

**SAMSUNG**

# GSM TELEPHONE

## GT-P1010(GT-P1013 Common)

# **SERVICE** *Manual*

**GSM TELEPHONE**

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**Notice :**

All functionality, features, specifications and other product information provided in this document including, but not limited to, the benefits, design, pricing, components, performance, availability, and capabilities of the product are subject to change without notice or obligation. Samsung reserves the right to make changes to this document and the product described herein, at anytime, without obligation on Samsung to provide notification of such change.

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# 1. Safety Precautions

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## 1-1. Repair Precaution

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

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## 3. Operation Instruction and Installation

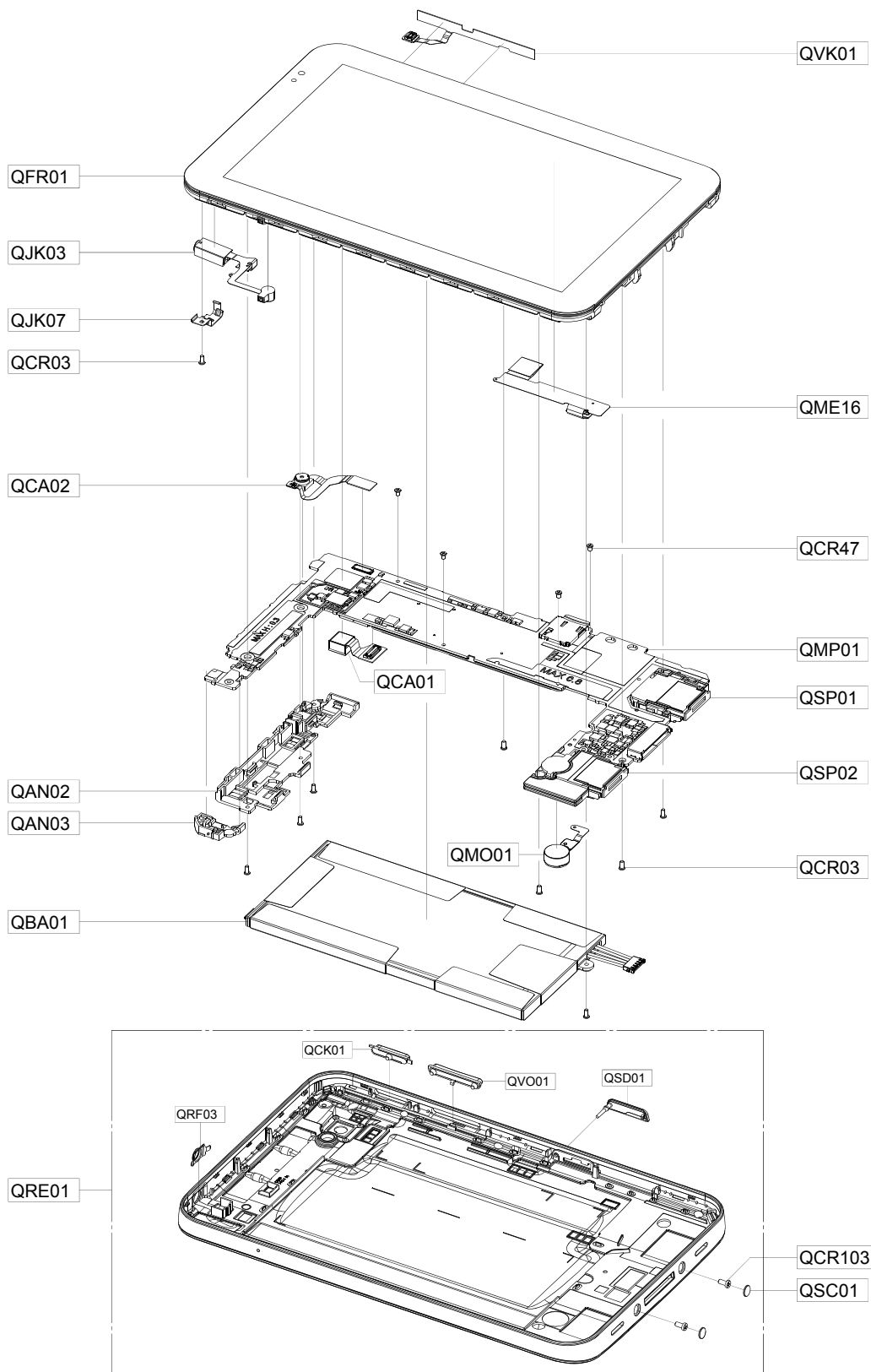
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### Main Function

- Android OS: Froyo
- 3MP AF with LED Flash
- 7.0" WSVGA TFT Full Touch (C-Type)
- A-GPS / BT v3.0 / USB v2.0 / WiFi (802.11 a/b/g/n)
- Recording 480p (D1, 720\*480) / Full HD Playback 1080p, DLNA
- Sensors: Accelation, Magnetic, Gyro, Light
- Additional :
  - Application store / Voice & Motion UI
  - Email/Push Email (Exchange ActiveSync) / Video Messaging Email
  - Multi-touch, Multi-task manager

## 4. Exploded View and Parts List

### 4-1. Cellular phone Exploded View



## 4-2. Cellular phone Parts list

Design LOC		Description	SEC CODE
QCR47		SCREW-MACHINE	6001-001695
QCR03		SCREW-MACHINE	6001-001811
QCR03		SCREW-MACHINE	6001-001811
QCR103		SCREW-MACHINE	6001-002656
QAN03		ANTENNA-GPS(GT-P1000)	GH42-02695A
QAN02		ANTENNA-WIFI (GT_P1010)	GH42-02807A
QBA01		SOFT BATTERY PACK-4000MAH,UNI,BLACK,MAIN	GH43-03457A
QSP01		MODULE-SPEAKER_R	GH59-09691A
QSP02		MODULE-SPEAKER_L	GH59-09692A
QJK03		KEY FPCB-EARJACK FPCB(SHW-M180S)	GH59-09694A
QME16		ASSY ETC-CON TO CON(GT_P1000)	GH59-09817A
QVK01		KEY FPCB-SIDE KEY(GT-P1000)	GH59-09830A
QJK07		IPR COVER-HOLDER_EARJACK	GH70-06456A
QSC01		TAPE-SCREW CAP	GH74-54595A
QMP01		A/S ASSY-PBA MAIN (COMM)	GH82-05571A
QCA01		ASSY CAMERA-MODULE(GTP1000_3M)	GH96-04944A
QCA02		ASSY CAMERA-MODULE(P1000_1.3M)	GH96-04949A
QFR01		MEA FRONT-LCD ASSY(P1010 WIFI_W)	GH97-12099A
QRE01		ASSY CASE-REAR(GT-P1010)	GH98-19465A
	QSD01	PMO COVER-SD_CARD_VZW	GH72-60980A
	QCK01	PMO KEY-POWER	GH72-61569A
	QRF03	ASSY DECO-EAR	GH98-18306A
	QVO01	ASSY KEY-VOLUME	GH98-18671A

## 5. MAIN Electrical Parts List

Design LOC	SEC CODE	Description
ANT200	3712-001361	CONNECTOR-TERMINAL
ANT201,ANT202	3712-001348	CONNECTOR-TERMINAL
BTC700	3711-007494	CONTNECTOR-HEADER
C200,C201,C740	2203-006839	C-CER,CHIP
C202,C203,C207,C208	2203-006872	C-CER,CHIP
C204	2203-005736	C-CER,CHIP
C205	2203-006439	C-CER,CHIP
C206,C428,C607,C616	0406-001413	C-CER,CHIP
C209	2203-006410	C-CER,CHIP
C210	2203-006968	C-CER,CHIP
C211	2203-006120	C-CER,CHIP
C212	2203-005725	C-CER,CHIP
C213,C324,C705,C714	2203-006872	C-CER,CHIP
C214	2203-006979	C-CER,CHIP
C216,C217,C219,C220	2203-007449	C-CER,CHIP
C218,C222,C223,C231	2203-006423	C-CER,CHIP
C221,C224,C225,C711	2203-007449	C-CER,CHIP
C226,C709	2203-000233	C-CER,CHIP
C227,C228	2203-006681	C-CER,CHIP
C232,C620,C717,C719	2203-006423	C-CER,CHIP
C233,C234,C423,C800	2203-002709	C-CER,CHIP
C236,C408,C415,C416	2203-001153	C-CER,CHIP
C237,C243	2203-006305	C-CER,CHIP
C238,C533,C702,C706	2203-007271	C-CER,CHIP
C239,C321,C612,C613	2203-007775	C-CER,CHIP
C244	2203-005234	C-CER,CHIP
C245,C317,C318,C319	2203-006562	C-CER,CHIP
C246,C322,C323	2203-006260	C-CER,CHIP
C247,C248	2203-006318	C-CER,CHIP
C326,C622,C629,C732	2203-006190	C-CER,CHIP
C344,C825	2203-007317	C-CER,CHIP
C400,C401,C412,C413	2203-006562	C-CER,CHIP
C404,C405,C419,C420	2203-000627	C-CER,CHIP
C407,C411,C414,C436	2203-000425	C-CER,CHIP
C409,C728,C729,C735	2203-000386	C-CER,CHIP
C421,C424,C427,C430	2203-006562	C-CER,CHIP

Design LOC	SEC CODE	Description
C422,C821,C822	2203-006208	C-CER,CHIP
C425,C426	2203-006137	C-CER,CHIP
C429,C437,C438,C439	2203-001153	C-CER,CHIP
C431,C432,C433,C434	2203-006562	C-CER,CHIP
C435,C442,C443,C444	2203-006562	C-CER,CHIP
C440,C441	2203-000425	C-CER,CHIP
C445,C504,C505,C523	2203-006562	C-CER,CHIP
C507,C749,C812,C845	2203-007270	C-CER,CHIP
C514	2203-007756	C-CER,CHIP
C524,C526,C527,C535	2203-006562	C-CER,CHIP
C532	2203-006978	C-CER,CHIP
C536,C707,C739,C763	2203-006562	C-CER,CHIP
C600	2203-006194	C-CER,CHIP
C601	2203-006647	C-CER,CHIP
C602,C603,C604,C605	2203-006048	C-CER,CHIP
C606,C614,C621,C624	2203-006399	C-CER,CHIP
C608,C609,C610,C611	2203-006048	C-CER,CHIP
C615,C617,C618,C619	2203-006048	C-CER,CHIP
C623,C625,C626,C627	2203-006048	C-CER,CHIP
C628	0406-001413	C-CER,CHIP
C630,C631,C632,C634	2203-006399	C-CER,CHIP
C633,C723,C724,C770	2203-006048	C-CER,CHIP
C635,C704,C708,C710	2203-006399	C-CER,CHIP
C636,C846	2203-006257	C-CER,CHIP
C637,C700	2203-006648	C-CER,CHIP
C701	2203-000278	C-CER,CHIP
C703	2203-007230	C-CER,CHIP
C718,C722,C736,C738	2203-007279	C-CER,CHIP
C720,C725	2203-007693	C-CER,CHIP
C721,C743,C758,C764	2203-006399	C-CER,CHIP
C726	2203-000725	C-CER,CHIP
C727,C733,C751,C765	2203-006824	C-CER,CHIP
C730,C731	2203-007240	C-CER,CHIP
C734,C759,C760	2203-007133	C-CER,CHIP
C737,C741	2203-006890	C-CER,CHIP
C742,C809	2203-007775	C-CER,CHIP



Design LOC	SEC CODE	Description
C744,C745,C757,C762	2203-007271	C-CER,CHIP
C746	2203-006324	C-CER,CHIP
C747,C750,C752,C753	2203-006872	C-CER,CHIP
C748,C754,C761,C851	2203-007449	C-CER,CHIP
C755,C756,C772,C813	2203-006872	C-CER,CHIP
C766	2203-006841	C-CER,CHIP
C769,C773,C774,C801	2203-000254	C-CER,CHIP
C771,C805,C807,C810	2203-006562	C-CER,CHIP
C775	2203-006399	C-CER,CHIP
C802,C804,C847	2203-000254	C-CER,CHIP
C803,C815,C816,C819	2203-002709	C-CER,CHIP
C806,C808,C844,C849	2203-006048	C-CER,CHIP
C811,C836	2203-006562	C-CER,CHIP
C814,C837,C838,C839	2203-006872	C-CER,CHIP
C817,C818,C827,C854	2203-007271	C-CER,CHIP
C820	2203-002709	C-CER,CHIP
C826	2203-007269	C-CER,CHIP
C829	2203-003054	C-CER,CHIP
C832,C833	2203-005057	C-CER,CHIP
C840,C841,C842,C843	2203-006872	C-CER,CHIP
C848	2203-006824	C-CER,CHIP
C850,C852,C853	2203-006048	C-CER,CHIP
C855,C856,C857,C858	2203-007271	C-CER,CHIP
C859	2203-007279	C-CER,CHIP
CD300	3709-001575	CONNECTOR-CARD EDGE
D301,D302,D404,D501	0406-001239	DIODE-TVS
D400,D401,D402,D403	0406-001375	DIODE-TVS
D502,D800,ZD500	0406-001239	DIODE-TVS
D503	0404-001361	DIODE-TVS
D504,D505	0404-001172	DIODE-TVS
D700	0407-001007	DIODE-TVS
D701,D702	0404-001250	DIODE-TVS
D801,D802,D803,D804	0406-001375	DIODE-TVS
F200	2911-000164	DUPLEXER-SAW
F201	4709-001967	FILTER-LC
F803,F804,F805	2901-001470	FILTER-EMI/ESD

Design LOC	SEC CODE	Description
HDC400,HDC401,HDC500	3711-006615	HEADER-BOARD TO BOARD
HDC800	3711-006865	HEADER-BOARD TO BOARD
HDC801,HDC802	3711-006882	HEADER-BOARD TO BOARD
HDC803	3711-007245	HEADER-BOARD TO BOARD
HEA600	3711-005550	HEADER-BOARD TO BOARD
IFC500	3710-003319	SOCKET-BOARD TO CABLE
L200,L408,L409,L410	3301-001885	INDUCTOR-SMD
L201	3301-001659	INDUCTOR-SMD
L203,L205,L208	3301-001946	INDUCTOR-SMD
L204	2703-003869	INDUCTOR-SMD
L400,L401,L406,L407	3301-001812	INDUCTOR-SMD
L402,L403,L404,L412	3301-001756	INDUCTOR-SMD
L411	3301-001885	INDUCTOR-SMD
L500	2703-003913	INDUCTOR-SMD
L700,L701	2703-002309	INDUCTOR-SMD
L702	2703-003907	INDUCTOR-SMD
L703,L705	2703-003911	INDUCTOR-SMD
L704	2703-003347	INDUCTOR-SMD
L800,L802	3301-001956	INDUCTOR-SMD
L801	3301-001901	INDUCTOR-SMD
L803	2703-003502	INDUCTOR-SMD
L804	2703-003412	INDUCTOR-SMD
L805,L806	3301-001729	INDUCTOR-SMD
L807	2703-003770	INDUCTOR-SMD
LED800	0601-002413	LED-FLASH
OSC200	2804-001884	OSCILLATOR-VCTCXO
OSC201	2809-001348	OSCILLATOR-VCTCXO
OSC700	2804-001762	OSCILLATOR-VCTCXO
OSC701	2801-004909	CRYSTAL-SMD
OSC800	2801-004626	CRYSTAL-SMD
Q700	0504-000168	TR-DIGITAL
Q701	0505-002384	TR-DIGITAL
R200	2007-008045	R-CHIP
R201	2007-008806	R-CHIP
R202	2007-000153	R-CHIP
R203,R204,R205,R206	2007-009171	R-CHIP

Design LOC	SEC CODE	Description
R207	2007-009171	R-CHIP
R213	GH80-03320A	R-CHIP
R306,R557,R559,R746	2007-000138	R-CHIP
R310,R311,R312,R313	2007-007014	R-CHIP
R314,R315,R316,R317	2007-007014	R-CHIP
R319	2007-003112	R-CHIP
R322,R528,R529,R544	2007-000148	R-CHIP
R324,R325,R326,R327	2007-000157	R-CHIP
R328,R329,R556,R558	2007-000157	R-CHIP
R331,R422	2007-007014	R-CHIP
R400,R408	2007-001119	R-CHIP
R402,R409,R550,R551	2007-000141	R-CHIP
R403,R406	2007-008478	R-CHIP
R410,R745	2007-003010	R-CHIP
R411,R412,R416,R521	2007-000170	R-CHIP
R414,R421	2007-001291	R-CHIP
R417,R420,R714,R834	2007-001298	R-CHIP
R514	2007-001292	R-CHIP
R517	2007-000167	R-CHIP
R519,R523	2007-001339	R-CHIP
R522,R524	2007-000636	R-CHIP
R525,R554,R706,R717	2007-000162	R-CHIP
R527,R828,U815	2007-000170	R-CHIP
R530	2007-007529	R-CHIP
R531,R532	2007-003015	R-CHIP
R533	2007-007585	R-CHIP
R545	2007-007589	R-CHIP
R546	2007-008403	R-CHIP
R547,R729,R810,R811	2007-000148	R-CHIP
R548	2007-007092	R-CHIP
R600,R601,R605,R606	2007-009408	R-CHIP
R607,R608	2007-009408	R-CHIP
R613,R616,R617,R715	2007-008055	R-CHIP
R621,R630,R631,R632	2007-008052	R-CHIP
R622	2007-000142	R-CHIP
R623,R627,R634,R635	2007-008516	R-CHIP

Design LOC	SEC CODE	Description
R639,R640,R642,R643	2007-008052	R-CHIP
R649	2007-007981	R-CHIP
R650,R720,R722	2007-007107	R-CHIP
R700	2007-003025	R-CHIP
R708,R709	2007-008419	R-CHIP
R711	2007-010509	R-CHIP
R713	2007-007592	R-CHIP
R716,R732,R800,R802	2007-000143	R-CHIP
R718,R719	2007-008548	R-CHIP
R723	2007-007156	R-CHIP
R730,R731,R803,R804	2007-000140	R-CHIP
R733,R734,R735	2007-001306	R-CHIP
R737	2007-008633	R-CHIP
R739,R740	2007-000758	R-CHIP
R741	2007-008210	R-CHIP
R742	2007-002965	R-CHIP
R743,R744	2007-000162	R-CHIP
R753	2007-008564	R-CHIP
R805,R806	2007-000138	R-CHIP
R812	2007-000141	R-CHIP
R813,R827	2007-000143	R-CHIP
R814,R815,R837	2007-000148	R-CHIP
R816	2007-007334	R-CHIP
R817,R818,R820,R829	2007-000157	R-CHIP
R825,R826	2007-000140	R-CHIP
R830,R832,R833	2007-000157	R-CHIP
R836	2007-008055	R-CHIP
R838	1209-001997	R-CHIP
R839	2007-007316	R-CHIP
R840	2007-007142	R-CHIP
SC200	GH71-09660A	SHIELDCAN
TA400,TA402,TA701	2404-001572	C-TA,CHIP
TA401	2404-001596	C-TA,CHIP
TA700,TA800	2404-001381	C-TA,CHIP
TA702	2404-001572	C-TA,CHIP
TH700	1404-001221	THERMISTOR-NTC

Design LOC	SEC CODE	Description
TR500,TR700,TR701	0505-002720	FET-SILICON
TR501,TR703	0504-001113	FET-SILICON
TR702	0505-002720	FET-SILICON
U200	1201-003168	SFMG1M0Q001
U201	1205-003966	GPS
U203	1203-006068	IC-DCDC
U204	1205-004226	IC-WIFI/BT
U300	1203-005250	IC-DCDC
U302	1001-001581	IC-DCDC
U400,U401	1203-005396	IC-DCDC
U403,U503	1202-001036	TC75W56FK-TE12L
U404	1201-002886	IC-AMP
U405,U807	1203-004776	IC-DCDC
U407	1201-003208	IC-DCDC
U408	1001-001410	IC-DCDC
U500	1205-003692	IC-ADC
U502	1203-006794	IC-DCDC
U507,U814	1203-005373	IC-OVP
U508	1203-006463	IC-LED CONTROL
U510	1003-002358	IC-LEVEL SHIFTER
U520,U521	1001-001481	IC-USB SWITCH
U700	1001-001429	IC-USB SWITCH
U701	1203-004793	IC-DCDC
U702	1003-002047	IC-DCDC
U703	1203-006493	IC-CHARGER
U704	1203-006464	PMU
U705	1203-006054	IC-LDO
U706	1203-006392	FUEL GAUGE
U708	0505-002353	IC-LDO
U709	0801-003016	GATE
U710	0801-003079	GATE
U711	1203-006346	IC-RESET
U712	0801-003346	74AUP1G04GM
U800	1203-006476	IC-DCDC
U801	1205-004036	LVDS
U802	0903-001633	IC-TSP

Design LOC	SEC CODE	Description
U803	1203-004792	IC-LDO
U804	1203-005478	IC-LDO
U805	1203-006025	IC-DCDC
U808,U809	2203-006872	C-CER,CHIP
U810	0904-002596	CMC623
U811	1209-001817	IC-SENSOR
U812	1209-001877	IC-SENSOR
U813	1203-005690	IC-DCDC
UCP600	0902-002708	IC-AP
UCP600UP	1108-000409	IC-DRAM
UME300	1107-002014	IC-FLASH
V700	1405-001298	LXES15AAA1-075
ZD300	0406-001267	IC-TVS
ZD400,ZD401,ZD505	0406-001375	IC-TVS
ZD402	0406-001281	IC-TVS
ZD403	0406-001293	IC-TVS
ZD504,ZD700	0403-001688	IC-TVS
ZD506,ZD507,ZD508	0406-001375	IC-TVS
ZD701	0406-001375	IC-TVS

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

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## 6. Level 1 Repair

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### 6-1. S/W Download

#### 6-1-1. Pre-requisite for S/W Downloading

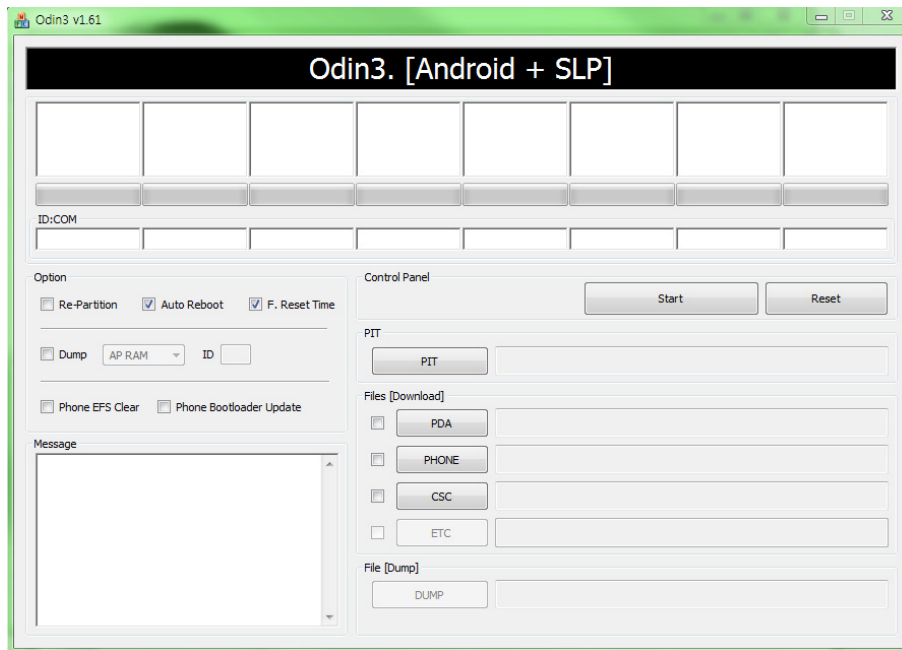
- Downloader Program (**Odin3 v1.61.exe**)
- GT-P1010 Mobile Tablet
- Data Link Cable
- JIG BOX (GH99-36900A)
- RF Test Cable (GH39-00985A)
- JIG Cable (GH81-09211A)
- Adapter (GH99-38251A)
- Binary files

#### ※ Settings



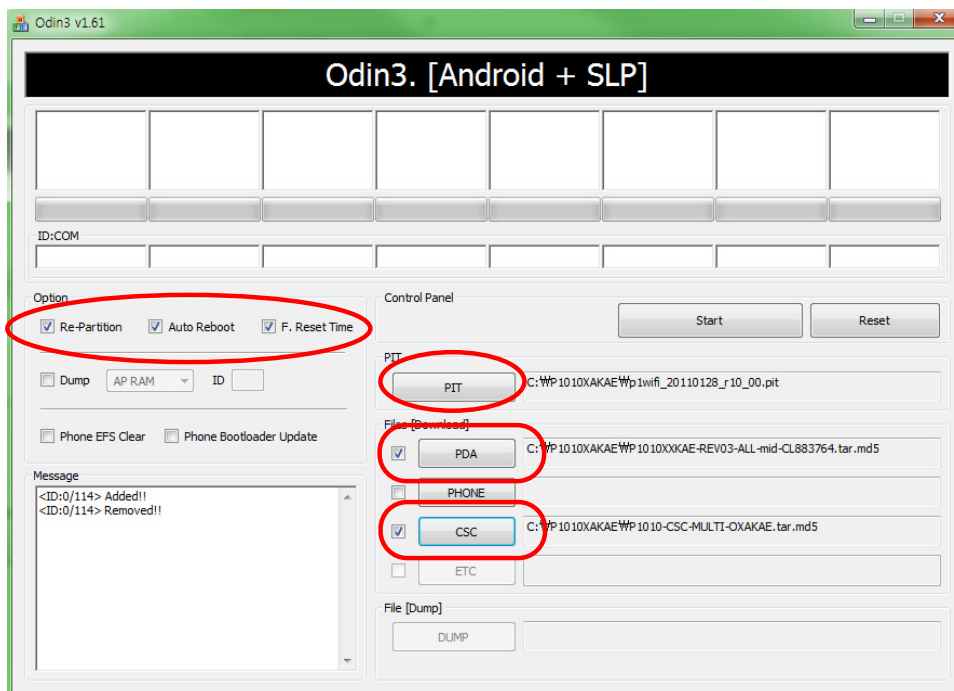
### 6-1-2. S/W Downloader Program

- Load the binary download program by executing the " **Odin3 v1.61.exe** " ← **Run this file.**



#### 1. Option Selection

- Check Re-Partition, Auto Reboot and F. Reset Time, then select PIT, PDA and CSC Files.





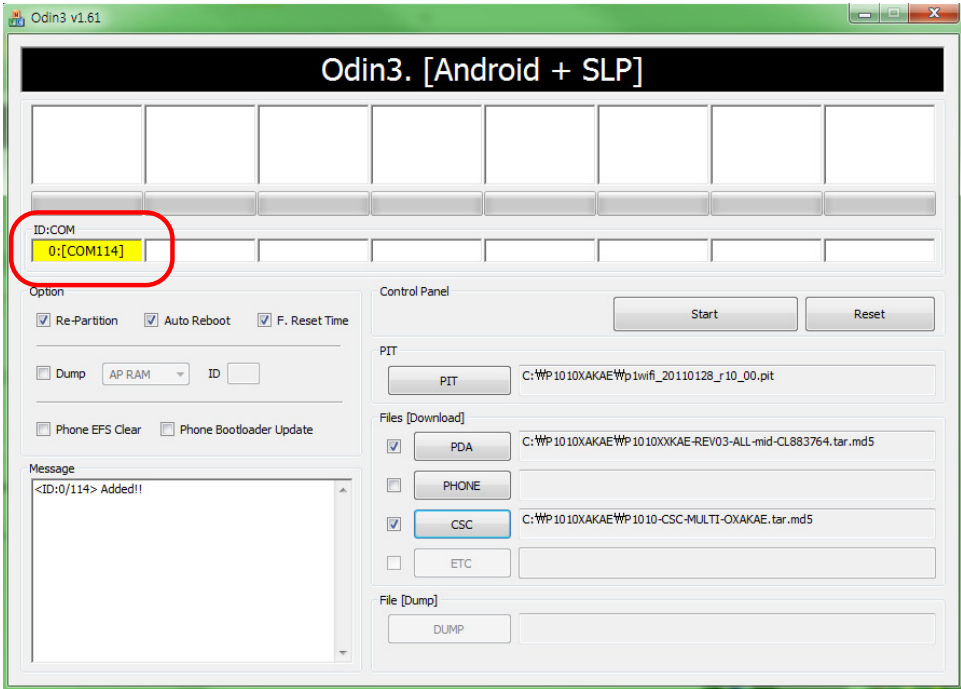
2. Enter Device into Download Mode

- Enter the device into Download Mode by pressing down on Volume Down button and Power On button at the same time.

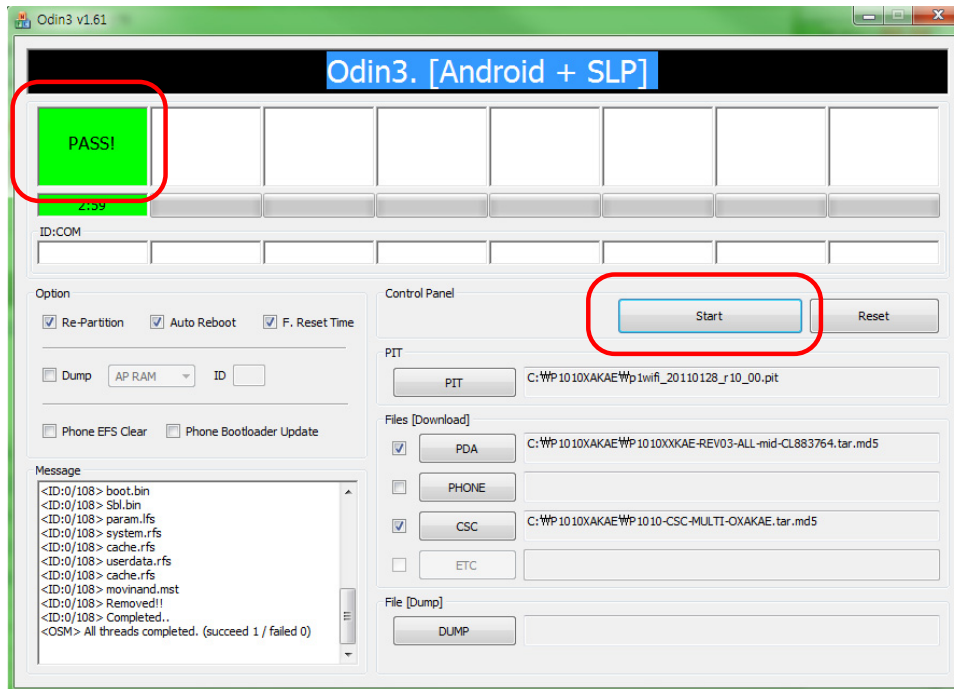


3. Connect the Device to PC via Data Cable.

Make sure ID:COM box highlighted yellow that the device is connected to the PC.



4. Start Downloading PDA and CSC files by clicking Start Button. Then wait for "Pass" to be appear on the screen.






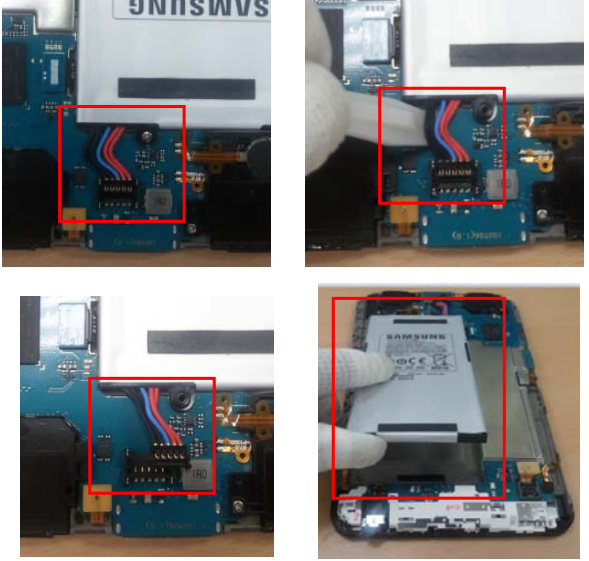
5. Once the device boots up, confirm the downloaded version name and etc. :  
**\*#1234#**


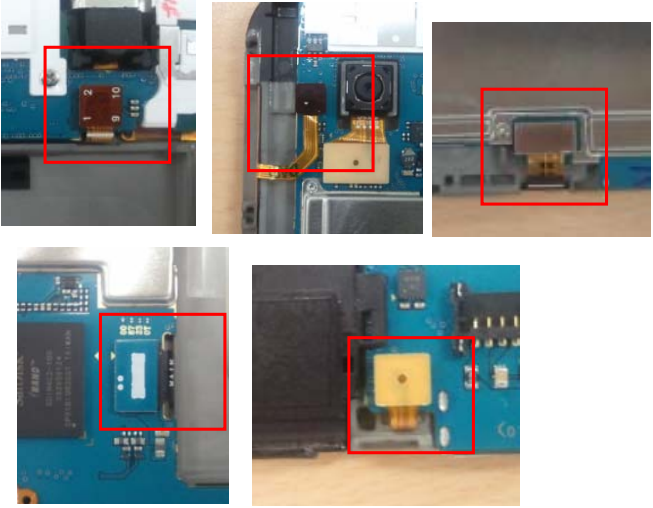

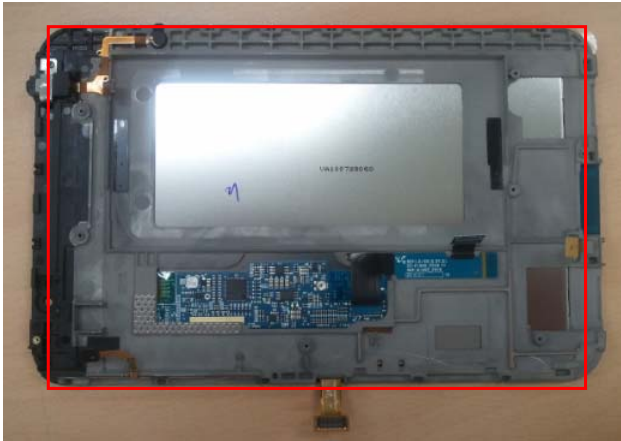
Full Reset :  
**\*2767\*3855#**

# 7. Level 2 Repair

## 7-1. Disassembly and Assembly Instructions

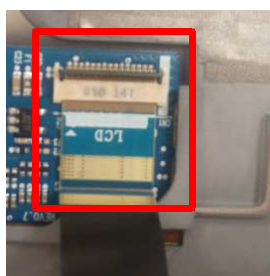
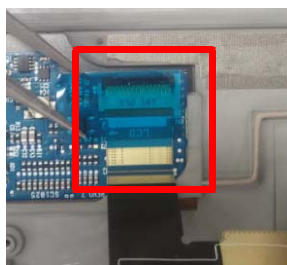
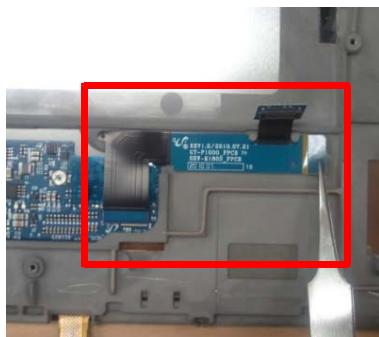
### 7-1-1. Disassembly

<p><b>1</b> loosen the screw(2 points)</p>	<p><b>2</b> disassembly FRONT Ass'y</p>
	
<p>Loosen the 2 points of screw (triangle screw) screw:1.7 *3.5 (Torque 1.35 +-0.15)</p>	
<p><b>3</b> disassembly the FRONT Ass'y from REAR</p>	<p><b>4</b> disassembly the battery connector</p>
	
<p>Disassembly the FRONT Ass'y from REAR</p> <p>Loosen the screw, and use assembly JIG, disassembly battery connector. (screw: 1.4 *3 Torque 1.1+-0.1)</p>	

<p><b>5</b>    loosen the screw</p> 	<p><b>6</b>    disassembly the connector</p> 
<p>Loosen the 7 points of screw screw: 1.4 *3    Torque 1.1+0.1</p>	<p>Disassembly connector. be careful, do not damage connector.</p>
<p><b>7</b>    take off the PBA from the FRONT Ass`y</p> 	<p><b>8</b>    take off the PBA from the FRONT Ass`y</p> 
<p>Take off the PBA from the FRONT Ass`y</p>	<p>Take off the PBA from the FRONT Ass`y</p>

9


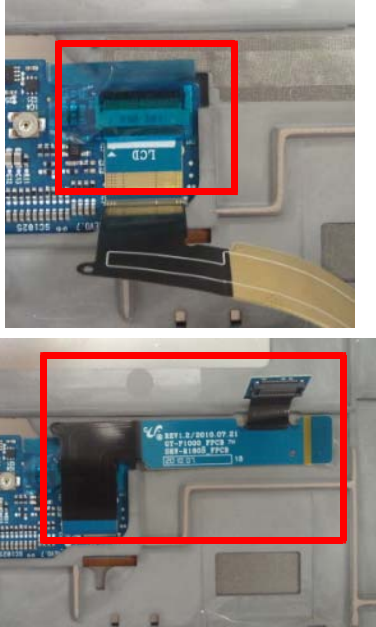

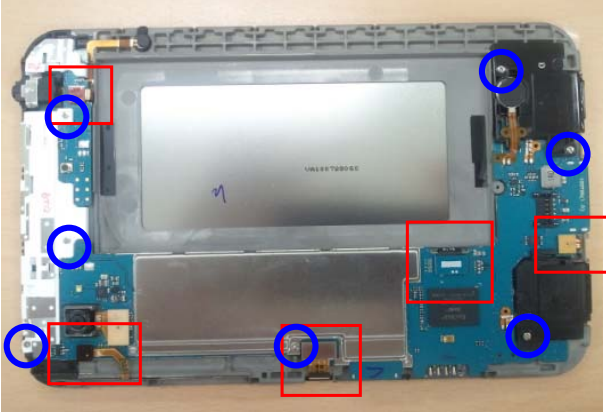
disassembly the LCD con to con FPCB



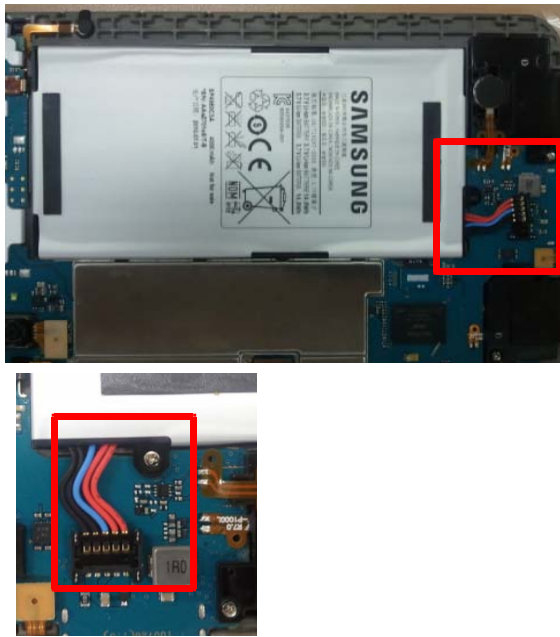
Do not damage the FPCB, be careful.



7-1-2. Assembly

<p><b>1</b> Assembly bracket, LCD, TSP</p> 	<p><b>2</b> assembly the LCD con to con FPCB</p> 
<p>Use the assembly JIG, attach the TSP</p>	
<p><b>3</b> Place the PBA on the Front Ass'y</p> 	<p><b>4</b> assembly connector</p> 
<p>Place the PBA on the Front Ass'y</p> <p>Assembly connector and tighten the screw(7 points) screw: 1.4 *3 Torque 1.1+-0.1</p>	

**5** assembly the battery connector



Assembly the battery connector and tighten the screw(screw: 1.4 \*3 Torque 1.1+-.0.1)

**6** Assembly Front Ass'y and Rear



Assembly the Front Ass'y and Rear

**7** Assembly Front Ass'y and Rear



Check side gap

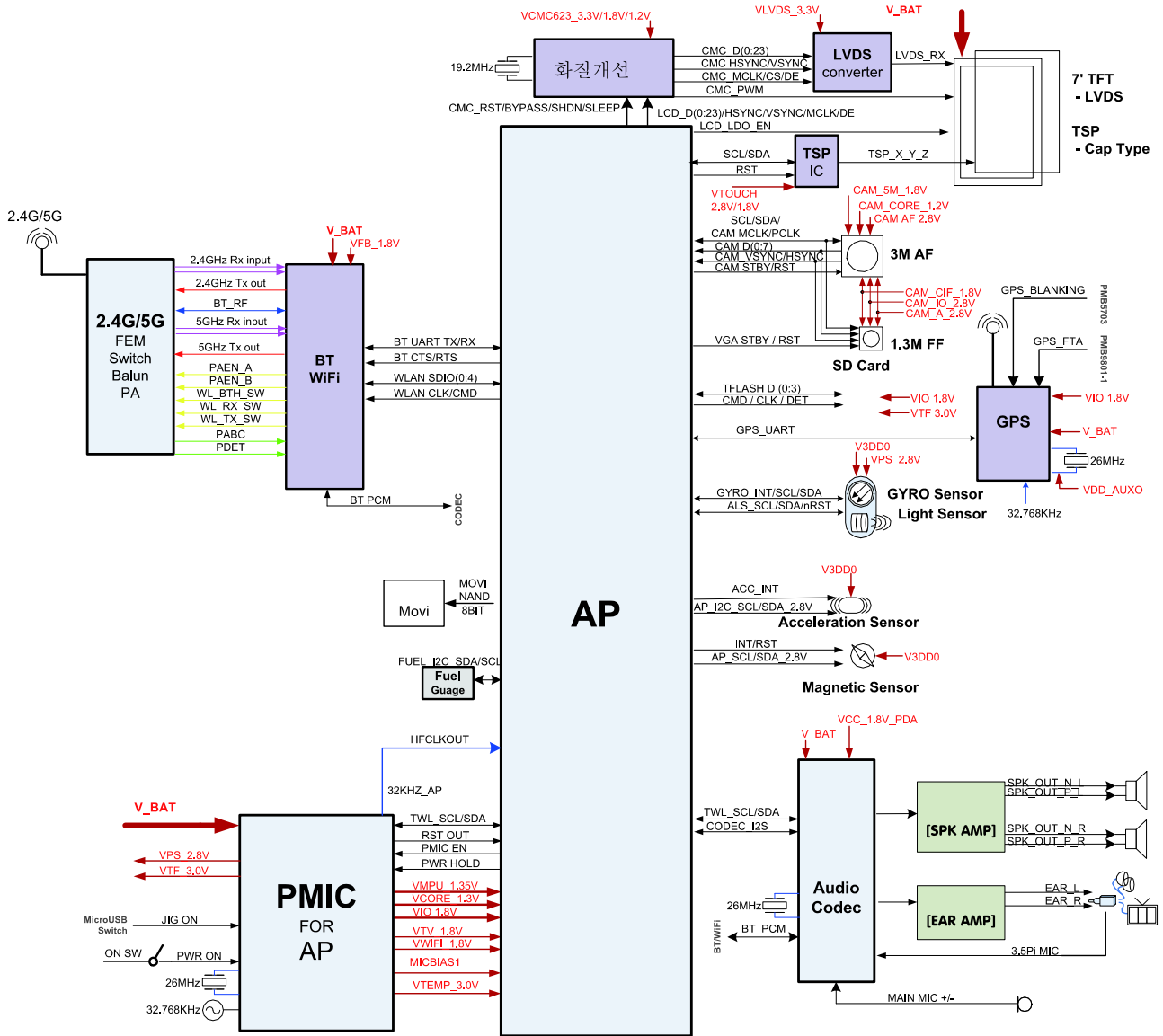
**8** tighten screw(2points)



Tighten screw(2points)  
screw:1.7 \*3.5 (Torque 1.35 +-0.15)

# 8. Level 3 Repair

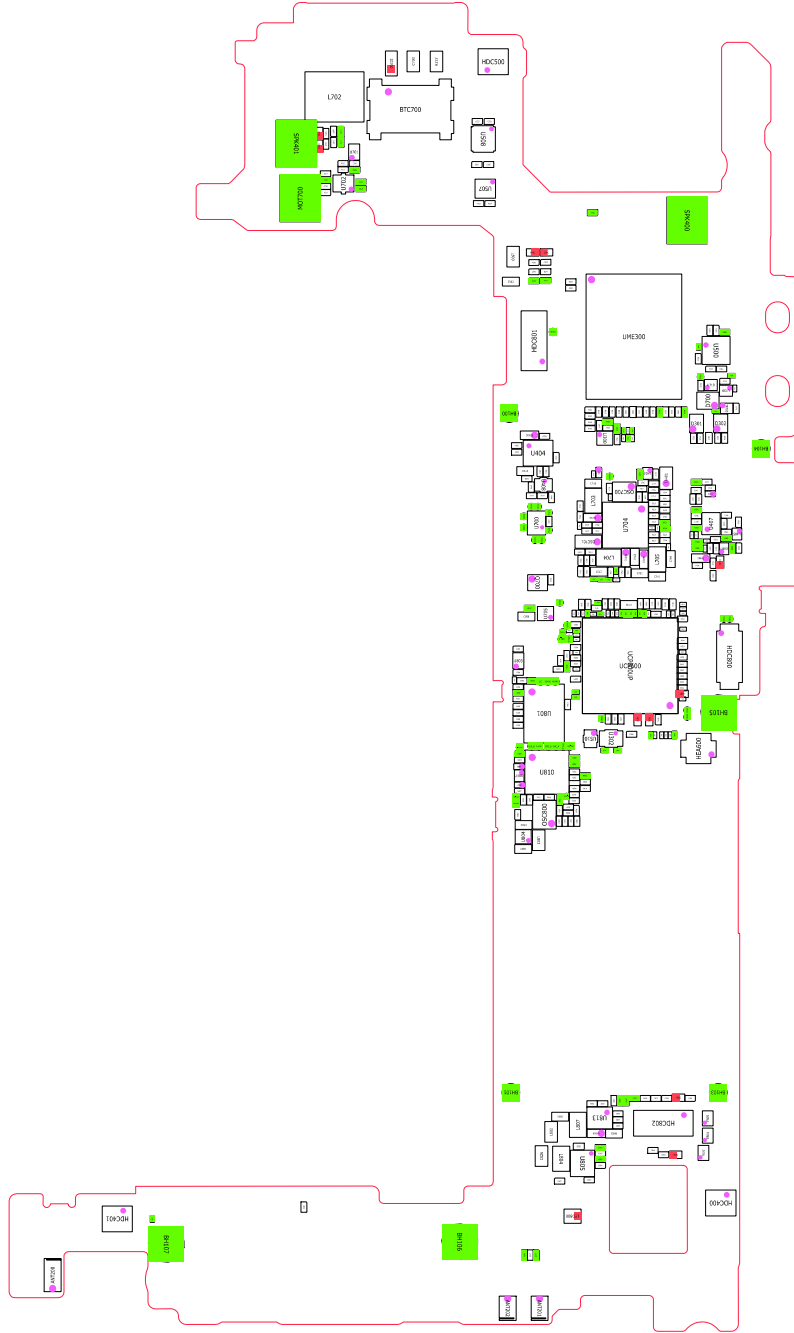
## 8-1. Block Diagram



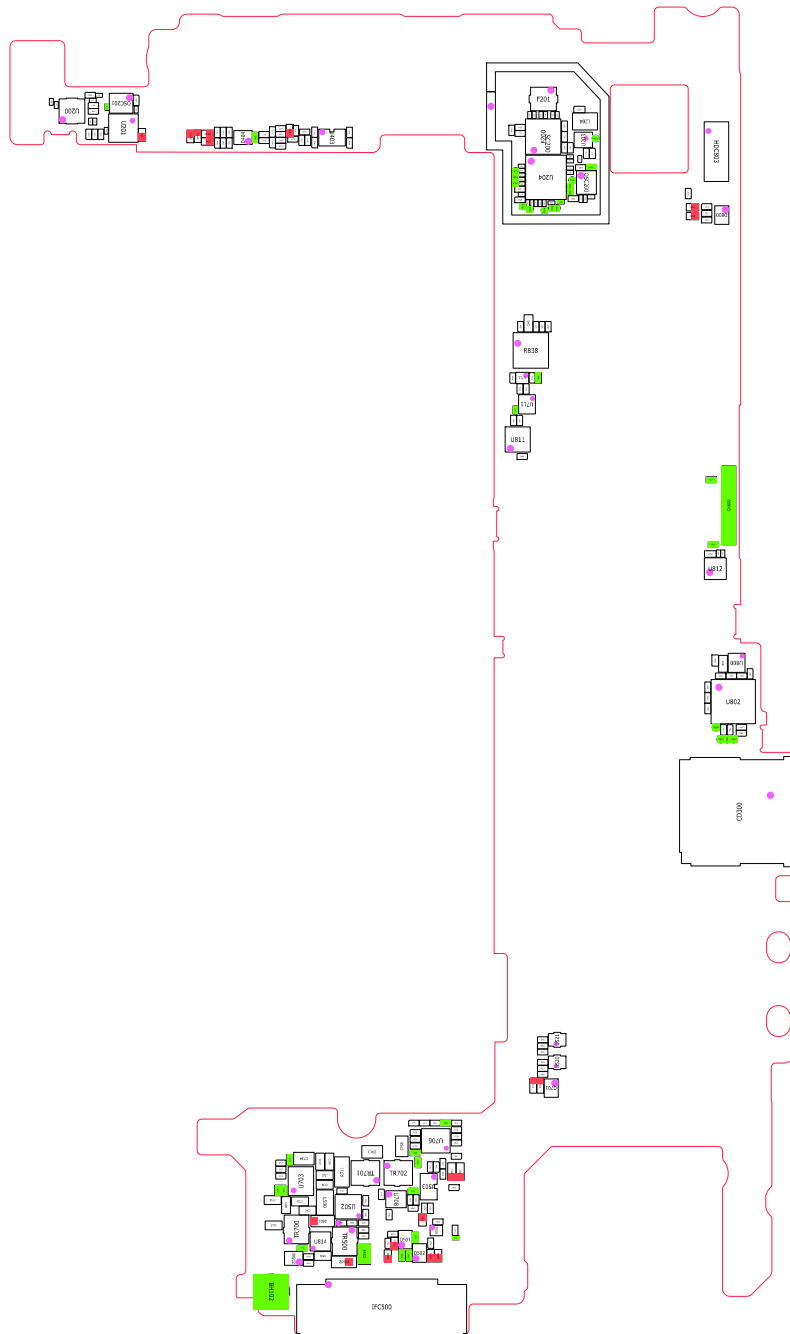


## 8-2. PCB Diagrams

### 8-2-1. Top

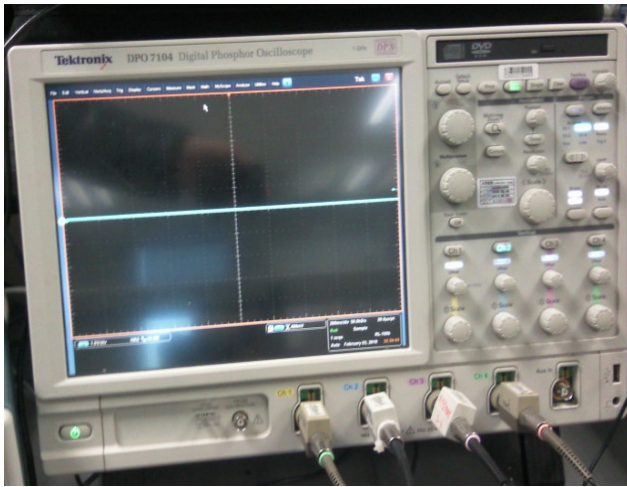


8-2-2. Bottom



### 8-3. Flow Chart of Troubleshooting

#### Equipments



↑ Oscilloscope



↑ Digital Multimeter

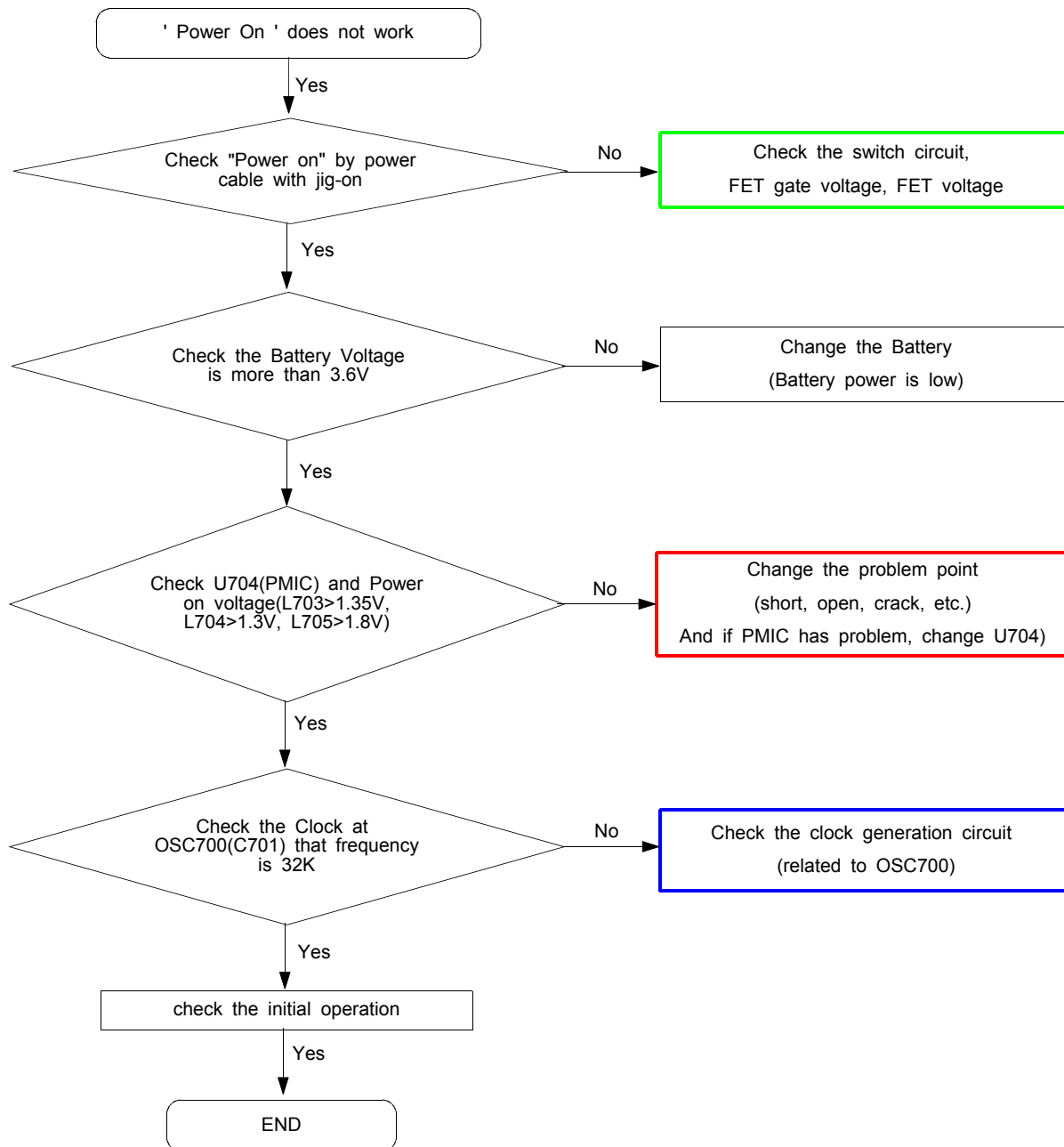


↑ Power Supply



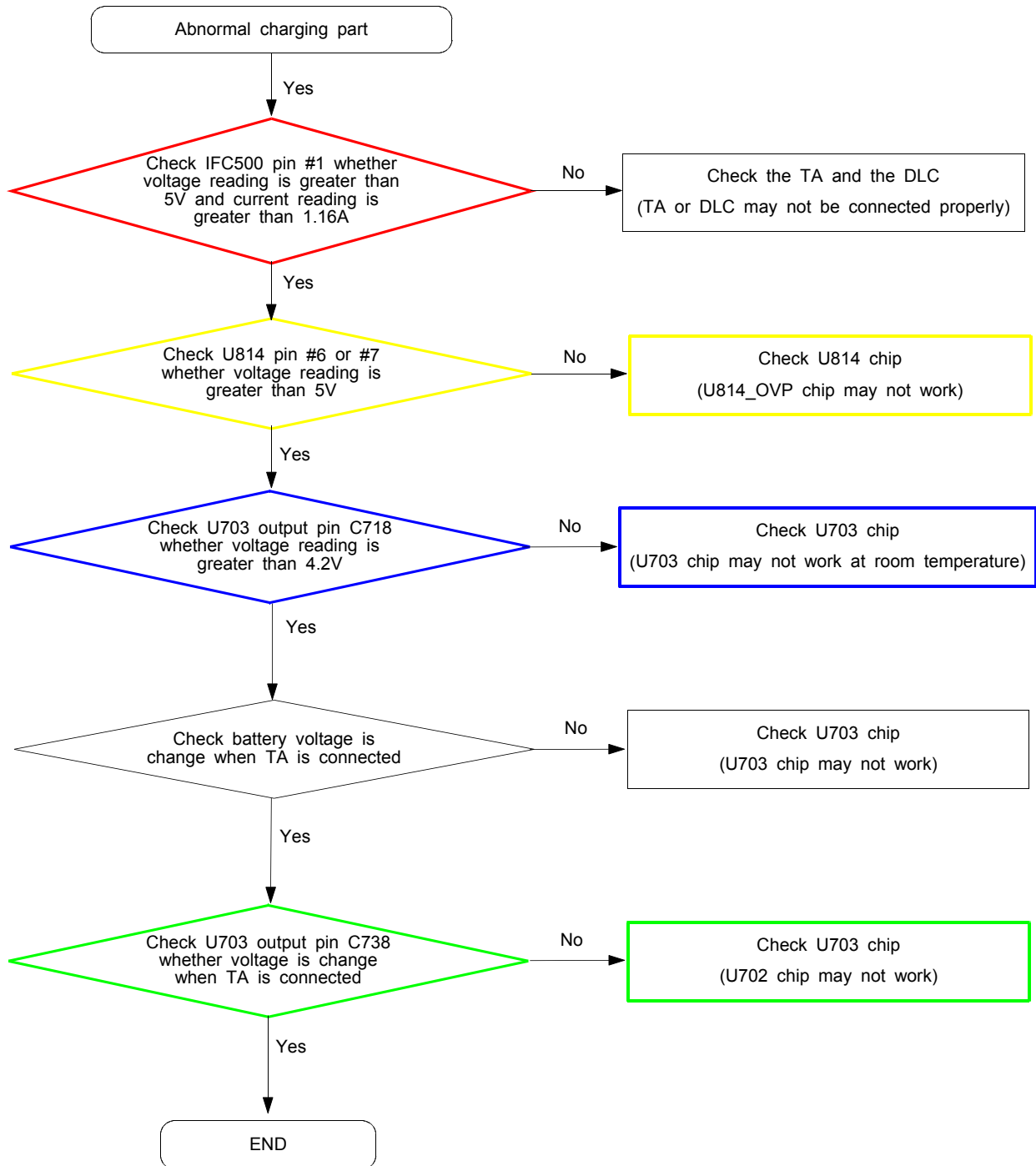
↑ + driver, Tweezer

8-3-1. Power On



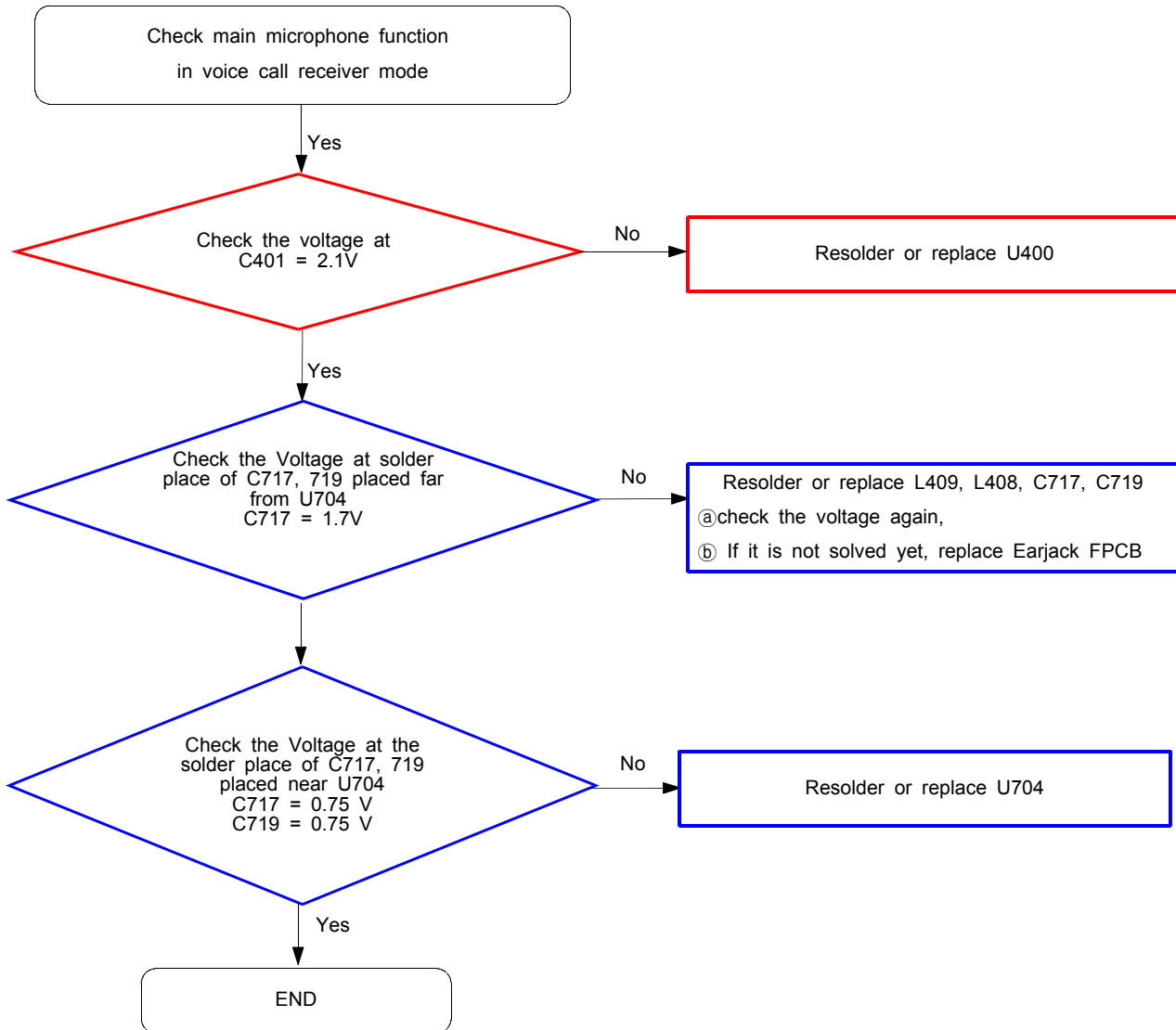


8-3-2. Charging Part





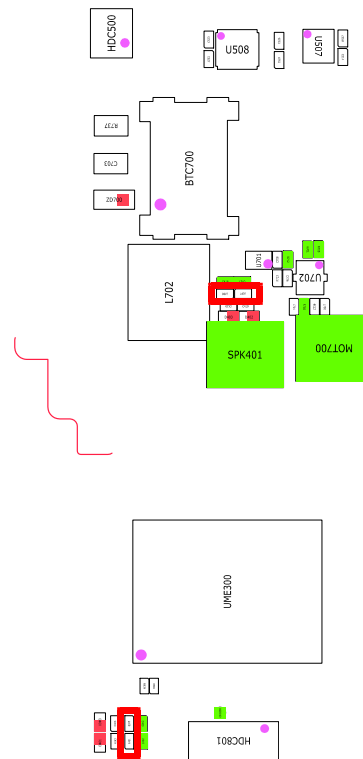
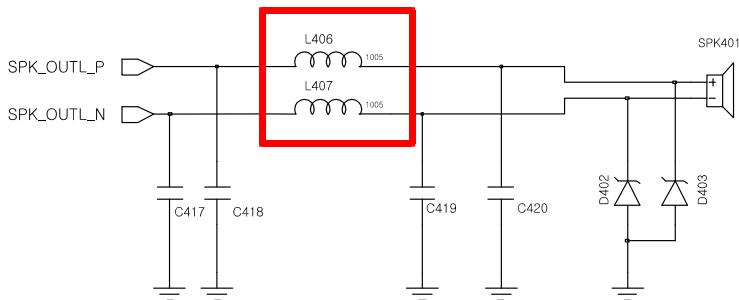
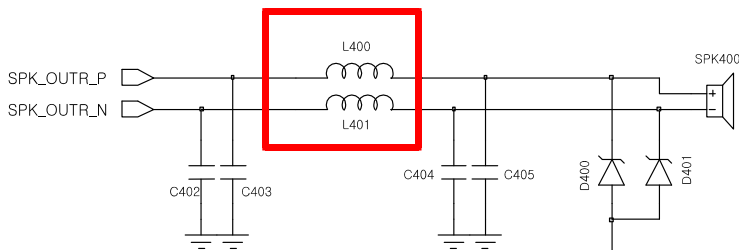
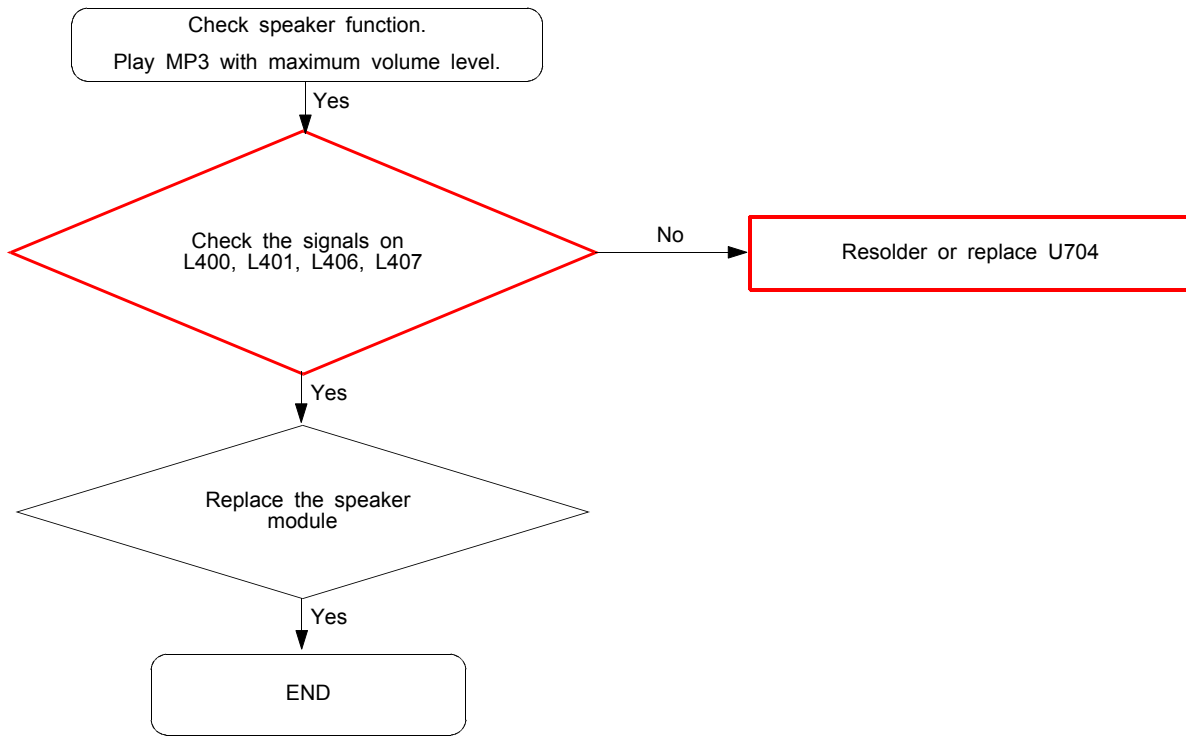
8-3-3. Microphone Part



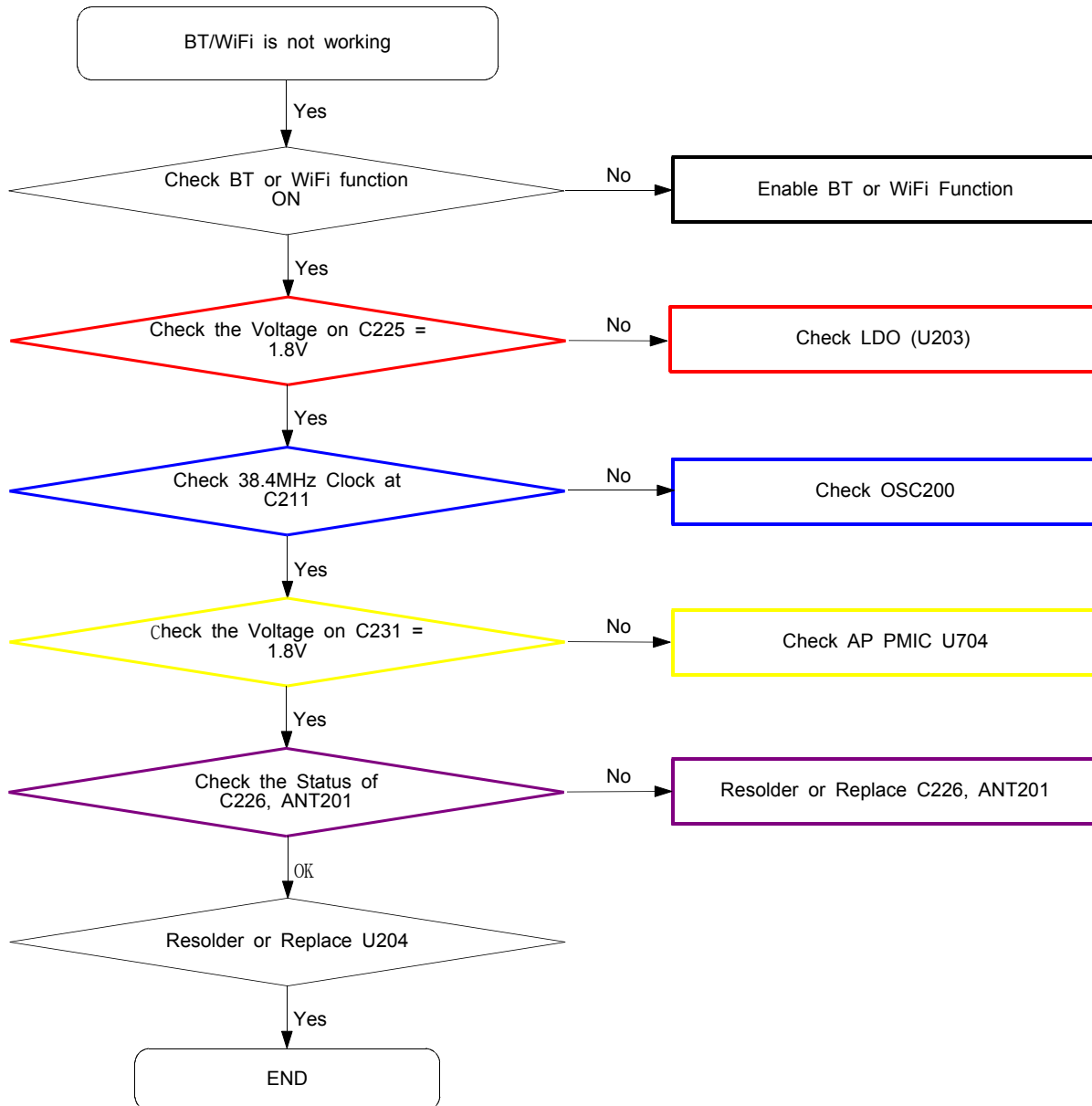




### 8-3-6. Speaker Part

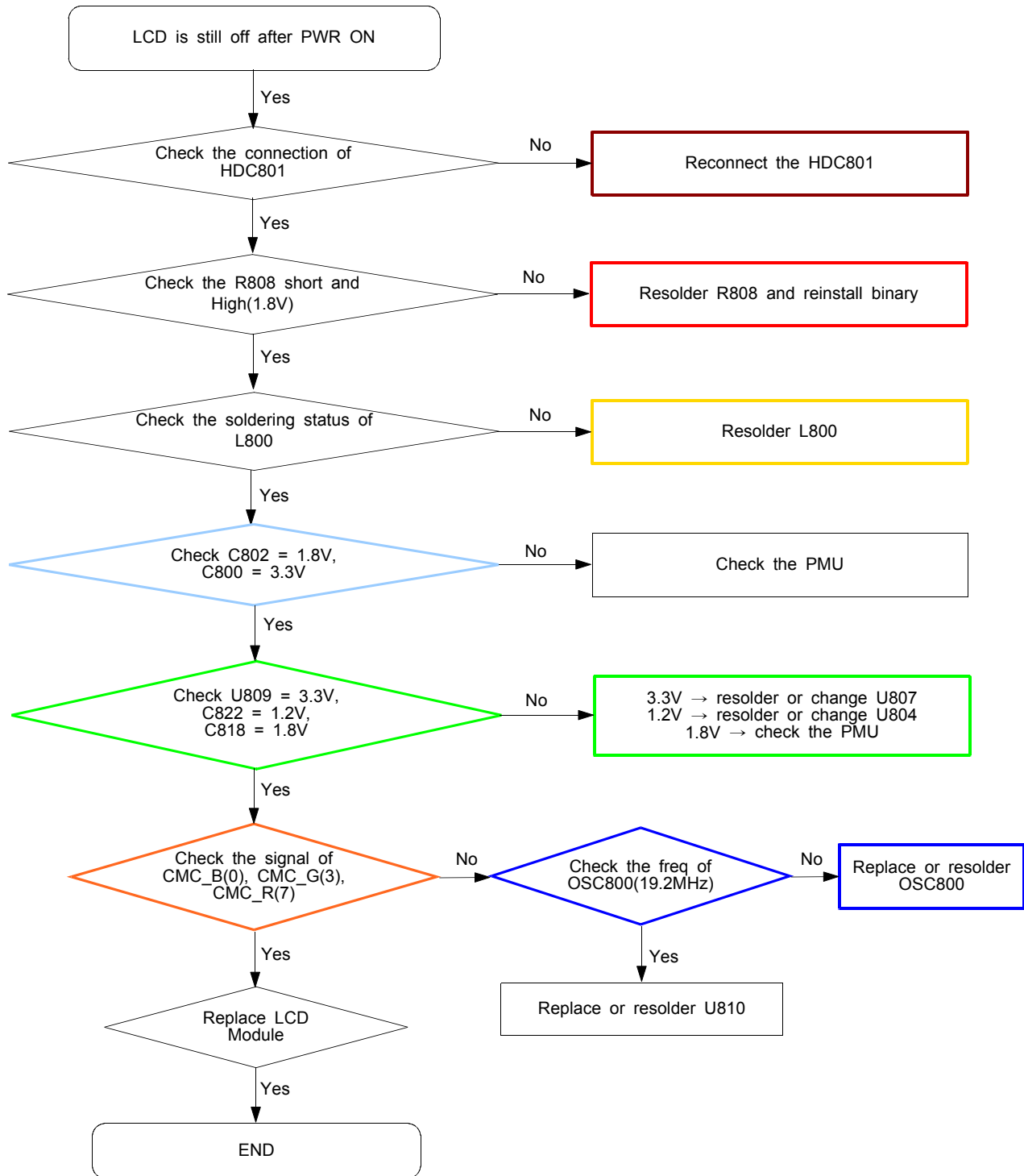


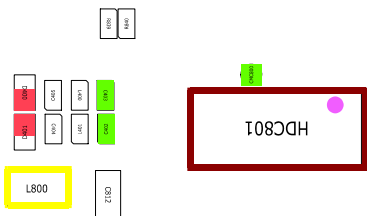
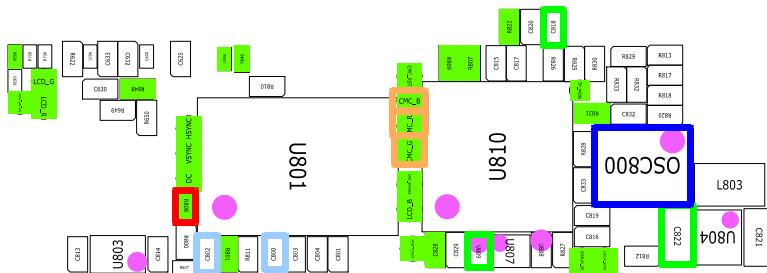
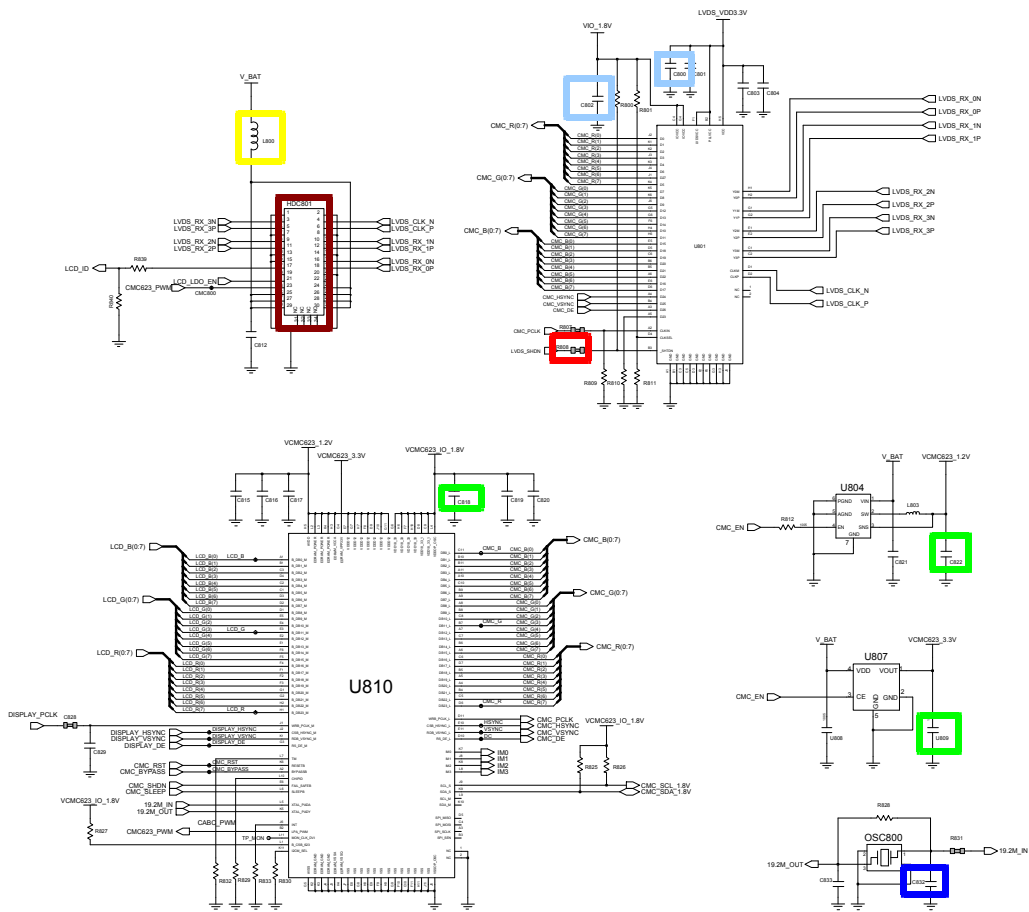
### 8-3-7. BT/WIFI



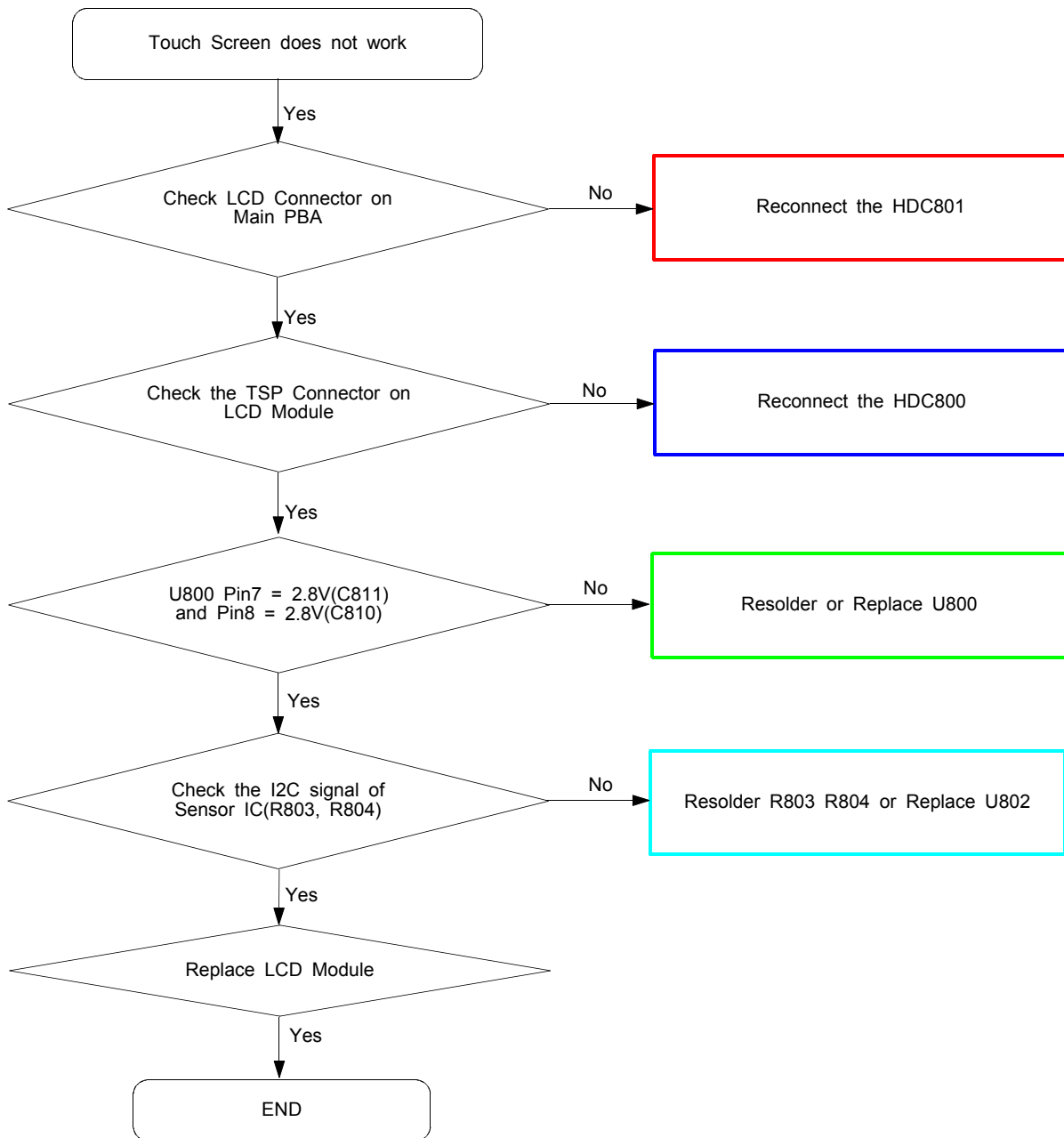


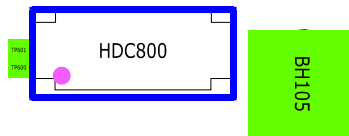
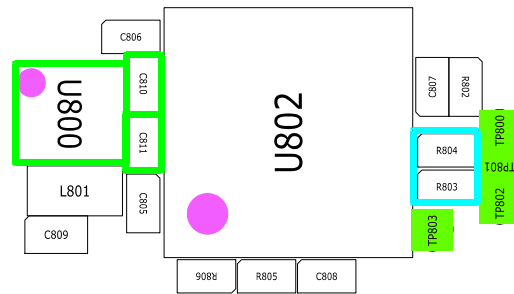
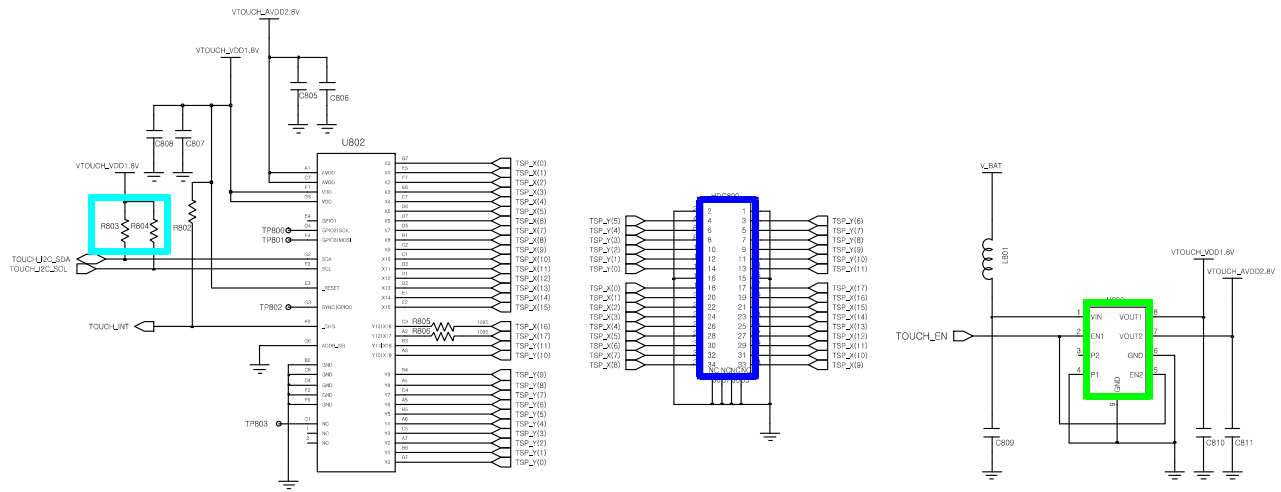
8-3-8. LCD





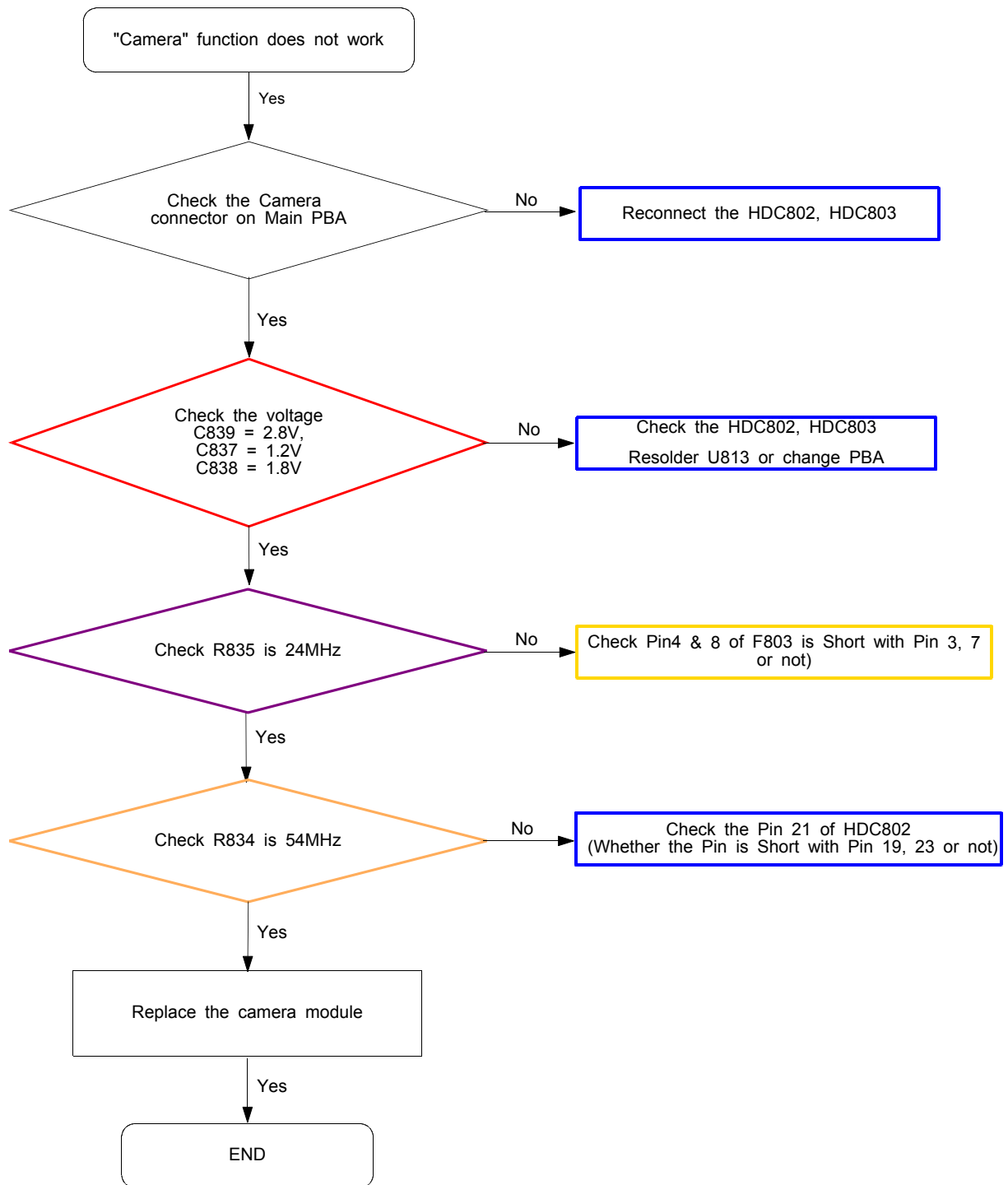
8-3-9. TSP

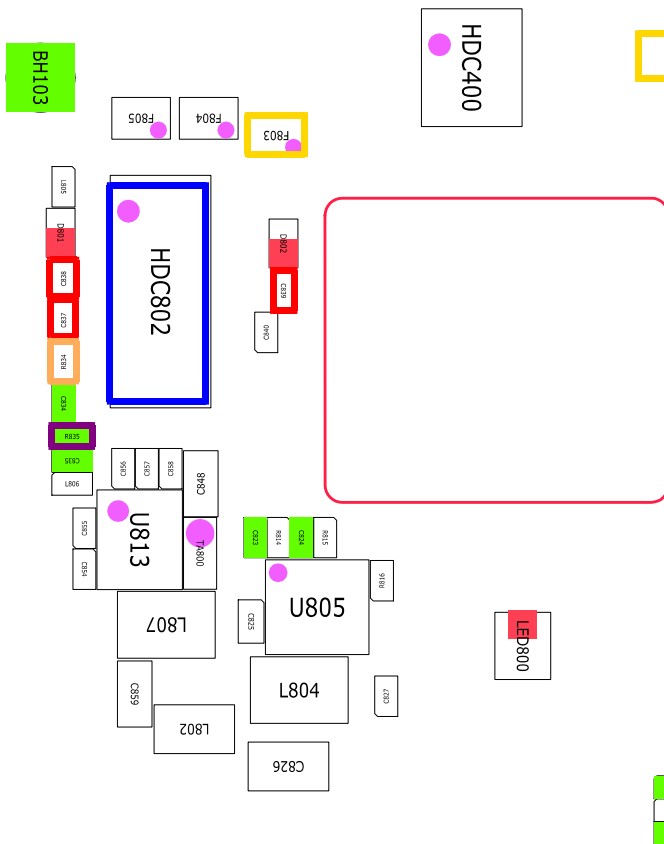
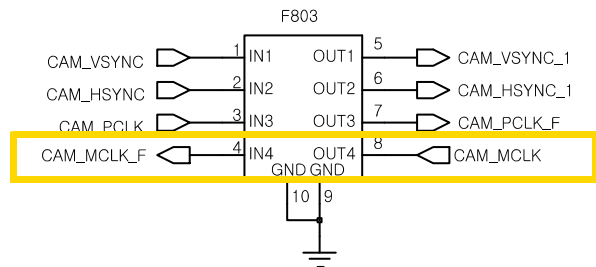
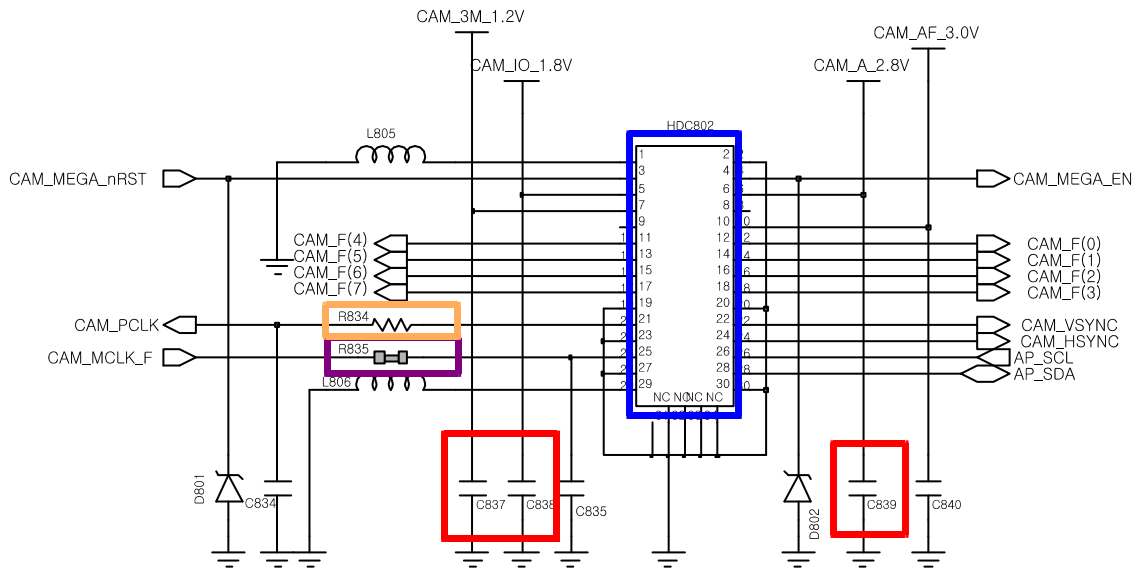




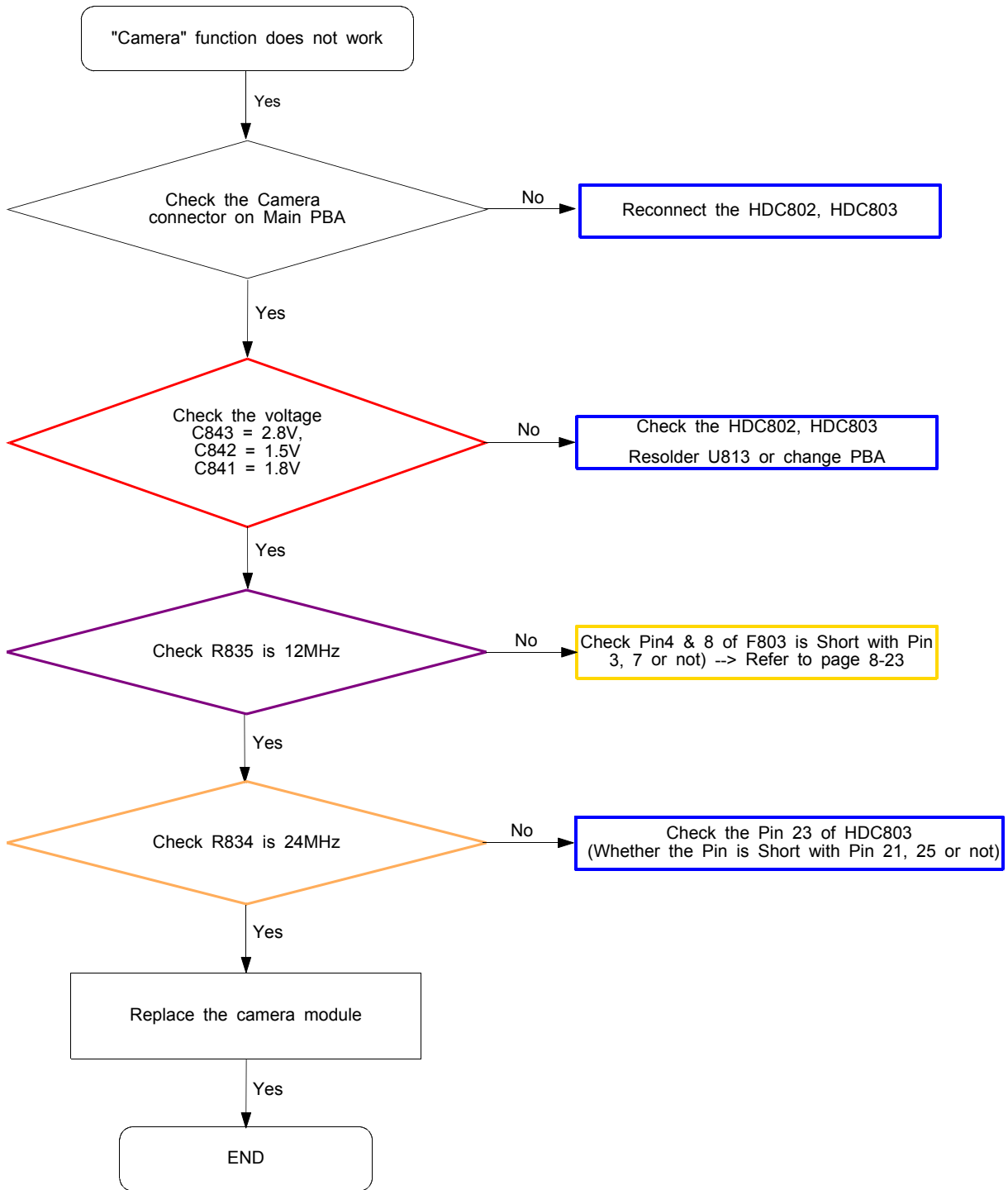


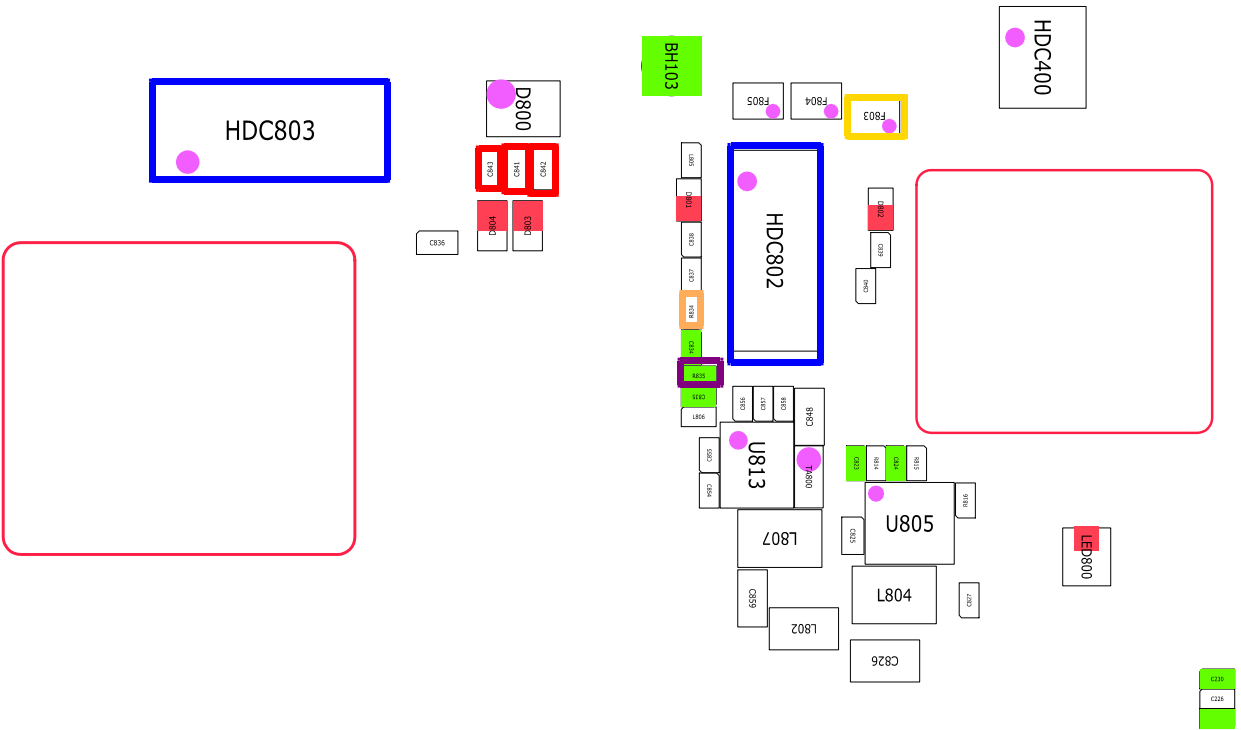
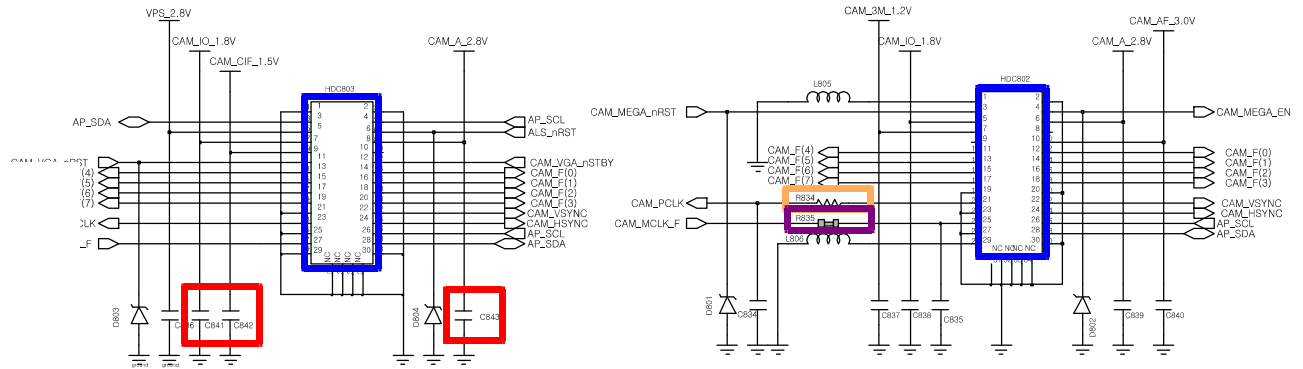
8-3-10. 3M CAM





8-3-11. 1.3M CAM





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## 9. Reference Abbreviate

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### 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

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