

SAMSUNG

CDMA TELEPHONE SPH-A900

SERVICE *Manual*

CDMA TELEPHONE



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BASIC.

1. General Introduction

1-1. General Instruction

The SPH-A900 enables mobile users to communicate 3G CDMA2000 1X service into a single handset.

For CDMA/PCS mode, The SPH-A900 supports Release A of the CDMA2000 1X standard.

The SPH-A900 also features EV-DO high-speed data, Bluetooth as well as a swiveling 1.3 megapixel digital camera.

This stylish clamshell phone supports dual color displays, Bluetooth, MMS, voice dialing, airplane mode and EV-DO services.

2. Circuit Description

2-1. Logic Section

2-1-1. Power Supply

Press "END" key to turn on the phone and then the **V_BAT** and **ON_SW** signals will be connected. This turns on the inner regulators(**V_MSMCORE**, **V_MSMC**, **VPD**, **VPA**) of u200(MAX1526).

The **V_BAT** applied to ON_SW will change ON_SW_SENSE signal from HIGH to LOW.

MSM6500(UCP102) sends out PS_HOLD(logical HIGH) to keep the inner regulators on even after the "END" key is released. **V_RFRX** can be turned on/off by the RX_CTRL signal. **V_TCXO** can be turned on/off by the TCXO_CTRL signal. The other regulators(**VDD2.6**, **V_SYNTH**, **V_RFTX**, **MOTOR_EN**) will be in the ON/OFF state by I²C-compatible 2 wire serial interface.

The regulated Voltage(u200, V_MSMCORE) are used in the core of MSM.

The regulated Voltage(u200, V_MSMC) are used in the digital part of MSM.

The regulated Voltage(u200, VPD) are used in the digital part and memory of MSM.

The regulated Voltage(u200, VPA) is used in the analog part of MSM.

The regulated Voltage(u200, V_RFTX) is used in the Tx RF part.

The regulated Voltage(u200, V_RFRX) is used in the Rx RF part.

The regulated Voltage(u200, V_TCXO) is used in the TCXO.

The regulated Voltage(u200, V_SYNTH) is used in the PLL part.

The regulated Voltage(u200, VDD2.6) is used in the voltage of camera .

The regulated Voltage(u200, MOTOR_EN) is used in the MOTOR.

2-1-2. Inner Charging Circuit Part

The most important function of the charger shall be done in the PMIC(Power Management Circuit u200).

When the phone with a battery is connected with a travel charging adapter, the inner charging circuit of the PMIC(u200) will charge the battery by constant fast charge mode.

When battery reaches regulation voltage of 4.2V (default charging voltage for Li+mode), the charge current drops quickly to 0mA

- Input voltage range : 4.25 6.5V
- Charging Temperature : 0°C 40°C
- Charging Method : Constant Voltage/Current -Charging Current : Normal 550mA
- Charging Time : Standard (800mAh) 2.5 ~ 3 Hrs
- Charging Mode : Charging Completion

- Charging Battery Regulation Voltage

Min 4.158V, Typical 4.2V, Max 4.242V(at T_A : 0°C to +85°C)

Min 4.137V, Typical 4.2V, Max 4.263V(at T_A : -40°C to +85°C)

Universal Serial Bus Interface

SPH-A900 supports a Universal Serial Bus(USB) interface by the MSM6500, to provide an efficient interconnection between the mobile phone and a Personal Computer(PC).

The MSM6500's USB interface is designed to comply with the Universal Serial Bus Specification, Revision 2.0. An external USB transceiver(u200) is required to implement the USB interface.

2-1-3. Logic Part

The logic part consists of MSM, MEMORY,EL Keypad, LCD, CAMERA and other input and output peripherals.

MOBILE SYSTEM MODEM(ucp102:MSM6500)

Industry standard ARM926EJ-S microprocessor is embedded. The MSM6500 chipset integrates CDMA2000 1x and 1xEVDO service. The 1xEVDO solution can support High-speed peak data rates of 2.4Mbps on forward link and 153kbps on reverse link.

The MSM6500 device is offered in a 409 ball, 0.5mm pitch, CSP production package. Subsystems within the MSM6500 device include a CDMA processor, a QDSP for voice compression, an ARM9TDMI microprocessor. Also integrated in the MSM6500 device are analog functions such as an audio voice codec, PLL, transmit DACs, ADCs, memories, USB controller, peripheral interfaces, and an enhanced clock. It is one of the most important components of the CDMA cellular phone.

The interface circuitry consists of reset circuit, dual address/data bus and memory controls. The TCXO clock of 19.2Mhz is used as the main clock of SPH-A900 model.

MCP : NAND FLASH and SDRAM (UME100(KBE00F003A))

MCP is consist of two 512Mbit(64M*8) NAND FLASH and two 256Mbit(4M*16*4Banks) Mobile SDRAM. NAND FLASH is used to store the Font data and program. EFS area is used to store ESN, NAM information, telephone directory, SMS messages and other important information of the phone, and also to store application programs and downloaded stuffs such as BREW applications and MP3. MCP is also used to excute the DMSS(Dual Mode Subscriber system) software.

Using the down-loading program, the program can be changed even after the terminal is fully assembled.

EL Keypad

For key recognition, key matrix is operated by using SCAN(0:6) and KEYSENCE(0:3) of the input ports of MSM. EL(Electro Luminescence) is included in the keypad for easy operation in the dark.

LCD Module

LCD is composed of a Transmissive with Micro Reflective(TMR) type Main TFT-LCD Panel, Transflective type Sub TFT-LCD Panel, a driver circuit and a back-light unit.

The resolution of a 2.22" Main LCD contains 240 * 320 pixels, the resolution of a 1.07" Sub LCD(Transflective) contains 96 * 96 pixels.

Clock

CPU clock : 19.2MHz. Clock signal from the TCXO

Sleep clock : 32.768KHz. Clock signal for sleep.

TCXO/N : 19.2/N MHz. This clock source is used by various blocks of the MSM6500 device, such as the ARM9CORE, UARTs, general-purpose PDMs and TCXO is also used by the MSM6500 device to produce CHIPX8.

USB clock : 48MHz. Clock signal for the USB interface

CAMERA

The camera module consists of 1/4 CIS type 1.3 Mega (1310K) Pixels CMOS sensor. The camera module provides Auto IRIS, and Auto White-Balance functionality.

Bluetooth module

Bluetooth module is a Bluetooth™ 1.1 and 1.2 compliant, stand-alone baseband processor with an integrated 2.4GHz transceiver. Bluetooth module supports any voice and/or data application that requires the Bluetooth SIG standard Host Controller Interface (HCI) via UART and PCM audio interfaces.

Operation Clock: 26MHz

Low-Power Clock: 32.768KHz

2-1-4. RF Interface Part

CDMA Data Interface

- TX_Q_P, TX_Q_N, TX_I_P, TX_I_N (U402) : Tx analog signal used during CDMA
- RX_I_P, RX_Q_P, RX_I_N, RX_Q_N (U301) : RX analog signal used during CDMA

RF Interface

- TX : TX_AGC_ADJ(ucp102) is used to control the TX power,
PA_ON_PCS(ucp102) is used to control the PCS power amplifier and
PA_ON_CELL(ucp102) is used to control the CDMA power amplifier.
- RX : TRK_LO_ADJ(ucp102) is used to adjust the TCXO module.

2-1-5. Audio Part

The MSM6500 device integrates a stereo wideband voice/audio CODEC into the Mobile Station Modem. The integrated CODEC contains all of the required conversion and amplification stages for the audio front end.

The CODEC operates as a 13bit linear CODEC with the transmit(TX) and receive(RX) filters designed to meet ITU-T G.712 requirements. The CODEC contains the software controlled amplifier for both the receiving and transmitting sections. Also, the vocoding schemes used will be 13kbps QCELP and 8Kbps EVRC. The QCELP vocoder is based in the MSM internally.

2-1-6. Tx Audio Path

The voice signal from the microphone is filtered and amplified by the internal OP-AMP and is converted to PCM data by the internal CODEC in the MSM. And then these signals are applied to the the MSM(ucp102)'s internal vocoder.

2-1-7. Rx Audio Path

The PCM data from the MSM(ucp102) is inputted to the internal CODEC and the data will be decoded by the internal DAC. Audio levels are adjusted by the amplifier. And then audio is sent to the receiver.

2-1-8. Speaker Path

When the MSM(ucp102) receives the data, its internal CMX generates bell and melody. The CMX bell and melody generated in MSM6500 are sent to SAPA1D2.

The SAPA1D2 (stereo class - D audio power amplifier) is a high quality audio power conversion chip generating 2.5W RMS output directly from the V_BAT supply. It is a high efficiency audio amplifier for mobile applications. The gain of amplifier in SPH-A900 set to 4(V/V) . The output generated in SAPA1D2 is intended to drive two speakers.

2-1-9. Key Tone Generator

The CODEC data out from the MSM6500 is converted to DTMF signal by TONE generator of internal CODEC, which is then amplified by the internal audio amplifier to be sent to the speaker units.

2-2. PCS Section

2-2-1. Receiver

LOW NOISE AMPLIFIER (U300)

The low noise amplifier(It is included in RFL6000 : U300) amplifies a weak signal received from the base station to obtain the optimum signal level.

RF BAND PASS FILTER (F300)

The RF BPF(F300) passes only a specific frequency(1960 ± 30 MHz) from the signal received from the mobile station. The bandwidth is 60 MHz.

VOLTAGE CONTROLLED OSCILLATOR(VCO300)

The VCO(VCO300) generates the signal having 1715 ~ 1788MHz frequency range.

The VCO's output frequency is changed by control voltage. The PLL in S1M8690X generates this control signal and this signal is changed into DC control voltage by R-C Loop filter.

Frequency Synthesizer Circuit

The PLL(Phased Locked Loop) block consists of VC-TCXO(TCK301), PLL in S1M8690X and VCO(VCO300). Input reference frequency is generated at VC-TCXO(TCK301) and the RF local signal is generated at VCO. PLL compares the two signals and generates the desired signal with a preprogrammed counter which controls voltage.

VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR (TCK301)

The VC-TCXO (TCK301) is a reference source of the frequency synthesizer. It provides 19.2MHz reference frequency to PLL-IC. It is a voltage controlled temperature compensated crystal oscillator having 19.2MHz ± 2.5 ppm frequency stability over all useful temperature range. A correct frequency tuning is made by the control voltage.

2-2-2. Transmitter

Intenna

Intenna sends signal to the base station and receives the signal from the base station. It is a tri-band Intenna and covers PCS band, CDMA band and GPS band.

RF Switch

It(U401:TQP4M3018) is used to switch the PCS path and CDMA path and the GPS path. The RF signal passes through PCS path when PCS_MODE is high(2.6V). The RF signal passes through CDMA path when CELL_MODE is high(2.6V). The RF signal passes through GPS path when GPS_MODE is high(2.6V). PCS_MODE, CELL_MODE and GPS_MODE are digital signals from MSM6500 GPIO.

Duplexer

Duplexer(DUF400) allows to transmit only the signals within acceptable Tx frequency range (1880 \pm 30 MHz) through the Intenna.

It provides the appropriate attenuation of transmitted signal at the receiver input and the appropriate rejection of the transmit-generated noise in the Receiver band.

Power Amp

Power amplifier module(PAM400:WS1413) amplifiers signal to be sent to the base station through the antenna.

Driver Amp

The driver amp(U402 ; included in S1M8690X) allows the signal to be inputted to the power amp(PAM400) as a specified level.

Up-converter(Mixer)

The up-converter(U402 ; also included in S1M8690X) receives the local signal $F_{Tx} * 0.7999$ and signal controlled by TX AGC amp(in S1M8690X) to generate Tx RF signal 1880±30MHz which signal comes out from the mixer output by adding $F_{Tx} * 0.7999$ local signal.

F_{Tx} means TX RF signal Frequency.

Automatic Gain Control Amp

The TX IF AGC amp (in S1M8690X) controls gain of AGC to deliver power level needed at driver amp. Its control voltage varies from 0.2V to 2.5V.

2-3. CDMA Section

2-3-1. Receiver

Low Noise Amplifier(LNA)

The low noise amplifier(It is included RFL6000 : U300) amplifies a weak signal received from the base station to obtain the optimum signal level.

RF Band Pass Filter(Rx RF SAW Filter)

The RF BPF in F300 passes only a specific frequency(881.49±12.5 MHz) from the signal received from the mobile station. The bandwidth is 25 MHz.

Voltage Controlled Oscillator

The VCO(VCO300) generates the signal having 1715 ~ 1788MHz frequency range.

The VCO's output frequency is changed by control voltage. The PLL in S1M8690X generates this control signal and this signal is changed into DC control voltage by R-C Loop filter.

Frequency Synthesizer Circuit

The PLL(Phased Locked Loop) block consists of VC-TCXO(TCK301), PLL in S1M8690X and VCO(VCO300). Input reference frequency is generated at VC-TCXO(TCK301) and the RF local signal is generated at VCO. PLL compares the two signals and generates the desired signal with a preprogrammed counter which controls voltage.

VC-TCXO

The VC-TCXO (TCK301) is a reference source of the frequency synthesizer. It provides 19.2MHz reference frequency to PLL-IC. It is a voltage controlled temperature compensated crystal oscillator having 19.2MHz ± 2.5 ppm frequency stability over all useful temperature range. A correct frequency tuning is made by the control voltage.

2-3-2. Transmitter

Intenna

Intenna sends signal to the base station and receives the signal from the base station. It is a tri-band Intenna and covers PCS band, CDMA band and GPS band.

RF Switch

It(U401:TQP4M3018) is used to switch the PCS path and CDMA path and the GPS path. The RF signal passes through PCS path when PCS_MODE is high(2.6V). The RF signal passes through CDMA path when CELL_MODE is high(2.6V). The RF signal passes through GPS path when GPS_MODE is high(2.6V). PCS_MODE, CELL_MODE and GPS_MODE are digital signals from MSM6500 GPIO.

Duplexer

Duplexer(DUF402) passes the RF signal of Rx frequency range(881.49 ± 12.5 MHz) and Tx frequency range

(836.49 ± 12.5 MHz). It provides appropriate attenuation of transmitted signal at the receiver input and appropriate rejection of the transmit-generated noise in the Receiver band.

It also matches LNA input in receiving part and PAM(PAM400:WS1102) output in transmitting part with the Intenna.

Power Amp

Power amplifier module(PAM400:WS1102 amplifiers signal to be sent to the base station through the antenna.

RF Band Pass Filter(Tx RF SAW Filter)

The RF BPF(F403) passes only specific frequency($836.49 \pm 12.5\text{MHz}$) to send it to power amp(PAM400:WS1102).

Driver Amp

The driver amp(U402 ; It is included in S1M8690X) allows the signal to be inputted to the power amp(PAM400) as a specified level.

Up-Converter(Mixer)

The up-converter(U402 ; It is also included in S1M8690X) receives the local signal $F_{\text{Tx}} * 1.6666$ and the signal controlled by TX AGC amp(in S1M8690X) to generate Tx RF signal $836.49 \pm 12.5\text{MHz}$ signal comes out from the mixer output by adding $F_{\text{Tx}} * 1.6666$ local signal. F_{Tx} means TX RF signal Frequency.

Automatic Gain Control Amp

The TX IF AGC amp in S1M8690X controls gain of AGC to deliver power level to be needed at Driver amp. Its control voltage varies from 0.2V to 2.5V.

2-4. GPS Section

Intenna

Intenna receives a signal from GPS satellites.

It is a tri-band Intenna and covers PCS band, CDMA band and GPS band.

RF Switch

It(U401:TQP4M3018) is used to switch the PCS path and CDMA path and the GPS path. The RF signal passes through PCS path when PCS_MODE is high(2.6V). The RF signal passes through CDMA path when CELL_MODE is high(2.6V). The RF signal passes through GPS path when GPS_MODE is high(2.6V). PCS_MODE, CELL_MODE and GPS_MODE are digital signals from MSM6500 GPIO.

Low Noise Amplifier Module(LNA)

The low noise amplifier(U302:ALM1106) amplifies a weak signal received from artificial satellite to obtain the optimum signal level.

RF Band Pass Filter(Rx RF SAW Filter)

The RF BPF(U404:B9000) passes only a specific frequency(1575.42 ± 1 MHz) from the signal received from the satellite. The bandwidth is 2 MHz.

3. Installation

3-1 Installing and Removing the Battery

To install, open the battery cover and insert the battery into the phone. Put on the battery cover. Make sure the cover on the back are inserted into the matching slots in the phone. Press down until the latches snap into place.

To remove, make sure the power is off. Push the battery cover latch release up completely. Pull and lift the battery away from the phone.

Specifications using TA (Travel Adapter)

Battery Type	Standard Battery (Li-ion, 800mAh)
Charging	< 3 hours
SEC Code	GH43-02101A

4. NAM Programming

NAM program can be changed as following table:

Notes:

- In the NAM program mode, each item show you the currently stored data. you can modify the data by entering a new data.
- You can move to next window by pressing "OK" key.
- When you press a wrong number, press "**BACK**" key to delete the last number or press and hold "**BACK**" key to delete all number
- You can move to menu screen by pressing "MENU" key.
- You can change some selection option keys by pressing "Left" or "Right" navigation.

4-1. Single NAM

4-1-1. General Setup

LCD Display	Key in	Funtion
Enter ##MSL#	##222222#	Enter the NAM Mode. Enter random 6-digit code (MSL) and 222222 is a default value.
SVC Menu 1: View 2: Edit 3: Done	1	View Phone Number and MSID
Phone Number 1234567890	Right key or Down key	Phone number is displayed
MSID 1234567890	MENU or BACK	Mobile ID is displayed
SVC Menu 1: View 2: Edit 3: Done	2	Choose 'Edit' to change Phone Number and MSID
Phone Number 1234567890	OK	- Phone number setup - To change phone number, enter phone # - Store it
MSID 1234567890	OK	- Mobile ID setup - To change phone number, enter phone # - Store it
SVC Menu 1: View 2: Edit 3: Done	3	Choose 'Done' to exit the NAM mode

4-1-2. NAM Mode Display

LCD Display	Key in	Funtion
	#,#,3,2,8,2,#	Enter the Data Program screen
3G Data Prog 1: User Name 2: Browser 3: IOTA Prog. 4: Camera URL 5: Advanced 6: Multimedia 7: Restore	5	Display the 3G Data program.
Enter Service Code ??????	222222	Enter random 6-digit code (MSL) - 222222 is a default value
Advanced 1: View 2: Edit	1	Choose "VIEW" to dispaly the Advanced NAM Information
ESN B0000000	Right key or Down key	Electronic Serial Number of the phone is displayed
CERT	Right key or Down key	Java security - Dormant Certificate Wakeup(On), and Sleep(off) status is displayed
P_REV 6	Right key or Down key	Common Air Interface version is displayed
VOCODER SVCOPT EVRC	Right key or Down key	13K or EVRC
SCM 01101010	Right key or Down key	Station Class Mark displays the power class, transmission, slotted class, dual mode.
Lock Code 0016	Right key or Down key	Lock code, current status is displayed
Slot Mode YES	Right key or Down key	Slot mode. 'Yes' indicates the slot mode.
Slot Index 2	Right key or Down key	Slot mode index. The high number means longer sleeping time
HOME SID 4139	Right key or Down key	SID written in the list,current status is displayed.
HOME NID 65535	Right key or Down key	NID written in the list,current status is displayed.
MCC 310	Right key or Down key	Imsl Mobile Country Code, current code is displayed.
MNC 00	Right key or Down key	Imsl Mobile Network Code, current code is displayed.
ACCOLC 6	Right key or Down key	CDMA Access Overload Class, current status is displayed

NAM CDMA Home Sys Reg Yes	Right key or Down key	CDMA Home system ID, current status is displayed
NAM CDMA FSID Reg Yes	Right key or Down key	CDMA foreign SID, current status is displayed.
NAM CDMA FNID Reg Yes	MENU or BACK	CDMA foreign NID,current status is displayed.

4-1-3. NAM Mode Setup

LCD Display	Key in	Funtion
	#,#,3,2,8,2,#	Enter the Data Program screen ('##DATA')
3G Data Prog 1: User Name 2: Browser 3: IOTA Prog. 4: Camera URL 5: Advanced 6: Multimedia 7: Restore	5	Display the 3G dara program.
Enter Service Code ??????	222222	Enter random 6-digit code (MSL) - 222222 is a default value
Advanced 1: View 2: Edit	2	Choose "EDIT" to change the Advanced NAM information
ESN B0000000	Right key or Down key	Electronic Serial Number of the phone is displayed
CERT	Right key or Down key	Java security - Dormant Certificate Wakeup(On), and Sleep(off)
P_REV 6	Right key or Down key	Common Air Interface version is displayed
VOCODER SVC OPT EVRC	Right key or Down key	Origination Service Option is displayed - Change Service Option - Store it
SCM 01101010	Right key or Down key	Station Class Mark displays the power class, transmission, slotted class, dual mode.
Lock Code 0016	4-digit Code OK	Lock code, current status is displayed - To change Lock Code, enter a new code - Store it
Slot Mode YES	Left or Right key OK	Slot mode. 'Yes' indicates the slot mode. - Change status - Store it

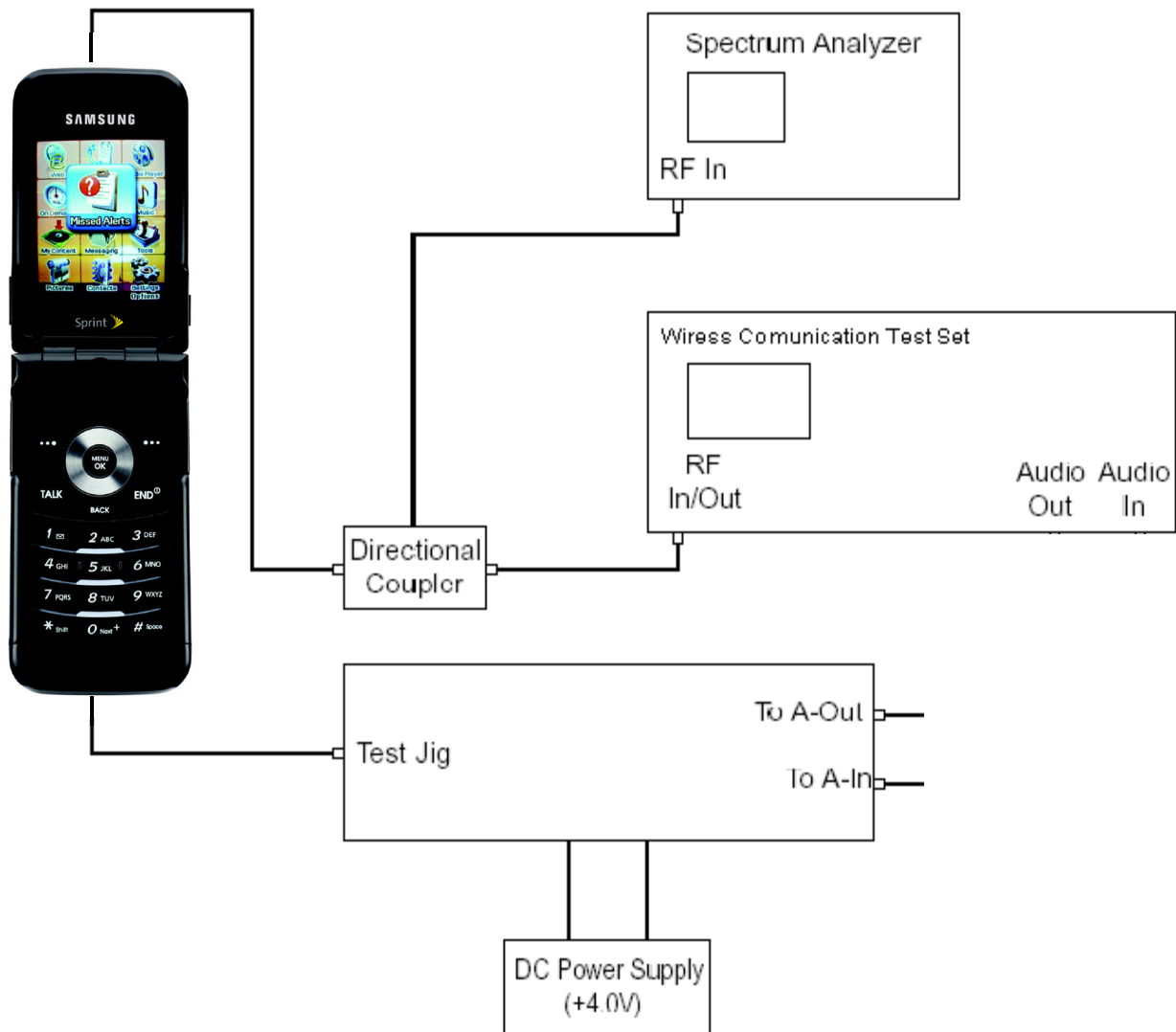
Slot Index 2	0 ~ 7 OK	Slot mode index. The high number means longer sleeping time - To change Slot Index, enter new one - Store it
HOME SID 4139	number OK	SID written in the list,current status is displayed. - Enter new one to change code - Store it
HOME NID 65535	number OK	NID written in the list,current status is displayed. - Enter new one to change code - Store it
MCC 310	number OK	Imsl Mobile Country Code, current code is displayed. - Enter new one to change code - Store it
MNC 00	number OK	Imsl Mobile Network Code, current code is displayed. - Enter new one to change code - Store it
ACCOLC 6	class number OK	CDMA Access Overload Class, current status is displayed - Enter new one to change code - Store it
NAM CDMA Home Sys Reg Yes	Left or Right key OK	CDMA Home system ID, current status is displayed - Change status - Store it
NAM CDMA FSID Reg Yes	Left or Right key OK	CDMA foreign SID, current status is displayed. - Change status - Store it
NAM CDMA FNID Reg Yes	Left or Right key OK	CDMA foreign NID,current status is displayed. - Change status - Store it

6. Test Procedure

6-1 List of Equipment

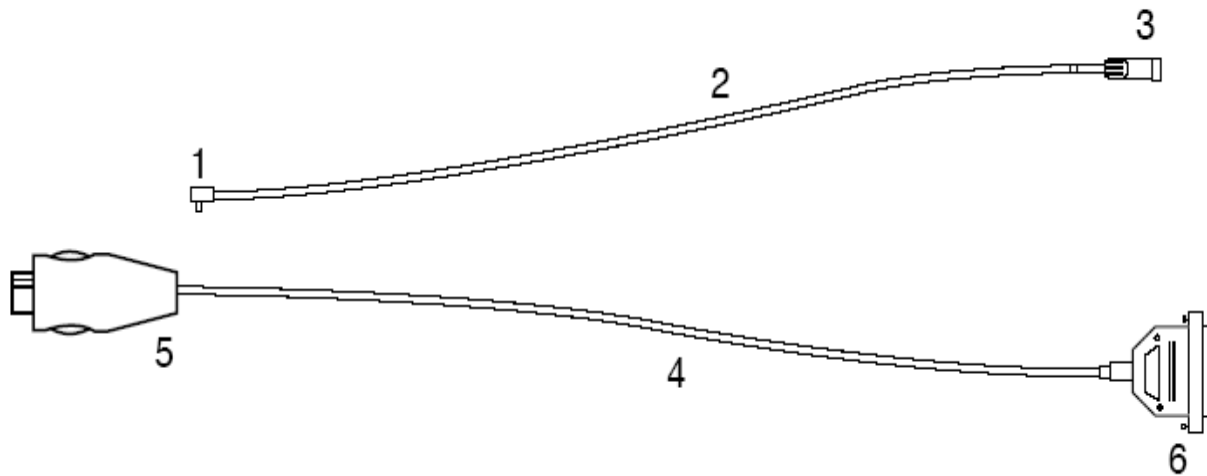
- DC Power Supply
- Test Jig
- Test Cable
- CDMA Mobile Station Test Set HP8285A, HP8960, CMD-80, etc
- Spectrum Analyzer(include CDMA Test Mode) HP8596E,

6-2 Configuration of Test



6-3 TEST CABLE CONNECTIONS

6-3-1 TEST CABLE

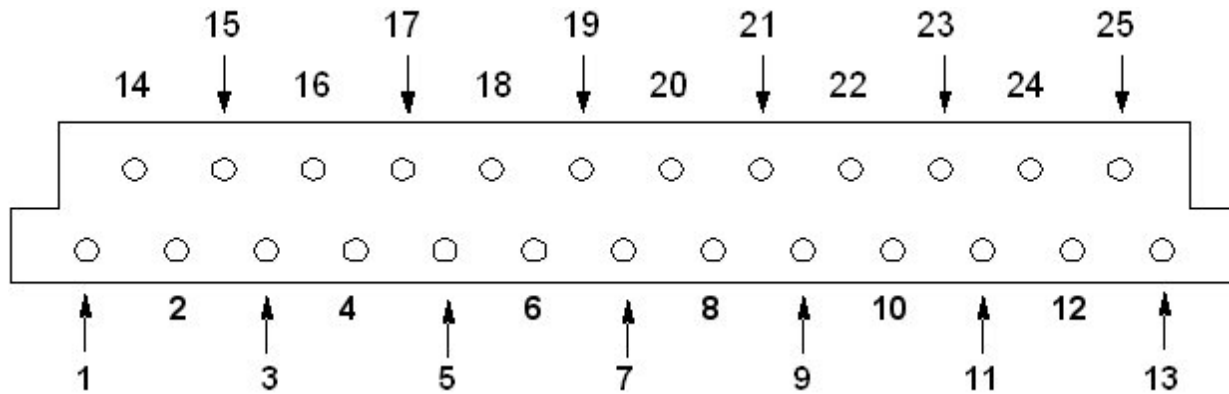


6-3-2 TEST CABLE CONNECTIONS

1	MHC 172
2	RF CABLE (1.4dB Loss for CDMA, 2.1dB Loss for PCS, 1.8dB Loss for GPS)
3	BNC CONNECTOR (RF)
4	DATA CABLE
5	Plug Connect to SPH-A900
6	Dsub 25PIN CONNECTOR (DATA)

6-3-3 Dsub 25 PIN CONNECTOR PIN DESCRIPTION (TEST CABLE 1, BACK SIDE)

DATA DESCRIPTION	Dsub CONN. PIN NO.	DATA DESCRIPTION	Dsub CONN. PIN NO.
GND	13	GND	24,25 (SHORT)
VBATT	4	VBATT	5,6 (SHORT)
HP_PWR	7	DP_RX_DATA	21
RX_AUDIO	12	DP_TX_DATA	22
TX_AUDIO	10		



6-3-4 CONVERSION TABLE OF FREQUENCY vs CHANNEL

- CDMA/PCS

T Y P E	C H A N N E L	C O N V E R S I O N E Q U A T I O N	R E M A R K
TX FREQUENCY	$990 \leq N \leq 1023$ $1 \leq N \leq 779$	$F = 0.03 \times (N - 1023) + 825.00$ $F = 0.03 \times N + 825.00$	N ; CH NUMBER F ; FREQUENCY (CDMA)
RX FREQUENCY	$990 \leq N \leq 1023$ $1 \leq N \leq 779$	$F = 0.03 \times (N - 1023) + 875.00$ $F = 0.03 \times N + 875.00$	
TX FREQUENCY	$0 \leq N \leq 1199$	$F = 0.05 \times N + 1850.00$	N ; CH NUMBER F ; FREQUENCY (PCS)
RX FREQUENCY	$0 \leq N \leq 1199$	$F = 0.05 \times N + 1930.00$	

6-4 Test Procedure

6-4-1 CDMA/PCS mode

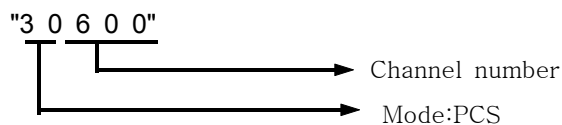
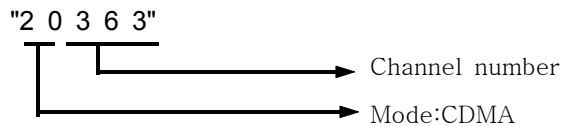
- Change the test mode

A. To change the phone's state from Normal Mode to Test Mode, You should enter the following keys.

: Press [4 7 * 8 6 9 # 1 2 3 5]

B. The command "0 0 1" is Suspend.

C. The command "0 2 2" is mode and channel change.



and press enter key from the soft key board to save mode/channel value..

D. The command "0 0 1" is Suspend.

E. To finish the Test Mode, You should enter the command "0 0 2".

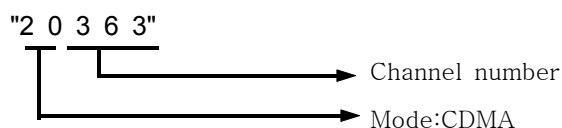
- Channel selection and Tx power output level control

CDMA

A. Enter to Test Mode [4 7 * 8 6 9 # 1 2 3 5]

B. "0 0 1" : Suspend.

C. The command "0 2 2" is mode and channel change



Push the [OK] key to save.

Test Procedure

D. To finish the Test Mode, You should enter the command "0 0 2".

E. Enter to Test Mode [4 7 * 8 6 9 # 1 2 3 5]

F. "0 0 1" : Suspend.

G. "0 1 1" : Carrier_On.

H. "0 1 4" : CDATA.

I. "0 1 0" : PA_R1(0:LOW GAIN MODE, 1:HIGH GAIN MODE)

J. "0 1 9" : Adjust RF power level.

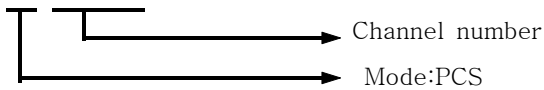
PCS

A. Enter to Test Mode [4 7 * 8 6 9 # 1 2 3 5]

B. "0 0 1" : Suspend.

C. The command "022" is mode and channel change

"3 0 6 0 0"



Push the [enter] key to save.

D. To finish the Test Mode, You should enter the command "0 0 2".

E. Enter to Test Mode [4 7 * 8 6 9 # 1 2 3 5]

F. "0 0 1" : Suspend.

G. "0 1 1" : Carrier_On.

H. "0 1 4" : CDATA.

I. "0 1 0" : PA_R1(0:LOW GAIN MODE, 1:HIGH GAIN MODE)

J. "0 1 9" : Adjust RF power level.

- CDMA Test items

TEST ITEMS	PROCEDURE
1. PREPARANCE	<p>Set test equipments up.</p> <p>[4 7 * 8 6 9 # 1 2 3 5] : Enter the Test Mode "0 0 1" : Suspend Confirm that the phone is in the "CDMA Mode". (If not CDMA Mode, Use Test Command "022""2XXXX" and Push the "↵" Key to "OK", and enter "0 0 2" to restart)</p> <p>If you select a wrong key, press " # ", then enter new command. To exit the Test Mode at any time, just press [0 0 2].</p>
2. FREQUENCY ACCURACY	<p>"0 0 1" : Suspend. "0 1 3 0 3 6 3 * " : Set channel to 363. "0 1 1" : Carrier On. "0 1 9 X X X ' END[Push and Hold] ' " : Set AGC Code(XXX) level. Measure the TX frequency : 835.89MHz±300Hz.</p>
3. OCCUPIED CDMA BANDWIDTH	<p>"0 0 1" : Suspend. "0 1 3 0 3 6 3 * " : Set channel to 363. "0 1 1" : Carrier On. "0 1 4" : Spread spectrum. "0 1 9 X X X ' END[Push and Hold] ' " : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec: 1.23MHz).</p>
4. LIMITATIONS ON EMISSIONS	<p>"0 0 1" : Suspend. "0 1 3 0 3 6 3 * " : Set channel to 363. "0 1 1" : Carrier On. "0 1 4" : Spread spectrum. "0 1 0 Select 1 * " :Set PA_R1 to High Gain Mode "0 1 9 X X X ' END[Push and Hold] ' " : Enter AGC Code(XXX) to adjust RF Output Power. Measure the spurious at $F_c \pm 900\text{kHz}$, $F_c \pm 1.98\text{MHz}$, $2F_c$, $3F_c$, $1/2F_c$. spec: $F_c \pm 900\text{kHz}$ below 42dBc/30kHz $F_c \pm 1.98\text{MHz}$ below 54dBc/30kHz Outside Receive Band $43+10\log$ (PY) PY: Mean Output Power in watts</p>
5. GATED POWER & TIME	<p>Set the service option 2. Set the data rate Eighth (1200bps). Registering: HHP → HP8924C. Call : HP8924C → HHP. Measure the Gated Power & Time. spec : Gated Power - at least 20dB Gated Time - Rising Time : below 6μs Falling Time : below 6μs Burst Time : below 1.25ms</p>

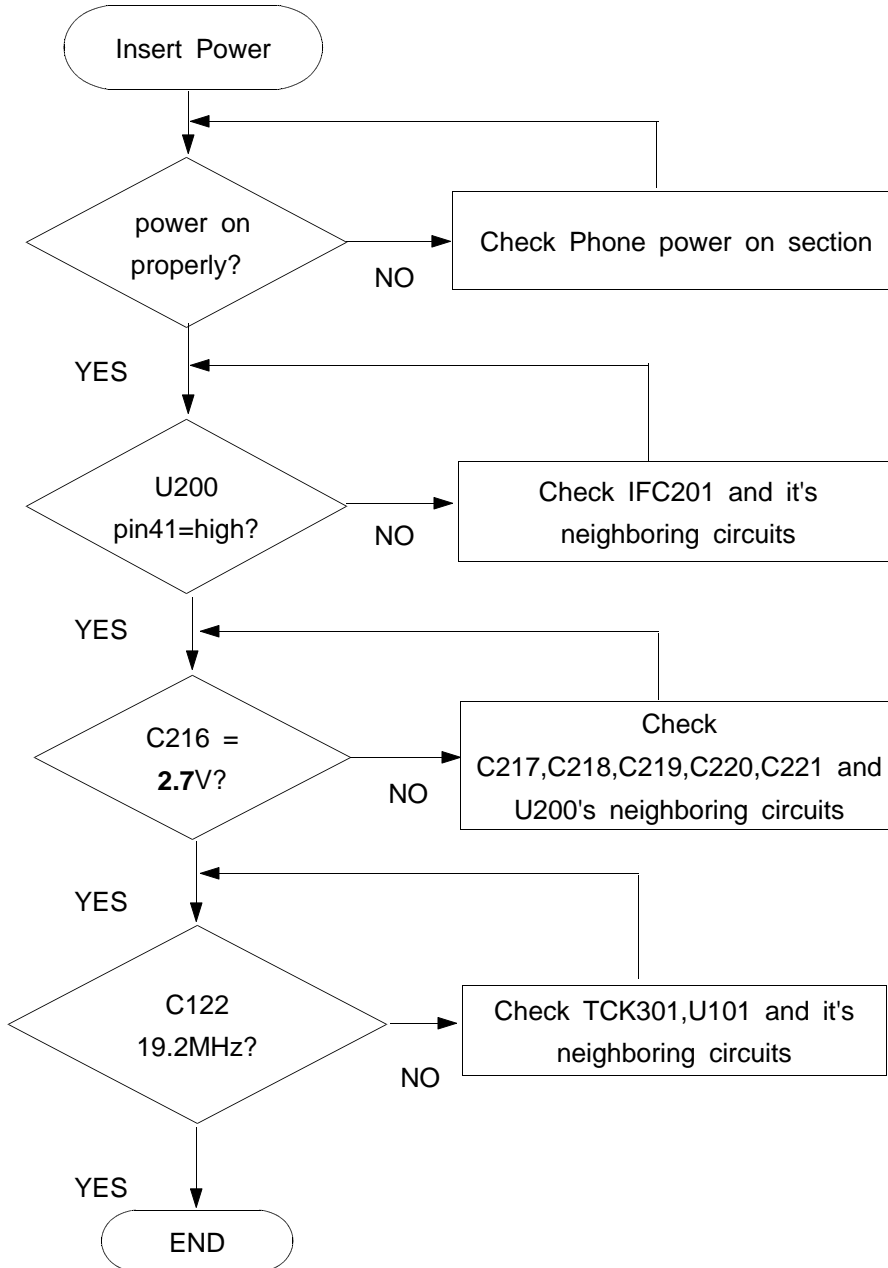
- PCS Test items

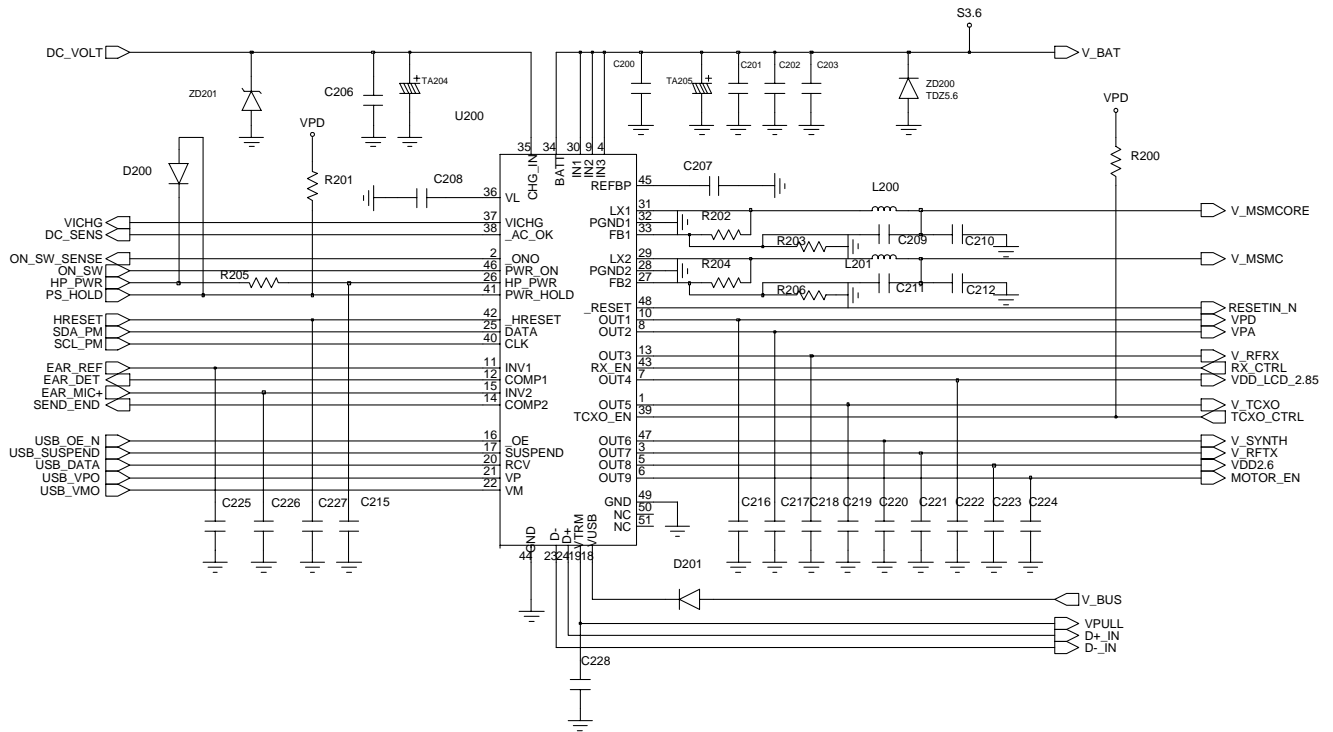
TEST ITEMS	PROCEDURE
1. PREPARANCE	<p>Set test equipments up.</p> <p>[4 7 * 8 6 9 # 1 2 3 5] : Enter the Test Mode</p> <p>"0 0 1" : Suspend</p> <p>Confirm that the phone is in the "PCS Mode". (If not PCS Mode, Use Test Command "022""3XXXX" and Push the [OK] Key, and enter "0 0 2" to restart)</p> <p>If you select a wrong key, press " # ", then enter new command. To exit the Test Mode at any time, just press [0 0 2].</p>
2. FREQUENCY ACCURACY	<p>"0 0 1" : Suspend.</p> <p>"0 1 3 0 6 0 0 * " : Set channel to 600.</p> <p>"0 1 1" : Carrier On.</p> <p>"0 1 9 X X X ' END[Push and Hold] ' " : Set AGC Code(XXX) level. Measure the TX frequency : 1880.00MHz±300Hz.</p>
3. OCCUPIED CDMA BANDWIDTH	<p>"0 0 1" : Suspend.</p> <p>"0 1 3 0 6 0 0 * " : Set channel to 600.</p> <p>"0 1 1" : Carrier On.</p> <p>"0 1 4" : Spread spectrum.</p> <p>"0 1 9 X X X ' END[Push and Hold] ' " : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec: 1.23MHz).</p>
4. LIMITATIONS ON EMISSIONS	<p>"0 0 1" : Suspend.</p> <p>"0 1 3 0 6 0 0 * " : Set channel to 600.</p> <p>"0 1 1" : Carrier On.</p> <p>"0 1 4" : Spread spectrum.</p> <p>"0 1 0 Select 1 * " :Set PA_R1 to High Gain Mode</p> <p>"0 1 9 X X X ' END[Push and Hold] ' " : Enter AGC Code(XXX) to adjust RF Output Power. Measure the spurious at $F_c \pm 1.25\text{MHz}$ spec: $F_c \pm 1.25\text{MHz}$ below 42dBc/30kHz</p>
5. GATED POWER & TIME	<p>Set the service option 2.</p> <p>Set the data rate Eighth (1200bps).</p> <p>Registering: HHP → HP8924C.</p> <p>Call : HP8924C → HHP.</p> <p>Measure the Gated Power & Time.</p> <p>spec : Gated Power - at least 20dB</p> <p>Gated Time - Rising Time : below 6μs Falling Time : below 6μs Burst Time : below 1.247ms</p>

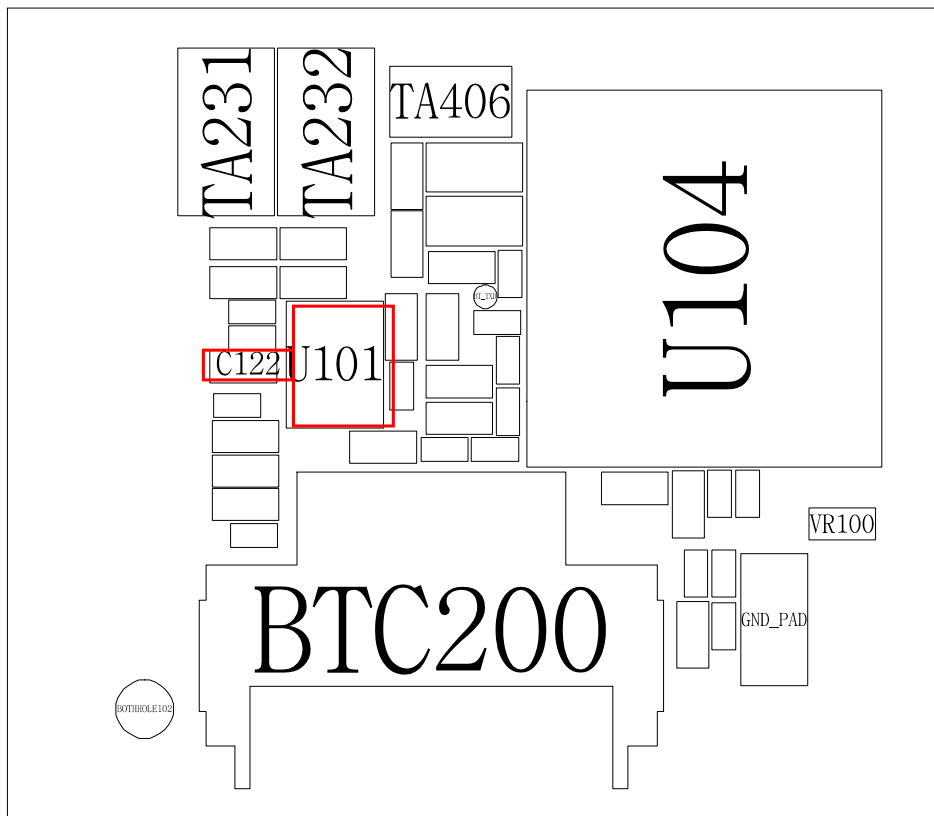
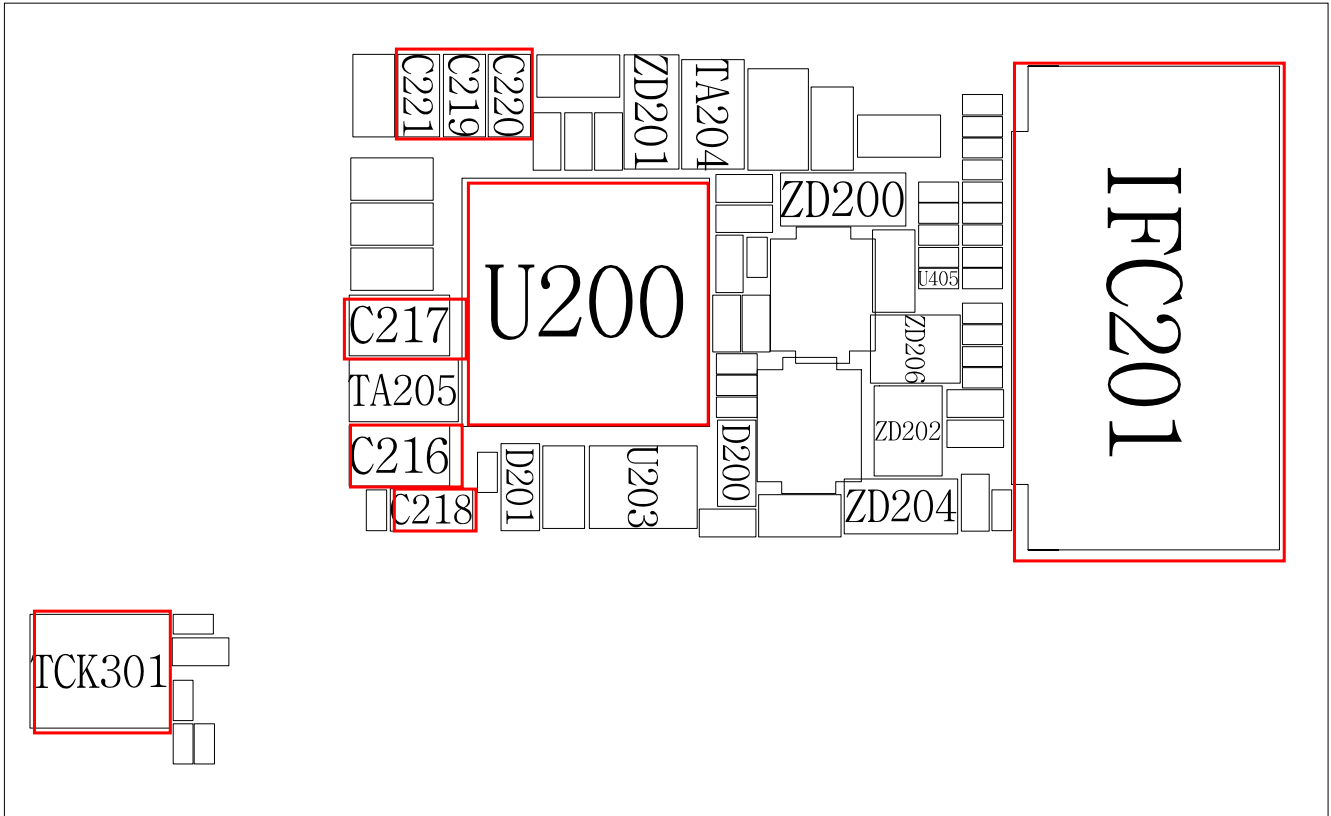
7. Flow Chart of TroubleShooting

7-1 Logic Section

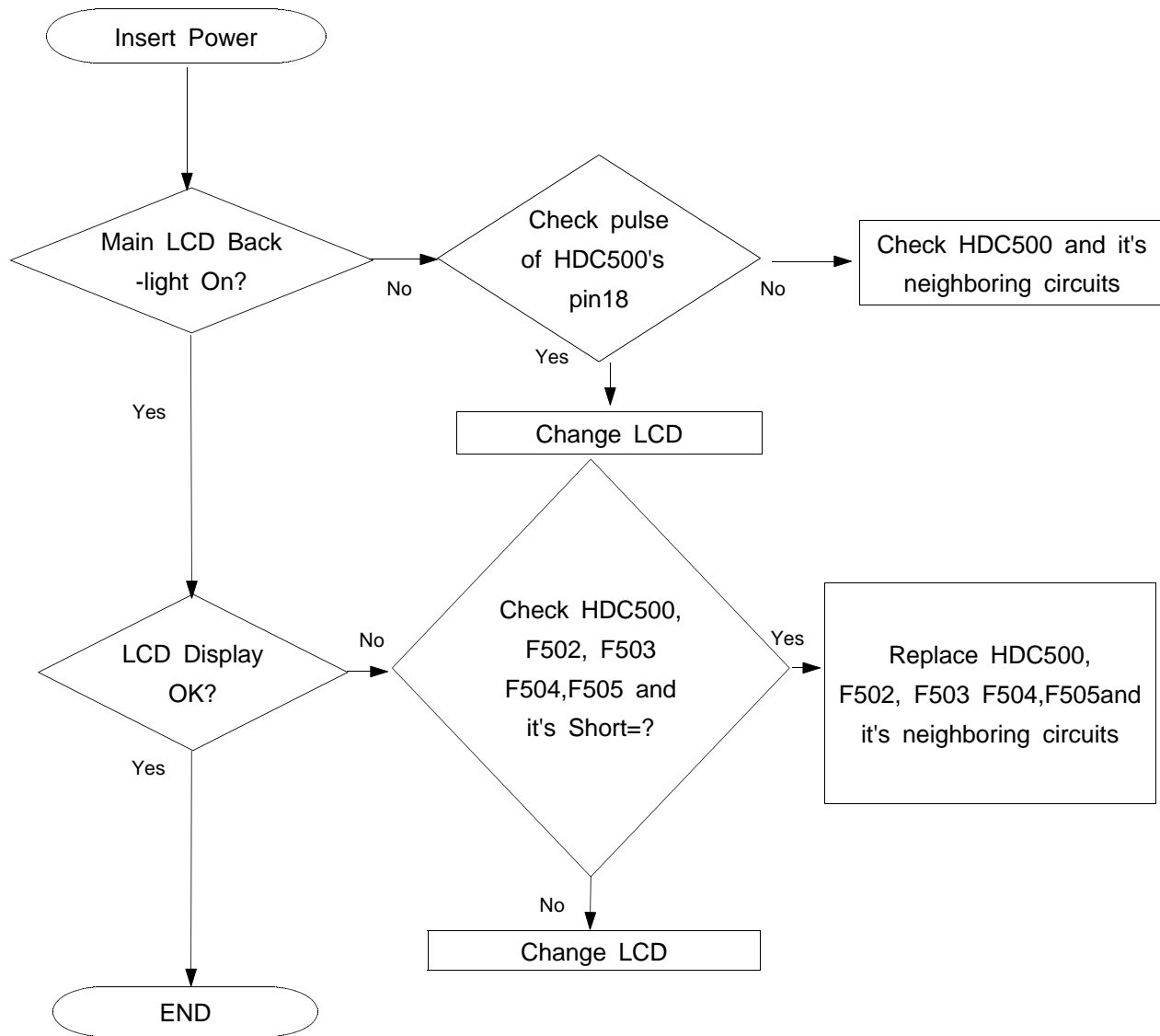
7-1-1 Power On

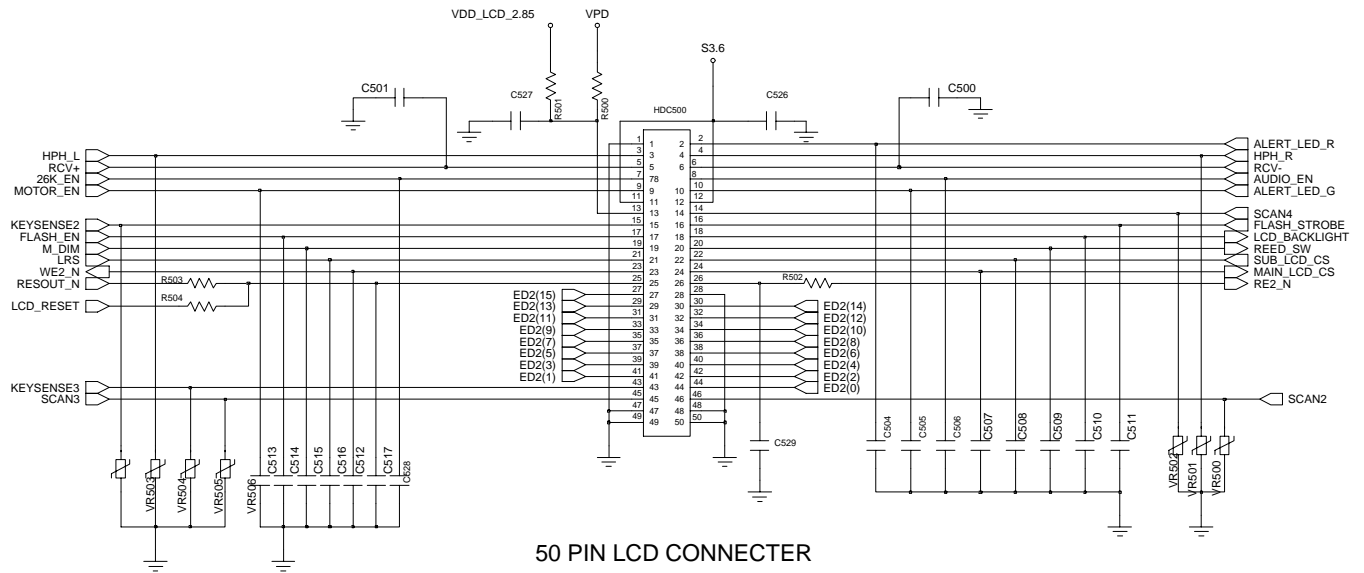




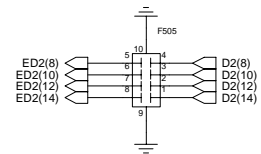
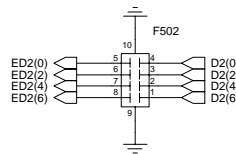
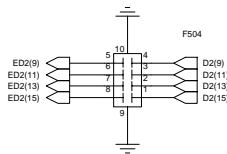
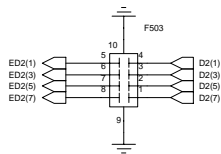


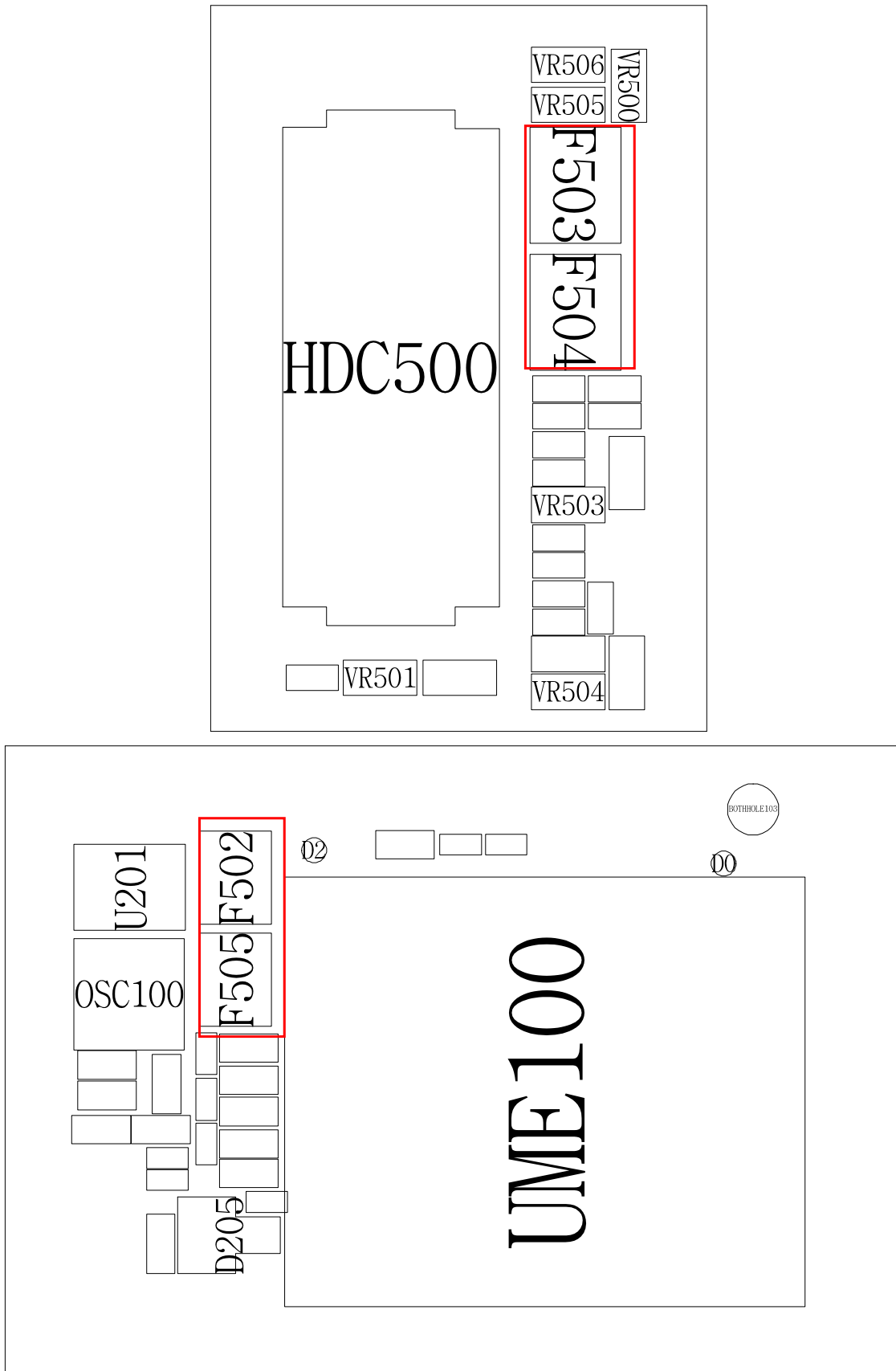
7-1-2 LCD Working



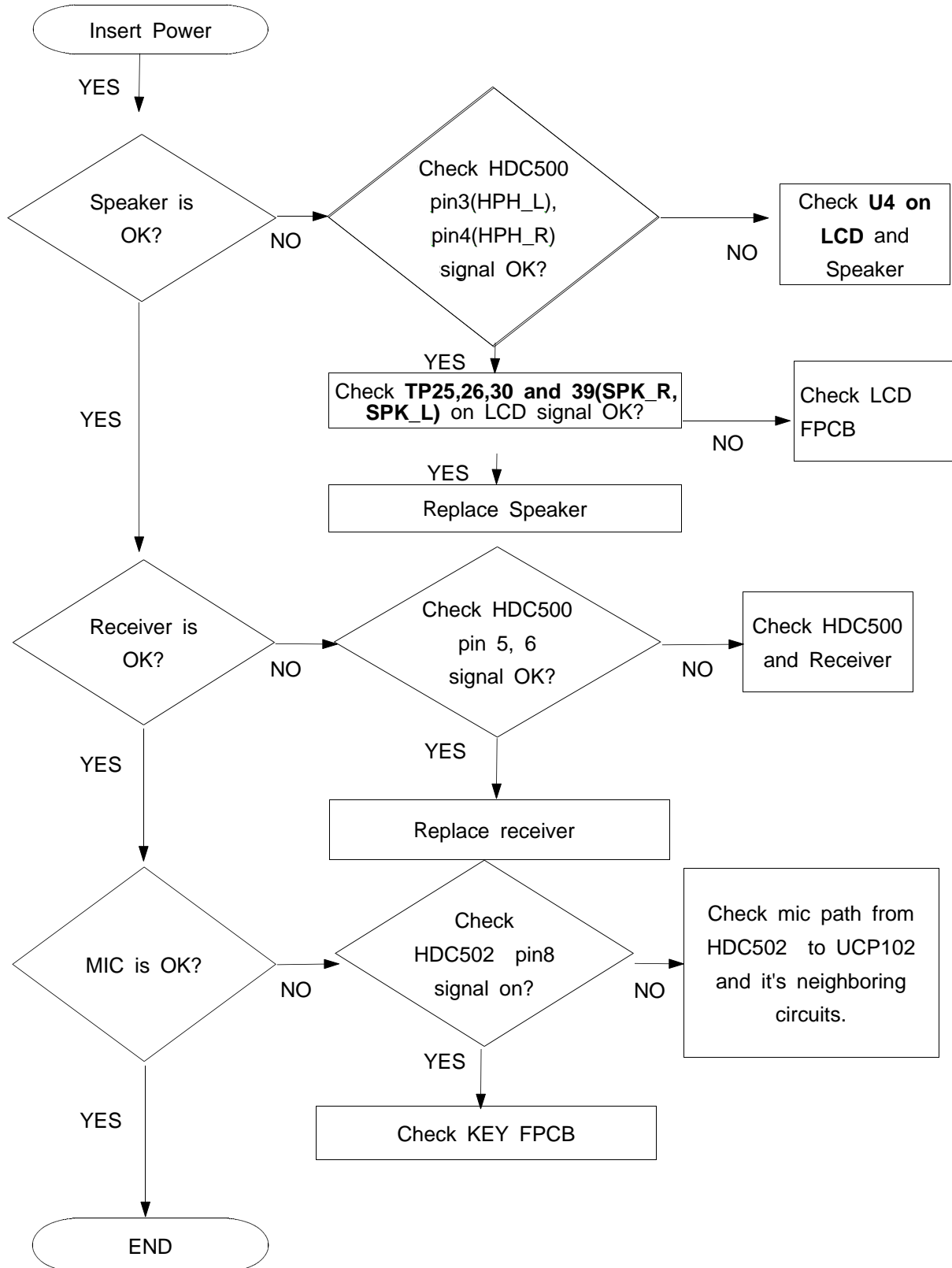


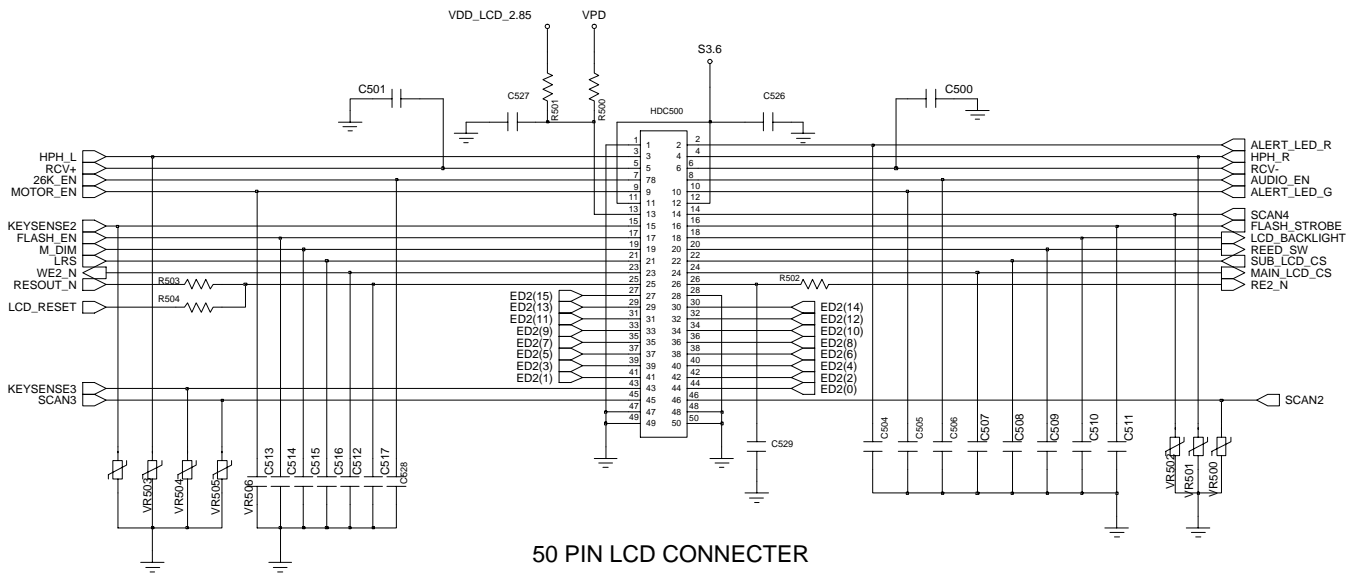
50 PIN LCD CONNECTER



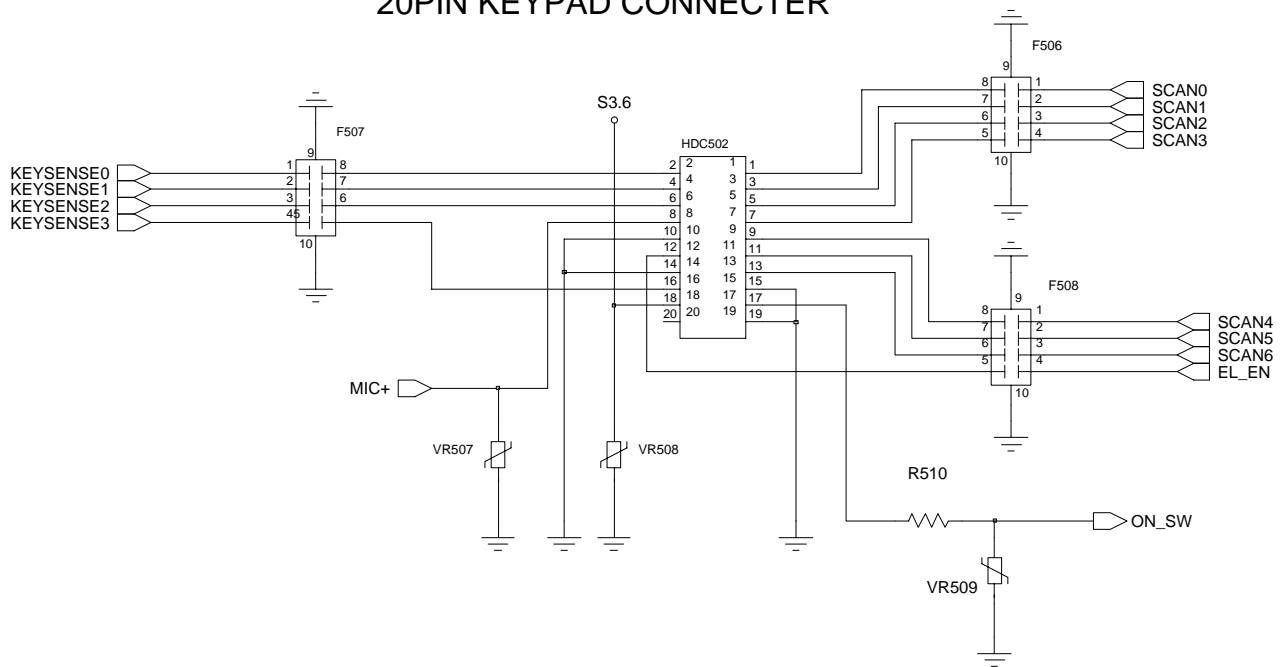


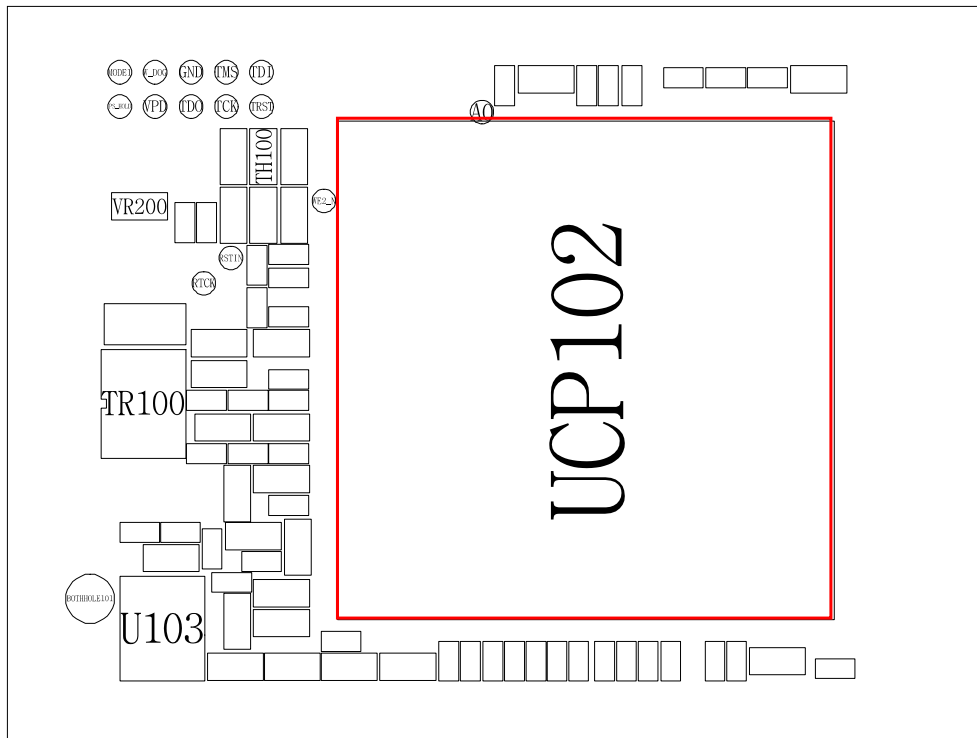
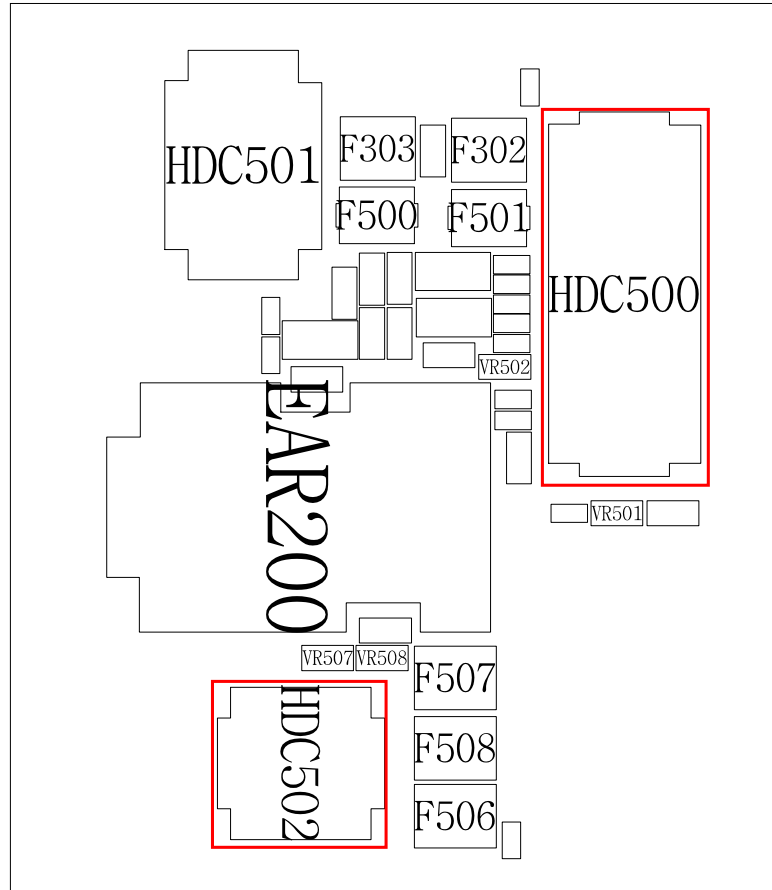
7-1-3 Speaker, Receiver and Mic Checking





20PIN KEYPAD CONNECTER

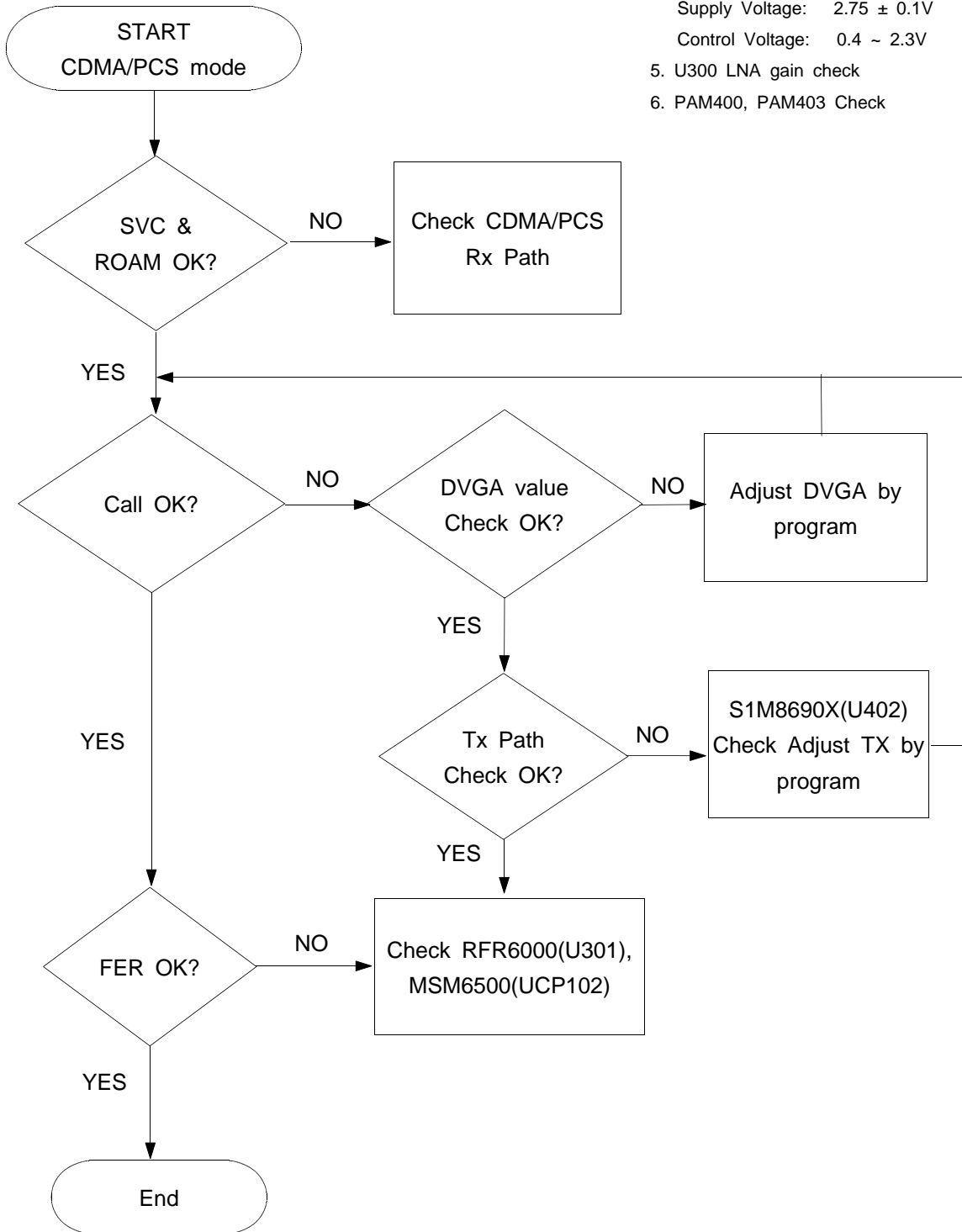




7-2. RX

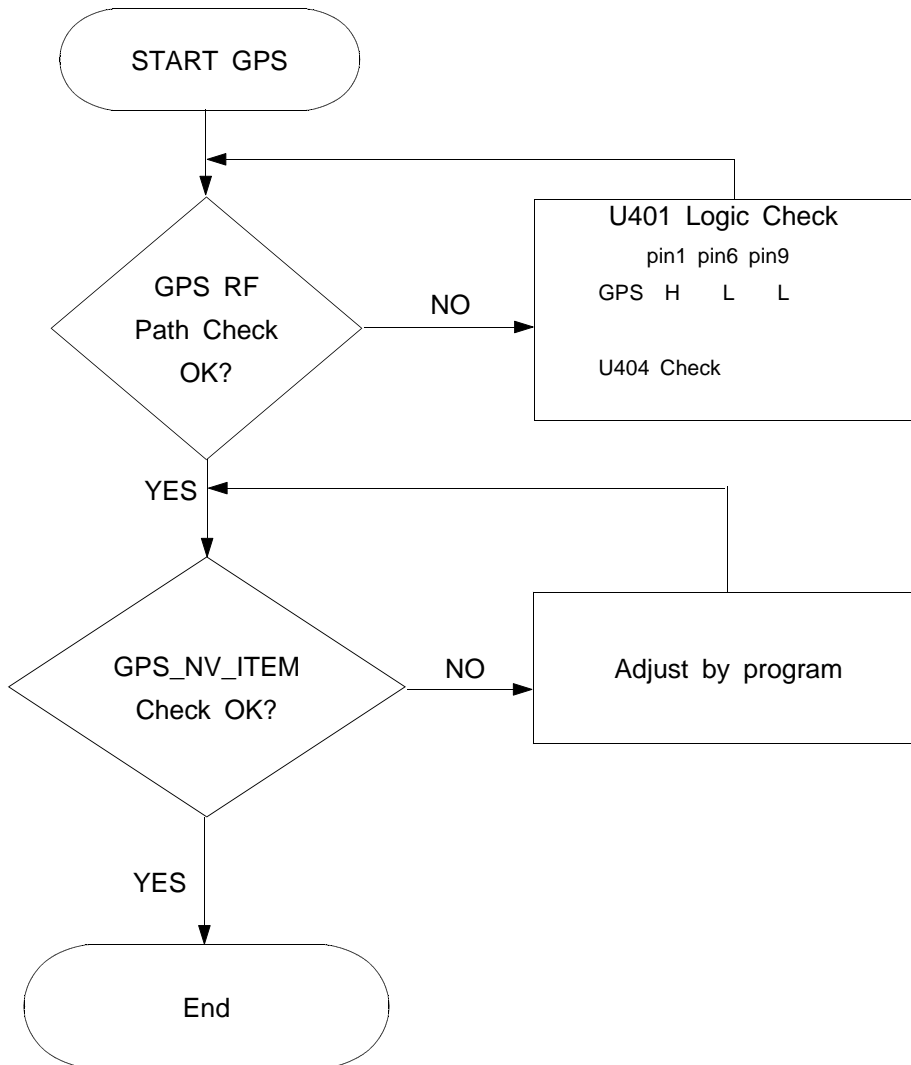
7-2-1 CDMA/PCS mode

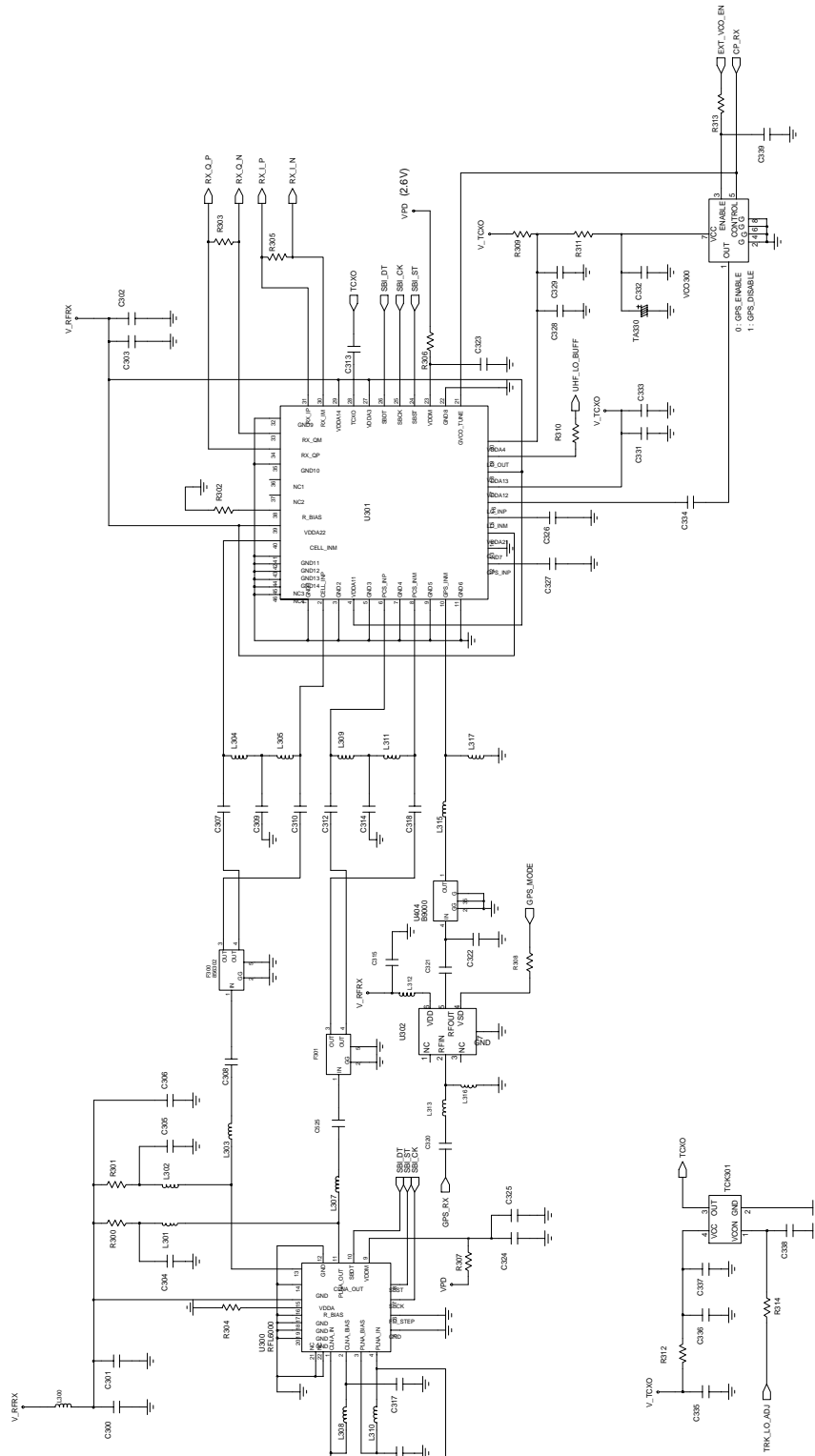
1. visual check! (soldering)
2. S/W Mode Check : CDMA Mode Check
3. VCTCXO(TCK301) Check : 19.2MHz
4. VCO(OSC301) voltage/frequency level check
 Frequency : $1715\text{MHz} < f < 1788\text{MHz}$
 Supply Voltage: $2.75 \pm 0.1\text{V}$
 Control Voltage: $0.4 \sim 2.3\text{V}$
5. U300 LNA gain check
6. PAM400, PAM403 Check

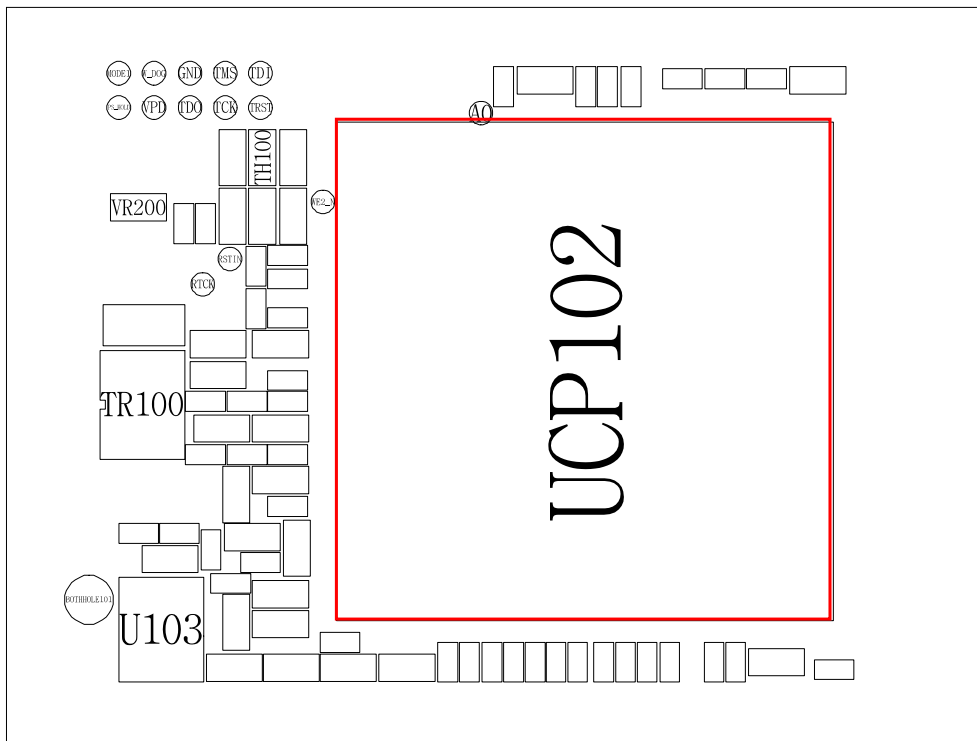
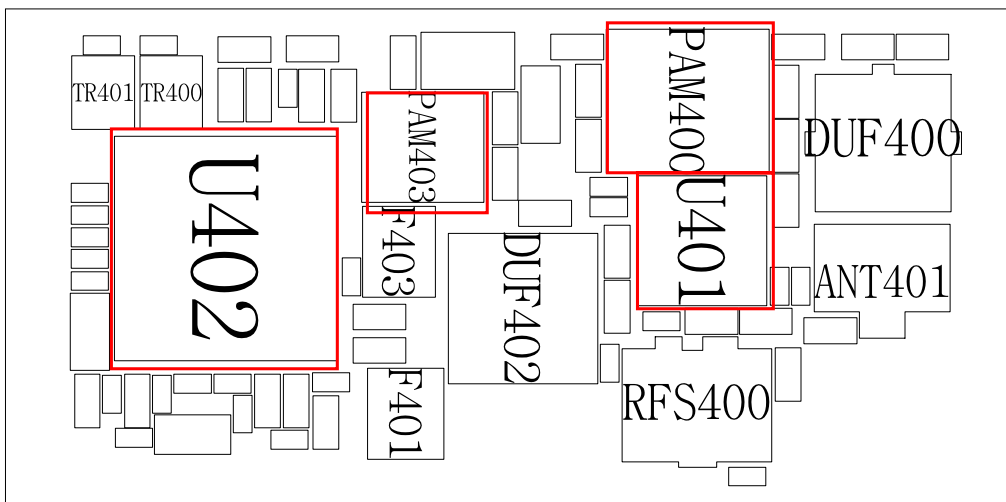
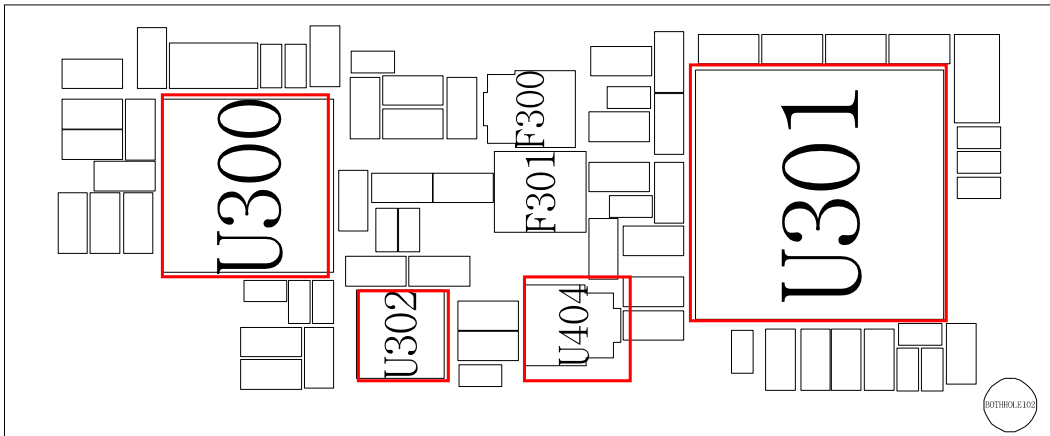


7-2-2 GPS Mode

1. visual check! (soldering)
2. S/W Test Mode Check : GPS Mode
3. VCTCXO(TCK301) Check : 19.2MHz

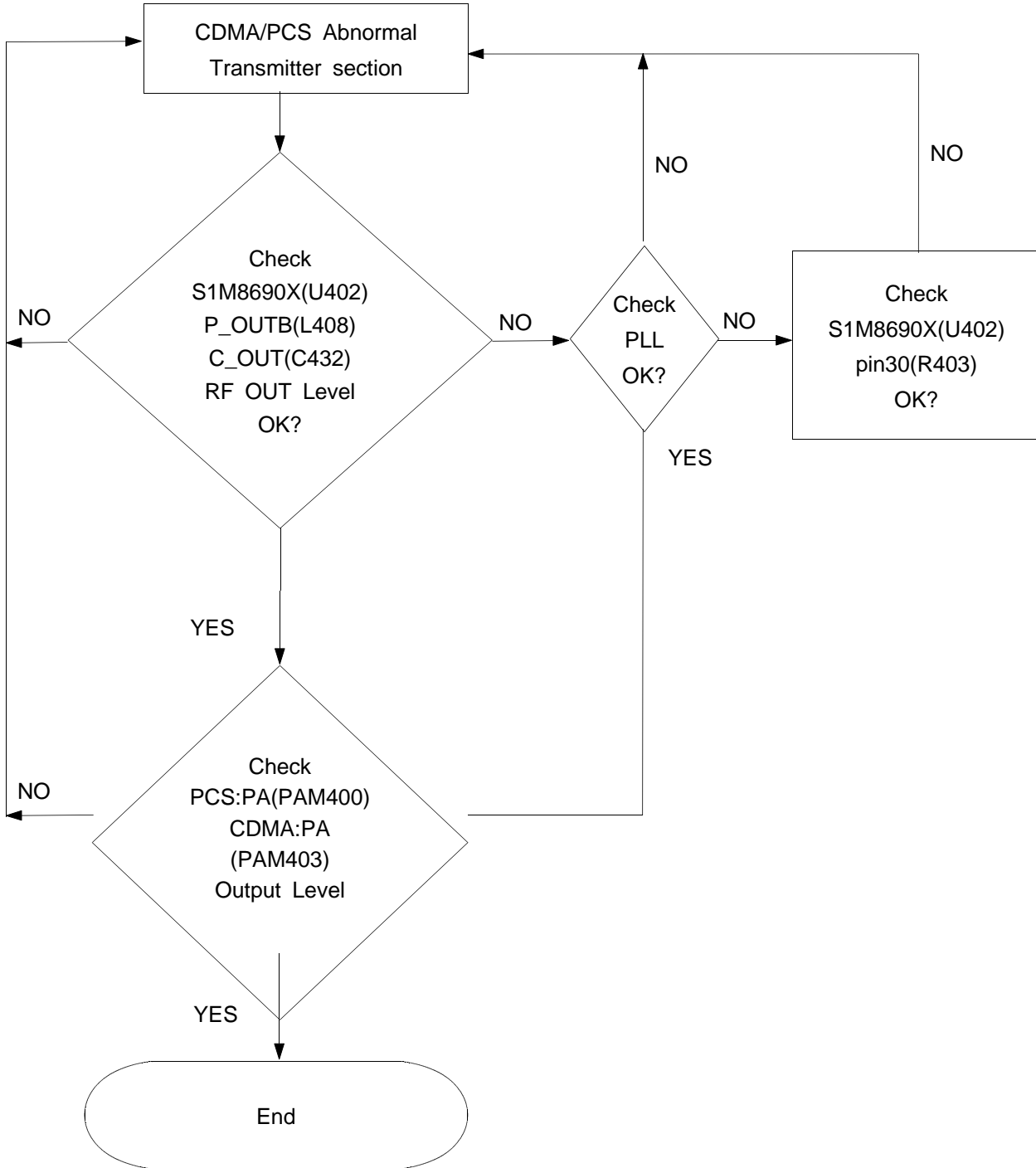


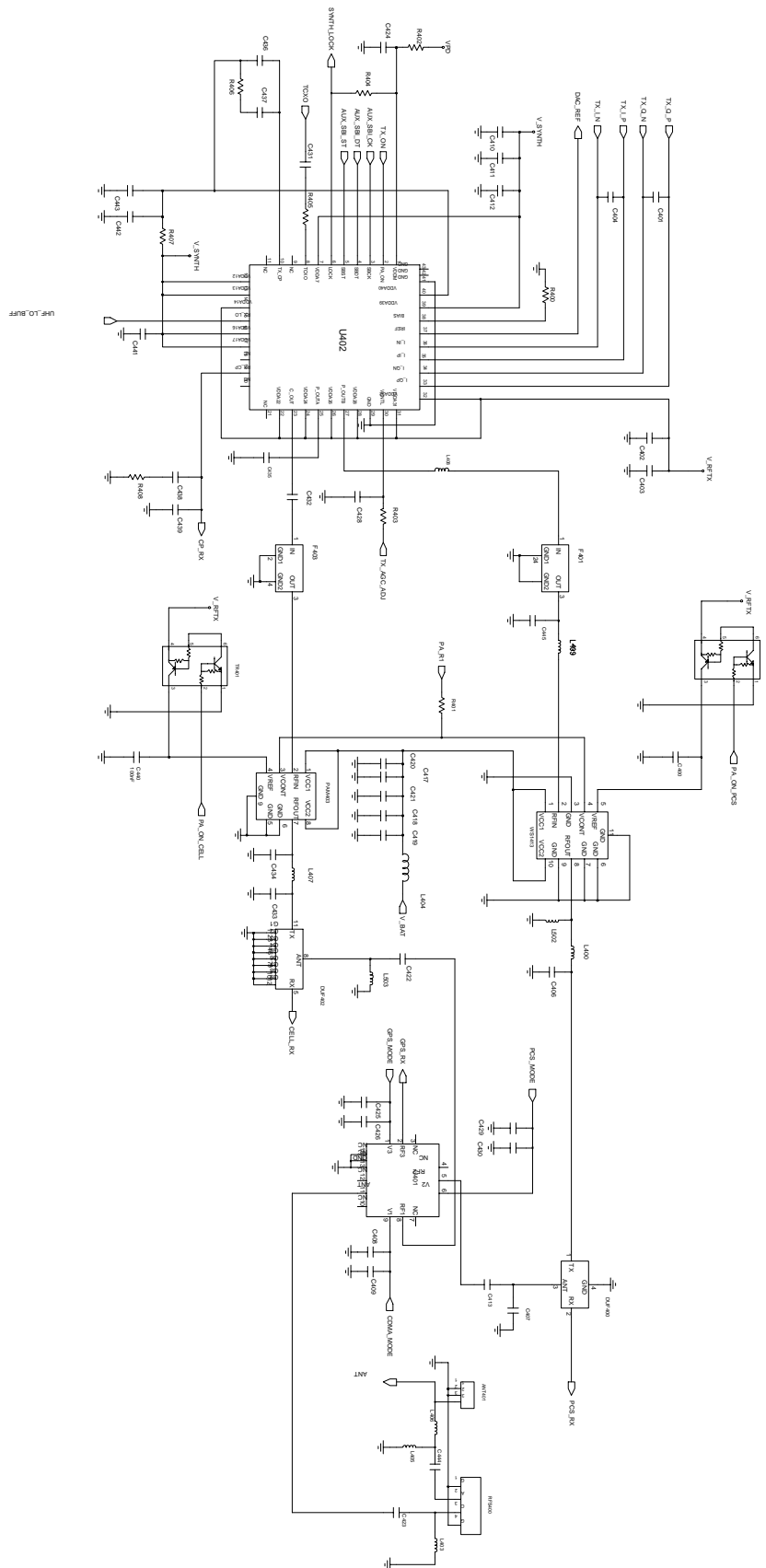


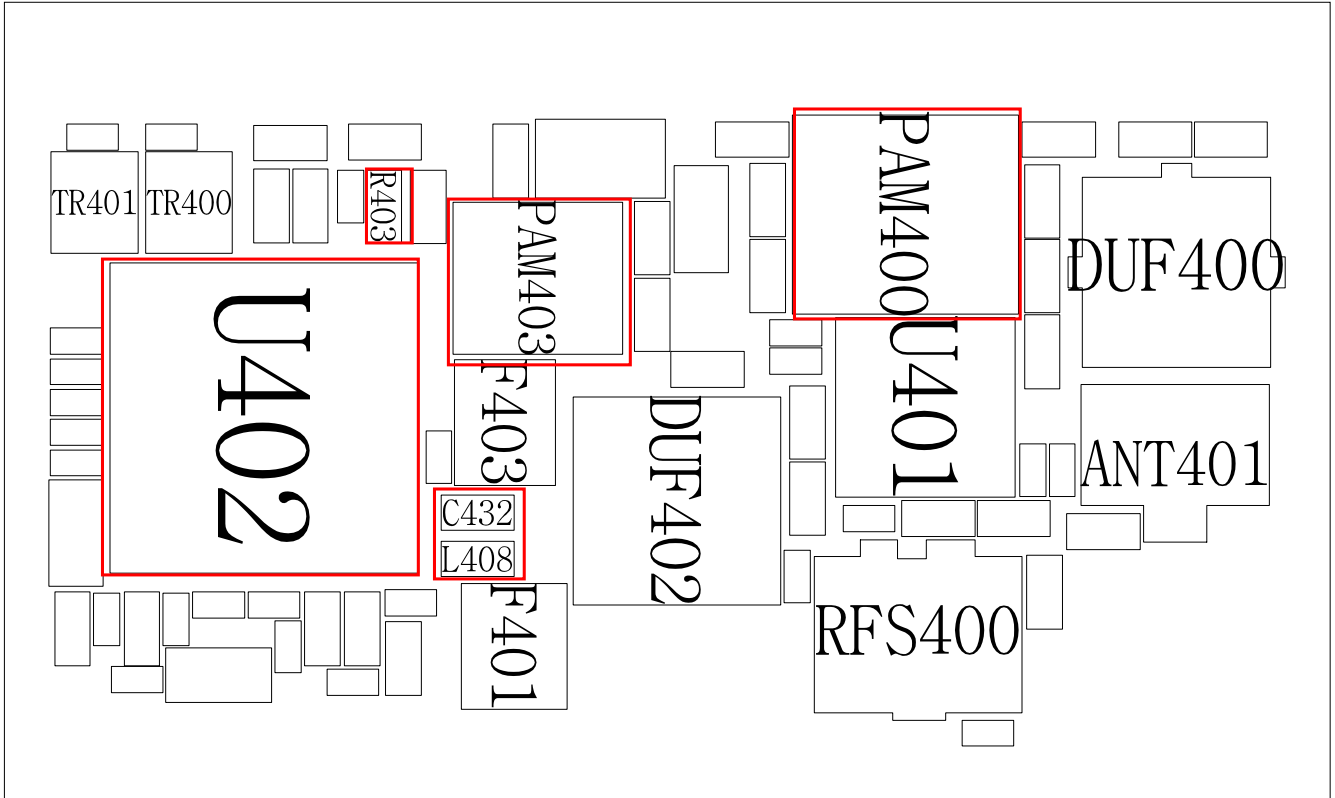


7-3 Tx

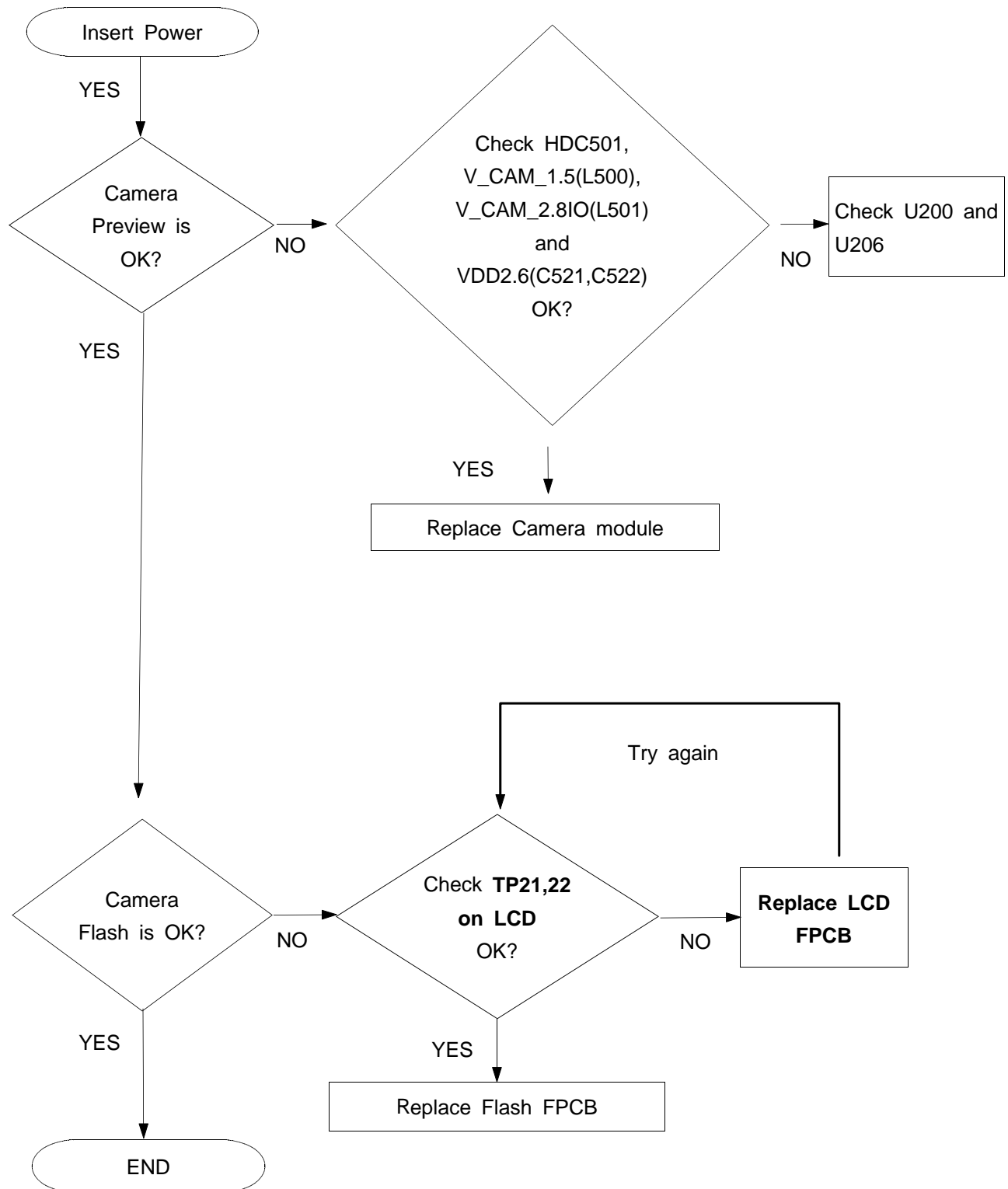
7-3-1 CDMA/PCS mode

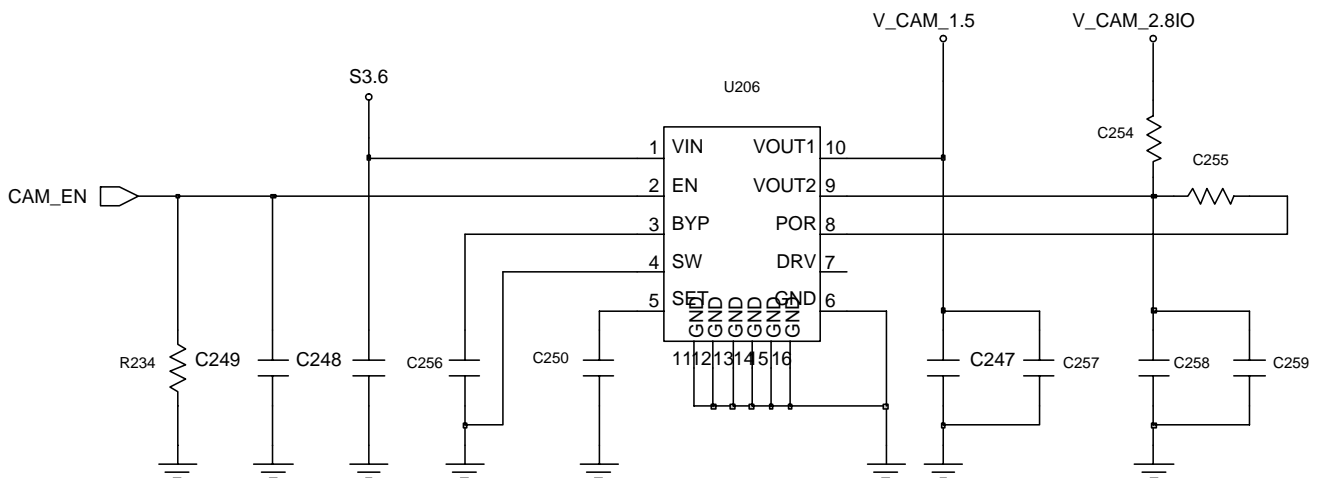
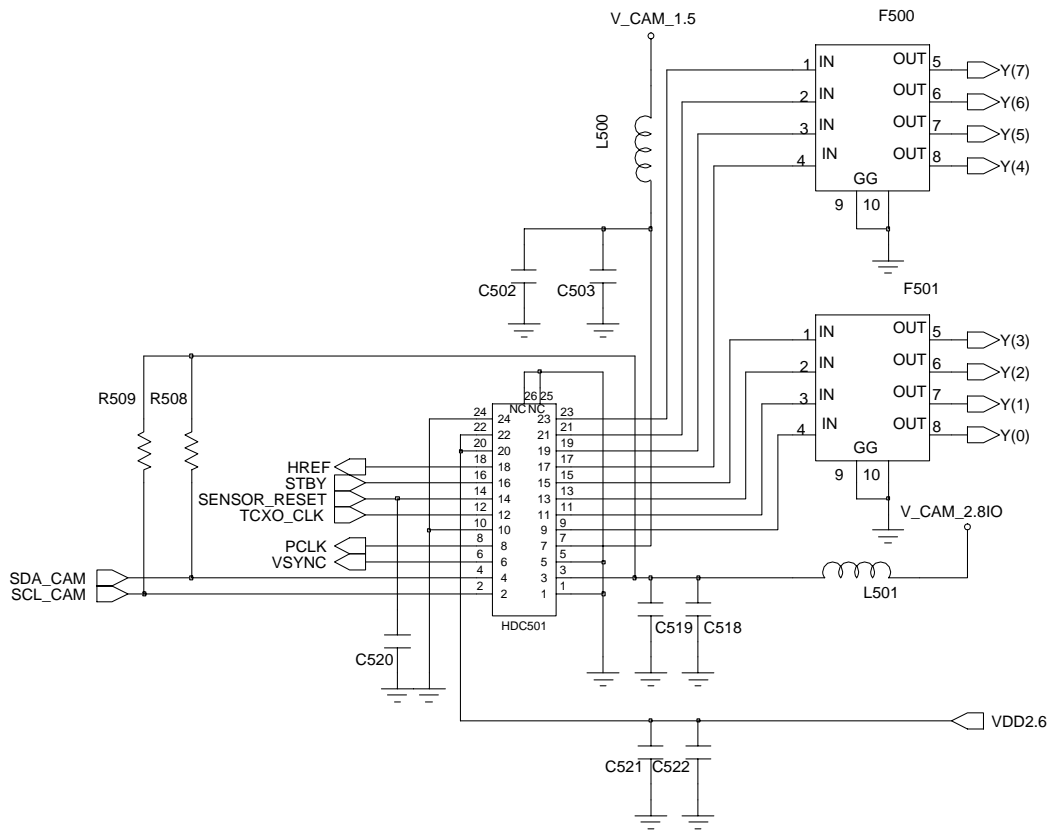


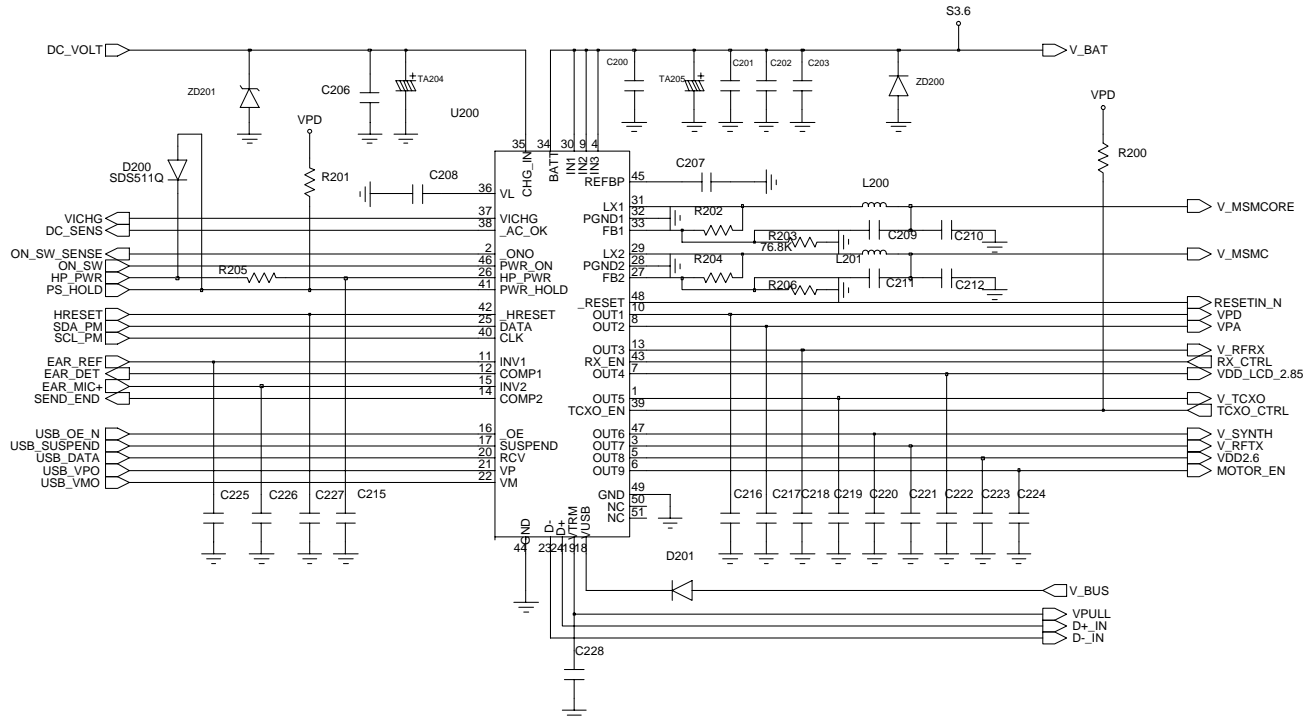


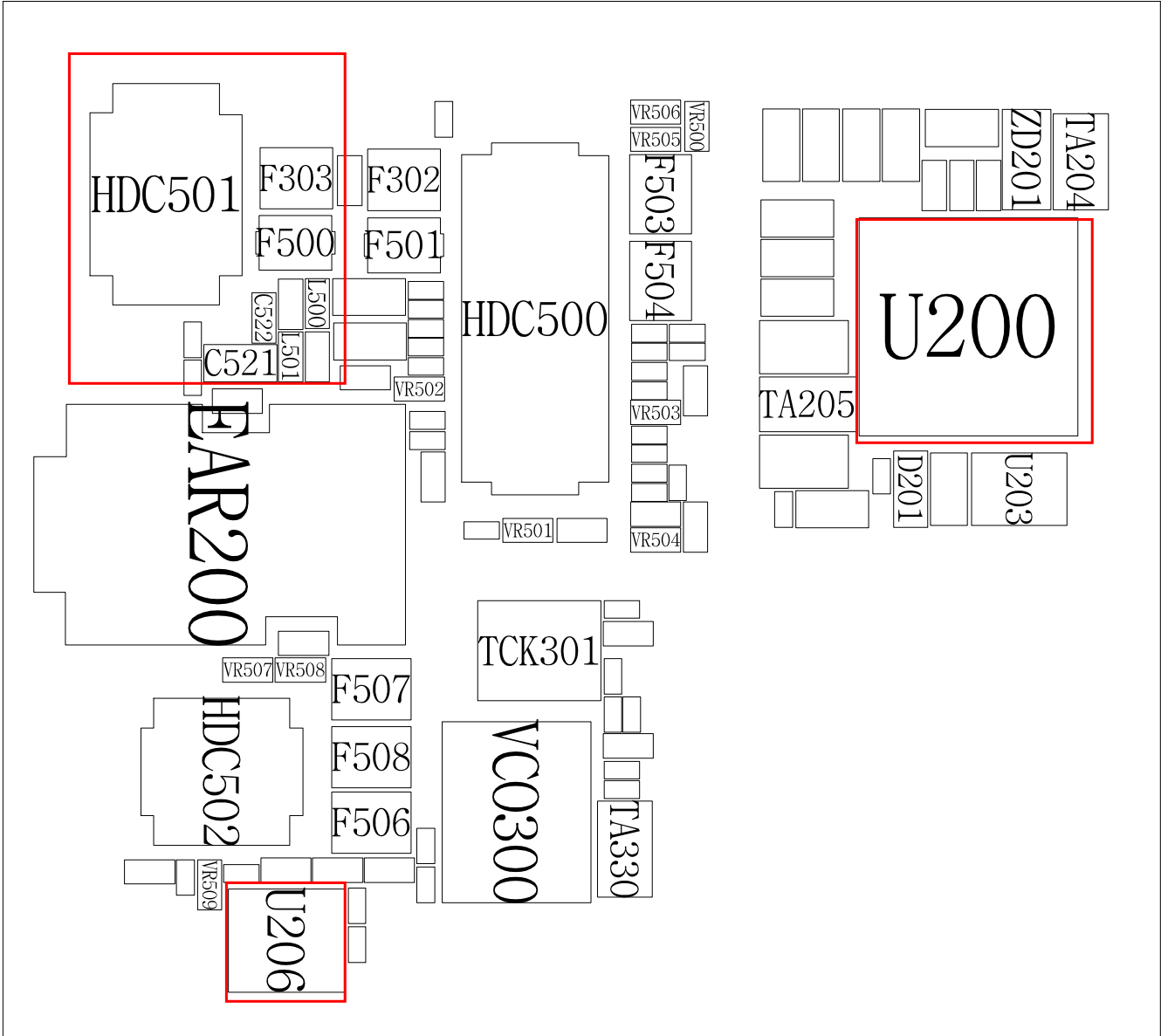


7-4 Camera checking

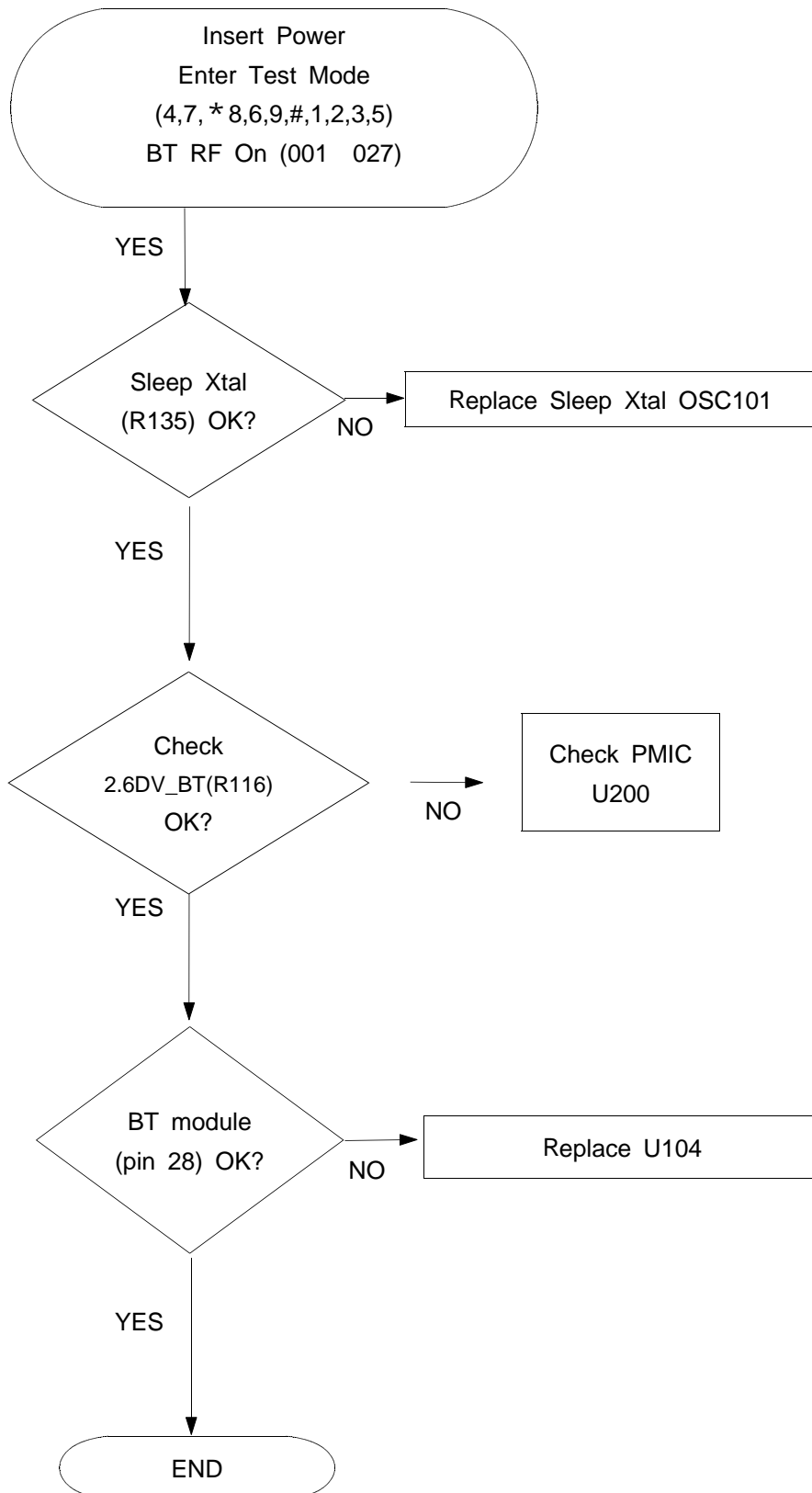


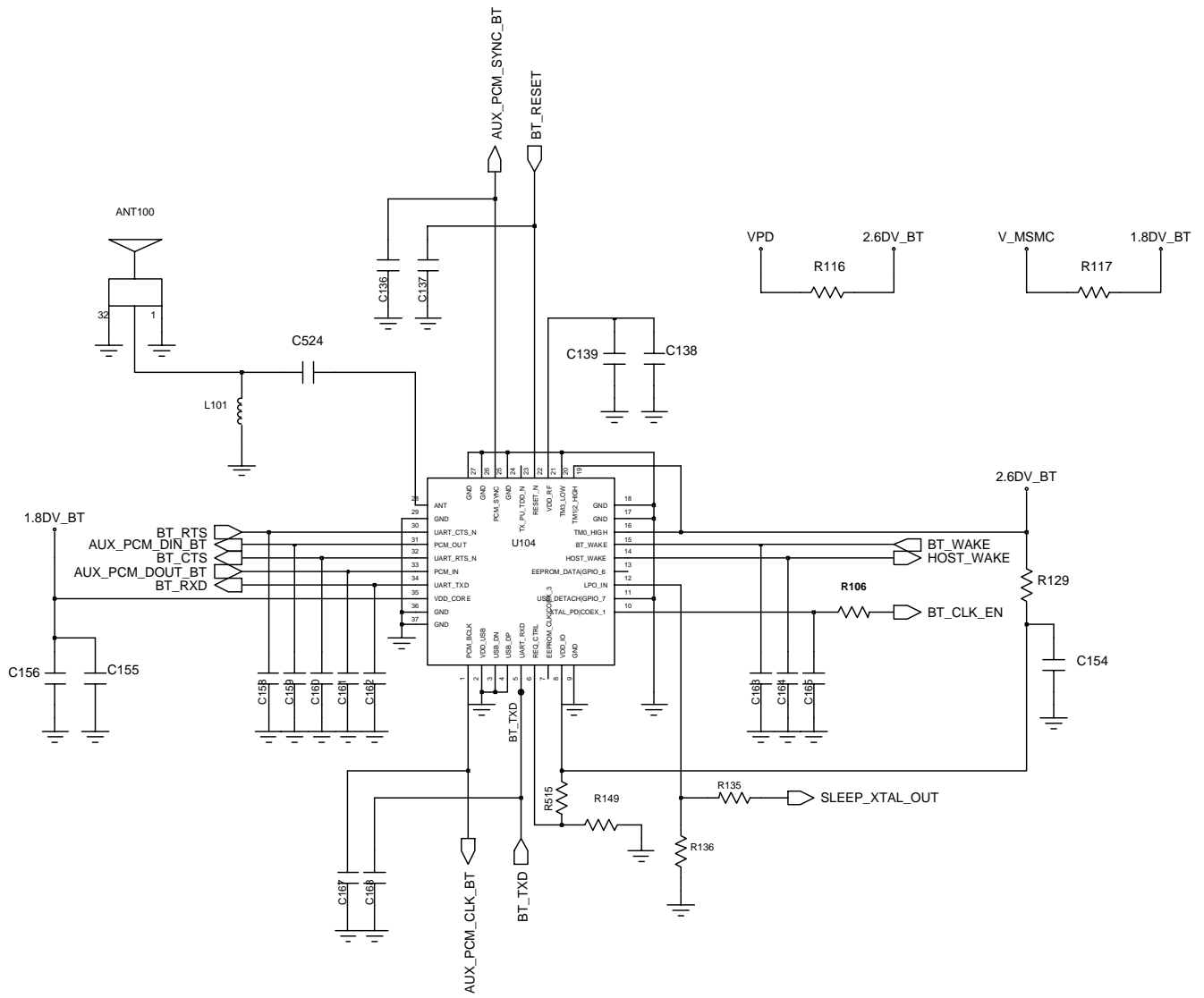


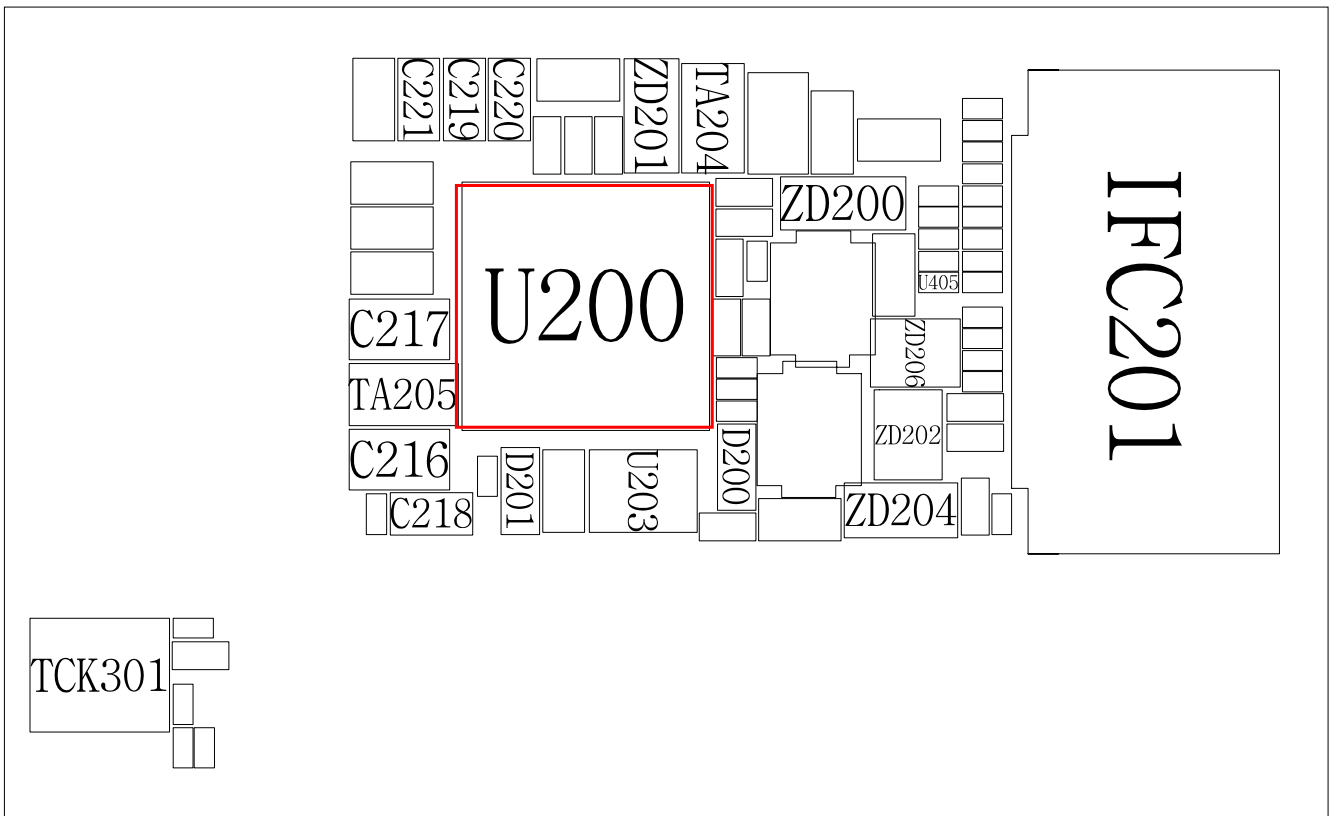
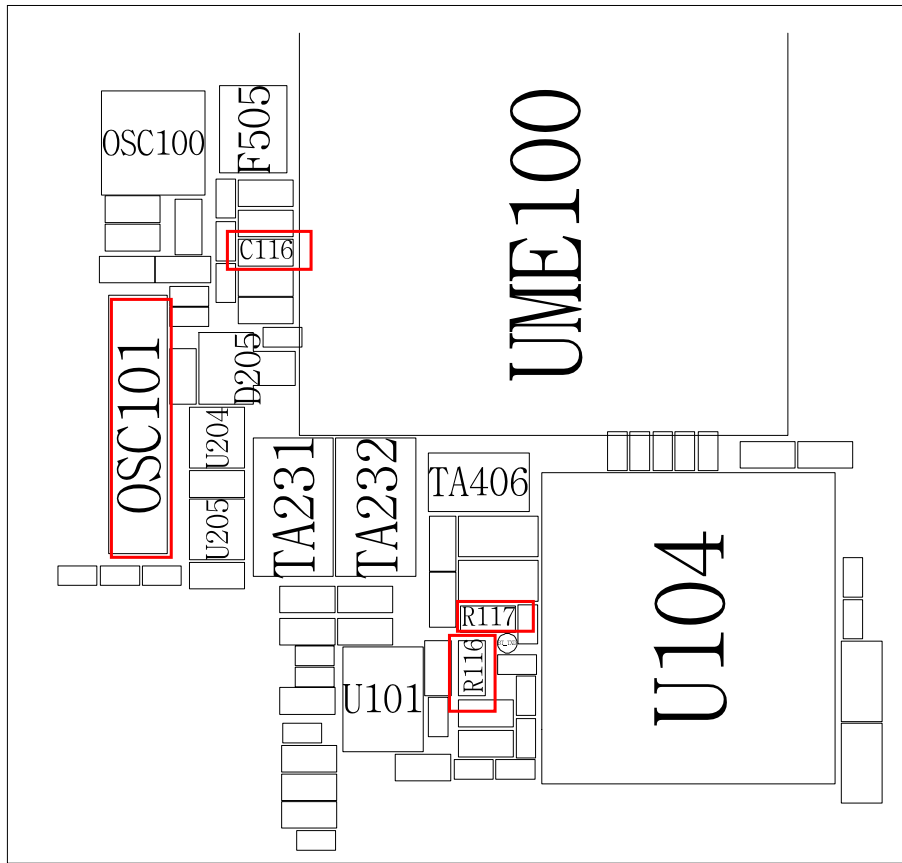




7-5 Bluetooth checking

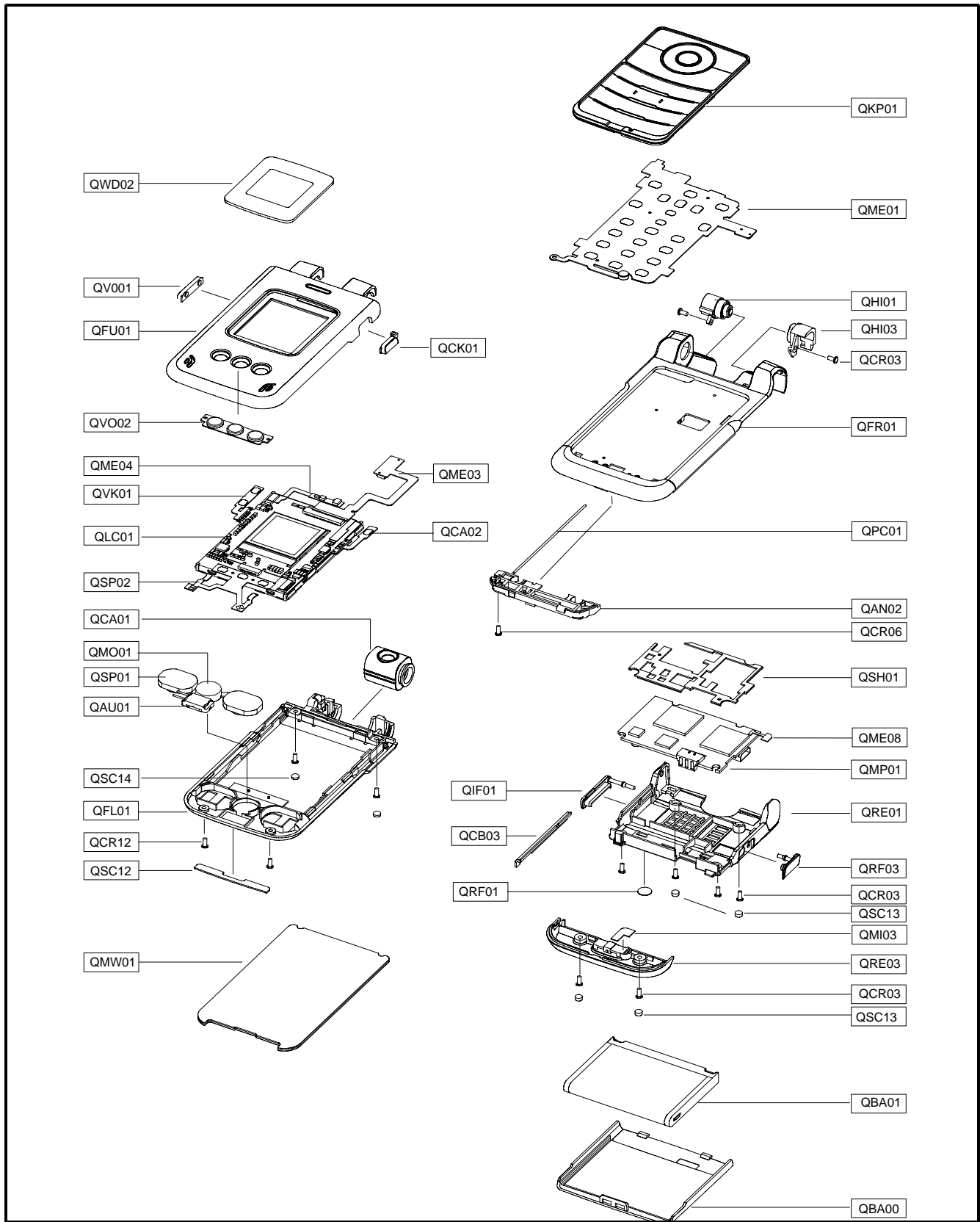






8. Exploded Views and Parts List

8-1. Exploded Views



8-2. Parts List

QAN02		INTENNA-SPHA900	GH42-00716A
QBA00		ASSY MEC-COVER BATTERY V2	GH75-09081A
QBA01		INNER BATTERY PACK-800MAH,BLK,	GH43-02101A
QCA01		UNIT-CAMERA	GH59-02668A
QCA02		UNIT-CAMERA KEY	GH59-02173A
QCB03		ASSY MEC-CABLE COVER	GH75-07382B
QCK01		PMO-CAMERA KEY	GH72-22531B
QCR03		SCREW-MACHINE	6001-001811
QCR03		SCREW-MACHINE	6001-001811
QCR06		SCREW-MACHINE	6001-001155
QCR12		SCREW-MACHINE	6001-001530
QCW02		ASSY MEC-FLASH WINDOW	GH75-07219A
QFL01		NDC-CASE LOWER FOLDER	GH71-05928A
QFL01		MEA-LOWER(SVC)	GH97-05855A
QFR01		NDC-FRONT COVER	GH71-05692A
QFR01		MEA-FRONT(SVC)	GH97-05858A
QFU01		NDC-CASE UPPER FOLDER	GH71-05927A
QFU01		MEA-UPPER(SVC)	GH97-05854A
QHI01		ASSY MEC-HINGE	GH75-07205A
QHI03		NDC-HINGE DUMMY	GH71-05105A
QKP01		ASSY MEC-KEYPAD(XAR/ZKS)	GH75-08316A
QME01		UNIT-EL KEYPAD	GH59-02664A
QME03		UNIT-CON TO CON ASSY	GH59-02175A
QME04		UNIT-FLASH FPCB	GH59-02176A
QME08		UNIT-BT ANT DUMMY FPCB	GH59-02681A
QMI03		RMO-RUBBER MIC	GH73-04934A
QMP01		PBA MAIN-SPHA900 PLUS	GH92-02721A
QMW01		ASSY-COVER-MAIN WINDOW(PLUS)	GH98-01078A
QPC01		CBF COAXIAL CABLE	GH39-00440A
QRE03		ASSY MEC-COVER REAR INT V2	GH75-09082A
QRF01		MPR-TAPE RF SWITCH	GH74-18895A
QSC12		ASSY MEC-FOLDER SCREW COVER	GH75-07381A
QSC13		RMO-REAR SCREW CAP1	GH73-04824B
QSC13		RMO-REAR SCREW CAP1	GH73-04824B
QSC14		PMO-FOLDER SCREW CAP	GH72-23132B
QSH01		ASSY MEC-SHIELD COVER	GH75-07882A
QSP02		UNIT-SPK MOT FPCB	GH59-02202A
QVK01		UNIT-VOLUME KEY	GH59-02172A
QVO01		PMO-VOLUME KEY	GH72-22530B
QVO02		ASSY MEC-VOD KEY	GH75-07220B
QWD02		PCT-SUB WINDOW	GH72-25511A
QRE01		ASSY MEC-REAR TOP COVER	GH75-07880A
	QRF03	PMO-EAR COVER	GH72-25508A
	QIF01	PMO-IF COVER	GH72-25509A
QSP01		SPEAKER	3001-001784
	QAU01	AUDIO-RECEIVER	3009-001127
	QMO01	MOTOR DC-SGHZ130	GH31-00154C
QLC01		LCD-LCD MODULE	GH07-00806A
	QLC02	AS-LCD SUB	GH81-01816A

BAG PE	6902-000297
BAG PE	6902-000378
BAG PE	6902-000461
CBF SIGNAL-SPHA940 DANPLA	GH39-00466A
ADAPTOR-SGHD500 BLK	GH44-00955A
UNIT-EARPHONE	GH59-02482A
LABEL(P)-GUIDE(SPRINT)	GH68-02023A
LABEL(P)-WATER SOAK	GH68-02026A
MANUAL USERS-NOA ENGLISH	GH68-09872A
MANUAL USERS-NOA ENGLISH	GH68-11503A
BOX-UNIT(PLUS)	GH69-03154C
CUSHION-CASE(NEW)	GH69-03396A
ICT-MAGNETIC	GH70-00571A
ICT-RECEIVER GRILL	GH70-00574A
ICT-LCD GUIDE	GH70-00954A
NPR-HINGE CONTACT	GH71-05182A
RMO-SPK BLOCK R	GH73-05123A
RMO-SPK BLOCK L	GH73-05124A
RMO-SPONGE SPEAKER	GH73-05125A
RMO-RUBBER FRONT	GH73-05907A
MPR-VOL KEY BOHO VINYL	GH74-07312A
MPR-TAPE SUB PBA BACK	GH74-12934A
MPR-TAPE MAGNETIC	GH74-15173A
MPR-TAPE FRONT SUPPORT B	GH74-15175A
MPR-TAPE FRONT SUPPORT C	GH74-15176A
MPR-NON WOVEN MIC	GH74-15177A
MPR-SPONGE LCD CONN SUPP	GH74-15234A
MPR-TAPE MAIN WINDOW	GH74-15239A
MPR-TAPE RECEIVER GRILL	GH74-15240A
MPR-TAPE SUB WINDOW	GH74-15243A
MPR-TAPE SPK GRILL	GH74-15244A
MPR-SPONGE SUB WINDOW	GH74-15246A
MPR-BOHO VINYL LCD CONN	GH74-15350A
MPR-TAPE HINGE DUST	GH74-15575A
MPR-SHEET FRONT COVER	GH74-15576B
MPR-TAPE FOLDER KEY	GH74-15646A
MPR-TAPE HINGE DUMMY	GH74-15647A
MPR-TAPE CONNECTOR SOUND	GH74-15648A
MPR-TAPE LCD LEFT	GH74-15650A
MPR-TAPE LCD RIGHT	GH74-15651A
MPR-TAPE CONN BASE 1	GH74-15652A
MPR-TAPE CONNECTOR UPPER	GH74-15654A
MPR-BOHO VINYL SUB WIN	GH74-15655A
MPR-TAPE MAGNETIC UPPER	GH74-15659A
MPR-TAPE FRONT ANTI SHOR	GH74-15660A
MPR-BOHO VINYL SUB WIN	GH74-16263A
MPR-TAPE MAIN PCB SIDE	GH74-16372A
MPR-SPONGE HINGE DUMMY	GH74-16467A
MPR-TAPE J TAG	GH74-16475A
MPR-NON WOVEN RECEIVER	GH74-16549A
MPR-GASKET CAMERA HINGE	GH74-16636A
MPR-BOHO VINYL F-PCB FIX	GH74-17063A

Exploded views and Parts List

MPR-TAPE IF HOLDER	GH74-17165A
MPR-TAPE APS	GH74-17967A
MPR-GASKET IF JACK	GH74-18874A
MPR-TAPE KEYPAD	GH74-19159A
MPR-BOHO VINYL VIEW	GH74-19308A
MPR-TAPE LCD CON	GH74-19321A
MPR-TAPE BATT INSULATION	GH74-19386A
MPR-GASKET SUB LCD	GH74-19762A
MPR-GASKET FOLDER UPPER	GH74-19763A
MPR-TAPE SUB LCD	GH74-19764A
MPR-TAPE SUPPORT MIC	GH74-20107A
MPR-TAPE FPCB INSUL	GH74-21393A
MPR-TAPE 1 (FPCB)	GH74-23612A
MPR-TAPE 2 (FPCB)	GH74-23613A
MPR-TAPE 3 (FPCB)	GH74-23614A
MPR-TAPE BOSS	GH74-24257A
MPR-SPONGE VOLUME KEY	GH74-26019A
AS-MAIN LCD	GH81-02629A
AS-MOD KEY DOME SHEET	GH81-03951A
MEA FRONT-COVERUNIT_EL KEYP	GH97-05502A
MEA-UPPER(SVC R)	GH97-05854B
MEA-LOWER(SVC R)	GH97-05855B
MEA-FRONT(SVC R)	GH97-05858B

8-3 DM Cable(GH39-00129A)



8-4 Test JIG



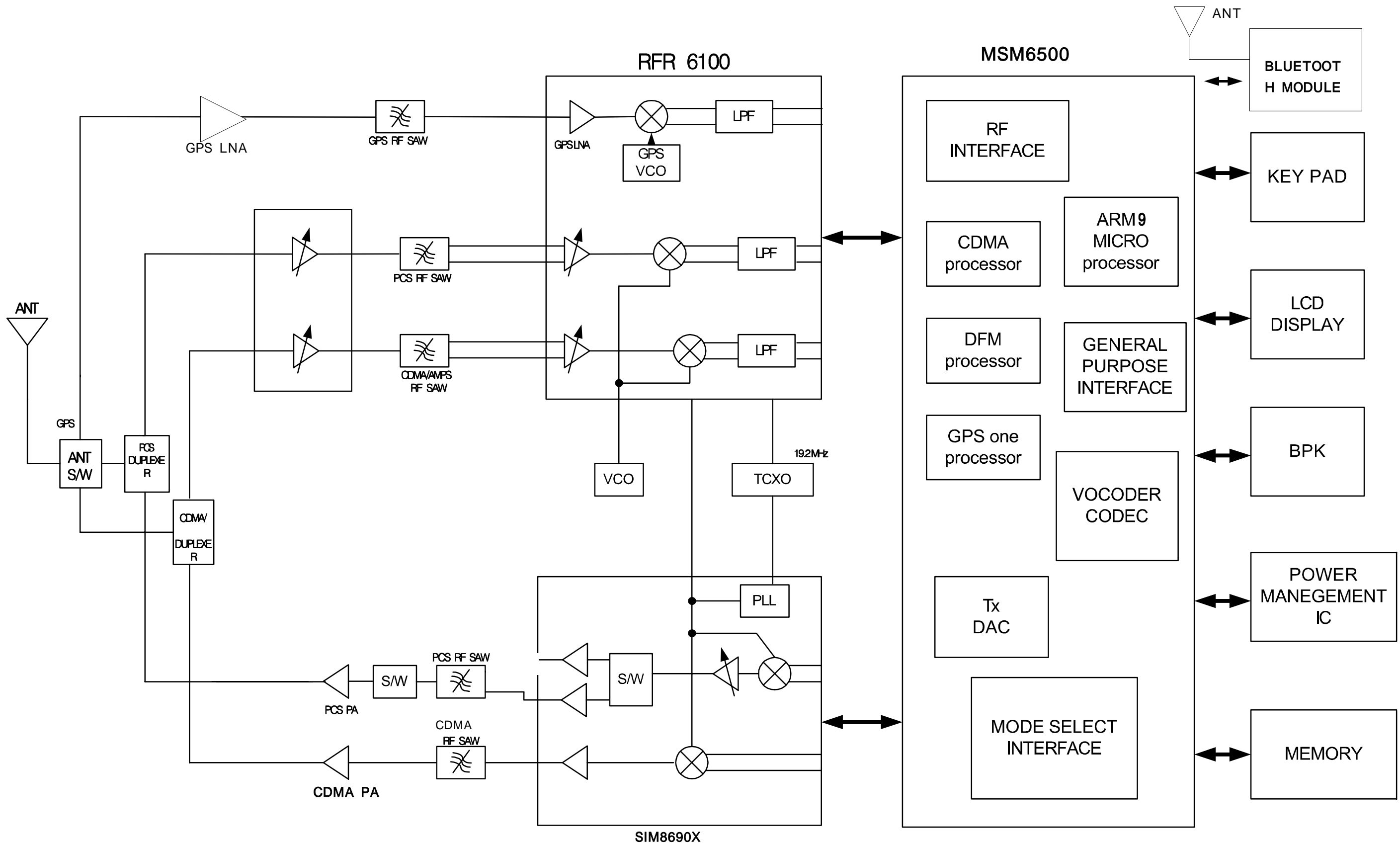
8-5 RF Cable(GH39-00397A)



8-6 Test Jig Cable(GH39-00399A)



9. Block Diagrams



10. Electrical Parts List

Design LOC	Description	SEC CODE	STATUS
ANT401	CONNECTOR-COAXIAL	3705-001225	SA
BTC200	CONNECTOR-BATTERY	3711-006003	SA
C100	C-CER,CHIP	2203-005393	SA
C101	C-CER,CHIP	2203-005393	SA
C102	C-CER,CHIP	2203-006423	SA
C103	C-CER,CHIP	2203-006093	SA
C104	C-CER,CHIP	2203-005682	SA
C105	C-CER,CHIP	2203-005682	SA
C106	C-CER,CHIP	2203-006423	SA
C107	C-CER,CHIP	2203-006194	SA
C108	C-CER,CHIP	2203-006423	SA
C109	C-CER,CHIP	2203-006194	SA
C110	C-CER,CHIP	2203-006423	SA
C111	C-CER,CHIP	2203-006423	SA
C112	C-CER,CHIP	2203-006194	SA
C113	C-CER,CHIP	2203-006423	SA
C114	C-CER,CHIP	2203-006194	SA
C115	C-CER,CHIP	2203-006423	SA
C117	C-CER,CHIP	2203-001072	SA
C118	C-CER,CHIP	2203-006194	SA
C119	C-CER,CHIP	2203-006423	SA
C120	C-CER,CHIP	2203-006194	SA
C121	C-CER,CHIP	2203-006423	SA
C122	C-CER,CHIP	2203-000438	SA
C123	C-CER,CHIP	2203-006194	SA
C124	C-CER,CHIP	2203-001437	SA
C125	C-CER,CHIP	2203-005736	SA
C126	C-CER,CHIP	2203-006194	SA
C127	C-CER,CHIP	2203-006194	SA
C128	C-CER,CHIP	2203-006194	SA
C129	C-CER,CHIP	2203-006194	SA
C130	C-CER,CHIP	2203-006423	SA
C131	C-CER,CHIP	2203-000254	SA
C132	C-CER,CHIP	2203-005717	SA
C133	C-CER,CHIP	2203-005717	SA
C134	C-CER,CHIP	2203-006093	SA
C135	C-CER,CHIP	2203-005061	SA
C136	C-CER,CHIP	2203-005682	SA
C137	C-CER,CHIP	2203-005682	SA
C138	C-CER,CHIP	2203-006208	SA
C139	C-CER,CHIP	2203-006201	SA
C140	C-CER,CHIP	2203-001405	SA
C141	C-CER,CHIP	2203-001405	SA
C143	C-CER,CHIP	2203-001405	SA
C144	C-CER,CHIP	2203-001405	SA
C145	C-CER,CHIP	2203-006423	SA
C146	C-CER,CHIP	2203-006423	SA
C147	C-CER,CHIP	2203-006091	SA
C148	C-CER,CHIP	2203-006091	SA
C149	C-CER,CHIP	2203-006423	SA
C150	C-CER,CHIP	2203-006423	SA
C151	C-CER,CHIP	2203-006423	SA
C152	C-CER,CHIP	2203-006423	SA
C153	C-CER,CHIP	2203-006423	SA
C154	C-CER,CHIP	2203-006093	SA
C155	C-CER,CHIP	2203-006208	SA
C156	C-CER,CHIP	2203-006201	SA

Electrical Parts List

Design LOC	Description	SEC CODE	STATUS
C157	C-CER,CHIP	2203-006423	SA
C158	C-CER,CHIP	2203-005682	SA
C159	C-CER,CHIP	2203-005682	SA
C160	C-CER,CHIP	2203-005682	SA
C161	C-CER,CHIP	2203-005682	SA
C162	C-CER,CHIP	2203-005682	SA
C163	C-CER,CHIP	2203-005682	SA
C164	C-CER,CHIP	2203-005682	SA
C165	C-CER,CHIP	2203-005682	SA
C166	C-CER,CHIP	2203-006423	SA
C167	C-CER,CHIP	2203-005682	SA
C168	C-CER,CHIP	2203-005682	SA
C169	C-CER,CHIP	2203-005736	SA
C170	C-CER,CHIP	2203-006194	SA
C171	C-CER,CHIP	2203-006194	SA
C172	C-CER,CHIP	2203-006438	SA
C173	C-CER,CHIP	2203-006194	SA
C174	C-CER,CHIP	2203-006348	SA
C175	C-CER,CHIP	2203-005682	SA
C200	C-CER,CHIP	2203-005664	SA
C201	C-CER,CHIP	2203-006201	SA
C202	C-CER,CHIP	2203-006201	SA
C203	C-CER,CHIP	2203-006201	SA
C206	C-CER,CHIP	2203-005061	SA
C207	C-CER,CHIP	2203-000254	SA
C208	C-CER,CHIP	2203-001652	SA
C209	C-CER,CHIP	2203-006120	SA
C210	C-CER,CHIP	2203-006201	SA
C211	C-CER,CHIP	2203-006120	SA
C212	C-CER,CHIP	2203-006201	SA
C213	C-CER,CHIP	2203-006194	SA
C214	C-CER,CHIP	2203-006423	SA
C215	C-CER,CHIP	2203-006423	SA
C216	C-CER,CHIP	2203-005664	SA
C217	C-CER,CHIP	2203-005664	SA
C218	C-CER,CHIP	2203-006201	SA
C219	C-CER,CHIP	2203-006053	SA
C220	C-CER,CHIP	2203-006053	SA
C221	C-CER,CHIP	2203-006201	SA
C222	C-CER,CHIP	2203-006201	SA
C223	C-CER,CHIP	2203-006201	SA
C224	C-CER,CHIP	2203-006201	SA
C225	C-CER,CHIP	2203-006423	SA
C226	C-CER,CHIP	2203-006423	SA
C228	C-CER,CHIP	2203-006053	SA
C230	C-CER,CHIP	2203-005682	SA
C233	C-CER,CHIP	2203-006423	SA
C234	C-CER,CHIP	2203-005682	SA
C235	C-CER,CHIP	2203-005682	SA
C236	C-CER,CHIP	2203-005682	SA
C238	C-CER,CHIP	2203-006423	SA
C240	C-CER,CHIP	2203-005682	SA
C241	C-CER,CHIP	2203-005736	SA
C242	C-CER,CHIP	2203-005736	SA
C245	C-CER,CHIP	2203-005682	SA
C246	C-CER,CHIP	2203-005682	SA
C247	C-CER,CHIP	2203-006093	SA

Design LOC	Description	SEC CODE	STATUS
C248	C-CER,CHIP	2203-006093	SA
C249	C-CER,CHIP	2203-001072	SA
C250	C-CER,CHIP	2203-006194	SA
C251	C-CER,CHIP	2203-005061	SA
C252	C-CER,CHIP	2203-005061	SA
C253	C-CER,CHIP	2203-005061	SA
C254	R-CHIP	2007-008542	SA
C255	R-CHIP	2007-008516	SA
C256	C-CER,CHIP	2203-006194	SA
C257	C-CER,CHIP	2203-006423	SA
C258	C-CER,CHIP	2203-006093	SA
C259	C-CER,CHIP	2203-006423	SA
C300	C-CER,CHIP	2203-006201	SA
C301	C-CER,CHIP	2203-006423	SA
C302	C-CER,CHIP	2203-006201	SA
C303	C-CER,CHIP	2203-000995	SA
C304	C-CER,CHIP	2203-005736	SA
C306	C-CER,CHIP	2203-005736	SA
C307	C-CER,CHIP	2203-001178	SA
C308	C-CER,CHIP	2203-000386	SA
C309	C-CER,CHIP	2203-006423	SA
C310	C-CER,CHIP	2203-001178	SA
C311	C-CER,CHIP	2203-000438	SA
C312	C-CER,CHIP	2203-005446	SA
C313	C-CER,CHIP	2203-005806	SA
C314	C-CER,CHIP	2203-006423	SA
C315	C-CER,CHIP	2203-005056	SA
C316	C-CER,CHIP	2203-000233	SA
C317	C-CER,CHIP	2203-000233	SA
C318	C-CER,CHIP	2203-005446	SA
C319	C-CER,CHIP	2203-000438	SA
C320	C-CER,CHIP	2203-000233	SA
C321	C-CER,CHIP	2203-000233	SA
C323	C-CER,CHIP	2203-006423	SA
C324	C-CER,CHIP	2203-006423	SA
C325	C-CER,CHIP	2203-005736	SA
C326	C-CER,CHIP	2203-000995	SA
C327	C-CER,CHIP	2203-005736	SA
C328	C-CER,CHIP	2203-006423	SA
C329	C-CER,CHIP	2203-000995	SA
C331	C-CER,CHIP	2203-006423	SA
C332	C-CER,CHIP	2203-006423	SA
C333	C-CER,CHIP	2203-000995	SA
C334	C-CER,CHIP	2203-000995	SA
C335	C-CER,CHIP	2203-006093	SA
C336	C-CER,CHIP	2203-006423	SA
C337	C-CER,CHIP	2203-005736	SA
C338	C-CER,CHIP	2203-006194	SA
C339	C-CER,CHIP	2203-006423	SA
C400	C-CER,CHIP	2203-005729	SA
C401	C-CER,CHIP	2203-000585	SA
C402	C-CER,CHIP	2203-000995	SA
C403	C-CER,CHIP	2203-006423	SA
C404	C-CER,CHIP	2203-000585	SA
C406	C-CER,CHIP	2203-002677	SA
C408	C-CER,CHIP	2203-006194	SA
C409	C-CER,CHIP	2203-005740	SA

Electrical Parts List

Design LOC	Description	SEC CODE	STATUS
C410	C-CER,CHIP	2203-000995	SA
C411	C-CER,CHIP	2203-006423	SA
C412	C-CER,CHIP	2203-006201	SA
C413	C-CER,CHIP	2203-000233	SA
C417	C-CER,CHIP	2203-000425	SA
C418	C-CER,CHIP	2203-000885	SA
C419	C-CER,CHIP	2203-006201	SA
C420	C-CER,CHIP	2203-000585	SA
C421	C-CER,CHIP	2203-000885	SA
C422	C-CER,CHIP	2203-000233	SA
C423	C-CER,CHIP	2203-000233	SA
C424	C-CER,CHIP	2203-006423	SA
C425	C-CER,CHIP	2203-006194	SA
C426	C-CER,CHIP	2203-005740	SA
C428	C-CER,CHIP	2203-006379	SA
C429	C-CER,CHIP	2203-006194	SA
C430	C-CER,CHIP	2203-005740	SA
C431	C-CER,CHIP	2203-005806	SA
C432	C-CER,CHIP	2203-001259	SA
C434	C-CER,CHIP	2203-002668	SA
C435	C-CER,CHIP	2203-005736	SA
C436	C-CER,CHIP	2203-002687	SA
C437	C-CER,CHIP	2203-006194	SA
C438	C-CER,CHIP	2203-006190	SA
C439	C-CER,CHIP	2203-005480	SA
C440	C-CER,CHIP	2203-006423	SA
C441	C-CER,CHIP	2203-006423	SA
C442	C-CER,CHIP	2203-006201	SA
C443	C-CER,CHIP	2203-006423	SA
C444	C-CER,CHIP	2203-006674	SNA
C445	C-CER,CHIP	2203-005281	SA
C500	C-CER,CHIP	2203-001072	SA
C501	C-CER,CHIP	2203-001072	SA
C502	C-CER,CHIP	2203-006053	SA
C503	C-CER,CHIP	2203-005482	SA
C504	C-CER,CHIP	2203-006556	SA
C505	C-CER,CHIP	2203-006556	SA
C506	C-CER,CHIP	2203-006556	SA
C507	C-CER,CHIP	2203-005717	SA
C508	C-CER,CHIP	2203-006556	SA
C509	C-CER,CHIP	2203-006556	SA
C510	C-CER,CHIP	2203-006556	SA
C511	C-CER,CHIP	2203-006556	SA
C512	C-CER,CHIP	2203-005717	SA
C513	C-CER,CHIP	2203-006556	SA
C514	C-CER,CHIP	2203-006556	SA
C515	C-CER,CHIP	2203-006556	SA
C516	C-CER,CHIP	2203-006556	SA
C517	C-CER,CHIP	2203-006556	SA
C518	C-CER,CHIP	2203-006093	SA
C519	C-CER,CHIP	2203-006053	SA
C520	C-CER,CHIP	2203-006190	SA
C521	C-CER,CHIP	2203-006053	SA
C522	C-CER,CHIP	2203-006093	SA
C524	C-CER,CHIP	2203-000233	SA
C525	C-CER,CHIP	2203-000233	SA
C526	C-CER,CHIP	2203-006556	SA

Design LOC	Description	SEC CODE	STATUS
C527	C-CER,CHIP	2203-006556	SA
C528	C-CER,CHIP	2203-006556	SA
C529	C-CER,CHIP	2203-006556	SA
D200	DIODE-SWITCHING	0401-001110	SA
D201	DIODE-SWITCHING	0401-001110	SA
D205	DIODE-SWITCHING	0401-001086	SA
DUF400	DUPLEXER-FBAR	2910-000009	SA
DUF402	DUPLEXER-SAW	2909-001244	SA
EAR200	JACK-EAR PHONE	3722-002315	SA
F300	FILTER-SAW	2904-001533	SA
F301	FILTER-SAW	2904-001519	SA
F302	VARISTOR	1405-001119	SA
F303	VARISTOR	1405-001119	SA
F401	FILTER-SAW	2904-001499	SA
F403	FILTER-SAW	2904-001474	SA
F500	FILTER-EMI SMD	2901-001268	SA
F501	FILTER-EMI SMD	2901-001268	SA
F502	FILTER-EMI/ESD	2901-001362	SA
F503	FILTER-EMI/ESD	2901-001362	SA
F504	FILTER-EMI/ESD	2901-001362	SA
F505	FILTER-EMI/ESD	2901-001362	SA
F506	VARISTOR	1405-001158	SA
F507	VARISTOR	1405-001158	SA
F508	VARISTOR	1405-001158	SA
HDC500	HEADER-BOARD TO BOARD	3711-005490	SA
HDC501	HEADER-BOARD TO BOARD	3711-005643	SA
HDC502	HEADER-BOARD TO BOARD	3711-005456	SA
IFC201	CONNECTOR-INTERFACE	3710-001611	SA
L100	BEAD-SMD	3301-001342	SA
L101	INDUCTOR-SMD	2703-002207	SA
L200	INDUCTOR-SMD	2703-002775	SA
L201	INDUCTOR-SMD	2703-002775	SA
L202	BEAD-SMD	3301-001342	SA
L300	INDUCTOR-SMD	2703-001723	SA
L301	INDUCTOR-SMD	2703-002198	SA
L302	INDUCTOR-SMD	2703-002204	SA
L303	INDUCTOR-SMD	2703-002268	SA
L304	INDUCTOR-SMD	2703-002170	SA
L305	INDUCTOR-SMD	2703-002170	SA
L306	INDUCTOR-SMD	2703-002208	SA
L307	INDUCTOR-SMD	2703-002369	SA
L308	INDUCTOR-SMD	2703-002314	SA
L309	INDUCTOR-SMD	2703-002208	SA
L310	INDUCTOR-SMD	2703-002200	SA
L311	INDUCTOR-SMD	2703-002208	SA
L312	INDUCTOR-SMD	2703-002200	SA
L313	INDUCTOR-SMD	2703-002208	SA
L314	INDUCTOR-SMD	2703-001729	SA
L315	INDUCTOR-SMD	2703-002281	SA
L400	INDUCTOR-SMD	2703-001749	SA
L403	INDUCTOR-SMD	2703-002206	SA
L404	BEAD-SMD	3301-001120	SA
L405	INDUCTOR-SMD	2703-002206	SA
L406	INDUCTOR-SMD	2703-002207	SA
L407	INDUCTOR-SMD	2703-002281	SA
L408	INDUCTOR-SMD	2703-002207	SA
L409	INDUCTOR-SMD	2703-002207	SA

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Design LOC	Description	SEC CODE	STATUS
L500	BEAD-SMD	3301-001729	SA
L501	BEAD-SMD	3301-001729	SA
L503	INDUCTOR-SMD	2703-002204	SA
OSC100	RESONATOR-CERAMIC	2802-001182	SA
OSC101	CRYSTAL-SMD	2801-003856	SA
PAM400	IC-POWER AMP	1201-002268	SA
PAM403	IC-POWER AMP	1201-002259	SA
R100	R-CHIP	2007-001313	SA
R101	R-CHIP	2007-000171	SA
R102	R-CHIP	2007-000171	SA
R105	R-CHIP	2007-000171	SA
R106	R-CHIP	2007-008542	SA
R107	R-CHIP	2007-000171	SA
R109	R-CHIP	2007-008052	SA
R110	R-CHIP	2007-008531	SA
R111	R-CHIP	2007-008542	SA
R113	R-CHIP	2007-000171	SA
R114	R-CHIP	2007-008055	SA
R115	R-CHIP	2007-000141	SA
R116	R-CHIP	2007-000171	SA
R120	R-CHIP	2007-000140	SA
R121	R-CHIP	2007-001319	SA
R122	R-CHIP	2007-001339	SA
R123	R-CHIP	2007-008516	SA
R124	R-CHIP	2007-000169	SA
R127	R-CHIP	2007-008516	SA
R128	R-CHIP	2007-001339	SA
R129	R-CHIP	2007-000171	SA
R131	R-CHIP	2007-008419	SA
R132	R-CHIP	2007-000156	SA
R133	R-CHIP	2007-008516	SA
R134	R-CHIP	2007-002796	SA
R135	R-CHIP	2007-000165	SA
R136	R-CHIP	2007-000169	SA
R137	R-CHIP	2007-007529	SA
R138	R-CHIP	2007-007107	SA
R139	R-CHIP	2007-007313	SA
R140	R-CHIP	2007-000775	SA
R141	R-CHIP	2007-008052	SA
R142	R-CHIP	2007-008516	SA
R143	R-CHIP	2007-008419	SA
R144	R-CHIP	2007-001308	SA
R147	R-CHIP	2007-008806	SA
R200	R-CHIP	2007-000162	SA
R201	R-CHIP	2007-000148	SA
R202	R-CHIP	2007-007107	SA
R203	R-CHIP	2007-007488	SA
R204	R-CHIP	2007-007107	SA
R205	R-CHIP	2007-008516	SA
R206	R-CHIP	2007-007139	SA
R207	R-CHIP	2007-007309	SA
R208	R-CHIP	2007-007137	SA
R209	R-CHIP	2007-007107	SA
R213	R-CHIP	2007-003006	SA
R219	R-CHIP	2007-008419	SA
R220	R-CHIP	2007-008419	SA
R222	R-CHIP	2007-003006	SA

Design LOC	Description	SEC CODE	STATUS
R228	R-CHIP	2007-000140	SA
R229	R-CHIP	2007-000148	SA
R230	R-CHIP	2007-000242	SA
R231	R-CHIP	2007-000758	SA
R232	R-CHIP	2007-001313	SA
R233	R-CHIP	2007-001313	SA
R234	R-CHIP	2007-000156	SA
R300	R-CHIP	2007-009115	SA
R301	R-CHIP	2007-009115	SA
R302	R-CHIP	2007-007491	SA
R303	R-CHIP	2007-007314	SA
R304	R-CHIP	2007-007314	SA
R305	R-CHIP	2007-007314	SA
R306	R-CHIP	2007-008045	SA
R307	R-CHIP	2007-008045	SA
R308	R-CHIP	2007-008542	SA
R309	R-CHIP	2007-008531	SA
R310	R-CHIP	2007-000171	SA
R311	R-CHIP	2007-008531	SA
R312	R-CHIP	2007-008806	SA
R313	R-CHIP	2007-008419	SA
R314	R-CHIP	2007-000138	SA
R400	R-CHIP	2007-007309	SA
R401	R-CHIP	2007-001325	SA
R402	R-CHIP	2007-008531	SA
R403	R-CHIP	2007-000140	SA
R404	R-CHIP	2007-008516	SA
R405	R-CHIP	2007-008419	SA
R406	R-CHIP	2007-008478	SA
R407	R-CHIP	2007-008531	SA
R408	R-CHIP	2007-008587	SA
R500	R-CHIP	2007-008542	SA
R502	R-CHIP	2007-008542	SA
R503	R-CHIP	2007-008542	SA
R508	R-CHIP	2007-008052	SA
R509	R-CHIP	2007-008052	SA
R510	R-CHIP	2007-008483	SA
R512	R-CHIP	2007-003010	SA
R513	R-CHIP	2007-003010	SA
R514	R-CHIP	2007-003010	SA
R515	R-CHIP	2007-008542	SA
RFS400	CONNECTOR-COAXIAL	3705-001358	SA
TA204	C-TA,CHIP	2404-001268	SA
TA205	C-TA,CHIP	2404-001268	SA
TA231	C-TA,CHIP	2404-001151	SA
TA232	C-TA,CHIP	2404-001151	SA
TA330	C-TA,CHIP	2404-001268	SA
TA406	C-TA,CHIP	2404-001105	SA
TCK301	OSCILLATOR-VCTCXO	2809-001277	SA
TH100	THERMISTOR-NTC	1404-001165	SA
TR100	FET-SILICON	0505-001889	SA
TR400	TR-DIGITAL	0504-001176	SA
TR401	TR-DIGITAL	0504-001176	SA
U101	IC-CMOS LOGIC	0801-002345	SA
U103	IC-VOL. DETECTOR	1203-003408	SA
U104	BLUETOOTH MODULE	4709-001410	SA
U200	IC-POWER SUPERVISOR	1203-003495	SA

Design LOC	Description	SEC CODE	STATUS
U201	IC-CMOS LOGIC	0801-002661	SA
U203	DIODE-ARRAY	0407-001038	SA
U204	IC-ANALOG MULTIPLEX	1001-001215	SA
U205	IC-ANALOG MULTIPLEX	1001-001215	SA
U206	IC-MULTI REG.	1203-003517	SA
U300	IC-RF AMP	1201-001964	SA
U301	IC-RECEIVER	1205-002265	SA
U302	IC-RF AMP	1201-002291	SA
U401	IC-ANALOG SWITCH	1001-001303	SA
U402	IC-TRANSMITTER	1205-002497	SA
U404	FILTER-SAW	2904-001414	SA
U405	C-CER,CHIP	2203-005682	SA
UCP102	IC-MODEM	1205-002521	SA
UME100	IC-MCP	1108-000044	SNA
VCO300	OSCILLATOR-VCO	2806-001335	SA
VR100	VARISTOR	1405-001110	SA
VR200	VARISTOR	1405-001110	SA
VR500	VARISTOR	1405-001138	SA
VR501	VARISTOR	1405-001138	SA
VR502	VARISTOR	1405-001138	SA
VR503	VARISTOR	1405-001138	SA
VR504	VARISTOR	1405-001138	SA
VR505	VARISTOR	1405-001138	SA
VR506	VARISTOR	1405-001138	SA
VR507	VARISTOR	1405-001110	SA
VR508	VARISTOR	1405-001110	SA
VR509	VARISTOR	1405-001110	SA
ZD200	DIODE-ZENER	0403-001547	SA
ZD201	DIODE-ZENER	0403-001427	SA
ZD202	DIODE-TVS	0406-001208	SA
ZD204	DIODE-ZENER	0403-001339	SA
ZD206	DIODE-TVS	0406-001208	SA

11. PCB Diagrams

11-1. Main PCB Top Diagram



11-2. Main PCB Bottom Diagram

