

SAMSUNG

GSM TELEPHONE

SGH-X481

SERVICE *Manual*

GSM TELEPHONE



CONTENTS

1. Specification
2. Flow Chart of Troubleshooting
3. Exploded View and Parts List
4. Electrical Parts List
5. PCB Diagrams
6. Block Diagrams
7. Disassembly and Assembly instructions

1. SGH-X481 Specification

1-1. GSM General Specification

	GSM900 Phase 1	EGSM 900 Phase 2	DCS1800 Phase 1	PCS1900
Freq. Band[MHz] Uplink/Downlink	890~915 935~960	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range	1~124	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~13dBm	33dBm~5dBm	30dBm~0dBm	30dBm~0dBm
Power Class	5pcl ~ 15pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux	8	8	8	8
Cell Radius	35Km	35Km	2Km	-

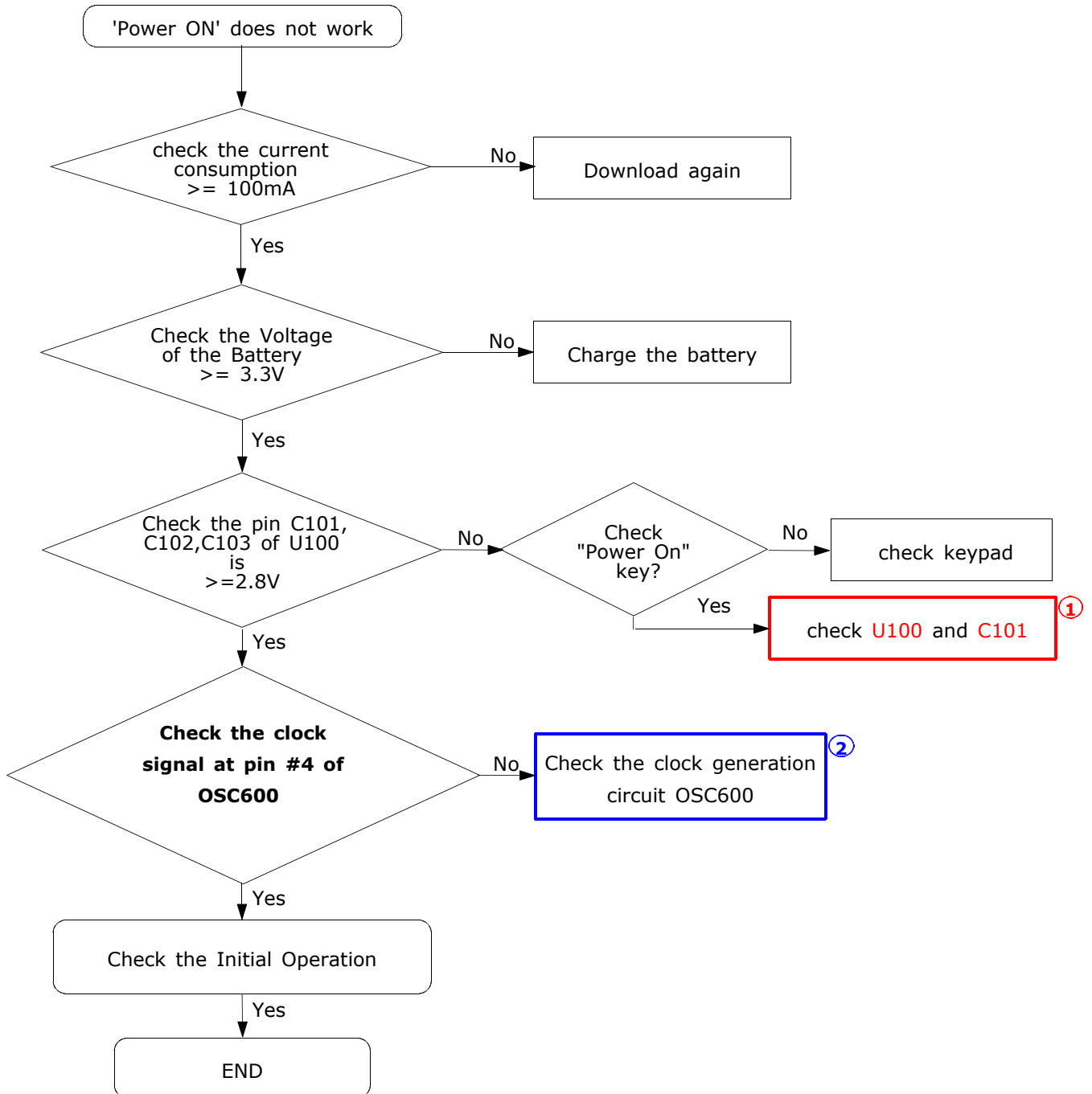
1-2. GSM Tx Power Class

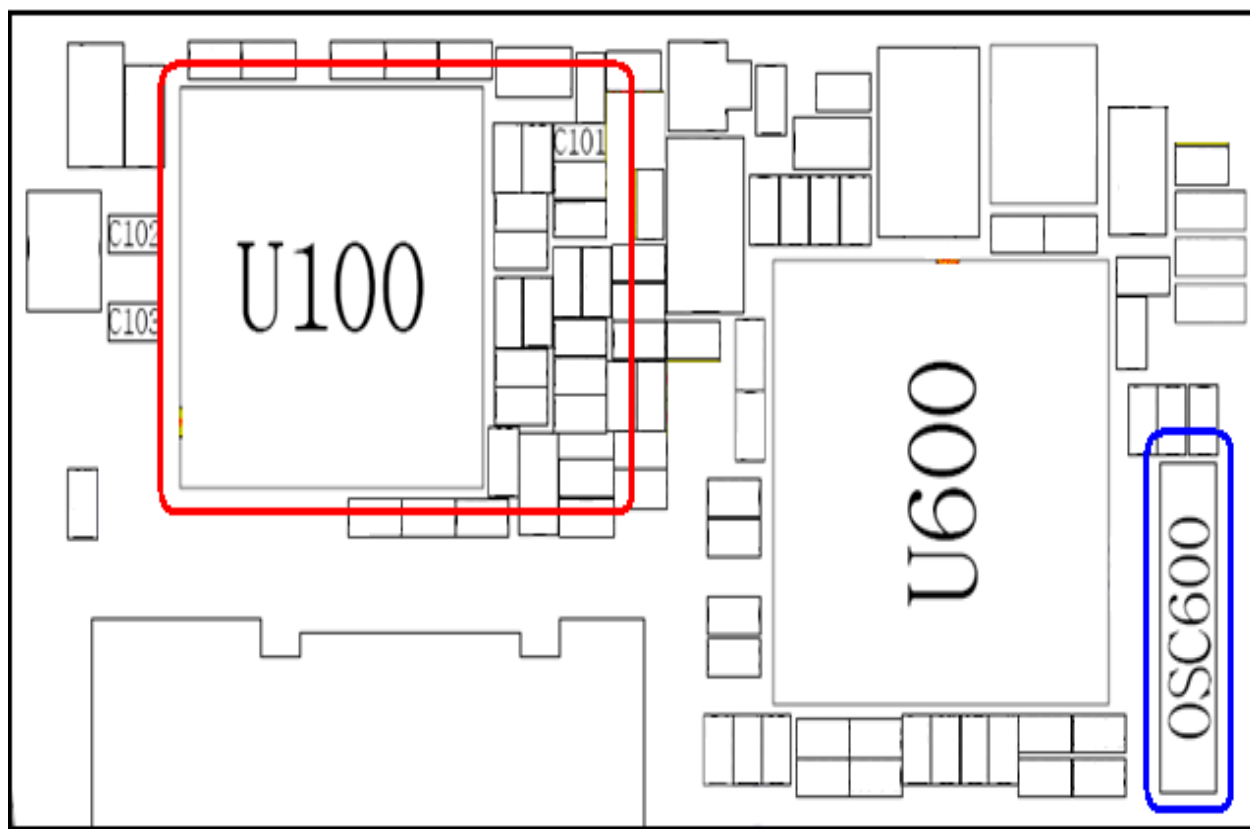
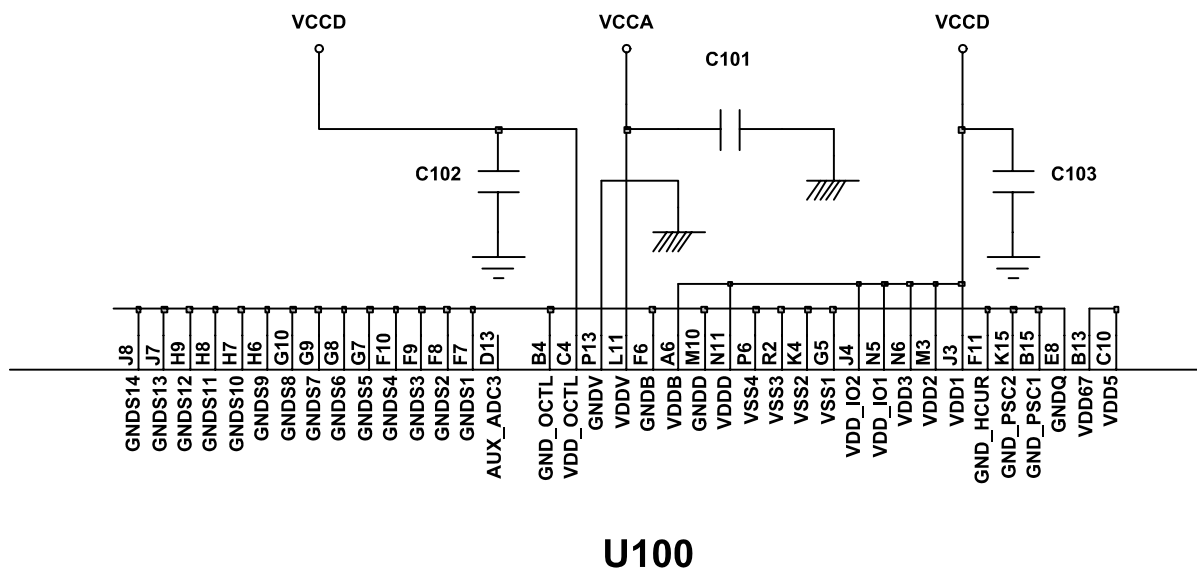
TX Power control level	GSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
5	33±2 dBm	0	30±3 dBm	0	30±3 dBm
6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm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

2. SGH-X481 Flow Chart of Troubleshooting

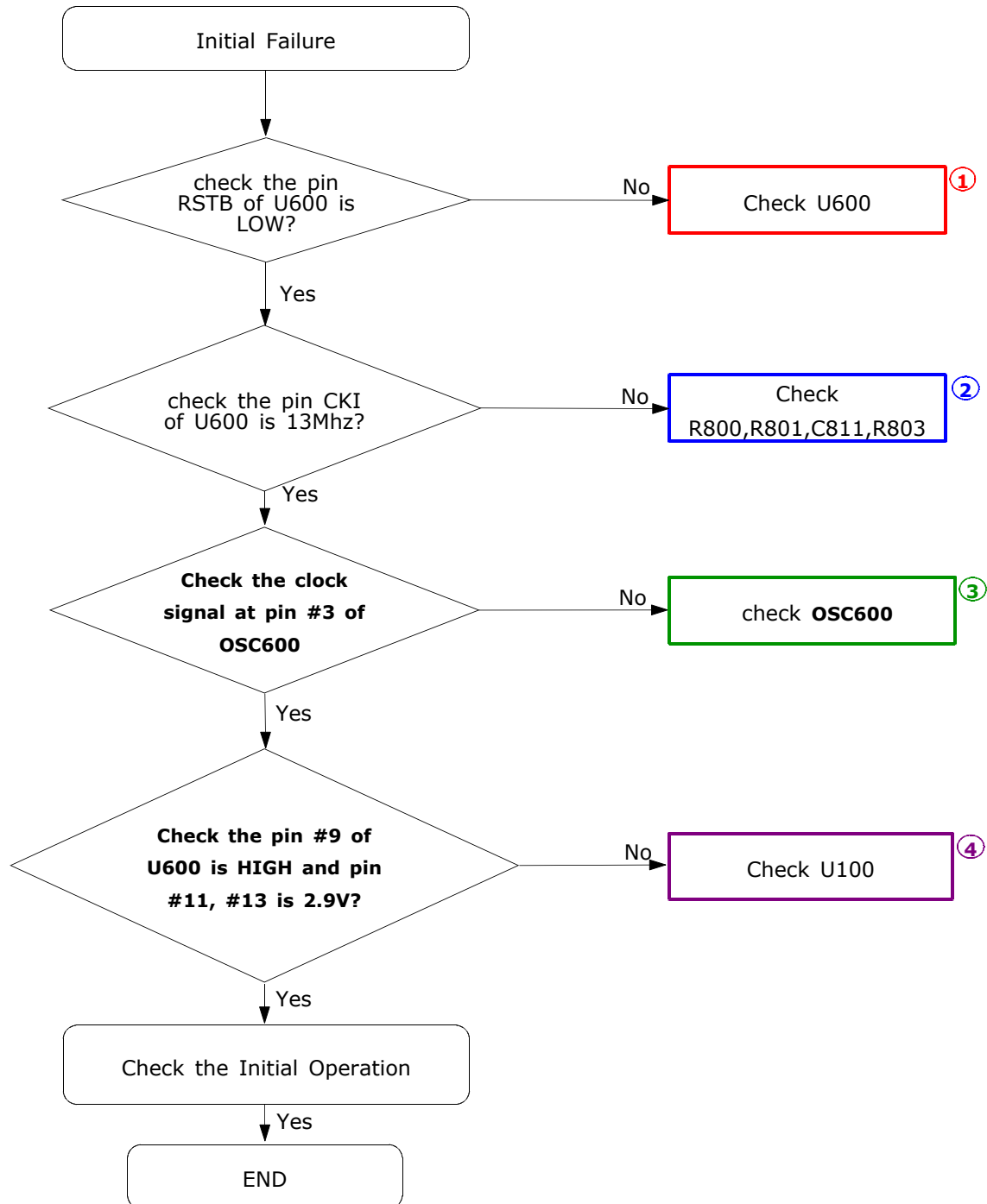
2-1. Baseband

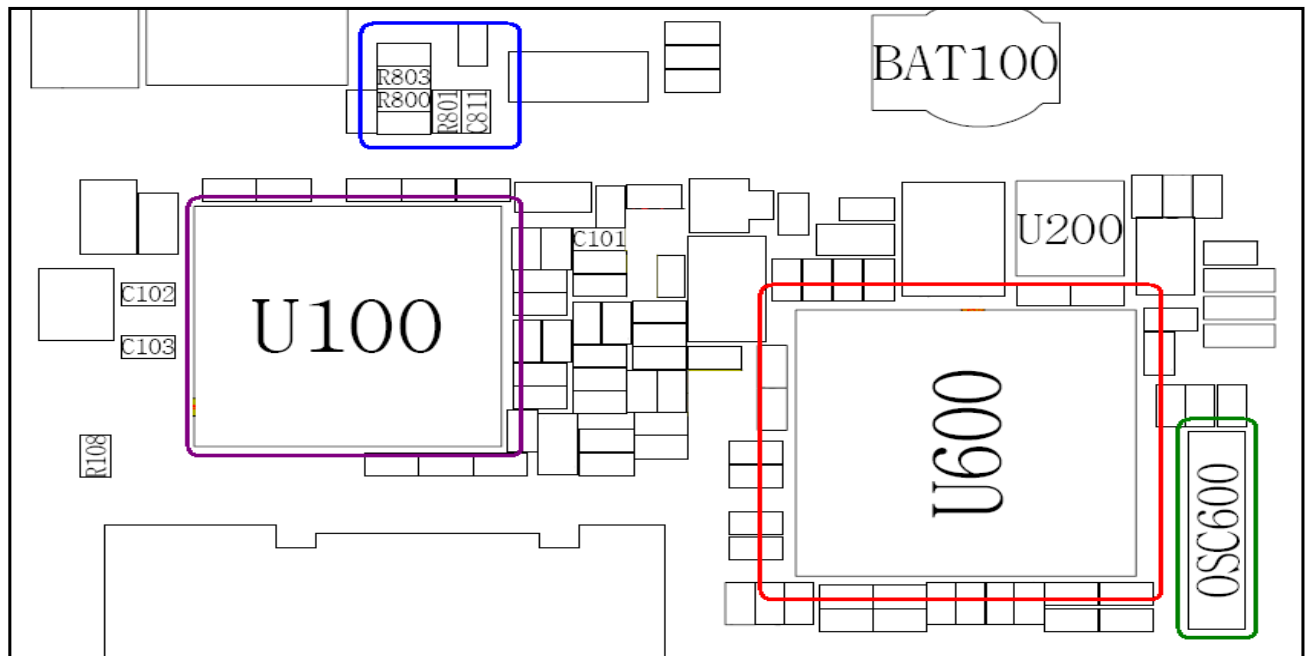
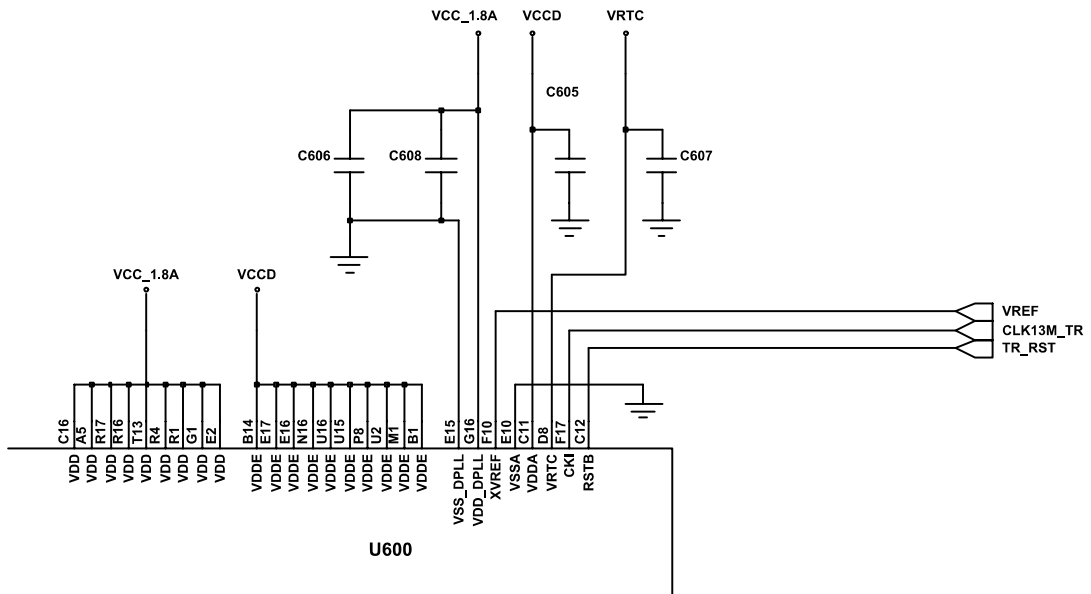
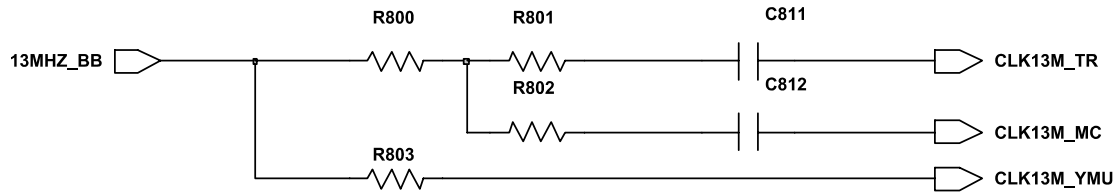
2-1-1. Power ON



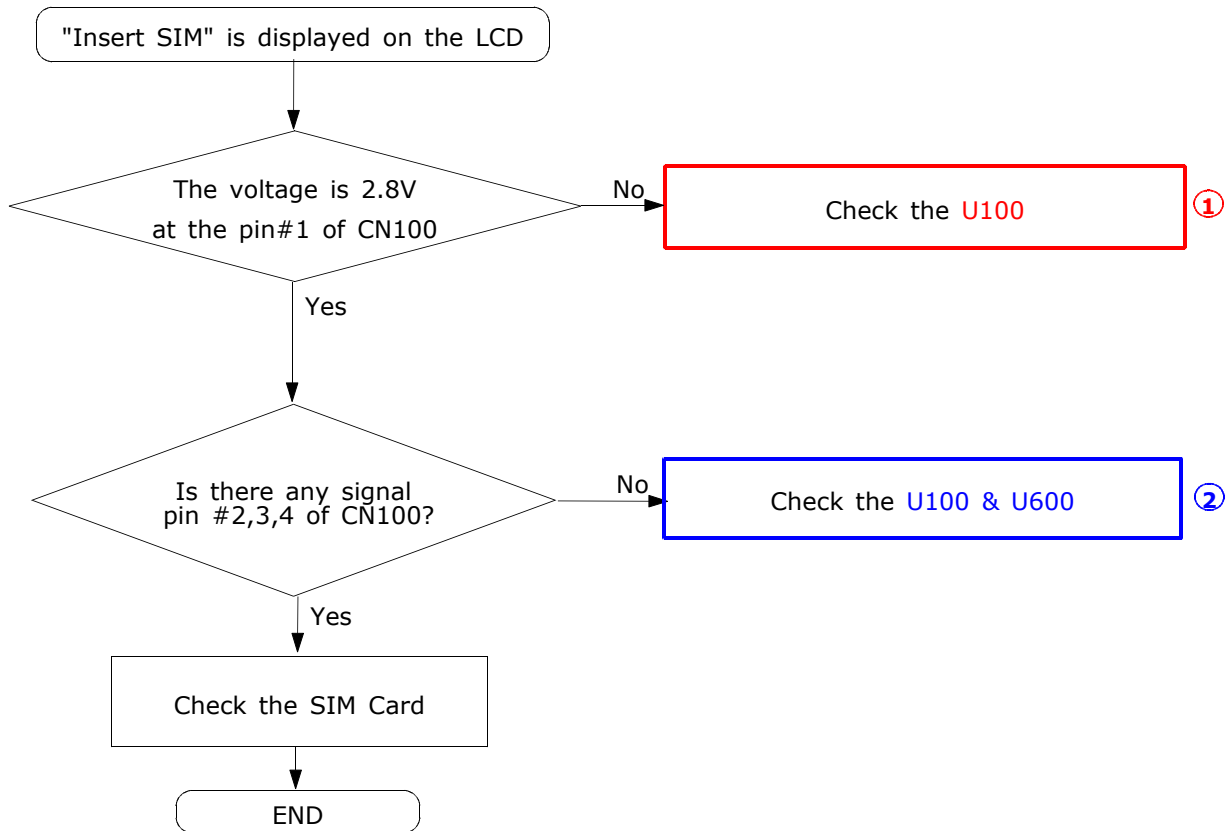


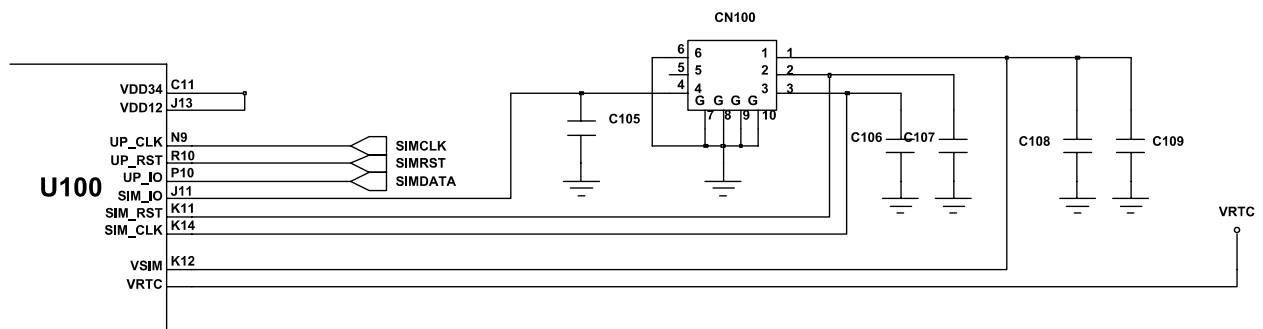
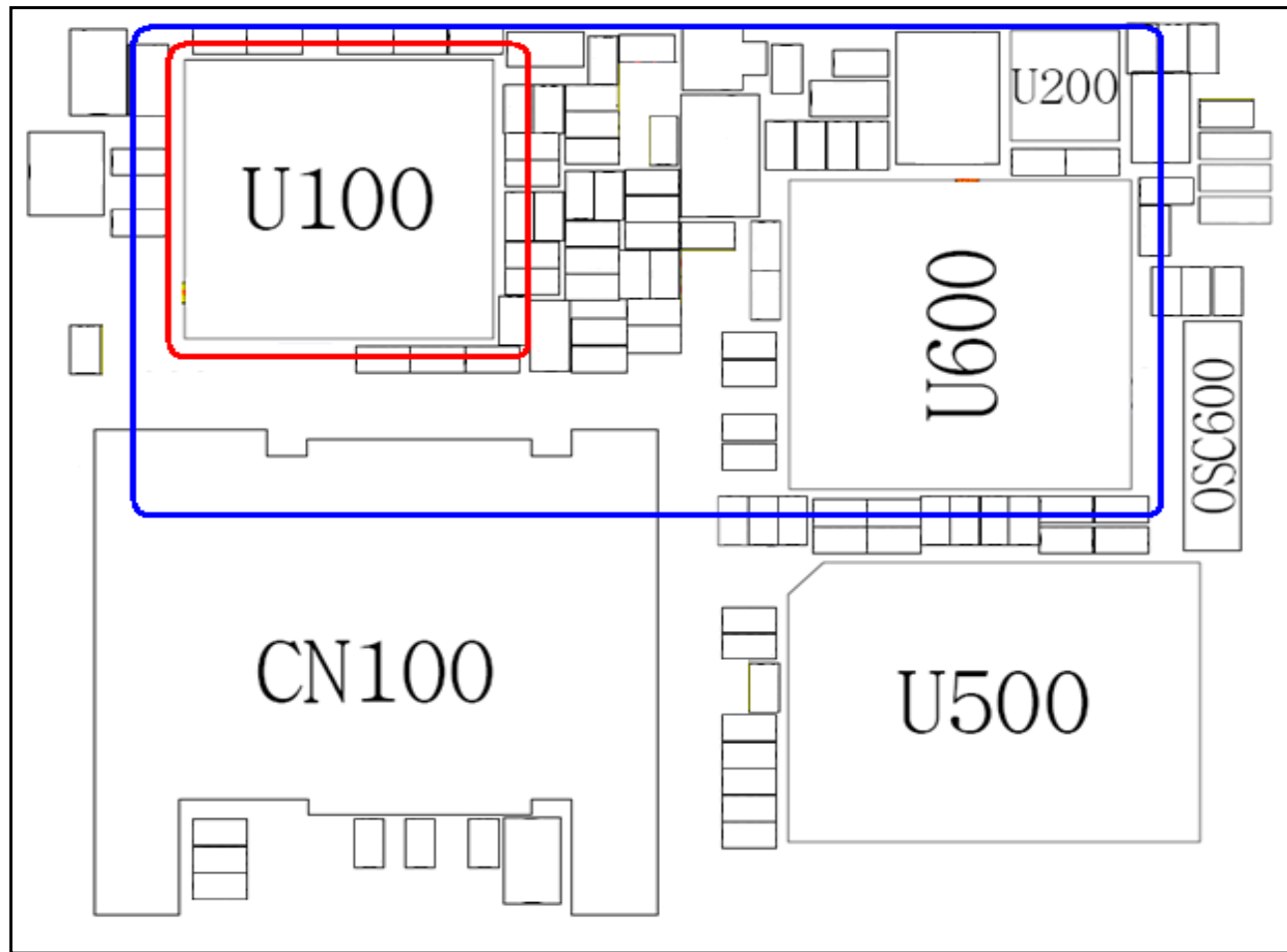
2-1-2. Initial





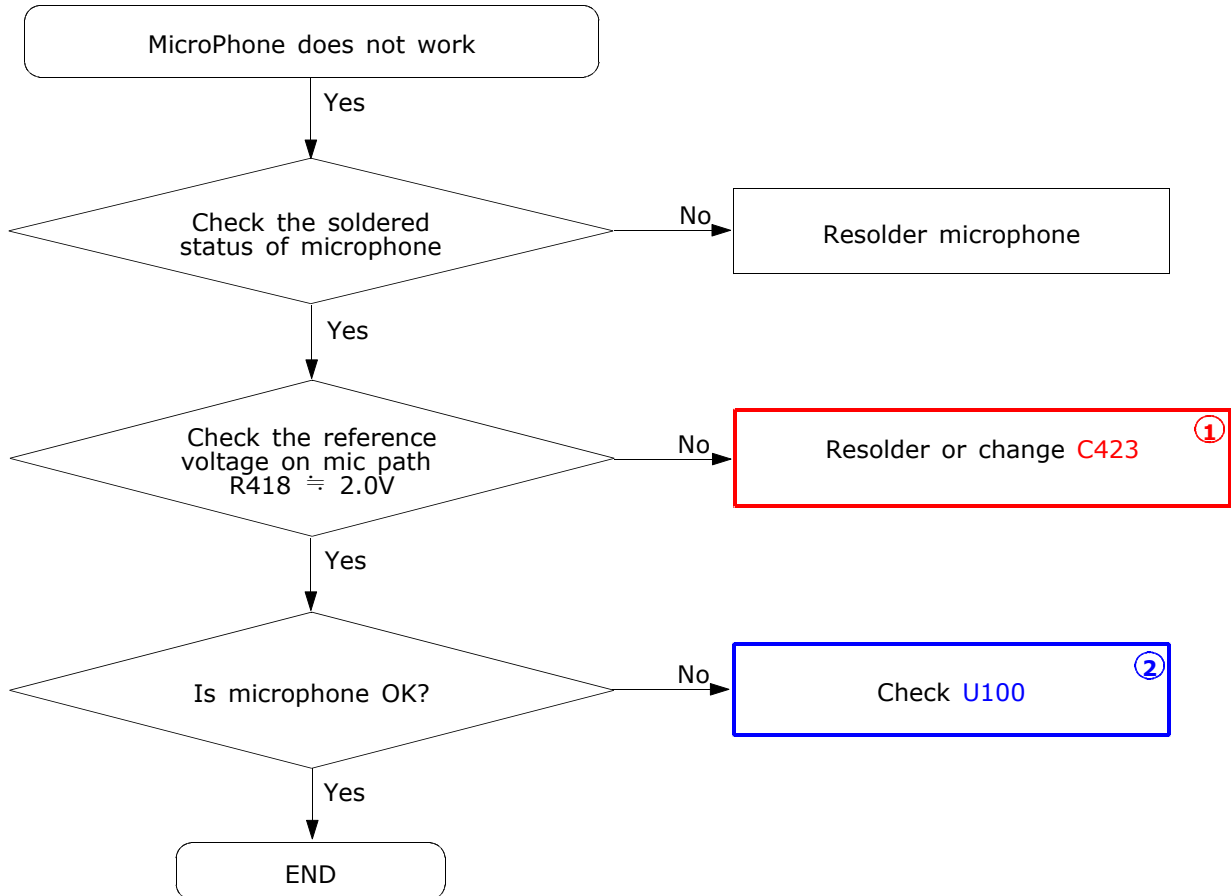
2-1-3. Sim Part

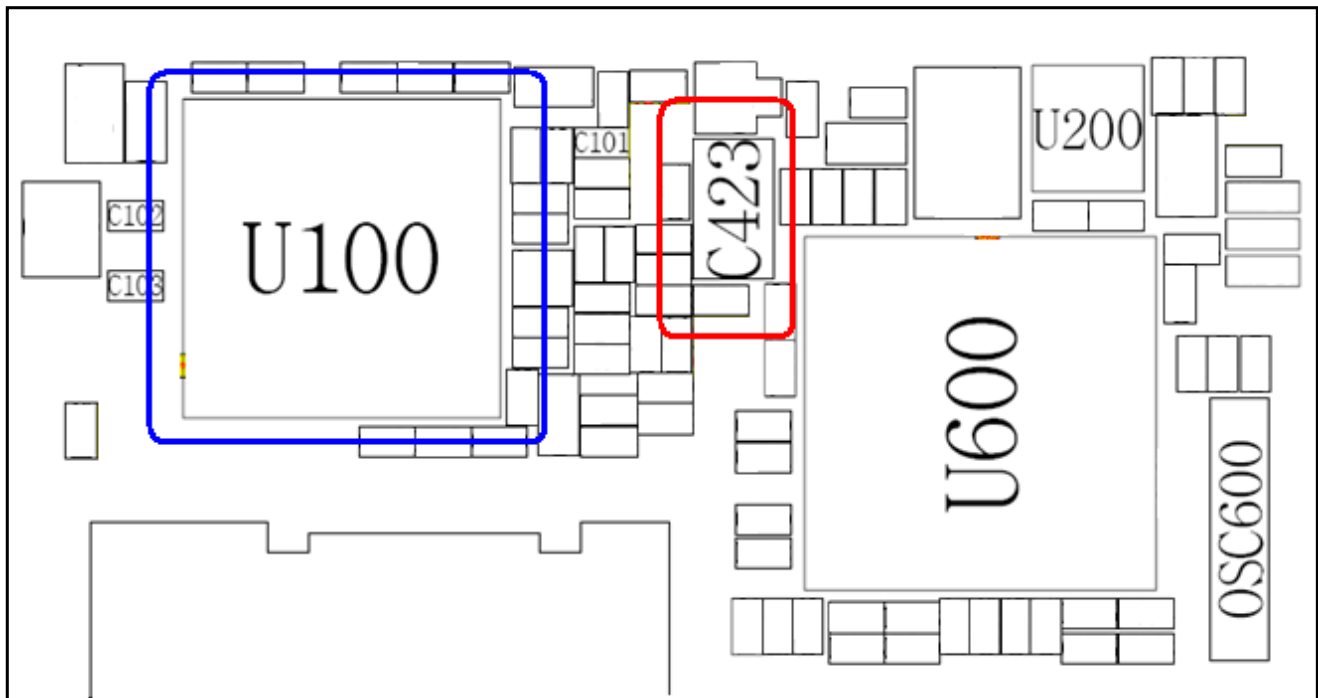
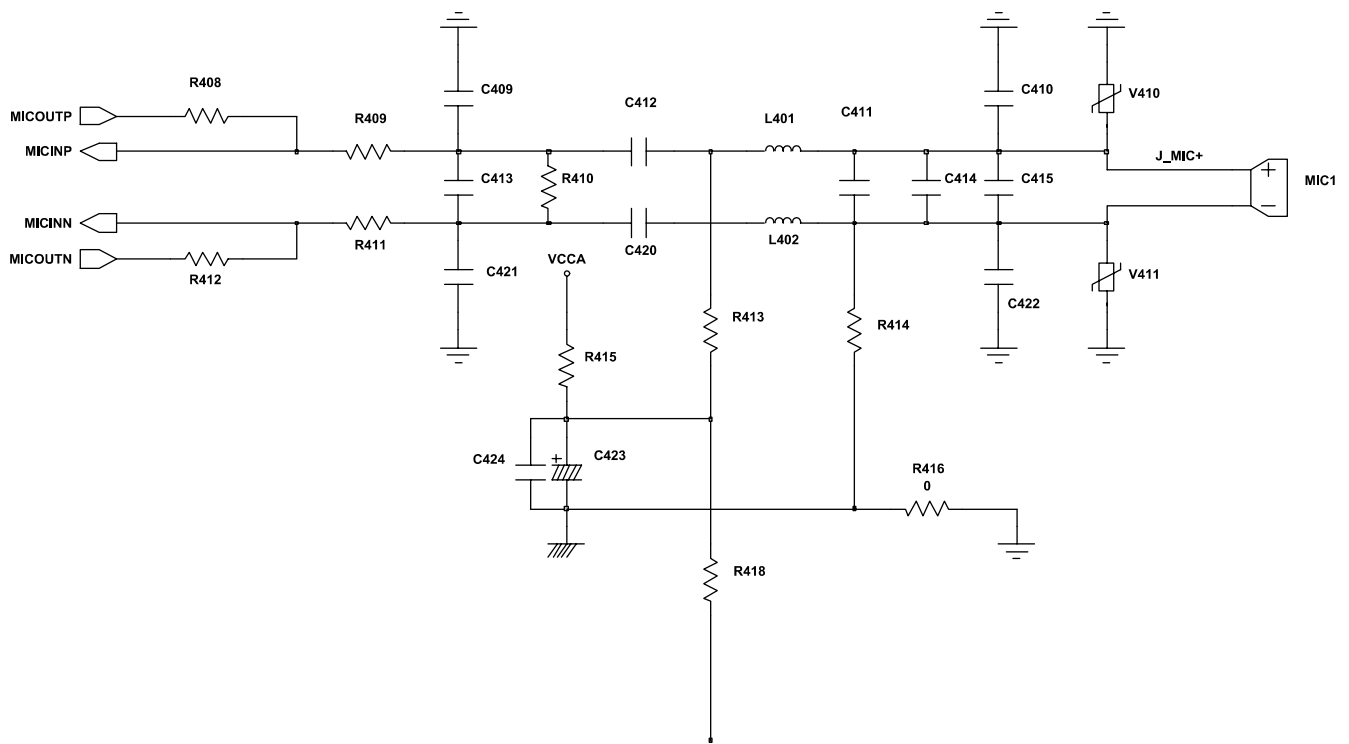




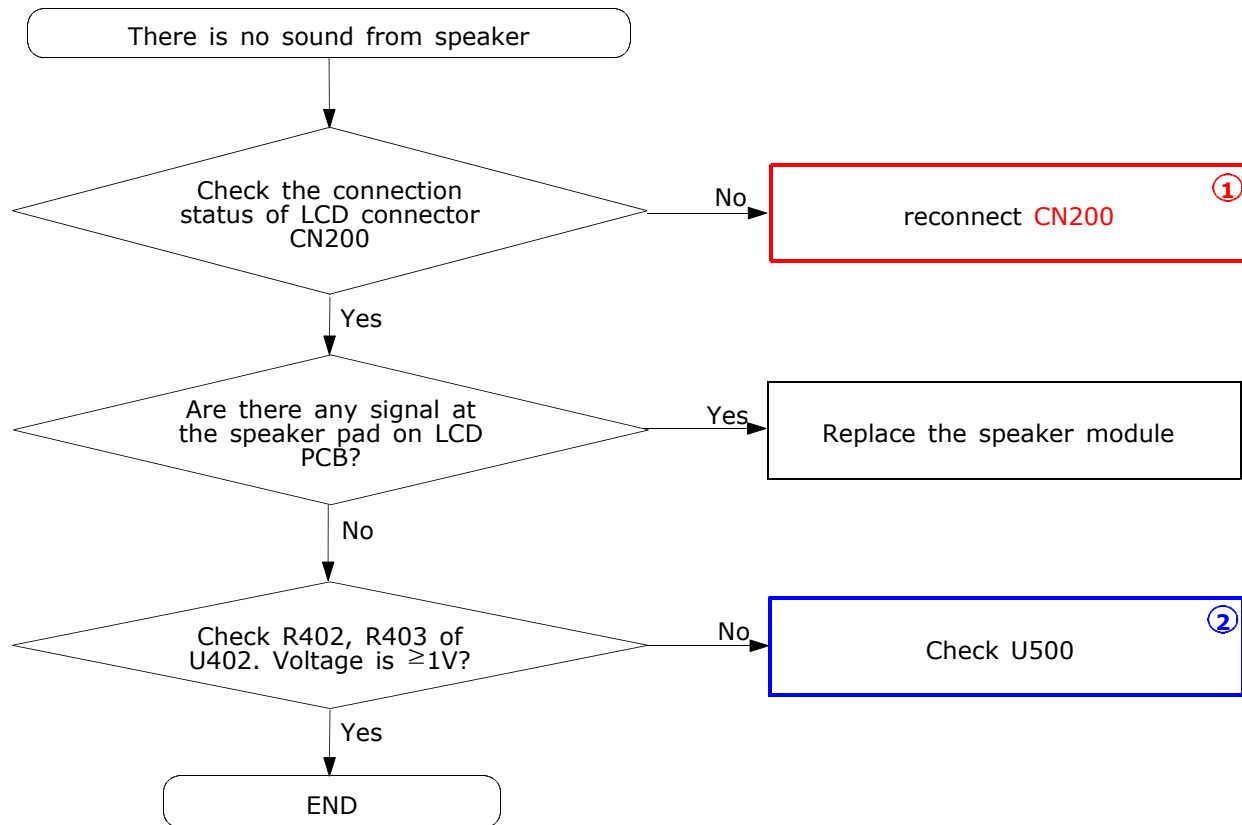
2-1-4. Microphone Part

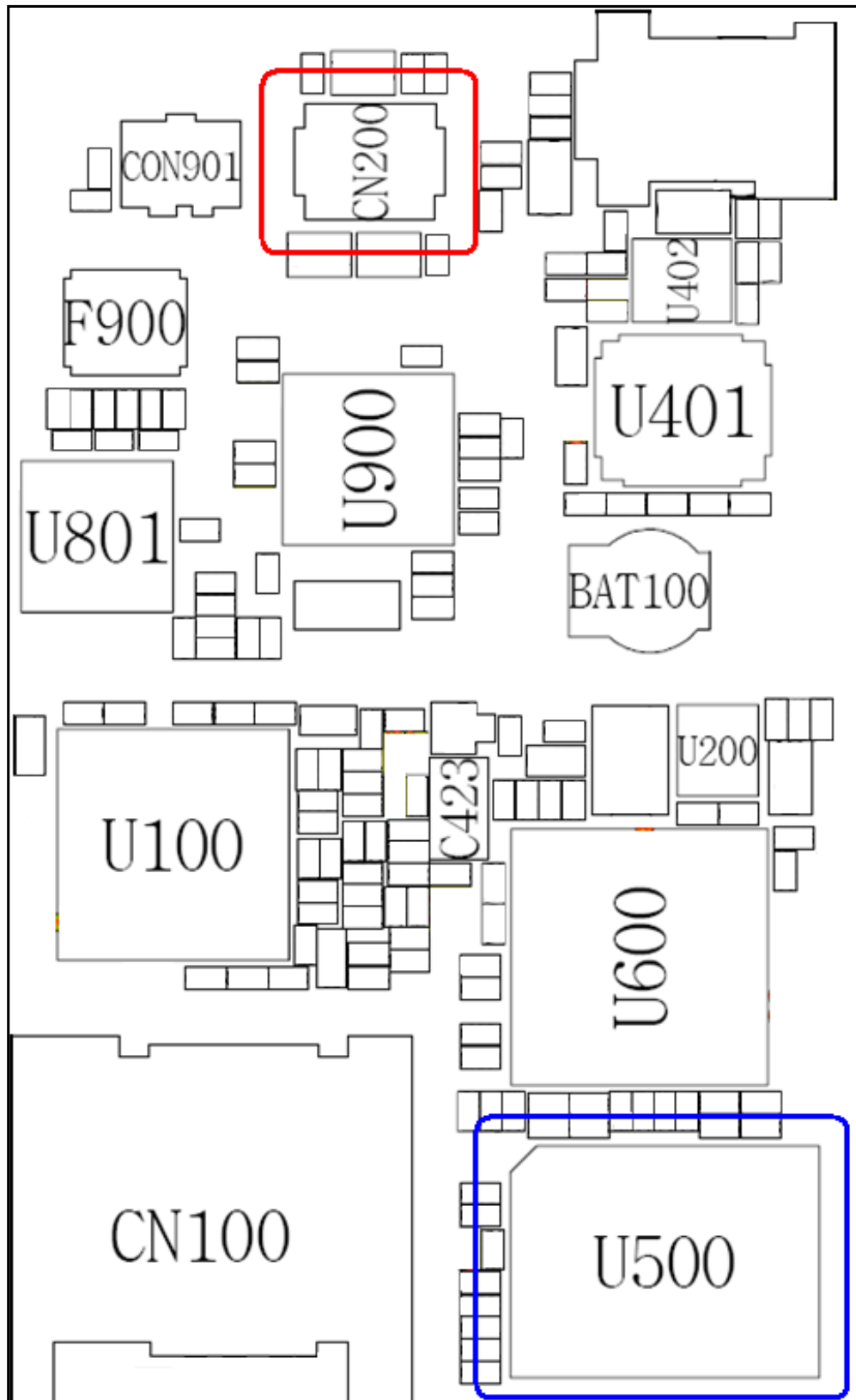
* Call with Sim before testing.



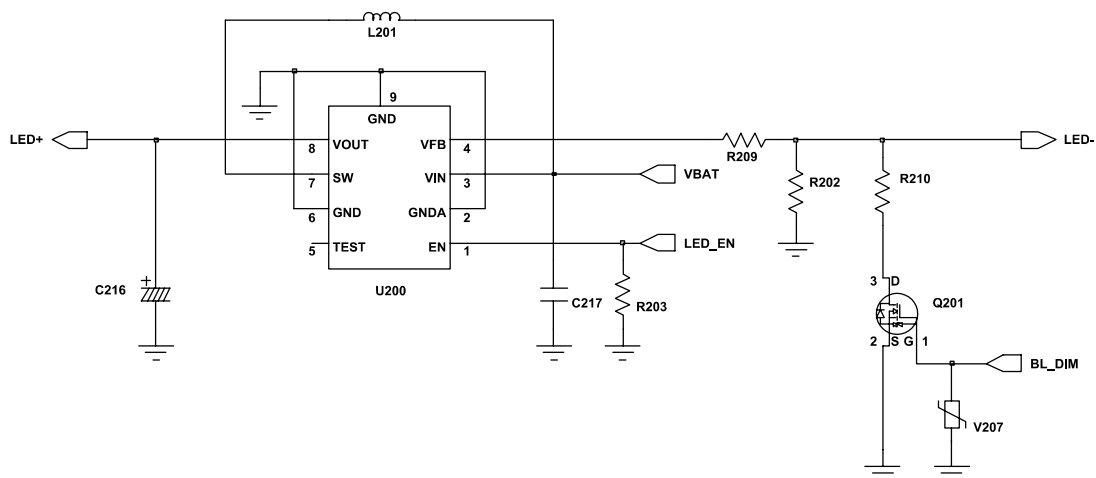
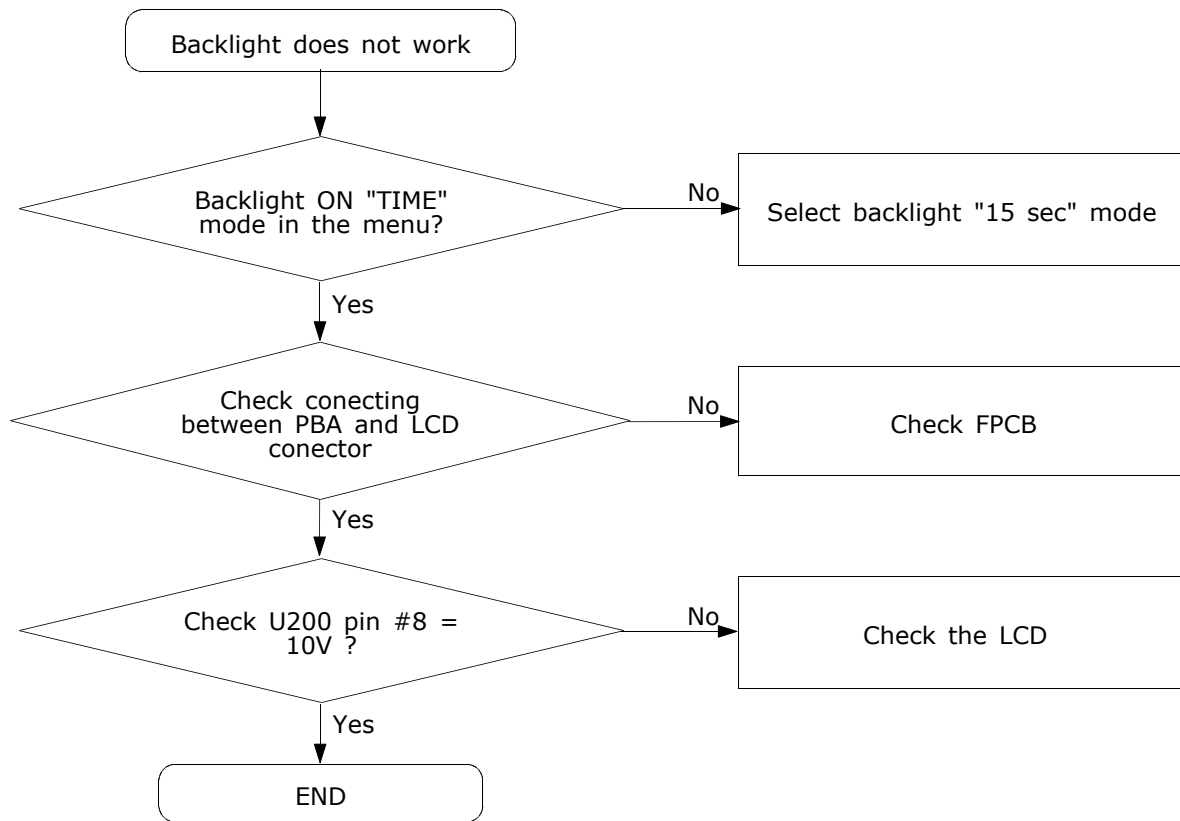


2-1-5. Speaker Part



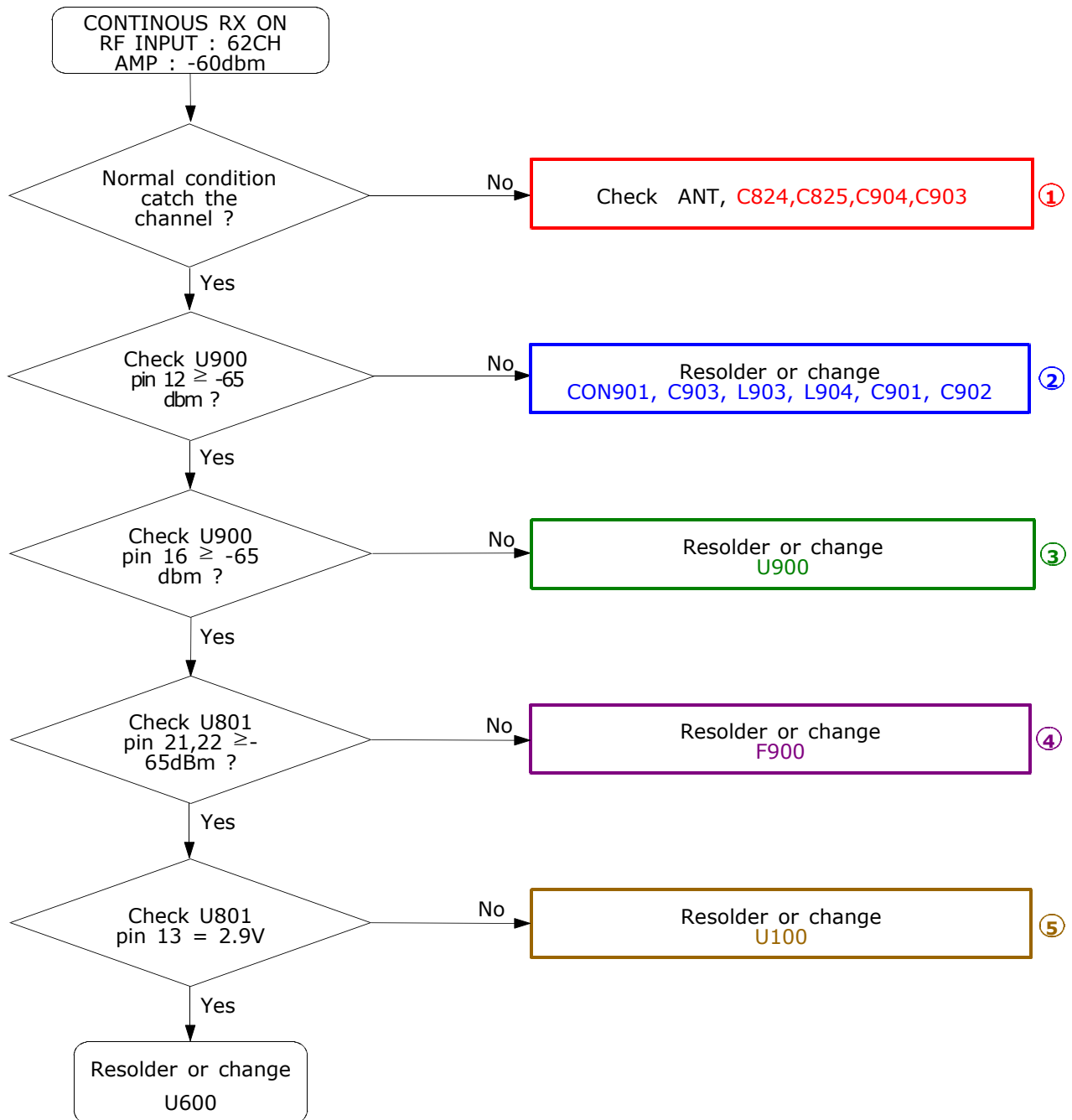


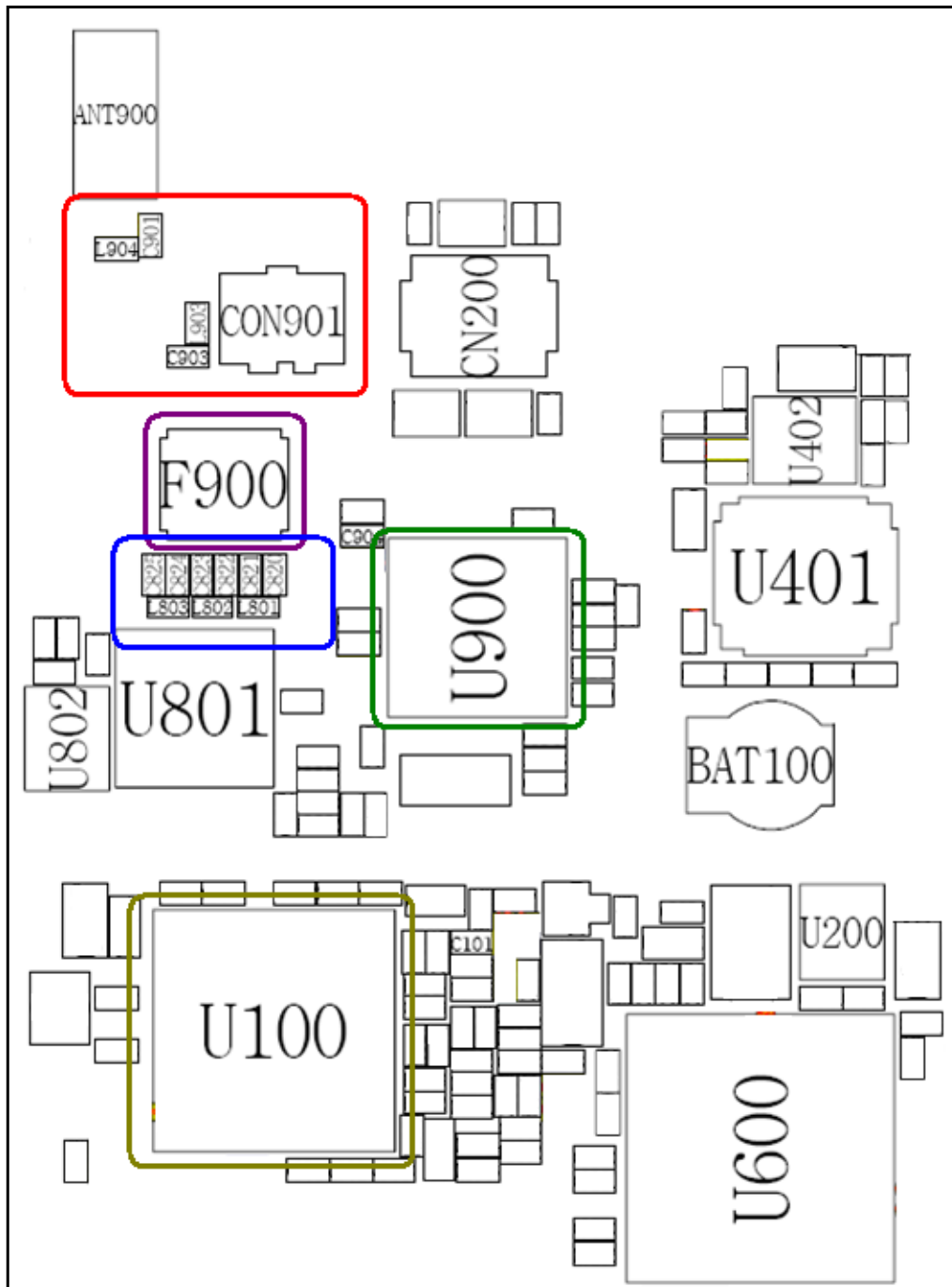
2-1-6. LCD backlight



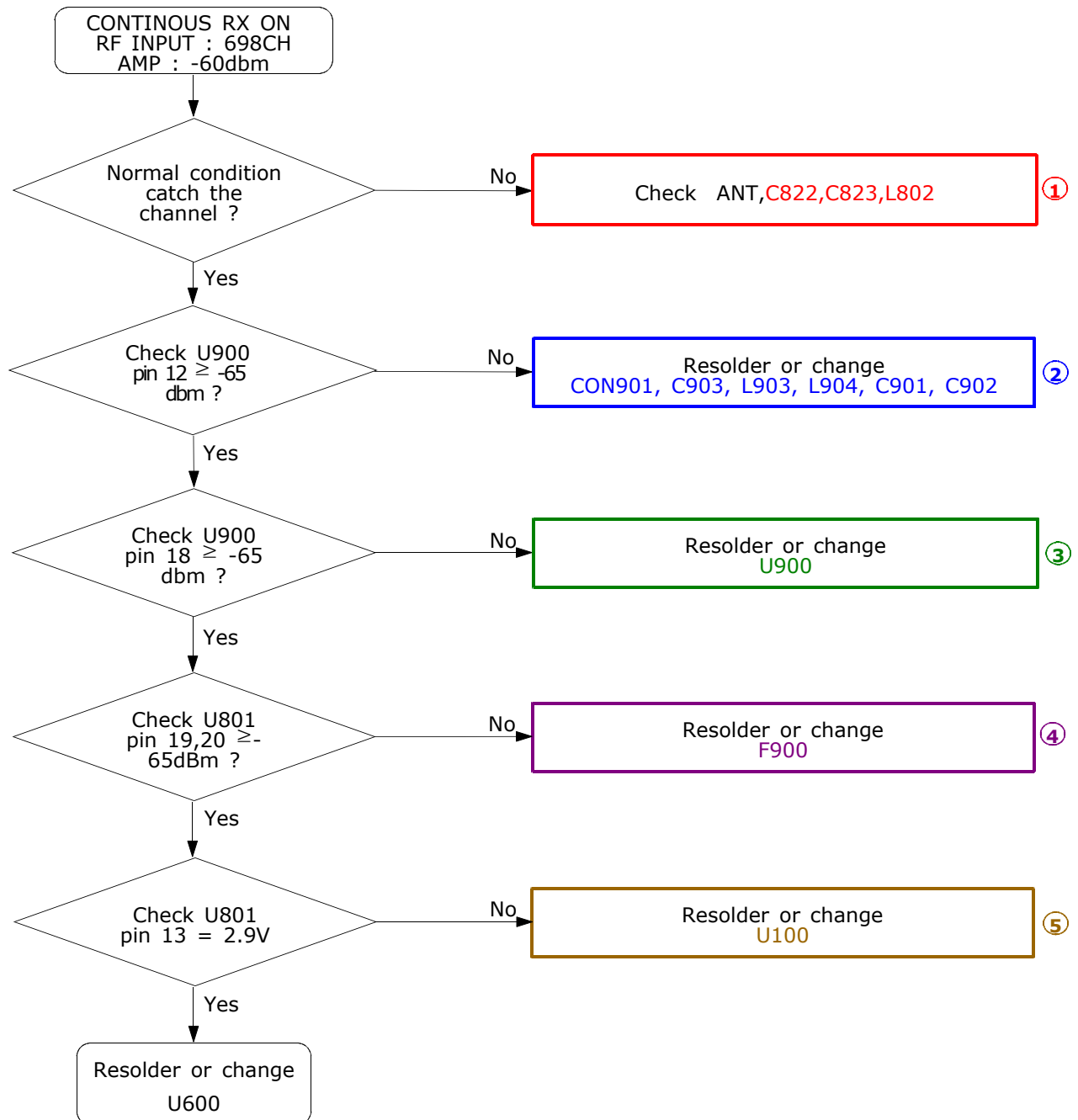
2-2. RF

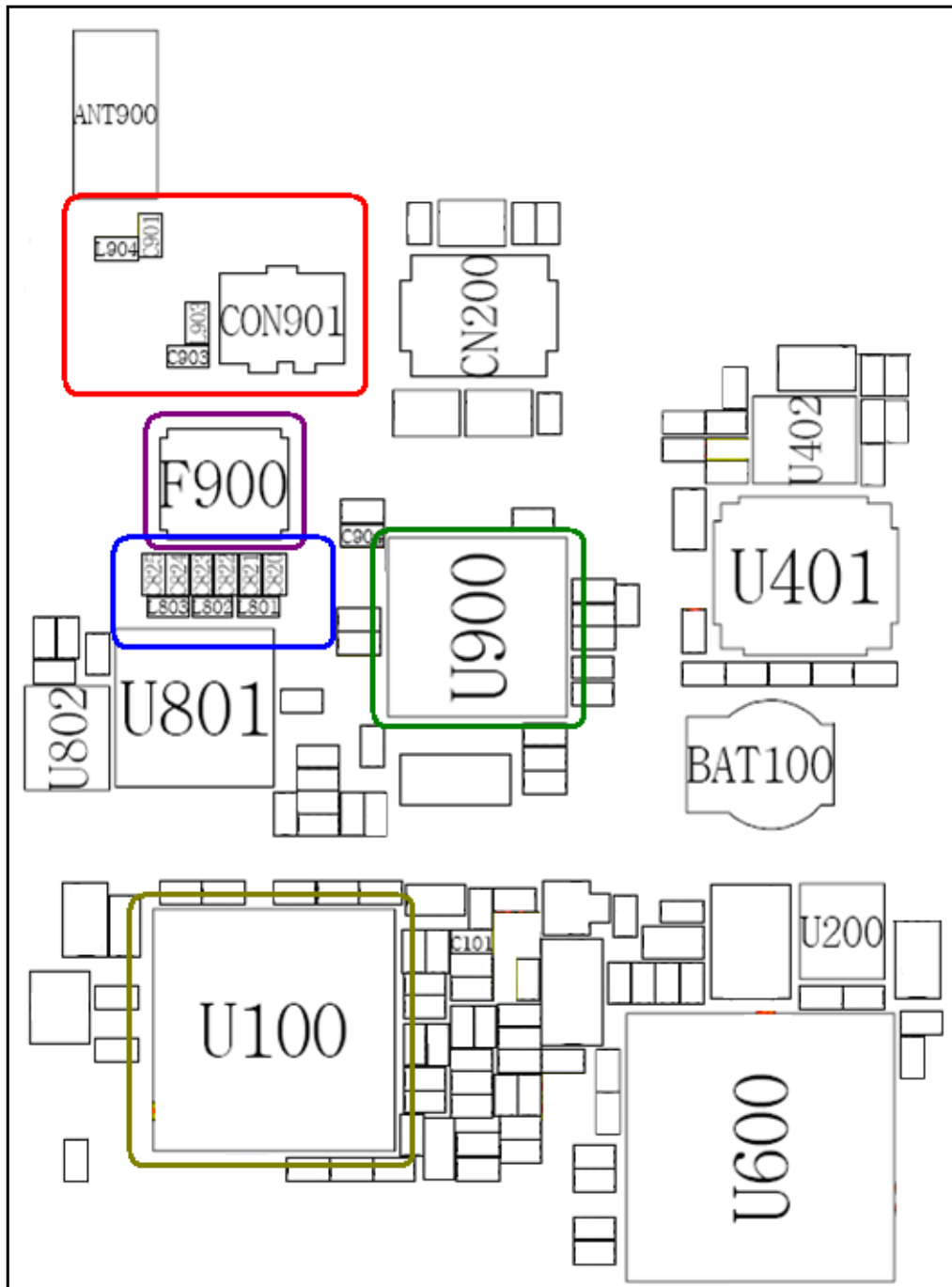
2-2-1. GSM Rx



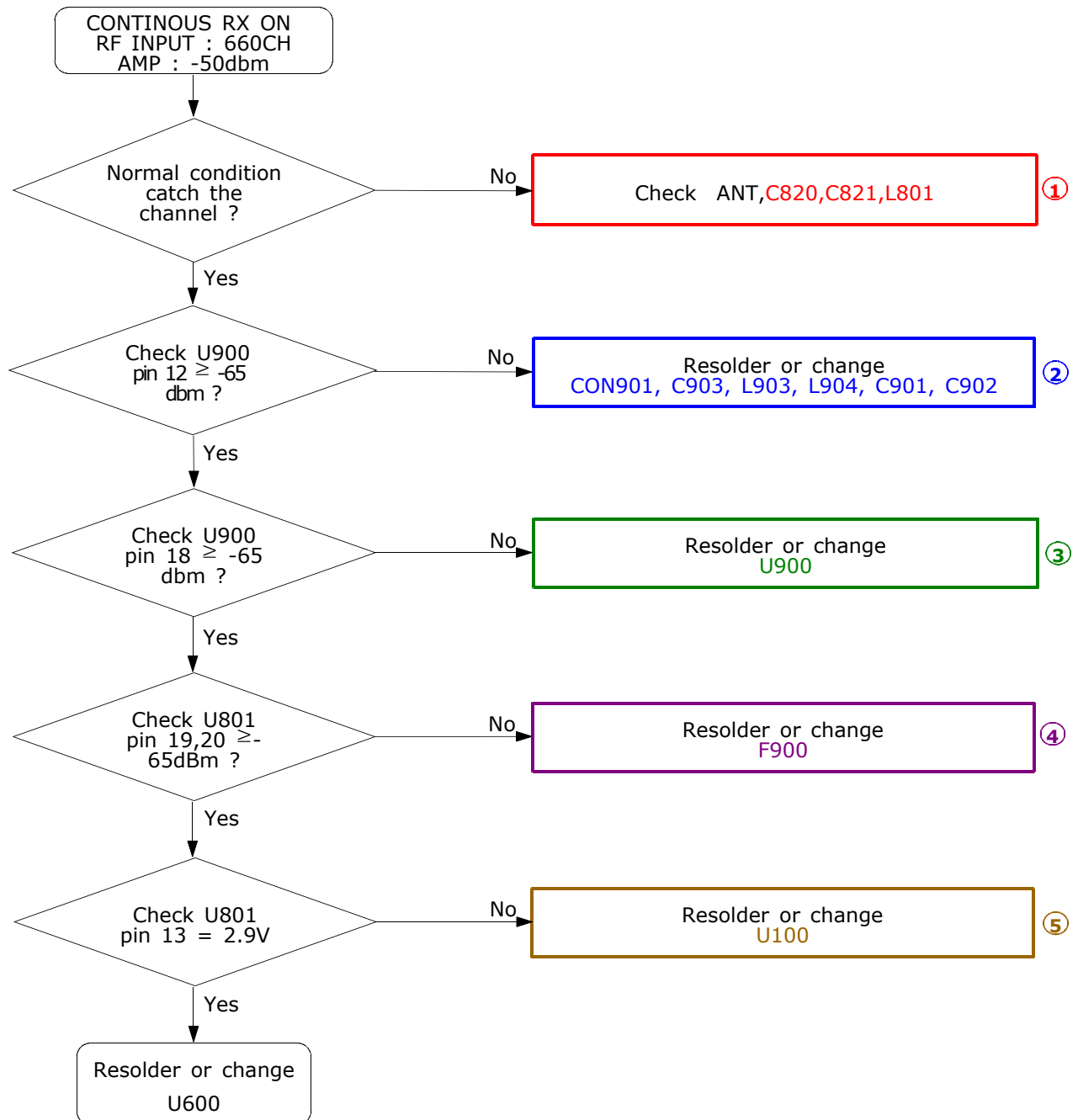


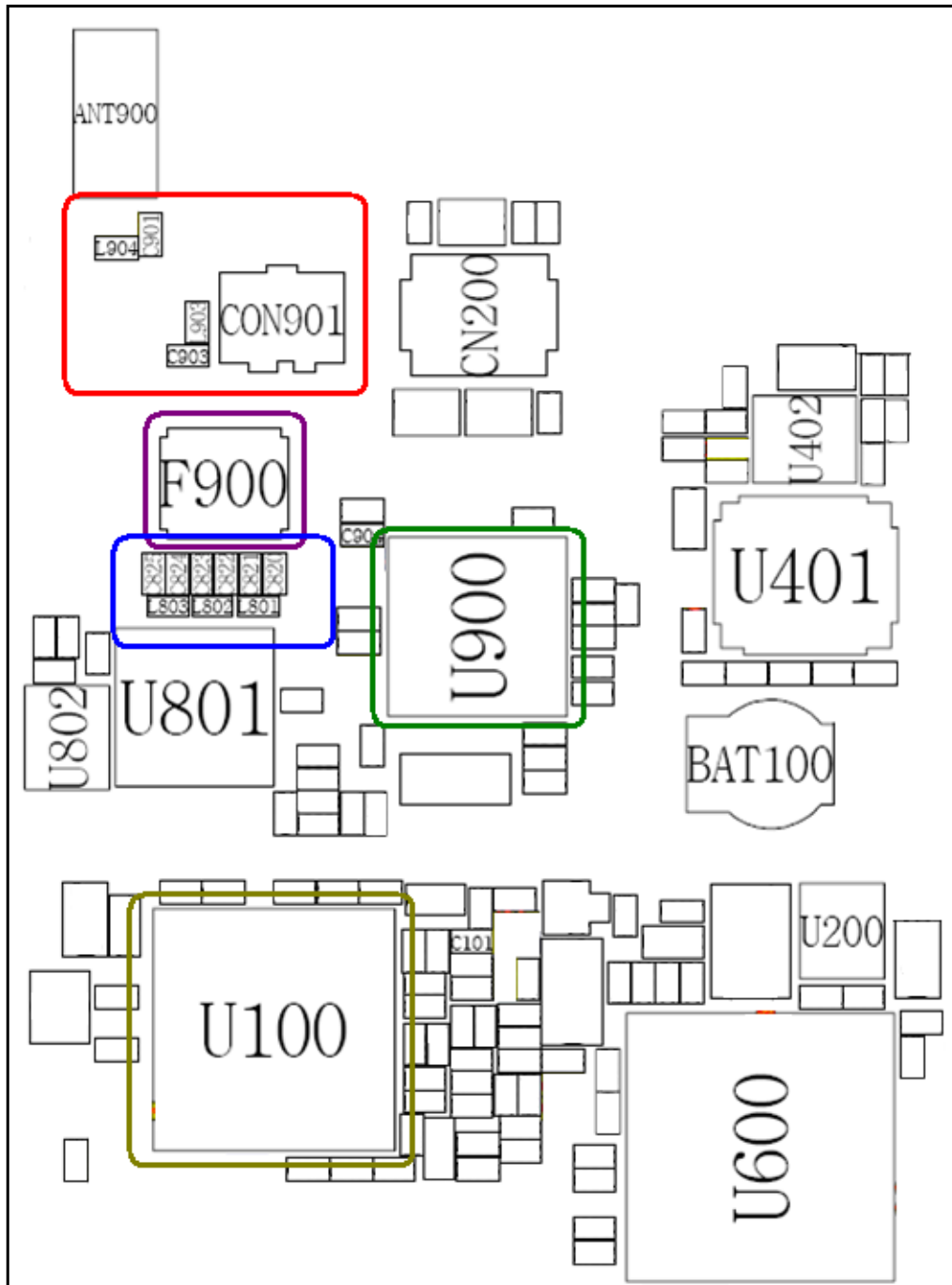
2-2-2. DCS Rx

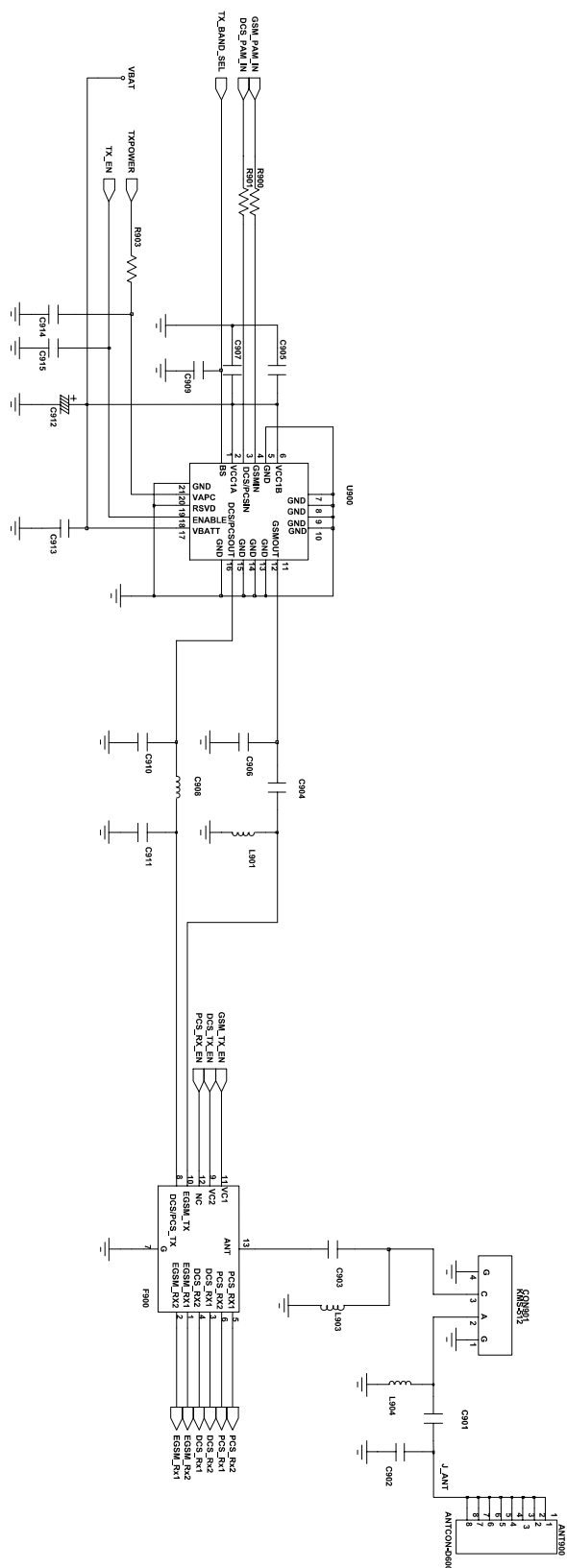




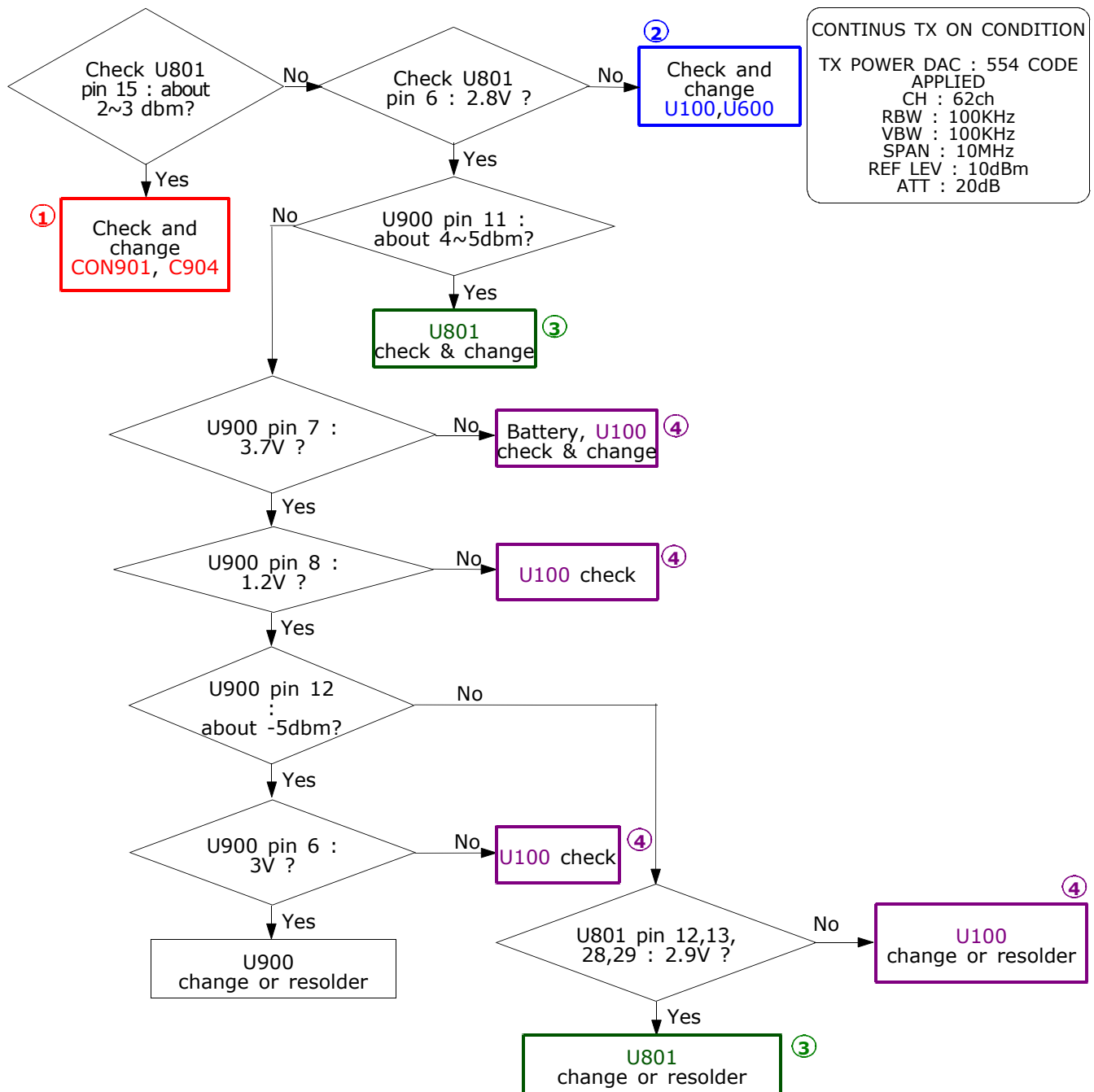
2-2-3. PCS Rx

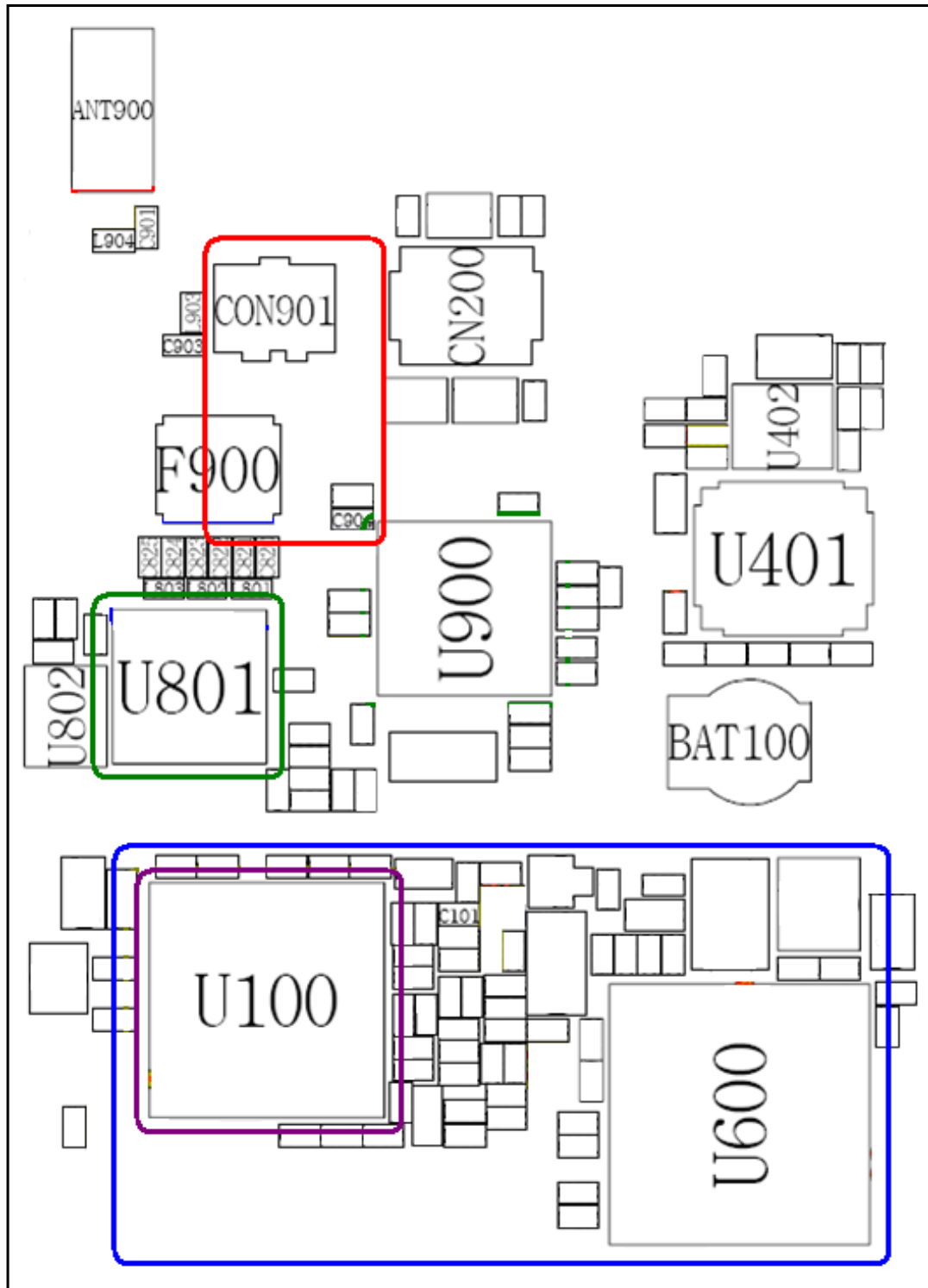




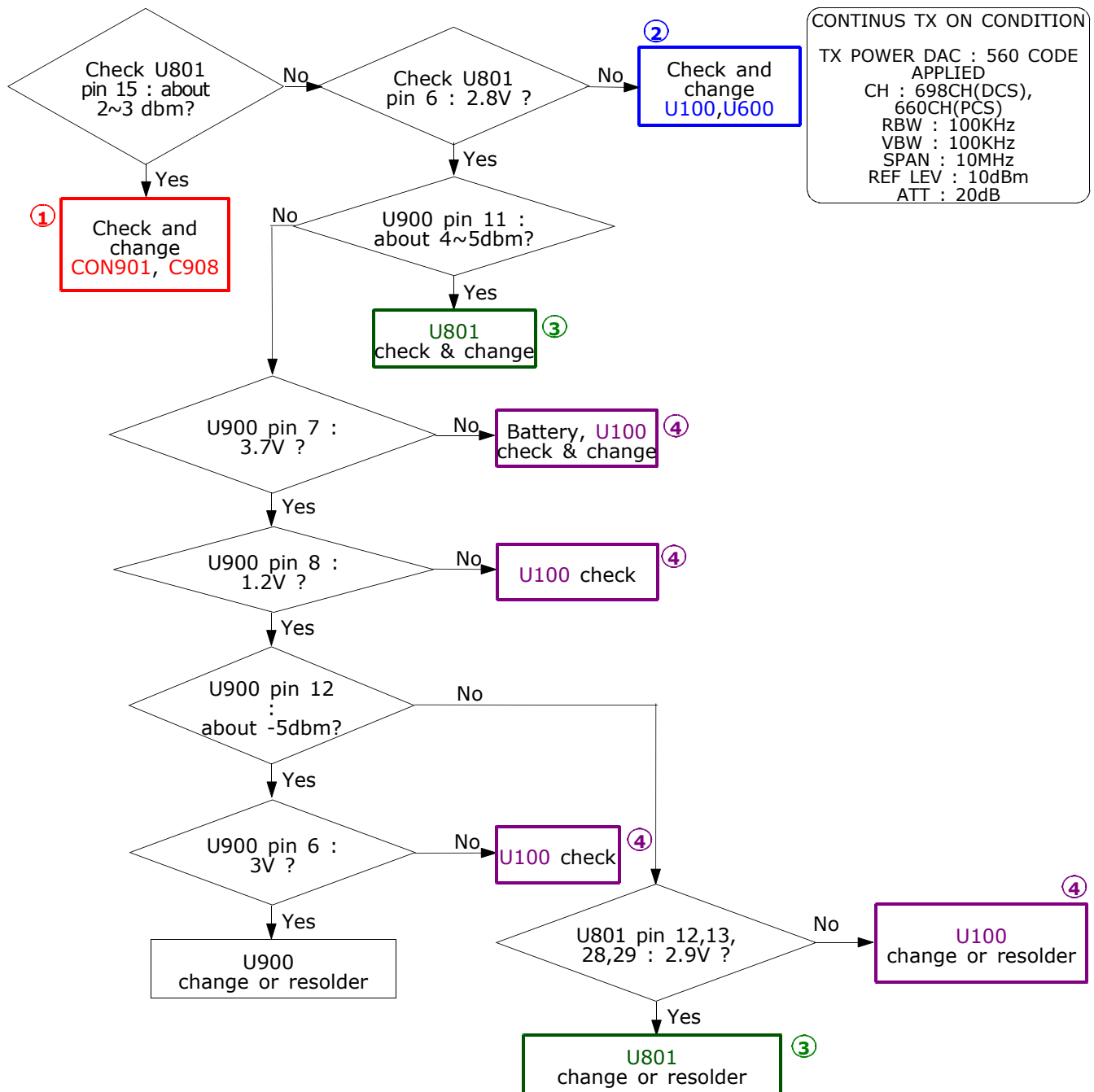


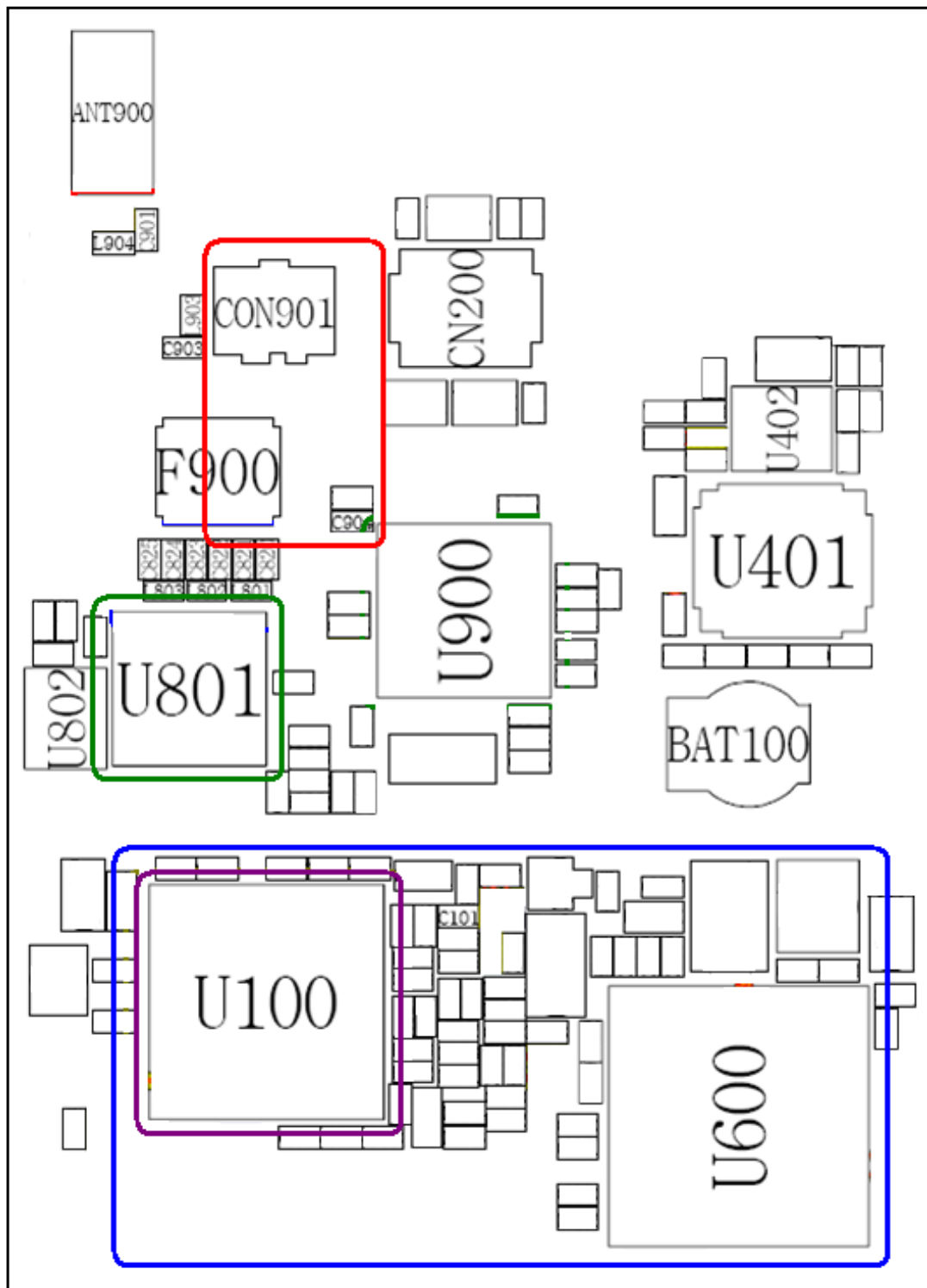
2-2-4. GSM Tx





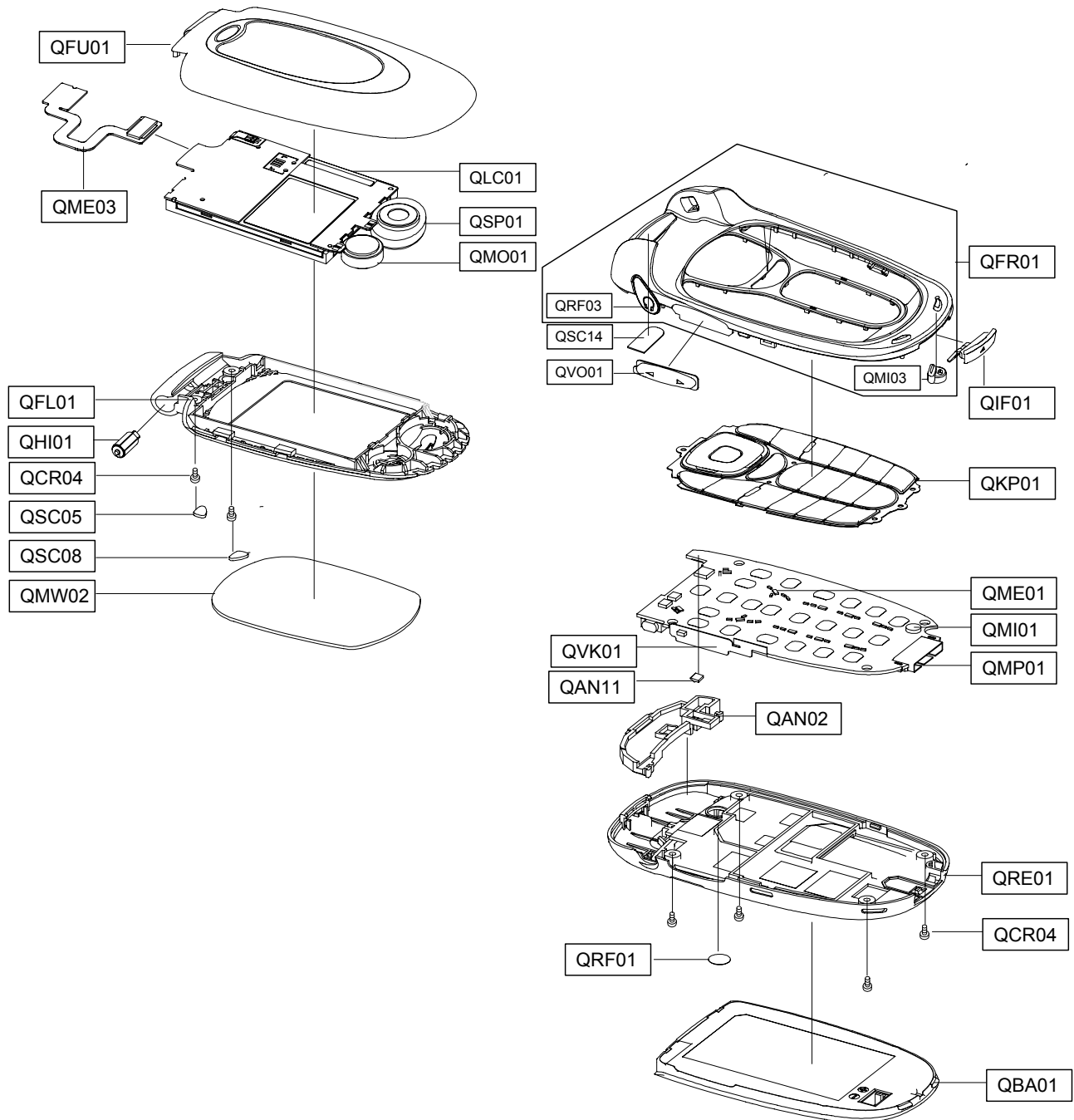
2-2-5. DCS/PCS Tx





3. SGH-X481 Exploded View and its Parts list

3-1. Cellular phone Exploded View



3-2. Cellular phone Parts list

Location NO.		Description	SEC CODE
QAN02		ANTENNA-SGHX481	GH42-00790A
QAN11		ASSY-CUSHION-RUBBER ANTENNA CO	GH98-01051A
QBA01		BATTERY-800MAH,SIL,ENG,M	GH43-01661A
QCR04		SCREW-MACHINE	6001-001479
QFU01		MEC-CASE FOLDER UPPER	GH75-09357A
QIF01		PMO-IF COVER	GH72-19085A
QKP01		ASSY-KEY-KEYPAD(SER/SIL)	GH98-00843A
QLC01		MEA-LCD MODULE KIT(X481)	GH97-05658A
QME01		UNIT-METAL DOME	GH59-03023A
QME03		PCB-CON TO CON	GH41-01181A
QMI01		MICROPHONE-ASSY-SGHX460	GH30-00119A
QMO01		MOTOR DC	GH31-00148A
QMP01		PBA MAIN-SGHX481	GH92-02649A
QMW02		PCT-COVER MAIN WINDOW	GH72-29249A
QRE01		ASSY-CASE-REAR	GH98-00742A
QRF01		MPR-TAPE RF SWITCH	GH74-12570A
QSC05		MPR-SCREW CAP R	GH74-12568A
QSC08		MPR-SCREW CAP L	GH74-12569A
QSC14		MPR-FRONT SHEET	GH74-13673A
QSP01		SPEAKER	3001-001737
QVK01		UNIT-VOLUME KEY	GH59-01927A
QVO01		PMO-SIDE KEY	GH72-19086A
QFL01		MEC-FOLDER LOWER	GH75-06164A
	QHI01	MEC-HINGE(CAN TYPE)	GH75-04662A
QFR01		ASSY-CASE-FRONT	GH98-00746A
	QMI03	RMO-MIC HOLDER	GH73-04031A
	QRF03	PMO-EAR COVER	GH72-19072A

Description	SEC CODE
BAG PE	6902-000634
ADAPTOR-TAD	GH44-00482A
LABEL(P)-WATER SOAK	GH68-02026A
LABEL(P)-WATER SOAK	GH68-02026A
MANUAL-WARRANTY CARD	GH68-02623A
MANUAL-SFC	GH68-04336A
LABEL(P)-BARCODE RUSSIA	GH68-08494A
LABEL(R)-MAIN(SER)	GH68-09191B
MANUAL USERS-EU RUSSIAN	GH68-09659A
CUSHION-CASE(1-2)	GH69-02722A
BOX(P)-UNIT(SER)	GH69-03612B
IPR-LOCKER SPRING	GH70-00228A
PMO-BATT LOCKER	GH72-19087A
MPR-MAIN WIN BOHO VINYL	GH74-09036A
MPR-BOHO VINYL W/SUB OUT	GH74-09046A
MPR-BOHO VINYL W/SUB OUT	GH74-09046A
MPR-LOWER BOHO VINYL	GH74-09047A
MPR-TAPE WINDOW	GH74-12567A
MPR-TAPE EAR COVER	GH74-12571A
MPR-TAPE CONTOCON	GH74-13626A
MPR-TAPE PBA EMI	GH74-13732A
MPR-TAPE J TAG	GH74-13733A
MPR-TAPE PBA GLD SHEET A	GH74-13963A
MPR-TAPE CAM CON LCD	GH74-20645A
MPR-TAPE EMI PBA 3	GH74-21767A

3-3. Test Jig (GH80-03304A)



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



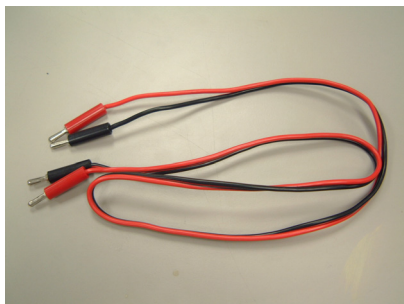
3-3-2. DATA CABLE
(GH39-00127A)



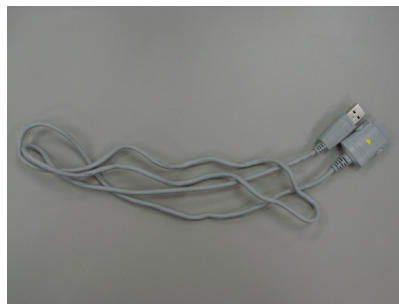
3-3-3. Serial Cable



3-3-4. Power Supply Cable



3-3-5. Test Cable
(GH39-00304A)



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



4. SGH-X481 MAIN Electrical Parts List

Design LOC	Discription	SEC Code	STATUS
ANT900	NPR-ANTENNA CONTACT	GH71-06578A	SA
ANT901	NPR-ANTENNA CONTACT	GH71-06578A	SA
BAT100	BATTERY-LI(2ND)	4302-001184	SA
C101	C-CER,CHIP	2203-000254	SA
C102	C-CER,CHIP	2203-001072	SA
C103	C-CER,CHIP	2203-006048	SA
C104	C-CER,CHIP	2203-006324	SA
C105	C-CER,CHIP	2203-000812	SA
C106	C-CER,CHIP	2203-000812	SA
C107	C-CER,CHIP	2203-000812	SA
C108	C-CER,CHIP	2203-002709	SNA
C109	C-CER,CHIP	2203-006183	SA
C110	C-CER,CHIP	2203-000233	SA
C111	C-TA,CHIP	2404-001240	SA
C112	C-CER,CHIP	2203-006562	SA
C113	C-CER,CHIP	2203-006562	SA
C114	C-CER,CHIP	2203-006562	SA
C115	C-CER,CHIP	2203-006562	SA
C116	C-CER,CHIP	2203-006562	SA
C117	C-CER,CHIP	2203-006183	SA
C118	C-CER,CHIP	2203-000254	SA
C119	C-CER,CHIP	2203-002709	SNA
C120	C-CER,CHIP	2203-000254	SA
C121	C-CER,CHIP	2203-005819	SA
C123	C-CER,CHIP	2203-005617	SNA
C125	C-TA,CHIP	2404-001415	SA
C201	C-CER,CHIP	2203-006048	SA
C202	C-CER,CHIP	2203-006048	SA
C205	C-CER,CHIP	2203-000254	SA
C206	C-CER,CHIP	2203-000359	SA
C207	C-CER,CHIP	2203-000359	SA
C208	C-CER,CHIP	2203-006257	SA
C209	C-CER,CHIP	2203-006257	SA
C210	C-CER,CHIP	2203-000438	SA
C211	C-CER,CHIP	2203-000233	SA
C216	C-TA,CHIP	2404-001450	SA
C217	C-CER,CHIP	2203-006562	SA
C220	C-NETWORK	2503-001041	SA
C221	C-NETWORK	2503-001041	SA
C302	C-CER,CHIP	2203-000854	SA
C303	C-TA,CHIP	2404-001415	SA
C401	C-CER,CHIP	2203-000940	SA
C402	C-TA,CHIP	2404-001415	SA
C403	C-CER,CHIP	2203-002709	SNA
C404	C-CER,CHIP	2203-002709	SNA
C405	C-CER,CHIP	2203-006091	SA
C407	C-CER,CHIP	2203-002709	SNA

Design LOC	Discription	SEC Code	STATUS
C408	C-CER,CHIP	2203-000585	SA
C410	C-CER,CHIP	2203-000812	SA
C411	C-CER,CHIP	2203-000812	SA
C412	C-CER,CHIP	2203-006260	SA
C413	C-CER,CHIP	2203-000995	SA
C414	C-CER,CHIP	2203-000628	SA
C415	C-CER,CHIP	2203-000425	SA
C416	C-CER,CHIP	2203-006824	SA
C417	C-CER,CHIP	2203-006260	SA
C418	C-CER,CHIP	2203-000438	SA
C419	C-CER,CHIP	2203-002709	SNA
C420	C-CER,CHIP	2203-006260	SA
C422	C-CER,CHIP	2203-000812	SA
C423	C-TA,CHIP	2404-001414	SA
C424	C-CER,CHIP	2203-000233	SA
C425	C-TA,CHIP	2404-001105	SA
C429	C-CER,CHIP	2203-006048	SA
C430	C-TA,CHIP	2404-001105	SA
C431	C-CER,CHIP	2203-000628	SA
C432	C-CER,CHIP	2203-000812	SA
C433	C-CER,CHIP	2203-001072	SA
C434	C-CER,CHIP	2203-001072	SA
C435	C-CER,CHIP	2203-006260	SA
C436	C-CER,CHIP	2203-005344	SA
C501	C-CER,CHIP	2203-000233	SA
C502	C-CER,CHIP	2203-002709	SNA
C503	C-CER,CHIP	2203-000233	SA
C504	C-CER,CHIP	2203-002709	SNA
C600	C-CER,CHIP	2203-006260	SA
C601	C-CER,CHIP	2203-000254	SA
C602	C-CER,CHIP	2203-000254	SA
C603	C-CER,CHIP	2203-000254	SA
C604	C-CER,CHIP	2203-000254	SA
C605	C-CER,CHIP	2203-002709	SNA
C606	C-CER,CHIP	2203-000679	SA
C607	C-CER,CHIP	2203-001405	SA
C608	C-CER,CHIP	2203-000254	SA
C610	C-CER,CHIP	2203-000254	SA
C611	C-CER,CHIP	2203-000254	SA
C612	C-CER,CHIP	2203-000254	SA
C613	C-CER,CHIP	2203-000254	SA
C615	C-CER,CHIP	2203-006626	SA
C618	C-CER,CHIP	2203-006260	SA
C619	C-CER,CHIP	2203-000330	SA
C620	C-CER,CHIP	2203-000330	SA
C702	C-CER,CHIP	2203-006324	SA
C703	C-CER,CHIP	2203-006048	SA

Design LOC	Discription	SEC Code	STATUS
C704	C-CER,CHIP	2203-006048	SA
C706	C-CER,CHIP	2203-000812	SA
C801	C-CER,CHIP	2203-000233	SA
C802	C-CER,CHIP	2203-000854	SA
C803	C-CER,CHIP	2203-000278	SA
C810	C-CER,CHIP	2203-006048	SA
C811	C-CER,CHIP	2203-000386	SA
C812	C-CER,CHIP	2203-001412	SA
C814	C-CER,CHIP	2203-006048	SA
C815	C-CER,CHIP	2203-006048	SA
C819	C-CER,CHIP	2203-000278	SA
C820	C-CER,CHIP	2203-002677	SA
C821	C-CER,CHIP	2203-002677	SA
C822	C-CER,CHIP	2203-005234	SA
C823	C-CER,CHIP	2203-005234	SA
C824	C-CER,CHIP	2203-005281	SA
C825	C-CER,CHIP	2203-005281	SA
C901	C-CER,CHIP	2203-000330	SA
C902	C-CER,CHIP	2203-002668	SA
C903	C-CER,CHIP	2203-000812	SA
C904	C-CER,CHIP	2203-000854	SA
C905	C-CER,CHIP	2203-000254	SA
C907	C-CER,CHIP	2203-000254	SA
C908	INDUCTOR-SMD	2703-002205	SA
C909	C-CER,CHIP	2203-000438	SA
C911	C-CER,CHIP	2203-001383	SA
C912	C-TA,CHIP	2404-001449	SA
C913	C-CER,CHIP	2203-000254	SA
C914	C-CER,CHIP	2203-000530	SA
C915	C-CER,CHIP	2203-000438	SA
CN200	HEADER-BOARD TO BOARD	3711-005296	SA
CN300	CONNECTOR-INTERFACE	3710-001994	SA
CN301	CONNECTOR-BATTERY	3711-005829	SA
CN401	JACK-EAR PHONE	3722-002067	SA
CON901	CONNECTOR-COAXIAL	3705-001358	SA
D700	DIODE-TVS	0406-001210	SA
D701	DIODE-TVS	0406-001210	SA
D702	DIODE-TVS	0406-001210	SA
F900	DUPLEXER-FEM	2911-000030	SNA
L201	INDUCTOR-SMD	2703-002339	SA
L301	BEAD-SMD	3301-001659	SA
L401	INDUCTOR-SMD	2703-002202	SA
L402	INDUCTOR-SMD	2703-002202	SA
L701	BEAD-SMD	3301-001729	SA
L801	INDUCTOR-SMD	2703-002544	SA
L802	INDUCTOR-SMD	2703-002544	SA
L803	INDUCTOR-SMD	2703-002558	SA

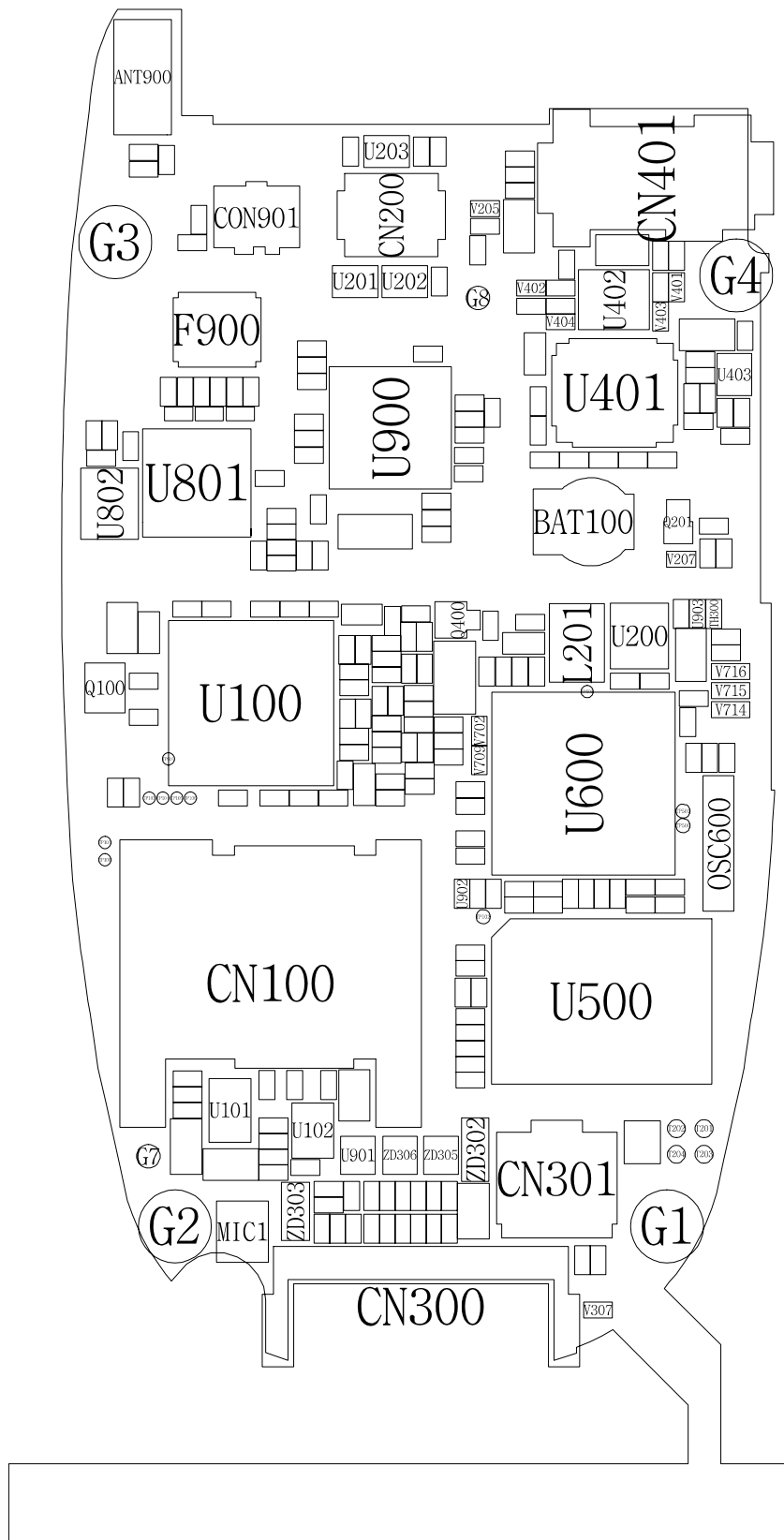
Design LOC	Discription	SEC Code	STATUS
L901	INDUCTOR-SMD	2703-002202	SA
L903	INDUCTOR-SMD	2703-002201	SA
L904	INDUCTOR-SMD	2703-002203	SA
LED700	LED	0601-001790	SA
LED701	LED	0601-001790	SA
LED702	LED	0601-001790	SA
LED703	LED	0601-001790	SA
LED704	LED	0601-001790	SA
LED705	LED	0601-001790	SA
LED706	LED	0601-001790	SA
LED707	LED	0601-001790	SA
LED708	LED	0601-001790	SA
LED709	LED	0601-001790	SA
OSC600	CRYSTAL-SMD	2801-003856	SA
Q201	FET-SILICON	0505-001518	SA
Q400	TR-SMALL SIGNAL	0501-000225	SA
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R202	R-CHIP	2007-003030	SA
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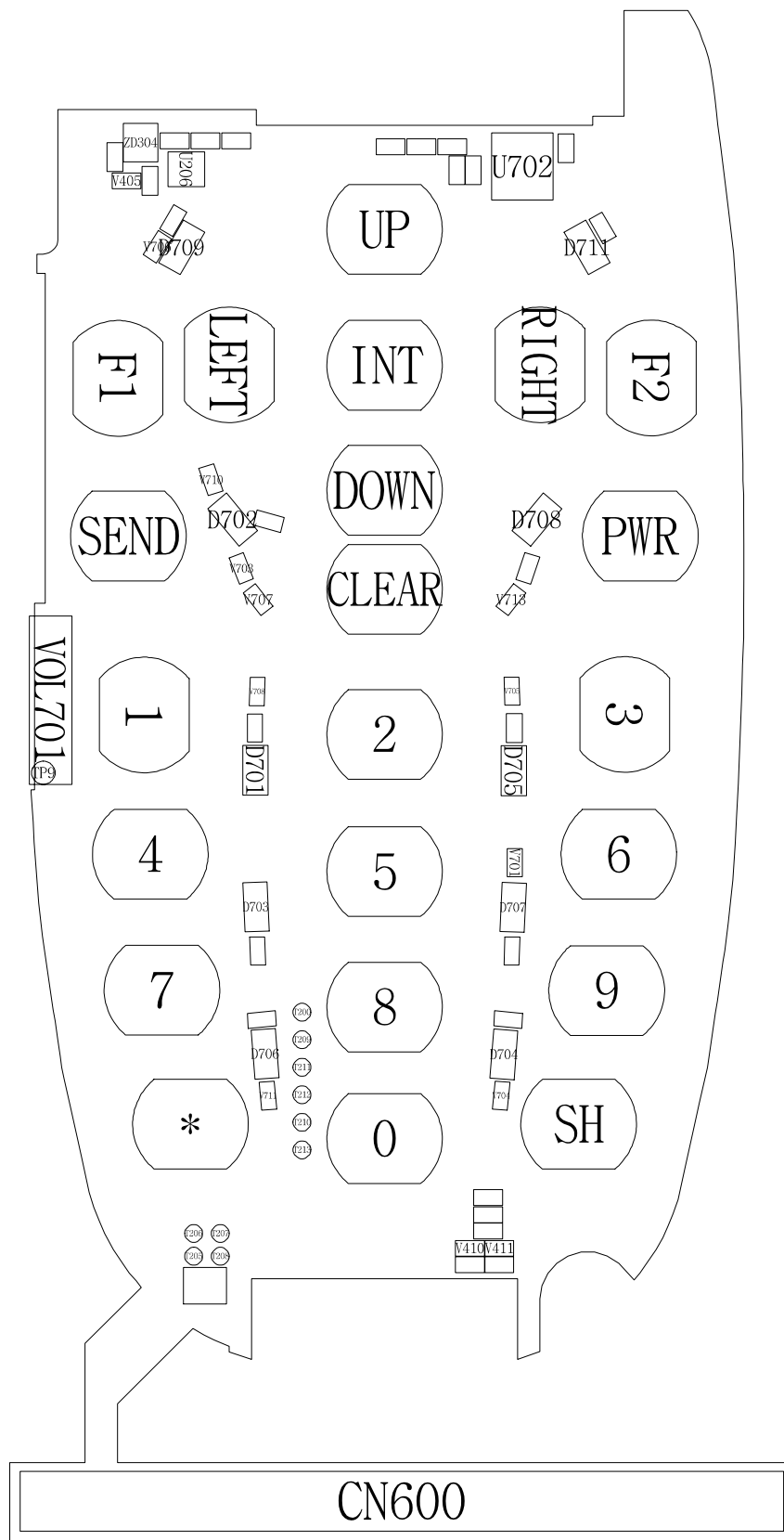
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R410	R-CHIP	2007-000148	SA
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R412	R-CHIP	2007-007107	SA
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R414	R-CHIP	2007-000142	SNA
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R801	R-CHIP	2007-002797	SA
R802	R-CHIP	2007-001308	SA
R803	R-CHIP	2007-000171	SA
R809	R-CHIP	2007-000148	SA
R900	R-CHIP	2007-001298	SA
R901	R-CHIP	2007-002970	SA
R903	R-CHIP	2007-007306	SA
SIM100	CONNECTOR-CARD EDGE	3709-001336	SA
TH300	THERMISTOR-NTC	1404-001221	SA
TR100	TR-DIGITAL	0504-000168	SA
U100	IC-POWER SUPERVISOR	1203-003304	SA
U101	IC-BATTERY	1203-003663	SA
U102	IC-CMOS LOGIC	0801-000796	SA
U200	IC-DC/DC CONVERTER	1203-004004	SA
U201	FILTER-EMI SMD	2901-001286	SA
U202	FILTER-EMI SMD	2901-001286	SA
U203	FILTER-EMI SMD	2901-001286	SA
U206	IC-POS.FIXED REG.	1203-003754	SA
U401	IC-MELODY	1204-002161	SA
U402	IC-ANALOG SWITCH	1001-001371	SA
U403	IC-ANALOG SWITCH	1001-001231	SA
U500	IC-MCP	1108-000010	SA
U600	IC MICOM-SGHX480	GH09-00036A	SA
U702	IC-HALL EFFECT S/W	1009-001010	SA
U801	IC-TRANSCEIVER	1205-002683	SA
U802	CRYSTAL-SMD	2801-004426	SA
U900	IC-POWER AMP	1201-002218	SA
U901	DIODE-TVS	0406-001190	SA
U902	C-CER,CHIP	2203-000254	SA
U903	R-CHIP	2007-007480	SA
V205	VARISTOR	1405-001082	SA
V207	VARISTOR	1405-001110	SA
V307	VARISTOR	1405-001093	SA
V401	VARISTOR	1405-001108	SA

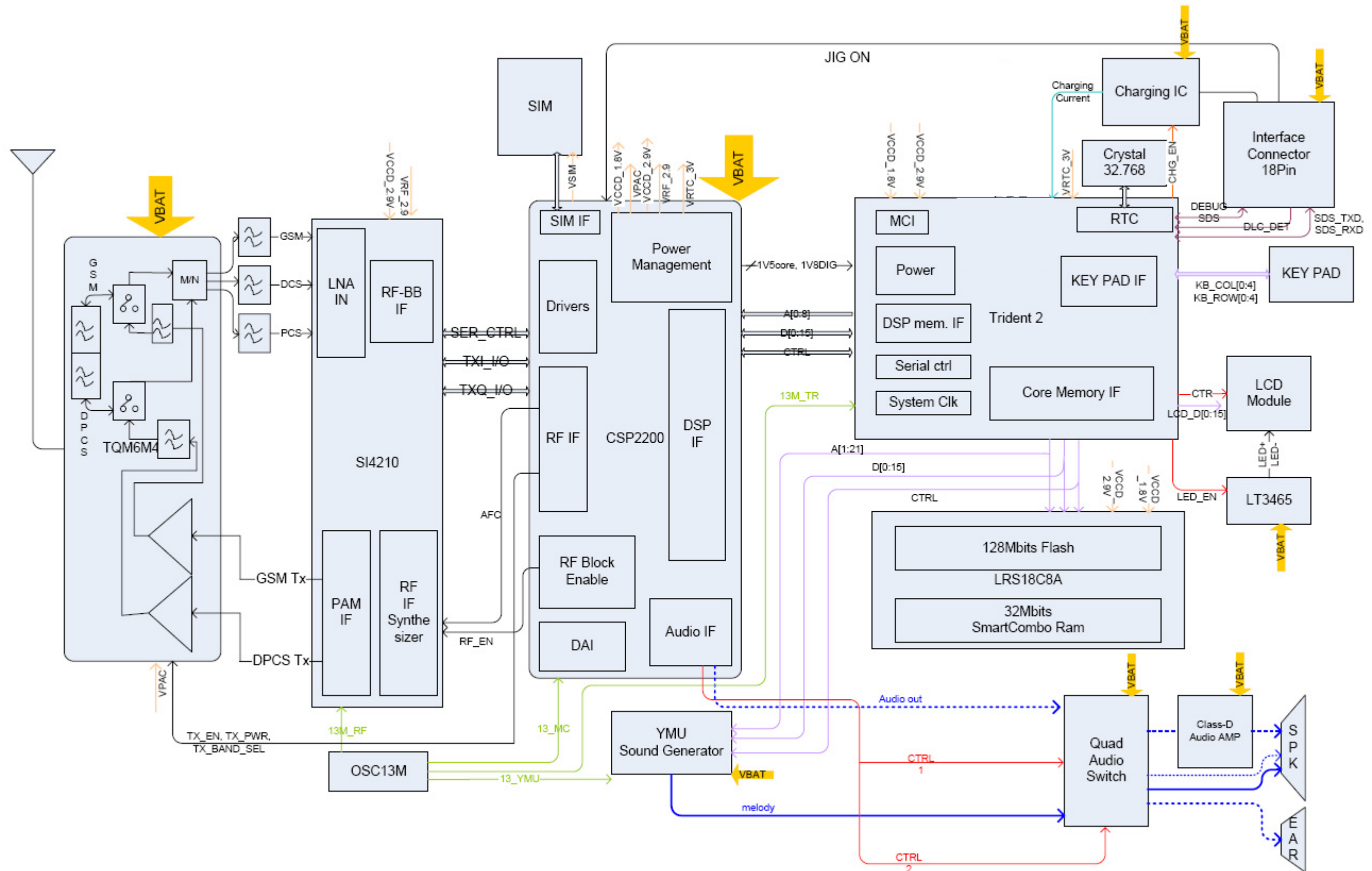
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V410	VARISTOR	1405-001082	SA
V411	VARISTOR	1405-001082	SA
VR700	VARISTOR	1405-001082	SA
VR701	VARISTOR	1405-001082	SA
VR702	VARISTOR	1405-001082	SA
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VR711	VARISTOR	1405-001082	SA
ZD302	DIODE-ZENER	0403-001547	SA
ZD304	DIODE-TVS	0406-001190	SA
ZD305	DIODE-TVS	0406-001190	SA
ZD306	DIODE-TVS	0406-001190	SA

5. SGH-X481 PCB Diagrams



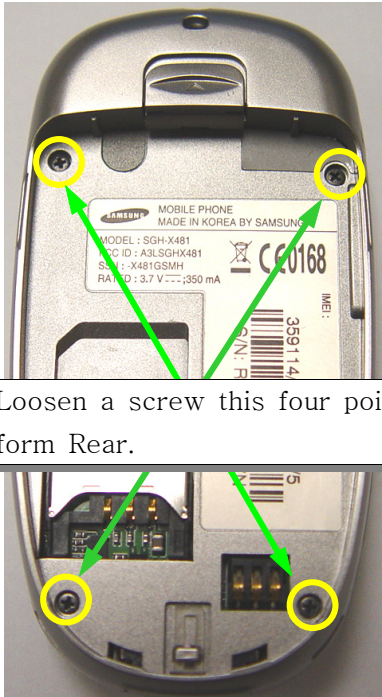
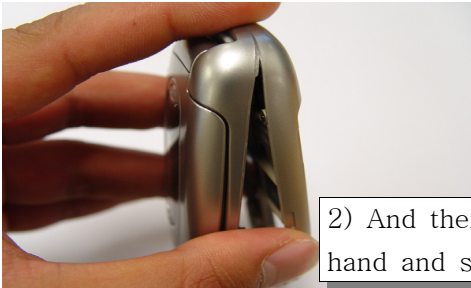
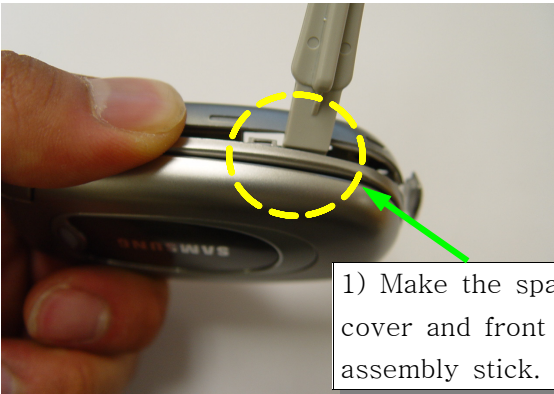
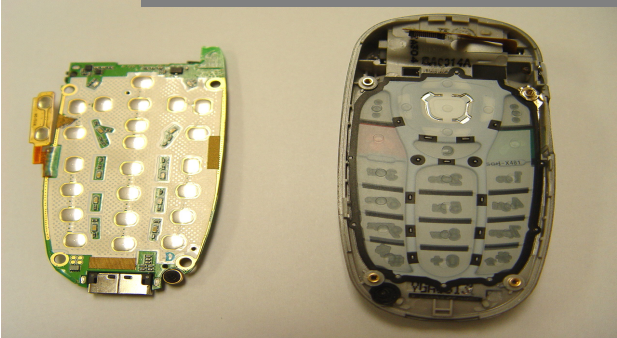
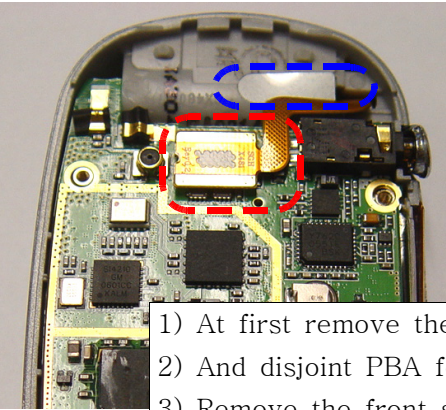
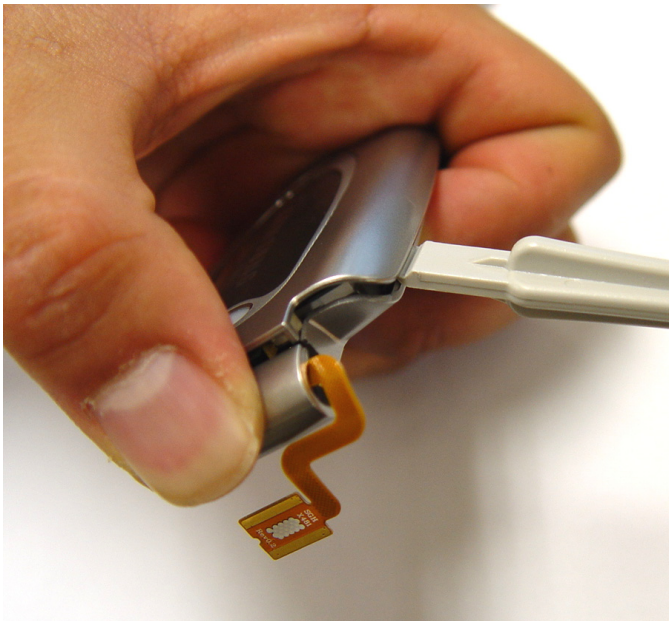


6. SGH-X481 Block Diagrams



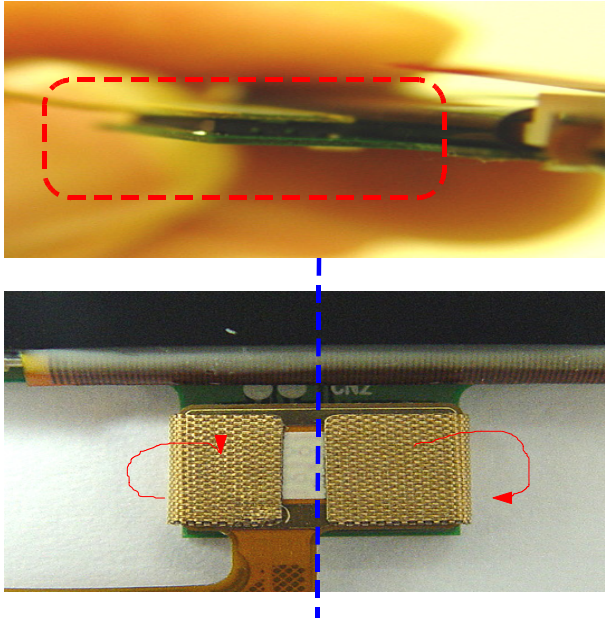
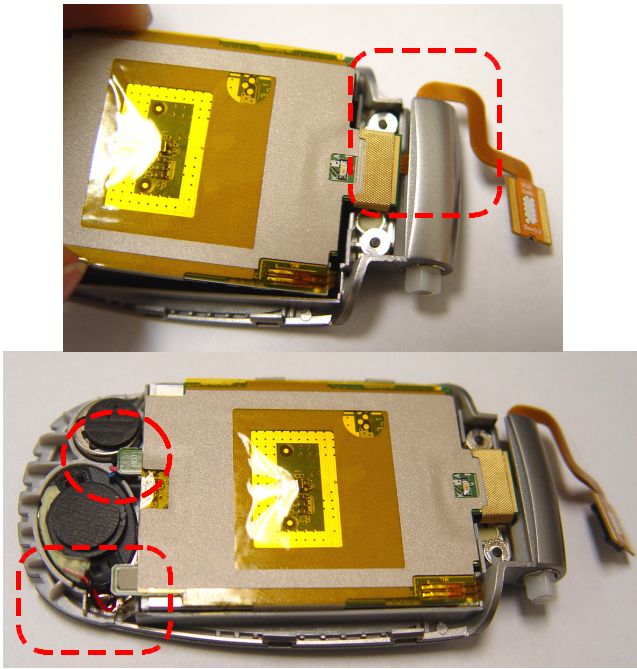
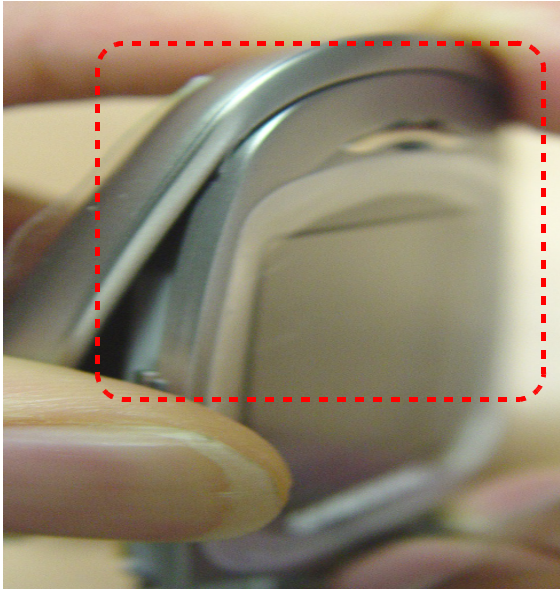
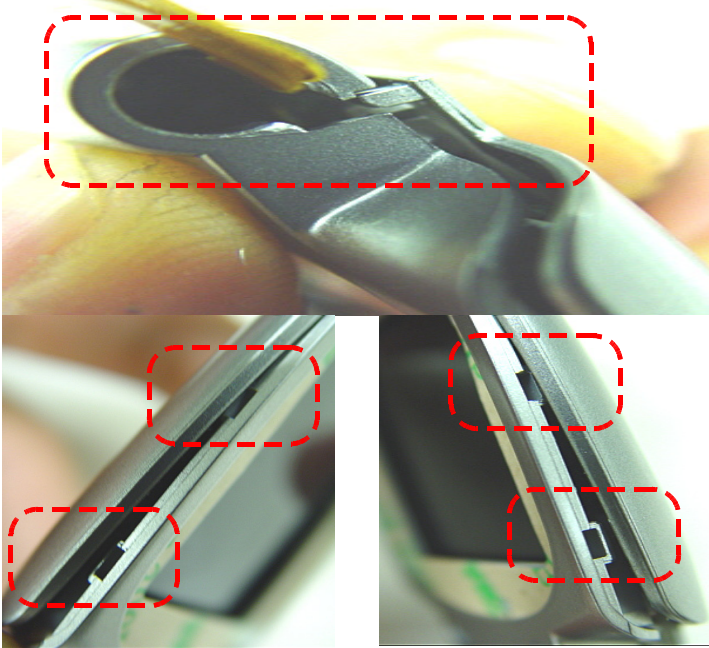
7. SGH-X481 Disassembly and Assembly instructions

7-1.Disassembly

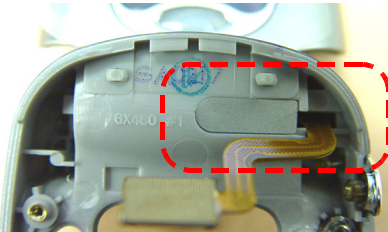
1  1) Loosen a screw this four point form Rear.	2  1) Make the space between rear cover and front cover using assembly stick. 2) And then widen space with hand and separate 2 parts.	3  1) At first remove the connector from PBA. 2) And disjoint PBA form front ass'y. 3) Remove the front sheet tape at front ass'y.
1) Be care of scratch and molding damage.	1) When we disjoint Rear, be care of scratch and molding damage.	1) When we disjointing a connector and PBA, be care of damage.
4  1) Remove the keypad from front ass'y. 2) And separate the folder ass'y from front by pushing the hinge.	5  1) Remove a screw cap with a pinset. 2) Loosen a screw with driver.	6  1) Insert a assembly stick to folder space after pushing top side with a thumb like a picture.
1) When we disjoint the Front, be care of body transformation.	1) Be care of scratch.	1) Be care of scratch and molding damage.

7 1) Separate the folder upper and lower by assembly stick. 2) Repeat that procedure both side of folder ass'y.	8 1) Separate a motor from folder lower using a pinset.	9 1) Saparate a speaker from folder lower using a pinset.
1) Be care of scratch and molding damage.	1) Be care of scratch and molding damage.	1) Be care of scratch and molding damage.
10 1) Remove the 'tape con to con' and separate the 'con to con' from LCD module.		
1) Be care of scratch and molding damage.		

7-2. Assembling

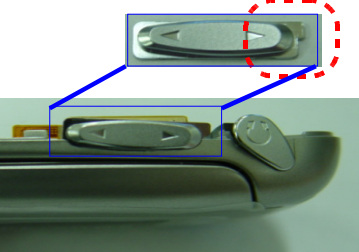
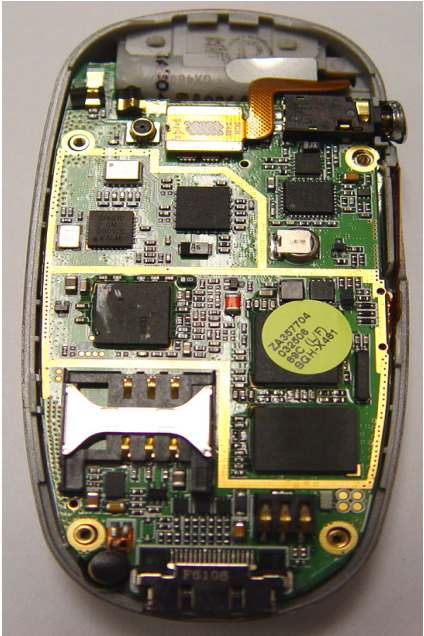
1  1) At first combine the 'con to con' with LCD connector. 2) Rap the 'tape con to con' to jointing point with clockwise.	2  1) Insert the 'con to con' to folder lower. 2) Assemble speaker and motor wire arrangement.	3  1) Insert the folder upper to folder lower top side.
1) Be care of damage of LCD module.	1) Be care of wire arrangement and damage. - Speak: twist twice with counterclockwise - Motor: twist once with counterclockwise	1) Be care of scratch and molding damage.
4  1) Push the bottom side with thumb. 2) Joint 4 hooks of all sides.	5  1) Fasten a screw with driver. 2) Attach a 'screw cap' with a pinset and hit with a Q-tip.	6  1) Insert the 'con to con' to front cover hole. 2) Insert the folder ass'y to front cover using folder hinge.
1) When we disjoint the Front, be care of body transformation.	1) Be care of scratch and molding damage.	1) Be care of scratch and molding damage. Especially FPCB of 'con to con'

7



1) Attach the 'front sheet'.
2) Put the keypad on front ass'y.

8



1) Put the PBA on front ass'y and hook the 'con to con' connector.
2) Insert Side Key on side dome.

9



1) Hook the rear cover to top side of front ass'y.
2) Grab bottom side of ass'y and push all hooks.

1) Be care of scratch and molding damage.

1) Be care of scratch and molding damage.
2) Verify the direction of side key

1) Be care of scratch and molding damage.

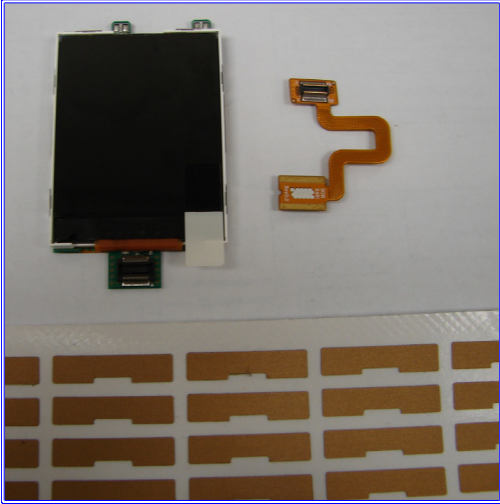
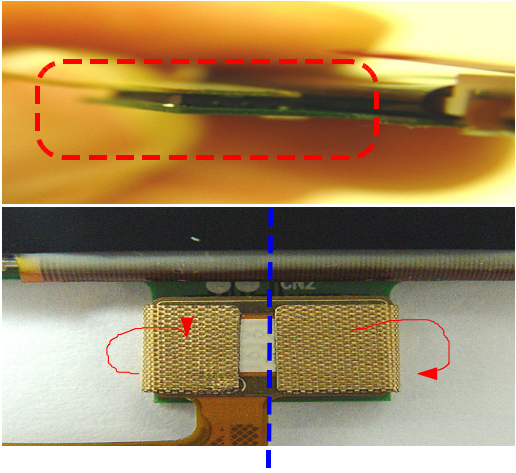
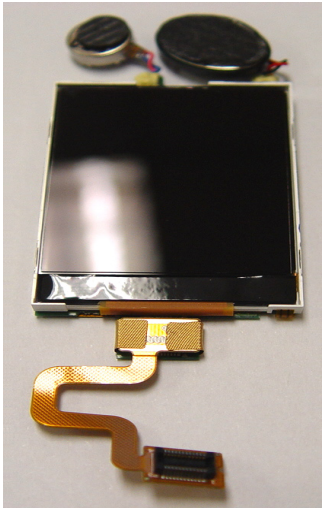
10



1) Fasten screws this four point of rear cover.

1) Be care of scratch and molding damage.

7-3. LCD KIT Assembly

1  1. Verify this parts such as LCD Module, con to con and tape con to con. And inspect standard and nap of outside.	2  1) At first combine the 'con to con' with LCD connector. 2) Rap the 'tape con to con' to jointing point with clockwise.
※ Caution 1. Verify the model name, SGH-X481 in 'con to con'	※ Caution 1. Be careful of LCD damage while using pinset.
3  1. inspect the outside of LCD Module.	
※ Caution 1. If the position of 'Tape con to con' is wrong, reattach the tape with new one.	

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