SAMSUNG

GSM TELEPHONE

SGH-C250

SERVICE Manual

GSM TELEPHONE

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1. Specification

1-1. GSM General Specification

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

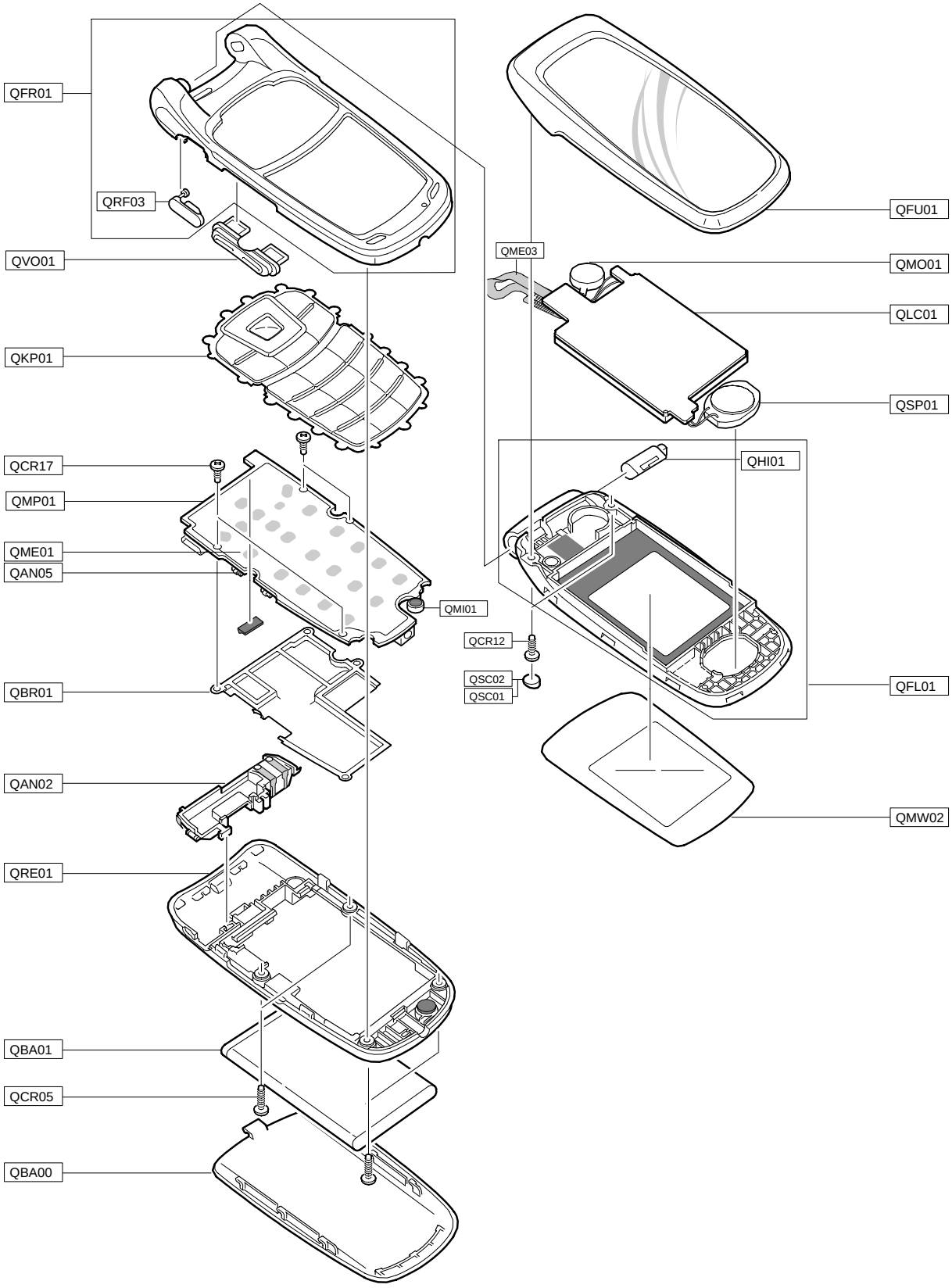
1-2. GSM Tx Power Class

TX Power control level	GSM900
5	33±2 dBm
6	31±2 dBm
7	29±2 dBm
8	27±2 dBm
9	25±2 dBm
10	23±2 dBm
11	21±2 dBm
12	19±2 dBm
13	17±2 dBm
14	15±2 dBm
15	13±2 dBm
16	11±3 dBm
17	9±3 dBm
18	7±3 dBm
19	5±3 dBm

TX Power control level	DCS1800
0	30±3 dBm
1	28±3 dBm
2	26±3 dBm
3	24±3 dBm
4	22±3 dBm
5	20±3 dBm
6	18±3 dBm
7	16±3 dBm
8	14±3 dBm
9	12±4 dBm
10	10±4 dBm
11	8±4 dBm
12	6±4 dBm
13	4±4 dBm
14	2±5 dBm
15	0±5 dBm

2. Exploded View and Parts List

2-1. Cellular phone Exploded View



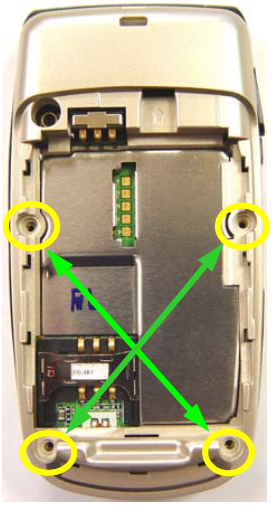
2-2. Cellular phone Parts list

Design LOC		Discription	SEC CODE
QAN02		INTENNA-SGH-C250	GH42-01088A
QAN05		ASSY MEC-INTENNA CONTACT	GH75-08168A
QBA00		PMO-CASE BATT V2	GH72-37058B
QBA01		INNER BATTERY PACK-800MAH,MAIN	GH43-02589A
QBR01		ASSY BRACKET-SHIELD	GH98-03092A
QCR05		SCREW-MACHINE	6001-001478
QCR12		SCREW-MACHINE	6001-001530
QCR17		SCREW-MACHINE	6001-001460
QFU01		ASSY CASE-FOLDER UPPER	GH98-03152B
QKP01		ASSY KEYPAD-(XEF/AGA)	GH98-03726A
QLC01		LCD-MAIN MODULE (SGHC170)	GH07-01044A
QME01		UNIT-DOME SHEET (SGHC250 F/K)	GH59-03999A
QME03		UNIT-CON TO CON	GH59-04016A
QMI01		MICROPHONE-ASSY	GH30-00321A
QMO01		MOTOR DC-SGHZ130	GH31-00154D
QMP01		PBA MAIN-SGHC250	GH92-03287A
QMW02		PMO-COVER MAIN WINDOW	GH72-36006A
QRE01		ASSY CASE-REAR	GH98-03153B
QSC01		RMO-RUBBER SCREW L	GH73-08668A
QSC02		RMO-RUBBER SCREW R	GH73-08669A
QSP01		SPEAKER	3001-002097
QVO01		PMO-VOL KEY	GH72-36007A
QFL01		ASSY CASE-FOLDER LOWER	GH98-03093A
	QHI01	ASSY MEC-HINGE	GH75-07998A
QFR01		ASSY CASE-FRONT	GH98-03094A
	QRF03	PMO-COVER EAR	GH72-36008A

Discription	SEC CODE
BAG PE	6902-000297
ADAPTOR-SGHC140 DC JACK(EU_B	GH44-01597A
UNIT-EARPHONE,10P,BLK(EU)	GH59-04003A
LABEL(P)-WATER SOAK	GH68-02026A
LABEL(P)-WATER SOAK	GH68-02026A
LABEL(R)-MAIN(EU)	GH68-13777A
MANUAL USERS-EU PORTUGUESE	GH68-13787A
MANUAL USERS-EU ENGLISH	GH68-13808A
BOX(P)-UNIT MAIN(EU)	GH69-05022A
PMO-CASE FOLDER DUMMY	GH72-36788A
MPR-VINYL BOHO WINDOW	GH74-30029A
MPR-VINYL BOHO DUMMY	GH74-30030A
MPR-TAPE LCD	GH74-30032A
MPR-SPONGE	GH74-30350A
MPR-SPONGE	GH74-30350A
MPR-SPONGE	GH74-30351A
MPR-TAPE KEY A	GH74-30691A
MPR-TAPE KEY B	GH74-30692A
MPR-TAPE LCD SOLD	GH74-30693A

2-3. Disassembly

1



1) Unscrew the REAR at the four points.
2) Uncover the EAR COVER

※ **caution**

1) Be careful not to make scratch and molding damage!

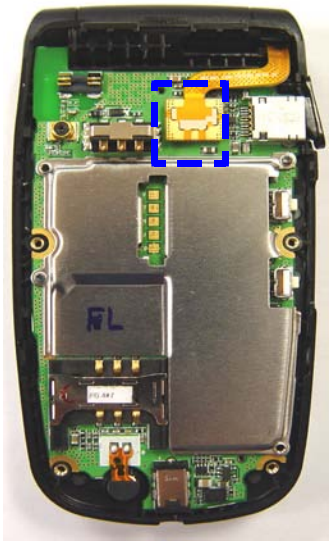
2

1) Disassemble the Rear from the bottom side to the upper side.

※ **caution**

1) Be careful not to make scratch and molding damage!

3



1) Disassemble the LCD CONNECTOR
2) Disassemble the PBA from the FRONT ASS'Y
3) Disassemble the Keypad.

※ **caution**

1) When PBA is separated from LCD Connector, Be careful not to damage!
2) Be careful not to damage LCD FPCB!

4

1) Push the hinge between Folder Upper and lower, And Disassemble Front from Folder.

※ **caution**

1) Be careful not to make scratch and molding damage!
2) Be careful not to damage LCD FPCB!

5

1) Remove screw caps.
2) Unscrew the FOLDER Upper.

※ **caution**

1) Be careful not to make scratch and molding damage!
2) Be careful not to damage LCD FPCB!

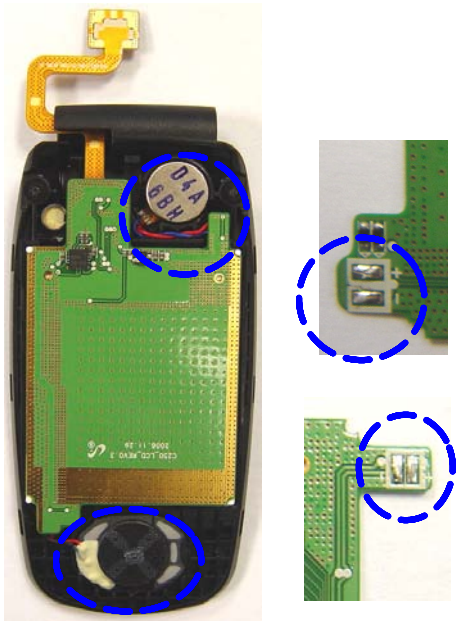
6

1) By using an assembly stick, Disassemble Folder Upper from Folder lower (Right and Left are the same process)

※ **caution**

1) Be careful not to make scratch and molding damage!

7

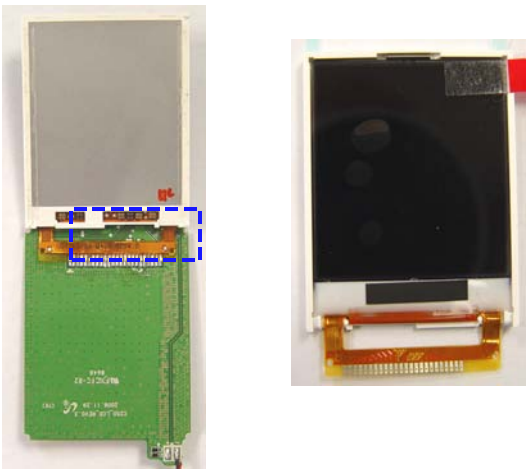


1) Disassemble the MOTOR and the SPEAKER from FOLDER LOWER by using a pincette.
2) Melt the lead of motor and speaker's joint

※ **caution**

1) Be careful not to make scratch and molding damage!

8



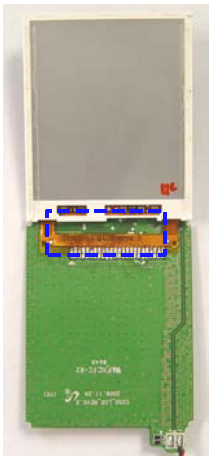
1) Detach the insulation tape
2) Disassemble the LCD FPCB connector
3) Disassemble the LCD PANNEL from PBA
4) Melt the lead of LCD FPCB and detach the LCD FPCB

※ **caution**

1) Be careful not to damage the LCD FPCB and LCD PANNEL

2-4. Assembly

1



1) Attach the fixing tape of LCD FPCB
2) Solder the LCD FPCB
3) Attach the insulation tape
4) Detach the cover of adhesive tape
5) Attach the LCD PANNEL to pba

※ **caution**

1) Arrange the lcd fpcb exactly
1) Be careful not to make scratch and molding damage!
2) Be careful when soldering the FPCB
3) DO not overheat the FPCB

2

1) Soldering the motor and speaker
2) Assemble the LCD connector

※ **caution**

1) Be careful not to make scratch and molding damage!
2) Be careful not to damage LCD FPCB!

3

1)Insert lcd into FOLDER LOWER.

※ **caution**

1) When inserted FPCB, Arrange Wires clearly as above picture is shown.

4

1) Assemble FOLDER UPPER with FOLDER LOWER following the orders as below picture is shown.

※ **caution**

1) Be careful not to make scratch and molding damage!

5

1) Screw up the FOLDER UPPER at the above two points.[M1.4*L2.5]

※ **caution**

1) Be careful not to make scratch and molding damage!
2) Use 1.1 ± 0.2 Kgf.cm!

6

1) Attach Screw rubber caps on the screws by using a pincette.

※ **caution**

1) Be careful not to make scratch and molding damage!

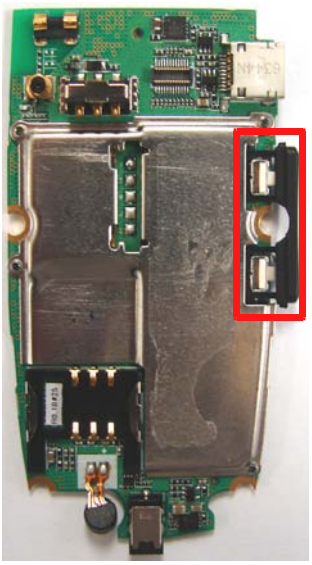
7

1) Insert LCD FPCB[which is connected to FOLDER] into the bottom of FRONT Hinge.
2) The FOLDER's projection inserts the FRONT'S hole when Projection is pushed
3) Assemble FOLDER with FRONT

※ **caution**

1) Be careful not to make scratch and molding damage!

8

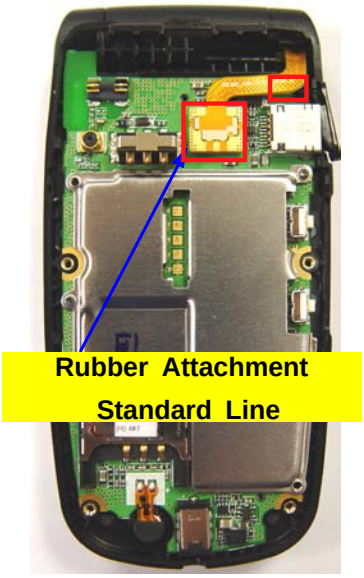


1) Insert the KEYPAD.
2) Attach side volume key
2) Insert PBA into FRONT.
3) Connect LCD FPCB to PBA CONNECTOR.

※ **caution**

1) Be careful not to insert keypad into FRONT incorrectly![Put KEYPAD Holes into FRONT Projection correctly!
2) Do not miss side key

9

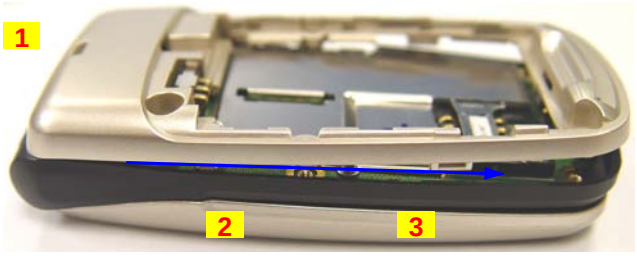


1) Attach the Rubber following Red Line as the above picture is shown.
2) Connect LCD FPCB to PBA CONNECTOR.
3) Cover the ear cover

※ **caution**

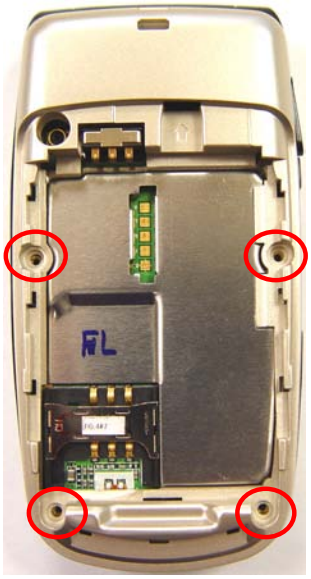
1) Be careful not to make scratch and molding damage!

10



1) Assemble rear with front following the orders as below picture is shown.

11



1) Screw up the REAR at 4 Points. [M1.4*L3]

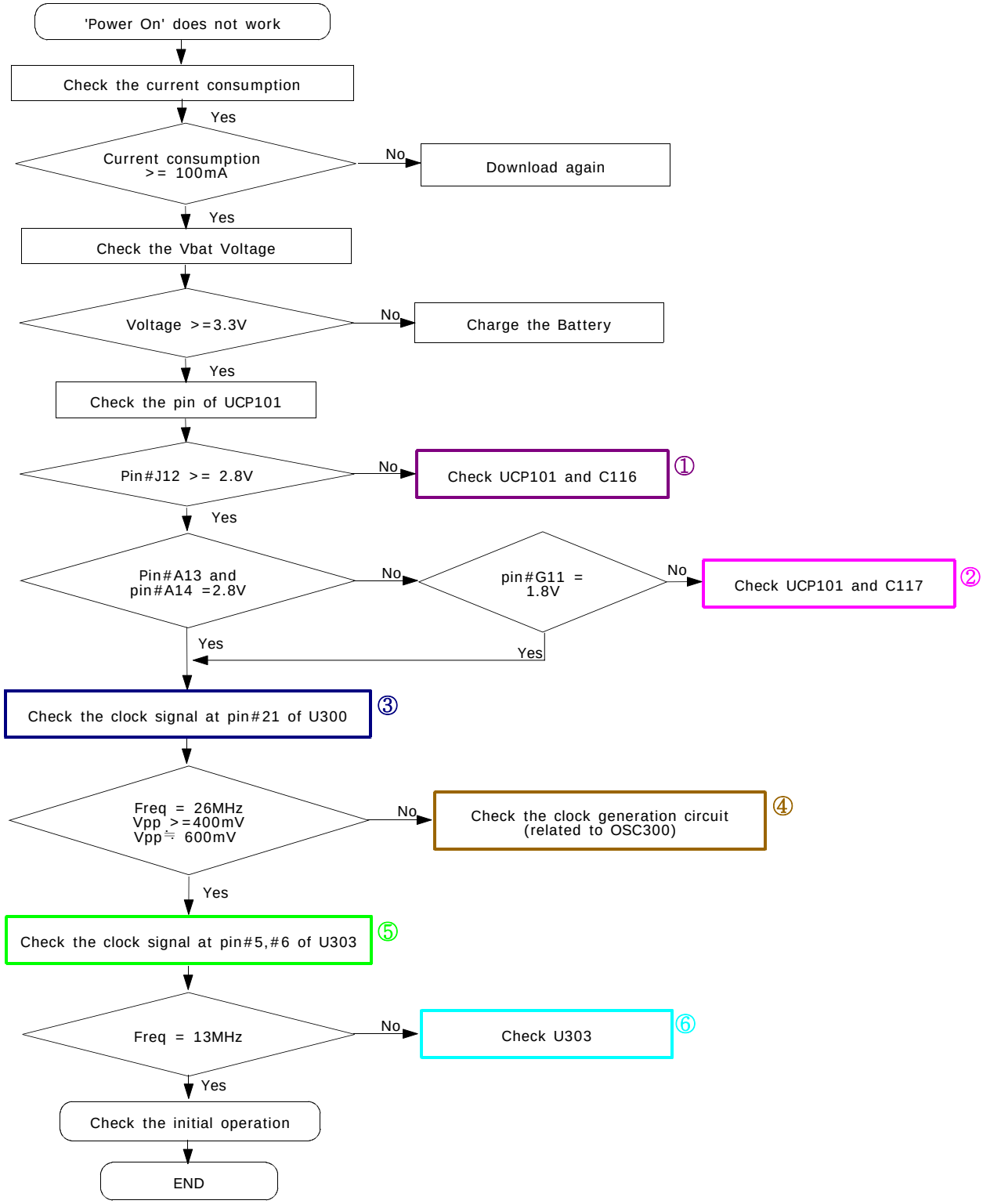
※ **caution**

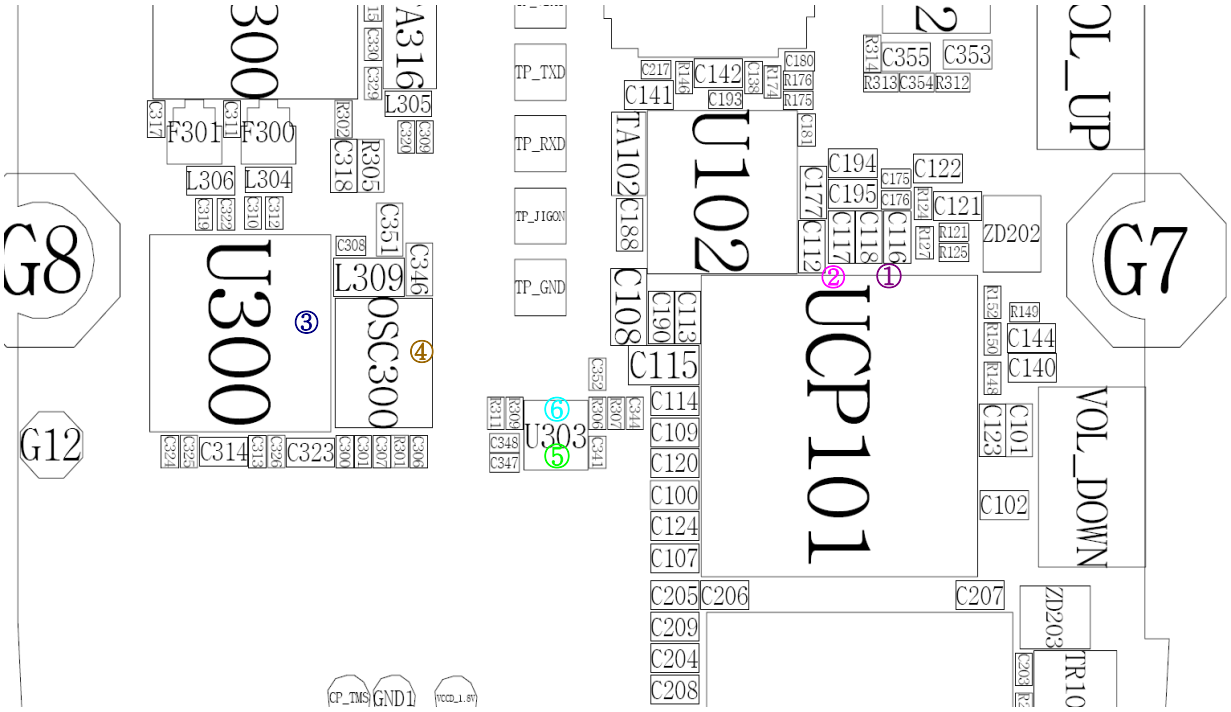
1) Be careful not to make scratch and molding damage!
2) Use 1.1 ± 0.2 Kgf.cm!

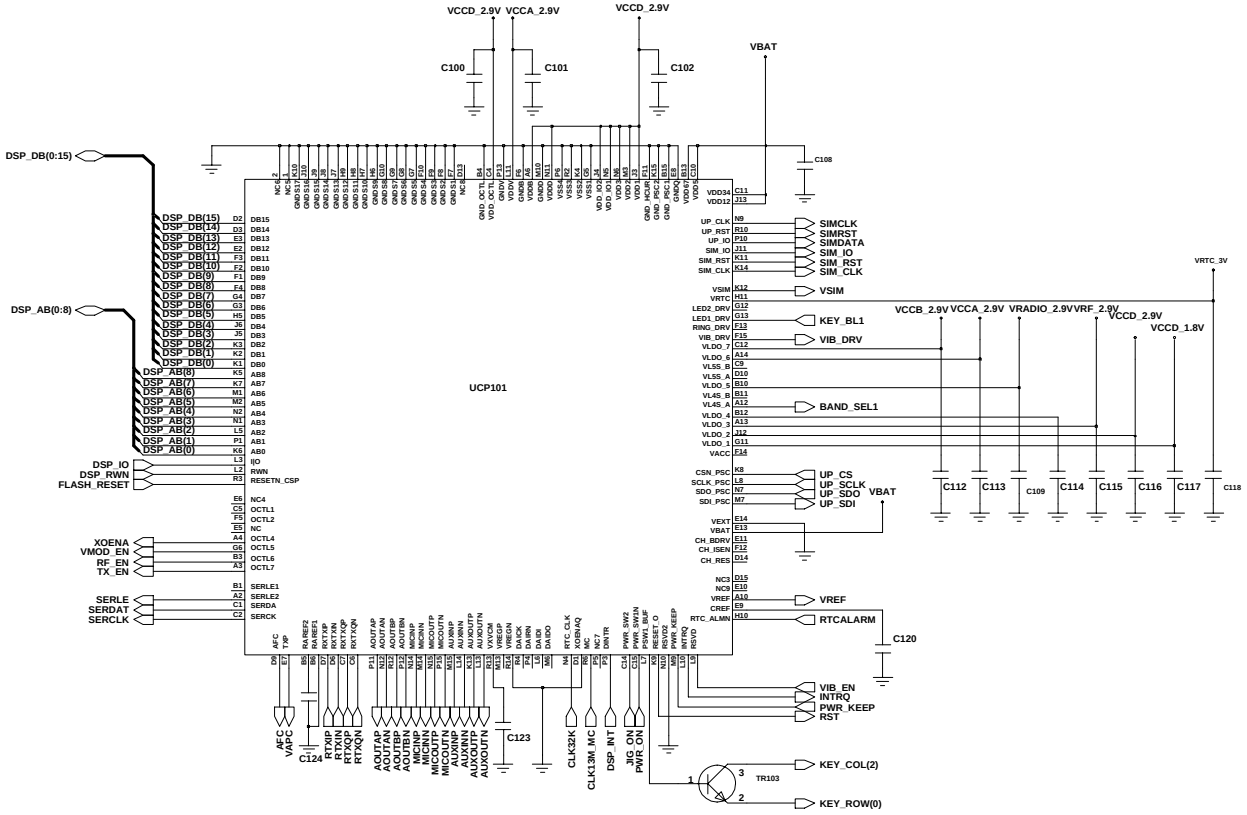
3. Flow Chart of Troubleshooting

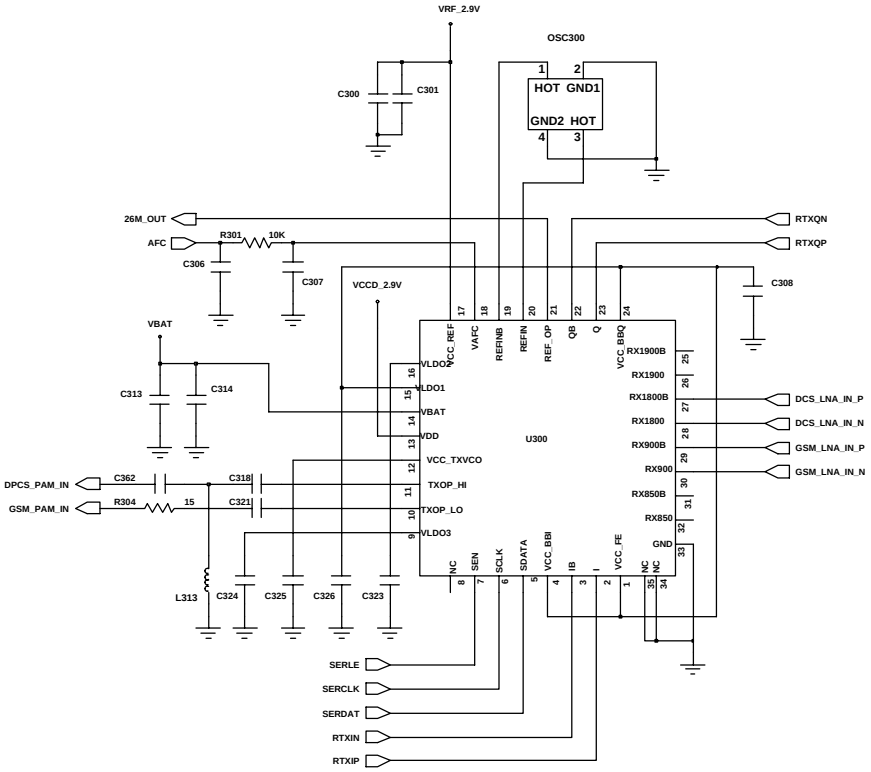
3-1.Baseband

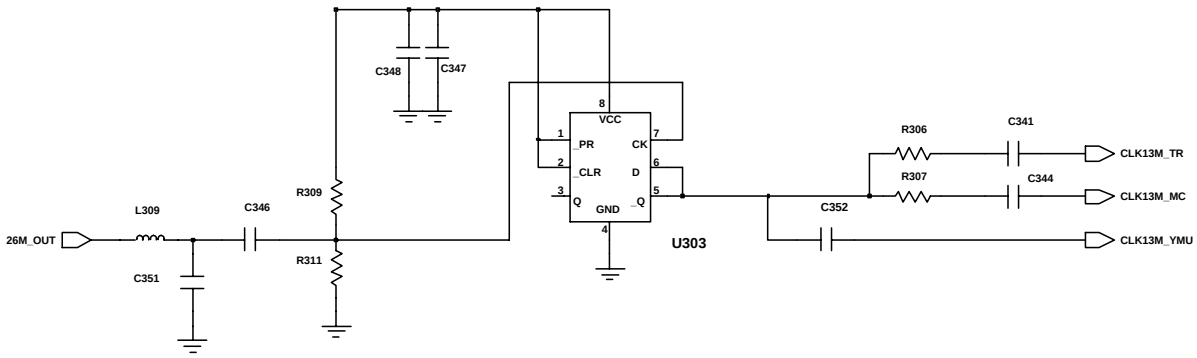
3-1-1. Power ON



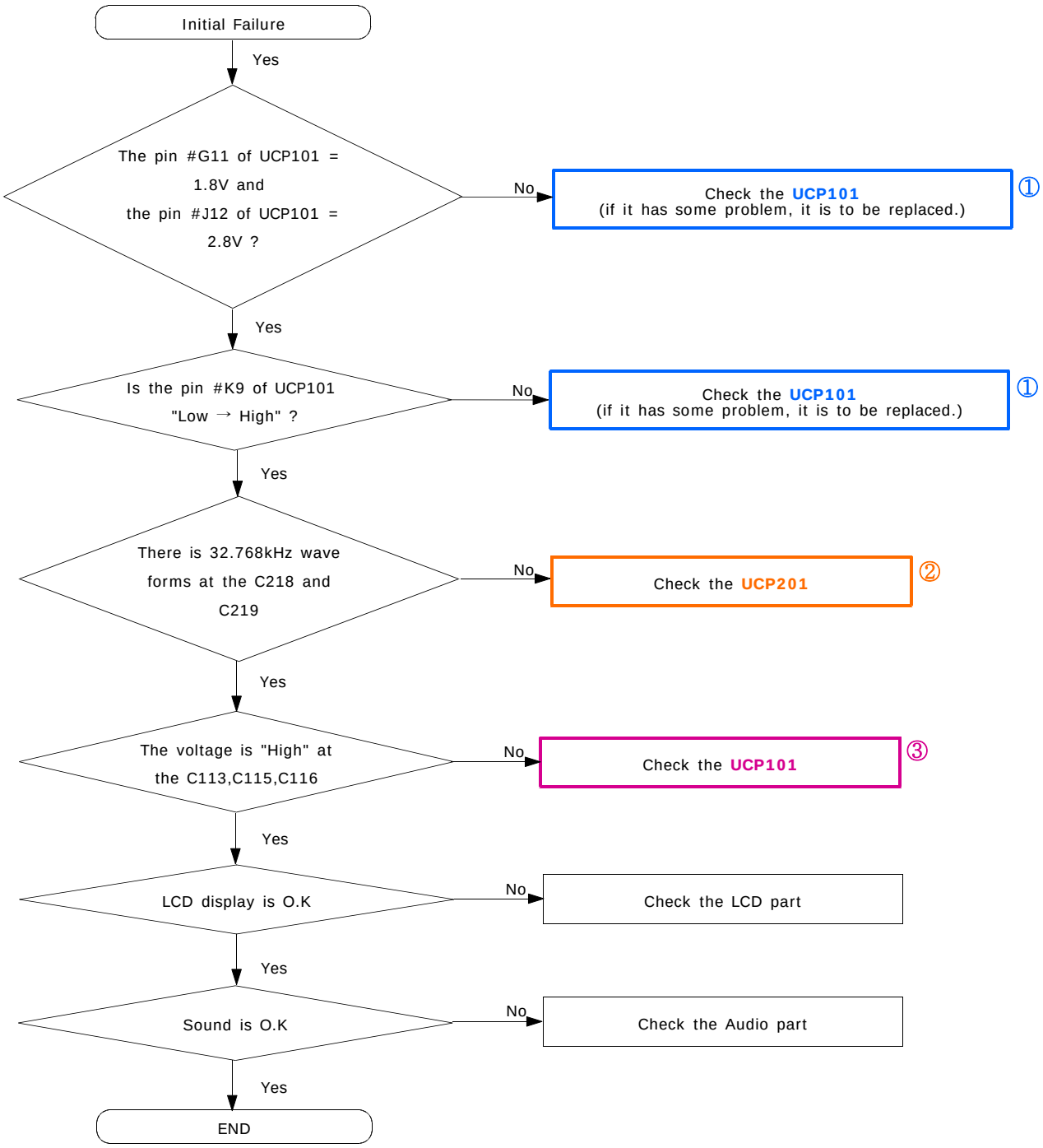


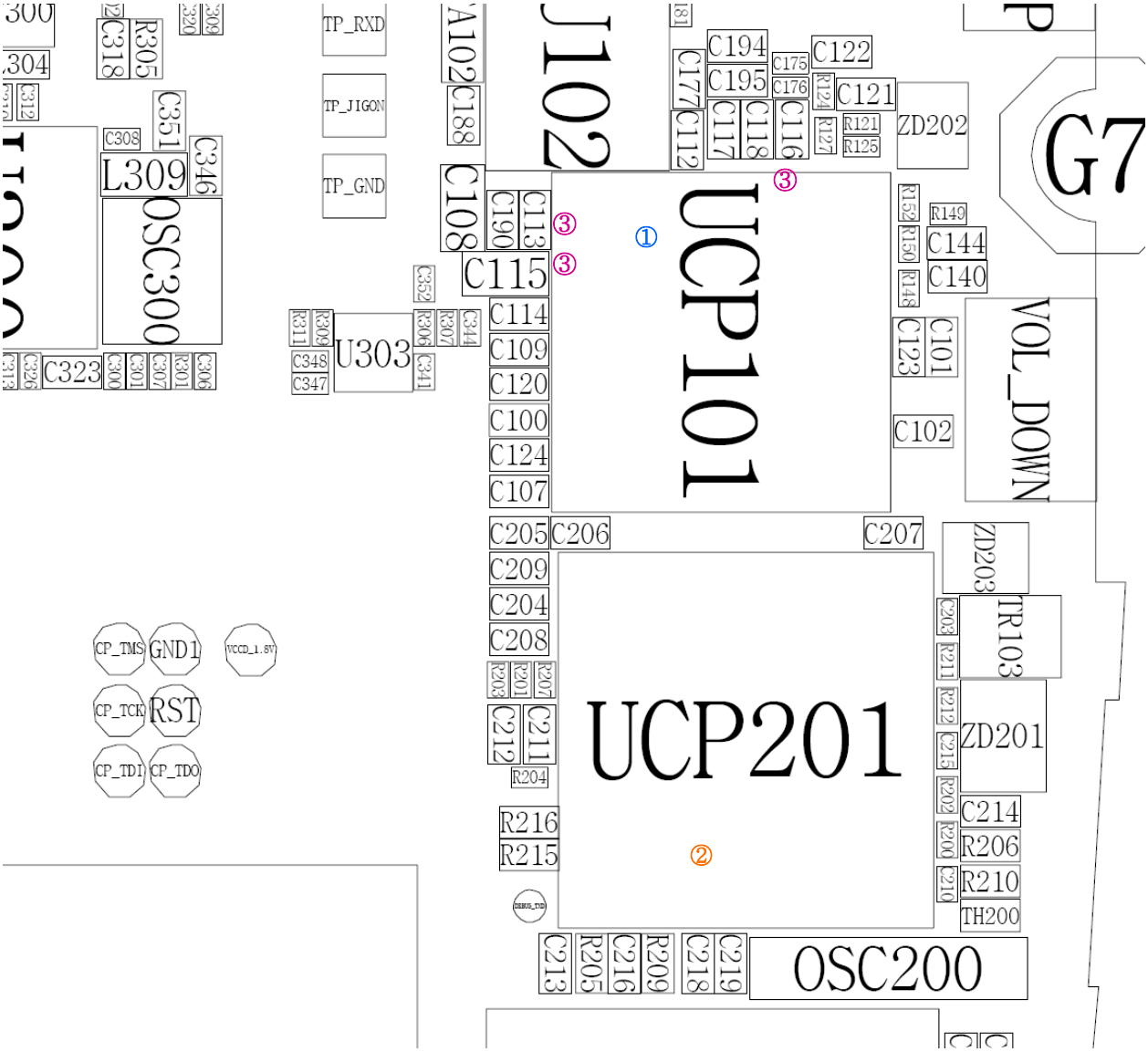


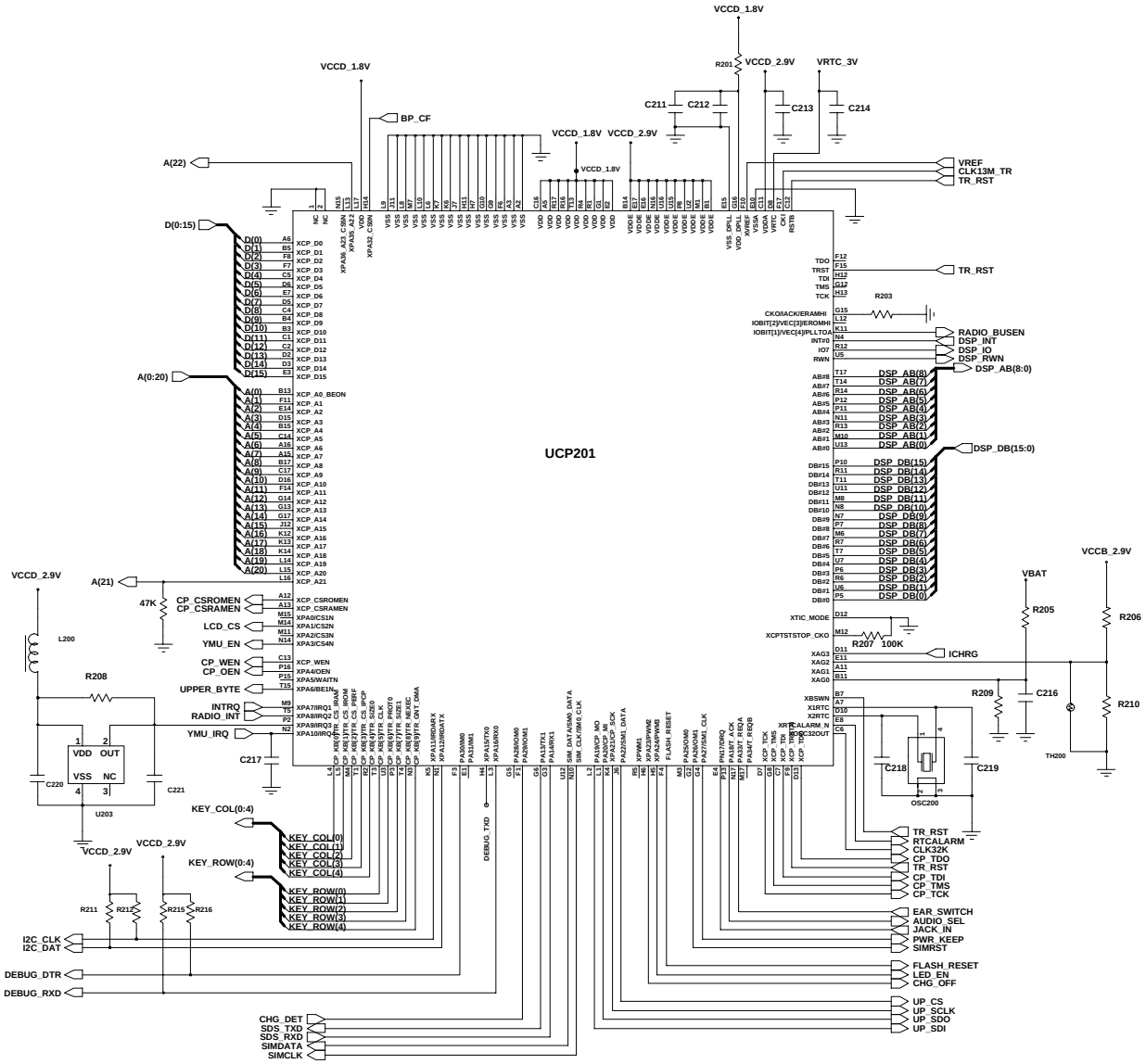




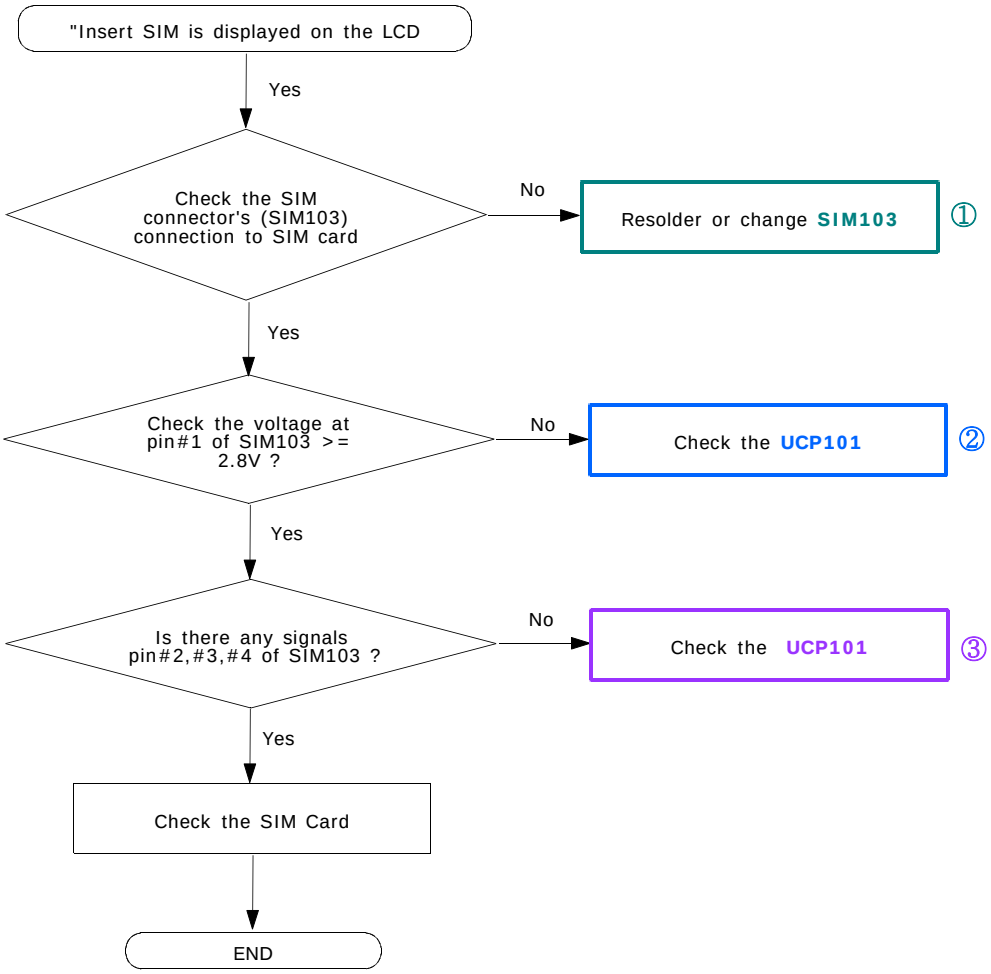
3-1-2. Initial

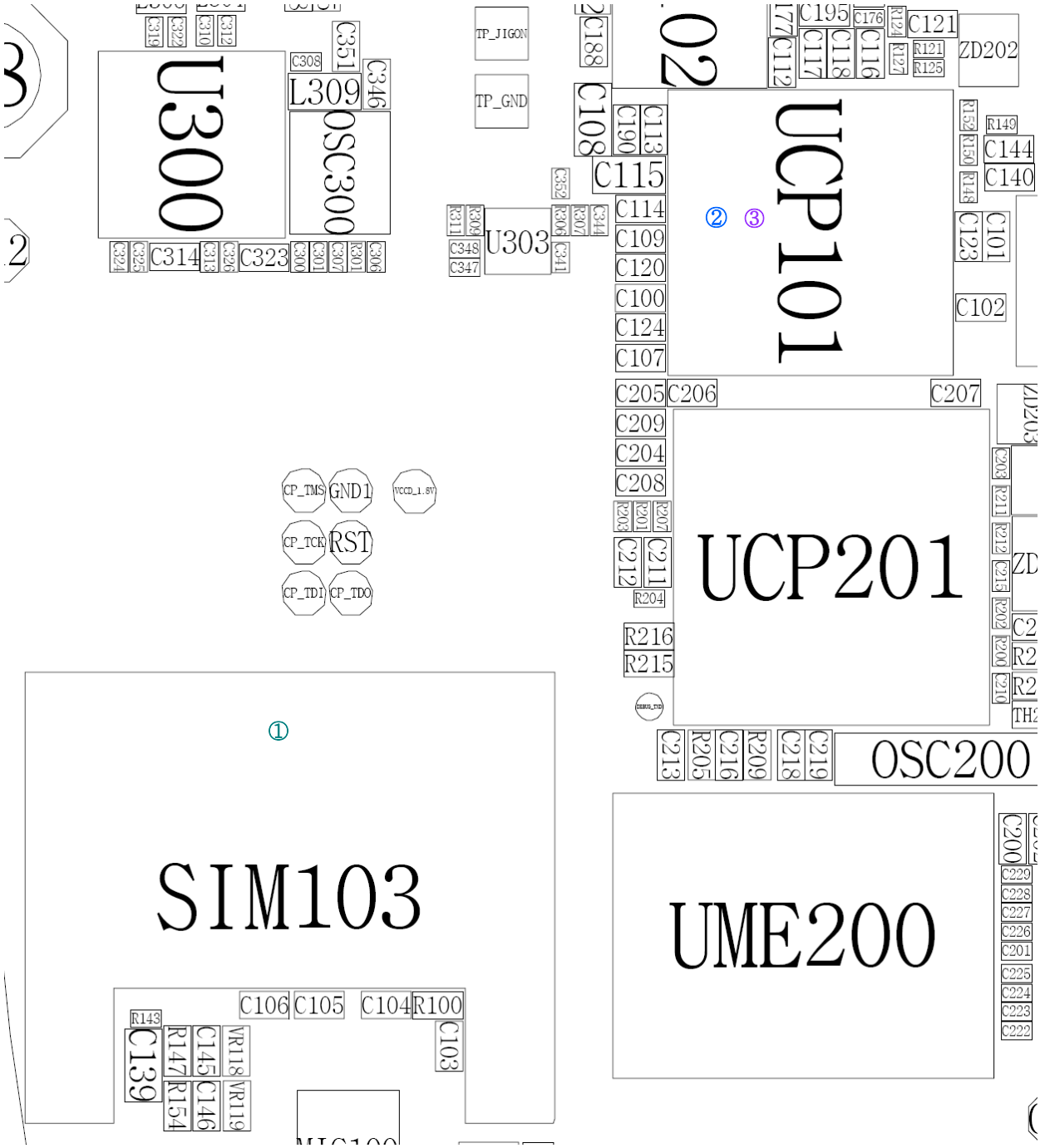




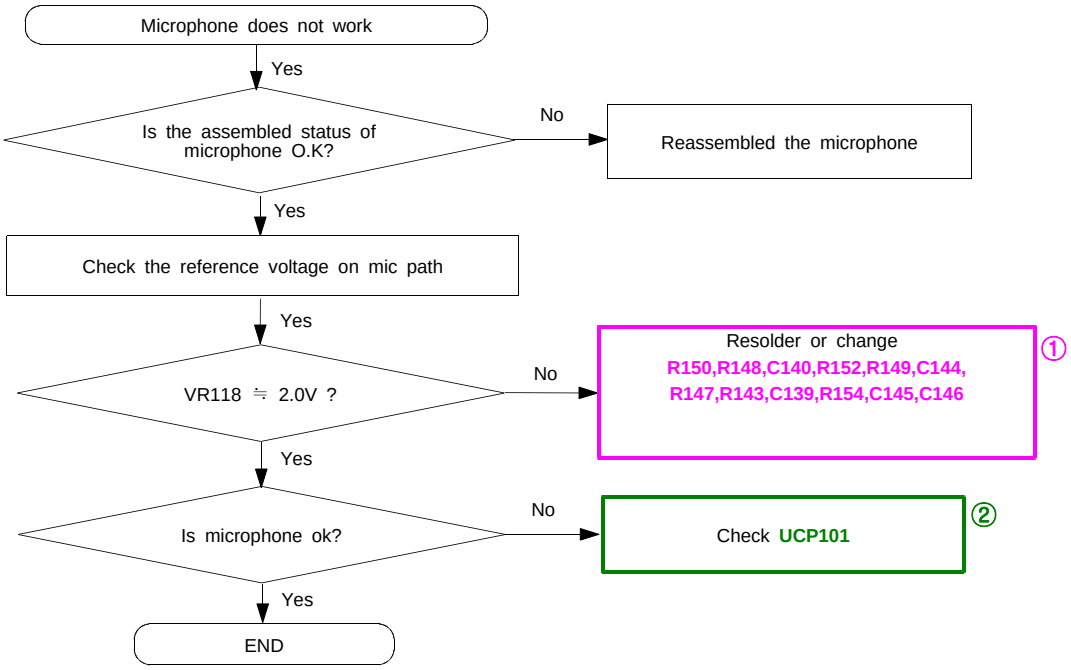


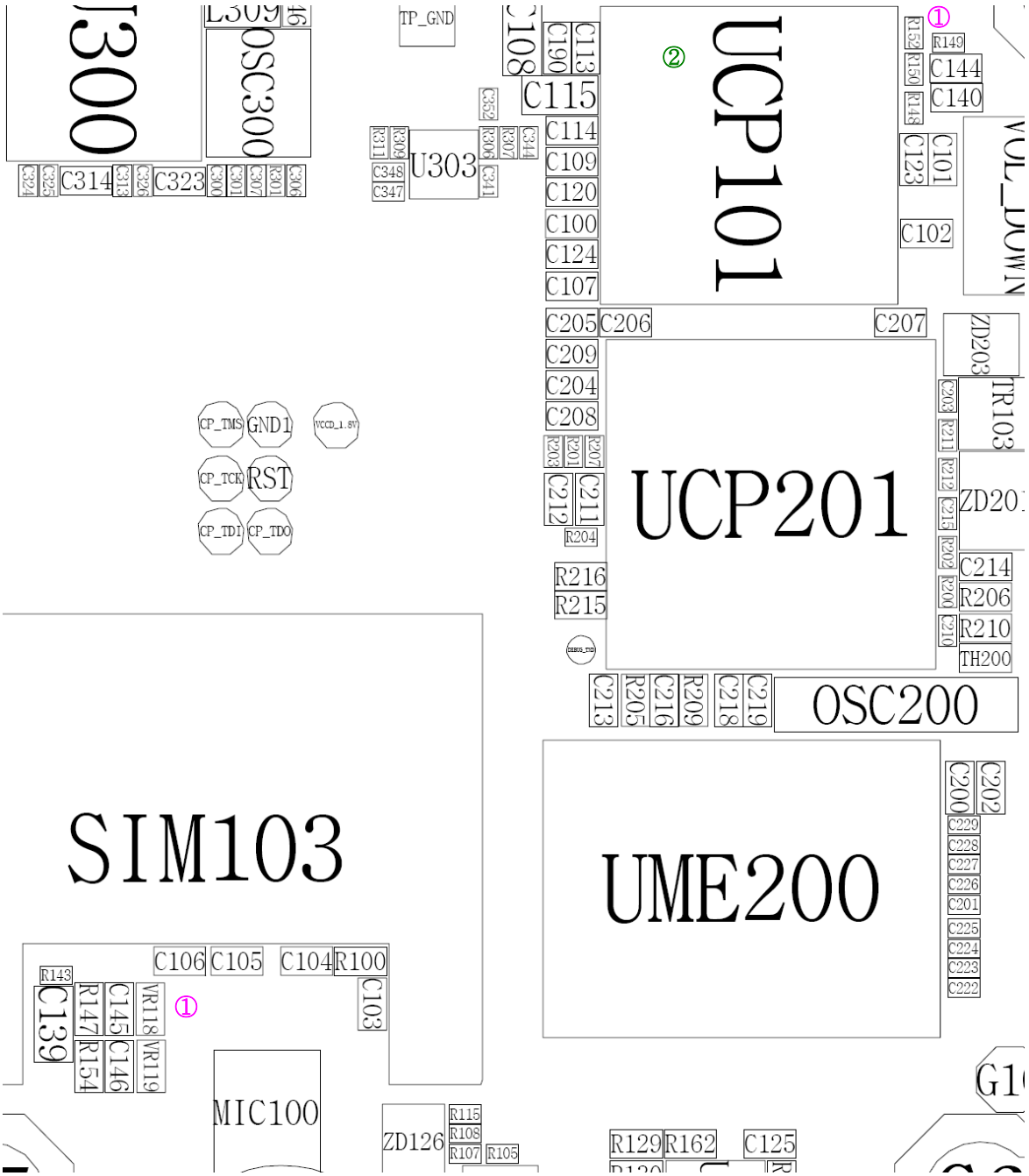
3-1-3. Sim Part

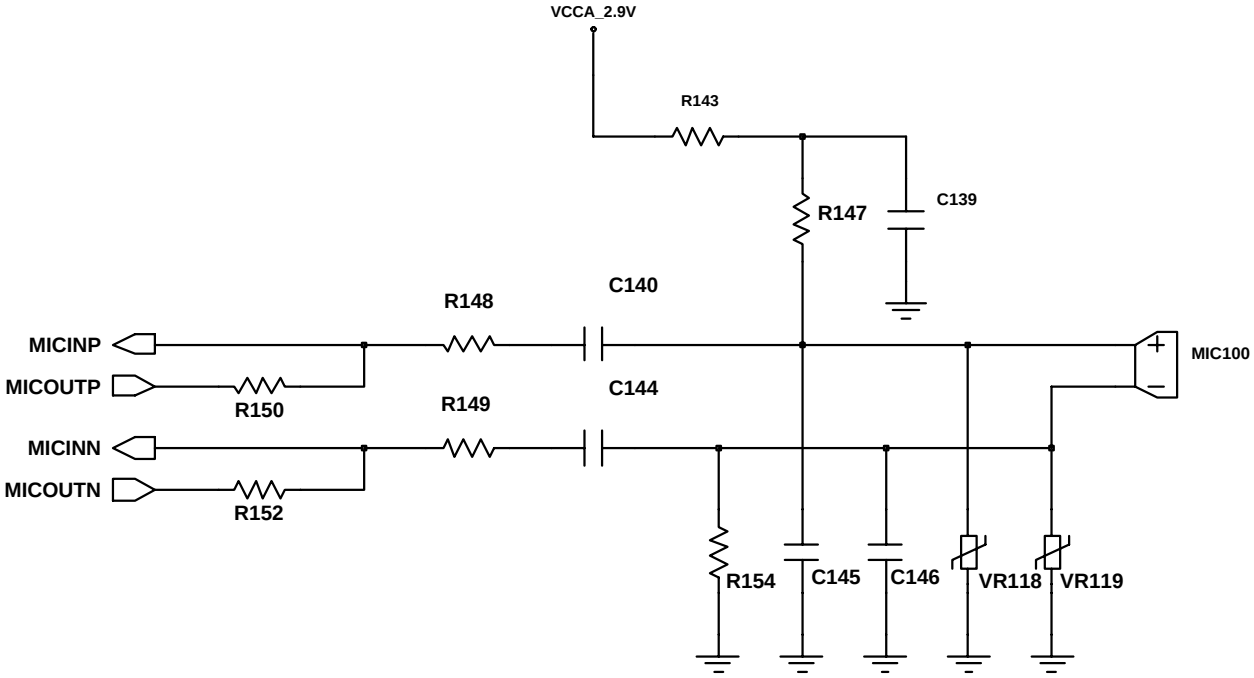




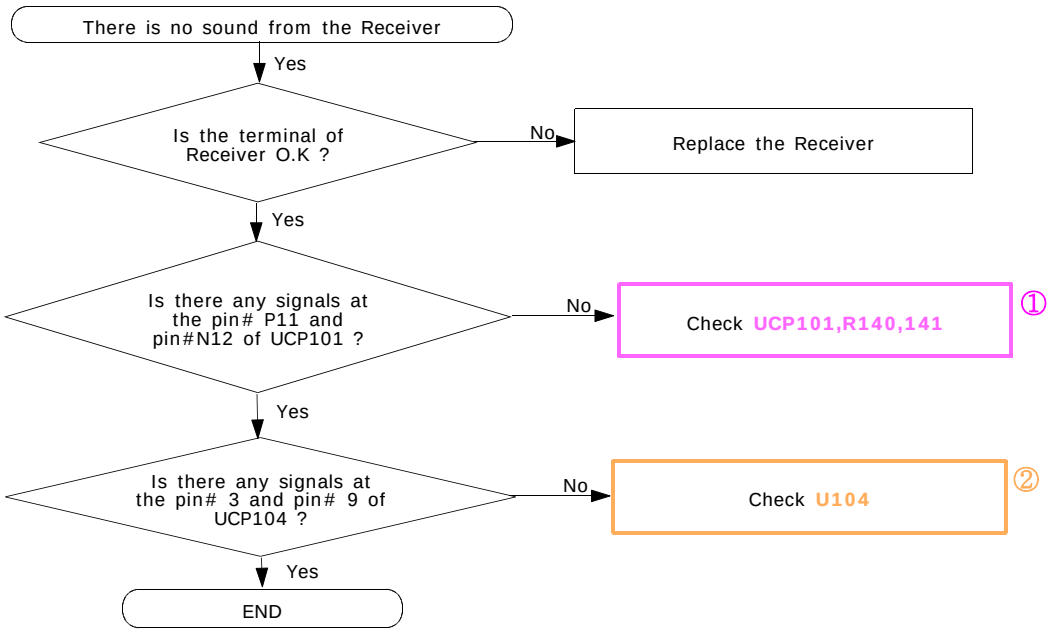
3-1-4. Microphone Part



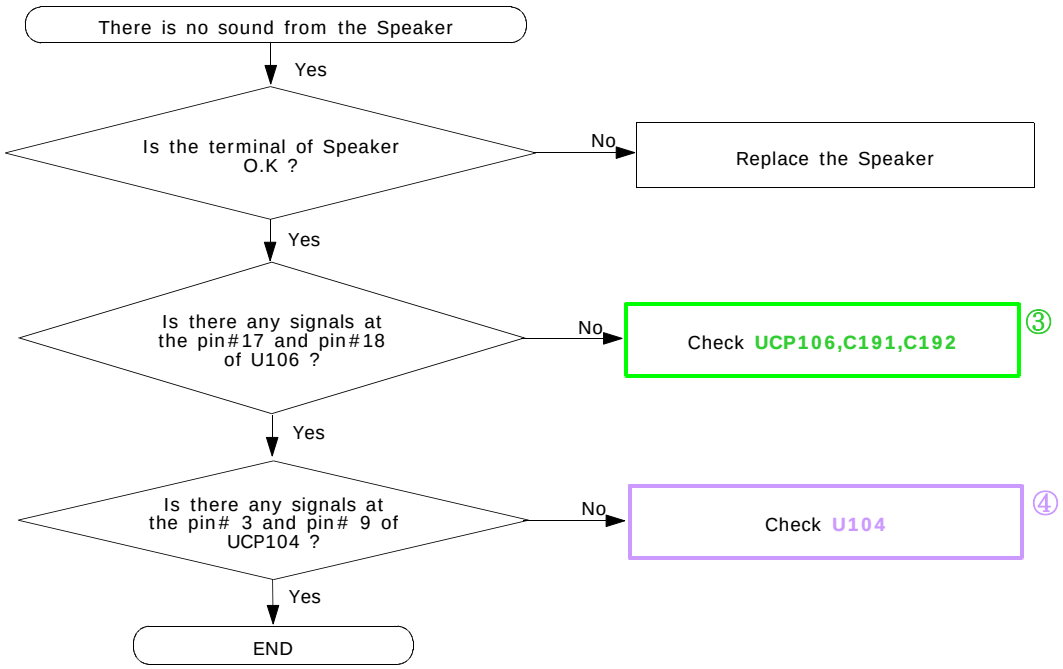


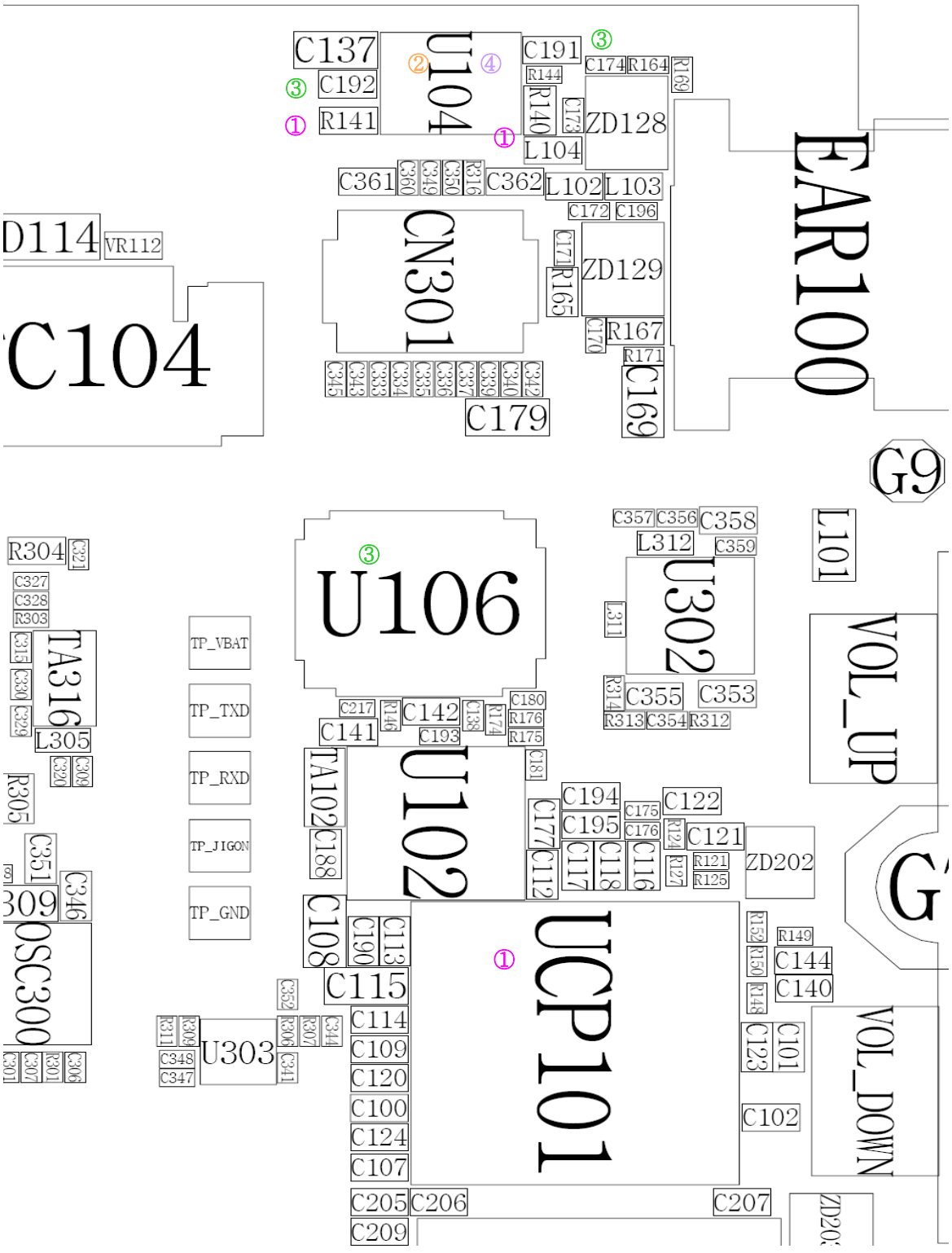


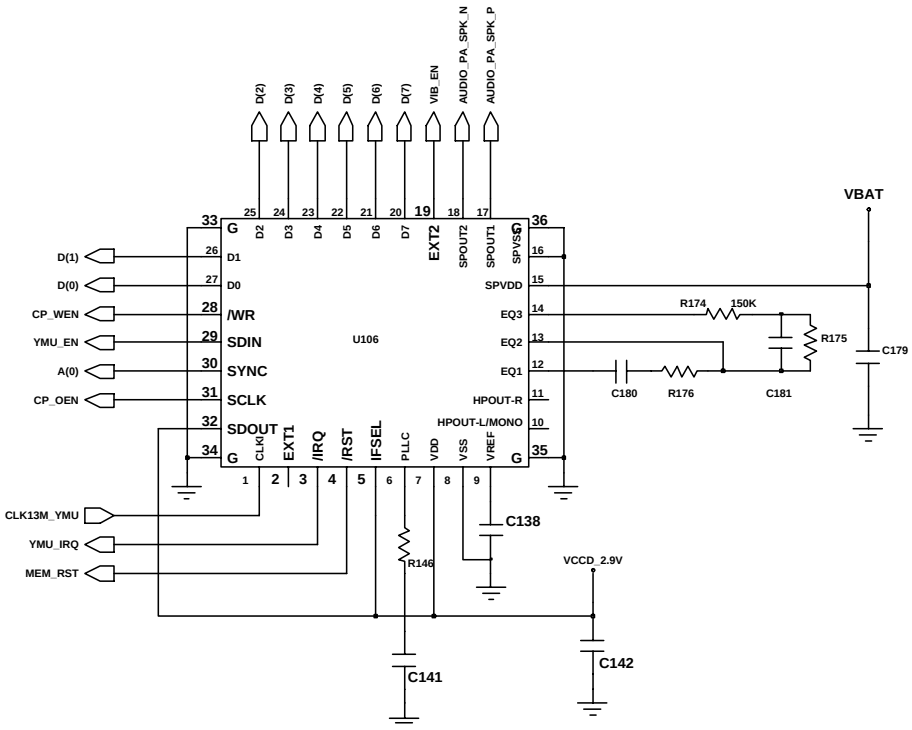
3-1-5. Receiver Part

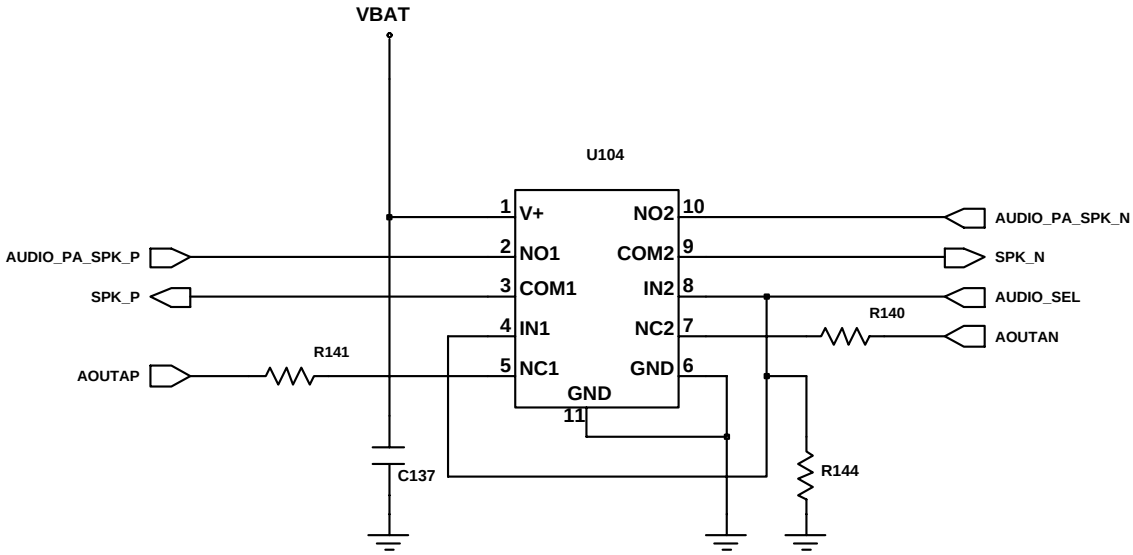


3-1-6. Speaker Part





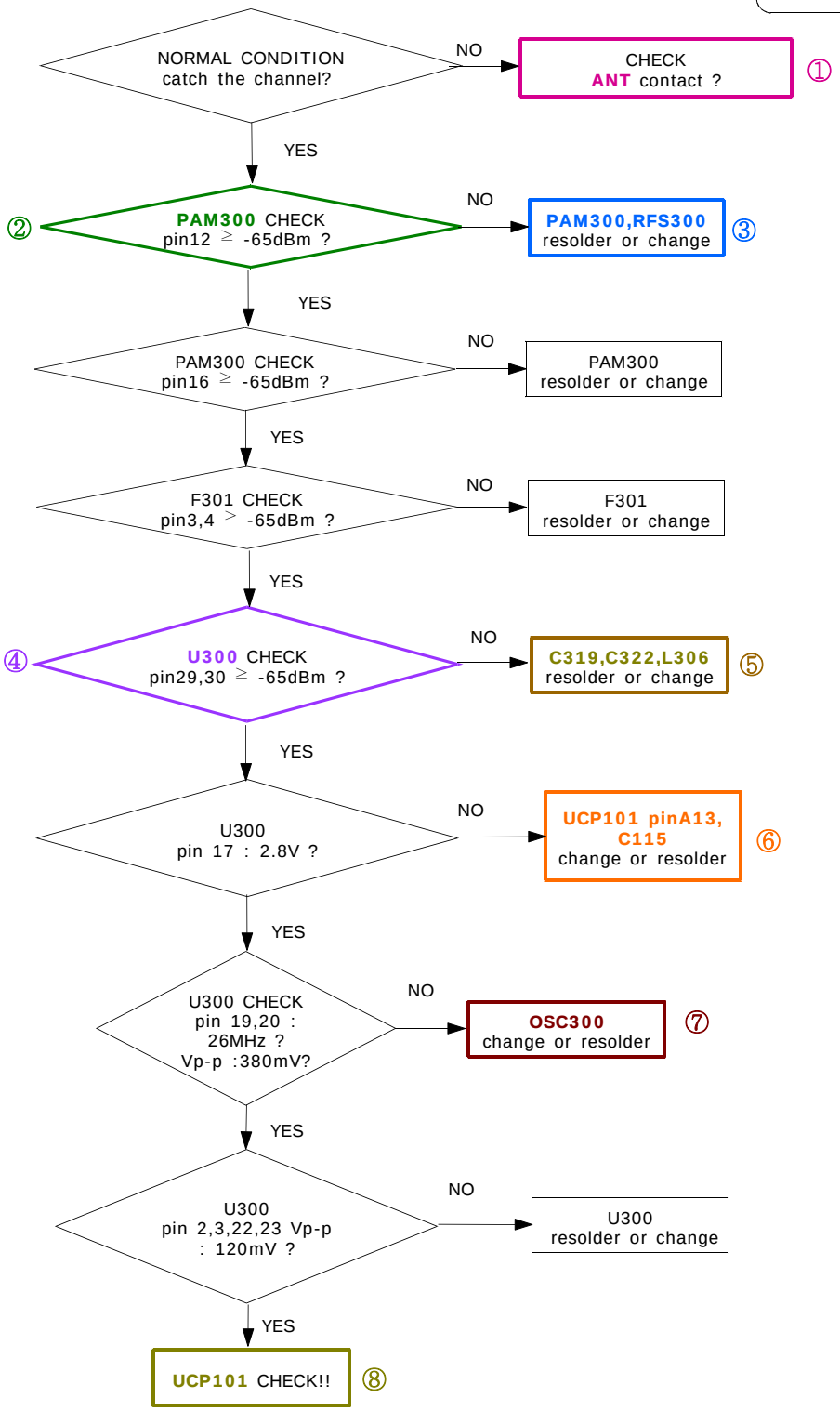


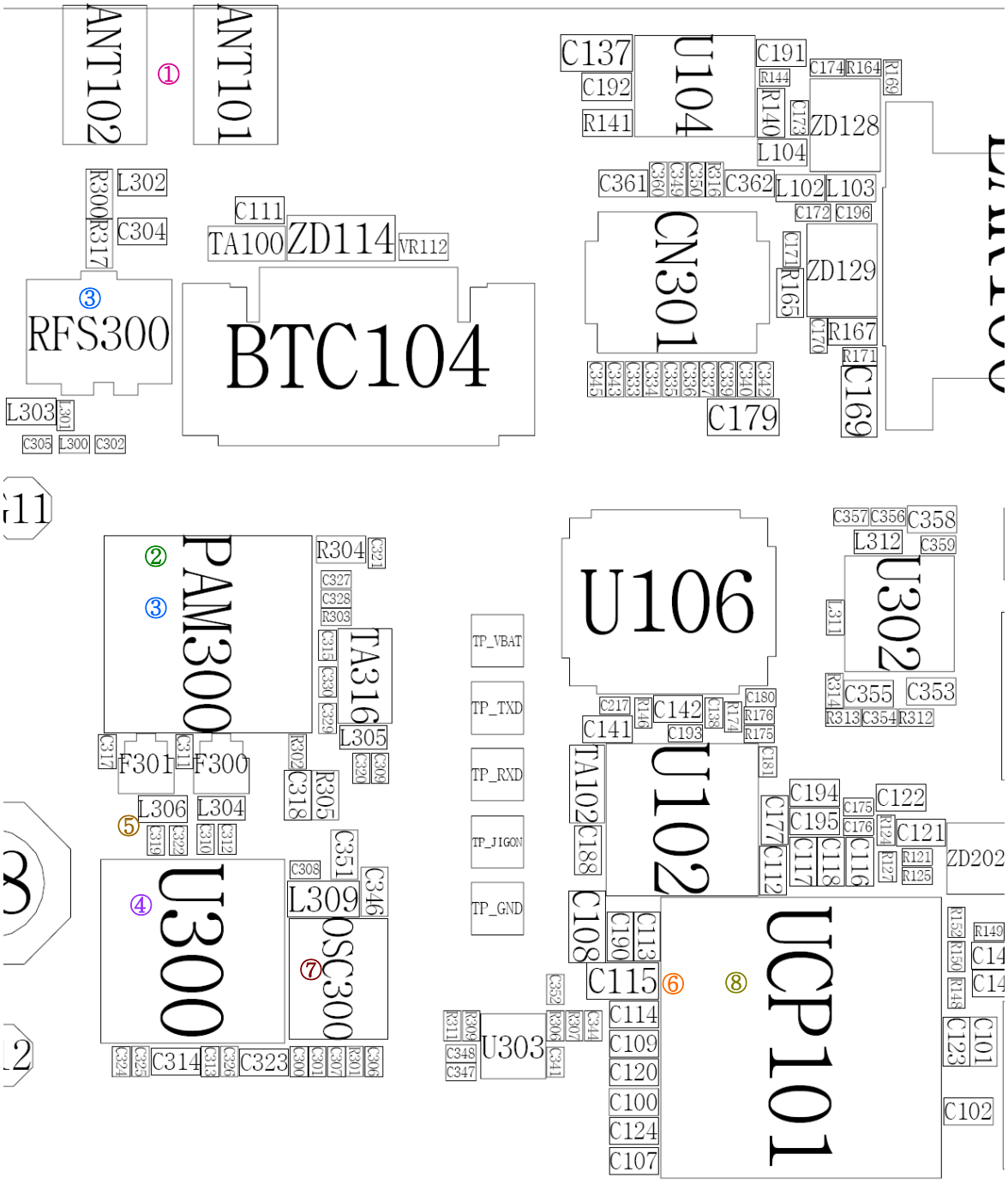


3-2.RF

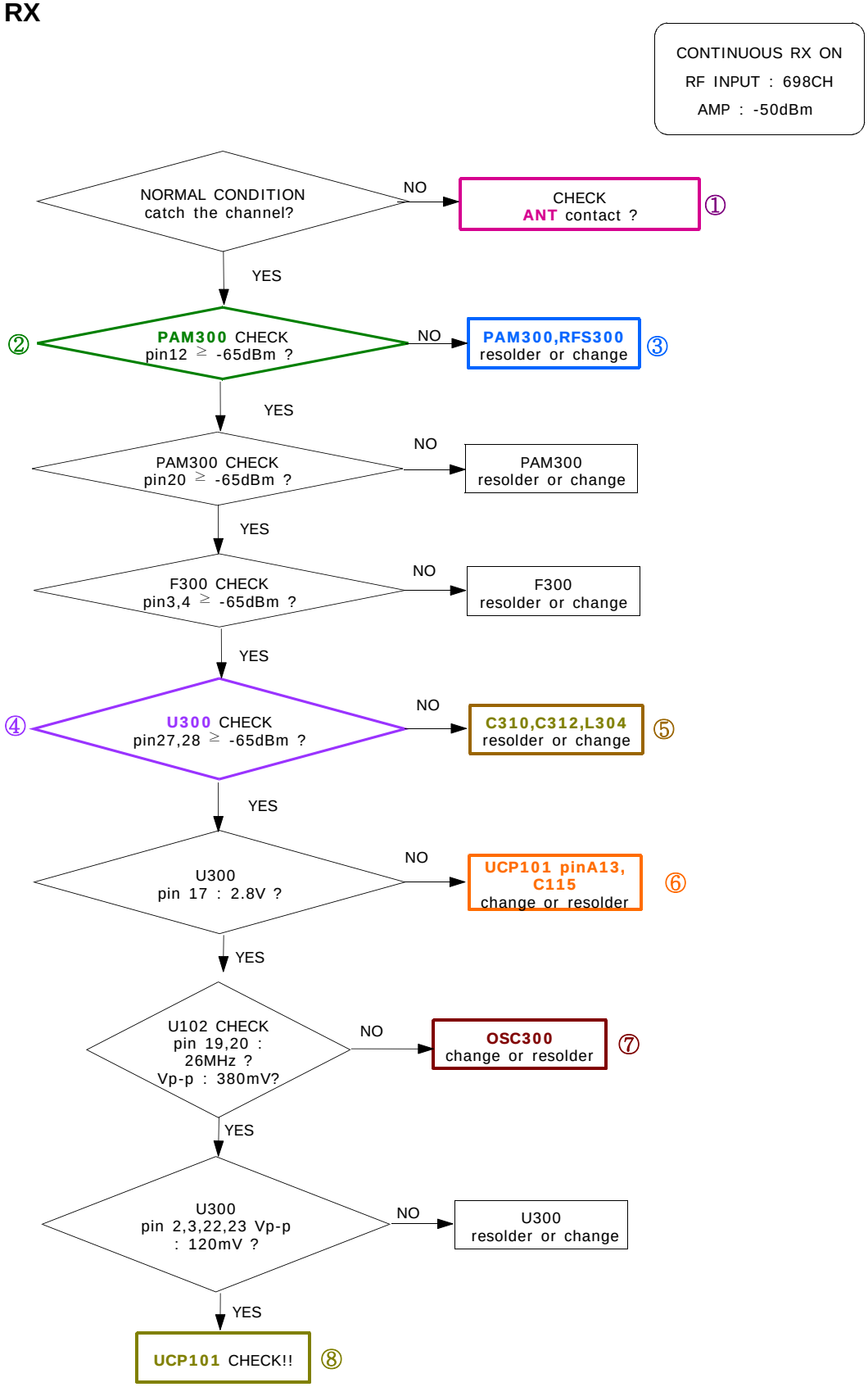
3-2-1. EGSM RX

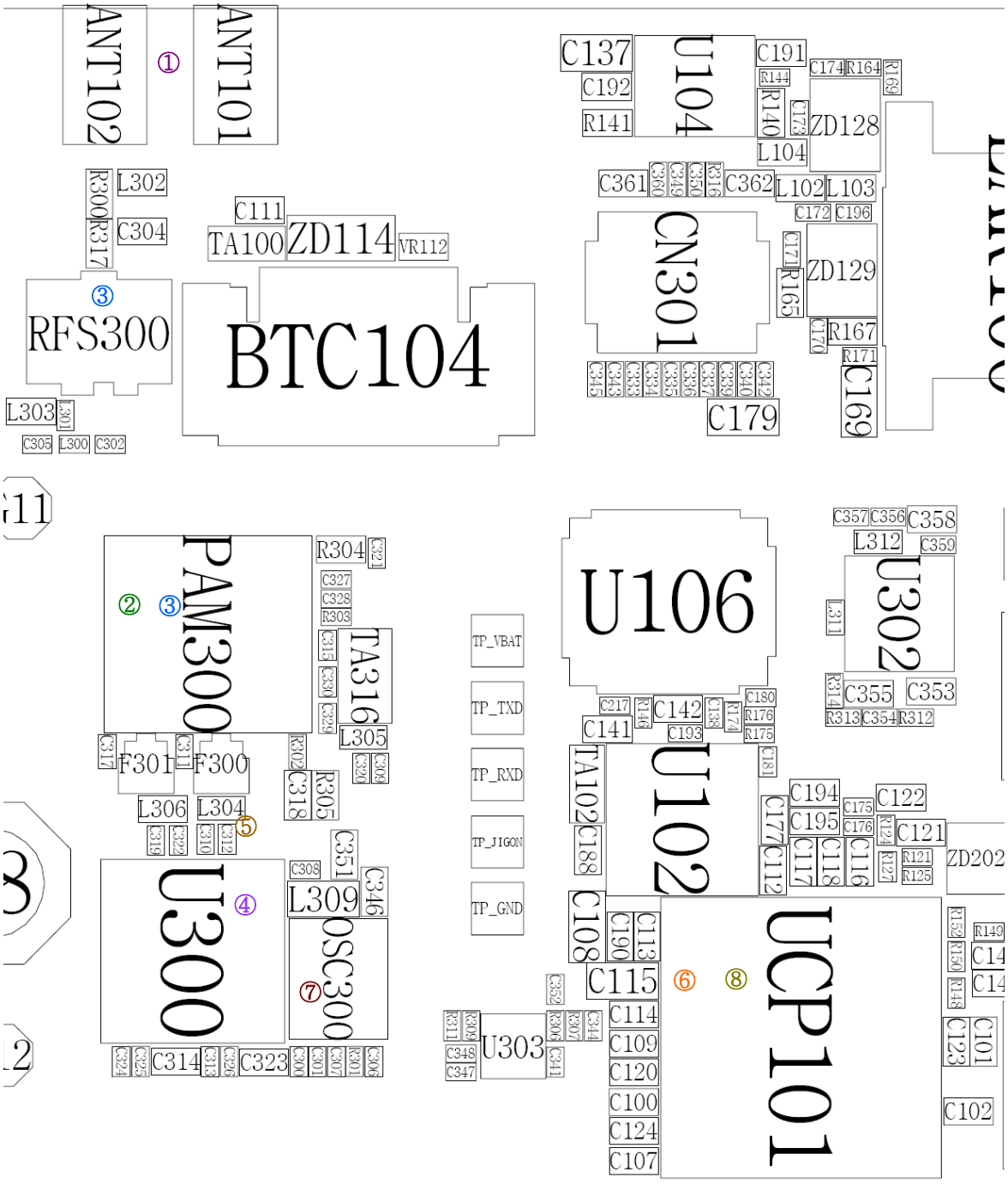
CONTINUOUS RX ON
RF INPUT : 62CH
AMP : -50dBm



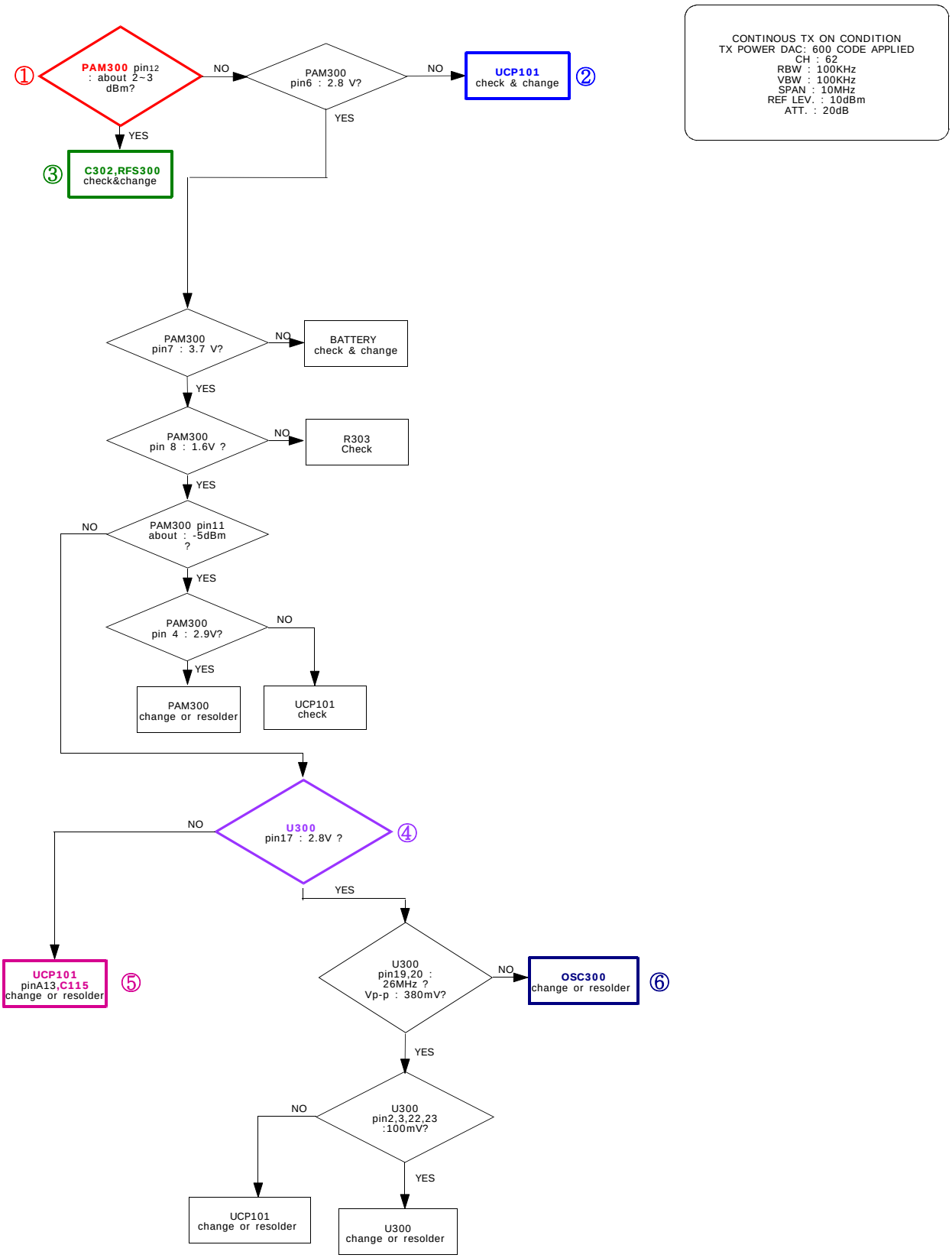


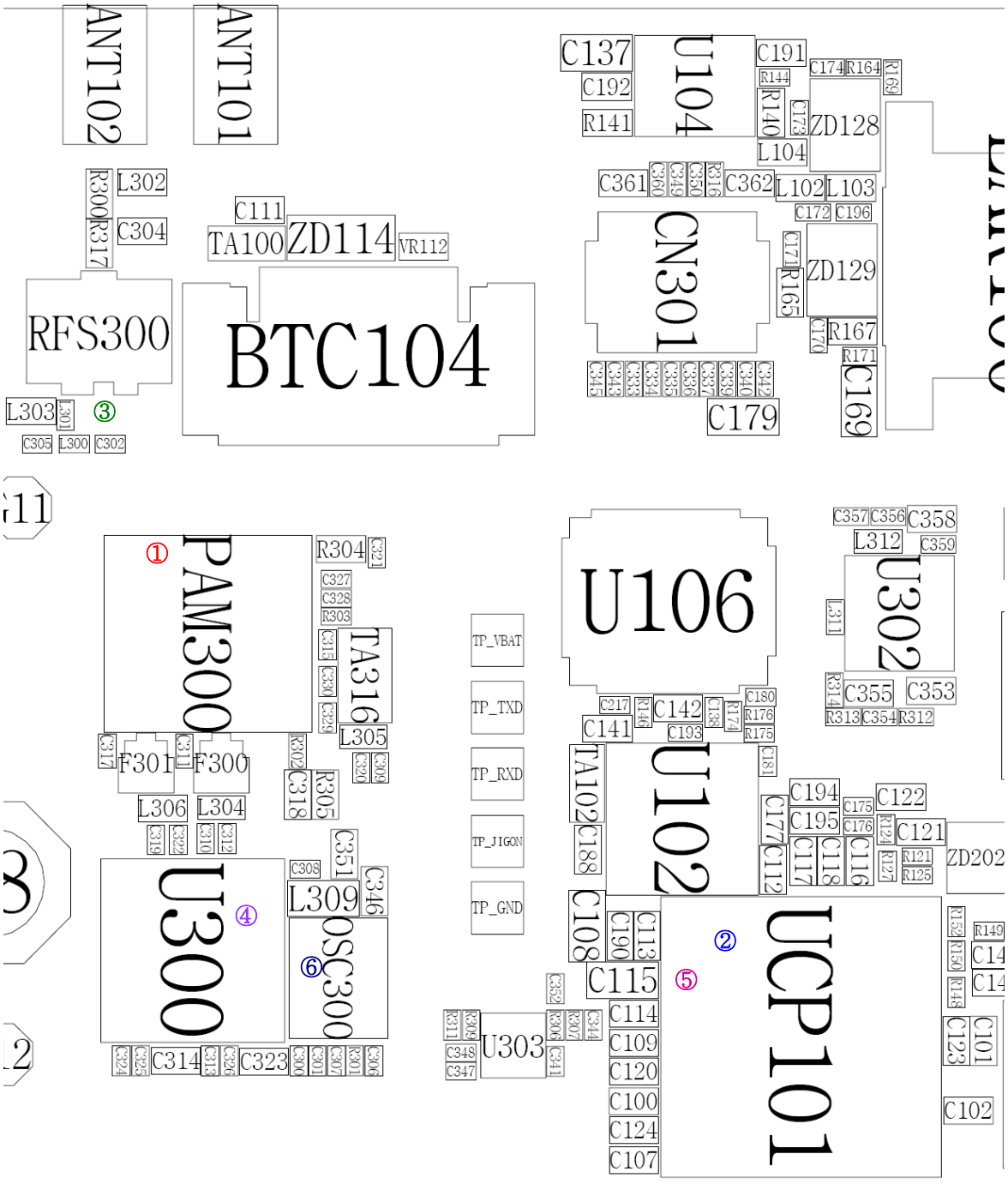
3-2-2. DCS RX



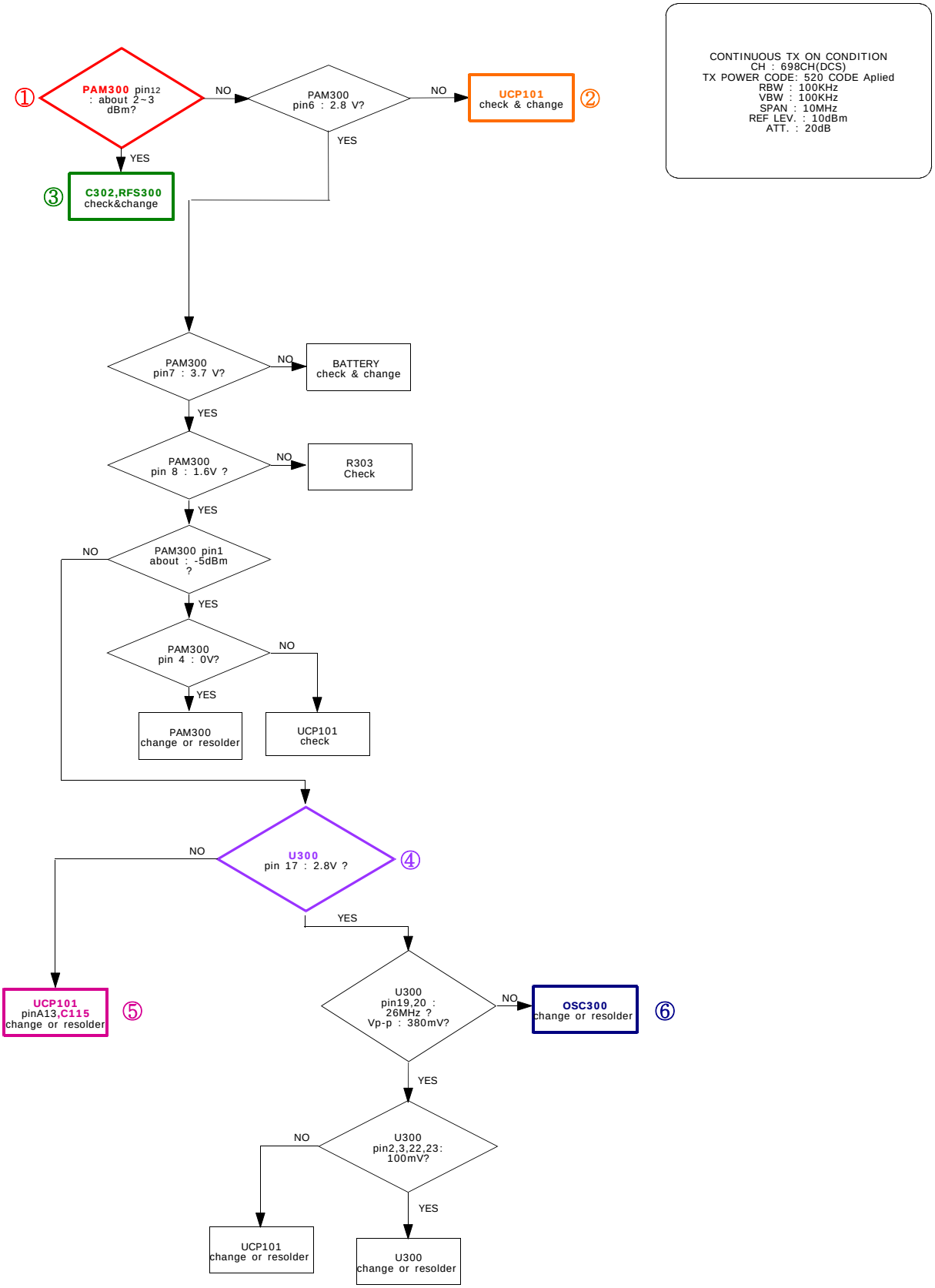


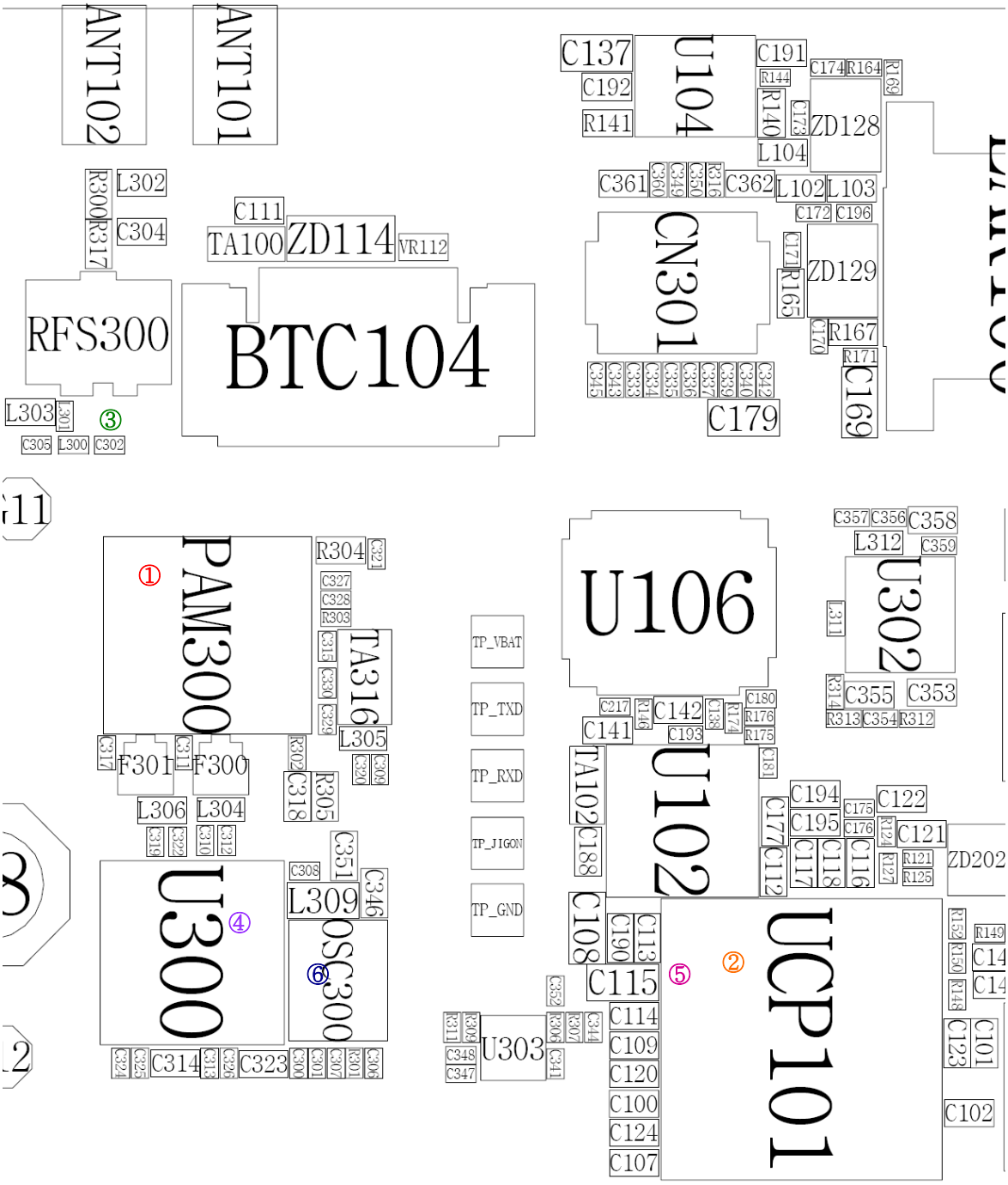
3-2-3. EGSM TX

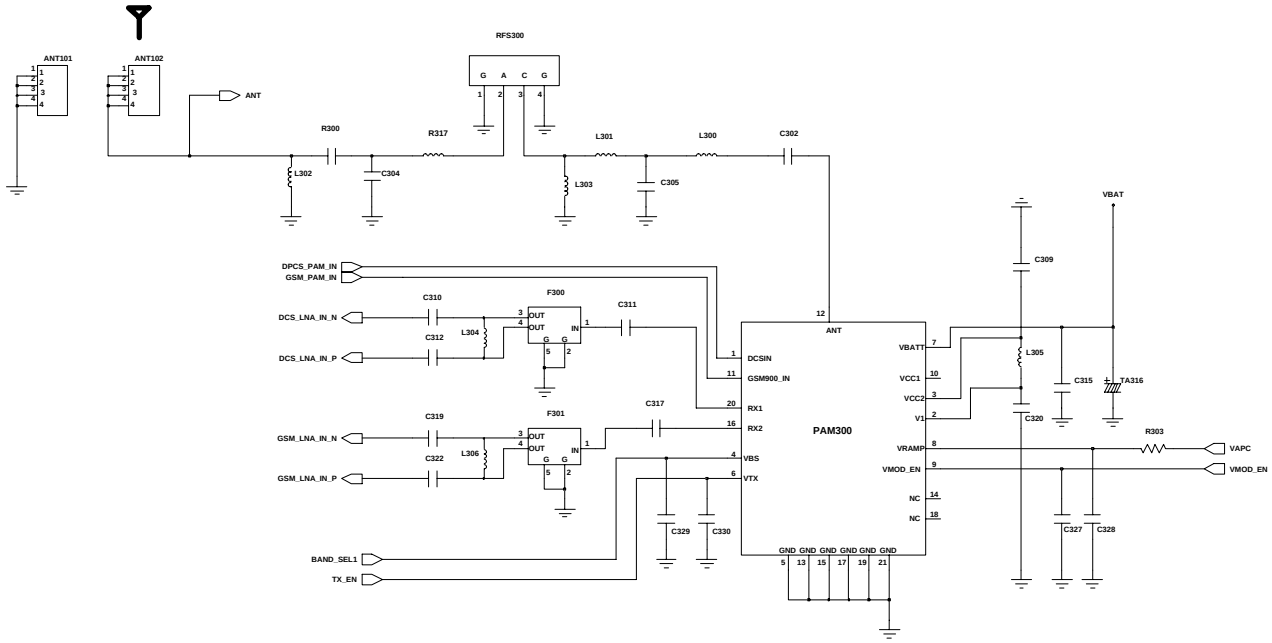




3-2-4. DCS TX







4. Array course control

Test Jig (GH80-00865A)

Test Cable (GH39-00743A)

RF Test Cable (GH39-00397A)

Software Downloading

4-1. Downloading Binary Files

- Three binary files for downloading C250.
  - C250XXYY.s3 : Main source code binary.

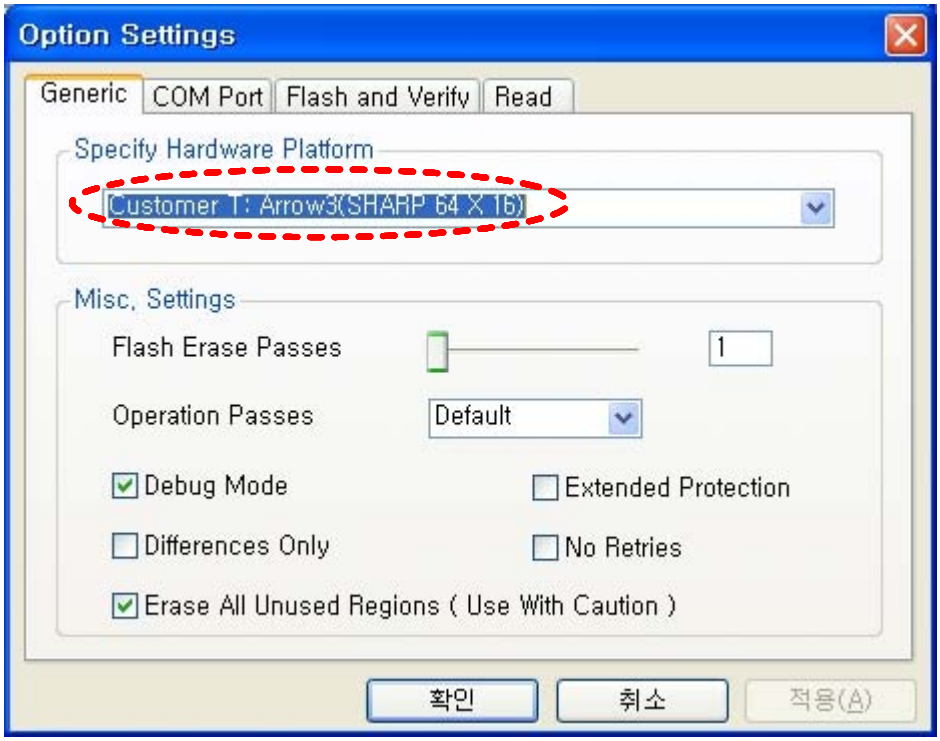
4-2. Pre-requsite for Downloading

- Downloader Program(OptiFlash.exe)
- C250 Mobile Phone
- Data Cable
- Binary files

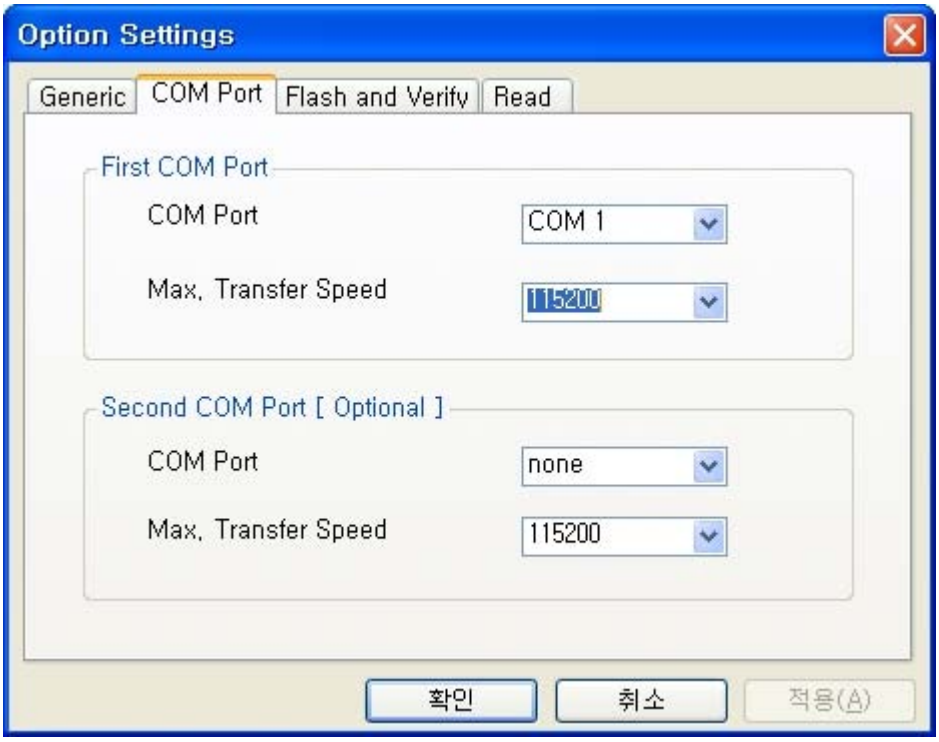
4-3. S/W Downloader Program

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



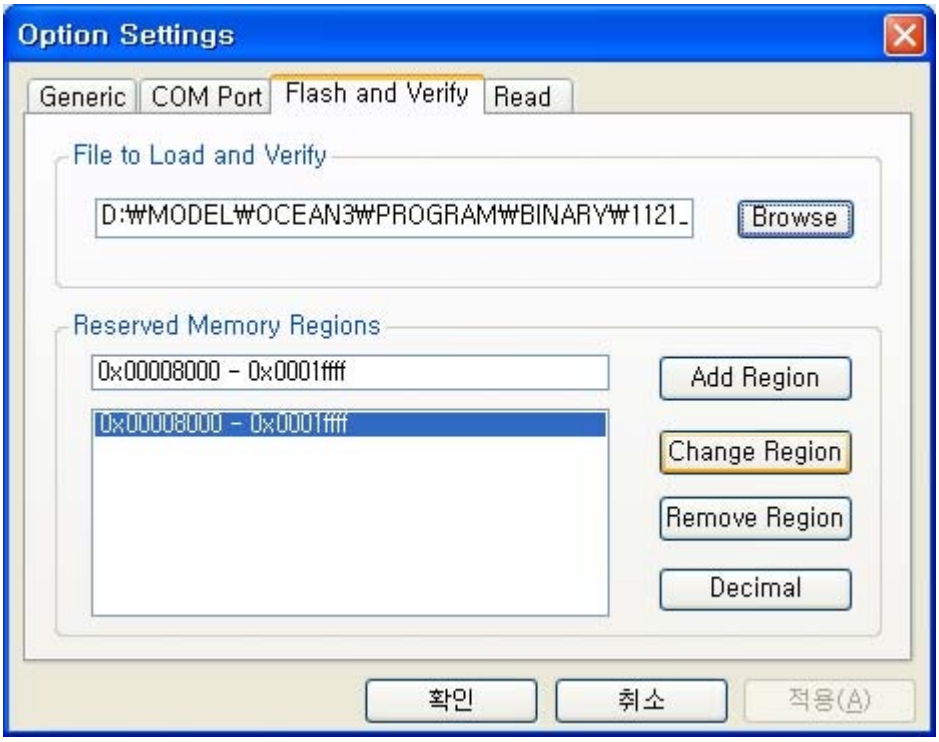
3. Select the **COM port** when the download cable is connected



Up to twelve 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 “C250XXYY.s3”, for the downloader binary setting.



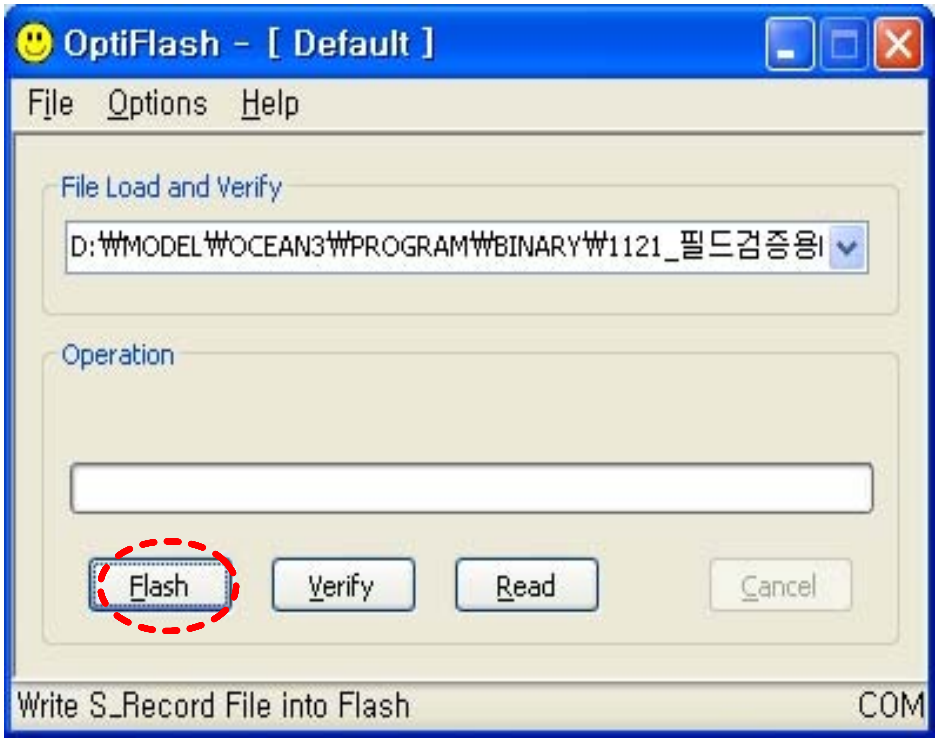
Make sure that not to change the reserved memory regions.

In case of C140 the reserved memory regions are :

-0x00008000 – 0x0001ffff

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.

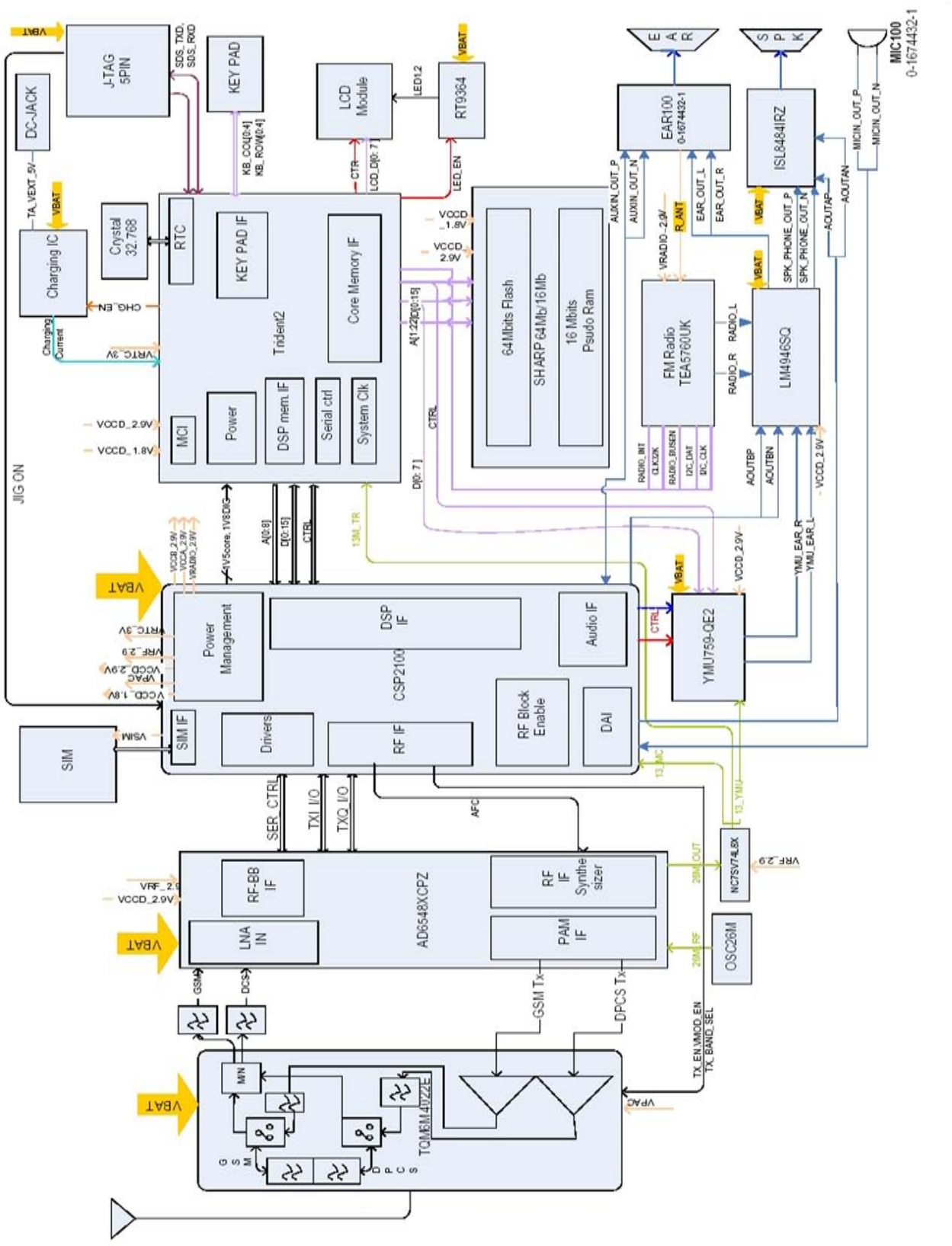
8. Confirm the downloaded version name and etc. :

***#1111#**

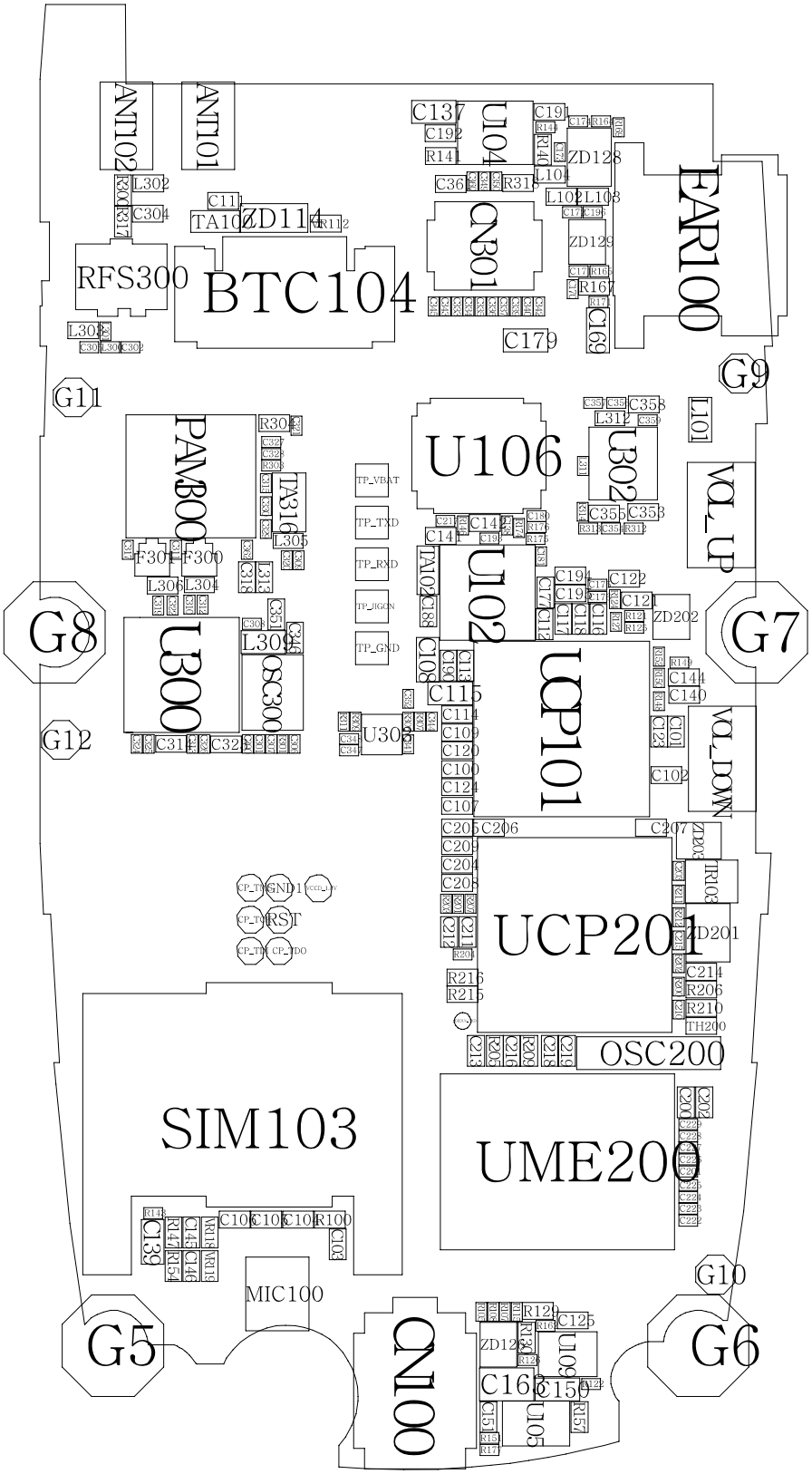
Full Reset :

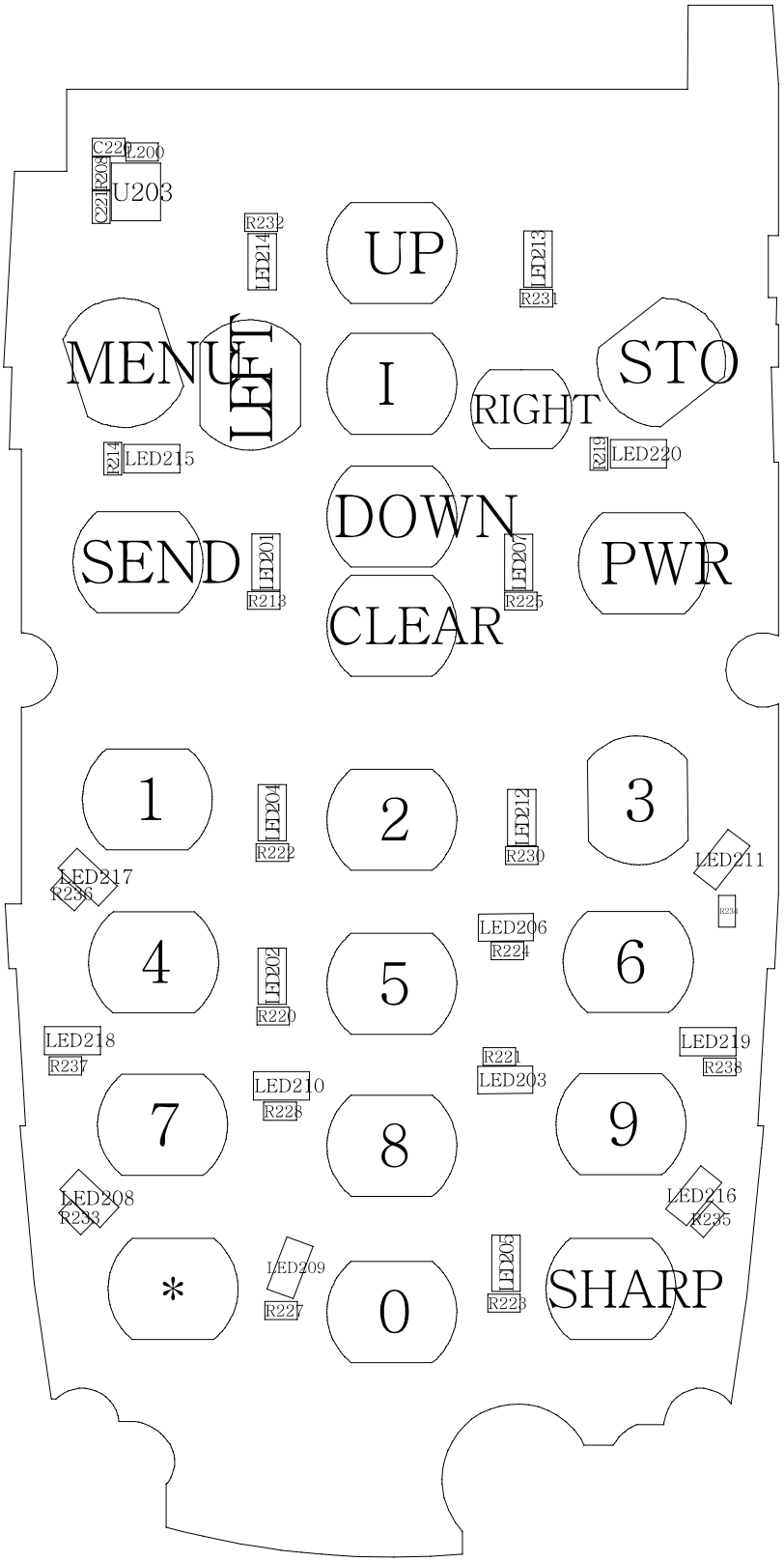
***2767*3855#**

5. Block Diagrams



6. PCB Diagrams





7. MAIN Electrical Parts List

SEC CODE	Design LOC	Discription
ANT101,ANT102	GH71-06338A	ANTCON-P900
BTC104	NEWETC00002	2005-03-261A
C100,C101,C204,C205	2203-000254	GRP155R71C103K
C102,C111,C121,C122	2203-006048	GRM155R71A104K
C103	2203-000940	GRP155R71H471K
C104,C177,C188,C355	2203-006257	GRM155R60J474KE19E
C105,C106	2203-000812	GRP1555C1H330J
C107,C221	2203-000995	GRP1555C1H470J
C108,C137	2203-006324	GRM188R61A225KE19D
C109,C112,C113,C116	2203-006562	CV05X5R105K10AH
C114,C118,C151	2203-006681	GRM155F51E104ZA01D
C115,C150,C179	2203-006824	CV105X5R475K10AT
C117,C123,C125,C353	2203-006562	CV05X5R105K10AH
C120,C214	2203-005344	GRM155R71E223KA61D
C124,C140,C144,C200	2203-006048	GRM155R71A104K
C138,C193,C201,C301	2203-006423	GRM33X5R104K6.3
C139,C169	2203-006890	CV105X5R106M06AT
C141,C191,C192,C346	2203-000438	GRP155R71H102K
C142,C190	2203-006838	CL05A225KQ5NSNC
C145,C146	2203-000359	GRP1555C1H151JD01E
C163	2203-006377	GRM21BR61E475KA12L
C170,C171,C302,C321	2203-006556	GRM0335C1E470JD01D
C172,C173,C217	2203-006896	GRM033R71E121KA01D
C174,C175,C176,C180	2203-006648	GRM033R60J223KE01D
C181	2203-006693	GRM033R71E271K
C194,C195,C323	2203-006260	GRM155R61A224KE19E
C196,C341	2203-005729	CL03C150JAGC
C202,C206,C208,C209	2203-006048	GRM155R71A104K
C203,C210,C215,C307	2203-006194	GRP033R70J103KA01E
C207,C212	2203-000254	GRP155R71C103K
C211	2203-000679	GRP1555C1H270J
C213,C216,C361	2203-006048	GRM155R71A104K
C218,C219	2203-000330	GRP1555C1H120J
C220	2203-002709	C1005Y5V1C104ZT
C222,C223,C224,C225	2203-005717	GRP0335C1E270JD01E
C226,C227,C228,C229	2203-005717	GRP0335C1E270JD01E
C300,C306,C308,C319	2203-005719	GRP0335C1E390JD01E
C304	2203-001385	GRP1555C1H1R5CZ01E
C305	2203-006318	GRP0335C1E1R2CD01
C309,C313,C352	2203-006194	GRP033R70J103KA01E
C310,C312	2203-005683	GRP0335C1E8R0DD01E
C311,C317,C328	2203-005736	GRP0335C1E101JD01E
C314	2203-006626	GRM155R61A334KE15D

SEC CODE	Design LOC	Discription
C315,C320,C325,C326	2203-006423	GRM33X5R104K6.3
C318	2203-000466	GRP1555C1H1R0C
C322	2203-005719	GRP0335C1E390JD01E
C324	2203-006462	GRM033R60J333K
C327,C329,C330,C333	2203-005682	GRP0335C1E330JD01E
C334,C335,C336,C337	2203-005682	GRP0335C1E330JD01E
C339,C340,C342,C343	2203-005682	GRP0335C1E330JD01E
C344,C345,C347,C349	2203-005682	GRP0335C1E330JD01E
C348,C359,C360	2203-006423	GRM33X5R104K6.3
C350	2203-005682	GRP0335C1E330JD01E
C351	2203-000627	GRM1555C1H220J
C354	2203-006647	GRM033R60J473KE19D
C356	2203-006556	GRM0335C1E470JD01D
C357	2203-005717	GRP0335C1E270JD01E
C358	2203-000233	GRP1555C1H101J
C362	2203-005777	CL03C010CA3GNNC
CN100	3722-002433	DCJ-11-5D-S-H3.2
CN301	3711-005296	14-5602-024-000-829
EAR100	3722-002010	0-1674432-1
F300	2904-001599	SF14-1842M5UBXX-04
F301	2904-001592	SF14-0942M5UBXX-03
L101	2703-001231	LK1608-100K-T
L102,L103,L104	3301-001729	BLM15AG102SN1D
L200	3301-001342	ACZ1005M-152-T
L300,L301	2703-002917	LQP03TN2N2B04D
L302,L313	2703-002267	CIH05T4N7SNC
L303	2703-002313	CIH05TR10JNC
L304	2703-002484	0402CS-7N5XJBW
L305	2703-002558	LQW15AN27NH00D
L306	2703-002200	CIH05T18NJNC
L309	2703-001236	LK1608-R82K-T
L311	2703-002910	LQP03TN39NJ04D
L312	2703-002989	CCIS-03-039-AL
LED201,LED202,LED203	0601-001819	AOT-TAWS-XXYY
LED204,LED205,LED206	0601-001819	AOT-TAWS-XXYY
LED207,LED208,LED209	0601-001819	AOT-TAWS-XXYY
LED210,LED211,LED212	0601-001819	AOT-TAWS-XXYY
LED213,LED214,LED215	0601-001819	AOT-TAWS-XXYY
LED216,LED217,LED220	0601-001819	AOT-TAWS-XXYY
OSC200	2801-003856	MC-146(32.768KHz,20ppm)
OSC300	2801-004587	TSX-3225(TN4-26412)
PAM300	1201-002364	TQM6M4022E
R100	2007-001284	RC1005J4R7CS

SEC CODE	Design LOC	Discription
R105	2007-008486	ERJ1GEJ204C
R107,R108,R115,R164	2007-008419	ERJ1GEJ102C
R121,R124,R148,R149	2007-008516	ERJ1GEJ103C
R122,R200,R202	2007-008531	MCR006MZPJ0100
R125,R127,R150,R152	2007-008808	MCR006YZPJ823
R126	2007-009168	MCR006MZPJ563
R129,R208	2007-000162	RC1005J104CS
R130	2007-001244	RC1005J913CS
R140,R141,R304	2007-002965	RK73K1ETP150J
R143,R171	2007-008544	ERJ1GEJ681C
R144,R177,R204	2007-008483	RMC1/20473JPA
R146,R314	2007-008051	RC0603J332CS
R147,R167	2007-001320	MCR01MZP5J182
R151,R169,R203,R207	2007-008055	ERJ1GENJ104X
R154	2007-000142	RC1005J272CS
R157	2007-008137	RC1005F243CS
R162,R303	2007-008516	ERJ1GEJ103C
R165	2007-008419	ERJ1GEJ102C
R174	2007-009108	RC0603J154CS
R175,R176	2007-009166	RK73H1HTTB3322F
R201	2007-009315	RC0603J4R7CS
R205,R209	2007-007573	RK73H1ETP3303F
R206	2007-007981	ERJ2RKF1803X
R210	2007-007590	RK73H1ETP8202F
R211,R212	2007-008052	ERJ1GENJ472X
R213,R214,R219,R220	2007-001301	MCR01MZP5J680
R215,R216	2007-000165	RC1005J204CS
R221,R222,R223,R224	2007-001301	MCR01MZP5J680
R225,R227,R228,R230	2007-001301	MCR01MZP5J680
R231,R232	2007-001301	MCR01MZP5J680
R233,R234,R235,R236	2007-000174	MCR01MZP5J470
R300	2203-005444	GRP1555C1H3R0B
R301	2007-007741	M5534204B10E0R
R306	2007-008587	ERJ1GEJ561C
R307	2007-008048	ERJ1GENJ201X
R309,R311	2007-009084	MCR006YZPJ105
R312	2007-009154	RMC1/20-120JTP
R313	2007-008786	RMC1/20K333JTP
R317	2703-002205	CIH05T3N9KNC
R318	2007-000174	MCR01MZP5J470
RFS300	3705-001358	KMS-512
SIM103	3709-001384	5000-6P-2.3M
TA100,TA102	2404-001381	F981A106MMA

SEC CODE	Design LOC	Discription
TA316	2404-001374	F951C106MPAAQ2
TH200	1404-001221	NCP15WB473J04RC
TR103	0504-000168	DTC144EE/TR
U102	1201-002356	LM4946SQ
U104	1001-001371	ISL8484IRZ
U105	1203-003663	ISL6294IRZ-T
U106	1204-001811	YMU759-QE2
U109	0801-002529	TC7SH32FU(TE85L)
U203	1009-001020	EM-1681-FT
U300	1205-003098	AD6548XCPZ
U302	1204-002688	TEA5760UK
U303	0801-003013	NC7SV74L8X
UCP101	1203-003897	G-CSP2100B1-YV10
UCP201	GH09-00039A	TR08WQTKE15IN3B
UME200	NEWETC00001	LRS18CK
VOL_DOWN,VOL_UP	3404-001152	LS10N2-T
VR112,VR118,VR119	1405-001082	VC040205X150R
ZD126,ZD129,ZD202	0406-001167	ESDA6V1-5P6
ZD128,ZD201	0406-001083	ESDA6V1W5
ZD114	0403-001547	TDZ5.6
ZD203	0406-001167	ESDA6V1-5P6

8. Reference data

8-1. Reference Abbreviate

AAC: Advanced Audio Coding.
AVC : Advanced Video Coding.
BER : Bit Error Rate
BPSK: Binary Phase Shift Keying
CA : Conditional Access
CDM : Code Division Multiplexing
C/I : Carrier to Interference
DMB : Digital Multimedia Broadcasting
EN **:** European Standard
ES **:** Elementary Stream
ETSI: European Telecommunications Standards Institute
MPEG: Moving Picture Experts Group
PN : Pseudo-random Noise
PS : Pilot Symbol
QPSK: Quadrature Phase Shift Keying
RS : Reed-Solomon
SI : Service Information
TDM : Time Division Multiplexing
TS **:** Transport Stream

9. Safety Precautions

9-1. 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 disassembing charger.

- Don't use as you pleases after change other material than replacement registered on SEC System.
  Otherwise engineer in charge isn't charged with problem that you don't keep this rules.

9-2. ESD(Electrostatically Sensitive Devices) Precaution

Several semiconductor may be damaged easilly 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.

10. Product Function

Main Function

- Cmera and camcorder
- Music player
- Java
- Offline mode
- Bluetooth
- Web browser
- Multimedia Message Service (MMS)
- Name card
- Voice recorder
- Women's life
- Organiser

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