

Dell Latitude 7280

Owner's Manual



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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Working on your computer

Before working inside your computer

Use the following safety guidelines to help protect your computer from potential damage and to help 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.

⚠ WARNING: 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.

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

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

- 1 Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
- 2 Turn off your computer.
- 3 If the computer is connected to a docking device (docked), undock it.

⚠ CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

- 4 Disconnect all network cables from the computer.
- 5 Disconnect your computer and all attached devices from their electrical outlets.
- 6 Close the display and turn the computer upside-down on a flat work surface.

ⓘ NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.

- 7 Remove the base cover.
- 8 Remove the main battery.
- 9 Turn the computer top-side up.
- 10 Open the display.
- 11 Press and hold the power button for few seconds, to ground the system board.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.

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

12 Remove any installed ExpressCards or Smart Cards from the appropriate slots.

Safety instructions

Use the following safety guidelines to help protect your computer from potential damage and to help 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.

WARNING: 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.

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 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 computer.

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

After working inside your computer

After you complete any replacement procedure, ensure that you connect external devices, cards, and cables before turning on your computer.

CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

- 1 Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
- 2 Connect any telephone or network cables to your computer.

CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.

- 3 Replace the battery.
- 4 Connect your computer and all attached devices to their electrical outlets.
- 5 Turn on your computer.



Turning off your computer — Windows 10

 **CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

- 1 Click or tap .
- 2 Click or tap  and then click or tap **Shut down**.

 **NOTE:** Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

Removing and installing components

This section provides detailed information on how to remove or install the components from your computer.

Recommended tools

The procedures in this document require the following tools:

- Small flat blade screwdriver
- Phillips # 1 screwdriver
- Small plastic scribe
- Hex screwdriver

Subscriber Identification Module (SIM) card

Removing SIM card or SIM card tray

CAUTION: Removing the SIM card when the computer is on may cause data loss or damage the card. Ensure that your computer is turned off or the network connections are disabled.

- 1 Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray.
- 2 Use a scribe to pull the SIM card tray
- 3 If a SIM card is available, remove the SIM card from the SIM card tray.

Base cover

Removing base cover

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 To release the base cover:
 - a Loosen the M2.5 x 6.0 captive screws that secure the base cover to the computer [1].
 - b Use a plastic scribe to release the base cover from the edge and lift it from the computer [2].





3 Lift the base cover from the computer.



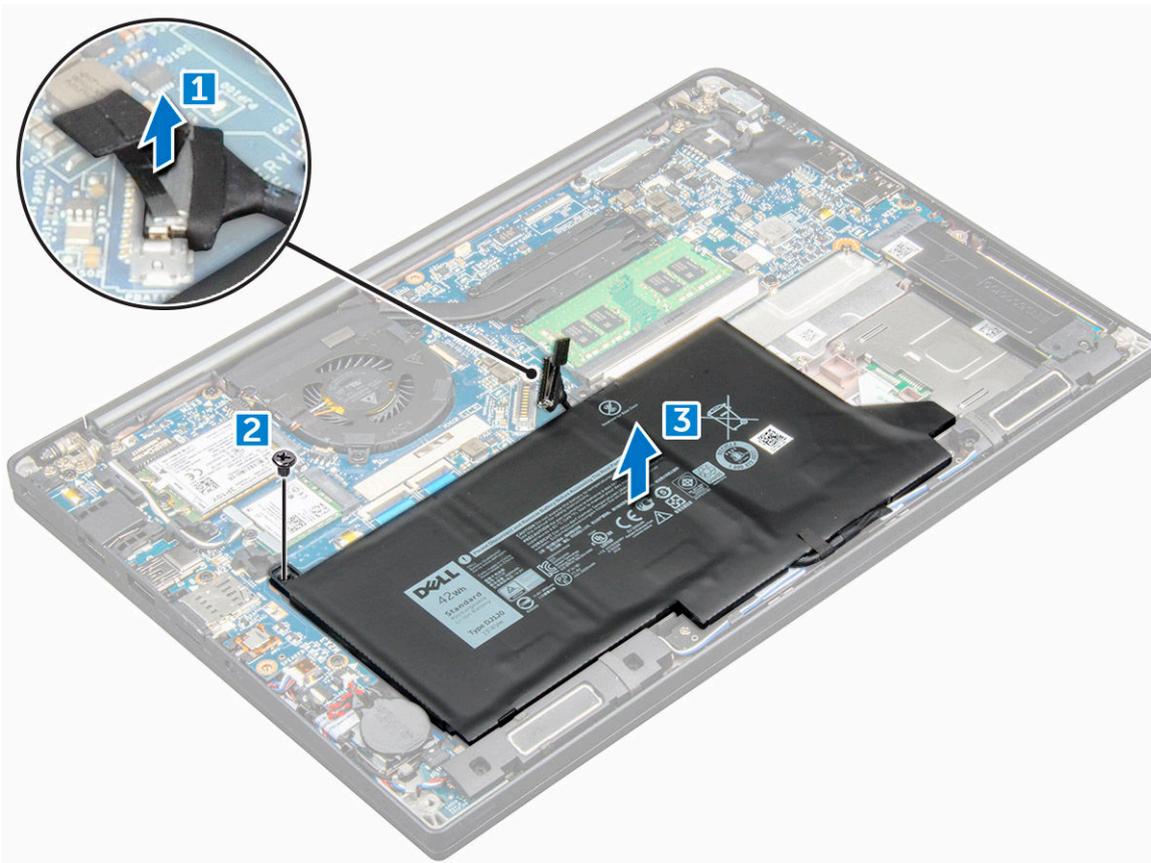
Installing base cover

- 1 Align the base cover tabs to the slots on the edges of the computer.
- 2 Press the edges of the cover until it clicks into place.
- 3 Tighten the M2.5 x 6.0 captive screws to secure the base cover to the computer.
- 4 Follow the procedure in [After working inside your computer](#).

Battery

Removing battery

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the [base cover](#).
- 3 To remove the battery:
 - a Disconnect the battery cable from the connector on the system board [1].
 - b Remove the M2.0 x 5.0 screws that secure the battery to the computer [2].
 - c Lift the battery from the computer [3].



Installing battery

- 1 Insert the battery into the slot on the computer.
- 2 Route the battery cable through the routing channel and connect the battery cable to the connector on the system board.



- 3 Tighten the M2.0 x 5.0 screws to secure the battery to the computer.
- 4 Install the [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

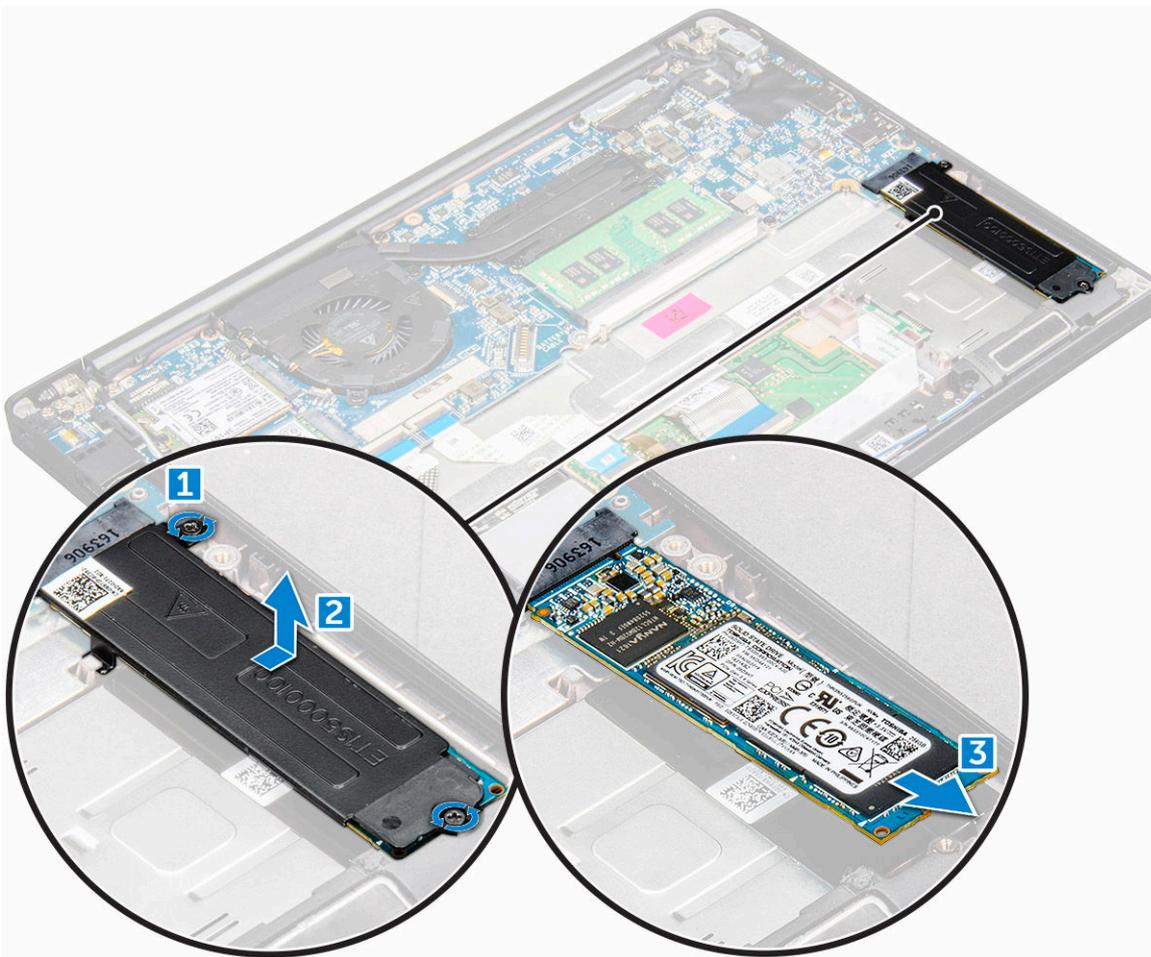
PCIe Solid State Drive (SSD)

Removing PCIe SSD card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- 3 To remove the PCIe SSD card:
 - a Loosen the M2.0x3.0 captive screws that secure the SSD bracket [1].
 - b Remove the SSD bracket [2].
 - c Remove the PCIe SSD card from the computer [3].



Installing PCIe SSD

- 1 Insert the PCIe SSD card into the connector.
- 2 Install the SSD bracket over the PCIe SSD card.
- 3 Tighten the M2.0x3.0 screws to secure it the SSD bracket.
- 4 Install the:
 - a battery

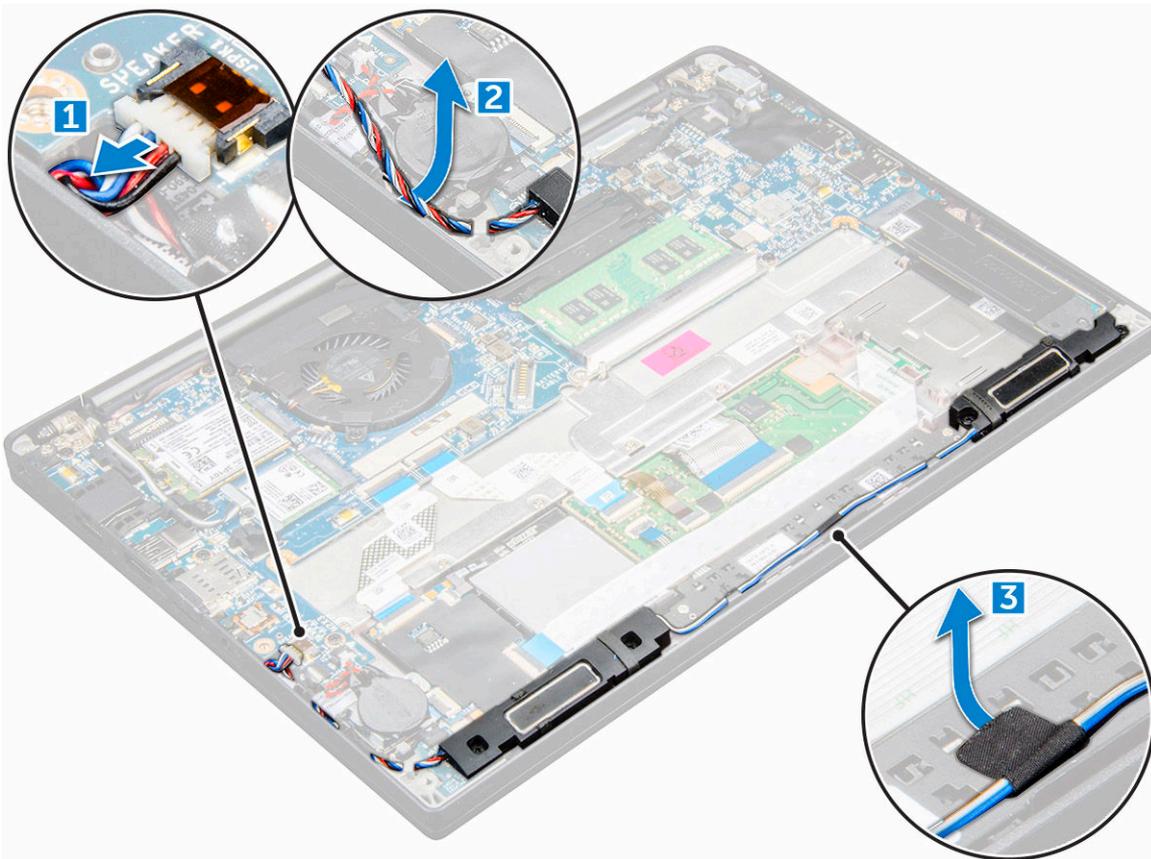
NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover
- 5 Follow the procedure in [After working inside your computer](#).

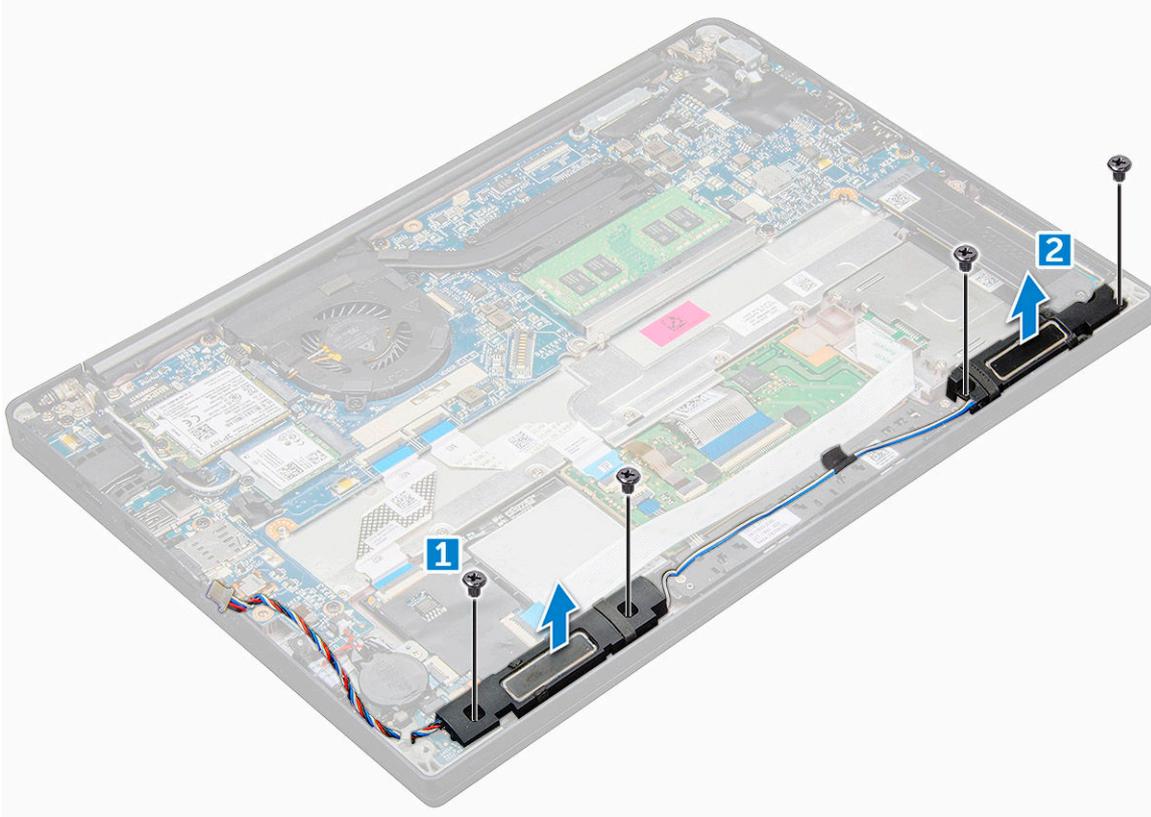
Speaker

Removing speaker module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
- 3 To release the speaker module:
 - a Disconnect the speaker cable from the connector on the system board [1].
 - b Un-route the speaker cable from the routing clips on the computer [2].
 - c Remove the tape that secures the speaker cables to the computer [3].



- 4 To remove the speaker module:
 - a Remove the M2.0x3.0 screws that secure the speaker module to the computer [1].
 - b Lift the speaker module from the computer [2].



Installing speaker module

- 1 Place the speaker module into the slots on the computer.
- 2 Tighten the M2.0x3.0 screws to secure the speaker to the computer.
- 3 Route the speaker cable through the retention clips on the computer.
- 4 Connect the speaker cable to the connector on the system board.
- 5 Install the:
 - a battery
 - b base cover
- 6 Follow the procedure in [After working inside your computer](#).

Coin cell battery

Removing the coin cell battery

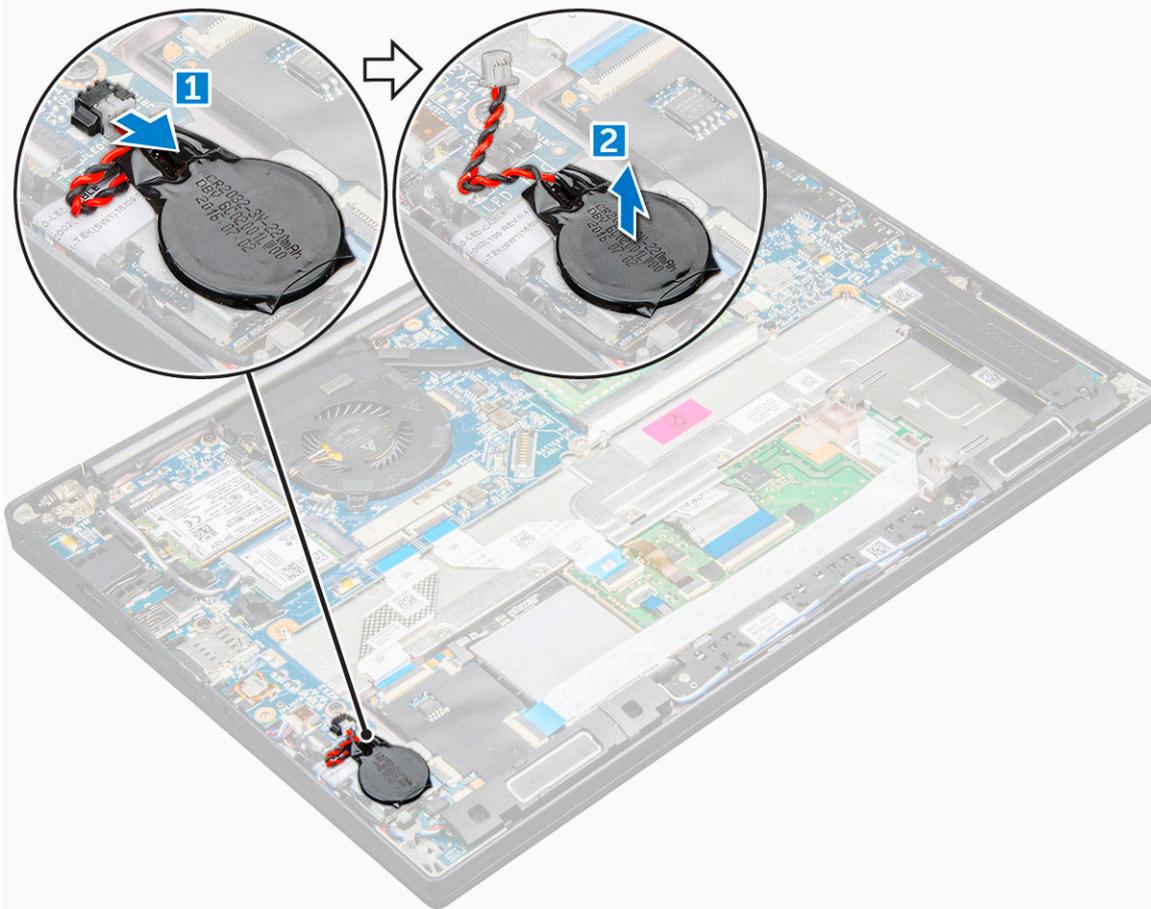
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the coin cell battery:
 - a Disconnect the coin cell battery cable from the connector on the system board [1].

NOTE: You must un-route the coin cell battery cable from the routing channel.

- b Lift the coin cell battery to release it from the adhesive [2].



Installing coin cell battery

- 1 Affix the coin cell battery on the slot inside the computer.
- 2 Route the coin cell battery cable through the routing channel before connecting the cable
- 3 Connect the coin cell battery cable to the connector on the system board.
- 4 Install the:
 - a [base cover](#)

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b [battery](#)
- 5 Follow the procedure in [After working inside your computer](#).

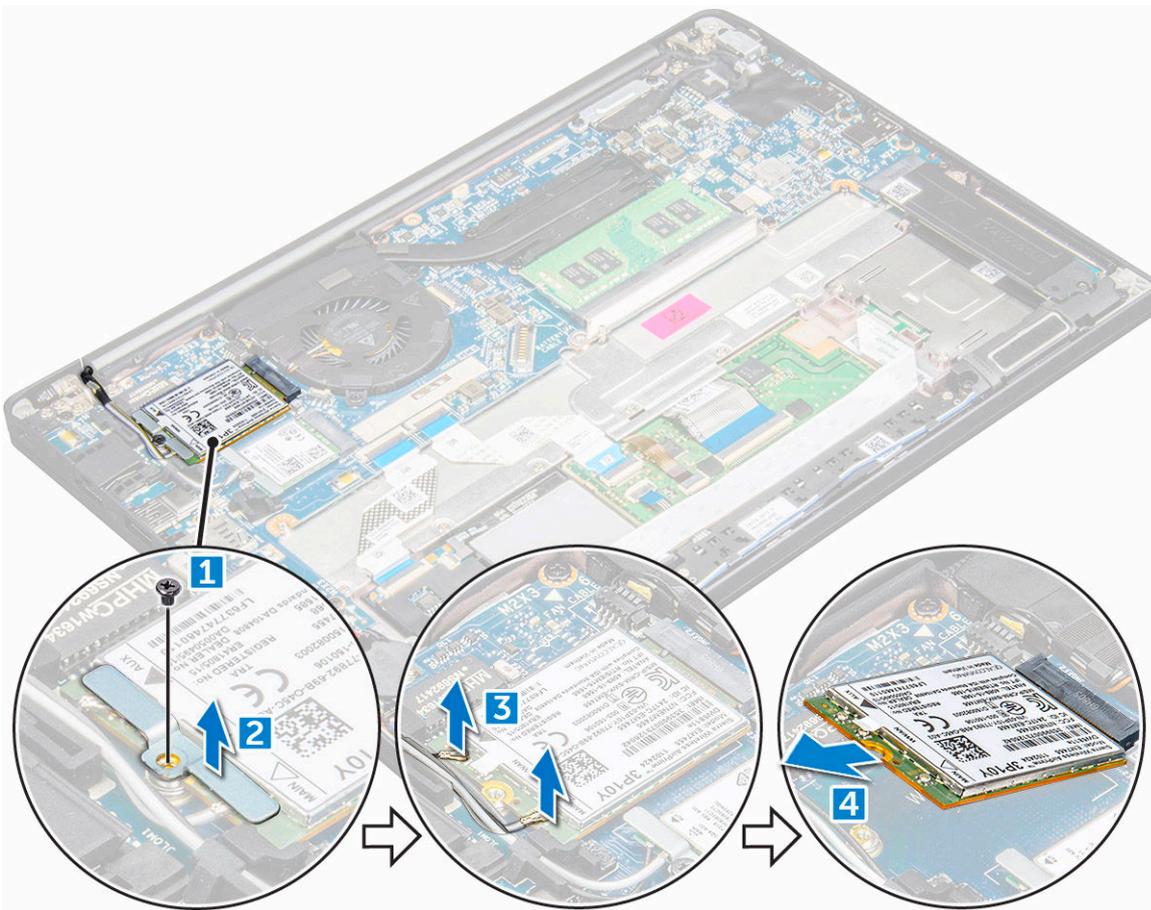
WWAN card

Removing WWAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the WWAN card:
 - a Remove the M2.0 x 3.0 screw that secures the metal bracket to the WWAN card [1].
 - b Lift the metal bracket that secures the WWAN card [2].
 - c Disconnect the WWAN cables from the connectors on the WWAN card [3].
 - d Lift the WWAN card from the computer [4].



Installing WWAN card

- 1 Insert the WWAN card into the connector on the system board.
- 2 Connect the WWAN cables to the connectors on the WWAN card.
- 3 Place the metal bracket and tighten the M2.0 x 3.0 screw to secure it to the computer.
- 4 Install the:

a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

b base cover

5 Follow the procedure in [After working inside your computer](#).

NOTE: The IMEI number can also be found on the WWAN card.

WLAN card

Removing WLAN card

1 Follow the procedure in [Before working inside your computer](#).

2 Remove the:

a base cover

b battery

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

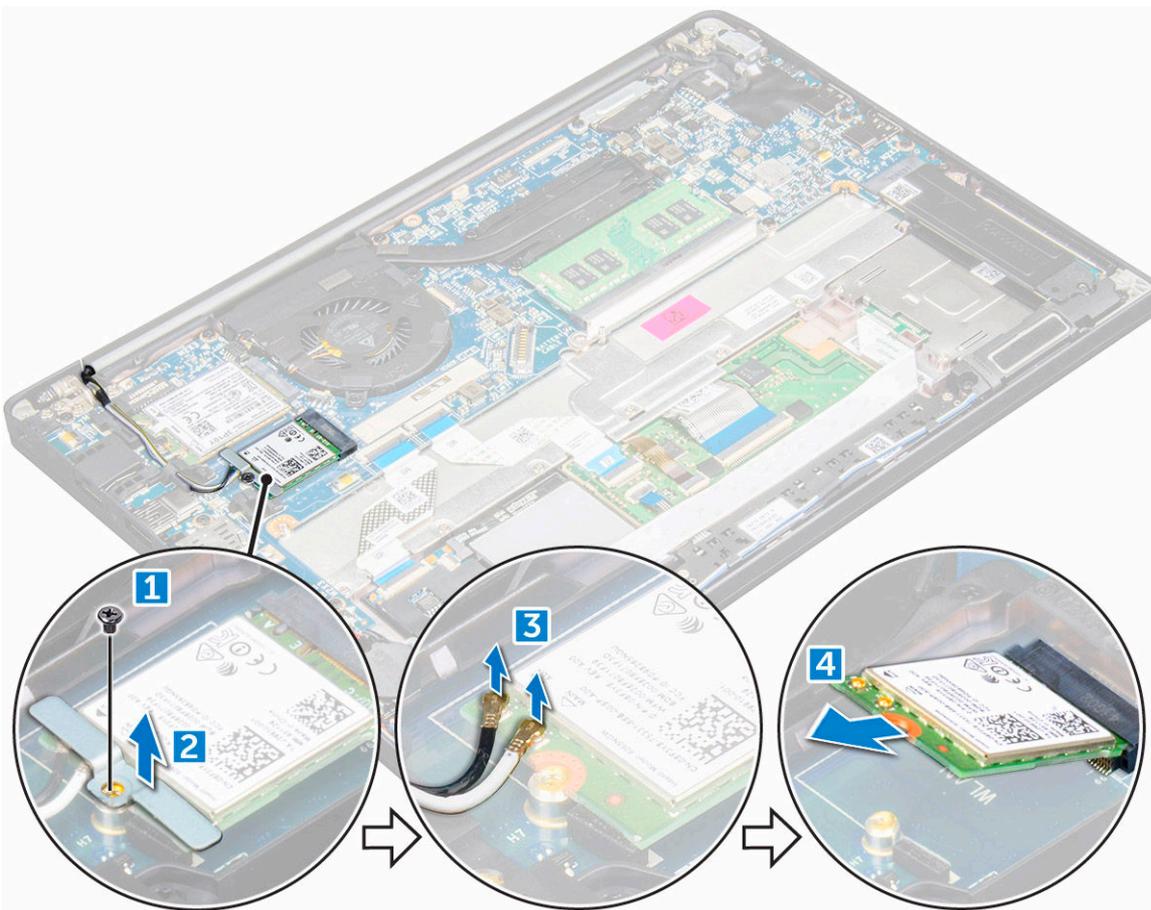
3 To remove the WLAN card:

a Remove the M2.0 x 3.0 screw that secures the metal bracket to the WLAN card [1].

b Lift the metal bracket [2].

c Disconnect the WLAN cables from the connectors on the WLAN card [3].

d Remove the WLAN card from the computer [4].



Installing WLAN card

- 1 Insert the WLAN card into the connector on the system board.
- 2 Connect the WLAN cables to the connectors on the WLAN card.
- 3 Place the metal bracket and tighten the M2.0 x 3.0 screw to secure it to the computer.
- 4 Install the:
 - a battery

 **NOTE:** If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover
- 5 Follow the procedure in [After working inside your computer](#).

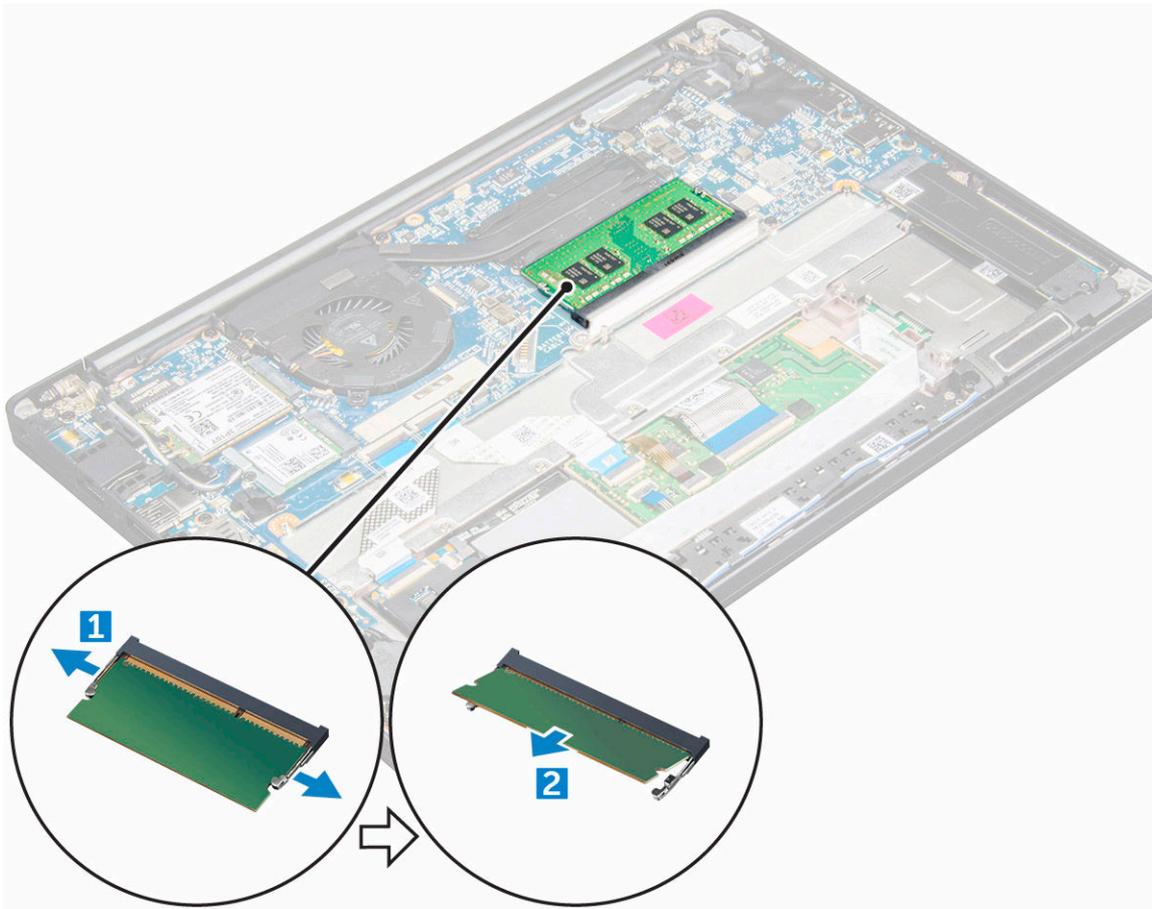
Memory module

Removing memory module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery

 **NOTE:** You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the memory module:
 - a Pull the clips securing the memory module until the module snaps-out [1].
 - b Remove the memory module from the connector on the system board [2].



Installing memory module

- 1 Insert the memory module into the connector until snaps in.
- 2 Install the:
 - a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover
- 3 Follow the procedures in [After working inside your computer](#).

Heat sink

Removing heat sink assembly

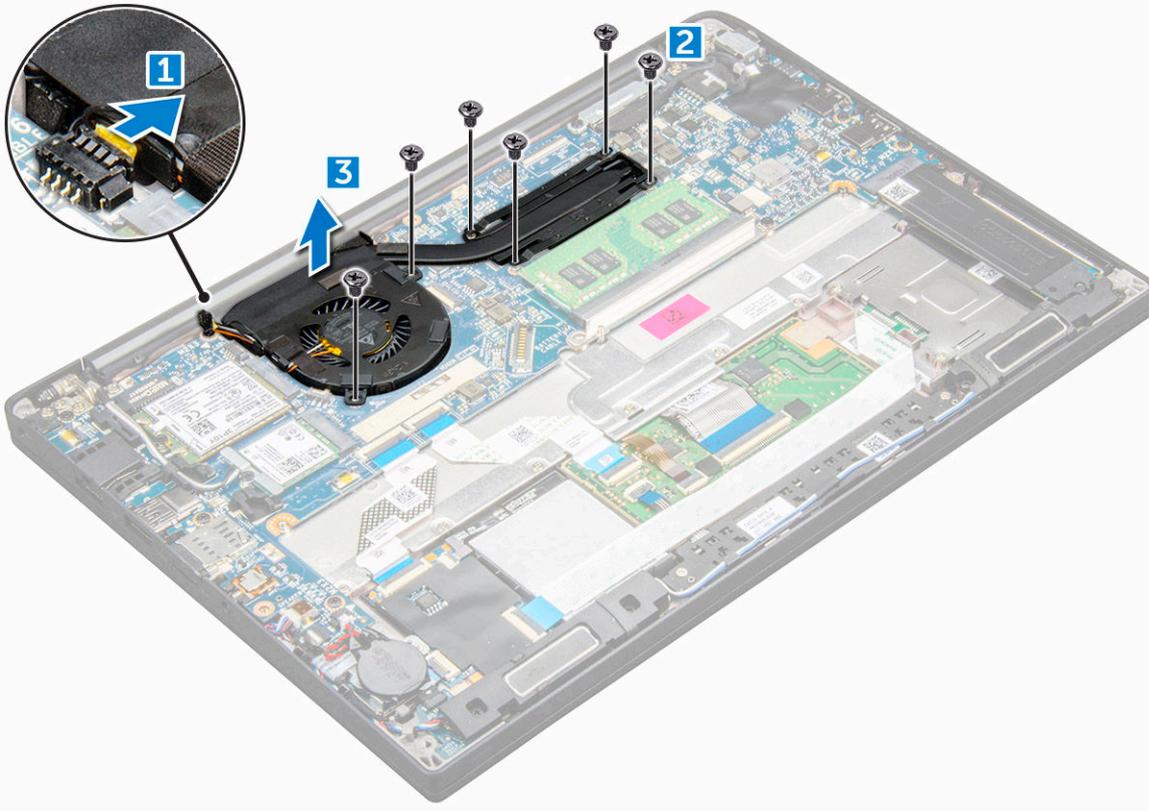
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the heat sink assembly:
 - a Disconnect the fan cable from the system board [1].



- b Remove the M2.0 x 3.0 screws that secure the fan to the system board.
- c Remove the M2.0 x 3.0 screws that secure the heat sink to the system board [2].
- d Lift the heat sink assembly from the system board.



Installing heat sink assembly

- 1 Align the heat sink assembly with screw holders on the system board.
- 2 Tighten the M2.0 x 3.0 screws to secure the heat sink to the system board.

NOTE: Tighten the screws on the system board in the order of the callout numbers [1, 2, 3, 4] as indicated on the heat sink.

- 3 Tighten the M2.0 x 3.0 screws to secure the fan to the system board.
- 4 Connect the fan cable to the connector on the system board.
- 5 Install the:

- a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover

- 6 Follow the procedure in [After working inside your computer](#).

Power connector port

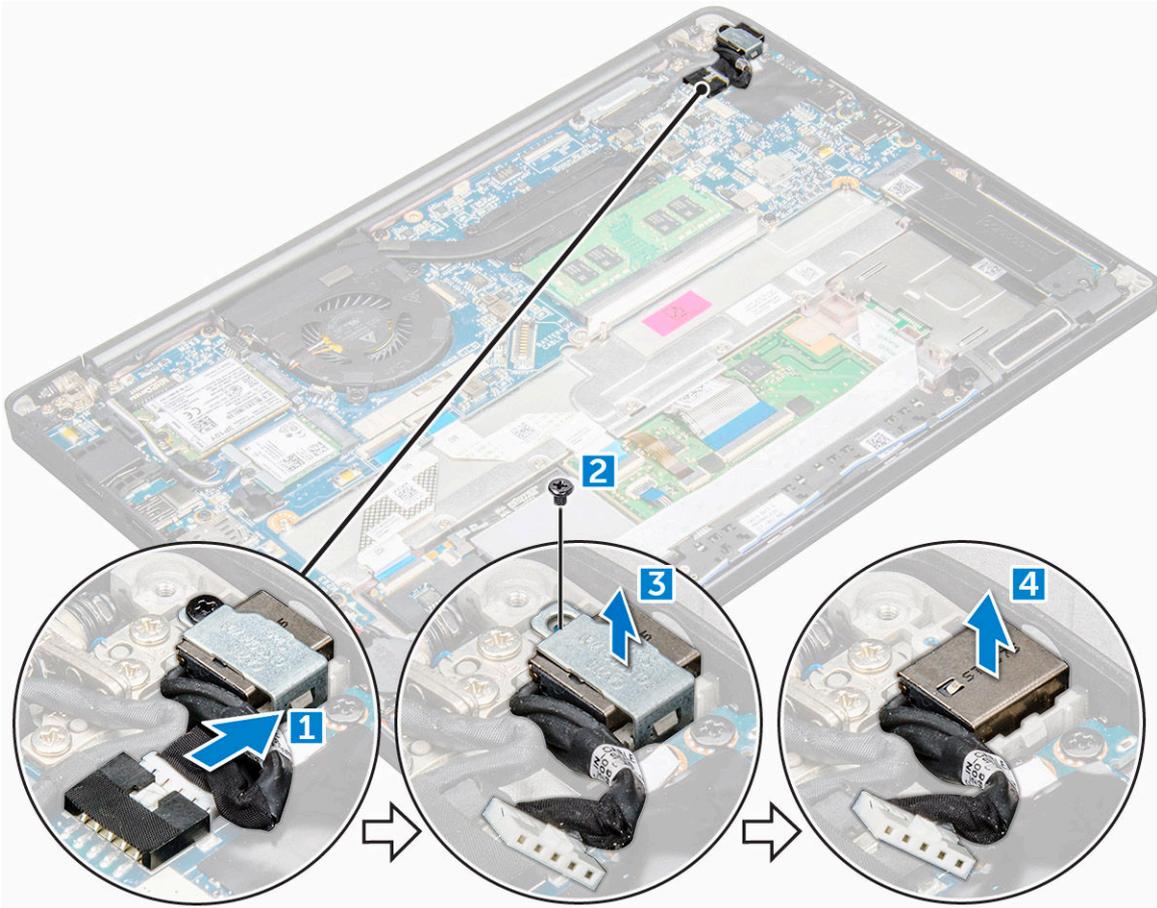
Removing power connector port

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:

- a base cover
- b battery

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the power connector port:
 - a Disconnect the power connector port cable from the system board [1].
 - b Remove the M2.0x3.0 screw to release the metal bracket on the power connector port [2].
 - c Lift the metal bracket from the computer [3].
 - d Remove the power connector port from the computer [4].



Installing power connector port

- 1 Install the power connector port into the slot on the computer.
- 2 Place the metal bracket on the power connector port.
- 3 Tighten the M2.0x3.0 screw to secure the power connector port to the computer.
- 4 Connect the power connector port cable to the connector on the system board.
- 5 Install the:
 - a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover

- 6 Follow the procedure in [After working inside your computer](#).



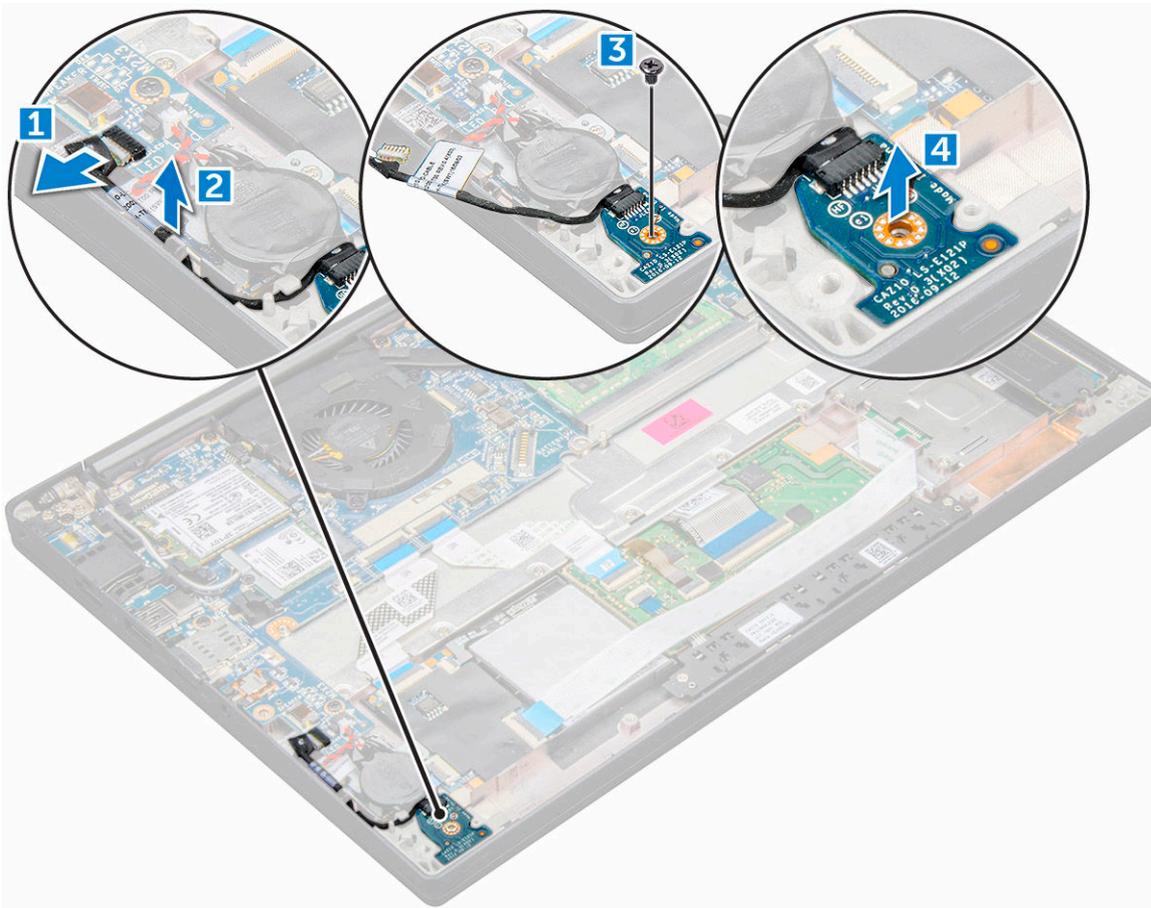
LED board

Removing LED board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)

NOTE: You need not remove the battery but instead disconnect the battery cable from the system board.

- 3 To remove the LED board:
 - a Disconnect the LED cable from the LED board [1].
 - b Unroute the LED cable from the routing channel [2].
 - c Remove the M2.0 x 2.5 screw that secures the LED board to the computer [3].
 - d Lift the LED board from the computer [4].



Installing LED board

- 1 Insert the LED board into the slot on the computer.
- 2 Tighten the M2.0 x 2.5 screw to secure the LED board.
- 3 Route the LED cable through the routing channel.
- 4 Connect the LED cable to the LED board.

- 5 Install the:
 - a battery

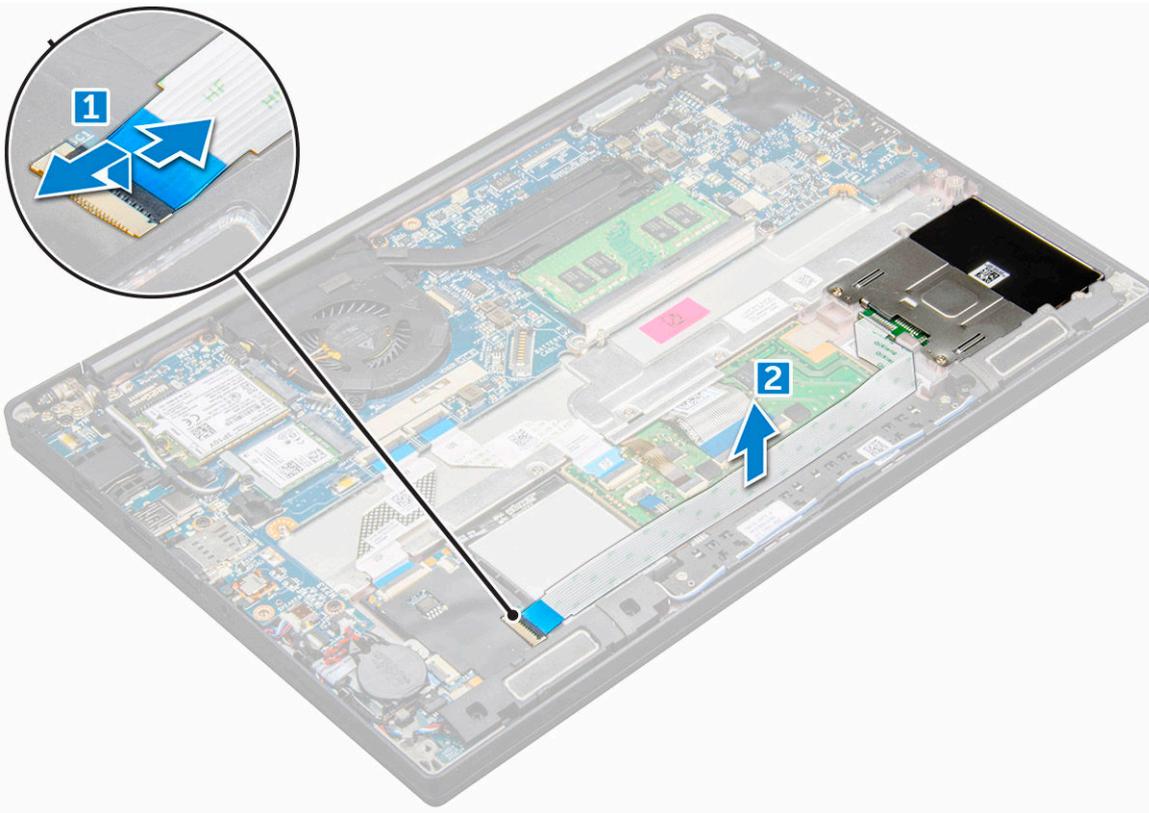
NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b battery
- 6 Follow the procedure in [After working inside your computer](#).

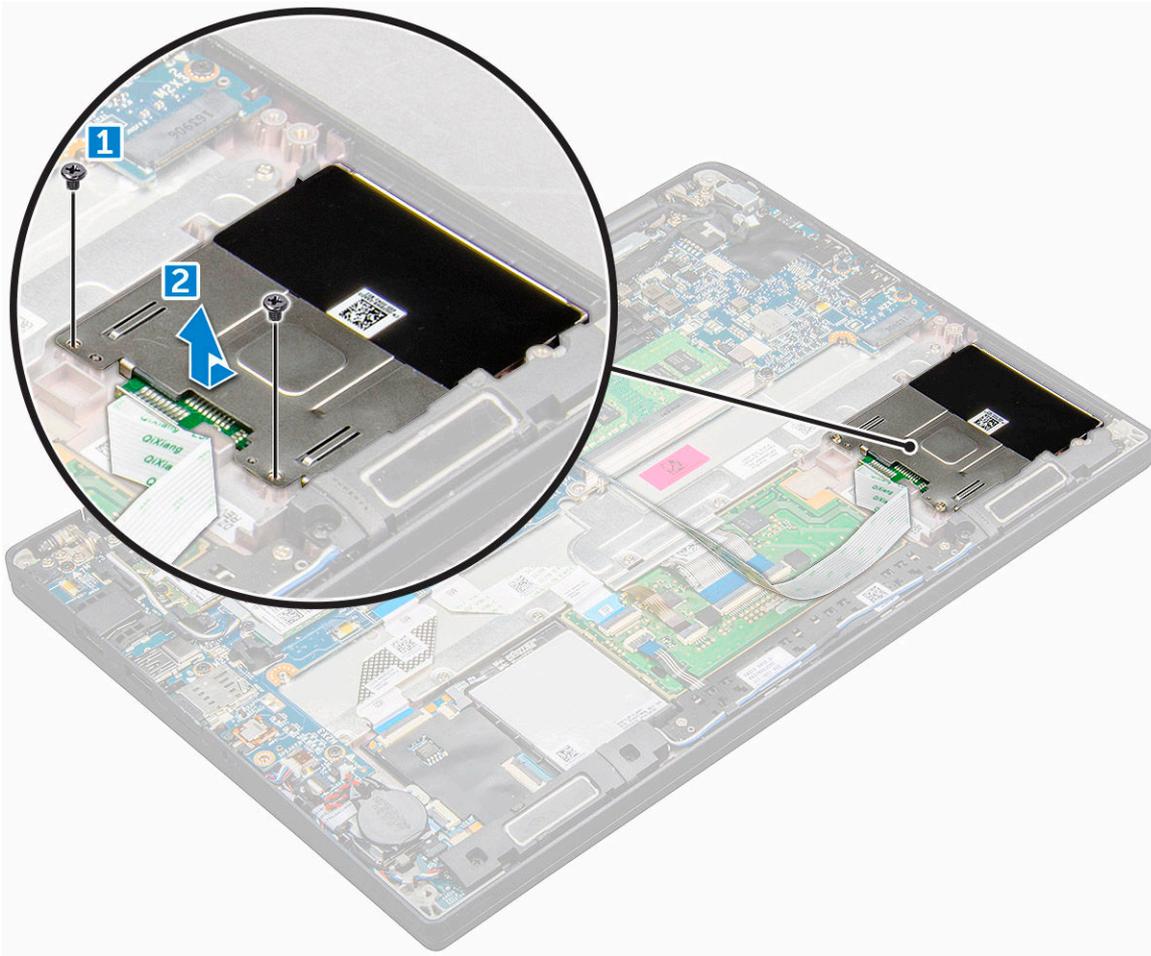
Smart card module

Removing smart card cage

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c PCIe SSD card
- 3 To disconnect the smart card cable:
 - a Disconnect the smart card cable [1].
 - b Lift the smart cable that is affixed to the computer [2].



- 4 To remove the smart card cage:
 - a Remove the M2.0 x 3.0 screws that secure the smart card cage to the computer [1].
 - b Slide and lift the smart card cage from the computer [2].



Installing smart card cage

- 1 Slide the smart card cage into the slot to align with the tabs on the computer.
- 2 Tighten the M2.0 x 3.0 screws to secure the smart card cage to the computer.
- 3 Affix the smart card cable and connect it to the connector on the computer .
- 4 Install the:
 - a [PCIe SSD card](#)
 - b [battery](#)

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- c [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

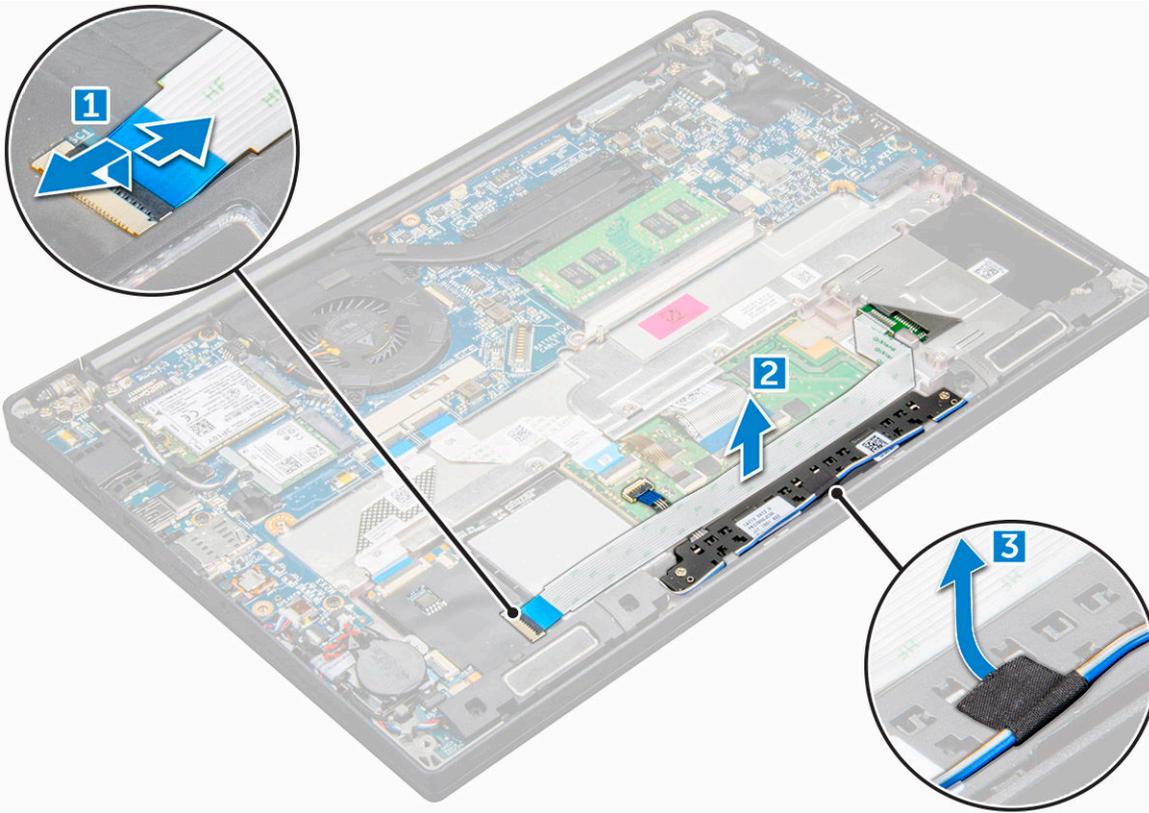
Touchpad panel

Removing touchpad panel

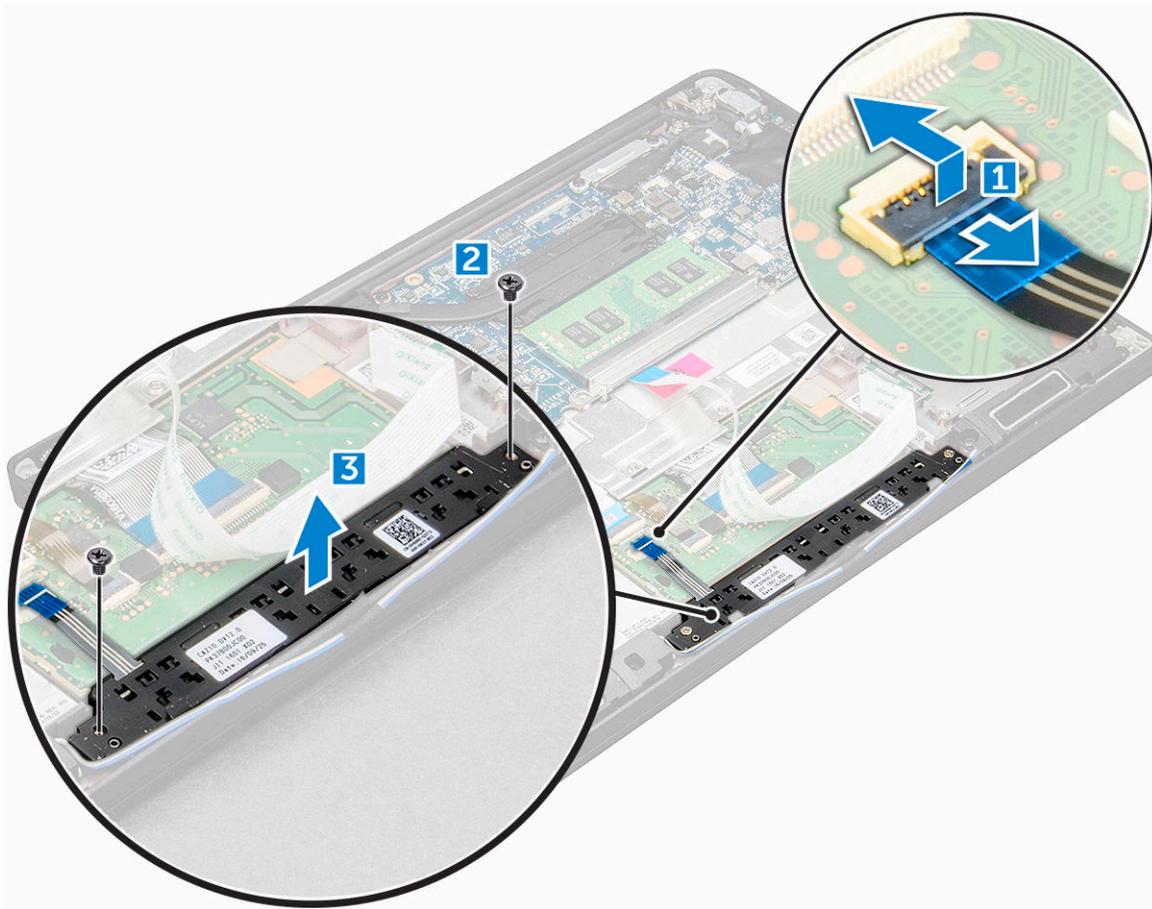
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [speaker](#)
 - b [base cover](#)

c battery

- 3 To disconnect the smart card cable:
 - a Disconnect the smart card cable [1].
 - b Lift the smart card cable that is affixed to the computer [2] to reveal the touchpad panel cable.



- 4 To remove the touchpad panel:
 - a Disconnect the touchpad panel cable from the touchpad board [1].
 - NOTE:** Touchpad panel cable is below the smart card cable.
 - b Remove M2.0 x 2.5 screws that secure the touchpad panel [2].
 - c Lift the touchpad panel from the computer [3].



Installing touchpad panel

- 1 Insert the touchpad panel into the slot to align the tabs with the grooves on the computer.
- 2 Tighten the M2.0 x 2.5 screws to secure the touchpad panel to the computer.
- 3 Connect the touchpad panel cable to the connector on the touchpad board.
- 4 Affix the smart card cable and connect it to the connector on the computer
- 5 Install the:
 - a battery

NOTE: If you have not removed the battery, you must connect the battery cable to the system board.

- b base cover
- 6 Follow the procedure in [After working inside your computer](#).

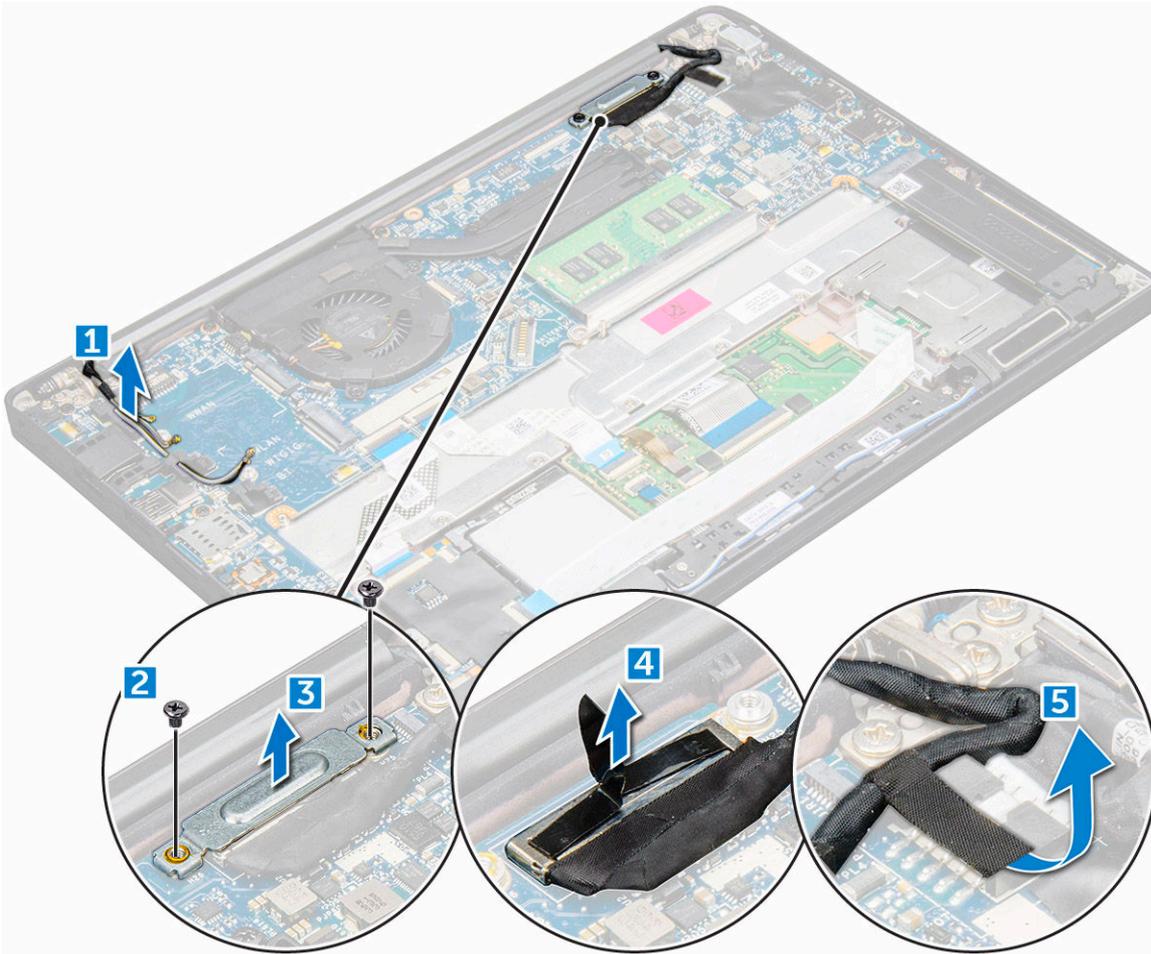
Display Assembly

Removing display assembly—with Touch

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery

- c WLAN card
- d WWAN card

- 3 To remove the display assembly:
 - a Un route the WLAN and WWAN cables from the routing channels [1].
 - b Remove the M2.0 x 5.0 screw that secures the eDP bracket [2].
 - c Lift the eDP bracket from the eDP cable [3].
 - d Lift the eDP cable to disconnect it from the connector on the system board [4].
 - e Un route the eDP cable from the routing channel [6].



- 4 To remove the display assembly:
 - a Place the computer on a table with the display facing down and the system board on the table.
 - b Remove the M2.5 x 4.0 screws that secure the display hinge to the display assembly [1].
 - c Lift the display assembly from the computer.



Installing display assembly—with touch

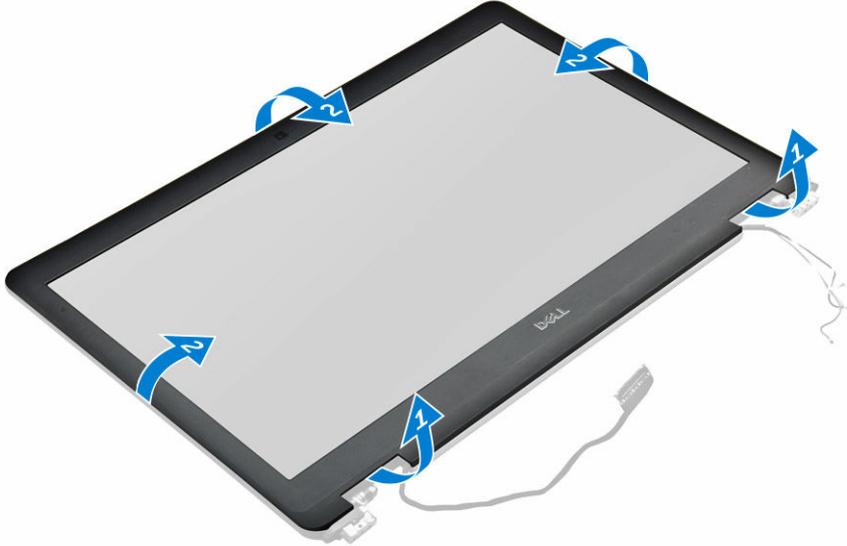
- 1 Install the display assembly to align it with the display hinge holders on the system.
- 2 Tighten the M2.5 x 4.0 screws to secure the display hinges on the system display assembly with the system unit.
- 3 Route the eDP cable through the routing channel.
- 4 Connect the eDP cable to the connector on the system board.
- 5 Install the eDP metal bracket on the eDP cable and tighten the M2.0 x 5.0 screws.
- 6 Route the WLAN and WWAN cables through the routing channels.
- 7 Install the:
 - a WLAN card
 - b WWAN card
 - c battery
 - d base cover
- 8 Follow the procedure in [After working inside your computer](#).

Removing display bezel

NOTE: The display bezel is available only for non-touch systems.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:

- a base cover
 - b battery
 - c WLAN card
 - d WWAN card
 - e display assembly
- 3 To remove the display bezel:
- a Use a plastic scribe to loosen the bottom edge of the display [1].
 - b Loosen the tabs on the edges of the display [2].



- 4 Remove the display bezel from the display assembly.

Installing display bezel

- 1 Place the display bezel on the display assembly.
- 2 Press the edges of the display bezel until it clicks onto the display assembly.
- 3 Install the:
 - a Display Assembly
 - b WLAN card
 - c WWAN card
 - d battery
 - e base cover
- 4 Follow the procedure in [After working inside your computer](#).

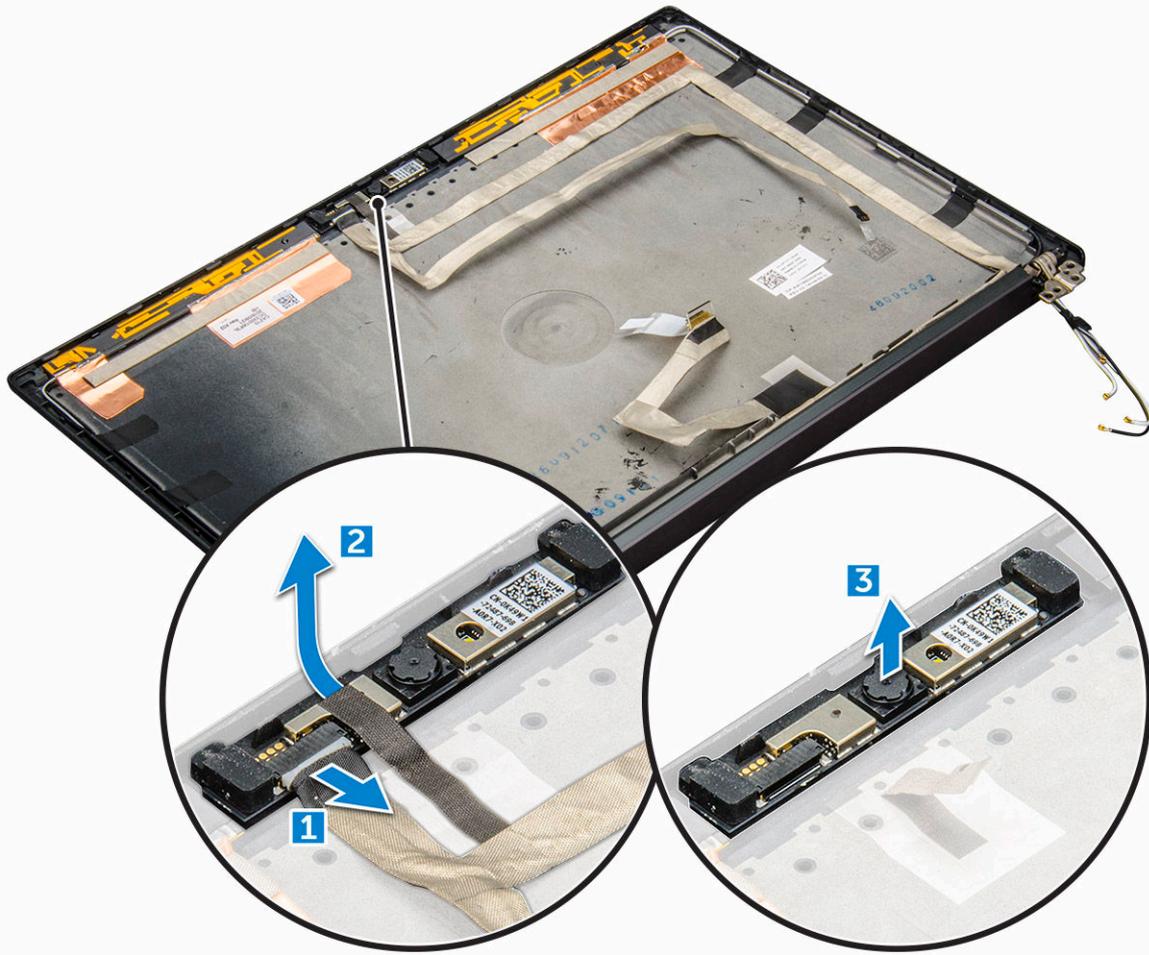
Camera

Removing camera

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a display assembly
 - b WLAN card
 - c WWAN card
 - d battery



- e [base cover](#)
- 3 To remove the camera module:
- a Disconnect the camera cable [1].
 - b Peel off the tape securing the camera module [2].
 - c Lift the camera from the display [3].



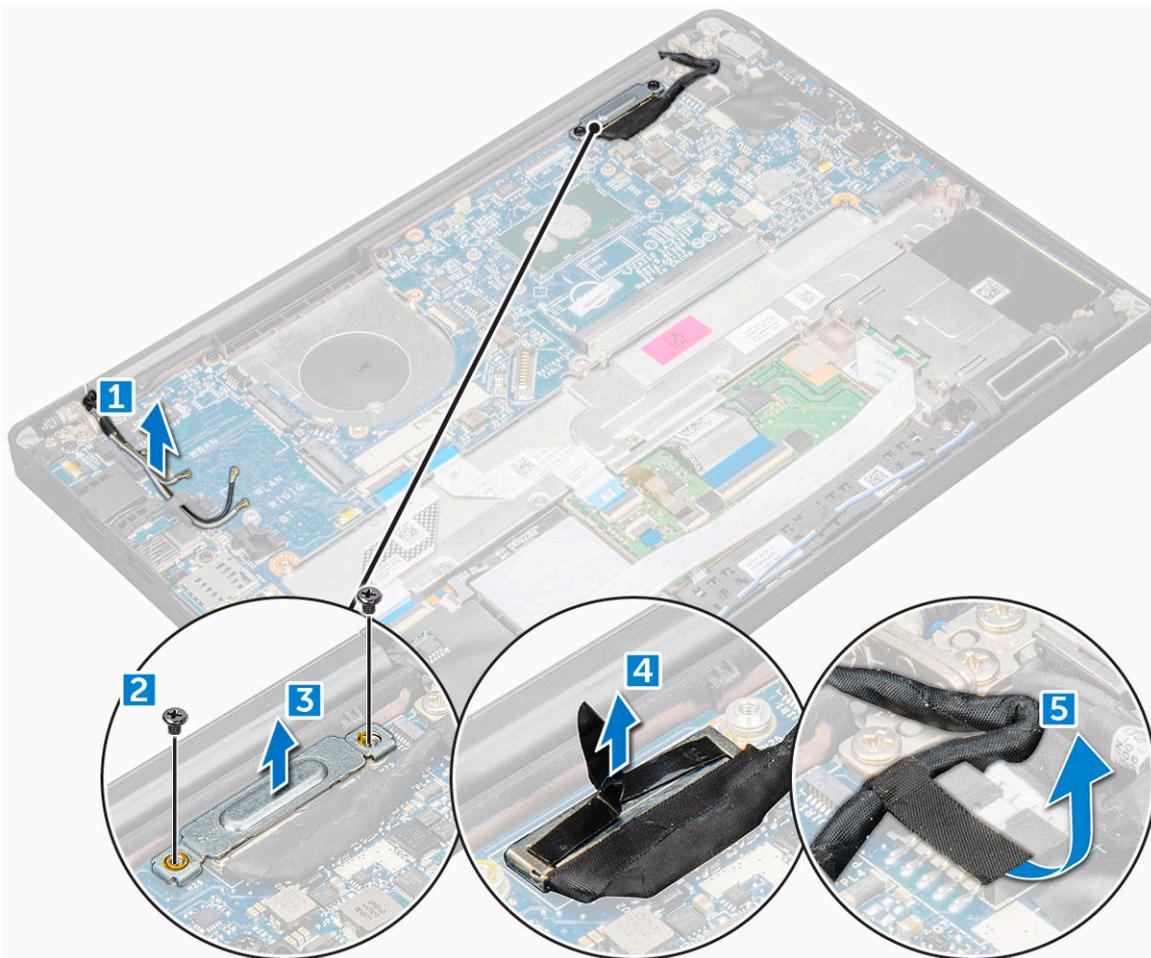
Installing camera

- 1 Insert the camera module into the slot on the display assembly.
- 2 Affix the tape to secure the camera module.
- 3 Connect the camera cable.
- 4 Install the:
 - a [display assembly](#)
 - b [WLAN card](#)
 - c [WWAN card](#)
 - d [battery](#)
 - e [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

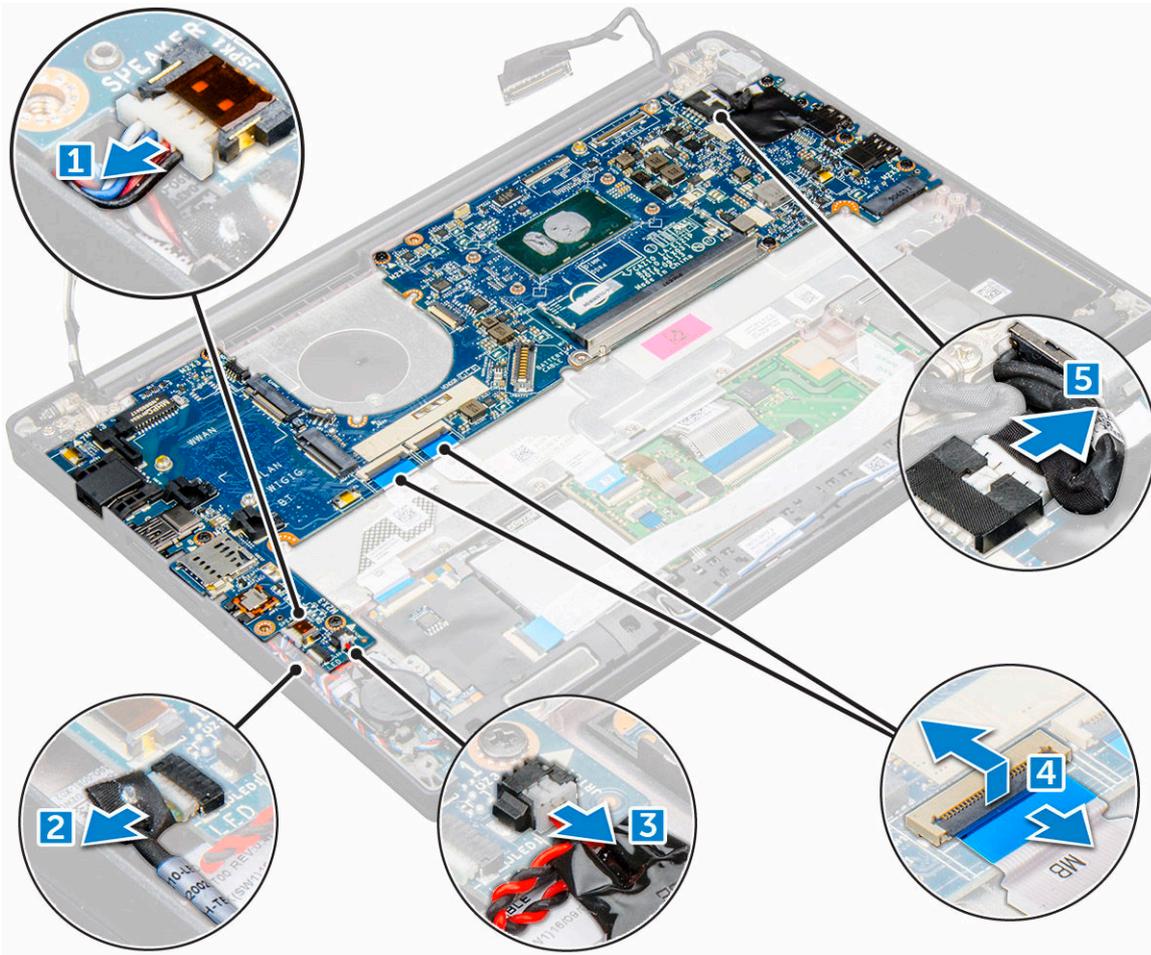
System board

Removing system board

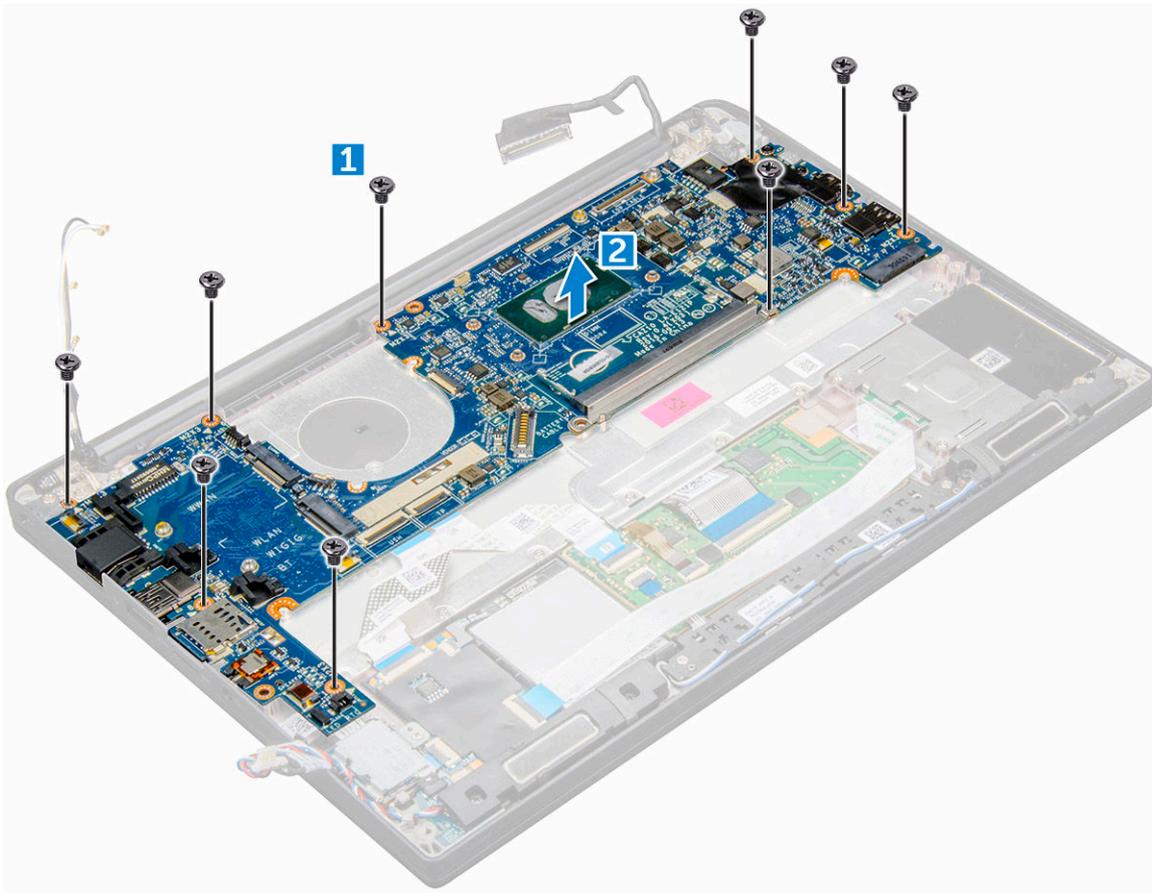
- 1 Follow the procedure in [Before working inside your computer](#).
- 1 If your computer is shipped with a WWAN card, then the removal of a SIM card tray is a requirement.
- 2 Remove the:
 - a [SIM card tray](#)
 - b [base cover](#)
 - c [battery](#)
 - d [memory module](#)
 - e [PCIe SSD](#)
 - f [WLAN card](#)
 - g [WWAN card](#)
 - h [heat sink assembly](#)
 - i [coin cell battery](#)
- 3 To disconnect the eDP cable:
 - a Un route the WLAN and WWAN cables from the routing channels [1].
 - b Remove the M2.0 x 3.0 screw that secures the eDP cable [2].
 - c Remove the eDP cable bracket [3].
 - d Disconnect the eDP cable from the system board [4].
 - e Lift the tape that secures the eDP cable to the system board [5].



- 4 To disconnect the cables:
 - a Speaker cable [1]
 - b coin cell battery cable [2]
 - c LED board cable [3]
 - d touchpad cable and USH board cable [4]
 - e power connector port [5]



- 5 To remove the system board:
 - a Disconnect the M2.0x3.0 screws that secure the system board to computer.
 - b Lift the system board away from the computer.



Installing system board

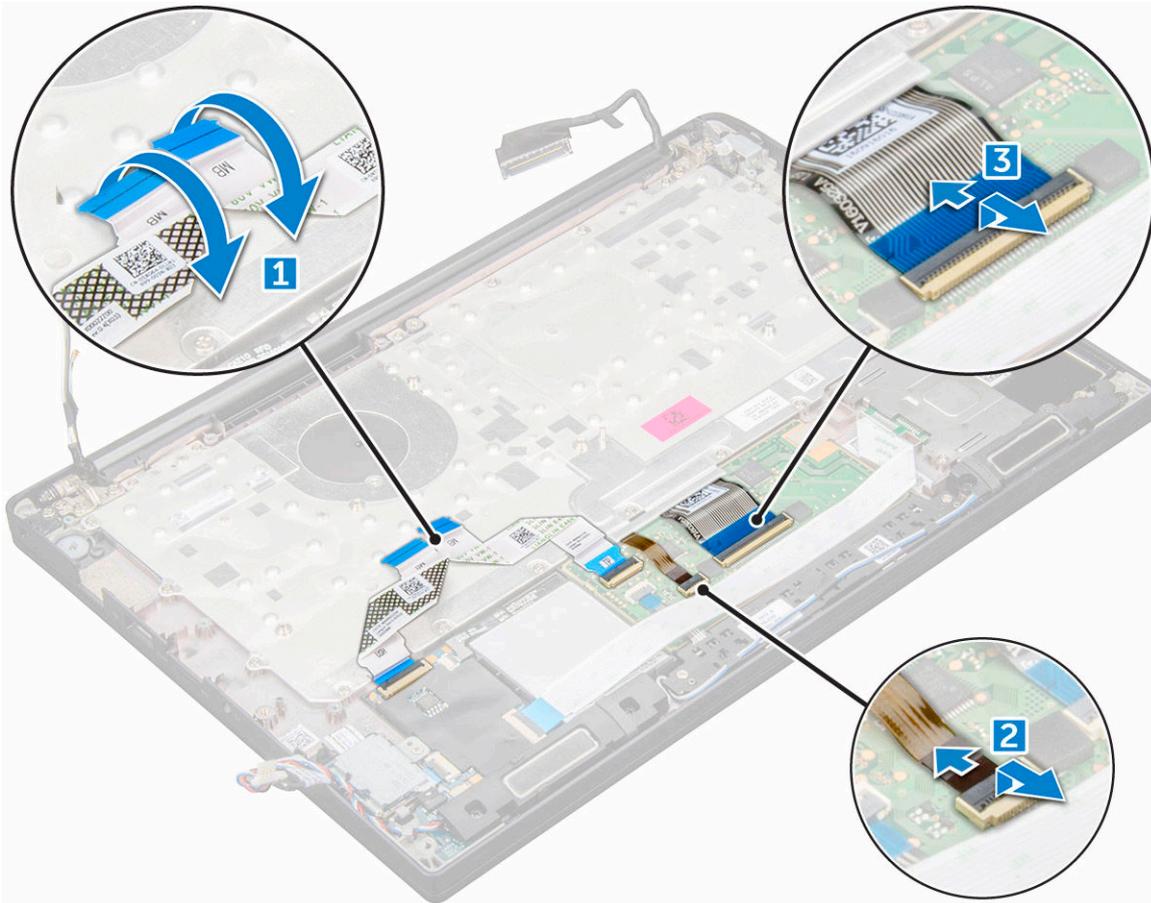
- 1 Align the system board with the screw holders on the computer.
- 2 Tighten the M2.0 x 5.0 screws to secure the system board to the computer.
- 3 Connect the speaker, power connector, LED board, touchpad, and system board cables to the connectors on the system board:
- 4 Connect the eDP cable to the connector on the system board.
- 5 Place the metal bracket over the eDP cable and tighten the M2.0 x 3.0 screw to secure it.
- 6 Remove the metal bracket from the memory module connectors of the system board that was removed.
- 7 Place the metal bracket over the memory module connectors and tighten the M2.0 x 3.0 screws to secure it to the computer.
- 1 **NOTE:** If your computer has a WWAN card, then SIM card tray installation is a requirement.
- 8 Install the:
 - a coin cell battery
 - b heat sink
 - c WLAN card
 - d WWAN card
 - e SSD card
 - f memory module
 - g battery
 - h battery
 - i base cover
- 9 Follow the procedure in [After working inside your computer](#).

Keyboard

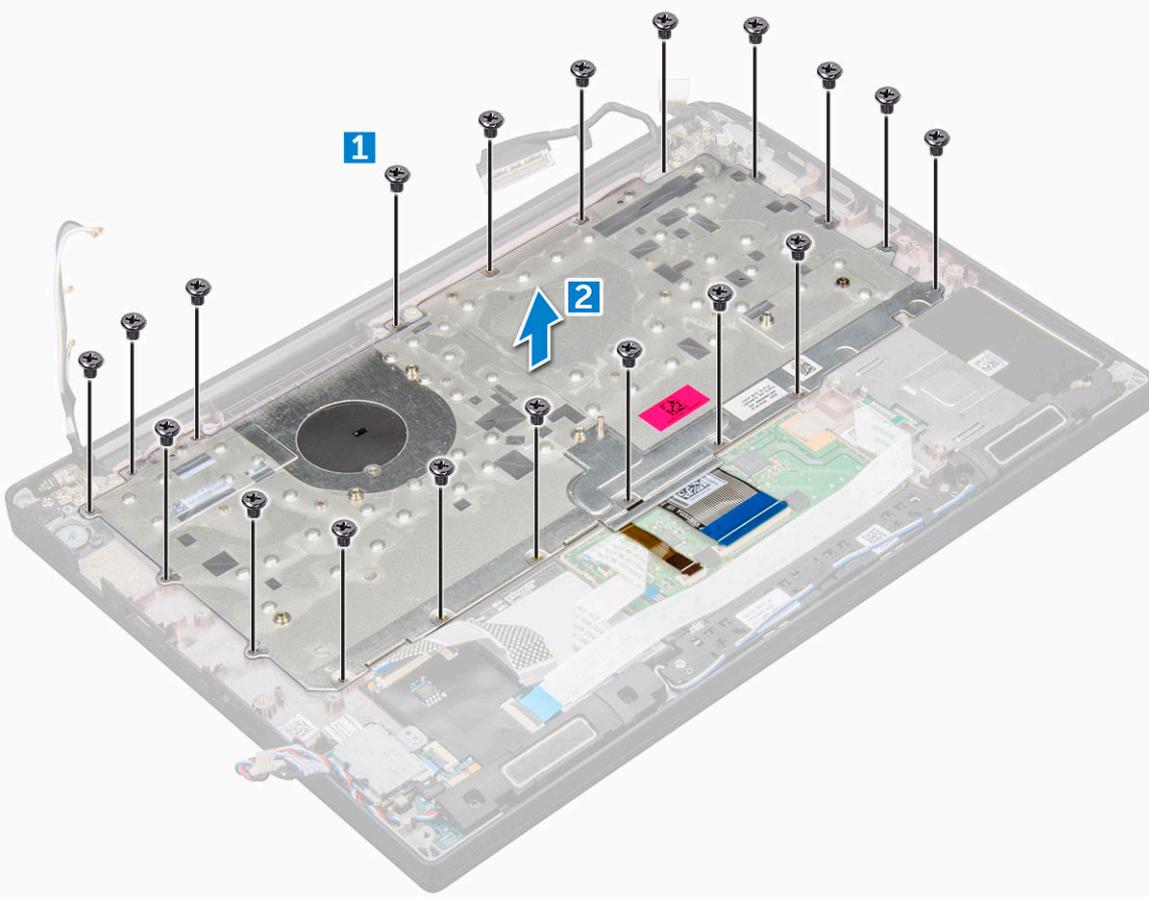
Removing keyboard assembly

① **NOTE:** The keyboard and the keyboard tray together are called the keyboard assembly.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove:
 - a [base cover](#)
 - b [battery](#)
 - c [memory module](#)
 - d [PCIe SSD](#)
 - e [WLAN card](#)
 - f [WWAN card](#)
 - g [power connector port](#)
 - h [heat sink assembly](#)
 - i [coin cell battery](#)
 - j [LED board](#)
 - k [speaker](#)
 - l [touchpad panel](#)
 - m [smart card cage](#)
 - n [display assembly](#)
 - o [system board](#)
- 3 Disconnect the cables:
 - a Touchpad and USH board cables [1]
 - b Keyboard cables [2,3]



- 4 To remove the keyboard:
 - a Remove the M2.0 x 2.5 screws that secure the keyboard [1].
 - b Lift the keyboard from the chassis [2].



Removing keyboard from keyboard tray

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the [keyboard](#)
- 3 Remove the M2.0 x 2.0 screws that secure the keyboard to the keyboard assembly [1].
- 4 Lift the keyboard away from the keyboard tray [2].



Installing keyboard to keyboard tray

- 1 Align the keyboard with the screw holders on the keyboard tray.
- 2 Tighten the M2.0 x 2.0 screws to secure the keyboard to the keyboard tray.
- 3 Install the [keyboard](#).

Installing keyboard assembly

NOTE: The keyboard and the keyboard tray together are called the keyboard assembly.

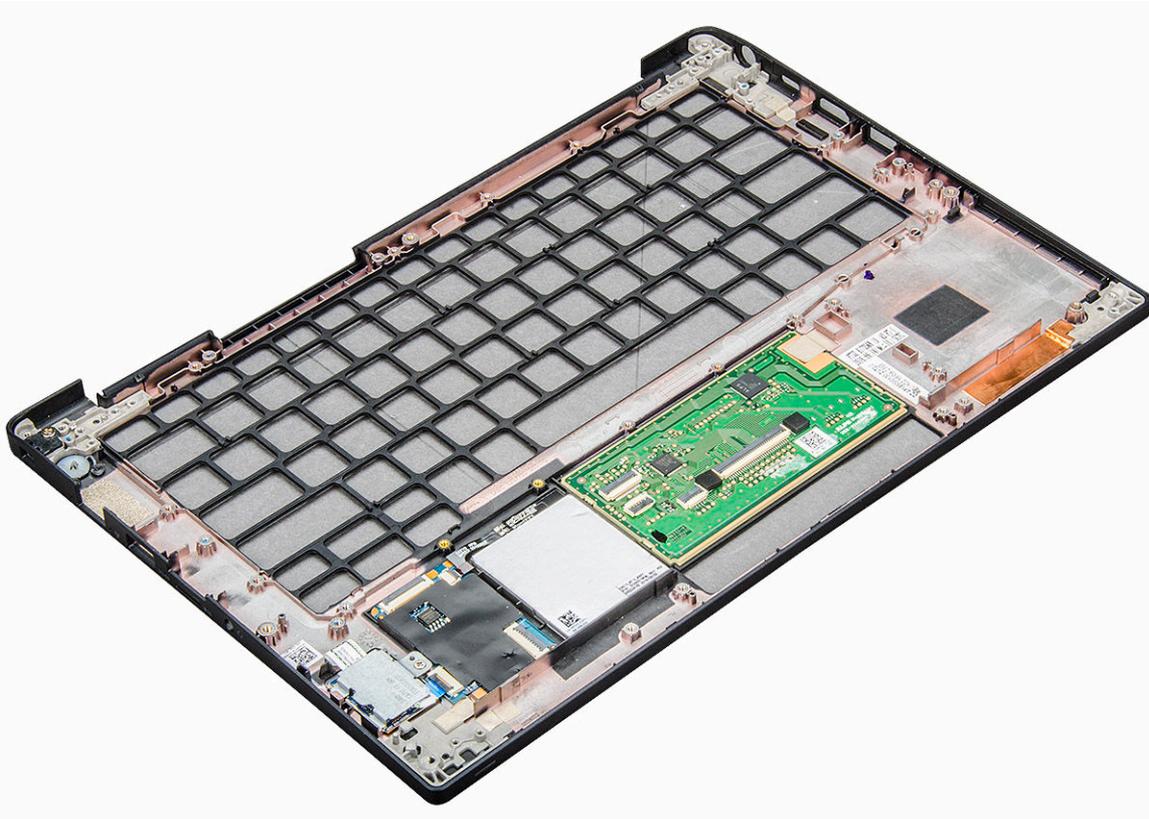
- 1 Align the keyboard assembly with the screw holders on the computer.
- 2 Tighten the M2.0 x 2.5 screws that secure the keyboard to the chassis.
- 3 Connect the keyboard cables to the connectors on the touchpad board.
- 4 Install the:
 - a [system board](#)
 - b [display assembly](#)
 - c [smart card](#)
 - d [touchpad panel](#)
 - e [speaker](#)
 - f [LED board](#)
 - g [coin cell battery](#)
 - h [heat sink](#)
 - i [power connector port](#)
 - j [WLAN card](#)
 - k [WWAN card](#)
 - l [SSD card](#)
 - m [memory module](#)
 - n [battery](#)
 - o [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

Palm rest

Replacing palmrest

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [memory module](#)
 - d [PCIe SSD](#)
 - e [WLAN card](#)
 - f [WWAN card](#)
 - g [power connector port](#)
 - h [heat sink assembly](#)
 - i [coin cell battery](#)
 - j [LED board](#)
 - k [speaker](#)
 - l [touchpad panel](#)

- m smart card cage
- n display assembly
- o system board
- p keyboard



The component you are left with is the palmrest.

- 3 Replace the palmrest.
- 4 Install the:
 - a keyboard
 - b system board
 - c display assembly
 - d smart card cage
 - e touchpad panel
 - f speaker
 - g WLAN card
 - h coin cell battery
 - i heatsink
 - j power connector port
 - k WLAN card
 - l WWAN card
 - m PCIe SSD
 - n memory
 - o battery
 - p base cover
- 5 Follow the procedure in [After working inside your computer](#).



Technical Specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

Topics:

- [Processor specifications](#)
- [System specifications](#)
- [Memory specifications](#)
- [Video specifications](#)
- [Audio specifications](#)
- [Battery specifications](#)
- [AC adapter specifications](#)
- [Port and connector specifications](#)
- [Communication specifications](#)
- [Camera specifications](#)
- [Touchpad specifications](#)
- [Display specifications](#)
- [Physical specifications](#)
- [Environmental specifications](#)

Processor specifications

| Feature | Specification |
|---------|--|
| Types | 7th generation Intel Core i3 / i5 / i7 |

System specifications

| Feature | Specification |
|------------------------|-----------------------------|
| Chipset | Integrated in the processor |
| DRAM bus width | 64-bit |
| Flash EPROM | SPI 128 Mbits |
| PCIe bus | 100 MHz |
| External Bus Frequency | DMI 3.0—8GT/s |

Memory specifications

| Feature | Specification |
|------------------|---------------------|
| Memory connector | One SoDIMM slots |
| Memory capacity | 4 GB and 8 GB |
| Memory type | DDR4 SDRAM—2133 MHz |
| Minimum memory | 4 GB |
| Maximum memory | 16 GB |

Video specifications

| Feature | Specification |
|--------------------------|---|
| Type | Integrated on system board |
| UMA controller | Intel Integrated HD Graphics 620 |
| External display support | <ul style="list-style-type: none">· On system – eDP (internal display), HDMI· Optional Type-C port – VGA, DisplayPort 1.2, DVI |

 **NOTE: Supports one VGA, DisplayPort, HDMI through the Docking station.**

Audio specifications

| Feature | Specification |
|----------------------------|---|
| Types | Four-channel high-definition audio |
| Controller | Realtek ALC3246 |
| Stereo conversion | 24-bit—analog-to-digital and digital-to-analog |
| Internal interface | High-definition audio |
| External interface | Microphone-in, stereo headphones, and headset combo connector |
| Speakers | Two |
| Internal speaker amplifier | 2 W (RMS) per channel |
| Volume controls | Hot keys |

Battery specifications

| Feature | Specification |
|----------------|---|
| Type | <ul style="list-style-type: none">· 3-cell Lithium Prismatic battery with ExpressCharge· 4-cell Lithium Prismatic battery with ExpressCharge |
| 3-cell: | |
| Length | 200.5 mm (7.89 inches) |



| Feature | Specification |
|--------------------------|---|
| Width | 95.9 mm (3.78 inches) |
| Height | 5.7 mm (0.22 inch) |
| Weight | 185.0 g (0.41 lb) |
| Voltage | 11.4 VDC |
| 4-cell: | |
| Length | 238 mm (9.37 inches) |
| Width | 95.9 mm (3.78 inch) |
| Height | 5.7 mm (0.22 inch) |
| Weight | 270 g (0.6 lb) |
| Voltage | 7.6 VDC |
| Life span | 300 discharge per charge cycles |
| Temperature range | |
| Operating | <ul style="list-style-type: none"> Charge: 0°C to 50°C (32°F to 158°F) Discharge: 0°C to 70°C (32°F to 122°F) |
| Non-operating | - 20°C to 65°C (- 4°F to 149°F) |
| Coin cell battery | 3 V CR2032 lithium coin cell |

| Feature | Specification |
|---------|--|
| Type | <ul style="list-style-type: none"> 3-cell Lithium Prismatic battery with ExpressCharge 4-cell Lithium Prismatic battery with ExpressCharge |

| | |
|--------------------------|---|
| 3-cell: | |
| Depth | 105.9 mm (4.17 inches) |
| Height | 6.1 mm (0.24 inch) |
| Width | 181.00 mm (7.13 inches) |
| Weight | 195.0 g (0.43 lb) |
| Voltage | 11.10 VDC |
| 4-cell: | |
| Depth | 105.9 mm (4.17 inches) |
| Height | 6.1 mm (0.24 inch) |
| Width | 238.00 mm (9.37 inches) |
| Weight | 300.00 g (0.66 lb) |
| Voltage | 7.40 VDC |
| Life span | 300 discharge per charge cycles |
| Temperature range | |
| Operating | <ul style="list-style-type: none"> Charge: 0°C to 50°C (32°F to 158°F) Discharge: 0°C to 70°C (32°F to 122°F) |

| Feature | Specification |
|-------------------|---|
| | <ul style="list-style-type: none"> Operating: 0°C to 35°C (32°F to 95°F) |
| Non-operating | - 20°C to 65°C (- 4°F to 149°F) |
| Coin cell battery | 3 V CR2032 lithium coin cell |

AC adapter specifications

| Feature | Specification |
|-------------------------------------|--|
| Type | 65 W and 90 W |
| Input voltage | 100 V AC to 240 V AC |
| Input current— maximum | 1.7 A / 2.5 A |
| Input frequency | 50 Hz to 60 Hz |
| Output current | 3.34 A and 4.62 A |
| Rated output voltage | 19.5 V DC |
| Weight | 230 g (65 W) and 320 g (90 W) |
| Dimensions | 22 x 66 x 106 mm (65 W) and 22 x 66 x 130 (90 W) |
| Temperature range —Operating | 0°C to 40°C (32°F to 104°F) |
| Temperature range —Non-Operating | -40°C to 70°C (-40°F to 158°F) |

Port and connector specifications

| Feature | Specification |
|--|--|
| Audio | One microphone/stereo headphone/speakers connector |
| Video | <ul style="list-style-type: none"> HDMI 1.4 |
| Network adapter | One RJ-45 connector |
| USB | Two USB 3.0 with one PowerShare |
| Memory card reader | Up to SD4.0 |
| Micro Subscriber Identity Module (uSIM) card | One |
| Docking port | None |
| |  NOTE: Cable docking is available. |
| Express Card | None |
| USIM | External tray tied to WWAN hinge up |



Communication specifications

| Features | Specification |
|-----------------|--|
| Network adapter | 10/100/1000 Mb/s Ethernet (RJ-45) |
| Wireless | Internal wireless local area network (WLAN), wireless wide area network (WWAN), WiGig <ul style="list-style-type: none">· Bluetooth 4.1 LE |

Camera specifications

| Feature | Specification |
|------------------|----------------------------|
| Type | HD fixed focus |
| Sensor type | CMOS sensor technology |
| Imaging rate | Up to 30 frames per second |
| Video Resolution | 1280 x 720 pixels |

Touchpad specifications

| Feature | Specification |
|-------------------------|--|
| Active Area: | |
| X-axis | 99.50 mm |
| Y-axis | 53.0 mm |
| X/Y position resolution | X: 1048cpi; Y:984cpi |
| Multi-touch | Configurable single finger and multi-finger gestures |

Display specifications

| Feature | Specification |
|-----------------------------------|--------------------------|
| HD anti-glare | |
| Luminance | 200 nits |
| Height | 155.52 mm (6.12 inches) |
| Width | 276.62 mm (10.89 inches) |
| Diagonal | 317.5 mm (12.5 inches) |
| Maximum resolution | 1366 x 768 |
| Refresh rate | 60 Hz/48 Hz |
| Maximum viewing angles—horizontal | +/-40° |
| Maximum viewing angles—vertical | +10°/-30° |
| Pixel pitch | 0.2025 x 0.2025 mm |



| Feature | Specification |
|-----------------------------------|--------------------------|
| FHD anti-glare: | |
| Luminance | 300 nits |
| Height | 155.52 mm (6.12 inches) |
| Width | 276.62 mm (10.89 inches) |
| Diagonal | 317.5 mm (12.5 inches) |
| Maximum resolution | 1920 x 1080 |
| Refresh rate | 60 Hz |
| Maximum viewing angles—horizontal | +/-80° |
| Maximum viewing angles—vertical | +/-80° |
| Pixel pitch | 0.144 x 0.144 mm |

| Feature | Specification |
|-----------------------------------|--------------------------|
| FHD anti-smudge | |
| Luminance | 300 nits |
| Height | 155.52 mm (6.12 inches) |
| Width | 276.62 mm (10.89 inches) |
| Diagonal | 305.3 mm (12.02 inches) |
| Maximum resolution | 1920 x 1080 |
| Refresh rate | 60 Hz |
| Maximum viewing angles—horizontal | +/-80° |
| Maximum viewing angles—vertical | +/-80° |
| Pixel pitch | 0.144 x 0.144 |

Physical specifications

| Feature | Specification |
|--------------------------------------|-------------------------|
| Front height | 11.51 mm (0.45 inch) |
| Back height—non-touch | 17.05 mm (0.71 inch) |
| Back height—touch | 17.3 mm (0.79 inch) |
| Width | 304.8 mm (12.0 inches) |
| Depth | 207.95 mm (8.19 inches) |
| Weight—non-touch with 3-cell battery | 1.18 kg (2.61 lbs) |



Environmental specifications

| Temperature | Specifications |
|-------------------------------|---|
| Operating | 0°C to 60°C (32°F to 140°F) |
| Storage | -51°C to 71°C (-59°F to 159°F) |
| Relative humidity —maximum | Specifications |
| Operating | 10% to 90% (non-condensing) |
| Storage | 5% to 95% (non-condensing) |
| Altitude— maximum | Specifications |
| Operating | -15.2 m to 3048 m (-50 to 10,000 ft) 0°C to 35°C |
| Non-operating | -15.24 m to 10,668 m (-50 ft to 35,000 ft) |
| Airborne contaminant level | G2 or lower as defined by ISA S71.04-1985 |



System Setup

Topics:

- [Boot Sequence](#)
- [Navigation keys](#)
- [System setup options](#)
- [General screen options](#)
- [System Configuration screen options](#)
- [Video screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Intel software guard extensions screen options](#)
- [Performance screen options](#)
- [Power management screen options](#)
- [POST behavior screen options](#)
- [Manageability](#)
- [Virtualization support screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [System logs screen options](#)
- [Updating the BIOS](#)
- [System and setup password](#)

Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

 **NOTE: XXX denotes the SATA drive number.**

- Optical Drive
- Diagnostics

 **NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.**

The boot sequence screen also displays the option to access the System Setup screen.



Navigation keys

NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

| Keys | Navigation |
|------------|--|
| Up arrow | Moves to the previous field. |
| Down arrow | Moves to the next field. |
| Enter | Selects a value in the selected field (if applicable) or follow the link in the field. |
| Spacebar | Expands or collapses a drop-down list, if applicable. |
| Tab | Moves to the next focus area. |

NOTE: For the standard graphics browser only.

Esc Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

F1 Displays the System Setup help file.

System setup options

NOTE: Depending on the computer and its installed devices, the items 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 | This section lists the primary hardware features of your computer. <ul style="list-style-type: none">System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by defaultMemory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size,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 TechnologyDevice Information: Displays M.2 SATA, M.2 PCIe SSD-0, LOM MAC Address, Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, WiGig Device, Cellular Device, Bluetooth Device |
| Battery Information | Displays the battery status health and whether the AC adapter is installed. |
| Boot Sequence | Allows you to change the order in which the computer attempts to find an operating system. <ul style="list-style-type: none">Diskette DriveInternal HDDUSB Storage DeviceCD/DVD/CD-RW DriveOnboard NIC |
| Boot sequence options | <ul style="list-style-type: none">Windows boot manager |

| Option | Description |
|--------------------------------|---|
| | <ul style="list-style-type: none"> WindowsIns |
| Boot list options | <ul style="list-style-type: none"> Legacy UEFI—selected by default |
| Advanced Boot Options | This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is disabled. Enable Attempt Legacy Boot is disabled by default. |
| UEFI boot path security | <ul style="list-style-type: none"> Always, except internal HDD Always Never |
| Date/Time | Allows you to change the date and time. |

System Configuration screen options

| Option | Description |
|-----------------------|---|
| Integrated NIC | Allows you to configure the integrated network controller. The options are: <ul style="list-style-type: none"> Disabled Enabled Enable UEFI network stack: This option is enabled by default. Enabled w/PXE |
| Parallel Port | Allows you to configure the parallel port on the docking station. The options are: <ul style="list-style-type: none"> Disabled AT: This option is enabled by default. PS2 ECP |
| Serial Port | Allows you to configure the integrated serial port. The options are: <ul style="list-style-type: none"> Disabled COM1: This option is enabled by default. COM2 COM3 COM4 |
| SATA Operation | Allows you to configure the internal SATA hard-drive controller. The options are: <ul style="list-style-type: none"> Disabled AHCI RAID On: This option is enabled by default. |
| Drives | Allows you to configure the SATA drives on board. All drives are enabled by default. The options are: <ul style="list-style-type: none"> SATA-0 M.2 PCI-e SSD-0 |



| Option | Description |
|---|---|
| | <ul style="list-style-type: none"> · SATA-2 |
| SMART Reporting | <p>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.</p> <ul style="list-style-type: none"> · Enable SMART Reporting |
| USB Configuration | <p>This is an optional feature.</p> <p>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.</p> <p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <p>The options are:</p> <ul style="list-style-type: none"> · Enable USB Boot Support—enabled by default · Enable the Thunderbolt ports—enabled by default · Always Allow dell docks—enabled by default · Enable External USB Port—enabled by default · Enable Thunderbolt Boot Support · Enable Thunderbolt (and PCIE behind TBT) Preboot · Security level-no security · Security level-user configuration—enabled by default · Security level-secure connect · Security level- Display port only <p>NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p> |
| USB PowerShare | <p>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</p> |
| Audio | <p>This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected. The options are:</p> <ul style="list-style-type: none"> · Enable Microphone—by default enable · Enable Internal Speaker—by default enable |
| Keyboard Illumination | <p>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:</p> <ul style="list-style-type: none"> · Disabled—enabled by default · Dim (50%) · Bright |
| Keyboard Backlight with AC | <p>The Keyboard Backlight with AC option does not affect the main keyboard illumination feature. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. This option is enabled by default.</p> |
| Keyboard Backlight Timeout on AC | <p>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:</p> |



| Option | Description |
|--|--|
| | <ul style="list-style-type: none"> · 5 sec · 10 sec—enabled by default · 15 sec · 30 sec · 1 min · 5 min · 15 min · Never |
| Keyboard Backlight Timeout on Battery | <p>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:</p> <ul style="list-style-type: none"> · 5 sec · 10 sec—enabled by default · 15 sec · 30 sec · 1 min · 5 min · 15 min · Never |
| Touchscreen | It controls whether the screen is enabled or disabled. This option is enabled by default. |
| Unobtrusive Mode | This option, when enabled, pressing Fn+F7 turns off all light and sound emissions in the system. To resume normal operation, press Fn+F7 again. This option is disabled by default. |
| Miscellaneous Devices | <p>Allows you to enable or disable the following devices:</p> <ul style="list-style-type: none"> · Enable 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. The LCD brightness is independent for battery and AC adapter. It can be set using the slider. |

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

Security screen options

| Option | Description |
|-----------------------|---|
| Admin Password | <p>Allows you to set, change, or delete the administrator (admin) password.</p> <p>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 and the hard drive password.</p> <p>NOTE: Successful password changes take effect immediately.</p> |



| Option | Description |
|--------------------------------|--|
| | Default setting: Not set |
| System Password | <p>Allows you to set, change, or delete the system password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p> |
| Internal HDD-2 Password | <p>Allows you to set, change, or delete the administrator password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p> |
| Strong Password | <p>Allows you to enforce the option to always set strong passwords.</p> <p>Default Setting: Enable Strong Password is not selected.</p> <p> NOTE: If Strong Password is enabled, the Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.</p> |
| Password Configuration | <p>Allows you to specify the minimum and max password lengths of the Administrator and System passwords.</p> <ul style="list-style-type: none"> · min-4—by default, if you want to change you can increase the number · max-32—you can decrease the number |
| Password Bypass | <p>Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:</p> <ul style="list-style-type: none"> · Disabled · Reboot bypass <p>Default setting: Disabled</p> |
| Password Change | <p>Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.</p> <p>Default setting: Allow Non-Admin Password Changes is selected.</p> |
| Non-Admin Setup Changes | <p>Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.</p> <p>Option "allow wireless switch changes" is not selected by default.</p> |
| TPM 2.0 Security | <p>Allows you to enable the Trusted Platform Module (TPM) during POST. The options are:</p> <ul style="list-style-type: none"> · UEFI capsule Firmware updates—enabled by default · TPM On—enabled by default · Clear · PPI Bypass for Enable Commands · PPI Bypass for Disabled Commands · Attestation enable—enabled by default · Key storage enable—enabled by default · SHA-256—enabled by default · Disabled · Enabled—enabled by default |



| Option | Description |
|--------------------------------|---|
| |  NOTE: To upgrade or downgrade TPM 2.0, download the TPM wrapper tool—software. |
| Computrace | <p>Allows you to activate or disable the optional Computrace software. The options are:</p> <ul style="list-style-type: none"> · Deactivate · Disable · Activate—enabled by default <p> NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes are allowed</p> |
| CPU XD Support | <p>Allows you to enable the Execute Disable mode of the processor. Enable CPU XD Support—enabled by default</p> |
| OROM Keyboard Access | <p>Allows you to set an option to enter the Option ROM Configuration screens using hotkeys during boot. The options are:</p> <ul style="list-style-type: none"> · Enabled · One Time Enable · Disable <p>Default setting: Enable</p> |
| Admin Setup Lockout | <p>Allows you to prevent users from entering Setup when an Administrator password is set. Default Setting: This option is enabled</p> |
| Master password lockout | <p>This option is not enabled by default</p> |

Secure Boot screen options

| Option | Description |
|------------------------------|---|
| Secure Boot Enable | <p>This option enables or disables the Secure Boot feature.</p> <ul style="list-style-type: none"> · Disabled · Enabled <p>Default setting: Enabled</p> |
| Expert Key Management | <p>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. The options are:</p> <ul style="list-style-type: none"> · PK—enabled by default · KEK · db · dbx <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p> <ul style="list-style-type: none"> · Save to File—Saves the key to a user-selected file · Replace from File—Replaces the current key with a key from a user-selected file · Append from File—Adds a key to the current database from a user-selected file |



| Option | Description |
|--------|--|
| | <ul style="list-style-type: none"> · Delete—Deletes the selected key · Reset All Keys—Resets to default setting · Delete All Keys—Deletes all the keys <p>NOTE: If you disable the Custom Mode, all the changes made are erased and the keys restore to default settings.</p> |

Intel software guard extensions screen options

| Option | Description |
|----------------------------|---|
| Intel SGX Enable | <p>This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:</p> <ul style="list-style-type: none"> · Disabled · Enabled <p>Default setting: Enabled</p> |
| Enclave Memory Size | <p>This option sets SGX Enclave Reserve Memory Size. The options are:</p> <ul style="list-style-type: none"> · 32 MB · 64 MB · 128 MB—enabled by default |

Performance screen options

| Option | Description |
|---------------------------|---|
| Multi-Core Support | <p>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. The installed processor supports two cores. If you enable Multi-Core Support, two cores are enabled. If you disable Multi-Core Support, one core is enabled.</p> <ul style="list-style-type: none"> · Enable Multi-Core Support <p>Default setting: The option is enabled.</p> |
| Intel SpeedStep | <p>Allows you to enable or disable the Intel SpeedStep feature.</p> <ul style="list-style-type: none"> · Enable Intel SpeedStep <p>Default setting: The option is enabled.</p> |
| C-States Control | <p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> · C states <p>Default setting: The option is enabled.</p> |
| Intel TurboBoost | <p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> · Enable Intel TurboBoost |

| Option | Description |
|----------------------------|---|
| | Default setting: The option is enabled. |
| HyperThread Control | Allows you to enable or disable the Hyper-Threading in the processor. <ul style="list-style-type: none"> · Disabled · Enabled Default setting: Enabled is selected. |

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. Default setting: Wake on AC is not selected. |

| | |
|---------------------|--|
| Auto On Time | Allows you to set the time at which the computer must turn on automatically. The options are: <ul style="list-style-type: none"> · Disabled · Every Day · Weekdays · Select Days Default setting: Disabled |
|---------------------|--|

USB Wake Support Allows you to enable USB devices to wake the system from Standby.

NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.

- Enable USB Wake Support
- Wake on Dell USB-C dock

Default setting: The option is disabled.

Wireless Radio Control Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.

- Control WLAN Radio
- Control WWAN Radio

Default setting: The options are disabled.

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
- LAN Only
- WLAN Only
- LAN or WLAN

Default setting: Disabled



| Option | Description |
|--|---|
| Block Sleep | <p>This option lets you block entering to sleep (S3 state) in operating system environment.</p> <p>Block Sleep (S3 state)</p> <p>Default setting: This option is disabled</p> |
| Peak Shift | <p>This option enables 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.</p> <ul style="list-style-type: none"> · Enable peak shift · Set battery threshold (15% to 100%) - 15 % (enabled by default) |
| Advanced Battery Charge Configuration | <p>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 nonwork hours to improve the battery health.</p> <p>Disabled</p> <p>Default setting: Disabled</p> |
| Primary Battery Charge Configuration | <p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> · Adaptive—enabled by default · Standard—Fully charges your battery at a standard rate. · ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology This option is enabled by default. · Primarily AC use · Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p>NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p> |
| Sleep mode | <ul style="list-style-type: none"> · OS Automatic selection—enabled by default <p>Force S3</p> |
| Type-C connector power | <ul style="list-style-type: none"> · 7.5 Watts · 15 Watts—enabled by default |

POST behavior screen options

| Option | Description |
|--------------------------|--|
| Adapter Warnings | <p>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters.</p> <p>Default setting: Enable Adapter Warnings</p> |
| Keypad (Embedded) | <p>Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard.</p> <ul style="list-style-type: none"> · Fn Key Only—default. · By Numlock <p>NOTE: When setup is running, this option has no effect. Setup works in Fn Key Only mode.</p> |

| Option | Description |
|--------------------------------|---|
| Mouse/Touchpad | Allows you to define how the system handles mouse and touch pad input. The options are: <ul style="list-style-type: none"> Serial Mouse PS2 Mouse Touchpad/PS-2 Mouse: This option is enabled by default. |
| Numlock Enable | Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default. |
| Fn Key Emulation | Allows you to set the option where the Scroll Lock key is used to simulate the Fn key feature. Enable Fn Key Emulation (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: <ul style="list-style-type: none"> Lock Mode Disable/Standard—enabled by default Lock Mode Enable/Secondary |
| MEBx Hotkey | Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. Default Setting: Enable MEBx Hotkey |
| Fastboot | Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: <ul style="list-style-type: none"> Minimal Thorough—enabled by default Auto |
| Extended BIOS POST Time | Allows you to create an extra preboot delay. The options are: <ul style="list-style-type: none"> 0 seconds—enabled by default. 5 seconds 10 seconds |
| Security audit | <ul style="list-style-type: none"> Disable display of security audit display—not enabled |
| Full Screen Log | <ul style="list-style-type: none"> Enable Full Screen Logo—not enabled |
| Warnings and errors | <ul style="list-style-type: none"> Prompt on warnings and errors—enabled by default Continue on warnings Continue on warnings and errors |

Manageability

| Option | Description |
|--------------------|--|
| MEBX Hotkey | Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. <ul style="list-style-type: none"> Disabled |



| Option | Description |
|--------|--|
| | <ul style="list-style-type: none"> · Enabled <p>Default setting: Disabled</p> |

For USB provision Enable USB provision is not selected by default

Virtualization support screen options

| Option | Description |
|--------------------------|---|
| Virtualization | Allows you to enable or disable the Intel Virtualization Technology. Enable Intel Virtualization Technology—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 - enabled 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 the Virtualization technology for direct I/O must be enabled to use this feature. Trusted Execution - disabled by default. |

Wireless screen options

| Option | Description |
|-------------------------------|---|
| Wireless Switch | Allows to set the wireless devices that can be controlled by the wireless switch. The options are: <ul style="list-style-type: none"> · WWAN · GPS (on WWAN Module) · WLAN/WiGig · Bluetooth <p>All the options are enabled by default.</p> <p>NOTE: For WLAN and WiGig enable or disable controls are tied together and they cannot be enabled or disabled independently.</p> |
| Wireless Device Enable | Allows you to enable or disable the internal wireless devices. <ul style="list-style-type: none"> · WWAN/GPS · WLAN/WiGig · Bluetooth <p>All the options are enabled by default.</p> |

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

Maintenance screen options

| 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 | This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default. |
| Data Wipe | This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: <ul style="list-style-type: none">· Internal SATA HDD/SSD· Internal M.2 SATA SDD· Internal M.2 PCIe SSD· Internal eMMC |
| BIOS Recovery | This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. <ul style="list-style-type: none">· BIOS Recovery from Hard Drive—enabled by default· Always perform integrity check—disabled 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. |

Updating the BIOS

It is recommended to update your BIOS (System Setup), on replacing the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet

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

① **NOTE: To locate the Service Tag, click Where is my Service Tag?**

① **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 computer.
- 5 Choose the **Product Type** from the list.
- 6 Select your computer model and the **Product Support** page of your computer 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 computer.
- 12 Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

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.

System and setup password

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

| 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. |

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: Your computer is shipped with the system and setup password feature disabled.

Assigning a system password and setup password

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

NOTE: If the password jumper is disabled, the existing System Password and Setup Password are deleted and you need not provide the system password to log on to the computer.

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

- 1 In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
- 2 Select **System 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 and/or setup password

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

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

- 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 promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

- 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 reboots.



Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Topics:

- [Enhanced Pre-Boot System Assessment \(ePSA\) diagnostics](#)
- [Device status lights](#)
- [Battery status lights](#)

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

⚠ CAUTION: Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

ⓘ NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

Device status lights

Table 1. Device status lights

| Icon | Name | Description |
|---|--------------------------|--|
|  | Power status light | Turns on when you turn on the computer and blinks when the computer is in a power management mode. |
|  | Hard drive status light | Turns on when the computer reads or writes data. |
|  | Battery charge indicator | Turns on steadily or blinks to indicate battery charge status. |

The device status LEDs are usually located either on the top or left side of the keyboard. They display the storage, battery and wireless devices connectivity and activity. Apart from that they can be useful as a diagnostic tool when there's a possible failure to the system.

NOTE: The position of the power status light may vary depending on the system.

The following table lists how to read the LED codes when possible errors occur.

Table 2. Battery charge LED indicator

| Amber blinking pattern | Problem description | Suggested resolution |
|------------------------|------------------------|---|
| 2,1 | CPU | CPU failure |
| 2,2 | System board: BIOS ROM | System board, covers BIOS corruption or ROM error |
| 2,3 | Memory | No memory/RAM detected |
| 2,4 | Memory | Memory/RAM failure |
| 2,5 | Memory | Invalid memory installed |
| 2,6 | System board: Chipset | System board/Chipset error |
| 2,7 | LCD | Replace the system board |
| 3,1 | RTC Power Failure | CMOS battery failure |
| 3,2 | PCI/Video | PCI or video card/chip failure |
| 3,3 | BIOS Recovery 1 | Recovery image not found |
| 3,4 | BIOS Recovery 2 | Recovery image found but invalid |

The blinking patterns will consist of 2 set of numbers being represented by (First Group: Amber blinks, Second Group: White blinks)

NOTE:

- 1 First Group: The LED blinks 1 to 9 times followed by a brief pause with LED off at the interval of 1.5 seconds.(This is in Amber color)
- 2 Second Group: The LED blinks 1 to 9 times, that would be then followed by a longer pause before the next cycle starts again at the interval of 1.5 seconds.(This is in White color)

For Example: No Memory detected (2,3), Battery LED blinks two times of amber color followed by a pause, and then blinks three times of white color. The Battery LED will pause for 3 seconds before the next cycle repeat itself again.

Battery status lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

| | |
|---|---|
| Alternately blinking amber light and white light | An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop. |
| Alternately blinking amber light with steady white light | Temporary battery failure with AC adapter present. |
| Constantly blinking amber light | Fatal battery failure with AC adapter present. |
| Light off | Battery in full charge mode with AC adapter present. |
| White light on | Battery in charge mode with AC adapter present. |



Contacting Dell

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.

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:

- 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.