Service Manual
Level 1-2
for

BenQ mobile

A38

Release	Date	Department	Notes to change
R 1.0	05.07.2006	ISC S CES	New document

Table of Content

1. Key Feature

System	• Tri-Band 900/1800/1900; 850/1800/1900
Battery	• Li-Ion 860 mAh
Stand – by Time	• Up to 286 hrs.
Talking Time	• Up to 248 min.
Storage	• 256KB
Dimensions	• 103.5 x 45.6 x 18.75mm
Display	• Dithering 60.5K colours, 1.4”, CSTN
Ring Tone	• 32 polyphonic melody
Connectivity	• RS232
Messaging	• SMS, EMS

Features

▪ SMS/EMS
▪ Headset Mono, PC Connectivity Toolkit, and PC Data Cable
▪ Display: 1.4 inches, 96 x 64 pixels, 60,543 colors
▪ 32-chord polyphonic ringtones, MIDI, SP-MIDI, i-Melody
▪ Speaker and Receiver
▪ Baseband Solution: TI

Data Service

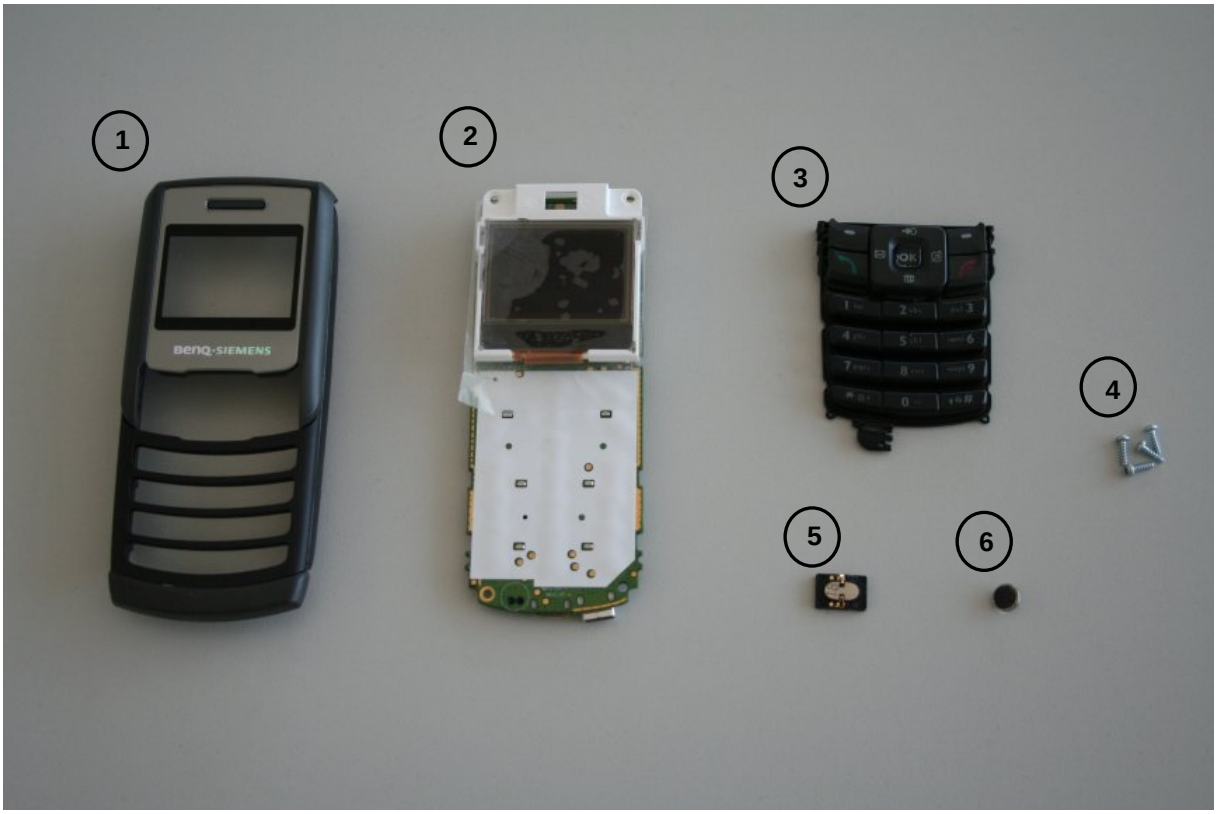
▪ Baseband Solution: TI
▪ SMS, EMS
▪ Input: iTap

SIM Functionality/Security Controls

▪ STK, SIM Lock / Security boot loader

2. Spare Part Overview of A38

Overview Upper Parts



No.	Description CM	Order Number
1.	Upper Case Shell (ASSY FRONT CASE)	
2.	RF Control Board incl. Display Module (PCBA MAIN BD)	
3.	Keypad	L50658-A218-A2-1
4.	Screws	L50658-A218-C90
5.	Earpiece (RECEIVER)	L50612-Z3-C86
6.	Microphone (MIC)	L50654-Z6-C125

Overview Lower Parts

No.	Description CM	Order Number
7.	Lower Case Shell (ASSY REAR CASE)	
8.	Battery Cover (COVER BATTERY)	C39158-A218-B500
9.	Battery (BAT LI 3.7V)	V30145-K1310-X481
10.	Ringer (SPK D15 0.5W)	C39158-A218-C201
11.	Vibra-Alert (VIBRATOR)	C39453-Z5-C427

3. Disassembly of A38

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

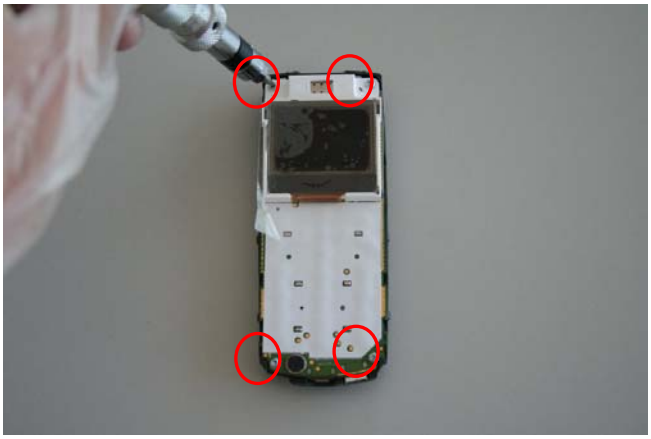
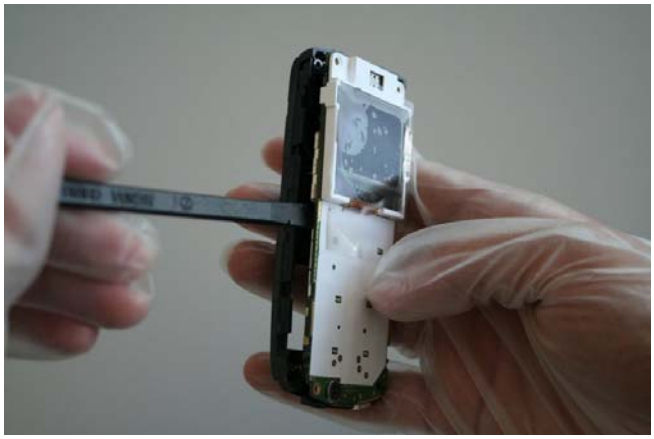
For more details please check information in c – market

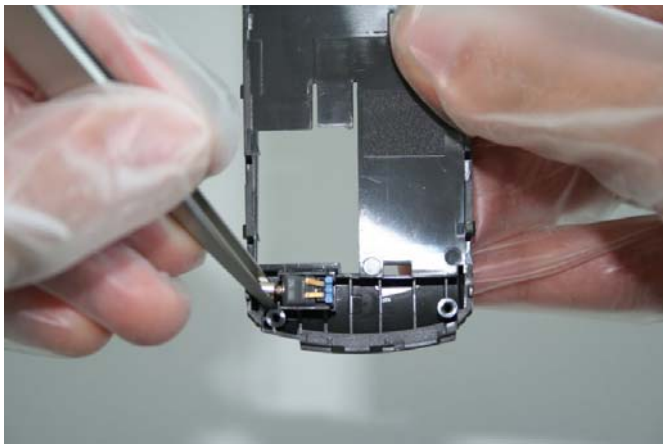
https://market.benqmobile.com/SO/welcome.lookup.asp

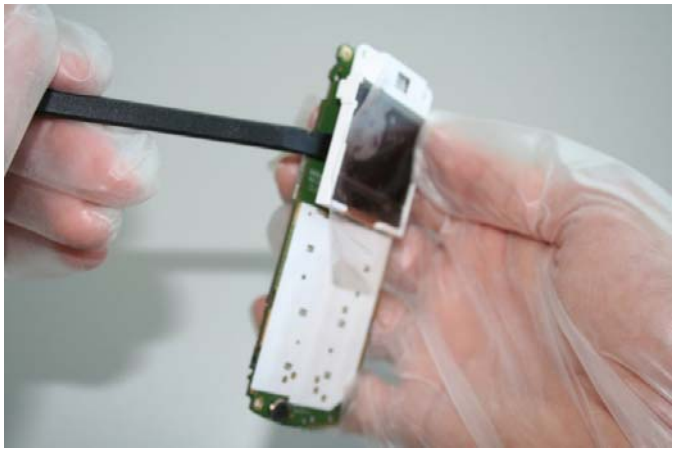
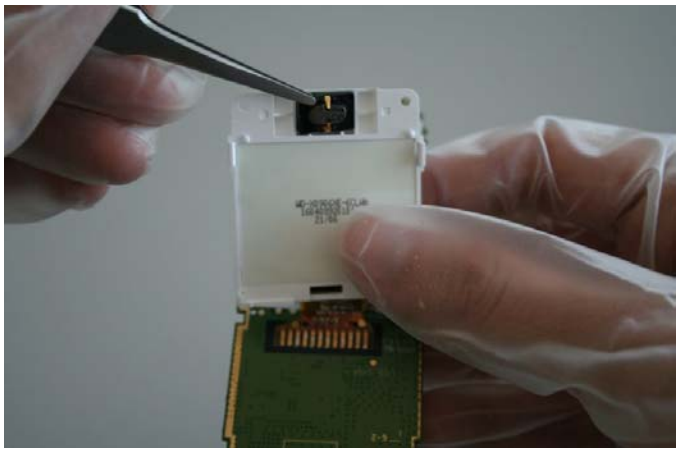
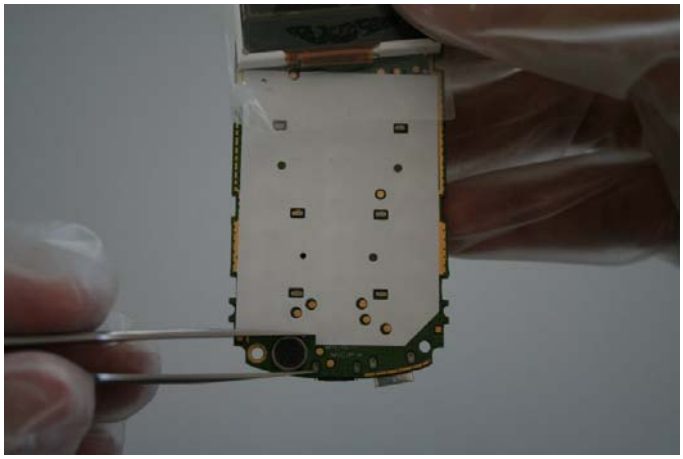
There you can find the document “ESD Guideline”.

Step 1 	Remove Battery Cover.
Step 2 	Remove Battery.

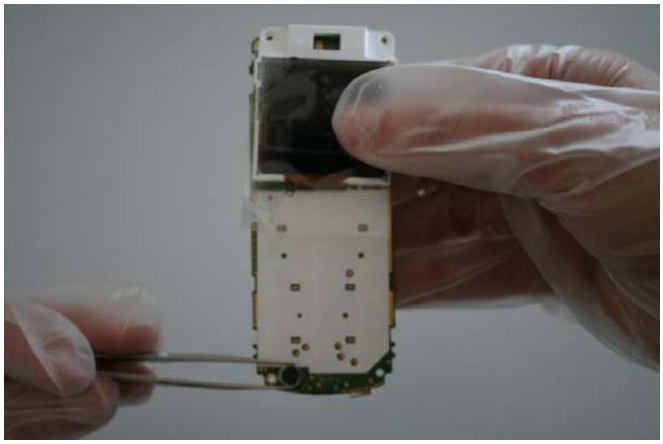
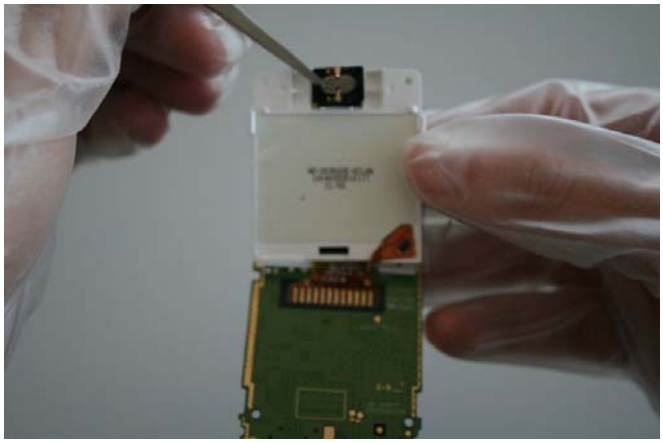
Step 3 	
Step 4 	Remove Upper Case Shell from Lower Case Shell by using the Alternative Opening Tool.
Step 5 	To avoid scratches it is mandatory to place a Protection Foil onto the Display.

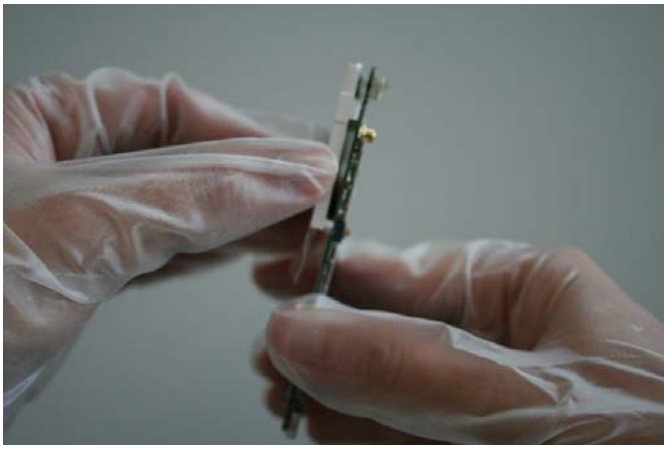
Step 6 	Remove screws with the Torque – Screwdriver. T5+
Step 7 	Remove Lower Case Shell from the RF Control Board by using the Alternative Opening Tool very carefully.
Step 8 	

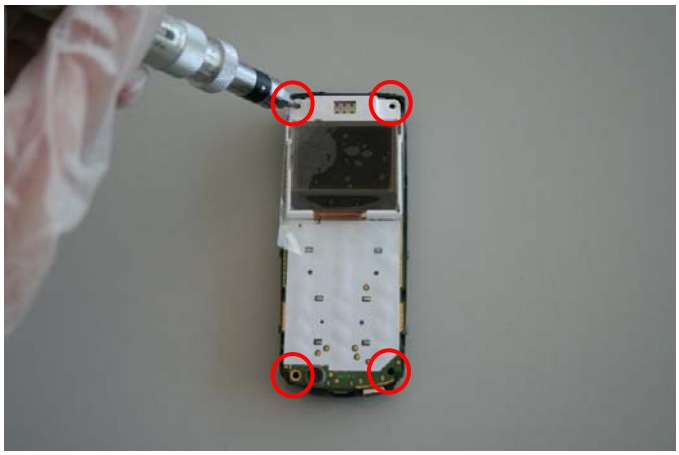
Step 9 	Remove Ringer by using Tweezers.
Step 10 	Remove Vibrator by using Tweezers.
Step 11 	Remove Keypad by using Tweezers carefully.

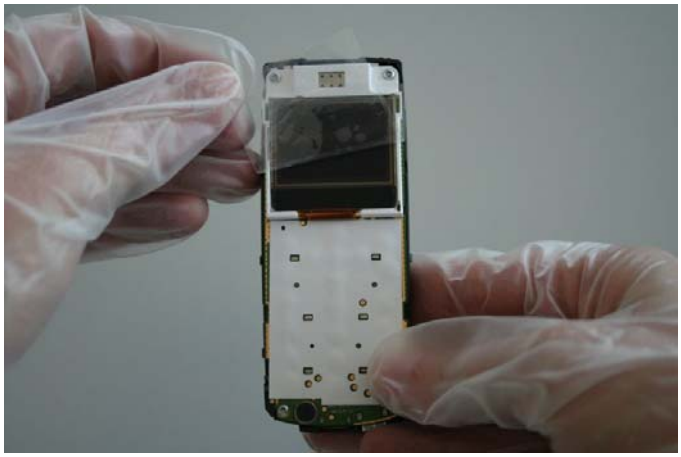
Step 12 	Disconnect the Display Module and turn it up. **Do not remove the Display Module fully.**
Step 13 	On the Back Side of the Display Module is the Earpiece. Remove it by using Tweezers carefully. Take care of the Flex Connection, it easily rips.
Step 14 	Remove Microphone by using Tweezers.

4. Assembly of A38

Step 1 	Assemble Microphone.
Step 2 	Assemble Earpiece.

Step 3 	Connect the Display Module with the RF Control Board.
Step 4 	Assemble Keypad.
Step 5 	Assemble Vibra-Alert.

Step 6 	Assemble Ringer.
Step 7 	Assemble RF Control Board and Lower Case Shell.
Step 8 	Place screws by using the Torque – Screwdriver T5.

Step 9 	Remove the protection foil.
Step 10 	Assemble Upper Case Shell and Lower Case Shell.
Step 11 	Assemble Battery.

Step 12  	Assemble Battery Cover.

5. 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**

	**Torque – Screwdriver** **Part Number: F 30032 – P 228 – A1**
	**Opening tool** **(Case opening without destroying)** **Part Number: F 30032 – P 38 – A1**
	**Alternative Opening tool** **Part Number: F30032 – P583 – A1**
	**Tweezers**

- **For SW update**

	**F30032-P601-A1**

- **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.

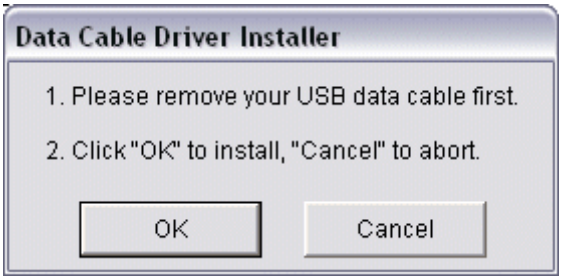
For additional Software and Hardware options as well as the supported GRT equipment, please check the GRT User manual.

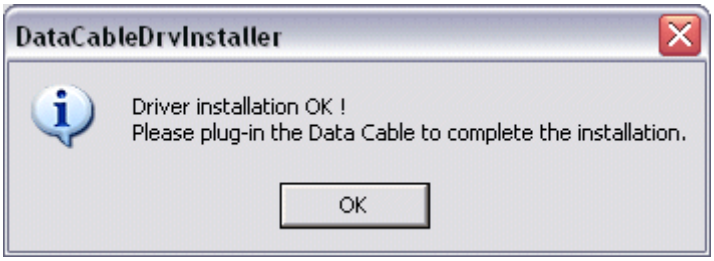
6. Setup of the Software

Download of the required software:
Download the driver, the MCSD Tool_A38 software mobile software (core-software and language files) from the Technical Support Page:

https://market.benqmobile.com/so/welcome.lookup.asp

Installation of USB – Serial converter boot cable:
Start the “DataCableDrvInstaller.exe” file and follow the instructions of the installer.





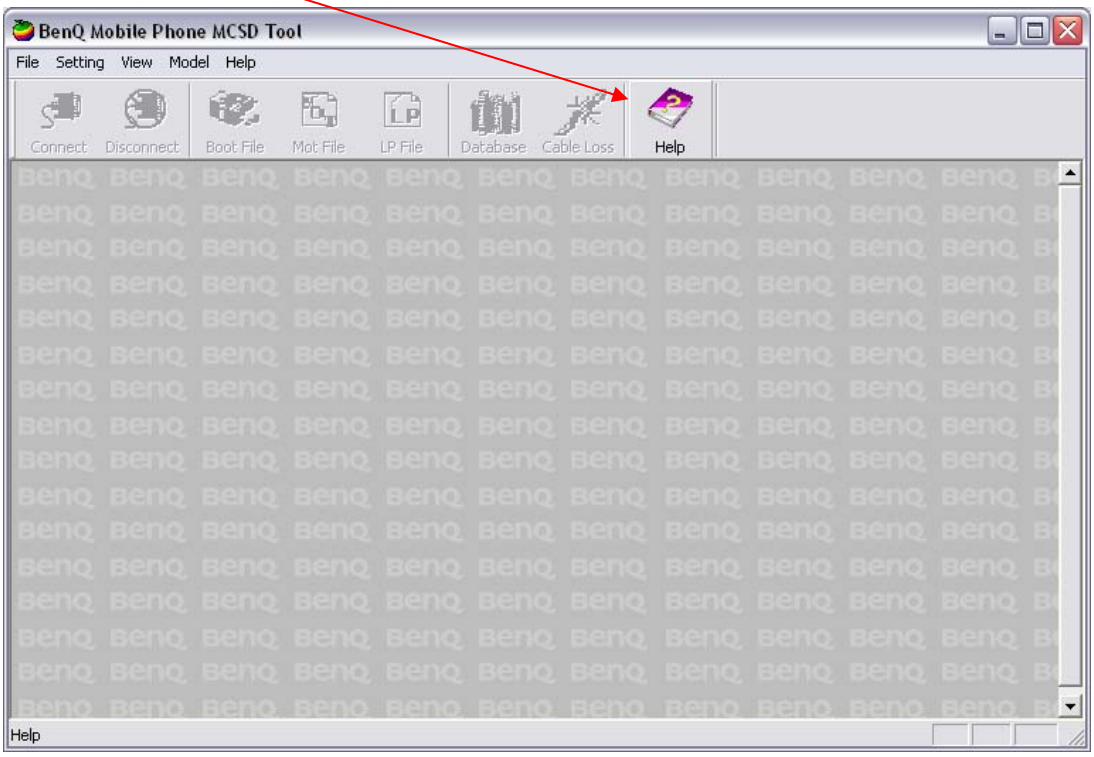
Plug in the Data cable and follow the installation instructions to complete the process.

Check the Comport number of the data cable in the device manager.
(Tool supports only Comport 1 to 10)

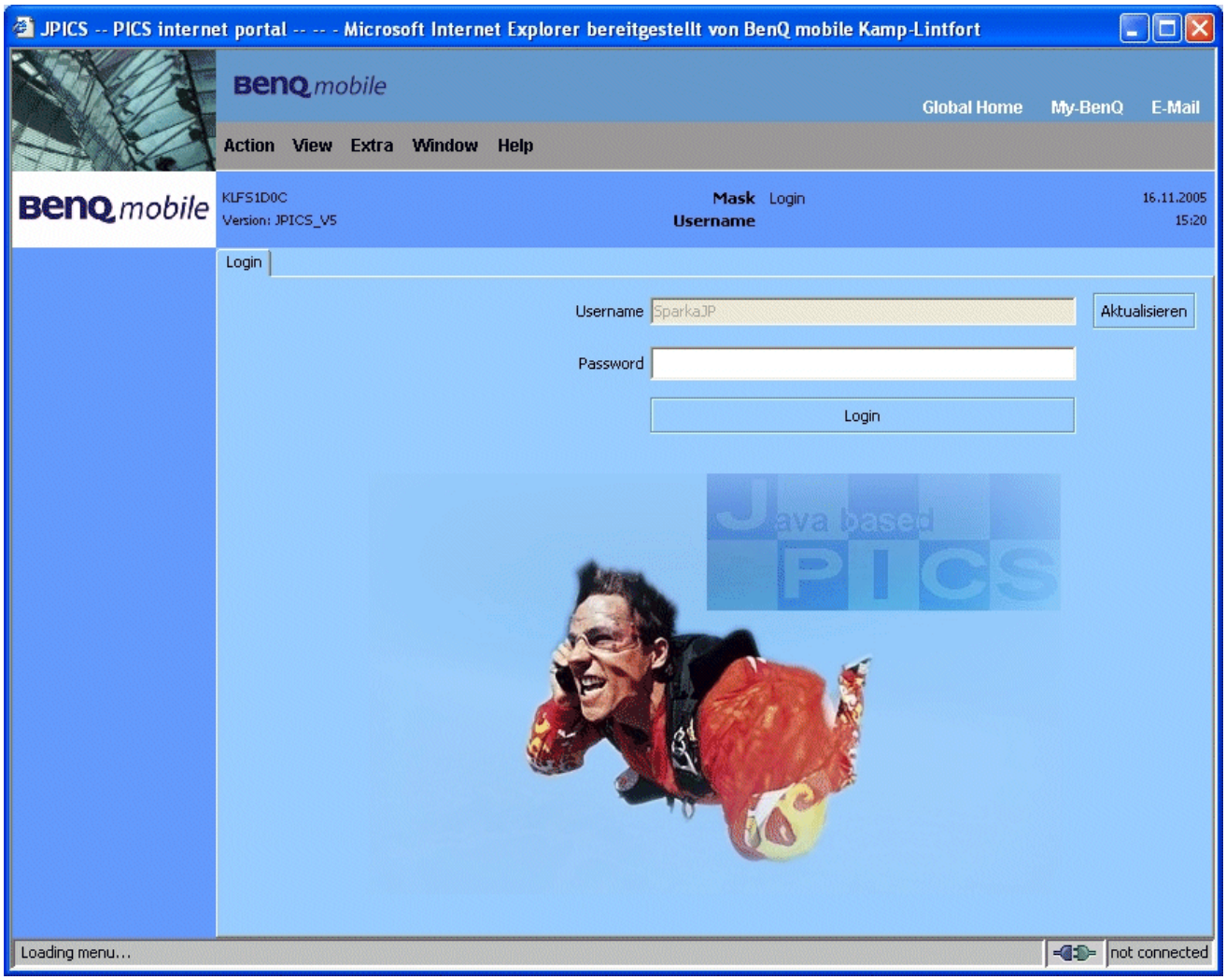
Installation of MCSD tool:
Start “setup.exe” file and follow the instructions.

7. MCSD Tool User Guide

Press the HELP button to open the MCSD Tool User Guide.



13. 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.

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

Generate Codes

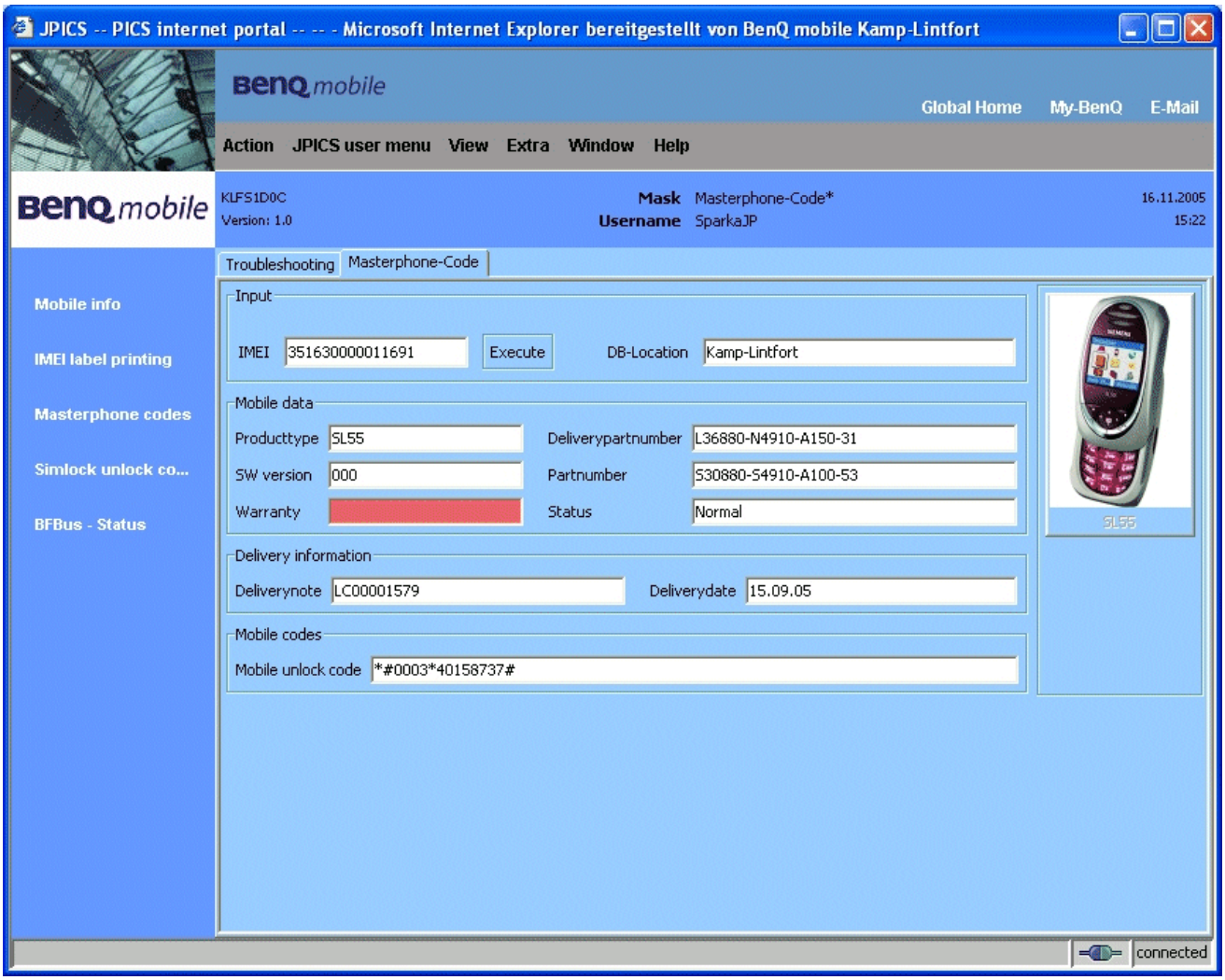
In the JPICS application you can choose to generate:

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

Masterphone codes

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

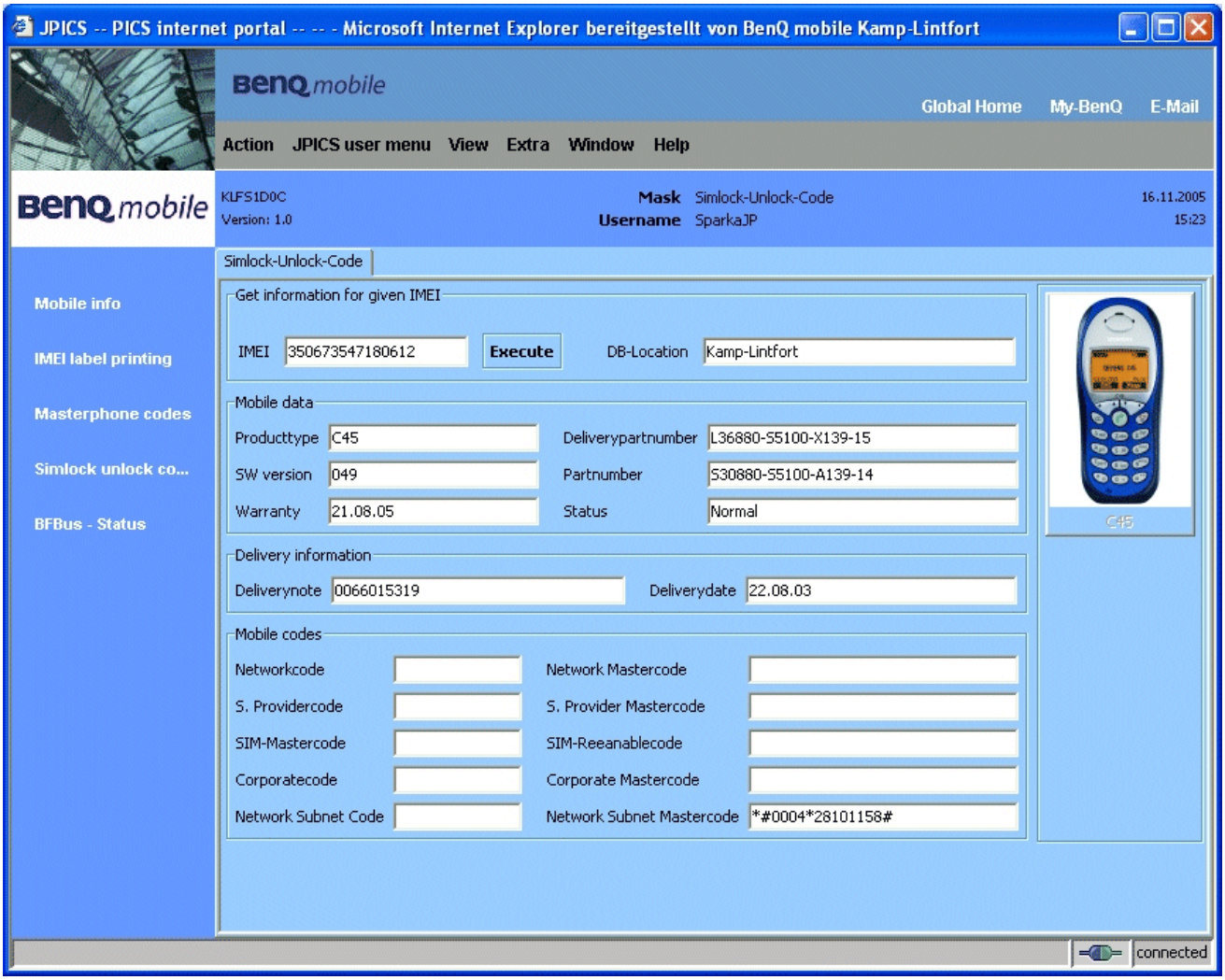
Masterphone codes can only be supplied for mobiles which have been delivered in a regular manner.



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.



14. 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.

A38 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.

Date code is shown on IMEI label: Detailed description on how to read date code is given in Annex 2.

To display the IMEI number, exit code and SW/HW version, key: * # 300 #
Code *#301# activates self diagnosis.

15. General Testing Information

General Information

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

Validity

This procedure is to apply for all from BenQ mobile authorized level 2 up to 3 workshops.

Procedure

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

Get delivery:

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

Enter data into your database:

(Depends on your application system)

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

Incoming check and check after assembling:

!! Verify the customers fault description!!

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

Check the storage capability:

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

Visual inspection:

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

SW update:

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

Repairs:

The disassembling as well as the assembling of a mobile phone has to be carried out by considering the rules mentioned in the dedicated manuals. If special equipment is required the service partner has to use it and to ensure the correct function of the tools.
If components and especially soldered components have to be replaced all rules mentioned in dedicated manuals or additional information e.g. service information have to be considered

GSM Test:

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

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

>Use a Test SIM

For Triple Band phones use a separate test case, if the test software allows only one handover.

Skip the GSM Band test cases if not performed by the mobile phone

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

Internal Antenna				
Test case		Parameter	Measurements	Limits
1	Location Update	• GSM Band 1 • BS Power = -55 dBm • middle BCCH	• Display check	• individual check
2	Call from BS	• low TCH • highest PCL • BS Power = -75 dBm • middle BCCH	• Ringer/Loudspeaker check	• individual check
3	TX GSM Band 1	• low TCH • highest PCL • BS Power = -75 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
4	Handover to GSM Band 2 Including Handover Check			
5	TX GSM Band 2	• low TCH • highest PCL0 • BS Power = -75 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
6	Call release from BS			

External Antenna				
7	Call from MS	• GSM900 • high TCH • second highest PCL • BS Power = -75 dBm • middle BCCH	• Keyboard check	• individual check
8	TX GSM Band 1	• high TCH • second highest PCL • BS Power = -75 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
9	RX GSM Band 1	• high TCH • BS Power = -102 dBm • 50 Frames • middle BCCH	• RX Level • RX Qual • BER Class Ib • BER Class II • BER Erased Frames	• GSM Spec.
10	Handover to GSM Band 2 Including Handover Check			
11	TX GSM Band 2	• high TCH • second highest PCL • BS Power = -75 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
12	RX GSM Band2	• high TCH • BS Power = -102 dBm • 50 Frames • middle BCCH	• RX Level • RX Qual • BER Class Ib • BER Class II • BER Erased Frames	• 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.

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

Device Date Code overview

GSN rule:
(ex: GS11500001TG0)

GS	1	9	5	00001	TG0
Big class	Date	Month	Year	S/N	Factory

Code	Meaning	Content
D	Date	1~9, A=10, B=11, C=12, D=13, E=14, F=15, G=16, H=17, J=18, K=19, L=20, M=21, N=22, P=23, R=24, S=25, T=26, V=27, W=28, X=29, Y=30, Z=31 (Don't use: 0, I, O, Q, U)
M	Month	1=Jan, 2=Feb, 3=Mar, 4=Apr, 5=May, 6=Jun, 7=Jul, 8=Aug, 9=Sep, A=Oct., B=Nov, C=Dec
Y	Year	Last digit of Year (Christian era) ex. Year 2004 → "4"

Based on the definition above, GSC55... below means 2005/05/12.