



# Service Manual

## Nokia 6510

### NPM-9

#### Service Level 2

Copyright © Nokia Corporation. This material, including documentation and any related computer programs, is protected by copyright controlled by Nokia Mobile Phones. All rights are reserved. Copying, including reproducing, storing, adapting or translating, any or all of this material requires the prior written consent of Nokia Mobile Phones. This material also contains confidential information, which may not be disclosed to others without the prior written consent of Nokia Mobile Phones.

## Introduction

The purpose of this document is to give Nokia service level 2 workshops aids to carry out service for 6510. The use of this Service Manual is only for Nokia authorized service partners additionally to other service documentation like Service Bulletins.

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, Nokia should be notified. 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. Ensure solder, wire, or foreign matter does not enter the telephone as damage may result.
4. Use only approved components as specified in the parts list.
5. Ensure all components, modules screws and insulators are correctly re-fitted after servicing and alignment. Ensure all cables and wires are repositioned correctly.
6. All PC's used with NMP Service Software for this produce must be bios and operating system "Year 2000 Compliant".

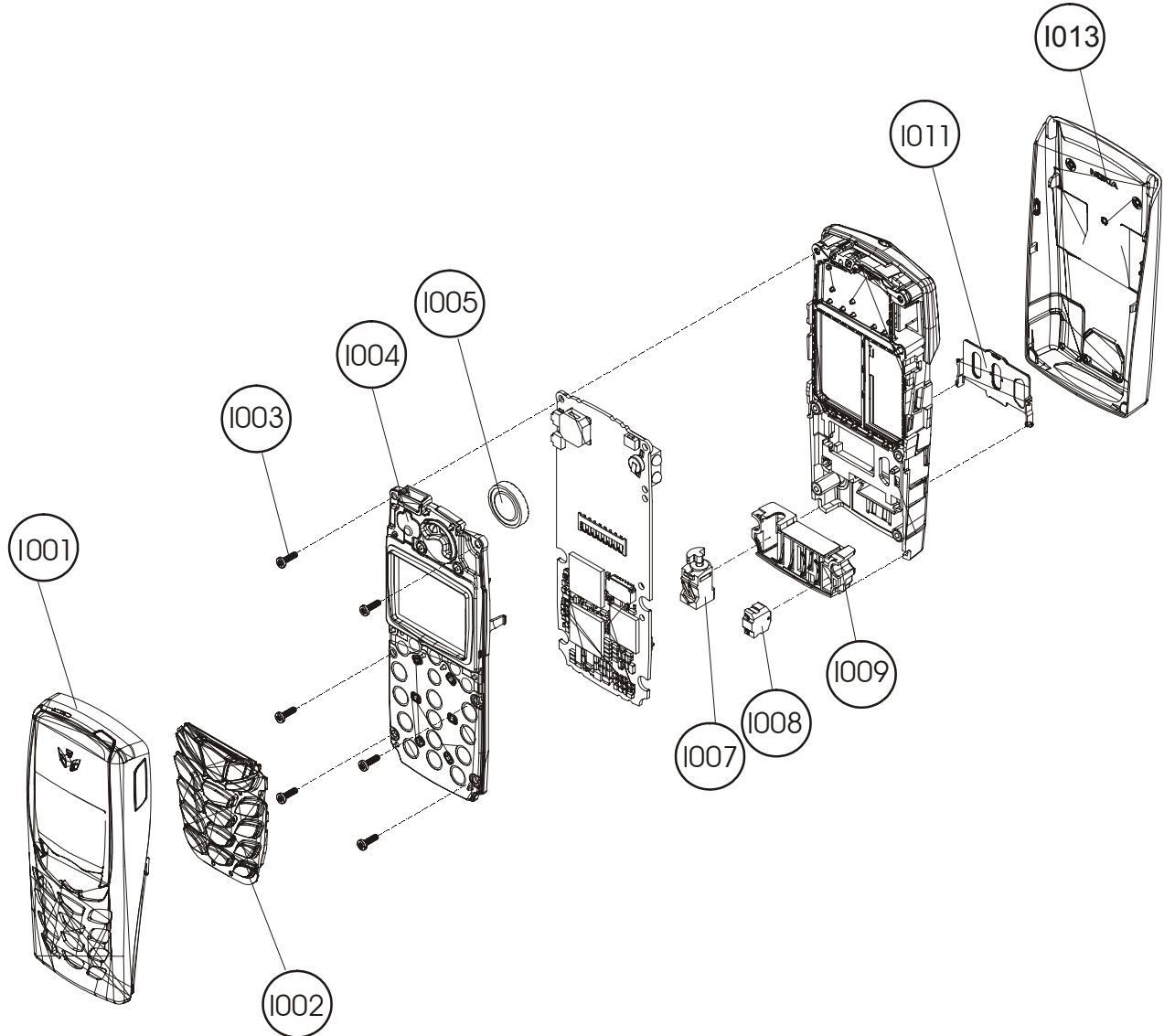
## Table of content

<b>1. EXPLODED VIEW.....</b>	<b>5</b>
<b>2. BILL OF REPAIR.....</b>	<b>6</b>
<b>3. SIMPLE INFRARED TEST .....</b>	<b>8</b>
<b>4. SW-UPDATE .....</b>	<b>8</b>
<b>5. GENERAL REPAIR INFORMATION .....</b>	<b>9</b>
<b>6. DISASSEMBLY INSTRUCTIONS .....</b>	<b>10</b>
<b>7. MAIN PARTS.....</b>	<b>12</b>
<b>8. QUICK TROUBLE SHOOTER PART1 .....</b>	<b>13</b>
<b>9. QUICK TROUBLE SHOOTER PART2 .....</b>	<b>14</b>
<b>10. ESD PROTECTION REQUIREMENTS.....</b>	<b>15</b>
<b>11. SERVICE NOTES.....</b>	<b>16</b>
<b>12. GONOGO TESTER.....</b>	<b>17</b>
<b>13. BATTERYTESTER.....</b>	<b>17</b>

### Change History

Originator	Status	Version No.	Date	Comments
MWy	Draft	0.1	14.02.2002	Initial draft
MWy	Approved	1.0	27.02.2002	approval

# 1. EXPLODED VIEW



Description: See corresponding ITEM/CIRCUIT REF of the BOR (Bill Of Repair)

**2. BILL OF REPAIR**

**SPARE PARTS**

ITEM/ CIRCUIT REF.	QTY	PART NO	PART NAME
I003	6	6150051	SCREW M1.6X5.5 T6
I004	1	0201868	LU9 UI MODULE EUROPE
I005	1	5140067	SPEAKER WITH SPRING
I007	1	6800055	VIBRA MOTOR WITH RUBBER
I008	1	5140205	MICROPHONE
I009	1	5460049	SYSTEM-CONNECTOR NON ASSEMBLED
I011	1	9460377	SIM CARD COVER
V324-V327	4	4864591	LED CL270PSB61 PASTELB 90'0603 EUR
S300-S302	3	5200025	SM TACT SW SIDE TRAVEL 0.2 MM
G300	1	4700131	CELL CAPACITOR 0.01MAH 3V3
F100	1	5119019	SM FUSE F 1.5A 32V 0603
		0770477	Spare Part Kit
		0080631	Refurbishment Kit
<b>VARIANT PARTS</b>			
I013	1	9458254	BATTERY COVER ASSY NPM-9 Beige
I013	1	9458324	BATTERY COVER ASSY NPM-9 dark blue
I001	1	9458252	A-COVER.ASSY NPM-9 Beige
I001	1	9458329	A-COVER.ASSY NPM-9 dark blue
I002	1	9794080	Keymat Arabic / Light
I002	1	9794081	Keymat Cyrillic_Russian / Light
I002	1	9794092	Keymat Cyrillic_Greek / Light
I002	1	9794079	Keymat Hebrew / Light
I002	1	9794062	Keymat Latin / Light
I002	1	9794067	Keymat Stroke / Light

## SWAP UNITS

	QTY	PART NO	PART NAME
	1	0073480	NPM-9 N6510 SWAP ENGINE EUROPE
	1	0073481	NPM-9 N6510 SWAP ENGINE TURKEY
	1	0073482	NPM-9 N6510 SWAP ENGINE FRANCE
	1	0073483	NPM-9 N6510 SWAP ENGINE CS-SK
	1	0073484	NPM-9 N6510 SWAP ENGINE RUSSIA
	1	0073485	NPM-9 N6510 SWAP ENGINE POLAND

## SERVICE TOOLS

TYPE	QTY	PART NO	PART NAME
DCD-1		0272865	DESK STAND
HDD-1		0273195	HEAD-SET DOUBLE MONO
BLB-2		0271570	BATTERY LI-ION 650 MAH
FLS-4		0081483	POS FLASH DONGLE
ACP-8E		0272169	AC TRAVEL CHARGER (EUR)
ACP-8X		0272172	AC TRAVEL CHARGER (UK)
XCS-1		0730218	POS SERVICE CABLE
FLA-18		0770318	POS FLASH LOADING ADAPTER

### 3. SIMPLE INFRARED TEST

You need another NOKIA infrared device when testing infrared via sending a business card. The infrared windows of the devices must be directed to each other and should have a distance of approx. 15cm.

Make sure that infrared is activated in receiver device (e. g. 5210).

1. From Home Menu, select "**Names**"
2. Select "**Search**"
3. Select "**List**"
4. Select "**Details**" from one phonebook entry
5. Select "**Options**"
6. Select "**Send bus.card**"
7. Select "**Send via IR**"
8. Press red receiver button for Home Menu



### 4. SW-UPDATE

To use FLS-4 Flash Dongle you have to follow the user guide inside the sales package. Please check always the latest version of flash software, which is available on Partner Website.

**Flash Concept – (Point of Sales)**



Description: See corresponding ITEM/CIRCUIT REF of the BOR (Bill Of Repair)








## 5. GENERAL REPAIR INFORMATION

In this section you will get some general hints how to carry out repairs:

- Before starting the repair you must take care of ESD precautions like being in your ESD-area and connecting your arm wrist.
- Use gloves to avoid corrosion and fingerprints.
- Protect windows and displays with a foil to avoid dust and scratches.
- When cleaning the pads you have to use a soft cloth and isopropanol. It is not allowed to use a glass fiber pencil because it scratches the surface and will lead later on to corrosion.
- **Soldering with hot air gun is totally forbidden because of the very sensitive  $\mu$ BGA components and  $\mu$ Via technology. Please check general Service Bulletin-122.**
- Mechanical parts, which didn't repair the failure, can be reused, if they are not soldered.
- Use always original Nokia parts or accessories.
- Don't try to repair liquid damages.
- Meet the torque requirements when assembling the unit (see also the document "torques for transceiver assembly" on Partner Websites).
- 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.
- The bottom side of a module is the side where the part no. of the pcb is seen.
- Please check Partner Websites (PWS) for latest news on a regular basis.

### 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. Only underlined components ( e.g. <u>I007</u> ) can be changed.	
	Follow the arrows step by step
	Pads or contacts: Check optical and mechanical condition as well as corrosion. Clean if necessary.
	Measure component for electrical functionality and change, if needed.
	No more action possible, send product to the appropriate service partner with higher service level.
	End Point
<sup>4, 5</sup>	Superscript numbers are for additional comments or instructions

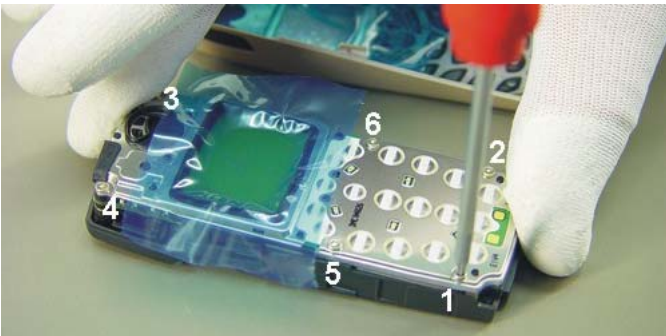
## 6. DISASSEMBLY INSTRUCTIONS



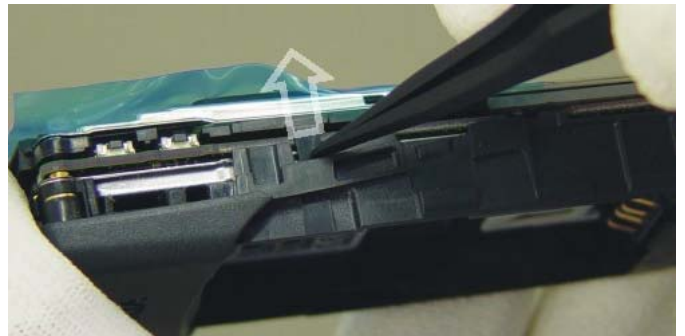
Push the unlock-button and move the battery cover to the System Connector direction.



Pull the A-Cover and B-Cover apart to open the unit.



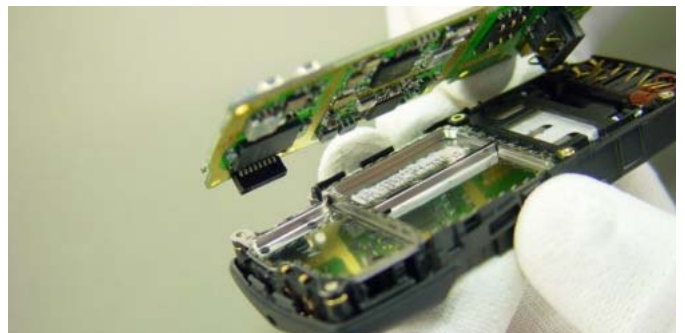
**Remove the six screws with screwdriver Torx T6 in the shown order. When assembling the reverse order has to be taken with a torque of 17Ncm.**



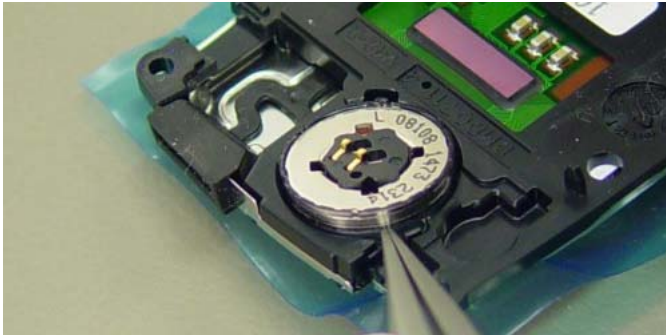
Before removing the UI module LU9 this clip has to be released with a screwdriver or tweezers.



Now the UI module can be removed. Please take care of not to damage the board to board connector afterwards which is located on the CMT module.



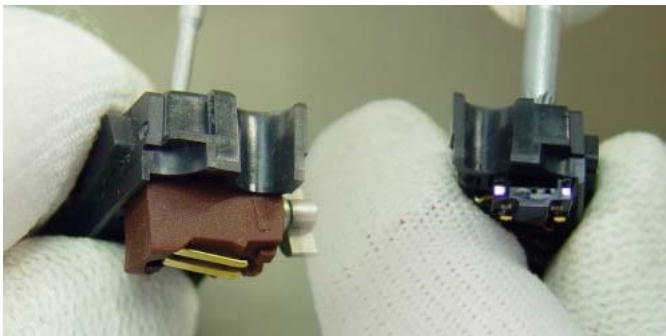
Lift up the CMT module LA5 carefully. Note that sometimes the battery connector gets stuck at the SIM Card Cover. Take care of not to bend the spring contacts of the battery connector.



If you need to change the speaker you shouldn't lift it from the spring connectors. Take tweezers and lift the speaker as shown in the picture.



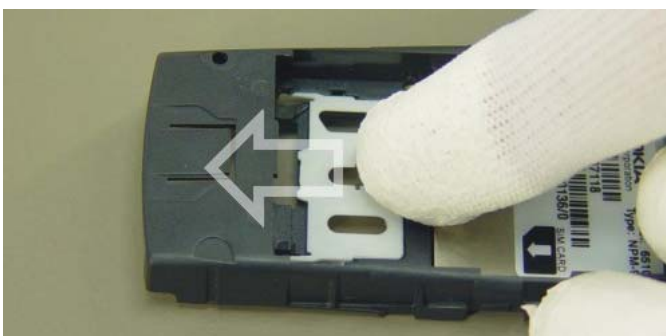
Turn around the B-Cover. If the System Connector is jammed, press with tweezers between cover and connector.



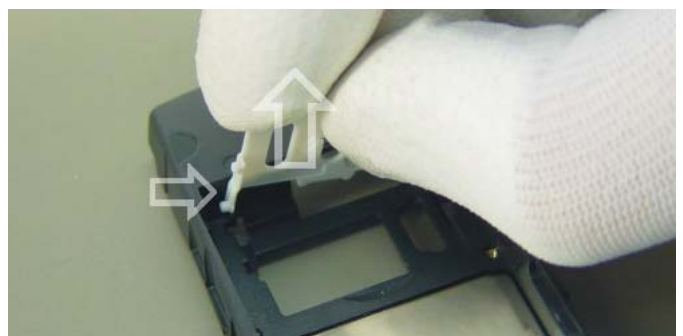
The System Connector contains Vibra Motor and Microphone, which can be easily pushed out from the System Connector.



Remove the Keymat. It is always good to protect the window from the inner side.



If you need to remove or change the SIM Card Cover you first have to release it.



The second step is to push one hinge to the middle to lift up the Card Cover.

**New screws have a special locking compound on the thread. Unscrewed screws mustn't be reused! When assembling the phone, screws must be tightend with a torque of 17 Ncm! The GoNoGo test verifies that the electrical specifications will be fulfilled.**



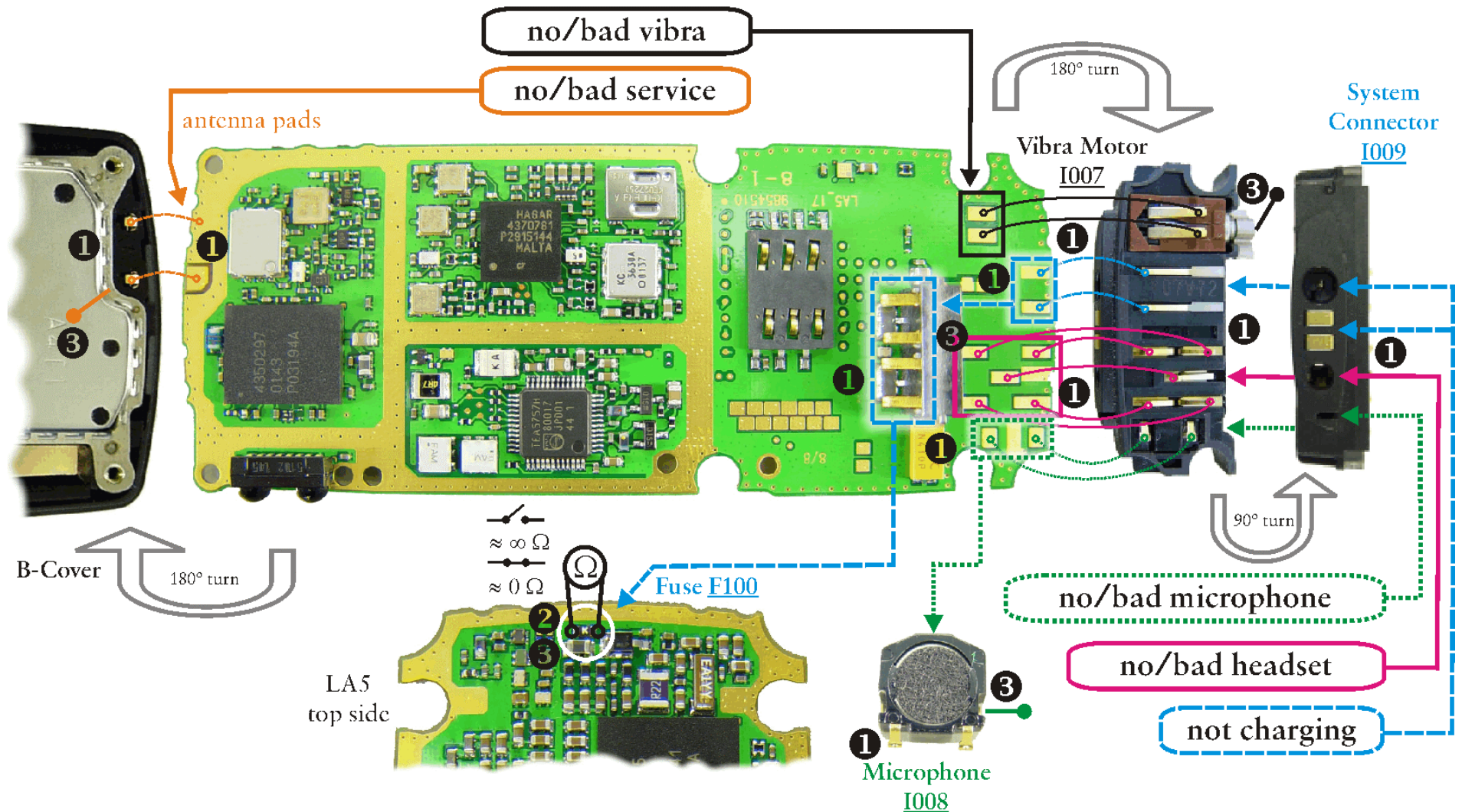


## 7. MAIN PARTS

		
<p>Microphone I008</p>	<p>Vibra Motor I007</p>	<p>System Connector I009</p>
		
<p>Keypad I002</p>	<p>Speaker I005</p>	<p>SIM Card Cover I011</p>
		
<p>A-Cover I001</p>	<p>B-Cover, not changeable</p>	<p>LU9 User Interface Module I004</p>

## 8. QUICK TROUBLE SHOOTER PART1

### Quick Trouble Shooter 6510 LA5 bottom side part 1



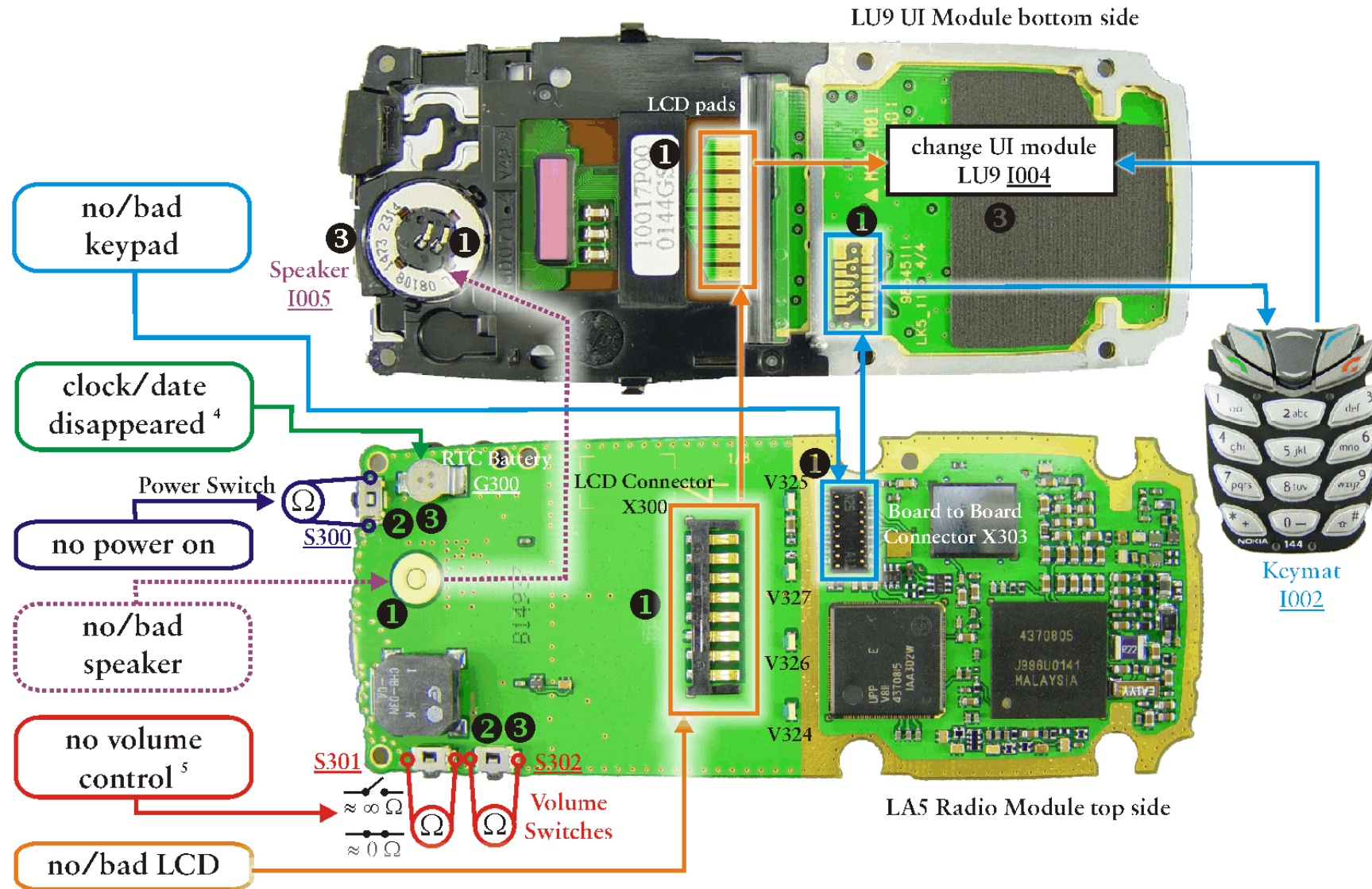


## 9. QUICK TROUBLE SHOOTER PART2


### Quick Trouble Shooter 6510 LA5 top side part 2

<sup>4</sup> Connect full battery for at least 10 min. and change battery.

<sup>5</sup> First check, if A-Cover fits right and buttons function with low friction.



## 10. ESD PROTECTION REQUIREMENTS

	<p>Electrostatic discharge can easily damage the sensitive components of electronic products. Therefore every Service Partner has to take care of at least some precautions like ESD restricted area, floor, table, covering, chair(s), shoes or arm wrist.</p>
---	---

Please refer to the Partner Website document

**ESD protection requirements for NMP Service Level 1/2 Service Suppliers**

	
<p>example configuration of an epa-area              source: <a href="http://www.armeka.com">www.armeka.com</a></p>	<p>example configuration of a workbench              source: <a href="http://www.warmbier.com">www.warmbier.com</a></p>
	
<p>example workbench and testers              source: <a href="http://www.armekaengineering.com">http://www.armekaengineering.com</a></p>	

## 11. SERVICE NOTES

We recommend using Service Notes when shipping phones to other Service Partners. It prevents the product from scratches, it is ESD-proved and has the possibility to give valuable feedback of the fault symptom through a structured form. Please refer to the document [Service Notes for faulty NMP transceiver](#) on Partner Website to get further information.

Sender <i>Repair Center</i>	Our Ref. <i>4711</i>
Handled by _____	Product Code <i>050381</i>
Serial n.o.: <i>449333/20/975406/2</i>	Date <i>10.07.01</i>
Yes <input checked="" type="checkbox"/> Warranty Case <input type="checkbox"/> No	Inst <input type="checkbox"/> Instant Service <input type="checkbox"/> DOA

<b>R</b> <input checked="" type="checkbox"/> Repair	<b>RR</b> <input type="checkbox"/> Repair and Refurbishment
<b>RO</b> <input type="checkbox"/> Refurbishment only	<b>SW</b> <input type="checkbox"/> Software update
<b>A</b> <input type="checkbox"/> Analysis	<b>C</b> <input type="checkbox"/> Claim
<b>24h</b> <input type="checkbox"/> 24 h Service	<b>SR</b> <input checked="" type="checkbox"/> Special Request <i>Save User data</i>

**A) EXISTENCE OF FAULT**

1. <input checked="" type="checkbox"/> Continuous fault	2. <input type="checkbox"/> Intermittent fault	3. <input type="checkbox"/> Temperature
4. <input type="checkbox"/> By shock or vibration	5. <input type="checkbox"/> No clear fault	6. <input type="checkbox"/> Only as portable
7. <input type="checkbox"/> Only in a car	8. <input type="checkbox"/> Only in desktop	

**B) SYMPTOM OF THE FAULT ON CMT-PART - Symptom Code** \_\_\_\_\_


1. <input type="checkbox"/> Totally dead	2. <input type="checkbox"/> Selftest failure	3. <input type="checkbox"/> SIM Fail
4. <input checked="" type="checkbox"/> No service	5. <input type="checkbox"/> No calls in	6. <input type="checkbox"/> No calls out
7. <input type="checkbox"/> Keypad failure	8. <input type="checkbox"/> Display failure	9. <input type="checkbox"/> Audio failure
10. <input type="checkbox"/> Doesn't charge	11. <input type="checkbox"/> Overcharging	12. <input type="checkbox"/> Hand-free failure
13. <input type="checkbox"/> Burns fuses	14. <input type="checkbox"/> Accessory fail, which _____	
15. <input type="checkbox"/> Switches off	16. <input type="checkbox"/> Other _____	

**C) OBSERVED OR MEASURED FAULT**

1. <input checked="" type="checkbox"/> TX Power
2. <input type="checkbox"/> TX Phase error
3. <input type="checkbox"/> Bit Error Rate
4. <input type="checkbox"/> Burst Template
5. <input type="checkbox"/> Ramping spectra
6. <input type="checkbox"/> RX Quality
7. <input type="checkbox"/> RSSI
8. <input type="checkbox"/> Other _____

**D) SYMPTOM OF THE FAULT ON PDA-PART - Symptom Code** \_\_\_\_\_

1. <input type="checkbox"/> PDA doesn't start
2. <input type="checkbox"/> Internal error
3. <input type="checkbox"/> Keypad failure
4. <input type="checkbox"/> Display failure

The image shows the back of a Nokia mobile phone with a service label. The label contains the following information: NOKIA MOBILE PHONES LTD, Type: NPE-SNX, Model: E210, MADE IN GERMANY, CE 0168 X, a barcode, Serial number: 449333/20/975406/2, Code: 0503831, and Owner: R&D Bochum TTA. A vertical text 'Phone: G0404 NMP-ENG' is visible on the right side of the phone's back cover.



## 12. GONOGO TESTER

The Acterna/Wavetek GoNoGo Tester has to be used to carry out the final test after your service action to guarantee the functionality of the phone.

**Please refer to the actual information in the Nokia Care Point Extranet within the Partner Website.**



## 13. BATTERYTESTER

The Astratec battery tester lets you test the capacity of Nokia batteries.

**Please refer to the actual information in the Nokia Care Point Extranet within the Partner Website.**

