

SAMSUNG

GSM TELEPHONE

SGH-T519

SERVICE *Manual*

GSM TELEPHONE



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**SAMSUNG
ELECTRONICS**



1. Safety Precautions

1-1. Repair Precaution

- Repair in Shield Box, during detailed tuning.
Take specially care of tuning or test,
because specipicty 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.

1-2. 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.

2. General Introduction

The SGH-T519 Quad Band phone functions as digital phone working in GSM (Global System for Mobile communications)850,EGSM900, DCS1800 and PCS(PersonalCommunication System)1900 modes.

<Specification>

- Dimension : 113 x 50 x 8.6 mm (with Standard Battery)
- Weight : 76g (with Standard Battery)
- LCD : LCD 260K TFT Color LCD (176 x 220) 1.93"
- R/F band : GSM850 / EGSM 900 / DCS1800 / PCS1900
- Vocoder : EFR + FR + HR + AMR
- Antenna : Fixed type
- SIM : 3 Voltage operation
- BLUETOOTH : VER 1.0

<GPRS/EGPRS Factor>

- MS Class : Class B
- GPRS Phase : GSM Phase II+
- Multi-slot : GPRS/EGPRS Class 10 (2 Up-link, 4 Down-link, 5 Sum)
- SMG : SMG #31
- Coding scheme : CS1 - CS4(GPRS), MCS5 - MCS9(EGPRS) support
- Power class : GSM850 - Class 4 (2W)
EGSM900 - Class 4 (2W)
DCS1800 - Class 1 (1W)
PCS1900 - Class 1 (1W)
- WAP 2.0 Browser
- SIM AT(Application Toolkit)
- 40 Polyphonic Ringtone

< Basic Package >

- Handset + Standard Battery + TA + User Guide + Handstrap

< Option Item >

- Travel Adapter
- Ear Microphone
- Bluetooth Headset
- Bluetooth Hands Free Kit
- Car Charger/Adapter

3. Specification

3-1. GSM General Specification

		GSM850	EGSM900	DCS1800	PCS1900
Freq. Band[MHz] Uplink/Downlink		824~849 869~894	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range		128~251	0~124& 975~1023	512~885	512~810
Tx/Rx spacing		45 MHz	45 MHz	95 MHz	80 MHz
Mod. Bit rate/ Bit Period	GPRS	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us
	EDGE	812.5 Kbps 3.692 us	812.5 Kbps 3.692 us	812.5 Kbps 3.692 us	812.5 Kbps 3.692 us
Time Slot Period/Frame Period		576.9 us 4.615 ms	576.9 us 4.615 ms	576.9 us 4.615 ms	576.9 us 4.615 ms
Modulation	GPRS	0.3 GMSK	0.3 GMSK	0.3 GMSK	0.3 GMSK
	EDGE	8 PSK	8 PSK	8 PSK	8 PSK
MS Power	GPRS	33 dBm~5 dBm	33 dBm~5 dBm	30 dBm~0 dBm	30 dBm~0 dBm
	EDGE	27~5 dBm	27~5 dBm	26~0 dBm	26~0 dBm
Power Level	GPRS	5~19(class4)	5~19(class4)	0~15(class1)	0~15(class1)
	EDGE	8~19(class E2)	8~19(class E2)	2~15(class E2)	2~15(class E2)
Sensitivity		-102 dBm	-102 dBm	-100 dBm	-102 dBm
TDMA Mux		8	8	8	8
Cell Radius		35 Km	35 Km	2 Km	2 Km

3-2. GSM TX power class

TX Power control level	GSM850	TX Power control level	EGSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
5	33±2 dBm	5	33±2 dBm	0	30±3 dBm	0	30±3 dBm
6	31±2 dBm	6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm	11	21±2 dBm	6	18±3 dBm	6	18±3 dBm
12	19±2 dBm	12	19±2 dBm	7	16±3 dBm	7	16±3 dBm
13	17±2 dBm	13	17±2 dBm	8	14±3 dBm	8	14±3 dBm
14	15±2 dBm	14	15±2 dBm	9	12±4 dBm	9	12±4 dBm
15	13±2 dBm	15	13±2 dBm	10	10±4 dBm	10	10±4 dBm
16	11±2 dBm	16	11±2 dBm	11	8±4 dBm	11	8±4 dBm
17	9±2 dBm	17	9±2 dBm	12	6±4 dBm	12	6±4 dBm
18	7±2 dBm	18	7±2 dBm	13	4±4 dBm	13	4±4 dBm
19	5±2 dBm	19	5±2 dBm	14	2±5 dBm	14	2±5 dBm
				15	0±5 dBm	15	0±5 dBm

3-3. EDGE TX Power Level

TX Power control level	GSM850	TX Power control level	EGSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
8	27±3 dBm	8	27±3 dBm	2	26±3 dBm	2	26±3 dBm
9	25±3 dBm	9	25±3 dBm	3	24±3 dBm	3	24±3 dBm
10	23±3 dBm	10	23±3 dBm	4	22±3 dBm	4	22±3 dBm
11	21±3 dBm	11	21±3 dBm	5	20±3 dBm	5	20±3 dBm
12	19±3 dBm	12	19±3 dBm	6	18±3 dBm	6	18±3 dBm
13	17±3 dBm	13	17±3 dBm	7	16±3 dBm	7	16±3 dBm
14	15±3 dBm	14	15±3 dBm	8	14±3 dBm	8	14±3 dBm
15	13±3 dBm	15	13±3 dBm	9	12±4 dBm	9	12±4 dBm
16	11±5 dBm	16	11±5 dBm	10	10±4 dBm	10	10±4 dBm
17	9±5 dBm	17	9±5 dBm	11	8±4 dBm	11	8±4 dBm
18	7±5 dBm	18	7±5 dBm	12	6±4 dBm	12	6±4 dBm
19	5±5 dBm	19	5±5 dBm	13	4±4 dBm	13	4±4 dBm
				14	2±5 dBm	14	2±5 dBm
				15	0±5 dBm	15	0±5 dBm

4. Product Function

Main Function

- 1.3 Megapixel Camera and Camcorder
- Bluetooth® Wireless Technology
- Instant Messageing capability
- Multimedia capability
- Fun & Apps featureprovides My Files, music player, games, alarms, calendar, task list, calculator, world time, unit conversion, timer, and stopwatch.

5. Circuit Description

< RF Circuit Description of SGH-T519 >

1. FEM (F100)

==> Switching Tx, Rx path for GSM850, EGSM900, DCS1800 and PCS1900 controlled by logic.

Integration of GSM850, EGSM900, DCS1800 and PCS1900 RX SAW Filters.

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

- for filtering the frequency band 824 ~ 849 / 869 ~ 894 MHz
- for filtering the frequency band 880 ~ 915 / 925 ~ 960 MHz
- for filtering the frequency band 1710 ~ 1785 / 1805 ~ 1880 MHz
- for filtering the frequency band 1850 ~ 1910 / 1930 ~ 1990 MHz

2. FEM Control Logic

==> Truth Table

	VC1	VC2	VC3
GSM850 Rx Mode	L	L	H
EGSM900	L	L	L
GSM850/EGSM900 Tx Mode	L	H	L
DCS/PCS Rx Mode	L	L	L
DCS/PCS Tx Mode	H	L	L

3. VC-TCXO(TCX400)

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

4. SKY74137 (UCD100)

==> The sky74137 is a RF transceiver IC for GS850, EGSM900 DCS1800 and PCS1900 quardband cellular systems, and incorporates EDGE transceiver capability, and integrates most of the low power silicon functions of a transceiver. The receive path implements a direct downconversion architecture. The transceiver consists of four integrated Low Noise Amplifiers (LNAs), a quadrature demodulator, selectable baseband filter bandwidths, and lowdroop DC Offset Correction (DCOC) sequencer.

- RX Function

Four LNAs which support different bands of operation have separated differential inputs. The LNA outputs feed into a quadrature demodulator that down-converts the RF signals directly to baseband. The baseband I and Q paths consist of cascaded amplifiers and low pass filter sections. All baseband filtering is provided on-chip using no external capacitors.

- TX Function

The device implements Skyworks Polar Loop transmit architecture. This architecture autonomously splits the amplitude and phase within the device using the traditional analog In-Phase and Quadrature (I/Q) signals. The filter-saving advantage of the translation-loop approach is embedded in the architecture. Also included is an AM loop that provides both signal AM and power level control. The transmitter is provided a coupled feedback signal from the PA and downconverts it to an IF. Following an IF VGA, this feedback signal is fed to both loops. The reference for both loops is a transmit IF signal produced by an I/Q modulator

5. POWER AMP (PAM400)

The module consists of a EGSM850/900 PA block and a DCS1800/PCS1900 PA block, Both PA blocks share common power supply pins to distribute current. The subsystem consists of two parts : a Power Amplifier Control (PAC) block, and an Integrated Coupler. To select GSM900/850 and GMS1800/1900 as determined from the Band Select (BAND_SEL) signal. SKY77331 contains band select switching circuitry to select GSM (BAND_SEL is low) and DCS/PCS (BAND_SEL is HIGH) as determined from the Band Select (BAND_SEL) signal. The BAND_SEL pad selects the PA output (DPCS_OUT or GSM_OUT) while the Power Control (VPC) controls the level of output power. The integrated power amplifier control (PAC) function provides envelope amplitude control by reducing sensitivity to input drive, temperature, power supply, and process variation.

< Baseband Circuit description of SGH-D407 >

1. CSP2750 (UCD301)

==> The CSP2750 has two major logical components power management and conversion signal processing.

The PSC component is responsible for all power-related functionality, including the following;

- Power management for RF, BB and ancillary devices within the GSM/GPRS
- Battery-charge management
- Reset control
- SIM card voltage-level shifting

The CSP component is responsible for the following ;

- Intraframe event scheduling
- Voice band processing, including voice band ADC and DAC
- Analog baseband processing, including baseband ADC and DAC
- Providing RF interface for Trident digital baseband device
- Transmitter Power control
- Automatic frequency control
- A5 ciphering
- Low-power sleep mode and wake-up control

The CSP2750 has the following major physical components;

- Timing and control unit
- RF serial interface
- Low-power sleep mode controller
- Baseband Transmitter / Receiver
- Voice input and output

2. WM8955L(UCD401)

==> The WM8955L is a low power, high quality stereo DAC with integrated headphone and loudspeaker amplifiers, designed to reduce external component requirements in portable digital audio application.

The on-chip headphone amplifiers can deliver 40mW into a 16Ω load. Advanced on-chip digital signal processing performs bass and treble tone control.

The WM8955L can operate as a master or a slave, and include an on-chip PLL. It can use most master clock frequencies commonly found in portable systems, including USB, GSM, CDMA or PDC clocks, or standard $256f_s$ clock rates. Different audio sample rates such as 48kHz, 44.1kHz, 8kHz and many other are supported.

The WM8955L operates on supply voltages from 1.8V up to 3.6V, although the digital core can operate on a separate supply down to 1.42V, saving power. Different section of the chip can also be powered down under software control.

3. HPE(UCP201)

==> The Trident-HPE digital baseband processor is a complete system IC designed for wireless terminals that includes two digital signal processor(DSP) cores optimized for low-power communications applications and a powerful, highperformance, industry-standard microcontroller core along with a rich set of peripherals. The Trident-HPE digital baseband processor achieves best-in-class signal processing performance while maintaining the efficient software code density, low power consumption, and small physical size required for GSM/GPRS terminals ARM946E-S microcontroller core;

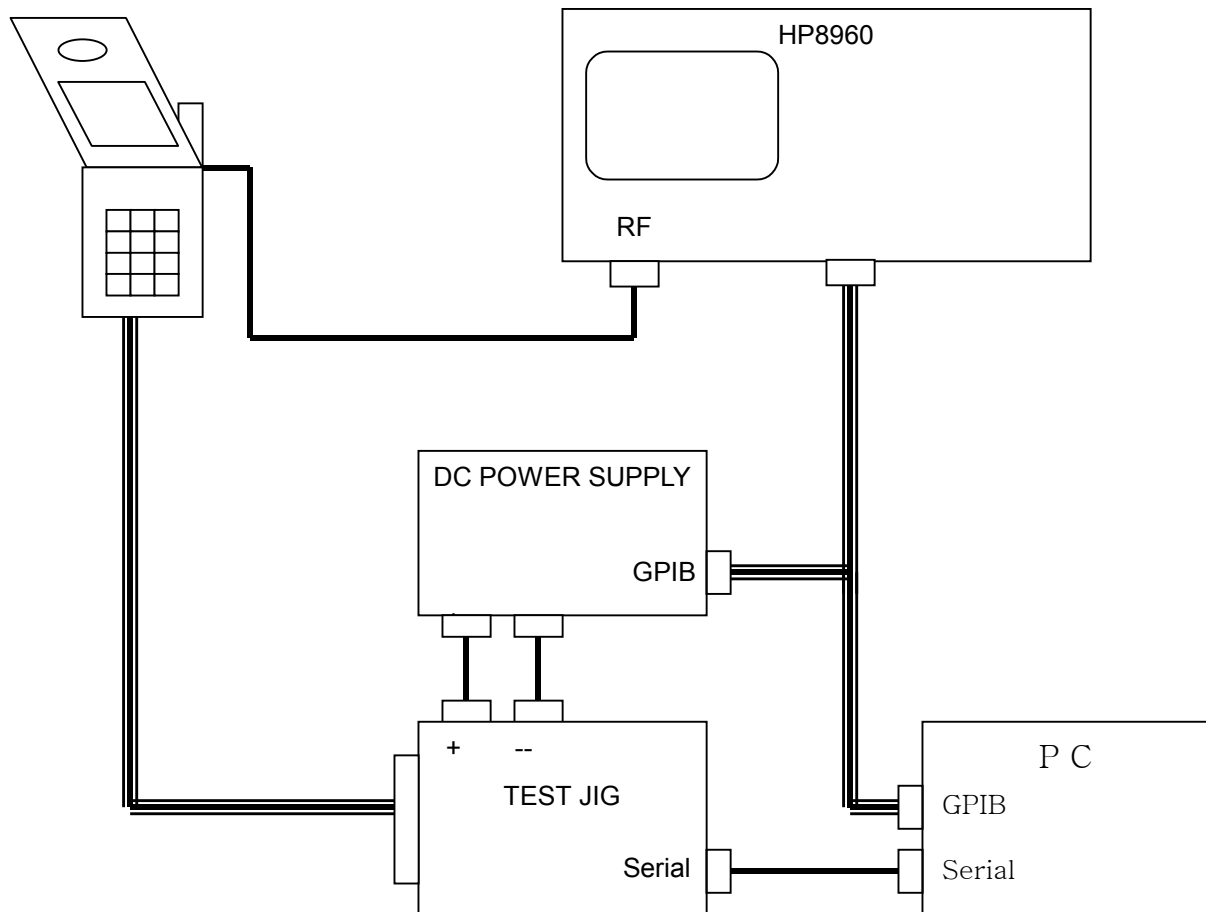
- 101 MHz system bus, 16 kbyte instruction and 16kbyte data caches.
- 8 kbyte tightly coupled zero wait-state instruction and 4kbyte tightly coupled zero wait-state data memory
- direct memory access controller for transparent transfer between memory and peripherals.
- External Memory interface with asynchronous burst mode support

- Synchronous serial port supporting
 - Programmable 48-bit general-purpose IO unit, keyboard interface, programmable interval timer and real-time clock.
 - SD/MMC controller that supports interfacing to secure digital/multimedia memory card. Two DSP16000 dual-MAC DSP cores;● Up to 404 million MACs per second at 101 MHz.
 - Memory complement;
 - DSP0 : 144K X 16-bit ROM, 40k X 16-bit RAM.
 - DSP1 : 96K X 16-bit ROM, 16k X 16-bit RAM.
 - JTAG boundary scan and integrated H/W development system Low power;
 - Ultralow leakage process technology for best-in-class standby power
 - Flexible power management modes to allow for maximum active power management
 - Interprocessor communication hardware support between ARM, DSP0 and DSP1.
- Supported by Trident-HPE digital baseband processor software and hardware development tools as well as industry standard ARM software and hardware development tools Two on-chip, programmable, PLL clock synthesizers;
- one for ARM and DSP, the other one for USB.

6. Test Command & Test Procedure

6-1. Calibration Equipment

- HP 8960
- DC Power Supply
- Test Jig
- Configuration



6-2. Calibration Program

- Samsung internal software

6-3. Tx Power Tune up Procedure

- GMSK

1) Procedure:

- a. Calibration equipment HP8960 and the cell phone are connected through RF cable.
- b. Target power (required power level according to the specification which should be set by calibration program) is set to equipment as power level (ex: GSM 5 level is 32.5 dBm).
- c. Activate phone in Tx_Mode_Only.
- d. HP8960 equipment measures transmitted power through rf test cable from the phone and reports measured level to calibration program.
- e. The program compares measured power with the target power.
- f. The calibration program decides power code which is defined in advance in the program and writes the codes to the flash memory in the phone.

2) Target value is defined according to the value of GSM specification.
See the TX power level definition table below.

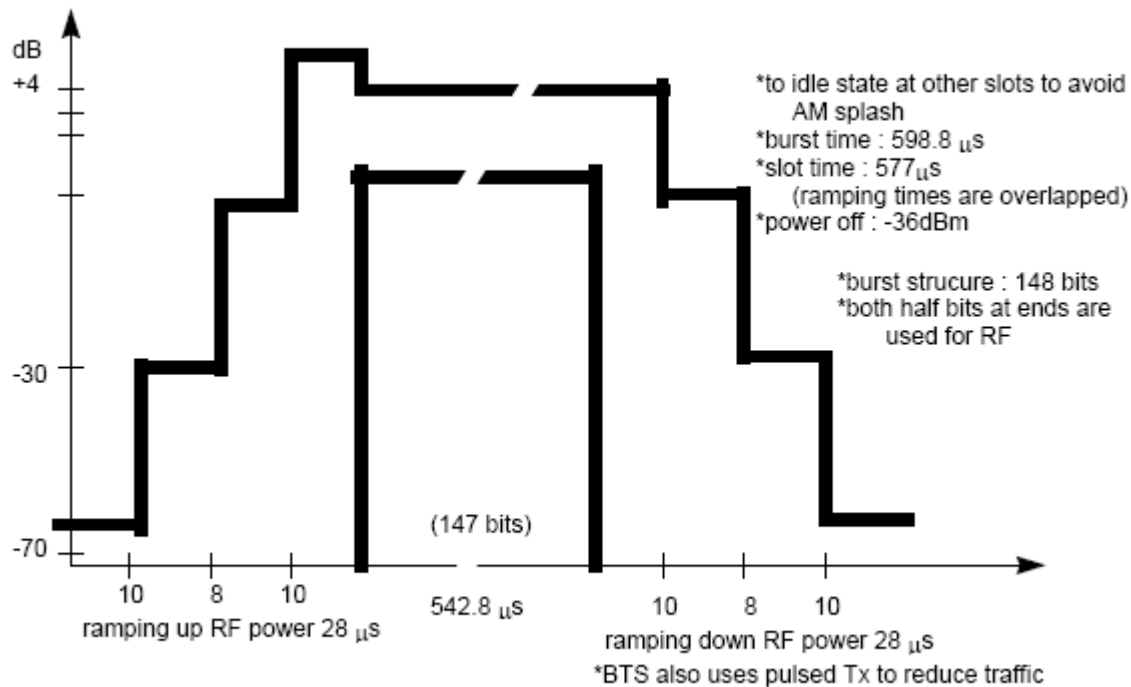
3) Target values of the peak level of the phone are set normally in conducted mode

- GSM850 5 level : 32.5dBm
- EGSM900 5 level : 32.5dBm
- DCS 0 level : 29.5dBm
- PCS 0 level : 29.5dBm (Tolerance : -2dB ~ +1dB)

4) Accuracy

All the TX level from the phone after tuned-up satisfy the GSM specification

5) TX ramp mask specification applied to the calibration program :



- 8PSK

1) Procedure:

- Calibration equipment HP8960 and the cell phone are connected through RF cable.
- Target power (required power level according to the specification which should be set by calibration program) is set to equipment as power level (ex: GSM 8 level is 27 dBm).
- Activate phone in Cont_8psk_Tx_Mode_Only.
- HP8960 equipment measures transmitted power through rf test cable from the phone and reports measured level to calibration program.
- The program compares measured power with the target power.
- The calibration program decides power code which is defined in advance in the program and writes the codes to the flash memory in the phone.

2) Target value is defined according to the value of EGPRS specification.

See the TX power level definition table below.

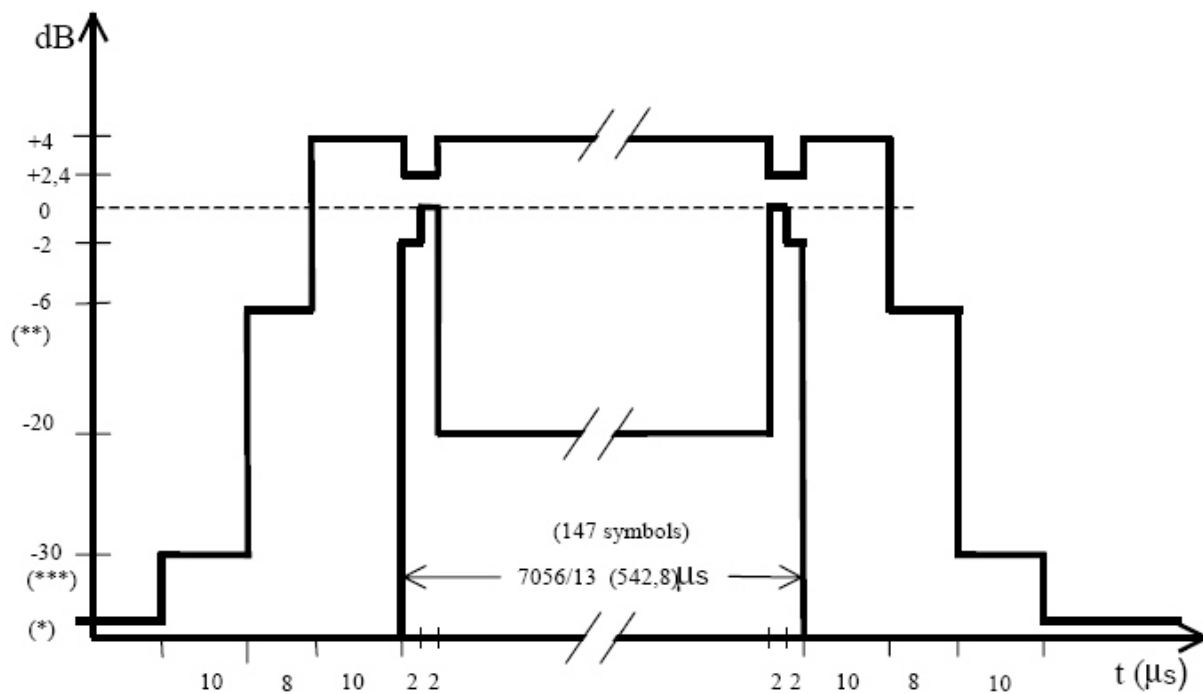
3) Target values of the peak level of the phone are set normally in conducted mode

- GSM850 8 level : 27dBm
- EGSM900 8 level : 27dBm
- DCS 2 level : 26dBm
- PCS 2 level : 26dBm (Tolerance : -2dB ~ +1dB)

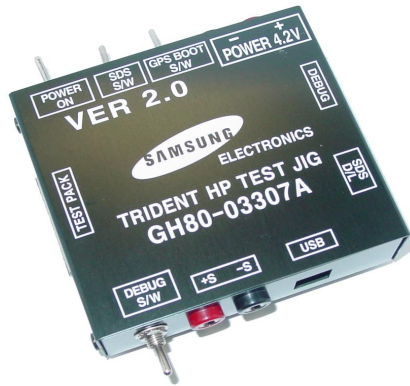
4) Accuracy

All the TX level from the phone after tuned-up satisfy the EGPRS specification

5) TX ramp mask specification applied to the calibration program :



7. Array course control



Test Jig (GH80-03307A)



Test Cable (GH39-00478A)



RF Test Cable (GH39-00397A)

Software Downloading

7-1. Downloading Binary Files

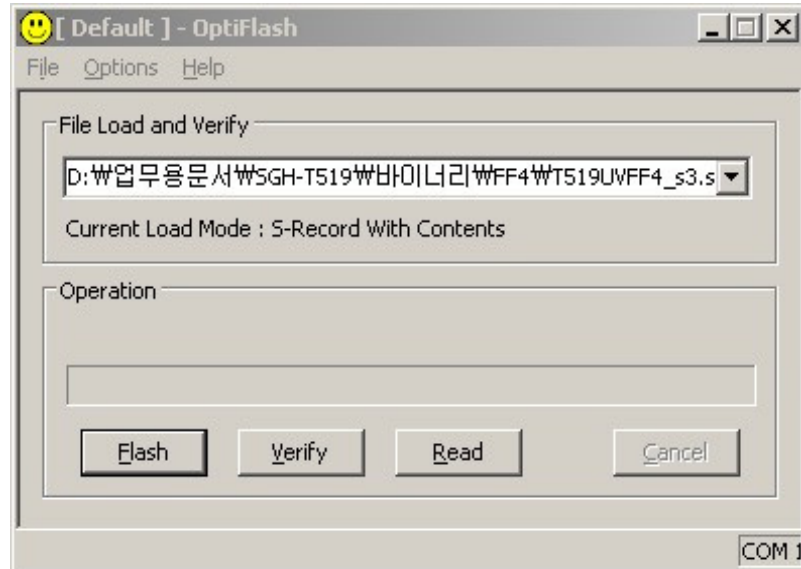
- Two binary files for downloading T519.
 - T519XXYY.s3 : Main source code binary.

7-2. Pre-requisite for Downloading

- Downloader Program([OptiFlash.exe](#))
- T519 Mobile Phone
- Data Cable
- Binary files

7-3. S/W Downloader Program

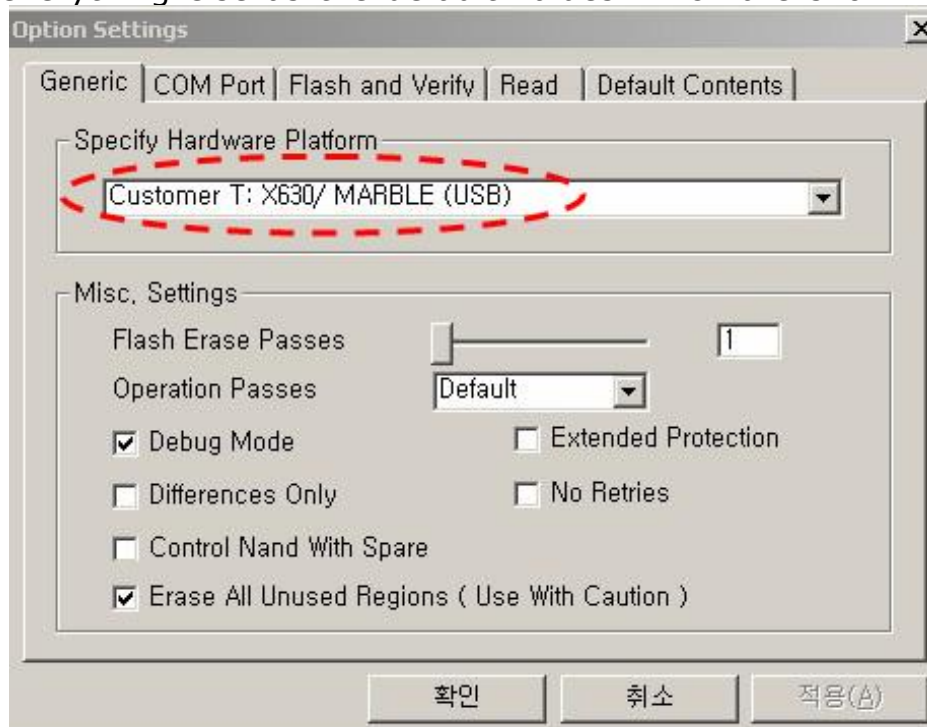
1. Load the binary download program by executing the **"OptiFlash.exe"**



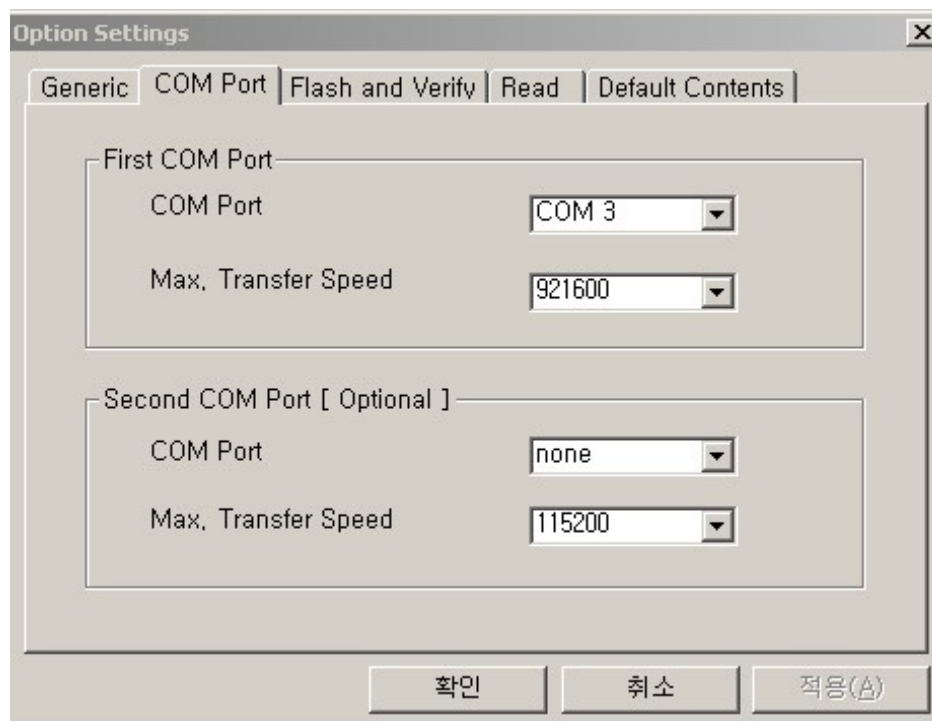
2. Select the **"Options" -> "Settings" -> "Generic" -> "Specify hardware platform"**.

Choose hardware platform for the downloader file setting.

Set the everything else as the default values which are shown below



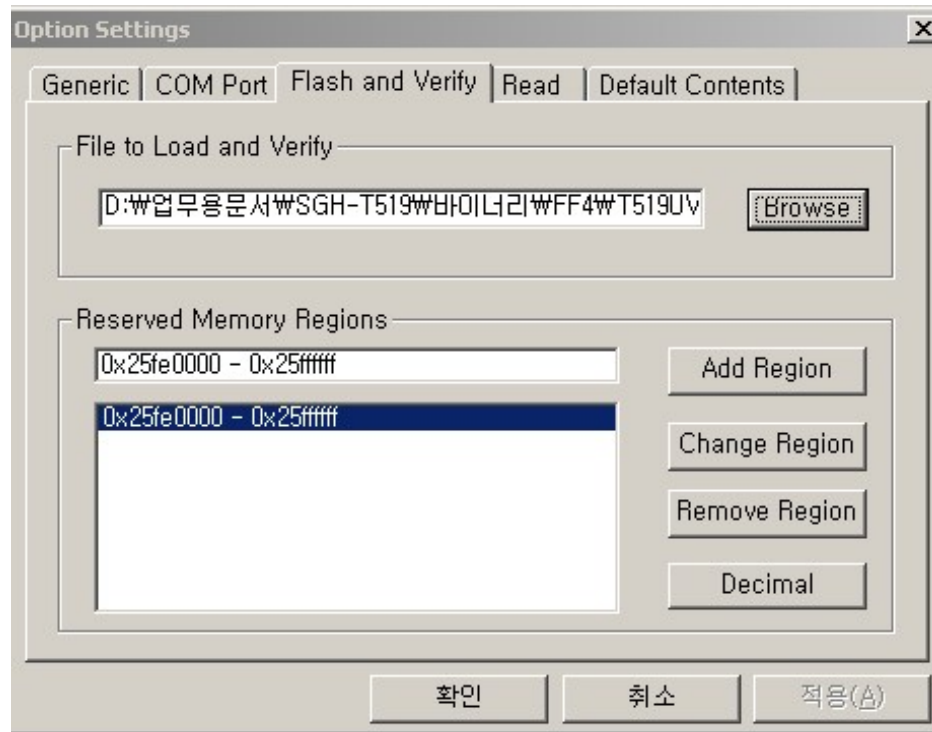
3. Select the **COM port** when the download cable is connected



Up to 64 ports are supported. Additionally you can select the maximum transfer speed OptiFlash will use to communicate with the phone. However, OptiFlash will use a slower speed if either the PC's or the phone's serial hardware is incapable of handling the selected speed.

4. Select the **"Flash&Verify"** -> **"Browse"**

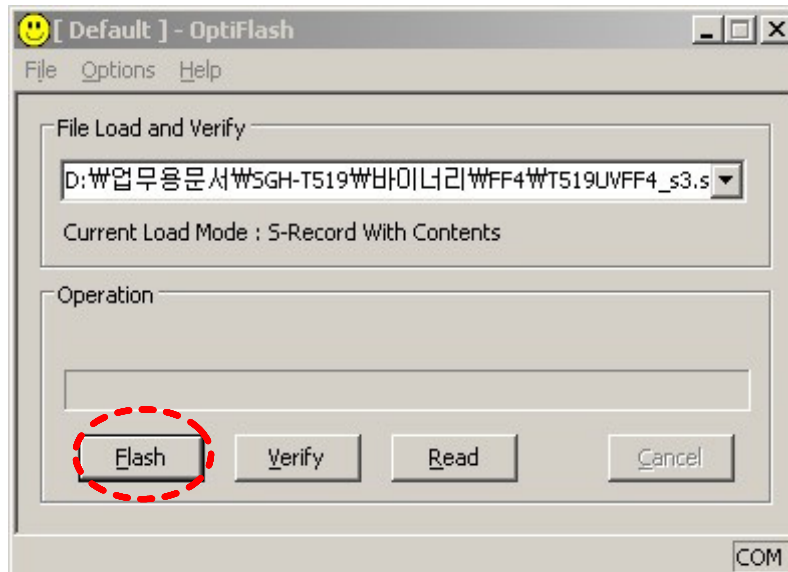
Set the directory path and choose the latest s/w binary, for example "T519XXYY.s3", for the downloader binary setting.



In case of D407 the reserved regions are **not a necessity.**
(It is defined in platform.def file)

5. Click "**OK**" button then press "**Flash**".♪
(Before pressing 'Flash' button, push the button '*****' and '**END**' at the **same time**. Then press 'Flash'.)♪

Downloader will upload the binary file as below for the downloading. ♪



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

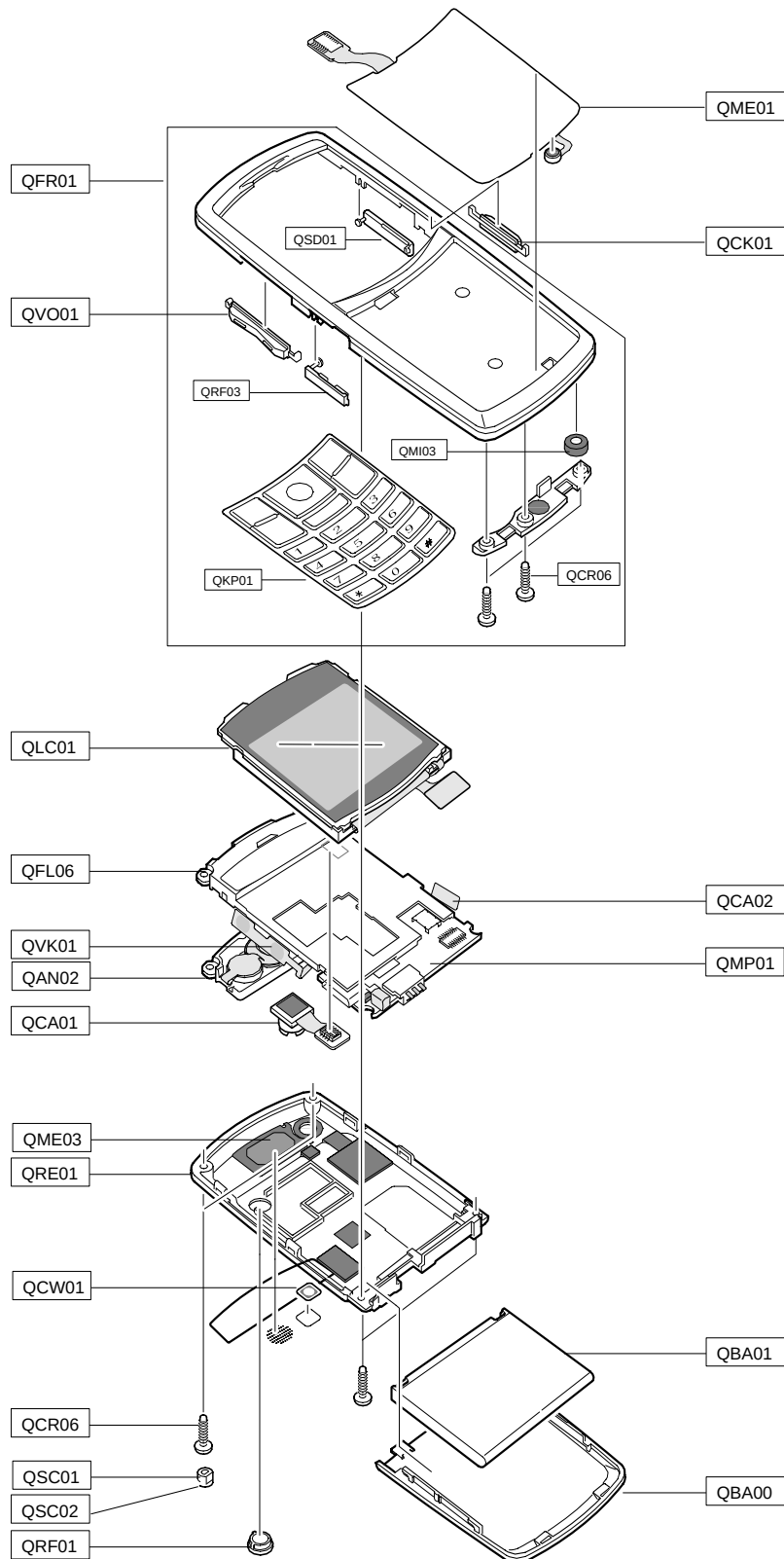
***#1234#**♪

Full Reset : ♪

***2767*3855#**

8. Exploded View and its Partslist

8-1. Cellular phone Exploded View



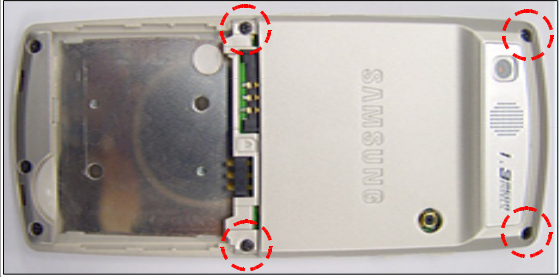
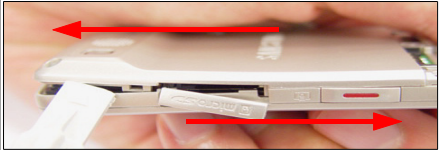
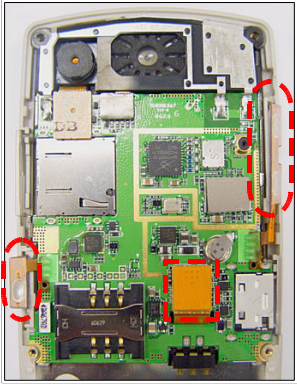
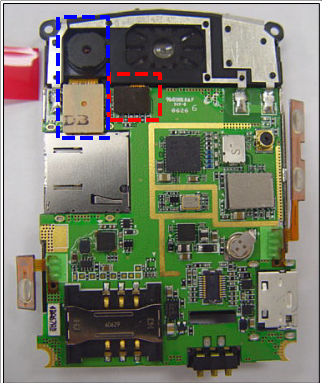
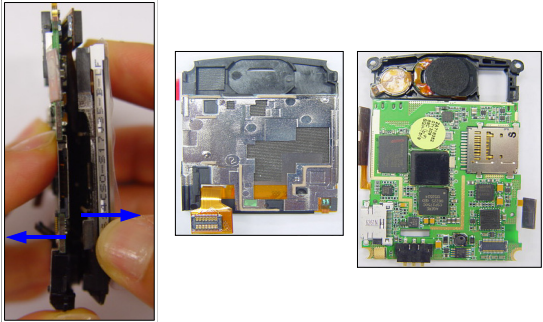
8-2. Cellular phone Parts list

QAN02	INTENNA-SGHT519	GH42-01022A
QBA00	ASSY CASE-BATT	GH98-02621B
QBA01	INNER BATTERY PACK-800MAH, BLK	GH43-02612A
QCA01	UNIT-CAMERA	GH59-03182A
QCA02	UNIT-CAMERA KEY	GH59-03176A
QCK01	ASSY KEY-CAMERA	GH98-00889B
QCR04	SCREW-MACHINE	6001-001479
QCR06	SCREW-MACHINE	6001-001155
QCR06	SCREW-MACHINE	6001-001155
QCW01	PMO-WINDOW CAMERA	GH72-30568A
QFL06	ASSY CASE-CARRIER LOWER	GH98-01899A
QFR01	ASSY CASE-FRONT	GH98-01888B
QKP01	ASSY KEYPAD-MAIN(CHE/BLK)	GH98-01901B
QLC01	LCD-M/S SGHT519	GH07-01002A
QME01	UNIT-EL KEY PBA	GH59-03177A
QME03	UNIT-SPK_MOT FPCB	GH59-03183A
QMI03	RMO-RUBBER MIC HOLDER	GH73-07779A
QMI05	ASSY CASE-MIC SUB	GH98-01889B
QMP01	A/S MATERIAL ASSY-PBA MAIN	GH82-02168A
QRE01	ASSY CASE-REAR	GH98-01900B
QRF01	PMO-COVER RF	GH72-33517B
QRF03	PMO-COVER EAR JACK	GH72-30563B
QSC01	PMO-COVER SCREW L	GH72-33519B
QSC02	PMO-COVER SCREW R	GH72-33526B
QSD01	PMO-COVER MICRO SD	GH72-30562B
QVK01	UNIT-VOLUME KEY	GH59-03175A
QVO01	ASSY KEY-VOLUME	GH98-00890B

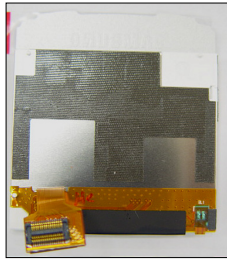
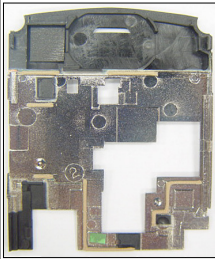
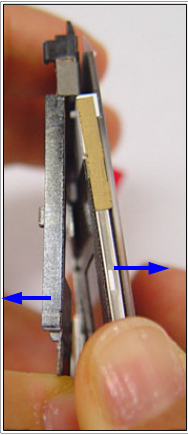
CBF INTERFACE-DATA LINK CABLE	GH39-00514A
CHARGER-SGHD820 TA (LTA)	GH44-01174A
UNIT-EARPHONE(BLK)	GH59-02499A
MPR-VINYL BOHO T MAIN WINDOW	GH74-26613B
AS-LCD WINDOW TAPE	GH81-05218A
AS-LCD WINDOW	GH81-05937A
RMO-RUBBER LCD CONN	GH73-07778A
RMO-RUBBER EAR JACK	GH73-07780A
RMO-RUBBER BGA	GH73-07922A
RMO-RUBBER CSP	GH73-08343A
MPR-TAPE CAMERA KEY	GH74-25950A
MPR-TAPE VOLUME KEY	GH74-25951A
MPR-SPONGE BT	GH74-26377A
MPR-TAPE, 3X3XT3.5, W290TCNG	GH74-26380A
MPR-TAPE, 8X6XT0.25, ABSORBER	GH74-26382A
MPR-SPONGE BD	GH74-26717A
MPR-TAPE LCD FRONT	GH74-27607A
MPR-INSU TAPE	GH74-27608A
MPR-TAPE	GH74-28264A
MPR-TAPE BRAKET B	GH74-28265A
RMO-RUBBER BATTERY	GH73-08571A
MPR-VINYL BOHO KEYPAD	GH74-22928A
LABEL(R)-WATER SOAK T_MOBILE	GH68-05914A
AS-TAPEKEYPAD	GH81-04637A
PMO-DECORATION REAR	GH72-30564B
MPR-VINYL BOHO REAR	GH74-21012A
LABEL(R)-WATER SOAK T_MOBILE	GH68-05914A
RMO-RUBBER EAR JACK	GH73-07780A
MPR-VINYL BOHO MAIN WINDOW	GH74-21905A
BAG PE	6902-000634
LABEL(P)-IMEI	GH68-01335D
LABEL(R)-MAIN(LTN)	GH68-12700A
BOX-UNIT(VMT)	GH69-04523E
CUSHION-CASE(MEXC)	GH69-04535A
S/W CD-SAMSUNG PC STUDIO 3.0	GH46-00247A
MANUAL USERS-LTN SPANISH	GH68-13488A

Disassembly and Assembly instructions

8-3. Disassembly

1 	2  
1. Unscrew 4 points of a rear. * caution 1. Be careful not to do damage and scratch the phone.	1. Disjoint a top of the rear with a tool. * caution 1. Be careful not to do damage and scratch the phone.
3 	4 
1. Remove both side keys, then detach the EL KEY FPCB CONNECTOR. * caution 1. Be careful not to cut both side keys and damage to camera connector pins	1. Lift up a board carefully and detach a PBA. * caution 1. Be careful not to cut both side keys and damage to camera connector pins
5 	6 
1. Remove a camera and SPK/MOT connector. * caution 1. Be careful not to damage to camera connector pins	1. Detach a PBA Ass'y from LCD Module. * caution 1. Be careful not to do damage to antenna and scratch the LCD.

7

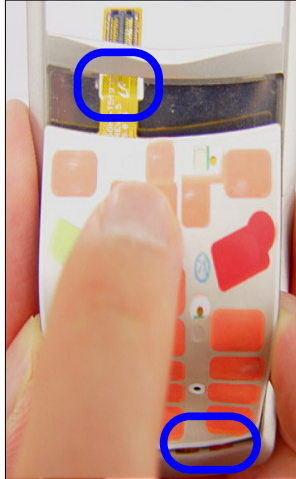


1. Detach a LCD from LCD bracket.
* **caution**
1. Be careful not to do damage and scratch the phone.

8-4. Assembly

1

1. Attach an EL sheet



2. Attach a key pad



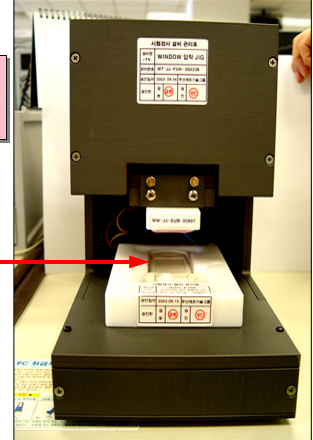
- A. Remove a adhesive tape of EL sheet.
- B. Attach a EL sheet
- C. Attach a mic cover
- D. Attach a key pad
- E. Press a key pad
 - Pressure kgf : 6 ± 1 kgf/cm²

2

1. Attach a rear deco. and camera window



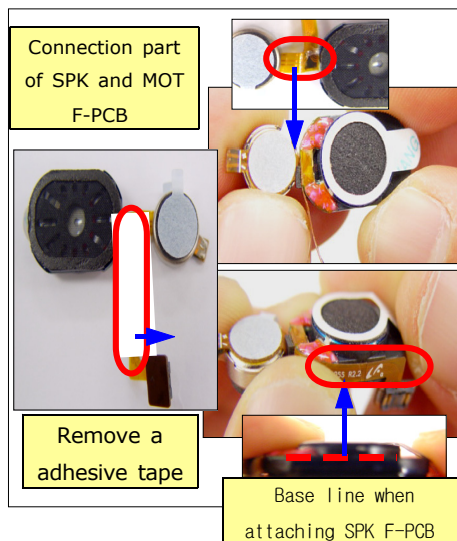
2. Press a camera window.



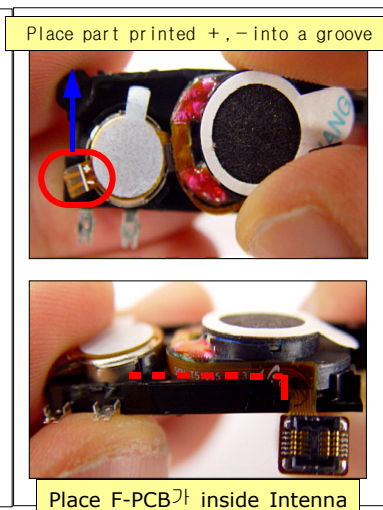
- A. Examine the surface of rear, and attach a rear deco. and camera window.
- B. Press a camera window.
 - Pressure kgf : 6 ± 1 kgf/cm²

3

1. Attach a SPK_MOT FPCB



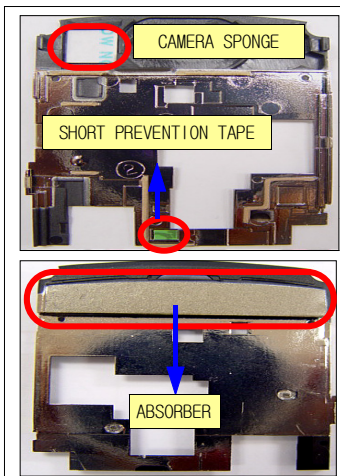
2. Place a SPK_MOT FPCB



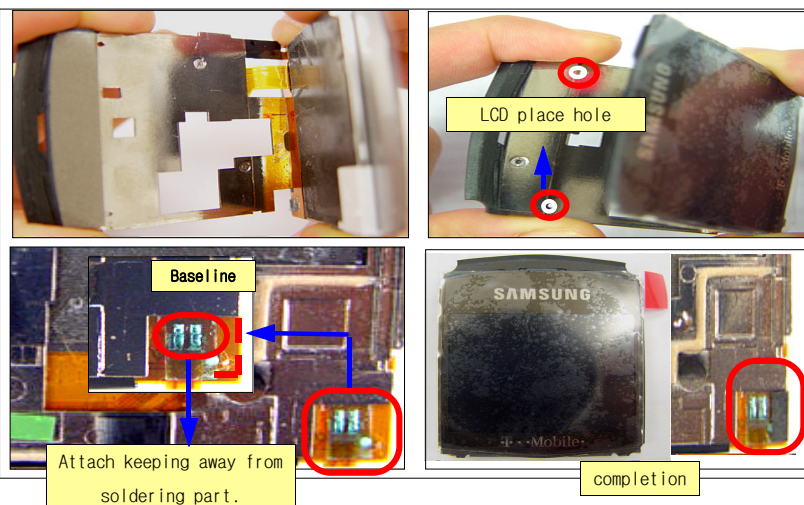
- A. Connect SPK and MOT with FPCB and paste another FPBC along the baseline.
- B. Place SPK_MOT F-PCB inside intenna.

4

1. Examine the surface of CARRIER LOWER



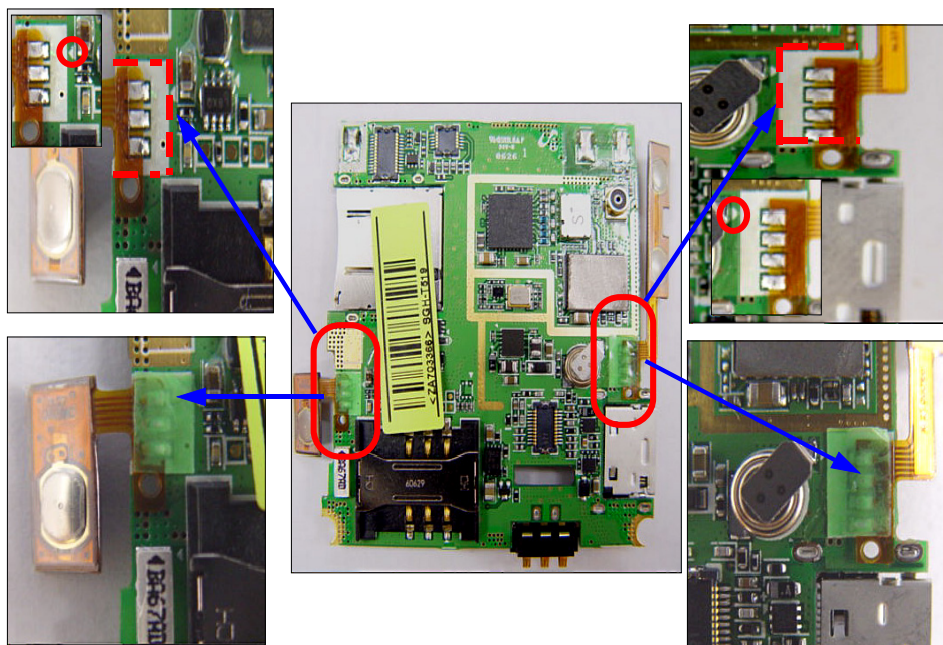
2. Place LCD and sponge



- A. Place a LCD inserting LCD connector on the front of CARRIER LOWER.
- B. Place a LCD into place hole of CARRIER LOWER correctly.
- C. Press carefully the top (SAMSUNG logo) and bottom (T-Mobile logo) of LCD.
- D. Attach a LCD sponge to CARRIER LOWER along the base line (the right side and bottom)

5

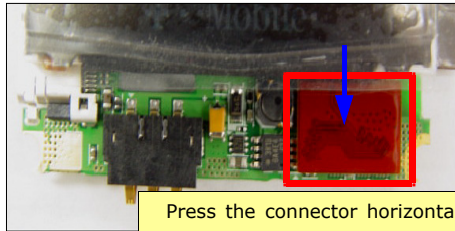
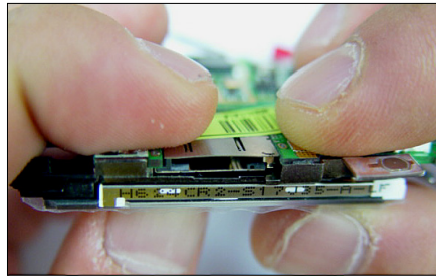
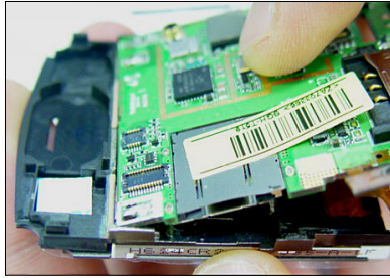
1. Solder side keys and stick a friction tape



- A. Solder side keys with soldering jig.
- B. Stick a friction tape along the baseline.

6

1. Place a PBA

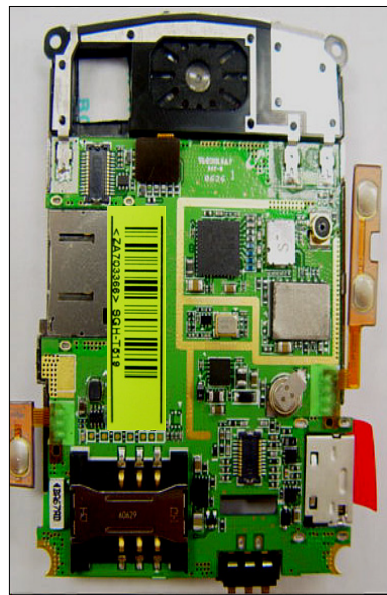
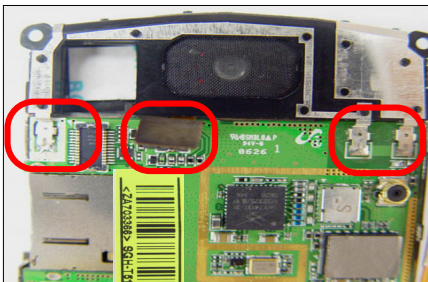
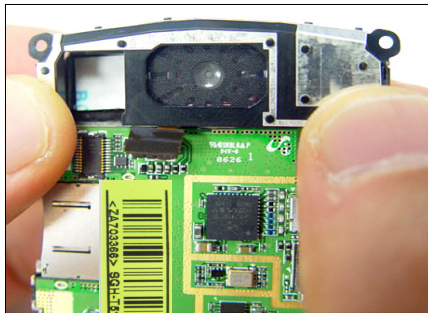


Press the connector horizontally to a
PBA

- A. Press carefully the top of PBA with your right hand grasping CARRIER LOWER with your left hand.
- B. Press both sides of PBA until it clicks into the CARRIER LOWER.
(Grasp the edge of LCD during work)
- C. Press the LCD connector to the CARRIER LOWER horizontally.

7

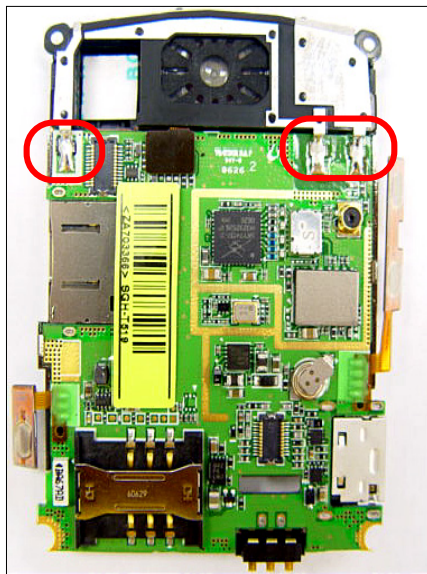
1. Place the antenna



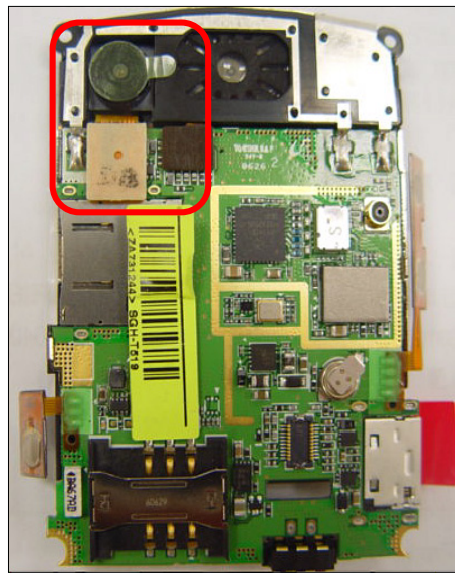
- A. Press the antenna until it clicks into the PBA
- B. Put the SPK CONNECTER horizontally
- C. Place the soldering part of ANTENNA to a groove

8

1. Solder the antenna



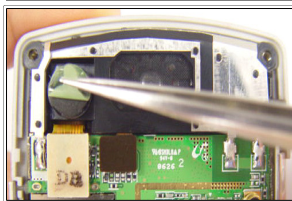
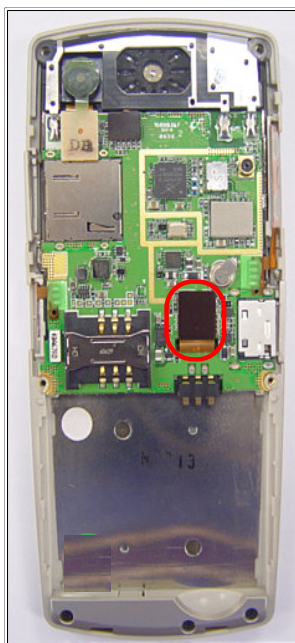
2. Place the camera



- A. Solder the antenna with soldering jig
- B. Place the camera into a groove of CARRIER LOWER.
- C. Press carefully after placing camera module.

9

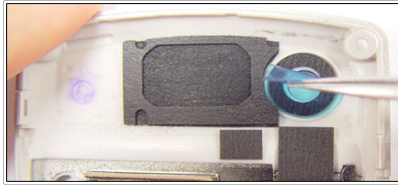
1. Place the PBA side keys



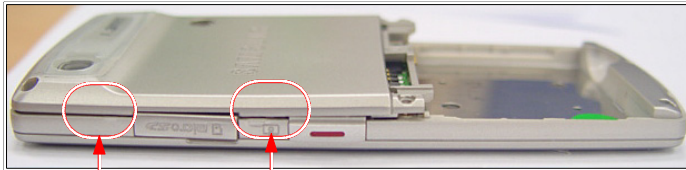
- A. Place the PBA on the FRONT.
- B. Remove the camera protection film.
- C. Place side keys into place.

10

1. Remove the protection film inside
CAMERA WINDOW



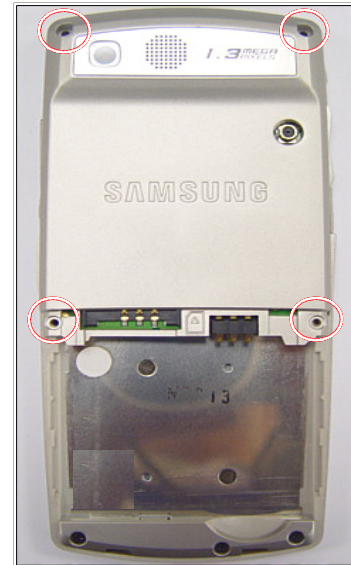
2. Place the REAR



Locker No.1

Locker No.2

3. SCREW



- A. Place the top of a REAR and press down until it clicks into the Front
- B. Press the Locker No.1 and Locker No.2
- C. SCREW. (4 POINT)

9. MAIN Electrical Parts List

SEC CODE	Design LOC	Discription	STATUS
0401-001141	D401	DIODE-SWITCHING	SA
0403-001411	ZD406	DIODE-ZENER	SA
0403-001511	ZD301	DIODE-ZENER	SA
0403-001547	ZD402	DIODE-ZENER	SA
0404-001245	D302	DIODE-SCHOTTKY	SA
0406-001167	U201	DIODE-TVS	SA
0406-001190	ZD403	DIODE-TVS	SA
0406-001190	ZD404	DIODE-TVS	SA
0406-001210	ZD203	DIODE-TVS	SA
0406-001210	ZD400	DIODE-TVS	SA
0406-001210	ZD401	DIODE-TVS	SA
0406-001223	ZD310	DIODE-TVS	SA
0406-001223	ZD311	DIODE-TVS	SA
0406-001241	ZD303	DIODE-TVS	SA
0406-001241	ZD304	DIODE-TVS	SA
0406-001254	ZD305	DIODE-TVS	SA
0406-001254	ZD306	DIODE-TVS	SA
0406-001254	ZD307	DIODE-TVS	SA
0406-001254	ZD308	DIODE-TVS	SA
0406-001254	ZD309	DIODE-TVS	SA
0406-001254	ZD407	DIODE-TVS	SA
0406-001254	ZD408	DIODE-TVS	SA
0406-001254	ZD409	DIODE-TVS	SA
0406-001254	ZD410	DIODE-TVS	SA
0406-001254	ZD411	DIODE-TVS	SA
0504-000168	Q301	TR-DIGITAL	SA
0801-002529	U300	IC-CMOS LOGIC	SA
0801-002958	U101	IC-CMOS LOGIC	SA
0801-002958	U204	IC-CMOS LOGIC	SA
1001-001371	U402	IC-ANALOG SWITCH	SA
1002-001441	UCD401	IC-D/A CONVERTER	SA
1003-001716	U305	IC-EL DRIVER	SA
1108-000068	UME201	IC-MCP	SA
1201-002240	U401	IC-AUDIO AMP	SA
1201-002368	PAM101	IC-POWER AMP	SA
1203-003663	U304	IC-BATTERY	SA
1203-003688	Q100	IC-POSI.FIXED REG.	SA

SEC CODE	Design LOC	Discription	STATUS
1203-003737	Q401	IC-POSI.FIXED REG.	SA
1203-003737	Q402	IC-POSI.FIXED REG.	SA
1203-003737	U405	IC-POSI.FIXED REG.	SA
1203-003767	Q400	IC-POSI.FIXED REG.	SA
1203-003787	Q403	IC-POSI.FIXED REG.	SA
1203-003789	U202	IC-POWER SUPERVISOR	SA
1203-004119	UCD301	IC-POWER SUPERVISOR	SA
1203-004164	U302	IC-DC/DC CONVERTER	SA
1203-004172	U404	IC-DC/DC CONVERTER	SA
1205-002272	U203	IC-TRANSCEIVER	SA
1205-002944	UCD100	IC-TRANSCEIVER	SA
1404-001165	U301	THERMISTOR-NTC	SA
1405-001082	V402	VARISTOR	SA
1405-001082	V403	VARISTOR	SA
1405-001082	VR200	VARISTOR	SA
1405-001108	V306	VARISTOR	SA
1405-001108	V307	VARISTOR	SA
1405-001108	V309	VARISTOR	SA
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1405-001108	V311	VARISTOR	SA
1405-001108	V312	VARISTOR	SA
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2007-000138	R440	R-CHIP	SA
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2007-000157	R122	R-CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
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2007-000690	R319	R-CHIP	SA
2007-000775	R301	R-CHIP	SA
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2007-001292	R228	R-CHIP	SA
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2007-007107	R421	R-CHIP	SA
2007-007107	R426	R-CHIP	SA
2007-007134	R111	R-CHIP	SA
2007-007142	R300	R-CHIP	SA
2007-007311	R315	R-CHIP	SA
2007-007312	R437	R-CHIP	SA
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SEC CODE	Design LOC	Discription	STATUS
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2007-007489	R316	R-CHIP	SA
2007-007590	R310	R-CHIP	SA
2007-007741	R109	R-CHIP	SA
2007-007741	R217	R-CHIP	SA
2007-007741	R401	R-CHIP	SA
2007-007741	R408	R-CHIP	SA
2007-007741	R420	R-CHIP	SA
2007-007741	R423	R-CHIP	SA
2007-007798	R215	R-CHIP	SA
2007-008045	R115	R-CHIP	SA
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2007-008052	R117	R-CHIP	SA
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SEC CODE	Design LOC	Discription	STATUS
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2203-000330	C102	C-CER,CHIP	SA
2203-000330	C222	C-CER,CHIP	SA
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2203-002709	C426	C-CER,CHIP	SA
2203-002982	C360	C-CER,CHIP	SA
2203-003019	C448	C-CER,CHIP	SA
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2203-005482	C207	C-CER,CHIP	SA
2203-005482	C221	C-CER,CHIP	SA
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2203-005482	C230	C-CER,CHIP	SA
2203-005482	C231	C-CER,CHIP	SA
2203-005482	C302	C-CER,CHIP	SA
2203-005482	C422	C-CER,CHIP	SA
2203-005482	C455	C-CER,CHIP	SA
2203-005682	C110	C-CER,CHIP	SA
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2203-005682	C305	C-CER,CHIP	SA
2203-005682	C308	C-CER,CHIP	SA
2203-005682	C309	C-CER,CHIP	SA
2203-005682	C324	C-CER,CHIP	SA
2203-005682	C325	C-CER,CHIP	SA
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2203-005682	C327	C-CER,CHIP	SA
2203-005682	C328	C-CER,CHIP	SA
2203-005682	C329	C-CER,CHIP	SA
2203-005682	C330	C-CER,CHIP	SA
2203-005682	C331	C-CER,CHIP	SA
2203-005725	C115	C-CER,CHIP	SA
2203-005731	C100	C-CER,CHIP	SA
2203-005732	C300	C-CER,CHIP	SA
2203-005736	C126	C-CER,CHIP	SA
2203-005808	C124	C-CER,CHIP	SA
2203-005819	C218	C-CER,CHIP	SA
2203-006048	C439	C-CER,CHIP	SA
2203-006048	C440	C-CER,CHIP	SA
2203-006121	C111	C-CER,CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
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2203-006137	C334	C-CER,CHIP	SA
2203-006137	C404	C-CER,CHIP	SA
2203-006194	C109	C-CER,CHIP	SA
2203-006194	C129	C-CER,CHIP	SA
2203-006194	C134	C-CER,CHIP	SA
2203-006194	C135	C-CER,CHIP	SA
2203-006194	C408	C-CER,CHIP	SA
2203-006257	C219	C-CER,CHIP	SA
2203-006257	C339	C-CER,CHIP	SA
2203-006260	C205	C-CER,CHIP	SA
2203-006260	C314	C-CER,CHIP	SA
2203-006260	C400	C-CER,CHIP	SA
2203-006260	C401	C-CER,CHIP	SA
2203-006305	C118	C-CER,CHIP	SA
2203-006305	C119	C-CER,CHIP	SA
2203-006305	C133	C-CER,CHIP	SA
2203-006305	C142	C-CER,CHIP	SA
2203-006324	C116	C-CER,CHIP	SA
2203-006324	C138	C-CER,CHIP	SA
2203-006324	C304	C-CER,CHIP	SA
2203-006324	C321	C-CER,CHIP	SA
2203-006348	C410	C-CER,CHIP	SA
2203-006348	C456	C-CER,CHIP	SA
2203-006361	C108	C-CER,CHIP	SA
2203-006361	C112	C-CER,CHIP	SA
2203-006361	C432	C-CER,CHIP	SA
2203-006377	C364	C-CER,CHIP	SA
2203-006423	C113	C-CER,CHIP	SA
2203-006423	C122	C-CER,CHIP	SA
2203-006423	C137	C-CER,CHIP	SA
2203-006423	C139	C-CER,CHIP	SA
2203-006423	C201	C-CER,CHIP	SA
2203-006423	C211	C-CER,CHIP	SA
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2203-006423	C421	C-CER,CHIP	SA
2203-006423	C424	C-CER,CHIP	SA
2203-006466	C409	C-CER,CHIP	SA
2203-006562	C130	C-CER,CHIP	SA
2203-006562	C132	C-CER,CHIP	SA
2203-006562	C229	C-CER,CHIP	SA
2203-006562	C313	C-CER,CHIP	SA
2203-006562	C316	C-CER,CHIP	SA
2203-006562	C318	C-CER,CHIP	SA
2203-006562	C319	C-CER,CHIP	SA
2203-006562	C336	C-CER,CHIP	SA
2203-006562	C367	C-CER,CHIP	SA
2203-006562	C412	C-CER,CHIP	SA
2203-006562	C416	C-CER,CHIP	SA
2203-006562	C419	C-CER,CHIP	SA
2203-006562	C420	C-CER,CHIP	SA
2203-006562	C423	C-CER,CHIP	SA
2203-006562	C427	C-CER,CHIP	SA
2203-006562	C428	C-CER,CHIP	SA
2203-006562	C430	C-CER,CHIP	SA
2203-006562	C431	C-CER,CHIP	SA
2203-006562	C433	C-CER,CHIP	SA
2203-006562	C434	C-CER,CHIP	SA
2203-006626	C338	C-CER,CHIP	SA
2203-006626	C390	C-CER,CHIP	SA
2203-006636	C220	C-CER,CHIP	SA
2203-006642	C388	C-CER,CHIP	SA
2203-006642	C389	C-CER,CHIP	SA
2203-006681	C411	C-CER,CHIP	SA
2203-006708	C363	C-CER,CHIP	SA
2203-006824	C315	C-CER,CHIP	SA
2203-006824	C317	C-CER,CHIP	SA
2203-006824	C358	C-CER,CHIP	SA
2203-006824	C429	C-CER,CHIP	SA

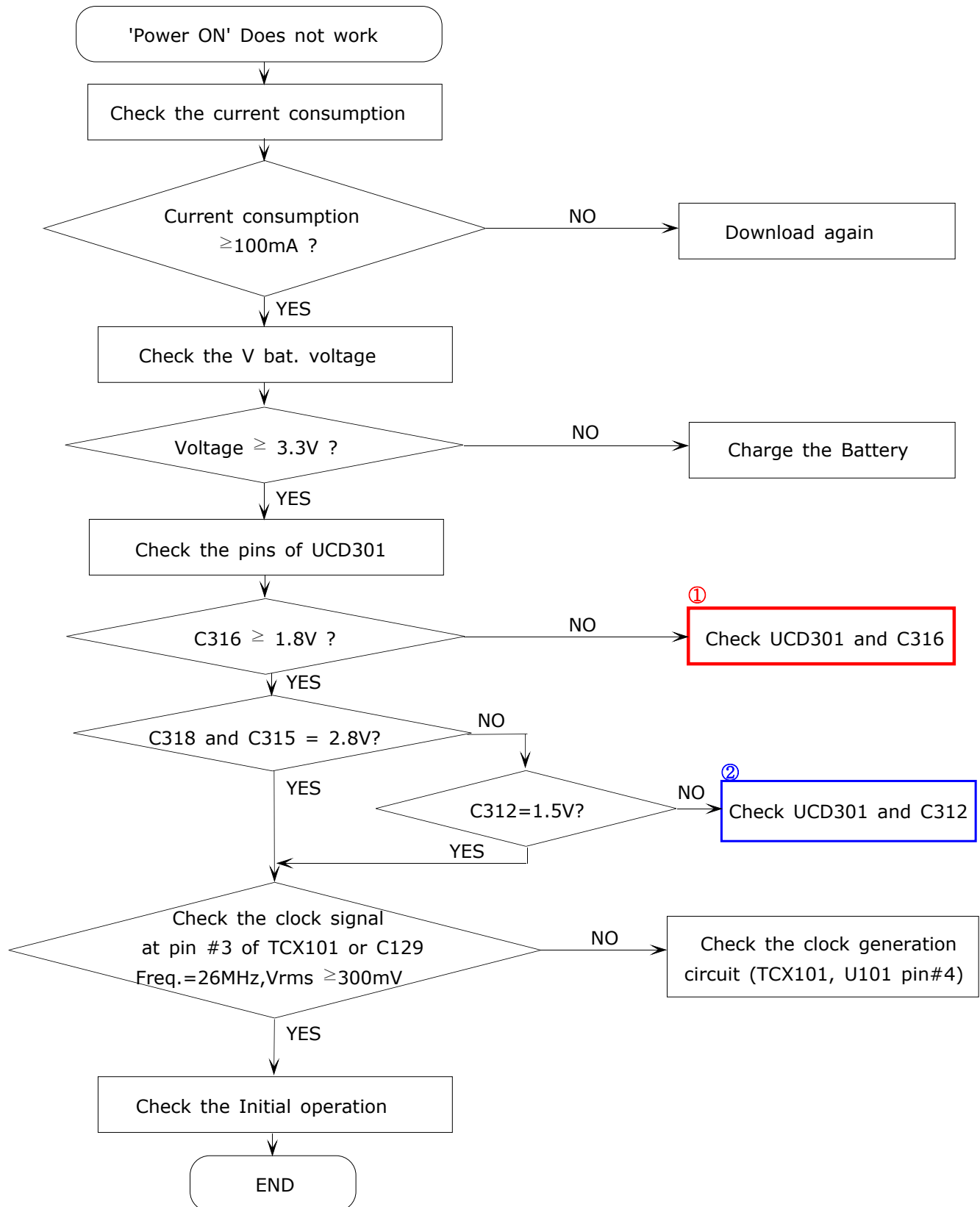
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2203-006824	C442	C-CER,CHIP	SA
2203-006825	C343	C-CER,CHIP	SA
2203-006825	C345	C-CER,CHIP	SA
2203-006838	C202	C-CER,CHIP	SA
2203-006846	C106	C-CER,CHIP	SA
2404-001348	C457	C-TA,CHIP	SA
2404-001348	C458	C-TA,CHIP	SA
2404-001352	C403	C-TA,CHIP	SA
2404-001352	C459	C-TA,CHIP	SA
2404-001352	C460	C-TA,CHIP	SA
2404-001381	C414	C-TA,CHIP	SA
2404-001381	C438	C-TA,CHIP	SA
2404-001381	TA302	C-TA,CHIP	SA
2404-001406	C425	C-TA,CHIP	SA
2703-001868	L402	INDUCTOR-SMD	SA
2703-001868	L403	INDUCTOR-SMD	SA
2703-002199	L106	INDUCTOR-SMD	SA
2703-002205	L103	INDUCTOR-SMD	SA
2703-002269	L107	INDUCTOR-SMD	SA
2703-002597	L104	INDUCTOR-SMD	SA
2703-002597	L105	INDUCTOR-SMD	SA
2703-002597	L108	INDUCTOR-SMD	SA
2703-002597	L109	INDUCTOR-SMD	SA
2703-002700	L110	INDUCTOR-SMD	SA
2703-002700	L111	INDUCTOR-SMD	SA
2703-002709	L302	INDUCTOR-SMD	SA
2703-002734	L304	INDUCTOR-SMD	SA
2703-002749	L303	INDUCTOR-SMD	SA
2703-002794	L114	INDUCTOR-SMD	SA
2703-002824	L200	INDUCTOR-SMD	SA
2703-002910	L102	INDUCTOR-SMD	SA
2703-003064	L407	INDUCTOR-SMD	SA
2703-003064	L408	INDUCTOR-SMD	SA
2801-004285	OSC401	CRYSTAL-SMD	SA
2801-004466	OSC201	CRYSTAL-SMD	SA

SEC CODE	Design LOC	Discription	STATUS
2809-001293	TCX101	OSCILLATOR-VCTCXO	SA
2901-001377	F301	FILTER-EMI SMD	SA
2901-001377	F302	FILTER-EMI SMD	SA
2901-001377	F303	FILTER-EMI SMD	SA
2901-001377	F304	FILTER-EMI SMD	SA
2911-000051	F100	DUPLEXER-FEM	SA
3301-001158	L405	BEAD-SMD	SA
3301-001158	L406	BEAD-SMD	SA
3301-001208	L112	BEAD-SMD	SA
3301-001534	F401	BEAD-SMD	SA
3301-001659	L404	BEAD-SMD	SA
3705-001421	RFS101	CONNECTOR-COAXIAL	SA
3709-001427	CN201	CONNECTOR-CARD EDGE	SA
3709-001447	SIM301	CONNECTOR-CARD EDGE	SA
3710-002363	IFC400	SOCKET-INTERFACE	SA
3711-005550	HDC401	HEADER-BOARD TO BOARD	SA
3711-005643	HDC301	HEADER-BOARD TO BOARD	SA
3711-005659	HDC300	HEADER-BOARD TO BOARD	SA
3711-005728	HDC302	HEADER-BOARD TO BOARD	SA
3711-006256	BTC400	HEADER-BATTERY	SA
4202-001169	ANT102	ANTENNA-CHIP	SA
4302-001158	BAT300	BATTERY-LI(2ND)	SA
4709-001372	MOD100	BLUETOOTH MODULE	SA
GH09-00044A	UCP201	IC MICOM	SA
GH13-00038A	U400	IC ASIC-SGHE380	SA

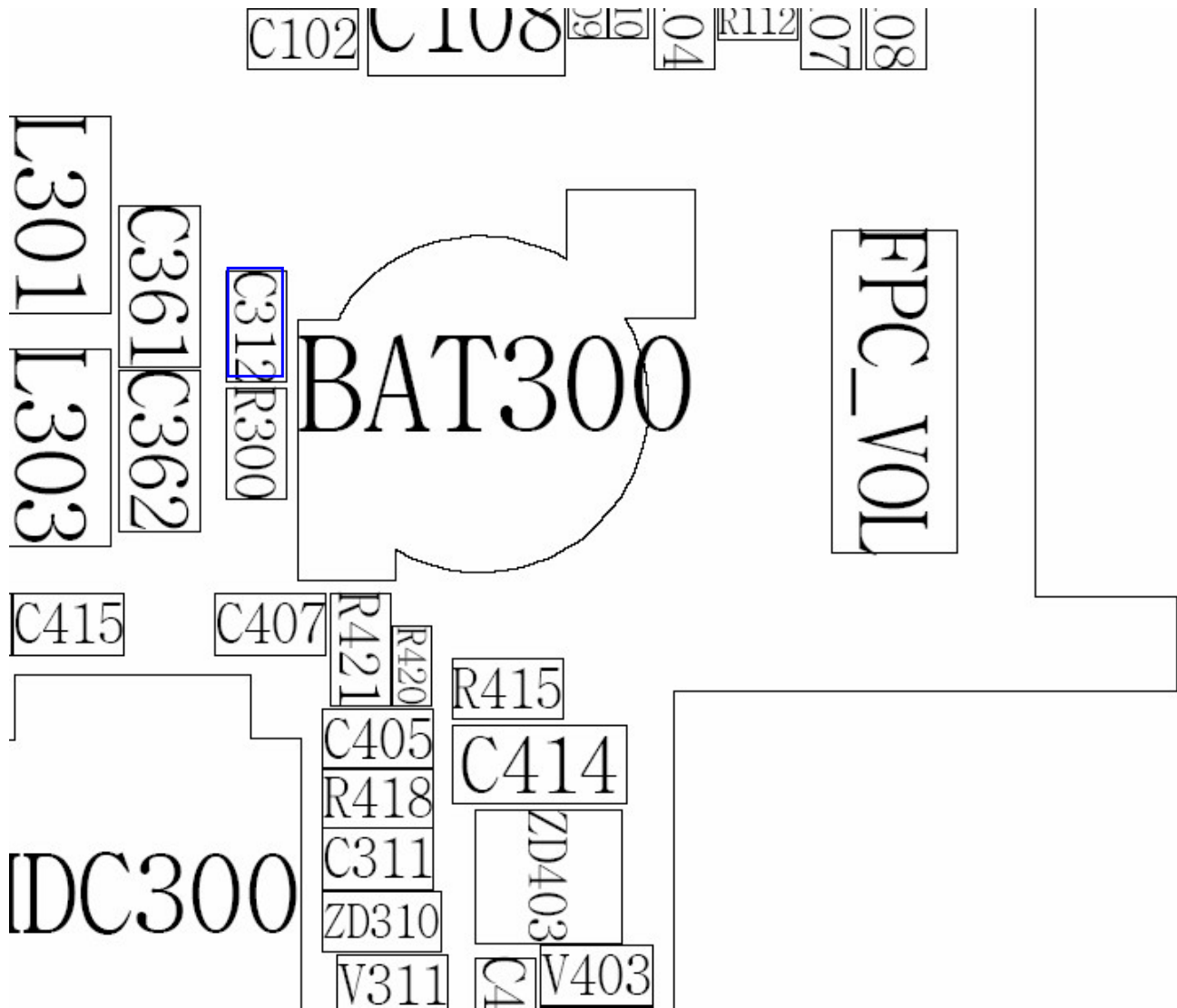
10. Flow Chart of Troubleshooting

10-1.Baseband

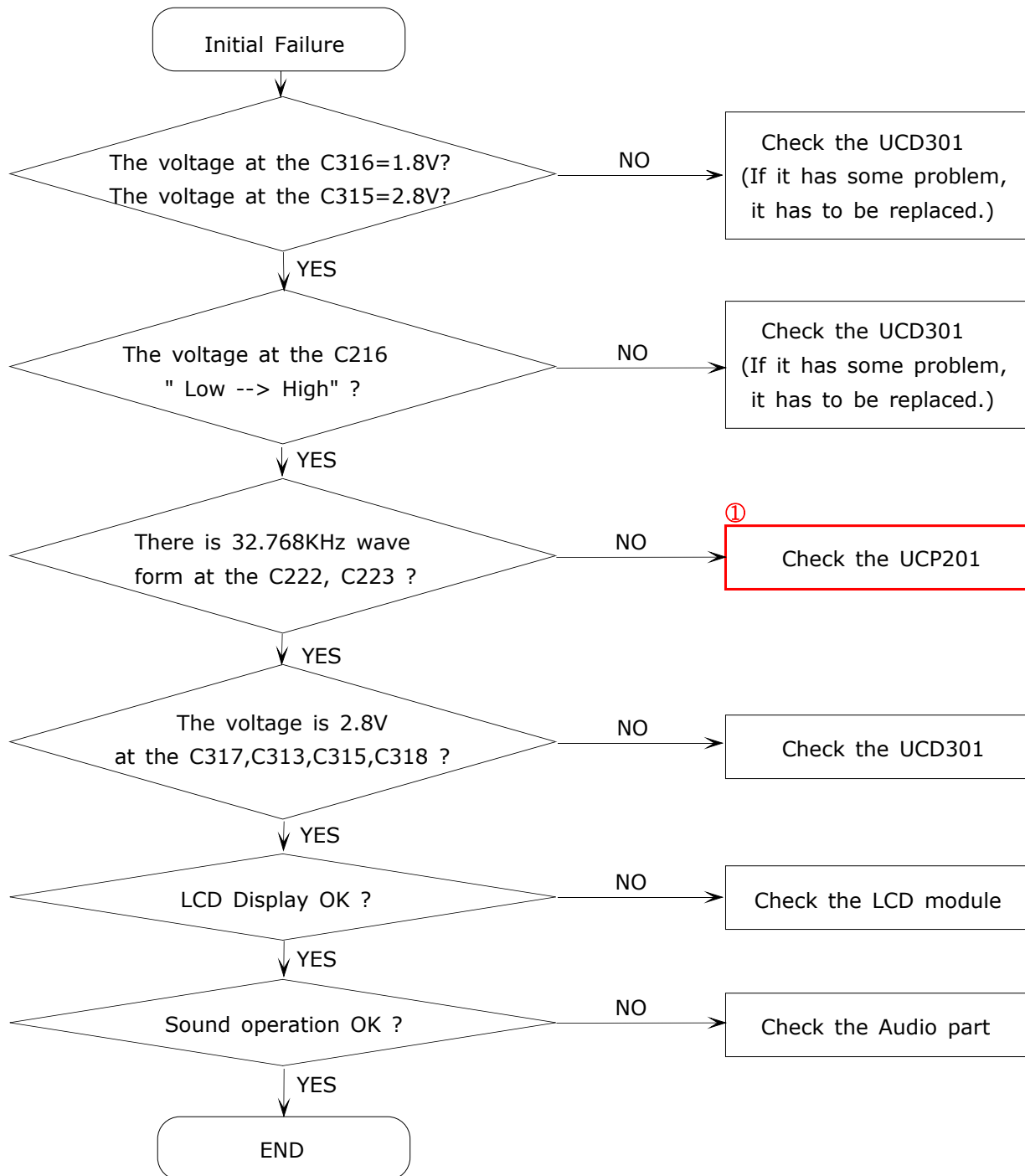
10-1-1. Power ON

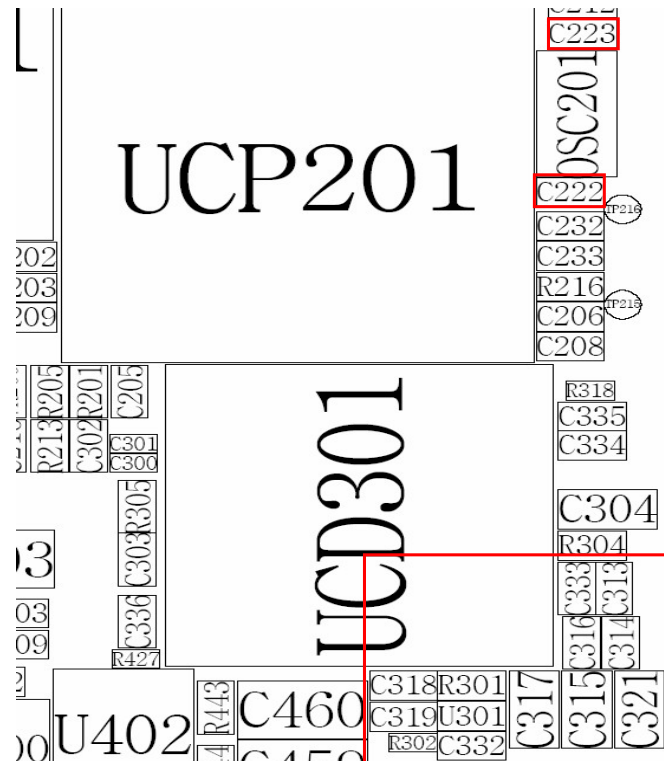
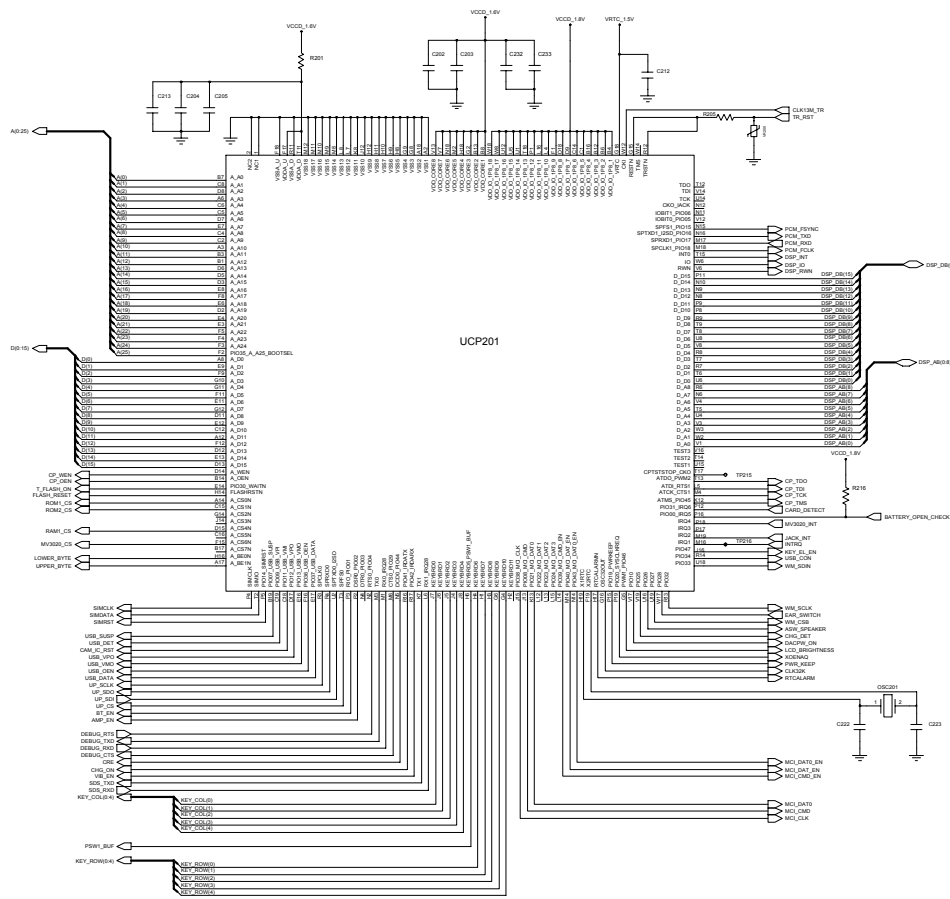




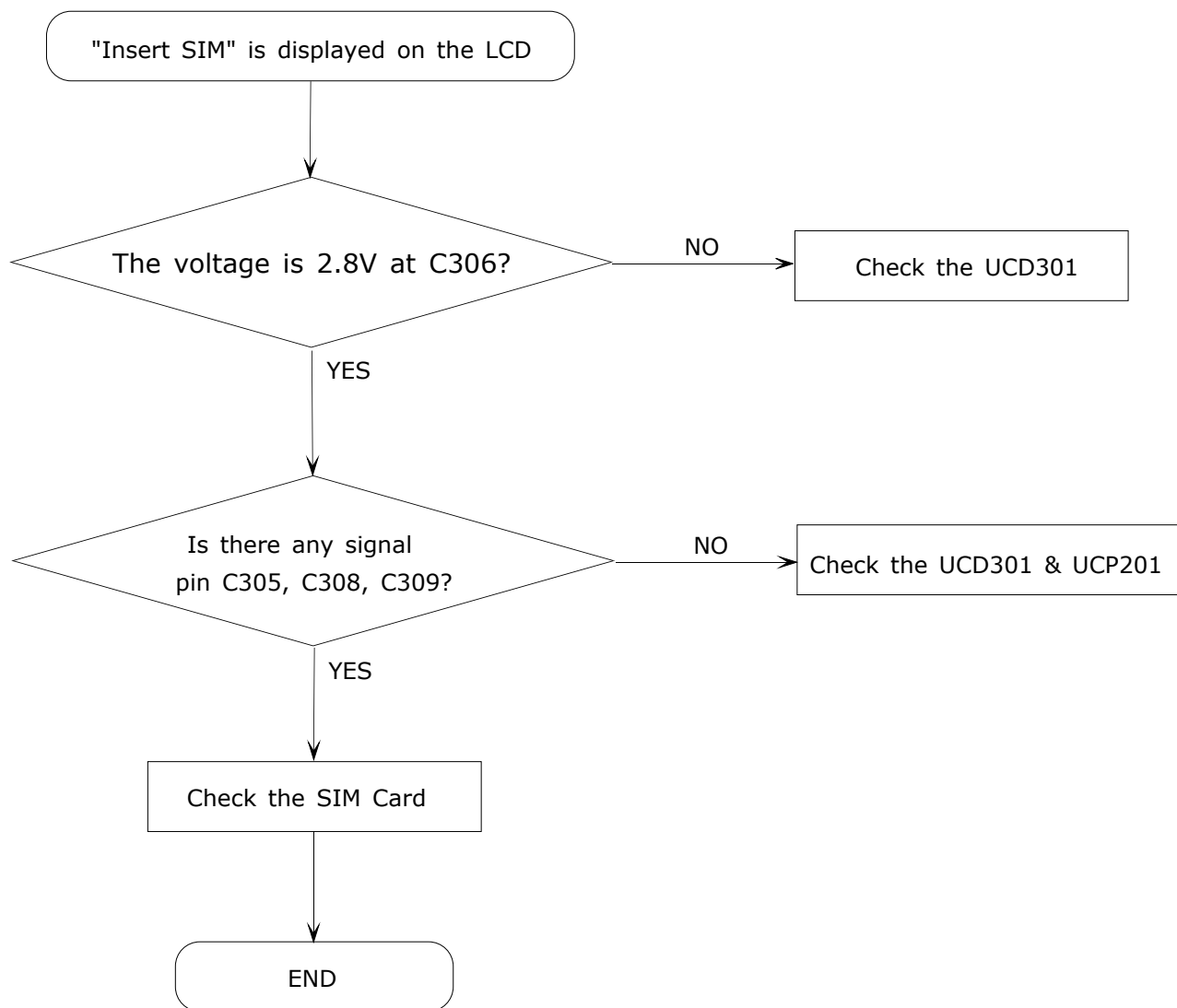


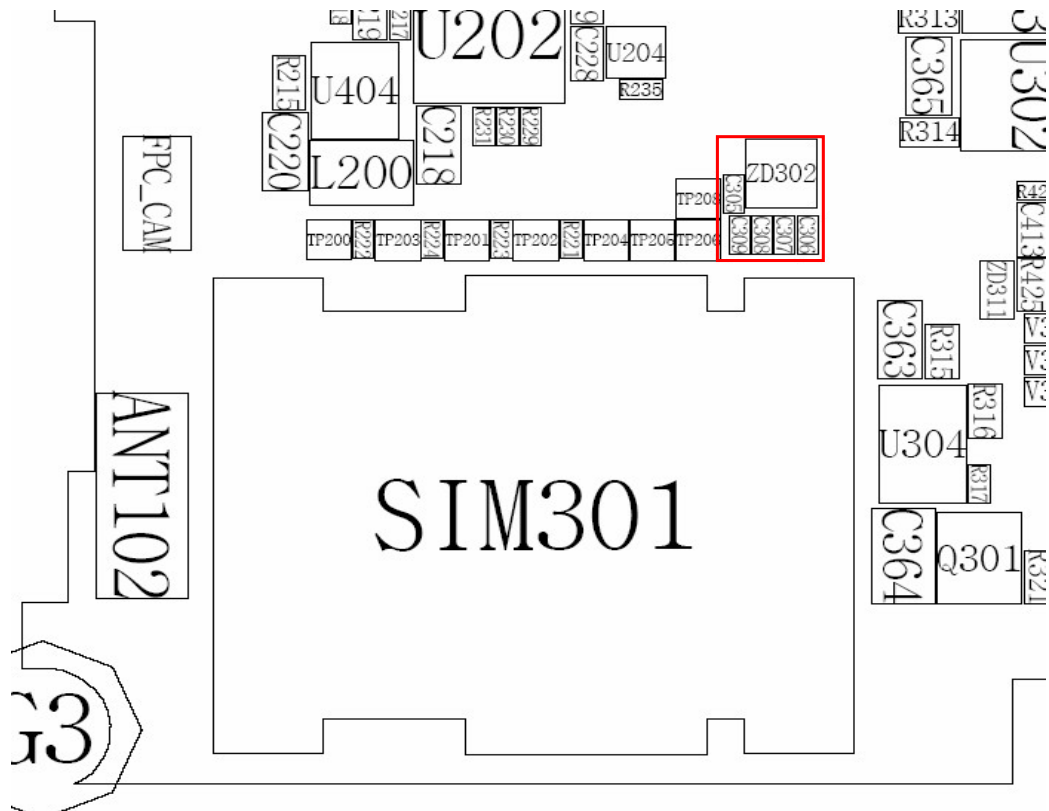
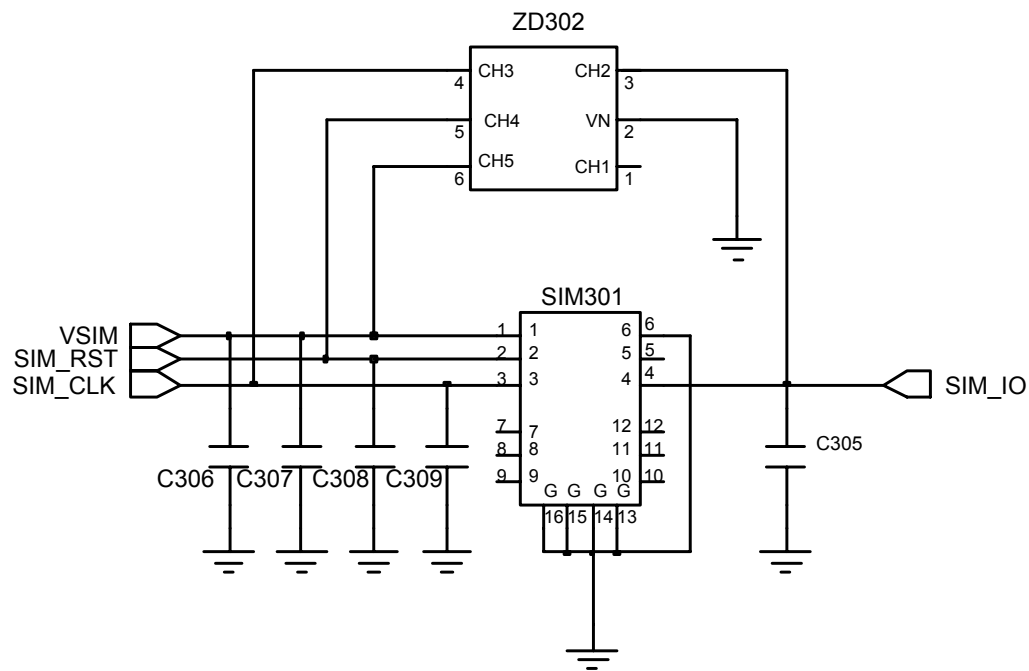
10-1-2. Initial

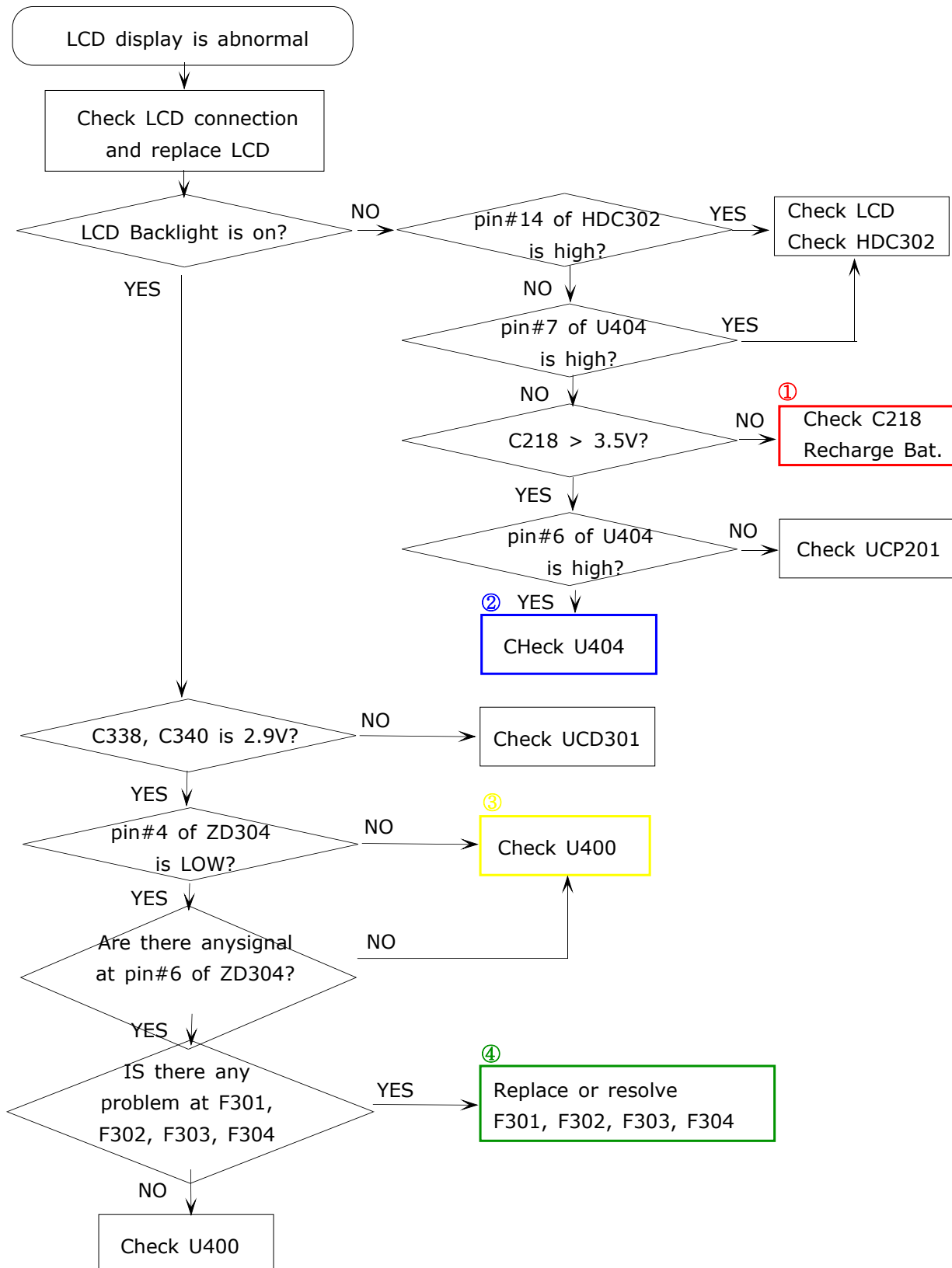


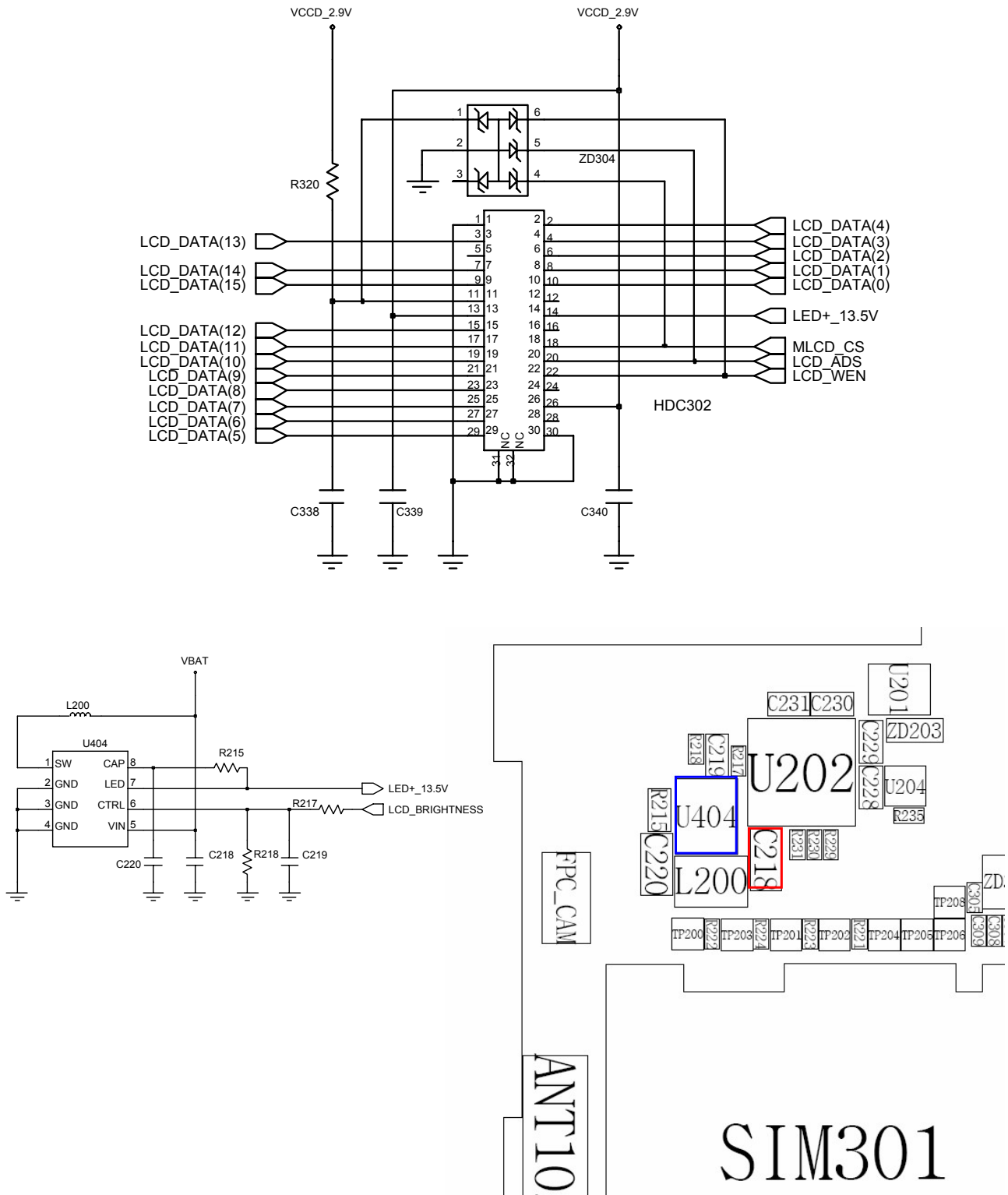


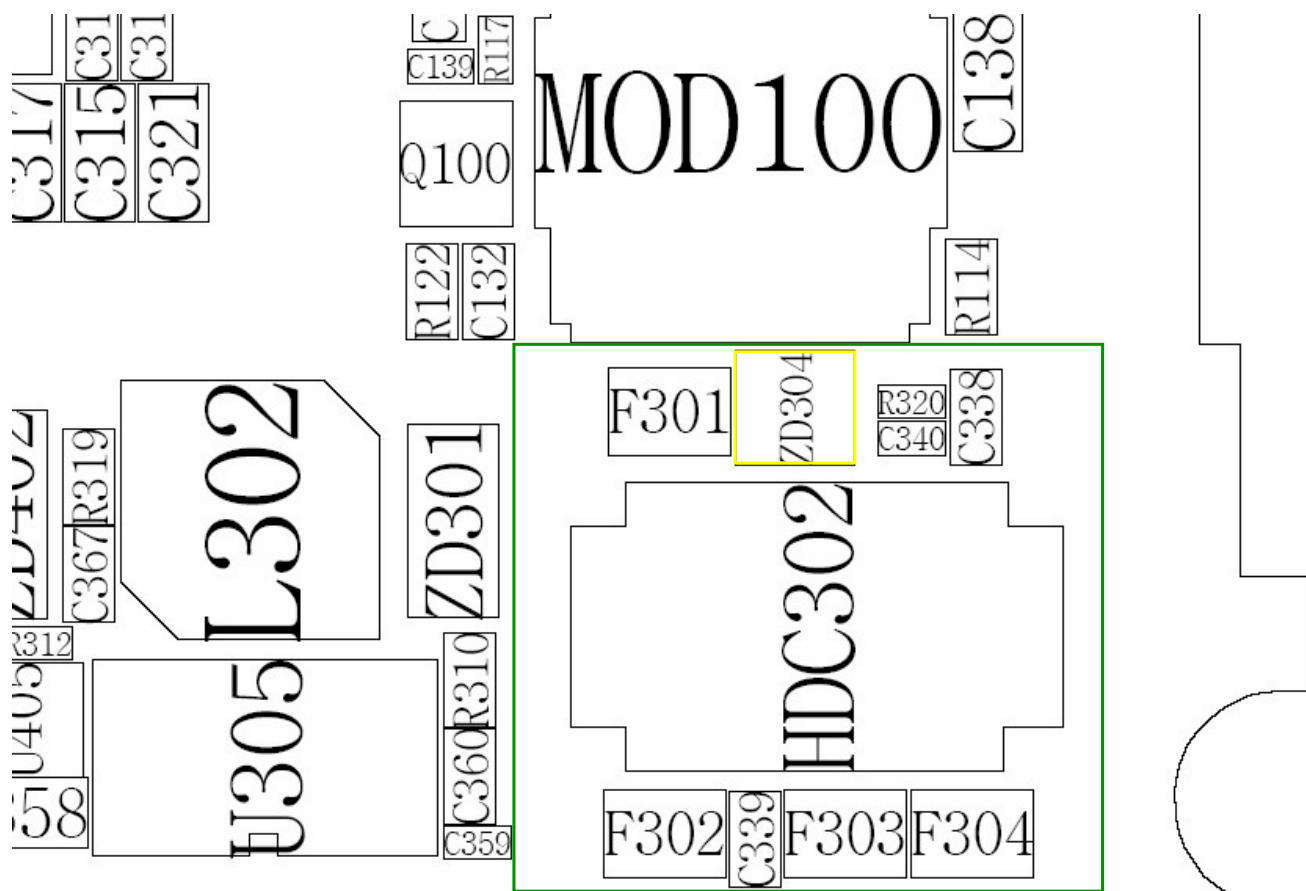
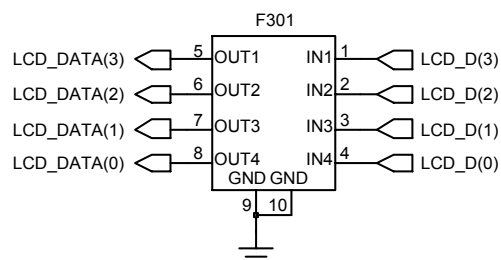
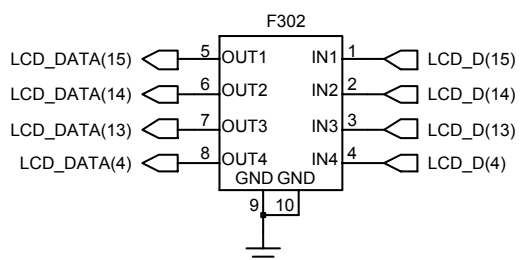
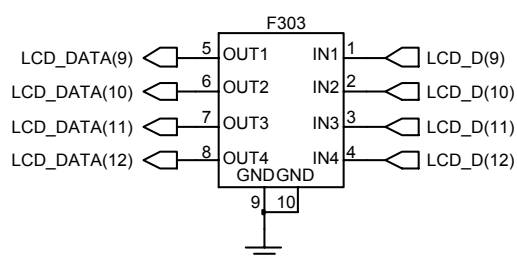
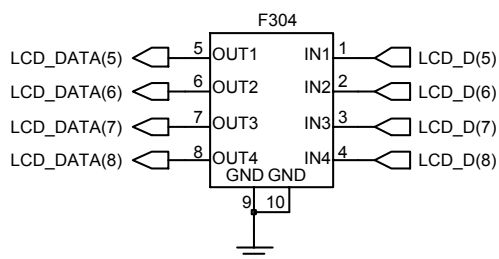
10-1-3. Sim Part

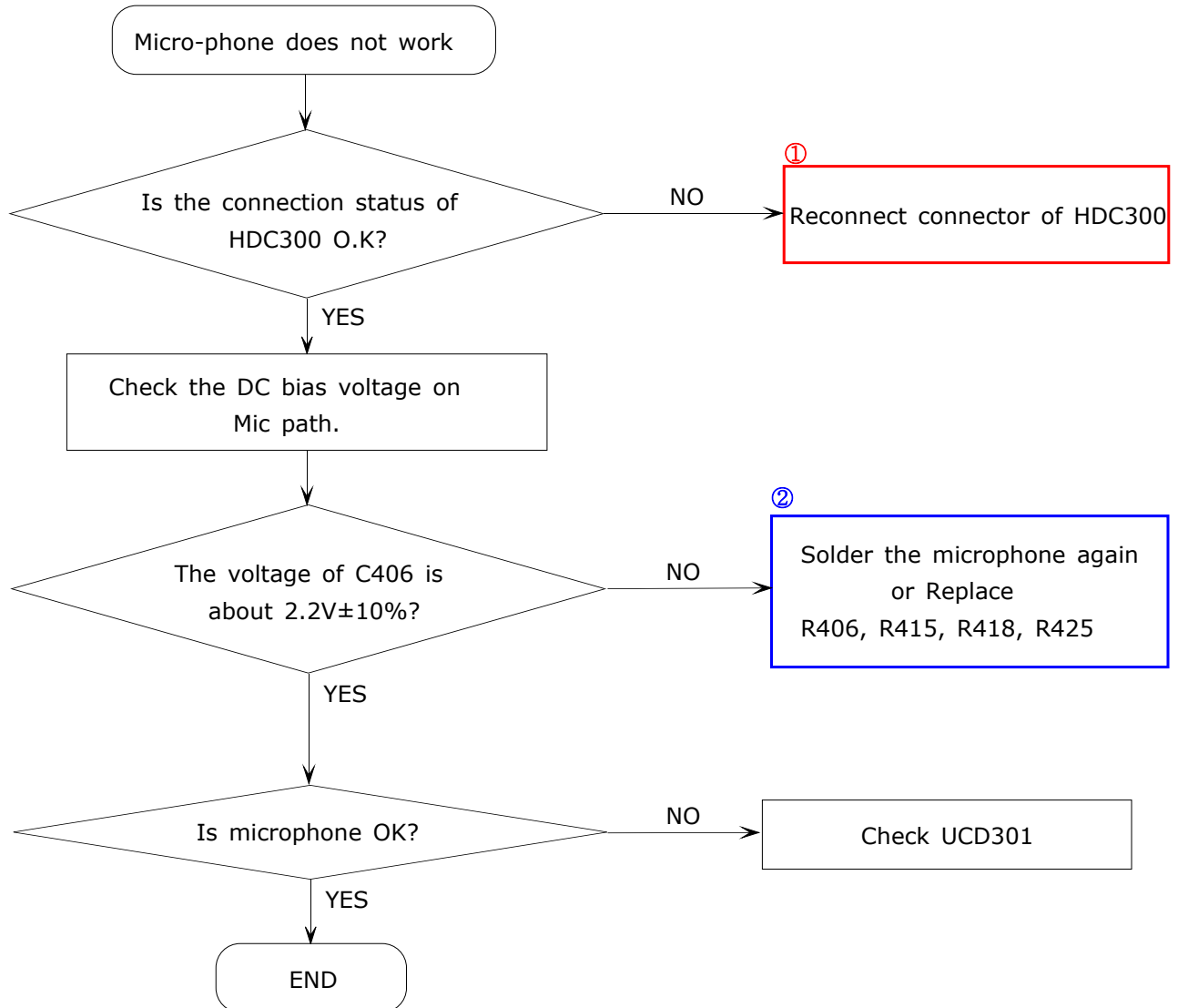


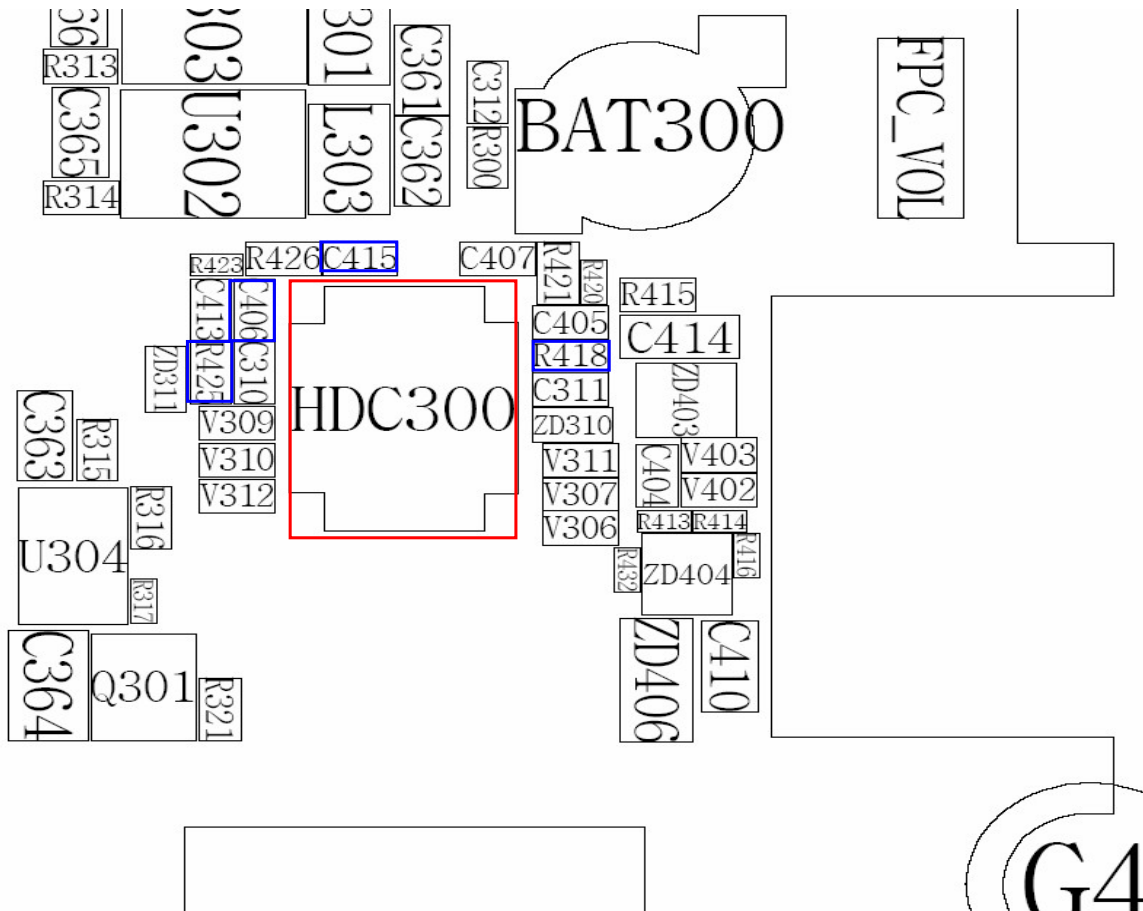
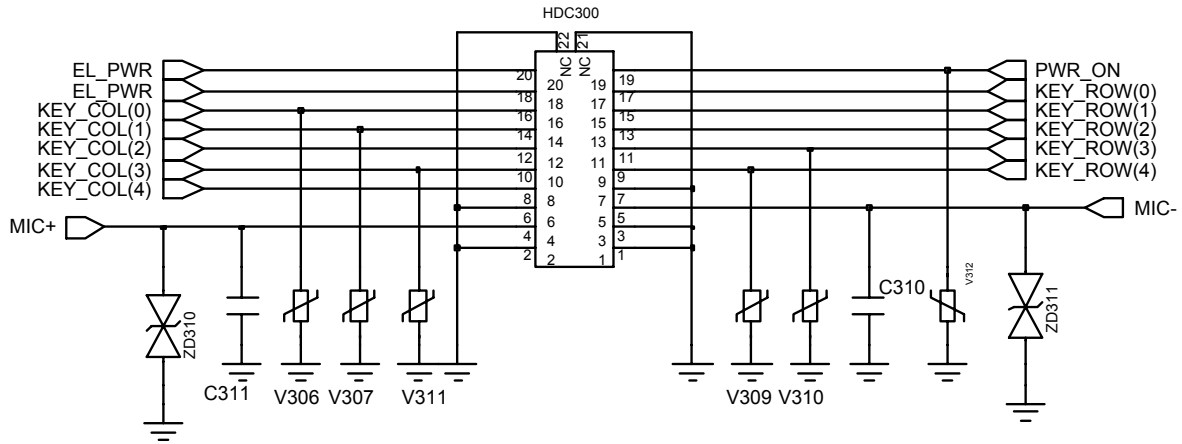


10-1-4. LCD Display part

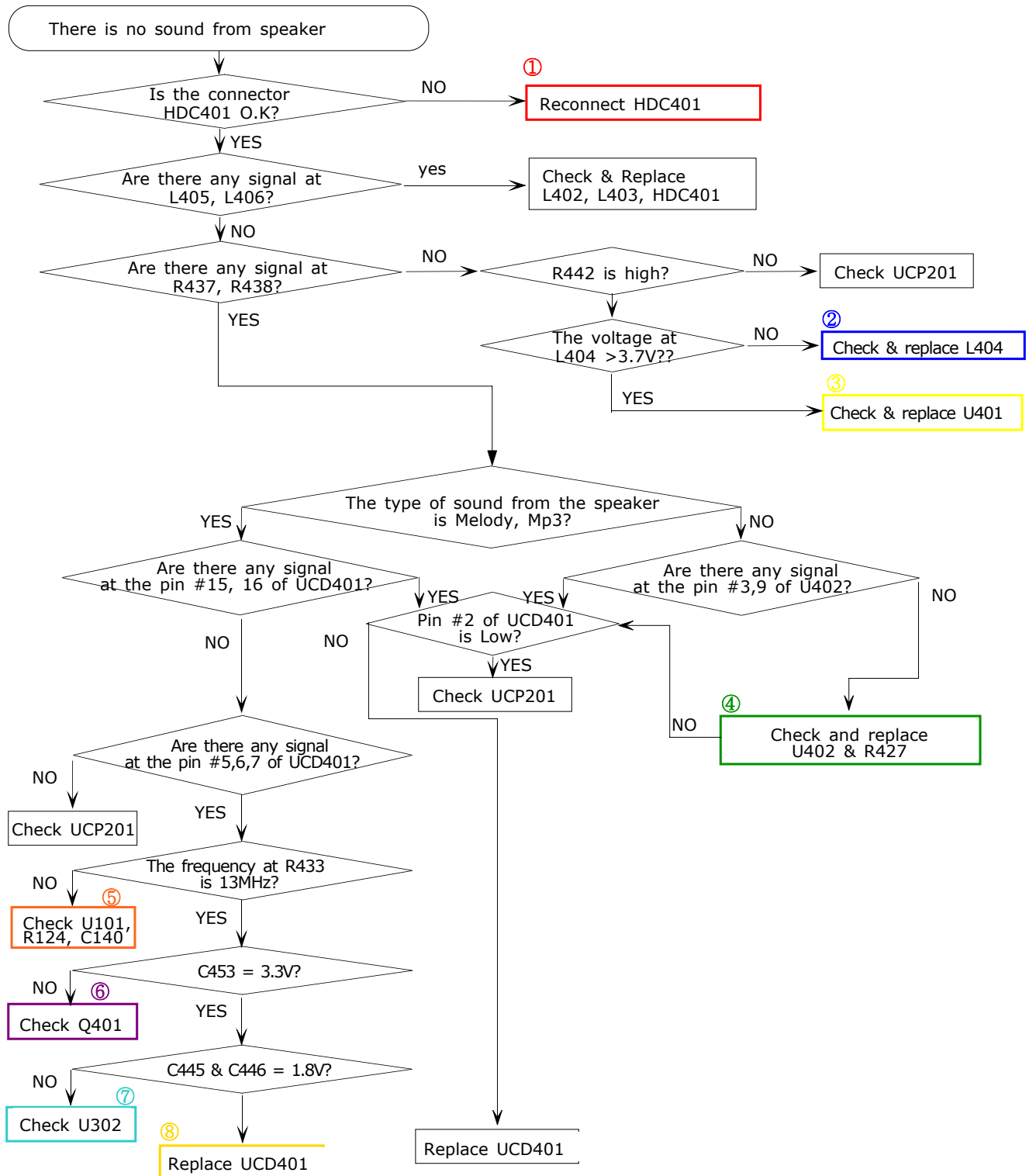


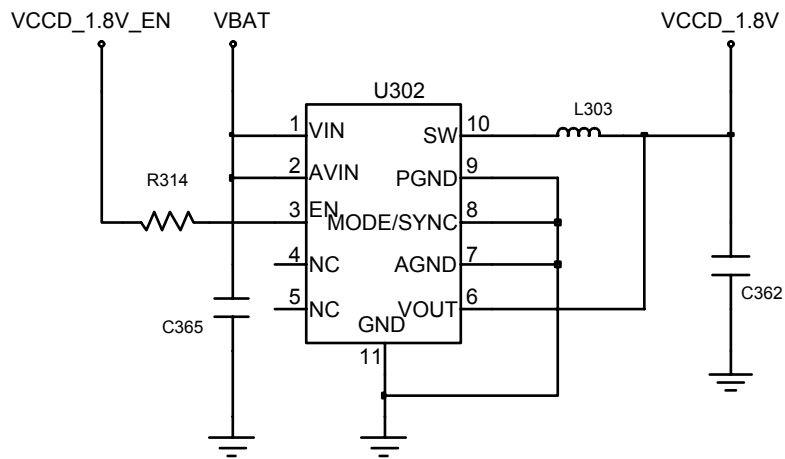
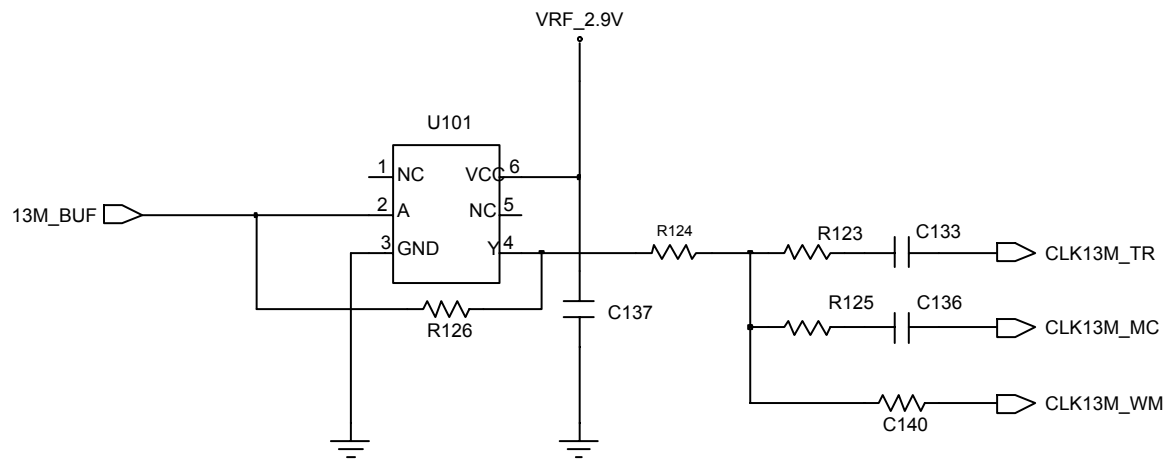


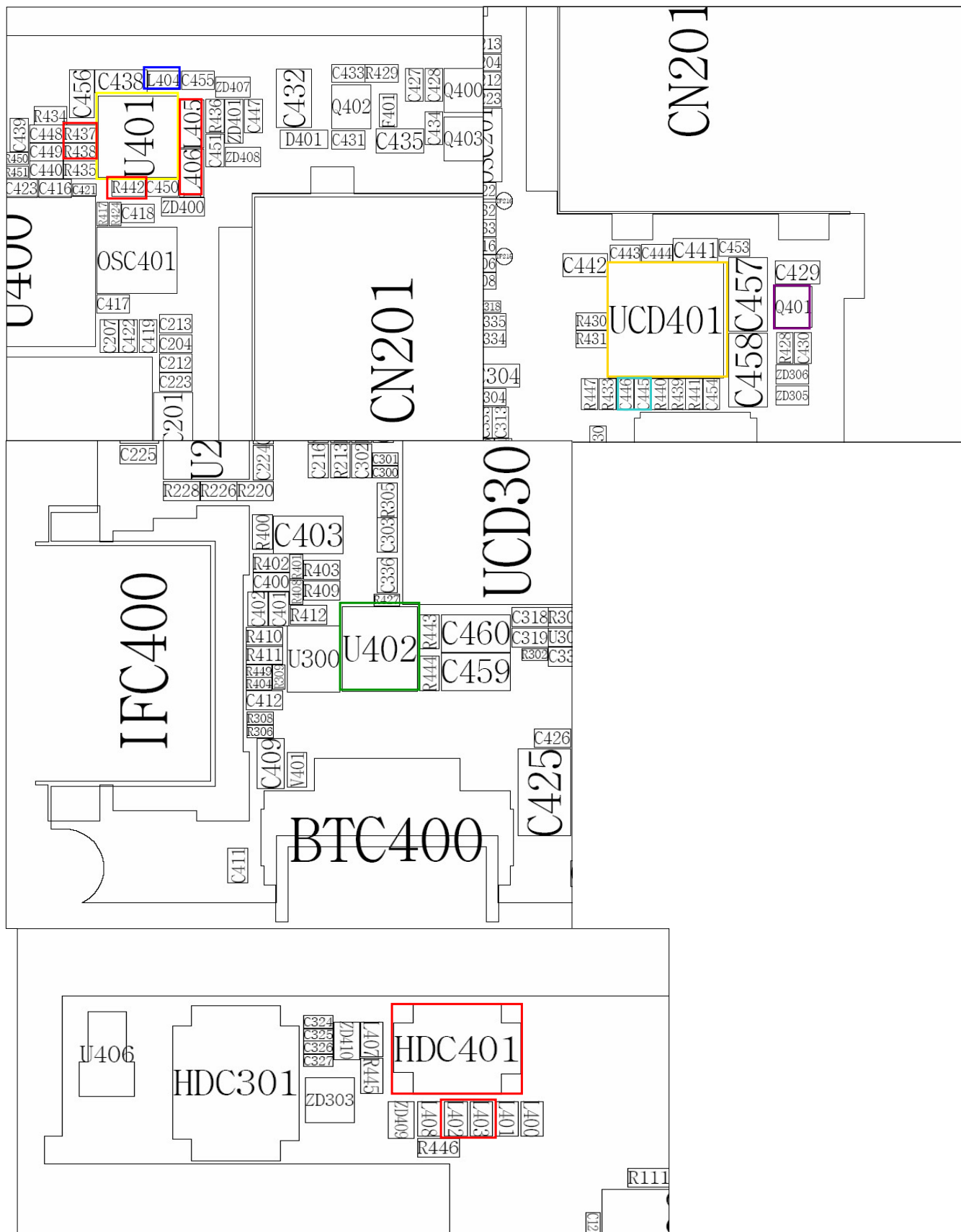
10-1-5. Microphone Part



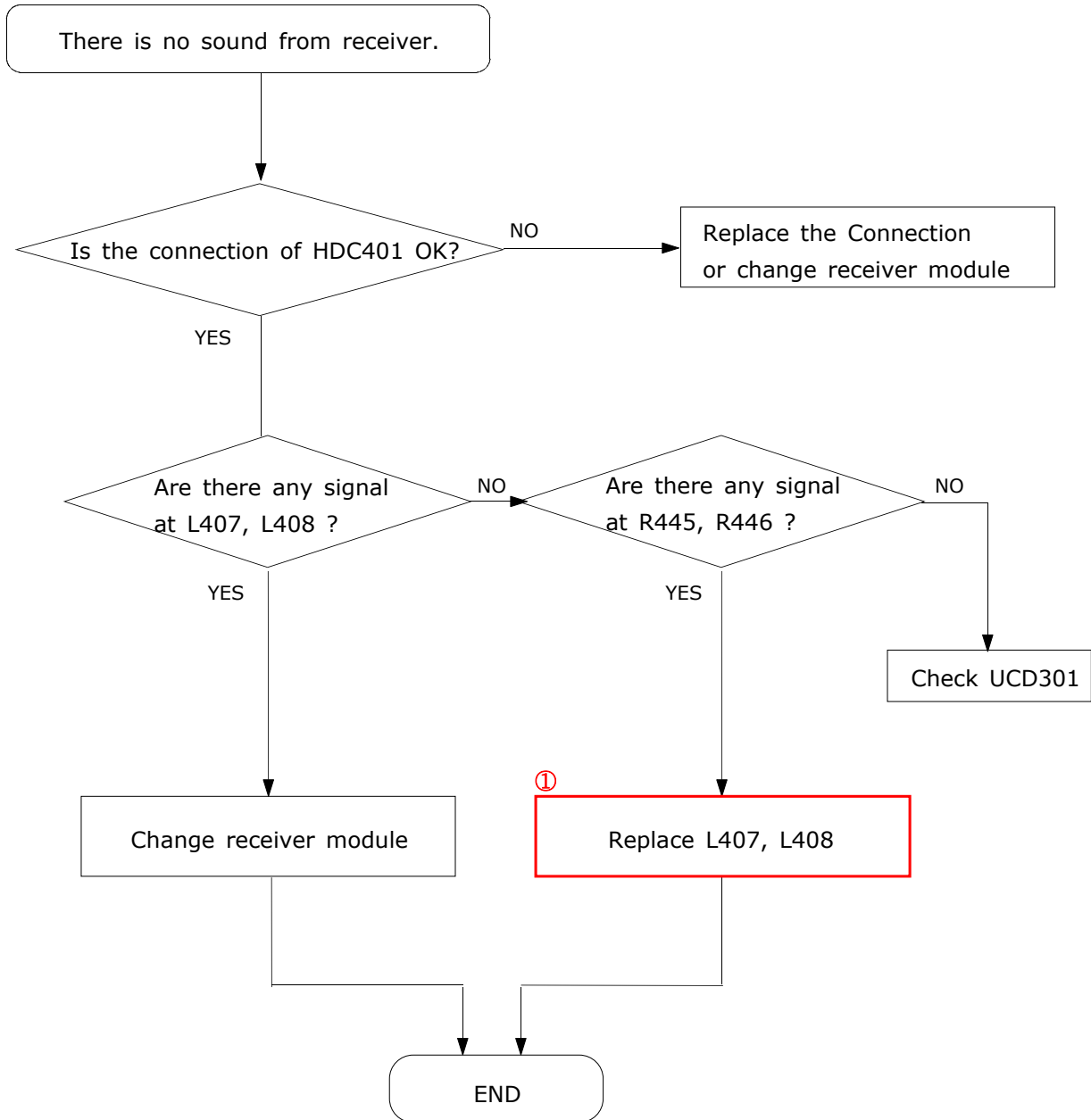
10-1-6. Speaker Part

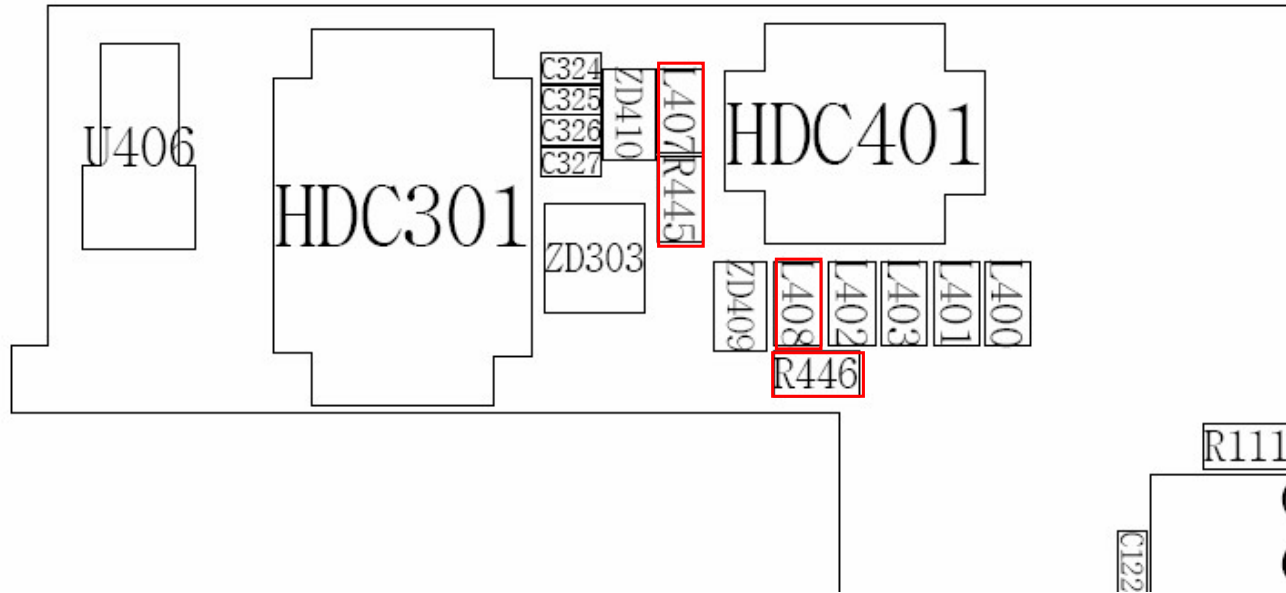


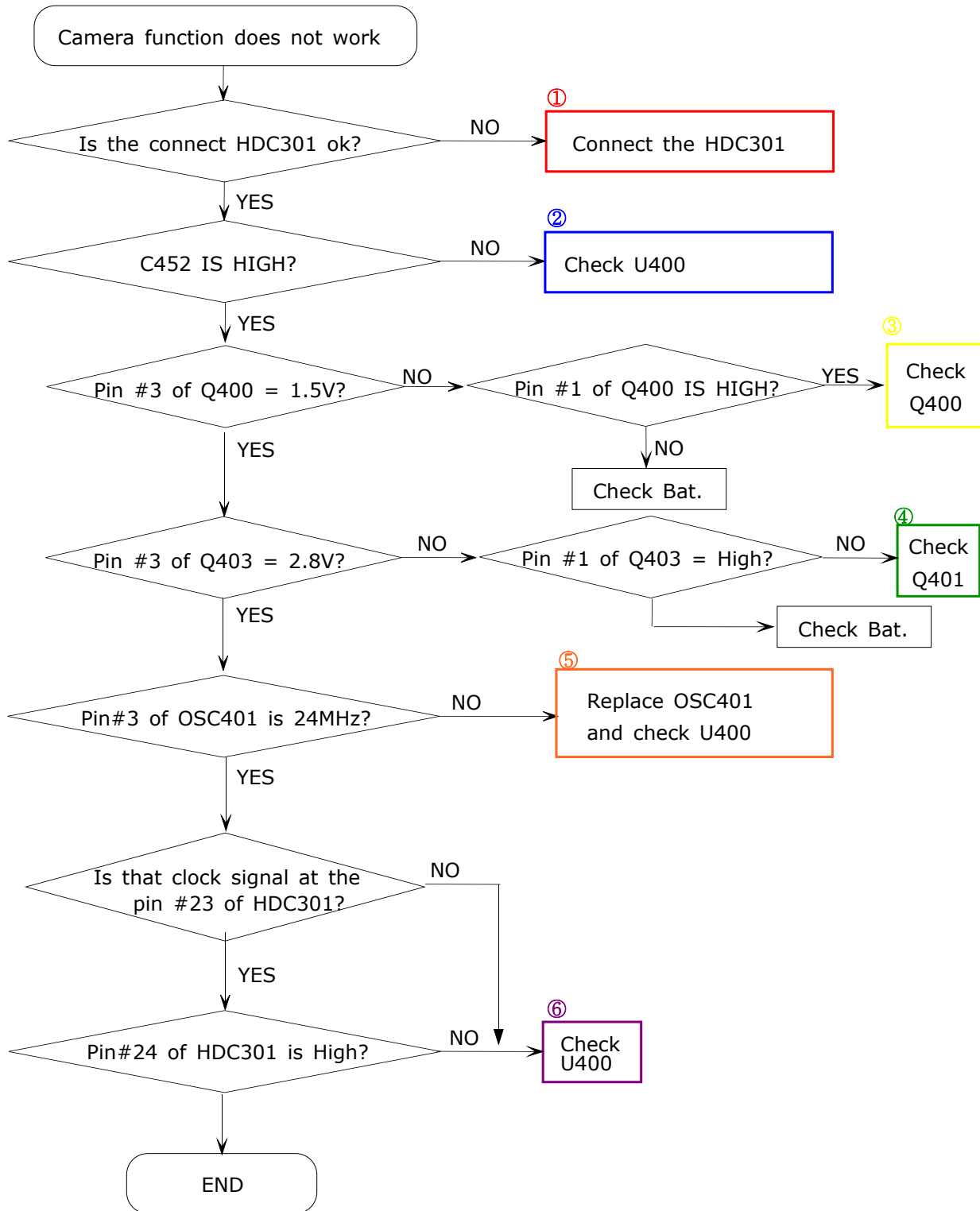


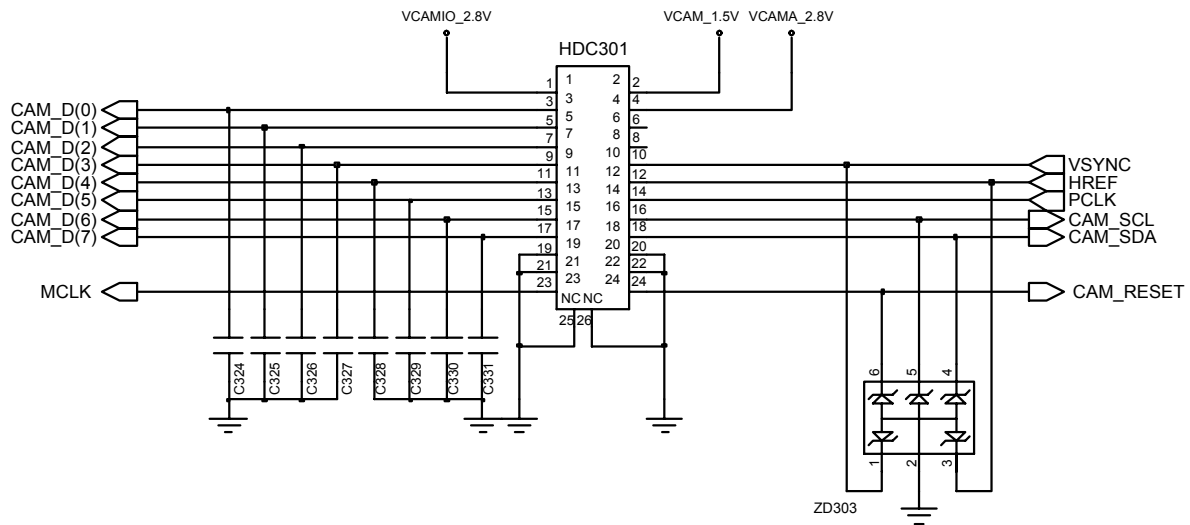


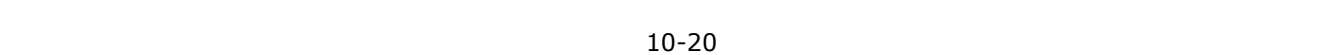
10-1-7. Receiver Part

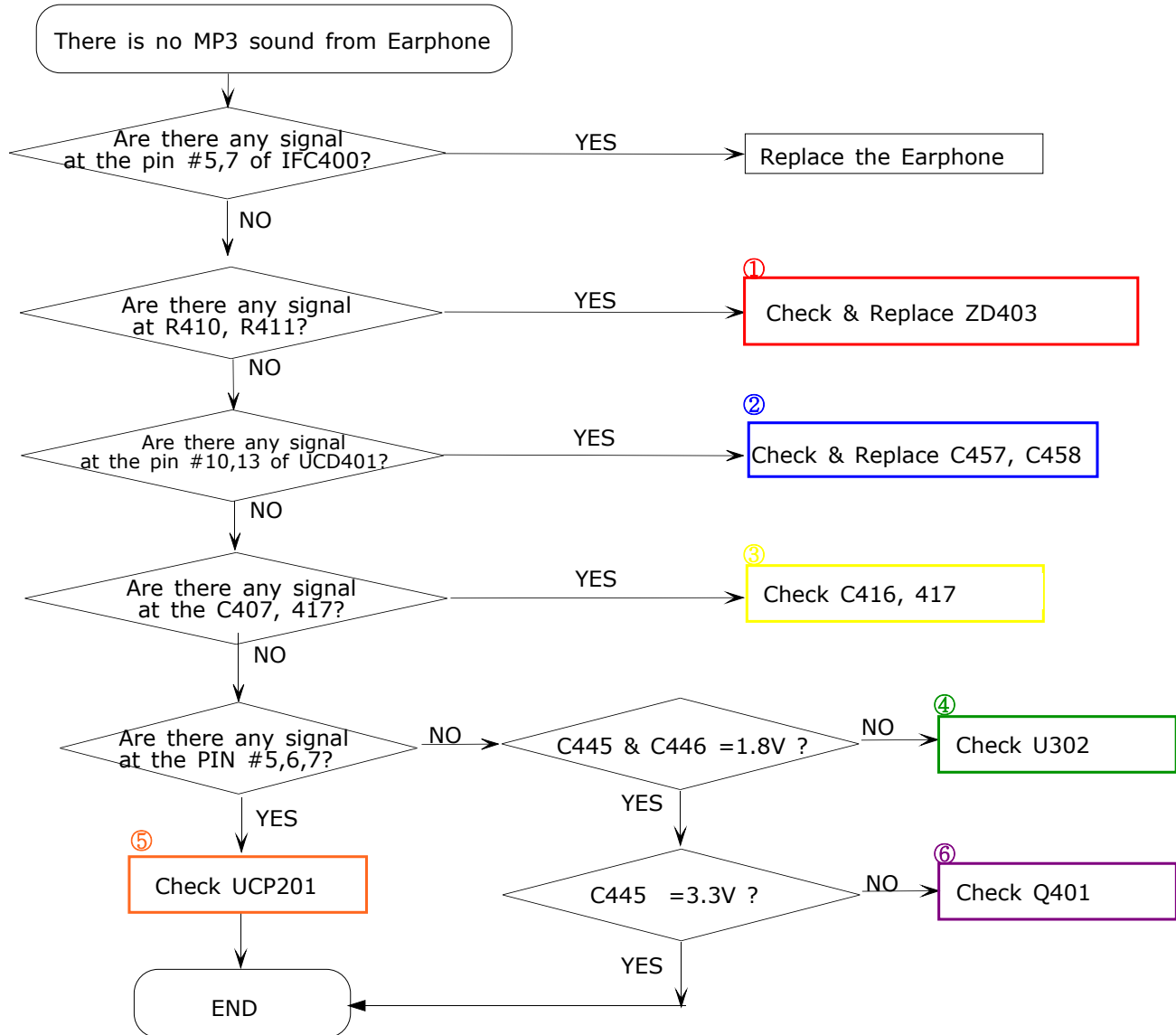




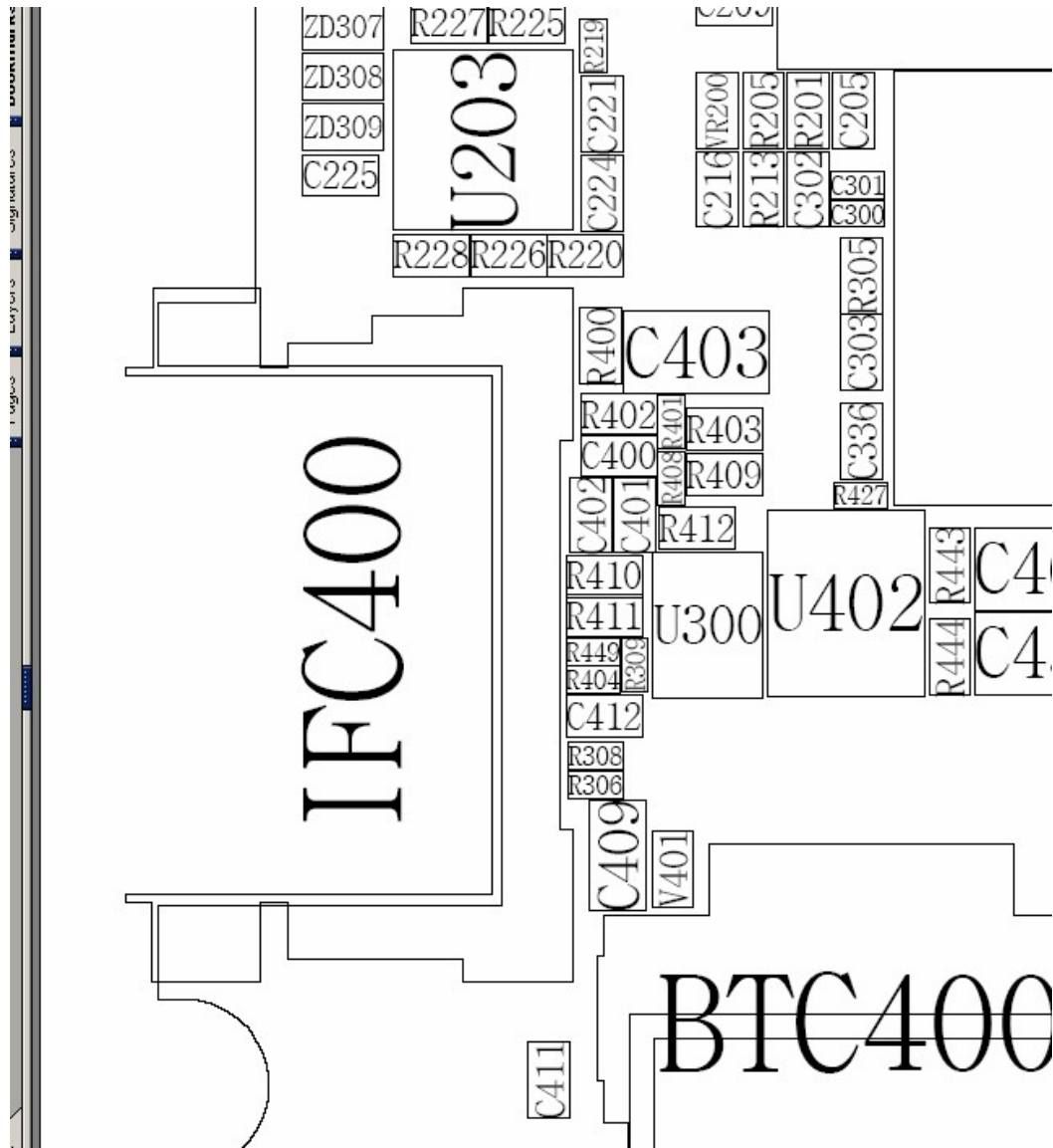
10-1-8. Camera part

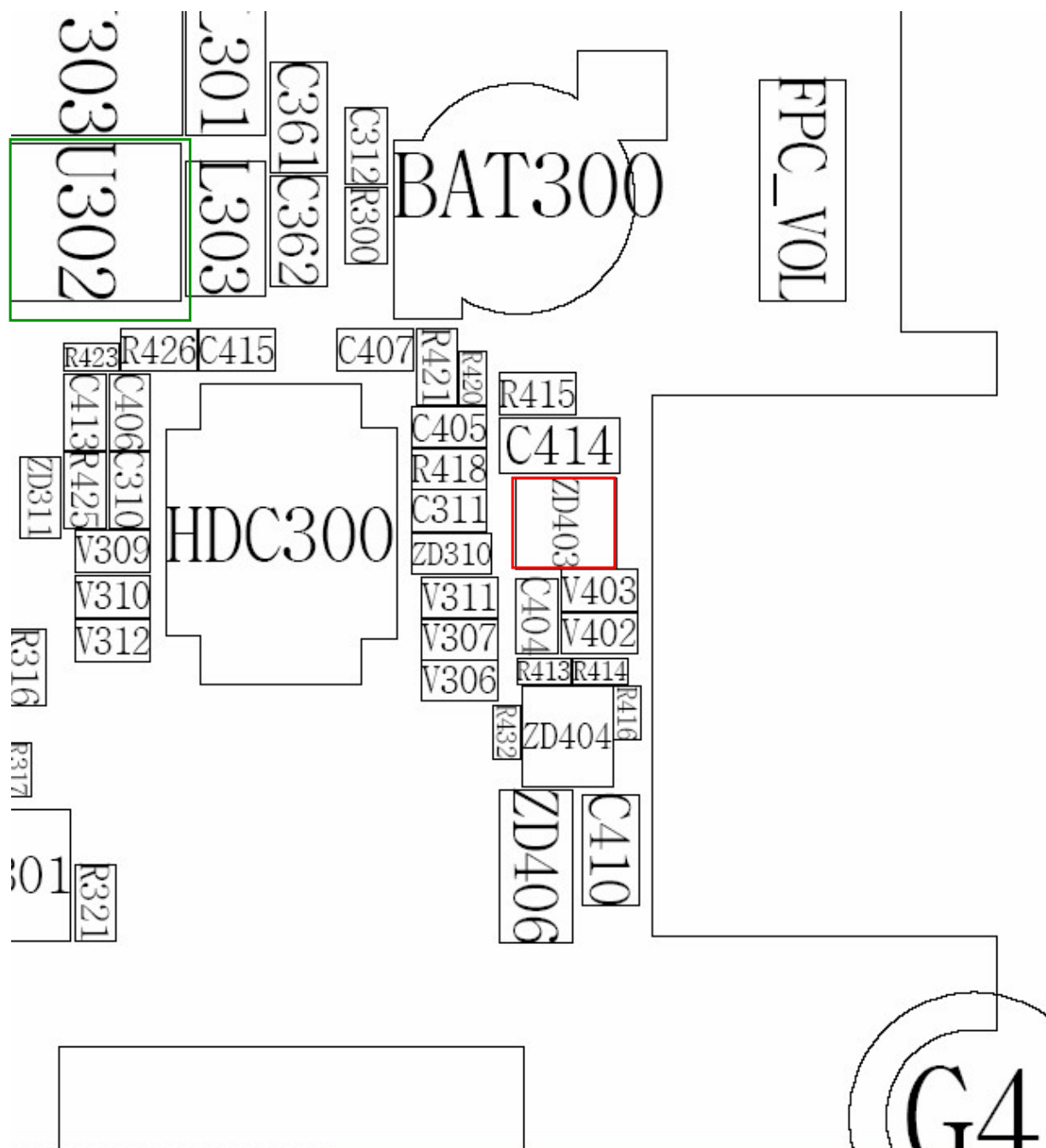




10-1-9. Mp3 part

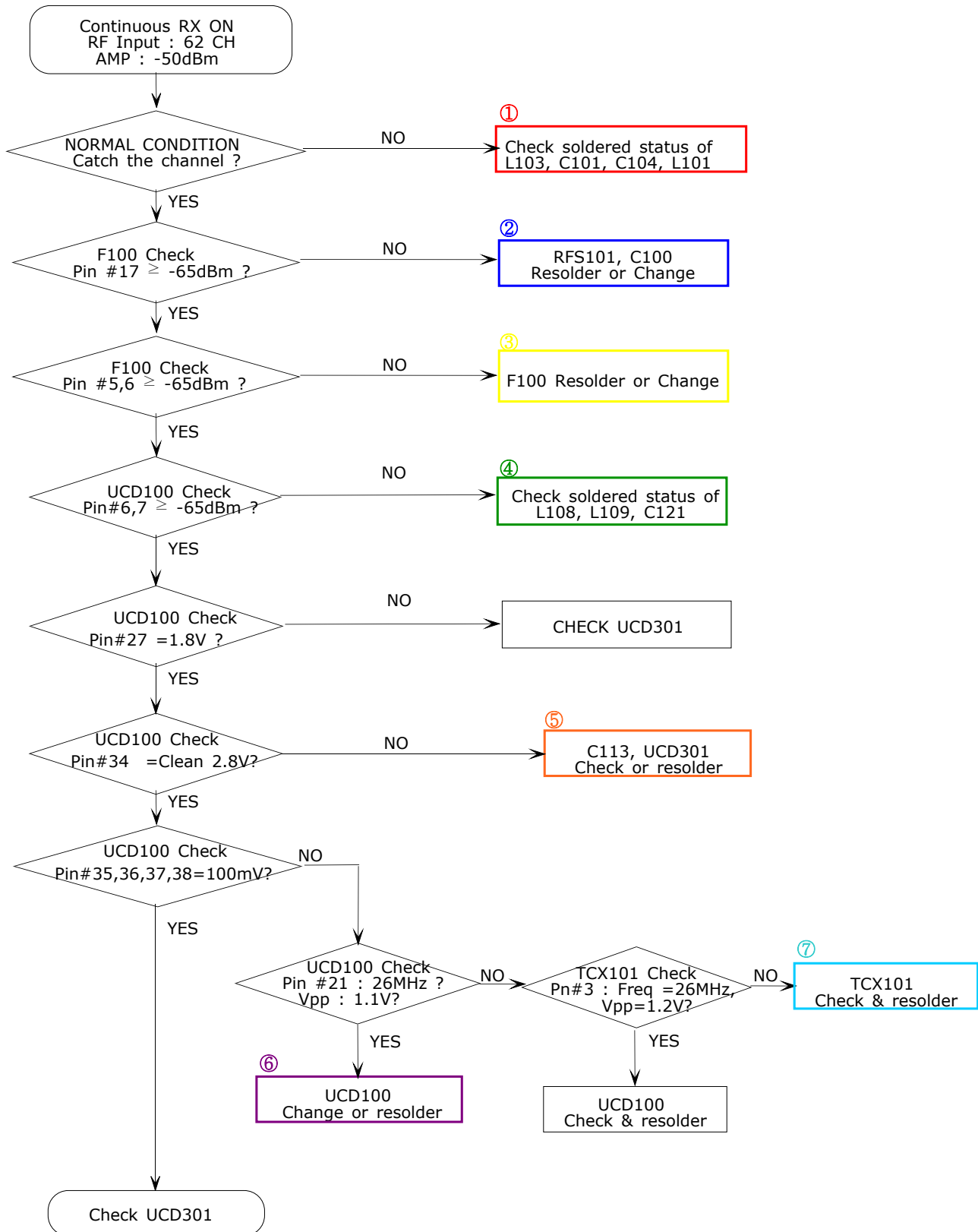


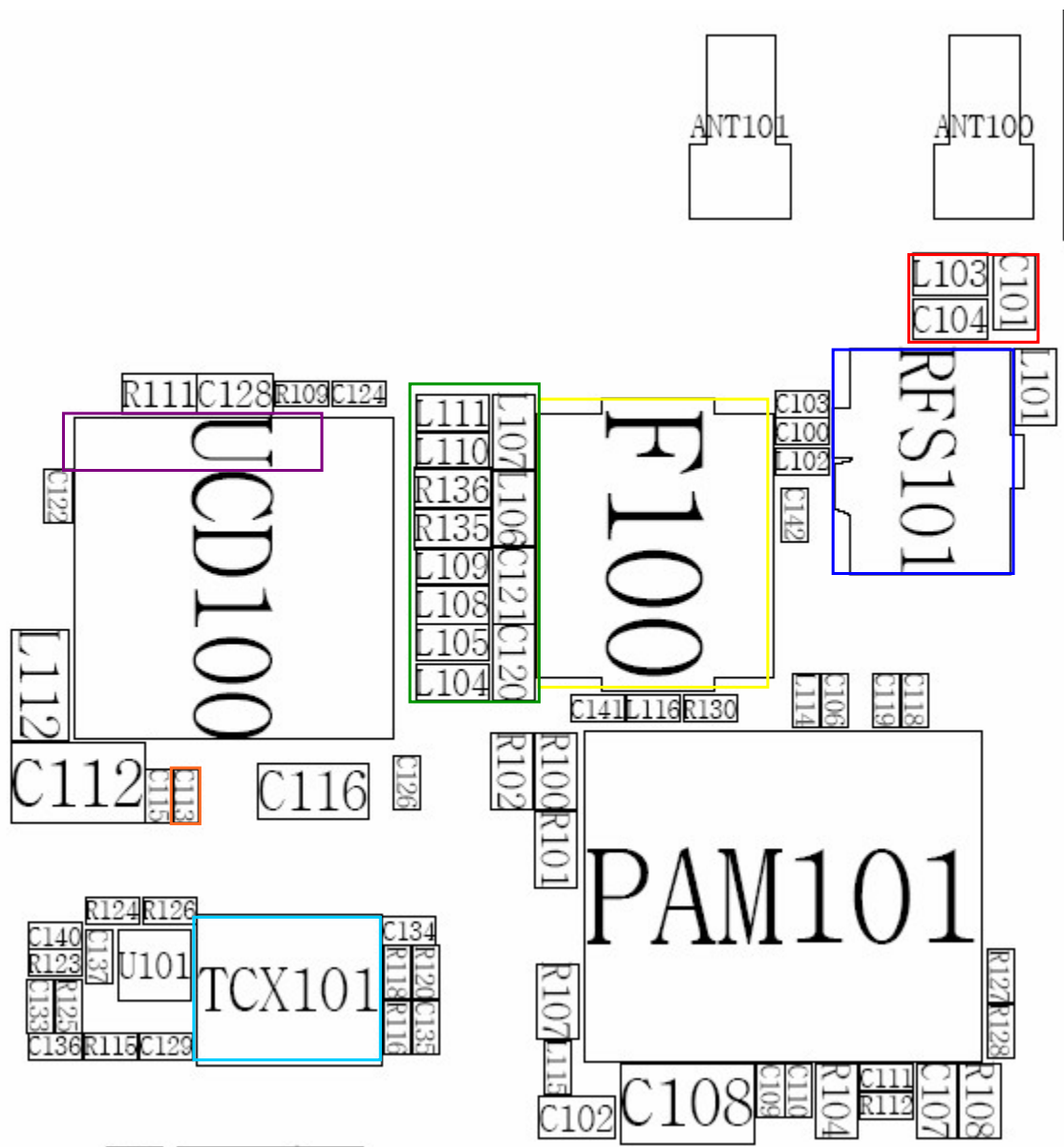




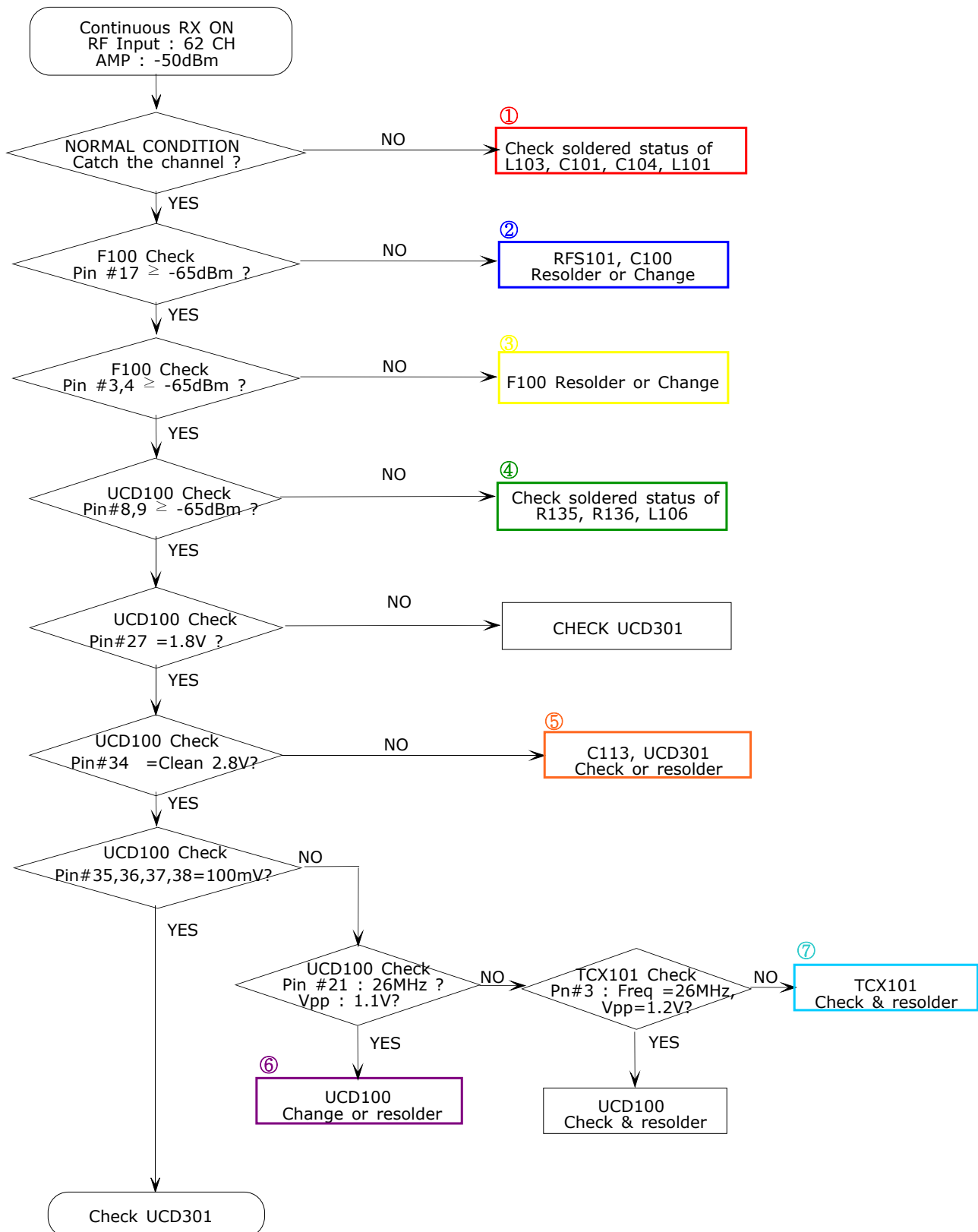
10-2. RF

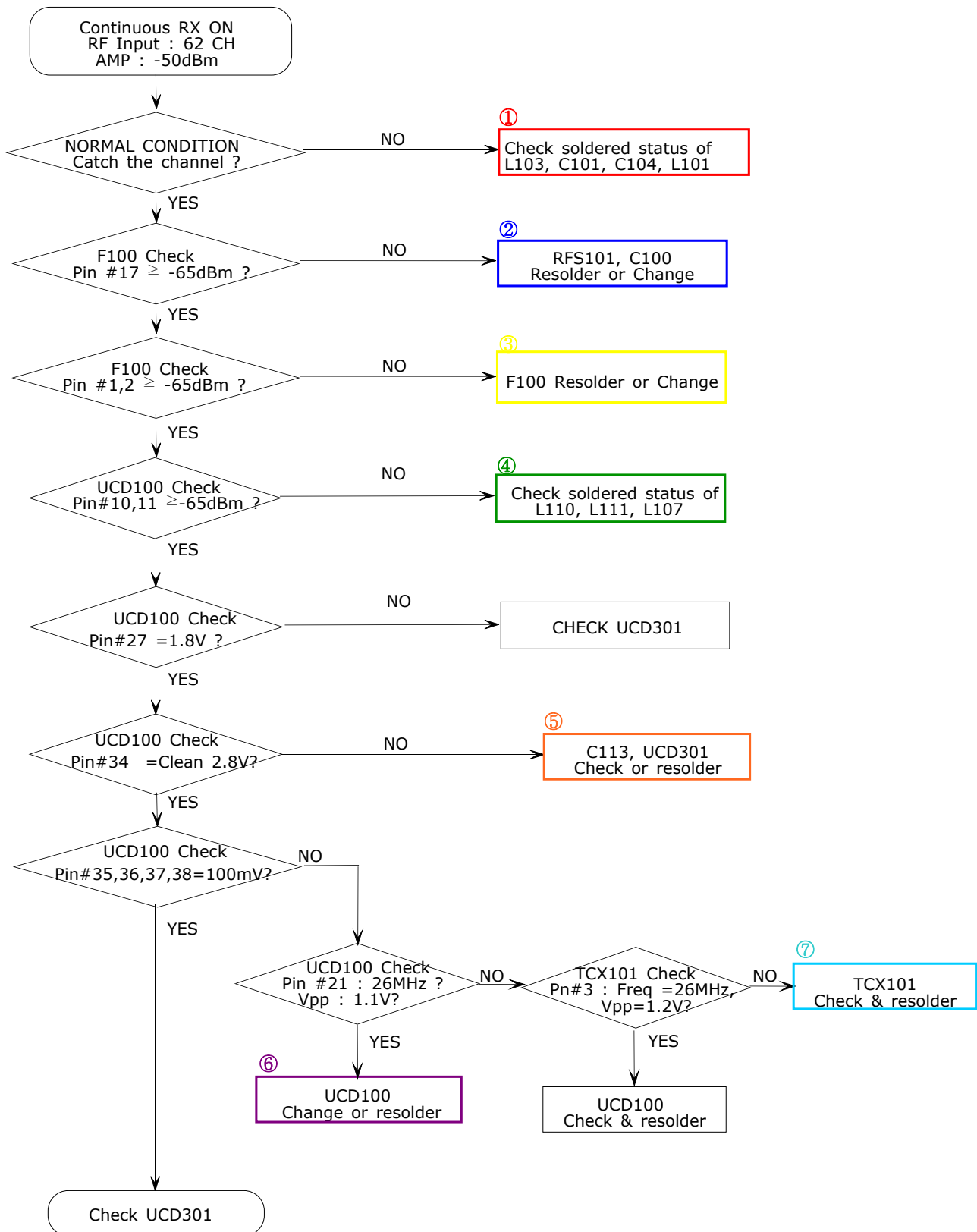
10-2-1. GSM900 RX

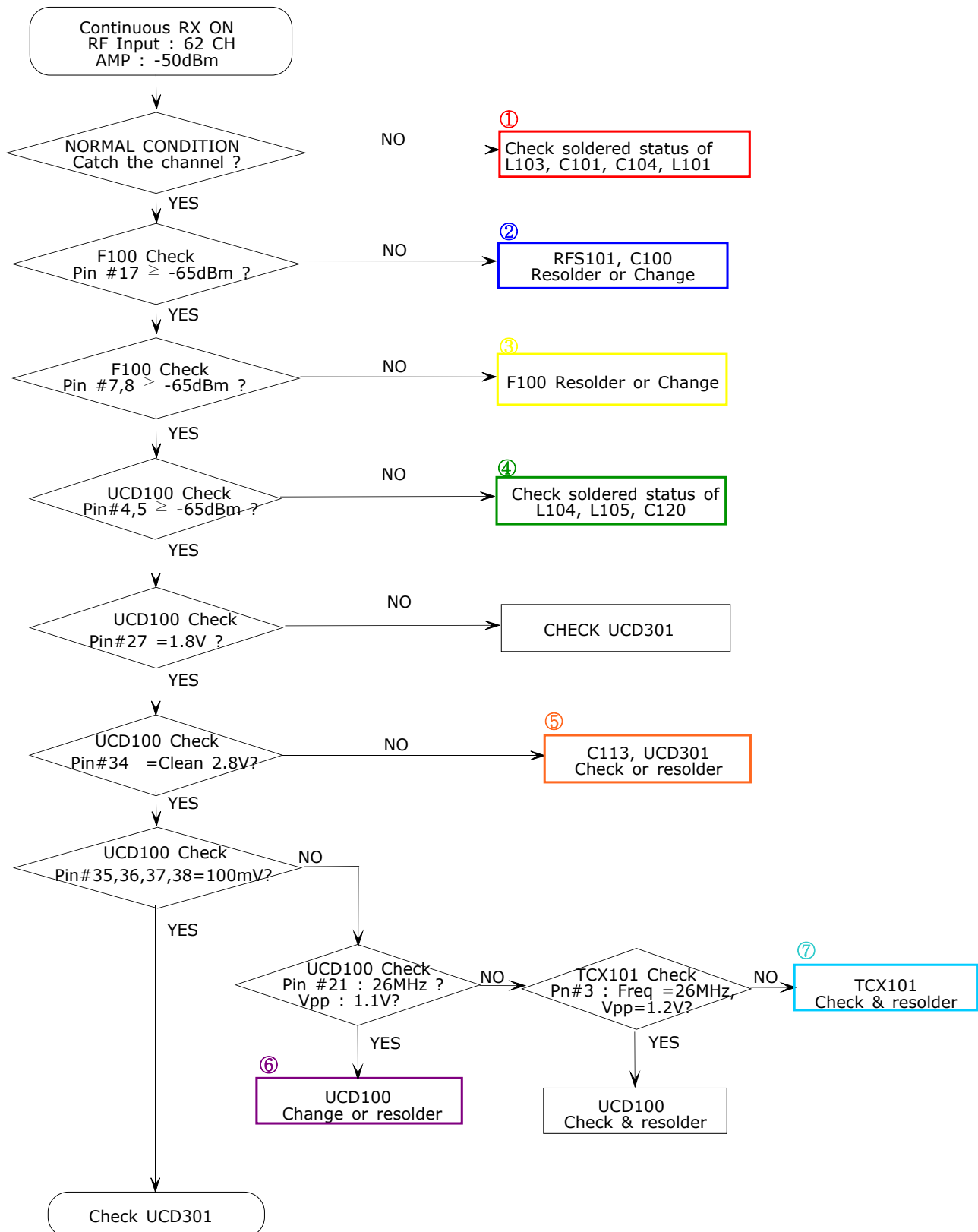


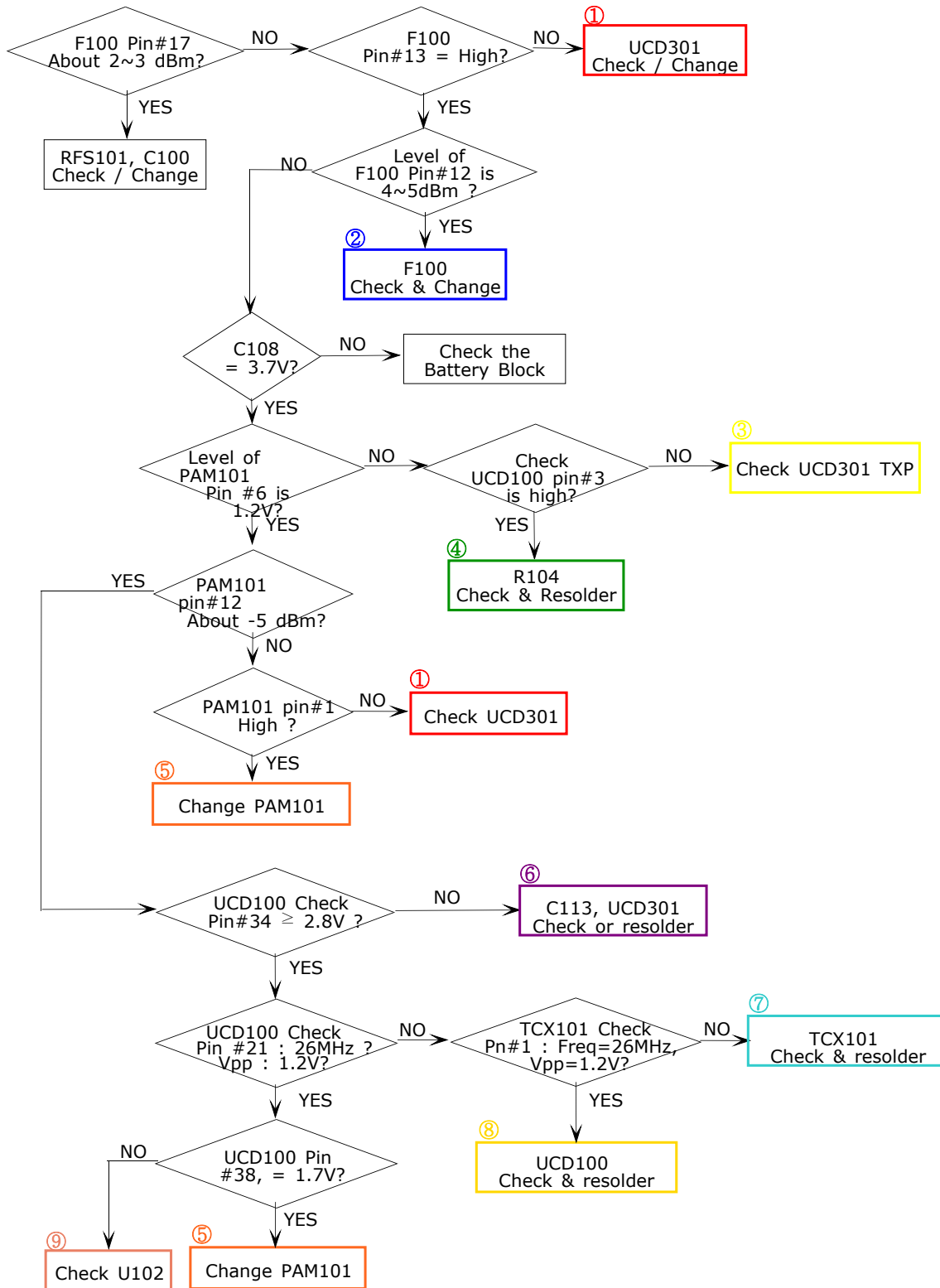


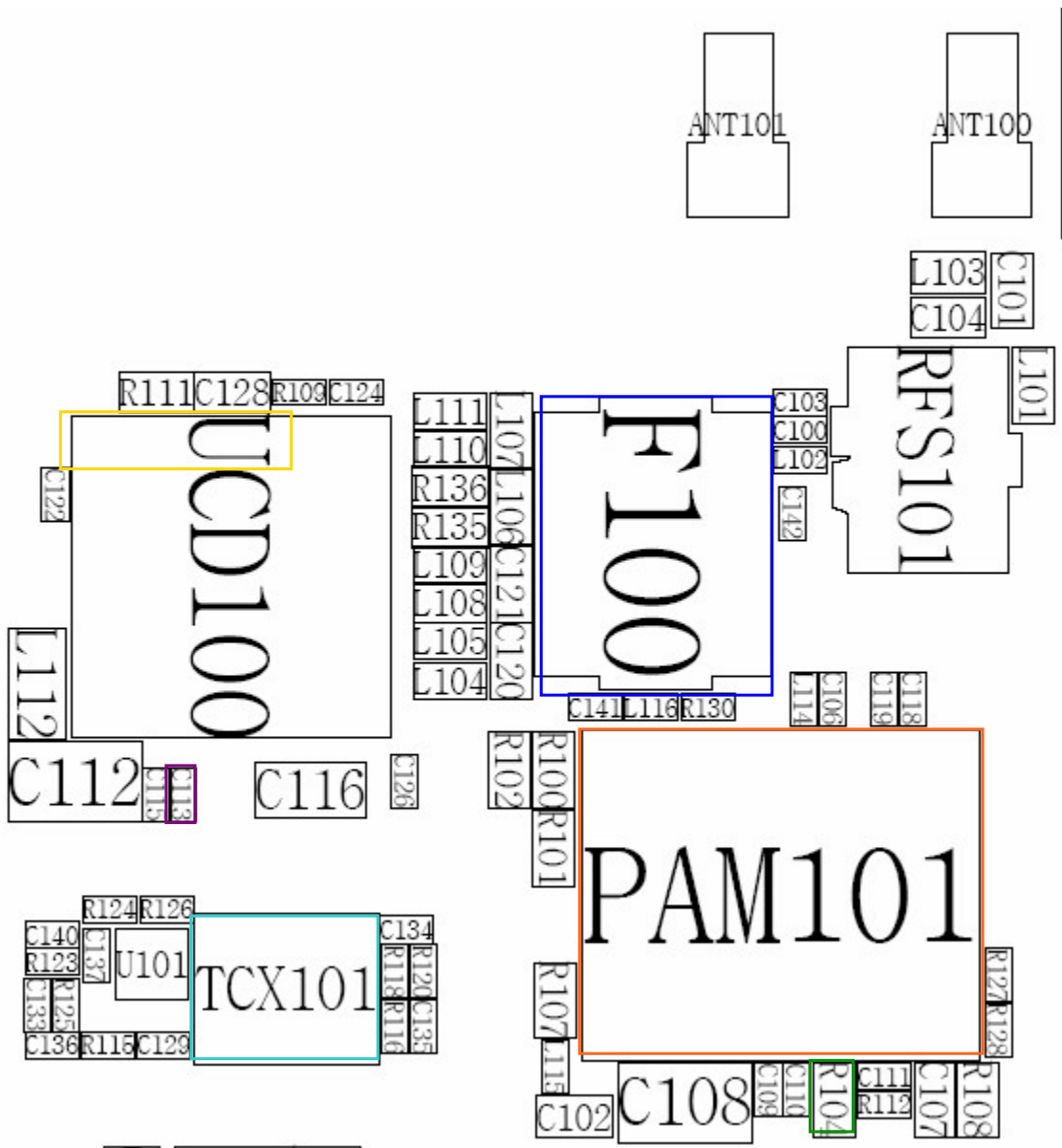
10-2-2. GSM1800 RX



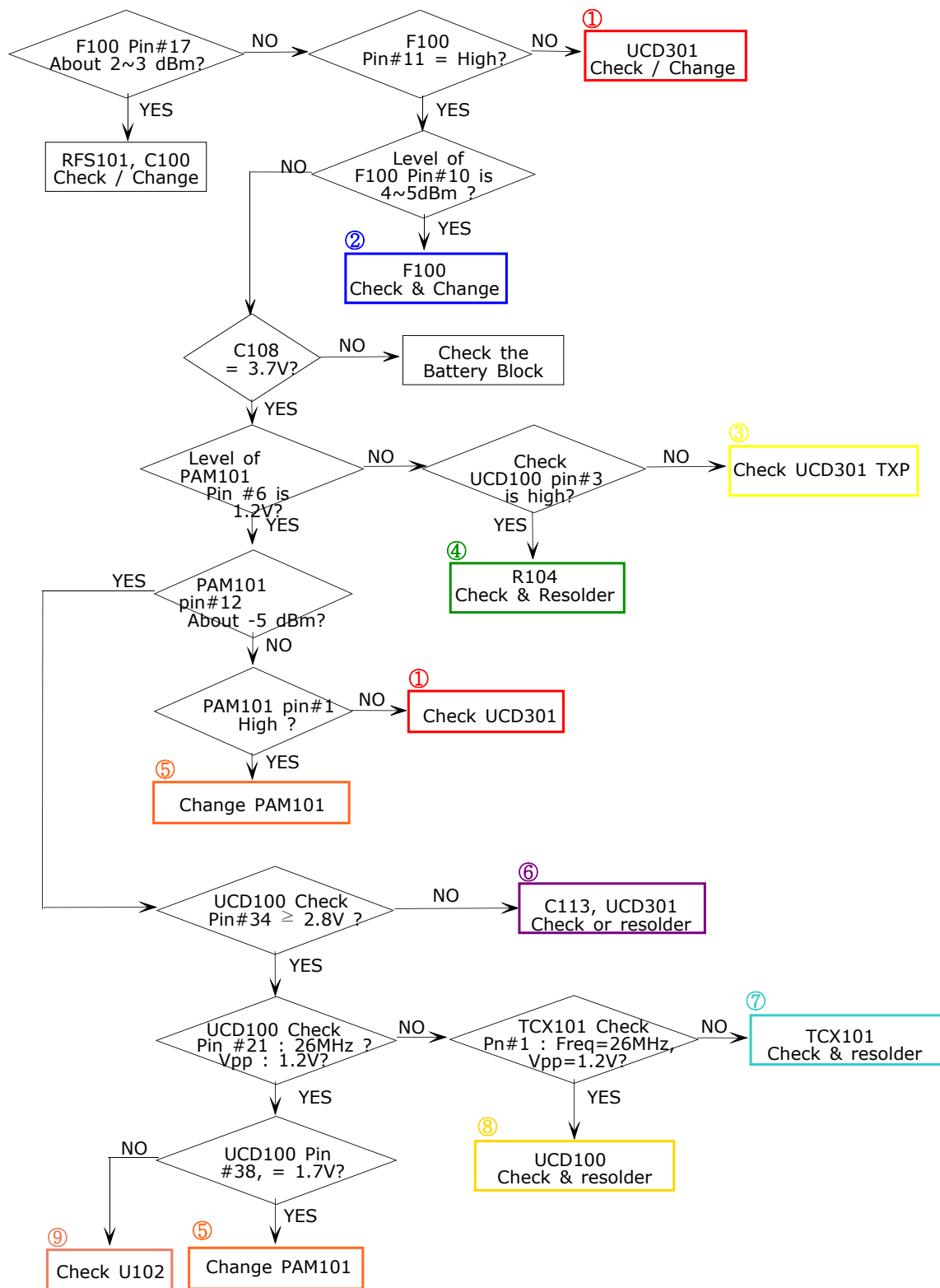
10-2-3. GSM1900 RX

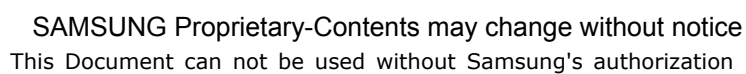
10-2-4. GSM850 RX

10-2-5. GSM850 / GSM900 TX

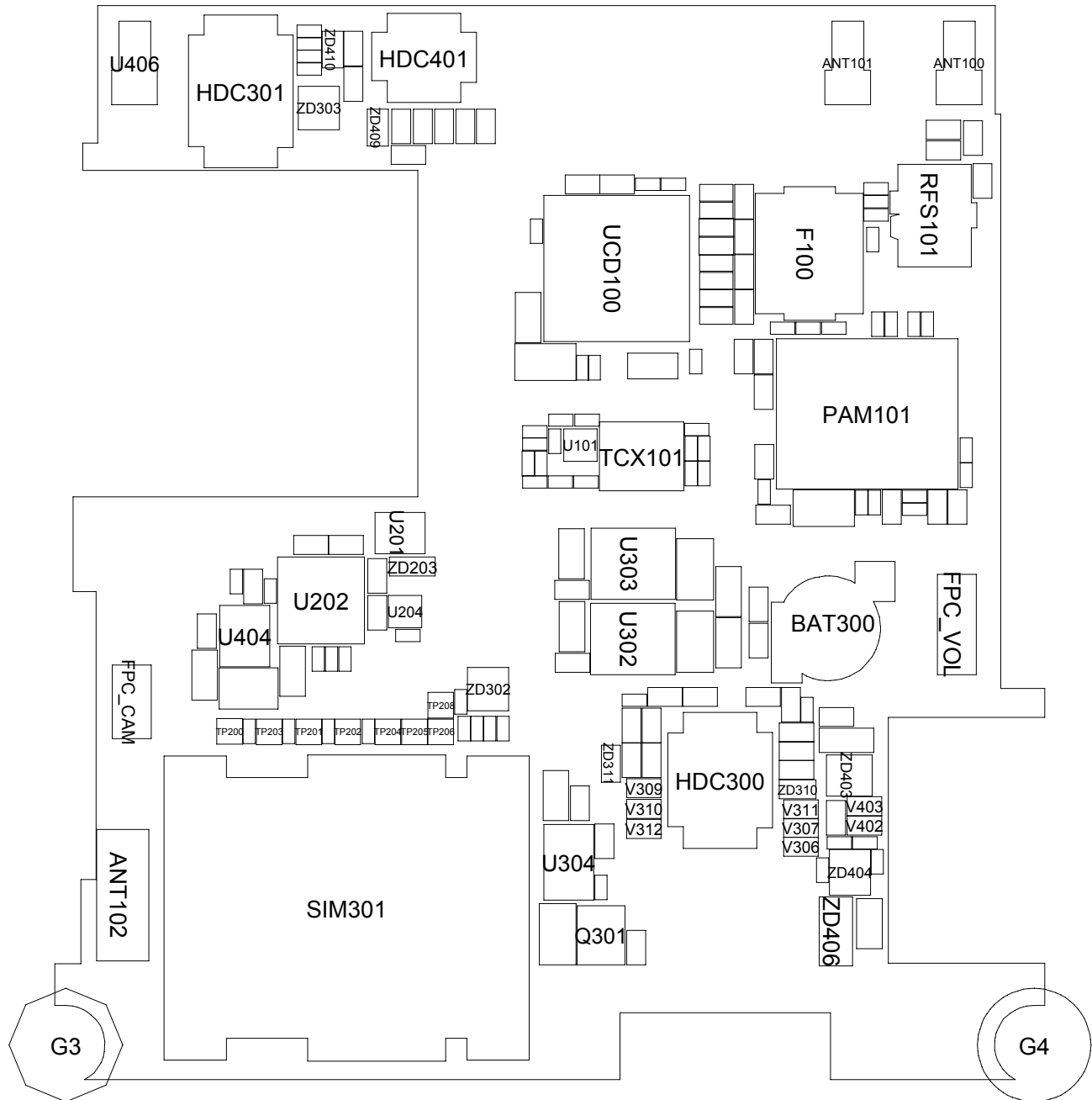


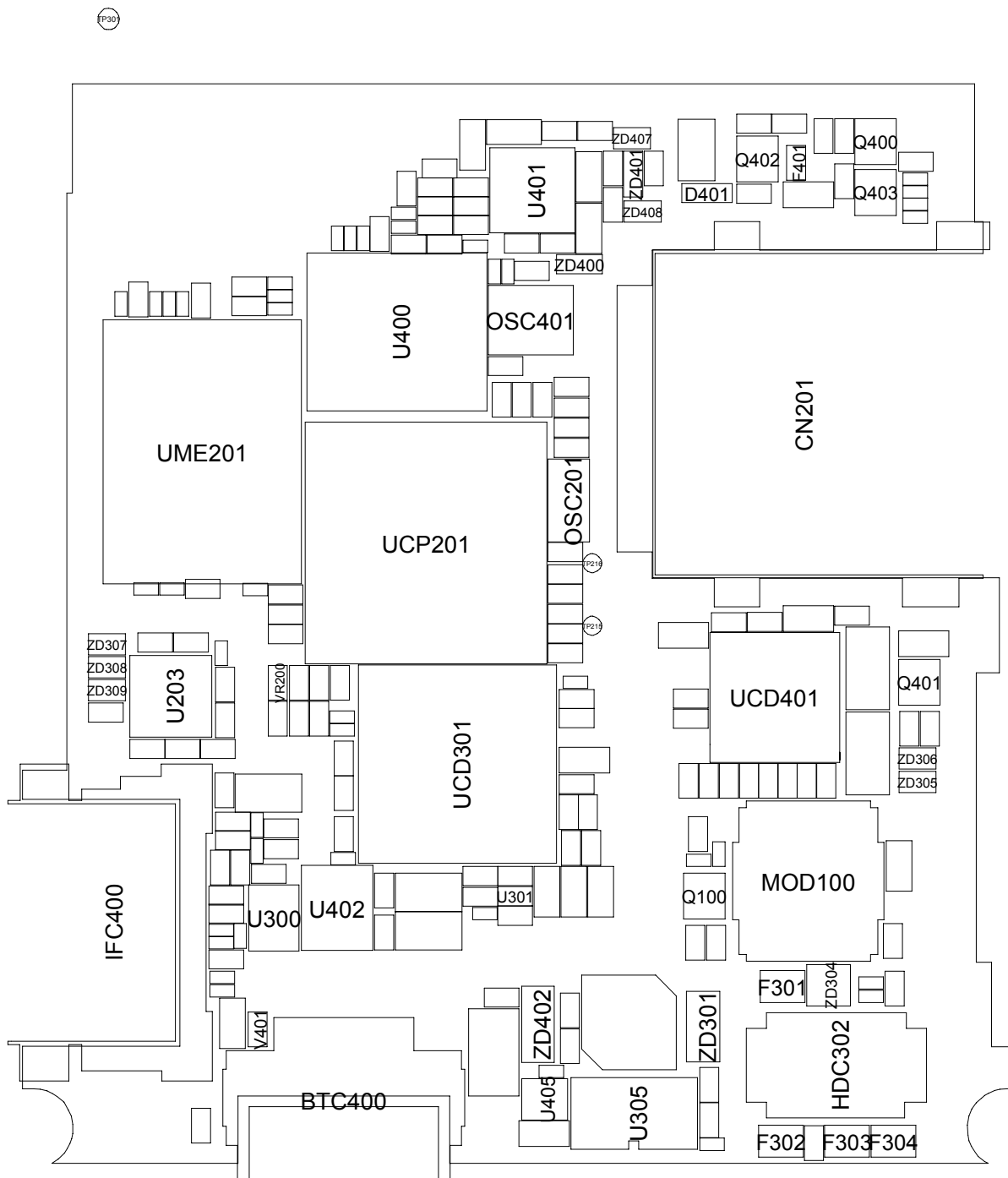
10-2-6. DCS1800 & PCS1900 TX





11. PCB Diagrams





12. Block Diagrams



13. Reference data

13-1. 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