Samsung Care

Galaxy Z Flip 5 Repair Guide

SM-F731

Samsung Care

What are we learning?

What components make up the Galaxy Z Flip 5? How do you properly disassemble the device during repair? How do you ensure the device is correctly assembled after a repair is complete? What tools are required during repair? How do I validate my repair? This training will explore how to provide expert repairs on B5.

This module will cover:

- Parts of the Device
- Tools and Equipment for Disassembly/Assembly
- How to Properly Disassemble the Device
- Correctly Assembling the Device Post Repair
- Required Outbound Quality Check and Calibrations

So how does this help me?

After completing this training, you will be able to discuss all of the hardware components that make the Galaxy Z Flip 5. You will be able to explain what tools and equipment are required for assembly and disassembly of the device. You will be able to complete repairs and the required quality control checks/calibrations following your repair.

Hardware Components

Removable Parts of the Galaxy Z Flip 5

Removable Parts of Galaxy Z Flip 5

The Galaxy Z Flip 5 has multiple removable parts. Being able to identify the parts and understand their functions will assist you in diagnostics and repair of the device.

The parts include:

Display Module

Main Printed Board Assembly (PBA)

Sub PBA

Components

Rear Assembly

Battery

Back Glass

Sub UB

Display Module

The Display Module consists of the Front Metal, Battery, Receiver, Fingerprint Sensor, Vibrate Motor, and Volume Keys.

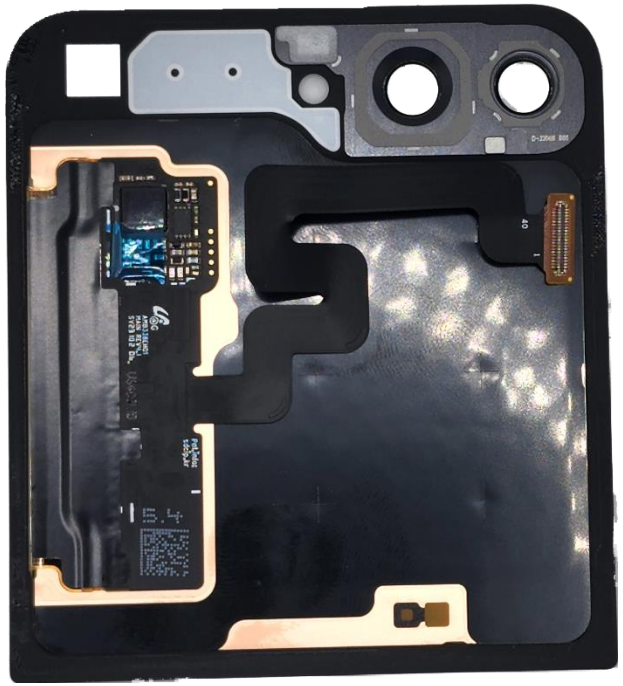
Front

Back

SUB UB

The top rear is made up of the Sub UB and Sub Display.

Outside

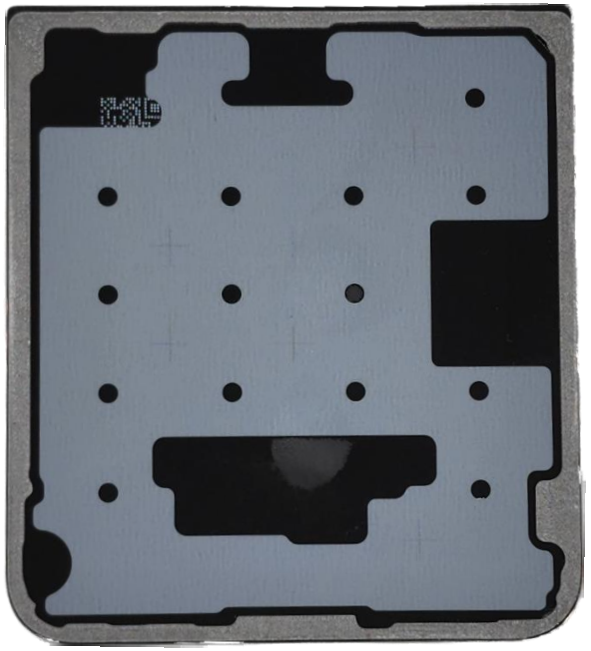


Inside

Back Glass

The Back Glass is located on the bottom side, and is adhered to the Display Module

Outside



Inside

Rear Assembly

The Rear Assembly is made up of four (4) pieces, and sits beneath the Sub UB and Back Glass.

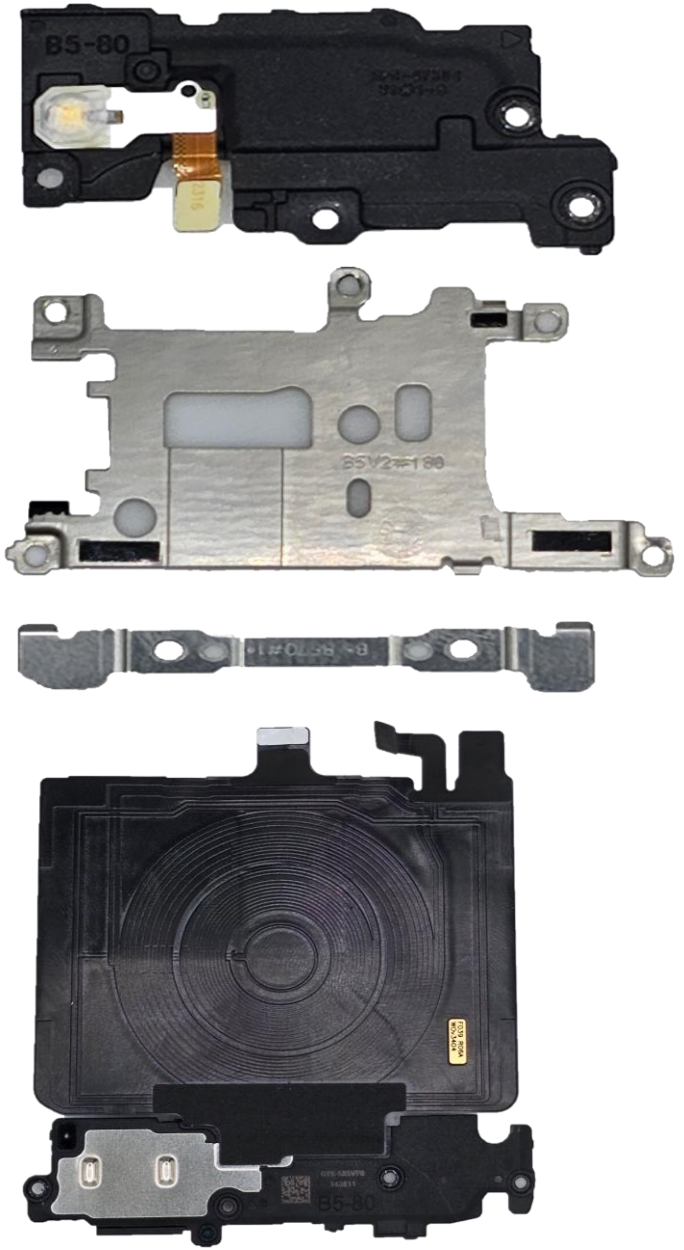
It is broken down into the following:

Top Rear Assembly (Antenna)

Upper SUS Plate

Lower SUS Plate

Lower Rear Assembly (Speaker and NFC Pad)



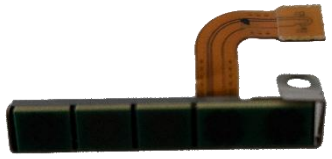
Components

There are a few smaller components on B5 that can be removed.

Vibrator Motor

Front facing camera

Rear Cameras



mmWave Module

Main PBA

The Main PBA is the main board of the device.

It contains the most essential components of the device such as:

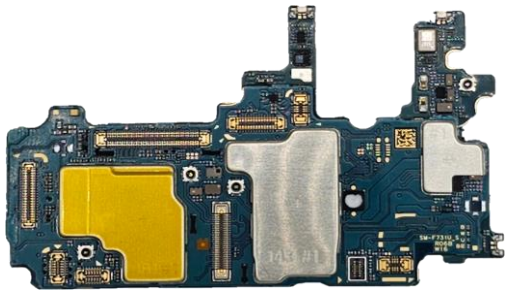
Mobile Chipset (CPU, GPU, and Radio)

Main Camera

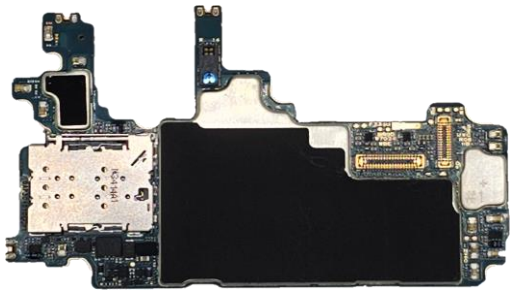
Proximity/Light Sensors

Built in Storage

6 Axis Sensor



Front



Back

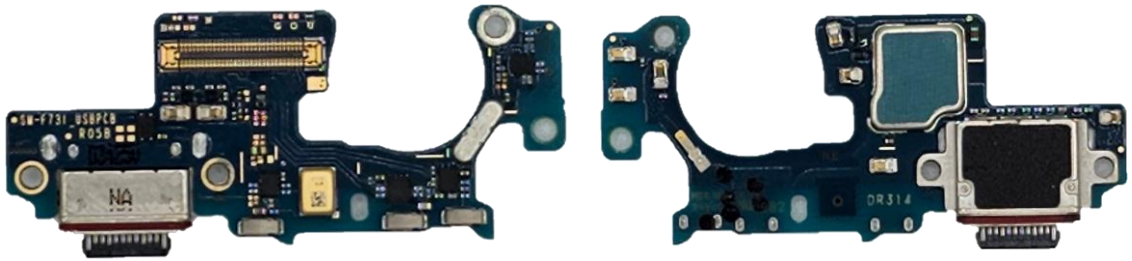
Sub PBA

The Sub PBA is the secondary board of the device.

It contains other essential components of the device such as:

Interface (I/F) Port

Bottom Microphone



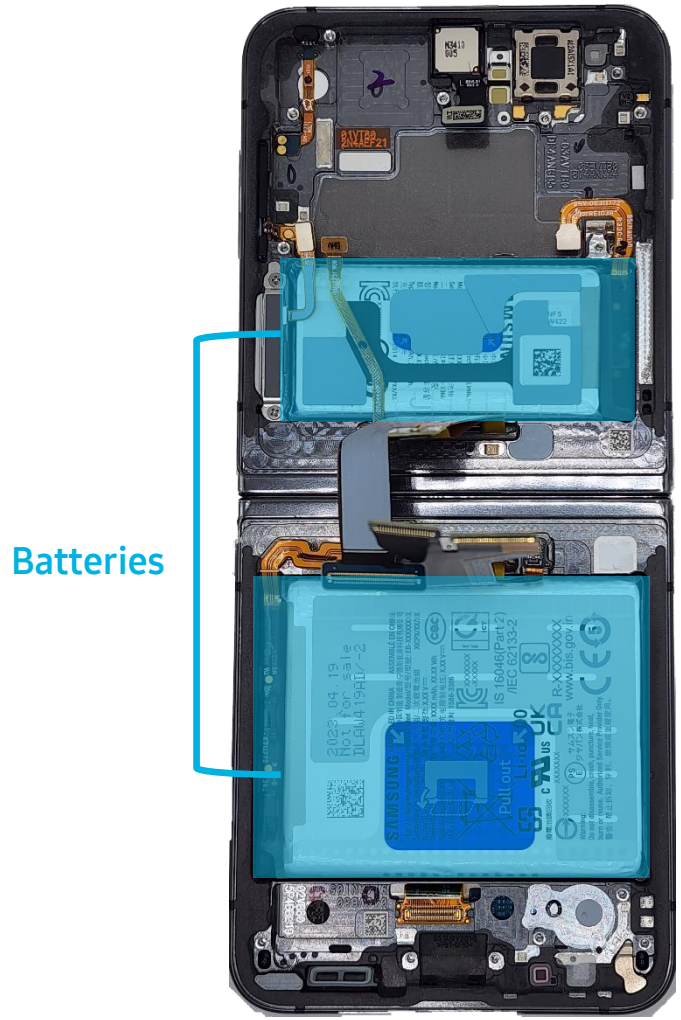
Front

Back

Batteries

The Z Flip 5 has two (2) Batteries. The batteries are Lithium-ion (Li-ion) cells, and must be handled carefully.

- Improper removal can damage cells, causing them to ignite and cause injury:
- Only hold the Battery from the center sides
- Do not squeeze the Battery or use any unauthorized tools when handling it
- Do not hold the Battery by flex connector, as this can accidentally short the leads
- When handling the Battery be careful not to puncture or damage the Battery



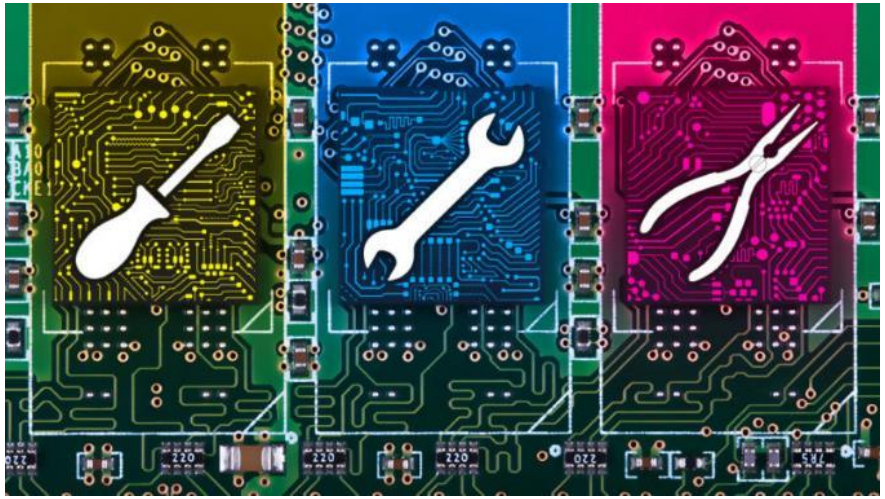
Disassembly

Disassembly of the Galaxy Z Flip 5

Disassembly

Taking the device apart

In this section we will review the disassembly of the Galaxy Z Flip 5 .



This section will cover

- The tools and equipment needed
- The steps of disassembly

So how does this help me?

With this knowledge you will be able to completely disassemble the Galaxy Z Flip 5.

Tools and Equipment

To ensure proper disassembly without damage to the device, use the correct tools and equipment:

Tweezers

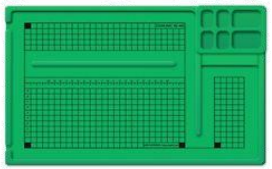
Disassembly Stick

Opening Pick

Torque Screwdriver

ESD 'Spatula' Stick

Ceramic Scissors

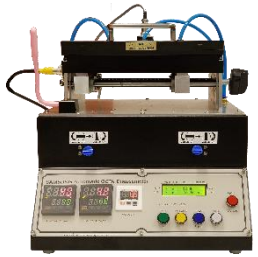


Anti-static Mat

ESD Wrist Strap

AOD Guide

ESD Gloves

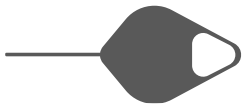


AOD

Scotch Tape

Right Vacuum Seal

Cap Protection Tape



SIM Eject Tool

Steps of Disassembly

You will disassemble the device in the following order:

- Back Glass and Sub UB
- Rear Assembly
- PBA
  - Main PBA & Sub PBA
- Parts on the Main PBA
  - Main Camera
- Parts on the Bracket
  - mmWave Modules & Front Facing Camera
- Battery (Main & Sub UB)
- Display Module

Electrostatic Discharge Precautions

Before you begin to disassemble, make certain that all ESD precautions are met.

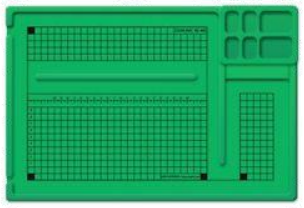
This includes:

Wearing an ESD Strap which has passed all required tests

Wearing Anti-static Gloves

Working over a Grounded Mat

ESD Wrist Strap



Anti-static Mat

Anti-static Gloves

Swollen Battery Precautions

If the device has a swollen Battery, **DO NOT** heat the device.

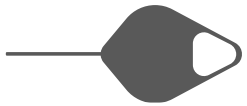
- A swollen Battery will cause a device to bulge
- Heating a device with a swollen Battery can cause further damage to the device, and may cause the Battery to ignite
- In the event of a swollen Battery, use 99% Isopropyl Alcohol to carefully separate and remove the Back Glass

Eject the SIM Tray

Using the SIM Eject Tool, eject the SIM Tray.

Ejecting the SIM Tray prevents damage to the Main PBA. The SIM tray is located on the top left of the device.

Tool Required

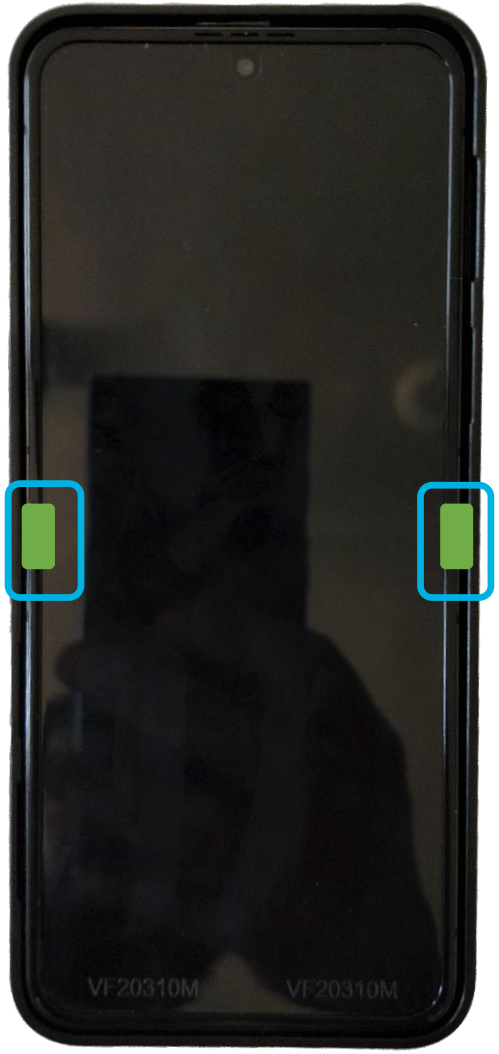


SIM Eject Tool

AOD Plastic Guide

To prevent scratches to the Caps, apply tapes to each Cap located on the left and right side of the Hinge.

Once the tapes have been applied, attach the AOD Guide to the device. The AOD guide will ensure the AOD has a good grip of the device during disassembly.



Tool Required

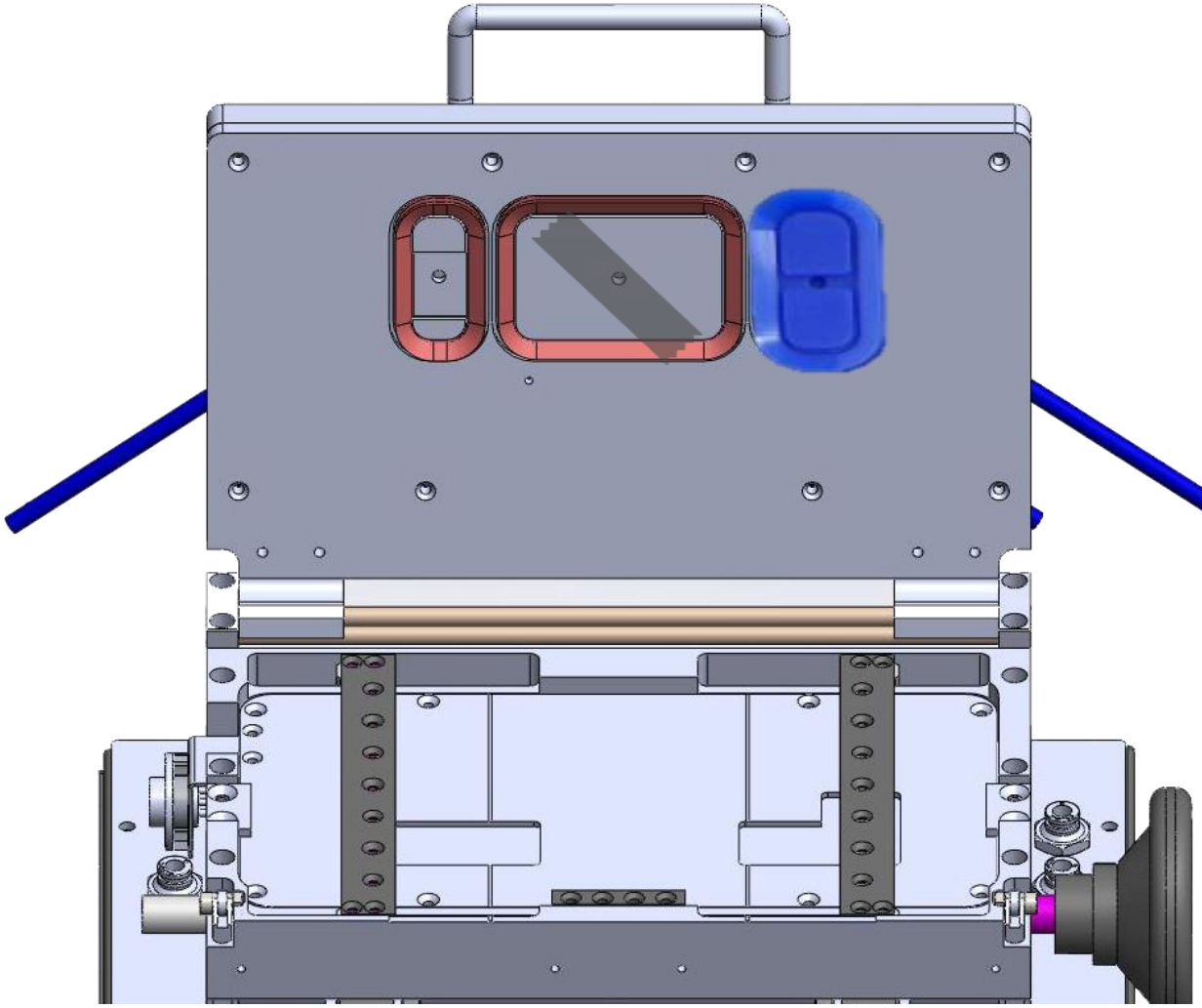
Cap Protection Tape

AOD Guide

AOD Configuration

Replace the right Vacuum Seal in the AOD with the Blue Vacuum Seal.

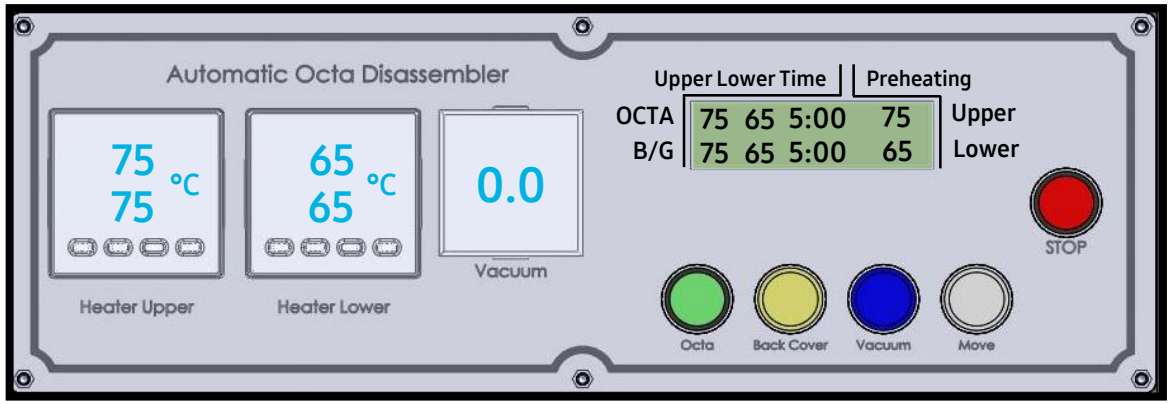
- Apply Scotch Tape over the middle vacuum to prevent air leakage



AOD Configuration, cont.

Set the AOD to the correct temperature and heating time based on the state of charge (SOC).

- **Battery SOC 68% and below** temperature settings and heating time: Upper 75°C / Lower 65°C for 5 Minutes
- **Battery SOC above 68%** temperature settings and heating time: Upper 60°C/ lower 60°C for 5 minutes

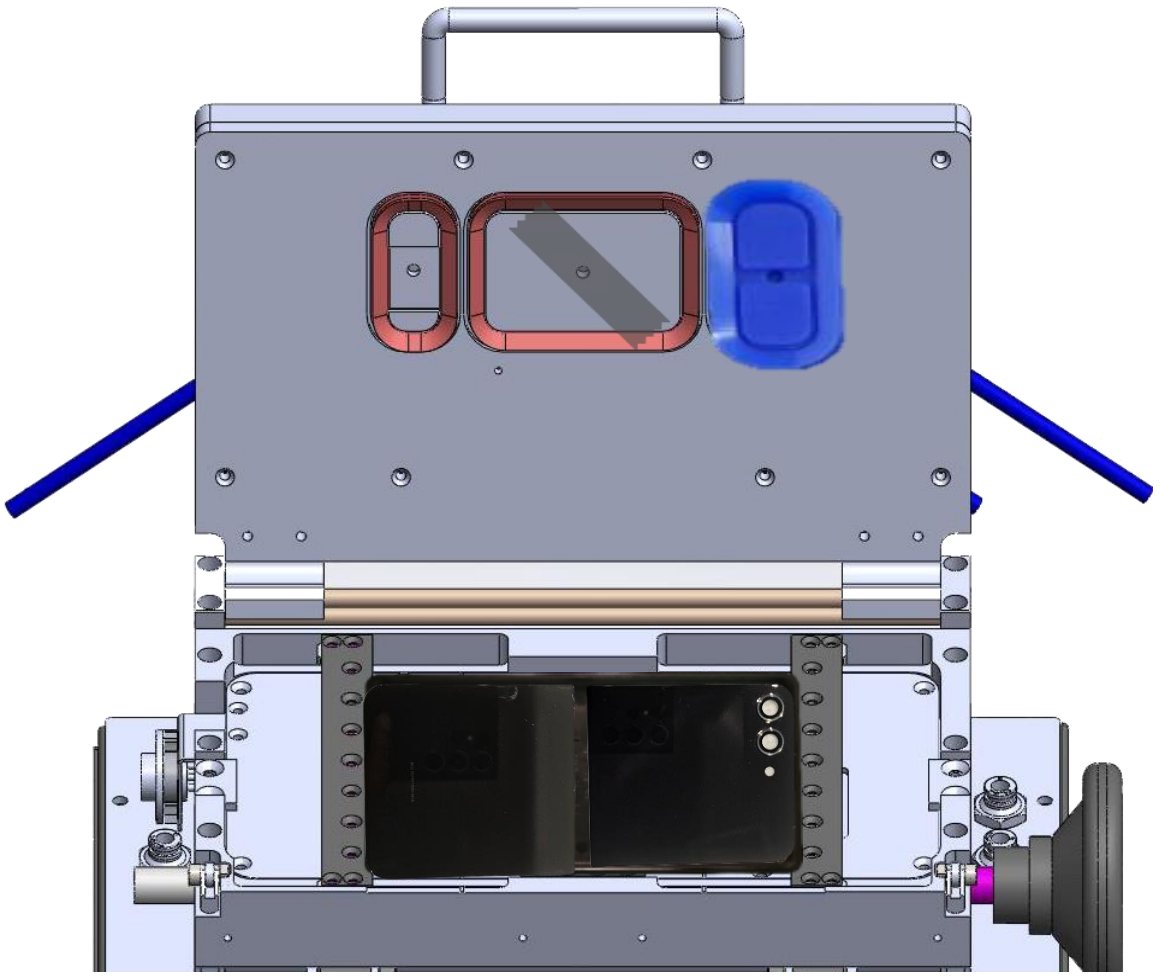


NOTE: **If the Battery SOC cannot be determined, preheat below 60°C for 5 minutes to prevent damage and quality issues during repair.**

Device Placement in the AOD

Align the device into the AOD face down and lock it into place.

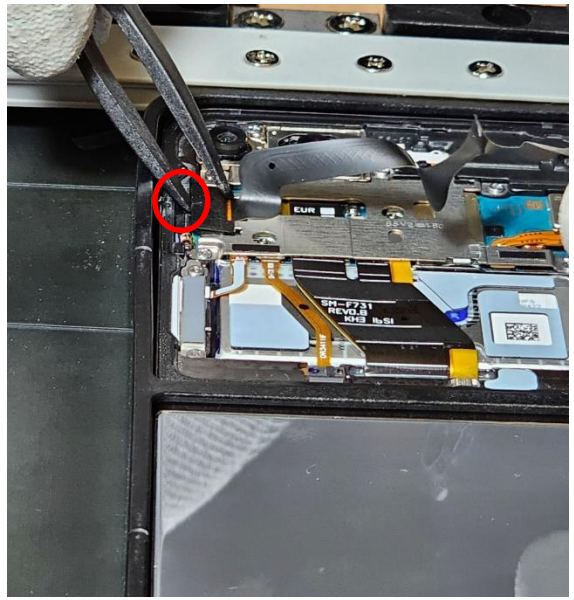
- Ensure the right Vacuum Seal is aligned directly over the Sub UB
- Ensure that you are only using the right vacuum on the AOD by turning on the right vacuum and turning off the left
- Close the AOD Lid and press Vacuum, then OCTA



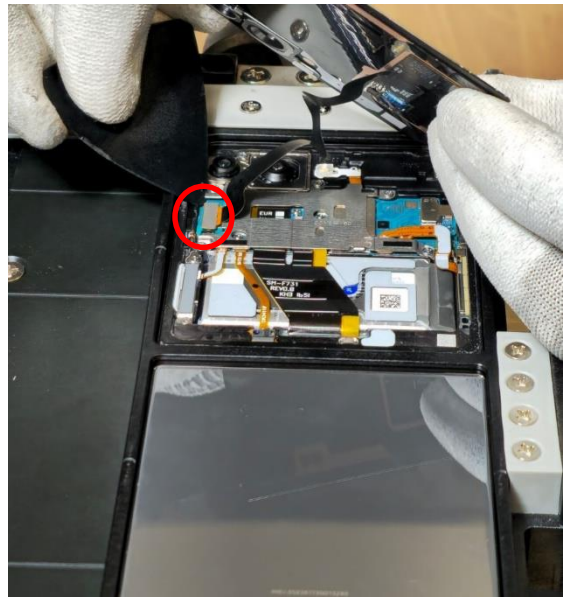
Remove Sub UB

When the AOD has lifted the Sub UB gently lift it up to expose the Sub UB FPCB.

- Using Tweezers, remove the SUB UB FPCB Cap (do not discard)
- Using the Opening Pick, disconnect the Sub UB FPCB
- Remove all tapes and tape residue from the Sub UB



Cap on



Cap off

Tool Required

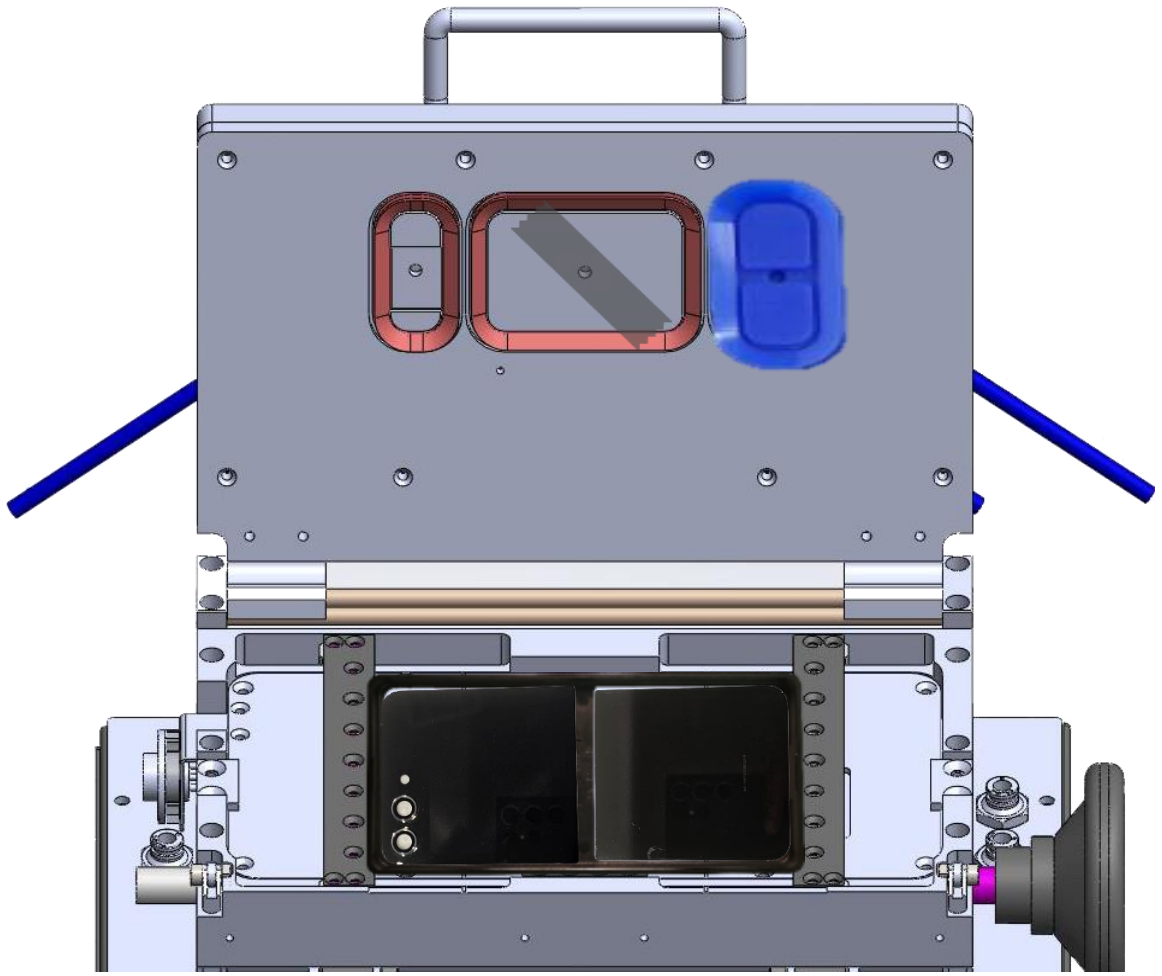
Tweezers

Opening Pick

Remove Back Glass

Align the back glass with the right vacuum in the AOD, and lock it into place.

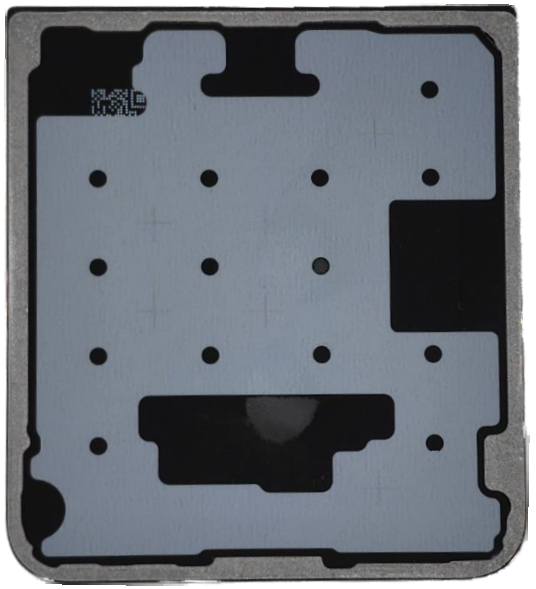
- Ensure that the left vacuum is turned off and the right one is turned on
- Ensure that the blue Vacuum Seal is aligned in the center of the Back Glass
- Close the AOD Lid and press Vacuum, then Back Glass



Removing Back Glass Tapes

Once the Back Glass is lifted, remove all double-sided tapes and tape residue from the Back Glass.

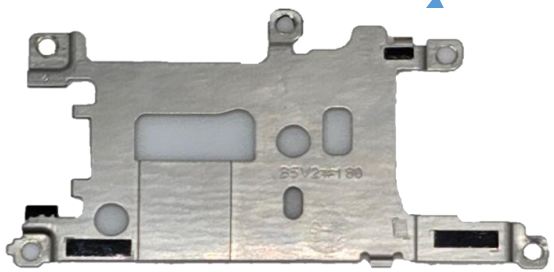
Removing all left over residue tape from the Sub UB and Back Glass will allow for new tapes to be placed properly without any interference.

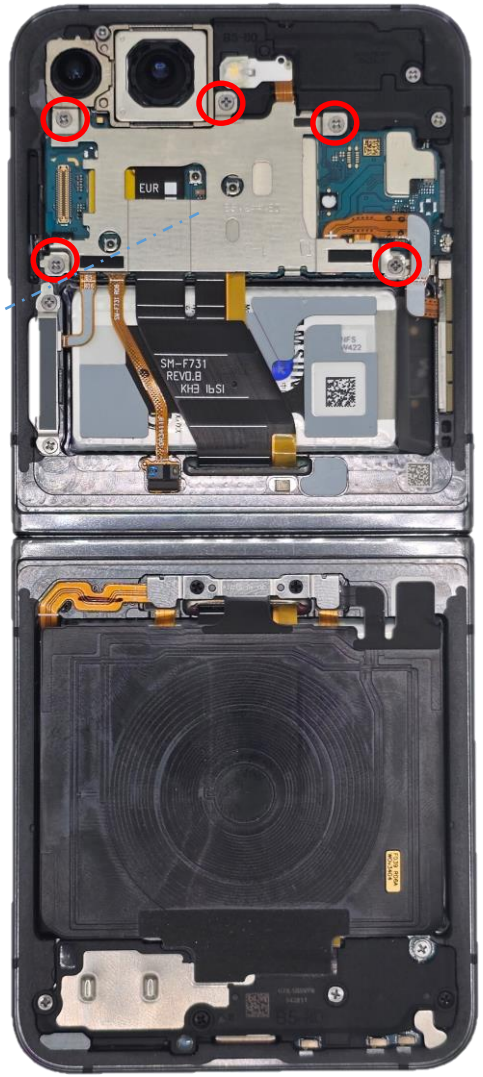


Removing Upper SUS Plate

Using the Torque Screwdriver, remove five (5) silver screws to remove the Upper SUS Plate.

Lift the Upper SUS plate away from the assembly.





Tool Required

Torque Screwdriver

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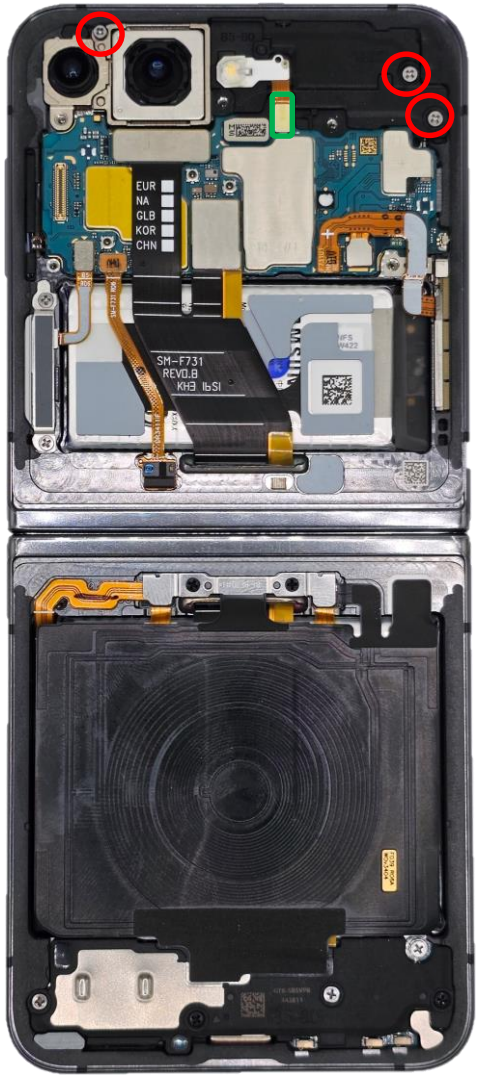
Remove Upper Rear Assembly

Using the Torque Screwdriver, remove three (3) screws from the Upper Rear Assembly.

Using the Opening Pick disconnect the sensor FPCB from the Main PBA.



Tool Required

Torque Screwdriver

Opening Pick

Remove Upper Rear Assembly cont.

Insert the tip of the Tweezers at the entry point and twist gently towards you. This will help to prevent any damage to the Main PBA.

Once the Top Assembly clips have been disconnected, remove the upper rear assembly and place them to the side.

Tool Required

Tweezers

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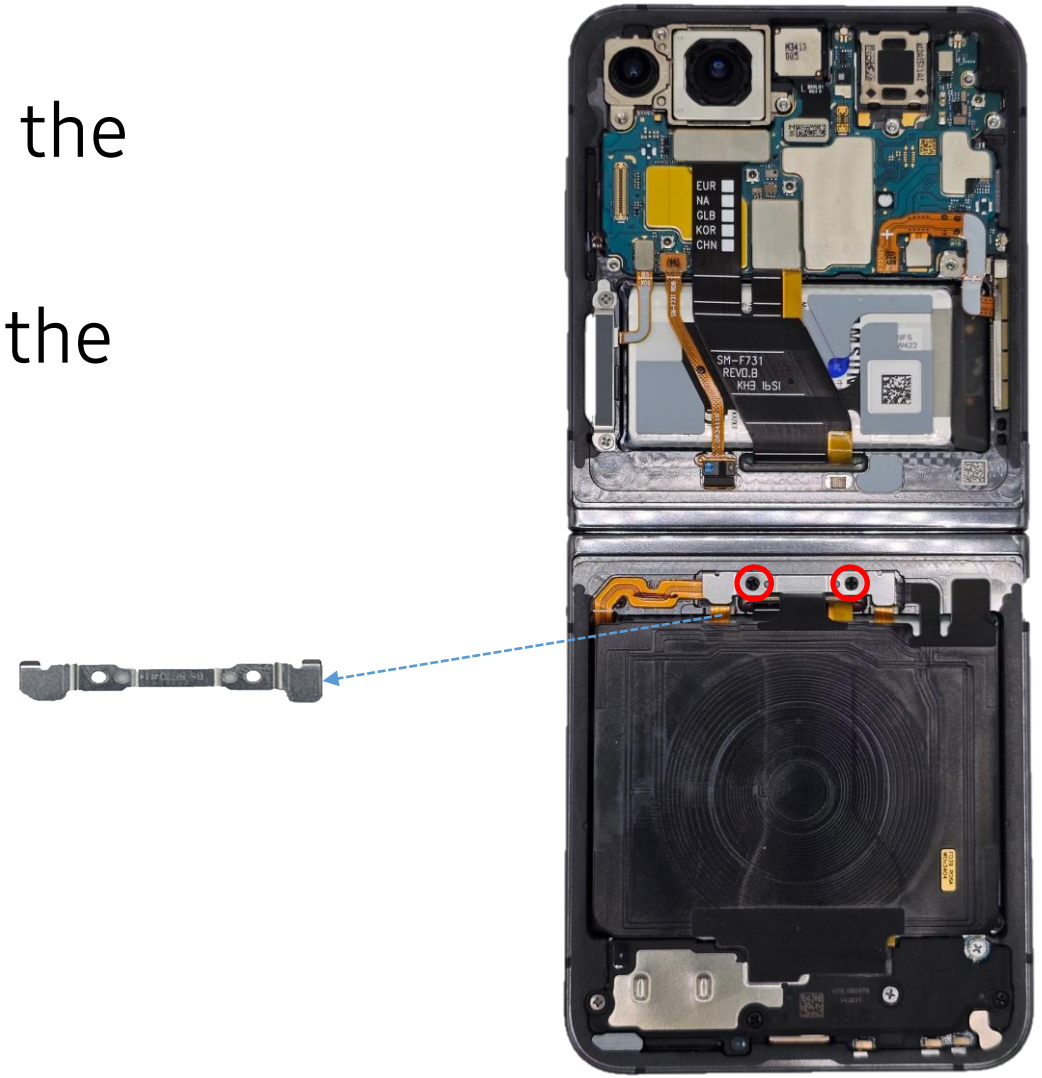
Remove Lower SUS Plate

Using the Torque Screwdriver remove two (2) black screws from the Lower SUS Plate.

- Lift Lower SUS Plate away from the Assembly



Tool Required

Torque Screwdriver

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Disconnect Battery

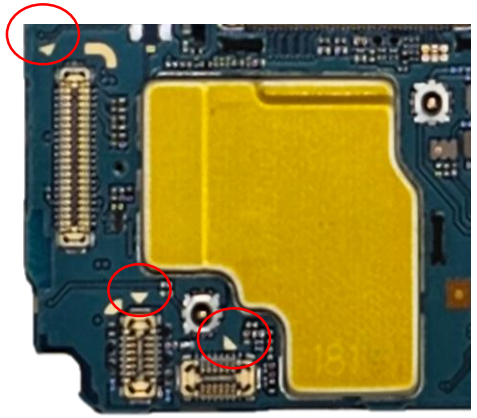
Using the Opening Pick disconnect the FPBs in the following order:

- Sub Battery
- mmWave
- Main Battery
- Right CTC
- Left CTC

NOTE: When disconnecting any FPCBS check for the arrows for your disassembly point to refrain from damaging c-clips.

Tool Required

Opening Pick



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Disconnect Bottom Rear Assembly

Using the Torque Screwdriver remove four (4) screws from the Lower Rear Assembly Speaker.

(2) silver screws

(2) black screw

Tool Required

Torque Screwdriver

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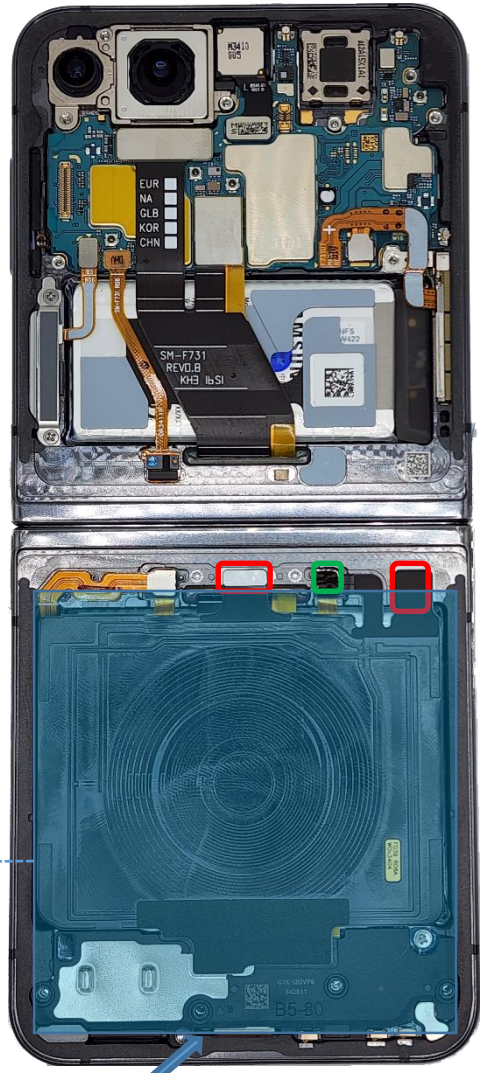
Disconnect Rear Bottom Assembly, cont

Gently detach the NFC ANT tape from the top and disconnect the NFC FPCB.

- Using Tweezers remove the Lower Rear Assembly Speaker, using the correct entry point to avoid damage



Tool Required

Tweezers

Opening Pick

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Disconnect FPCBs from Main PBA

Using the Opening Pick disconnect the three (3) remaining FPCBs from the Main PBA.

Tool Required

Opening Pick

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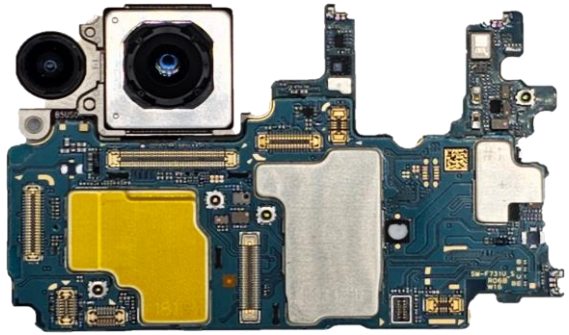
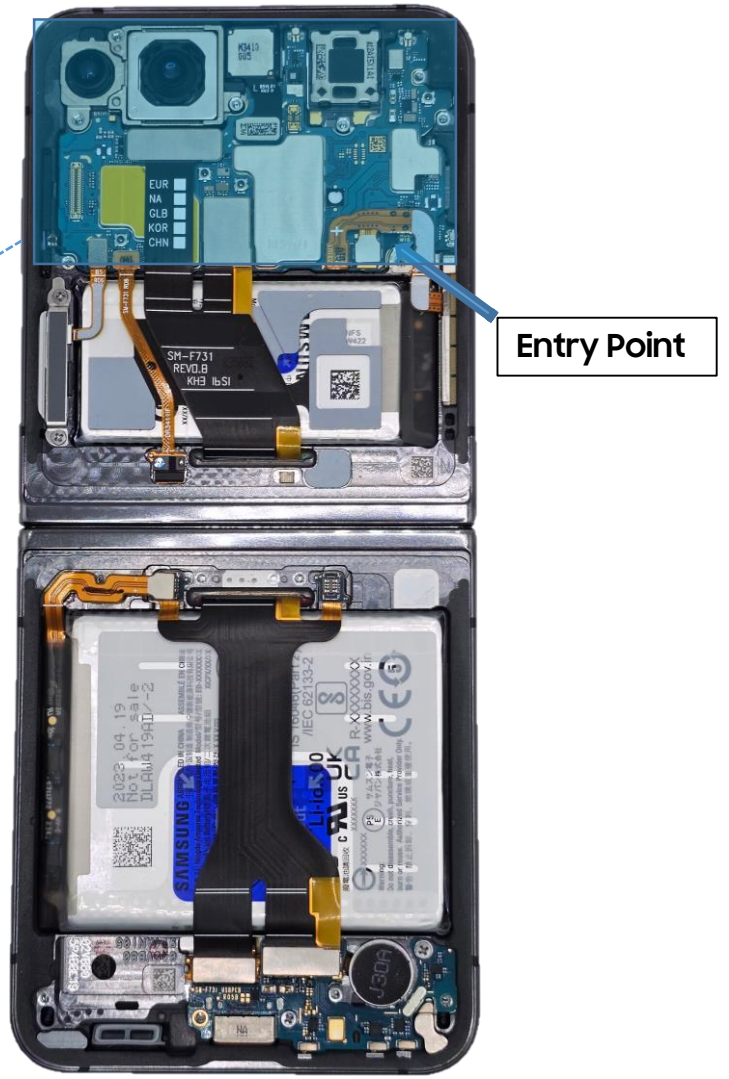
Remove Main PBA

Using Disassembly Stick, lift the Main PBA away from the Front Assembly, using the correct entry point to avoid damage.





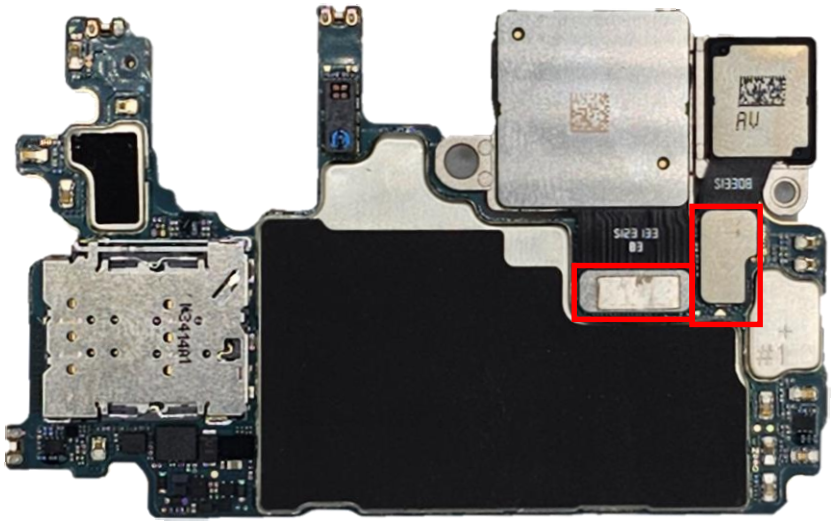
Tool Required

Disassembly Stick

Remove Main Camera

Using the Opening Pick, remove the two (2) Camera FPCBs from the back of the Main PBA.

- Without touching the lens, place the Main Camera on ESD Mat lens up
- If available, use lens covers to keep the lens free from damage, dirt, debris, or fingerprints



Tool Required

Opening Pick

Remove Sub PBA

Using the Torque Screwdriver remove two (2) silver screws from the Sub PBA.

Tool Required

Torque Screwdriver

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Remove Sub PBA, cont

Using the Opening Pick disconnect two (2) FPCBs.

Tool Required

Opening Pick

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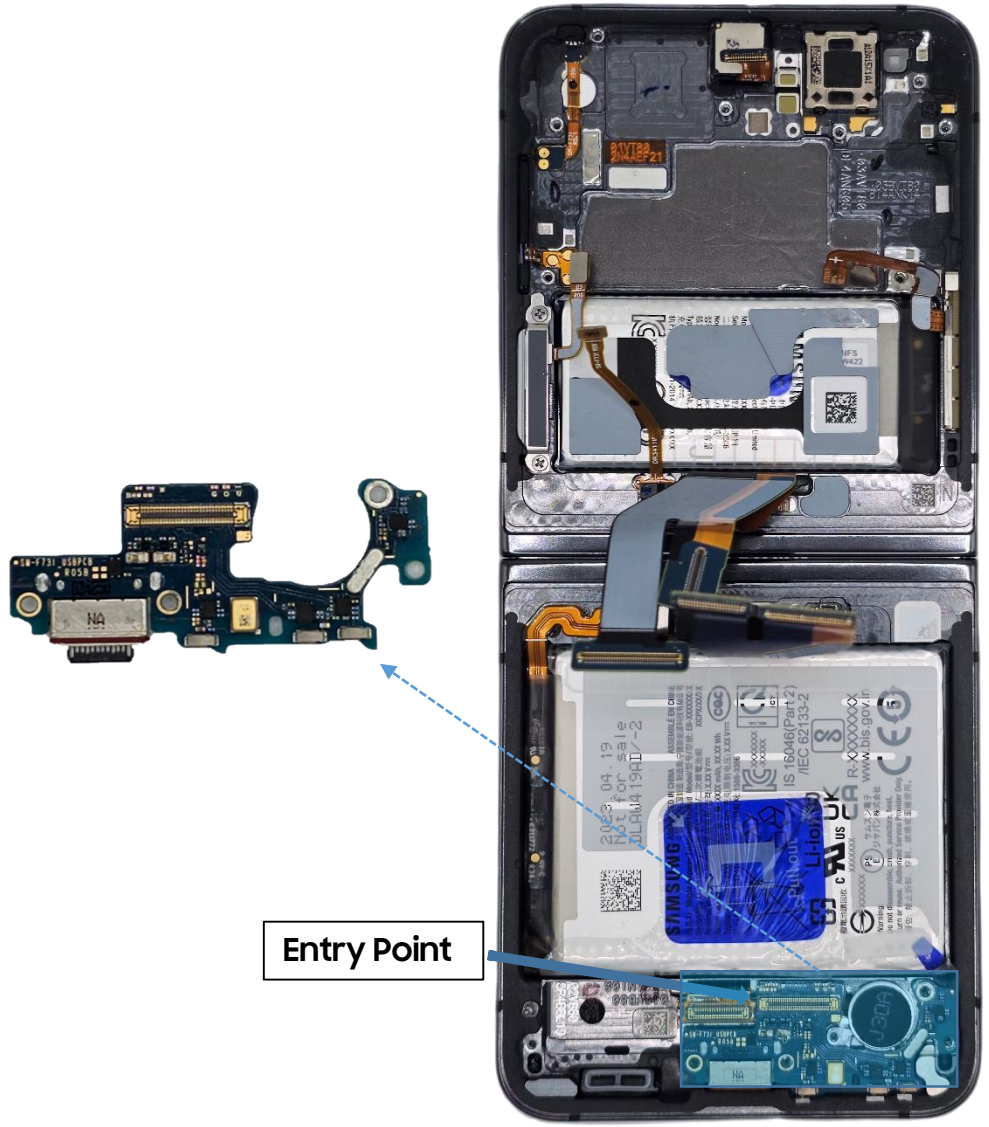
Remove Sub PBA, cont.

Using Disassembly Stick lift the Sub PBA up from the top.



Tool Required

Disassembly Stick

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Remove the Vibrator Motor

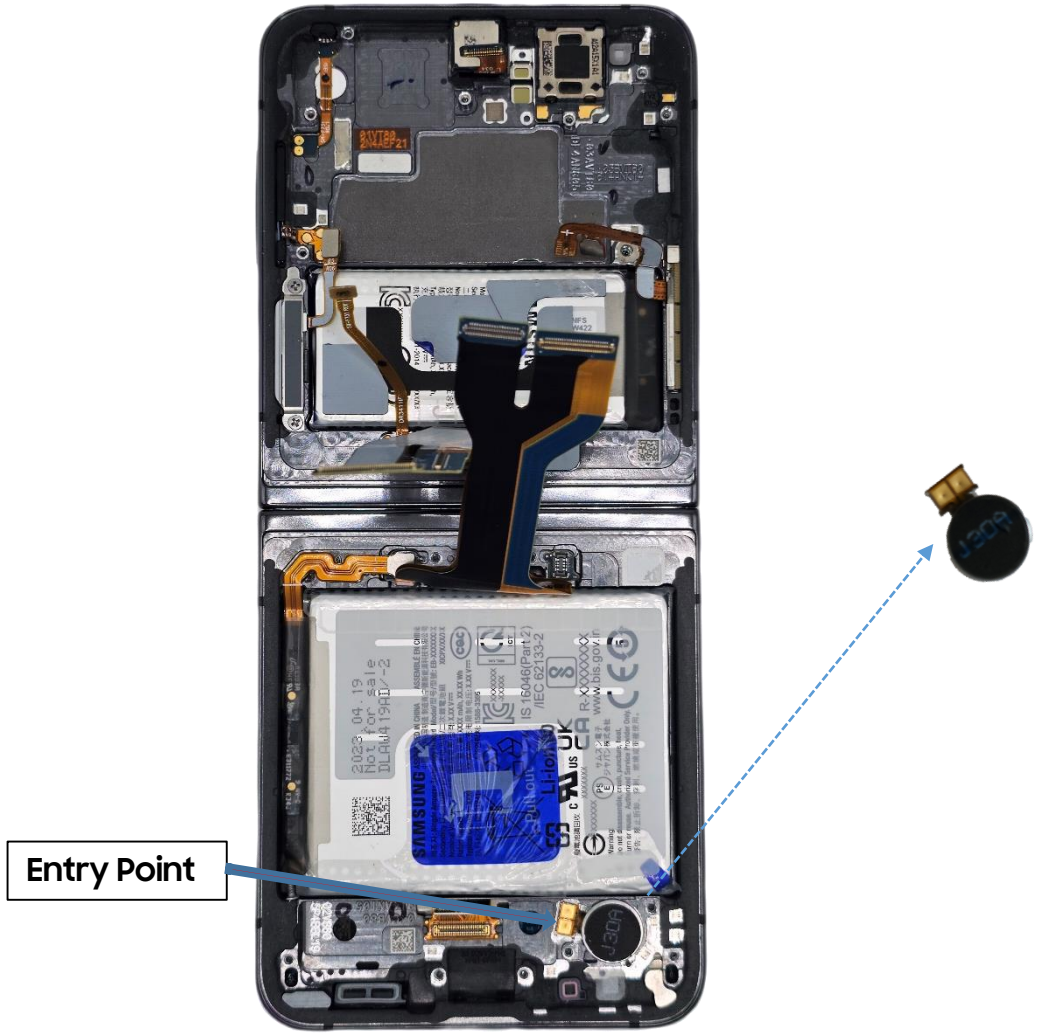
Using Tweezers remove the Vibrator Motor, using the correct entry point to avoid damage.

Gently use Tweezers underneath the gold contact pads.

The Vibrator Motor is pre-installed on new Display kits, so only remove it if necessary.

Tool Required

Tweezers



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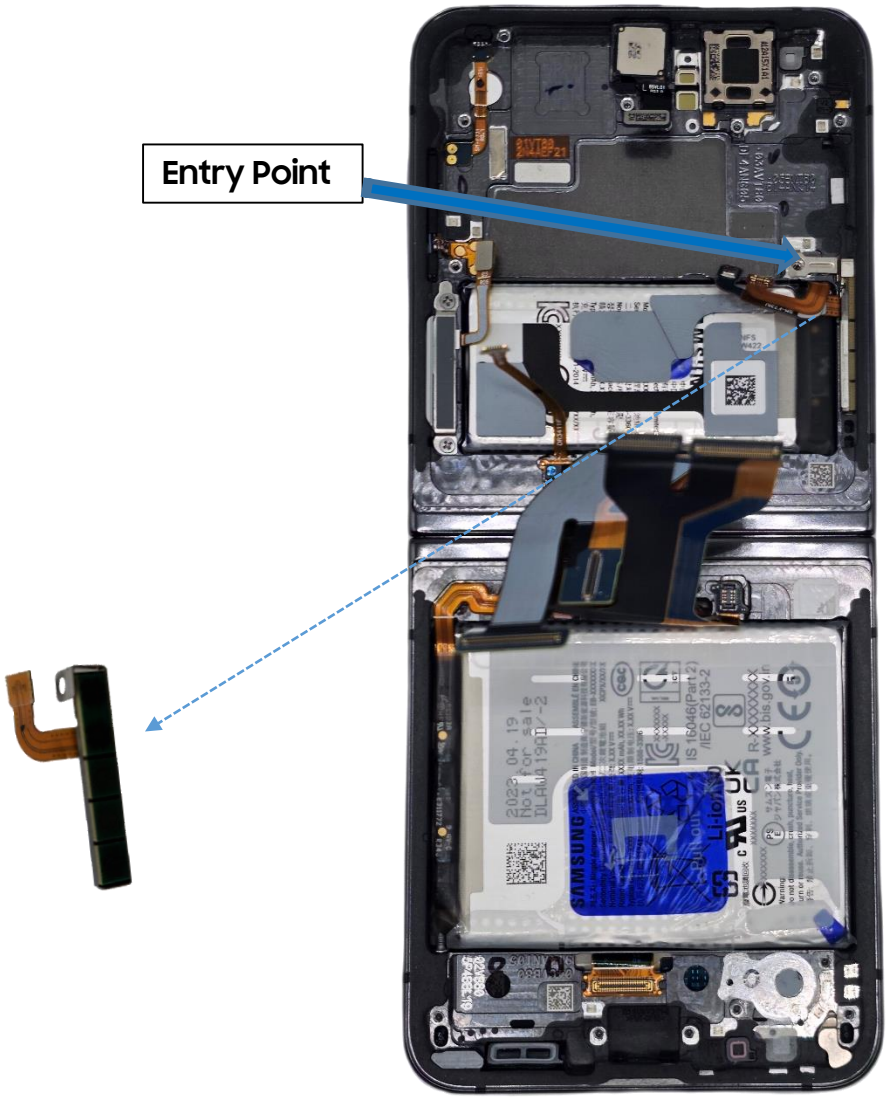
Remove the mmWave Module

Using Tweezers remove the mmWave Module from the front assembly using the correct entry point.

- Utilize a heat source if needed to loosen the adhesive



Tool Required

Tweezers

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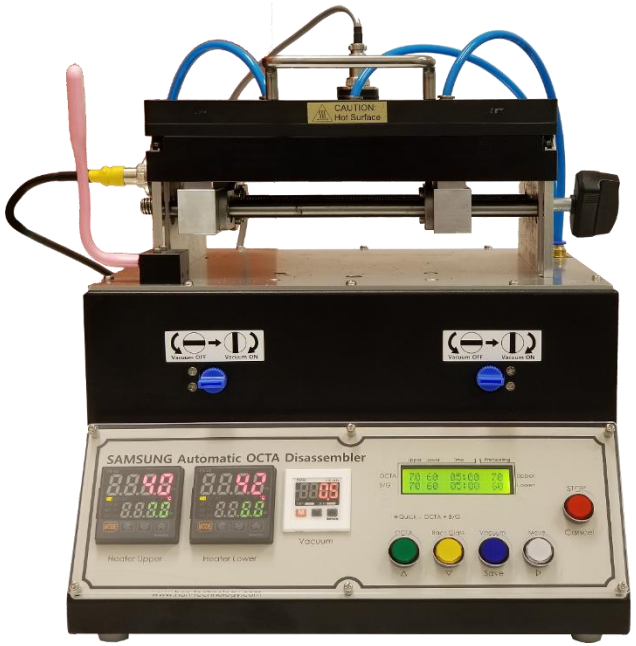
Remove the Front Facing Camera

Place device in hot plate or AOD and close the lid

Heat for 5-10 minutes at 70 degrees Celsius to loosen the adhesive on FFC



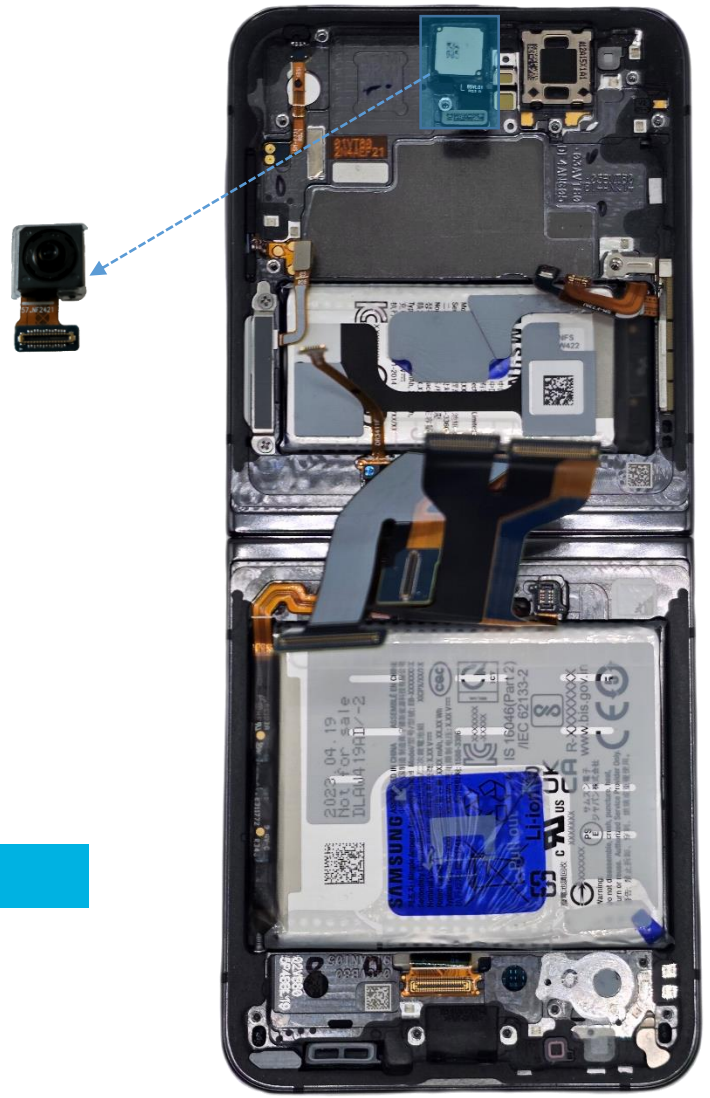
Remove the Front Facing Camera cont.

Be careful not to damage the Camera module during removal.

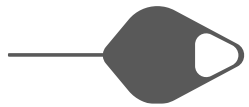
Use the SIM Eject Tool to remove the adhesive from the left and right sides.

Then use SIM Eject Tool to lift the Front Facing Camera away from the Front Assembly.

Remove the tape from the lens window



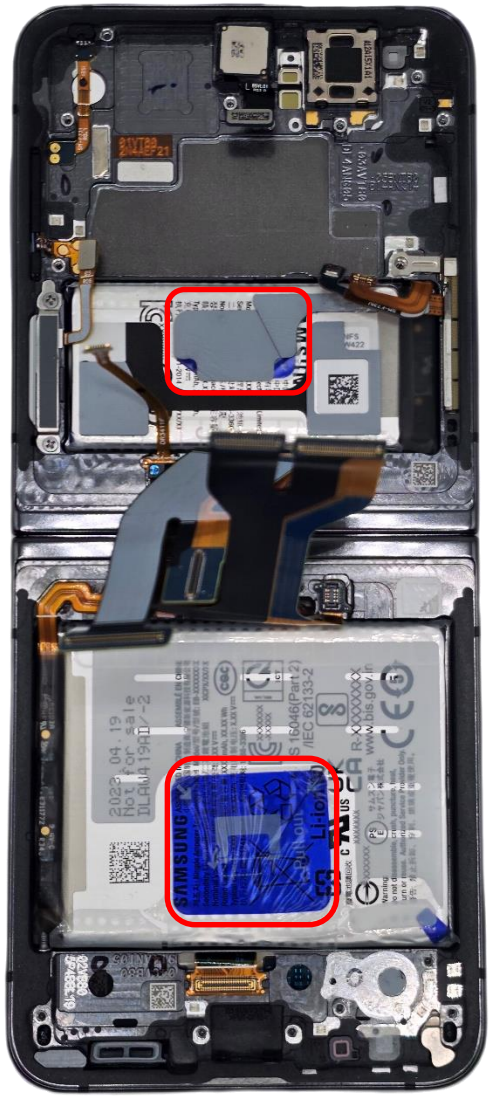
Tool Required



Sim Eject Tool

Battery Removal

To remove the Batteries lift up the blue tabs and pull the tabs at a 90 degree angle to remove from frame.



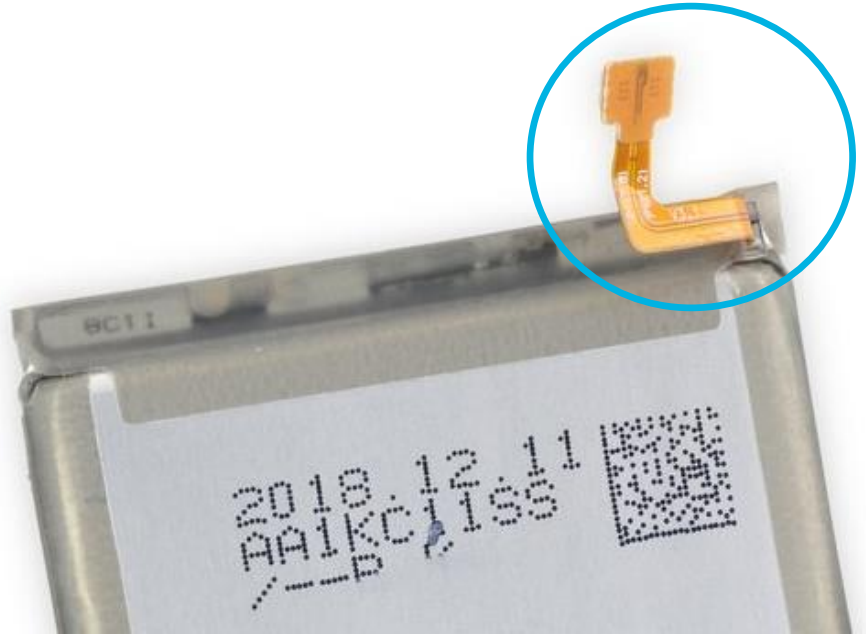
Battery Handling

Batteries are not to be reused.

Batteries must be recycled according to Standard Operating Procedures (SOP).

Before recycling the Battery, the Battery lead must be sent back to Samsung using the U-Class process.

Using ONLY Ceramic Scissors, cut the lead from the Battery.



Display Damage

When the main (foldable) display has a problem, the Front Assembly needs to be replaced. When this happens, these parts will be preinstalled on the new Front Assembly:

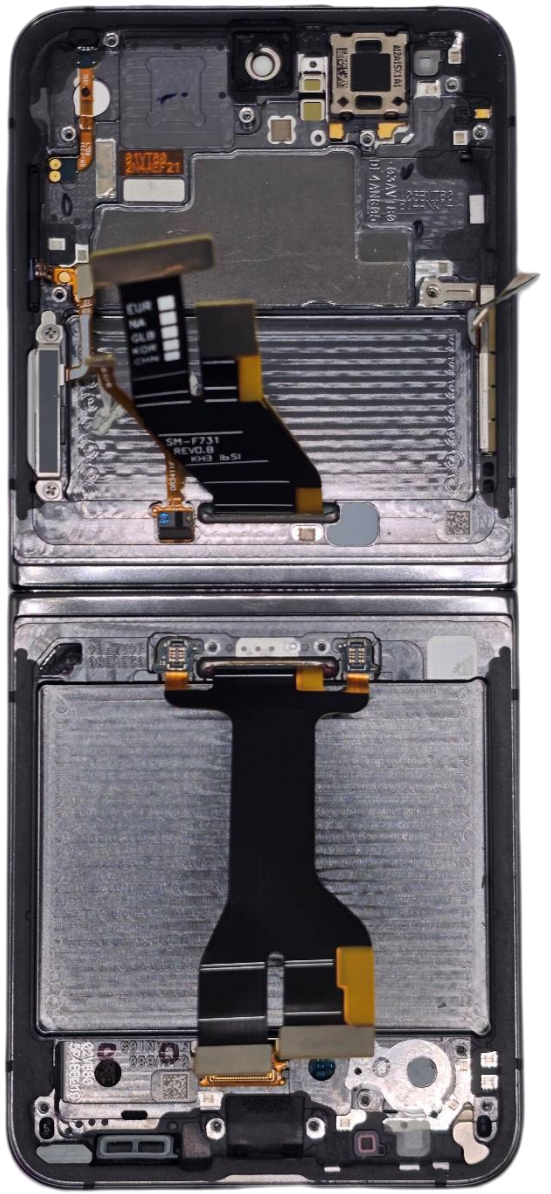
- Foldable Display
- Receiver
- Fingerprint sensor
- Volume keys
- Vibrator Motor
- Batteries

These parts cannot be reused; only the Batteries should be removed for U-Class lead returns and Battery recycling.

Disassembly of B5

The device has now been disassembled.

We have covered the disassembly process of B5. At this point all removable components have been detached.



Keep in mind:

- In a repair scenario, only remove as much as required for the repair
- Follow proper process and tool usage to avoid damage

Assembly

Assembly of the Galaxy Z Flip 5

Assembly of the Galaxy Z Flip 5

Putting it back together

In this section we will review the assembly of the Galaxy Z Flip 5.

This section will cover

- The tools and equipment needed
- The steps of assembly

So how does this help me?

With this knowledge you will be able to completely assemble the Galaxy Z Flip 5.

Tools and Equipment

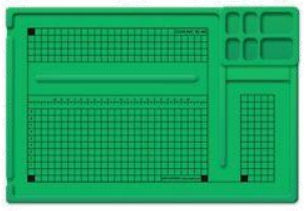
To ensure proper assemble without damage to the device, use the correct tools and equipment:

Tweezers

Disassembly Stick

Torque Driver

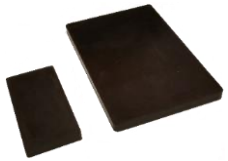
Anti-static Gloves



Anti-static Mat

Press Jig

Device Press Pads



Battery Press Pads

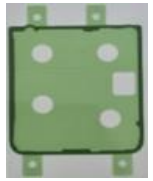
Rework Kit: Sub UB

Sub UB Tapes and screws must always be replaced upon assembling.

B5 Global			QTY	SVC Code
GH82-31832A A/S SUB UB Rework Kit	Tape Double Face-Sub Glass		1	GH02-24994A
	A/S- Tape WP Finger Key Hole SVC		1	GH81-22732A
	Rear Top Screw		7	6001-003506
	Main Cam Screw		1	6001-003487
	A/S-Sponge VT Cam SVC		1	GH81-24007A

Rework Kit: Back Glass

Back Glass Tapes and screws must always be replaced upon assembling.

B5 Global			QTY	SVC Code
GH82-31834A A/S Main Rework Kit	Tape Double Face-Back Glass		1	GH02-24952A
	Rear BTM Screw_Silver		4	6001-00342
	Rear BTM Screw_Black		2	6001-003489
	CON SUS Screw_Black		2	6001-003507

Steps of Assembly

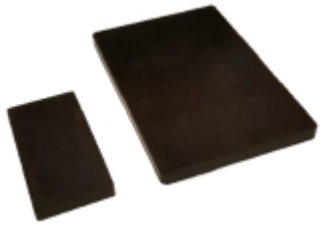
You will assemble the device in the following order:

- Display Module
- Battery (Main & Sub UB)
- Parts on the Bracket
  - Vibrator & mmWave Module
- Parts on the Main PBA
  - Main Camera
- PBA
  - Main PBA & Sub PBA
- Rear Assembly
- Back Glass and Sub UB

Install New Batteries

Remove the blue film from both Batteries and lay them in their positions on the Front Assembly.

- After the Batteries are in place, use the Battery Press Pads to press each Battery for 5 seconds at 0.6N of force



Install the Front Facing Camera

Align the new tape onto the Camera window and remove the blue film.

Align the Camera onto the assembly and press down with an index finger.

Note: Use an otoscope or Dino-Lite to check Camera alignment after installation

Install the mmWave Modules

If installing brand new mmWave modular antennas, proceed as follows to ensure successful calibration post repair:

- Attach two (2) tapes to the mmWave bracket and then remove the green films
- Attach a tape on the bottom of the mmWave Module that doesn't have a bracket
- Align the mmWave Modules into the Front Assembly

Install Vibrator Motor

The Vibrator Motor must be inserted in the correct direction. Use the molding on the OCTA to properly align the Motor onto the Front Assembly

With the Vibrator Motor properly aligned, gently press down for about one second to secure it in place.

The contact pads of the Vibrator Motor must not be damaged in any way, such as separation from the frame. If there is any physical damage to the Vibrator Motor, the Motor MUST be replaced.

If the adhesive of the Vibrator Motor is worn out, attach new tape to the Vibrator Motor before installation.

Install the Sub PBA

- Align the Sub PBA onto the Front Assembly, placing the IF connector first
- Connect two (2) FPCBs
- Insert two (2) new screws and tighten to 1.2 kgf·cm²

Tool Required

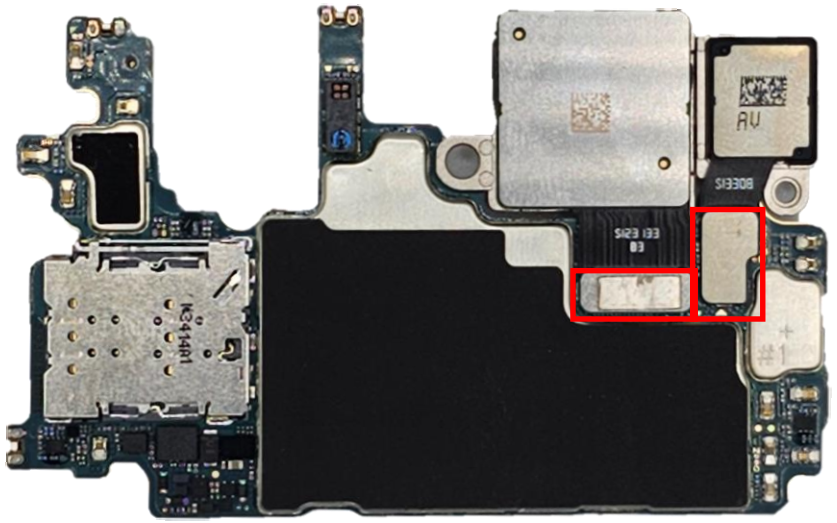
Torque Screwdriver

Samsung Care

Install the Main Camera

Align the Camera onto the Main PBA without touching the lens.

- Connect two (2) Camera FPCBs to the back of the Main PBA



Install the Main PBA

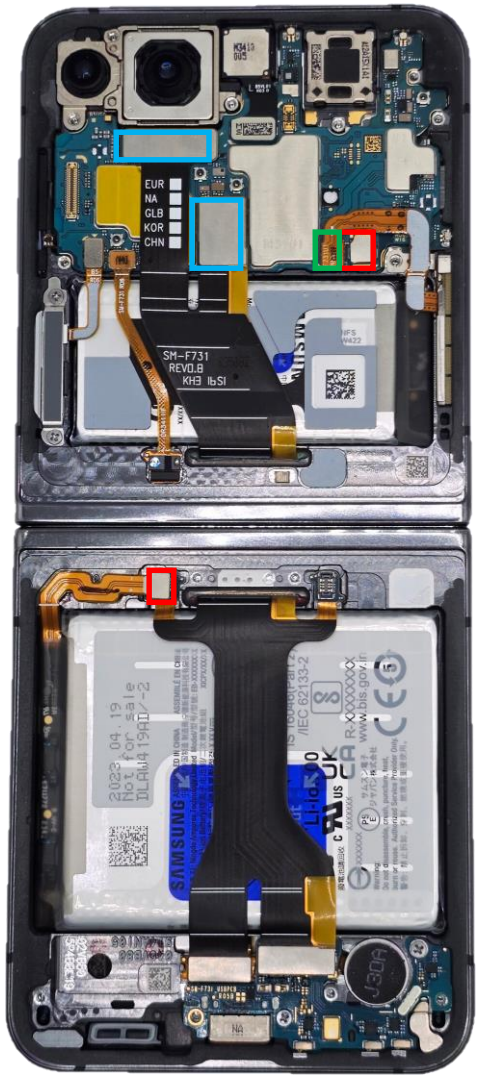
Align the Main PBA onto the Front Assembly; make sure to move the flex cables out of the way to ensure it lays flush (flat) in its place.

- Connect three (3) FPCBs to the Main PBA

Connect the FPCBs

Connect the remaining FPCBs in the following order:

- Left CTC
- Right CTC
- Main Battery
- mmWave
- Sub Battery



Install Bottom Speaker and NFC ANT

Install the Bottom Speaker by snapping it into place.

- Attach the NFC ANT tape and attach the NFC FPCB
- Connect the NFC ANT FPCB
- Align the lower SUS plate over the FPCBs

Using the Torque Screwdriver insert (2) new silver screws and (2) new black screws into the Bottom Speaker at 1.1 kgf·cm^2, and (2) new black screws into the Lower SUS Plate at 1.0 kgf·cm^2.

Tool Required

Torque Screwdriver

Install the Top Rear Assembly

Install the Top Rear Assembly by snapping it into place and connect the FPCB to the Main PBA.

Using a Torque Screwdriver insert (3) new silver screws at 1.2 kgf·cm^2 to secure it in place.

- Align the SUS Plate
- Using a Torque Screwdriver insert two (5) new silver screws at 1.2 kgf·cm^2

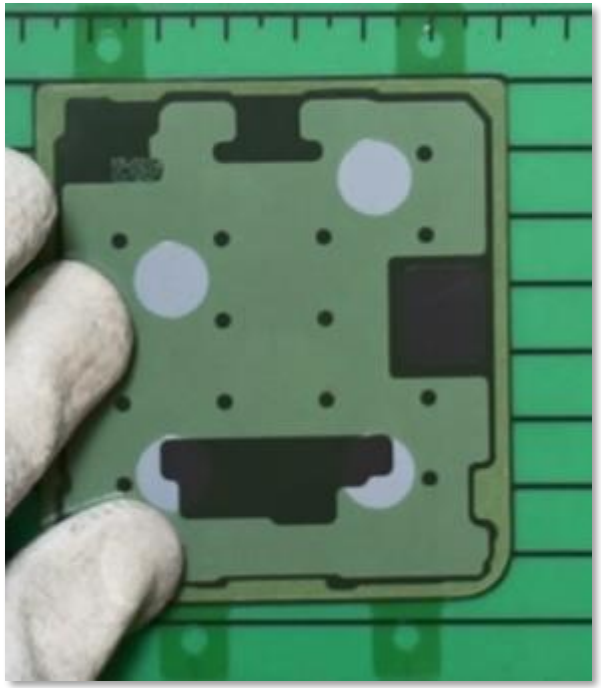
Apply Sub UB and Back Glass Tape

Manually apply Sub UB tapes directly to the rear assembly and attach back glass tape directly on the back glass

Using a thumb, press on the adhesive around the edges

- Pull up the green film from Back Glass and Sub UB

SUB UB Tape



Back Glass Tape

Install the Sub UB

Connect the Sub UB FPCB to the Main PBA.

- Install the SUB UB FPCB Cap by snapping it into place; use the arrows engraved on the cap and top assembly piece as a guide to help you with the alignment
- Lay the Sub UB into place using the Main Camera as a guide

Install the Back Glass

Align the Back Glass manually, laying it down top to bottom.

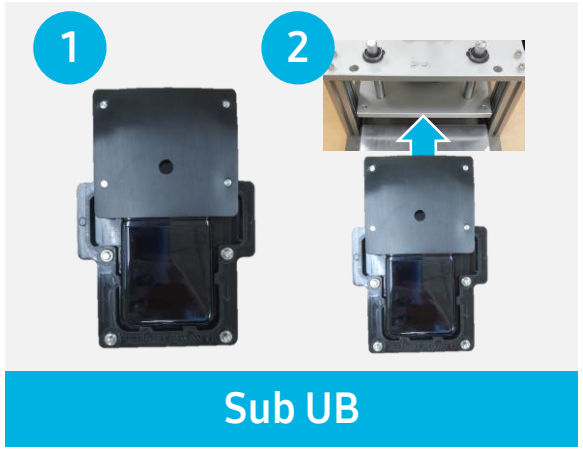
Gently press around the edges of the Sub UB and Back Glass with your thumbs to ensure a bond.

Pressing the Sub UB and Back Glass

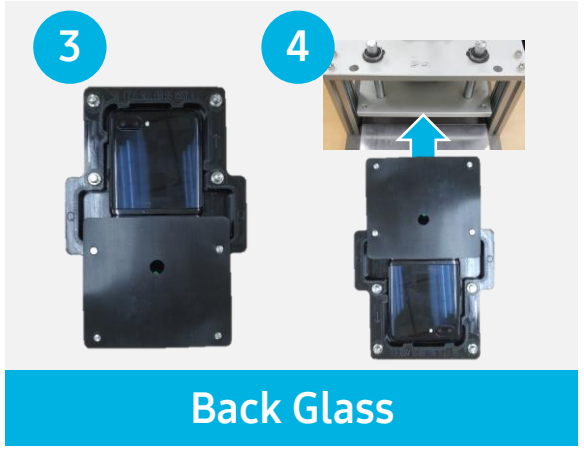
Place the device in the Press Pads facing down.

- Place the top Pad over the Sub UB side
- Place the Press Pad into the Press Jig and make sure the top Pad is aligned in the center of the Press Jig
- Turn the wheel until it stops and press at 1N of force for 1 minute
- Repeat the above steps to press the Back Glass

Note: If you are using universal press pads refer to Universal press pads OJT for foldable press instructions.



Sub UB



Back Glass

※ Align the center with the upper pad

Outbound Quality Check

OQC and Required Calibrations

Galaxy Diagnostics

Once removed from the Press Jig, the device is fully assembled.

Make sure the SIM Tray is reinstalled and perform a final visual inspection of the device

Once the repair is complete, perform an Outbound Quality Check.

Calibration tests for the Galaxy Z Flip 5 include:

- Digital Hall IC Calibration
- TSP Calibration
- Speaker Calibration

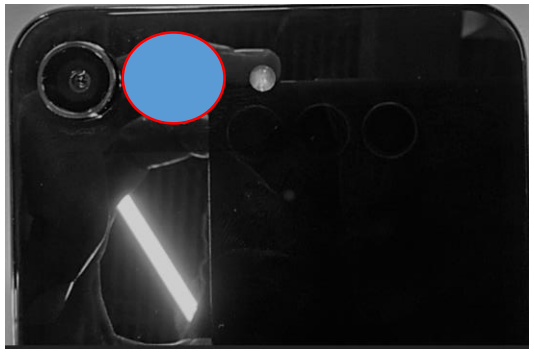
Water Resistance Testing:

- Any side that has been opened must have WRT performed using Galaxy Diagnostics

Water Resistant Testing

Sealing Point for WRT Test will be the Fingerprint key Air vent:

Below are the WRT testing points for the Sub UB and Back Glass



SUB UB

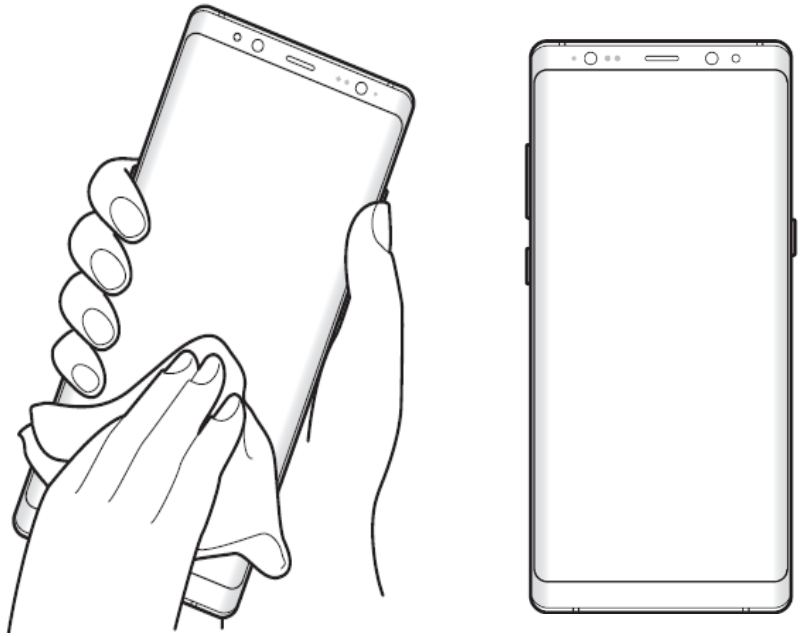
Back Glass

Customer Pickup

Perform one last visual inspection and return the device in the following condition:

- Updated with the most recent firmware build
- State of charge at 100%

Wipe the device clean using a soft, dry microfiber cloth to remove any fingerprints or debris.



Summary

You should now be able to:

- Explain what tools are required for disassembly and reassembly of the Galaxy Z Flip 5
- Describe the steps for disassembly and assembly of the device
- Complete the required OQC and calibrations on the device after repair