Dell Latitude 7210 2-in-1

Service Manual

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DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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1

Working on your computer

Topics:

- Safety instructions

Safety instructions

Prerequisites

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

About this task

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTE: Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

CAUTION: Exercise caution when handling Lithium-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

CAUTION: System will shut down if side covers are removed while the system is running. The system will not power on if the side cover is removed.

Before Working Inside Your Tablet

Prerequisites

Use the following safety guidelines to help protect your tablet from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following condition exists:

- You have read the safety information that shipped with your tablet.

About this task

NOTE: Before working inside your tablet, read the safety information that shipped with your tablet. For additional safety best practices information, see the Regulatory Compliance Homepage at **www.dell.com/regulatory_compliance**

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the tablet.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTE: The color of your tablet and certain components may appear differently than shown in this document.

To avoid damaging your tablet, perform the following steps before you begin working inside the tablet.

Steps

1. Ensure that your work surface is flat and clean to prevent the tablet cover from being scratched.
2. Turn off your tablet.
3. If the tablet is connected to a docking device (docked) such as the optional docking station or keyboard dock, un-dock it.
4. Disconnect the power adapter from the tablet.
5. Press and hold the power button for a few seconds to remove the flea power from the system board.

   CAUTION: To guard against electrical shock, always unplug your tablet from the electrical outlet.

   CAUTION: Before touching anything inside your tablet, ground yourself by touching an unpainted metal surface, such as the metal at the back of the tablet. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

6. Remove the storage SD card from the tablet.

Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

Observe the following safety precautions before you perform any installation or break/fix procedures involving disassembly or reassembly:

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any tabletnotebookdesktop to avoid electrostatic discharge (ESD) damage.

- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 20 seconds should discharge residual power in the system board. Remove the battery from tablets.notebooks.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory modules, and system boards. Slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms that are related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, and so on.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD Field Service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the computer, or inside an ESD bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the bonding-wire of wrist-strap into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of computer that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components.
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the computer, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and use anti-static bags for transporting sensitive components.

After working inside your computer

About this task

CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.

Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.

2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

Switch off the battery power

The battery cable connector is located in a very tight space which requires removal of the battery screws to disconnect; there is a battery switch to the left of the battery cable, which the technician must flip to the OFF position to cut-off power during any replacement procedures.

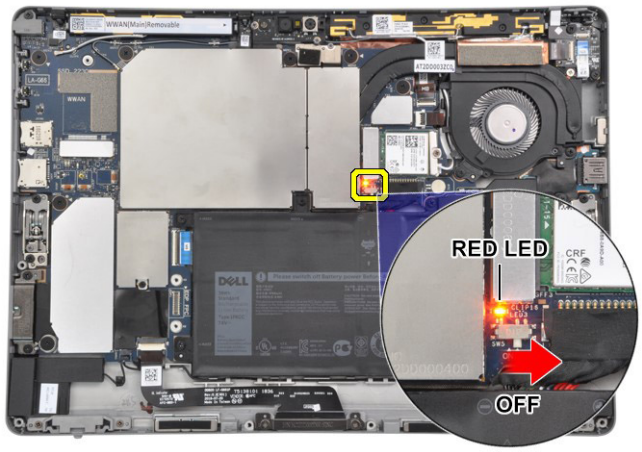


Figure 1. Switch OFF battery power

2

Disassembly and reassembly

Topics:

- Recommended tools
- Screw list
- Subscriber Identity Module (SIM) card
- Micro Secure Digital (SD) Card
- Display panel assembly
- Solid-state drive
- WLAN card
- WWAN card
- Battery
- Heat sink
- Speakers
- Front facing camera
- Rear facing camera
- Smart Card Cage
- Docking board connector
- Power Button Board
- System Board
- I/O Board
- WWAN Antenna
- Microphone
- Display cable
- Back cover

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver
  - #0 Phillips head screwdriver
  - #1 Phillips head screwdriver
- Plastic scribe (recommended for field technician)

Screw list

Table 1. Latitude 7210 2-in-1 Screw size list

Component	M2x 1.1+1.7	M2X4	M1.6x3	M2X2.5	M1.6x3	M2X2	M2X3.5
Back cover	3						
Battery		4					
Heat sink				4			
Hinges		4					
Display panel			6				
System fan		2					

Table 1. Latitude 7210 2-in-1 Screw size list (continued)

Component	M2x 1.1+1.7	M2X4	M1.6x3	M2X2.5	M1.6x3	M2X2	M2X3.5
WWAN card							1
WLAN card							1
Smart card cage				3			
SSD card				1			
Docking bracket						2	
Kickstand					4		
Camera module					2 (front) 1(rear)		
Antenna module					1		
System board				4			

Subscriber Identity Module (SIM) card

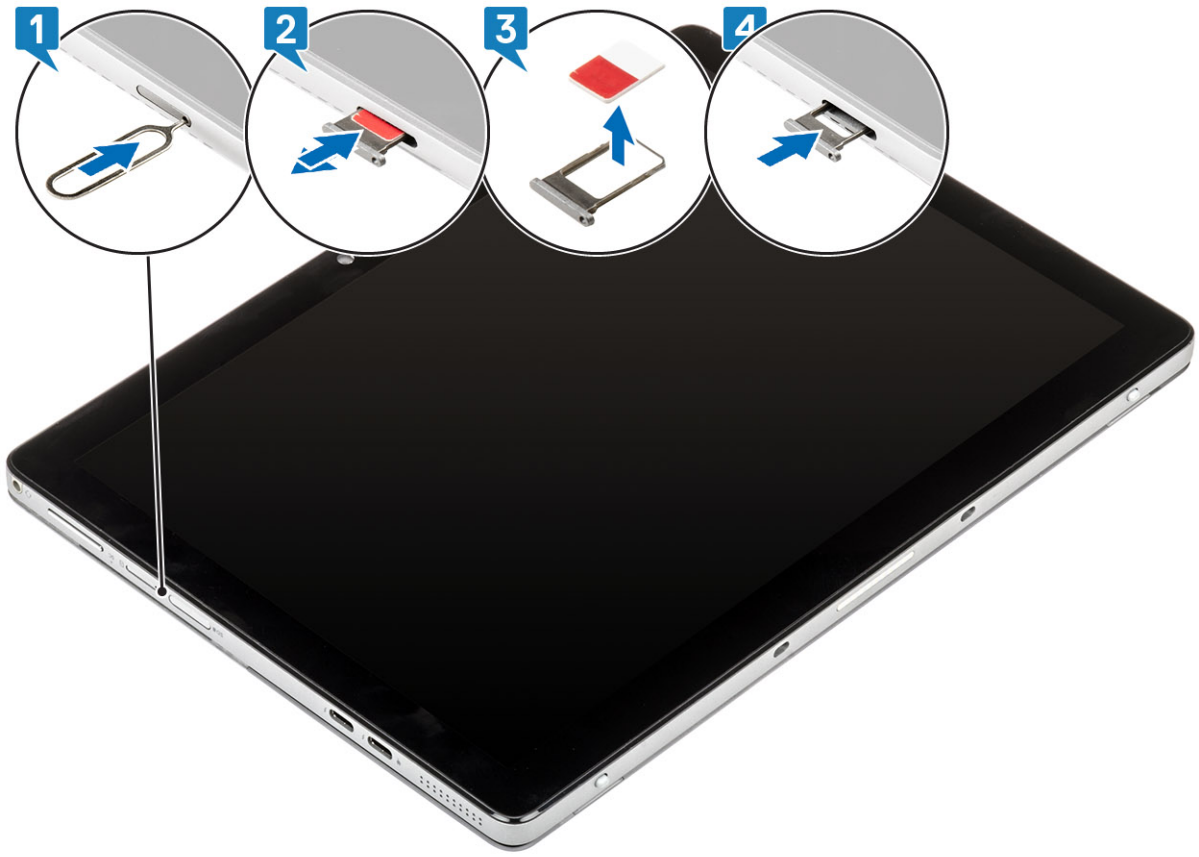
Removing the SIM card tray

Prerequisites

1. Follow the procedure in Before working inside your computer.

Steps

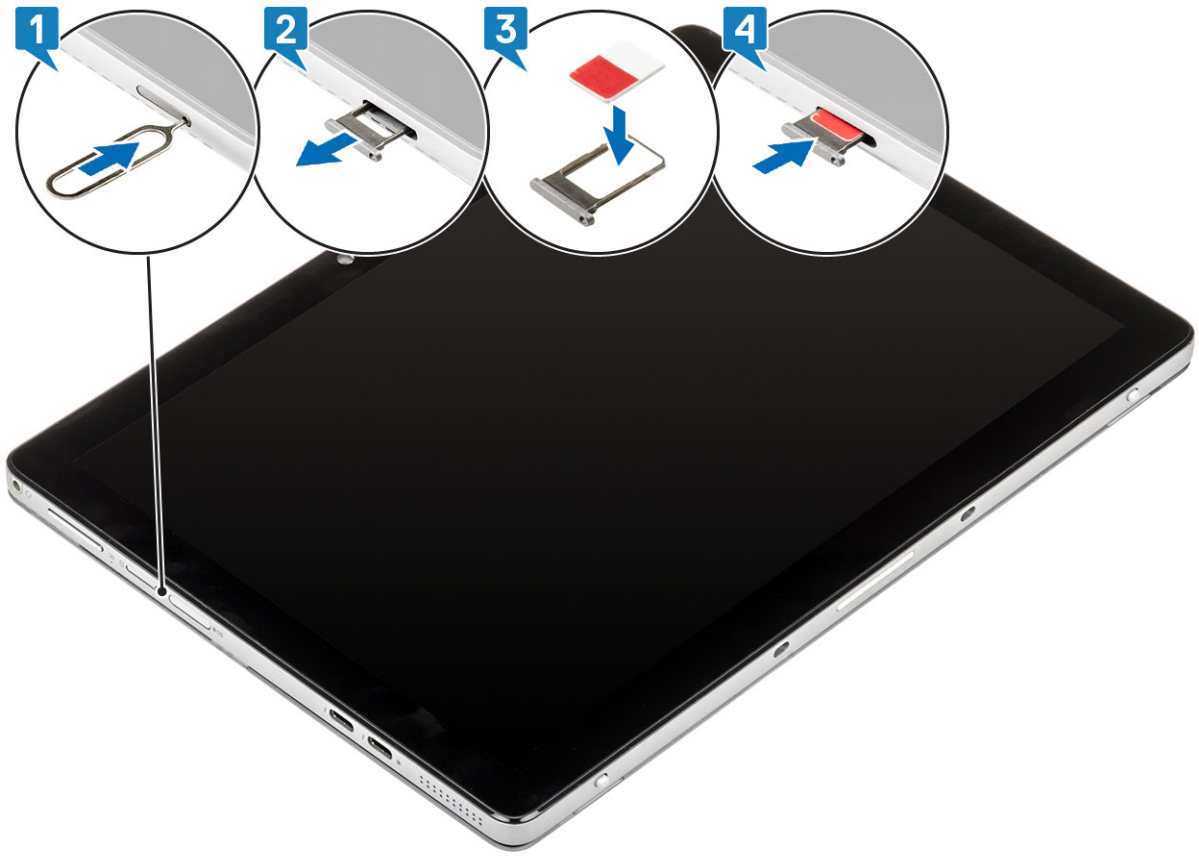
1. Insert a pin into the hole of the SIM card tray and push inward until the tray is released
2. Slide the SIM card tray out of the slot on the computer.
3. Remove the SIM card from the SIM card tray.
4. Slide the SIM card tray into the slot, until it clicks into place.



Installing the SIM card tray

Steps

1. Insert a pin into the hole of the SIM card tray and push inward until the tray is released
2. Slide the SIM card tray out of the slot on the computer.
3. Place the SIM card into the SIM card tray with the metallic contact facing up.
4. Align the SIM card tray with the slot on the computer, and slide the SIM card tray into the slot, until it clicks into place.



Next steps

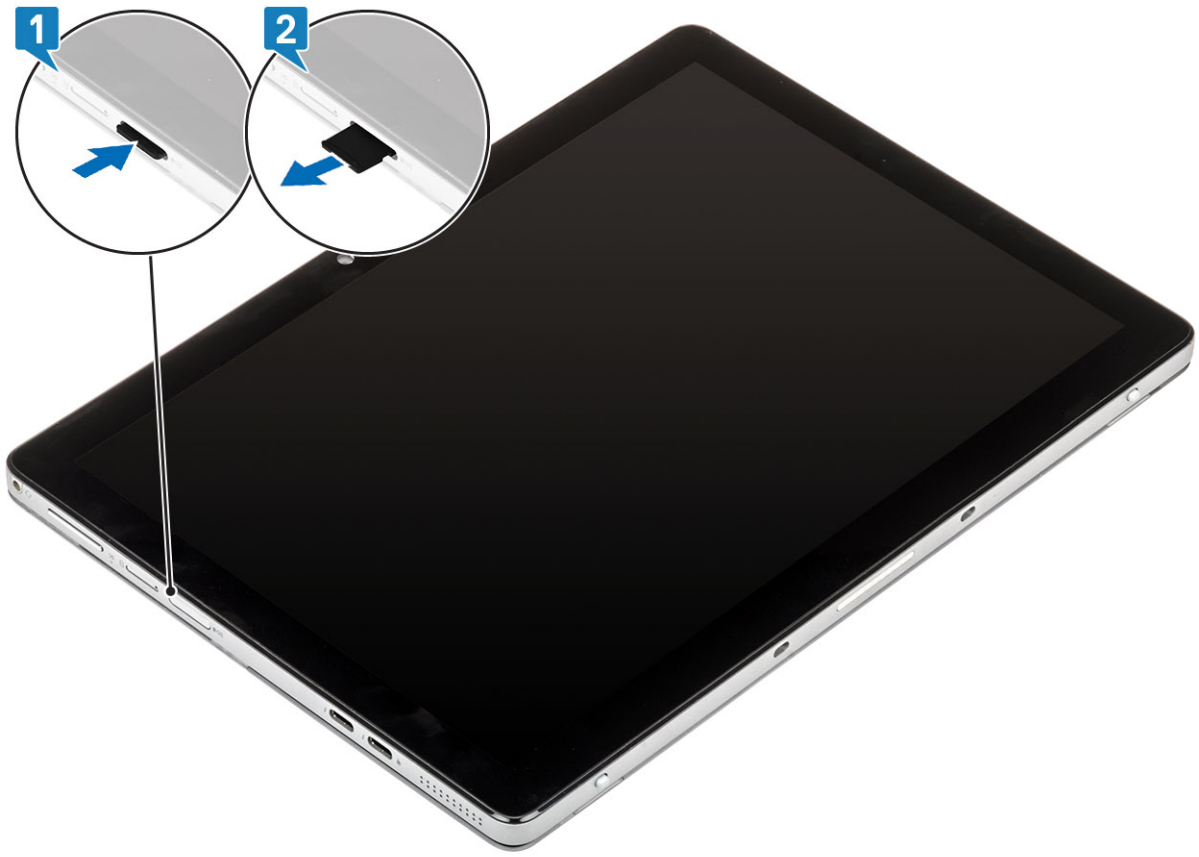
1. Follow the procedure in after working inside your computer.

Micro Secure Digital (SD) Card

Removing the microSD card

Steps

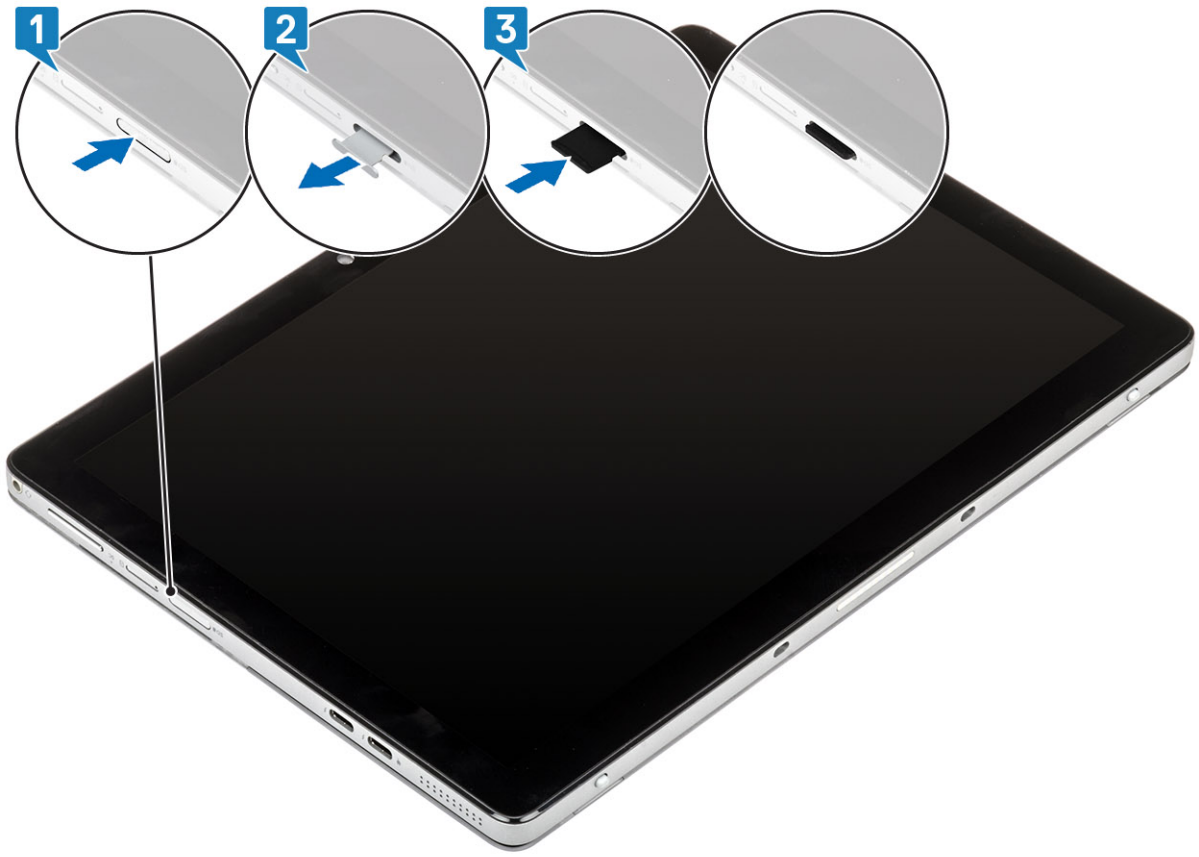
1. Follow the procedure in Before working inside your computer.
2. Press the microSD card to eject it from the slot [1].
3. Remove the microSD card from the computer[2].



Installing the microSD card

Steps

1. Press the dummy microSD card filler to eject it out.
2. Remove the dummy microSD card filler from the computer.
3. Align the microSD card in the slot on the computer.
4. Slide the microSD card into the slot until it clicks into place.



Next steps

1. Follow the procedure in after working inside your computer.

Display panel assembly

Removing the display panel assembly

About this task

NOTE: There are two different configurations of the Latitude 7210 2-in-1:

- Non-security configuration with non-captive screws.
- Security configuration with captive screws.

Latitude 7210 2-in-1 has the kickstand power on feature. When the kickstand is deployed, the tablet will power on. If the tablet is powered on with the kickstand deployed, press and hold the power button to turn off the tablet, and then begin the tablet disassembly. There is no need to close the kickstand, proceed to remove the screws securing the display assembly.

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
3. Press the release tabs and lift the display back cover upwards.





4. Remove the six screws (non-security configuration) and loosen the six captive screws (security configuration) securing the display assembly of Latitude 7210 2-in-1 to the system chassis.



5. Using a plastic scribe, push the two release holes next to the hinges to loosen the display assembly from the display back cover.



6. Close the display back cover.



7. Flip the system over so the display assembly is facing upwards.



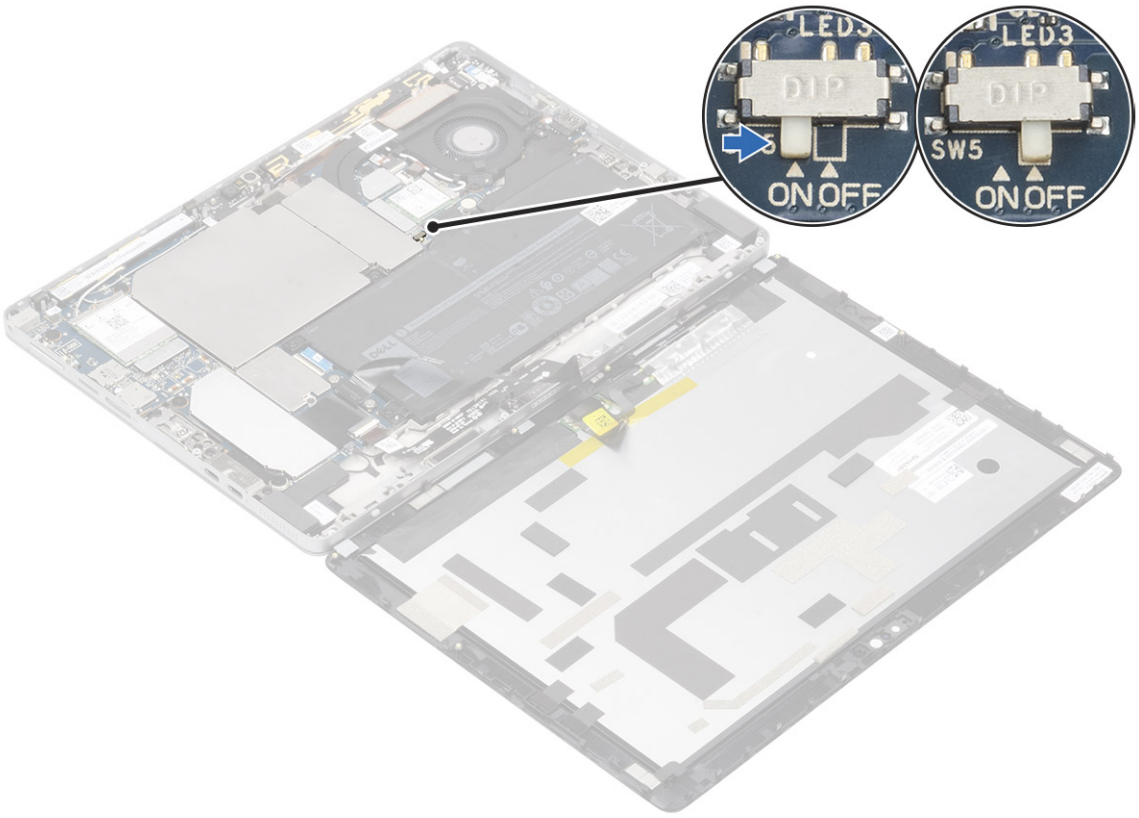
8. Insert the plastic scribe into the gap created in step #1 and with a suction cup (optional), pry open the display assembly from the bottom-left corner of the front side of the system. Work your way around the right side of the display assembly.



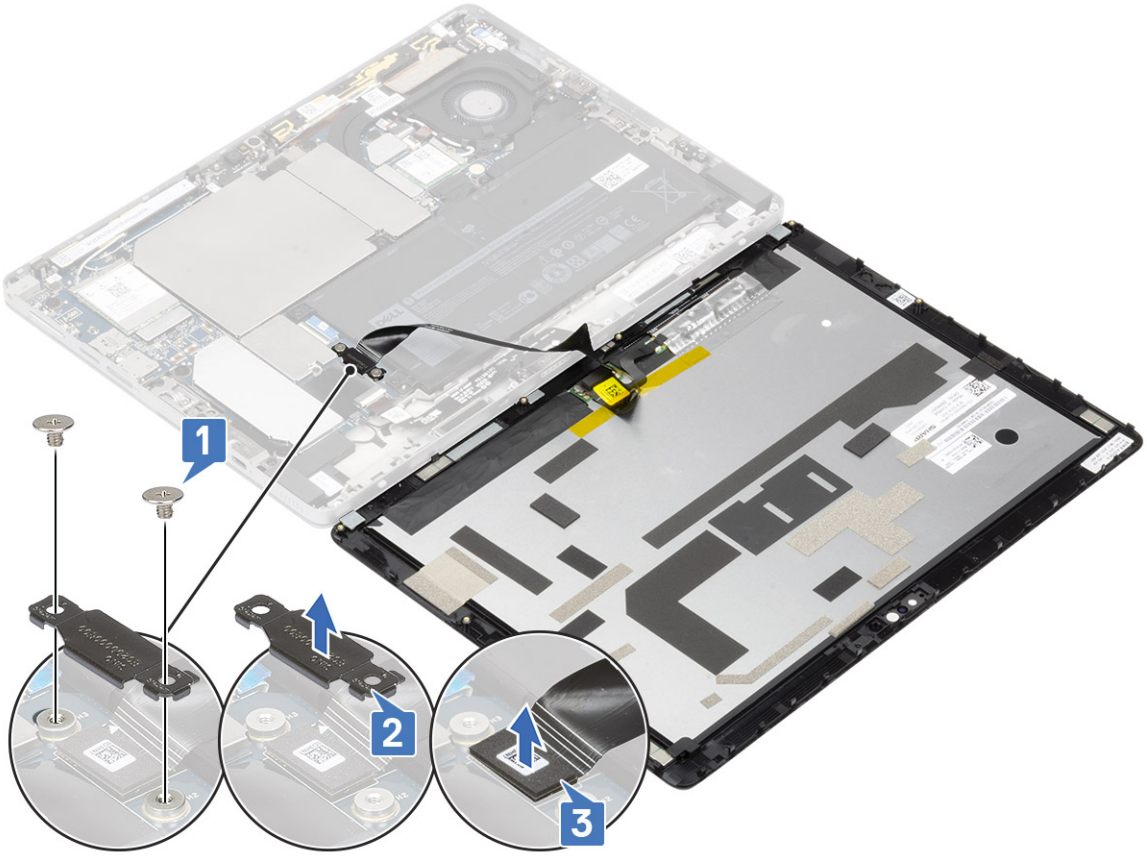
9. Carefully flip the display assembly over from the top edge and lay the display assembly face-down next to the display back cover. Do not pull away the display assembly from the base. The display assembly is still connected to the system board on the base via the display cable. Carefully flip the display assembly over and disconnect the display cable.



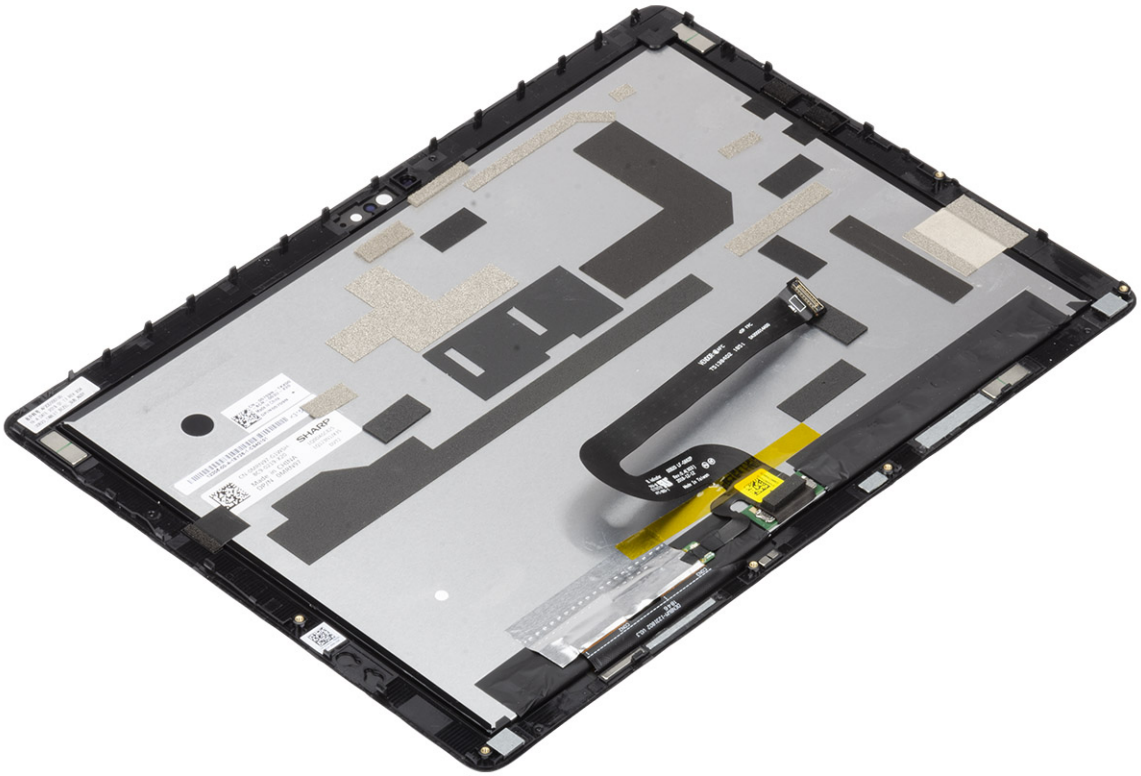
10. Slide the battery power switch on the system board to **OFF**.



11. Remove the two M2x2.5 screws [1] securing the display cable bracket [2] to the system board and remove the display cable bracket.



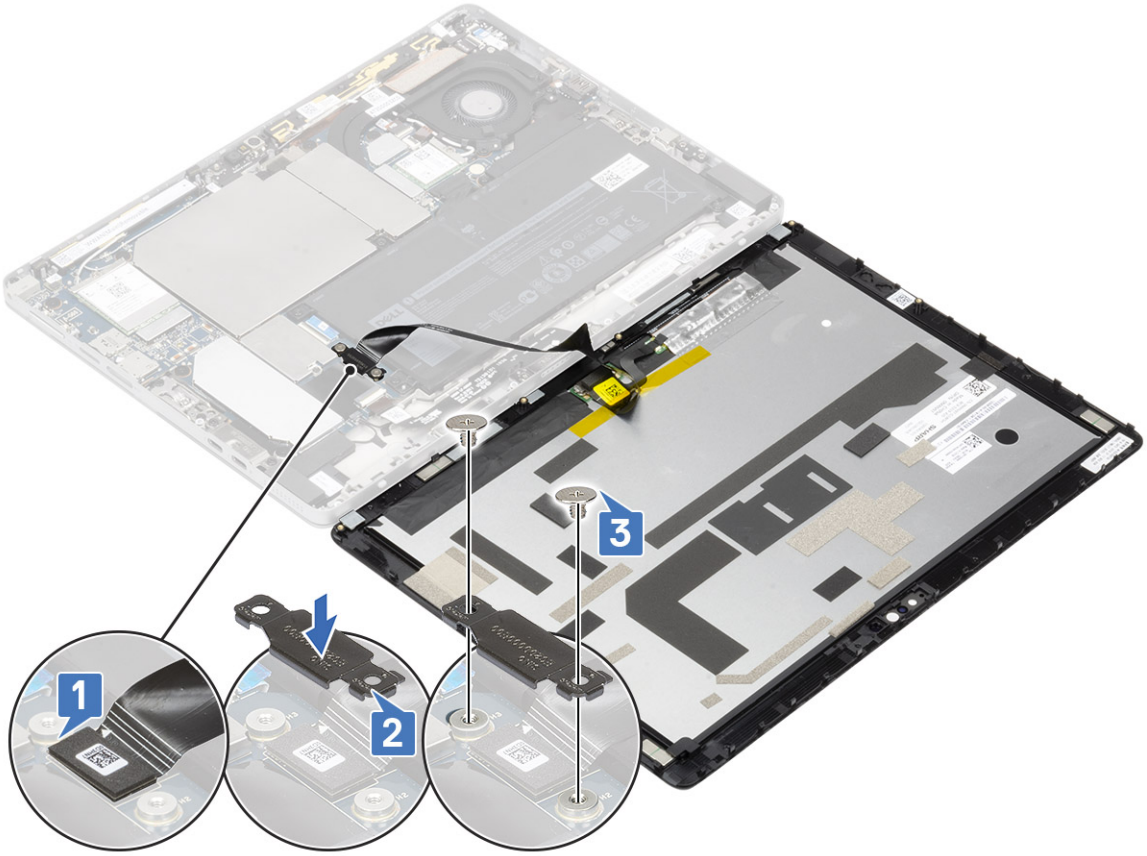
12. Disconnect the display cable [3] from the system board and remove the display panel assembly from the system.



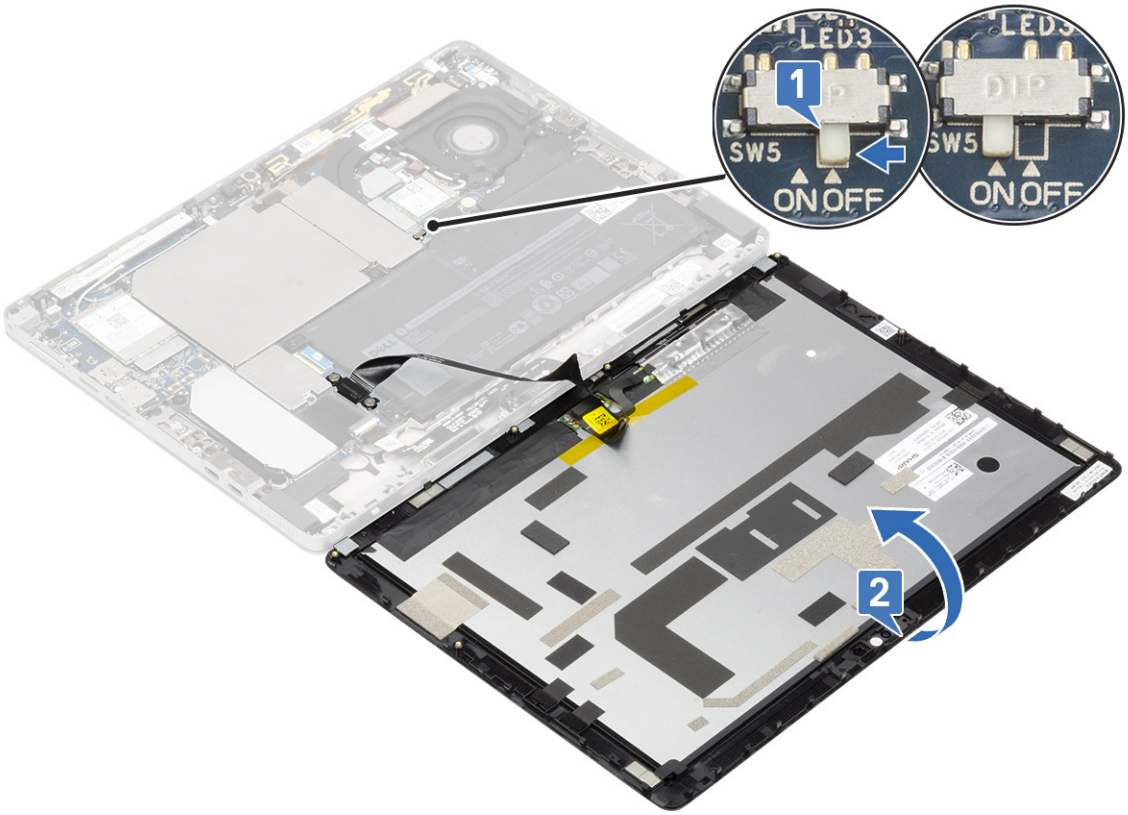
Installing the display panel assembly

Steps

1. Connect the display cable to the connector on the system board.
2. Replace the two M2x2.5 screws [3] securing the display cable bracket to the system board and replace the display cable bracket [2].



3. Slide the battery power switch on the system board to **ON**, carefully connect the display assembly to the system board using display cable, and flip the display assembly facing up.



4. Continue to work around the left side and the top side of the display assembly.



5. Flip over the computer, and then place the computer on a flat surface.



6. Open the kickstand.



7. Replace the six screws (non-security configuration) and tighten the six captive screws (security configuration) securing the display assembly of Latitude 7210 2-in-1 to the system chassis.



8. Close the kickstand.





9. Install the:
   a. SIM card tray
   b. microSD card
10. Follow the procedure in After working inside your tablet.

Solid-state drive

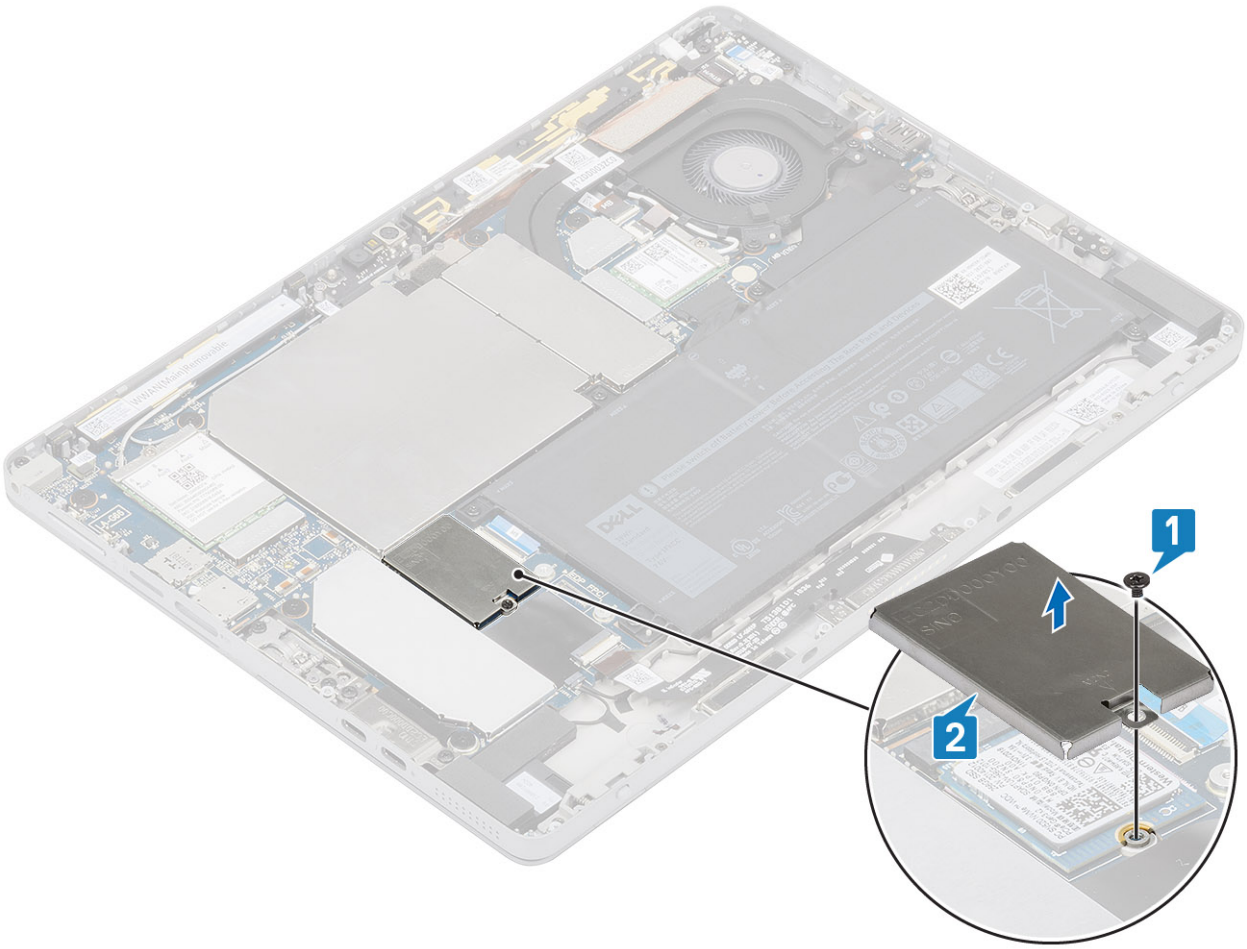
Removing the solid-state drive

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the solid-state drive bracket:

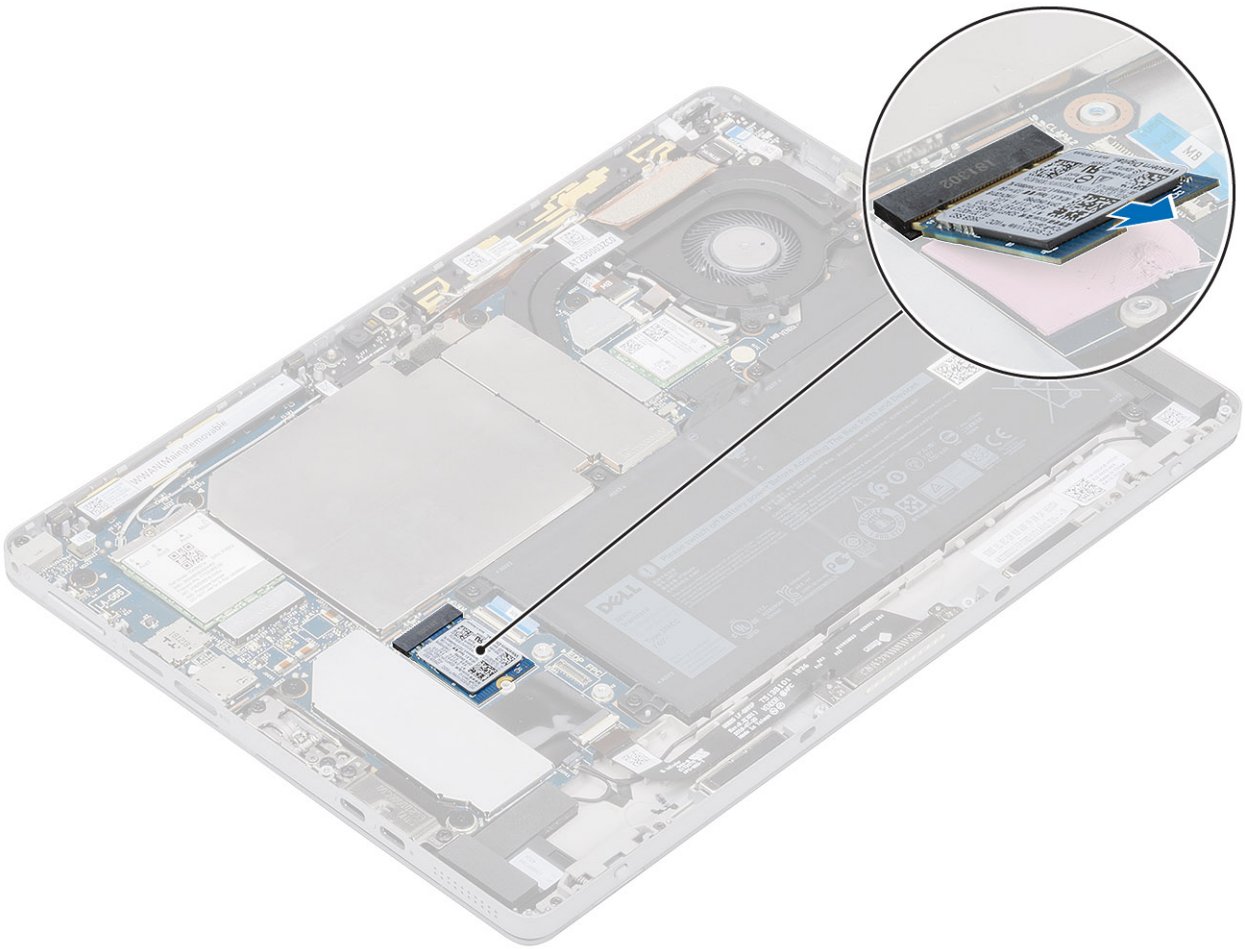
   NOTE: SIM card slot is available only on tablets with WWAN module.

   a. Remove the M2x2.5 screw that secures the bracket to the solid-state drive [1].



b. Lift the SSD bracket away from the solid-state drive [2].

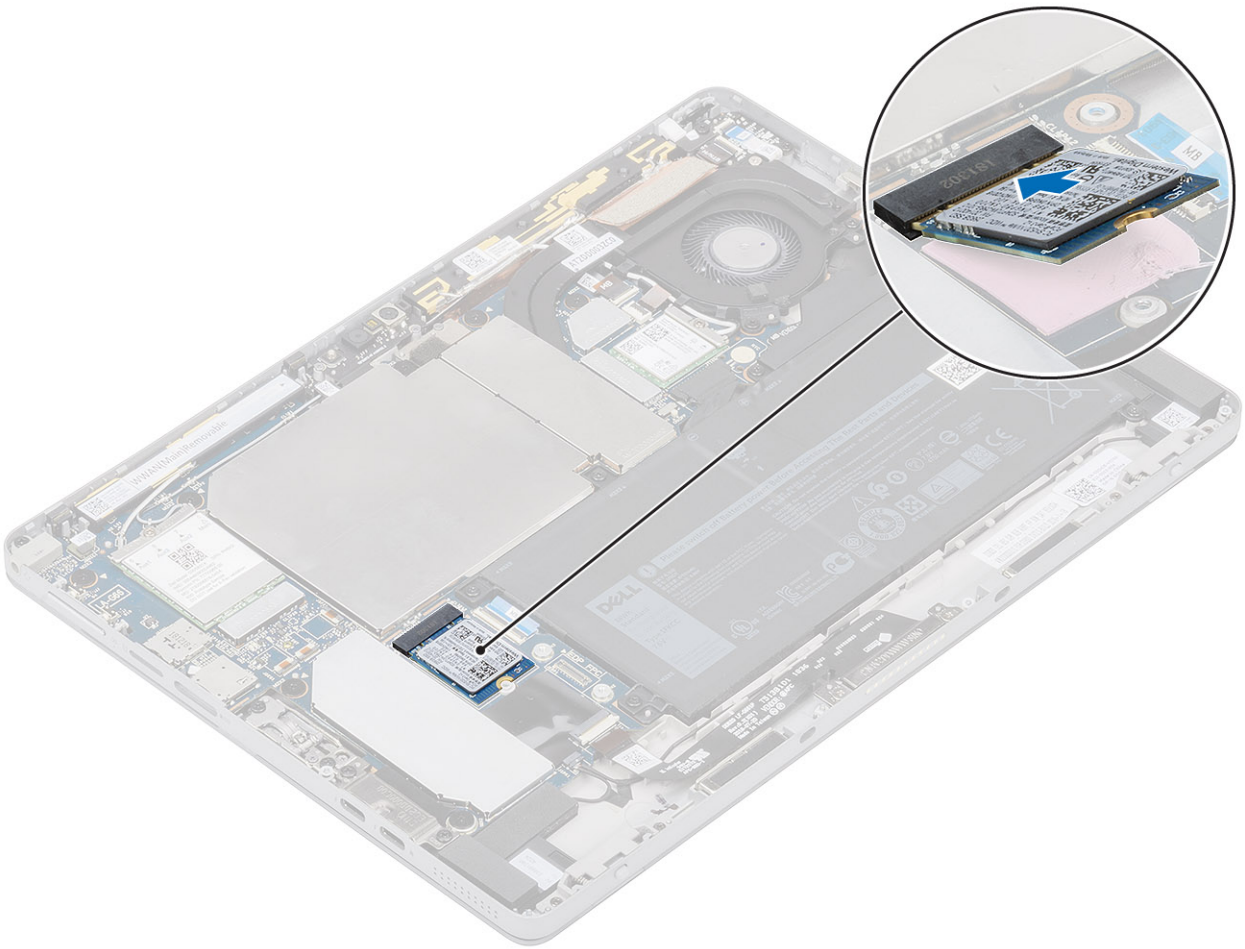
4. Slide and remove the solid-state drive off the system board.



Installing the solid-state drive

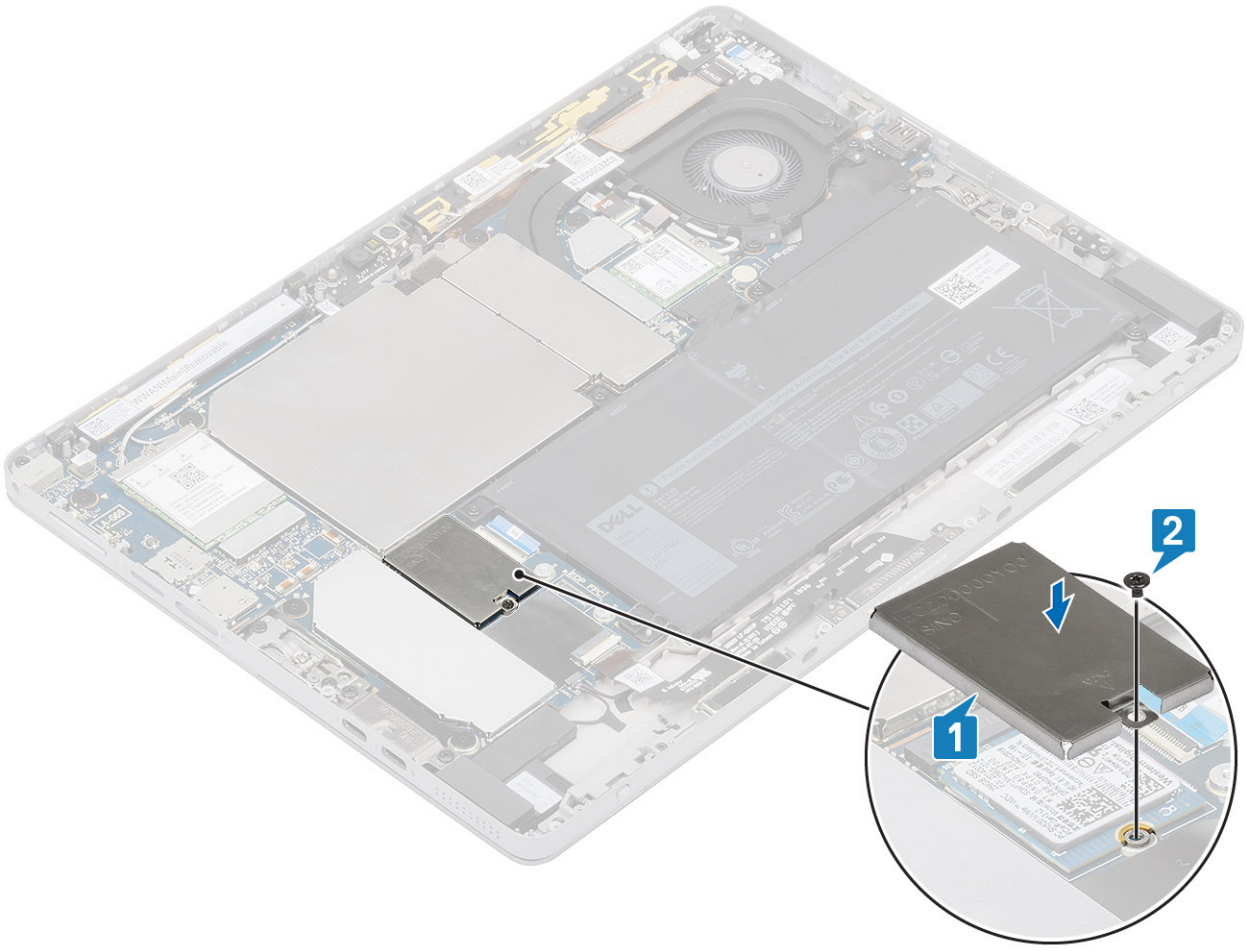
Steps

1. Slide the solid-state drive firmly into the slot on the system board at an angle and gently press the solid-state drive down until it snaps into position.



2. Place the bracket on the solid-state drive [1].

   NOTE: Align the shield carefully to avoid damage to the clip heads.



3. Replace the M2x2.5 screws that secures the bracket to the solid-state drive.
4. Install the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
5. Follow the procedure in After working inside your tablet.

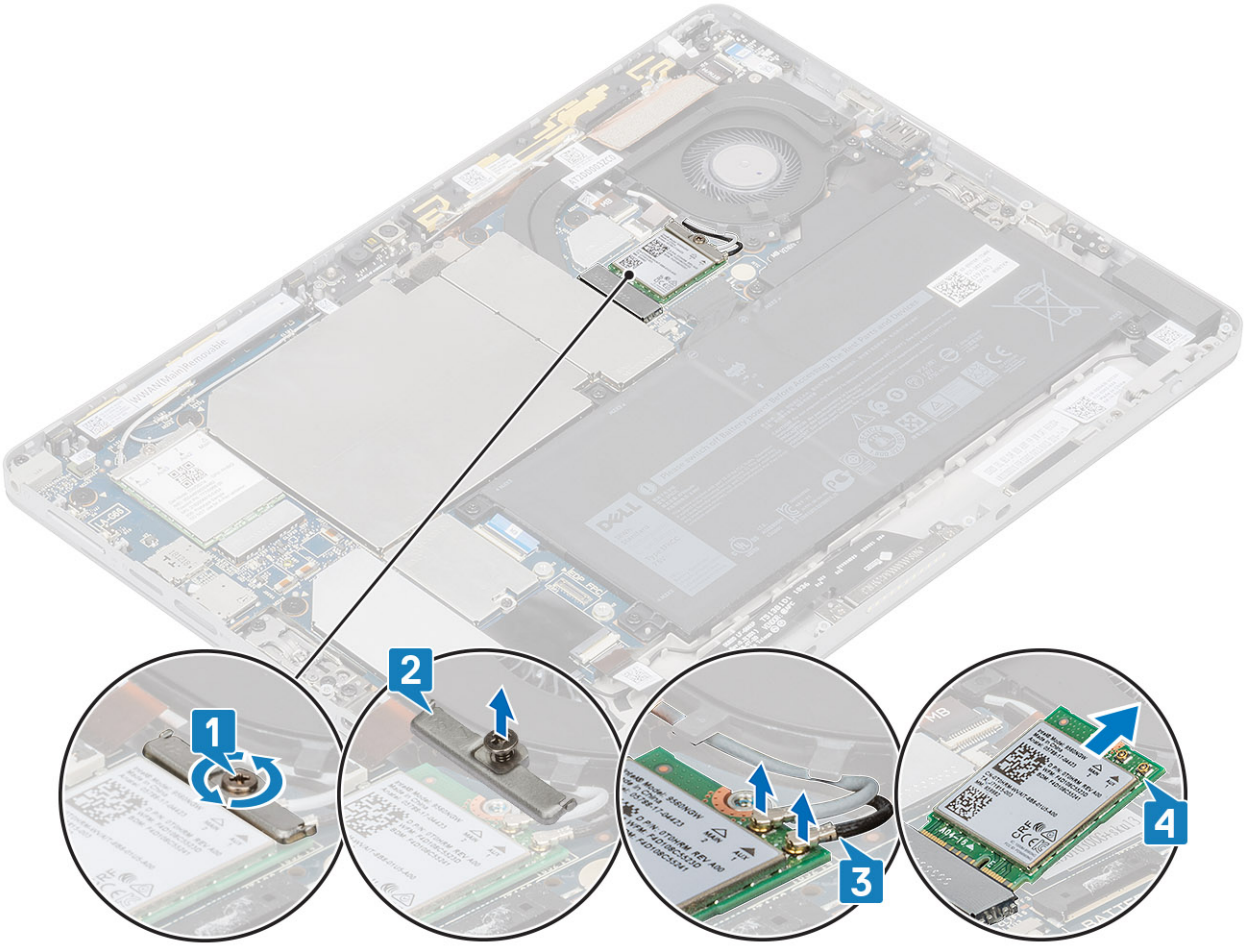
WLAN card

Removing the WLAN card

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Loosen the M2x3.5 screws that secure the WLAN bracket to the WLAN card [1].
4. Remove the WLAN bracket [2].
5. Disconnect the antenna cables from the WLAN card [3].

6. Slide and remove the WLAN card from the WLAN card slot [4].

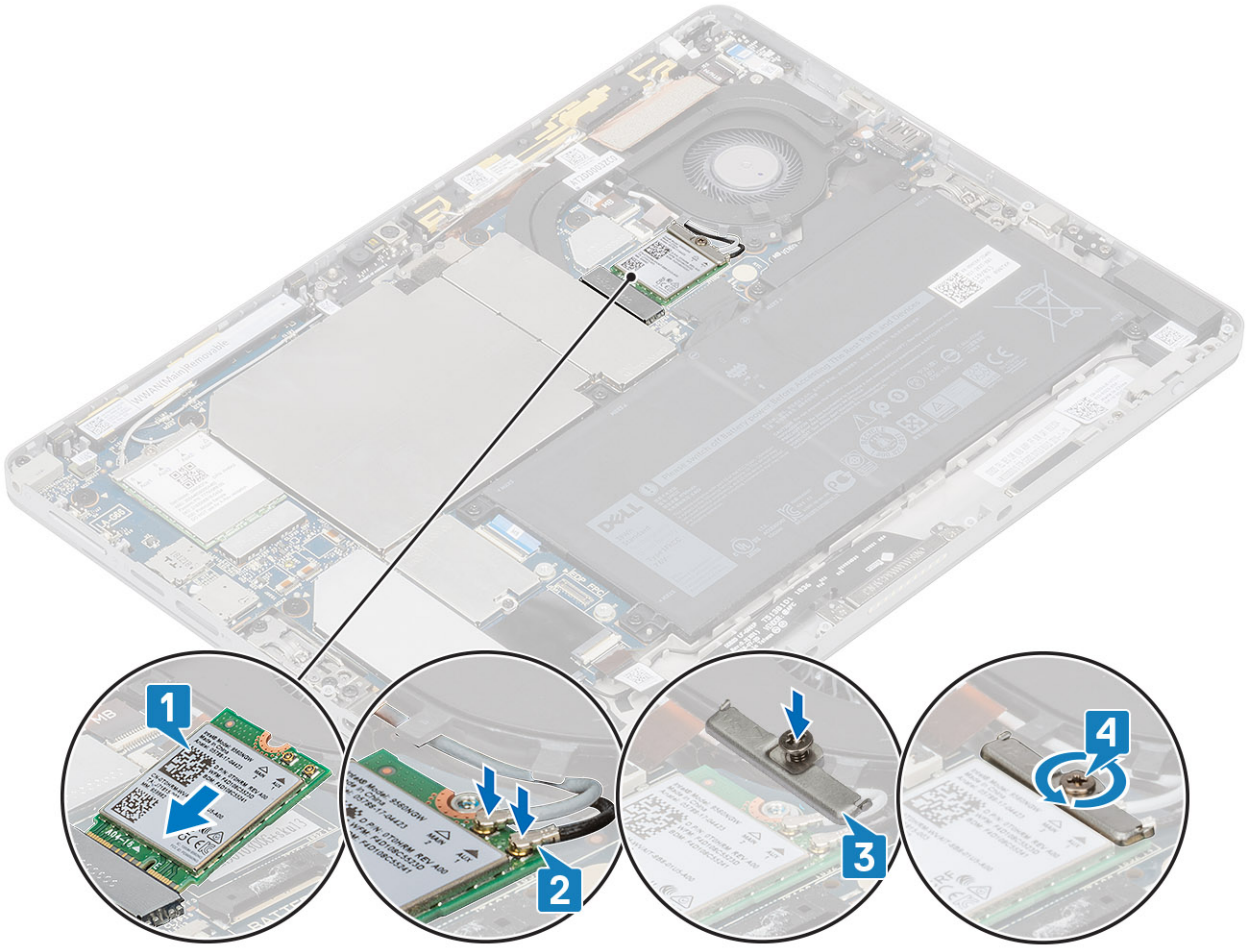


Installing the WLAN card

Steps

1. Align the notch on the WLAN card with the tab on the WLAN-card slot and insert the WLAN card at an angle into the WLAN-card slot [1].
2. Connect the antenna cables to the WLAN card [2].
3. Place the WLAN bracket to the WLAN card [3].

4. Replace the M2x3.5 that secures the WLAN bracket to the WLAN card.



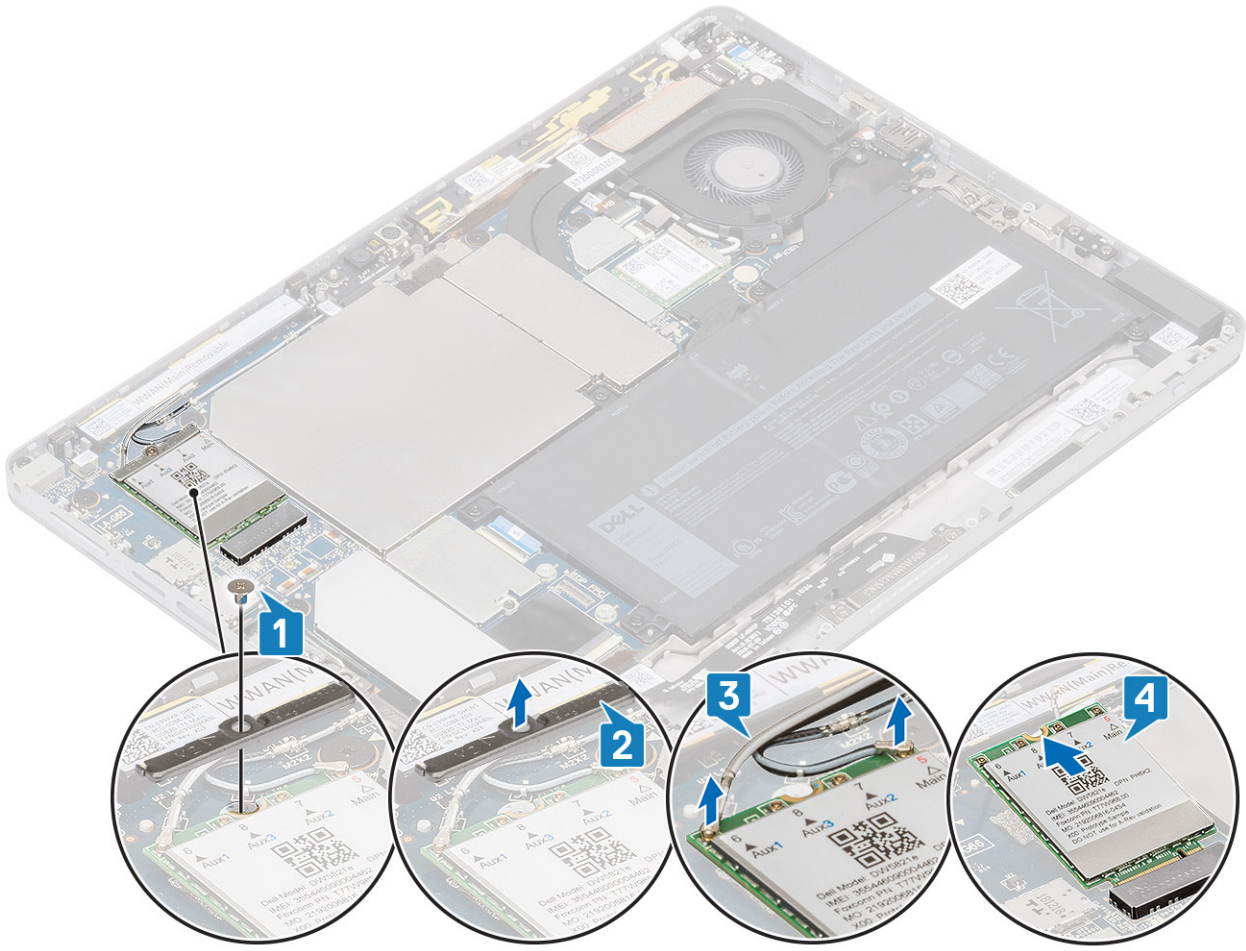
5. Install the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
6. Follow the procedure in After working inside your tablet.

WWAN card

Removing the WWAN card

Steps

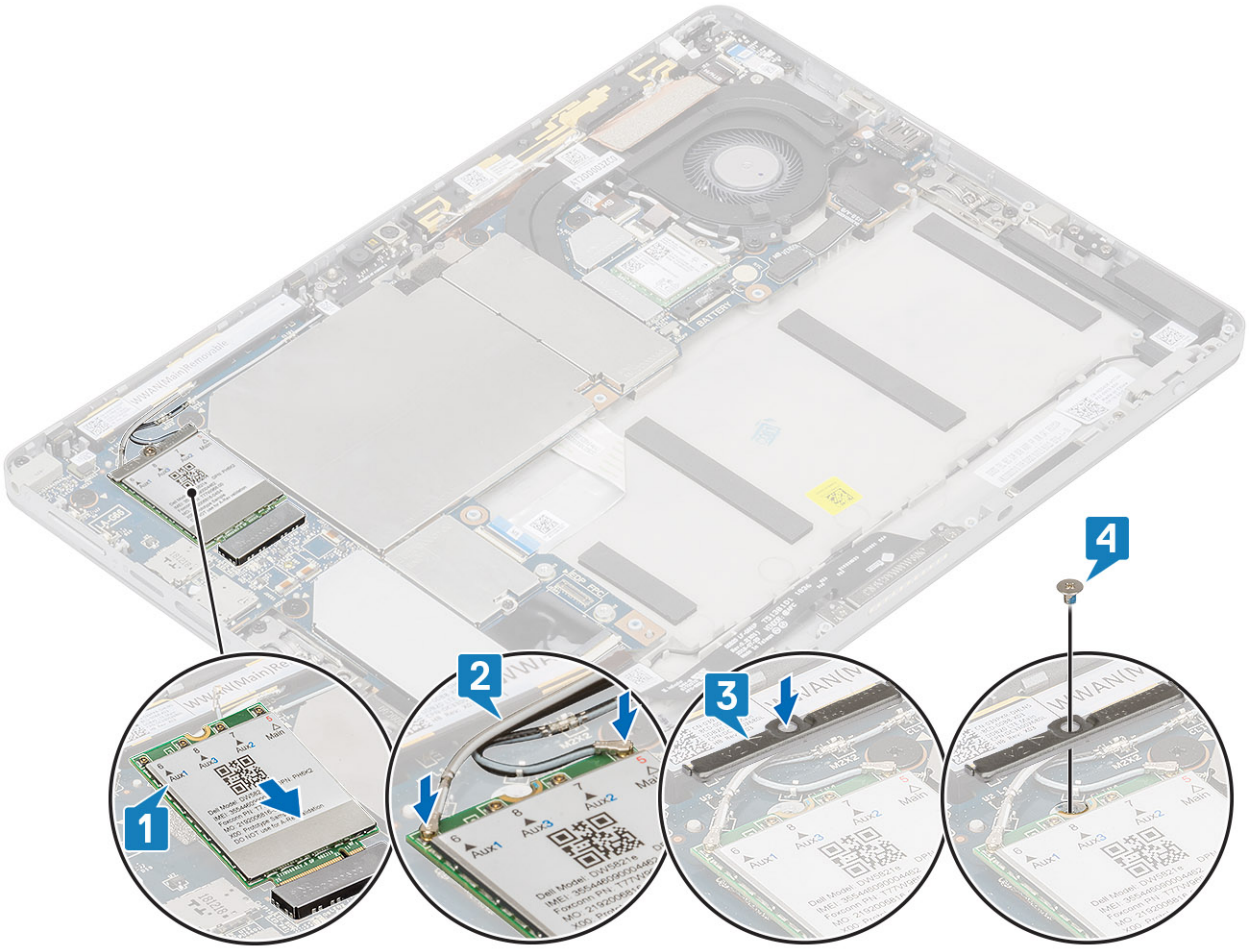
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Loosen the M2x3.5 screw that secures the WWAN bracket to the WWAN card [1].
4. Remove the WWAN bracket [2].
5. Disconnect the antenna cables from the WWAN card [3].
6. Slide and remove the WWAN card from the WWAN card slot [4].



Installing the WWAN card

Steps

1. Align the notch on the WWAN card with the tab on the WWAN-card slot and insert the WWAN card at an angle into the WWAN-card slot [1].
2. Connect the antenna cables to the WWAN card. [2]
3. Place the WWAN bracket to the WWAN card [3]
4. Replace the M2x3.5 screw that secures the WWAN bracket to the WWAN card.



5. Install the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
6. Follow the procedure in After working inside your tablet.

Battery

Rechargeable Li-ion battery precautions

CAUTION:

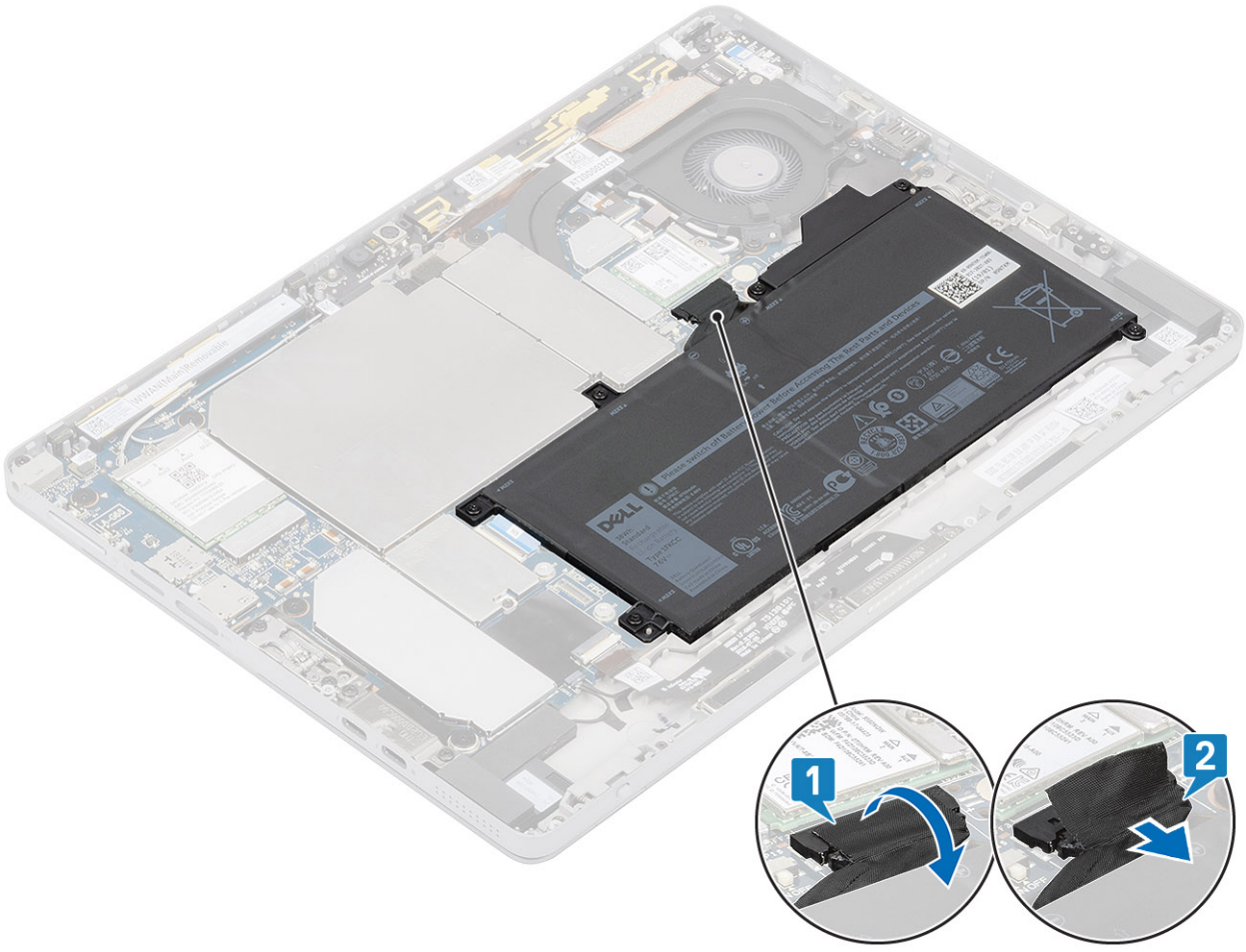
- **Exercise caution when handling rechargeable Li-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other computer components.**

- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a rechargeable Li-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See Contact Support at Dell Support Site.**
- **Always purchase genuine batteries from Dell Site or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

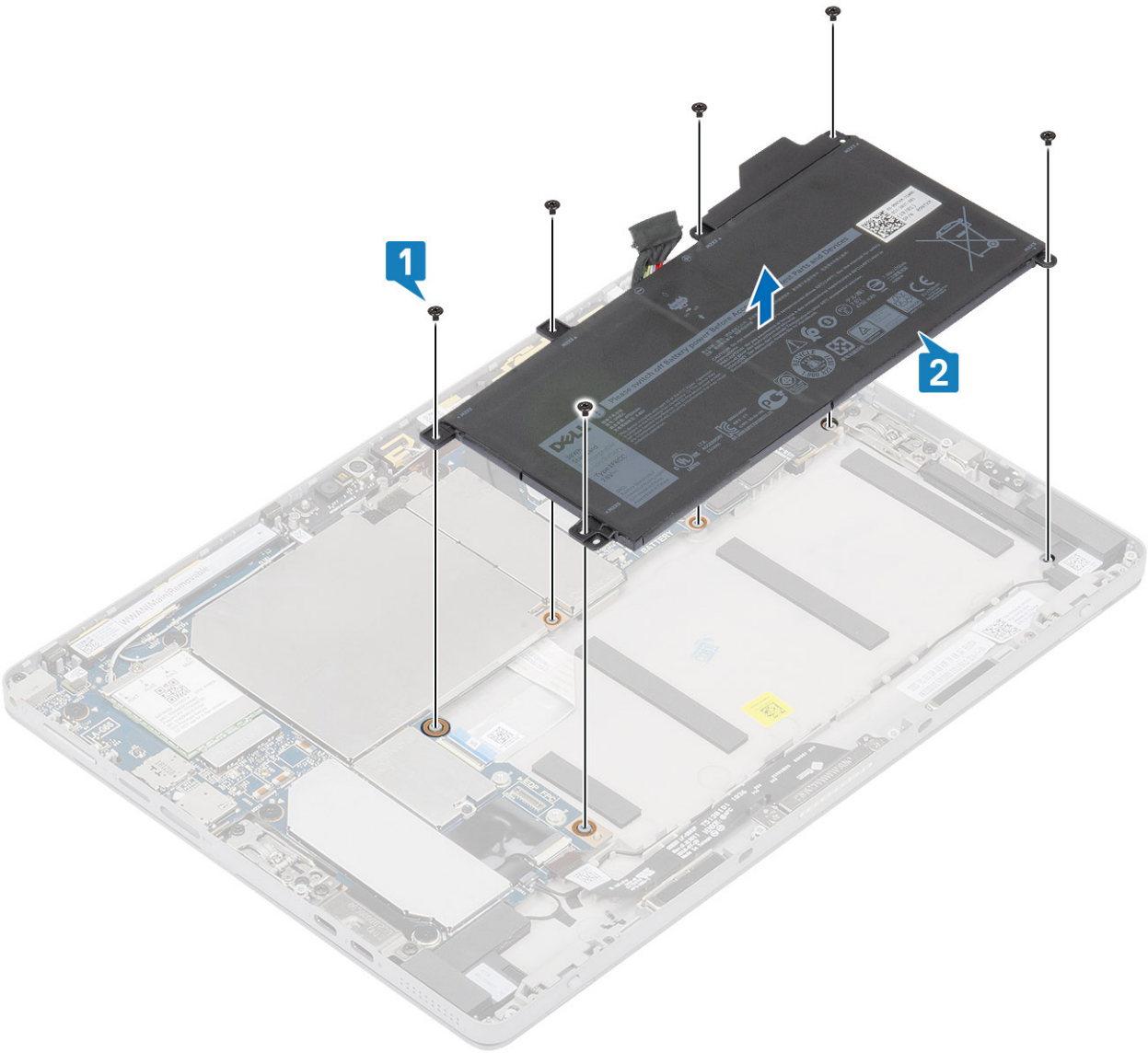
Removing the battery

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. Display panel assembly
3. To remove the battery:
   a. Peel off the adhesive tape covering the battery connector [1].
   b. Disconnect the battery cable from the system board [2]



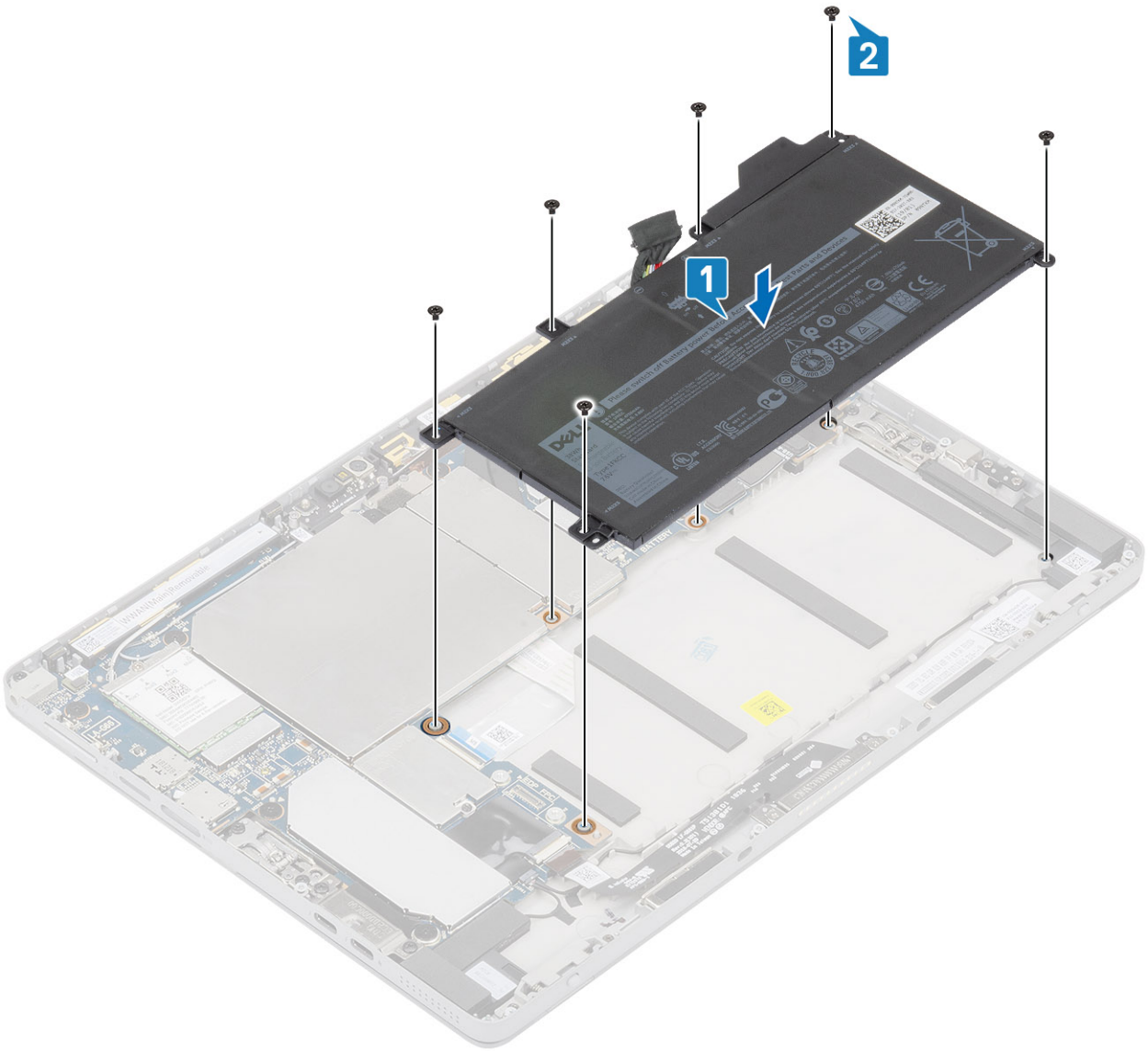
   c. Remove the M2x4 screws that secure the battery to the chassis [1].
   d. Lift the battery off the computer [2].



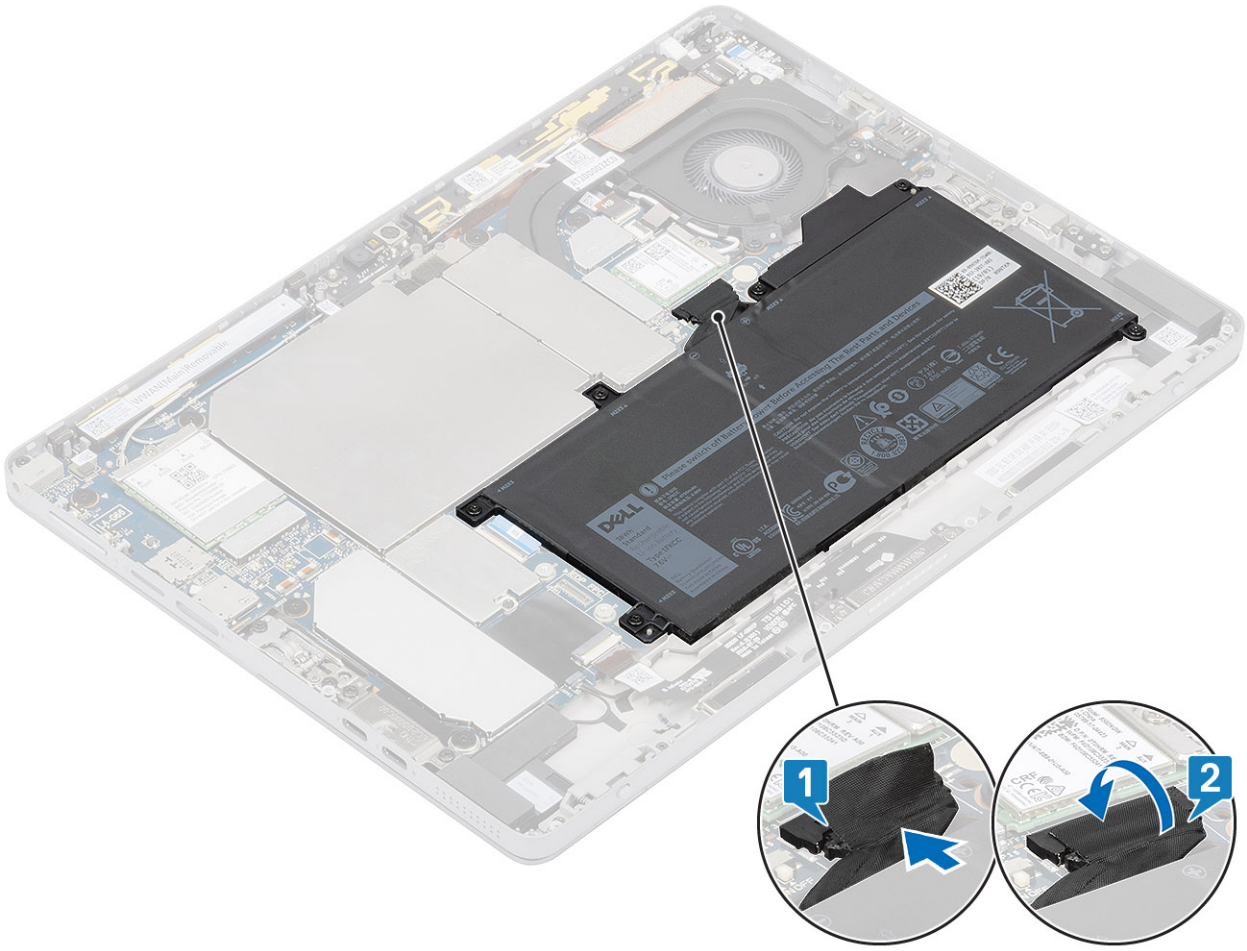
Installing the battery

Steps

1. Align the screw holes on the battery with the screw holes on the computer [1].
2. Replace the M2x4 screws that secure the battery to the computer [2].



3. Connect the battery cable to connector on the system board [1].
4. Adhere the tape on the battery connector[2].



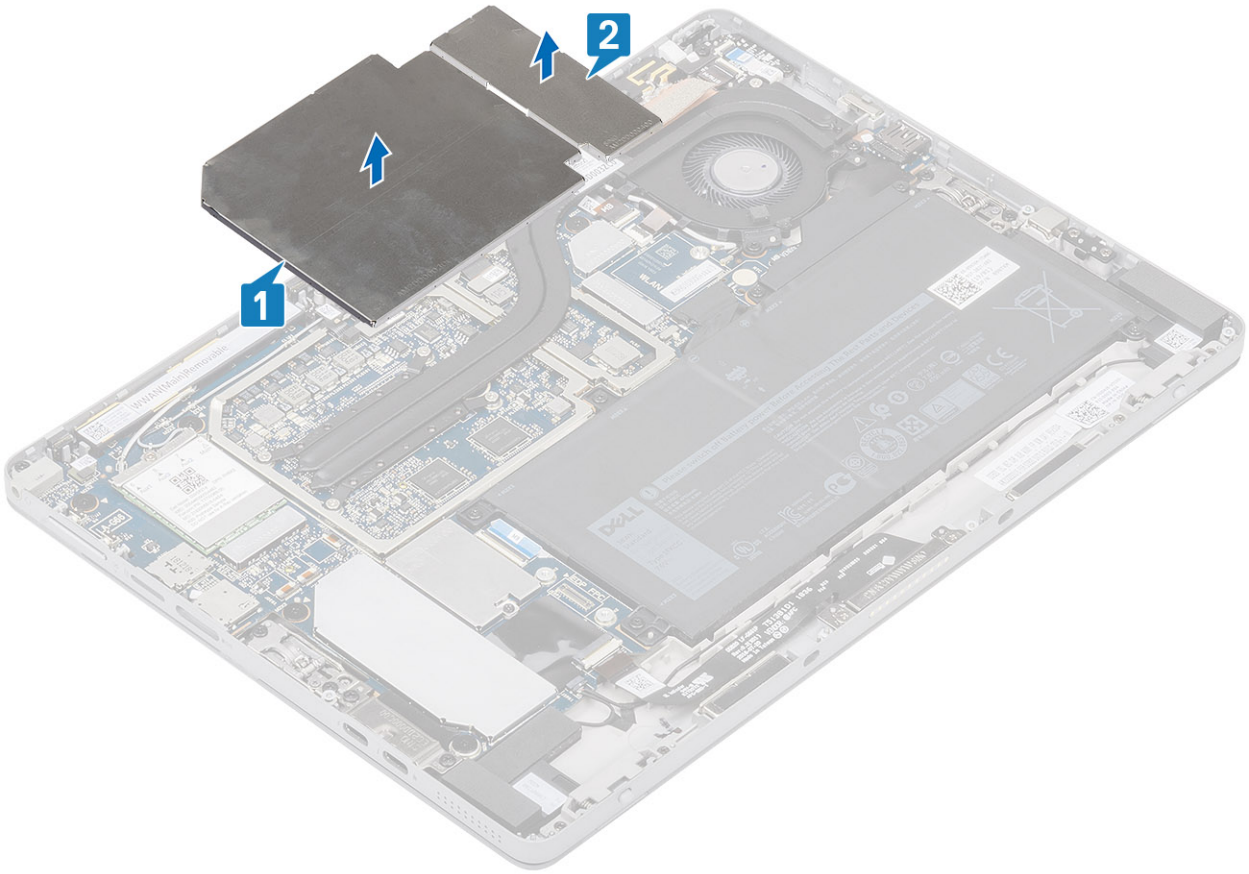
5. Install the:
   a. Display panel assembly
   b. microSD card
   c. SIM card tray
6. Follow the procedure in After working inside your tablet.

Heat sink

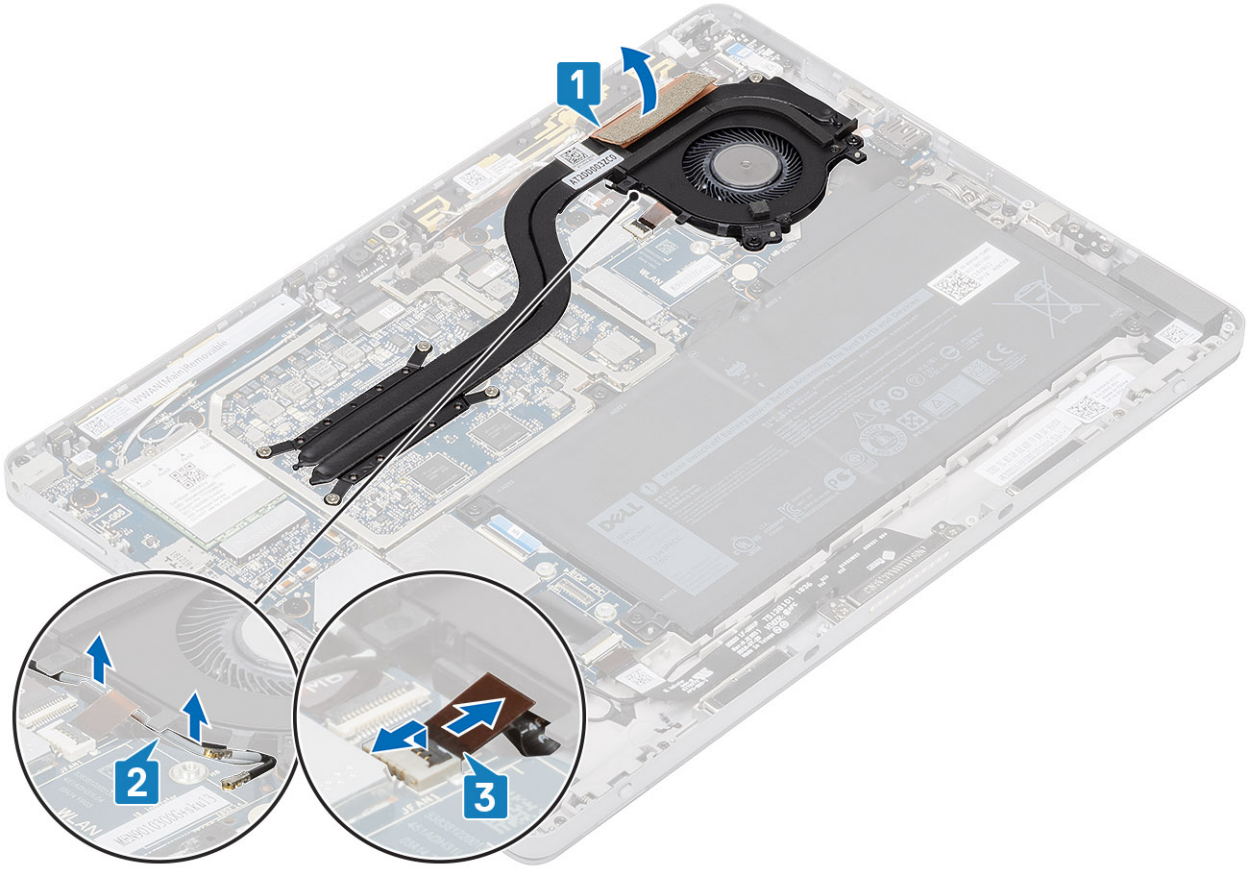
Removing the heat-sink assembly

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Lift and remove the left heat-sink shield [1] and right heat-sink shield [2] away from the heat-sink.



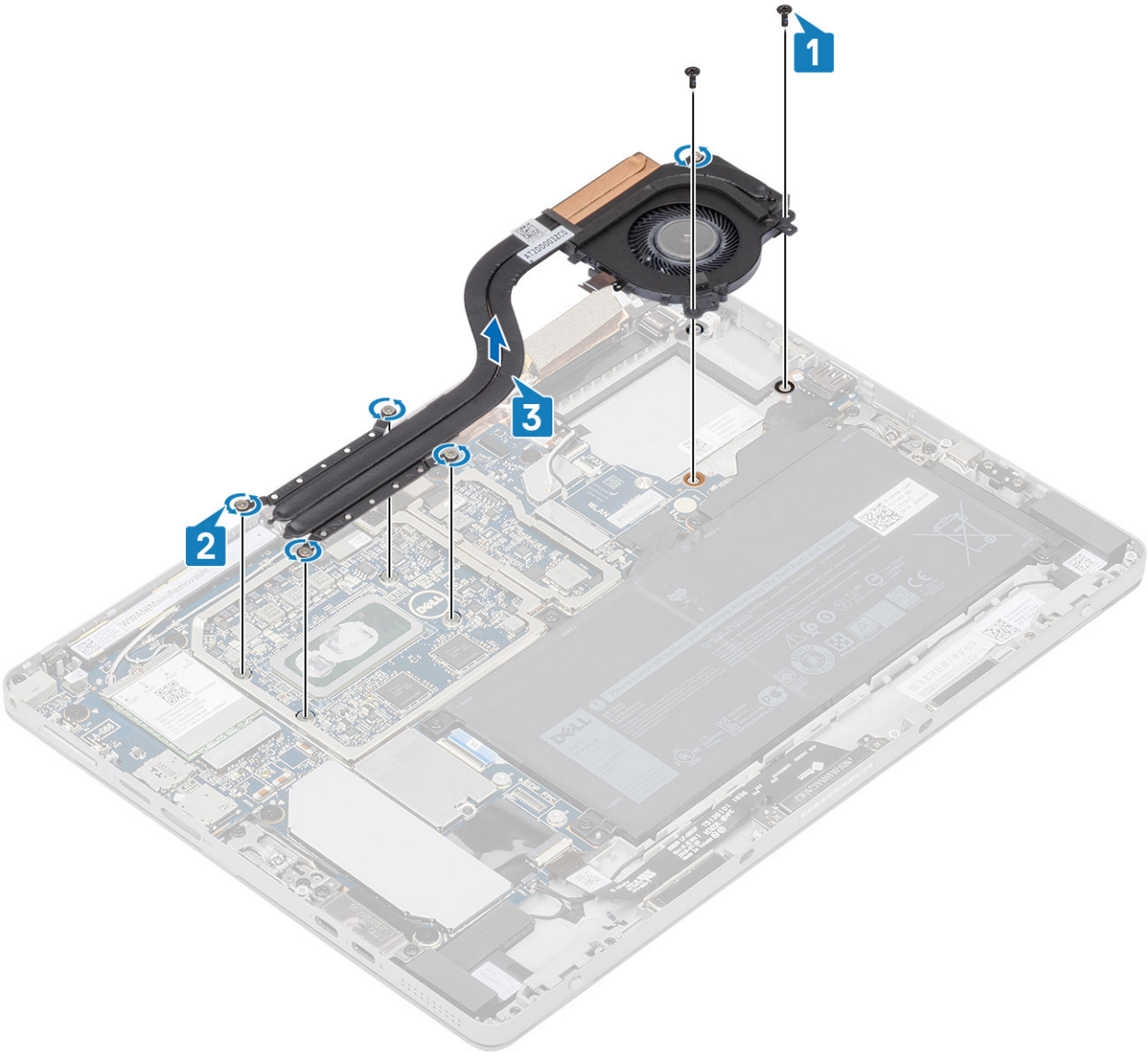
4. Peel the adhesive the tape from the heat-sink assembly [1].
5. Unroute the WLAN antenna cables from the routing guides on the heat sink [2].
6. Open the latch and disconnect the heat-sink fan cable from the connector on the system board [3].



7. To remove the heat-sink assembly:
   a. Remove the M2x2.5 screws that secure the heat-sink fan to the system board [1].
   b. In sequential order (as indicated on the heat sink), loosen the captive screws that secure the heat sink to the system board [2].

      NOTE: Remove the screws in the order of the callout numbers [1, 2, 3, 4] as graphically printed on the heat sink.

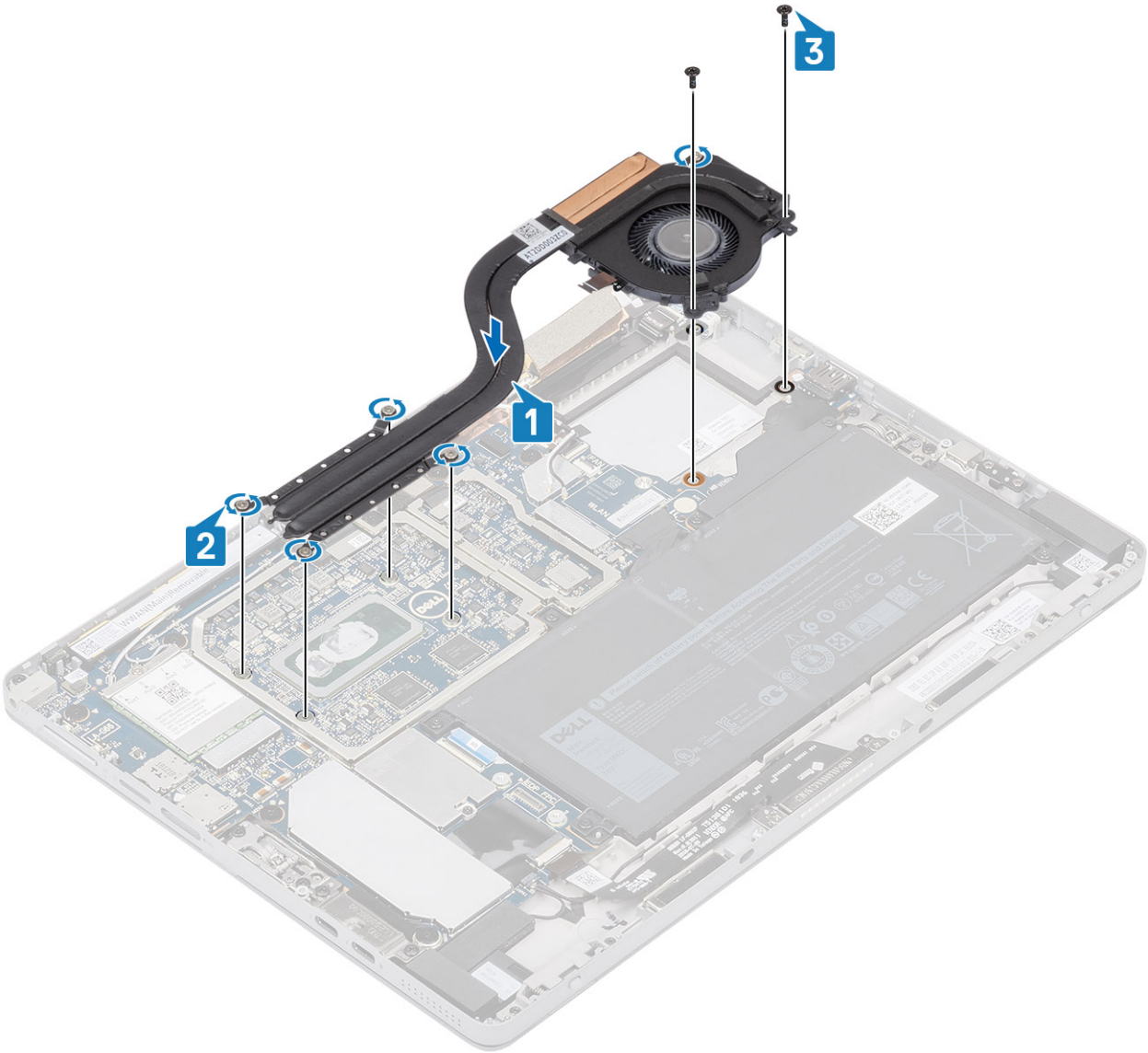
   c. Lift the heat-sink assembly from the tablet [3].



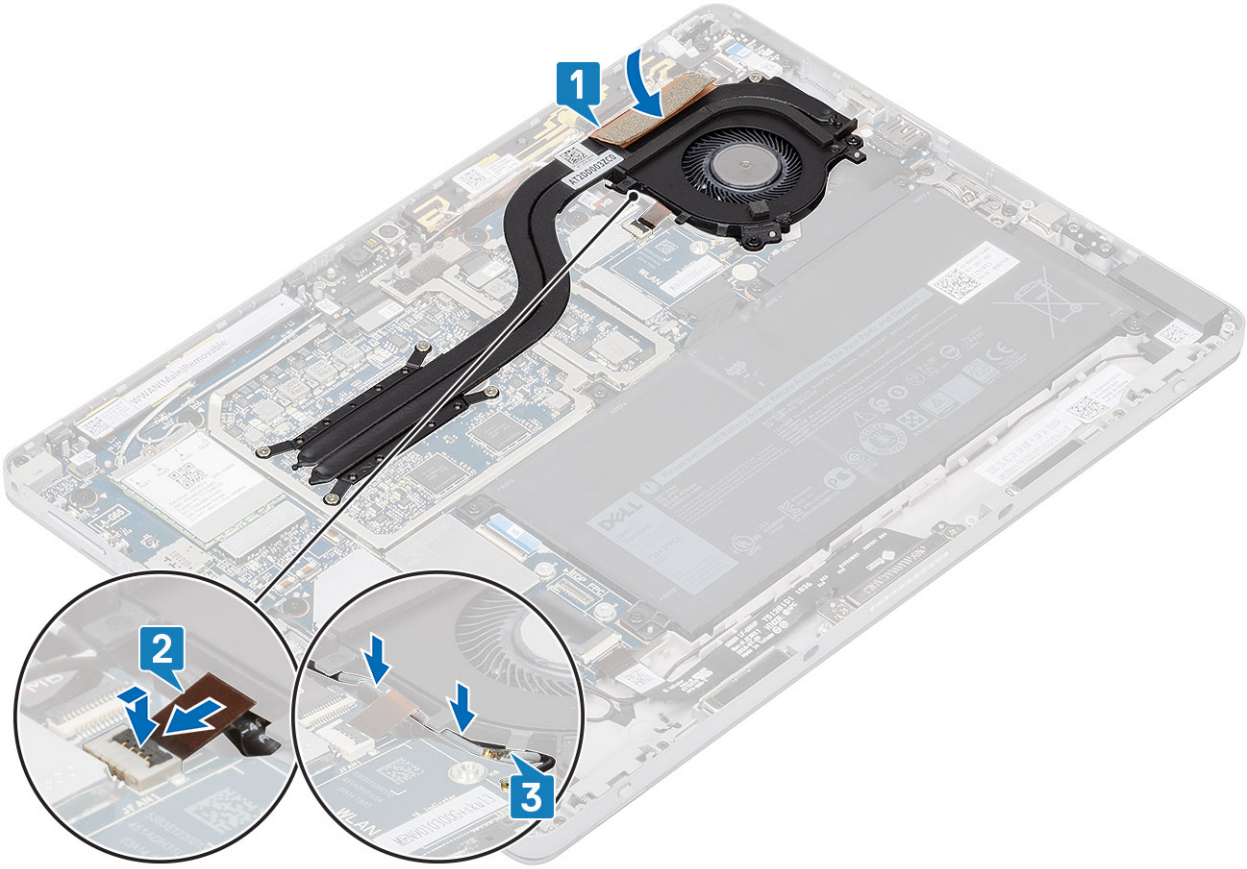
Installing the heat-sink assembly

Steps

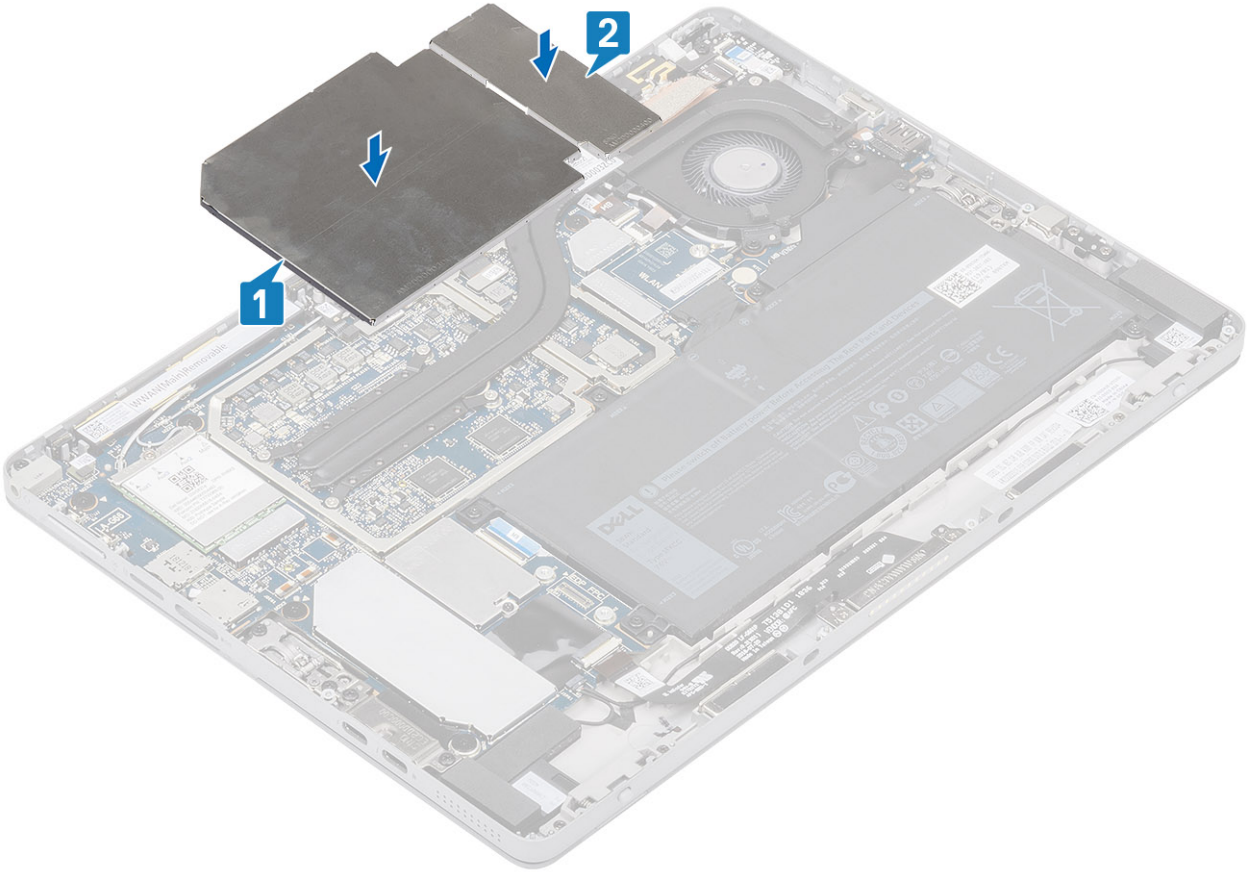
1. To install the heat sink assembly:
   a. Place the heat sink on the system board [1].
   b. Align the screw holes on the heat sink with the screw holes on the system board.
   c. In sequential order (indicated on the heat sink), tighten the captive screws that secure the heat sink to the system board [2].
   d. Align the screw holes on the heat-sink fan with the screw holes on the system board.
   e. Replace the M2x2.5 captive screws that secure the heat-sink fan on the system board [3].



f. Adhere the adhesive tape to the heat-sink assembly [1].
g. Slide the heat-sink fan cable into the connector on the system board and close the latch to secure the cable [2].
h. Route the WLAN antenna cables through the routing guides on the system board [3].



i. Place the left heat-sink shield [1] and right heat-sink shield [2] on the heat sink.



2. Install the:

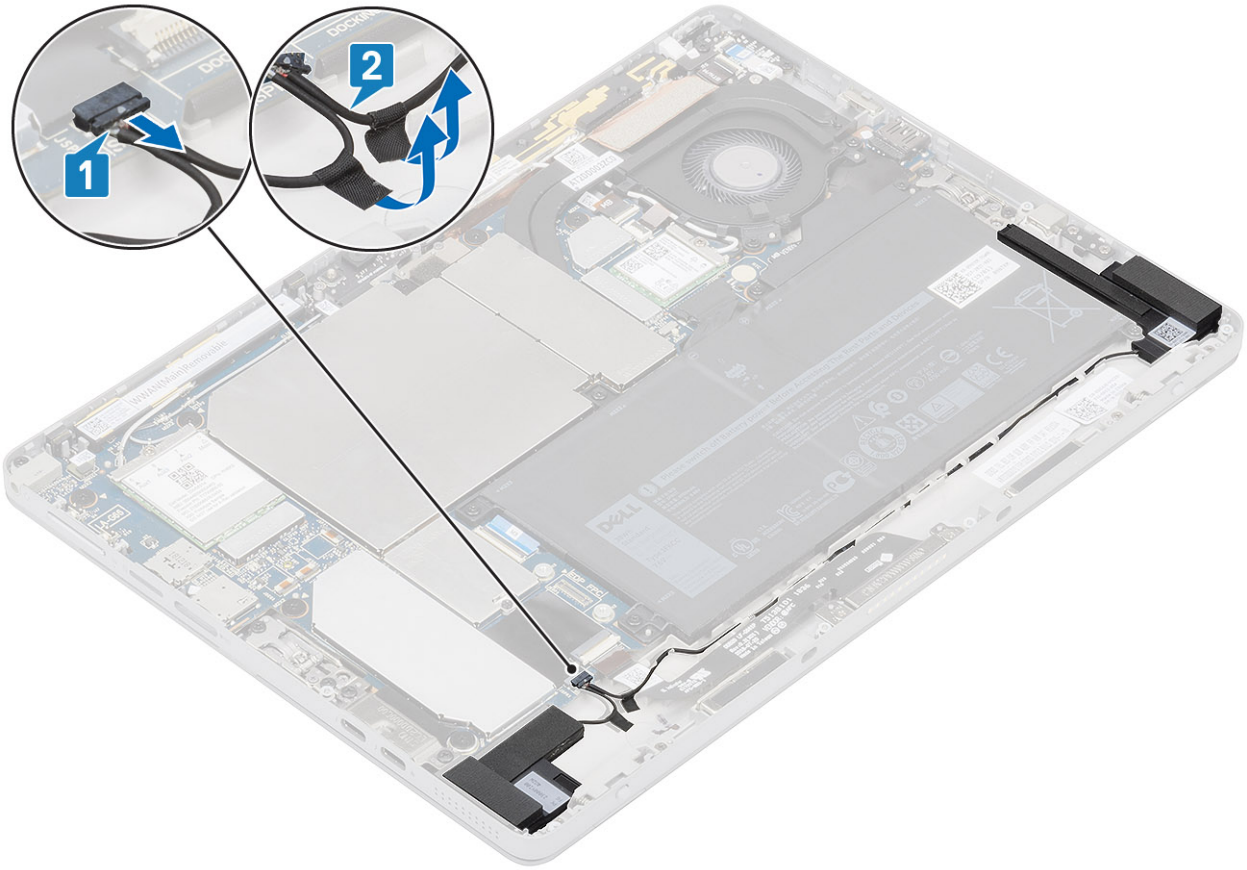
a. display panel assembly
b. microSD card
c. SIM card tray

Speakers

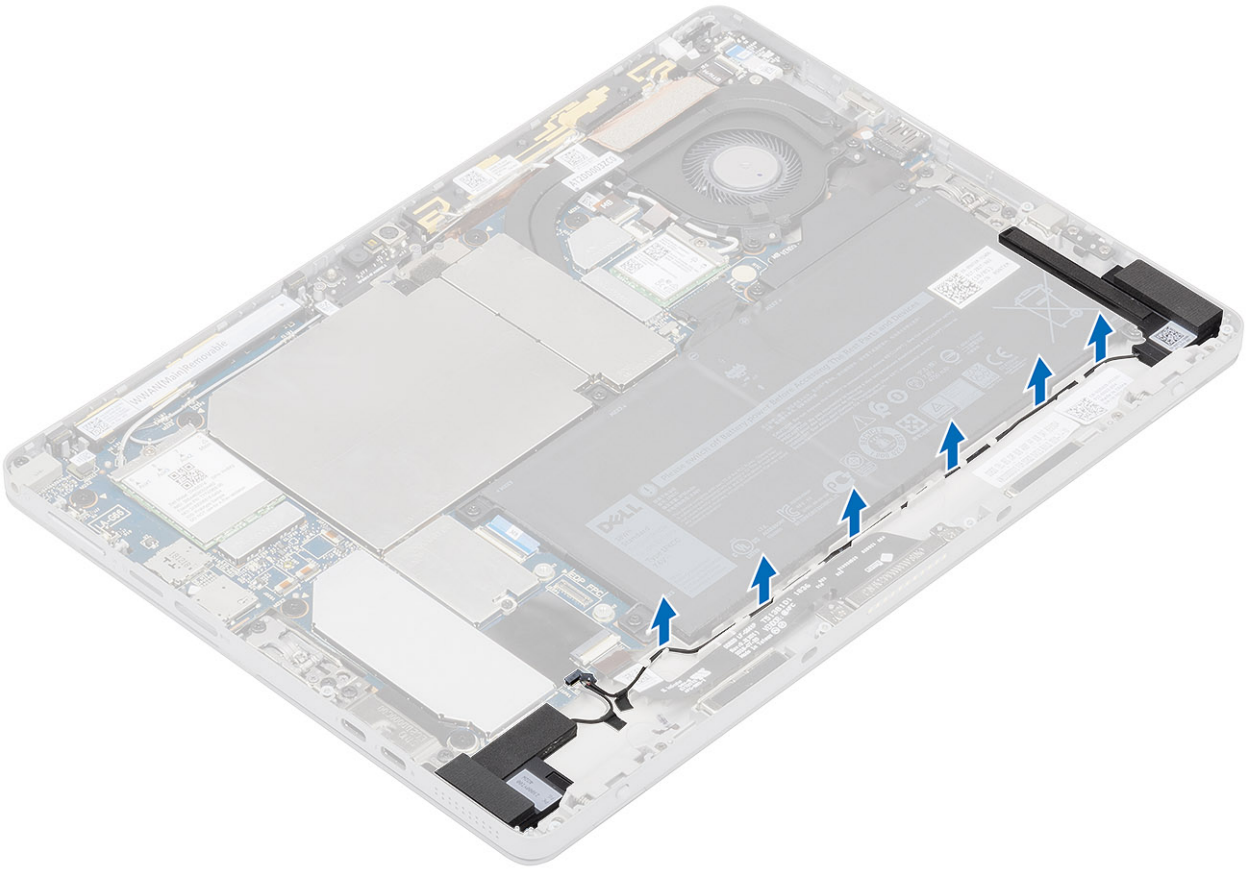
Removing the speakers

Steps

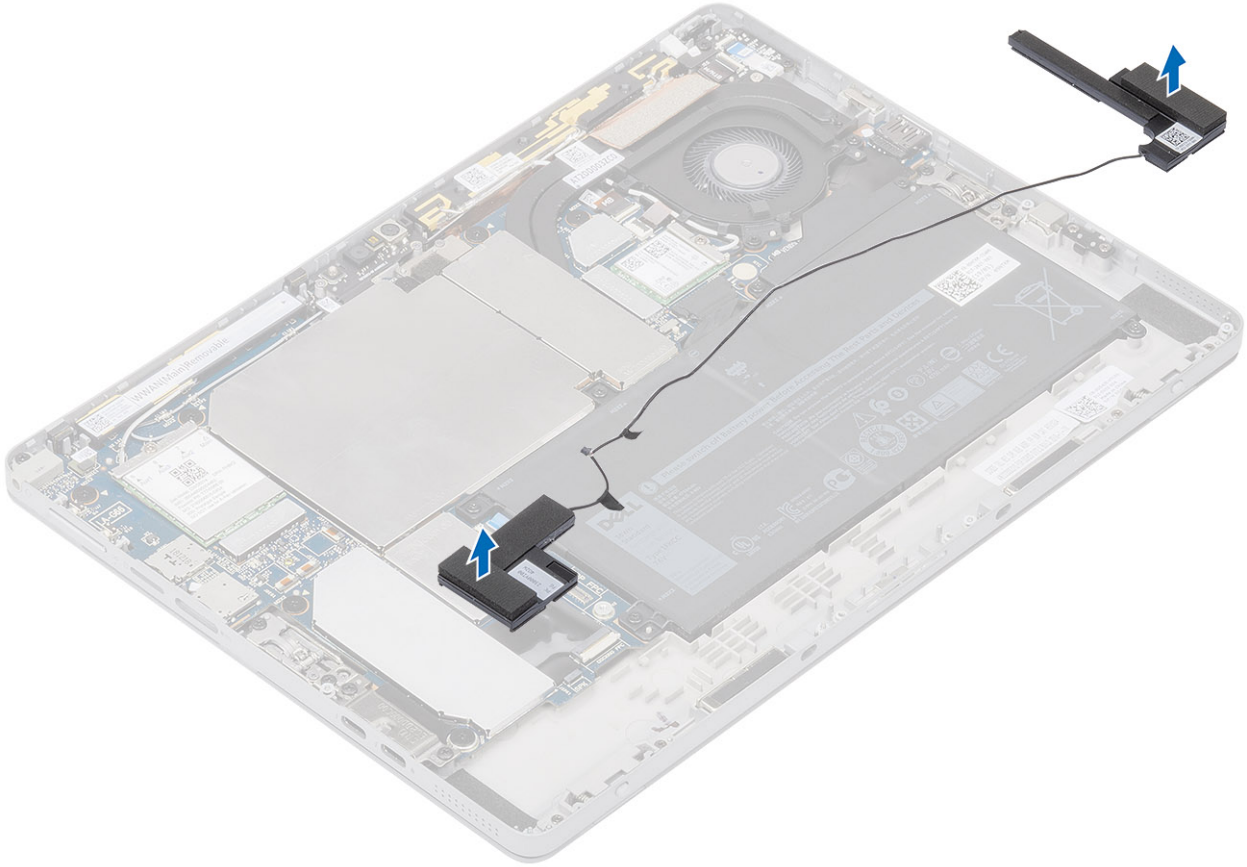
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the speakers:
   a. Disconnect the speaker cable from the connector on the system board [1].
   b. Peel off the tapes that secure the speaker cable to the computer [2].



   c. Unroute the speaker cable from the routing guides on the computer.



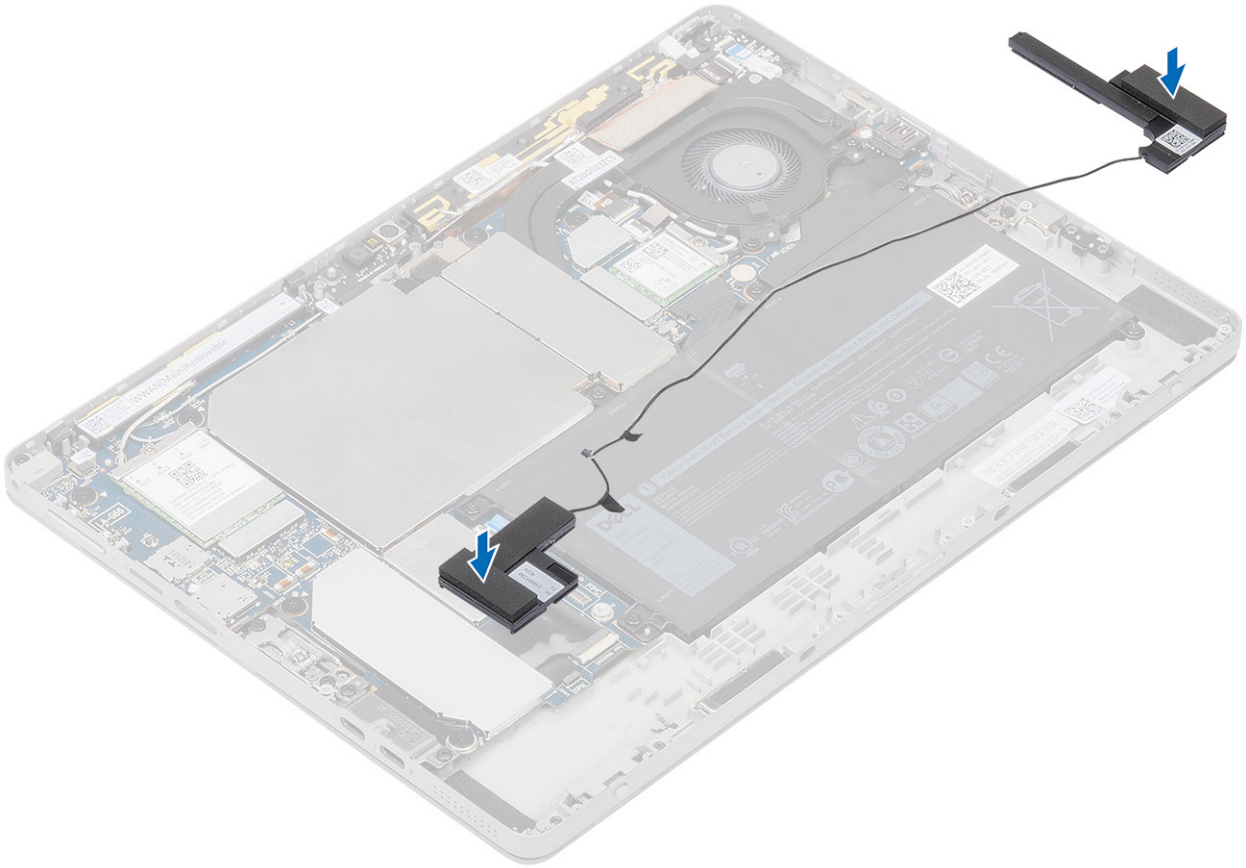
d. Lift the speakers off the computer.



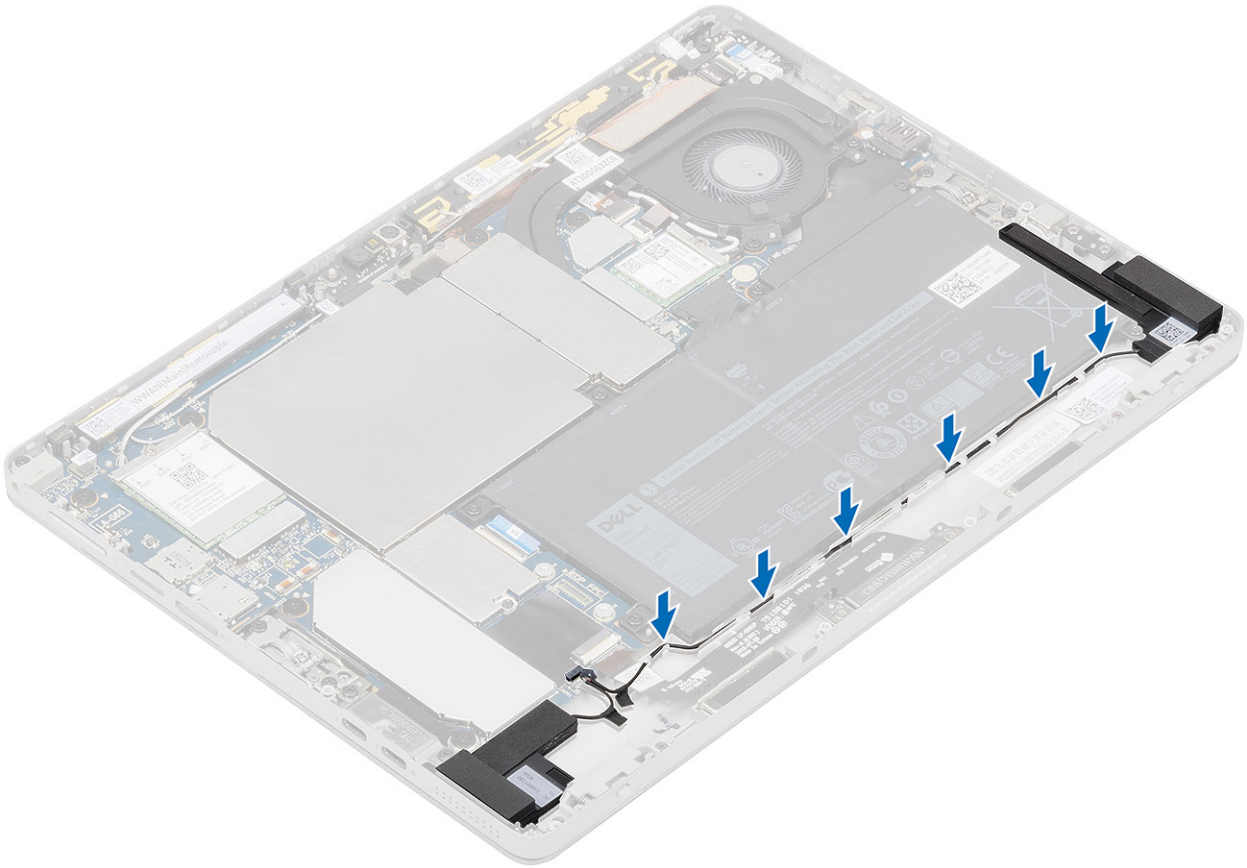
Installing speakers

Steps

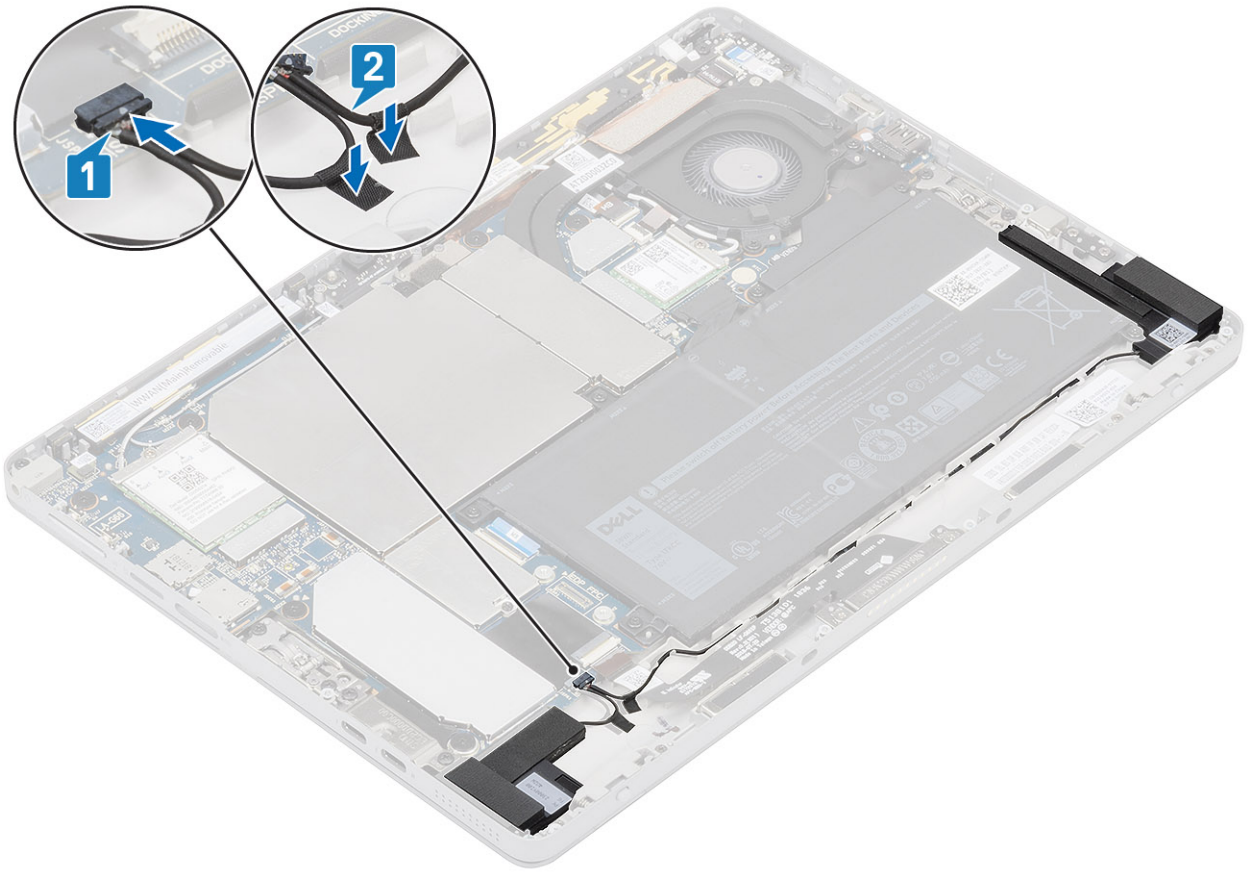
1. Using the alignment posts, align and place the speakers on the computer.



2. Route the speaker cable through the routing guides on the computer.



3. Connect the speaker cable to a connector on the system board.
4. Adhere the tapes that secure the speaker cable to the computer.



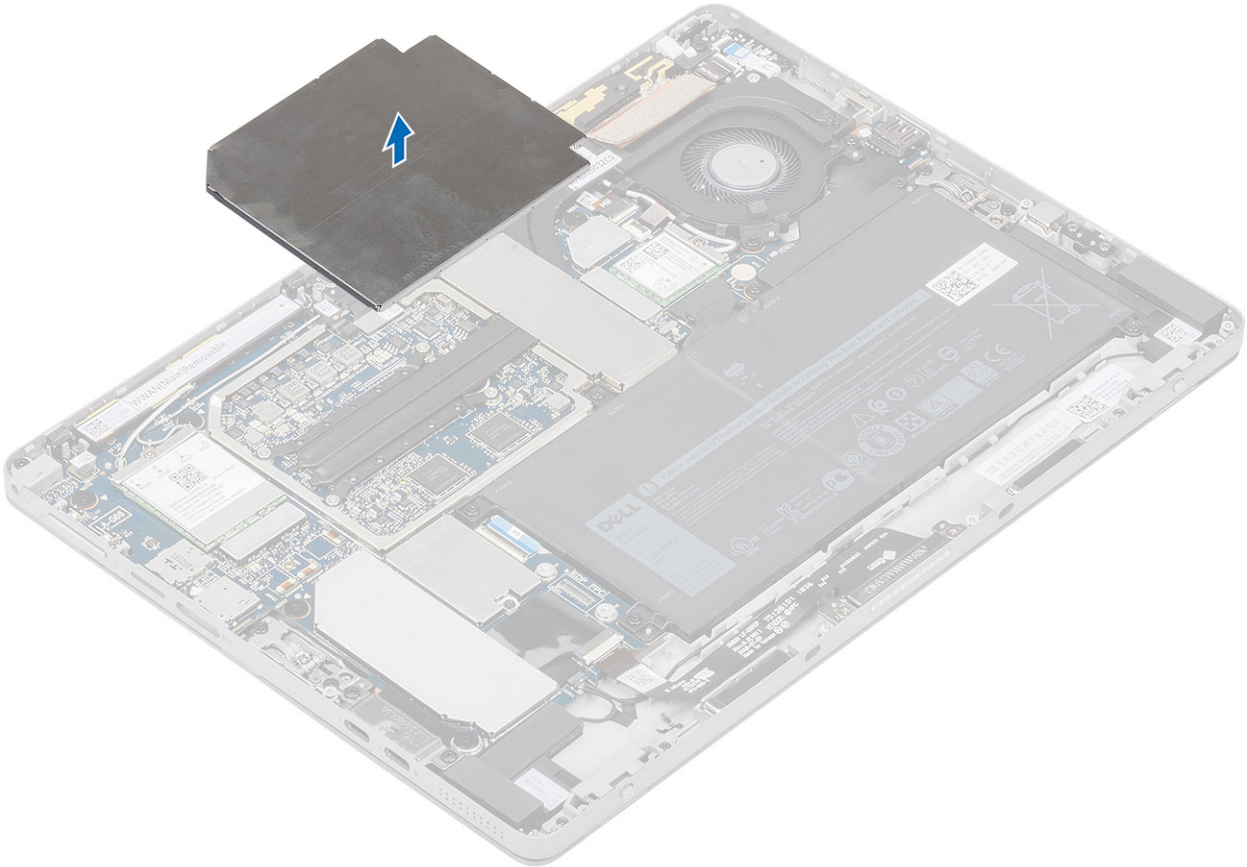
5. Install the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
6. Follow the procedure in After working inside your tablet.

Front facing camera

Removing the front-facing camera

Steps

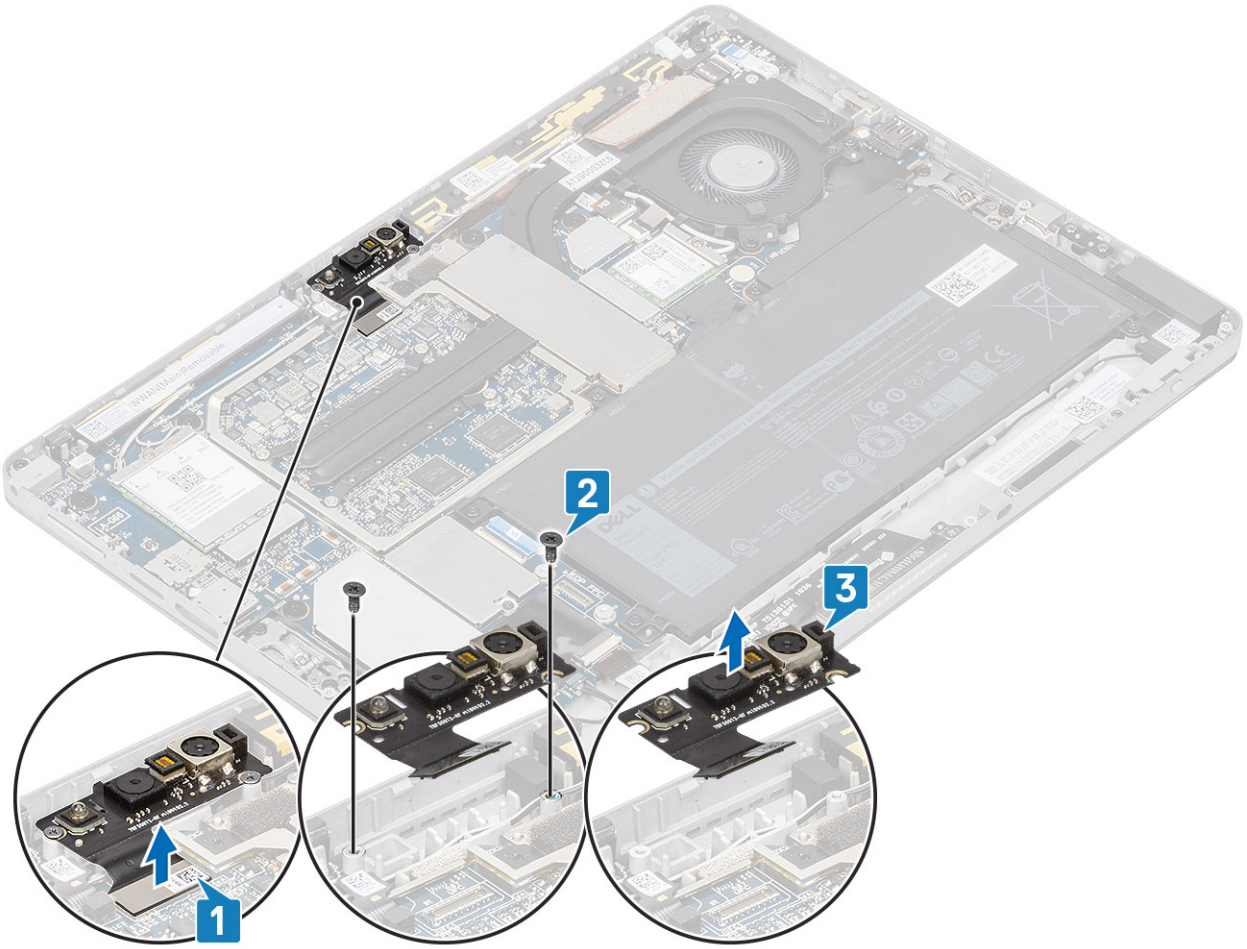
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the front camera:
   a. To use a plastic scribe, gently pry open and remove the left shielding cover from the edge that is marked with an arrow.



   b. Disconnect the front-facing camera cable from the system board [1].

      NOTE: Ensure to peel off the adhesive tape that secures the front camera to the rear camera. The front camera cable is glued to the rear camera, ensure to gently peel off, to remove the screw that secures the rear camera to the system board.

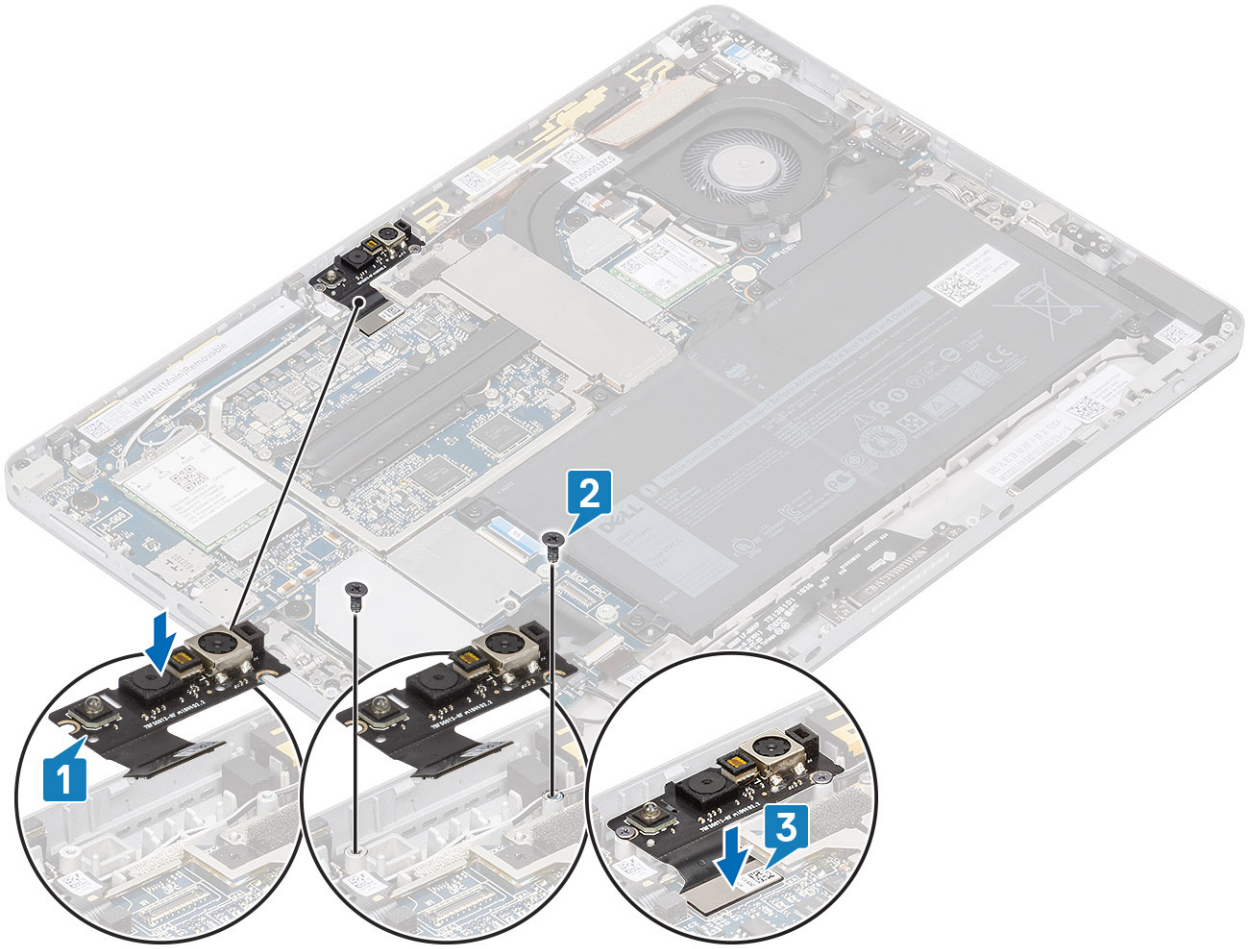
   c. Remove the M1.6x3 screws that secure the front-camera module to the computer [2].
   d. Peel off and lift the front-camera module from the computer [3].



Installing the front-facing camera

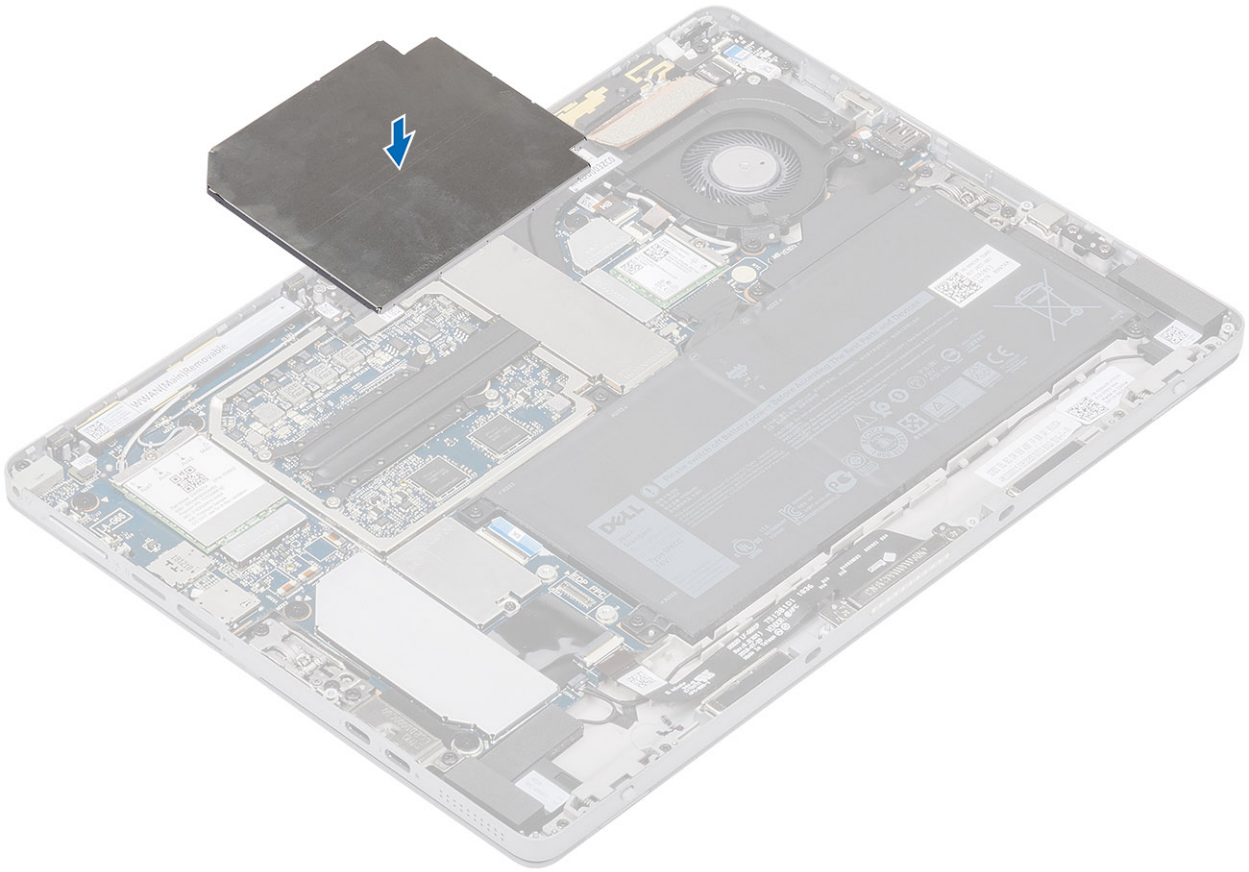
Steps

1. Align and place the front-camera module into the slot on the computer.
2. Replace the M1.6x3 screws to secure the front-camera module to the computer.
3. Connect the front-camera cable to the connector on the system board.



4. Place the shielding cover to secure the front-camera module.

NOTE: Handle the covering shield with care else it may break.



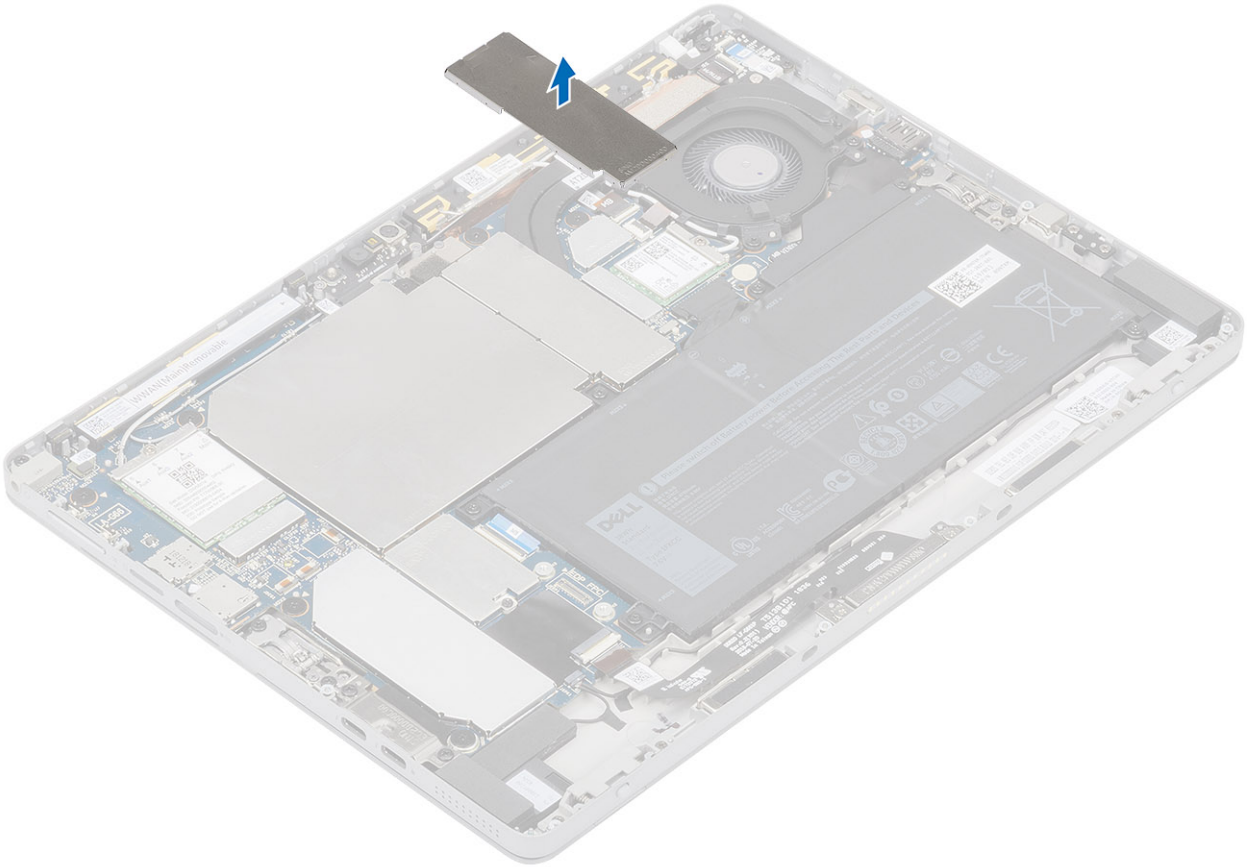
5. Install the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
6. Follow the procedure in After working inside your tablet.

Rear facing camera

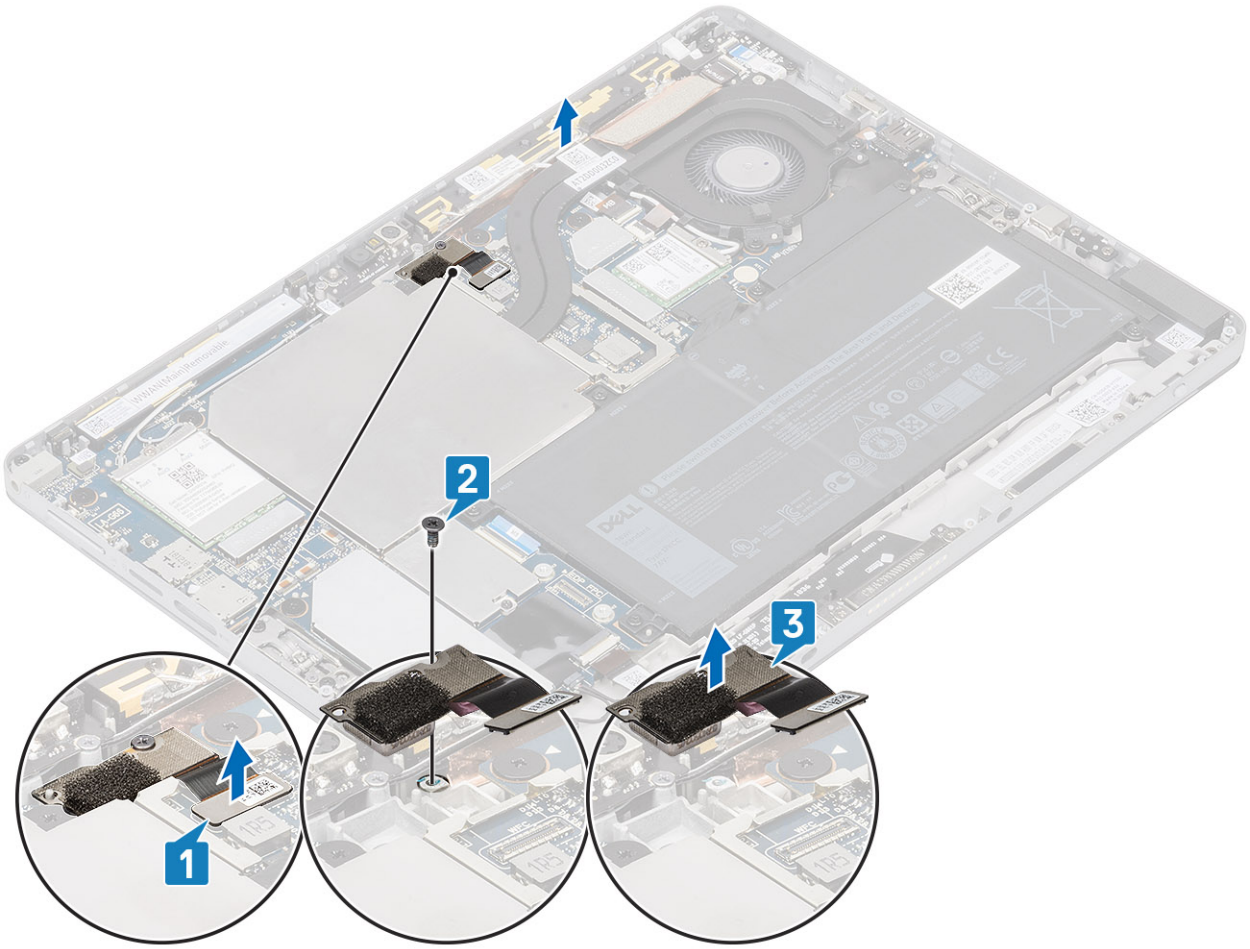
Removing the rear camera

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. MicroSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the rear camera:
   a. Remove the shielding cover from the computer.



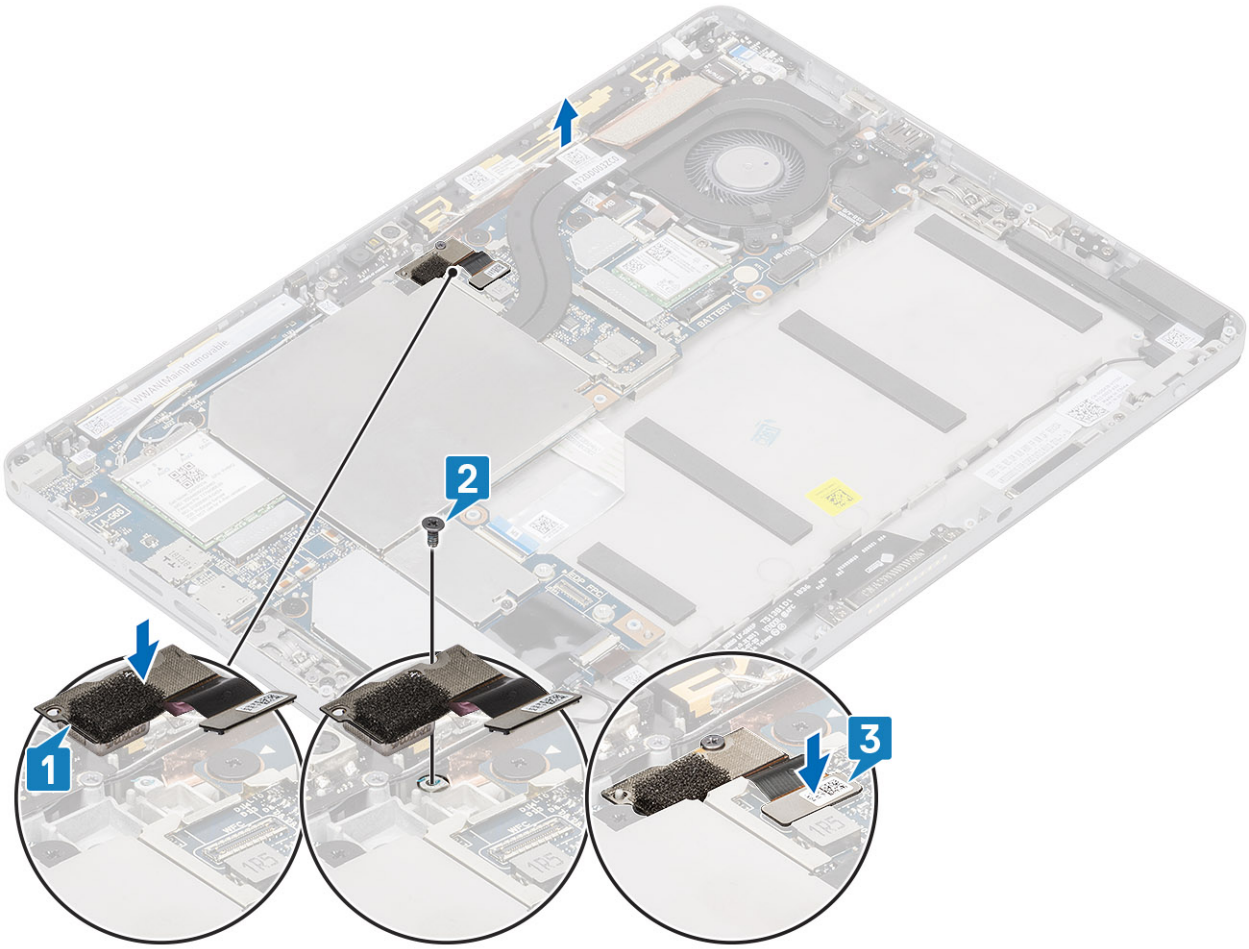
b. Disconnect the rear-camera cable from the system board [1].
c. Remove the M1.6x3 screw securing the rear-camera module to the computer [2].
d. Lift the camera module from the computer [3].



Installing rear camera

Steps

1. To install the rear camera:
   a. Align and place the rear-camera module into the slot on the computer [1].
   b. Replace the M1.6x3 screw to secure the rear-camera module to the computer [2].
   c. Connect the rear-camera cable to the connector on the system board [3].



2. Place the shielding cover to secure the rear-camera module to the computer.
3. Install the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
4. Follow the procedure in After working inside your tablet.

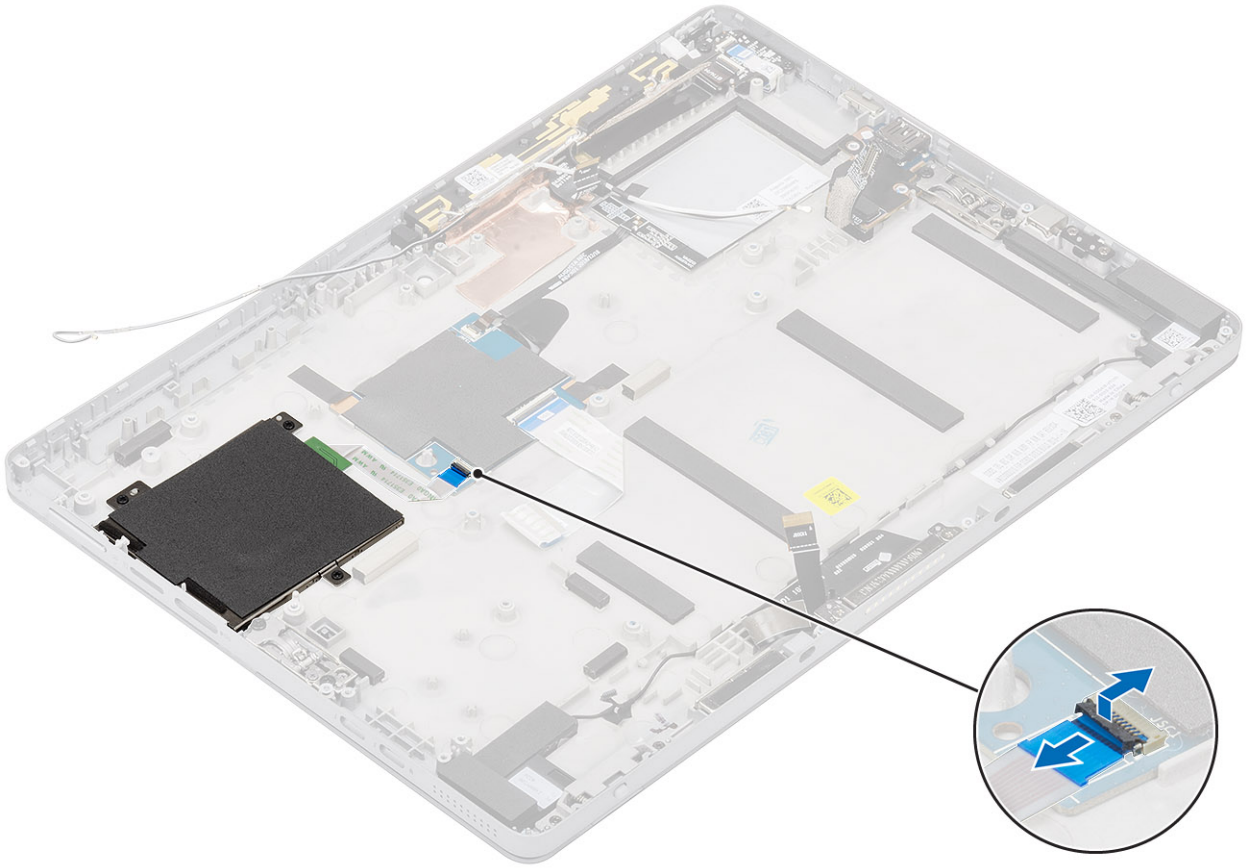
Smart Card Cage

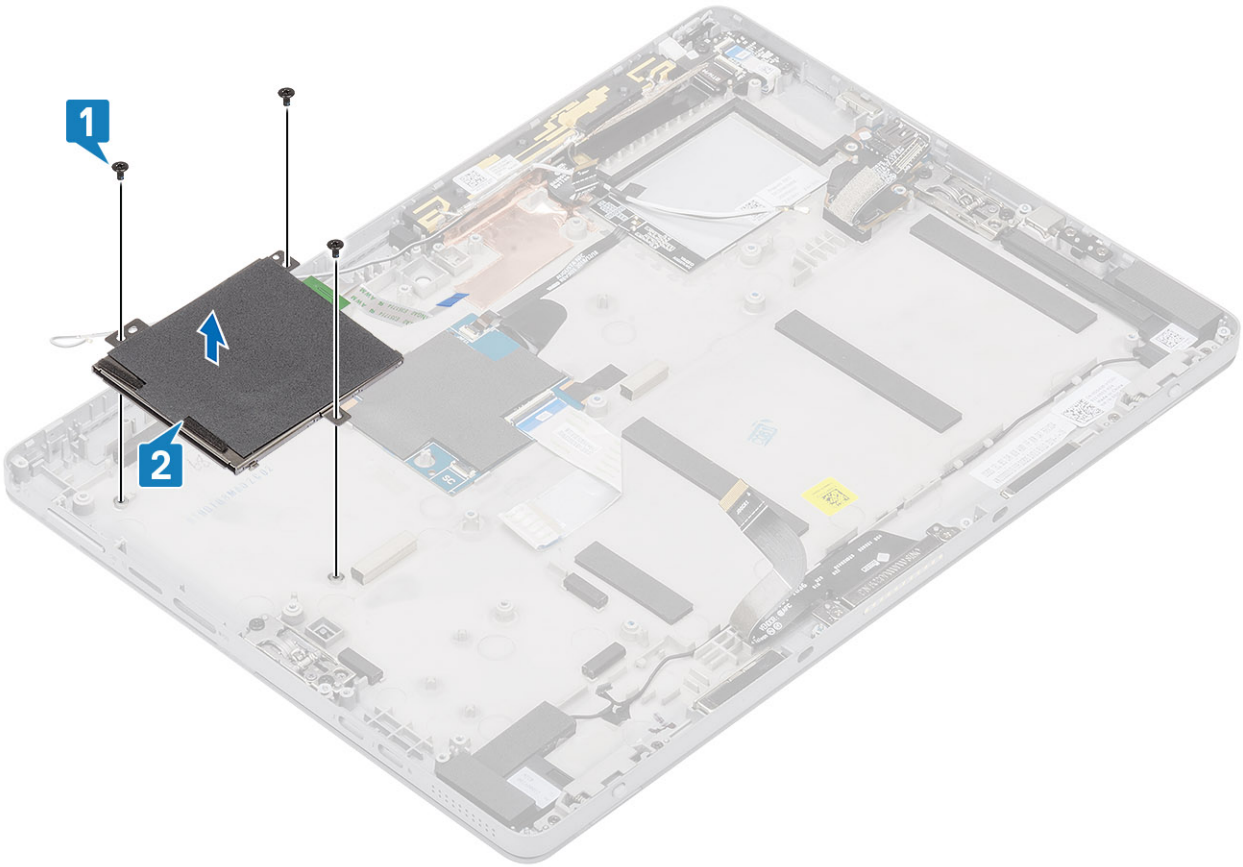
Removing the smart card cage

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. battery
   d. M.2 2230 SSD
   e. WWAN card
   f. Rear-facing camera
   g. Heat sink assembly
   h. WWAN main antenna module
   i. System board
   j. display panel

3. To remove the smart card cage:
   a. Disconnect and peel back the Smartcard cage FFC from the daughter board.
   b. Remove the M2x2 screws from the smart card module [1].
   c. Lift the smart card cage from the tablet [2].

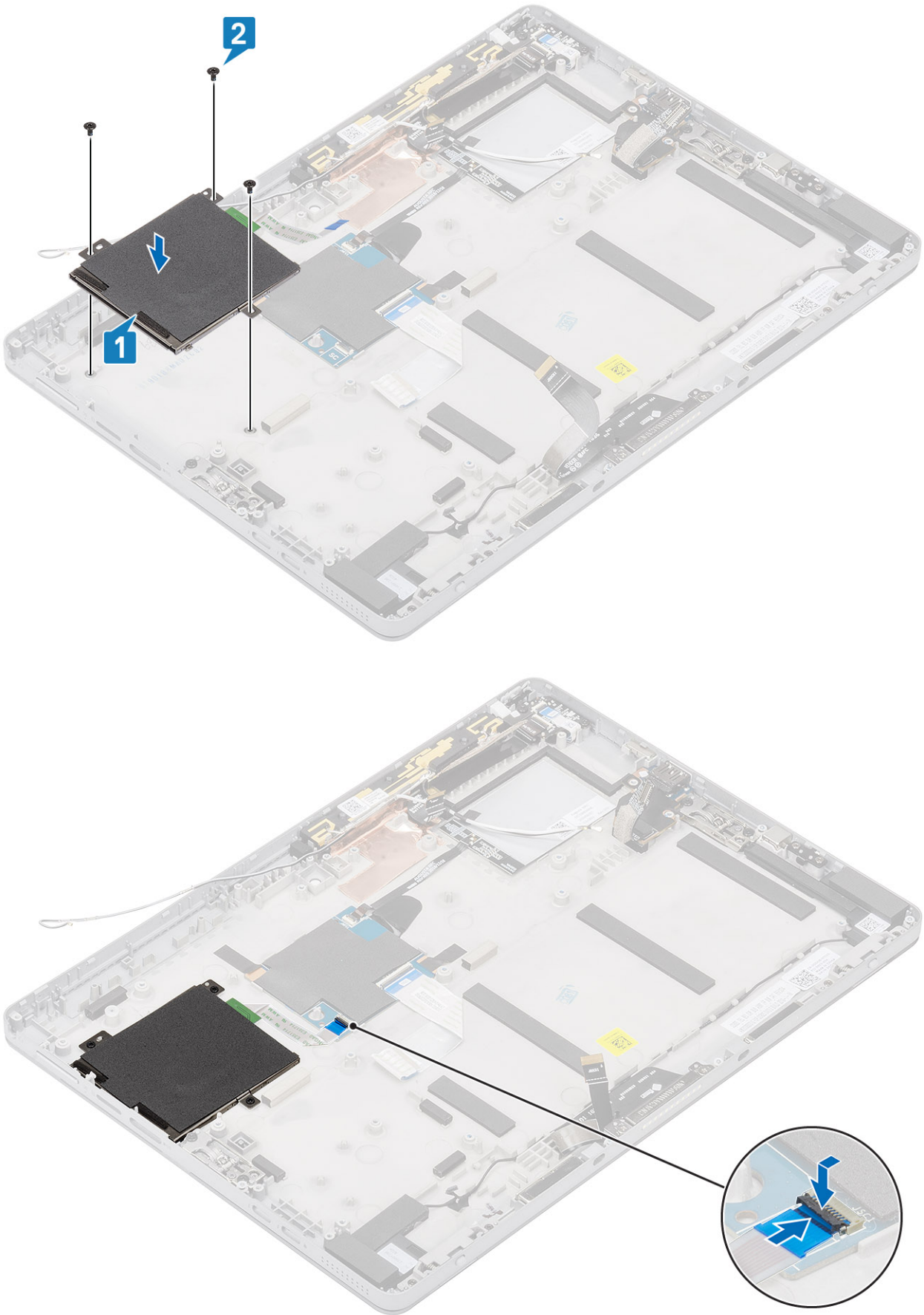




Installing the smart card cage

Steps

1. Insert the smart cage into the slot on the tablet.
2. Replace the M2 x 2.5 screws [2] to secure the smart card cage to the tablet [1].
3. Connect the smart cable to the smart card module.



4. Replace the:
   a. System board

b. WWAN main antenna module
c. Heat sink assembly
d. Rear-facing camera
e. display panel
f. microSD card
g. SIM card tray
h. battery

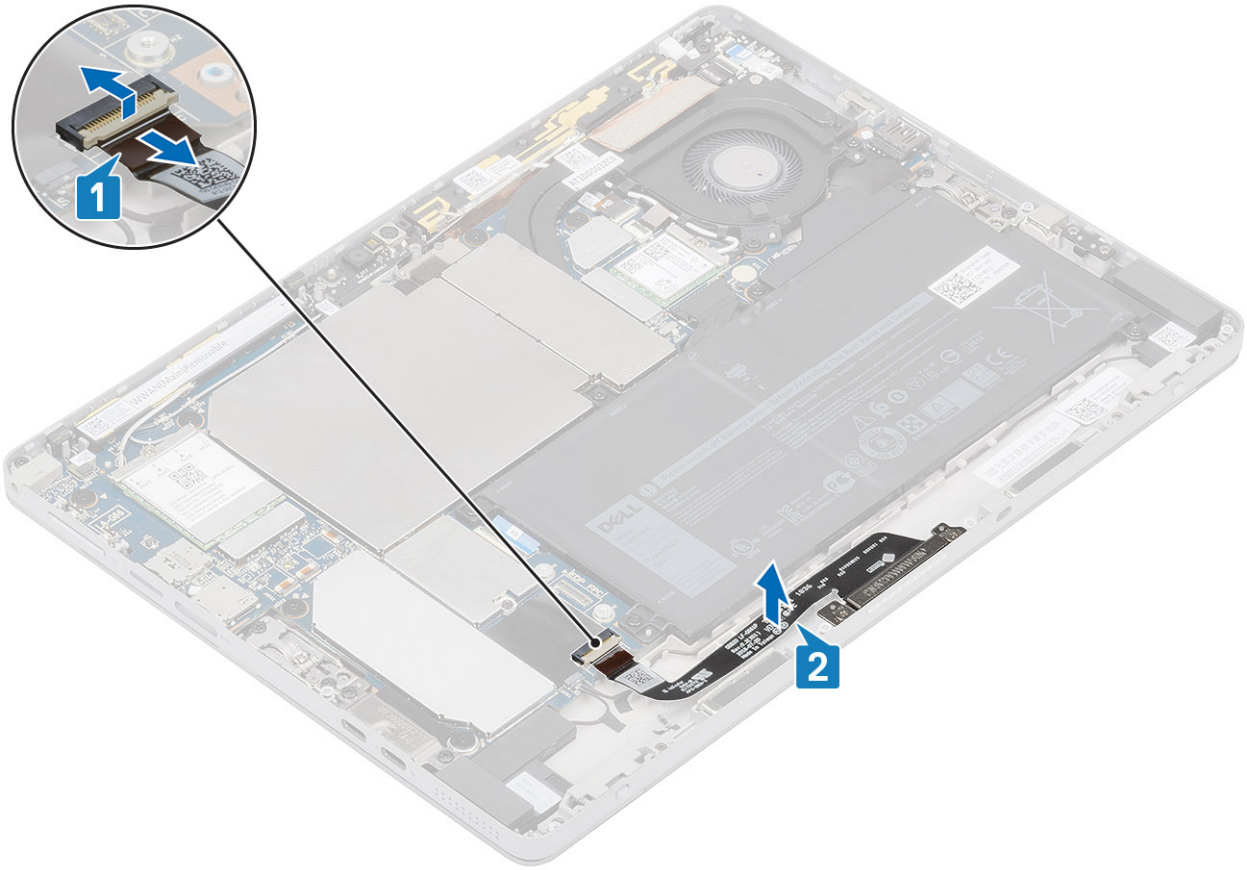
5. Follow the procedure in After working inside your tablet.

Docking board connector

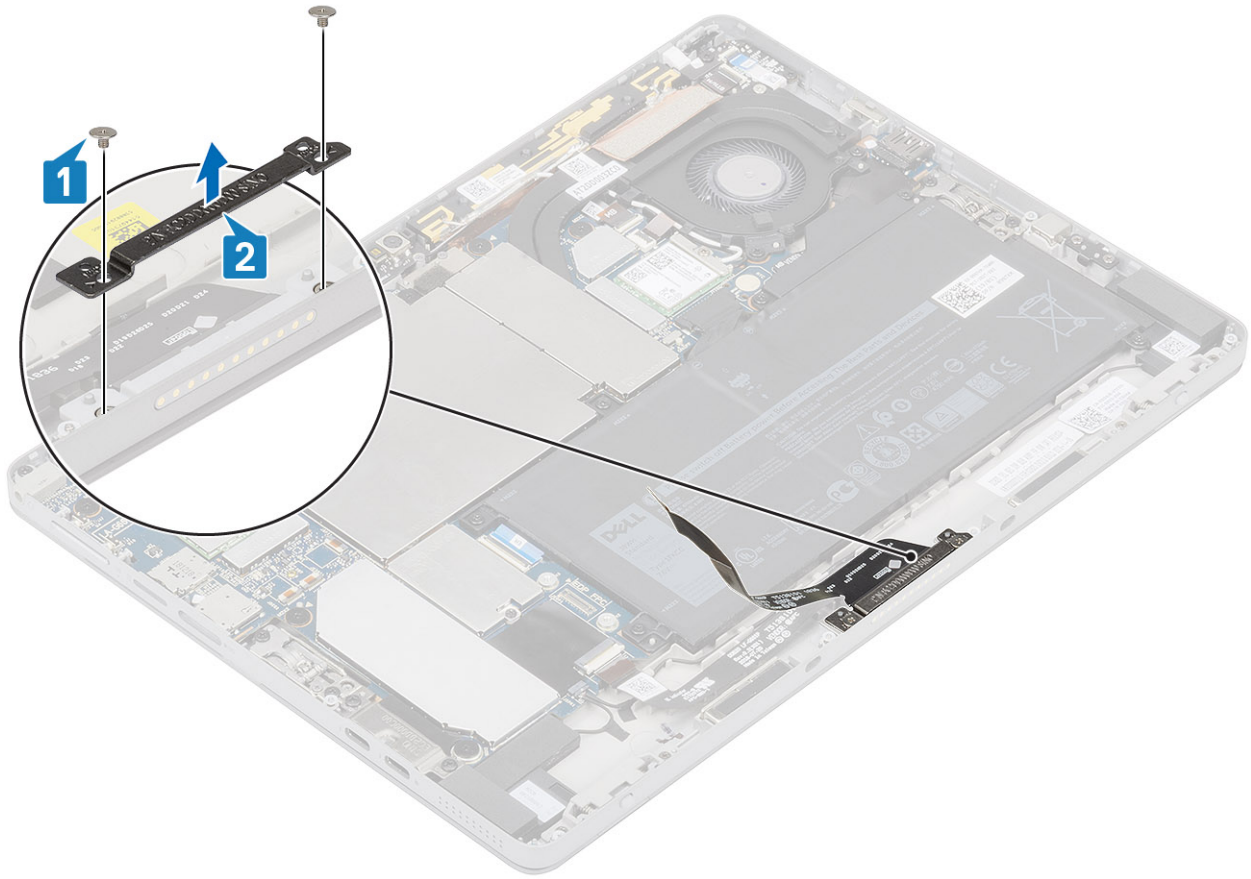
Removing the docking connector

Steps

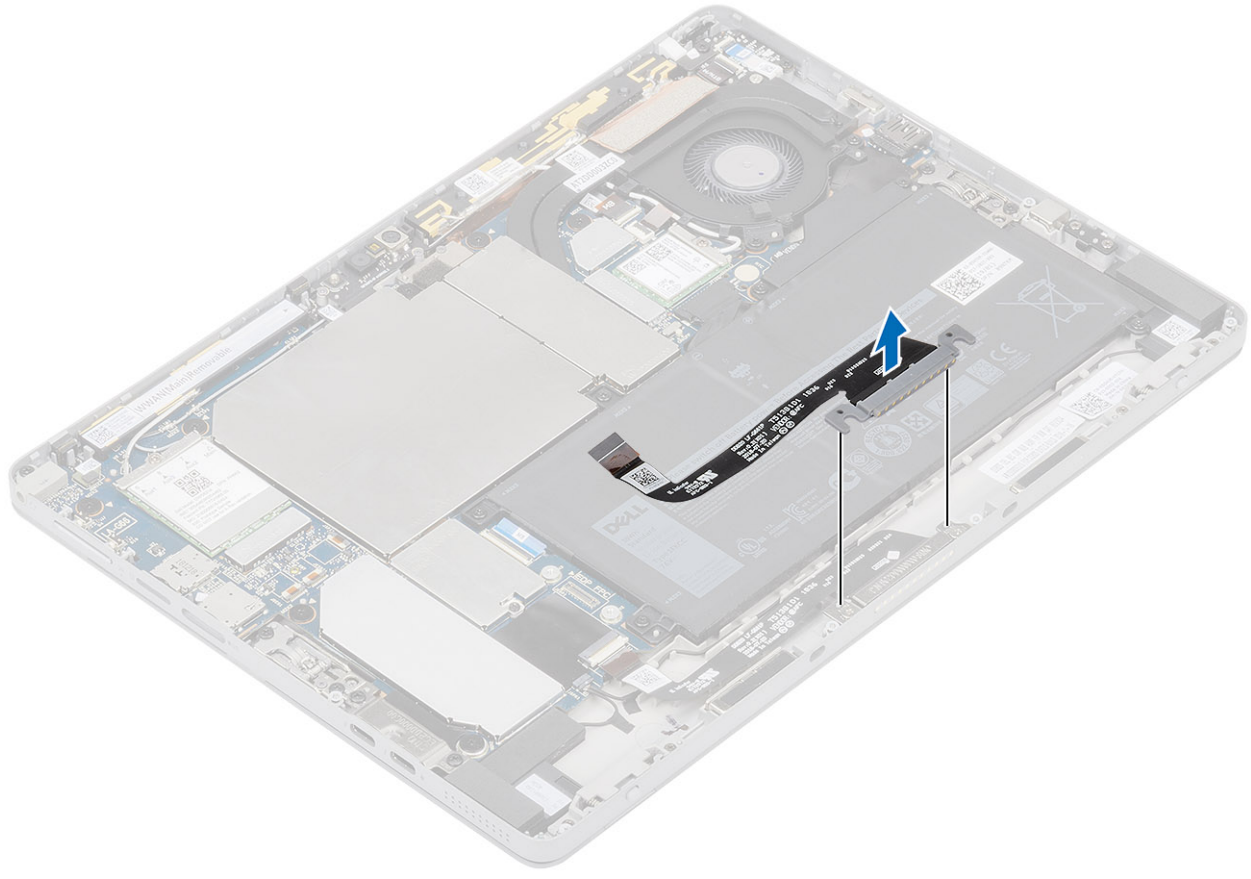
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the docking connector:
   a. Open the latch and disconnect the docking connector FPC from the system board [1].
   b. Peel the docking connector FPC from the computer [2].



   c. Remove the M2x2.5 screws that secure the docking-board bracket to the docking board [1].
   d. Lift the docking-board bracket away from the docking board [2].



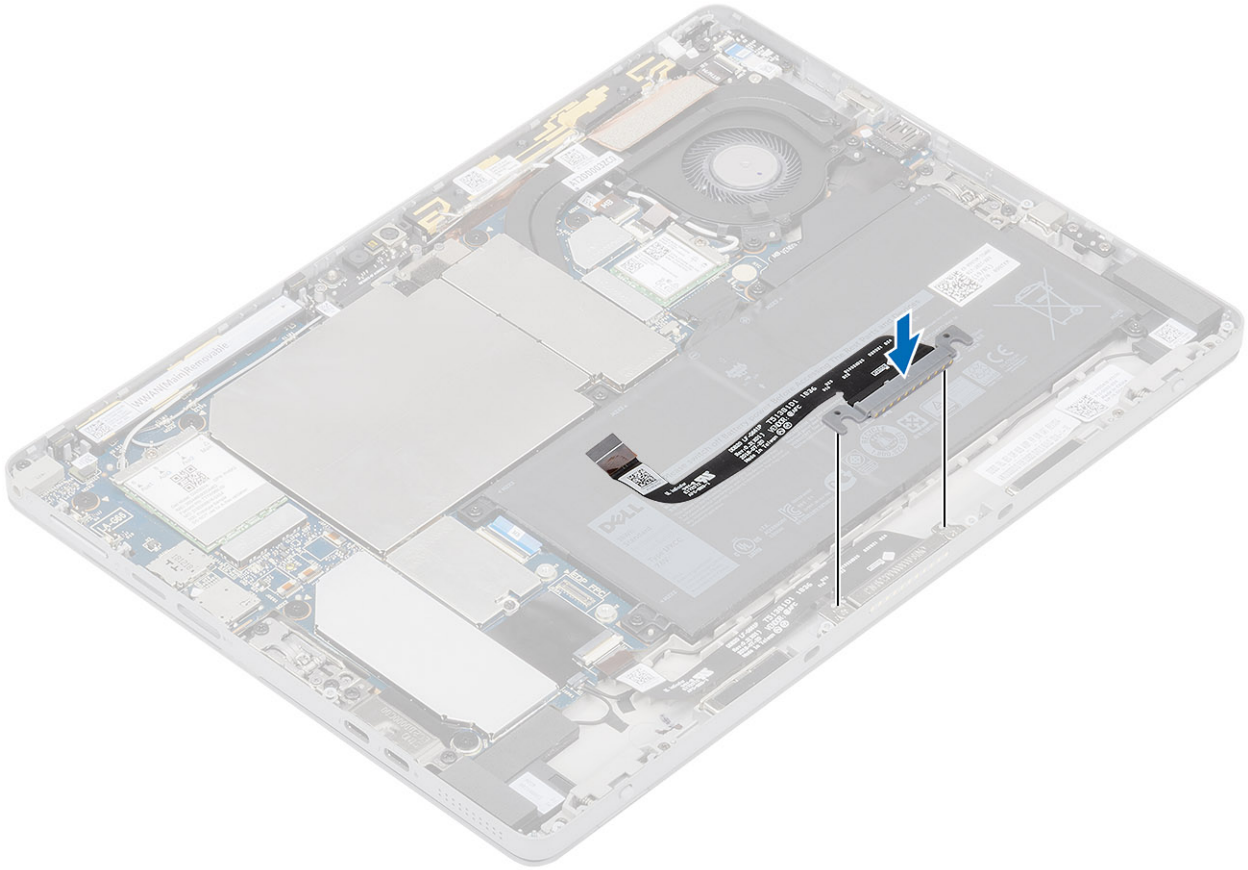
e. Remove the docking connector along with its FPC from the computer.



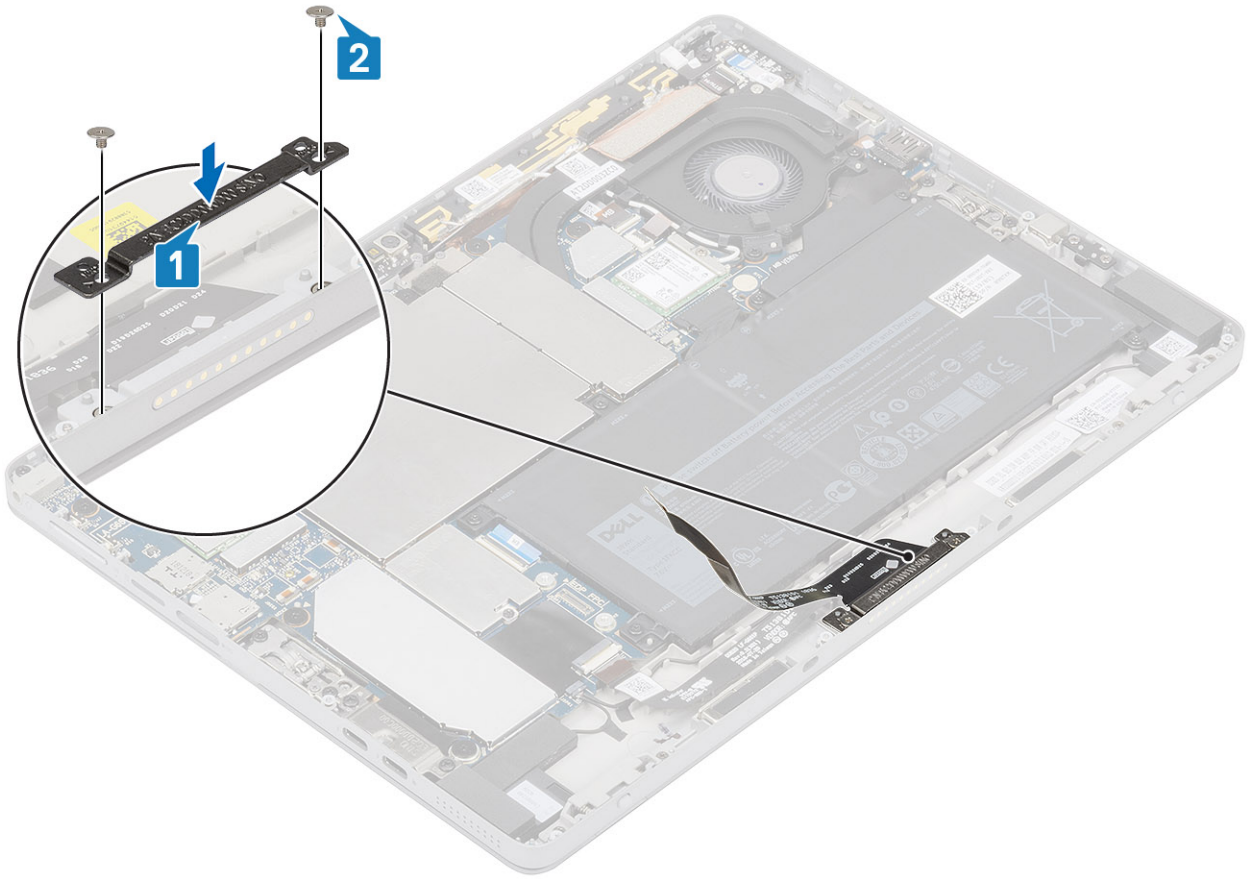
Installing the docking board

Steps

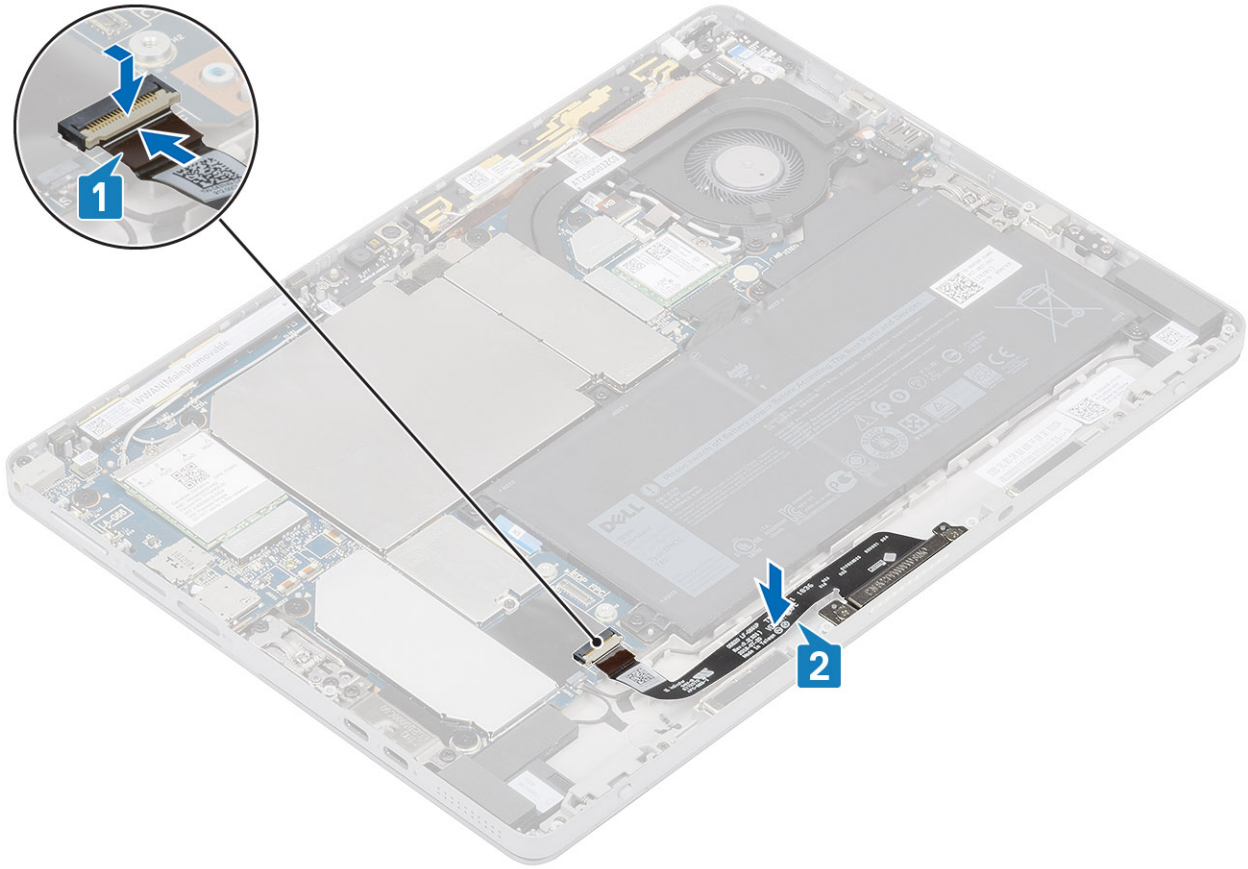
1. Align and place the docking board along with the FPC in the slot on the computer.



2. Align the screw holes on the docking-connector bracket with the screw holes on the docking board [1].
3. Replace the M2x2 screws to secure the docking-connector bracket to the docking board [2].



4. Connect the docking board cable to the connector on the system board [1].
5. Adhere the docking-board cable to the computer [2].



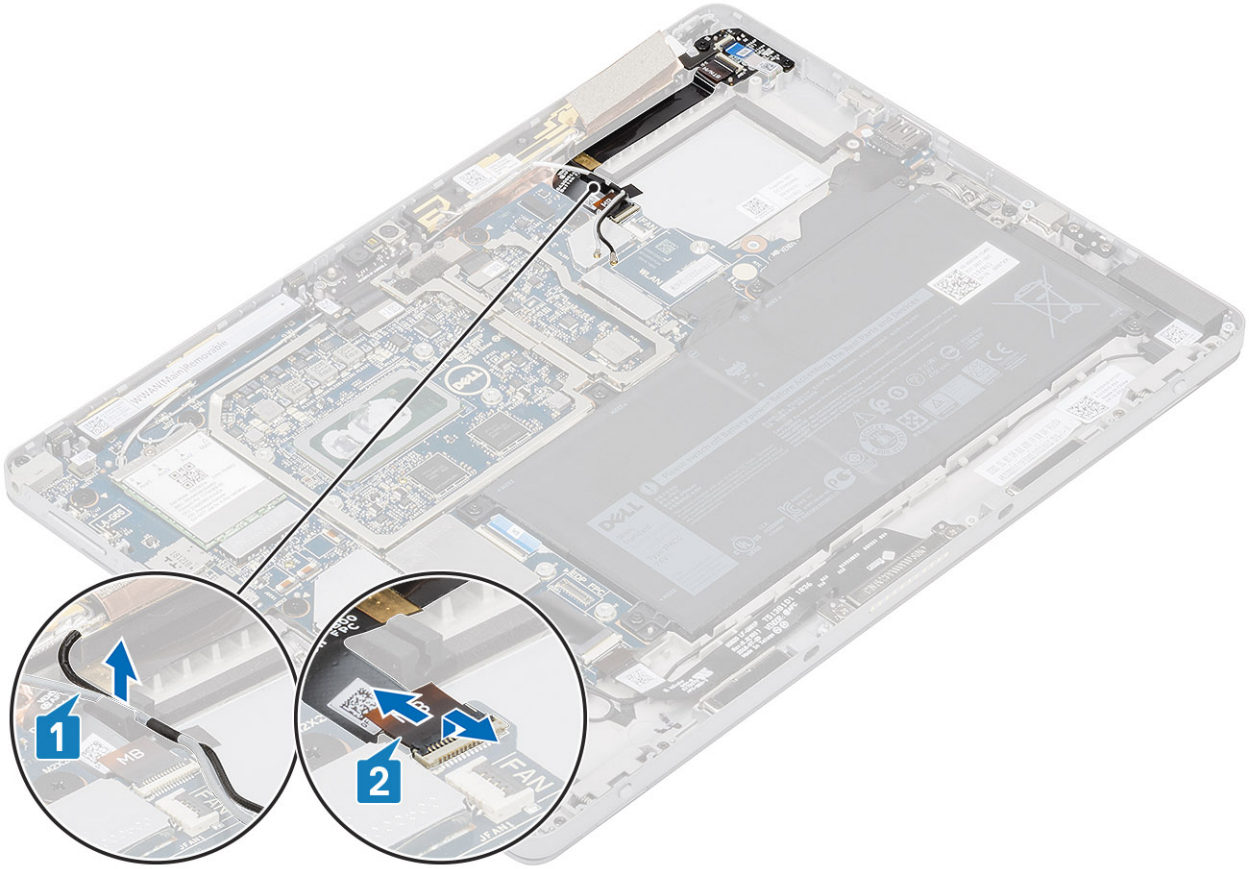
6. Replace the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
7. Follow the procedure in After working inside your tablet.

Power Button Board

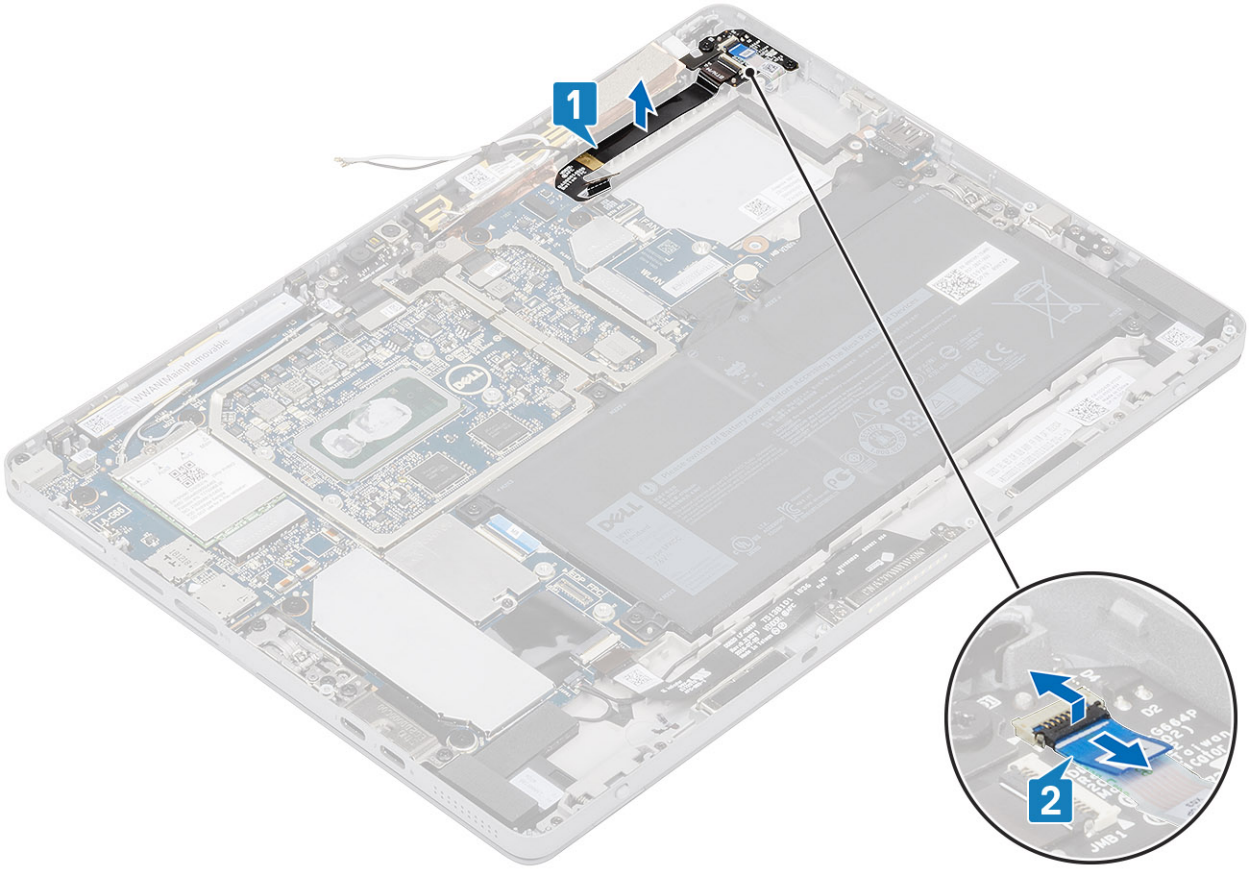
Removing the power-button board

Steps

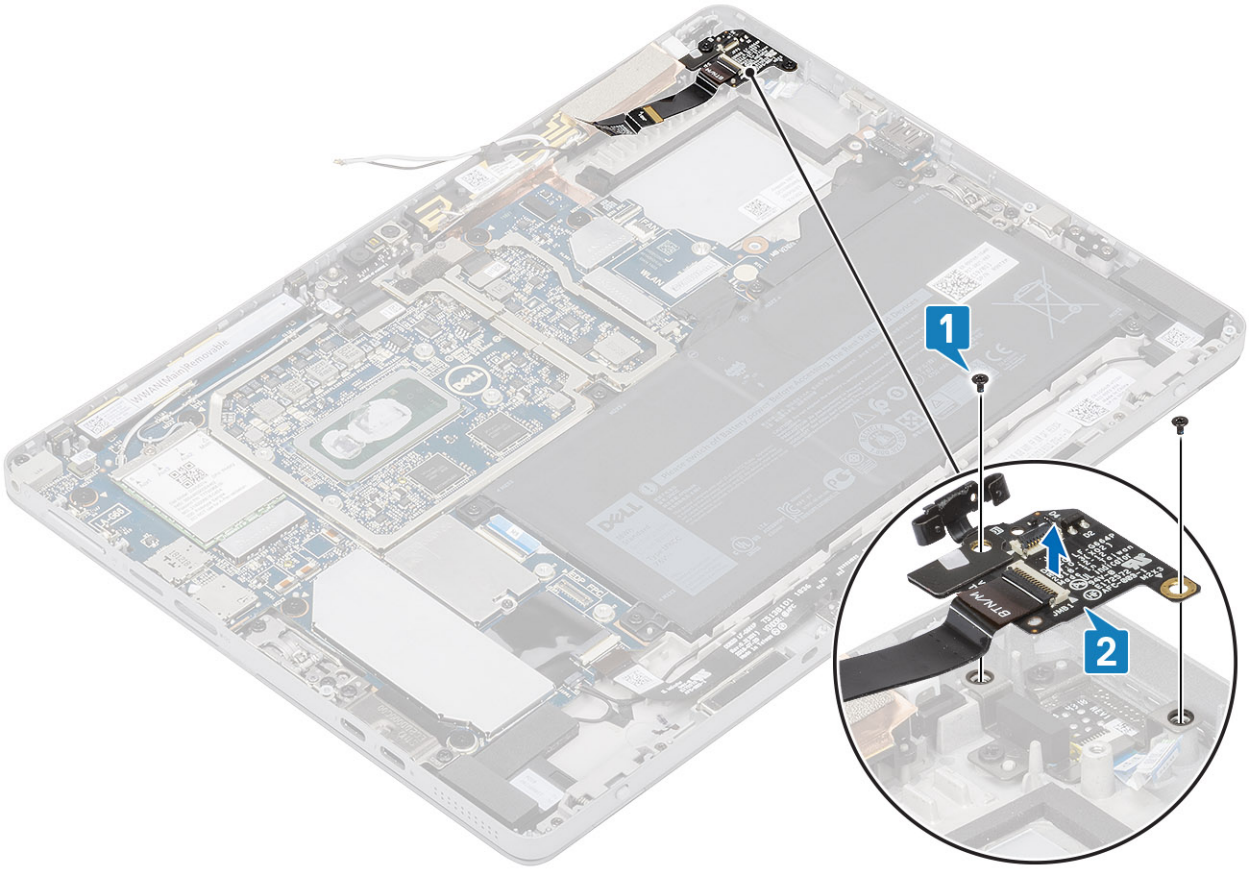
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
   d. heat-sink assembly
3. Unroute the WLAN antenna cables from the routing guides on the computer [1].
4. Open the latch and disconnect the power-button board FPC from the connector on the system board [2].



5. Peel the power-button board FPC from the computer [1].
6. Open the latch and disconnect the fingerprint reader FFC from the power-button board [2].



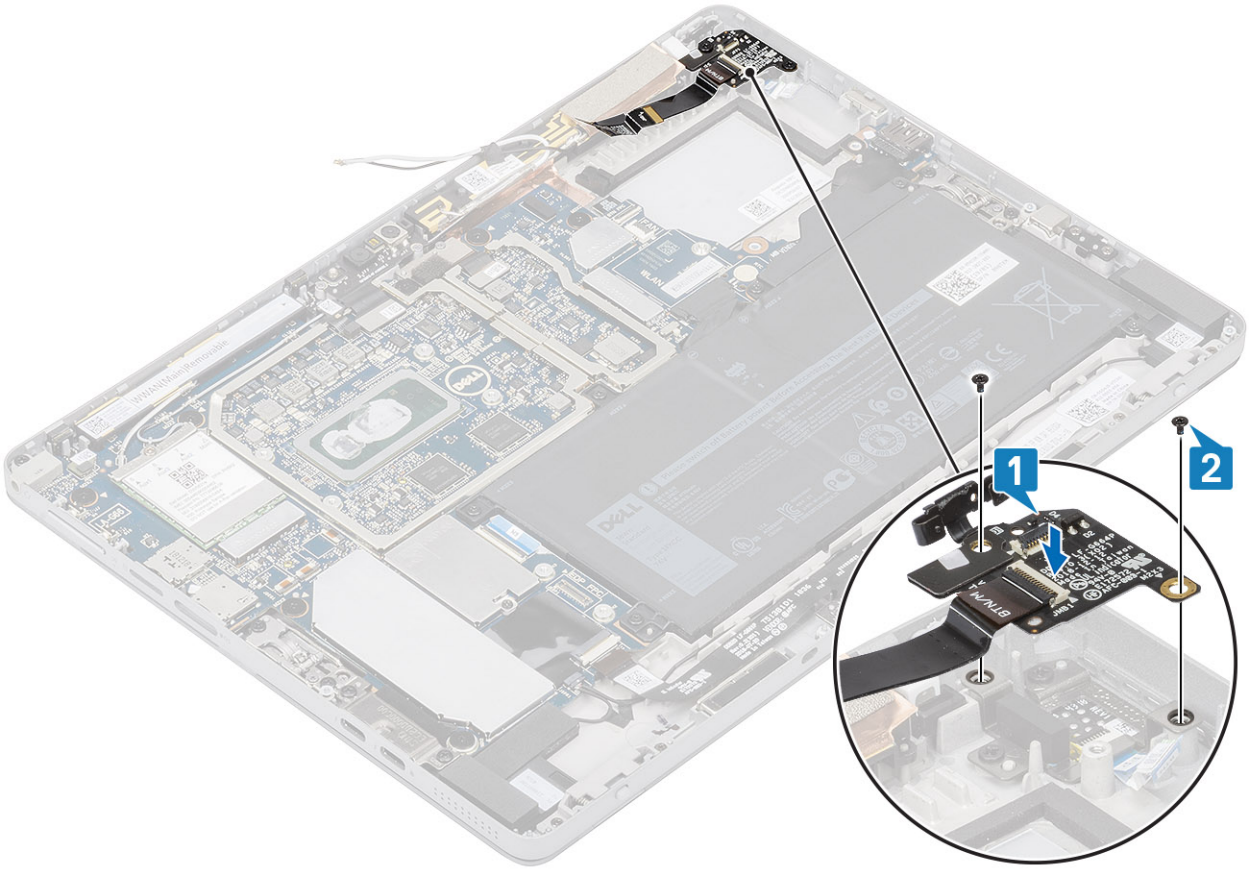
7. Remove the two M2x3 screws that secure the power-button board to the computer [1].
8. Using a plastic scribe, pry the power-button sensor at the top edge of the power-button board out of its compartment.
9. Remove the power-button board along with its FPC from the computer [2].



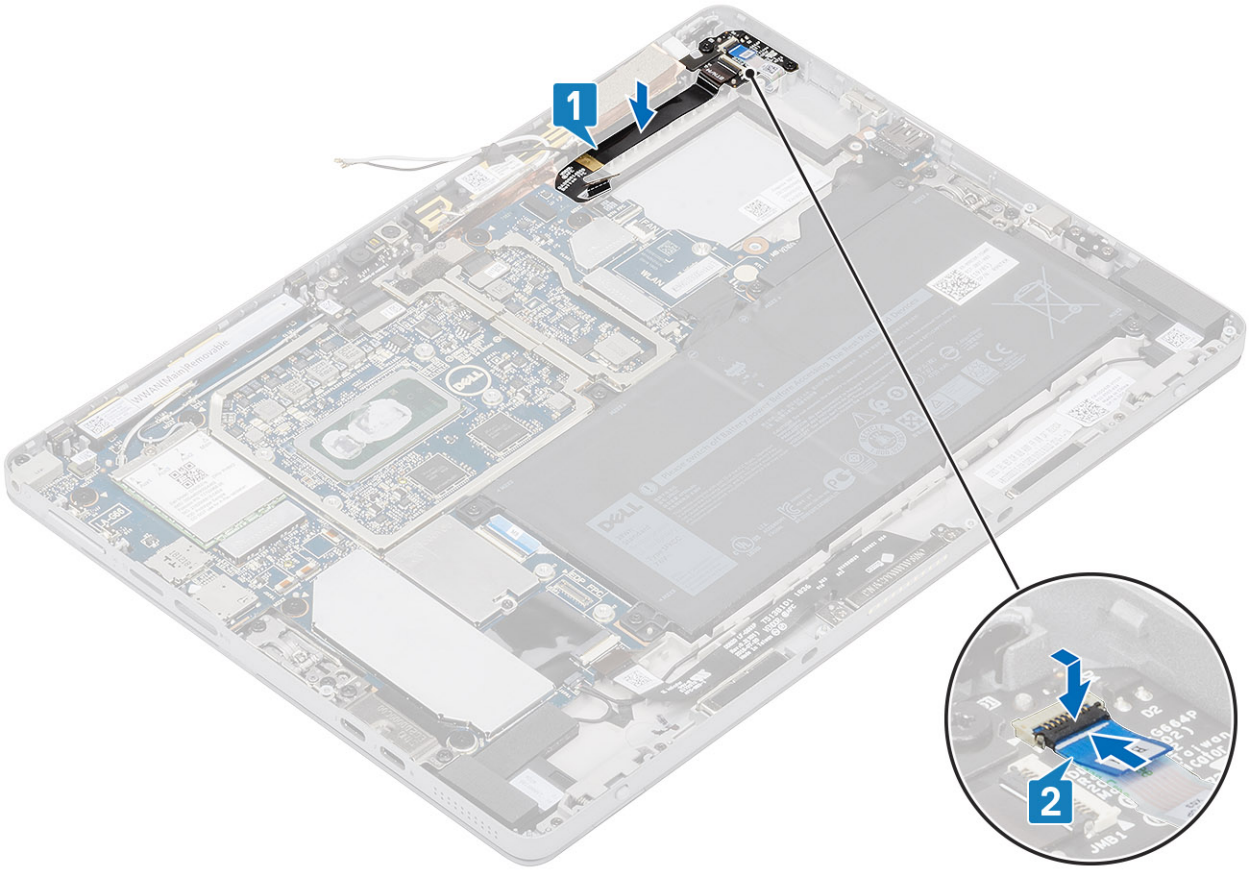
Installing the power-button board

Steps

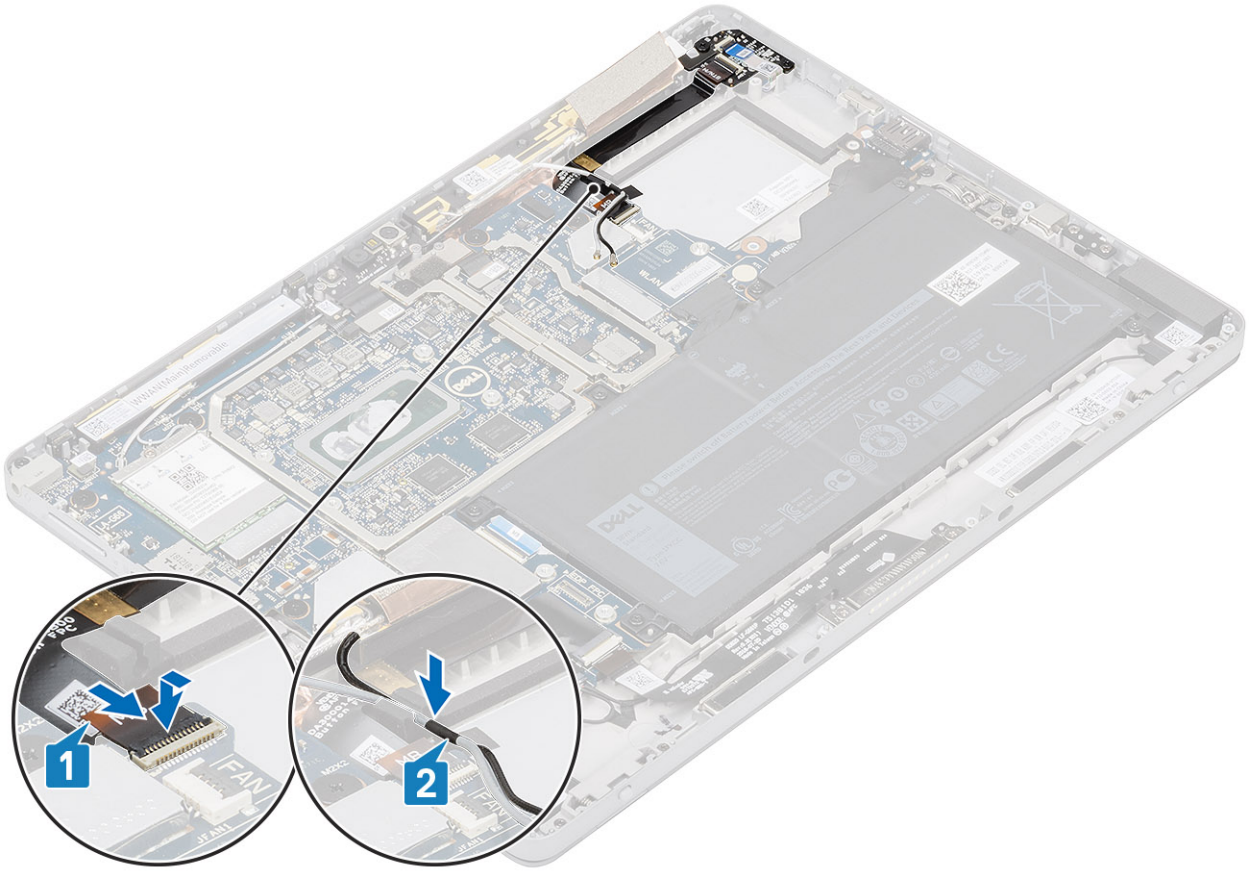
1. Align and place the power-button board along with its FPC in the slot on the computer [1].
2. Replace the two M2x2.5 screws to secure the power-button board to the computer [2].



3. Adhere the power-button board FPC to the computer [1].
4. Connect the fingerprint reader FFC to the connector on the power-button board [2].



5. Connect the power-button board FPC to the connector on the system board [1].
6. Route the WLAN antenna cables through the routing guides on the computer [2].



7. Replace the:
   a. heat-sink assembly
   b. display panel assembly
   c. SIM card tray
   d. microSD card
8. Follow the procedure in After working inside your tablet.

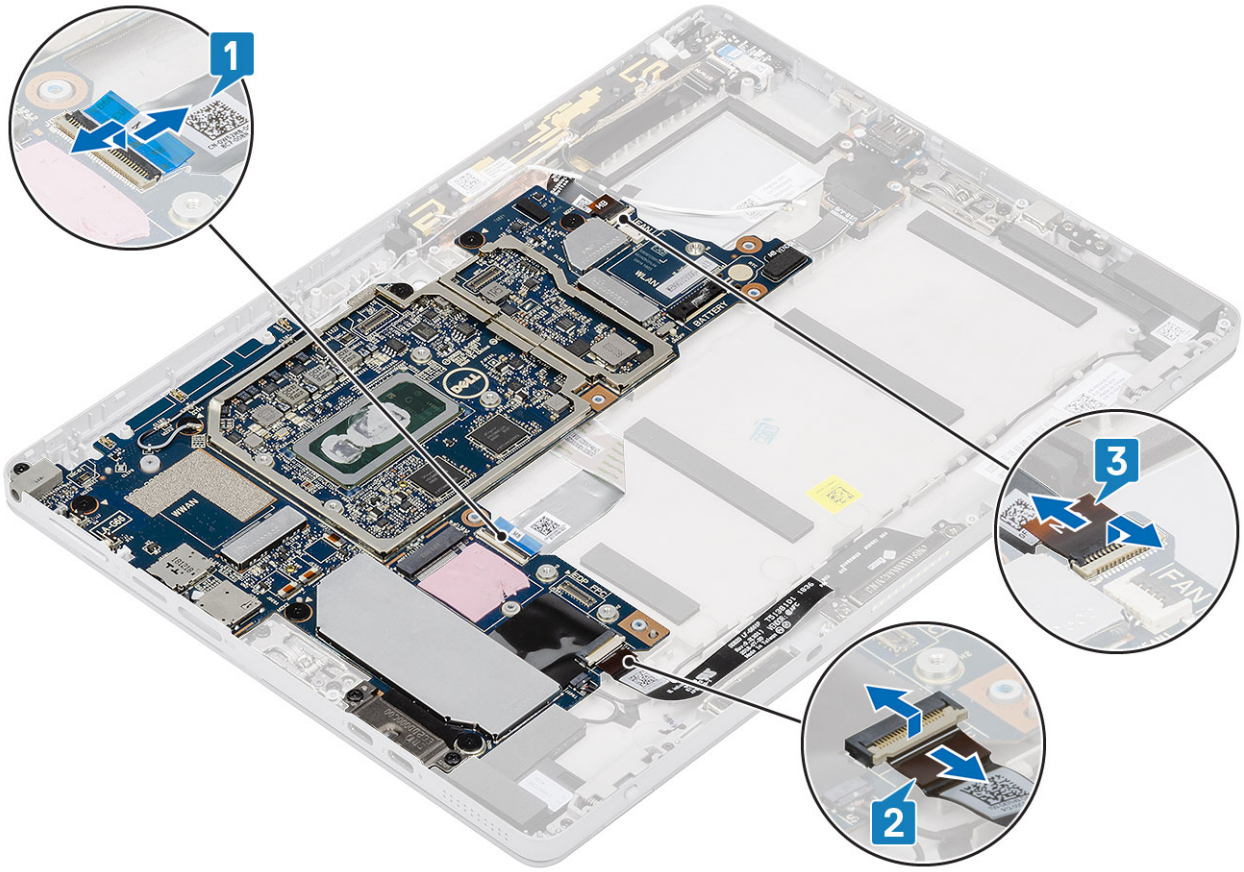
System Board

Removing system board

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. battery
   d. display panel assembly
   e. M.2 2230 SSD
   f. WWAN card
   g. Rear-facing Camera
   h. Heat-sink assembly
   i. WWAN main antenna module
3. Disconnect the following cables from the system board .

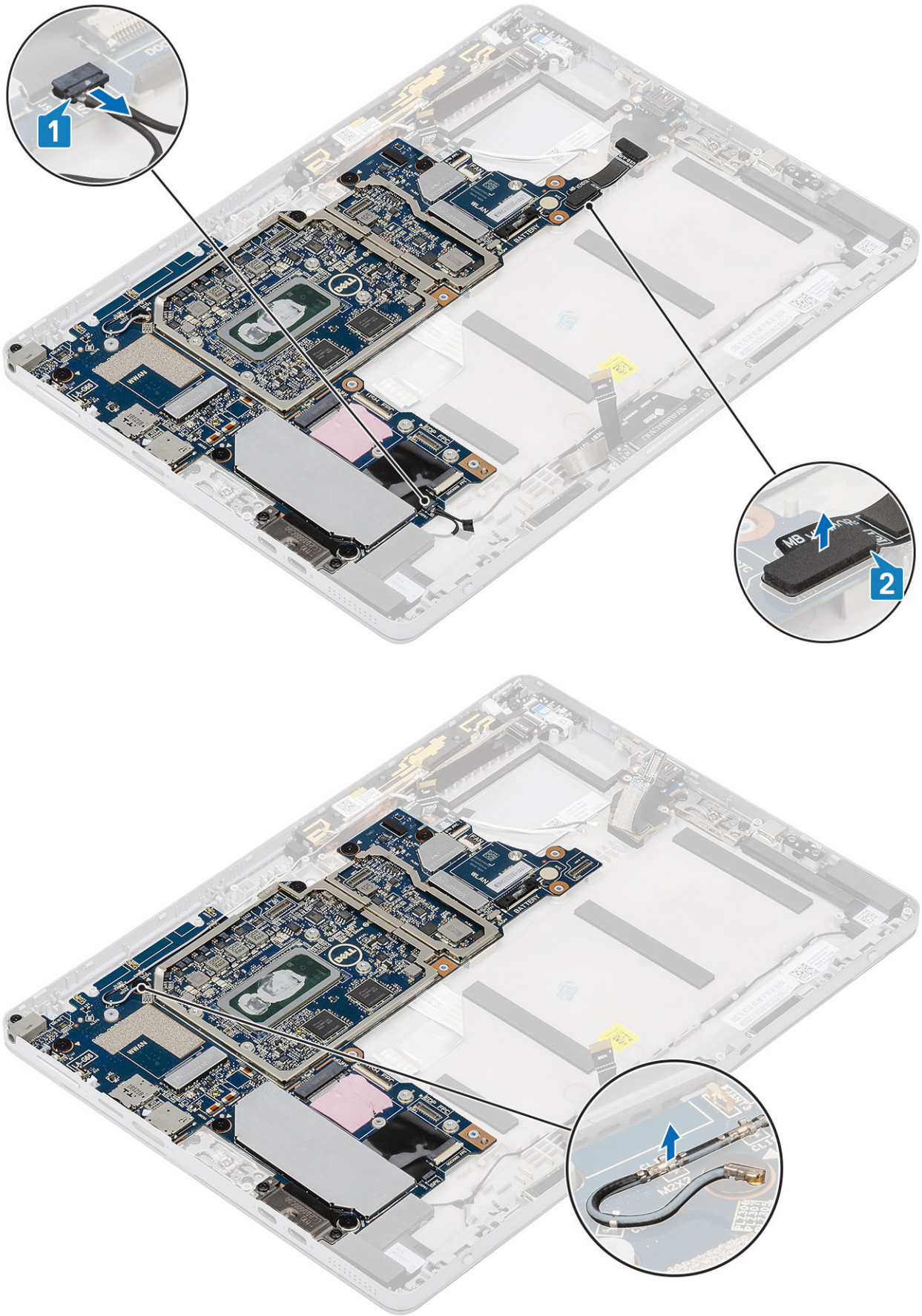
a. Push the release latch of on the SIM card cage inward to release



the
dummy SIM card tray.

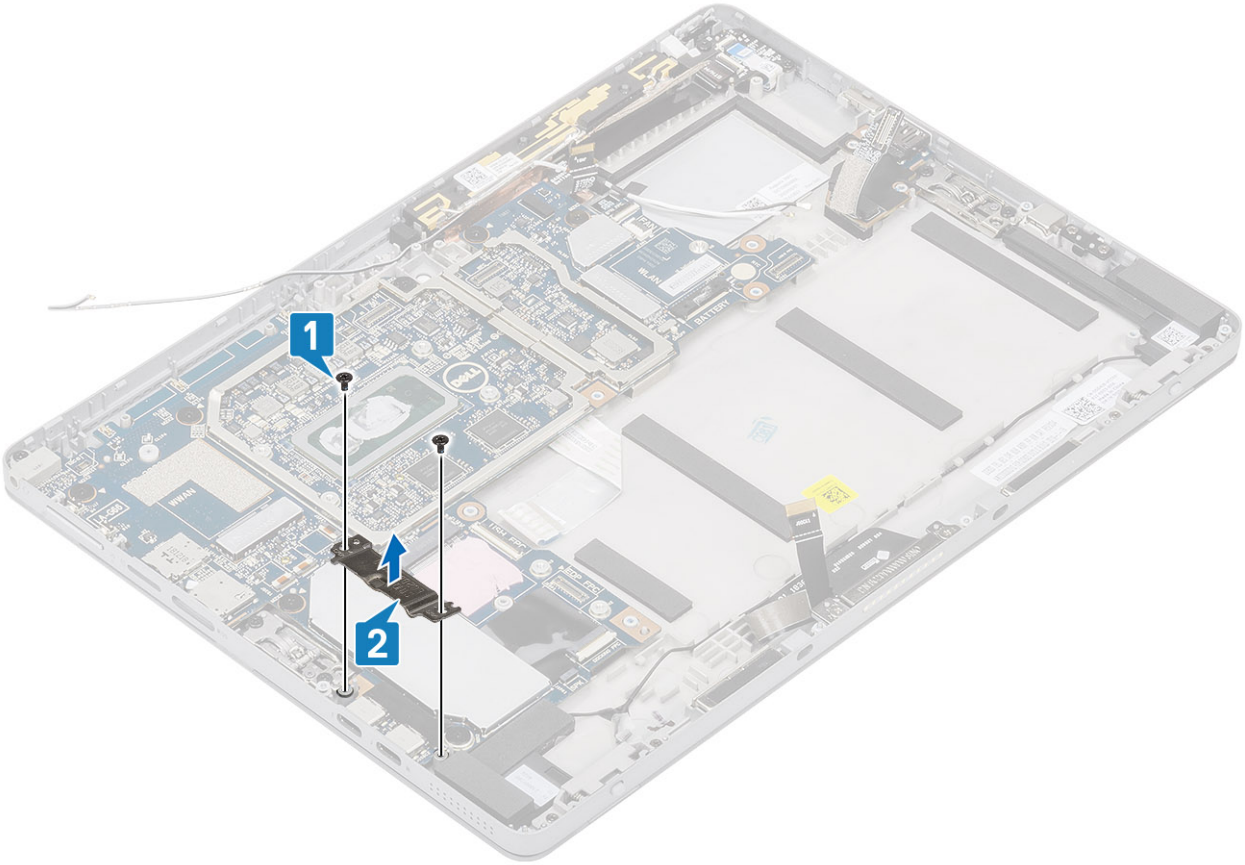
b. Remove the dummy SIM card tray.
c. Disconnect the power button daughter board FPC, USB daughter board FPC, USH FFC (that are shipped with a USH module), docking connector FPC, and a speaker cable.

4. Un-route the antenna cables from the routing clips .

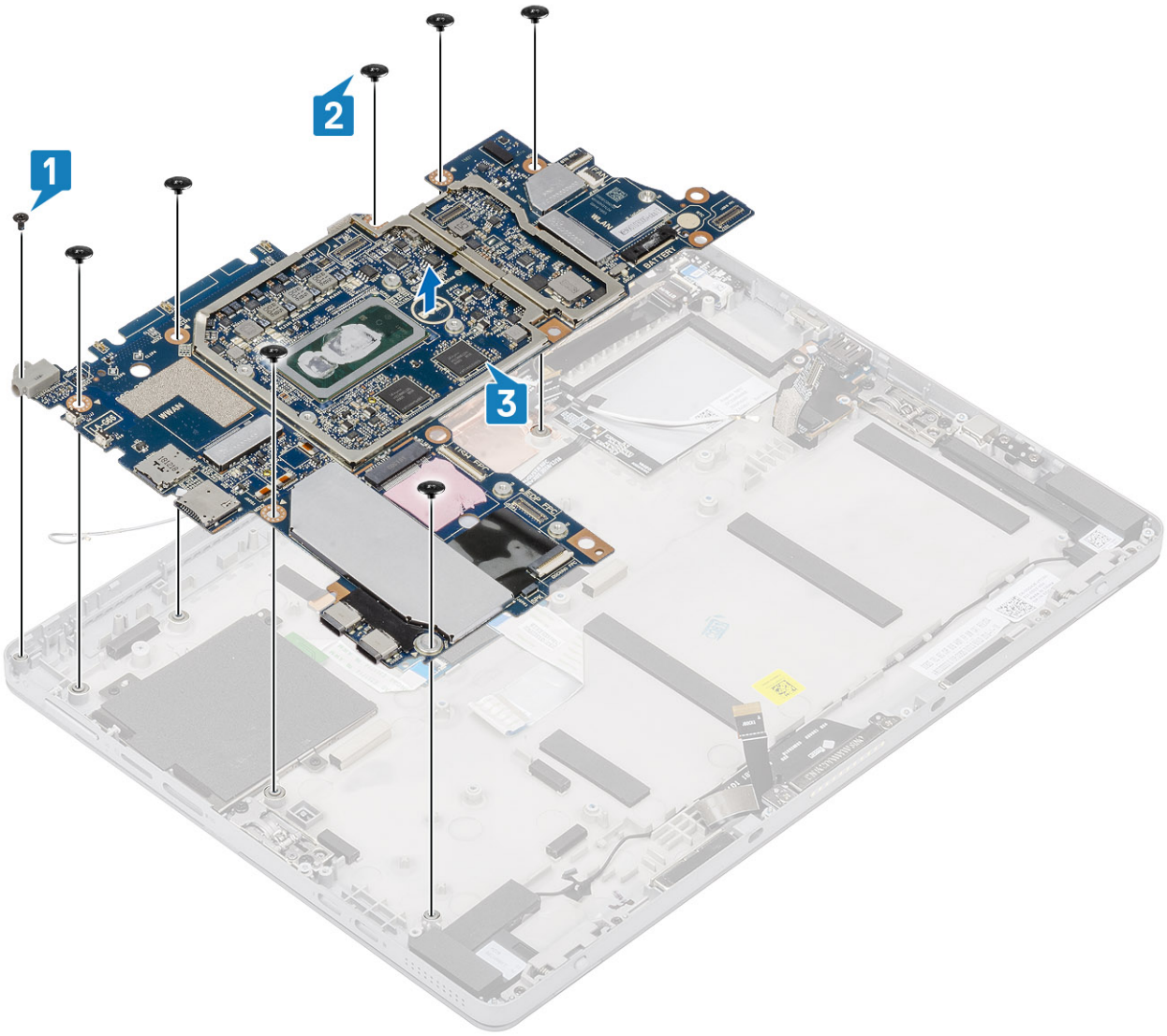


5. To remove the system board
   a. Remove the two bracket M2 x3 screws securing the Type-C USB bracket in place.

b. Remove the Type-C USB bracket.
c. Remove the single M2 x 3 screw securing the audio jack in place.



d. Remove the seven M2 x 2 screws securing the system board in place



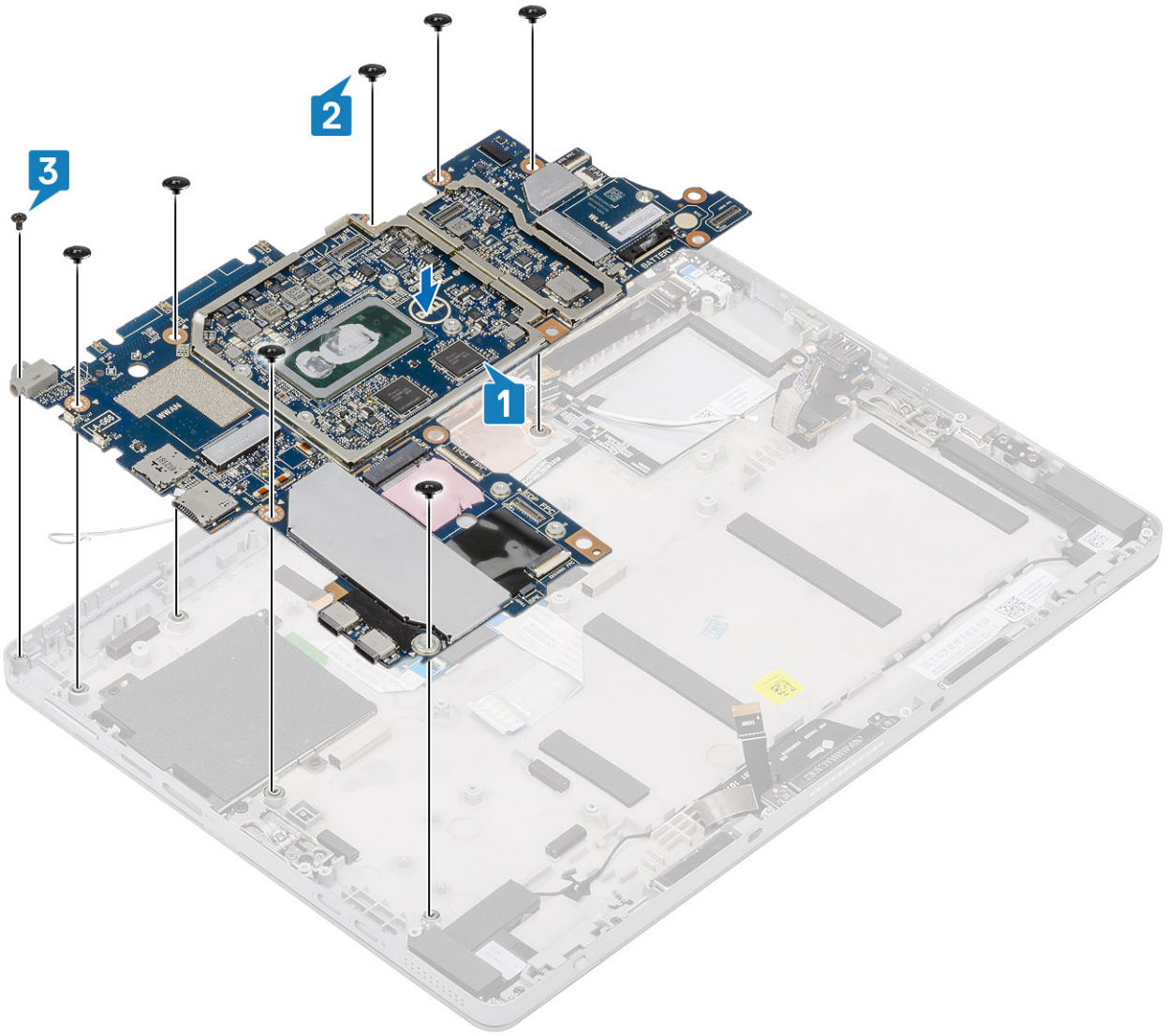
e. Lift the system board from the tablet [2].

Installing system board

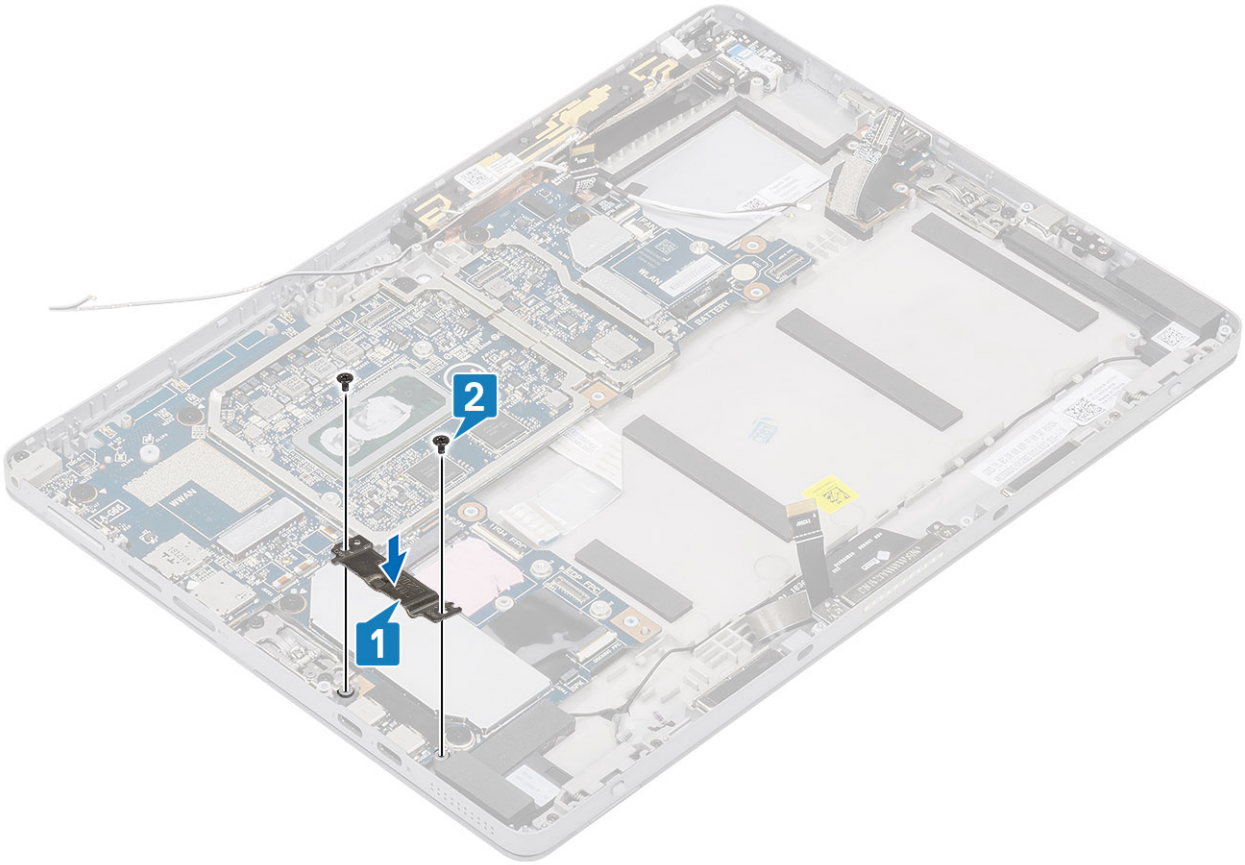
Steps

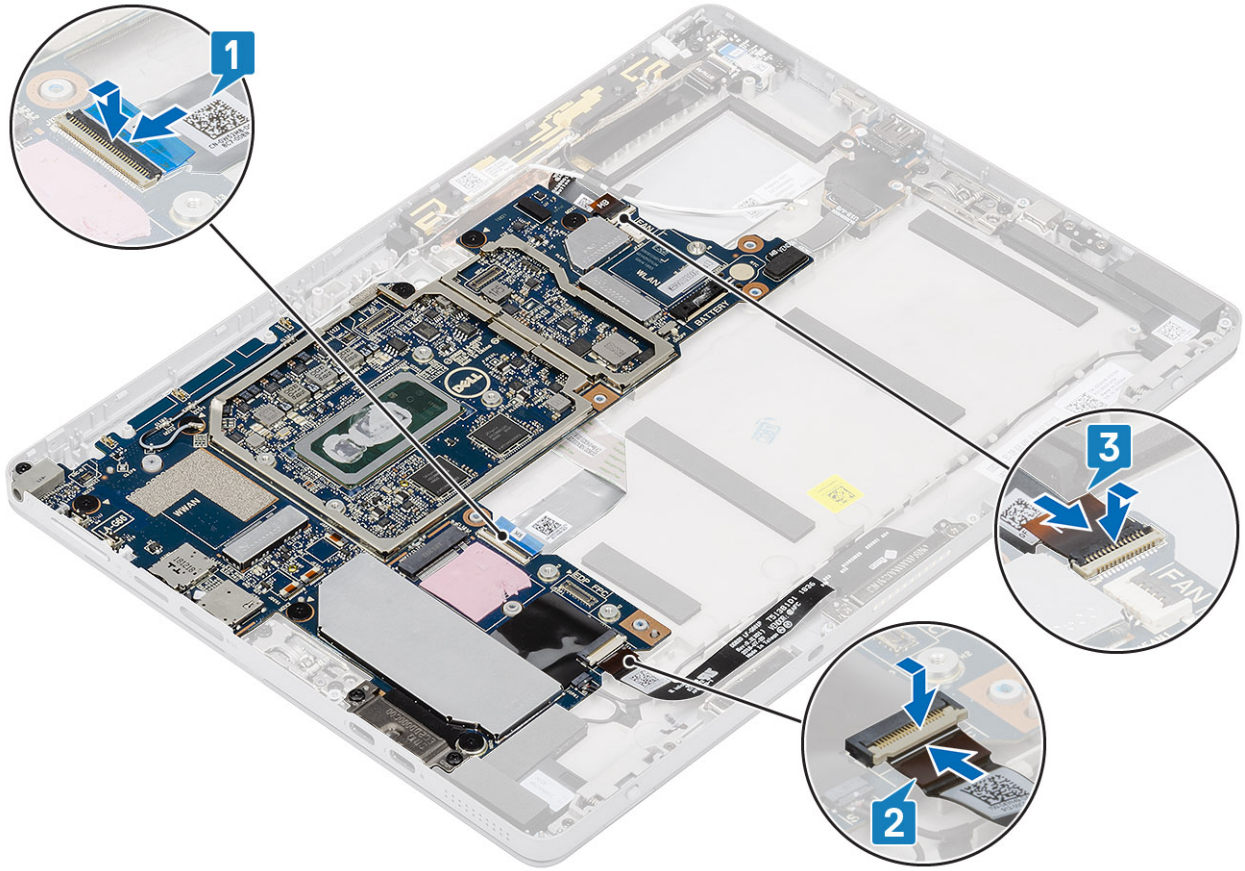
1. Align the system board with the screw holders on the tablet.
2. Tighten the seven M2 x2 screws to secure the system board to the tablet.

NOTE: Remember to align the Type-C port and tighten the two screws to secure the port to the system chassis.



3. Tighten the single M2 x 3 screw securing the audio jack in place and place the USB Type-C bracket.
4. Tighten the two bracket M2 x3 screws securing the Type-C USB bracket in place.





5. Replace the:
   a. WWAN main antenna module

b. Heat-sink assembly
c. Rear-facing camera
d. display panel
e. microSD card
f. SIM card tray
g. battery

6. Follow the procedure in after working inside your tablet.

I/O Board

Removing I/O board

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the SD Memory Card and display panel.
3. Remove the cable from the system board, and peel off the adhesive tape to remove the I/O board

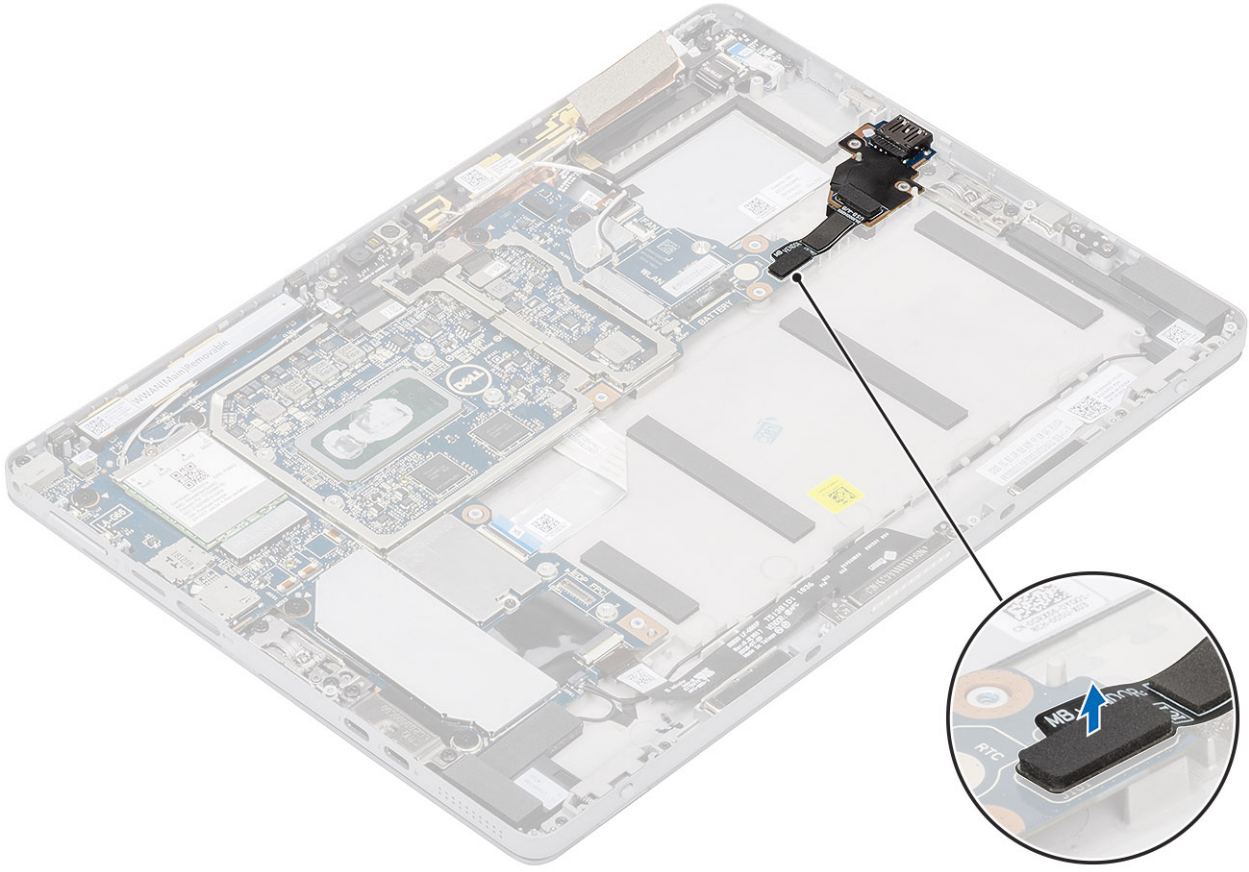


Figure 2. Removing the cable

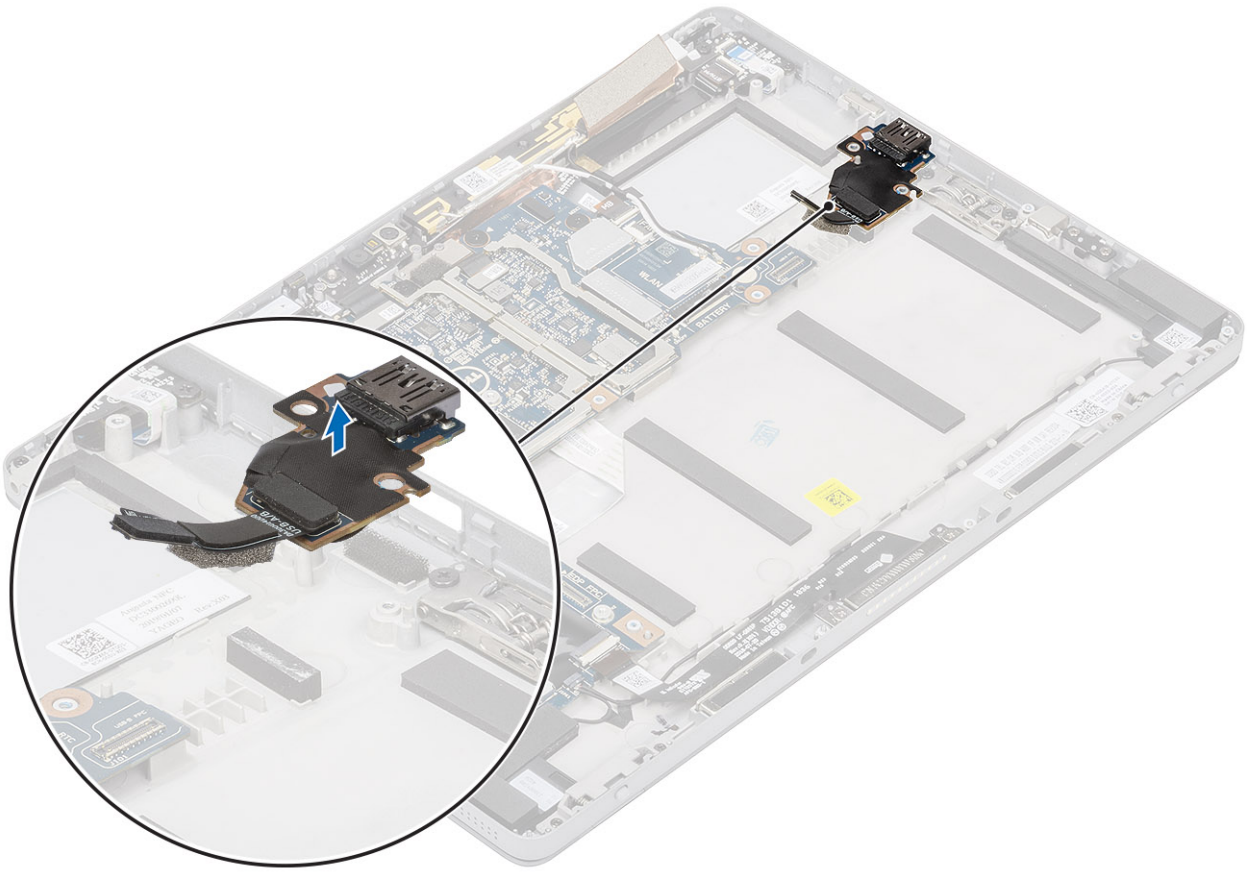


Figure 3. Peel off the adhesive tape

Installing I/O board

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the SD Memory Card and display panel.
3. Fix the adhesive tape and Install the cable with the I/O board to the system board.

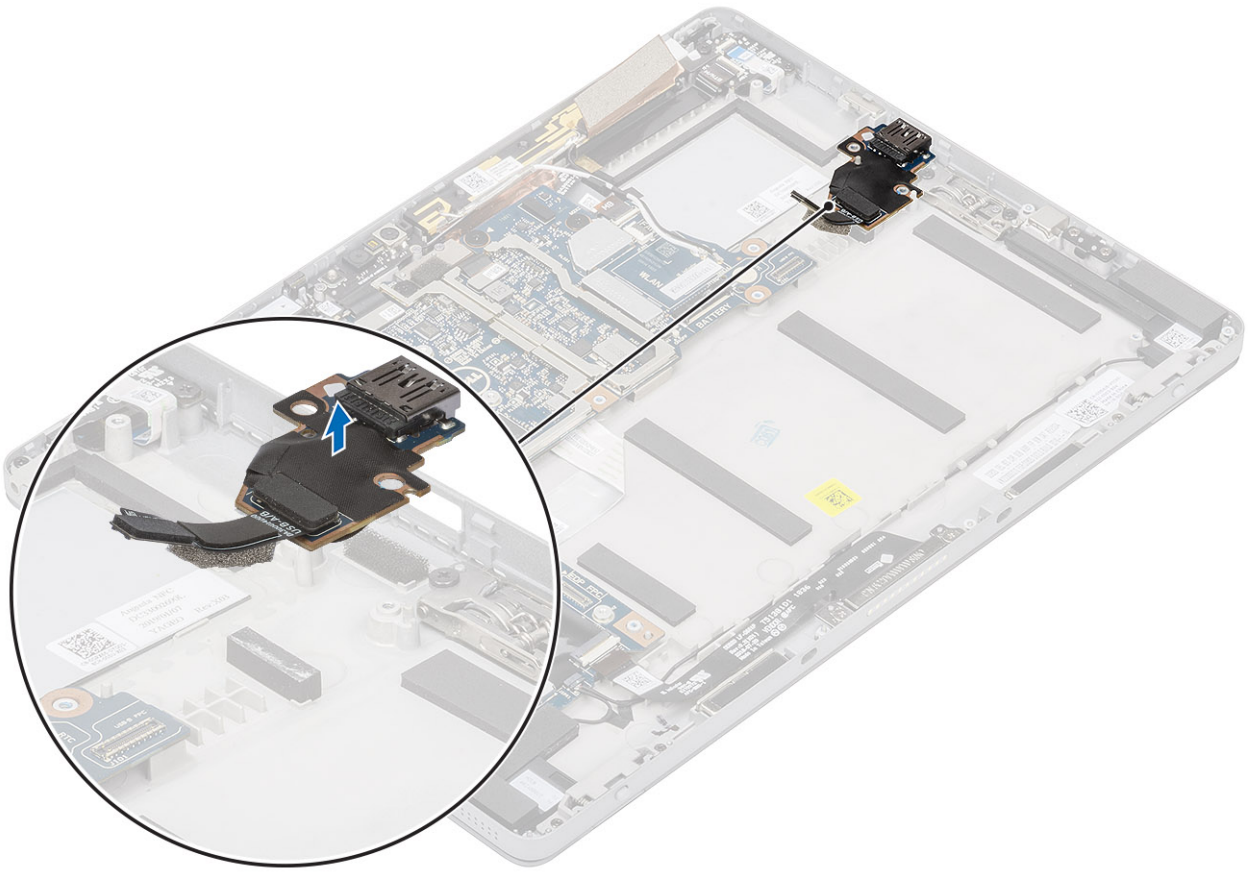


Figure 4. Fix the adhesive tape

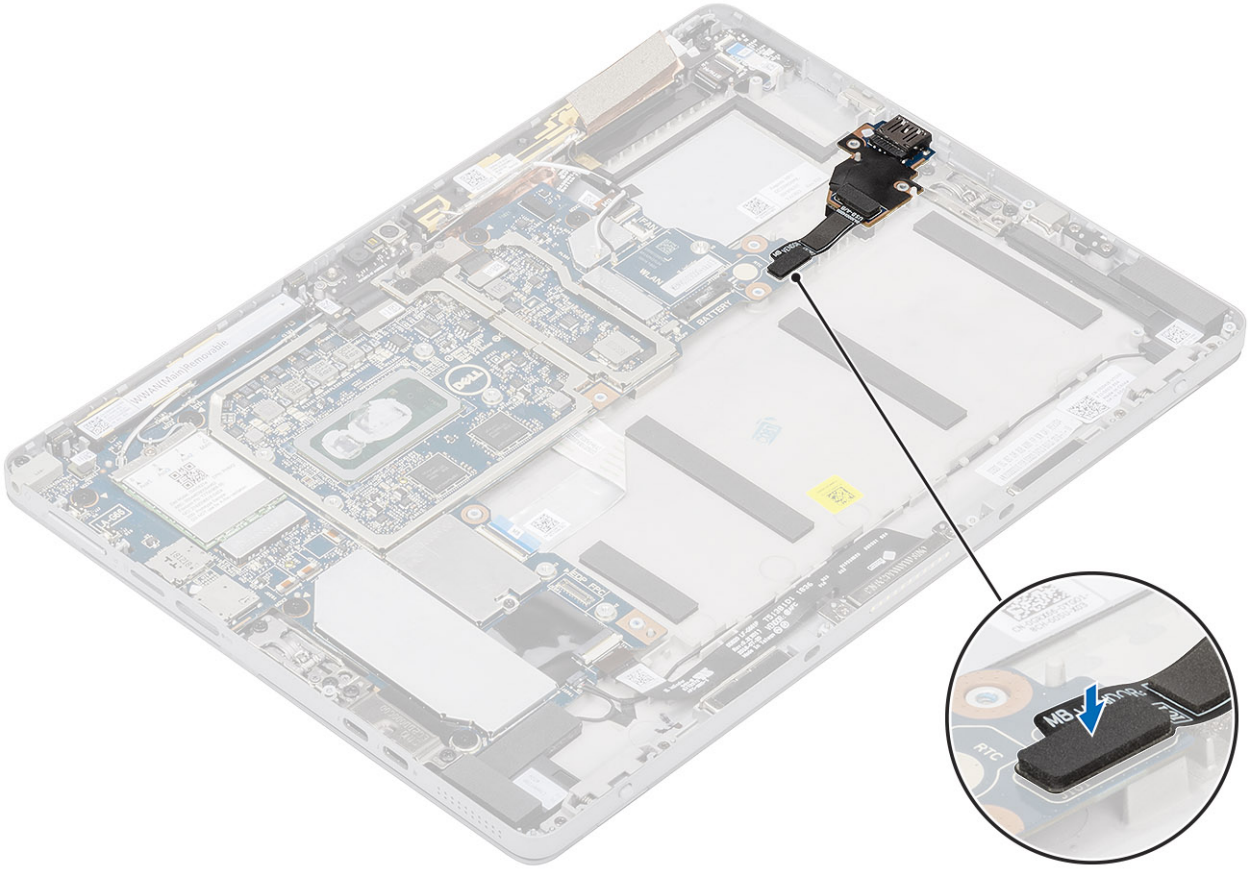


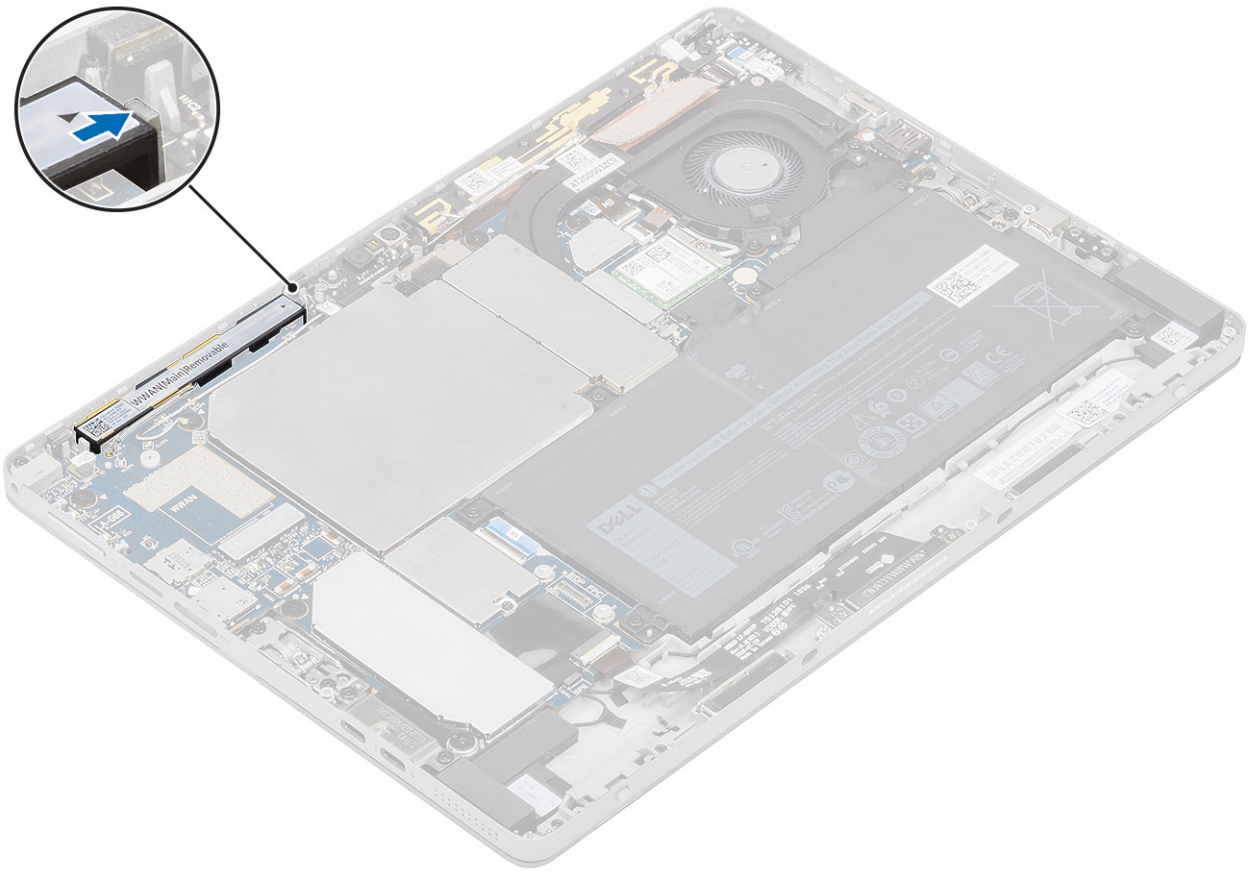
Figure 5. Fix the I/O module

WWAN Antenna

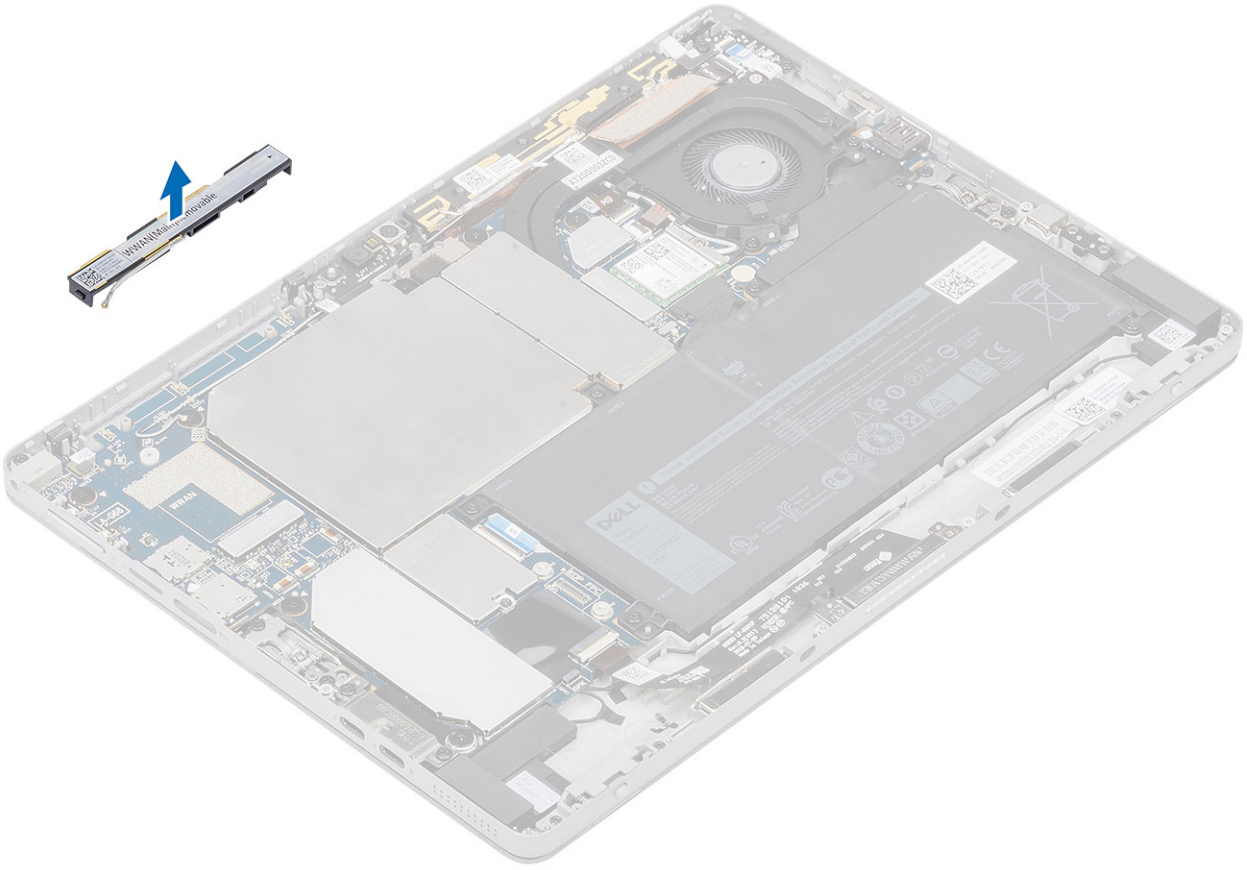
Removing the WWAN antenna module

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. To remove the antenna module:
   a. Unroute the WWAN antenna cables from the system board.
   b. Release the clips on the left and right side of the WWAN main antenna module securing it to the computer.



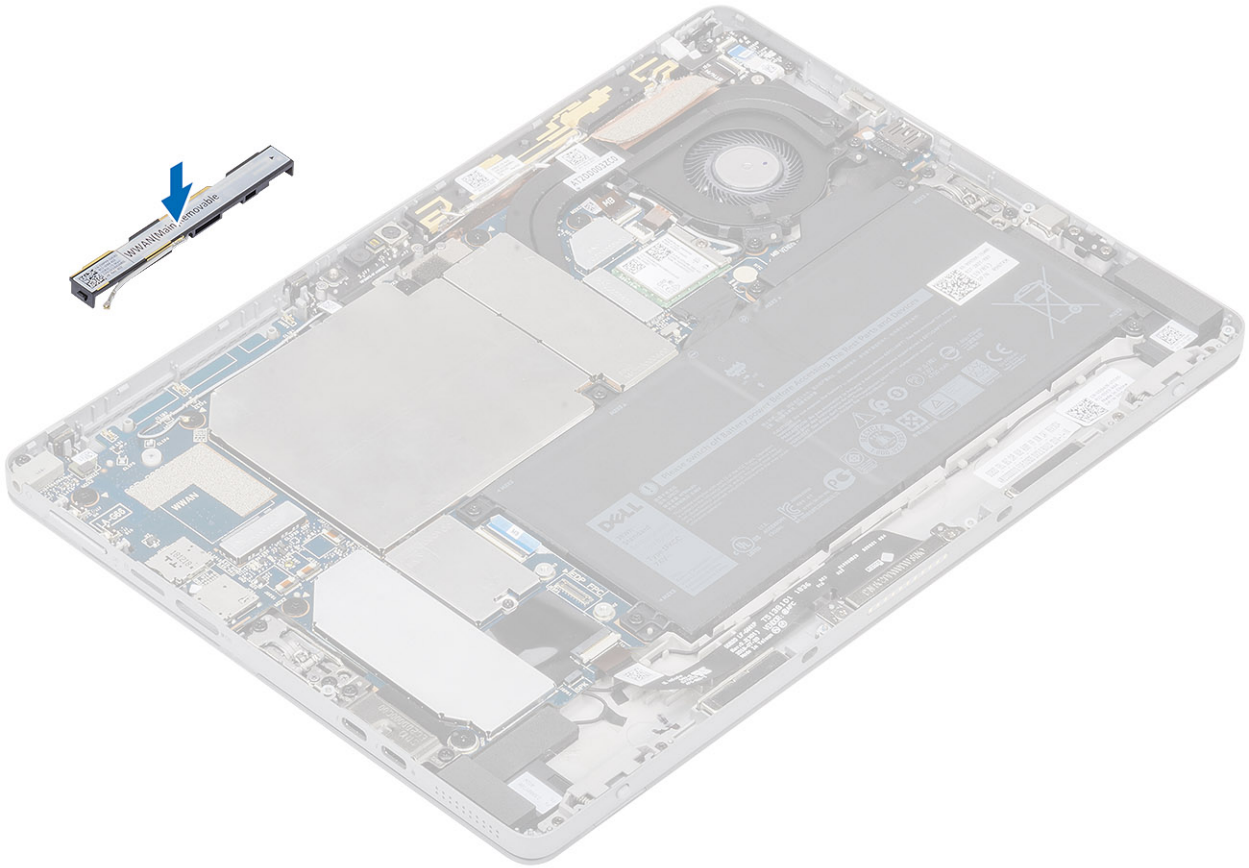
c. Flip over the WWAN main antenna module to release it from the system board.
d. Remove the WWAN main antenna module from the computer.



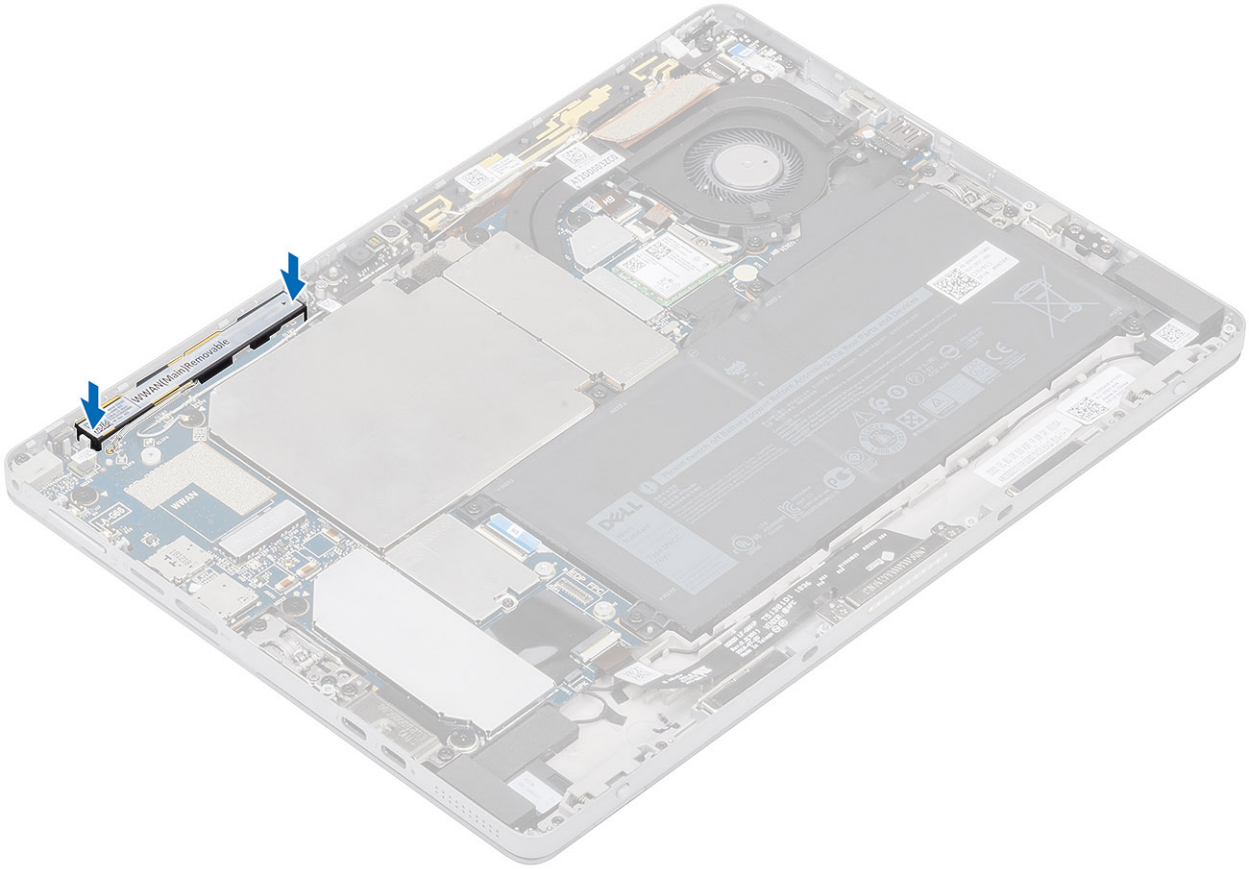
Installing the WWAN antenna module

Steps

1. Insert the WWAN antenna module into the slot on the computer.
2. Flip over the WWAN main antenna module to fix it to the system board.



3. Tighten the clips on the left and right side of the WWAN main antenna module to secure it to the computer.
4. Route the WWAN antenna cables to the system board.



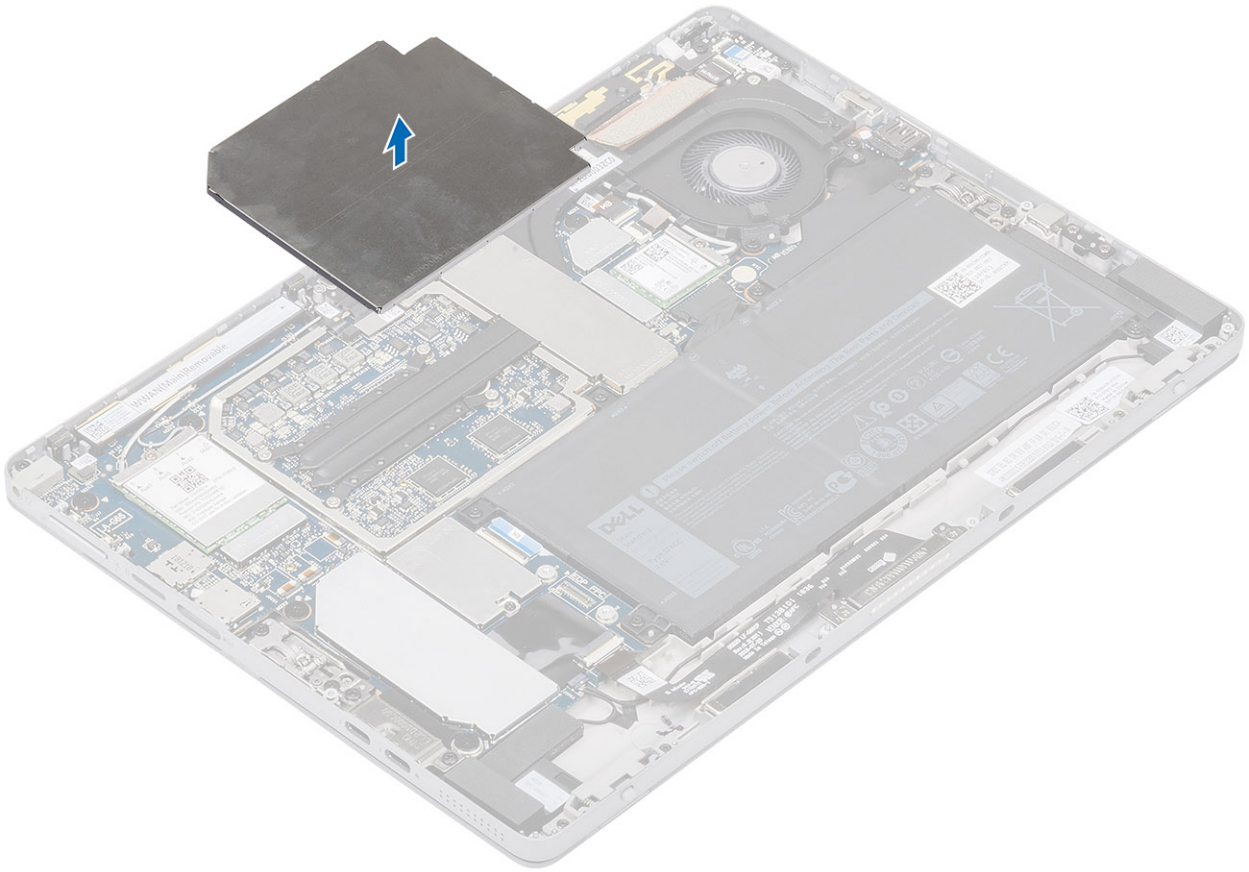
5. Replace the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray
6. Follow the procedure in After working inside your tablet.

Microphone

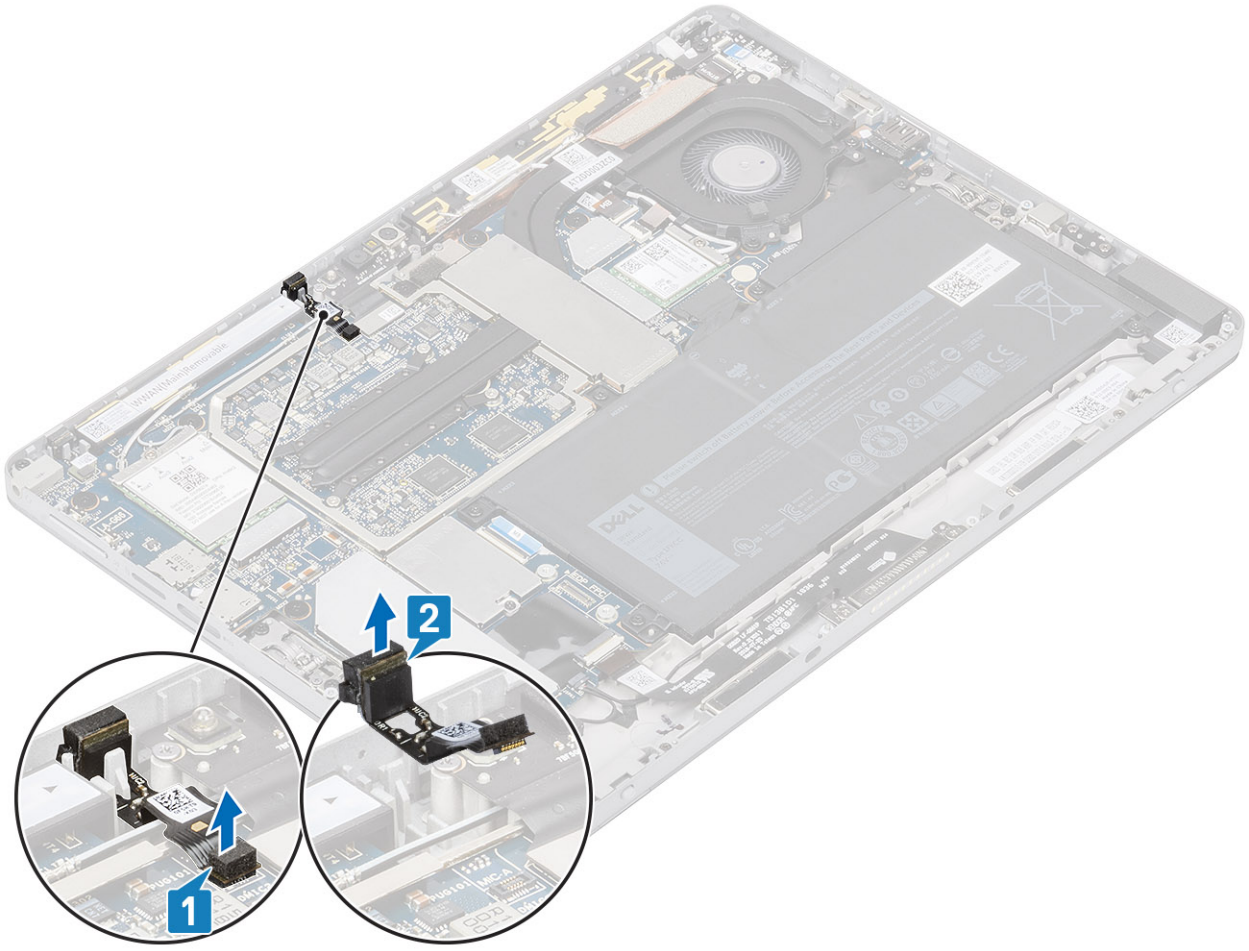
Removing the microphone module-A

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Remove the left shielding cover from the computer.



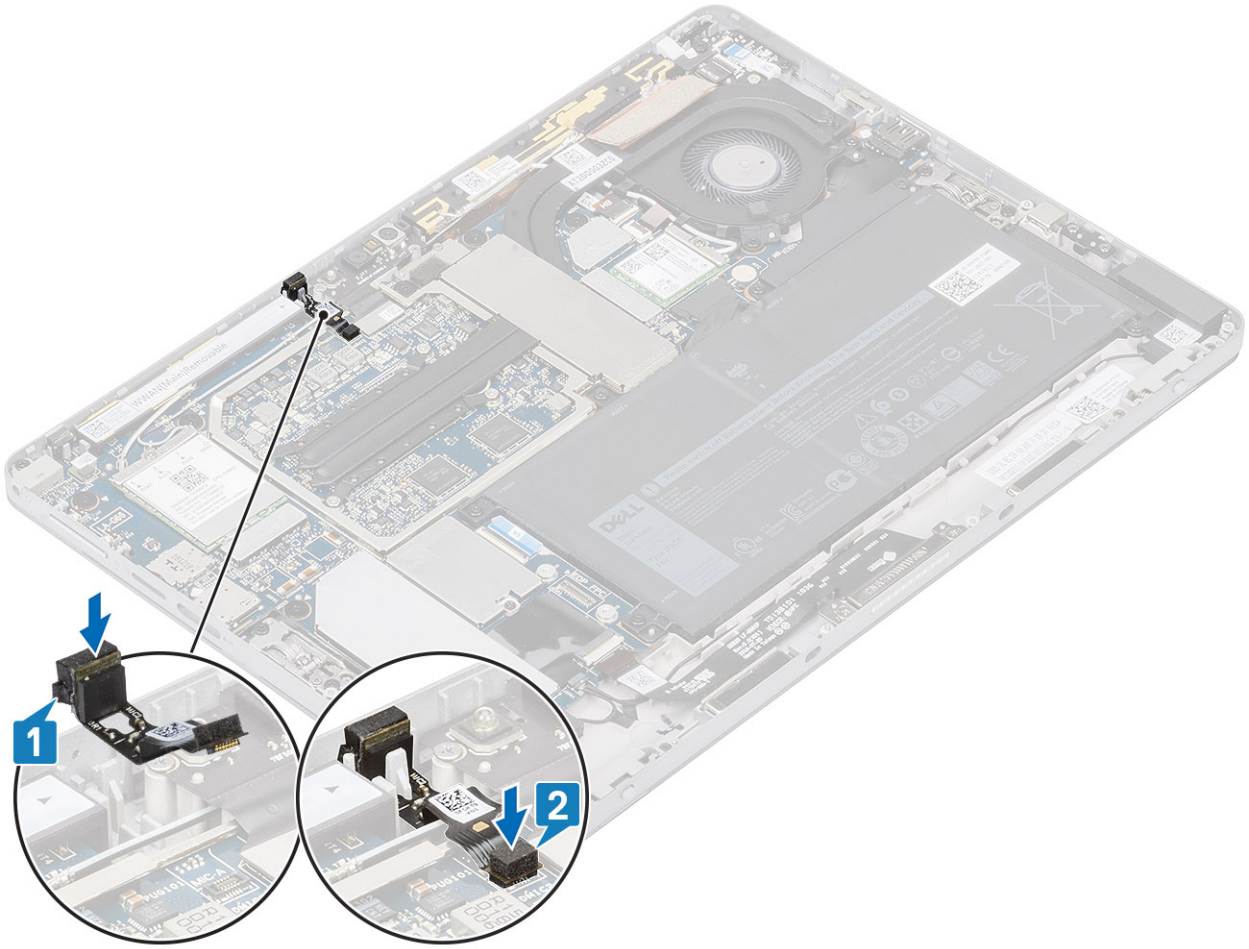
4. Disconnect the microphone module-A cable from the connector on the system board [1].
5. Using tweezers, grasp the microphone module from the sides and lift to remove it from its compartment [2].
6. Remove the microphone module-A away from the computer.



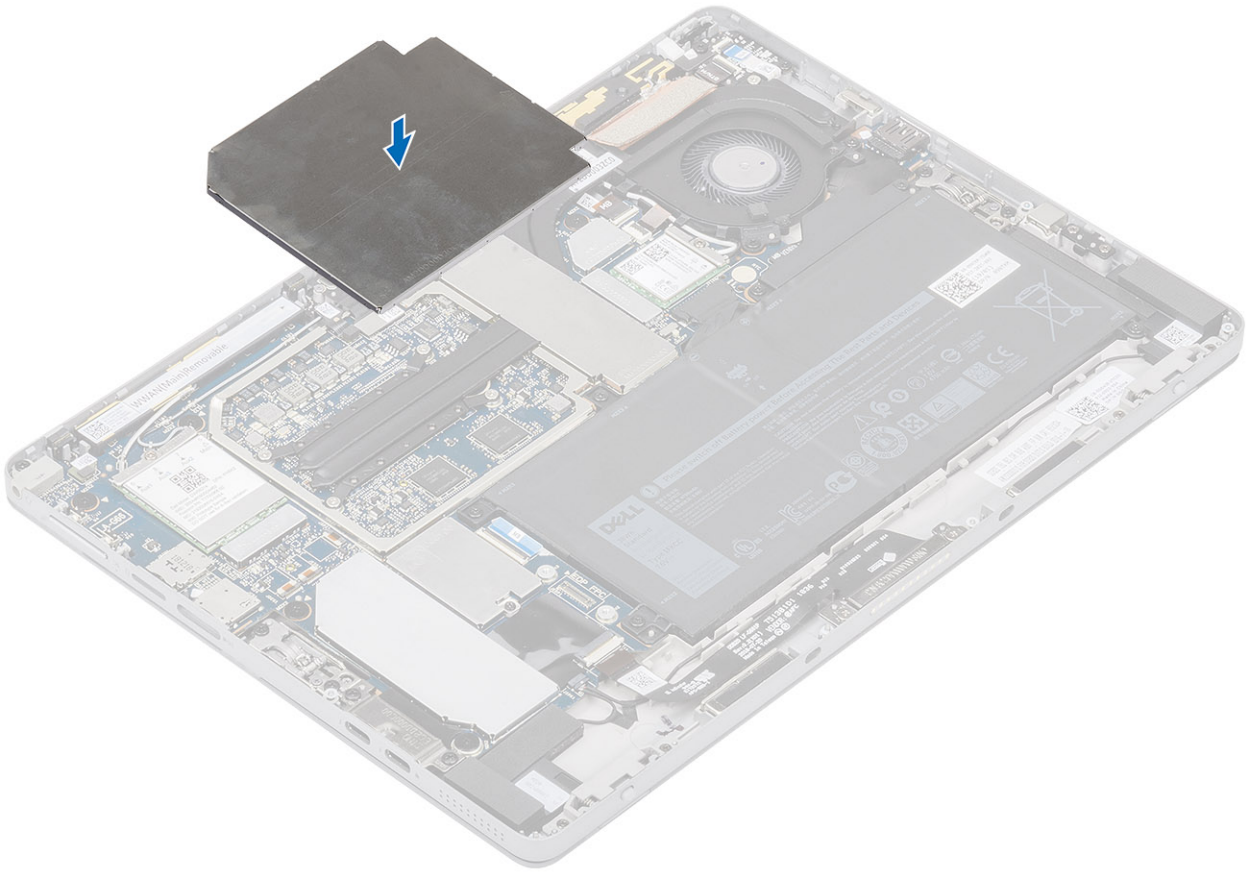
Installing the microphone module-A

Steps

1. Align and place the microphone module-A into the slot on the computer [1].
2. Connect the microphone module-A cable to the connector on the system board [2].



3. Align and place the left shielding cover on the computer.

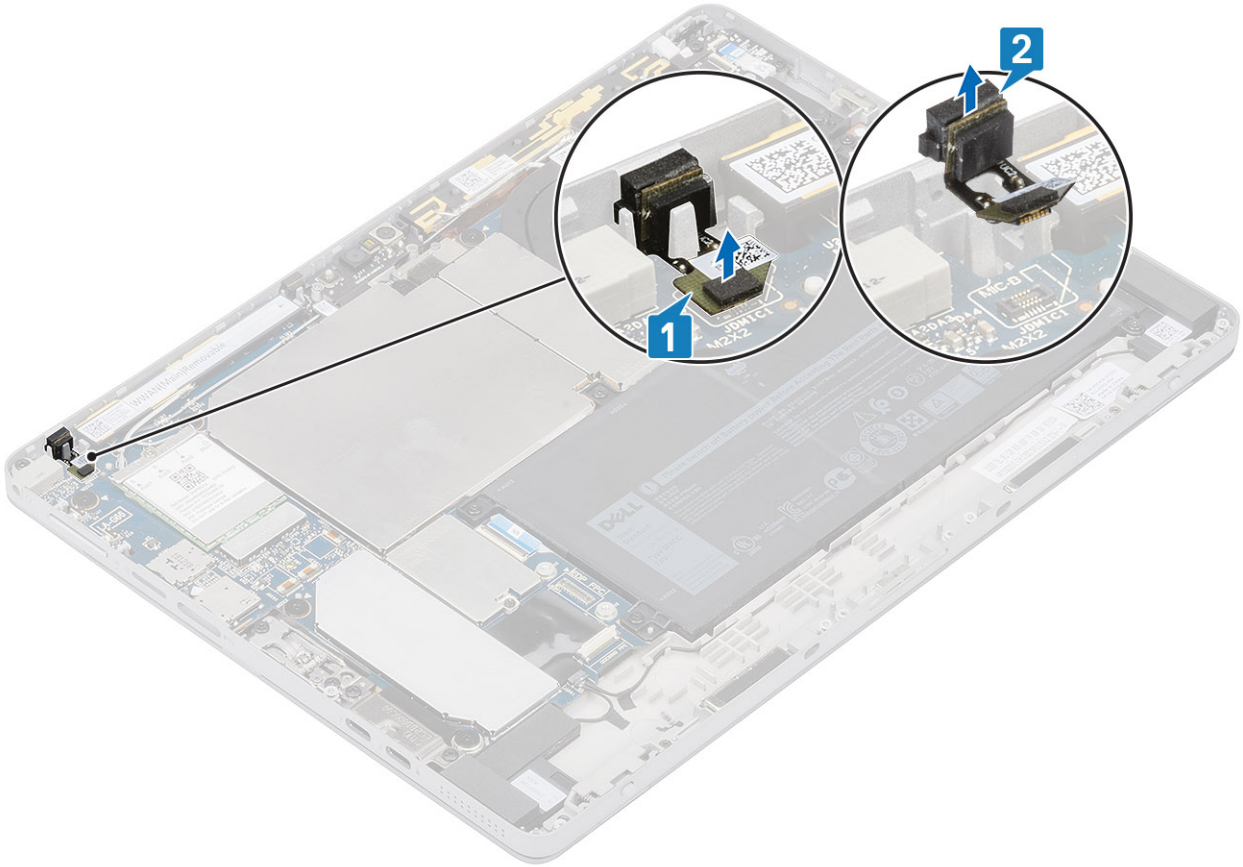


4. Install the:
   a. display panel assembly
   b. SIM card tray
   c. microSD card

Removing the microphone module-B

Steps

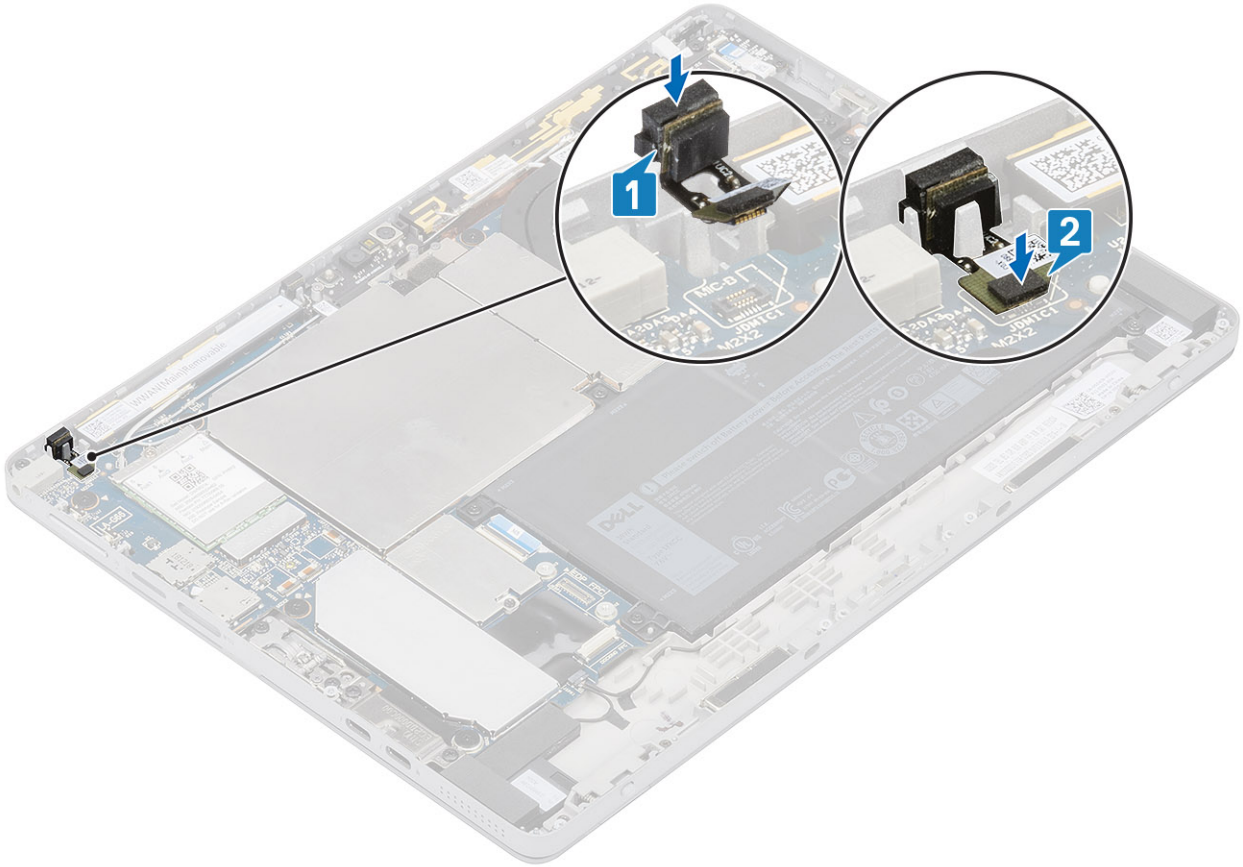
1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Disconnect the microphone module-B cable from the connector on the system board [1].
4. Using tweezers, grasp the microphone module from the sides and lift to remove it from its compartment [2].
5. Remove the microphone module-B away from the computer.



Installing the microphone module-B

Steps

1. Align and place the microphone module-B into the slot on the computer.
2. Connect the microphone module-B cable to the connector on the system board.



3. Install the:
   a. display panel assembly
   b. SIM card tray
   c. microSD card

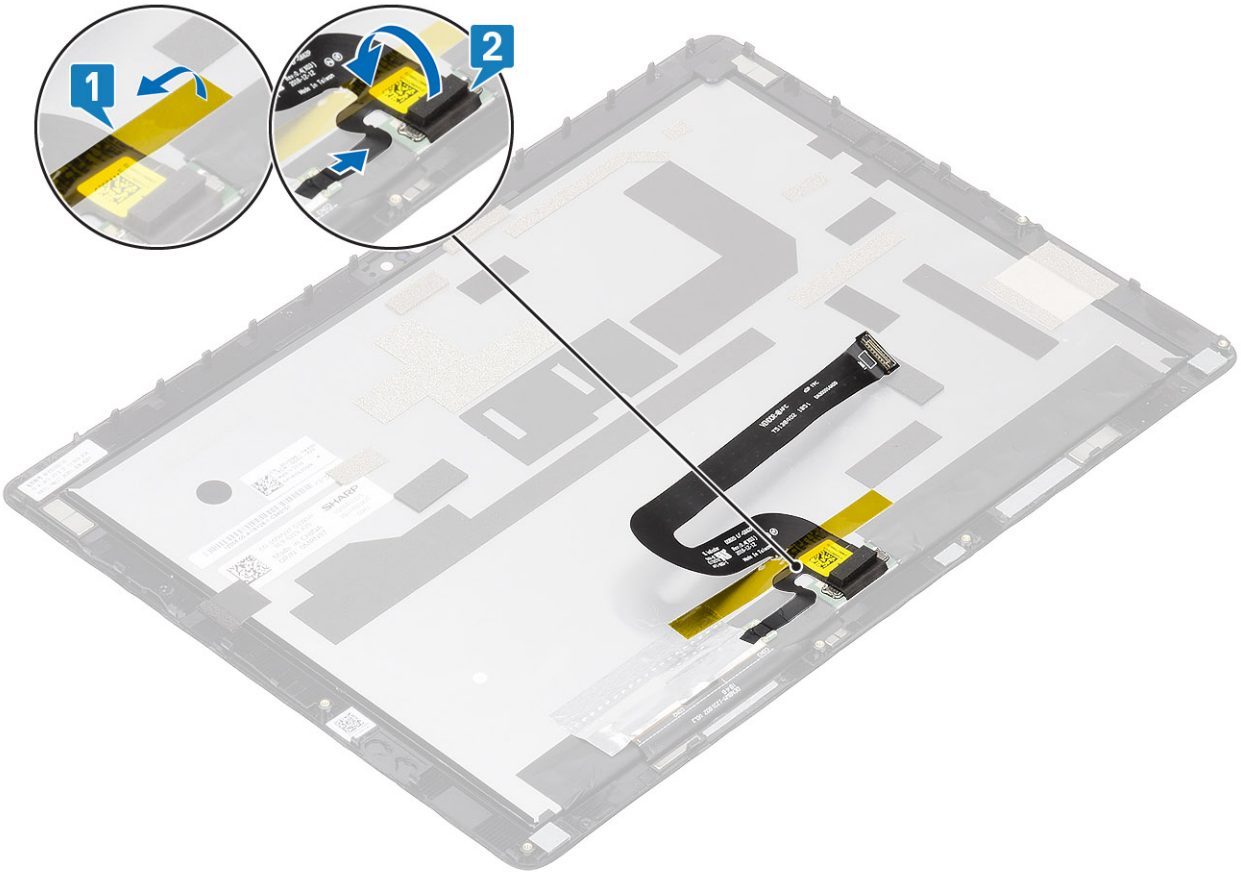
Display cable

Removing display cable

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. display panel assembly
3. Peel back the tape covering the display connector and touch module connector [1].
4. Disconnect and peel the display cable from the touch module [2].
5. Disconnect and remove the display cable from the display panel [2].

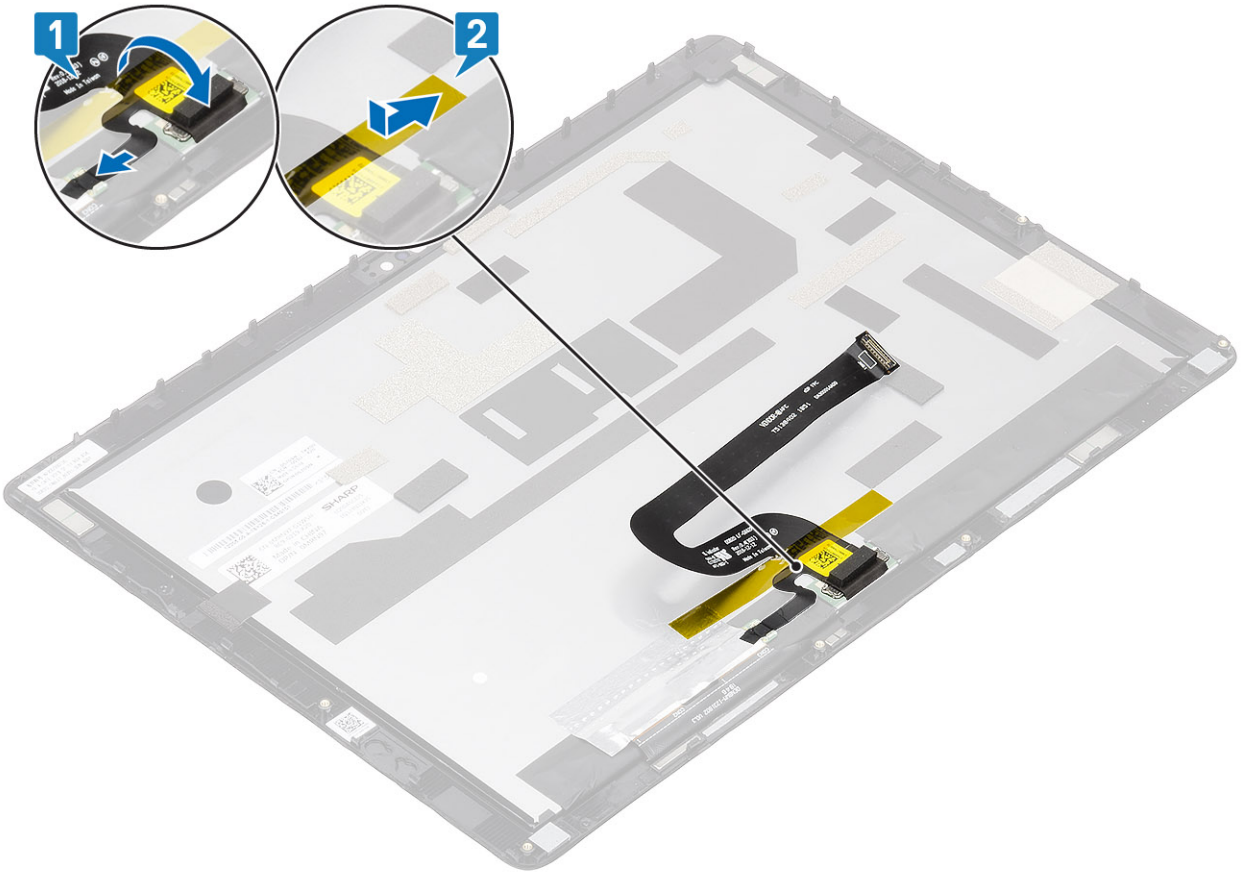
   NOTE: The connector on the display cable features a cover that must be flipped open in order to disconnect the display cable from the display panel.



Installing the display cable

Steps

1. Align and place the display cable on the display panel.
2. Connect and adhere the display cable to the touch module.
3. Adhere back the tape covering the display connector and touch module connector.



4. Install the:
   a. display panel assembly
   b. microSD card
   c. SIM card tray

Back cover

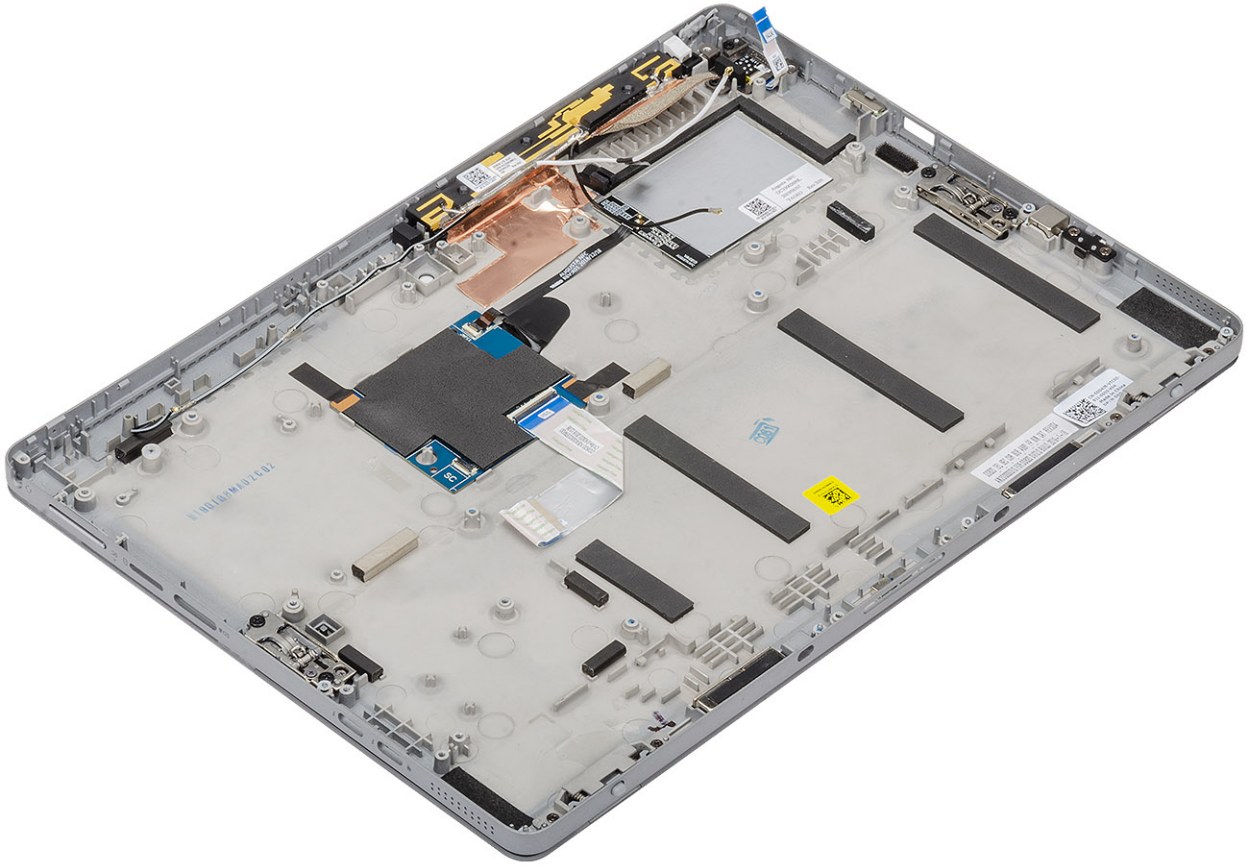
Removing back cover

Steps

1. Follow the procedure in Before working inside your tablet.
2. Remove the:
   a. microSD card
   b. SIM card tray
   c. battery
   d. display panel assembly
   e. M.2 2230 SSD
   f. WLAN card
   g. WWAN card
   h. rear-facing Camera
   i. heat-sink assembly
   j. power-button board
   k. speaker
   l. docking connector
   m. I/O board

n. WWAN main antenna module
o. microphone
p. system board
q. smart card cage

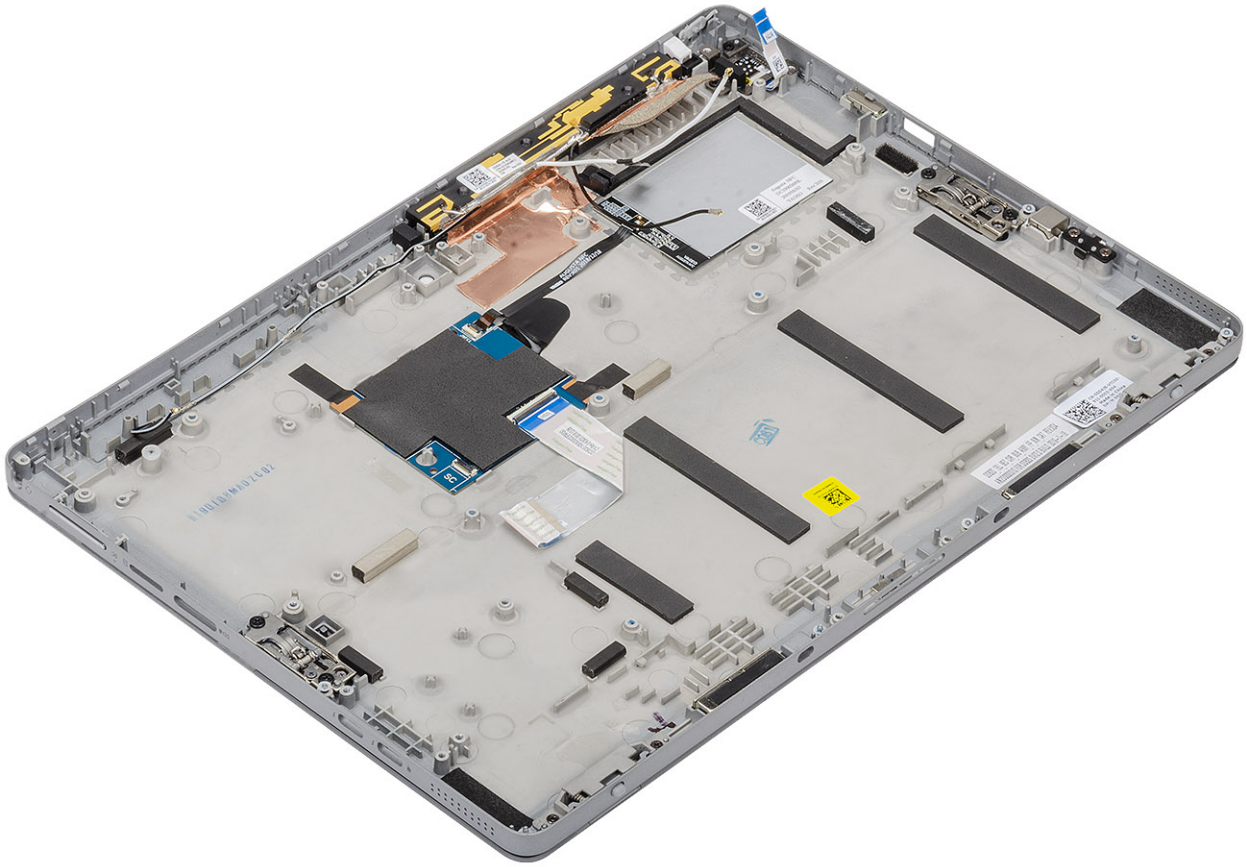
3. After performing the step 2, you are left with the back cover.



Installing system board

Steps

1. Place the back cover on a flat surface.



2. Replace the:
   a. smart card cage
   b. system board
   c. microphone
   d. WWAN main antenna module
   e. I/O board
   f. docking connector
   g. speaker
   h. power-button board
   i. heat-sink assembly
   j. rear-facing camera
   k. battery
   l. WWAN card
   m. WLAN card
   n. M.2 2230 SSD
   o. battery
   p. display panel
   q. microSD card
   r. SIM card tray
3. Follow the procedure in after working inside your tablet.

3

System setup

System setup enables you to manage your tabletdesktopnotebook hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- Entering BIOS without keyboard
- System setup options
- System Log
- Updating the BIOS
- Updating your system BIOS using a USB flash drive
- System and setup password

Entering BIOS without keyboard

Steps

1. Press the power button to turn on your tablet.
2. Press and hold the **Volume Up** button when the Dell logo appears on the screen.
3. When the **F12** boot selection menu appears, select **BIOS Setup** using the **Volume Up** button.
4. Press the **Volume Down** button to enter BIOS setup program.

System setup options

NOTE: Depending on the tabletcomputerlaptop and its installed devices, the items that are listed in this section may or may not appear.

General screen options

This section lists the primary hardware features of your computer.

Option	Description
System Information	• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code. • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology • Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit technology. • Device Information: Displays Primary Hard Drive, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, Cellular Device, Bluetooth Device.
Battery Information	Displays the battery status and the type of AC adapter connected to the computer.

Option	Description	
Boot Sequence	**Boot Sequence**	Allows you to change the order in which the computer attempts to find an operating system. The options are: ● Windows Boot Manager By default, the options is checked.
	Boot List Options	Allows you to change the boot list option: ● UEFI (The option is enabled by default)
Advanced Boot Options	Allows you the legacy option ROMs to load. By default, all the option are disabled.	
UEFI Boot Path SecurityOptions	Allows you to control whether or not the system will prompt to the user to enter the Admin password, when a user selects a UEFI boot path from the F12 boot Menu. ● **Always, Except Internal HDD**. This option is enabled by default. ● **Always, Except Internal HDD&PXE** ● **Never** **NOTE:** These options have no relevance if the Admin password is not set BIOS settings.	
Date/Time	Allows you to change the date and time.	

System Configuration screen options

Option	Description
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self-Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. ● Enable SMART Reporting
USB Configuration	This is an optional feature. This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices—HDD, memory key, floppy. If USB port is enabled, device attached to this port is enabled and available for OS. If USB port is disabled, the OS cannot see any device attached to this port. The options are: ● Enable USB Boot Support—enabled by default ● Enable External USB Port—enabled by default **NOTE:** USB keyboard and mouse always work in the BIOS setup irrespective of these settings.
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port. This option is disabled by default
Audio	This field enables or disables the integrated audio controller. By default, the **Enable Audio** option is selected. The options are: ● Enable Microphone—enabled by default ● Enable Internal Speaker—enabled by default
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are: ● Bright (default) ● Dim (50%)
Keyboard Backlight	The Keyboard Backlight Timeout dims out with the Battery option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are:

Option	Description
Timeout on Battery	• 5 sec • 10 sec—enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Keyboard Backlight Timeout on AC	The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are: • 5 sec • 10 sec—enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Unobtrusive Mode	This option, when enabled, pressing **Fn+shift+B** turns off all light and sound emissions in the system. To resume normal operation, press **Fn+shift+B** again. This option is disabled by default.
Miscellaneous Devices	Allows you to enable or disable the following devices: • Enable Front Camera—enabled by default • Enable Back Camera—enabled by default • Secure Digital (SD) card—enabled by default • Secure Digital (SD) card boot • Secure Digital (SD) card read-only-mode

Video screen options

Option	Description
LCD Brightness	Allows you to set the display brightness depending up on the power source (On Battery and On AC).

NOTE: The video setting will be visible only when a video card is installed into the system.

Security screen options

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password. **NOTE:** You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password. **NOTE:** Password changes take effect immediately. By default, the drive will not have a password set.
System Password	Allows you to set, change or delete the system password. **NOTE:** Password changes take effect immediately. By default, the drive will not have a password set.

Option	Description
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	Allows you to disable or enable the permission to bypass the System and the Internal hard drive password, when they are set. The options are: • **Disabled**. This option is selected by default. • **Reboot bypass**
Password Change	Allows you to enable or disable permission to the System and Hard Drive passwords when the admin password is set. **Allow Non-Admin Password Changes** This option is selected by default.
UEFI Capsule Firmware Updates	This option controls whether the system allows BIOS updates via UEFI capsule update packages. **Enable UEFI Capsule Firmware Updates** option is selected by default. **NOTE:** Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS).
TPM 2.0 Security	Allows you to enable the Trusted Platform Module (TPM) during POST. You can control whether the trusted platform module is visible to the operating system. The option is: • **TPM on** This option is selected by default. • **Clear** • **PPI Bypass for Disable Commands** • **PPI Bypass for Clear Command" in TPM 2.0 Security**. • **Attestation Enable**. This option is selected by default. • **PPI Bypass for Disable Commands** • **Key Storage Enable**. This option is selected by default. • **SHA-256**. This option is selected by default. **CAUTION: For the TPM upgrade/downgrade process, it is recommended to complete the process in an AC power with AC adapter plugged into the computer. The upgrade/ downgrade process without the AC adapter plugged in might damage the computer or hard disk.** **NOTE:** Disabling this option does not change any settings you have made to the TPM, nor does it delete or change any information or keys you may have stored in the TPM. Changes to this setting take effect immediately.
Absolute (R)	Allows you to activate or disable the optional Computrace Service from Absolute software. The options are: • Deactivate • Disable • Activate **NOTE:** The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed Default setting: Activate
Admin Setup Lockout	Allows you to prevent users from entering the setup when an Administrator password is set. **Enable Admin Setup Lockout** This option is not selected by default.
Master Password Lockout	Allows you to prevent users from entering the setup when an Master password is set. Hard disk passwords need to be cleared before the setting can be changed. **Enable Master Password Lockout** This option is not selected by default.
SSM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. The OS can use the feature to help protect the secure environment created by virtualization based security. **SSM Security Mitigation** This option is disabled by default.

Secure Boot

Option	Description
Secure Boot Enable	This option enables or disables the **Secure Boot** feature. • Disabled • Enabled Default setting: Enabled.
Expert Key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default.
Custom Mode Key Management	Allows you to manage the security key databases only if the system is in Custom Mode .The options are: • **PK**. This option is selected by default. • **KEK** • **db** • **dbx** **NOTE:** If you disable the **Enable Custom Mode**, all the changes made will be erased and the keys will restore to default settings. Save to File will save the key to a user-selected file.

Intel software Guard Extensions

Option	Description
Intel SGX Enable	This option enables or disables to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are: • **Disabled** • **Enabled** • **Software Controlled**.This option is selected by default.
Enclave Memory Size	Allows you to reserve the memory size. The memory size can be set from 32 MB to 128 MB, these options are disabled by default. The options are: • **32 MB** • **64 MB** • **128 MB**

Performance screen options

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. This option is enabled by default. Allows you to enable or disable multi-core support for the processor. • **All**This option is enabled by default. • **1** • **2** • **3**
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of the processor. • **Enable Intel SpeedStep** Default setting: The option is enabled.
C-States Control	Allows you to enable or disable the additional processor sleep states. • **C states** Default setting: The option is enabled.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor.

Option	Description
	• **Enable Intel TurboBoost** Default setting: The option is enabled.
HyperThread Control	Allows you to enable or disable the HyperThreading in the processor. • **Disabled** • **Enabled**This option is enabled by default.

Power Management screen options

Option	Description
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. **Wake on AC** This option is disabled by default.
Enable Intel Speed Shift Technology	Allows you to enable or disable the Intel speed Shift Technology support. Setting to enable option, allows the operating system to automatically select the required processor performance. **Enable Intel Speed Shift Technology** This option is enabled by default.
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: • **Disabled** This option is enabled by default. • **Every Day** • **Weekdays** • **Select Days**
USB Wake Support	Does not allow this option.
Lid Switch	Allows this option.
Thermal Management	Allows this option..
Wireless Radio Control	Allows you to sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN) Upon disconnection from the wired network, the selected wireless radios is re-enabled. By default none of the option is enabled. The options are: • **Control WLAN radio** • **Control WWAN radio**
Wake on WLAN	Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal. • **Disabled** This option is selected by default. • **LAN with PXE Boot** • **LAN Only**
Peak Shift	Allows you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached. • **Enable Peak Shift**This option is not selected by default.
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health. • **Enable Advanced Battery Charge Mode**This option is not selected by default.
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: • **Adaptive** This option is enabled by default. • **Standard** Fully charges your battery at a standard rate. • **ExpressCharge** The battery charges over a shorter period of time using Dell's fast charging technology.

Option	Description
	• **Primarily AC use** • **Custom** If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop. **NOTE:** All charging mode may not be available for all the batteries. To enable this option, disable the **Advanced Battery Charge Configuration** option.

POST Behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. **Enable Adapter Warnings** This option is selected by default.
Numlock Enable	Allows you to enable the Numlock option when the computer boots. • **Enable Network** This option is enabled by default.
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1 – F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are: • **Lock Mode Disable/Standard** This option is selected by default. • **Lock Mode Enable/Secondary**
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: • **Minimal** This option is selected by default. • **Thorough** • **Auto**
Extended BIOS POST Time	Allows you to create an additional pre-boot delay. The options are: • **0 seconds** This option is enabled by default. • **5 seconds** • **10 seconds**
Warnings and Errors	Allows you to select in the BIOS setup options that cause the boot process to pause only, when warnings or errors are detected rather than stop, prompt and wait for user input. The options are: **Prompt on Warnings and Errors**. This option is enabled by default. **Continue on Warnings** **Sign of Life Indication**

Virtualization Support options

Option	Description
Virtualization	Allows you to enable or disable the Intel Virtualization Technology. **Enable Intel Virtualization Technology** This option is selected by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. **Enable VT for Direct I/O** This option is selected by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. The TPM Virtualization Technology, and Virtualization technology for direct I/O must be enabled to use this feature. **Trusted Execution** This option is disabled by default.

Wireless screen options

Option	Description
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. • WWAN/GPS • WLAN • Bluetooth All the options are enabled by default.

NOTE: IMEI number for WWAN can be found on the outer box or the WWAN card.

Maintenance

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	Allows you to control flashing of the system firmware to previous revisions. The option are: **Allows BIOS Downgrade** This option is enabled by default.
Data Wipe	Allows you to securely erase data from all internal storage devices. The process adheres to Serial ATA Security Erase and eMMC JEDEC Sanitize specifications. The option are: **Wipe on Next Boot** This option is disabled by default.
BIOS Recovery	Allows you to recover from certain computed BIOS conditions from a recovery file on the user primary hard drive or an external USB key. When 'Enabled' is selected BIOS stores the recovery file on the user primary hard drive.The option are: **BIOS Recovery from Hard Drive** This option is enabled by default.

System logs screen options

Option	Description
BIOS Events	Allows you to view and clear the System Setup (BIOS) POST events.
Thermal Events	Allows you to view and clear the System Setup (Thermal) events.
Power Events	Allows you to view and clear the System Setup (Power) events.

System Log

Option	Description
BIOS Events	Allows you to view and clear the System Setup (BIOS) POST events.
Thermal Events	Allows you to view and clear the System Setup (Thermal) events.
Power Events	Allows you to view and clear the System Setup (Power) events.

Updating the BIOS

Prerequisites

It is recommended to update your BIOS (System setup) on replacing the system board or if an update is available. Ensure that your tabletnotebookdesktop battery is fully charged and connected to a power outlet.

Steps

1. Restart the tabletnotebookdesktop.
2. Go to **Dell.com/support**.
3. Enter the **Service Tag** or **Express Service Code** and click **Submit**.

   NOTE: To locate the Service Tag, click **Where is my Service Tag?**

   NOTE: If you cannot find your Service Tag, click **Detect My Product**. Proceed with the instructions on screen.

4. If you are unable to locate or find the Service Tag, click the Product Category of your tabletnotebookdesktop.
5. Choose the **Product Type** from the list.
6. Select your tabletnotebookdesktop model and the **Product Support** page of your tabletnotebookdesktop appears.
7. Click **Get drivers** and click **View All Drivers**.
   The Drivers and Downloads page opens.
8. On the Drivers and Downloads screen, under the **Operating System** drop-down list, select **BIOS**.
9. Identify the latest BIOS file and click **Download File**.

   You can also analyze which drivers need an update. To do this for your product, click **Analyze System for Updates** and follow the instructions on the screen.
10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.
    The **File Download** window appears.
11. Click **Save** to save the file on your tabletnotebookdesktop.
12. Click **Run** to install the updated BIOS settings on your tabletnotebookdesktop.

    Follow the instructions on the screen.

Next steps

NOTE: It is recommended not to update the BIOS version for more than 3 revisions. For example: If you want to update the BIOS from 1.0 to 7.0, then install version 4.0 first and then install version 7.0.

Updating your system BIOS using a USB flash drive

About this task

If the system cannot load into Windows, but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

NOTE: You will need to use a bootable USB flash drive. Please refer to the following article for further details How to Create a Bootable USB Flash Drive using Dell Diagnostic Deployment Package (DDDP)

Steps

1. Download the BIOS update .EXE file to another system.
2. Copy the file e.g. O9010A12.EXE onto the bootable USB flash drive.
3. Insert the USB flash drive into the system that requires the BIOS update.
4. Restart the system and press F12 when the Dell splash logo appears to display the One Time Boot Menu.
5. Using arrow keys, select **USB Storage Device** and click **Enter**.
6. The system will boot to a Diag C:\> prompt.
7. Run the file by typing the full filename, for example, O9010A12.exe and press **Enter**.
8. The BIOS Update Utility will load. Follow the instructions on screen.

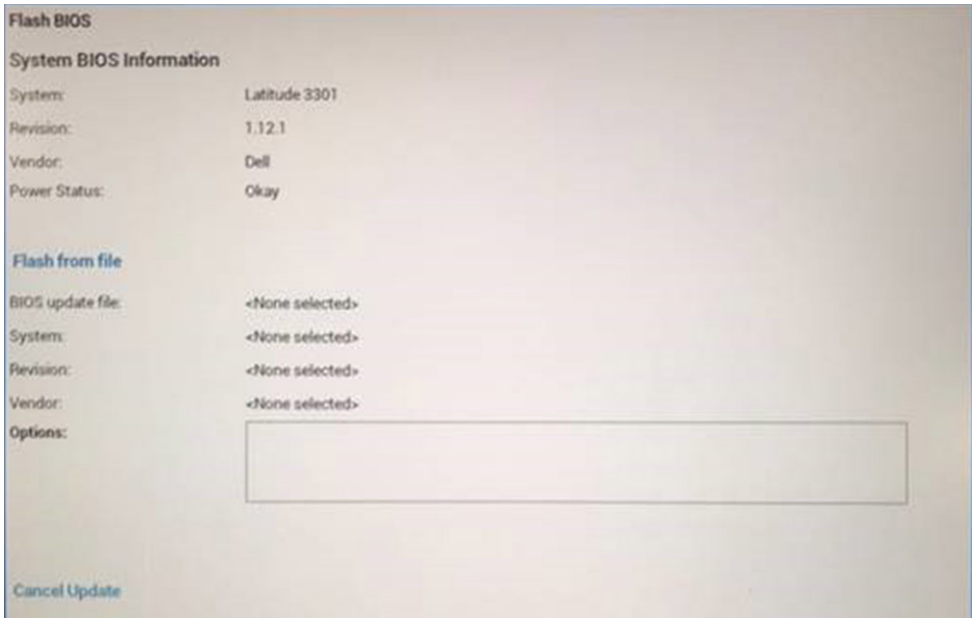


Figure 6. DOS BIOS Update Screen

System and setup password

Table 2. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

CAUTION: The password features provide a basic level of security for the data on your computer.

CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

About this task

To enter the system setup, press F2 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:

- A password can have up to 32 characters.
- The password can contain the numbers 0 through 9.
- Only lower case letters are valid, upper case letters are not allowed.
- Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press **Esc** and a message prompts you to save the changes.
5. Press **Y** to save the changes.
   The computer reboots.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

About this task

To enter the System Setup, press **F2** immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press **Enter**.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press **Enter** or **Tab**.
4. Select **Setup Password**, alter or delete the existing setup password and press **Enter** or **Tab**.

   NOTE: If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.

5. Press **Esc** and a message prompts you to save the changes.
6. Press **Y** to save the changes and exit from System Setup.
   The computer restarts.

4

Troubleshooting

Topics:

- Handling swollen rechargeable Li-ion batteries
- Enhanced Pre-boot System Assessment - eDiags2.0
- System-diagnostic lights
- Built-in self-test (BIST)
- LED Indicators and Characteristics
- Kickstand open status behavior
- Updating the BIOS using the USB drive in Windows
- Updating the BIOS in Windows
- Backup media and recovery options
- Wi-Fi power cycle
- Flea power release

Handling swollen rechargeable Li-ion batteries

Like most laptops, Dell laptops use Lithium-ion batteries. One type of Lithium-ion battery is the rechargeable Li-ion battery. Rechargeable Li-ion batteries have increased in popularity in recent years and have become standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to rechargeable Li-ion battery technology is the potential for swelling of the battery cells.

A swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing rechargeable Li-ion batteries are as follows:

- Exercise caution when handling rechargeable Li-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer turn on when the power button is pressed, the battery is fully discharged.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell product support at Dell Support Site for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from Dell Site or otherwise directly from Dell.

Rechargeable Li-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information about how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell Laptop Battery in the Knowledge Base Resource at Dell Support Site.

Enhanced Pre-boot System Assessment - eDiags2.0

The eDiags2.0 is a diagnostic utility available on the tablet. This utility includes a series of tests for a tablet's hardware. Customers can run these tests even if the computer lacks any media (hard drive, CD drive, etc.). If an eDiags2.0 -tested component fails, the system displays an error code and generates a beep code.

Features:

- Graphical User Interface.
- Automatic Default Operation- runs test on all devices, allowing a user to interrupt and select any device.
- Checks the Master Boot Record for readiness to boot into a full OS environment.
- Tablet panel test.
- Video card.
- Battery test.
- Charger test.
- Primary battery.
- Multiprocessor cache test.

Running the ePSA Diagnostic Utility

About this task

NOTE: The following steps can be used to run the ePSA diagnostic utility in DOS mode without using an external keyboard.

Steps

1. Power on the system.
2. Before the Dell Logo is displayed, immediately press the **Volume Up** button to get the **Boot Menu**.
3. Scroll down the **Diagnostics** and then press the **Volume Down** button to select.
4. The tablet will begin running the ePSA utility.

System-diagnostic lights

Power and battery-status light

The power and battery status light indicates the power and battery status of the computer. These are the power states:

Solid white: Power adapter is connected and the battery has more than 5% charge.

Amber: Computer is running on battery and the battery has less than 5% charge.

Off:

- Power adapter is connected, and the battery is fully charged.
- Computer is running on battery, and the battery has more than 5% charge.
- Computer is in sleep state, hibernation, or turned off.

The power and battery-status light may blink amber or white according to pre-defined "beep codes" indicating various failures.

For example, the power and battery-status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off, indicating no memory or RAM is detected.

The following table shows different power and battery-status light patterns and associated problems.

NOTE: The following diagnostic light codes and recommended solutions are intended for Dell service technicians to troubleshoot problems. You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

Table 3. Diagnostic-light LED codes

Diagnostic light codes (Amber,White)	Problem description	Recommended solutions
1,1	TPM detection failure	
1,2	Unrecoverable SPI Flash Failure	
2,1	Processor failure	Replace the system board.
2,2	System board: BIOS or ROM (Read-Only Memory) failure	Flash latest BIOS version. If problem persists, replace the system board.
2,3	No memory or RAM (Random-Access Memory) detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2,4	Memory or RAM (Random-Access Memory) failure	Reset and swap memory modules among the slots. If problem persists, replace the memory module.
2,5	Invalid memory installed	Reset and swap memory modules among the slots. If problem persists, replace the memory module.
2,6	System-board or chipset error	Flash latest BIOS version. If problem persists, replace the system board.
2,7	Display failure - SBIOS message	Replace display cable (EDP) if possible, otherwise replace the display assembly (LCD).
2,8	Display failure - EC detection of power rail failure	
3,1	Coin-cell battery failure	Reset the CMOS battery connection. If problem persists, replace the RTC battery.
3,2	PCI, video card/chip failure	Replace the system board.
3,3	Recovery image not found	Flash latest BIOS version. If problem persists, replace the system board.
3,4	Recovery image found but invalid	Flash latest BIOS version. If problem persists, replace the system board.
3,5	Power-rail failure	EC ran into power sequencing failure. If problem persists, replace the system board.
3,6	System BIOS Flash incomplete	Flash corruption detected by SBIOS. If problem persists, replace the system board.
3,7	Management Engine (ME) error	Timeout waiting on ME to reply to HECI message. If problem persists, replace the system board.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board built-in self-test diagnostics tool that improves the diagnostics accuracy of system board Embedded Controller (EC) failures.

NOTE: M-BIST can be manually initiated before Power On Self-Test (POST).

How to run M-BIST

NOTE: M-BIST must be initiated on the computer from a power-off state that is either connected to AC power or with a battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.

NOTE: If your computer is not connected to an external keyboard, press and hold the **volume down button + power button** in power-off state to invoke the LCD BIST test.

2. The battery indicator LED may exhibit two states:
   a. OFF: No fault was detected with the system board.
   b. AMBER: Amber indicates a problem with the system board.
3. If there is a failure with the system board, the battery status LED flashes one of the following error codes for 30 seconds:

Table 4. LED error codes

Blinking Pattern		Possible Problem
Amber	**White**	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Memory/RAM failure

4. If there is no failure with the system board, the LCD cycles through the solid color screens that are described in the LCD-BIST section for 30 seconds and then turn off.

LCD Built-in Self-Test (BIST)

Dell computers have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell computer or with the video card (GPU) and computer settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade, it is always a good practice to isolate the LCD (screen) by running the Built-In Self-Test (BIST).

How to invoke the LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold the **D** key and **Power on** the laptop to enter LCD built-in self-test (BIST) mode. Continue to hold the D key until the computer boots up.

NOTE: If your computer is not connected to an external keyboard, press and hold the **volume down button + power button** in power-off state to invoke the LCD BIST test.

5. The screen displays solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it displays the colors white, black, and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
8. At the end of the last solid color (red), the computer shuts down.

NOTE: Dell SupportAssist Preboot diagnostics upon launch initiates an LCD BIST first, expecting a user intervention to confirm functionality of the LCD.

LED Indicators and Characteristics

Battery Charge and Status LED

Table 5. Battery Charge and Status LED Indicator

Power Source	LED Behavior	System Power State	Battery Charge Level
AC Adapter	Off	S0 - S5	Fully Charged

Table 5. Battery Charge and Status LED Indicator (continued)

Power Source	LED Behavior	System Power State	Battery Charge Level
AC Adapter	Solid White	S0 - S5	< Fully Charged
Battery	Off	S0 - S5	11-100%
Battery	Solid Amber (590+/-3 nm)	S0 - S5	< 10%

- S0 (ON) - System is turned on.
- S4 (Hibernate) - The system consumes the least power compared to all other sleep states. The system is almost at an OFF state, expect for a trickle power. The context data is written to hard drive.
- S5 (OFF) - The system is in a shutdown state.

Kickstand open status behavior

Table 6. Kickstand open status behavior

	Operation Sequence	Power status changes				
	1- Kickstand	2 - Folio KB	S0	MS	S4	**G3/S5
1	Closed to Open	W/O Folio KB	System keeps opened	System resume	System resume	System resume
2	Open to Closed		System keeps opened	System resume	System off	System off
3	Closed	Folio KB closed -> opened (Action)	System keeps opened	System resume	System off	System off
4	Open		System keeps opened	System resume	System resume	System resume***
5	Closed to Open	Folio KB closed always	System keeps opened	System off	System off	System off

NOTE: *** If Folio is opened within 5sec of opening kickstand, it will transition to system open status. Otherwise, it will return back to system Suspend/off mode.

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, search the Knowledge Base Resource at Dell Support Site.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS in Windows

Steps

1. Go to Dell Support Site.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

   For more information about how to update the system BIOS, search in the Knowledge Base Resource at Dell Support Site.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering the Windows operating system on your Dell computer. For more information, see Dell Windows Backup Media and Recovery Options.

Wi-Fi power cycle

About this task

If your computer is unable to access the Internet due to Wi-Fi connectivity issues a Wi-Fi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a Wi-Fi power cycle:

NOTE: Some Internet Service Providers (ISPs) provide a modem or router combo device.

Steps

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

Flea power release

About this task

Flea power is the residual static electricity that remains on the computer even after it has been powered off and the battery has been removed. The following procedure provides the instructions on how to conduct flea power release:

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Press and hold the power button for 15 seconds to drain the flea power.

4. Connect the power adapter to your computer.
5. Turn on your computer.

5

Getting help

Topics:

- Contacting Dell

Contacting Dell

Prerequisites

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

About this task

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

Steps

1. Go to **Dell.com/support**.
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.