512~885 | 512~810 |
| Tx/Rx spacing | 45MHz | 45MHz | 45MHz | 95MHz | 80MHz |
| Mod. Bit rate/ Bit Period | 270.833kbps 3.692us | 270.833kbps 3.692us | 270.833kbps 3.692us | 270.833kbps 3.692us | 270.833kbps 3.692us |
| Time Slot Period/Frame Period | 576.9us 4.615ms | 576.9us 4.615ms | 576.9us 4.615ms | 576.9us 4.615ms | 576.9us 4.615ms |
| Modulation | 0.3GMSK | 0.3GMSK | 0.3GMSK | 0.3GMSK | 0.3GMSK |
| MS Power | 33dBm~13dBm | 33dBm~13dBm | 33dBm~5dBm | 30dBm~0dBm | 30dBm~0dBm |
| Power Class | 5pcl ~ 15pcl | 5pcl ~ 15pcl | 5pcl ~ 19pcl | 0pcl ~ 15pcl | 0pcl ~ 15pcl |
| Sensitivity | -102dBm | -102dBm | -102dBm | -100dBm | -100dBm |
| TDMA Mux | 8 | 8 | 8 | 8 | 8 |
| Cell Radius | 35Km | 35Km | 35Km | 2Km | - |

1-2. GSM TX power class

| TX Power control level | GSM850 | TX Power control level | GSM900 | TX Power control level | DCS1800 | TX Power control level | PCS1900 |
|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|----------------|-------------------------------|----------------|
| 5 | 33±3 dBm | 5 | 33±2 dBm | 0 | 30±2 dBm | 0 | 30±2 dBm |
| 6 | 31±3 dBm | 6 | 31±2 dBm | 1 | 28±3 dBm | 1 | 28±3 dBm |
| 7 | 29±3 dBm | 7 | 29±2 dBm | 2 | 26±3 dBm | 2 | 26±3 dBm |
| 8 | 27±3 dBm | 8 | 27±2 dBm | 3 | 24±3 dBm | 3 | 24±3 dBm |
| 9 | 25±3 dBm | 9 | 25±2 dBm | 4 | 22±3 dBm | 4 | 22±3 dBm |
| 10 | 23±3 dBm | 10 | 23±2 dBm | 5 | 20±3 dBm | 5 | 20±3 dBm |
| 11 | 21±3 dBm | 11 | 21±2 dBm | 6 | 18±3 dBm | 6 | 18±3 dBm |
| 12 | 19±3 dBm | 12 | 19±2 dBm | 7 | 16±3 dBm | 7 | 16±3 dBm |
| 13 | 17±3 dBm | 13 | 17±2 dBm | 8 | 14±3 dBm | 8 | 14±3 dBm |
| 14 | 15±3 dBm | 14 | 15±2 dBm | 9 | 12±4 dBm | 9 | 12±4 dBm |
| 15 | 13±3 dBm | 15 | 13±2 dBm | 10 | 10±4 dBm | 10 | 10±4 dBm |
| 16 | 11±5 dBm | 16 | 11±3 dBm | 11 | 8±4dBm | 11 | 8±4dBm |
| 17 | 9±5 dBm | 17 | 9±3dBm | 12 | 6±4 dBm | 12 | 6±4 dBm |
| 18 | 7±5 dBm | 18 | 7±3 dBm | 13 | 4±4 dBm | 13 | 4±4 dBm |
| 19 | 5±5 dBm | 19 | 5±3 dBm | 14 | 2±5 dBm | 14 | 2±5 dBm |
| | | | | 15 | 0±5 dBm | 15 | 0±5 dBm |

2. Circuit Description

2-1. SGH-D600 RF Circuit Description

2-1-1. RX PART

- FEM(F100 SWICHPLEXER)

Switching Tx, Rx path for GSM850, GSM900, DCS1800 and PCS1900 by logic controlling.

- ANTENNA SWITCH Control Logic (F100) Truth Table

| | VC_1 | VC_2 | VC_3 |
|--------------------------|------|------|------|
| GSM850/900 Rx Mode | L | L | L |
| DCS Rx Mode | L | L | L |
| PCS Rx Mode | L | L | H |
| GSM Tx Mode (GSM850/900) | H | L | L |
| DCS/PCS Tx Mode | L | H | L |

- FILTER

To convert Electromagnetic Field Wave to Acoustic Wave and then pass the specific frequency band.

- GSM850 FILTER (L113,C133,C134,C135) For filtering the frequency band between 869 ~ 894 MHz.
- GSM900 FILTER (L106,C122,C123,C124) For filtering the frequency band between 925 ~ 960 MHz.
- DCS FILTER (L108,L109,C129,C130) For filtering the frequency band 1805 and 1880 MHz.
- PCS FILTER (L110,L111,C131,C132) For filtering the frequency band 1930 and 1990 MHz.

- VC-TCXO (U102)

To generate the 26MHz reference clock to drive the logic and RF.

After additional process, the reference clock applies to the U100 Rx IQ demodulator and Tx IQ modulator.

The oscillator for RX IQ demodulator and Tx modulator are controlled by serial data to select channel and use fast lock mode for GPRS high class operation.

- TRANSCEIVER (U100)

This chip fully integrated GSM GPRS quad-band transceiver with transmit baluns, loop filters and most of the passive component in it.

And also fully integrated fractional N RF synthesizer with AFC control possibility, RF VCO with integrated supply regulator. semi integrated reference oscillator with integrated supply regulator.

RF Receiver front-end amplifies the GSM850, E-GSM900, DCS1800 and PCS1900 aerial signal, convert the chosen channel down to a low IF of 100kHz.

In IF section, further amplifies the wanted channel output level to the desired value and rejects DC.

2-1-2. TX PART

The transmitter is fully differential using a direct up conversion architecture. It consists of a signal side band power up mixer. Gain is controlled by 6 dB via 3-wire serial bus programing. The fully integrated VCO and power mixer achieve LO suppression, quadrature phase error, quadrature amplitude balance and low noise floor specification. Output matching/balun components drive a standard 50 ohms single ended load.

2-2. Baseband Circuit description of SGH-D600

2-2-1. PCF50603 (U400)

- Power Management

Eight low-dropout regulators designed specifically for GSM applications power the terminal and help ensure optimal system performance and long battery life. A programmable boost converter provides support for 1.8V, 3.0V SIMs, while a self-resetting, electronically fused switch supplies power to external accessories. Ancillary support functions, such as RTC module and High Voltage Charge pump, Clock generator, aid in reducing both board area and system complexity.

I2C BUS serial interface provides access to control and configuration registers. This interface gives a microprocessor full control of the PCF50603 and enables system designers to maximize both standby and talk times.

Supervisory functions, including a reset generator, an input voltage monitor, and a temperature sensor, support reliable system design. These functions work together to ensure proper system behavior during start-up or in the event of a fault condition (low microprocessor voltage, insufficient battery energy, or excessive die temperature).

- Clock Generator

The Clock Generator (CG) generates all clocks for internal and external usage. The 32.768 kHz crystal oscillator provides an accurate low clock frequency for the PCF50603 and other circuitry.

2-2-2. LCD

LCD is consisted of main LCD (color 262K TFT LCD).

Chip select signals in the U301, LCD_MAIN_CS, can enable LCD. BACKLIGHT signal enables white LED of main LCD. 16-bit data lines (LD(0)~LD(15)) transfers data and commands to LCD. Data and commands use "RS" signal. If this signal is high, Inputs to LCD are commands. If it is low, Inputs to LCD are data. The signal which informs the input or output state to LCD, is required. But this system is not necessary this signal. So "L_WRB" signal is used to write data or commands to LCD. Power signals for LCD are "VDD_IO_HIGH".

2-2-3. Key

This is consisted of key interface pins KEY_ROW(0:4) and KEY_COL(0:4) in PCF5212EL1. These signals compose the matrix. Result of matrix informs the key status to key interface in the PCF5212EL1. Power on/off key is separated from the matrix. So power on/off signal is connected with PCF50603 to enable PCF50603. Key LED is consisted of six white LEDs for sub key and twelve white LEDs for main key. White LED for sub key use the VBAT voltage.

"SLIDER_KEY_ON" signal enables Transistor for sub key backlight.

Main key LED use the 3.3V LDO for a supply voltage. KEY_LED_ON signal enables eight white LED.

"FLIP" informs the status of slide (open or closed) to the PCF5213EL1. This uses the hall effect IC, EM-1681

A magnet under LCD enables EM-1681.

2-2-4. EMI ESD Filter

This system uses the EMI ESD filter, U500 to protect noise from IF CONNECTOR part.

2-2-5. IF connetor

It is 18-pin connector. They are designed to use VBAT, V_EXT_CHARGE, USB_D+, +VBUS, USB_D-, TXD1, RXD1, AUX_ON, EXT1, EXT2, HFK_SPK, HFK_MIC and GND. They connected to power supply IC, microprocessor and signal processor IC.

2-2-6. Battery Charge Management

A complete constant-current/constant-voltage linear charger for single cell lithium-ion batteries.

If TA connected to phone, "V_EXT_CHARGE" enable charger IC and supply current to battery.

When fault condition caused, "CHG_ON" signal level change low to high and charger IC stop charging process.

2-2-7. Audio

HFR_P and HFR_N from PCF5212E11 are connected to the main speaker via analog switches. MIC_P and MIC_N are connected to the main MIC as well. EAR1 is the source of External Speaker. AK4642 is 16-bit stereo audio CODEC with a built-in microphone - Amplifier and Headphone - Amplifier.

I2S signals from CL8522S5 are decoded with audio analog signals. SAPA1D2-24ELP amplify these signals and deliver to stereo speakers.

2-2-8. Memory

This system uses Samsung's memory, KBH10PD00M-D414. The KBH10PD00M is a Multi Chip Package Memory which combines 256Mbit Synchronous Burst Multi Bank NOR Flash Memory and two 1Gbit OneNAND Flash and 256Mbit Synchronous Burst UtRAM.

It has 16 bit data line, HD[1~16] which is connected to PCF5212 and CL8522S5, also has 24 bit address lines, HA[1~24]. There are 3 chip select signals, CS0n_FLASH, CS4n_NAND, and CS1n_RAM.

In the Wrting process, WEn is fallen to low and it enables writing process to operate. During reading process, OEn is fallen to low and it enables reading process to operate. Each chip select signals in the PCF5212 choose different memories.

2-2-9. PCF5212EL1

The PCF5212EL1 is mainly composed of embedded DSP and ARM core. The DSP subsystem includes the Saturn DSP core with embedded RAM and ROM, and a set of peripherals. It has 24kx16 bits PRAM, 104k*16 bits, 32k*16 XYRAM and 63k*16 XYROM in the DSP.

The ARM946E-S consists of an ARM9E-S processor core, 8 kbyte instruction cache and 8 kbyte data cache, tightly-coupled ITCM(Instruction Tightly Coupled Memory) and DTCM(Data Tightly Coupled Memory) memories, a memory protection unit, and an AMBA(Advanced Microcontroller Bus Architecture) AHB(Advanced High-performance Bus) bus interface with a write buffer.

HD(0:15), data lines and HA(0:23), address lines are connected to KBJ10KB00M (memory), MV319DNQ (image dsp) and YMU765 (melody IC). It has 64 kbyte SC RAM (0.5 Mbit) and 32 kbyte SC program ROM for bootstrap loader in the ARM core.

HD(0:15), data lines and HA(0:23), address lines are connected to memory and YMU765 to communicate.

MV319DNQ(Camera DSP Chip) controls the communication between ARM core and DSP core.

OEn, WEn control the access of memory. KROW, and KCOL recognize the key string input status.

It has J-TAG control pins (TDI/TDO/TCK) for ARM and DSP core. J-SEL signal controls different access to ARM and DSP core.

ADC(Analog to Digital Convertor) receives the condition of temperature, battery type and battery voltage.

2-2-10. TCO-5888T (26MHz)

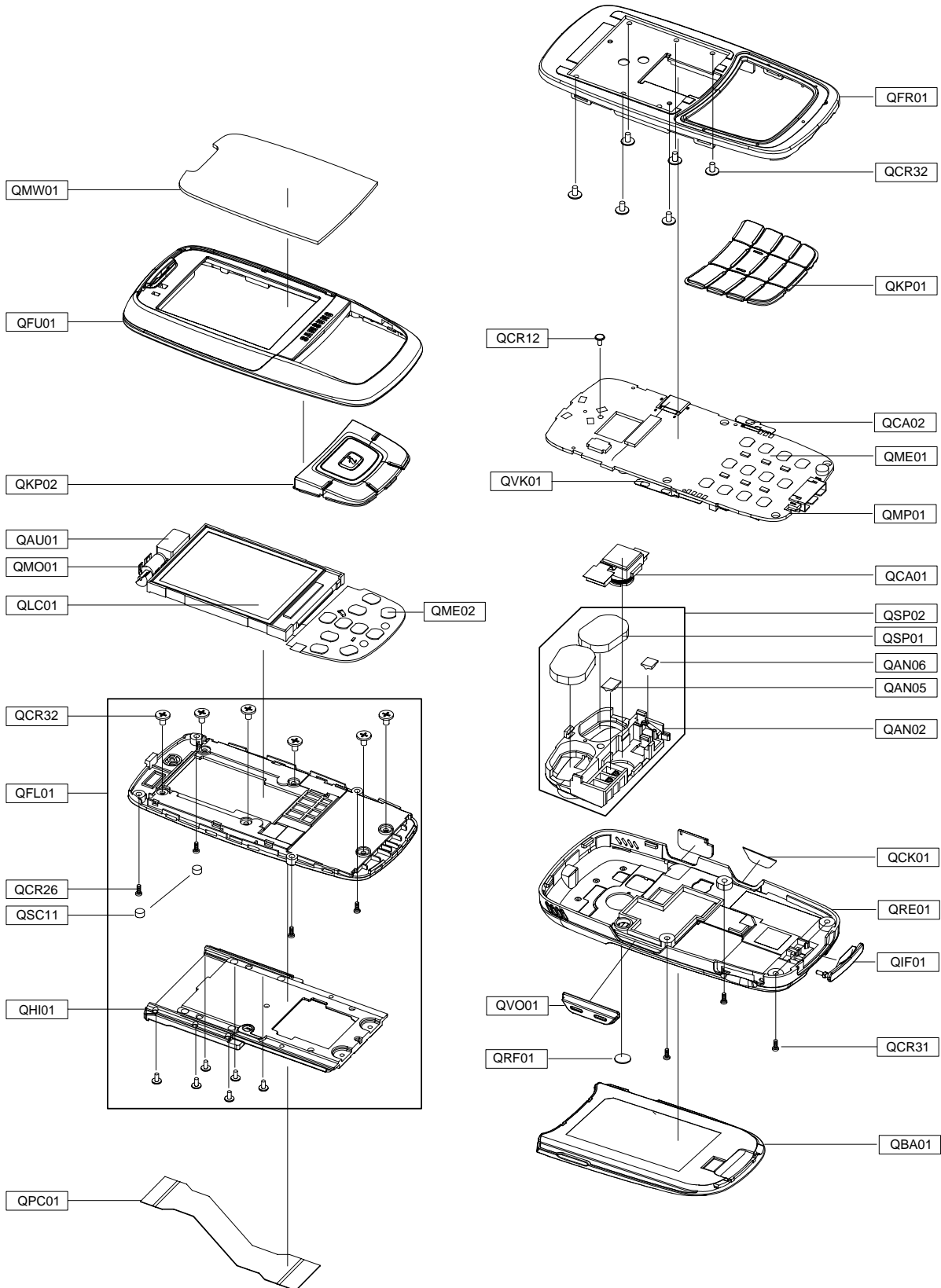
This system uses the 26MHz TCXO, TCO-5871U, Toyocom. AFC control signal from PCF5212 controls frequency from 26MHz x-tal. It generates the clock frequency. This clock is connected to PCF5212, YMU765 and UAA3587.

2-2-11. Multimedia Chip (CL8522S5)

CL8522S5 is the hardware based MPEG4 CODEC is available to capture the video signal of up to CIF Resolution (352X288, at 30FPS). CL8522S5 directly transmits and previews the RGB Data to the LCD graphic memory by processing the sensor output data. It can save the raw RGB data up to 1600x1200 into its image buffer and allows the host processor to download with scalable sized compressed data.

3. Exploded View and Parts List

3-1. Exploded View



3-2. Parts List

| Location No | | Description | Sec Code |
|-------------|-------|--------------------------------------|-------------|
| QAN05 | | MEC-ANTENNA CONN RUBBER;SGH-D600,EU, | GH75-08200A |
| QAN06 | | MEC-ANTENNA CONN RUB SM;SGH-D600,EU, | GH75-08201A |
| QAU01 | | AUDIO-RECEIVER; 32ohm,109dB±2dB,11X6 | 3009-001125 |
| QBA01 | | BATTERY-900MAH,BLK,ENG,M;BST4389BE,S | GH43-01939A |
| QCA01 | | UNIT-CAMERA;SGH-D600,IC04001AA,-,EU, | GH59-02171A |
| QCA02 | | UNIT-CAMERA KEY;SGH-D600,H/K F.P.C A | GH59-02208A |
| QCK01 | | PMO-CAMERA KEY;SGH-D600,PC(K2261),BL | GH72-22444A |
| QCR12 | | SCREW-MACHINE;PH,+,M1.4,L2.5,ZPC(BLK | 6001-001530 |
| QCR26 | | SCREW-MACHINE;CH,+,M1.7,L3,ZPC(BLK), | 6001-001850 |
| QCR31 | | SCREW-MACHINE;CH,+,M1.7,L3,ZPC(BLK), | 6001-001795 |
| QFR01 | | MEC-FRONT COVER;SGH-D600,EU,-,-,-,-, | GH75-07212A |
| QFU01 | | MEC-SLIDE UPPER;SGH-D600,EU,-,-,-,-, | GH75-07334A |
| QIF01 | | PMO-IF COVER;SGH-D600,PC+UREATHANE,B | GH72-22629A |
| QKP01 | | MEC-KEYPAD MAIN;SGH-D600,EU,-,-,-,-, | GH75-07207A |
| QKP02 | | MEC-KEYPAD SUB;SGH-D600,EU,-,-,-,-,C | GH75-07206A |
| QLC01 | | LCD-LCD MODULE;LTS200QV-F03-0,SGH-D6 | GH07-00734A |
| QME01 | | UNIT-METAL DOME;SGH-D600,-,-,EU,12V, | GH59-02206A |
| QME02 | | UNIT-KEY PAD;SGH-D600,HUW9555-010010 | GH59-02094A |
| QMO01 | | MOTOR DC-SGHZ130;DMJBRV83CG,SGH-Z130 | GH31-00153B |
| QMP01 | | PBA MAIN-SGHD600;SGH-D600,EU,EU,PBA | GH92-02191A |
| QMW01 | | PCT-WINDOW MAIN;SGH-D600,ACRYL,TRP,- | GH72-22505A |
| QPC01 | | PCB-FPCB;SGH-D600,POLYIMIDE,3L,-,0.0 | GH41-00892A |
| QRE01 | | MEC-REAR COVER;SGH-D600,EU,-,-,-,-,C | GH75-07208A |
| QRF01 | | MPR-R/F CAP;SGH-D600,PC SHEET,P5.4XT | GH74-15303A |
| QSC11 | | RMO-LOWER SCREW CAP;SGH-D600,CR RUBB | GH73-05136A |
| QVK01 | | UNIT-VOLUME KEY;SGH-D600,SGH-D600 V/ | GH59-02207A |
| QVO01 | | PMO-VOLUME KEY;SGH-D600,PC(K2261),BL | GH72-22445A |
| QSP02 | | UNIT-SPEAKER MODULE;SGH-D600,SS-SGH- | GH59-02364A |
| | QSP01 | SPEAKER;0.7W,8.0ohm,87dB±2dB,700Hz, | 3001-001788 |
| | QAN02 | ANTENNA-SGHD600;EWPADG006A,SGH-D600, | GH42-00596A |
| QFL01 | | MEC-SLIDE LOWER;SGH-D600,EU,-,-,-,-, | GH75-07210A |
| | QCR32 | SCREW-MACHINE;CH,+,M1.4,L2,ZPC(BLK), | 6001-001700 |
| | QH101 | MEC-HINGE MODULE;SGH-D600,EU,-,-,-,- | GH75-07211A |

| Description | Sec Code |
|--------------------------------------|-------------|
| BAG PE;LDPE,TO.05,W80,L180,TRP,-,- | 6902-000634 |
| CBF INTERFACE-AV CABLE;SGH-D600,10 p | GH39-00410A |
| CBF INTERFACE-DATA LINK CABLE;SGH-D6 | GH39-00423A |
| ADAPTOR-SGHD500 BLK;TAD137EBE,SGH-D5 | GH44-00954A |
| S/W CD-SAMSUNG PC STUDIO;SGH-D600,SG | GH46-00167A |
| UNIT-EAR PHONE(BLK);SGH-D600,AEP421S | GH59-02335A |
| LABEL(P)-WATER SOAK;COMM,NORGE,100G, | GH68-02026A |
| MANUAL-WEEE CARD;COMM,SEC,ENGLISH,UN | GH68-07013A |
| LABEL(R)-MAIN(EU);SGH-D600,EU,POLYES | GH68-07243A |
| MANUAL-USER;SGH-D600,XEF,FRENCH,FRAN | GH68-07562A |
| BOX(P)-SLIPCASE(EU);SGH-D600,SC300+S | GH69-03033A |
| CUSHION-CASE(1-2);SGH-D600,PULP,TO.8 | GH69-03036A |
| BOX(P)-UNIT(EU);SGH-D600,SC300g+S120 | GH69-03175A |
| ICT-BATT LOCKER SPRING;SGH-D600,STS3 | GH70-00611A |
| PMO-BATTERY LOCKER;SGH-D600,PC(K2261 | GH72-22498A |
| MPR-TAPE BOHO MAIN WIN A;SCH-X850,3M | GH74-06456A |
| MPR-BOHO VINYL IF;SCH-X699,3M 4187C, | GH74-11062A |
| MPR-BOHO VINYL S/U (R);SGH-D500,STA | GH74-13284A |
| MPR-MAIN CON INSULATION;SGH-D600,SP6 | GH74-15311A |
| MPR-MAIN PBA DOWN L IN;SGH-D600,SP65 | GH74-15312A |
| MPR-MAIN PBA DOWN R IN;SGH-D600,SP65 | GH74-15313A |
| MPR-MAIN PBA UP L IN;SGH-D600,SP65,8 | GH74-15314A |
| MPR-MAIN PBA UP R IN;SGH-D600,SP65,9 | GH74-15315A |
| MPR-TAPE B TO B CON IN;SGH-D600,SP65 | GH74-15317A |
| MPR-TAPE B TO B CON EMI;SGH-D600,DTF | GH74-15318A |
| MPR-SUB CON INSLATION;SGH-D600,SP65, | GH74-15319A |
| MPR-TAPE SUB CON EMI;SGH-D600,DTF-10 | GH74-15320A |
| MPR-TAPE BASE BTB LA;SGH-D600,TAST49 | GH74-16479A |
| MPR-BOHO VINYL MAIN WIN;SGH-D600,ST5 | GH74-16880A |
| MPR-BOHO VINYL R/W LENS;SGH-D600,ST5 | GH74-16881A |
| MPR-B TO B CON SIDE EMI;SGH-D600,DTF | GH74-16883A |
| MPR-TAPE IF HOLDER;SCH-V740,FABRIC T | GH74-17165A |
| MPR-TAPE BASE BTB;SGH-D600,TASA 4962 | GH74-18234A |
| AS-ANTENNA FRONT GASKET;SGH-D600,-,G | GH81-02279A |
| AS-ANTENNA REAR GASKET;SGH-D600,-,GA | GH81-02280A |

3-3. Test Jig (GH80-01909A)



3-3-1. RF Test Cable
(GH39-00283A)



3-3-2. Test Cable
(GH39-00337C)



3-3-3. Serial Cable



3-3-4. Power Supply Cable



3-3-5. DATA CABLE
(GH39-00423A)



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



3-3-7. TV-OUT Cable
(GH39-00410A)



4. Electrical Parts List

| Design LOC | Description | SEC CODE |
|------------------------|------------------|-------------|
| ANT101, ANT102, ANT302 | NPR-CONTACT ANT | GH71-04813A |
| BAT400 | BATTERY | 4302-001177 |
| BTC500 | CONNECTOR-HEADER | 3711-005880 |
| C101, C106, C110, C113 | C-CERAMIC, CHIP | 2203-000628 |
| C102, C105 | C-CERAMIC, CHIP | 2203-005057 |
| C103, C107, C111, C114 | C-CERAMIC, CHIP | 2203-000254 |
| C104, C108 | C-TA, CHIP | 2404-001374 |
| C109 | C-CERAMIC, CHIP | 2203-002968 |
| C112, C121, C128, C605 | C-CERAMIC, CHIP | 2203-000278 |
| C115, C125, C410, L115 | C-CERAMIC, CHIP | 2203-000233 |
| C116, C146 | C-CERAMIC, CHIP | 2203-000654 |
| C117, C203, C205, C206 | C-CERAMIC, CHIP | 2203-005482 |
| C118, C119, C136, C143 | C-CERAMIC, CHIP | 2203-000812 |
| C120, C126 | C-CERAMIC, CHIP | 2203-002687 |
| C122, C124, C133, C135 | C-CERAMIC, CHIP | 2203-001259 |
| C127, C201, C202, C307 | C-CERAMIC, CHIP | 2203-000254 |
| C131, C137 | C-CERAMIC, CHIP | 2203-005288 |
| C132, C141 | C-CERAMIC, CHIP | 2203-002668 |
| C142 | INDUCTOR-SMD | 2703-002176 |
| C144 | C-CERAMIC, CHIP | 2203-006260 |
| C145 | C-TA, CHIP | 2404-001348 |
| C204, C215, C217, C219 | C-CERAMIC, CHIP | 2203-000812 |
| C207, C208, C209, C210 | C-CERAMIC, CHIP | 2203-005482 |
| C211, C301, C303, C308 | C-CERAMIC, CHIP | 2203-006399 |
| C212, C213, C214, C216 | C-CERAMIC, CHIP | 2203-005482 |
| C218, C305, C306, C309 | C-CERAMIC, CHIP | 2203-005482 |
| C222, C223, C412, C715 | C-CERAMIC, CHIP | 2203-000812 |
| C302, C304, C324, C404 | C-CERAMIC, CHIP | 2203-006562 |
| C310, C311, C312, C318 | C-CERAMIC, CHIP | 2203-005482 |
| C313, C314 | C-CERAMIC, CHIP | 2203-000330 |
| C315, C607 | C-CERAMIC, CHIP | 2203-005050 |
| C316, C322, C403, C819 | C-CERAMIC, CHIP | 2203-006324 |
| C320 | C-TA, CHIP | 2404-001225 |
| C323, C501, C610, C803 | C-CERAMIC, CHIP | 2203-006399 |
| C401 | C-CERAMIC, CHIP | 2203-000359 |
| C402, C413, C415, C418 | C-CERAMIC, CHIP | 2203-006208 |
| C405, C507, C612, C718 | C-CERAMIC, CHIP | 2203-006562 |
| C406, C419, C503, C505 | C-CERAMIC, CHIP | 2203-005482 |
| C407, C409 | C-CERAMIC, CHIP | 2203-000386 |
| C408, C414, C416, C417 | C-CERAMIC, CHIP | 2203-006257 |
| C411 | C-TA, CHIP | 2404-001394 |
| C422 | C-CERAMIC, CHIP | 2203-000585 |
| C423, C426, C805 | C-CERAMIC, CHIP | 2203-006208 |
| C424, C425 | C-CERAMIC, CHIP | 2203-006257 |
| C502 | C-CERAMIC, CHIP | 2203-005503 |
| C504 | C-CERAMIC, CHIP | 2203-000854 |
| C506 | C-TA, CHIP | 2404-001268 |
| C508, C701, C702, C703 | C-CERAMIC, CHIP | 2203-000679 |
| C601 | C-TA, CHIP | 2404-001392 |
| C602, C604, C617, C706 | C-CERAMIC, CHIP | 2203-005482 |

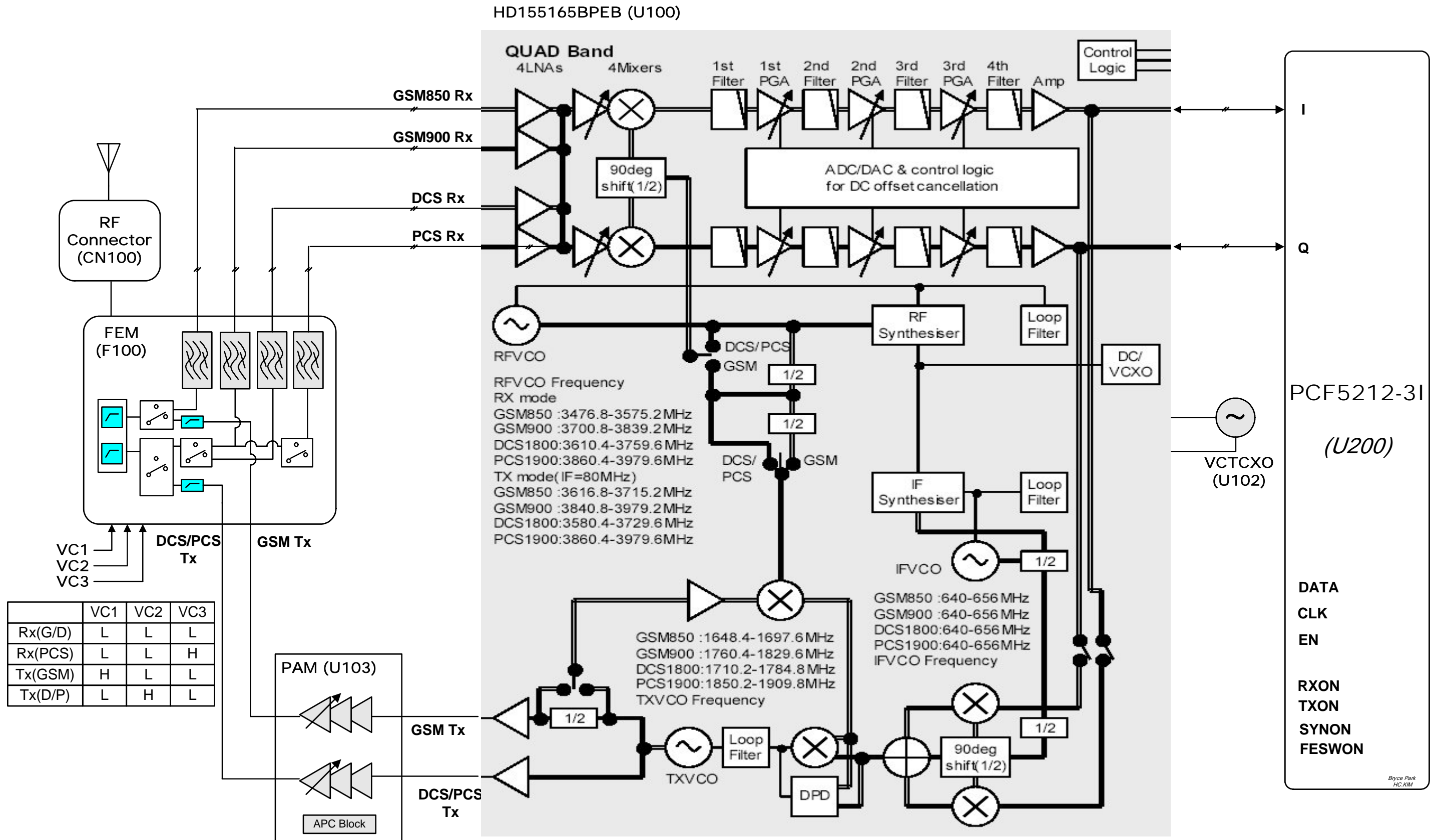
| Design LOC | Description | SEC CODE |
|------------------------|-----------------------|-------------|
| C606, C611, C811, C812 | C-CERAMIC, CHIP | 2203-000995 |
| C609 | C-CERAMIC, CHIP | 2203-002443 |
| C613, C614 | C-CERAMIC, CHIP | 2203-000438 |
| C615 | C-CERAMIC, CHIP | 2203-001405 |
| C616, C829, C830 | C-TA, CHIP | 2404-001405 |
| C704, C705, C712, C713 | C-CERAMIC, CHIP | 2203-000679 |
| C707 | C-TA, CHIP | 2404-001339 |
| C708 | C-CERAMIC, CHIP | 2203-006190 |
| C710, C720, C801, C802 | C-CERAMIC, CHIP | 2203-005482 |
| C716, C717 | C-CERAMIC, CHIP | 2203-006438 |
| C719, C834, C835 | C-CERAMIC, CHIP | 2203-006562 |
| C721 | C-CERAMIC, CHIP | 2203-000812 |
| C733 | C-CERAMIC, CHIP | 2203-000679 |
| C804, C806, C807, C818 | C-CERAMIC, CHIP | 2203-005482 |
| C810, C813, C814, C817 | C-CERAMIC, CHIP | 2203-006399 |
| C815, C816 | C-CERAMIC, CHIP | 2203-000995 |
| C820, C821, C822, C824 | C-CERAMIC, CHIP | 2203-005482 |
| C823 | C-CERAMIC, CHIP | 2203-000885 |
| C826 | C-CERAMIC, CHIP | 2203-006399 |
| C827, C828 | C-CERAMIC, CHIP | 2203-005482 |
| CN100 | CONNECTOR-COAXIAL | 3705-001358 |
| CN500 | CONNECTOR-CARD EDGE | 3709-001393 |
| CN600 | JACK-PHONE | 3722-002356 |
| CN700 | CONNECTOR-FPC/FFC/PIC | 3708-002156 |
| CN701 | CONNECTOR-HEADER | 3711-005643 |
| F100 | FILTER | 2911-000014 |
| F300 | FILTER-DUPLEXER | 2909-001279 |
| F500 | FILTER-EMI SMD | 2901-001315 |
| F701, F702, F703, F704 | FILTER-EMI SMD | 2901-001286 |
| F705 | FILTER-EMI SMD | 2901-001286 |
| IFC500 | CONNECTOR-SOCKET | 3710-001994 |
| L103 | INDUCTOR-SMD | 2703-002313 |
| L104, L105, L107 | INDUCTOR-SMD | 2703-002320 |
| L106, L113 | INDUCTOR-SMD | 2703-002596 |
| L108, L109, L110, L111 | INDUCTOR-SMD | 2703-002365 |
| L112 | INDUCTOR-SMD | 2703-001751 |
| L301 | INDUCTOR-SMD | 2703-002208 |
| L401 | CORE-FERRITE BEAD | 3301-001120 |
| L402 | INDUCTOR-SMD | 2703-002774 |
| L601, L602 | CORE-FERRITE BEAD | 3301-001438 |
| L603 | CORE-FERRITE BEAD | 3301-001534 |
| L701, L801, L814 | CORE-FERRITE BEAD | 3301-001729 |
| L803, L804, L806, L807 | INDUCTOR-SMD | 2703-002201 |
| L809, L810, L812, L813 | INDUCTOR-SMD | 2703-002201 |
| LED601, LED602, LED603 | LED | 0601-002055 |
| LED604, LED605, LED606 | LED | 0601-002055 |
| MIC600 | MIC-CONDENSOR | 3003-001107 |
| OSC300 | CRYSTAL-UNIT | 2801-004340 |
| OSC400 | CRYSTAL-UNIT | 2801-004339 |
| Q401, U201, U202, U203 | TR-DIGITAL | 0504-001151 |

| Design LOC | Description | SEC CODE |
|------------------------|---------------------|-------------|
| R101, R103, R104, R105 | R-CHIP | 2007-000171 |
| R106, R108, R109, R110 | R-CHIP | 2007-000171 |
| R107, R118, R612, R613 | R-CHIP | 2007-000138 |
| R111, R112, R114, R121 | R-CHIP | 2007-000171 |
| R115 | R-CHIP | 2007-000173 |
| R122, R405, R406, R622 | R-CHIP | 2007-000171 |
| R123, R803, R804, R805 | R-CHIP | 2007-007313 |
| R203, R217, R304, R509 | R-CHIP | 2007-000148 |
| R204, R205, R210, R213 | R-CHIP | 2007-000162 |
| R206, R207, R208, R209 | R-CHIP | 2007-000170 |
| R211, R212, R601 | R-CHIP | 2007-001319 |
| R214 | R-NETWORK | 2011-001394 |
| R215, R301, R305, R308 | R-CHIP | 2007-000162 |
| R216, R706, R707 | R-CHIP | 2007-000143 |
| R306, R515, R516, R810 | R-CHIP | 2007-000170 |
| R307 | R-CHIP | 2007-007588 |
| R309 | R-CHIP | 2007-000157 |
| R310 | R-CHIP | 2007-007312 |
| R311, R620 | R-CHIP | 2007-007142 |
| R313 | R-CHIP | 2007-007009 |
| R314 | R-CHIP | 2007-001306 |
| R315, R402, R407, R501 | R-CHIP | 2007-000162 |
| R401 | R-CHIP | 2007-008812 |
| R403, R618 | R-CHIP | 2007-007107 |
| R404 | R-CHIP | 2007-007100 |
| R408, R504 | R-CHIP | 2007-000140 |
| R502, R503 | R-CHIP | 2007-000758 |
| R505, R506, R508, R511 | R-CHIP | 2007-000162 |
| R507 | R-CHIP | 2007-000159 |
| R510 | R-CHIP | 2007-000166 |
| R512 | R-CHIP | 2007-007573 |
| R513 | R-CHIP | 2007-000137 |
| R514, R621 | R-CHIP | 2007-007334 |
| R517 | R-CHIP | 2007-007489 |
| R518 | R-CHIP | 2007-008275 |
| R519 | R-CHIP | 2007-000152 |
| R602, R608, R808 | R-CHIP | 2007-000162 |
| R604, R807 | R-CHIP | 2007-000148 |
| R605 | R-CHIP | 2007-000141 |
| R614, R615, R616, R617 | R-CHIP | 2007-000138 |
| R619 | R-CHIP | 2007-001339 |
| R704, R705 | R-CHIP | 2007-000138 |
| R708 | R-CHIP | 2007-008964 |
| R806 | R-CHIP | 2007-007313 |
| R811, R812, R813 | R-CHIP | 2007-000170 |
| SIM400 | CONNECTOR-CARD EDGE | 3709-001357 |
| U100 | IC | 1205-002709 |
| U102 | OSCILLATOR-VCTCXO | 2809-001302 |
| U103 | IC | 1201-002223 |
| U200 | IC | 1205-002751 |

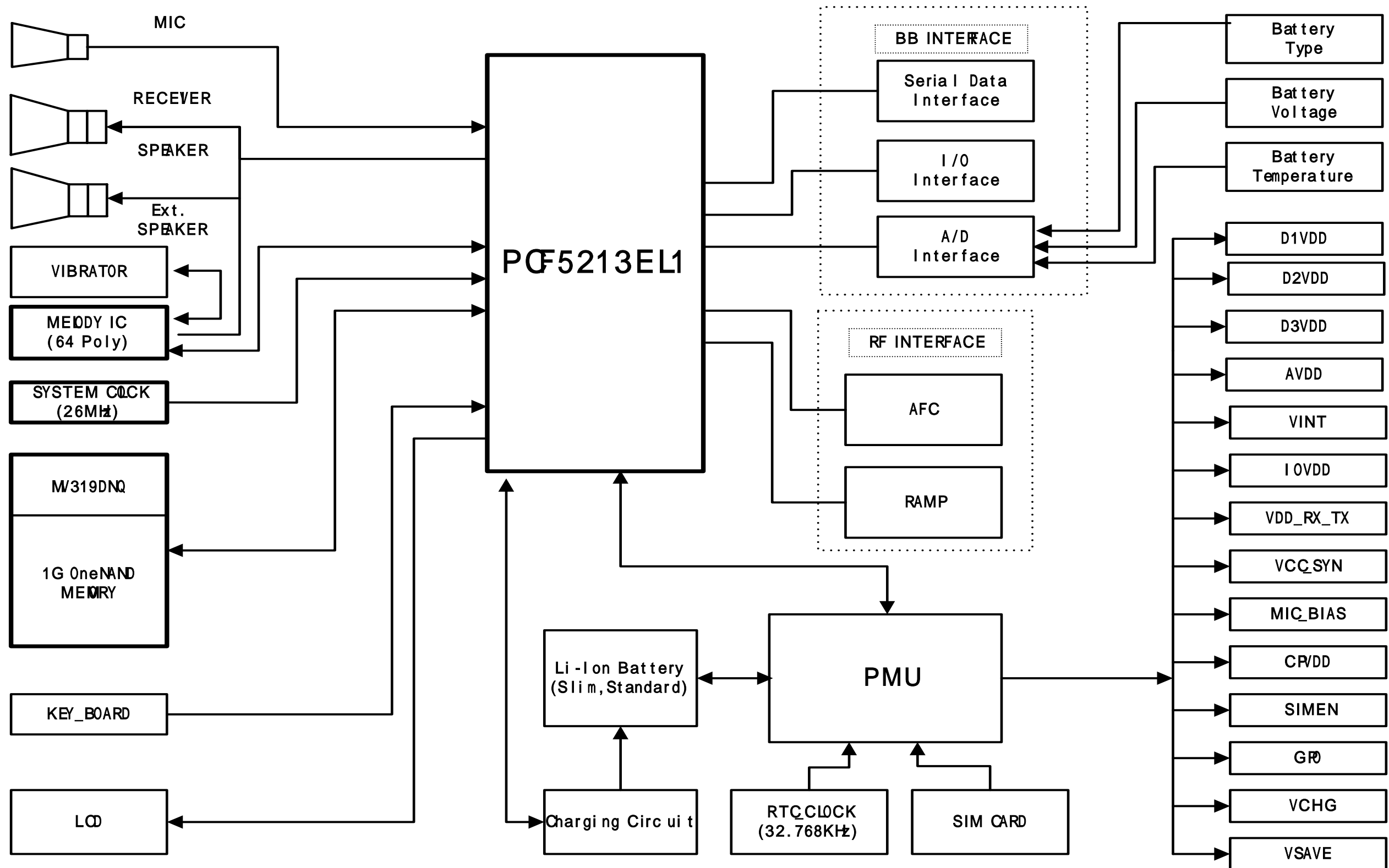
| Design LOC | Description | SEC CODE |
|------------------------|-------------|-------------|
| U204 | TR-DIGITAL | 0504-001151 |
| U300 | IC | 1108-000030 |
| U301 | IC | 1205-002746 |
| U302 | RF-MODULE | 4709-001378 |
| U303, U504 | IC | 0801-002237 |
| U304, U401, U602, U802 | IC | 1203-003737 |
| U305 | IC | 1203-003787 |
| U306 | IC | 1201-002147 |
| U307 | IC | 1203-003688 |
| U400 | IC | 1203-003568 |
| U402 | IC | 1203-003736 |
| U500 | DIODE-TVS | 0406-001188 |
| U501 | IC | 1203-003742 |
| U502 | DIODE-TVS | 0406-001200 |
| U503 | IC | 1203-003815 |
| U600 | IC | 1009-001020 |
| U601 | IC | 1001-001294 |
| U603, U604 | IC | 1001-001231 |
| U700 | IC | 1203-003496 |
| U801 | IC | 1205-002681 |
| U803 | IC | 1001-001345 |
| U804 | IC | 1201-002241 |
| V400, V714, V715, V716 | VARISTOR | 1405-001082 |
| V500 | THERMISTOR | 1404-001221 |
| V601, V602, V701, V702 | VARISTOR | 1405-001138 |
| V703, V704, V705, V706 | VARISTOR | 1405-001138 |
| V707, V708, V709, V710 | VARISTOR | 1405-001138 |
| V711, V712, V713 | VARISTOR | 1405-001138 |
| V717, V718, V721 | VARISTOR | 1405-001082 |
| ZD500 | DIODE-ZENER | 0403-001547 |
| ZD501 | DIODE-ZENER | 0403-001427 |
| ZD600 | DIODE-TVS | 0406-001190 |
| ZD601 | DIODE-TVS | 0406-001104 |
| ZD701, ZD702, ZD703 | DIODE-TVS | 0406-001208 |

5. Block Diagrams

5-1. RF Solution Block Diagram

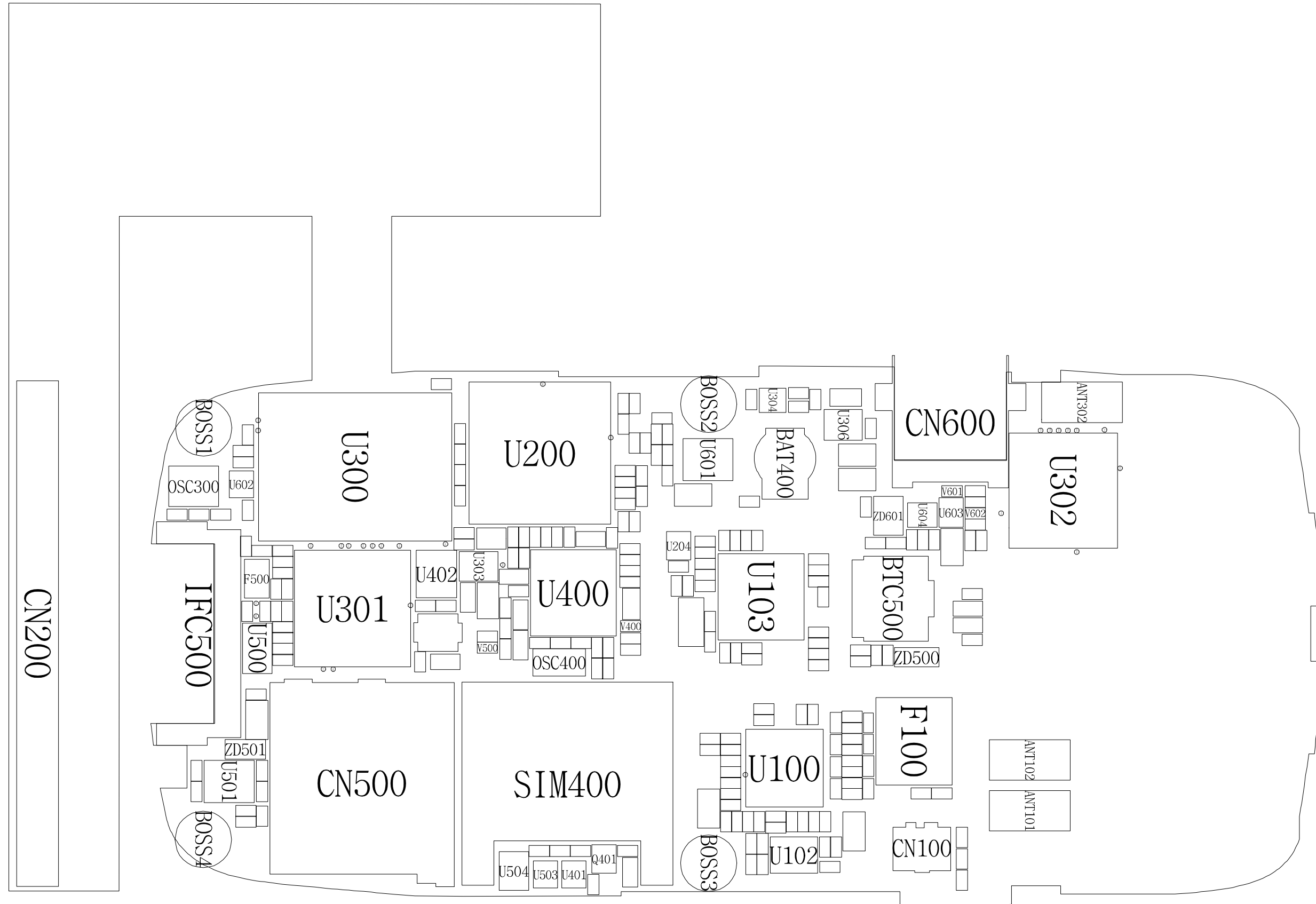


5-2. Base Band Solution Block Diagram

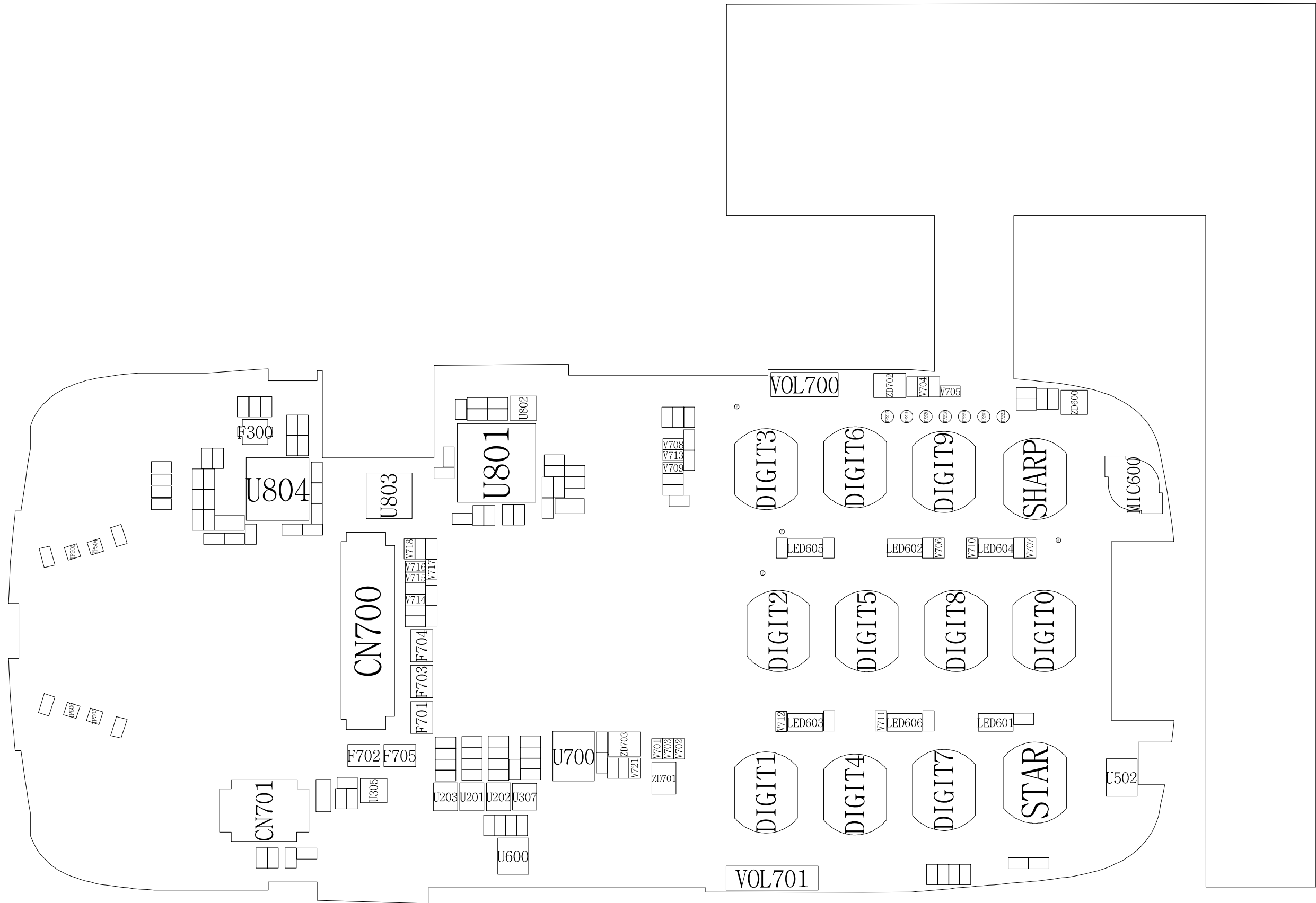


6. PCB Diagrams

6-1. PCB Top Diagram

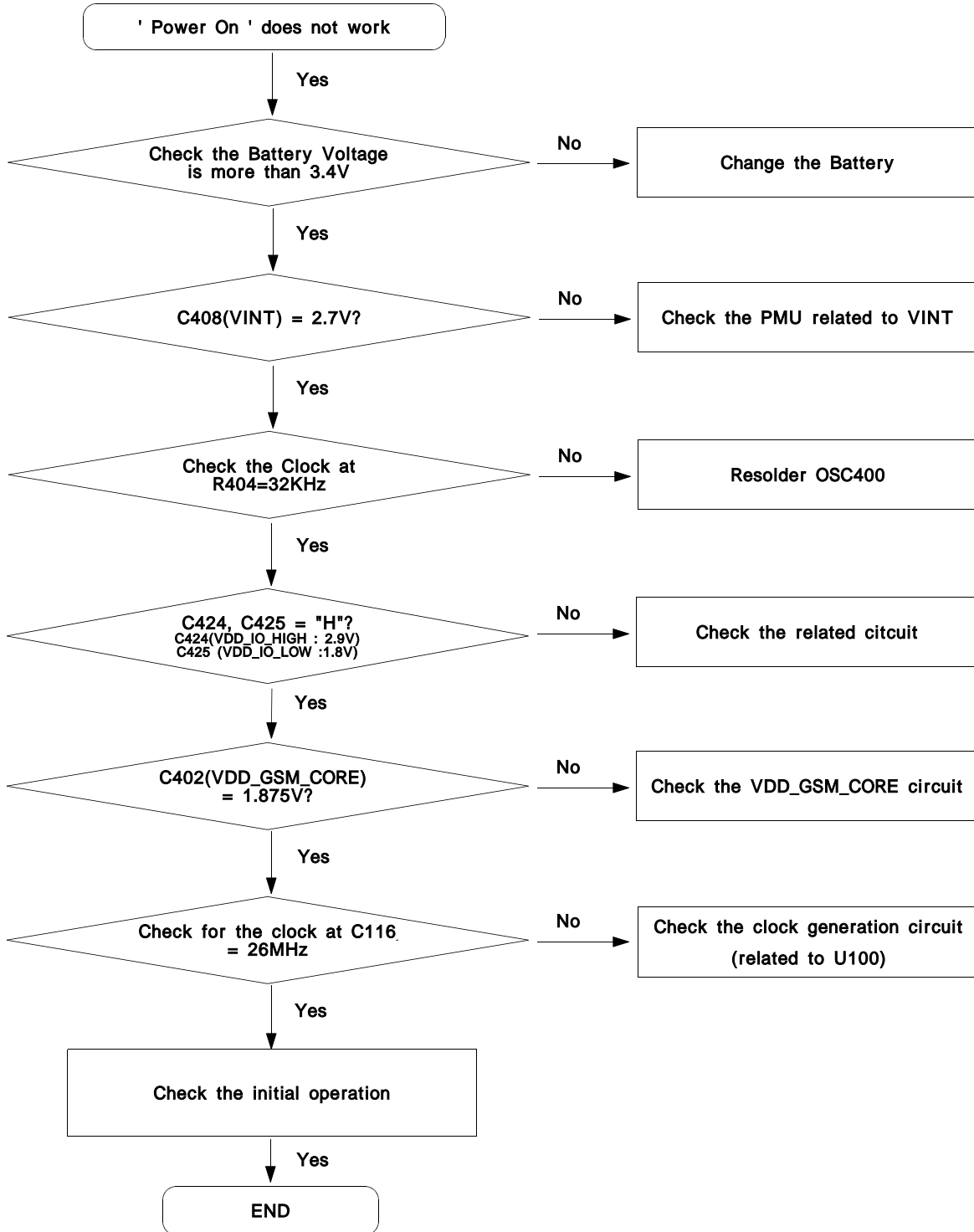


6-2. PCB Bottom Diagram

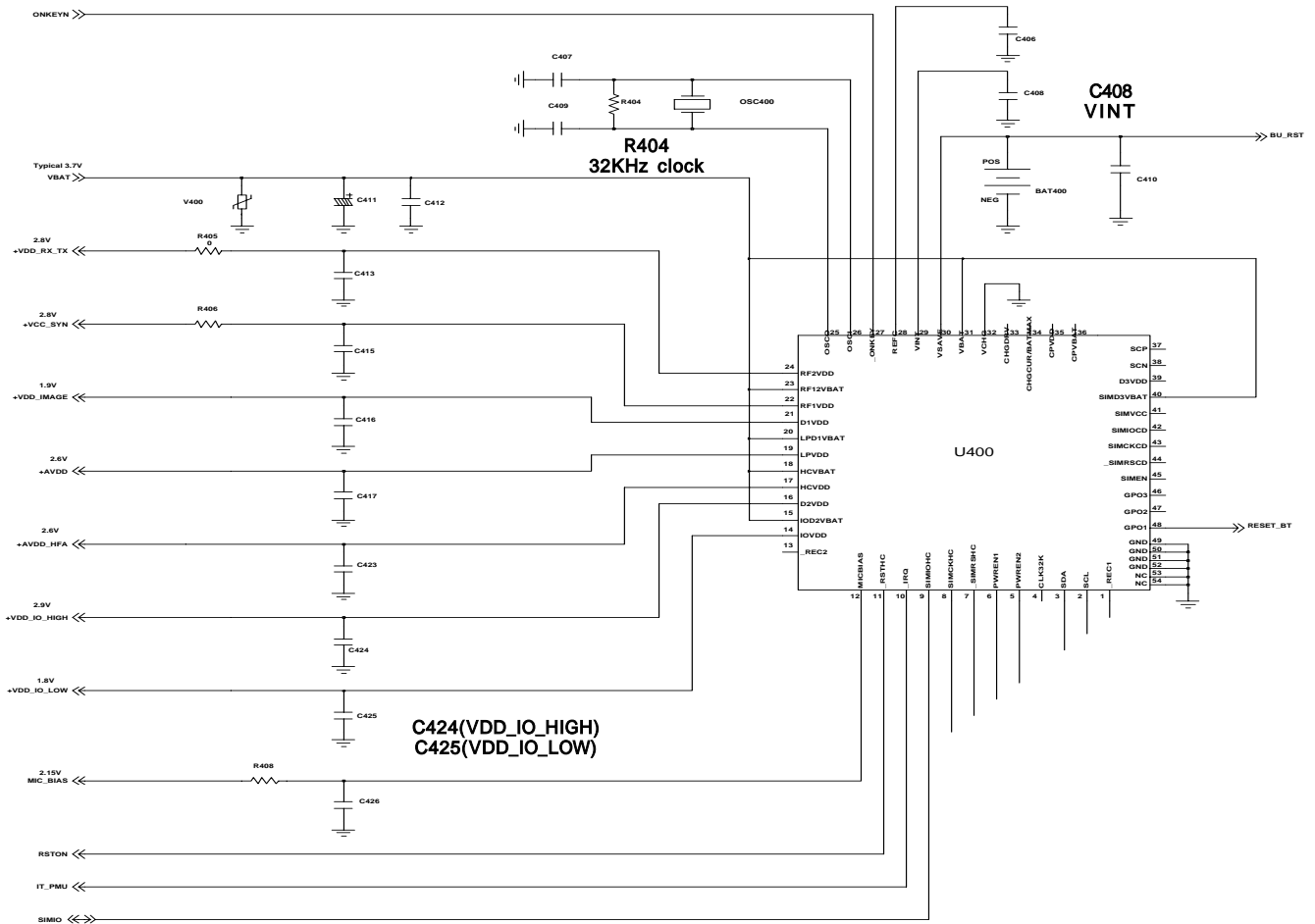


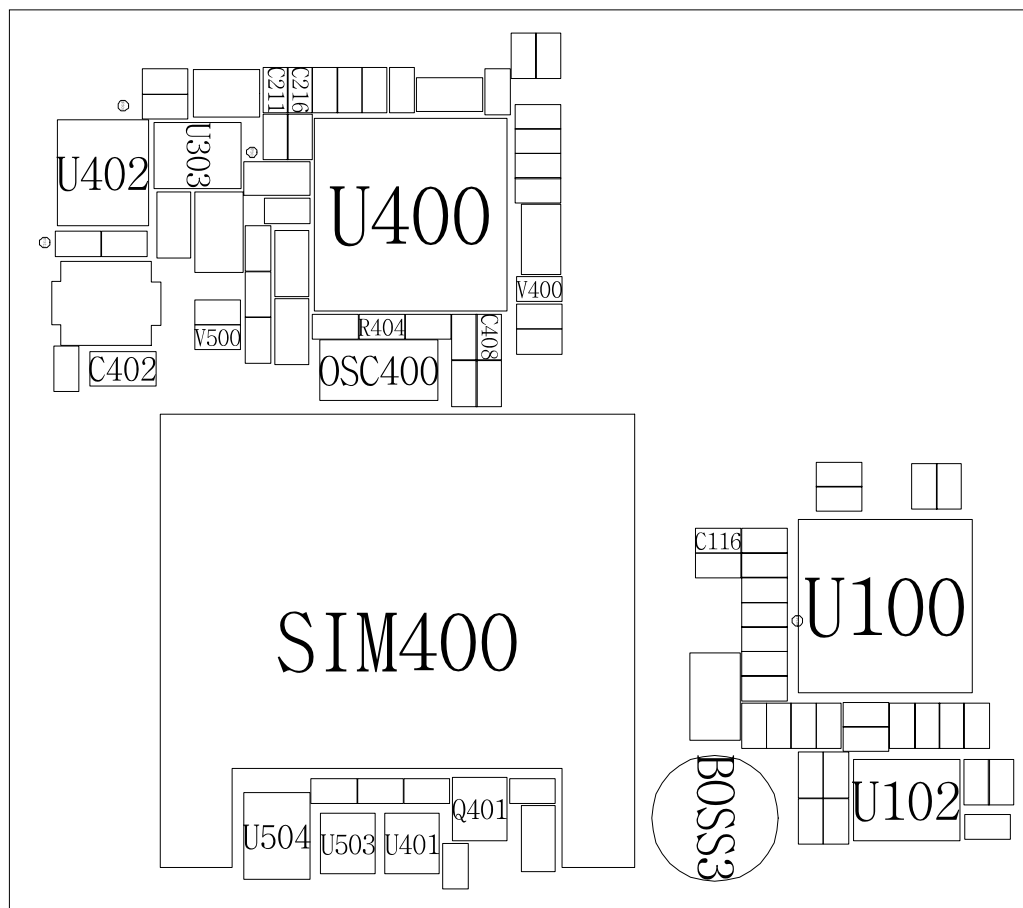
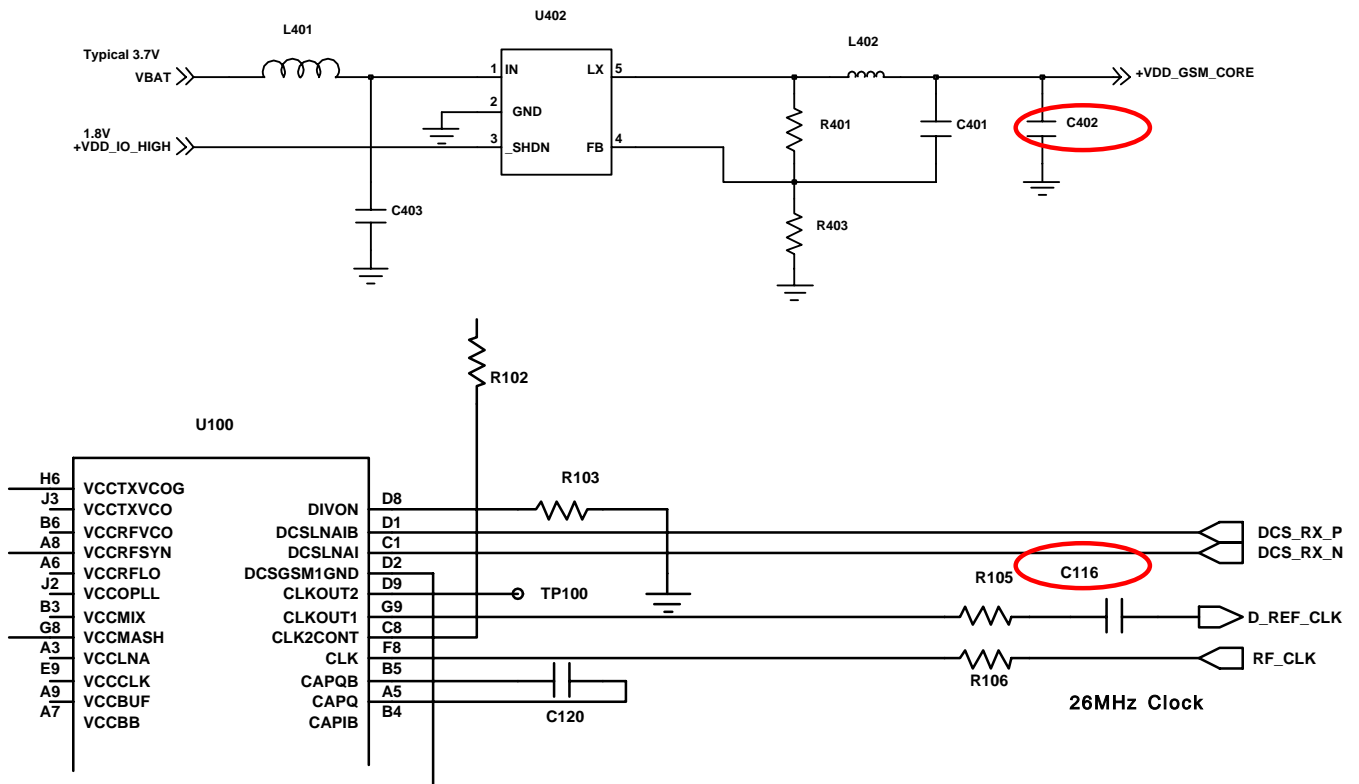
7. Flow Chart of Troubleshooting

7-1. Power On

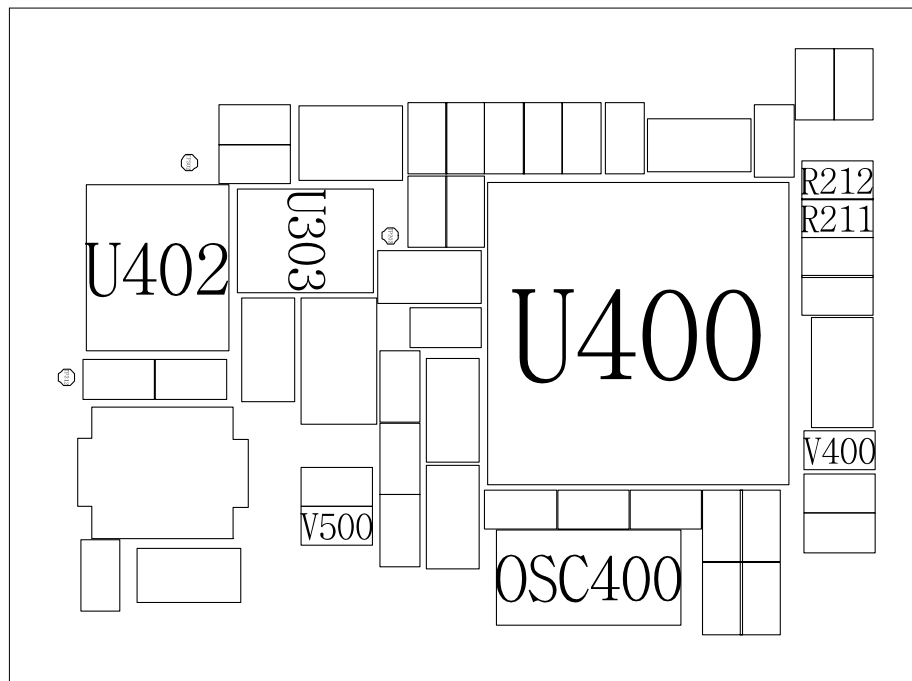
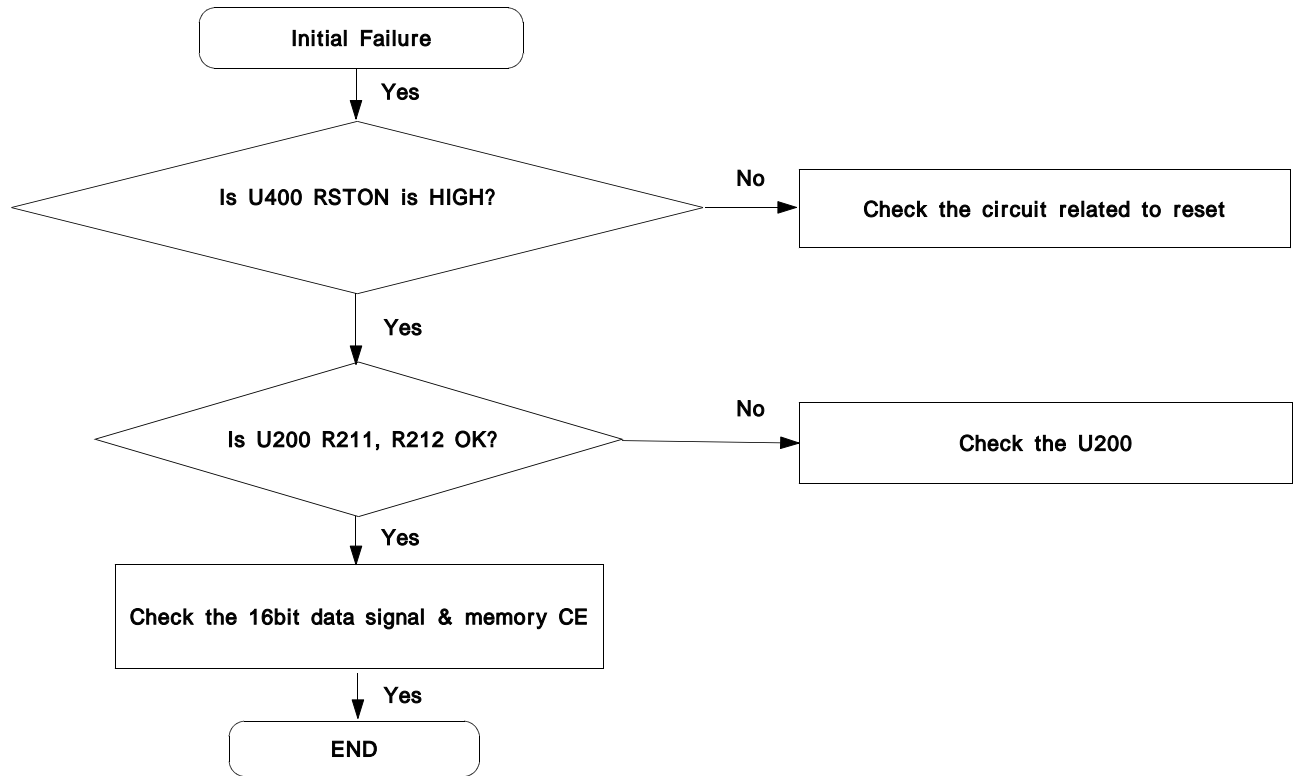


Power On

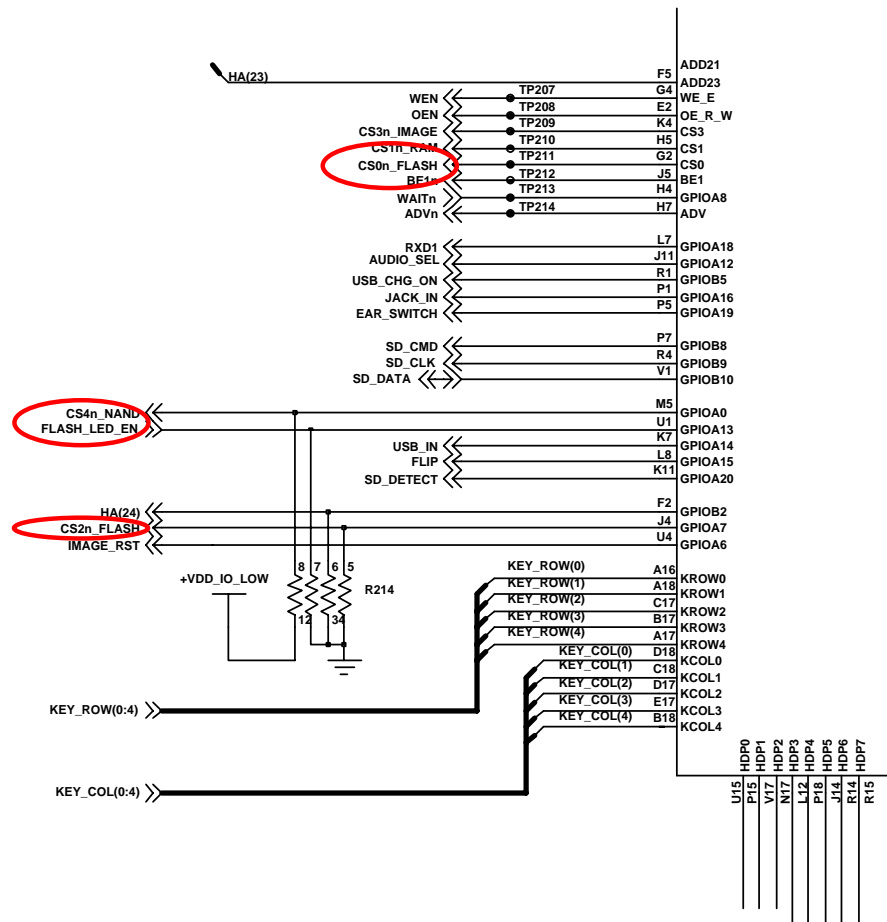
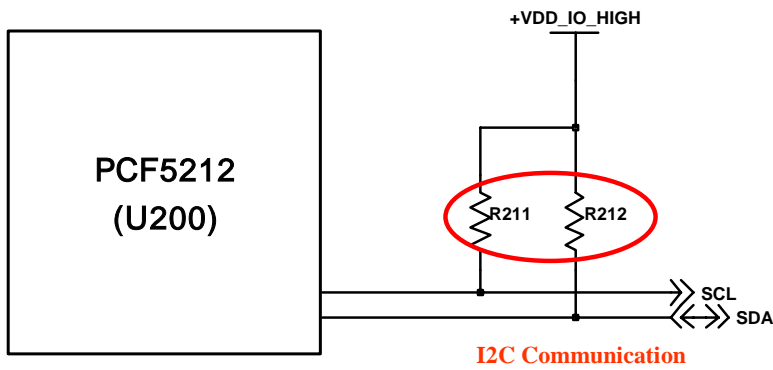
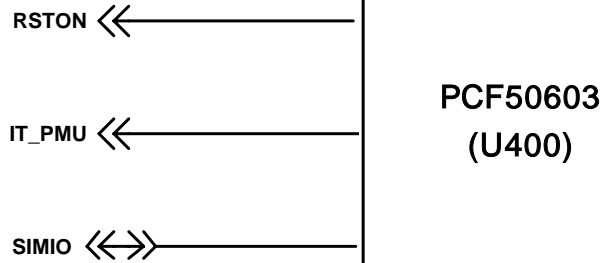




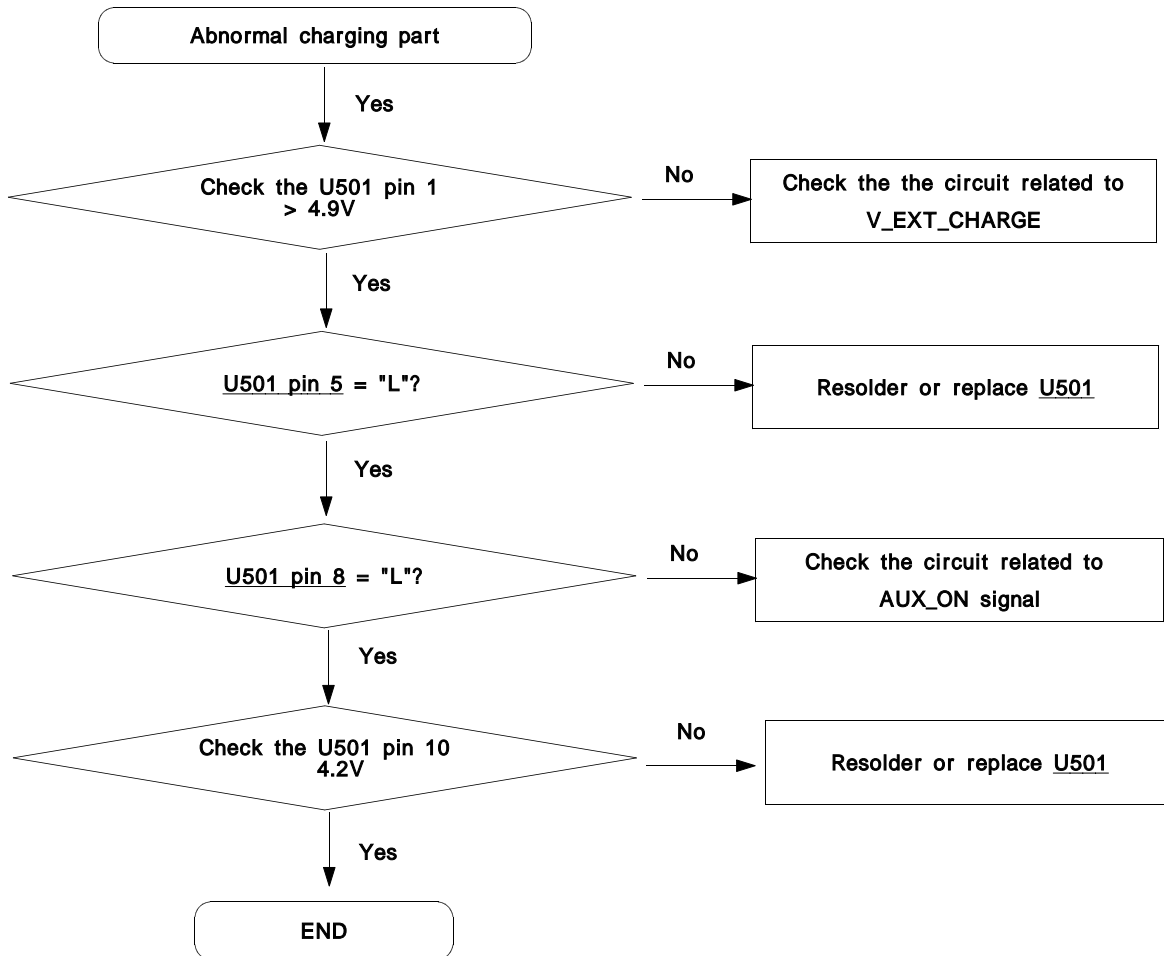
7-2. Initial



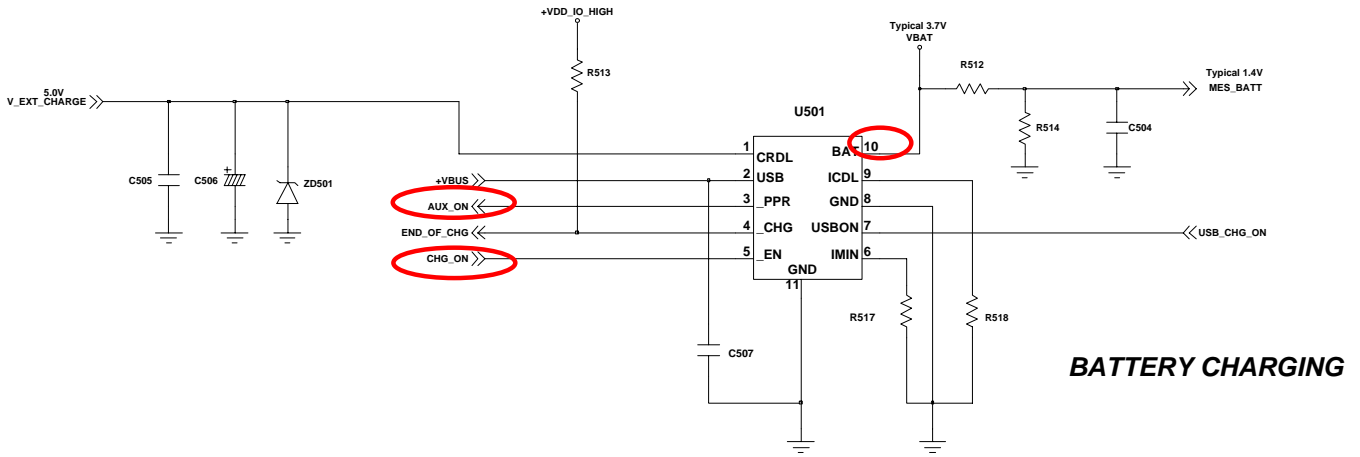
Initial



7-3. Charging Part

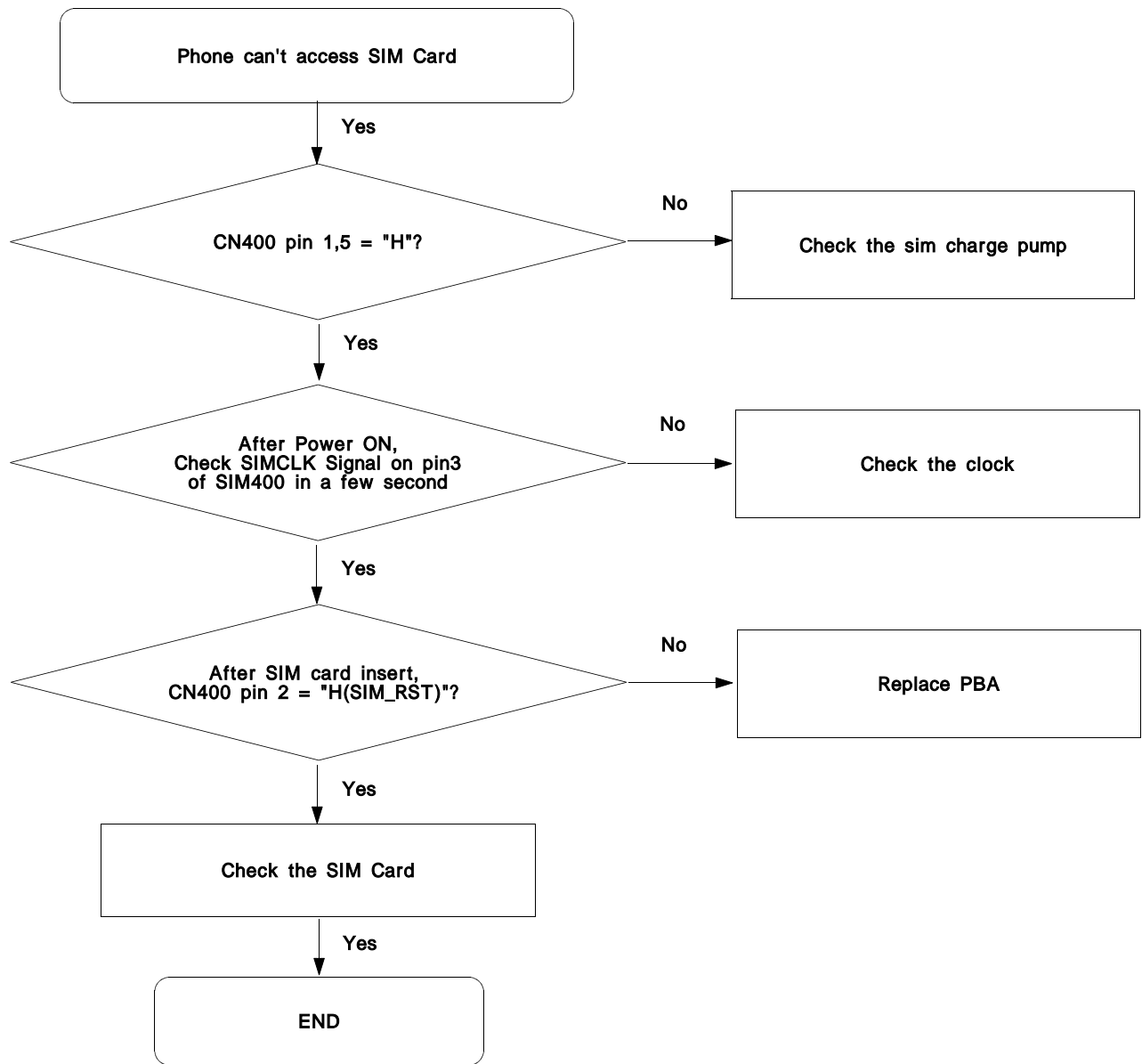


Charging

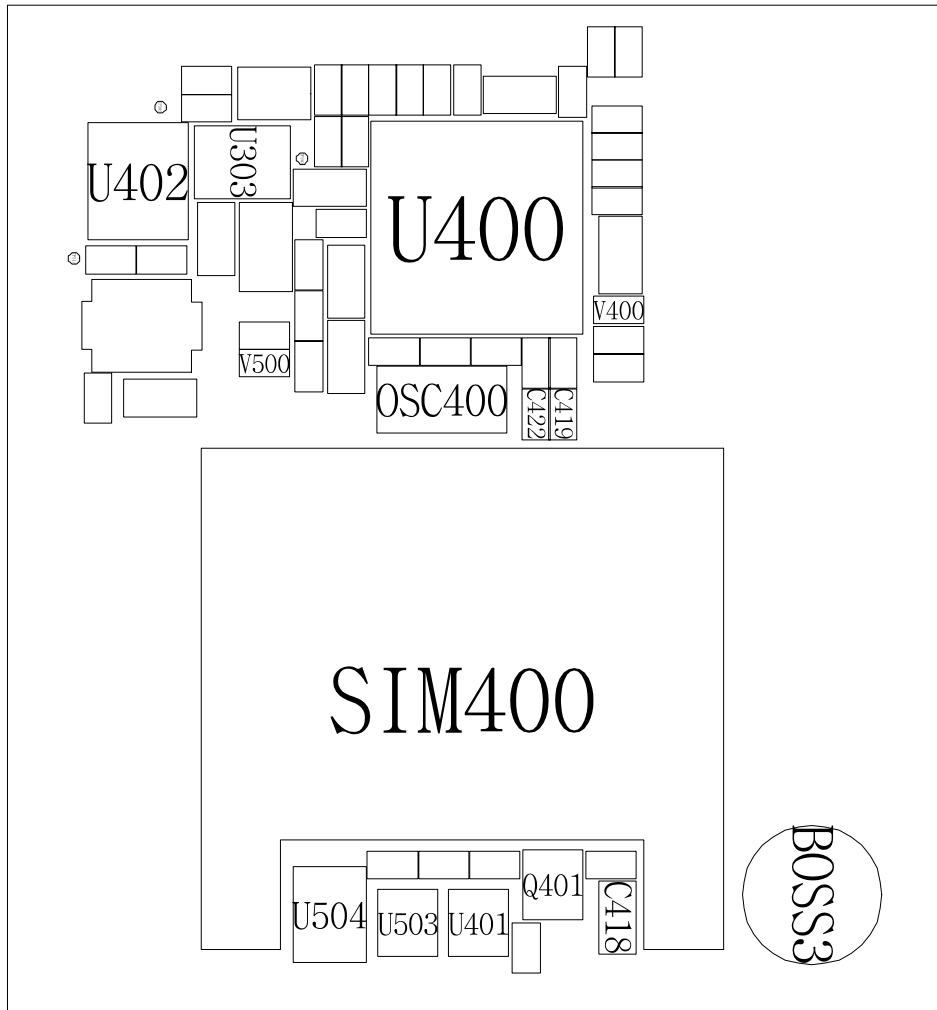
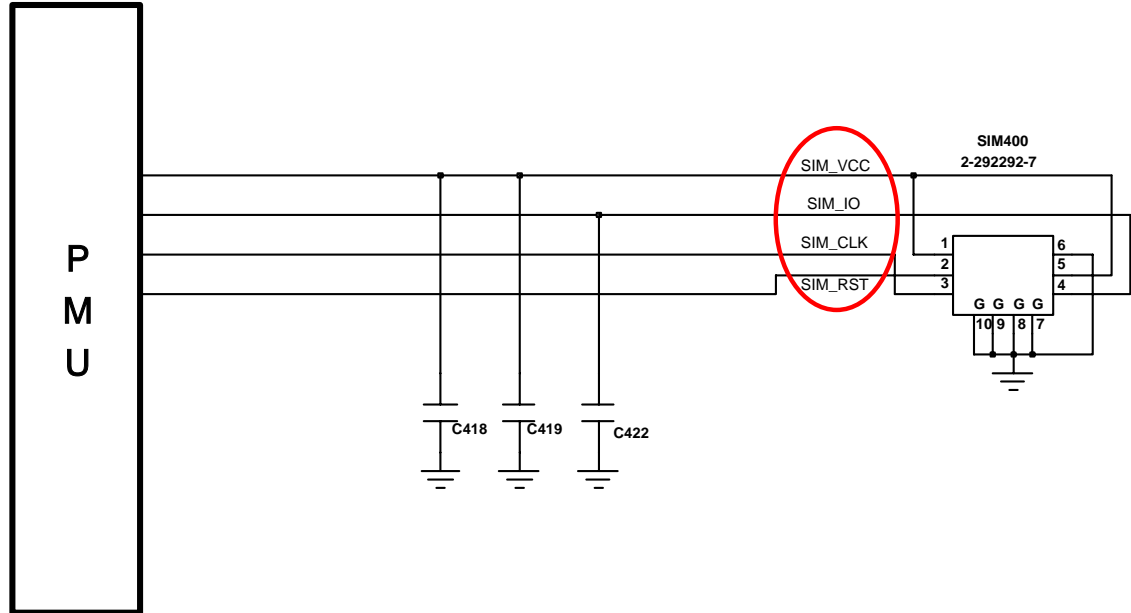


BATTERY CHARGING

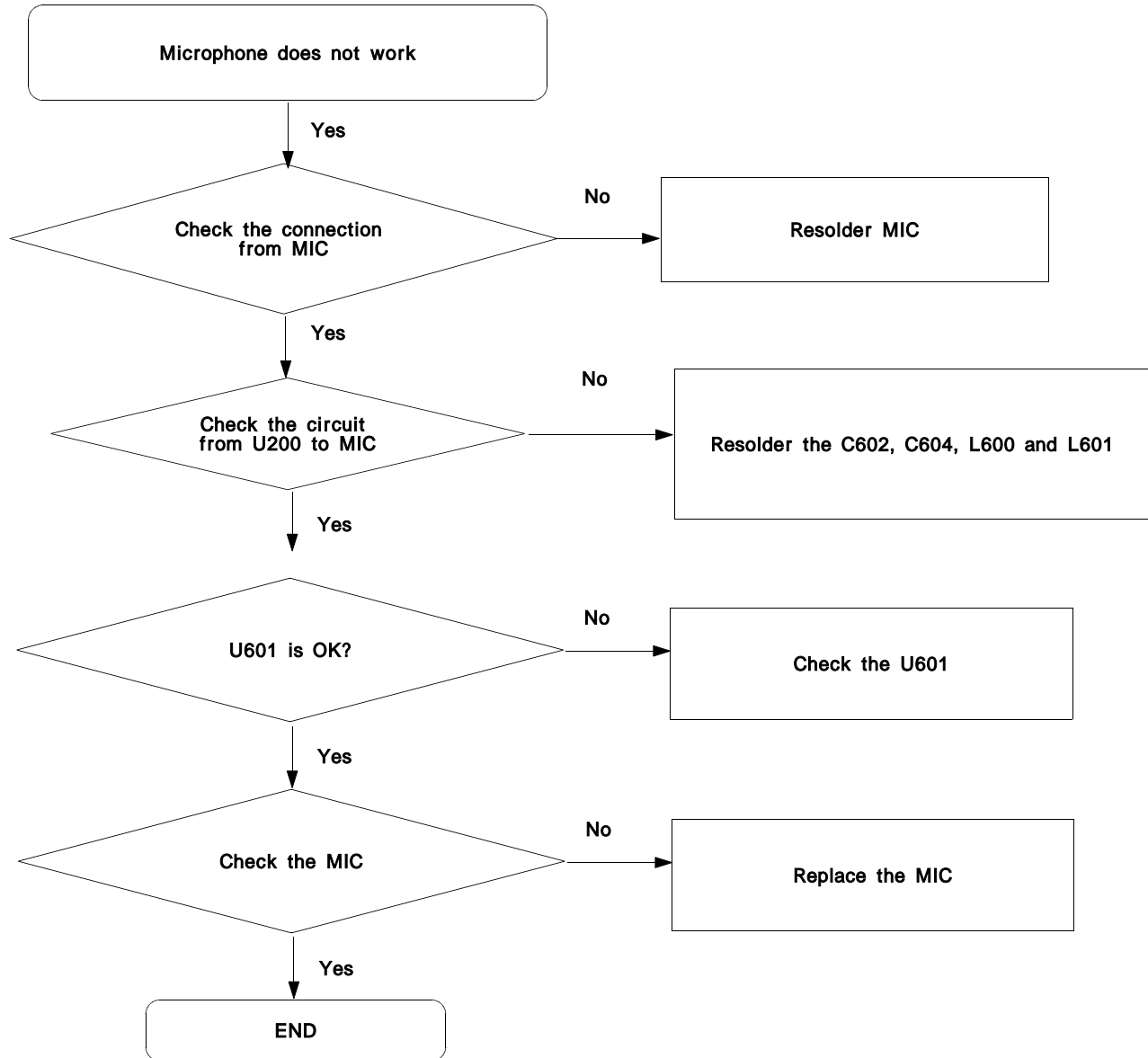
7-4. Sim Part



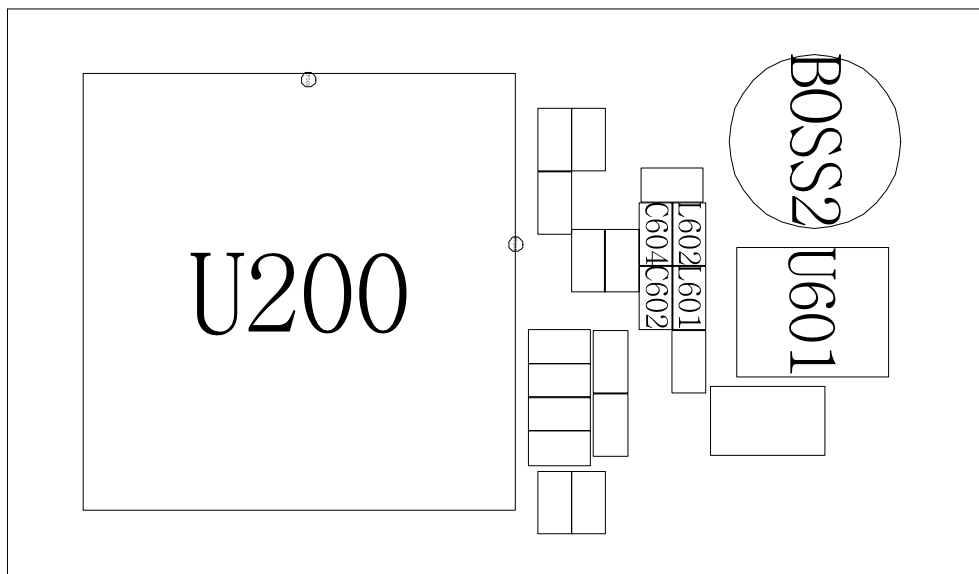
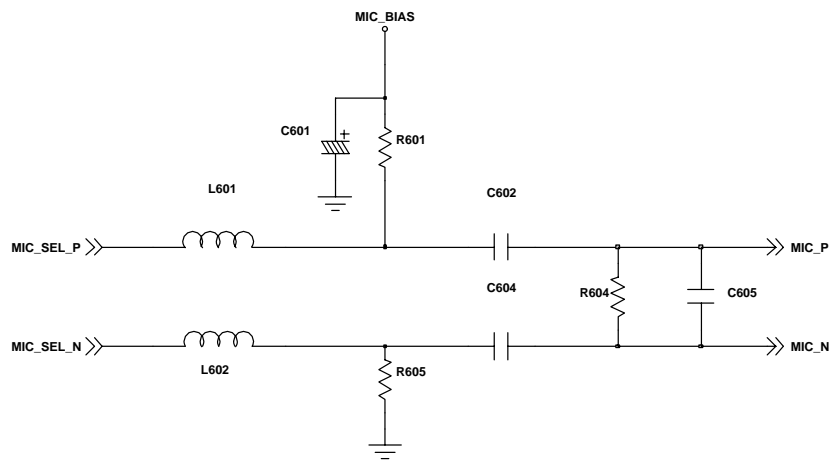
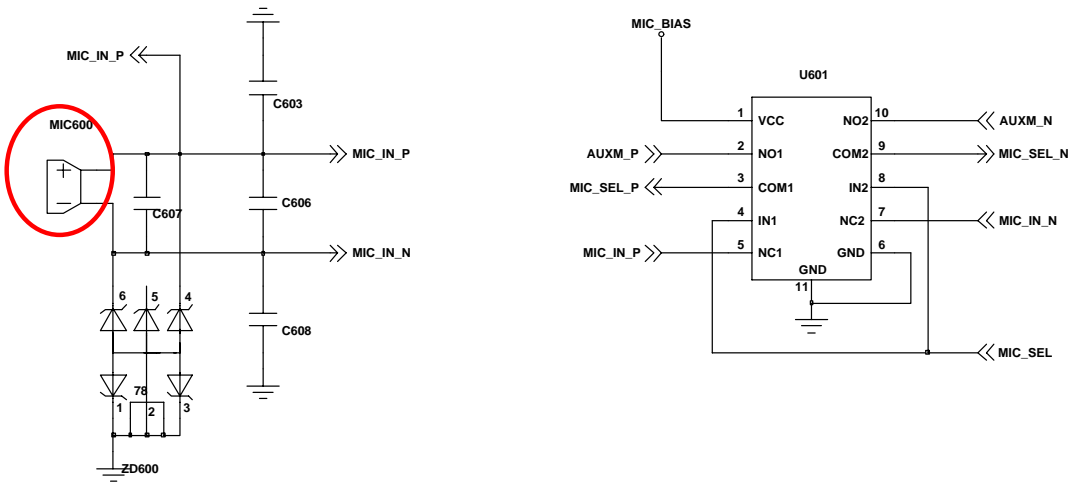
SIM



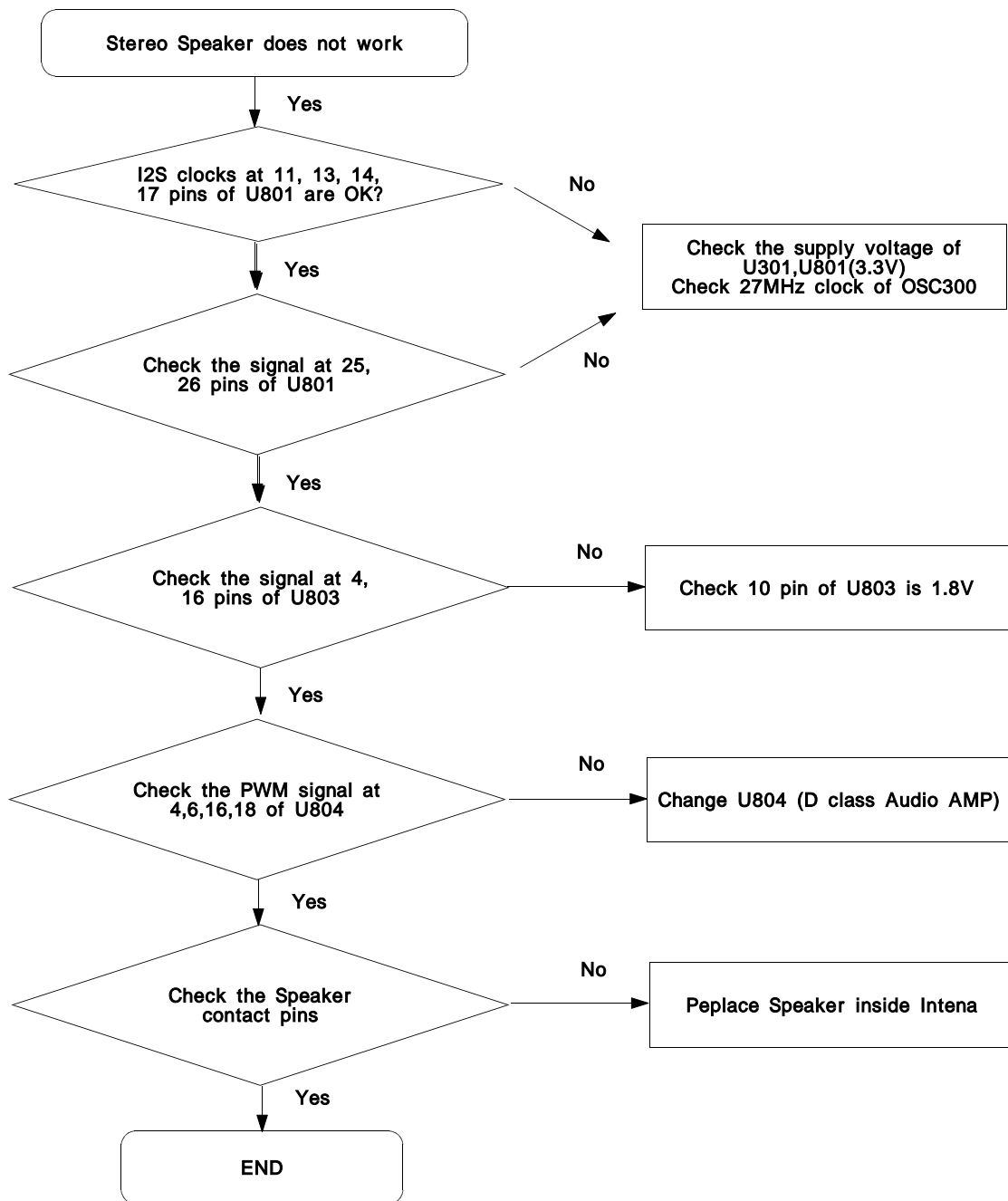
7-5. Microphone Part



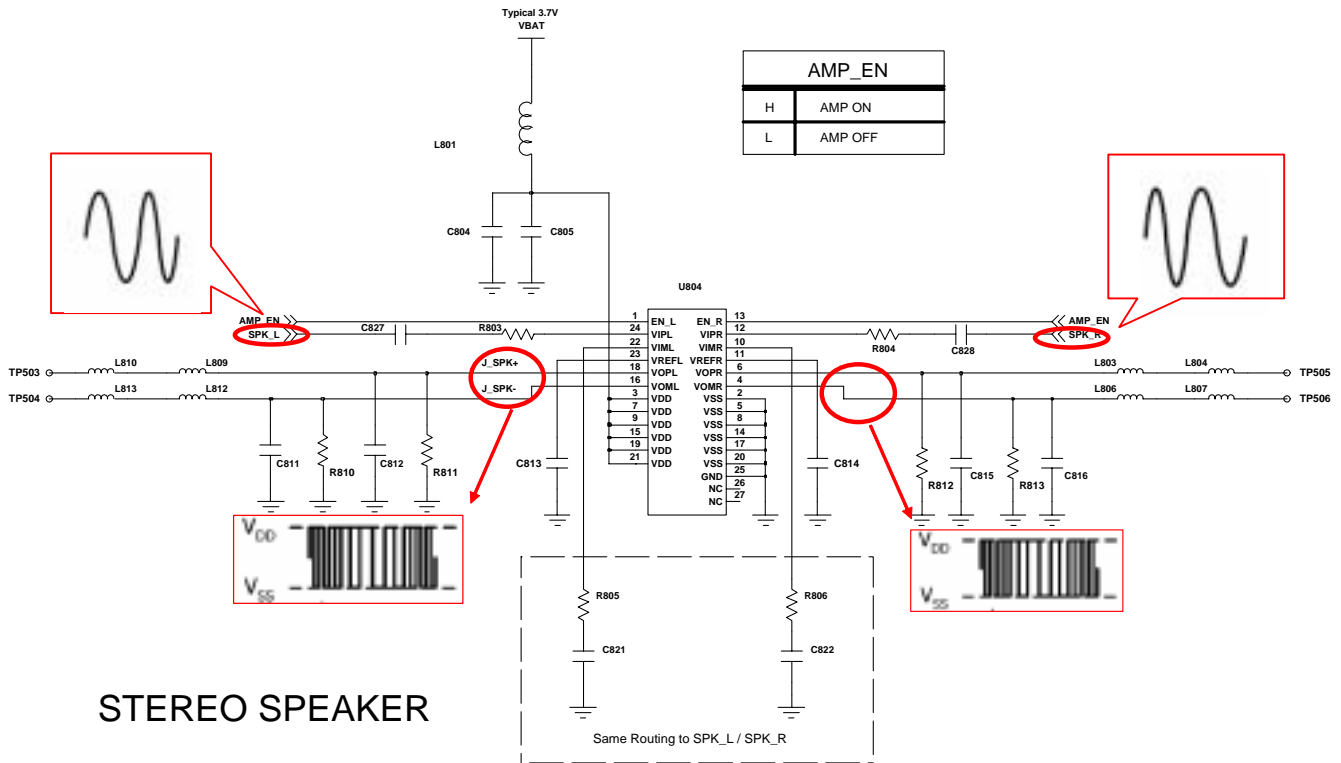
Microphone



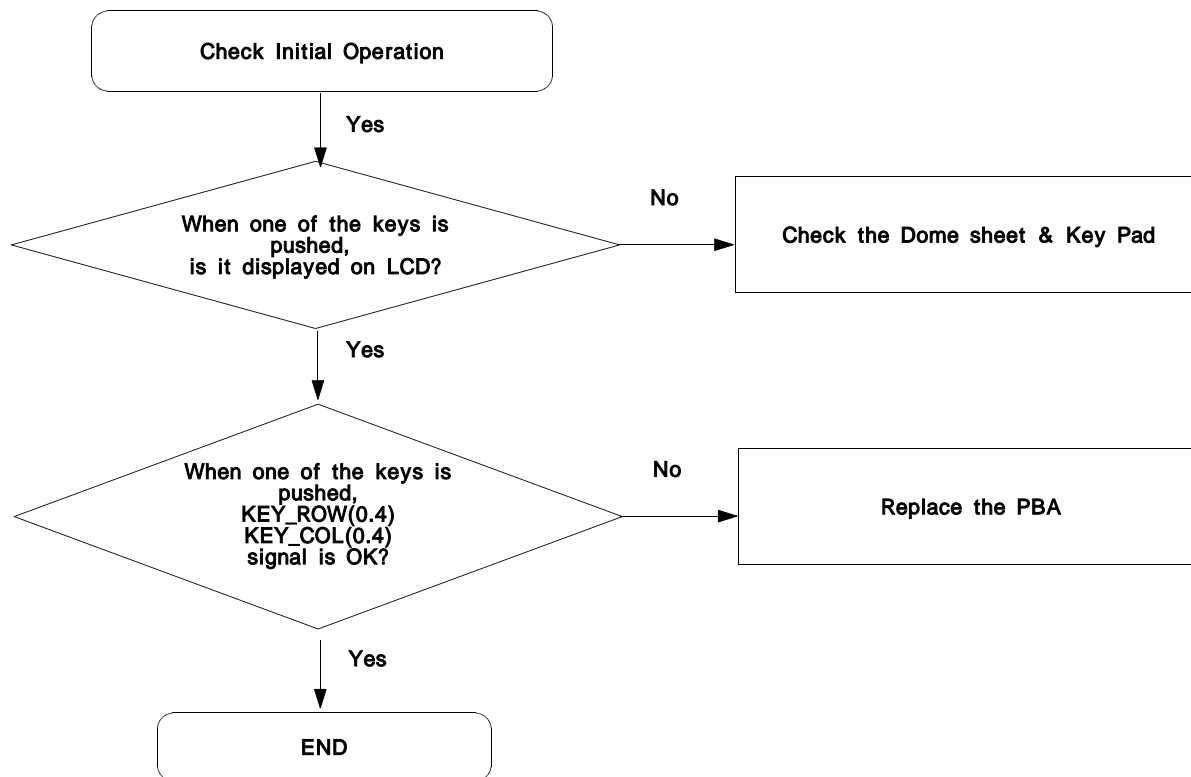
7-6. Speaker Part(MP3/Spk)



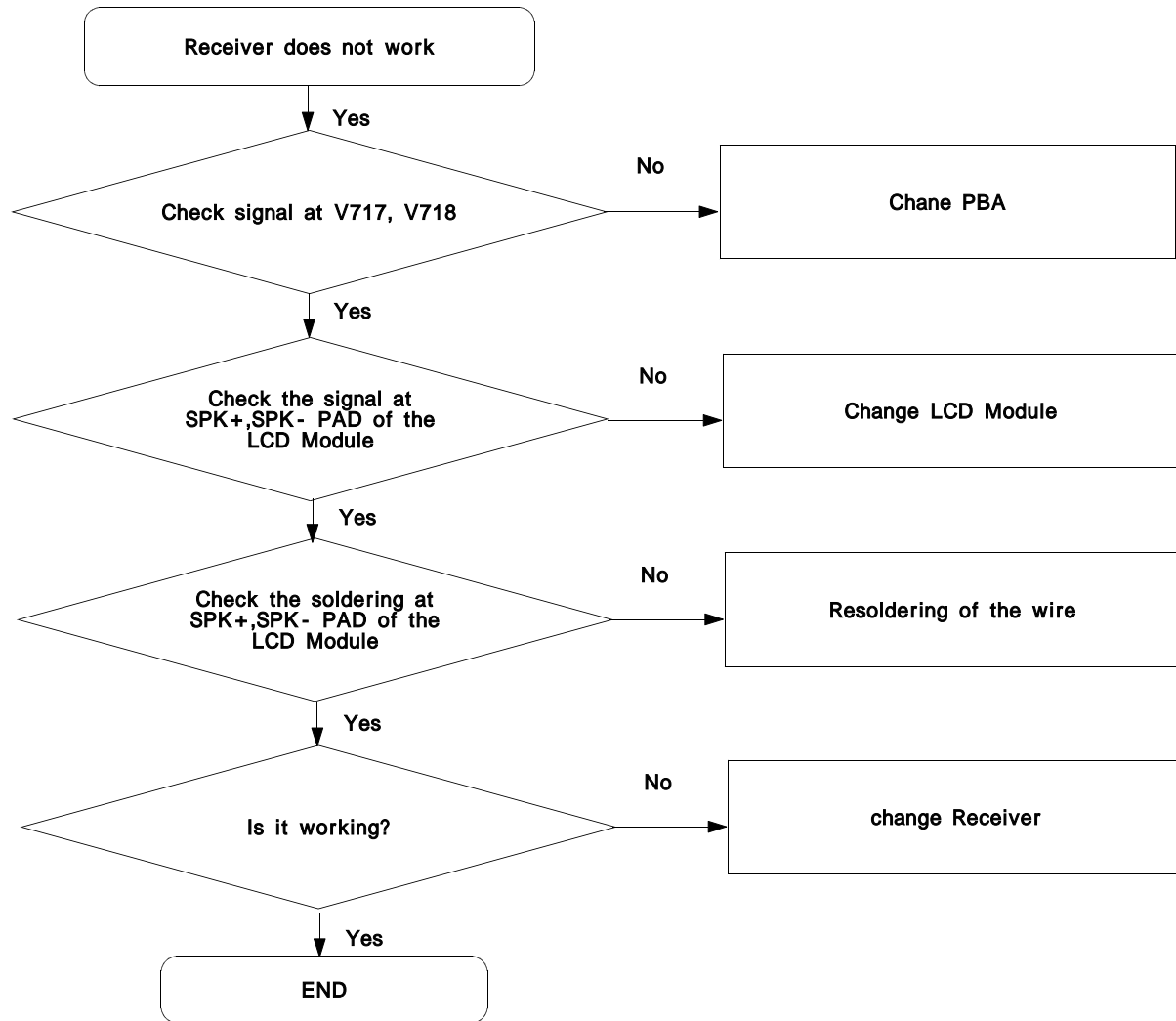
Speaker

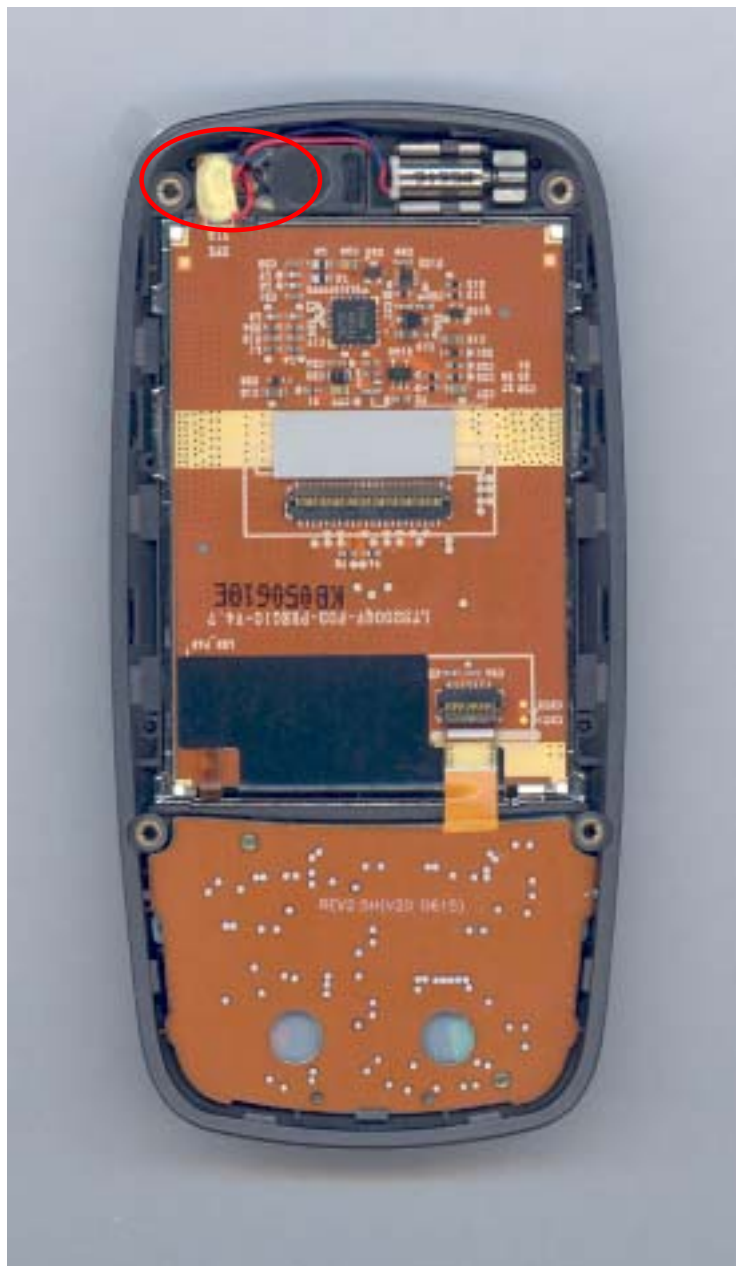


7-7. Key Data Input

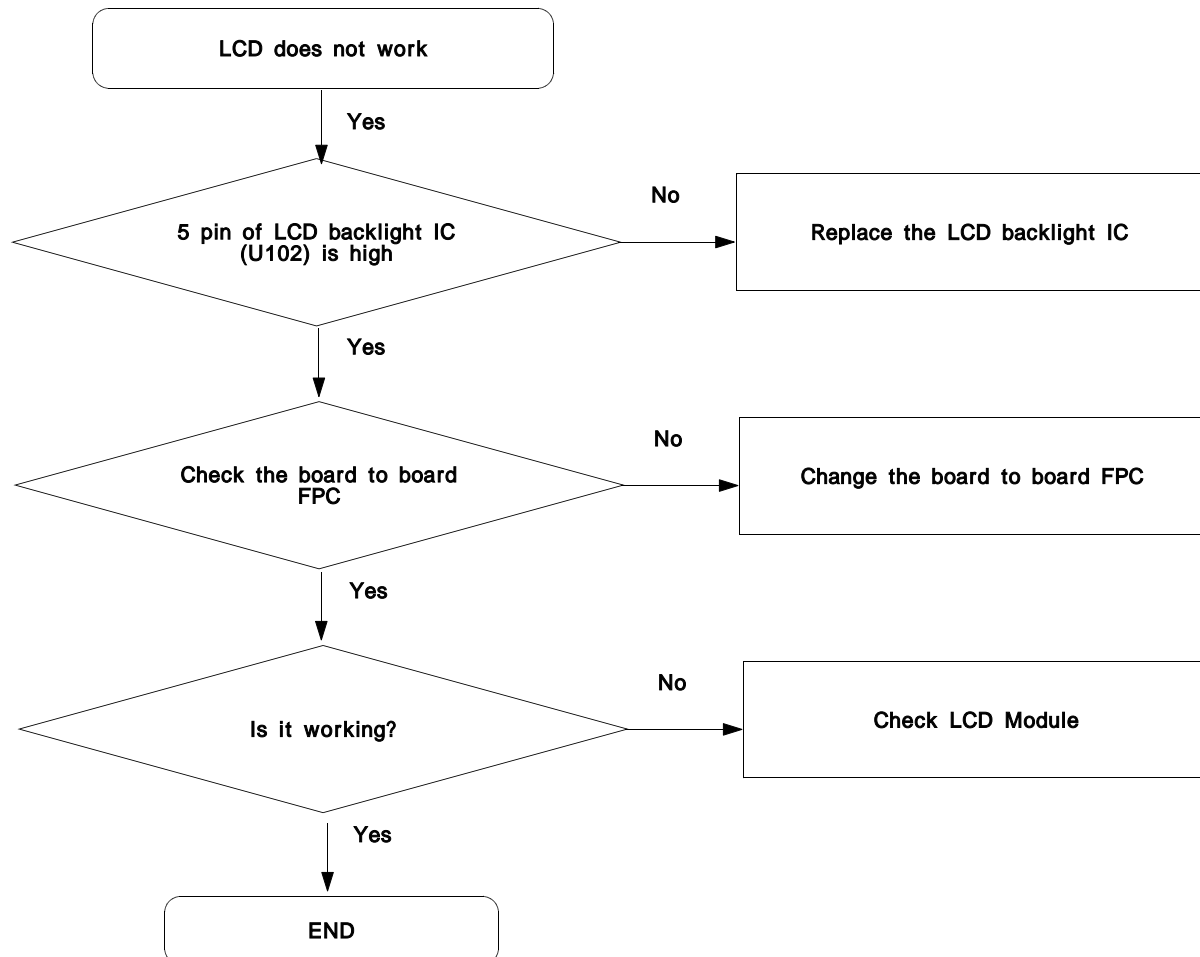


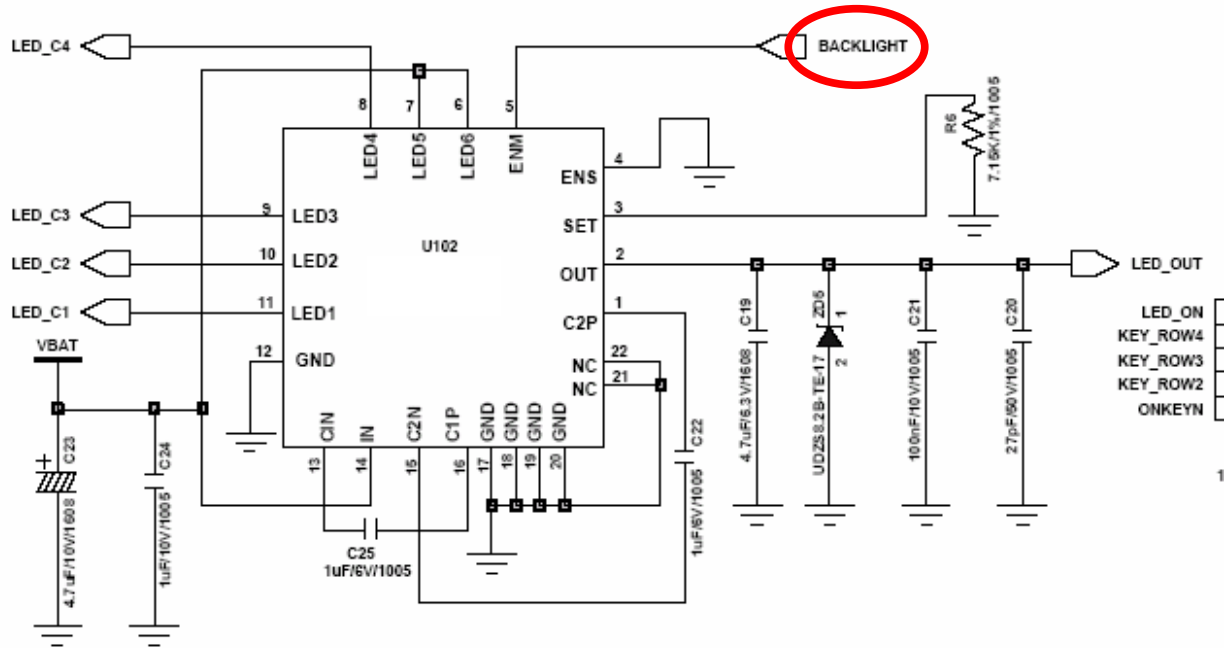
7-8. Receiver Part



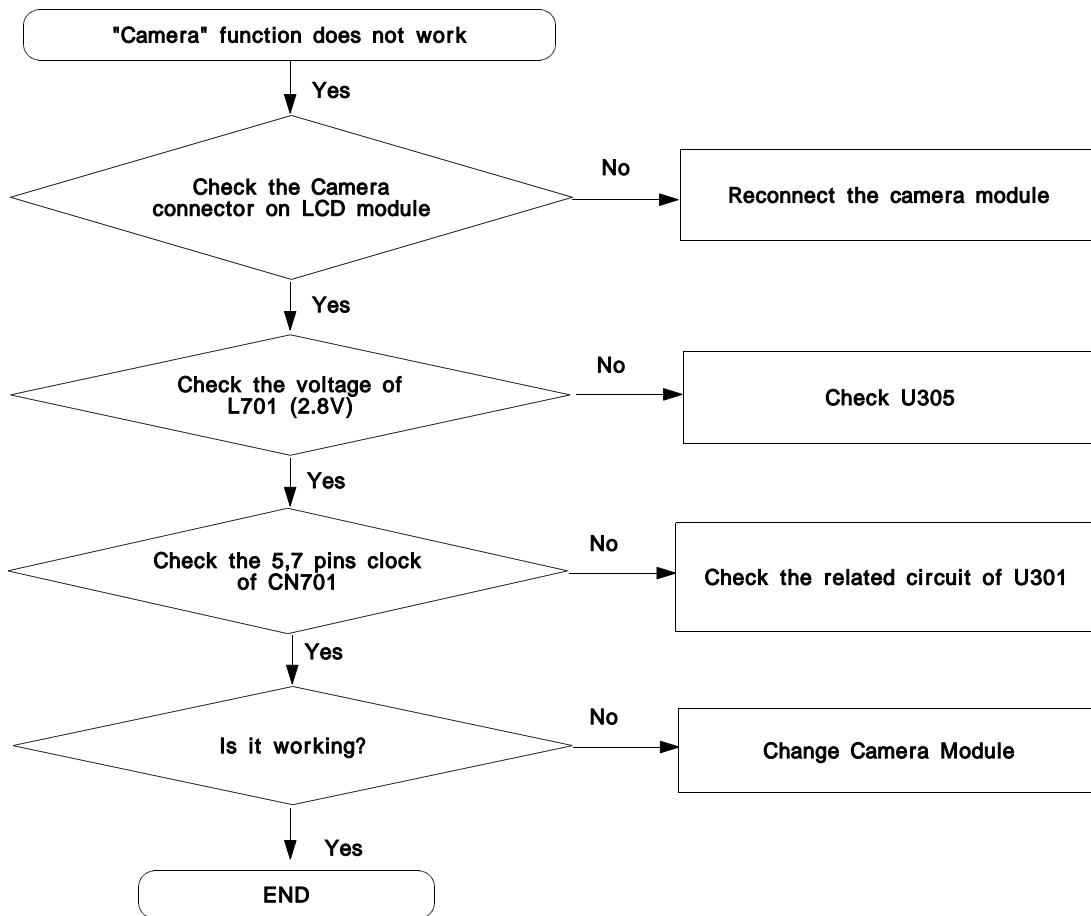


7-9. LCD Part

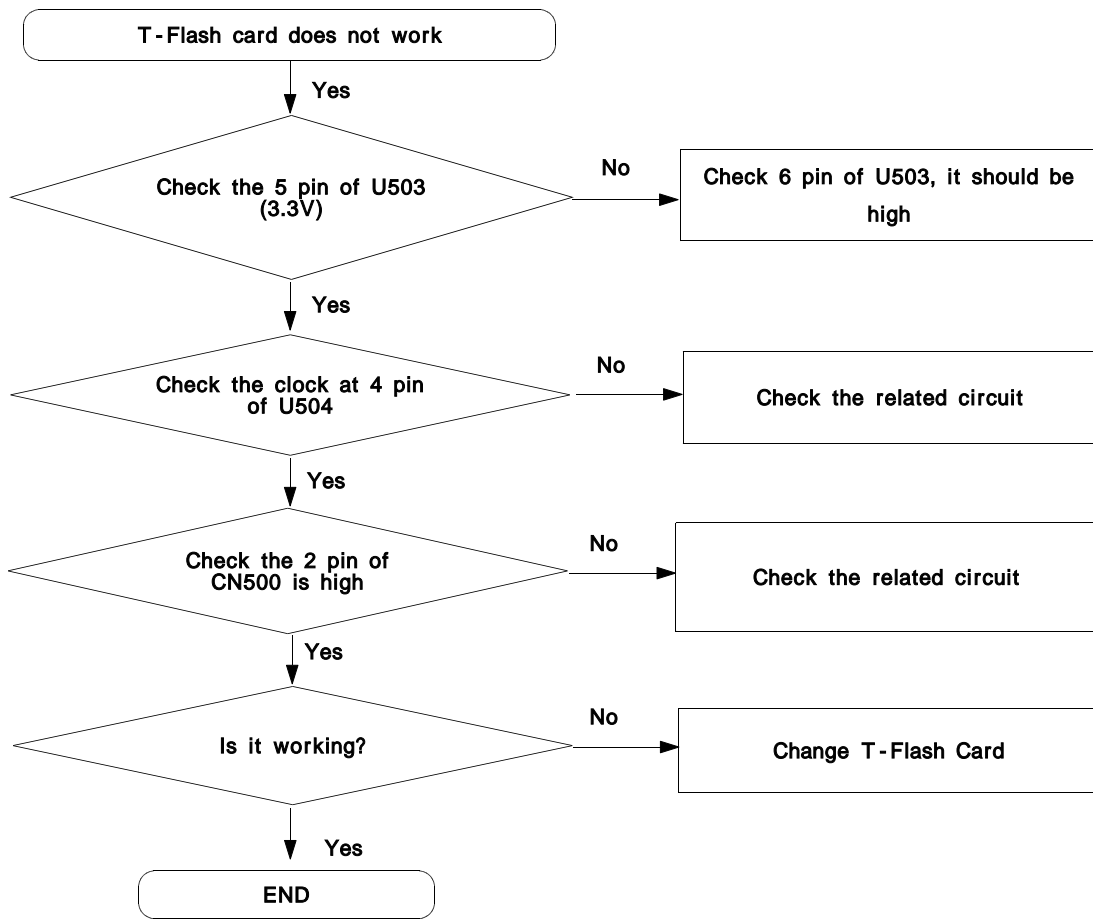




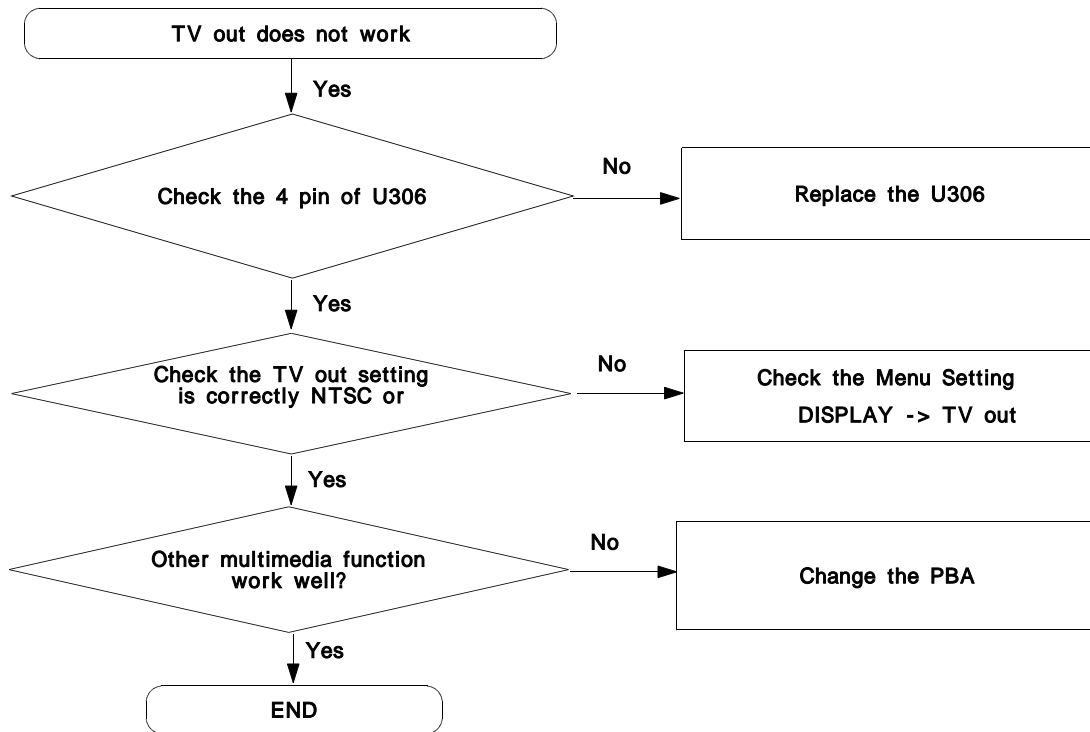
7-10. Camera part



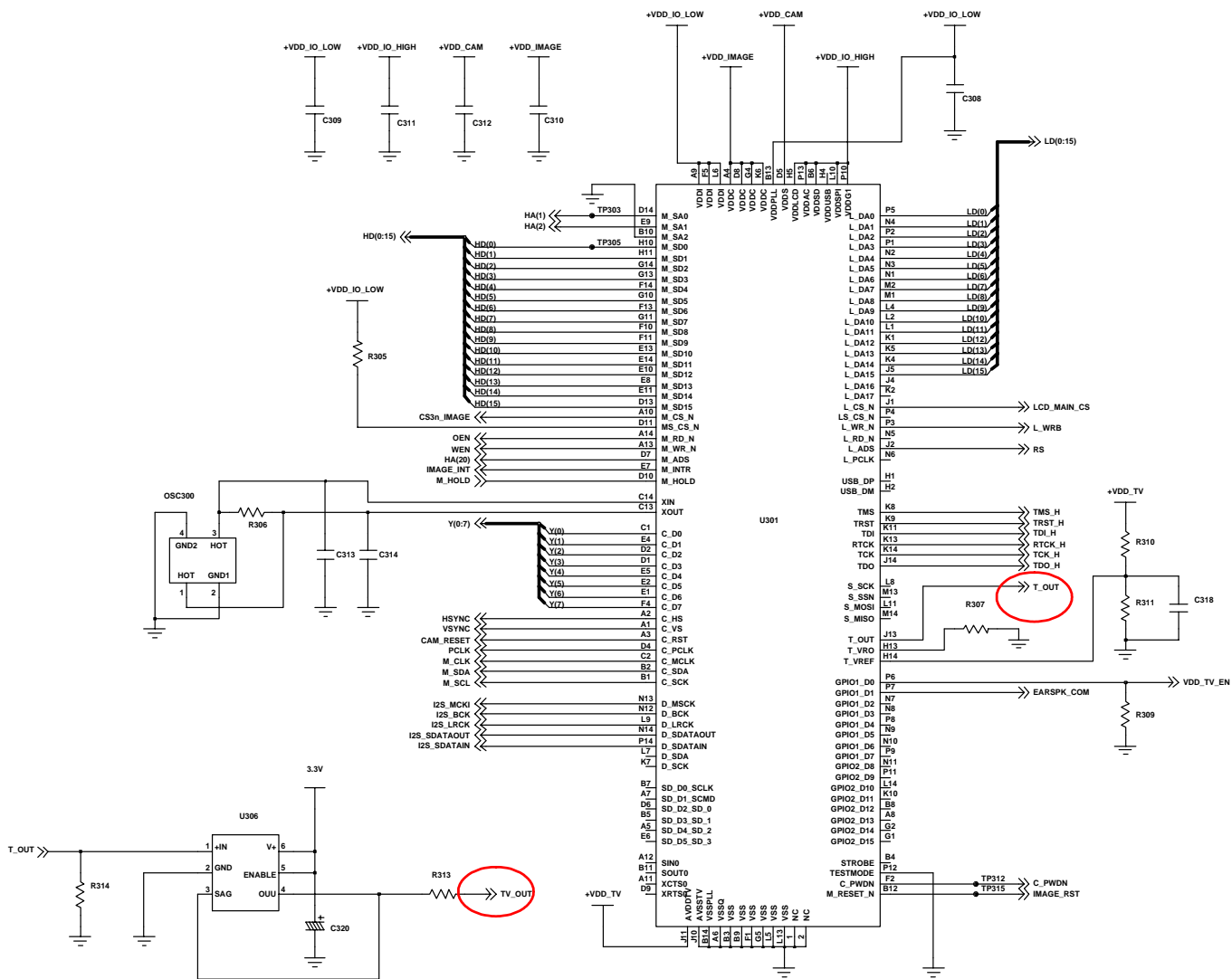
7-11. Trans Flash Card part



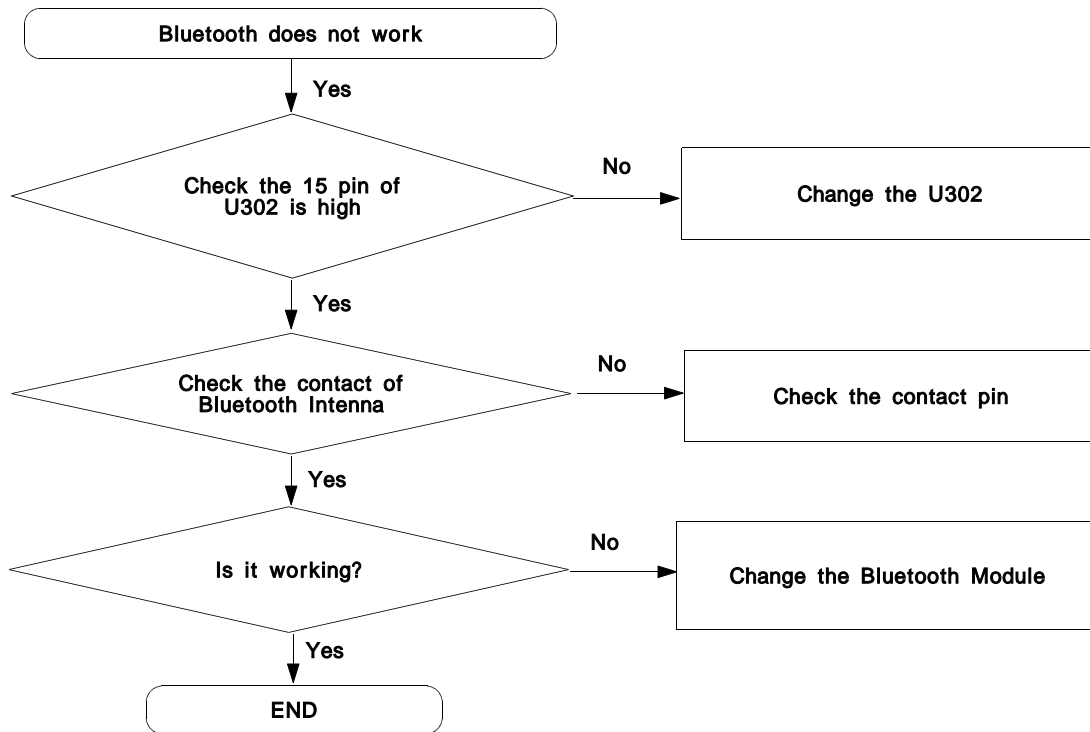
7-12. TV OUT



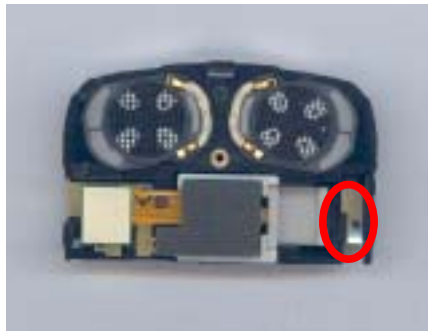
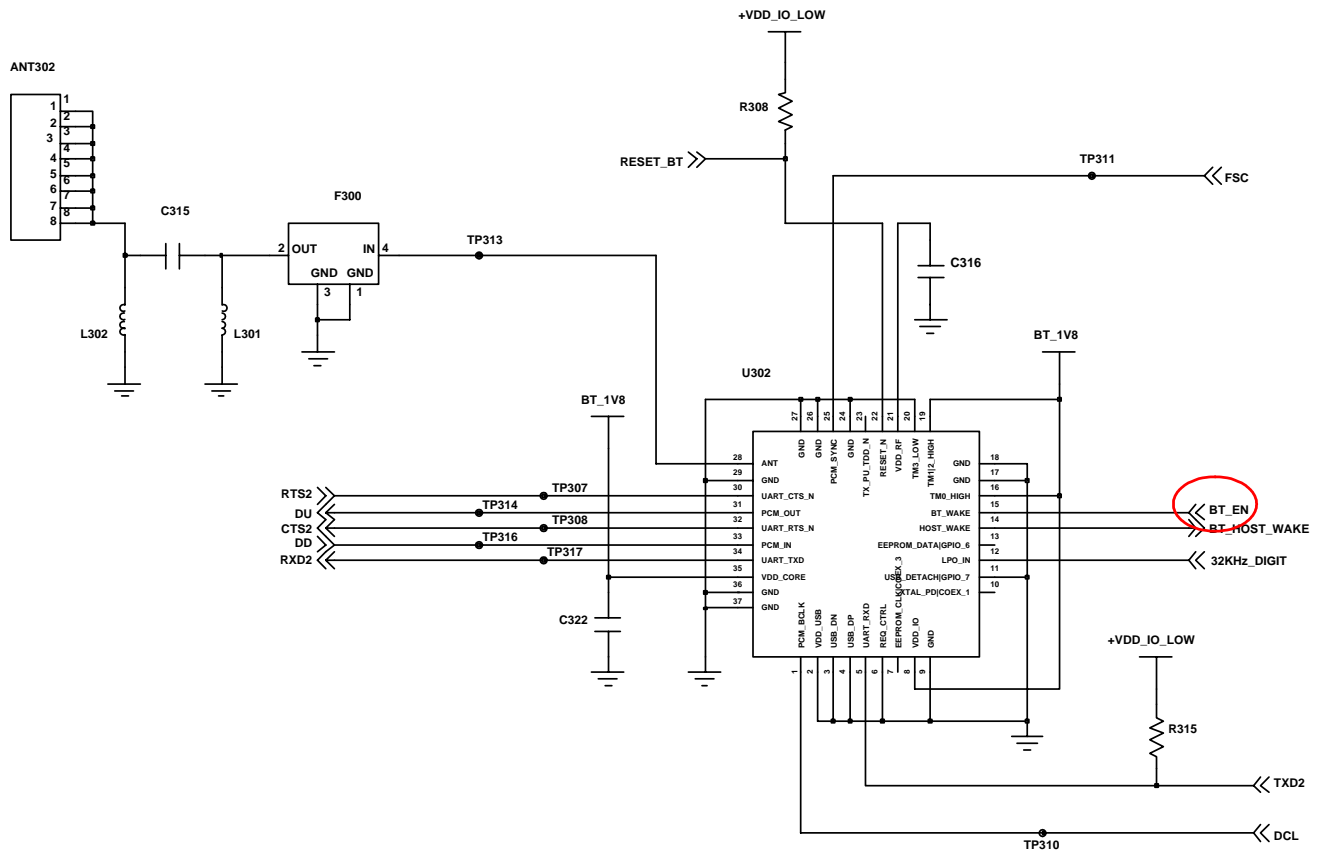
Flow Chart of Troubleshooting



7-13. Bluetooth part



Flow Chart of Troubleshooting



7-14. Main Key LED part

