1. Important Safety Notice

Product Announcement:

This product is certificated to meet RoHS Directive and Lead-Free produced definition. Using approved critical components only is recommended when the situation to replace defective parts. Vender assumes no liability express or implied, arising out of any unauthorized modification of design or replacing non-RoHS parts. Service providers assume all liability.

Qualified Repairability:

Proper service and repair is important to the safe, reliable operation of all series products. The service providers recommended by vender should be aware of notices listed in this service manual in order to minimize the risk of personal injury when perform service procedures. Furthermore, the possible existed improper repairing method may damage equipment or products. It is recommended that service engineers should have repairing knowledge, experience, as well as appropriate product training per new model before performing the service procedures.

NOTICE:

! To avoid electrical shocks, the products should be connected to an authorized power cord, and turn off the master power switch each time before removing the AC power cord.
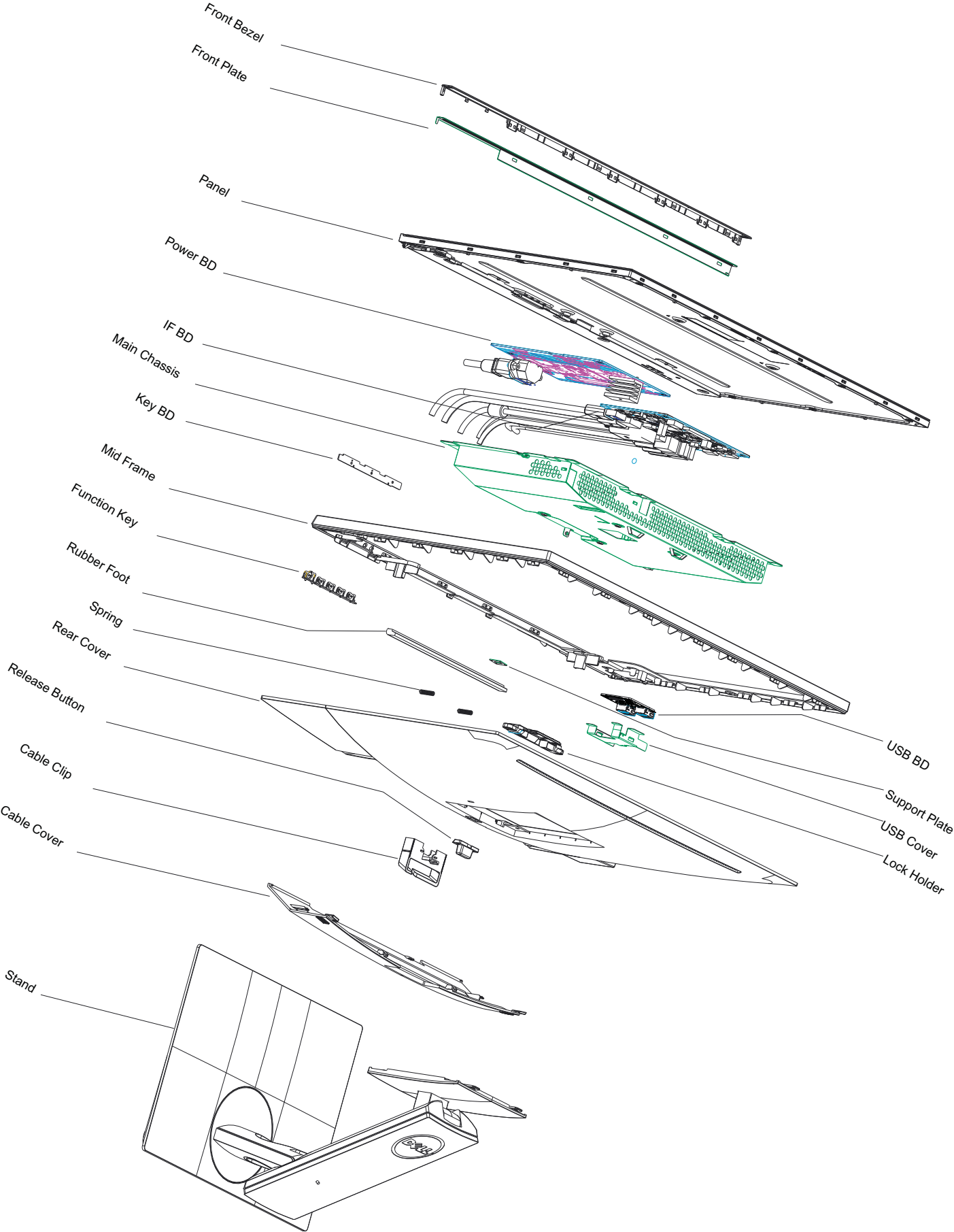
! To prevent the product away from water or expose in extremely high humility environment.

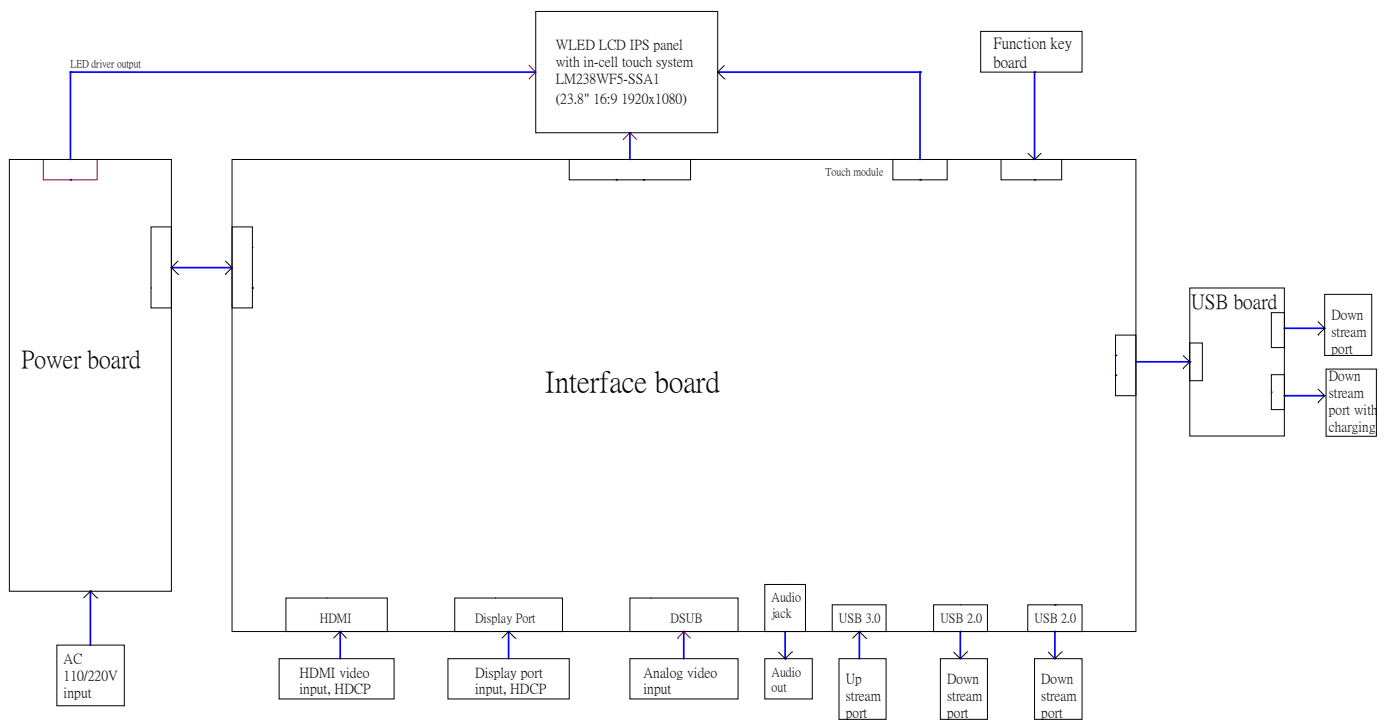! To ensure the continued reliability of this product, use only original manufacturer's specified parts.

! To ensure following safety repairing behavior, put the replaced part on the components side of PWBA, not solder side.

! To ensure using a proper screwdriver, follow the torque and force listed in assembly and disassembly procedures to unscrew screws.

! Using Lead-Free solder to well mounted the parts.

! The fusion point of Lead-Free solder requested in the degree of 220°C.

2. Exploded view diagram with list of items

Front Bezel

Front Plate

Panel

Power BD

IF BD

Main Chassis

Key BD

Mid Frame

Function Key

Rubber Foot

Spring

Rear Cover

Release Button

Cable Clip

Cable Cover

Stand

USB BD

Support Plate

USB Cover

Lock Holder

3. Wiring Connectivity Diagram

LED driver output

WLED LCD IPS panel
with in-cell touch system
LM238WF5-SSA1
(23.8" 16:9 1920x1080)

Function key
board

Touch module

USB board

Down
stream
port

Down
stream
port with
charging

Power board

Interface board

AC
110/220V
input

HDMI

HDMI video
input, HDCP

Display Port

Display port
input, HDCP

DSUB

Analog video
input

Audio
jack

Audio
out

USB 3.0

Up
stream
port

USB 2.0

Down
stream
port

USB 2.0

Down
stream
port

4. Disassembly and Assembly Procedures

Necessary repair and test equipment:

1. Philips-head screwdriver
2. Hex-head screwdriver

 4.1 Disassembly Procedures:

S1
Remove the monitor stand base:

1. Place the monitor on a soft cloth or cushion.

2. Press and hold the stand-release button.

3. Lift the stand up and away from the monitor.
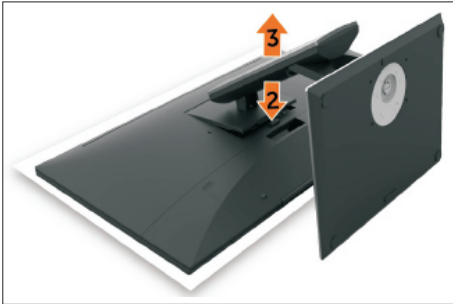
S2
Use a Philips-head screwdriver to remove four screws for unlocking mechanisms.
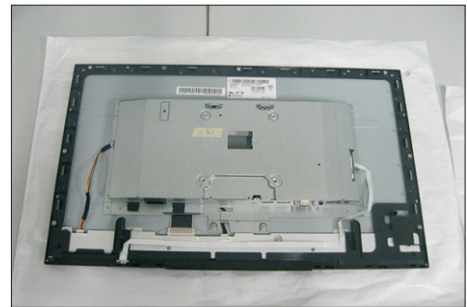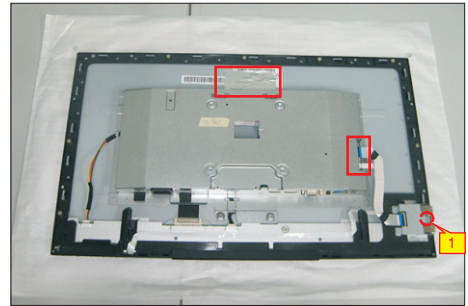
(No.1~4 screw size=M4x10,Torque=12±0.5kgfxcm)
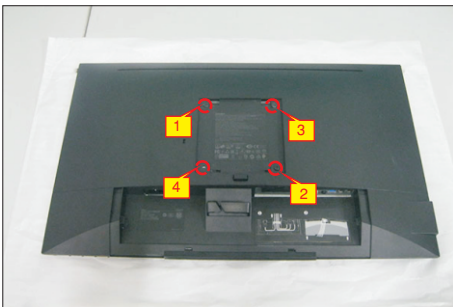
S3
Use one hand to press the rear cover, then wedge your fingers between the rear cover and the middle bezel on the corners of the top left side to the right side of the monitor to release the rear cover.

S4
Remove the rear cover. Tear off the aluminum foil, and then disconnect the USB cable and Function key cable away from the connector of the interface board. Use a Philips-head screwdriver to remove one screw for unlocking the USB unit, remove the USB unit from the hooks.
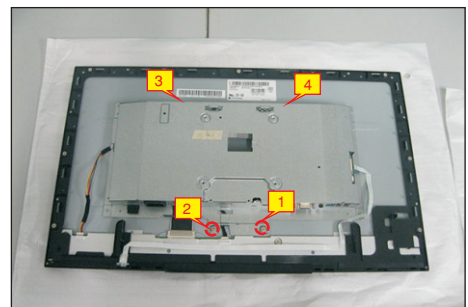
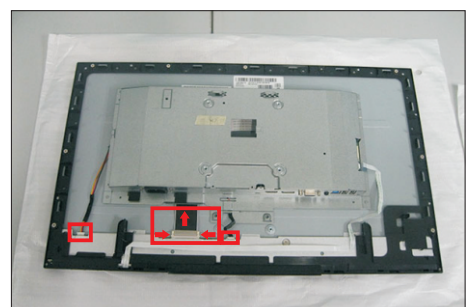(No.1 screw size=M3x5, Torque=4±0.5kgfxcm)

S5
Use a Philips-head screwdriver to remove four screws for unlocking the bracket chassis module with the panel module.

(No.1~4 Screw size= M3x4, Torque=5±0.5kgfxcm)

S6
Disconnect the panel power cable to the connector of the panel module. Then disconnect the other cables as the below picture shown.
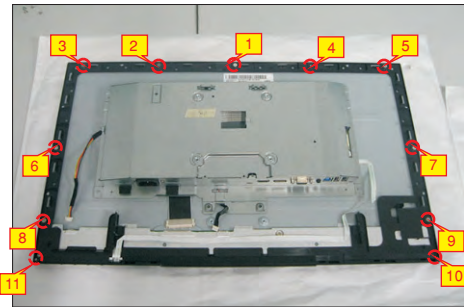
4. Disassembly and Assembly Procedures

S7 Use a Philips-head screwdriver to remove nine screws for unlocking the middle bezel with the assembled unit. Use a Philips-head screwdriver to remove two screws for unlocking the front bezel. Put the bracket chassis module on the protector.
(No.1~9 screw size=M3x4, Torque=5±0.5kgfxcm)
(No.10~11 screw size=M1.6x3.1, Torque=0.7±0.2kgfxcm)

S8 Tear off the adhesive tapes to release the function key cable. Remove the middle bezel and front bezel then put them on a protector.


S9 Use a Philips-head screwdriver to remove two screws for unlocking the AC-power outlet connector. And Use a Hex-head screwdriver to remove two screws for unlocking mechanisms of the VGA connectors.
(No.1~2 screw size=M3x10, Torque=6±0.5kgfxcm)
(No.3~4 screw size=M3x8, Torque=6±0.5kgfxcm)
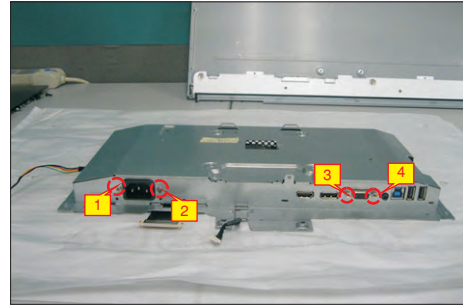
S10 Turn over the bracket chassis module. Remove the Mylar from the hooks of the bracket, and then use a Philips-head screwdriver to remove six screws for unlocking the interface board and power board.
(No.1 screw size=M4x8, Torque=6±0.5kgfxcm;
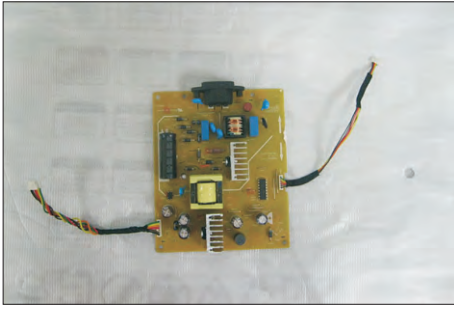No.2~6 screw size=M3x7.5, Torque=6±0.5kgfxcm)
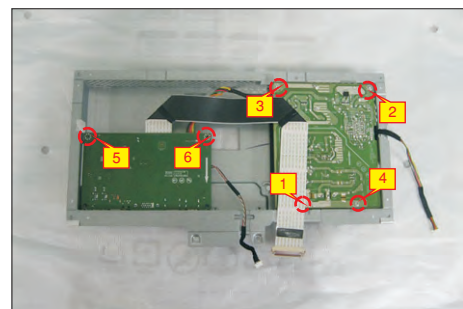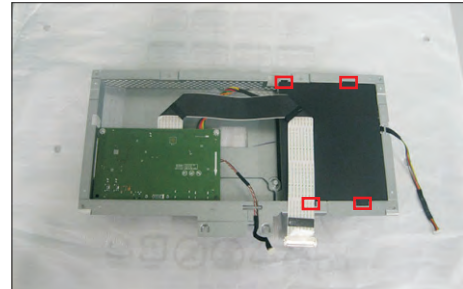
S11 Remove the interface and power boards from the bracket chassis module carefully, and then disconnect all of the cables.
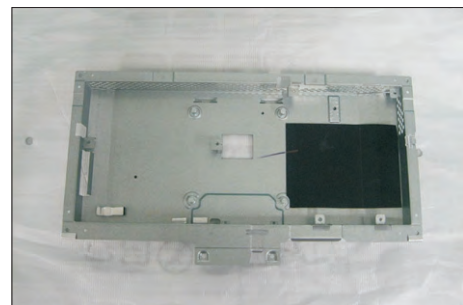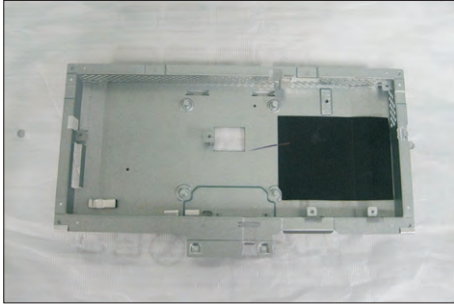
4. Disassembly and Assembly Procedures

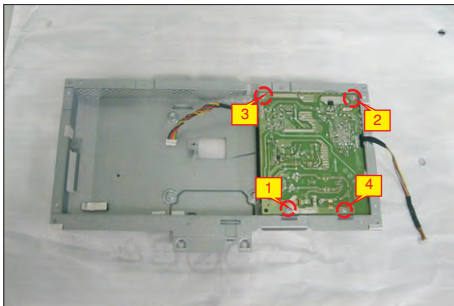# 4. Disassembly and Assembly Procedures

4.2 Assembly Procedures:

S1 Place a bracket chassis base on a protective cushion.

S2 Turn over a power board and put the power board into the bracket chassis, then use a Philips-head screwdriver to tighten four screws for locking the power board.
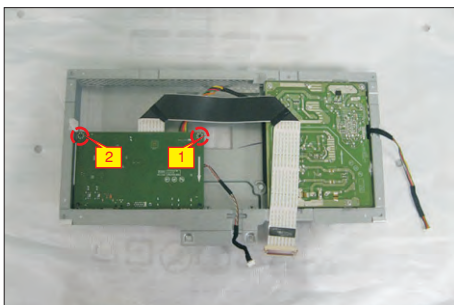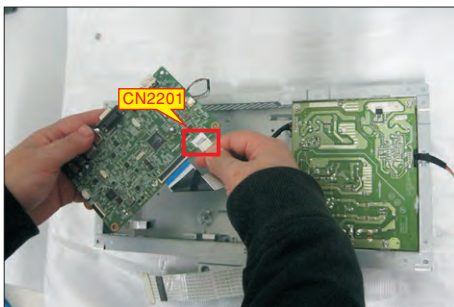(No.1 screw size=M4x8, Torque=6±0.5kgfxcm;
No.2~4 screw size=M3x7.5, Torque=6±0.5kgfxcm)

S3 Take a interface board, connect the cable of the power board to the CN2201 of the interface board. Turn over the interface board and locate it into the bracket. Use a Philips-head screwdriver to tighten two screws for locking the interface board.
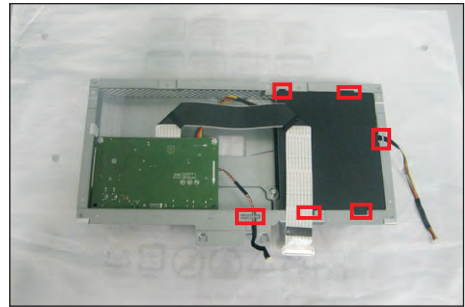(No.1~2 screw size=M3x7.5, Torque=6±0.5kgfxcm)

S4 Take a mylar to insert the hooks of the bracket to cover the power board. locate the two cables into the hook of the bracket chassis.

S5 Turn over the bracket chassis module and then use a Philips-head screwdriver to tighten two screws for locking the AC-power outlet connector. And Use a Hex-head screwdriver to tighten two screws for locking mechanisms of the VGA connectors.
(No.1~2 screw size=M3x10, Torque=6±0.5kgfxcm)
(No.3~4 screw size=M3x8, Torque=6±0.5kgfxcm)
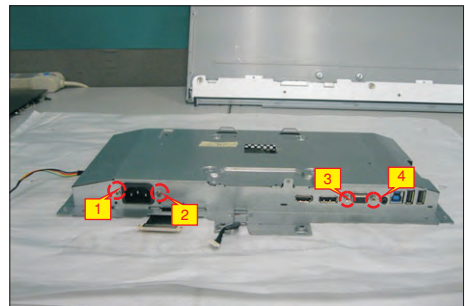
S6 Panel preparation: Examine the panel surface according to inspection criteria. Turn over the panel to place screen faced down. Take a front bezel and put the front bezel under the panel as the below picture shown.

4. Disassembly and Assembly Procedures

S7 Take a function key board and a middle bezel, then thread the function key cable through the hole of the middle bezel, and then locate the function board unit to the specific position of the middle bezel. Use a Philips-head screwdriver to tighten three screws for locking the function key board with the middle bezel.
(No.1~3 Screw size= M2x3.3, Torque=1±0.2kgfxcm)
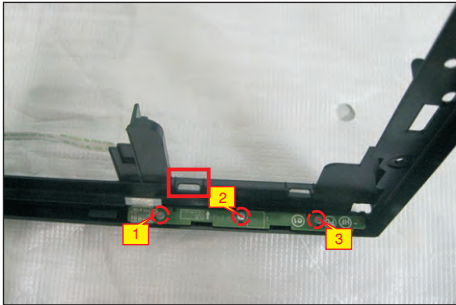
S8 Put down the middle bezel on the assembled unit and push the middle bezel for two parts firmly attachment. Tear off all the double-faced adhesive tapes which pasted on the back of the function key cable, and then fix the cable on the panel.
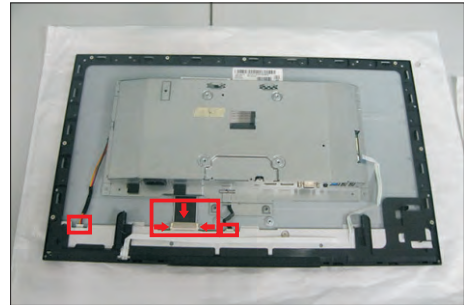

S9 Use a Philips-head screwdriver to tighten nine screws for locking the middle bezel with the assembled unit. Use a Philips-head screwdriver to tighten two screws for locking the front bezel. Put the bracket chassis module on the panel module.
(No.1~9 screw size=M3x4, Torque=5±0.5kgfxcm)
(No.10~11 screw size=M1.6x3.1, Torque=0.7±0.2kgfxcm)
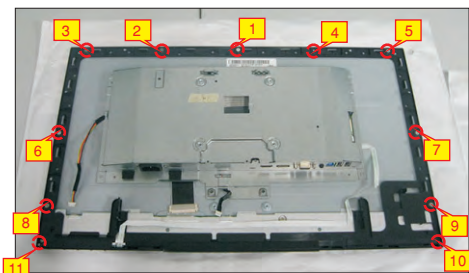
S10 Connect the panel power cable to the connector of the panel module. Then connect the other cables as the below picture shown.

S11 Adjust the bracket chassis module, and then use a Philips-head screwdriver to tighten four screws for locking the bracket chassis with the panel module.
(No.1~4 Screw size= M3x4, Torque=5±0.5kgfxcm)
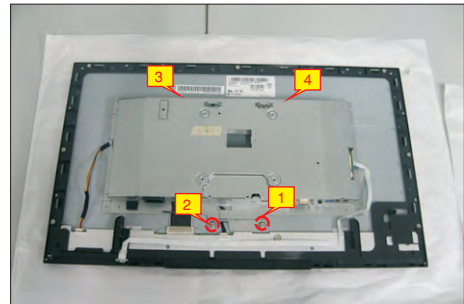
S12 Prepare a USB board, a USB hub and a connect cable. Connect the cable to the USB board, then locate the USB board into the hooks of the middle bezel. Take the USB Hub to cover the USB board, and then use a Philips-head screwdriver to tighten one screw for locking the USB board with the USB hub with the middle bezel.
(No.1 screw size=M3x5, Torque=4±0.5kgfxcm)
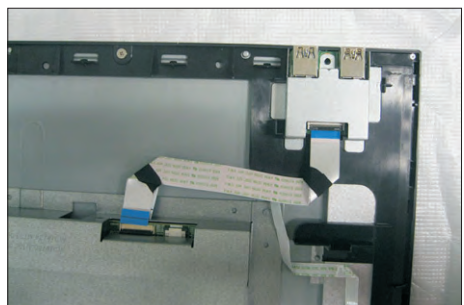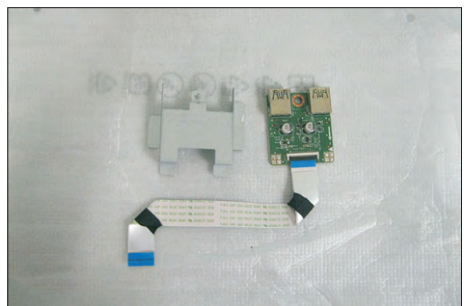
4. Disassembly and Assembly Procedures

S13 Connect the USB cable and the function key cable to the connector of the interface board. Then stick a piece of aluminum foil on the specific position as the picture below shown.

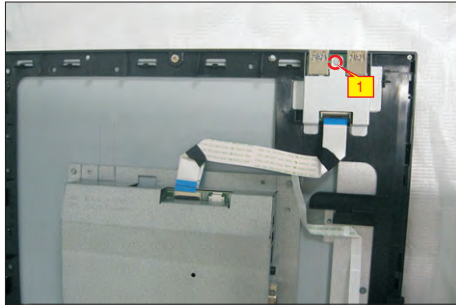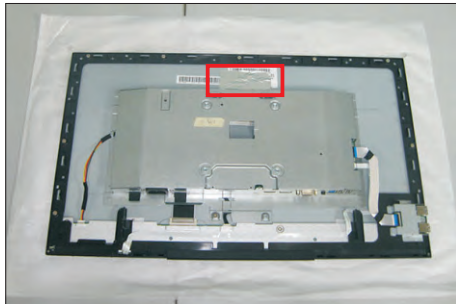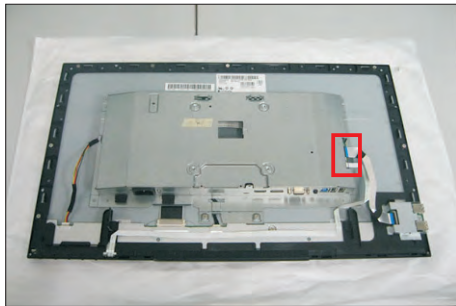**S14** Take a rear cover, put down the rear cover on the assembled unit carefully and push the rear cover on the positions marked for the rear cover mechanisms engagement.

S15 Use a Philips-head screwdriver to tighten four screws for locking the rear cover. Stick three pieces of label on the specific positions
(No.1~4 screw size=M4x10, Torque=12±0.5kgfxcm)
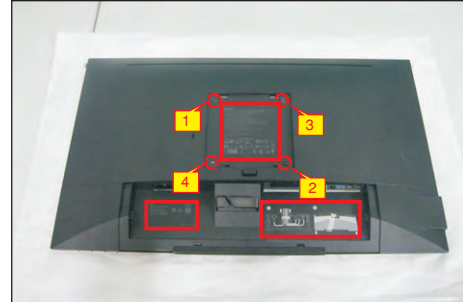
S16 Take a stand close to the monitor. Fit the two tabs on the upper part of the stand into the grooves on the back of the monitor, and then lower the stand so that the monitor mounting area snaps onto the stand.

S17 Take a stand base close to the stand, and fix the base to the stand as the below picture shown.

S18 Lift up the monitor to checking the gap between the front bezel with panel module , then provide power supply and a video signal to the monitor, then turn on the monitor for functionality check.

⚠ **WARNING: Before you begin any of the procedures in this section, follow the Safety Instructions.**

Self-Test

Your monitor provides a self-test feature that allows you to check whether your monitor is functioning properly. If your monitor and computer are properly connected but the monitor screen remains dark, run the monitor self-test by performing the following steps:

1 Turn off both your computer and the monitor.

2 Unplug the video cable from the back of the computer. To ensure proper Self-Test operation, remove all digital and the analog cables from the back of computer.

3 Turn on the monitor.

The floating dialog box should appear on-screen (against a black background), if the monitor cannot sense a video signal and is working correctly. While in self-test mode, the power LED remains white. Also, depending upon the selected input, one of the dialogs shown below will continuously scroll through the screen.
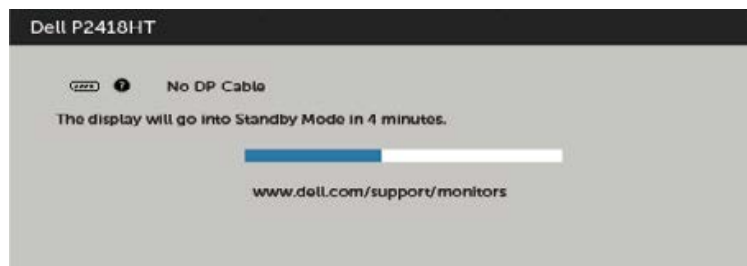
or
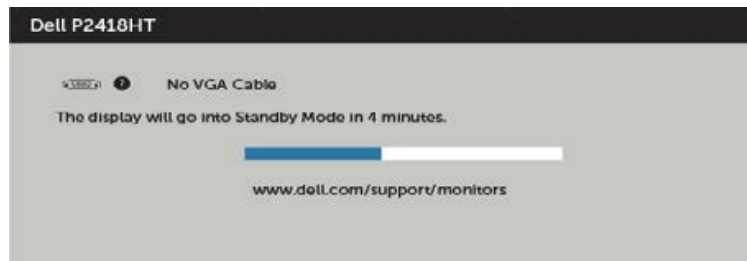
or
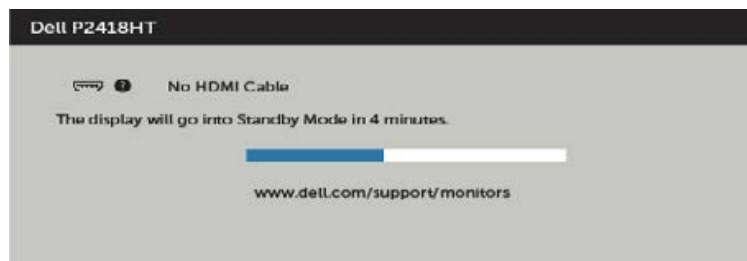
4 This box also appears during normal system operation, if the video cable becomes disconnected or damaged.

5 Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

If your monitor screen remains blank after you use the previous procedure, check your video controller and computer, because your monitor is functioning properly.

Built-in Diagnostics

Your monitor has a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with your monitor, or with your computer and video card.

NOTE: You can run the built-in diagnostics only when the video cable is unplugged and the monitor is in self-test mode.

To run the built-in diagnostics:
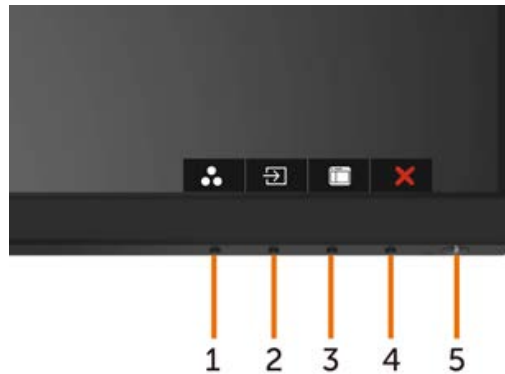1 Make sure that the screen is clean (no dust particles on the surface of the screen).
2 Unplug the video cable(s) from the back of the computer or monitor. The monitor then goes into the self-test mode.
3 Press and hold **Button 1** for 5 seconds. A gray screen appears.
4 Carefully inspect the screen for abnormalities.
5 Press **Button 1** on the front panel again. The color of the screen changes to red.
6 Inspect the display for any abnormalities.
7 Repeat steps 5 and 6 to inspect the display in green, blue, black, white, and text screens.

The test is complete when the text screen appears. To exit, press **Button 1** again.
If you do not detect any screen abnormalities upon using the built-in diagnostic tool, the monitor is functioning properly. Check the video card and computer.

Common Problems

The following table contains general information about common monitor problems you might encounter and the possible solutions:

Common Symptoms	What You Experience	Possible Solutions
No Video/Power LED off	No picture	• Ensure that the video cable connecting the monitor and the computer is properly connected and secure. • Verify that the power outlet is functioning properly using any other electrical equipment. • Ensure that the power button is depressed fully. • Ensure that the correct input source is selected in the Input Source menu.
No Video/Power LED on	No picture or no brightness	• Increase brightness & contrast controls via OSD. • Perform monitor self-test feature check. • Check for bent or broken pins in the video cable connector. • Run the built-in diagnostics. • Ensure that the correct input source is selected in the Input Source menu.
Poor Focus	Picture is fuzzy, blurry, or ghosting	• Perform **Auto Adjust** via OSD. • Adjust the **Phase** and **Pixel Clock** controls via OSD. • Eliminate video extension cables. • Reset the monitor to factory settings. • Change the video resolution to the correct aspect ratio.
Shaky/Jittery Video	Wavy picture or fine movement	• Perform **Auto Adjust** via OSD. • Adjust the **Phase** and **Pixel Clock** controls via OSD. • Reset the monitor to factory settings. • Check environmental factors. • Relocate the monitor and test in another room.
Missing Pixels	LCD screen has spots	• Cycle power on-off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information on Dell Monitor Quality and Pixel Policy, see Dell Support site at: http://www.dell.com/support/monitors.
Stuck-on Pixels	LCD screen has bright spots	• Cycle power On-Off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information on Dell Monitor Quality and PixelPolicy, see Dell Support site at: http://www.dell.com/support/monitors.
Brightness Problems	Picture too dim or too bright	• Reset the monitor to factory settings. • **Auto Adjust** via OSD. • Adjust brightness & contrast controls via OSD.

5. Trouble Shooting Instructions

Common Symptoms	What You Experience	Possible Solutions
Geometric Distortion	Screen not centered correctly	• Reset the monitor to factory settings. • **Auto Adjust** via OSD. • Adjust horizontal & vertical controls via OSD.
Horizontal/Vertical Lines	Screen has one or more lines	• Reset the monitor to factory settings. • Perform **Auto Adjust** via OSD. • Adjust **Phase** and **Pixel Clock** controls via OSD. • Perform monitor self-test feature check and determine if these lines are also in self-test mode. • Check for bent or broken pins in the video cable connector. • Run the built-in diagnostics.
Synchronization Problems	Screen is scrambled or appears torn	• Reset the monitor to factory settings. • Perform **Auto Adjust** via OSD. • Adjust **Phase** and **Pixel Clock** controls via OSD. • Perform monitor self-test feature check to determine if the scrambled screen appears in self-test mode. • Check for bent or broken pins in the video cable connector. • Restart the computer in safe mode.
Safety Related Issues	Visible signs of smoke or sparks	• Do not perform any troubleshooting steps. • Contact Dell immediately.
Intermittent Problems	Monitor malfunctions on & off	• Ensure that the video cable connecting the monitor to the computer is connected properly and is secure. • Reset the monitor to factory settings. • Perform monitor self-test feature check to determine if the intermittent problem occurs in self-test mode.
Missing Color	Picture missing color	• Perform monitor self-test. • Ensure that the video cable connecting the monitor to the computer is connected properly and is secure. • Check for bent or broken pins in the video cable connector.
Wrong Color	Picture color not good	• Change the settings of the **Preset Modes** in the **Color** menu OSD depending on the application. • Adjust R/G/B value under **Custom. Color** in **Color** menu OSD. • Change the **Input Color Format** to PC RGB or YPbPr in the **Color** menu OSD. • Run the built-in diagnostics.
Image retention from a static image left on the monitor for a long period of time	Faint shadow from the static image displayed appears on the screen	• Set the screen to turn off after a few minutes of screen idle time. These can be adjusted in Windows Power Options or Mac Energy Saver setting. • Alternatively, use a dynamically changing screensaver.

Product Specific Problems

Specific Symptoms	What You Experience	Possible Solutions
Screen image is too small	Image is centered on screen, but does not fill entire viewing area	• Check the **Aspect Ratio** setting in the **Display** menu OSD. • Reset the monitor to factory settings.
Cannot adjust the monitor with the buttons on the front panel	OSD does not appear on the screen	• Turn off the monitor, unplug the monitor power cable, plug it back, and then turn on the monitor. • Check whether the OSD menu is locked. If yes, press and hold the button beside the power button for 6 seconds to unlock (for more information, see Lock).
No Input Signal when user controls are pressed	No picture, the LED light is white	• Check the signal source. Ensure the computer is not in the power saving mode by moving the mouse or pressing any key on the keyboard. • Check whether the signal cable is plugged in properly. Re-plug the signal cable if necessary. • Reset the computer or video player.
The picture does not fill the entire screen	The picture cannot fill the height or width of the screen	• Due to different video formats (aspect ratio) of DVDs, the monitor may display in full screen. • Run the built-in diagnostics.

Touchscreen Problems

Specific Symptoms	What You Experience	Possible Solutions
Touch report error	Touch function miss alignment or no touch function	• Use the Dell provided USB cable to connect your computer. • Make sure the power cable has a ground pin. • Unplug and replug the power cable from the power adapter to allow auto-recalibration of the touch module. • Make sure computer supports USB 2.0 or later. • If the display cannot be detected by the computer, power off/on the monitor or unplug and replug the USB cable.
Touchscreen non-responsive in standby mode	Cannot wake up monitor and computer by using touch in standby mode	1. Access Device Manager, expand HID Interface Device under Human Device. 2. Right click HID- compliant device, click Properties and select the check-box to allow the device to wake the computer.
Windows 7, Windows 8, Windows 8.1 and Windows 10 Calibration	Cursor does not accurately follow your finger when you touch the screen	1. Open Control Panel, open Hardware and Sound, and then open Tablet PC Settings. 2. Select **Calibration**. 3. Follow the instructions to recalibrate your screen

Universal Serial Bus (USB) Specific Problems

Specific Symptoms	What You Experience	Possible Solutions
USB interface is not working	USB peripherals are not working	• Check that your monitor is turned ON. • Reconnect the upstream cable to your computer. • Reconnect the USB peripherals (downstream connector). • Switch off and then turn on the monitor again. • Reboot the computer. • Some USB devices like external portable HDD require higher electric current; connect the device directly to the computer system.
SupreSpeed USB 3.0 interface is slow.	SuperSpeed USB 3.0 peripherals working slowly or not working at all	• Check that your computer is USB 3.0-capable. • Some computers have USB 3.0, USB 2.0, and USB 1.1 ports. Ensure that the correct USB port is used. • Reconnect the upstream cable to your computer. • Reconnect the USB peripherals (downstream connector). • Reboot the computer.
Wireless USB peripherals stop working when a USB 3.0 device is plugged in	Wireless USB peripherals responding slowly or only working as the distance between itself and its receiver decreases	• Increase the distance between the USB 3.0 peripherals and the wireless USB receiver. • Position your wireless USB receiver as close as possible to the wireless USB peripherals. • Use a USB-extender cable to position the wireless USB receiver as far away as possible from the USB 3.0 port.