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# SERVICE MANUAL Level 1&2



RM-67 RM-112



#### **Transceiver characteristics:**

**DUAL MODE:** Tri-band phone for GSM 900/1800/1900MHz and WCDMA 2100

#### CAMERA:

- 2 Megapixel camera (1600 x 1200 pixels) with up to 20x digital zoom
- VGA camera (640 x 480 pixels) with 2x digital zoom

#### DISPLAY:

**Main:** Active matrix 2.4" QVGA color display with 262.144 colors, resolution 320 x 240 pixel

Cover: 1.36" display: Up to 65,536 colors; 96 x 68 pixels,

#### **BLUETOOTH**

**VISUAL RADIO** 

**CARD TYPE:** miniSD™

**CONNECTOR:** Pop-Port connector

#### Transceiver with BL-5C 970mAh Li-Ion battery pack

| Talk time | Standby      | Note                          |
|-----------|--------------|-------------------------------|
| up to 4h  | up to 9 days | Depends on network parameters |

#### **Environmental characteristics:**

Lead-free soldered



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## **CHANGE HISTORY**

| Status   | Version No. | Date        | Comments  |
|----------|-------------|-------------|---|
| Draft    | 0.1         | 13.01.2006  | Initial draft   |
| Approved | 1.0         | 03.Mar.2006 | Approval  |
| Approved | 2.0         | 27.Apr.2006 | Lid removal instruction deleted   |
| Approved | 3.0         | 28.Jul.2006 | Exploded view and Spare Parts overview updated  |
| Approved | 4.0         | 12.Dec.2006 | Exploded view, Spare Parts overview, Component overview updated,<br>Level 2 Solder components added |



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## 1. INTRODUCTION

The purpose of this document is to help NOKIA service levels 1 and 2 workshop technicians to service NOKIA products. This Service Manual must be used only by authorized NOKIA service suppliers. The content of it is confidential. Please note that NOKIA also provides other guidance documents (e.g. Service Bulletins) for service suppliers. Follow these regularly and comply with the given instructions.

While every effort 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 always watch out for the newest version.

## **Warnings and Cautions**

Please refer to the phone's user's guide for instructions relating to operation, care, and maintenance, which include 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
- 2. THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY. THE CELLULAR 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 must observe the precautions, mentioned in the appropriate "Service Partner Requirements", available on NOKIA Online. Also see ESD Protection Requirements in this Service Manual.

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## 2. GENERAL REPAIR INFORMATION

This section provides useful repair information how to carry out repairs:

- Make sure your testing equipment is functioning properly before beginning repair work.
- To familiarize yourself with the NOKIA product read the tutorials or user's guide on <a href="https://www.nokia.com">www.nokia.com</a> -->Support--> Phones, by selecting the Phone Model.
- Before starting repairs you must observe ESD precautions such as being in your ESD Protected Area and connecting your wristband.
- Use gloves to avoid corrosion and fingerprints.
- Cover windows and displays with a protective film to avoid dust and scratches.
- Use a lint-free cloth (e.g. Micro-Fibre cloth) to clean the LCD.
- When cleaning the pads use a soft cloth/ESD brush and Isopropanol. Do not use a glass fiber pencil: this scratches the surface and will corrosion.
- Non-faulty mechanical parts (except shielding lids and bent parts or soldered components), may 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 affect the device.
- Always use original NOKIA spare parts.
- Check the soldering joints of the parts concerned with regard to the fault symptom (e.g. soldered connectors or switches) and resolder them if necessary (Level 2 only).
- Remove excess soldering flux after repair.
- Observe the torque requirements when assembling the unit.
- Preferably use your own equipment for testing. E.g. if the customer complains about charger function, please test the phone with your own charger to determine if the malfunction is being caused by 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 of the part that caused the malfunction. Also, fill in the appropriate part code from the assembly if needed.
- Please be aware that some malfunctions may be software related and solved by an update.
- There are several documents available on NOL which must be followed:
- First, pay attention to the latest content pages of Service Bulletins, which are always available for each folder on NOKIA Online. Make sure your documentation is up to date.
- The service level indicator at the bottom of each document displays the appropriate target group.

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

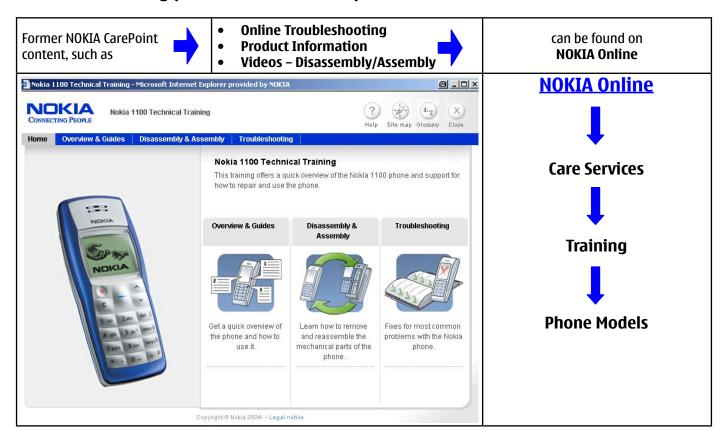
In addition to the information in this Service Manual, there are other instructions and data, which must be followed. Main documentation database is **NOKIA Online** with the purpose of serving different multimedia content, like video clips or interactive tutorials.

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"). New information must be processed and implemented as soon as possible. When logged into NOL you can also find needed information in different folders like:



Service Manuals Service Bulletins Software Repair Information

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



Level 1&2 e-learning courses offer a quick overview of the NOKIA phone and support on repair and testing.

|   | · · · · · · · · · · · · · · · · · · ·                  |   |
|---|--|---|
| Overview & Guides   | Disassembly & Assembly                                 | Troubleshooting   |
| Basic information about the phone, features, and technologies | Instructions on disassembling and assembling the phone | Step-by-step instructions on locating and repairing the most common problems with the phone |

To reduce the server traffic we recommend downloading the newest version of large files like videos, Phoenix packages, or Service Manuals only once to distribute it internally for further use.



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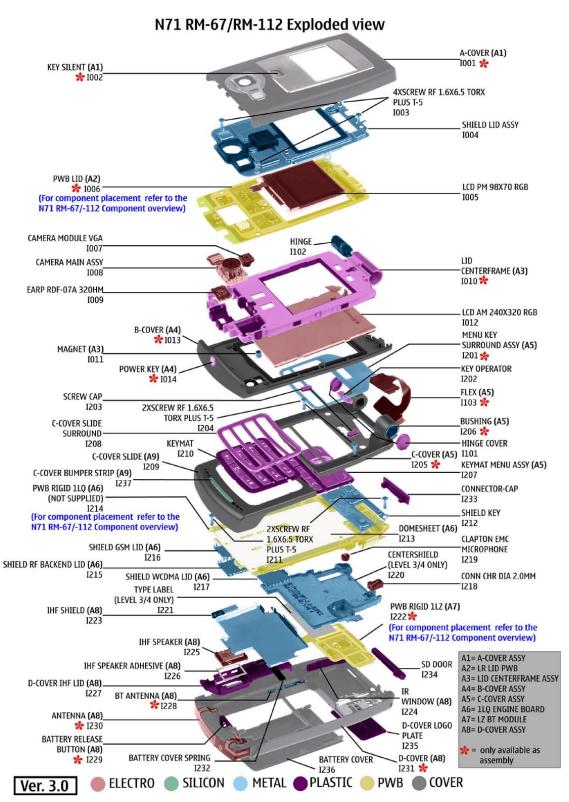
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## 4. EXPLODED VIEW AND COMPONENT DISPOSAL

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.

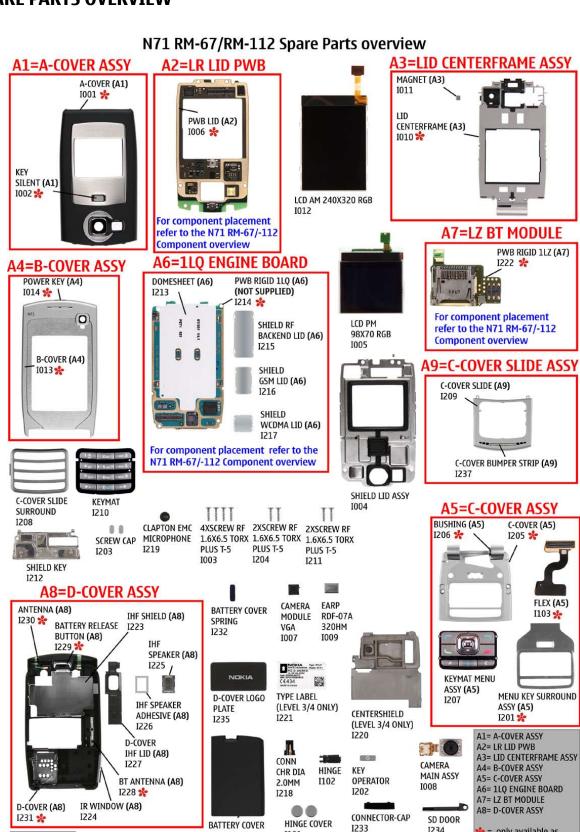


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## 5. SPARE PARTS OVERVIEW



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only available as

assembly

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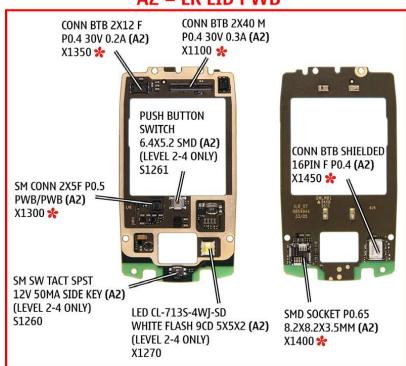
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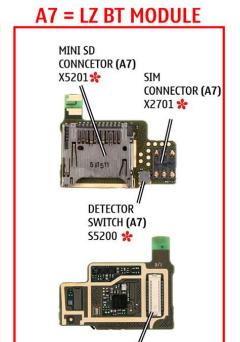
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## 6. COMPONENT OVERVIEW

# N71 RM-67/RM-112 Component overview



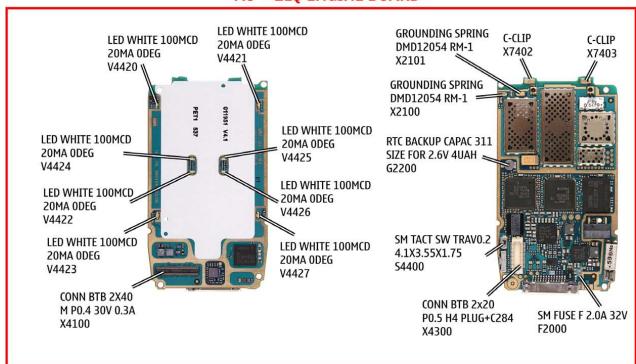




BTB-CONNECTOR (A7)

X5200 \*\*

## A6 = 1LQ ENGINE BOARD



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## 7. LEVEL 2 SOLDER COMPONENTS

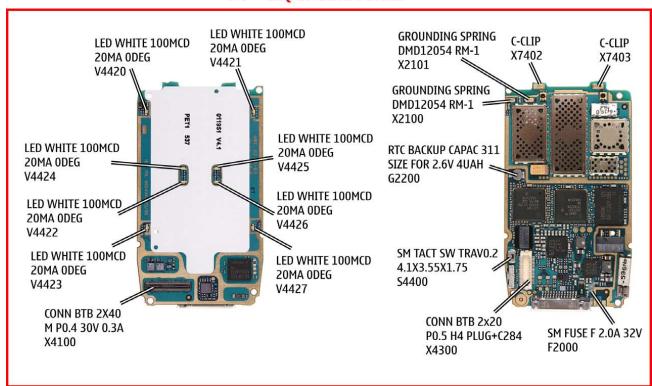
# N71 RM-67/RM-112 Level 2 Solder components

Solder components only for Level 2

## A2 = LR LID PWB



## A6 = 1LQ ENGINE BOARD



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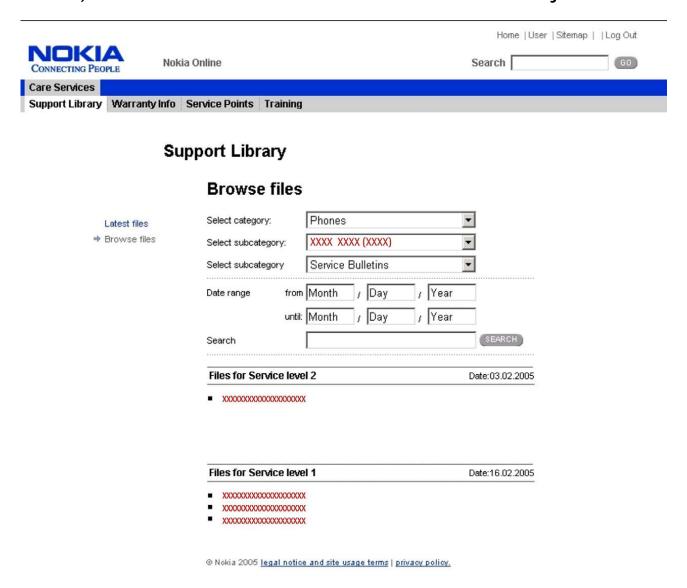
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## 8. SPARE PARTS LIST

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

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

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



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# 9. **SERVICE TOOLS**

| SCHOOL STATE OF THE STATE OF TH | <b>FLS-4S incl. ACF-8, Driver and User Guide</b> Dongle and flash device incorporated into one package, developed specifically for POS use. |
|--|---|
|  | ACF-8 Universal Power Supply is used to power FLS-4S.   |
|  | <b>Travel Charger AC-4</b> Small and lightweight charger for fast charging of your phone battery.   |
|  | Internal Battery BL-5C Inserted under the back cover, this Li-Ion 850 mAh battery provides power in a lightweight package.                  |
|  | Headset HDS-3 Small and lightweight stereo headset for handsfree functionality and listening to FM radio.                                   |
|  | SS-51<br>VGA Camera Removal Tool.   |
|  | <b>CA-53</b> Service Cable to connect the PC with the Pop-Port <sup>™</sup> connector   |



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|   | <b>RJ-99</b><br>Soldering Jig  |  |
|---|--|--|
|   | SS-15<br>Camera Removal Tool (recommended)   |  |
| 100 A 2 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Lead-free Solder Wire Mandatory for lead-free products (Level 2 only).   |  |
|   | <ul> <li>NOKIA opening tool SRT-6 NOKIA No. 0770431</li> <li>Tonichi torque driver NOKIA No. 6901525</li> <li>Hoya micro Fibre cloth MX304</li> <li>Dastex gloves S, M, XL</li> <li>Artilux goggles AH166</li> <li>Wera bit T5 867/4TX 5x50</li> <li>Wera 867/4 6IP; 50mm (Torx 6 PLUS®)</li> <li>Wera bit T6 867/4TX 6x50</li> <li>Wera 867/1 5IP; 25mm (Torx 5 PLUS®)</li> <li>Wera bit T6 PLUS® 867/4TX 6IP</li> <li>Facom side cutter 416E</li> <li>Facom T5 driver SP.14032</li> <li>Facom T6 driver SP.14033</li> <li>Facom slot screwdriver AEF. 2x35.E</li> <li>Wetec tweezers 7abb SA-ESD</li> <li>Wetec tweezers 13 SA-SMD ESD</li> <li>Wetec tweezers PSF SA-ESD</li> <li>Wetec ESD brush E1211</li> <li>Kaiser Fototechnik airbrush 6315</li> <li>Wetec dental tool DEM83266/0</li> <li>RS Components Scissors 323-5732</li> </ul> |  |



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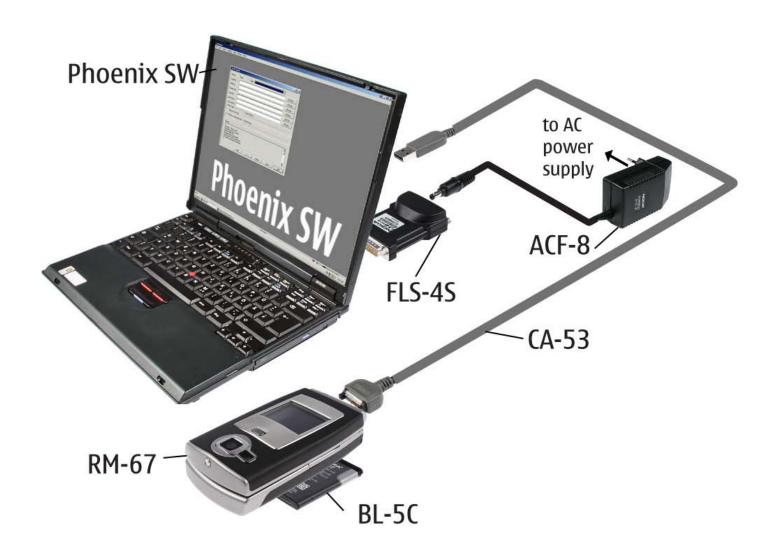
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## 10.SW-UPDATE

## 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**.

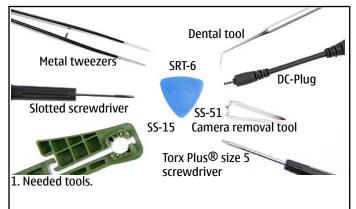


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## 11. DISASSEMBLY INSTRUCTION

















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9. Carefully remove the A-COVER.



10. Unscrew the four, Torx Plus $^{
m extbf{@}}$  size 5 SCREWS in the order shown.



11. Open the FLEX connector.



12. Open the LCD connector.



13. Open the unit and unlock the snap of the B-COVER ASSY.



14. Then unlock the SHIELD LID ASSY by using a dental tool. Do the same on both sides.



15. Take care to the grounding springs when removing the SHIELD LID ASSY.



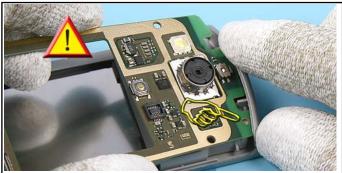
16. Gently, open the LCD connector.



17. Lift the LCD a bit by using the SRT-6 and remove it from its mounting.



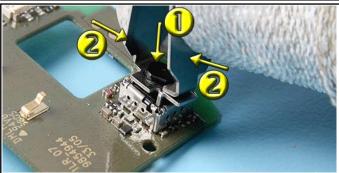
18. Lift the LR LID PWB and the CAMERA as shown and remove the modules carefully.



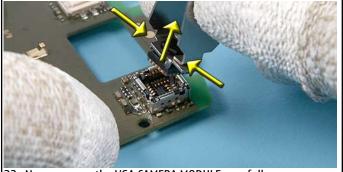
19. Take care to the secure pin when removing the LID PWB.



20. Open the CAMERA MAIN ASSY connector.



21. Place the SS-51 over the VGA CAMERA MODULE as shown and press together the blades of the SS-51.



22. Now, remove the VGA CAMERA MODULE, carefully.



23. First, unlock the clip on the shown side.



24. Then, release the snap in the middle of the cover with a slotted screwdriver.



25. Gently, open a bit the B-COVER on the shown side.



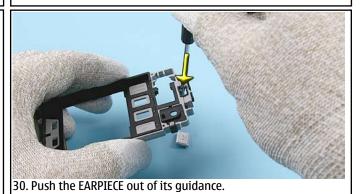
27. Place the SRT-6 between the B-COVER and the LID CENTER FRAME and release the last two snaps.

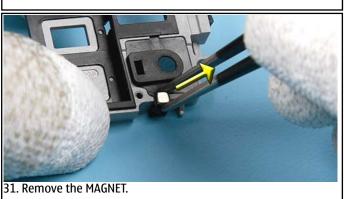


28. Now, the B-COVER can be removed.



29. Protect the LCD with a film and remove it from the LID CENTER FRAME.







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33. The HINGE is fixed in the C-COVER.



34. Use the SS-15 as a support when removing the HINGE. Position the HINGE exactly over the recess.



35. Use a Torx driver to push out the HINGE. Take special care to the FLEX.



36. Now, the HINGE can be removed. Please note: This part must not be reused.



37. Push up the BUSHING with a screwdriver.



39. Remove the SCREW CAPS with the SRT-6. Note: Do not reuse



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the SCREW CAPS.

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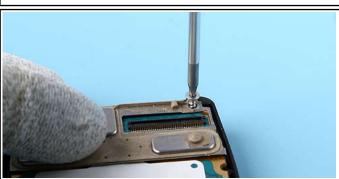
41. Place the SRT-6 between the C-COVER and the D-COVER as shown and lift the C-COVER a bit. Do not slide the SRT-6 along the



42. Now, unlock the C-COVER.



43. Open the FLEX connector carefully.



44. Unscrew the Torx Plus® size 5 SCREW.



45. Remove the SHIELD KEY.



47. Gently, remove the MENU KEY SURROUNDING ASSY. Please note: This part must not be reused.



48. Feed the FLEX through the slide in the C-COVER.



49. Fit the SRT-6 between the C-COVER SLIDE SURROUND and the C-COVER and unlock the C-COVER SLIDE SURROUND.

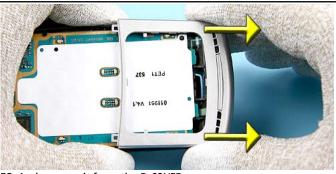


50. Remove the KEYMAT assembly.



51. Separate the KEYMAT from the C-COVER SLIDE SURROUND.

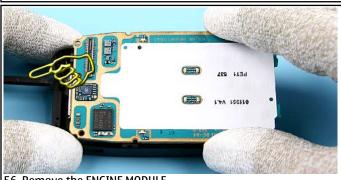




53. And remove it from the D-COVER.



55. Open the SD DOOR and check, that the MINI SD card has been removed from its slot, before removing the ENGINE MODULE from the D-COVER.



56. Remove the ENGINE MODULE.

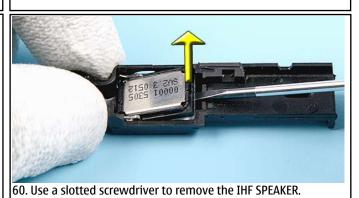


57. Unlock the IHF SHIELD on the shown side...





59. Remove the D-COVER IHF LID.







61. Carefully, disconnect LZ BT MODULE from the ENGINE BOARD.

62. Remove the CENTER SHIELD paying attention to the Battery Connector.

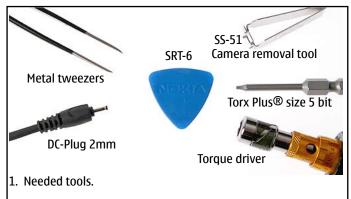


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## 12. ASSEMBLY INSTRUCTION









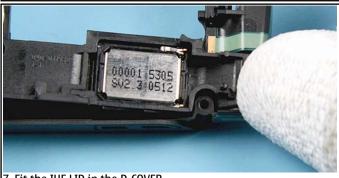




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5. Connect the LZ BT MODULE.

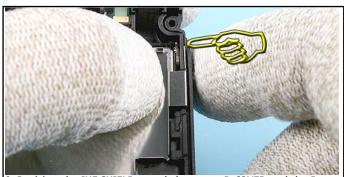
6. Insert the EARPIECE with the new IHF SPEAKER ADHESIVE into the D-COVER IHF LID.





7. Fit the IHF LID in the D-COVER.

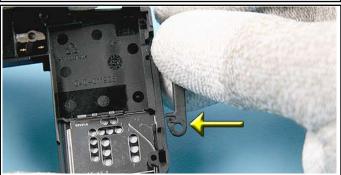
8. Place the IHF SHIELD on the D-COVER.



9. Position the IHF SHIELD exactly between D-COVER and the D-COVER IHF LID as shown.



to. Very carefully, fix it into place. Do not belie the far shield.



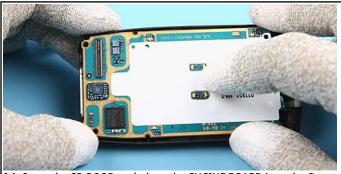
11. Assemble the SD DOOR (only when using a new D-COVER).



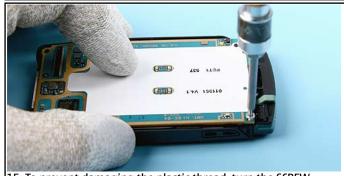
12. Press the SD DOOR into place.



13. Check the right position of the IR WINDOW.



14. Open the SD DOOR and place the ENGINE BOARD into the D-COVER.



15. To prevent damaging the plastic thread, turn the SCREW slightly left first. Then tighten it with a torque setting of 17Ncm.



16. Fit the C-COVER SLIDE.



17. Fix the KEYMAT into the C-COVER SLIDE SURROUND.



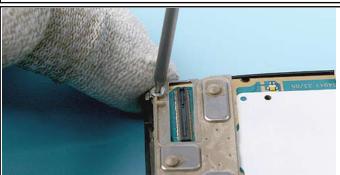
18. Insert the KEYMAT assembly as shown.



19. Secure the KEYMAT assembly by pressing it into place.



20. Fit the SHIELD KEY.



21. To prevent damaging the plastic thread, turn the SCREW slightly left first. Then tighten it with a torque setting of 17Ncm.





23. Gently, close the FLEX connector.



24. Carefully, feed the FLEX through the slot in the C-COVER by securing the closed connector.



25. Fit the C-COVER into the D-COVER and check the correct position of the FLEX.



26. Be sure that the surface of the C-COVER is clean. Fit the new MENU KEY SURROUND ASSY.



27. Press the parts together.



28. To prevent damaging the plastic threads, turn the SCREWS slightly left first. Then tighten them in the shown order with a torque setting of 17Ncm.

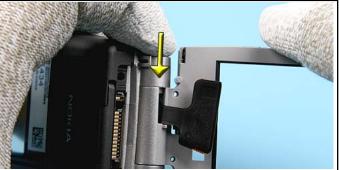


29. Stick on the new SCREW CUPS.

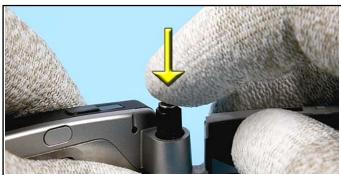


31. Very carefully, assemble the LID CENTER FRAME paying atten-

tion to the FLEX.



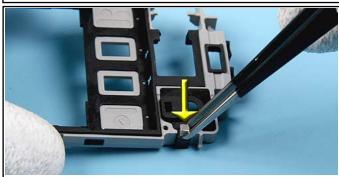
32. Push the BUSHING into its place to secure the LID CENTER FRAME.



33. First insert the new HINGE and then gently, open the device Ensure the correct position of.



35. Fit the HINGE COVERS.



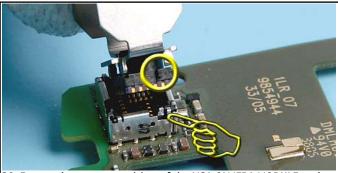
36. Insert the MAGNET.



37. Place the LCD onto the LID CENTER FRAME.



38. Position the CAMERA MAIN ASSY on the LR LID PWB and close the CAMERA connector.



39. Ensure the correct position of the VGA CAMERA MODULE and insert it into its housing.

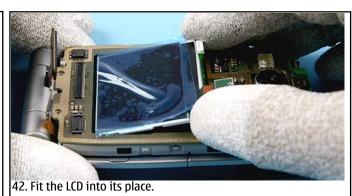


40. Insert the EARPIECE.

**Multimedia Creation & Support** 



41. Place the LR LID PWB onto the LID CENTER FRAME and check the position of the CAMERA MAIN ASSY.



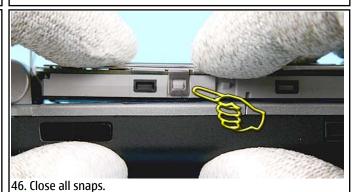




44. Remove the protective film.



45. Fit the SHIELD LID ASSY into the LID CENTER FRAME. Take special care to the grounding springs.





47. To prevent damaging the plastic threads, turn the screws slightly left first. Then tighten them in the shown order with a torque setting of 17Ncm.



48. Close the LCD connector.



49. Close the FLEX connector.





51. Fit the B-COVER ASSY carefully paying attention to the guides of the B-COVER.



52. Press together the B-COVER and the LID CENTER FRAME.



53. Close the snaps on the both sides of the upper block.



54. Fit the A-COVER ASSY. Start at the shown side.



55. Close the A-COVER.



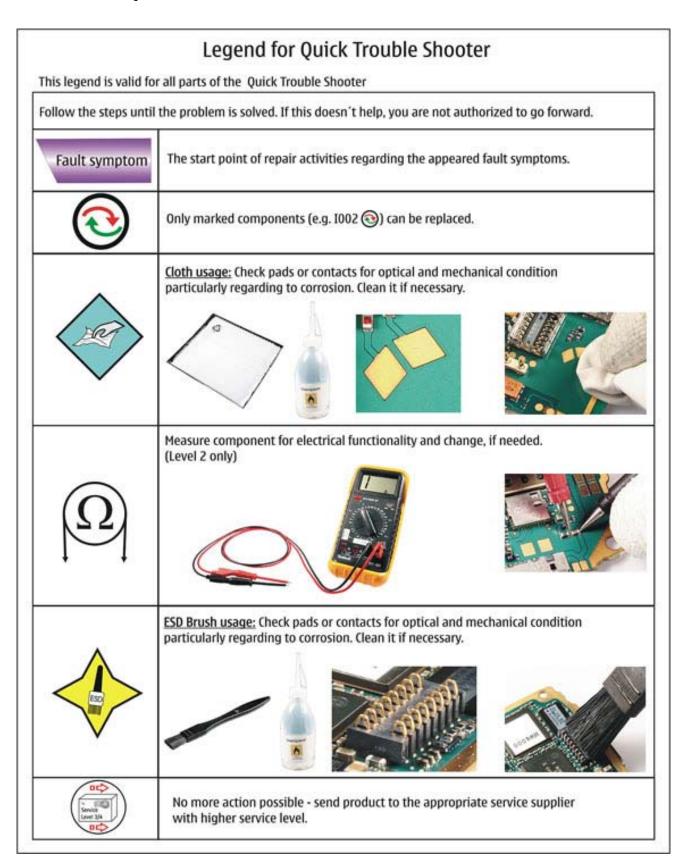
56. Finally, fit the BATTERY COVER.

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## 13.LEGEND FOR QUICK TROUBLE SHOOTER

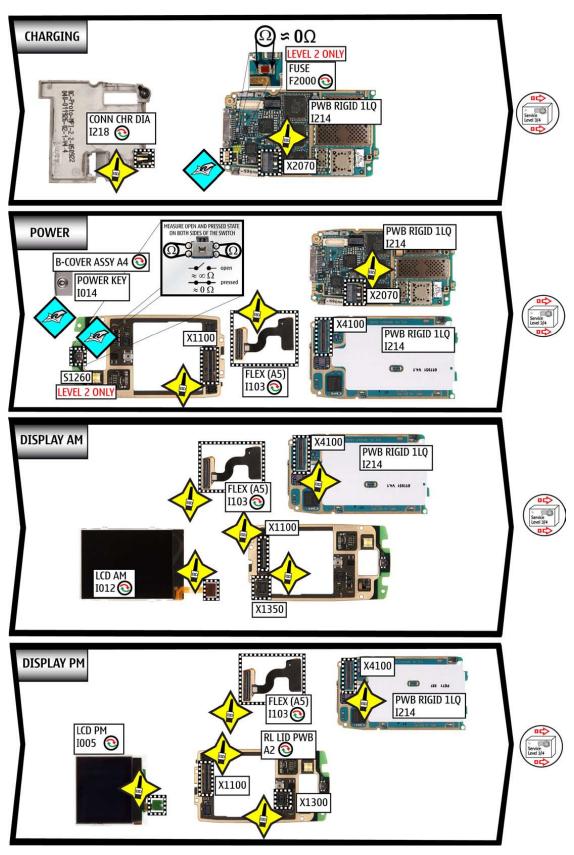


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## 14.QUICK TROUBLE SHOOTER PART 1

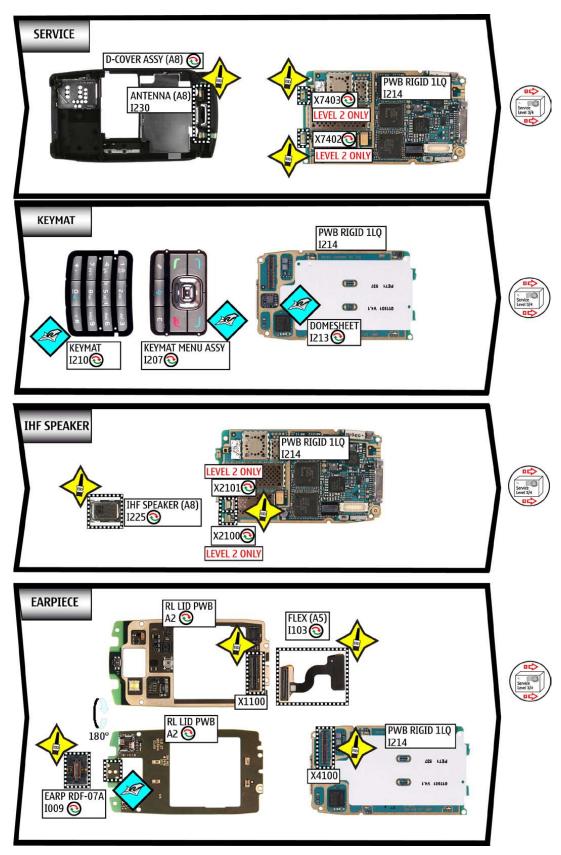


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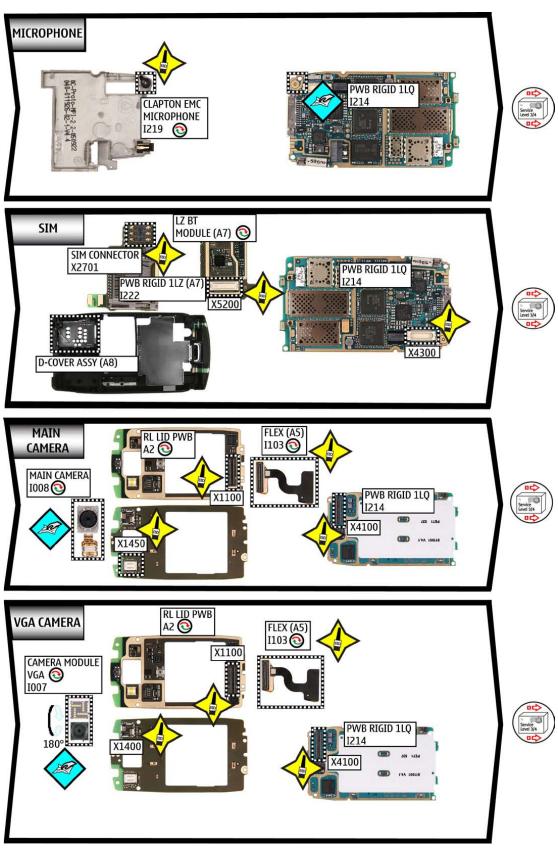
## 15.QUICK TROUBLE SHOOTER PART 2



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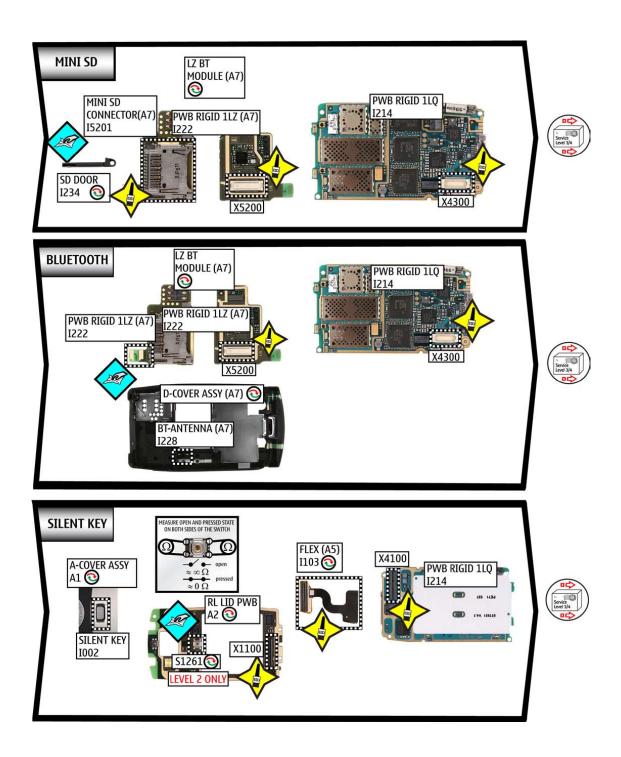
# **16.QUICK TROUBLE SHOOTER PART 3**



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# 17. OUICK TROUBLE SHOOTER PART 4





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## 18.GONOGO TEST

To test the Camera, Bluetooth and IRDA functionality refer to the N71 User's guide.

The User's Guide is available on www.nokia.com.

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



#### **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.

## **Infrared test**

You need another infrared device (e.g. 6230) to do a GoNoGo test. The infrared windows of the devices must be directed to each other and should have a distance of approximate 15 cm. Make sure that infrared is activated in receiver device.

**Warning:** Do not point the IR (infrared) beam at anyone's eye or allow it to interfere with other IR devices. This device is a Class 1 Laser product.









Test unit

Reference unit, Bluetooth /infrared activated



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## 19. 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/