SAMSUNG

GSM TELEPHONE

SGH-C180

SERVICE *Manual*

GSM TELEPHONE

CONTENTS

SAMSUNG ELECTRONICS

GSPN (Global Service Partner Network)

Country	Web Site
North America	service.samsungportal.com
Latin America	latin.samsungportal.com
CIS	cis.samsungportal.com
Europe	europe.samsungportal.com
China	china.samsungportal.com
Asia	asia.samsungportal.com
Mideast & Africa	mea.samsungportal.com

2007. 08 Rev.1.0

1. Safety Precautions

1-1. Repair Precaution

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

2. Specification

2-1. GSM General Specification

	EGSM 900	DCS1800
Freq. Band[MHz] Uplink/Downlink	880~915 925~960	1710~1785 1805~1880
ARFCN range	0~124 & 975~1023	512~885
Tx/Rx spacing	45MHz	95MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us
Time Slot Period/Frame Period	576.9us 4.615ms	576.9us 4.615ms
Modulation	0.3GMSK	0.3GMSK
MS Power	33dBm~5dBm	30dBm~0dBm
Power Class	4 (max +33dBm)	1 (max +30dBm)
Sensitivity	-102dBm	-100dBm
TDMA Mux	8	8
Cell Radius	35Km	2Km

2-2. 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±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±4dBm
12	6±4 dBm
13	4±4 dBm
14	2±5 dBm
15	0±5 dBm

3. Operation Instruction and Installation

Main Function

S20 PIN TA
No Java
No MMS
WAP 2.0
16 Poly S/W MIDI
Dual band(900/1800MHz)
GPRS Class 10
Bluetooth

4. Array course control

4-1. Software Adjustments

1. JIG Box: Download, Trace, Calibration, etc
2. RF test cable: RF test
3. TA (Travel Adaptor)
4. Serial cable: PC to JIG
5. Test cable: JIG to phone

4-2. Software Downloading

4-2-1. Downloading Binary Files

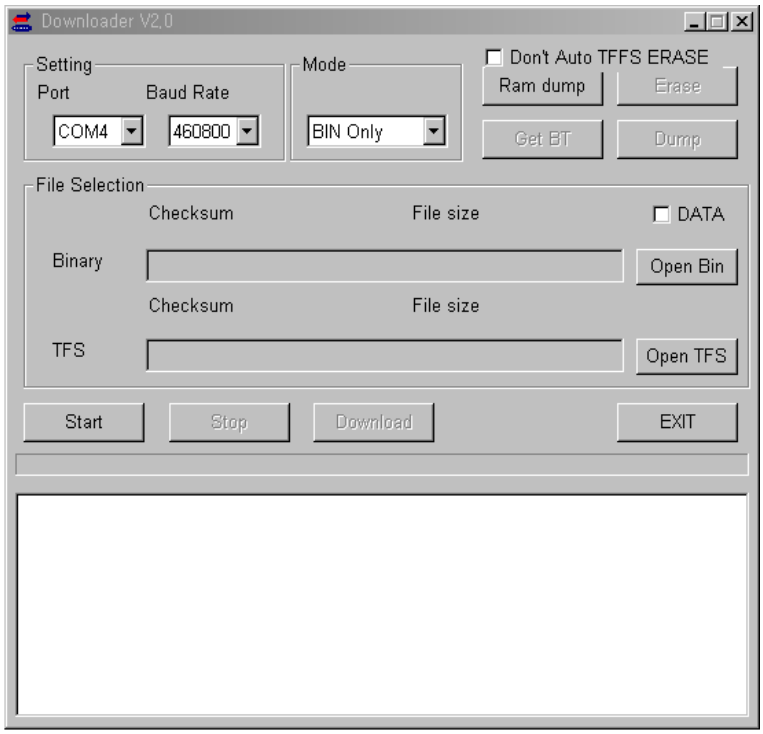
- 2 binary files for downloading C180.
  - C180XAGD1.cla
  - C180XAGD1..tfs

4-2-2. Pre-requsite for Downloading

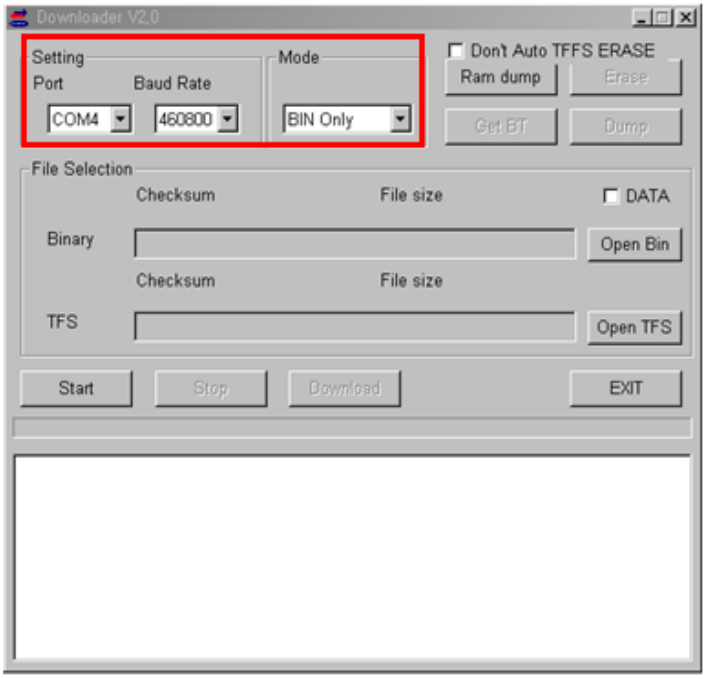
- Downloader Program(**C180_Downloader 2.0.exe**)
- SGH-C180 Mobile Phone
- JIG BOX
- Test Cable
- Serial Cable
- Binary files

4-2-3. S/W Downloader Program

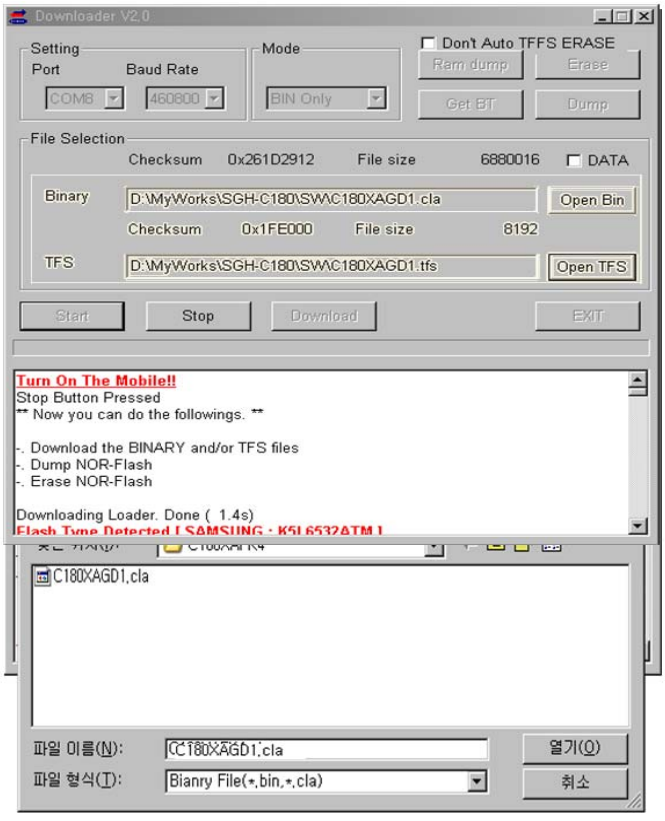
1. Load the binary download program by executing the "**C180_Downloader 2.0.exe**".



2. Select the Port, Baud Rate and Mode.

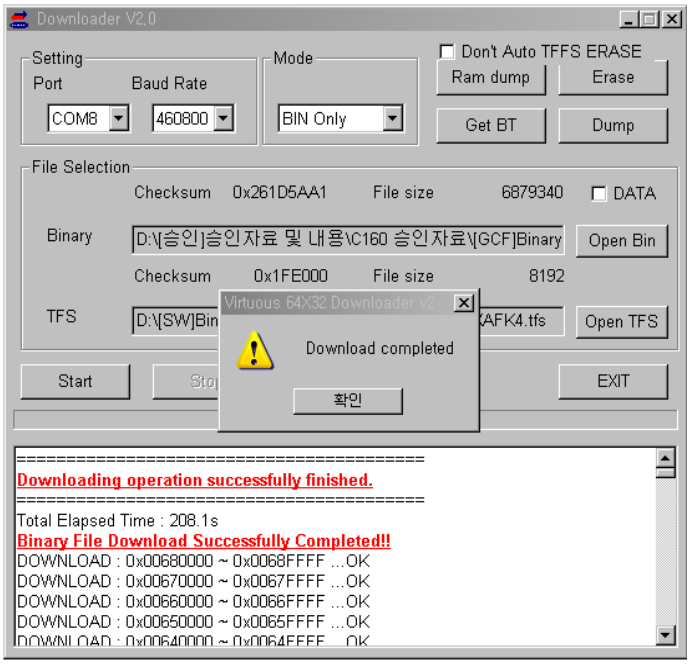


3. Select the binary files what you want to download



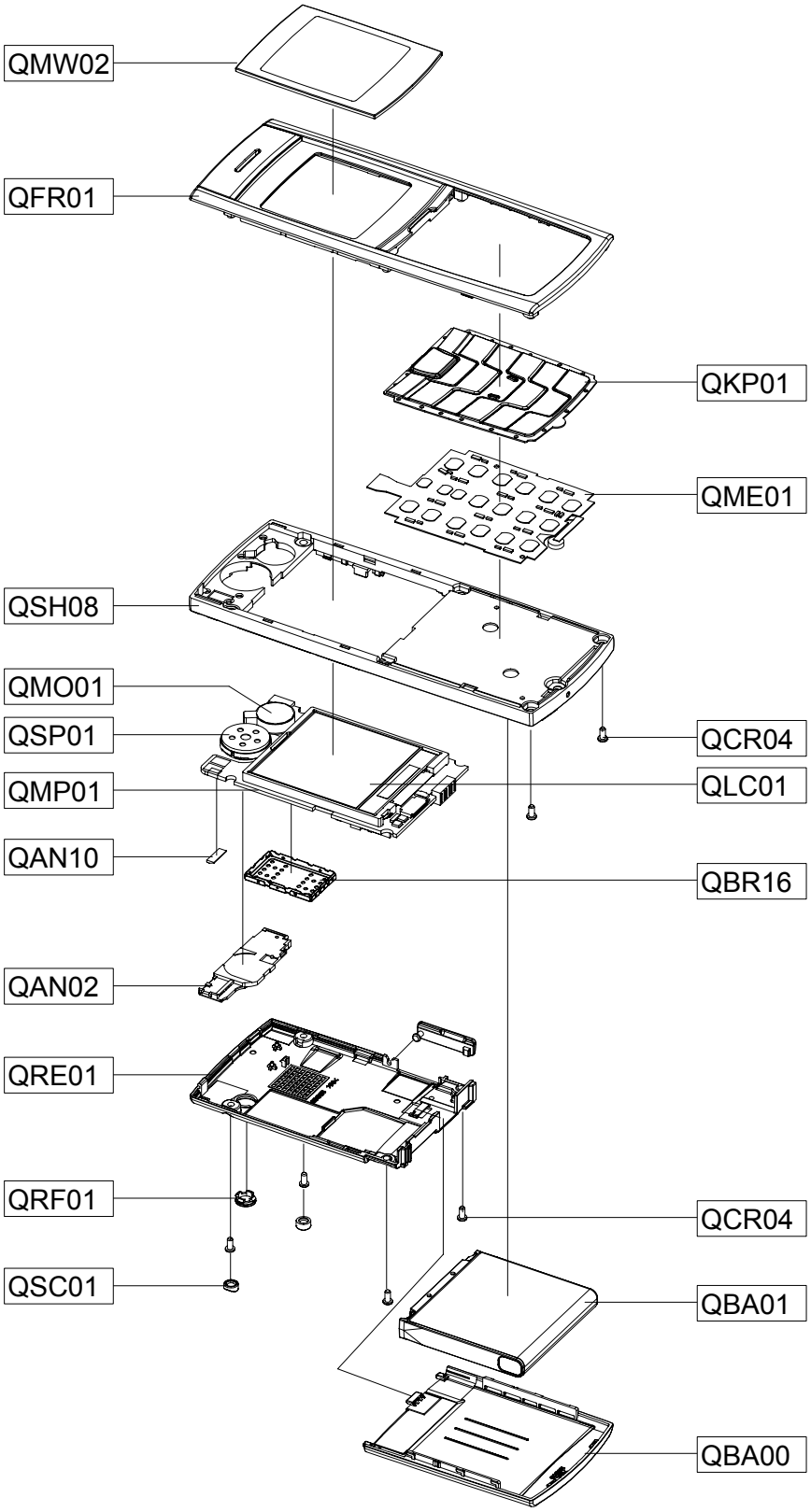
4. Press the "Start" button and connect the Handset

5. When downloading is complete, automatically the small window was showed up..



5. Exploded View and Parts List

5-1. Cellular phone Exploded View



5-2. Cellular phone Parts List

Design LOC		Description	SEC CODE
QAN02		INTENNA-SGHC180	GH42-01322A
QAN10		ASSY-CUSHION-ANT CONTACT RUBBE	GH98-01218A
QBA00		PMO-CASE BATTERY	GH72-39741A
QBA01		INNER BATTERY PACK-730MAH,BLK,	GH43-02811A
QBR16		IPR-BRACKET LID	GH70-02201A
QCR04		SCREW-MACHINE	6001-001479
QCR04		SCREW-MACHINE	6001-001479
QFR01		ASSY CASE-FRONT	GH98-04709A
QKP01		ASSY KEYPAD-(XEN/ZK)	GH98-04674C
QLC01		LCD-MAIN MODULE (SGHC170)	GH07-01085A
QME01		KEY FPCB-MAIN KEY PBA	GH59-04724A
QMO01		MOTOR DC-SGHC180	GH31-00383A
QMP01		PBA MAIN-SGHC180	GH92-03825A
QMW02		PCT-COVER MAIN WINDOW	GH72-39742A
QRE01		ASSY CASE-REAR	GH98-04711A
QRF01		PMO-COVER RF	GH72-38552A
QSC01		RMO-SCREW CAP	GH73-09347A
QSH08		ASSY CASE-BELT	GH98-04710A
QSP01		SPEAKER	3001-002214

Description	SEC CODE
BAG PE	6902-000634
ADAPTOR-ATADS10EBE,BLK,EU	GH44-01702A
LABEL(P)-UNIT SEAL	GH68-00518B
LABEL(P)-IMEI	GH68-01335D
LABEL(R)-WATER SOAK	GH68-09361A
LABEL(R)-MAIN(EU)	GH68-15413A
MANUAL USERS-EU FRENCH	GH68-15639A
BOX-UNIT(EU)	GH69-05639A
PMO COVER-EAR	GH72-42756A
TAPE INSU-PCB CONN	GH74-33536A
TAPE INSU	GH74-33822A
TAPE INSU-PCB	GH74-33994A
TAPE GASK-KEY FPCB 1	GH74-34731A
TAPE GASK-KEY FPCB 2	GH74-34732A

6. MAIN Electrical Parts List

Design LOC	Description	SEC Code	STATUS
ANT100	NPR-ANTENNA CONTACT	GH71-06419A	SA
ANT101	NPR-ANTENNA CONTACT	GH71-06419A	SA
ANT102	ANTENNA-CHIP	4202-001366	SA
BTC300	HEADER-BATTERY	3711-006217	SA
C100	R-CHIP	2007-000171	SA
C101	C-CER,CHIP	2203-000995	SA
C103	C-CER,CHIP	2203-005234	SA
C104	C-CER,CHIP	2203-006048	SA
C105	C-CER,CHIP	2203-006194	SA
C106	C-CER,CHIP	2203-006194	SA
C107	C-CER,CHIP	2203-006194	SA
C108	C-CER,CHIP	2203-006194	SA
C109	C-CER,CHIP	2203-005729	SA
C110	C-CER,CHIP	2203-005052	SA
C111	C-CER,CHIP	2203-006048	SA
C112	C-TA,CHIP	2404-001496	SA
C113	C-CER,CHIP	2203-006423	SA
C114	C-CER,CHIP	2203-006620	SNA
C115	C-CER,CHIP	2203-000359	SA
C116	C-CER,CHIP	2203-005682	SA
C117	C-CER,CHIP	2203-005682	SA
C118	C-CER,CHIP	2203-005052	SA
C119	C-CER,CHIP	2203-000278	SA
C120	C-CER,CHIP	2203-006423	SA
C121	C-CER,CHIP	2203-000278	SA
C122	C-CER,CHIP	2203-005482	SA
C123	C-CER,CHIP	2203-005234	SA
C124	C-CER,CHIP	2203-005234	SA
C126	C-CER,CHIP	2203-002677	SA
C127	C-CER,CHIP	2203-000278	SA
C128	C-CER,CHIP	2203-000254	SA
C129	C-CER,CHIP	2203-002677	SA
C130	C-CER,CHIP	2203-005482	SA
C131	C-CER,CHIP	2203-000278	SA
C132	C-CER,CHIP	2203-006681	SA
C133	C-CER,CHIP	2203-006562	SA
C134	INDUCTOR-SMD	2703-001178	SA
C136	C-CER,CHIP	2203-005393	SA
C200	C-CER,CHIP	2203-005482	SA
C201	C-CER,CHIP	2203-005482	SA
C202	C-CER,CHIP	2203-005482	SA
C203	C-CER,CHIP	2203-005482	SA
C204	C-CER,CHIP	2203-000254	SA
C205	C-CER,CHIP	2203-005482	SA
C206	C-CER,CHIP	2203-005482	SA
C207	C-CER,CHIP	2203-000254	SA
C208	C-CER,CHIP	2203-000254	SA
C209	C-CER,CHIP	2203-005482	SA
C210	C-CER,CHIP	2203-000854	SA
C211	C-CER,CHIP	2203-000679	SA
C212	C-CER,CHIP	2203-005482	SA
C214	C-CER,CHIP	2203-005482	SA
C215	C-CER,CHIP	2203-005482	SA

Design LOC	Description	SEC Code	STATUS
C216	C-CER,CHIP	2203-006048	SA
C219	C-CER,CHIP	2203-005482	SA
C300	C-CER,CHIP	2203-000425	SA
C301	C-CER,CHIP	2203-006681	SA
C302	C-CER,CHIP	2203-006348	SA
C303	C-CER,CHIP	2203-000425	SA
C304	C-CER,CHIP	2203-000679	SA
C306	C-CER,CHIP	2203-000812	SA
C307	C-CER,CHIP	2203-005482	SA
C308	C-CER,CHIP	2203-006348	SA
C310	C-CER,CHIP	2203-007165	SA
C311	C-CER,CHIP	2203-006257	SA
C312	C-CER,CHIP	2203-006562	SA
C313	C-CER,CHIP	2203-007165	SA
C314	C-CER,CHIP	2203-006257	SA
C315	C-CER,CHIP	2203-006556	SA
C316	C-CER,CHIP	2203-007165	SA
C317	C-CER,CHIP	2203-006839	SA
C318	C-CER,CHIP	2203-005682	SA
C319	C-CER,CHIP	2203-005682	SA
C320	C-CER,CHIP	2203-006257	SA
C321	C-CER,CHIP	2203-006257	SA
C322	C-CER,CHIP	2203-007165	SA
C323	C-CER,CHIP	2203-006257	SA
C324	C-CER,CHIP	2203-006257	SA
C325	C-CER,CHIP	2203-005482	SA
C327	C-CER,CHIP	2203-002709	SA
C401	C-CER,CHIP	2203-005482	SA
C402	C-CER,CHIP	2203-000854	SA
C403	C-CER,CHIP	2203-005482	SA
C407	C-CER,CHIP	2203-000679	SA
C409	C-CER,CHIP	2203-005482	SA
C410	C-CER,CHIP	2203-000386	SA
C411	C-CER,CHIP	2203-006562	SA
C413	C-CER,CHIP	2203-000550	SA
C414	C-CER,CHIP	2203-000995	SA
C417	C-CER,CHIP	2203-005482	SA
C418	C-CER,CHIP	2203-000386	SA
C420	C-CER,CHIP	2203-000425	SA
C423	C-CER,CHIP	2203-000425	SA
C424	C-CER,CHIP	2203-006562	SA
C425	C-CER,CHIP	2203-006562	SA
C426	C-CER,CHIP	2203-006260	SA
C500	C-CER,CHIP	2203-006562	SA
C501	C-CER,CHIP	2203-006562	SA
C502	C-CER,CHIP	2203-000812	SA
C503	C-CER,CHIP	2203-000311	SA
C504	C-CER,CHIP	2203-006562	SA
C505	C-CER,CHIP	2203-006562	SA
C506	C-CER,CHIP	2203-006377	SA
C507	C-CER,CHIP	2203-006562	SA
C508	C-CER,CHIP	2203-006562	SA
CAN100	IPR-BRACKET FRAME	GH70-02200A	SA

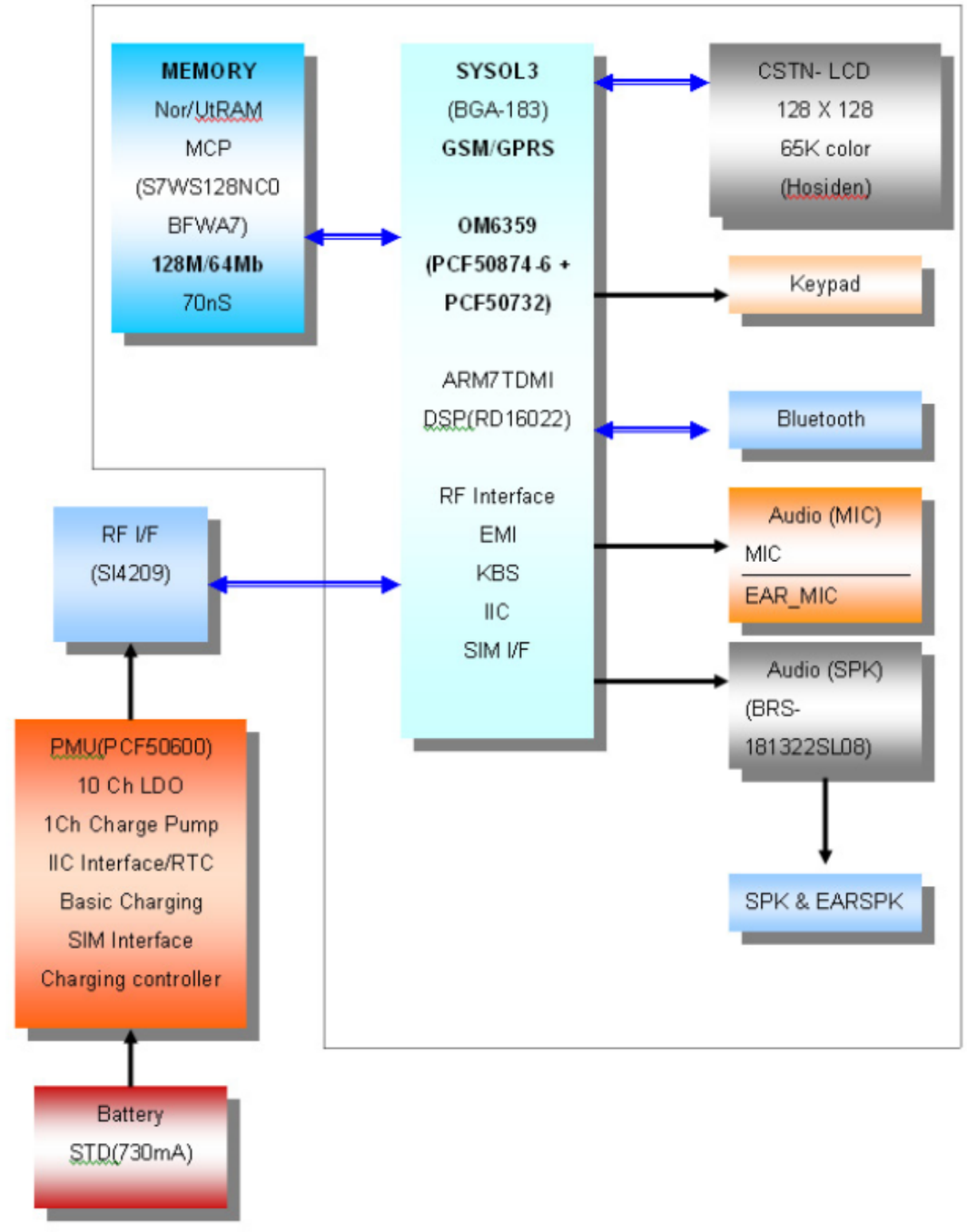
Design LOC	Description	SEC Code	STATUS
CN500	CONNECTOR-FPC/FFC/PIC	3708-002222	SA
D200	DIODE-TVS	0406-001231	SA
D300	DIODE-TVS	0406-001231	SA
D400	DIODE-TVS	0406-001231	SA
D401	DIODE-TVS	0406-001231	SA
D402	DIODE-TVS	0406-001231	SA
D403	DIODE-TVS	0406-001231	SA
D404	DIODE-TVS	0406-001231	SA
D500	DIODE-ARRAY	0407-001002	SA
D501	DIODE-TVS	0406-001231	SA
D502	DIODE-TVS	0406-001231	SA
D503	DIODE-TVS	0406-001231	SA
D504	DIODE-TVS	0406-001231	SA
D505	DIODE-TVS	0406-001231	SA
F100	FILTER-SAW	2904-001731	SA
F101	FILTER-LC	2909-001283	SA
F500	FILTER-EMI SMD	2901-001329	SA
F501	FILTER-EMI/ESD	2901-001450	SA
F502	FILTER-EMI/ESD	2901-001450	SA
IFC400	SOCKET-INTERFACE	3710-002534	SA
L101	INDUCTOR-SMD	2703-001750	SA
L102	INDUCTOR-SMD	2703-001750	SA
L104	INDUCTOR-SMD	2703-002203	SA
L105	INDUCTOR-SMD	2703-002313	SA
L107	INDUCTOR-SMD	2703-002204	SA
L108	INDUCTOR-SMD	2703-002558	SA
L109	INDUCTOR-SMD	2703-002198	SA
L110	INDUCTOR-SMD	2703-002558	SA
L111	INDUCTOR-SMD	2703-003277	SA
L112	INDUCTOR-SMD	2703-002281	SA
L113	INDUCTOR-SMD	2703-002170	SA
L400	INDUCTOR-SMD	2703-002206	SA
L401	INDUCTOR-SMD	2703-002206	SA
L402	BEAD-SMD	3301-001729	SA
L403	BEAD-SMD	3301-001729	SA
L404	BEAD-SMD	3301-001729	SA
L405	BEAD-SMD	3301-001729	SA
L406	BEAD-SMD	3301-001729	SA
L407	BEAD-SMD	3301-001729	SA
L408	BEAD-SMD	3301-001729	SA
L409	BEAD-SMD	3301-001729	SA
L501	BEAD-SMD	3301-001729	SA
L502	INDUCTOR-SMD	2703-002308	SA
L503	BEAD-SMD	3301-001729	SA
OSC100	CRYSTAL-SMD	2801-004455	SA
OSC101	CRYSTAL-SMD	2801-004560	SA
OSC300	CRYSTAL-SMD	2801-004339	SA
PAM100	IC-POWER AMP	1201-002364	SA
Q300	TR-SMALL SIGNAL	0501-002571	SA
Q401	TR-DIGITAL	0504-001197	SA
R100	C-CER,CHIP	2203-005393	SA
R103	R-CHIP	2007-003015	SA
R104	R-CHIP	2007-001339	SA

Design LOC	Description	SEC Code	STATUS
R105	R-CHIP	2007-000157	SA
R107	C-CER,CHIP	2203-002668	SA
R108	R-CHIP	2007-000155	SA
R111	R-CHIP	2007-008052	SA
R123	R-CHIP	2007-000171	SA
R128	R-CHIP	2007-003025	SA
R130	R-CHIP	2007-001316	SA
R131	R-CHIP	2007-001316	SA
R133	INDUCTOR-SMD	2703-002207	SA
R200	R-CHIP	2007-000174	SA
R201	R-CHIP	2007-000171	SA
R202	R-CHIP	2007-000162	SA
R203	R-CHIP	2007-007141	SA
R204	R-CHIP	2007-007107	SA
R205	R-CHIP	2007-000159	SA
R206	R-CHIP	2007-008055	SA
R207	R-CHIP	2007-008055	SA
R208	R-CHIP	2007-008055	SA
R209	R-CHIP	2007-008055	SA
R210	R-CHIP	2007-007142	SA
R211	R-CHIP	2007-000171	SA
R212	R-CHIP	2007-000162	SA
R213	R-CHIP	2007-000162	SA
R214	R-CHIP	2007-000162	SA
R215	R-CHIP	2007-007107	SA
R216	R-CHIP	2007-000162	SA
R217	R-CHIP	2007-007001	SA
R218	R-CHIP	2007-000141	SA
R219	R-CHIP	2007-000141	SA
R220	R-CHIP	2007-000143	SA
R222	R-CHIP	2007-000157	SA
R223	R-CHIP	2007-000162	SA
R226	R-CHIP	2007-000162	SA
R227	R-CHIP	2007-000162	SA
R300	R-CHIP	2007-007100	SA
R301	R-CHIP	2007-007869	SA
R305	R-CHIP	2007-000162	SA
R306	R-CHIP	2007-001339	SA
R307	R-CHIP	2007-000758	SA
R309	R-CHIP	2007-007573	SA
R310	R-CHIP	2007-007334	SA
R311	R-CHIP	2007-000170	SA
R400	R-CHIP	2007-000148	SA
R401	R-CHIP	2007-000141	SA
R402	R-CHIP	2007-000141	SA
R405	R-CHIP	2007-000141	SA
R406	R-CHIP	2007-000141	SA
R419	R-CHIP	2007-000159	SA
R422	R-CHIP	2007-007107	SA
R423	R-CHIP	2007-001339	SA
R425	R-CHIP	2007-001339	SA
R426	R-CHIP	2007-007142	SA
R427	R-CHIP	2007-008531	SA

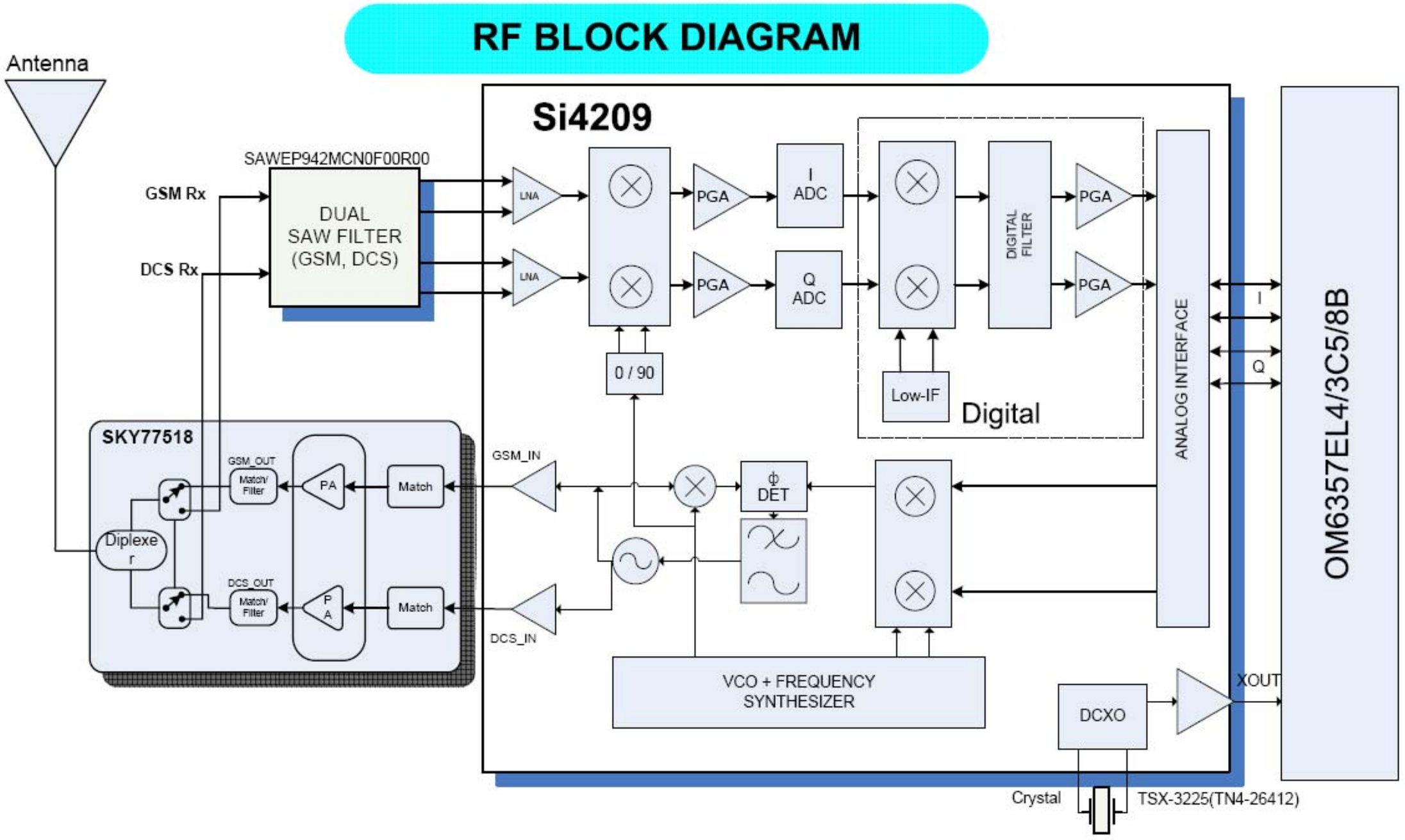
Design LOC	Description	SEC Code	STATUS
R428	R-CHIP	2007-007142	SA
R429	R-CHIP	2007-000162	SA
R430	R-CHIP	2007-000171	SA
R433	R-CHIP	2007-000159	SA
R434	R-CHIP	2007-008531	SA
R437	R-CHIP	2007-007107	SA
R438	R-CHIP	2007-001339	SA
R439	R-CHIP	2007-000171	SA
R440	R-CHIP	2007-000171	SA
R442	R-CHIP	2007-001217	SA
R444	R-CHIP	2007-001217	SA
R446	R-CHIP	2007-000172	SA
R448	R-CHIP	2007-000172	SA
R449	R-CHIP	2007-007107	SA
R500	R-CHIP	2007-000157	SA
R501	R-CHIP	2007-000162	SA
R502	R-CHIP	2007-000140	SA
R503	R-CHIP	2007-000171	SA
R504	R-CHIP	2007-000157	SA
R507	R-CHIP	2007-000148	SA
RFS400	CONNECTOR-COAXIAL	3705-001358	SA
SIM300	CONNECTOR-CARD EDGE	3709-001391	SA
TA300	C-TA,CHIP	2404-001381	SA
TA301	C-TA,CHIP	2404-001381	SA
TA302	C-TA,CHIP	2404-001381	SA
TA400	C-TA,CHIP	2404-001377	SA
TA401	C-TA,CHIP	2404-001396	SA
TA500	C-TA,CHIP	2404-001381	SA
TH200	THERMISTOR-NTC	1404-001221	SA
U100	IC-DATA COMM./GEN.	1205-003064	SA
U101	IC-ANALOG MULTIPLEX	1001-001447	SA
U102	IC-TRANSCEIVER	1205-003278	SA
U300	IC-POWER SUPERVISOR	1203-004550	SA
U401	IC-ANALOG MULTIPLEX	1001-001349	SA
U402	FET-SILICON	0505-001923	SA
U403	IC-AUDIO AMP	1201-002494	SA
U404	FILTER-EMI/ESD	2901-001349	SA
U500	IC-POSI.FIXED REG.	1203-003737	SA
U501	IC-DC/DC CONVERTER	1203-003708	SA
U502	FET-SILICON	0505-001469	SA
U503	C-CER,CHIP	2203-000854	SA
U504	C-CER,CHIP	2203-000995	SA
UCP200	IC-COMM. CONTROLLER	1205-003192	SA
UME200	IC-MCP	1108-000059	SA
ZD300	DIODE-ZENER	0403-001340	SA
ZD301	DIODE-ZENER	0403-001547	SA
ZD400	DIODE-TVS	0406-001197	SA
ZD401	DIODE-TVS	0406-001231	SA
ZD403	DIODE-TVS	0406-001231	SA
ZD500	DIODE-TVS	0406-001267	SA
ZD503	DIODE-TVS	0406-001241	SA
ZD504	DIODE-TVS	0406-001241	SA

7. Block Diagrams

7-1. Main Block Diagram

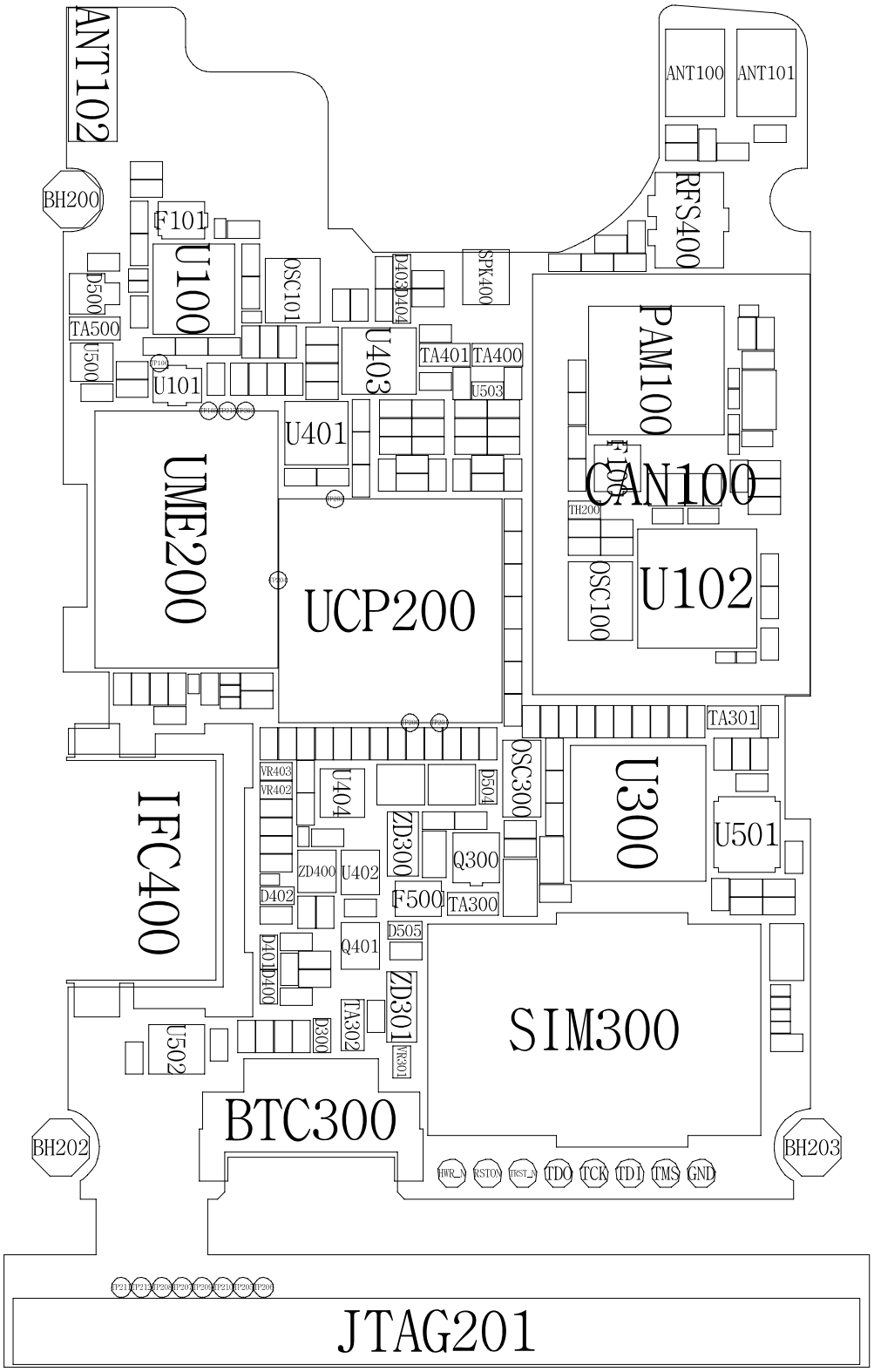


7-2. RF Solution Block Diagram

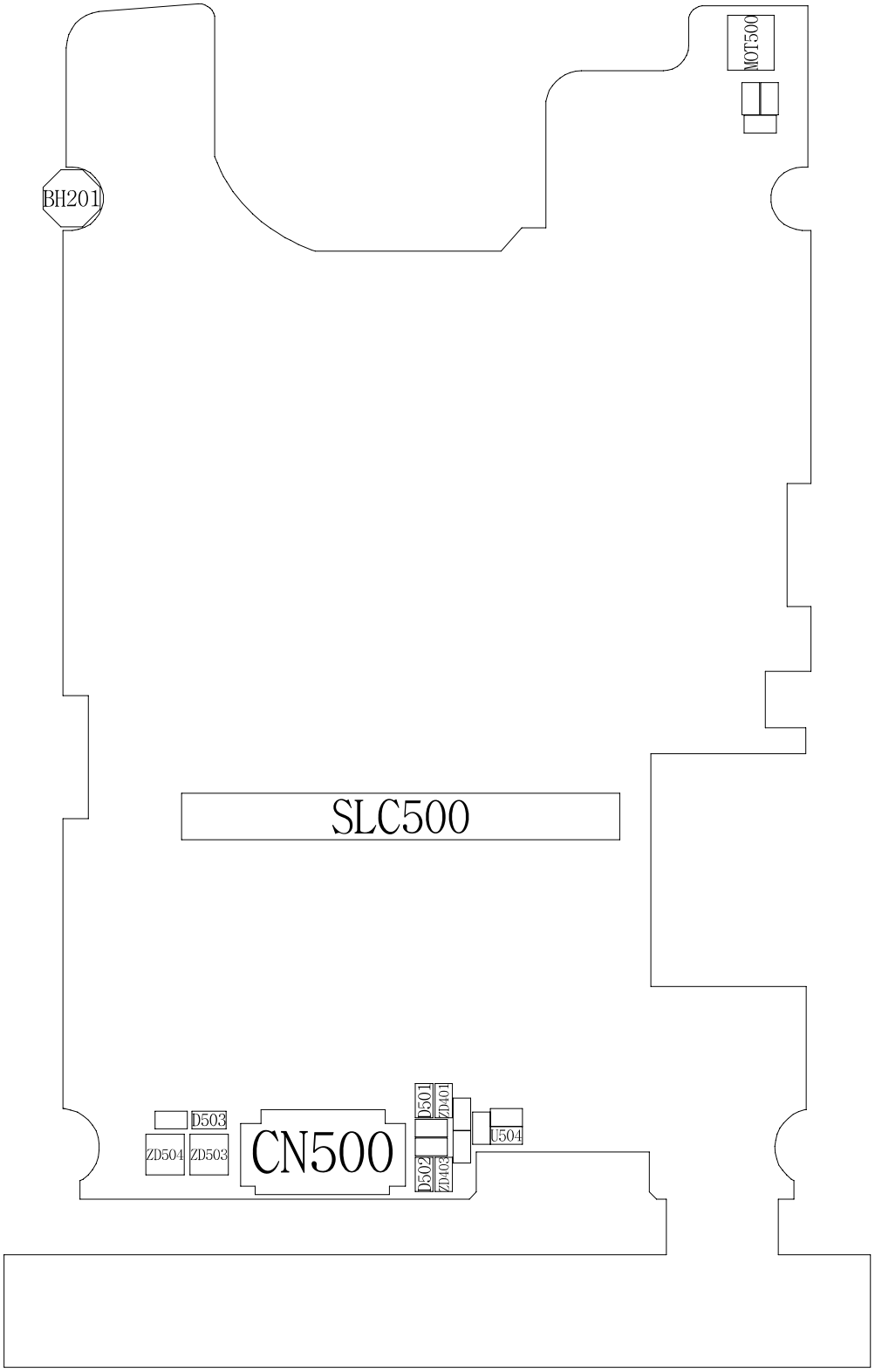


8. PCB Diagrams

Top

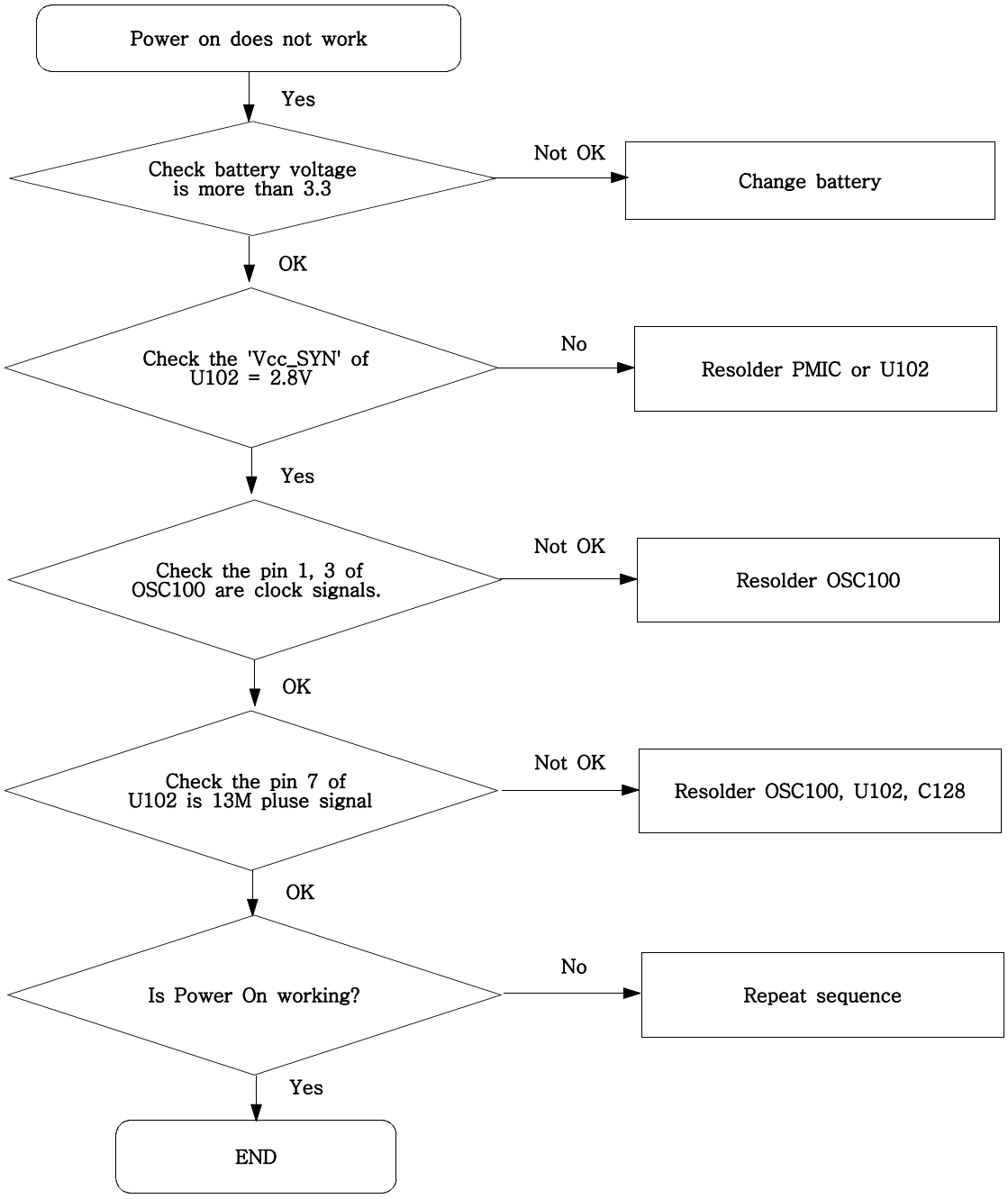


Bottom

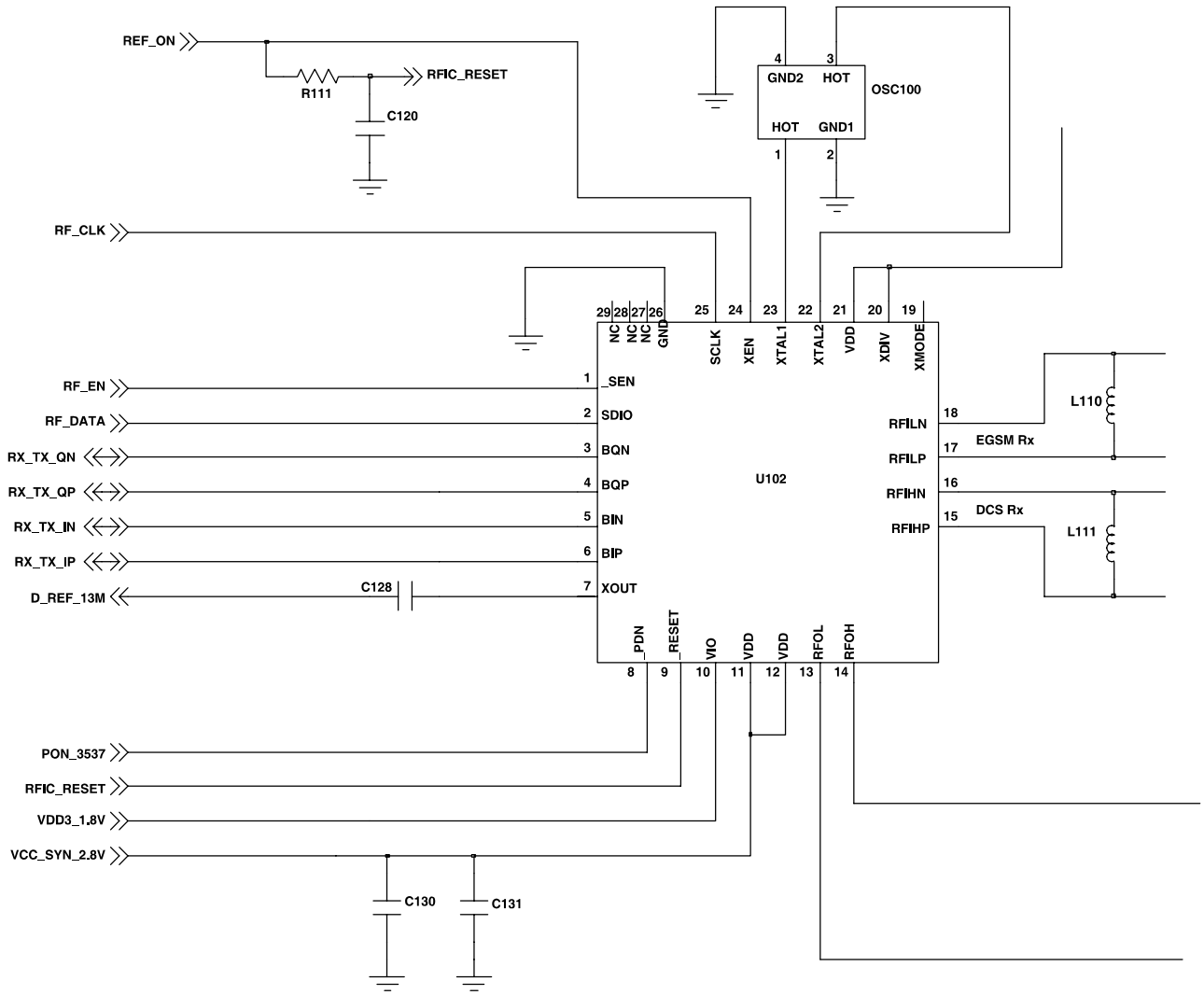


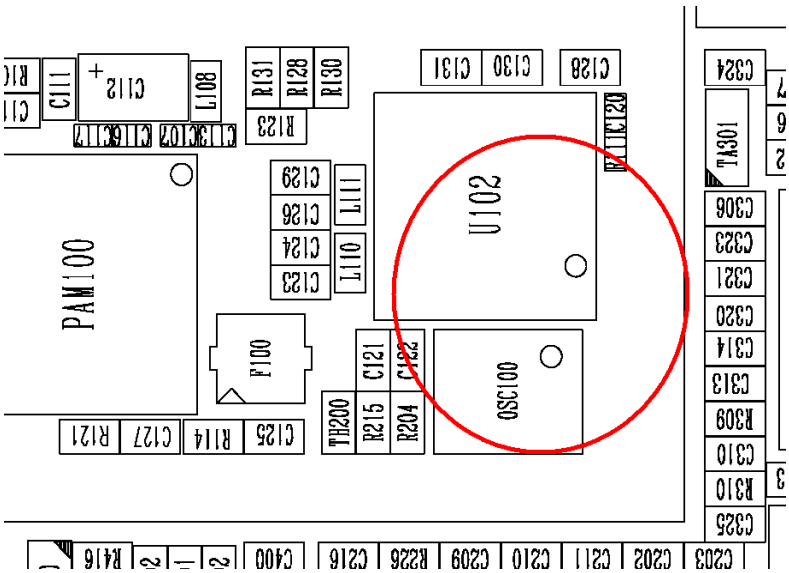
9. Flow Chart of Troubleshooting

9-1. Power On

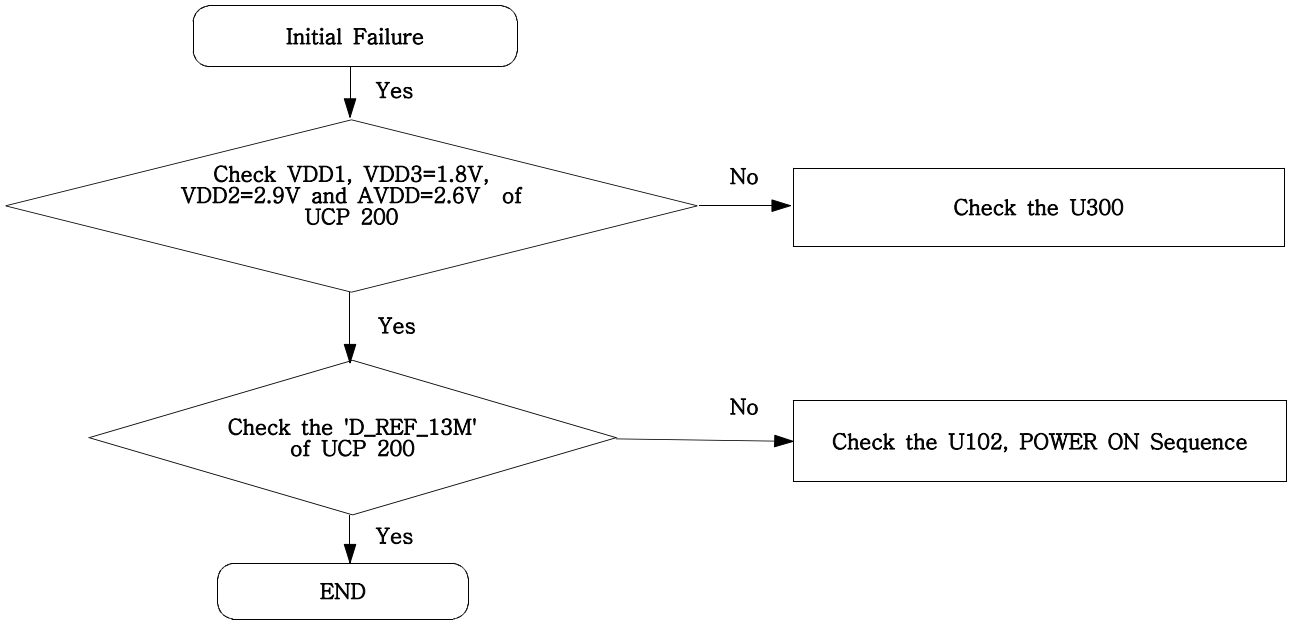


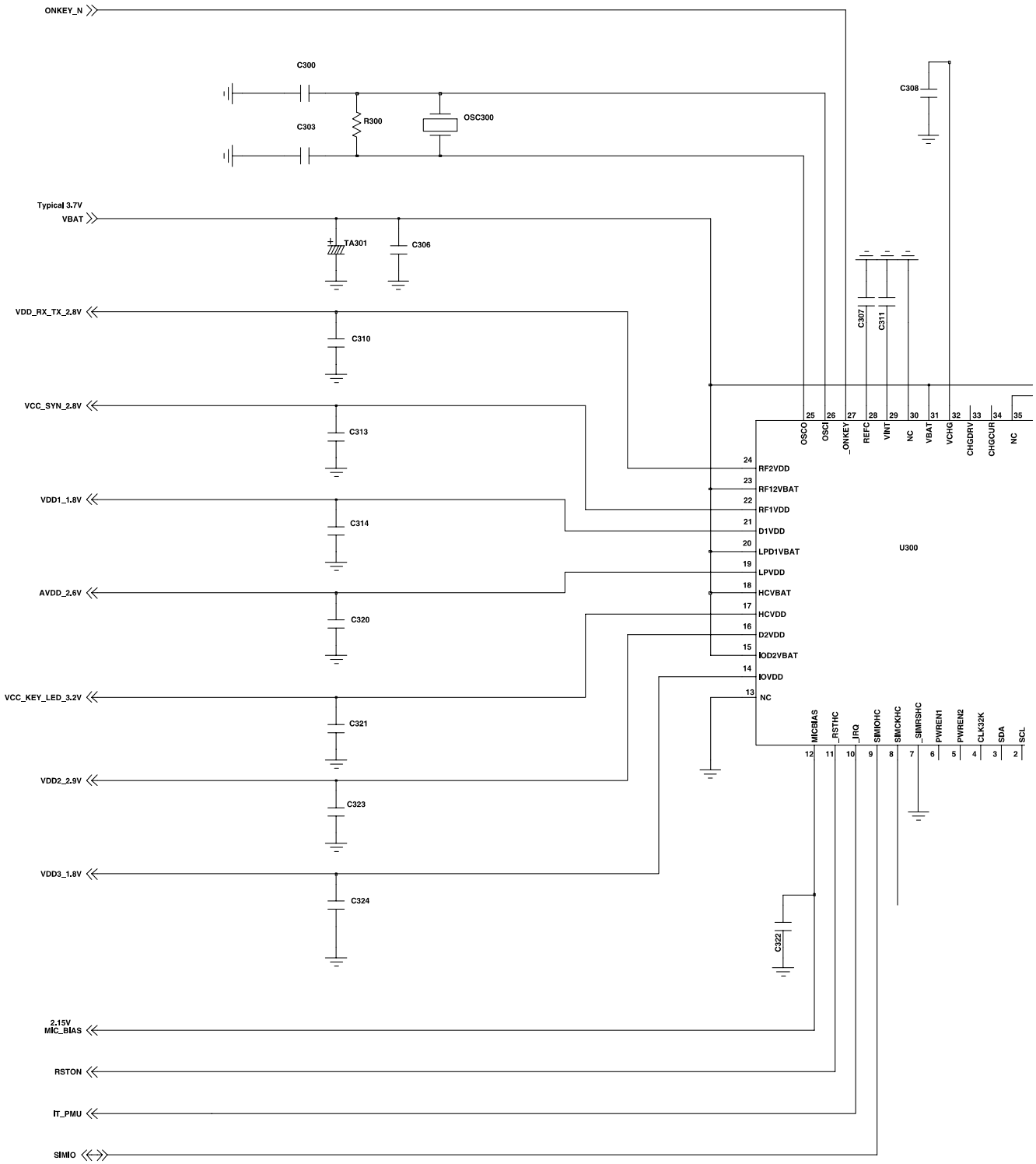
Power On



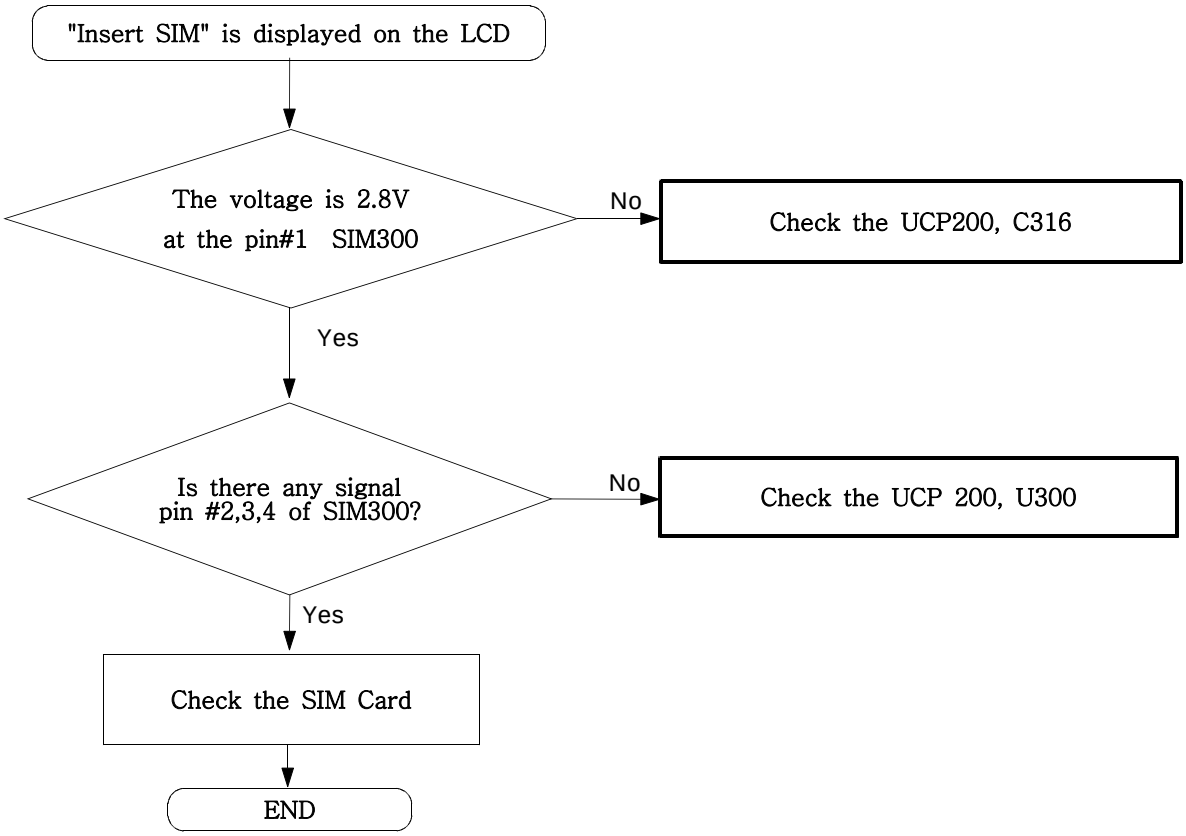


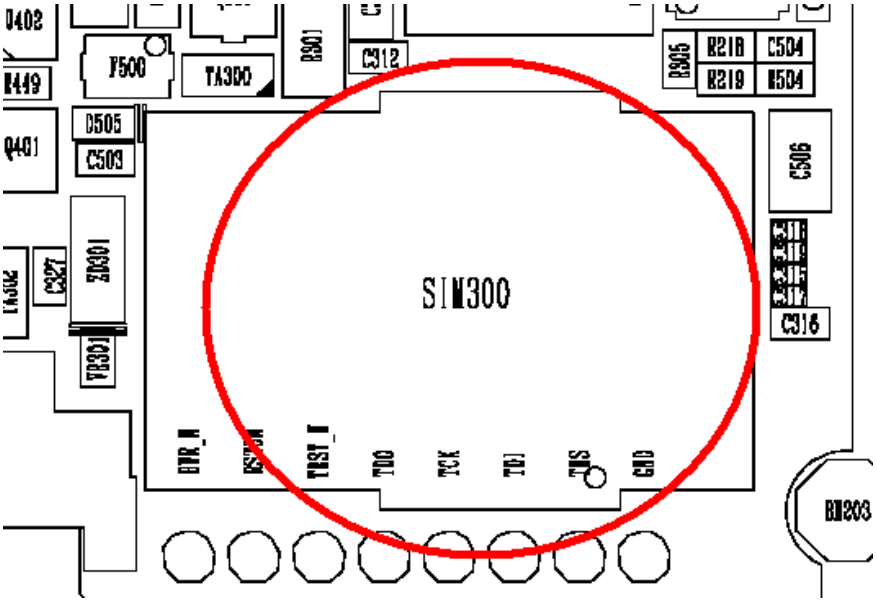
9-2. Initial

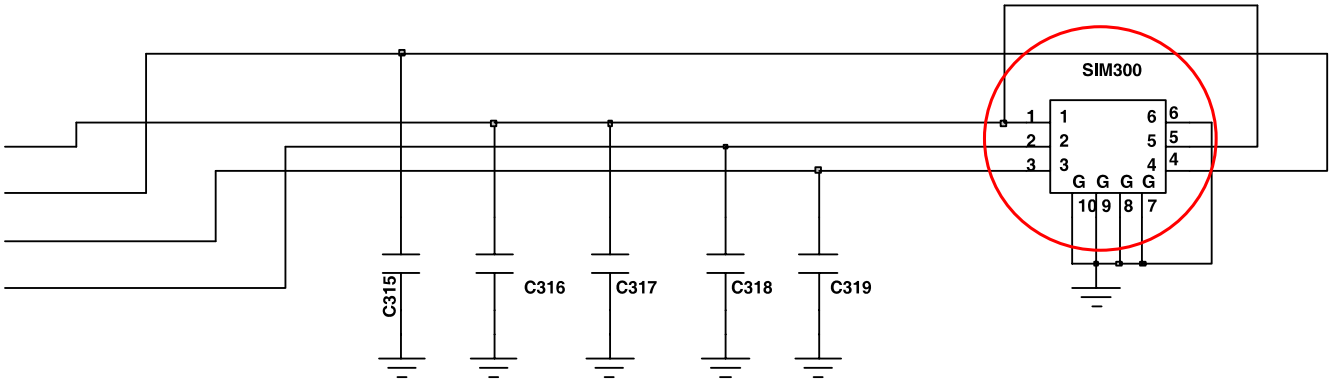




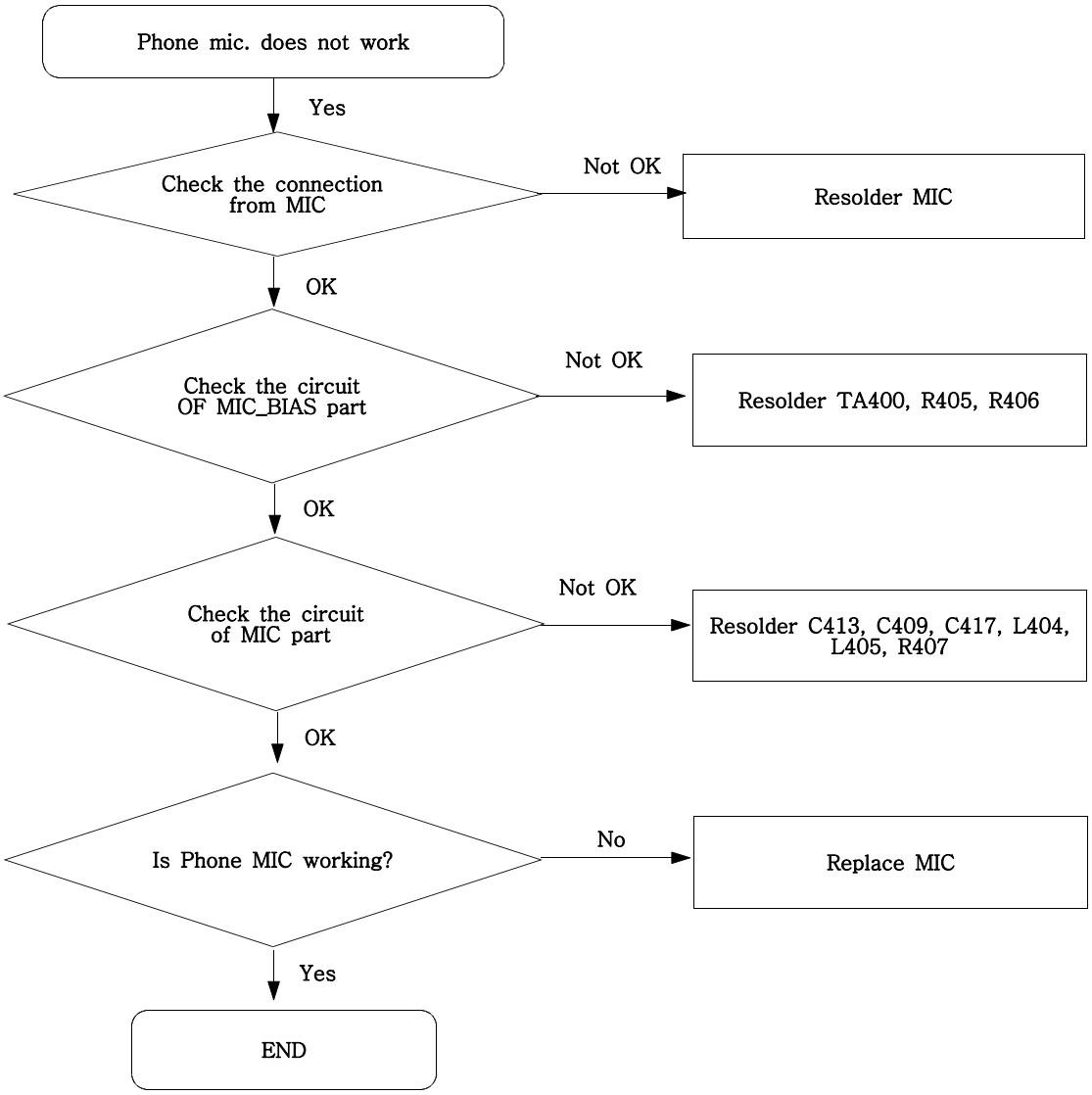
9-3. Sim Part





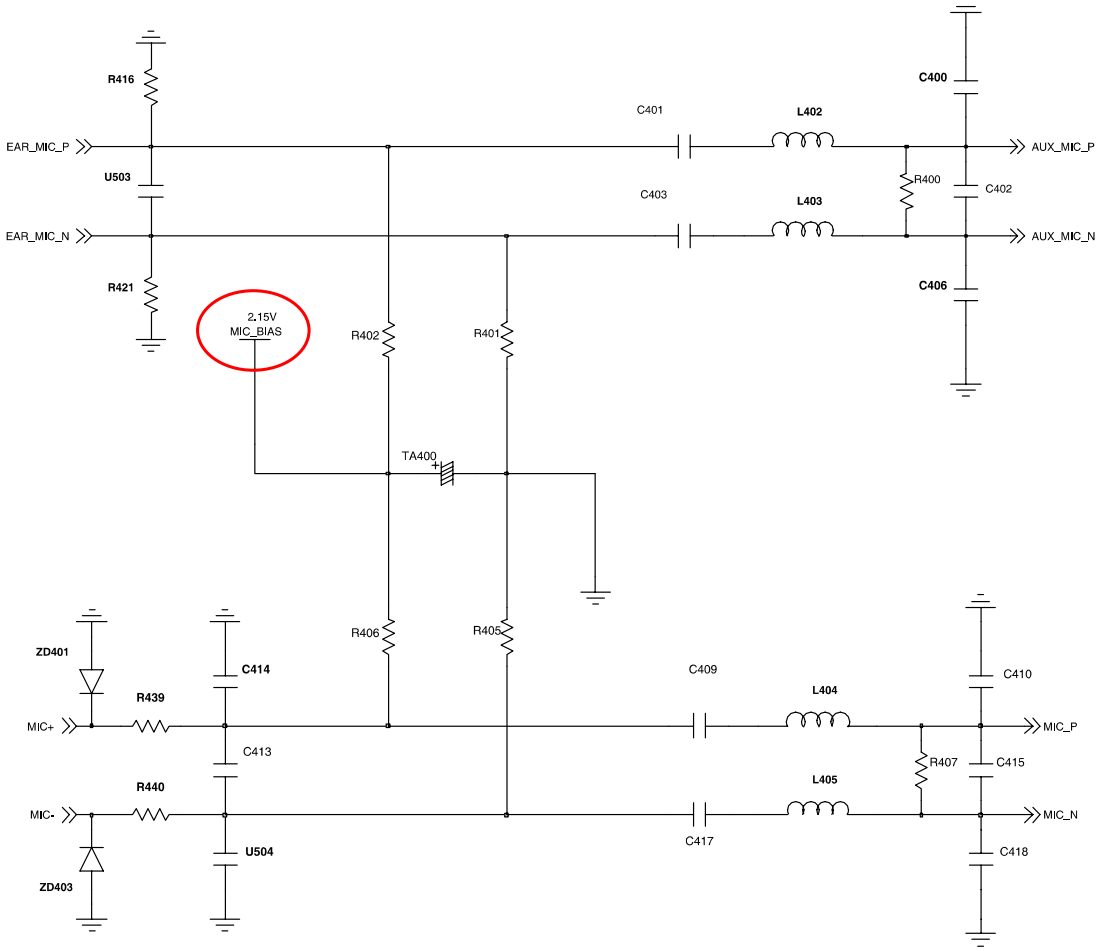


9-4. Microphone Part - Phone MIC

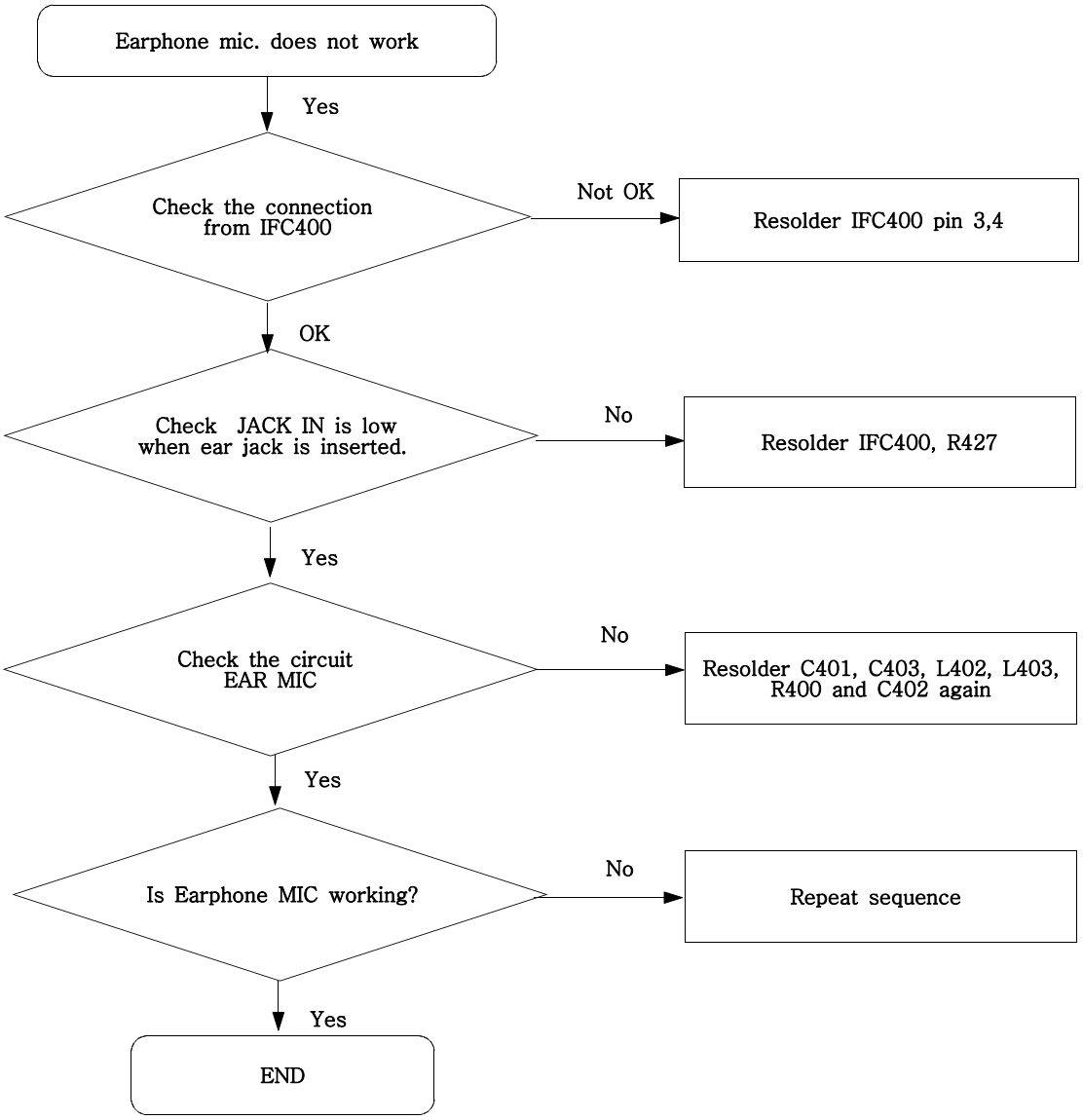


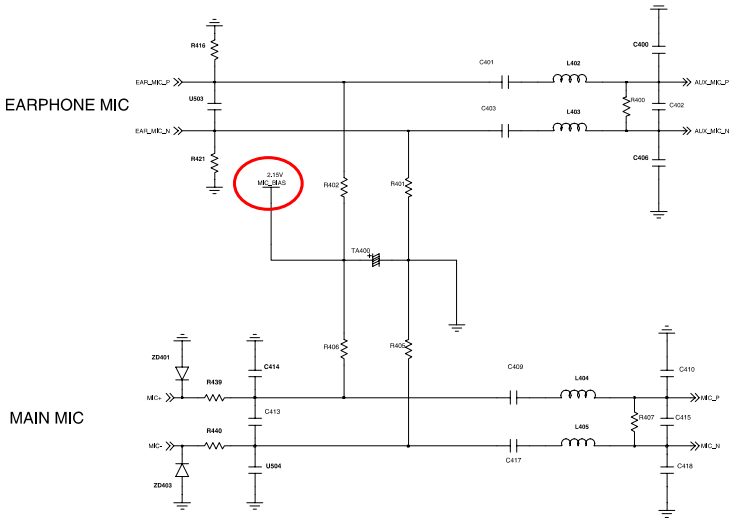
EARPHONE MIC

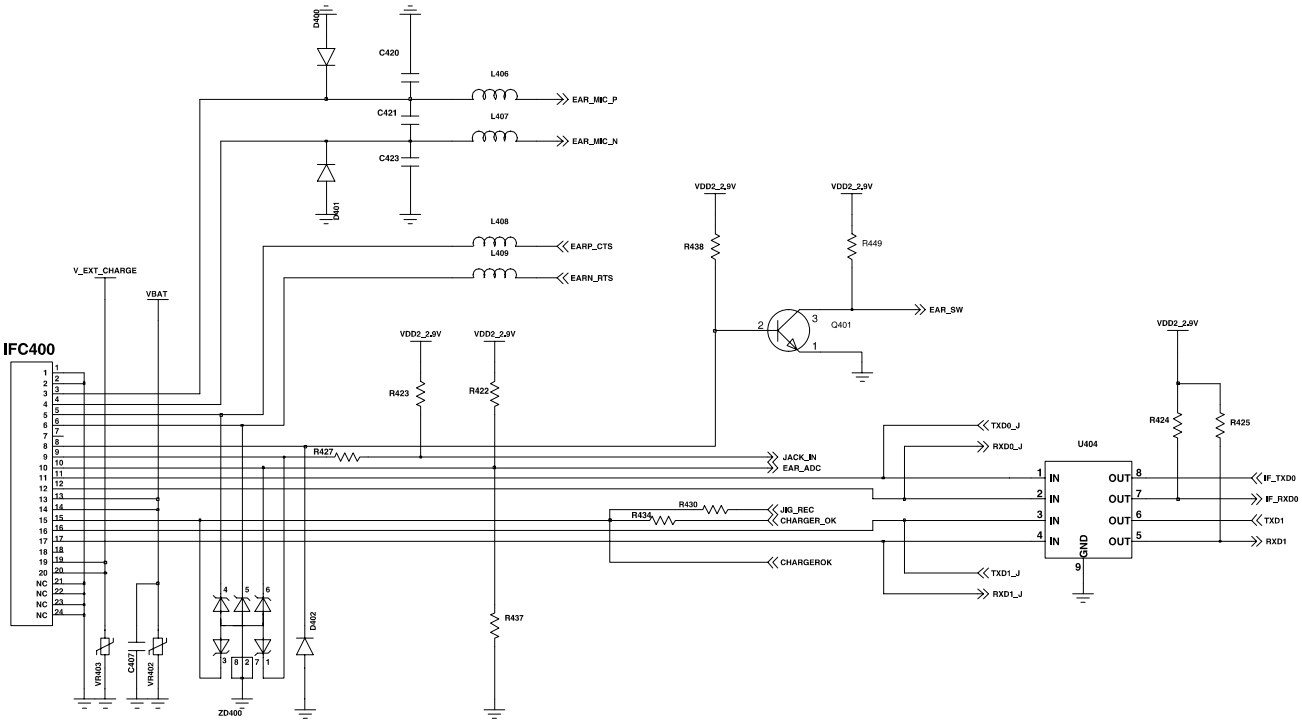
MAIN MIC

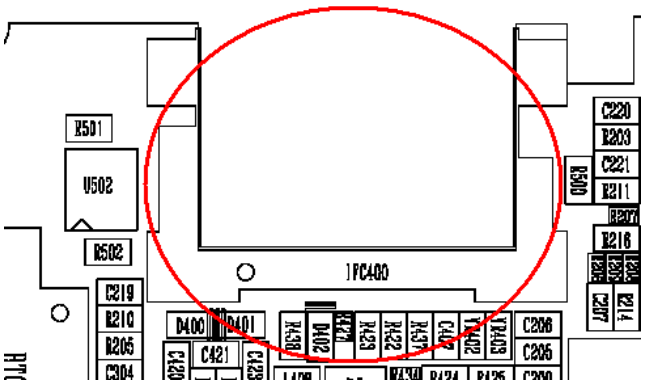


9-5. Microphone Part - Earphone MIC

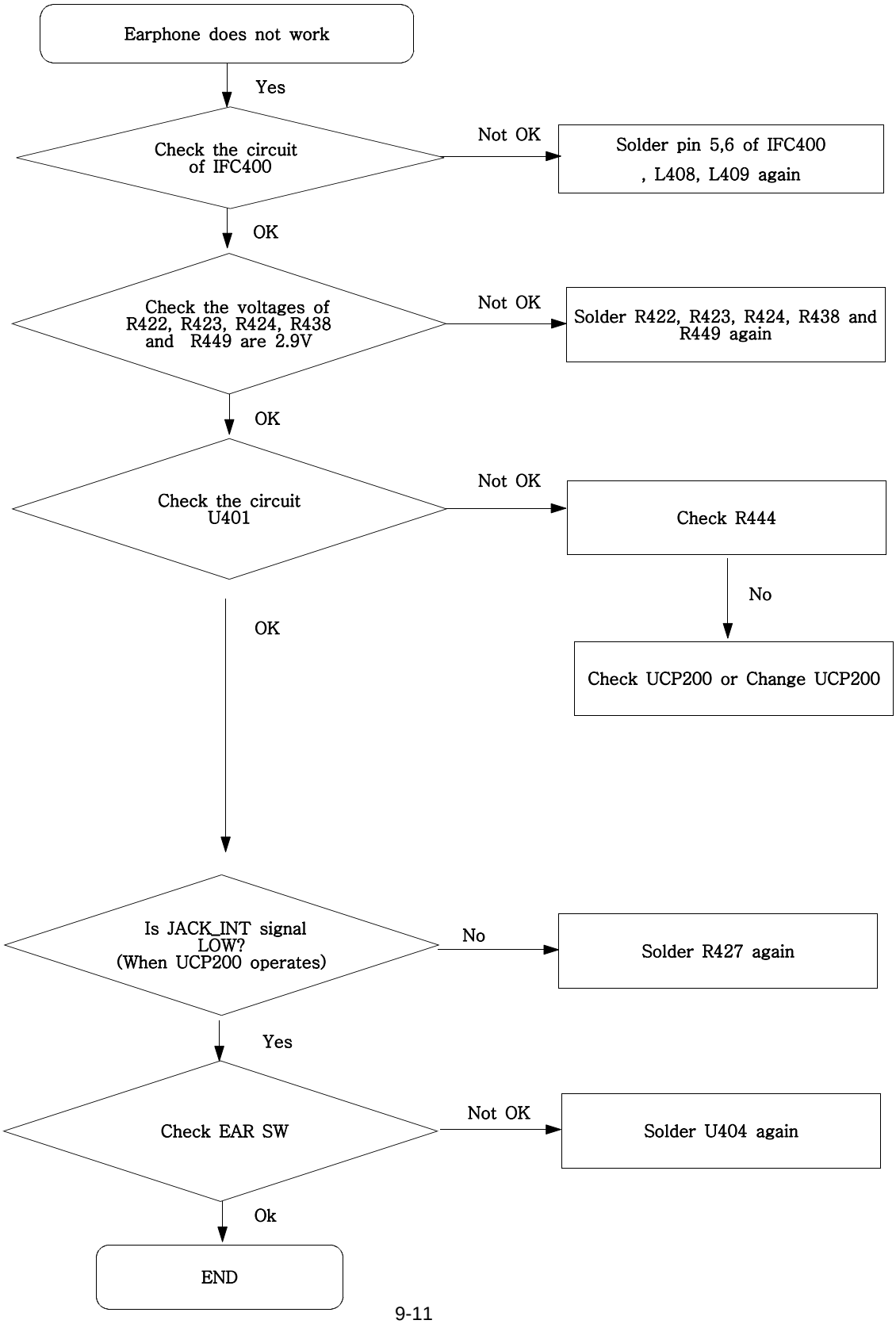


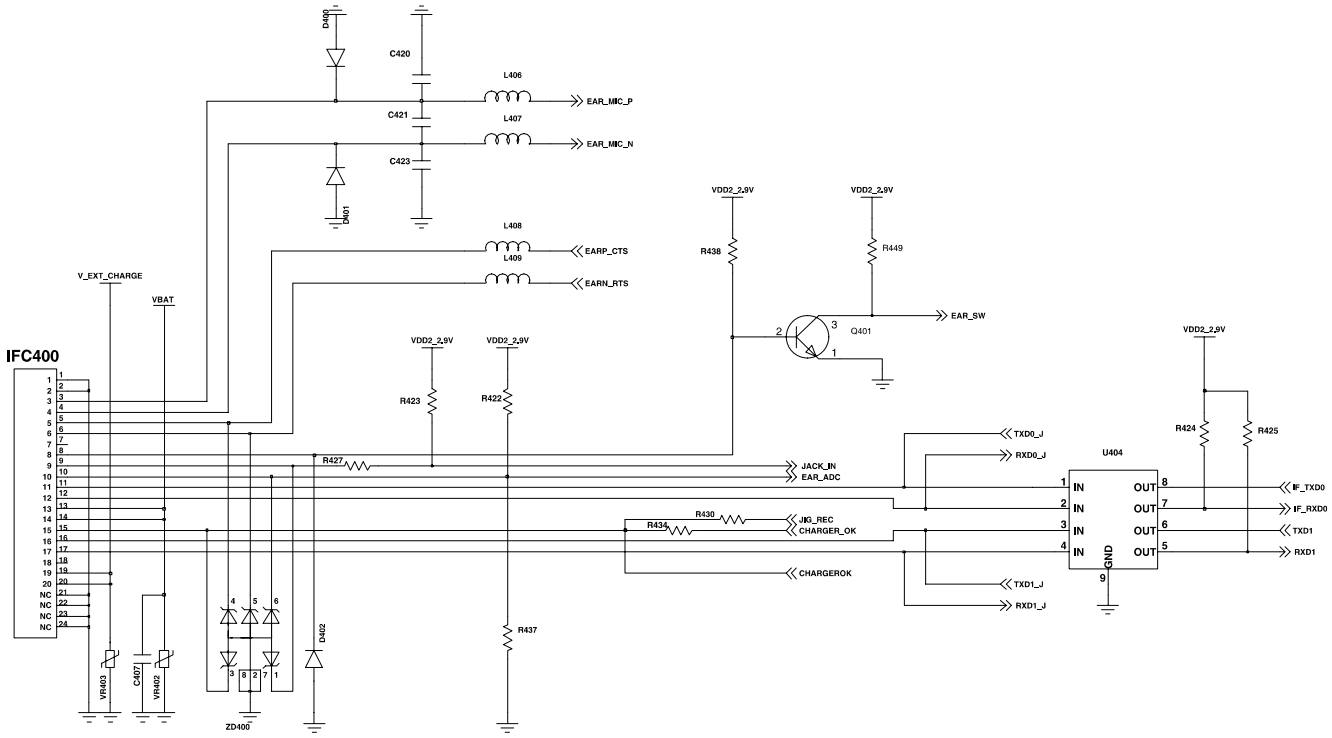






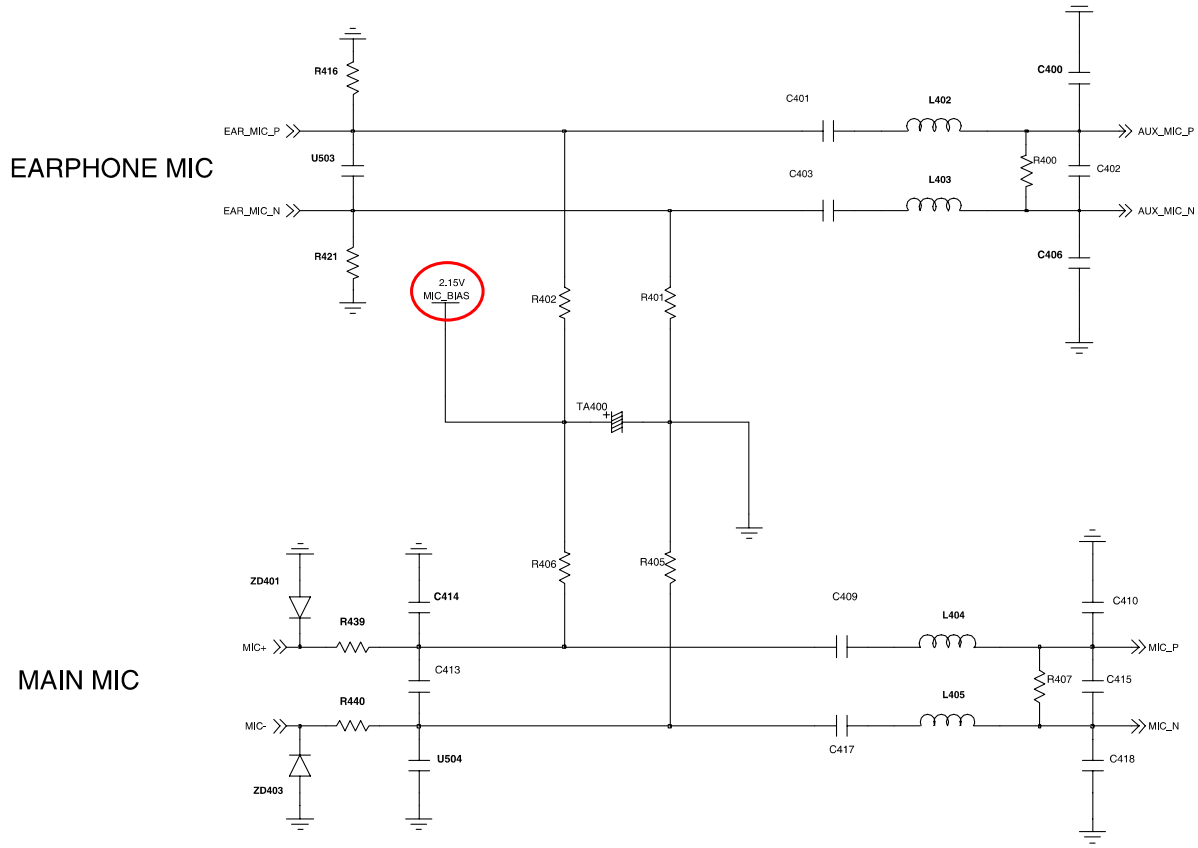
9-6. Earphone Part

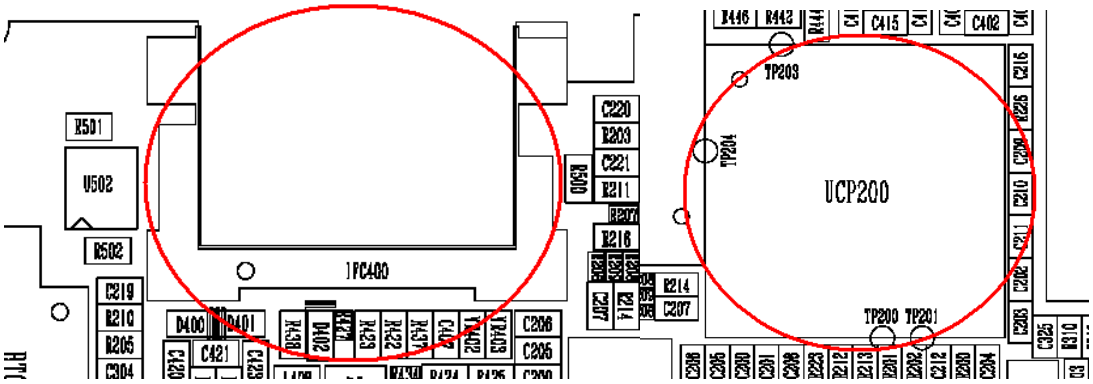


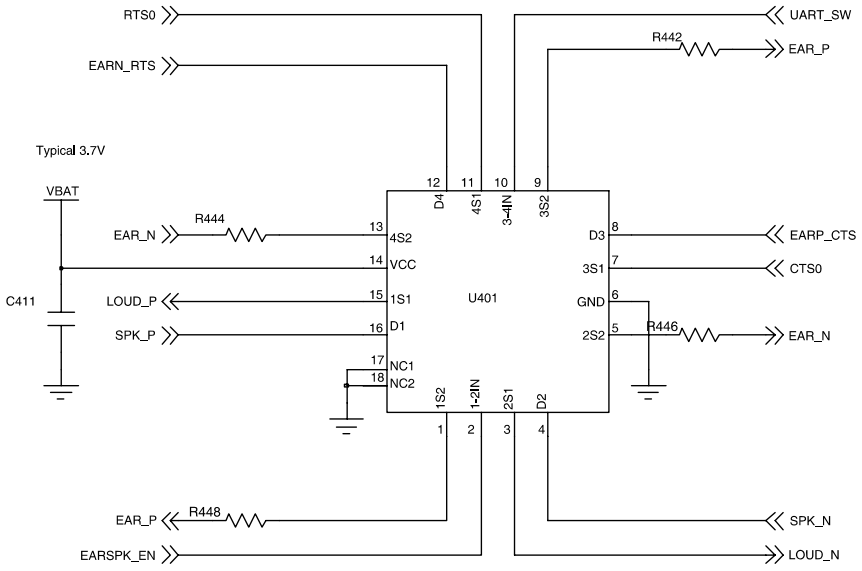


EARPHONE MIC

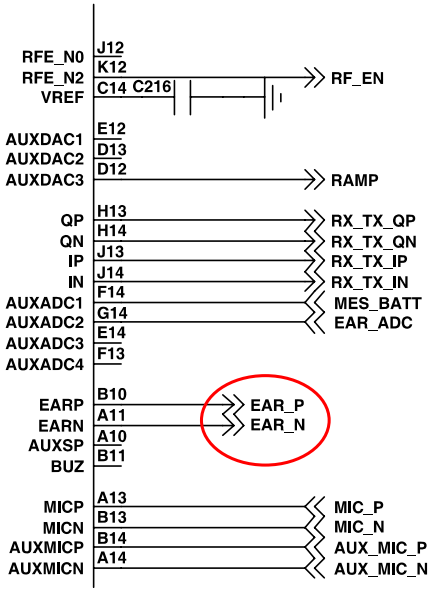
MAIN MIC



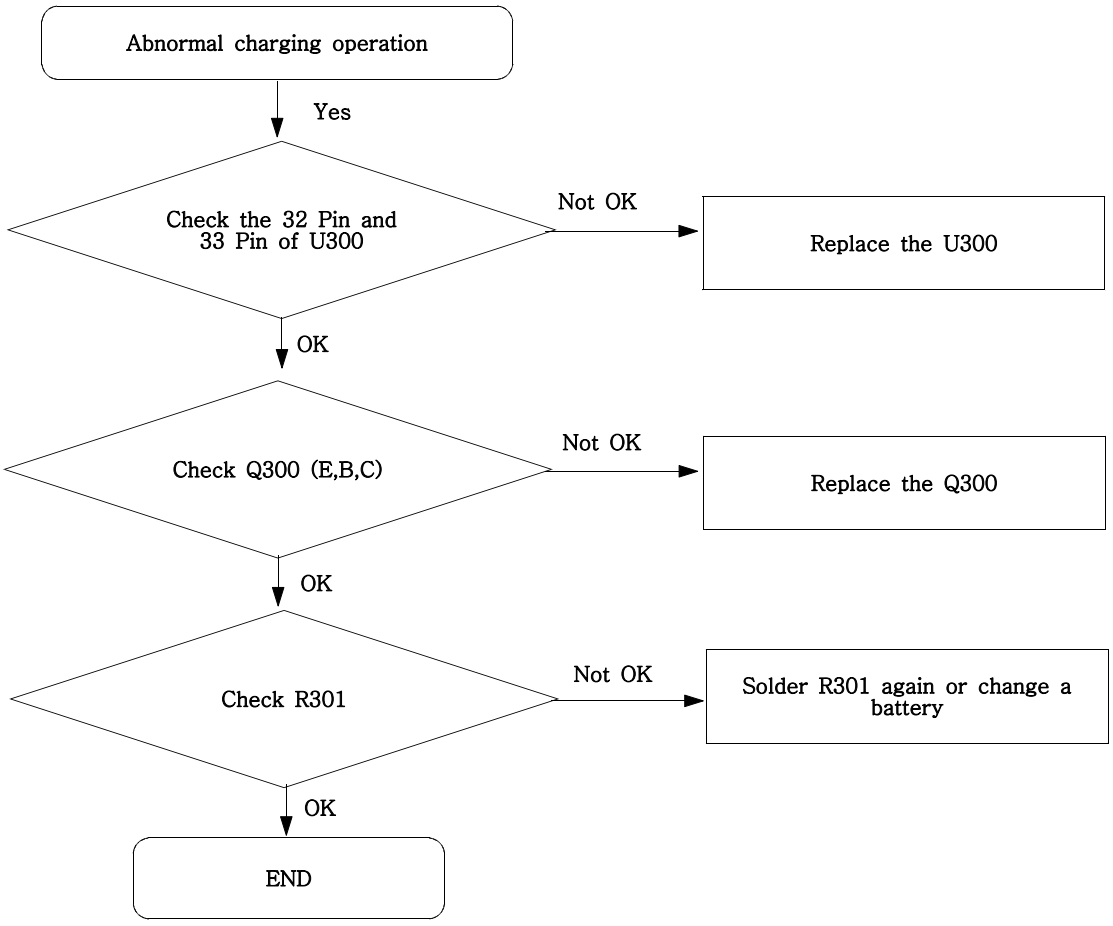


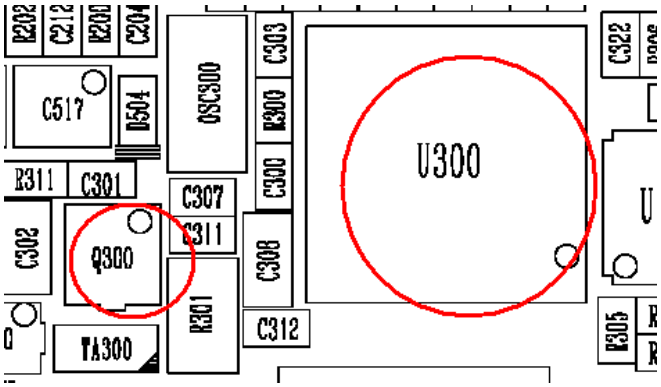


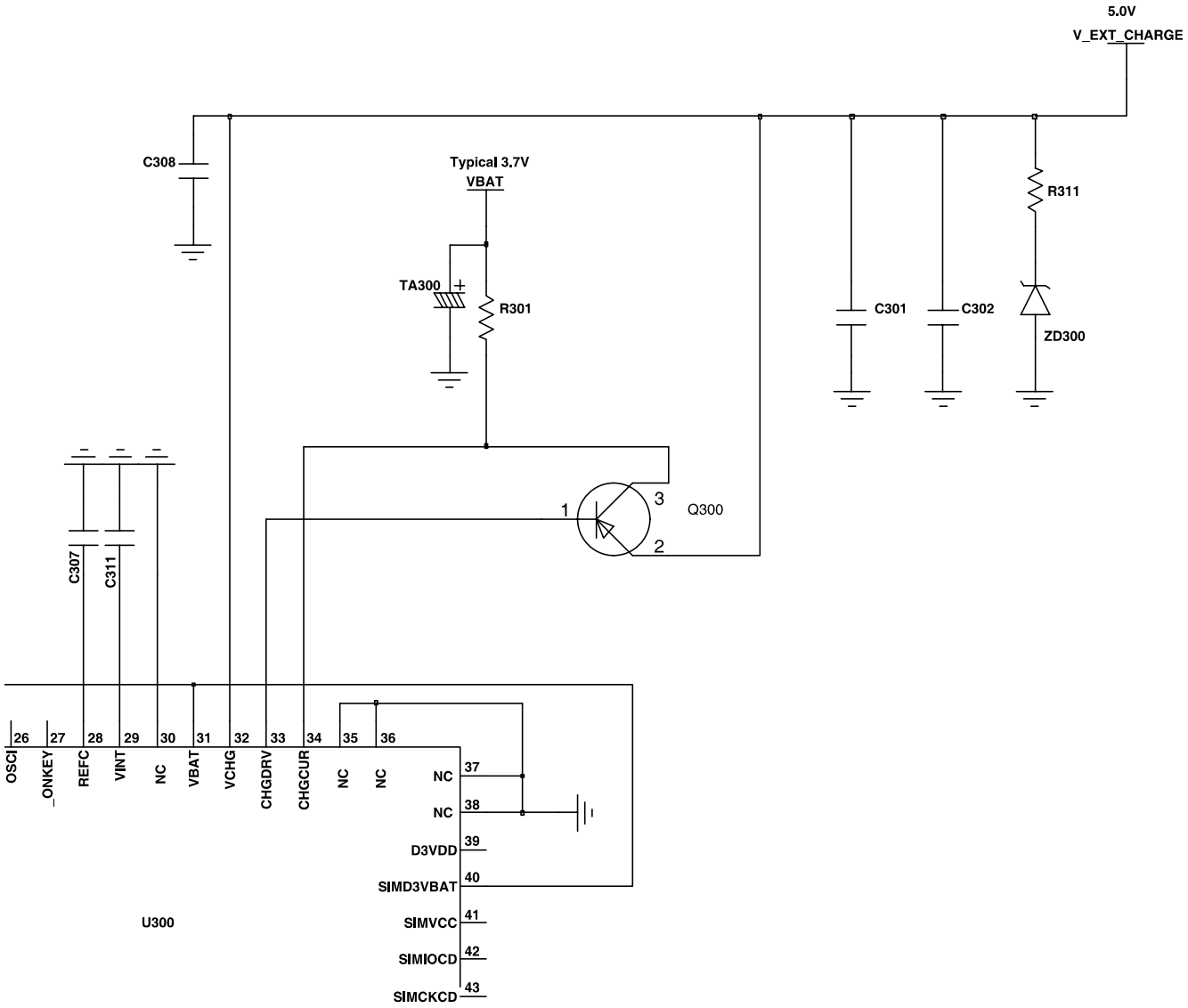
UCP200



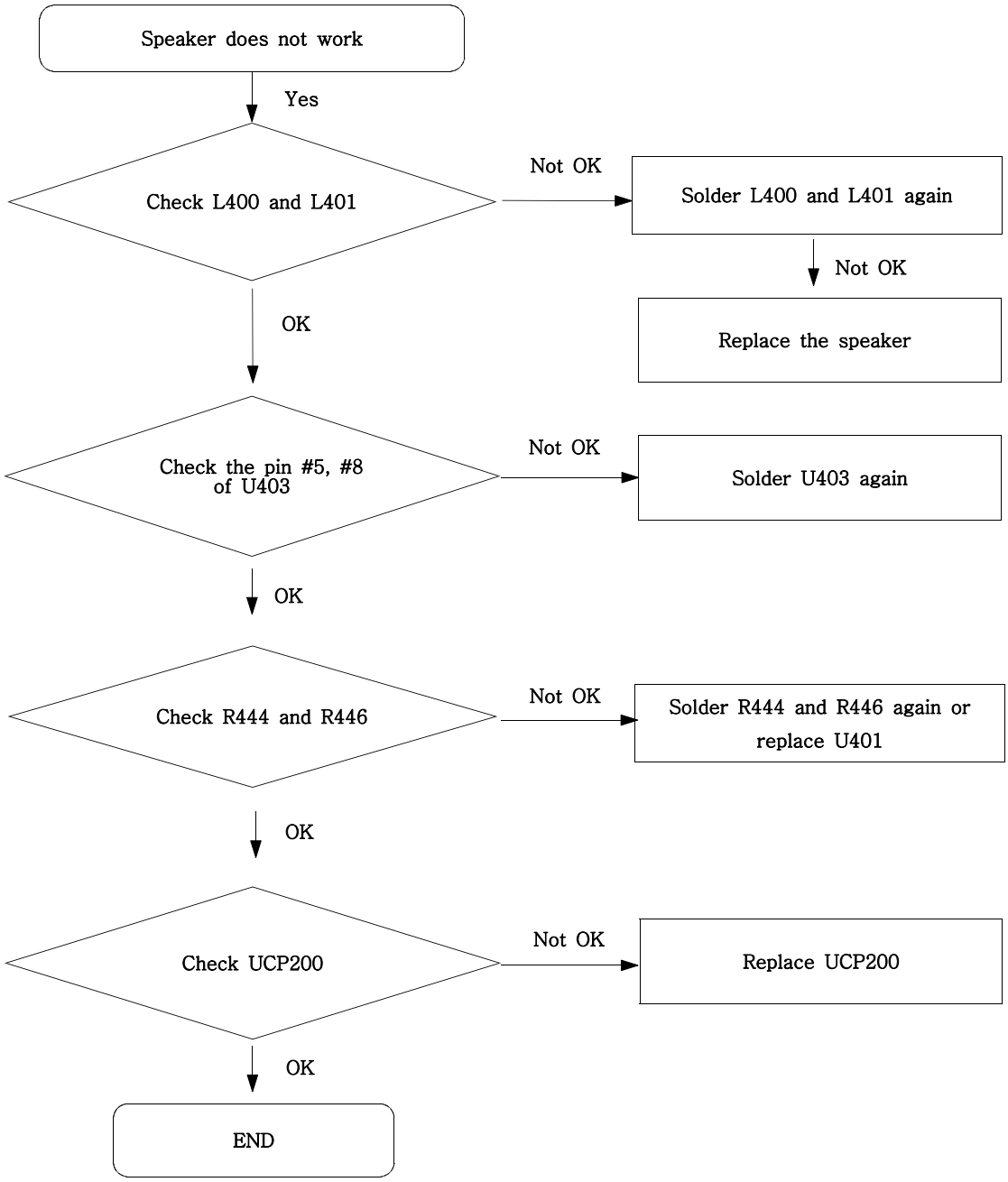
9-7. Charging Part

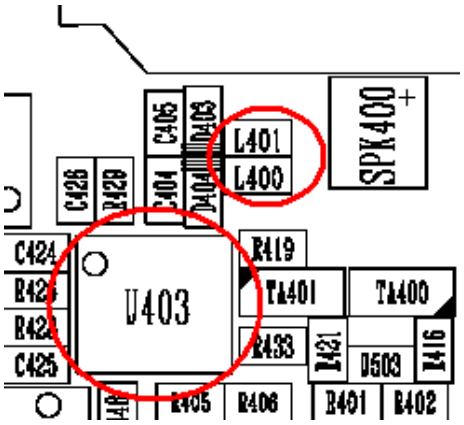


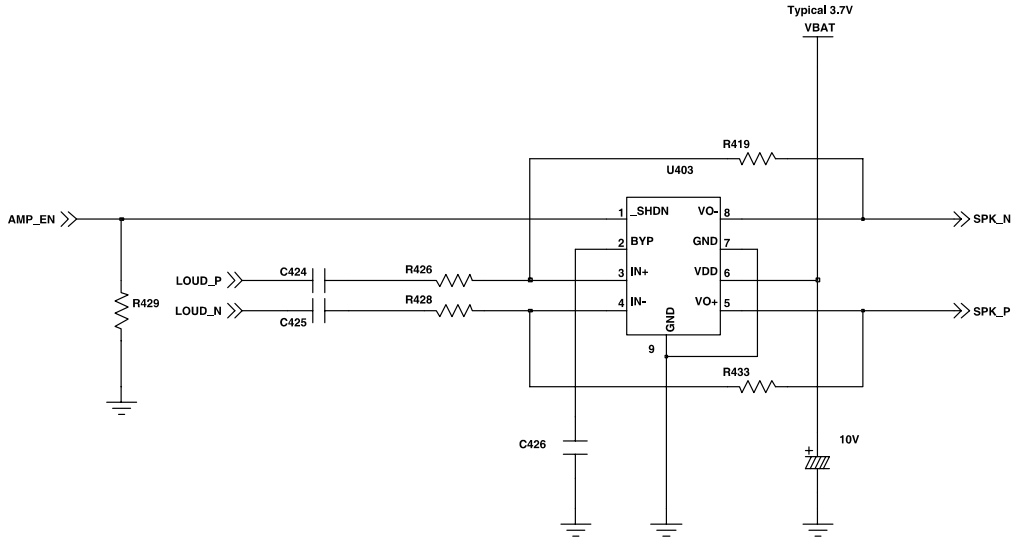


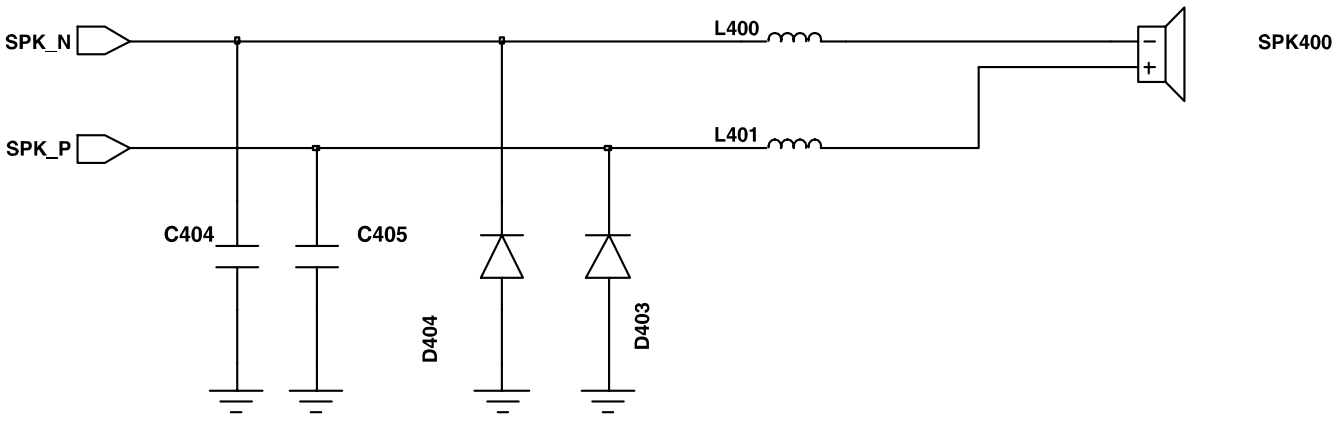


9-8. Speaker Part

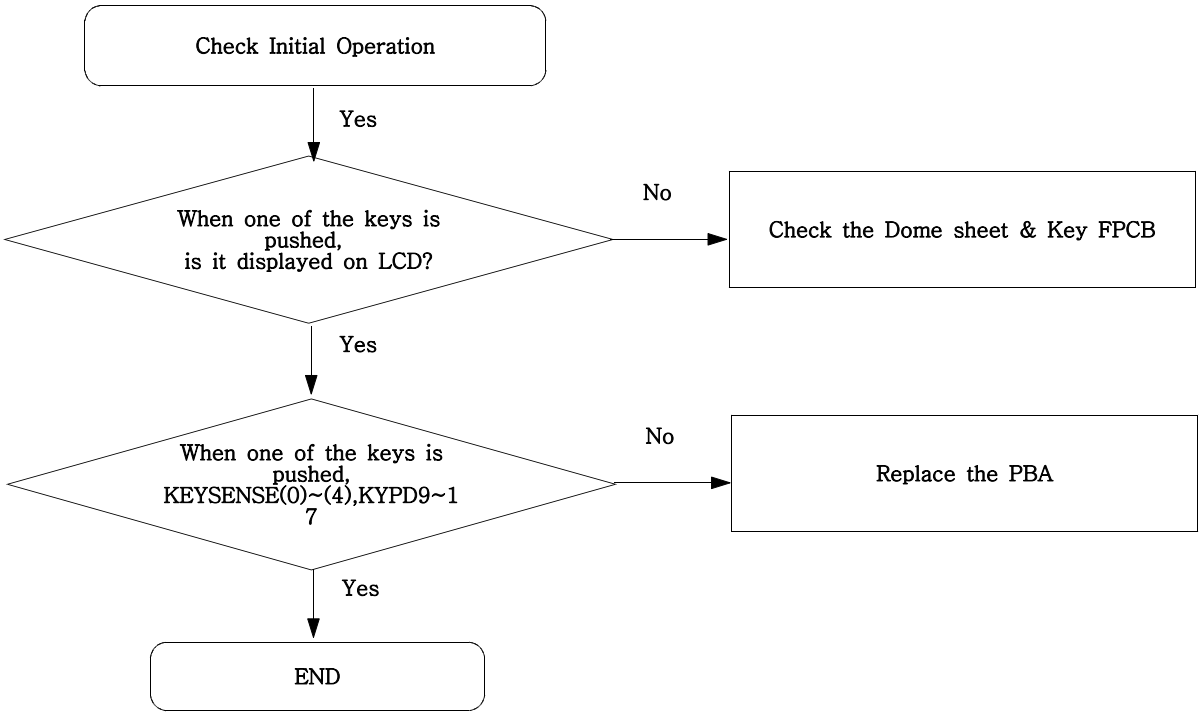




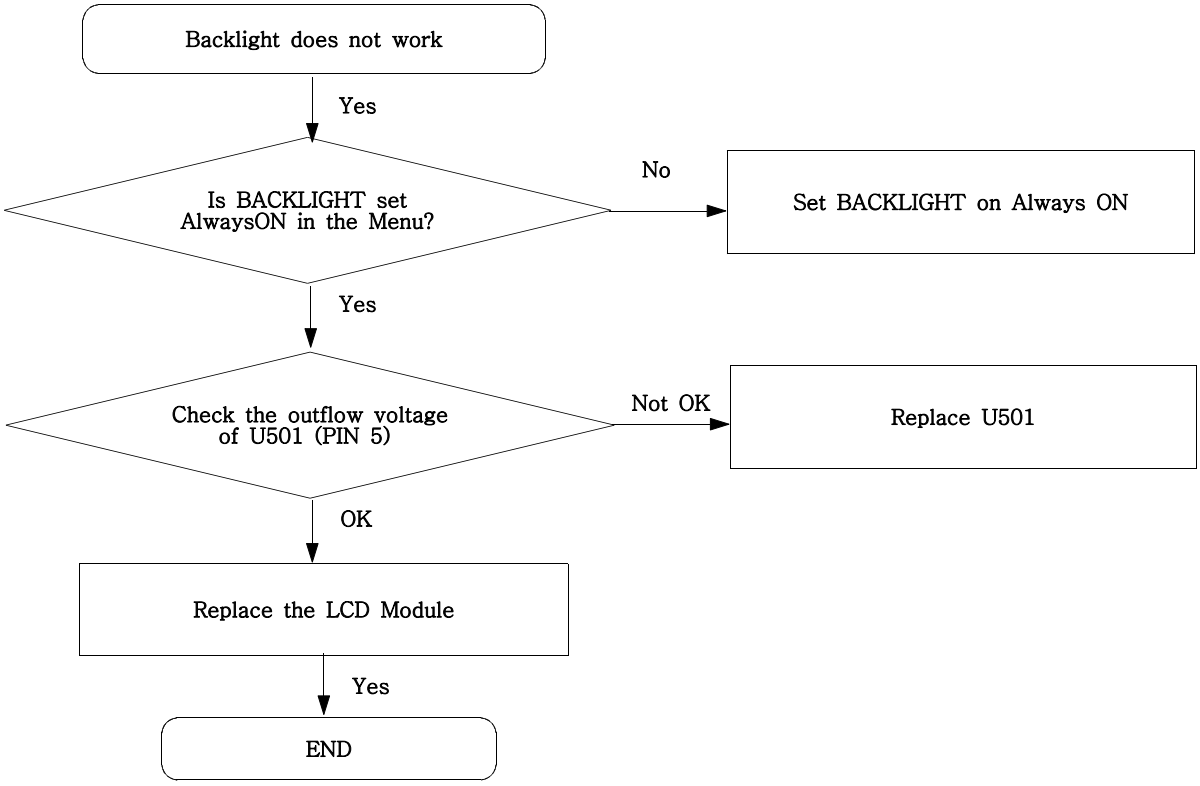


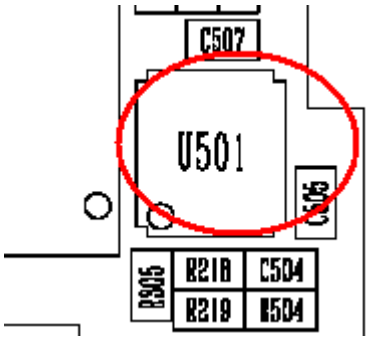


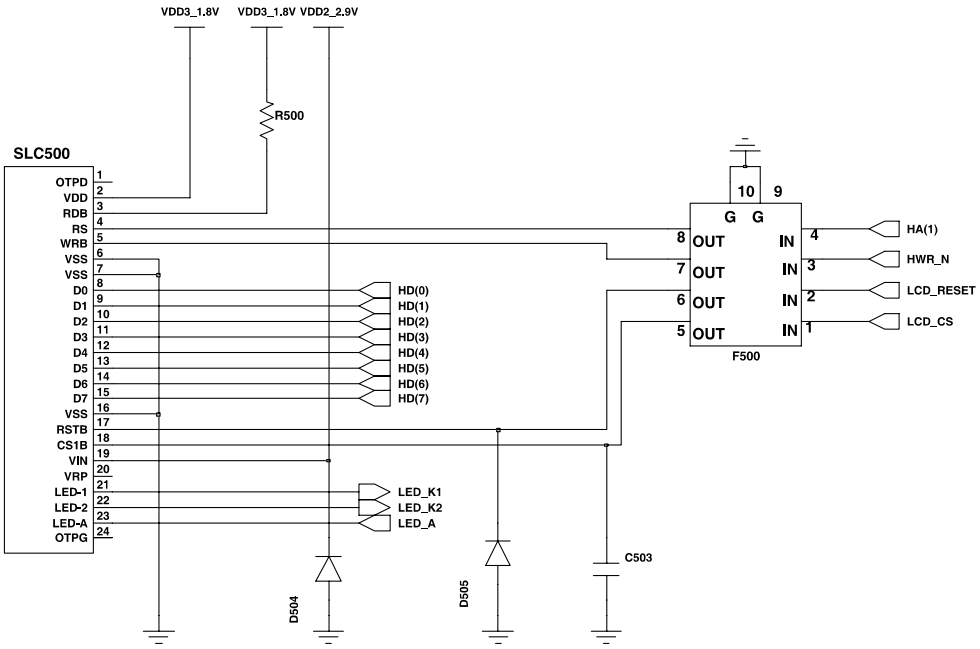
9-9. Key Data Input

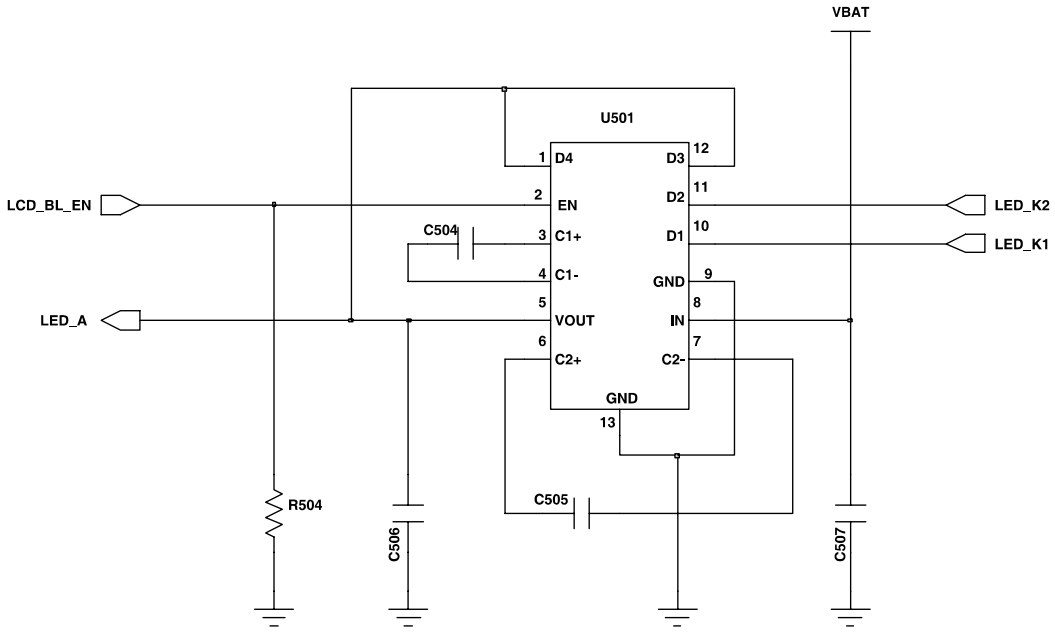


9-10. Back Light (for Color Main LCD)

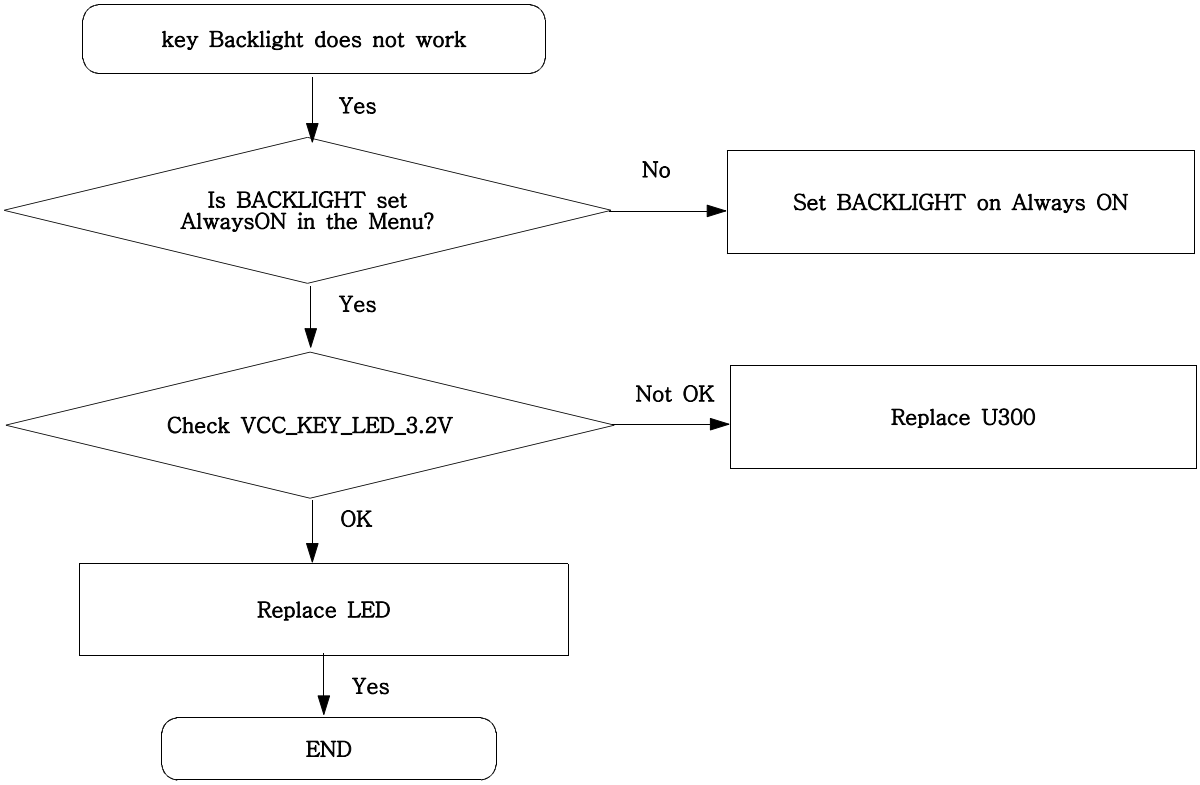


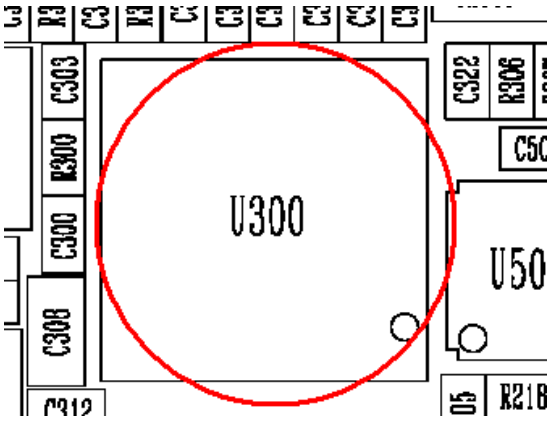


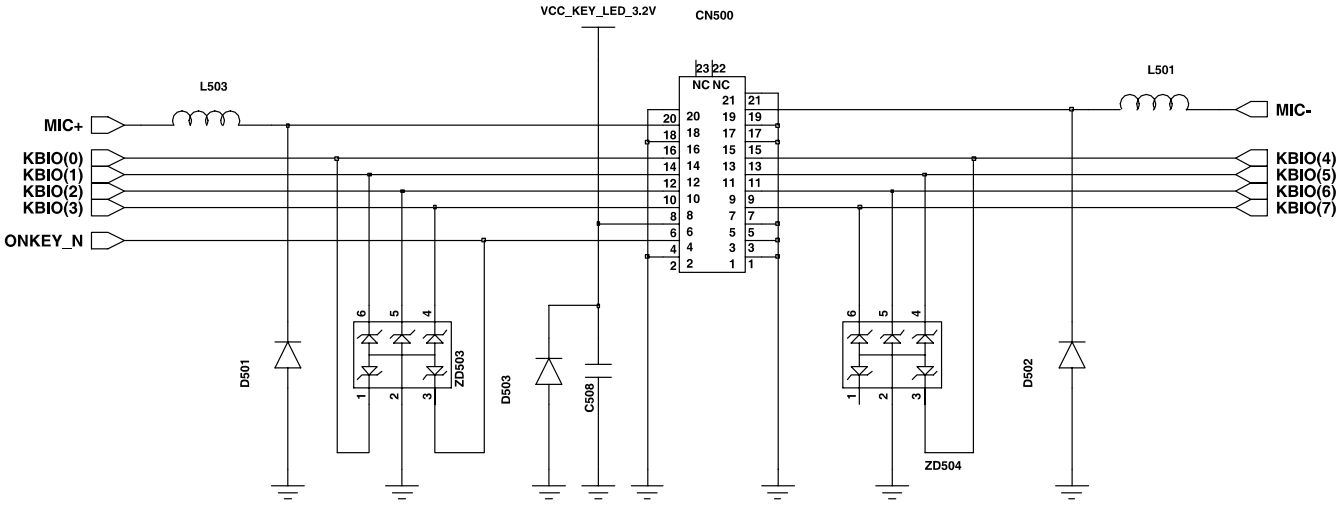


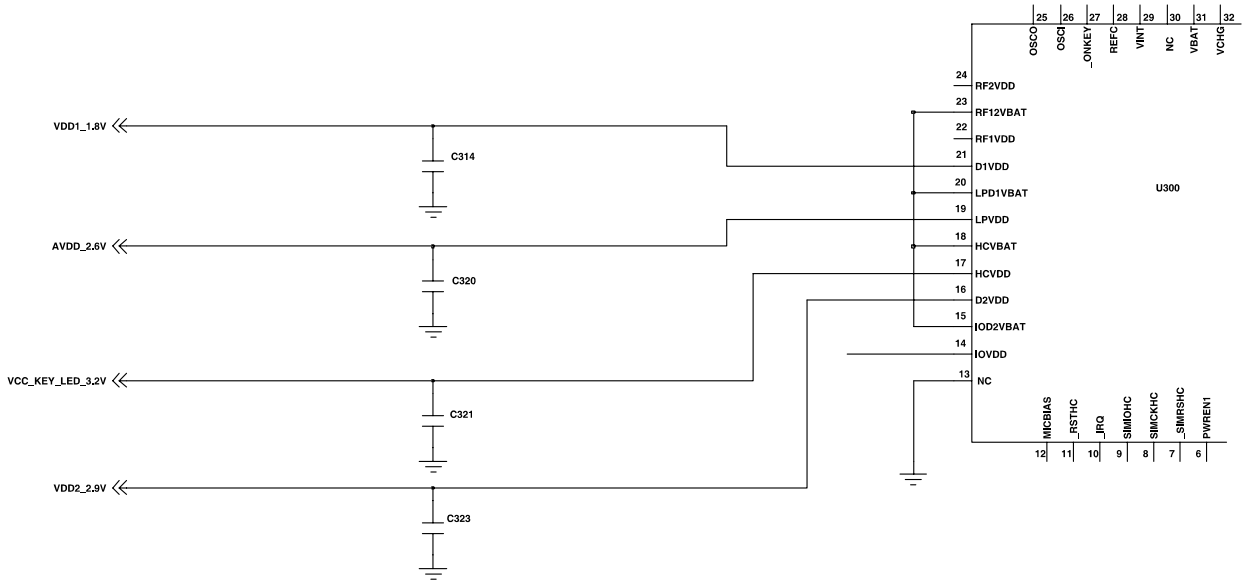


9-11. Key Back Light

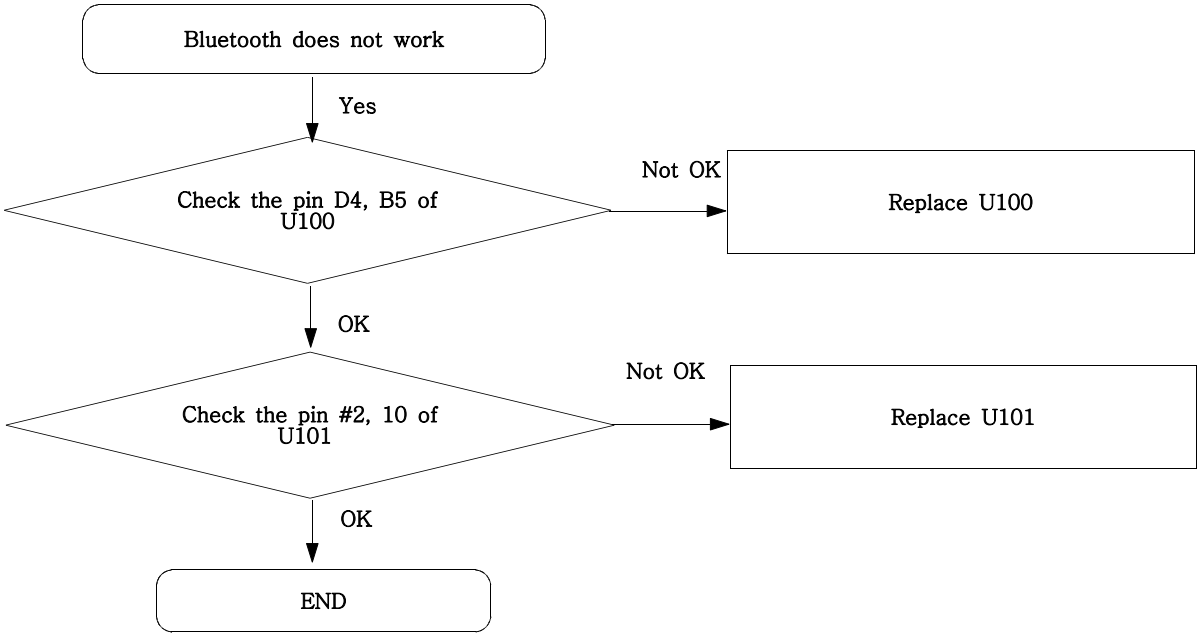


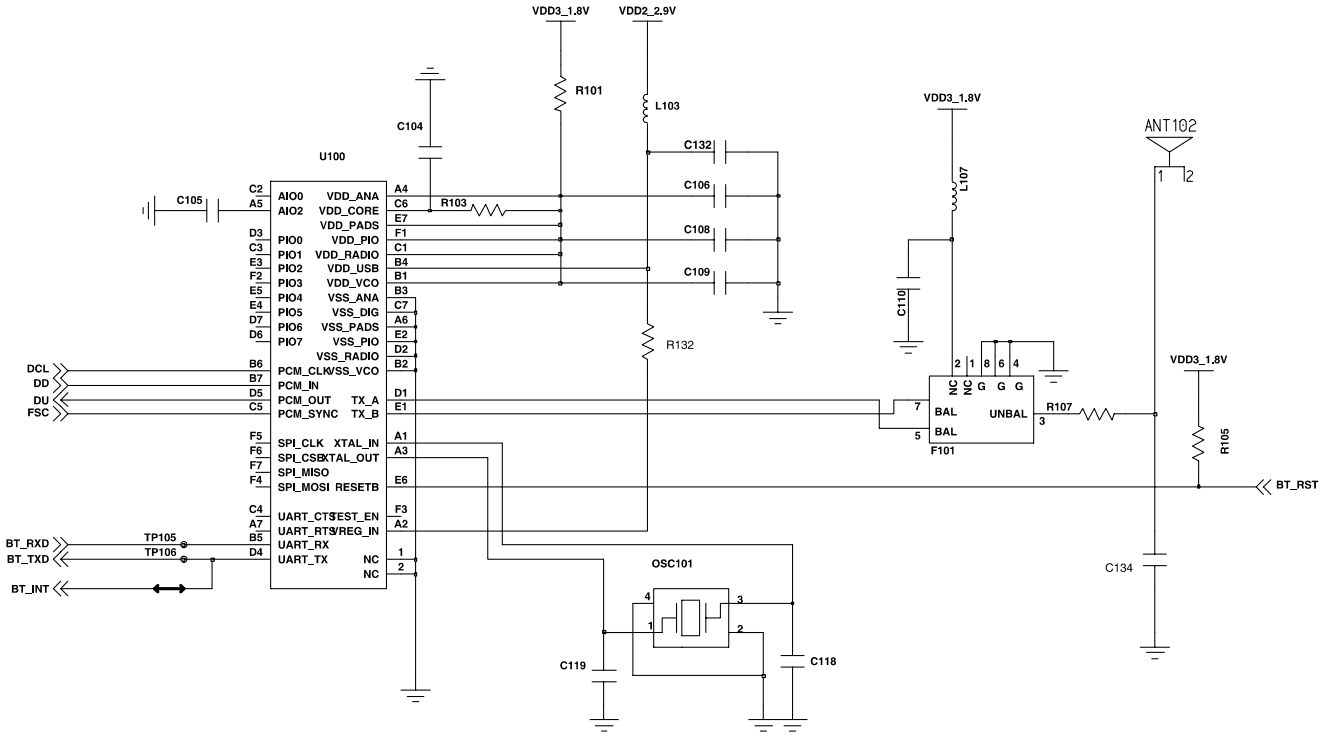


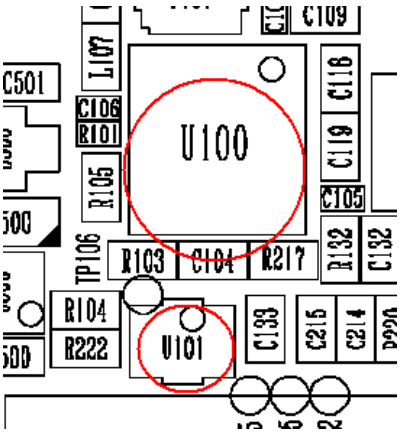


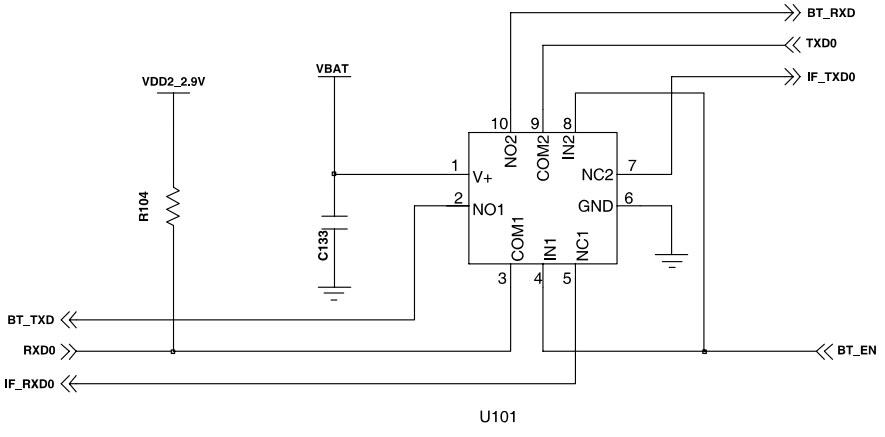


9-12. Bluetooth

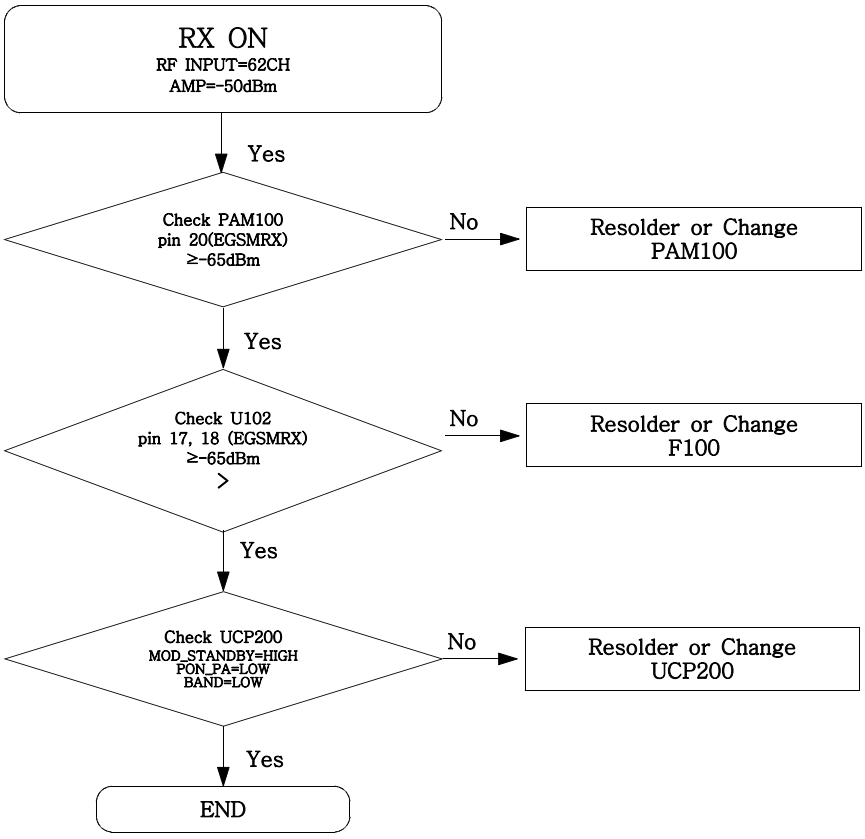


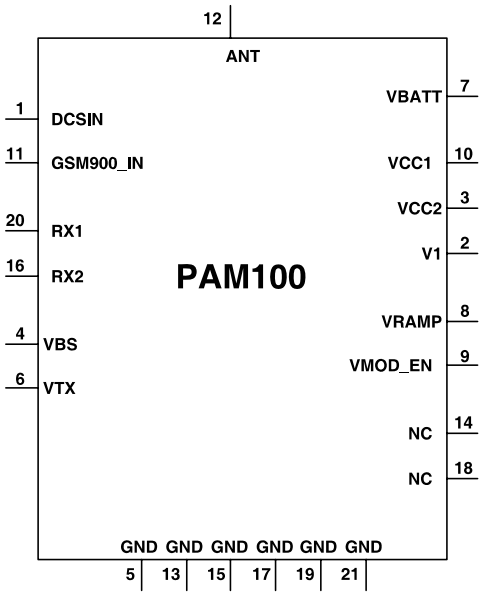


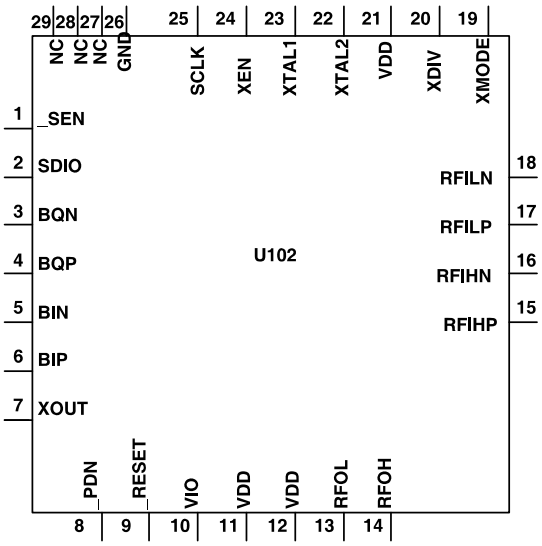




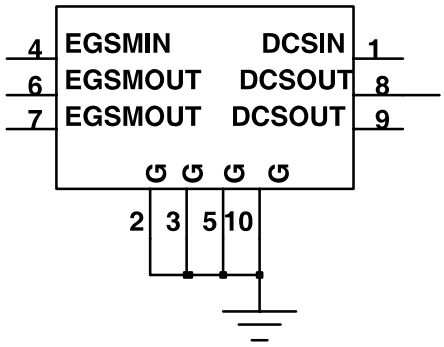
9-15. GSM Receiver

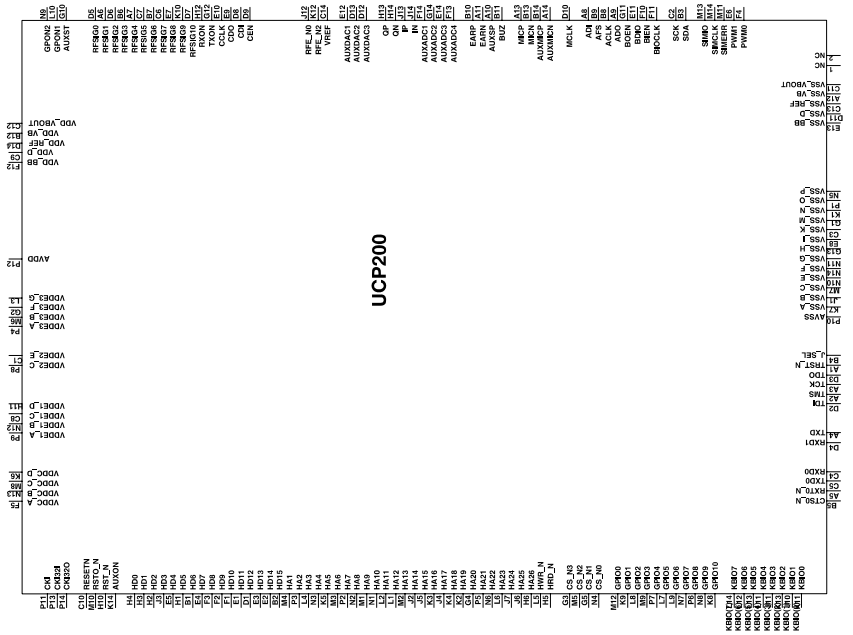


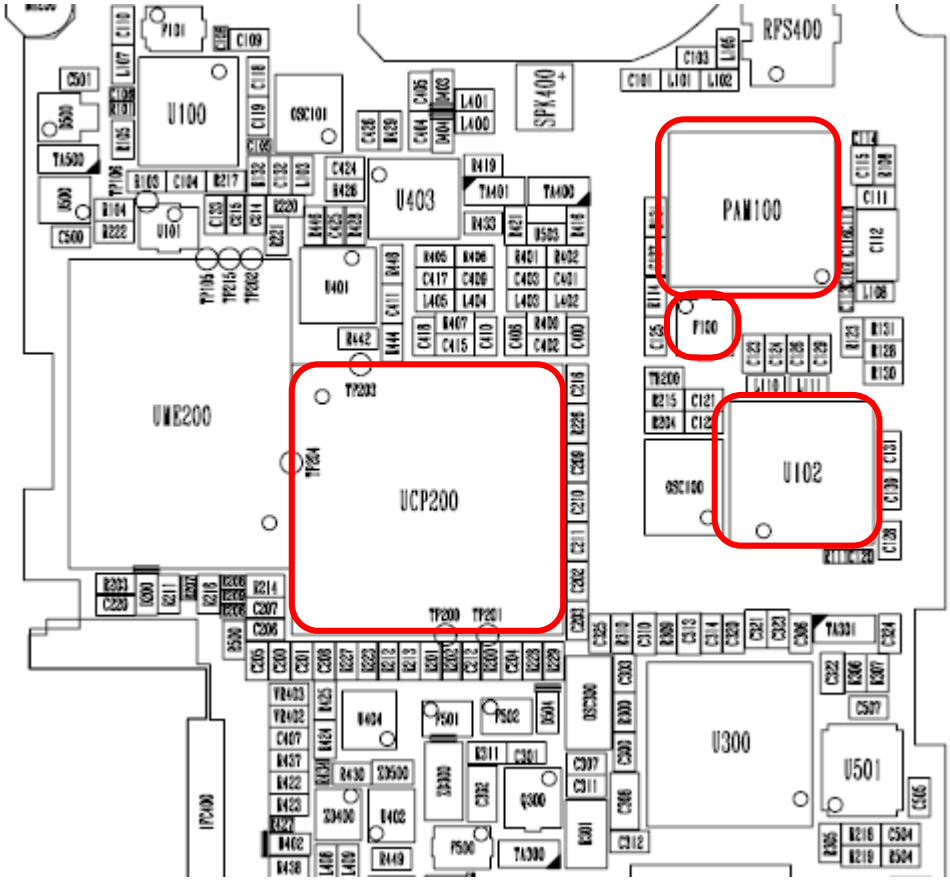




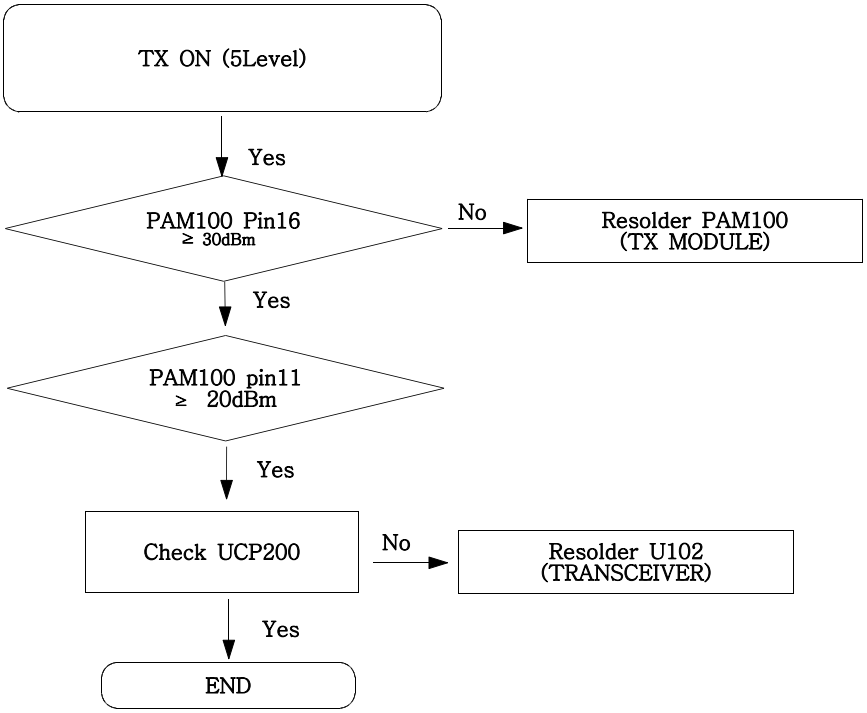
F100

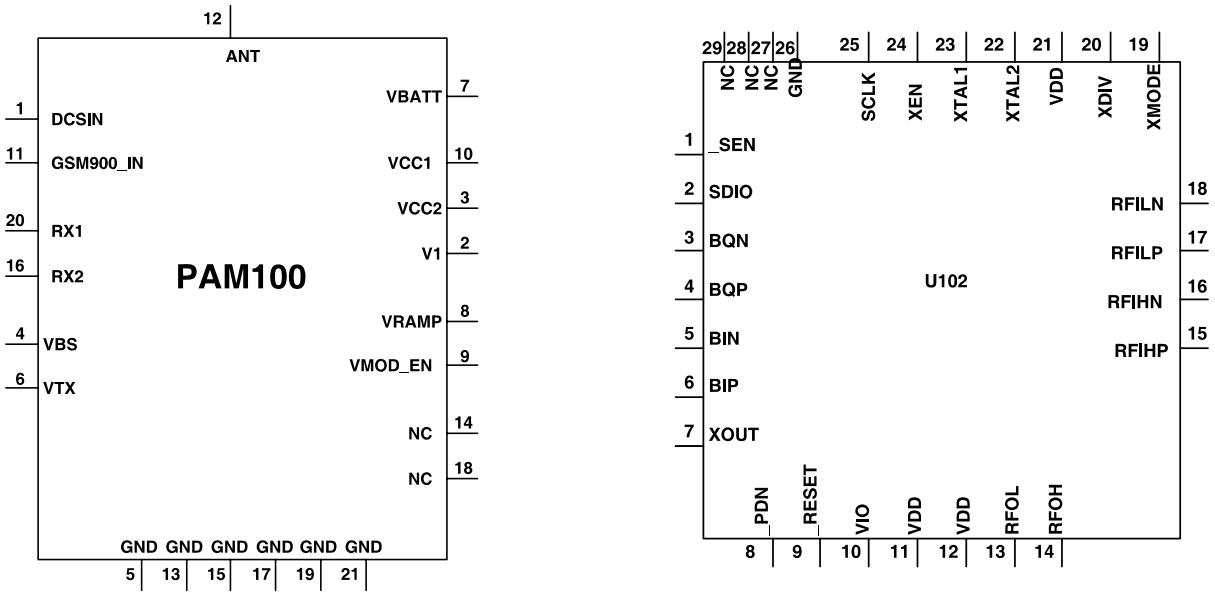






9-15. GSM Transmitter





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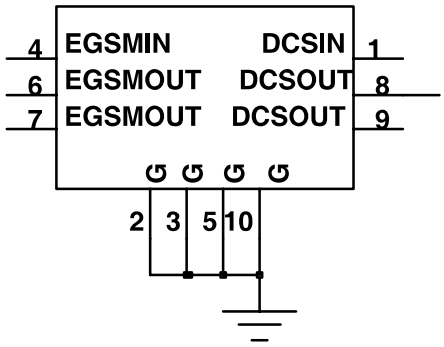
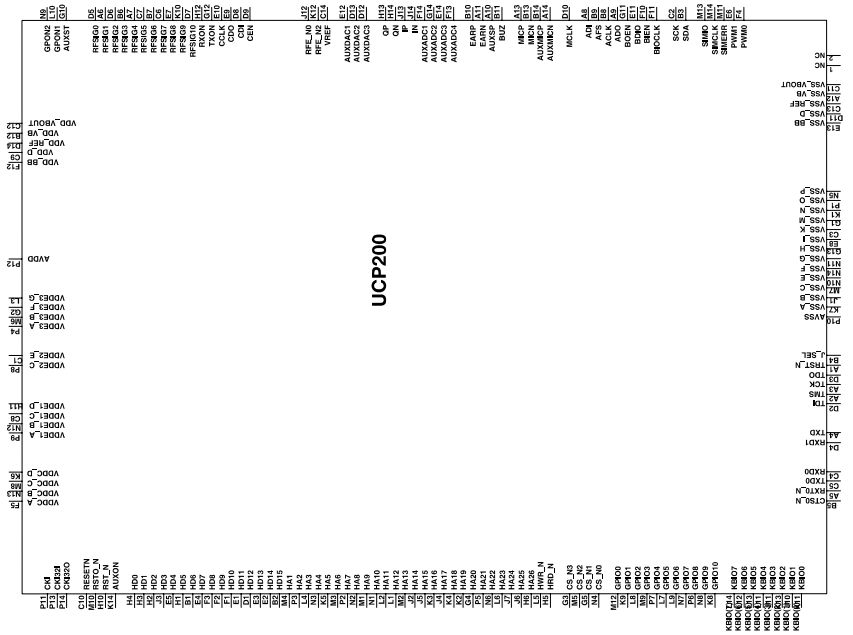
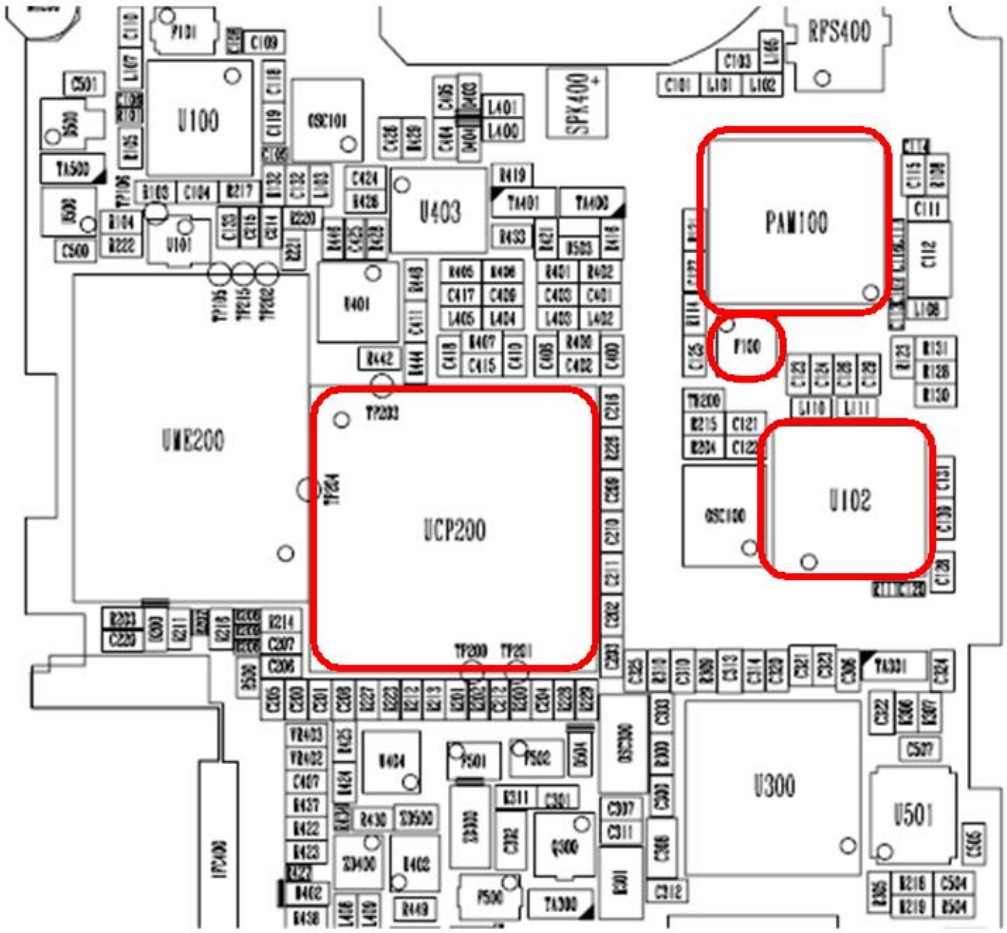
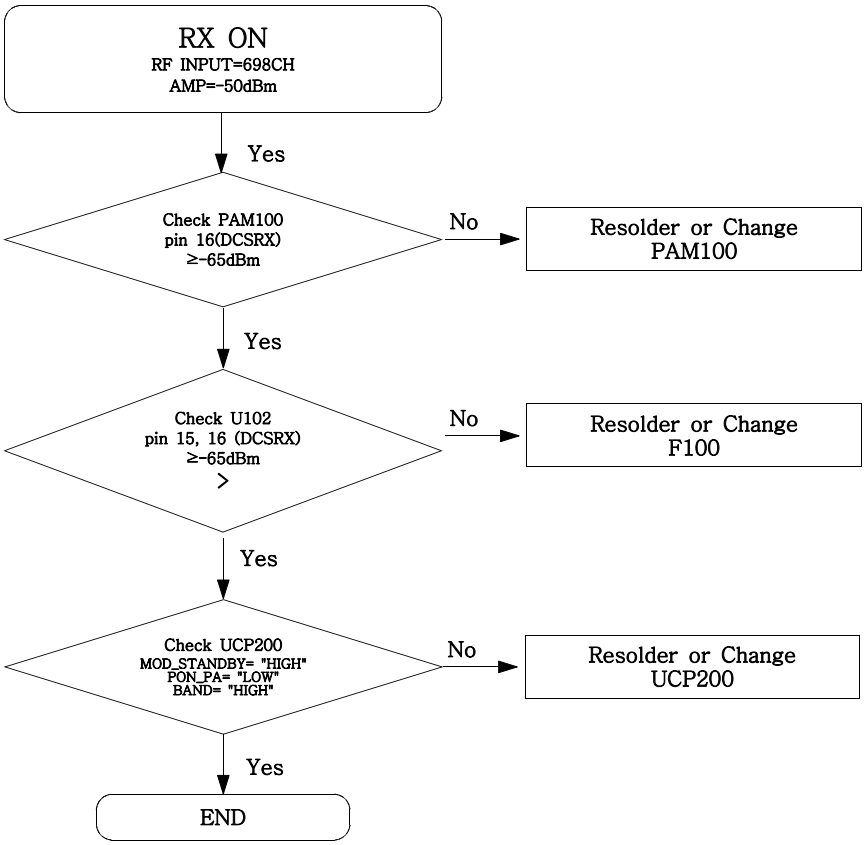
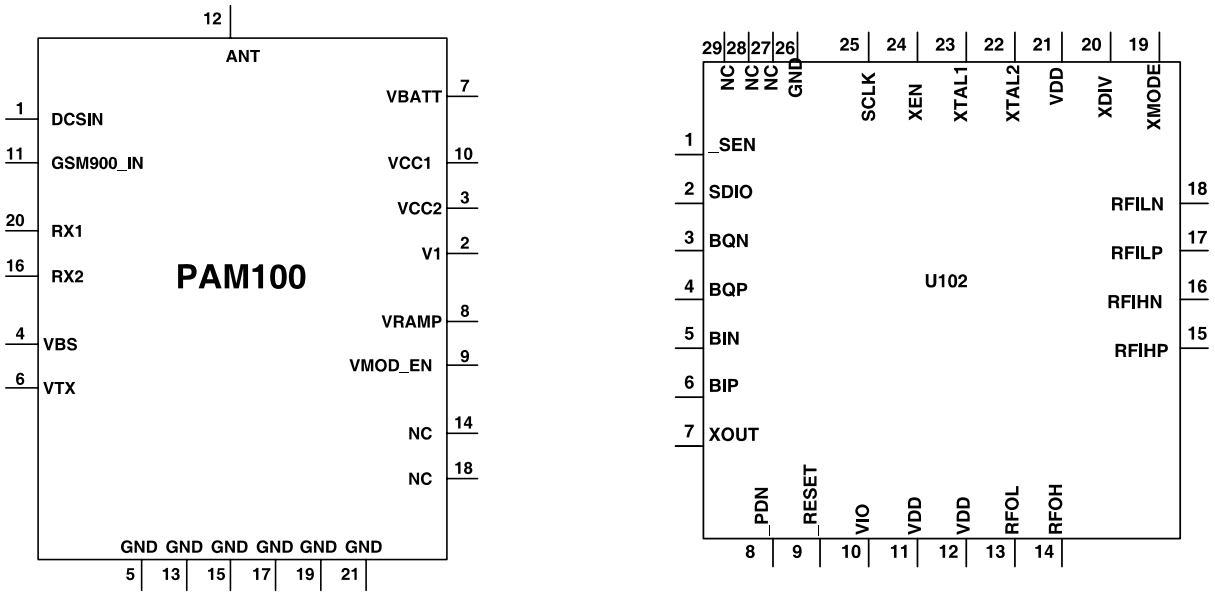






9-16. DCS Receiver





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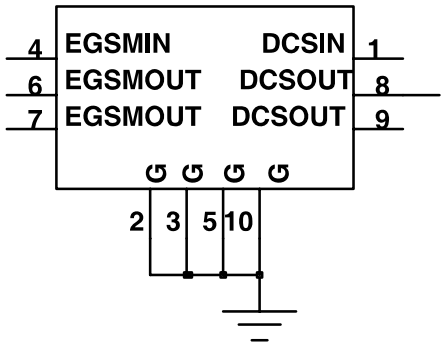
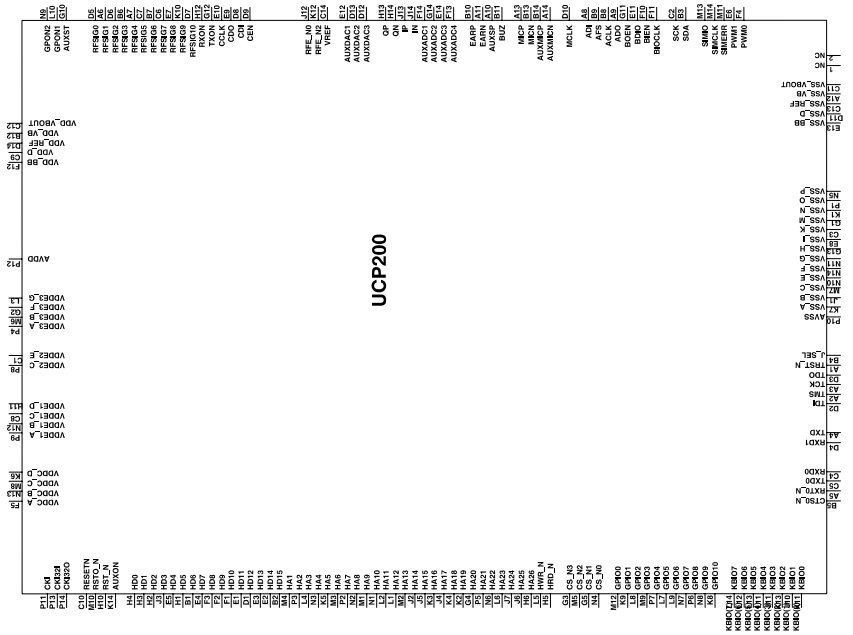
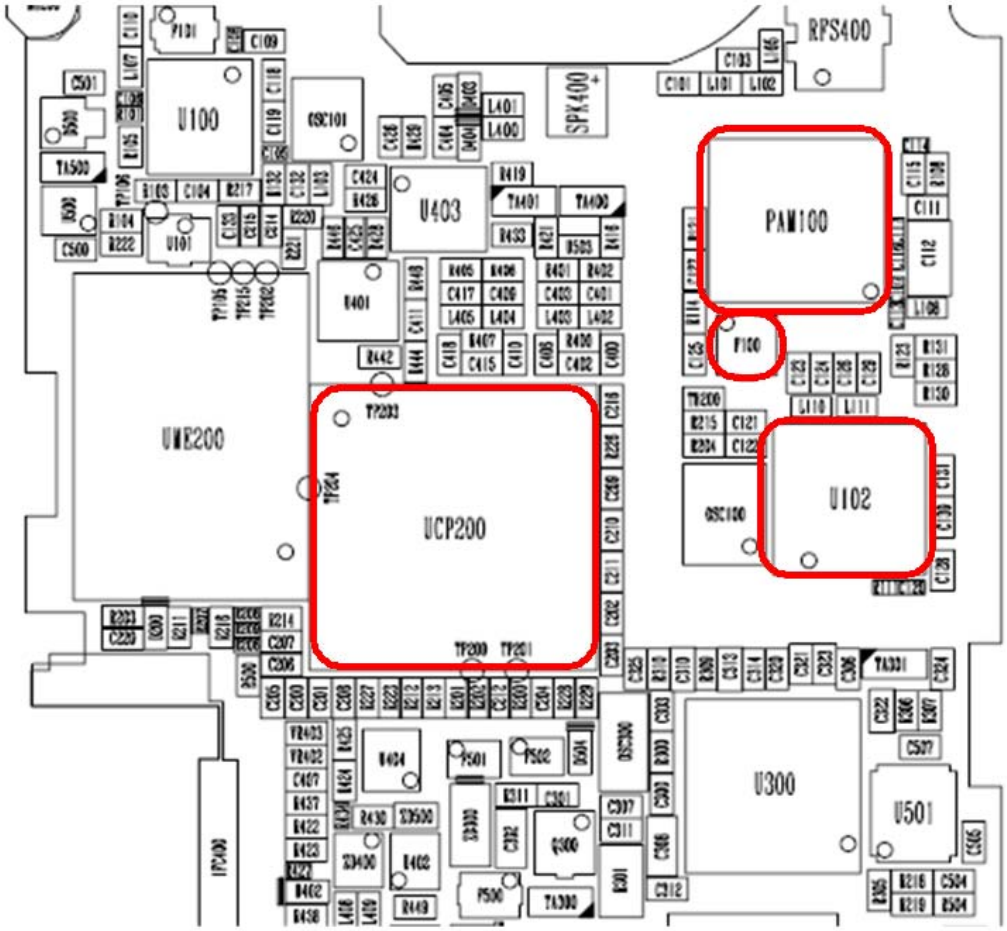
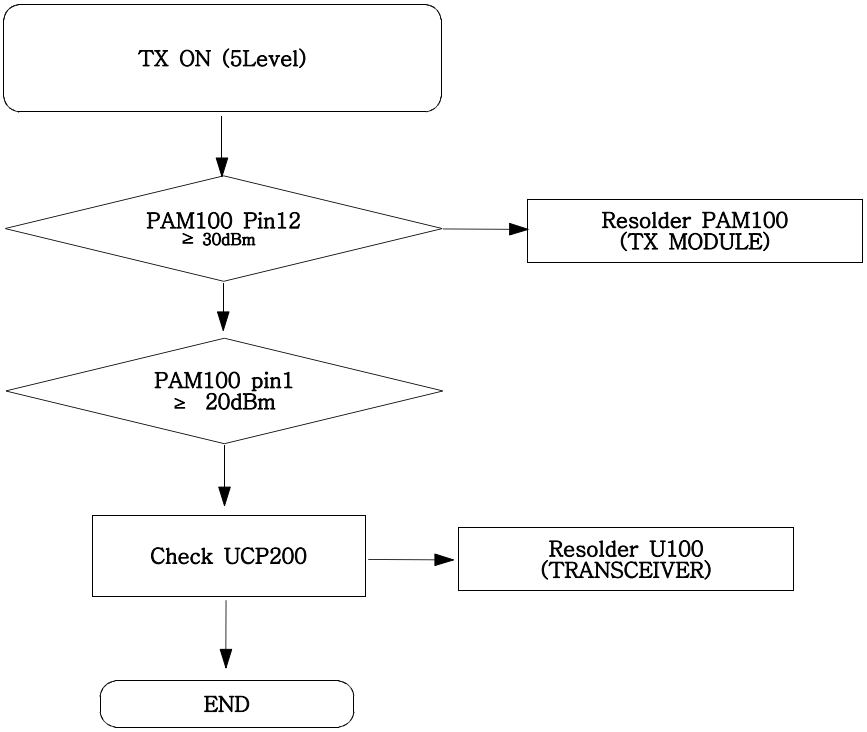
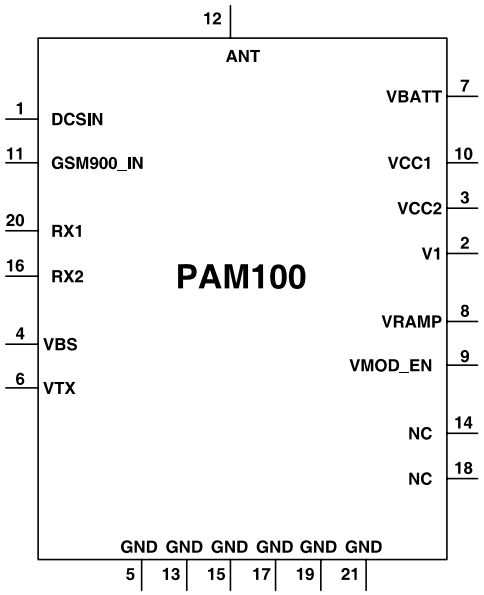


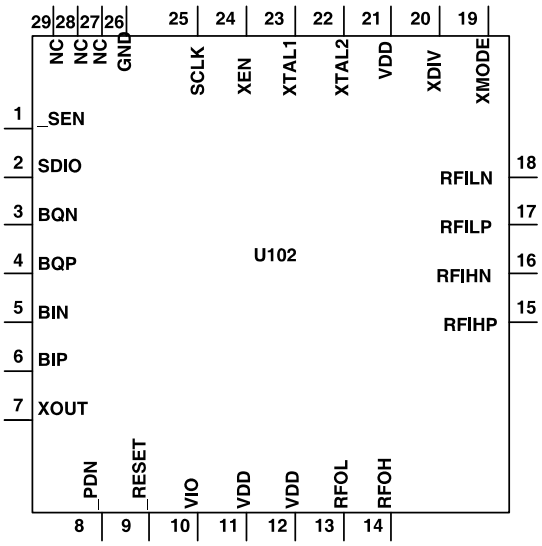




9-17. DCS Transmitter







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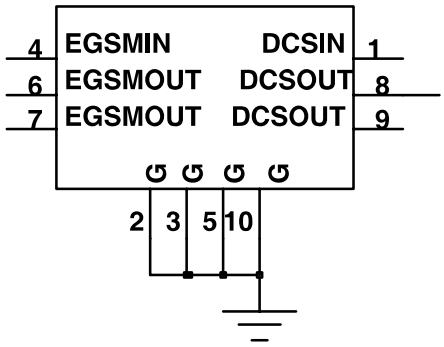

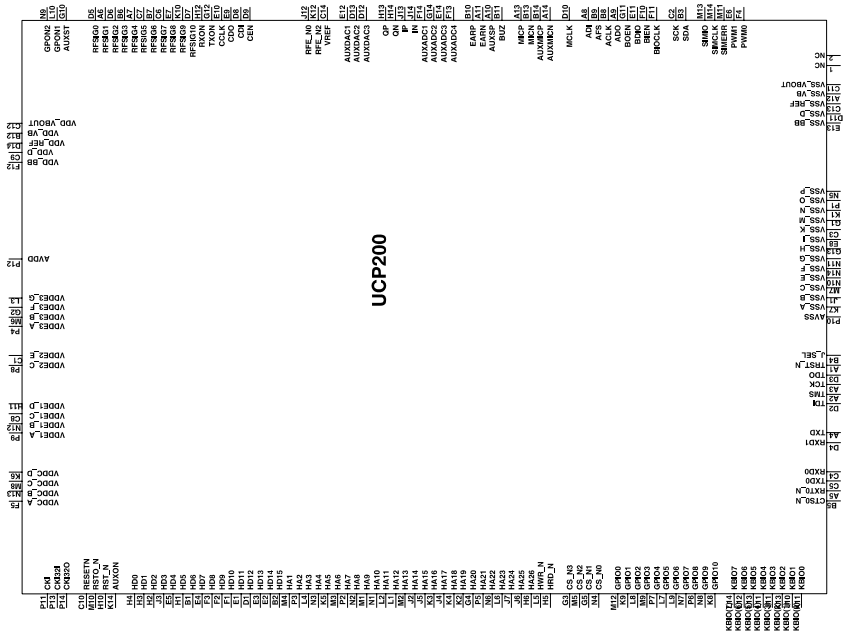

10. Reference data

Reference Abbreviate

- **ARFCN** : Absolute Radio Frequency Channel Number
- **BER** : Bit Error Rate
- **BPSK**: Binary Phase Shift Keying
- **ESD :** Electrostatically Sensitive Devices
- **ETSI**: European Telecommunications Standards Institute
- **MS**: Mobile Station
- **QPSK**: Quadrature Phase Shift Keying
- **RF** : Radio Frequency
- **TDMA** : Time Division Multiple Access