SAMSUNG

UMTS TELEPHONE
SGH-Z240

SERVICE Manual

UMTS TELEPHONE

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2007. 02. Rev.1.0

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10. Reference data

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.

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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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2. Specification

2-1. GSM General Specification

	EGSM 900	DCS1800	PCS1900	W-CDMA
Freq. Band[MHz] Uplink/Downlink	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990	1920~1980 2110~2170
ARFCN range	0~124 & 975~1023	512~885	512~810	UL:9612~9888 DL:10562~10838
Tx/Rx spacing	45MHz	95MHz	80MHz	190MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	3.84Mcps
Time Slot Period/Frame Period	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	Frame length : 10ms
Modulation	0.3GMSK	0.3GMSK	0.3GMSK	QPSK HQPSK
MS Power	33dBm~5dBm	30dBm~0dBm	30dBm~0dBm	24dBm ~ - 50dBm
Power Class	4 (max +33dBm)	1 (max +30dBm)	1 (max +30dBm)	3 (max +24dBm)
Sensitivity	-102dBm	-100dBm	-100dBm	-106.7dBm
TDMA Mux	8	8	8	
Cell Radius	35Km	2Km	2Km	2Km

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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

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

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3. Product Function

Main Function

- Quad band(900/1800/1900/2100MHz)
- 1.3 Mega Camera
- Image editor
- MP3 player
- Phonebook
- Name card
- Multimedia Message Service (MMS) / Video Message
- E-mail
- Voice recorder
- Bluetooth
- Get personal with photo caller ID
- Web browser
- WAP2.0 / Java2.0
- Calender
- H263. MPEG4

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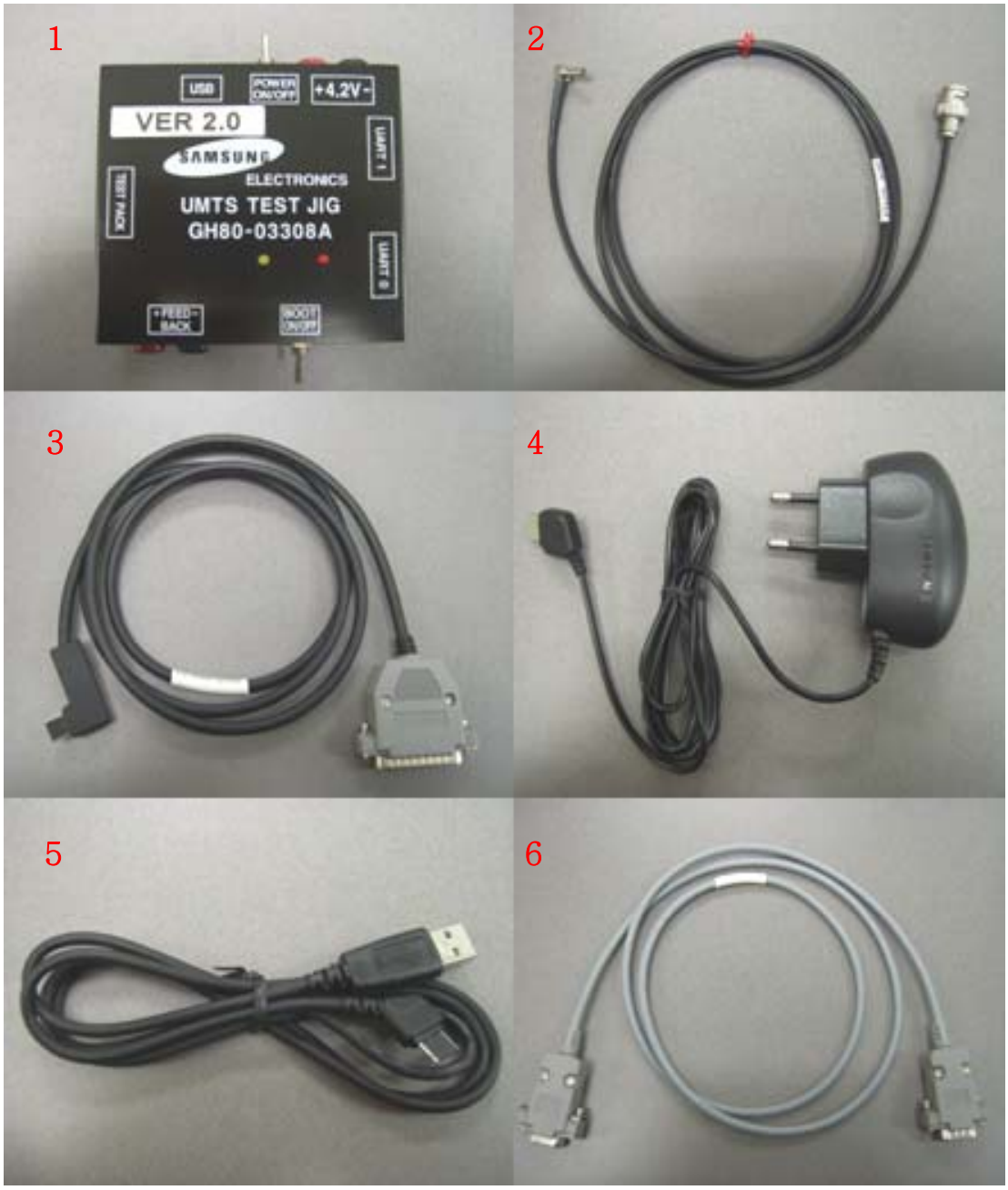
4. Array course control

4-1. Software Adjustments



1. JIG: Download, Trace, Calibration, etc (GH80-003308A)
2. RF test cable: RF test (GH39-00397A)
3. Test cable: JIG to phone (GH39-00478A)
4. TA (Travel Adaptor) (GH44-01207A)
5. Data Link Cable : USB cable (GH39-00444A)
6. Serial cable: PC to JIG

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4-2. Software Downloading

4-2-1. Downloading Binary Files

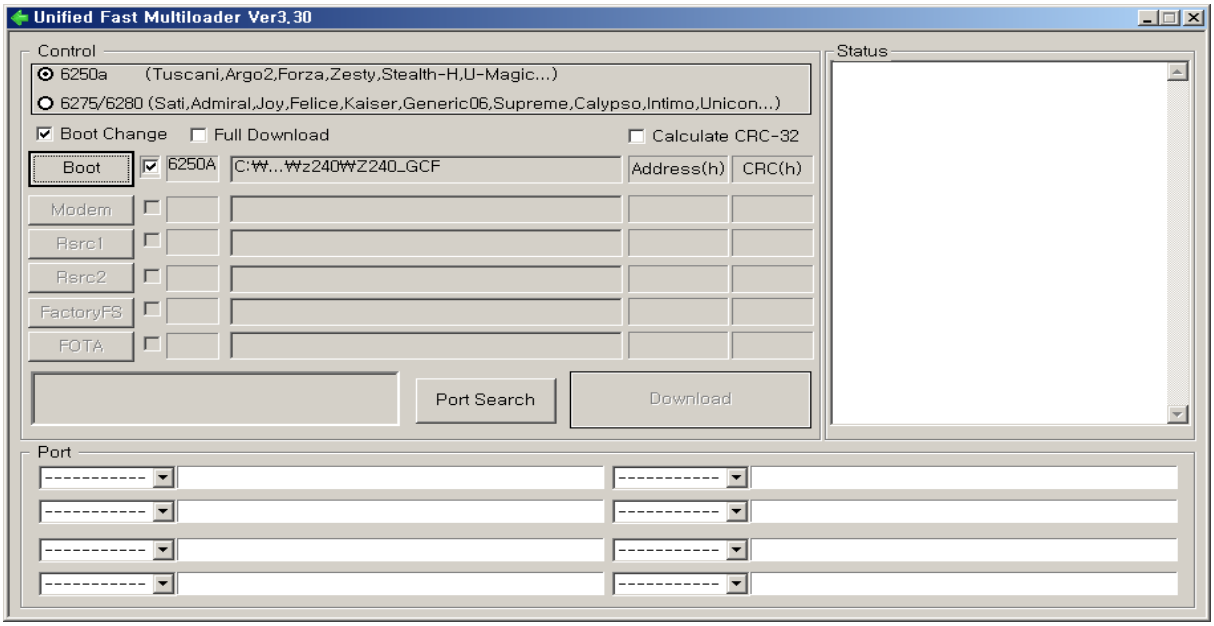
- Four binary files for downloading Z240.
  - VMSZCR.bin : Modem binary for communication function
    & Mocha binary for user interface and various application
  - Rsrc_Z240_Generic.rc1: Files need for each application
  - Rsrc2_Z240(Mid).rc2 : Power on/off animation
  - FactoryFs_A701_Telstra.ffs : Default file system to be put into in initial production

4-2-2. Pre-requsite for Downloading

- Downloader Program(FastMultiLoader V3.30.exe)
- SGH-Z240 Mobile Phone
- USB Data Link Cable
- Binary files

4-2-3. S/W Downloader Program

1. Boot the Z240 by pressing 'Power ON key'
2. Load the binary download program by executing the "**FastMultiLoader V3.30.exe**".



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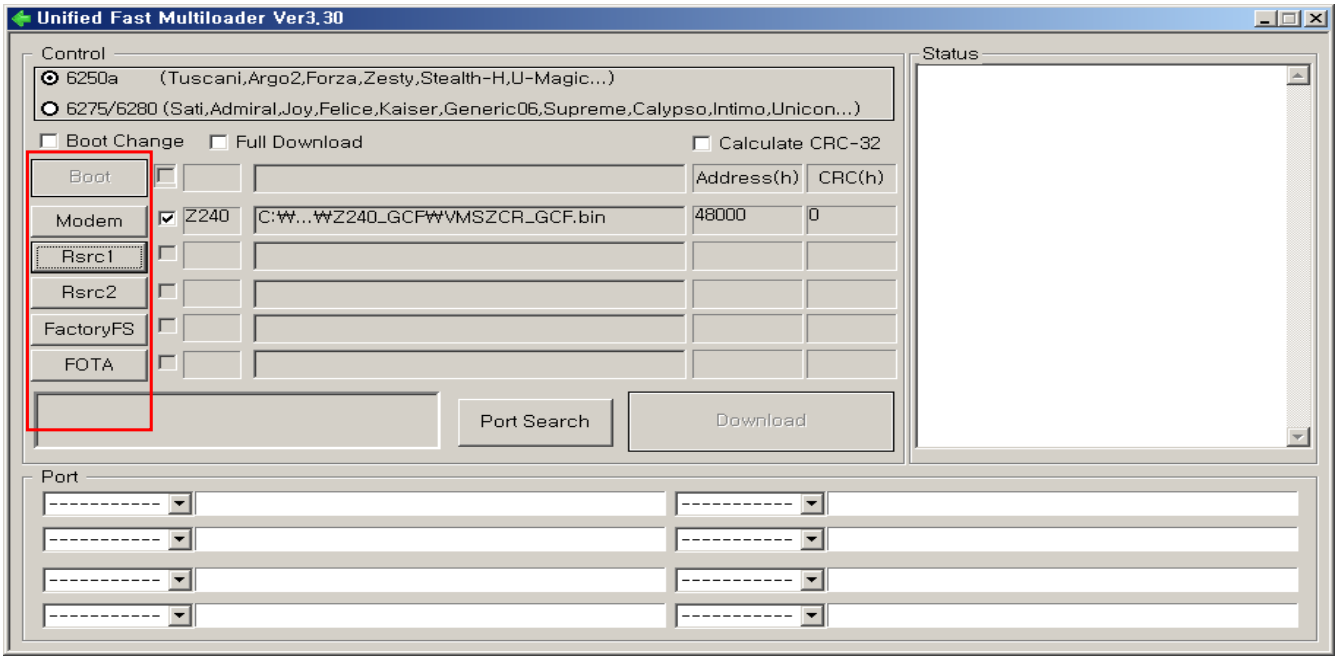
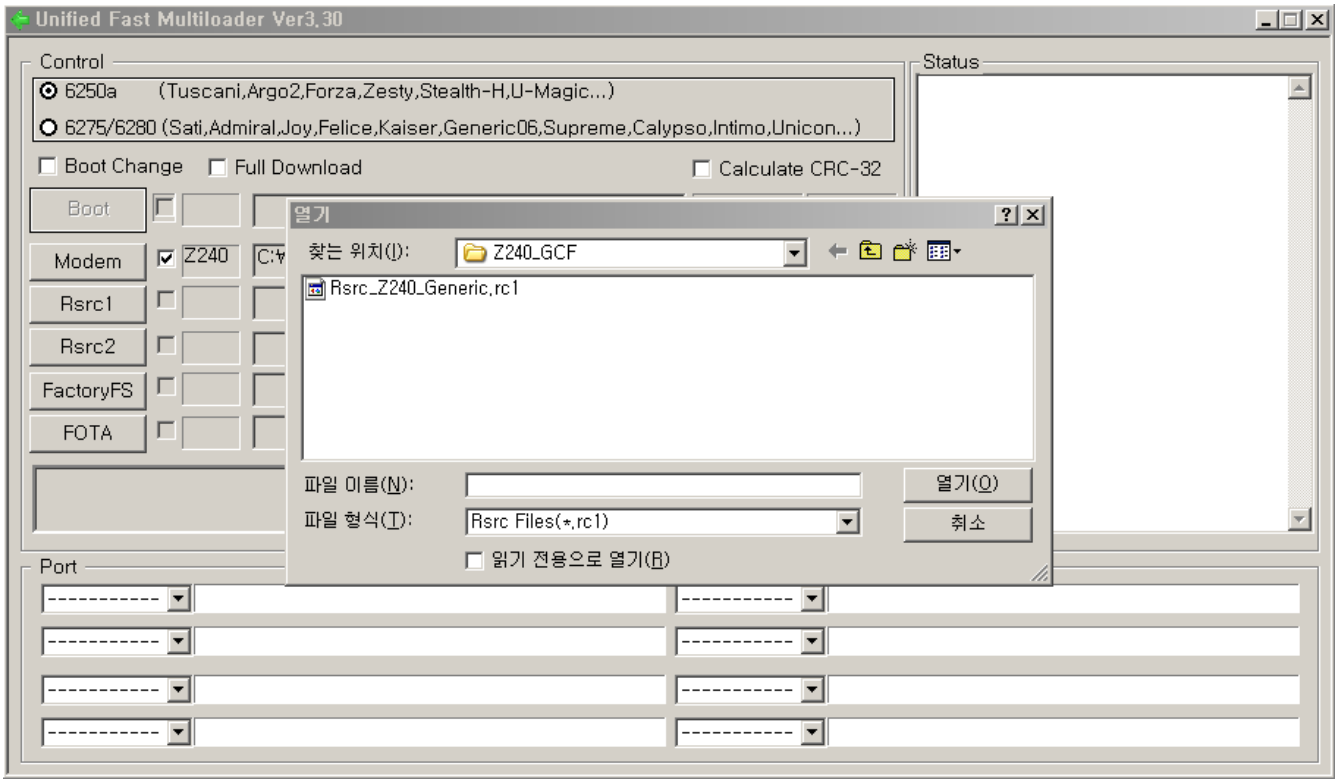
3. Select the check box what you want to download.



4. Select the binary file what you want to download



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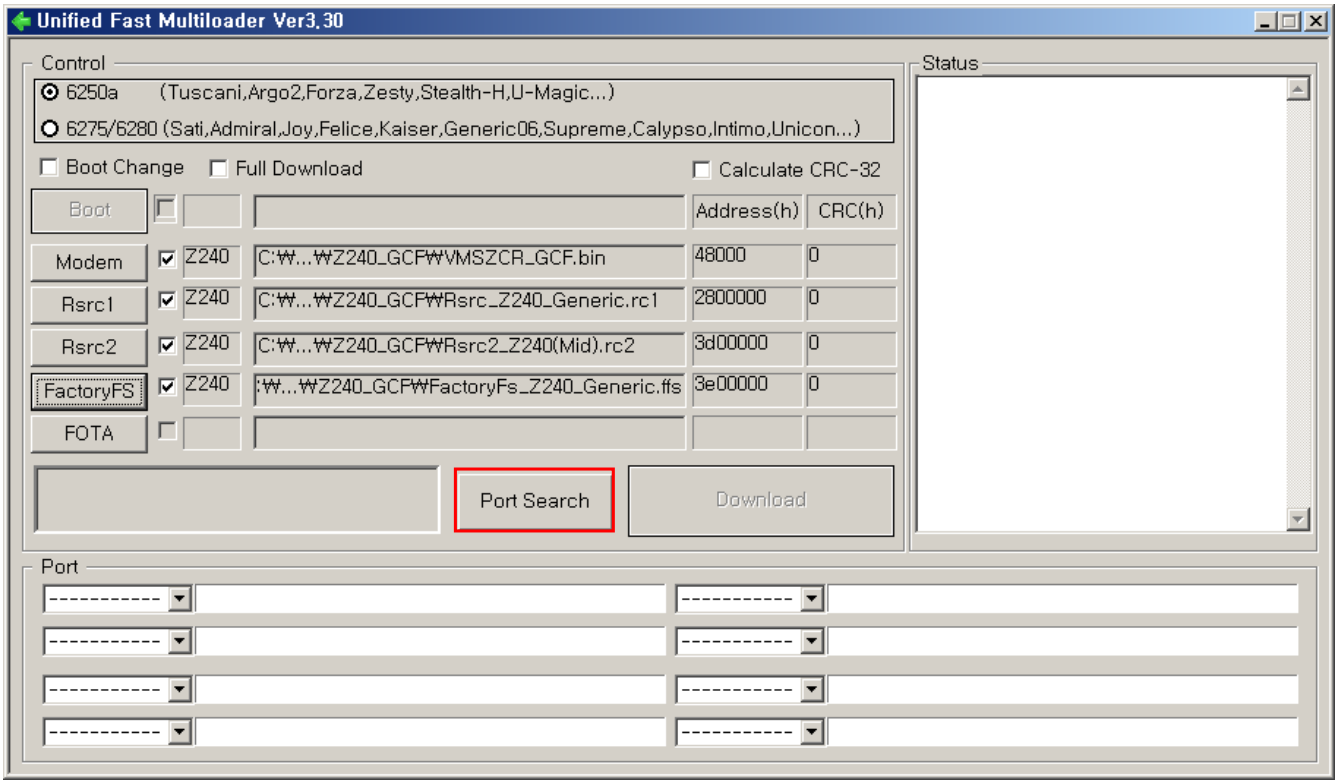
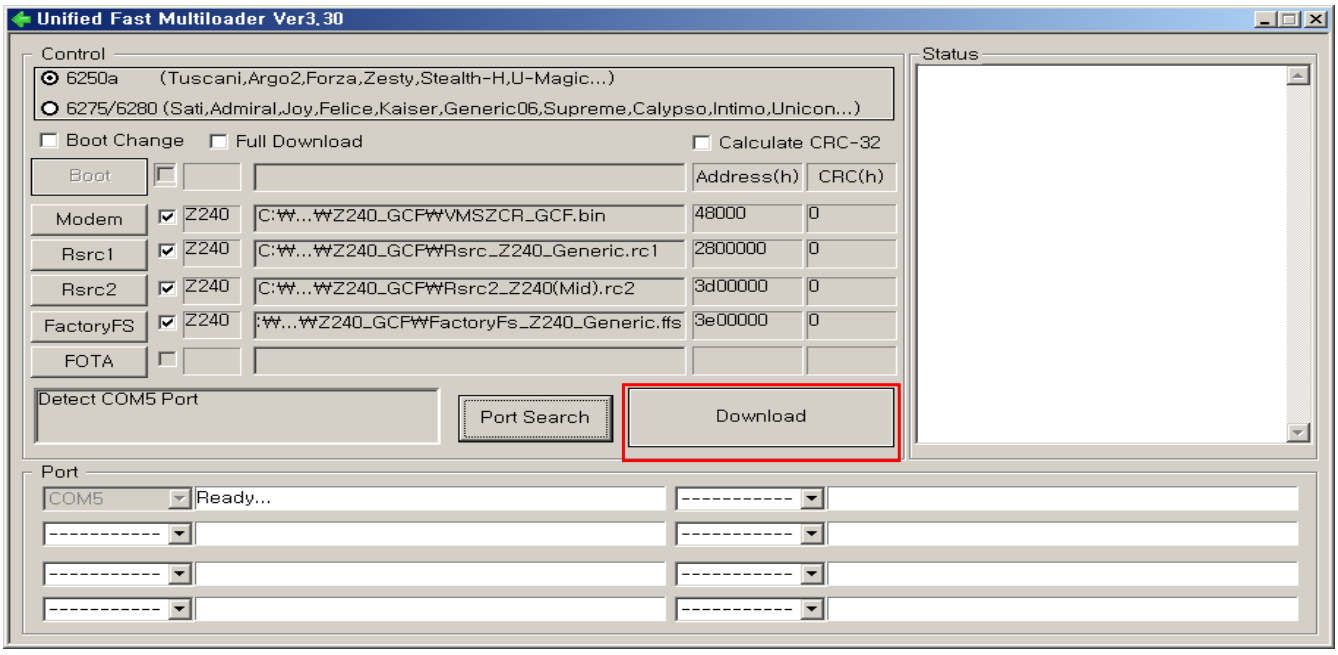
5. Now press the button ‘Port Search’.



6. Now press the button ‘DownLoad’.



7. When downloading is complete, UE reboot automatically.
- If there is difference in FactoryFs.bin, UE will format file system automatically.

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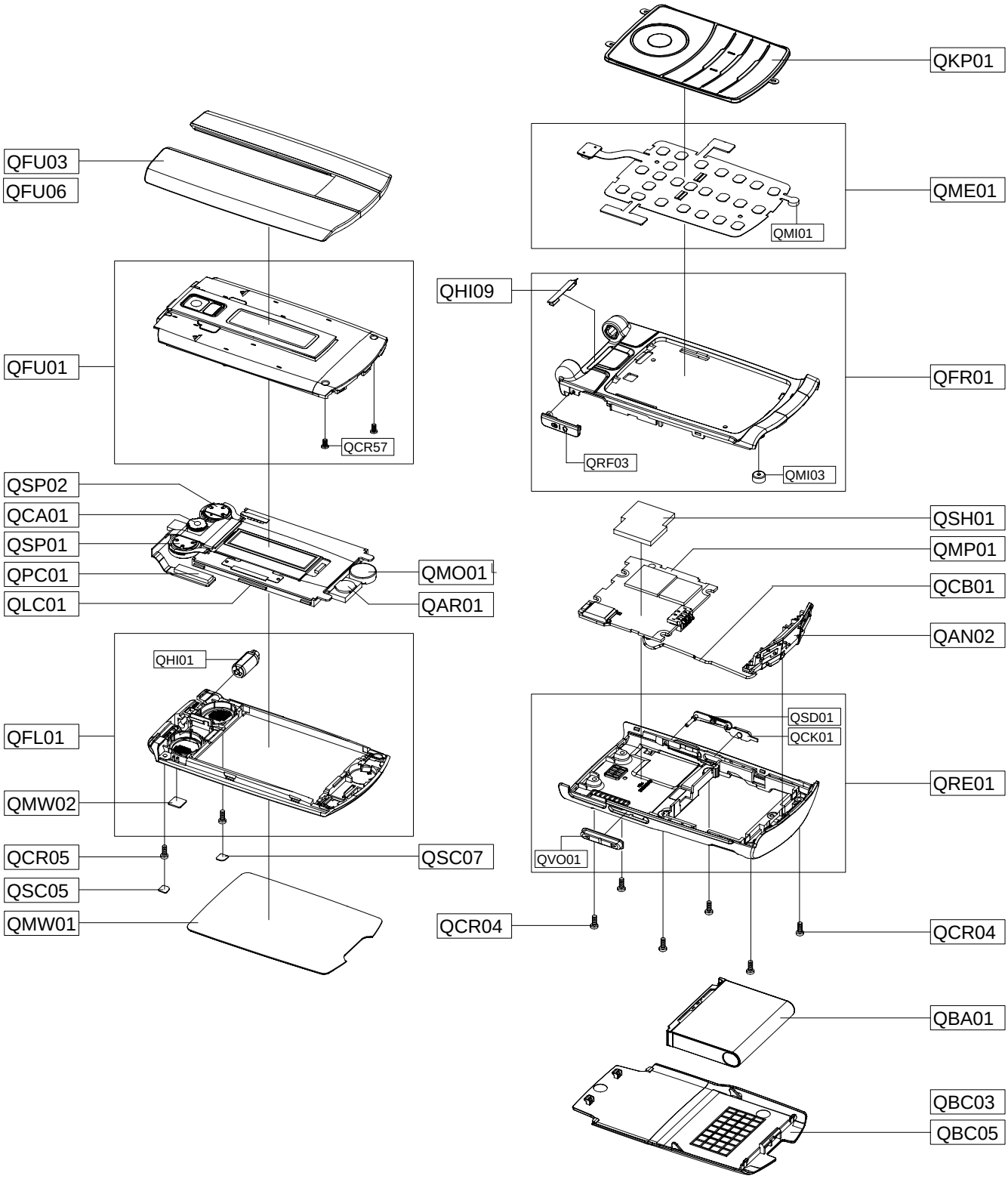
5. Exploded View/Disassembly&Assembly Instructions

5-1. Cellular phone Exploded View



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5-2. Cellular phone Parts list

Design LOC	Description	SEC CODE
QAN02	INTENNA-SGHZ240	GH42-01115A
QAR01	AUDIO-RECEIVER	3009-001254
QBA01	INNER BATTERY PACK-880MAH , BL	GH43-02666A
QBC03	ASSY CASE-BATT IML(XSO)	GH98-04613A
QBC05	ASSY CASE-BATT	GH98-04203E
QCA01	UNIT-SGHZ240 CAMERA MODULE	GH59-04052A
QCB01	CBF COAXIAL CABLE	GH39-00771A
QCK01	PMO-CAMERA KEY	GH72-36437A
QCR04	SCREW-MACHINE	6001-001479
QCR04	SCREW-MACHINE	6001-001479
QCR05	SCREW-MACHINE	6001-001478
QCR57	SCREW-MACHINE	6001-002001
QFL01	ASSY CASE-FOLDER LOWER	GH98-03802A
QFR01	ASSY CASE-FRONT	GH98-03801A
QFU01	ASSY CASE-FOLDER UPPER A(TIM)	GH98-04202A
QFU03	ASSY CASE-UPPER B IML	GH98-04479B
QFU06	ASSY CASE-UPPER B	GH98-02202F
QHI01	ASSY HINGE-FOLDER	GH98-03635A
QHI09	ASSY DECO-HINGE PLATE	GH98-04142A
QKP01	ASSY KEYPAD-(TIM/BLK)	GH98-04395A
QLC01	ELA ETC-SGHZ240 LCD MODULE	GH96-02330A
QME01	UNIT-MAIN KEY PBA	GH59-04060A
QMI01	AS-MIC SVC	GH81-05445A
QMI03	ASSY COVER-MIC HOLDER	GH98-03236A
QMO01	MOTOR DC-SGHZ240	GH31-00303A
QMP01	PBA MAIN-SGHZ240	GH92-03273A
QMW01	ASSY COVER-MAIN WINDOW(TIM)	GH98-04394A
QMW02	PCT-COVER VGA WINDOW	GH72-37759A
QPC01	PCB-CON TO CON	GH41-01554A
QRE01	ASSY CASE-REAR	GH98-03804A
QRF03	PMO-COVER EAR JACK	GH72-35411A
QSC05	MPR-TAPE SCREW LOWER L	GH74-30782A
QSC07	MPR-TAPE SCREW LOWER R	GH74-30783A
QSD01	PMO-COVER MICRO SD	GH72-34108A
QSH01	ICT-COVER SHIED	GH70-02073A
QSP01	SPEAKER	3001-002071
QSP02	SPEAKER	3001-002080
QVO01	PMO-KEY VOLUME	GH72-34110A

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Description	SEC CODE
CBF INTERFACE-DATA LINK CABLE	GH39-00444B
ADAPTOR-SGHE690,SIL,EU,A_TYPE	GH44-01361B
UNIT-EARPHONE,SGHE490,SIL,B-TY	GH59-03883B
RMO-RUBBER MEMORY	GH73-09371A
MPR-TAPE ABSORBER	GH74-30965A
RMO-RUBBER MSM	GH73-09370A
RMO-RUBBER LCD B	GH73-09520A
RMO-RUBBER LCD C	GH73-09521A
MPR-BOHO VINYL LCD CONN	GH74-15350A
MPR-TAPE	GH74-28337A
MPR-INSU TAPE	GH74-29017A
MPR-GASK TAPE	GH74-29057A
MPR-INSU TAPE LCD	GH74-30278A
MPR-TAPE FRONT A	GH74-30279A
MPR-GASK TAPE	GH74-30437A
MPR-GASK TAPE	GH74-30780A
MPR-SPONGE	GH74-31384A
MPR-REMOVE TAPE LCD	GH74-13804A
MPR-TAPE LED	GH74-17926A
CONE-TAPE SUB LCD INSUL	GH74-19756A
MPR-TAPE	GH74-27509A
MPR-INSU TAPE	GH74-28410A
MPR-GASK TAPE	GH74-27728A
MPR-GASK TAPE	GH74-31010A
MPR-TAPE KEY CAMERA	GH74-31177A
MPR-TAPE FRONT SHIELD	GH74-31265A
MPR-GASK TAPE EMI RING	GH74-31393A
MPR-SPONGE	GH74-29615A
RMO-RUBBER LCD A	GH73-08862A
S/W CD-SGHZ240 PC LINK CD	GH46-00362A
MANUAL USERS-TIM ITALIAN	GH68-14297A
BAG PE	6902-000634
LABEL(R)-MAIN(TIM)	GH68-14030B
CUSHION-CASE(EU_NEW)	GH69-05037A
BOX-UNIT(TIM-H)	GH69-05108M

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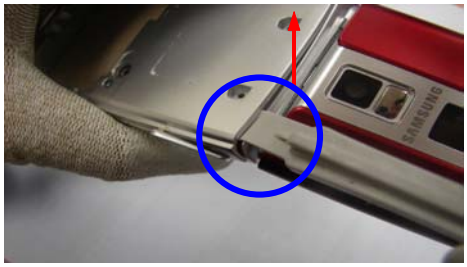
5-3. Disassembly and Assembly Instructions

– Disassembly

1 1) Unscrew 6 Points	2 1) Detach the REAR cover using the "Disassembler" upside first and downside last.
	
1)When you unscrew it, please be cautious not to damage to the REAR COVER.	1)When you detach the COVER, please be cautious not to damage to the REAR COVER.
3	1) Pull out 3*4 key connector. 2) Pull out LCD connector. 3) Lift up the INTENNA WIRE with tweezers.
1) Please be careful not to damage the F-PCB of 3*4 KEY CONNECTOR, LCD connector. 2) Please be careful not to bend the INTENNA WIRE tip.	

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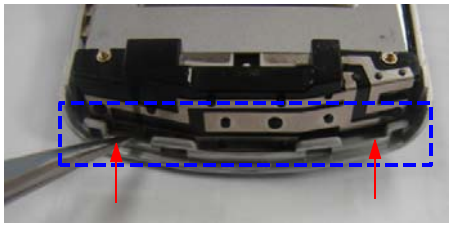
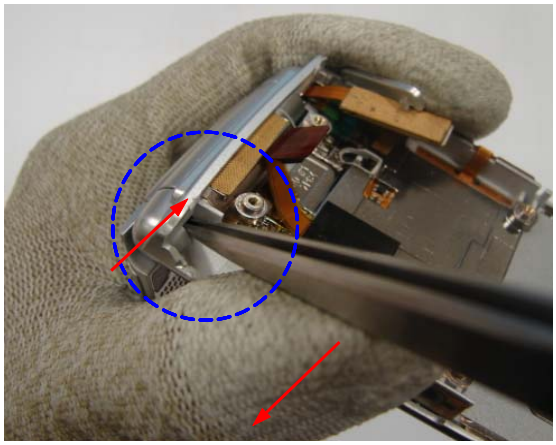
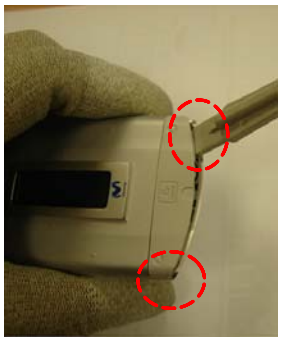
4 1) Lift up bottom of the intenna with tweezers. 	5 1) Push the tip of the hinge inside the guide hole with tweezers. 
1) Please be careful not to damage the INTENNA.	1) Please be careful not to damage the Front.
6 1)Take off 2 SCREW CAPs with tweezers. 2)Unscrew 2 POINTs. 	7 1) Detach the Folder Upper cover using the "Disassembler" upside first and 4 side points last. 
1) Please be careful not to damage the Folder Lower.	1) Unlock the Red Circle Area. 2) Please be careful not to damage the Folder Lower/Folder Upper.

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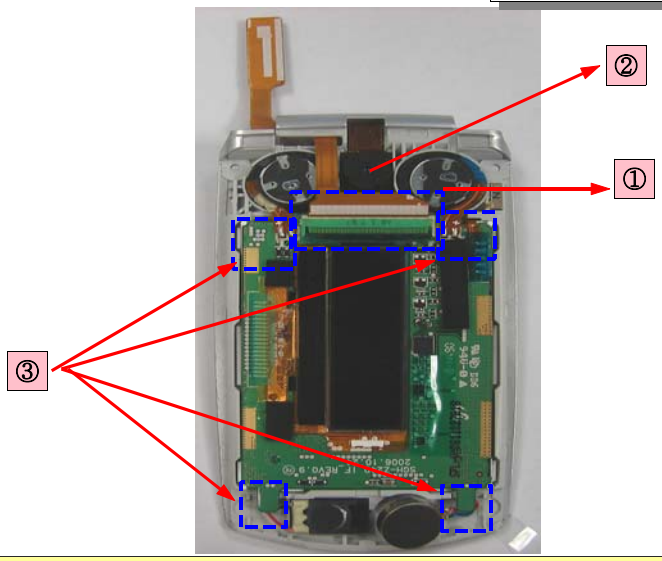
8	1)Take off ① Conn Insu TAPE with tweezers. (Open up the Actuator and detach the F-PCB.)	9	2)Open up the Actuator and detach the CAM connector F-PCB. 3)Detach SPKs, MOT, RCV by soldering.



1) Please be careful not to damage the VGA CAMERA.
2) Please be careful not to damage the CAMERA FPCB.
3) Please Use tweezers when separating the LCD FPCB from the LCD module preventing scratching the surface of the F-PCB.

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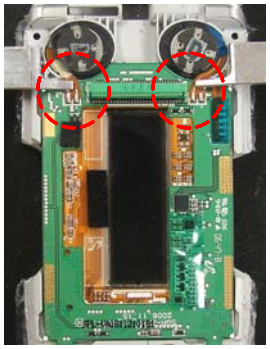
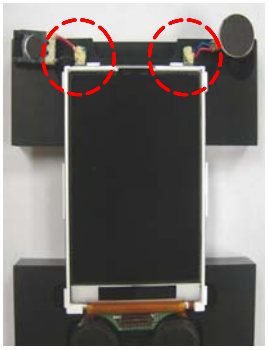
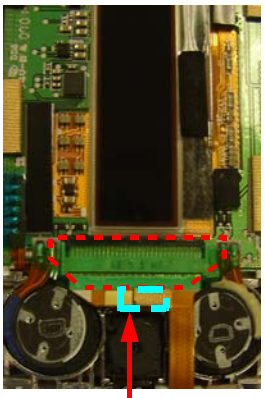
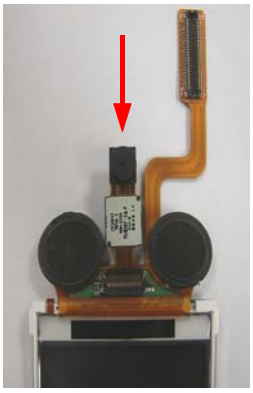
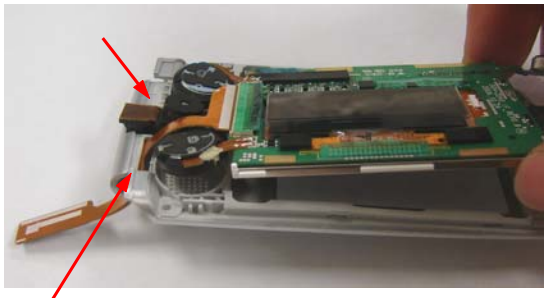
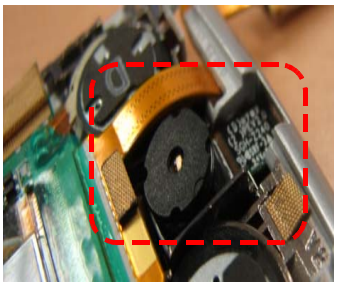
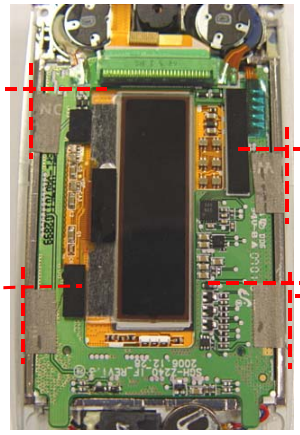
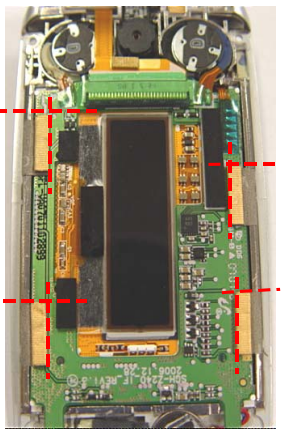
– Assembly

1 1) Solder SPKs, MOT, RCV as below.  	2 1) Insert the Con-to-con into the connector and push the Actuator to fix the F-PCB. Attach the INSU TAPE. 2) Insert the CAM module as below. ①  ② 
1) Bond the part of Soldering SPKs,MOT,RCV with the yellow glue.	1) Please be careful not to damage the F-PCB
3 1) Put the LCD Ass'y into the Folder LOWER. ①  	4 1) Attach 4 EMI TAPEs and 4 gaskets as below.  
1) Please be careful not to damage the Folder Lower. 2) Please be careful not to damage the CAMERA module.	1) Attach them in the right position on the silk marks in the LCD PCB.

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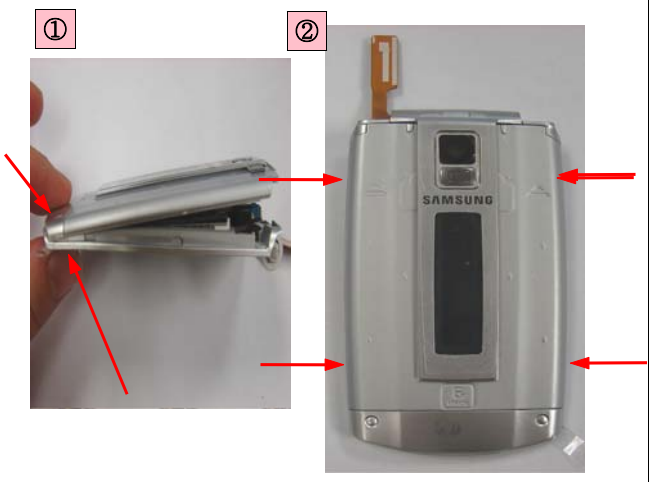
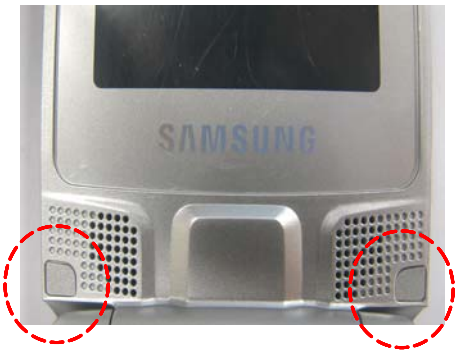
5 1) Hook the UPPER case on the Folder LOWER. 2) Push 4 points to be hooked firmly. 	6 1) Screw 2 points. 2) Attach 2 SCREW CAPs as below. 
1) Push the hook along the red colored direction arrow.	1) Please be careful not to damage the Folder Lower.
7 1) Combine the Folder Ass'y to Front Ass'y with Folder assembling Jig. 	8 1) Assemble the CHANGEABLE COVER as below.
1) Please be careful not to damage the CASEs.	1) Please be careful not to damage the CASEs.

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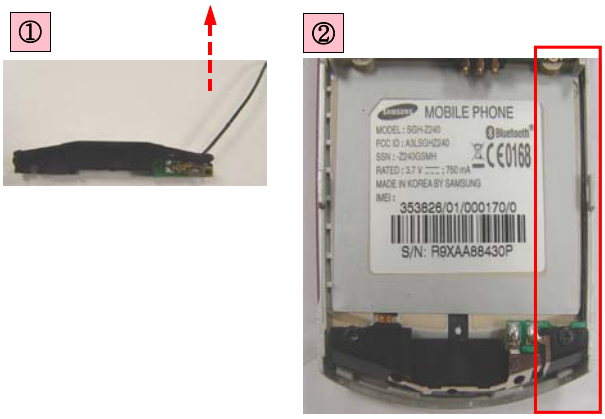
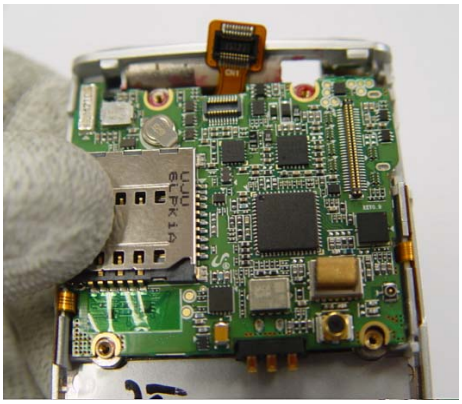
9 1) Plug the INTENNA Cable to the INTENNA as below.
2) Assemble the INTENNA, the INTENNA WIRE to the FRONT CASE.



1) Please be careful not to damage the INTENNA WIRE.

10 1) Push the left side first and then right side of the PBA to be hooked on the LOCKER.



1) Please be careful not to damage the PBA.

11 1) Mate the 2 connectors as below (3*4 KEY, LCD FPCB CONNECTOR).(Check the EMI gasket on the LCD CONNECTOR)
2) Mate the INTENNA WIRE.

1) Please be careful not to damage the PBA.

12 1) Assemble the REAR COVER bottom side first as below.

1) Please be careful not to damage the CASEs.

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13 1) Screw 6 POINTs.

1) Please be careful not to damage the CASEs.

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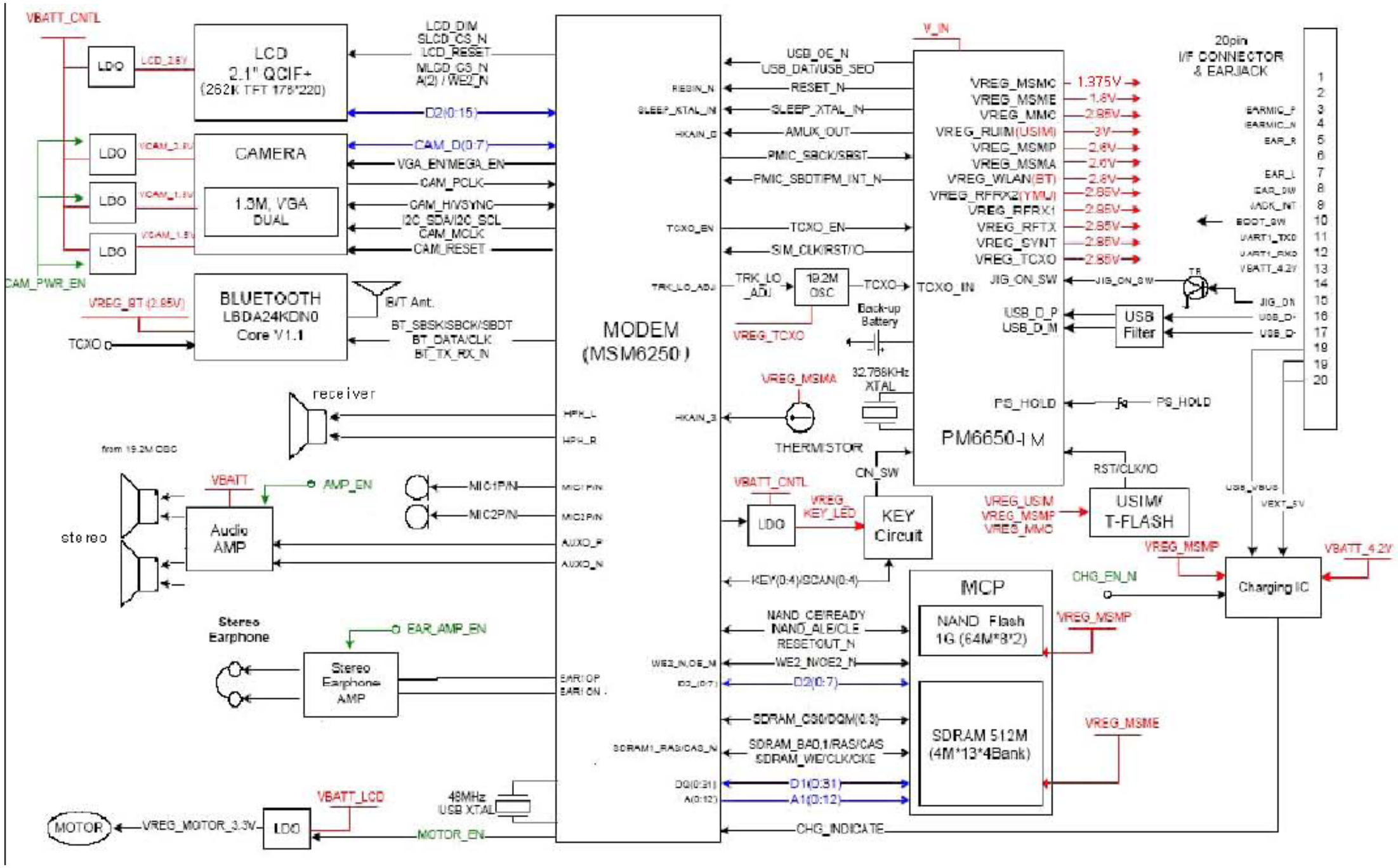
7. Block Diagrams

7-1. Baseband Solution Block Diagram



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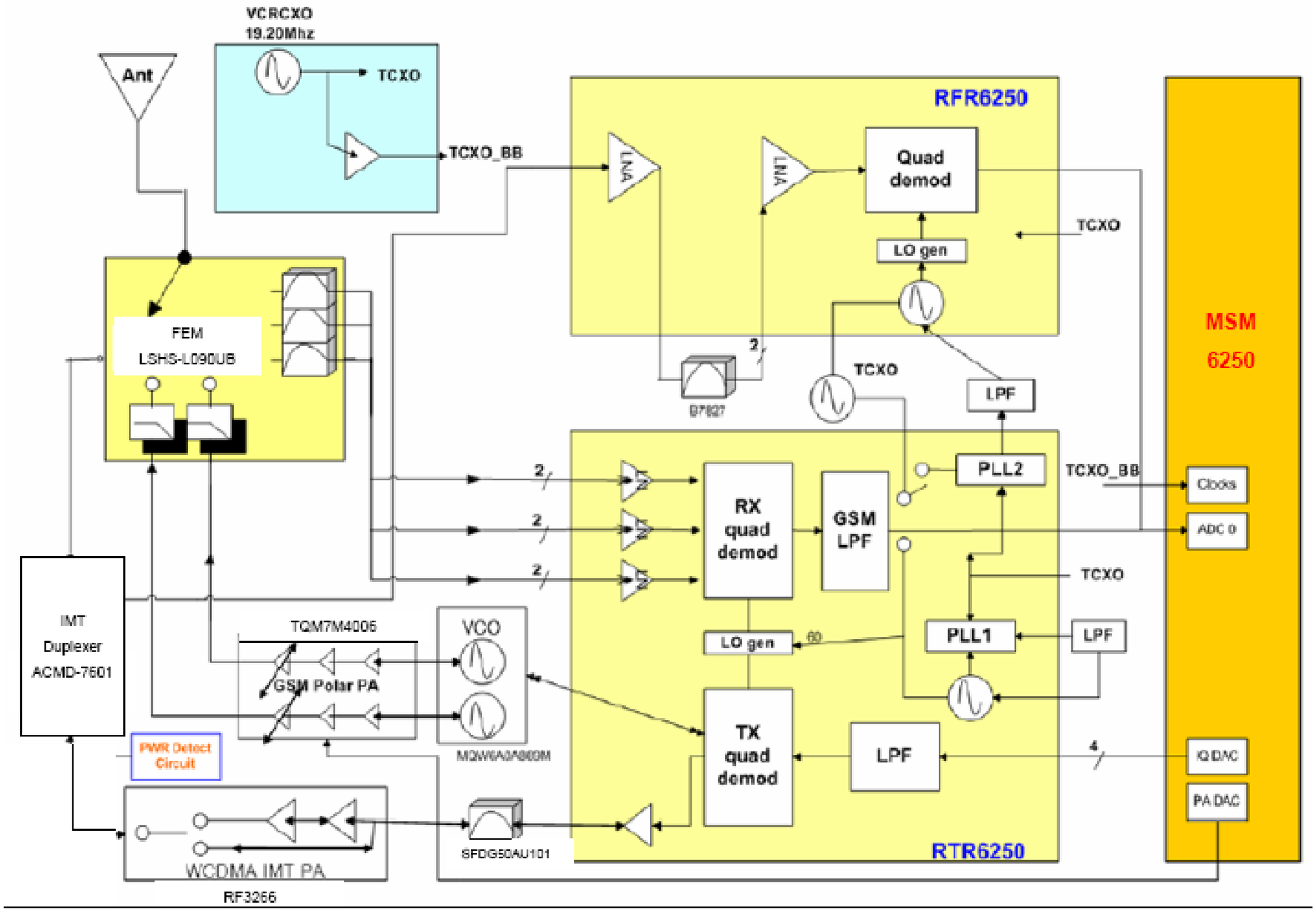
7-2. RF Solution Block Diagram



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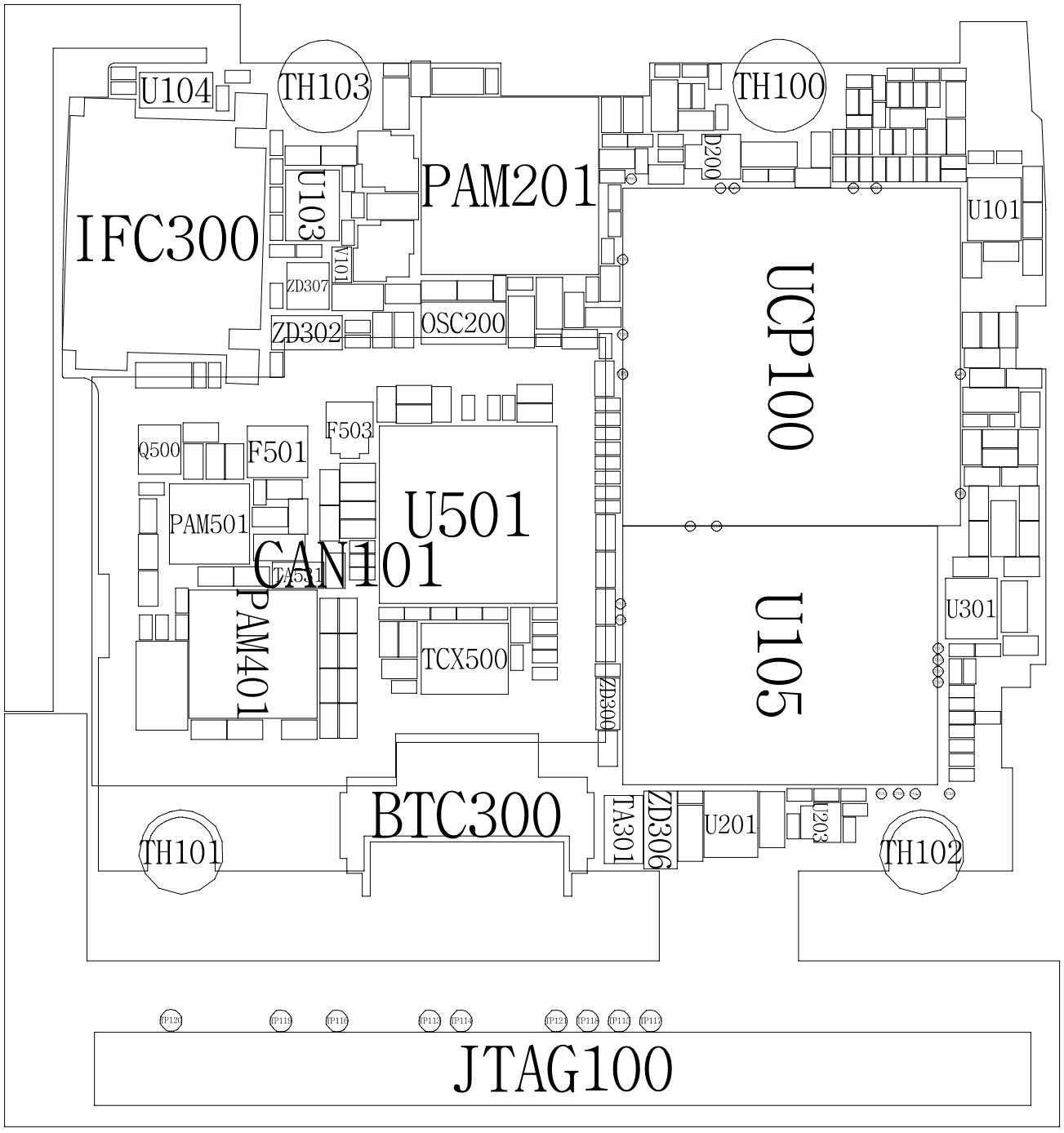
8. PCB Diagrams

Top



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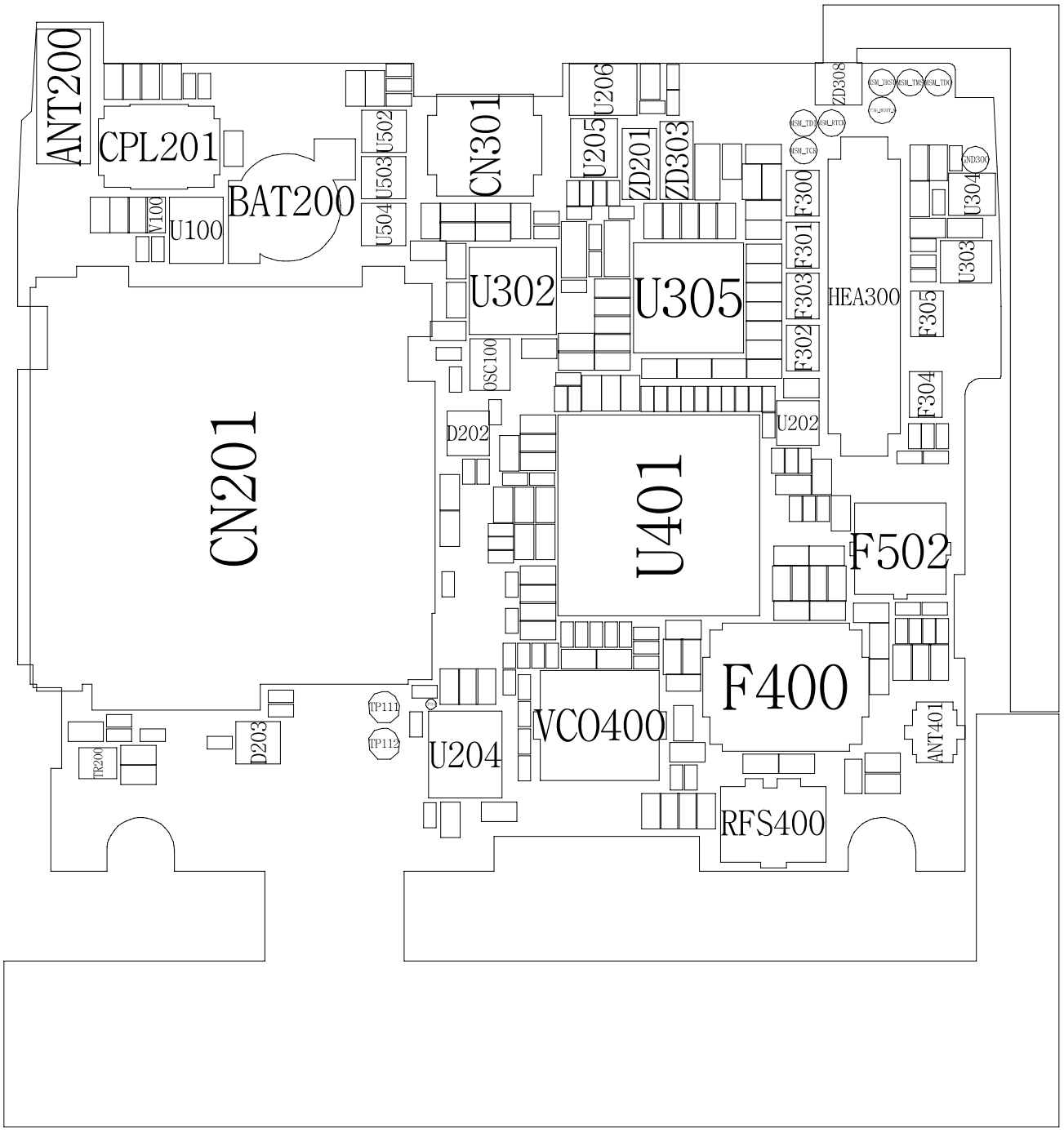
Bottom



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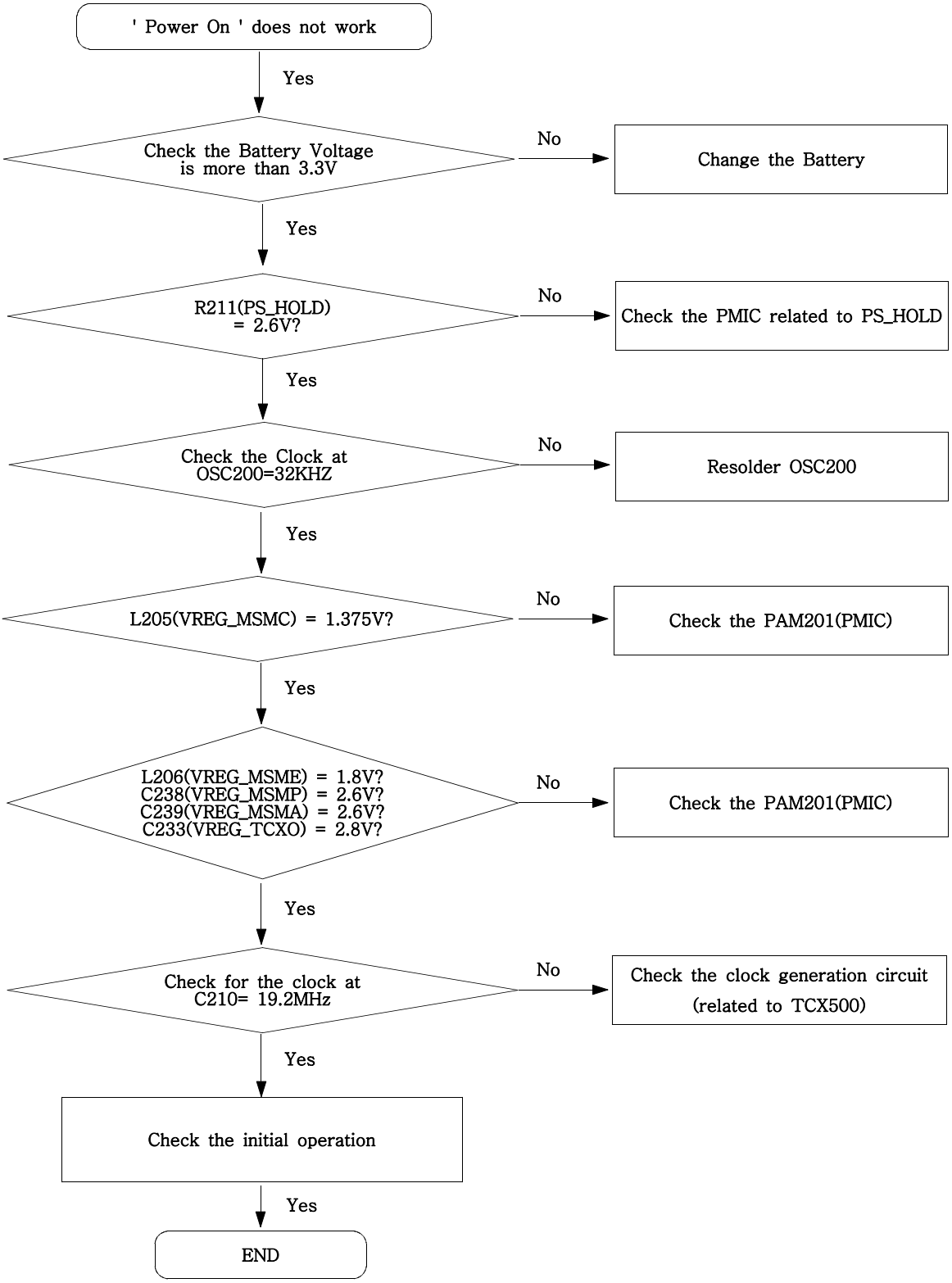
9. Flow Chart of Troubleshooting

9-1. Power On



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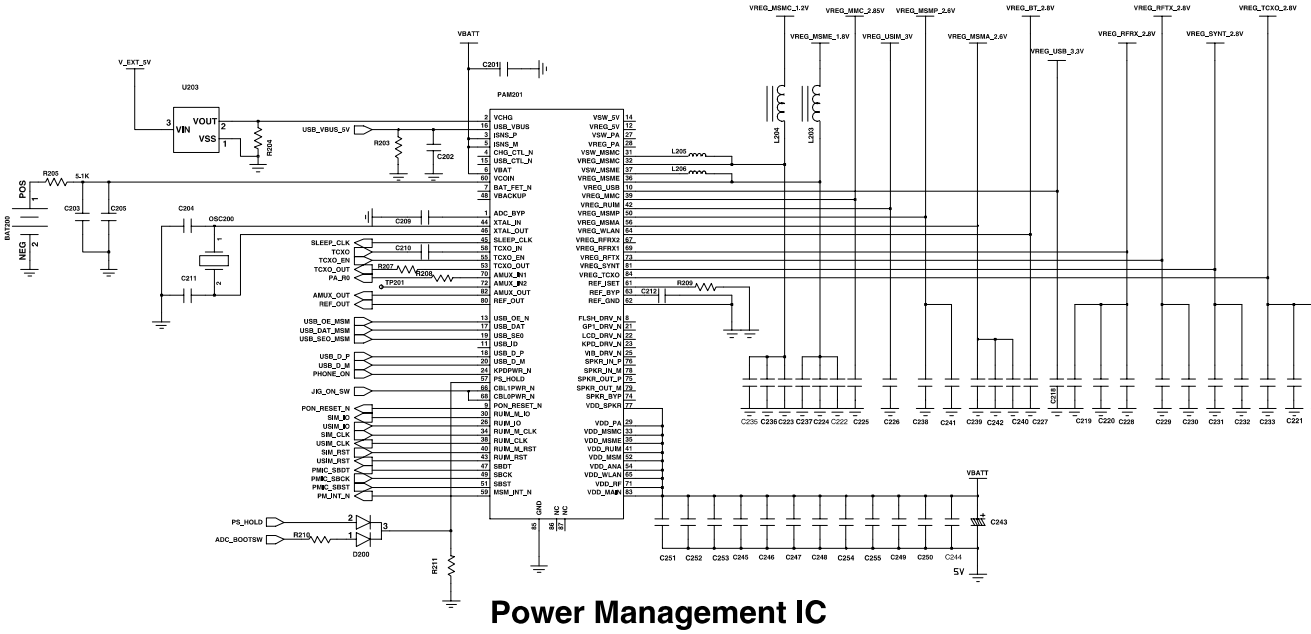
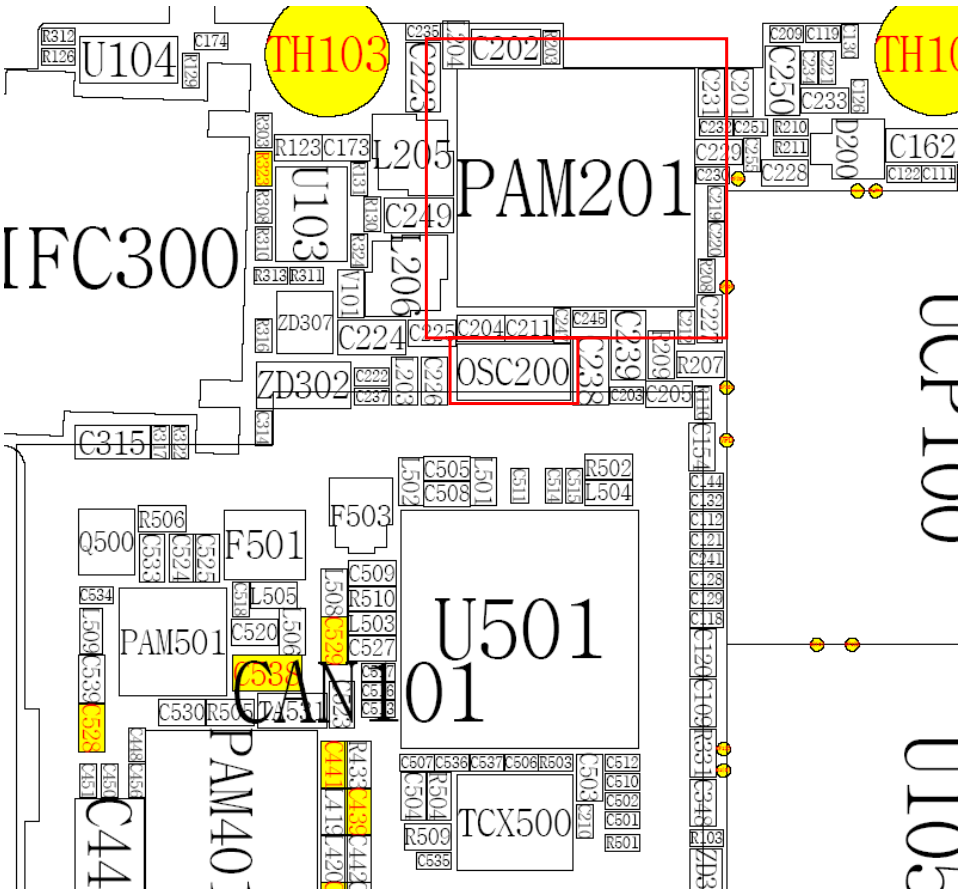
Power On

< Power Management IC >



Power Management IC



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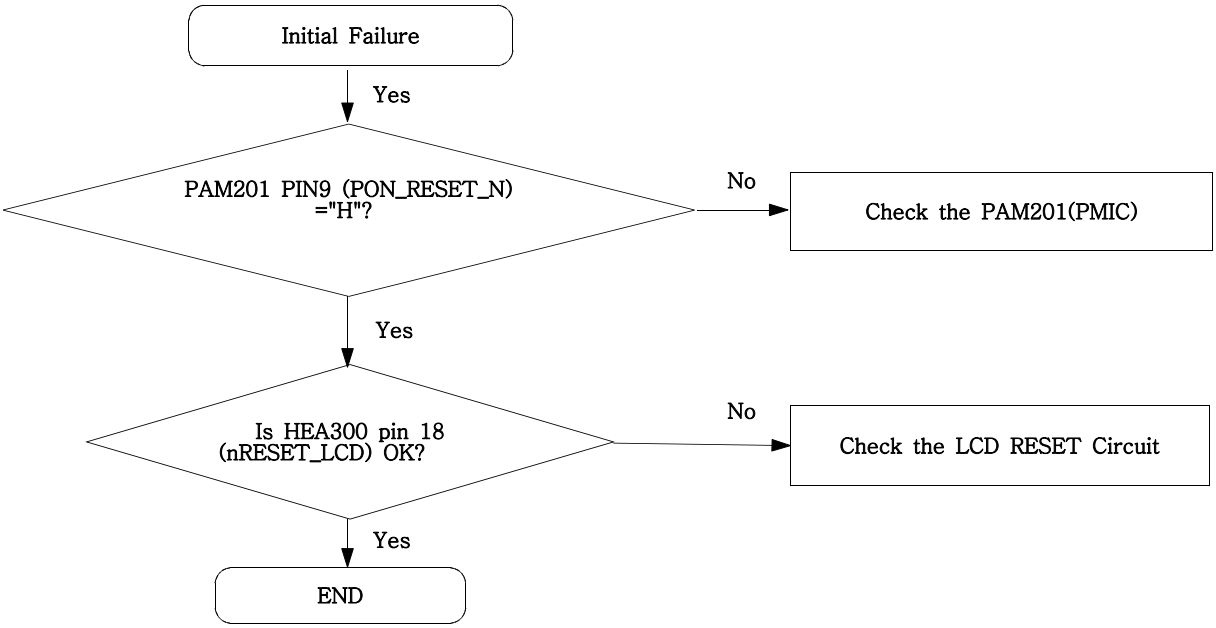
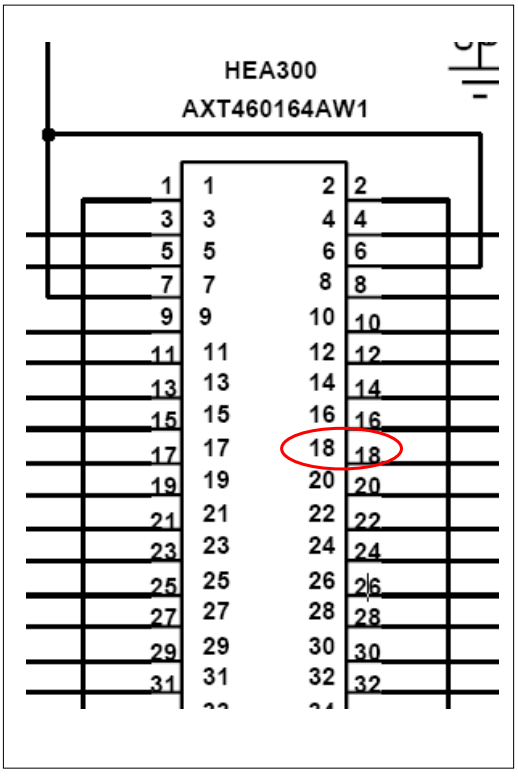
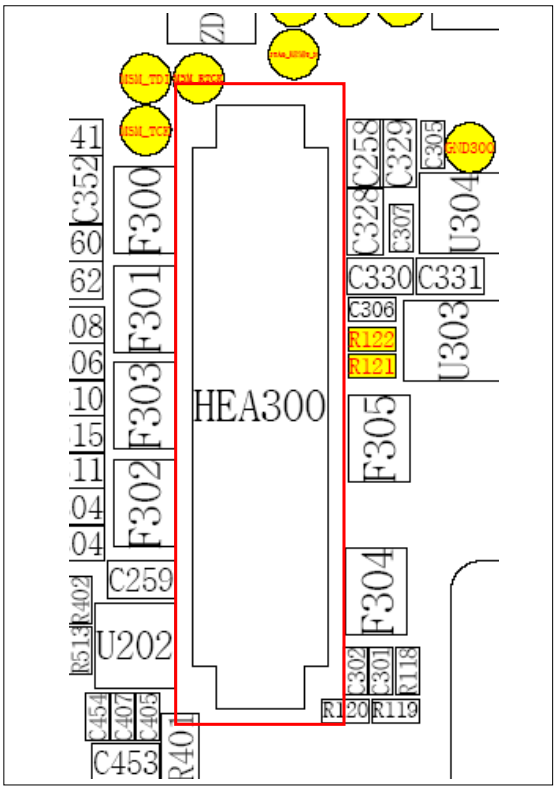
9-2. Initial







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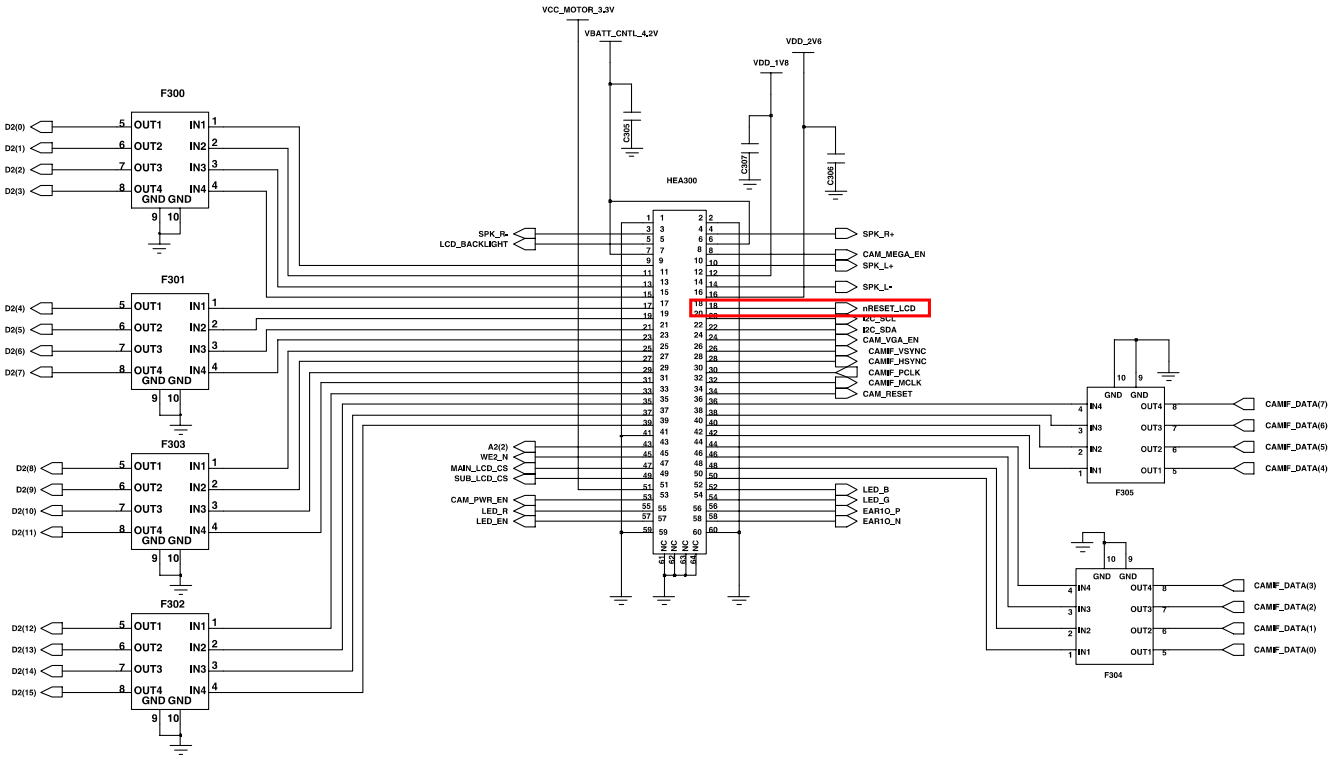
LCD CONNECTOR (HEADER 60PIN 1.5T)



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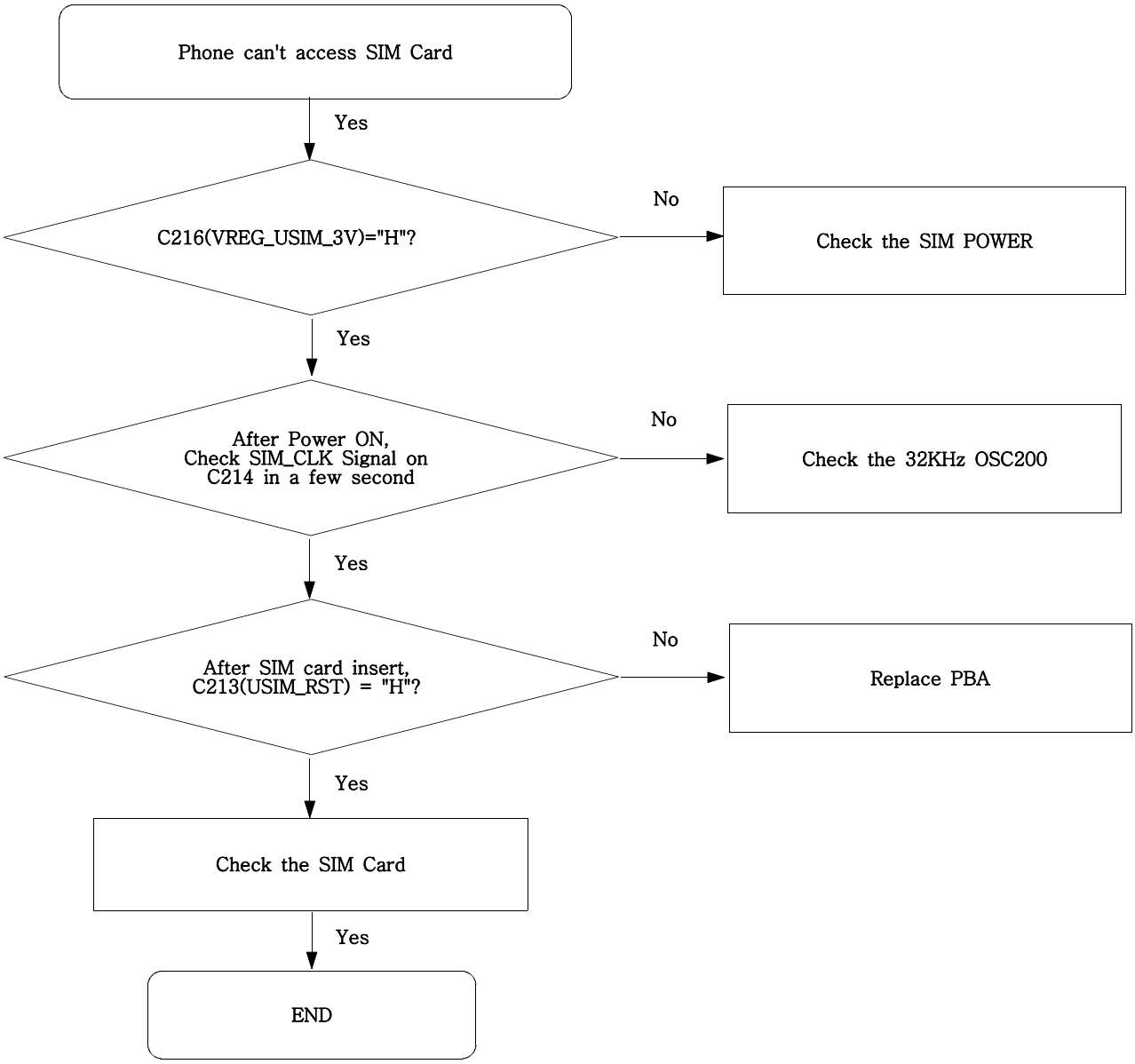
9-3. SIM Part



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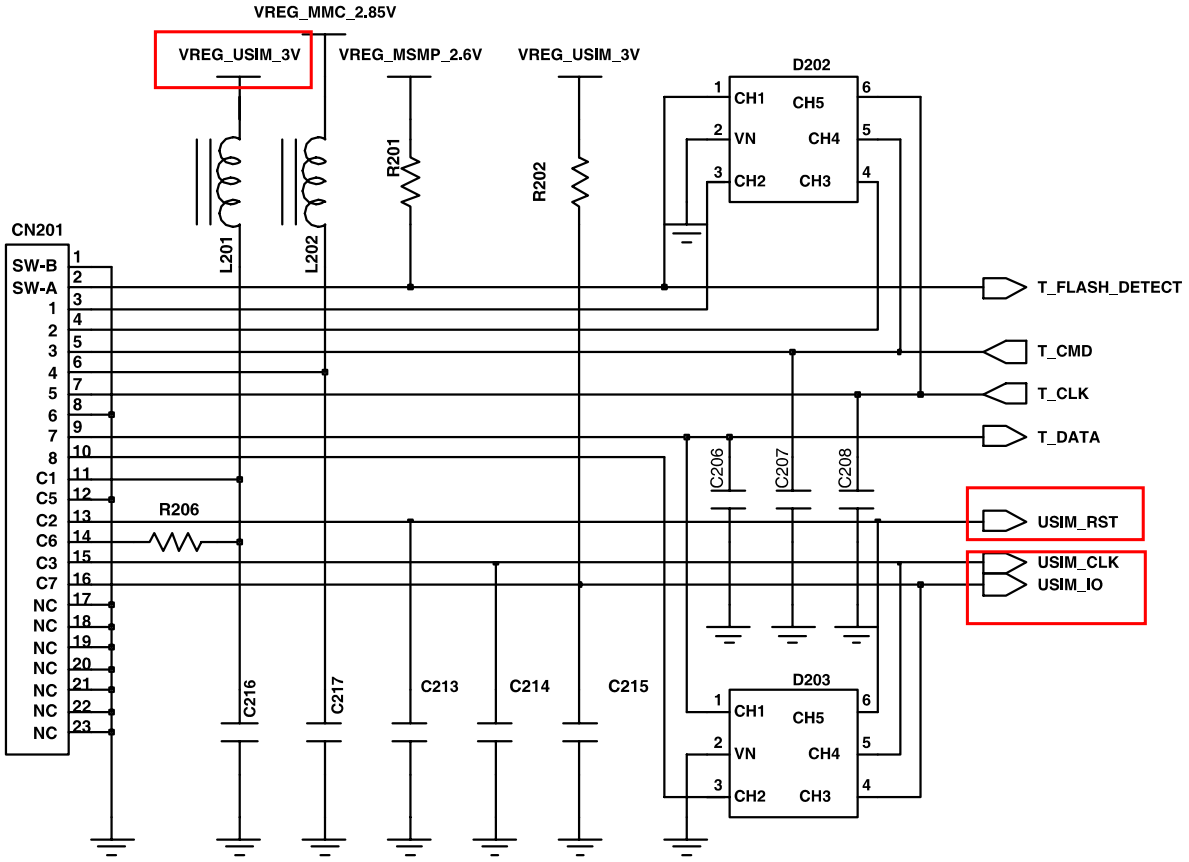
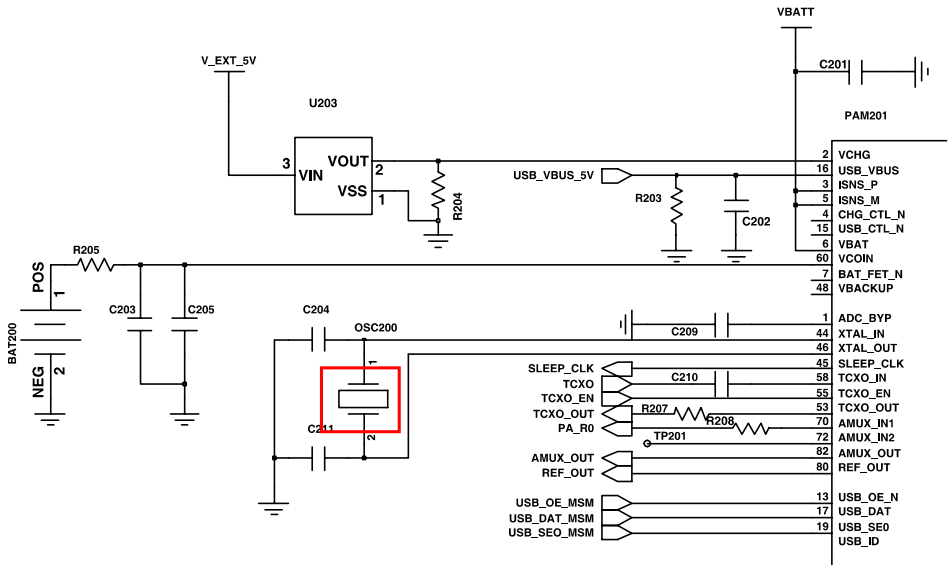
SIM

T-flash / USIM Socket



T-flash / USIM Socket



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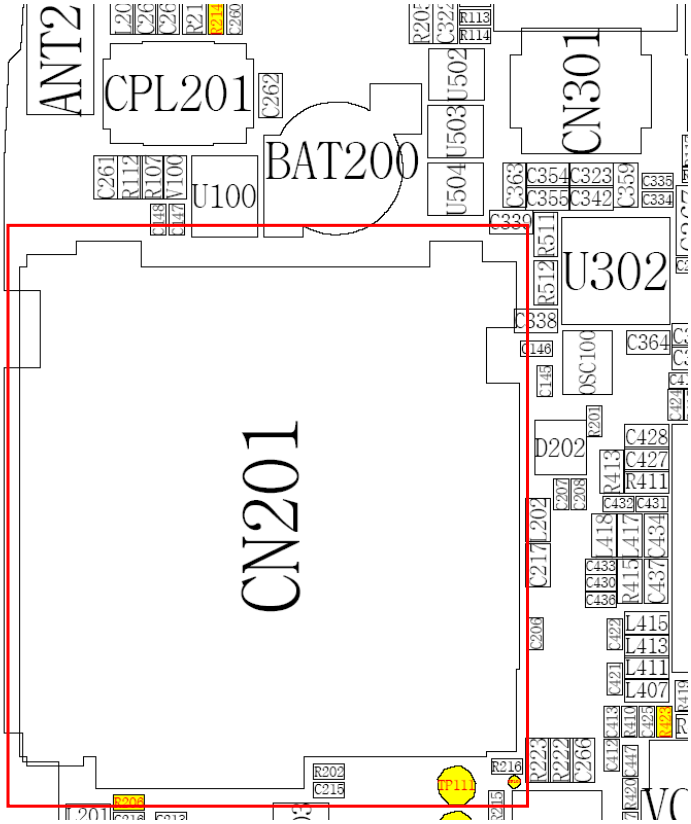

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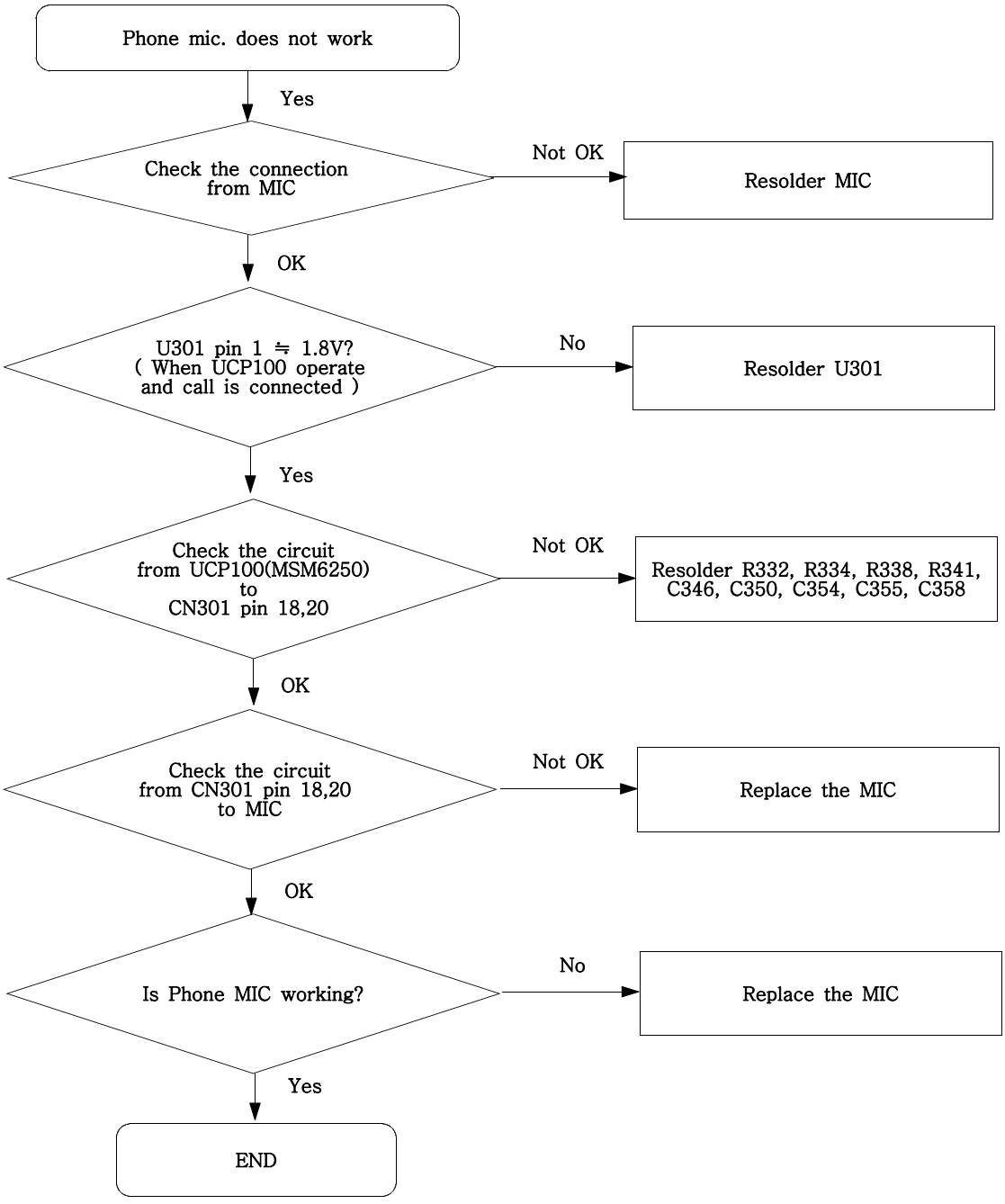
9-4. Microphone Part - Phone MIC



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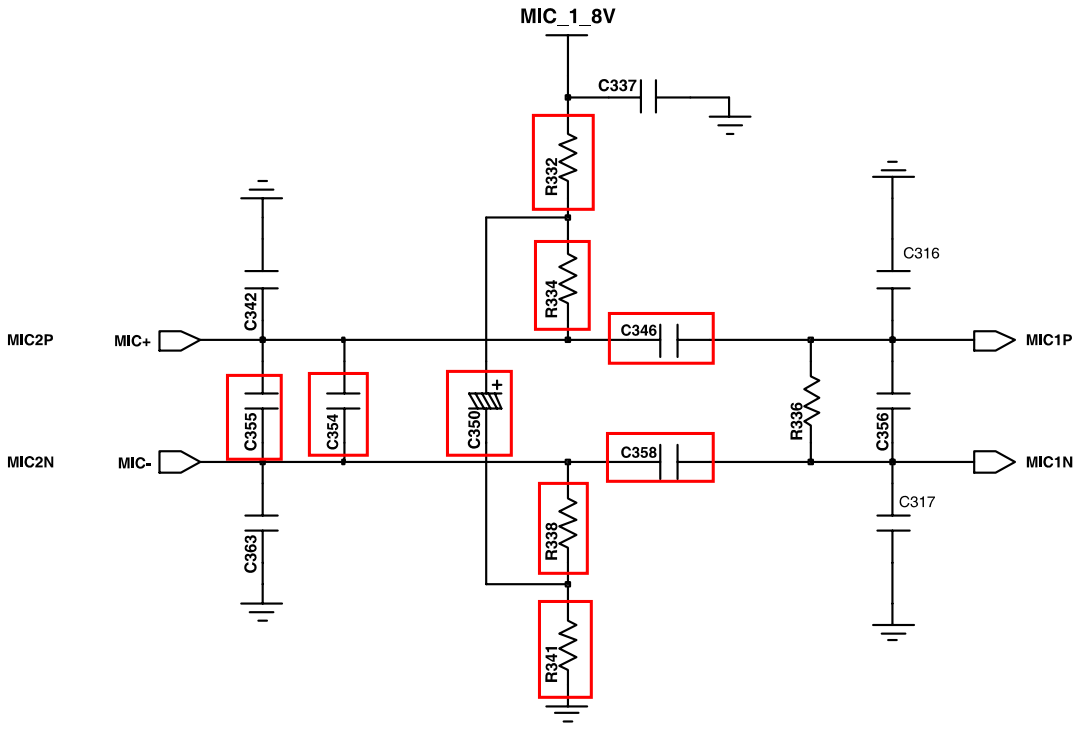
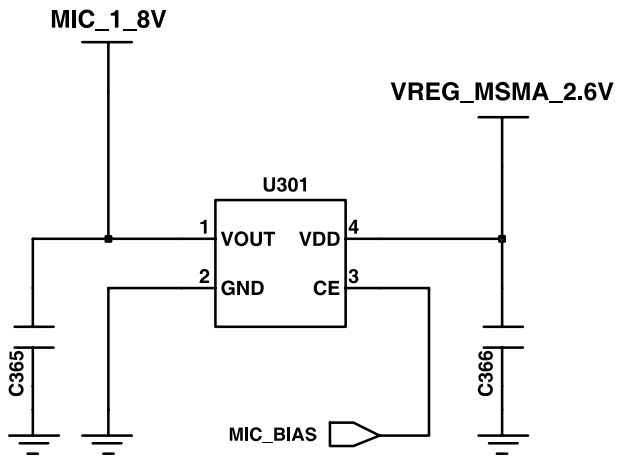
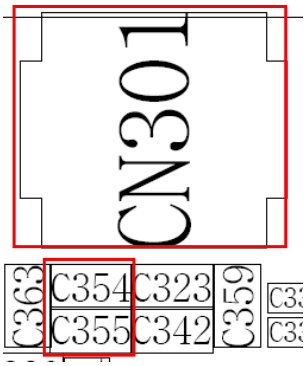
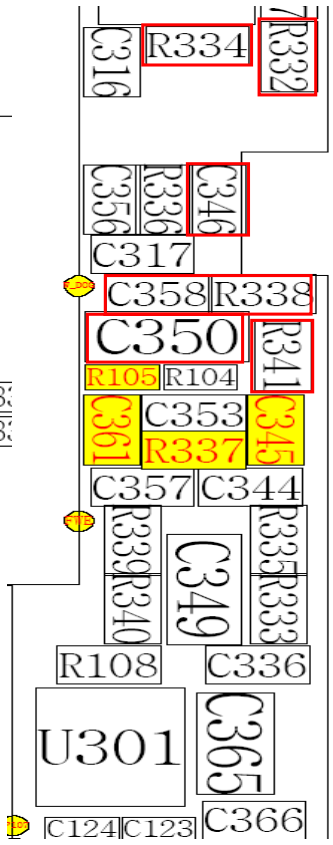


MAIN MIC PATH







MIC BIAS PWR

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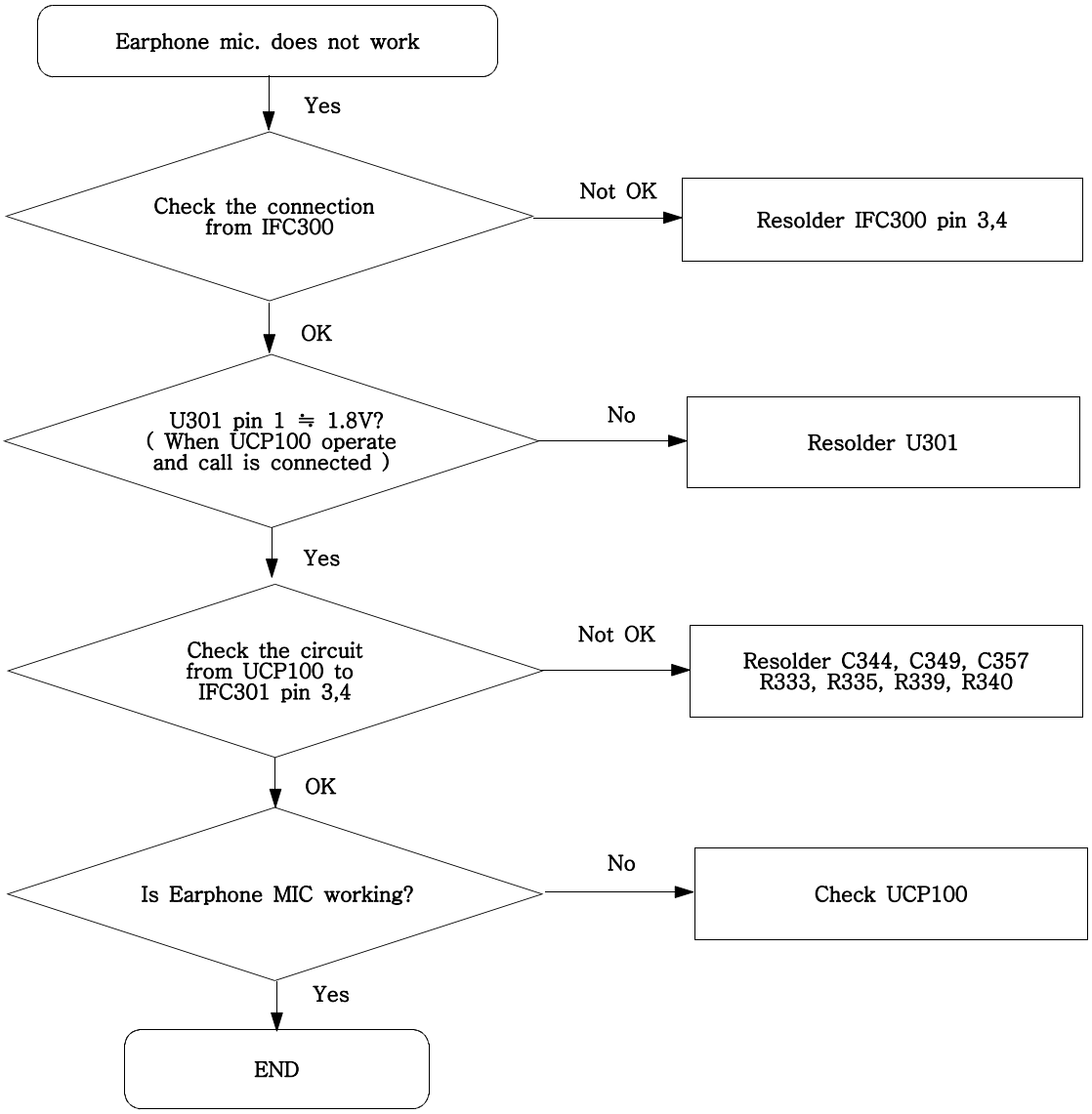
9-5. Microphone Part - Earphone MIC



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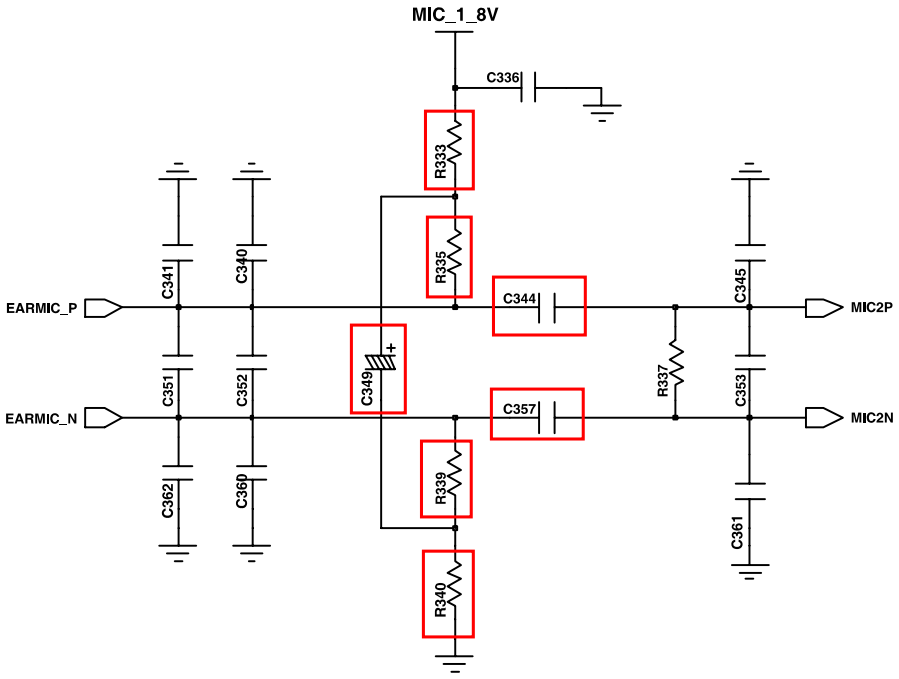
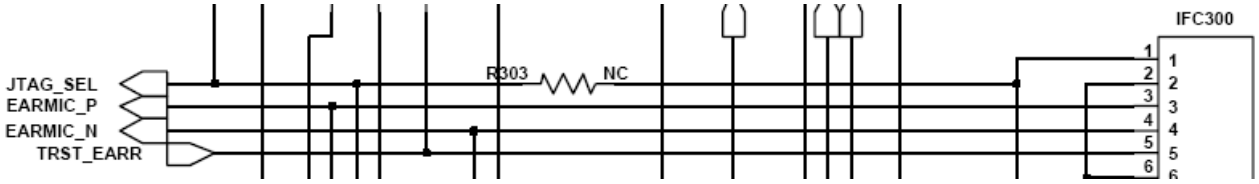
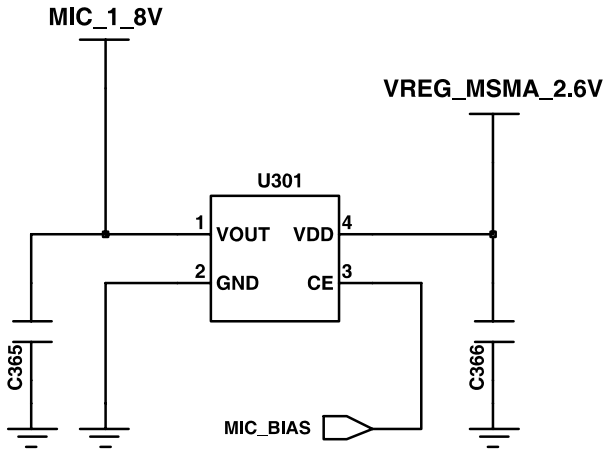
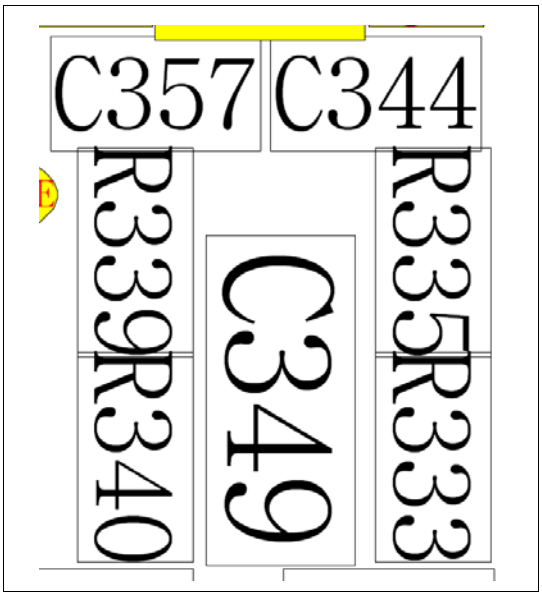


EARMIC PATH





MIC BIAS PWR



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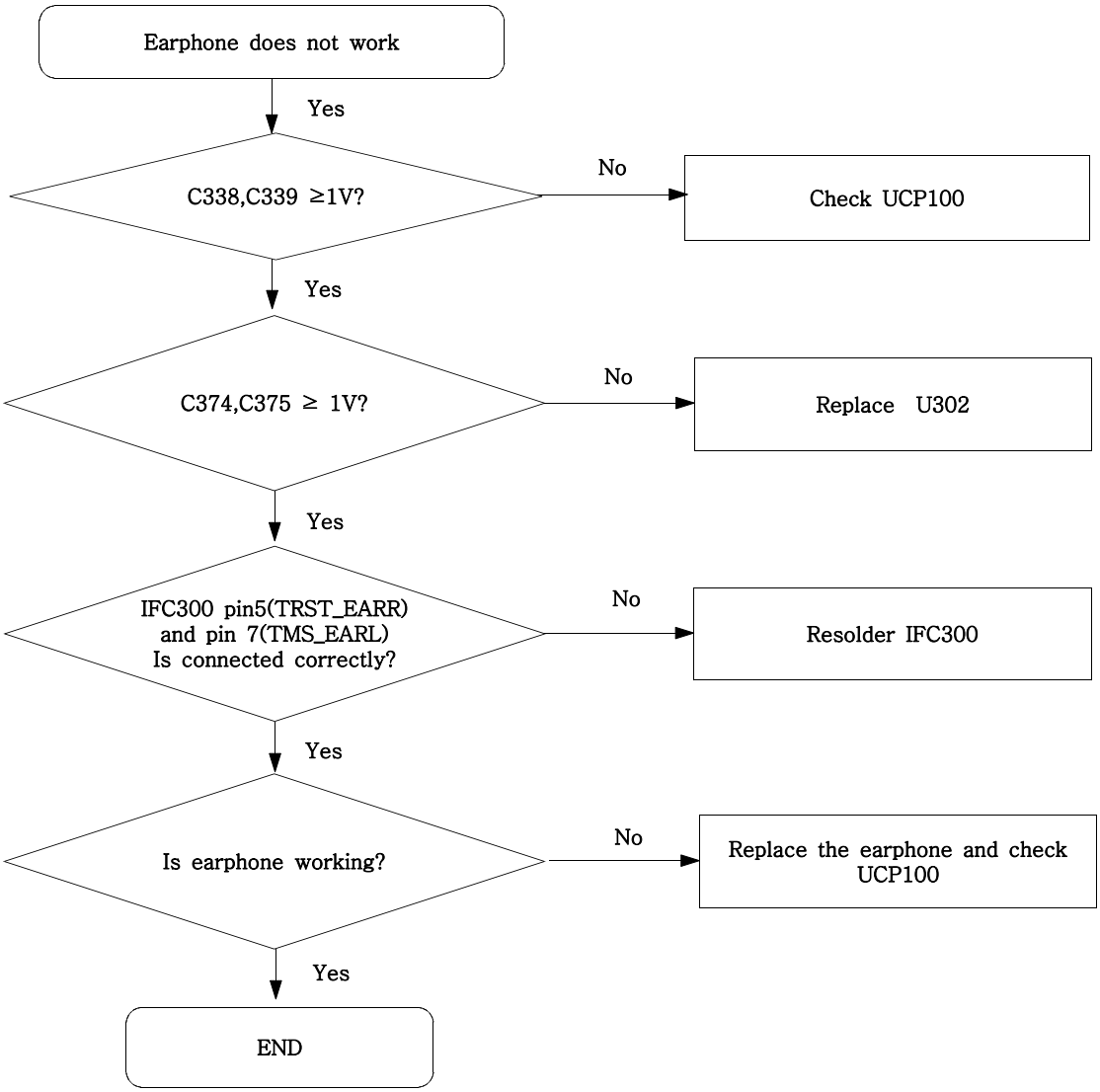
9-6. Earphone Part



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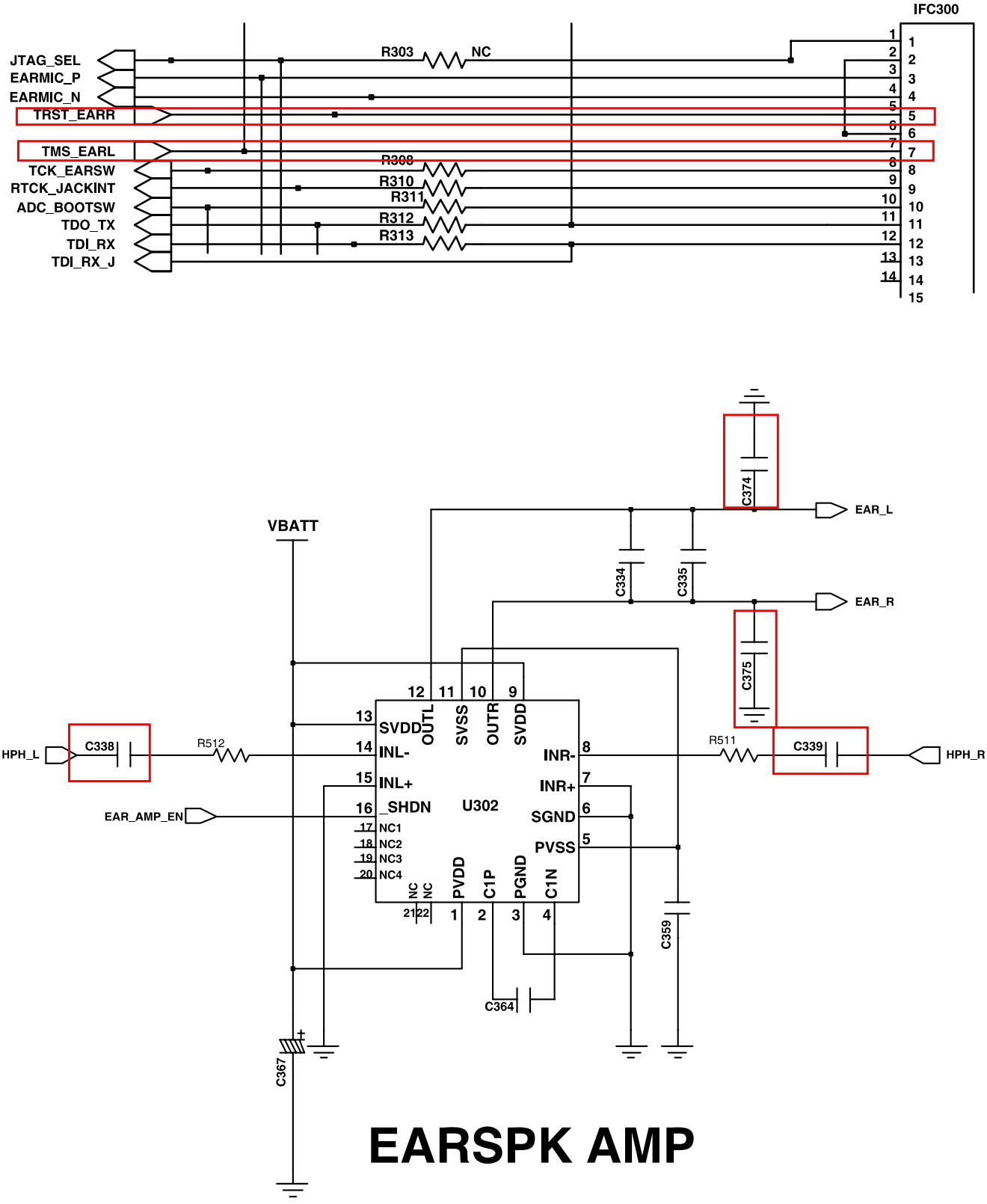

EARSPK AMP

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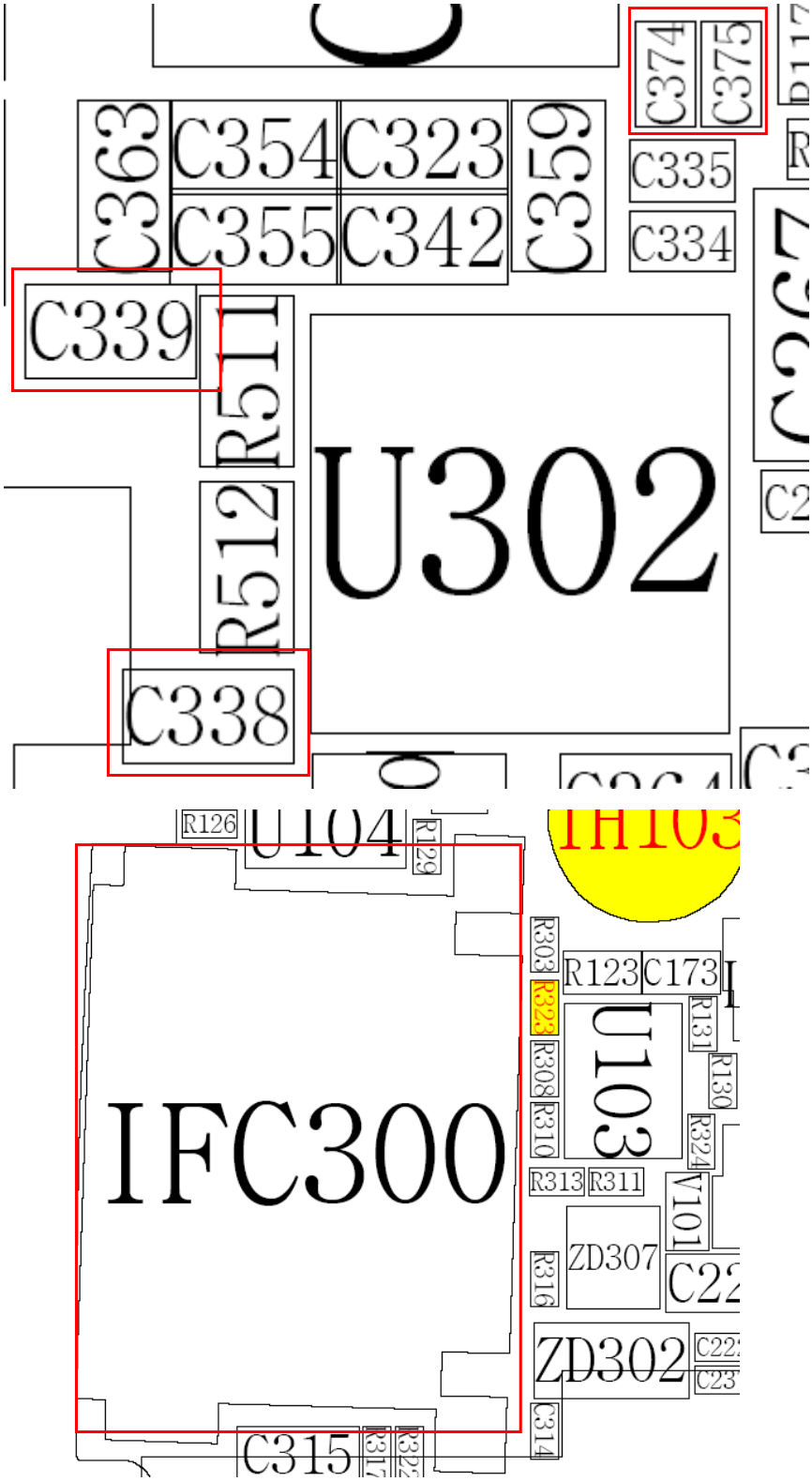

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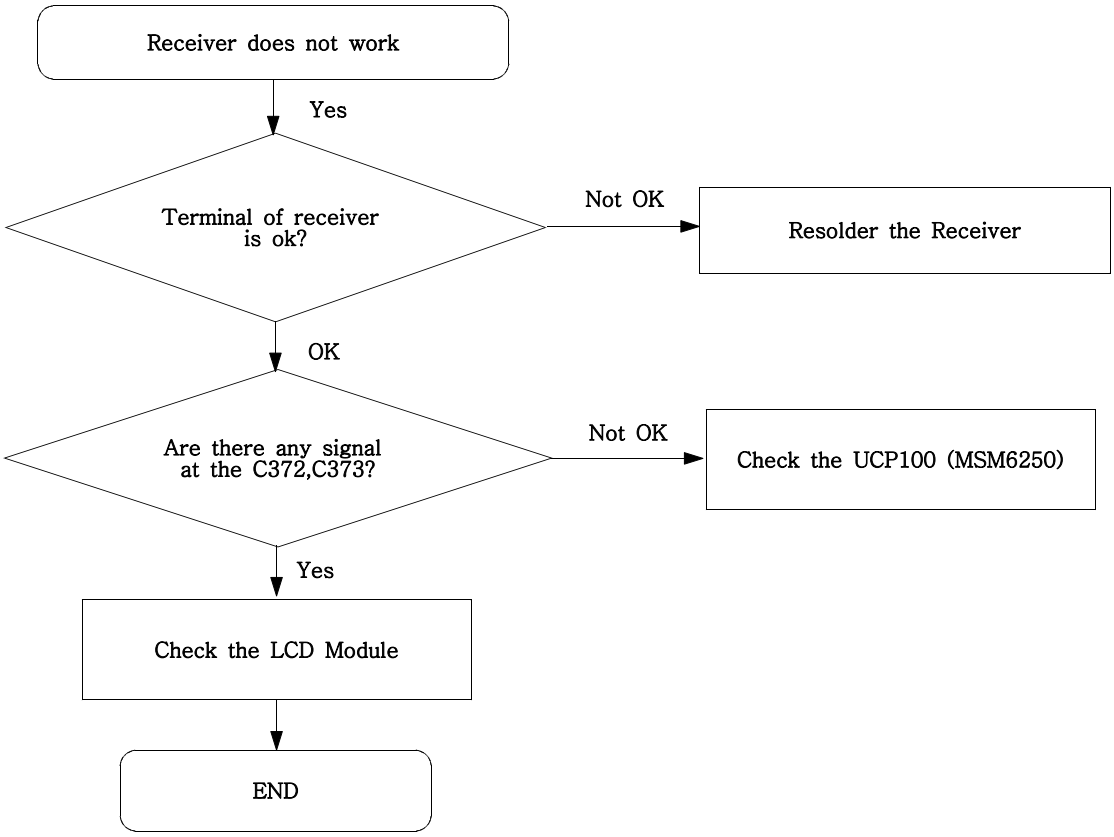
9-7. Receiver, Speaker Part



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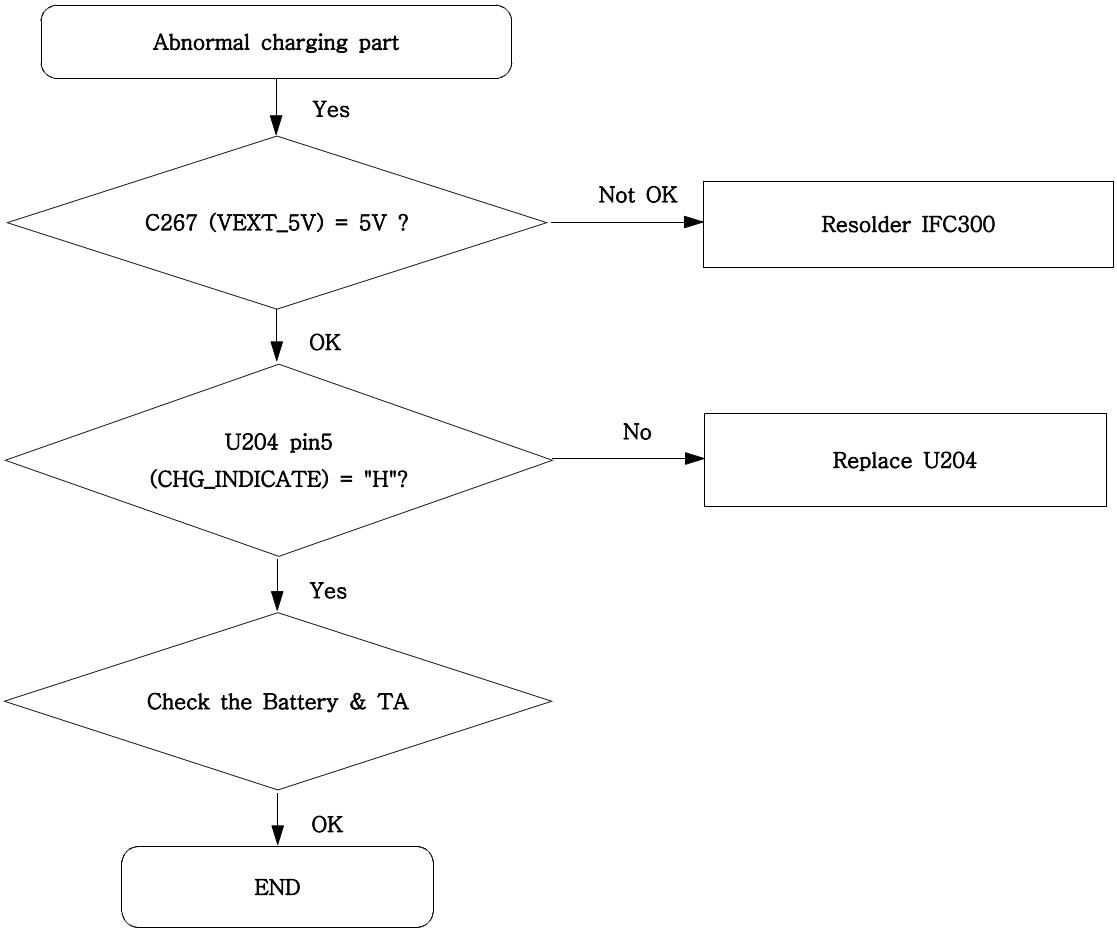
9-8. Charging Part



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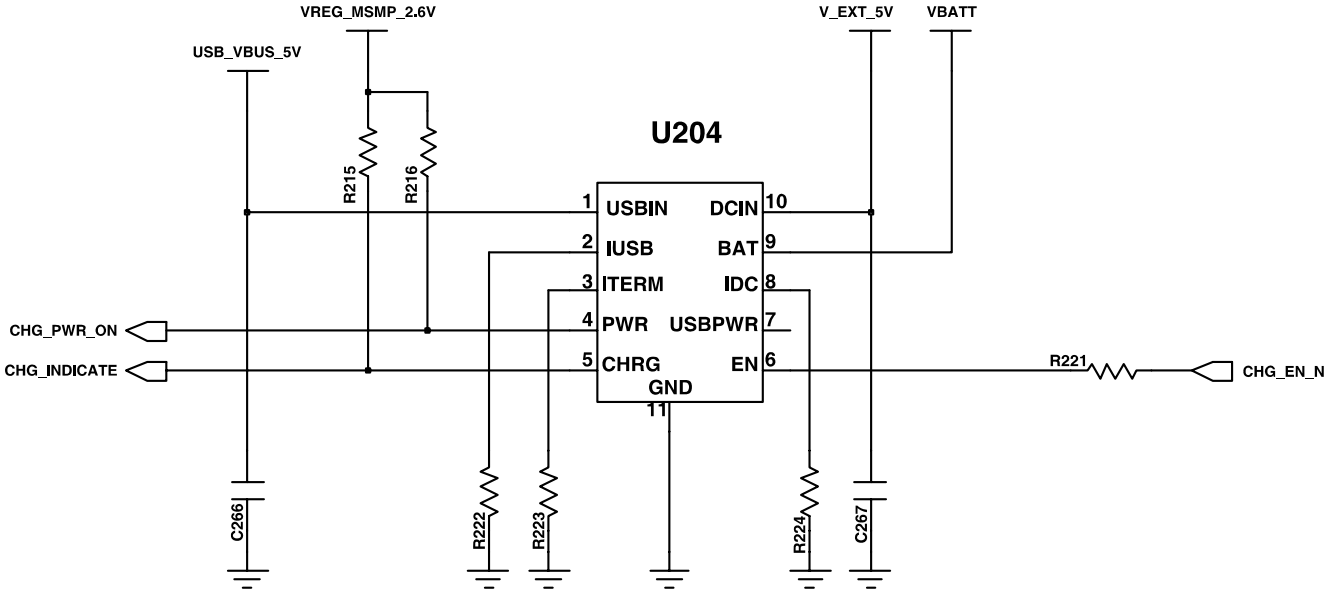
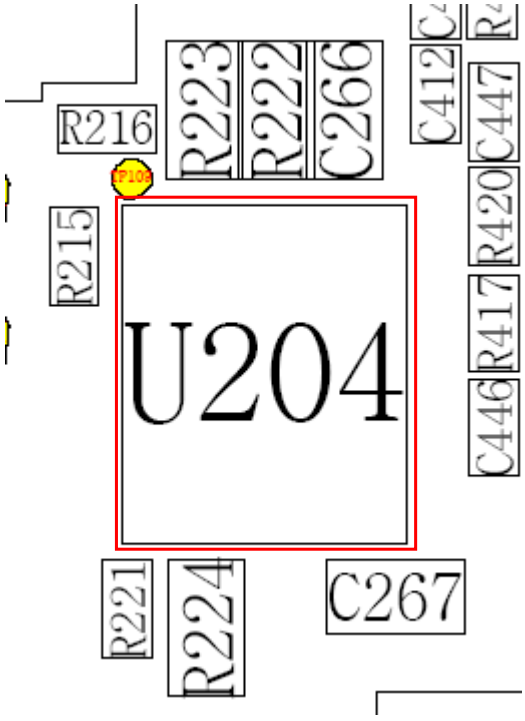


Charging Logic



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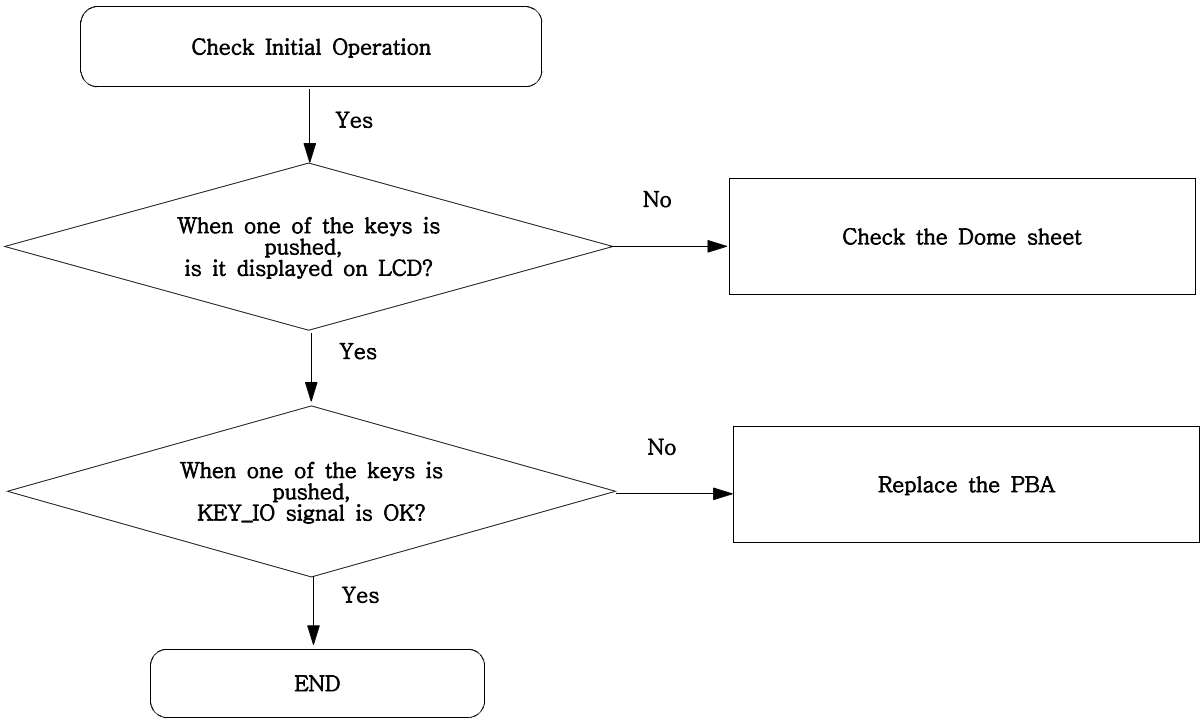
9-9. Key Data Input



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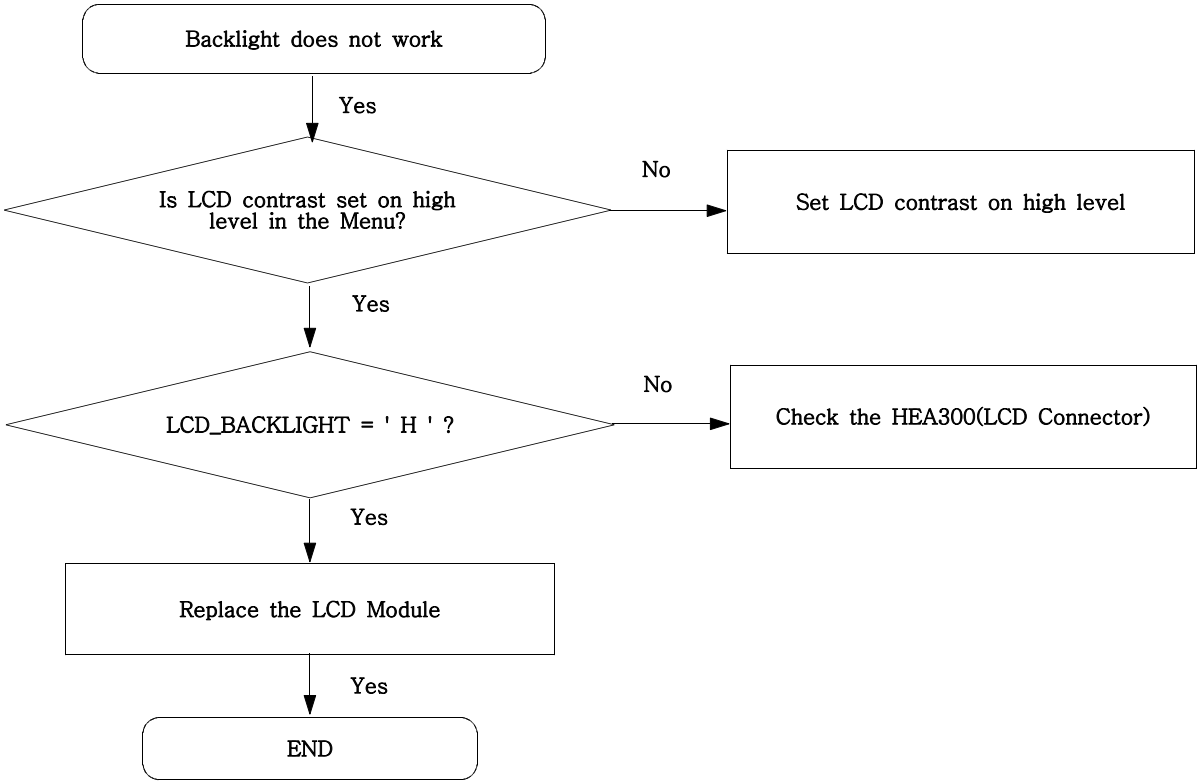
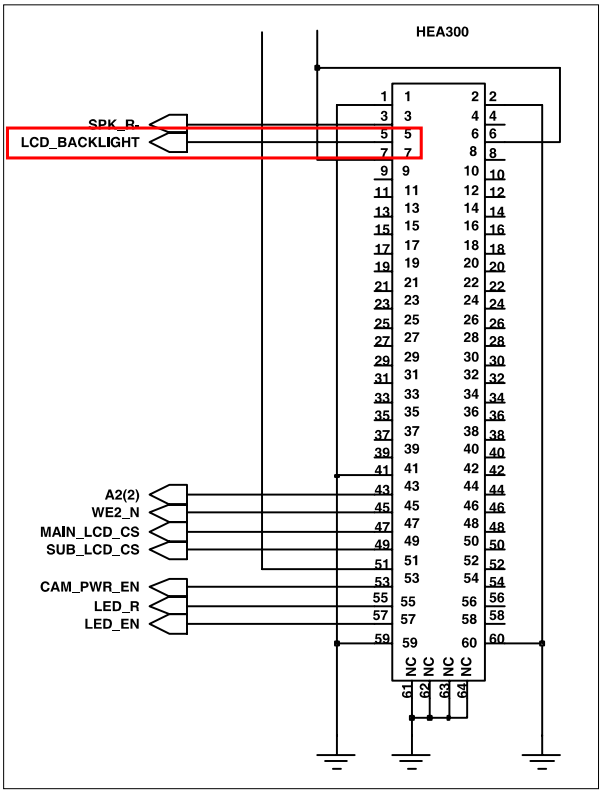
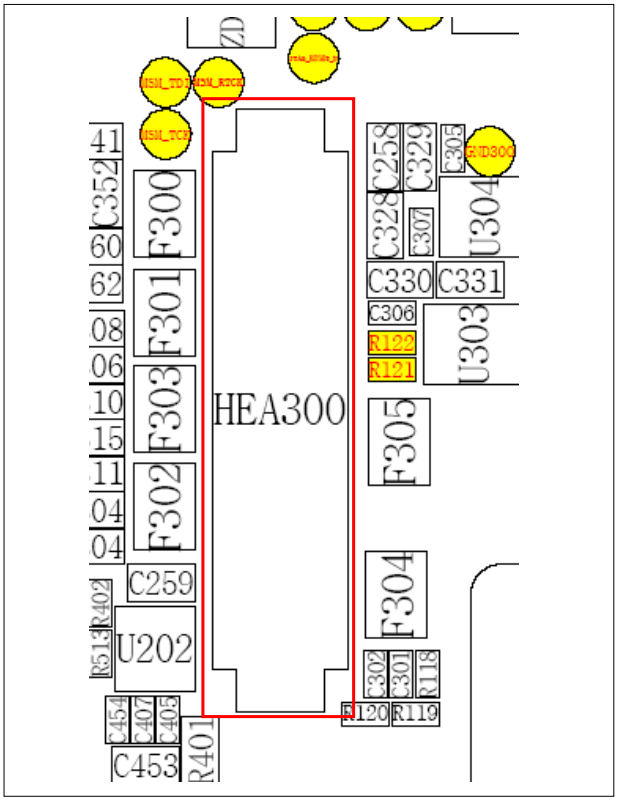
9-10. Back Light (for Color Main LCD)







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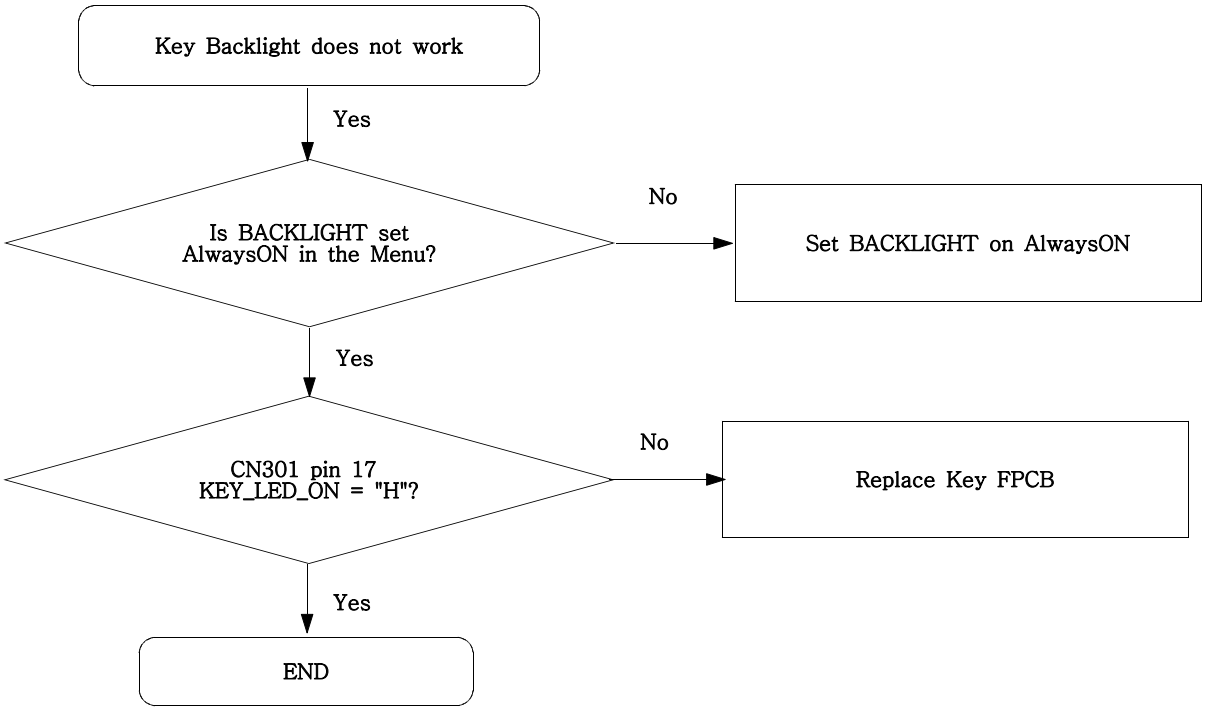
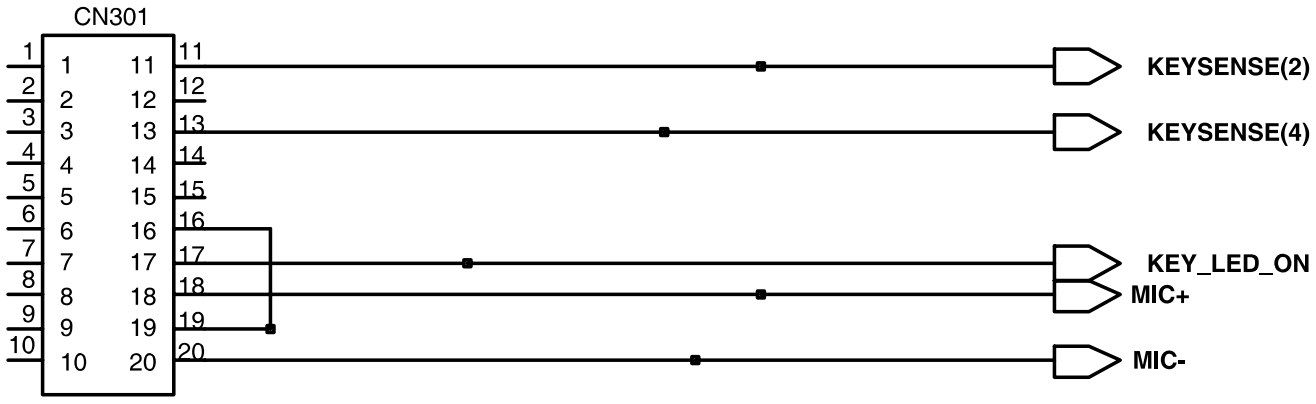
9-11. Key Back Light





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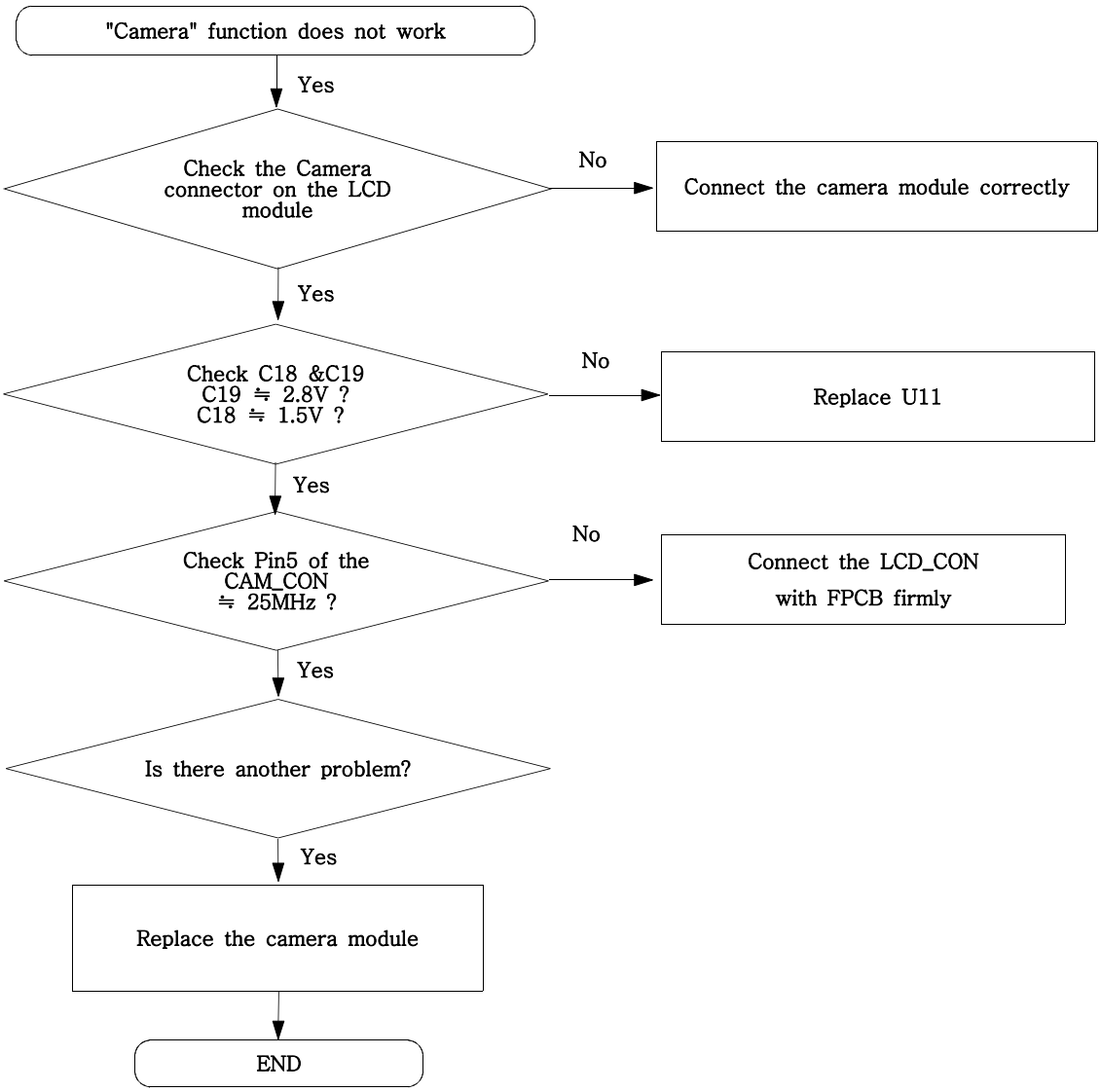
9-12. Camera part



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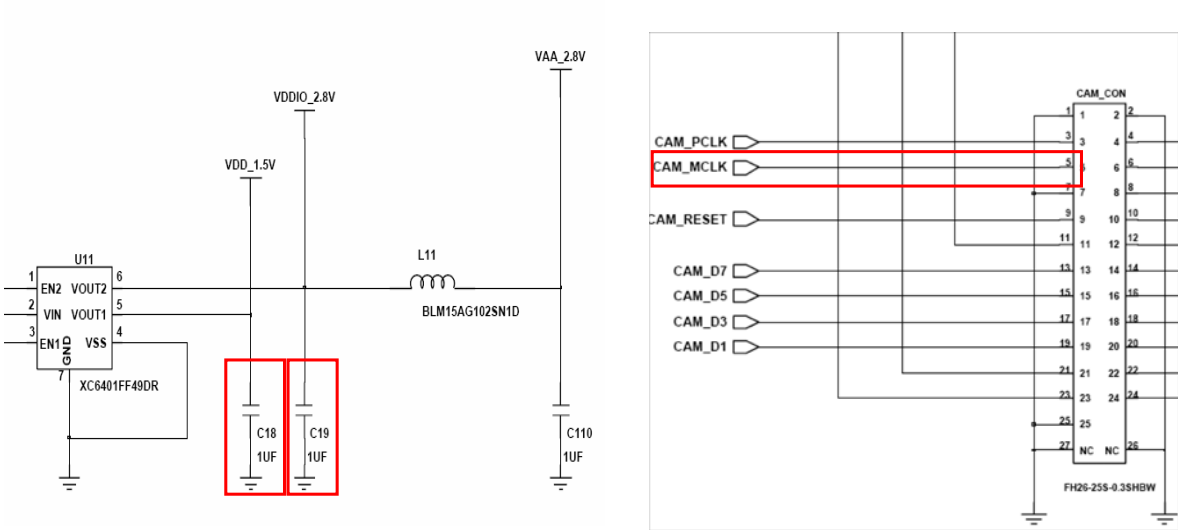

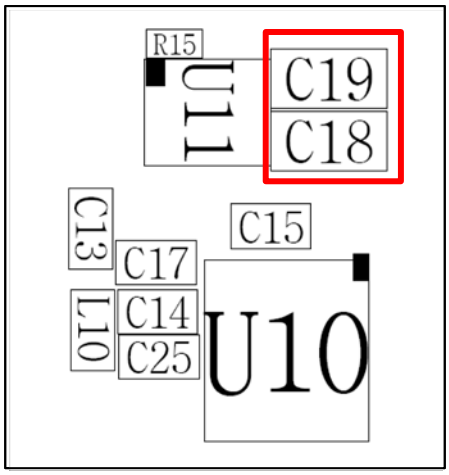

< LCD PART >

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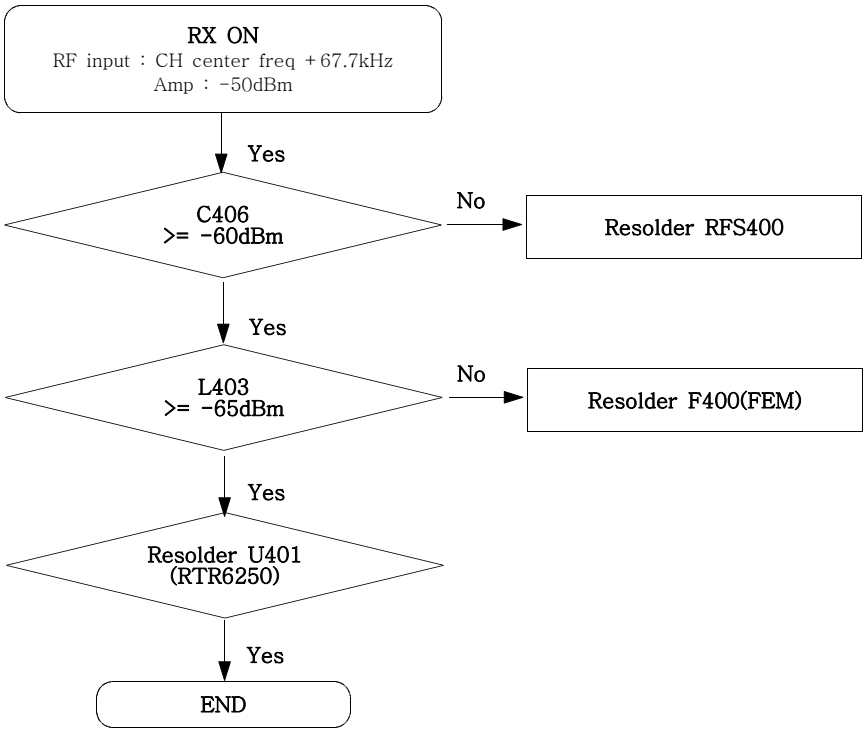
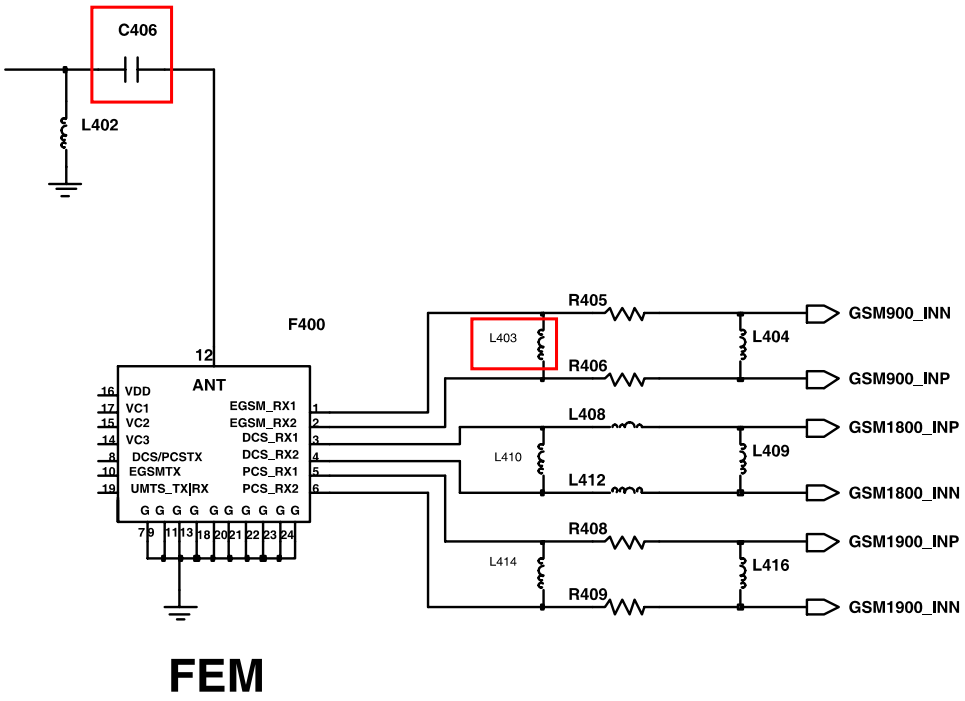
9-13. GSM Receiver





FEM

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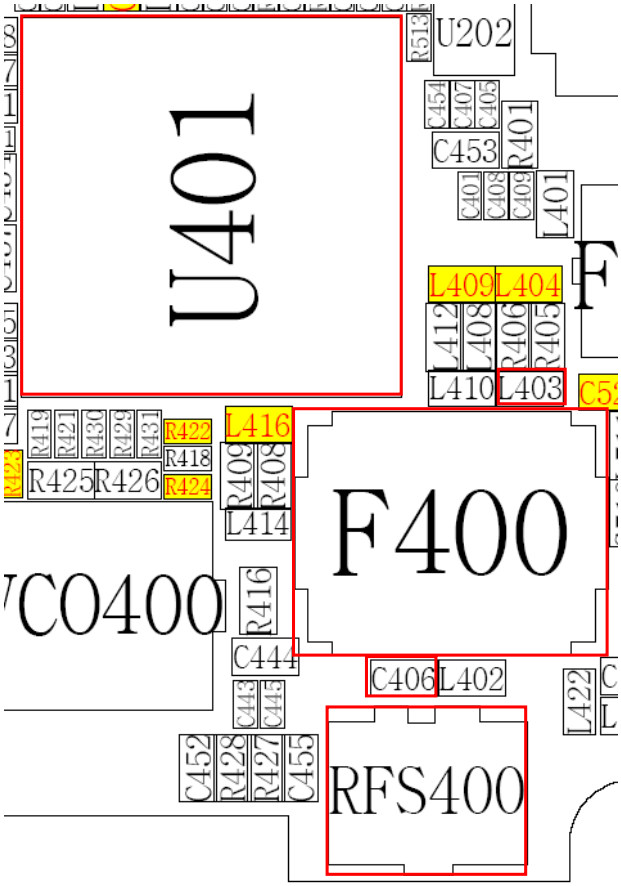

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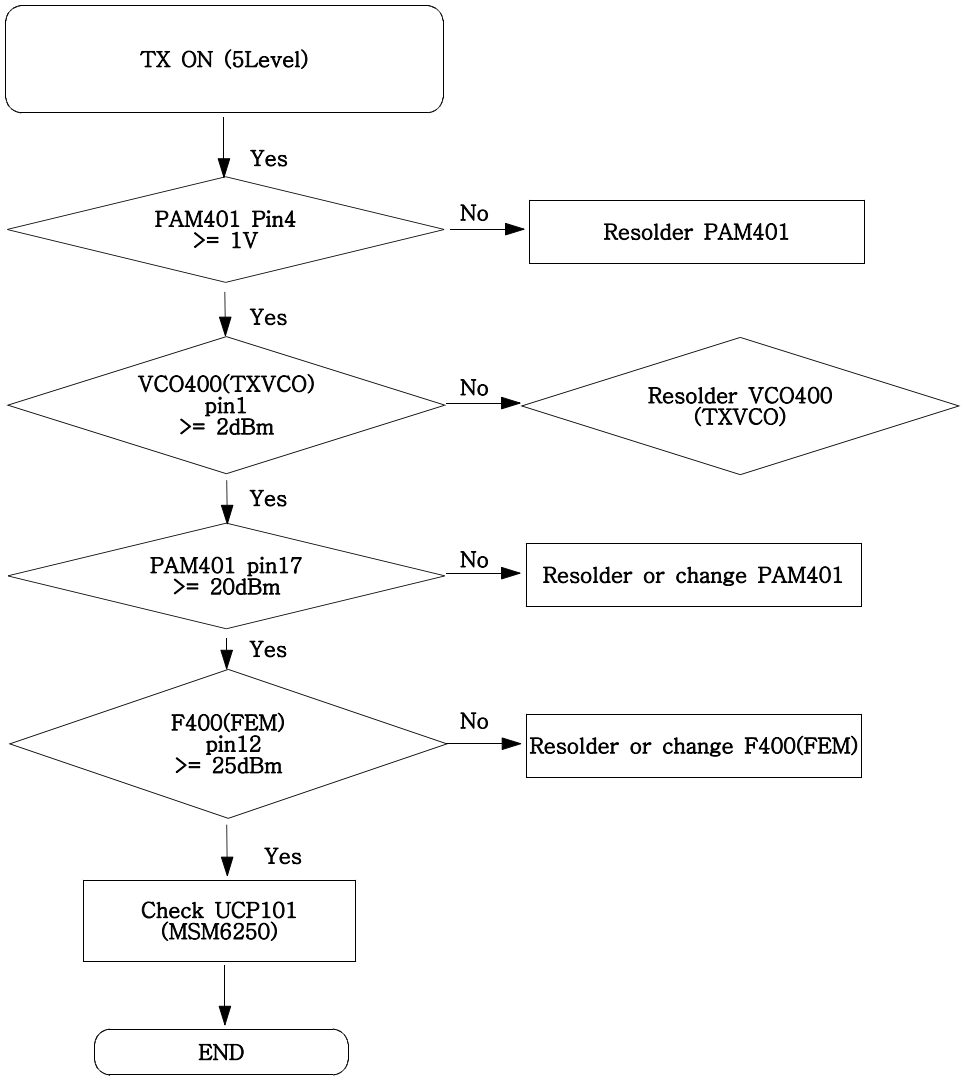
9-14. GSM Transmitter



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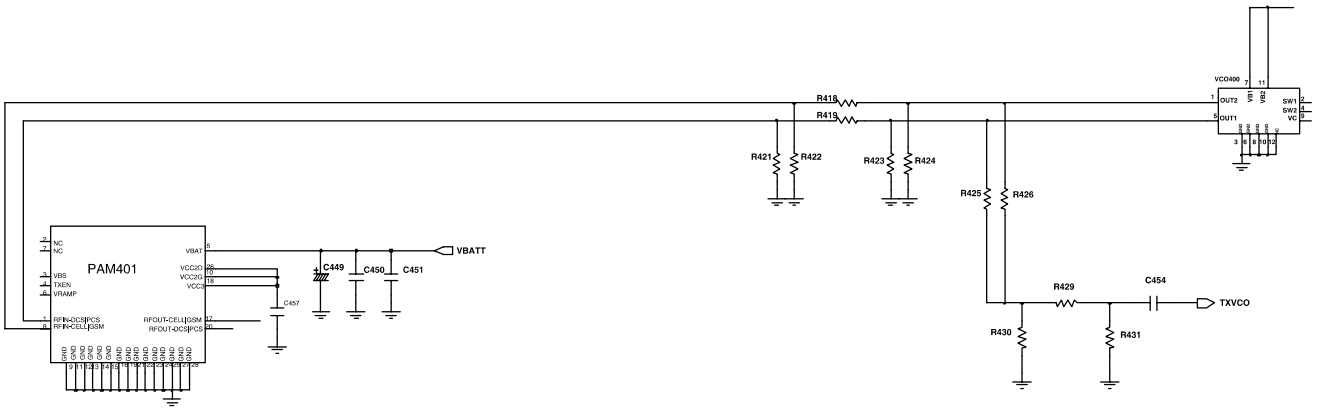

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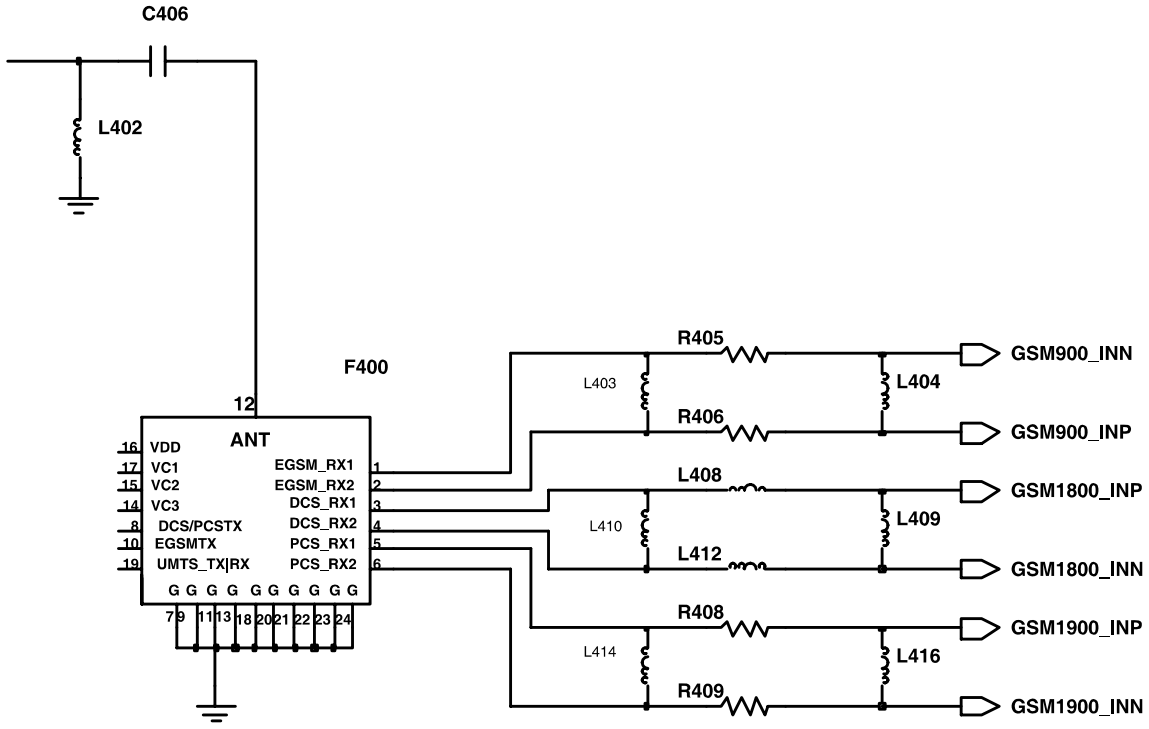

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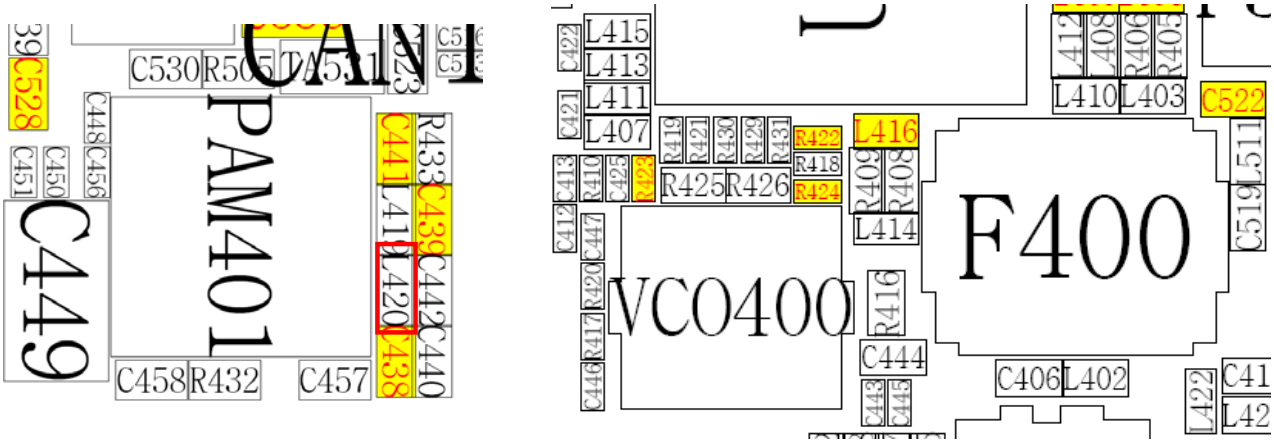

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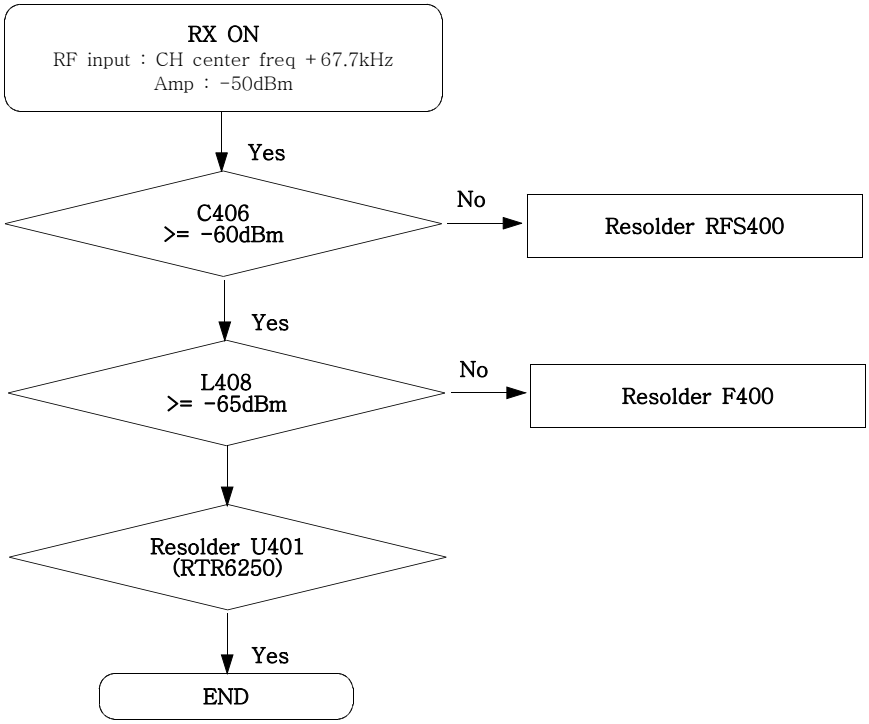

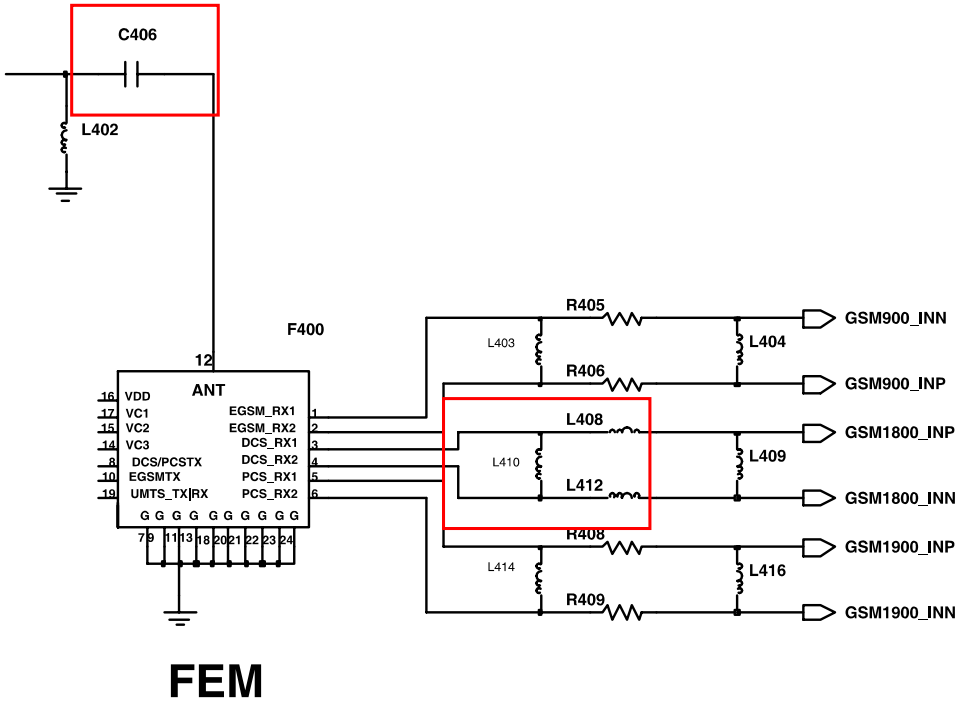

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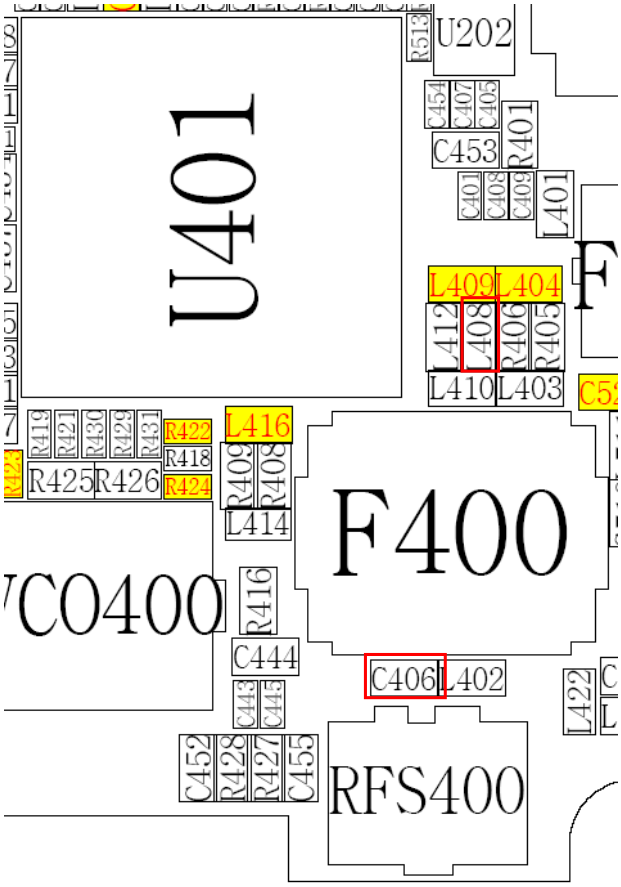

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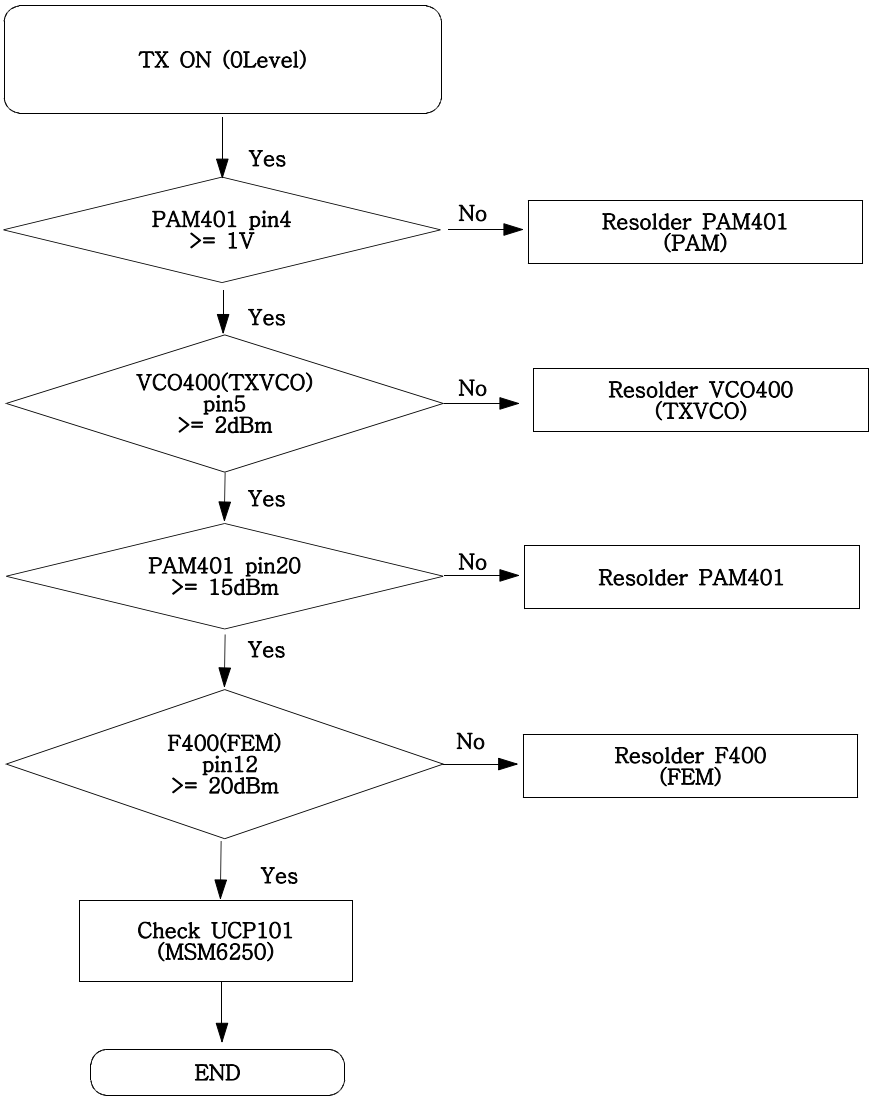

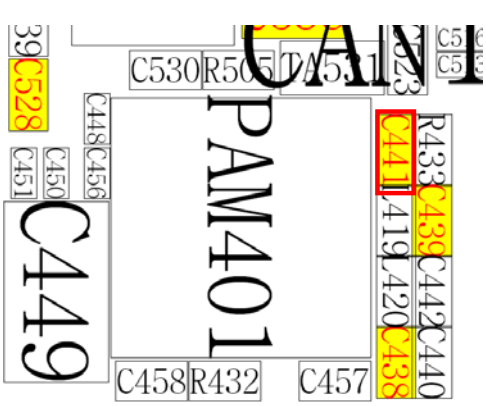

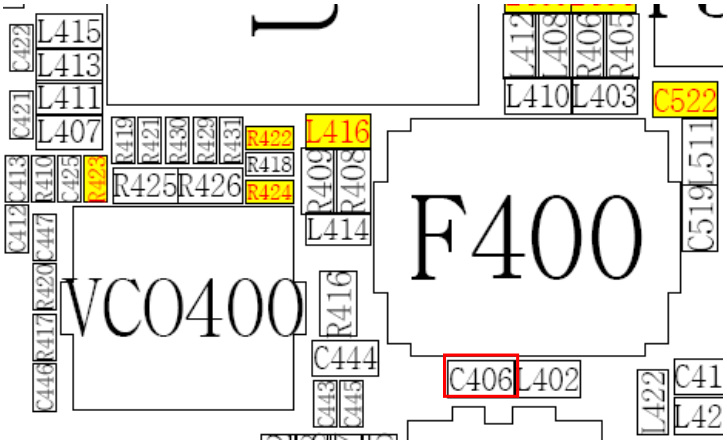

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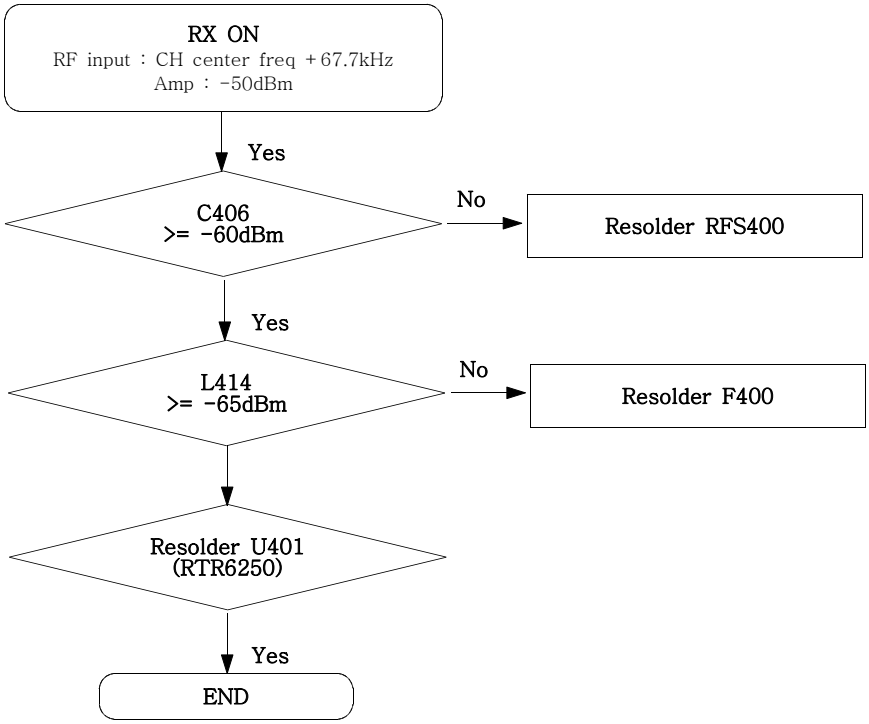

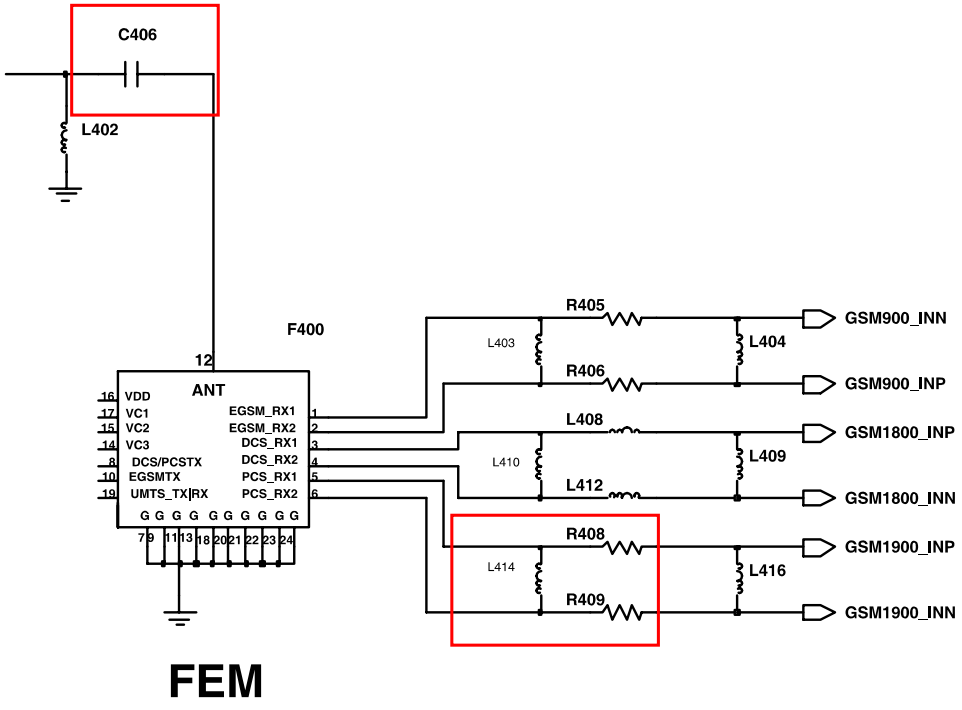

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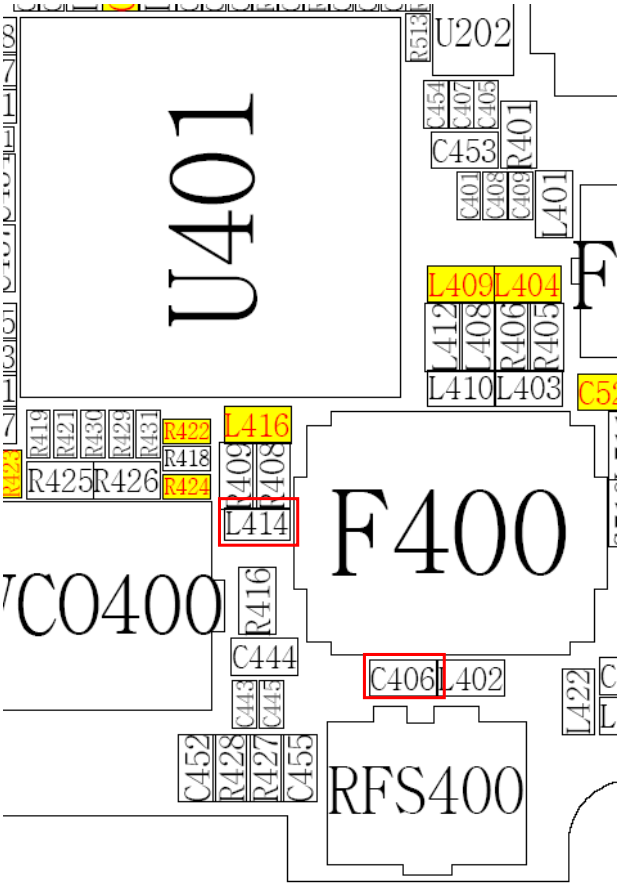

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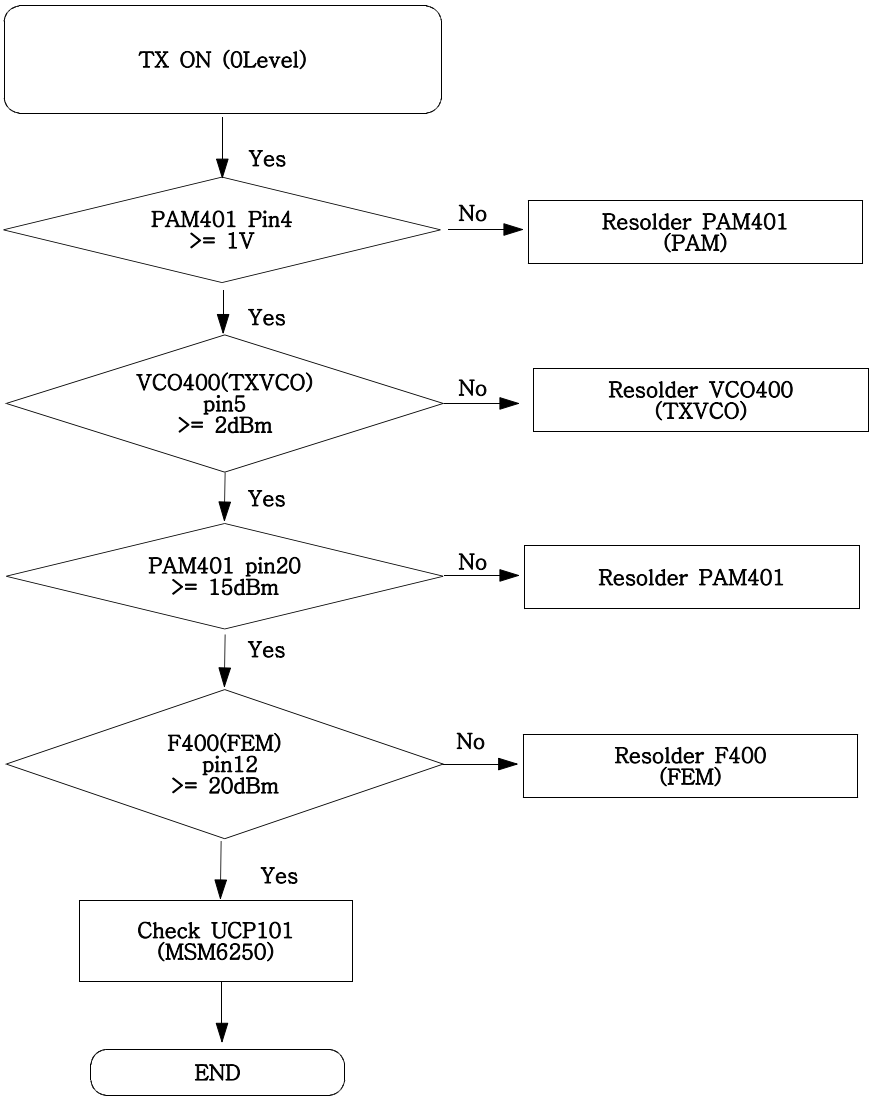

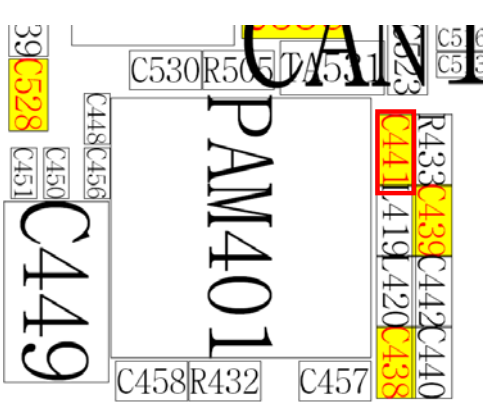

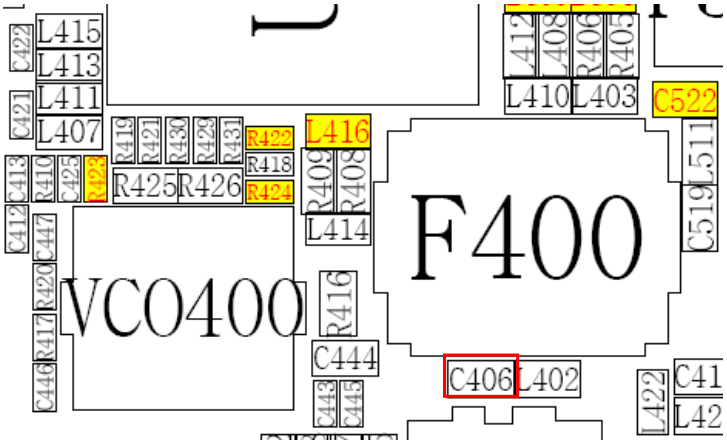

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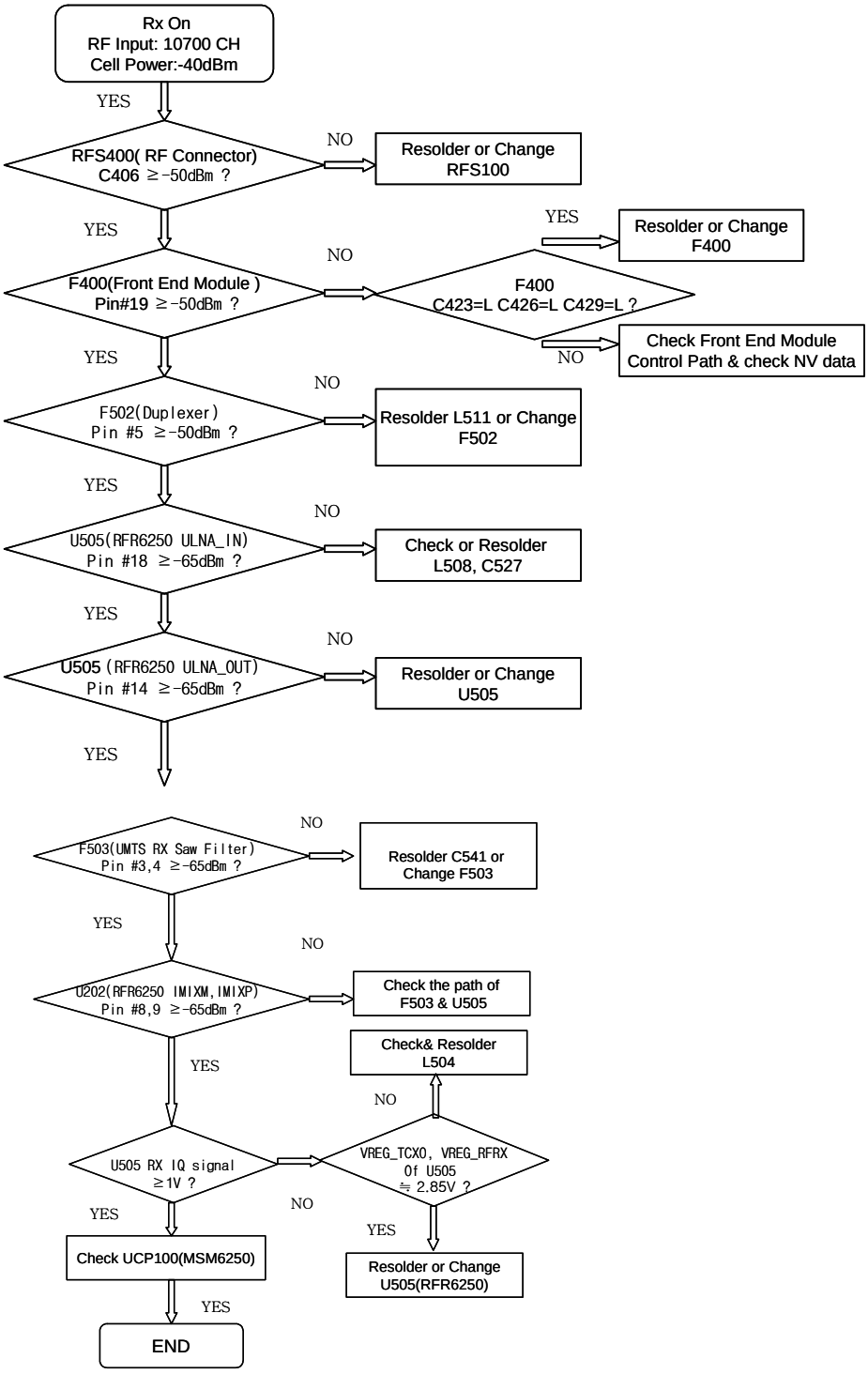
9-19. WCDMA Receiver



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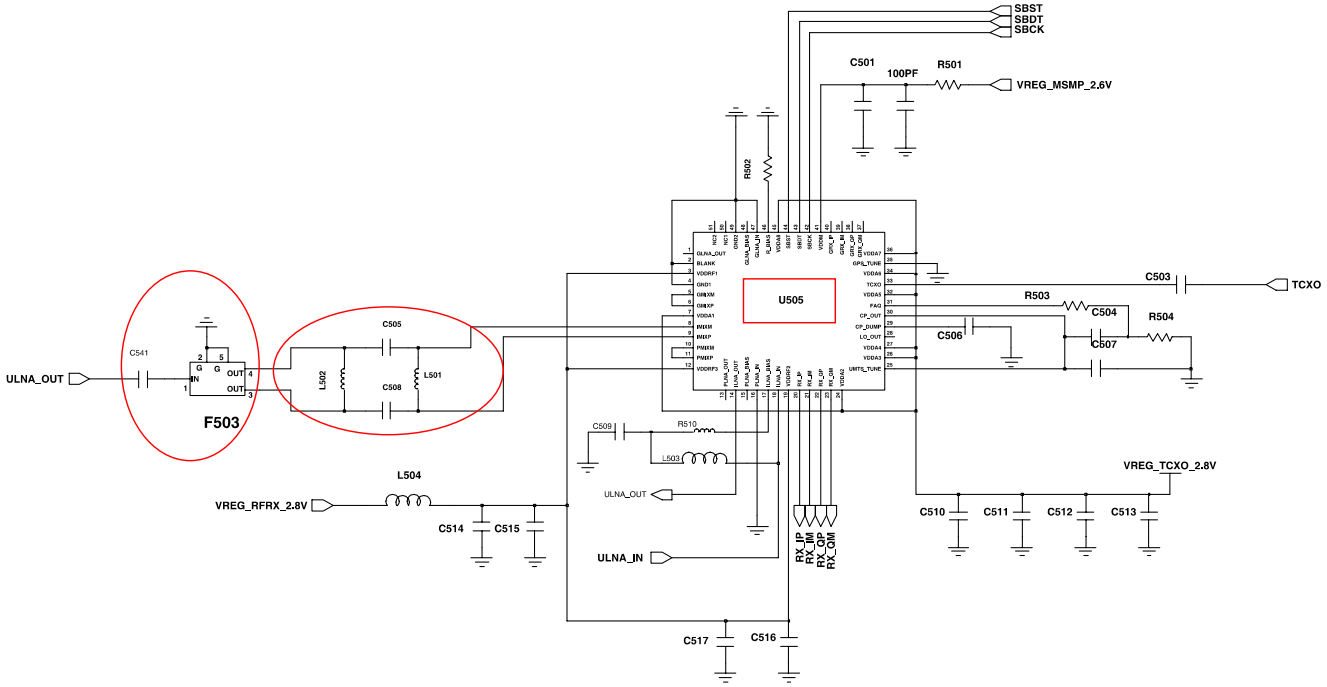

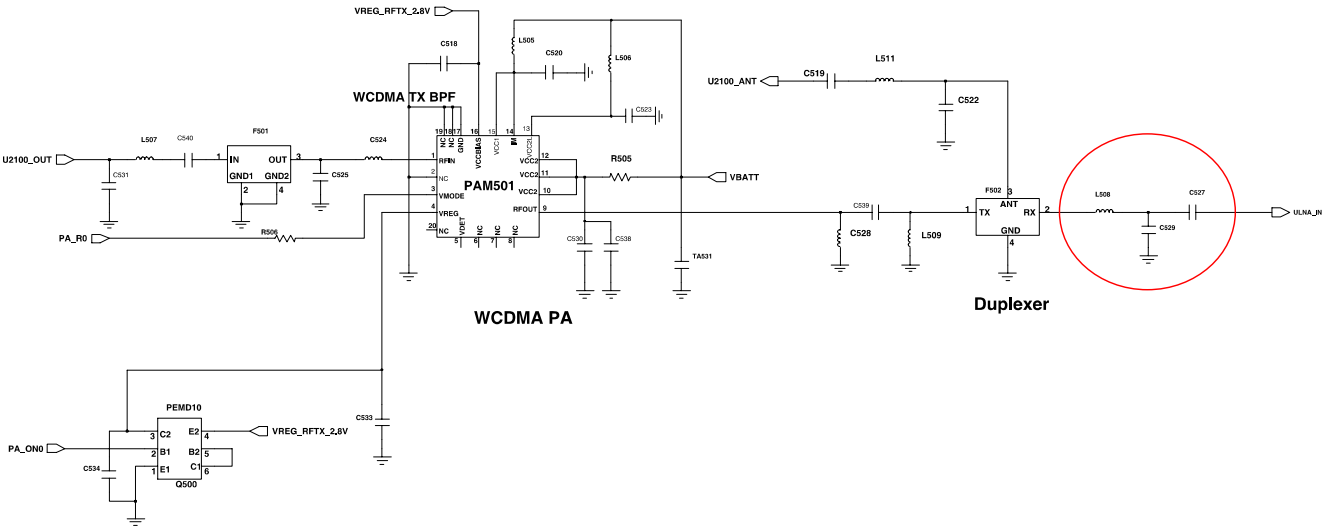

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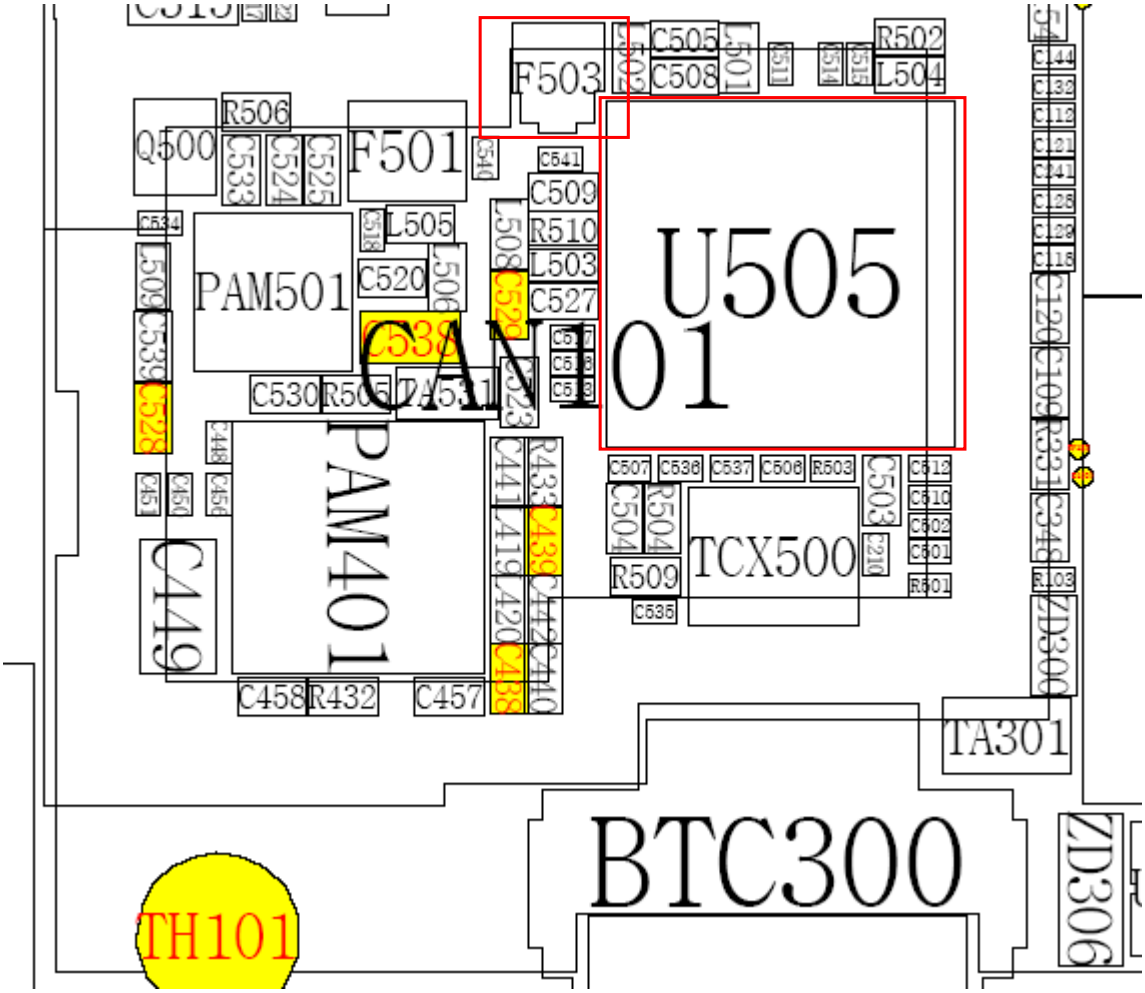

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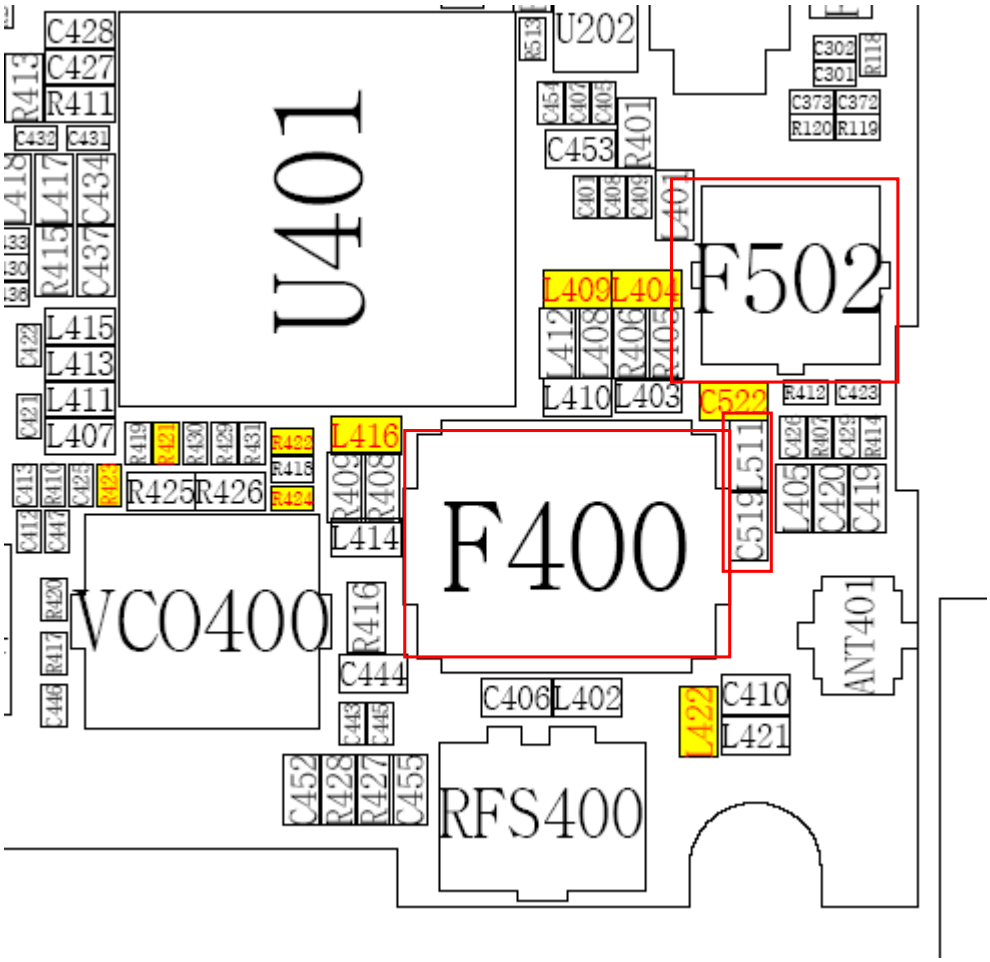

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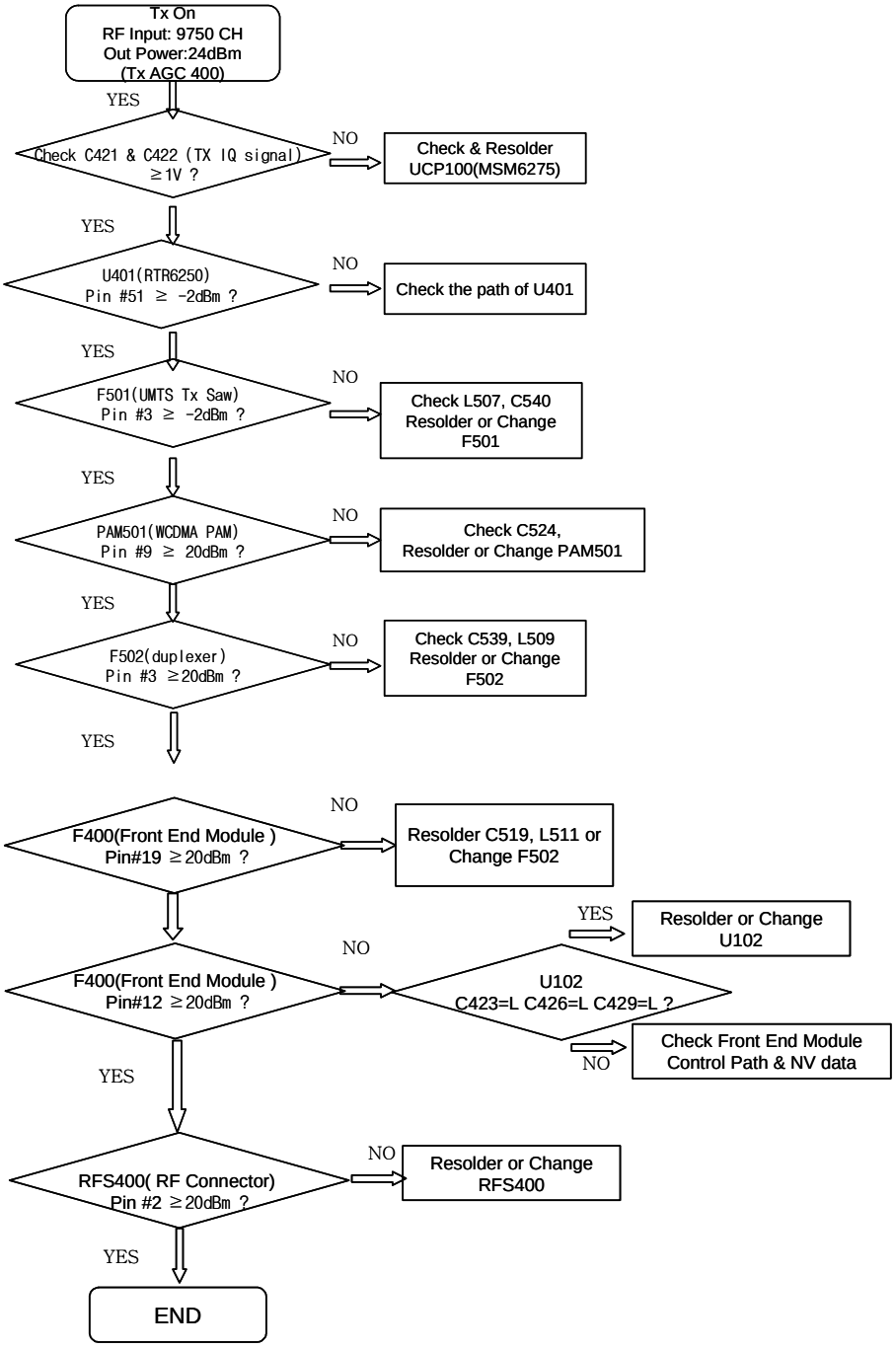

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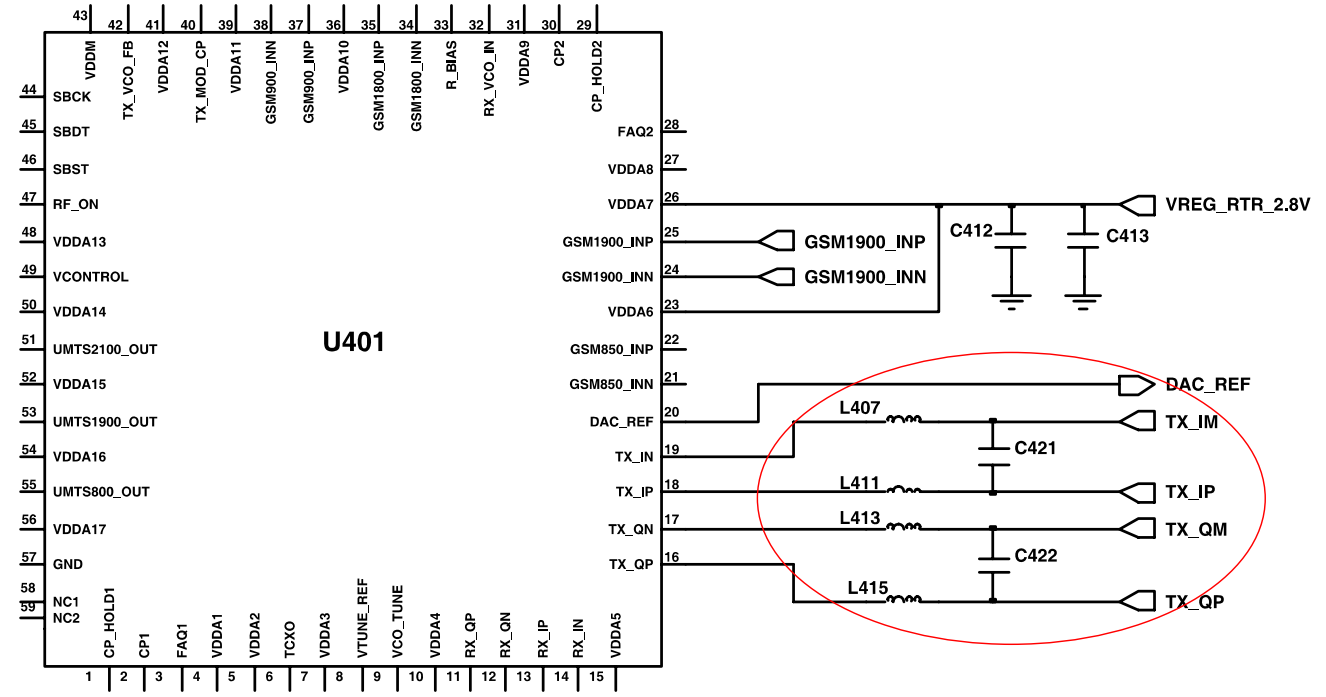

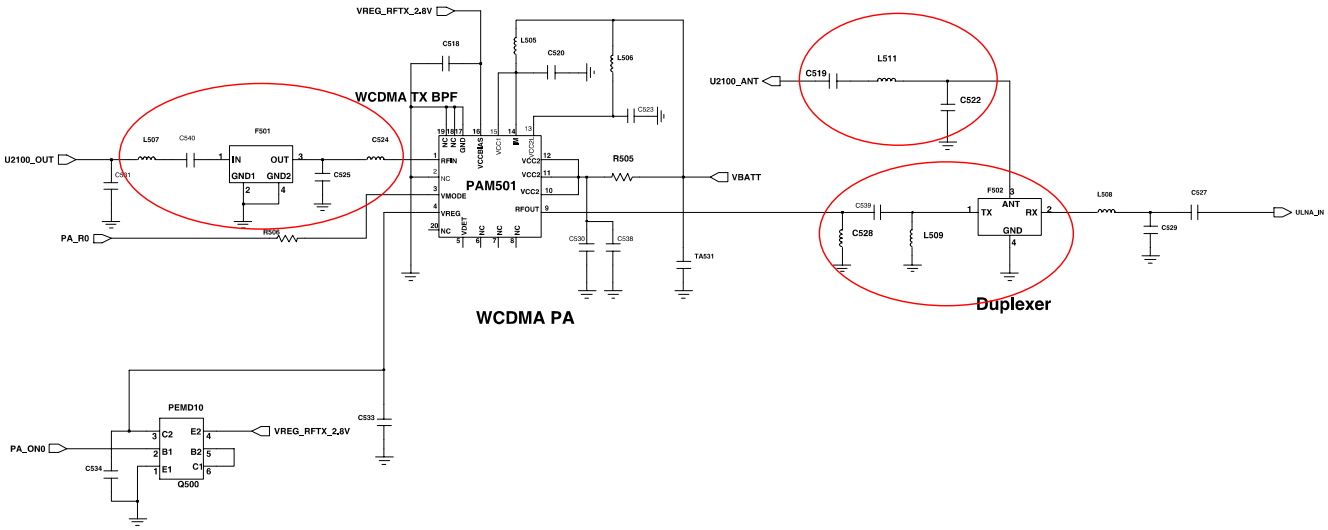

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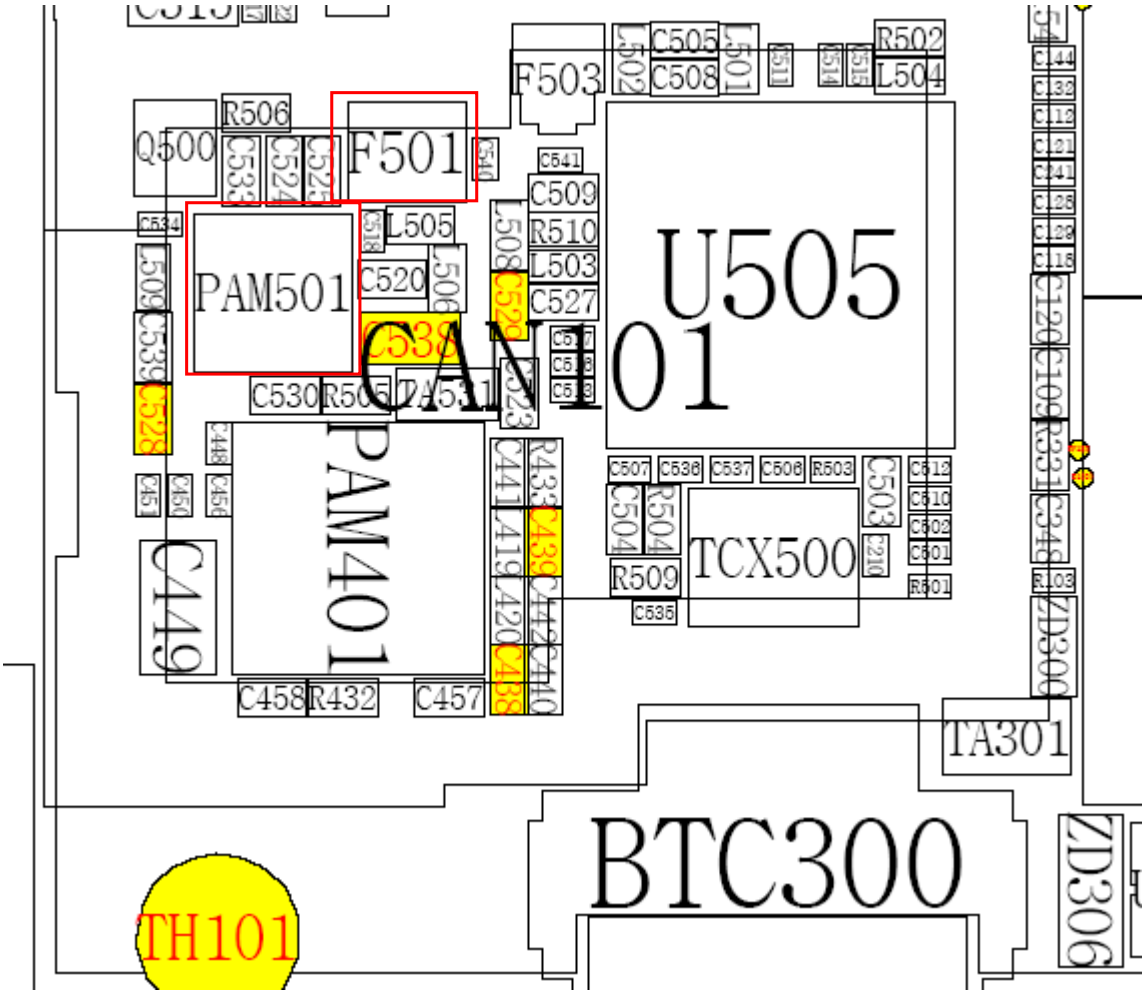

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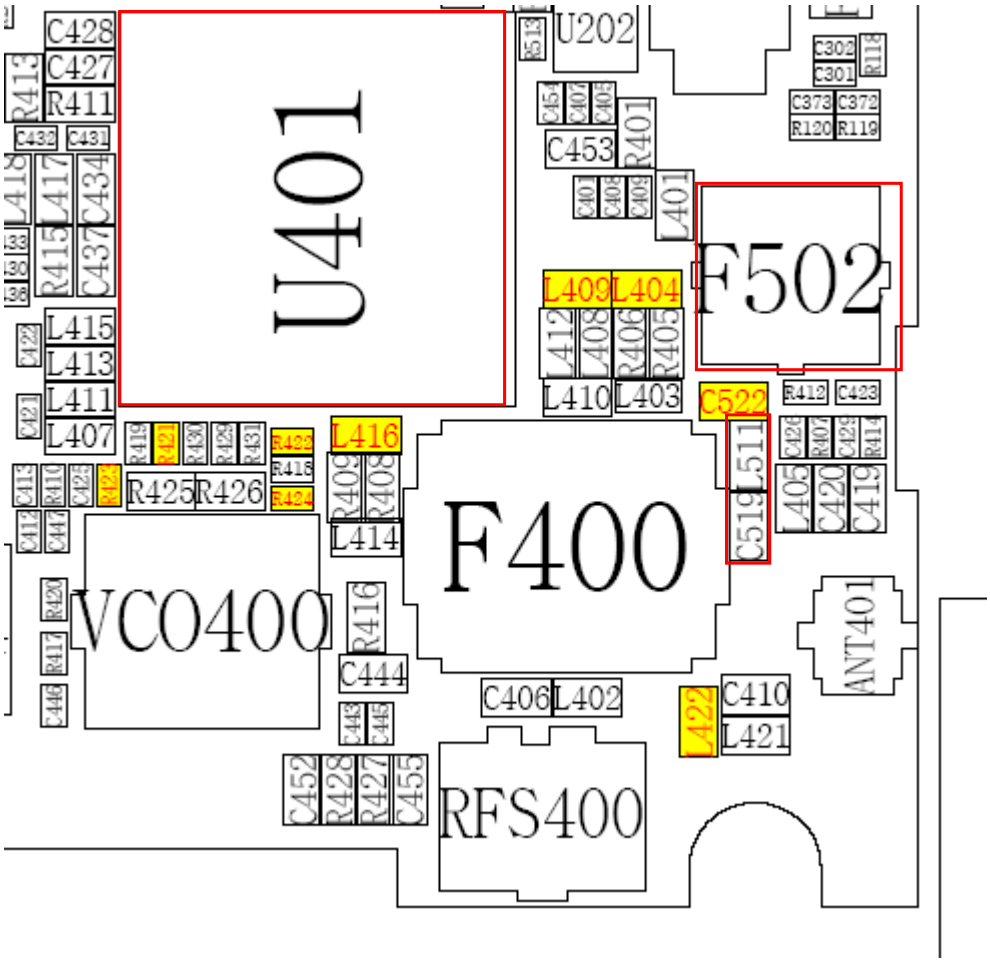

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10. Reference data

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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