MOTOROLA

ZN 200

Quad-Band Wireless Telephone

ZN200

GSM 850/900, DCS 1800, and PCS1900 MHz

Mobile Devices Business,
SawgrassInternational Concourse
789 International Parkway
Room S2C

Contents

Introduction

Motorola® Inc. maintains a worldwide organization that is dedicated to provide responsive, full-service customer support. Motorola products are serviced by an international network of company-operated product care centers as well as authorized independent service firms.

Available on a contract basis, Motorola Inc. offers comprehensive maintenance and installation programs which enable customers to meet requirements for reliable, continuous communications.

To learn more about the wide range of Motorola service programs, contact your local Motorola products representative or the nZN200earest Customer Service Manager.

Product Identification

Motorola products are identified by the model number on the housing. Use the entire model number when inquiring about the product. Numbers are also assigned to chassis and kits. Use these numbers when requesting information or ordering replacement parts.

Product Names

Product names are subject to change without notice. some product names, as well as some frequency bands, are available only in certain market.

Product Changes

When electrical, mechanical or production changes are incorporated into Motorola products, a revision letter is assigned to the chassis or kit affected, for example; -A, -B, or -C, and so on.

The chassis or kit number, complete with revision number is imprinted during production. The revision letter is an integral part of the chassis or kit number and is also listed on schematic diagrams, and printed circuit board layouts.

Regulatory Agency Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause any harmful interference, and
- this device must accept interference received, including interference that may cause undesired operation

This class B device also complies with all requirements of the Canadian Interference-Causing Equipment Regulations (ICES-003).

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Computer Program Copyrights

The Motorola products described in this manual may include Motorola computer programs stored in semiconductor memories or other media that are copyrighted with all rights reserved worldwide to Motorola. Laws in the United States and other countries preserve for Motorola, Inc. certain exclusive rights to the copyrighted computer programs, including the exclusive right to copy, reproduce, modify, decompile, disassemble, and reverse-engineer the Motorola computer programs in any manner or form without Motorola's prior written consent. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license or rights under the copyrights, patents, or

patent applications of Motorola, except for a nonexclusive license to use the Motorola product and the Motorola computer programs with the Motorola product.

About This Service Manual

Using this service manual and the suggestions contained in it assures proper installation, operation, and maintenance of ZN200 telephones. Refer questions about this manual to the nearest Customer Service Manager.

Audience

This document aids service personnel in testing and repairing ZN200 telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Use of this manual assures proper installation, operation, and maintenance of Motorola products and equipment. It contains all service information required for the equipment described and is current as of the printing date.

Scope

This manual provides basic information relating to ZN200 telephones, and also to provide procedures and processes for repairing the units at Level 1 and 2 service centers including:

- Unit swap out
- Repairing of mechanical faults
- Basic modular troubleshooting
- Testing and verification of unit functionality
- Initiate warranty claims and send faulty modules to Level 3 or 4 repair centers.

Conventions

Special characters and typefaces, listed and described below, are used in this publication to emphasize certain types of information.

Note: Emphasizes additional information pertinent to the subject matter.

Caution: Emphasizes information about actions which may result in equipment damage.

Warning: Emphasizes information about actions which may result in personal injury.

Warranty Service Policy

The product is sold with the standard 12 month warranty terms and conditions. Accidental damage, misuse, and extended warranties offered by retailers are not supported under warranty. Non warranty repairs are available at agreed fixed repair prices.

Out of Box Failure Policy

The standard out of box failure criteria applies. Customer phones that fail very early on after the date of sale, are to be returned to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing to bear the costs of early life failure.

Product Support

Customer's original phones will be repaired but not refurbished as standard. Appointed Motorola Service Hubs will perform warranty and non-warranty field service for level 2 (assemblies) and level 3 (limited PCB component). Motorola High Tech Centers will perform level 4 (full component) repairs.

Customer Support

Customer support is available through dedicated Call Centers and in-country help desks. Product-Service training should be arranged through the local Motorola Support Center.

Parts Replacement

When ordering replacement parts or equipment, include the Motorola part number and description used in the service manual.

When the Motorola part number of a component is not known, use the product model number or other related major assembly along with a description of the related major assembly and of the component in question.

In the U.S.A., to contact Motorola, Inc. on your TTY, call: 800-793-7834.

Replacement Parts Service Division (RPSD)

U.S.A.	**Outside U.S.A.**
Phone: 800-422-4210	Phone: 847-538-8023
FAX: 800-622-6210	FAX: 847-576-3023

Website: http://businessonline.motorola.com
For EMEA spare parts call +49 461 803 1404.
Website: http://emeaonline.motorola.com
For Asia spare parts call +65 648 62995.
Website: http://asiaonline.motorola.com

Specifications

General Function	Specification
Frequency Range GSM 850	824-849 MHzTx 869-894 MHzRx
Frequency Range GSM 900	880-915 MHzTx 925-960 MHzRx
Frequency Range GSM 1800	1710-1785 MHzTx 1805-1880 MHzRx
Frequency Range GSM 1900	1850-1910 MHzTx 1930-1990 MHzRx
Channel Spacing	200KHz
Channels	EGSM 174/DCS 374/PCS 299/ GSM850 124 (Carrier with 8 channel per carrier)
Modulation	GMSK at BT=0.3
Transmitter Phase Accuracy	$\leqq$ 5 degrees RMS, 20 degrees peak
Duplex Spacing	45 MHz (GSM850, GSM900), 95 MHz (DCS 1800), 80MHz (PCS 1900)
Frequency Stability	±0.10 ppm of the downlink frequency (Rx)
Operating Voltage	+3.2V dc to +4.2V dc (battery)
Transmit Current Drain	90 - 180 mA average talk current drain
Standby Current Drain	4.75mA (DRX2), 5.25mA (DRX9)
Temperature Range	-10℃ to 55℃ (15℉ to 130℉)
Dimensions	L 105mm X W47mm X H15.94mm
Size (Volume)	80cc
Weight	113g
Battery Life, with standard 780 mAh Li-Ion Battery	GSM Vocie Call: 245 ~ to 511 mins Standby DRX5 = 289 hrs All talk and standby times are approximate and depend on network configuration, signal strength, and features selected. Standby times are quoted at DRX=5. Talk time are quoted with DTX ON.
Battery Charge time	4 hours to 90% of 810 mAh capacity
Alert Volume	Max 95dB @ 5 cm, 0.5 watts input

Transmitter Function	Specification

RF Power Output	32.5 dBm nominal GSM 850/ GSM 900 29.5 dBm nominal DCS 1800/PCS 1900
Output Impedance	50 ohms nominal
Spurious Emissions	$\leq$ -36 dBm from 0.1 to 1 GHz, -30 dBm from 1 to 4 GHz

Speech Coding Function	**Specification**
Speech Coding Type	Regular pulse excitation/Linear predictive coding with long term prediction (RPE LPC with LTP)
Bit Rate	13.0 kbps
Frame Duration	20 ms
Block Length	260 bits
Classes	Class 1 bit = 182 bits/Class 2 bits = 78 bits
Bit Rate with FEC Encoding	22.8 kbps

Product Overview

Motorola ZN200 mobile telephones feature global system for mobile communications (GSM) air interface, general packet radio service (GPRS) transport technology, and wireless application protocol (WAP) Internet browser. The mobile telephone uses a simplified icon and graphical-based user interface (UI) for easier operation, allows short message service (SMS) text messaging, and include clock, alarm, datebook, calculator, and caller profiling personal management tools. The ZN200 is a dual-band phone that allows roaming within the 900 MHz and digital cellular system (DCS) 1800 MHz, or GSM 850/personal communication system (PCS) 1900 MHz, depends on hardware.

ZN200 telephones support GPRS and SMS in addition to traditional circuit switched transport technologies. GPRS, where available, provides substantial increases in mobile data communications performance and the efficient use of radio spectrum. Data transmission rates for GSM networks can potentially increase from the current rate of 9.6 kbps up to a theoretical maximum of 171.2 kbps. An increased data rate is by no means the only benefit provided by GPRS. A key advantage is the provision of a permanent virtual connection to the network. This "always on" connection is possible because GPRS uses packet data transfer so that, for example, email can be downloaded in "background mode." There is no need for the user to reconnect before requesting a service, eliminating connection set-up delays and adding convenience and immediacy to data services access. The "virtual" nature of this connection means that network resources are not consumed during periods when a user is not actually sending or receiving data.

The telephones are made of polycarbonate plastic. The display and speaker, as well as the 21-key keypad, transceiver printed circuit board (PCB), microphone, charger and headphone connectors, and power button are contained within the clamshell form-factor housing. The user-replaceable 810 mAh Lithium Ion (LiIon) battery provides up to 511 minutes of talk time with up to 289 hours of standby time[1]. The phone accepts 3V mini subscriber identity module (SIM) cards which fit into the SIM holder under the battery. These telephones feature a 176 x 200 pixel high-resolution color graphics display and an internal antenna.

Features

ZN200 telephones use advanced, self-contained, sealed, custom integrated circuits to perform the complex functions required for GSM GPRS communication. Aside from the space and weight advantage, microcircuits enhance basic reliability, simplify maintenance, and provide a wide variety of operational functions.

Features available in this family of telephones include:

- 176 x 220 262K 1.88' TFT LCD
- FM Radio
- MP3 Melody
- Supports SMS, concatenated SMS, MMS, instant messaging, and cell broadcast messages[2]
- Supports GPRS, circuit switched, and SMS networks2
- WAP 2.0
- 2M- pixel camera sensor
- Bluetooth 2.0
- Personal management tools calculator with currency converter, real time clock with date, reminders, and caller profiling

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1. All talk and standby times are approximate and depend on network configuration, signal strength, and features selected. Standby times are quoted as a range from DRX=2 to DRX=9. Talk times are quoted as a range from DTX off to DTX on.
2. Network, subscription and SIM card or service provider dependent feature. Not available in all areas.

Wireless Access Protocol (WAP) 2.0 Compliancy

In the WAP environment, access to the Internet is initiated in wireless markup language (WML), which is derived from hypertext markup language (HTML). The request is passed to a WAP gateway which retrieves the information from the server in standard HTML (subsequently filtered to WML) or directly in WML if available. The information is then passed to the mobile subscriber via the mobile network. The ZN200's microbrowser can be configured for baud, idle timeout, line type, phone number, and connection type.

Bitmap image data will download as text. If the image is larger than the screen,only part of the image will display.

If the user receives a call while in browser mode, the browser will pause and allow the user to resume after completing the call.

Caller Line Identification

Upon receipt of a call, the calling party's phone number is compared to the phonebook. If the number matches a phonebook entry, that name will be displayed. If there is no phonebook entry, the incoming phone number will be displayed. In the event that no caller identification information is available, an incoming call message is displayed.

User must subscribe to a caller line identification service through their service provider.

SIM Toolkit™ - Class 2

SIM Application Toolkit is a value-added service delivery mechanism that allows GSM operators to customize the services they offer their customers, from the occasional user who requests sports news and traffic alerts, to a high call time business user who receives stock alerts and checks flight times. Operators can now create their own value-added services menu quickly and easily in the phone. The customized menu will appear as the first menu and may be updated over-the-air with new services when customers request them.

Personal Information Management

The ZN200 telephone contains a built-in calendar with datebook reminders and phonebook.

Other Features

Detailed descriptions of the other features can be found in the appropriate ZN200 telephone user guides listed in the Related Publications section toward the end of this manual.

General Operation

Controls, Indicators, and Input/Output (I/O) Connectors

The ZN200 telephones' controls are located on the front and side of the device, and on the keyboard as shown in Figure 1. Indicators, in the form of icons, are displayed on the LCD (see Figure 3).

Figure 1. ZN200 Telephone Controls Locations

Figure 2. ZN200 Telephone Controls Locations

Menu Navigation

ZN200 telephones are equipped with a simplified icon and graphical-based user interface. The phone also features 6 user-definable shortcuts to menu options that are accessed by pressing the soft keys and 4-way navigation key. See Figure 3 for details of the ZN200 menu structure. A 4-way navigation key allows you to move easily through menus. Left soft key lets you confirm your selection. When the up/down side key (voice activation key) is held down from a idle display, provides a shortcut to voice dialing and voice feature launcher.

Liquid Crystal Display (LCD)

The LCD provides an 832 square millimeter multi color backlit color display with user-adjustable contrast settings for optimum readability in all light conditions. The large bit-mapped 176 x 220 pixel display.

Display animation makes the phone's icon menu move smoothly as the user scrolls up and down.

Whether a phone displays all indicators depends on the programming and services to which the user subscribes.

Figure 3 shows some common icons display on the LCD

Icon	Name	Description
	Signal Strength	Indicates strength of signal being received. The more vertical bars, the better the reception (5 bars maximum).
	Battery Power Level	Indicates remaining battery power. The more bars, the more battery power available (3 bars maximum).
	Roaming	Indicates you are on another network.
	Voice Call Active	Indicates a call is connected.
	New Voicemail Message	Indicates new unheard voicemail message(s).
	SMS/MMS Full	Indicates the phone's memory which stores SMS/MMS messages is full. You must read new SMS messages to receive more SMS messages.
	New SMS Message	Indicates new unread SMS message(s).
	New MMS Message	Indicates new unread MMS message(s).
	GPRS Available	Indicates your service provider supports GPRS.
	GPRS Connected	Indicates GPRS is connected.
	GPRS Attached	Indicates you are surfing over the GPRS network.

Figure 3. ZN200 Display Icons

Icon	Name	Description
	Ringer On / Loud	Indicates ringer is turned on and sound is loud.
	Ring On / Soft	Indicates ringer is turned on and sound is soft.
	Vibrator On	Indicates vibrator is turned on.
	Ringer/Vibrator On	Indicates ringer and vibrator are turned on.
	Silent	Indicates ringer is turned off.
	Alarm On	Indicates alarm is on.
	Online Chat Active	Indicates you open Chatroom to have an online chat.
	Line 1/Line 2	Indicates the telephone line you are using.
	Call Waiting	Indicates a call is waiting to answer.
	Call Diverting	Indicates all of your incoming calls will be transferred to another phone number.
	Call Muted	Indicates a call is muted.

Figure 4. ZN200 Display Icons

Icon	Name	Description
	WAP Connected	Indicates WAP is connected.
	WAP Hold	Indicates WAP is on hold.
	WAP Security	Indicates the secure page is connected.
	Home Zone	Indicates phone is in home zone.
	Bluetooth Search	Indicates Bluetooth is active.
	Bluetooth Connected	Indicates Bluetooth is connected.
	BT type: access point / audio	Indicates the connected Bluetooth device type is acess point / audio.
	BT type: computer / handheld	Indicates the connected Bluetooth device type is computer / handheld.
	BT type: headsets / music	Indicates the connected Bluetooth device type is headsets / music.
	BT type: mobile / peripheral	Indicates the connected Bluetooth device type is mobile / peripheral.

Figure 5. ZN200 Display Icons

Alert Settings

In addition to 35 preset ring tones, ZN200 telephones allow the user to download 5 additional ring tones via GPRS/USB. (Availability is carrier and Network dependant). Motorola ZN200 phones incorporate the VibraCall® discreet vibrating alert that helps to avoid disturbing others when a ringing phone is unacceptable. Alerts can be set to ring only, vibrate only, vibrate then ring, or no ring or vibrate. Additionally, the profiling feature allows users to identify incoming calls by a specific ringer tone.

Battery Function

Battery Charge Indicator

The telephone displays a battery charge indicator icon in the idle screen to indicate the battery charge level. The gauge shows four levels: 100%, 66%, 33%, and Low Battery.

Battery Removal

Removing the battery causes the phone to shut down immediately and loose any pending work (partially entered phonebook entries or outgoing messages, for example).

All batteries can cause property damage and/or bodily injury such as burns if a conductive material such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

If the battery is removed while receiving a message, the message is lost.

To ensure proper memory retention, turn the phone OFF before removing the battery. Immediately replace the old battery with a fresh battery.

Operation

For detailed operating instructions, refer to the appropriate User Guide listed in the Related Publications section toward the end of this manual.

Tools and Test Equipment

Table 1 lists the tools and test equipment used on ZN200 telephones. Use either the listed items or equivalents.

Table 1. General Test Equipment and Tools

Motorola Part Number[1]	Description	Application
See Table 6	Charger	Used to charge battery and power phone
0180386A82	Antistatic Mat Kit (includes 66-80387A95 antistatic mat, 66-80334B36 ground cord, and 42-80385A59 wrist band)	Provides protection from damage to phone caused by electrostatic discharge (ESD)
8102430Z04	GSM/DCS Test SIM	Used to enable manual test mode
6680388B67	Disassembly tool, plastic with flat and pointed ends (manual opening tool)	Used during assembly/disassembly
6680388B01	Tweezers, plastic	Used during assembly/disassembly
	Philips screw driver	Used during assembly/disassembly
RSX4043-A	Torque Driver	Used to remove and replace screws
—	Torque Driver Bit T-5 Plus, Apex 440-6IP Torx Plus or equivalent	Used with torque driver
HP34401A[2]	Digital Multimeter	Used to measure battery voltage

1. To order in North America, contact Motorola Aftermarket and Accessories Division (AAD) by phone at (800) 814-0601 or FAX (800) 622-6210. Internationally, AAD can be reached by calling (847) 538-8023 or by fax (847) 576-3023.
2. Not available from Motorola. To order, contact Hewlett Packard at (800) 452-4844.

Disassembly

This chapter serves as a guideline to help the respective service personnel in the repairing of ZN200 up to level 2. At Level 1 stage, technician can repair those components without using screwdriver or any special devices.

⚠ *Many of the integrated devices used in this phone are vulnerable to damage from electrostatic discharge (ESD). Ensure adequate static protection is in place when handling, shipping, and servicing any internal components.*

⚠ *Avoid stressing the plastic in any way to avoid damage to either the plastic or internal components.*

⚠ *Please use tools appropriate to the specification set disassembly. Do not press the unreasonable force at disassembly. The set may be damaged.*

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Removing and Replacing the Battery Door

1. Hold the battery door latch and take out the Battery cover illustrated in Figure 6.

Figure 6. Removing the Battery Door

2. To replace, align the battery door hook to the case D and press to the battery door latch.

Removing and Replacing the Battery

All batteries can cause property damage and/or bodily injury such as burns if a conductive material such as jewelry, keys, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

1. Lift the side of the battery first, then remove it from the phone. See figure 7.
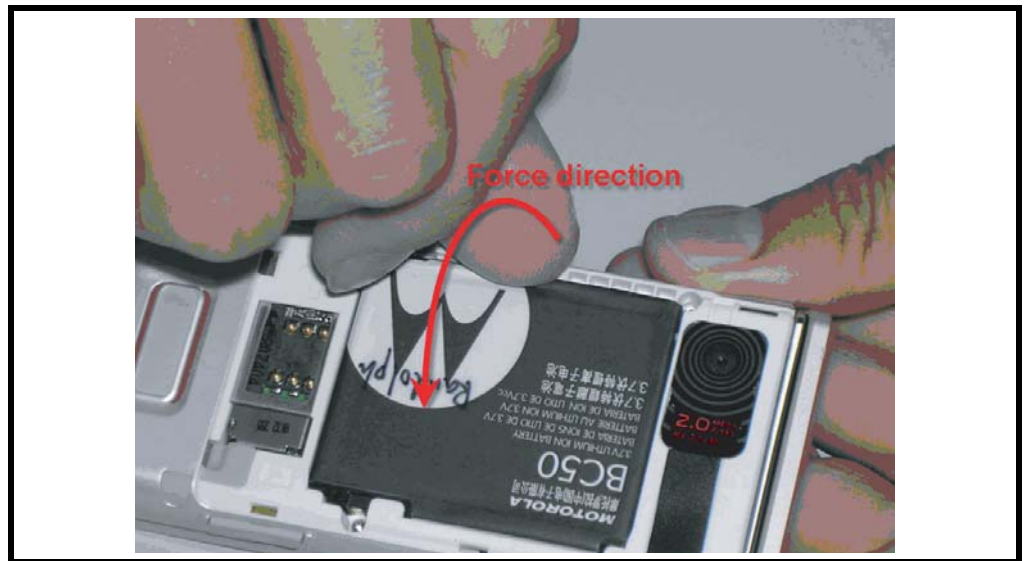
Figure 7. Removing the Battery

There is a danger of explosion if the Lithium Ion battery is replaced incorrectly. Replace only with the same type of battery or equivalent as recommended by the battery manufacturer. dispose of used batteries according to the manufacturer's instructions.

2. To replace, align the battery with the battery compartment so the contacts on the battery match the battery contacts in the phone.
3. Insert the battery, contacts side first into the battery compartment and push down followed by the opposite edge of the battery.
4. Replace the battery door as described in the procedures.

Removing and Replacing the Upper Module and Lower Module

1. Remove the battery door and battery as described in the procedures.

2.   Remove 2 screw covers illustrated in Figure 8 by tweezers.

Figure 8. Removing the screw covers

3.   Use T5 screw driver to remove 6 screws illustrated in Figure 9.
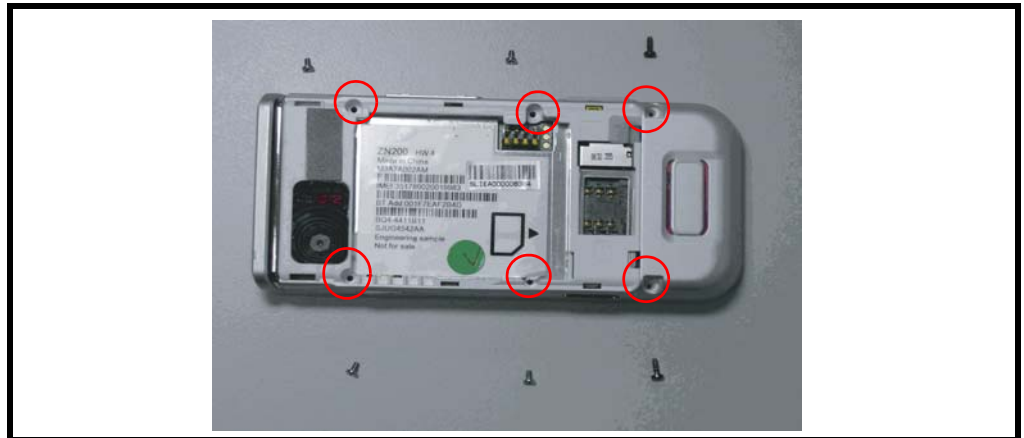
Figure 9. Release 6 screws on Case D.

4.   Separate Lower module from Upper module by hand illustrated in Figure 10.

Figure 10. Separate the Lower module from Upper module.

5.   Remove the Rubber Cap by fingernail illustrated in Figure 11.
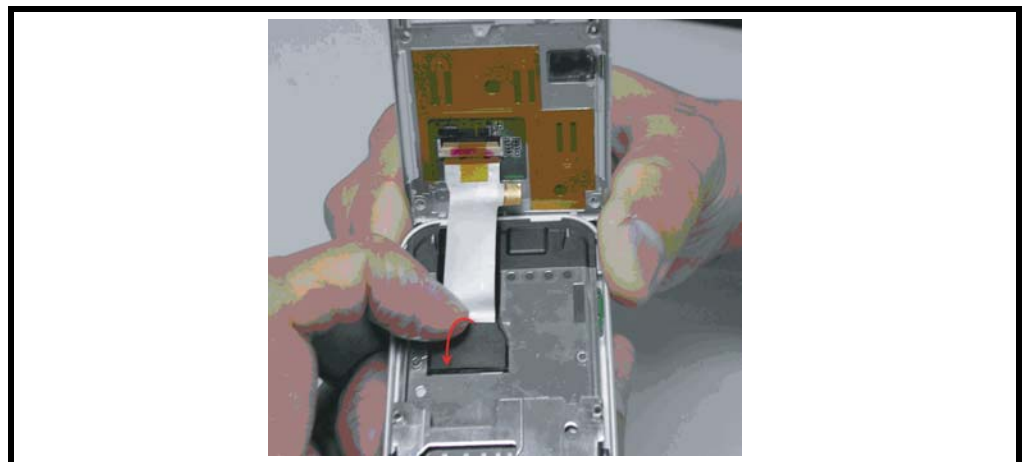
Figure 11. Removing the Rubber Cap

6. Peel off the mylar by tweezers illustrated in Figure 12. Put the mylar aside for reused.
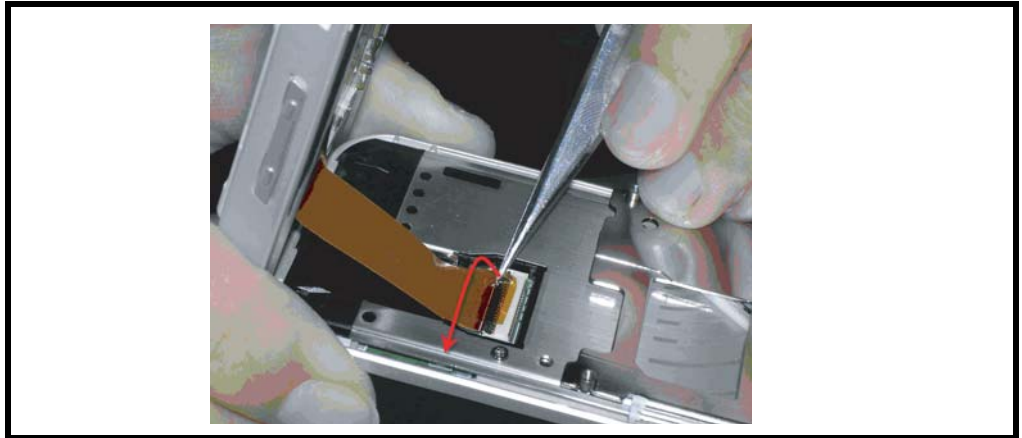
Figure 12. Peel off the mylar

7. Unlock the connector switch to pull out the FPC from Lower module by fingernail and separate the Upper module from Lower module illustrated in Figure 13.
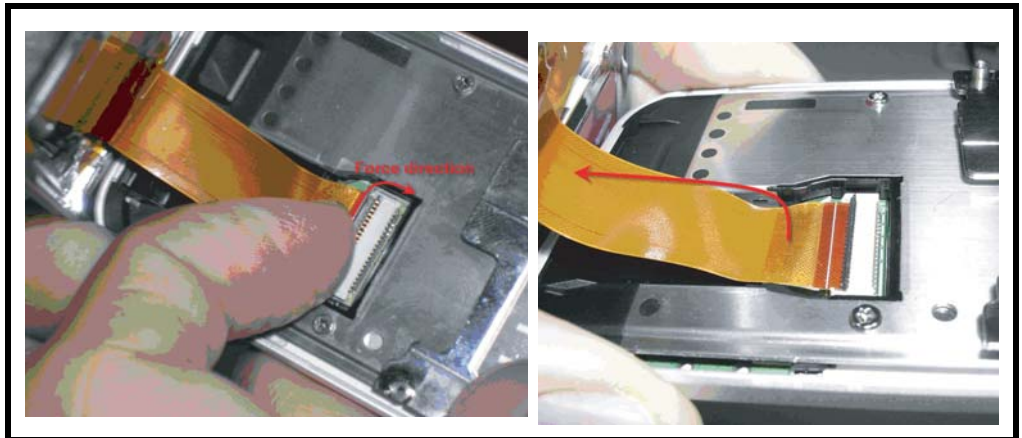
Figure 13. Remove the FPC from Lower module

8.   To replace, insert main FPC into connector of Lower module completely and press down the connector button.
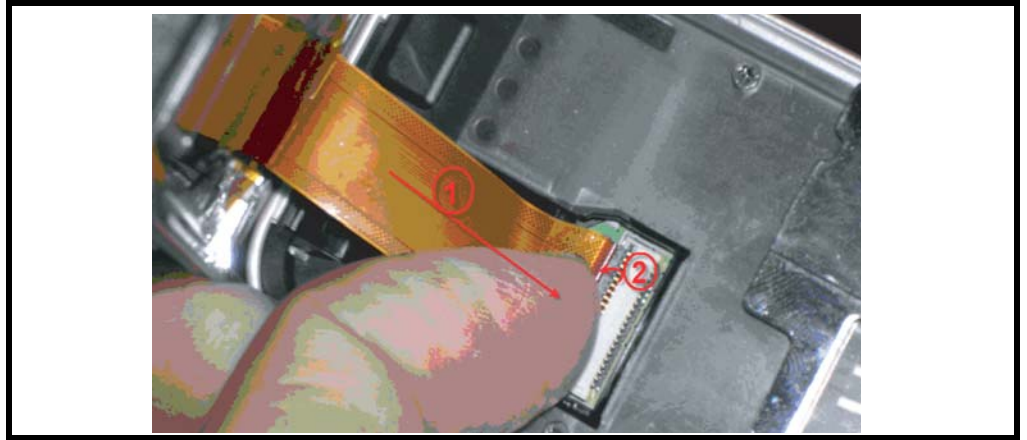
Figure 14. Inser FPC into connector

9.   Place mylar on top of connector button to fix FPC and connector by tweezers.
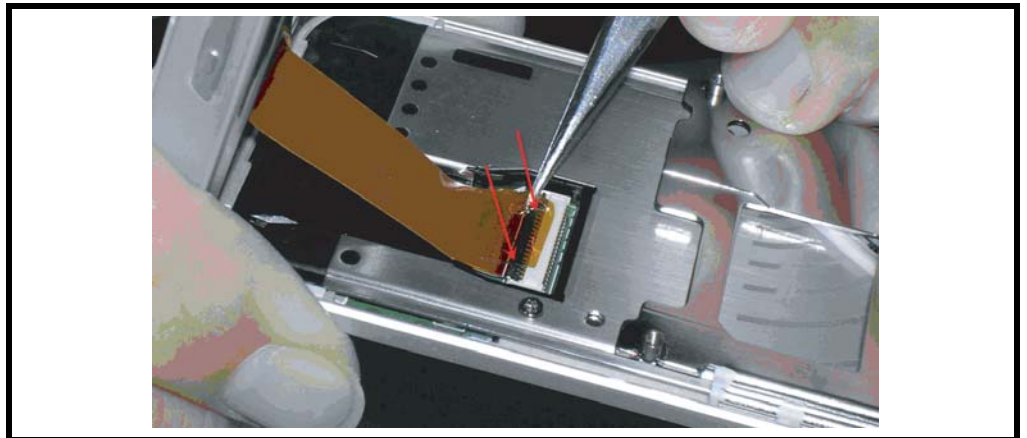
Figure 15. Place Mylar on top of connector button.

10. Place the rubber cap into the Upper module (case B).
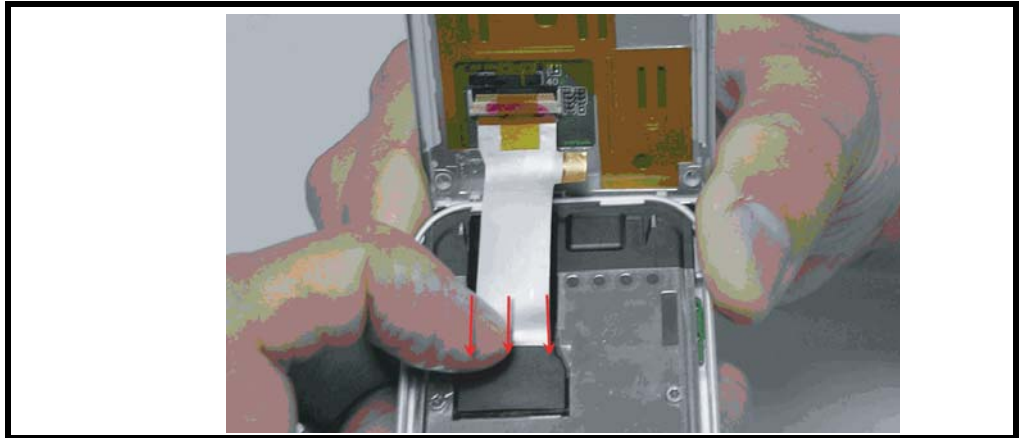
Figure 16. Place rubber cap into the Upper module

11. Assembly Upper module and lower module.
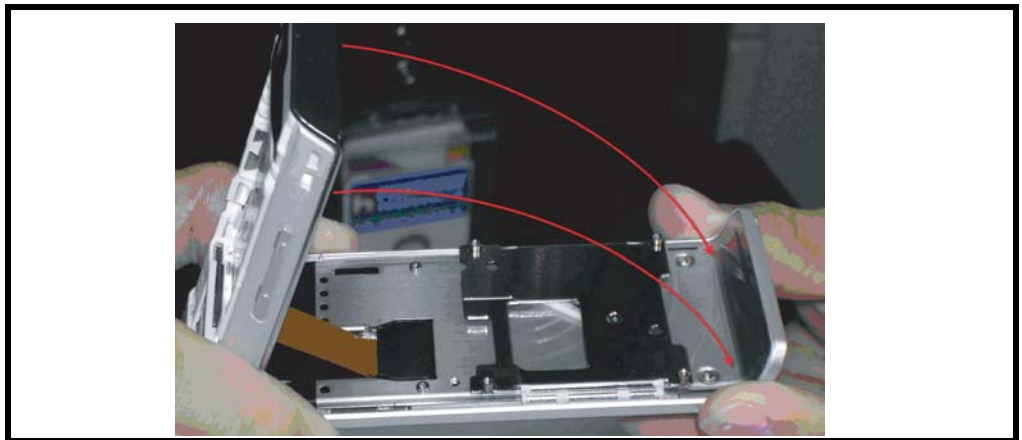
Figure 17. Assembly Upper Module and Lower Module

12. Fasten 6 screws on Rear Housing by T5 screw driver
13. Place the 2 screw cover on Rear Housing
14. Replace the battery, and battery cover as described in the procedures.

Removing and Replacing Keypad PCBA Assembly

1. Remove the battery door, battery, Upper Module and Lower Module assembly as described in the procedures.

2.   Remove 4 screws of Upper Module illustrated in the figure 18 by T5 screwdriver.
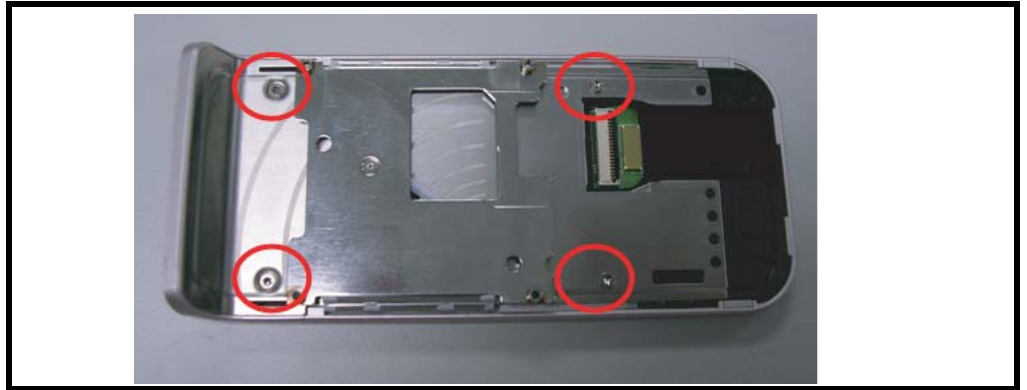
Figure 18. Release 4 screws

3.   Separate Case A and Case B by fingernail and put the pressure on the red dot to unhook Case A and Case B.
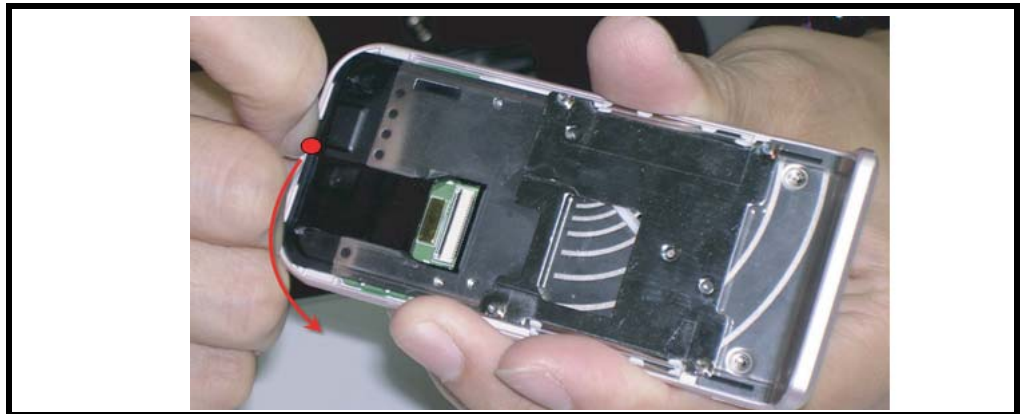
Figure 19. Unhook Case A and Case B

4.   Remove mylar on the connector by tweezers put the Mylar aside for reused.
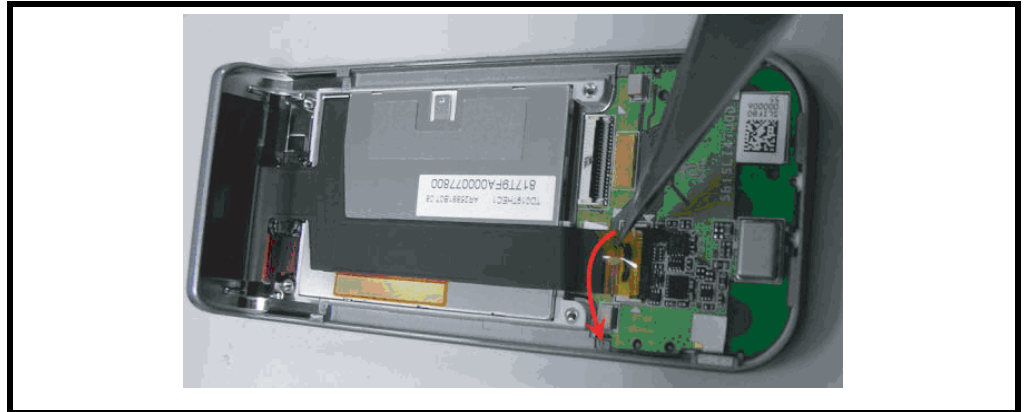
Figure 20. Remove the mylar

5.   Unlock the connector switch by fingernail and separate the keypad PCBA and LCM illustrated in Figure 21.

Figure 21. Unlock the connector switch

6. To replace, insert the LCM FPC into the connector of keypad PCBA and lock the connector switch.

Figure 22. Assembly the LCM FPC

7. Place Mylar on the connector to fix the FPC by tweezers.
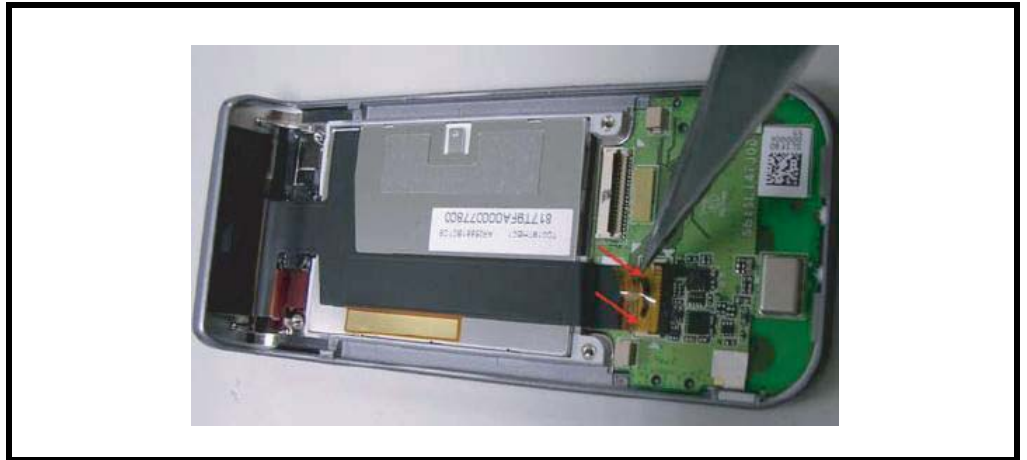
Figure 23. Place mylar on the connector.

8.   Assembly the case A and case B.
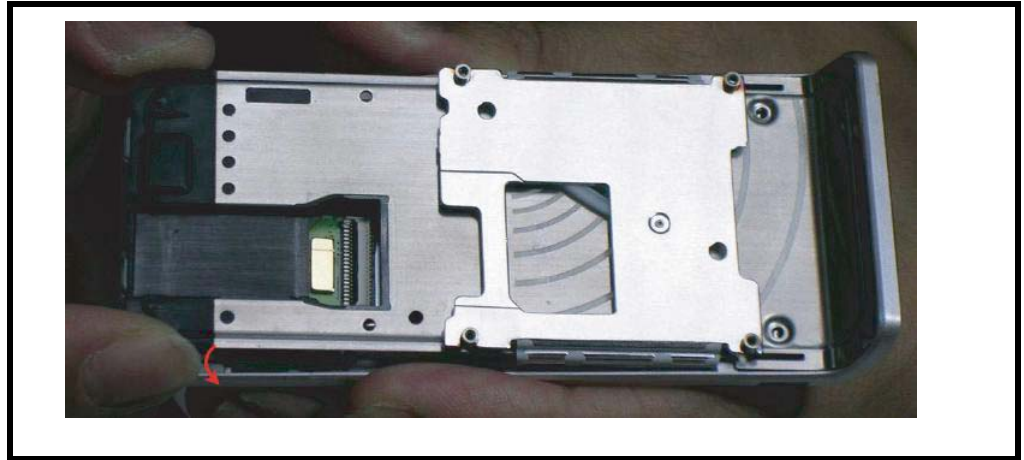
Figure 24. Assembly Case A and Case B.

9.   Insert the main FPC into connector completely and lock the connector switch.
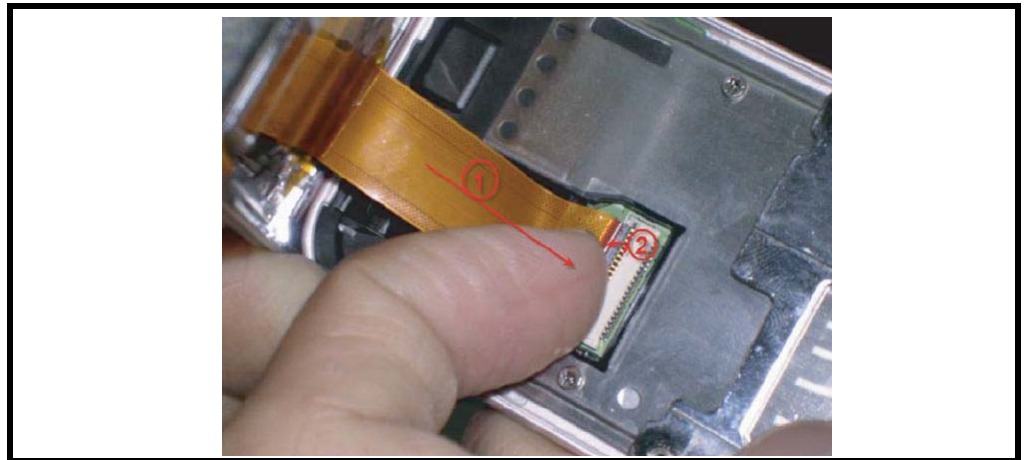
Figure 25. Remove the LCM module

10.   Stick mylar to fix FPC and connector.
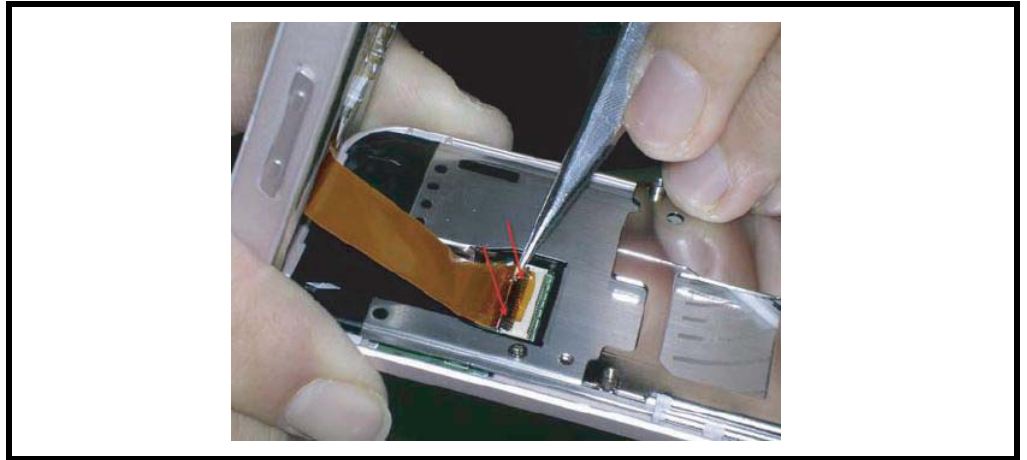
Figure 26. Remove the LCM module

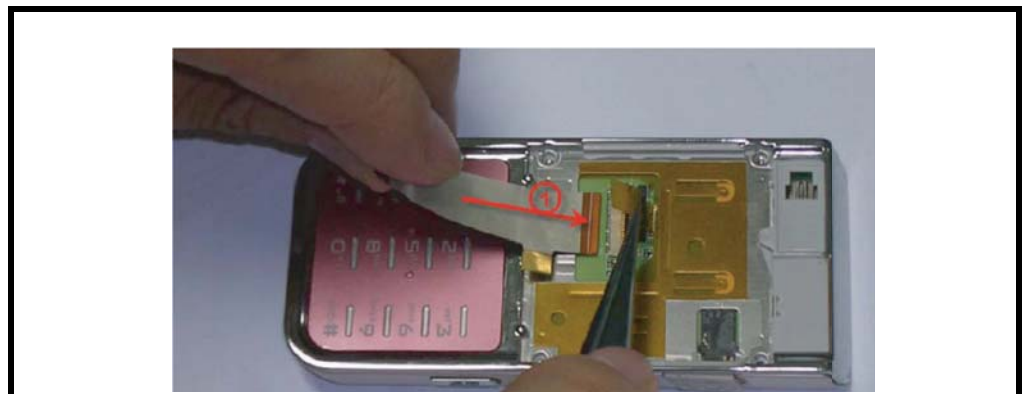11.   Replace the Upper Module and Lower Module, battery, and battery door assembly as described in the procedures.

Removing and Replacing LCM Module and Receiver Assembly

1.   Remove the battery door, battery, Upper module and Lower module, and Keypad PCBA assembly as described in the procedures.
2.   Unlock te connector of the reciver and take off the LCM module by tweezers.
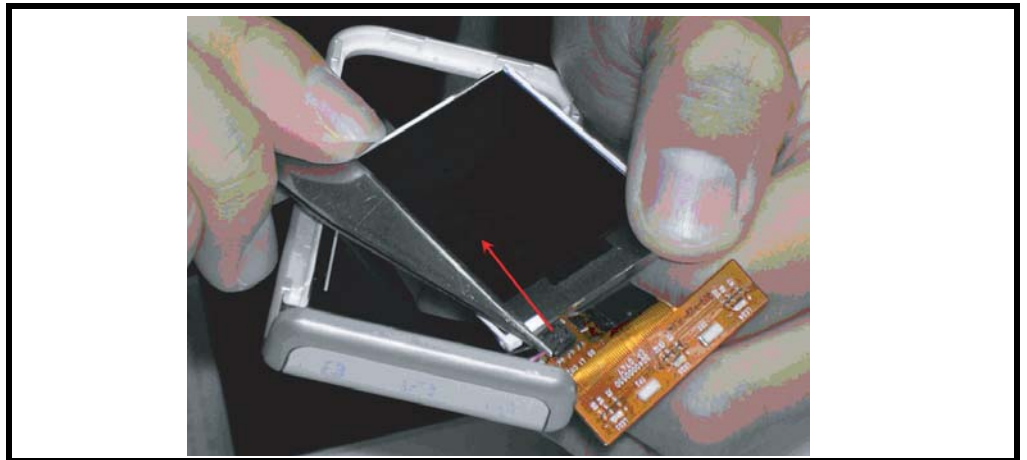
Figure 27. Remove the LCM module

3.   Remove the Receiver by finger.
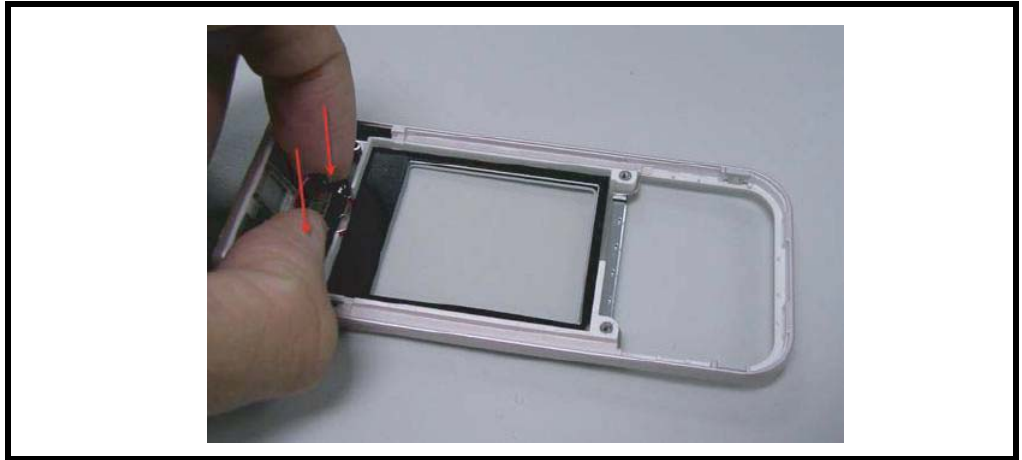
Figure 28. Remove the LCM module

4.   To replace, reconnect the LCM FPC back to the connector of receiver. There is a sing " PUSH" on the FPC connector of receiver and make sure the sign is facing up.
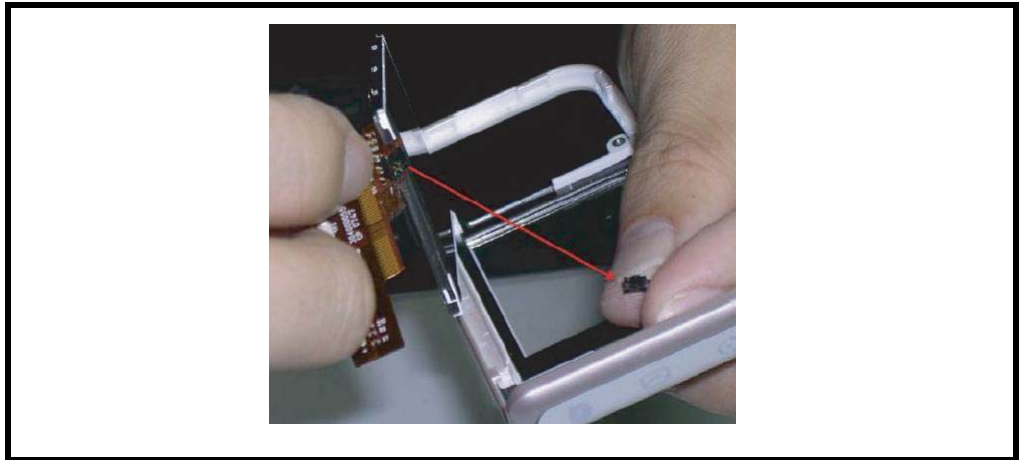
Figure 29. Re-connect the LCM FPC

5.   Insert the LCM FPC into the connector of keypad PCBA and lock the connector switch.
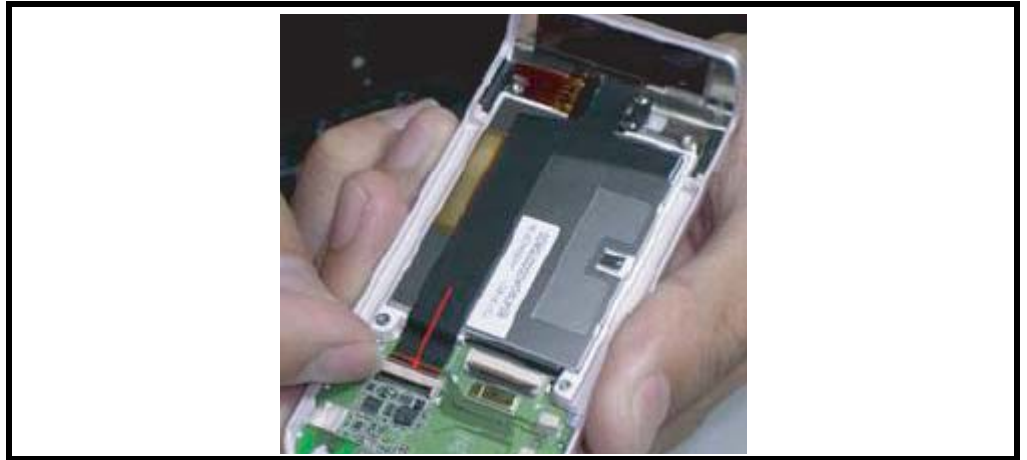
Figure 30. Assembly the LCM FPC

6.   Place Mylar on the connector to fix the FPC by tweezers.
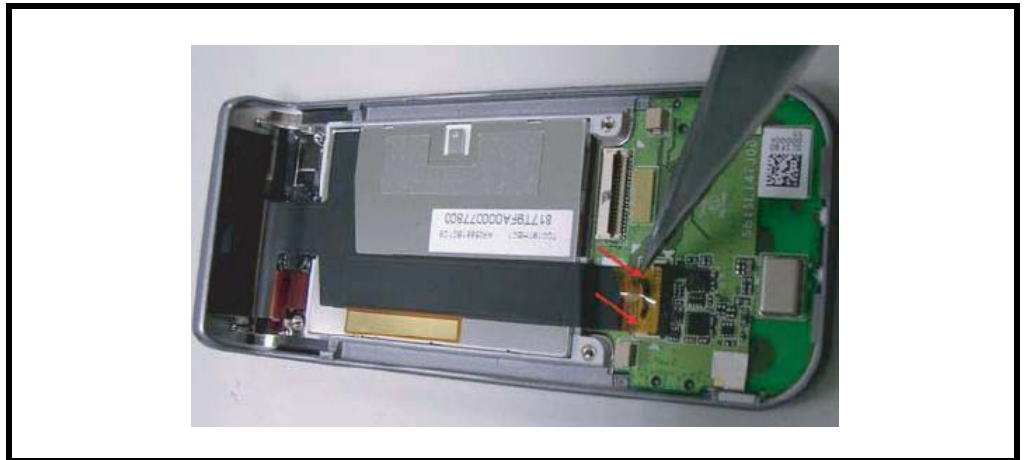
Figure 31. Place mylar on the connector.

7.   Replace the Keypad PCBA, Upper module and Lower module, Battery, and Battery Door assembly as described in the procedures.

Removing and Replacing the Main PCBA Assembly

1.   Remove the battery door, battery, Upper module and Lower module as described in the procedures.

2. Pull up the mylar from B to B FPC and connector to remove the FPC. Do not remove the whole mylar. Just remove the area that cover on the B to B FPC.
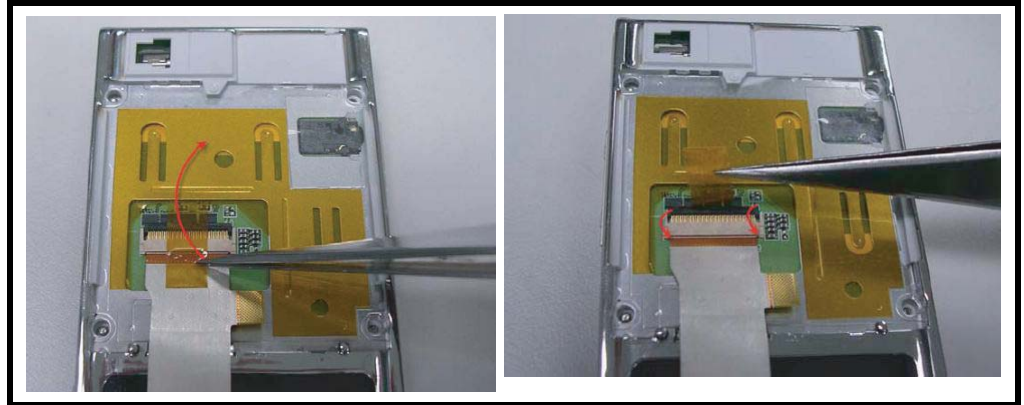
Figure 32. Pull up the Mylar

3. Separate Case C and Case D by fingernail put the pressure on the red dot to unhook.

Figure 33. Removing Case C and Case D
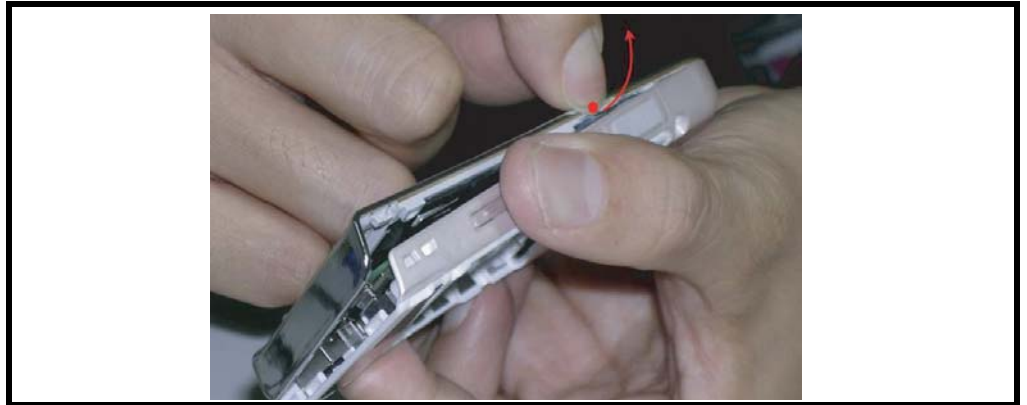
Figure 34. Removing Case C and Case D

Figure 35. Removing Case C and Case D
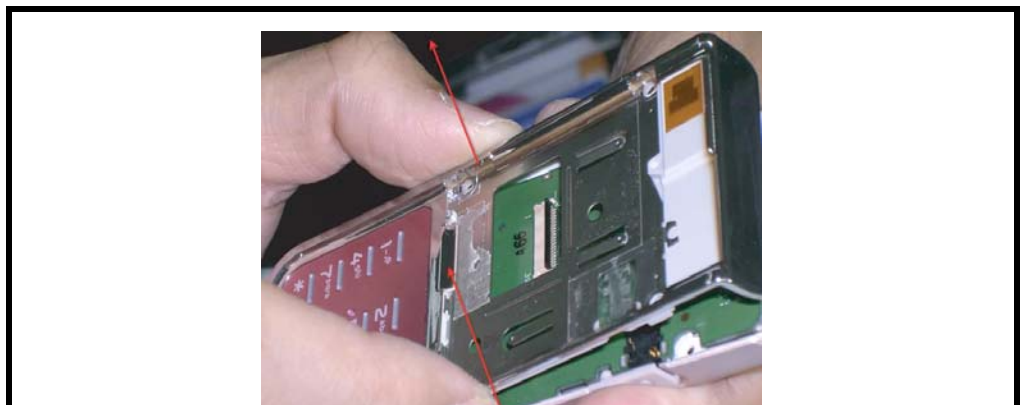
Figure 36. Removing Case C and Case D

4. Separate Main PCBA and Case D by hand illustrated in figure 37.
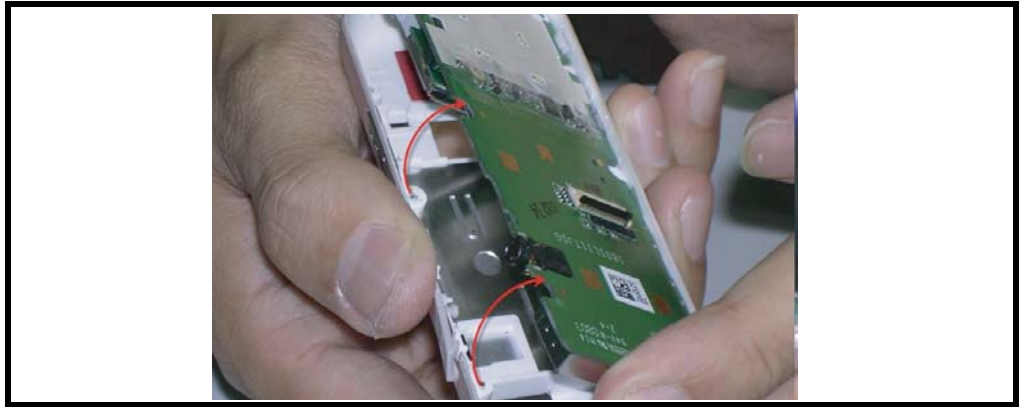
Figure 37. Removing Case C and Case D

5. To replace, put the Main PCBA back into Case D according to PCBA assay holes and case D pins. Need to make sure PCBA connected tightly.
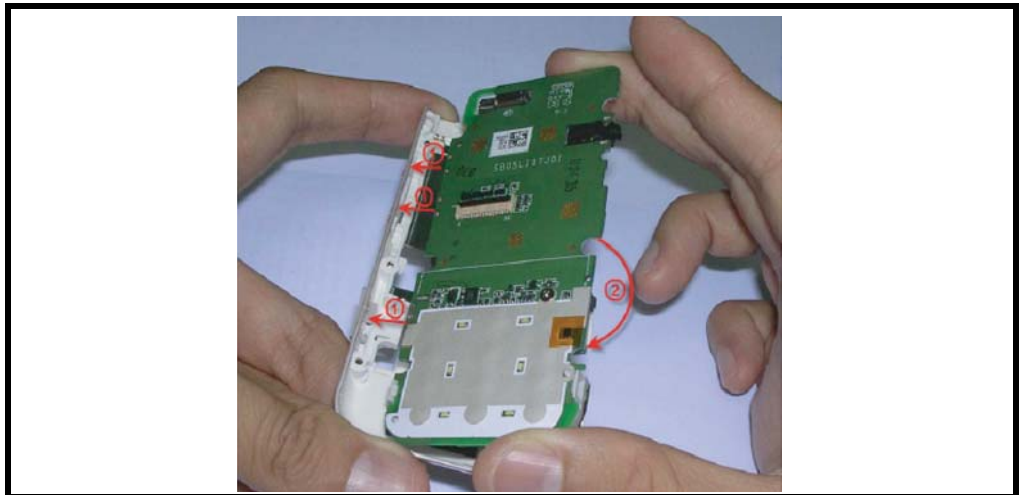
Figure 38. Replace Main PCBA into Case D
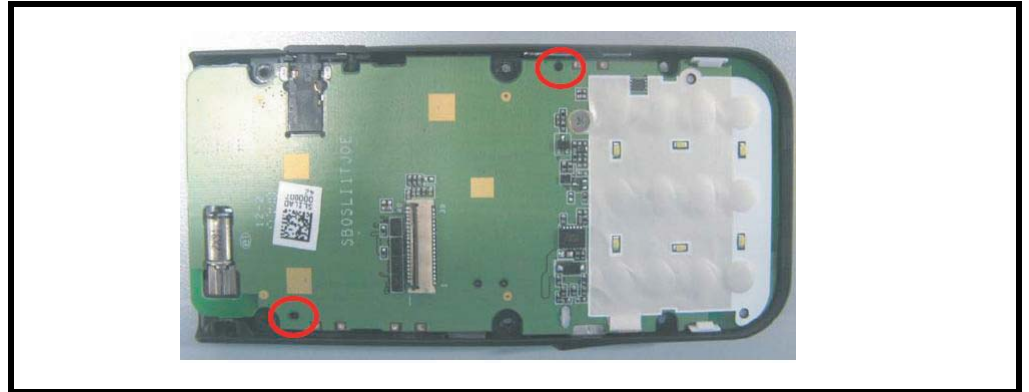
Figure 39. Align the hole

6.   Assemble Case C and Case D.
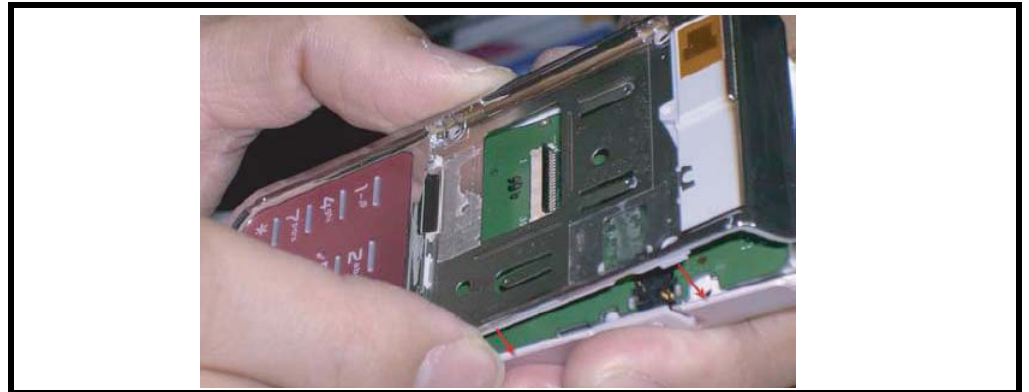
Figure 40. Assemble Case C and Case D

7.   Insert FPC into connector of Main PCBA completely, then lock the connector switch and stick mylar on the Case C.

Figure 41. Assemble FPC

8.   Replace the Upper module and Lower module, battery, and battery door assembly as described int he procedures.

Removing and Replacing the Antenna Carrier and Speaker

1.   Remove the battery door, battery, Upper module and Lower module, and Main PCBA as described in the procedures.
2.   Remove the Antenna carrier from the Main PCBA by hand.

Figure 42. Removing the Antenna Carrier

3.   Remove the Speaker from the Antenna carrier by tweezers.
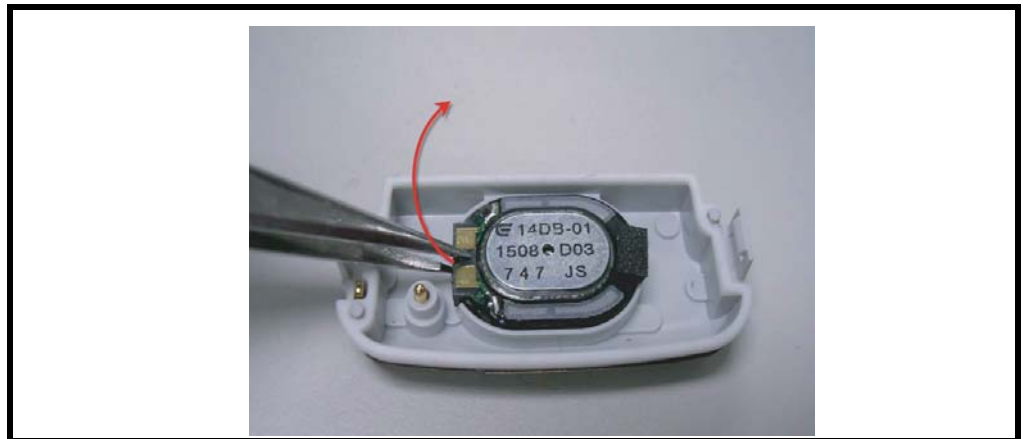
Figure 43. Removing the Speaker

4.   To replace, put the Speaker into the Antenna carrier

5.   Align the hooks of Antenna carrier to the Main PCBA hole which indicate in the figure 44
to assembly.
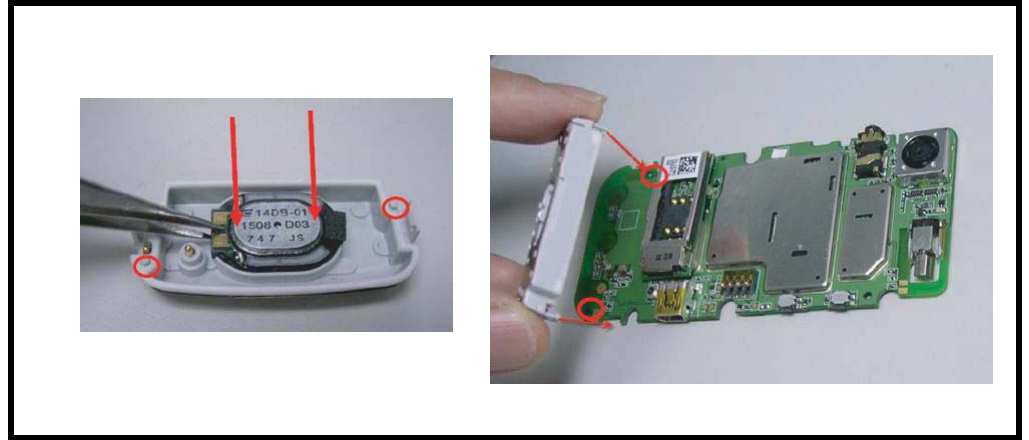
Figure 44. Removing the Speaker

6.   Replace the Main PCBA, Upper module and Lower Module, Battery and Battery door as
described in the procedures.

Removing and Replacing the Camera Module

1.   Remove the battery door, battery, Upper module and Lower module, and Main PCBA as
described in the procedures.
2.   Remove the Camera Shielding cover.
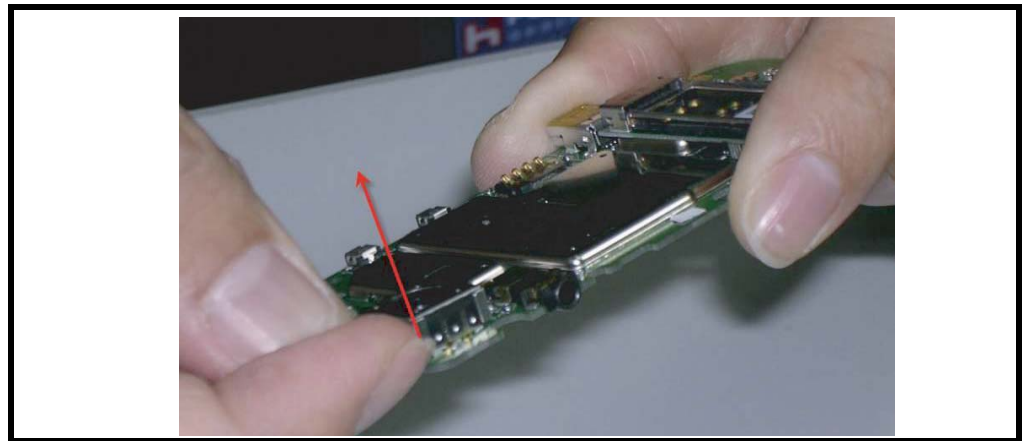
Figure 45. Removing the Antenna Carrier

3.   Remove the Camera By fixure.

Figure 46. Removing the Antenna Carrier

4.   To replace, put the camera on the Main PCBA by Fixure.
5.   Align the holes of camera cover to the holes of socket and press tightly.
6.   Replace the Main PCBA, Upper module and Lower Module, Battery and Battery door as described in the procedures.

Removing and Replacing the SUB PCBA

1.   Remove the battery door, battery, Upper module and Lower module, and Main PCBA as described in the procedures
2.   Remove the screw by Philip screw driver to separate SUB PCBA and Main PCBA.
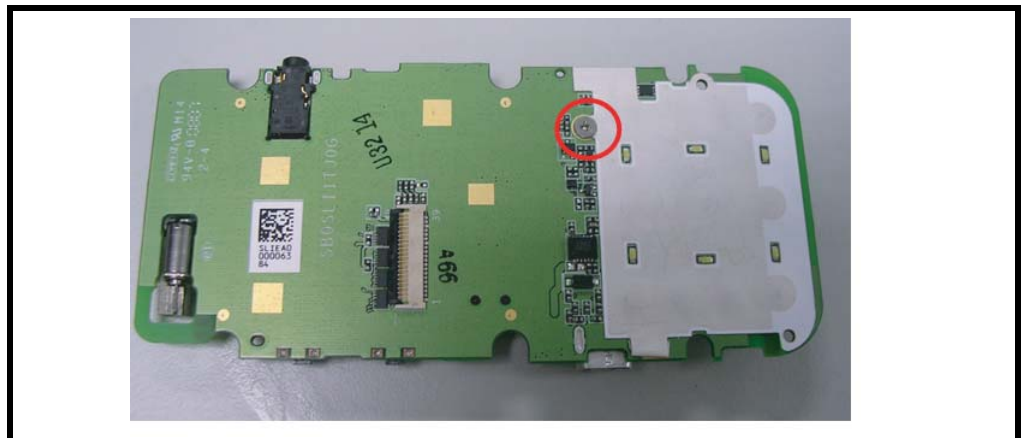
Figure 47. Removing the screw

3.   Remove the SUB PCBA.
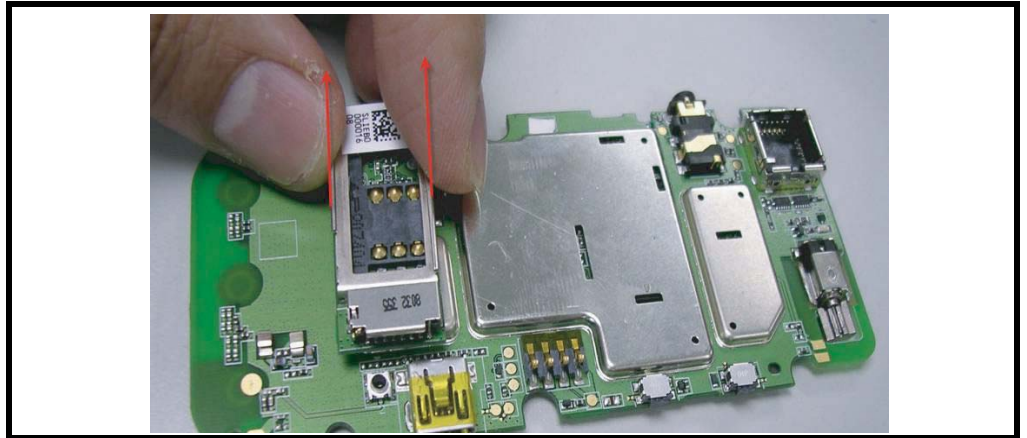
Figure 48. Removing the SUB PCBA

4.   To replace, assembly the SUB PCBA and Main PCBA.
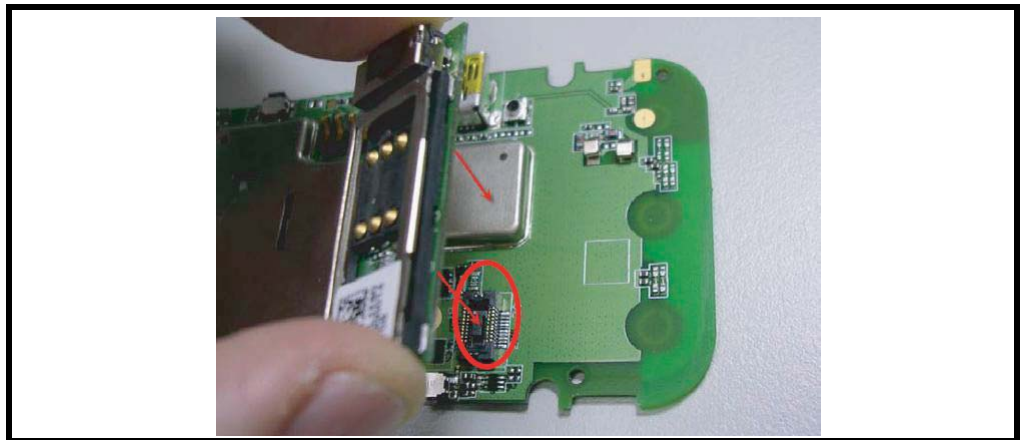
Figure 49. Replacing the SUB PCBA

5.   Fasten the screw.
6.   Replace the Main PCBA, Upper module and Lower Module, Battery and Battery door as
      described in the procedures

Subscriber Identity Module (SIM) and Identification Label

SIM

A SIM is required to access the existing local GSM network, or remote networks when travelling (if a roaming agreement has been made with the provider).

The SIM contains:

- All the data necessary to access GSM services
- The ability to store user information such as phone numbers
- All information required by the network provider to provide access to the network

Identification

Each Motorola GSM phone is labelled with a variety of identifying numbers. The following information describes the current identifying labels.

Mechanical Serial Number (MSN)

The MSN is an individual unit identity number and remains with the unit throughout its life.

The MSN can be used to log and track a phone on Motorola's Service Center Database.

The MSN is divided into 4 sections as shown in Figure 50.
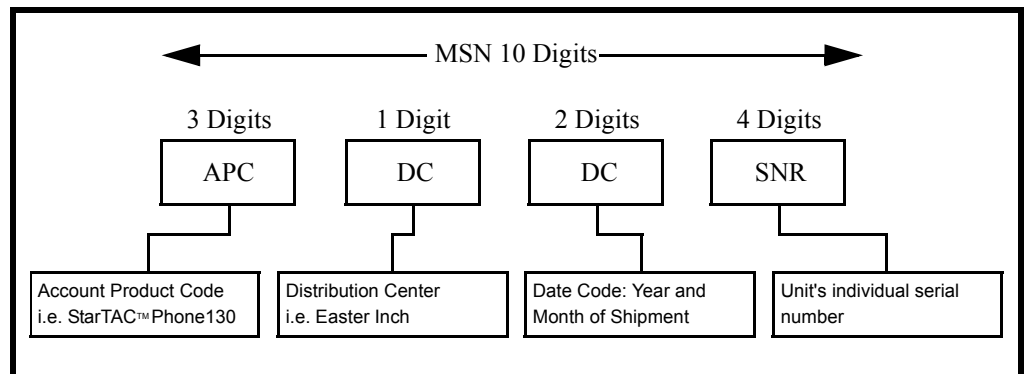
Figure 50. MSN Label Breakdown

International Mobile Station Equipment Identity (IMEI)

The International Mobile Station Equipment Identity (IMEI) number is an individual number unique to the PCB and is stored within the unit's memory.

The IMEI uniquely identifies an individual mobile station and thereby provides a means for controlling access to GSM networks based on mobile station types or individual units. The full IMEI structure is listed in Table 2.

Table 2. IMEI Number Breakdown

TAC	Serial Number	Check Digit
NNXXXX YY	ZZZZZZ	A

Where

TAC	Type Allocation Code, formerly known as Type Approval Code
NN	Reporting body identifier
XXXX	Type identifier
YY	YY is set to 00 from 01/01/2003 until 31/03/2005.
ZZZZZZ	Individual unit serial number
A	Phase 1 = 0. Phase 2 & 2+ = check digit and is defined as a function of all other IMEI digits.

Other label number configurations present are:

*   **TRANSCEIVER NUMBER**: Identifies the product type. Normally the SWF number (i.e. V100).
*   **PACKAGE NUMBER**: Identifies the equipment type, mode, and language in which the product is shipped.

Troubleshooting

Manual Test Mode

Motorola ZN200 telephones are equipped with a manual test mode capability. This allows service personnel to verify functionality and perform fault isolation by entering keypad commands.

To enter the manual test command mode, a GSM/DCS/PCS test SIM must be used.

1. Press and hold 🔲 to turn the phone OFF.
2. Remove the battery door as described in the procedures.
3. Remove the battery as described in the procedures.
4. Remove the customer's SIM card from the phone.
5. Insert the test SIM into the SIM slot.
6. Replace the battery as described in the procedures.
7. Replace the battery door as described in the procedures.
8. Press and hold 🔲 to turn the phone ON.

Manual Test Mode Commands

Table 3. Manual Test Commands

Key Sequence	Test Function/Name	Remarks
*#06#	IMEI Check	No Test Mode Required
*#**372# 🔲	Test Display. Melody, speaker, keypad, etc.	

Troubleshooting Chart

Table 4. Level 1 and 2 Troubleshooting Chart

Symptom	Probable Cause	Verification and Remedy
1. Telephone will not turn on or stay on.	a) Battery either discharged or defective.	Measure battery voltage across a 50 ohm (>1 Watt) load. If the battery voltage is <3.25 Vdc, recharge the battery using the appropriate battery charger. If the battery will not recharge, replace the battery. If battery is not at fault, proceed to b.
	b) Battery terminals open or misaligned.	Visually inspect the battery terminals on both the battery and the telephone. Realign and, if necessary, either replace the battery or refer to a Level 3 Service Center for the battery connector replacement. If battery terminals are not at fault, proceed to c.
	c) Keypad defective.	Replace the keypad as described in the procedures. Temporarily connect a +3.6 Vdc supply to the battery terminals. Press and hold the PWR button. If unit turns on and stays on, disconnect the dc power source and reassemble with the new keypad.
2. Telephone exhibits poor reception or erratic operation such as calls frequently dropping or weak or distorted audio.	Connections to or from lower PCB defective.	Check connection between the antenna and the lower PCB.
3. Display is erratic, or provides partial or no display.	a) FPC cable faulty.	Check general condition of FPC cable and upper PCB. If the FPC cable and upper PCB are good, proceed to b.
	b) LCM defective.	Replace the LCM. Verify that the fault has been cleared and reassemble the unit with the new LCM.
4. Incoming call alert transducer audio distorted or volume is too low.	Speaker defective.	Replace the speaker as described in the procedures. Verify that the fault has been cleared and reassemble the unit with the new speaker.
5. Telephone transmit audio is weak (usually indicated by called parties complaining of difficulty in hearing voice).	Microphone defective.	Replace the microphone as described in the procedures. Verify that the fault has been cleared and reassemble the unit with the new microphone.
6. Receive audio from earpiece speaker is weak or distorted.	a) Connections to or from lower PCB defective.	Check connection between the antenna and the lower PCB. If the connection is OK, proceed to b.
	b) Speaker defective.	Temporarily replace the speaker with a known good speaker. Ensure good connection. Place a call and verify improvement in earpiece audio. If fault is cleared, reassemble the telephone with the good speaker.
7. Telephone will not recognize or accept SIM card.	SIM card defective.	Check the SIM card contacts for dirt. Clean if necessary, and check if fault has been cleared. If the contacts are clean, insert a known good SIM card into the telephone. Power up the unit and confirm that the card has been accepted. If the fault no longer exists, replace the defective SIM card.

Table 4. Level 1 and 2 Troubleshooting Chart(Continued)

Symptom	Probable Cause	Verification and Remedy
8. Keypad not functioning.	Keypad defective.	Use alcohol to wipe the keypad metal dome. Check if fault has been cleared. If the fault is still present, either replace the keypad as described in the procedures or refer to a Level 3 Service Center for the keypad metal dome replacement.
9. No or weak audio when using headset.	Headset plug not fully pushed.	Ensure the headset plug is fully seated in the audio jack.

Programming: Software Upgrade and Flexing

Contact your local technical support engineer for information about equipment and procedures for flashing and flexing.

Part Number Charts

The following section provides a reference for the parts associated with ZN200 telephones.

Related Publications

Motorola ZN200 Wireless Phone User Guide

Exploded View Diagram
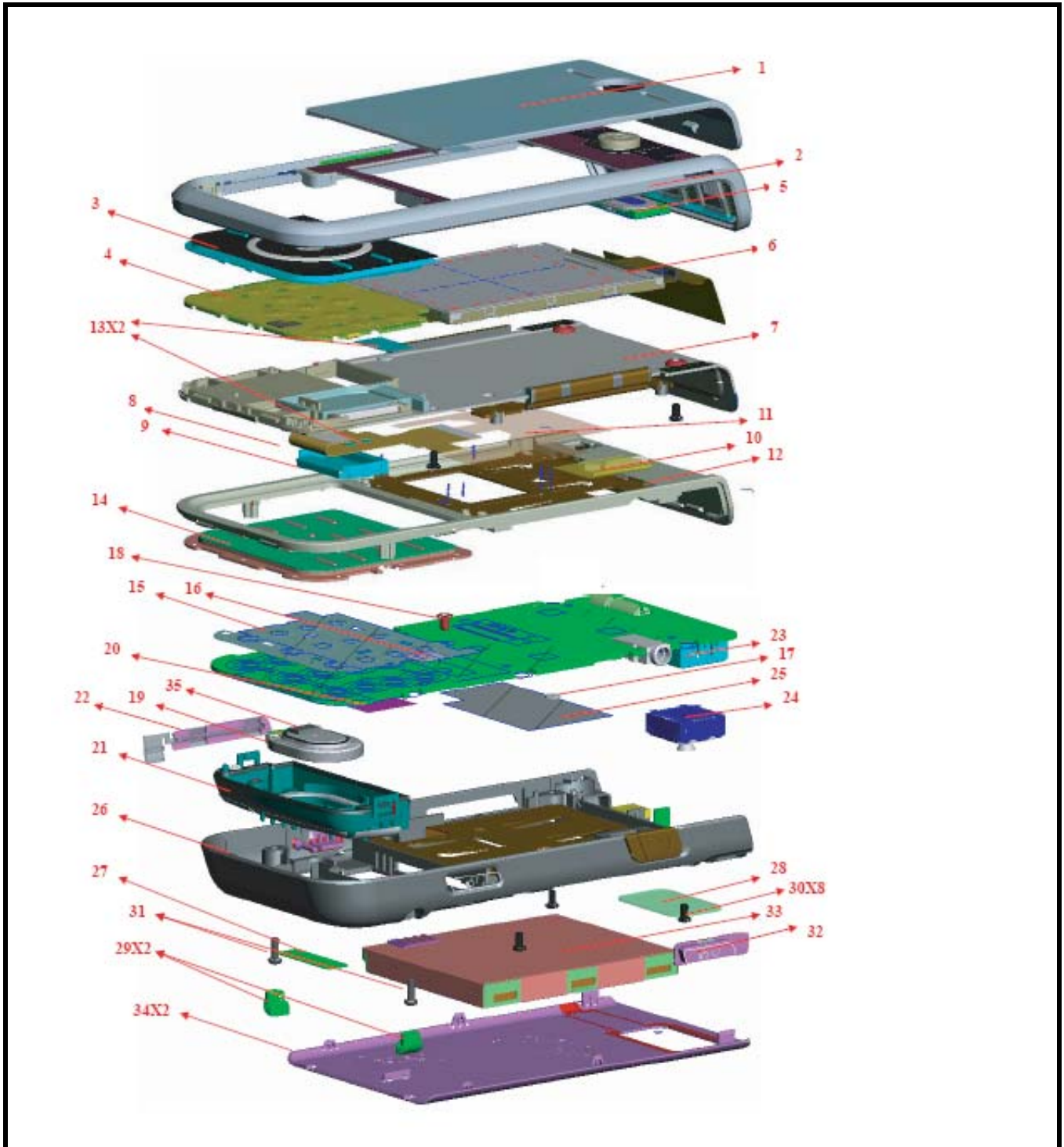
Figure 51. ZN200 Exploded View Diagram

Exploded View Parts List

Item	Part No.	Description	Q'ty
1	MESLI04001A	Lens Main Black SLI	1
2	MESLI61010B	Assy Case A Black SLI	1
3	MESLI07001B	Keypad Function Black SLI	1
4	MESLI16001B	Metal Dome Function Keypad SLI	1
5	S0R08150011	RCV_32?+10/-20%_50mW_8*15*2.1mm	1
6	SLTD5411X00	LCD Module_TFT_DRVIC(SPFD5411_176*220_RGB	1
7	MESLI61002B	Assy Case B SLI	1
8	MESLI14004A	FPC Link U+L Career SLI	1
9	MESLI71005B	Cap Rubber Case B SLI	1
10	MESLI31006A	Mylar Audio Jack Insert C SLI	1
11	MESLI31004A	MYLAR_Main_FPC_SLI	1
12	MESLI61011B	Assy Case C_NCVM Silver_SLI	1
13	MESLI31005A	Mylar_ZIF_conn_SLI	2
14	MESLI07002B	Keypad Number Black SLI	1
15	MESLI16002B	Metal Dome Number Keypad SLI	1
16	MESLI31016	MYLAR_HALL_SENSOR_SLI	1
17	PKGAR15001A	Label_Water_Indication_GAR	1
18	W6101162420	SCREW_M Type_ Cross Pit _W/O Washer_Flat Pan	1
19	S0S14DB0000	SPEAKER_0.5W_14*20mm	1
20	MESLI84005A	Adhesive Sub PCB	1
21	MESLI61009B	Assy Antenna Slipper	1
22	MESLI07003B	Side Key Black SLI	1
23	MESLI23005A	Shielding Cover Camera Socket SLI	1
24	S0C02019000	CAMERA MODULE_2M_2.8V_8.5*8.5*4.75mm	1
25	MESLI31012A	Mylar Shield BB SLI	1
26	MESLI61012B	Assy Case D Black SLI	1
27	MESLI31011B	Mylar Name Plate ZN200 Licorice SLI	1
28	MESLI08003A	Lens Camera, Red letter	1
29	MESLI71004B	Cap Rubber Screw Black SLI	2
30	W6401142520	SCREW_M_T5_Flat Head_1.4*2.5_Nickel	8
31	W5401154020	SCREW_PT Type_T5_W/O Washer_I- Head_1.5*	2
32	MESLI07004B	Smart Key Bright Chrome SLI	1
33	BPSLISY301A	BATTERY PACK_Sanyo GS/LI-ION/780mAH/3.7V_SNN5811A	1
34	MESLI61020B	Assy_Battery_Cover_Black_SLI	1
35	MESLI33005A	Sponge Speaker Support SLI	1

Figure 52. Part List

To order parts please use the following Link:
https://servicelink3.motorola.com
(Password is Required)
For information on ordering parts please contact EMEA at +49 461 803 1638.

Accessories

Table 5. List of Accessories

Description	Part Number
Power Solution	
Battery 850 mAh LiIon	SNN5744
Black battery door	SHN9510A
AC charger - PRC plug	AAPN4061
AC charger - UK/HK plug	SPN5164
AC charger - Aus plug	SPN5295A
AC charger - India plug	SPN5169A
AC charger - US/TWN plug	SPN5268
Audio & Connectivity	
Headset	CHYN4516
USB data transfer cable	SKN6371
Mobile phone tools CD-ROM	AAVN4008
Consumer Personalization	
Silver lanyard (PRC)	CHYN4152B
Carrying case (TWN)	CHYN4642A

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