

SERVICE MANUAL
Level 1&2

NOKIA
N97 mini

RM-553 / RM-555



Transceiver characteristics

Band:

RM-555: WCDMA HSDPA 900/1900/2100 + 4-band GSM

RM-553: WCDMA HSDPA 850/1900/2100 + 4-band GSM

Display:

3.2" TFT, up to 16 million colours

nHD 16:9 widescreen aspect ratio, 640x360 pixel resolution

Camera:

Main camera: 5.0 MPix CMOS, Dual LED Flash, Auto focus

Secondary camera: 640x480 QVGA

Operating System:

Symbian OS ver. 9.4 Series60 5th Edition (5.0)

Connections:

WLAN IEEE 802.11 b/g with UPnP support, USB 2.0 (micro USB), Bluetooth 2.0 + EDR + A2DP, 3.5mm AV connector

Talk time	Standby
GSM: Up to 320 mins	GSM: Up to 342 hrs
WCDMA: Up to 256 mins	WCDMA: Up to 315 hrs

Note: Talk times are dependant on network parameter settings.

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1. CHANGE HISTORY

Status	Version No.	Date	Comments
Approved	1.0	31.08.2009	First approved version
Approved	2.0	15.09.2009	File name renamed
Approved	3.0	22.02.2009	Exploded view & assembly hints updated

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.

2. COPYRIGHT

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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. Shortcircuiting 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

A1 A-COVER ASSY (I0001 - I0002)

- A-COVER** * I0001
- EARPIECE ASSY** * I0002
- LCD AM TFT 360X640** I0003
- SCREW M1.2X2, PANHEAD 2.5X0.6 T+ 4IP** I0004
- SCREW M1.4 x 5.8 P3642** I0109
- SCREW CAP** I0005
- QWERTY PRD** I0108

A2 HINGE ASSEMBLY (I0101 - I0107)

- DISPLAY CHASSIS** * I0104
- HINGE** * I0105
- ENGINE CHASSIS** * I0107
- MAIN FPC ASSY** * I0101
- LCD ADHESIVE TAPE** I0102
- A-BEZEL GROUND CLIP** I0103
- QWERTY FPC ASSY** * I0106
- ABSORBER TAPE** I0110

A3 LIGHT SWAP PACKAGE (I0201 - I0203)

- LIGHT SWAP PWB** * I0201
- SIM TRAY** I0202
- TYPE LABEL** I0203

READER FPC ASSY I0206

HEAT SINK ASSY I0205

GPS ANTENNA ASSY I0209

CAMERA ASSY I0204

CELLULAR ANTENNA ASSY I0208

AV FPC ASSY I0207

A4 B-COVER ASSY (I0210, I9998)






- WATER INGRESS LABEL** I9998
- B-COVER** * I0210
- SCREW M1.4x2.5 TORX+ 4IP** I0213
- SCREW M1.2X2 PANHEAD 2.5X0.6 TORX+ 4IP** I0212
- SCREW M1.4x3.6 TORX+ 4IP** I0211
- BATTERY COVER ASSY** I0214

Ver. 2.0

* Only available as assembly

These parts can not be reused after removal

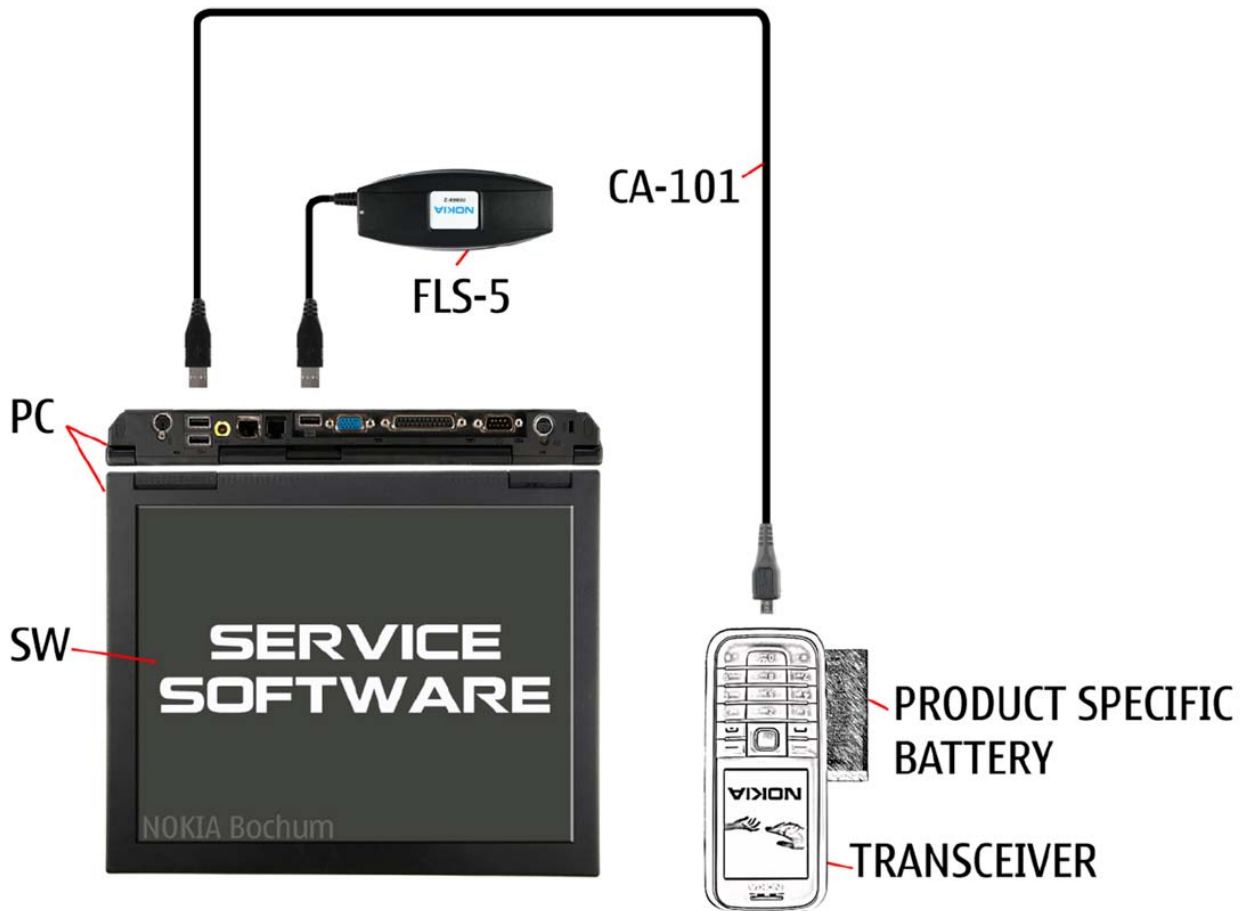
8. SERVICE DEVICES

 <p>FLS-5</p> <p>FLS-5 Flash Device</p>	 <p>CA-101 100cm</p> <p>CA-101 Service Cable</p>	 <p>AC-10 Travel Charger</p>
 <p>BL-4D Battery</p>	 <p>NMP standard toolkit (v2) For more information, refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in "Recommended service equipment" document on NOKIA Online.</p>	

9. SW-UPDATE

Flash concept - (Point of Sales)

To use the FLS-5 Flash Dongle, 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 INSTRUCTIONS



1) Nokia N97 mini disassembly.



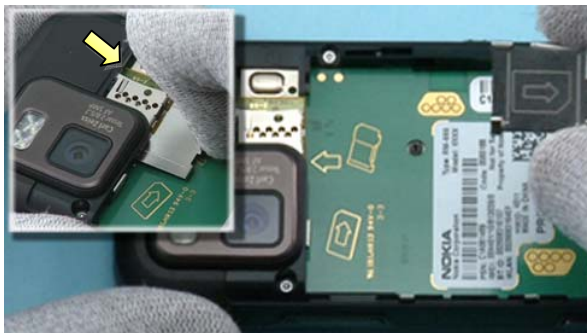
2) You must use the Nokia Standard Toolkit version 2.



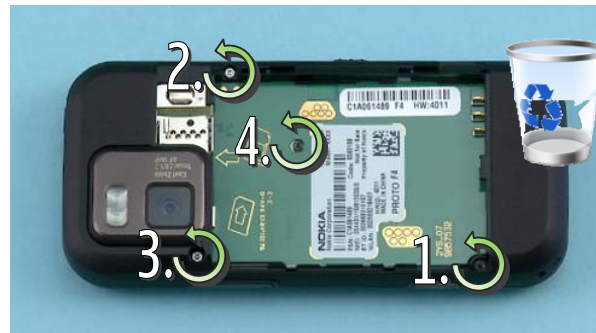
3) Use the opening notch to release the BATTERY COVER.



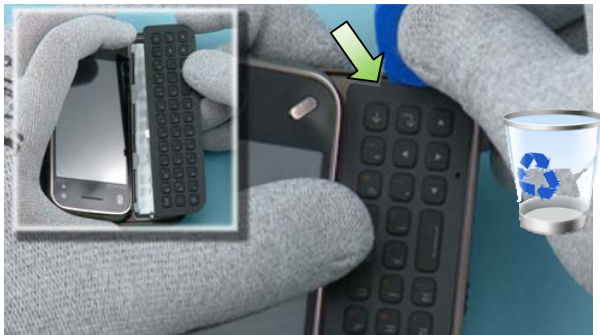
4) Remove the BATTERY COVER. If there is a battery inserted, remove it also.



5) Remove the SIM TRAY.



6) Unscrew the four TORX+ size 4 screws in the order shown. Do not use them again. Discard them.



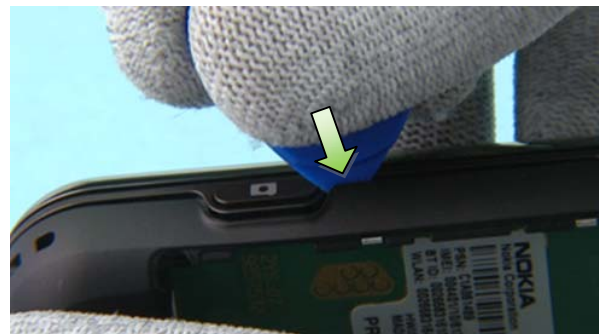
7) Slide the phone open. Release the QWERTY PRTD with the SRT-6 as shown. The QWERTY PRTD cannot be reused. Discard it.



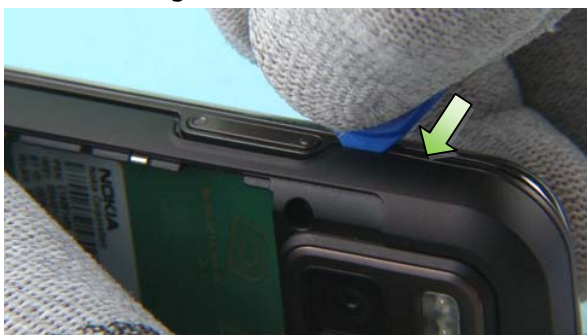
8) Unscrew the two TORX+ size 4 screws in the order shown. Discard the screws.



9) To release the B-COVER close the slide and insert the SRT-6 between the hinge assembly and the B-COVER. While detaching the B-cover, be careful not to touch the engine board.



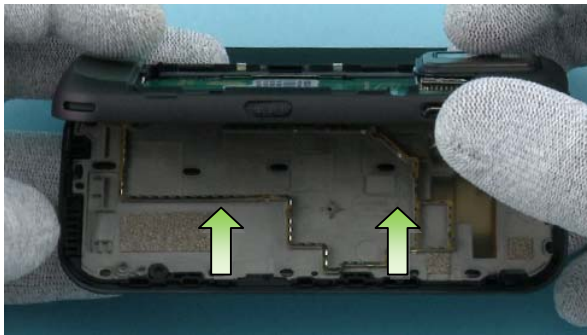
10) First release the clips around the camera button.



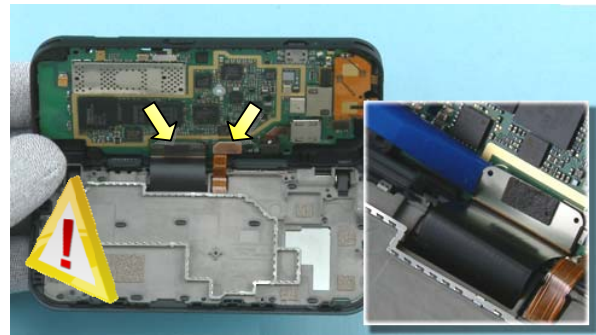
11) Then release the clips around the volume key.



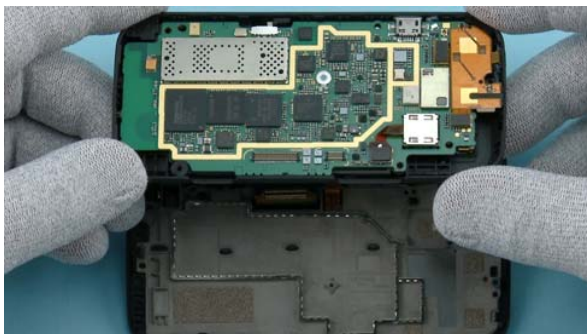
12) Carefully slide the phone open. Use the SRT-6 to release the remaining clips holding the B-COVER. Remember not to touch the engine board.



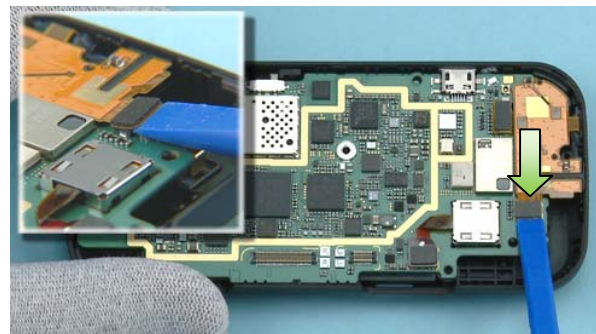
13) Carefully lift up the B-COVER to gain access to the MAIN FPC and the QWERTY FPC connectors.



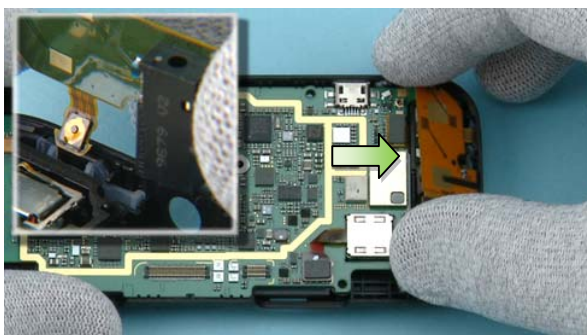
14) Open QWERTY FPC and the main FPC connector from the engine board with the SS-93. While opening the connectors, be careful not to damage the connectors - or any nearby components.



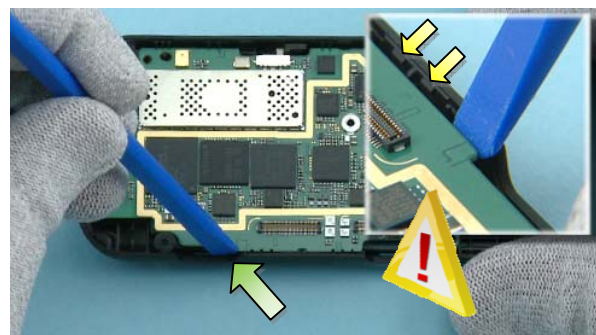
15) The B-COVER with the engine board can now be separated.



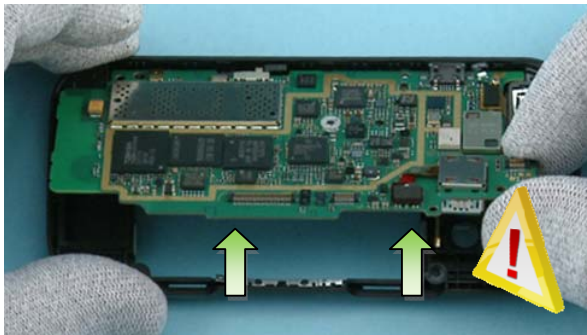
16) Open the AV FPC ASSY connector with the SS-93.



17) Lift the AV FPC ASSY carefully up and pull it out.



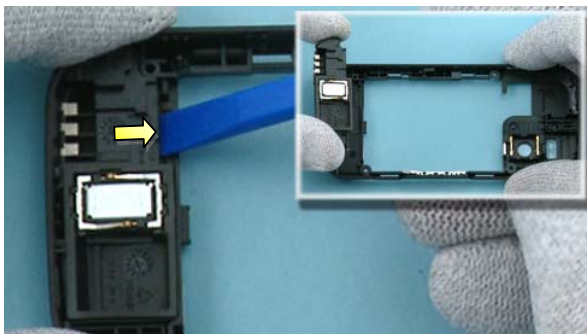
18) Use the SS-93 to carefully release two clips holding the engine board.



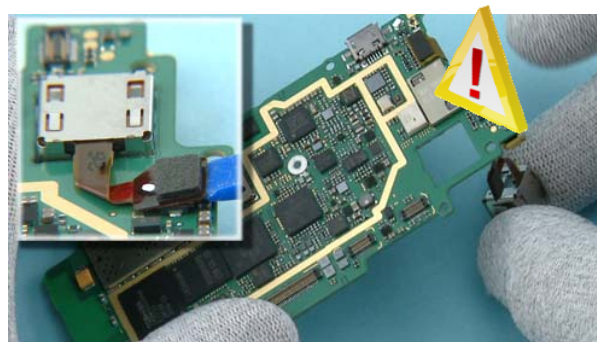
19) Remove the engine board as shown. While removing the engine board, be careful not to damage the USB connector.



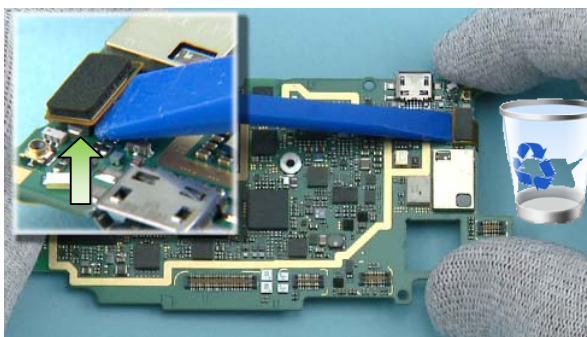
20) Release the GPS ANTENNA ASSEMBLY with the sharp end of the SS-93. Remove the antenna.



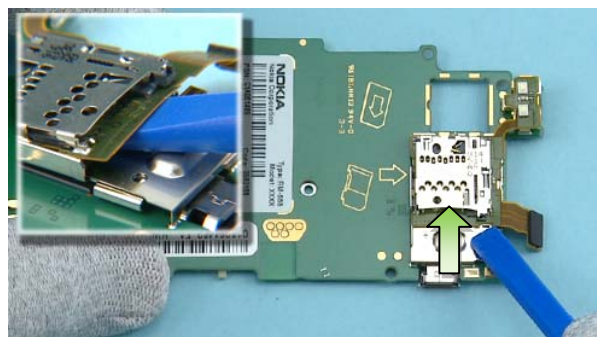
21) Use the SS-93 to detach the CELLULAR ANTENNA ASSEMBLY and remove it.



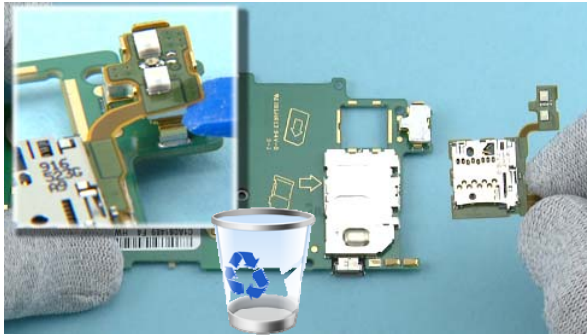
22) Disconnect the camera connector from the engine board with the SS-93. Be careful not to damage the components nearby! Remove the camera.



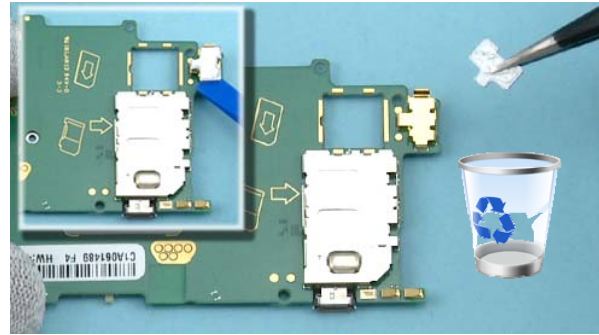
23) Use the SS-93 to open the READER FPC ASSY connector. While opening the connector, be careful not to damage the connector! The READER FPC ASSY cannot be reused.



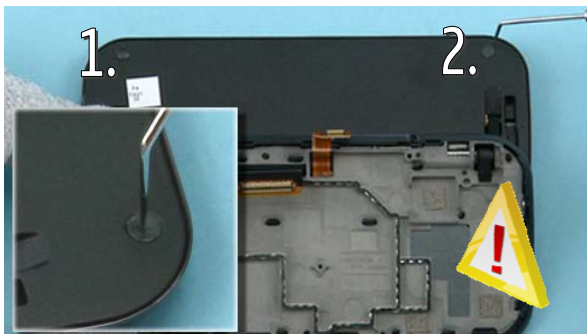
24) Detach one end of the READER FPC using the SS-93.



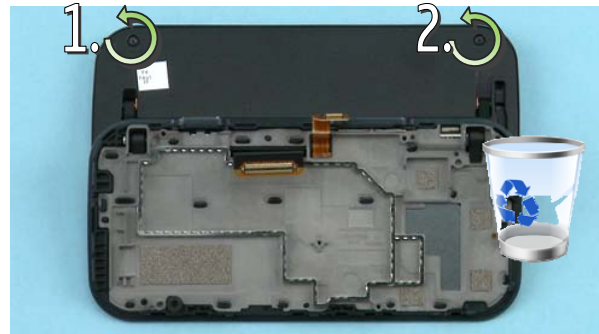
25) Now detach the other end of the READER FPC fixed to the HEAT SINK ASSY adhesive using the SS-93. The READER FPC cannot be reused.



26) Use SS-93 again to detach the HEAT SINK ASSY adhesive. Do not use it again. The HEAT SINK ASSY adhesive has to be renewed also.



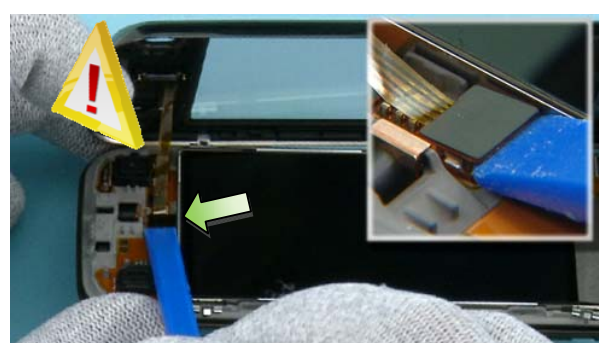
27) Use the dental tool to remove the two SCREW CAPS. Be aware of the sharp point of the dental tool! Be careful not to injure yourself!



28) Unscrew the two Torx+ size 4 screws in the order shown. Do not use them again. Discard them.



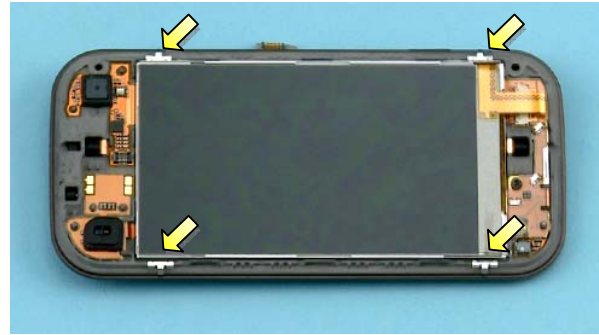
29) Start releasing the A-cover assembly with the SRT-6 as shown.



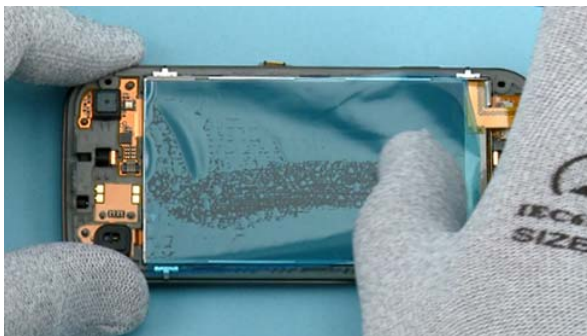
30) Carefully lift up the assembly to gain access to the A-COVER ASSY connector. Use the SS-93 to open the connector. Be careful not to damage the connector or any nearby components!



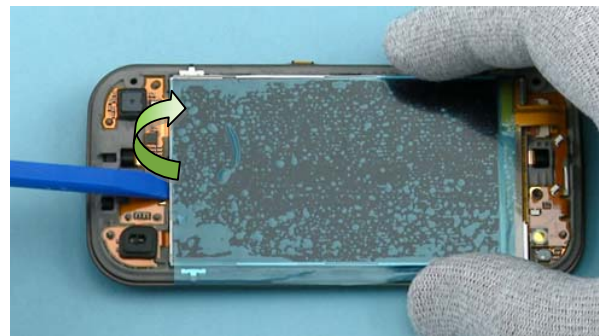
31) The A-COVER can now be separated.



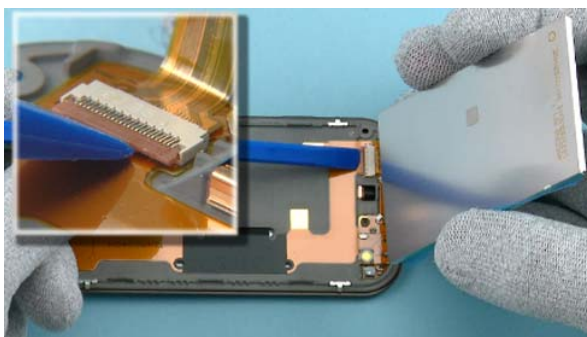
32) Once the A-Cover is removed, check that all the four A-BEZEL GROUND CLIPS are still mounted in its place.



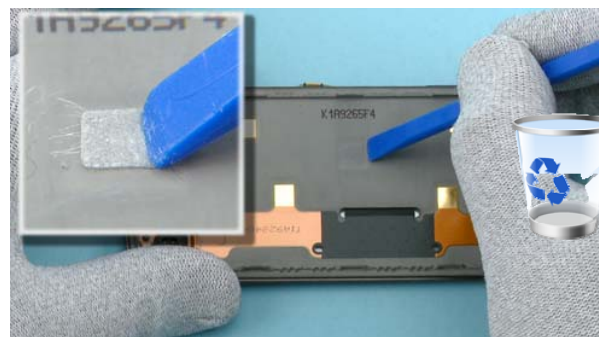
33) Protect the LCD with protective film.



34) Use the SS-93 to carefully lift up the LCD. Be careful not to bend the display while loosening the LCD adhesive!



35) Use the SS-93 to unlock the locking mechanism of the LCD connector. Then carefully remove the LCD.



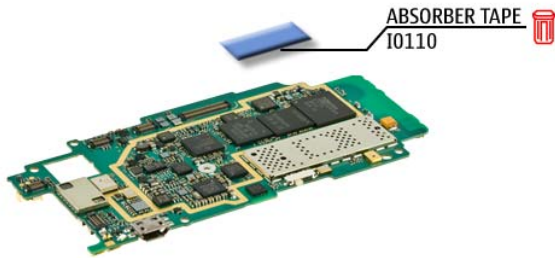
36) Remove the LCD adhesive with the SS-93. Discard the adhesive. It cannot be used again.



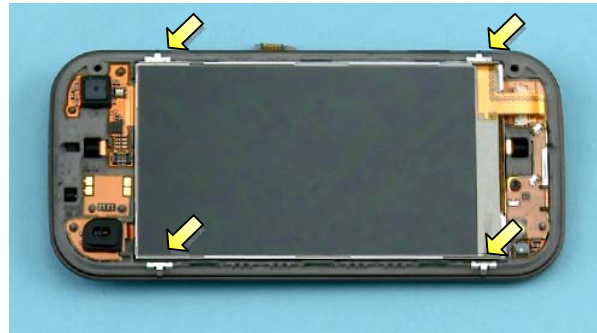
37) Nokia N97 mini disassembly is now complete.

-END OF DISASSEMBLY-

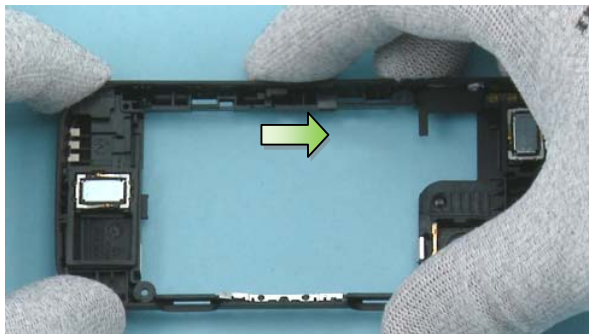
11. ASSEMBLY HINTS



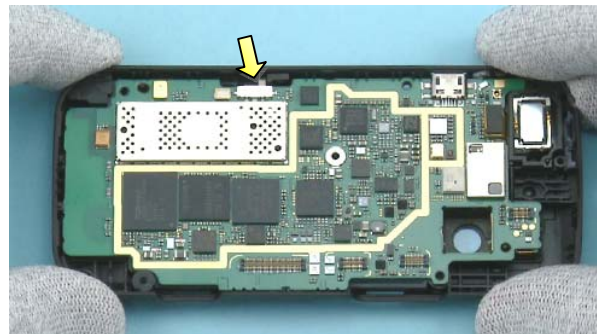
1) Note that the ABSORBER TAPE must be used in all cases when the phone is being opened for other required service actions and there is no such tape in place.



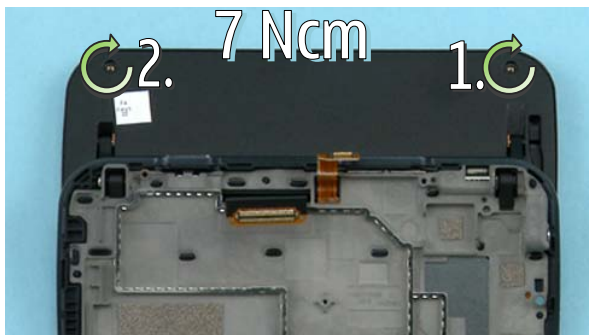
2) Before placing the A-COVER make sure all the four A-BEZEL GROUND CLIPS are in place.



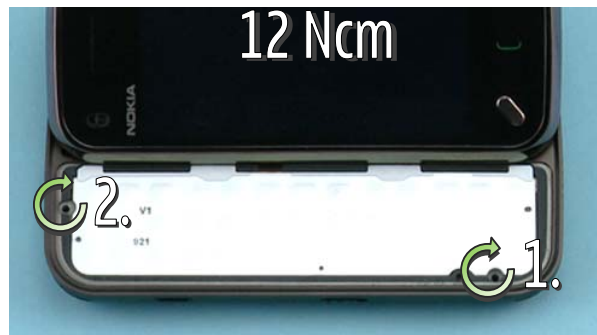
3) Place the LOCK KEY as shown.



4) After assembling engine board into the B-COVER, check the right alignment of the LOCK KEY SWITCH.



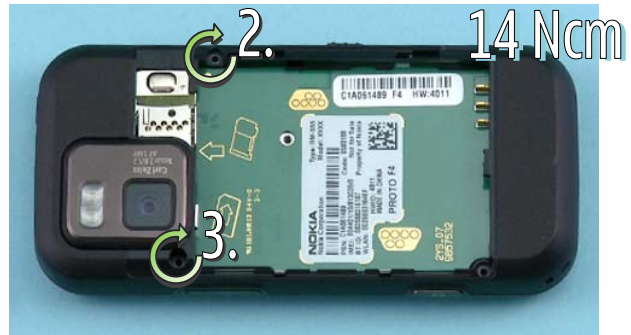
5) Tighten the two M1.2X2, PANHEAD 2.5X0.6 T PLUS-4IP screws to the torque of 7 Ncm in the order shown.



6) Tighten the two M1.4 x 5.8 P3642 screws to the torque of 12 Ncm in the order shown.



7) Tighten this M1.2X2, PANHEAD 2.5X0.6 T PLUS-4IP screw to the torque of 7 Ncm.



8) Tighten these two M1.4x3.6 TORX PLUS 4IP screws to the torque of 14 Ncm in the order shown.



9) Tighten this M1.4x2.5 TORX PLUS-4IP screw to the torque of 8 Ncm.



10) Insert the USIM CARD TRAY.



11) Make sure the battery cover is assembled correctly. First attach the hooks on the Camera/Volume key side. Then close the LOCK KEY side.

12. TOUCH PANEL RECALIBRATION

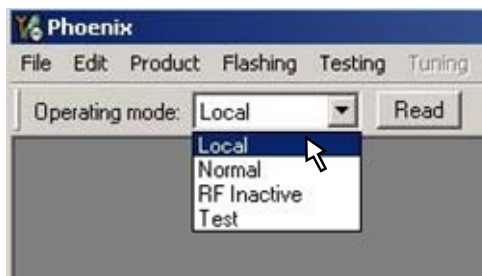
After replacing the RM-555/RM-553 **A-Cover**, the touch panel settings in the phone must be recalibrated to match with the new touch panel

To perform this procedure, you will require the following equipment:

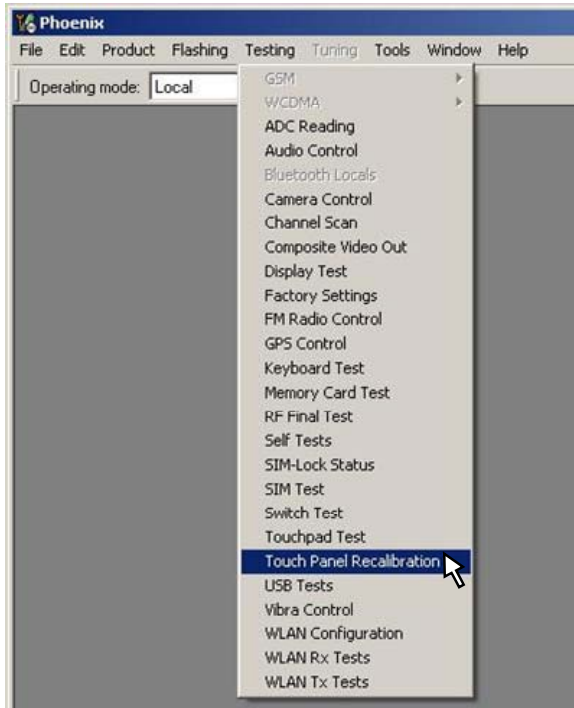
- PC with Phoenix Service Software
- USB Cable CA-101
- FLS-5 Dongle
- SS-93 Tool (or a stylus).

12.1 Recalibration setup

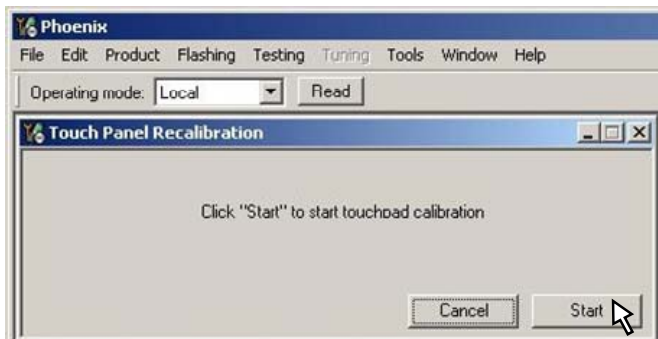
1. Power on the phone, and boot to the home screen. (USIM is not required)
2. Connect the phone to the PC via USB cable CA-101.
3. On the phone, select “PC Suite Mode”.
4. Ensure the PC has FLS-5 dongle connected.
5. Start Phoenix Service SW.
6. Select USB connection.
7. Scan Product (Phoenix > File > Scan Product)
8. Put the phone into Local Mode



9. Open Testing > Touch Panel Recalibration



10. Start the calibration

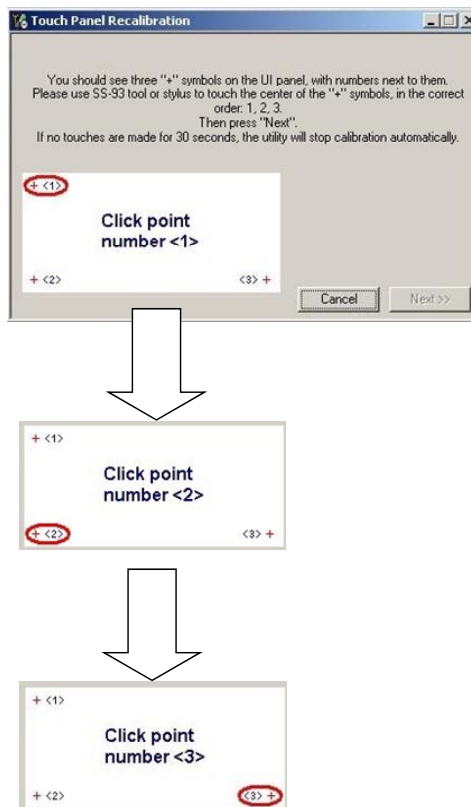


12.2 Recalibration procedure

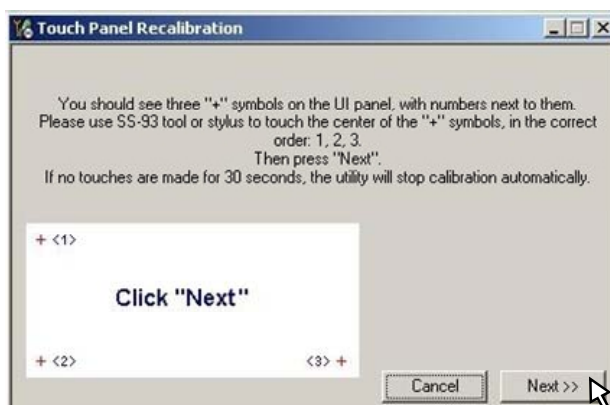
1. Touch the center of the “+” points on the Phone UI in the correct order (1, 2, 3) using the SS-93 Tool.



After touching each point on the phone UI, check that the touch was registered properly on the phoenix screen.



2. If 3 touches were successfully detected, you will see this screen.



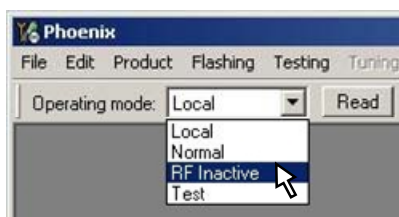
If you feel you did not press the “+” points correctly, select “Cancel” to start over. The calibration data is not written to the phone memory until you press “Next”

3. Select “Next” to finalize the recalibration, then Close the next box



You can perform this recalibration again if needed. To ensure the calibration data is written properly to memory, you must change the phone to RF-Inactive mode.

4. Switch the phone to RF-Inactive, and wait until the phone boots to the home screen.



5. Verify that the touch panel is working correctly.
 - a Verify that the **Send** and **End** keys are working properly
 - Start the Menu > Applications > Drawing application, and check that lines are drawn as expected, and that they follow the tip of the SS-93/stylus. Check also that lines can be drawn to the edges (within 1-2mm) of the screen.

12.3 Troubleshooting

When touching the points on the phone UI, there is a 30 second timeout. If this expires without receiving 3 points, the procedure will abort.

- Simply press “Retry” to start again.

If the phone connection to Phoenix is disrupted (e.g. cable is disconnected), the recalibration will stop.

- Make sure the connections are correct, and restart the calibration procedure.

For verification failure issues:

- Send/End keys not working
- Touch panel is not working
- Drawn lines are not following the tip of the SS-93/stylus
- There are large “dead” areas where lines cannot be drawn
- Restart Phoenix and retry the calibration again.
- If verification continues to fail, contact your next level of support.

13. SOLDER COMPONENTS

