Self-Service Repair Manual for X500 Pro Max

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Part I: Document Introduction

1.1 Purpose of this Document

This manual is designed to guide repair enthusiasts with basic technical skills and prior repair experience through the process of self-replacing official vivo parts in their devices.

1.2 Pre-Repair Notices

All features, specifications, and device information provided in this document, including but not limited to device advantages, design, pricing, components, performance, availability, and functionality, are subject to change without prior notice. vivo reserves the right to modify this document or any descriptions herein at any time without any obligation to notify. Please read this manual carefully before performing any repairs. If you are not confident in your ability to safely repair your device, do not attempt to disassemble it. We recommend visiting an official vivo Service Center for professional repair assistance.

1.2.1 Repair Precautions

WARNINGS: Failure to follow the instructions or using non-genuine vivo parts or improper tools may damage the device, its components, or other property, impair device functionality or water resistance, and in severe cases, may result in fire or other safety hazards and cause injury or death.

1) vivo is not responsible for any damage or defects resulting from repairs carried out by unauthorized personnel, self-repairs, or non-professional individuals. vivo assumes no liability for device damage, personal injury, or other safety issues arising from failure to follow these repair instructions.
2) Any attempt to repair the product by individuals or entities not certified by vivo will void the warranty for damages or defects caused.
3) Use only the official tools provided by vivo. Most electronic components are sensitive to electromagnetic forces, and using low-quality tools may result in permanent damage. Please refer to the included tools list.
4) Use only genuine vivo replacement parts. Third-party components may not function properly and could cause fire hazards or personal injury.
5) Certain components, such as sensors (Laser AF / Proximity / Fingerprint), rear cameras, TSP (Touchscreen Panel), speakers, and other modules, may require calibration to ensure optimal post-repair performance.
6) Repairs performed by users or unskilled personnel may compromise the device's original water and dust resistance.
7) For access to the device's fault data or more detailed diagnostics, please visit an official vivo Customer Service Center.
8) To replace parts not available for retail purchase, please visit a vivo Customer Service Center for further guidance.
9) Always back up all important data on your device before performing any repair.
10) Ensure proper safety equipment is worn before repair. vivo is not responsible for any injuries resulting from a lack of proper safety gear. Refer to the Disassembly and Assembly Tools section for a list of necessary tools.
11) Perform repairs in a safe and secure environment.
12) Ensure the device is powered off and the battery is fully discharged before any repair.
13) If the device is damaged, emits smoke, or has a burning smell, immediately stop using it and contact vivo.
14) If the device is damaged, emits smoke, or has a burning smell, immediately stop using it. Extinguish any flames using a CO_2 or dry powder fire extinguisher, or specialized foam, sand, gravel, or dedicated lithium-ion fire extinguisher, and contact vivo immediately.
15) During repairs, it is recommended to wear safety glasses, gloves, and masks.
16) Safety gear such as protective goggles, gloves, and masks should be worn when you repair the device.

17) Take care not to damage the device when you remove the back cover. Before assembly, ensure there are no screws or foreign objects near the battery.
18) During assembly, inspect the back cover carefully and reinstall it. Avoid hitting or pressing on the battery to prevent damage. If the battery is damaged, visit a vivo Customer Service Center for assistance.

1.2.2 ESD (Electrostatic Discharge) Precautions

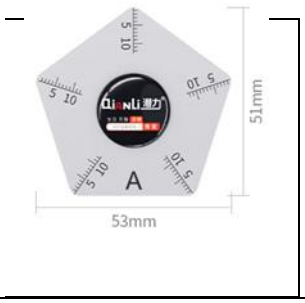
Electrostatic discharge (ESD) is the sudden flow of electricity between two charged objects caused by contact, short circuits, or dielectric breakdown. ESD can negatively affect mobile devices, particularly electronic components.
1) It is recommended to wear anti-static wrist straps, gloves, and use anti-static mats when you perform repairs.
2) Increase airflow in the workspace to reduce the likelihood of accidental ESD events. Dry, low-humidity environments, such as air-conditioned rooms, can increase the probability of electrostatic discharge.

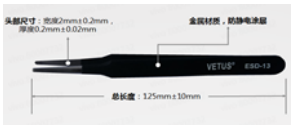
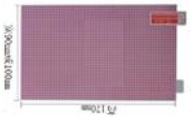
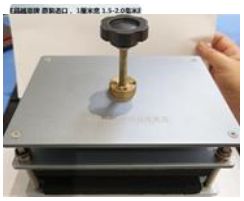
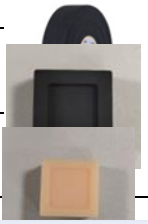
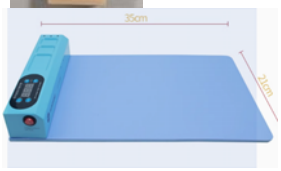
Part II: Warranty Information

2.1 All official replacement parts provided by vivo carry a 90-day warranty. If any part exhibits quality issues within this period, contact vivo for replacement.
2.2 Devices repaired by non-vivo authorized service provider are not covered under warranty, and any repair costs must be borne by the user.
2.2 Any damage incurred during self-service repairs is the responsibility of the user.

Part III: Tool Usage

3.1 Hardware Tools

Tool	Photo of the Actual Item	Purpose
Metal Prying Pick (with scale)		Disassemble the screen unit
Screwdriver Set (Rubber Handle, 6 mm × 100 mm)		Install/remove screws

PET Prying Pick		Remove the battery cover and screen module
Suction Cup		Remove the battery cover.
Anti-Static Conductive Fiber Tweezers Pointed Tip		Remove BTB and coaxial connectors
Metal Flat-Tip Tweezers		Remove main/sub boards or clean adhesive
Screen / Glass Back Cover Anti-Shatter Film		Prevent glass breakage
Universal Pressure Jig		Apply pressure to screen or battery cover
Electrical Insulation Tape, 3M Black, 17 mm Wide		Calibrate the light sensor
EO Fingerprint Test Finger, Flesh Color, 20 × 20 × 12		Photoelectric fingerprint calibration
EO Fingerprint Test Finger, Black, 22 × 22 × 12		Photoelectric fingerprint calibration
Heating Pad (default temperature: 65°C)		Heat the battery cover and screen

3.1.1 Tool Purchase Link: Official purchase link:
https://www.vivo.com/eu/view/support/aboutSelfServiceRepair?code=selfServiceRepair

3.2 Software Updates and Tools

3.2.1 Follow the steps below to update software via FOTA:

- Open the Settings app and tap System Upgrade.
- If the system is already up to date, no action is required.
- If an update is available, you can schedule installation or set an automatic update time.

Note:

1. Updating via mobile data may incur additional charges.
2. If the latest software is already downloaded, the above options will not be active.

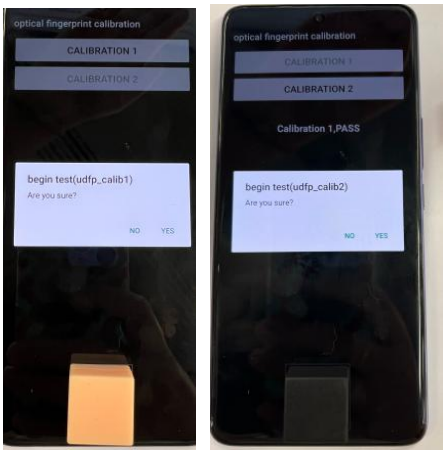
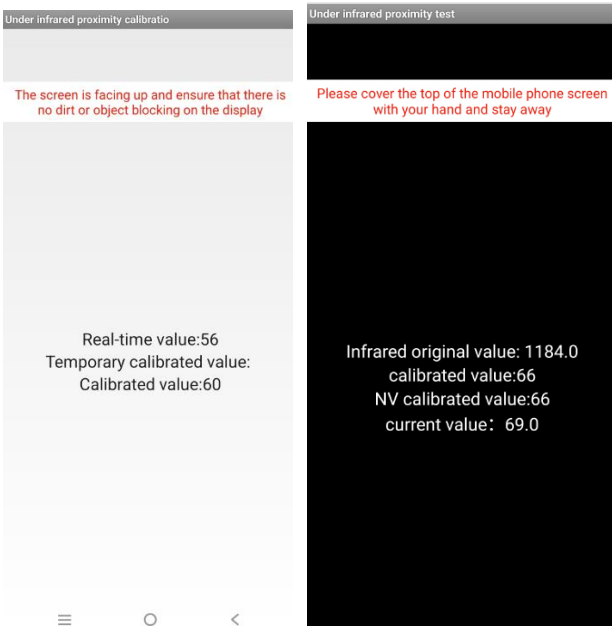
3.2.2 Self-Diagnosis: Perform self-diagnostics before and after repairs to verify device functionality.

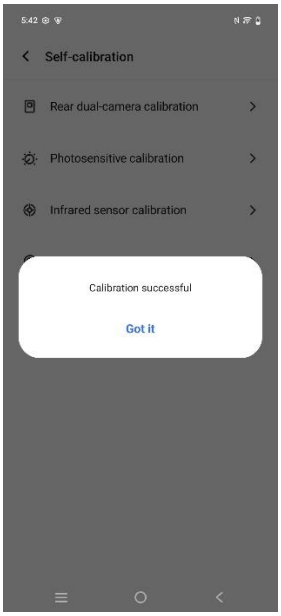
Path: vivo Official App > Service > Self-Service > Hardware Diagnostics > One-Tap Test

3.2.3 Self-Calibration via Official App: Primarily used for post-repair calibration after you replace the display or camera,

this includes rear dual-camera calibration (applicable only to devices with two or more rear cameras), in-display fingerprint calibration, and infrared/light sensor calibration. All relevant components must be calibrated after repair to ensure proper functionality.

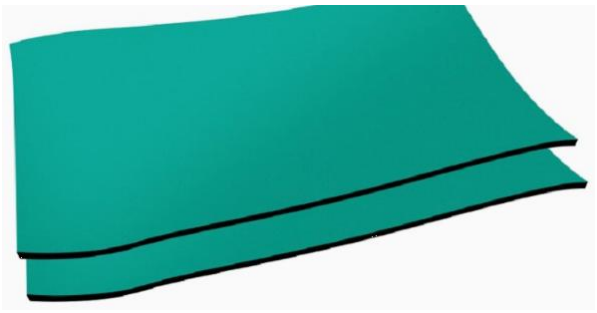
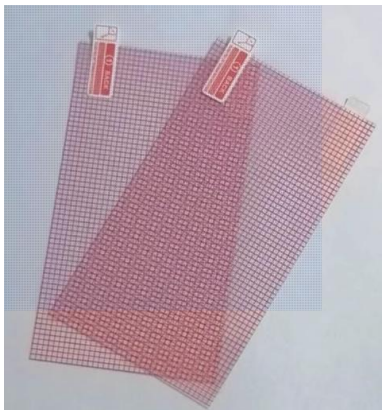
Calibration items and instructions are as follows:

Calibration Item	Instructions	Illustration	Notes
Rear Dual-Camera Calibration	Go to Official Website/App > Service > Self-Service > Hardware Test > More Tests > Tap Self-Calibration > Enter calibration code (SELFREPAIR) > Select Rear Dual-Camera calibration > Complete calibration.		Required after you disassemble the mainboard or remove/replace any rear camera.
Screen Fingerprint Calibration	Go to Official Website/App > Service > Self-Service > Hardware Test > More Tests > Tap Self-Calibration > Enter calibration code (SELFREPAIR) > Select Screen Fingerprint calibration > Complete calibration.		Required after you replace the display assembly or fingerprint sensor assembly.
IR Calibration	Go to Official Website/App > Service > Self-Service > Hardware Test > More Tests > Tap Self-Calibration > Enter calibration code (SELFREPAIR) > Select IR calibration > Complete calibration.		Required after you disassemble the mainboard or replace the display assembly.

Light Sensor Calibration	Go to Official Website/App > Service > Self-Service > Hardware Test > More Tests > Tap Self-Calibration > Enter calibration code (SELFREPAIR) > Select Optical calibration > Complete calibration.	 	Required after you disassemble the mainboard or replace the display assembly.

3.3 Safety Tools

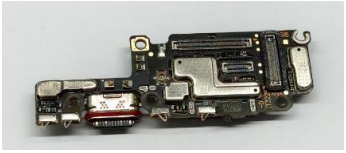
Tool	Photo of the Actual Item	Purpose
Safety Goggles		Protect eyes from splashes or debris during repair
Anti-Static Cut-Resistant Gloves		Prevent electrostatic discharge that could damage the device Protect hands from cuts during repairs
Anti-Static Wrist Strap		Prevent electrostatic discharge that could damage the device

Anti-Static Mat		Prevent electrostatic discharge that could damage the device
Anti-Shatter Film		Prevent device damage or personal injury if the screen or battery cover shatters
Sand Bucket		Safely contain and dispose of a battery in the event of a fire

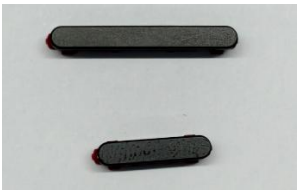
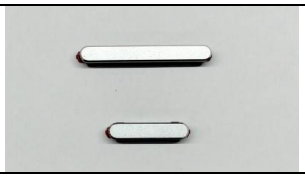
Note: Some protective tools must be purchased separately; official accessories may not include them.

Part IV: Repair Guide

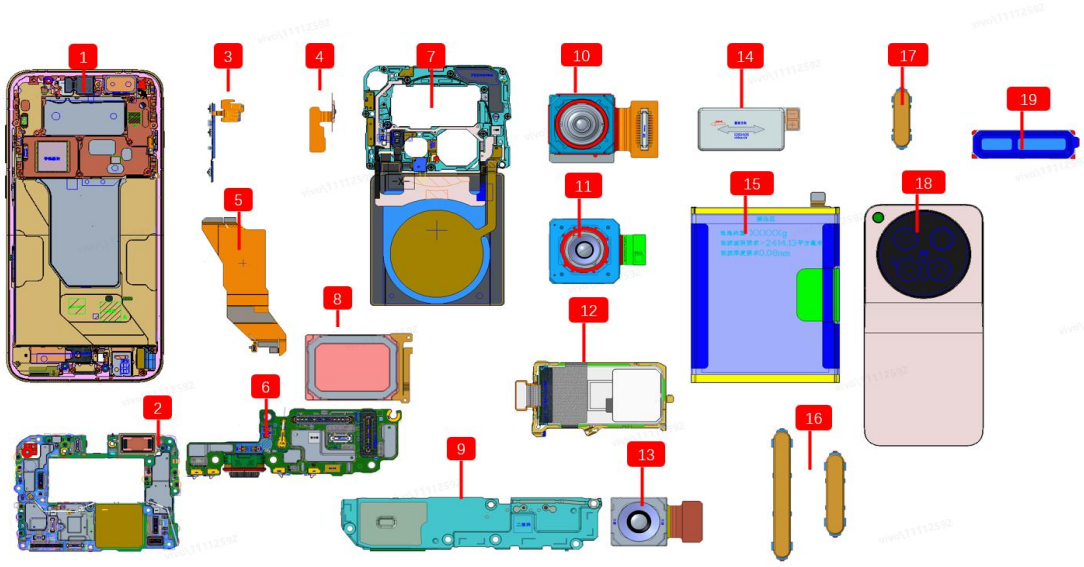
4.1 Spare Part List (with Purchase Codes)

Sr. No.	Purchase Code	Material Name	Illustration
1	4936781	Sub Board (ANA Board)	
2	5420232	Front Camera Assembly	

3	5420233	Rear Main Camera Assembly	
4	5420234	Rear Periscope Camera Assembly	
5	5420235	Rear Wide-Angle Camera Assembly	
6	5420230	Upper Speaker Assembly	
7	5420231	Lower Speaker Assembly	
8	5420237	Plastic-Coated Lithium Battery	
9	5420227	Display Assembly (Black)	
10	5420228	Display Assembly (Gray)	
11	5420393	SIM Card Tray Assembly (Black)	
12	5420394	SIM Card Tray Assembly (Gray)	

13	5420243	Battery Cover Assembly (Black)	
14	5420244	Battery Cover Assembly (Gray)	
15	5420239	Side Button Assembly (Black)	
16	5420240	Side Button Assembly (Gray)	
17	5420241	Mute Button Assembly (Black)	
18	5420242	Mute Button Assembly (Gray)	

4.2 Product Exploded View



Sr. No.	Assembly Description	Sr. No.	Assembly Description
1	Display assembly	11	Rear Main Camera

2	Mainboard	12	Rear Periscope Camera
3	FK Board	13	Rear Wide-Angle Camera
4	FKB Board	14	Motor
5	FMA Board	15	Battery
6	Sub Board (ANA Board)	16	Side Button
7	Mainboard bracket	17	Mute Button
8	Upper Speaker	18	Battery Cover
9	Lower Speaker	19	Lower Speaker Dust Screen
10	Front Camera		

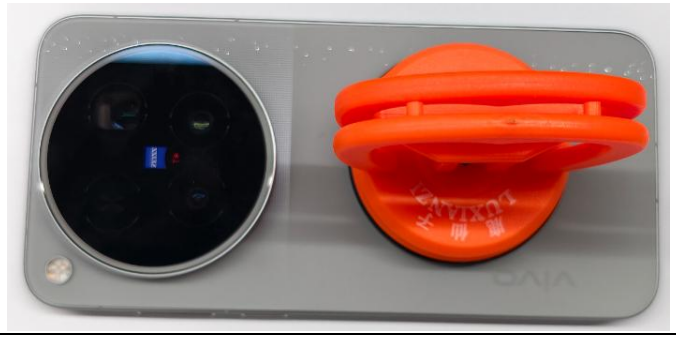
4.3 Removal and Installation Guide

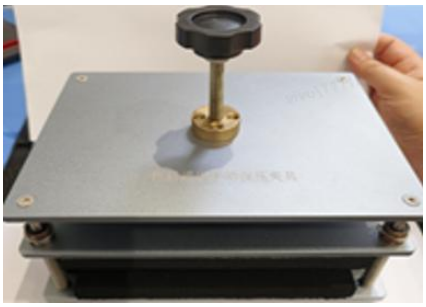
- Before beginning any repair, be sure to complete the following steps:
- Back up your data
- Fully discharge the battery
- Power off the device and disconnect all external cables
- Wear anti-static gloves
- If a cosmetic damage or adhesive overflow occurs after assembly, please visit an official vivo Service Center for inspection and support

4.3.1 Battery Cover Replacement

Repair Difficulty: Low
Estimated Time: 6–10 minutes
Required Spare Parts: Battery Cover Assembly

Removal		
Procedure	Illustration	Notes
Step 1: Power off the device. Insert a SIM card tray eject tool into the eject hole to remove the SIM card tray.		

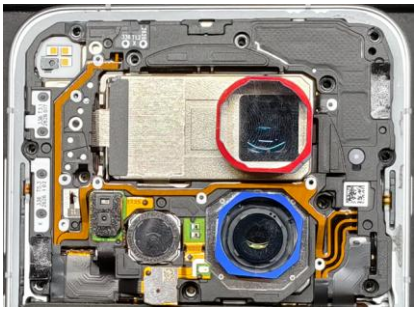
Step 2: Set the heating pad to 65°C. Place the phone on the heating pad and heat for 5 minutes.		
Step 3: Place the suction cup at the center of the bottom edge of the back cover, pull upward to create a gap, and insert a prying pick into the gap. Do not pry all four sides at this stage—only insert the pick.		Note: Use a handle-type suction cup and proceed with caution to avoid injury, as the handle may detach during use.
Step 4: Apply protective film to the battery cover to prevent it from cracking. Use a prying pick to work around the edges. Do not insert deeper than 5 mm.		To avoid damaging internal circuits, never insert the pick deeper than 5 mm.
Step 5: Once all edges are loosened, slowly lift the back cover from the left side. Do not open it at an excessive angle. Detach the battery cover.		
Step 6: Use pointed anti-static tweezers or your fingers to remove all residual adhesive from the back cover and the back of the device.		Do not to touch the rear cameras or the lens of the battery cover with your fingers or any foreign objects, and avoid damaging nearby

		components.
Installation		
Procedure	Illustration	Notes
Step 1: Remove the protective liner from the back cover adhesive. Align it using the mid-frame as a reference, and then attach it to the frame.		
Step 2: Align the battery cover with the frame and press it into place. Wrap your fingers with lint-free cloth and press along the adhesive areas. Use a universal pressure jig to apply consistent pressure and activate the adhesive.	 	

4.3.2 Removal and Installation of Mainboard Bracket

Repair Difficulty: Low
Estimated Time: 8–12 minutes
Required Spare Parts: Mainboard Bracket Assembly

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	

Step 2: Use a Phillips screwdriver to remove the mainboard bracket screws, 12 in total, as illustrated.		
Step 3: Use tweezers to gently lift the mainboard bracket from the lower-right corner.		
Installation		
Procedure	Illustration	Notes
Assembly sequence: Align the mainboard bracket on the mainboard and secure it with screws.		Ensure the camera module is properly aligned.

4.3.3 Lower Speaker Replacement

Repair Difficulty: Low
Estimated Time: 8–12 minutes
Required Spare Parts: Lower Speaker Assembly

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	
Step 2: Remove all the six screws.		
Step 3: Detach the lower speaker from the designated removal slot.		Note: Avoid puncturing or damaging the battery

		during this process.
Installation		
Procedure	Illustration	Notes
Step 1: First install the bottom edge of the speaker, and then snap the top edge into the slot.		Before installation, ensure the speaker is free of debris.
Step 2: Install the screws.		

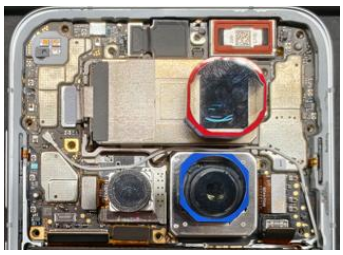
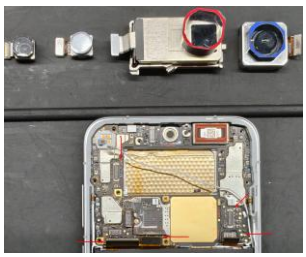
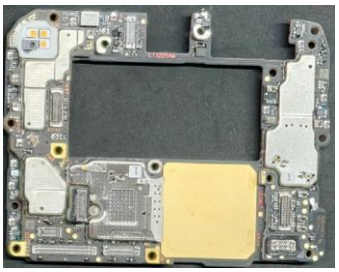
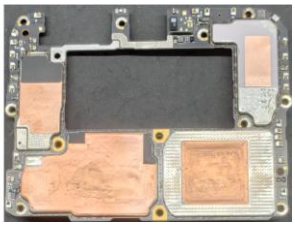
4.3.4 Sub-Board Replacement (Main MIC & Charging Port)

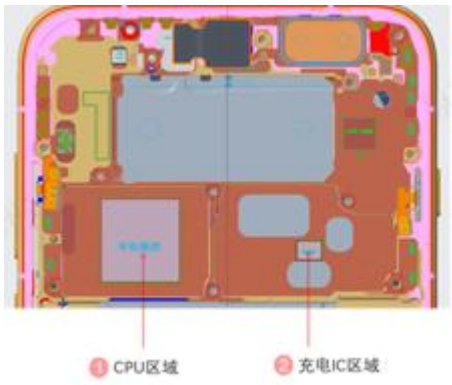
Repair Difficulty: Low
Estimated Time: 9–13 minutes
Required Spare Parts: Sub-board module

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	
Step 2: Remove the speaker (refer to the speaker removal steps).	Refer to section 4.3.3	
Step 3: Remove the component BTB connectors and coaxial cable from the indicated positions.		
Step 4: Use fine-tip tweezers to pry up the sub board from the indicated location.		
Installation		
Procedure	Illustration	Notes
Step 1: Insert the bottom edge of the sub board into the frame and press until it clicks securely into place.		
Step 2: Reconnect the coaxial cable, display BTB, and fingerprint BTB connectors.		

4.3.5 Removal and Installation of Mainboard

Repair Difficulty: Low
Estimated Time: 9–12 minutes
Required Spare Parts: Mainboard

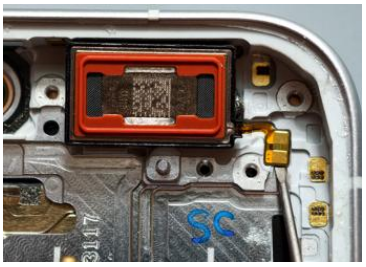
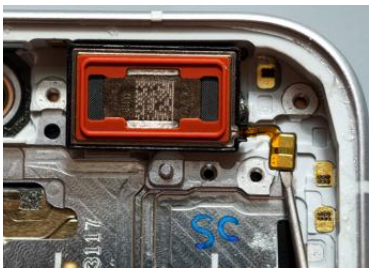
Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	
Step 2: Remove the mainboard bracket (refer to the mainboard bracket removal steps).	Refer to section 4.3.2	
Step 3: Disconnect all cameras, BTB connectors, and coaxial cables from the mainboard at the indicated positions.	 	After removing the cameras, keep them free from dust and contami-nants. Avoid touching the lenses to avoid affecting photo quality.
Step 4: Remove the mainboard screws, and then gently lift the board using a flat-head screwdriver.	 	
Installation		
Procedure	Illustration	Notes
Step 1: Clean any residual thermal gel from both the frame and mainboard using a clean lint-free cloth.	 	Handle with care. Do not apply excessive force, especially on the mainboard

		side.
Step 2: Apply new thermal gel to the designated areas.		
Step 3: Install the mainboard by inserting the bottom edge into the frame first, and press it into place. Ensure it is properly seated with no warping, and then secure it with screws.		
Step 4: Reconnect all camera BTBs and coaxial cables.		
Step 5: Perform calibration.	After reassembly, calibrate the rear dual cameras, light sensor, and infrared sensor as specified in section 3.2.3.	

4.3.6 Removal and Installation of Upper Speaker

Repair Difficulty: Low
Estimated Time: 9–12 minutes
Required Spare Parts: Upper Speaker

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	
Step 2: Remove the mainboard bracket (refer to the mainboard bracket removal steps).	Refer to section 4.3.2	
Step 3: Remove the mainboard.	Refer to section 4.3.5	

Step 4: Use a flat-head screwdriver to remove the reinforcement plate, and then detach the speaker module.	 	Warning: Do not insert the screwdriver too deeply when removing the speaker to avoid damaging the display.
Installation		
Procedure	Illustration	Notes
Step 1: Clean any residual adhesive from the speaker area on the frame. Apply new double-sided adhesive to the frame and remove the protective film. Press the new speaker firmly into position.		Be careful not to damage the screen while cleaning the adhesive.

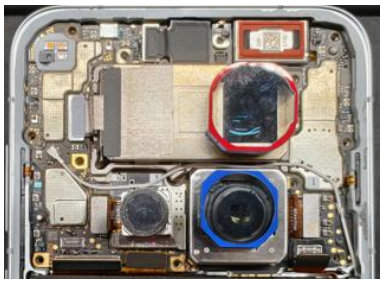
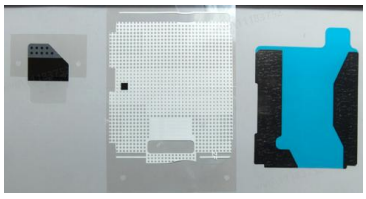
4.3.7 Battery Replacement

Repair Difficulty: Low
Estimated Time: 6–10 minutes
Required Spare Parts: Battery module

Preparation before battery removal:

1. Ensure the battery is fully discharged.
2. Prepare a sand bucket to mitigate safety risks in case the battery ignites during removal.

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover (refer to the battery cover removal steps).	Refer to section 4.3.1	
Step 2: Remove the mainboard bracket (refer to the mainboard bracket removal steps).	Refer to section 4.3.2	

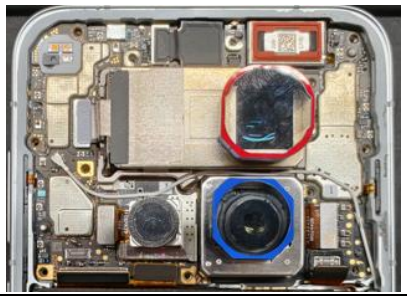
Step 3: Disconnect the battery BTB connectors.		
Step 4: Pull the PET tab at an angle no greater than 60° to the work surface and slowly lift the battery.		Ensure your hand do not obstruct the battery area during removal.
Installation		
Procedure	Illustration	Notes
Step 1: Check whether the battery is swollen, deformed, or damaged. If so, do not reuse and replace with a new battery.		
Step 2: Remove residual adhesive on the main upper part and battery, clean black adhesive in the indicated areas. Peel off also the PET disc for the old battery.		
Step 3: Take a new battery PET film and two battery adhesive strips. Attach them to the battery and frame according to the indicated positions. Peel off all release films.		
Step 4: Before installation, ensure the battery and battery compartment are free from any foreign objects. Place the battery into the frame, and press firmly on the adhesive areas indicated with blue		

frames to activate the adhesive.		

4.3.8 Display Assembly Replacement

Repair Difficulty: Neutral
Estimated Time: 15–20 minutes
Required Spare Parts: Display Module

Removal		
Procedure	Illustration	Notes
Step 1: Remove the battery cover.	Refer to section 4.3.1	
Step 2: Remove the mainboard bracket.	Refer to section 4.3.2	
Step 3: Remove the lower speaker bracket.	Refer to section 4.3.3	
Step 4: Remove the mainboard and cameras.	Refer to section 4.3.5	
Step 5: Remove the battery.	Refer to section 4.3.7	
Step 6: Remove the upper speaker.	Refer to section 4.3.6	
Step 7: Remove the sub board.	Refer to section 4.3.4	
Installation		
Procedure	Illustration	Notes
Step 1: Install the upper speaker, mainboard, cameras, and ANA board.	Refer to the installation steps in sections 4.3.6, 4.3.5, and 4.3.4	
Step 2: Install the FMA board, and apply adhesive to the back of the FMA board. Connect both ends of the FMA BTB to the M board and ANA board, respectively. Finally, align and secure the FMA board to the frame, and press it firmly onto the soft pad at		

the bottom of the battery compartment.		
Step 3: Install the coaxial cable. First secure one end to the M board, and route the cable neatly into the cable groove. Place the PET disc and press it firmly, and then reconnect the coaxial cable to the ANA board.		
Step 4: Install the speaker, battery, mainboard bracket, and battery cover.	Refer to the installation steps in sections 4.3.3 and 4.3.7, 4.3.2, and 4.3.1	
Step 5: Power on the device and check if the screen turns on normally.		
Step 6: Perform calibration.	After reassembly, calibrate the rear dual cameras, in-display fingerprint sensor, infrared sensor, and light sensor as specified in section 3.2.3.	

4.3.9 Side Button Replacement

Repair Difficulty: Low
Estimated Time: 5 minutes
Required Spare Parts: Side Button

Removal		
Procedure	Illustration	Notes
Step 1: Apply high-temperature protective tape to safeguard the device appearance.		

Step 2: Using a flat-head screwdriver or flat-tip tweezers, pry out the side button from the indicated removal point.		
Installation		
Procedure	Illustration	Notes
Step 1: Insert the new side button into the slot. Ensure it is aligned parallel to the frame, and then press it into place securely.		