

SERVICE MANUAL

Level 1&2

NOKIA NOKIA

N95 N95 8GB

RM-159/ RM-245 RM-160 RM-321/ RM-320 Transceiver characteristics:



Band: Quad-band phone for EGSM850/900/1800/1900MHz

WCDMA:

-RM-159/-320/-321: 2100MHz

-RM-160: 850/1900MHz

Camera:

- **Main:** 5Mpix with autofocus and Flash LED

- **Sub:** CIF for video calls

Display:

-RM-159/-245/-160: 6.604cm (2.6") 24bit QVGA TFT full transmissive, resolution 240x320 pixel

-RM-320/-321: 7.112cm (2.8") 24bit QVGA TFT full transmissive, resolution 240x320 pixel

Operating System: Series 60

Bluetooth

WLAN (only RM-159/-160/-320)

GPS

Connector: mini USB Connector, AV Connector, Memory card slot (only RM-159/-245/-160)

Transceiver with BL-5F Li-Ion battery pack (only RM-159/-245/-160)

Talk time	Standby	Note
up to 160/210h	up to 9days	Depends on network parameters and phone settings

Transceiver with BL-6F Li-Ion battery pack (only RM-320/RM321)

Talk time	Standby	Note
up to 210/300h	up to 11.5days	Depends on network parameters and phone settings

Environmental characteristics:

- Lead-free soldered

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CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	11.Dec.2006	Initial draft
Approved	1.0	08.Feb.2007	Approval
Approved	2.0	12.04.2007	Exploded view & Spare Parts overview updated
Approved	3.0	19.Apr.2007	Level 2 solder components and Trouble Shooter Section updated
Approved	4.0	30.May.2007	Exploded view updated, General Information page removed
Approved	5.0	29.Aug.2007	RM-320/-312 added, New Exploded view incl. Assembly A4 changes; Spare Parts overview and General Recycling Recommendation removed
Approved	6.0	12.Sept.2007	RM-160 added (additionally Exploded view)

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.

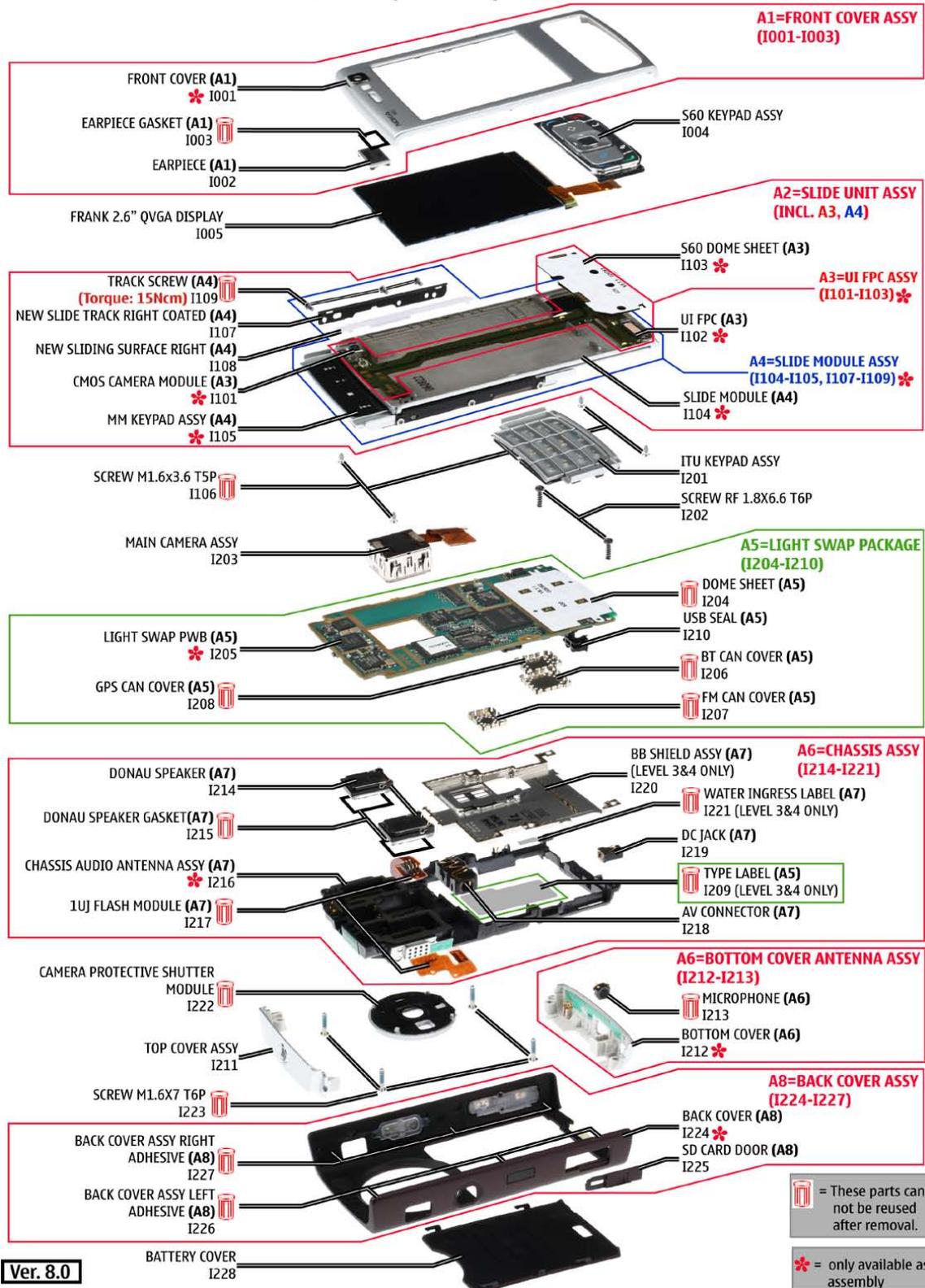


Electrostatic discharge can easily damage the sensitive components of electronic products. Therefore every Service Supplier has to take care of all precautions, which are mentioned in the service level related "Service Partner Requirements", available on NOKIA Online. Also see ESD Protection Requirements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

2. EXPLODED VIEW FOR RM-159/RM-245

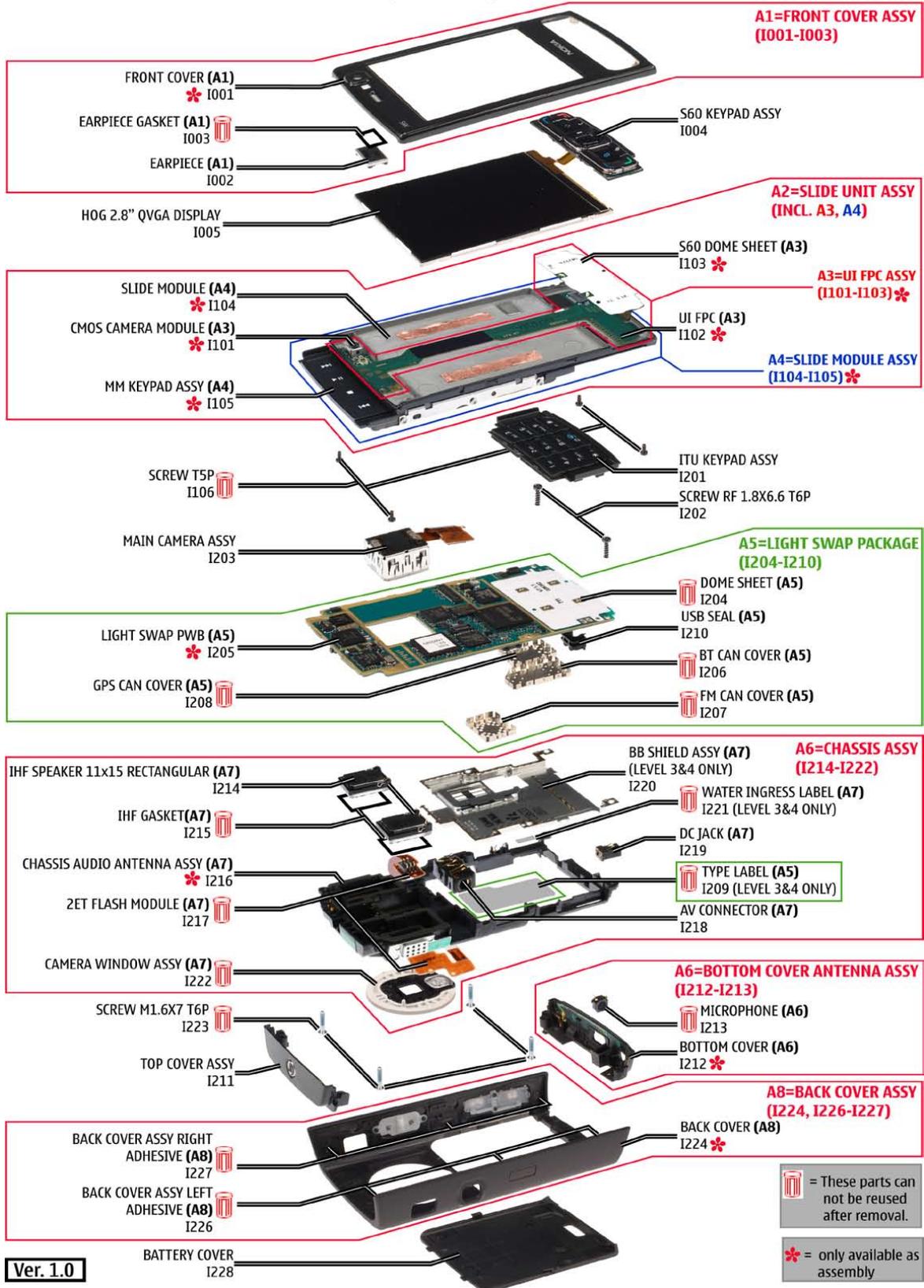
See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on NOL.

N95 RM-159/-245 Exploded view



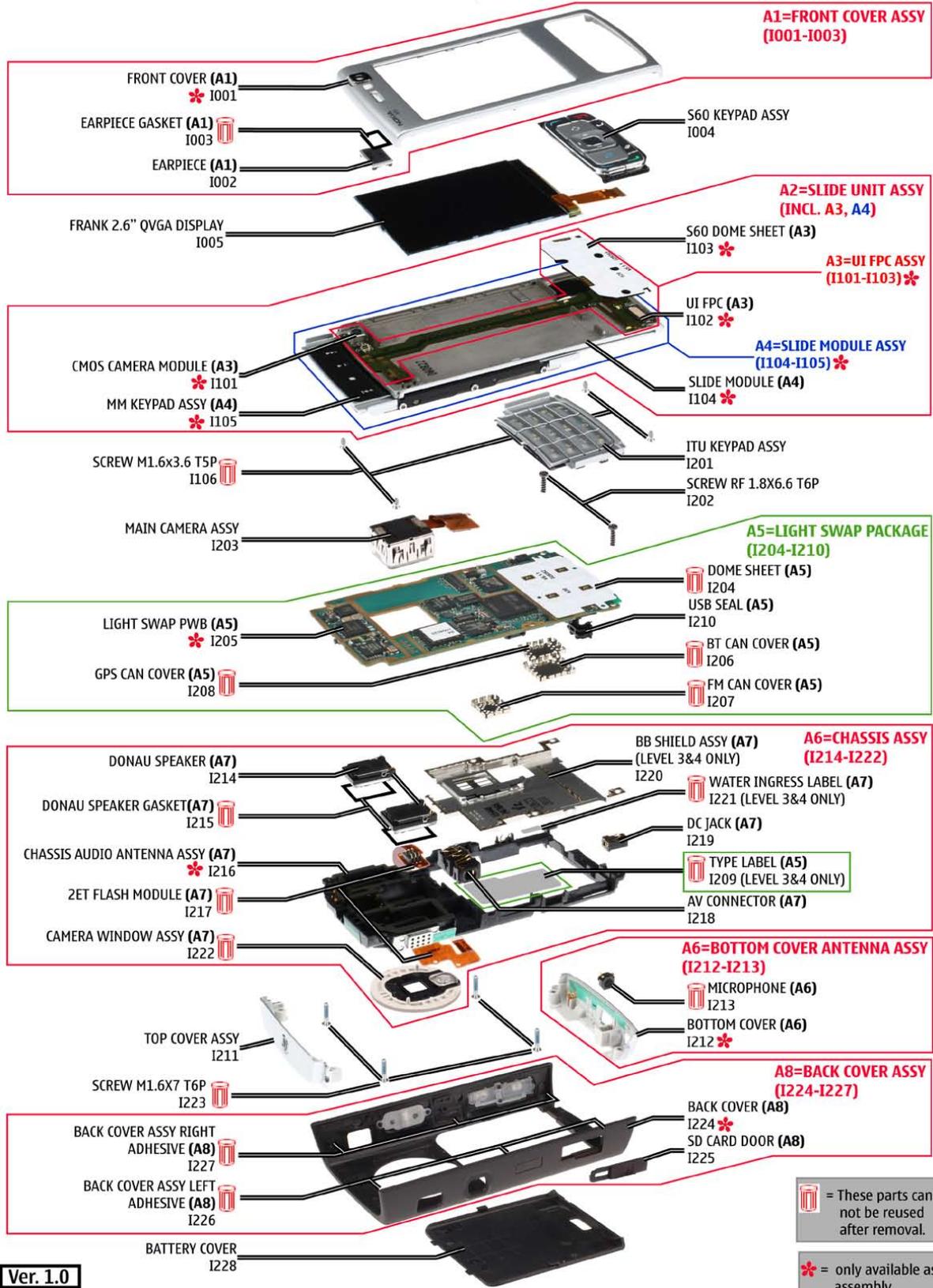
3. EXPLODED VIEW FOR RM-320/RM-321

N95 RM-320/-321 Exploded view



4. EXPLODED VIEW FOR RM-160

N95 RM-160 Exploded view

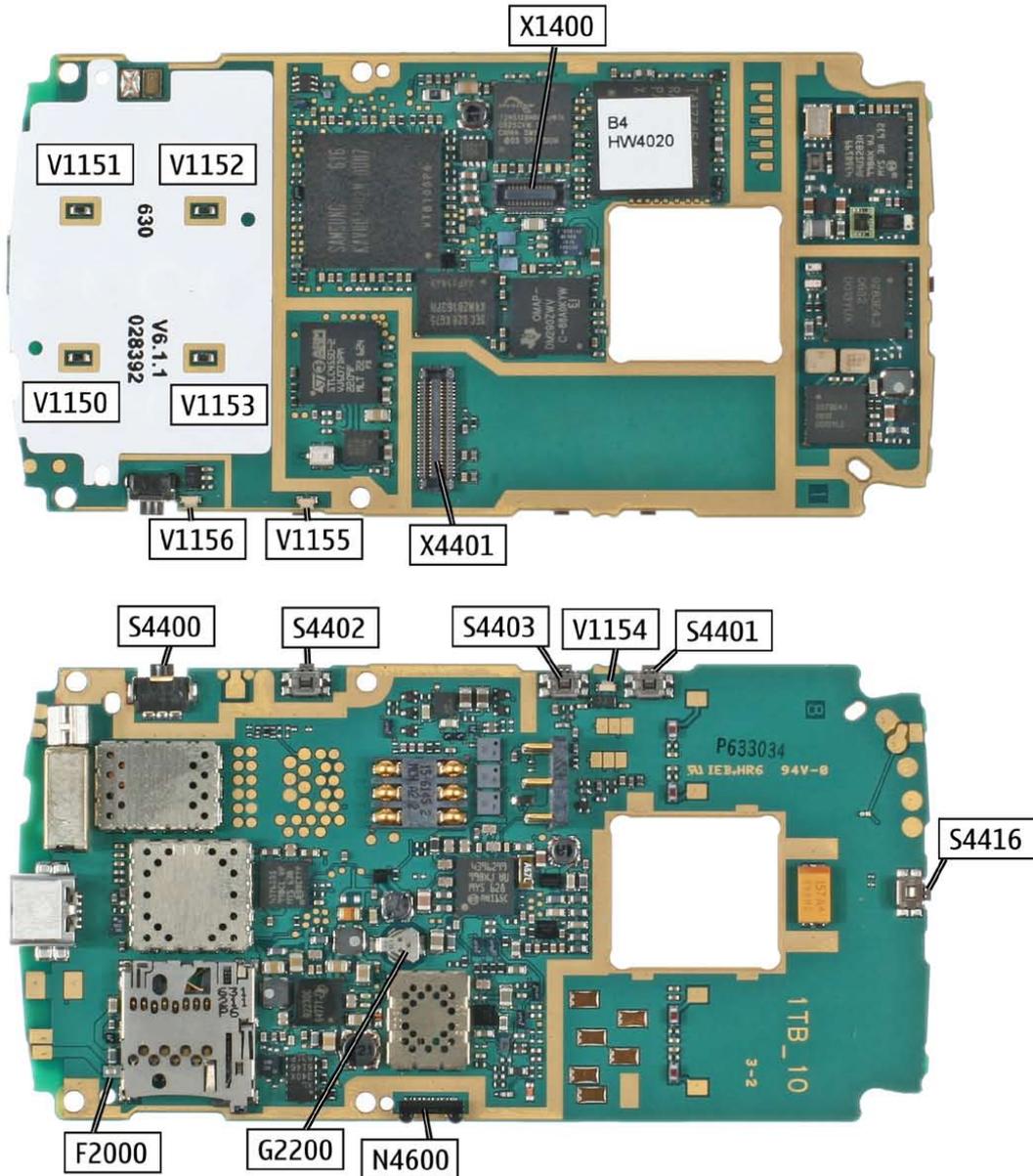


Ver. 1.0

5. LEVEL 2 SOLDER COMPONENTS

N95 RM-159/-160/-245 Level 2 solder components
N95 8GB RM-320/-321 Level 2 solder components

Solder components only for LEVEL 2



Ver. 3.0

6. SERVICE DEVICES

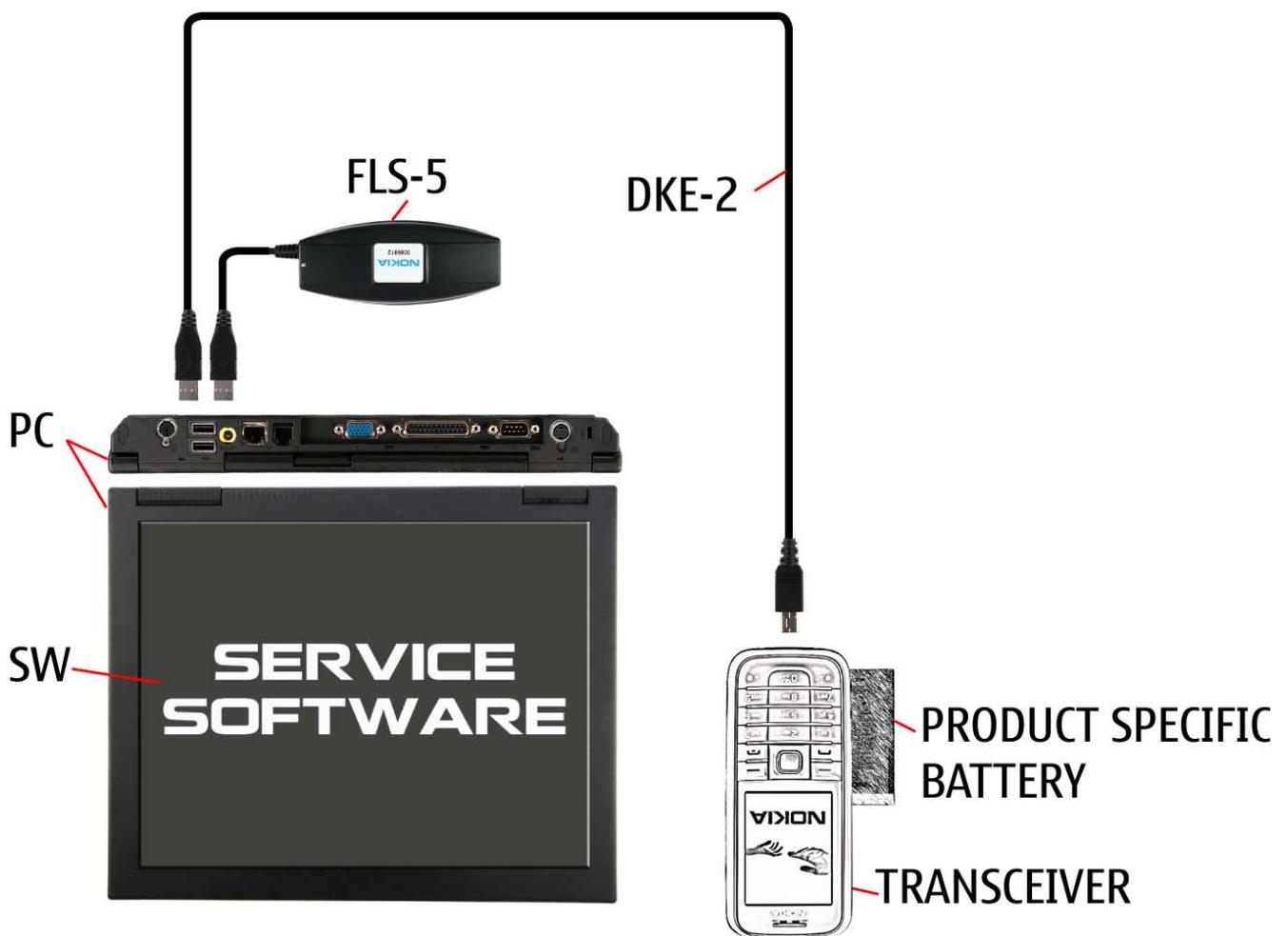
 <p>FLS-5</p>	<p>FLS-5 incl. ACF-8, Driver and User Guide Dongle and flash device incorporated into one package, developed specifically for POS use.</p>
	<p>ACF-8 Universal Power Supply is used to power FLS-5.</p>
	<p>Travel Charger AC-4 Small and lightweight charger for fast charging of your phone battery.</p>
 <p>BL-5F</p>	<p>Internal Battery BL-5F (only RM-159/-245/-160) Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.</p>
 <p>BL-6F</p>	<p>Internal Battery BL-6F (only RM-320/-321) Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.</p>
 <p>CA-75U 150cm</p>	<p>CA-75U Video connectivity cable for TV-out testing</p>
	<p>DKE-2 Service Cable to connect the PC with the phone connector.</p>

	<p>RJ-118 Soldering Jig</p>
	<p>Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).</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>

7. 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](#).



8. UPPER BLOCK DISASSEMBLY



1. Needed tools: SS-93, the SRT-6, the bit holder with a torx plus size 5 bit and a torque driver.



2. Cover the display with a protective film.



3. Check that no battery is still inserted before going on.



4. Shift open the assembly.



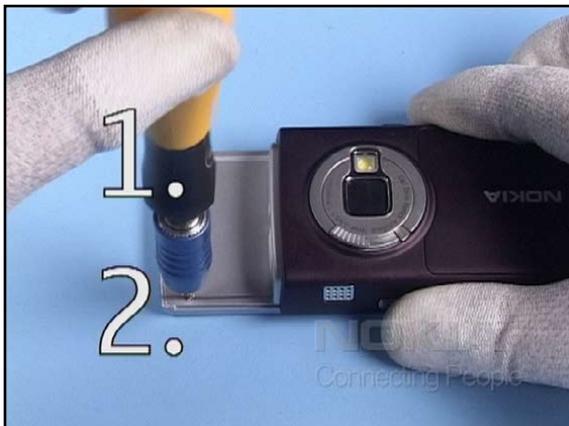
5. Unscrew these 2 screws.



6. Discard them, they can't be reused.



7. Shift the slider into the other position.



8. Unscrew these 2 screws in the order shown and discard them, too.



9. Do not use them again.



10. Unlock these middle metal clips, hidden under the FRONT COVER.



11. Turn the unit and release the second connector, too.



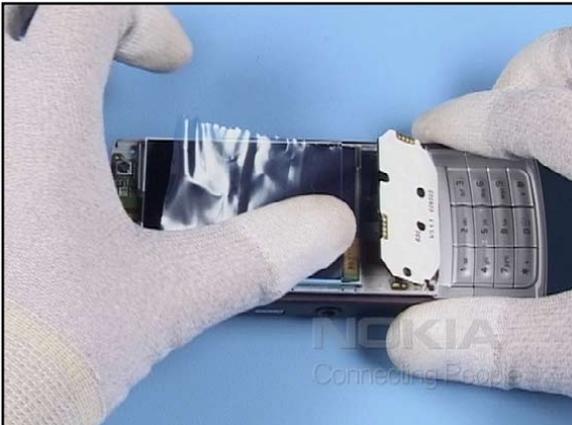
12. Peel up the protection film.



13. Now, lift up the FRONT COVER.



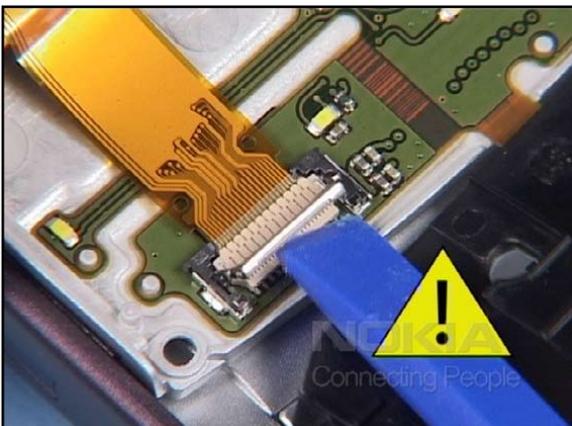
14. Remove the S60 KEYPAD.



15. Cover the display with a protective film.



16. Flip over the keypad.



17. **(Only for RM-159/245)** Be double careful while opening this connector. The whole SLIDE MODULE must be replaced if damaged. The display connector for RM-320/321 is different.



18. Lift up the display.



19. Gently release the adhesive of the EARPIECE. The gasket will be destroyed while removal.



20. ...and must be replaced when reassemble.



21. The disassembly procedure is now complete.

9. UPPER BLOCK ASSEMBLY



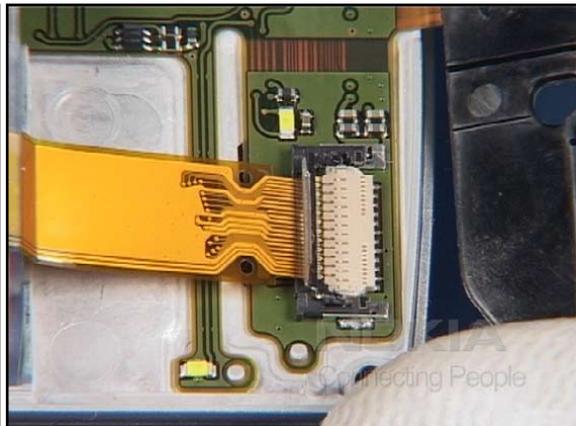
1. Assembly



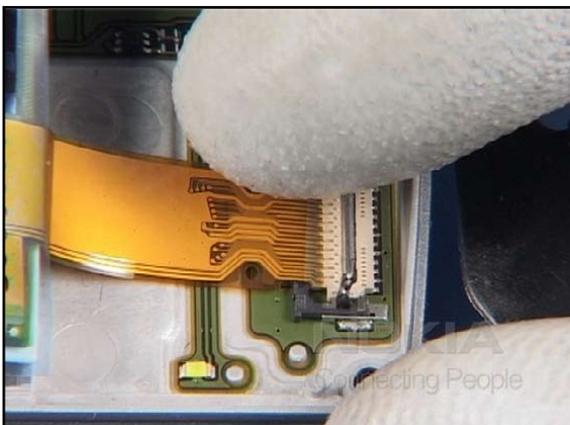
2. Fit a new gasket and place the EARPIECE into the FRONT COVER.



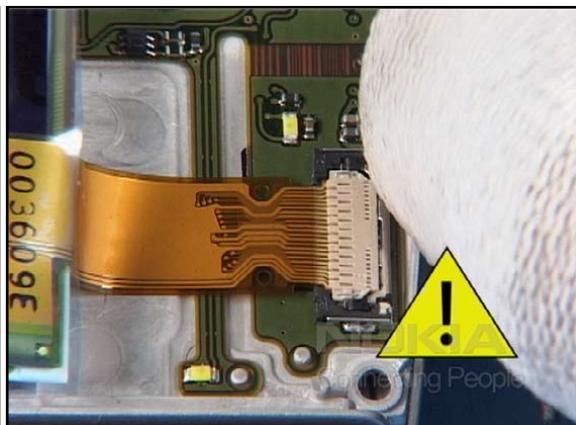
3. Flip over the keypad.



4. Insert the flex foil of the display into the connector evenly.



5. Open the connector if necessary while inserting.



6. Carefully close the connector. Again, when destroying this connector or parts of it, the whole SLIDE MODULE must be replaced.



7. Place the display into its compartment.



8. Flip over the keypad.



9. Peel up the protection film.



10. Place the S60 KEYPAD.



11. Check that the window and camera are clean, otherwise clean it up before going on.



12. Place the FRONT COVER and smooth it down evenly.



13. Protect the display again.



14. Shift open the slider.



15. Insert two new screws.



16. Set the correct torque.



17. Tighten both screws in the order shown.



18. Slide the assembly into the second position to access the next treads.



19. Insert the next 2 screws.



20. Tighten them to the correct torque in the order shown.



21. Check the functionality of the slider.

10. LOWER BLOCK DISASSEMBLY



1. Needed tools: SS-93, the dental pick, metal tweezers, a bit holder with a Torx plus size 6 bit, a torque driver, a straight bladed screwdriver and a DC plug.



2. Always cover the windows with a protective film.



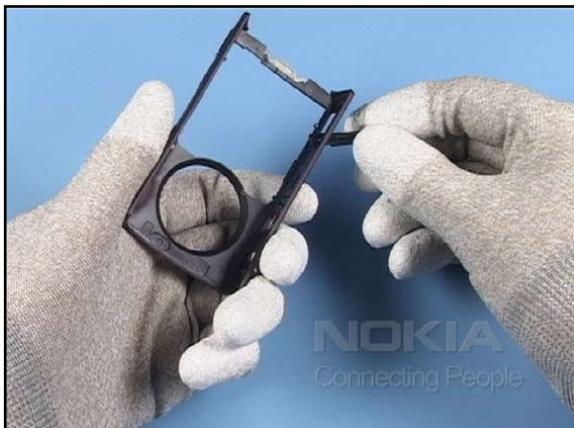
3. Unlock and remove the BATTERY COVER.



4. Shift open the assembly.



5. Bend open the BACK COVER ASSEMBLY carefully.



6. The removal of the SD CARD DOOR becomes easy now.



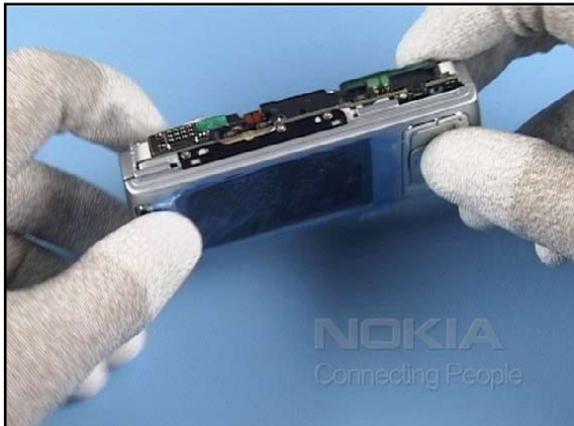
7. Keep all 6 adhesives of the BACK COVER clean, otherwise you have to change them before re-assembly.



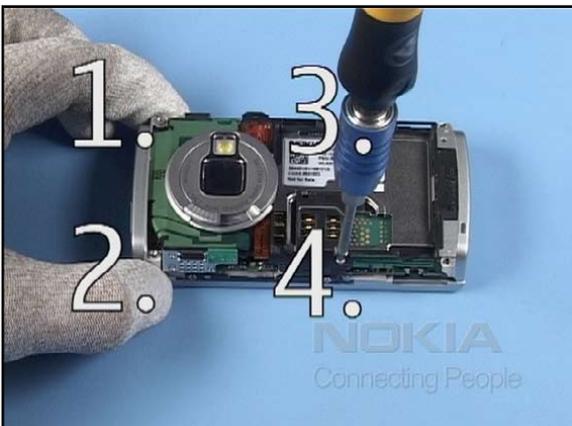
8. Gently pry open both plastic clips of the ITU KEYPAD.



9. Lift it up now and remove it.



10. Shift the assembly together and turn it to access the screws.



11. Unscrew the 4 torx plus size 6 screws in the order shown.



12. Remove all screws and discard them. Do not use them again.



13. Lift up the TOP COVER ASSY first, then remove it.



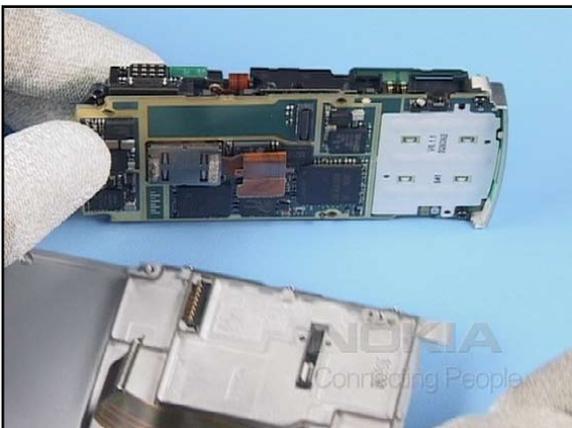
14. Shift out the assembly in order to gain the maximum flex foil length.



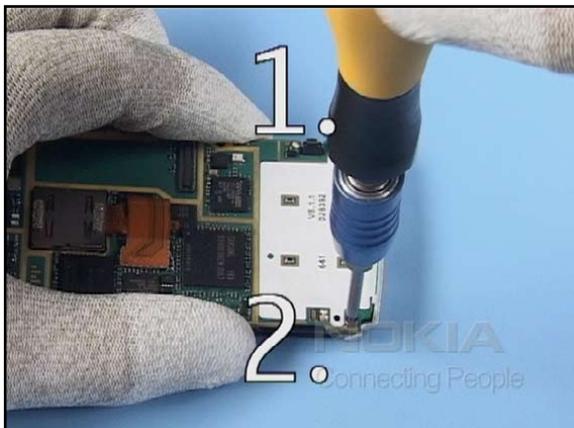
15. Separate the assemblies, keep in mind that the flex foil is still connected.



16. Be double careful while opening this connector. Do not destroy the hidden components underneath.



17. Now the parts can be separated.



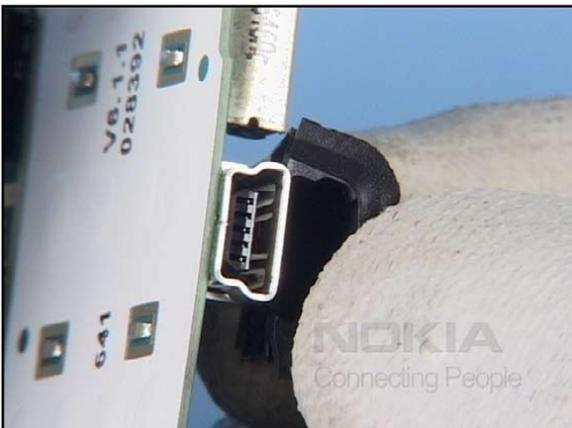
18. Unscrew both screws in the order shown and remove them.



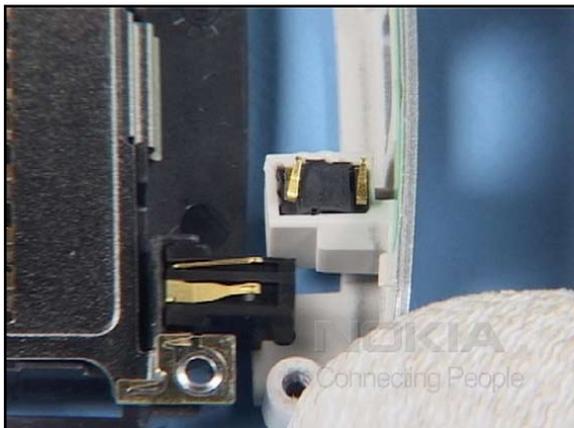
19. Lift up the LIGHT SWAP PWB together with the MAIN CAMERA.



20. To separate the camera, disconnect the flex connector first. Do not lever out against the components.



21. Remove the USB SEAL.



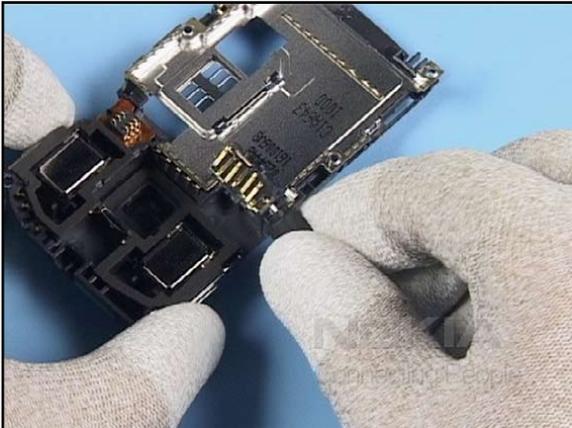
22. The BOTTOM COVER can be separated easily.



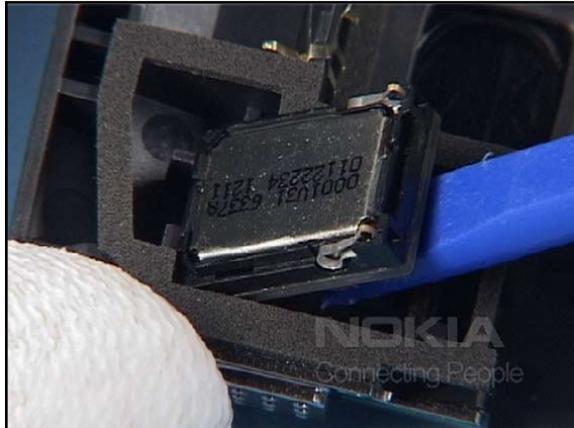
23. Ease out the MICROPHONE and discard it, use a new one when reassembling.



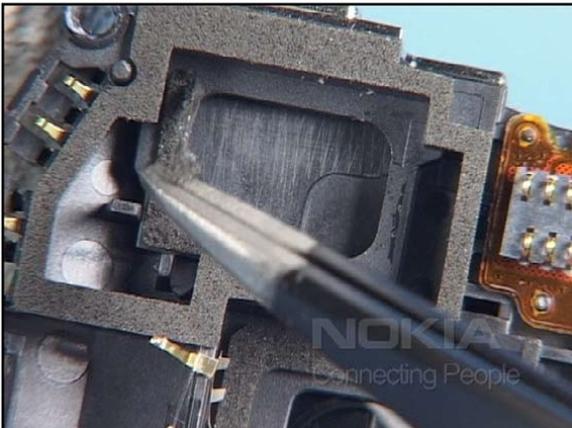
24. Remove the DC Jack...



25. ...and the AV CONNECTOR with the DC plug.



26. Gently lever out the glued in DONAU SPEAKERS.



27. The gaskets will be destroyed. Remove all residues before reassembling.



28. Lever up the first metal latch of the BB SHIELD



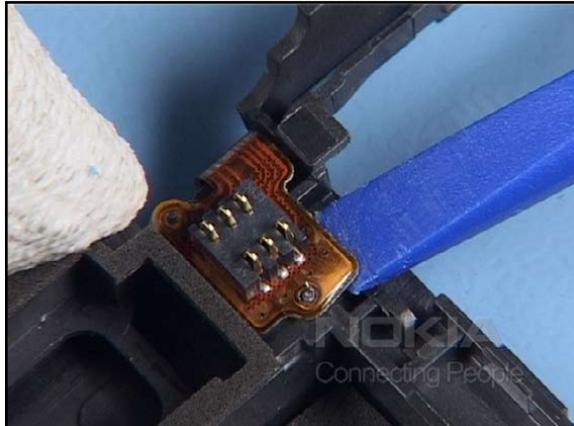
29. and than the second one. Do not touch or bend the gasket. Keep it together with the PWB.



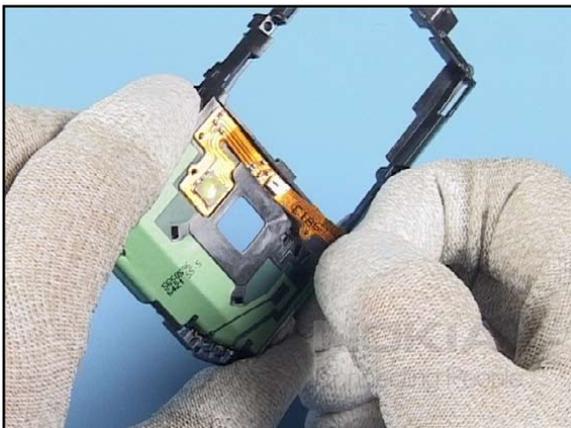
30. Gently release the adhesive of the CAMERA PROTECTIVE SHUTTER MODULE. Mind the hidden switch underneath!



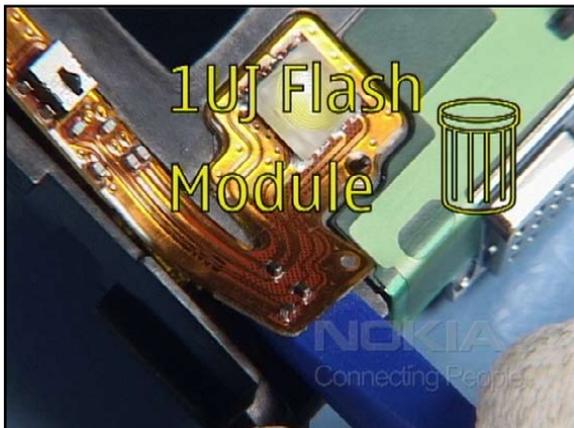
31. Remove it now. It can't be reused again.



32. Release the flex of the 1UJ FLASH MODULE, beginning at the connector's side.



33. Now peel up the flex.



34. Now release the still fixed side with the SS-93. The module can't be used again.



35. Check that no residues of the adhesive remain.



36. The disassembly procedure of the lower block is now completed.

11. LOWER BLOCK ASSEMBLY



1. Assembly.



2. Remove the protective film from the 1UJ FLASH MODULE.



3. Align the module exactly to the alignment tabs.



4. Smooth it down evenly. Note the components.



5. Now position the connector side.



6. Do not bend the connector springs while pushing down.



7. Remove the protection film from the CAMERA PROTECTIVE SHUTTER.



8. Align it and push down the assembly as shown evenly to fix the adhesive.



9. Place the BB SHIELD into the CHASSIS.



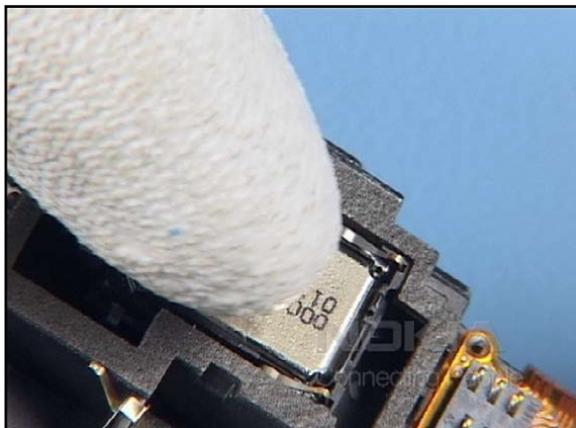
10. Do not bend the HF gasket.



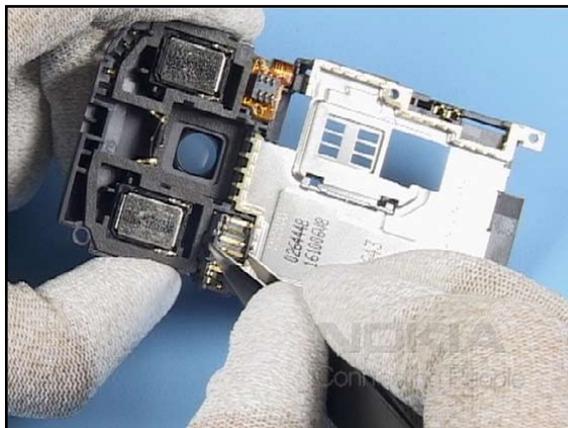
11. Complete the DONAU SPEAKERS with new adhesives.



12. Mind the correct positioning before placing the speakers into the CHASSIS.



13. Push them down evenly.



14. Insert the AV CONNECTOR.



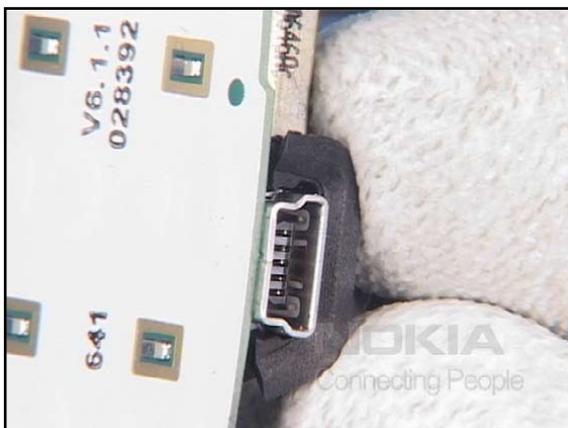
15. ...and the DC JACK.



16. Insert the MICROPHONE.



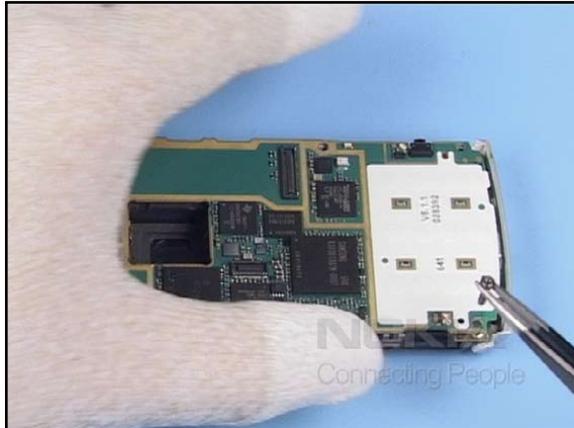
17. Fit the BOTTOM COVER to the CHASSIS now.



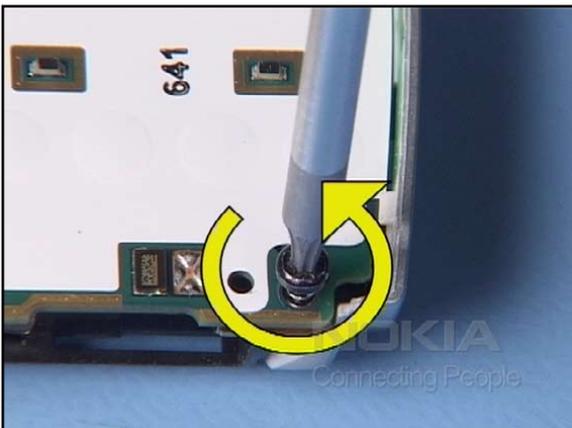
18. Place the USB SEAL.



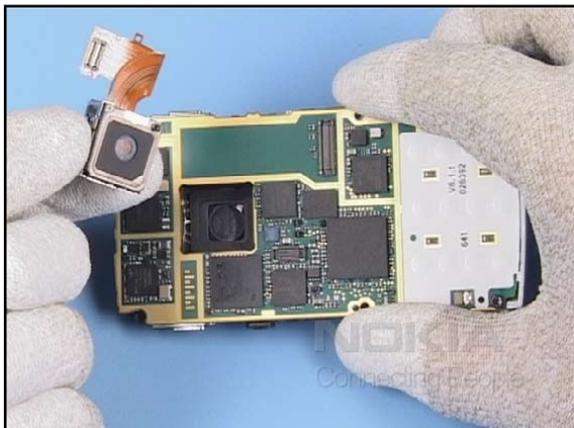
19. Insert the PWB into the CHASSIS, beginning from the bottom.



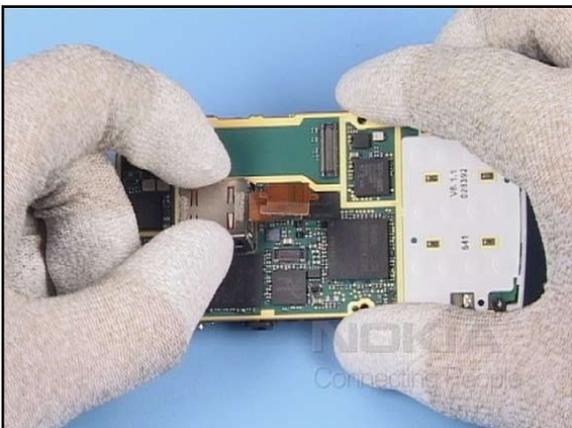
20. Insert the screws of the BOTTOM COVER.



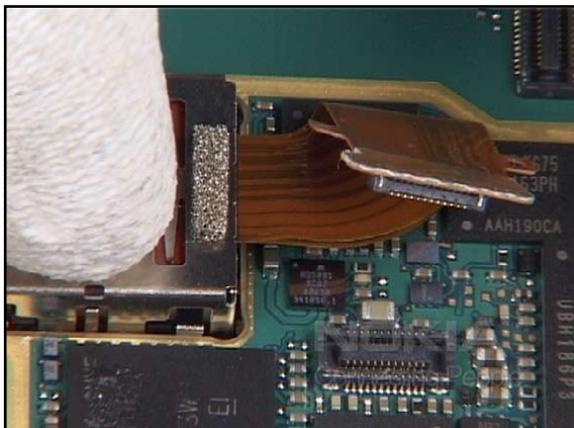
21. To prevent damaging the plastic threads, turn the screws to the left first. Then tighten them slightly.



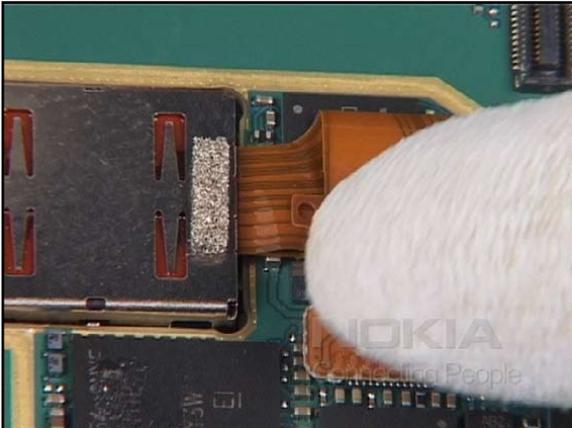
22. Check the camera and the window for cleanness before going on.



23. Position the MAIN CAMERA over its recess.



24. Push down the camera.



25. Close the flex connector.



26. Set the correct torque.



27. Apply the torque in the order shown.



28. Position the upper block below the PWB.



29. Close the flex connector.



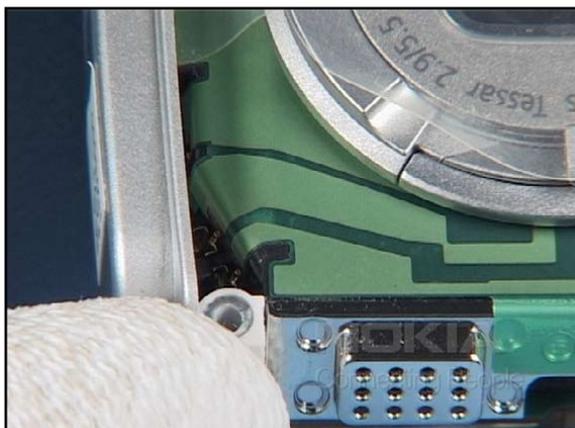
30. Bring the slider into position shown while placing it over the lower part.



31. Insert the 2 new screws.



32. Tighten these screws slightly.



33. Now place the TOP COVER.



34. Insert the next 2 new screws.



35. Close the slider.



36. Set the correct torque.



37. Apply the correct torque to the screws in the order shown.



38. Ensure that the protection film is still fitted, otherwise protect it with a plastic film.



39. Turn the unit.



40. Insert the ITU KEYMAT.



41. Smooth it down evenly, click the snaps into their places.



42. Complete the BACK COVER with the SD CARD DOOR.



43. Check all 6 adhesives for cleanness. Replace them if there are dirty, destroyed or missing.



44. Remove the protective film and close the shutter.



45. Place the BACK COVER over the assembly.



46. Click all snaps into their places.

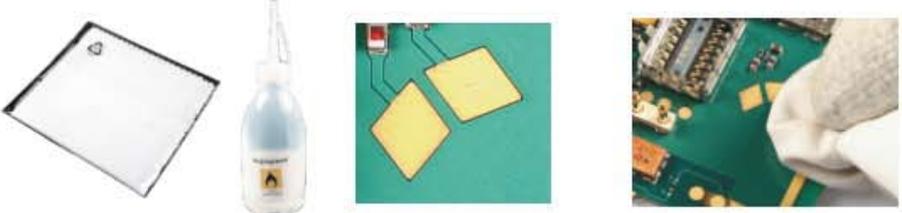
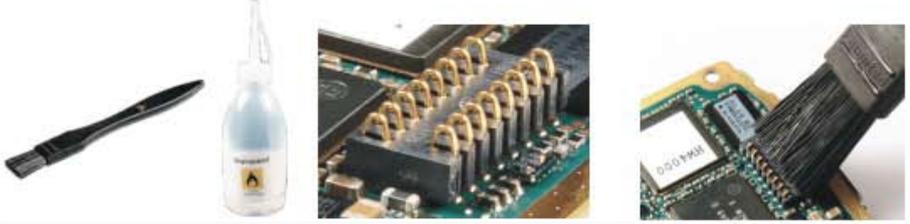


47. Check that no gaps remain and that all keys operate.

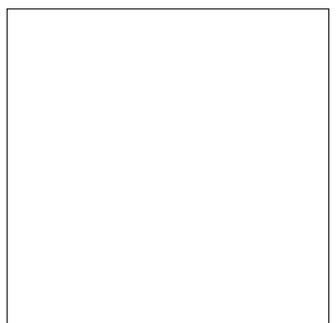
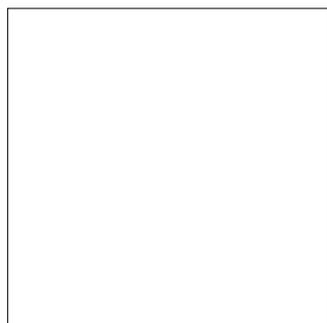
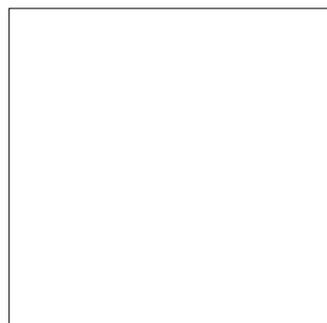
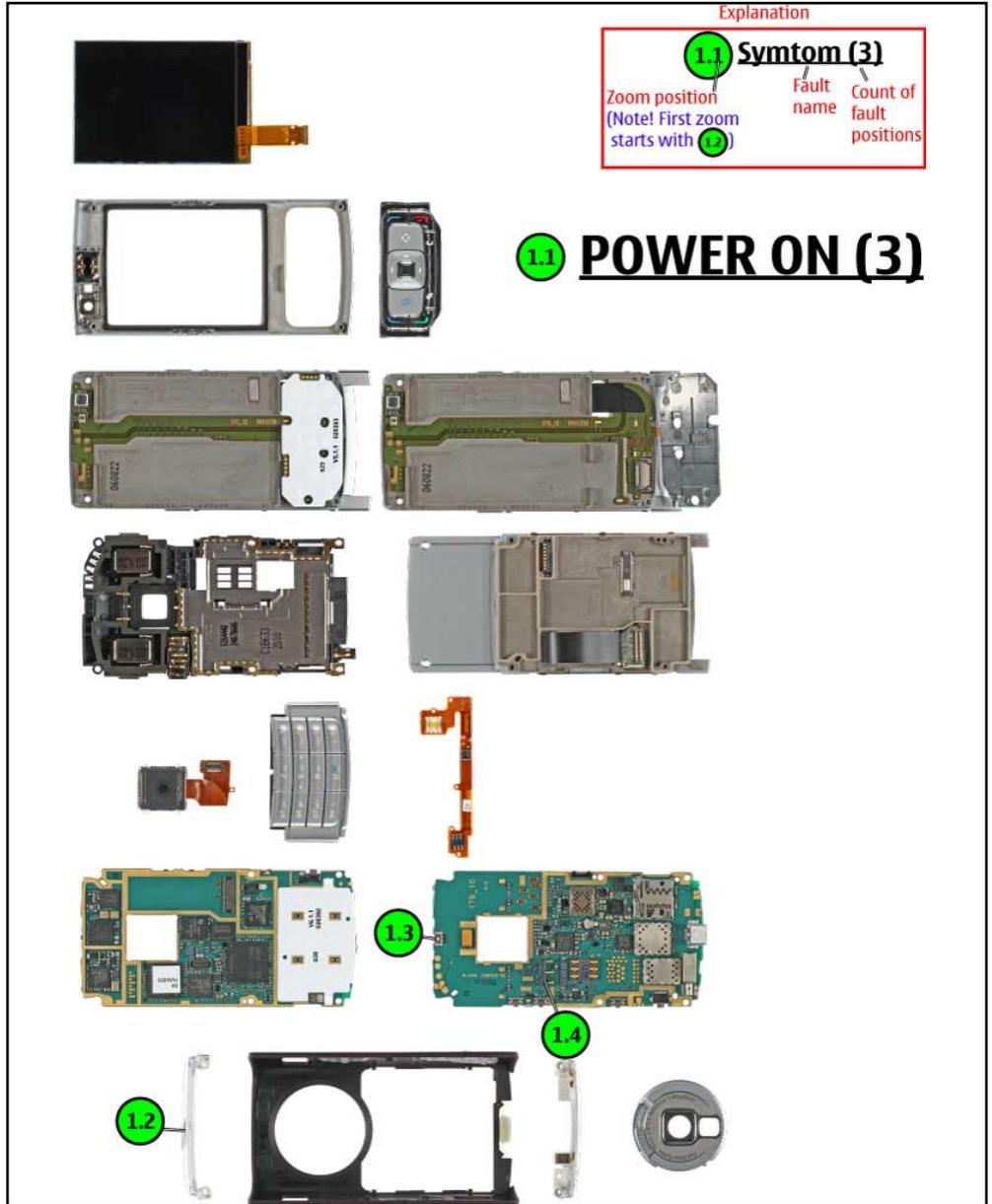
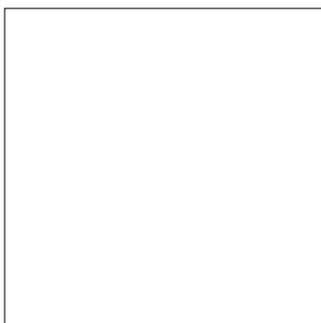
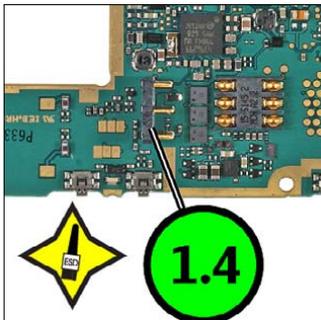
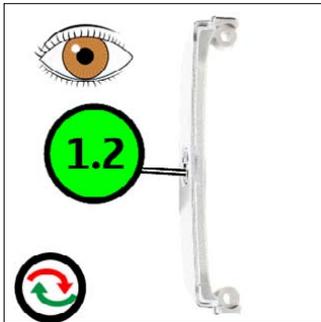


48. Complete the assembly with the BATTERY COVER.

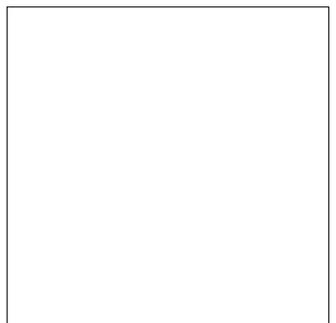
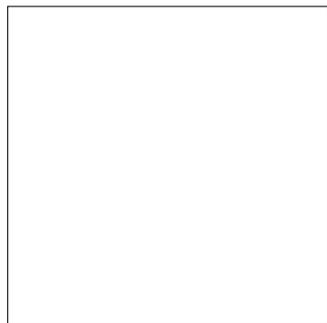
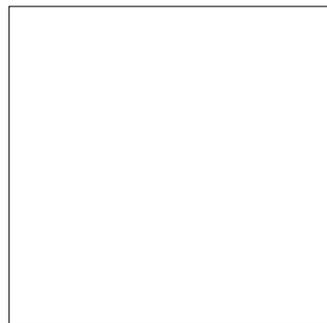
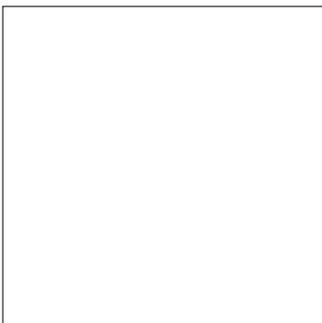
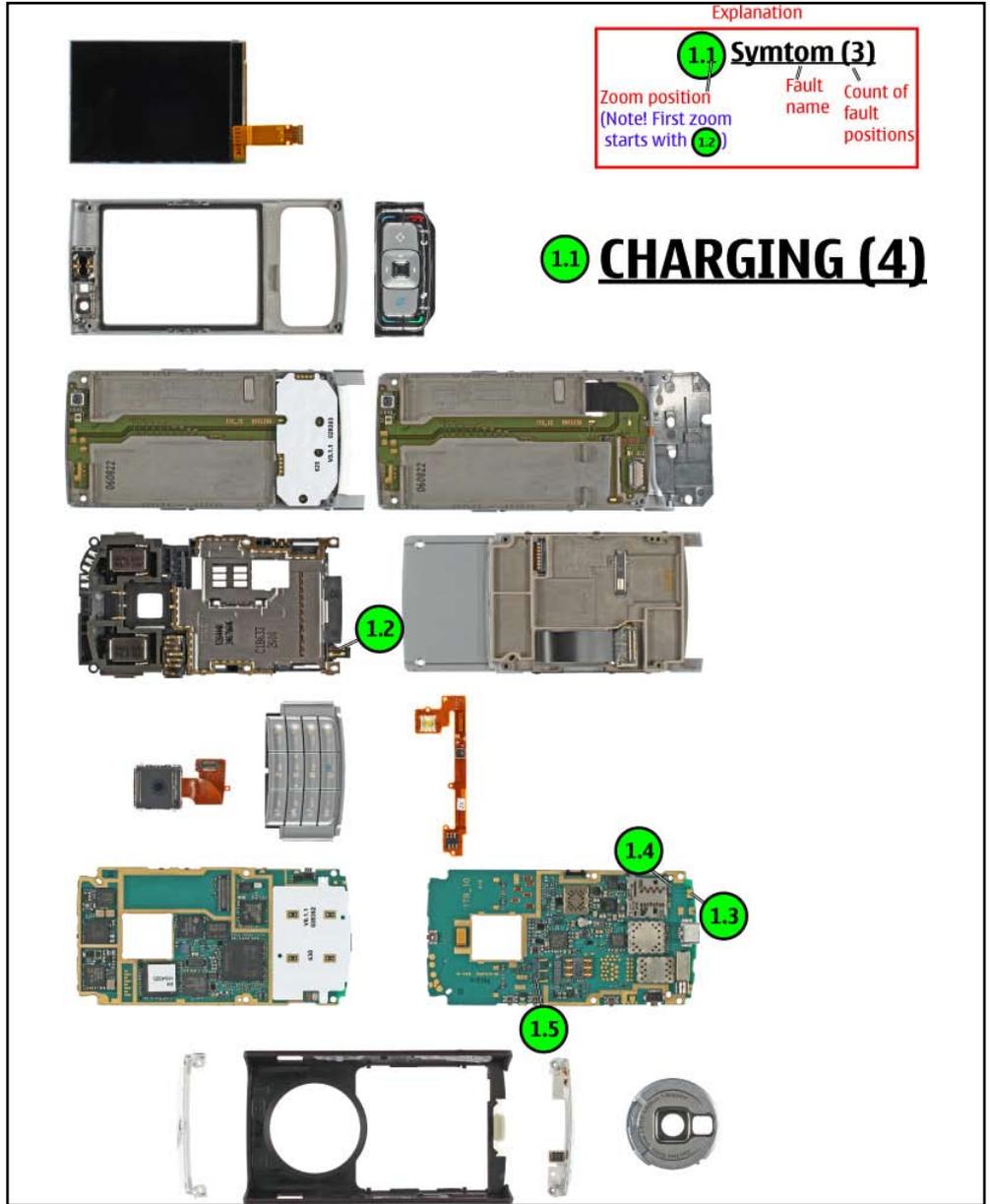
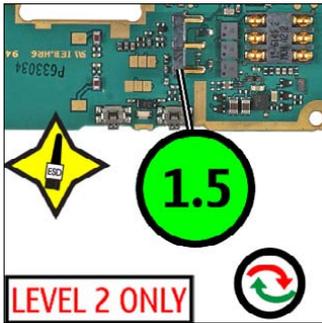
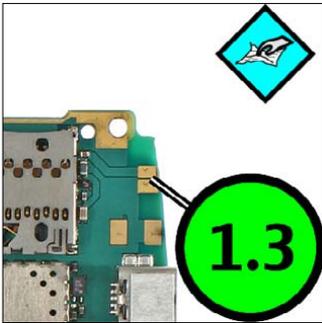
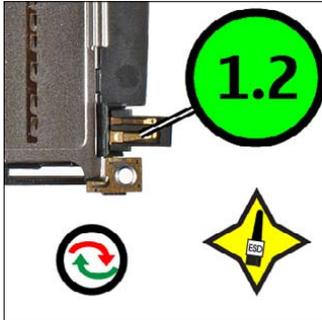
12.LEGEND FOR QUICK TROUBLE SHOOTER

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).
	Cloth usage: 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) 
	ESD Brush usage: 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>1.1 Syntom (3)</p> <p>Zoom position (Note! First zoom starts with 1.2)</p> <p>Fault name</p> <p>Count of fault positions</p> </div>

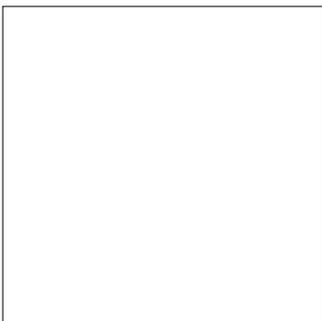
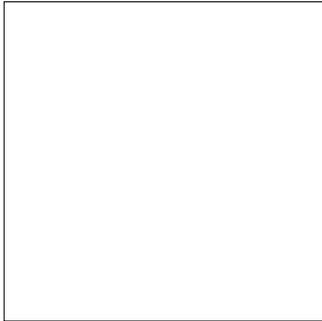
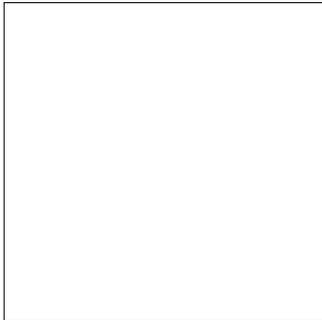
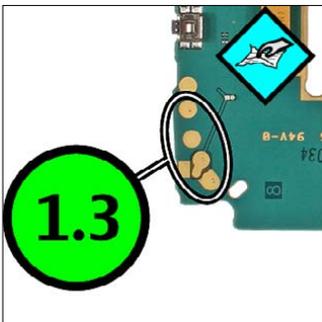
13. QUICK TROUBLE SHOOTER - POWER ON



14. QUICK TROUBLE SHOOTER - CHARGING



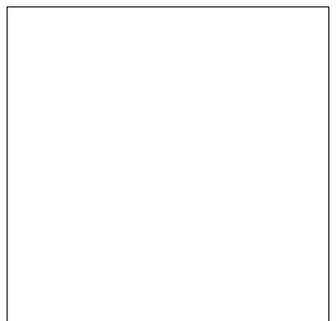
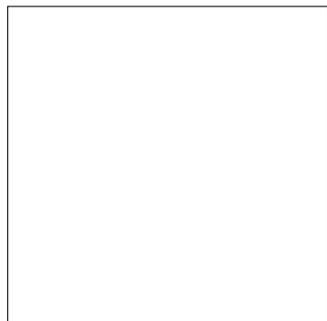
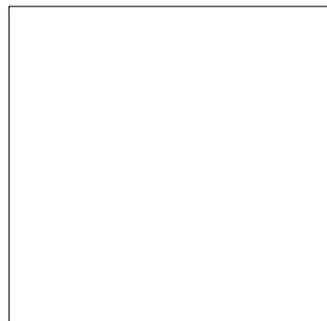
15. QUICK TROUBLE SHOOTER - NO SERVICE (GSM/WCDMA)



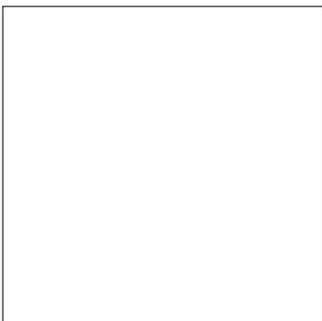
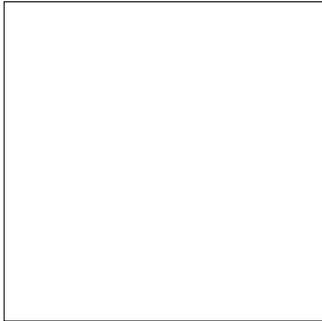
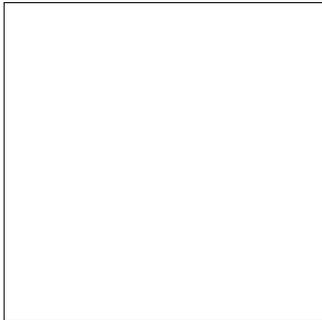
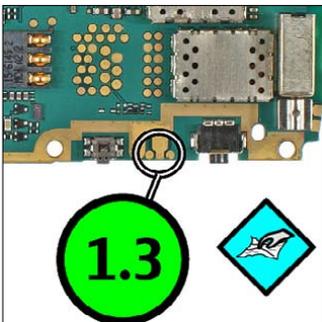
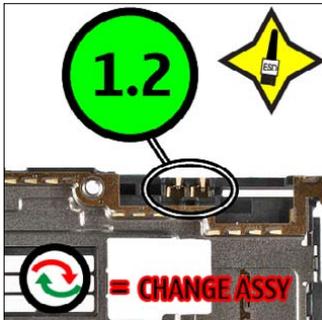
Explanation

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)**



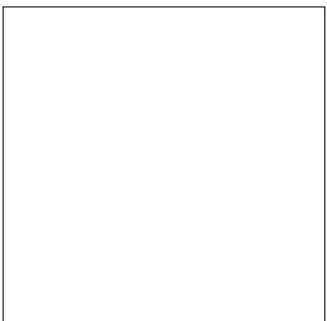
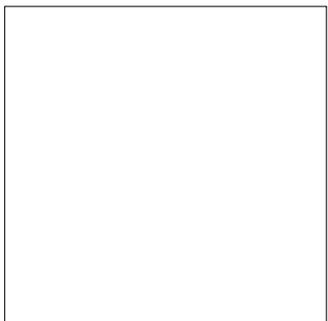
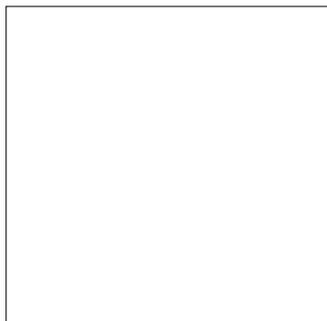
16. QUICK TROUBLE SHOOTER - WLAN/BLUETOOTH



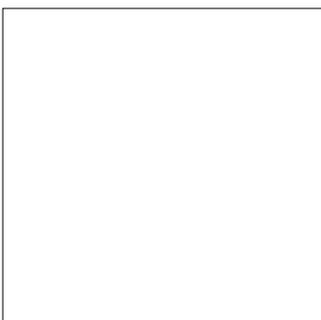
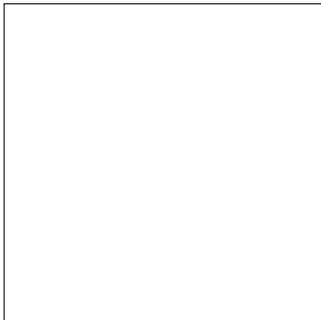
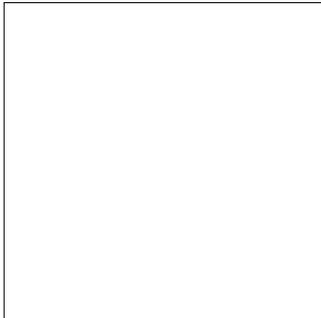
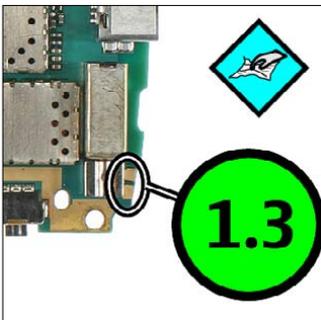
Explanation

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

1.1 **WLAN/BLUETOOTH (2)**



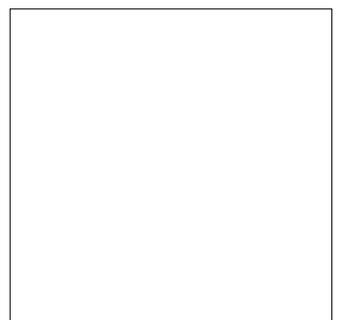
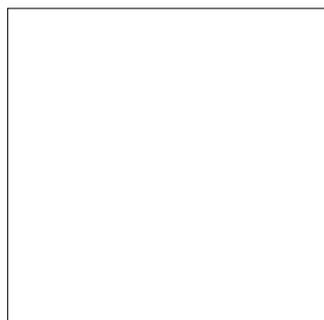
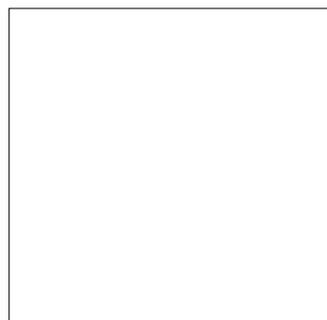
17. QUICK TROUBLE SHOOTER - GPS



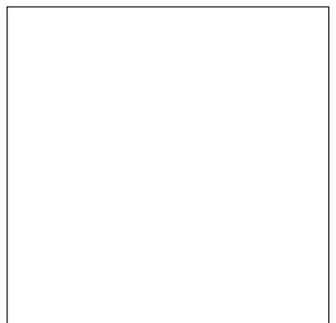
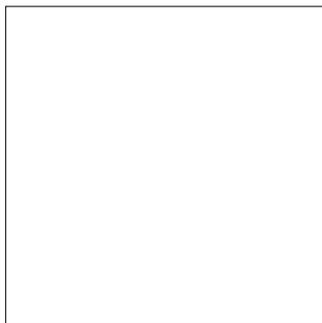
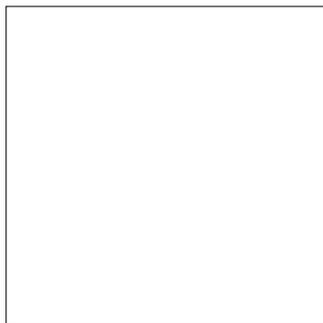
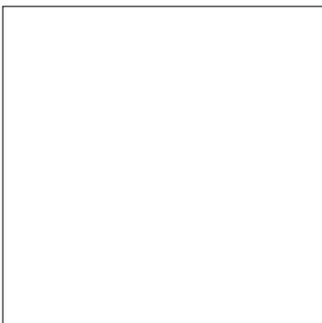
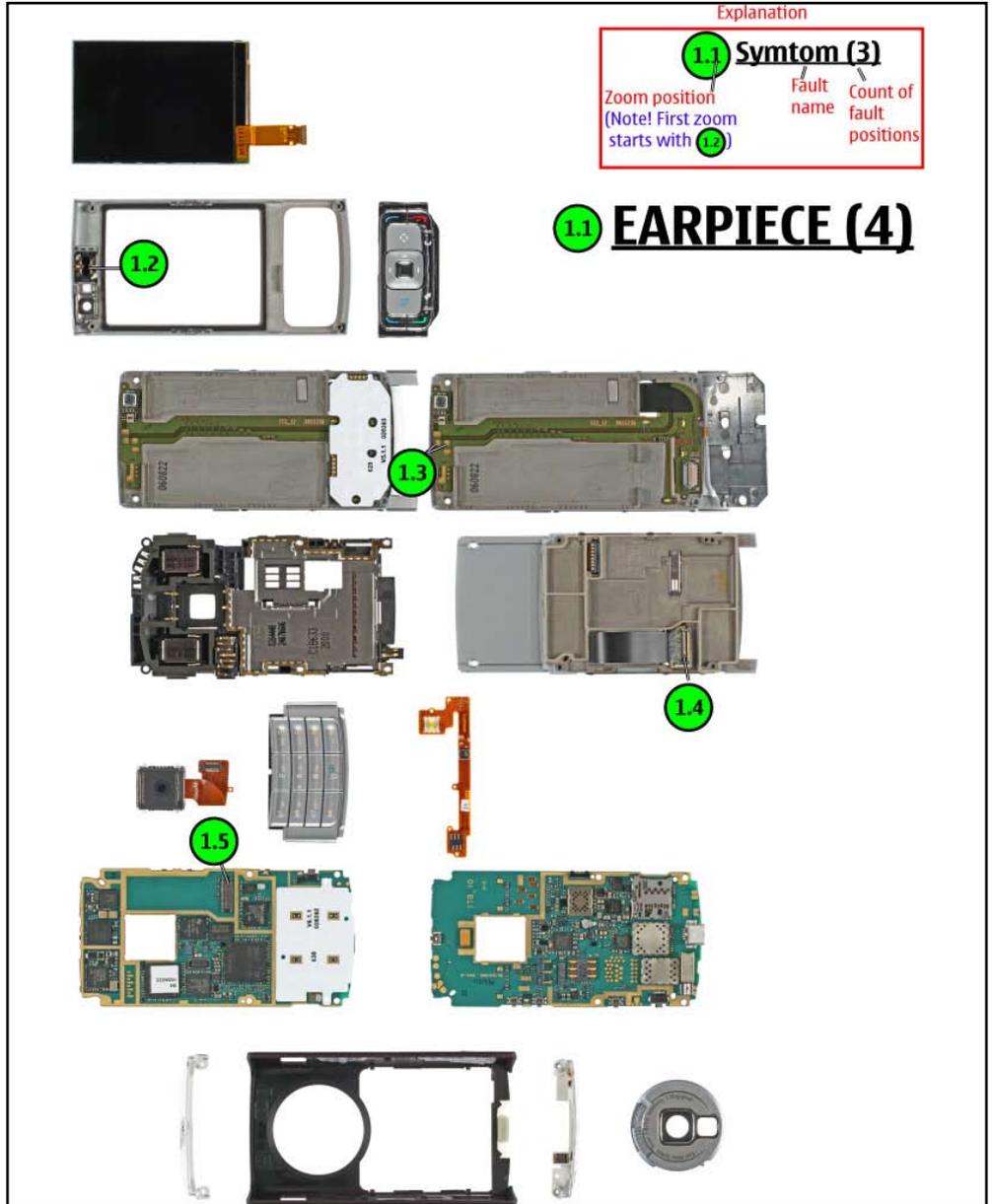
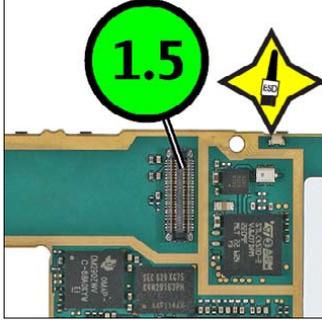
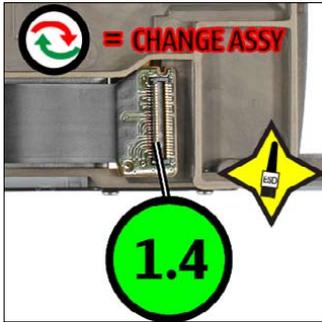
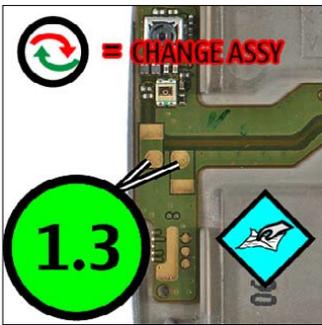
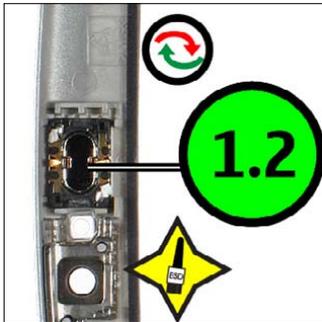
Explanation

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

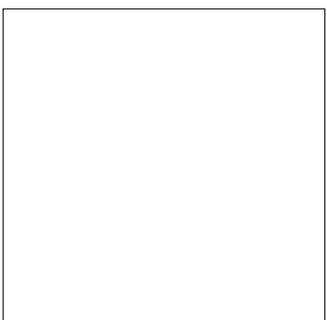
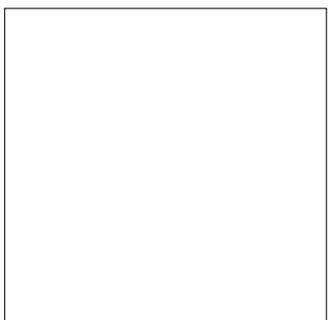
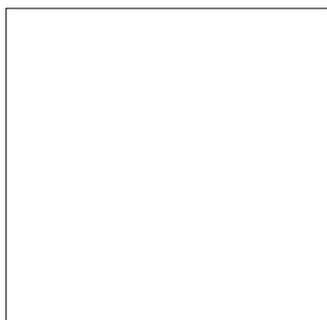
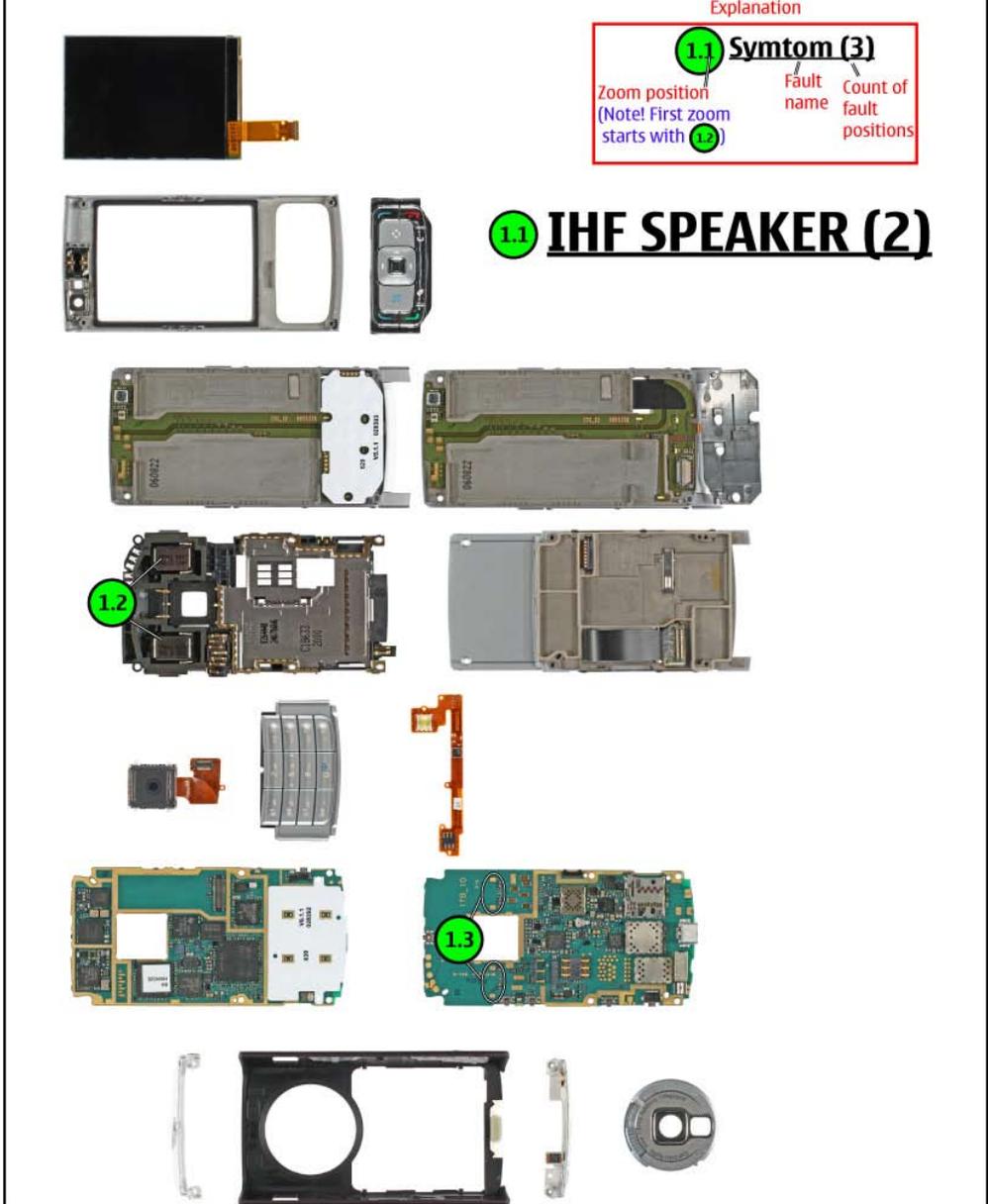
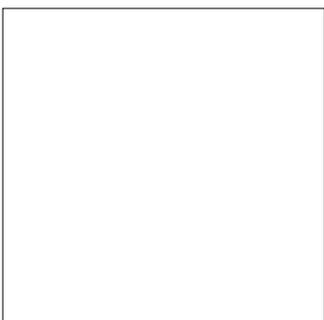
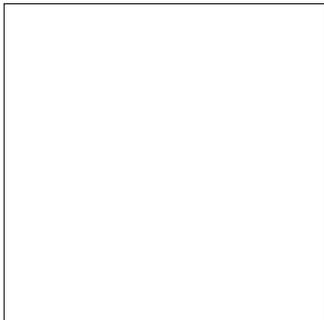
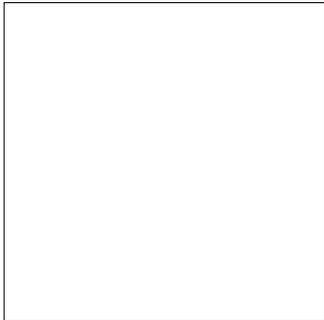
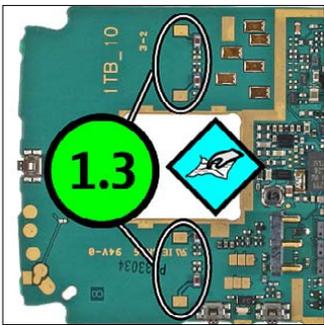
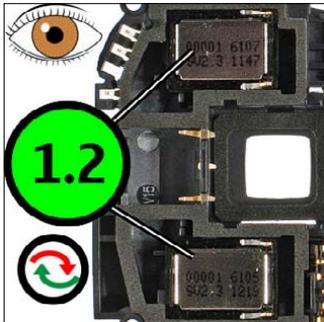
1.1 **GPS (2)**



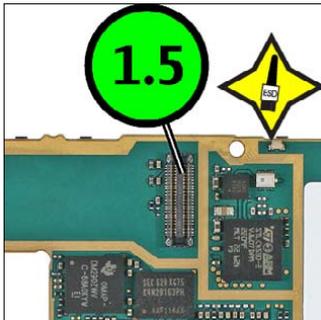
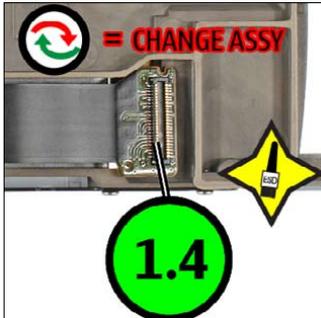
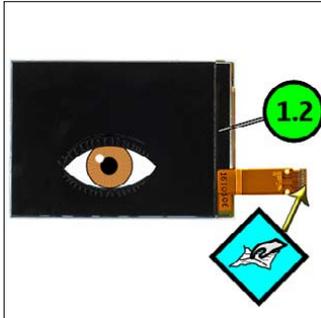
18. QUICK TROUBLE SHOOTER - EARPIECE



19. QUICK TROUBLE SHOOTER - IHF SPEAKER



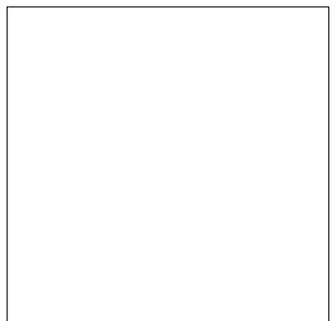
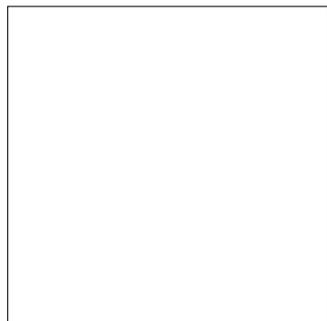
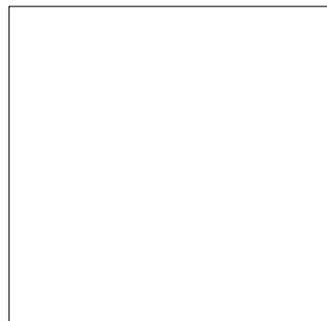
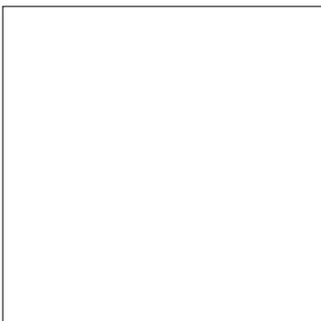
20. QUICK TROUBLE SHOOTER - DISPLAY



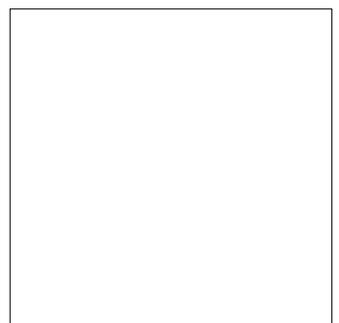
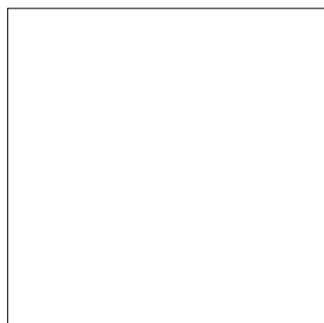
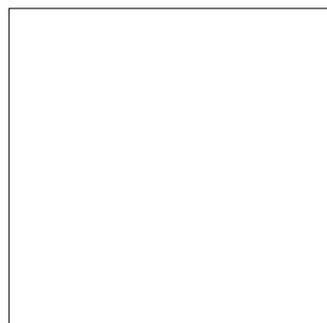
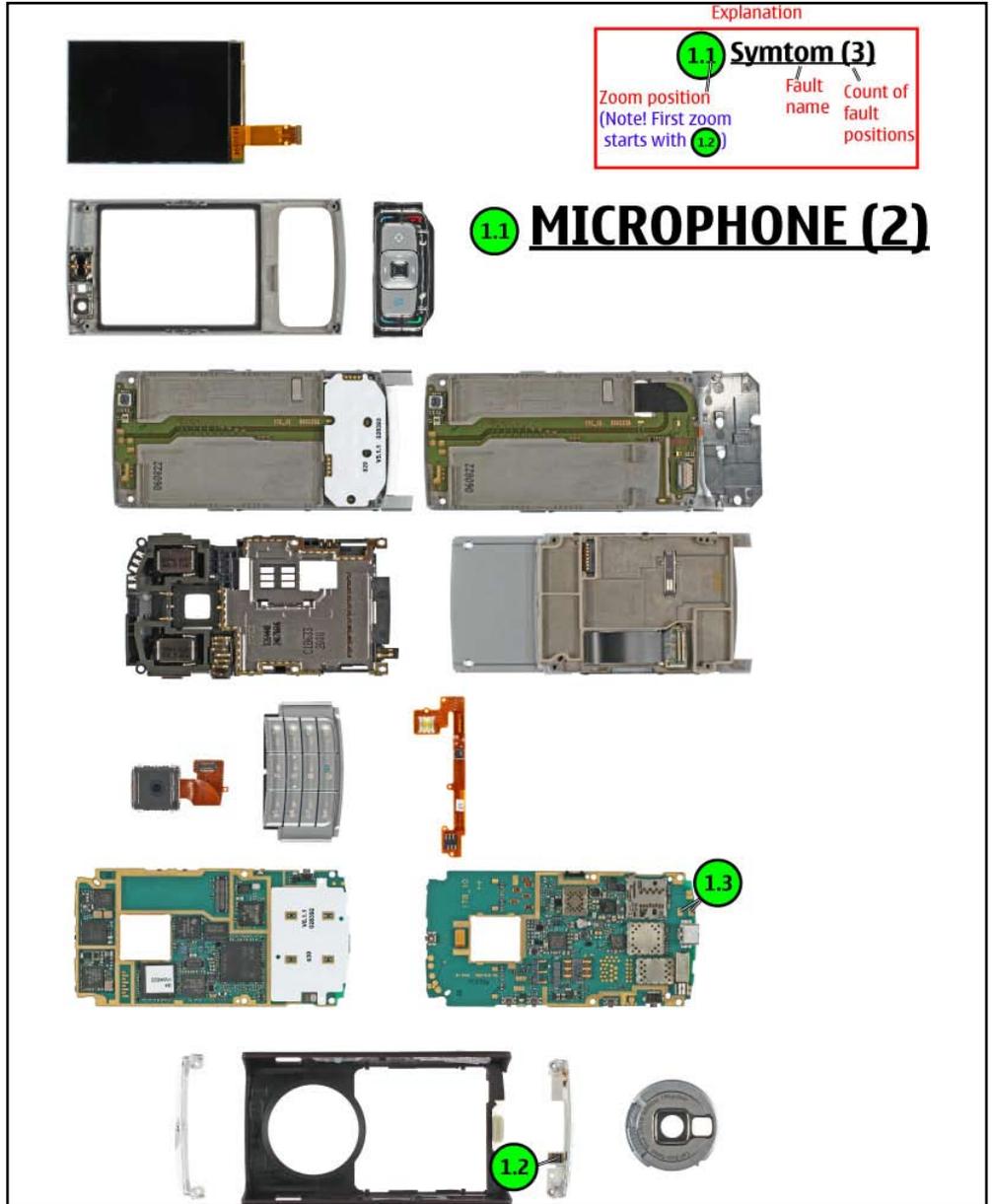
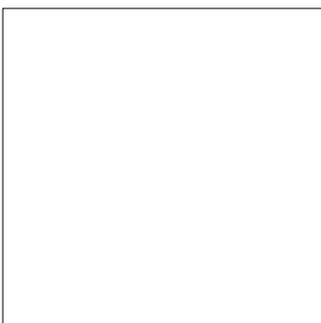
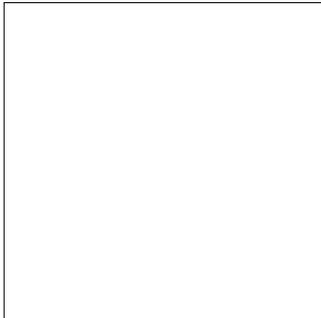
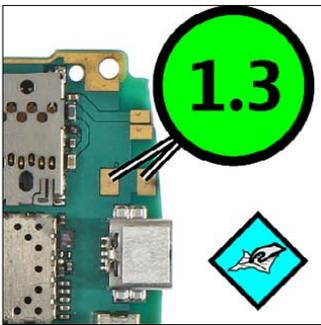
Explanation

<p>1.1</p> <p>Zoom position (Note! First zoom starts with 1.2)</p>	<p>Symtom (3)</p> <p>Fault name</p>	<p>Count of fault positions</p>
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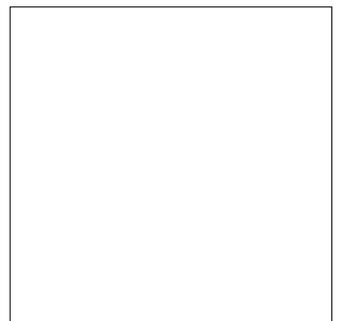
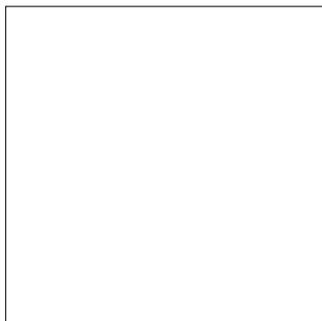
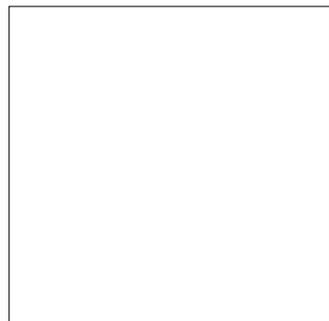
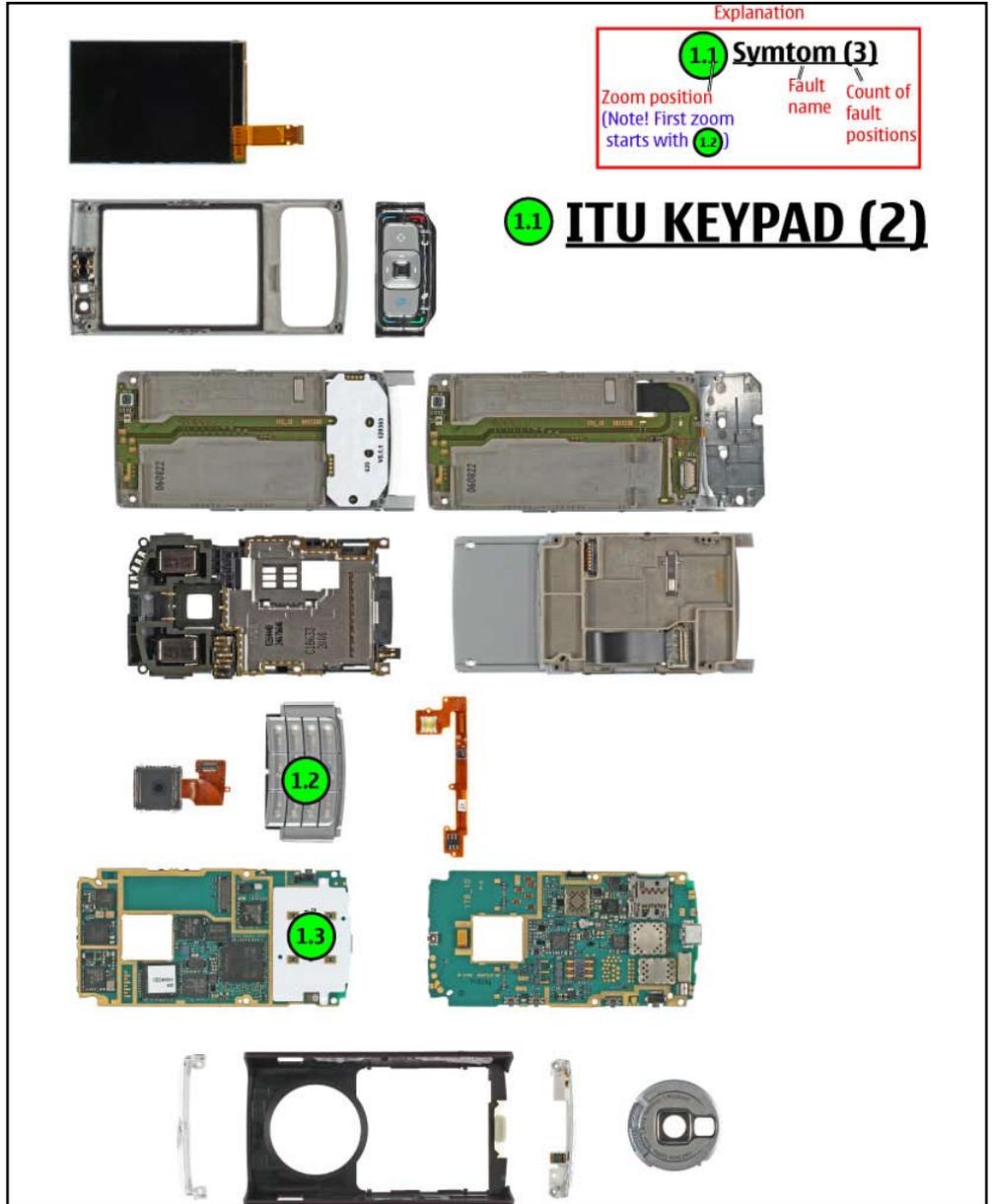
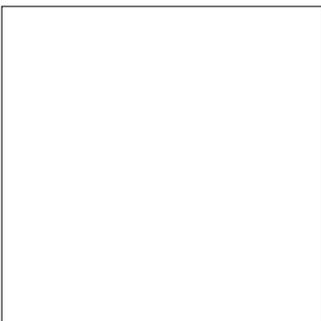
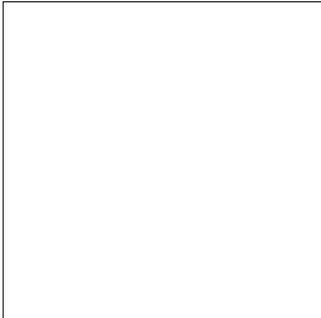
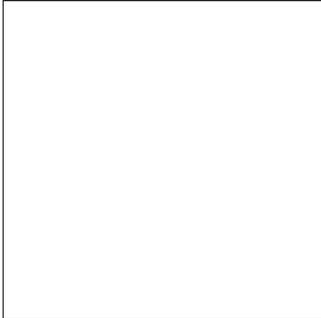
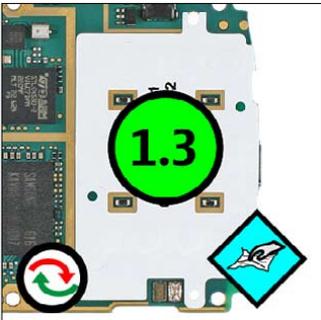
1.1 **DISPLAY (4)**



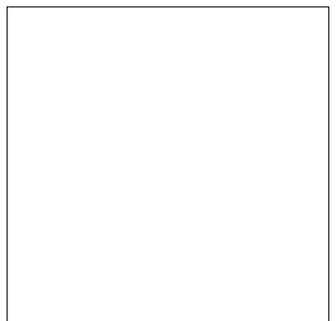
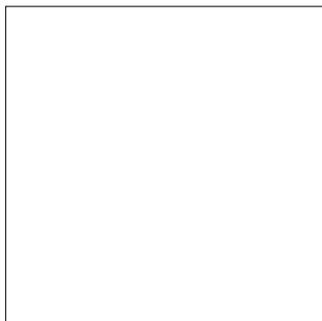
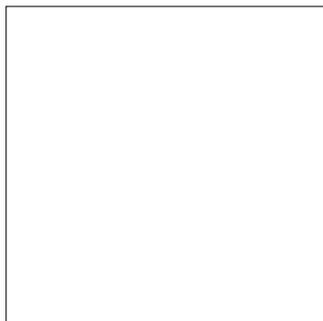
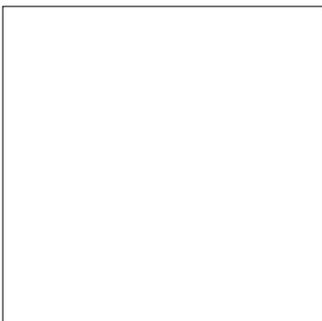
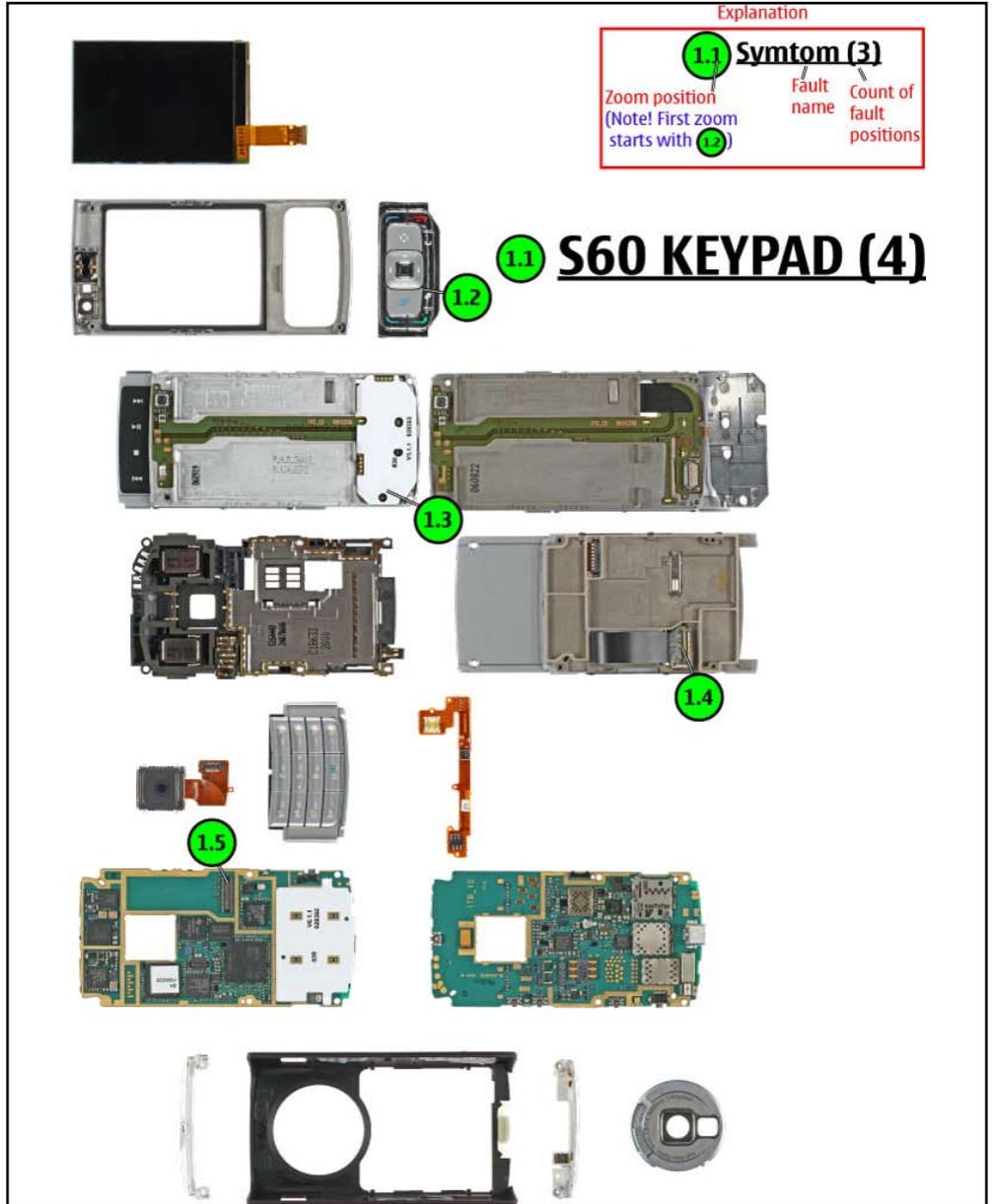
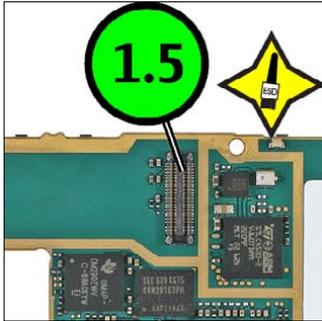
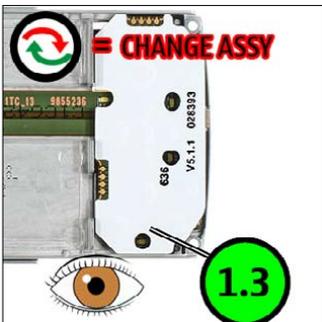
21. QUICK TROUBLE SHOOTER - MICROPHONE



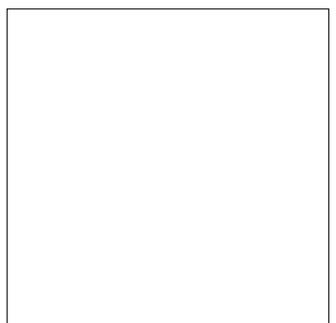
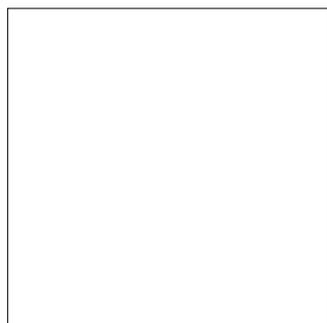
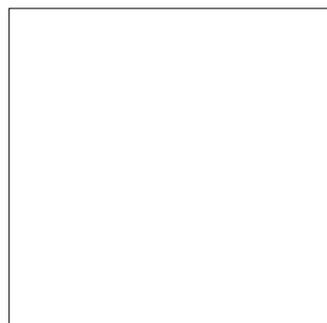
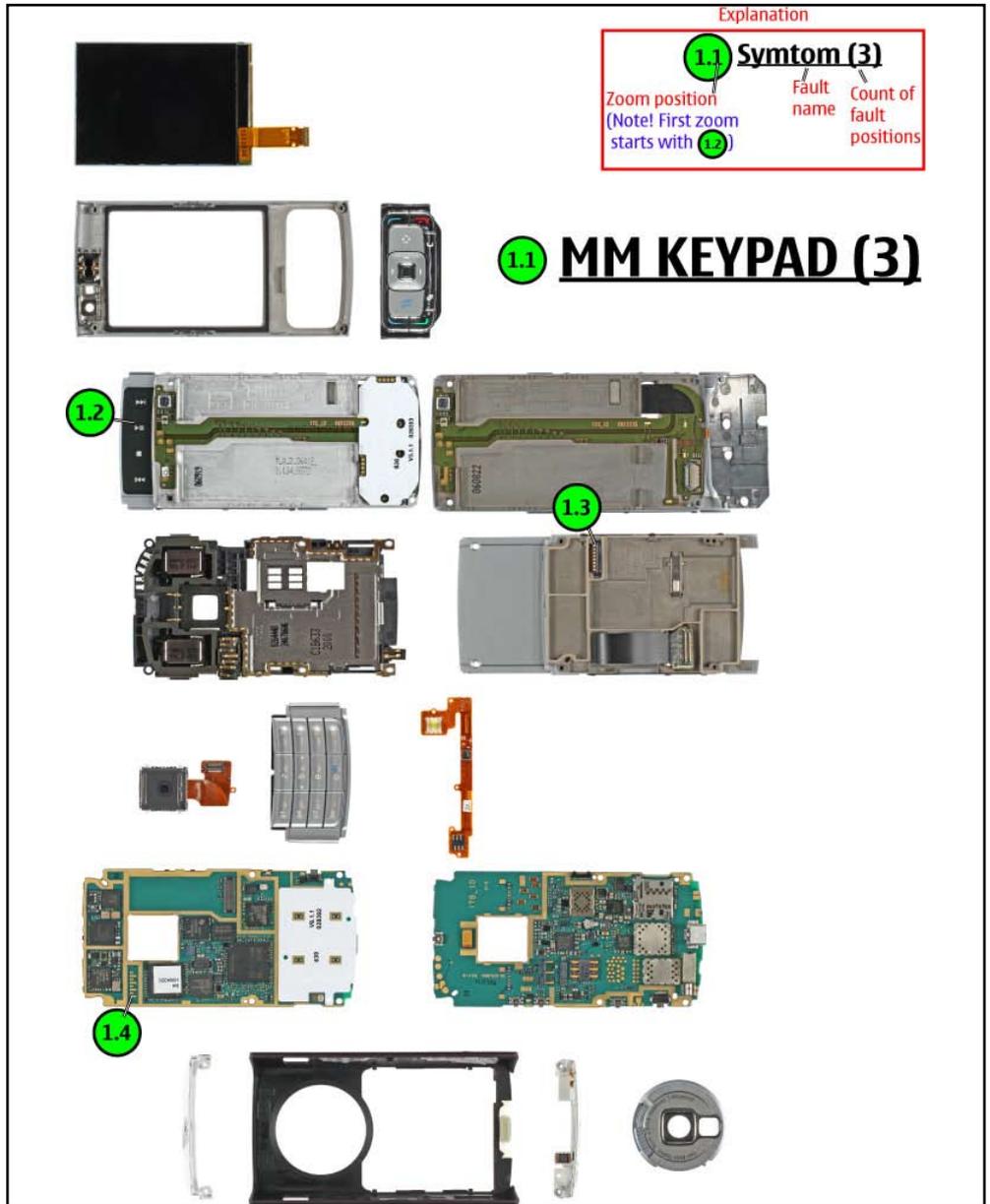
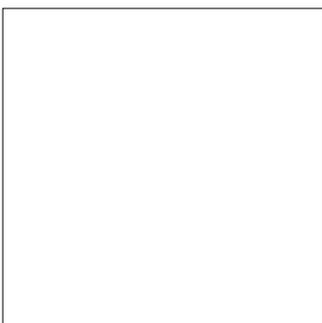
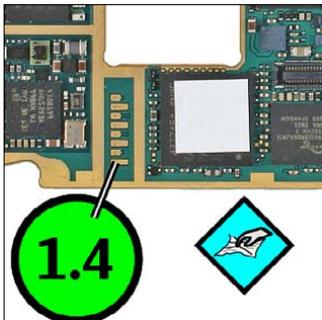
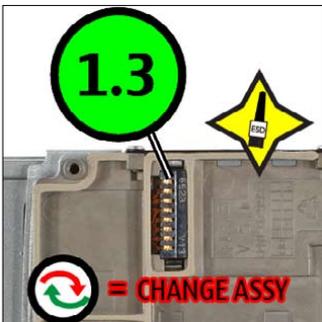
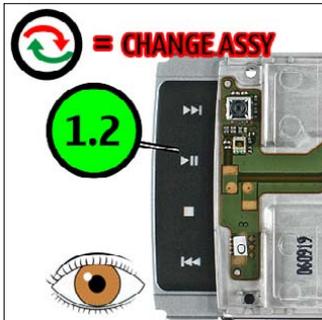
22. QUICK TROUBLE SHOOTER - ITU KEYPAD



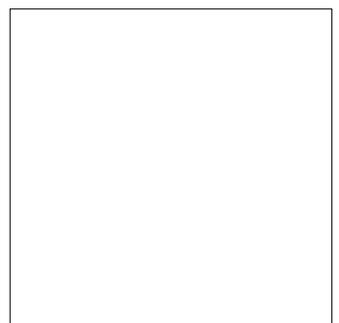
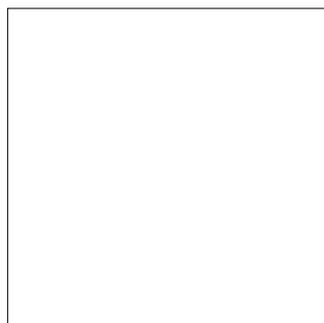
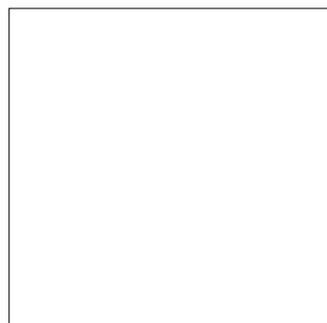
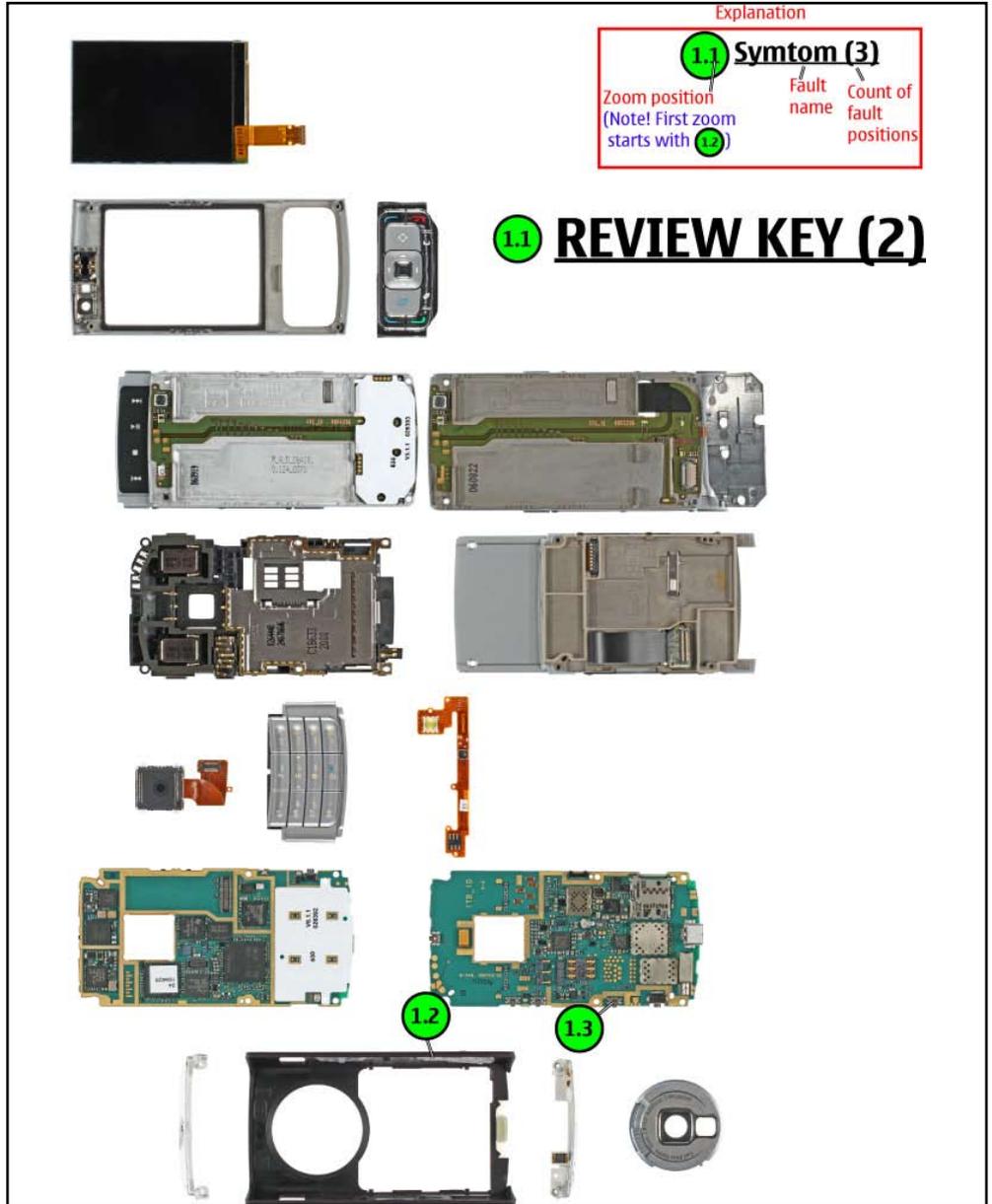
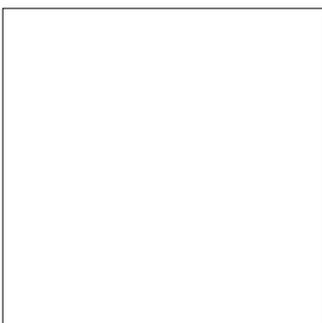
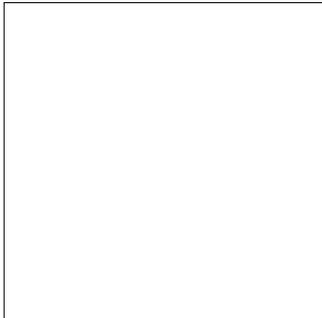
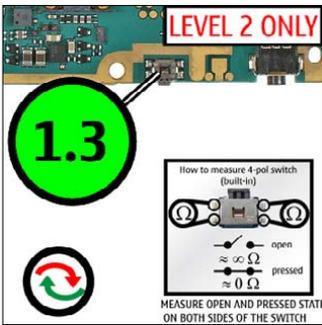
23. QUICK TROUBLE SHOOTER - S60 KEYPAD



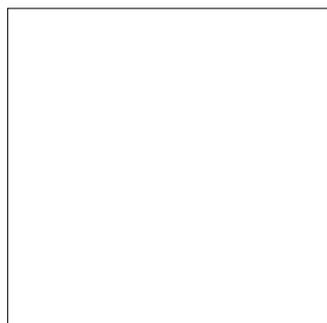
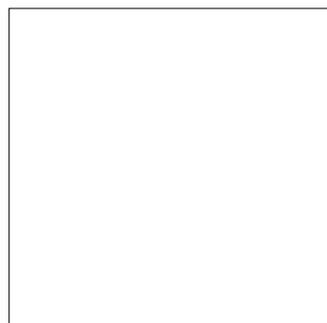
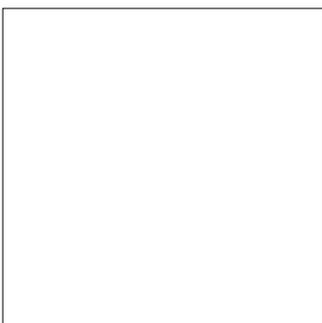
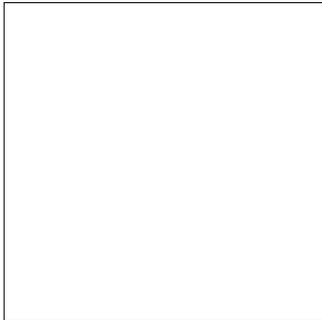
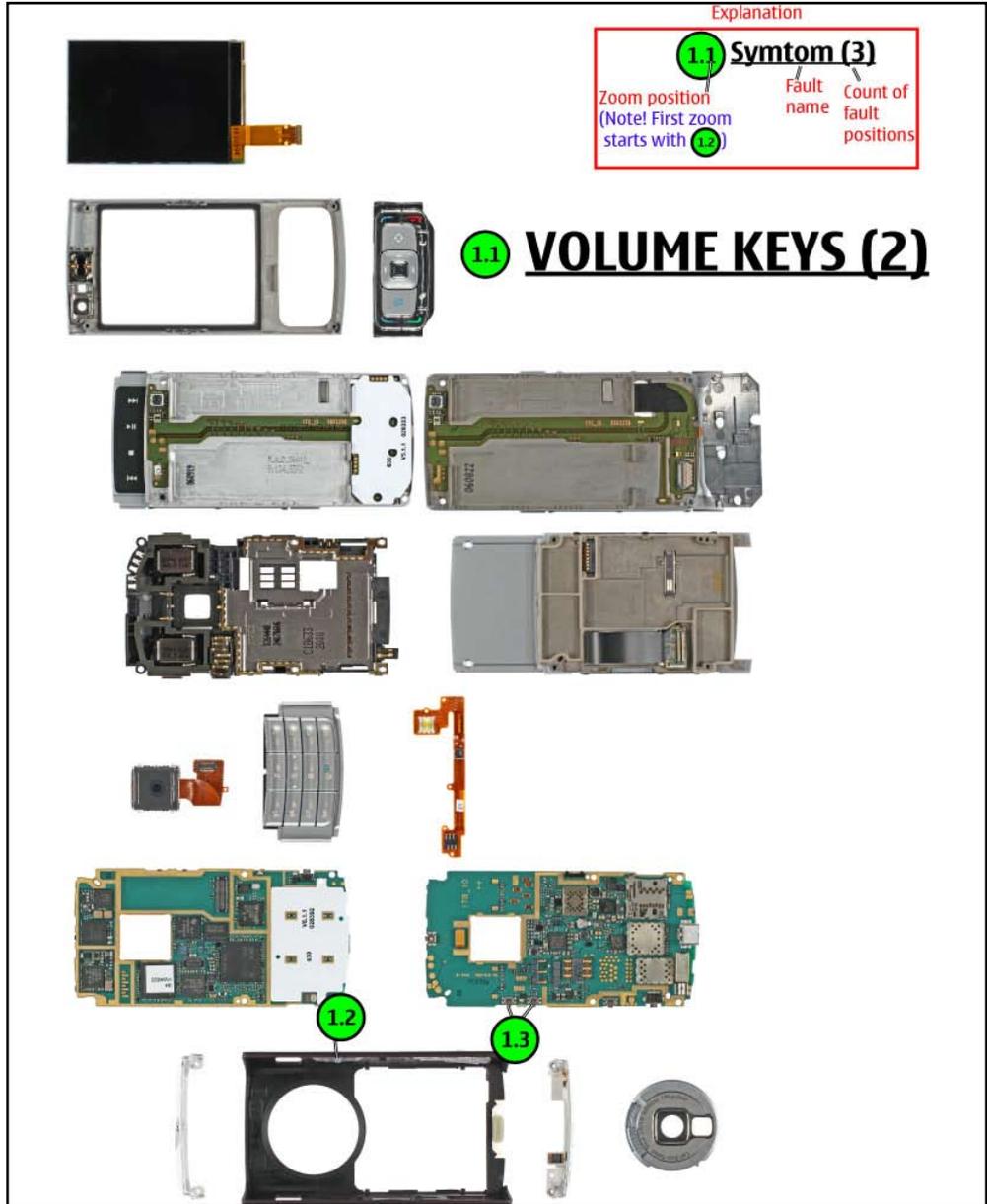
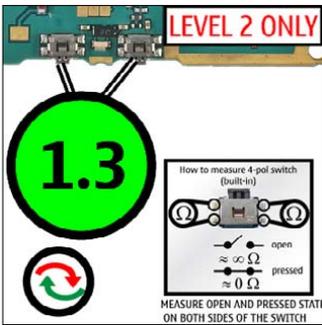
24. QUICK TROUBLE SHOOTER - MM KEYPAD



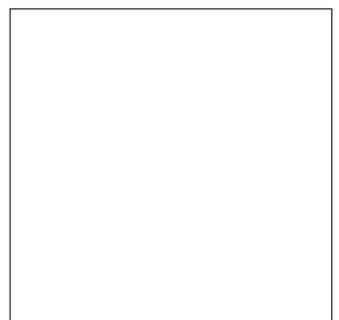
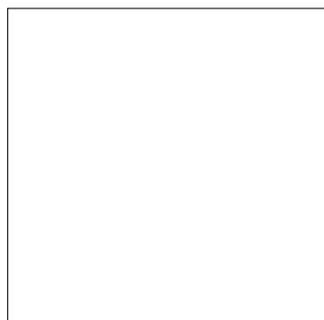
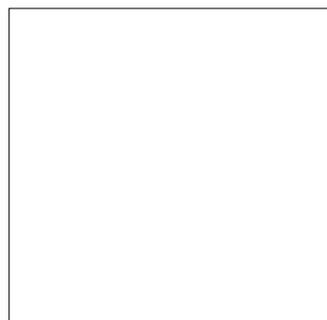
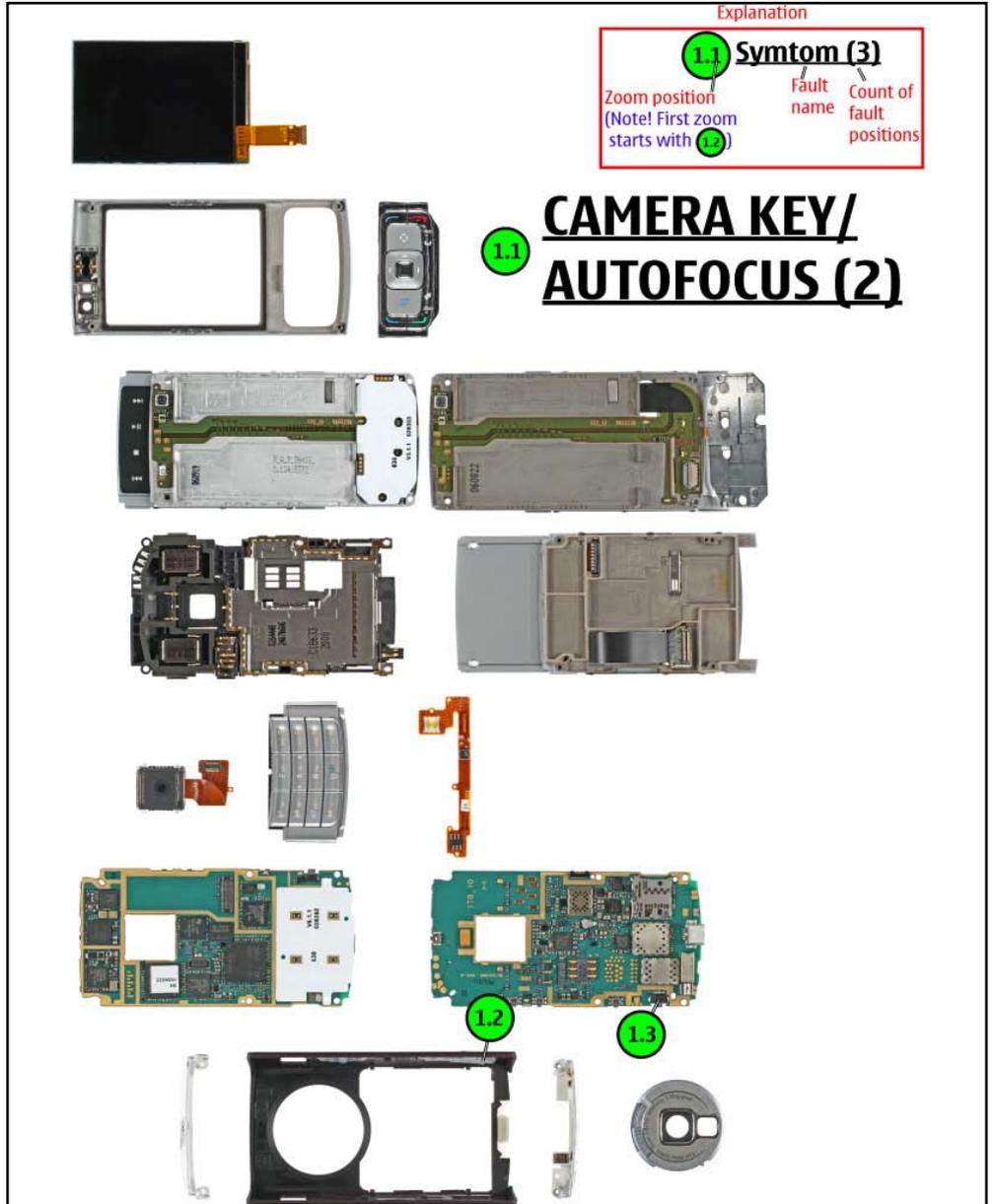
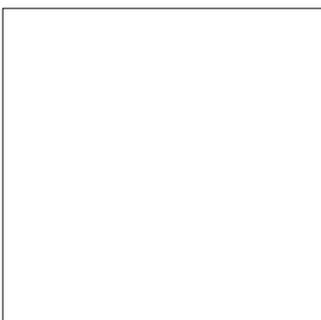
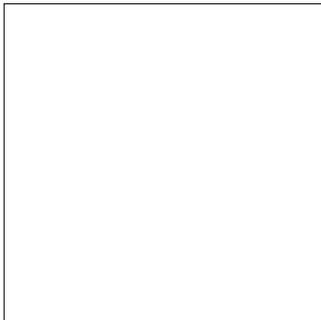
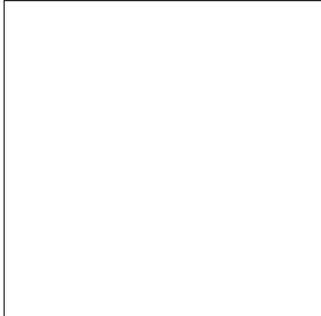
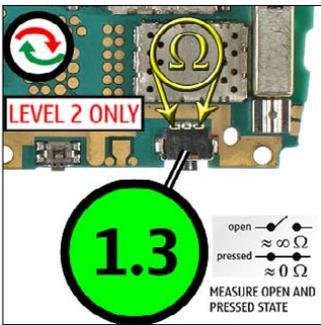
25. QUICK TROUBLE SHOOTER - REVIEW KEY



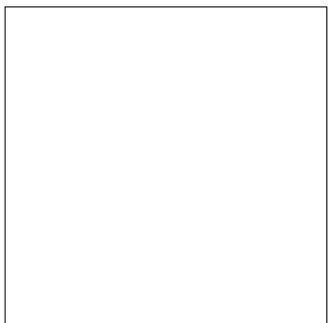
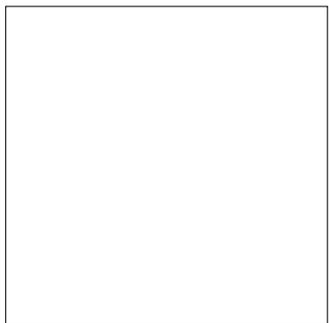
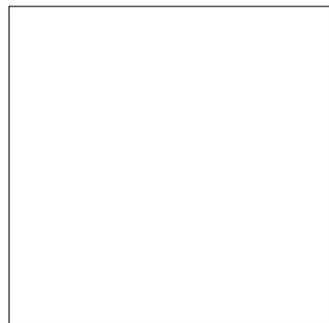
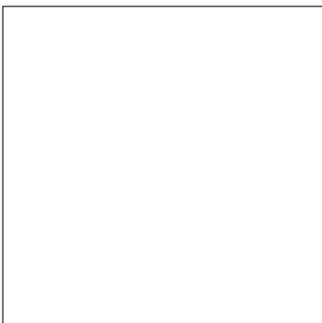
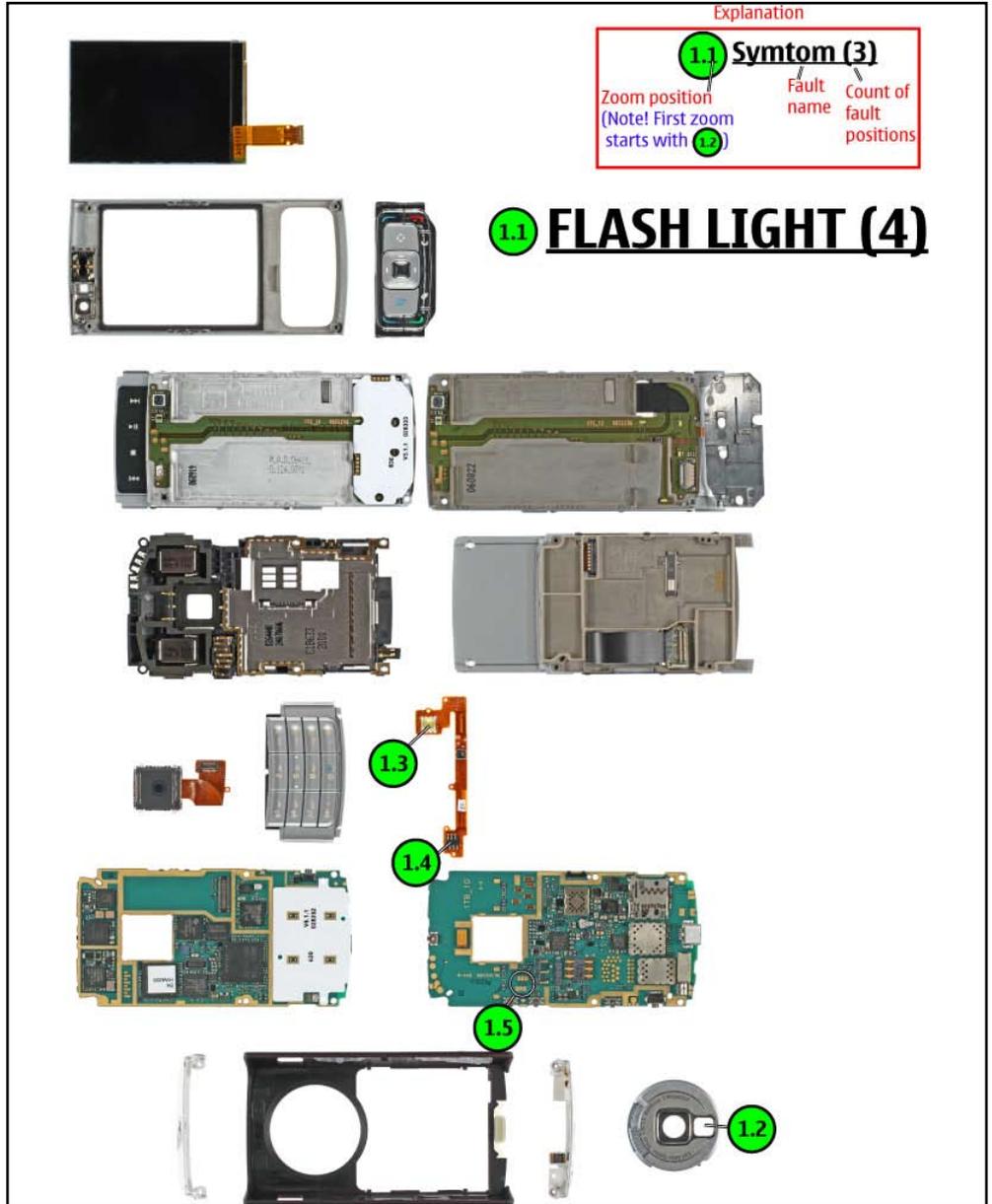
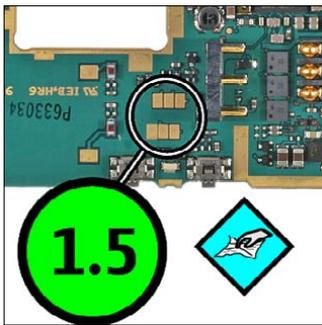
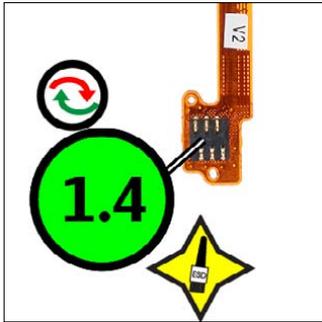
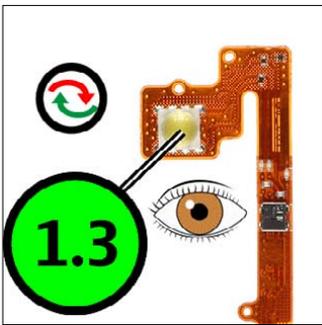
26. QUICK TROUBLE SHOOTER - VOLUME KEYS



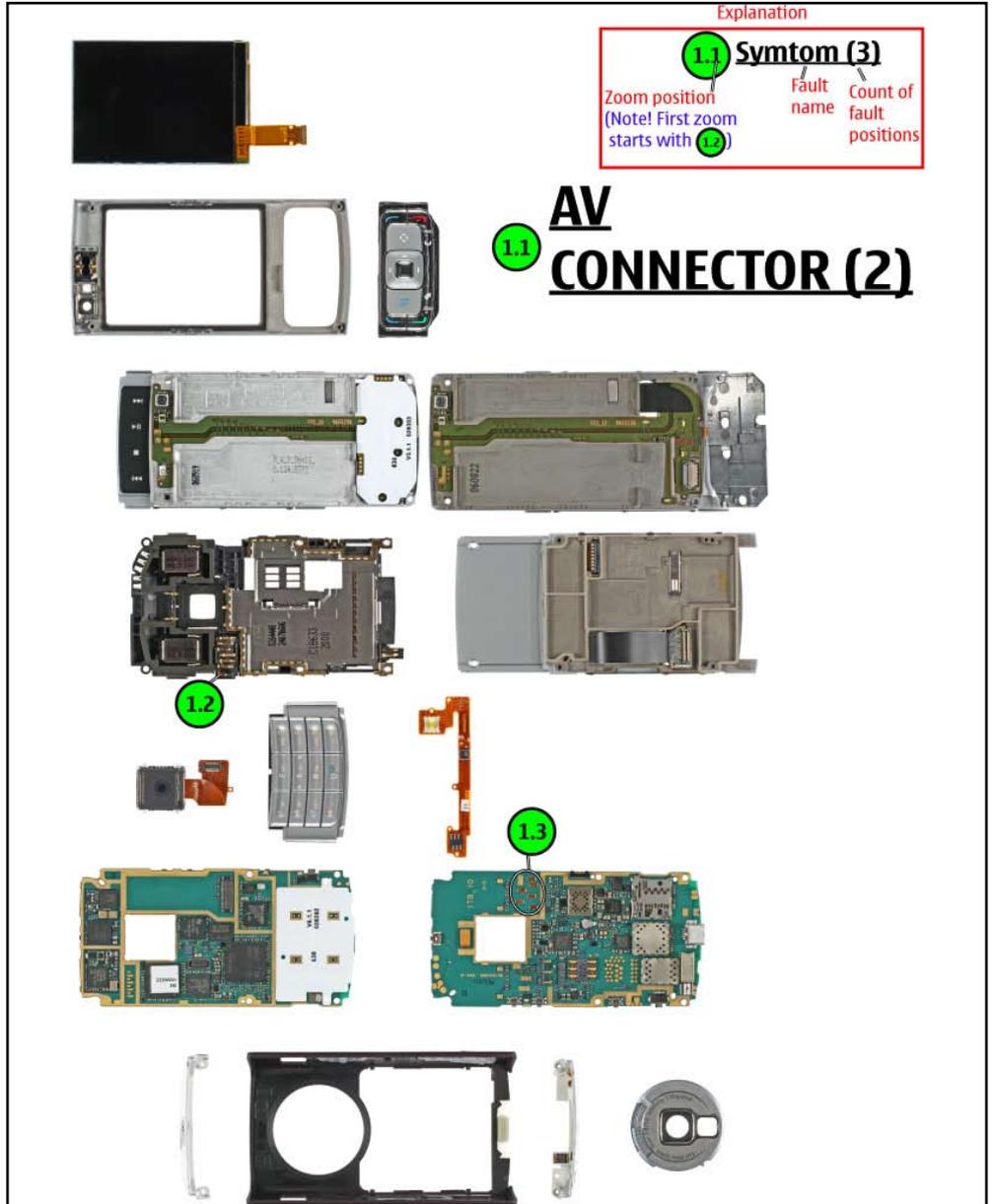
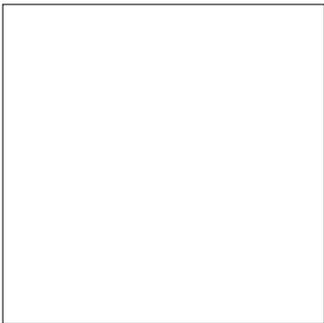
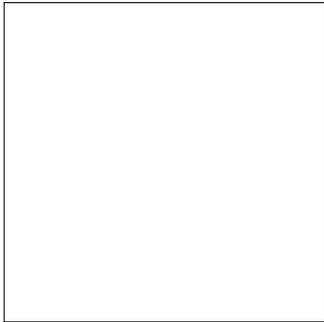
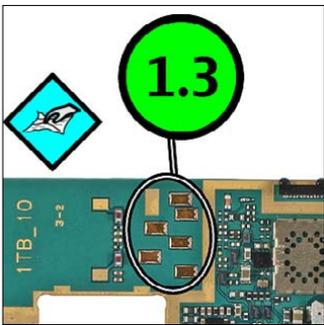
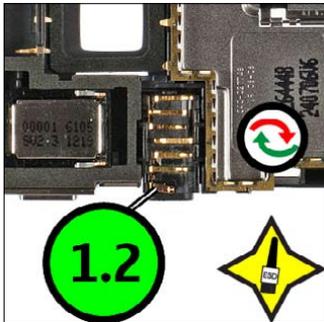
27. QUICK TROUBLE SHOOTER - CAMERA KEY/ AUTOFOCUS



28. QUICK TROUBLE SHOOTER - FLASHLIGHT

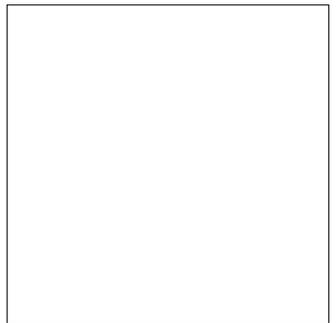
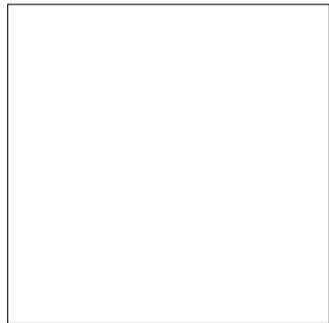
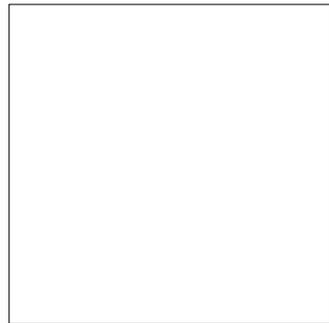


29. QUICK TROUBLE SHOOTER - AV CONNECTOR

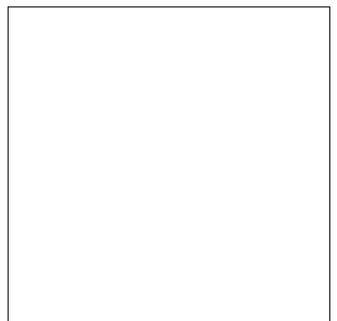
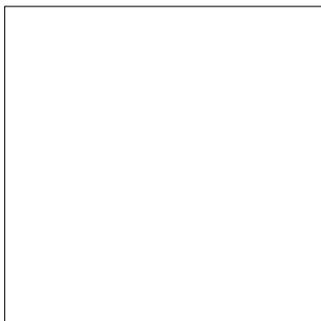
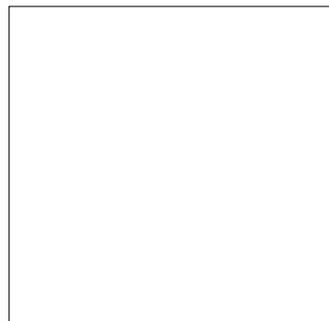
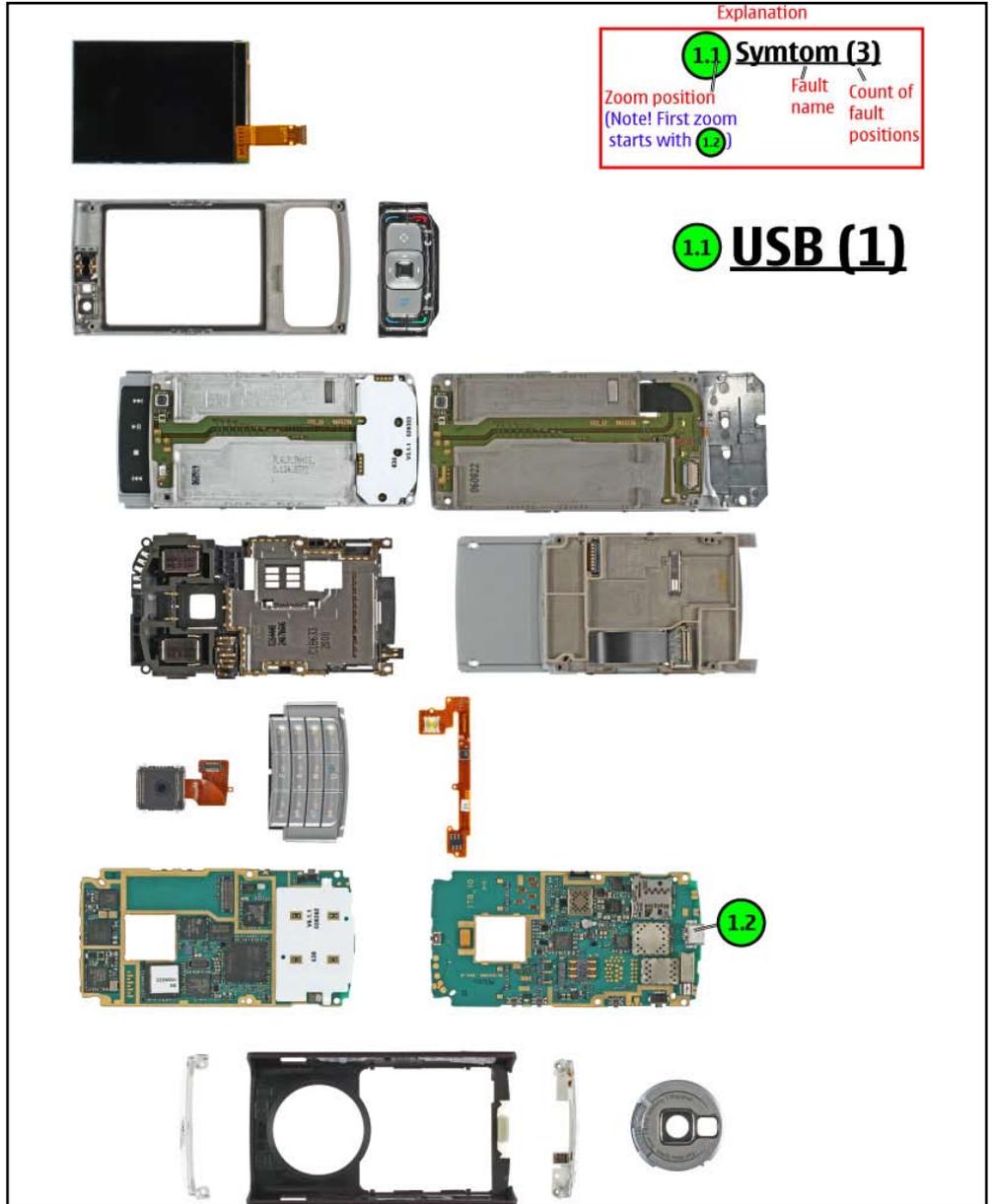
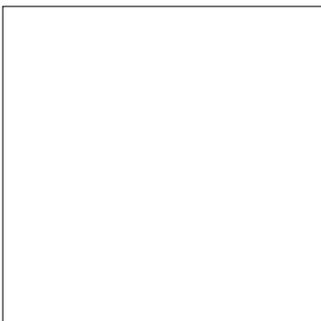
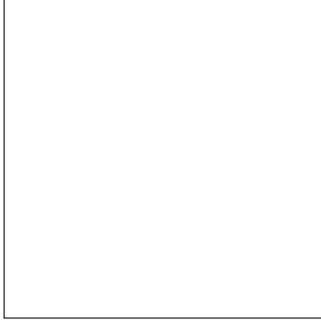
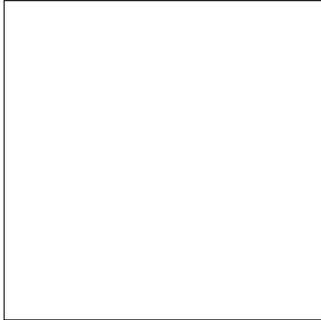
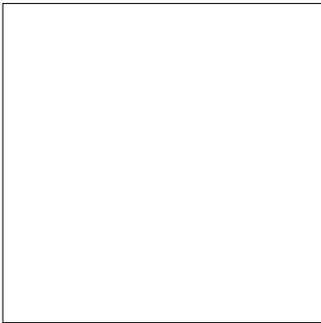
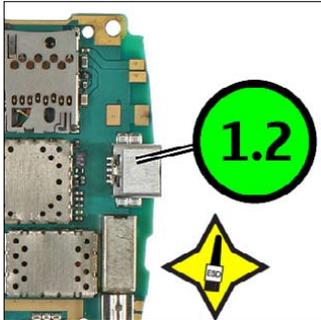


Explanation		
1.1	Symtom (3)	
Zoom position (Note! First zoom starts with 1.2)	Fault name	Count of fault positions

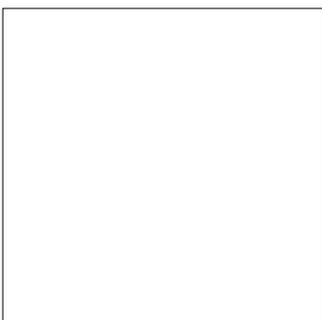
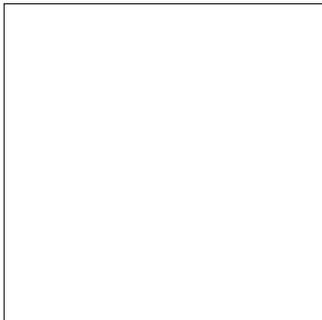
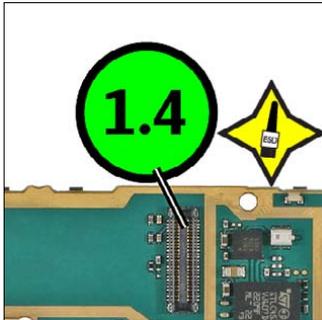
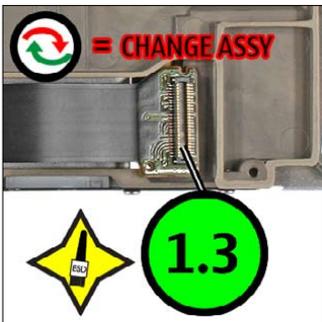
AV CONNECTOR (2)



30. QUICK TROUBLE SHOOTER - USB



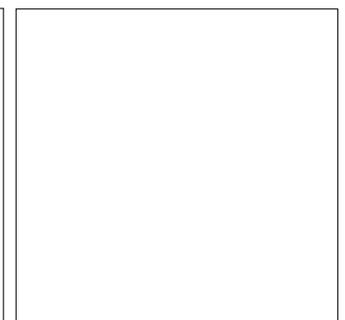
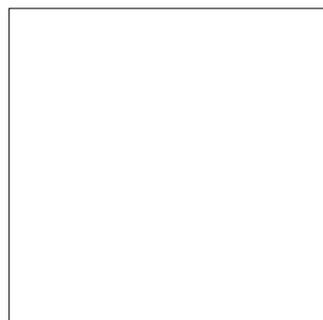
31. QUICK TROUBLE SHOOTER - CMOS CAMERA



Explanation

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

1.1 CMOS CAMERA (3)



32. QUICK TROUBLE SHOOTER - MAIN CAMERA

