

Service Manual

EF81

Level 1-3




Release	Date	Department	Notes to change
R 1.0	27.02.2006	BenQ Mobile CC S CES	New document

Table of Content

1	Key Feature.....	3
2	Unit Description of EF81.....	5
3	Exploded View of EF81.....	6
4	Disassembly of EF81.....	7
5	Assembly of EF81.....	21
6	BenQ Service Equipment User Manual.....	36
7	GRT Software: Functionality Configuration.....	37
8	GRT Software: Regular Usage.....	39
9	JPICS (Java based Product Information Controlling System).....	44
10	International Mobile Equipment Identity, IMEI.....	50
11	General Testing Information.....	51
12	Introduction of Service Repair Documentation Level 3 (basic) – EF81.....	58

1 Key Feature

System	<ul style="list-style-type: none"> • UMTS Technology & Tri-band GSM
Battery	<ul style="list-style-type: none"> • Li-Ion Polymer Battery • Nominal Capacity: 930mAh • GSM Capacity: 900mAh • Charging Time: 2h
Stand – by Time	<ul style="list-style-type: none"> • GSM: ~310h • UMTS: ~300h
Talking Time	<ul style="list-style-type: none"> • GSM: 275mA Power Level 5 => ~3,2h 145mA Power Level 19 => ~6h • UMTS: 275mA Power Level -5dBm => 900mAh => ~3,2h
Bands	<ul style="list-style-type: none"> • 900/1800/1900MHz GSM/GPRS • 2100 UMTS • GPRS Class10
SIM Card	<ul style="list-style-type: none"> • Small (=”Plug In”) 1.8 V or 3 V-SIM card (Phase II)
Antenna	<ul style="list-style-type: none"> • Tri – Band + UMTS GSM 900/GSM 1800/ GSM 1900/ UMTS 2100
Main Display	<ul style="list-style-type: none"> • Resolution: 240x320 Pixel • Technology: TFT • No. of Colours: 256k • Frame Rate: max. 15 frames/sec • Pixel size/mm: 0.141mm x 0.141mm • Active Area/mm: 2.2” (33.84mm x 45.12mm) • Illumination: White (5 LEDs in series integrated)
Sub Display	<ul style="list-style-type: none"> • Resolution: 120 x 160 Pixel • Technology: TFT • No of Colours: 256k • Frame Rate: max. 15 frames/sec • Pixel size / mm: 0.167mm x 0.167mm • Active Area / mm: 1.3” (19.98mm x 26.64mm) • Illumination: White
3 x 4 Block Keypad	<ul style="list-style-type: none"> • Flat metal sheet keypad • 12 – key - block (0-9, *, #) • Tactile finder on key “5” • Stamped numbers and letters
Function Block with Operator key	<ul style="list-style-type: none"> • 5 way navi-key • Chrome plated navi-key ring with center push button
Additional Keys	<ul style="list-style-type: none"> • Eight additional keys, functions: left & right soft key, Send, End/ON-OFF, Task, Clear, VT and one customized with operator logo • ON-OFF key combined with the END key, the symbol  (I inside O) is used as a symbol for ON-OFF • SEND key with green colour and END key with red Colour

Soft Keys	<ul style="list-style-type: none"> • One rocker soft key, use depended functions: e.g. Next/previous, Volume+/Volume-, Zoom up/down • Left soft key: use case depended functions: e.g. back • Right soft key: use case depended functions: e.g. Play, Photo, Record, etc. • Soft keys metal plated
Acoustics	<ul style="list-style-type: none"> • Combined hands free/ringer speaker at front side of phone, north to second display • Dedicated ear piece speaker • Omni-directional microphone • Polyphonic ringer tones (parallel to GPRS data transfer: 16 voices; all other use cases: high polyphone and high quality with 512 kb size) • Hands free mode • Different selectable volume levels for hands free , handset and ringer mode
Sound/Ringtones	<ul style="list-style-type: none"> • MP3 – AAC++, real audio 8/64-chord polyphonic ringtones
Camera	<ul style="list-style-type: none"> • 2 MegaPixel, 5x digital zoom (rotating) for still picture/ Video recording and video conderencing
Interfaces	<ul style="list-style-type: none"> • Bluetooth, USB
SW related features	<ul style="list-style-type: none"> • Video recording max. 3min QCIF • Video recording: Up to 15 fps • Video playback: Up to 15 fps • Viewfinder camera mode: Up to 15 fps • User memory space: about 64MB • TransFlash support: Up to 1GB
Accessories	<ul style="list-style-type: none"> • Headset Bluetooth Comfort, Car Kit Bluetooth, Leather Case
Extras	<ul style="list-style-type: none"> • Main applications and call handling enabled in closed mode; Star Wars Package

2 Unit Description of EF81

The EF81 is a clam shell phone with two displays for closed and open mode usability. The camera is mounted inside the hinge and facing towards the user when the phone is opened (e.g. for video conferencing, self portraits or self videos). In closed mode the camera can be used for photo and video recording, using the 2nd display as a viewfinder. The camera picture format is usually fitting to display size, so that the phone has to be e.g. held vertical for landscape photo and video recording. Only during video telephony, there will be two landscape screens (far end and viewfinder) at the inside portrait display.

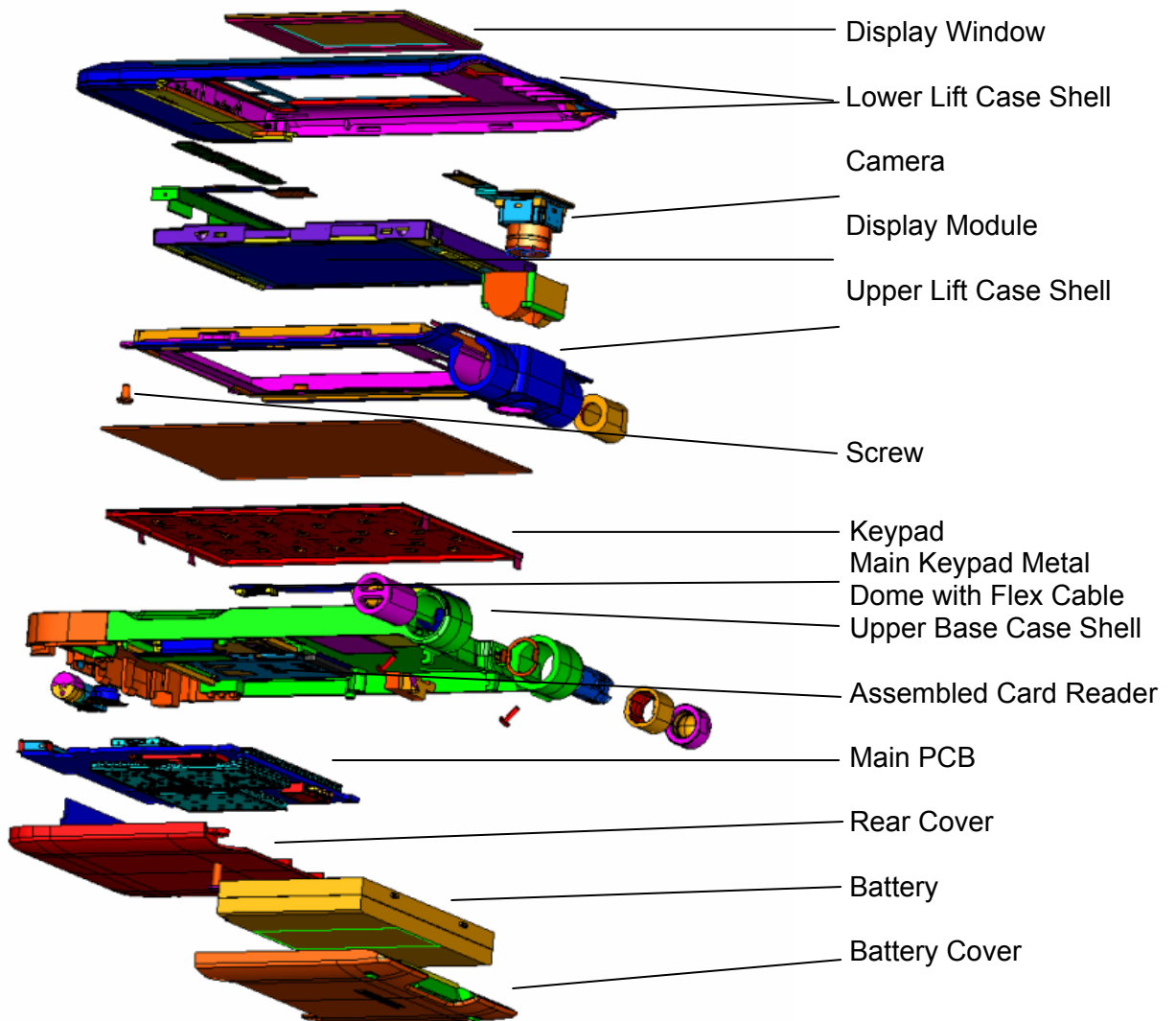
The phone has two different acoustic modules one for receiver mode inside and one for sound ringer and hands free mode with separate holes on front outside.

The exchangeable TransFlash card reader and SIM reader (both are push-push-reader) could be reached after removing the battery cover. The readers are soldered on an additional PCB (PCB-Card) which is stacked in the Base Upper Case. The 3 layers Main-FPC is lying on top of the PCB-Card and Base Upper Case and beneath the slim keypad. The Main-FPC is populated with the metal dome foil for keypad functions and EL-foil for lightening, step-inverter, hall-sensor and B2B-Connector for connecting Display, Camera and Top-keys. The ultra slim keypad is out of a metal sheet with co-moulded silicone.

There are no side keys, but 4 soft keys (1 rocker and 2 single) below the outside display (Top-keys). There will be one colour variant, silver/black. The Top Cover of the Flip-Part is made of brushed stainless steel with an integrated real glass for the 2nd display lens. The lower level of the Base-Part (Base Lower Case) is painted in matt black and the Battery cover is matt-black anodized (eloxated) to get a smaller impression.



3 Exploded View of EF81





4 Disassembly of EF81




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>Step 1</p> 	
<p>Step 2</p> 	<p>Remove Battery Cover.</p>

<p>Step 3</p> 	<p>Remove screws with the Torque – Screwdriver T5+.</p>
<p>Step 4</p> 	<p>Remove Rear Cover.</p>
<p>Step 5</p> 	<p>Remove Battery.</p>

Step 6



Step 7






Use Tweezers to disconnect the Flex Cable from the RF Control Board socket.

Step 8



Use Alternative opening Tool to remove the RF Control Board.

<p>Step 9</p> 	
<p>Step 10</p> 	<p>Remove Vibrator by using Tweezers.</p>
<p>Step 11</p> 	<p>Remove Microphone by using Tweezers.</p>

Step 12



Remove Flex Cable with Adhesive Strip by using Tweezers carefully.

Step 13



Remove the Flex Cable by using Tweezers carefully.

Step 14

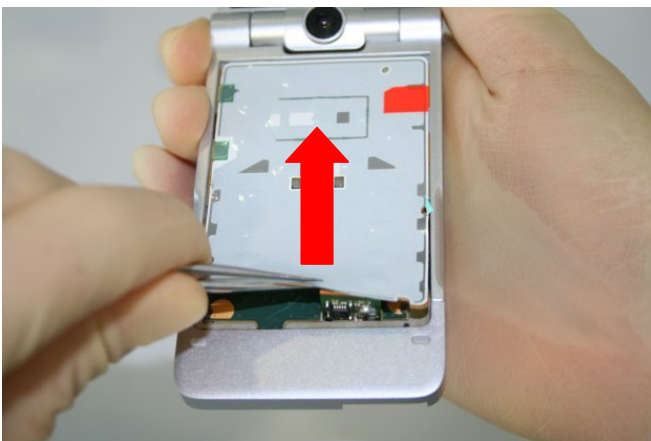


Remove Keypad with Alternative Opening Tool. Handle with care!

Step 15

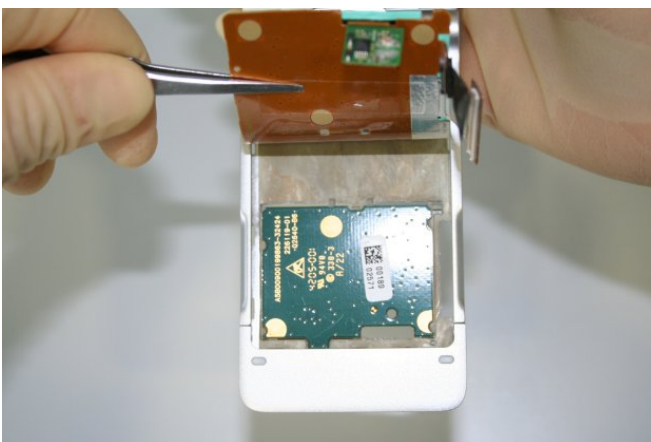


Step 16



Remove the Keypad MMI by loosening it from the Upper Base Case Shell. Be very careful with the glued Flex Cable.

Step 17



Step 18



The Card Holder lies in the Upper Base Case Shell. Pull it out of the frame.

Step 19



Step 20



Remove the Bluetooth – Antenna by using Tweezers.

Step 21




Remove screws with the Torque –
Screwdriver T5+.

Step 22

Use Tweezers to push the Hinge Caps
outside the hinge.

Step 23

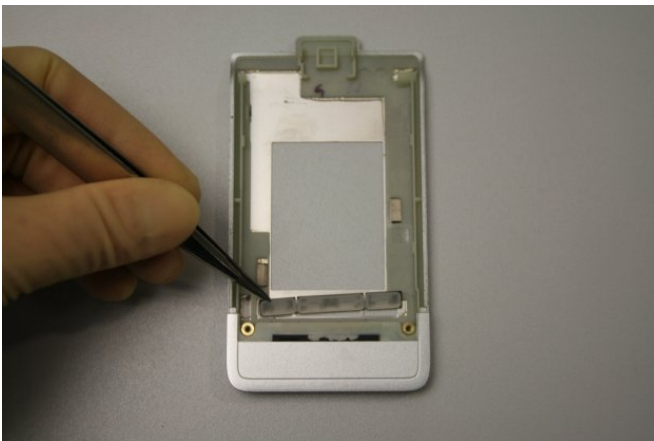
Remove the Display Window by using the
Alternative Opening Tool very carefully.

<p>Step 24</p> 	
<p>Step 25</p> 	<p>To avoid scratches it is mandatory to place a protection foil onto the Display!!!</p> <p>Remove the screws with the Torque Screwdriver T5+.</p>
<p>Step 26</p> 	<p>Remove the display with the Opening Tool. Be very careful!</p>

Step 27

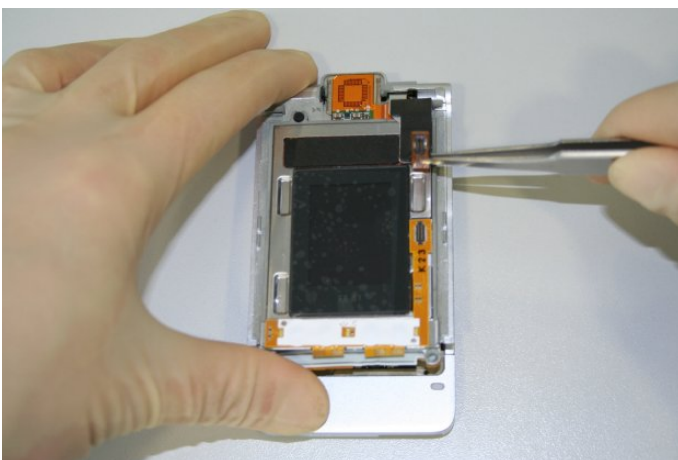


Step 28



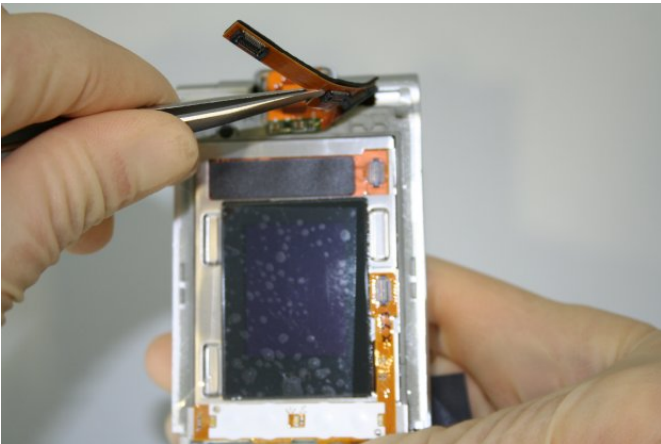
Use Tweezers to remove the Flip Upper Case Shell Keypad.

Step 28



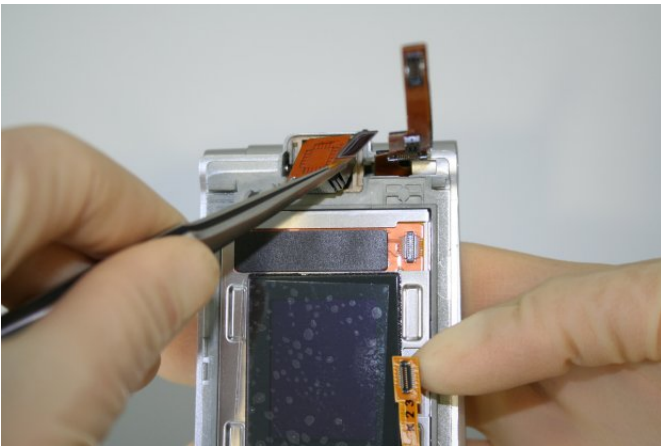
Use Tweezers to disconnect the Flex Cable from the Upper Case Metal Dome Socket.

Step 29



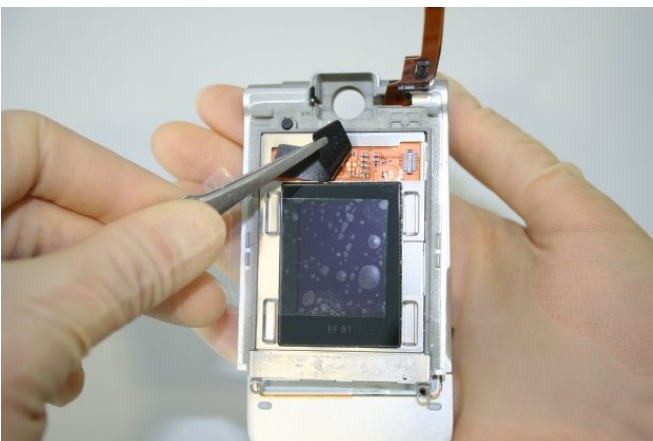
Use Tweezers to disconnect the Flex Cable from the display socket.

Step 30

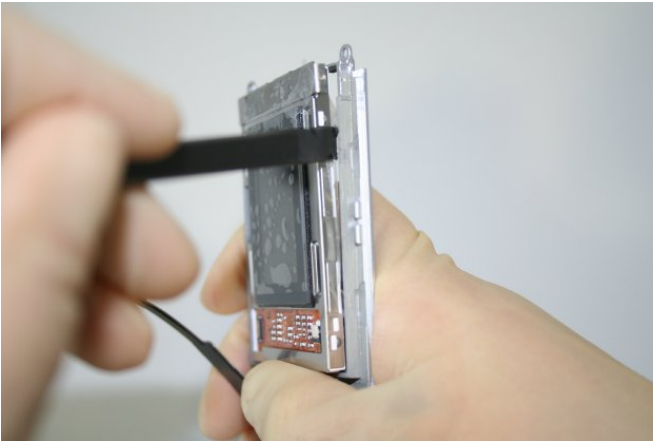


Take the camera with camera gasket out of the given frame.

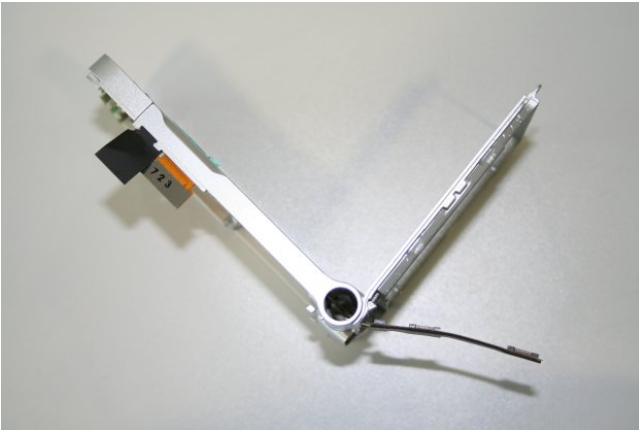
Step 31



Remove the Isolative Spacer by using Tweezers.

Step 30

Remove the Display Module by using the Alternative Opening Tool very carefully.

Step 31

Place the Mobile onto that side where the hinge - spring is located.

Step 32

Take a screwdriver and insert it into the hinge until you reach the hinge – spring. Push the screwdriver downwards to release the hinge – spring.

Step 33



Step 34



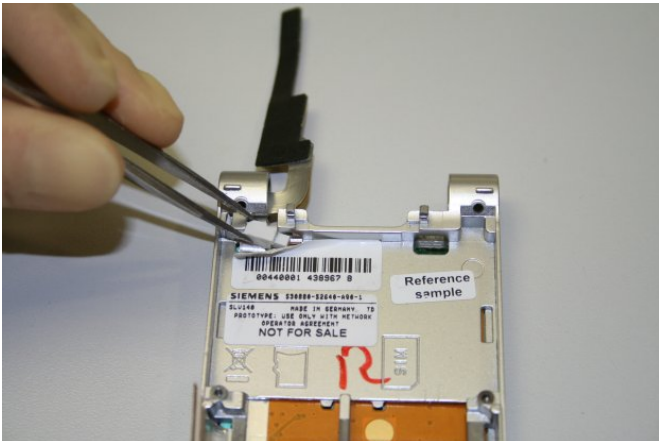
Separate the Upper Base Case Shell from the Upper Lift Case Shell. Pass the Flex Cable through the cut out. Take care that the Flex Cable doesn't rip!

Step 35



To remove the Flex Cable Fixture you have to remove partly the IMEI – Label.

Step 36



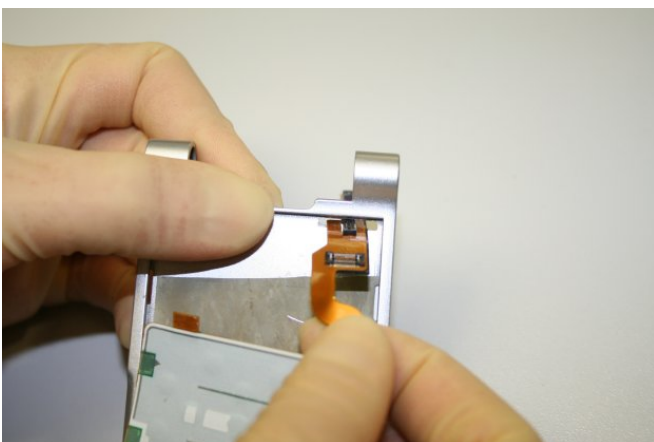
Remove the Flex Cable Fixture.

Step 37

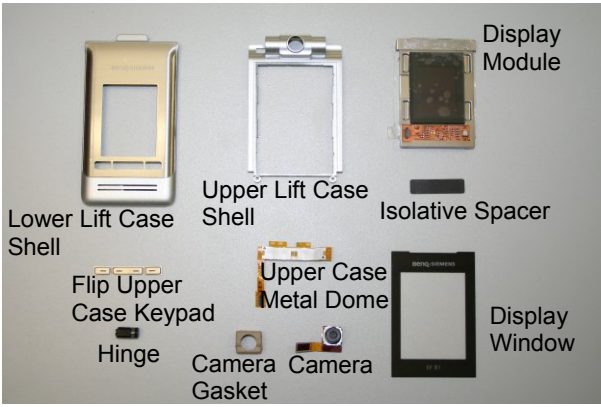
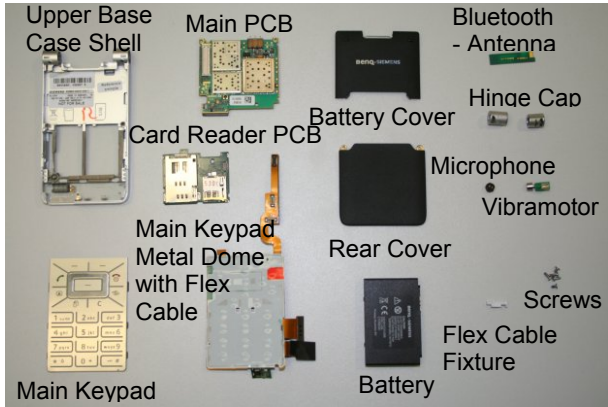


Take the Flex Cable out of the Hinge.

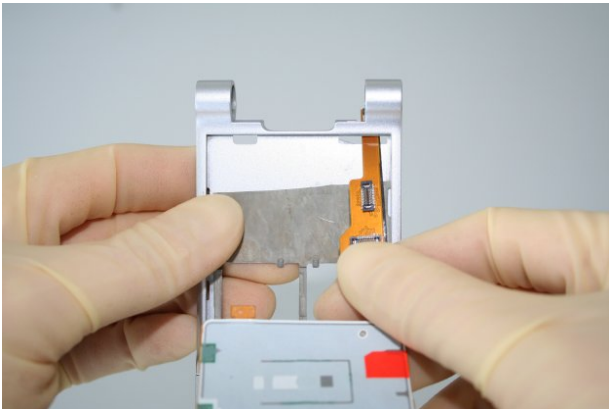

Step 38


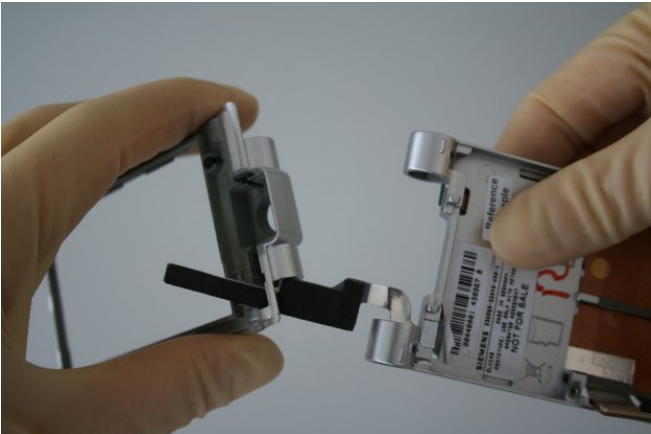
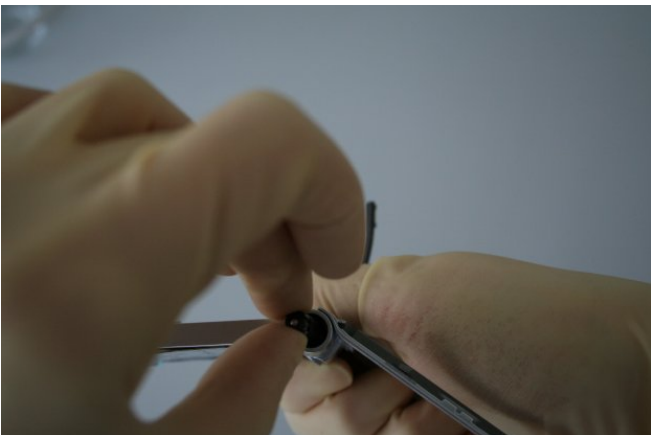




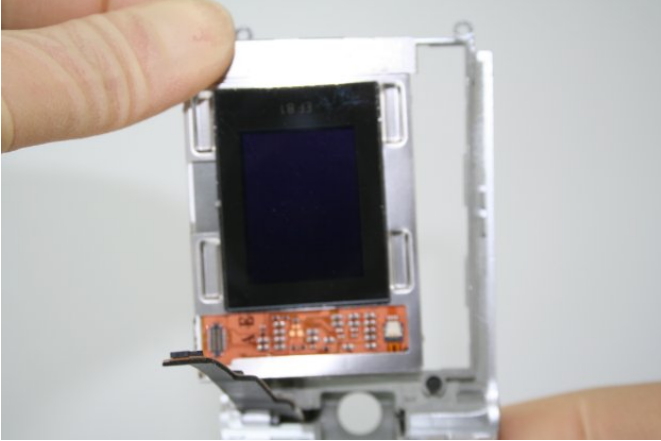
To remove the Main Keypad Metal Dome with Flex Cable passes the Flex Cable through the given frame.



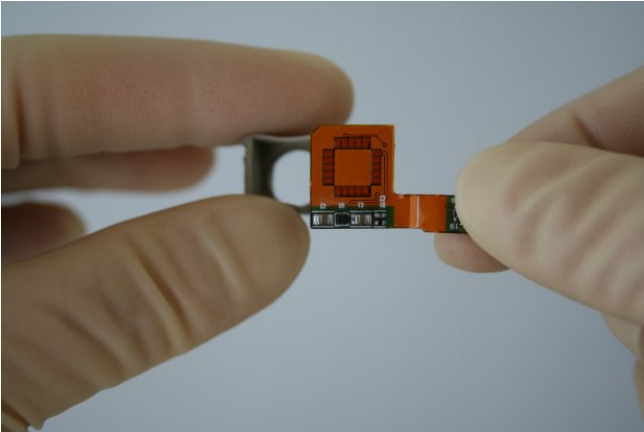
Overview Upper Parts	Overview Lower Parts
 <p>Display Module Lower Lift Case Shell Upper Lift Case Shell Isolative Spacer Flip Upper Case Keypad Upper Case Metal Dome Hinge Camera Gasket Camera Display Window</p>	 <p>Upper Base Case Shell Main PCB Bluetooth - Antenna Card Reader PCB Battery Cover Hinge Cap Microphone Vibramotor Main Keypad Metal Dome with Flex Cable Rear Cover Screws Main Keypad Battery Flex Cable Fixture</p>




5 Assembly of EF81

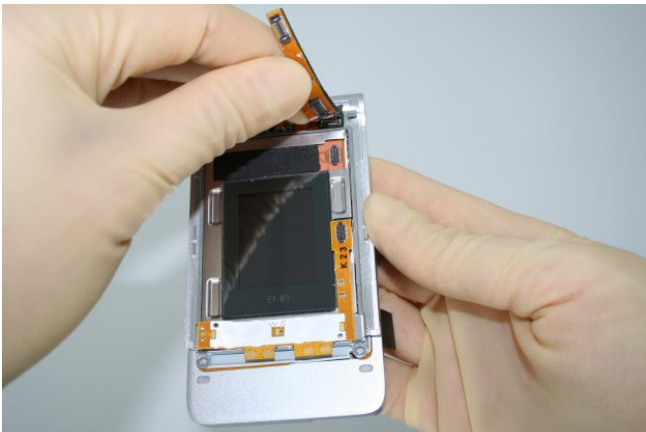


<p>Step 1</p> 	<p>Pass the Flex Cable of the Main Keypad Metal Dome through the cut out of the Upper Base Case Shell.</p>
<p>Step 2</p> 	<p>Assemble the Flex Cable Fixture.</p>

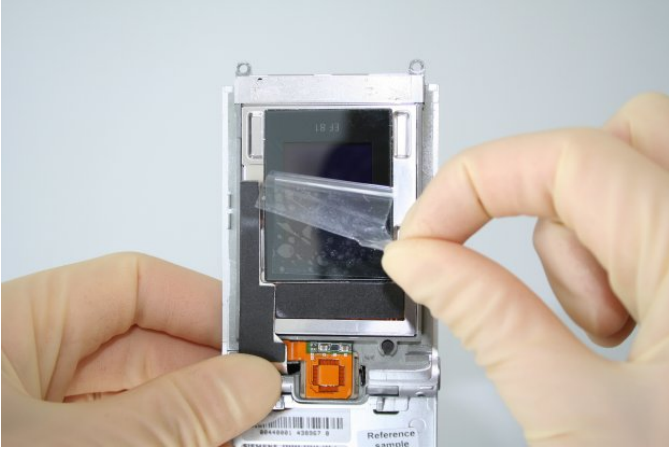


<p>Step 3</p> 	<p>Refasten the IMEI – Label carefully.</p>
<p>Step 4</p> 	<p>Pass the Flex Cable through the frame of the Upper Lift Case Shell.</p>
<p>Step 5</p> 	<p>Put the Hinge – Spring into the Hinge.</p>




<p>Step 6</p> 	
<p>Step 7</p> 	<p>Assemble the Hinge Cap into the Hinge. Make sure, that the Cap has the correct position.</p>
<p>Step 8</p> 	<p>Fix the Display in the Upper Lift Case Shell.</p>

<p>Step 9</p> 	
<p>Step 10</p> 	
<p>Step 11</p> 	<p>Assemble the Camera into the Camera Gasket.</p>

<p>Step 12</p> 	<p>Put the assembled Camera into the Camera Frame.</p>
<p>Step 13</p> 	<p>Assemble the Isolative Spacer.</p>
<p>Step 14</p> 	<p>Assemble the Upper Case Metal Dome by using Tweezers.</p>

<p>Step 15</p> 	<p>Connect the Flex Cable with the Display Connector.</p>
<p>Step 16</p> 	<p>Connect the end of the Flex Cable with the Upper Case Metal Dome Connector.</p>
<p>Step 17</p> 	<p>Assemble the Flip Upper Case Shell Keypad by using Tweezers.</p>

<p>Step 18</p> 	<p>Remove the Protection Foil.</p>
<p>Step 19</p> 	<p>Assemble the Upper Lift Case Shell into the Lower Lift Case Shell.</p>
<p>Step 20</p> 	

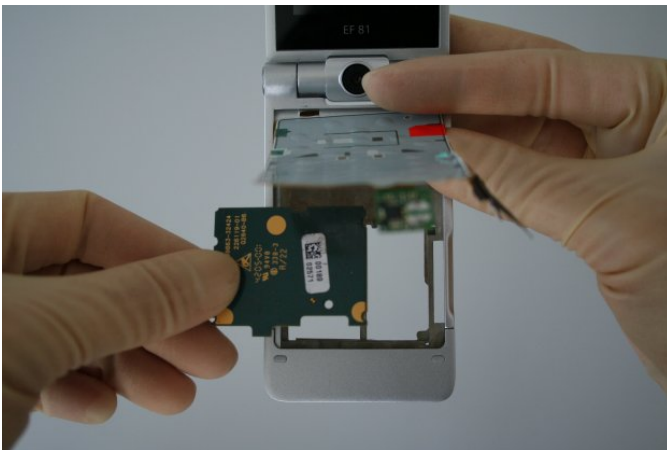
<p>Step 21</p> 	<p>Place the screws with the Torque – Screwdriver T5+.</p>
<p>Step 22</p> 	<p>Remove the Protection Foil.</p>
<p>Step 23</p> 	<p>Assemble the Display Window.</p>

Step 24



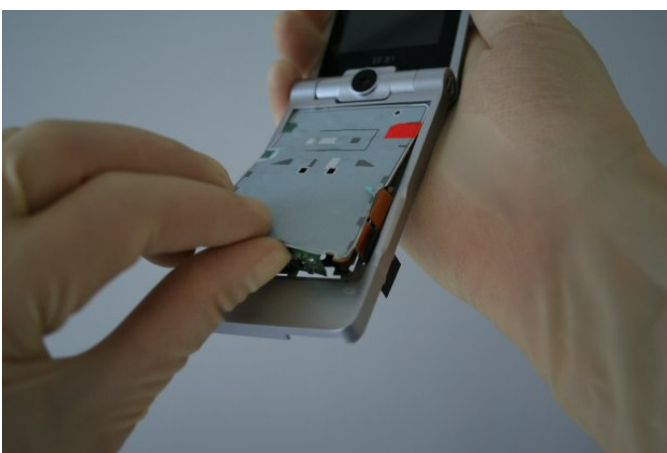
Place the screws with Torque –
Screwdriver T5+.

Step 25


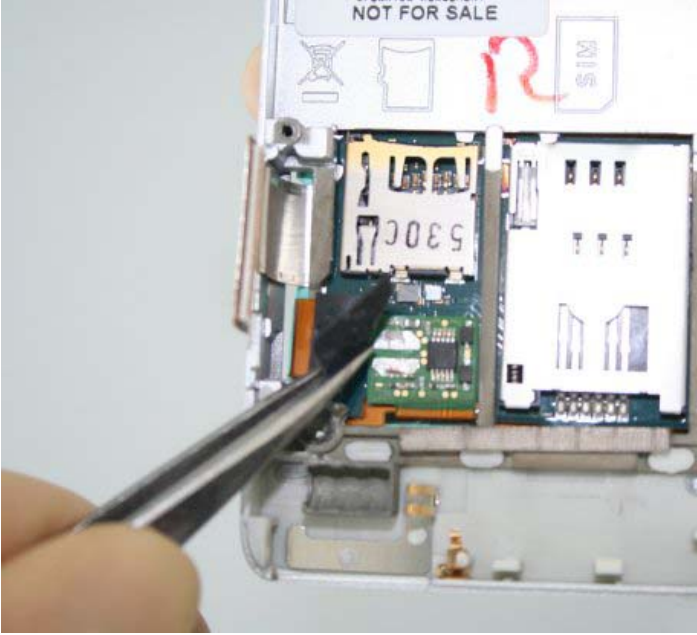


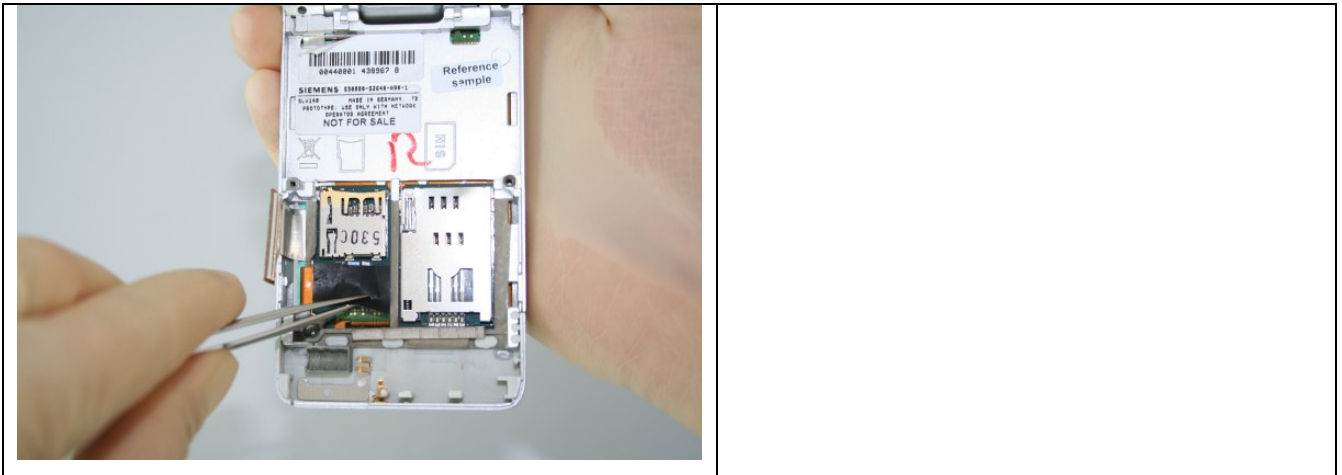
Assemble the Card Reader PCB into the
Upper Base Case Shell.

Step 26



Assemble the Main Keypad Metal Dome
with Flex Cable into the Upper Base Case
Shell. Take care of the Flex Cable!

<p>Step 27</p> 	<p>Connect the Flex Cable with the Card Reader socket.</p>
<p>Step 28</p> 	<p>Tape the Adhesive Strip onto the connected Card Reader socket.</p>
<p>Step 29</p>	

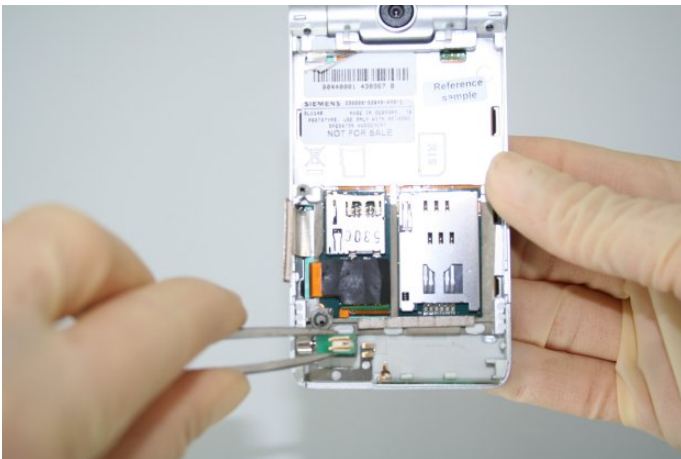


Step 30



Assemble the Bluetooth Antenna by using Tweezers.

Step 31



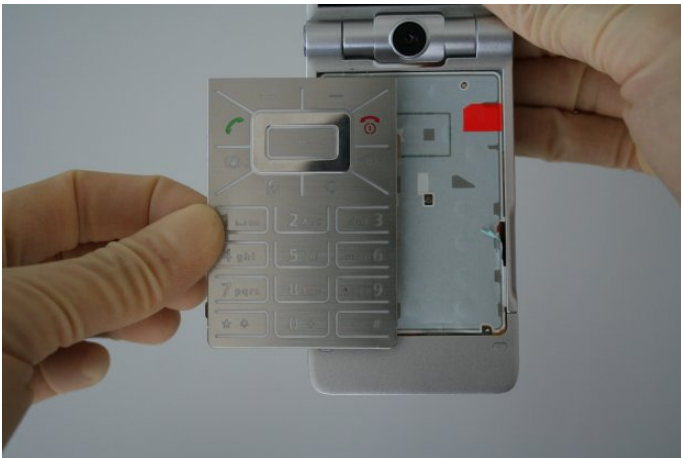
Assemble Vibramotor.

Step 32



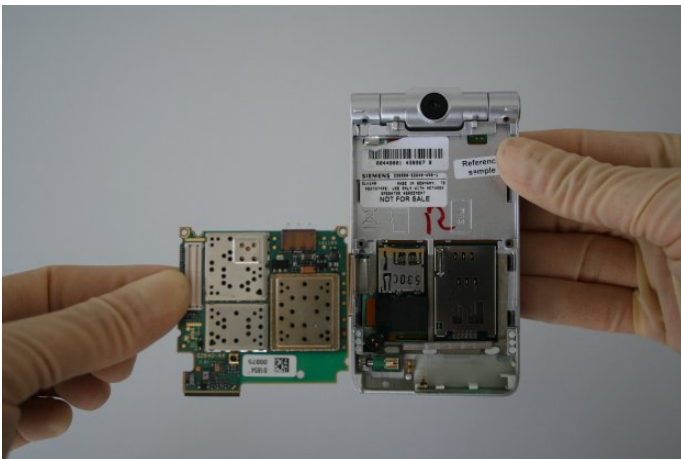
Assemble Microphone.

Step 33



Assemble the Main Keypad by fitting it exactly into the Upper Base Case Shell.

Step 34


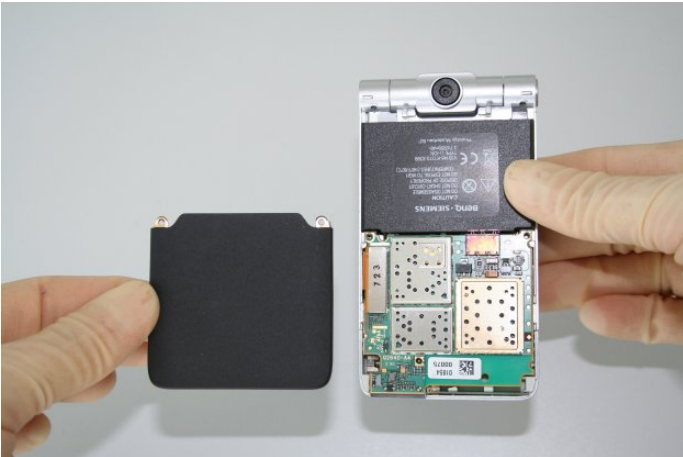



Assemble the Main PCB into the Upper Base Case Shell.

Step 35



Connect the Flex Cable with the Main PCB.

<p>Step 36</p> 	<p>Assemble Battery.</p>
<p>Step 37</p> 	<p>Assemble Rear Cover.</p>
<p>Step 38</p> 	<p>Place screws with Torque – Screwdriver T5+.</p>

Step 39



Assemble Battery Cover.


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

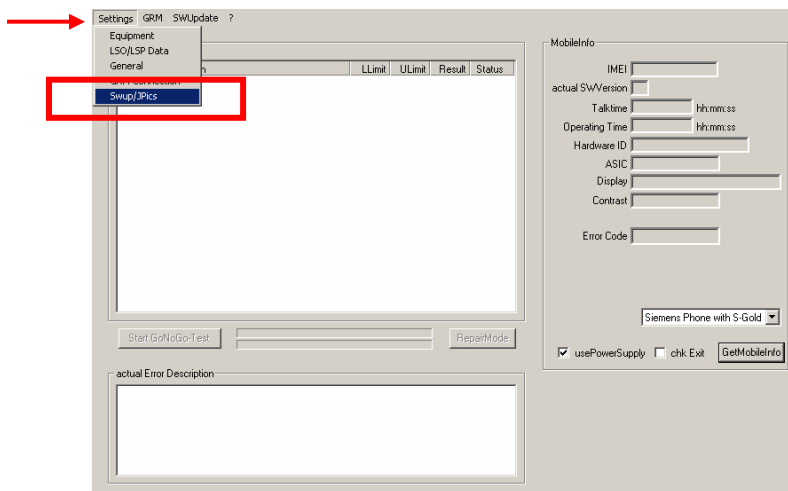
For additional Software and Hardware options as well as the supported GRT equipment, please check the GRT User manual.

<p>Technical Documentation</p>	<p style="text-align: right;">02/2006</p>
<p>TD_Repair_L2.5L_EF81_R1.0.pdf</p>	<p style="text-align: right;">Page 36 of 67</p>

7 GRT Software: Functionality Configuration

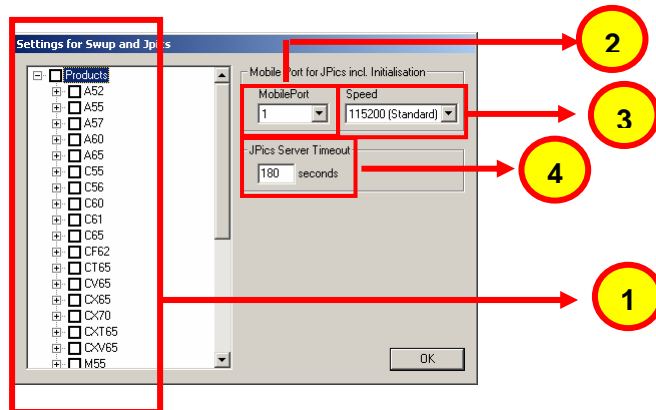
Note: Not implemented in GRT Version 3.x. For Software Update please use the tool 3GSWUP_FU. Manual and Software are available in the Technical Support section of the C-market.

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



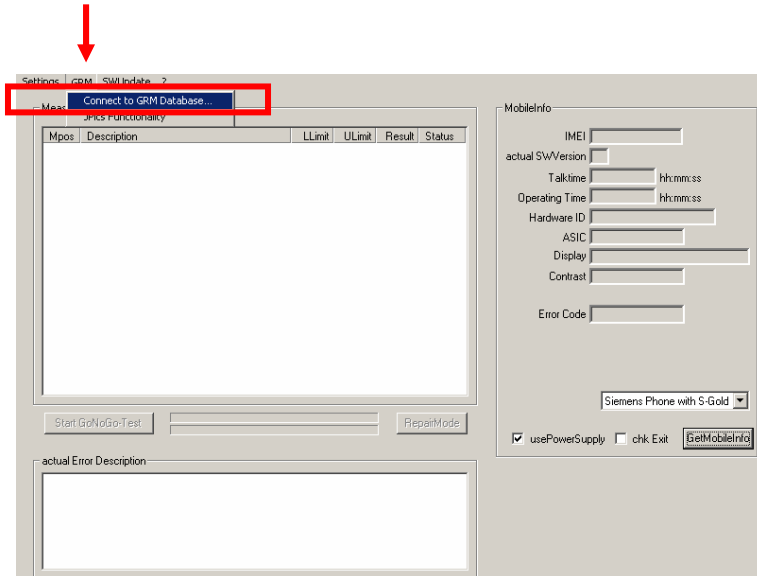
Step 2: Proceed as follows:

- 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"

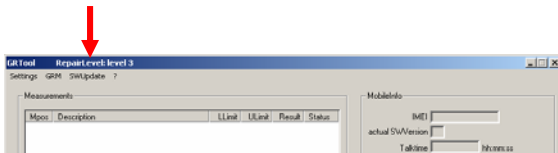
3 If you IT infrastructure parameter have changed, use this button to move to the configuration mask

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

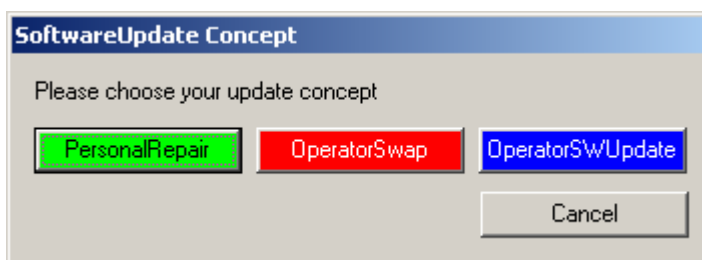
GRT Software has now finished all required settings and configuration tasks. All files have been down- and uploaded. In dependency of the selected number of mobile phones and variants the volume of transferred date could be (~100MB)

8 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.

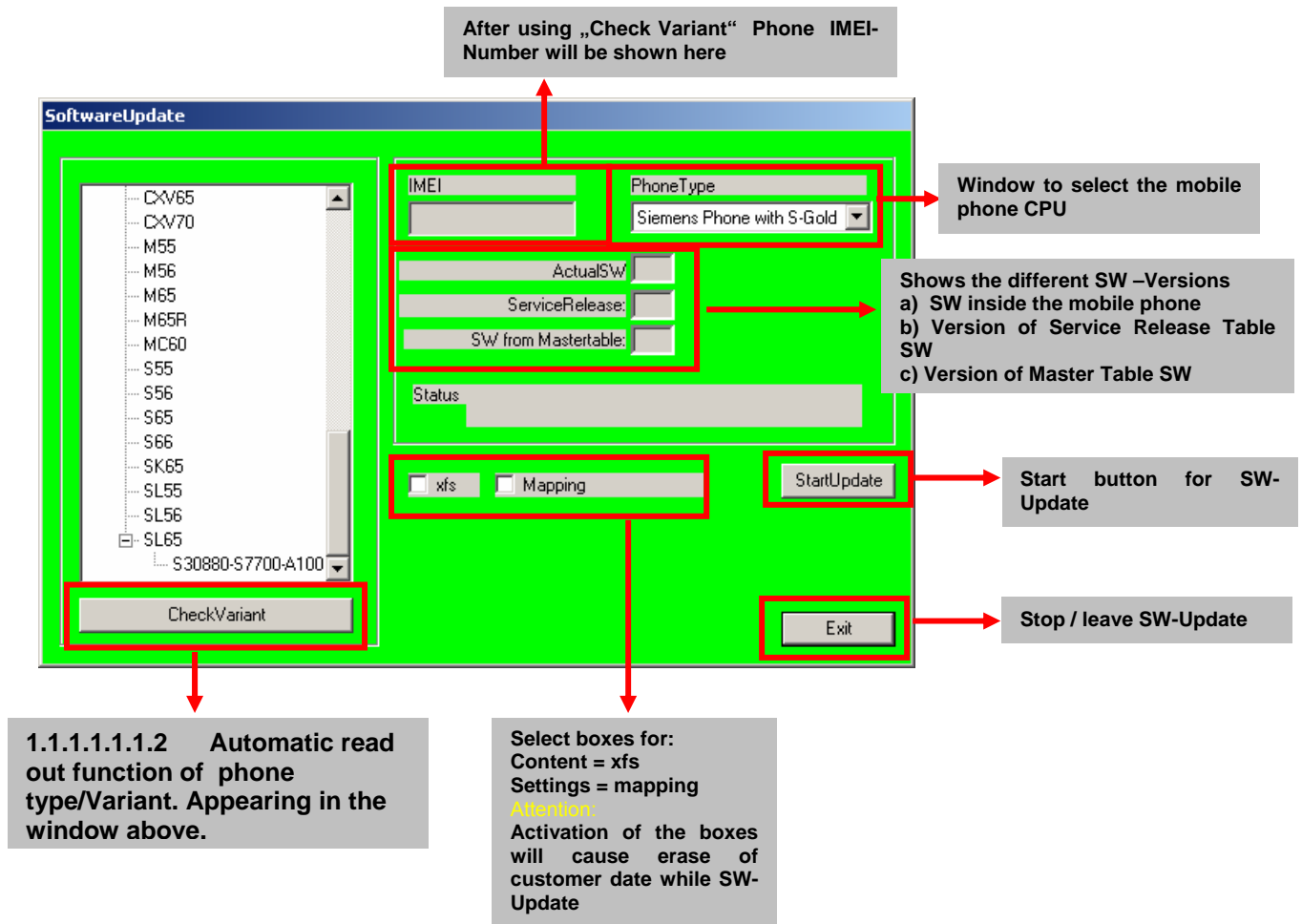
- **Operator SWUpdate**

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.

8.1 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.

8.2 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. There is a 'Status' field, checkboxes for 'xfs' and 'Mapping', and a 'StartUpdate' button. An 'Exit' button is at the bottom right. Four numbered callouts (1-4) 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 1.1.1.1.1.1 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 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

8.3 Case 2: Operator SWAP (red)

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

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** 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

8.4 Case 3 Operator SWUpdate (blue)

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, M690, 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 checkboxes for 'xfs' and 'Mapping', and a 'StartUpdate' button. An 'Exit' button is at the bottom right. 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; 4 points to the 'StartUpdate' button.

1 Select the mobile phone CPU type

2 1.1.1.1.1.3 Read out phone type/Variant. >>Appears in the window above.

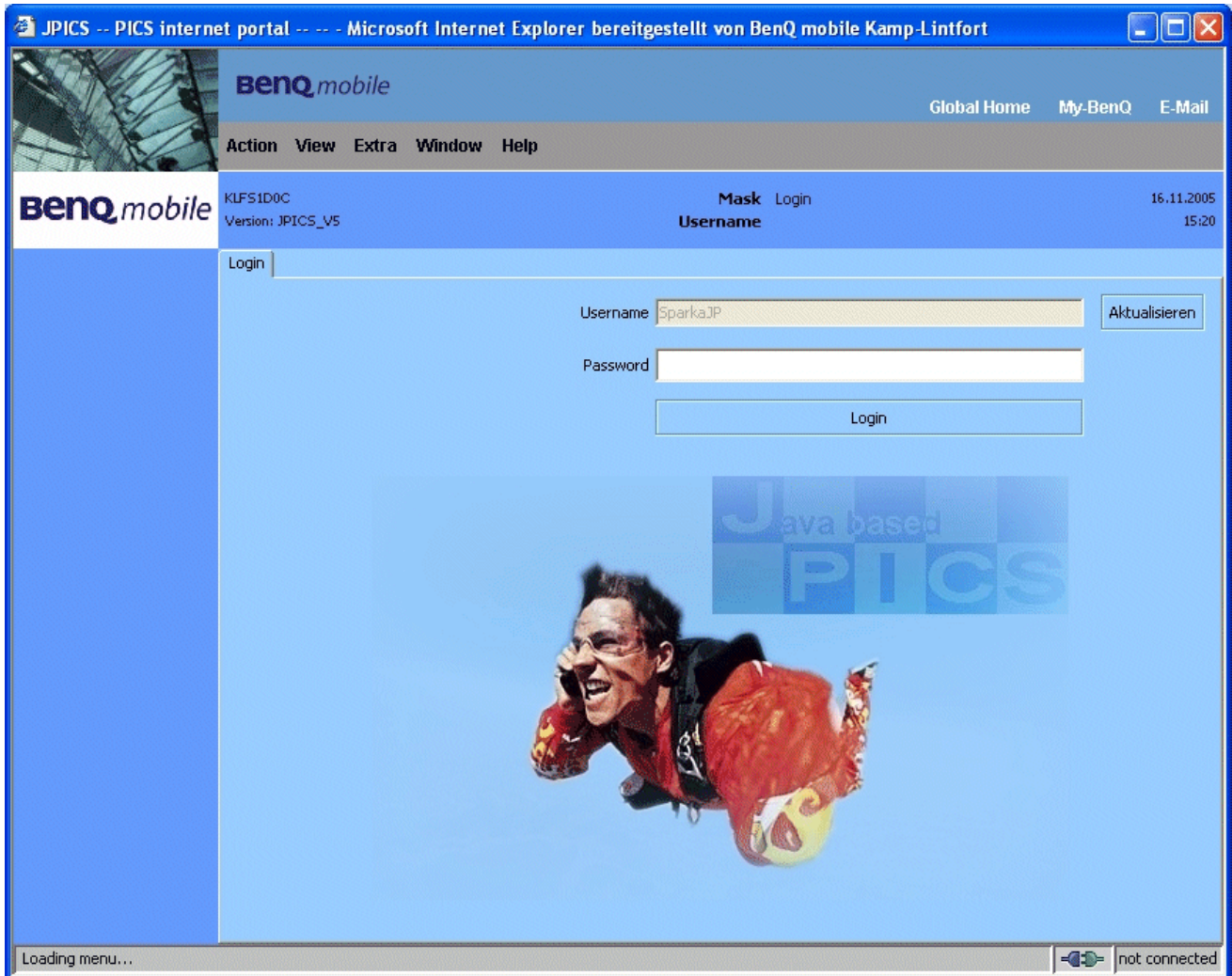
3 Choose if customer data shall be erased. If "Yes" activate the boxes in front of xfs and mapping

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

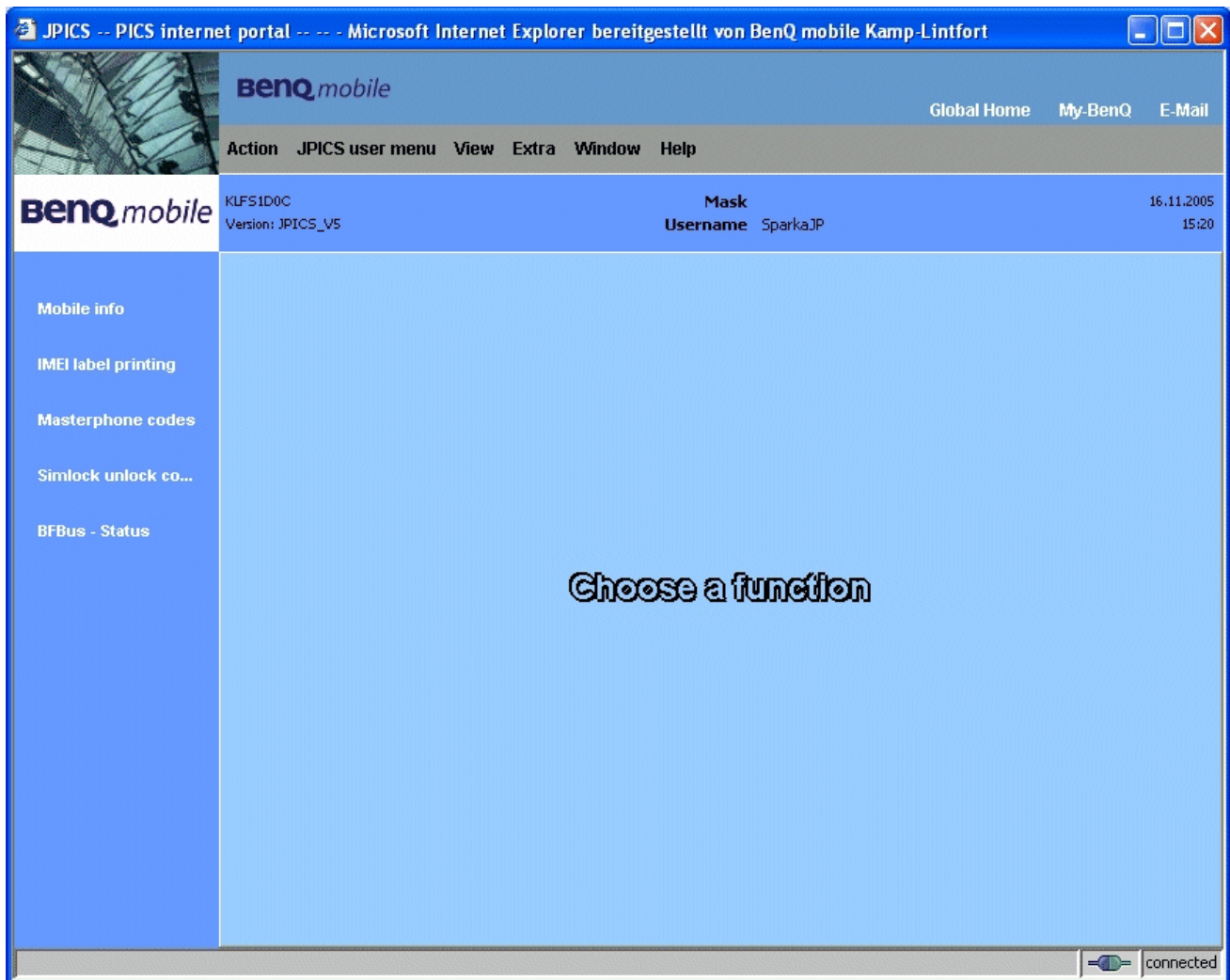
9 JPICS (Java based Product Information Controlling System)



Overview

The following functions are available for the LSO:

- General mobile information
- Generate PINCODE
- Generate SIMLOCK – UNLOCK – Code
- Print IMEI labels



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
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

BenQ mobile Global Home My-BenQ E-Mail

Action JPICS user menu View Extra Window Help

KLFS1D0C Mask Masterphone-Code* 16.11.2005
Version: 1.0 Username SparkaJP 15:22

Troubleshooting Masterphone-Code

Input

IMEI Execute DB-Location

Mobile data

Producttype Deliverypartnumber
SW version Partnumber
Warranty Status

Delivery information

Deliverynote Deliverydate

Mobile codes

Mobile unlock code

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.

The screenshot shows the BenQmobile JPICS internet portal interface. The browser title is "JPICS -- PICS internet portal -- -- Microsoft Internet Explorer bereitgestellt von BenQ mobile Kamp-Lintfort". The page header includes the BenQmobile logo and navigation links: "Global Home", "My-BenQ", and "E-Mail". A menu bar contains "Action", "JPICS user menu", "View", "Extra", "Window", and "Help".

The main content area is titled "Simlock-Unlock-Code" and includes the following sections:

- User Information:** Mask: Simlock-Unlock-Code, Username: SparkaJP, Date: 16.11.2005 15:23.
- Form Section:**
 - Get information for given IMEI: IMEI DB-Location
 - Mobile data:

Producttype	<input type="text" value="C45"/>	Deliverypartnumber	<input type="text" value="L36880-55100-X139-15"/>
SW version	<input type="text" value="049"/>	Partnumber	<input type="text" value="S30880-55100-A139-14"/>
Warranty	<input type="text" value="21.08.05"/>	Status	<input type="text" value="Normal"/>
 - Delivery information:

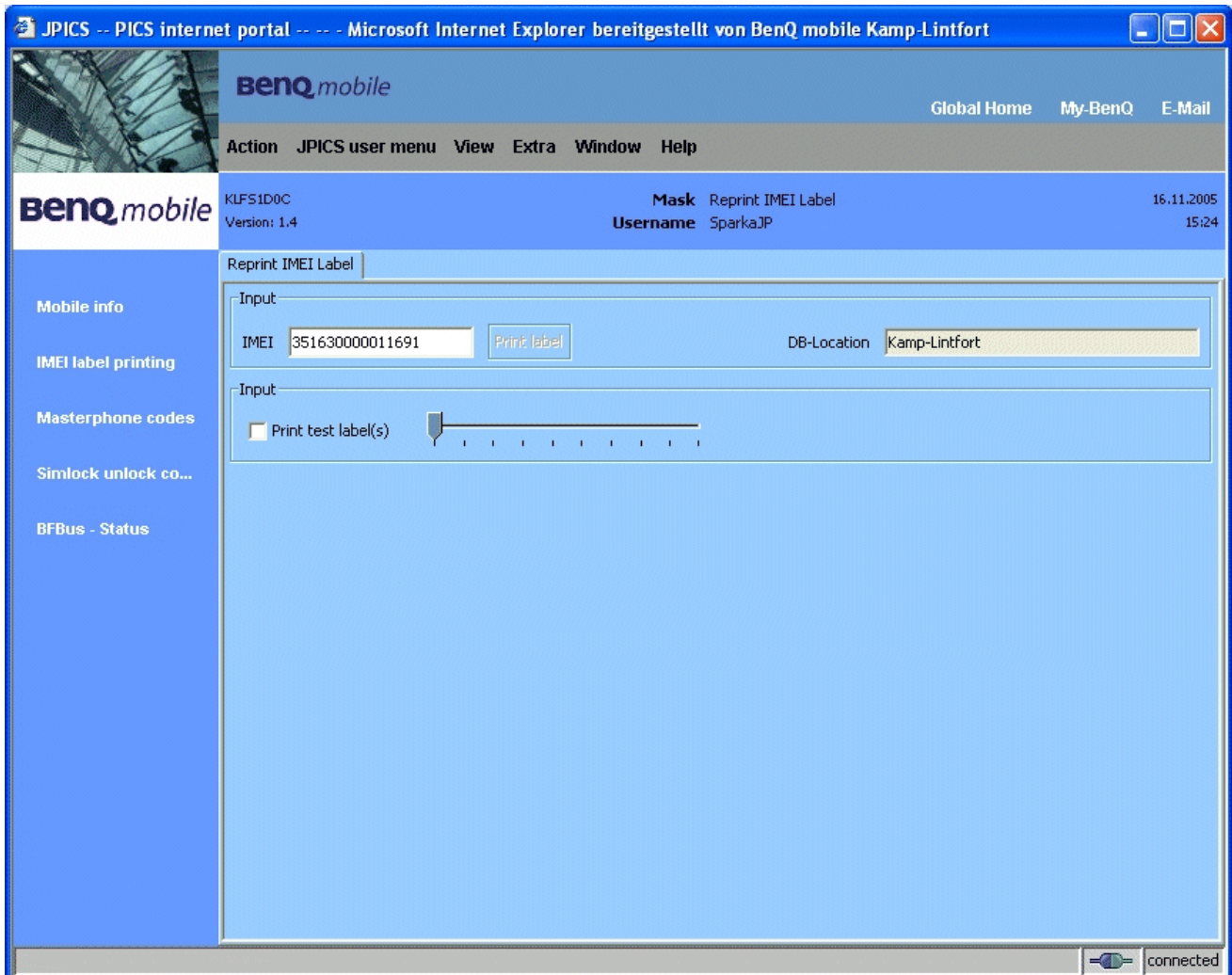
Deliverynote	<input type="text" value="0066015319"/>	Deliverydate	<input type="text" value="22.08.03"/>
--------------	---	--------------	---------------------------------------
 - Mobile codes:

Networkcode	<input type="text"/>	Network Mastercode	<input type="text"/>
S. Providercode	<input type="text"/>	S. Provider Mastercode	<input type="text"/>
SIM-Mastercode	<input type="text"/>	SIM-Reeanablecode	<input type="text"/>
Corporatecode	<input type="text"/>	Corporate Mastercode	<input type="text"/>
Network Subnet Code	<input type="text"/>	Network Subnet Mastercode	<input type="text" value="*#0004*28101158#"/>
- Image:** A small image of a blue mobile phone labeled "C45".

The bottom right corner of the browser window shows a "connected" status icon.

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.

10 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 EF81 is S30880-2640-#xxx where the last for letters specify the housing and software variant.

EF81 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 includes 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

SW/HW version, key: * # 0 6 #

number, exit code and

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

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

Technical Documentation	02/2006
TD_Repair_L2.5L_EF81_R1.0.pdf	Page 54 of 67

WCDMA 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 WCDMA tester
- >Use a Test USIM

Internal Antenna				
Test case	Parameter	Measurements	Limits	
1	Location Update	• Band 1		
2	Call from NodeB			
3	WCDMA TX Test	• UARFCN 10750 • ULTA -30	• Peak Power (dBm) • Magnitude Error RMS • EVM RMS • Phase Error RMS • Frequency Error Average	• WCDMA Spec.
4	Call release from NodeB			
External Antenna				
5	Call from UE			
6	Audio Test		• Audio Loop	• Individual check
7	WCDMA TX Min Power		• Peak Power (dBm) • Magnitude Error RMS • EVM RMS • Phase Error RMS • Frequency Error Average	• WCDMA Spec
8	WCDMA TX Max Power		• Peak Power (dBm) • Magnitude Error RMS • EVM RMS • Phase Error RMS • Frequency Error Average	• WCDMA Spec
9	Call release from NodeB			
10	Test RX BER	• UARFCN 10750 • ULTA -30	• Bit Error Rate • Block Error Rate	• WCDMA Spec

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

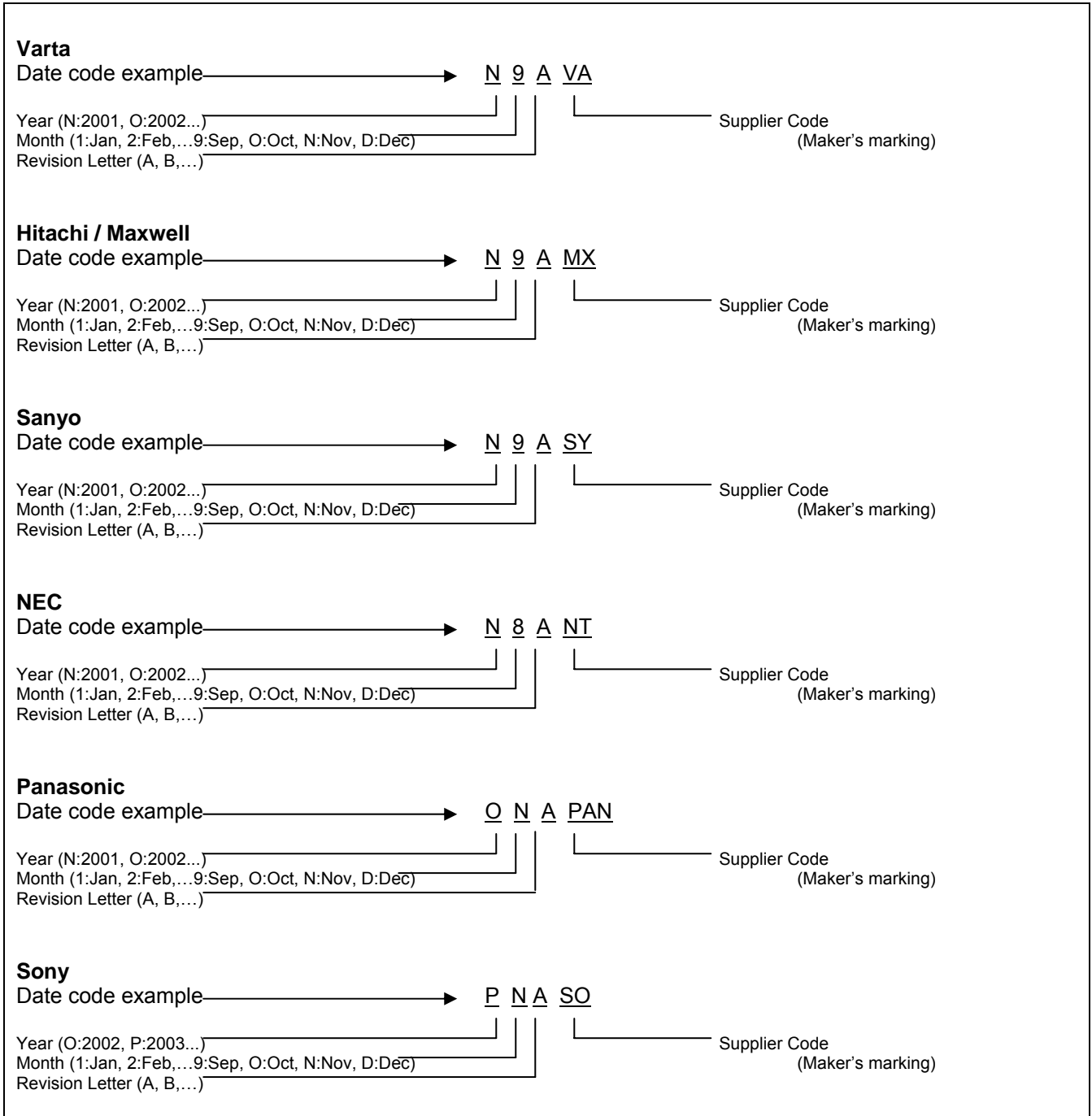
2) Test SIM Card from the company “**T-D1**”

Pin 1 number: 1234
PUK : 76543210

Pin 2 number: 5678
PUK 2 : 98765432

Annex 2

Battery Date Code overview



12 Introduction of Service Repair Documentation Level 3 (basic) – EF81

12.1 Purpose

This part of Service Repair Documentation is intended to carry out repairs on BenQ Mobile repair level 3basic (only for workshops without level 3 equipment (special agreement required)). The described failures shall be repaired in BenQ authorized local workshops only.

The level 3basic partners are obliged to send exchanged boards (SWAP) to the next higher Service Repair Partner.

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 EF81 Level 1-3 repair documentation.

The Service Partner has to ensure 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 EF81 related Customer Care Information

The part number for the EF81 is S30880-S2640-#xxx where the last four letters specify the housing and software variant.

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.

12.2 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 3basic.

12.3 Terms and Abbreviations

12.4 List of available Level 3 (basic) parts

Product	ID	Order Number	Description CM
EF81	X100	L50634-Z93-C364	IO-JACK NANO 12-POL
EF81	X1101	L50634-Z97-C482	CONNECTOR BATTERY 3-POL X85-2
EF81	X1400	L50634-Z97-C447	CONNECTOR CARDREADER TRANSFLASH
EF81	X1500	L50634-Z97-C475	CONNECTOR SIM CARD READER KE
EF81	X2200	L50634-Z97-C477	CONNECTOR BOARD TO BOARD FEMALE 80 POL
EF81	X2304	L50634-Z97-C456	CONNECTOR BOARD TO BOARD MALE 20 POL
EF81	Z1500	L50620-U6029-D670	FILTER EMI (Fi-Type6) PB Free

12.5 Hardware requirements

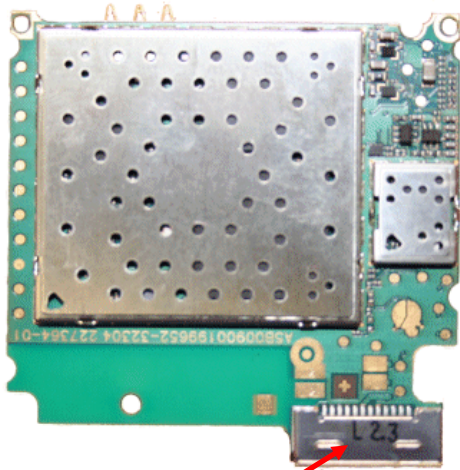
(According to General soldering information V1.3 - check C-market for updates)

Jigs, Tools and working materials for all described repairs:

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

12.6 EF81 Board Layout Main PCB

Upper board side

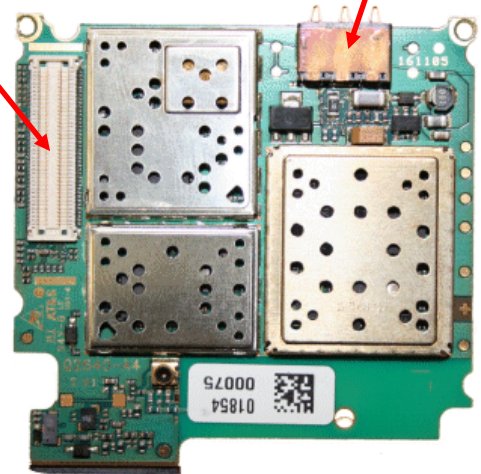


Nano I/O - Connector

Lower board side

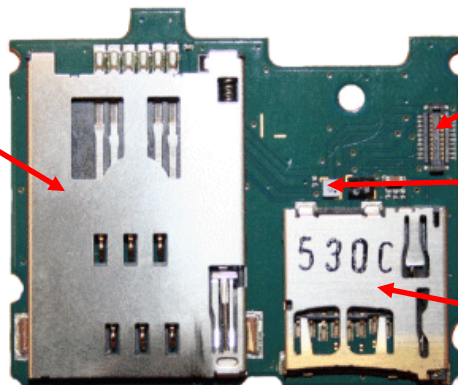
MMI Connector

Battery Connector



12.7 EF81 Board Layout Card Reader PCB

SIM - Card Reader



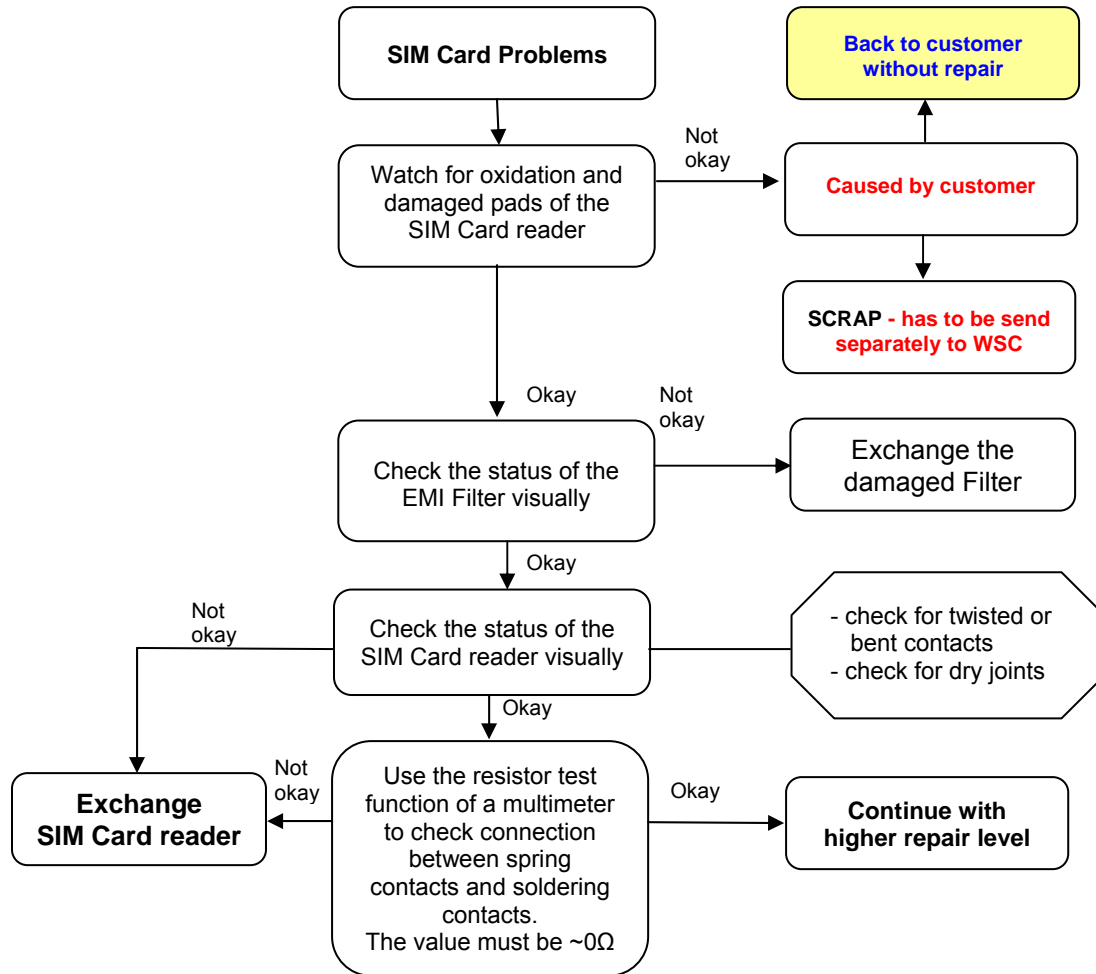
Board to Board Connector

EMI Filter

Memory - Card Reader

12.8 SIM Card Problems

Fault Symptoms	
Customer: Handset does not accept SIM card	GRT: Support in February 2006



Connector SIM Card Reader

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

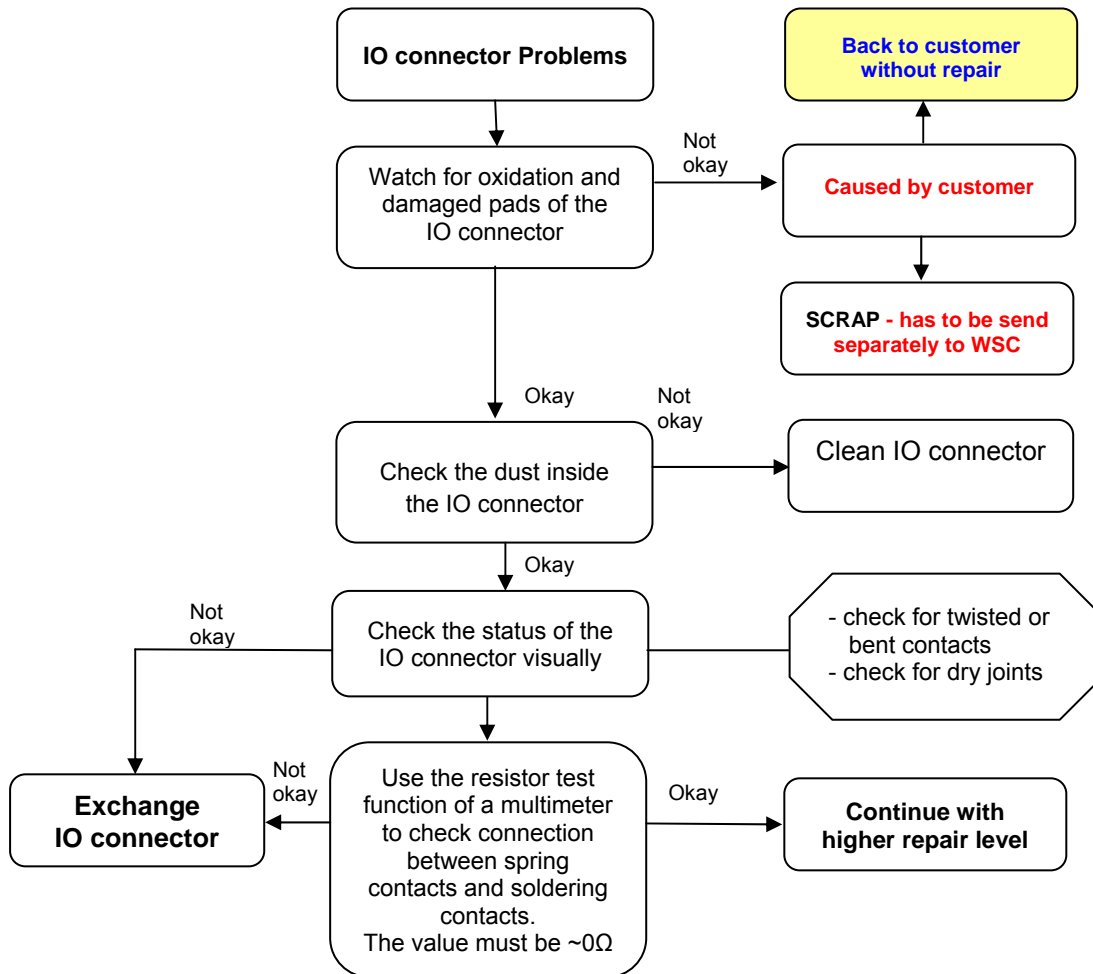
E-commerce order number: L50634-Z97-C475
 E-commerce order name: CONNECTOR SIM CARD READER KE
 Soldering temperature: ~ 360°C TIP Temp.

IRIS Diagnose Code: 43100 Interfaces / SIM Cardreader / "Please Insert SIM Card"
 43200 Interfaces / SIM Cardreader / "Cardreader Error"
 43300 Interfaces / SIM Cardreader / Mechanical Damage

Technical Documentation	02/2006
TD_Repair_L2.5L_EF81_R1.0.pdf	Page 61 of 67

12.9 IO Connector Problems

Fault Symptoms	
Customer: Problems with external loudspeaker or microphone when using a car kit Problems with accessories connected at the IO connector	GRT: Support in February 2006



Connector IO Jack

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

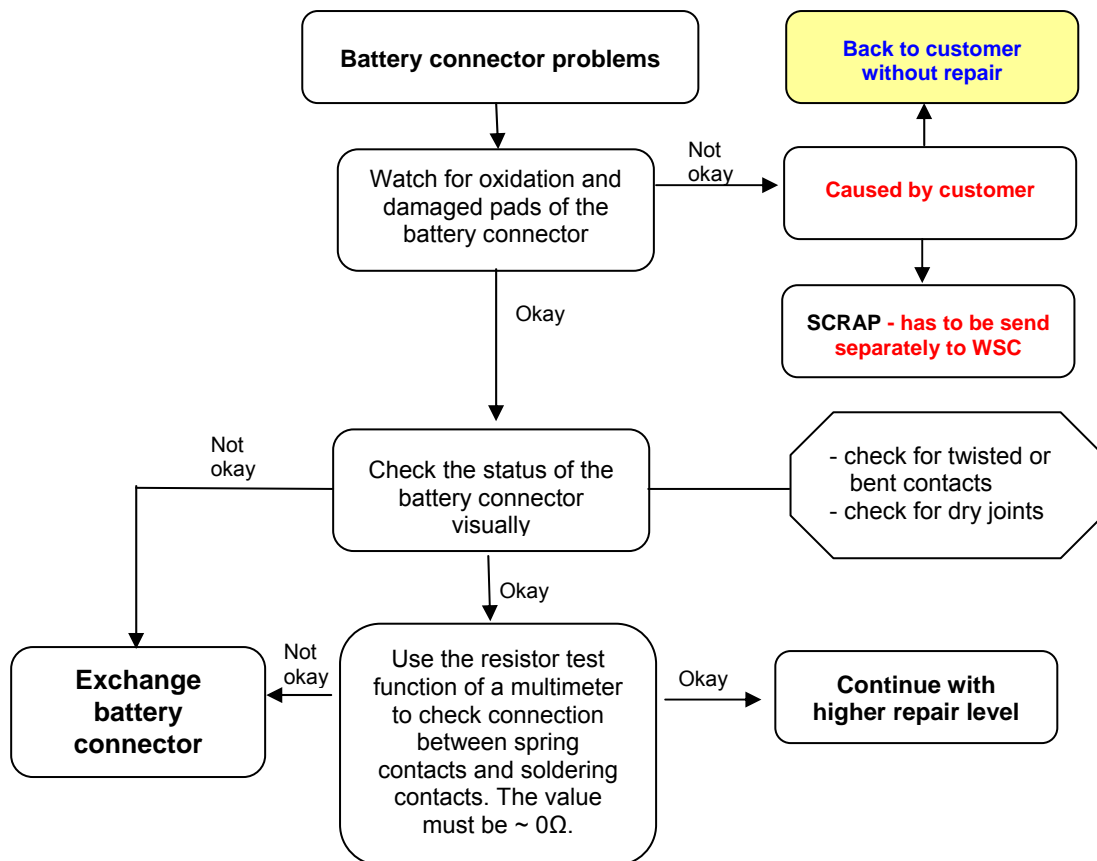
E-commerce order number: L50634-Z93-C364
 E-commerce order name: IO-JACK NANO 12-POL
 Soldering temperature: ~ 360°C TIP Temp.

IRIS Diagnose Code: 47300 Interface/Data Interface/Mechanical Damage
 4B100 Interface/Headset Connector/Mechanical Damage

Technical Documentation	02/2006
TD_Repair_L2.5L_EF81_R1.0.pdf	Page 62 of 67

12.10 Battery Connector Problems

Fault Symptoms	
Customer: Mobile does not switch on	GRT: No connection to GRT



Connector BATTERY

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

E-commerce order number: L50634-Z97-C482

E-Commerce name: CONNECTOR BATTERY 3-POL X85-2

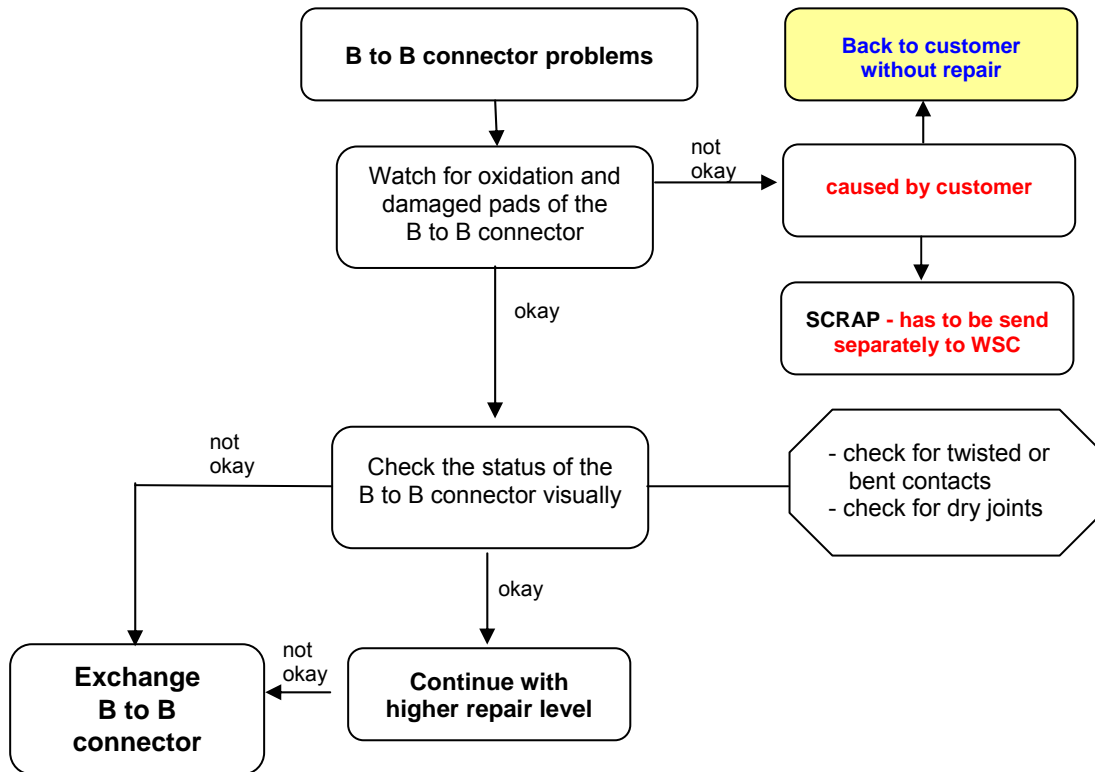
Soldering temperature: 240 - 255°C

IRIS Diagnose Code: 11000 Battery / No Charging
92000 Functionality / Switch On Problems

Technical Documentation	02/2006
TD_Repair_L2.5L_EF81_R1.0.pdf	Page 63 of 67

12.11 Board to Board Connector Problems

Fault Symptoms	
Customer: Keypad malfunction Display malfunction	GRT: Keyboard malfunction Current measured failed



Connector Board to Board

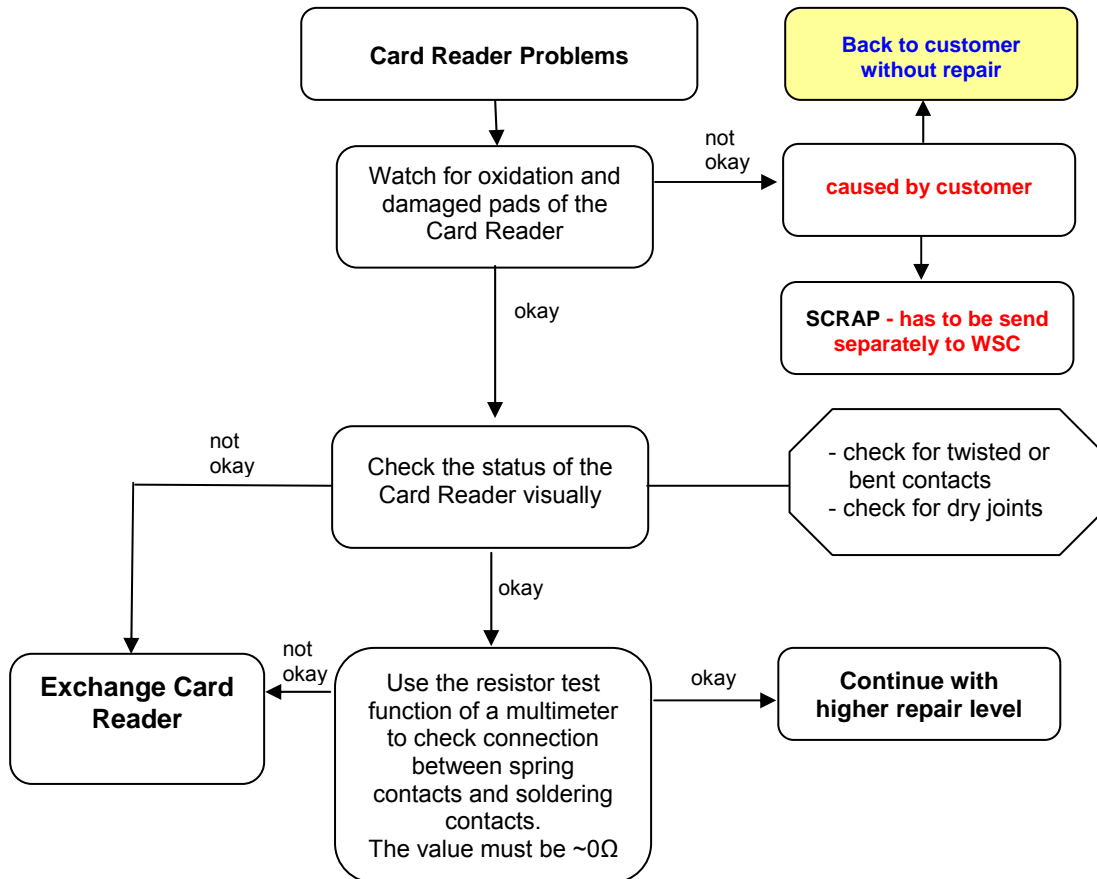
Use hot air blower to remove defective component. Avoid excessive heat! Watch surrounding components! Resolder new component afterwards.

E-commerce order number: L50634-Z97-C456
 E-commerce order name: CONNECTOR BOARD TO BOARD MALE 20 POL
 Soldering temperature: ~ 360°C TIP Temp.

IRIS Diagnose Code: 21000 Display / Performance
 31100 Keys / All / No Function
 31200 Keys / All / Reduced Functionality
 36000 Keys / Illumination
 36100 Keys / Illumination / No Function

12.12 Transflash Card Reader Problems

Fault Symptoms	
Customer: Card Reader malfunction	GRT: Tbd.

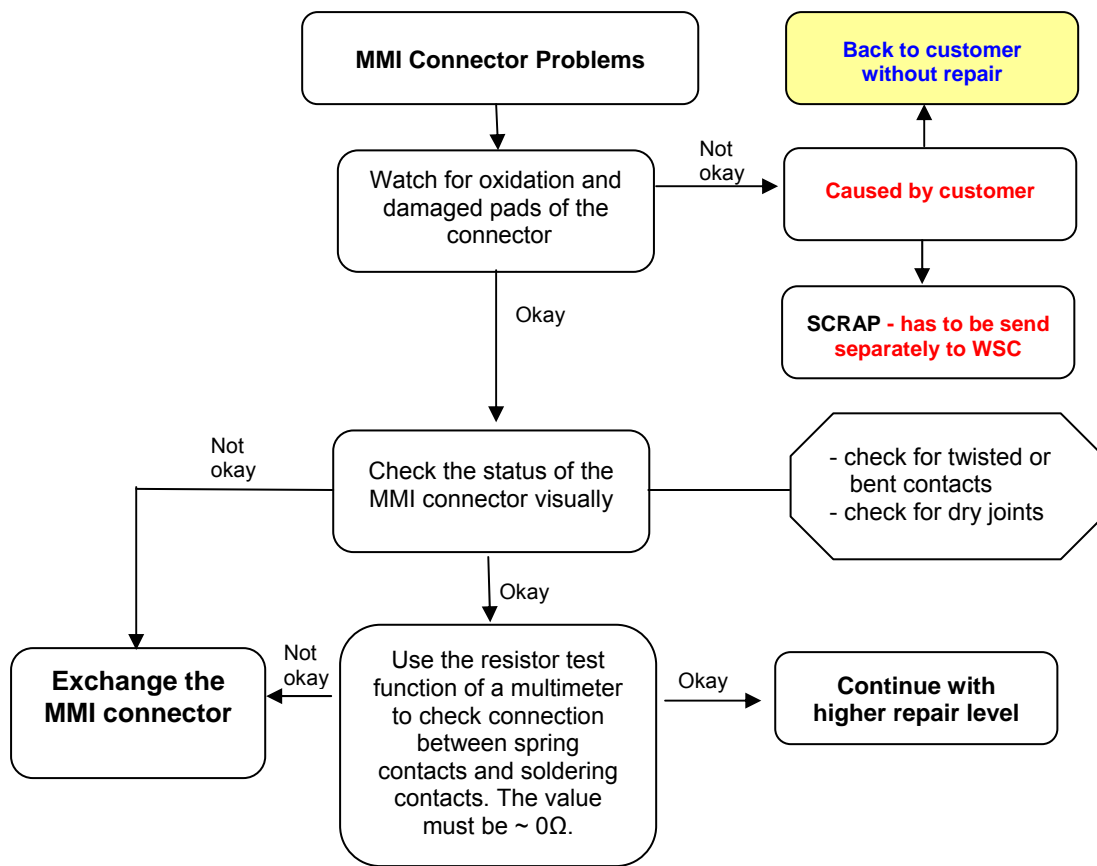


E-commerce order number: L50634-Z97-C447
 E-Commerce name: CONNECTOR CARDREADER TRANSFLASH

IRIS Diagnose Code: 4E000 Interfaces / Memory Card Reader
 4E100 Interfaces / Memory Card Reader / Card Does Not Snap In

12.13 MMI Connector Problems

Fault Symptoms	
Customer: Display malfunction Keypad malfunction Camera malfunction	GRT: Tbd.



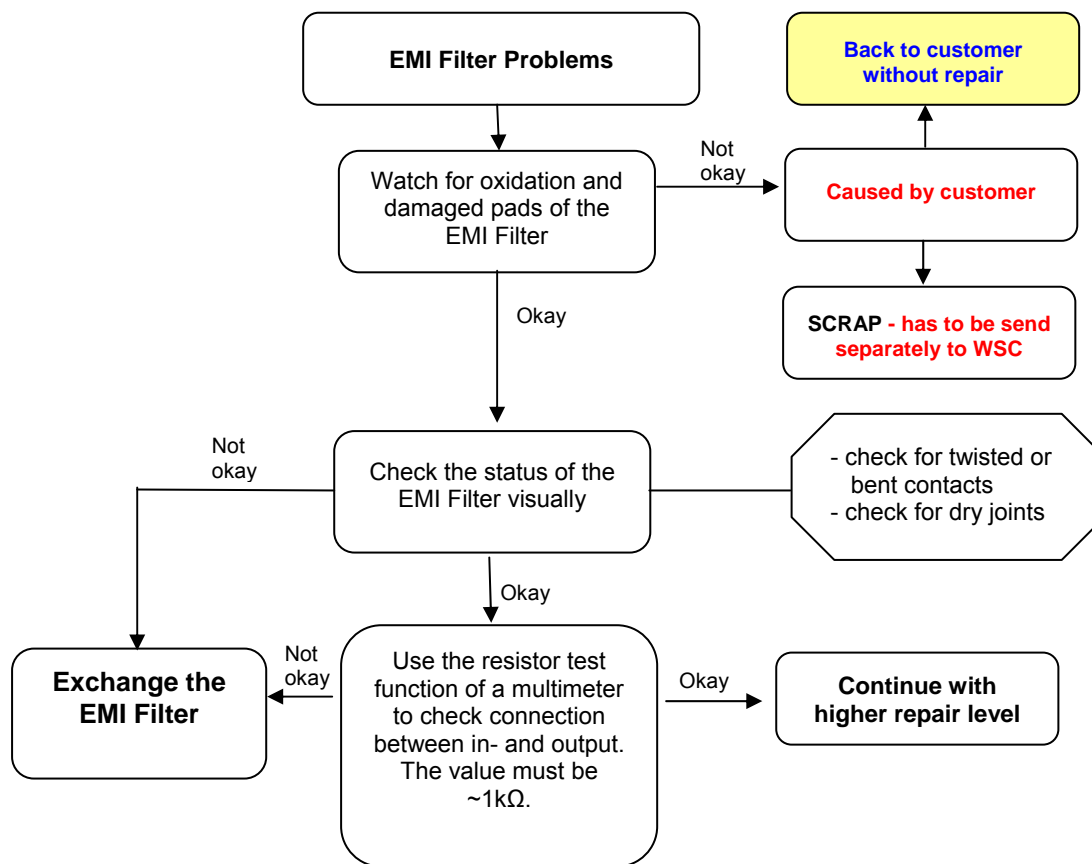
E-commerce order number: L50634-Z97-C477
 E-Commerce name: CONNECTOR BOARD TO BOARD FEMALE 80 POL

IRIS Diagnose Code: 47100 Interfaces / Data Interface / No Function
 47300 Interfaces / Data Interface / Mechanical Damage
 BA200 Accessories / Camera / No Function

Technical Documentation	11/2005
TD_Repair_L1-L3_EF81_R1.0.pdf	Page 66 of 67

12.14 EMI Filter Problems

Fault Symptoms	
Customer: No Data Connectivity via I/O Connector	GRT: No Software Update possible Get Mobile Info Fails



E-commerce order number: L50620-U6029-D670
 E-Commerce name: FILTER EMI (Fi-Type6) PB Free

IRIS Diagnose Code: 47100 Interfaces / Data Interface / No Function

Technical Documentation	11/2005
TD_Repair_L1-L3_EF81_R1.0.pdf	Page 67 of 67