NOKIA

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WW Competence Transfer Team
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Bochum / Germany

NOKIA N70

RM-84

Transceiver characteristics:

- **Dual Band:** EGSM and WCDMA

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

    - **-WCDMA:** 2100MHz

- **Camera:**

    - **-1. Camera:** 2 Mega pixel (1600x1200pixels), 20x digital zoom

    - **-2. Camera:** VGA (640x480pixels), 2x digital zoom

- **Flash LED**

- **Display:** TFT active matrix color display with 262.144 colors, resolution 176 x 208 pixel

- **Bluetooth**

- **FM radio:** Stereo

- **Vibra Alert:** Standard Vibra motor

- **Connector:** Pop Port Connector

- **MMC Reader**

Transceiver with BL-5c 970mAh Li-Ion battery pack

Talk time		Standby		Note
EGSM	WCDMA	EGSM	WCDMA	Depends on network parameters
215 min	210 min	210 h	250 h	

Environmental characteristics:

- Lead-free soldered

SERVICE MANUAL

Service Level 1&2

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CHANGE HISTORY

Status	Version No.	Date	Comments
Draft	0.1	01.07.2005	Initial draft
Approved	1.0	21.07.2005	Approval

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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:

o   To familiarize oneself with NOKIA product read the tutorials or user guide on www.nokia.com -->Support--> Phones, by selecting the Phone Model.
o   Before starting the repair you must take care of ESD precautions like being in your ESD Protected Area and connecting your wristband.
o   Use gloves to avoid corrosion and fingerprints.
o   Protect windows and displays with a film to avoid dust and scratches.
o   When cleaning the LCD Module any lint-free cloth can be used (e.g. Micro-Fibre cloth).
o   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.
o   Mechanical parts (except shielding lids and bent parts), which didn't repair the failure, can be reused, if they are not soldered.
o   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.
o   Always use original NOKIA spare parts.
o   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).
o   Remove redundant soldering flux after repair.
o   Meet the torque requirements when assembling the unit (see also the document "torques for transceiver assembly" on NOKIA Partner Web Site/NOKIA Online).
o   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.
o   A SIM card is needed for all GoNoGo tests.
o   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.
o   Please be aware that some malfunctions could be software related and solved by an update.

o   There are several documents available on NOL, which have to be followed:

o   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.

o   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. PATHFINDER FOR WORKSHOP STAFF

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

It is mandatory to watch for newest technical and organizational information on a daily basis to be updated as required (see **"Latest files in Support Library"**). Every new information has to be processed and implemented as soon as possible.
When logged into NOL you can also find needed information in different folder like:

Support Library

Phones

Service Manuals
Service Bulletins
Software
Repair Information

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

Former NOKIA CarePoint content, such as	• **Online Troubleshooting** • **Product information** • **Videos – Disassembly/Assembly**	can be found on **NOKIA Online**
		NOKIA Online **Care Services** **Training** **Phone Models**

Level 1&2 e-learning courses offer a quick overview of the NOKIA phone and support for how to repair and use the phone:
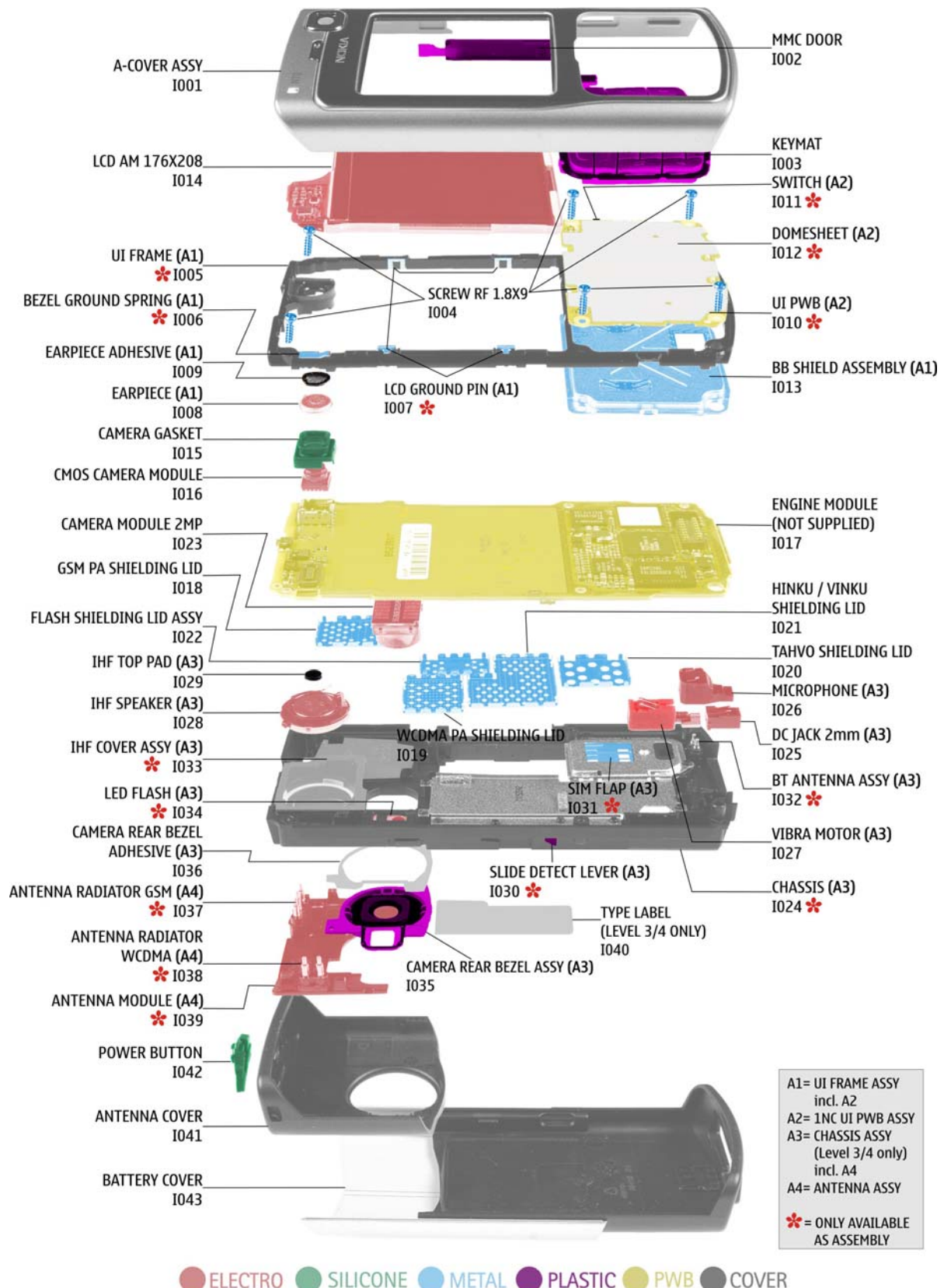
Overview & Guides	**Disassembly & Assembly**	**Troubleshooting**
Basic information about the phone, features and technologies	Instructions how to disassemble and assemble the phone	Step-by-step instructions on how to locate and repair the most common problems with the phone

To reduce the server traffic it is recommended to download newest version of huge files like videos, Phoenix packages or Service Manuals only once and distribute it internally for further use.
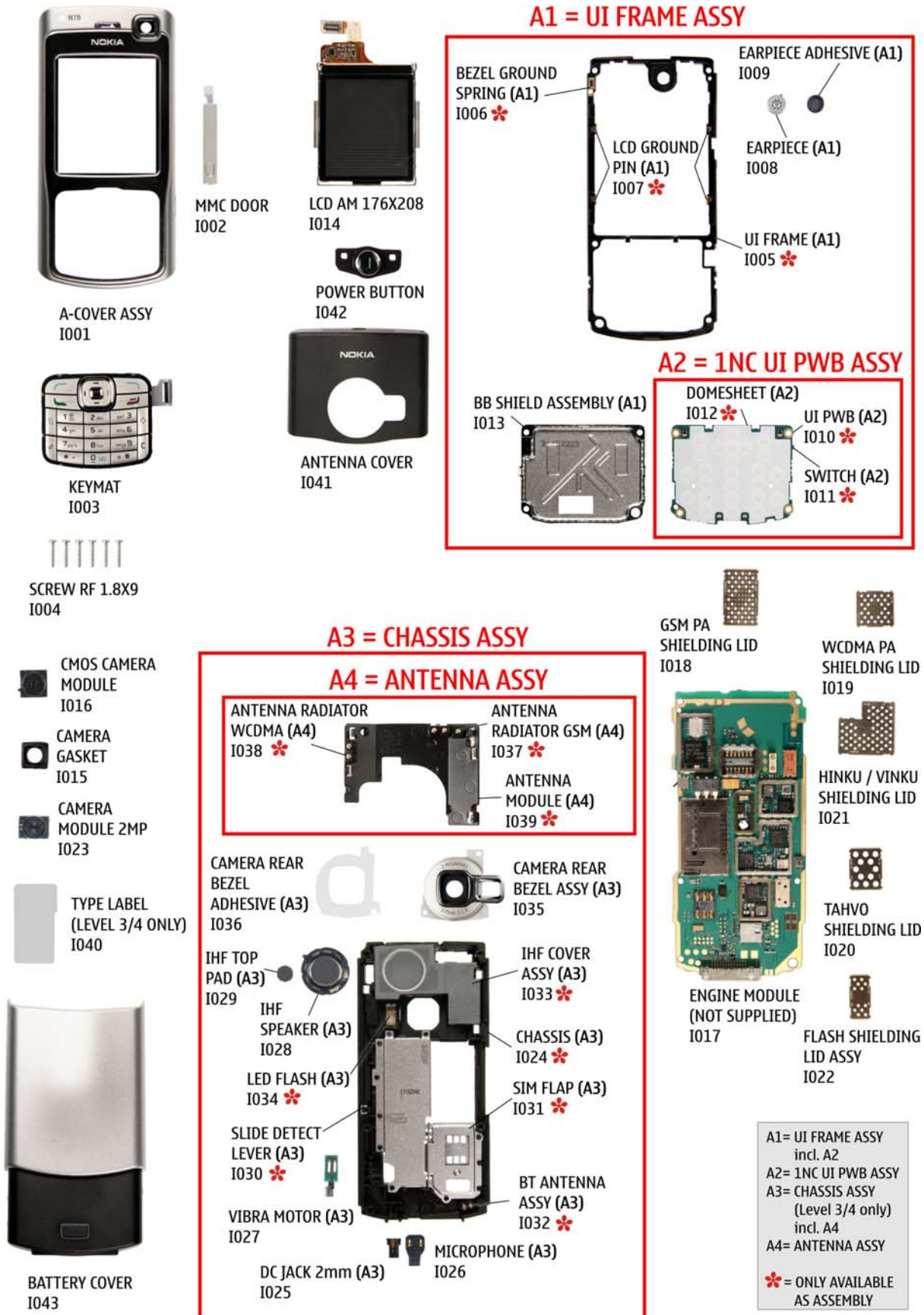
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4. EXPLODED VIEW AND COMPONENT DISPOSAL

Recommendation for the ecologically friendly disposal of components. Colorized components show the different categories. See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on NOL.

A-COVER ASSY I001
MMC DOOR I002
LCD AM 176X208 I014
KEYMAT I003
SWITCH (A2) I011 ✳
DOMESHEET (A2) I012 ✳
UI FRAME (A1) ✳ I005
BEZEL GROUND SPRING (A1) ✳ I006
SCREW RF 1.8X9 I004
UI PWB (A2) I010 ✳
EARPIECE ADHESIVE (A1) I009
EARPIECE (A1) I008
LCD GROUND PIN (A1) I007 ✳
BB SHIELD ASSEMBLY (A1) I013
CAMERA GASKET I015
CMOS CAMERA MODULE I016
CAMERA MODULE 2MP I023
ENGINE MODULE (NOT SUPPLIED) I017
GSM PA SHIELDING LID I018
HINKU / VINKU SHIELDING LID I021
FLASH SHIELDING LID ASSY I022
TAHVO SHIELDING LID I020
IHF TOP PAD (A3) I029
MICROPHONE (A3) I026
IHF SPEAKER (A3) I028
DC JACK 2mm (A3) I025
IHF COVER ASSY (A3) ✳ I033
WCDMA PA SHIELDING LID I019
SIM FLAP (A3) I031 ✳
BT ANTENNA ASSY (A3) I032 ✳
LED FLASH (A3) ✳ I034
CAMERA REAR BEZEL ADHESIVE (A3) I036
SLIDE DETECT LEVER (A3) I030 ✳
VIBRA MOTOR (A3) I027
ANTENNA RADIATOR GSM (A4) ✳ I037
TYPE LABEL (LEVEL 3/4 ONLY) I040
CHASSIS (A3) I024 ✳
ANTENNA RADIATOR WCDMA (A4) ✳ I038
CAMERA REAR BEZEL ASSY (A3) I035
ANTENNA MODULE (A4) ✳ I039
POWER BUTTON I042
ANTENNA COVER I041
BATTERY COVER I043

A1= UI FRAME ASSY incl. A2
A2= 1NC UI PWB ASSY
A3= CHASSIS ASSY (Level 3/4 only) incl. A4
A4= ANTENNA ASSY

✳ = ONLY AVAILABLE AS ASSEMBLY

● ELECTRO ● SILICONE ● METAL ● PLASTIC ● PWB ● COVER

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5. SPARE PARTS OVERVIEW

MMC DOOR
I002

LCD AM 176X208
I014

A-COVER ASSY
I001

POWER BUTTON
I042

ANTENNA COVER
I041

KEYMAT
I003

SCREW RF 1.8X9
I004

CMOS CAMERA
MODULE
I016

CAMERA
GASKET
I015

CAMERA
MODULE 2MP
I023

TYPE LABEL
(LEVEL 3/4 ONLY)
I040

BATTERY COVER
I043

A1 = UI FRAME ASSY

BEZEL GROUND
SPRING (A1)
I006 ✱

EARPIECE ADHESIVE (A1)
I009

LCD GROUND
PIN (A1)
I007 ✱

EARPIECE (A1)
I008

UI FRAME (A1)
I005 ✱

A2 = 1NC UI PWB ASSY

BB SHIELD ASSEMBLY (A1)
I013

DOMESHEET (A2)
I012 ✱

UI PWB (A2)
I010 ✱

SWITCH (A2)
I011 ✱

GSM PA
SHIELDING LID
I018

WCDMA PA
SHIELDING LID
I019

HINKU / VINKU
SHIELDING LID
I021

TAHVO
SHIELDING LID
I020

ENGINE MODULE
(NOT SUPPLIED)
I017

FLASH SHIELDING
LID ASSY
I022

A3 = CHASSIS ASSY

A4 = ANTENNA ASSY

ANTENNA RADIATOR
WCDMA (A4)
I038 ✱

ANTENNA
RADIATOR GSM (A4)
I037 ✱

ANTENNA
MODULE (A4)
I039 ✱

CAMERA REAR
BEZEL
ADHESIVE (A3)
I036

CAMERA REAR
BEZEL ASSY (A3)
I035

IHF TOP
PAD (A3)
I029

IHF
SPEAKER (A3)
I028

IHF COVER
ASSY (A3)
I033 ✱

CHASSIS (A3)
I024 ✱

LED FLASH (A3)
I034 ✱

SIM FLAP (A3)
I031 ✱

SLIDE DETECT
LEVER (A3)
I030 ✱

VIBRA MOTOR (A3)
I027

DC JACK 2mm (A3)
I025

BT ANTENNA
ASSY (A3)
I032 ✱

MICROPHONE (A3)
I026

A1= UI FRAME ASSY
    incl. A2
A2= 1NC UI PWB ASSY
A3= CHASSIS ASSY
    (Level 3/4 only)
    incl. A4
A4= ANTENNA ASSY

✱ = ONLY AVAILABLE
    AS ASSEMBLY

6. SPARE PARTS LIST

Please exchange this page (placeholder) with latest corresponding Service Bulletins (spare parts, SWAP units and service tools) from NOL!

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

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

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7. SERVICE TOOLS

FLS-4S 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.

Internal Battery BL-5C
Inserted under the back cover, this Li-Ion 850 mAh battery provides power in a lightweight package.

DKU-2
USB flash cable

Travel Charger ACP-12
Small and lightweight charger for fast charging of your phone battery.

Headset HDS-3
Small and lightweight stereo headset for handsfree functionality and listening to FM radio.

SS-15
Camera removal tool for <u>Camera Module 2MP</u>. One side is for disassembly, the other side for assembly.

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	SS-51 Camera Removal Tool for CMOS Camera
	SS-34 Flex Opening Tool
	RJ-94 Soldering Jig
	Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).

0772040   NMP Standard Toolkit

- NOKIA opening tool SRT-6 NOKIA No. 0770431
- Tonichi torque driver NOKIA No. 6901525
- Hoya micro fibre cloth MX304
- Dastex gloves S, M, XL
- Artilux goggles AH166
- Wera bit T5 867/4TX 5x50
- Wera 867/4 6IP; 50mm (Torx 6 PLUS®)
- Wera bit T6 867/4TX 6x50
- Wera 867/1 5IP; 25mm (Torx 5 PLUS®)
- Wera bit T6 PLUS® 867/4TX 6IP
- Facom side cutter 416E
- Facom T5 driver SP.14032
- Facom T6 driver SP.14033
- Facom slot screwdriver AEF. 2x35.E
- Wetec tweezers 7abb SA-ESD
- Wetec tweezers 22 SA-ESD
- Wetec tweezers 13 SA-SMD ESD
- Wetec tweezers PSF SA-ESD
- Wetec ESD brush E1211
- Kaiser Fototechnik airbrush 6315
- Wetec dental tool DEM83266/0
- RS Components Scissors 323-5732

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8. SW-UPDATE

Flash Concept – (Point of Sales)

To use FLS-4S 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.

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9. DISASSEMBLY INSTRUCTIONS

1.) You need the following tools.

2.) Always protect the window with a plastic film.

3.) Remove the **Battery Cover**.

4.) Place the SRT-6 between the **A-Cover** and **Chassis Assy**. Release the 4 plastic clips beginning from the bottom side as shown.

5.) Remove the **Keymat**

6.) Protect the **LCD** with a plastic film.

7.) Also protect the inner side window with a film

8.) Remove the **MMC Door** from **A-Cover.**

9.) Insert the SRT-6 between the **Antenna Cover** and **Chassis Assy**. Additional force may be required while opening the **Antenna Cover** clips.

10.) Remove the **Power Button** with tweezers.

11.) Protect the **Camera Rear Bezel Assy** with a plastic film before turning the unit.

12.) Remove the **Camera gasket**.
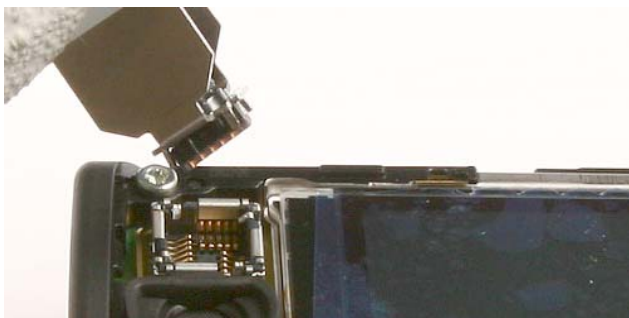
13.) Unlock and remove the **VGA Camera** with the **SS-51** camera removal tool.
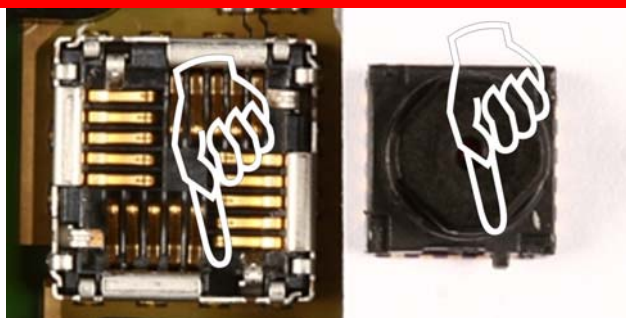
14.) Mind the correct position when fitting the Camera into its compartment.
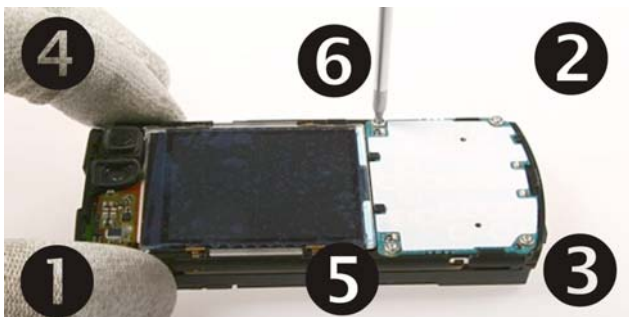
15.) Unscrew the 6 Torx size 6 plus screws in the shown order. **For Assembly use the reverse order and the torque of 25 Ncm.**

16.) Lift the **UI-frame Assy** from **Chassis Assy**. Mind the still connected flex foil of the **LCD.**

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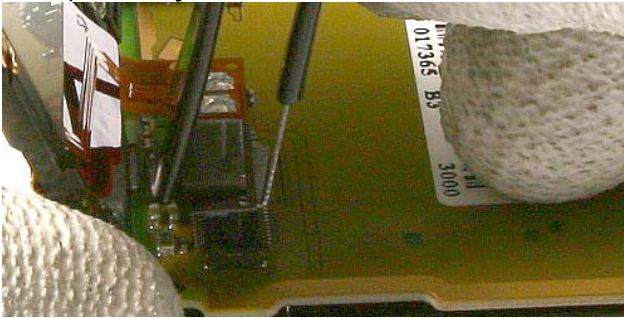
17.) Open the flex connector with the SS-34 flex connector-opening tool. Mind the surrounding components while placing the tool. Now the **UI-Frame Assy** can be removed.
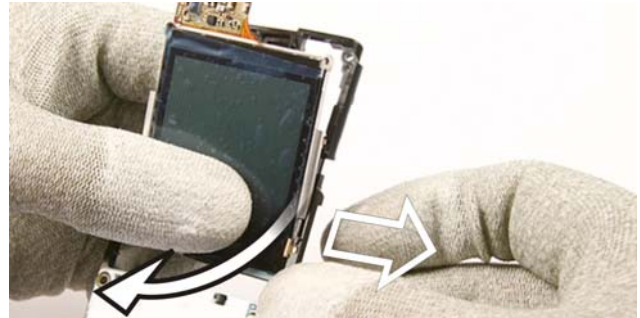
18.) Unlatch each clip of the **LCD** from the **UI Frame Assy** carefully by pulling the **UI Frame Assy** sideward while pushing the LCD forward.

19.) Remove the **Earpiece** with the dental tool

20.) Also remove the **Earpiece Gasket** from its compartment. **Always use a new gasket when reassembling.**
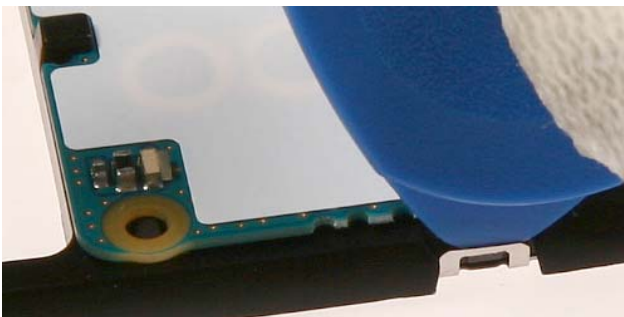
21.) Unlatch the **BB shield Assembly** first.
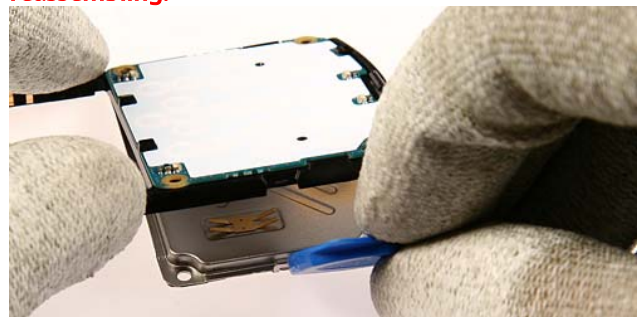
22.) Then push down and remove the **BB Shield Assembly.** The shield can't be reused again, always use a new one.
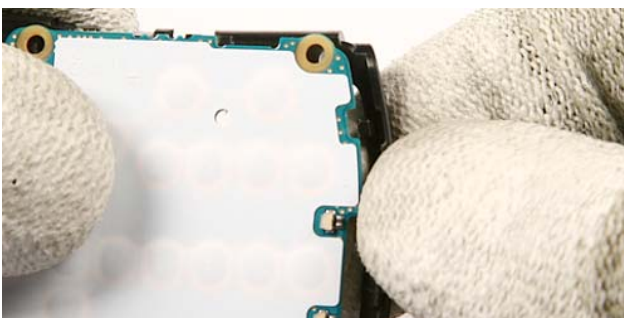
23.) Pull the **UI Frame Assy** slightly to unlock the **UI PWB.**
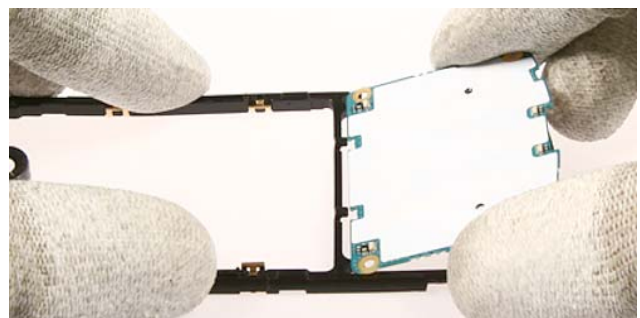
24.) Now the **UI PWB** can be removed easily.

25.) Remove the **Engine Module**. Place it into the RJ-94 jig immediately.

26.) Remove the **Vibra Motor** with tweezers.
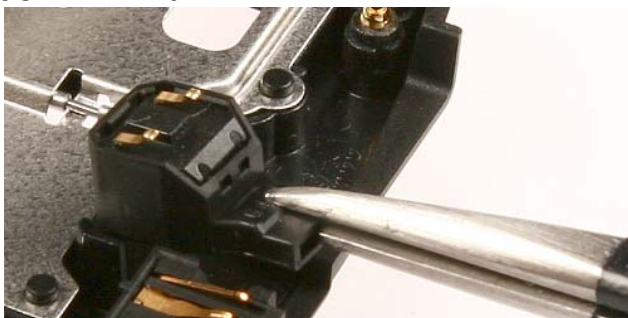
27.) Pull out the **Microphone** with tweezers.
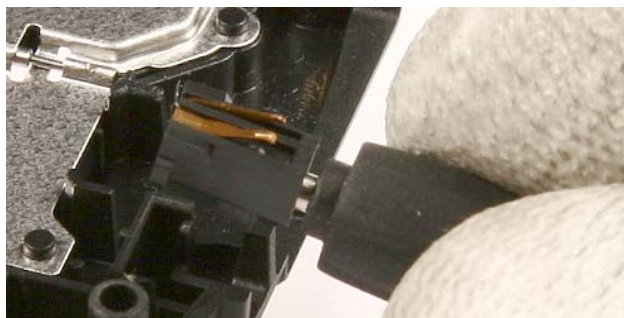
28.) Use the DC plug to remove the **DC Jack**.
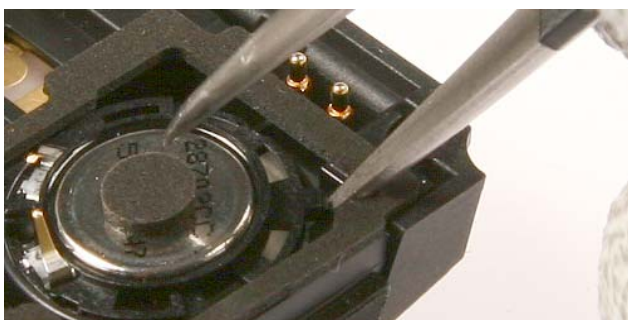
29.) Lever out the **IHF speaker**. **Mind the guide pin when reassembling.**
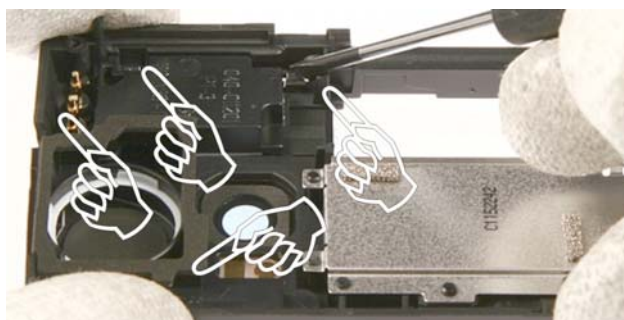
30.) Unlock the 5 plastic clips of the **Antenna Assy** in the area shown.
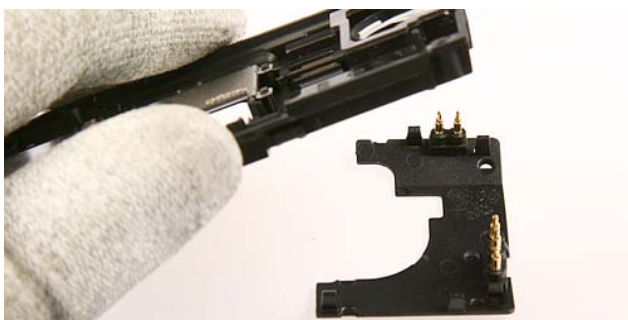
31.) Carefully separate the **Antenna Assy**.

32.) Lever out the **Camera Rear Bezel Assy.**

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33.) Remove the residues of the **Camera Rear Bezel Assy Adhesive** completely with the SRT-6.
For assembly always use a new adhesive.
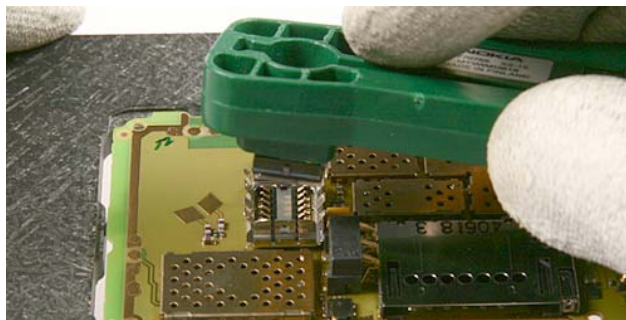
34.) Remove the **Camera Module 2MP** with the SS-15 camera removal tool. Always use the RJ-94 rework jig as support to prevent mechanical stress to the PWB.

For assembly only!
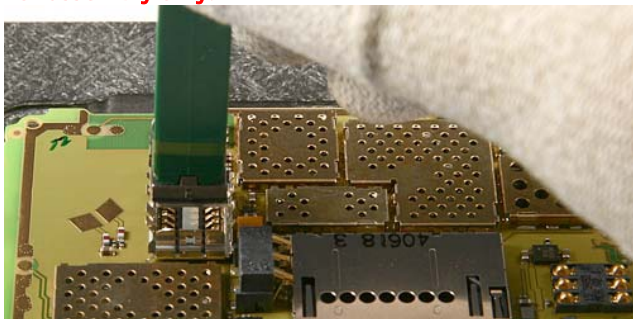
35.) **Use the Assembly side of the SS-15 for fitting the Camera Module 2MP into its compartment.**

For assembly only!
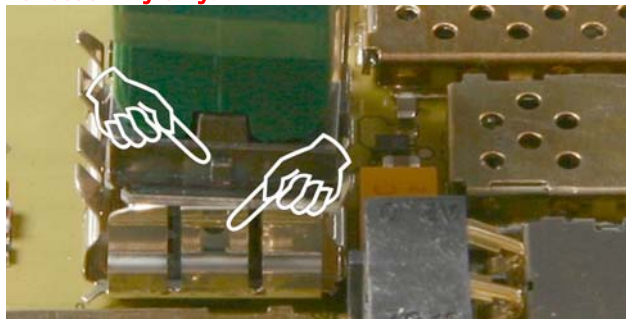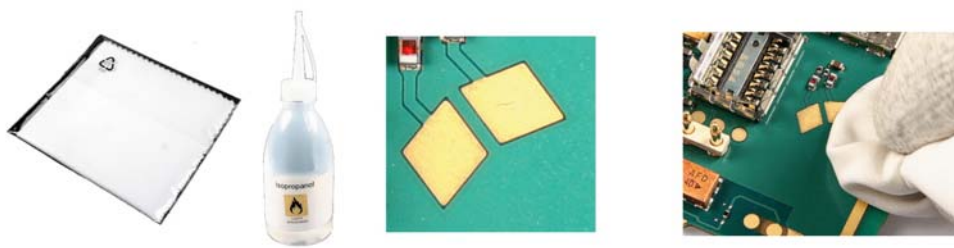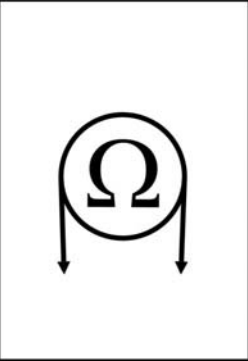
36.) **Mind the correct position of the camera while assembling.**

10. LEGEND FOR QUICK TROUBLE SHOOTER

Legend for Quick Trouble Shooter
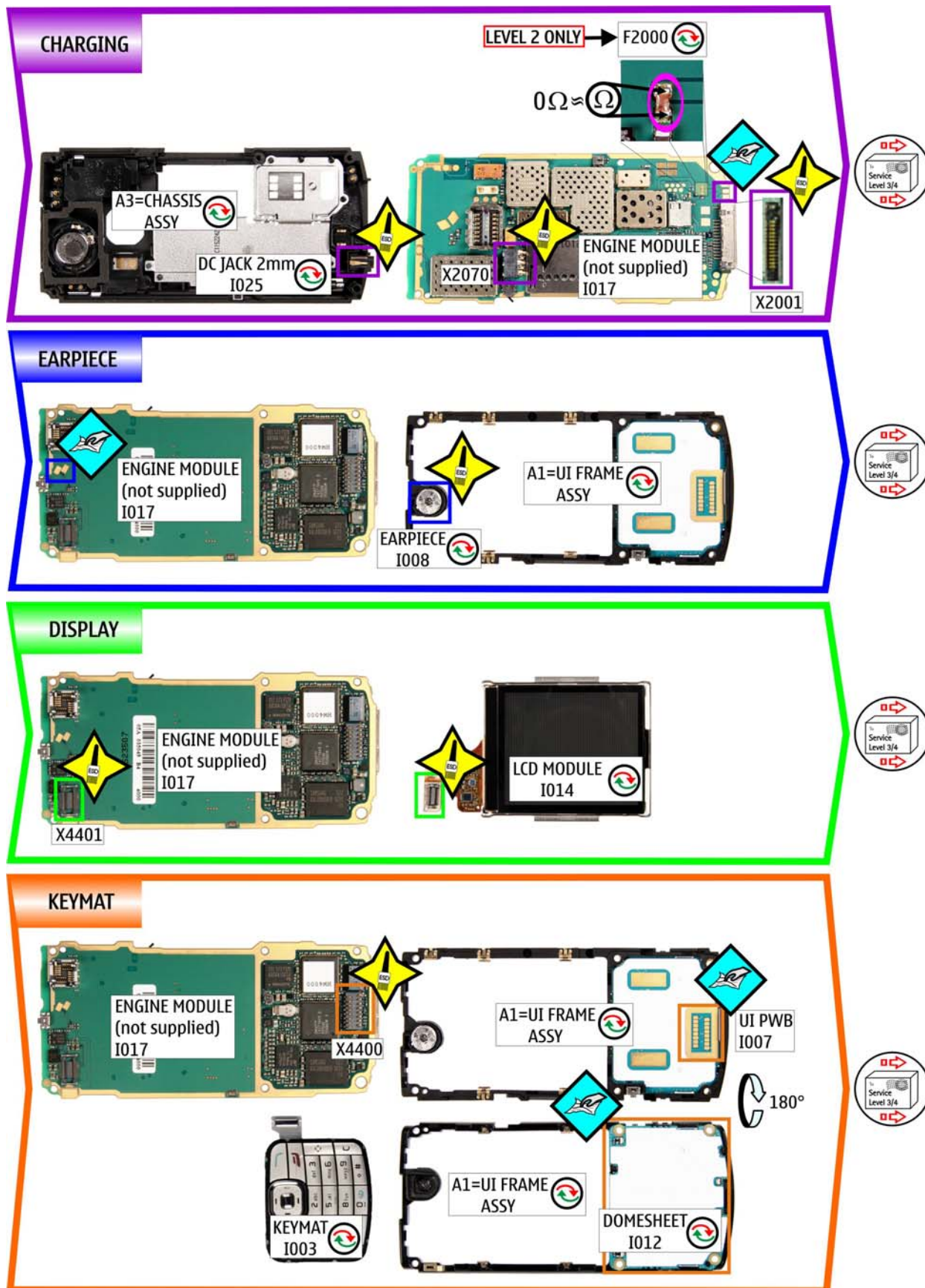
This legend is valid for all parts of the Quick Trouble Shooter

Follow the steps until the problem is solved. If this doesn´t help, you are not authorized to go forward.	
Fault symptom	The start point of repair activities regarding the appeared fault symptoms.
↻	Only marked components (e.g. I002 ⊙) can be replaced.
◇	**Cloth usage:** Check pads or contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary.
Ω	Measure component for electrical functionality and change, if needed. (Level 2 only)
✦ ESD	**ESD Brush usage:** Check pads or contacts for optical and mechanical condition particularly regarding to corrosion. Clean it if necessary.
Service Level 3/4	No more action possible - send product to the appropriate service supplier with higher service level.

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11. QUICK TROUBLE SHOOTER PART 1

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12. QUICK TROUBLE SHOOTER PART 2

IHF SPEAKER

ENGINE MODULE (not supplied) I017

A3=CHASSIS ASSY

IHF SPEAKER I028

Service Level 3/4

SERVICE GSM

ENGINE MODULE (not supplied) I017

ANTENNA RADIATOR GSM I037

A4=ANTENNA ASSY

Service Level 3/4

SERVICE WCDMA

ENGINE MODULE (not supplied) I017

A4=ANTENNA ASSY

ANTENNA RADIATOR WCDMA I038

Service Level 3/4

HEADSET

ENGINE MODULE (not supplied) I017

X2001

Service Level 3/4
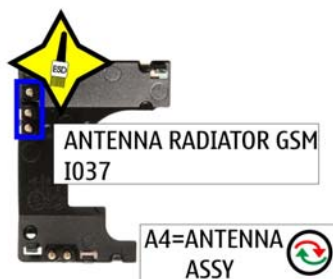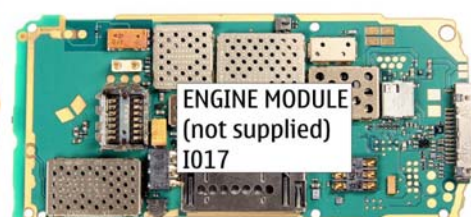
13. QUICK TROUBLE SHOOTER PART 3

VIBRA

ENGINE MODULE (not supplied) I017

A3=CHASSIS ASSY

VIBRA MOTOR I027

Service Level 3/4

POWER

ENGINE MODULE (not supplied) I017

X2070

ENGINE MODULE (not supplied) I017

S2422

LEVEL 2 ONLY

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

$\approx \infty\,\Omega$ open

$\approx 0\,\Omega$ pressed

MEASURE OPEN AND PRESSED STATE ON BOTH SIDES OF SWITCH

POWER BUTTON I042

ANTENNA COVER I041

Service Level 3/4

CAMERA 2MP

ENGINE MODULE (not supplied) I017

X1470

CAMERA MODULE 2MP I023

Service Level 3/4

CMOS CAMERA

ENGINE MODULE (not supplied) I017

X1472

CAMERA MODULE VGA I015

Service Level 3/4

14. QUICK TROUBLE SHOOTER PART 4

LED FLASH

X5212 · ENGINE MODULE (not supplied) I017 · A3=CHASSIS ASSY · LED FLASH I034

BLUETOOTH

ENGINE MODULE (not supplied) I017 · BT ANTENNA ASSY I032 · A3=CHASSIS ASSY

MICROPHONE

ENGINE MODULE (not supplied) I017 · A3=CHASSIS ASSY · MICROPHONE I026

SIM

ENGINE MODULE (not supplied) I017 · X2700 · SIM FLAP I031 · A3=CHASSIS ASSY

To Service Level 3/4

NOKIA
CONNECTING PEOPLE

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CMO Operations & Logistics   MGR
WW Competence Transfer Team
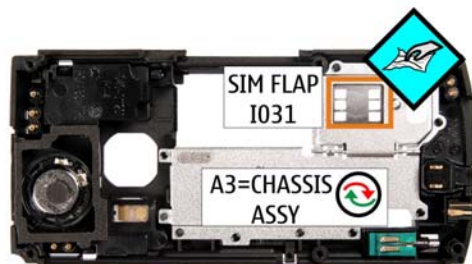Multimedia Creation & Support   CONFIDENTIAL   27.7.2005
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15. CAMERA GONOGO TEST

Before starting the GoNoGo test, check that camera window is clean. If not, clean the window with cloth.

Camera Module 2MP   CMOS Camera

Camera 2MP GoNoGo test:

- Press the red receiver button to reach the Home Menu

- Open the **Slide Cover**

- Press [icon] to take a photo

  This Image will be saved to Gallery into the Photos folder automatically.

  Test was successful, if the Image appears on your Display. The camera is ok.

- Select **Options**

- Select **Delete**

- Select **Yes**

- Close the **Slide Cover**

CMOS Camera GoNoGo test:

- **Slide Cover** must be closed

- Press [icon] to reach the Menu

- Select **Imaging**

- Select **Camera** (If the display shows only back select **option** and select **use secondary camera**)

- Press [icon] to take a photo

  This Image will be saved to Gallery into the Photos folder automatically.

  Test was successful, if the Image appears on your Display. The camera is ok.

- Select **Options**

- Select **Delete**

- Select **Yes**

- Press the red receiver button to reach the Home Menu

  If the test is failed see Quick Trouble Shooter.

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16. BLUETOOTH

Bluetooth test
You need another Bluetooth device (e.g. 6230) to do a GoNoGo test.
Make sure that Bluetooth is activated in the reference unit. The distance of the devices should be not more than 5m from each other.

Reference unit, Bluetooth /infrared activated   Test unit

Settings on the test unit:

- Press the red **End** key to reach the Home Menu

- Press [icon] to select **Contacts**

  If phone and SIM memory is empty, create one new entry.

- Select **Options**
- Select **Send**
- Select **Via Bluetooth**

     If needed (for e.g. after a sw-update), enter a name for this device

   Search window appears, if all Bluetooth devices in range will be displayed, the test is successful!

- Press red **End** key to reach the Home Menu

 **Note: If the Bluetooth is activated, switch it off!**

17. GONOGO TEST

After the optical check, a GoNoGo test has to be carried out if the unit has been unscrewed to guarantee the functionality of the phone.

Please refer to the actual information on NOKIA Online. When using delivered tester support files, take care of the right setup according to the tester type and product type.
Please refer to "Recommended Service Equipment" on NOKIA Online.
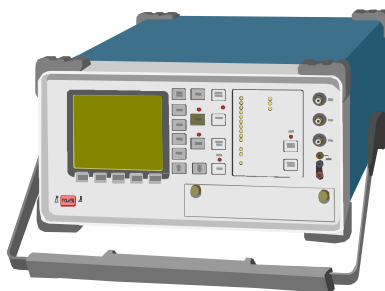
Mobile Phone Tester

18. BATTERY TEST

A battery tester lets you test the capacity of NOKIA batteries.

Please refer to the actual information on NOKIA Online.

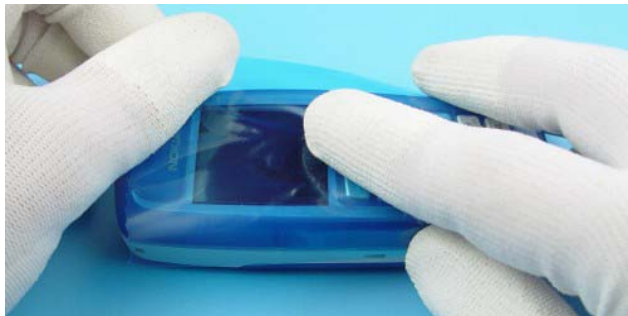http://www.astratec.co.uk/   http://www.cadex.com/

19. FORWARDING OF REPAIRS

When it is necessary to forward of repairs to appropriate service supplier with higher service level we recommend using the offered swap phone cartons as described in Spare Parts SB-004.

Always Protect the window with a protection film.


Put the unit under the stretch film.

Add repair documentation e.g. filled-in service note into the swap carton.

Fold the swap carton as shown in Spare Parts SB-004.

There are two different sizes of swap cartons for common mobile phones.

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20. ESD PROTECTION REQUIREMENTS

Please refer to the NOKIA Online document Service Supplier Requirements in folder General instructions.
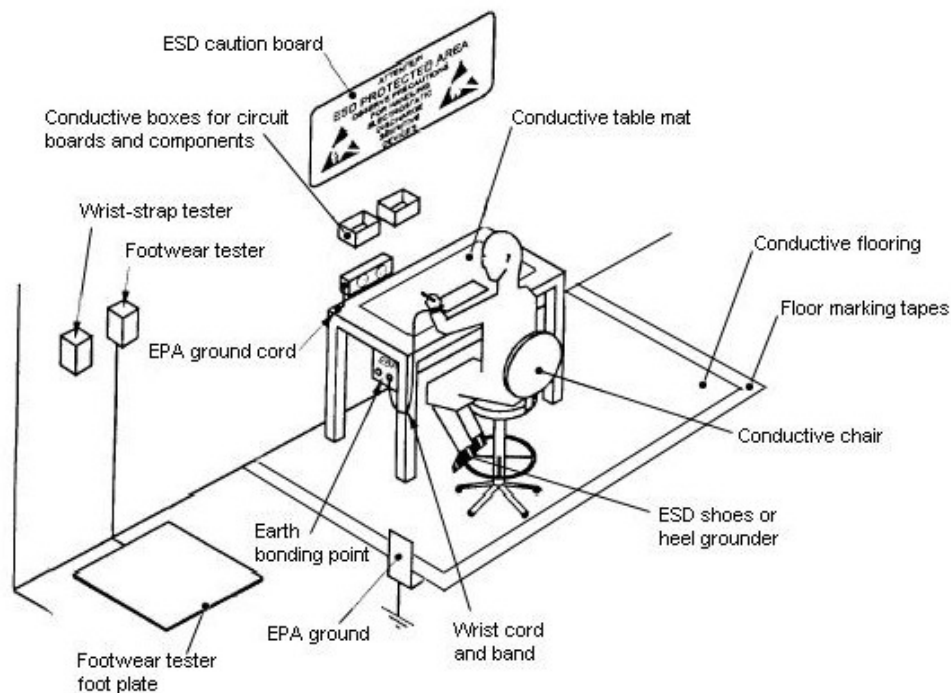
USE Conductive bags and boxes	NO Smoking
USE ESD compatible service tools	NO Drinking
USE Conductive wastebaskets	NO Eating
USE ESD gloves when handling PWBs/PCBs	NO Dust
USE Cleaning material without changing el. Characteristics	NO Useless Items
USE Grounded service equipment, i.e. soldering station	NO Normal pressured air for cleaning
USE ESD clothes such as coat or frock	modules/displays

The video covers general issues concerning Electro-Static Discharge (ESD)