Lenovo X2
Service Manual

LENOVO
Contents

1. How to assemble and disassemble LENOVO X2 ................................................................. 3
   1.1 The phone disassemble guide ................................................................................. 3
   1.2 The phone assemble guide ...................................................................................... 6
2. Main board and Sub FPC layout introduction ................................................................. 7
   2.1 Main board top view ............................................................................................... 7
   2.2 Main board bottom view ......................................................................................... 8
   2.3 Sub board top view ............................................................................................... 8
   2.4 Sub board bottom view ......................................................................................... 9
3. Troubleshooting Procedure ............................................................................................ 10
   3.1 No boot .................................................................................................................. 10
   3.2 Touch panel have no effect ..................................................................................... 11
   3.3 Charging anomaly ................................................................................................. 12
   3.4 Calling receiver sound has poor quality ................................................................ 14
   3.5 Speaker has no sound ......................................................................................... 15
   3.6 LCD has no display .............................................................................................. 16
   3.7 Phone crash .......................................................................................................... 18
   3.8 Key has no effect ................................................................................................. 19
   3.9 Communication signal abnormality ...................................................................... 20
   3.10 Calling receiver has no sound ........................................................................... 21
   3.11 Microphone has no effect ................................................................................... 22
   3.12 Display color distortion ......................................................................................... 23
   3.13 Speaker tone distortion ....................................................................................... 24
   3.14 Speaker tone smaller .......................................................................................... 25
   3.15 No charging ........................................................................................................ 26
   3.16 Camera has no effect ......................................................................................... 27
   3.17 Auto shutdown ................................................................................................... 29
   3.18 SIM Card has not be detected ............................................................................ 30
1. How to assemble and disassemble LENOVO X2

1.1 The phone disassemble guide

1) Take out the sim-tray

2) Disassemble the bottom of decoration

Use tweezer from the top of decoration and the battery cover gap (the back right side with the red spot mentioned below), released the hooks remove the decoration.

3) Disassemble the rear housing assemble
Note: 1. The solid red dots are hooks position

2. Disassemble tools: Tweezer, Disassemble bar; in order to protect the cover from destroy, the disassemble bar insert just about 2mm

Using the disassemble bar to pry hooks
Released the hook 1 from the lower left corner. The direction of from bottom to top to released the hooks

4) Disassemble the main board

Disassemble the battery connector pressure sheet steel. 2 screws

Release the battery connector
Release brackets

Release the TP connector, LCD connector and main FPC

Remove screws as the solid red dots position

5) Disassemble the sub board

Remove the SPK BOX, 3 screws red arrow board

Remove the RF cable connector from sub
Remove the sub board slowly, pay attention to protect the shrapnel and the hook (The solid red
6) Disassemble battery

If you want disassemble the battery, need to pull out the battery adhesive. The red arrow location

1.2 The phone assemble guide

Assemble and disassemble process is opposite
2. Main board and Sub FPC layout introduction

2.1 Main board top view
2.2 Main board bottom view

GLUE : U1502

2.3 Sub board top view
2.4 Sub board bottom view
3. Troubleshooting Procedure

3.1 No boot

Cannot boot

- Check the Key FPC assembly & Change the power key FPC
  - Y: The phone can power on, the root cause is Key FPC.
  - N: Give the 4v on the PCBA vbat pin but not power on the phone, is there any Overload current() in the PCBA?
    - Y: PCBA is bad, change it.
    - N: Connect the phone to the computer through the USB line, check the computer device manager if there is equipment pops up.
      - Y: Download software and try power on it again.
      - N: Check the 19.2MHz crystal is normal?
        - Y: Check the battery connector SMT is normal?
          - Y: Change the phone to the computer through the USB line, check the computer device manager if there is equipment pops up.
          - N: Heat the battery connector then try it again.
        - N: Check the battery connector SMT is normal?
          - Y: Heat the battery connector then try it again.
          - N: Check PMIC provide power supply to CPU and EMMC are normal?
            - Y: Heat the PMIC or change the PMIC.
            - N: Change memory chip U1502

- N: Heat the PMIC or change the PMIC.
3.2 Touch panel have no effect

Touch panel no respond

Change the lcd&Tp model → Y → Touch panel is not good, change it.

N → Check the lcd connect J1601; Is there any smt problem? → Y → Heat the touch panel connector and EMI filter.

N → Check the I2C controller line signal by the oscilloscope,

N → Change CPU chip
3.3 Charging anomaly

3.3.1 The charger is plugged in, without charging display

- **The charger is plugged in, without any respond**
  - **Y** Replace the charger
  - **N**
    - **Y** Measure the battery voltage, whether it is less than 3V?
      - **Y** Replace the battery
      - **N**
        - **Y** Change the sub board
          - **Y** Sub problem.check the sub board
          - **N**
            - **Y** Change the main fpc and Check the main connector J1701
              - **Y** Main fpc problem
              - **N**
                - **Y** Check the charge ic u1302 ‘s output and input voltage
                  - **Y** Change the U1302
                  - **N**
3.3.2 Connect the phone and computer through USB line, but not any new device was found in the computer

The USB cable is plugged in, without any respond

- Change the usb cable,
  - Y Replace the usb cable
  - N

- Check is there any charger respond?
  - NO This is no charge problem;
  - Y

- Change the sub board
  - Y Sub problem.check the sub board
  - N

- Change the main fpc and Check the main connector J1701
  - Y Main fpc problem
  - N

- Change the U1001
3.4 Calling receiver sound has poor quality

Calling sound poor quality in receiver

Measure the receiver’s resistance, is the value 32ohm?

Y

Check the contact is good between receiver spring and contact point. Reassemble the receiver and whether the phone work is good.

Y

OK

N

OK

N

Replace the U1301

Replace the receiver.

Checks the SMT quality of bead. Whether these parts are SMT good? The phone is work good after heating these parts?
3.5 Speaker has no sound

Speaker has no sound

Replace the speaker, and then does the phone work normal? Whether the speaker spring is normal?

Y
Replace the Sub FPC, and then does the phone work normal?

N
Replace the Sub FPC.

Y Replace the Sub FPC.
N
Checks the SMT quality of these components include the BEAD on the Sub board. Whether these parts are SMT good? The phone is work good after heating these parts?

Y OK
N
Replace the codec IC U1001
3.6 LCD has no display

3.6.1 Power on and no display

White or black screen & no display, backlight is good.

The SMT of LCD connector and EMI filter is not normal?

- Y: OK
- N: Replace the LCD, whether the screen display is normal?

- Y: OK
- N: Checks the SMT quality of these EMI filter. Whether these parts are SMT good?

- Y: OK
- N: Checks the U1603's output voltage;

- Y: Heat tU1603 or change it
- N: Replace the CPU U1001
3.6.2 LCD has no display

LCD has no backlight

Check whether the connection status between the LCD module FPC connector and the motherboard connector is normal, and reconnect the connector whether the phone is working normal.

Y  OK

N

Replace the LCD module, and make sure whether the LCD has the backlight.

Y  OK

N

Check whether the LCD backlight driver (U1604) output voltage is exceeding 20V

Y  The backlight circuit is normal, and the LCD module is bad.

N

Checks the backlight current. And found out the problem; And change the smt part;

Y  OK
3.7 Phone crash

Phone crash

Connecting the phone and computer through USB line, check whether some new device was found in the computer.

Y → Download software

N

Check the 19.2MHz crystal is normal?

Y

Check PMIC provide power supply to CPU and EMMC are normal?

N → Heat the crystal then try it again.

Y

Heat the PMIC or change the PMIC.

Replace the memory U1502, whether the phone is working normal.

Y → OK

N

Change CPU chip U1001
3.8 Key has no effect

Check whether the connection status between the key FPC and the motherboard connector is normal, and reconnect the connector whether the phone is working normal.

Press the key button, make sure whether the key signal line short to ground net.

Change CPU chip U1001
3.9 Communication signal abnormality

Communication signal abnormality

Boot into the engineer test mode to make sure whether the phone has the SN or IMEI number.

Y

Write the SN or IMEI number.

N

Check whether the connection status between the ANT cable and the RF connector is normal, and reconnect the connector whether the phone is working normal.

Y

reconnect the connector

N

Try to download program, whether the downloading is successful.

Y

Find the issue part according to the download tool message.

N

Check the modem circuit and whether the intermediate frequency is good.
3.10 Calling receiver has no sound

Calling receiver has no sound

Measure the resistance of receiver, is the value 32ohm?

N Replace the receiver.

N

Check whether the contact is good between receiver spring and contact point. Re assemble the receiver and whether the phone work is good.

Y OK

N

Checks the SMT quality of these BEAD, Whether these parts are SMT good? The phone is work good after heating these parts?

Y OK

N

Replace the codec IC

Y OK
3.11 Microphone has no effect

MIC no effect

Checks the SMT quality of parts around the MCI

Change the MIC

Check the sub board connector and main fpc; And change the sub board and fpc;

Replay PMIC U1301
3.12 Display color distortion

Display color distortion

The SMT of LCD connector and EMI filter is not normal?

Y → OK

N

Replace the LCD, whether the screen display is normal?

Y → OK

N

Check the U1603’s output voltage; And change the U1603

Y → OK

N

Replace the CPUU1001
3.13 Speaker tone distortion

Replace the speaker, and then does the phone work normal? Whether the speaker spring is normal?

Replace the Main FPC, and then does the phone work normal?

Checks the SMT quality of BEAD on the Sub board and. Whether these parts are SMT good? The phone is work good after heating these parts?

Replace the codec IC in sub board: U1003
3.14 Speaker tone smaller

Speaker tone distortion

Replace the speaker, and then does the phone work normal? Whether the speaker spring is normal?

Y → OK

N → Replace the Main FPC, and then does the phone work normal?

Y → Replace the Main FPC.

N → Checks the SMT quality of BEAD on the Sub board and. Whether these parts are SMT good? The phone is work good after heating these parts?

Y → OK

N → Replace the codec IC in sub board: U1003
3.15 No charging

- **No charging**
  - Change the charger adapter and usb cable, Y Replace the charger
  - N
    - Measure the battery voltage, whether it is less than 3V? Y Replace the battery
      - N
        - Change the sub board Y Sub problem.check the sub board
          - N
            - Change the main fpc and Check the main connector J1701 Y Main fpc problem
              - N
                - Check the charge ic u1302 ‘s out put and in put voltage Y Change the U1302
3.16 Camera has no effect

3.16.1 Main camera has no effect

No effect

Check Camera module connecting is ok?

Replace Camera module is OK?

Check the SMT quality of Camera connect, and reheat it is OK?

Check EMI filter and SMT is OK?

Check the CPU SMT quality is OK?

Y

Y

Y

Y

OK

OK

OK

OK

OK

Reheat it

Reheat and Replace

N

N

N

N

N

N
3.16.2 Sub camera has no effect

No effect

Check Camera module connecting is ok?
  Y → OK
  N → Replace Camera module is OK?
    Y → OK
    N → Check the SMT quality of Camera connect, and reheat it is OK?
      Y → OK
      N → Check EMI filter and SMT is OK?
        N → Reheat it
        Y → Check the CPU SMT quality is OK?
          N → Reheat and Replace
3.17 Auto shutdown

Auto shutdown

Check battery temperature detection pin, connector is good?

Y

Charging battery or replace the connect.

N

Using power source supply power, any overload current?

Y

Check and found out the over current parts;

N

Download the coder again.

Y

According to the tools prompt, fixed bad components

N

Check SW vision, SN, IMEI

Y

Modem chip is ok?

N

Charging is OK?

Y

Check charge chip is ok?

N

Check CPU is ok?
3.18 SIM Card has not be detected

Sim No detected

Change SIM card

Y

Change new SIM card

N

Change SIM tray.

Y

Change new SIM tray

N

Check SN, IMEI have been written?

Y

Rewrite SN and IMEI number.

N

Change SIM tray.

Y

OK

N

Change the U1001 and U1901

Y

OK

N

Check the SIM card current in the main board; found out open current;

Y

OK

N