

# SERVICE MANUAL

## Level 1&2

# NOKIA

# N96



### Transceiver characteristics

#### Band:

RM-247: WCDMA 900/2100 (HSDPA), EGSM 900/GSM 850/1800/1900

RM-297: EGSM 900/GSM 850/1800/1900

RM-472: WCDMA 850/1900 (HSDPA), EGSM 900/GSM 850/1800/1900 (EGPRS)

#### Display:

2,8" QVGA (240 x 320 pixels) LCD TFT display with up to 16 million colours

#### Camera:

5 MP with 20 x digital zoom

#### Operating System:

Symbian v9.3, S60 v3.1

#### Connections:

DVB-H (not in RM-297), WLAN 802.11b/g (not in RM-297) with UPnP support, Bluetooth 2.0 with A2DP stereo audio, 3.5 mm audio connector, TV-out support (PAL/NTSC), Micro USB type B interface with Hi-Speed USB2.0, small charging plug (2 mm), MicroSD (hot swappable)

#### Transceiver with battery pack

| Talk time                       | Standby                       | Note   |
|---------------------------------|-------------------------------|--|
| <b>GSM:</b> Up to 230 minutes   | <b>GSM:</b> Up to 230 hours   | Depends on network parameters and phone settings |
| <b>WCDMA:</b> Up to 160 minutes | <b>WCDMA:</b> Up to 200 hours |  |

|     |                               |    |
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## 1. CHANGE HISTORY

| Status   | Version No. | Date       | Comments           |
|----------|-------------|------------|--------------------|
| Draft    | 0.1         | 29.08.2008 | Initial draft      |
| Draft    | 0.2         | 01.09.2008 | Review corrections |
| Approved | 1.0         | 01.09.2008 | Approved           |

The purpose of this document is to help NOKIA service levels 1 and 2 workshop technicians to carry out service to NOKIA products. This Service Manual is to be used only by authorized NOKIA service suppliers, and the content of it is confidential. Please note that NOKIA provides also other guidance documents (e.g. Service Bulletins) for service suppliers, follow these regularly and comply with the given instructions.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist. If you find any errors or if you have further suggestions, please notify NOKIA using the address below:

**CMO Operation & Logistics**  
**Training and Vendor Development**  
**Multimedia Creation & Support**  
<mailto:Service.Manuals@nokia.com>

Please keep in mind also that this documentation is continuously being updated and modified, so watch always out for the newest version.

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The availability of particular products may vary by region.

### **IMPORTANT**

This document is intended for use by qualified service personnel only.

### 3. WARNINGS AND CAUTIONS

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

#### 3.1 Warnings

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI-SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY.
2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES, EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.
3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

#### 3.2 Cautions

1. Servicing and alignment must be undertaken by qualified personnel only.
2. Ensure all work is carried out at an anti-static workstation and that an anti-static wrist strap is worn.
3. Use only approved components as specified in the parts list.
4. Ensure all components, modules screws and insulators are correctly re-fitted after servicing and alignment.
5. Ensure all cables and wires are repositioned correctly

#### 4. ESD PROTECTION



Nokia requires that service points have sufficient ESD protection (against static electricity) when servicing the phone.

Any product of which the covers are removed must be handled with ESD protection. The SIM card can be replaced without ESD protection if the product is otherwise ready for use.

To replace the covers ESD protection must be applied.

All electronic parts of the product are susceptible to ESD. Resistors, too, can be damaged by static electricity discharge.

All ESD sensitive parts must be packed in metallized protective bags during shipping and handling outside any ESD Protected Area (EPA).

Every repair action involving opening the product or handling the product components must be done under ESD protection.

ESD protected spare part packages **MUST NOT** be opened/closed out of an ESD Protected Area.

For more information and local requirements about ESD protection and ESD Protected Area, contact your local Nokia After Market Services representative.

## 5. CARE AND MAINTENANCE

This product is of superior design and craftsmanship and should be treated with care. The suggestions below will help you to fulfil any warranty obligations and to enjoy this product for many years.

- Keep the phone and all its parts and accessories out of the reach of small children.
- Keep the phone dry. Precipitation, humidity and all types of liquids or moisture can contain minerals that will corrode electronic circuits.
- Do not use or store the phone in dusty, dirty areas. Its moving parts can be damaged.
- Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the phone in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
- Do not drop, knock or shake the phone. Rough handling can break internal circuit boards.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone.
- Do not paint the phone. Paint can clog the moving parts and prevent proper operation.
- Use only the supplied or an approved replacement antenna. Unauthorised antennas, modifications or attachments could damage the phone and may violate regulations governing radio devices.

All of the above suggestions apply equally to the product, battery, charger or any accessory.

## 6. BATTERY INFORMATION

Note: A new battery's full performance is achieved only after two or three complete charge and discharge cycles! The battery can be charged and discharged hundreds of times but it will eventually wear out.

When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery. Use only batteries approved by the phone manufacturer and recharge the battery only with the chargers approved by the manufacturer.

Unplug the charger when not in use. Do not leave the battery connected to a charger for longer than a week, since overcharging may shorten its lifetime.

If left unused a fully charged battery will discharge itself over time. Temperature extremes can affect the ability of your battery to charge.

For good operation times with Ni-Cd/NiMh batteries, discharge the battery from time to time by leaving the product switched on until it turns itself off (or by using the battery discharge facility of any approved accessory available for the product).

Do not attempt to discharge the battery by any other means. Use the battery only for its intended purpose.

Never use any charger or battery which is damaged.

Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes direct connection of the + and - terminals of the battery (metal strips on the battery) for example when you carry a spare battery in your pocket or purse. Short-circuiting the terminals may damage the battery or the connecting object.

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 15°C and 25°C (59°F and 77°F).

A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Batteries' performance is particularly limited in temperatures well below freezing.

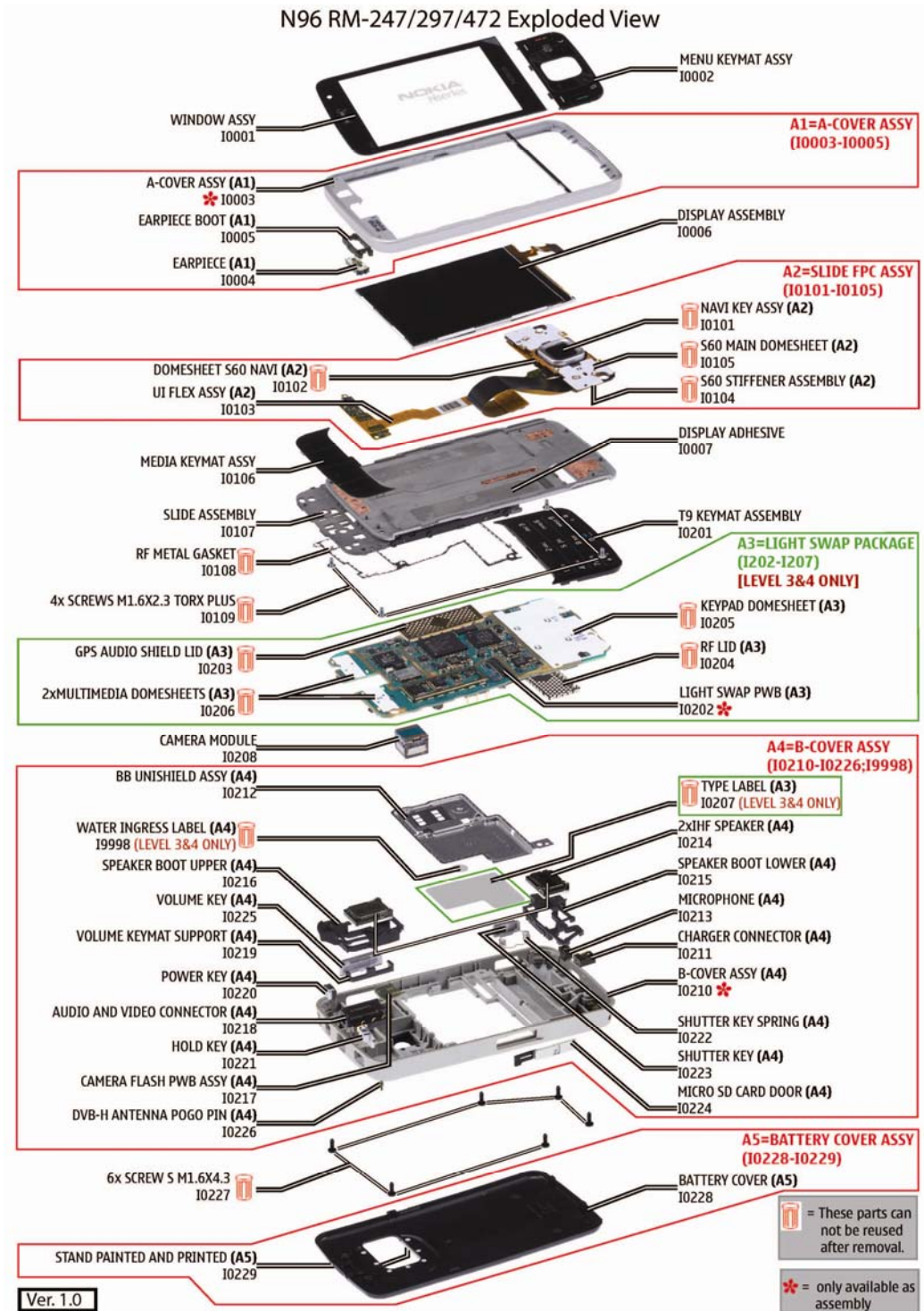
Do not dispose batteries in a fire! Dispose of batteries according to local regulations (e.g. recycling).

Do not dispose as household waste.



**7. EXPLODED VIEW**

See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on NOL.



Ver. 1.0

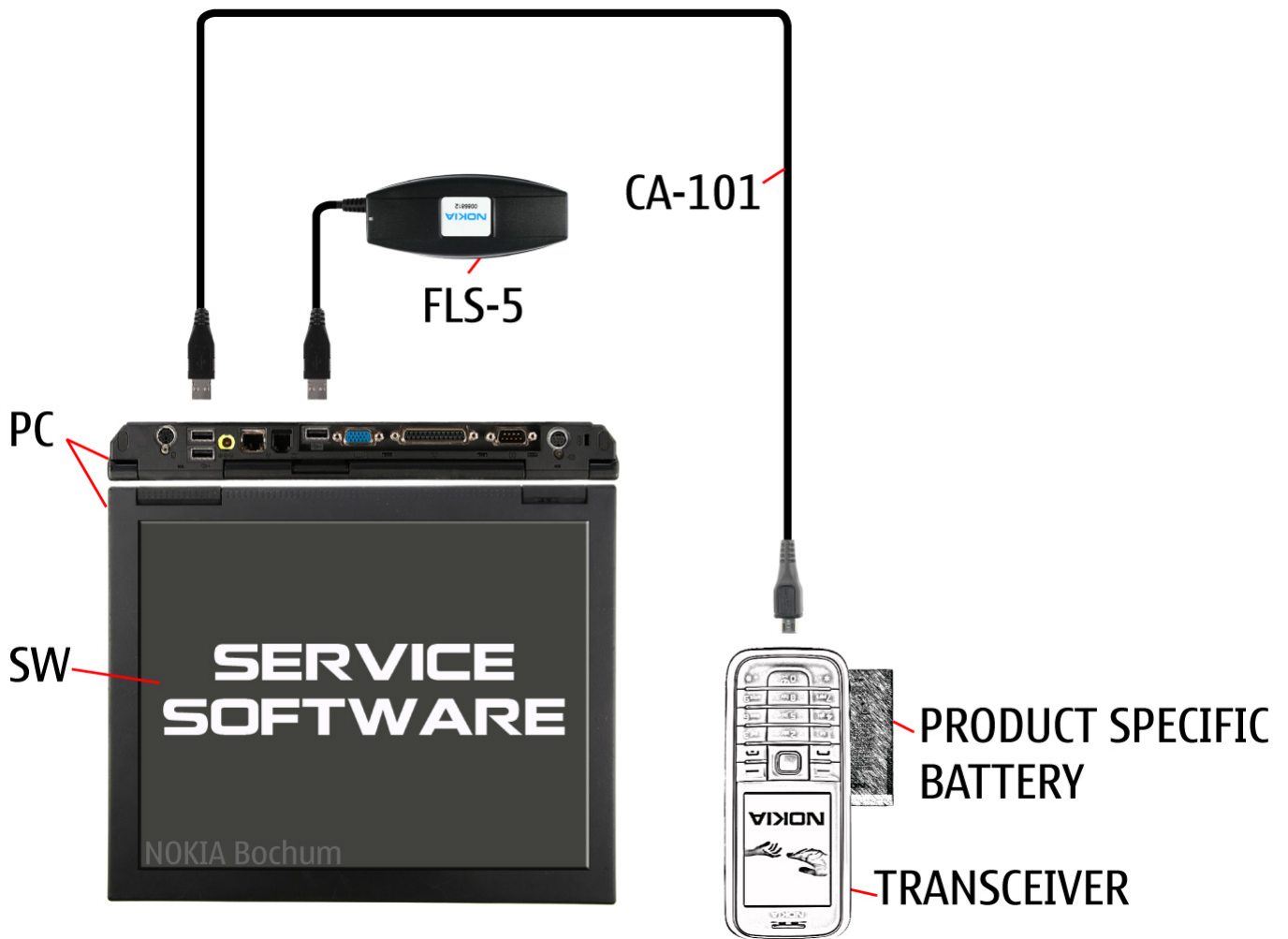
**8. SERVICE DEVICES**

|  |  |
|--|--|
| <p style="text-align: center;"><b>FS-51</b></p>  <p style="text-align: center;"><b>FS-51 Product-specific Adapter</b></p>     | <p style="text-align: center;"><b>SS-100</b></p>  <p style="text-align: center;"><b>SS-100 Camera Removal Tool</b></p> |
| <p style="text-align: center;"><b>Standard Toolkit</b></p>  <p style="text-align: center;"><b>Nokia Standard Toolkit</b></p> |  |

## 9. SW-UPDATE

### Flash concept – (Point of Sales)

To use the FLS-5 Flash Dongle, you have to follow the user guide inside the sales package.  
Please check always for the latest version of flash software, which is available on Nokia Online.





**10. DISASSEMBLY INSTRUCTION**



1) Push down on latch and pull up the **BATTERY COVER**.



2) Lift up **BATTERY COVER**. Be careful with the camera housing .



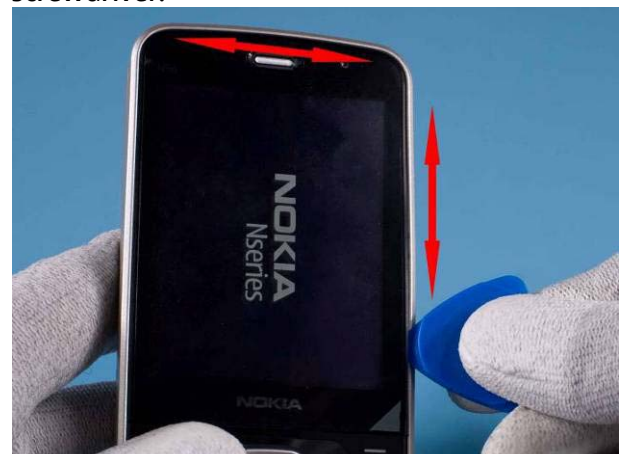
3) Remove 6 screws using a TORX6 screwdriver.



4) Remove 2 screws using a TORX6 screwdriver.



5) Remove the 2 remaining screws.



6) Use SRT6 and slide along window to release snaps.



7) Carefully lift up the **WINDOW ASSY.**



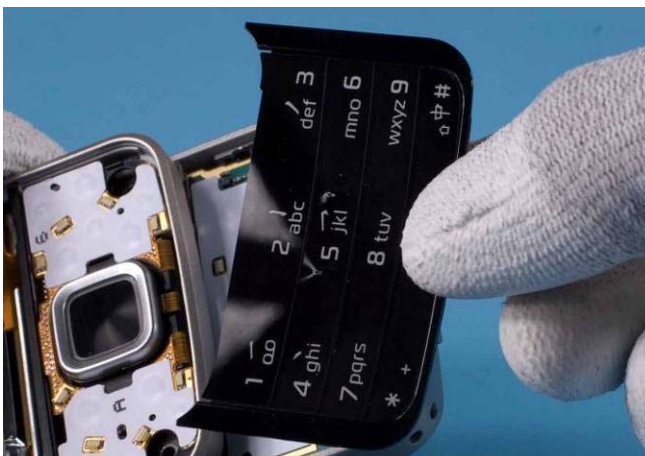
8) Insert SRT6 and slide along edges to release clips.



9) Separate **MENU KEYMAT ASSEMBLY** from **A-COVER.**



10) Use SRT6 to release snaps of **T9 KEYMAT ASSEMBLY.**



11) Separate **T9 KEYMAT ASSEMBLY.**

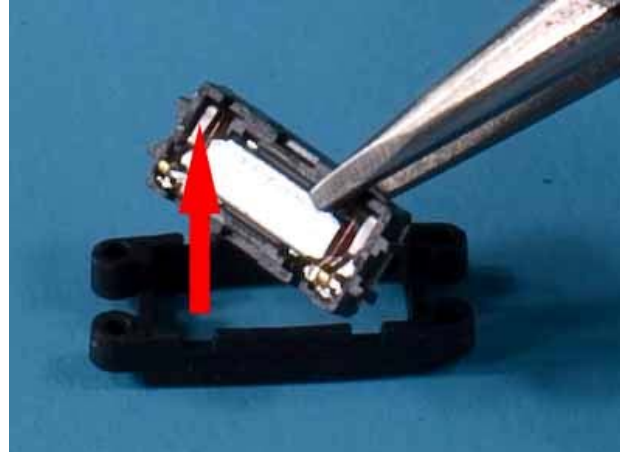


12) Carefully lift up **A-COVER** to remove it.





13) Use tweezers to remove the **EARPIECE BOOT** with **EARPIECE**.



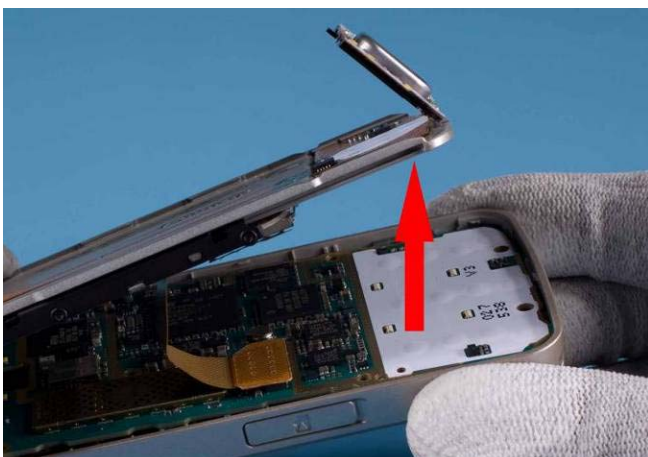
14) Use tweezers to separate the **EARPIECE** from **EARPIECE BOOT**.



15) Release LCD connector using **SS-93** tool.



16) Insert **SRT6** and slide along edges to lift up **DISPLAY ASSEMBLY**. Be careful not to damage the **LCD**.



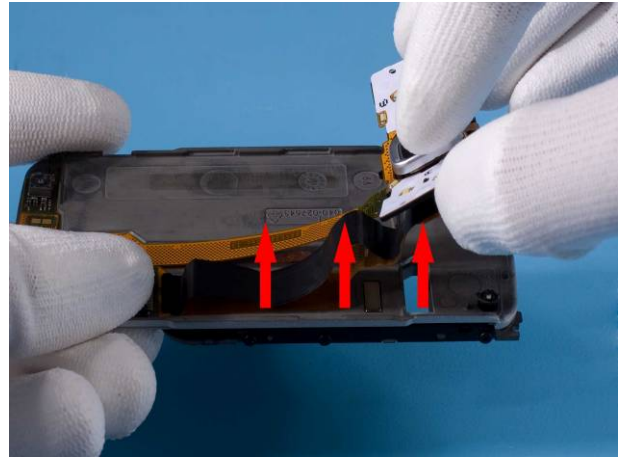
17) Gently lift up **SLIDE ASSEMBLY**.



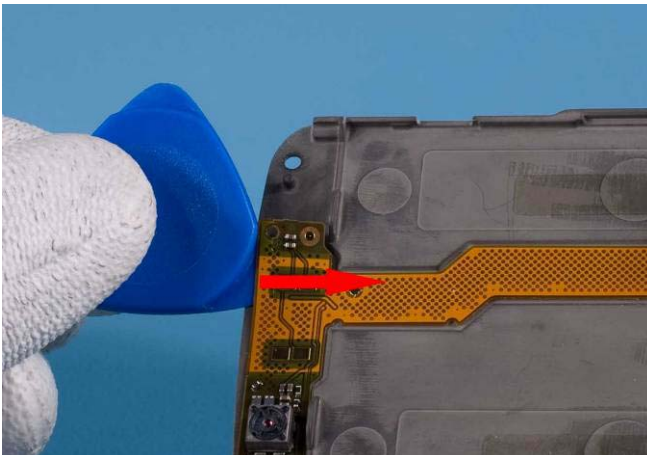
18) Use **SS-93** tool to release the connector.



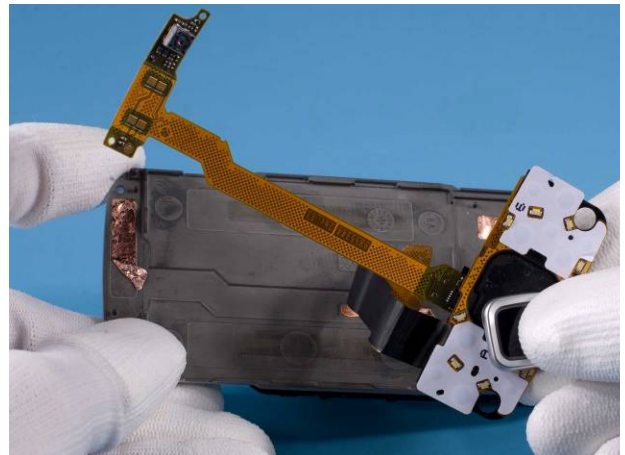
19) Guide connector through **SLIDE ASSEMBLY**.



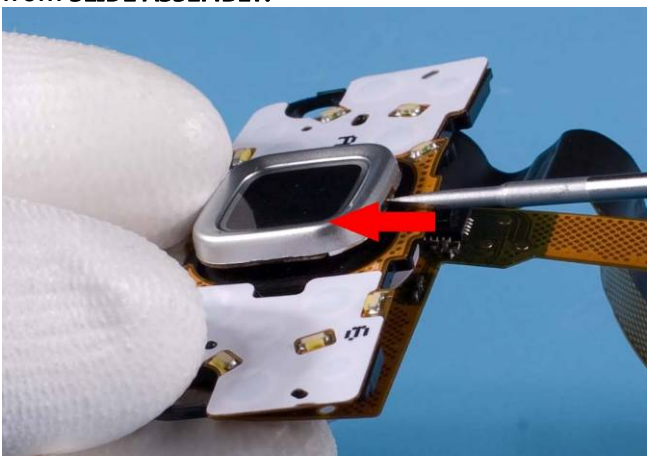
20) Gently lift up the **UI FLEX ASSY**.



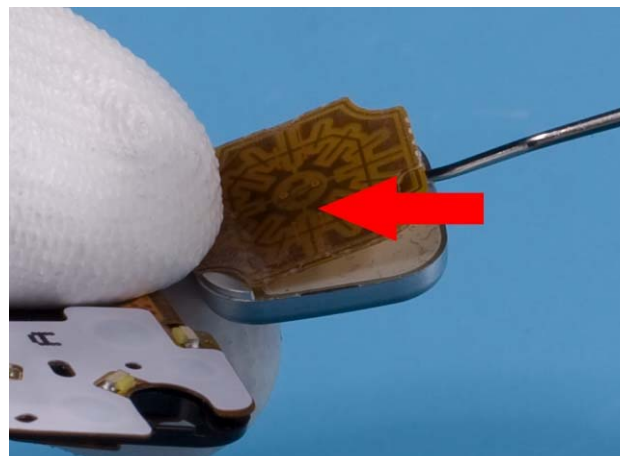
21) Use SRT6 at glued area to release **UI FLEX ASSY** from **SLIDE ASSEMBLY**.



22) Remove **UI FLEX ASSY**.

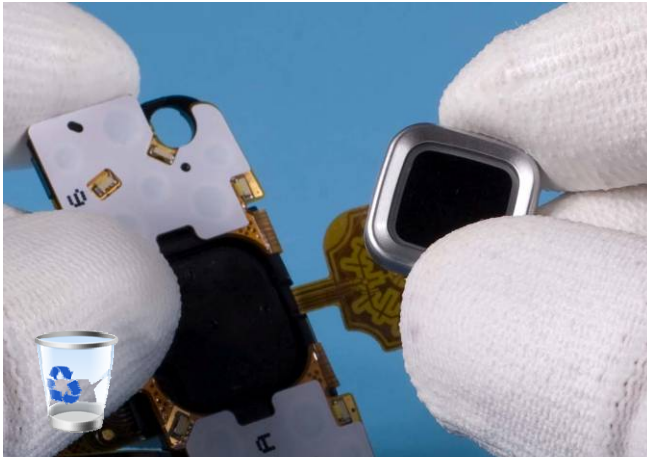


23) Use flat head screwdriver to release **NAVI KEY ASSY** from **UI FLEX ASSY**.



24) Release **NAVI KEY ASSY** from flex foil with a dental pick.

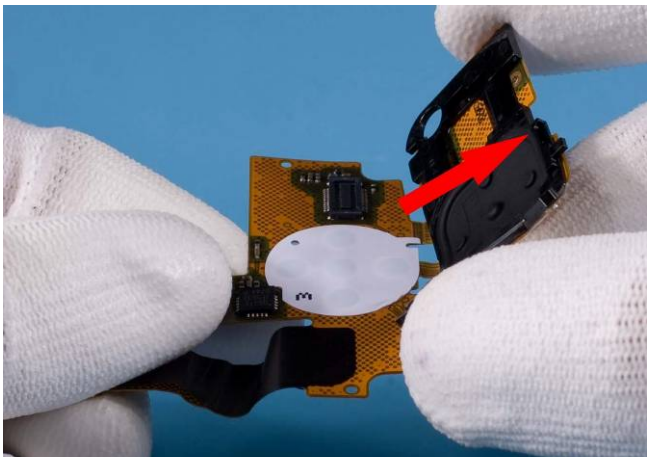




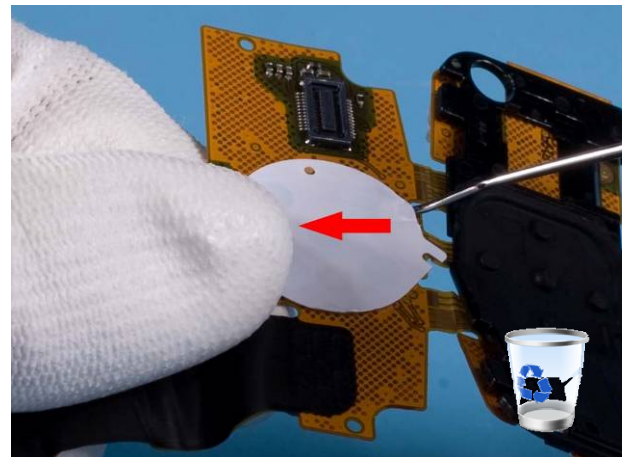
25) Remove NAVI KEY ASSY.



26) Use dental pick to peel off S60 MAIN DOMESHEET.



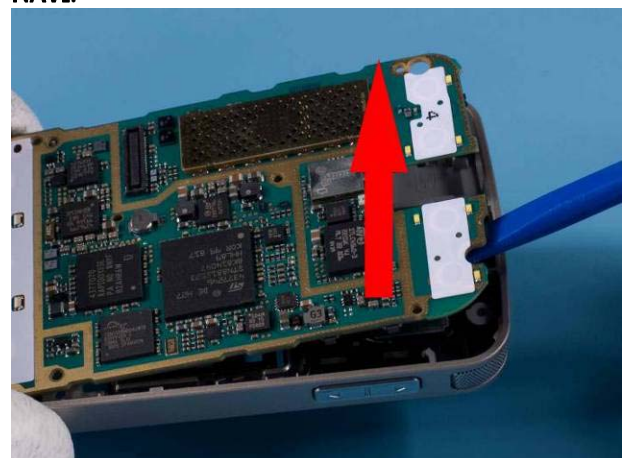
27) Lift up S60 STIFFENER ASSEMBLY.



28) Use dental pick to peel off DOMESHEET S60 NAVI.

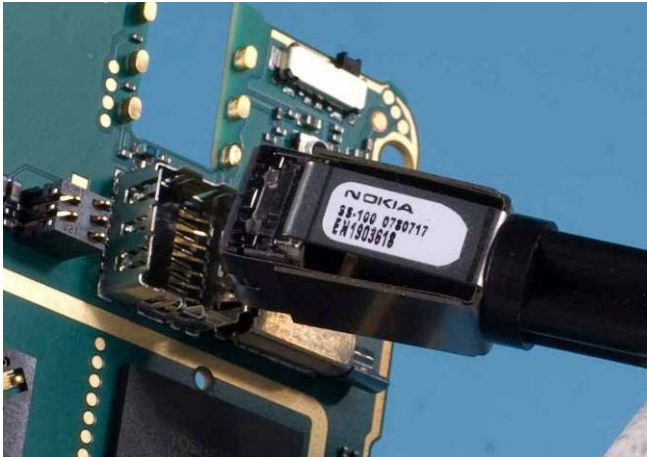


29) Use SS-93 tool to release MEDIA KEYMAT ASSY.

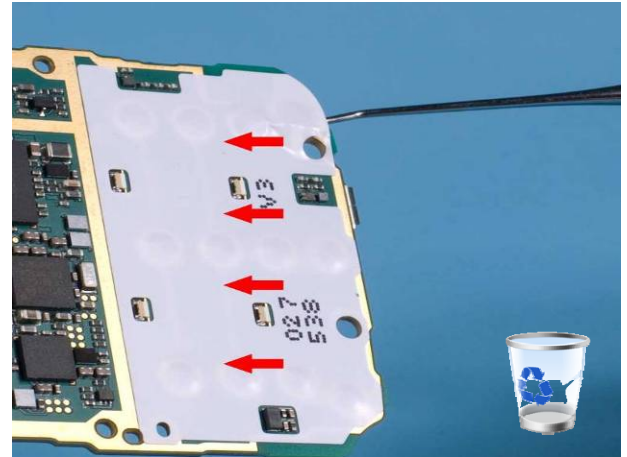


30) Insert SS-93 tool and lift up PWB to release.

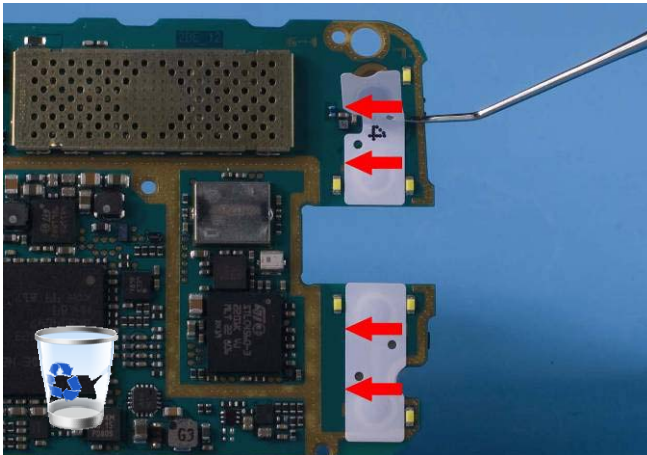




31) Use SS-100 tool to remove the **CAMERA MODULE**.



32) Use dental pick to remove **KEYPAD DOMESHEET**.



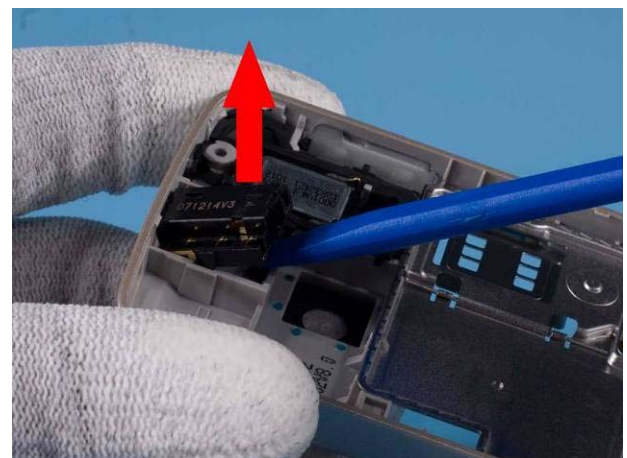
33) Peel off 2x **MULTIMEDIA DOMESHEETS** with a dental pick.



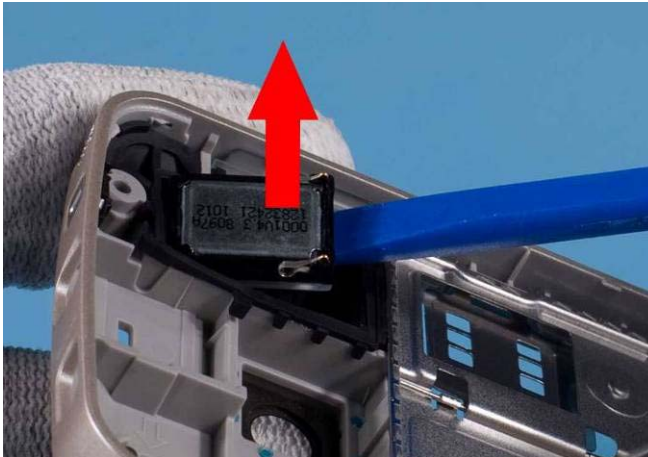
34) Use tweezers to remove **HOLD KEY**.



35) Open **MICRO SD CARD DOOR** and remove with tweezers.



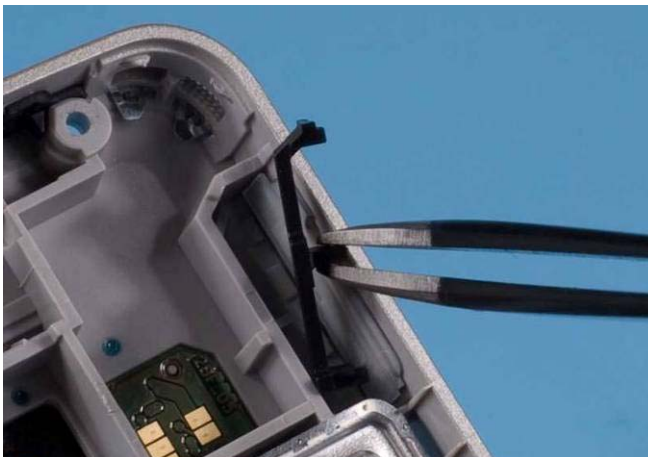
36) Remove **AV JACK** using SS-93 tool.



37) Remove **IHF SPEAKER**.



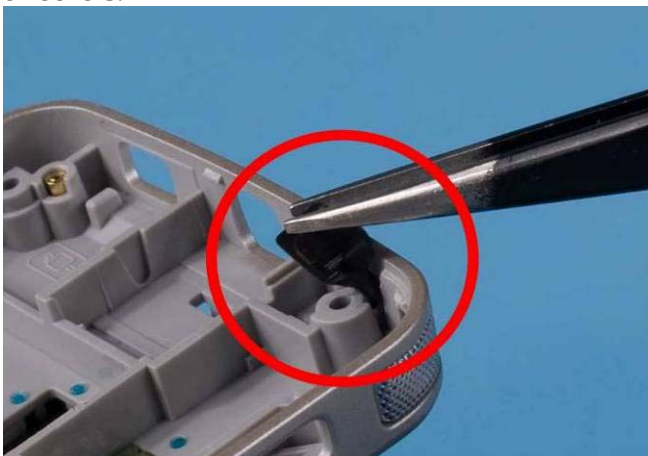
38) Use tweezers to remove **SPEAKER BOOT UPPER**.



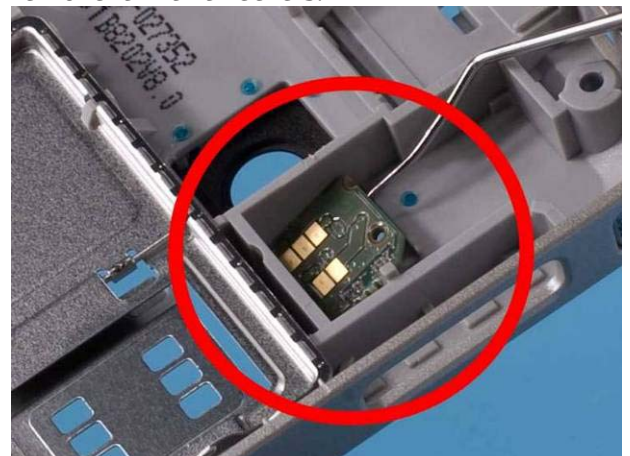
39) Remove **VOLUME KEYMAT SUPPORT** with tweezers.



40) Use finger to push on **VOLUME KEY** and remove it with tweezers.

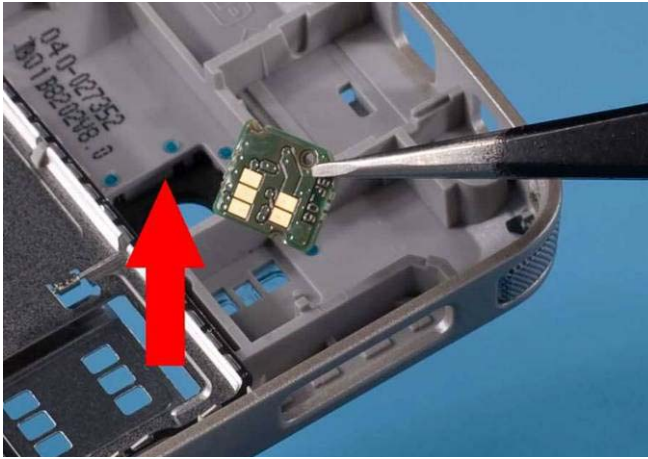


41) Use finger to push on **POWER KEY** and remove with tweezers.



42) Using dental pick gentle to lift up **CAMERA FLASH PWB**.





43) Remove **CAMERA FLASH PWB** using tweezers.



44) Use tweezers to lift up **SHUTTER KEY SPRING**.



45) Use tweezers to remove **SHUTTER KEY**.



46) Use SS-93 tool to lift up **IHF SPEAKER**.



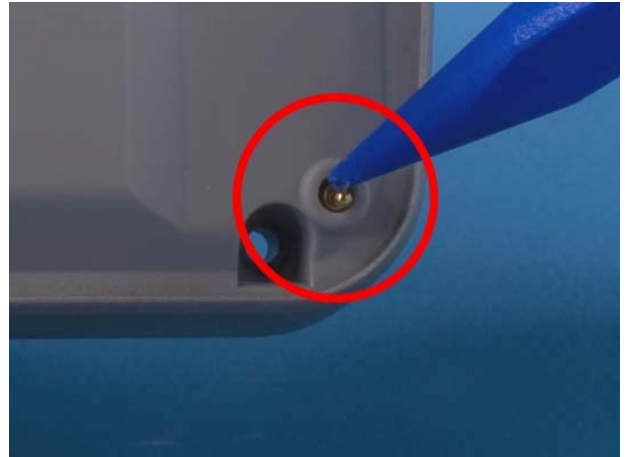
47) Use tweezers to remove **SPEAKER BOOT LOWER**.



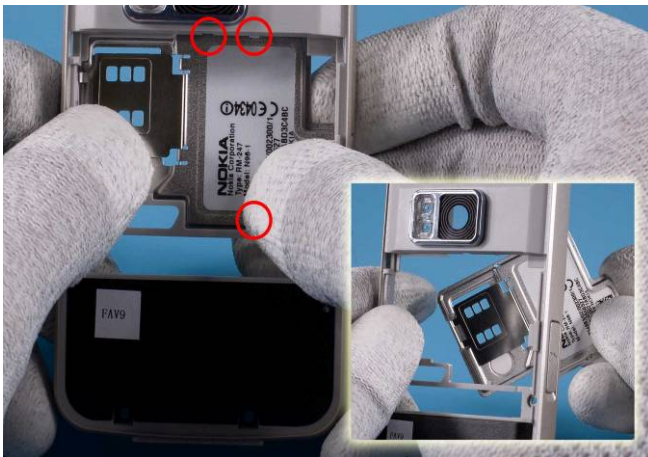
48) Use tweezers to remove **MICROPHONE**.



49) Remove **CHARGER CONNECTOR**.

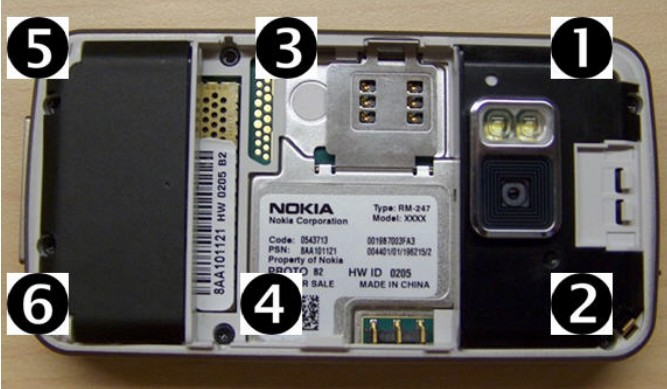
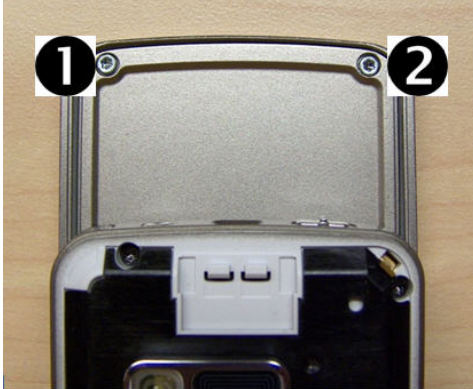


50) Use peak side of SS-93 tool to push out **DVB-H ANTENNA POGO PIN**.



51) Push and remove **BB UNISHIELD ASSY**.

**11. ASSEMBLY HINTS**

|  |   |
|--|---|
|  <p>The image shows the internal components of the Nokia N96 back cover. Six numbered callouts indicate the locations for screw tightening: 1 (top right), 2 (bottom right), 3 (top center), 4 (bottom center), 5 (top left), and 6 (bottom left). The central component is a Nokia battery with the following text: NOKIA Type: RM-247, Nokia Corporation Model: XXXX, Code: 054373 001887003A3, PSN: SAA101121 004401011902152, Property of Nokia, B2 HW ID 0205, MADE IN CHINA. A barcode on the left side reads SAA101121 HW 0205 B2.</p> |  <p>The image shows the external view of the Nokia N96 back cover. Two numbered callouts indicate the locations for screw tightening: 1 (top left) and 2 (top right).</p> |
| <p>1) Tighten the screws to the torque of 0.23 Ncm in the order shown.</p>   | <p>2) Tighten the screws to the torque of 0.23 Ncm in the order shown.</p>  |



12. SOLDER COMPONENTS

N96 RM-247, RM-297, RM-472 Components overview

Solder components only for Level 2

