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SERVICE MANUAL
Level 1&2

NOKIA
6290

RM-176

Transceiver characteristics:

Dual Mode:

-**GSM Band:** Tri-band phone for EGSM 850/900/1800/1900MHz

-**WCDMA Band:** 2100

Camera:

-**Main:** 2,0 Megapixel camera with integrated flash

-**2nd:** CIF camera for video call

Display: Active TFT color display with 16M colors,

resolution 320 x 240 pixel; active area 33.48x44.64mm

Operating System: Series 60

Bluetooth

IRDA

FM radio

Connector: Mini USB Connector, AV Connector

Transceiver with BL-5F Li-Ion battery pack

Talk time	Standby	Note
up to 3h	up to 11days	Depends on network parameters

Environmental characteristics:

- Lead-free soldered

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CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	29.Jan.2007	Initial draft
Approved	1.0	26.Feb.2007	Approval
Approved	2.0	13.Apr.2007	Exploded view/Spare Parts overview updated

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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.

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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
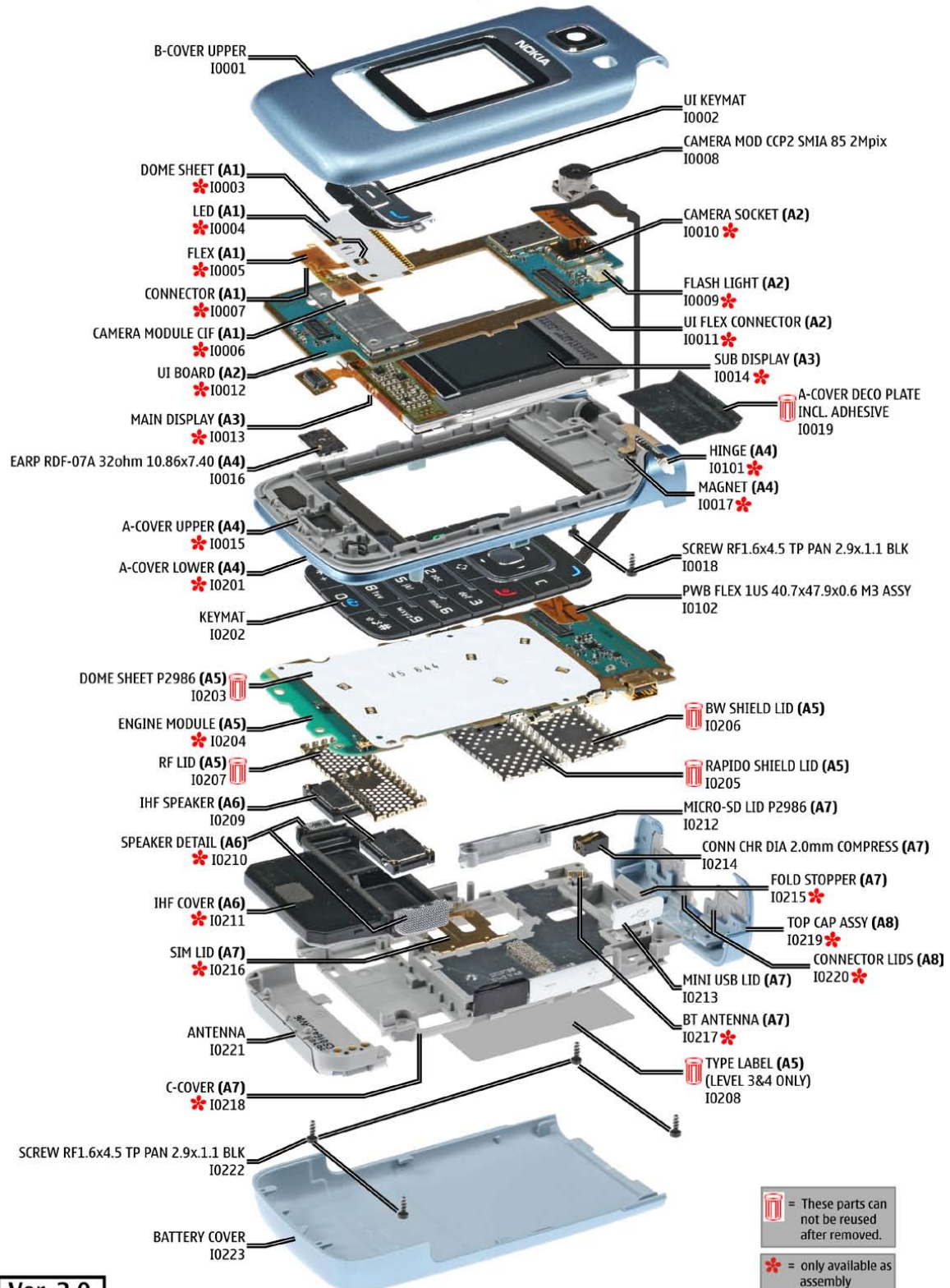6. Common Software Service Bulletins
   etc,...

Use General SB-217 as a reference or overview.

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

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3. EXPLODED VIEW

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

6290 RM-176 Exploded view

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4. SPARE PARTS OVERVIEW

6290 RM-176 Spare Parts overview

A1=UI FLEX ASSEMBLY (I0003-I0007)
- LED (A1) I0004
- DOME SHEET (A1) I0003
- FLEX (A1) I0005
- CONNECTOR (A1) I0007
- CAMERA MODULE CIF (A1) I0006

A2=UI BOARD ASSY (I0009-I0012)
- UI BOARD (A2) I0012
- CAMERA SOCKET (A2) I0010
- FLASH LIGHT (A2) I0009
- UI FLEX CONNECTOR (A2) I0011

A8=TOP CAP ASSY (I0219-I0220)
- CONNECTOR LIDS (A8) I0220
- TOP CAP ASSY (A8) I0219

A5=LIGHT SWAP ENGINE MODULE ASSY (I0203-I0208) (LEVEL 3&4 ONLY)
- DOME SHEET P2986 (A5) I0203
- ENGINE MODULE (A5) I0204
- BW SHIELD LID (A5) I0206
- RAPIDO SHIELD LID (A5) I0205
- RF LID (A5) I0207
- TYPE LABEL (A5) (LEVEL 3&4 ONLY) I0208

VS 844

A4=A-COVER ASSY (I0015-I0017, I0101, I0201)
- EARP RDF-07A 32ohm 10.86x7.40 (A4) I0016
- HINGE (A4) I0101
- MAGNET (A4) I0017
- A-COVER UPPER (A4) I0015
- A-COVER LOWER (A4) I0201

A6=IHF ASSEMBLY (I0209-I0211)
- IHF SPEAKER (A6) I0209
- SPEAKER DETAIL (A6) I0210
- IHF COVER (A6) I0211

A7=C-COVER ASSY (I0212-I0218) (LEVEL 3&4 ONLY)
- MICRO-SD LID P2986 (A7) I0212
- CONN CHR DIA 2.0mm COMPRESS (A7) I0214
- BT ANTENNA (A7) I0217
- SIM LID (A7) I0216
- FOLD STOPPER (A7) I0215
- MINI USB LID (A7) I0213
- C-COVER (A7) I0218

A3=LCD AM QVGA+128x160 COG 16Mco Napa SE (I0013-I0014)
- SUB DISPLAY (A3) I0014
- MAIN DISPLAY (A3) I0013

- SCREW RF1.6x4.5 TP PAN 2.9x1.1 BLK I0018
- B-COVER UPPER I0001
- UI KEYMAT I0002
- CAMERA MOD CCP2 SMIA 85 2Mpix I0008
- KEYMAT I0202
- PWB FLEX 1US 40.7x47.9x0.6 M3 ASSY I0102
- A-COVER DECO PLATE INCL. ADHESIVE I0019
- SCREW RF1.6x4.5 TP PAN 2.9x1.1 BLK I0222
- BATTERY COVER I0223
- ANTENNA I0221

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= These parts can not be reused after removed.

= only available as assembly

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5. GENERAL RECYCLING RECOMMENDATION

6. LEVEL 2 SOLDER COMPONENTS

6290 RM-176 Components overview
Solder components only for LEVEL 2

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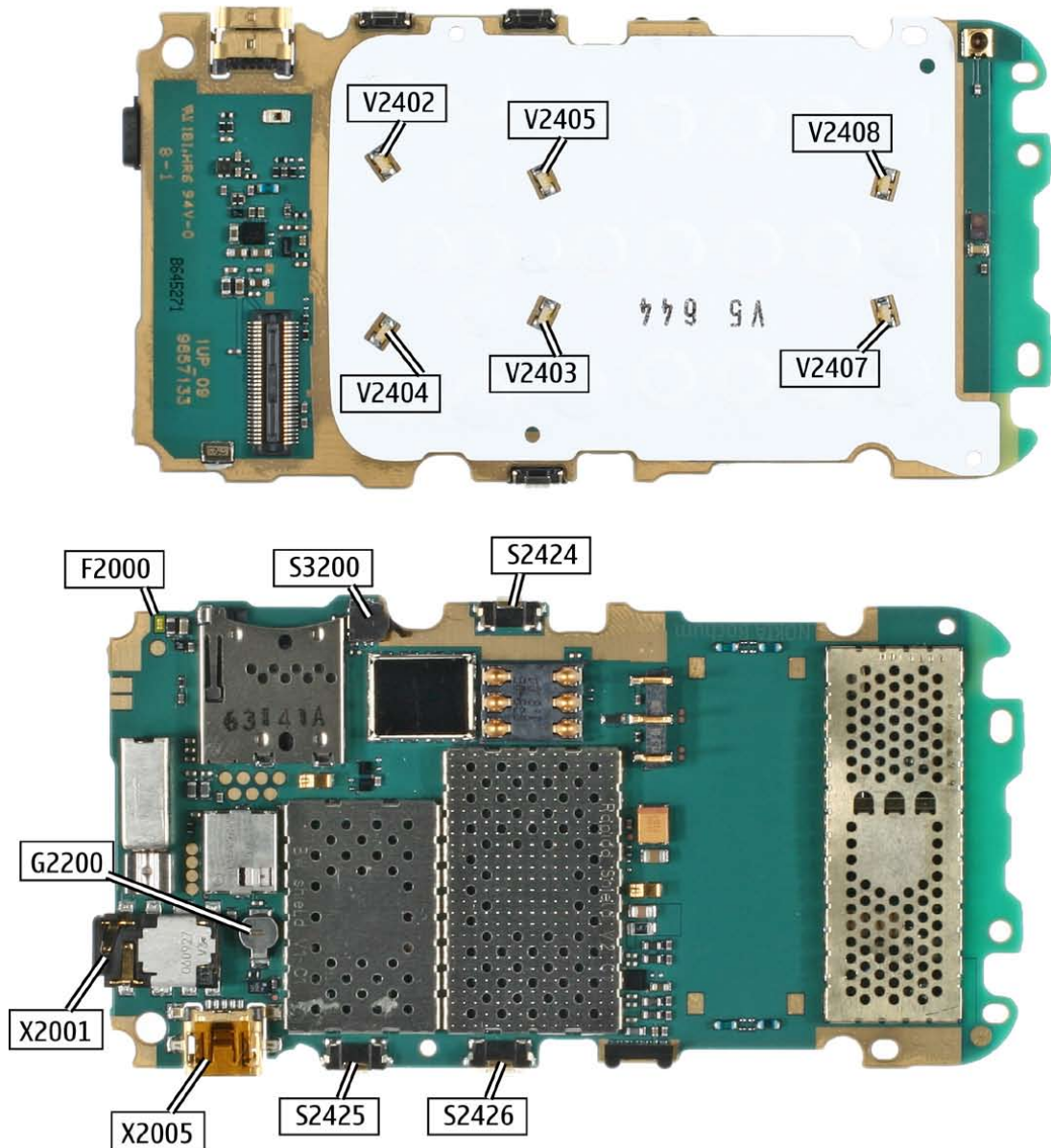
7. SERVICE TOOLS

FLS-5	**FLS-5 incl. ACF-8, Driver and User Guide** Dongle and flash device incorporated into one package, developed specifically for POS use.
	ACF-8 Universal Power Supply is used to power FLS-4S.
	Travel Charger AC-4 Small and lightweight charger for fast charging of your phone battery.
BL-5F	**Internal Battery BL-5F** Inserted under the back cover, this Li-Ion battery provides power in a lightweight package.
	SS-102 Camera removal tool.
	DKE-2 Service Cable to connect the PC with the mini USB connector.

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	RJ-133 Soldering Jig
	Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).
	0772040 NMP Standard Toolkit (V2) For more informations refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in "**Recommended service equipment**" document on NOKIA Online.

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8. 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
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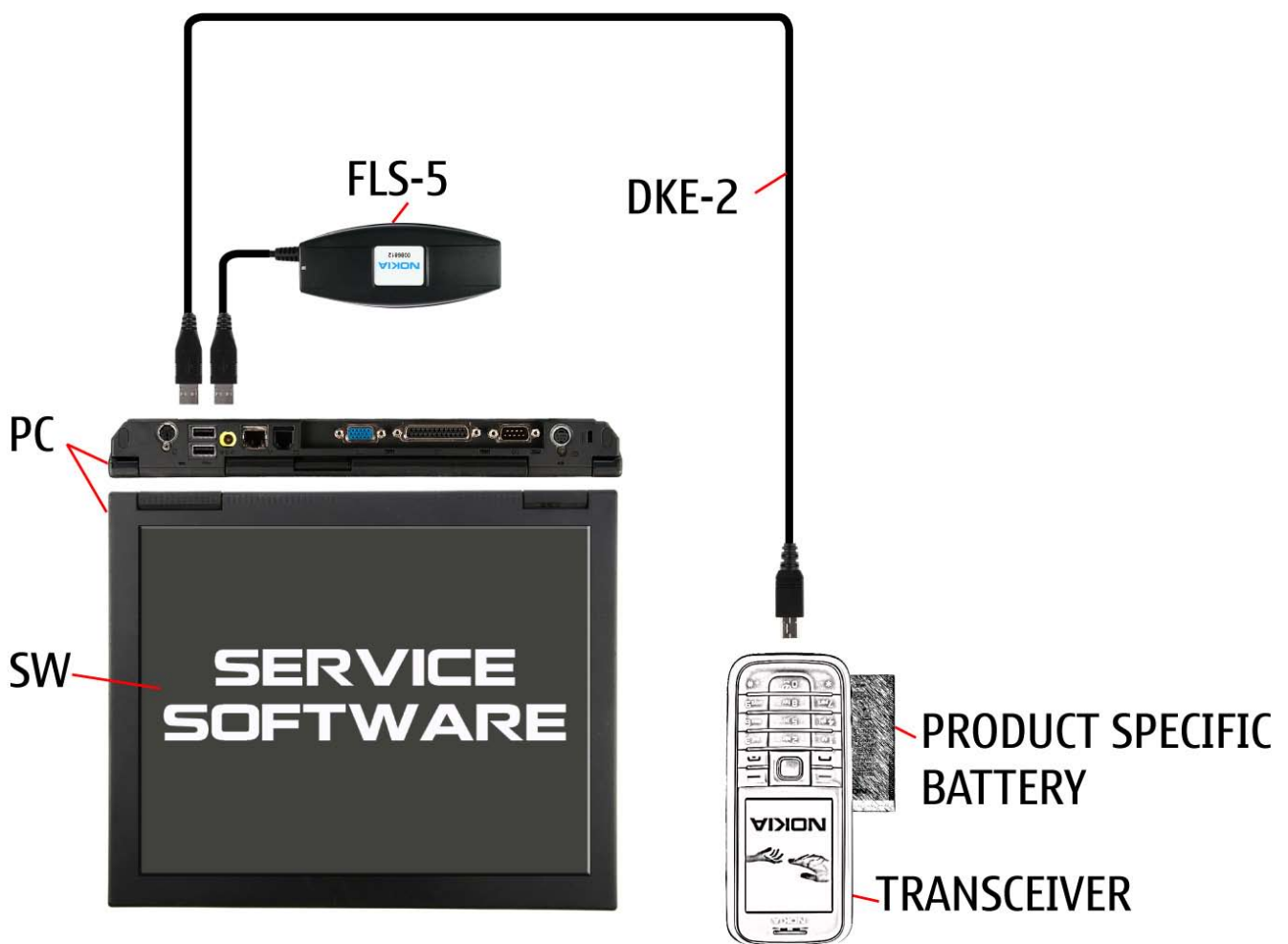
9. UPPER BLOCK DISASSEMBLY

1. Needed tools : A Torx and a torque driver, a Torx Plus size 6 bit, metal tweezers, a flat bladed screwdriver, the SS-93, the SRT-6 and the SS-102 camera removal tool.

2. Open and remove the BATTERY COVER. Remove the battery if inserted.

3. First, place the SRT-6 between the edge of the A-COVER UPPER and the A-COVER DECO PLATE and gently slide it along the edge.

4. Then remove the A-COVER DECO PLATE with the SS-93 and discard it.

5. Unscrew the screws in the order shown.

6. Remove the screws.

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7. Unlock the snaps of the B-COVER UPPER starting on the shown side.

8. Expand the B-COVER UPPER from the shown side...

9. ...and gently slide the SRT-6 along the edge to unlock the snaps. Do not twist the SRT-6 to avoid scratching the covers.

10. Do the same on the other side.

11. Remove the B-COVER UPPER.

12. Unlock the snaps of the UI KEYMAT with the SS-93...

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13. ...and remove it from the B-COVER UPPER.

14. Gently, open the PWB FLEX connector.
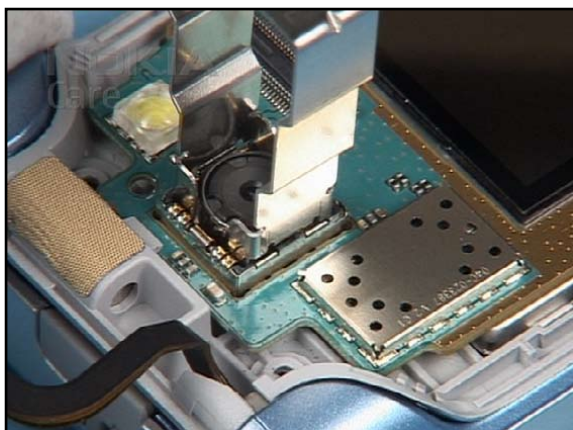
15. Carefully, remove the CAMERA MODULE with the SS-102.
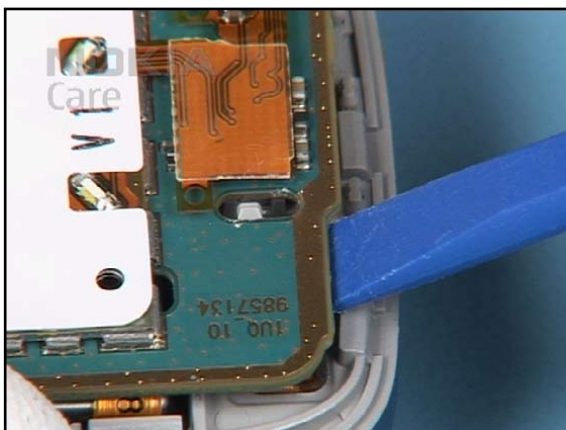
16. Unlock the UI BOARD...
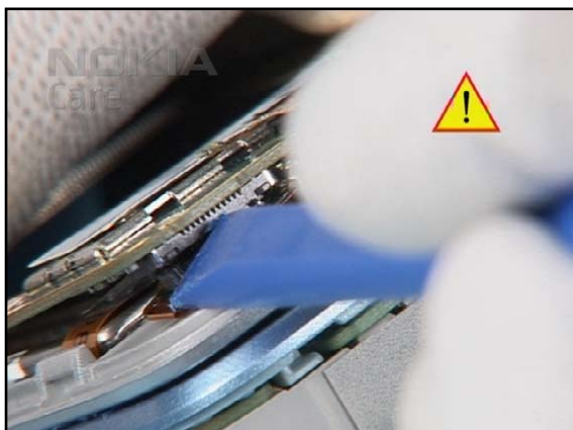
17. ...and carefully open the LCD connector.
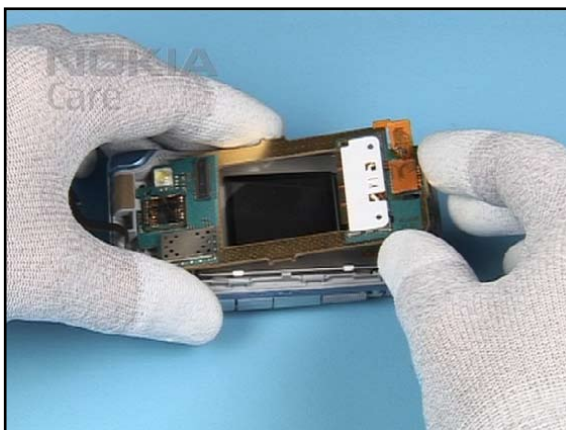
18. Now, remove the UI BOARD ASSY from the A-COVER UPPER.

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19. Cover the SUB DISPLAY with the protective film.

20. Now, the displays can be removed easily.
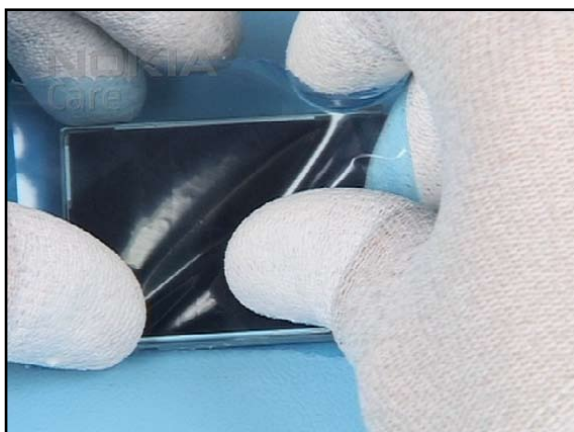
21. Cover the MAIN DISPLAY with the protective film.

22. Use the flat bladed screwdriver as a lever to unlock the EARPIECE from its place...

23. ...and remove it.
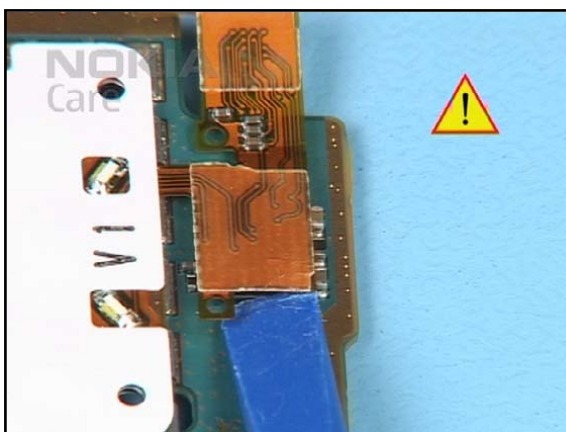
24. Open the UI FLEX connector.

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25. Remove the UI FLEX from the UI BOARD and discard it.

26. The disassembly procedure is now completed.

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10. UPPER BLOCK ASSEMBLY

1. Place the EARPIECE into the A-COVER UPPER…
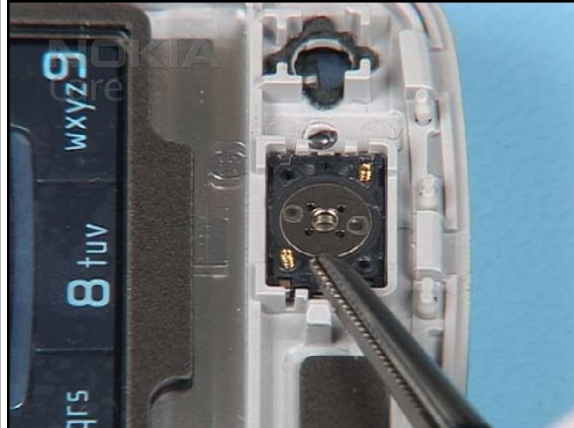
2. …and gently push it into its place. Avoid bending the spring contacts.

3. Align the new UI FLEX with the UI BOARD…

4. …and close the connector.
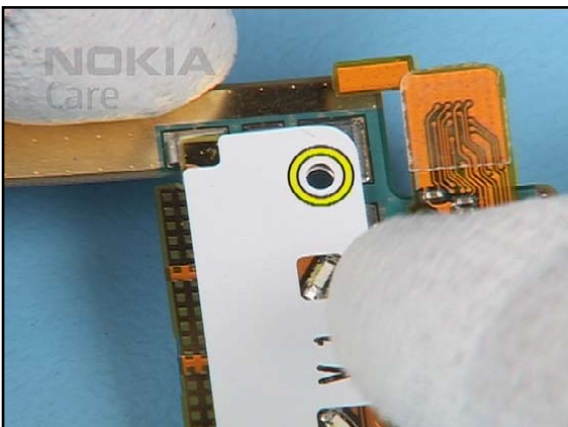
5. Note the right position of the UI FLEX…
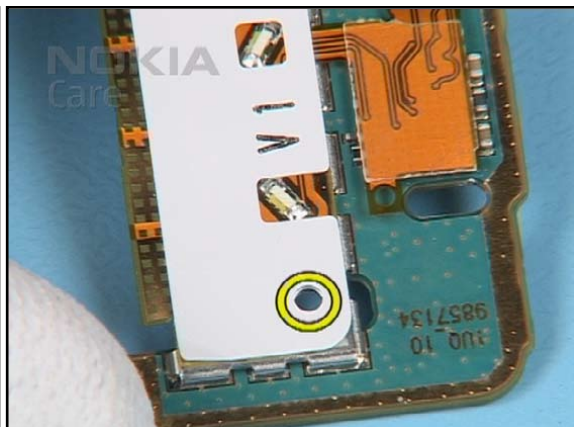
6. …and press it carefully onto the metal shield.

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7. Place the LCD into the A-COVER UPPER.

8. Ensure the right position of the LCD connector.
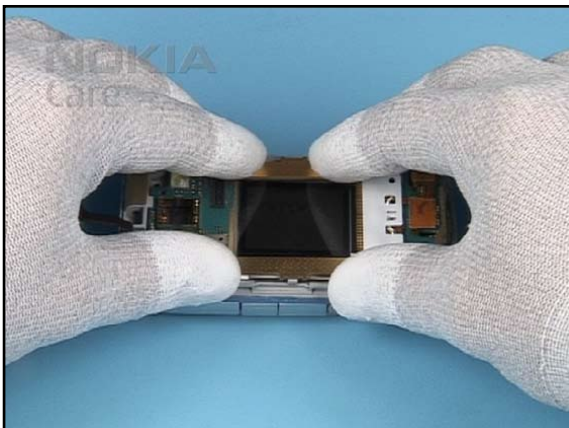
9. Align the UI BOARD with the A-COVER UPPER, secureit into ist position...

10. ...and carefully close the LCD connector.
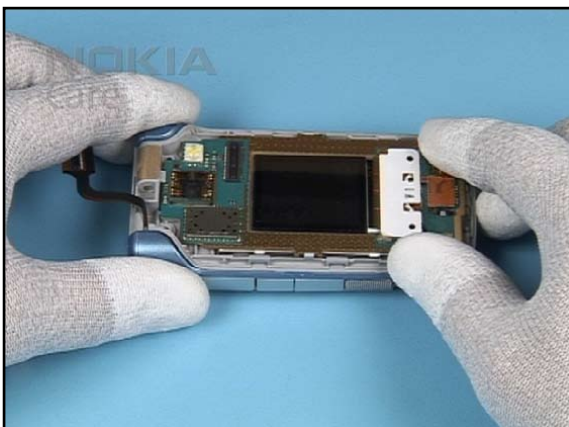
11. Ensure that the CAMERA MODULE CIF is positioned correctly.
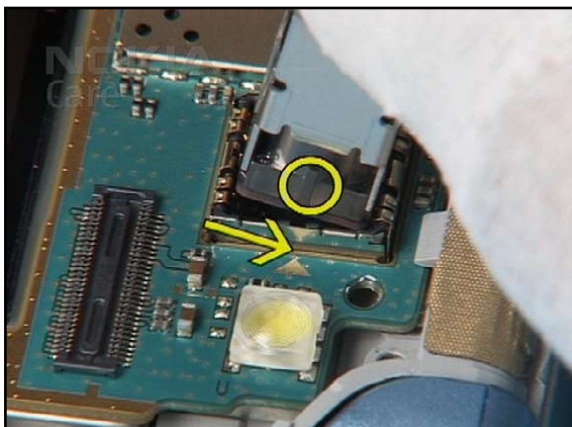
12. Insert the CAMERA MODULE. Note the right position of the guide pin.

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13. Secure the CAMERA MODULE by gently pressing it into place.

14. Close the PWB FLEX connector.

15. Fit the UI KEYMAT and close the snaps.

16. Fit the B-COVER UPPER...

17. and carefully squeeze the parts together.

18. Insert the screws.

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19. Set the torque driver to the correct torque.

20. To avoid damaging of the plastic threads first tighten the screws to the left.

21. Then tighten them in the order shown.

22. Place the A-COVER DECO PLATE onto the A-COVER UPPER and press it carefully to secure it into its place.

23. Check that no gaps remain.

24. Finally, fit the BATTERY COVER.

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11. LOWER BLOCK DISASSEMBLY

1. Needed tools: A Torx and a torque driver, a Torx Plus size 6 bit, metal tweezers, the SS-93, the SRT-6 and the DC-plug.

2. Open and remove the BATTERY COVER. Remove the Battery if inserted.

3. Open the unit.

4. Place the SRT-6 between the KEYMAT and the A-COVER LOWER and carefully slide it along the edge as shown.

5. Remove the KEYMAT avoiding to touch the LEDs.

6. Close the unit.

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7. Unlock the snaps of the TOP CAP ASSY with the SS-93.

8. Remove the TOP CAP ASSY.
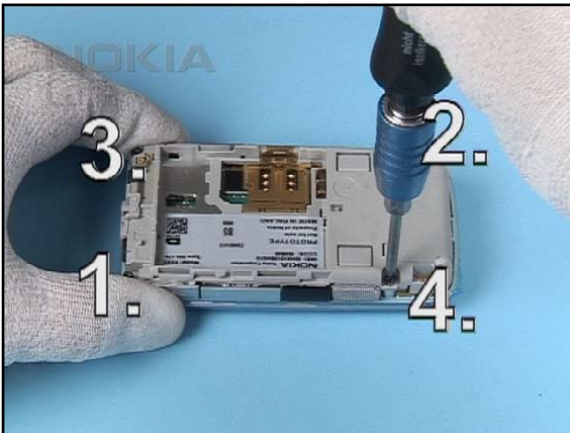
9. Unscrew the 4 Torx Plus size six screws in the order shown.

10. Remove the screws.

11. Place the SRT-6 between the C-COVER ASSY and the A-COVER LOWER and carefully release the snaps.

12. Lift the A-COVER LOWER as shown...

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13. ...and carefully open the Hinge PWB FLEX connector with the SS-93.

14. Unlock the ENGINE MODULE as shown...
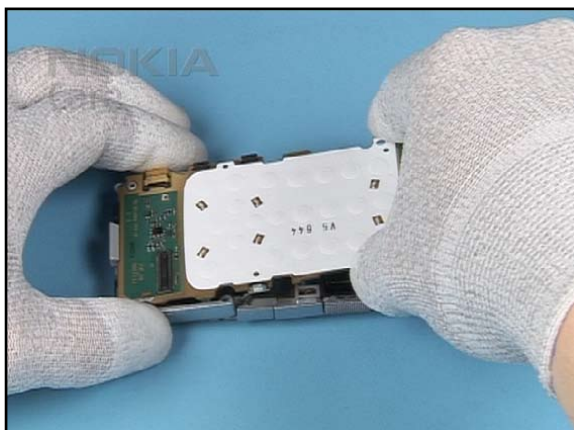
15. ... and remove it from the C-COVER ASSY.
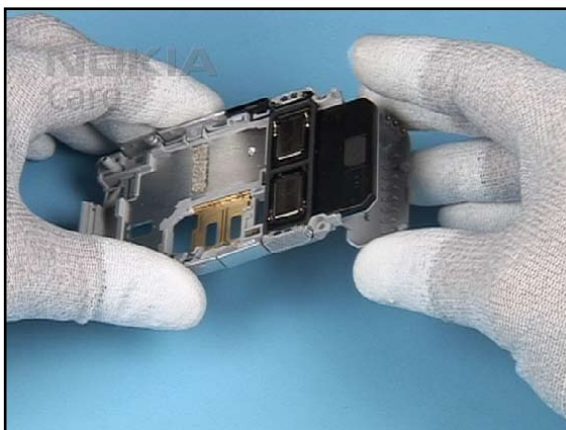
16. Remove the ANTENNA.

17. Remove the IHF ASSEMBLY from the C-COVER ASSEMBLY.
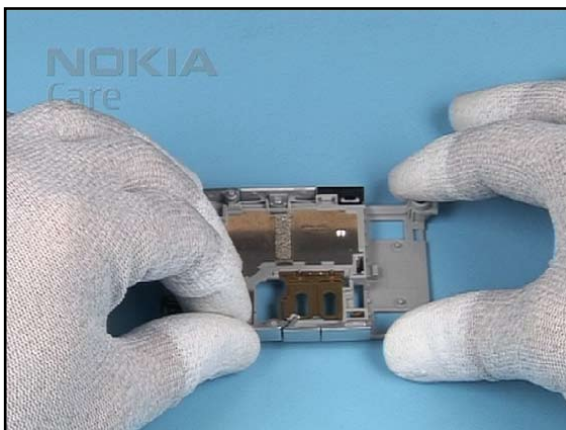
18. Remove the MICRO SD LID...

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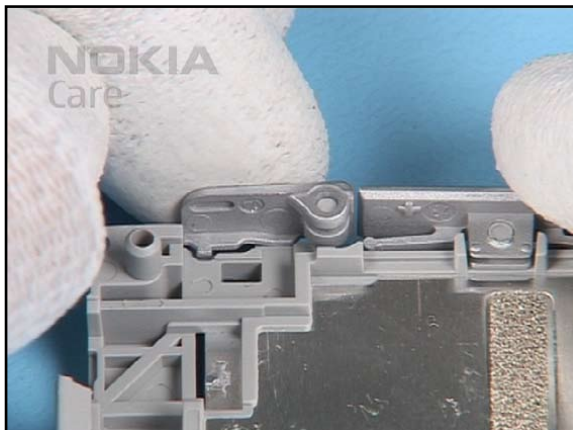
19. ... and the MINI USB LID.

20. Use the DC-plug to remove the DC-JACK.
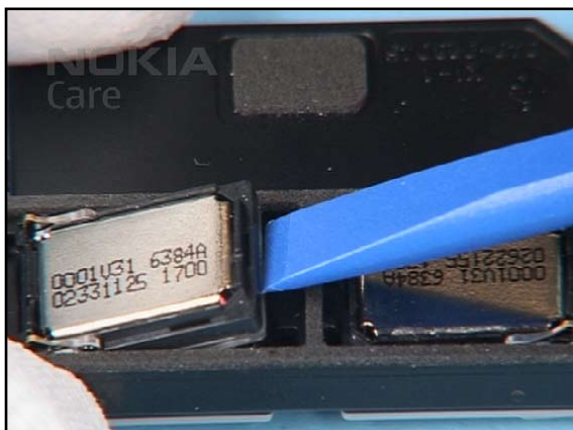
21. Use the SS-93 as a lever to lift the IHF SPEAKER from the IHF ASSEMBLY.

22. Now, remove the IHF SPEAKER. Do the same on the other side.
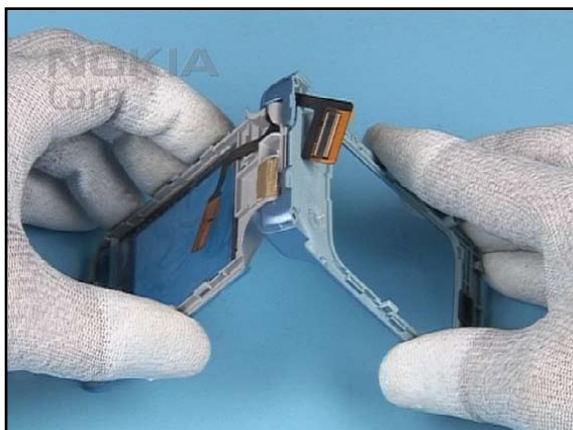
23. Open the A-COVER ASSY as shown...

24. ...and remove the PWB FLEX from the HINGE.

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25. Note the right position of the PWB FLEX when assembling the unit.

26. Carefully insert the PWB FLEX into the HINGE slot.

27. Close the A-COVER ASSY...

28. ...and check if the PWB flex is positioned correctly.

29. The disassembly procedure is now completed.

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12. LOWER BLOCK DISASSEMBLY

1. Insert the IHF SPEAKERs into the IHF ASSEMBLY avoiding to touch the spring contacts and the membrane of the speaker.

2. Insert the DC-JACK with the DC-plug into the A-COVER ASSY. Avoid bending the spring contacts.
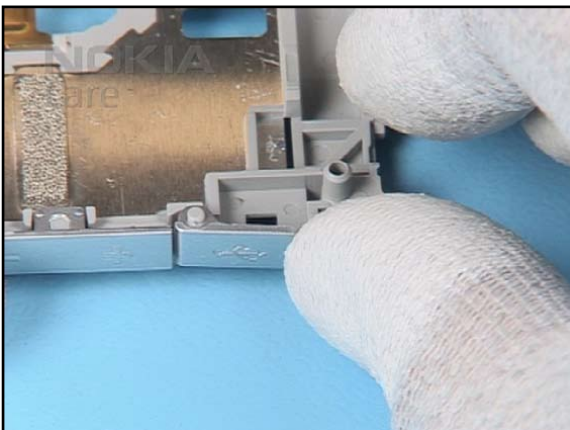
3. Insert the MINI USB LID and close it.

4. Insert the MICRO-SD LID and close it.

5. Align the IHF ASSEMBLY with the C-COVER ASSY as shown...

6. ...and secure it by carefully pressing it into position.

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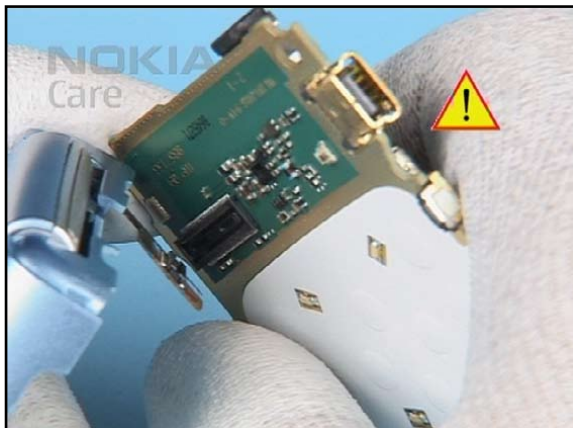
7. Gently connect the PWB FLEX to the ENGINE MODULE.
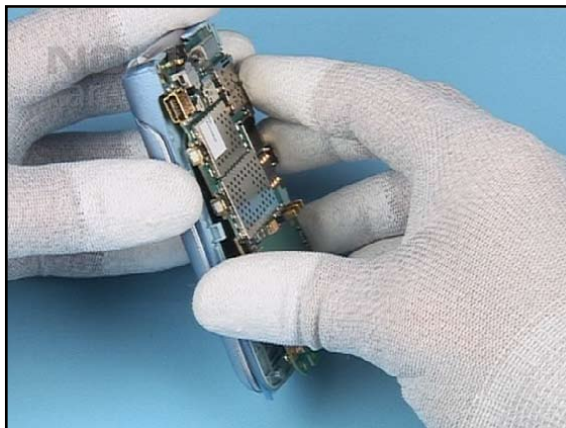
8. Place the ENGINE MODULE onto the A-COVER UPPER.

9. Note the right position of the guide pins.

10. Align the C-COVER ASSY with the A-COVER LOWER.

11. Secure the parts by carefully squeezing them together.

12. Fit the ANTENNA to the C-COVER ASSEMBLY...

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13. ...and close the shown snap.

14. Insert the screws.

15. Set the torque driver to the correct torque.
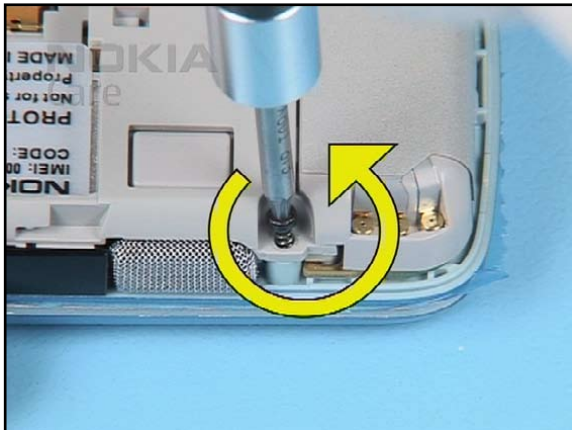
16. To avoid damaging the plastic threads, first tighten the screws to the left.
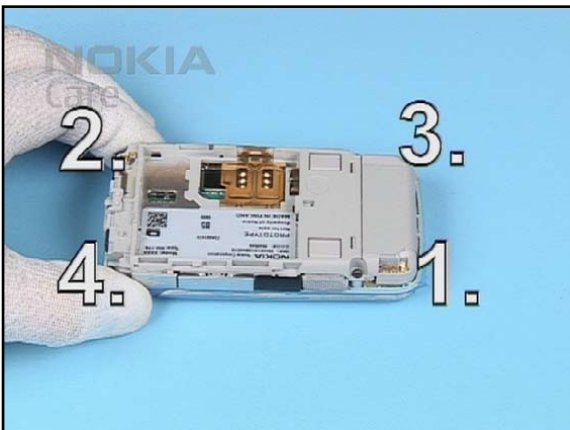
17. Then tighten them in the order shown.

18. Fit the TOP CAP ASSY...

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19. ...secure it by pressing it into position.

20. Open the unit ...

21. ...and fit the KEYMAT into the A-COVER LOWER.

22. Check the correct position of the KEYMAT.

23. Fit the BATTERY COVER.

24. Finally, check that no gaps remain.

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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).

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.

Explanation

1.1 **Symtom (3)**

Zoom position
(Note! First zoom starts with 1.2)

Fault name

Count of fault positions

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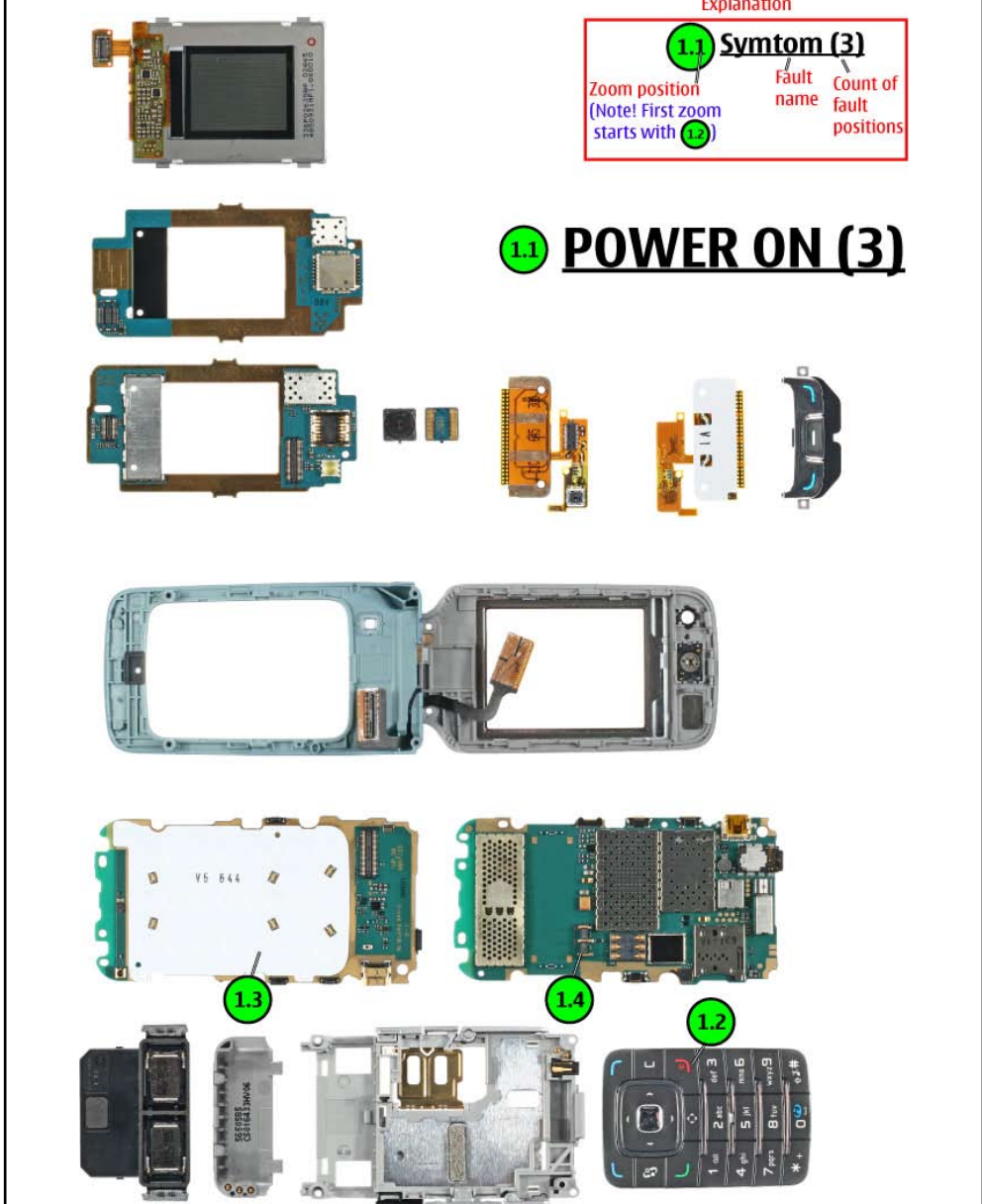
14. QUICK TROUBLE SHOOTER - POWER ON
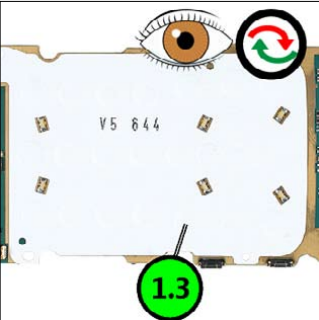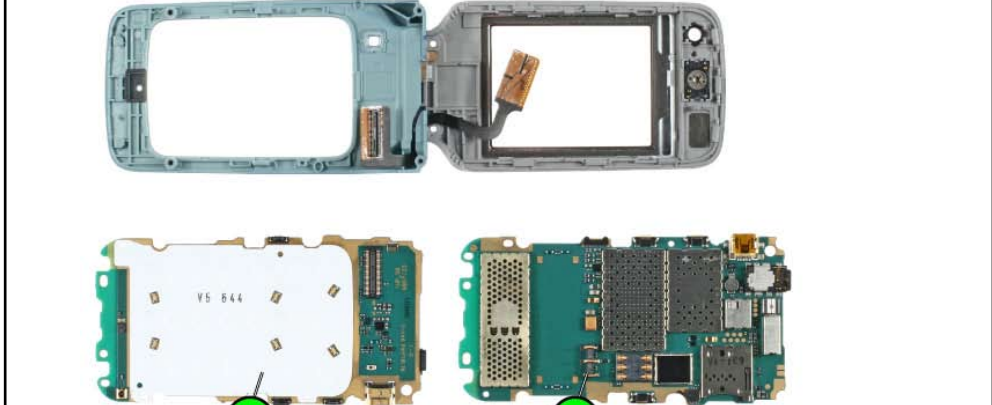
Explanation

1.1 **Symtom (3)**

Zoom position
(Note! First zoom
starts with 1.2)

Fault
name

Count of
fault
positions

1.1 **POWER ON (3)**
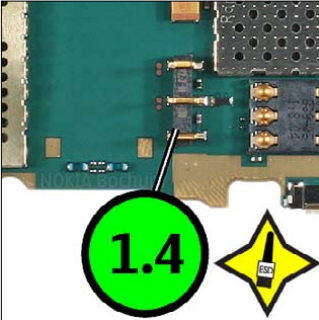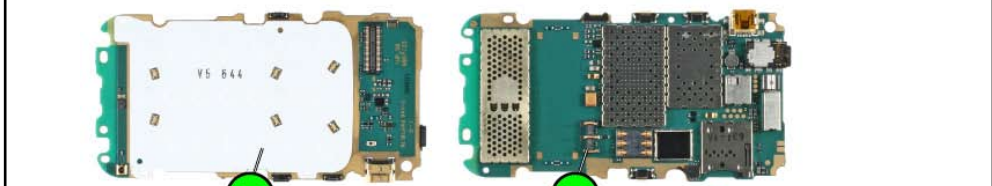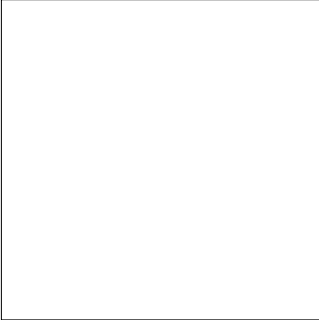
15. QUICK TROUBLE SHOOTER - CHARGING
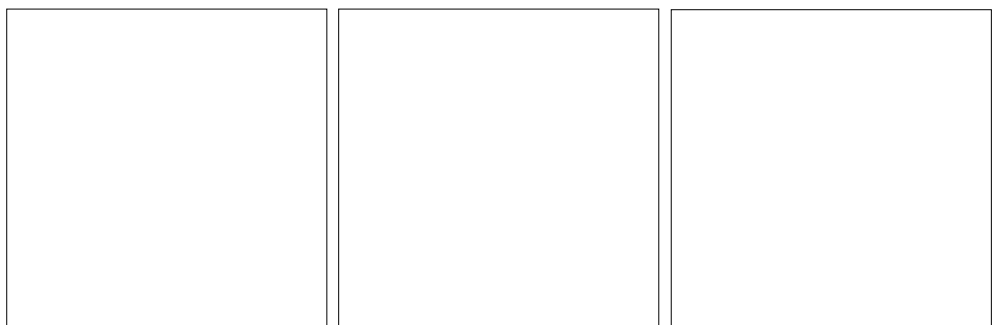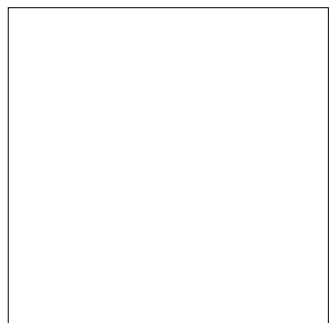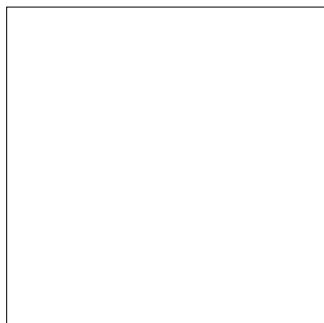

Explanation

1.1 Symtom (3)

Zoom position
(Note! First zoom starts with 1.2))

Fault name

Count of fault positions

1.1 CHARGING (4)

1.2

1.3

LEVEL 2 ONLY

Ω

$\Omega 0 \approx$

1.4

1.5

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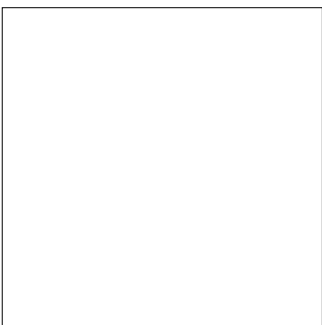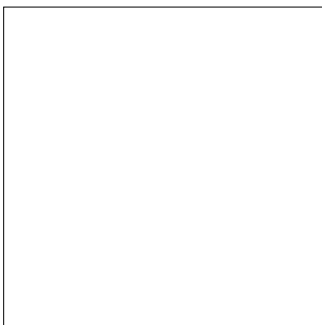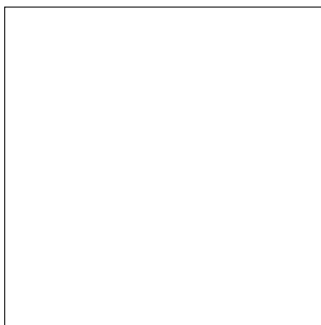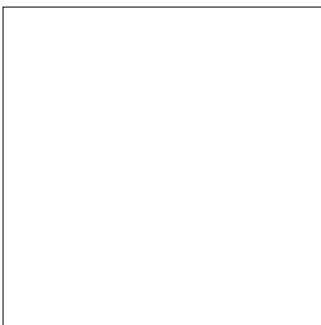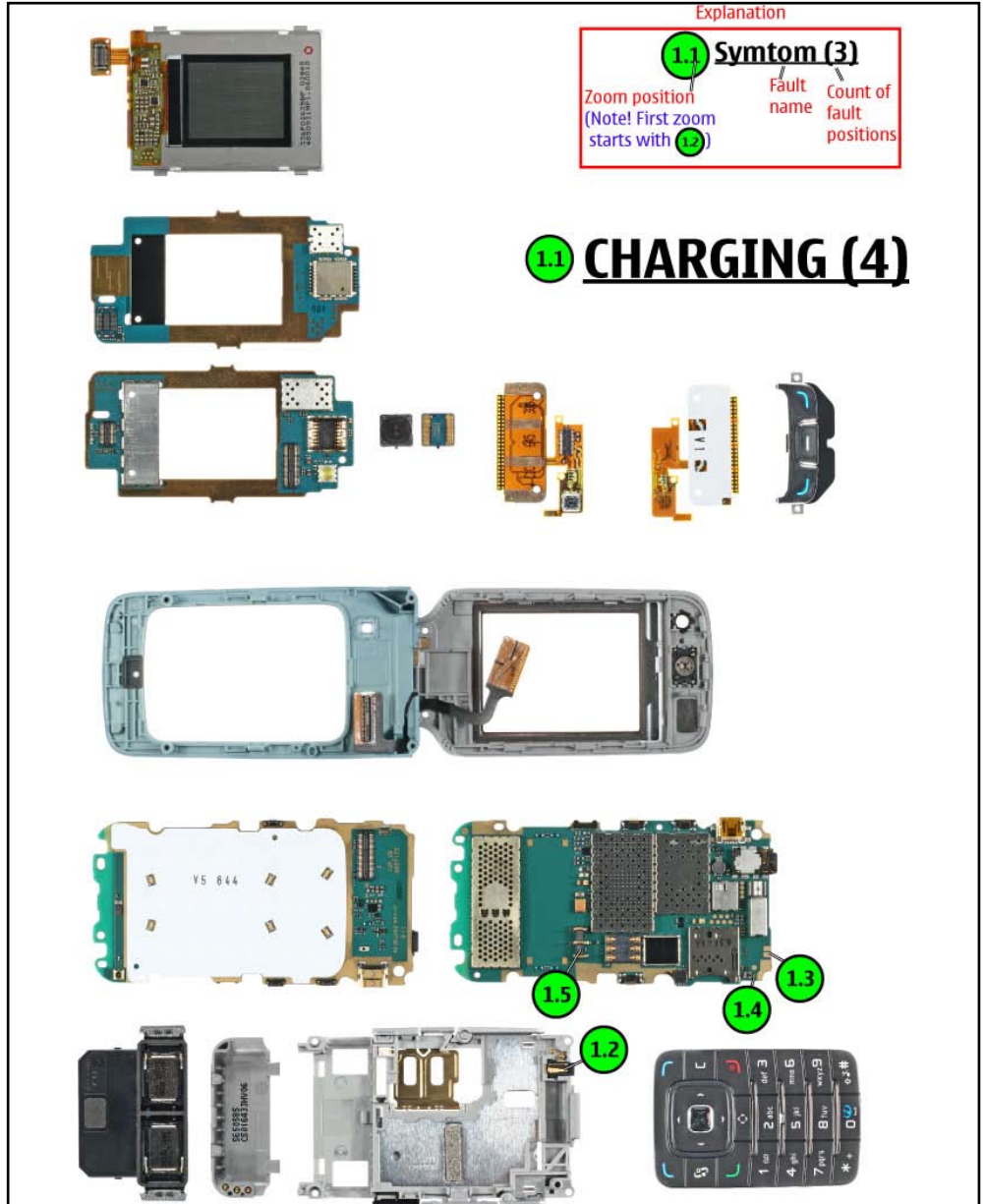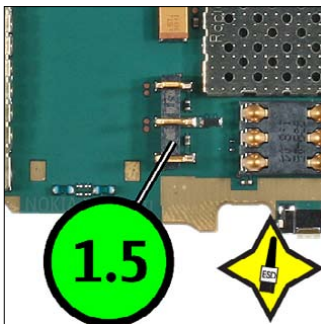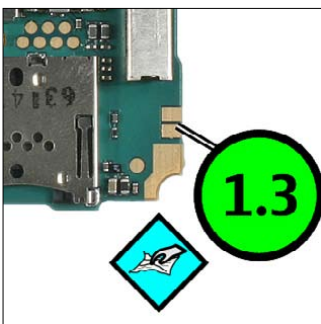
16. QUICK TROUBLE SHOOTER - NO SERVICE

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)

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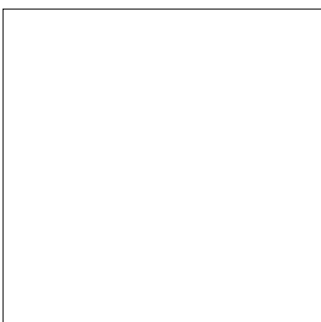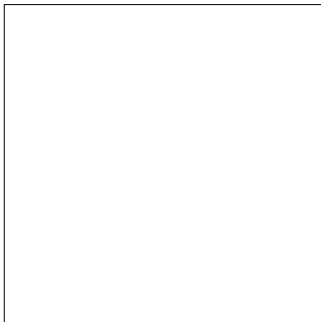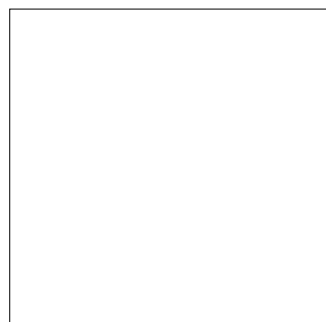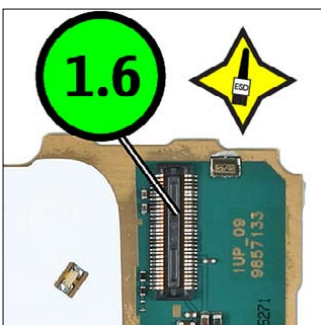
17.QUICK TROUBLE SHOOTER - BLUETOOTH

= CHANGE ASSY

1.2

1.3

Explanation

1.1 Symtom (3)

Zoom position
(Note! First zoom
starts with 1.2)

Fault
name

Count of
fault
positions

1.1 BLUETOOTH (2)

1.2

1.3

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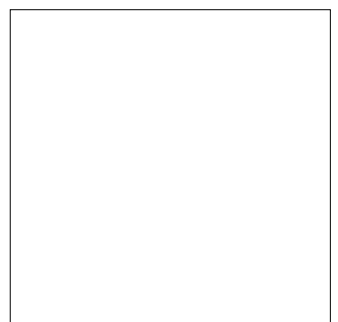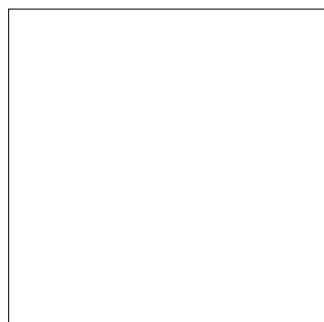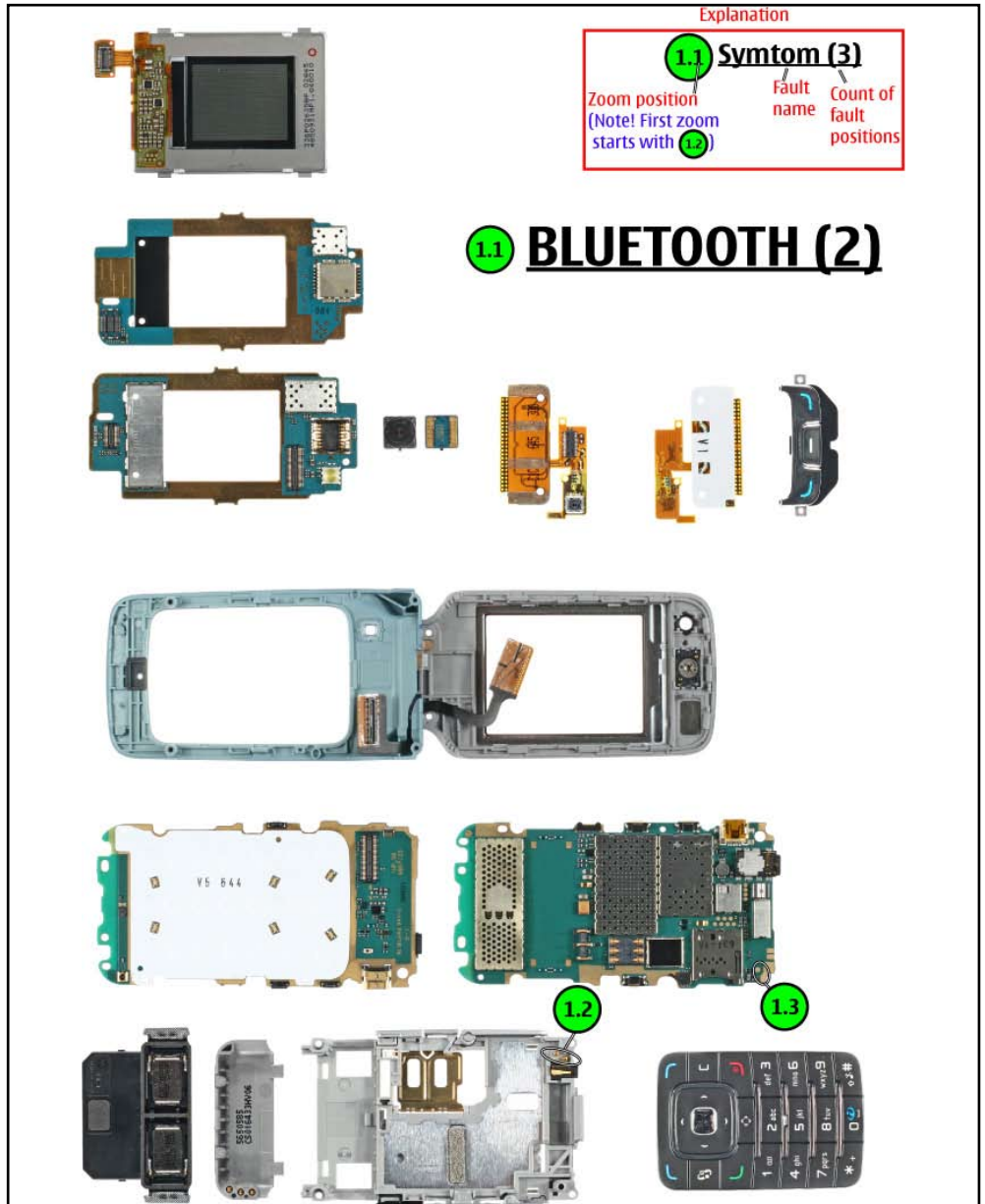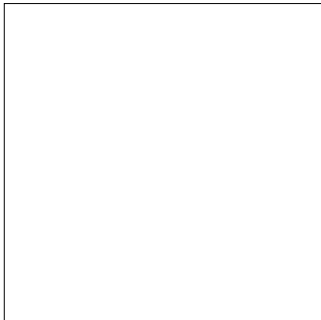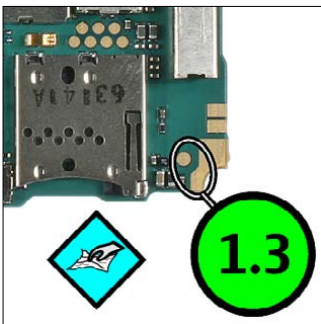
18. QUICK TROUBLE SHOOTER - EARPIECE

1.2

= CHANGE ASSY

1.3

= CHANGE ASSY

1.4

1.5

1.6

Explanation

1.1 **Symtom (3)**

Zoom position
(Note! First zoom
starts with **1.2**)

Fault
name

Count of
fault
positions

1.1 **EARPIECE (5)**

1.3

1.4

1.2

1.5

1.6

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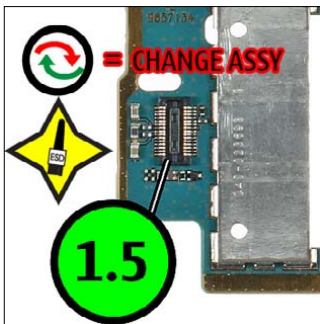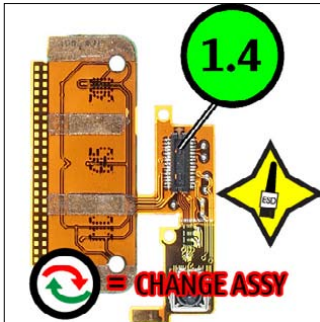Multimedia Creation & Support

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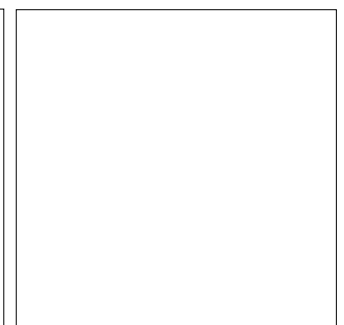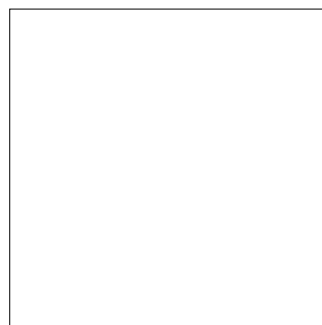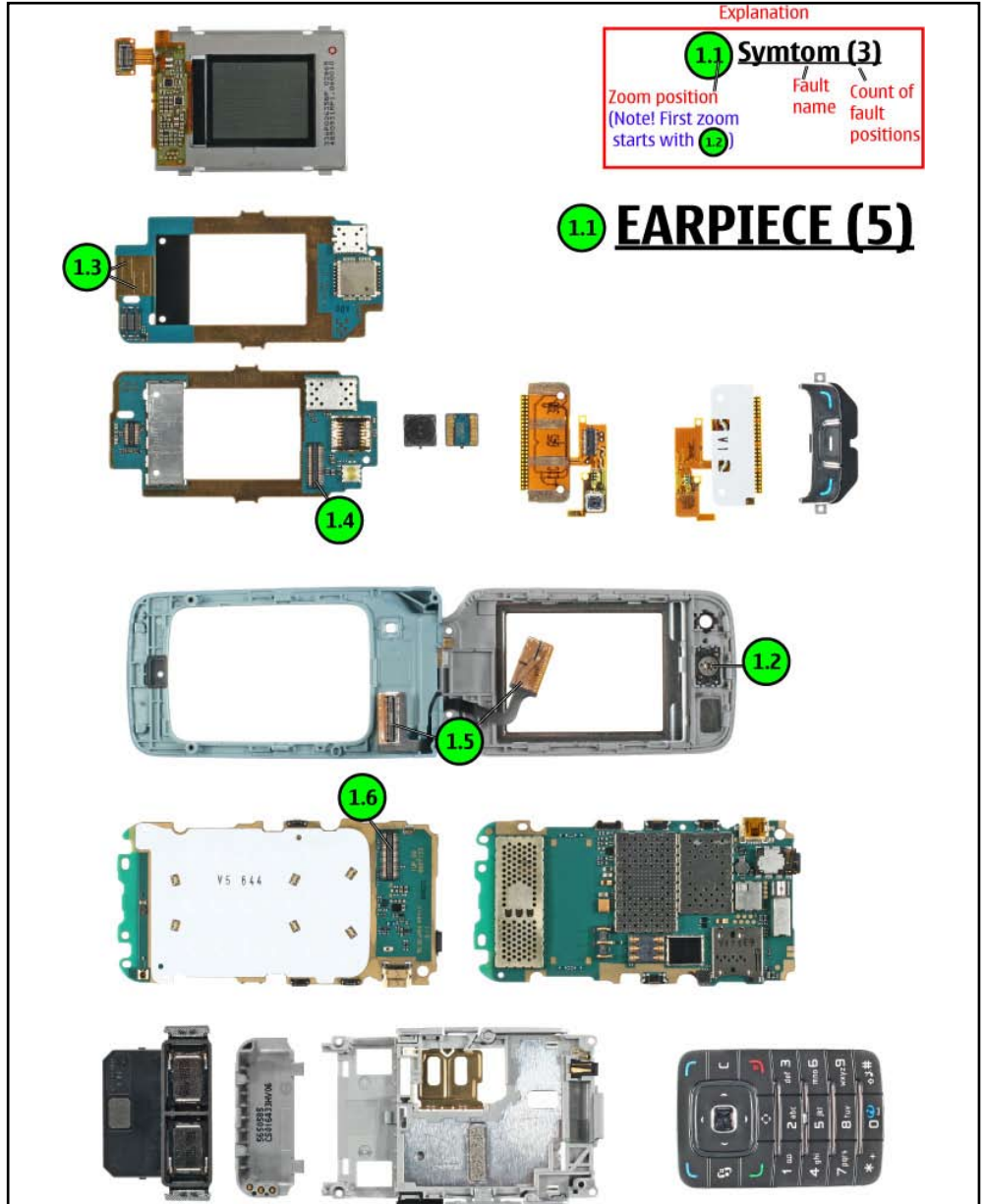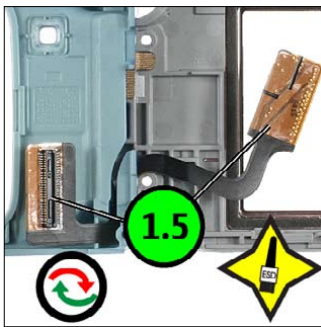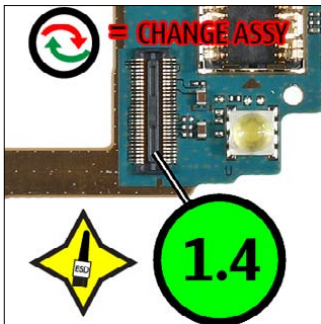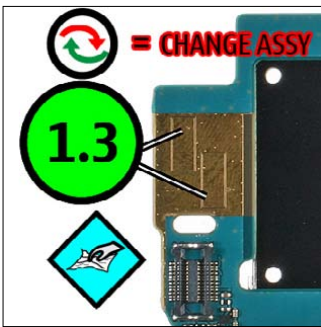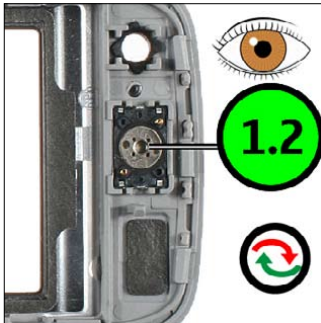
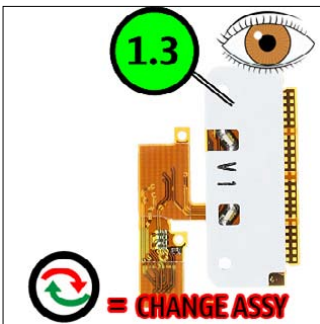## 19. QUICK TROUBLE SHOOTER - IHF SPEAKER
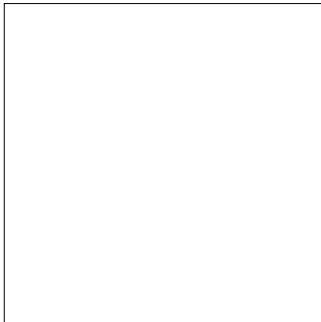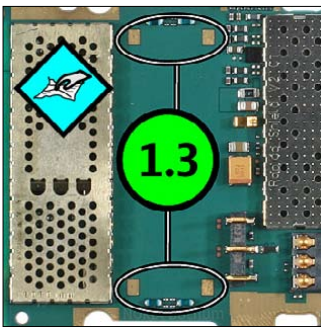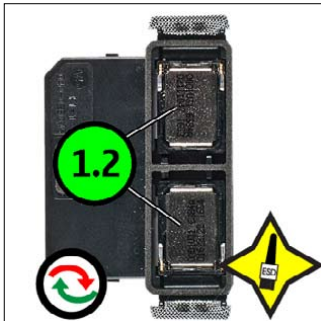
Explanation

1.1 **Symtom (3)**

Zoom position (Note! First zoom starts with 1.2)

Fault name

Count of fault positions

1.1 **IHF SPEAKER (2)**

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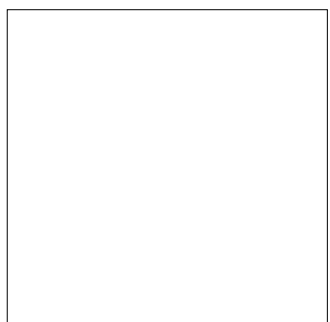
20. QUICK TROUBLE SHOOTER - DISPLAY
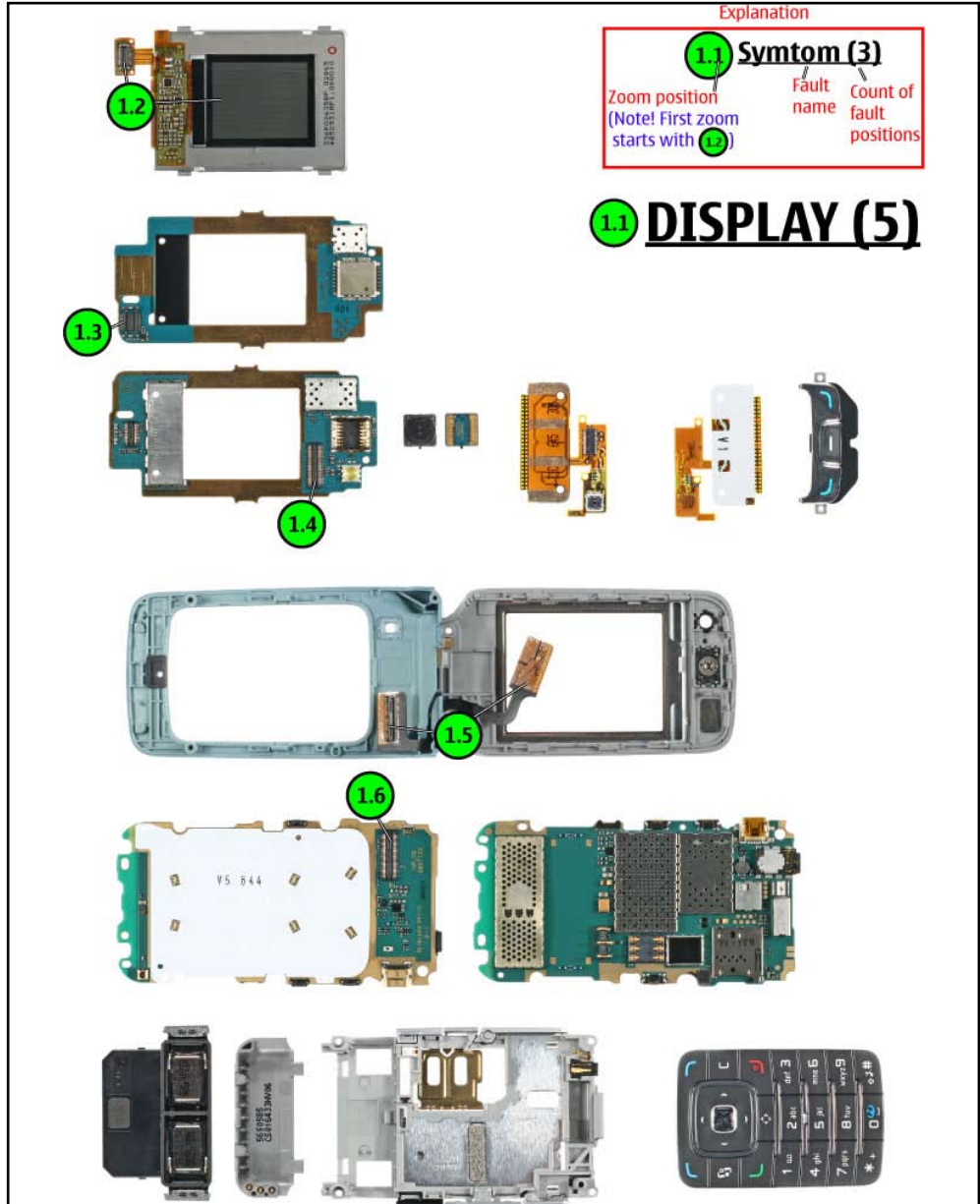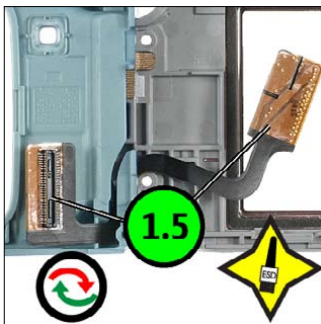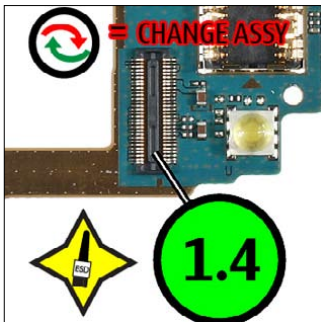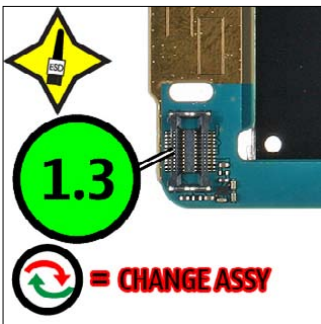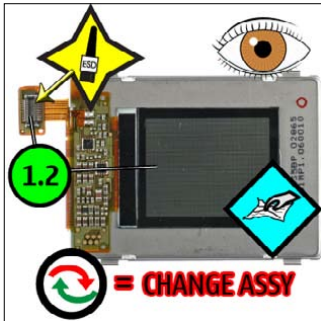
Explanation

1.1 **Symtom (3)**

Zoom position
(Note! First zoom
starts with 1.2)

Fault
name

Count of
fault
positions

1.1 **DISPLAY (5)**

1.2

1.3

1.4

1.5

1.6

1.2 = CHANGE ASSY

1.3 = CHANGE ASSY

= CHANGE ASSY 1.4

1.5

1.6

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21. QUICK TROUBLE SHOOTER - MICROPHONE

Explanation
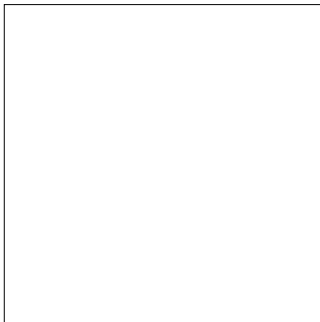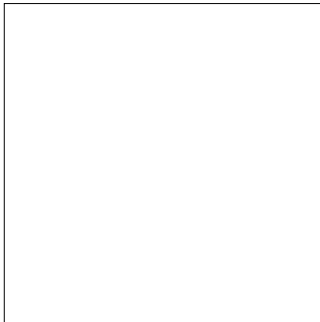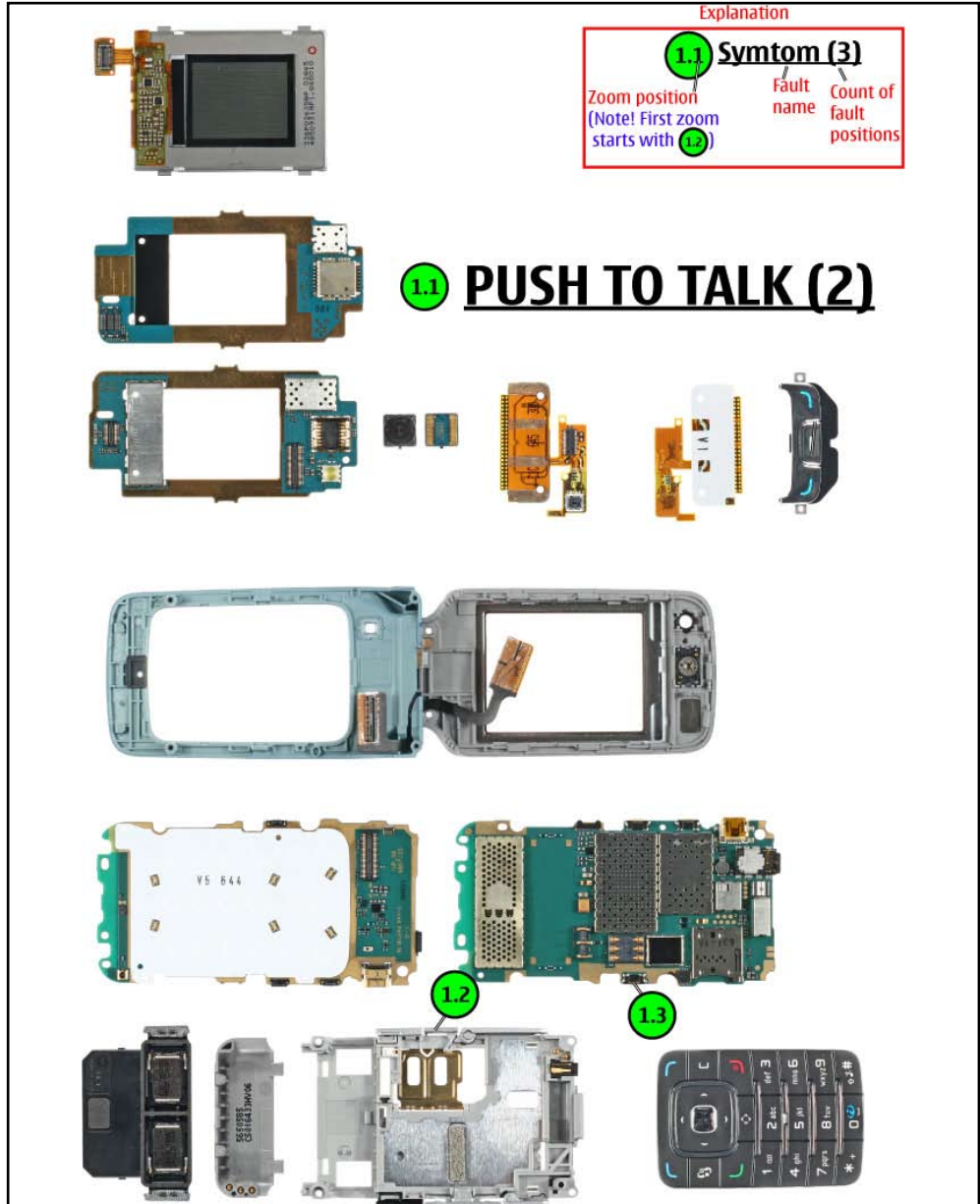
1.1 **Symtom (3)**

Zoom position
(Note! First zoom
starts with 1.2)

Fault name   Count of fault positions

1.1 **MICROPHONE (1)**

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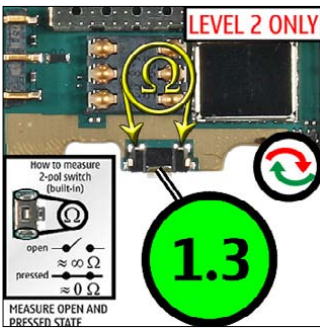**Multimedia Creation & Support**

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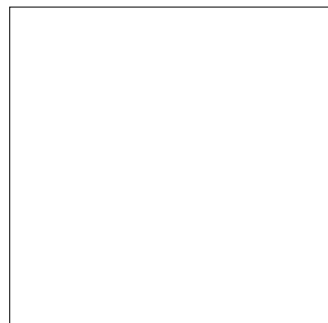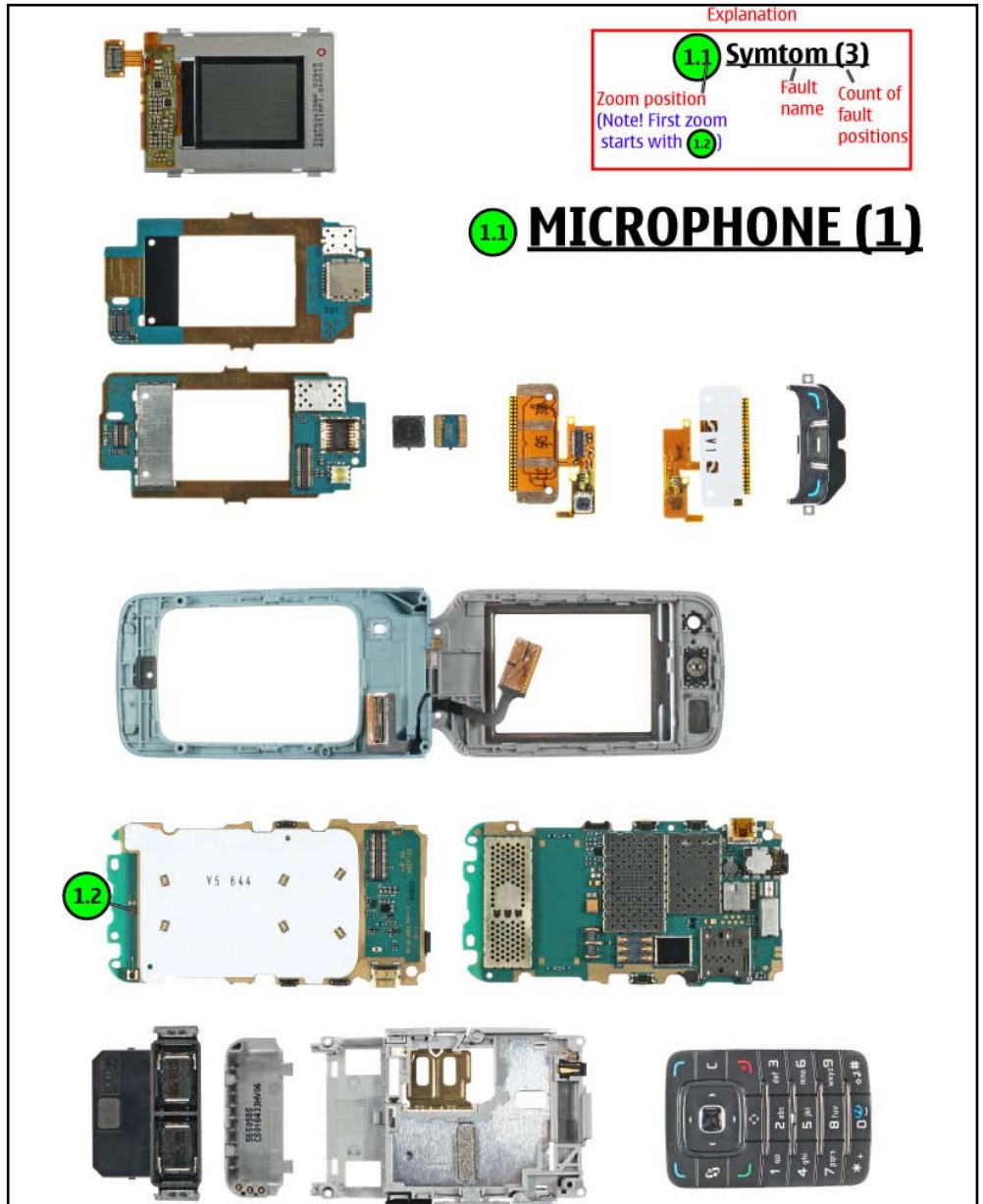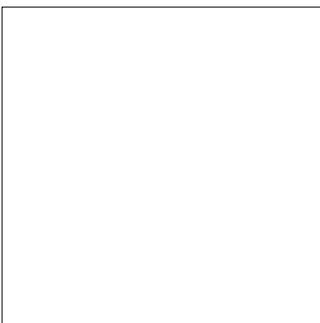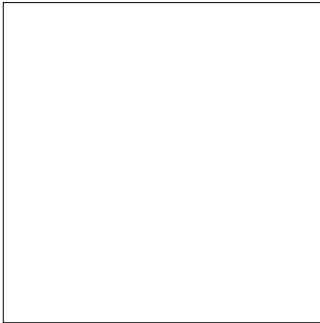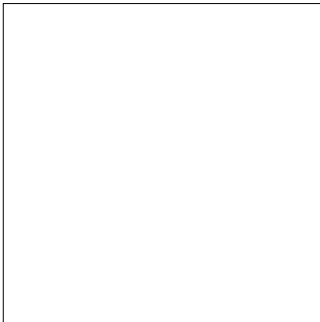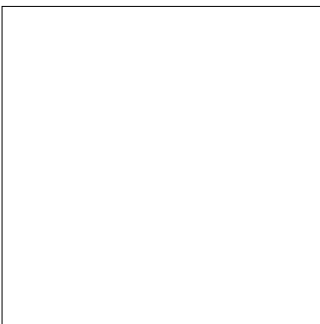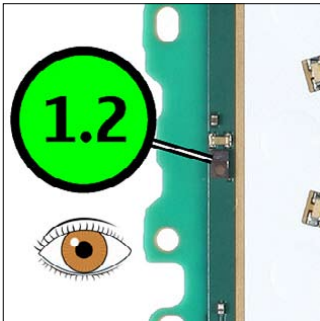
22. QUICK TROUBLE SHOOTER - KEYMAT

Explanation

1.1 Symtom (3)

Zoom position
(Note! First zoom
starts with 1.2)

Fault
name

Count of
fault
positions

1.1 KEYMAT (2)

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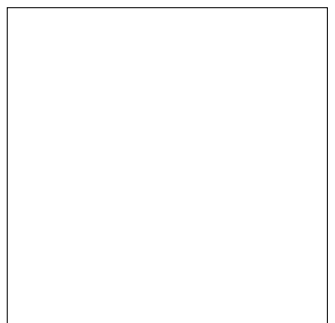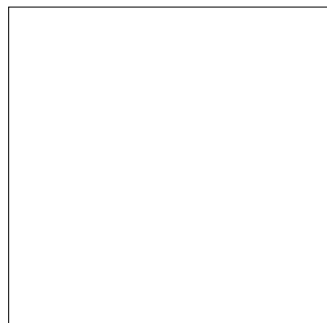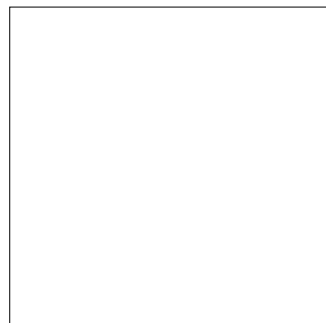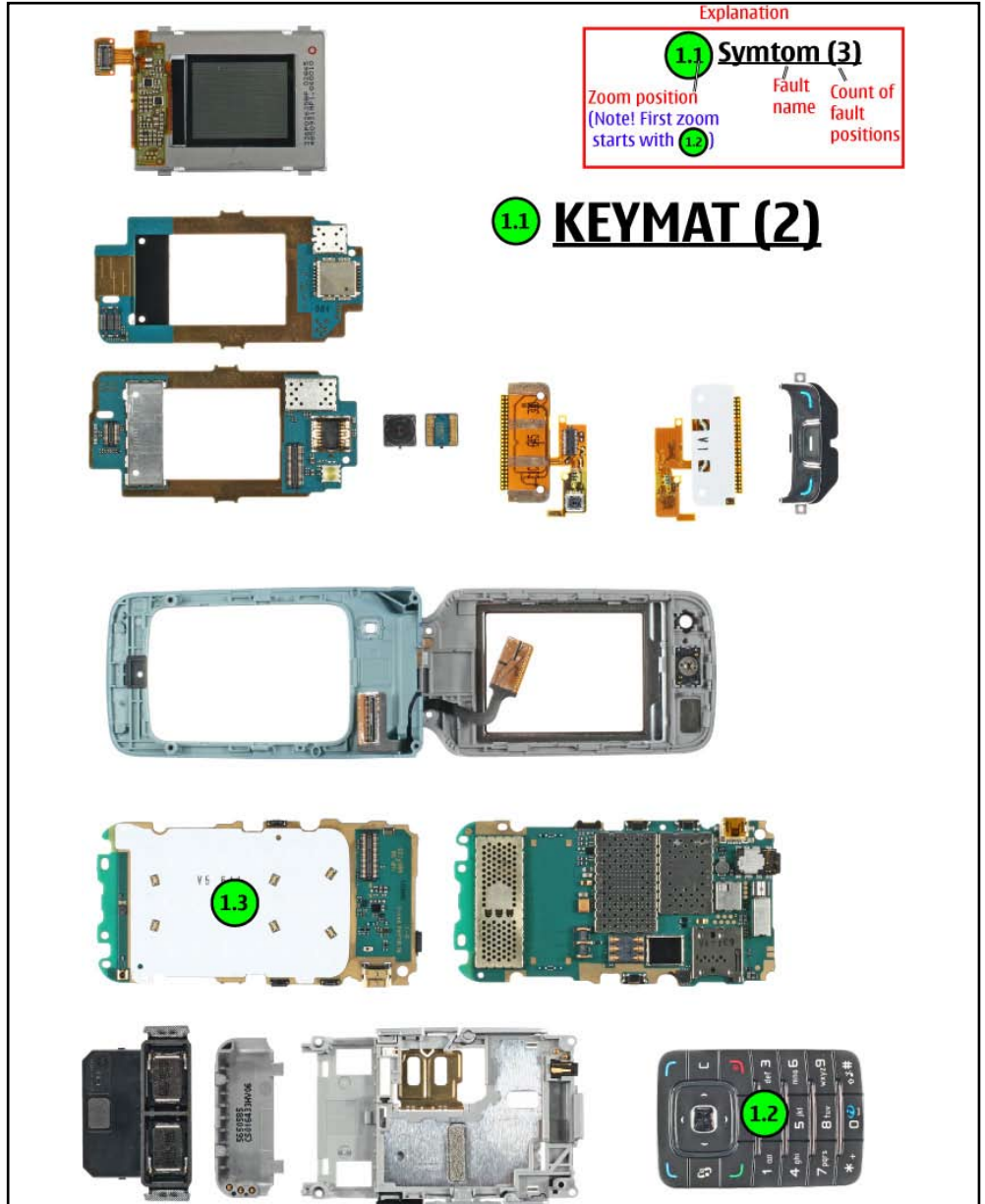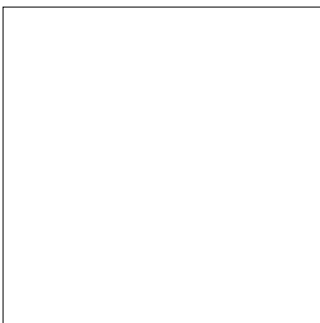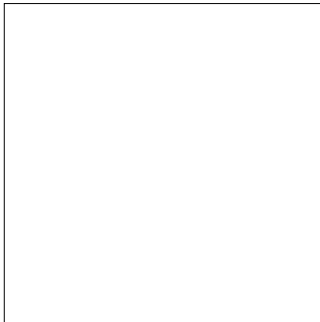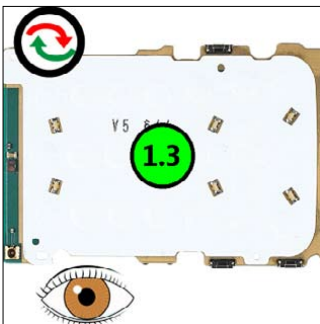
23. QUICK TROUBLE SHOOTER - UI KEYMAT

Explanation

1.1 Symtom (3)

Zoom position
(Note! First zoom starts with 1.2)

Fault name

Count of fault positions

1.1 **UI KEYMAT (7)**

= CHANGE ASSY
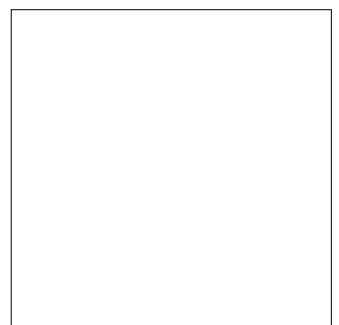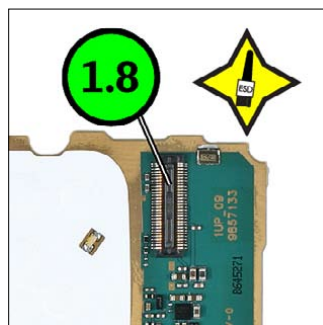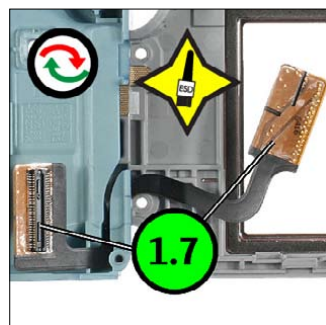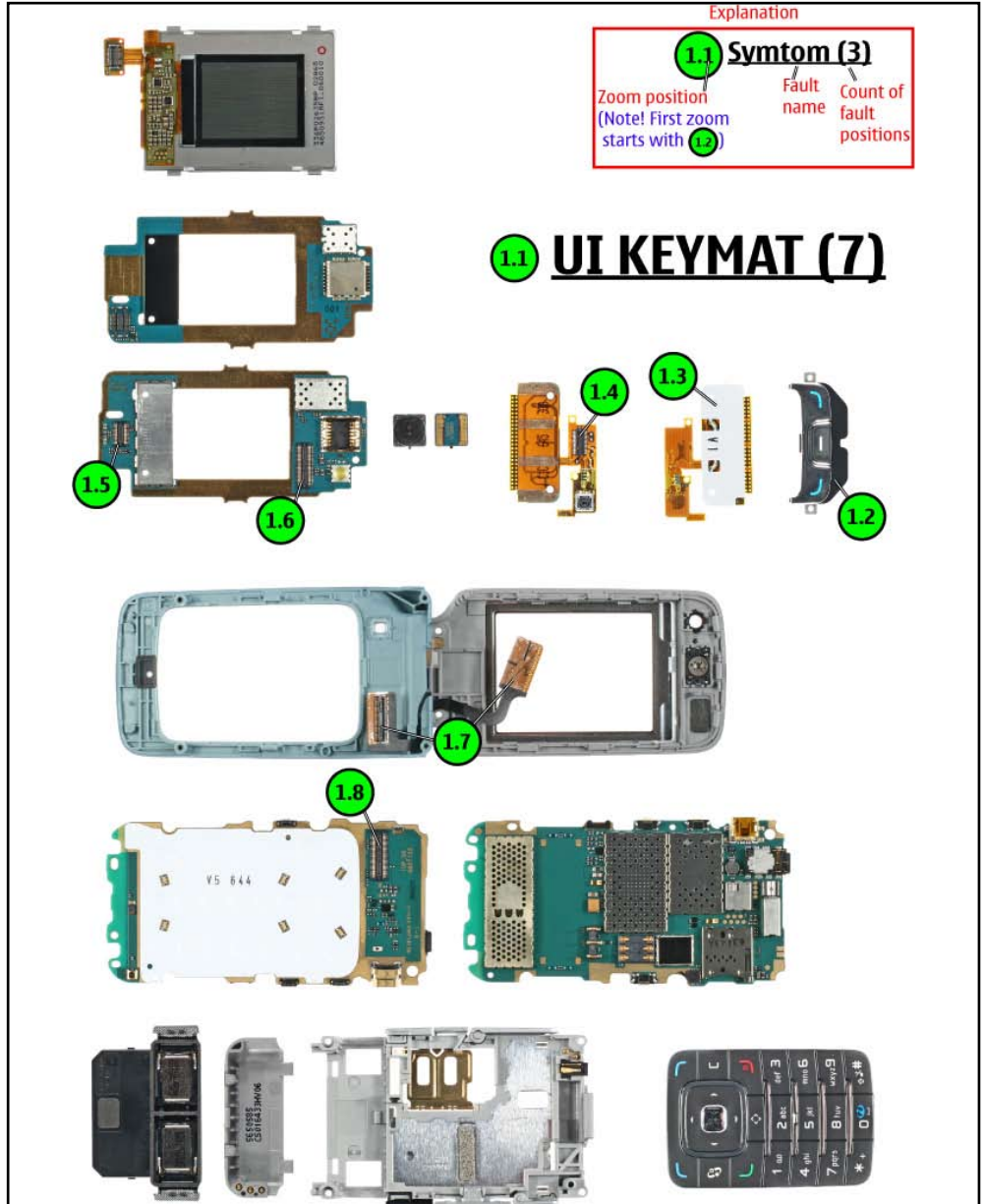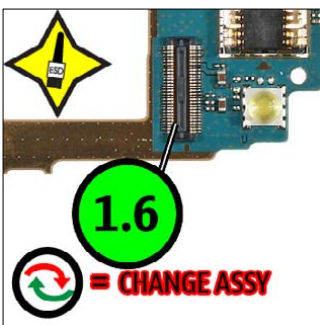
24. QUICK TROUBLE SHOOTER - PUSH TO TALK

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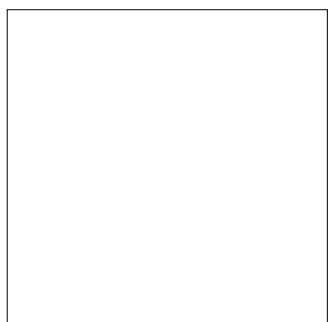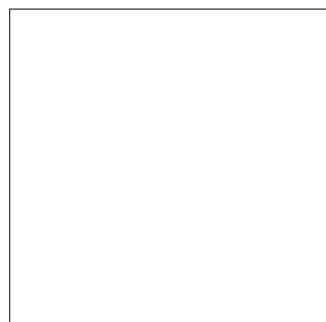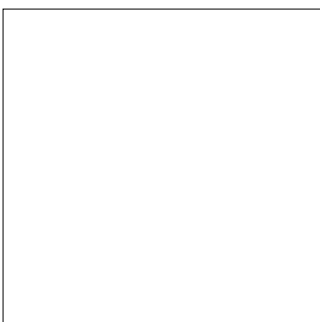
25. QUICK TROUBLE SHOOTER - VOLUME KEYS
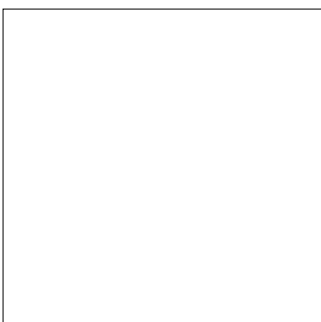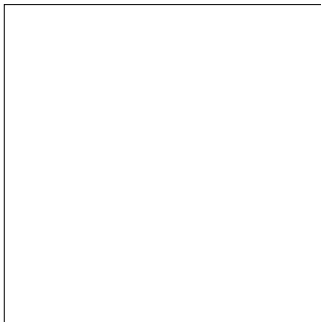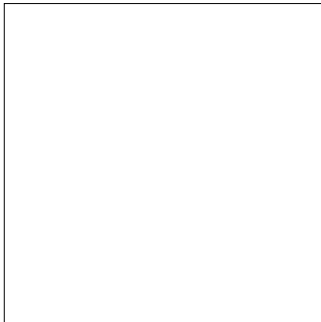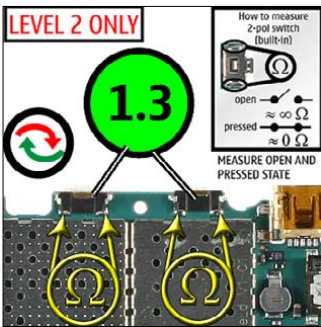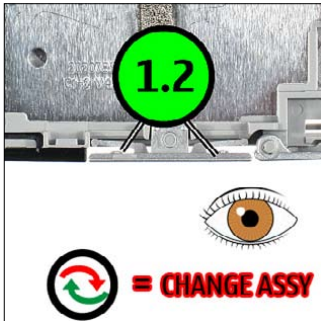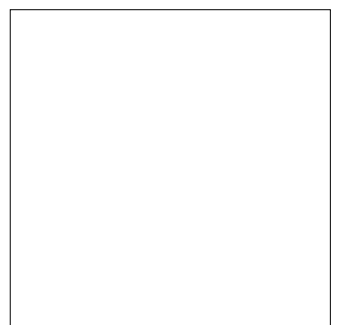
1.2

= CHANGE ASSY

LEVEL 2 ONLY

1.3

How to measure 2-pol switch (built-in)

open ≈ ∞ Ω
pressed ≈ 0 Ω

MEASURE OPEN AND PRESSED STATE

Explanation

1.1 Symtom (3)

Zoom position (Note! First zoom starts with 1.2)

Fault name

Count of fault positions

1.1 VOLUME KEYS (2)

1.3

1.2

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26. QUICK TROUBLE SHOOTER - CARD READER

1.2

LEVEL 2 ONLY

Ω

1.3

How to measure 4-pol switch
(built-in)

Ω

Ω

●━━━● open
≈ ∞ Ω pressed
≈ 0 Ω pressed

MEASURE OPEN AND PRESSED STATE
ON BOTH SIDES OF THE SWITCH

1.4

Explanation

1.1 **Symtom (3)**

Zoom position — Fault name — Count of fault positions
(Note! First zoom starts with **1.2**)

1.1 **CARD READER (3)**

V5 644

1.2 **1.3** **1.4**

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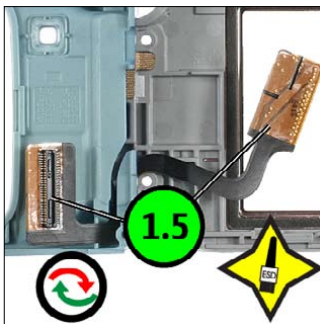
27. QUICK TROUBLE SHOOTER - CAMERA

Explanation

1.1 **Symtom (3)**

Zoom position (Note! First zoom starts with 1.2)

Fault name

Count of fault positions

1.1 **CAMERA (5)**

= CHANGE ASSY

= CHANGE ASSY

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28. QUICK TROUBLE SHOOTER - CAMERA CIF