8. Level 3 Repair

8-1. Components Layout
8-2. Block Diagram
8-3. PCB Diagrams
8-3-1. Top
8-3-2. Bottom
8-4. Flow Chart of Troubleshooting

Equipments

- Oscilloscope

- Digital Multimeter

- Power Supply

- + driver, ESD Safe Tweezer

- 8960 & Spectrum Analyzer

- Soldering iron
8-1-1. Power On

Cell-phone can’t power on.

Check the Battery Voltage, Battery > 3.4V?

Yes

Power-on the phone and check the power-on sound or motor vibration. Sound or vibration ok ?

Yes

Check the TAC5000 Power-key is normal ?

Yes

Check the U4000 output voltage (C4030,C4031=1.15V)

No

Change the Power-key. And retry to the power-on operation.

Abnormal

Check the U4000 output signal (AP_PS_HOLD(TP4001) = 1.8V)

Yes

If the output voltage is not satisfied with normal condition, replace PM4000.

No

If the output voltage is not satisfied with normal condition, replace PM4000

No

Connect TA to charge the battery.

No

Check the Battery Voltage. Battery > 3.4V?

Yes

Check the TAC5000 Power-key is normal ?

Yes

Check the U4000 output voltage (C4030,C4031=1.15V)

Yes

Check the U4000 output signal (AP_PS_HOLD(TP4001) = 1.8V)

Yes

check the initial operation

Yes

END
8-4-2. Initial

- Check the AP Reset
  AP_RST_IN_N(C4049) = 1.8V

  - Yes
    - Re-download Software
    - Abnormal

  - No
    - Check the PM4000

- Check the oscillator clock waveforms.
  19.2Mhz : OSC4000

  - Abnormal
    - Check the OSC4000
    - Check the output clock waveforms and frequency.

    ※ Test condition (Oscilloscope setting):
    : 20.0us.div (time division)

  - Normal
    - Change UCP3000
    - Abnormal
      - Change PBA
        - END
8-4-3. No Service

No service

Check menu setting
Menu → applications → setting → wireless and network → mobile networks → network mode → setting is auto mode?

| Yes | | Yes |
|-----|--------------------------------------------------|
| Menu → Phone → Keypad → *#1234# → check Phone version → PHONE : SM-J7008XXXX or PHONE : unknown | PHONE : J7008XXXX | Check the connection of RF coaxial cable |
| PHONE : unknown | | |
| Check the voltage level PM8916's AP_RST_IN_N = HIGH (1.8V) | | |
| Yes | | Yes |
| Check OSC4000 Frequency = 19.2MHz | | |
| Yes | | Yes |
| Replace UCP3000 | | END |
| No | | No |
| Replace the PM4000 | | Replace the OSC4000 |

※ Schematic : Refer to the 8-4-2 (Initial)
8-4-4. Sim Part - Sim Card 1

Insert SIM card

Yes

Check the status of SIM6000

Yes

Check the SIM Voltage.
C6019 = 1.8V?

No

Replace the U2001

Yes

Replace to SIM6000

END
8-4-4. Sim Part - Sim Card 2

1. Insert SIM card
   - Yes
   - No
     - Replace to SIM6001

2. Check the status of SIM6001
   - Yes
   - No
     - Replace to SIM6001

3. Check the SIM Voltage. C6021 = 1.8V?
   - Yes
   - No
     - Replace the PM4000
8-4-5. Charging Part

- **TA / USB Insert**
  - Yes
  - **Charging Sequence Start**
    - Yes: VBUS_IF_5P0 = 5V
    - No: Check L4013 = 5V, or may not connected TA / USB
  - No: Check VBUS_DET(C4067)=4.8V
    - Yes
    - **Battery is Charging?**
      - Yes
      - **END**
      - No: Resolder or Replace UCP3000
    - No: Resolder and Replace U400
8-4-6. OTG

OTG does not work

Yes

Check CHG_OUT=5V
C4072

Yes

Check VBUS_IF_5P0 =5V
C4058

No

Replace U4002

No

Replace IFC4000

Yes

Replace U4002

Yes

END
8-1-7. Proxy Sensor

Sensor does not work

Yes

Check TSP Connector on Main PBA

No

Reconnect the HDC6002

Yes

Check the TSP connector on LCD Module

No

Reconnect TSP Connector

Yes

Check the VDD_TSP_A3P0(C6026)

No

Resolder or Replace : U6002

Yes

Check the int signal(R6009)

No

Resolder UCP3000

Yes

Replace LCD or TSP Module

END
8-1-8 Microphone Part - Main MIC

Check main microphone function in voice call Handset mode or voice recorder mode

Yes

Check MIC500 SMD Status

Yes

Check the voltage at C5037 = 1.8V?

No

Resolder MIC500

Yes

No

Replace L5003 or PM4000

Yes

Replace PM4000

Check component soldering statuses of L5004

Yes

No

END

Yes

No

Resolder L5004 or Replace PM4000
8-4-9. Speaker Part

1. Check speaker function. Play MP3 with maximum volume level.
   - Yes
     - Check the status of ANT5004 / ANT5005
       - Yes
         - Replace the speaker module
           - Yes
             - END
           - No
             - Resolder ANT5004 / ANT5005
       - No
         - Resolder L5014 / L5015 or Replace PM4000
   - No
     - Resolder L5014 / L5015 or Replace PM4000
8-1-10. Receiver Part

Check receiver function in voice call receiver mode.

- Yes
  - Check the statuses ANT5000 / ANT5001
    - Yes
      - Resolder ANT5000 / ANT5001
    - No
      - No
        - Replace the RCV module
      - Yes
        - Resolder ANT5000 / ANT5001

- No
  - Check the statuses ANT5000 / ANT5001
    - Yes
      - Replace the RCV module
    - No
      - Replace the RCV module

Check RCV module for any damage

- Yes
  - Replace the RCV module
- No
  - Replace the RCV module

Check the signals on C5004 / C5005

- Yes
  - Replace PM4000
- No
  - Replace PM4000

END
8-4-11. BT/WIFI

- BT/WiFi is not working
  - Check BT or WiFi function ON
    - Yes
      - Check the Voltage on C2009 = 1.8V
        - Yes
            - Yes
              - Check the Status of C2002, L2003, C2005
                - Yes
                  - Check the Status of ANT2000
                    - Yes
                      - Resolder or Replace ANT2000
                        - Yes
                          - Resolder or Replace U2009
                            - Yes
                              - END
                    - No
                        - Yes
                          - Check the U4002 (crack, open, damaged, etc.)
                            - No
        - No
          - No
            - No
              - Yes
                - No
                  - Yes
                    - Yes
8-1-12. GPS

GPS is not working

Yes

Check Location services ON

Yes

Check the ANT2001,C2029,L2012,C2030

No

Enable Location services on the setting.

No

Check the ANT2001,C2029,L2012,C2030

Yes

Check the U2010,R2009,R2010

No

Check U2010,R2009,R2010

Yes

Check the F2001,C2032,L2010

No

Resolder or Replace F2001,C2032,L2010

Yes

Change U2011

No

END

Yes
8-1-13. NFC

1. NFC is not working
   - Check NFC function ON
     - Yes
     - No
       1. Check the battery
          - Yes
            1. Check the Voltage on R208 = 1.8V or 1.4V
               - Yes
               - No
                 1. Check the Status of R2013
                    - Yes
                    - No
                      1. Resolder or Replace R215, R218, L2018, L2019, C246, C239, C254, C250
       - No
         1. Enable NFC Function
         2. Check the battery (wrong, damage etc) (NFC Antenna is in battery)
            - Yes
            - No
              1. Check the UCP3000 (crack, open, damaged, etc.)

2. Check the Status of R2013
   - Yes
   - No

3. Resolder or Replace U203
   - Yes
   - No

END
8-1-14. LCD

- LCD is still off after PWR ON
  - Yes
  - No
  - Check the connection of HDC6002
    - Yes
    - No
    - Reconnect the HDC6002
  - No
  - Check VDD_LCD_1P8?(C6025)
    - Yes
    - No
    - Resolder or Replace the U6001
  - Yes
  - Check VSN_5P0,VSN_-5P0? (C6027,C6028)
    - Yes
    - No
    - Resolder or Replace the U6005
  - Yes
  - Replace LCD Module
    - Yes
    - END
8-4-15. 13M CAM

"Camera" function does not work

Check the Camera connector on Main PBA

Reconnect the HDC6000

Check the voltage
C6002 = 2.8V,
C6043 = 1.8V
C6004 = 1.2V

Resolder or Replace PM4000,U4002

Check R6000 is 24MHz

Replace the UCP3000

Replace the camera module

END
8-4-16. VT CAM

"Camera" function does not work

Yes

Check the Camera connector on Main PBA

No

Reconnect the HDC6001

Abnormal

Check the voltage
C6008 = 1.2V?
C6007 = 1.8V?
C6005 = 2.8V?

No

Resolder or Replace PM4000,U4002

Yes

Check R6003 is 24MHz

No

Resolder UCP3000

Yes

Replace the camera module

Yes

END
8-4-17. TSP

- Touch Screen does not work
  - Yes
    - Check TSP Connector on Main PBA
      - Yes
        - Reconnect the HDC6002
      - No
        - Check the TSP connector on LCD Module
          - Yes
            - Reconnect TSP Connector
          - No
            - Check the $\text{VDD\_TSP\_A3P0(C6026)}$
              - Yes
                - Resolder or Replace : U6002
              - No
                - Resolder UCP3000
  - No
    - Check the int signal(R6009)
      - Yes
        - Replace LCD or TSP Module
      - No
        - END
8-1-18. Motor

Motor does not work

Yes

Check the Clip on Main PBA. ANT 5000 and ANT 5001

No

Resolder or Replace : ANT 5000, ANT 5001

Yes

Check the VDD_VIB_3P3(C5058,C545)

No

Resolder or Replace : U4004

Yes

Check the P/N signal (L5015, L5016)

No

Resolder L5015 or L5016

Yes

Replace Motor

Yes

END
8-1-19. GSM 850,900,1800,1900 / LTE FDD BAND 1,3,7 / LTE TDD BAND 38,39,40,41 / TD-SCDMA B34/B39 RX

NORMAL CONDITION

Catch the channel?

Yes


No


soldering condition for any damage (crack, open, etc)

Yes

CHECK soldered components

No

Yes

Resolder or change F1006, F1007, PAM1001

No

Check U2003 for any damage (crack, open, etc)

Yes

Resolder or change U2003

No

Change the board

END
8-1-20. GSM 850,900,1800,1900 / LTE FDD BAND 1,3,7 / LTE TDD BAND 38,39,40,41 / TD-SCDMA B34/B39  TX

NORMAL CONDITION

catch the channel?

Yes

Check
soldering condition for any damage (crack, open, etc)

Yes

CHECK soldered components

No

Check U2003 for any damage (crack, open, etc)

Yes

Resolder or change U2003

No

Resolder or change F1006,F1007,PAM1001

Yes

Check F1006,F1007,PAM1001
for any damage (crack, open, etc)

No

Change the board

END
8-5. Service Schematics
   - NC point (Top view)
   UCP3000(AP)