

# Service Manual

## AX72

### Level 1- Level 3 (basic)



Release	Date	Department	Notes to change
R1.0	16.11.2005	BenQ Mobile CC S CES	New document
R1.1	05.01.2006	BenQ Mobile CC S CES	Part Modification

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## 1 Key Feature

Bands	<ul style="list-style-type: none"><li>• Triple Band E-GSM 900 / GSM 1800 / GSM 1900</li><li>• EGSM Phase 2 / phase 2+</li><li>• GPRS Multi Class 8</li></ul>
Battery	<ul style="list-style-type: none"><li>• Li-Ion Battery Pack</li><li>• Nominal Voltage : 3.7V</li><li>• Nominal Capacity : 600 mAh</li><li>• GSM Capacity: 580 mAh</li><li>• Power Input: 2.0 A (0.6 ms) / 0.25 A (0.4 ms)</li><li>• Cut-off Threshold 3.2 V</li></ul>
Stand-by Time	<ul style="list-style-type: none"><li>• up to 220 h (standard battery)</li></ul>
Talk Time	<ul style="list-style-type: none"><li>• up to 300 min (standard battery)</li></ul>
SIM Card	<ul style="list-style-type: none"><li>• Small ("Plug In") 3V SIM card (Phase II)</li><li>• To insert the SIM card, the battery pack must be removed.</li></ul>
GSM Antenna	<ul style="list-style-type: none"><li>• Integrated triple band antenna for EMEA/APAC.</li></ul>
Dimensions	<ul style="list-style-type: none"><li>• 101 x 44 x 20 mm (L x W x H)</li></ul>
Weight	<ul style="list-style-type: none"><li>• Approx. 80 g</li></ul>
Charging time	<ul style="list-style-type: none"><li>• &lt; 2 h for 100%</li></ul>
Receiver Sensitivity	<ul style="list-style-type: none"><li>• GSM 900: -102dBm (Specification, static &amp; with fading)</li><li>• GSM 1800/1900: -102 dBm (Specification, static &amp; with fading)</li></ul> <p>Receiver sensitivity must comply with the corresponding GSM recommendations in all operating conditions (temperature, battery level, etc)</p>
Transmitter Power	<ul style="list-style-type: none"><li>• GSM 900: nominal 2W (Specification: Class 4 Mobile phone)</li><li>• GSM 1800/1900: nominal 1W (Specification: Class 1 Mobile phone)</li></ul> <p>Transmitter output characteristics is according to GSM 11.10 specification implying all specified operating conditions (temperature, battery level ...).</p> <p>Transmitter set points will be specified for GSM and PCN when typical values and statistical values become available.</p>

Speech Codec	<ul style="list-style-type: none"><li>• Half Rate, Full Rate, Enhanced Full Rate and Adaptive Multi Rate speech coders are available as standard.</li></ul>
Temperature Range	<ul style="list-style-type: none"><li>• -10<sup>0</sup>C to +55<sup>0</sup>C (Normal operation)</li><li>• -30<sup>0</sup>C to +85<sup>0</sup>C (Storage capability)</li></ul>
Display	<ul style="list-style-type: none"><li>• Type: Full Graphic</li><li>• Resolution: 130 x 130 Pixel</li><li>• No. of colours: 65K</li><li>• Technology: C-STN</li><li>• Active area: 27.3mm x 27.3mm</li><li>• Pixel size: 0.21mm x 0.21mm. (1 Pixel consists of 3 sub-pixels in red, green and blue)</li><li>• Illumination: White (3 LEDs integrated)</li><li>• Frame Rate: 15 frames/sec</li></ul>
12-Block Keypad	<ul style="list-style-type: none"><li>• IMF technology</li><li>• 12-key-block (0-9, #, *)</li><li>• two function keys (SEND, END)</li><li>• ON/OFF key combined with the END key; the symbol ⓘ (I inside O) is used as a symbol for ON/OFF.</li><li>• 4 way-navikey</li><li>• 2 soft-keys for different SW-enabled functions</li><li>• tactile finder on key "5"</li><li>• 6 amber LEDs for keypad</li></ul>
Acoustics	<ul style="list-style-type: none"><li>• Three-in-one-earpiece for handset, handsfree and ringing tones</li><li>• Omnidirectional microphone</li><li>• Loud signal emitter (soundringer) (&gt;100dB(A) SPL @5cm, 'Hongkong-Spec.') only for rectangular sound signals (NOT POSSIBLE for Soundringer melodies)</li><li>• Polyphonic ringer tones 16 voices</li><li>• Different selectable volume levels for handsfree, handset and ringer mode (for the amount see SW product description)</li></ul>

## 2 AX72 Interface to Accessories

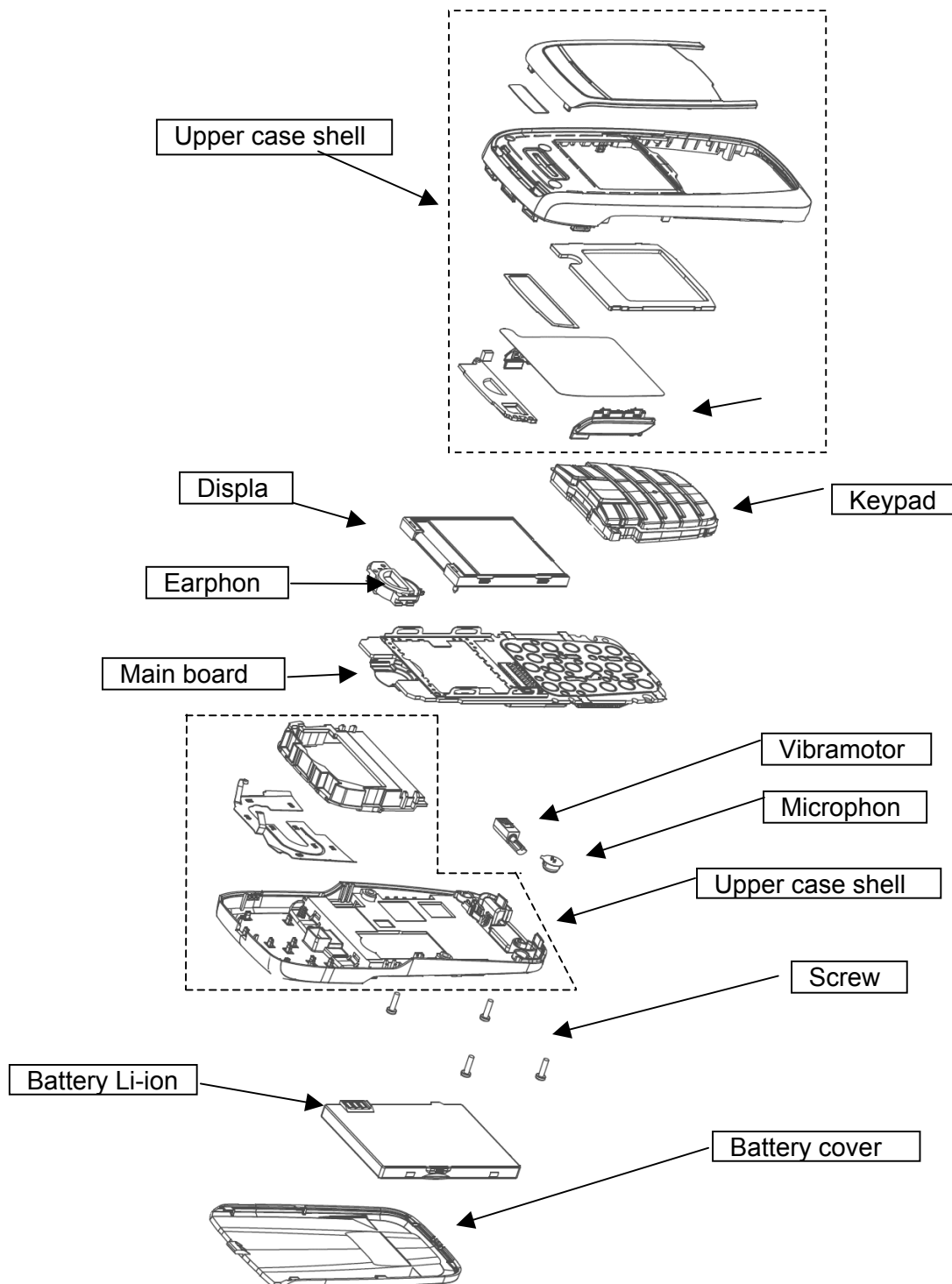
There are no specific mechanical interfaces to the car cradle. The car cradle is designed to fit the existing design. The I/O-Connector (Lumberg-slim-connector) is in use. The compatible interface is suitable to use the travel charger.

## 3 Unit Description of AX72

The AX72 is designed as a Mono Block with non-exchangeable housing. The Upper case, lower case and battery cover are painted parts. IMD Lens will be mounted by Ultrasonic, Display, 130X130; semi-bridgeless keypad, 4-way Navi-Key, 12 keys block; IMD lens; IRDA window; No ID concept will be realized on Battery cover.



## 4 Exploded View of AX72



## 5 Disassembly of AX72

All repairs as well as disassembling and assembling have to be carried out in an ESD protected environment and with ESD protected equipment/tools. For all activities the international ESD regulations have to be considered.

For more details please check information in c – market

<https://market.benqmobile.com/SO/welcome.lookup.asp>

There you can find the document “ESD Guideline”.

### Step 1



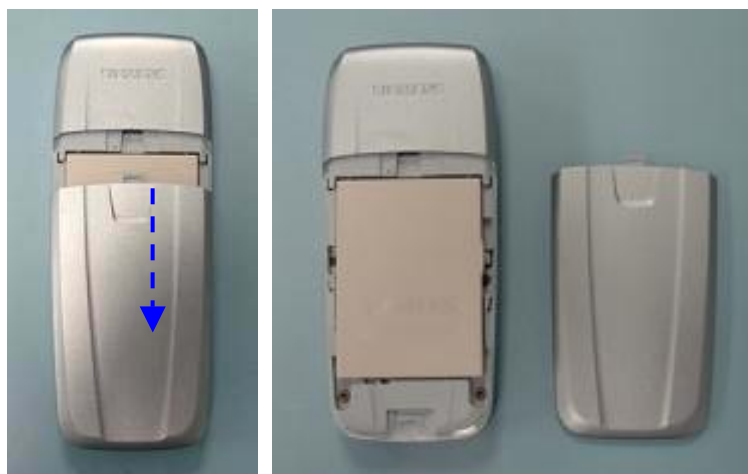
Front view of the AX72

### Step 2



Back View of the AX72

### Step 3



Remove Battery cover.

### Step 4



Remove Battery

**Step 5**

Remove SIM Card

**Step 6**

Remove the 4 screws (as indicated) with T5 Plus screw driver.



**Step 7**

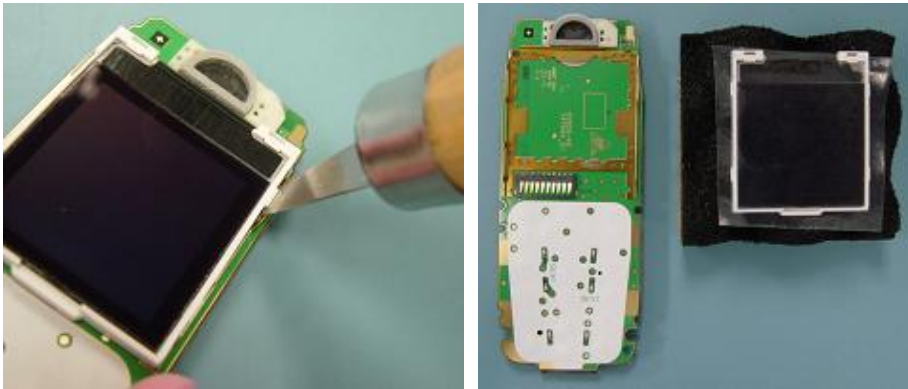
Remove Vibrator

**Step 8**

Remove Microphone

**Step 9**

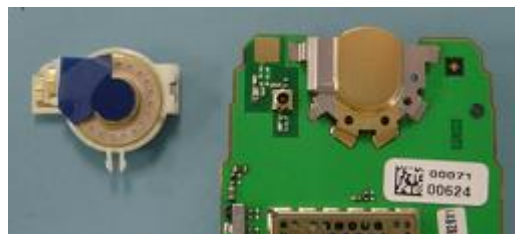
Remove Main board.

**Step 10**

Remove Display module. Place foil over Display module for protection

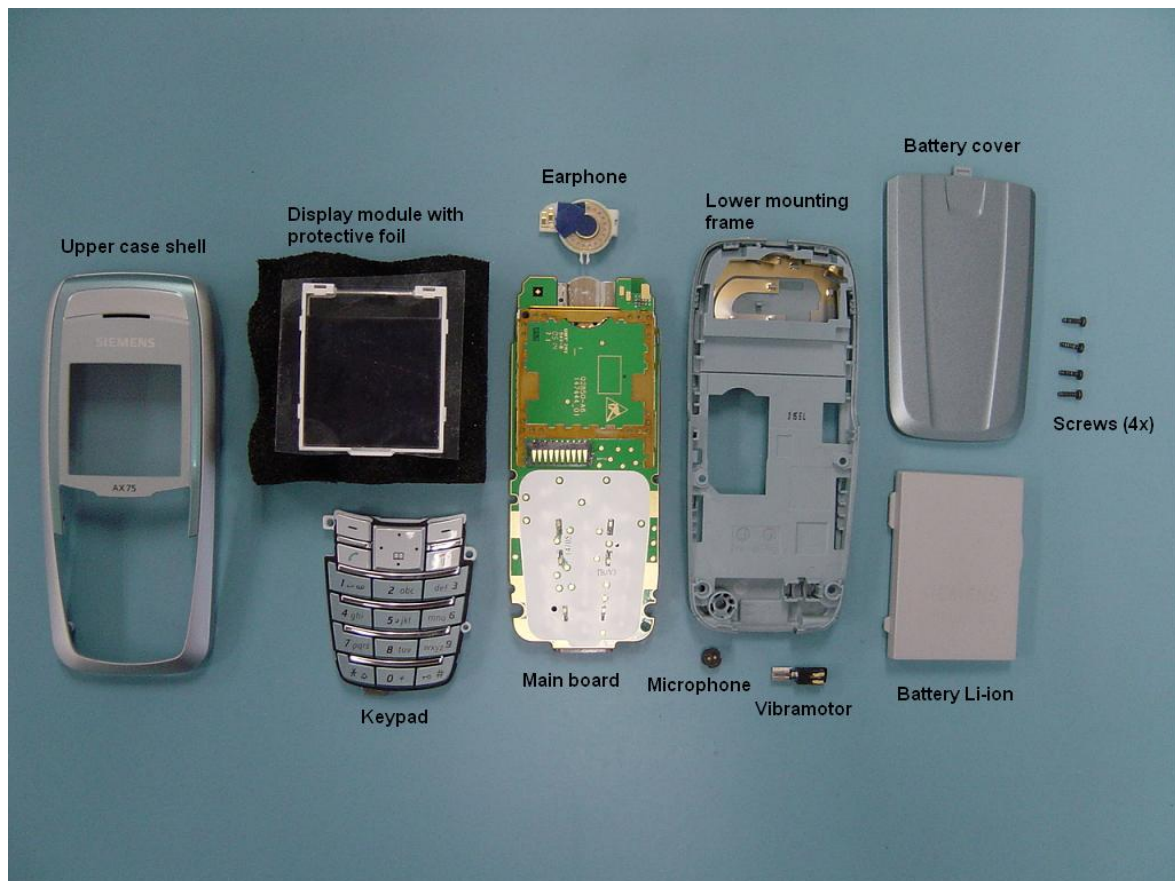
**Step 11**

Remove Earphone

**Step 12**

## Remove Keypad

## Step 13



Fully disassembled AX72

## 6 Assembly of AX72

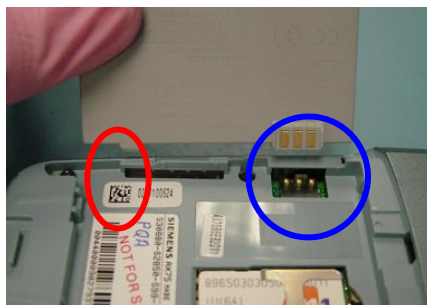
**For the reassembly of the AX72, reverse the disassembly procedures from Step 12 to Step1. However there are some areas to be taken note of during reassembling of the phone.**

During the installation of the SIM card, make sure that the SIM card is inserted properly and that the golden contact area is facing downwards. Insert the SIM card downwards to lock the SIM card into position.



Installation of the SIM card

During the installation of the battery, make sure that the hinges are properly in place (See picture below). Otherwise the battery will not be able to fit into the phone properly.



When placing the screws, set Torque to 17cNm.



## 7 BenQ Service Equipment User Manual

### Introduction

Every LSO repairing BenQ handset must ensure that the quality standards are observed. BenQ has developed an automatic testing system that will perform all necessary measurements. This testing system is known as:

### BenQ Mobile Service Equipment

- For disassembling / assembling

	<b>Torque – Screwdriver</b> <b>Part Number: F30032 – P 228 – A1</b>
	<b>Opening tool</b> <b>(Case opening without destroying)</b> <b>Part Number: F30032 – P 38 – A1</b>
	<b>Alternative Opening tool</b> <b>Part Number: F30032 – P583– A1</b>
	<b>Tweezers</b>

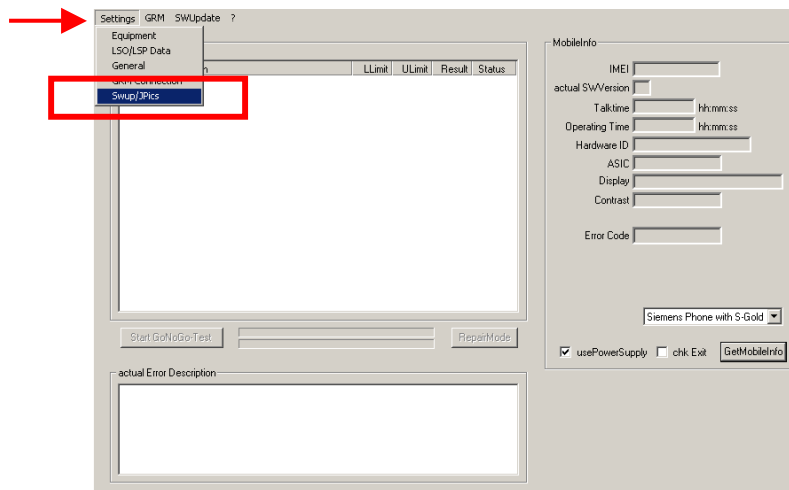
- For testing

All mobile phones have to be tested with the GRT – Software. The service partner is responsible to ensure that all required hardware is available.

For additional Software and Hardware options as well as the supported GRT equipment, please check the GRT User manual.

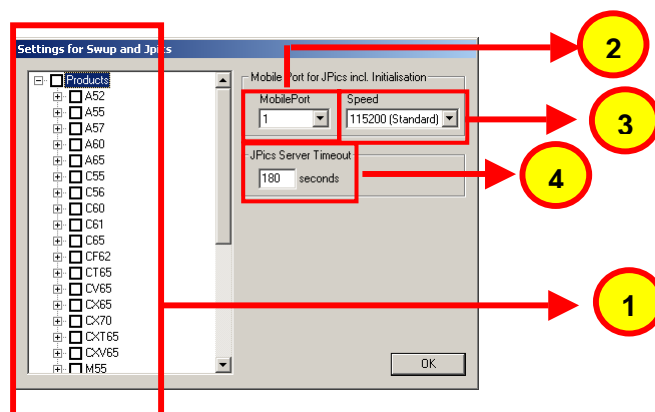
## 8 GRT Software: Functionality Configuration

**Step 1: Select „Settings >> SWUP / JPICS”**



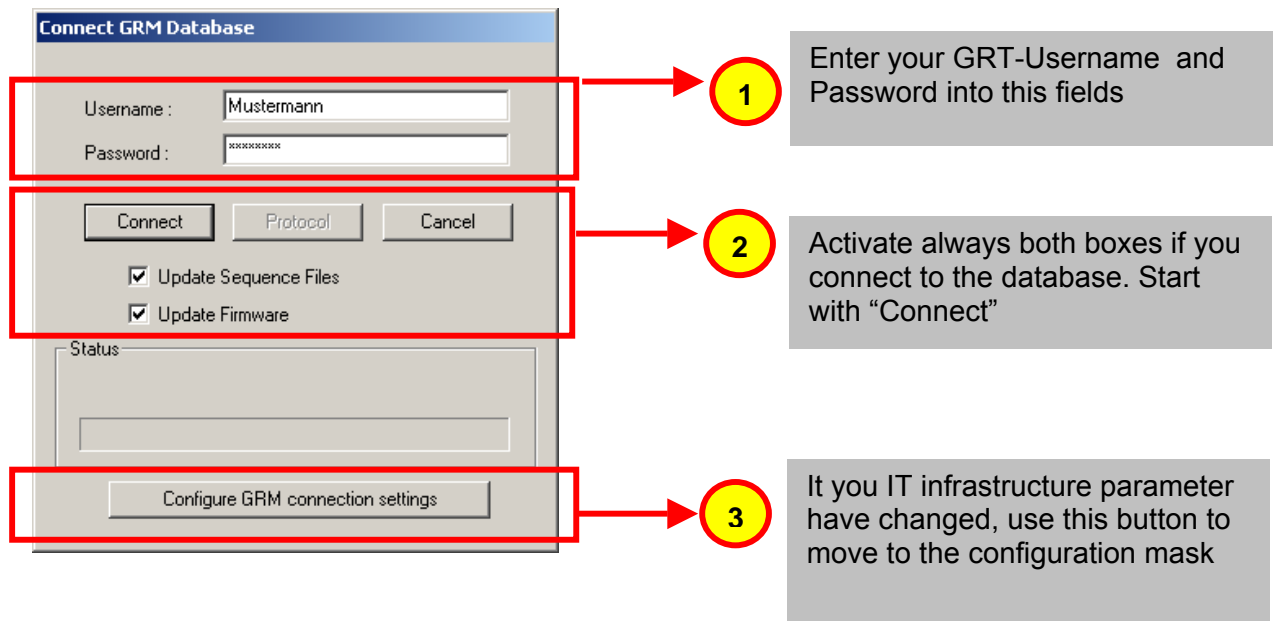
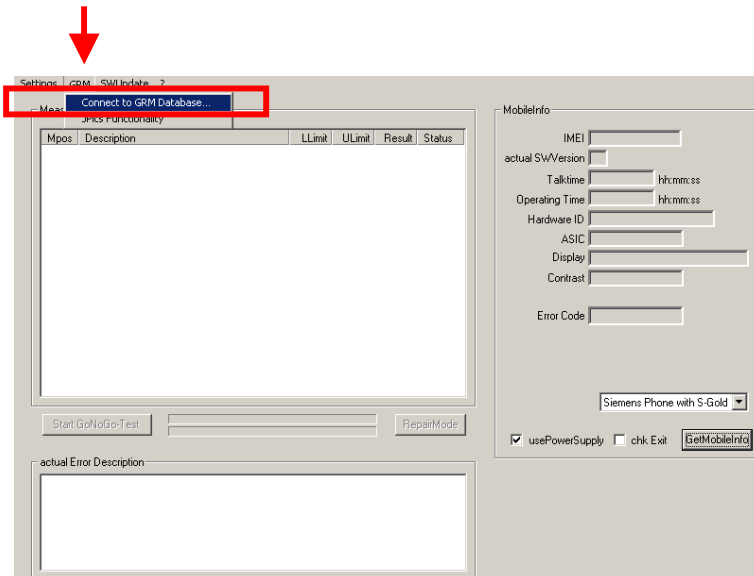
**Step 2: Proceed as follows:**

- Select all required Variants you need to repair (click onto the “+” in front of the product name.
- Check Com-Port setting. If necessary change it
- Check speed setting. Select always the lowest speed if your PC does not have a fast serial card
- Enter the value for “JPICS Server Timeout”. Be careful, this value defines how long GRT tries to reach the server until you get an error message. Do not select a very long time



**Step 3: Connect to GRM Server**

- Choose in the section „GRM“ the „Connect to GRM Database“ functionality



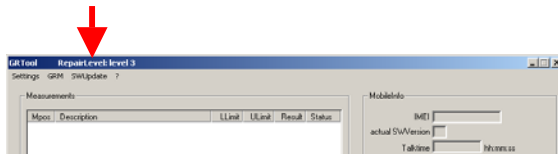
- End the connection with a click onto the „Exit button“ (appearing after successful data exchange)

**GRT Software has now finished all required settings and configuration tasks. All files have been down- and uploaded.**  
**In dependency of the selected number of mobile phones and variants the volume of transferred data could be (~100MB)**

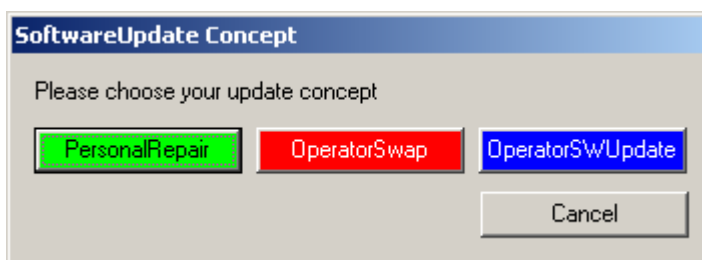


## 9 GRT Software: Regular Usage

Step 1: Select the section SWUpdate



Step 2: Choose the area you want to work with



- **Personal Repair**

Personal Repair is always accessible. Basis for the decision if a SW-Update is authorised by Siemens is the so called Service Release-Table.

**Example:**

Mobile Phone has already SW50. Service -Release-Table shows SW50. In this case SW-Update is not necessary and therefore not authorized

In any case customer data can be erased on request. (xfs and mapping have to be activated) Of course **JPICS** hardware and authorisation have to be available.

- **Operator SWAP**

This area is only accessible if you are released by the service management to perform SW-Updates for Net-Operators. Basis for the decision if a SW-Update is authorised by Siemens is the so called Master-Table.

Customer data will be erased without any exception and any chance to influence by the user. **JPICS** hardware and authorisation have to be available.

- **Operator SWUpdate**

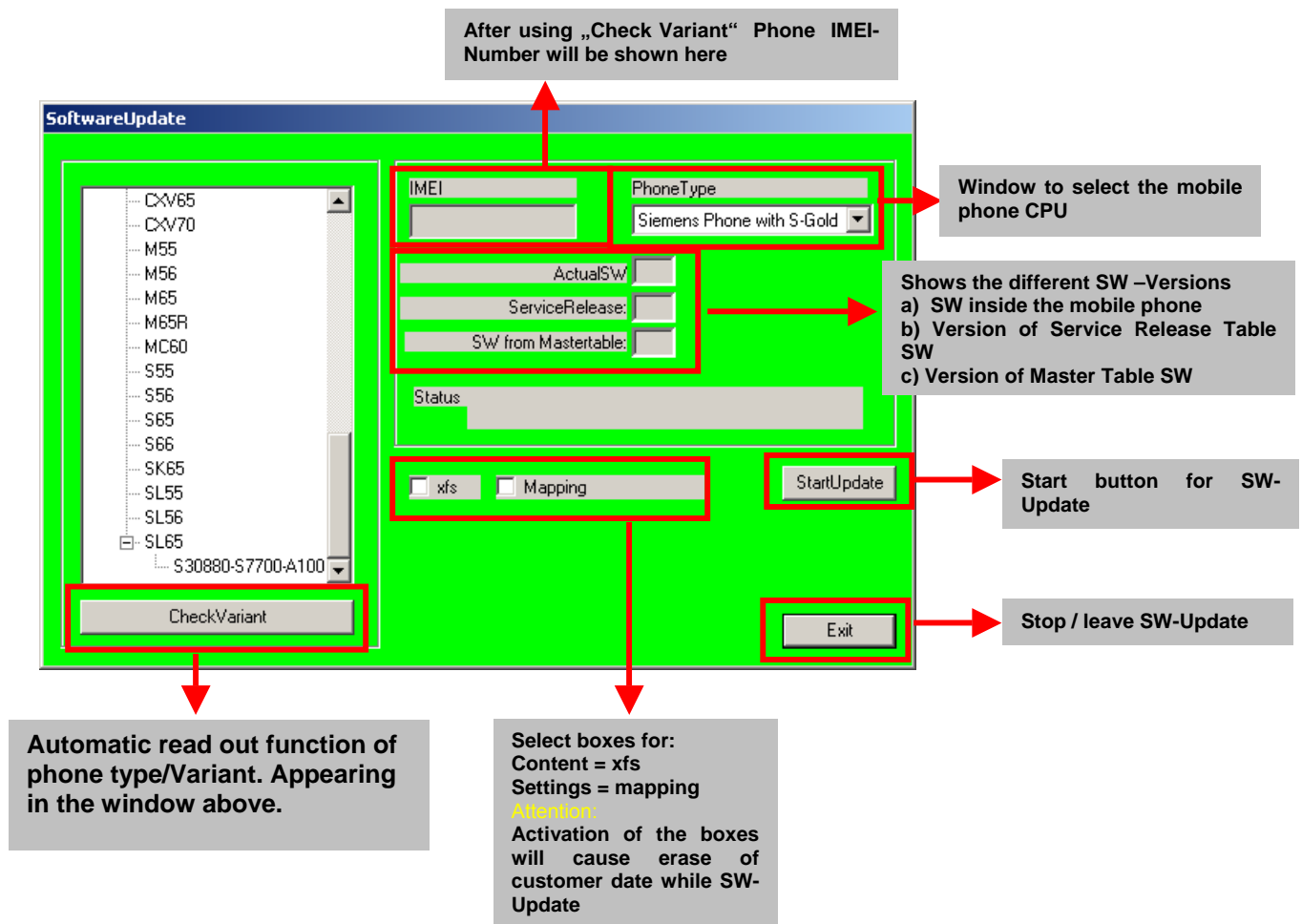
This area is only accessible if you are released by the service management to perform SW-Updates for Net-Operators. Basis for the decision if a SW-Update is authorised by Siemens is the so called Master-Table.

Like in "Personal Repair" customer data can be erased on request. (xfs and mapping have to be activated) Of course **JPICS** hardware and authorisation have to be available.



## 9.1 Window explanation

This general explanation is valid for all SW-Update channels  
(**Personal Repair**, **Operator SWAP**, **Operator SWUpdate**)



### Remarks:

In case of malfunction please check

- Is the correct phone type selected
- Is the correct COM-Port selected
- If a variant is missing, move back to Settings select the missing variant and connect the GRM Server. Then continue with SW-Update.

## 9.2 Case 1: Personal Repair (green)

**Step 1:** Carry out step 1 – 4 to start SW-Update.

The screenshot shows the 'SoftwareUpdate' window. On the left is a list of phone variants including CXV65, CXV70, M55, M56, M65, M65R, MC60, S55, S56, S65, S66, SK65, SL55, SL56, and SL65. Below this list is a 'CheckVariant' button. On the right, there are fields for IMEI, PhoneType (a dropdown menu currently showing 'Siemens Phone with S-Gold'), ActualSW, ServiceRelease, and SW from Mastertable. Below these is a 'Status' field. At the bottom, there are checkboxes for 'xfs' and 'Mapping', a 'StartUpdate' button, and an 'Exit' button. Four numbered callouts are present: 1 points to the PhoneType dropdown; 2 points to the 'CheckVariant' button; 3 points to the 'xfs' and 'Mapping' checkboxes; and 4 points to the 'StartUpdate' button.

**1** Select the mobile phone CPU type

**2** Read out phone type/Variant.  
>>Appears in the window above.

**3** Choose if customer data shall be erased.  
If "Yes" activate the boxes in front of xfs and mapping

**4** Start SW-Update

### Remarks:

- The decision about a Siemens authorised SW-Update depends only on the Service Release-Table.
- The SW which is booted by GRT can be below the SW mentioned in the Service Release Table, if this SW is not released for the Net-Operator
- If **xfs** and **mapping** are activated, GRT will erase in any case the customer data even if the action is cancelled.
- If the user wants to download another variant then the automatically identified one, he has simply to select another variant from the list. Afterwards he has to start the SW-Update

### 9.3 Case 2: Operator SWAP (red)

**Step 1:** Carry out step 1 – 4 to start SW-Update.

The screenshot shows the 'SoftwareUpdate' window. On the left is a list of phone variants including CXV65, CXV70, M55, M56, M65, M65R, MC60, S55, S56, S65, S66, SK65, SL55, SL56, and SL65. Below the list is a 'CheckVariant' button. On the right, there are fields for 'IMEI', 'PhoneType' (set to 'Siemens Phone with S-Gold'), 'ActualSW', 'SW from Mastertable', and 'Status'. There are also checkboxes for 'xfs' and 'Mapping', and a 'StartUpdate' button. An 'Exit' button is at the bottom right. Four numbered callouts point to specific elements: 1 points to the 'PhoneType' dropdown, 2 points to the 'CheckVariant' button, 3 points to the 'xfs' and 'Mapping' checkboxes, and 4 points to the 'StartUpdate' button.

1 Select the mobile phone CPU type

2 Read out phone type/Variant.  
>>Appears in the window above.

3 Choose if customer data shall be erased.  
If "Yes" activate the boxes in front of xfs and mapping

4 Start SW-Update

#### Remarks:

- The decision about a Siemens authorised SW-Update depends only on the Master-Table.
- The user has no chance to influence the decision
- **Xfs** and **mapping** are always activated there is no chance to deactivate them. GRT will erase in any case the customer data even if the action is cancelled. If the user wants to download another variant then the automatically identified one, he has simply to select another variant from the list. Afterwards he has to start the SW-Update

## 9.4 Case 3 Operator SWUpdate (blue)

**Step 1:** Carry out step 1 – 4 to start SW-Update.

The screenshot shows the 'SoftwareUpdate' dialog box. It has a list of phone models on the left, including CXV65, CXV70, M55, M56, M65, M65R, MC60, S55, S56, S65, S66, SK65, SL55, SL56, and SL65. Below the list is a dropdown menu showing 'S55550/S77009A100' and a 'Check variant' button. On the right, there are fields for 'IMEI', 'PhoneType' (set to 'Siemens Phone with S-Gold'), 'ActualSW', 'SW from Mastertable', and 'Status'. At the bottom, there are checkboxes for 'xfs' and 'Mapping', and a 'StartUpdate' button. Four numbered yellow circles with red arrows indicate the steps: 1 points to the 'PhoneType' dropdown, 2 points to the 'Check variant' button, 3 points to the 'xfs' and 'Mapping' checkboxes, and 4 points to the 'StartUpdate' button.

**1** Select the mobile phone CPU type

**2** Read out phone type/Variant.  
>>Appears in the window above.

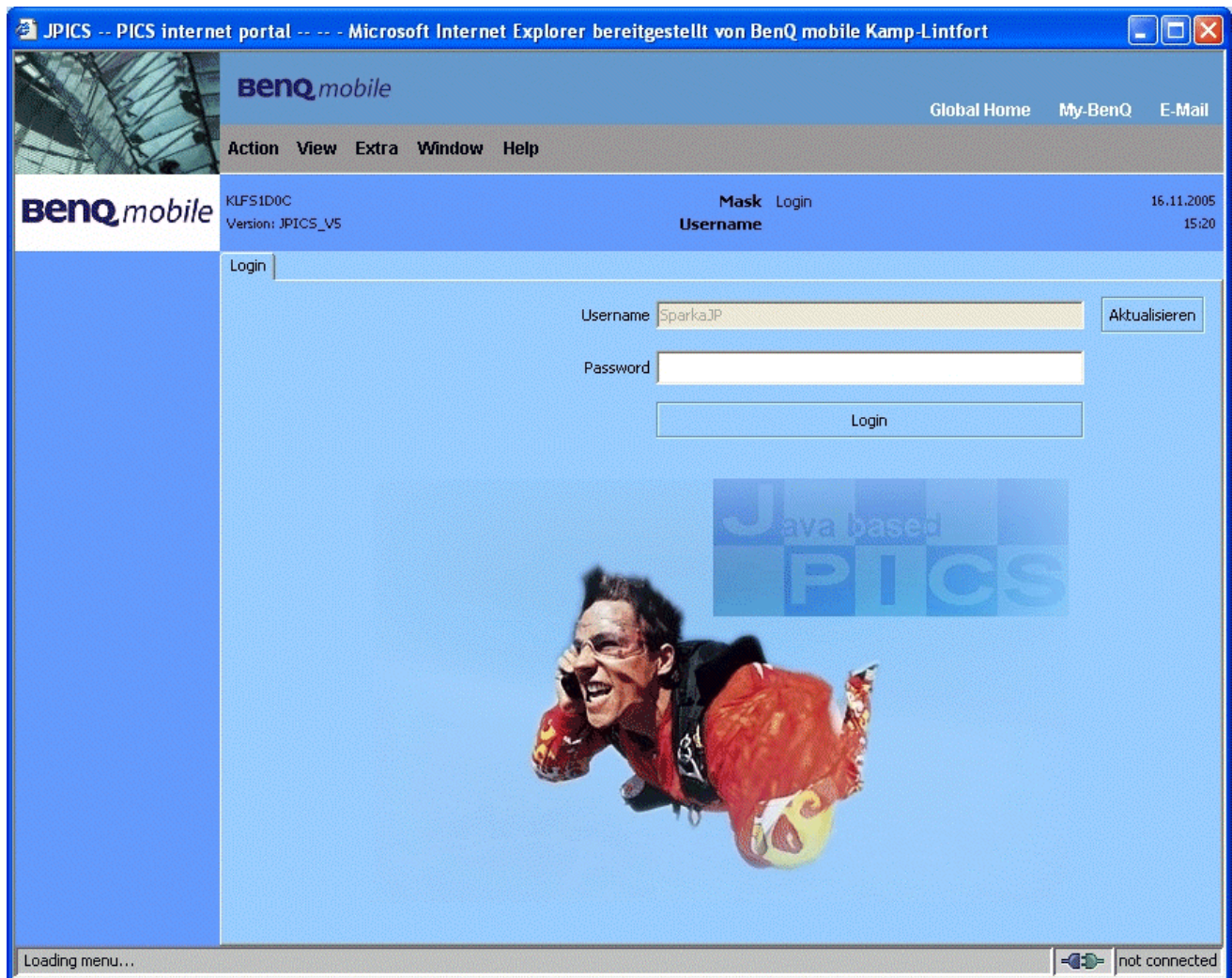
**3** Choose if customer data shall be erased.  
If "Yes" activate the boxes in front of xfs and mapping

**4** Start SW-Update

### Remarks:

- The decision about a Siemens authorised SW-Update depends only on the Master-Table.
- The user has no chance to influence the decision
- **Xfs** and **mapping** can be activated on demand. GRT will erase in any case the customer data even if the action is cancelled.
- If the user wants to download another variant then the automatically identified one, he has simply to select another variant from the list. Afterwards he has to start the SW-Update

## 9 JPICS (Java based Product Information Controlling System)



### Overview

The following functions are available for the LSO:

- General mobile information
- Generate PINCODE
- Generate SIMLOCK – UNLOCK – Code
- Print IMEI labels
- Lock, Unlock and Test the BF - Bus





The access to the JPICS server which is located in Kamp–Lintfort is protected by chip card and in addition using secure socket layer (SSL) connection.

The JPICS server is only available for authorized users with a specially coded smart card. These smart cards and the administration of the JPICS web server and the PICS database – server can only be provided by the JPICS – TRUST – Center of the responsible department in Kamp–Lintfort.

In case of any questions or requests concerning smart cards or administration of the databases please ask your responsible BenQ Customer Care Manager.

## Installation overview

The following installation description assumes that a web browser is already installed.

JPICS is tested with the following browsers:

1. Internet Explorer Version 5.5 and higher
2. Netscape Version 6 and higher

For further information regarding supported browsers, browser version and supported operating systems, see the Sun FAQ's.

Here is a step by step instruction to install all the required components:

### **It is necessary to follow this order!**

1. Smart Card Reader (Omnikey: Cardman 2020 USB or Cardman 3121 USB)
2. CardOS interface (Siemens Version 3.0 B)
3. Java Runtime Environment (Sun)
4. Java additional components

### **Every user is responsible for a proper installation matching the license agreements.**

For installation and further access you need the following:

1. The JPICS Installation – CD
2. The Smart Card JPICS. These cards can be ordered via your responsible Customer Care Manager within Siemens or on [http://jpics.siemens.com/jpics/admin/request-new\\_jpics.jsp](http://jpics.siemens.com/jpics/admin/request-new_jpics.jsp)
3. A supported Smart Card Reader (Omnikey Cardman) in order to access your Smart Card.

Remark: We recommend using Cardman 2020 USB or Cardman 3121 USB. Serial card readers are not supported!!!

## Generate Codes

In the JPICS application you can choose to generate:

- **Masterphone codes**
- **Simlock – Unlock – Codes**

## Masterphone codes

The **Masterphone code** is used to unlock blocked mobiles.

**Masterphone codes** can only be supplied for mobiles which have been delivered in a regular manner.

JPICS -- PICS internet portal -- - Microsoft Internet Explorer bereitgestellt von BenQ mobile Kamp-Lintfort

BenQmobile

Global Home My-BenQ E-Mail

Action JPICS user menu View Extra Window Help

BenQmobile KLF51D0C Version: 1.0 Mask Masterphone-Code\* Username SparkaJP 16.11.2005 15:22

Troubleshooting Masterphone-Code

Input

IMEI 351630000011691 Execute DB-Location Kamp-Lintfort

Mobile data

Producttype SL55 Deliverypartnumber L36880-N4910-A150-31

SW version 000 Partnumber 530880-54910-A100-53

Warranty Status Normal

Delivery information

Deliverynote LC00001579 Deliverydate 15.09.05

Mobile codes

Mobile unlock code \*#0003\*40158737#

SL55

connected



## Simlock – Unlock – Code

The **Simlock – Unlock – Codes** can only be generated if the following conditions are given:

- Mobile must have an active **Simlock** inside.
- The user must be given the authorization to obtain **Simlock – Unlock – Codes** for the variant of the operator to which the mobile was delivered last time.

JPICS -- PICS internet portal -- -- - Microsoft Internet Explorer bereitgestellt von BenQ mobile Kamp-Lintfort

BenQmobile

Global Home My-BenQ E-Mail

Action JPICS user menu View Extra Window Help

BenQmobile

KLFS1D0C  
Version: 1.0

Mask Simlock-Unlock-Code  
Username SparkaJP

16.11.2005  
15:23

Simlock-Unlock-Code

Get information for given IMEI

IMEI 350673547180612 Execute DB-Location Kamp-Lintfort

Mobile data

Producttype C45 Deliverypartnumber L36880-S5100-X139-15

SW version 049 Partnumber S30880-S5100-A139-14

Warranty 21.08.05 Status Normal

Delivery information

Deliverynote 0066015319 Deliverydate 22.08.03

Mobile codes

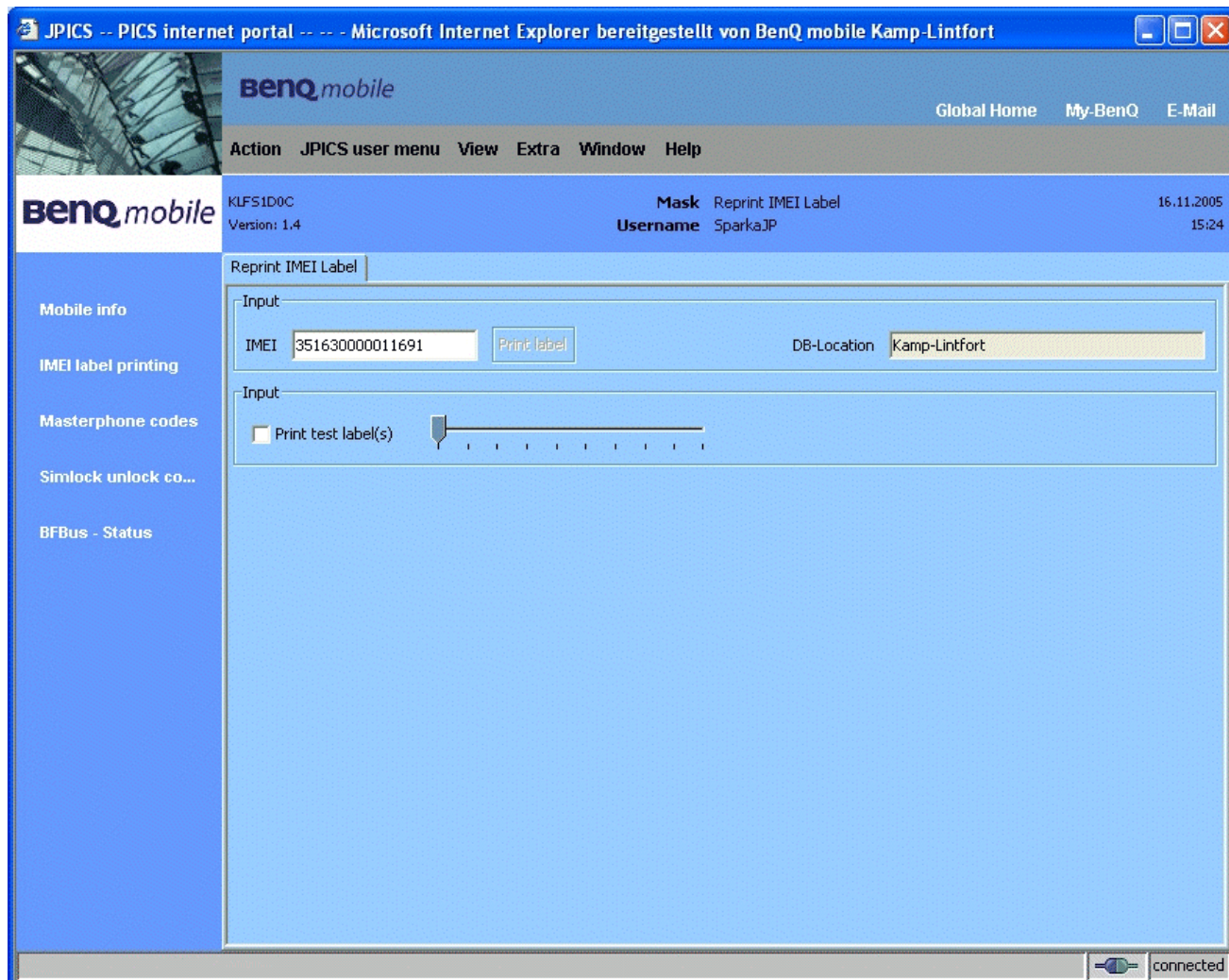
Networkcode		Network Mastercode	
S. Providercode		S. Provider Mastercode	
SIM-Mastercode		SIM-Reeanablecode	
Corporatecode		Corporate Mastercode	
Network Subnet Code		Network Subnet Mastercode	*#0004*28101158#

C45

connected

## Printing IMEI label

The module “**printing IMEI label**” offers the possibility to re-print IMEI labels for mobiles again.



You are able to print 1 label in just one step.

To prevent that misaligned labels are being printed, the setting “Print test labels = ✓” is activated by default. After having printed a well aligned test label you can uncheck the setting and print the correct label.

### Hint:

For correct printing of IMEI labels you must have a **Zebra – label printer** with special material that fits for label printing. This printer has to be connected to local LPT1 printer port (also see Installation of IMPRINT) and MUST feature a printing resolution of 300dpi.

## 9 International Mobile Equipment Identity, IMEI

The mobile equipment is uniquely identified by the International Mobile Equipment Identity, IMEI, which consists of 15 digits. Type approval granted to a type of mobile is allocated 6 digits. The final assembly code is used to identify the final assembly plant and is assigned with 2 digits. 6 digits have been allocated for the equipment serial number for manufacturer and the last digit is spare.

The part number for the AX72 is S30880-S2860-#xxx where the last four letters specify the housing and software variant.

AX72 series IMEI label is accessible by removing the battery.

Re – use of IMEI label is possible by using a hair – dryer to remove the IMEI label.

On this IMEI label, BenQ has also included the data code for production or service, which conforms to the industrial standard DIN EN 60062. The data code comprises of 2 characters: first character denotes the **year** and the second character denotes the **month**.

For example: **S5**

CODE	Year	Month	CODE
P	2002	MARCH	3
R	2003	APRIL	4
S	2004	MAY	5
T	2005	JUNE	6
U	2006	JULY	7

To display the IMEI number, exit code and SW/HW version, key: \* # 0 6 #

## 10 General Testing Information

### General Information

The technical instruction for testing GSM mobile phones is to ensure the best repair quality.

### Validity

This procedure is to apply for all from BenQ Mobile authorized up to level 3 workshops.

### Procedure

All following checks and measurements have to be carried out in an ESD protected environment and with ESD protected equipment/tools. For all activities the international ESD regulations have to be considered.

Get delivery:

- Ensure that every required information like fault description, customer data a.s.o. is available.
- Ensure that the packing of the defective items is according to packing requirements.
- Ensure that there is a description available, how to unpack the defective items and what to do with them.

Enter data into your database:

(Depends on your application system)

- Ensure that every data, which is required for the IRIS-Reporting is available in your database.
- Ensure that there is a description available for the employees how to enter the data.



Incoming check and check after assembling:

**!! Verify the customers fault description!!**

- After a successful verification pass the defective item to the responsible troubleshooting group.
- If the fault description can not be verified, perform additional tests to save time and to improve repair quality.
  - Switch on the device and enter PIN code if necessary unblock phone.
  - Check the function of all **keys** including **side keys**.
  - Check the **display** for error in line and row, and for illumination.
  - Check the **ringer/loudspeaker** acoustics by individual validation.
  - Perform a **GSM Test** as described on page 36.

Check the storage capability:

- Check internal resistance and capacity of the battery.
- Check battery charging capability of the mobile phone.
- Check charging capability of the power supply.
- Check current consumption of the mobile phone in different mode.

Visual inspection:

- Check the entire board for liquid damages.
- Check the entire board for electrical damages.
- Check the housing of the mobile phone for damages.

SW update:

- Carry out a software update and data reset according to the master tables and operator/customer requirements.

**Repairs:**

**The disassembling as well as the assembling of a mobile phone has to be carried out by considering the rules mentioned in the dedicated manuals. If special equipment is required the service partner has to use it and to ensure the correct function of the tools.**

**If components and especially soldered components have to be replaced all rules mentioned in dedicated manuals or additional information e.g. service information have to be considered**

**GSM Test:**

**With the availability of the GRT Test /Alignment software, this tool has to be used to perform the outgoing test!**

- >Connect the mobile/board via internal antenna (antenna coupler) and external antenna (car cradle/universal antenna clip) to a GSM tester
- >Use a Test SIM

For Triple Band phones use a separate test case, if the test software allows only one handover. Skip the GSM Band test cases if not performed by the mobile phone

example:                    1. Test file                    Band 1 = GSM900 / Band 2 = GSM1800  
                                  2. Test file                    Band 1 = GSM1900

Internal Antenna				
Test case		Parameter	Measurements	Limits
1	Location Update	<ul style="list-style-type: none"> <li>• GSM Band 1</li> <li>• BS Power = -55 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Display check</li> </ul>	<ul style="list-style-type: none"> <li>• individual check</li> </ul>
2	Call from BS	<ul style="list-style-type: none"> <li>• low TCH</li> <li>• highest PCL</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Ringer/Loudspeaker check</li> </ul>	<ul style="list-style-type: none"> <li>• individual check</li> </ul>
3	TX GSM Band 1	<ul style="list-style-type: none"> <li>• low TCH</li> <li>• highest PCL</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency Error</li> <li>• Phase Error RMS</li> <li>• Phase Error Peak</li> <li>• Average Power</li> <li>• Power Time Template</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
4	Handover to GSM Band 2 Including Handover Check			
5	TX GSM Band 2	<ul style="list-style-type: none"> <li>• low TCH</li> <li>• highest PCL0</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency Error</li> <li>• Phase Error RMS</li> <li>• Phase Error Peak</li> <li>• Average Power</li> <li>• Power Time Template</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
6	Call release from BS			

External Antenna				
7	Call from MS	<ul style="list-style-type: none"> <li>• GSM900</li> <li>• high TCH</li> <li>• second highest PCL</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Keyboard check</li> </ul>	<ul style="list-style-type: none"> <li>• individual check</li> </ul>
8	TX GSM Band 1	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• second highest PCL</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency Error</li> <li>• Phase Error RMS</li> <li>• Phase Error Peak</li> <li>• Average Power</li> <li>• Power Time Template</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
9	RX GSM Band 1	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• BS Power = -102 dBm</li> <li>• 50 Frames</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• RX Level</li> <li>• RX Qual</li> <li>• BER Class Ib</li> <li>• BER Class II</li> <li>• BER Erased Frames</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
10	Handover to GSM Band 2 Including Handover Check			
11	TX GSM Band 2	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• second highest PCL</li> <li>• BS Power = -75 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency Error</li> <li>• Phase Error RMS</li> <li>• Phase Error Peak</li> <li>• Average Power</li> <li>• Power Time Template</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
12	RX GSM Band2	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• BS Power = -102 dBm</li> <li>• 50 Frames</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• RX Level</li> <li>• RX Qual</li> <li>• BER Class Ib</li> <li>• BER Class II</li> <li>• BER Erased Frames</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
13	Call release from MS			

### Final Inspection:

The final inspection contains:

- 1) A 100% network test (location update, and set up call).
- 2) Refer to point 3.3.
- 3) A random sample checks of:
  - Data reset (if required)
  - Optical appearance
  - complete function
- 4) Check if PIN-Code is activated (delete the PIN-Code if necessary).

Basis is the international standard of **DIN ISO 2859**.

Use Normal Sample Plan Level II and the Quality Border 0,4 for LSO.

**Remark:** All sample checks must be documented.

## Annex 1

### Test SIM Card

There are two different “Test SIM Cards” in use:

1) Test SIM Card from the company “**ORGA**”

Pin 1 number: 0000  
PUK 1 : 12345678

Pin 2 number: 0000  
PUK 2 : 23456789

2) Test SIM Card from the company “**T-D1**”

Pin 1 number: 1234  
PUK : 76543210

Pin 2 number: 5678  
PUK 2 : 98765432



## Annex 2

### Battery Date Code overview

#### Varta

Date code example → N 9 A VA

Year (N:2001, O:2002...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Hitachi / Maxwell

Date code example → N 9 A MX

Year (N:2001, O:2002...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Sanyo

Date code example → N 9 A SY

Year (N:2001, O:2002...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### NEC

Date code example → N 8 A NT

Year (N:2001, O:2002...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Panasonic

Date code example → O N A PAN

Year (N:2001, O:2002...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Sony

Date code example → P N A SO

Year (O:2002, P:2003...) →  
 Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
 Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

## 11 Introduction of Service Repair Documentation Level 3 – AX72

### 11.1 Purpose

This Service Repair Documentation is intended to support Service partners to carry out repairs on BenQ repair level 3. The described failures shall only be repaired in BenQ authorized local workshops.

The level 3 (former Level 2.5light) partners are obliged to repair level 3 classified boards, up to their repair level, under consideration of this repair instruction.

All repairs have to be carried out in an ESD protected environment and with ESD protected equipment/tools. For all activities the international ESD regulations have to be considered.

Check at least weekly C-market for updates and consider all AX72 related Customer Care Information

**Scrap Handling: All Scrap information given in this manual are related to the SCRAP-Rules and instructions.**

**Attention: Consider the new "LEAD-FREE" soldering rules (available in the communication market), avoid excessive heat.**

### 11.2 Scope

This document is the reference document for all BenQ mobile authorised Service Partners which are released to repair BenQ mobile phones up to level 2.5 light.

### 11.3 Terms and Abbreviations

## 12 List of available level 3 (basic) spare parts

(according to Component Matrix V1.09 - check C-market for updates)

Product	ID	Order Number	Description CM
AX72	C1605	L36853-C6224-M6	CAPACITOR 2220N (Cap-Type3)
AX72	R1614	L50652-C472-J2	RESISTOR 4K7 (Res-Type11)
AX72	V286	L36840-L2056-D670	LED AMBER
AX72	V287	L36840-L2056-D670	LED AMBER
AX72	V288	L36840-L2056-D670	LED AMBER
AX72	V289	L36840-L2056-D670	LED AMBER
AX72	V290	L36840-L2056-D670	LED AMBER
AX72	V291	L36840-L2056-D670	LED AMBER
AX72	X1400	L36334-Z97-C213	CONNECTOR BATTERY 3-POL
AX72	X1603	L36334-Z97-C337	CONNECTOR SIM CARD READER K1
AX72	X211	L36334-Z93-C303	IO-JACK SLIM 12-POL
AX72	X2202	L36334-Z97-C205	CONNECTOR DISPLAY 10POL

## 13 Hardware requirements

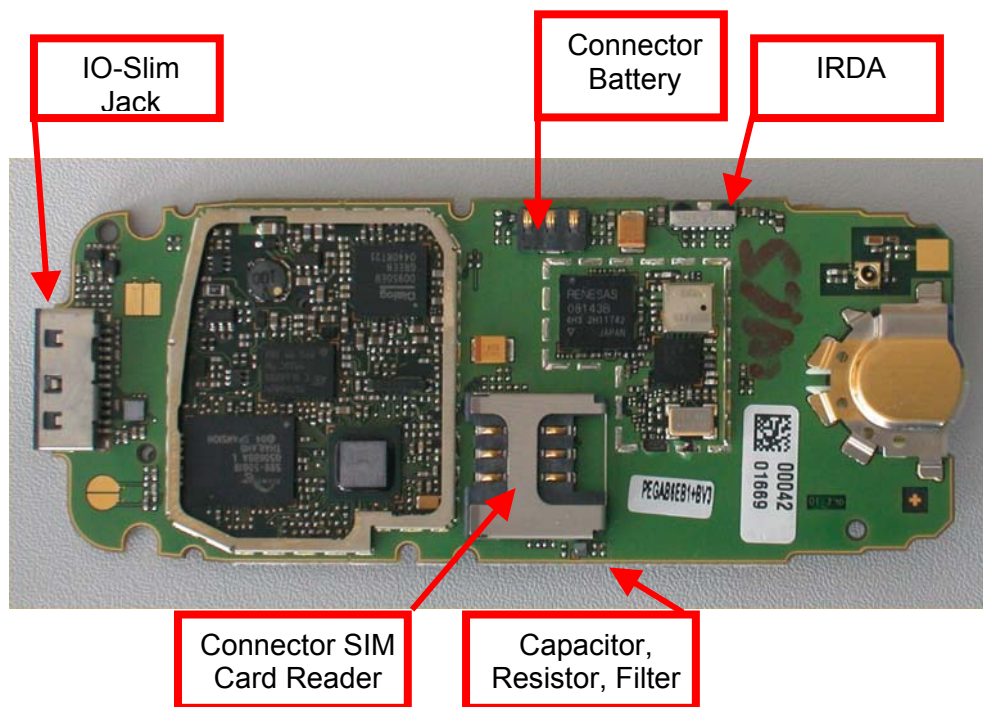
(according to General soldering information V1.3 - check C-market for updates)

Jigs, Tools and working materials for all described repairs:

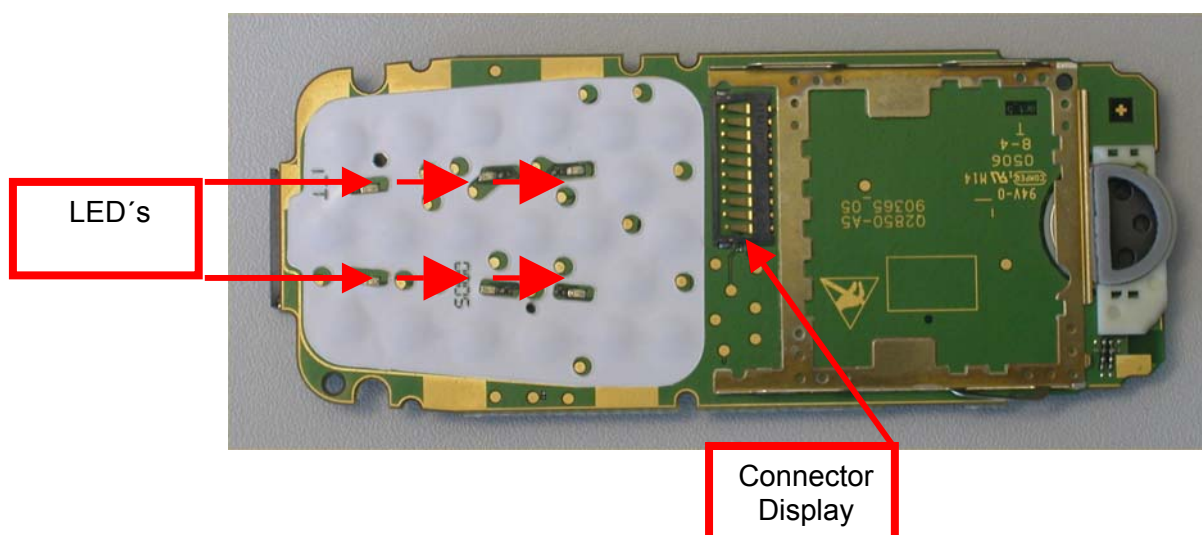
- hot air blower
- soldering gun
- tweezers
- flux
- solder

## 14 AX72 Board layout

### Upper board side

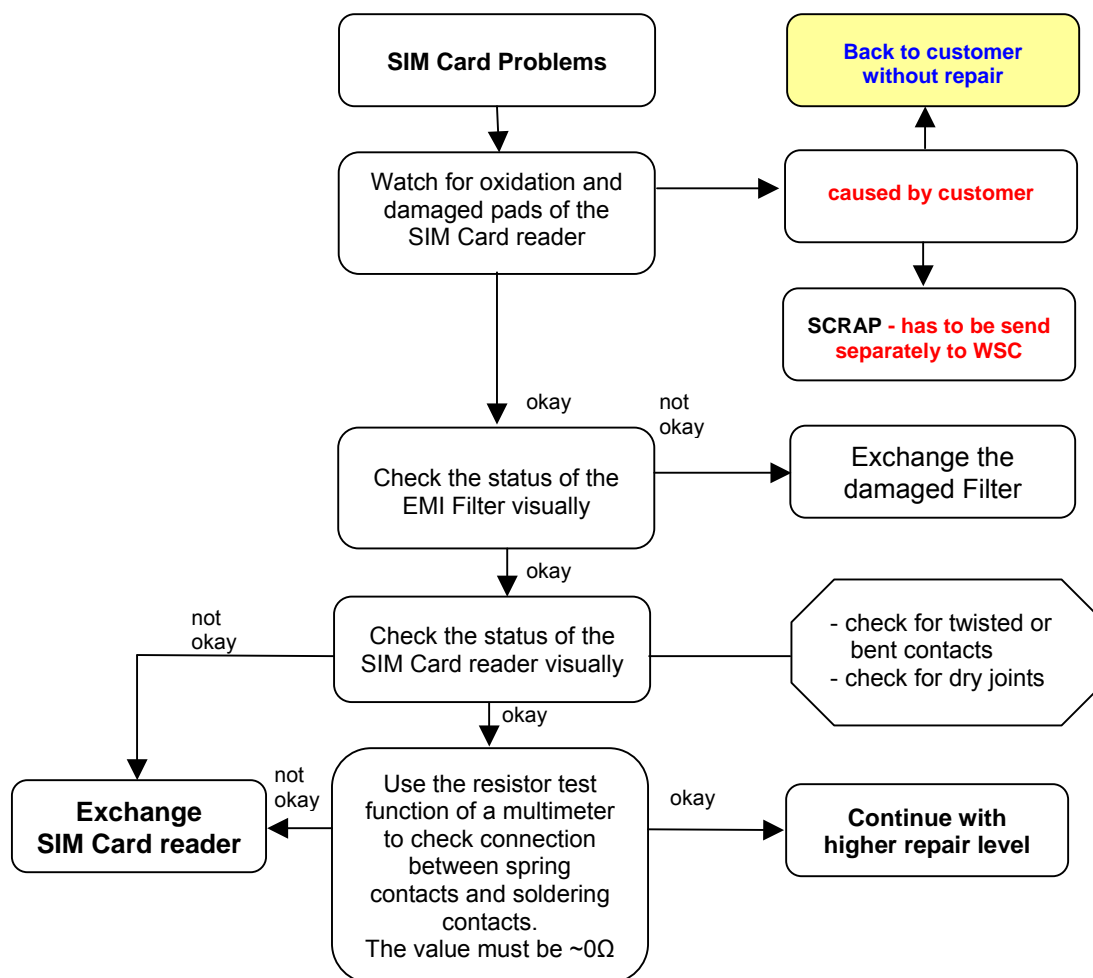


### Lower board side



## 15 SIM Card Problems

Fault Symptoms	
Customer: Handset does not accept SIM card	GRT: SIM Card Problems



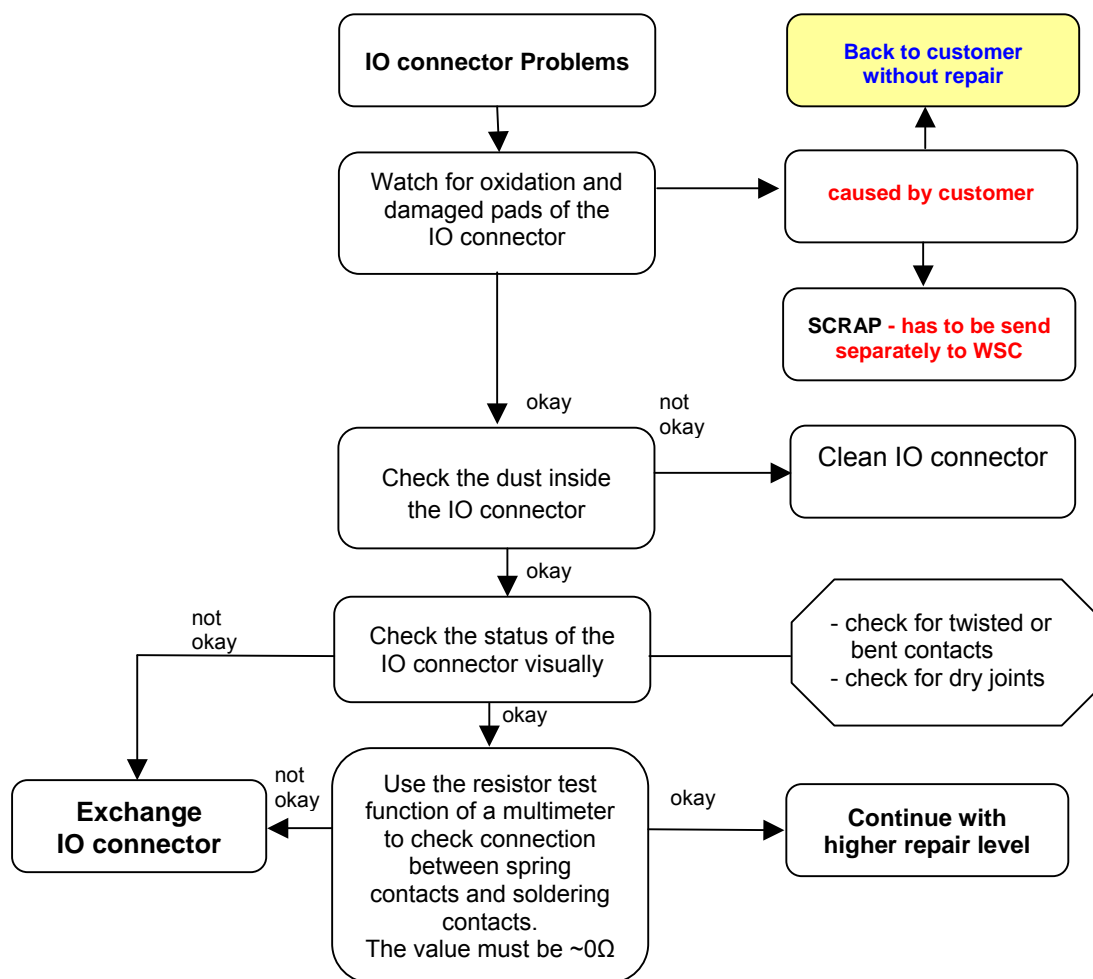
### Connector SIM Card Reader

Use soldering iron to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards.

E-commerce order number: L36334-Z97-C337  
 E-commerce order name: CONNECTOR SIM CARD READER K1  
 Soldering temperature: ~ 360°C Tip Temp.  
 IRIS Diagnose Code: 43300 Interface/SIM Cardreader/Mechanical Damage

## 16 IO Connector Problems

Fault Symptoms	
Customer: Charging Problems Problems with external loudspeaker or microphone when using a car kit Problems with accessories connected at the IO connector	GRT: No connection to GRT



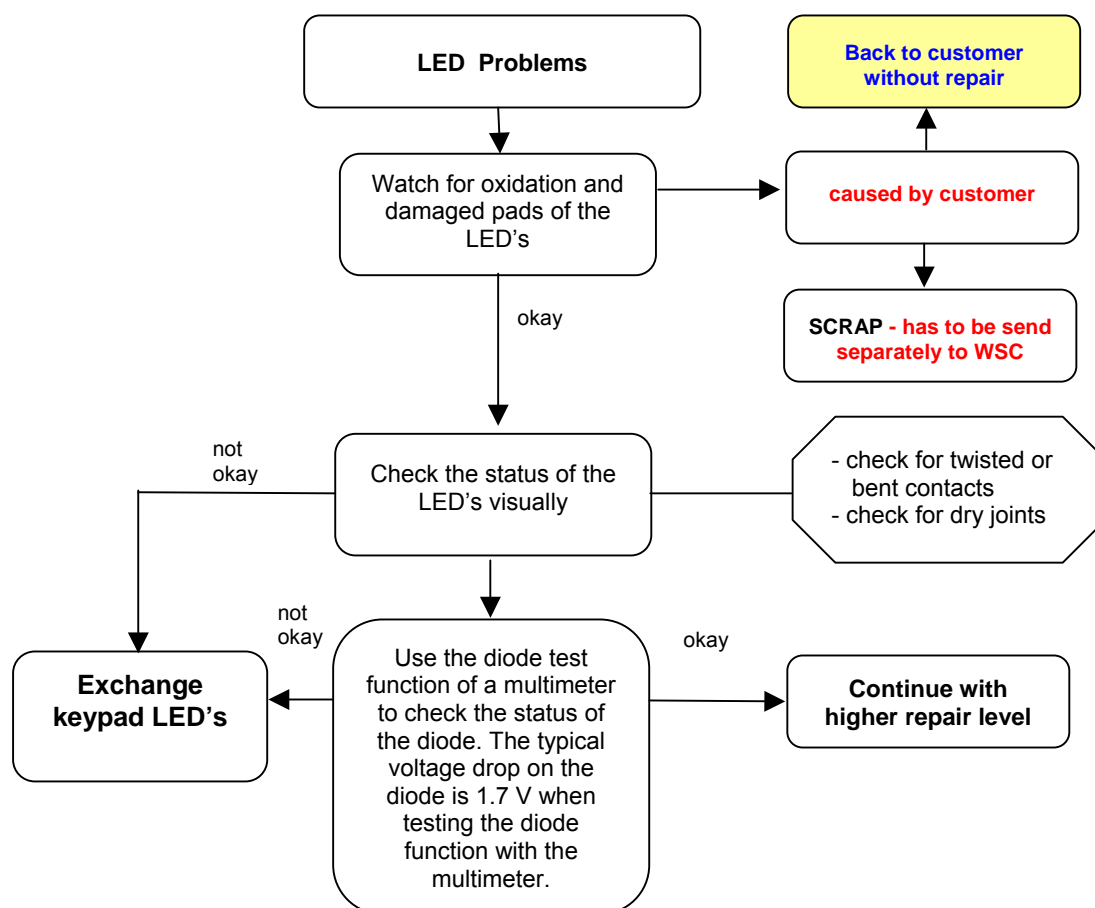
### Connector IO Jack

Use soldering iron to remove defective component. Avoid excessive heat! Watch surrounding components!  
Resolder new component afterwards.

E-commerce order number: L36334-Z93-C303  
 E-commerce order name: IO-JACK SLIM 12-POL  
 Soldering temperature: ~ 360°C Tip Temp.  
 IRIS Diagnose Code: 46100 Interface/Charging Connector/Mechanical Damage  
 47300 Interface/Data Interface/Mechanical Damage  
 4B100 Interface/Headset Connector/Mechanical Damage

## 17 LED\_Keypad illumination Problems

Fault Symptoms	
Customer: Main keypad illumination does not work	GRT: Current measured failed



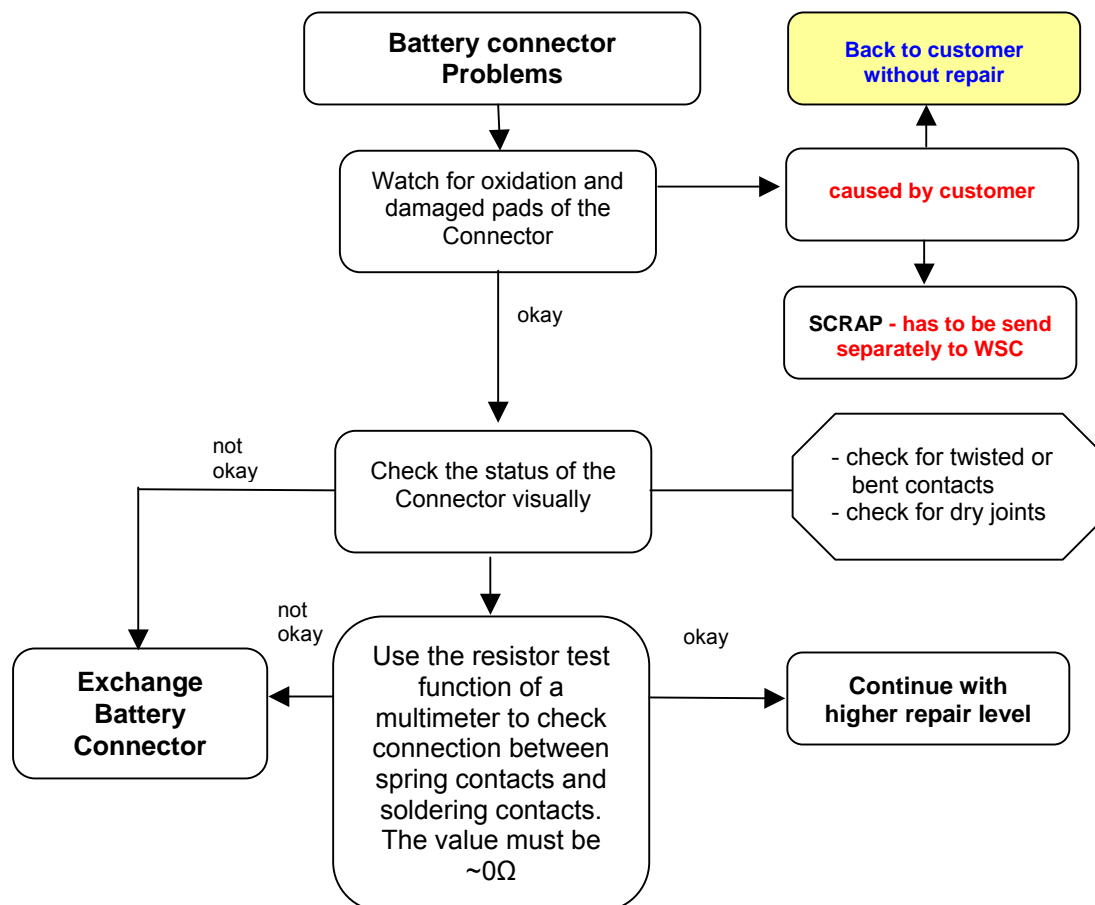
### LED\_ KEYPAD

Remove metal dome sheet before replace LED's Use soldering iron to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards. The metal dome jip must be used to place the metal dome sheet.

E-commerce order number: L36840-L2056-D670  
 E-commerce order name: LED AMBER  
 Soldering temperature: ~ 360°C Tip Temp.  
 IRIS Diagnose Code: 22000 Display / Background Illumination

## 18 Battery Connector Problems

Fault Symptoms	
Customer: Mobile does not switch on	GRT: Current measured failed



### Connector BATTERY

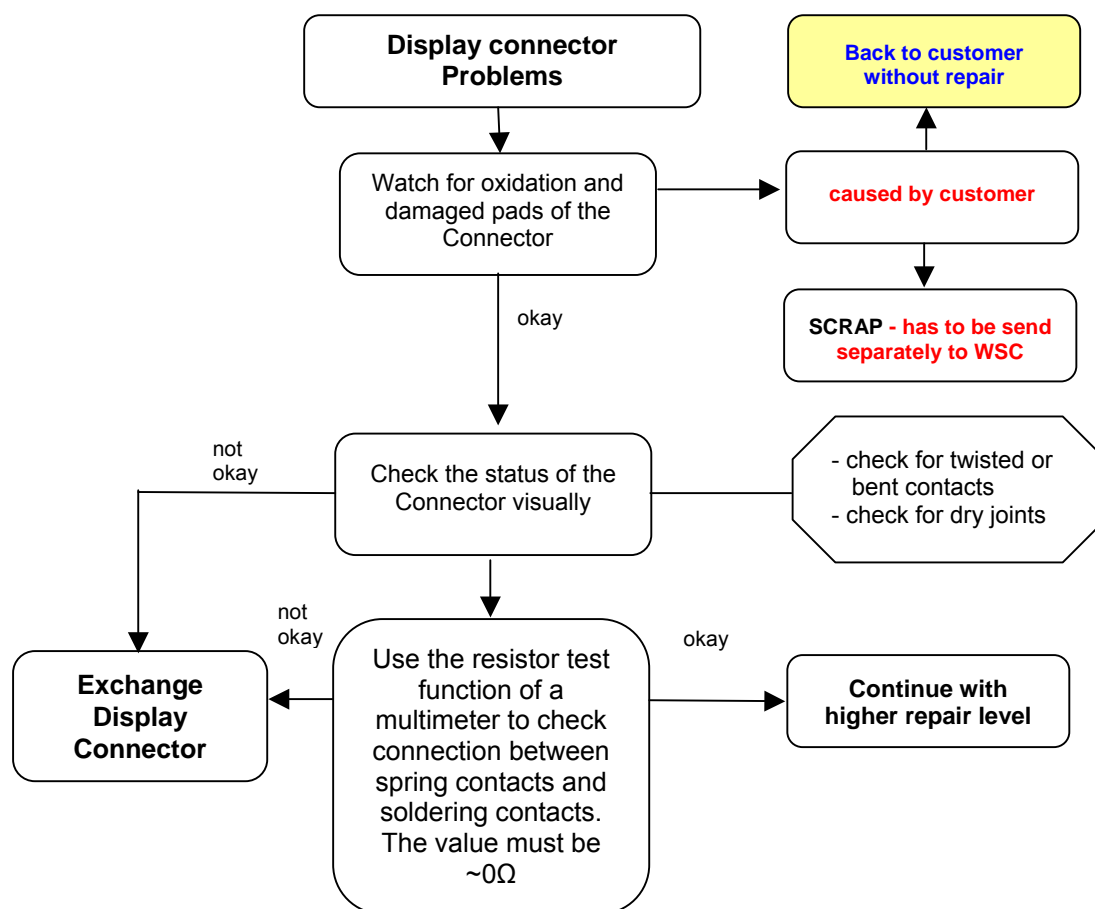
Use hot air blower to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards.

E-commerce order number: L36334-Z97-C213  
E-commerce order name: CONNECTOR BATTERY 3-POL  
Soldering temperature: ~ 360°C Tip Temp.  
IRIS Diagnose Code: 13000 Battery/Mechanical Damage



## 19 Display Problems

Fault Symptoms	
Customer: Display problems, like missing lines or columns on the LCD or display contrast problems or illumination problems	GRT: Display problems



### Connector DISPLAY

Use hot air blower to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards.

E-commerce order number: L36334-Z97-C205  
 E-commerce order name: CONNECTOR DISPLAY 10POL  
 Soldering temperature: ~ 360°C Tip Temp.  
 IRIS Diagnose Code: 21000 Display / Performance  
 22000 Display / Background Illumination