SERVICE MANUAL

FOR

DIAGNOSTIC ULTRASOUND SYSTEM

MODEL EBIT 50

CHISON MEDICAL IMAGING CO., LTD.

We reserve the right to make changes to this manual without prior notice.

CONTEXT

Chapter 1 GENERAL INTRODUCTION

1.1 Introduction

This guide covers the preparation and maintenance of the ultrasound system, transducers, and accessories. Refer to the manufacturers' instructions for specific information about peripherals. Please read the information in this guide before providing service to EBIT 50 color ultrasound system. It applies to the ultrasound system, and transducers.

1.2 Service policy

CHISON provides life-time service for all produced ultrasound machines. Meanwhile, according to the warranty card enclosed in the packing box, the corresponding free warranty period is provided for the main unit and probe (transducer) from the date of Ex-factory.
CHISON Service Dept. provides efficient service solutions to customers timely, including technical support, spare parts support, field service, upgrade, warranty extension, and on demand service.
The engineer must have ultrasound training before provide service, CHISON can provide varieties of training, including operation, application maintenance, and troubleshooting.

1.3 Service Procedure

If you encounter difficulty with proving service to CHISON products, please refer to the user manual and service manual firstly to correct the problem.
If the problem is still not solved there, please contact with CHISON Service Dept at the following numbers or addresses:

CHISON website: www.chison.com.

Service Support: Tel: 0086-510-85310012

Fax: 0086-510-85310726

E-mail: service@chison.com.cn

⓿ **Caution :Important information**

1. *It is the customer's responsibility to maintain and manage the system after delivery.*

2. *The warranty does not cover the following items, even during the warranty period:*

   a) *Damage or loss due to misuse or abuse with system and probes, for example, drop the probe, the liquid or the metal part fall into the system.*

   b) *Damage or loss caused by Acts of God such as fires, earthquakes, floods, lightning, etc.*

   c) *Damage or loss caused by failure to meet the specified conditions for this system, such as inadequate power supply, improper installation or environmental conditions.*

   d) *Damage or loss caused by non approved transportation by CHISON.*

   e) *Damage or loss due to use the system outside the region where the system was originally sold.*

   f) *Damage or loss involving the system purchased from a source other than CHISON or its authorized agents.*

3. *Do not make changes or modifications to the software or hardware of this system and probes.*

4. *During operate the system, if user has any doubt, difficulty or any unclear, please contact CHISON's authorized service engineer immediately. Please describe the situation clearly to solve the question in time. Before solve the question, please don't operate the system.*

5. *This system shall not be used by persons other than fully qualified and certified medical personnel.*

6. *The device can only be sold to qualified medical institutions or doctors. The users shall fully understand and master the devices before operating. The users shall have got the qualification, and shall comply with the local laws and regulations, the local religion and customs, etc.*

7. *The System modified or repaired by people other than CHISON's qualified service engineers, CHISON shall not be liable for the system.*

8. *The purpose of this system is to provide physicians with data for clinical diagnosis. It is the physician's responsibility for diagnostic procedures. CHISON shall not be liable for the results of diagnostic procedures*

9. *This manual contains warnings regarding foreseeable potential dangers, but user shall always be alert to dangers other than those indicated as well. CHISON shall not be liable for damage or loss that results from negligence*

or from ignoring the precautions and operating instructions described in this operation manual.

10. *Due to negligence not following operation manual, CHISON shall not be liable for the results.*

11. *Each time before and after ultrasound examination, please check the probe surface, probe cable and sheath whether they are abnormal, such as cracking, peeling and deformation. Also check whether the lens is strongly fixed. Abnormal probes may cause electric shock and injure the patient. Once any abnormal, user must stop using and contact CHISON's authorized service engineer.*

12. *If the probe is dropped or scratched by hard part, please stop using the probe immediately. And contact CHISON's authorized service engineer to make sure the safety and effectiveness is in good condition before use.*

13. *If there is any liquid or metal to enter to the system, please power off the system and stop using it immediately. Please first contact CHISON's authorized service engineer to make sure it's safe before restart using it.*

14. *Please don't use solvents (such as paint thinner, benzine, or alcohol) or abrasive cleansers for cleaning the system (including monitor and probes, etc). It may corrode the system and probes.*

15. *The following environmental conditions are within system tolerances for operation:*
Temperature: 10º C ~ 40º C   Relative Humidity: 30%~75%, non-condensing

16. *Important data must be backed up on external memory media. CHISON shall not be liable for loss of data stored in the memory of this system caused by operator error or accidents.*

17. *LCD display screen may have some dark or light dots, it is normal for the LCD. It does not mean that LCD screen is defective.*

18. *Please put this service manual with the system to ensure operator and manager can reach it at any time.*

19. *Please start to disassemble the system in 2 minutes after the system is OFF.*

20. *While open the metal box, please note the sharp edge of metal part to avoid to cut the finger.*

21. *Before disassembling any circuit board, the connection between the power supply and the built-in battery must be disconnected.*
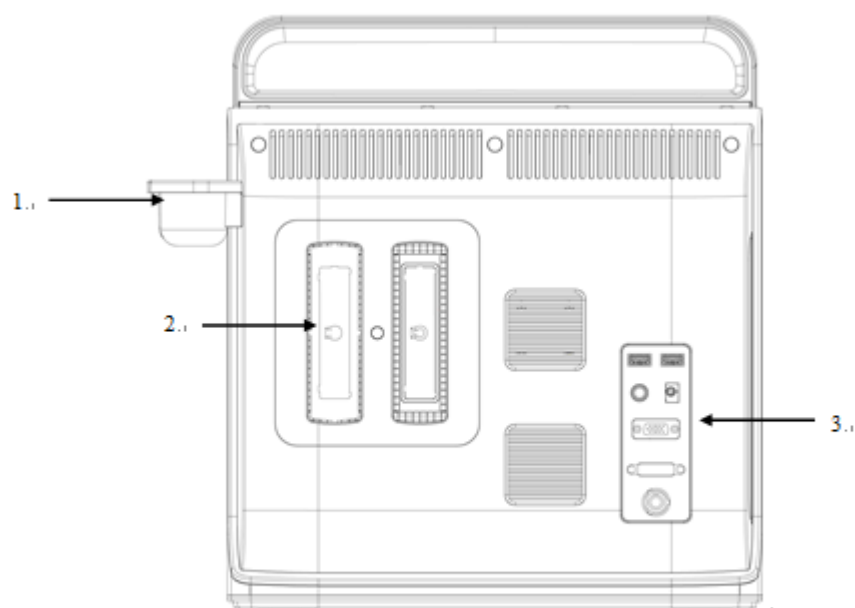
CHAPTER 2 DISASSEMBLE MACHINE

2.1 SYSTEM OVERVIEW
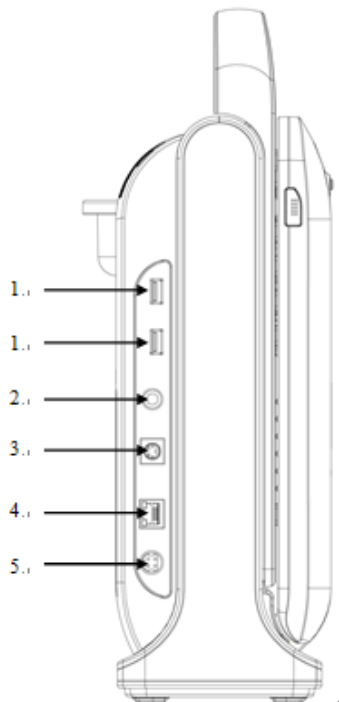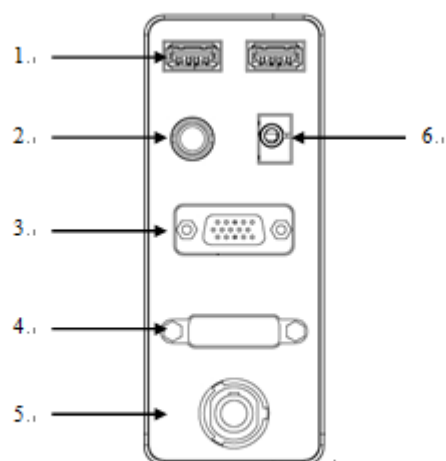

System Left Side View

1. USB 2.0   2. FOOT SWITCH   3. S-VIDEO   4. Ethernet   5.Power in

Rear View.
1.Probe Holder   2.Probe Ports   3.Rear External Interface.

Rear External Interface.
1. USB 2.0   2.VIDEO OUT   3.VGA   4.DVI   5.ECG   6.REMOTE.

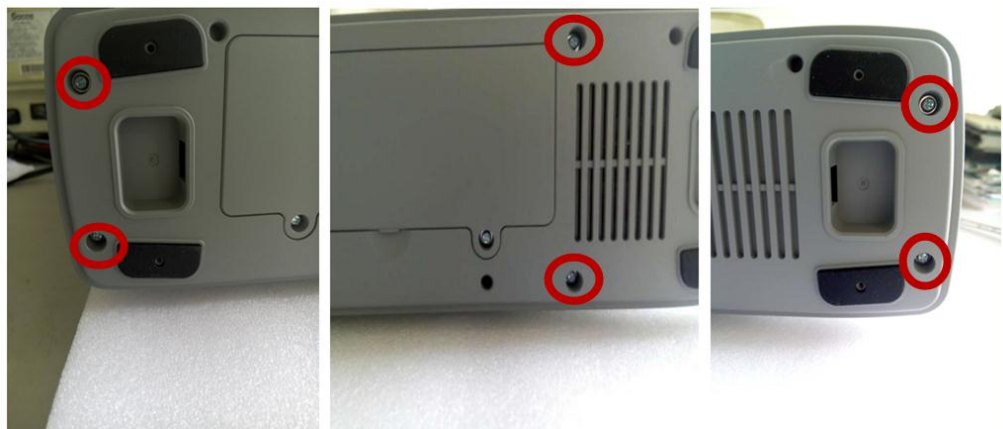## 2.2 Disassemble the ultrasound module and power module

2.2.1
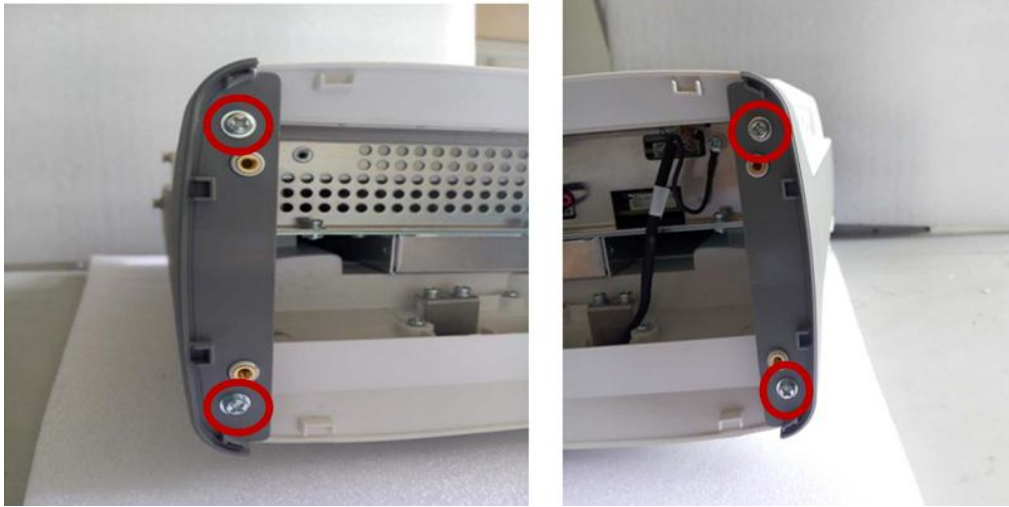
Remove 2 screws from the battery cover.

2.2.2

Remove the 6 screws to remove the panel.

2.2.3

Remove the 4 screws marked in the picture and gently remove the side panels.

2.2.4

In order to disassemble back panel we need to remove the 4 screws.

2.2.5

Remove the screws marked in the picture to disassemble the transducer board.
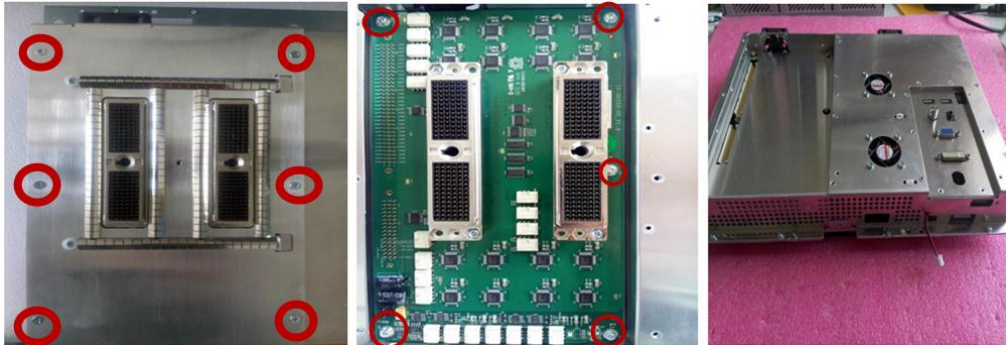
2.2.6

Remove the 13 screws marked in the picture to dismantle the metal baffle.
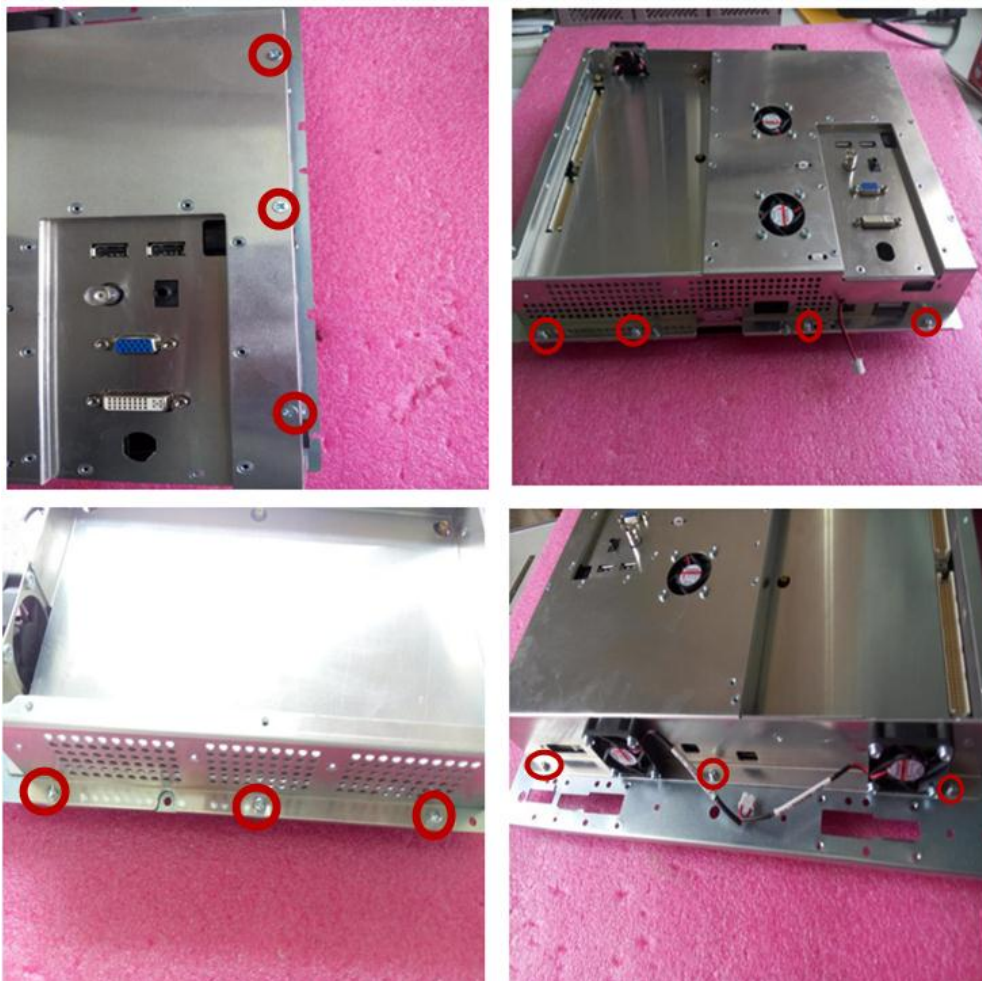
2.2.7

To disassemble the board we need to remove the 3 screws.
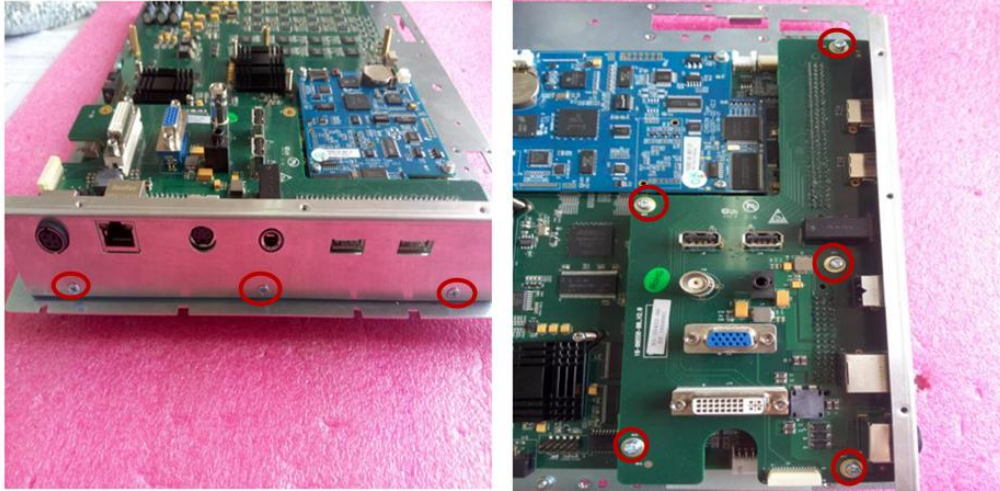
2.2.8

Remove the 4 screws marked in the picture to dismantle the OMAP board.
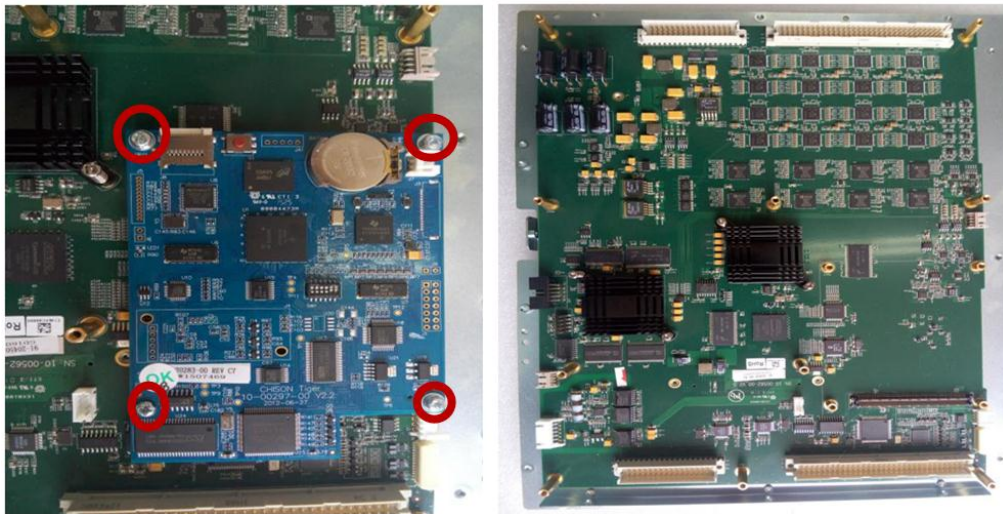
2.2.9

Remove the 8 screws marked in the picture to disassemble the cover and the power supply board.

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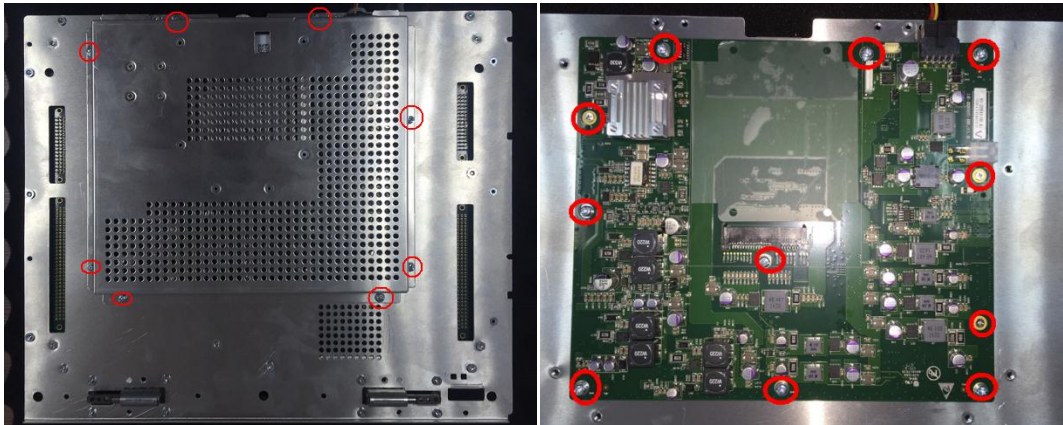
2.2.10

Remove the screws and the main board.

2.3 Disassemble the monitor module

2.3.1

Cut the ribbon and pull out the ribbon, then remove the ultrasound module to disassemble the monitor module.

2.3.2

Remove the 8 screws.

2.3.4

Remove the screws to get the monitor itself.

2.4 Disassemble the keyboard module

2.4.1

Remove the screws on the keyboard.

2.4.2

Pull out the cables marked in the picture.
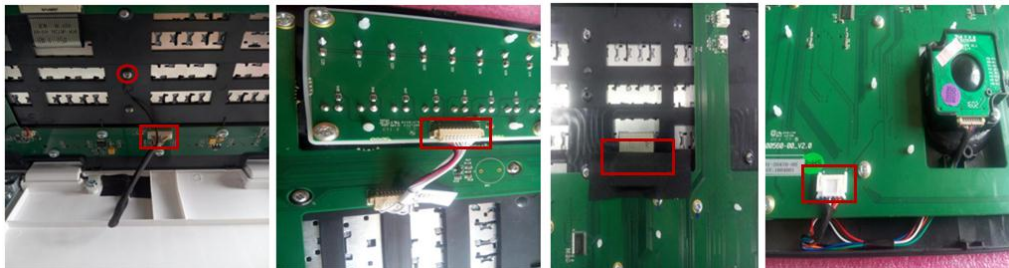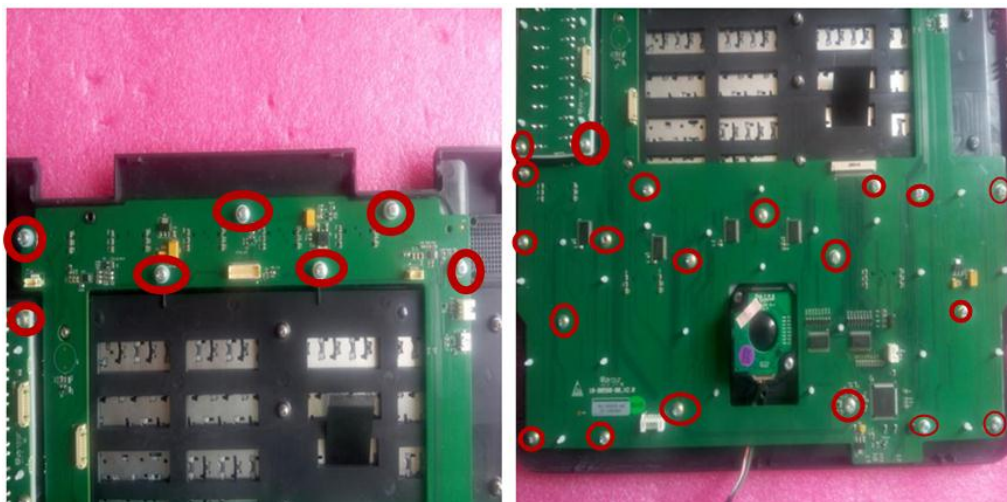

2.4.3

Pull out the cables from the speakers.
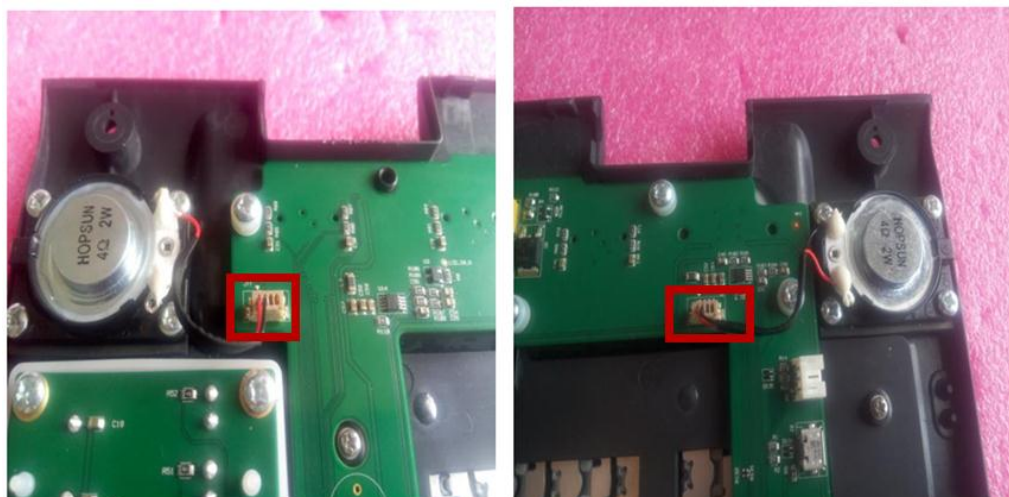
2.4.3

Remove the nocks marked in the picture.

2.4.4

Remove the screws and you will get the keyboard PCB.

CHAPTER3 TROUBLE SHOOTING

According to the most frequently occurred errors and system messages, the list of possible causes and relevant solutions is attached as below:

No.	Errors & Messages	Possible Cause	Solution
1	When turn on the system, power-indicating lamp is not lit.	Battery failure, the adapter is not working properly.	Check the power cable connection to make sure it's good.
2	When turn on the system, power indicating lamp is lit, but no images on the monitor.	1. The system is restarted too shortly after it is turned off. 2. the connection between the monitor and DSC board	1. Wait for 1 minute to restart the system after turning off. 2. Check the LVDS cable connection to make sure it's connection is good.
3	Menu bar displays on the screen but no scanning image	1. Transmission frequency, gain or TGC control is not set properly. 2. No probe is connected or probe is connected improperly The system is in frozen status	1. Adjust the transmission frequency, gain or TGC control. 2.Ensure the probe is connect correctly 3. Defreeze the system by pressing the FREEZE key.
4	Image quality is abnormal	1.Examination mode is not correct 2.Image processing parameters are set improperly	1. Set the exam mode correctly. 2.Adjust the setting of image processing or set it to default setting
5	Wrong probe type show on screen.	1. The probe is not connected well with probe connector. 2. Internal circuit protection	1. Reconnect probe correctly. 2. Restart the system.

CHAPTER4 YSTEM AND SOFTWARE UPGRADE

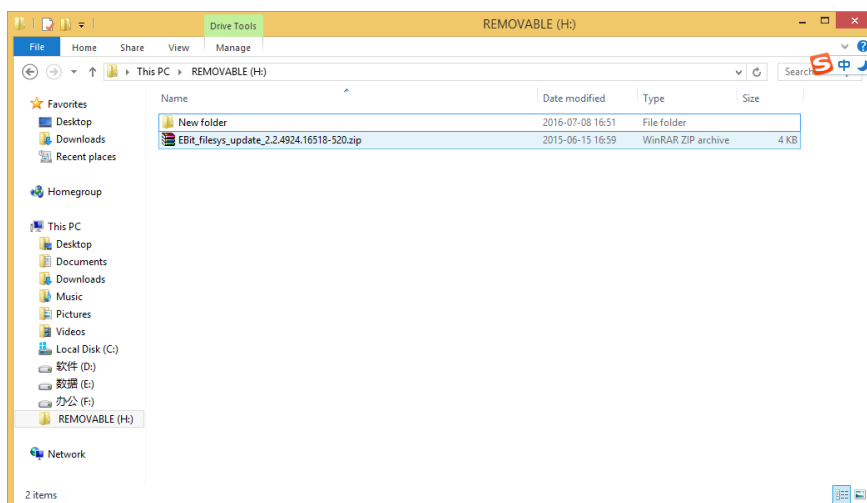## 4.1.1. SYSTEM UPGRADE

4.1.1

Find an empty USB disk, 2GB volume is easiest to be found by the main unit, change USB disk as FAT32 and quick format.
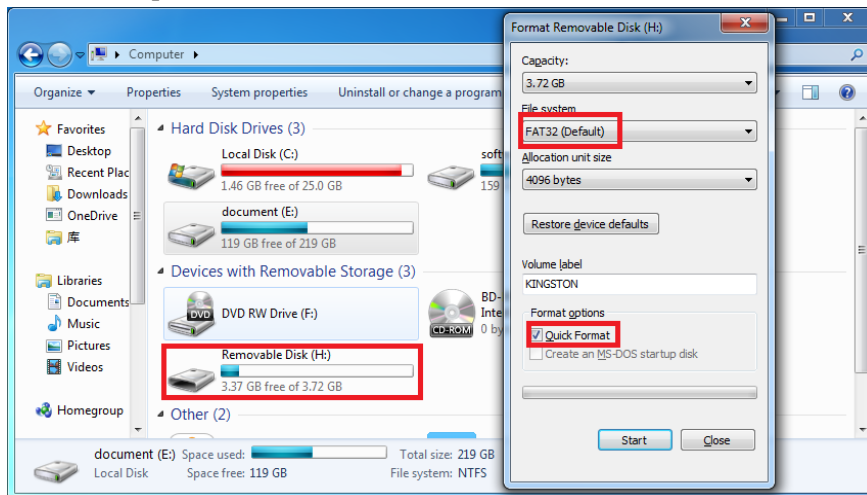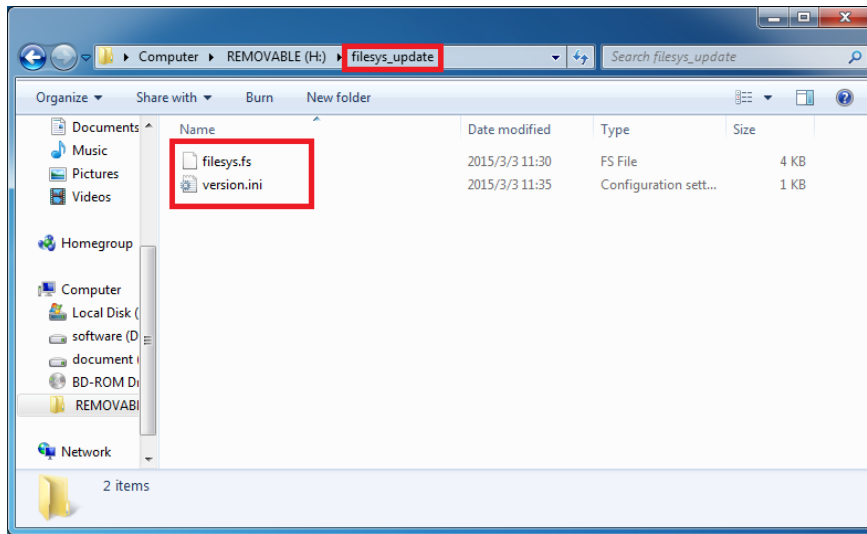

4.1.2

Get the update file , the files are zipped and named as EBit system_update_ X.X.XXXX.XXXX-XX Sometimes the name of the file will be marked EBit50. Don't worry, this file can be used normally.

4.1.3

Confirm when you open the folder filesys_update, there should be sub files in the folder.

Note: Confirm there should be uncovered sub files in the filesys_update folder. Otherwise, system interface will prompt：No files can be found!!

4.1.4

Insert the U disk into the USB socket, Press SETUP key on the key on the keyboard, choose System to get into System Settings interface.

Click the "update" item in system interface firstly and then click the "update" in the following interface box .System will upgrade the software automatically.
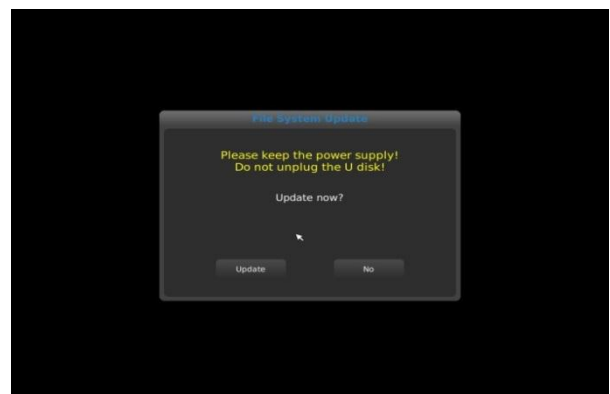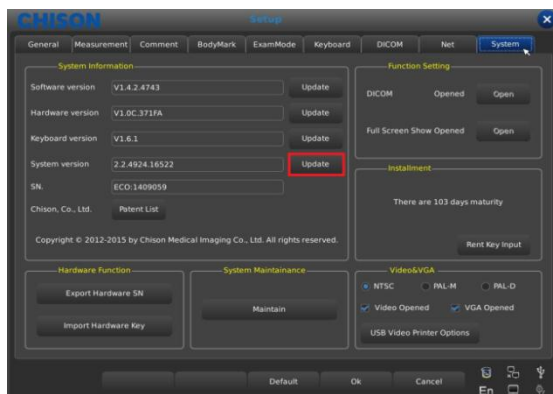
4.1.5

If the upgrade is completed, please restart the machine, and the following dialog will pop up.
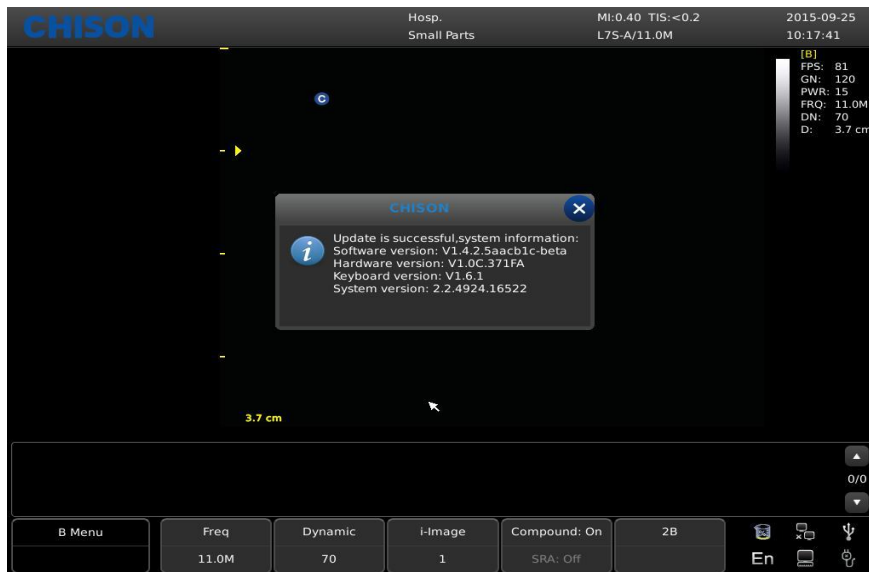
4.2.SOFTWARE AND HARDWARE UPGRADE

4.2.1

Please contact with CHISON Service Dept. Get the newest upgrade package. The package is different with each unit, please provide the serial no. (SN) when you ask for the files. It includes two files: fpga_update.rar and update_EBit-xxxxxxx (serial no.).zip
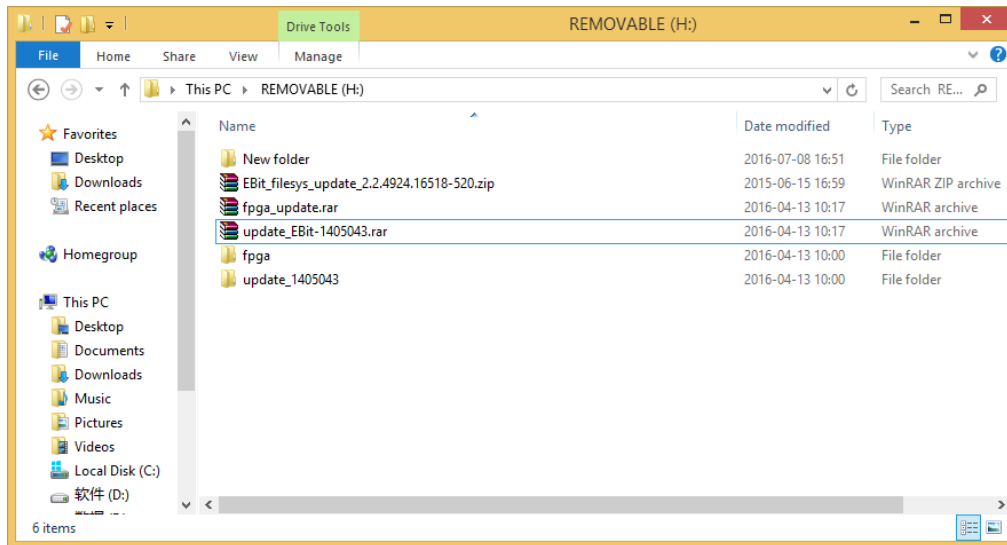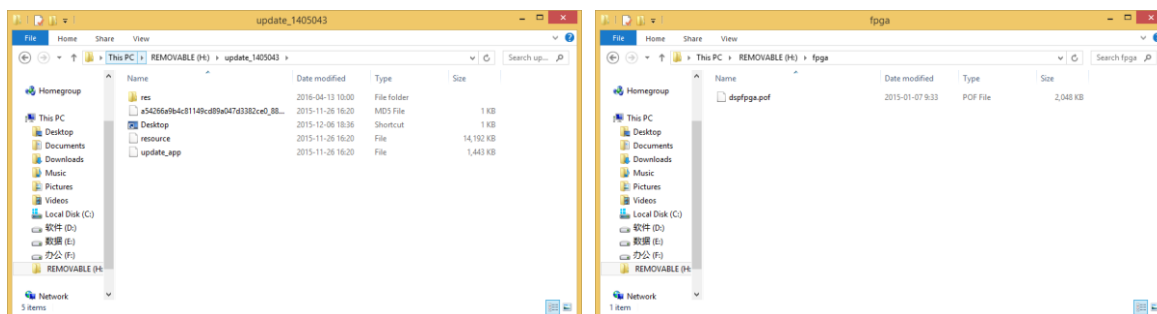

4.2.2

Unzip the files, we recommed " WinRAR " software tool to unzip. You will get two folders as below, update_SN and fpga, copy them to the root directory of flash disk.
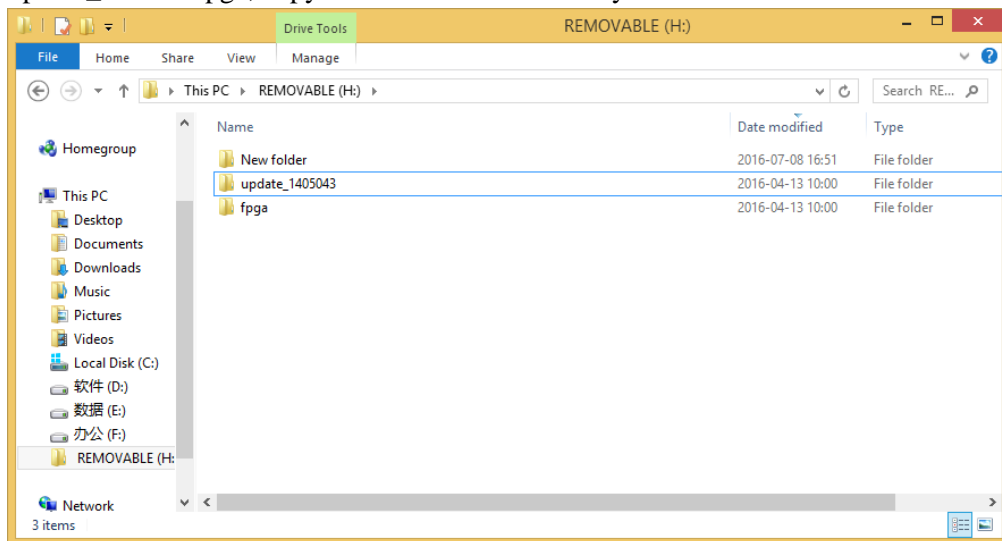
4.2.3

Please confirm when you open the folders, there should be subfile in the folder;


4.2.4

Insert the U disk into the USB socket, Press SETUP key on the key on the keyboard, choose System to get into System Settings interface.

⓵ Caution：*Never unplug the U disk or cut off the power supply during upgrade, or the system will be breakdown, the software should be upgraded firstly, hardware following.*
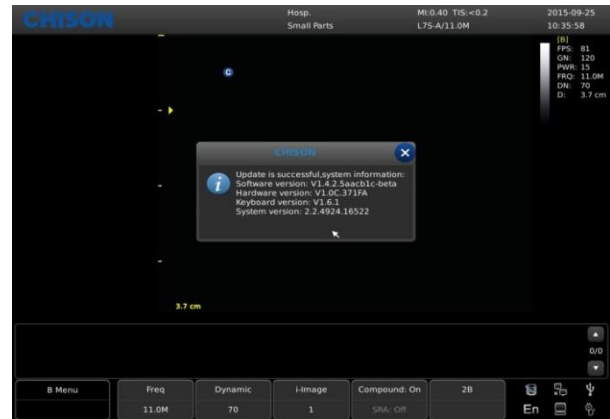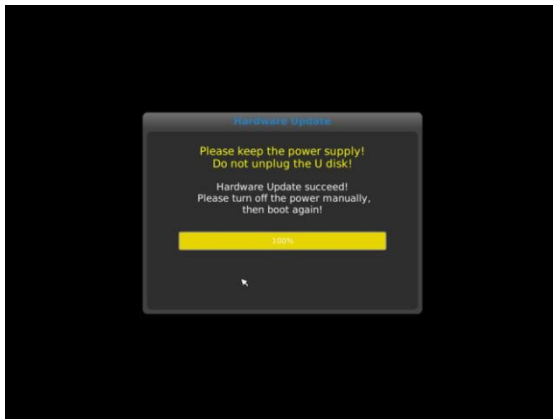
4.2.4

Click the "update" item of software firstly and confirm "update", the system will upgrade the software automatically
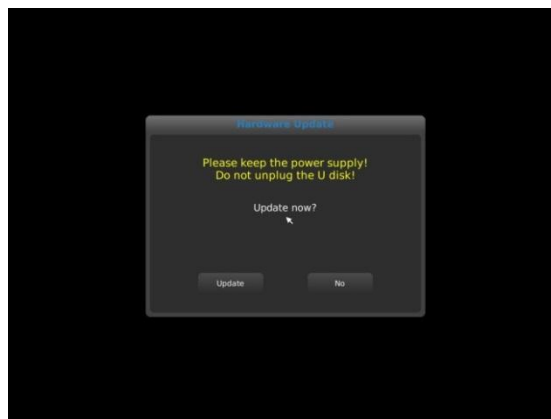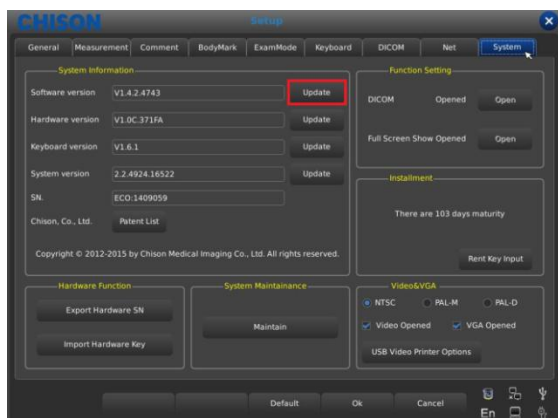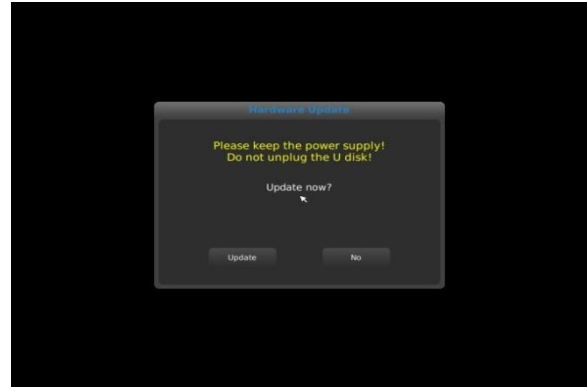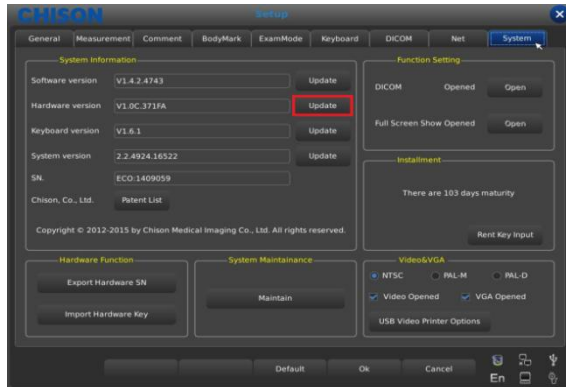
4.2.5

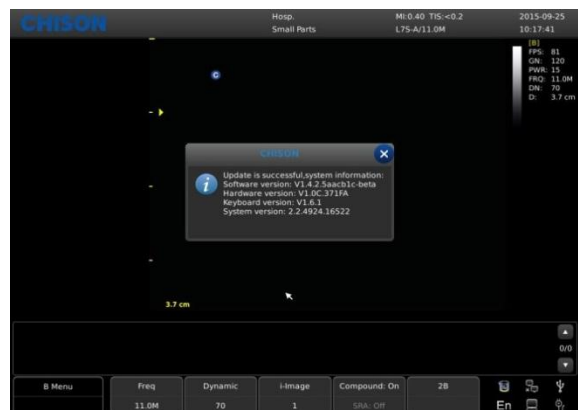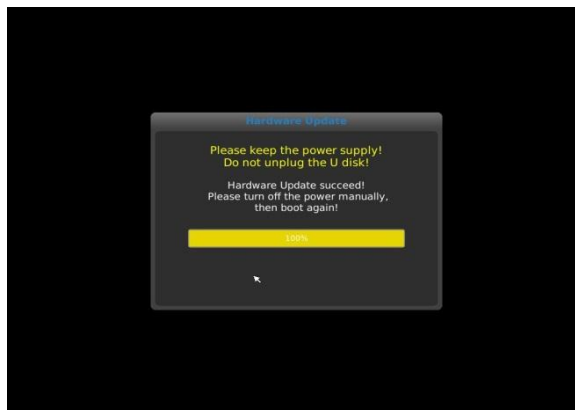Manually boot the machine, and you will see the following tips.

4.2.6

When the machine restart and get into the system interface, then click the "update" item of hardware and confirm "update" , the system will upgrade the hardware automatically

4.2.7

Manually boot the machine, and you will see the following tips.

![Caution icon] **Caution：Solution for upgrade failure:**

1) Please confirm the U disk is a good one, or you may try with another U disk.
2) The volume for U disk (2GB is the best), too small or too big volume is not easy for machine to recognize.
3) Please confirm there will be subfiles once you open the upgrade folder or fpga folder.
4) The upgrade package is damaged during the downloading or unzip, you can try to download and unzip again.
5) Please confirm the USB disk is found.