

# Service Manual CF110 Level 1-3



Release	Date	Department	Notes to change
R 1.0	29.11.2005	BenQMobile S CC CES	New document

Technical Documentation	11/2005
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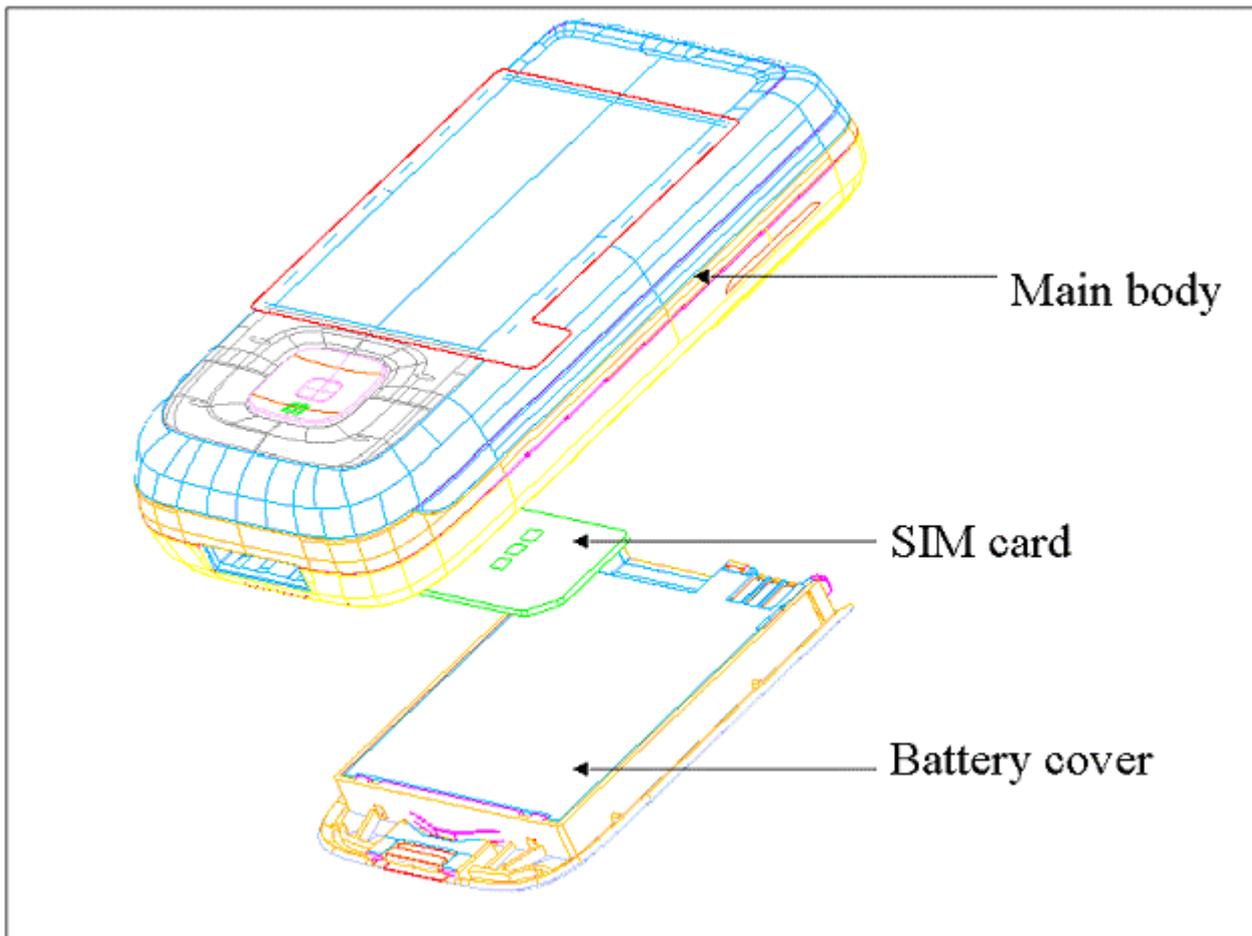
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## 1 Key Feature

<b>Battery</b>	<ul style="list-style-type: none"> <li>• Li – Ion Battery Pack</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>
<b>Stand – by Time</b>	<ul style="list-style-type: none"> <li>• Up to 220h</li> </ul>
<b>Talk Time</b>	<ul style="list-style-type: none"> <li>• Up to 5h</li> </ul>
<b>SIM Card</b>	<ul style="list-style-type: none"> <li>• Small (“Plug In”) 3 V-SIM card (Phase II)</li> </ul>
<b>Speech Coder</b>	<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>
<b>Temperature Range</b>	<ul style="list-style-type: none"> <li>• -10°C to + 55°C (Normal operation)</li> <li>• -30°C to + 85°C (Storage capability)</li> </ul>
<b>Display</b>	<ul style="list-style-type: none"> <li>• Type: Full graphic</li> <li>• Resolution: 130 x 130 Pixel</li> <li>• Technology: TFT</li> <li>• No of colours: 65536</li> <li>• Frame Rate: 15 frames/sec</li> <li>• Pixel size / mm: 0.231 mm x 0.231 mm</li> <li>• Active area / mm: 30.03 mm x 30.03 mm</li> <li>• Illumination: <math>\approx 300 \text{ cd/m}^3</math></li> </ul>
<b>Keypad</b>	<ul style="list-style-type: none"> <li>• IMF technology</li> <li>• 4 – way Navi – Key</li> <li>• 5 – keys function keys block</li> <li>• 12 – keys number keys block 12 – key – block (0 – 9, #, *)</li> <li>• ON/OFF key combined with the END key; the symbol <math>\text{Ⓞ}</math> ( I inside O) is used as a symbol for ON/OFF</li> <li>• Tactile finder on key “5”</li> <li>• 3 LEDs for functional keypad</li> <li>• 4 LEDs for number keypad</li> </ul>
<b>Acoustics</b>	<ul style="list-style-type: none"> <li>• Two speaker system with receiver and speaker</li> <li>• 4mm omni directional microphone</li> <li>• Loud signal emitter (sound ringer) (&gt;100dB(A) SPL @5cm, ‘Hongkong – Spec.’) only for rectangular sound signals (NOT POSSIBLE for Sound ringer melodies)</li> <li>• Polyphonic ringer tones 16 voices</li> <li>• Different selectable volume levels for hands free, handset and ringer mode (for te amount see SW product description)</li> </ul>

## 2 CF110 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.

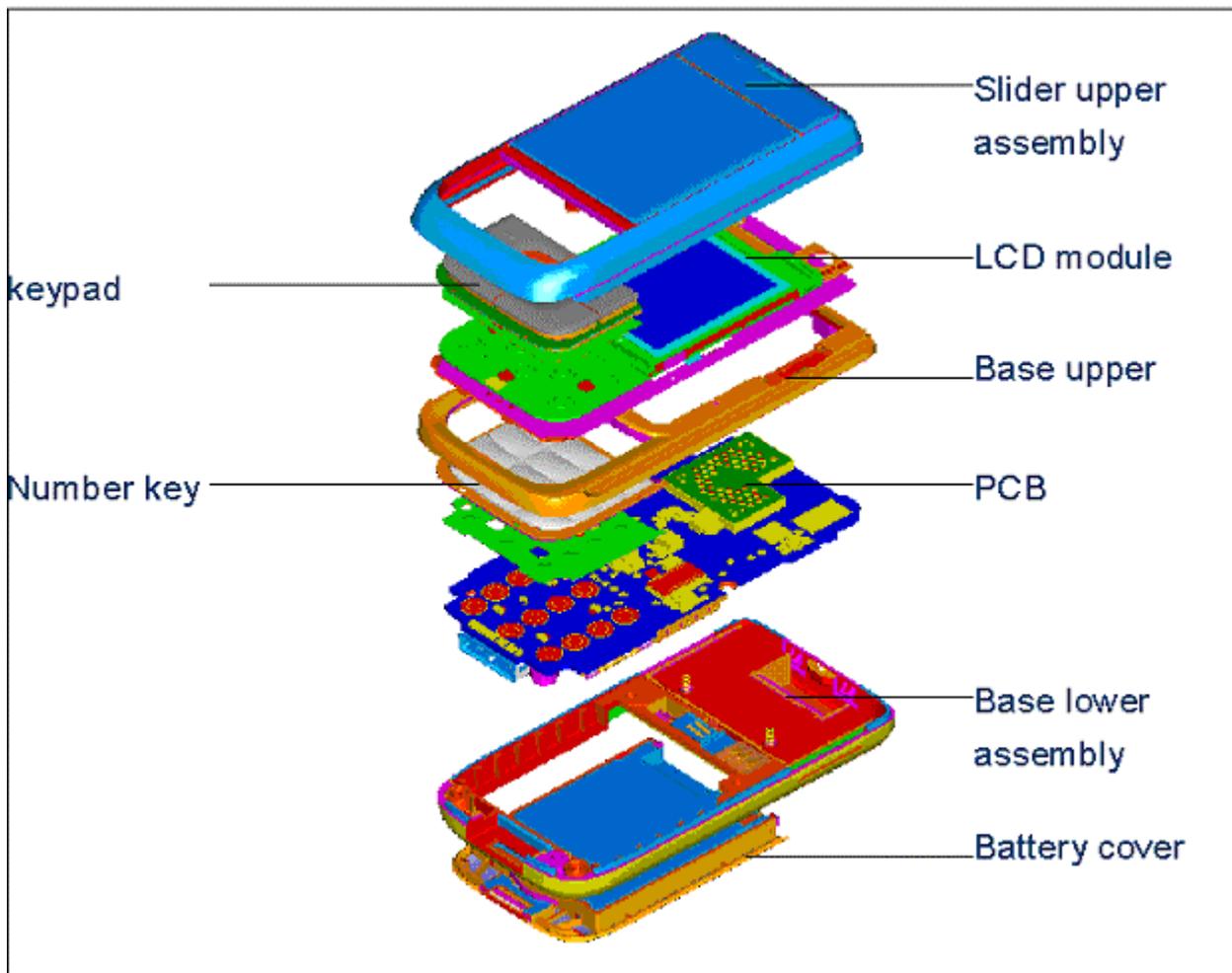


### 3 Unit Description of CF110

The CF110 is designed as a slider phone. The slider upper, base upper, base lower and battery cover are painted parts (1k; 2 colours). IMD Lens will be mounted by adhesive, Display, 130X130 TFT; bridgeless keypad, 4-way Navi-Key, 5 keys function keys block, 12 keys number keys block; IMD lens (1 pcs only); No ID concept will be realized on Battery Cover if needed.



## 4 Exploded View of CF110



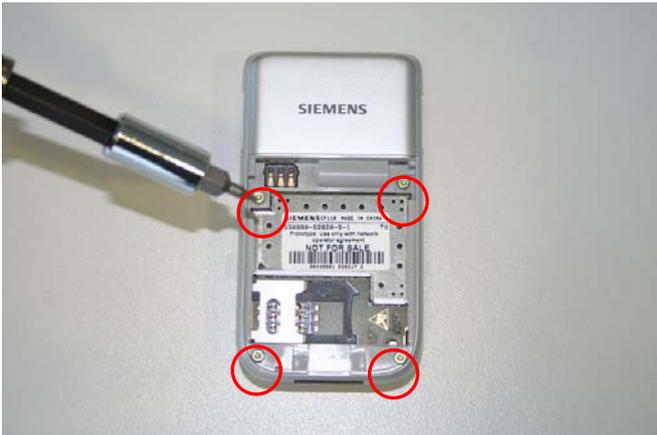
## 5 Disassembly of CF110

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

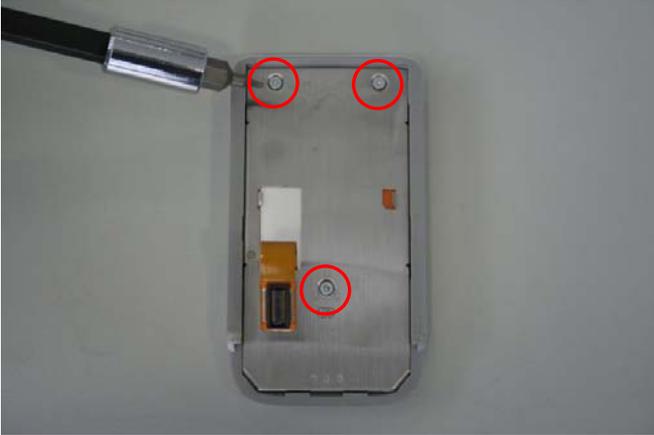
<https://market.benqmobile.com/SO/welcome.lookup.asp>

There you can find the document “ESD Guideline”.

<p><b>Step 1</b></p> 	<p>Remove battery cover.</p>
<p><b>Step 2</b></p> 	<p>Remove screws by using a Torque screw driver. Screws size: T5+ Torx.</p>

<p><b>Step 3</b></p> 	<p>Remove lower case.</p>
<p><b>Step 4</b></p> 	<p>Disconnect PCB from upper case by using the opening tool. Take care of the flex cable!</p>
<p><b>Step 5</b></p> 	<p>Use tweezers to disconnect the flex cable from the upper case.</p>

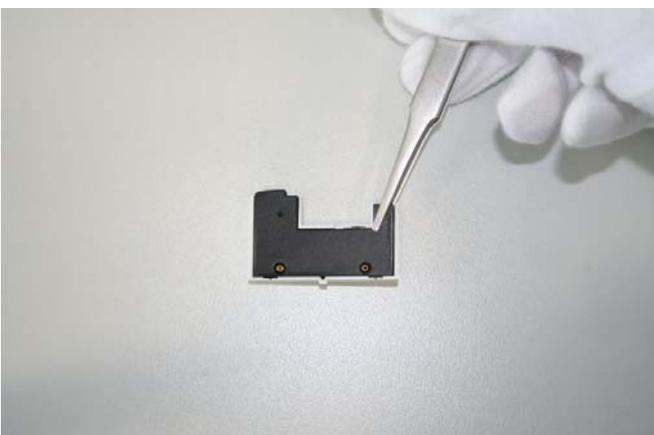
<p><b>Step 6</b></p> 	
<p><b>Step 7</b></p> 	<p>Remove keypad.</p>
<p><b>Step 8</b></p> 	

<p><b>Step 9</b></p> 	<p>Remove slider. Use opening tool to lift base upper case carefully. Then push it downwards to unhook the slider up. Attention! Take care that the flex cable won't rip!</p>
<p><b>Step 10</b></p> 	
<p><b>Step 11</b></p> 	<p>Remove screws. Screws size: T3+ Torx.</p>

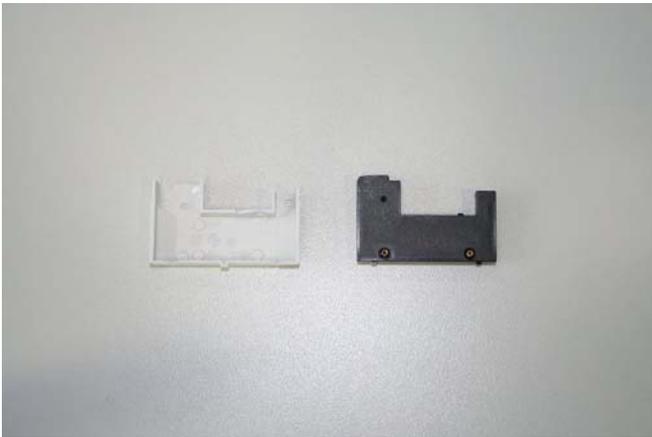
<p><b>Step 12</b></p> 	<p>Remove slider plate by using the opening tool carefully.</p> <p>Push the flex cable trough the cut out.</p> <p>Take care of the flex cable!</p>
<p><b>Step 13</b></p> 	
<p><b>Step 14</b></p> 	<p>Use opening tool to remove the display PCB carefully.</p>

<p><b>Step 15</b></p> 	<p>Take out the flex cable with tweezers carefully! It is glued with the earphone!</p>
<p><b>Step 16</b></p> 	<p>To avoid scratches it is mandatory to place a protection foil onto the display!</p>
<p><b>Step 17</b></p> 	<p>Remove keypad MMI by using tweezers carefully.</p>

<p><b>Step 18</b></p>  A photograph showing a silver mobile phone chassis with a copper-colored frame and a separate black component with a circular lens, likely a camera or sensor.	
<p><b>Step 19</b></p>  A close-up photograph of a hand wearing a white glove using tweezers to carefully lift a small component from the back of the phone chassis.	<p>Remove vibramotor by using tweezers carefully.</p>
<p><b>Step 20</b></p>  A photograph showing a hand wearing a white glove using tweezers to lift a component from the bottom of the phone chassis.	<p>Remove microphone by using tweezers carefully.</p>

<p><b>Step 21</b></p> 	<p>Remove ringer by using opening tool carefully.</p>
<p><b>Step 22</b></p> 	
<p><b>Step 23</b></p> 	<p>Disassemble ringer with tweezers carefully.</p>

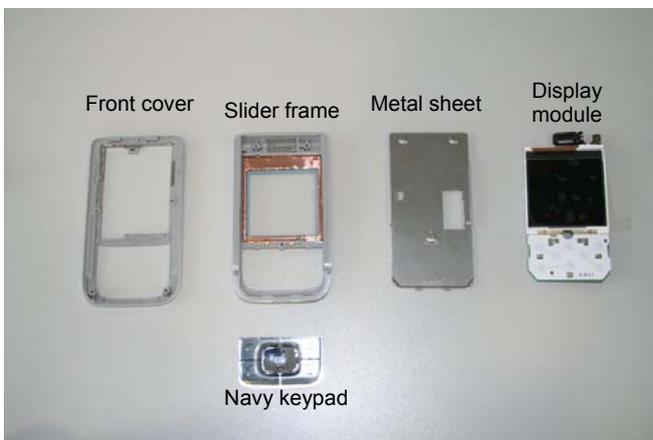
**Step 24**



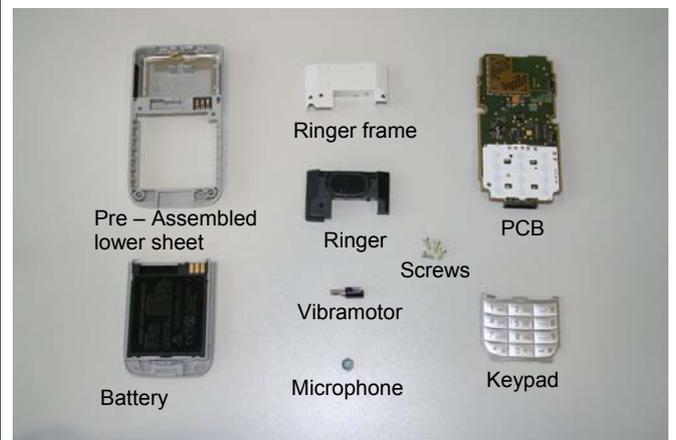
**Step 25**



**Overview Upper Case Parts**



**Overview Lower Case Parts**



## 6 Assembly of CF110

### Step 1

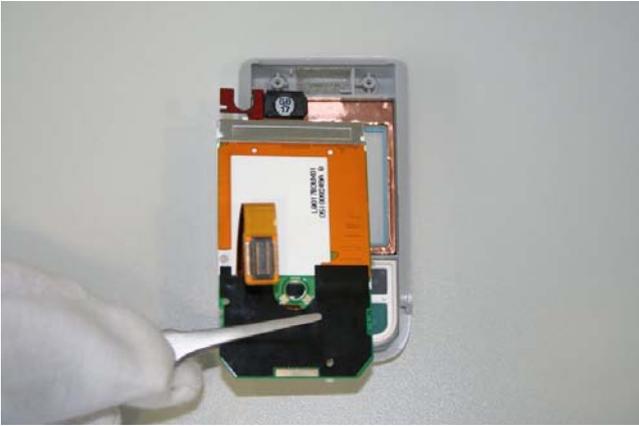


Use tweezers to fix the ringer in the given frame.

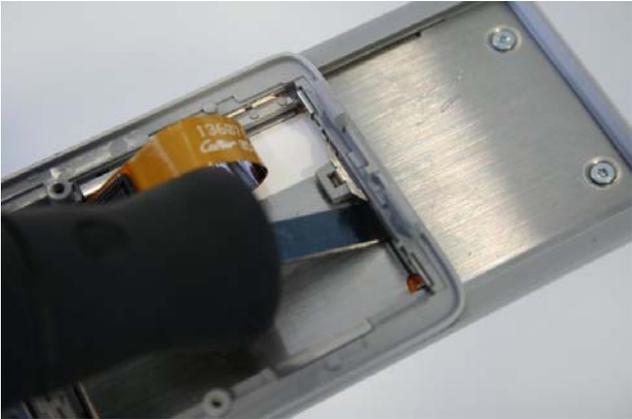
### Step 2



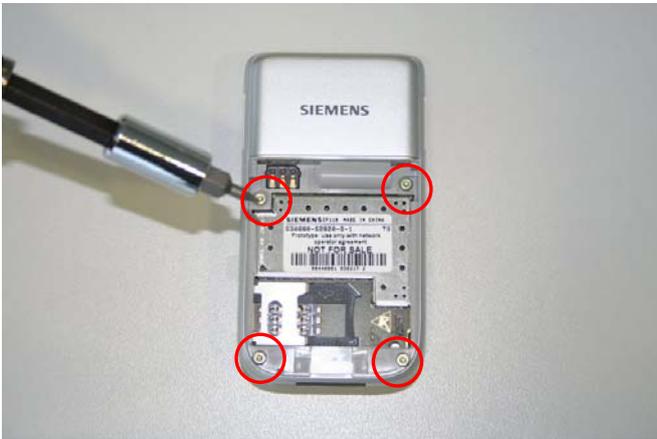
<p><b>Step 3</b></p> 	<p>Assemble microphone by using tweezers. Consider the correct position of the microphone!</p>
<p><b>Step 4</b></p> 	<p>Use tweezers to assemble vibramotor. Ensure, that the vibramotor contacts are not bent.</p>
<p><b>Step 5</b></p> 	<p>Assemble keypad MMI.</p>

<p><b>Step 6</b></p> 	<p>Assemble display MMI. Before assembling ensure the correct position of the flex cable with the glued earphone!</p>
<p><b>Step 7</b></p> 	<p>Attention! Before assembling remove display foil and take care of the flex cable!</p>
<p><b>Step 8</b></p> 	<p>Assemble the upper case.</p>

<p><b>Step 9</b></p> 	<p>Assemble the upper case. Attention! Be careful with the flex cable!</p>
<p><b>Step 10</b></p> 	<p>Place screws to assemble the upper case. Use a torque screw driver.</p>
<p><b>Step 11</b></p> 	<p>Assemble keypad.</p>

<p><b>Step 12</b></p> 	<p>Assemble slider.</p> <p>Use opening tool to lift base upper case carefully. Then push it downwards to assemble the slider.</p> <p>Attention! Take care that the flex cable won't rip!</p>
<p><b>Step 13</b></p> 	<p>To assemble PCB connect it with the flex cable.</p>
<p><b>Step 14</b></p> 	<p>Assemble lower case.</p>

**Step 15**



Place screws by using the torque screw driver.

**Step 16**



Assemble battery cover.

## 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

	<p style="text-align: center;"><b>Torque – Screwdriver</b> Part Number: F 30032 – P 228 – A1</p>
	<p style="text-align: center;"><b>Opening tool</b> (Case opening without destroying) Part Number: F 30032 – P 38 – A1</p>
	<p style="text-align: center;"><b>Alternative Opening tool</b> Part Number: F30032 – P583 – A1</p>
	<p style="text-align: center;"><b>Tweezers</b></p>

- For testing

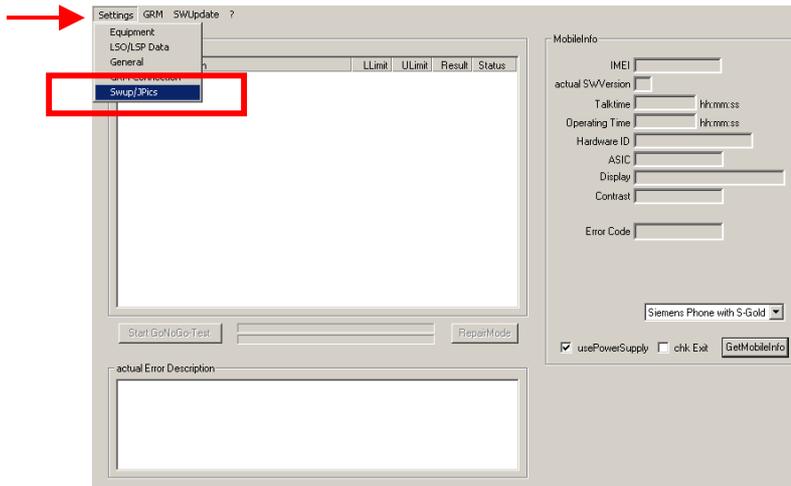
**All mobile phones have to be tested with the GRT – Software. The service partner is responsible to ensure that all required hardware is available.**

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

<p>Technical Documentation</p>	<p style="text-align: right;">11/2005</p>
<p>TD_Repair_L1-L3_CF110_R1.0.pdf</p>	<p style="text-align: right;">Page 22 of 51</p>

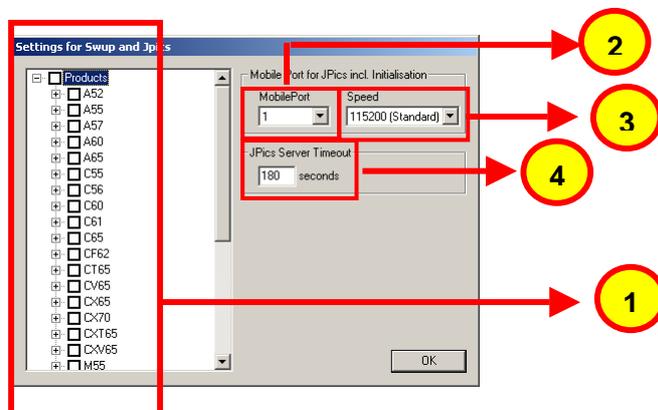
## 8 GRT Software: Functionality Configuration

Sep 1: Select „Settings >> SWUP / JPICS”



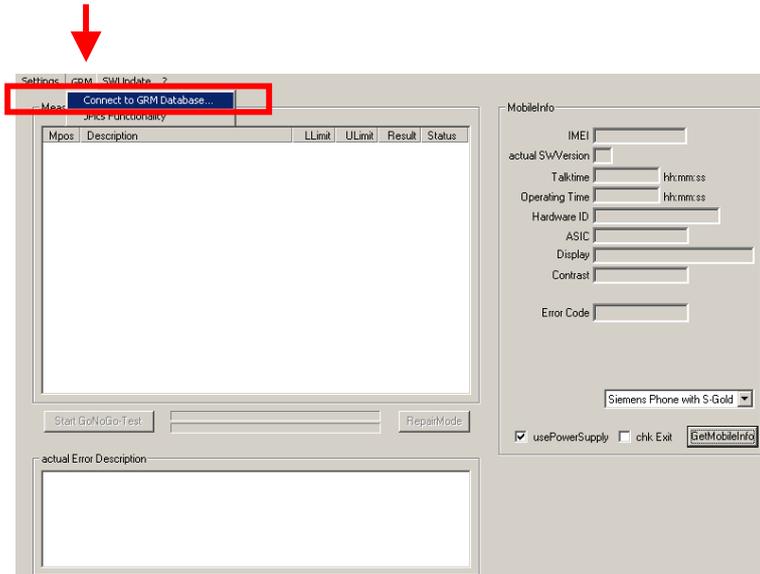
Step 2: Proceed as follows:

- 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



**1** Enter your GRT-Username and Password into this fields

**2** Activate always both boxes if you connect to the database. Start with "Connect"

**3** If you IT infrastructure parameter have changed, use this button to move to the configuration mask

- 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 date 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 authorised

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.

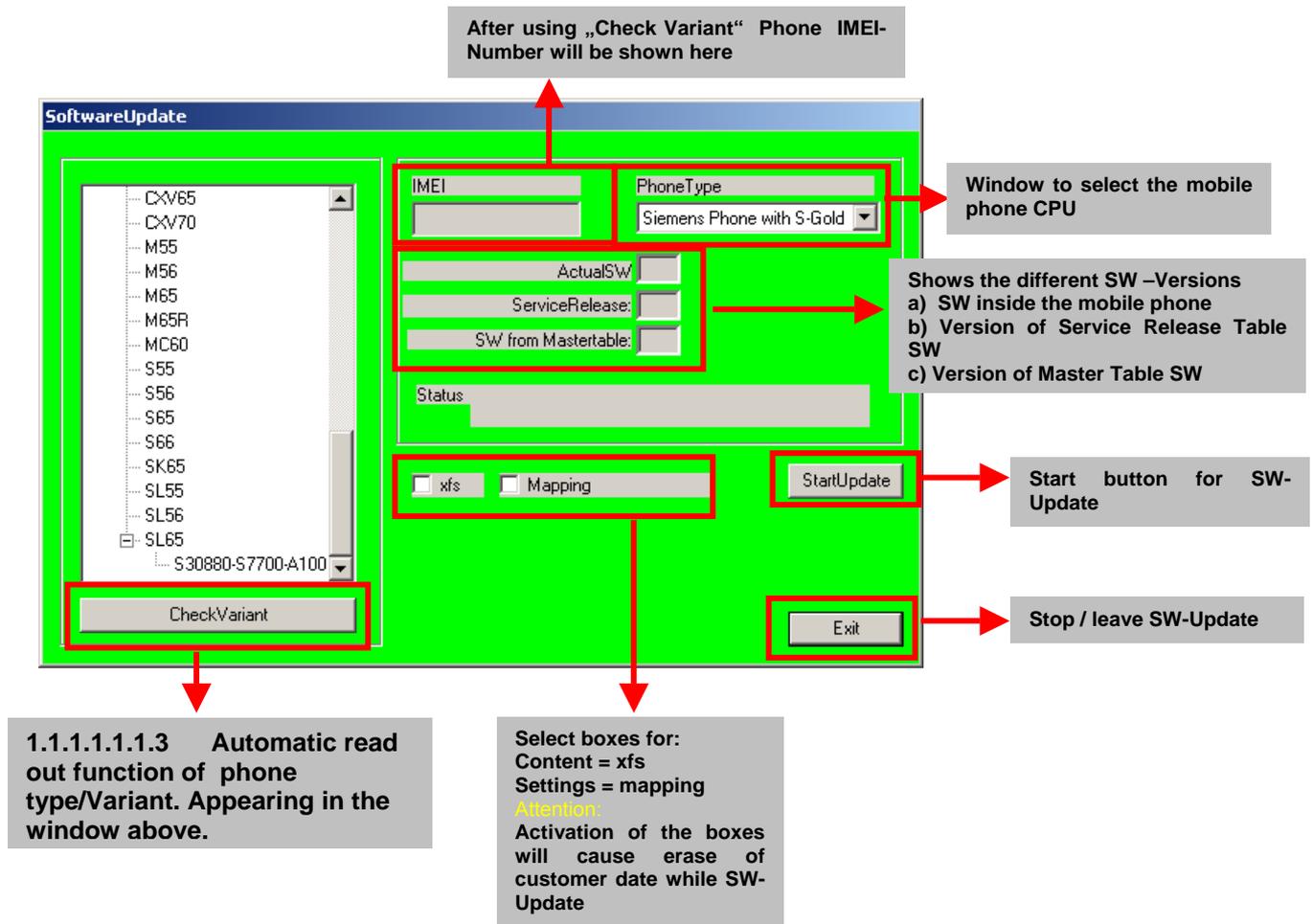
- **Operator SWUpdate**

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' dialog box. 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, ServiceRelease, and SW from MasterTable. A 'Status' field is also present. At the bottom, there are checkboxes for 'xfs' and 'Mapping', a 'StartUpdate' button, and an 'Exit' button. Four numbered callouts (1, 2, 3, 4) 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** 1.1.1.1.1.2 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 an other variant then the automatically identified one, he has simply to select an other 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' dialog box. It features a list of phone variants 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 'CheckVariant' button. The main area contains 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 'StartUpdate' and 'Exit' buttons. Numbered callouts are as follows: 1 points to the PhoneType dropdown; 2 points to the CheckVariant button; 3 points to the xfs and Mapping checkboxes; 4 points to the StartUpdate button.

**1** Select the mobile phone CPU type

**2** 1.1.1.1.1.1.1 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 an other variant then the automatically identified one, he has simply to select an other 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 features a list of phone variants 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 '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 'StartUpdate' and 'Exit' buttons. Red callouts 1, 2, 3, and 4 point to the PhoneType dropdown, the CheckVariant button, the xfs and Mapping checkboxes, and the StartUpdate button respectively.

**1** Select the mobile phone CPU type

**2** 1.1.1.1.1.4 Read out phone type/Variant. >>Appears in the window above.

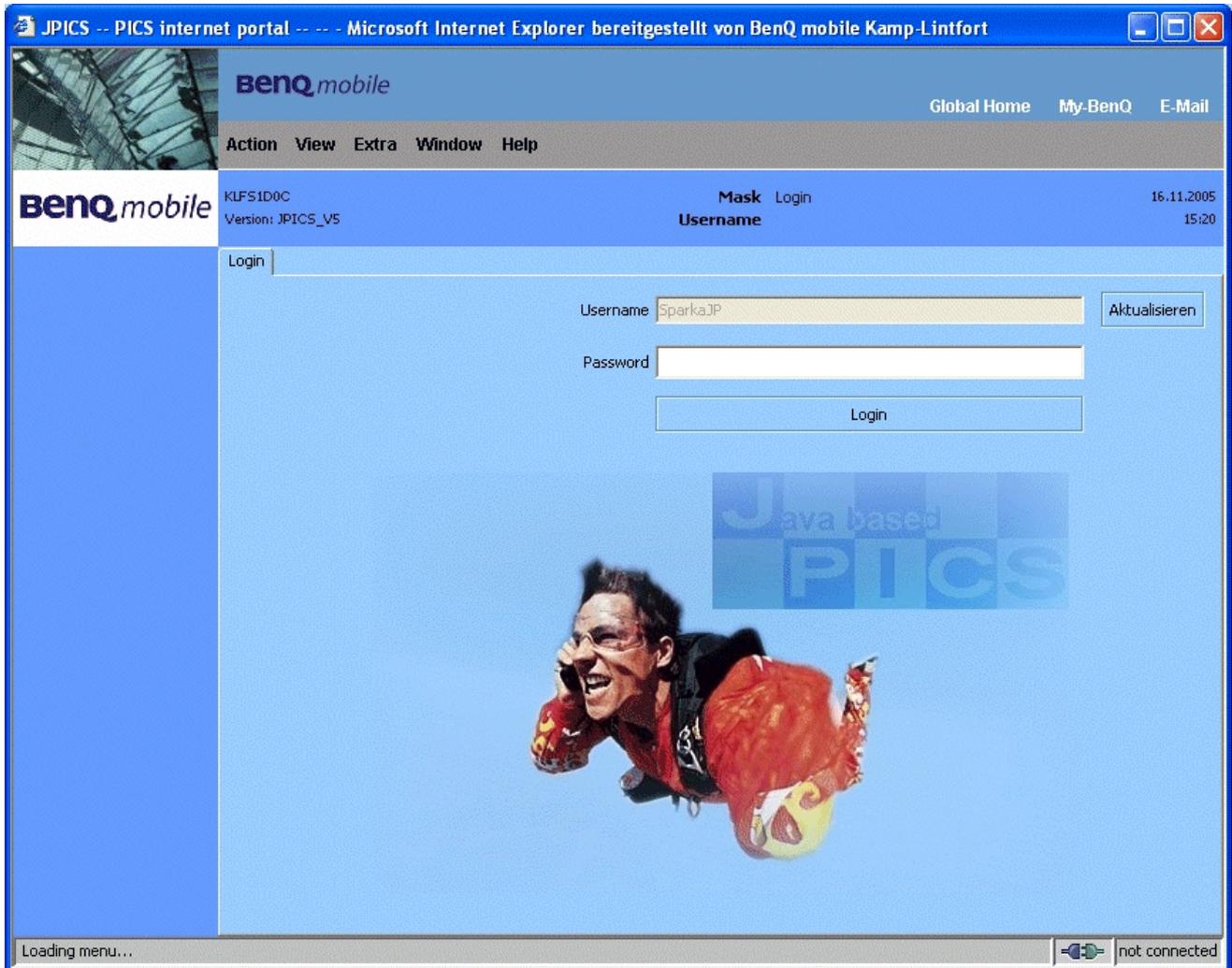
**3** Choose if customer data shall be erased. If "Yes" activate the boxes in front of xfs and mapping

**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 an other variant then the automatically identified one, he has simply to select an other variant from the list. Afterwards he has to start the SW-Update

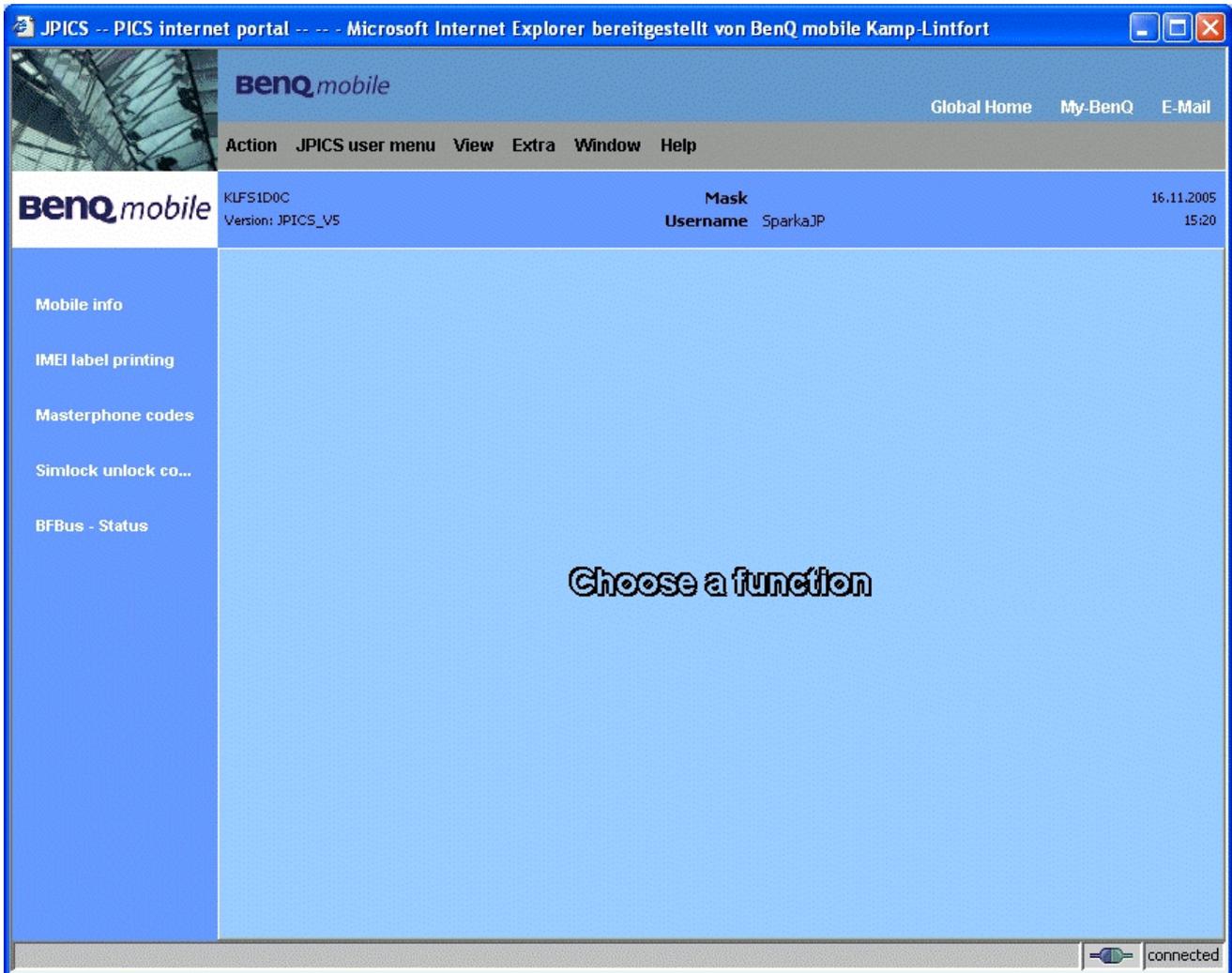
## 10 JPICS (Java based Product Information Controlling System)



### 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.

The screenshot shows the JPICS internet portal interface. At the top, there is a navigation bar with links for 'Global Home', 'My-BenQ', and 'E-Mail'. Below this is a menu with 'Action', 'JPICS user menu', 'View', 'Extra', 'Window', and 'Help'. The main content area is titled 'Masterphone-Code' and contains several sections:

- Input:** IMEI (351630000011691), DB-Location (Kamp-Lintfort), and an 'Execute' button.
- Mobile data:** Producttype (SL55), Deliverypartnumber (L36880-N4910-A150-31), SW version (000), Partnumber (530880-54910-A100-53), Warranty (redacted), and Status (Normal).
- Delivery information:** Deliverynote (LC00001579) and Deliverydate (15.09.05).
- Mobile codes:** Mobile unlock code (\*#0003\*40158737#).

A sidebar on the left contains links for 'Mobile info', 'IMEI label printing', 'Masterphone codes', 'Simlock unlock co...', and 'BFBus - Status'. A small image of a mobile phone is shown on the right side of the main content area.

## 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.

The screenshot shows a web browser window titled "JPICS -- PICS internet portal" with the BenQmobile logo and navigation links. The main content area is titled "Simlock-Unlock-Code" and contains several sections:

- Mobile info:** Includes fields for IMEI (350673547180612), DB-Location (Kamp-Lintfort), and an "Execute" button.
- Mobile data:** A table of device specifications:
 

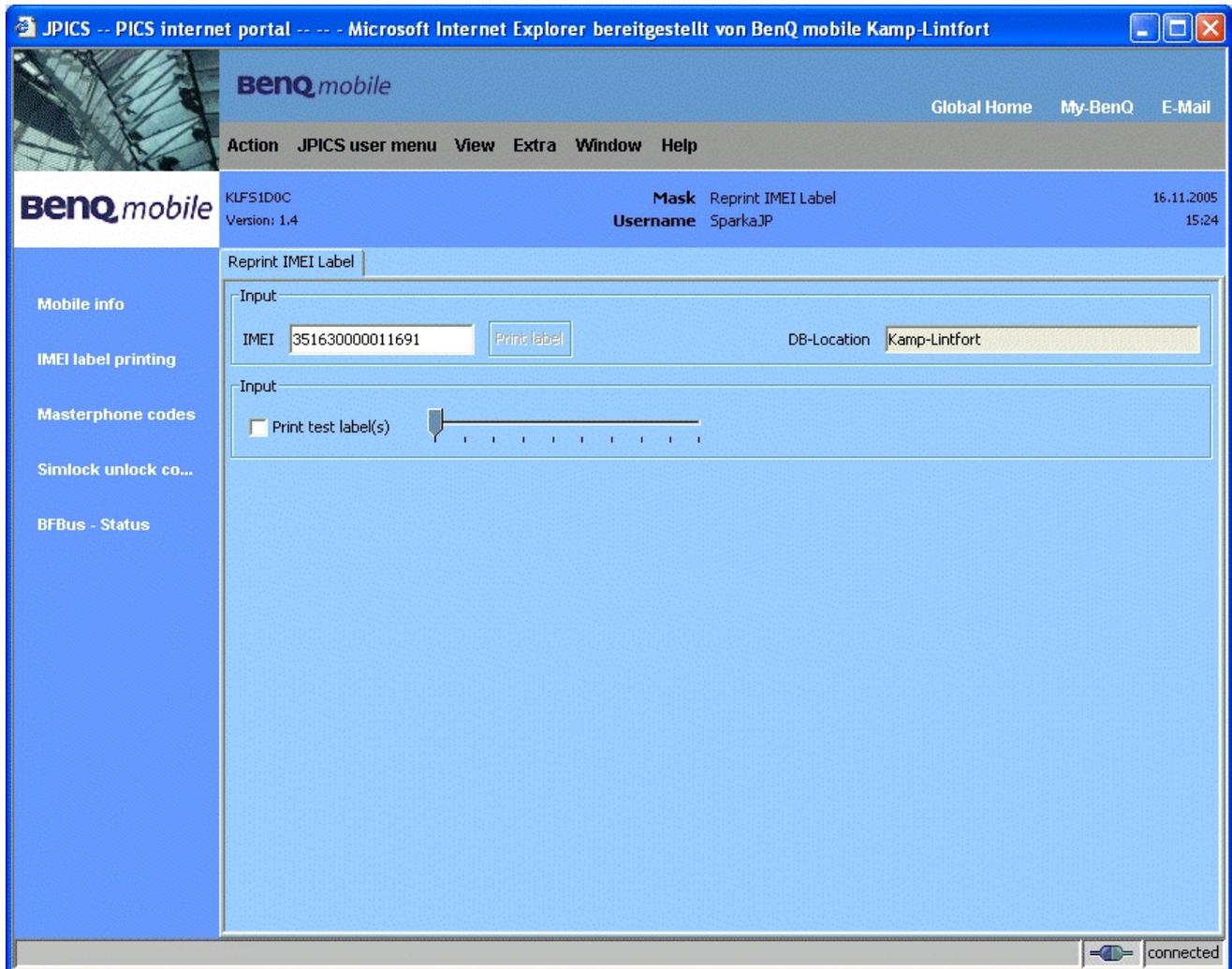
Producttype	C45	Deliverypartnumber	L36880-55100-X139-15
SW version	049	Partnumber	530880-55100-A139-14
Warranty	21.08.05	Status	Normal
- Delivery information:** Includes Deliverynote (0066015319) and Deliverydate (22.08.03).
- Mobile codes:** A grid of fields for various codes:
 

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

A small image of a blue BenQ C45 mobile phone is shown on the right side of the interface.

## 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.

## 11 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 CF110 is S30880-S2820-#xxx where the last four letters specify the housing and software variant.

CF110 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
<b>S</b>	2004	MAY	<b>5</b>
T	2005	JUNE	6
U	2006	JULY	7

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

## 12 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 Siemens AG authorized level 2 up to 2.5e 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.

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## 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

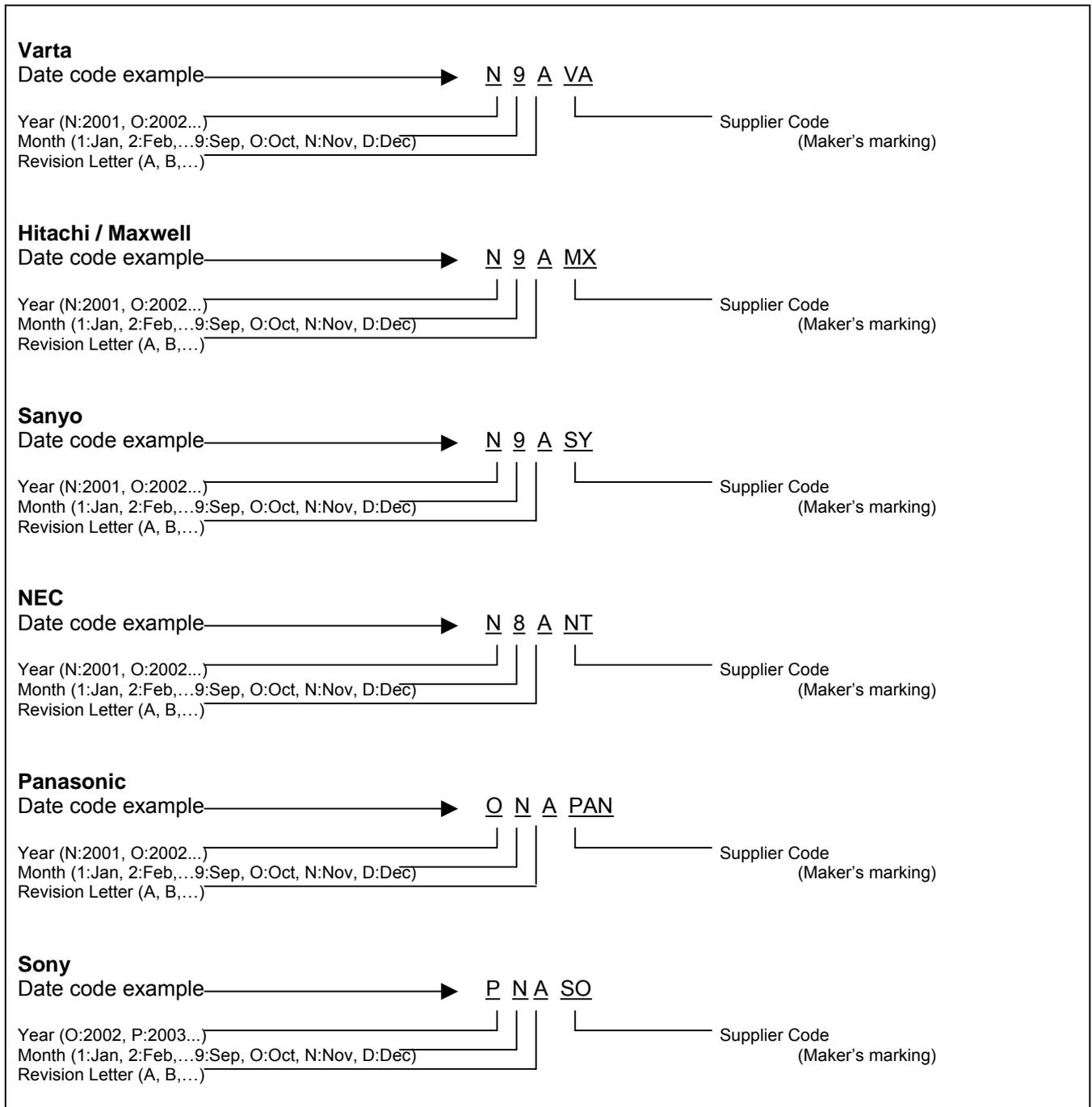
2) Test SIM Card from the company “**T-D1**”

Pin 1 number:           1234  
PUK            :       76543210

Pin 2 number:           5678  
PUK 2           :       98765432

## Annex 2

### Battery Date Code overview



## 13 Introduction of Service Repair Documentation Level3 – CF110

### 13.1 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.

Assembling/disassembling has to be done according to the latest CF110 Level 1-2 repair documentation. It has to be ensured that every repaired mobile Phone is checked according to the latest released General Test Instruction document (both documents are available in the Technical Support section of the C-market).

Check at least weekly C-market for updates and consider all CF110 related Customer Care Information

CF110 Partnumber on IMEI label: S30880-S2820-#xxx

, while # may be any letter (A-Z) and xxx may be any number from 100, 101, 102....

**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.**

### 13.2 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.

### 13.3 Terms and Abbreviations

## 14 List of available level 2.5light parts

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

Product	ID	Order Number	Description CM
CF110	V286	L36840-L2099-D670	LED WHITE TOP
CF110	V287	L36840-L2099-D670	LED WHITE TOP
CF110	V288	L36840-L2099-D670	LED WHITE TOP
CF110	V289	L36840-L2099-D670	LED WHITE TOP
CF110	X1603	L50634-Z97-C406	CONNECTOR SIM CARD READER R65 (B)
CF110	X211	L36334-Z93-C303	IO-JACK SLIM 12-POL
CF110	X2750	L50634-Z97-C340	BOARD TO BOARD 30-POL
CF110	Z1601	L50620-U6029-D670	FILTER EMI (Fi-Type7) PB Free

## 15 Hardware requirements

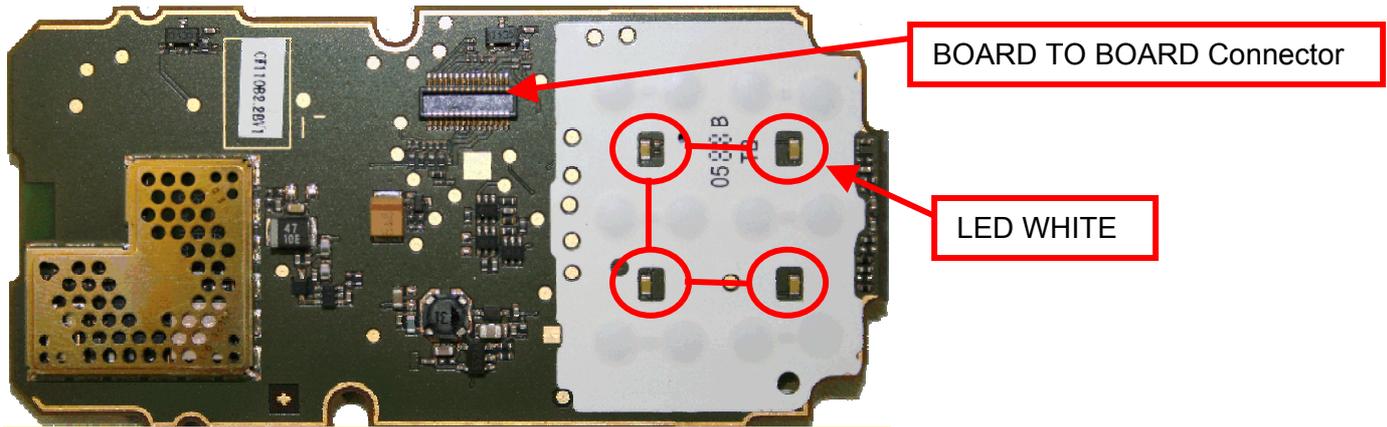
(according to L2.5L-L2.5 General soldering information V1.3 - check C-market for updates)

Jigs, Tools and working materials for all described repairs:

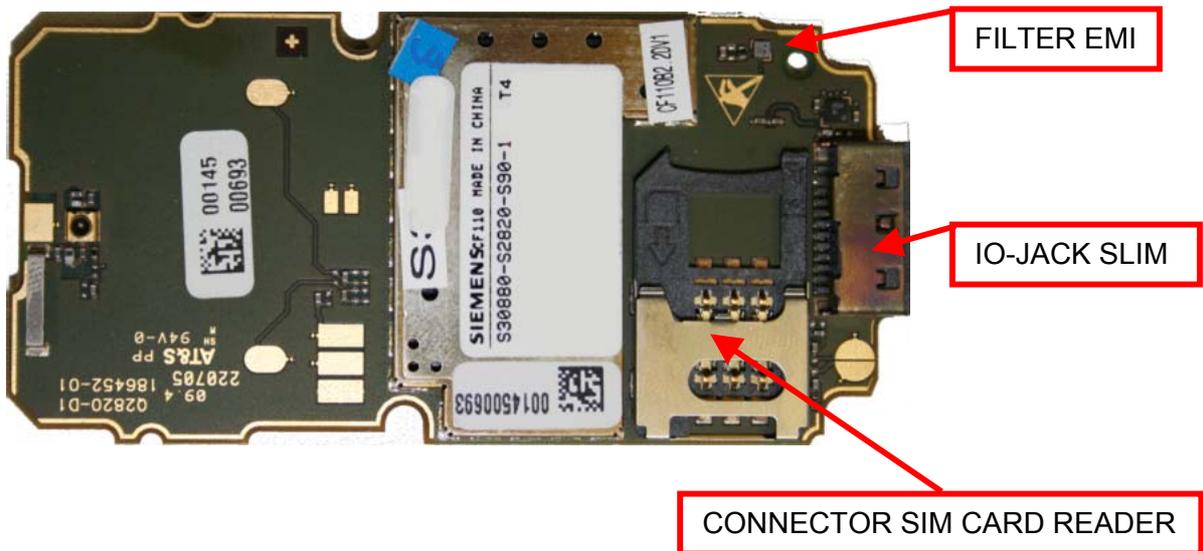
- hot air blower
- soldering gun
- tweezers
- flux
- solder
- CF110 dome sheet jig

## 16 CF110 Board layout

### Upper board side

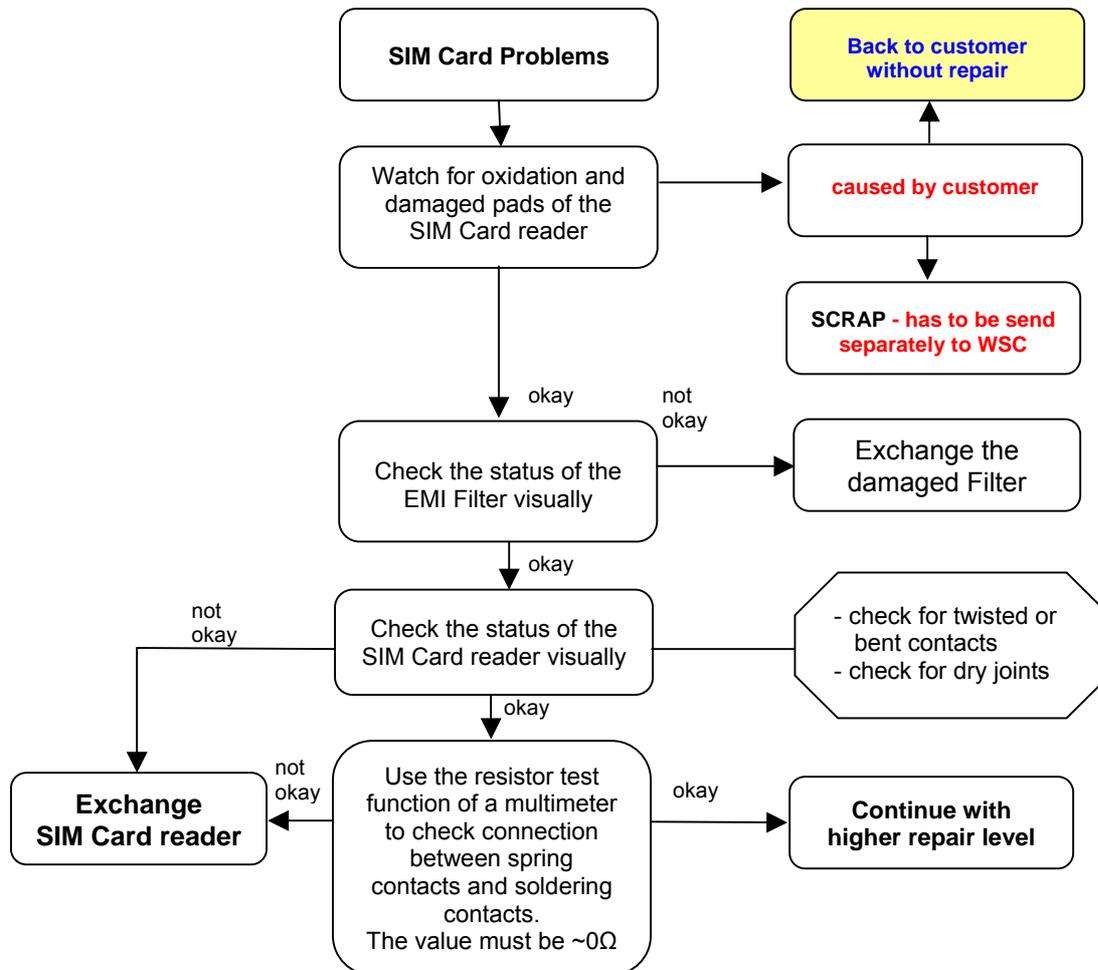


### Lower board side



## 17 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: L50634-Z97-C406

E-commerce order name: CONNECTOR SIM CARD READER R65 (B)

Soldering temperature: ~ 360°C TIP Temp.

### EMI Filter

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

Resolder new component afterwards.

E-commerce order number: L50620-U6029-D670

E-commerce order name: FILTER EMI (Fi-Type7) PB Free

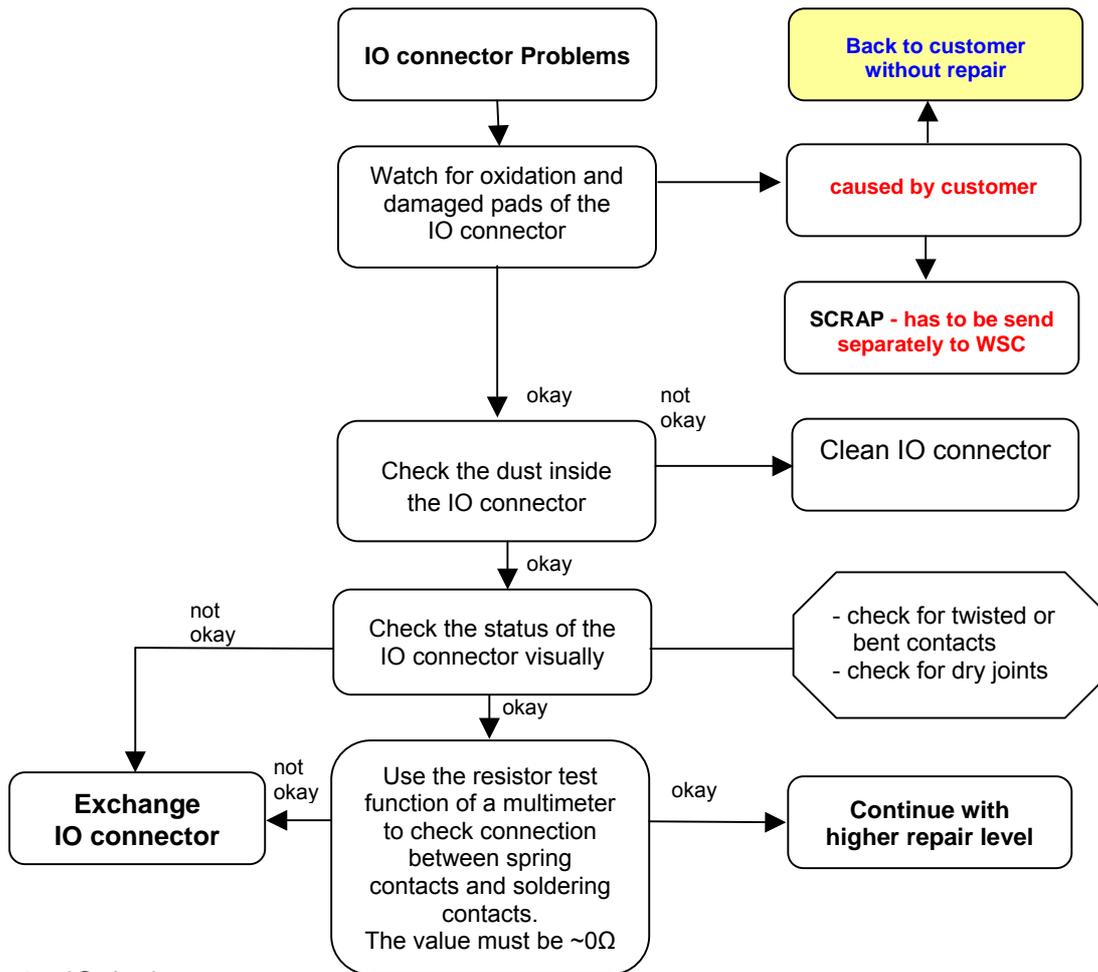
Soldering temperature: ~ 360°C TIP Temp

IRIS Diagnose Code: 43300 Interface/SIM Card reader/Mechanical Damage

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## 18 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

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## Important additional soldering hints

The MMC Reader is located on the opposite of the SLIM-Lumberg connector. Therefore the risk to damage the plastic material of this MMC-Reader is potentially high if excessive heat is used while removal or soldering of the SLIM-Lumberg connector.

Please follow these instructions:

- a) Remove the SLIM-Lumberg connector with a soldering iron and Desolder Wick
- b) Clean the Pads afterwards
- c) Solder the new connector by using soldering iron under consideration of the max. allowed temperature range.

## Samples of critical area:



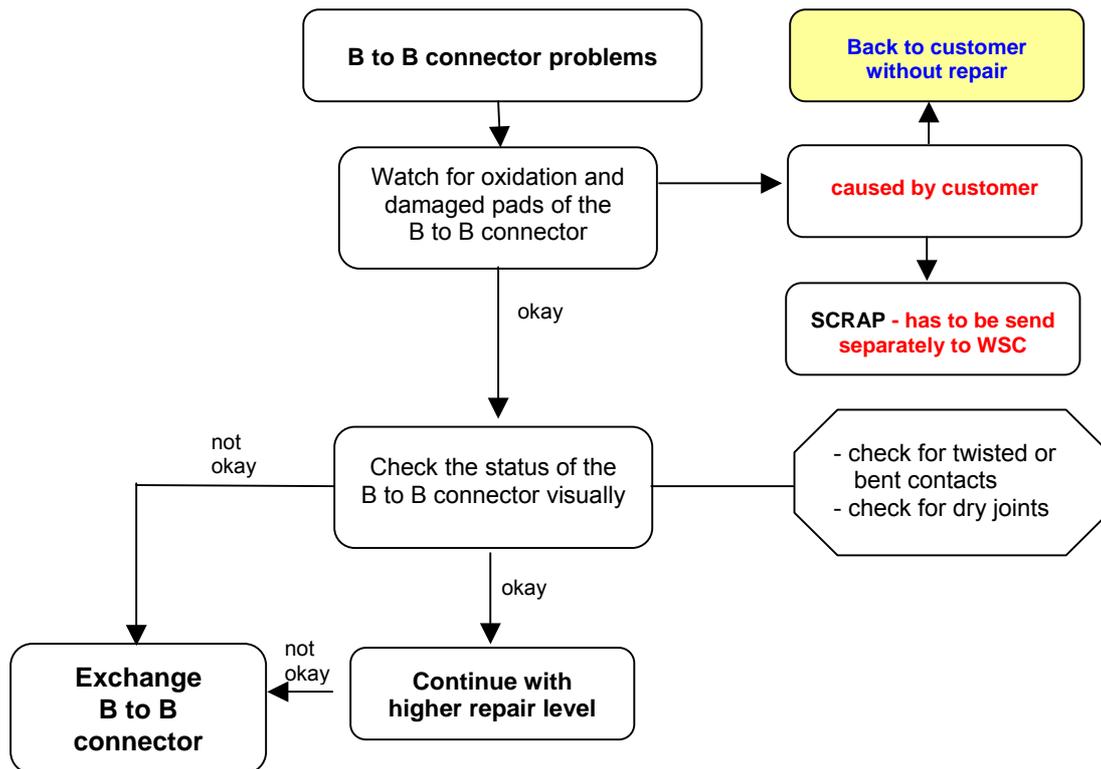
Lock mechanism damaged



Lock mechanism OK

## 19 B to B connector (upper slider part) Problems

Fault Symptoms	
Customer: Upper slider keyboard malfunction Upper slider keypad illumination does not work Display problems	GRT: Keyboard malfunction Current measured failed



### Connector Board to Board

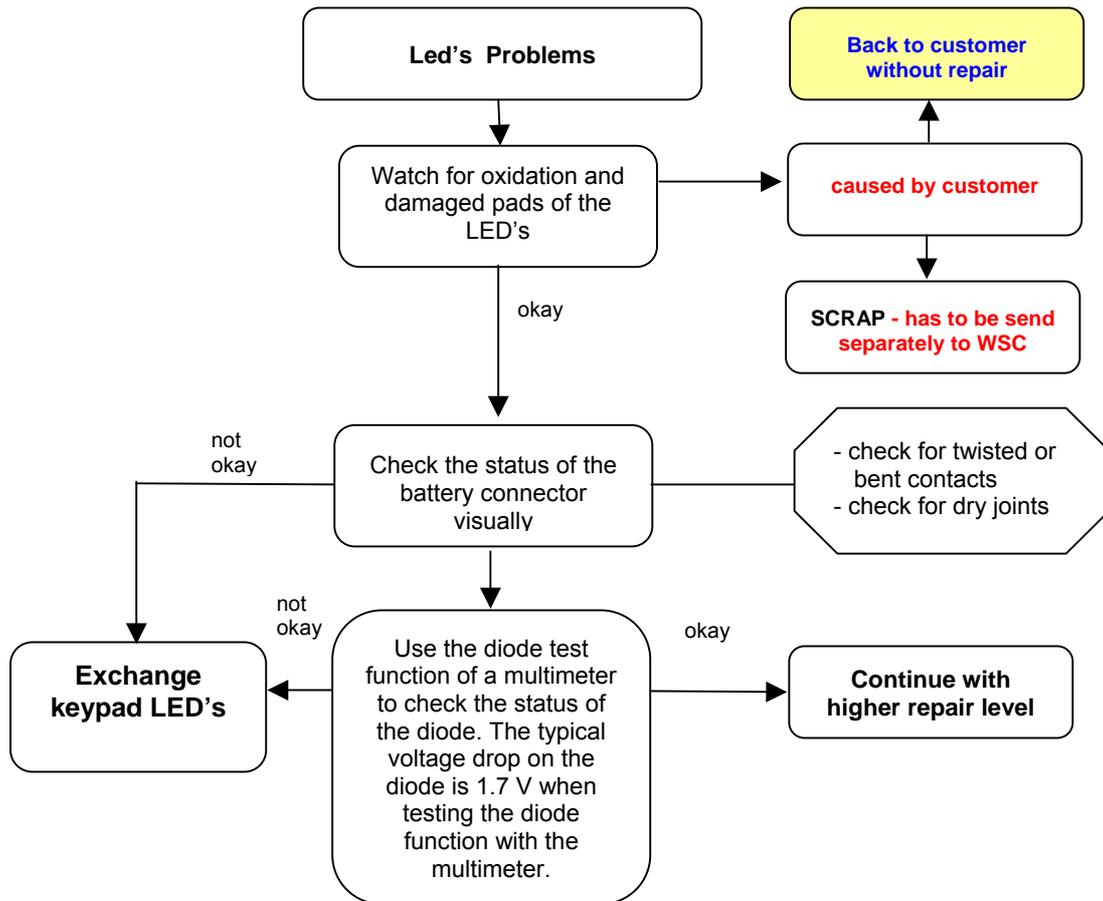
Use hot air blower to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards.

E-commerce order number: L50634-Z97-C340  
 E-commerce order name: BOARD TO BOARD 30-POL  
 Soldering temperature: ~ 360°C TIP Temp.

IRIS Diagnose Code: 32100 Keys / Main / No Function  
 32200 Keys / Main / Reduced Functionality  
 36000 Keys / Illumination

## 20 Main keypad illumination Problems

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



### LED WHITE TOP

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

**Attention: Remove Metal Dome Sheet before!!!**

E-commerce order number: L36840-L2099-D670

E-commerce order name: LED WHITE TOP

Soldering temperature: ~ 360°C TIP Temp.

IRIS Diagnose Code: 36000 Keys/Illumination

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