Self-service Repair Manual for vivo V50

Contents

1 About this manual

1.1 Purpose

This manual is intended to guide DIY hobbyists with certain hands-on skills and repair experience in replacing official components of vivo phones.

1.2 Caution

All features, characteristics, specifications, and other device information provided in this manual, 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 manual or any descriptions herein at any time without the obligation to give notice of such modifications. Please read through this manual carefully before repair. If you do not meet the repair conditions, do not disassemble the device. You may visit a vivo customer service center for repairs.

1.2.1 Repair notes

Warning: Failure to follow the instructions herein or the use of non-official vivo components or improper tools may damage the device, its components, or other property; impair device functionality and water resistance; and in severe cases, cause fires or other safety hazards, leading to personal injury or death.

(1) vivo assumes no liability for any damage or defects resulting from repairs made by unauthorized carriers, yourself, or other non-professionals. vivo is not responsible for any device damage, personal injury, or other safety consequences caused by failure to follow this manual.

(2) Any damage or defects resulting from attempts to repair the device by anyone other than a vivo-certified service provider are not covered by the warranty.

(3) We recommend that you use only official tools for repairing. Most electronic components are sensitive to electromagnetic forces, and low-quality tools may easily damage your device. For tool details, see Section 3.1.

(4) We recommend that you use only official spare parts. Third-party spare parts may not function properly and may cause fires or personal injury.

(5) Some components, such as laser focusing/proximity/fingerprint sensors, rear cameras, touchscreen panels, and speakers, may require calibration to ensure their performance after repair.

(6) The water and dust resistance of a device repaired by yourself or other non-professionals cannot be guaranteed.

(7) If you need to access device fault data or obtain more detailed diagnostics, please visit a vivo customer service center.

(8) If you need to replace components that are unavailable on the market, please visit a vivo customer service center for further assistance.

(9) Before making repairs, back up important data stored in the device.

(10) Before making repairs, wear proper safety gear. vivo is not responsible for any injury due to failure to wear proper safety gear. For details of the required disassembly and assembly tools, see Section 3.1.

(11) Make repairs in a safe location.
(12) Before making repairs, make sure that the device is powered off and its battery is fully discharged.
(13) If the device is damaged, emits smoke, or produces a burning smell, stop repairing it immediately and contact vivo customer service. If a fire is started, extinguish it with a carbon dioxide or dry powder fire extinguisher, specialized foam, sand, soil, gravel, or a dedicated lithium-ion battery fire suppressant.
(14) When repairing the device, wear protective gear such as safety goggles, gloves, and masks.
(15) When removing the back cover, take care not to damage the device. Before reassembling the device, make sure that no free screws or foreign objects are left around the battery.
(16) During reassembly, inspect the back cover for abnormalities before reinstalling it. Avoid impact or pressure on the battery to prevent damage. If the battery is damaged, please visit a vivo customer service center.

1.2.2 ESD precautions

Electrostatic discharge (ESD) is a sudden flow of electric current between two charged objects due to contact, a short circuit, or dielectric breakdown. ESD negatively affects mobile devices, particularly their electronic components.
(1) We recommend that you wear anti-static wrist straps and gloves, and use anti-static mats when you repair the device.
(2) Increase airflow in the work area to reduce the likelihood of accidental ESD. In an environment with low humidity, such as an air-conditioned room, ESD is more likely to happen.

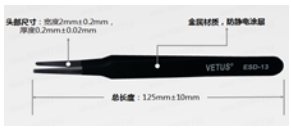
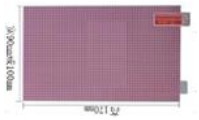
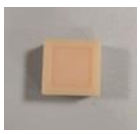
2 Warranty

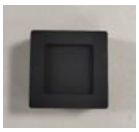
2.1 A 90-day warranty is provided for official spare parts. If any quality issues arise with them within that period, you may contact vivo for a replacement.
2.2 A device repaired by anyone other than a vivo-authorized service provider is not covered by the warranty, and you will bear the repair costs.
2.3 Any damage caused during self-service repairs will be your responsibility.

3 Tools

3.1 Hardware tools

Tool name	Photo	Usage
Metal pry pick (with a scale)		Disassembling the display module

Screwdriver kit (rubber-grip dual-purpose screwdriver, 6 × 100 mm)		Removing and installing screws
PET pry sheet		Removing the back cover and display module
Suction cup		Removing the back cover
Anti-static carbon fiber tweezers (with pointed tips)		Removing board-to-board (BTB) and coaxial cable connectors
Metal flat-head tweezers		Removing the M board and ANA board, or cleaning adhesive
Anti-shatter film		Preventing glass shattering on screen / back cover
Universal pressure fixture	 	Securing the screen or back cover
Electrical insulation tape, 3M, black, 17 mm		Optical calibration
False finger, flesh-colored, 20 × 20 × 12 mm		Testing electro-optical fingerprint recognition

False finger, black, 22 × 22 × 12 mm		Testing electro-optical fingerprint recognition
Heating pad (default temperature: 65°C)		Heating the back cover and screen

3.1.1 Tool purchase

Official purchase link:

https://www.vivo.com/eu/view/support/aboutSelfServiceRepair?code=selfServiceRepair

3.2 Software update and software tools (to be confirmed after software release)

3.2.1 Software update via FOTA

- To update software, go to Settings > System Update.
- If the system is already of the latest version, no update is needed.
- If a software update is available, you can set the time for automatic update.

Note:

1. Updating software via mobile data may incur additional fees.
2. If the latest software has been downloaded to the device, these options do not take effect.

3.2.2 Self-diagnosis

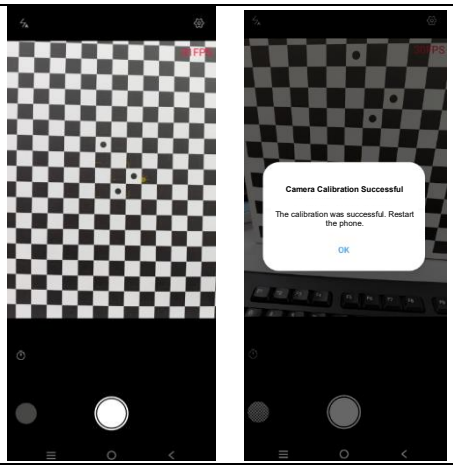
Before and after repair, perform a self-diagnosis to check if the device functions properly.

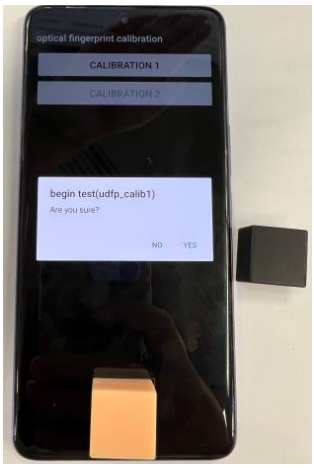
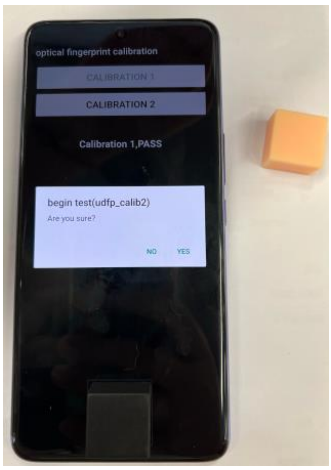
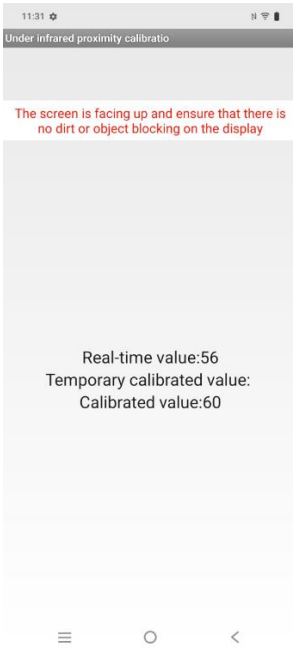
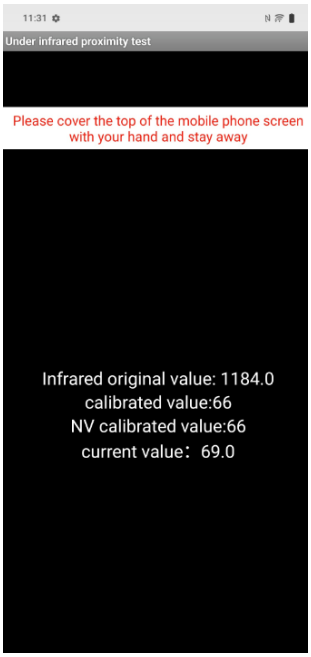
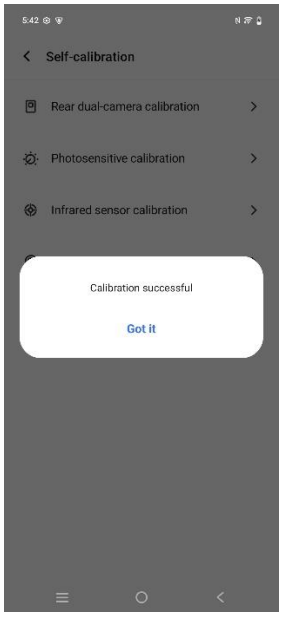
Open the vivo Store / vivo.com app, go to Support > Hardware Test > Self-calibration, and enter the calibration code "SELFREPAIR" to perform the check.

3.2.3 Self-calibration on the vivo Store / vivo.com app

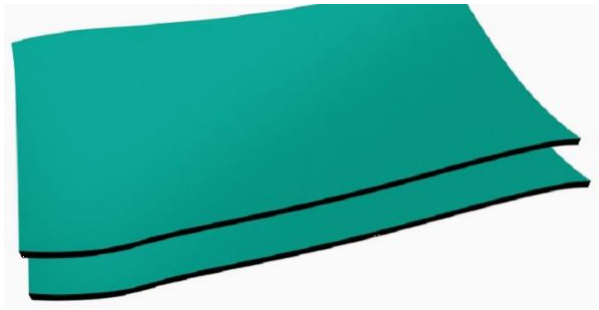
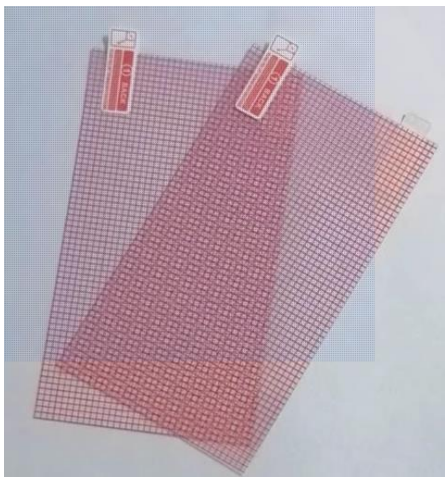
You can perform calibration after replacing the display or camera, such as the calibration of the rear cameras (for devices with two or more rear cameras), in-display fingerprint scanner, infrared proximity sensor, and ambient light sensor. The calibration ensures proper functionality of components after repairs.

The following table describes calibration items and instructions.

Calibration item	Instruction	Illustration	Description
Rear cameras	Open the vivo Store / vivo.com app, go to Support > Hardware Test > Self-calibration, enter the calibration code "SELFREPAIR", tap Rear dual-camera calibration, and calibrate the cameras.		This calibration is required after M board disassembly or replacement

			of any rear camera.
In-display fingerprint scanner	Open the vivo Store / vivo.com app, go to Support > Hardware Test > Self-calibration, enter the calibration code "SELFREPAIR", tap Screen finger calibration, and calibrate the fingerprint scanner.	 	This calibration is required after replacement of the display assembly, display module, or fingerprint module.
Infrared proximity sensor	Open the vivo Store / vivo.com app, go to Support > Hardware Test > Self-calibration, enter the calibration code "SELFREPAIR", tap Infrared proximity sensor calibration, and calibrate the infrared proximity sensor.	 	This calibration is required after M board disassembly or replacement of the display assembly or display module.
Ambient light sensor	Open the vivo Store / vivo.com app, go to Support > Hardware Test > Self-calibration, enter the calibration code "SELFREPAIR", tap Photosensitive calibration, and calibrate the ambient light sensor.	 	This calibration is required after M board disassembly or replacement of the display assembly or display module.

3.3 Protective tools

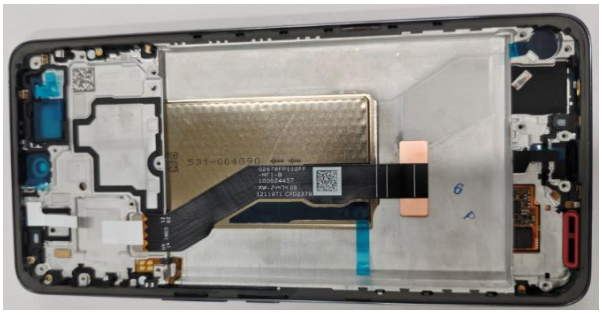
Tool name	Photo	Usage
Safety goggles		Preventing liquid/splinter splashes from hurting your eyes during repairs
Anti-static cut-resistant gloves		Preventing ESD damage and cuts during repairs
Anti-static wrist strap		Preventing ESD damage to the device during repairs
Anti-static mat		Preventing ESD damage to the device during repairs
Anti-shatter film		Preventing device damage or personal injury due to screen or back cover shattering

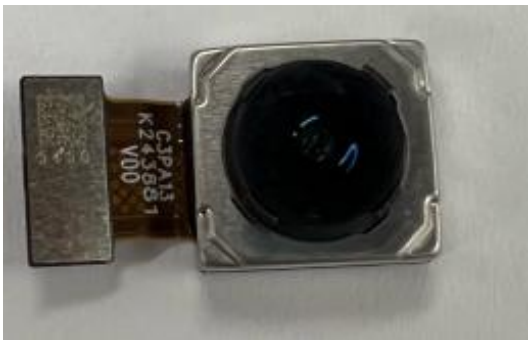
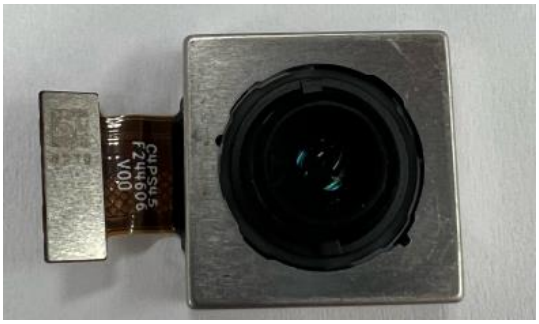
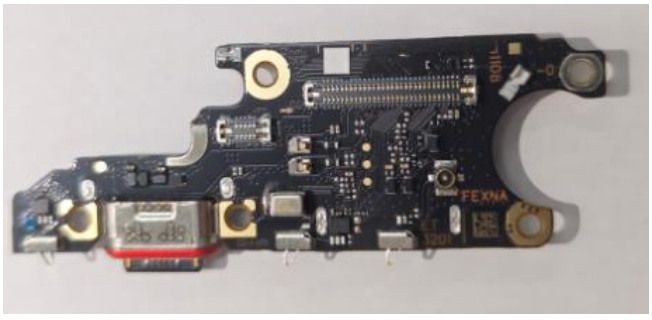
Fire bucket		Containing a burning battery

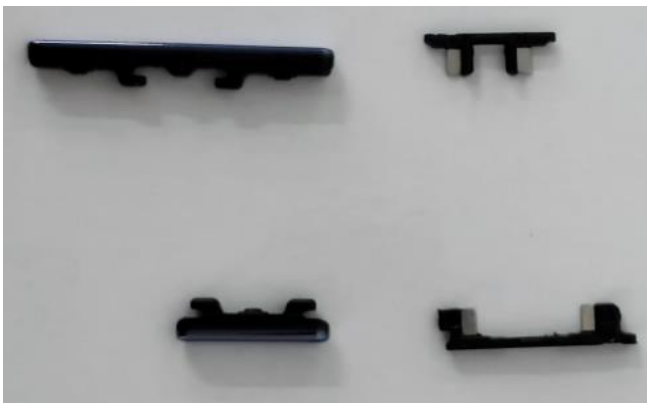
Note: vivo does not provide all protective tools. You need to purchase them from other sources.

4 Repair guide

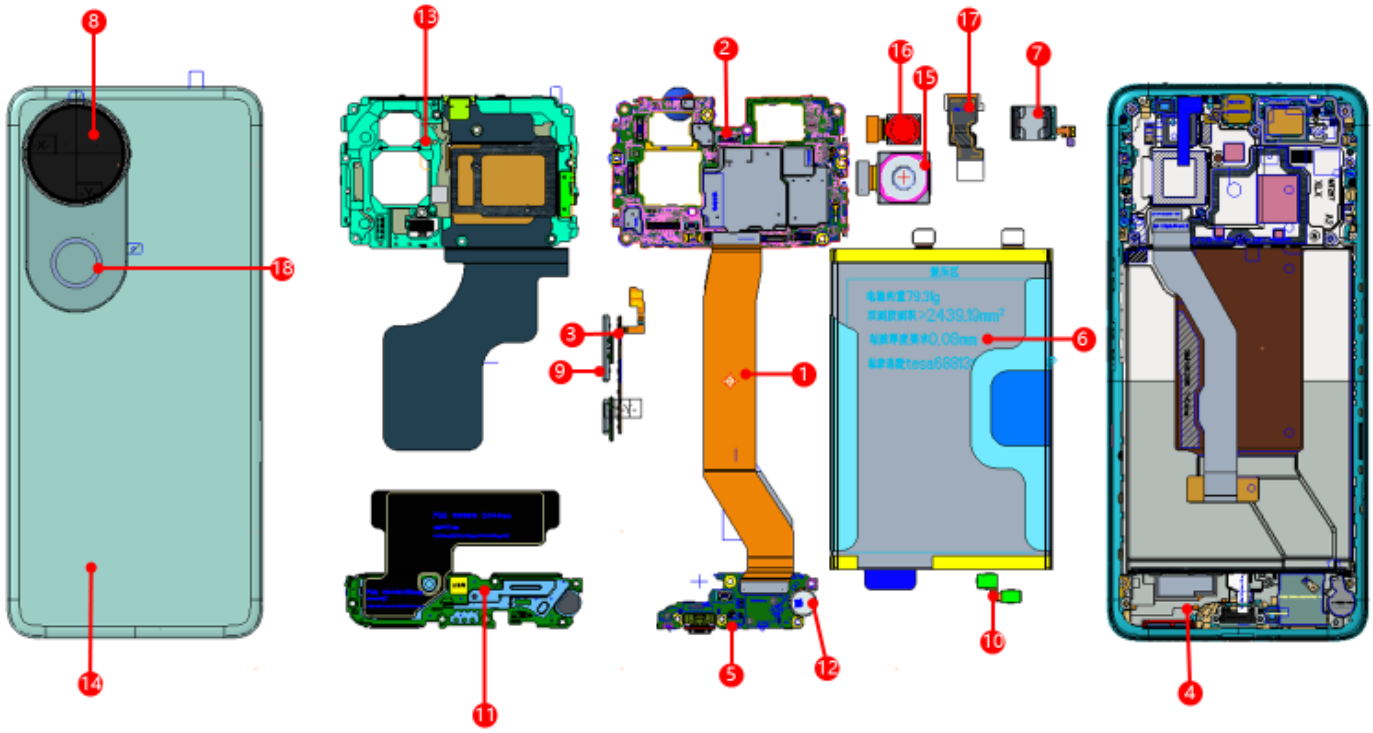
4.1 Spare parts

No.	Material name	Purchase code	Illustration
1	Display assembly	5437422 5437423	
2	Display module	5436547	
3	Back cover assembly	5437429 5437430 5437431 5437432	

4	Battery assembly	5437427 5437428	
5	Wide-angle camera	5437426	
6	Rear main camera	5437437	
7	Front camera	5437425	
8	ANA board	4935289	

9	Lower speaker	5437424	
10	Side buttons	5437433 5437434	
11	Card tray	5437435 5437436	

4.2 Device breakdown



No.	Material name
1	FMA board
2	M board
3	FK board
4	Display assembly
5	ANA board
6	Sealed Li-ion battery
7	Upper speaker assembly
8	Camera lens with decorative ring
9	Side button assembly
10	Fingerprint scanner assembly
11	Lower speaker assembly
12	Motor assembly
13	M board bracket assembly

14	Back cover assembly
15	Rear main camera assembly
16	Rear wide-angle camera assembly
17	Front camera assembly
18	Camera flash assembly

4.3 Disassembly and assembly guide

- Perform the following steps before starting the repair:
- Back up your data.
- Fully discharge the battery.
- Power off the phone and disconnect all external data cables.
- Wear anti-static gloves.
- If you find issues such as cosmetic damage and adhesive overflow after assembly, you may visit a vivo official service center.

4.3.1 Replace the back cover

Difficulty: low

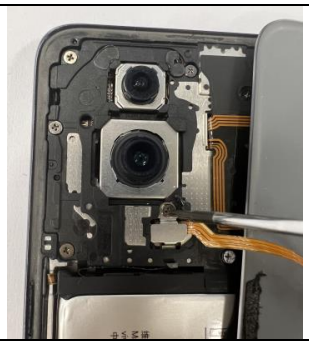
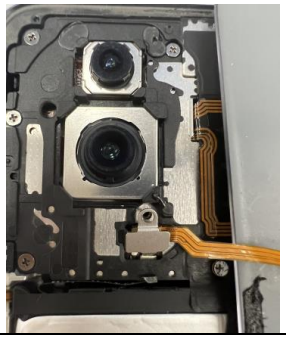
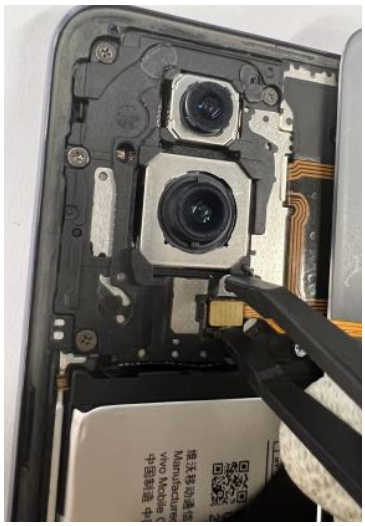
Duration: 6–10 minutes

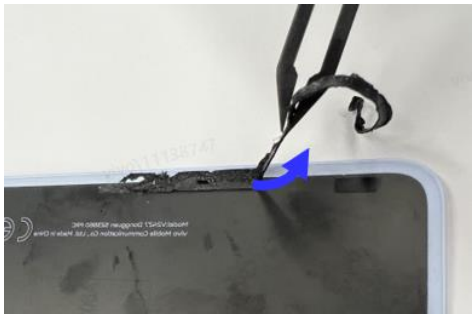
Required spare parts: back cover assembly

Tools:

Disassembly		
Operation	Illustration	Remarks
Step 1: Power off the device, and then insert eject tool into the SIM card eject hole to remove the card tray.		

Step 2: Set the heating pad to 65°C and place the device on it for 5 minutes.		
Step 3: Place the suction cup at the bottom center edge of the back cover, lift it gently to create a small gap, and insert a pry pick to separate it. Do not slide the pry pick along the edges at this step.		Note: Use a handle suction cup. Be careful to avoid injury, as its handle may loosen during use.
Step 4: Apply an anti-shatter film to the back cover to prevent shattering. Slide the pry pick around the edges, with an insertion depth of up to 5 mm.		Do not insert the pry pick deeper than 5 mm to avoid damaging internal circuits.

Step 5: Slowly lift the back cover from the left side at a shallow angle to avoid stressing the flexible printed circuit (FPC). Gently wiggle the cover side-to-side during lifting. Never pull it forcefully, which may tear the FPC.	 	
Step 6: Use a screwdriver to remove the screw securing the flash connector's metal bracket, and then remove the metal bracket.	 	
Step 7: Remove the flash connector using anti-static tweezers (lift from the connector's top-right corner).		
Step 8: Fully separate the back cover from the device.		

Step 9: Clean residual adhesive from the device frame and back cover using pointed anti-static tweezers or fingers.	 	Avoid touching or leaving debris on rear camera lenses or the lens protector. Take care not to damage nearby components.
Assembly		
Operation	Illustration	Remarks
Step 1: Peel off the backing from the back cover adhesive tape, and attach the tape to the frame neatly. (Two types of tapes are available for some models. See Figure 2 for details.)	 Device color / Double-sided adhesive Black  Light violet 	
Step 2: Install the flash connector and secure its metal bracket. Peel off the adhesive tape's release liner from the pre-cut slit.	 	

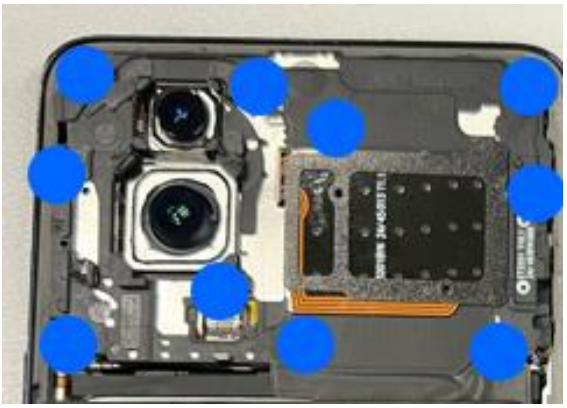
Step 3: Align the back cover precisely and press firmly onto the middle frame. Wrap your fingers with a lint-free cloth and press adhesive areas to activate bonding.		

4.3.2 Replace the M board bracket

Difficulty: low

Duration: 8–12 minutes

Required spare parts: M board bracket assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Use a Phillips screwdriver to remove the 10 M board bracket screws as shown in the illustration.		
Step 3: Lift the bracket from its bottom edge to remove it.		

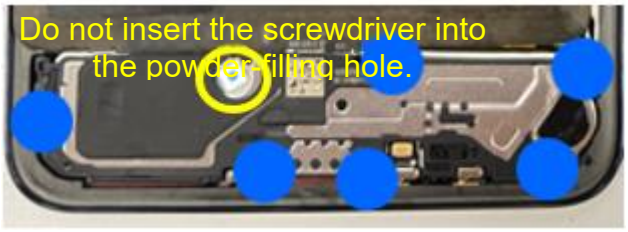
Assembly		
Operation	Illustration	Remarks
Step 1: Align the left end of the M board bracket, and then secure it over the M board and press firmly into position.		Check for any camera module misalignment.
Step 2: Install the 10 M board bracket screws.		

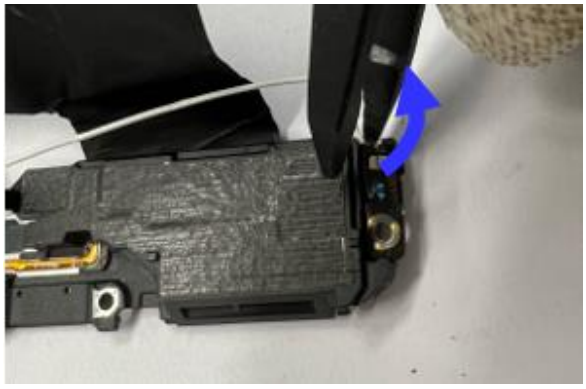
4.3.3 Replace the lower speaker

Difficulty: low

Duration: 8–12 minutes

Required spare parts: lower speaker assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the six screws from the lower speaker bracket. Do not insert the screwdriver into the powder-filling hole.		

Step 3: Disconnect the coaxial cable, and then use a flat-head screwdriver to remove the lower speaker from the indicated position, as shown in the lower figure.	 	Note: Avoid contact with the battery during this process.
Step 4: Remove the antenna board by gently prying it up with pointed tweezers. (Antenna board removal is required only for speaker replacement.)		
Assembly		
Operation	Illustration	Remarks
Step 1: Before installation, check the speaker for attached foreign objects. Align the speaker's bottom edge to the main upper part, and then secure the top edge and press around the speaker perimeter. Make sure that the speaker lies completely flat without lifting.		
Step 2: Install the screws.		

Step 3: Neatly route the coaxial cable into the speaker bracket's cable slot.		

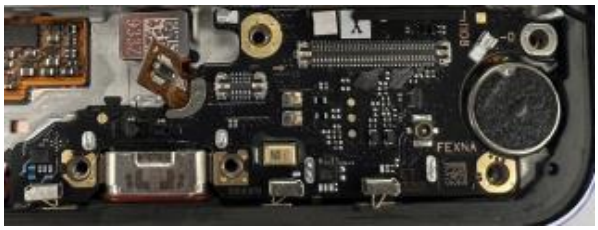
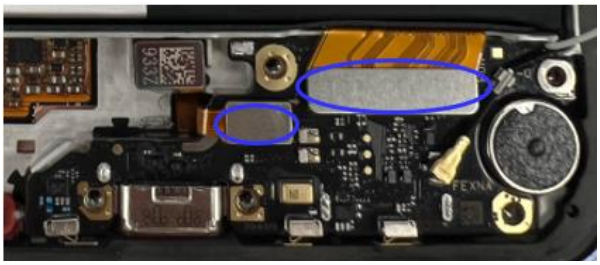
4.3.4 Replace the ANA board (incl. the main mic and charging port)

Difficulty: low

Duration: 9–13 minutes

Required spare parts: ANA board assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the lower speaker.	See Section 4.3.3.	
Step 3: Disconnect the BTB connectors and coaxial cable from the indicated positions.		
Step 4: Use pointed tweezers to lift the ANA board from the indicated position.		
Assembly		
Operation	Illustration	Remarks
Step 1: Align the bottom edge of the ANA board with the middle frame, and then press the board until it lies flat without lifting.		

		
Step 2: Connect the coaxial cable.		
Step 3: Connect the BTB connectors of the display and fingerprint scanner.		

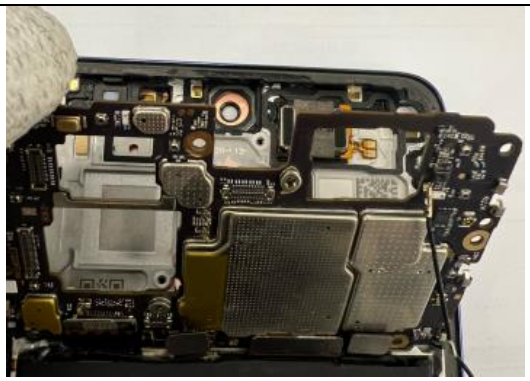
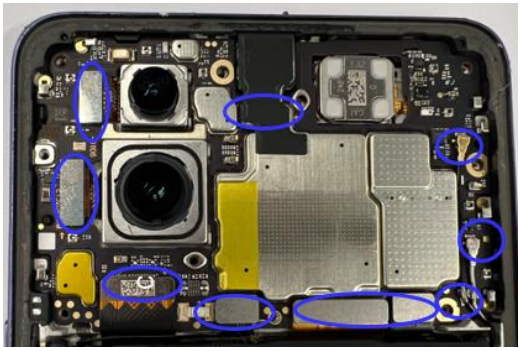
4.3.5 Replace the M board

Difficulty: low

Duration: 9–12 minutes

Required spare parts: M board

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the M board bracket.	See Section 4.3.2.	
Step 3: Use pointed tweezers to disconnect BTB connectors and/or coaxial cables of the battery and other components. After the camera is removed, protect it from dust and contamination. Avoid touching the lens to		After the camera is removed, protect it from dust and contamination. Avoid touching the lens to prevent impact on photo quality.

prevent impact on photo quality.		
Step 4: Use a Anti-static carbon fiber tweezer to pry up the M board from the indicated position.		
Assembly		
Step 1: Align the bottom edge of the M board with the middle frame, and then secure the M board. Make sure it lies flat without lifting.	 	
Step 2: Reinstall the camera, and all BTB connectors and coaxial cables.		
Step 3: Perform calibrations.	After assembly, calibrate the rear cameras, ambient light sensor, and infrared proximity sensor as specified in Section 3.2.3.	

4.3.6 Replace the upper speaker

Difficulty: low

Duration: 9–12 minutes

Required spare parts: upper speaker assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the M board bracket.	See Section 4.3.2.	
Step 3: Remove the M board.	See Section 4.3.5.	
Step 4: Use a flat-head screwdriver to detach the speaker reinforcement plate, and then remove the upper speaker unit.	 	When removing the speaker unit, do not insert the screwdriver too deeply to avoid damaging the display.
Assembly		
Operation	Illustration	Remarks
Step 1: Clean residual adhesive from the upper speaker area. Apply a new adhesive tape to secure the upper speaker to the middle frame and remove the blue release liner.		Avoid damaging the display during adhesive removal.
Step 2: Press the speaker to position on the middle frame.		

4.3.7 Replace the battery

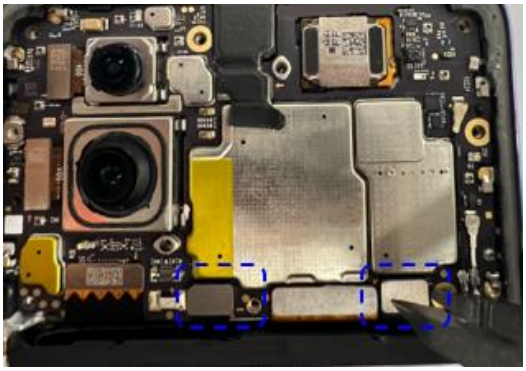
Difficulty: low

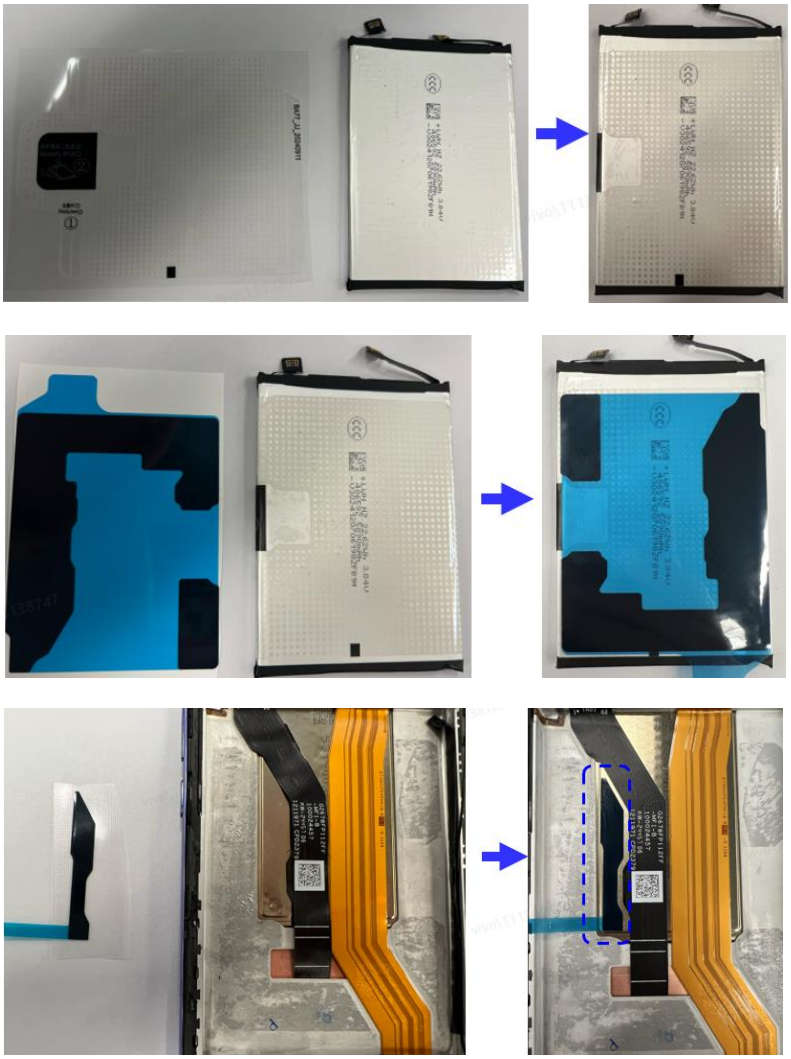
Duration: 6–10 minutes

Required spare parts: battery assembly

Before you remove the battery:

1. Fully discharge the battery.
2. Prepare a fire bucket in case of a battery fire.

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the M board bracket.	See Section 4.3.2.	
Step 3: Disconnect the BTB connector of the battery.		
Step 4: Slowly pull the battery PET film by its pull tab, maintaining a 145° angle between the tab and battery surface during pulling.		Keep your hands clear of the battery area during the process.
Assembly		
Operation	Illustration	Remarks
Step 1: Inspect the battery for swelling, deformation, or damage. If any defects exist, the battery cannot be reused and must be replaced.		

Step 2: Clean residual adhesive from both the main upper part and battery. Remove any residual black adhesive from the indicated areas. Also remove the PET film from the old battery.		
Step 3: Take a new battery PET film and two battery adhesive tapes. Apply them to the battery and main upper part as indicated. Remove all release liners.		Figures for material application illustration

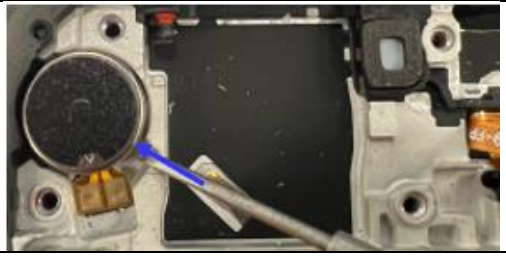
Step 4: Before installation, make sure that the battery and battery compartment are free of foreign objects. Install the battery into the compartment and press the indicated adhesive areas with your fingers to activate bonding.		

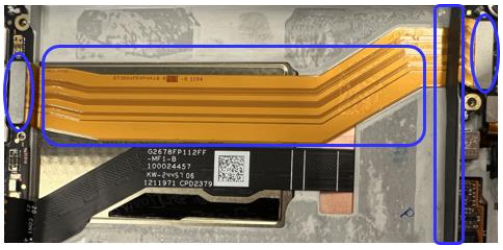
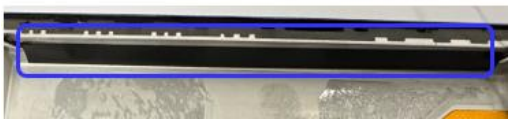
4.3.8 Replace the display assembly

Difficulty: medium

Duration: 15–20 minutes

Required spare parts: display assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the M board bracket.	See Section 4.3.2.	
Step 3: Remove the lower speaker bracket.	See Section 4.3.3.	
Step 4: Remove the M board and cameras.	See Section 4.3.5.	
Step 5: Remove the battery.	See Section 4.3.7.	
Step 6: Remove the upper speaker.	See Section 4.3.6.	
Step 7: Remove the ANA board.	See Section 4.3.4.	
Step 8: Remove the motor.		

Step 9: Remove the fingerprint scanner.		
Assembly		
Operation	Illustration	Remarks
Step 1: Install the upper speaker, M board, cameras, motor, fingerprint scanner, and ANA board.	See the following sections: 4.3.4, 4.3.5, and 4.3.6.	
Step 2: Install the FMA board: First, apply FMA back adhesive. Then, connect both ends of the FMA BTB connector to the M board and ANA board respectively. Finally, secure the FMA board to the middle frame and adhere it to the soft pad at the bottom of the battery compartment.	 	
Step 3: Install the coaxial cable: Connect both ends of the coaxial cable to the M board, and then route the cable through the cable slot. Apply a PET film, press it firmly, and secure the black coaxial connector to the ANA board.	  	
Step 4: Install the lower speaker, battery, M board bracket, and back cover.	See the following sections: 4.3.1, 4.3.2, 4.3.3, and 4.3.7.	

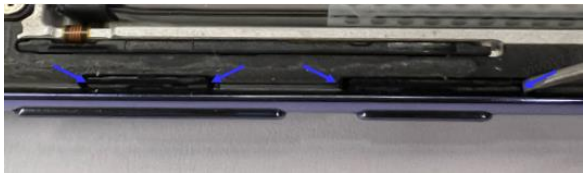
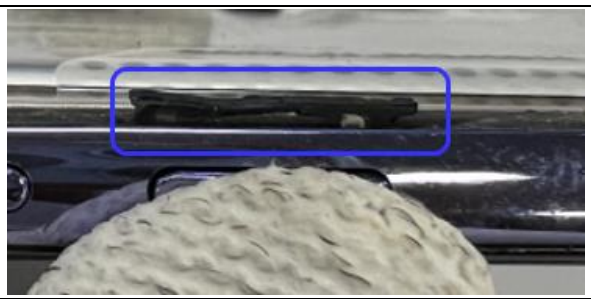
Step 5: Power on the device to verify normal screen display.		
Step 6: Perform calibrations.	After assembly, calibrate the rear cameras, in-display fingerprint scanner, infrared proximity sensor, and ambient light sensor as specified in Section 3.2.3.	

4.3.9 Replace the side buttons

Difficulty: low

Duration: 6–8 minutes

Required spare parts: side button assembly

Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Use a flat-head screwdriver to press the button, and then pry out the side button bracket from the indicated slots. The side buttons will detach automatically.		
Assembly		
Operation	Illustration	Remarks
Step 1: Place the new side buttons into their slots, and keep them in parallel with the middle frame.		
Step 2: Take a new side button bracket, use pointed tweezers to position it into the slot, and then press it to		

ensure proper engagement.		

4.3.10 Replace the display module

Difficulty: high

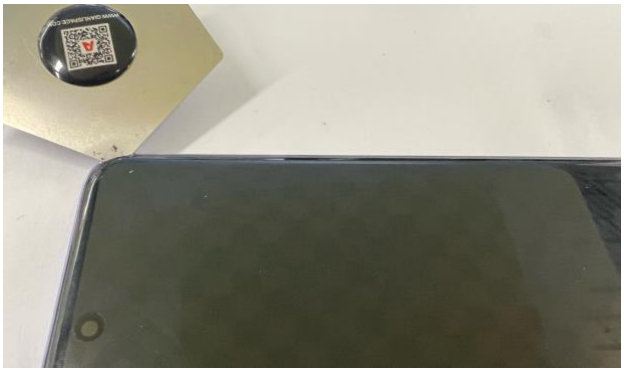
Duration: 20–50 minutes

Required spare parts: display module

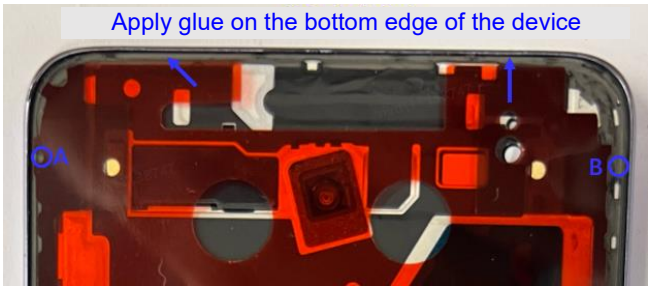
Before you remove the display module:

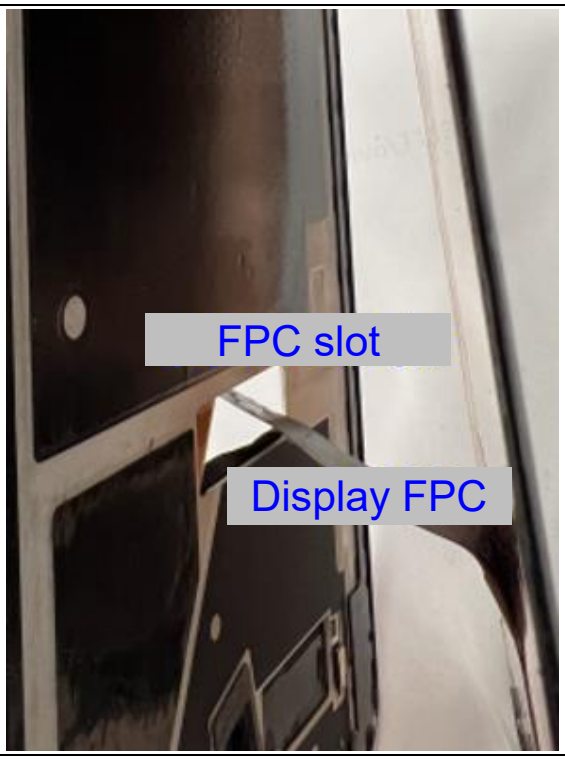
1. Wear gloves to prevent finger cuts from the metal pry pick.
2. Insert the pry pick only between the cover and screen. Inserting the pry pick to the middle frame gaps can cause scratches.
3. Prepare some glue (purchase code: 5121839), which is required for some models.

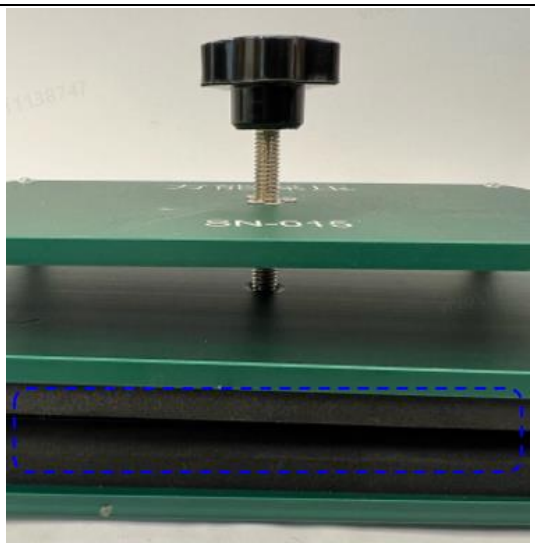
Disassembly		
Operation	Illustration	Remarks
Step 1: Remove the back cover.	See Section 4.3.1.	
Step 2: Remove the M board bracket.	See Section 4.3.2.	
Step 3: Remove the M board.	See Section 4.3.5.	
Step 4: Remove the battery.	See Section 4.3.7.	
Step 5: Heat the display at 65°C for 5 minutes on the heating pad.		

Step 6: Separate the display FPC from the middle frame, Remove the residual glue, insert a metal pry pick 3 mm deep from the device's top-right corner to create a gap between the display and the main upper part, and then switch to a PET pry sheet for full disassembly.	   	Complete disassembly immediately after heating. Delays may cause cooling and difficulty. Use a metal pry pick only for stubborn areas.
Step 7: After separating all edges, gently remove the display by lifting it upward.		
Assembly		
Operation	Illustration	Remarks

Step 1: Clean residual adhesive from the middle frame while it is still warm, as shown in Figure 1. Inspect the middle frame and replace it if it is damaged. The locations of three types of conductive foam are shown in Figure 2. To install Type 1 conductive foam, adhere its black portion to the dotted pad area, as shown in Figure 3.		Adhesive removal tips: 1. For strip-shaped residue, pinch one end and peel it off in one motion. 2. For irregular residue, use flat-head plastic tweezers to scrape it off along the middle frame. For stubborn residue, wrap tweezers with adhesive tape, press it to the residue, and lift the residue.
Step 2: As shown in the figures, apply display adhesive tapes 1 and 2 to the main upper part. Match positions A, B, C, and D on the adhesive with corresponding locations on the main upper part. Press the adhesive tapes to activate bonding.		

Step 3: Take a bottle of glue, clear any cured glue from the applicator tip to ensure proper glue flow, and apply glue on the bottom edge of the device. As shown in Figure 1, starting from Point A, follow the arrow along the narrow edge to Point B (slightly tilt the tip against the edge for precise control).	 	
Step 4: Clean excess glue inside with a pry tool. Adjust uneven glue with the applicator tip. The figure on the right side shows how it looks after proper glue application. Then, remove all adhesive release liners.		

Step 5: Insert the display FPC into the FPC slot in the middle frame, as shown in the figure. Put the display in position, align it with the main upper part, and fully engage them.		
Step 6: Wipe excess glue from the bottom edge with a lint-free cloth.		
Step 7: After assembly, wrap your fingers with a lint-free cloth and firmly press along all adhesive areas for 1 minute to activate bonding.		

Step 8: Apply an FPC adhesive tape to the middle frame, install the M board, remove the release liner of the FPC adhesive tape, connect the screen FPC BTB connector, and secure the FPC.	 	
Step 9: After full assembly, place the device on the pressure fixture as shown and maintain pressure for 30 minutes.		
Step 10: Power on the device to verify its functionality.		
Step 11: Perform calibrations.	After full assembly, calibrate the rear cameras, in-display fingerprint scanner, infrared proximity sensor, and ambient light sensor as specified in Section 3.2.3.	