PICKADO

ThinkPad X1 Carbon Gen 13

Installation GUIDE



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1. Device details and tools

Release date: 2024-10-09

Machine Types: 21NS, 21NT

Recommended tools: non-metallic pry tool, screwdriver kit, static-safe tweezers, SIM-card tray eject pin.

Non-metallic pry tool

An anti-static tool that has a wide, flat-head screwdriver-like end that extends as a wedge and is used to separate pressure-fit plastic components without causing damage during separation. It may also be called a "spudger" by some manufacturers.



Screwdriver kit

A driver with grip for torque and a swivel cap on the end that houses replaceable bits for various systems and components. Bit size will vary throughout systems, but generally, you will need PH0, PH1, or PH2 bits to facilitate removals and replacements. The example shown in this info window is for illustrative purposes only.



Static-safe tweezers

Helpful for holding, handling, or placing delicate parts. We recommend ESD-safe tweezers to protect your components from static-caused damage. The tweezers pictured here are for illustrative purposes only and not necessarily an endorsement of any specific brand.



SIM-card tray eject pin

A SIM-card-tray eject pin or a small paperclip with one end open may be used to access externally-placed emergency reset holes or remove nano-SIM-card trays. Be careful not to touch any metal surfaces with the exposed tip of the paperclip or SIM-card-tray eject pin.



2. Parts list

This section provides the list of components for the ThinkPad X1 Carbon Gen 10.

1. Disable the built-in battery
2. Nano-SIM card tray
3. Base cover assembly
4. Built-in battery
5. M.2 solid-state drive and M.2 solid-state drive bracket
6. 4G wireless WAN module
7. Thermal fan assembly
8. Speaker assembly
9. Trackpad / Haptic Touchpad, fingerprint reader, P sensor and NFC cable
10. Wireless WAN antennas (for selected models)
11. Wireless WAN antenna cable guide rubber (for selected models)
12. Coin-cell battery
13. Fan cable guide
14. USB bracket
15. NFC sponge and NFC module (for selected models)
16. Trackpad (for selected models)
17. Haptic Touchpad (for selected models)
18. System board
19. LCD unit

20. Keyboard assembly

3. Removal and replacement steps

The removal and replacement section guides you through the steps required to disassemble and replace each component of this device, providing clear images for enhanced understanding. This section provides details on the required time for removal and replacement, the necessary tools, and the difficulty level. In some cases, you can also find notes, warnings, and cautions related to the replacement of a specific component.

3.1 Disable built-in battery

Steps for this part: 8
Overall difficulty level: Easy
Cumulative time required: 1-5 minutes
Suggested tools for this part: None

Prerequisites:

- First, ensure that Fast Startup is disabled.
- To disable Fast Startup:
    1. Go to Control Panel and view by Large icons or Small icons.
    2. Click **Power Options**, and then click **Choose what the power buttons do** on the left pane.
    3. Click the **Change settings that are currently unavailable** at the top.
    4. If prompted by User Account Control, click **Yes**.
    5. Clear the **Turn on fast startup** check box and click **Save changes**.

Notes: If your computer cannot enter the UEFI BIOS menu, you cannot disable the built-in battery. To avoid a short circuit when you replace a part, it is recommended to do the following:

- For the built-in battery connected to the system board with cables: Disconnect the battery cables.
- For the built-in battery connected to the system board with combo connectors: Disconnect the connectors by removing the battery. For the removal procedure, refer to the built-in battery replacement instructions in this documentation.

To disable the battery:

1) Disconnect the power adapter.



2) Press the power button.



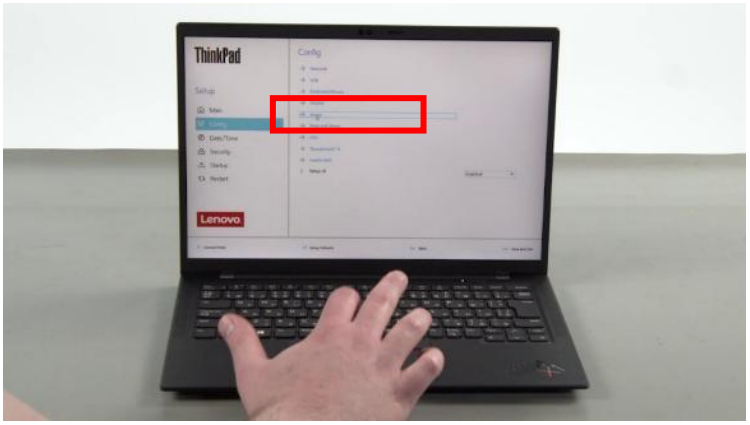
3) Tap the F1 key repeatedly to enter the Setup menu.



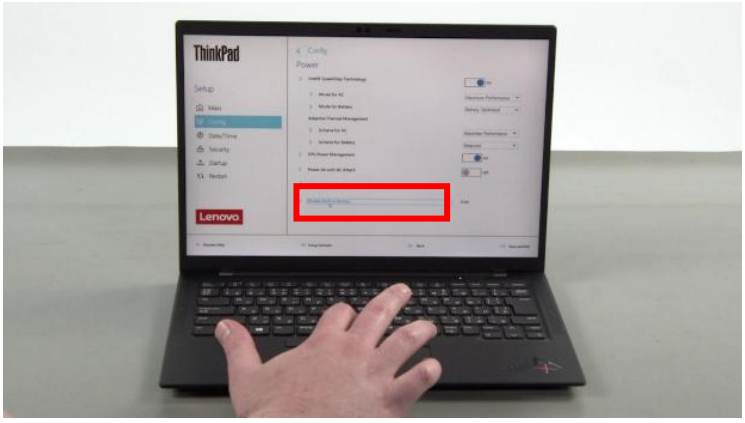
4) Select the Config menu.

z

5) Select the Power menu option.



6) Select the Disable Built-in Battery menu option.



7) Select Yes in the confirmation box.



8) The system will shut down, and the battery will be disabled.



After replacing this part, don't forget:

- Reconnect the power supply to re-enable the built-in battery.

3.2 Nano-SIM card tray

Steps for this part: 3
Overall difficulty level: Easy
Cumulative time required: 1-5 minutes
Suggested tools for this part: SIM-card tray eject pin

Prerequisites:

- Disconnect the power cable and disable the built-in battery.

Note: If the computer you are servicing has a nano-SIM card installed, remove the card with the tray together.

Removal:

1) Use a SIM-card tray eject pin or paper clip to pop out the SIM card tray.



2) Remove the tray from the slot.



Replacement:

1) Insert the SIM card tray into the slot and press to secure.





After replacing this part, don't forget:

- Reconnect the power supply to re-enable the built-in battery.

3.3 Base cover assembly

Steps for this part: 4
Overall difficulty level: Easy
Cumulative time required: 5-10 minutes
Suggested tools for this part: Non-metallic pry tool, screwdriver kit

Notes: Do not remove the base cover assembly in the following situations. Otherwise, there might be a risk of short circuits.

- When your computer has the removable battery installed.
- When your computer is connected to AC power.

Prerequisites:

- Disable built-in battery.
- Remove the nano-SIM-card and nano-SIM-card tray.
- Turn off the computer and disconnect it from AC power and all connected cables.

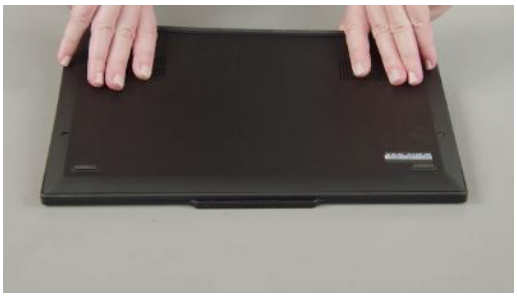
- Close the computer display and turn over the computer.

Removal:

1) Loosen four (4) captive screws.



2) Starting at the hinges, pry up the cover to release the clips and remove the cover from the system.

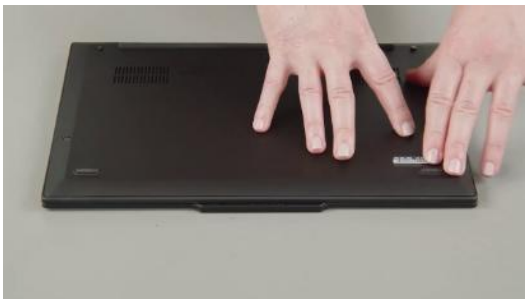




Replacement:

1) Place the cover onto the chassis, inserting the edge opposite the hinges first, and press down around the edges to secure the clips.





2) Tighten the four (4) captive screws.



After replacing this part, don't forget:

- Reconnect the power supply to re-enable the built-in battery.

3.4 Built-in battery

Steps for this part: 6
Overall difficulty level: Easy
Cumulative time required: 10-15 minutes
Suggested tools for this part: Screwdriver kit

Warning! Use only the authorized battery specified for your computer. Any other battery could ignite or explode.

Batteries supplied by Lenovo for use with your product have been tested for compatibility and should only be replaced with approved parts. A battery other than the one specified by Lenovo, or a disassembled or modified battery may not be covered by warranty.

Caution: Battery abuse or mishandling can cause overheating, liquid leakage, or an explosion. To avoid possible injury:

- Do not open, disassemble, or service any battery unless you are competent to do so, and ensure that you carefully follow all instructions provided by Lenovo.
- Do not crush or puncture the battery.
- Do not short-circuit the battery or expose it to water or other liquids.
- Keep the battery away from children and animals.
- Keep the battery away from fire.
- Stop using the battery if it is damaged, or if you notice any discharge or the buildup of foreign materials on the battery leads.
- If the battery is incorrectly replaced, there is danger of an explosion. The battery contains a small amount of harmful substances.

Attention! Lenovo has no responsibility for the performance or safety of unauthorized batteries and provides no warranties for failures or damage arising out of their use.

The Vantage app provides an automatic battery diagnostic test that determines if the built-in battery is defective. A built-in battery should not be replaced unless this diagnostic test shows that the battery is defective. The only exception to this is if the built-in battery is physically damaged.

If the Vantage app is not installed on the computer, download and install the program to diagnose the built-in battery before replacing a non-physically damaged built-in battery. Note that the replacement of a physically damaged built-in battery is not covered by the warranty.

Prerequisites:

- Disable built-in battery.
- Remove the base cover assembly.

Removal:

1. Loosen six (6) captive screws on the built-in battery.



2. Using the corners, carefully pry up the battery to disconnect it from the system board and remove it from the system.





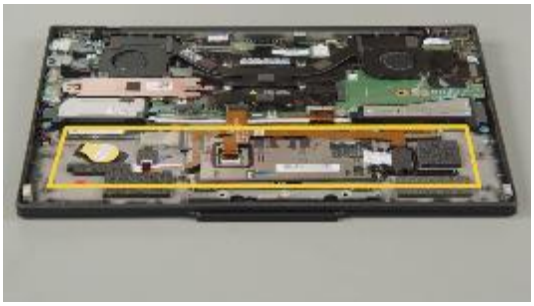
Replacement prerequisites:

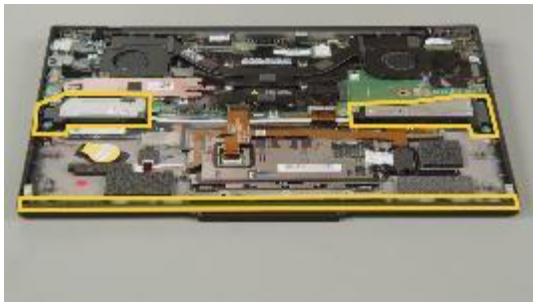
CAUTION!

- **Remove any foreign objects before reassembly.**
- Ensure that the base cover assembly is secured in place. Otherwise, the battery connection might fail.

Replacement:

1. Before inserting the battery into the system, inspect the battery bay area to ensure there are no sharp objects, foreign objects, or screws that could puncture the battery. Make sure to check for loose screws or other metal debris that may be stuck to magnetized areas such as speakers or lid magnets.

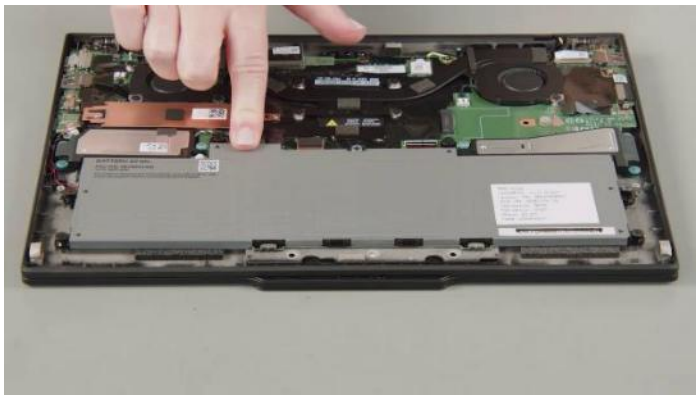




2. Insert the tabs on the bottom of the built-in battery into the slots in the system and lower the battery into place.



3. Press on the connector to connect the battery to the system board.



4. Tighten six (6) captive screws on the built-in battery.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

Important:

- Do not put the battery in the trash that is disposed of in landfills.
- Do not dispose of your battery with your household waste.
- Comply with local ordinances or regulations when disposing of the battery.
- For recycling information, go to Lenovo.com/recycling.

3.5 M.2 solid-state drive and bracket

Steps for this part: 6
Overall difficulty level: Easy
Cumulative time required: 10-15 minutes
Suggested tools for this part: Screwdriver kit

Attention!

- The M.2 solid-state drive is sensitive. Inappropriate handling might cause damage and permanent loss of data.
- Do not drop the drive or apply any physical shock to it. The drive is sensitive to physical shock. Improper handling can cause damage and permanent loss of data.
- Before removing the drive, make a backup copy of all the information on it if possible.
- Never remove the drive while the system is operating or in sleep mode.
- When handling the M.2 solid-state drive, remove or insert the M.2 solid-state drive horizontally. Otherwise, the slot might get damaged.

When handling the M.2 solid-state drive, observe the following guidelines:

- Replace the M.2 solid-state drive only for repair. The M.2 solid-state drive is not designed for frequent changes or replacement.

- Before replacing the M.2 solid-state drive, make a backup copy of all the data that you want to keep.
- Do not apply pressure to the M.2 solid-state drive.
- Do not touch the contact edge or circuit board of the M.2 solid-state drive. Otherwise, the M.2 solid-state drive might get damaged.
- Do not subject the M.2 solid-state drive to physical shocks or vibration. Put the M.2 solid-state drive on a soft material, such as cloth, to absorb physical shocks.

Prerequisites:

- Disable the built-in battery.
- Remove the base cover assembly.

Removal:

1) Loosen two (2) captive screws on the M.2 solid-state drive bracket.



2) Remove the bracket.

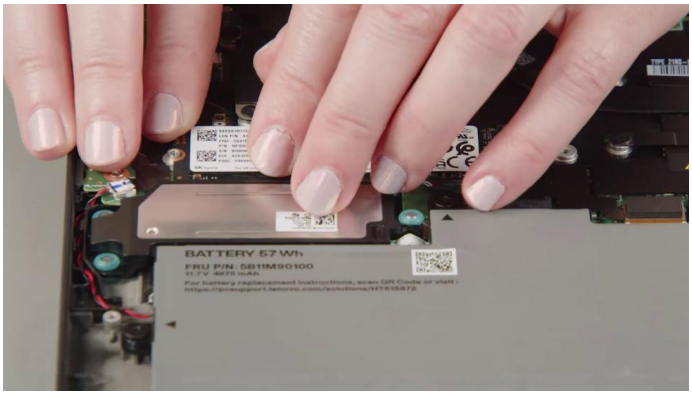


3) Remove the M.2 solid-state drive from the slot.

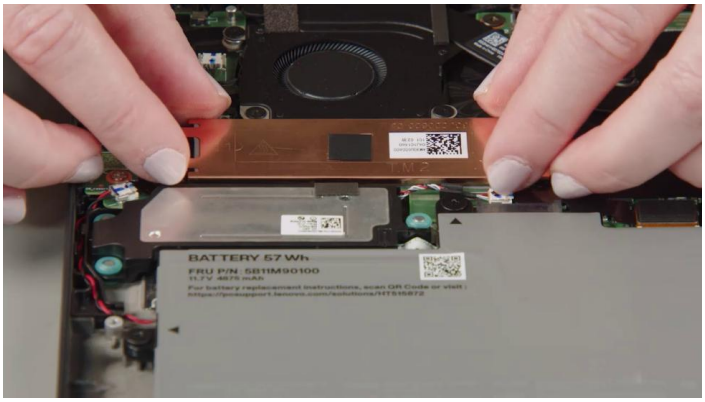


Replacement:

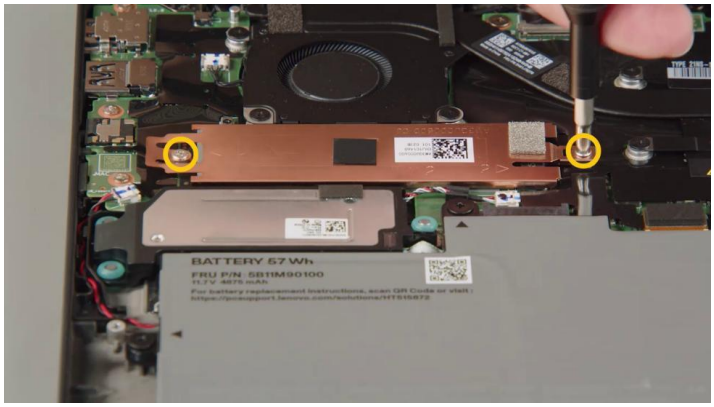
1) Insert the M.2 solid-state drive into the slot on the system board.



2) Lower the bracket into place on the solid-state drive.



3) Tighten two (2) captive screws on the bracket.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.6 4G Wireless WAN module – Type one

Steps for this part: 6
Overall difficulty level: Medium
Cumulative time required: 10-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

Prerequisites:

- Disable the built-in battery.
- Remove the base cover assembly.

Note:

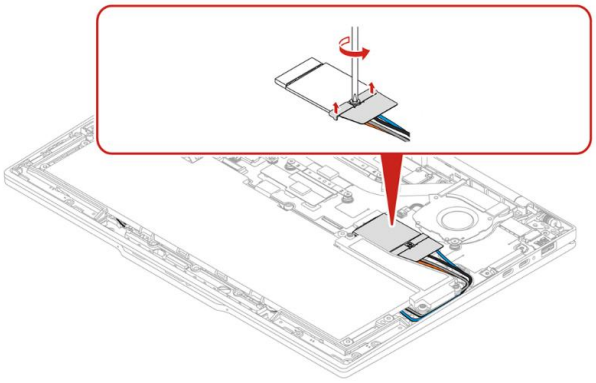
- The following information is only for the computer with user-installable modules. Ensure that you use only a Lenovo-authorized wireless module specifically tested for this computer model. Otherwise, the computer will generate an error code beep sequence when you turn on the computer.
- The cable routing is different for the 4G wireless WAN module and the 5G wireless WAN module. Ensure that the antenna cables are installed appropriately when installing a wireless WWAN module.

Attention:

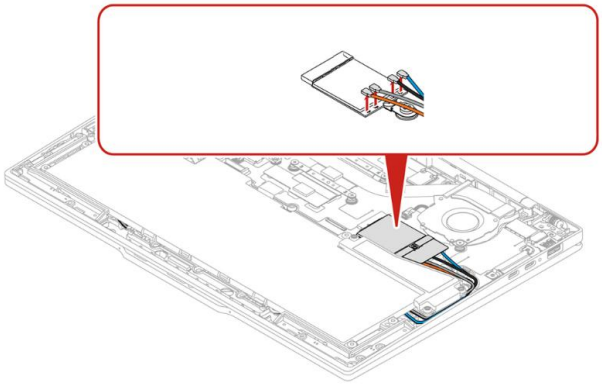
- Do not touch the contact edge of the wireless WAN module. Otherwise, the wireless WAN module might get damaged.

Removal:

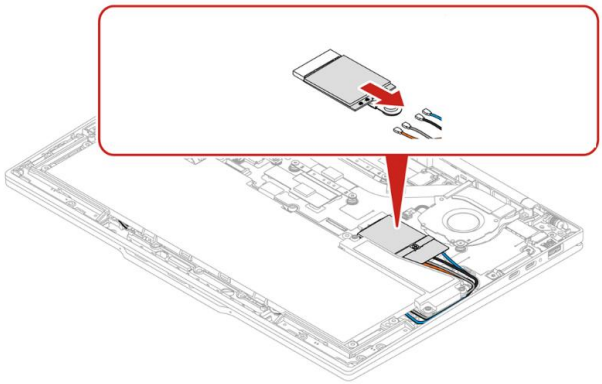
1) Remove one (1) screw from the bracket and remove the bracket.



2) Disconnect the antenna cables from the wireless WAN card.



3) Pull the card from the slot.



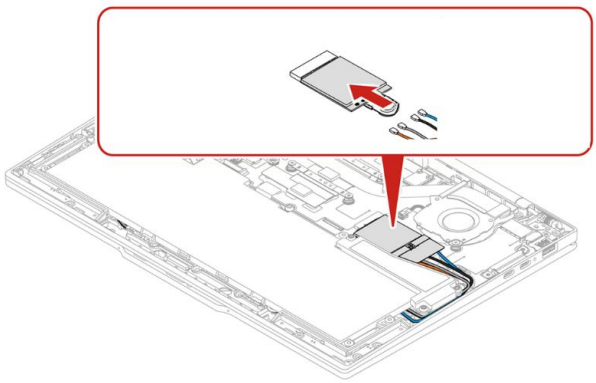
Replacement prerequisites:

- Keep the tape attached away from the speaker.
- Ensure that the orange cable does not touch the speaker.
- Ensure that the blue cable does not touch the thermal fan.

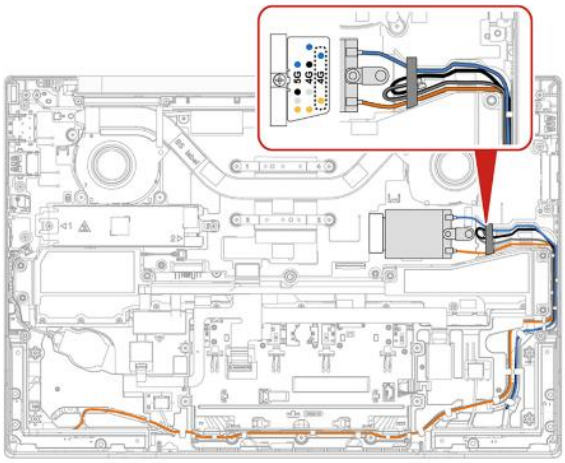
- Do not remove the plastic cover from the new antenna connectors until you install the new antennas.

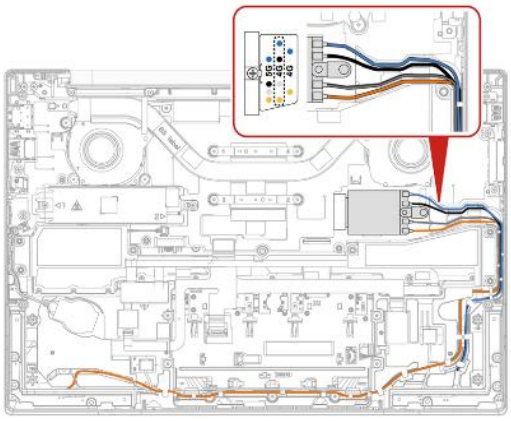
Replacement:

1) Insert the wireless WAN card into the slot.

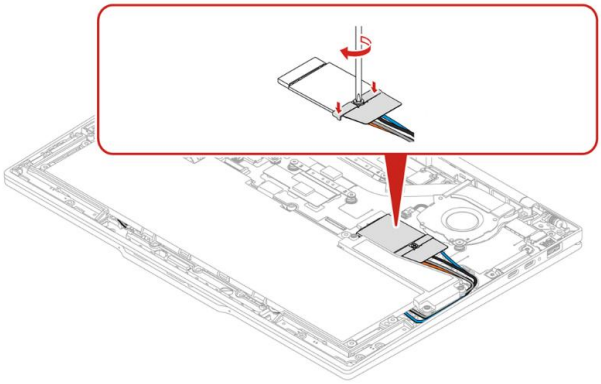


2) Connect the antenna cables to the corresponding terminals as shown in the installation chart. Depending on the model, the 4G wireless WAN module might have either 2 connectors or 4 connectors.





3) Attach the bracket to the wireless WAN card and install one (1) screw to secure the card in place.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.7 5G Wireless WAN module – Type two

Steps for this part: 6
Overall difficulty level: Medium
Cumulative time required: 10-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

Prerequisites:

- Disable the built-in battery.
- Remove the base cover assembly.

Note:

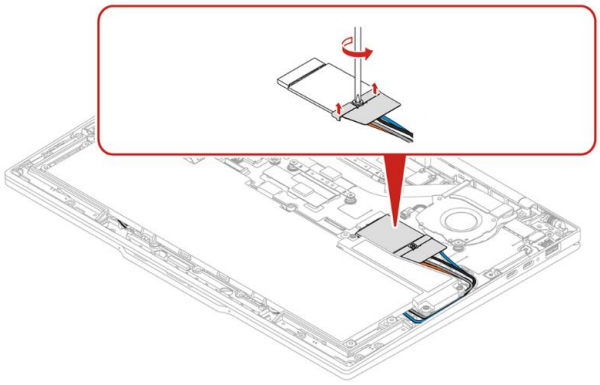
- The following information is only for the computer with user-installable modules. Ensure that you use only a Lenovo-authorized wireless module specifically tested for this computer model. Otherwise, the computer will generate an error code beep sequence when you turn on the computer.
- The cable routing is different for the 4G wireless WAN module and the 5G wireless WAN module. Ensure that the antenna cables are installed appropriately when installing a wireless WWAN module.

Attention:

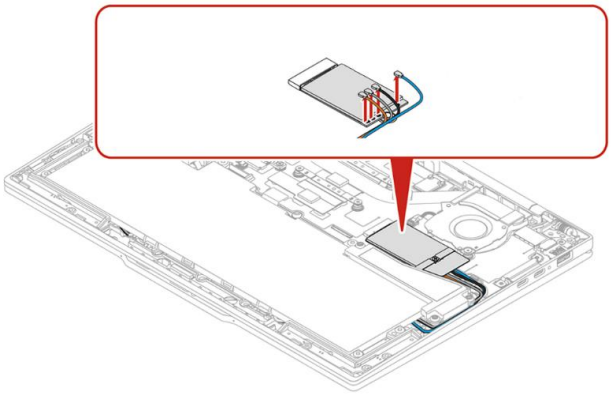
- Do not touch the contact edge of the wireless WAN module. Otherwise, the wireless WAN module might get damaged.

Removal:

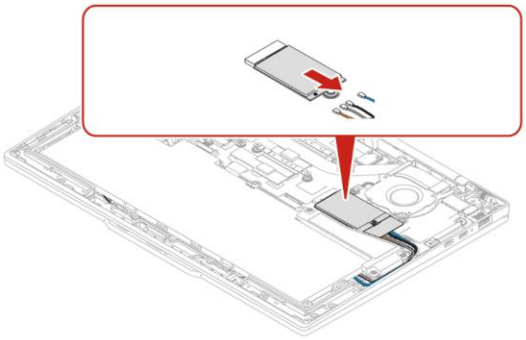
1) Remove one (1) screw from the bracket and remove the bracket.



2) Disconnect the antenna cables from the wireless WAN card.



3) Pull the card from the slot.

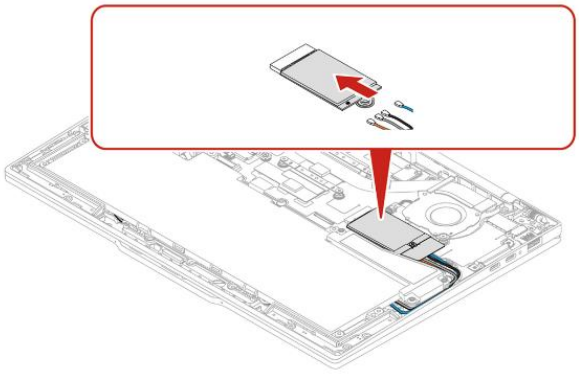


Replacement prerequisites:

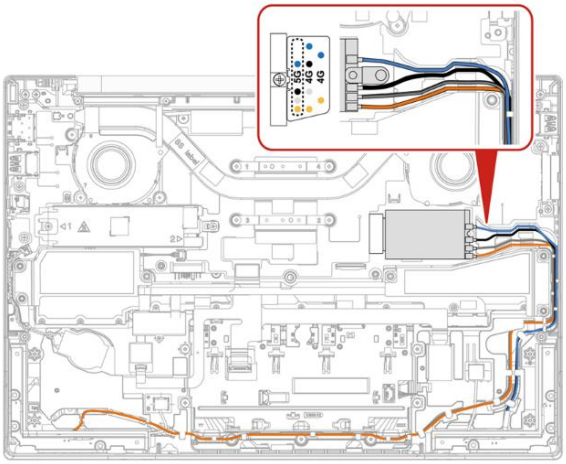
- Keep the tape attached away from the speaker.
- Ensure that the orange cable does not touch the speaker.
- Ensure that the blue cable does not touch the thermal fan.
- Do not remove the plastic cover from the new antenna connectors until you install the new antennas.

Replacement:

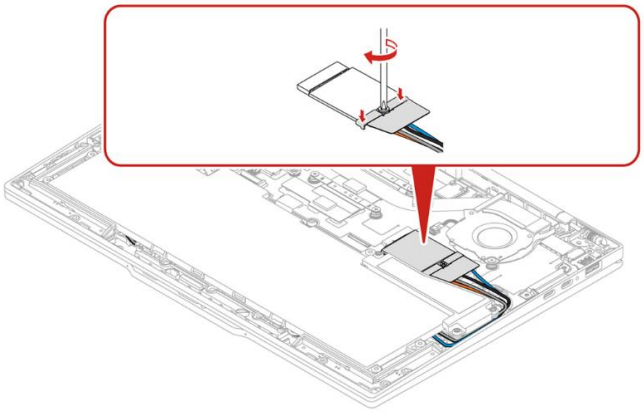
1) Insert the wireless WAN card into the slot.



2) Connect the antenna cables to the corresponding terminals as shown in the installation chart. Depending on the model, the 4G wireless WAN module might have either 2 connectors or 4 connectors.



3) Attach the bracket to the wireless WAN card and install one (1) screw to secure the card in place.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.8 Wireless WAN module bracket only – Type three

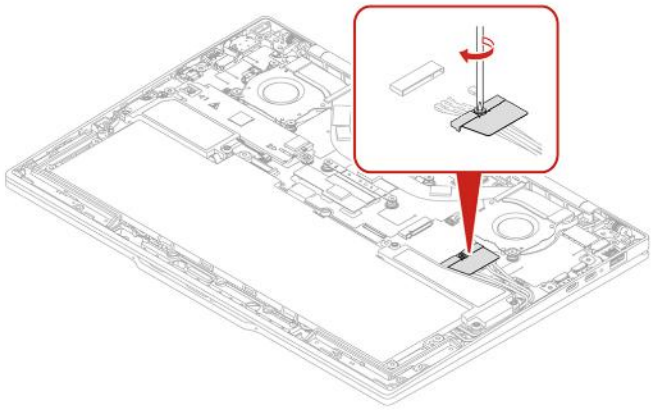
Steps for this part: 4
Overall difficulty level: Medium
Cumulative time required: 10-20 minutes
Suggested tools for this part: Screwdriver kit

Prerequisites:

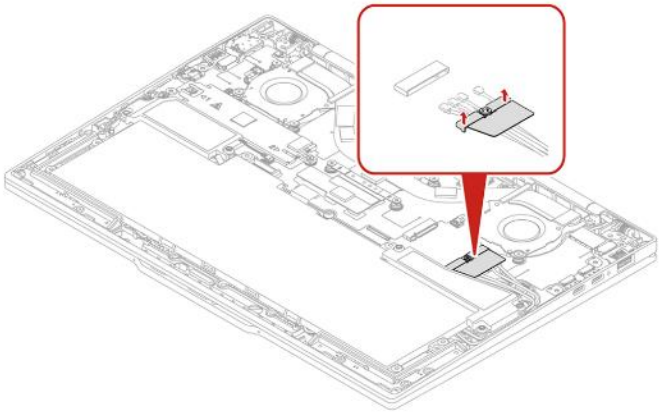
- Disable the built-in battery.
- Remove the base cover assembly.

Removal:

1) Remove one (1) screw from the bracket.

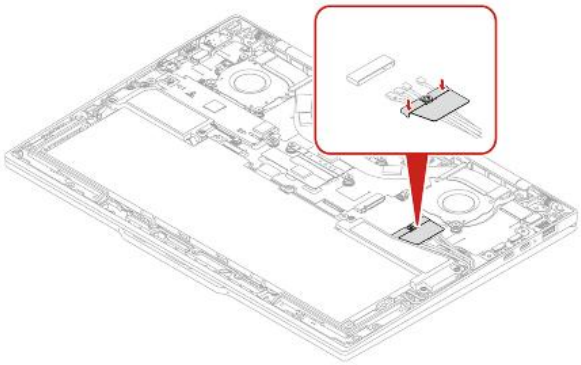


2) Remove the bracket.

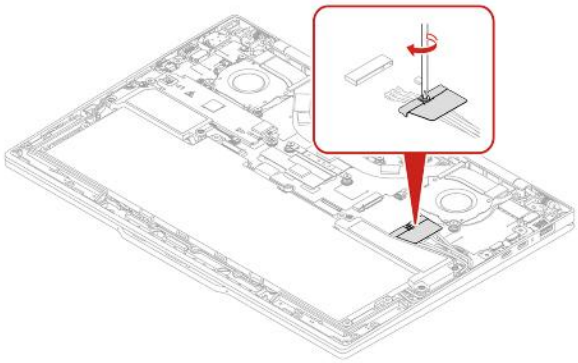


Replacement:

1) Attach the bracket to the wireless WAN card.



2) Install one (1) screw to the bracket.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.9 Thermal fan assembly

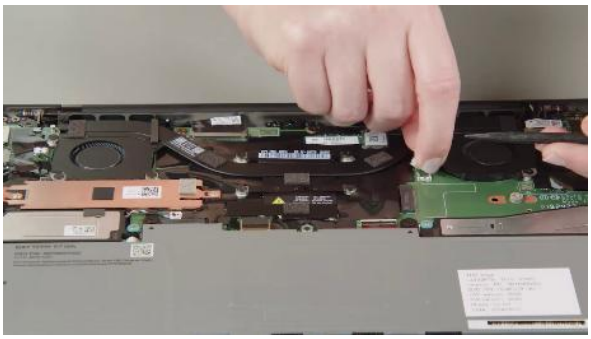
Steps for this part: 7
Overall difficulty level: Moderate
Cumulative time required: 15-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool

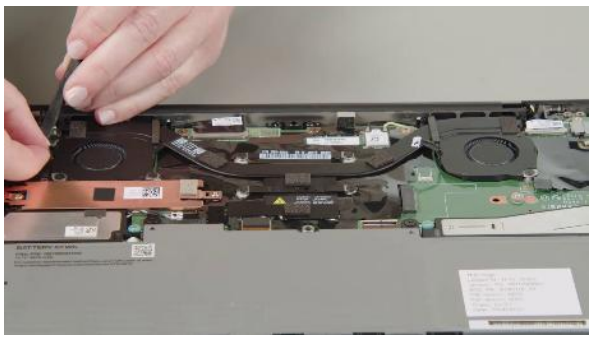
Prerequisites:

- Disconnect the power cable and disable the built-in battery.
- Remove the base cover assembly.

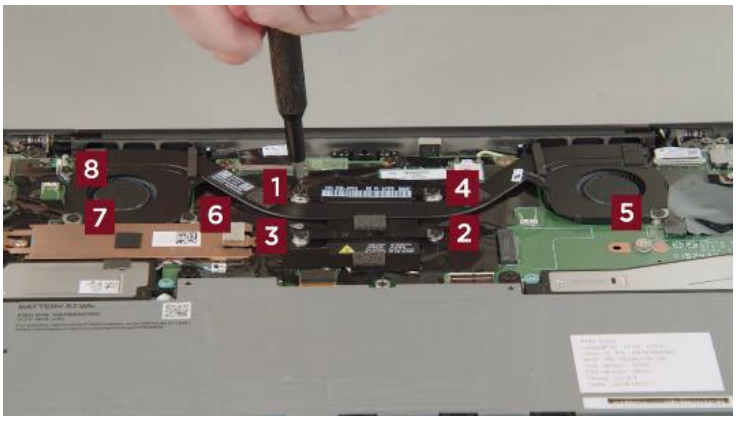
Removal:

1. Disconnect the thermal fan assembly cables from the system board.

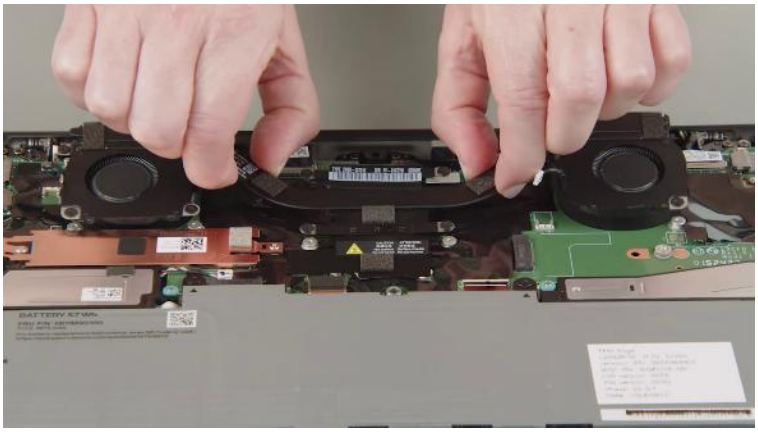




2. Loosen eight (8) captive screws in numerical order.



3. Lift the thermal fan assembly from the system.

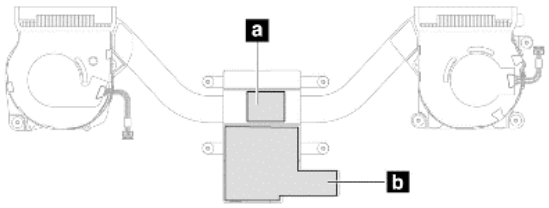


Warning!

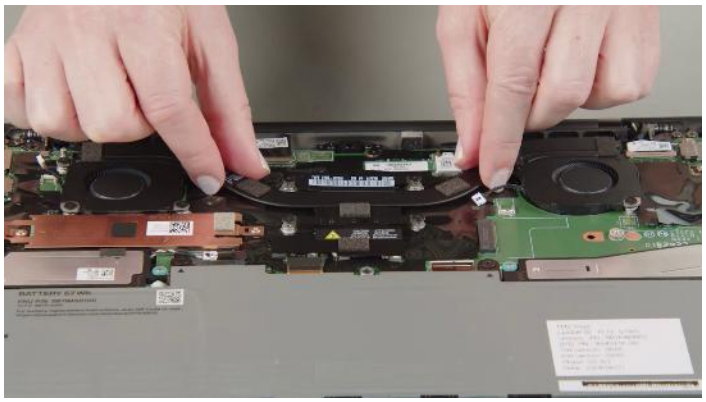
- You must clean the thermal grease from the thermal assembly, the processor, and any other areas where it was used. Watch this video for guidance and best practices for removing and applying thermal grease: https://youtu.be/SDcaHmBYkOM?feature=shared&t=296.
- Do not press the top of the fan cover and the fan hub.
- If you are installing a new thermal fan assembly, before you attach the assembly to the computer, clean all thermal grease and thermal gel on the system board (if not a new one).
- Tighten the screws in ascending order by following the alphabet marked beside each screw. Otherwise, the system board might get damaged.
- Ensure that the connector is attached firmly.

Replacement:

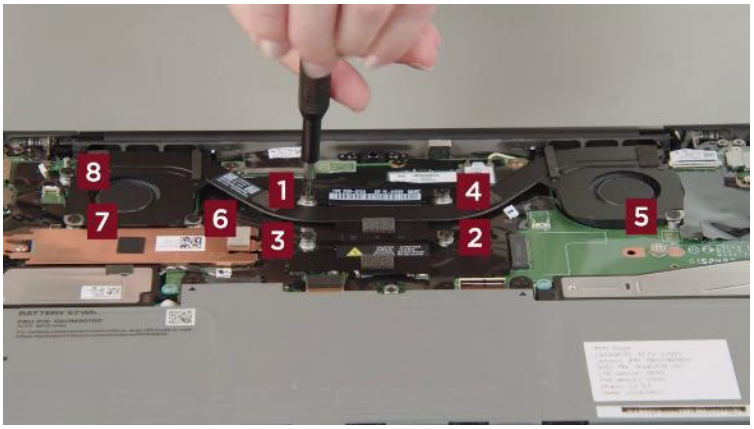
1. Clean old thermal grease from all parts in the system where it was used. Apply 0.2 grams of new thermal grease to the parts marked “a” and new L83BY thermal paste to the parts marked “b” according to this diagram.



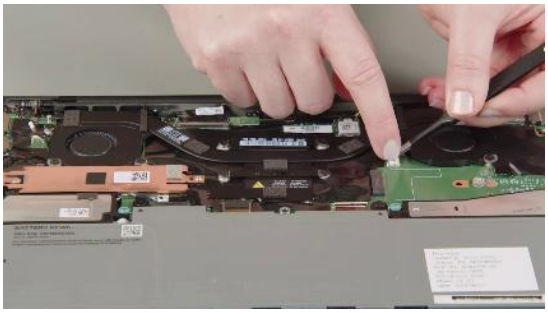
2. Lower the thermal fan assembly into position using the screw holes for alignment.

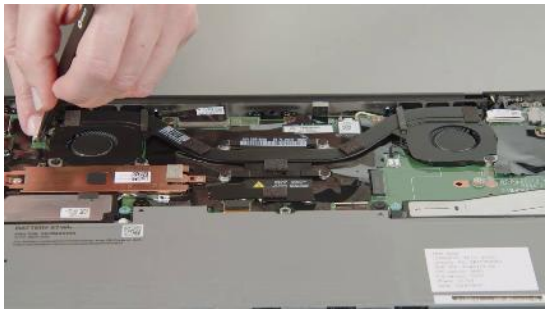


3. Tighten eight (8) captive screws in numerical order.



4. Connect the thermal fan assembly cables to the system board.





After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.10 Speaker assembly

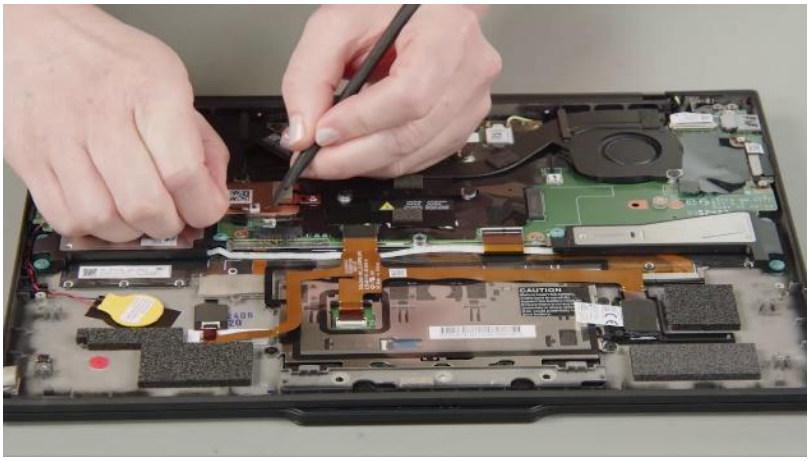
Steps for this part: 9
Overall difficulty level: Easy
Cumulative time required: 10-15 minutes
Suggested tools for this part: Screwdriver kit

Prerequisites:

- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

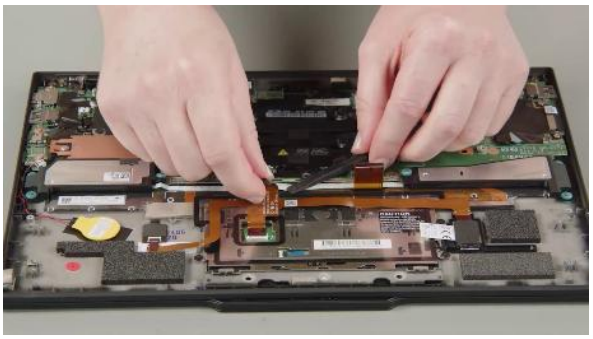
Removal:

1. Disconnect the speaker cable from the system board and remove the cable from the guide.



2. Disconnect the keyboard cable and the trackpad, fingerprint reader, P sensor, and NFC cable from the system board.

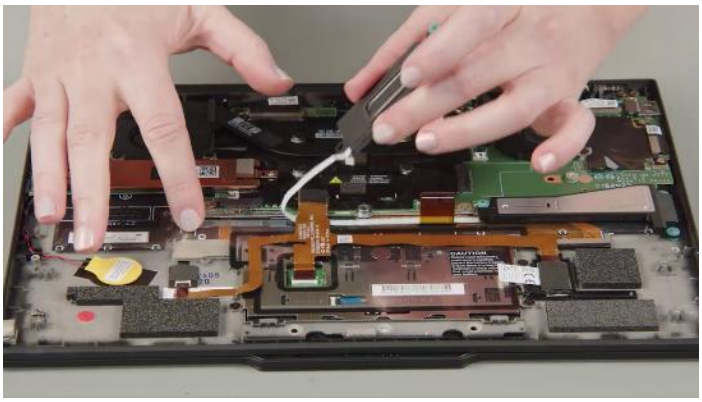




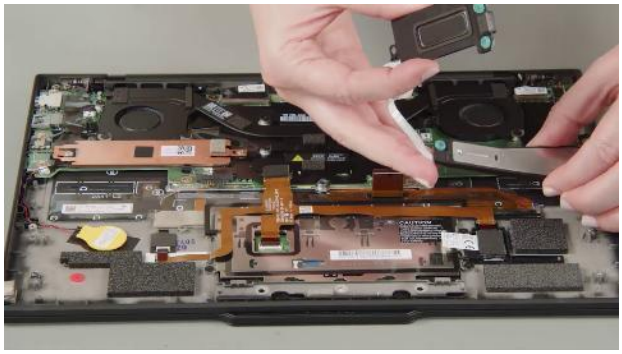
3. Remove the speaker closest to the connector cable from its posts. Set aside any rubber gaskets that come out of the speaker hole to reinstall before replacing the speaker.



4. Gently peel up the cable between the speakers.



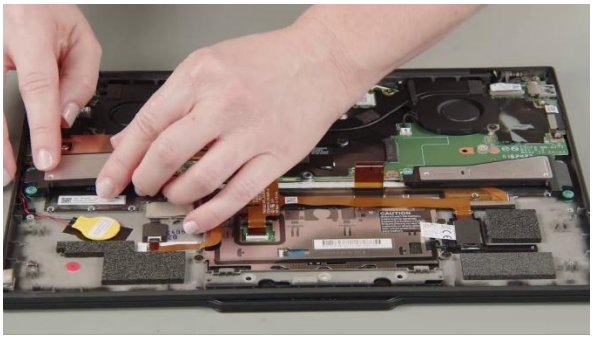
5. Lift the second speaker from its posts and remove the assembly from the system.



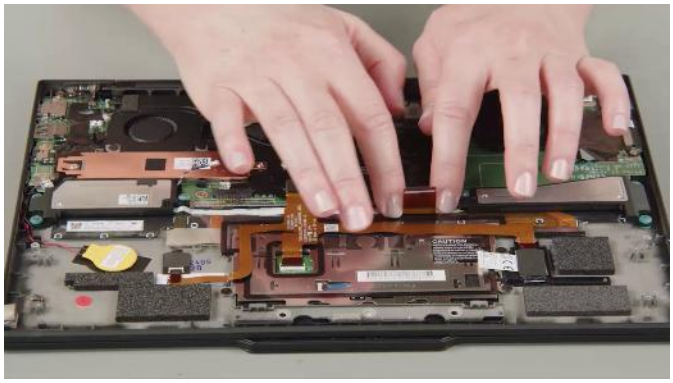
Replacement:

1. Place both speakers onto their respective posts in the system**.**

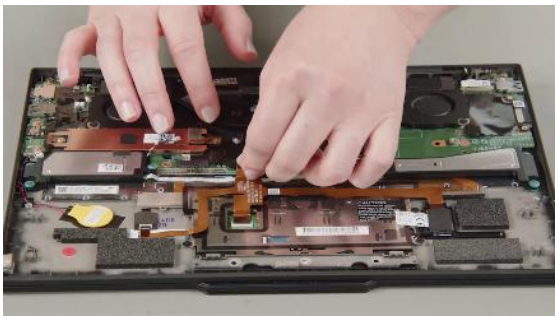




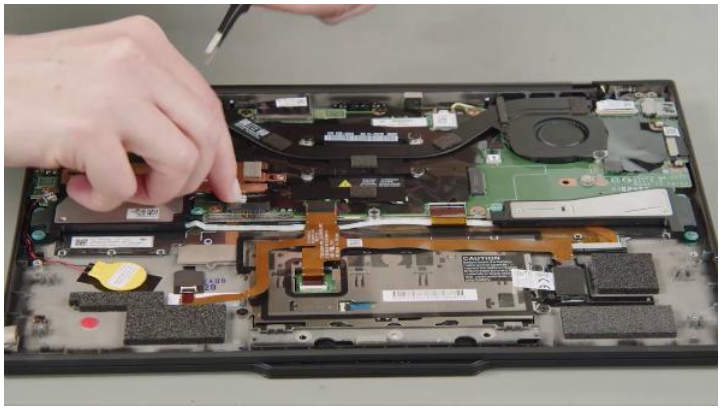
2. Secure the adhesive backing on the cable between the speakers.



3. Connect the trackpad, fingerprint reader, P sensor, NFC cable, and keyboard cable to the system board.




4. Connect the speaker cable to the system board and insert the cable into its guide.



After replacing this part, don't forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.11 Trackpad / Haptic Touchpad, fingerprint reader, P-sensor, and NFC cable

Steps for this part: 8
Overall difficulty level: Easy
Cumulative time required: 15-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

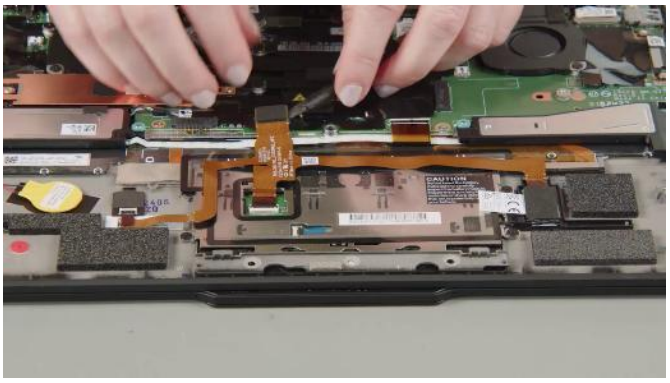
Prerequisites:

- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

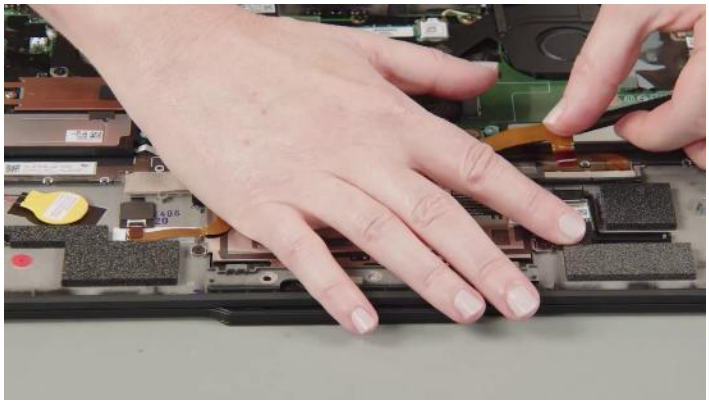
Note: Depending on the model, your computer might have no P sensor connector or NFC connector.

Removal:

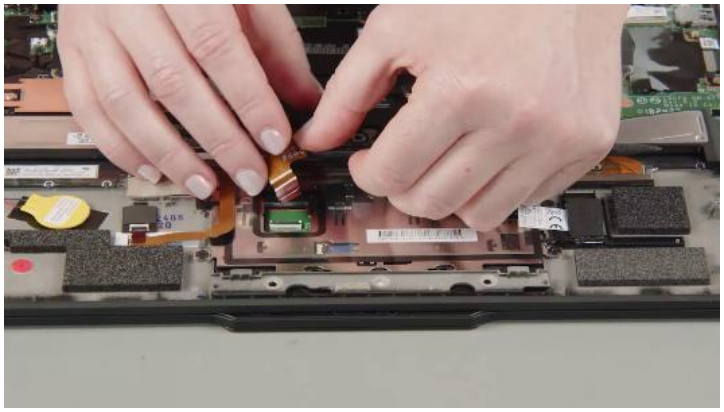
1. Disconnect the trackpad, fingerprint reader, P-sensor, and NFC cable from the system board.



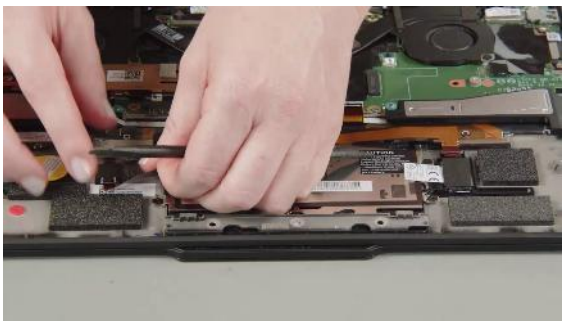
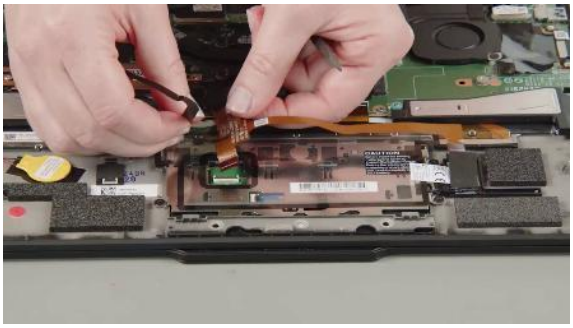
2. Disconnect the cable from the NFC module.



3. Disconnect the cable from the trackpad.

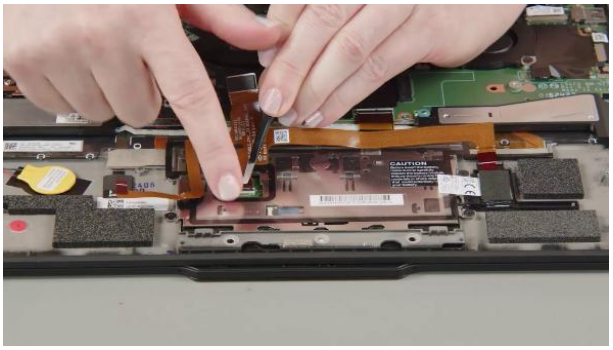


4. Disconnect the cable from the fingerprint reader and remove the cable from the system.

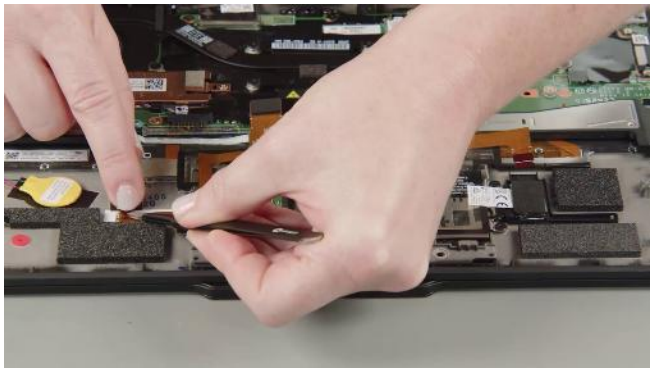



Replacement:

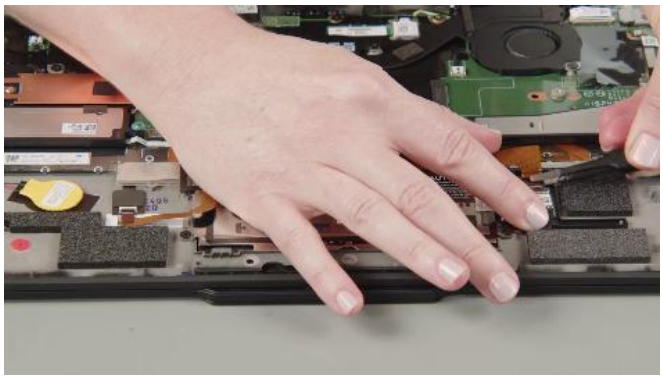
1. Connect the cable to the trackpad.



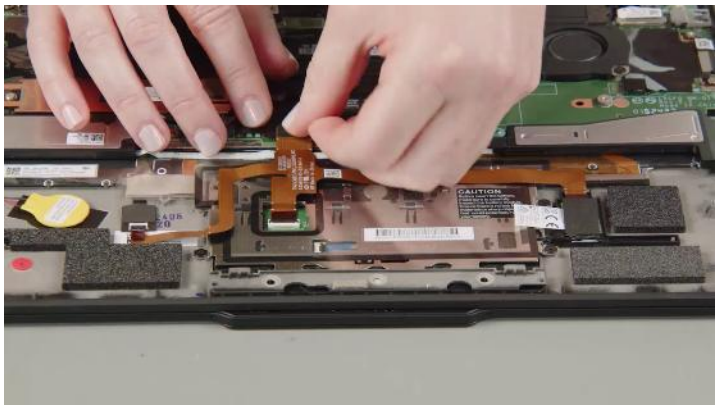
2. Connect the cable to the fingerprint reader.



3. Connect the cable to the NFC module.



4. Connect the cable to the system board.



After replacing this part, don’t forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.12 Wireless WAN antennas (for selected models)

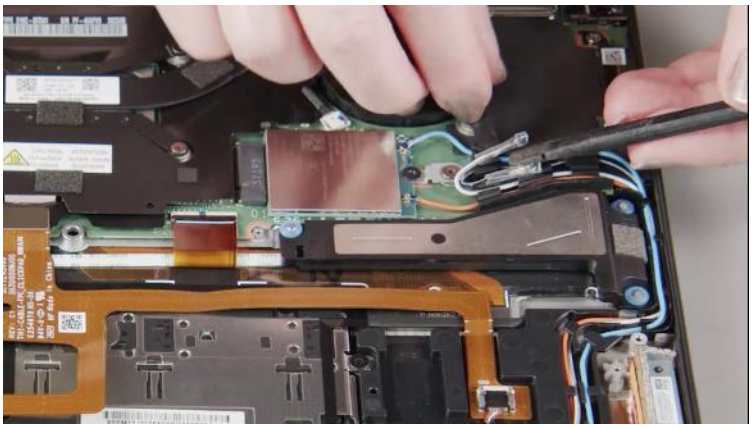
Steps for this part: 15
Overall difficulty level: Medium
Cumulative time required: 20-25 minutes
Suggested tools for this part: Screwdriver kit, Non-metallic pry tool, static-safe tweezers

Prerequisites:

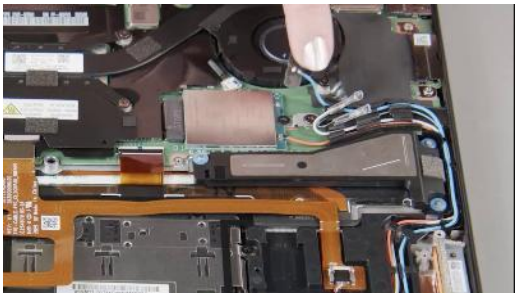
- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

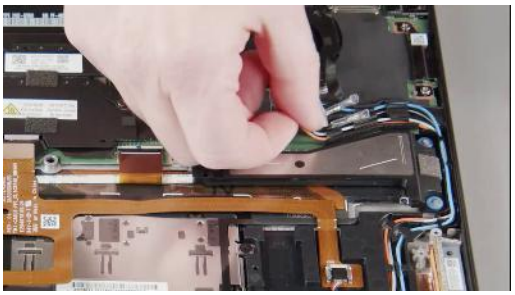
Removal:

1. Remove the tape securing the antenna cables.

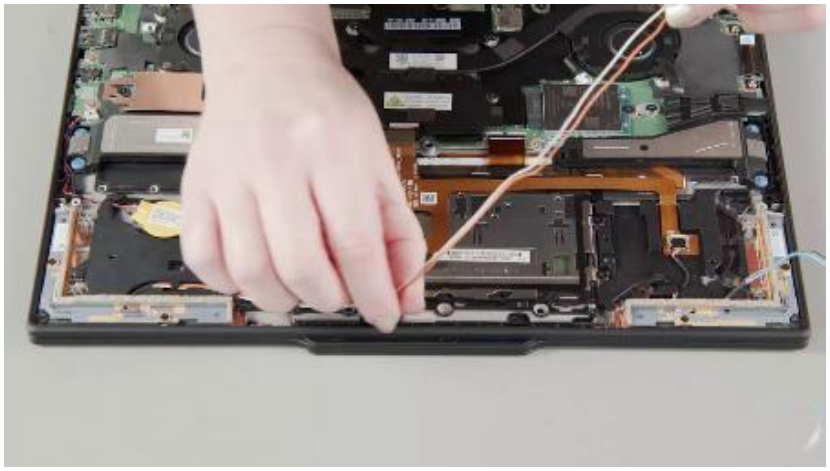


2. Disconnect the antenna cables from the Wireless WAN card.

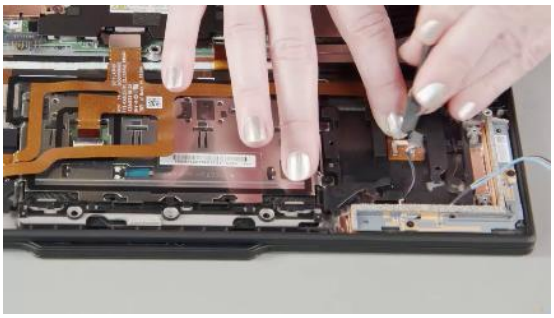




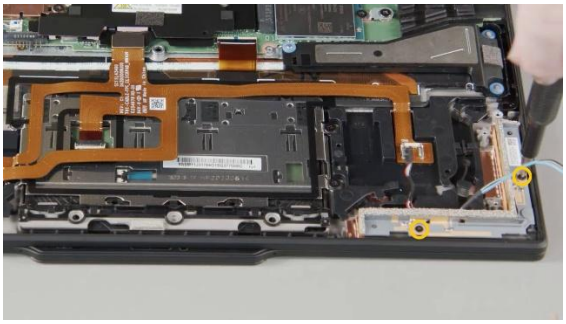
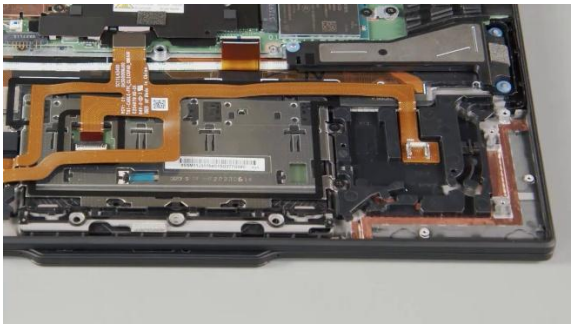
3. Remove the antenna cables from all the cable guides.



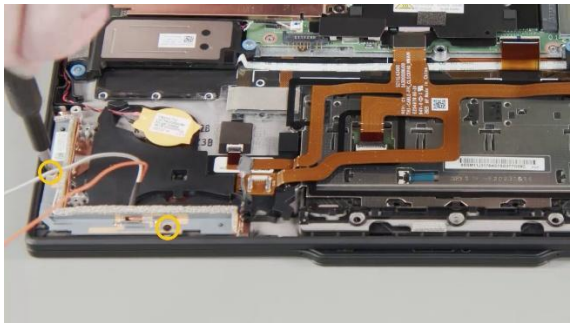
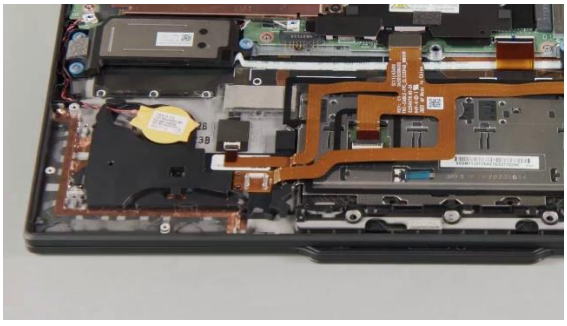
4. Disconnect two P-sensor connectors.




5. Remove two (2) screws from the right Wireless WAN antenna and lift the antenna from the system.

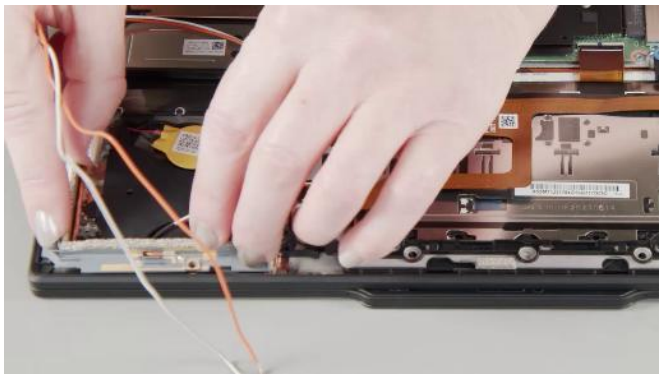



6. Remove two (2) screws from the left Wireless WAN antenna and lift the antenna from the system.

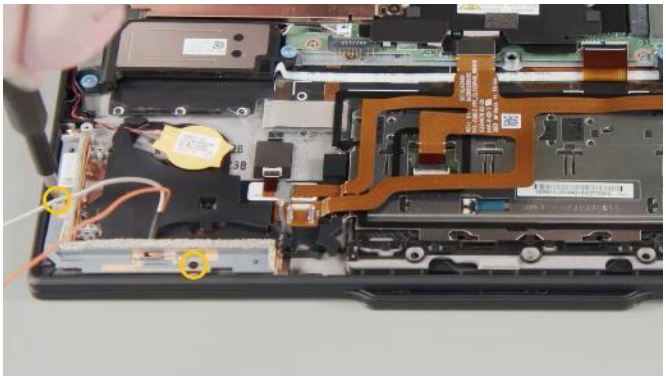



Replacement:

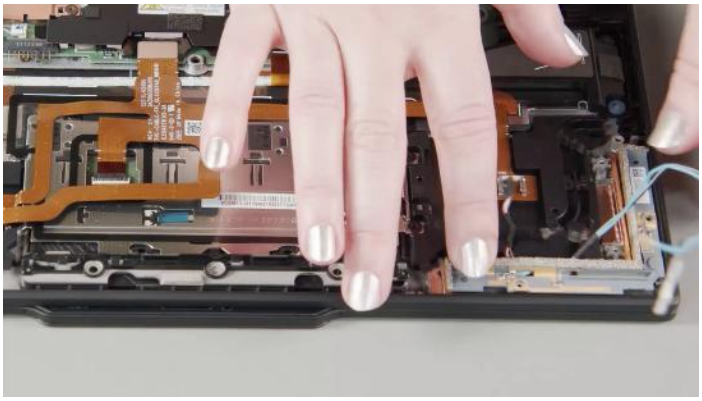
1. Place the left wireless WAN antenna into the system.



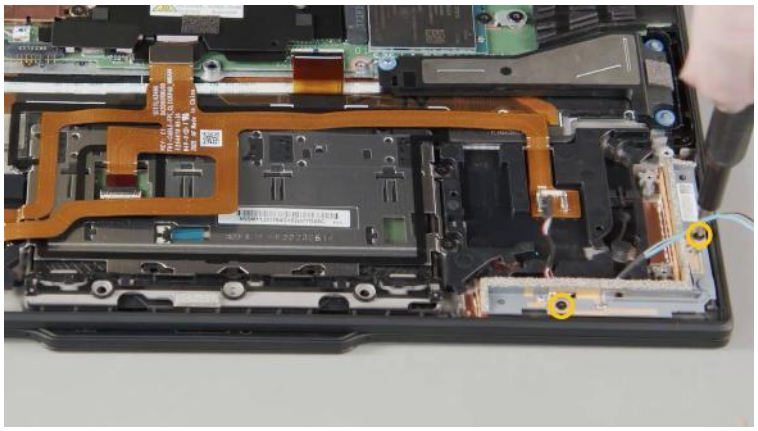
2. Install two (2) retaining screws into the left antenna.



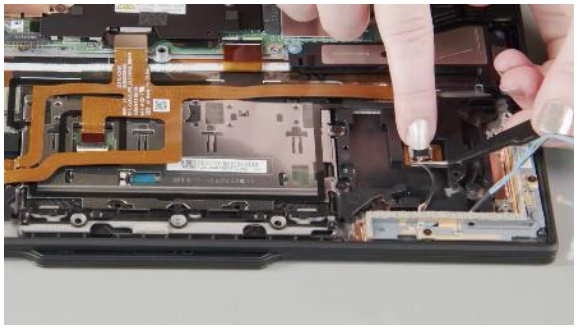
3. Place the right wireless WAN antenna into the system.

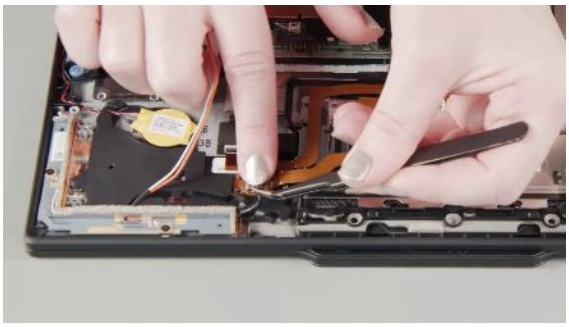


4. Install two (2) retaining screws into the right antenna.

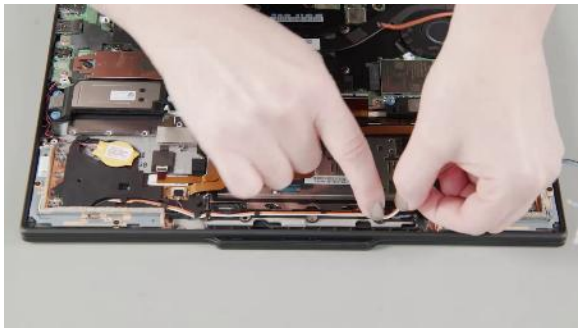


5. Connect two P-sensor connectors.



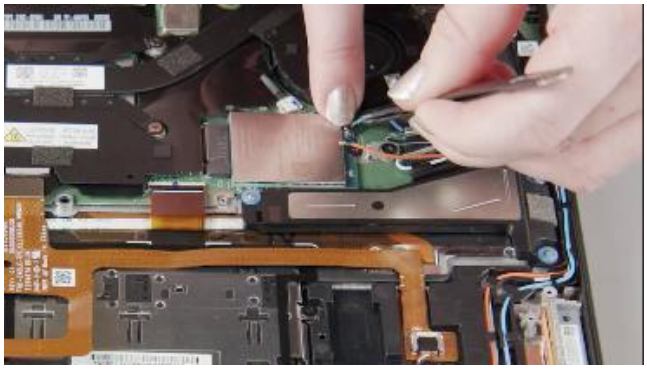


6. Insert the antenna cables into all the cable guides.

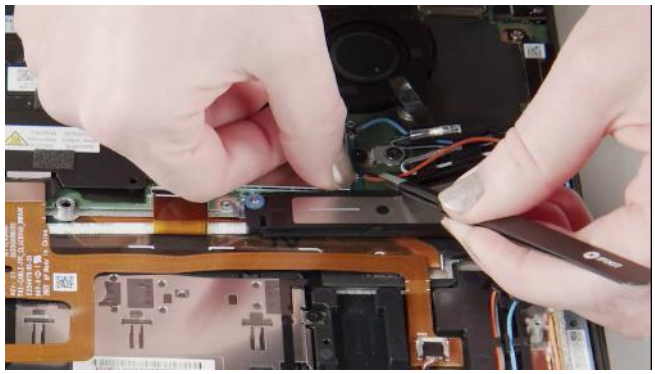




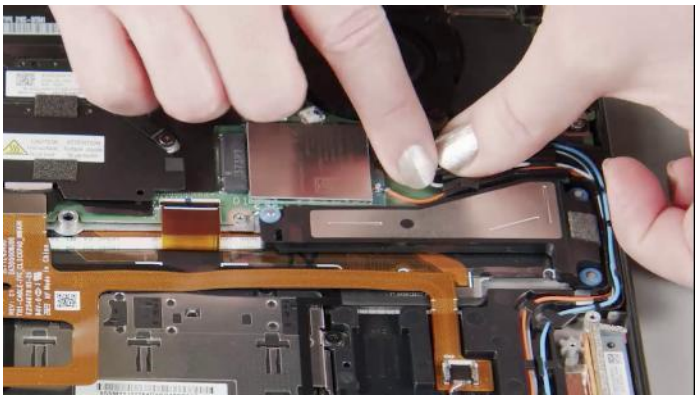
7. Connect the blue antenna cable to the blue terminal on the wireless WAN card.



8. Connect the orange antenna cable to the orange terminal on the wireless WAN card.



9. Secure the antenna cables in the cable guides with tape.



After replacing this part, don’t forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.13 Wireless WAN antenna cable guide rubber (for selected models)

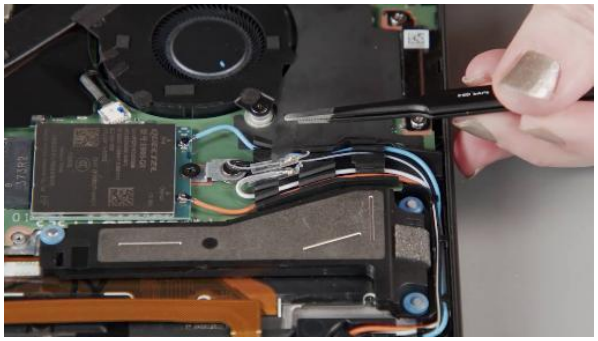
Steps for this part: 9
Overall difficulty level: Medium
Cumulative time required: 20-25 minutes
Suggested tools for this part: Non-metallic pry tool, static-safe tweezers

Prerequisites:

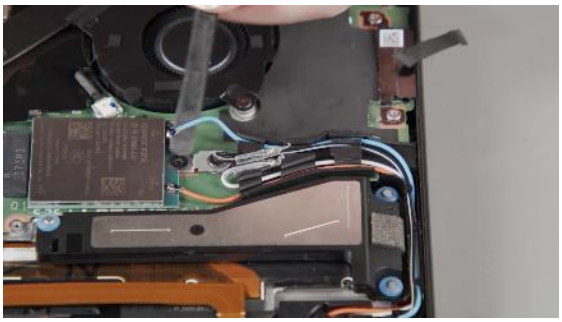
- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

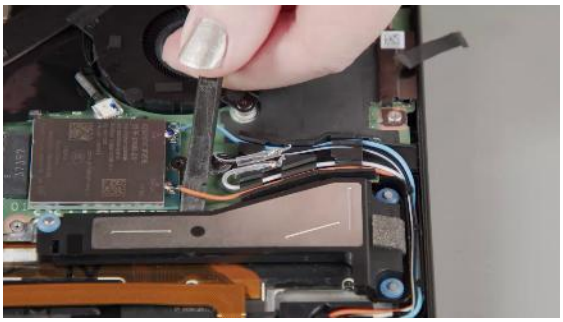
Removal:

1. Remove the tape securing the antenna cables.

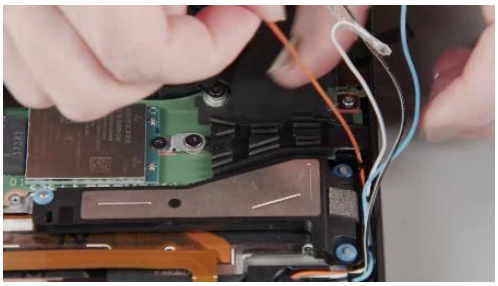


2. Disconnect the antenna cables from the wireless WAN card.

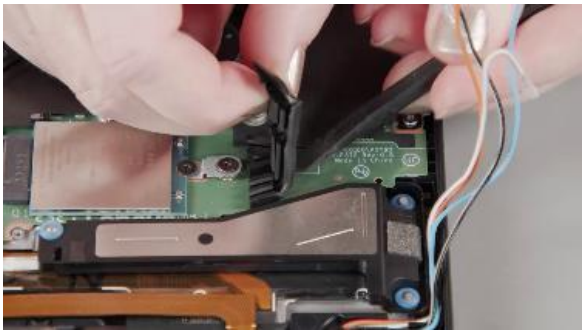




3. Remove the antenna cables from the cable guide rubber.

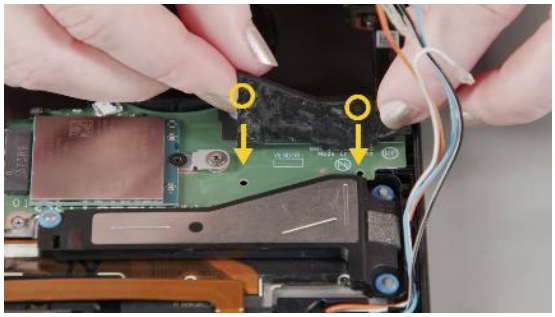


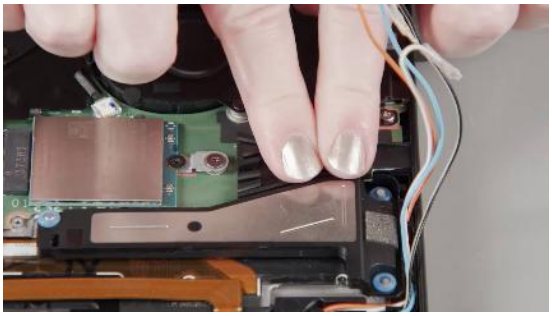
4. Pry up the guide rubber from the system board.



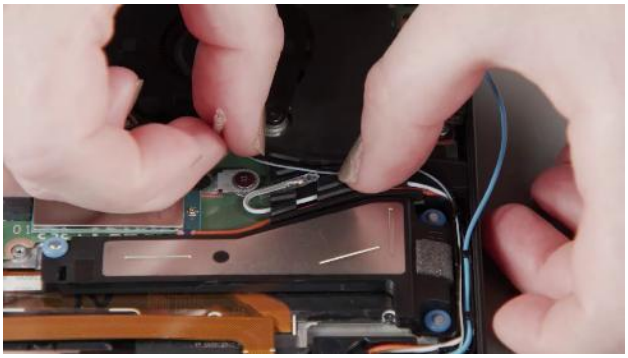
Replacement:

1. Insert the two tabs on the guide rubber into the holes on the system board and press down to secure the rubber with its adhesive backing.

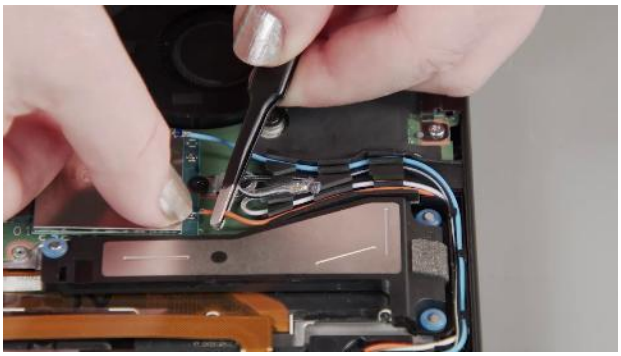




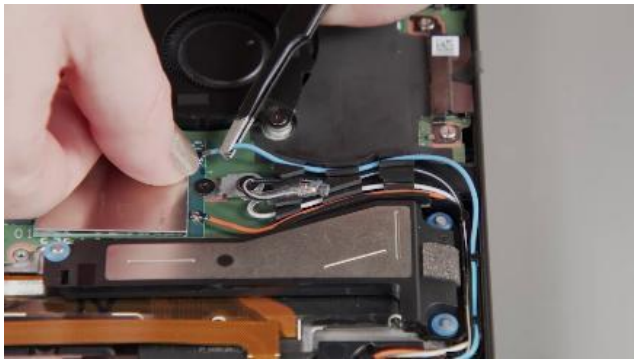
2. Insert the antenna cables into the cable guide rubber.



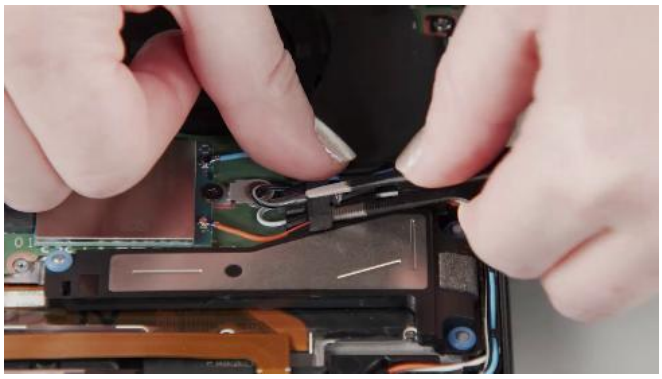
3. Connect the orange antenna cable to the orange terminal on the wireless WAN card.



4. Connect the blue antenna cable to the blue terminal on the wireless WAN card.



5. Secure the antenna cables in the cable guides with tape.



After replacing this part, don’t forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.14 Coin-cell battery

Steps for this part: 5
Overall difficulty level: Low
Cumulative time required: 10-15 minutes
Suggested tools for this part: Non-metallic pry tool, static-safe tweezers

Prerequisites:

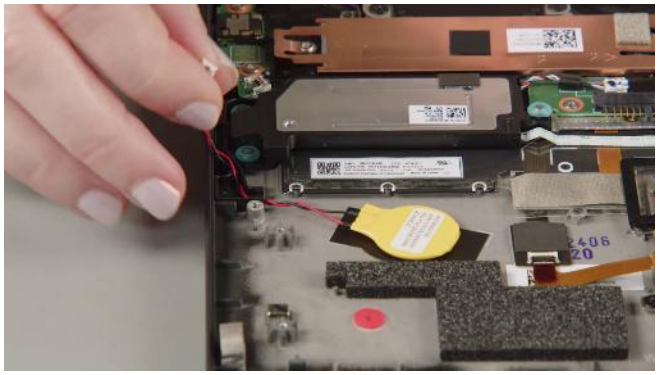
- Disconnect the power cable and disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

Warning:

- Use only the Lenovo-authorized battery specified for the computer. Any other battery could ignite or explode.

Removal:

1. Disconnect the coin-cell battery cable from the system board and remove the cable from the guides.

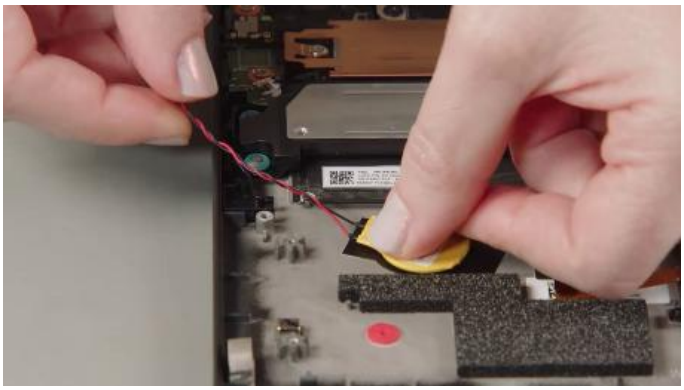


2. Pry up the battery from its adhesive backing and remove it.

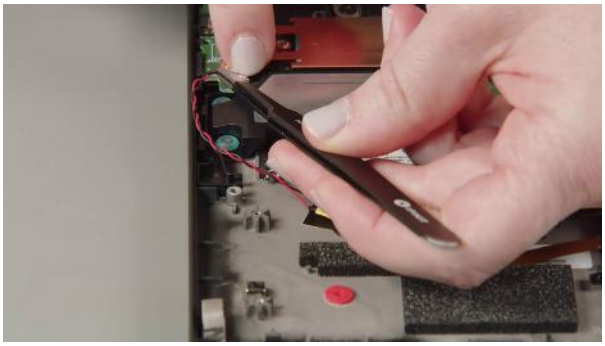


Replacement:

1. Lower the coin-cell battery into place and secure the adhesive backing.



2. Connect the cable to the system board.



3. Insert the cable into the guides.

After replacing this part, don't forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.
- Reset the system date and time in the BIOS menu.

3.15 Fan cable guide

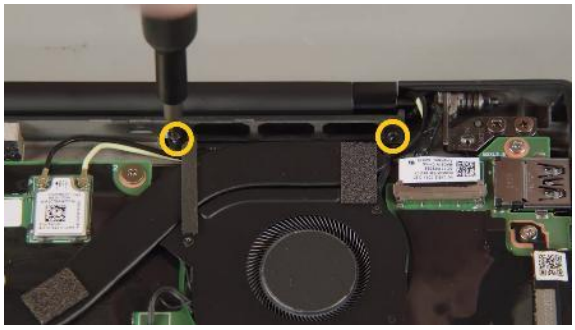
Steps for this part: 8
Overall difficulty level: Medium
Cumulative time required: 10-15 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool

Prerequisites:

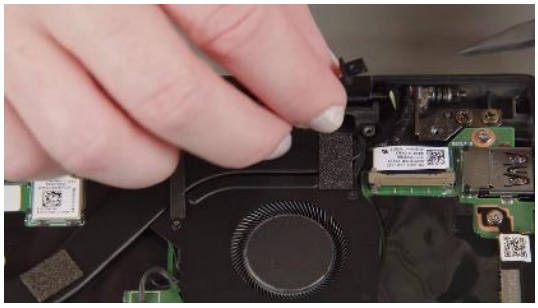
- Disconnect the power cable and disable the built-in battery.
- Remove the base cover assembly.

Removal:

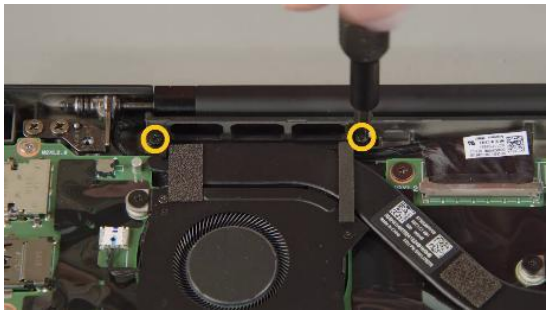
1. Remove two (2) screws from the fan cable guide closest to the LCD cable.



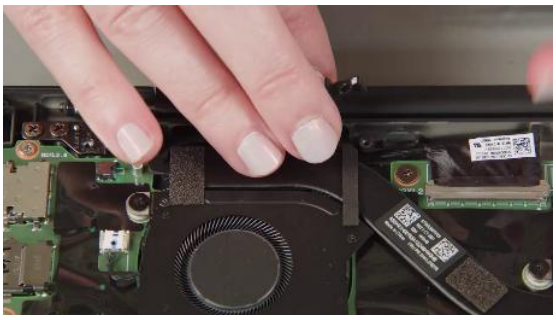
2. Remove the fan cable guide from the system.



3. Remove two (2) screws from the fan cable guide closest to the camera cable.



4. Remove the fan cable guide from the system.

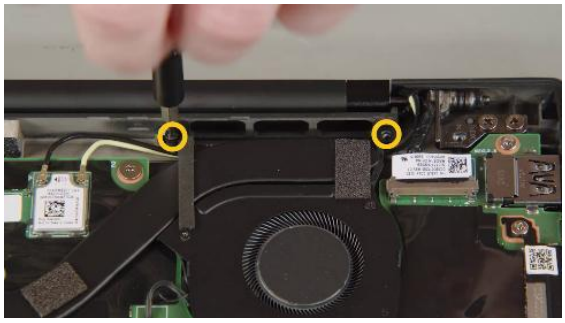


Replacement:

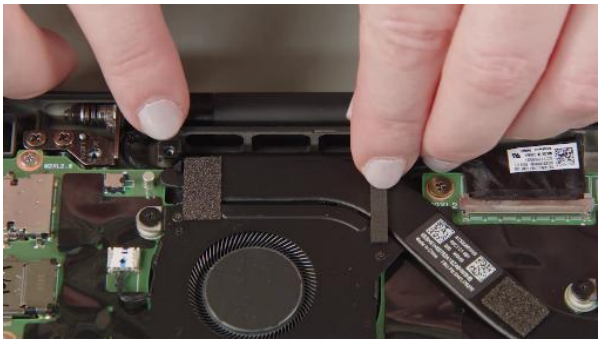
1. Lower the fan cable guide closest to the LCD cable into place in the system.



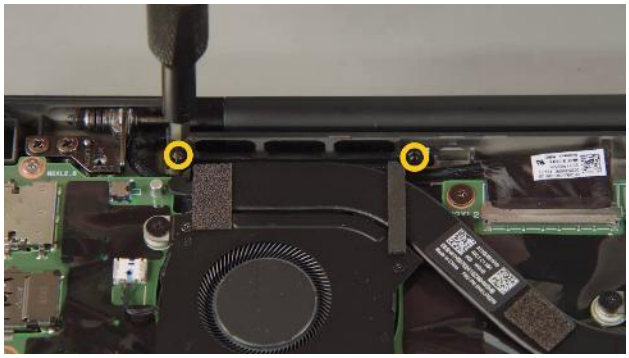
2. Install two (2) screws to secure the guide in place.



3. Lower the fan cable guide closest to the camera cable into place in the system.



4. Install two (2) screws to secure the guide in place.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.16 USB bracket

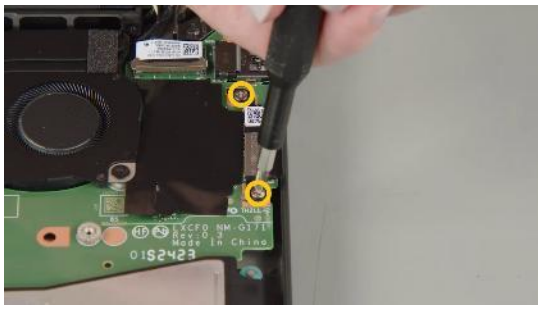
Steps for this part: 4
Overall difficulty level: Easy
Cumulative time required: 10-15 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool

Prerequisites:

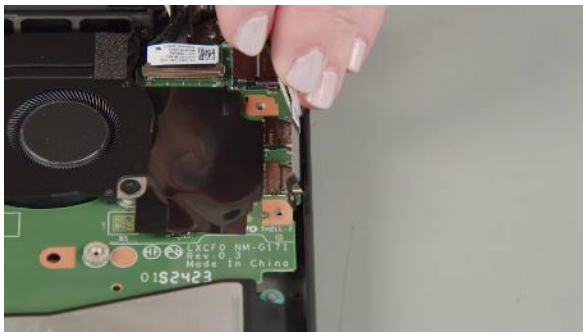
- Disable the built-in battery.
- Remove the base cover assembly.

Removal:

1. Remove two (2) screws from the USB bracket.

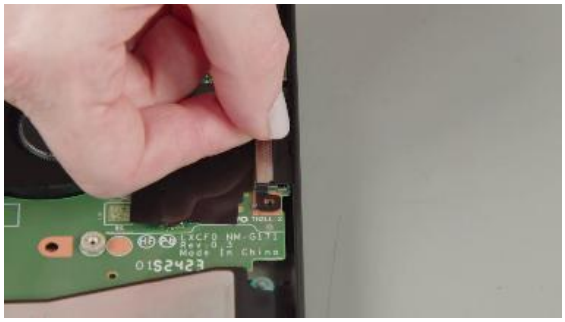


2. Remove the bracket from the system.

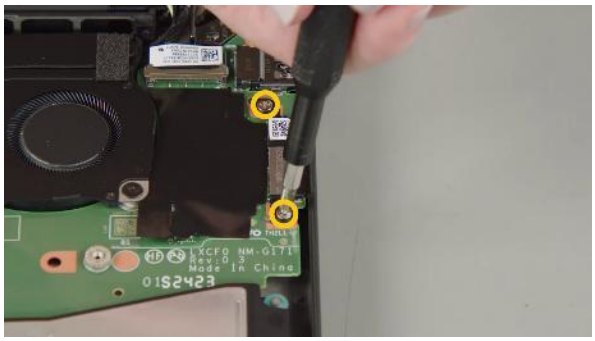


Replacement:

1. Lower the USB bracket into place in the system using the screw holes for alignment.



2. Install two (2) screws to secure the bracket in place.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.17 NFC module and sponge (for selected models)

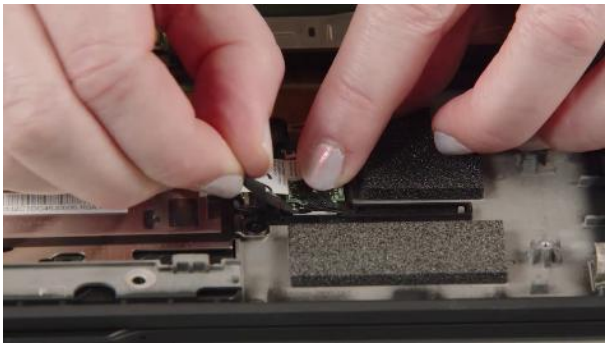
Steps for this part: 8
Overall difficulty level: Easy
Cumulative time required: 15-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

Prerequisites:

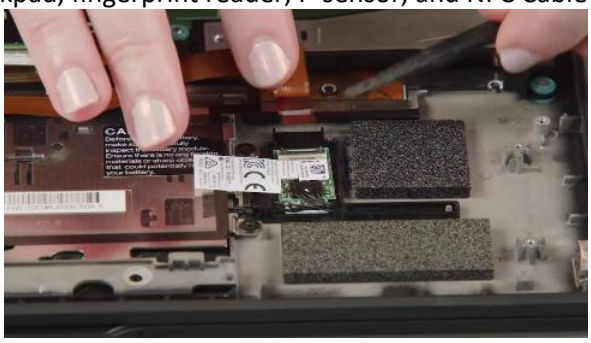
- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

Removal:

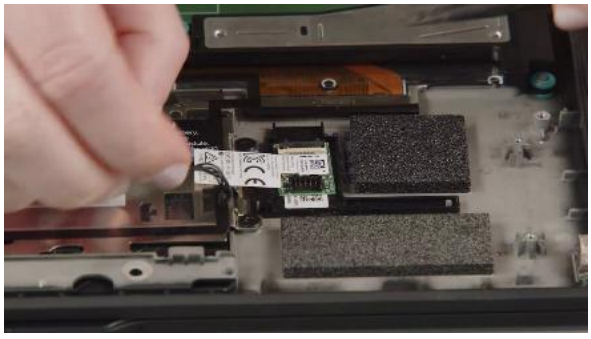
1. Remove the NFC sponge.



2. Disconnect the trackpad, fingerprint reader, P-sensor, and NFC Cable from the NFC module.



3. Disconnect the NFC antenna from the NFC module and remove it from the guide.

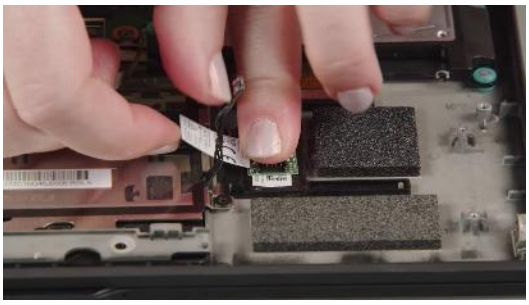


4. Gently pry up the NFC module and remove it from the system.

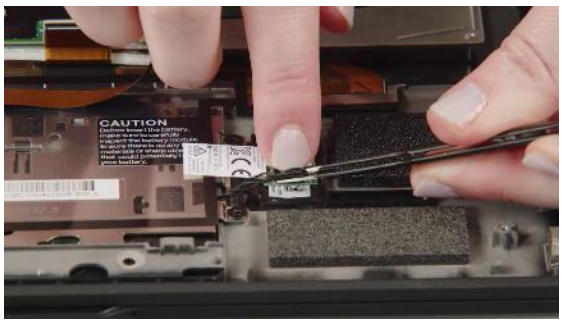


Replacement:

1. Lower the NFC module into place in the system and press to secure the adhesive backing.

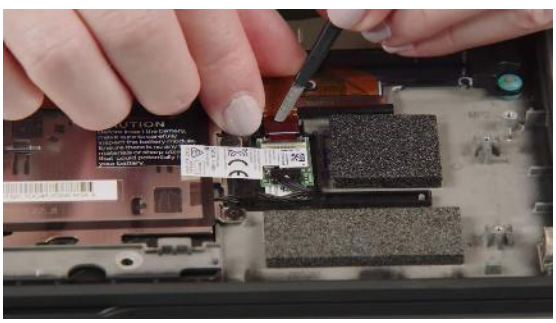


2. Connect the NFC antenna to the NFC module and place the antenna into the guide.

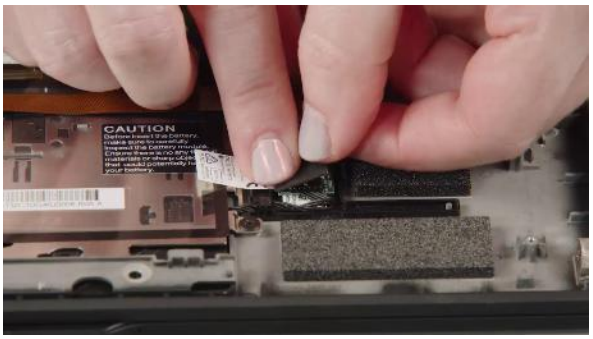




3. Connect the trackpad, fingerprint reader P-sensor, and NFC Cable to the NFC module.



4. Lower the NFC sponge into place and press to secure the adhesive backing.



After replacing this part, don't forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.18 Trackpad

Steps for this part: 10
Overall difficulty level: Easy
Cumulative time required: 20-25 minutes
Suggested tools for this part: Non-metallic pry tool, screwdriver kit, static-safe tweezers
Prerequisites:

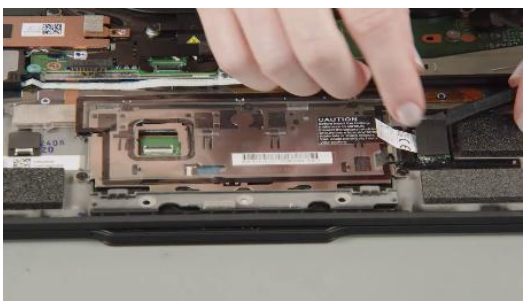
- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.
- Remove the trackpad, fingerprint reader, P-sensor, and NFC cable.

Notes:

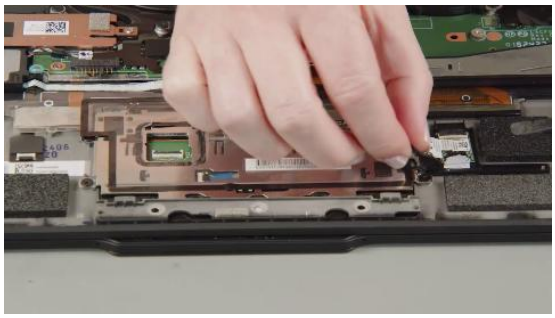
- There might exist a waterproof mylar covering the Trackpad, remove the mylar before replacement.
- The NFC module is for selected models.

Removal:

1. Remove the NFC sponge.



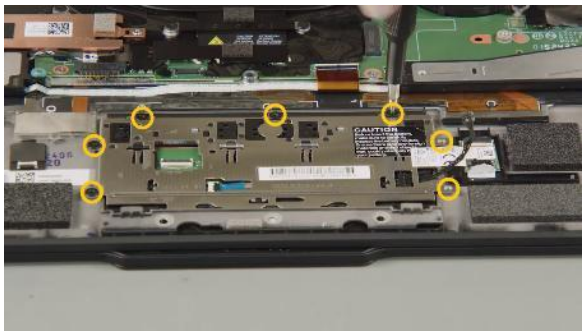
2. Disconnect the NFC antenna from the NFC module.



3. Peel up the waterproof mylar and remove it from the trackpad.



4. Remove seven (7) screws from the trackpad.

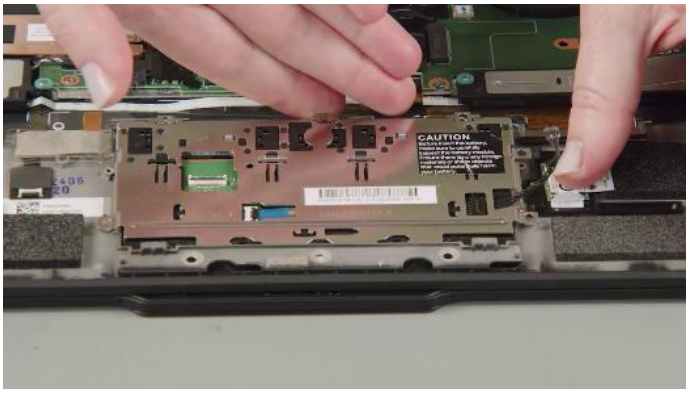


5. Remove the trackpad from the system.

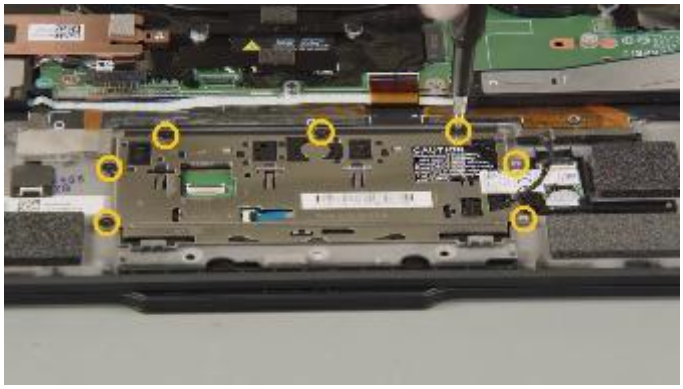


Replacement:

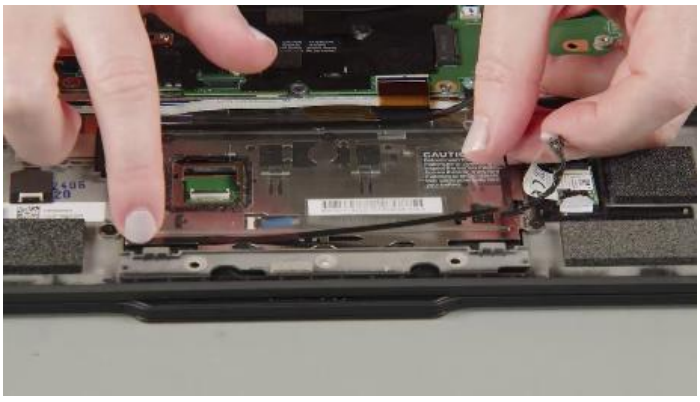
1. Insert the trackpad into its slot in the system.



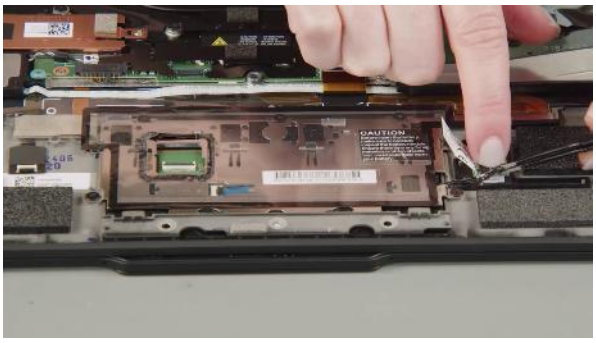
2. Install seven (7) screws into the trackpad.



3. Install the waterproof mylar and press around the black edges to secure the adhesive backing.

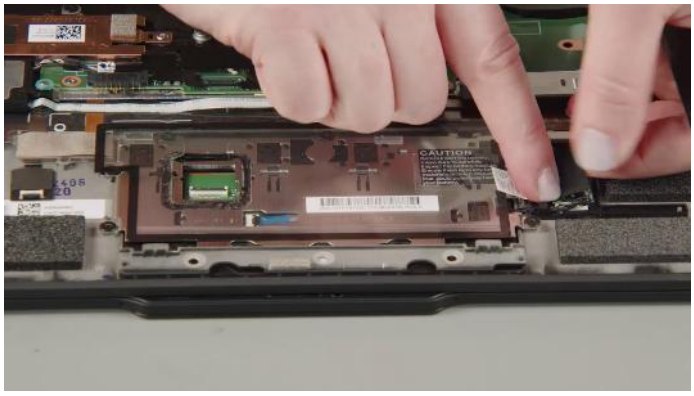


4. Connect the NFC antenna to the NFC module and place the antenna in the guide.





5. Install the NFC sponge.



After replacing this part, don't forget:

- Install the trackpad, fingerprint reader, P-sensor, and NFC cable.
- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.19 Haptic Touchpad (for selected models)

Steps for this part: 10
Overall difficulty level: Hard
Cumulative time required: 20-25 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool

Prerequisites:

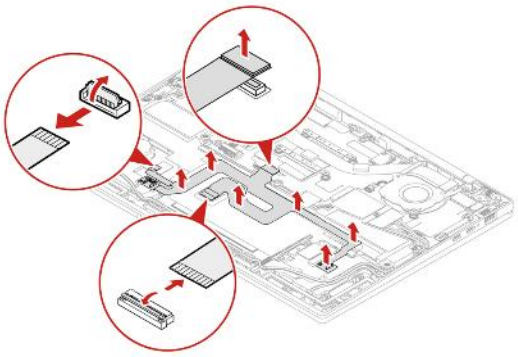
- Disable the built-in battery.
- Remove the base cover assembly.
- Remove the built-in battery.

Notes:

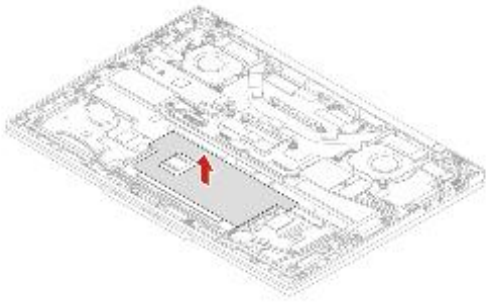
- There might exist a waterproof mylar covering the Trackpad, remove the mylar before replacement.
- The NFC module is for selected models.

Removal:

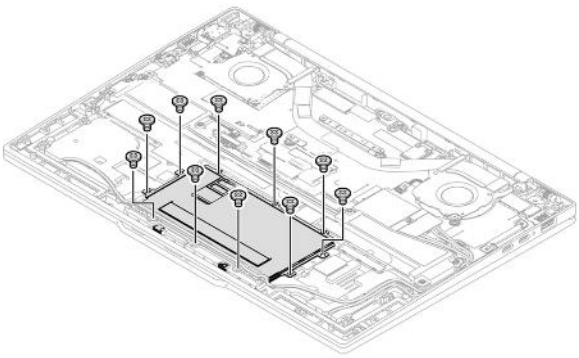
1. Disconnect the connectors and remove the trackpad cable from the system.



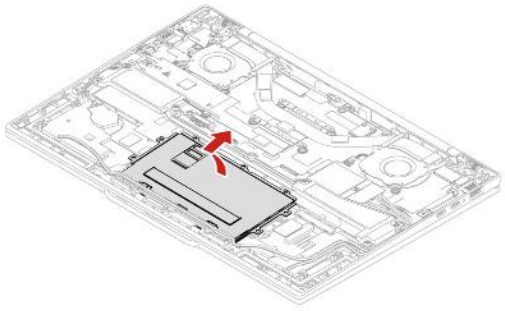
2. Remove the trackpad insulation mylar.



3. Remove ten (10) screws that secure the trackpad assembly.



4. Remove the trackpad assembly.

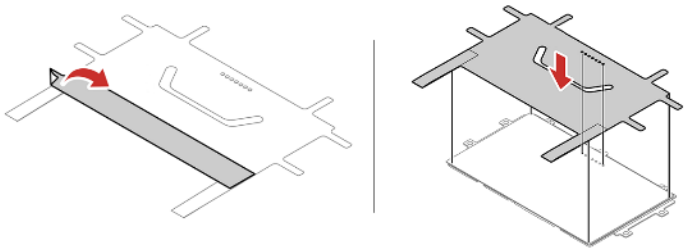


Notes:

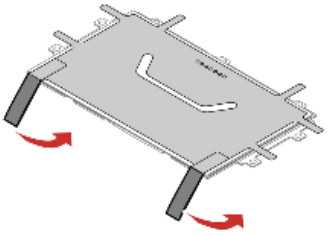
- A Haptic Touchpad jig might come with the Haptic Touchpad, which is used to fix the location of the Haptic Touchpad. Ensure the seven dots on the Haptic Touchpad and the jig are aligned.
- A mylar might cover the Haptic Touchpad. Ensure that you attach the mylar to the Haptic Touchpad after replacement.

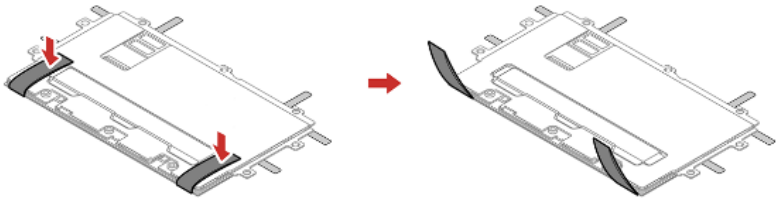
Replacement:

1. Peel off the adhesive tapes and attach the haptic touchpad jig to the haptic touchpad surface.

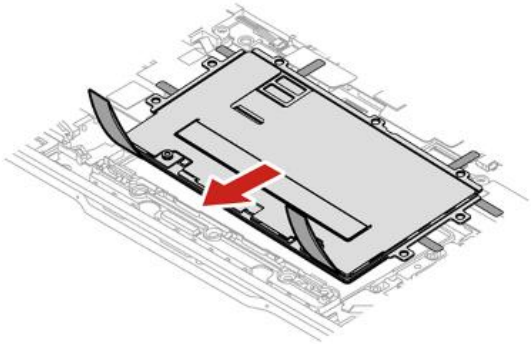


2. Install the Haptic Touchpad and fold the two tails backward. Ensure that there is a folding mark in the tails and that no screws are magnetically attracted to the Haptic Touchpad.

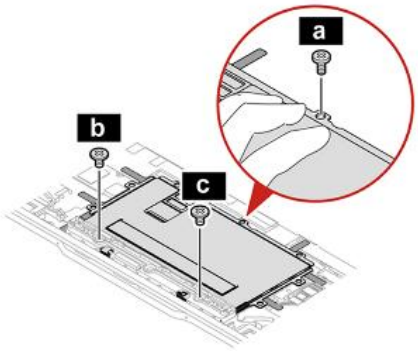




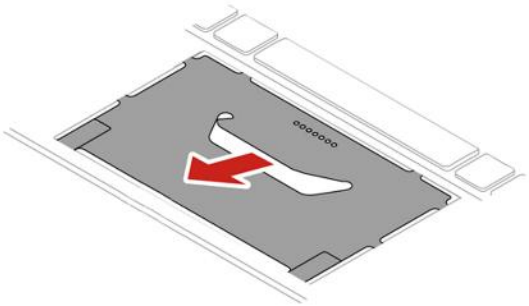
3. Adjust the angle of the Haptic Touchpad and install the Haptic Touchpad into the keyboard and keyboard bezel assembly. Ensure that the tails are lying into the keyboard and keyboard bezel assembly after installing.



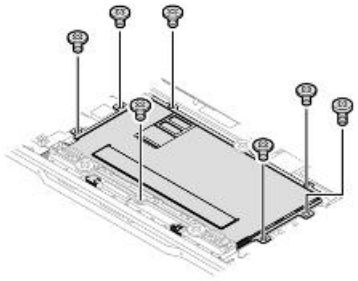
4. Press the side points when fastening the screw “a” and tighten the screws “b” and “c”.



5. Remove the jig.



6. Tighten seven (7) screws.



After replacing this part, don't forget:

- Install the built-in battery.
- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.20 System board

Steps for this part: 21
Overall difficulty level: Moderate
Cumulative time required: 30-40 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

Prerequisites:

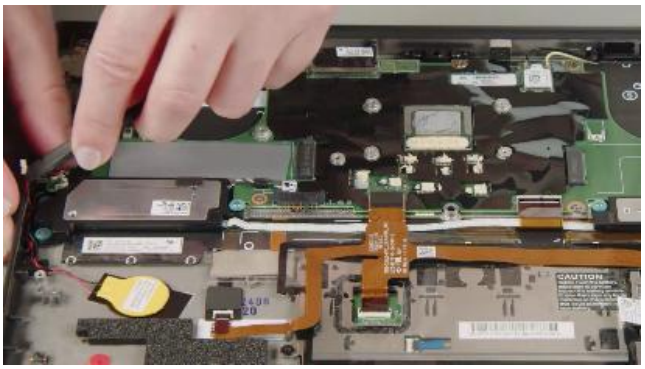
- Disable the built-in battery.
- Remove the nano-SIM-card and nano-SIM-card tray (for selected models).
- Remove the base cover assembly.
- Remove the built-in battery.
- Remove the M.2 solid-state drive and bracket.
- Remove the wireless WAN module and bracket (for selected models).
- Remove the thermal fan assembly.
- Remove the wireless WAN antennas (for selected models).
- Remove the USB bracket.

Attention!

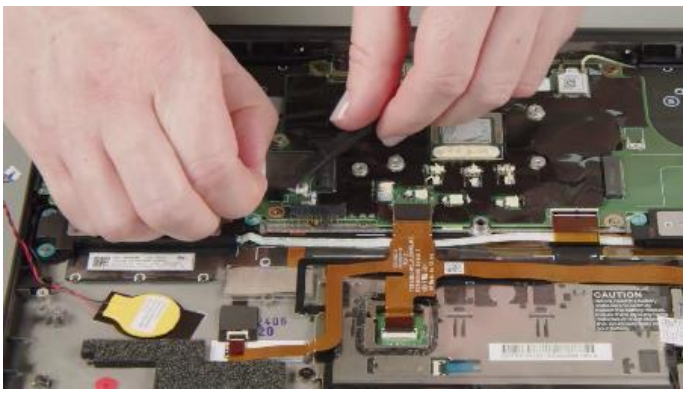
- The system board has an accelerometer, which can be broken when several thousands of G-forces are applied. Dropping a system board from a height of as little as 6 inches so that it falls flat on a hard bench can subject the accelerometer to as much as 6000 Gs of shock.
- Be careful not to drop the system board on a bench top that has a hard surface, such as metal, wood, or composite.
- Avoid rough handling of any kind.
- At every point in the process, be sure not to drop or stack the system board.
- If you put a system board down, be sure to put it only on a padded surface such as an ESD mat or a corrugated conductive surface.
- Avoid bending a system board and hard pushing to prevent cracking at each BGA (Ball Grid Array) chipset.
- This computer shares a common system board with another computer. After replacing the system board, you will be prompted to input a brand name to correctly identify the machine type. For machine types 21NS and 21NT, the brand name is ThinkPad X1 Carbon Gen 13.

Removal:

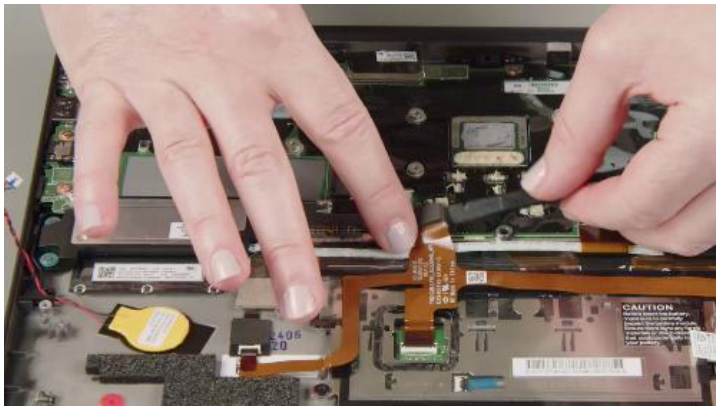
1. Disconnect the coin-cell battery cable from the system board and remove it from the guides.



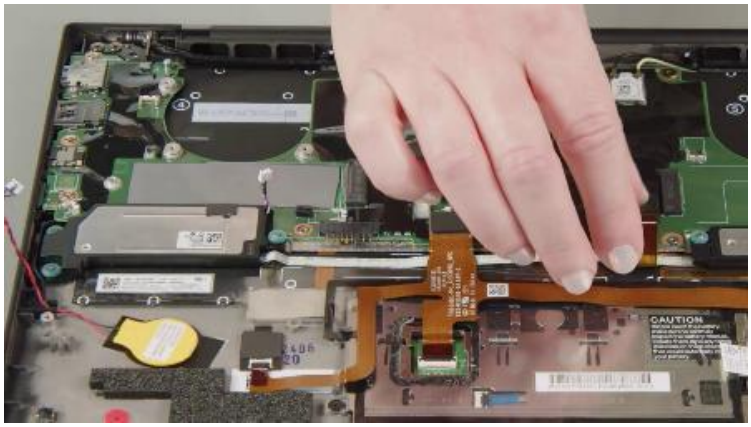
2. Disconnect the speaker cable from the system board and remove it from the guide.



3. Disconnect the trackpad, fingerprint reader, P sensor, and NFC cable from the system board.



4. Disconnect the keyboard cable from the system board.

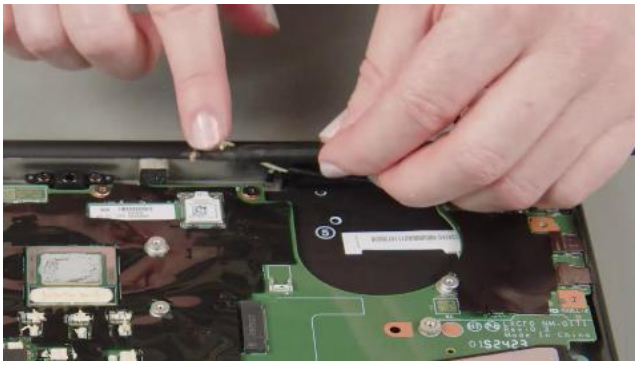


5. Disconnect the LCD cable from the system board.

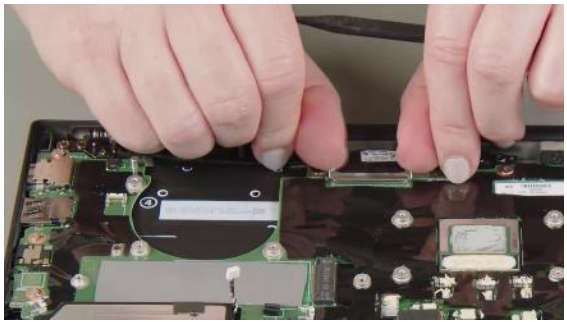


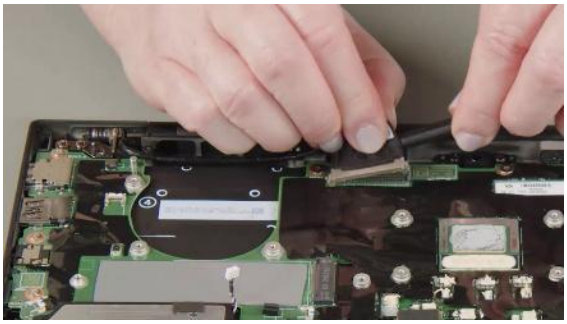


6. Disconnect the wireless LAN antennas.



7. Disconnect the camera cable from the system board.

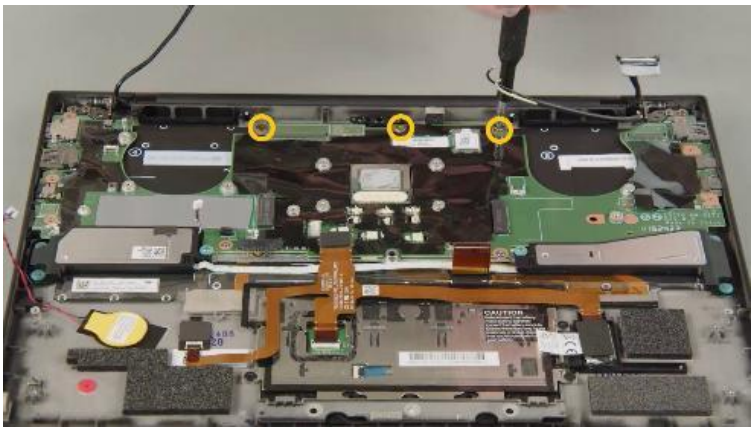




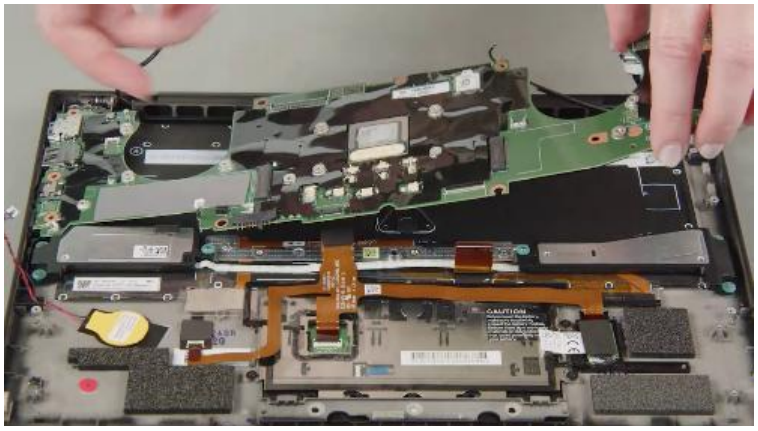
8. Remove four (4) M2 x 2.8 screws from the system board.



9. Remove three (3) M2 x 2.0 screws from the system board.

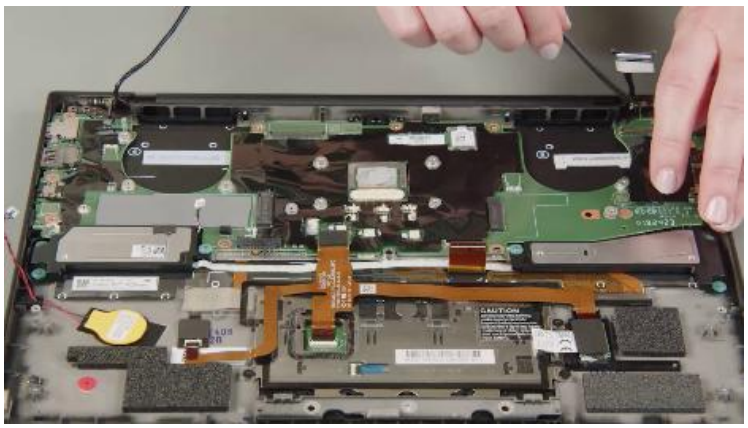


10. Carefully lift the system board and remove it.

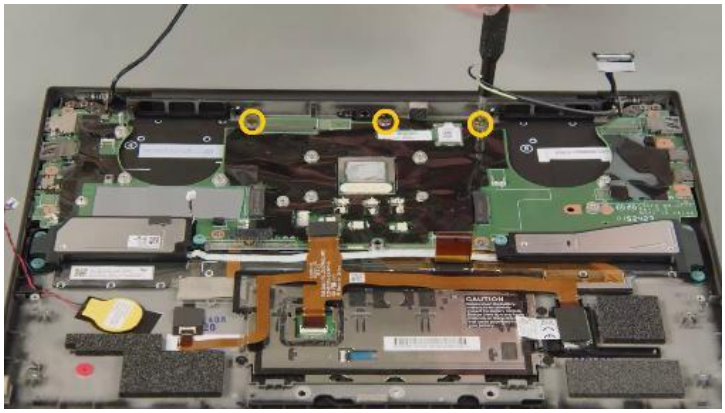


Replacement:

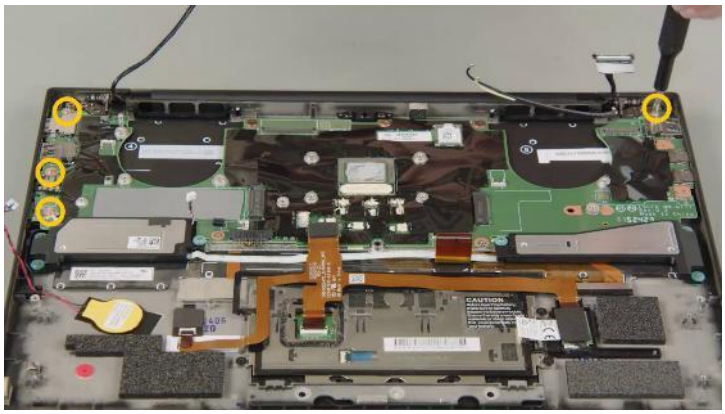
1. Place the system board into position, using the ports and screw holes for alignment. Be careful not to trap any cables under the system board.



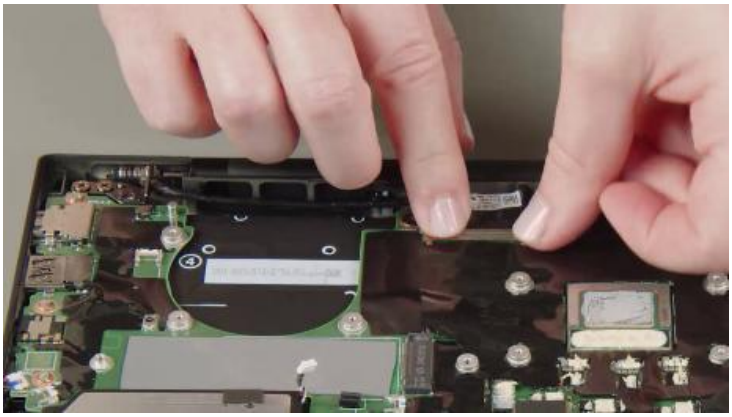
2. Install three (3) M2 x 2.0 screws into the system board.



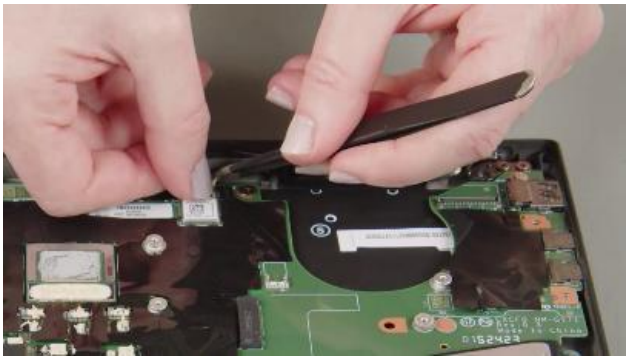
3. Install four (4) M2 x 2.8 screws into the system board.



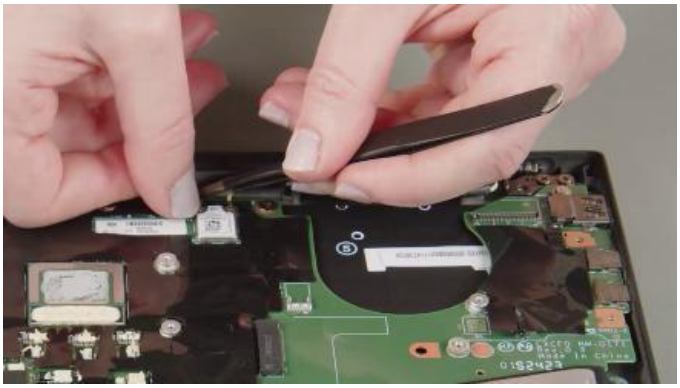
4. Connect the camera cable to the system board and insert the cable into the guides.



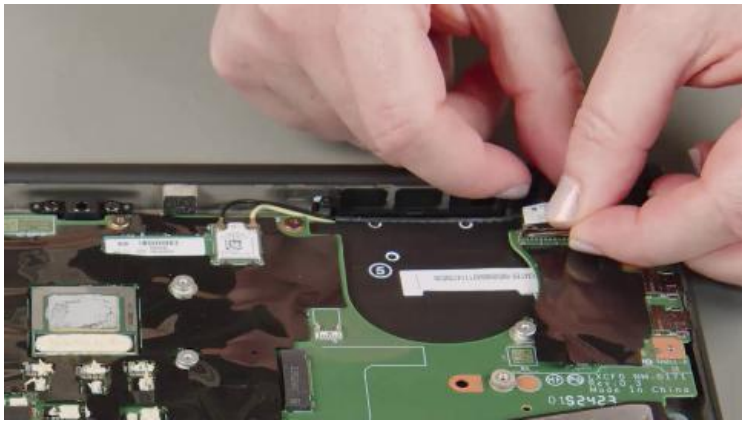
5. Connect the yellow wireless LAN antenna cable to the auxiliary connector.



6. Connect the black wireless LAN antenna cable to the main connector.



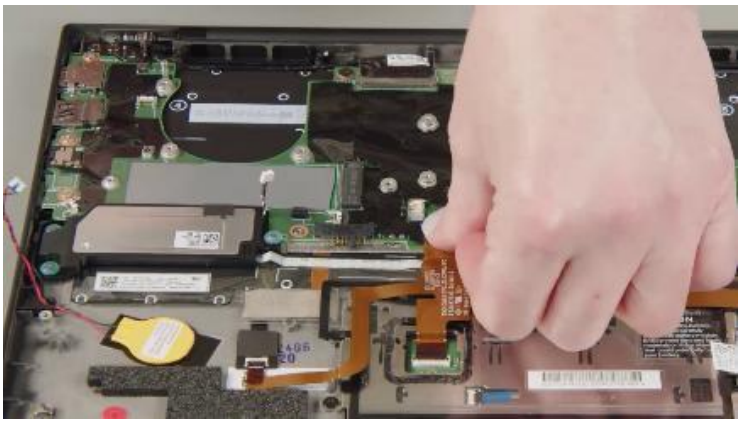
7. Connect the LCD cable to the system board.



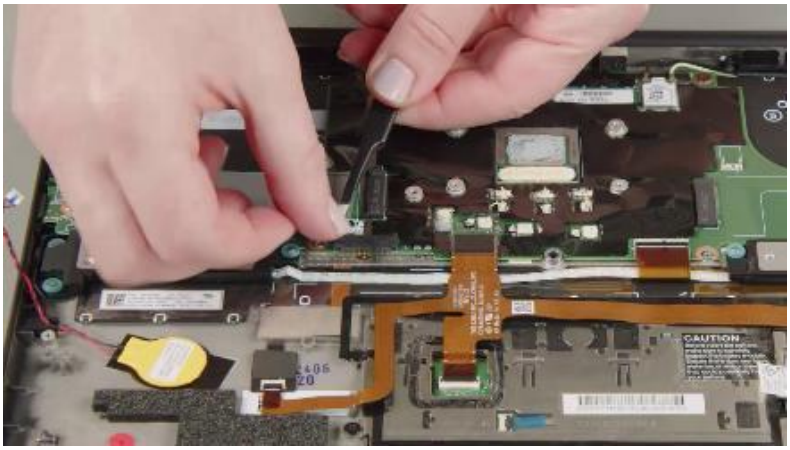
8. Connect the keyboard cable to the system board.



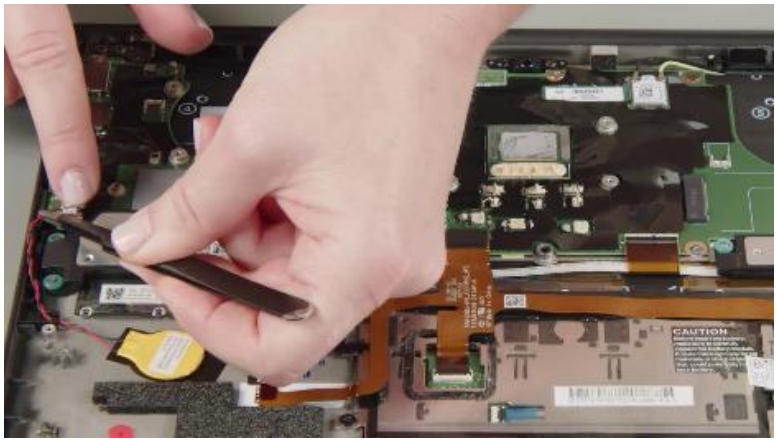
9. Connect the trackpad, fingerprint reader, P sensor, and NFC cable to the system board.



10. Connect the speaker assembly cable to the system board and place the cable in the guide.



11. Connect the coin-cell battery cable to the system board and place the cable in the guides.



After replacing this part, don't forget:

- Install the USB bracket.
- Install the wireless WAN antennas (for selected models).
- Install the thermal fan assembly.
- Install the wireless WAN module and bracket (for selected models).
- Install the M.2 solid-state drive and bracket.
- Install the built-in battery.
- Install the base cover assembly.
- Install the nano-SIM-card and nano-SIM-card tray (for selected models).
- Reconnect the power supply to re-enable the built-in battery.
- After replacing the system board, use the **Maintenance Utility** to bind the model type, serial number, and Brand ID of the computer with the new system board. Refer to https://support.lenovo.com/us/en/solutions/ HT506954 for instructions on how to do that. You can also use the Golden Key U1 tool as an alternative. Refer to https://support.lenovo.com/us/en/solutions/ht102004 for instructions.
- Apply thermal grease and L83BY Thm paste on the thermal fan assembly if needed.
- Configure keyboard language in UEFI BIOS:
  1. Enter the UEFI BIOS menu.
  2. Click **Config → Keyboard/Mouse → Keyboard Layout**, and then select the keyboard language.

3.21 LCD Unit

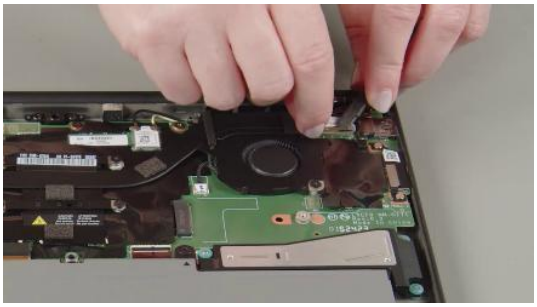
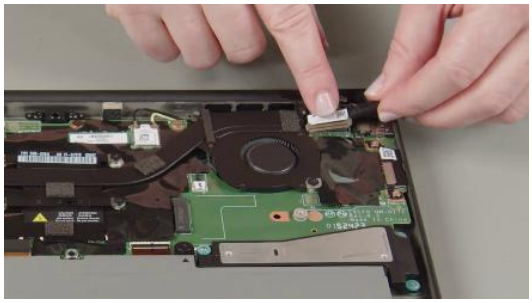
Steps for this part: 14
Overall difficulty level: Easy
Cumulative time required: 15-20 minutes
Suggested tools for this part: Screwdriver kit, non-metallic pry tool, static-safe tweezers

Prerequisites:

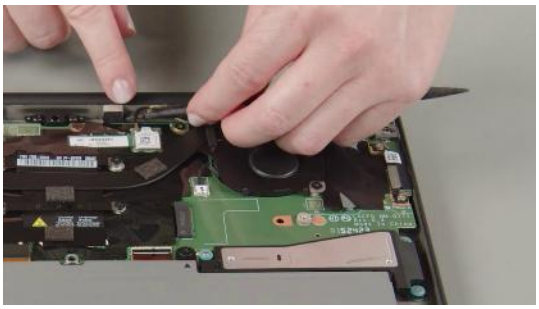
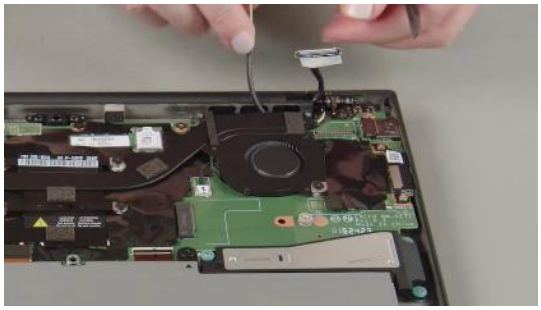
- Disable the built-in battery.
- Remove the base cover assembly.

Removal:

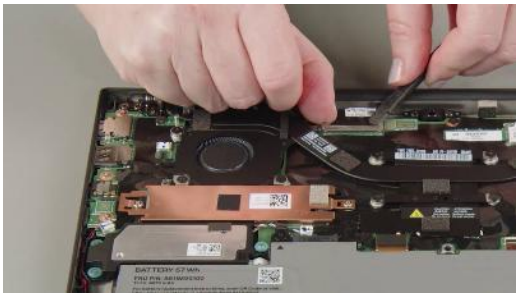
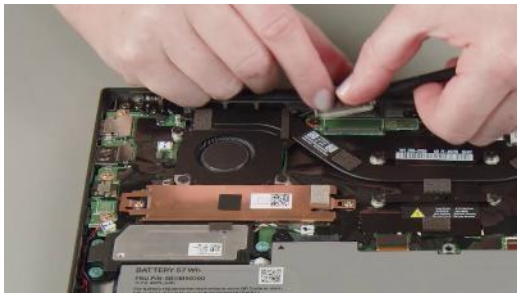
1. Disconnect the LCD cable from the system board.

2. Disconnect the wireless LAN antennas from the wireless LAN card and remove the cables from the guides.

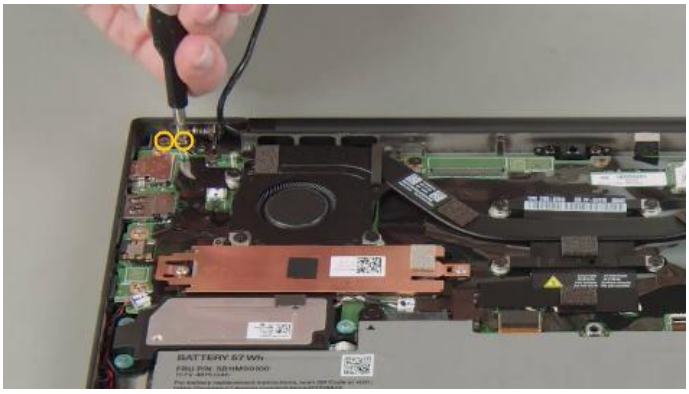
3. Disconnect the camera cable from the system board and remove the cable from the guides.

4. Remove two (2) screws from the hinge closest to the LCD cable.



5. Remove two (2) screws from the hinge closest to the camera cable.



6. Pivot the lower assembly into an open position and separate it from the LCD unit.

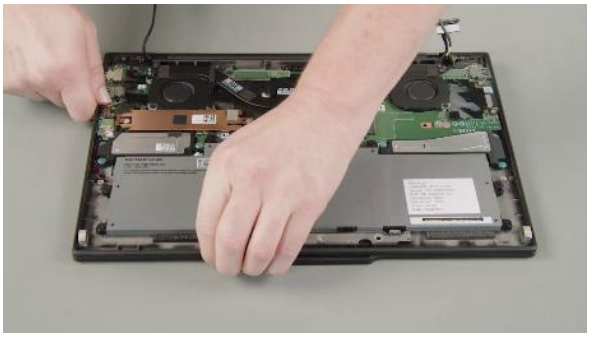




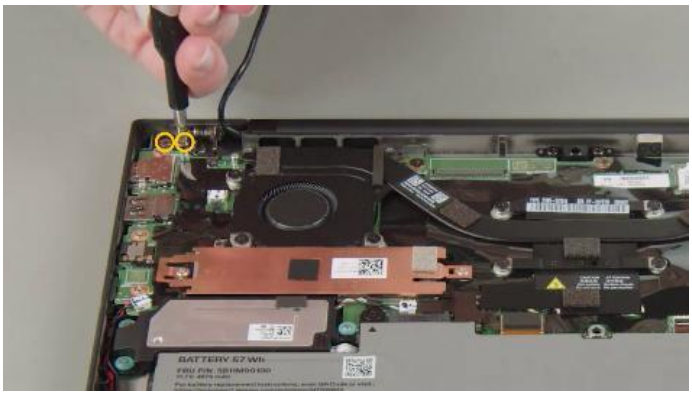
Replacement:

1. Align the lower assembly with the LCD unit and pivot the hinges down with the system into a closed position.





2. Install two (2) screws into the hinge closest to the camera cable.



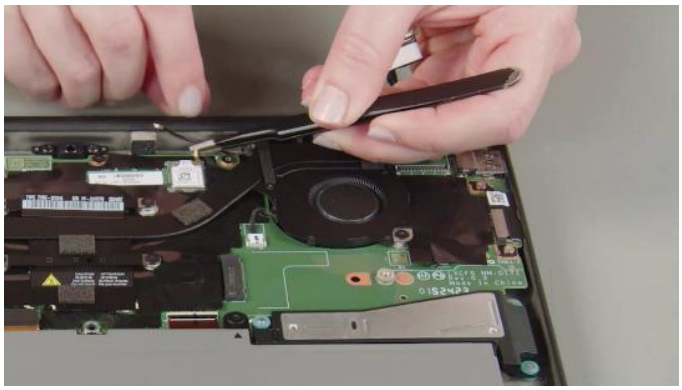
3. Install two (2) screws into the hinge closest to the LCD cable.



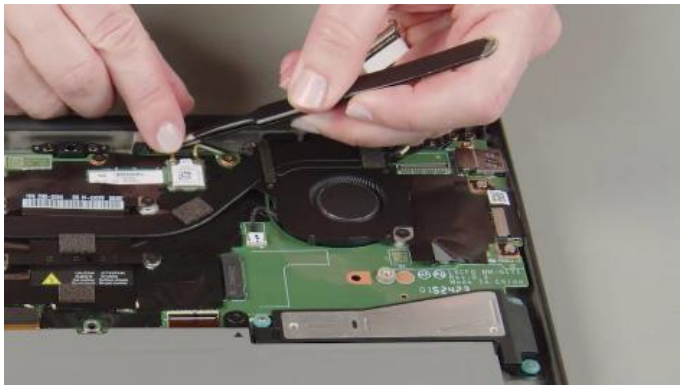
4. Insert the wireless LAN antenna cables into the guides.



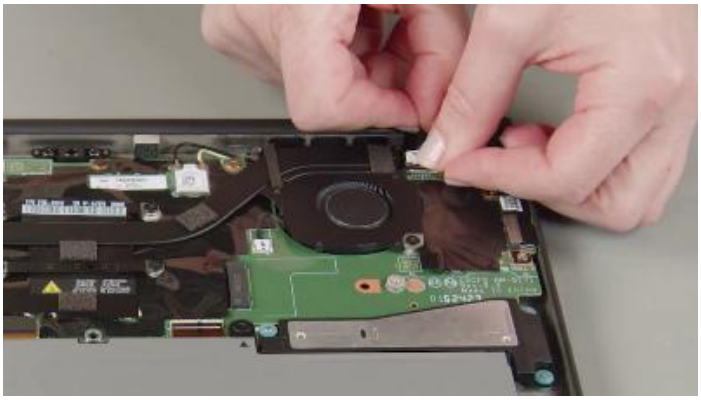
5. Connect the yellow antenna cable to the auxiliary terminal on the wireless LAN card.



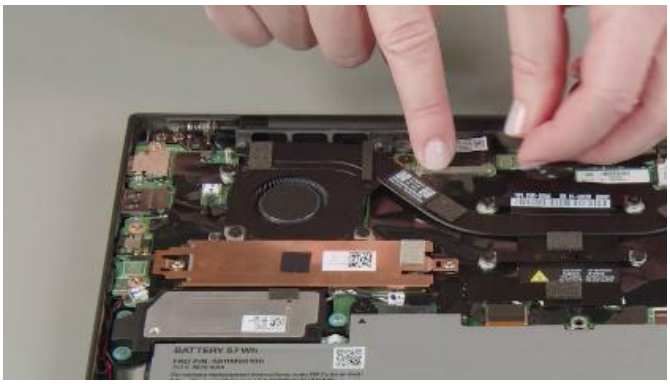
6. Connect the black antenna cable to the main terminal.



7. Connect the LCD cable to the system board.



8. Insert the camera cable into the guides and connect the cable to the system board.



After replacing this part, don't forget:

- Install the base cover assembly.
- Reconnect the power supply to re-enable the built-in battery.

3.22 Keyboard assembly

Steps for this part: 2
Overall difficulty level: Moderate
Cumulative time required: 60-75 minutes
Suggested tools for this part: None

Prerequisites:

- Disable the built-in battery.
- Remove the nano-SIM-card and nano-SIM-card tray.
- Remove the base cover assembly.
- Remove the built-in battery.
- Remove the M.2 solid-state drive and M.2 solid-state drive bracket.
- Remove the wireless WAN module and its bracket (for selected models).
- Remove the thermal fan assembly.
- Remove the speaker assembly.
- Remove the Trackpad/Haptic Touchpad, fingerprint reader, P-sensor, and NFC cable.
- Remove the wireless WAN antennas (for selected models).
- Remove the coin-cell battery.
- Remove the fan cable guide.
- Remove the USB bracket.
- Remove the NFC module and the NFC sponge (for selected models).
- Remove the trackpad (for selected models).
- Remove the Haptic Touchpad (for selected models).
- Remove the system board.
- Remove the LCD unit.

Removal:

1. With all prerequisites removed, the keyboard bezel assembly with keyboard is empty of all components and ready for replacement.



Replacement:

1. The keyboard bezel assembly with keyboard is ready for components to be installed.



After replacing this part, don't forget:

- Install the LCD unit.
- Install the system board.
- Install the Haptic Touchpad (for selected models).
- Install the trackpad (for selected models).
- Install the NFC module and the NFC sponge.
- Install the USB bracket.
- Install the fan cable guide.
- Install the coin-cell battery.
- Install the wireless WAN antennas (for selected models).
- Install the Trackpad/Haptic Touchpad, fingerprint reader, P-sensor and NFC cable.
- Install the speaker assembly.
- Install the thermal fan assembly.
- Install the wireless WAN module and its bracket (for selected models).

- Install the M.2 solid-state drive and M.2 solid-state drive bracket.
- Install the built-in battery.
- Install the base cover assembly.
- Install the nano-SIM-card and nano-SIM-card tray.
- Reconnect the power supply to re-enable the built-in battery.

4. Sources

Chapter	Source link
Images from this guide	ThinkPad X1 Carbon Gen 13
Tools	Tools
Device details	Repair Guide
Parts list	Parts list
Removal and replacement steps	Repair Guide