

SERVICE MANUAL

Level 1&2



RM-227



Transceiver characteristics:

Dual Mode:

- GSM Band: Quad-band phone for EGSM 850/900/1800/1900MHz
- WCDMA Band: 2100

Camera: 2.0 Megapixel camera

Display: 7.112cm (2.8") QVGA display with 16M colors,
 resolution 320 x 240 pixel; active area 56.9x42.7mm

Operating System: Symbian OS 9.1 Series 60 3rd edition

Bluetooth

WLAN

Connector: Pop-Port™ Connector

Memory Card: microSD™

Transceiver with BP-4L Li-Ion battery pack

Talk time	Standby	Note
2.2h up to 9.5h	8 up to 19days	Depends on network parameters

Environmental characteristics:

- Lead-free soldered

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CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	23.Jan.2007	Initial draft
Approved	1.0	23.Feb.2007	Approval

1. INTRODUCTION

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:

<mailto:cc-ts-rc.documentation@nokia.com>

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

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.



Electrostatic discharge can easily damage the sensitive components of electronic products. Therefore every Service Supplier has to take care of all precautions, which are mentioned in the service level related "Service Partner Requirements", available on NOKIA Online. Also see ESD Protection Requirements in this Service Manual.

2. 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 -->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.

3. PATHFINDER FOR WORKSHOP STAFF

This is the NOL page (NOKIA Online) which is currently available in Europa, Middle East and Africa only!

In addition to the information in this Service Manual, there are several instructions and information, which have to be followed. Main documentation database is [NOKIA Online](#) with the purpose of serving different multimedia content, like video clips or interactive tutorials.

It is mandatory to watch for newest technical and organizational information on a daily basis to be updated as required (see **“Latest files in Support Library”**). Every new information has to be processed and implemented as soon as possible.

When logged into NOL you can also find needed information in different folder like:

Support Library



- Service Manuals
- Service Bulletins
- Software
- Repair Information

Level 1&2 e-learning (former NOKIA CarePoint) on NOKIA Online

Former NOKIA CarePoint content, such as	<ul style="list-style-type: none"> • Online Troubleshooting • Product information • Videos – Disassembly/Assembly 	can be found on NOKIA Online
		<p>NOKIA Online</p> <p>↓</p> <p>Care Services</p> <p>↓</p> <p>Training</p> <p>↓</p> <p>Phone Models</p>

Level 1&2 e-learning courses offer a quick overview of the NOKIA phone and support for how to repair and use the phone:

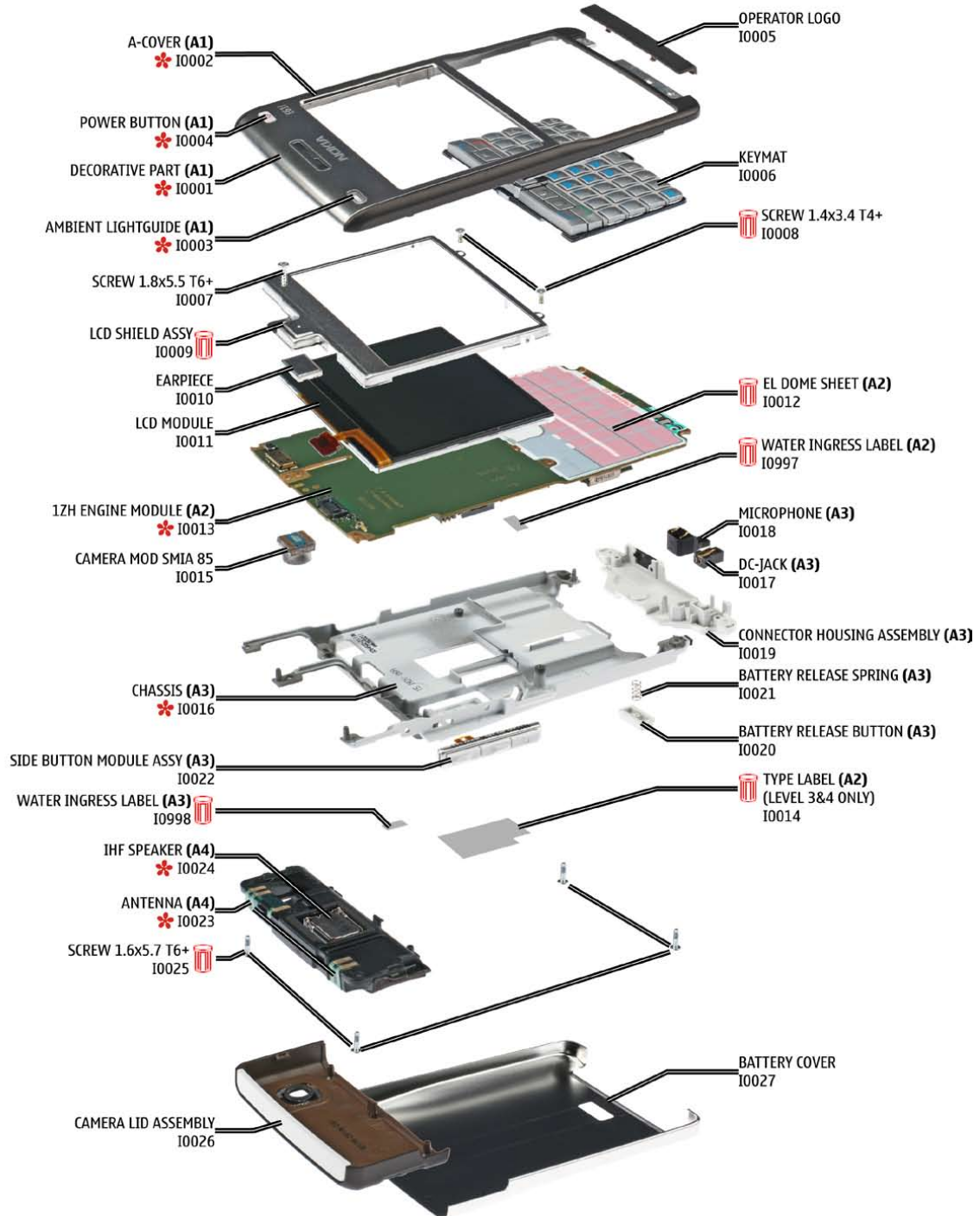
<p>Overview & Guides Basic information about the phone, features and technologies</p>	<p>Disassembly & Assembly Instructions how to disassemble and assemble the phone</p>	<p>Troubleshooting Step-by-step instructions on how to locate and repair the most common problems with the phone</p>
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To reduce the server traffic it is recommended to download newest version of huge files like videos, Phoenix packages or Service Manuals only once and distribute it internally for further use.

4. EXPLODED VIEW

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

E61i RM-227 Exploded view



 = These parts can not be reused after removal.

* = only available as assembly

Ver. 2.0

5. SPARE PARTS OVERVIEW

E61i RM-227 Spare Parts overview

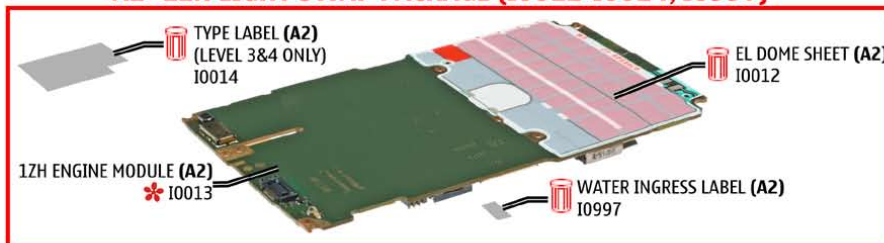
A1=A-COVER ASSY (I0001-I0004)



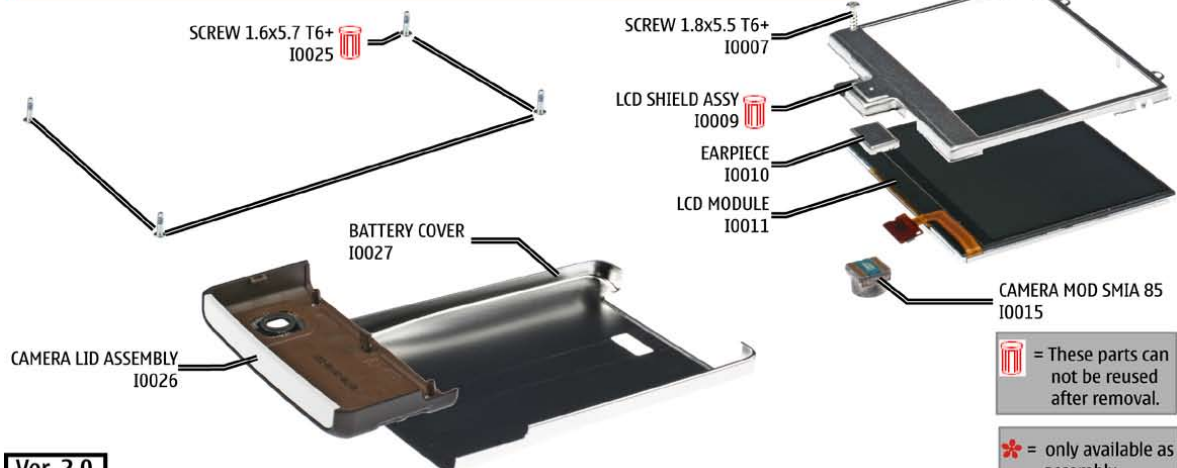
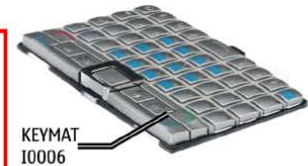
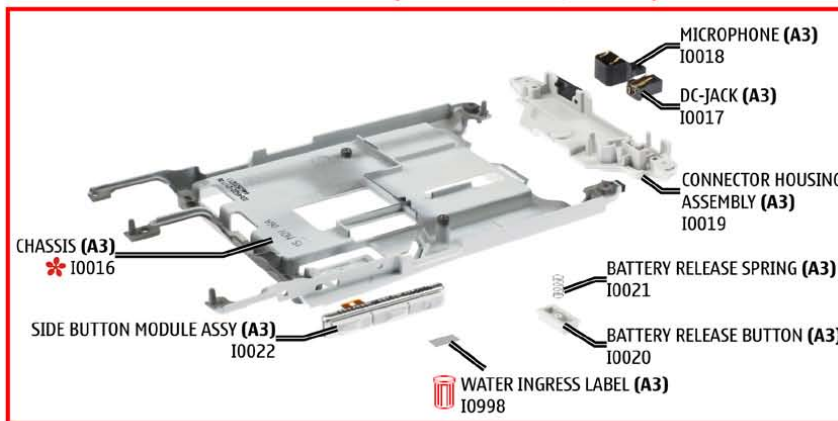
A4=ANTENNA ASSY (I0023-I0024)



A2=1ZH LIGHT SWAP PACKAGE (I0012-I0014, I0997)



A3=CHASSIS ASSY (I0016-I0022, I0998)



= These parts can not be reused after removal.

= only available as assembly

Ver. 2.0

6. GENERAL RECYCLING RECOMMENDATION

NOKIA

CMO Operations & Logistics
Training and Vendor Development
Multimedia Creation & Support

Confidential

13.11.2006

MGR

General Recycling recommendation

100% - only one Material
(Example components)

METAL

PLASTIC

Mixed components
(Example components)

ELECTRO-MIX

ELECTRO-MIX: Most components made of Glass, Ceramics, Glassfiberreinforced epoxy.
ALL fractions containing any copper should be send to ELECTRO-MIX!!!

METAL - MIX

METAL-MIX: Most components made of Metal

BATTERY

BATTERY: Chemicals, Plastic and Ceramics

PLASTIC-MIX

PLASTIC-MIX: Most components made of Plastic

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

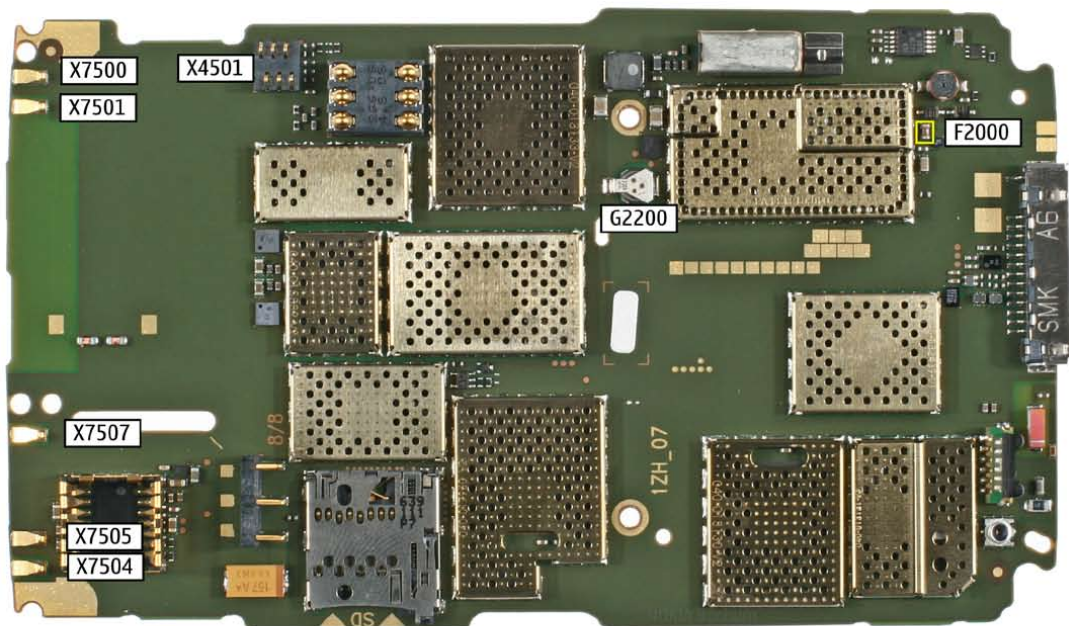
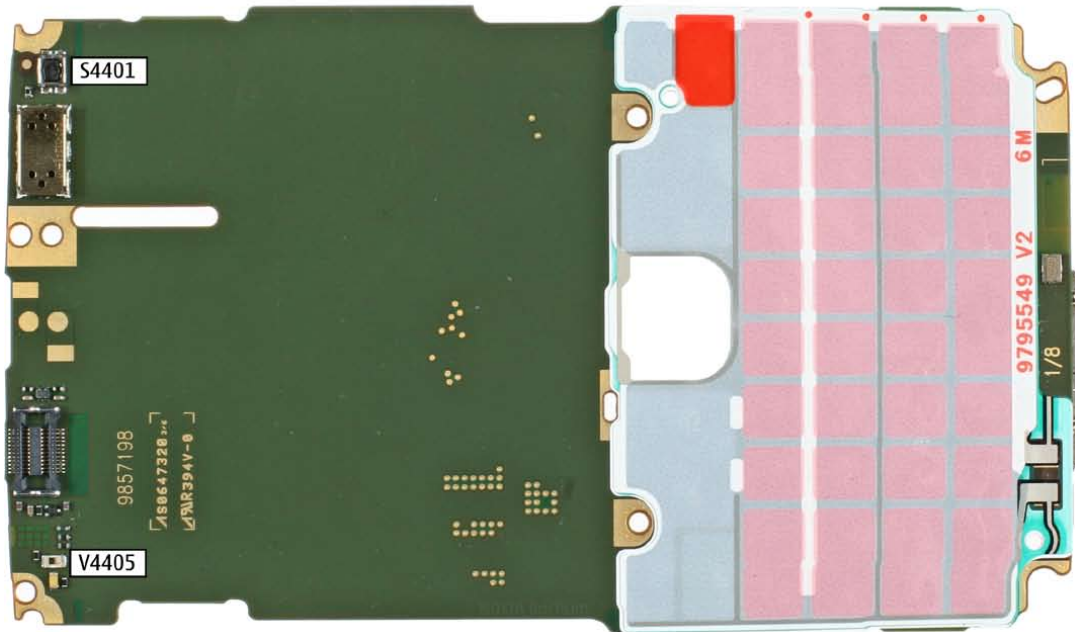
Ver. 3.0

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7. LEVEL 2 SOLDER COMPONENTS

E61i RM-227 Components overview

Solder components only for Level 2



Ver. 2.0


8. NOKIA ONLINE (NOL)

NOL is the database where you can find the latest corresponding Service Bulletins (spare parts, SWAP units and service tools).

This will ensure, that you are using up-to-date order codes only.

Therefore Service Bulletins have to be checked from NOL on daily basis.

[Home](#) | [User](#) | [Sitemap](#) | [Log Out](#)

Nokia Online

GO

[Care Services](#)

[Support Library](#) | [Warranty Info](#) | [Service Points](#) | [Training](#)

Support Library

Browse files

Latest files

» Browse files

Select category:

Select subcategory:

Select subcategory:

Date range from: / /

until: / /

Search: SEARCH

Files for Service level 2 Date:03.02.2005

- XXXXXXXXXXXXXXXXXXXX

Files for Service level 1 Date:16.02.2005

- XXXXXXXXXXXXXXXXXXXX
- XXXXXXXXXXXXXXXXXXXX
- XXXXXXXXXXXXXXXXXXXX

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Service Manual E61i RM-227

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9. SERVICE TOOLS

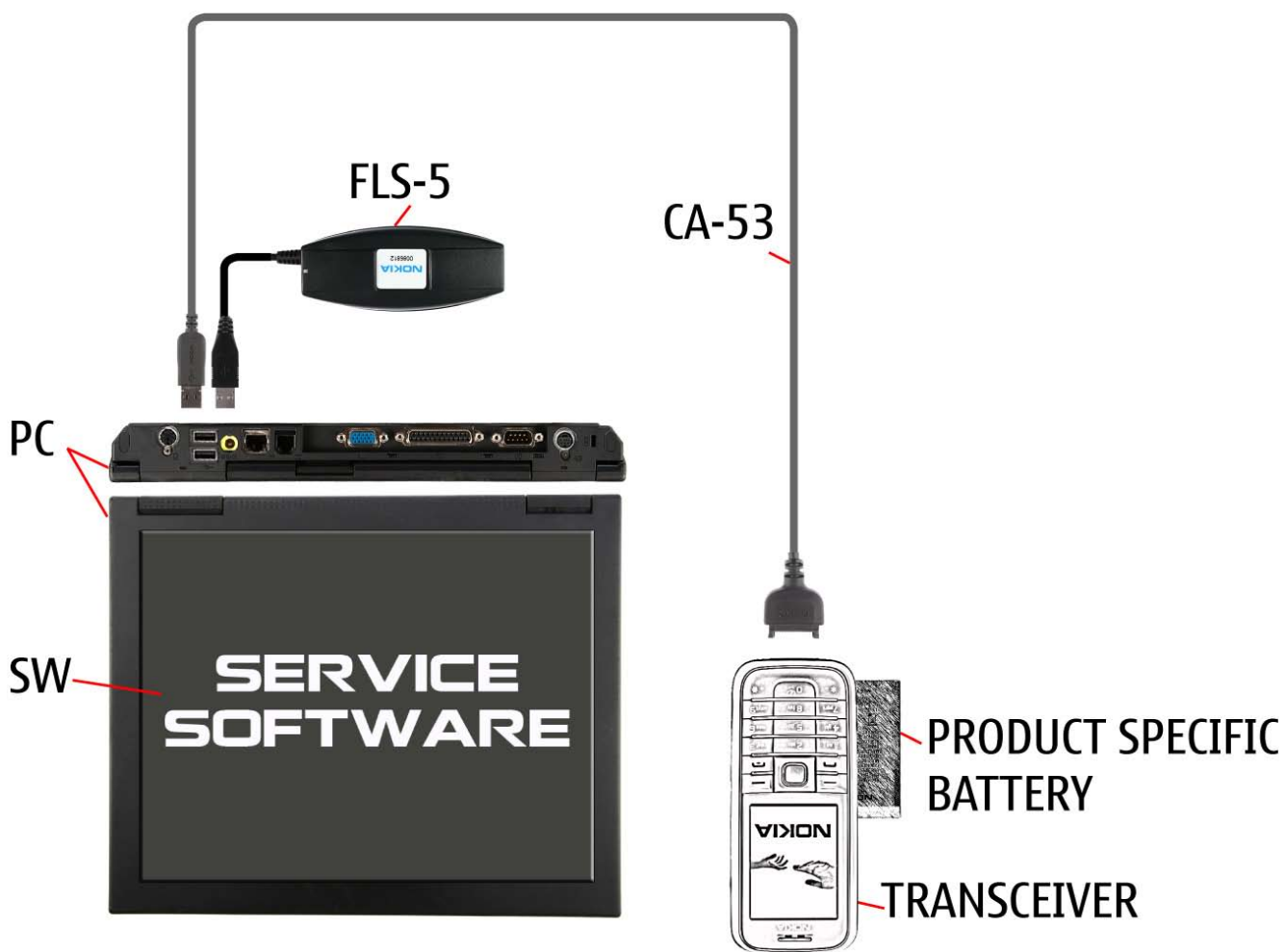
 <p>FLS-5</p>	<p>FLS-5 incl. ACF-8, Driver and User Guide Dongle and flash device incorporated into one package, developed specifically for POS use.</p>
	<p>ACF-8 Universal Power Supply is used to power FLS-4S.</p>
	<p>Travel Charger AC-4 Small and lightweight charger for fast charging of your phone battery.</p>
 <p>BP-4L</p>	<p>Internal Battery BP-4L Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.</p>
	<p>SS-102 Camera removal tool.</p>
	<p>CA-53 Service Cable to connect the PC with the Pop-Port™ connector.</p>

<p>SS-109</p> 	<p>SS-109 Dome Sheet alignment tool.</p>
<p>RJ-149</p> 	<p>RJ-149 Soldering Jig</p>
	<p>Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).</p>
<p>NOKIA Standard Toolkit V2</p> 	<p>0772040 NMP Standard Toolkit (V2)</p> <p>For more informations refer to the Service Bulletin (SB-011) on NOKIA Online.</p> <p>Supplier or manufacturer contacts for tool re-order can be found in “Recommended service equipment” document on NOKIA Online.</p>

10.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](#).



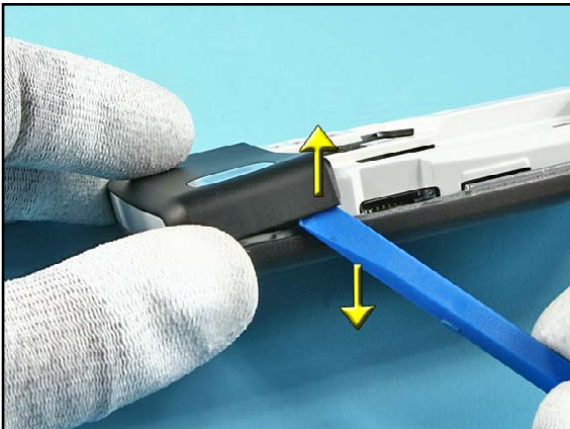
11. DISASSEMBLY INSTRUCTION



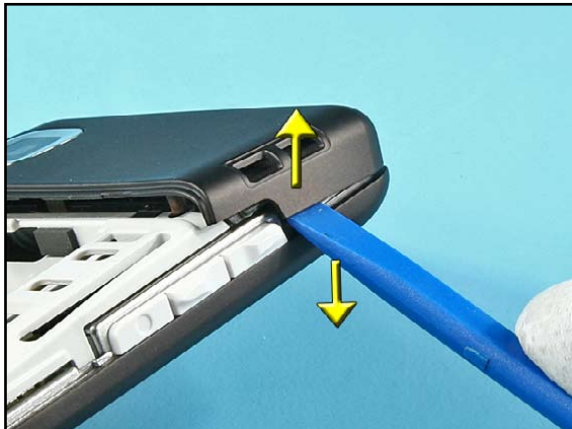
1. Needed tools: a Torx driver, a torque driver, a Torx plus size 4 bit, a Torx plus size 6 bit, the SS-93 opening tool, metal tweezers, the SS-102 camera removal tool and a DC-plug.



2. Push the BATTERY RELEASE BUTTON and remove the BATTERY COVER.



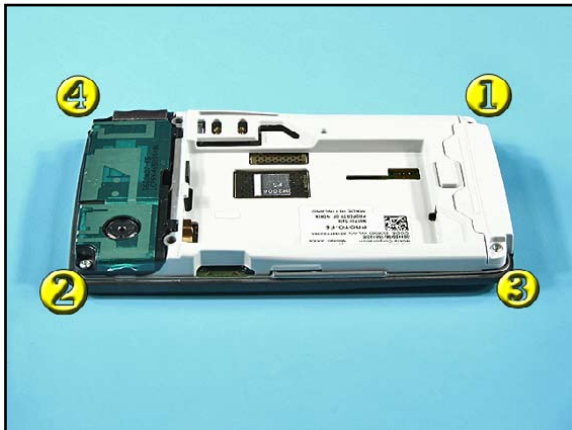
3. First unlock the snap of the CAMERA LID on the shown side.



4. Do the same on the other side.



5. Then Gently, lift the CAMERA LID with the SS-93 and remove it.



6. Unscrew the four Torx Plus® size 6 screws in the order shown and discard them.



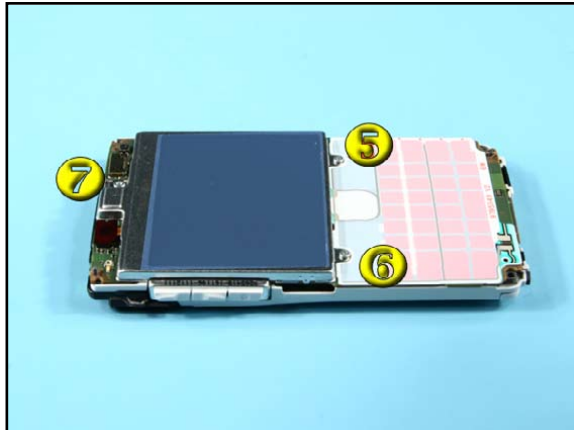
7. Remove the assemblies from the A-COVER.



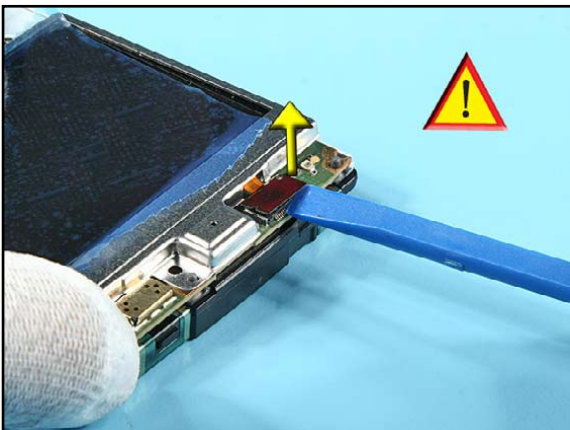
8. Separate the KEYMAT from the A-COVER.



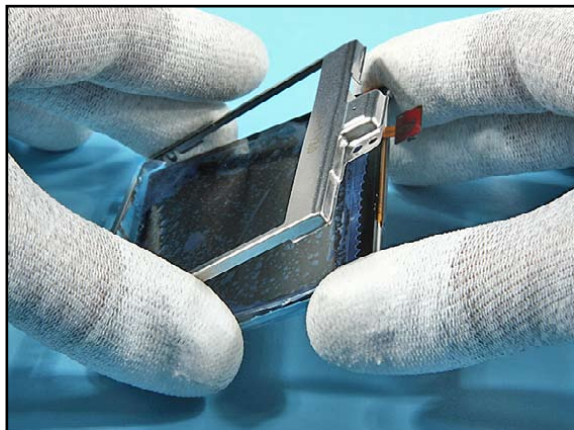
9. If needed, carefully unlock and remove the OPERATOR LOGO.



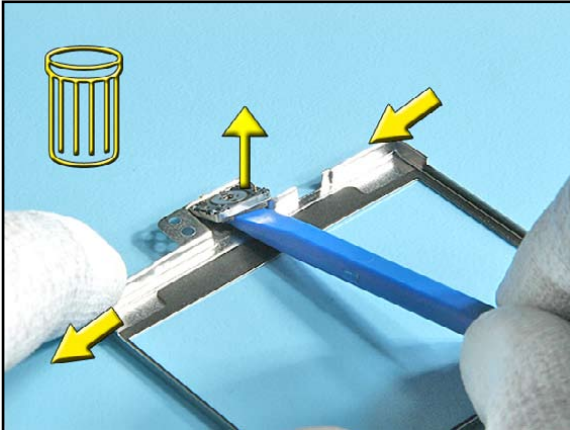
10. Unscrew the two Torx Plus ® size 4 screws (5 and 6) and discard them. Finally, unscrew the last Torx Plus ® size 6 screw.



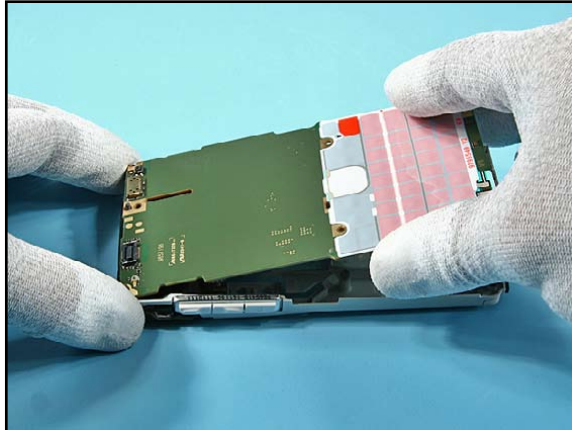
11. Gently, open the LCD connector with the SS-93 and remove the LCD MODULE and the LCD SHIELD ASSY.



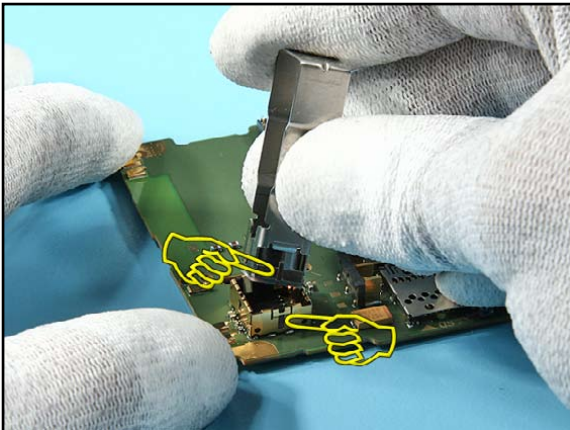
12. Separate the LCD SHIELD ASSY from the LCD MODULE.



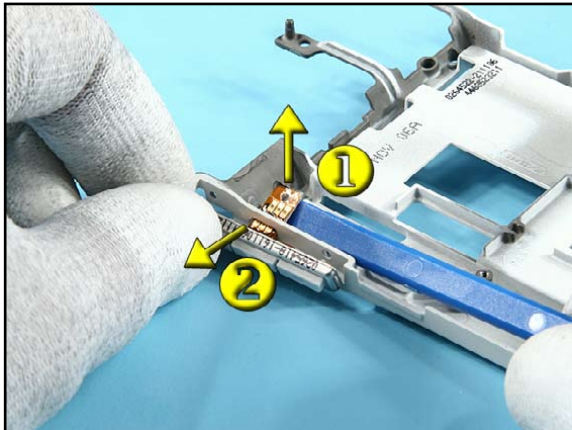
13. Remove the EARPIECE from the LCD SHIELD ASSY with the SS-93. In case of removing the EARPIECE, the LCD SHIELD ASSY has to be renewed.



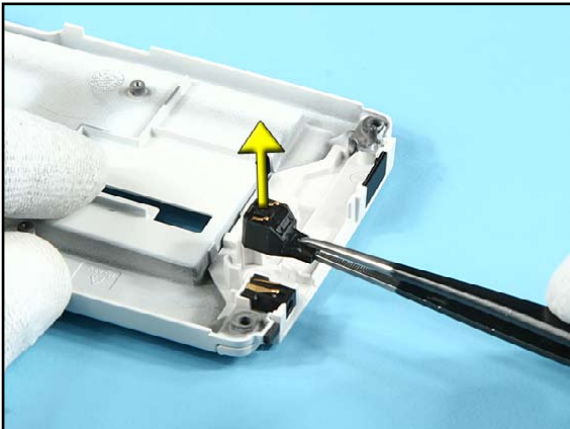
14. Remove the 1ZH ENGINE MODULE from the CHASSIS. After that, the ANTENNA ASSY can remove easily.



15. Remove the CAMERA with SS-102.



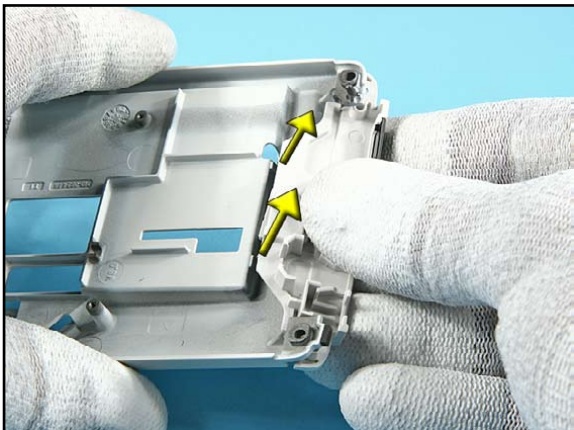
16. Unlock the SIDE BUTTON MODULE ASSY and remove it from its socket.



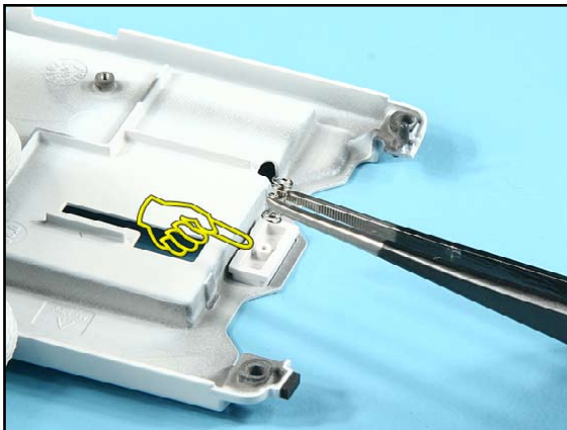
17. Remove the MICROPHONE.



18. Use the DC-PLUG to remove the DC-JACK.



19. Unlock both snaps of the CONNECTOR HOUSING ASSEMBLY and remove it.



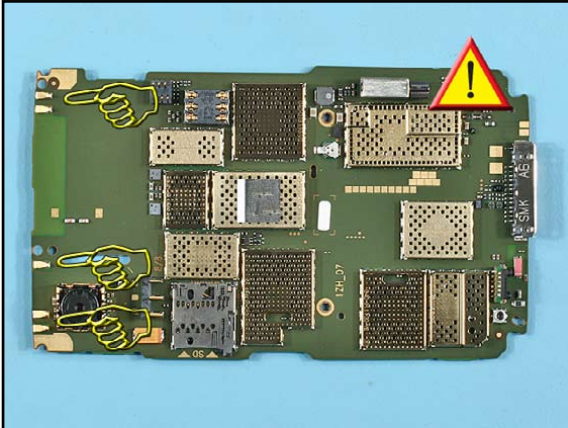
20. Remove the BATTERY RELEASE BUTTON and the BATTERY RELEASE SPRING.



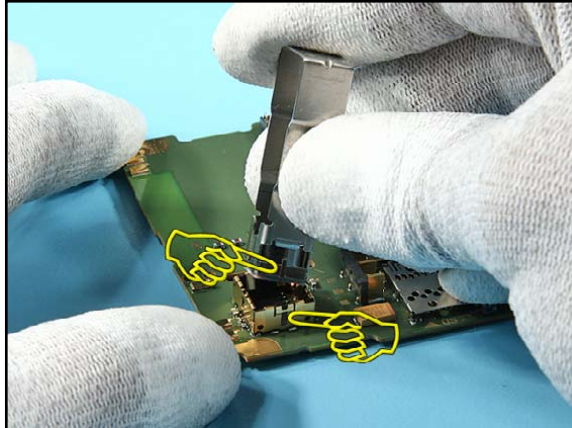
21. The disassembly procedure is now complete.



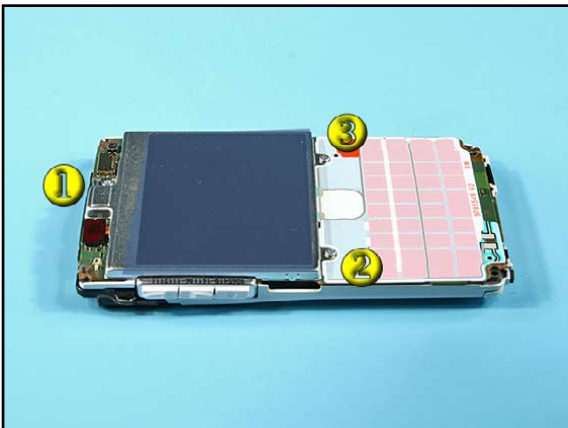
12.ASSEMBLY HINTS



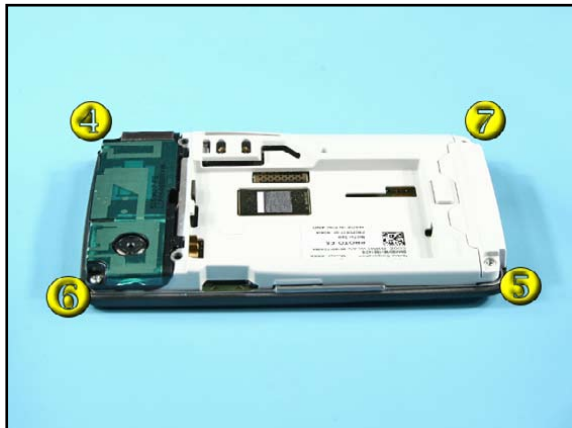
1. Take special care to all spring contacts on the ENGINE MODULE when assembling the unit.



2. Note the right position of the guide pin when assembling the CAMERA.












3. Insert the first screw. To avoid damaging the plastic thread, first turn the screw slightly left to engage the thread and then tighten the Torx Plus ® size 6 screw to the torque of 20 Ncm. Always use a new screws 2 and 3. Tighten the Torx Plus ® size 4 screw to the torque of 17 Ncm.

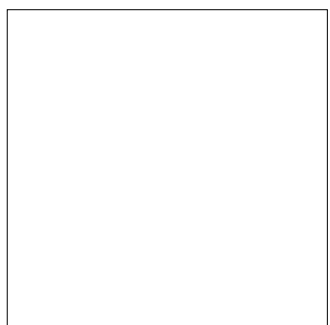
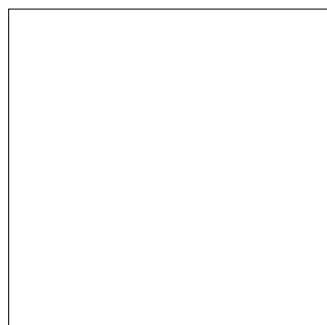
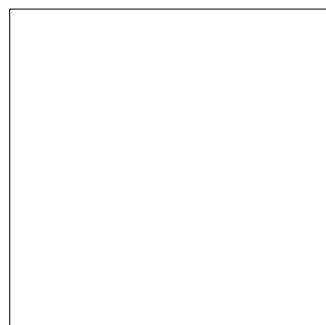
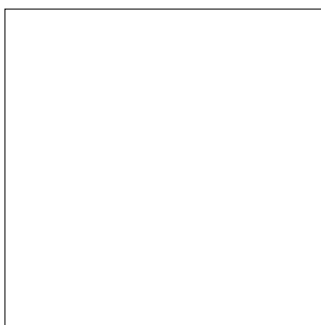
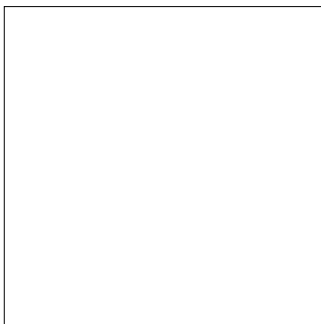
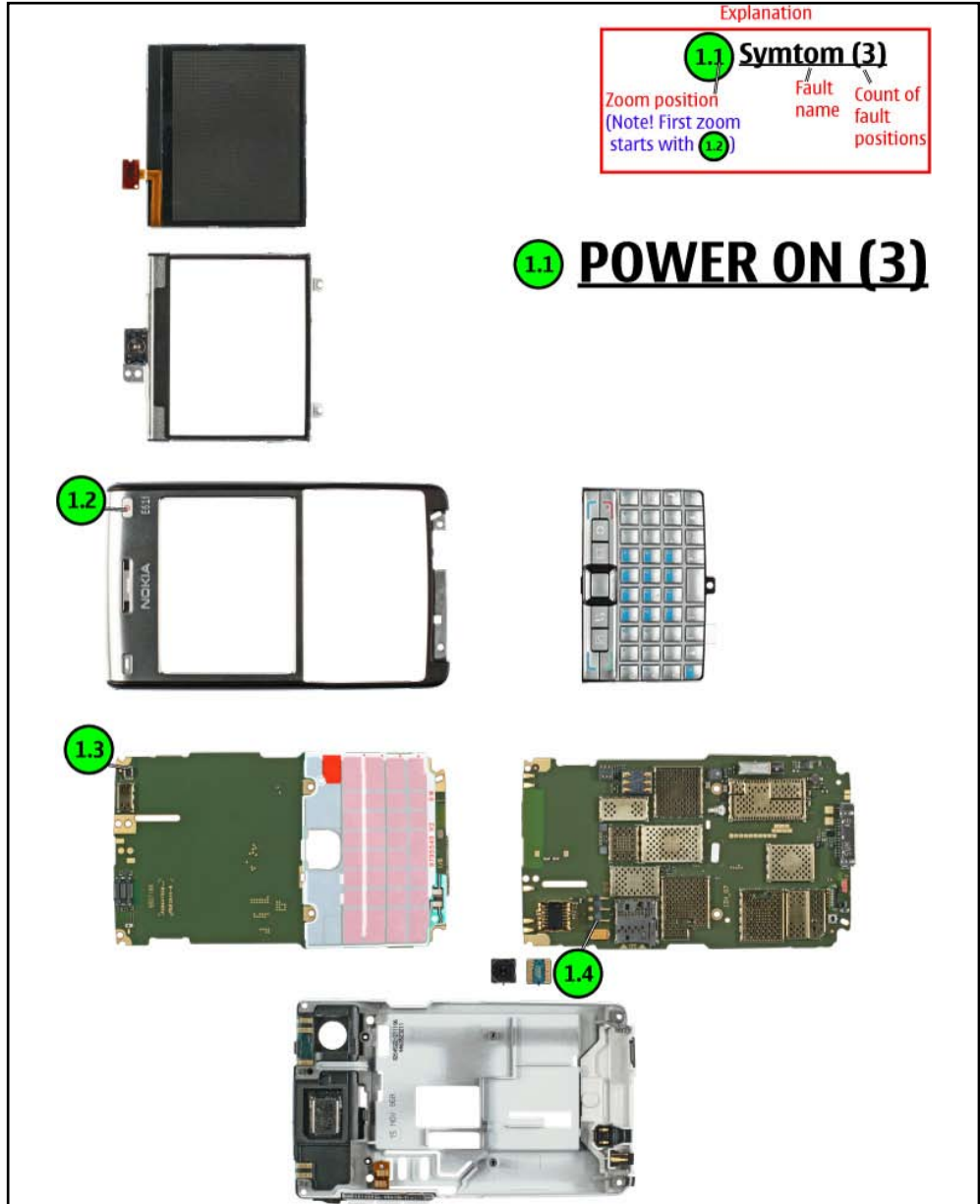
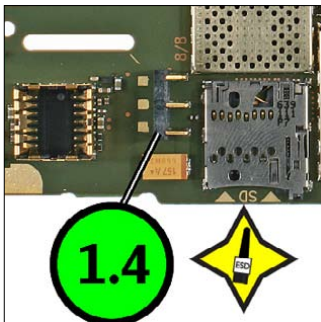


4. Always use new screws. Tighten the four Torx Plus ® size 6 screws to the torque of 17 Ncm in the order shown.

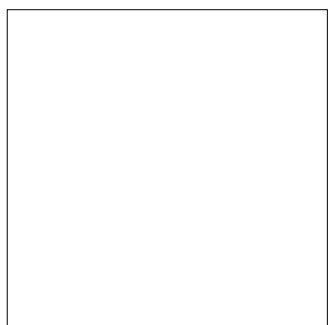
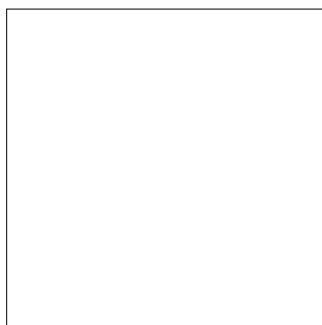
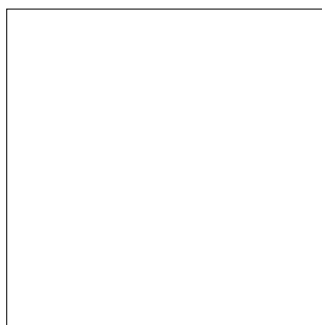
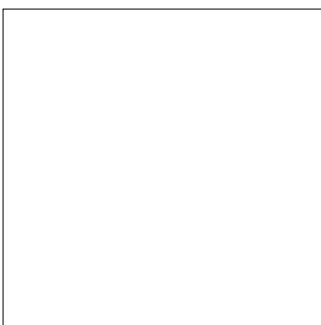
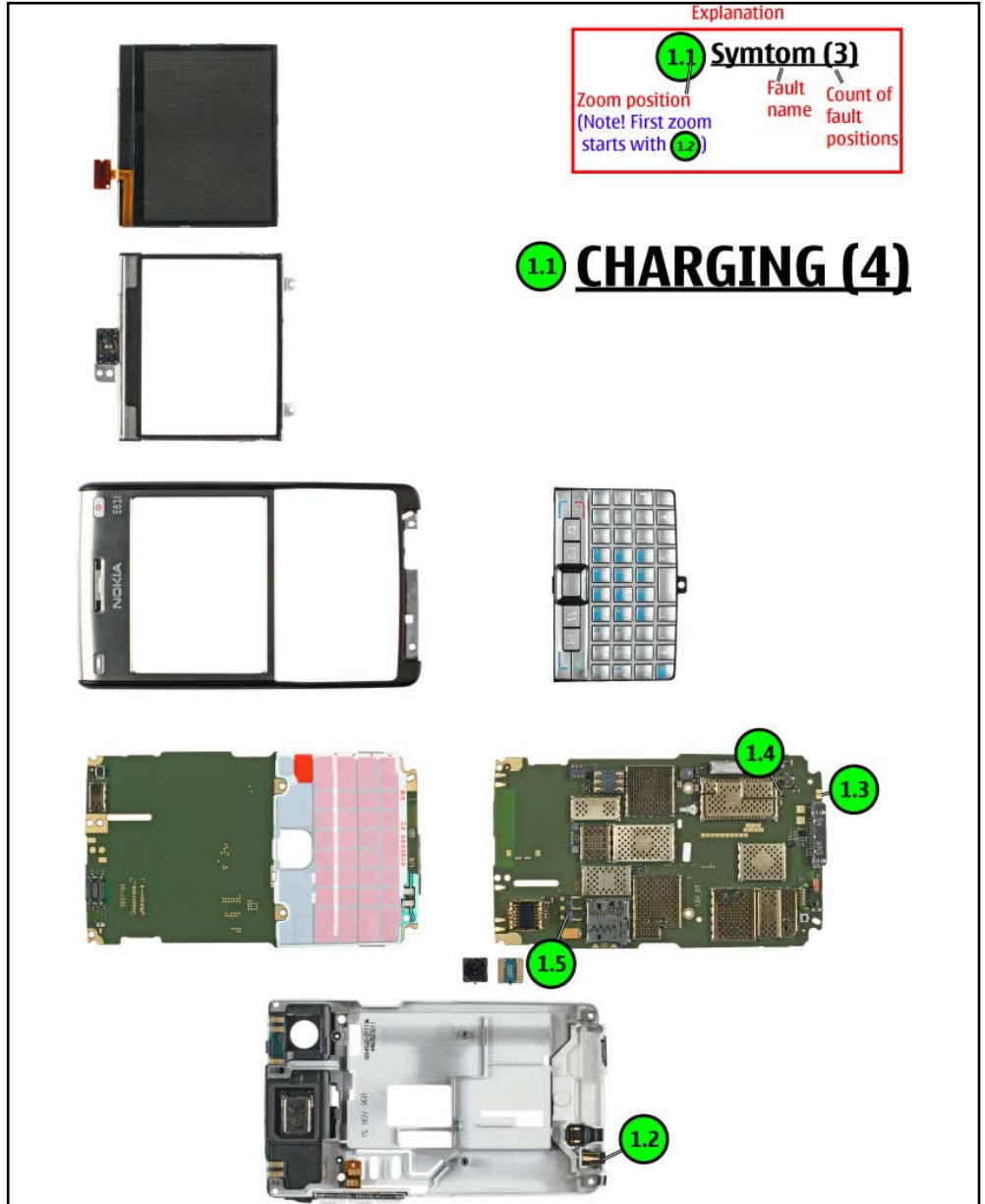
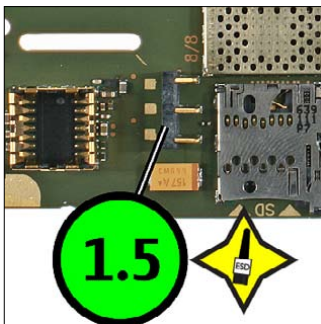
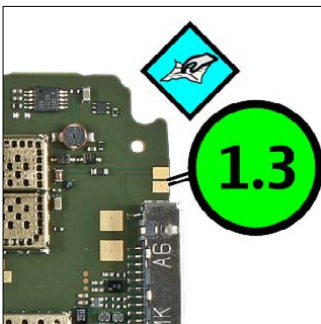
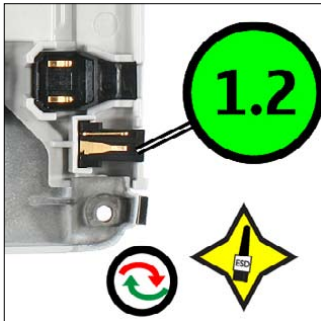
13.LEGEND FOR QUICK TROUBLE SHOOTER

Legend for Quick Trouble Shooter	
This legend is valid for all parts of the Quick Trouble Shooter 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 " =CHANGE ASSY " appears, then change the whole assembly (e.g. A4=D-COVER ASSEMBLY).
	<p>Cloth usage: Check pads or contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary.</p> 
	Measure component for electrical functionality and change, if needed. (Level 2 only) 
	<p>ESD Brush usage: Check contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary.</p> 
	<p style="text-align: center;">Explanation</p> <div style="border: 1px solid red; padding: 5px;"> <p style="text-align: center;">1.1 Syntom (3)</p> <p>Zoom position (Note! First zoom starts with 1.2) Fault name Count of fault positions</p> </div>

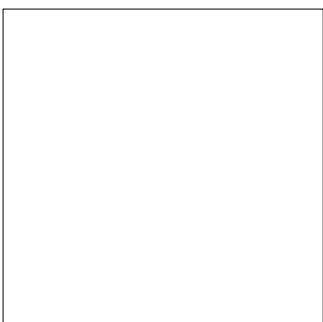
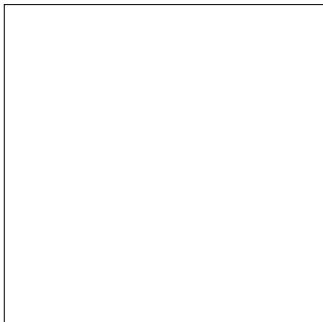
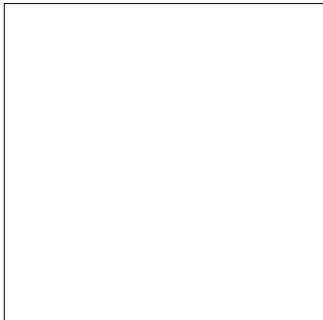
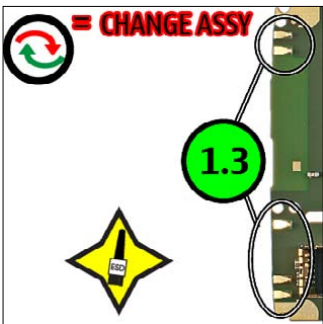
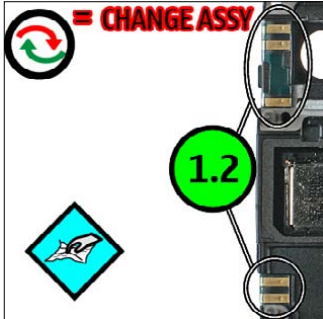
14. QUICK TROUBLE SHOOTER - POWER ON



15. QUICK TROUBLE SHOOTER - CHARGING



16. QUICK TROUBLE SHOOTER - NO SERVICE

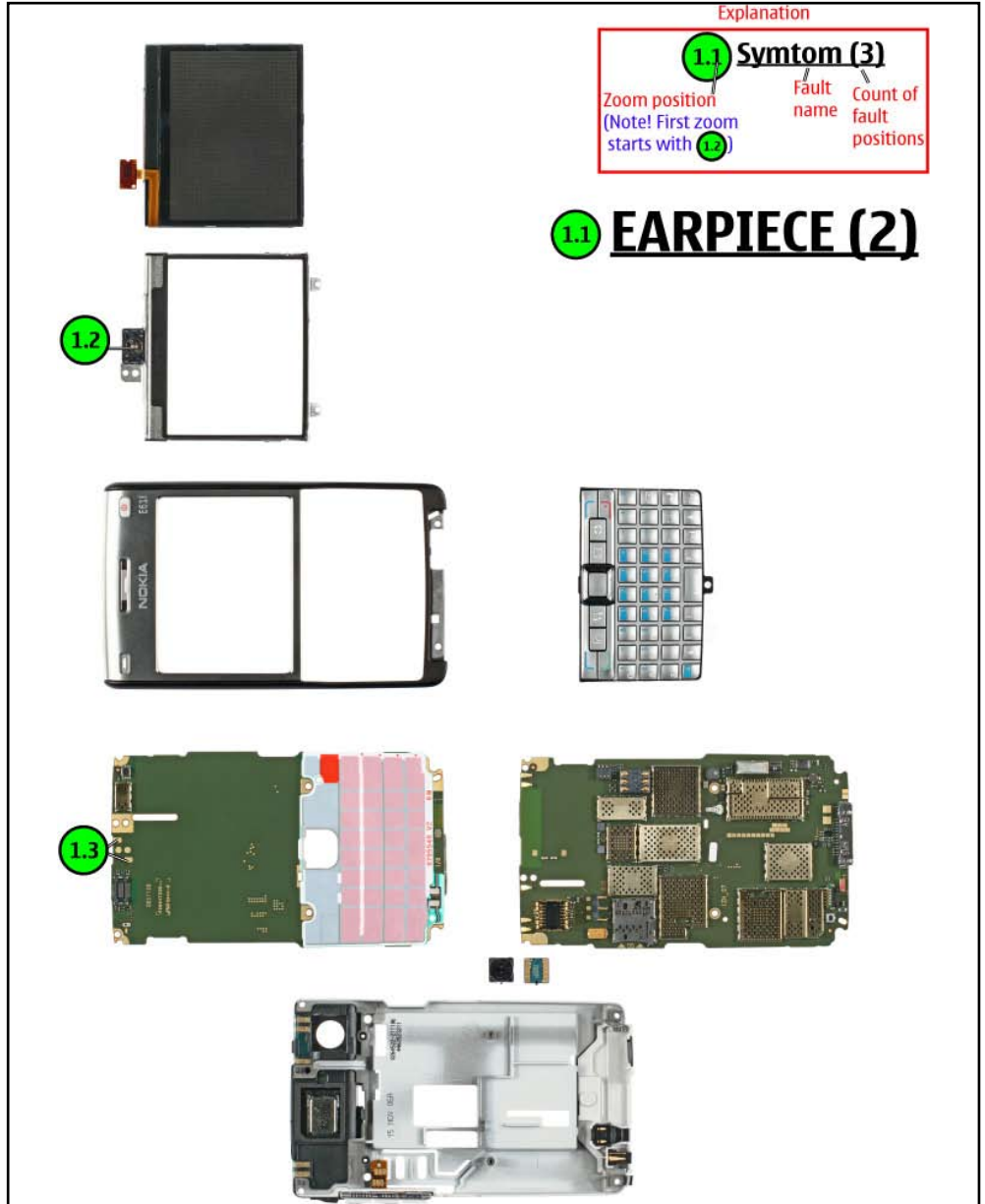
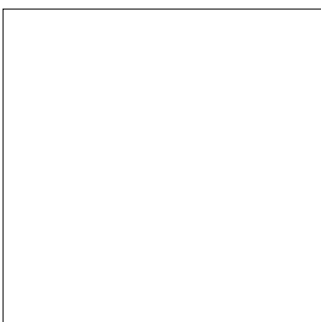
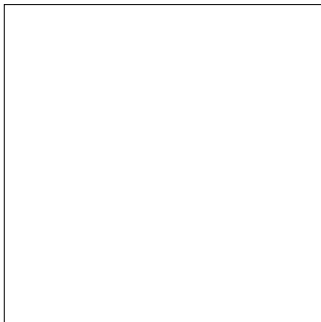
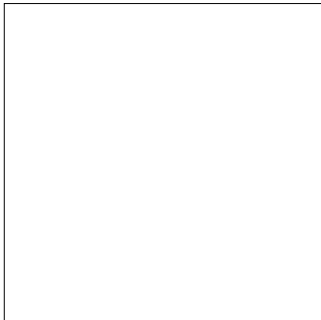
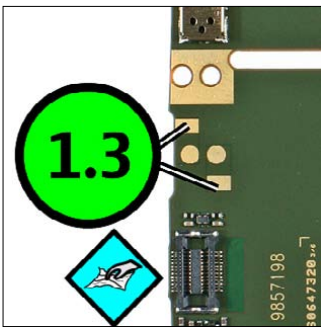


Explanation

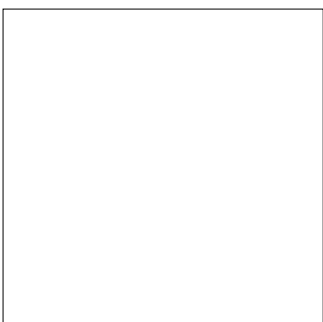
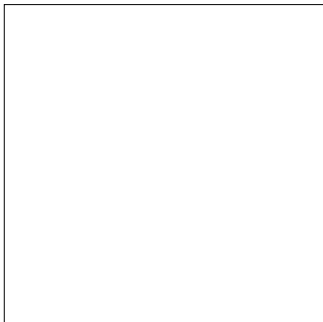
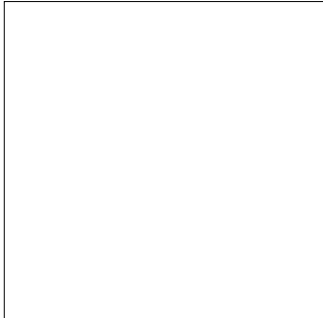
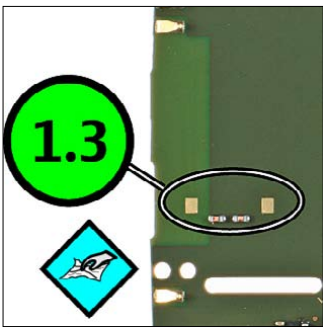
1.1	Symtom (3)
Zoom position (Note! First zoom starts with 1.2)	Fault name Count of fault positions

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

17. QUICK TROUBLE SHOOTER - EARPIECE



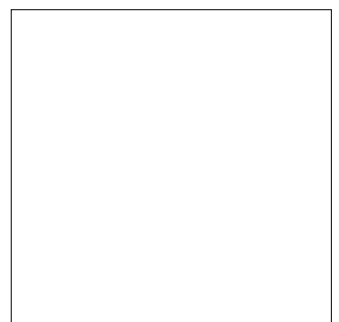
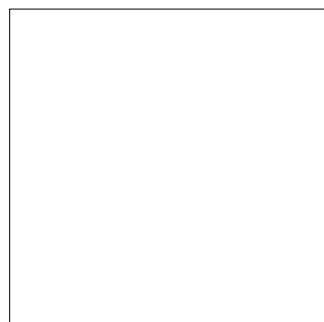
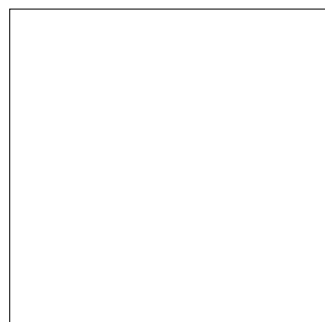
18. QUICK TROUBLE SHOOTER - IHF SPEAKER



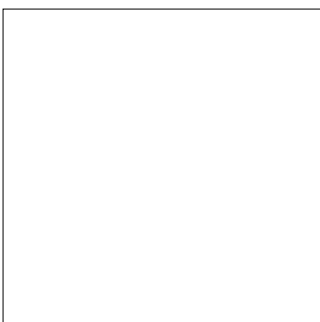
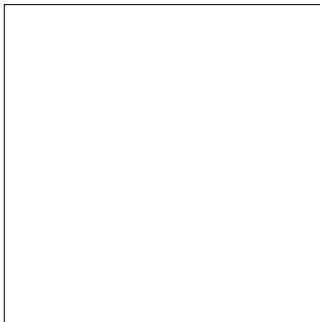
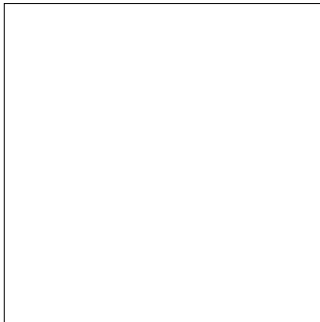
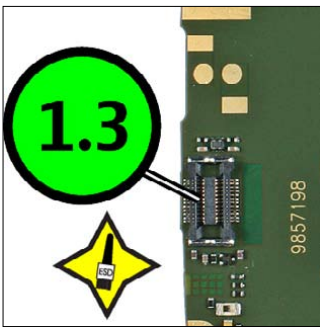
Explanation

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

1.1 **IHF SPEAKER (2)**



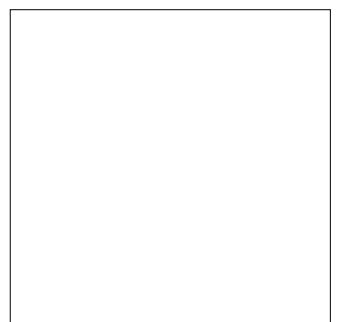
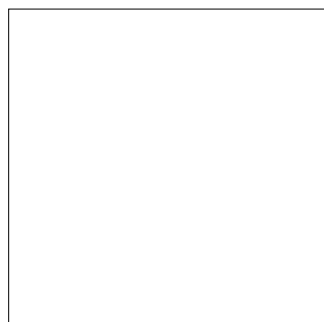
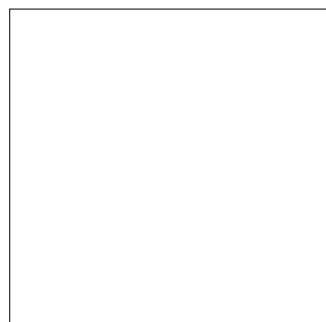
19. QUICK TROUBLE SHOOTER - DISPLAY



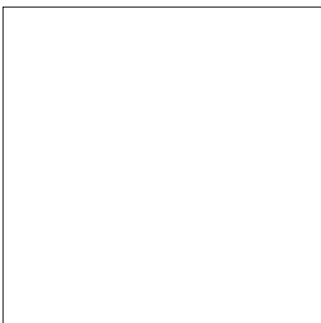
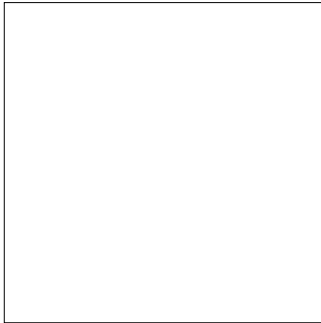
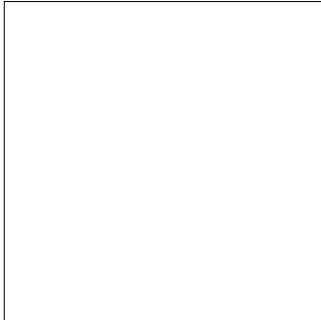
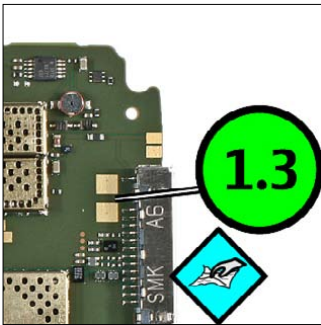
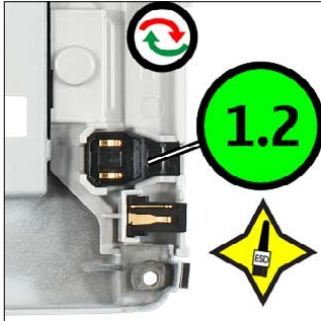
Explanation

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

1.1 **DISPLAY (2)**



20. QUICK TROUBLE SHOOTER - MICROPHONE



Explanation

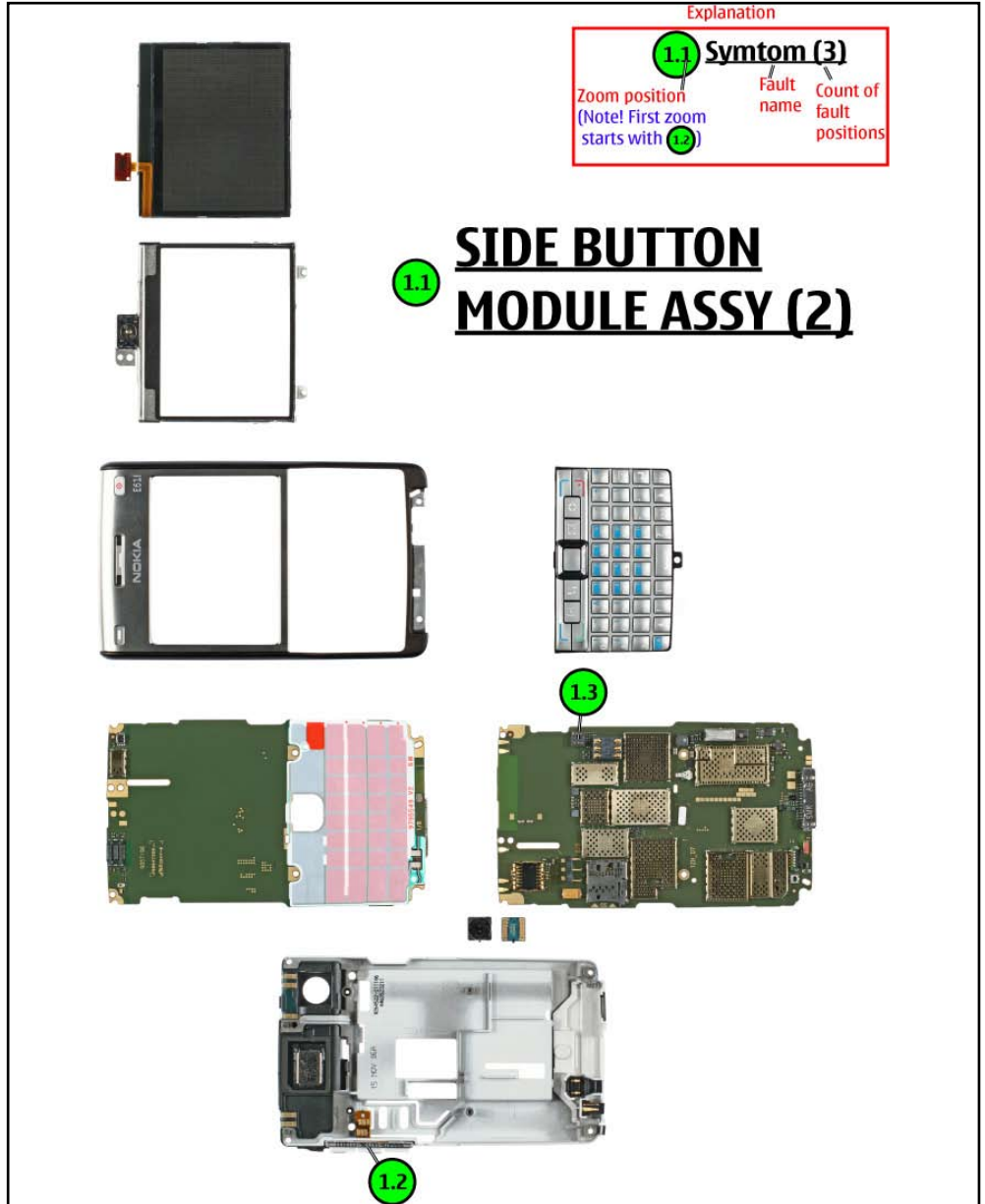
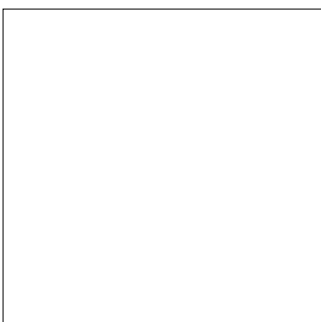
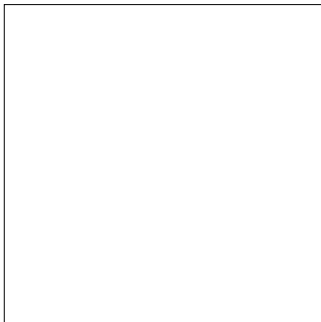
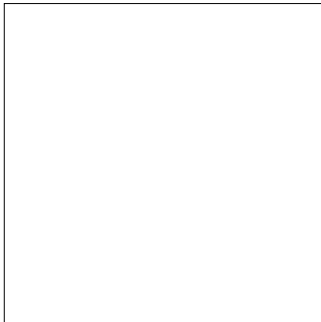
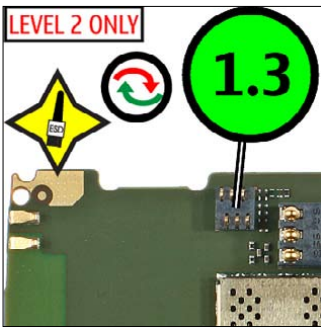
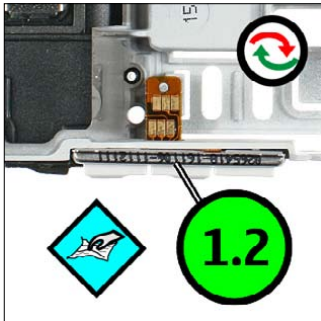
1.1	Symtom (3)
Zoom position (Note! First zoom starts with 1.2)	Fault name Count of fault positions

1.1 MICROPHONE (2)

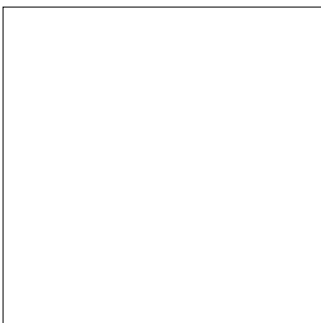
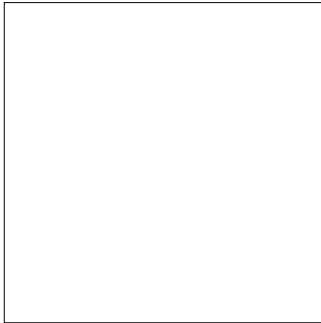
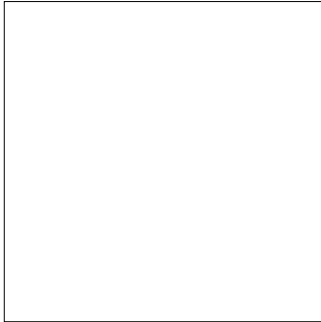
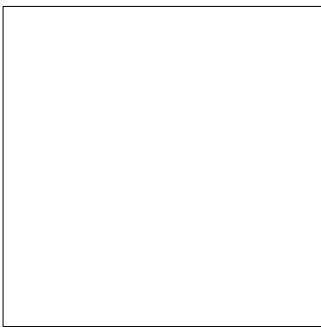
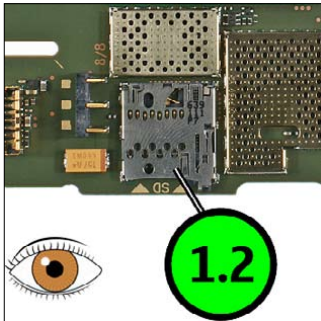
1.2

1.3

22. QUICK TROUBLE SHOOTER - SIDE KEYS



23. QUICK TROUBLE SHOOTER - CARD READER



Explanation

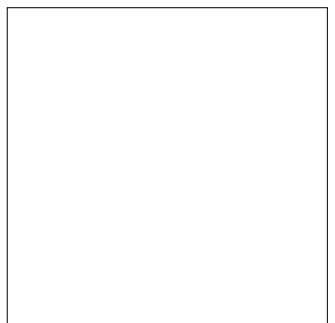
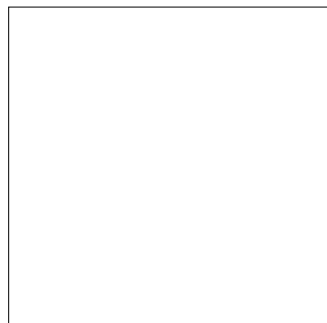
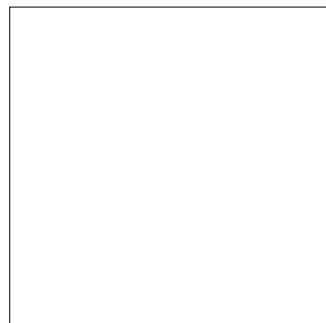
1.1	Symtom (3)	
Zoom position (Note! First zoom starts with 1.2)	Fault name	Count of fault positions

Disassembly steps for the SD card reader: LCD, keypad, back cover, battery, and PCB.

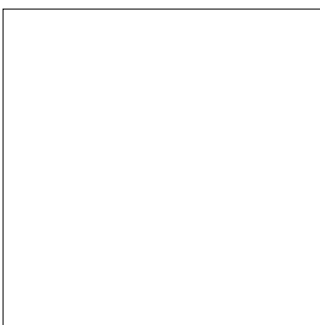
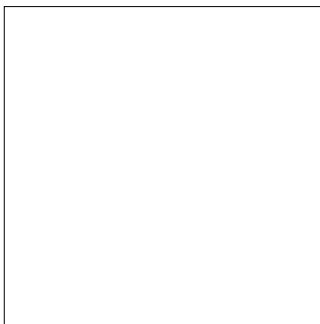
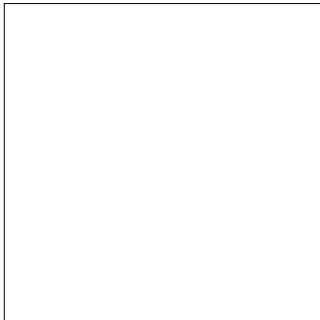
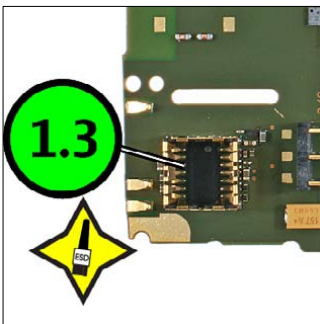
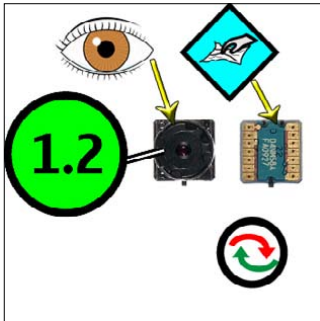
1.1

SD CARD READER (1)

PCB view with callout '1.2' pointing to the SD card reader.



24. QUICK TROUBLE SHOOTER - CAMERA



Explanation

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

1.1 CAMERA (2)

Exploded view diagram of the camera assembly. Components shown include the lens, sensor, camera frame, keypad, and the mainboard. Callouts **1.2** and **1.3** are placed near the mainboard and keypad respectively.

