Service Manual - E2222H

Version: 01

Date: 2021/10/30

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
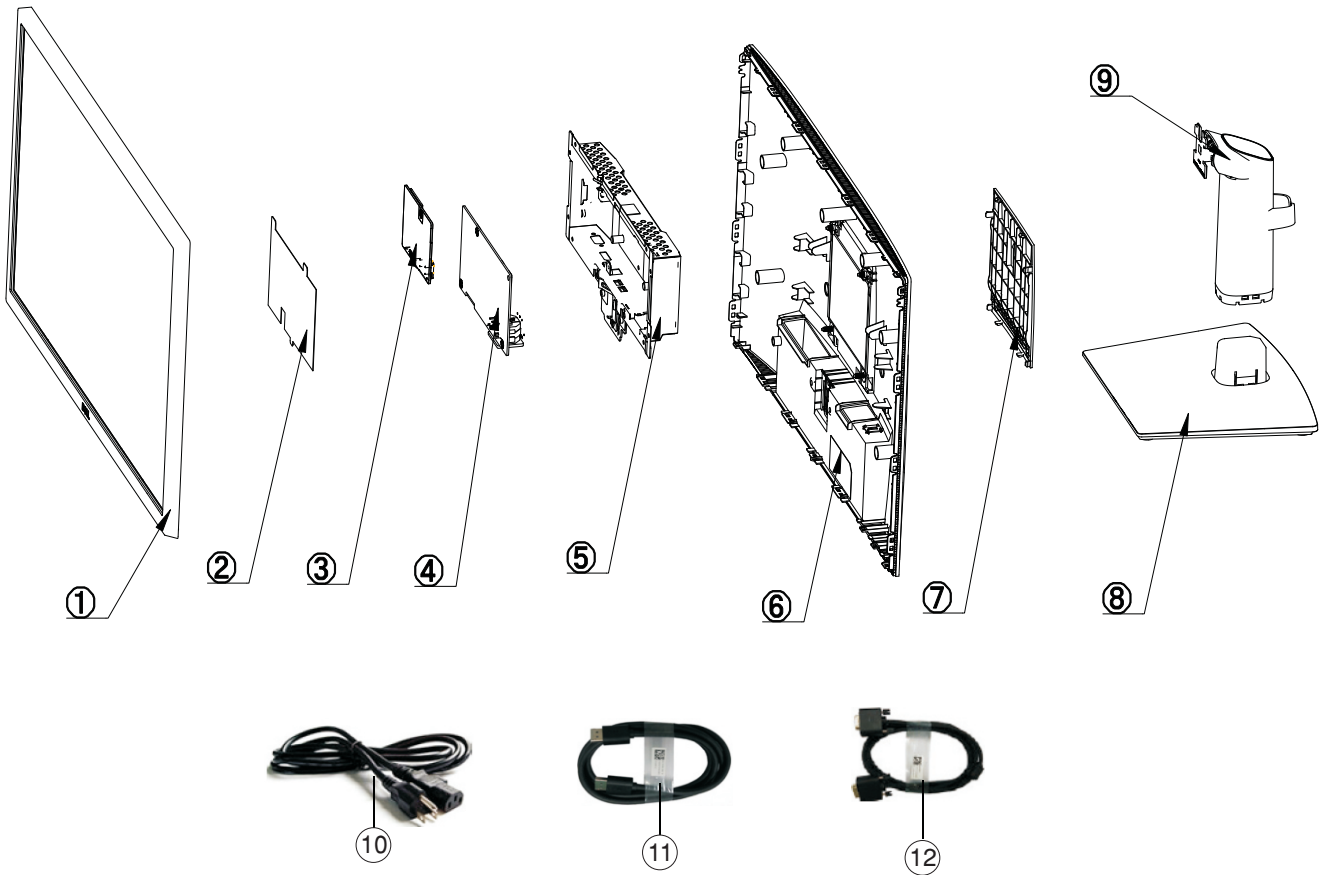
Item	Description	Q'ty	Remark
1	LCM ASSY	1	For EMEA Only, not for other regions
2	Safety Mylar	1	
3	Interface board	1	
4	Power board	3	
5	Main chassis	1	
6	Rear Cover ASSY	1	
7	VESA Cover	1	
8	Base	2	
9	Stand	1	
10	Power cable	1	See "NOTE"
11	DisplayPort cable	1	See "NOTE"
12	VGA cable	1	See "NOTE"

NOTE:

For replacement of power cord, connectivity cable and external power supply (if applicable), contact Dell:

1. Go to https://www.dell.com/support.

2. Verify your country or region in the Choose A Country/Region drop-down menu at the bottom-right corner of the page.

3. Click Contact Us next to the country dropdown.

4. Select the appropriate service or support link based on your need.

5. Choose the method of contacting Dell that is convenient for you.

3. Wiring Connectivity Diagram

21.45 inch Panel 1920x1080

Power Board

Interface Board

KB1

Function key board

DP

VGA
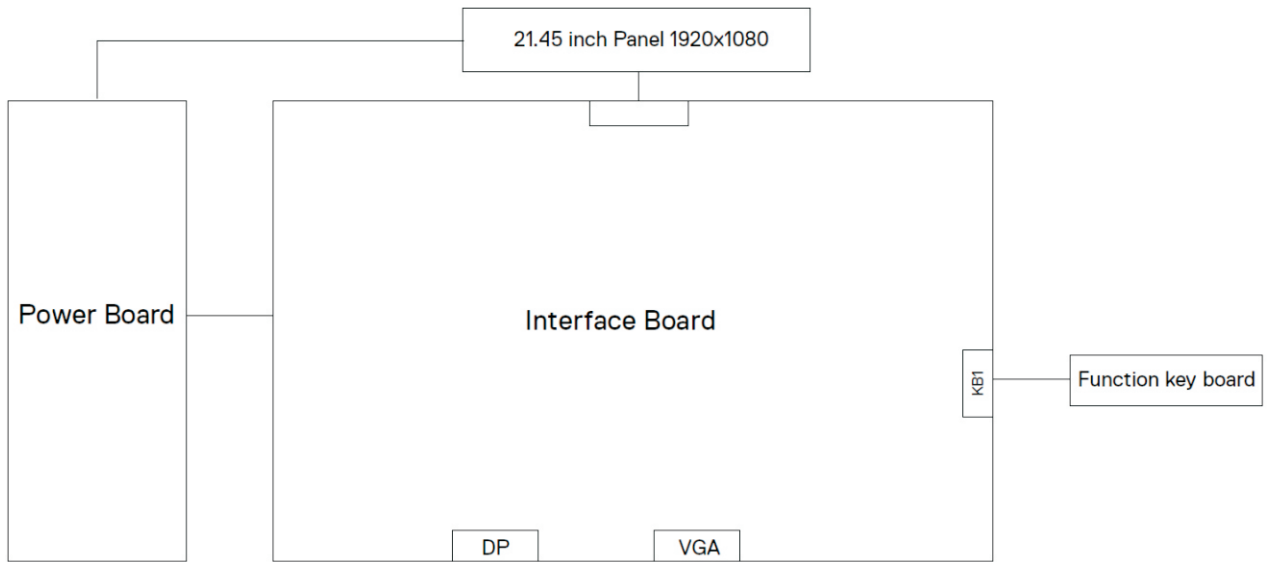
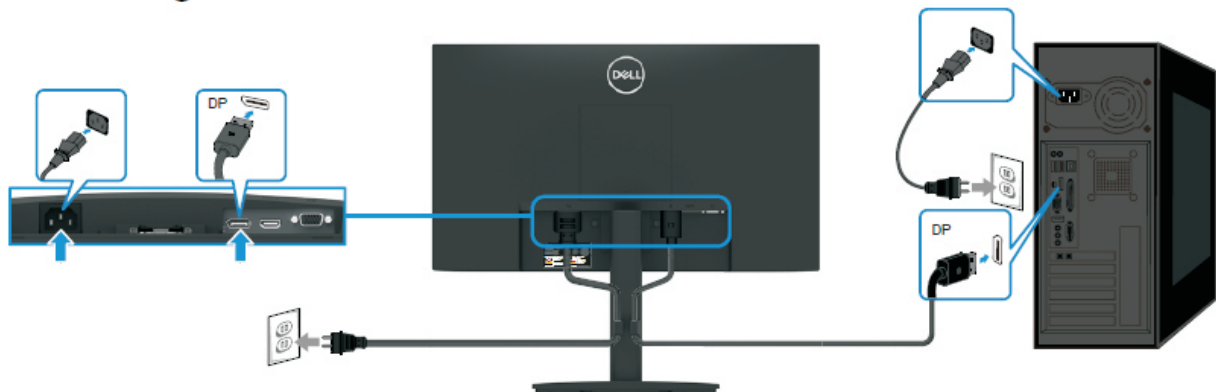# 4. How to connect and disconnect power cable/ connectivity cable

WARNING: To change power cable/ connectivity cable, switch off power before unplugging the cable and replugging in required cable.

Connecting VGA cable

Connecting DP cable

5. Disassembly and Assembly Procedures

NOTE:

This "Disassembly and Assembly Procedures" is for EMEA only, not for other regions. Please note that Dell will deem warranty void if any disassembly is done on the monitors.

Tool Required:

List the type and size of the tools that would typically can be used to disassemble the product to a point where components and materials requiring selective treatment can be removed.

Tool Description:

- Screwdriver(Phillip head) #1
- Screwdriver(Phillip head) #2
- Penknife
- Soldering iron and absorber

5.1 Disassembly Procedures:

Remove the monitor stand base:

S1

1. Place the monitor on a soft cloth or cushion.
2. Remove VESA cover to access the release button.
3. Use a long and thin screwdriver to push the release latch located in a hole just above the stand.
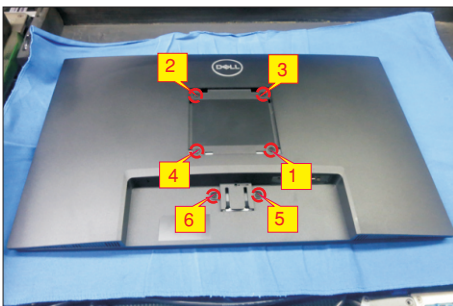4. Once the latch is released, remove the base away from the monitor.

S2
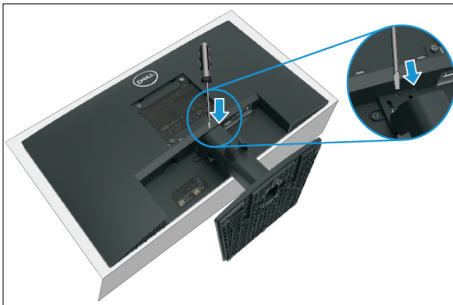
Use a Philips-head screwdriver to remove 6pcs screws for unlocking mechanisms.

(No.1~4 screw size=M4x11; Torque=11±1kgfxcm; No.5~6 screw size=M4x6; Torque=11±1kgfxcm)

S3

Turn over the LCD monitor to let the screen faced up, place a cloth on the panel where you are working on to protect the panel. Continually, wedge your fingers between the front bezel and the panel in order of arrow preference for unlocking mechanisms. Turn over the LCD monitor to let the screen faced down and then remove the rear cover.
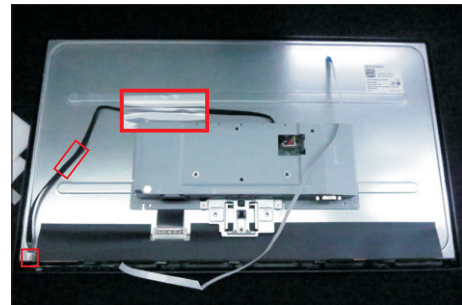
S4
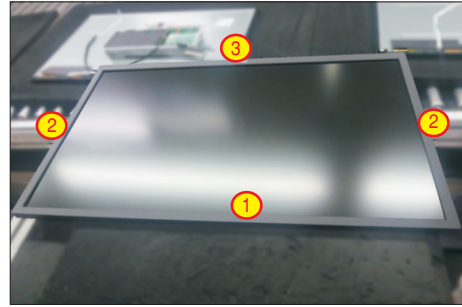
Disconnect the function key cable away from the connector of the board, then tear off 3pcs adhesive tape for releasing the function key board.

S5
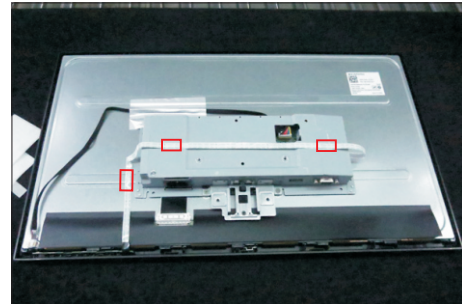
Tear off 1pcs aluminum foil on the back of the panel lamp cable for unlocking panel lamp cable, and then disconnect the panel lamp cable away from the connector of panel module.
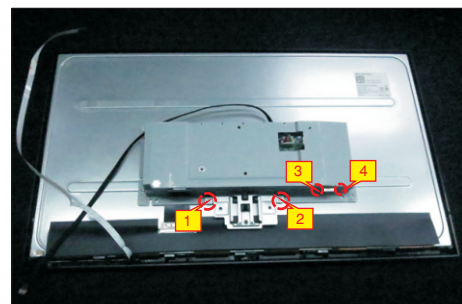
S6

Use a Philips-head screwdriver to remove 2pcs screws for unlocking the bracket with panel module.
Use a Hex-head screwdriver to remove 2pcs screws for unlocking the VGA connector.

(No.1~2 screw size=M3x2.6, Torque=4±0.5kgfxcm; No.3~4 screw size=M3x8, Torque=6±0.5kgfxcm)

5. Disassembly and Assembly Procedures

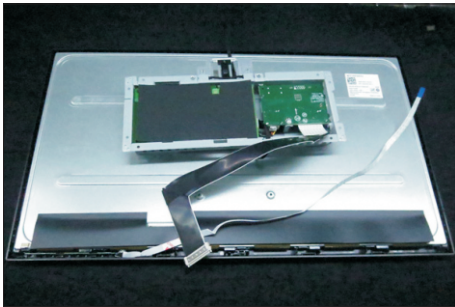**S7** Unplug the LVDS cable from the connector of the panel module by pushing the earing-locks.

**S8** Lift up the bracket chassis and put it on a protective cushion.

S9 Release the panel module away from the hooks of the front bezel, then lift up the panel module and take away the front bezel with key board.

S10 Tear off the mylar tape, then put the front bezel into a fixture, then use a Philips-head screwdriver to remove 3pcs screws for unlocking the function key board with the front bezel.
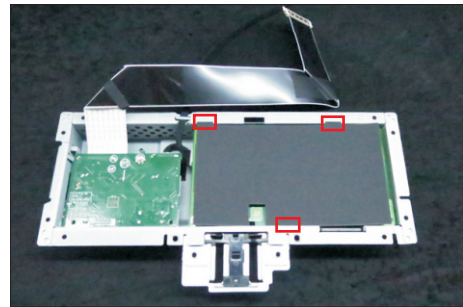(No.1~3 screw size=M2x2.4, Torque=0.8±0.2kgfxcm
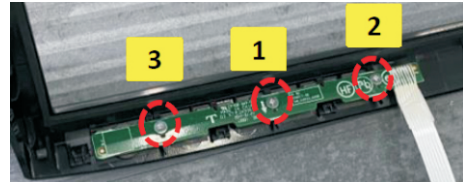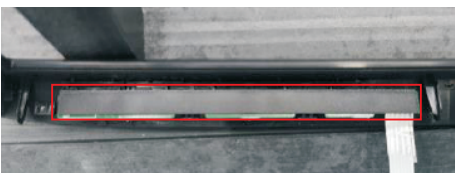
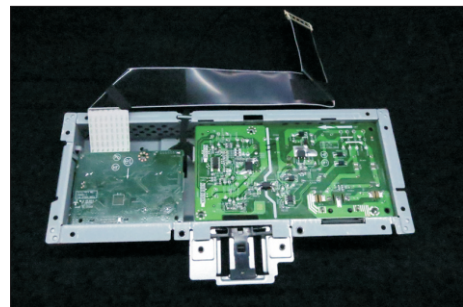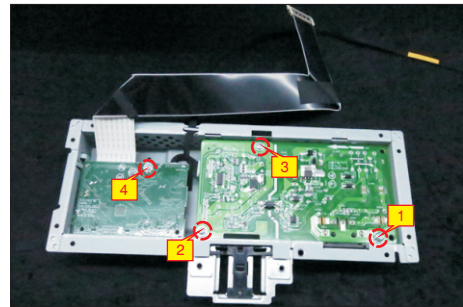**S11** Remove the Mylar from the hooks of the bracket chassis module.

S12 Use a Philips-head screwdriver to remove 4pcs screws for unlocking the circuit board, release all the cables from the hooks.
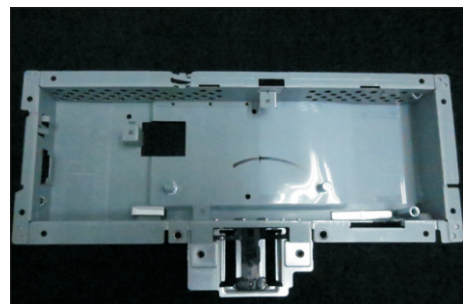(No.1 screw size=M4x8, Torque=6±0.5kgfxcm;
No. 2~4 screw size=M3x7.5, Torque=6±0.5kgfxcm)

S13 Remove the interface board and power board from the bracket chassis module carefully, and disconnect all the cables.
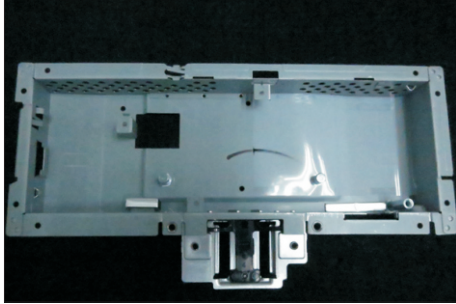
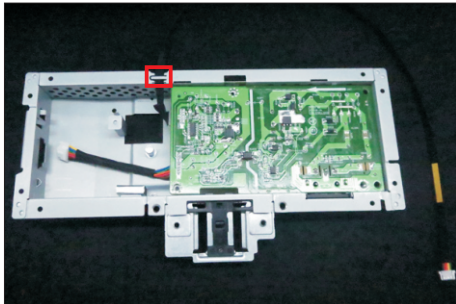# 5. Disassembly and Assembly Procedures

5.2 Assembly Procedures:

S1 Place a bracket chassis base on a protective cushion.
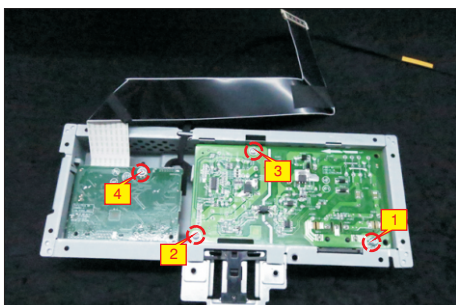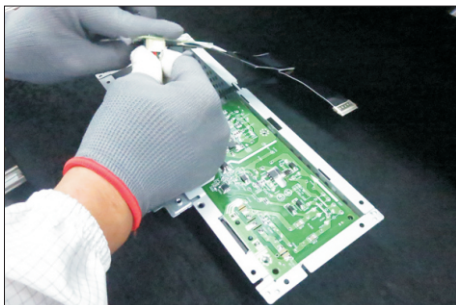

S2 Turn over a power board and put the power board into the bracket chassis, locate the panel power cable into the hook of the bracket chassis.


S3 Take a interface board, connect a LVDS cable to the connector of the interface board, then connect the cable of the power board to the connector of the interface board. Turn over the interface board and locate it into the bracket. Use a Philips-head screwdriver to tighten 4pcs screws for locking the power board and interface board.
(No.1 screw size=M4x8, Torque=5±0.5kgfxcm;
 No.2~4 screw size=M3x7.5, Torque=5±0.5kgfxcm)

S4 Take a mylar to insert the hooks of the bracket to cover the power board.
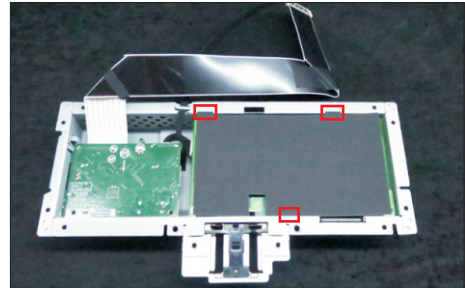
The following two steps (S6 and S7) is processed in LCM assemble line. Take 1pcs function key board and 1pcs front bezel from the carton, then put the middle bezel into a fixture, and locate the function keyboard into the hooks of the front bezel. Use a Philips-head screwdriver to tighten 3pcs screws for locking the function key board with the front bezel, then paste 1pcs black mylar tape to cover the function key board.

S5 (No.1~3 screw size=M2x2.4, Torque=0.8±0.2kgfxcm
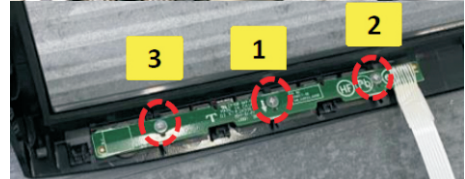
S6 Take 1pcs panel module, then put the panel into the front bezel and locate the panel into the hooks of the front bezel for the two parts firmly attached.

5. Disassembly and Assembly Procedures

S7 Take out 1pcs panel assembled module with front bezel and function key board from the carton, and then examine the panel surface according to inspection criteria. Turn over the panel, and then place screen faced down for later assembling.

**S8** Move the bracket close to the panel, then use a proper tool to connect LVDS cable to the connector of the panel.
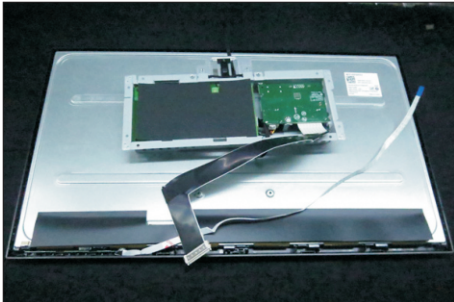

S9 Adjust the bracket chassis to the correct position, then use a Philips-head screwdriver to tighten 2pcs screws for locking the bracket with panel module. Use a Hex-head screwdriver to lock 2pcs screws for locking the VGA connector.

(No.1~2 screw size=M3x4, Torque=5±0.5kgfxcm;
 No.3~4 screw size=M3x8, Torque=6±0.5kgfxcm)
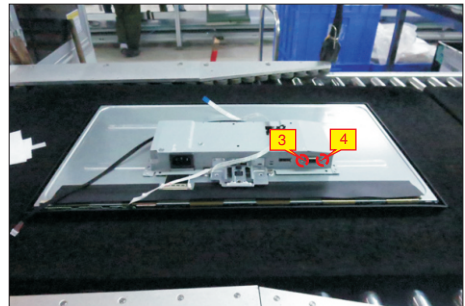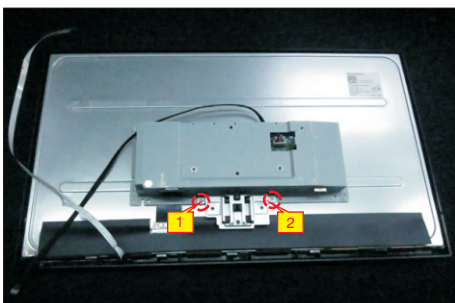
S10 Connect the panel lamp cable to the connector of the panel module, then fix the panel lamp cable with 1pcs aluminum foil as the picture below shown.
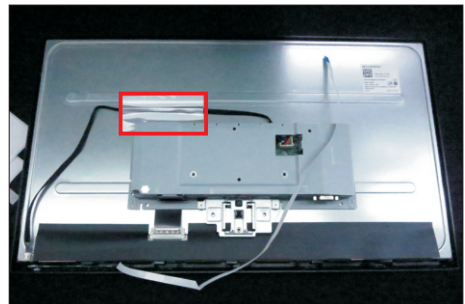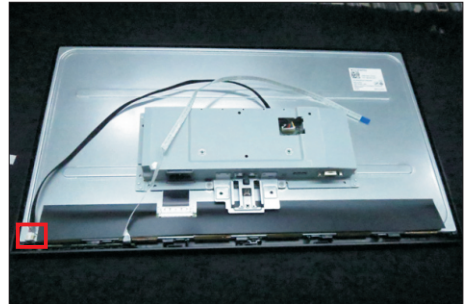
S11 Connect the function key cable to the connector of board, then tear off the 3pcs double-faced tape on the back of the back and fix the cable on the bracket as the picture below shown.
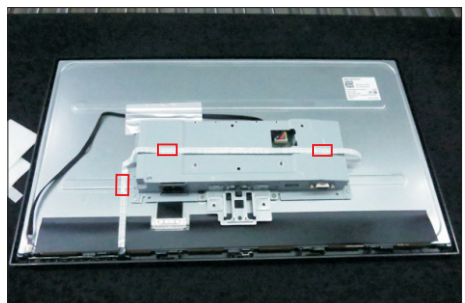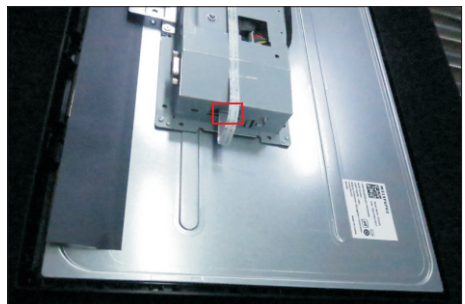
5. Disassembly and Assembly Procedures

**S12** Take 1pcs rear cover, put down the rear cover and push the rear cover on the positions marked as the picture below shown for mechanisms engagement.

S13 Use a Philips-head screwdriver to tighten 4pcs screws for locking rear cover with the assembled unit, to tighten 2pcs screws for locking the rear cover with bracket chassis module.

(No.1~4 screw size=M4x11; Torque=10~12kgfxcm; No.5~6 screw size=M4x6; Torque=10~12kgfxcm)
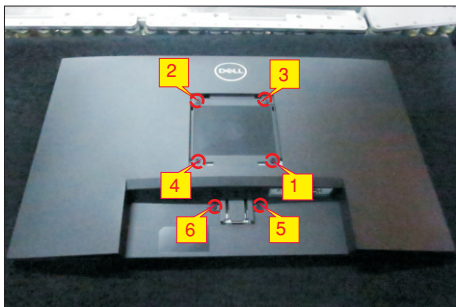
S14 Stick 2pcs labels on the specific positions as the picture below shown. Take 1pcs stand riser and 1pcs stand base, assemble the stand base with stand riser. Insert the stand-riser into monitor groove until it snaps into its place.
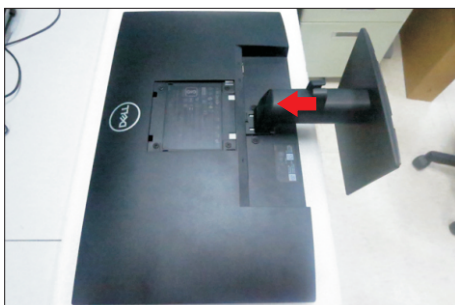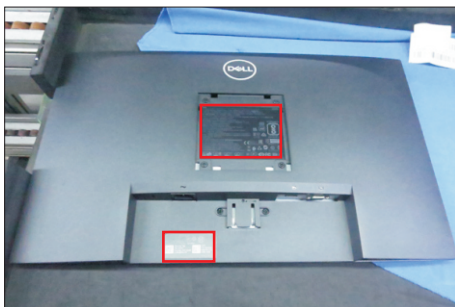
S15 Lift up the monitor to checking the gap between the front bezel with panel module , then provide power supply and a video signal to the monitor, then turn on the monitor for functionality check.

6. Trouble Shooting Instructions

Self-test

Your monitor provides a self-test feature that allows you to check if 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. Disconnect all video cables from the monitor. This way, the computer does not have to be involved.
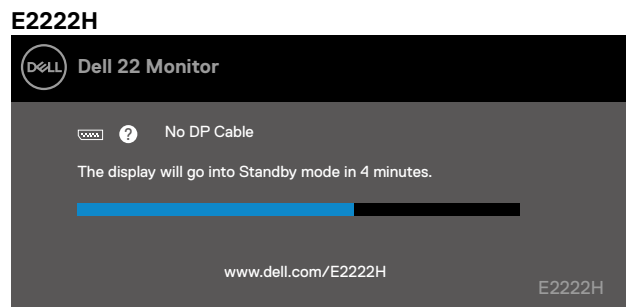3. Turn on the monitor.

If the monitor is working correctly, it detects that there is no signal and one of the following message appears. While in self-test mode, the power LED remains white.

E2222H

NOTE: This message also appears during normal operation, when the video cable is disconnected or damaged.

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

   If your monitor remains dark after you reconnect the cables, check your video controller and computer.

Built-in diagnostics

Your monitor has a built-in diagnostic tool that helps you determine if any screen abnormality you experience is an inherent problem with your monitor, or with your computer and video card.
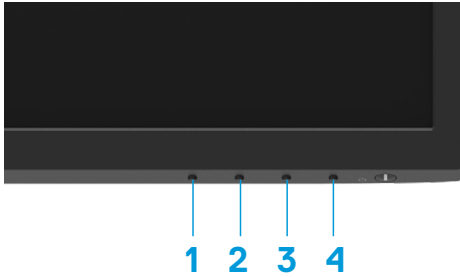
Label	Description
1	Button 1
2	Button 2
3	Button 3
4	Button 4

To run the built-in diagnostics:

1. Ensure that the screen is clean (no dust particles on the surface of the screen).
2. Press and hold **Button 4** for about 4 seconds and wait for a pop up menu.
3. Use **Button 1** or **2** to select the ⬚ and press ♥ to confirm.

   A gray test pattern appears at the beginning of the diagnostic program.
4. Carefully inspect the screen for abnormalities.
5. Press **Button 1** to change the test patterns.
6. Repeat steps 4 and 5 to inspect the display in red, green, blue, black, white and text screens.
7. When in White color test screen, check for white color uniformity and if there white color appears greenish/reddish, etc.
8. Press **Button 1** to end the diagnostic program.

6. Trouble Shooting Instructions

Common problems

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

Common symptoms	Possible solutions
No video/Power LED off	• 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 pressed. • Ensure that the correct input source is selected via the **Input Source** menu.
No video/Power LED on	• Increase brightness and contrast controls using the 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 via the **Input Source** menu.
Poor focus	• Eliminate video extension cables. • Reset the monitor to Factory Settings (**Factory Reset**). • Change the video resolution to the correct aspect ratio.
Shaky/Jittery video	• Reset the monitor to Factory Settings (**Factory Reset**). • Check environmental factors. • Relocate the monitor and test in another room.
Missing pixels	• Cycle power On-off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information about Dell Monitor Quality and Pixel Policy, see Dell Support site at: **https://www.dell.com/support/monitors.**
Stuck-on pixels	• Cycle power On-off. • Pixel that is permanently off is a natural defect that can occur in LCD technology. • For more information about Dell Monitor Quality and Pixel Policy, see Dell Support site at: **https://www.dell.com/support/monitors.**
Brightness problems	• Reset the monitor to Factory Settings (**Factory Reset**). • Adjust brightness and contrast controls using OSD.
Geometric distortion	• Reset the monitor to Factory Settings (**Factory Reset**). • Adjust horizontal and vertical using OSD.
Horizontal/Vertical lines	• Reset the monitor to Factory Settings (**Factory Reset**). • 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.

6. Trouble Shooting Instructions

Common symptoms	Possible solutions
Synchronization problems	- Reset the monitor to Factory Settings (**Factory Reset**). - 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	- Do not perform any troubleshooting step. - Contact Dell immediately.
Intermittent problems	- Try different **Preset Modes** in **Color** settings OSD. Adjust **R/G/B** value in **Custom Color** in **Color** settings OSD. - Change the **Input Color Format** to **RGB** or **YPbPr** in the **Color** settings OSD. - Run the built-in diagnostics.
Missing color	- Perform monitor self-test feature check. - 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	- Try different **Preset Modes** in **Color** settings OSD. Adjust **R/G/B** value in **Custom Color** in **Color** settings OSD. - Change the **Input Color Format** to **RGB** or **YCbCr/YPbPr** in the **Color** settings OSD. - Run the built-in diagnostics.
Image retention from a static image left on the monitor for a long period of time	- 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.
Video ghosting or overshooting	Change the **Response Time** in the **Display** OSD to **Fast** or **Normal** depending on your application and usage.

Product-specific problems

Specific symptoms	Possible solutions
Screen image is too small	- Check the **Aspect Ratio** setting in the **Display** settings OSD. - Reset the monitor to Factory Settings (**Factory Reset**).
Cannot adjust the monitor with the buttons on the bottom of the panel	Turn off the monitor, unplug the power cord, plug it back, and then turn on the monitor.
No input signal when user controls are pressed	- Check the signal source. Ensure that the computer is not in standby or sleep mode by moving the mouse or pressing any key on the keyboard. - Check if the video cable is plugged in properly. Disconnect and reconnect the video cable if necessary. - Reset the computer or video player.
The picture does not fill the entire screen	- Due to different video formats (aspect ratio) of DVDs, the monitor may display in full screen. - Run the built-in diagnostics.