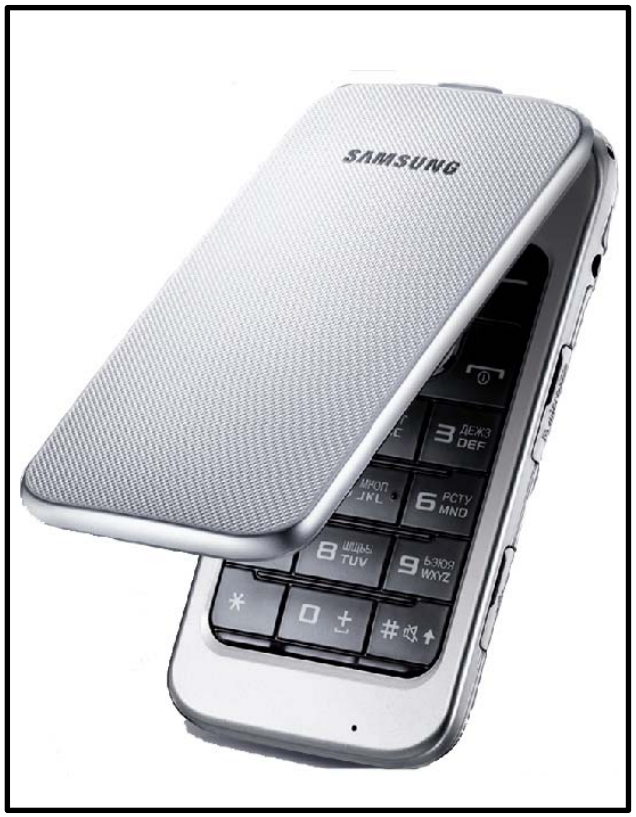
GSM TELEPHONE

GT-C3520

SERVICE Manual

GSM TELEPHONE



CONTENTS

SAMSUNG
ELECTRONICS

2011. 09. Rev.1.0

2. Specification

2-1. GSM General Specification

	GSM850 Phase 1	EGSM 900 Phase 2	DCS1800 Phase 1	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	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
Time Slot Period/Frame Period	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
MS Power	33dBm~5dBm	33dBm~5dBm	30dBm~0dBm	30dBm~0dBm
Power Class	5pcl ~ 19pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux	8	8	8	8
Cell Radius	35Km	35Km	2Km	2Km

2-2. GSM Tx Power Class

TX Power control level	GSM850
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±3dBm
18	7±3 dBm
19	5±3 dBm

TX Power control level	EGSM900
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±3dBm
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

TX Power control level	PCS1900
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

3. Operation Instruction and Installation

Main Function

- GSM(2G EDGE) 850/900/1800/1900MHz
- Stylish Wide & Slim folder type phone
- 2.4” QVGA 262K TFT LCD
- Music player, Voice Recorder
- 1.3M Camera
- FM Radio Receiver
- Bluetooth v2.1
- USB 2.0 ,3.5pi earjack
- SMS / Chat On / Email

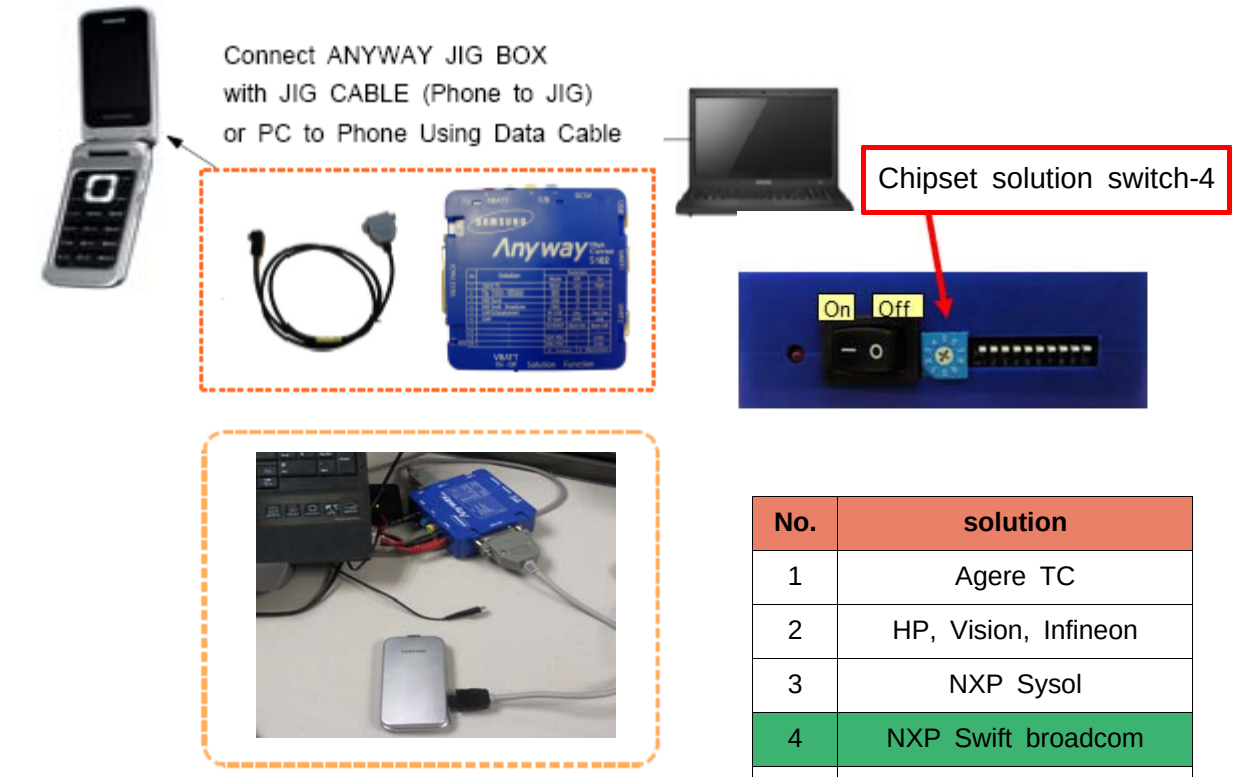
6. Level 1 Repair

6-1. Software Download

6-1-1. Pre-requisite for Download

- Downloader Program (**Flash Loader 7.5.4 CSC**)
- GT-C3520 Mobile Phone
- Data Cable
- JIG BOX (GH99-36900B)
- RF Test Cable (GH39-00985A)
- JIG Cable (GH39-01290A)
- Adapter (GH99-38251A)
- Binary files

※ Settings



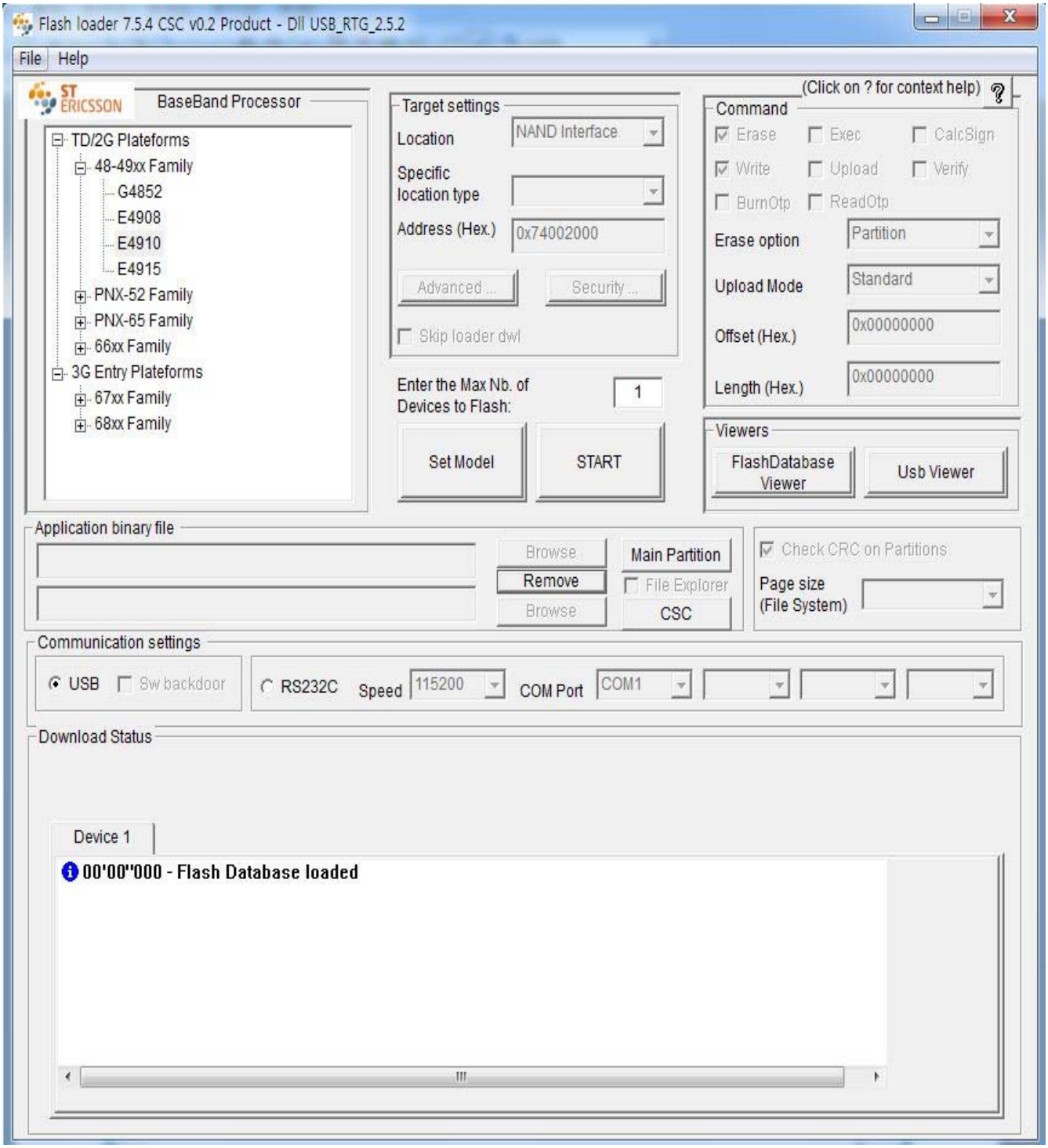
No.	solution
1	Agere TC
2	HP, Vision, Infineon
3	NXP Sysol
4	NXP Swift broadcom
5	EMP

1. Click the 'Down' menu Key + '1' Key

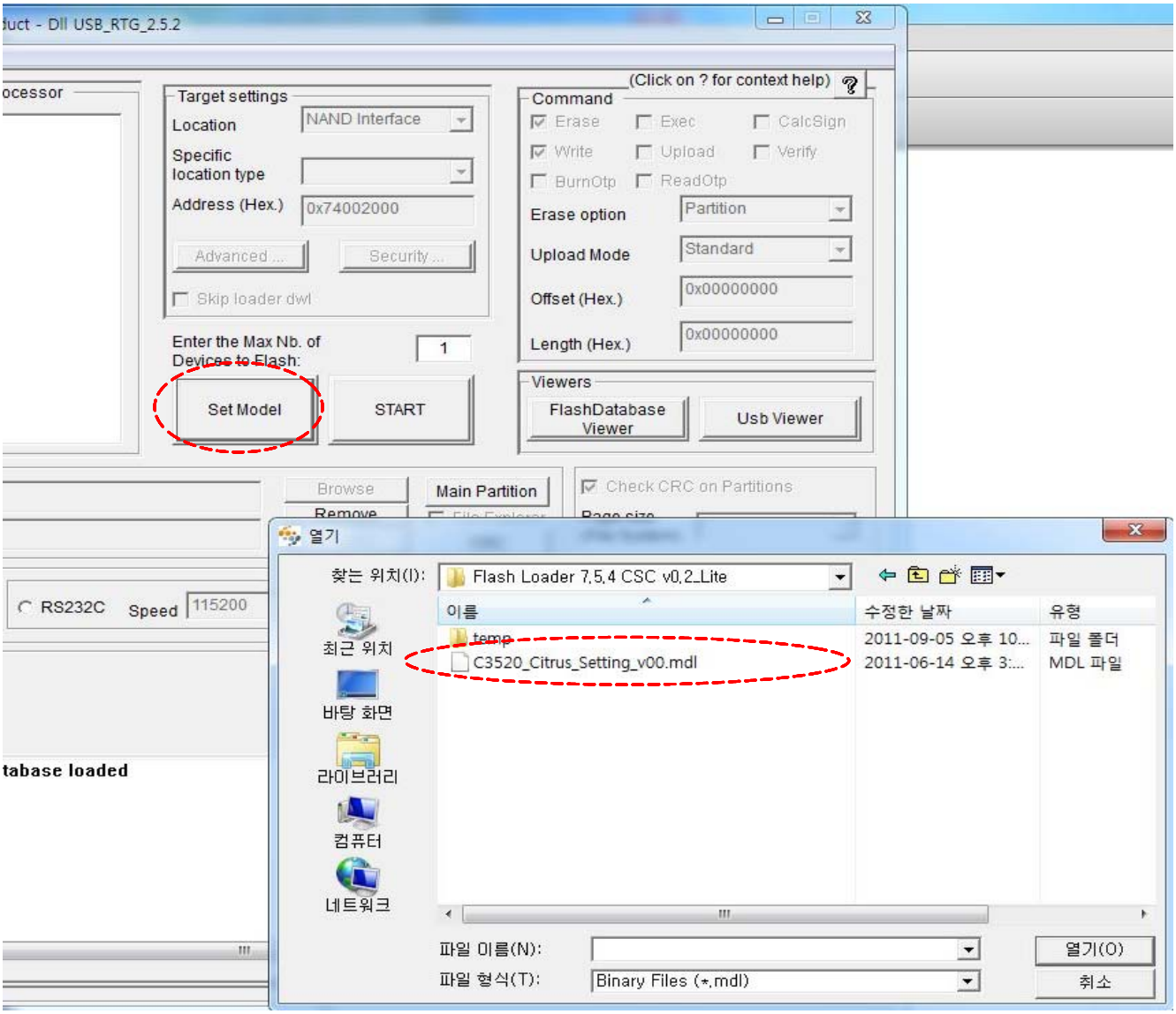
2. Plug your cell phone in the JIG cable.

6-1-2. S/W Download Process

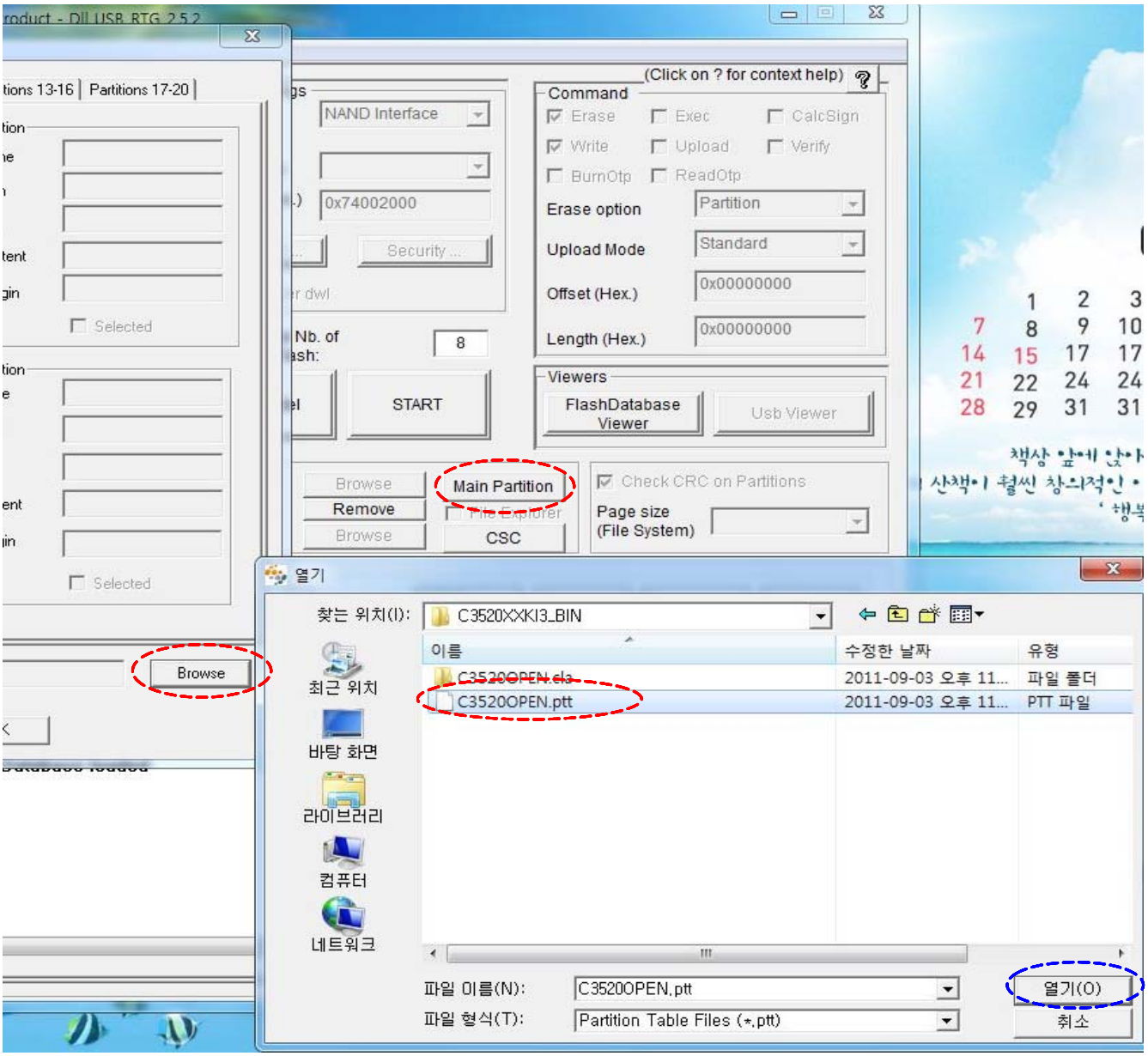
1. Load the binary download program by executing the "**Flash Loader 7.5.4 CSC** "



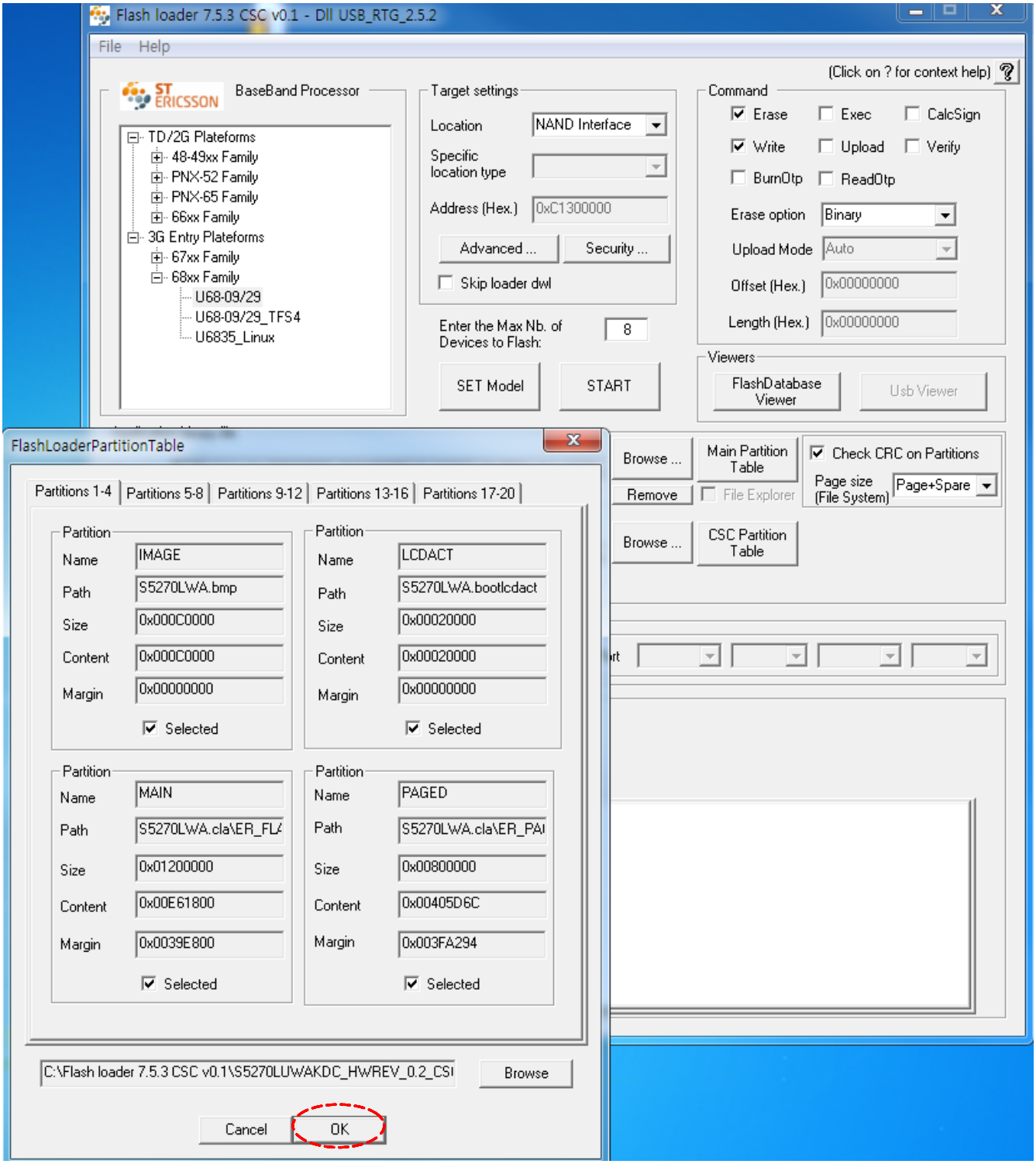
2. Click the SET Model Button and Insert "mdl" binary file



3. (1) Click Main Partition Table.
   (2) Click Browser Button and Insert 'ptt' file(Main)
   (3) Click the 'Open' Button

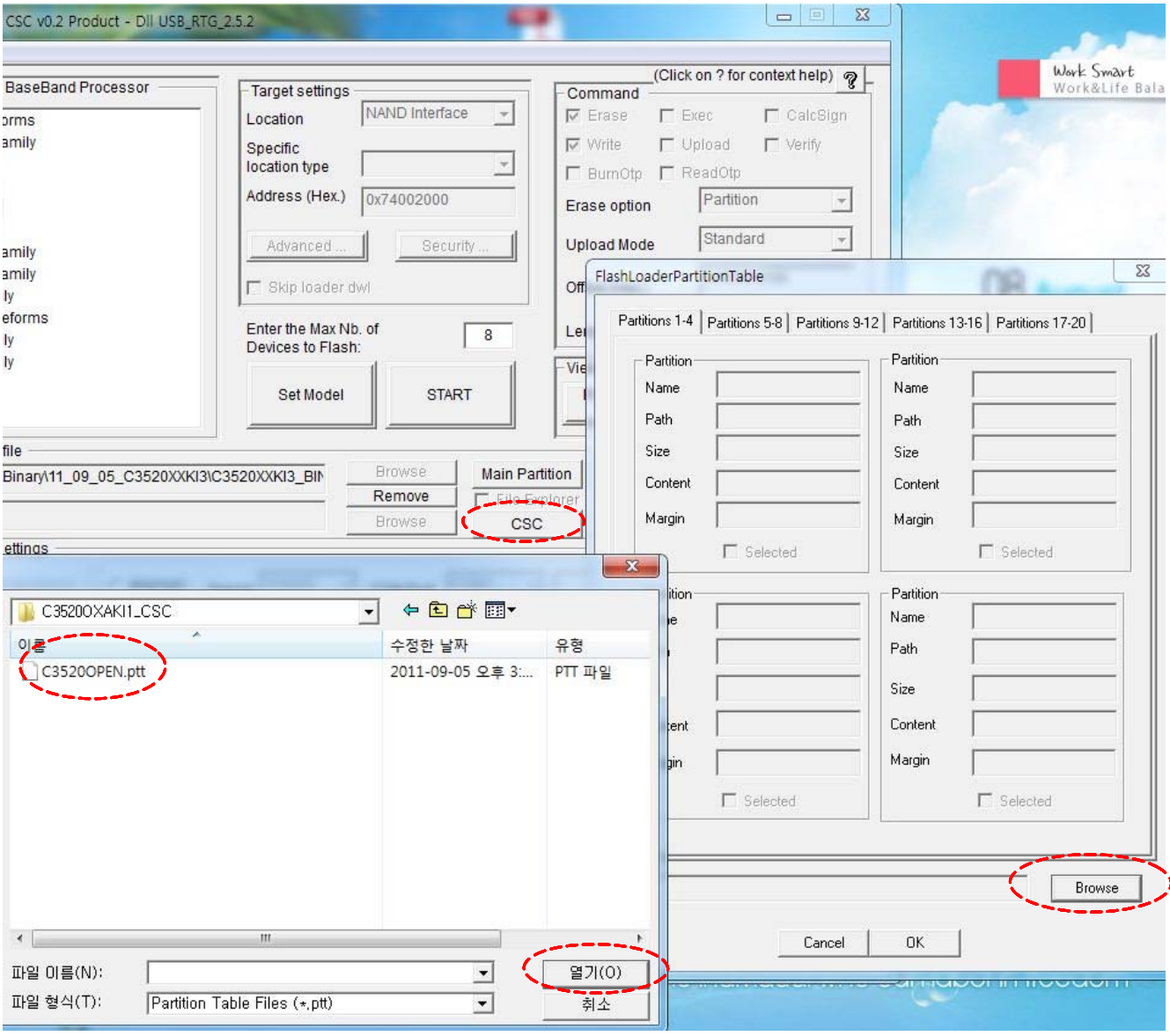


3.(1)Click Partition Tabel "OK" Button

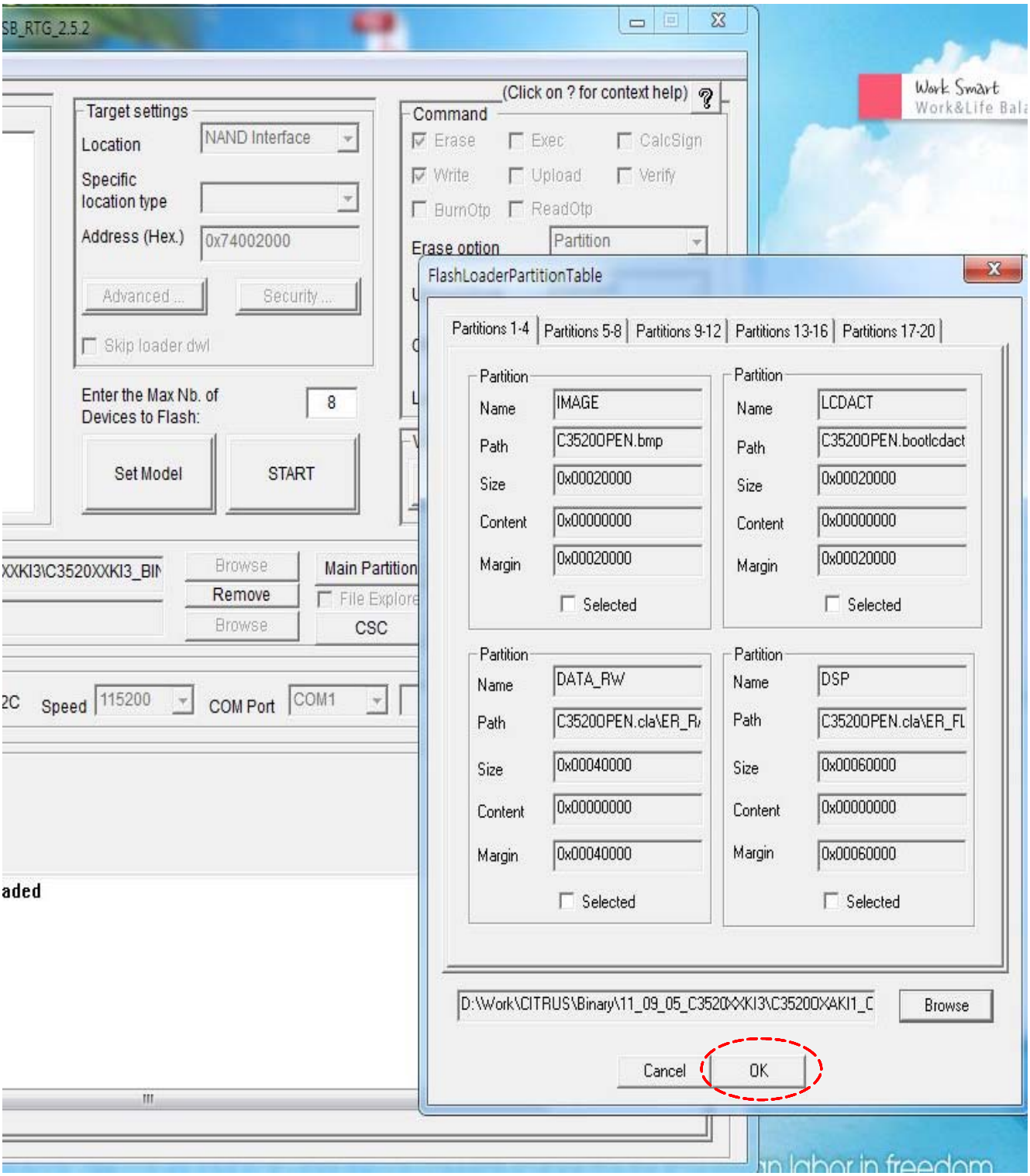


5 (1)Click Browser Button and Insert 'ptt' file(CSC)

(1) Click the 'CSC' button.
(2) Click the Browser button.and Insert 'ptt' file(CSC)
(3) Click the 'Open' Button

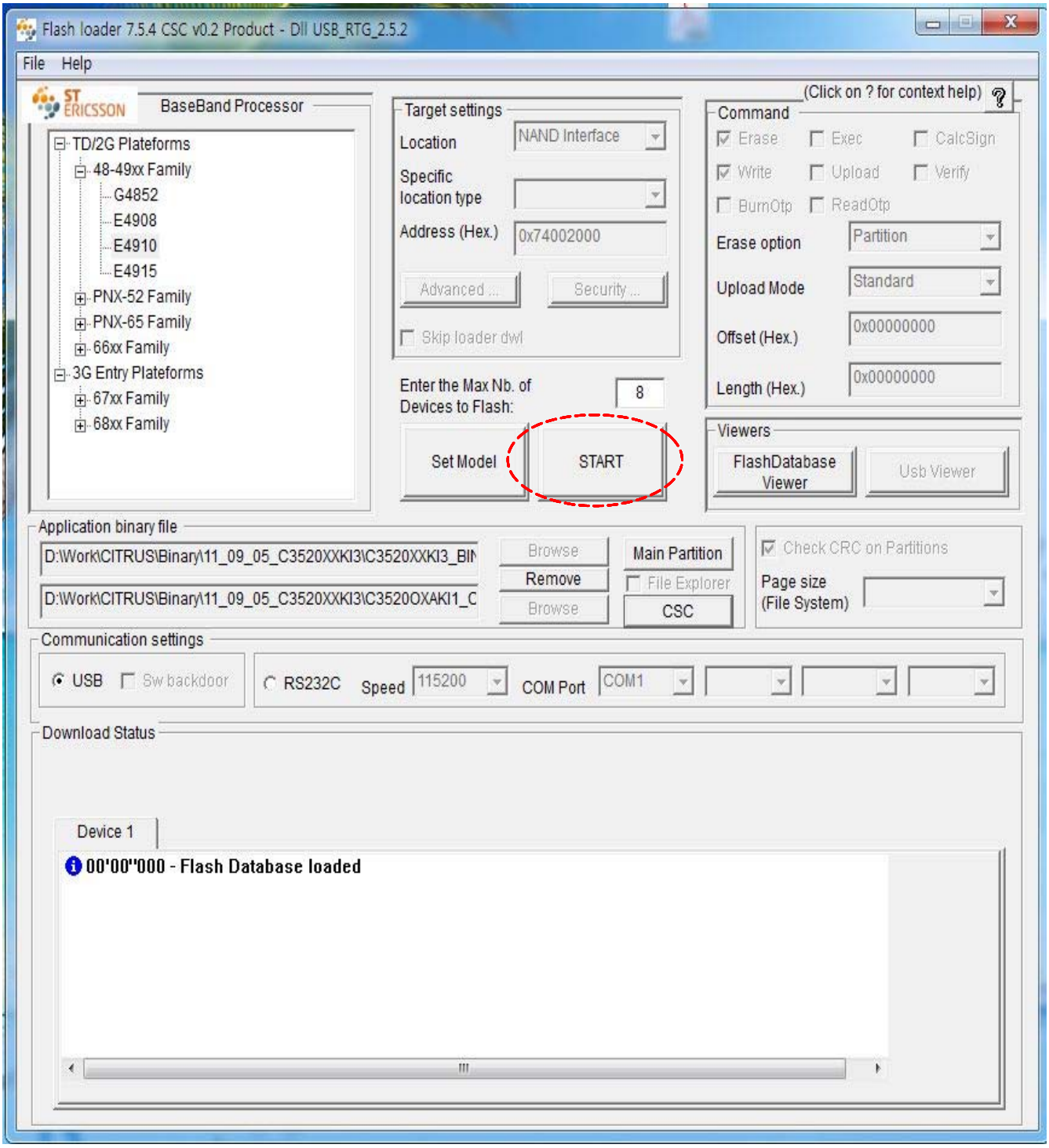


6. (1) Click the 'OK' Button

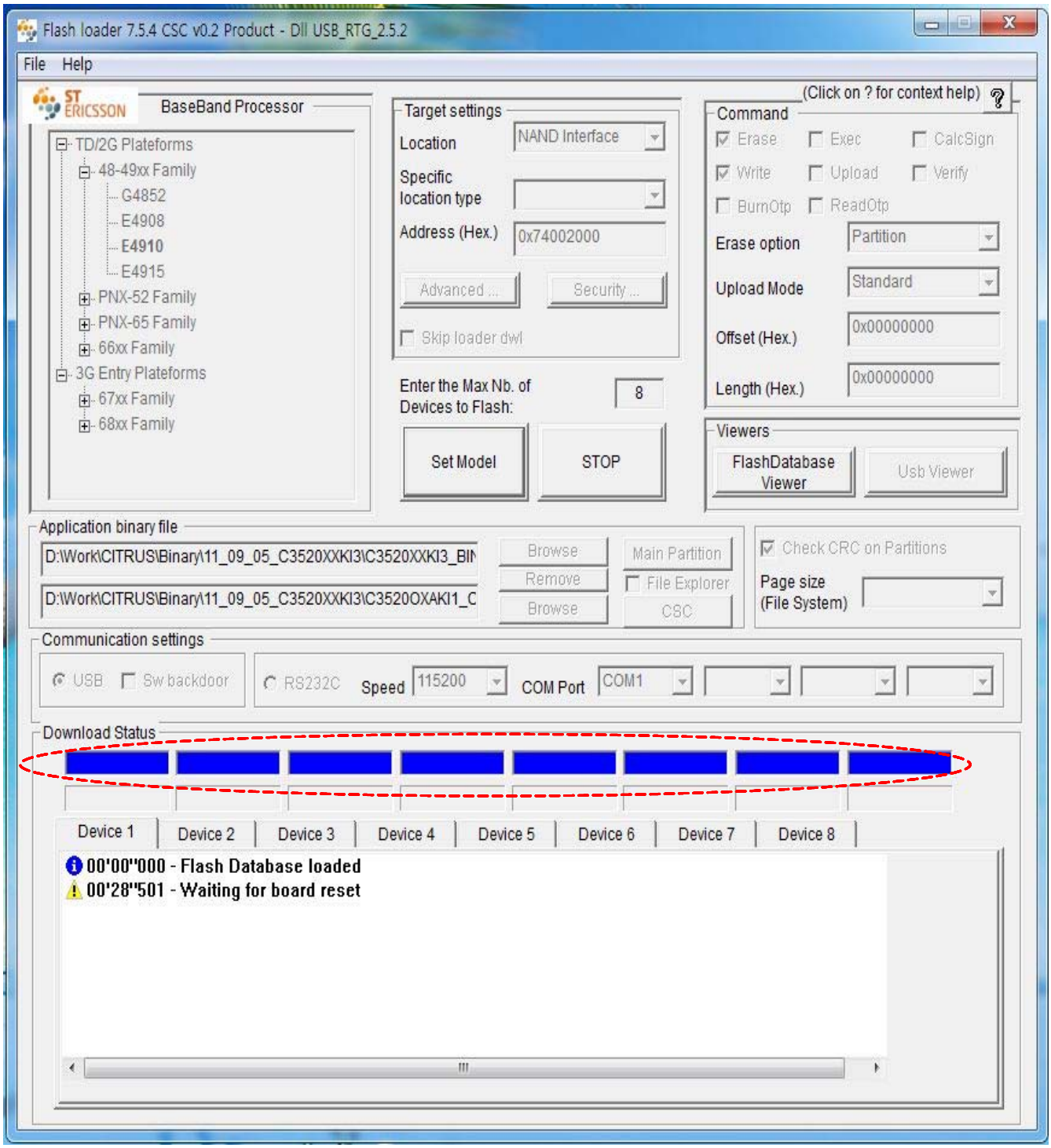


7.Click the start Button.

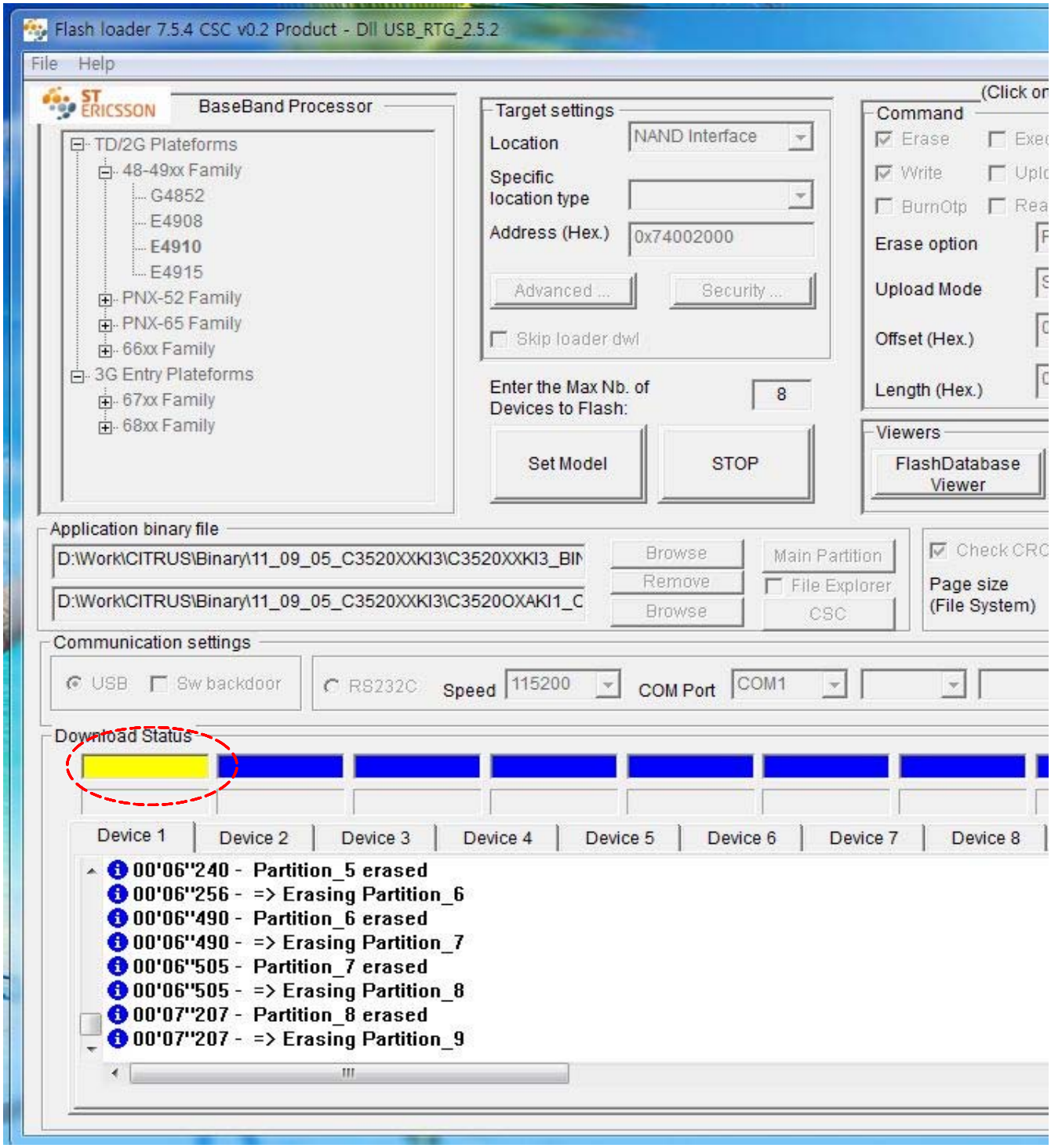
* (1) complete All files changed
  (2) Click the 'Start' button



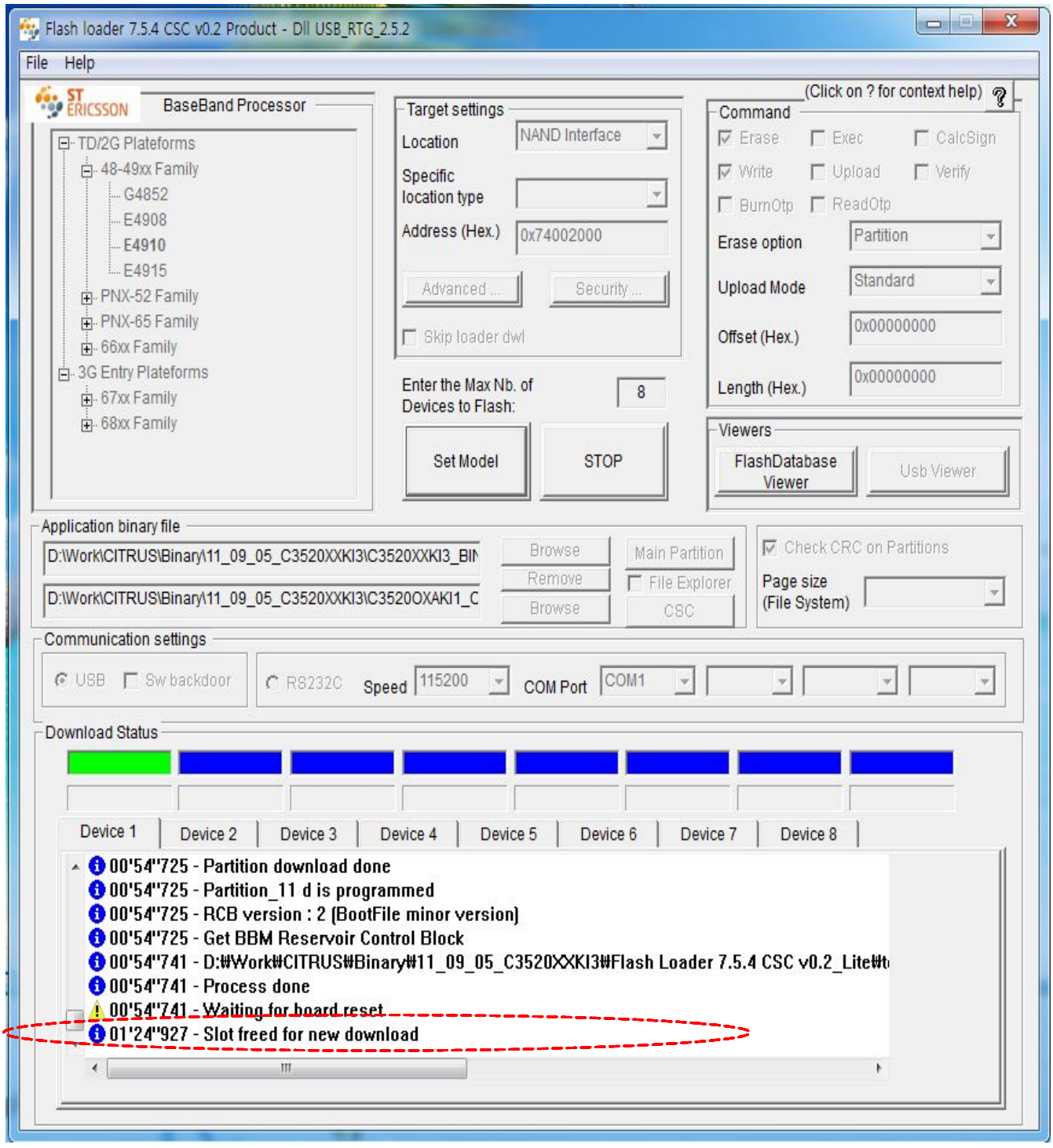
8. If you Click Start Button ,Box is appeard



9. If Connect Phone and Data cable, Download start!!! (box color Blue ->Yellow)



10. When downloading is finished successfully, there is a "**Slot freed for new download**" message.(box color Yellow --> Green)



11. Confirm the downloaded version name and etc. :

***#1234#**

9. Reference Abbreviate

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

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 magnetic 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.

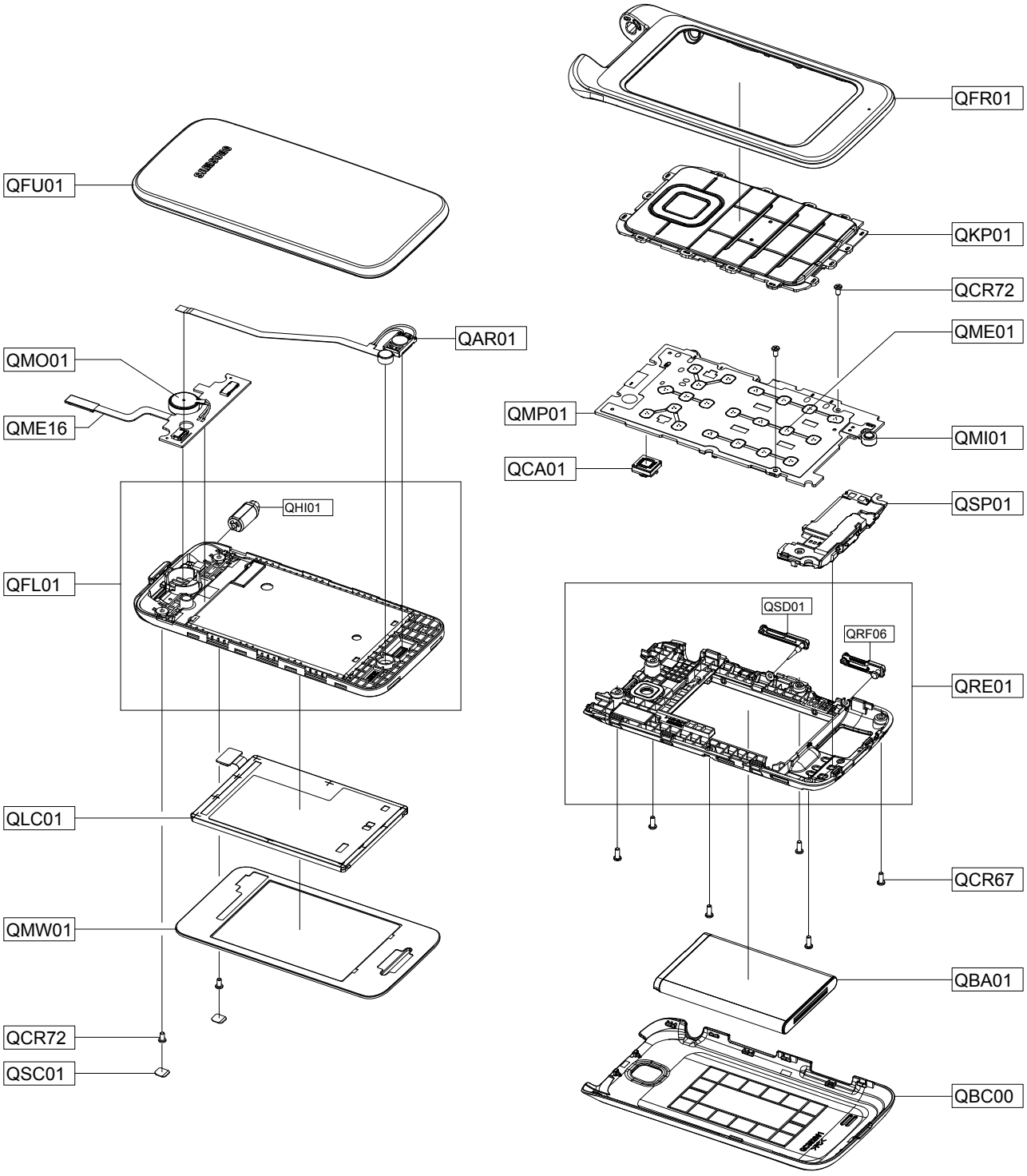
- Use soldering removing tool to break static electricity. , otherwise ESD will be damaged by static electricity.

- 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.

4. Exploded View and Parts List

4-1. Cellular phone Exploded View



4-2. Cellular phone Parts list

Design LOC		Description	SEC CODE
QCR72		SCREW-MACHINE	6001-002051
QCR72		SCREW-MACHINE	6001-002051
QCR67		SCREW-MACHINE	6001-002083
QMI01		MICROPHONE-ASSY-GT-C3520	GH30-00752A
QMO01		MOTOR DC-SGH_P250	GH31-00454A
QBA01		INNER BATTERY PACK-800MAH,BLK,UNI,MAIN	GH43-03241A
QCA01		CAMERA MODULE-1.3M_1/6_SF_SOCKET_S	GH59-11139A
QME01		DOME SHEET-GT-C3520	GH59-11387A
QME16		ASSY ETC-CTC FPCB (GT-C3520)	GH59-11409A
QAR01		MODULE-RCV+MIC (GT-C3520)	GH59-11416A
QSP01		MODULE-SPK+INT(GT-C3520)	GH59-11433A
QSC01		TAPE-SCREW SHEET	GH74-57240A
QMW01		AS-MAIN WINDOW(COMM)	GH81-09796A
QMP01		A/S ASSY-PBA MAIN (COMM)	GH82-06056A
QLC01		ELA MODULE-LCD MODULE (GT-C3520)	GH96-05310A
QFU01		ASSY CASE-FOLDER UPPER	GH98-21376A
QFR01		ASSY CASE-FOLDER FRONT	GH98-21378A
QBC00		ASSY COVER-BATTERY	GH98-21380A
QKP01		ASSY KEYPAD-(RUSSIA/BLACK)	GH98-21387A
QRE01		ASSY CASE-FOLDER REAR	GH98-21379A
	QSD01	PMO COVER-SD	GH72-65450A
	QRF06	PMO COVER-USB	GH72-65451A
QFL01		ASSY CASE-FOLDER LOWER	GH98-21377A
	QHI01	ASSY MEC-HINGE	GH75-09183A

5. MAIN Electrical Parts List(2011.09.14)

SEC CODE	Design LOC	Description
0403-001688	ZD313	USFZ5.6V-RTK/H
0404-001172	D300	RB520S-30
0406-001293	ZD300,ZD301,ZD302	ESD9B3.3ST5G
0406-001293	ZD303,ZD307,ZD308	ESD9B3.3ST5G
0406-001293	ZD310,ZD324	ESD9B3.3ST5G
0406-001413	ZD304	PESD5V0F1BL
0505-001325	Q300	2SK3019
0505-002384	Q301	PMR280UN
0601-002846	LED300,LED301,LED302	19-217UTD/S759/TR8
0601-002846	LED303,LED304,LED305	19-217UTD/S759/TR8
1001-001655	U304	NX3L1T5157GM
1001-001677	U301	MAX14577EEWA-T
1009-001058	U300	S-5712ACDL1-I4T1U
1108-000334	UME200	K521F12ACC-B060
1201-003290	PAM100	TQM6M4068
1203-005512	U302,U306	MIC5365-3.3YMT
1203-005521	U100	MIC5365-2.8YMT
1203-006050	U303	RP152L002B-TR
1205-004360	UCP200	E4909ET3UM
1205-004369	U101	88W8790-A0-BLF2C000-P123
1404-001221	TH200	NCP15WB473J04RC
1405-001317	VR301,VR302,VR303	LXES15AAA1-100
1405-001317	VR304,VR305,VR306	LXES15AAA1-100
1405-001317	VR307,VR308,VR309	LXES15AAA1-100
1405-001317	VR310,ZD305,ZD306	LXES15AAA1-100
2007-000138	R101,R307	RC1005J101CS
2007-000140	R306	RC1005J102CS
2007-000141	R216,R217,R301	RC1005J222CS
2007-000143	R202,R203,R316	RC1005J472CS
2007-000148	R103,R104,R224,R303	RC1005J103CS
2007-000148	R311,R313	RC1005J103CS
2007-000151	R319	RC1005J153CS
2007-000157	R215,R220	RC1005J473CS
2007-000160	R314	RC1005J683CS
2007-000162	R105,R208,R209,R210	RC1005J104CS
2007-000162	R213,R214,R308,R310	RC1005J104CS

SEC CODE	Design LOC	Description
2007-000162	R330	RC1005J104CS
2007-000165	R309	RC1005J204CS
2007-000168	R305	RC1005J474CS
2007-000170	R300	RC1005J105CS
2007-000172	R110	RC1005J100CS
2007-000174	R323,R324,R325,R326	MCR01MZP5J470
2007-000174	R327,R328	MCR01MZP5J470
2007-000758	R312	RC1005J334CS
2007-001339	R106	RC1005J184CS
2007-003010	R302,R304	RC1005J200CS
2007-007001	R200	RC1005J392CS
2007-007156	R333,R335,R336	RC1005J1R0CS
2007-007538	R218	RK73H1ETP5602F
2007-008465	R212	RC1005F2150CS
2007-008766	R211	ERJ2RKF6041X
2203-000233	C131,C146,C341,C347	GRP1555C1H101J
2203-000254	C144,C228,C237	GRP155R71C103K
2203-000278	C116	GRP1555C1H100D
2203-000425	C314	GRP1555C1H180J
2203-000438	C141,C142,C143,C239	GRP155R71H102K
2203-000438	C340	GRP155R71H102K
2203-000489	C305,C306	GRP155R71H222K
2203-000812	C119,C133,C243,C244	GRP1555C1H330J
2203-000854	C139	GRP1555C1H390J
2203-000995	C140,C245,C312,C369	GRP1555C1H470J
2203-001101	C115	GRP155R71E682KA01E
2203-001153	C300,C336	GRP1555C1H680J
2203-001385	C114,C118	GRP1555C1H1R5CZ01E
2203-002443	C318,C323	GRP155R71H331KD01E
2203-002668	C134	C1005CG1H0R5BT
2203-005057	C112,C123,C372	GRP1555C1H8R2CZ01E
2203-005234	C120,C125	GRP1555C1H1R2CZ01E
2203-005281	C127,C129,C132,C135	GRP1555C1H1R5BZ01E
2203-005444	C138	GRP1555C1H3R0B
2203-006048	C103,C104,C204,C205	GRM155R71A104K
2203-006048	C206,C207,C208,C209	GRM155R71A104K

SEC CODE	Design LOC	Description
2203-006048	C210,C215,C221,C227	GRM155R71A104K
2203-006048	C231,C233,C234,C311	GRM155R71A104K
2203-006048	C322,C334,C335,C342	GRM155R71A104K
2203-006048	C352,C355,C370	GRM155R71A104K
2203-006138	C105	CL05C1R2BB5ANNC
2203-006190	C337,C338	GRM155R60J224KE01E
2203-006208	C220,C313	CM105X5R475M06AT
2203-006260	C202,C339	GRM155R61A224KE19E
2203-006324	C302	GRM188R61A225KE19D
2203-006348	C310	CV105X5R105K25AT
2203-006399	C101,C102,C117,C200	GRM155R60J105KE19D
2203-006399	C201,C211,C212,C223	GRM155R60J105KE19D
2203-006399	C225,C226,C235,C236	GRM155R60J105KE19D
2203-006399	C238,C242,C307,C328	GRM155R60J105KE19D
2203-006399	C345,C358,C366	GRM155R60J105KE19D
2203-006562	C213,C309,C315	CV05X5R105K10AH
2203-006681	C317	GRM155F51E104ZA01D
2203-006824	C214,C218,C219	CV105X5R475K10AT
2203-006872	C222	GRM155R60J225ME15D
2203-007240	C224	CL10A226MQ8NRNE
2203-007269	C126,C147,C321	CL21A226MPCLRNC
2203-007270	C308	CL10A106KP8NNNC
2203-007279	C217	CV105X5R106M10AT
2203-007290	C136,C137	GRM1555C1HR70B
2203-007317	C216,C230	CV05X5R475M06AH
2203-007342	C106,C107,C333,C343	CV05X5R225M10AH
2203-007342	C346,C349	CV05X5R225M10AH
2203-007729	C145	CL05C020BB5NNNC
2203-007809	C301	GRM155R71H223KA12
2703-001409	L104,L106	LL1005-FH12NK
2703-001737	L114,L115	LL1005-FH2N7S
2703-001748	L101,L113	LL1005-FH5N6S
2703-001750	L102	LL1005-FH2N2S
2703-002170	L109,L111	CIH05T6N8JNC
2703-002176	L100	CIH05T2N7SNC
2703-002202	L110	CIH05T27NJNC

SEC CODE	Design LOC	Description
2703-002204	L105	CIH05T22NJNC
2703-002208	L112	CIH05T2N2SNC
2703-002267	L116	CIH05T4N7SNC
2703-002313	L310	CIH05TR10JNC
2703-002314	L103	CIH05T47NJNC
2703-003297	L202	APIS08G4R7MT
2703-003476	L107	LQG15HSR27J02D
2703-003485	L306	CIG22L100MNE
2703-003878	L304	CIG10WR27MNC
2703-004230	L313,L314	LQG15HS68NJ02D
2801-004902	OSC200	ST3215SB32768E0HPWBB
2801-005011	OSC201	7M26000055
2901-001435	F300,F301,F302	AVRC-14S-03Q-030-200R
2904-002028	F100	SF18-0942GASBA1
2904-002029	F101	SF18-1960DASBA1
2909-001343	F102	LFB212G45CC6D241
3301-001438	L305,L312,L315	BLM15BB750SN1D
3301-001659	L316	BLM15AG601SN1
3301-002058	L200,L201,L204	MHC1005G121MBPS
3301-002063	L311	BLM18HE152SN1D
3301-002065	L300,L301,L302,L303	MMZ1005A182ET
3301-002085	L307	BLM15AX601SN1D
3705-001731	RFS100	KMS-560-002-BEF
3709-001570	CD301	SCHA5B0102
3709-001623	SIM301	5000-6P-1.6M
3710-003306	SOC300	3D1201087-ST32-7H
3711-007393	BTC300	KQ03SB2-3R
3711-007883	HDC300	503776-3450
3712-001348	ANT100,ANT101,ANT300	HJ-ICT-05Y
3712-001348	ANT301	HJ-ICT-05Y
3722-003115	IFC300	KQ20AX-7P-4D
3722-003344	EAR300	IJAN4-157
GH80-03320A	R111,R219,R329	PB-SHORT-1005

Please consult the GSPN website (Samsung Portal) for the most recent version of the product's part list.

7. Level 2 Repair

7-1. Disassembly and assembly Instructions

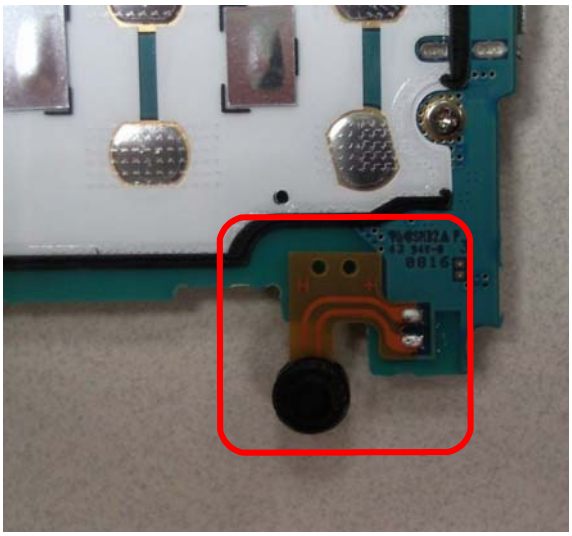
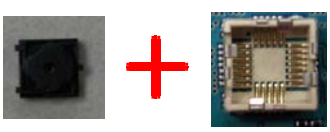
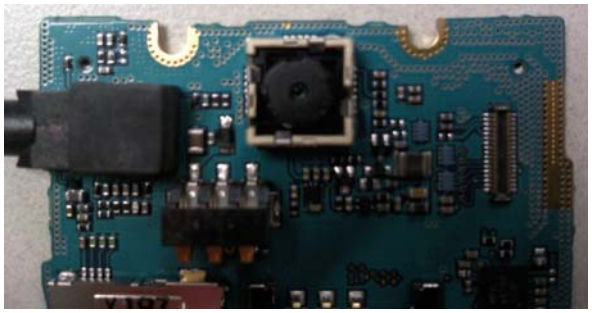
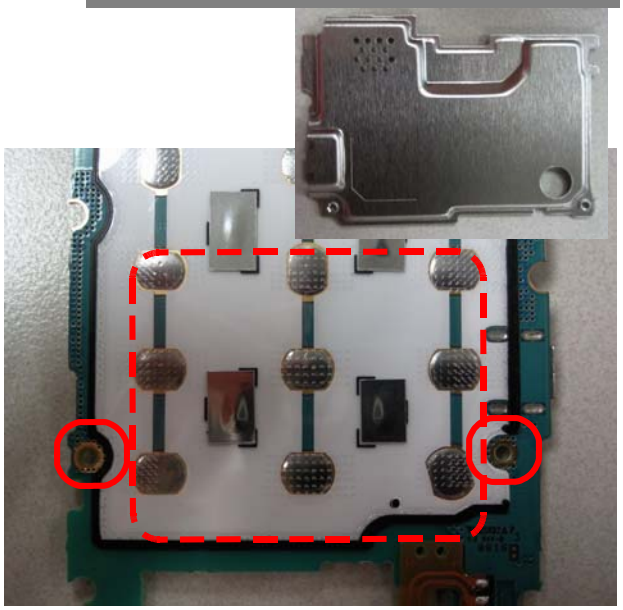
7-1-1. Disassembly

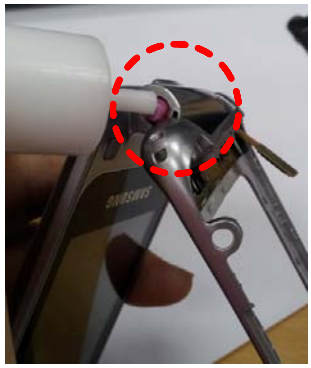
1 Unscrew 6 points at the REAR case 	2 DIsassemble the REAR as from upper side  
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!
3-1 Separate MIC, FPCB connector. 	4 Disassemble PBA, Keypad from folder ass'y 
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!

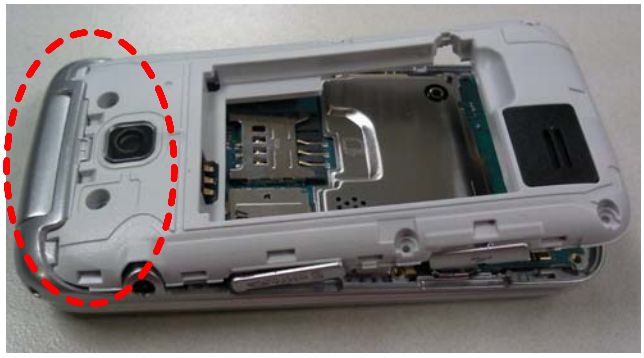
5 While pressing Hinge, Separate FRONT from LOWER. 	6 Tear off screw cap and unscrew 2 point. 
1) Be careful not to make scratch and molding damage! 3) Be careful not to damage LCD FPCB and LCD	1) Be careful not to make scratch and molding damage!
7 Disassemble LOWER from upper side. 	8 Separate LCD connector, Motor, Receiver FPCB connector. 
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage! 2) Be careful not to damage Receiver FPCB

9 Disassemble CTC FPCB, Receiver from Upper ass'y 	
1) Be careful not to make scratch and molding damage! 2) Be careful not to damage Receiver FPCB	

7-1-2. Assemble

1 Soldering 2 points of MIC FPCB pad with PBA 	2 Assemble the 1.3M Camera with PBA,  
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!
3 Screw 2 points at the SHIELD CAN. Assemble the SHIELD CAN 	4 Assemble CTC FPCB, Motor  
1) Be careful not to make scratch and molding damage! 2)- Torque : 1.0 ~ 1.2 kgf.cm - Size : M1.4 * L2.5	1) Be careful not to make scratch and molding damage! 2) Be careful not to damage CTC FPCB

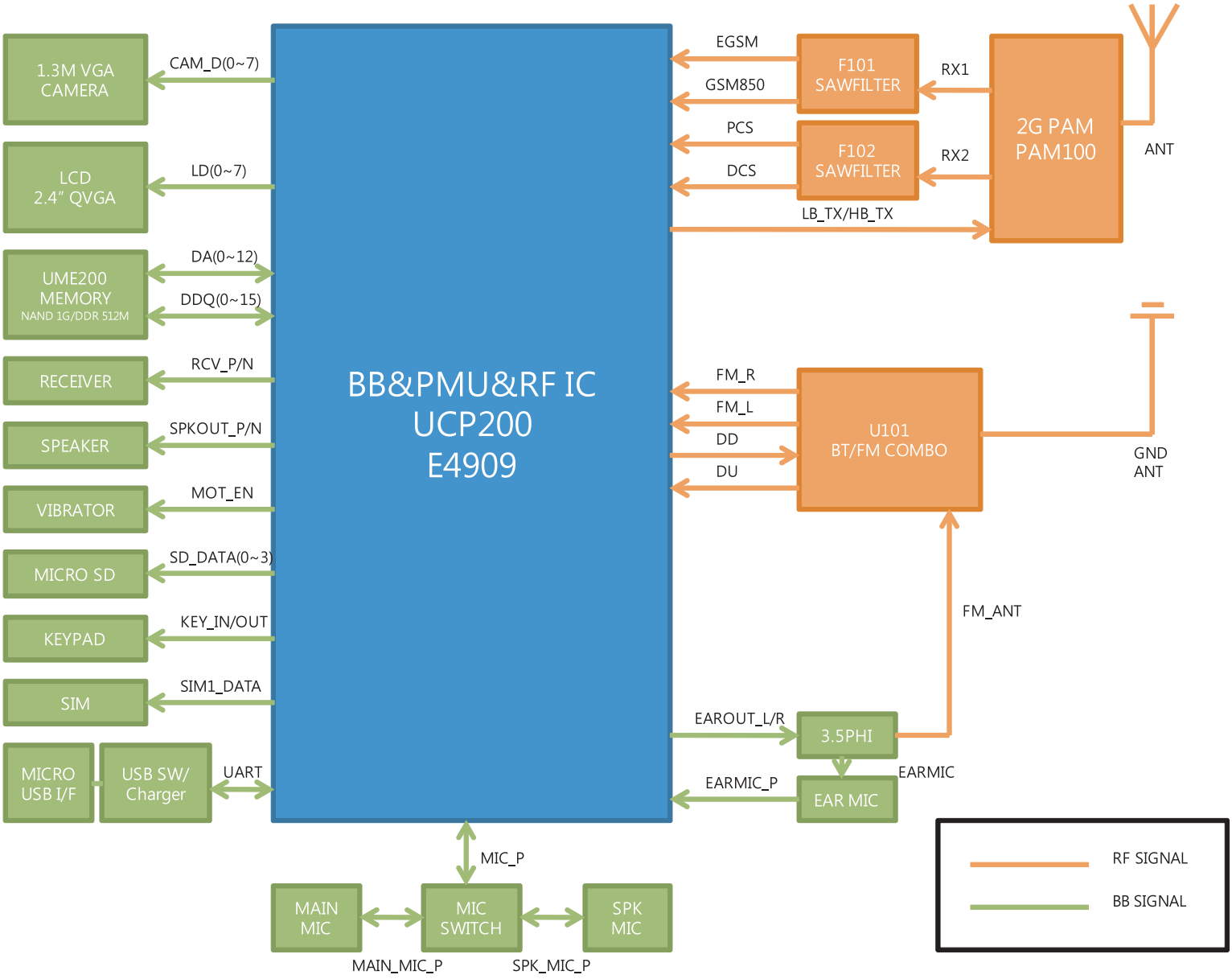
5 Assemble the Receiver Module 	6 Assemble LOWER from lower side. Screw 2 point and Attach screw cap.  
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!
7 While pressing Hinge, Assemble FRONT from LOWER.  	8 Assemble FRONT from LOWER. 
1) Be careful not to make scratch and molding damage! 2) Be careful not to damage CTC FPCB	1) Be careful not to make scratch and molding damage!

9 Assemble KEY PAD to FRONT. 	10 Assemble MIC, FPCB connector. 
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!
11 Assemble REAR from Upper side. 	12 Assemble REAR from Upper side.  
1) Be careful not to make scratch and molding damage!	1) Be careful not to make scratch and molding damage!

13 Screw 6 points at the REAR case. 	
1) Be careful not to make scratch and molding damage!	

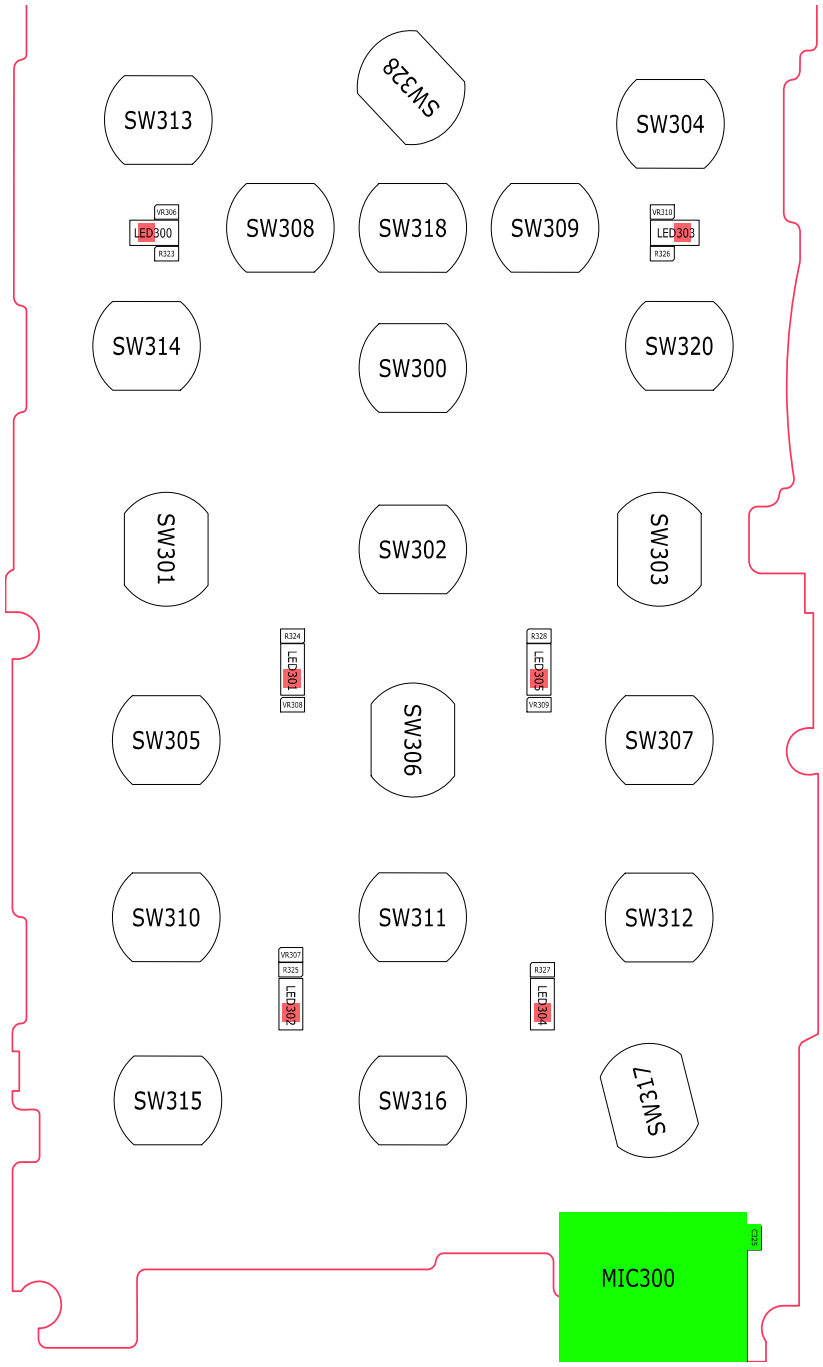
8. Level 3 Repair

8-1.Block Diagram

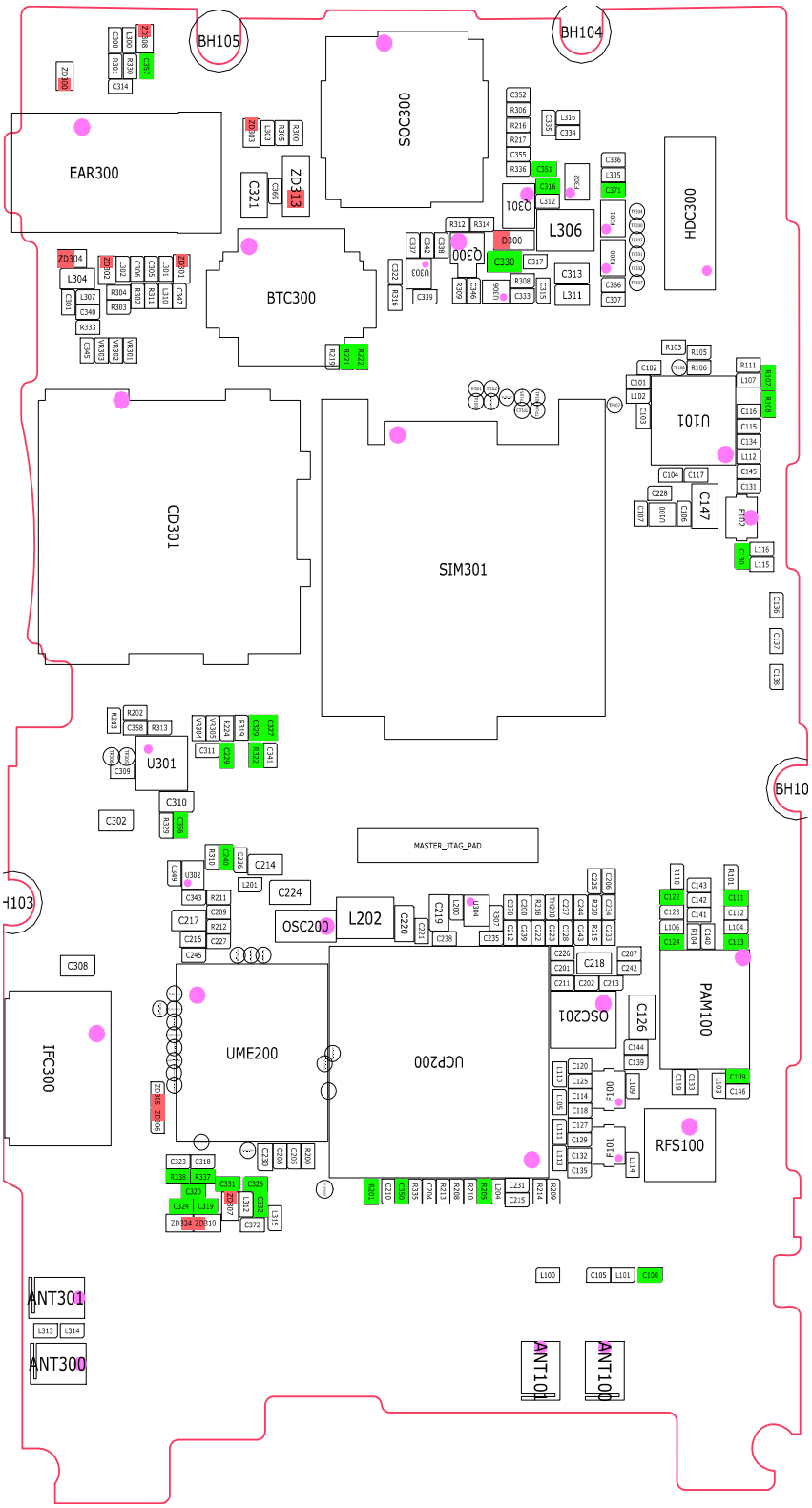


8-2. PCB Diagrams

8-2-1. Top

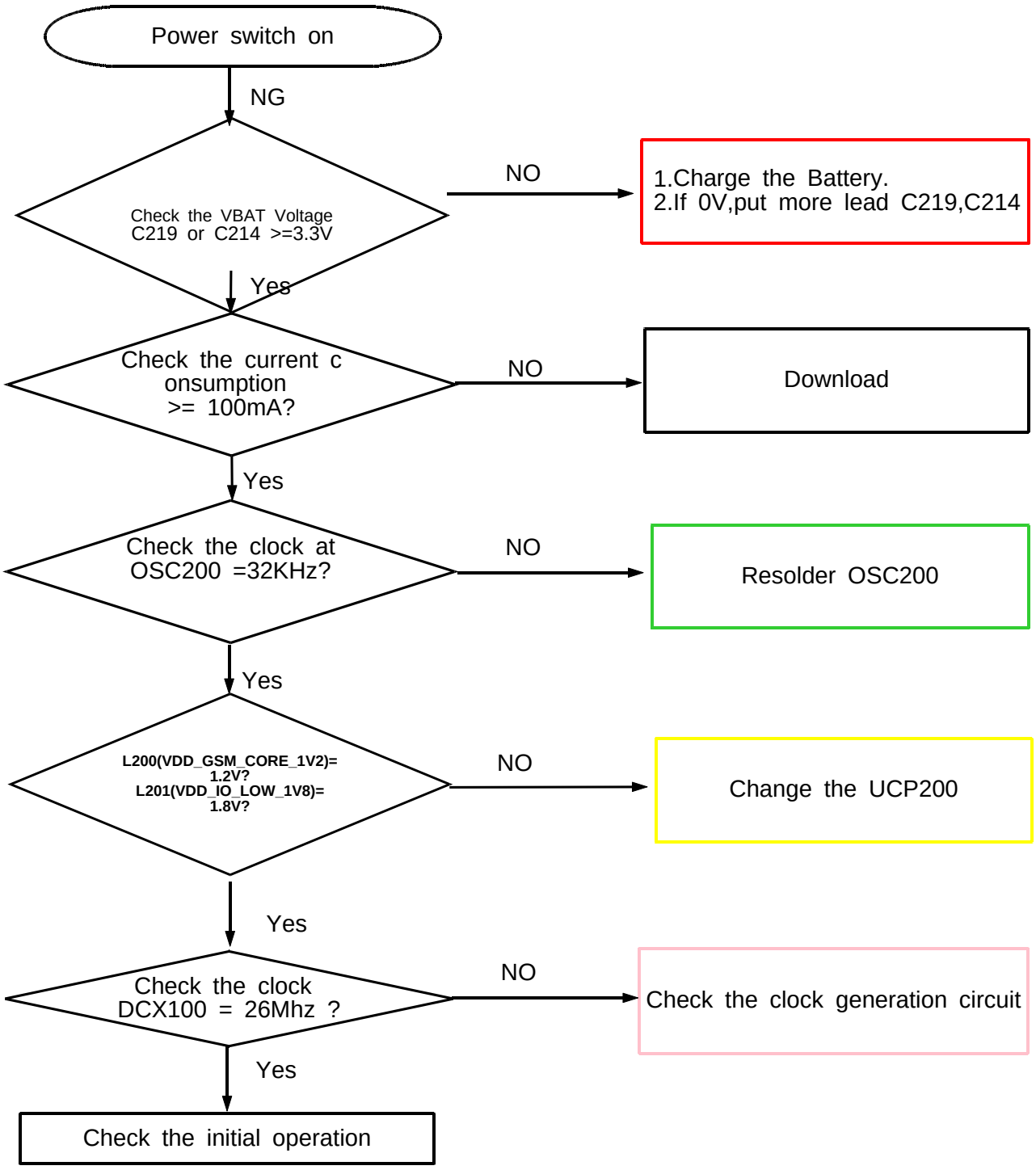


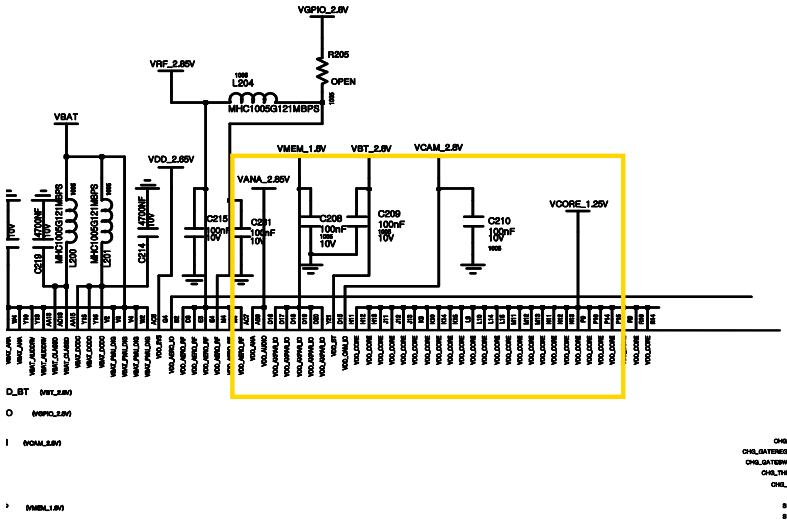
8-2-2. Bottom



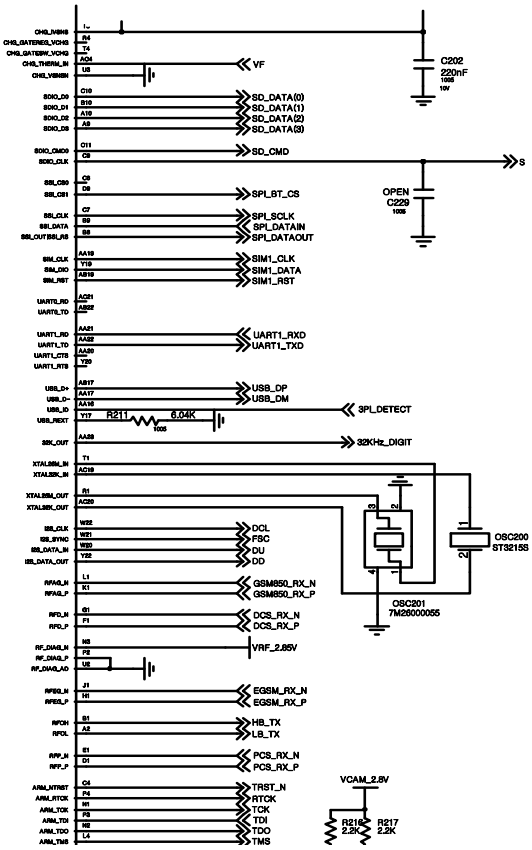
8-3. LOGIC

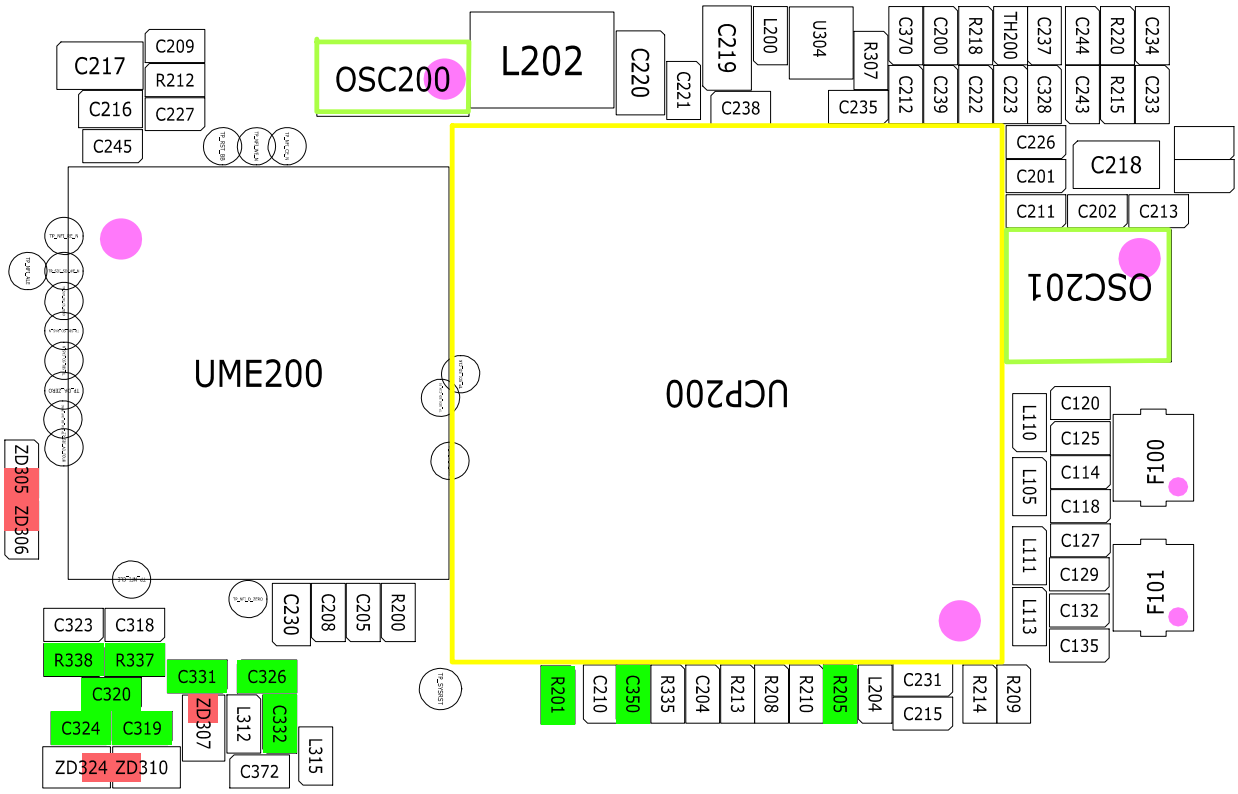
8-3-1. Power On



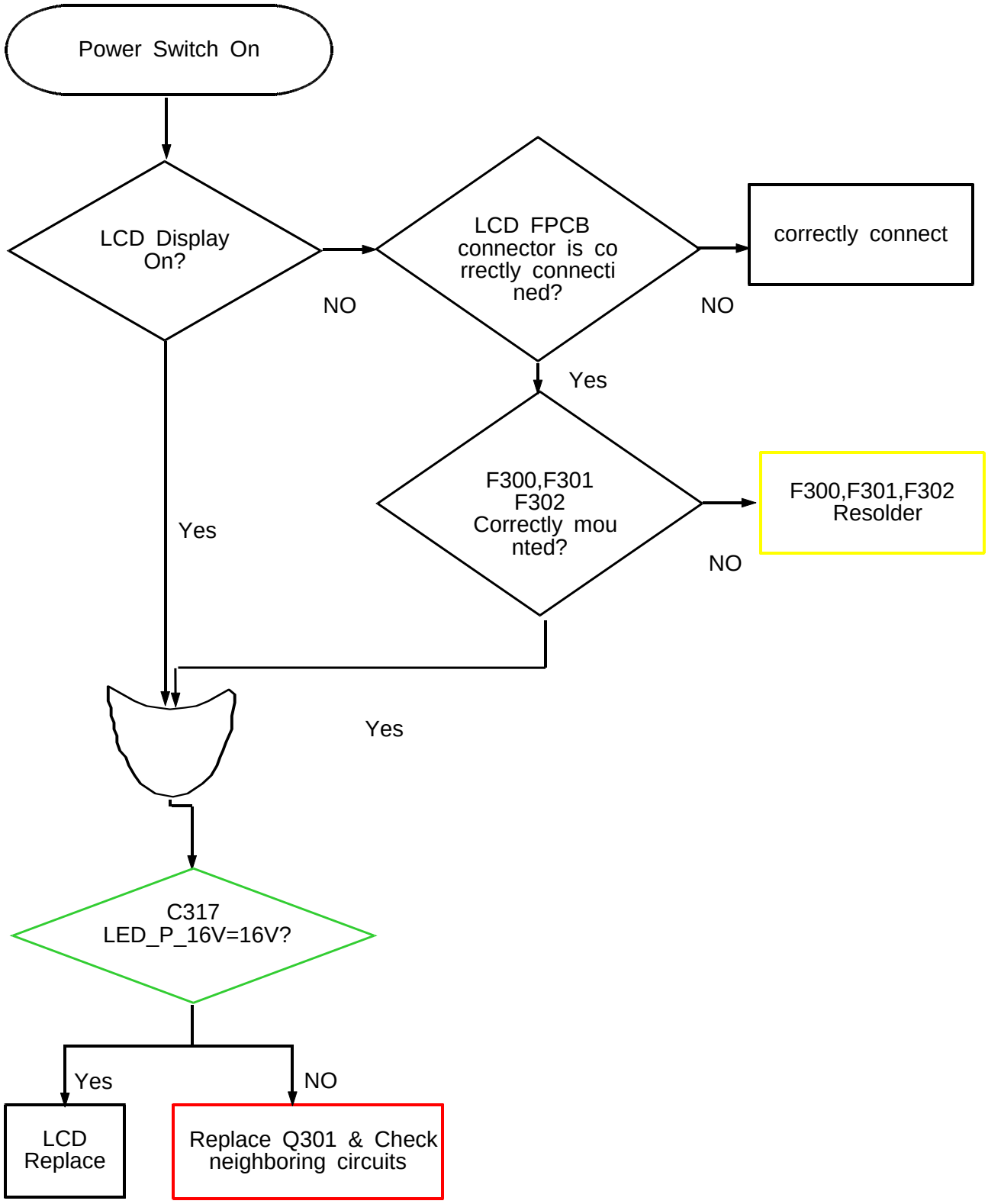


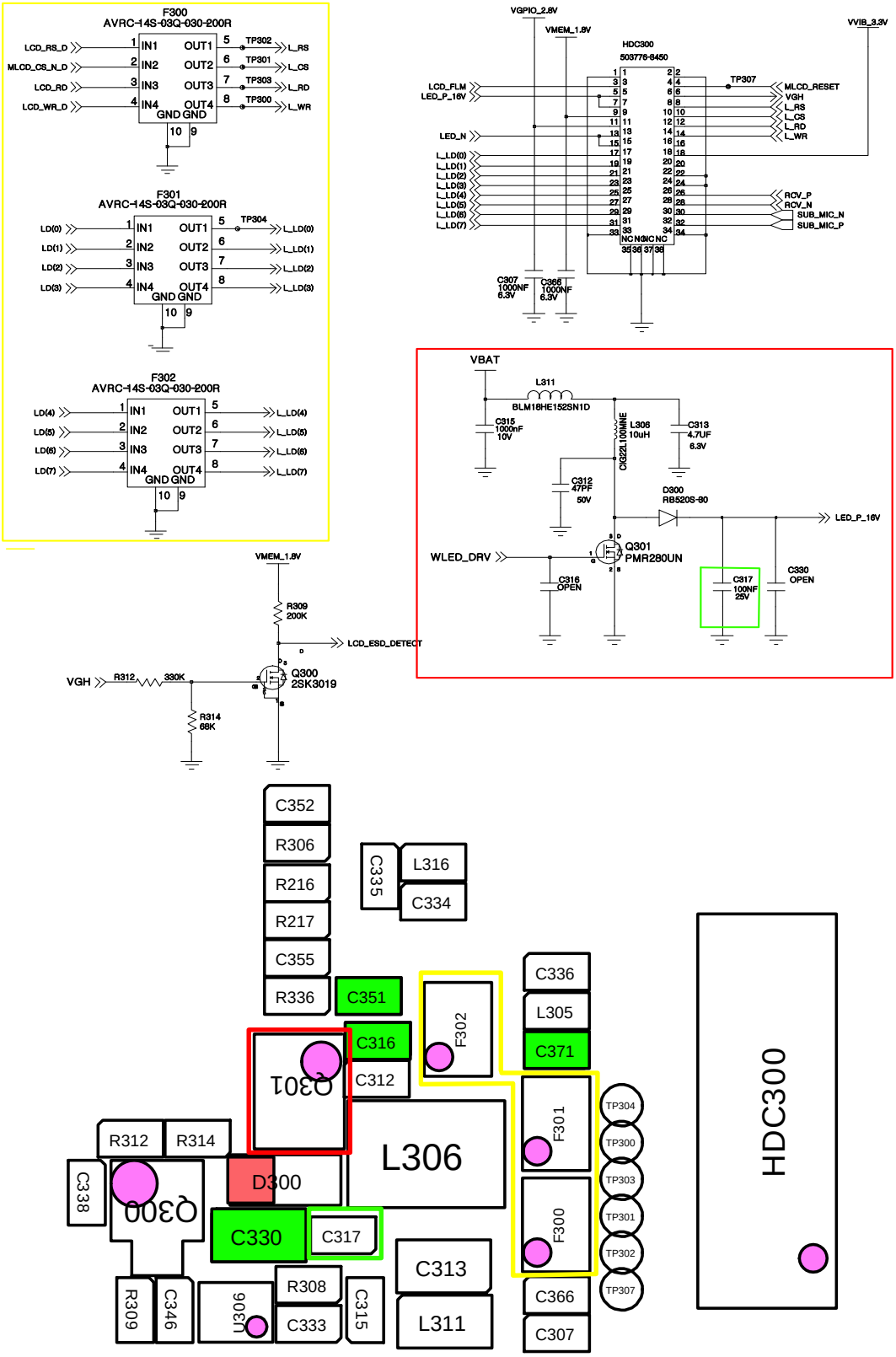
UCP200
E4909ET3UM



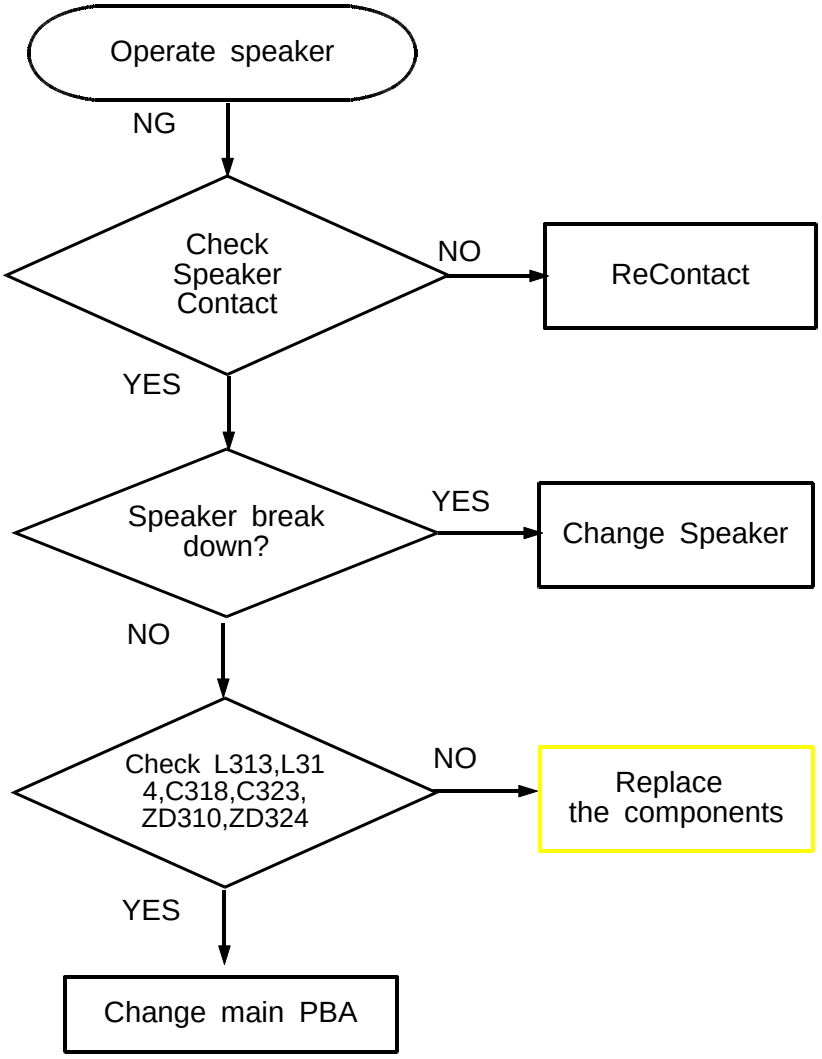


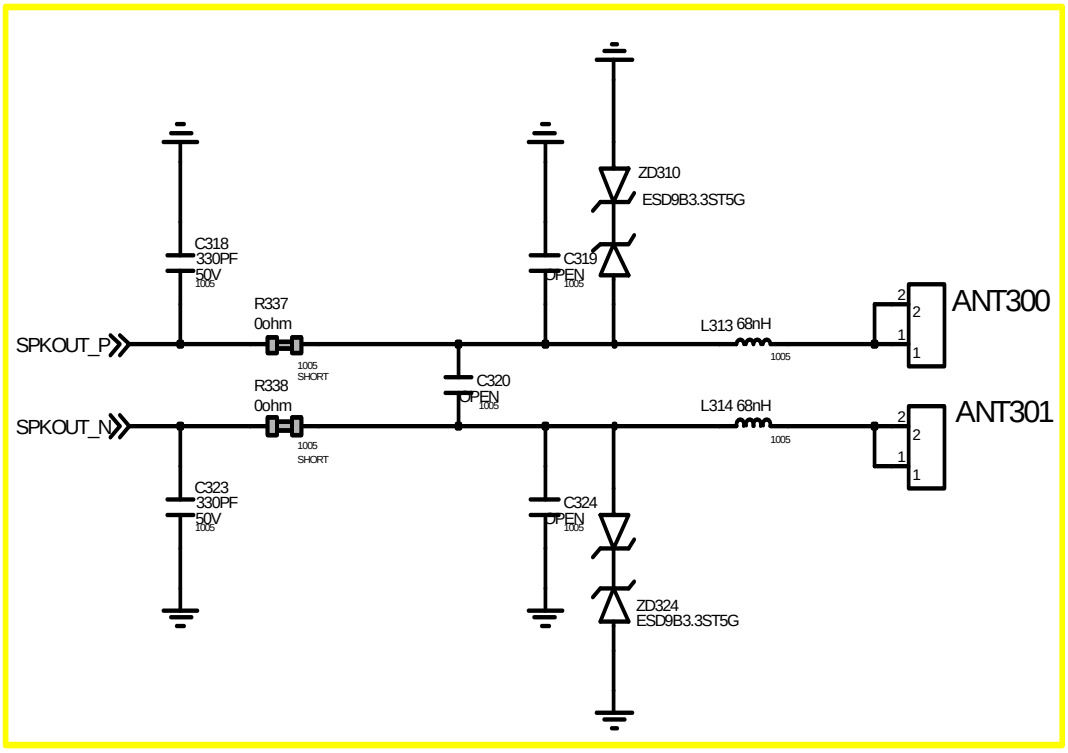
8-3-2. LCD Working

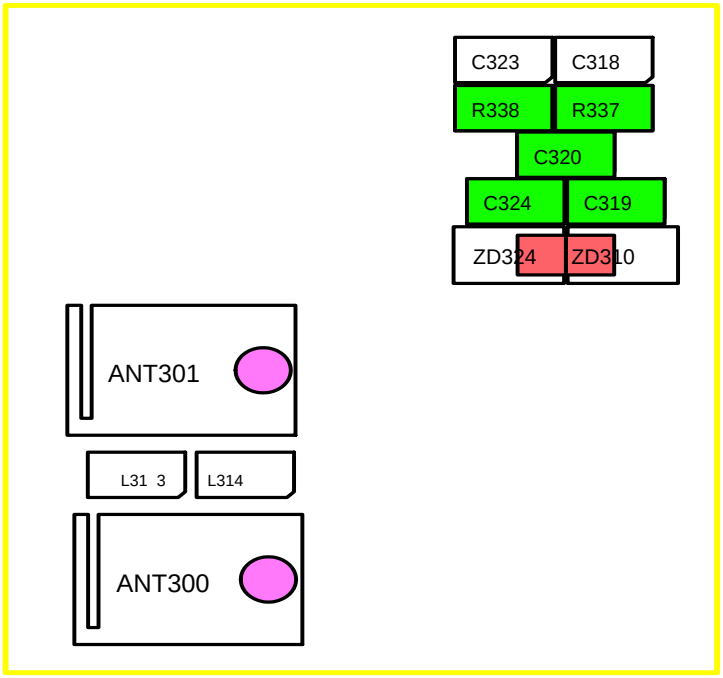




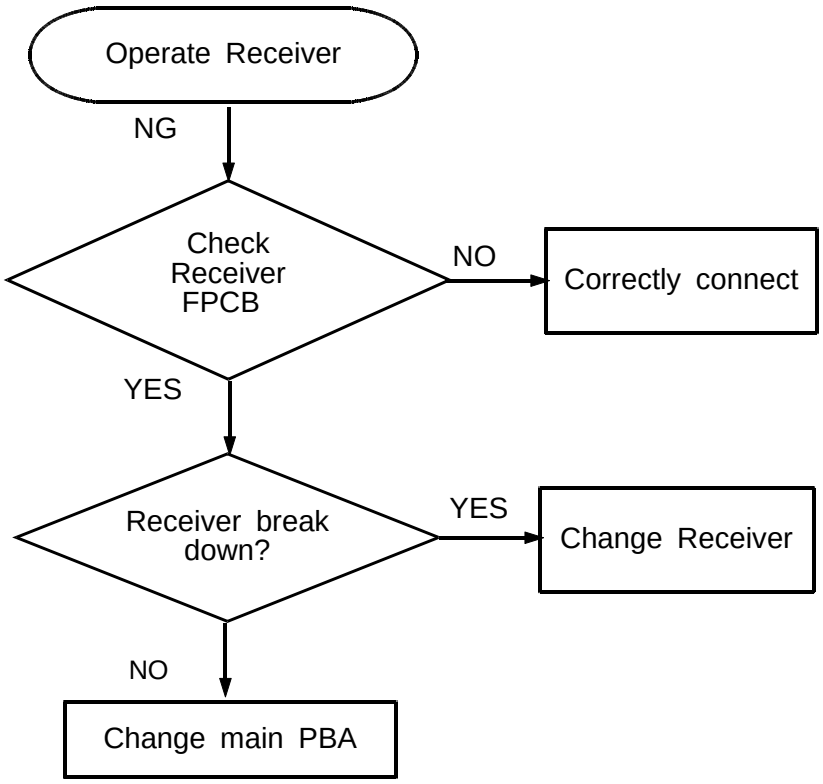
8-3-3. Speaker Working



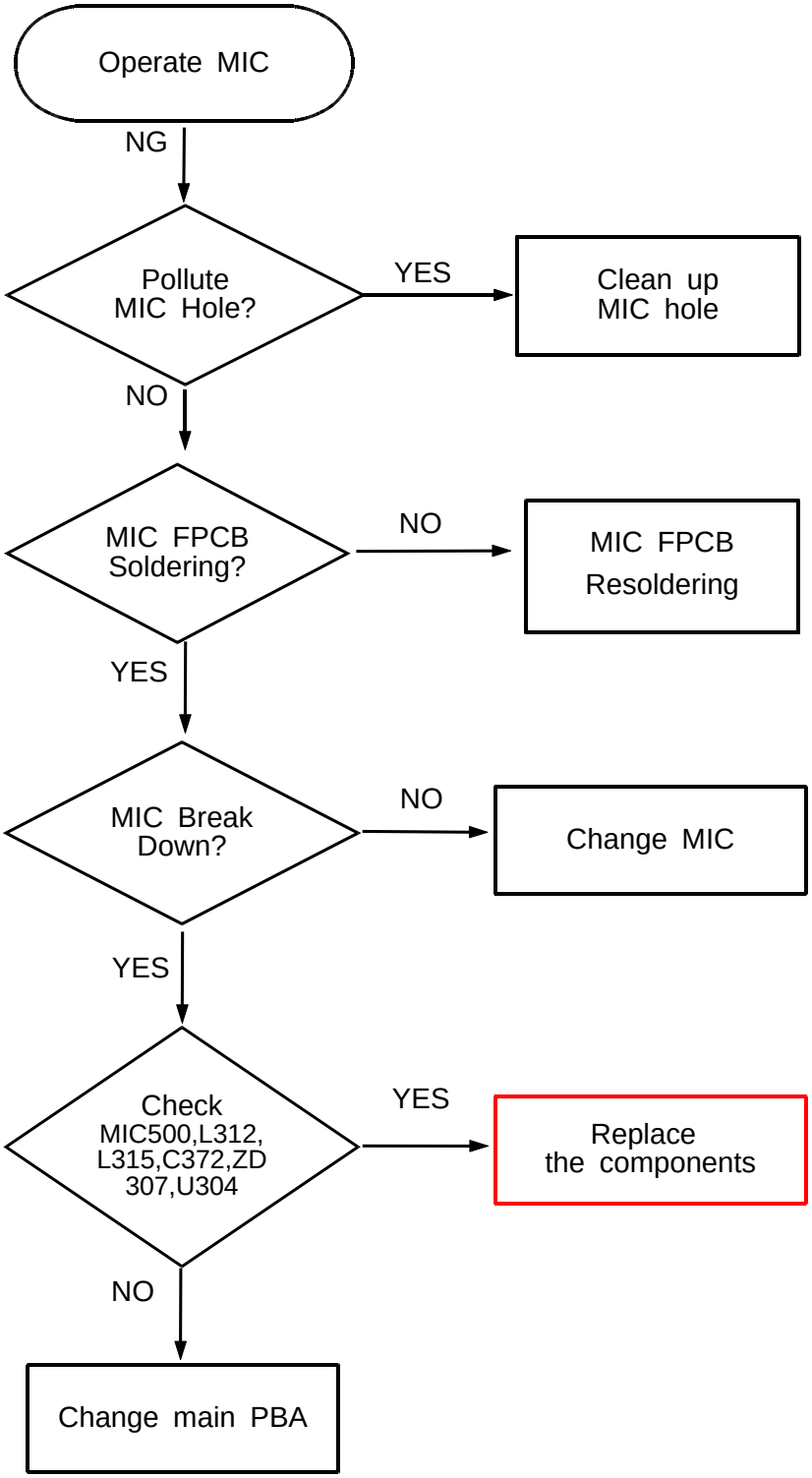


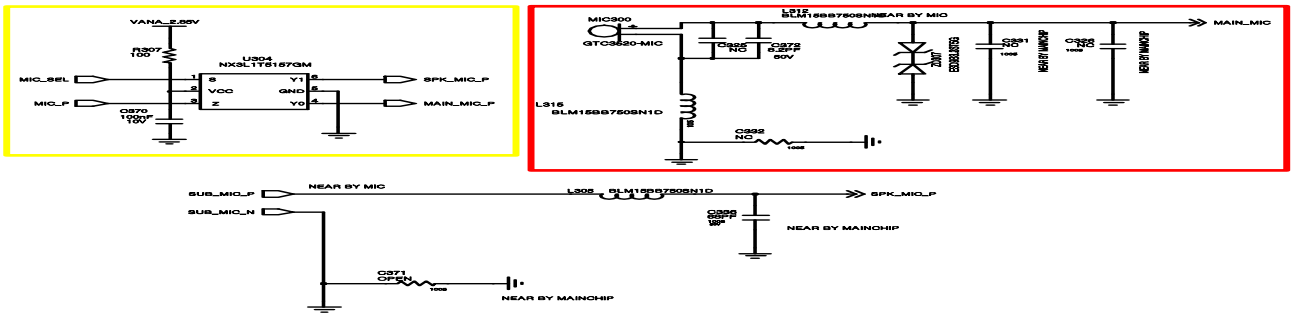


8-3-4. Receiver Working

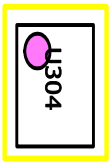


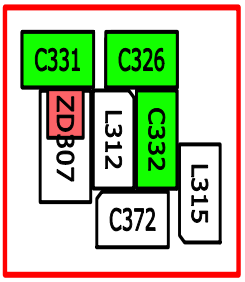
8-3-5. Main MIC Working

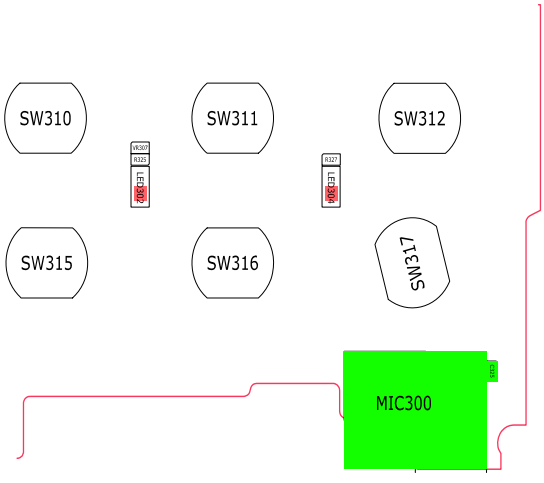




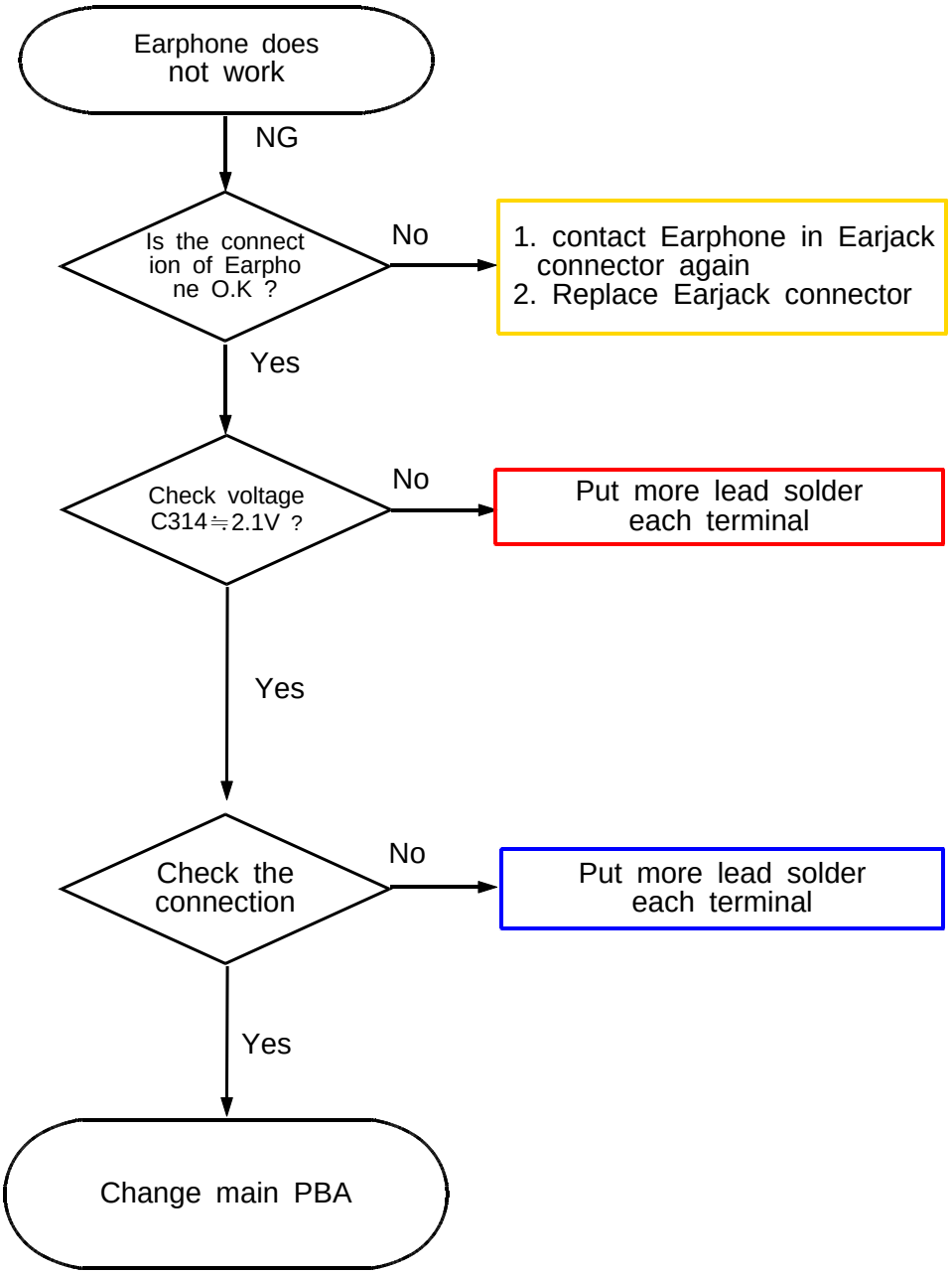
MASTER_JTAG_PAD

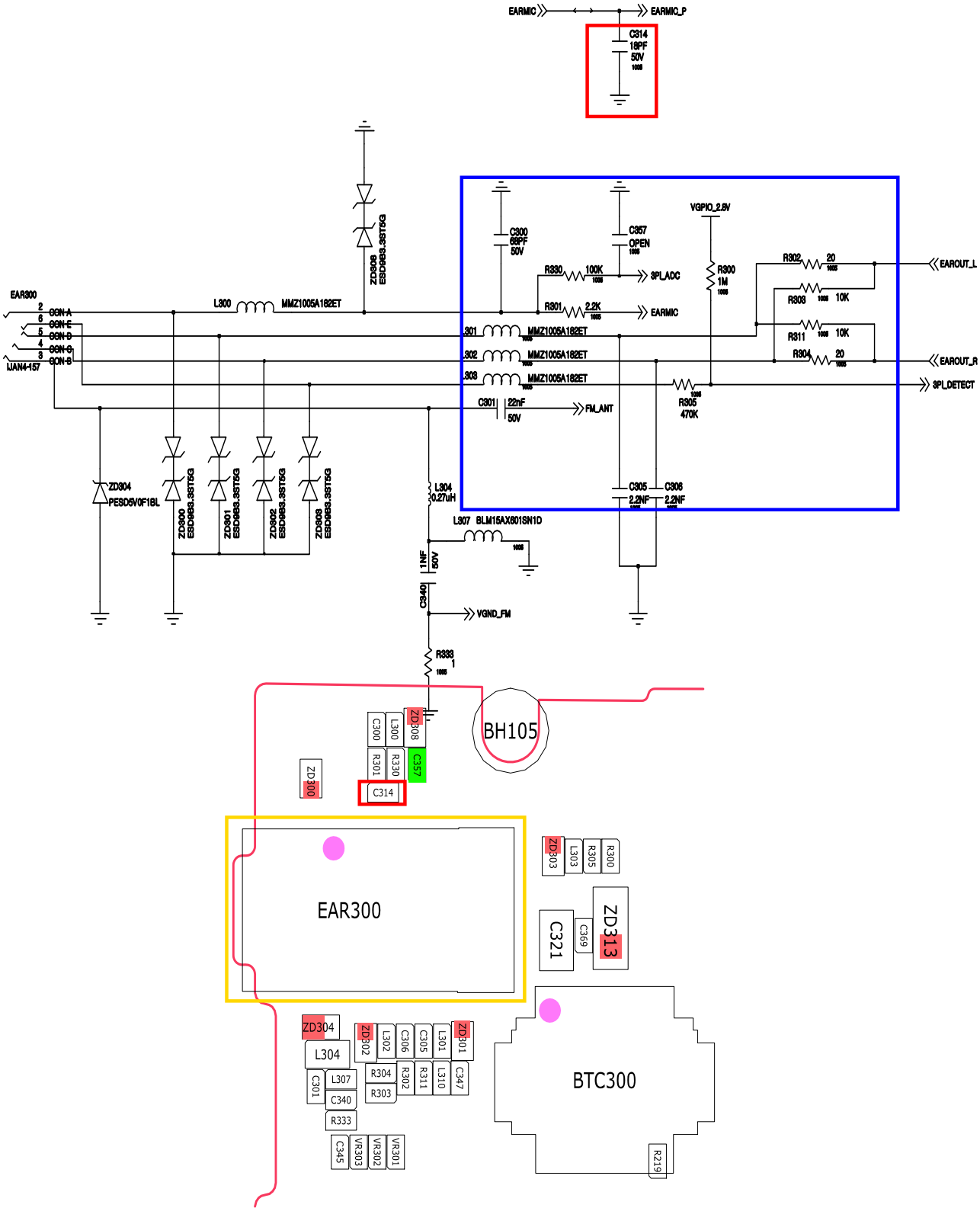




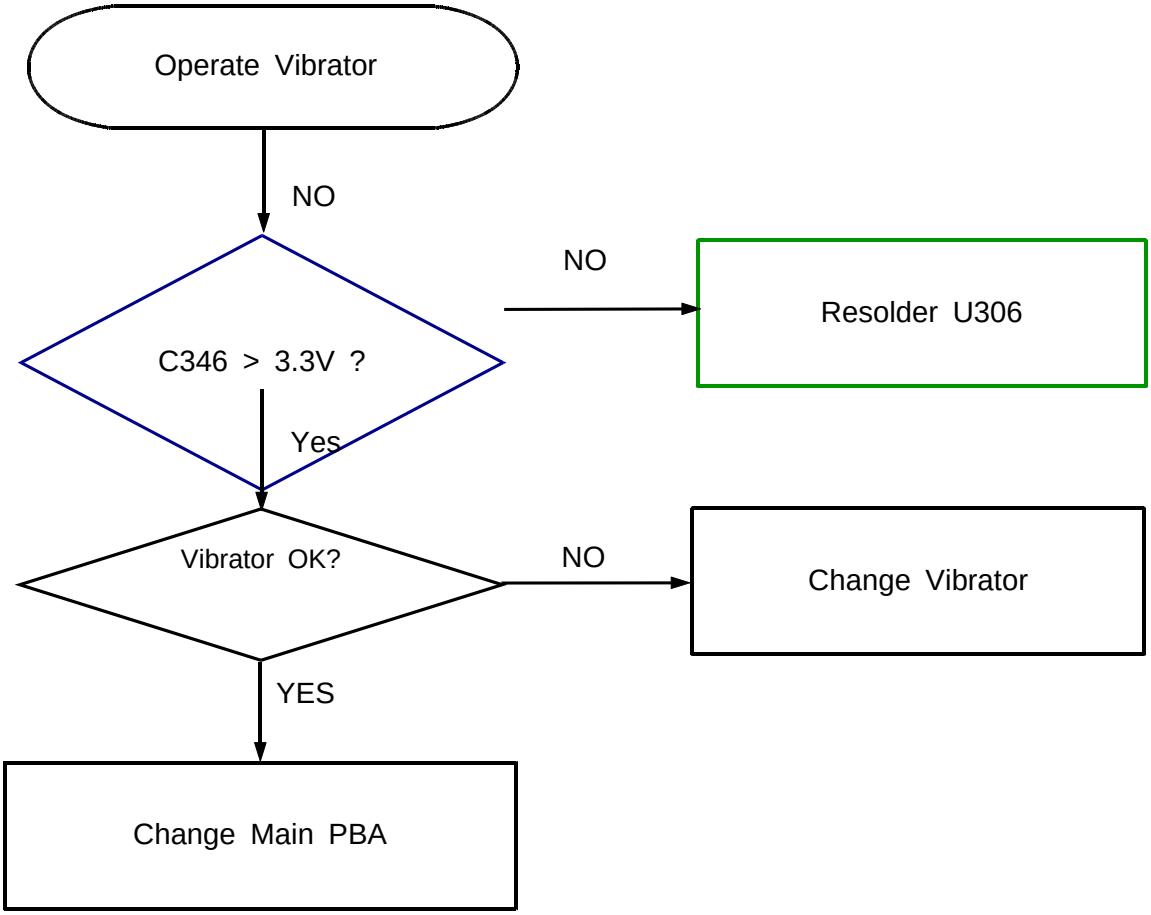


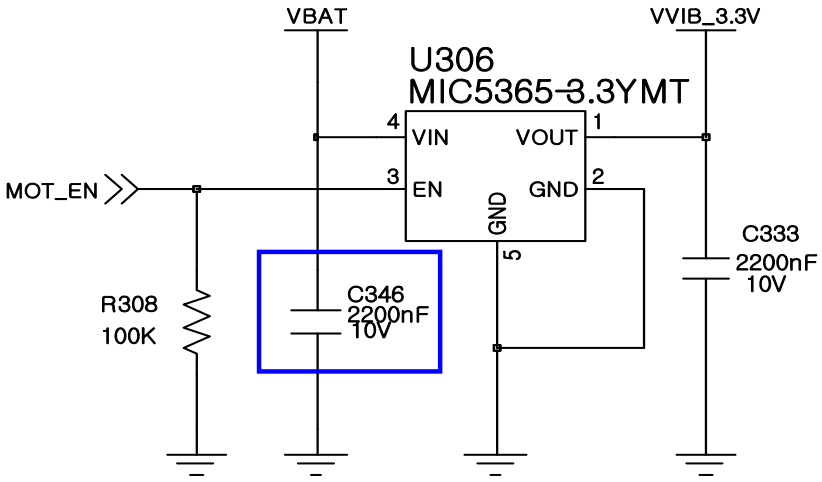
8-3-6.Earphone Working

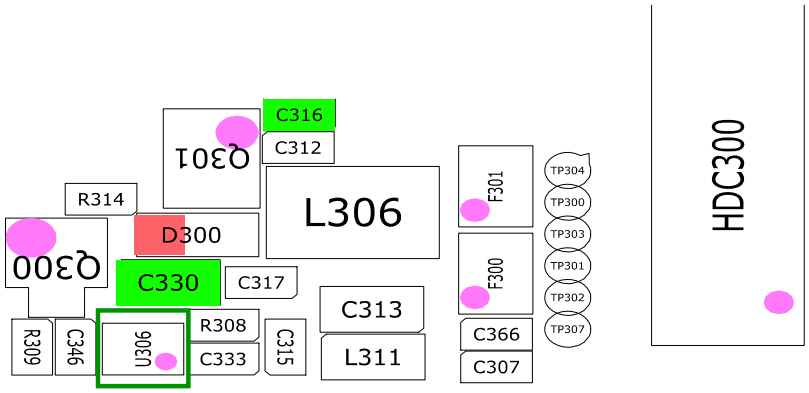




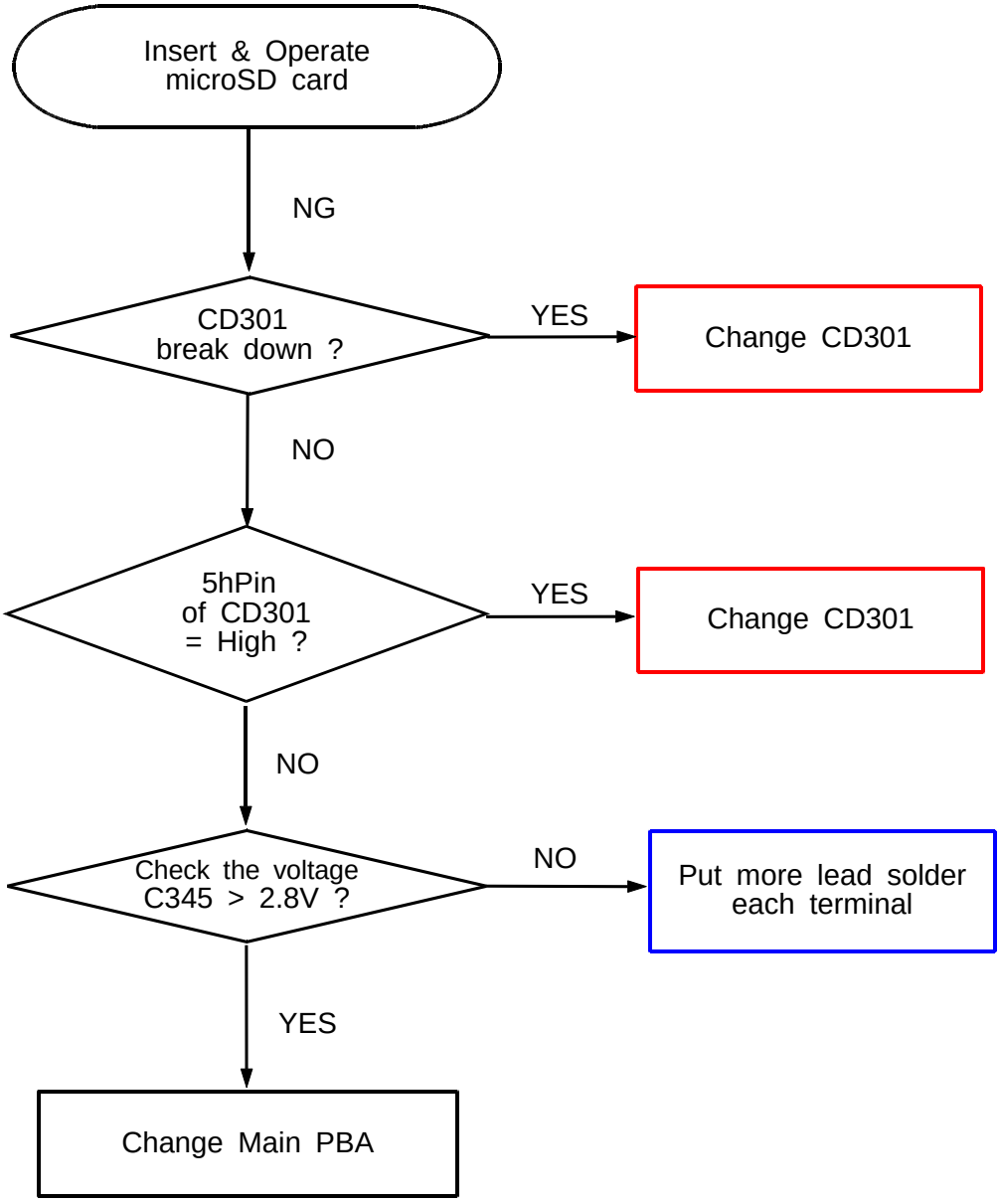
8-3-7. Vibrator Working

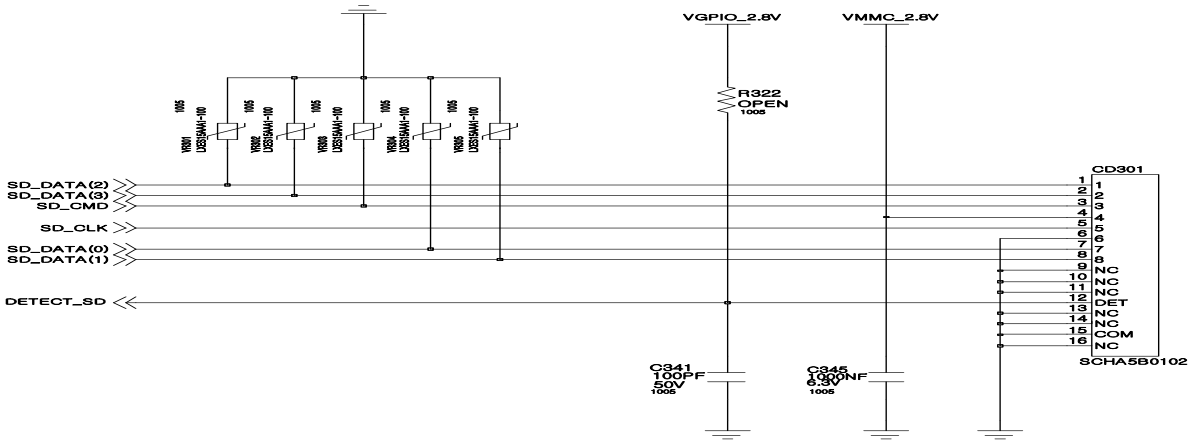


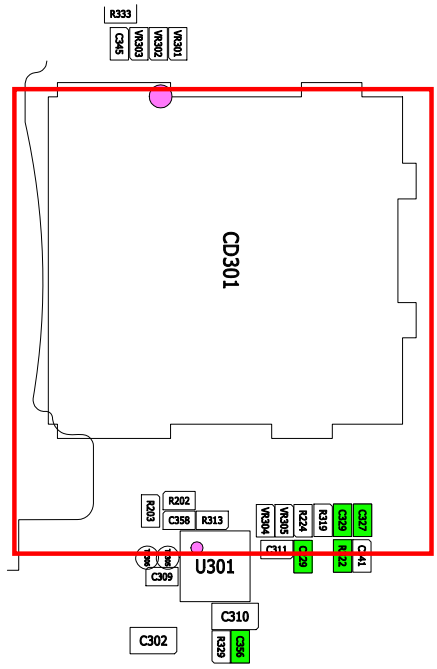




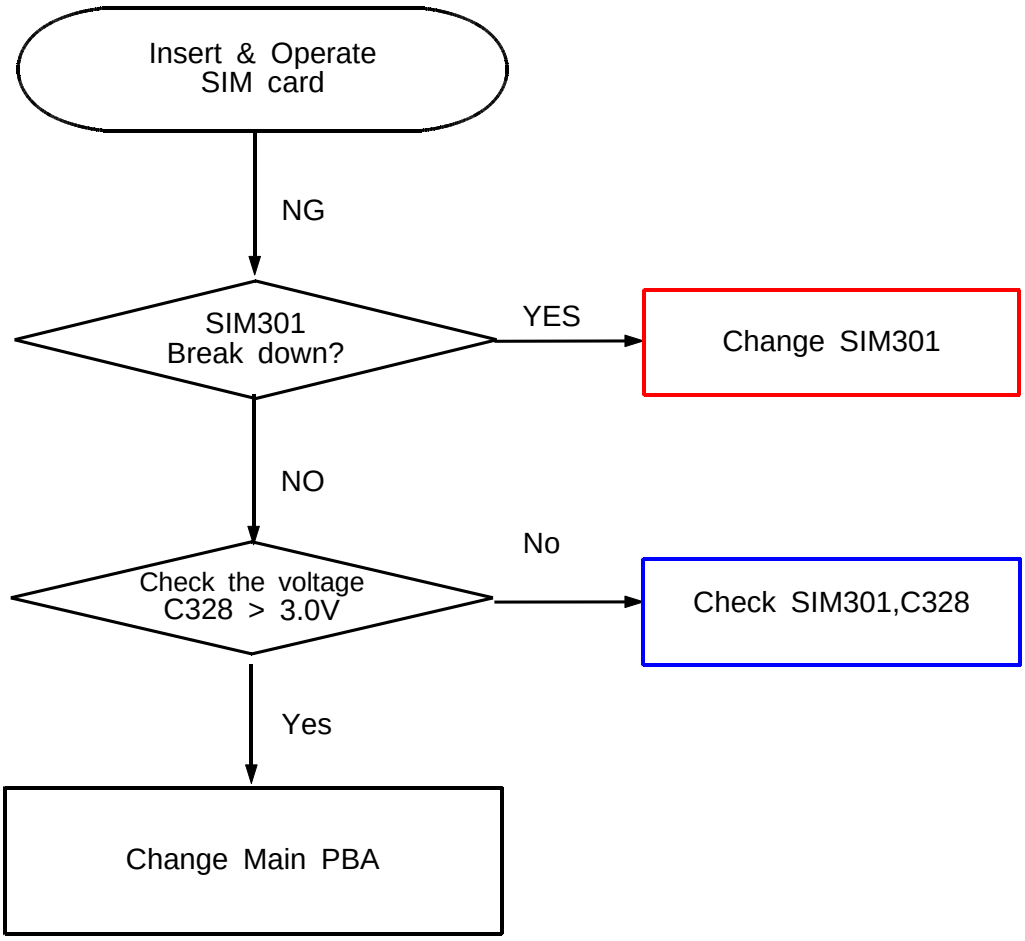
8-3-8. Micro SD Card Working

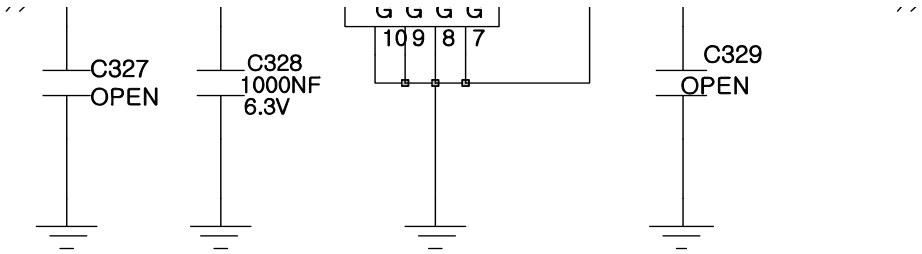




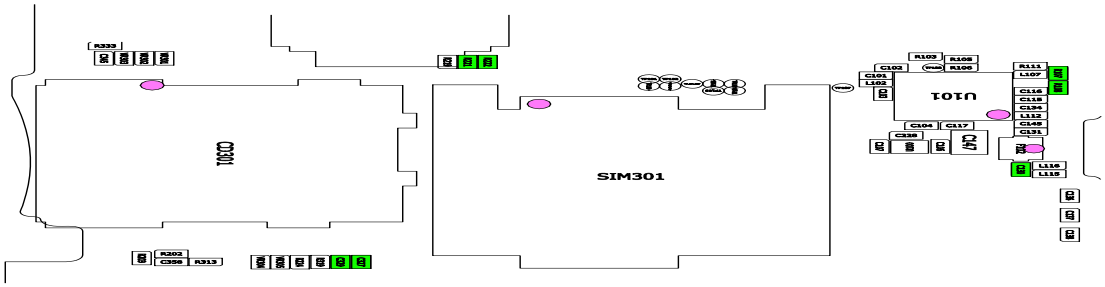


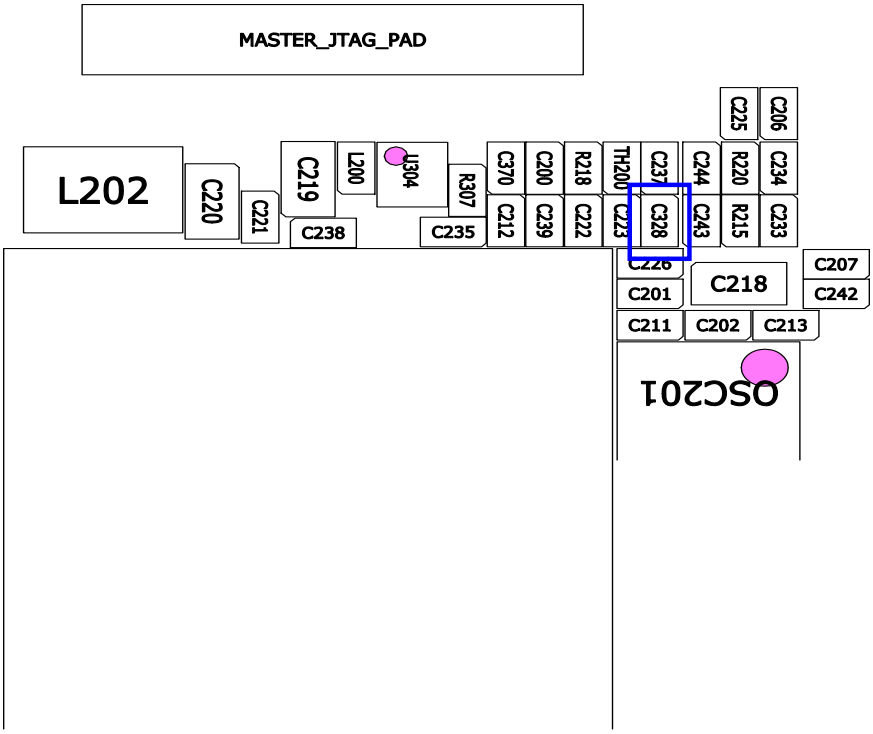
8-3-9. SIM Card Working



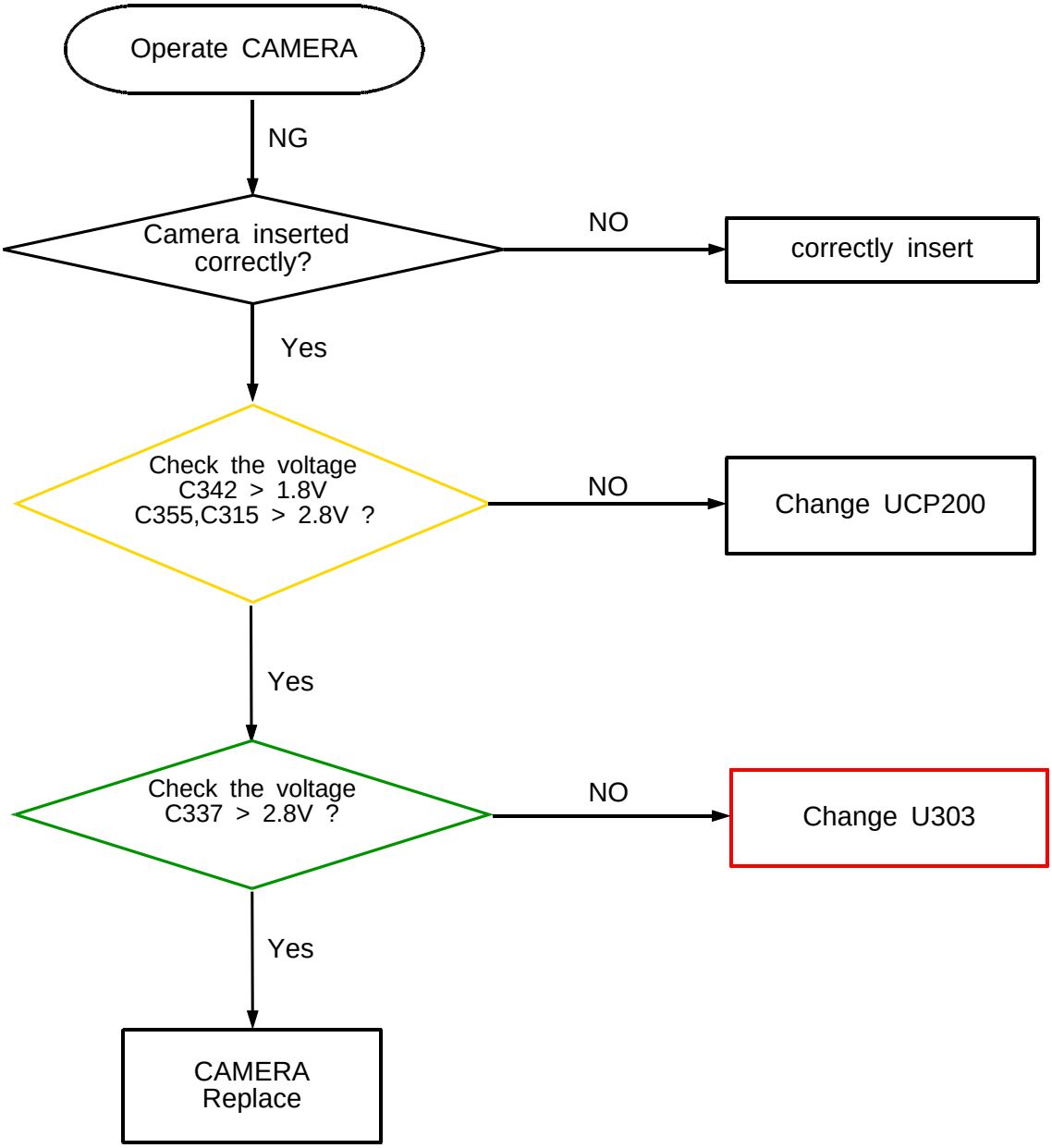


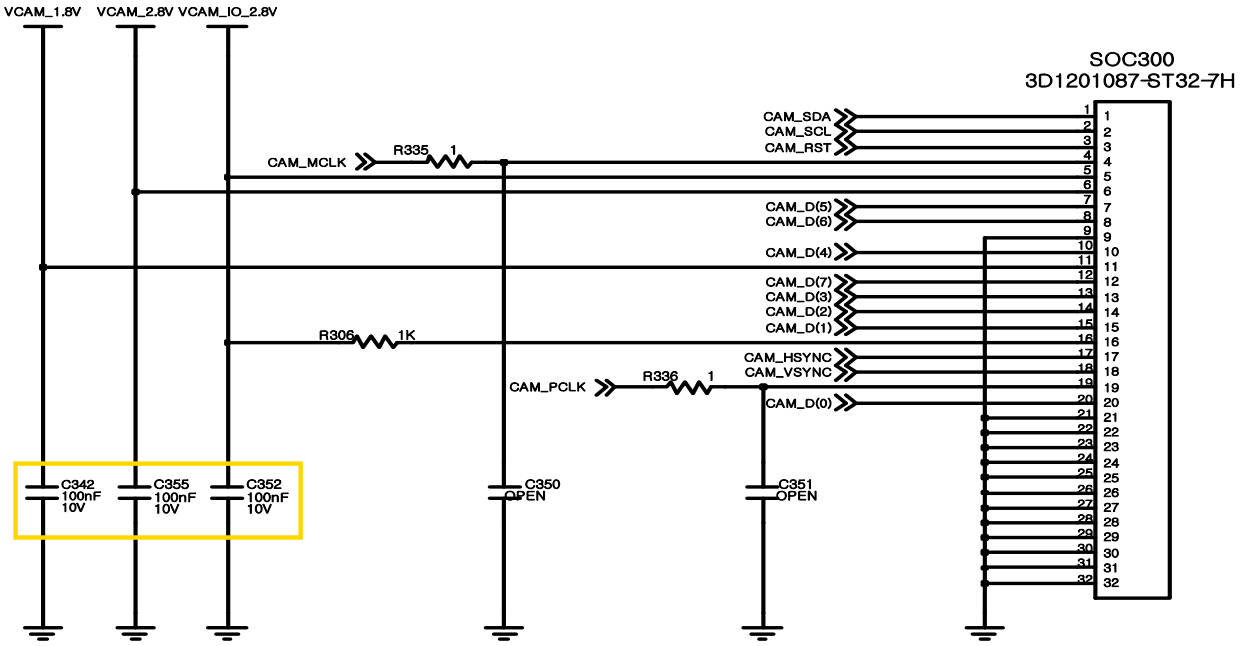
SIM

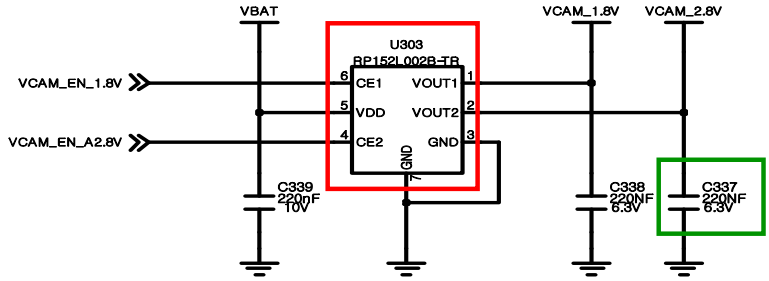


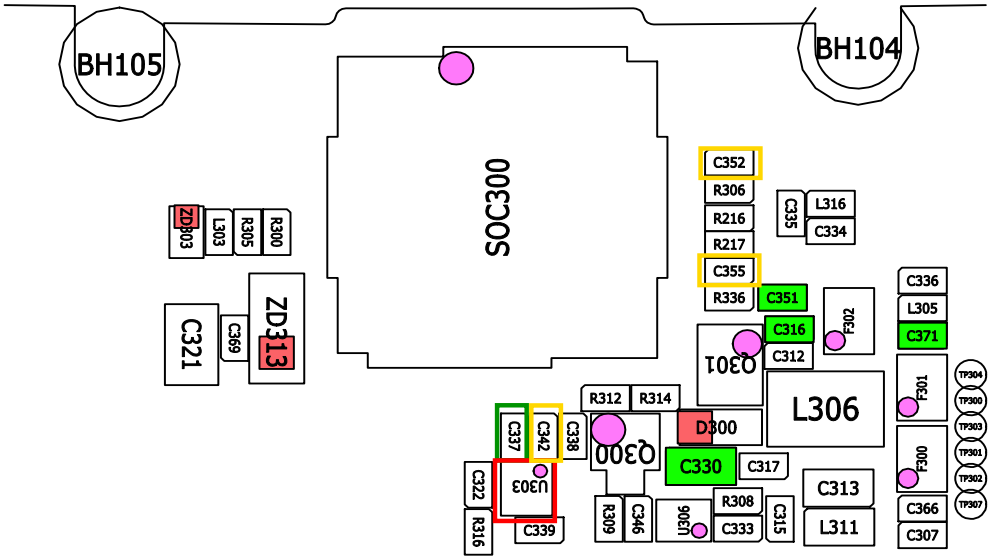


8-3-10 1.3M CAMERA Working





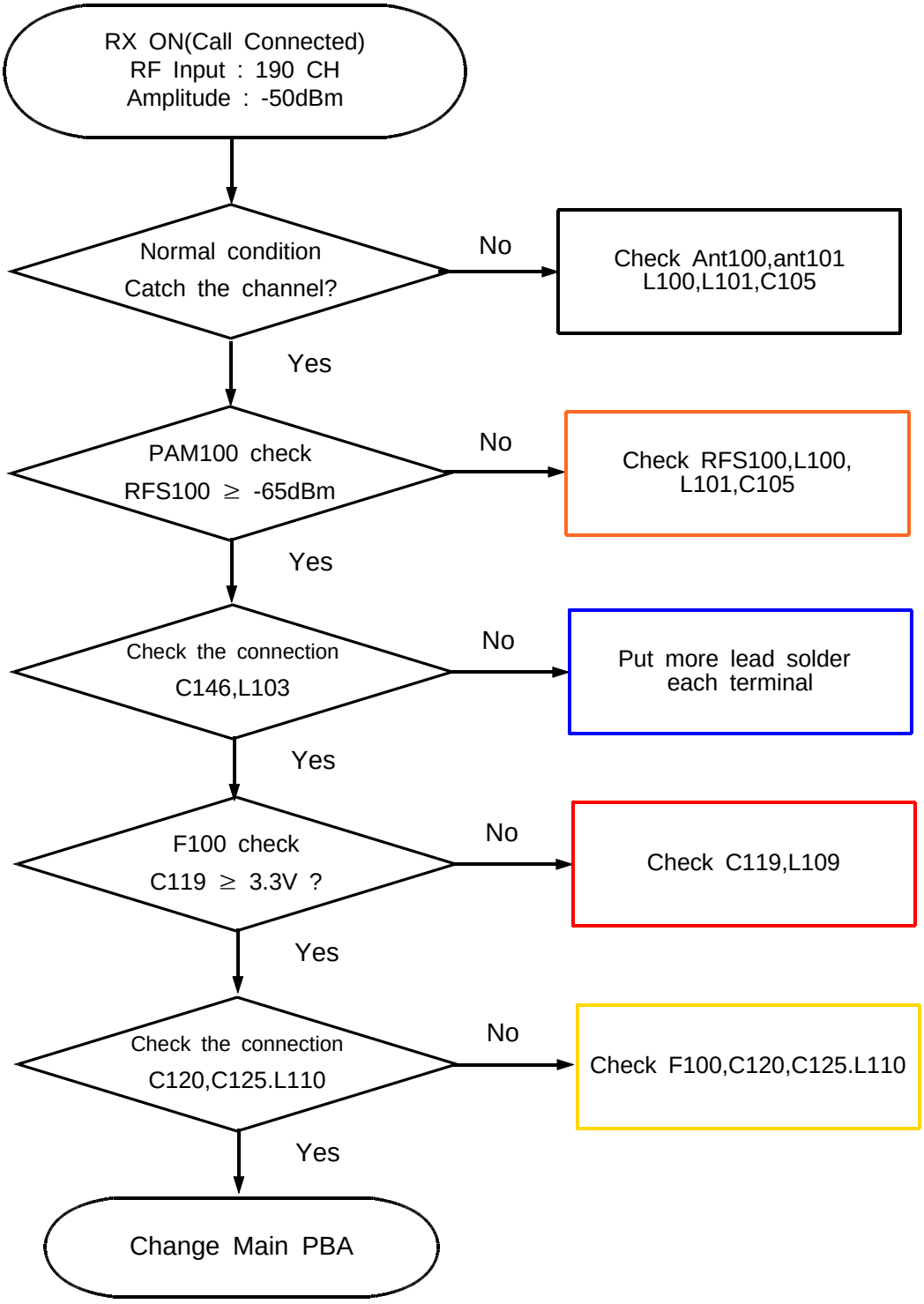




8-4-1. GSM850 RX

**If you check the tx chain,

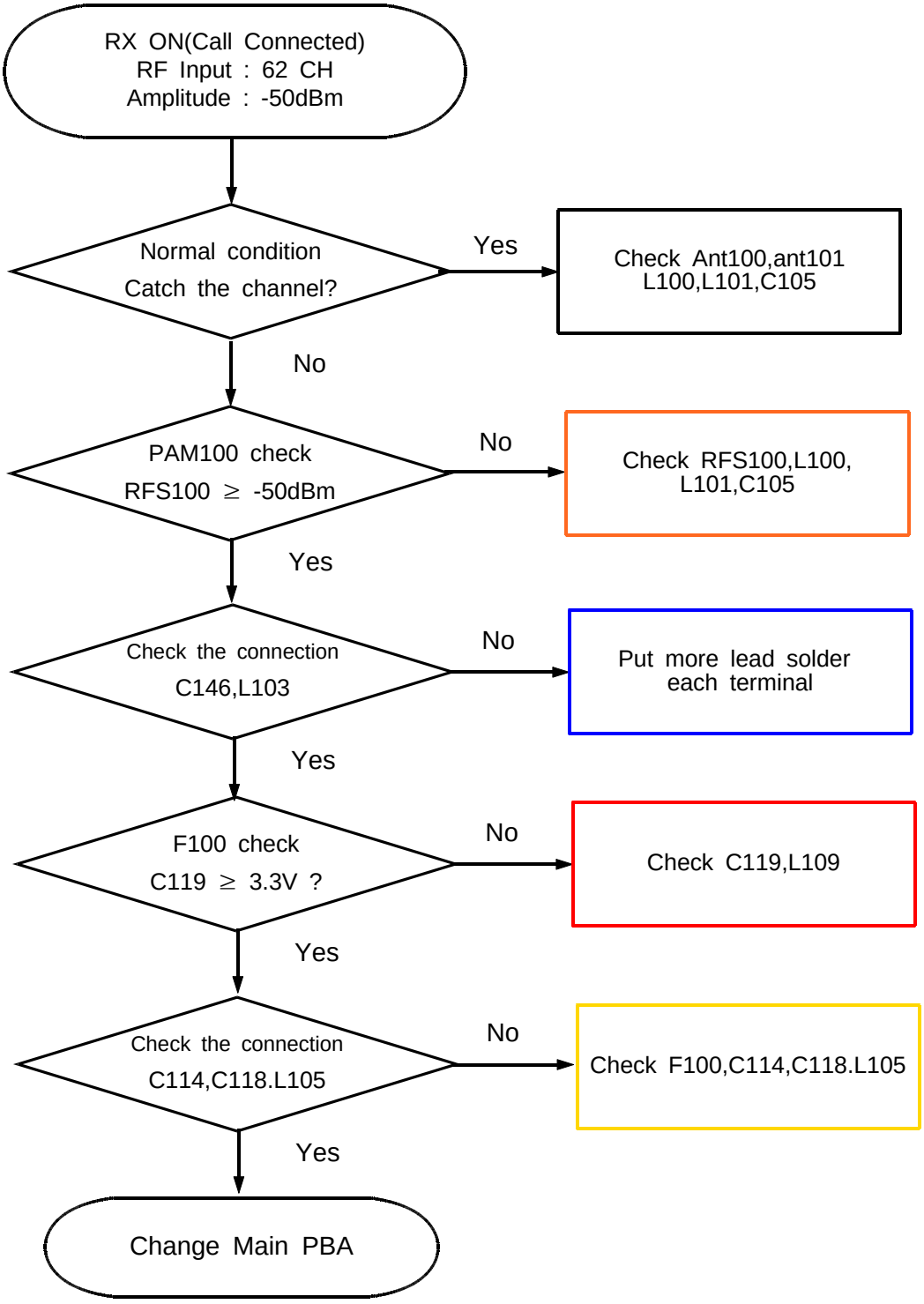
Check the not only RF Device but also resistor, inductor and capacitor.



8-4-2. GSM900 RX

**If you check the tx chain,

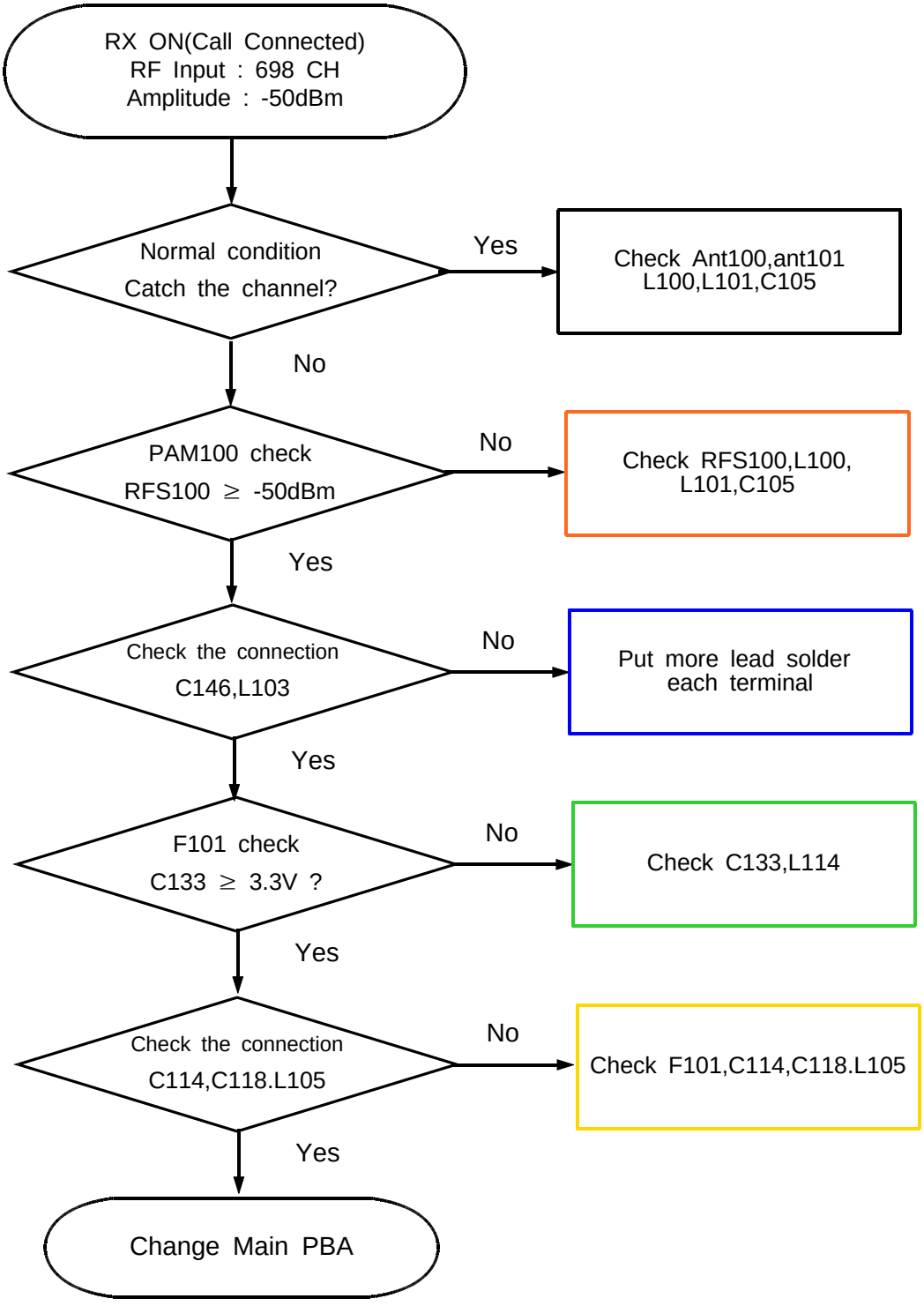
Check the not only RF Device but also resistor, inductor and capacitor.



8-4-3. DCS RX

**If you check the tx chain,

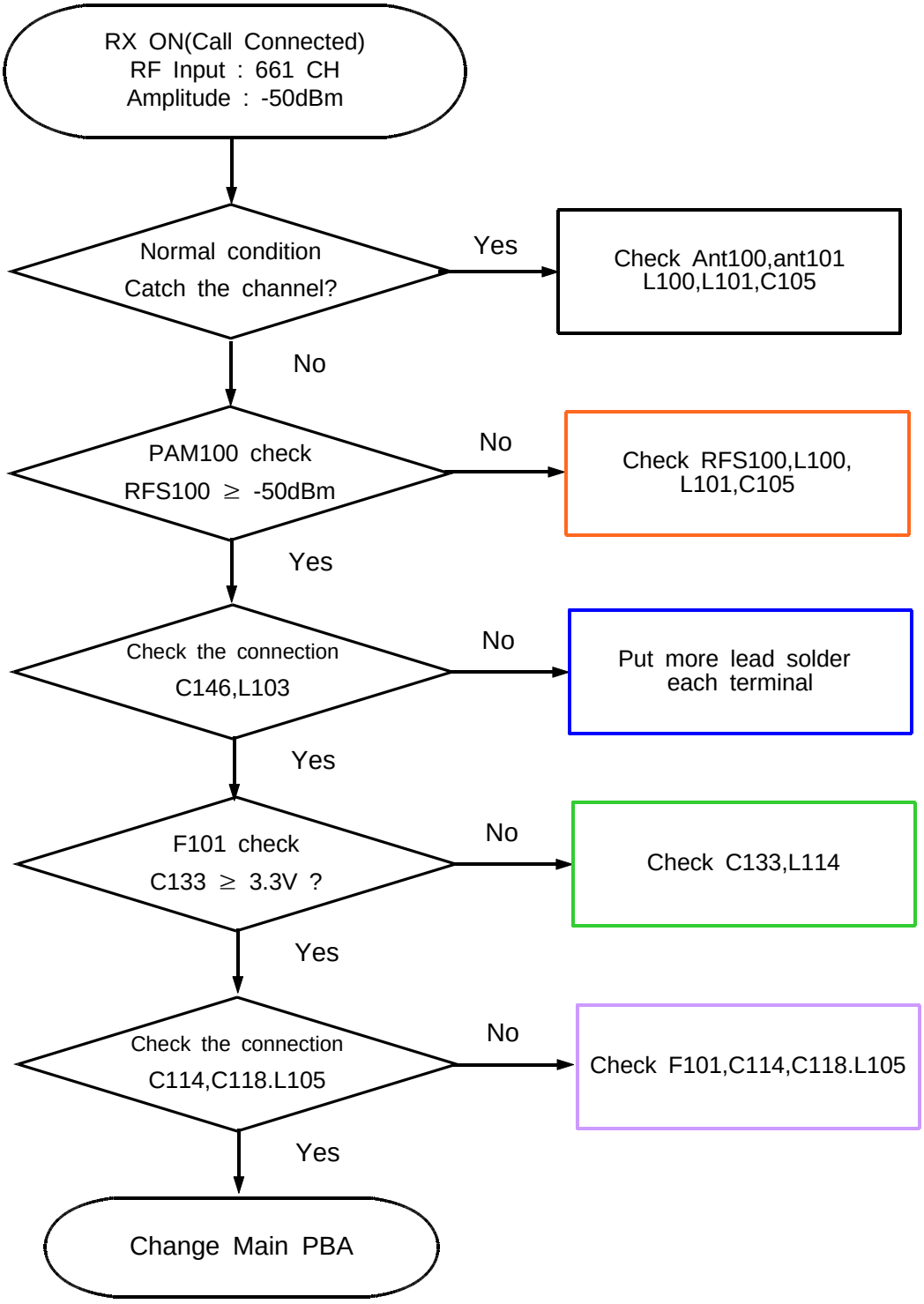
Check the not only RF Device but also resistor, inductor and capacitor.

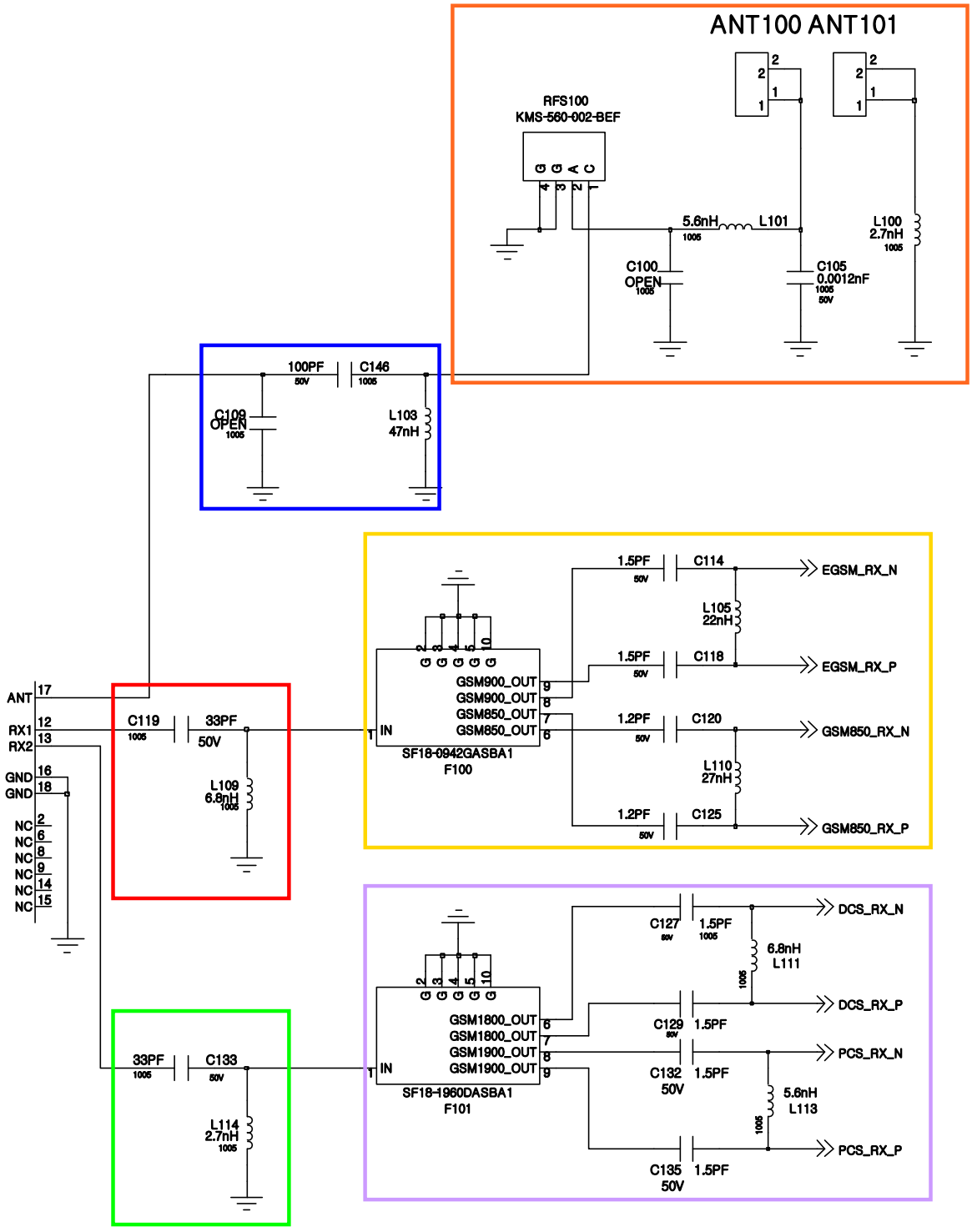


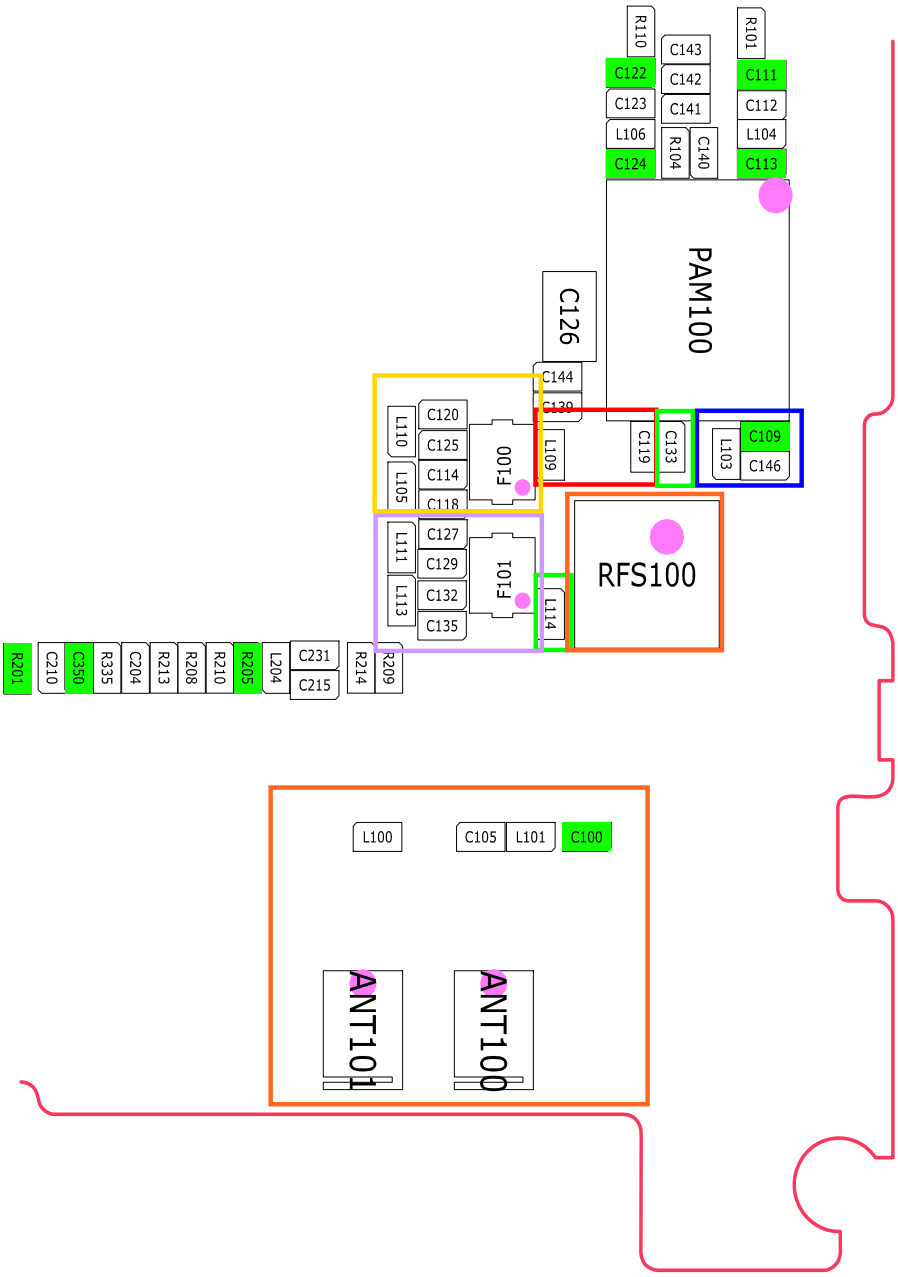
8-4-4. PCS RX

**If you check the tx chain,

Check the not only RF Device but also resistor, inductor and capacitor.



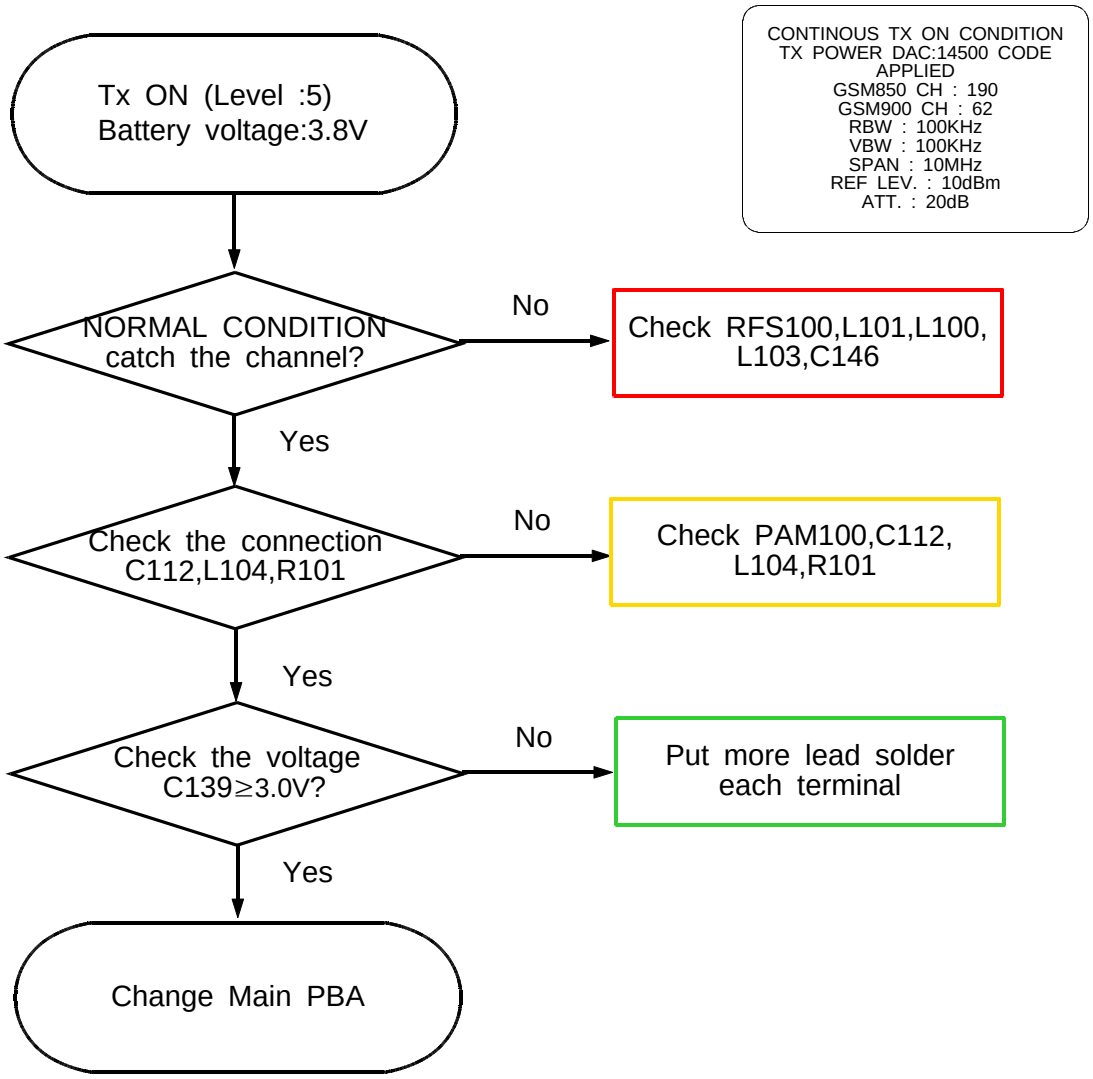




8-4-5. GSM850/900 TX

**If you check the tx chain,

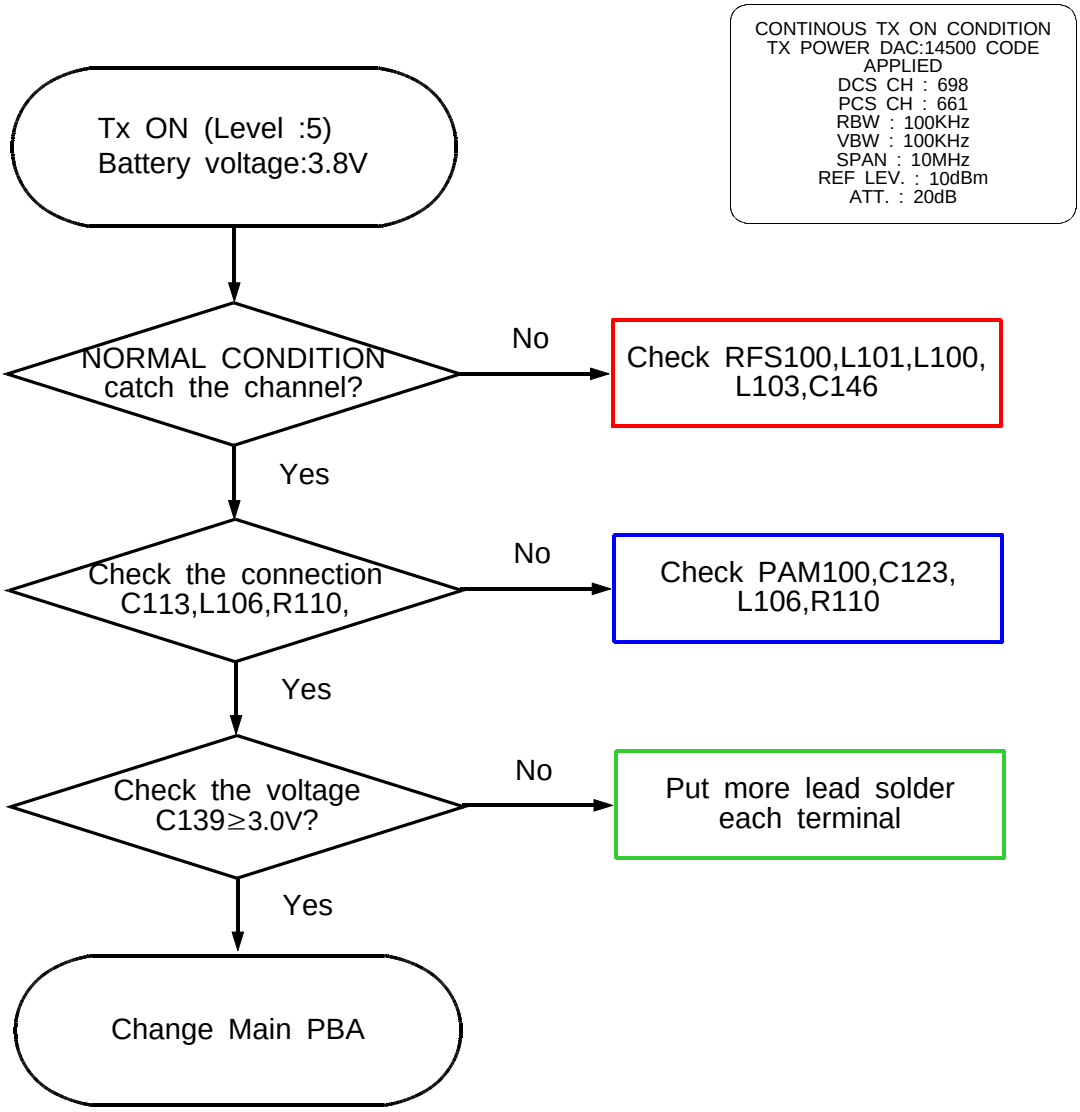
Check the not only RF Device but also resistor, inductor and capacitor.

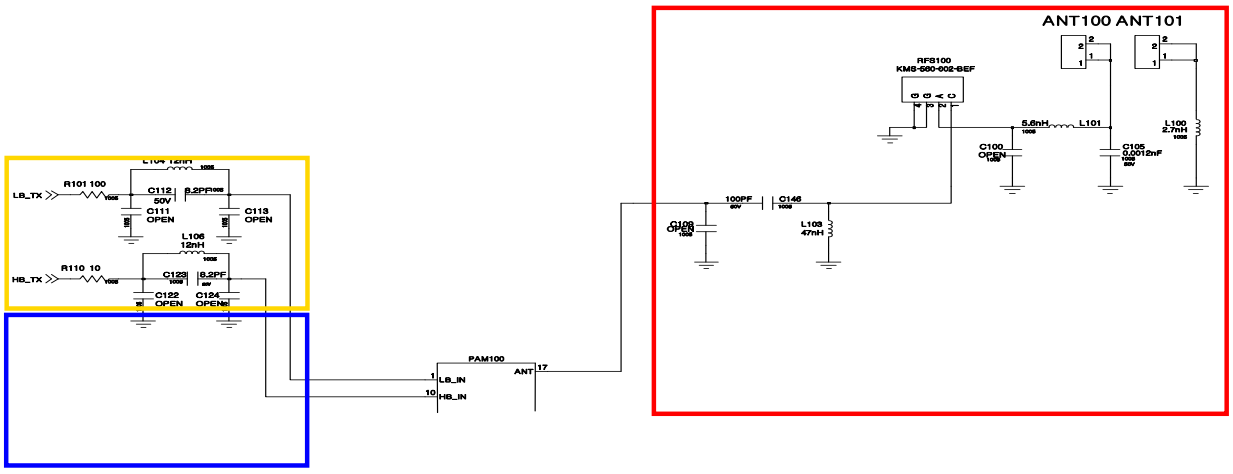


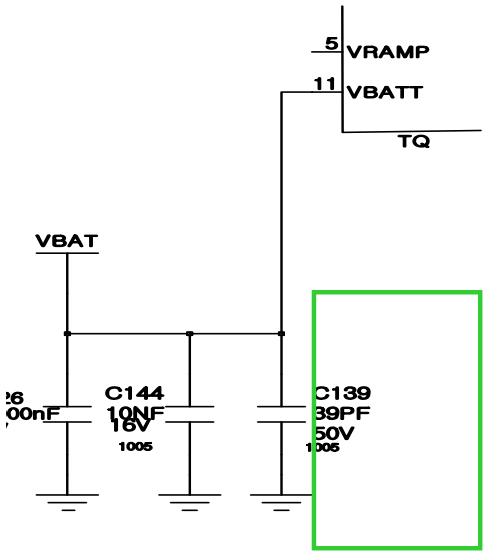
8-4-6. DCS/PCS TX

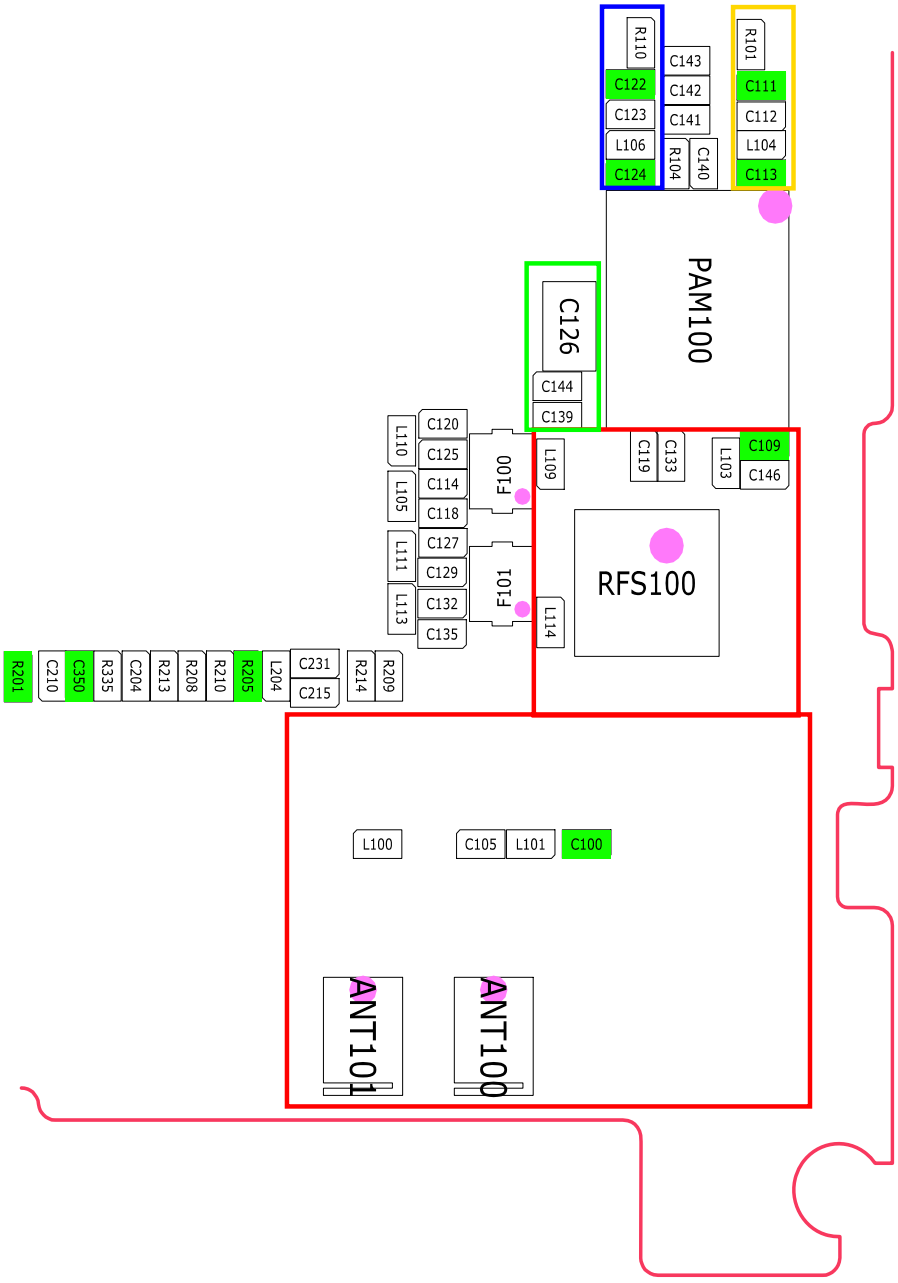
**If you check the tx chain,

Check the not only RF Device but also resistor, inductor and capacitor.

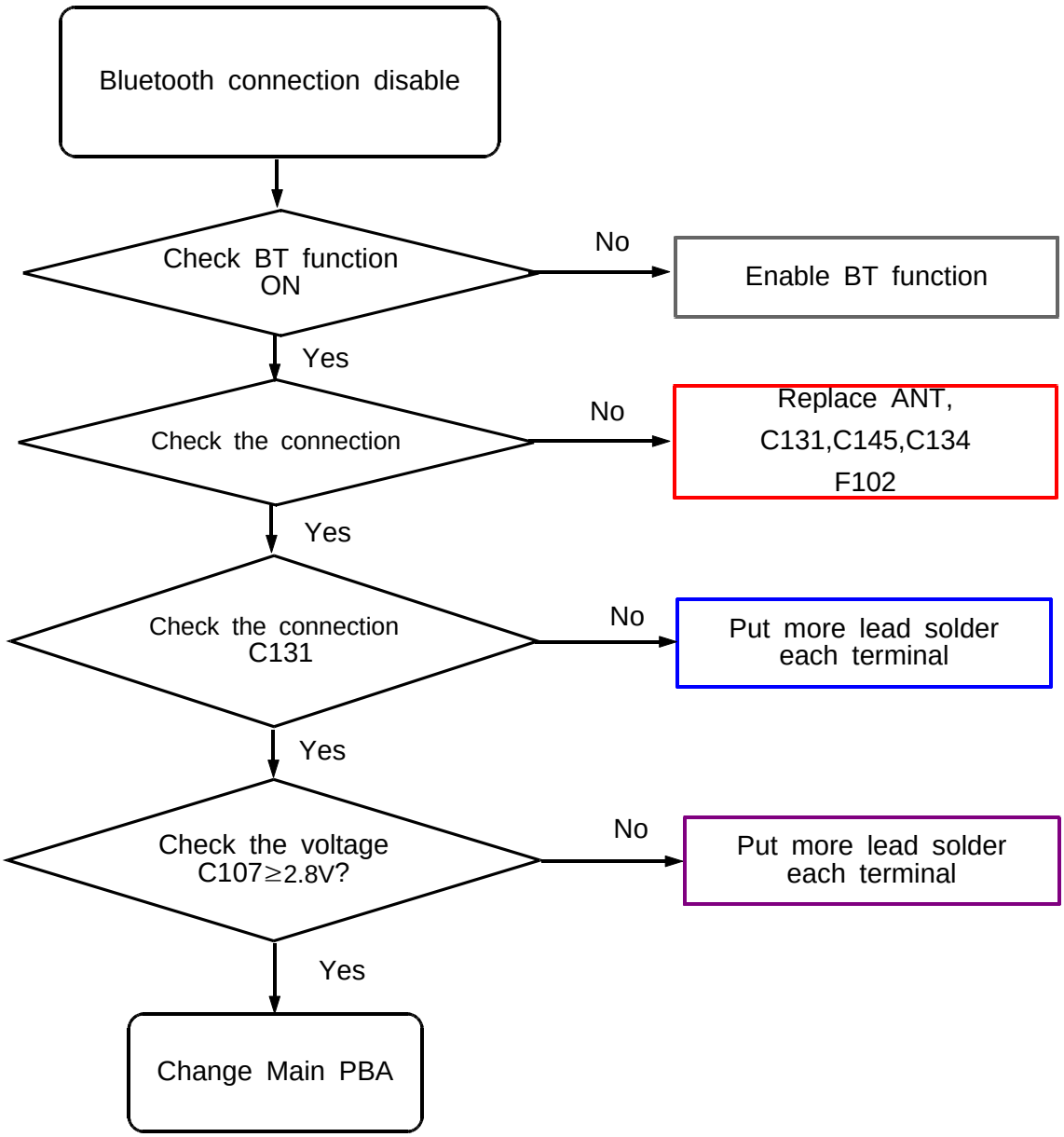


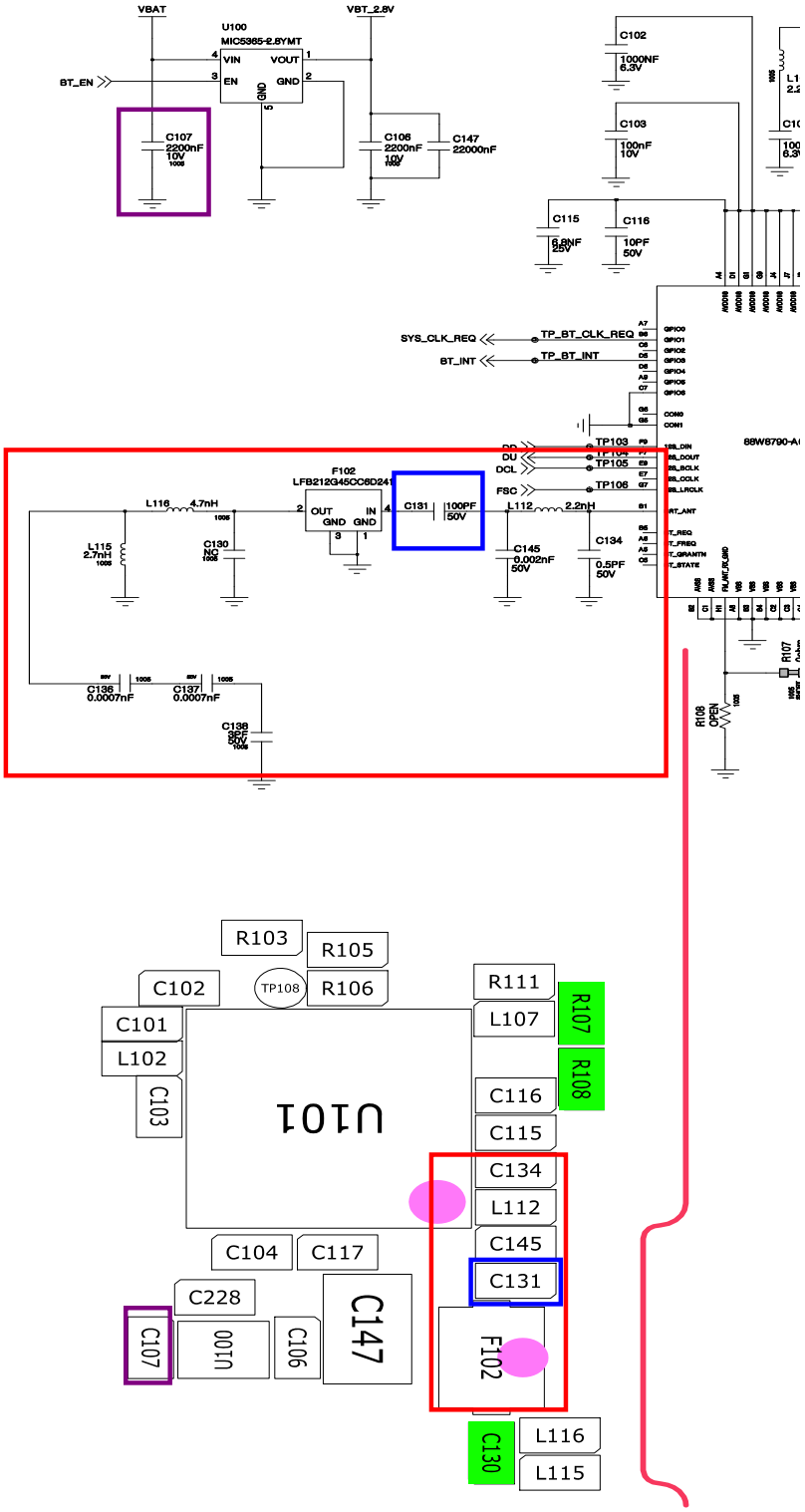






8-4-7. BLUETOOTH





8-4-8. FM RADIO