FlipFold

Repair Manual

How to contact us

Email us at help@opelmobile.com or call

0808 160 7167 in UK (8am to 4pm, Mon to Fri – excluding national holidays)

1800 456 902 in Ireland (8am to 4pm, Mon to Fri – excluding national holidays)

Table of Contents

1. Repair Disclaimer

The Company does not recommend that you make your own repairs to the equipment. We are not responsible for any damage to or defective performance of the equipment resulting from operation by unauthorized service personnel, self-repair, or non-professional repair. We are not responsible for any damage, personal injury, or other safety issues that may result from attempting to repair the equipment without following these repair and maintenance instructions.

If you choose to repair the equipment yourself, you are deemed to have fully understood and voluntarily assumed all risks and responsibilities in the repair process.

2. Concerning the present document

This manual provides systematic step-by-step instructions for repairing and maintaining FlipFold devices, and is intended to provide technical support for professional technicians and users with independent repair needs.

2.1Coverage

Contents included:

Safe Disassembly and Reassembly Process

Basic troubleshooting and visual inspection methods

Contents not included:

Advanced Electrical System Diagnostics

Software level fixes or firmware issue handling

2.2Applicable to

This guide applies to:

Professional and technical staff: Qualified technicians and maintenance tradespeople for equipment maintenance.

Self-maintained users: Users interested in DIY repairs.

Recovery operations staff: Personnel responsible for equipment disposal or material recovery requiring safe dismantling of components.

2.3Structure of the guide

This document is organized into the following main sections:

Caveat

Tools required

Disassembly procedures

Assembly Instructions

Repair Instructions

Fault resolution

3. General precautions

Before servicing the product, please read all the precautions in this document.

3.1Please be careful before starting repairs

⚠ CAUTION
Opening or servicing equipment may result in electric shock, equipment damage, fire, personal injury and other safety risks. • Ensure that the work surface is clean and free of debris to prevent contamination of internal components. • Ensure that the operating environment is ESD compliant by wearing an anti-static wrist strap before handling and connecting it to a grounded ESD safety mat. • Wear safety goggles, safety gloves, and safety masks to ensure safety practices and reduce operational risks. • Work in a dry, well-ventilated environment free of flammable materials. • Ensure that cables and components are not damaged during disassembly, if damage is found it must be replaced immediately with new components. • Make sure there are no additional screws or other foreign objects in the machine after assembly. • Disconnect the unit from all power sources before disassembly.

3.2Glass handling

⚠ CAUTION

Broken glass parts can cause cuts, scratches or damage to the interior of the unit

- When handling broken glass parts, be sure to wear safety gloves and goggles throughout to avoid direct contact with broken glass or flying particles.
- Immediately after replacing a glass part, place the damaged glass part in the spare parts package to prevent injury.

3.3Battery

CAUTION

- The battery needs to be discharged before servicing.
- Do not touch the battery contacts with metal tools.
- Do not bend, indent, puncture the battery or use tools to pry open the battery case.
- To prevent damage, replace the battery and place it in the replacement package immediately after replacing it.
- If the battery is swollen, broken, hot, abnormal odor or the device is abnormally hot, immediately stop operation and contact the support team, do not force disassembly.
- When battery venting (e.g. electrolyte leakage, smoke) is detected, it is necessary to immediately cover the battery with sand or wear insulated gloves and transfer the battery to a fireproof container with pliers.
- Do not damage the battery as this may cause fire or overheating.
- Do not dispose of old batteries in the regular trash. Please dispose of batteries according to local regulations.

3.4Tools

The use of specialized tools is highly recommended for all equipment repairs.

CAUTION

Do not perform maintenance operations without the proper tools, as this may result in personal injury, equipment damage, or component obsolescence.

Improper use of tools can result in personal injury, damage to tools,damage to fixtures, or damage to spare parts.。

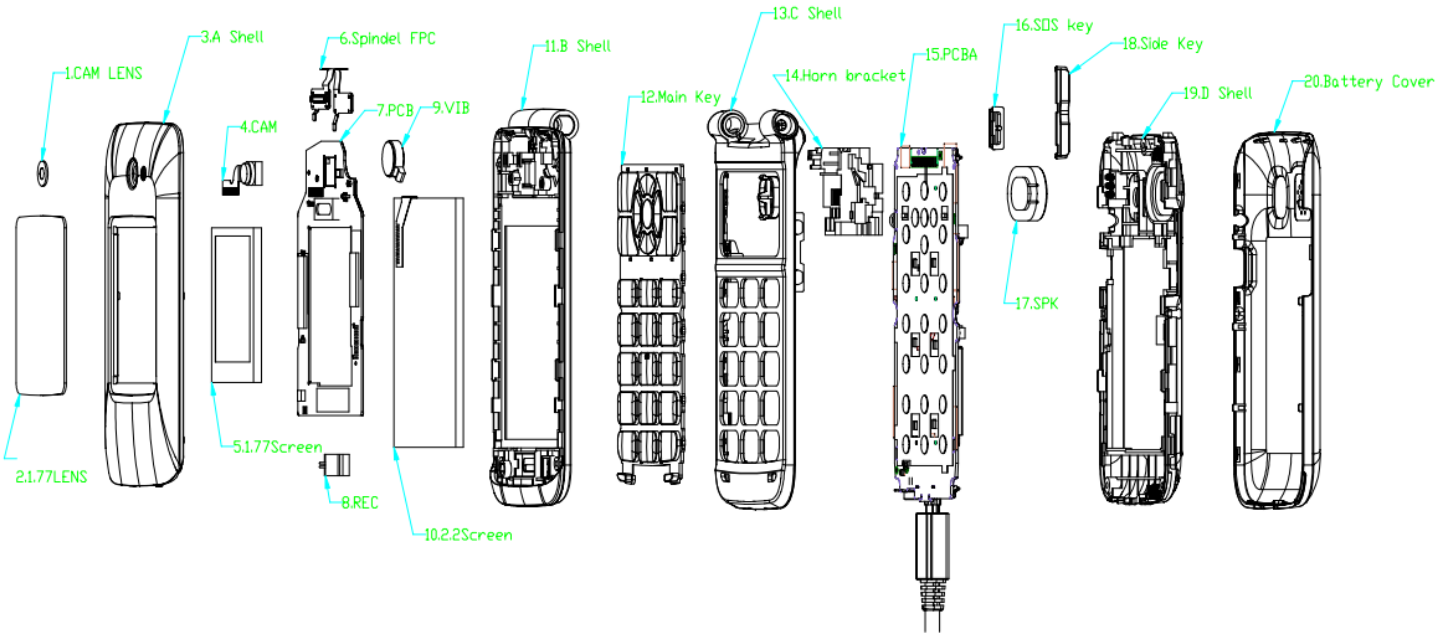
4. Tools and materials required

Tools	imagery	descriptions
safety goggles		Prevention of accidents during maintenance (protective equipment)
safety gloves		Prevention of accidents during maintenance (protective equipment)
safety mask		Prevention of accidents during maintenance (protective equipment)

tweezers		Tools for handling connectors, cables and other components
Antistatic Wrist Strap		Protection against electrostatic damage (recommended)
ESD Safety Mats		Protection against electrostatic damage (recommended)
heat gun		Soften modular adhesive layer
Phillips screwdriver (i.e. with cross slit)		For loosening Phillips head screws
prying piece		Tools for removing back cover, screen and other components
Soldering iron		Melting solder

crowbar  Removing the Main Board Assembly

5. Exploded views



6. How to turn on and off FlipFold

Before performing any repairs, the unit must be turned off to prevent damage to internal components and to ensure safety during disassembly.

After completing repairs and completely reassembling the unit, you will need to turn the unit on again to verify that it is operating as intended.

6.1Turn on FlipFold

Flip up the screen and press and hold the power button until the display lights up.

6.2Turn the screen on and off

When the phone is on, flip up the screen to light up the display interface, and snap shut the screen to automatically turn off the display interface.

6.3Turn off FlipFold

Flip up the screen and press and hold the power button. Select “OK” from the options that appear to turn off the phone.

7. Dismantle

Preparation for disassembly：

•Before performing maintenance, back up all important data stored in the device.

•Unplug and turn off the unit before disassembly.

•Wear safety goggles, safety gloves, and safety masks to ensure safety practices and reduce operational risks.

•Ensure that the operating environment is ESD compliant by wearing an anti-static wrist strap and connecting it to a grounded ESD safety mat.

7.1Removing the Battery Cover

7.1.1Purpose

Removing the battery cover is a fundamental step in internal phone repairs. Beneath the battery cover lie core components such as the battery, mainboard assembly, camera, buttons, and charging port. Removing the battery cover is a necessary prerequisite for accessing and repairing these internal parts.

7.1.2Tools and equipment

Name of the tool	Description of use
Prying piece	Used to insert the battery cover into the gap between the battery cover and the body, separating the connecting clips

7.1.3Security and preventive measures

Need to wear anti-static wrist strap, safety gloves, goggles, operating environment in line with ESD specifications and no flammable materials.

7.1.4Pre-demolition inspection

Ensure that the device is completely turned off.

7.1.5Overview of the methodology

Insert the skid in the removal notch between the battery cover and the machine and carefully slide it along the edge to loosen the battery cover assembly.

7.1.6Step-by-step instructions

1.Locate the removal notch located at the bottom right corner of the battery cover and body.

2.Insert the tip of the prying piece into the notched gap to a depth of approximately 2 mm. using the insertion point as a pivot point, slowly slide the prying piece to both sides, loosening the clips in turn.

3.When the back cover is completely loose, carefully lift the battery cover.

Description：

When removing the battery cover, use the correct method and do not force the battery cover open, otherwise the battery cover may be cracked or deformed.

7.1.7Post-dismantling inspection

Inspect the phone to ensure that no parts were damaged during disassembly.

Check the battery cover for cracks or deformation.

7.1.8Relevant information

Assembling Battery Cover

7.2Remove Battery

7.2.1Purpose

Remove the battery to disconnect the device's power source, preventing short circuits caused by live operations and providing access for further repairs.

7.2.2Tools and equipment

Name of the tool	Description of use
Prying piece	Prying Batteries

7.2.3Security and preventive measures

Do not touch the battery contacts with metal tools.

Do not puncture, crush or bend the battery. A damaged battery may leak, catch fire, or even explode.

Do not dispose of old batteries in the regular trash. Please follow local e-waste and battery recycling regulations.

Need to wear anti-static wrist strap, safety gloves, goggles, operating environment in line with ESD specifications and no flammable materials.

7.2.4Pre-demolition inspection

Battery cover has been removed.

All power connections have been disconnected.

Safety gear has been worn and the operating environment is ESD compliant.

7.2.5Overview of the methodology

Insert the prying piece into the notch at the bottom of the battery and, using the notch as a pivot point, gently pry the prying piece upward to separate the battery from the body.

7.2.6Step-by-step instructions

1.Locate the removal notch in the lower right corner of the battery.

2.Insert a prying piece (or hard plastic piece) through the notch of the battery by 2-3mm. using the notch as a pivot point, gently pry the prying piece upward to separate the bottom of the battery from the body and gently remove the battery.

Description：

Inserting the prying piece more than 3mm may damage the battery.

Insulated tools without sharp edges must be used to avoid the tools from conducting electricity or cutting through the battery case due to sharp tips, resulting in battery leakage, fire and other risks.

7.2.7Post-dismantling inspection

Check that the battery is not scratched, flattened, bulging or leaking.

7.2.8Relevant information

Assembled Batteries

7.3Disassemble C Shell

7.3.1Purpose

Remove the C-shell to expose critical internal components, facilitating subsequent repair operations (such as replacing the speaker, charging port, or mainboard assembly).

7.3.2Tools and Equipment

Name of the tool	Description of use
Prying piece	breakaway carabiner
Phillips screwdriver	Loosen the Phillips screws securing the D-shell.

7.3.3Security and preventive measures

Need to wear anti-static wrist strap, safety gloves, goggles, operating environment in line with ESD specifications and no flammable materials.

7.3.4Pre-demolition inspection

Battery cover and battery have been removed.

Safety gear has been worn and the operating environment is ESD compliant.

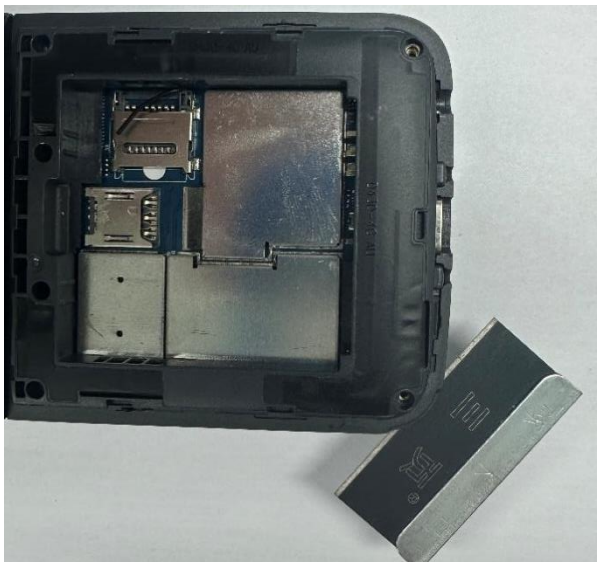
7.3.5Overview of the methodology

Unscrew the screws securing the C-shell, use a pry tool to separate the clips along the edge, then remove the C-shell.

7.3.6Overview of the methodology

1. Locate the six screws on the C-shell, then use a Phillips-head screwdriver to remove them.

2. Insert the pry tool into the gap at the bottom of the C-shell and slowly slide it along the edge to release the clips one by one.



3.After the latch is fully released, carefully lift the C-shell.

Description：

Check the number of screws removed and store them carefully to ensure that no screws remain in the body.

7.3.7Post-dismantling inspection

Check the inside of the phone to make sure that the motherboard, speakers, charging ports, and other components are not displaced or damaged.

Check the C-shell for cracks and broken clips.

7.3.8Relevant information

Assemble the C shell

7.4Removing the Main Board Assembly

7.4.1Purpose

Removing the motherboard assembly facilitates component replacement or in-depth troubleshooting.

7.4.2Tools and equipment

Name of the tool	Description of use
tweezers	Separation of FPC connectors, clamping of micro-components
crowbar	Remove the main board assembly
Soldering iron	Disassemble the microphone

7.4.3Security and preventive measures

Need to wear anti-static wrist strap, safety gloves, goggles, operating environment in line with ESD specifications and no flammable materials.

Set the soldering iron preheat temperature to 320±10° C, with each soldering operation not exceeding 5 seconds. After use, place the soldering iron on a heat-resistant stand to prevent operator burns or fire hazards.

Do not touch the motherboard assembly pads or chip pins directly with metal tools.

7.4.4Pre-demolition inspection

The battery cover, battery and C shell assembly have been removed.

Safety gear has been worn and the operating environment is ESD compliant.

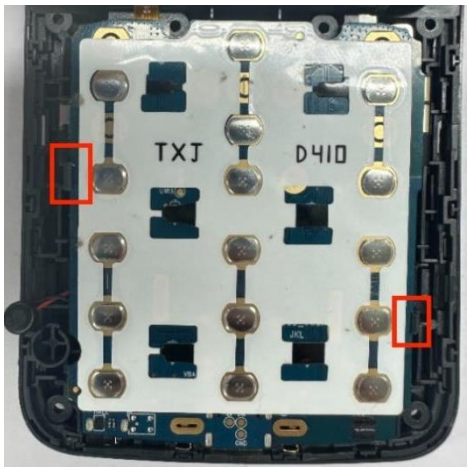
7.4.5Overview of the methodology

First, remove the microphone from the groove in the D-shell. Then, extract the mainboard assembly from the D-shell. Next, disconnect the hinge FPC from the mainboard. Finally, remove the microphone from the mainboard assembly.

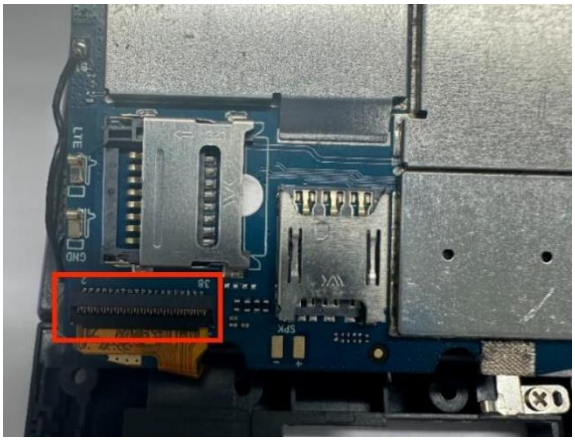
7.4.6Step-by-step instructions

1. Locate the microphone. Gently insert the tip of the tweezers into the gap between the microphone and the D-shell. Slowly pry and separate them.

2. Insert the tip of the pry tool into the gap between the D-shell and the mainboard assembly. Slowly pry and slide along the edge to release the clips one by one.



3. Flip the motherboard over. Locate the hinge FPC connector on the back of the motherboard. Use tweezers to lift the locking tab on the ZF connector (flip it upward 90°), then slowly pull out the ribbon cable.



4. After confirming all clips are fully disengaged, grasp both sides of the motherboard assembly and lift it upward smoothly to remove the motherboard assembly.

5. Locate the microphone solder joint. Preheat the soldering iron to approximately 320° C. Quickly melt the solder at the joint. Once the solder is molten, use tweezers to gently lift the connecting wire and remove the microphone.

7.4.7Post-demolition inspection

Check the motherboard assembly for deformation, capacitors for bulging, solder pads for detachment, and circuit boards for burn marks.

Inspect ribbon cables for damaged outer sheaths, contacts for oxidation, and connector pins for bending.

Examine chips for surface cracks and pins for misalignment.

7.4.8Relevant information

Assemble the mainboard assembly

7.5Remove the main screen lens

7.5.1Purpose

Remove the main screen lens to replace cracked, scratched, or delaminated lens assemblies, or to repair issues such as display blurring caused by adhesive layer aging or foreign object intrusion. Simultaneously, removing the main screen lens exposes the screws securing the B-shell, providing access for subsequent B-shell disassembly.

7.5.2Tools and Equipment

Name of the tool	Description of use
tweezers	Remove the LCD lens
heat gun	Softening gel layer
suckers	Lift the edge of the screen to create a removal gap

7.5.3Security and preventive measures

Need to wear anti-static wrist strap, safety gloves, goggles, operating environment in line with ESD specifications and no flammable materials.

The temperature of the hot air gun should be controlled below 70℃ to avoid high temperature damage to the screen or internal components of the body.

7.5.4Pre-demolition inspection

Safety gear has been worn and the operating environment is ESD compliant.

The battery cover and battery have been removed.

7.5.5Overview of the methodology

Heat the Main Screen Lens with a heat gun until the adhesive layer softens. Use a suction cup to lift the edge of the Main Screen Lens, creating a gap. Finally, use tweezers to carefully pry along the gap, gradually separating the Main Screen Lens from the device body.

7.5.6Step-by-step instructions

1. Set the heat gun to 70° C and evenly heat the edges of the main screen for 2 minutes. Keep the heat gun perpendicular to the screen at a distance of approximately 10cm to prevent localized overheating.

2. Press the suction cup firmly against the edge of the Main Screen Lens, ensuring complete contact with the surface. After pressing to expel air, use a strong, steady force to lift the suction cup, creating a gap between the Main Screen Lens and the B-shell.

3. Insert the tweezers into the gap between the two surfaces, then slide them back and forth along the edge of the screen, using the edge of the tweezers to cut through the adhesive layer.

4.Repeat this process on all sides of the screen lens, scraping away all adhesive layers. Slowly lift the back cover and gently remove it from the device.

Description：

1. If there is too much resistance when lifting the suction cup, reheat the corresponding area for 10-15 seconds, do not pull forcibly and cause the lens to break.

2.Never insert the tweezers more than 3mm due to possible damage to the internal screen.

7.5.7Post-dismantling inspection

Check the surface of the lens for cracks and scratches.

Observe the screen display layer for scratches and leaks.

7.5.8Relevant information

Assemble the Main screen lenses

7.6Remove the front cover

7.6.1Purpose

Remove the front cover to expose the internal components, providing access for subsequent disassembly.

7.6.2Tools and equipment

Name of the tool	Description of use
prying piece	breakaway carabiner
Phillips screwdriver (i.e. with cross slit)	Loosen the Phillips screws in the rear housing

7.6.3Security and preventive measures

Anti-static wrist straps, safety gloves, and goggles must be worn, and the operating environment must comply with ESD standards and be free of flammable materials.

7.6.4Pre-demolition inspection

Have removed the battery cover, battery, and the Main screen lens.

Safety gear has been worn and the operating environment is ESD compliant.

7.6.5Overview of the methodology

First remove the four fixed screws, then use a pry tool to separate the clips along the edges and gradually remove the front shell.

7.6.6Step-by-step instructions

1. Locate the 4 screws behind the main screen lens and remove them using a Phillips head screwdriver.

2. Insert the pry tool into the gap along the edge of the front shell and slowly slide it along the edge to release the clips one by one.

3.After the latch is fully released, carefully lift the front cover.

Description：

Check the number of screws removed and store them carefully to ensure that no screws remain in the body.

7.6.7Post-dismantling inspection

Inspect the front shell for cracks or deformation, and ensure the latches are intact without any breaks.

Check the internal components of the flip cover, such as the secondary display, earpiece, and motor, for displacement or damage.

7.6.8Relevant information

Assemble the front cover

7.7Disassemble the speaker module

7.7.1Purpose

Remove the speaker module to replace damaged audio components or troubleshoot issues such as sound distortion, no sound, or abnormal noise caused by oxidized contacts, foreign objects blocking the sound chamber, or deformed diaphragms.

7.7.2Tools and equipment

Name of the tool	Description of use
Soldering iron	Melt the solder joints and separate the speakers.
tweezers	Separate the gel layer and remove the motor.

7.7.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Set the soldering iron preheat temperature to 320±10° C. Each soldering operation should not exceed 5 seconds. After use, place the soldering iron on a heat-resistant stand to prevent operator burns or fire hazards.

Do not touch the speaker diaphragm directly with metal tools.

7.7.4Pre-demolition inspection

Confirm that the battery cover, battery, and A-shell have been removed.

Safety protective equipment has been worn, and the operating environment complies with ESD standards.

7.7.5Overview of the methodology

Remove the screws from the speaker bracket, then lift the small screen and use tweezers to pry out the motor and remove the speaker. Finally, use a soldering iron to melt the solder joints on the speaker connection wires to separate the module from the main body.

7.7.6Step-by-step instructions

1. Remove the two screws securing the speaker.

2. Flip the small screen to the right, then use tweezers to gently pry along the motor's edge. After separating the adhesive layer, remove the motor.

3. Flip the speaker to the left, then preheat the soldering iron to approximately 320° C. Quickly melt the solder at the speaker's joints. Once the solder is melted, gently lift the connecting wires with tweezers and remove the entire module.

Description：

Avoid direct contact between metal tools and the speaker diaphragm to prevent physical damage.

7.7.7Post-demolition inspection

Inspect the speaker diaphragm for tears or deformation, and check the sound chamber for dust, liquid residue, or foreign object blockages.

Examine the connecting cables for breaks and inspect the outer sheath for damage.

7.7.8Relevant information

Assemble the speaker module

7.8Disassembly of the Small Board Assembly

7.8.1Purpose

The small board assembly integrates core components such as the secondary display, earpiece, camera, motor, and main display. Disassembling the small board assembly allows for the inspection, replacement, or maintenance of these components to resolve device functionality issues caused by component damage or performance failures.

7.8.2Tools and equipment

Name of the tool	Description of use
tweezers	Separation gel layer
Phillips screwdriver	Unscrew the steel plate securing the small plate assembly.
Soldering iron	Melted solder joint

7.8.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Set the soldering iron preheat temperature to 320±10° C. Single soldering operations should not exceed 5 seconds. After use, place the soldering iron on a heat-resistant stand to prevent operator burns or fire hazards.

Do not touch the screen or camera lens with metal tools to prevent physical damage.

7.8.4Pre-demolition inspection

The battery cover, battery, main screen lens, and B-shell have been removed.

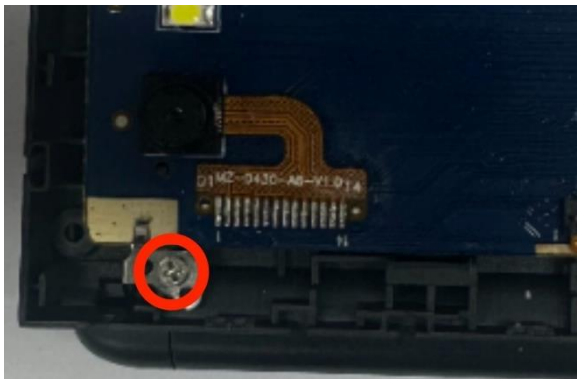
Safety protective gear has been worn, and the operating environment complies with ESD standards.

7.8.5Overview of the methodology

First remove the steel plate, then remove the secondary display, camera, and motor from the front of the small board assembly. Disconnect the hinge FPC from the small board assembly, then remove the primary display from the back of the small board assembly.

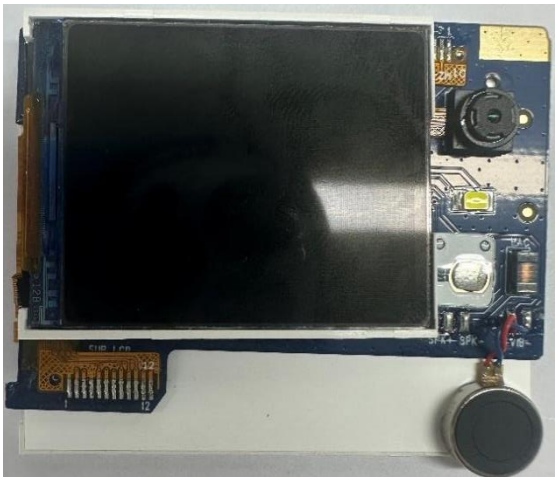
7.8.6Step-by-step instructions

1.Remove the screws securing the steel plate and take out the steel plate.

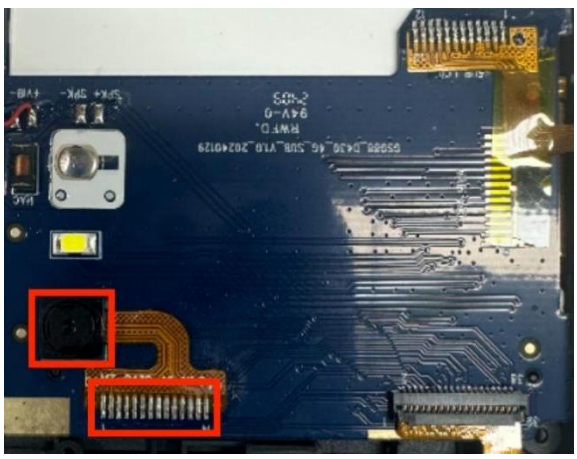
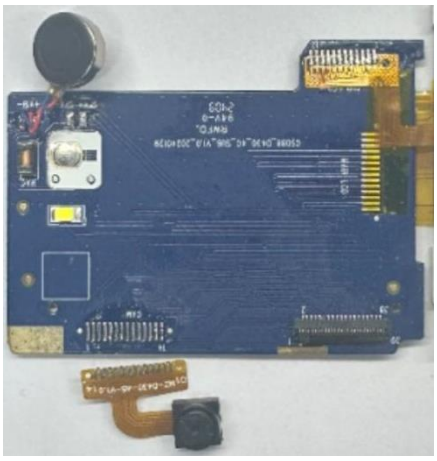


2.Locate the connector for the hinge FPC. Use tweezers to lift the locking tab on the ZF connector (flip it upward 90°), then slowly pull out the ribbon cable.

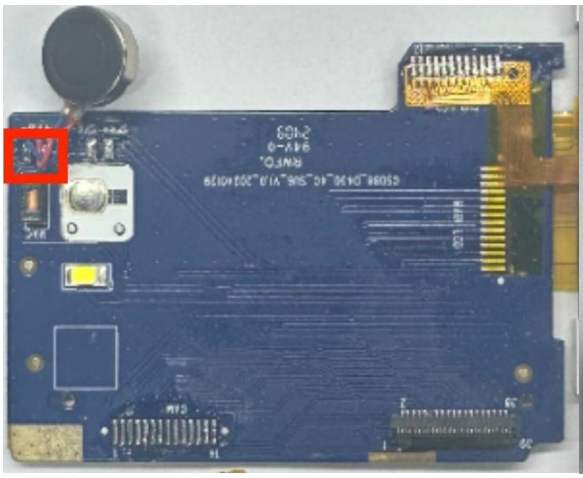
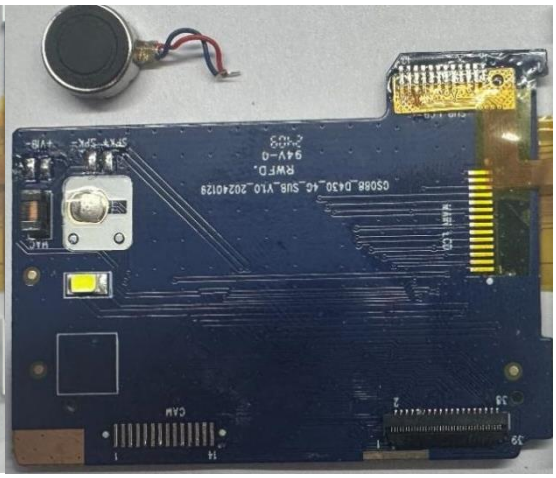
3.Insert the tip of the pry tool into the gap between the B-shell and the small board assembly. Slowly pry to release the clips. Gently flip the small board assembly along with the screen, then separate the small board assembly from the B-shell.



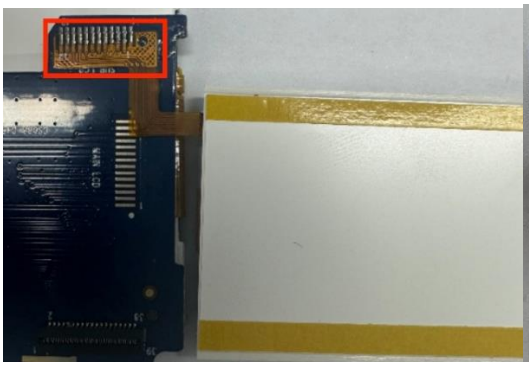
4.Locate the camera module. Using the tip of the tweezers, gently pry up one corner from the edge of the camera module and slowly remove it from the B-shell. Preheat the soldering iron to approximately 320° C. Apply a small amount of flux to the flex cable solder joints, quickly melt the solder, and separate the camera module from the small board assembly.

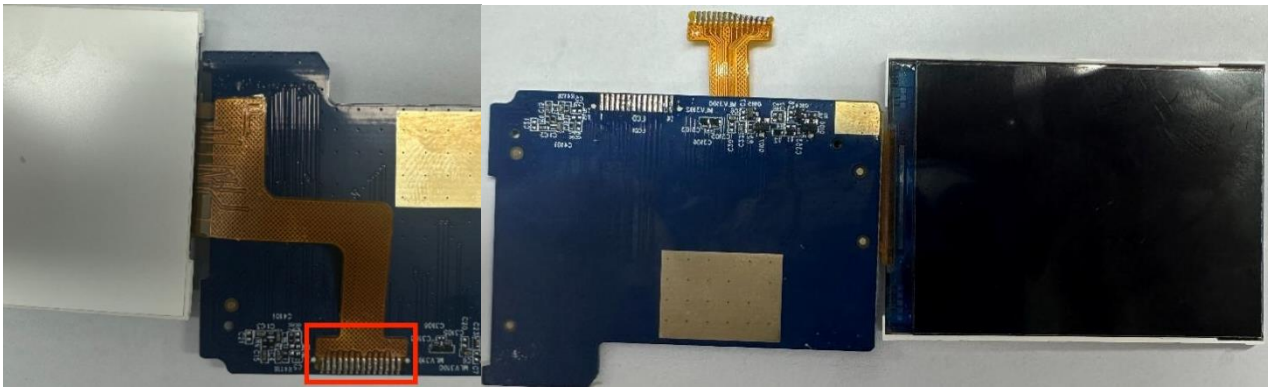
5.Locate the motor, preheat the soldering iron to approximately 320° C, quickly melt the solder at the joints, and separate the motor from the small board assembly.

6.Locate the auxiliary display. Preheat the soldering iron to approximately 320° C. Apply a small amount of flux to the ribbon cable solder joints, quickly melt the solder, and separate the auxiliary display from the small board assembly.




7.Locate the main display panel. Preheat the soldering iron to approximately 320° C. Apply a small amount of flux to the ribbon cable solder joints. Quickly melt the solder to separate the main display panel from the sub-board assembly.



Description：

Count the number of screws removed and store them carefully to ensure none remain inside the machine body.

7.8.7Post-demolition inspection

Inspect the small board for cracks, deformation, and detached solder pads.

Confirm the secondary screen is free of cracks.

Check the ribbon cable for breaks and oxidized contacts.

7.8.8Relevant information

Assembly of Small Board Subassemblies

8. Assembly

Before reassembly：

Carefully inspect the body to ensure that there are no residual screws, solder debris, or other foreign objects.

Wear safety goggles, safety gloves, and safety masks to ensure safety practices and reduce operational risks.

Ensure that the operating environment is ESD compliant by wearing an anti-static wrist strap and connecting it to a grounded ESD safety mat.

After reassembly:

After repairing and assembling the device, go to “Handset Test” to check if the components or sensors in the device are working properly. For more information, see Device Startup Options.

8.1Assembly of Small Board Subassemblies

8.1.1Purpose

Properly install the small board assembly onto the device body to restore screen display, earpiece audio, camera functionality, and motor vibration. Ensure stable electrical connections for all components.

8.1.2Tools and equipment

Name of the tool	Description of use
Screwdriver	Tighten the Phillips screws securing the small plate assembly.
Soldering iron	Melt the solder and complete the soldering.

8.1.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Set the soldering iron preheat temperature to 320±10° C. Single soldering operations must not exceed 5 seconds. After use, place the soldering iron on a heat-resistant stand to prevent operator burns or fire hazards.

Avoid touching the screen, camera lens, or FPC flex cable contacts with metal tools to prevent physical damage.

8.1.4Pre-assembly Inspection

Confirm that the small board has no cracks or deformation, the solder pads are intact, the FPC cable outer layer is undamaged, and the connector interfaces are in good condition.

Inspect the auxiliary screen, camera, and main screen to be installed for cracks, dust, or fingerprints.

Check the installation slots to ensure no foreign objects such as residual screws or debris remain.

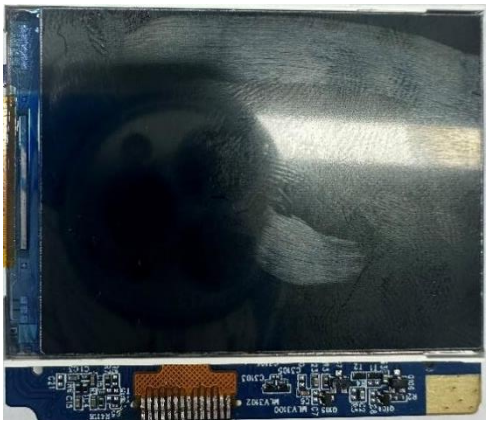
8.1.5Overview of the methodology

First, install the main display onto the rear side of the sub-board assembly. Then, mount the secondary display, motor, and camera onto the front side of the sub-board assembly, completing the electrical connections and securing them in place. Finally, connect the sub-board assembly to the hinge FPC and secure the steel plate with screws.

8.1.6Step-by-step instructions

1.Align the contacts of the main screen FPC cable with the corresponding interfaces on the sub-board assembly. Apply flux and solder paste evenly to the surface of the solder joints on the

sub-board assembly. Use a soldering iron to quickly melt the solder and complete the connection. After cooling, gently press the cable to ensure proper contact. Inspect the contacts for cold solder joints or bridging.

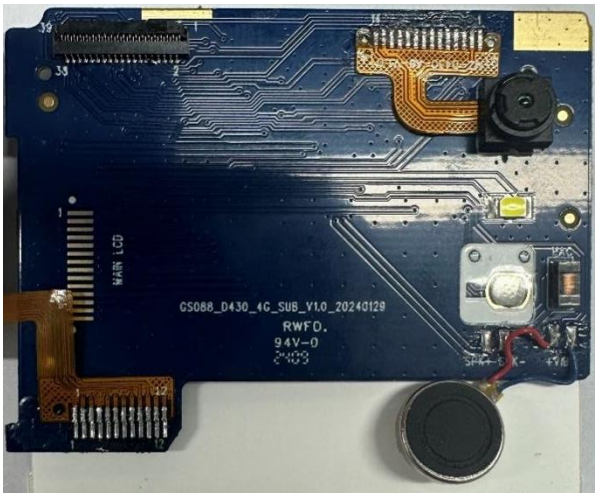


2.Align the contacts of the secondary screen FPC cable with the corresponding interfaces on the sub-board assembly. Apply flux and solder paste evenly to the surface of the solder joints on the sub-board assembly. Use a soldering iron to quickly melt the solder and complete the connection. After cooling, gently press the cable to ensure proper contact. Inspect the contacts for cold solder joints or bridging.

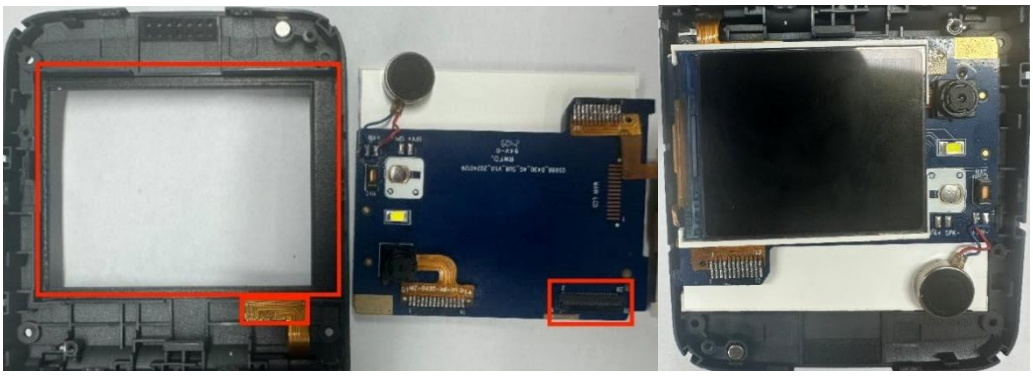
3.Apply a thin, even layer of solder paste to the motor cable solder joint. After precisely aligning the connector contacts with the solder points on the small board assembly, use a soldering iron to rapidly melt the solder and complete the connection. After operation, gently tug the connector with tweezers to verify there is no looseness, detachment, or cold solder joint.

4.Align the contacts of the camera FPC cable with the corresponding interfaces on the small board assembly. Apply flux and solder paste evenly to the surface of the cable solder joints on the small board assembly. Use a soldering iron to quickly melt the solder and complete the

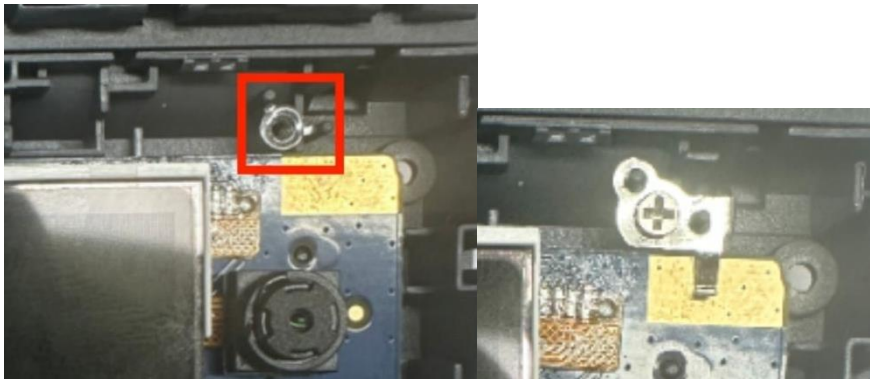
soldering. After cooling, gently press the cable to ensure proper contact. Inspect the contacts for cold solder joints or bridging.



5.Insert the small board assembly into the corresponding groove in the B shell. Simultaneously insert the FPC connector into the ZF connector until the contacts are fully seated, then press the latch to secure it.



6.Insert the steel plate into the hole and screw it in.



8.1.7Post-assembly inspection

Inspect the FPC cable for tight alignment, checking for twists, creases, or excessive tension. Ensure the connector plug is fully seated in the socket, with no exposed or misaligned parts.

Verify that the earpiece, motor, camera, secondary display, and primary display are securely seated in the B-shell grooves, with no lifting, wobbling, or misalignment.

Inspect the screen for scratches or liquid leakage; check the earpiece diaphragm for damage; examine the camera lens for fingerprints, dust, or cracks.

8.1.8Relevant information

Disassembly of the Small Board Assembly

8.2Assemble the speaker module

8.2.1Purpose

Install the speaker module into the device to restore its audio output functionality while securing the camera and motor.

8.2.2Tools and equipment

Name of the tool	Description of use
Soldering iron	Melt the solder and complete the soldering.
Screwdriver	Screw in the screws to secure the speaker.

8.2.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Set the soldering iron temperature to 320±10° C. Do not heat a single solder joint for more than 5 seconds. Repeat the operation only after a 10-second interval. Immediately place the soldering iron on a heat-resistant stand after use to prevent operator burns or fire hazards.

Do not touch the speaker diaphragm directly with metal tools to prevent physical damage.

8.2.4Pre-assembly Inspection

Anti-static wrist straps and safety gloves are worn, and the operating environment complies with ESD standards.

Inspect the speaker module for cosmetic integrity and check the diaphragm for damage.

Confirm that no foreign objects—such as leftover screws, solder residue, or adhesive stains—remain in the chassis mounting slots.

Verify that the mainboard assembly is correctly installed.

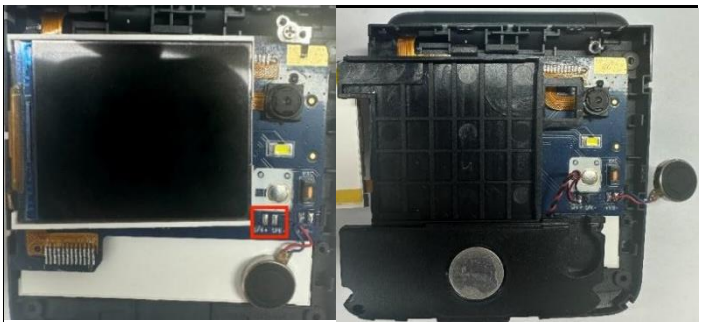
8.2.5Overview of the methodology

First, solder the speaker to the corresponding position on the small board assembly. Then, align the speaker with the positioning structure and install it onto the small board assembly. Finally, secure the motor, secondary display, and camera to the speaker and fasten them with screws.

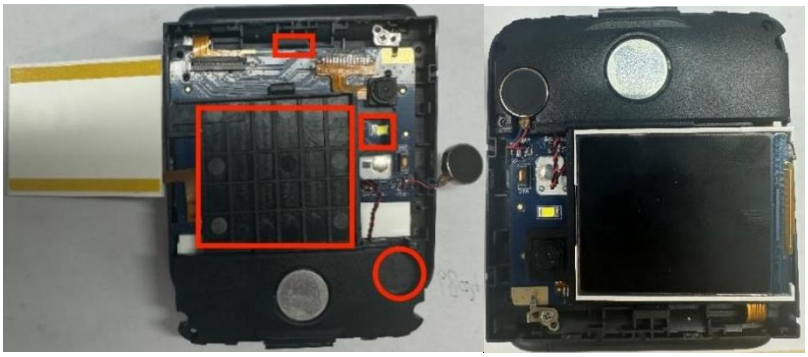
8.2.6Step-by-step instructions

1.Apply a thin, even layer of solder paste to the solder joints on the speaker cable. After precisely aligning the connector contacts with the solder points on the small board assembly,

use a soldering iron to quickly melt the solder and complete the connection. After soldering, gently wiggle the connector with tweezers to ensure there is no looseness, detachment, or cold solder joint.



2.Align the secondary screen, motor, and camera with the grooves on the speaker module, then gently place them into position. Secure the entire module by snapping the clips into their corresponding slots.



3.Screw in the screws to secure the speaker module.

8.2.7Post-assembly inspection

Check whether the speaker is securely installed, with no loose or wobbly parts; inspect the speaker diaphragm for any tears or deformation.

Examine the solder joints for cold solder or bridging, and check the cables for breaks or damage.

8.2.8Relevant information

Disassemble the speaker module

8.3Assemble A Shell

8.3.1Purpose

Install the A shell onto the device to protect the internal small board assembly and components, ensuring structural integrity and restoring dust and water resistance.

8.3.2Tools and equipment

No tools are required for this process.

8.3.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Do not forcefully press the A-shell to prevent uneven stress causing snap-fit breakage or internal component displacement.

8.3.4Pre-assembly Inspection

Inspect the A-shell for cracks and check if any clips are broken.

Thoroughly examine the interior for any residual screws, debris, adhesive residue, or other foreign objects.

Safety gear is worn, and the operating environment complies with ESD standards.

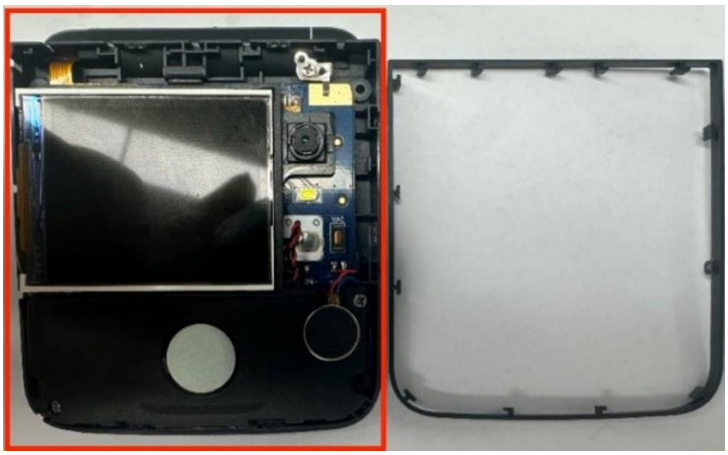
Confirm that the sub-board assembly and hinge are correctly installed.

8.3.5Overview of the methodology

First insert the decorative ring, then insert the bottom clips of Shell A into the corresponding slots on the body. Next, gradually snap the remaining clips into place along the edges.

8.3.6Step-by-step instructions

1.Install decorative rings into the slots around its periphery.



2.Pick up Shell A, align the latch at its bottom with the corresponding slot on Shell B, and insert it.

3.Starting from the bottom and working upward, gently press along the left and right edges of Shell A, allowing the clips on both sides to snap into place sequentially.

8.3.8Relevant information

Remove Shell A

8.4Assemble the main screen lens

8.4.1Purpose

Precisely install the main screen lens onto the B-shell to restore the screen surface's integrity and protective function.

8.4.2Tools and equipment

Name of the tool	Description of use
Phillips screwdriver	Tighten the cross-head screws to secure them.

8.3.7Post-assembly inspection

Inspect whether the edges of Shell A and Shell B are tightly aligned, checking for any noticeable gaps, misalignment, or warping.

8.4.3Security and preventive measures

Anti-static wrist straps, safety gloves, and safety goggles must be worn. The operating environment must comply with ESD standards and be free of flammable materials.

8.4.4Pre-assembly Inspection

Carefully inspect the slot for any residual screws, debris, or other foreign objects.

Safety protective equipment has been worn, and the operating environment complies with ESD standards.

Confirm that the sub-board assembly has been correctly installed.

Confirm that the main screen lens is free of cracks, scratches, or deformation.

8.4.5Overview of the methodology

First, screw in the four screws securing the A shell. Then align the lens with the mounting groove on the B shell. Finally, press the lens evenly to ensure complete adhesion.

8.4.6Step-by-step instructions

1.Tighten the four screws securing the A shell evenly in a diagonal sequence.

2.Align the lens precisely with the mounting groove on the B shell, ensuring the lens edge perfectly matches the shell's alignment line. Then press evenly from the center of the lens outward toward the edges.

8.4.7Post-assembly inspection

Inspect whether the main screen lens fits tightly against the edge of the B shell, checking for any noticeable misalignment or lifting.

Examine the lens surface for bubbles, dust residue, or foreign objects.

8.4.8Relevant information

Remove the main screen lens

8.5Assemble the mainboard assembly

8.5.1Purpose

Precisely install the motherboard assembly into the chassis, restore the integrity of core circuit connections, ensure stable electrical connections for the microphone, and guarantee the normal operation of all device functions.

8.5.2Tools and equipment

Name of the tool	Description of use
Soldering iron	Melt the solder and complete the soldering.
tweezers	Clamping Microcomponents

8.5.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Direct contact with the motherboard assembly pads, chip pins, or FPC ribbon cable contacts using metal tools is strictly prohibited to prevent short circuits or physical damage.

Set the soldering iron temperature to 320±10° C. Do not heat a single solder joint for more than 5 seconds. Wait 10 seconds before repeating the operation. Immediately place the soldering iron on a heat-resistant stand after use to prevent operator burns or fire hazards.

8.5.4Pre-assembly Inspection

Verify that no foreign objects such as residual screws, solder debris, or adhesive residue remain in the motherboard assembly mounting slot.

Confirm that the motherboard assembly shows no deformation, solder pads are intact, capacitors are free of bulging, and chip pins are not bent.

Inspect the microphone for cosmetic damage and ensure the FPC cable shows no breaks or oxidation.

Anti-static wrist straps and safety gloves are worn, and the operating environment complies with ESD standards.

Confirm the hinge is correctly installed.

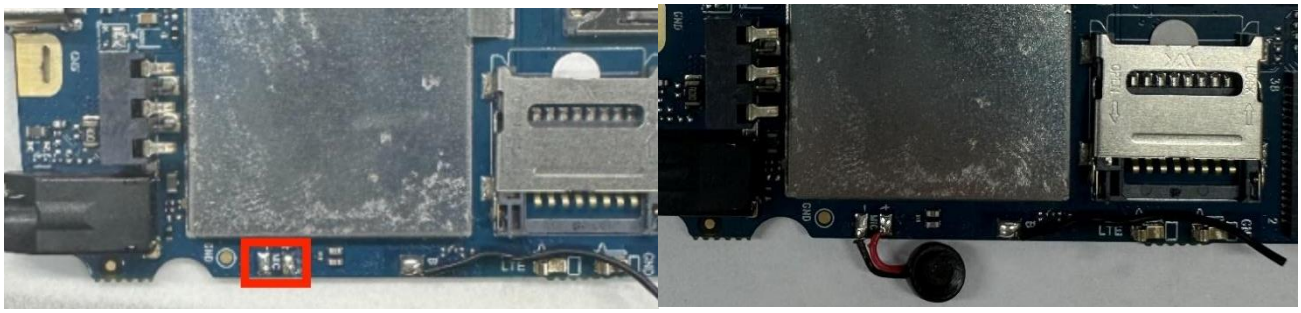
8.5.5Overview of the methodology

First, use a soldering iron to solder the microphone to the corresponding solder points on the mainboard assembly. Next, insert the male connector of the hinge FPC into the female socket on the mainboard assembly. Then, align the positioning clips of the mainboard assembly with those on the D-shell and snap them into place along the edges. Finally, install the microphone

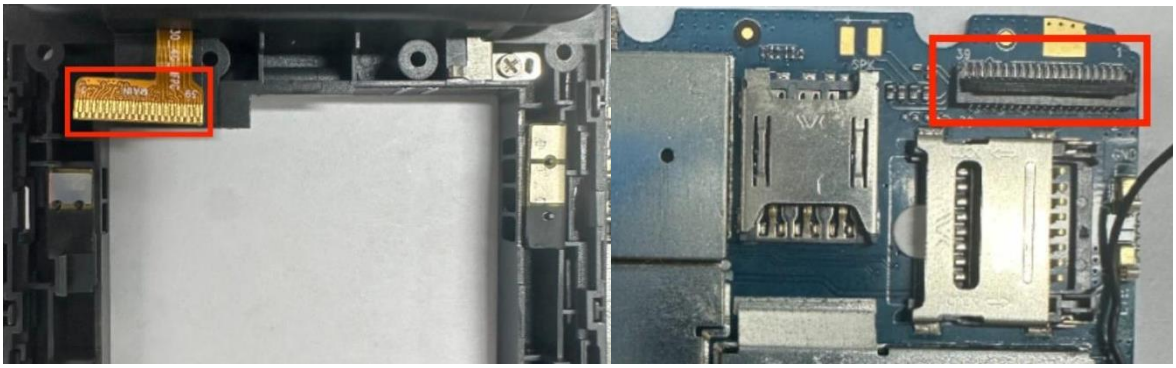
into the corresponding slot on the inner side of the D-shell to complete the overall assembly of the mainboard assembly.

8.5.6Step-by-step instructions

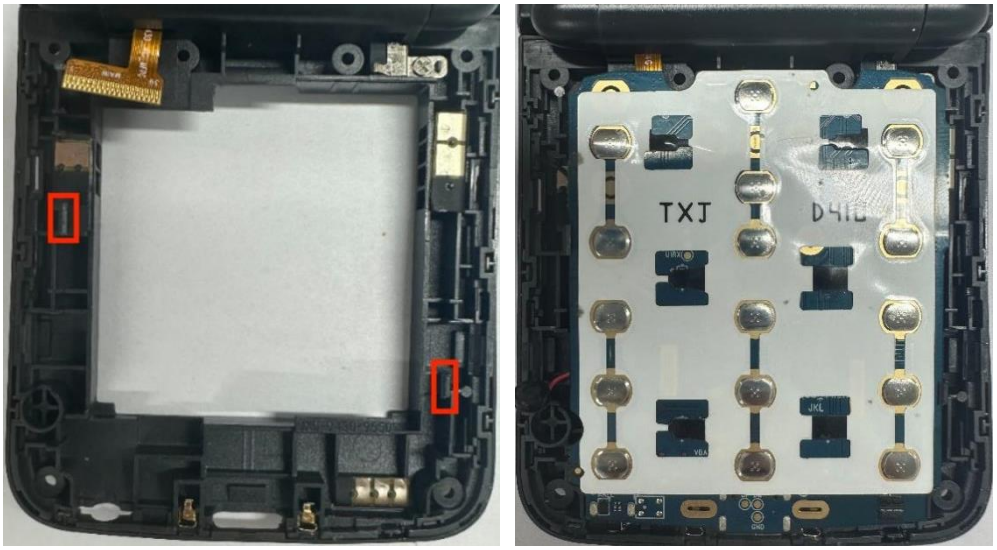
1.Apply a thin, even layer of solder paste to the microphone cable's solder joint. After precisely aligning the connector contacts with the motherboard assembly's solder points, use a soldering iron to quickly melt the solder and complete the connection. After soldering, gently tug the connector with tweezers to ensure there is no looseness, detachment, or cold solder joint.



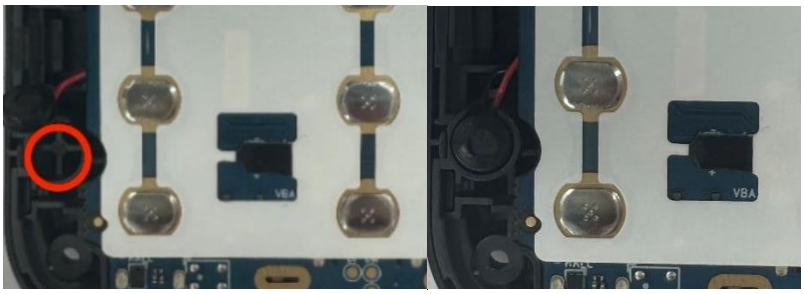
2.Insert the rotary shaft FPC into the ZF connector until the contacts are fully seated, then press the latch to lock it in place.



3.Align the motherboard assembly with the clips on the D-shell. Apply even pressure along the shell's edge with your fingers to snap the clips on both sides into place one after another.



4. Using tweezers, grasp the microphone and align it with the microphone slot on the inner side of the D-shell. Slowly insert it and gently press to secure it until the microphone is fully seated in the groove.



8.5.7Post-assembly inspection

Inspect whether the motherboard assembly fits snugly into the chassis mounting slots, checking for any noticeable gaps or lifting.

Verify that all FPC connectors are fully seated in their sockets, and ensure the flex cables show no signs of twisting, pulling, or excessive bending.

Confirm that microphone solder joints exhibit no cold solder joints or bridging, and that flex cable contacts show no oxidation or damage.

8.5.8Relevant information

Disassembly of the Mainboard Assembly

8.6Assemble C Shell

8.6.1Purpose

Properly reinstall the C-shell onto the chassis to restore the device's physical protection capabilities and secure the internal components.

8.6.2Tools and equipment

Name of the tool	Description of use
Phillips screwdriver	Tighten the Phillips screws securing the C-shell.

8.6.3Security and preventive measures

Wear an anti-static wrist strap, safety gloves, and safety goggles. The operating environment must comply with ESD standards and be free of flammable materials.

Do not forcefully press the C-shell to prevent uneven stress causing snap-fit breakage or internal component displacement.

8.6.4Pre-assembly Inspection

Inspect the C-shell for cracks and check if any clips are broken.

Thoroughly examine the interior for any residual screws, debris, or adhesive residue to ensure no foreign objects remain.

Safety protective gear has been worn, and the operating environment complies with ESD standards.

Confirm that the mainboard assembly and speaker module are correctly installed.

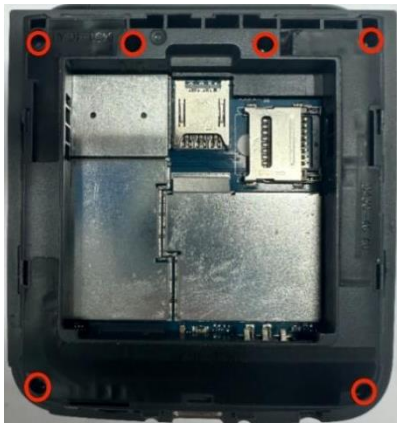
8.6.5Overview of the methodology

First align the C-shell with the frame clips on the device body, gradually snap it into place along the edges. Then tighten the securing screws in a diagonal sequence to ensure the shell fits snugly against the device body.

8.6.6Step-by-step instructions

1.Align the top edge of the C-shell with the top of the device body, ensuring the shell's clips align with the corresponding slots. Gently press along the edge of the shell to snap both side clips into place, ensuring the shell's edges are fully flush with the device body.

3.Using a Phillips screwdriver, evenly tighten the 6 mounting screws into the screw holes in a diagonal sequence to prevent deformation of the housing.



8.6.7Post-assembly inspection

Inspect whether there are any noticeable gaps between the C-shell and the main body, whether the edges are flush, and whether any screws are loose or stripped.

8.6.8Relevant information

Disassemble C Shell

8.7Assemble the battery

8.7.1Purpose

Properly reinstall the battery into the device body to restore power supply, ensuring the battery contacts are securely connected to the device interface.

8.7.2Tools and equipment

This program does not require any tools.

8.7.3Security and preventive measures

Do not touch battery terminals with metal tools.

Do not puncture, crush, or bend the battery. Damaged batteries may leak, catch fire, or explode.

Dispose of used batteries according to local electronic waste regulations. Do not place them in regular trash bins.

Wear an anti-static wrist strap, safety gloves, and goggles. Ensure the operating environment complies with ESD standards and is free of flammable materials.

8.7.4Pre-assembly Inspection

Inspect the battery surface for dents, scratches, bulges, or signs of electrolyte leakage to ensure the battery is cosmetically intact.

Thoroughly examine the interior of the battery compartment for any residual screws, debris, or other foreign objects.

Safety gear is worn, and the operating environment complies with ESD standards.

Verify that internal components such as the mainboard assembly, speaker module, sub-board assembly, and C-shell are correctly installed.

8.7.5Overview of the methodology

Align the battery contacts with the positioning protrusions inside the device's battery compartment. Slowly insert the battery, ensuring the contacts align precisely with the interface and the battery is fully seated in the slot.

8.7.6Step-by-step instructions

Hold the battery and align the contacts on its top with the protrusions in the device's slot. Slowly insert the battery until it is fully seated in the slot. If resistance is encountered during insertion, do not force it. Instead, check whether the alignment is off.

8.7.7Post-assembly inspection

Check that the battery is fully seated in the battery compartment, with the contacts tightly aligned with the device's interface and the battery edges flush with the device body.

Inspect the battery surface to ensure there are no new dents, scratches, or bulges, and no signs of electrolyte leakage.

8.7.8Relevant information

Remove the battery

8.8Assemble the Battery Cover

8.8.1Purpose

Properly reinstall the battery cover onto the device body to restore its physical protective properties and ensure internal components are securely fastened in place.

8.8.2Tools and equipment

No tools are required for this process.

8.8.3Security and preventive measures

Anti-static wrist straps, safety gloves, and goggles must be worn, and the operating environment must comply with ESD standards and be free of flammable materials.

Do not forcefully press down on the battery cover to avoid uneven stress on the latches, which may cause breakage or internal component displacement.

8.8.4Pre-assembly Inspection

Inspect the battery cover for cracks and check if the latches are broken.

Carefully examine the interior for any remaining screws, debris, or other foreign objects.

Safety gear has been worn, and the operating environment complies with ESD standards.

Confirm that the battery and all internal components have been installed.

8.8.5Overview of the methodology

Align the body with the battery cover latch, starting from the top, and gradually press the battery cover along the edge to close it.

8.8.6Step-by-step instructions

1.Align the top of the battery cover with the body first, then gently press the top of the battery cover to initially snap the bottom clips together.

3.Press along the edges of the battery cover from left to right and from top to bottom to ensure that the edge tabs snap together one by one.

8.9.7Post-assembly inspection

Check that the battery cover is flat, with no warping or dents.

Gently run your fingernail along the edges of the battery cover to ensure all clips are fully engaged and there are no noticeable gaps between the cover edges and the device body.

8.9.8Relevant information

Remove the battery cover

9. Repair Instructions

9.1 How to replace the battery

9.1.1 Purpose

This process is designed to guide users in safely replacing device batteries, resolving issues such as battery aging, reduced battery life, and swelling that cause abnormal device power supply, and restoring normal device functionality.

9.1.2 Prerequisites

The battery cover has been removed.

The device has been completely shut down and disconnected from all external power sources.

Safety protective equipment has been worn, and the operating environment complies with ESD specifications.

9.1.3 Tools and equipment

Name of the tool	Description of use
Prying piece	pry battery

9.1.4 Security and preventive measures

Do not touch the battery terminals with metal tools.

Do not puncture, crush, or bend the battery. Damaged batteries may leak, catch fire, or explode.

Used batteries must be disposed of in accordance with local electronic waste recycling regulations and must not be placed in regular trash bins.

Anti-static wrist straps, safety gloves, and goggles must be worn, and the operating environment must comply with ESD standards and be free of flammable materials.

9.1.5 Overview of the methodology

Take a prying piece (or hard plastic sheet) and slowly insert it into the notch at the bottom of the battery. Using the notch as a fulcrum, gently pry the prying piece upward to separate the bottom of the battery from the device first. Then align the replacement battery contacts with the positioning protrusions in the device's battery compartment and slowly push the battery into place to complete the installation.

9.1.6 Step-by-step instructions

1.Locate the battery's removal notch.

2.Insert a pry tool (or rigid plastic card) 2-3mm into the notch on the battery. Using the notch as a fulcrum, gently pry upward to separate the battery base from the device body. Carefully lift along the battery's edge to remove the old battery completely.

3. 拿Take the new battery and position it with the battery contacts facing the device's battery compartment. Align the contacts on the top of the battery with the raised tabs inside the compartment. Gently push the battery into place until it is fully seated. If you encounter resistance, do not force it. Instead, check if the alignment is off.

Description：

Inserting the prying piece more than 3 mm may damage the battery.

It is essential to use insulated tools with no sharp edges to prevent the tools from conducting electricity or damaging the battery casing with sharp edges, which could puncture the battery cells and cause risks such as battery leakage or fire.

9.1.7 Reassembly reference

After replacing the battery, reinstall the battery cover.

9.1.8 Check after replacement

Check that the battery is fully inserted into the battery compartment of the device, that the contacts are aligned with the device interface, and that the edges of the battery are flush with the device.

Observe the surface of the battery to ensure that there are no new dents, scratches, or bulges, and no signs of electrolyte leakage.

After turning on the device, confirm that the battery power display is normal and there are no charging abnormalities.

9.2 How to replace the display screen

9.2.1 Purpose

This procedure explains how to replace the device's display screen to resolve display malfunctions caused by issues such as screen cracks, liquid leakage, display abnormalities.

9.2.2 Prerequisites

The battery cover, battery, main screen lens, A-shell, and speaker module have been disassembled in sequence.

Safety protective gear has been worn, and the operating environment complies with ESD standards.

9.2.3 Tools and equipment

Name of the tool	Description of use
Screwdriver	Cross-head screws for securing steel plates
Soldering iron	Melt the solder and complete the soldering.
tweezers	Clamping small components
pry bar	Pry out the small board assembly

9.2.4 Security and preventive measures

The equipment has been completely powered down and disconnected from all external power sources.

Anti-static wrist straps, safety gloves, and safety goggles must be worn. The operating environment must comply with ESD standards and be free of flammable materials.

The soldering iron must be preheated to 320±10° C. Single soldering operations should not exceed 5 seconds. After use, place the soldering iron on a heat-resistant stand to prevent operator burns or fire hazards.

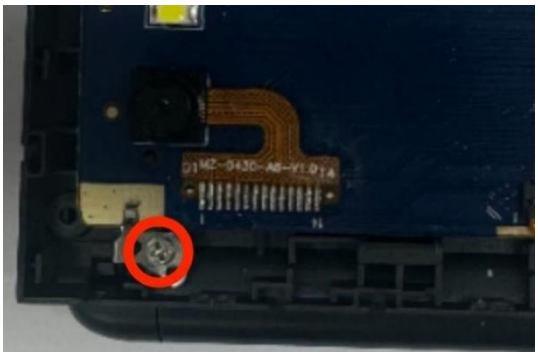
Avoid direct contact with the screen or ribbon cable connectors using metal tools to prevent physical damage.

9.2.5 Overview of the methodology

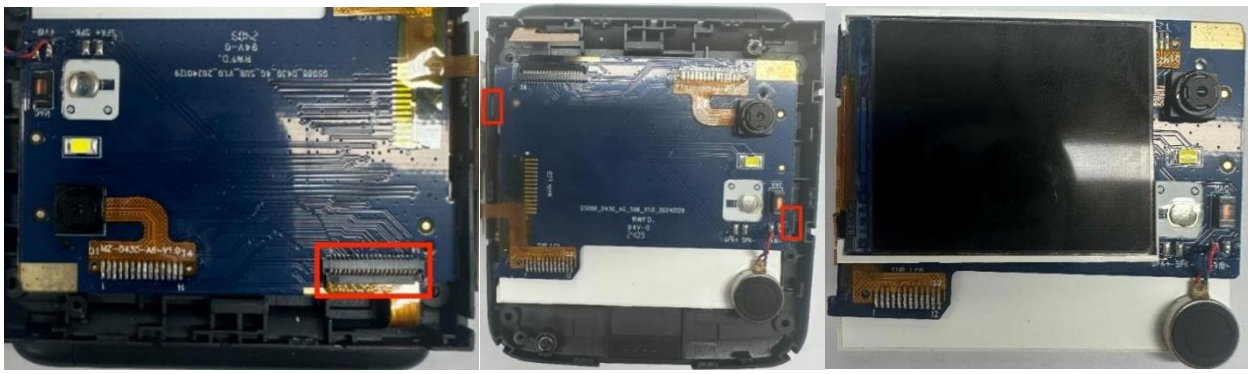
First remove the small board assembly, then detach the secondary and primary screens and install the new screen. Next, place the small board assembly into the B-shell and insert the steel plate.

9.2.6 Step-by-step instructions

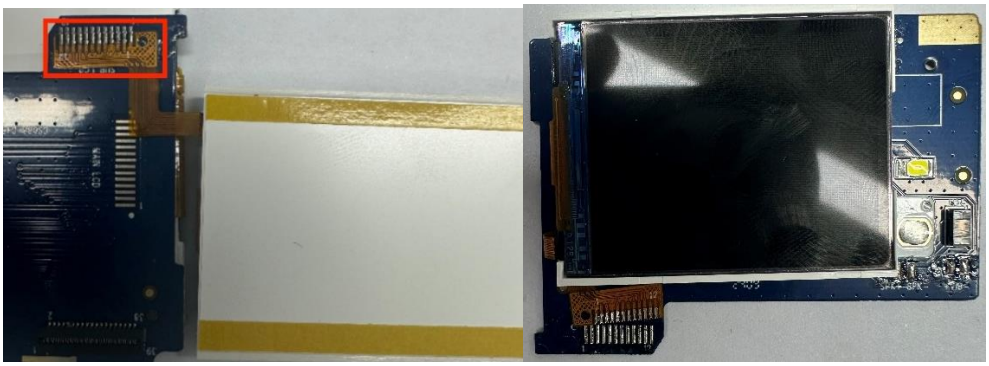
1.Remove the screws securing the steel plate and take out the steel plate.



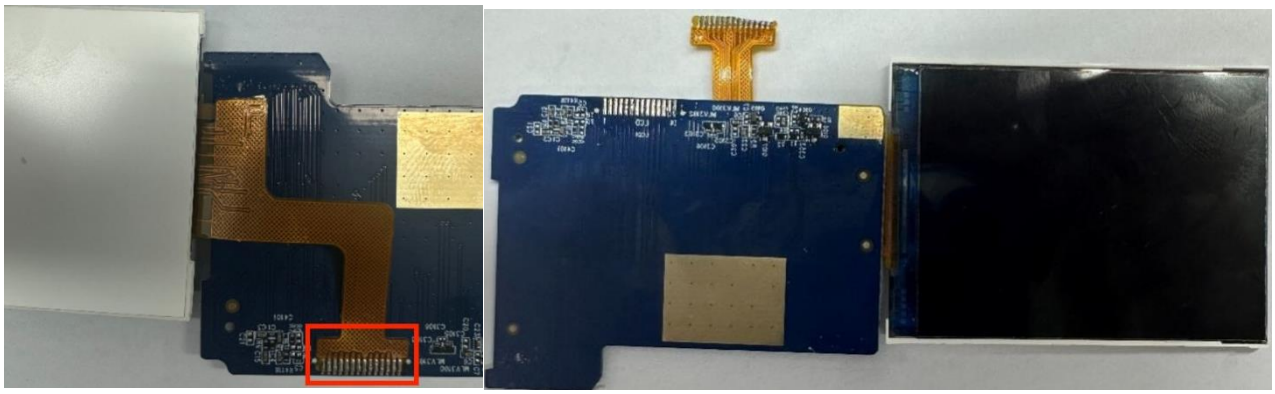
2. Locate the connector for the hinge FPC. Use tweezers to lift the locking tab on the ZF connector (flip it upward 90°), then slowly pull out the ribbon cable. Insert the tip of a pry tool into the gap between the B-shell and the small board assembly, and gently pry to release its clips. Carefully flip the small board assembly along with the screen, then separate the small board assembly from the B-shell.



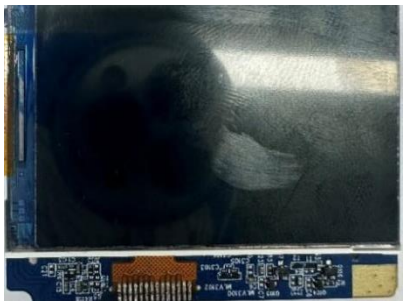
3.Apply a small amount of flux to the solder joints of the auxiliary display ribbon cable. Preheat the soldering iron to approximately 320° C. Quickly melt the solder to separate the ribbon cable from the small board assembly, then remove it from the assembly.



4.Apply a small amount of flux to the main display flex cable solder joints. Preheat the soldering iron to approximately 320° C. Quickly melt the solder, then gently lift the main display flex cable with tweezers to separate the old main display from the small board assembly.

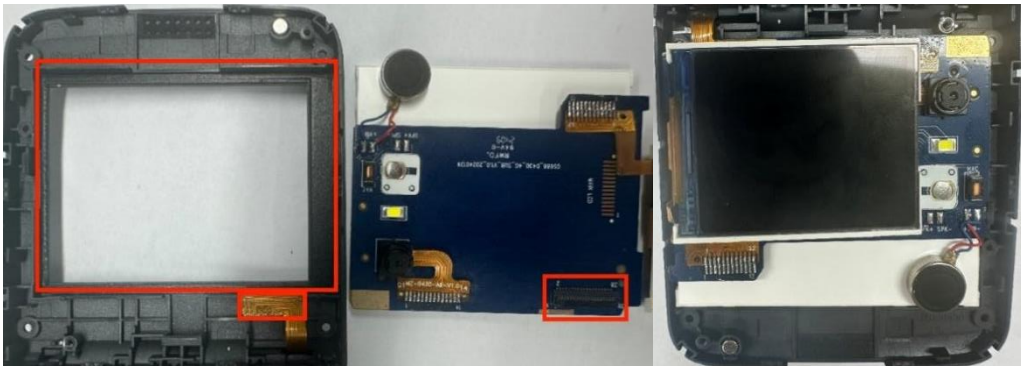


5.Apply a small amount of flux to the solder joints on the new main screen flex cable. Preheat the soldering iron to approximately 320° C. Quickly melt the solder to secure the new screen flex cable to the small board assembly. After cooling, gently press the flex cable to ensure proper contact. Inspect for any cold solder joints or bridging.

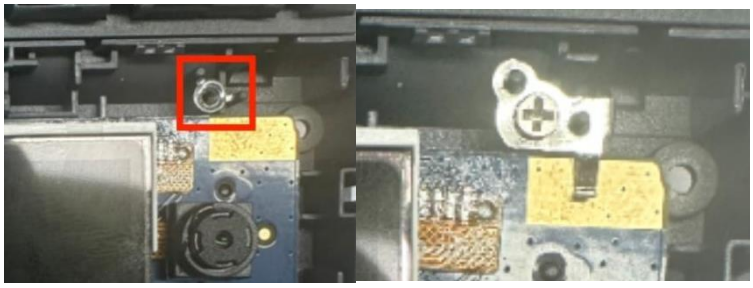


6.Apply a small amount of flux to the solder joints of the new sub-display cable. Preheat the soldering iron to approximately 320° C. Quickly melt the solder to secure the new display cable to the small board assembly. After cooling, gently press the cable to ensure proper contact. Inspect for any cold solder joints or bridging.

7.Insert the small board assembly into the corresponding groove in the B shell. Simultaneously insert the FPC connector into the ZF connector until the contacts are fully seated, then press the latch to secure it.



8.Insert the steel plate into the hole and screw it in.



9.2.7 Reassembly reference

After completing the new screen installation, reset the components in the following sequence:

Assemble the speaker module → Assemble the A-shell → Assemble the main screen lens → Assemble the battery → Assemble the battery cover.

9.2.8 Check after replacement

Check the display surface for scratches and fluid leaks.

Turn on the power to make sure the display is normal, with or without splash screen, flickering or color blocks.

10. Troubleshooting

⚠ CAUTION
This section is intended for technical personnel and maintenance professionals only.

10.1 Reset software

10.1.1 Purpose

Through the reset software to solve the problems caused by system file corruption, configuration abnormality, application conflict, etc., such as device operation lag, abnormal function or system crash, to restore the normal operation status of the device software level.

10.1.2 Prerequisites

The device battery level must be kept above 50% to avoid system damage caused by power failure during the reset process.

Back up important data on your device in advance to prevent data loss due to reset operations.

Ensure that the device is disconnected from all external power sources and external devices (such as USB cables, headphones, etc.).

10.1.3 Security and preventive measures

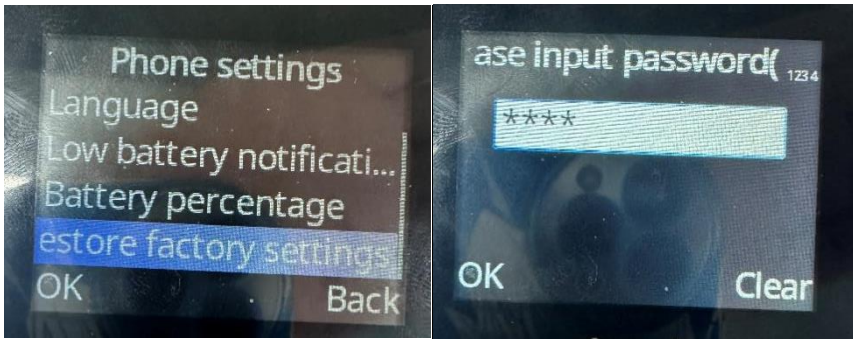
The reset operation will erase all user data stored on the device. Please ensure that you have backed up your data.

Please refrain from performing frequent resets unless necessary, as this may affect the service life of the device and system stability.

Do not force shut down or interrupt the operation during the reset process, otherwise the device may not start up normally.

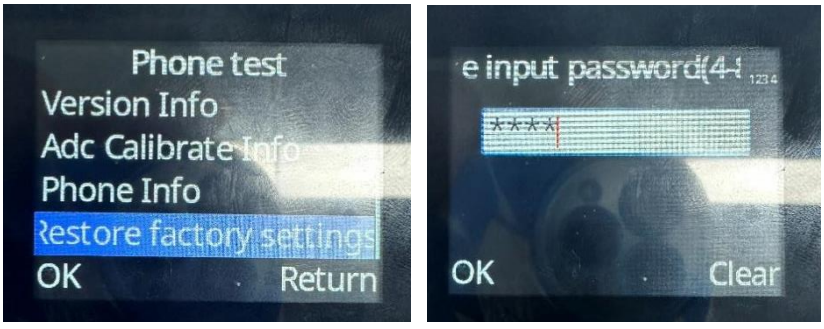
10.1.4 Normal factory reset

Open the device's Settings app, select: “Phone settings” → “Restore factory settings”, enter the password “1234”, then tap OK.



10.1.5Non-standard factory reset

After entering the phone's test mode, select “Restore factory settings.” Enter the password “1234” and tap OK.



10.1.6 Check after reset

After restarting the device, confirm that the system interface loads normally, with no black screen, screen distortion, or repeated restarts.

Test whether each functional module (such as call, network, camera, touch screen, etc.) is operating normally.

10.2Device startup options

10.2.1 Purpose

Assist in troubleshooting hardware faults, repairing system problems, or conducting functional tests through different startup modes, providing technical support for fault diagnosis and repair.

10.2.2Safety precautions

When entering non-standard startup modes (such as safe mode or factory mode), it is essential to follow the steps carefully to avoid accidental touches that could cause system abnormalities.

10.2.3Normal startup

Operating Instructions：Press and hold the power button until the screen lights up and the startup animation appears. The device will start up the system using the default settings.

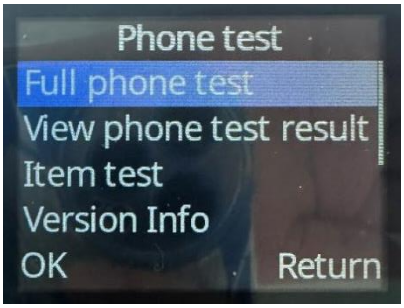
10.2.4Cell Phone Testing

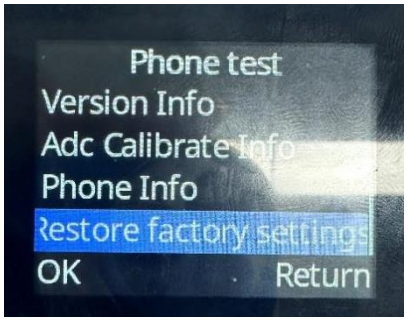
Access Methods：

1.Open the device's “Phone” application (dialer)。

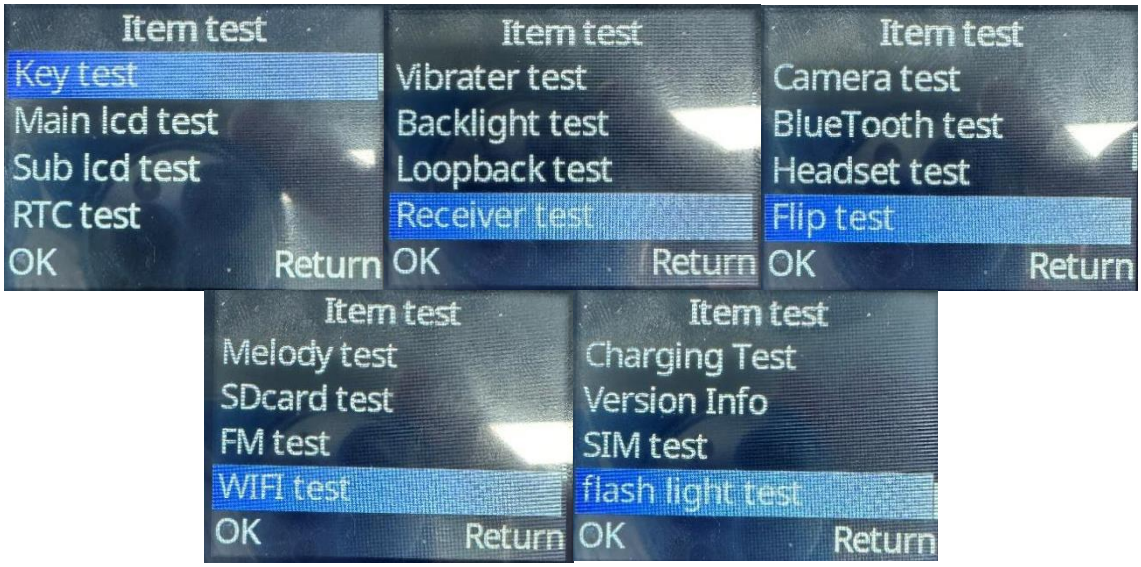
2.Enter the code:**#37*#**. During the input process, the system will automatically jump to the cell phone test interface.

Functional Description：





Customized Test Modules：Corresponding test items can be selected for equipment functions or components, and the system will perform functional testing on the selected module.



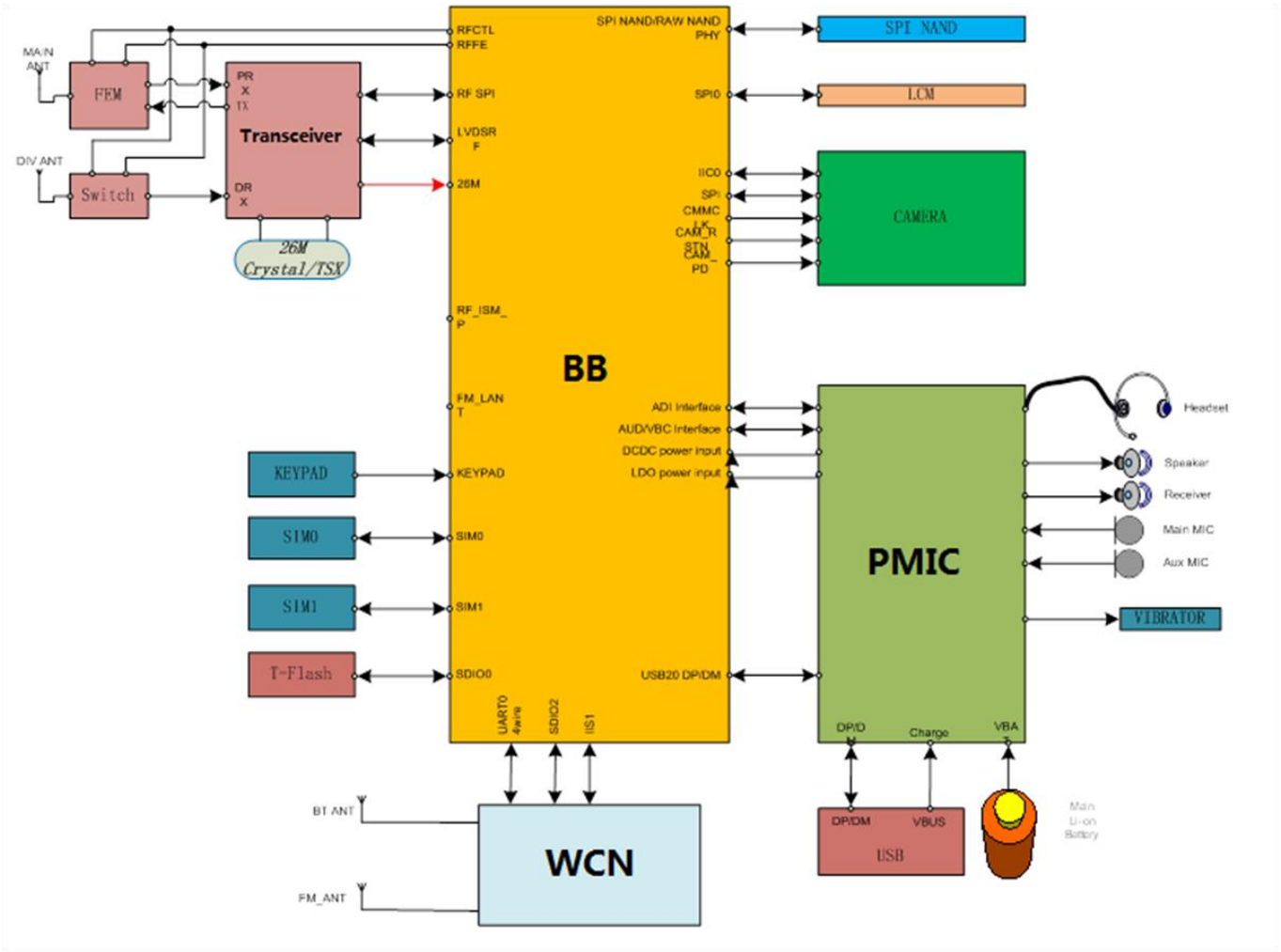
Generate test reports：Upon completion of the test, the system generates a detailed test report, making it easy to locate the problem.

Restore Factory Settings：Support to restore the device to factory state, the operation will clear all user data, applications and system settings.

Exit Test：When the test is complete, click the “Back” button on the device to exit the phone test interface.

11. Appendix

11.1 Block diagram



FlipFold
Repair Manual

How to contact us

Email us at help@opelmobile.com or call

0808 160 7167 in UK (8am to 4pm, Mon to Fri – excluding national holidays)

1800 456 902 in Ireland (8am to 4pm, Mon to Fri – excluding national holidays)