

# SERVICE MANUAL Level 1&2

## NOKIA N77

RM-194 RM-195



### Transceiver characteristics:

#### Band:

**EGSM:** Tri-band 900/1800/1900MHz

**WCDMA:** 2100MHz (RM-194 only)

#### Display:

**LCD:** 6.096cm QVGA (2.4") (240x320 pixel); 16M colors

#### Camera:

**Camera:** 2.0 Megapixel 1600x1200 pixels, 16x digital zoom

**CIF CAMERA:** 352x288 pixels, 2x digital zoom

#### Operating System:

Series 60 3rd Edition

#### Special Feature:

**DVB-H:** 470-750MHz

#### Connections:

**Wireless:** Bluetooth

**Connector:** Pop-Port Connector

#### Memory:

MicroSD™ (max 2GB)

### Transceiver with BP-6M Li-Ion battery pack

Talk time	Standby	Note
up to 4.5h	up to 7.5days	Depends on network parameters

## 1. CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	02.Apr.2007	Initial draft
Approved	2.0	23.Apr.2007	Approval

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.Manual@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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**IMPORTANT**

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

### 3. WARNINGS AND CAUTIONS

#### 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:

#### 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.

#### 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.

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## 7. GENERAL REPAIR INFORMATION

In this section the technician will get some general hints how to carry out repairs:

- To familiarize oneself with NOKIA product read the tutorials or user guide on [www.nokia.com](http://www.nokia.com) -->Support--> Phones, by selecting the Phone Model.
  - Before starting the repair you must take care of ESD precautions like being in your ESD Protected Area and connecting your wristband.
  - Use gloves to avoid corrosion and fingerprints.
  - Protect windows and displays with a film to avoid dust and scratches.
  - When cleaning the LCD Module any lint-free cloth can be used (e.g. Micro-Fibre cloth).
  - When cleaning the pads you have to use a soft cloth/ESD brush and Isopropanol. It is not allowed to use a glass fiber pencil because it scratches the surface and will lead later on to corrosion.
  - Mechanical parts (except shielding lids and bent parts), which didn't repair the failure, can be reused, if they are not soldered.
  - When removing the shielding lids make sure to replace them with new ones, otherwise the high-frequency leakage can have an influence on the device.
  - Always use original NOKIA spare parts.
  - Check the soldering joints of the parts, which are concerned regarding the indicated error (e.g. soldered connectors or switches) and resolder them if necessary (Level 2 only).
  - Remove redundant soldering flux after repair.
  - Meet the torque requirements when assembling the unit (see also the document "torques for transceiver assembly" on NOKIA Partner Web Site/NOKIA Online).
  - Always use your own equipment for testing where you are sure that it works. E.g. if the customer complains about charger function, please test the phone with your own charger to be sure if phone or charger causes the malfunction.
  - A SIM card is needed for all GoNoGo tests.
  - When doing the fault log entries, always note the Item code, which caused the malfunction. Also, fill in the appropriate part code from the assembly, if needed.
  - Please be aware that some malfunctions could be software related and solved by an update.
- 
- There are several documents available on NOL, which have to be followed:
  - 
  - First, take care for the latest content pages of Service Bulletins, which are always available for each folder on NOKIA Online. This is also important to recognize, if existing documents have become invalid.
  - 
  - The service level indicator at the bottom of each document tells the appropriate destination.

Downloads > Support Library >

1. Instructions
  2. General Service Bulletins
  3. Product related documents
  4. Spare Part Service Bulletins
  5. Service Tools Service Bulletins
  6. Common Software Service Bulletins
- etc,...

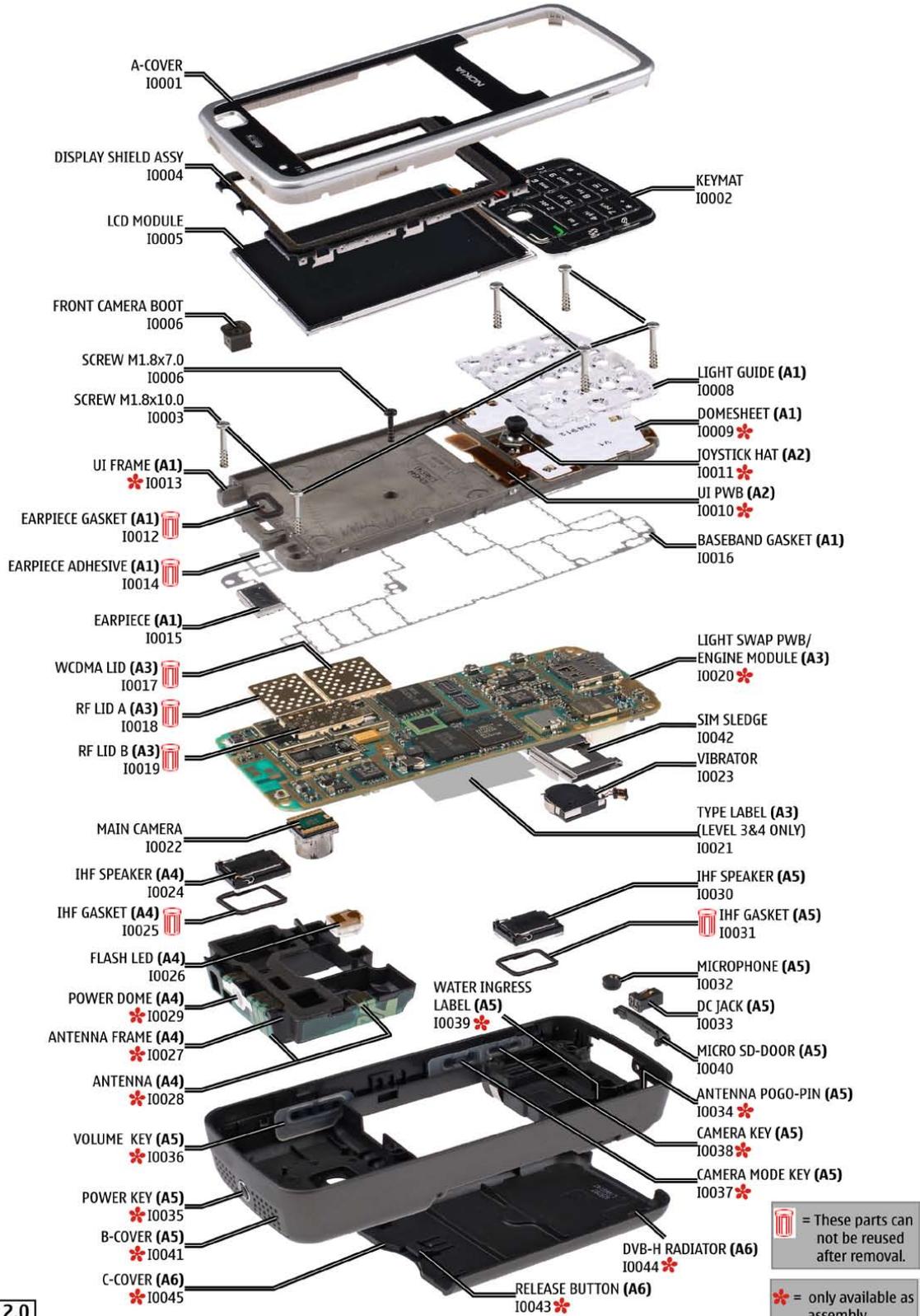
Use General SB-217 as a reference or overview.

Please also check NOKIA Online (NOL) for latest news and files on a regular basis.

## 8. EXPLODED VIEW

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

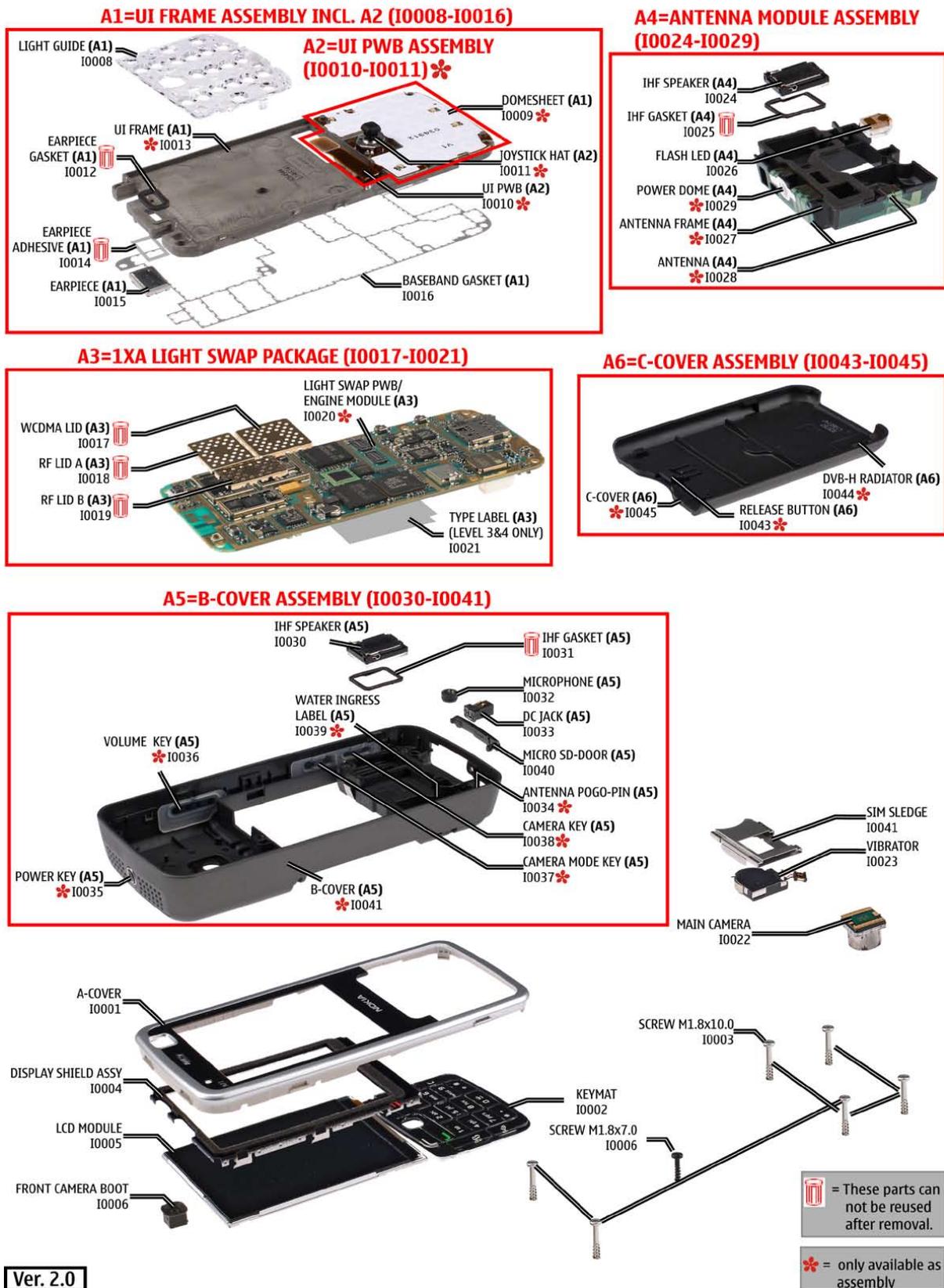
### N77 RM-194/RM-195 EXPLODED VIEW



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## 9. SPARE PARTS OVERVIEW

### N77 RM-194/RM-195 SPARE PARTS OVERVIEW



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## 10. GENERAL RECYCLING RECOMMENDATION

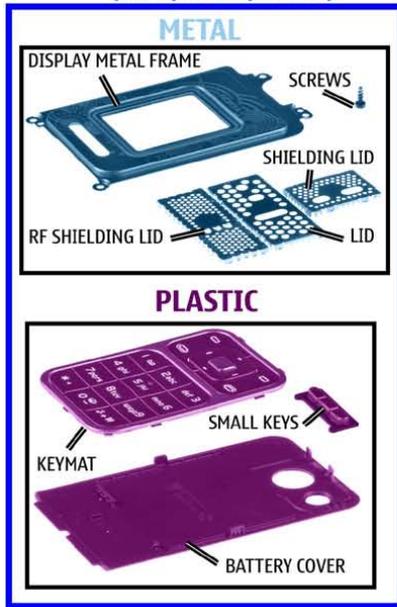
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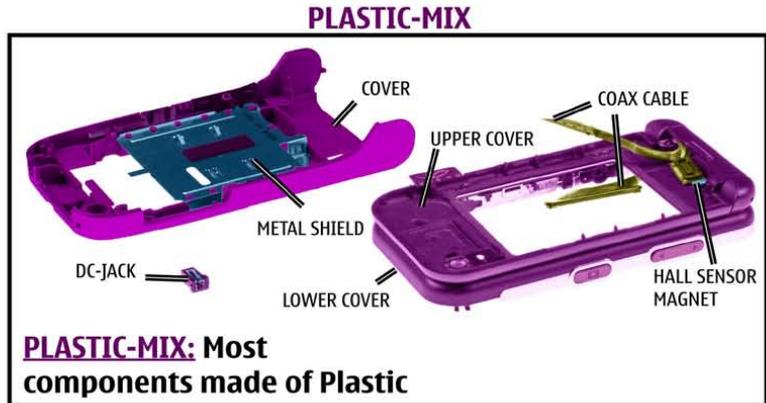
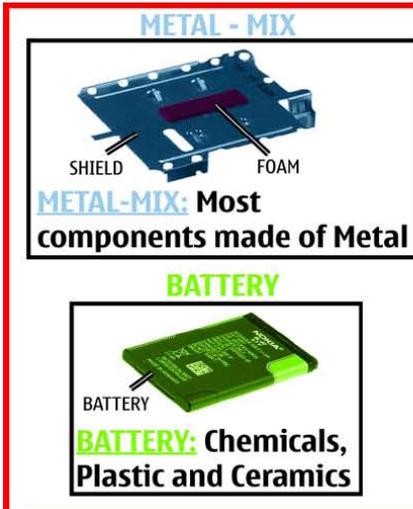
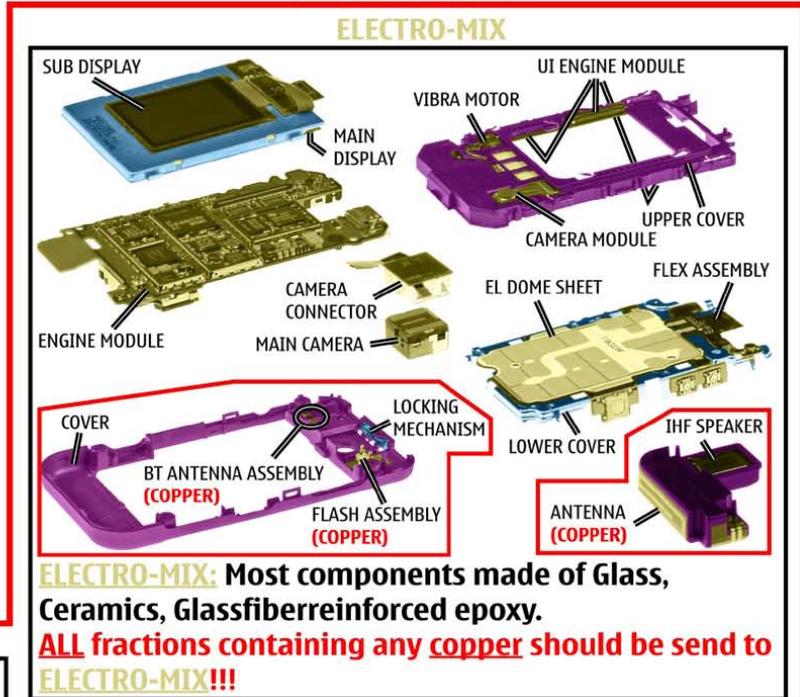
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### General Recycling recommendation

**100% - only one Material**  
(Example components)



**Mixed components**  
(Example components)



Some of these options can be utilized directly and some need pretreatment as for instance dismantling, grinding, milling, etc.  
For sorting the waste into fractions for recycling, your recycler will offer you more specific information, but a **GENERAL RULE** is:  
**Electronic Equipment:** There are recyclers that can process this "multimaterial" for high recycling yields.  
**Metals:** Fractions containing metals must always be collected and sent for (metal) material recycling.  
**Plastics:** Pure plastics fractions (i.e. covers) can be sent for (plastics) materials recycling.  
**Mixed Plastic/Metals:** A metal fraction contaminated with plastics does not represent a problem for metal recycling/recovery whereas recycling/recovery of plastics is generally sensitive for contamination by other materials.

● ELECTRO ● METAL ● PLASTIC ● BATTERY

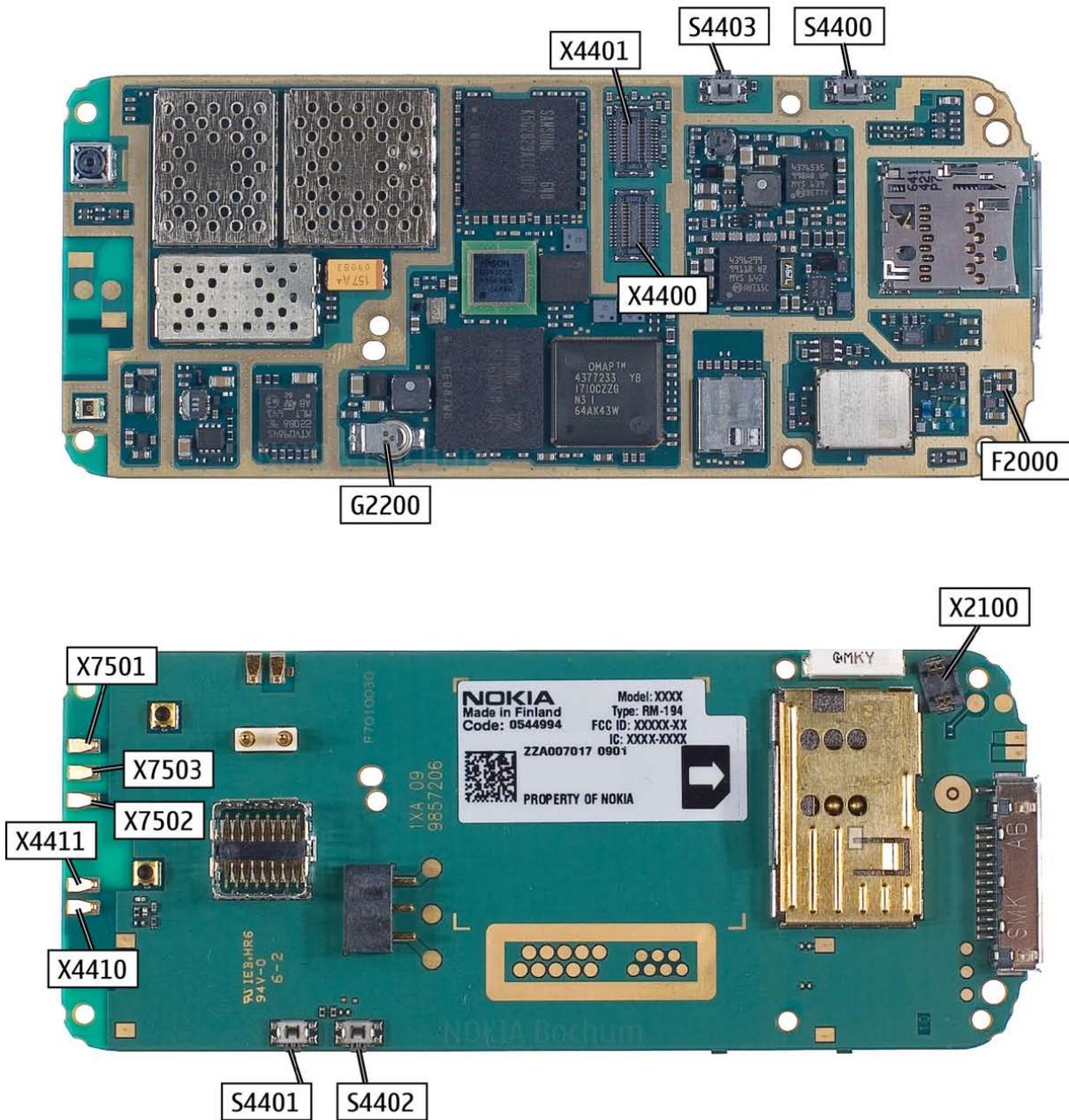
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**11.LEVEL 2 SOLDER COMPONENTS**

N77 RM-194/RM-195 Level 2 solder components

**Solder components only for LEVEL 2**



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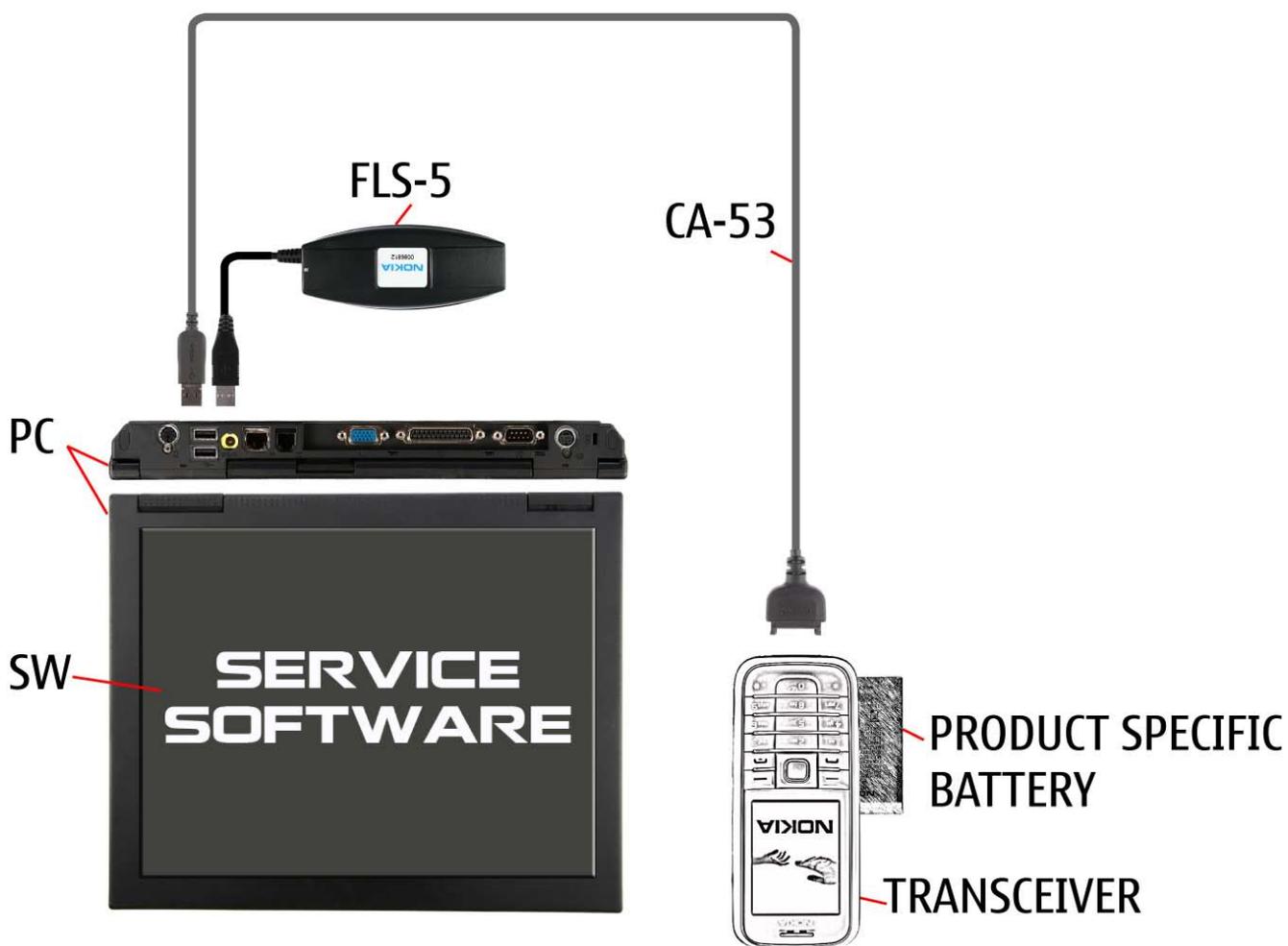
**12.SERVICE TOOLS**

 <p><b>FLS-5</b></p> <p><b>FLS-5 incl. ACF-8, Driver and User Guide</b> Dongle and flash device incorporated into one package, developed specifically for POS use.</p>	 <p><b>ACF-8</b> Universal Power Supply is used to power FLS-4S.</p>	 <p><b>Travel Charger AC-4</b> Small and lightweight charger for fast charging of your phone battery.</p>
 <p><b>CA-53</b> Service Cable to connect the PC with the mini USB connector.</p>	<p><b>SS-45</b></p>  <p><b>SS-45</b> Camera removal tool. One side is for disassembly, the other side for assembly.</p>	<p><b>RJ-192</b></p>  <p><b>RJ-192</b> Soldering Jig</p>
 <p><b>Internal Battery BP-6M</b> Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.</p>	 <p><b>Lead-free Solder Wire</b> Mandatory for lead-free products (Level 2 only).</p>	 <p><b>0772040</b> <b>NMP Standard Toolkit (V2)</b> For more informations refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in “<b>Recommended service equipment</b>” document on NOKIA Online.</p>

## 13.SW-UPDATE

### Flash Concept – (Point of Sales)

To use 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](#).



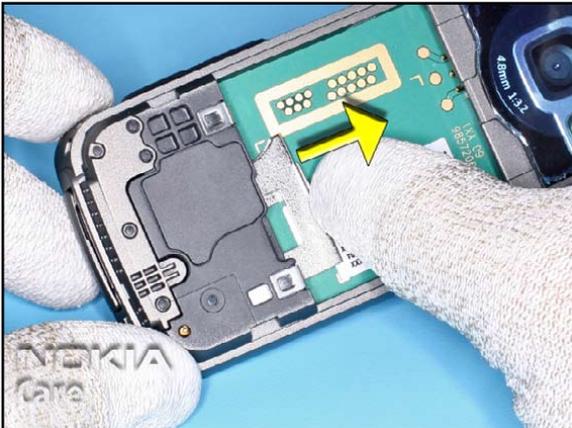
**14. DISASSEMBLY INSTRUCTION**



1. Needed tools: A Torx driver, a Torx Plus© size 6 bit, a torque driver, metal tweezers, a dental pick, the SS-45 camera removal tool, a DC plug, the SRT-6 and the SS-93 opening tool.



2. Cover all sensitive surfaces with a protective film. Unlock and open the C-COVER ASSEMBLY. Remove the Battery if inserted.



3. Remove the SIM SLEDGE.



4. Place the SS-93 between the KEYMAT and the edge of the A-COVER and unlock the bottom clip first. Hold the SS-93 in the shown position and unlock the side clip with SRT-6 by pressing it between the A-COVER and the B-COVER. Do the same on the other side.



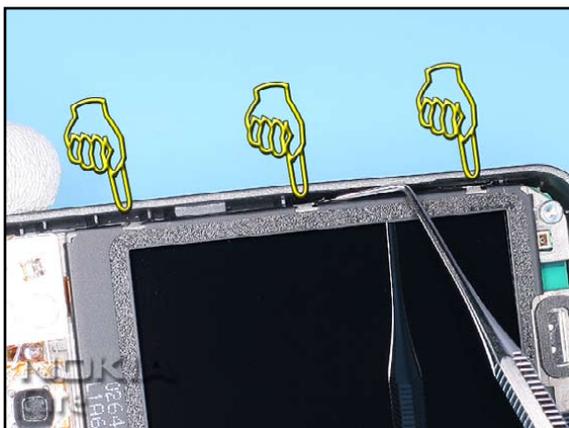
5. Slide the SRT-6 along the marked edges to unlock the snaps.



6. Gently remove the A-COVER from the B-COVER ASSEMBLY.



7. Remove the KEYMAT.



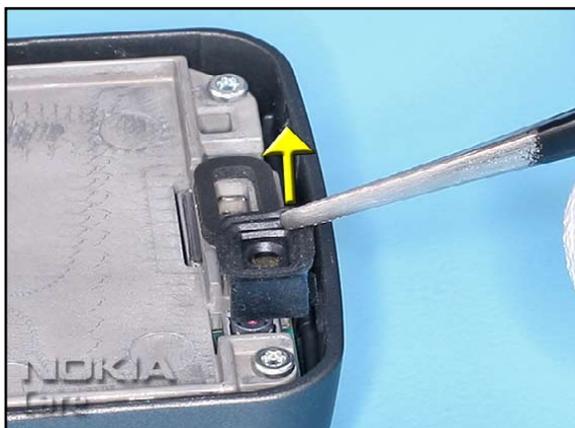
8. Carefully unlock and remove the DISPLAY SHIELD by using the dental tool.



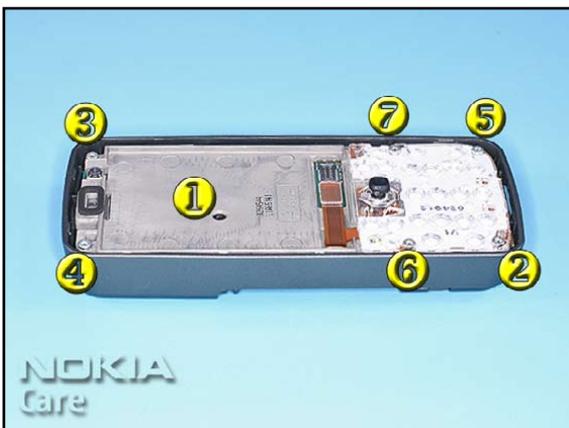
9. Cover the LCD MODULE with a protective film. Gently lift out the LCD MODULE from the UI FRAME...



10. ...and disconnect it from the ENGINE MODULE.



11. Remove the FRONT CAMERA BOOT.



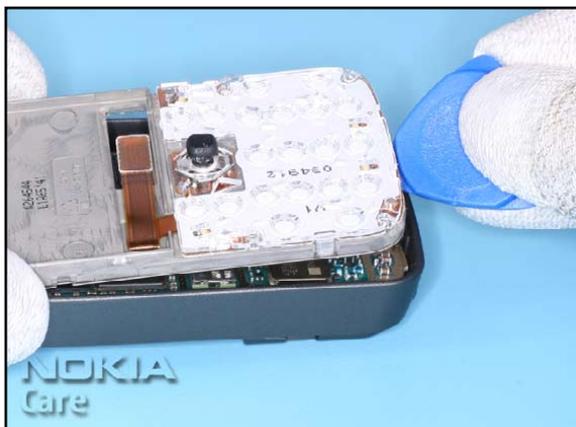
12. Undo the screws in the order shown and remove them.



13. Open the UI PWB connector.



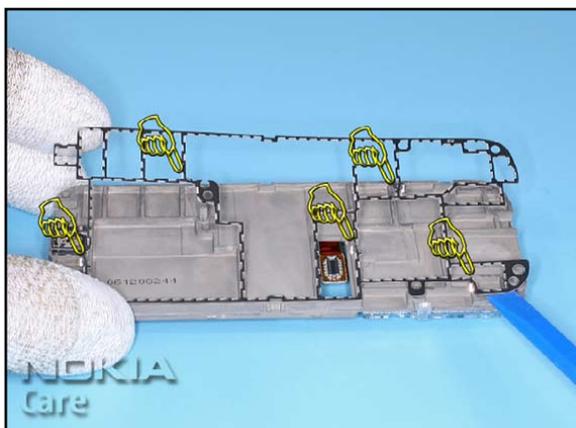
14. The UI FRAME is attached with two snaps to the B-COVER. Unlock the UI FRAME with the SS-93.



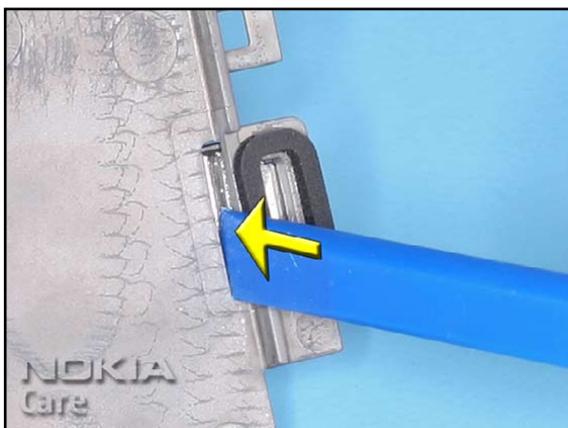
15. Lift the UI FRAME a bit with the SRT-6 and remove it.



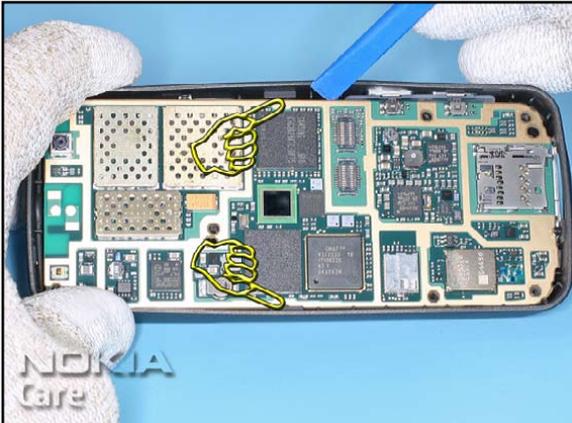
16. Release the LIGHT GUIDE.



17. Very gently remove the BASEBAND GASKET with the SS-93.



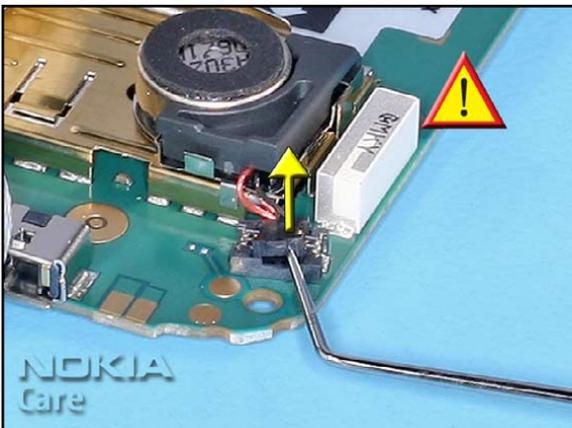
18. Push out the EARPIECE from the UI FRAME as shown.



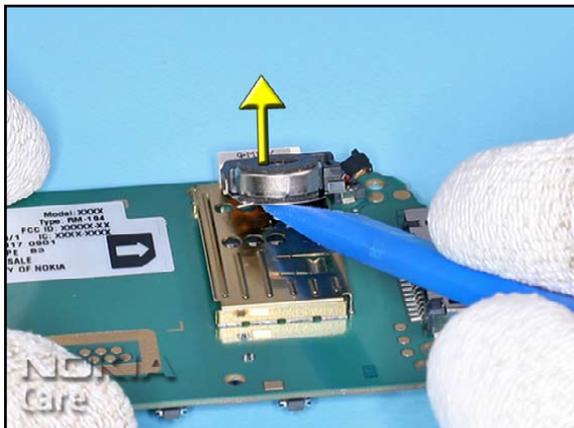
19. The ENGINE MODULE is secured with two snaps to the B-COVER ASSEMBLY. Unlock the ENGINE MODULE with the SS-93.



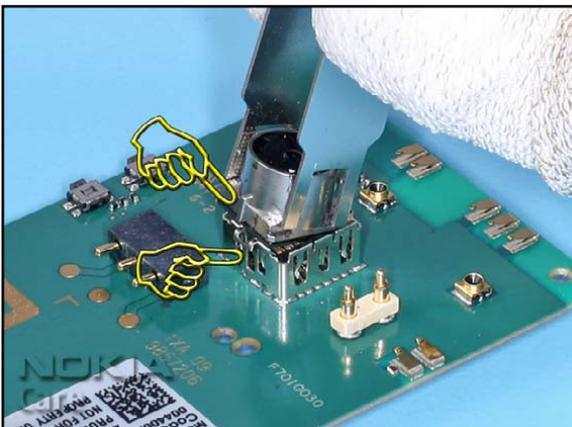
20. Remove the ENGINE MODULE from the B-COVER.



21. Carefully open the VIBRATOR connector.



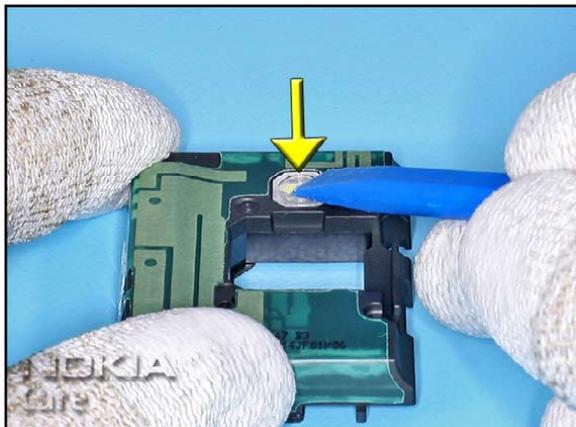
22. Lift the VIBRATOR from its position with the SS-93 and remove it.



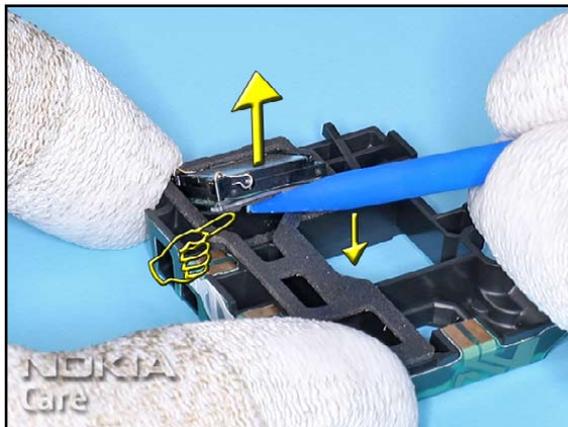
23. Unlock and remove the MAIN CAMERA with the SS-45.



24. Unlock and remove the ANTENNA MODULE ASSEMBLY.



25. Push out the FLASH LED from its fixing.



26. Gently remove the IHF SPEAKER from the from the ANTENNA MODULE.



27. Remove the IHF SPEAKER from the B-COVER. The DC-Jack and the MICROPHONE can be removed easily.

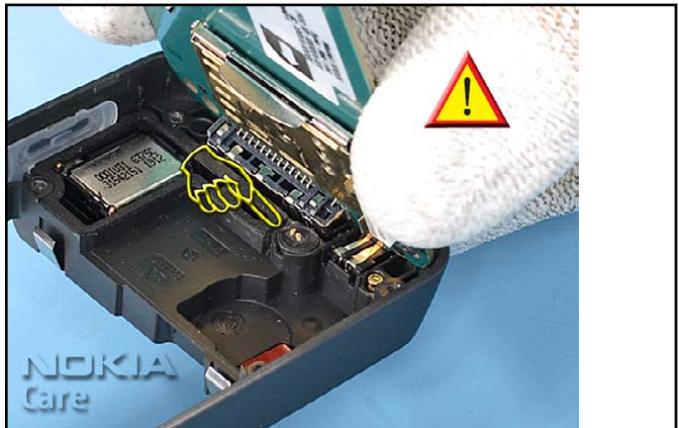


28. The disassembly procedure is now finished.

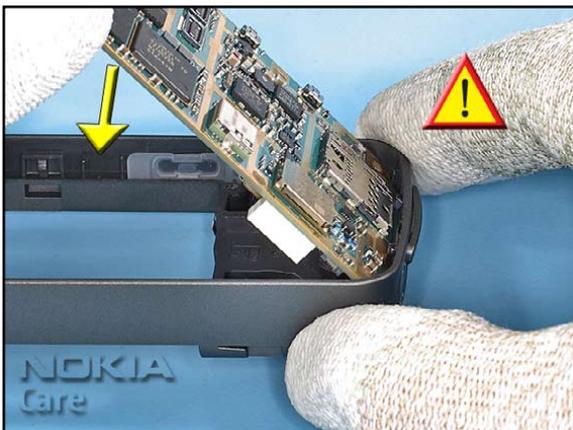
**15.ASSEMBLY HINTS**



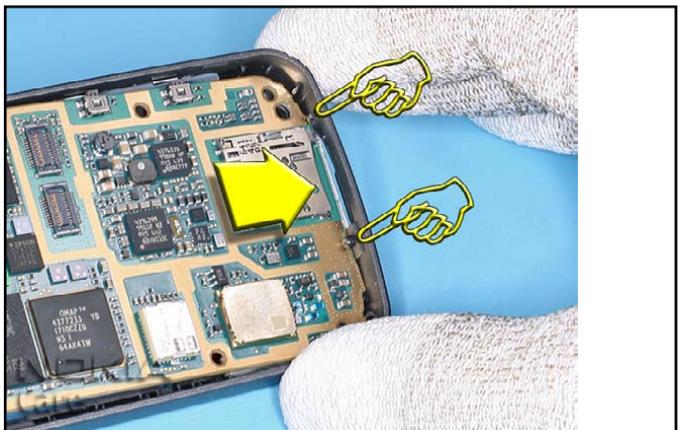
1. Nokia N77 assembly hints.



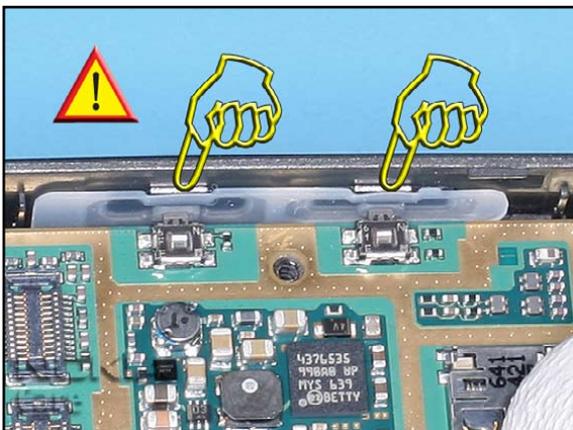
2. Place the ENGINE MODULE into the B-COVER starting on the shown side. Take special care to the spring contacts of the MICROPHONE.



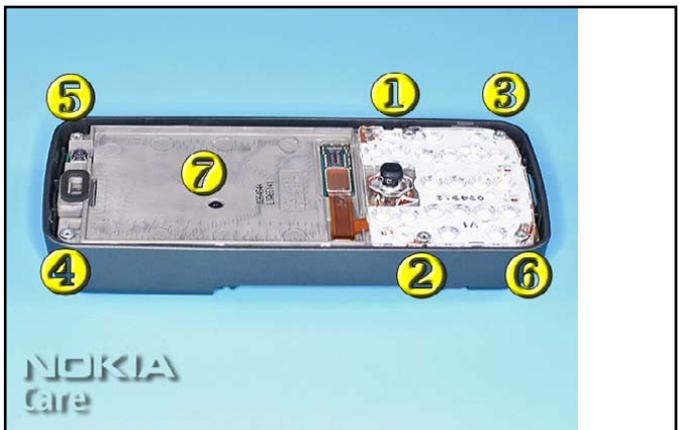
3. Gently put the ENGINE MODULE onto the B-COVER.



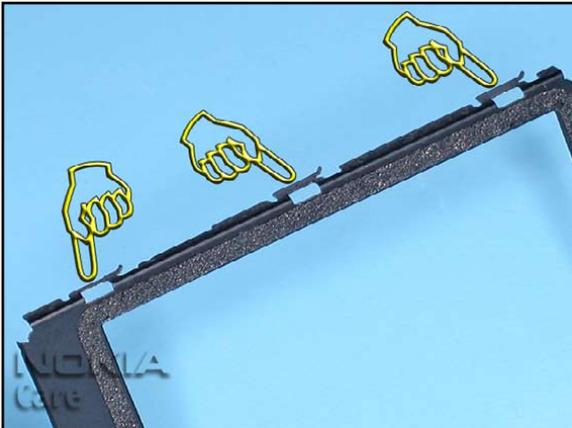
4. Ensure that the Pop-Port connector is positioned correctly into the B-COVER.



5. Take special care to the switches and keys while inserting the ENGINE MODULE.



6. First tighten the six screws (1-6) to the torque of 25Ncm, then set the torque driver to the torque of 28Ncm and tighten the last screw.

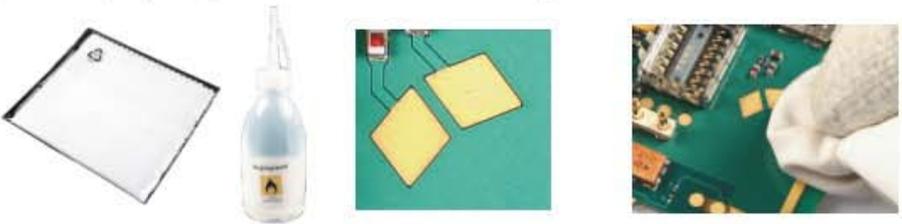


7. Ensure that the clips of the DISPLAY SHIELD are in a good condition.

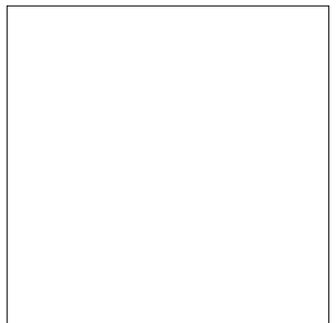
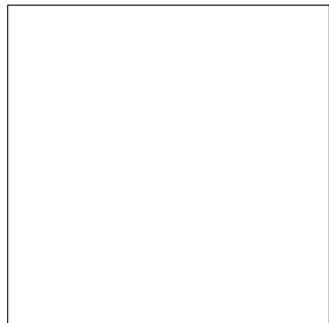
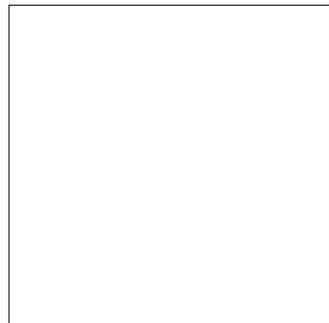
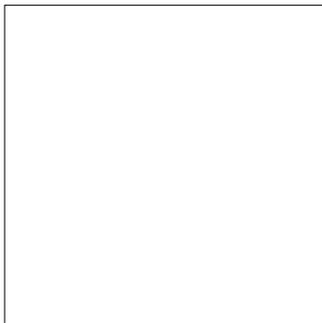
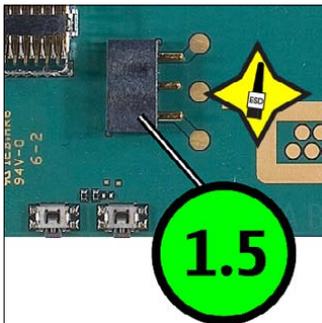
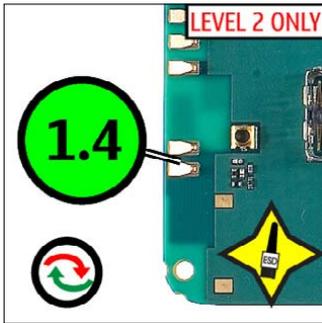
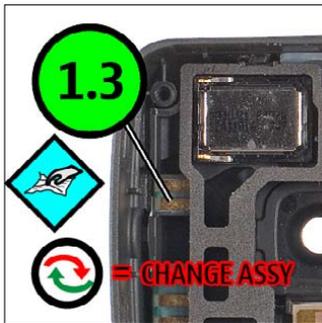
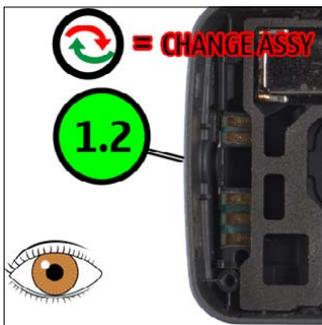


8. Pay attention to the correct position of the FRONT CAMERA BOOT.

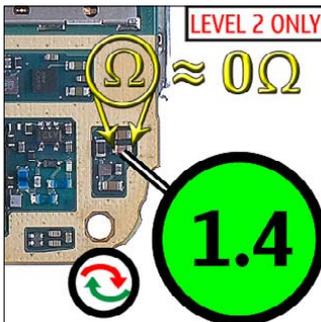
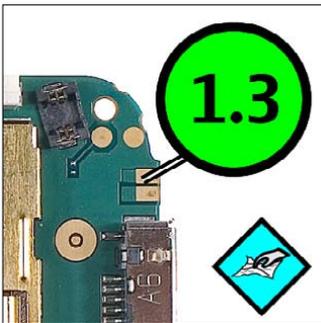
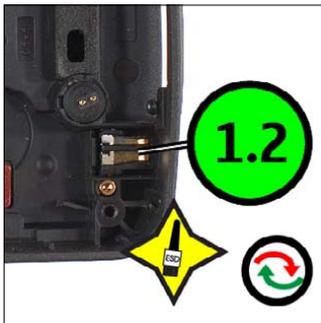
**16.LEGEND FOR QUICK TROUBLE SHOOTER**

Legend for Quick Troubleshooter	
This legend is valid for all parts of the Quick Troubleshooter	
Follow the steps until the problem is solved. If this doesn't help, you are not authorized to go forward.	
	Check the mechanical condition of the component (bent, broken or missing).
	Only marked components can be replaced. If additionally " <b>=CHANGE ASSY</b> " appears, then change the whole assembly (e.g. A4=D-COVER ASSEMBLY).
	<b>Cloth usage:</b> Check pads or contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary. 
	Measure component for electrical functionality and change, if needed. (Level 2 only) 
	<b>ESD Brush usage:</b> Check contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary. 
	<p>Explanation</p> <div style="border: 1px solid red; padding: 5px; display: inline-block;"> <p><b>1.1 Syptom (3)</b></p> <p>Zoom position (Note! First zoom starts with <b>1.2</b>)</p> <p>Fault name</p> <p>Count of fault positions</p> </div>

**17. QUICK TROUBLE SHOOTER - POWER ON**



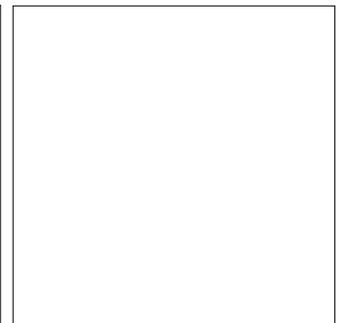
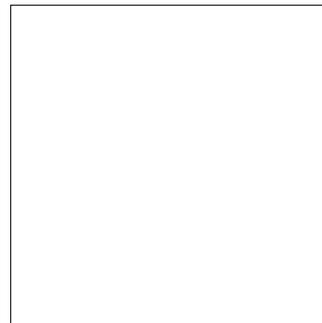
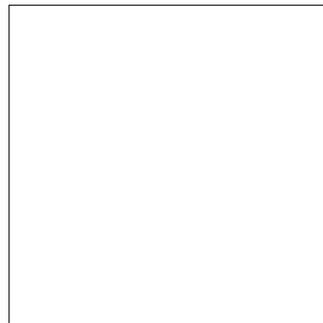
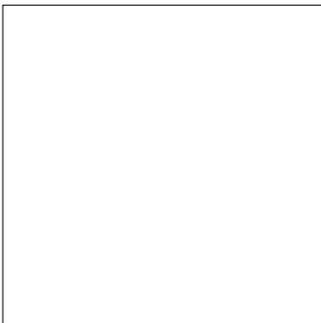
**18. QUICK TROUBLE SHOOTER - CHARGING**



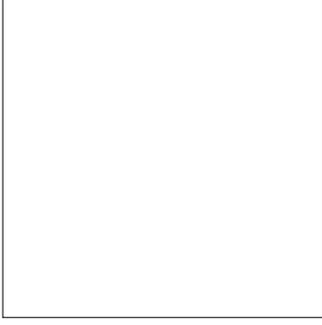
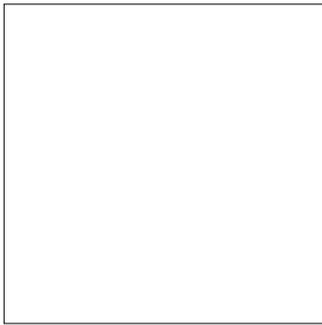
Explanation

<b>1.1</b>	<b>Symptom (3)</b>	
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name	Count of fault positions

**1.1 CHARGING (4)**



**19. QUICK TROUBLE SHOOTER - NO SERVICE**

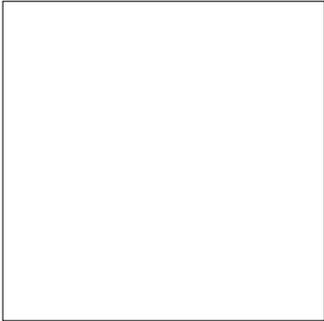
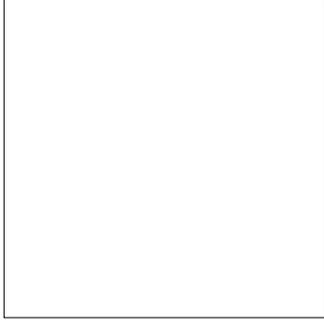
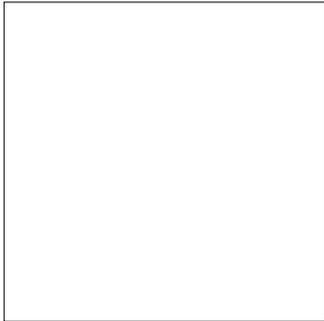
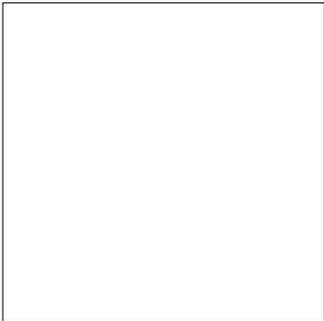
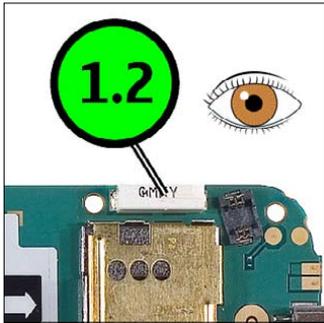


Explanation

	Symtom (3)	Fault name	Count of fault positions
1.1	Zoom position (Note! First zoom starts with 1.2)		

**1.1** **NO SERVICE GSM/WCDMA (2)**

**20. QUICK TROUBLE SHOOTER - BLUETOOTH**



Explanation

1.1	<b>Symtom (3)</b>	3
Zoom position (Note! First zoom starts with 1.2)	Fault name	Count of fault positions





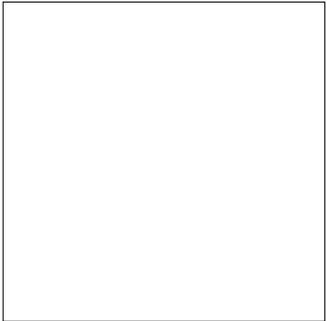
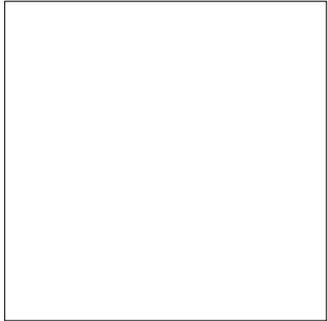
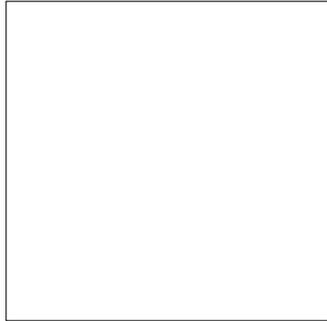




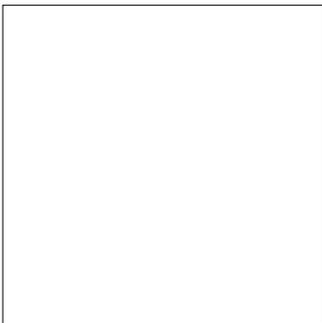
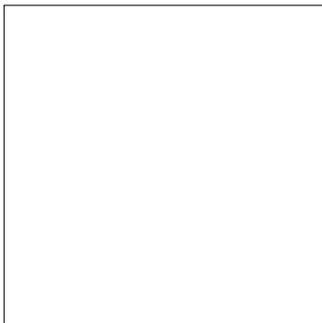
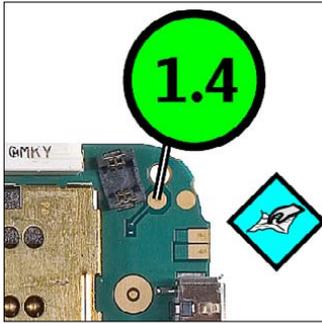





**1.1** **BLUETOOTH (1)**



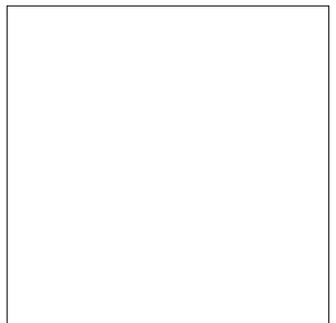
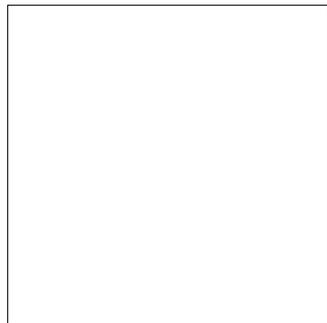
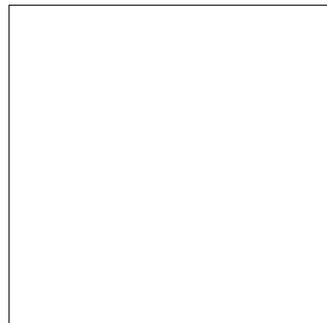
**21. QUICK TROUBLE SHOOTER - DVB-H**



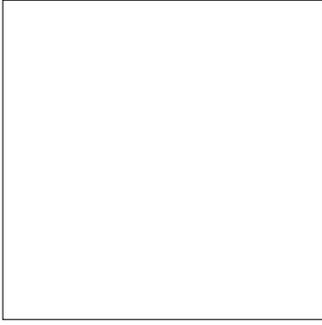
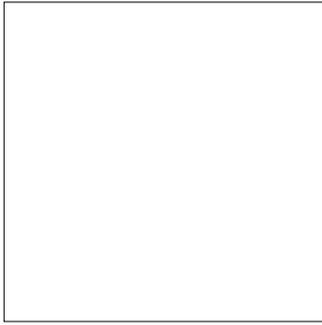
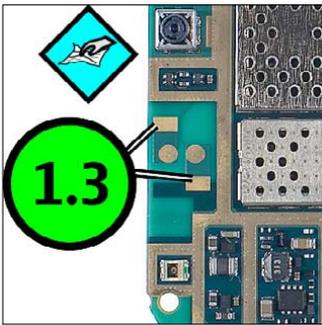
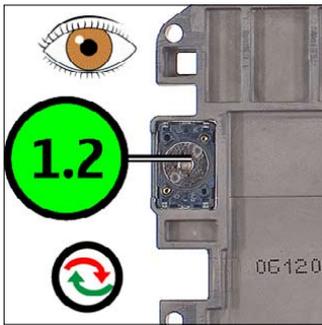
Explanation

<b>1.1</b>	<b>Symtom (3)</b>	
Zoom position (Note! First zoom starts with	Fault name	Count of fault positions
<b>1.2</b>		

**1.1 DVB-H(3)**



**22. QUICK TROUBLE SHOOTER - EARPIECE**



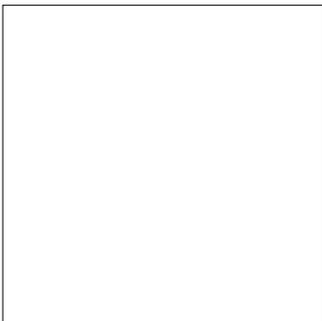
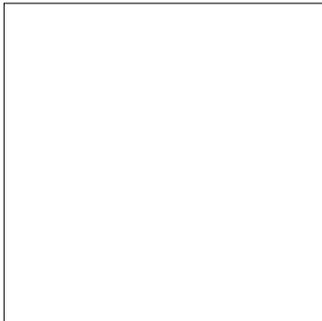
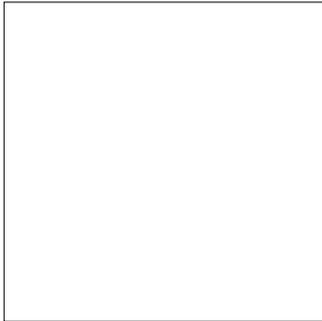
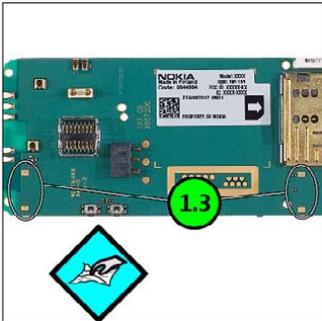
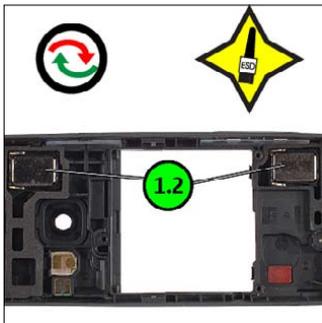
Explanation

1.1	Symtom (3)
Zoom position (Note! First zoom starts with 1.2)	Fault name
1.2	Count of fault positions

1.1

EARPIECE (2)

**23. QUICK TROUBLE SHOOTER - IHF SPEAKER**

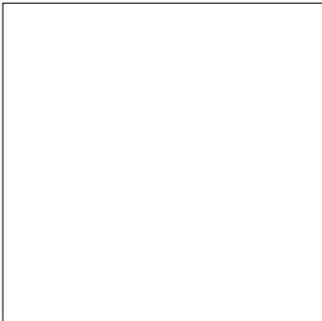
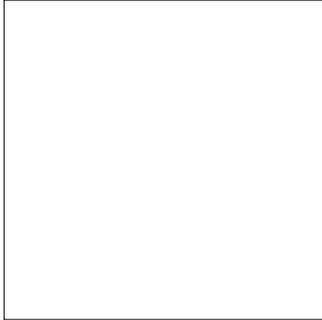
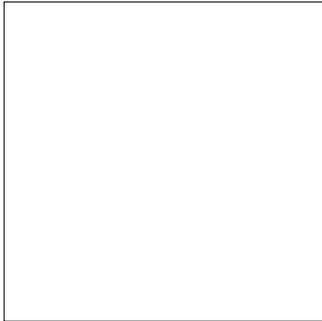
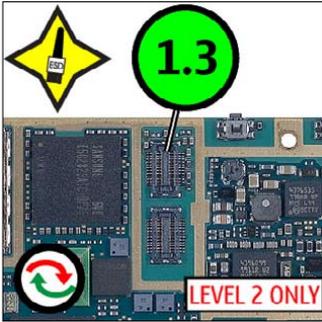
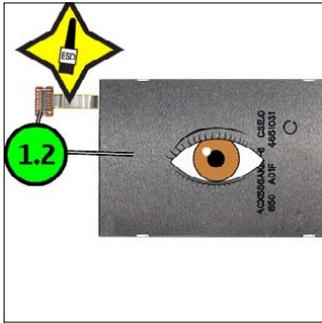


Explanation

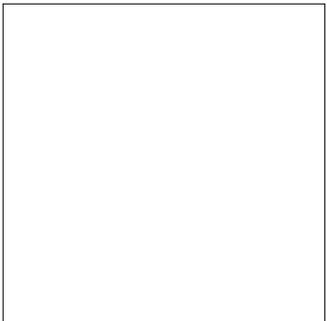
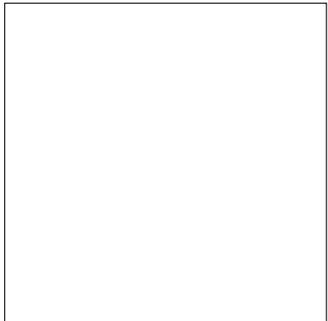
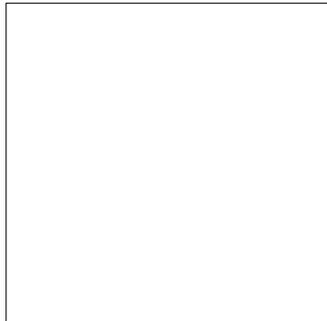
1.1	Symptom (3)
Zoom position (Note! First zoom starts with 1.2)	Fault name
	Count of fault positions

1.1 **IHF SPEAKER (2)**

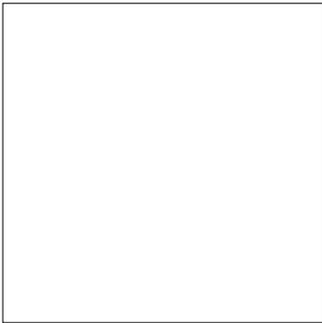
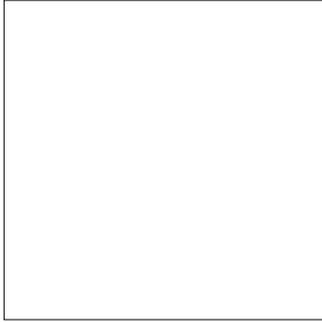
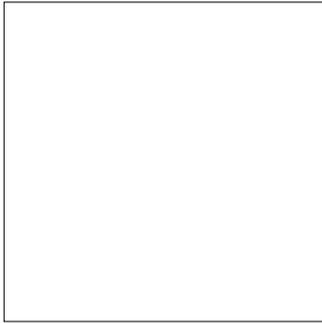
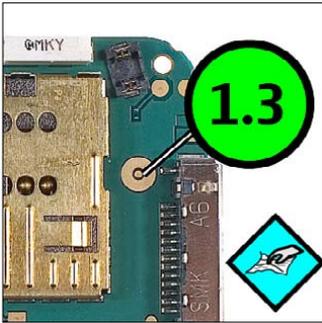
**24. QUICK TROUBLE SHOOTER - DISPLAY**



		Explanation	
1.2		1.1	<b>Symtom (3)</b>
		Zoom position (Note! First zoom starts with 1.2)	Fault name    Count of fault positions
		<b>1.1 DISPLAY (2)</b>	
	1.3		



**25. QUICK TROUBLE SHOOTER - MICROPHONE**

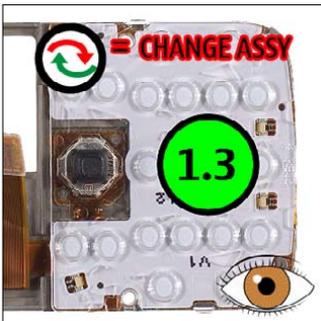


Explanation

<b>1.1</b>	<b>Symtom (3)</b>	
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name	Count of fault positions

**1.1 MICROPHONE (2)**

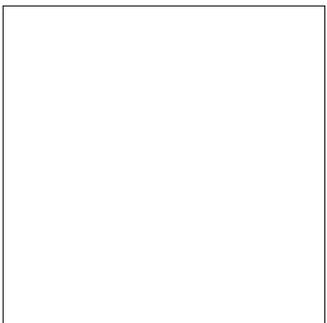
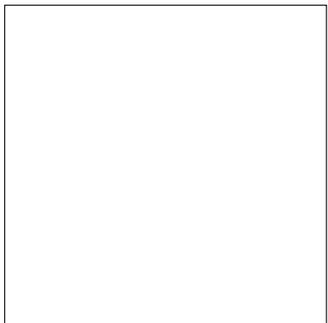
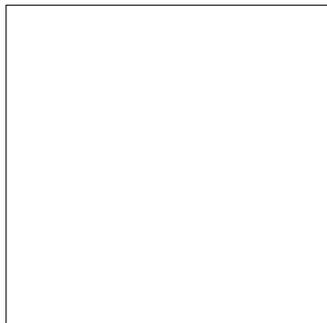
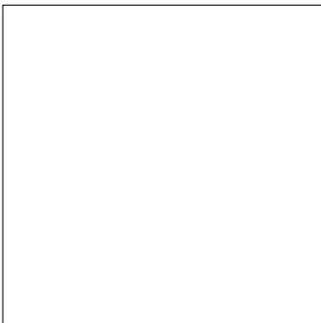
**26. QUICK TROUBLE SHOOTER - KEYMAT**



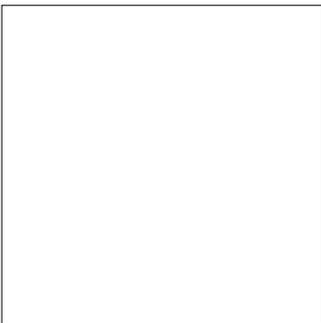
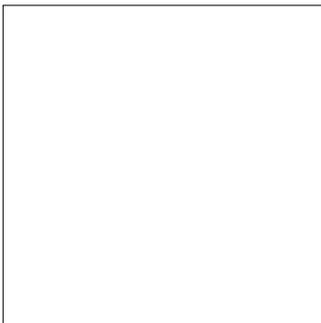
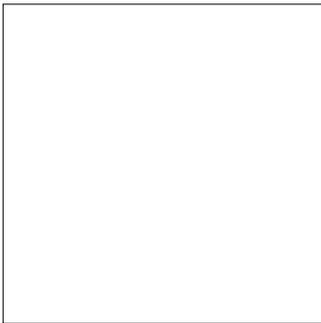
Explanation

<b>1.1</b>	<b>Symtom (3)</b>
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name Count of fault positions

**1.1 KEYMAT (4)**



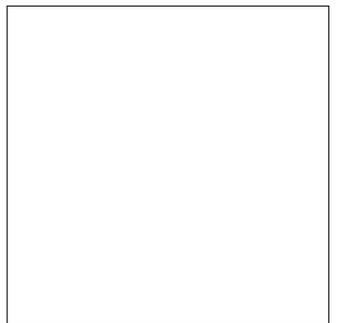
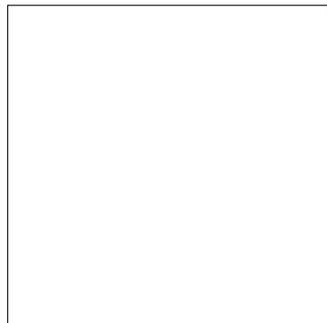
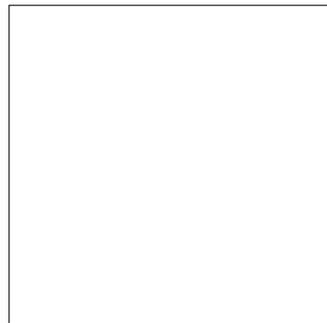
**27. QUICK TROUBLE SHOOTER - VIBRATOR**



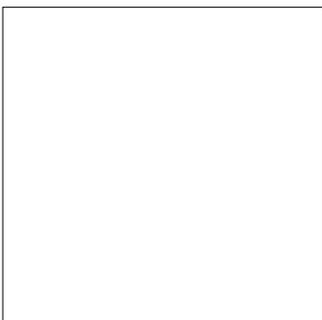
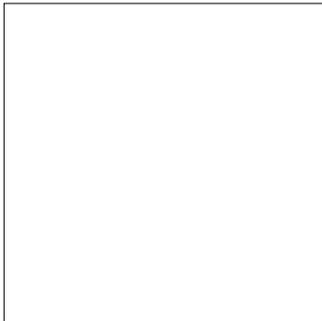
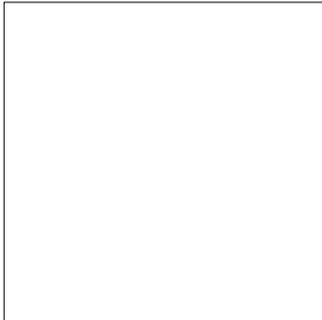
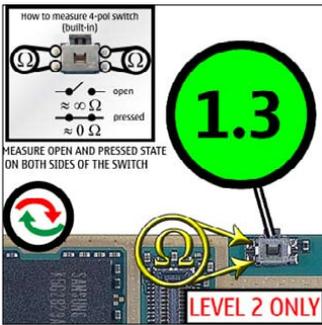
Explanation	
<b>1.1</b>	<b>Symtom (3)</b>
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name Count of fault positions

**1.1 VIBRA (2)**



**28. QUICK TROUBLE SHOOTER - DVB-H KEY**

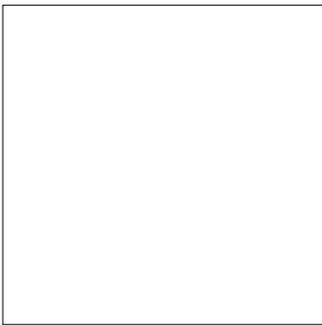
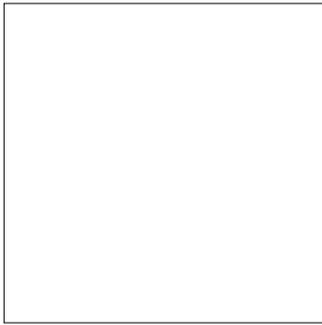
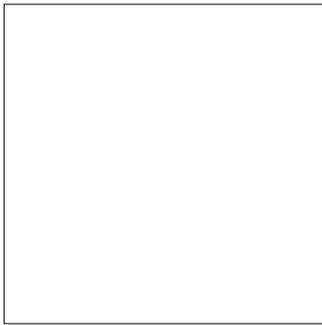
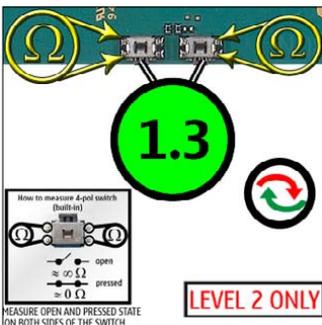
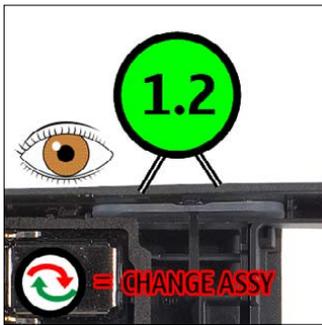


Explanation

<b>1.1</b>	<b>Symtom (3)</b>	
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name	Count of fault positions

**1.1** **DVB-H KEY (2)**

**29. QUICK TROUBLE SHOOTER - VOLUME KEYS**



Explanation

<b>1.1</b>	<b>Symtom (3)</b>	
Zoom position (Note! First zoom starts with 1.2)	Fault name	Count of fault positions

**1.1 VOLUME KEYS (2)**



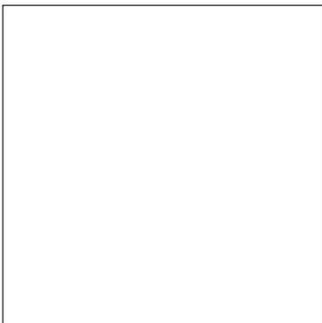
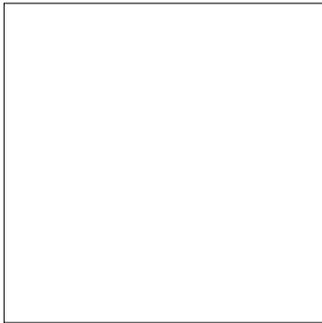
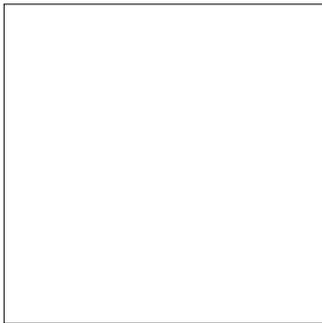
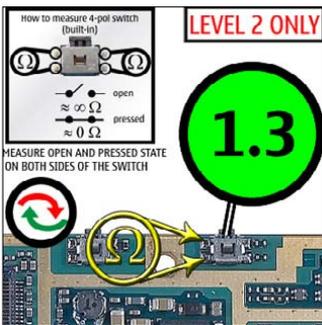








**30. QUICK TROUBLE SHOOTER - CAMERA KEY**

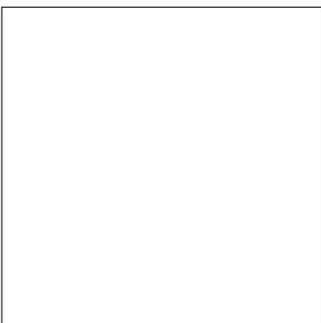
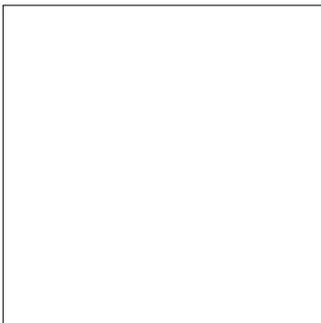
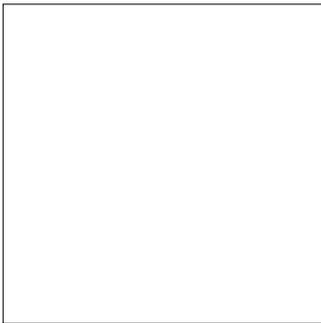
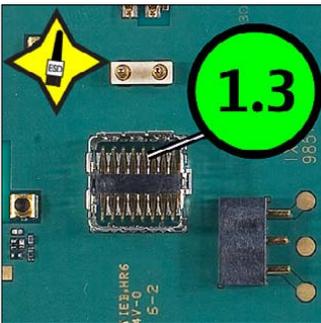
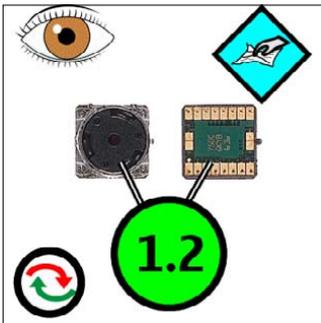


Explanation

<b>1.1</b>	<b>Symtom (3)</b>	Fault name	Count of fault positions
Zoom position (Note! First zoom starts with <b>1.2</b> )			

**1.1 CAMERA KEY (2)**

**31. QUICK TROUBLE SHOOTER - MAIN CAMERA**



**Explanation**

<b>1.1</b>	<b>Symtom (3)</b>
Zoom position (Note! First zoom starts with <b>1.2</b> )	Fault name Count of fault positions

**1.1 CAMERA (2)**

1. Phone with camera cover removed.

2. Back cover removed.

3. Main PCB with camera sensor highlighted.

4. Camera sensor removed.

5. Camera sensor reinstalled.

