

Service Manual

Level 1-2

for

BenQmobile

E61



Release	Date	Department	Notes to change
R 1.0	05.08.2006	ISC S CES	New document

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1. Key Feature

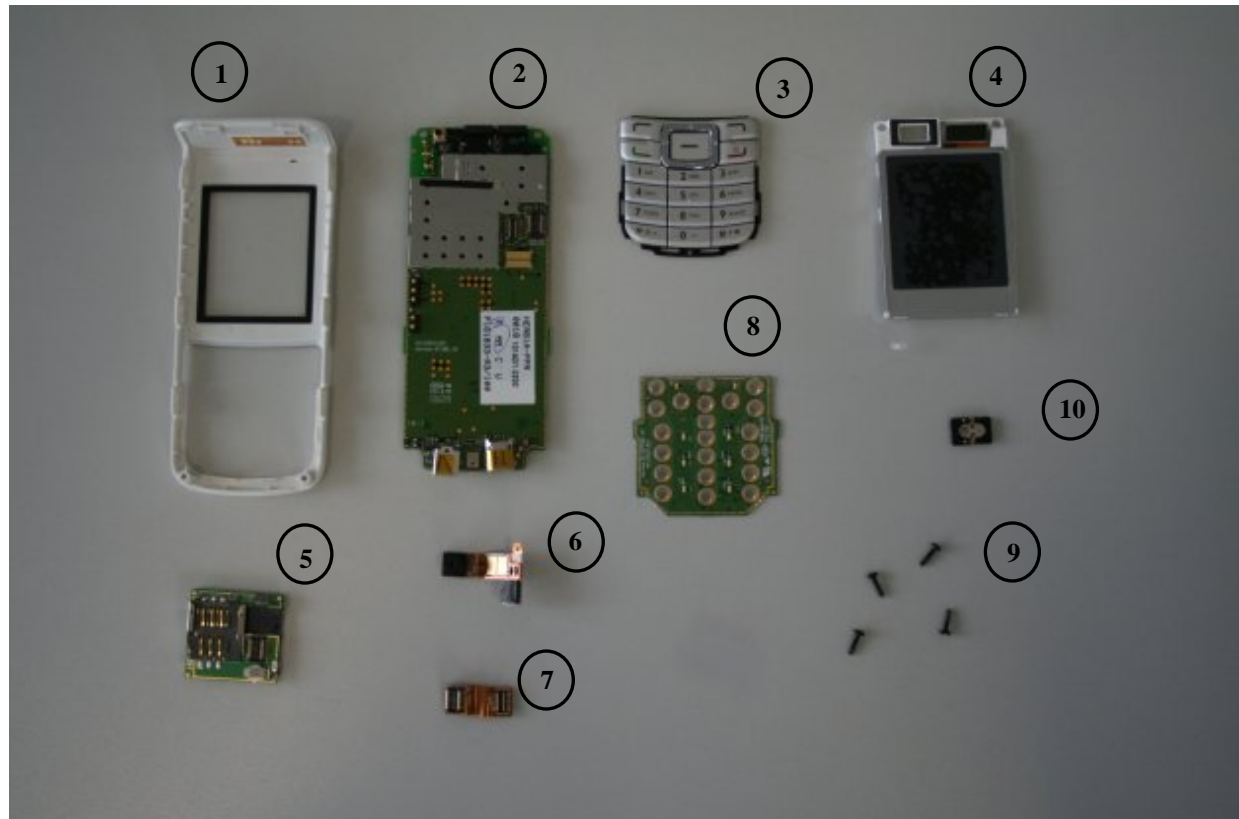
Frequency	<ul style="list-style-type: none"> • Tri-band GSM/GPRS 900/1800/1900, GPRS Class 10
Antenna	<ul style="list-style-type: none"> • Internal Antenna
Display	<ul style="list-style-type: none"> • 1.8" ; 128* 160 pixel; Type: 262K TFT
Embedded DSC	<ul style="list-style-type: none"> • 300K pixel DSCM
Memory	<ul style="list-style-type: none"> • Flash 128MB + Pseudo SRAM:32MB
External Memory	<ul style="list-style-type: none"> • Mini SD Card
Entertainment Feature	<ul style="list-style-type: none"> • MP3 / AAC / AAC+ player • 2 default C code game
Connectivity	<ul style="list-style-type: none"> • USB supported
Battery	<ul style="list-style-type: none"> • Lithium-Ion 920 mAh
Handsfree	<ul style="list-style-type: none"> • Stereo type with fashionable design
Keys	<ul style="list-style-type: none"> • 27 keys (5-way Navigation key, 1 OK key, 12 number keys, 2 soft-keys, 2 send/end keys, 5 top keys (MP3 play/pause key, 2 for FF/REW, 2 for volume))
Message Service	<ul style="list-style-type: none"> • MMS/EMS/SMS
Ring Tone	<ul style="list-style-type: none"> • MP3 / AAC / AAC+ / Midi / I-Melody ring tone
MP3 – Player	<ul style="list-style-type: none"> • Support MP3/AAC • Equalizer



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2. Spare Part Overview of E61

Overview Upper Parts



No.	Description CM	Order Number
1.	Upper Case Shell	L50658-A214-A23
2.	PCB	L50658-A214-A20
3.	Keypad	L50658-A214-A12
4.	Display Module	L50651-Z1508-A192
5.	SIM Card Board	L50658-A214-A22
6.	Camera Module	L50651-Z1508-A193
7.	Film ADHES SUB-PCB	L50658-A214-A19
8.	Keypad PCB	L50658-A214-A21
9.	Screw	L50658-A214-A28
10.	Receiver	L50612-Z3-C86

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Overview Lower Parts



No.	Description CM	Order Number
1.	Lower Case Shell	L50658-A214-A25
2.	Battery Cover	L50658-A214-A14
3.	Battery	L50645-K1310-X454
4.	Ringer	L50604-F3090-X943
5.	Vibra-Alert	L50653-Z5-C427
6.	Microphone	L50654-Z6-C145

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3. Disassembly of E61

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

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Step 3



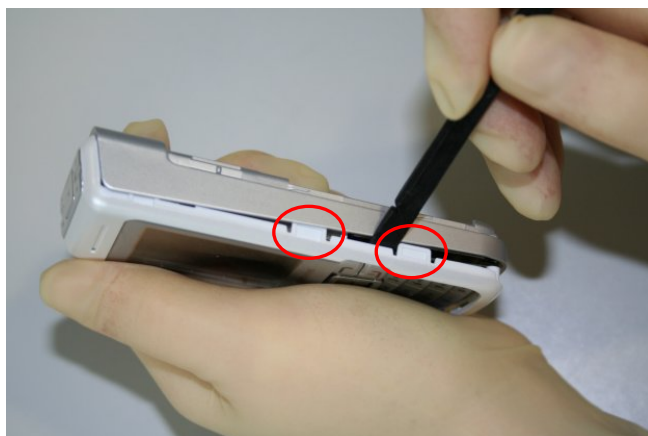
Remove Battery.

Step 4



Remove screws by using the Torque
– Screwdriver T5+.

Step 5



Disconnect Lower Case Shell from
Upper Case Shell by using the
Alternative Opening Tool.
Find the hooks and push them
downwards to release the Upper
Case Shell.

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Step 6



Step 7



Unplug the Flex Cable by using
Tweezers.

Step 8



Remove Top-Keypad by using
Tweezers.

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Step 9



Remove the Display Lens by using the Alternative Opening Tool.

Step 10



To avoid scratches it is mandatory to place a protection foil onto the Display!!!

Step 11



Remove the Keypad.

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Step 12



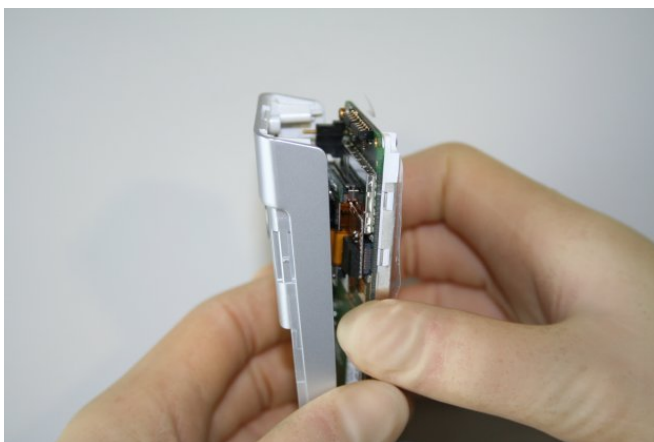
Remove the Keypad PCB.

Step 13



Remove screws by using the
Torque – Screwdriver T5+.

Step 14



Remove the PCB from the Lower
Case Shell.

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Step 15



Step 16



Unplug the Display Flex Cable from PCB Socket carefully by using Tweezers.

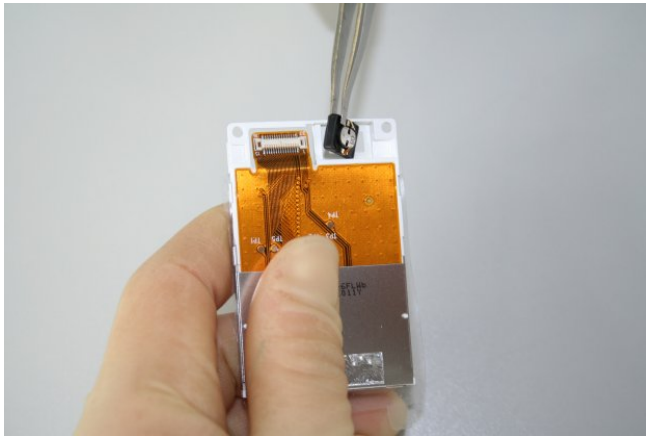
Step 17



Remove Display from PCB by using Alternative Opening Tool very carefully.

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Step 18



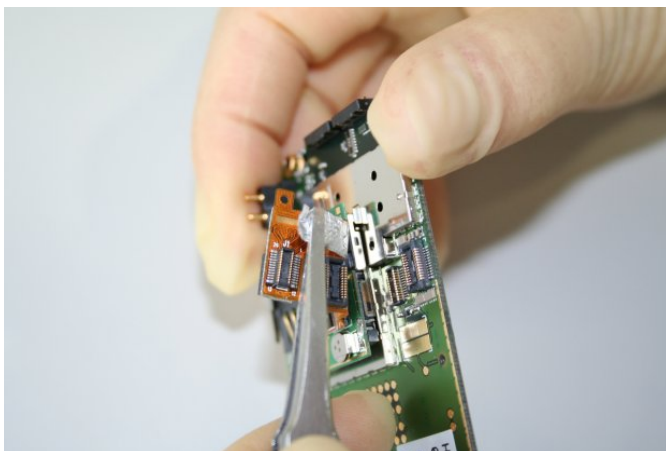
Remove the Receiver by using
Tweezers.

Step 19



Unplug Camera Flex Cable from
PCB Socket carefully with
Tweezers.

Step 20



Remove the shielding.

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Step 21

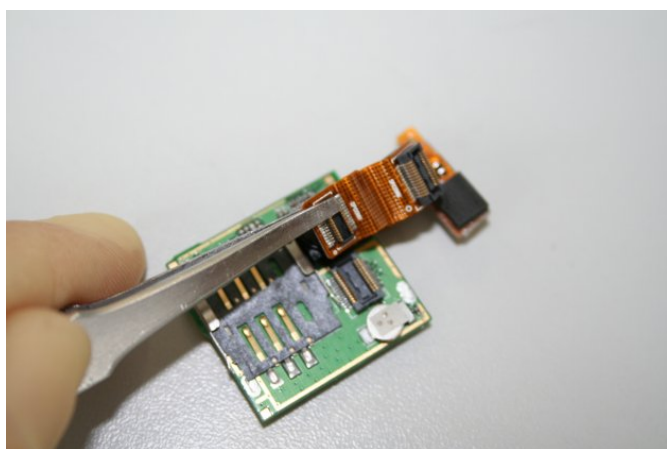


Remove the SIM Card Board by using Tweezers.

Step 22



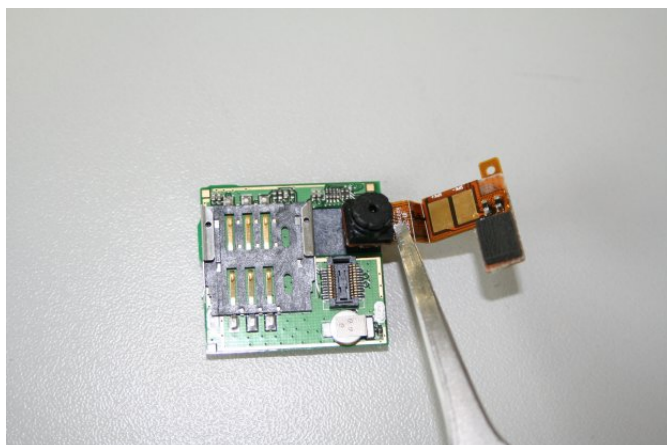
Step 23



Disconnect Film Adhesive Strip from the PCB socket.

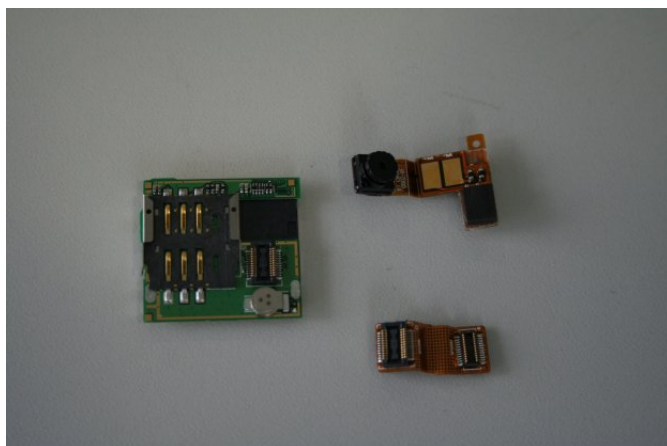
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Step 24



Disconnect the Camera Flex Cable from the PCB socket.

Step 25



Step 26



Remove Microphone by using Tweezers.

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Step 27



Remove Vibra-Alert by using
Tweezers.

Step 28






Remove Ringer by using Tweezers
carefully.

Step 29



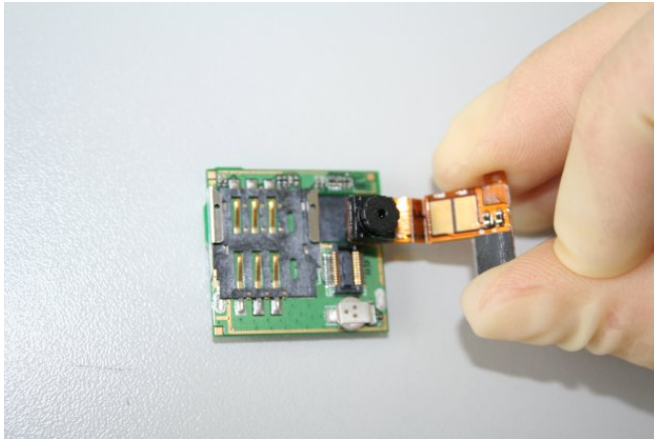
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5 Assembly of E61

<p>Step 1</p> 	<p>Assemble Ringer.</p>
<p>Step 2</p> 	<p>Assemble Vibra-Alert by using Tweezers.</p>
<p>Step 3</p> 	<p>Assemble Microphone by using Tweezers.</p>

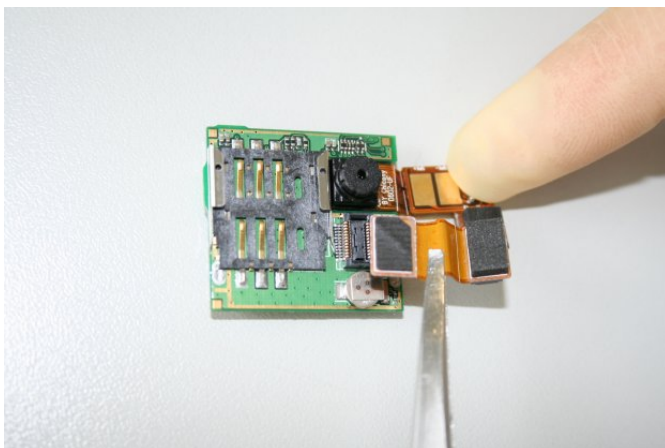
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Step 4



Connect the Camera Flex Cable
with the Camera PCB.

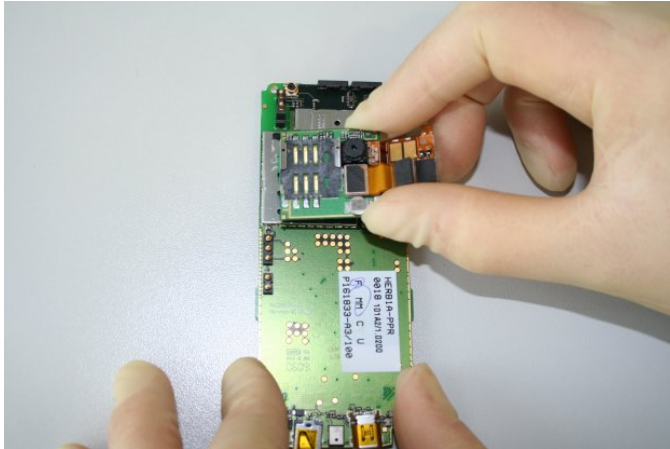
Step 5



Connect the Film Adhesive Strip
with the PCB.

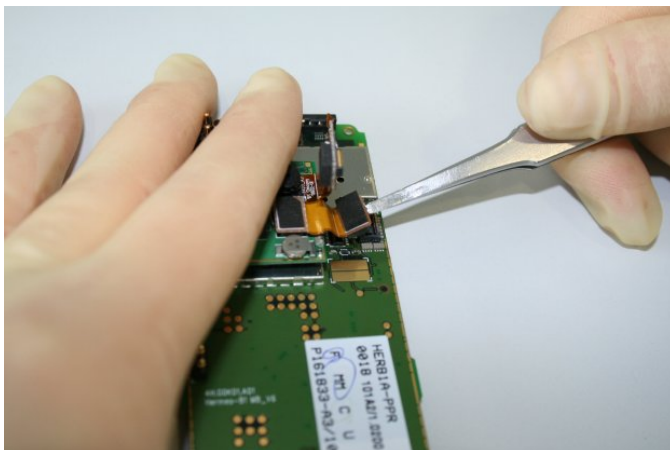
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Step 6



Assemble the SIM Card Board.

Step 7



Connect the Film Adhesive Strip with the PCB socket.

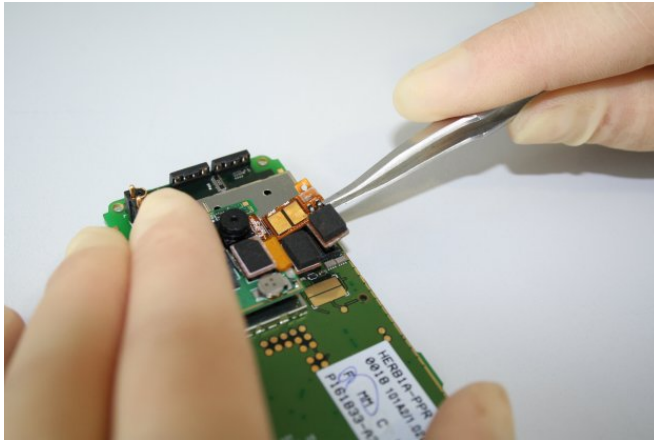
Step 8



Fix the shielding on the PCB.

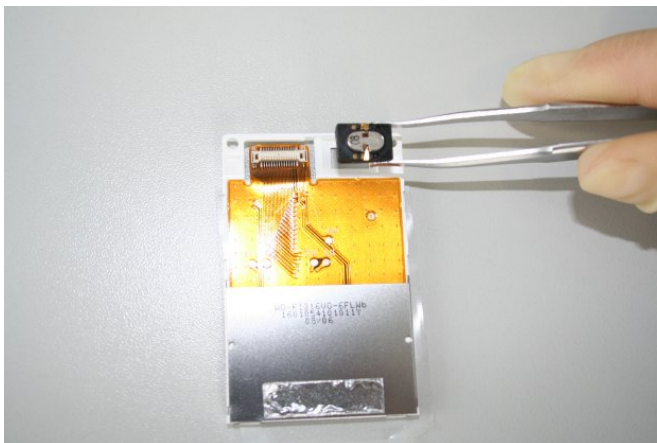
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Step 9



Connect the Flex Cable with the PCB socket.

Step 10



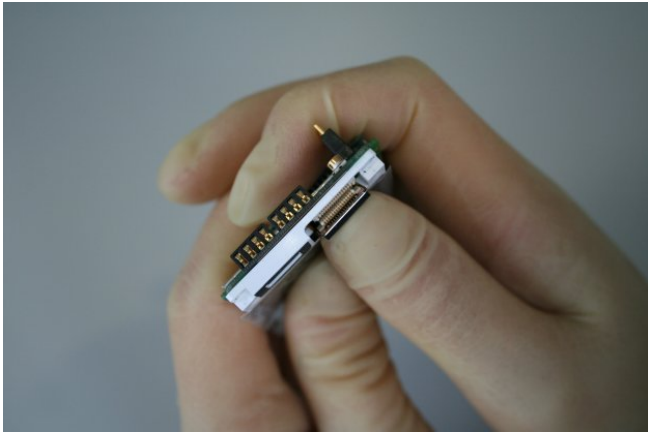

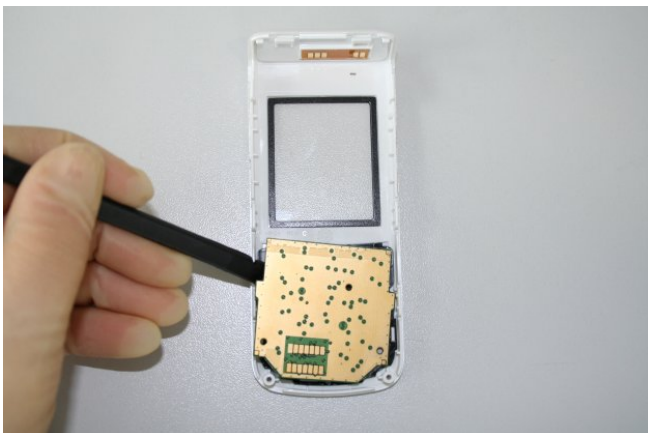
Assemble Receiver by using Tweezers.

Step 11



Assemble the Display Module onto the PCB very carefully.

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<p>Step 12</p> 	<p>Connect the Flex Cable with the PCB socket.</p>
<p>Step 13</p> 	<p>Assemble the PCB onto the Lower Case Shell.</p>
<p>Step 14</p> 	<p>Assemble Keypad PCB.</p>

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Step 15



Assemble Keypad.

Step 16



Assemble Upper Case Shell with
Lower Case Shell.

**Remove the protection foil before
assembling Upper with Lower
Case!**

Step 17



Place screws by using the Torque –
Screwdriver T5+.

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Step 18



Assemble Battery.

Step 19



Assemble Battery Cover.

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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

	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 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.

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7 Setup of the Software

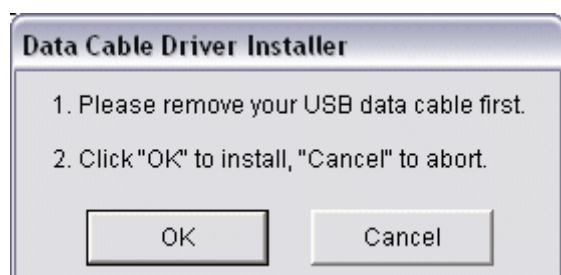
Download of the required software:

Download the driver, the XCSD 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.

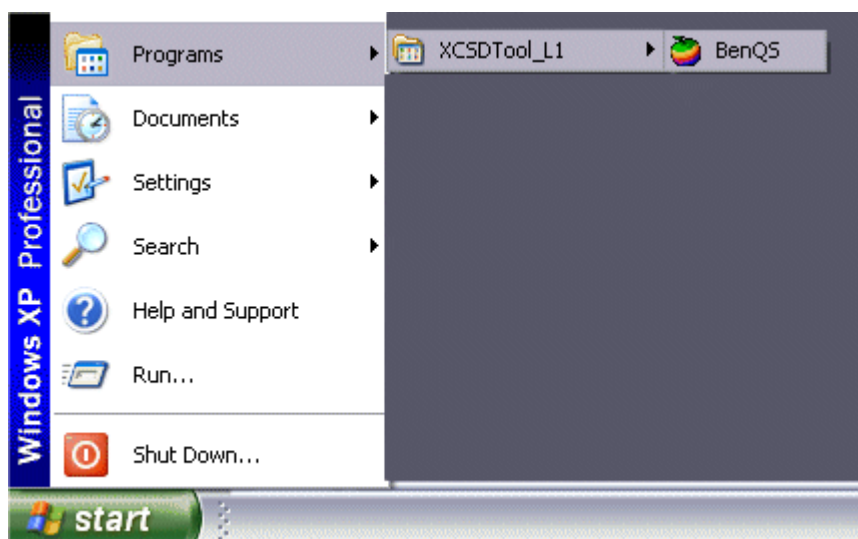
**Check the Comport number of the data cable in the device manager.
(XCSD tool supports only Comport 1 to 10)**

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Installation of XCSD tool:

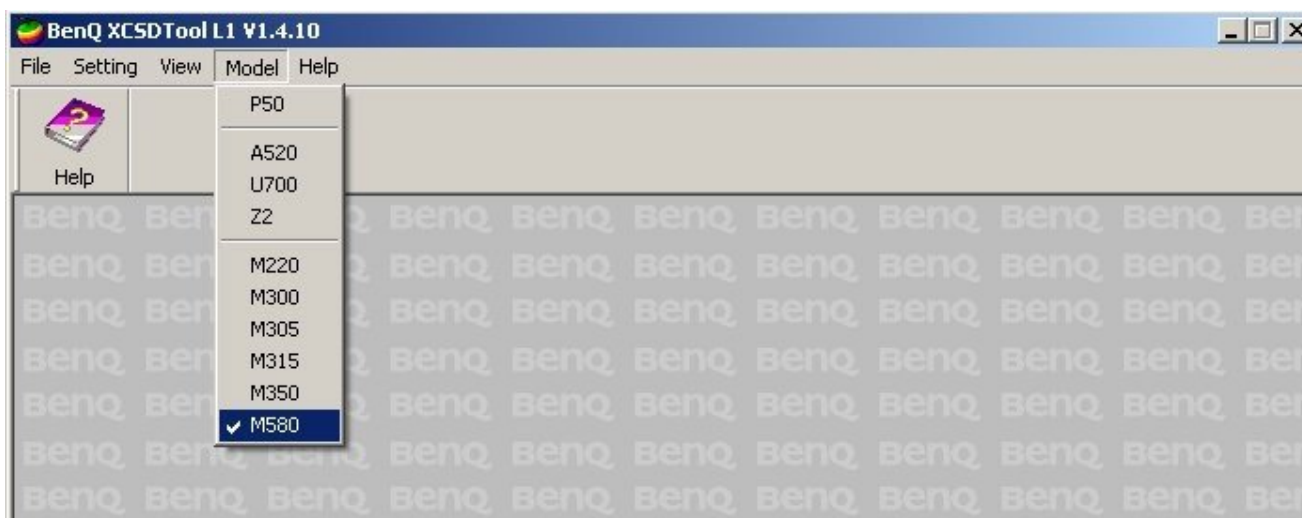
Start "setup.exe" file and follow the instructions.

The installer creates a shortcut in the start menu bar. Start – Programs – XCSDTool_L1 - BenQS



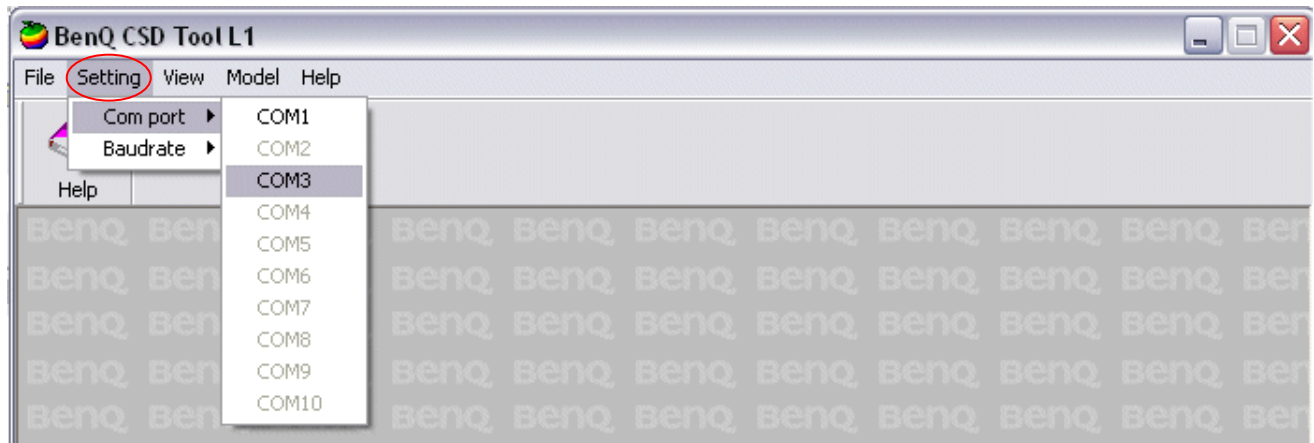
8 Software basic settings

- Start the software (BenQS.exe). The XCSD tool will be shown on the screen
- Select Model (for example see the screenshot below):



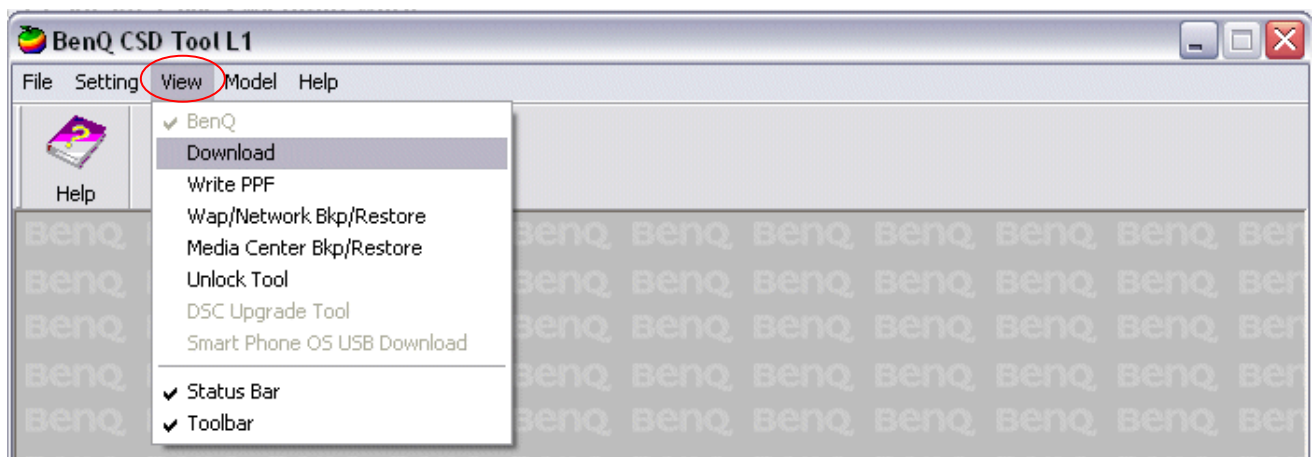
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- Select Com port (Setting – Com port):



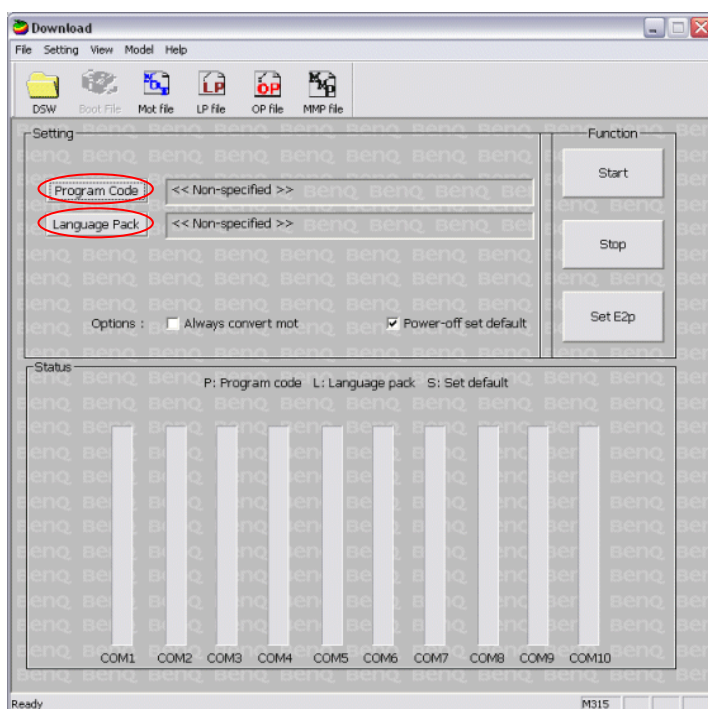
4. Software Download procedure

- Select Download Option (View – Download):



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- Select Program Code Language Pack (example: E22 1 11710.mot) and (example E22 L 11711.mot)



Status bar colour scheme:

yellow	waiting for update
blue	update in progress
red	error occurred
black	Comport not available
green	Update successful

- Connect mobile phone with data cable. Phone must be switched off. Click on “Start” button and press the power on button on the handset to start the download. During download process status bar shows the state of the process of P = Program code, L = Language file and S = Set default (if activated). After successful SW download, the status bar of the used Com port is changed to green.

Erase of customer data:

Select the “Power-off set default” option to erase all customer data of the phone during the download process.

- Click the “Set E2p” to erase the customer data without software update.

SW files naming rules:

Program Code E22111710
Language Pack E22L11711

E22 Project name
117 Program Code
L Language Pack
117 Version 1.17
10/11 Program Code ID

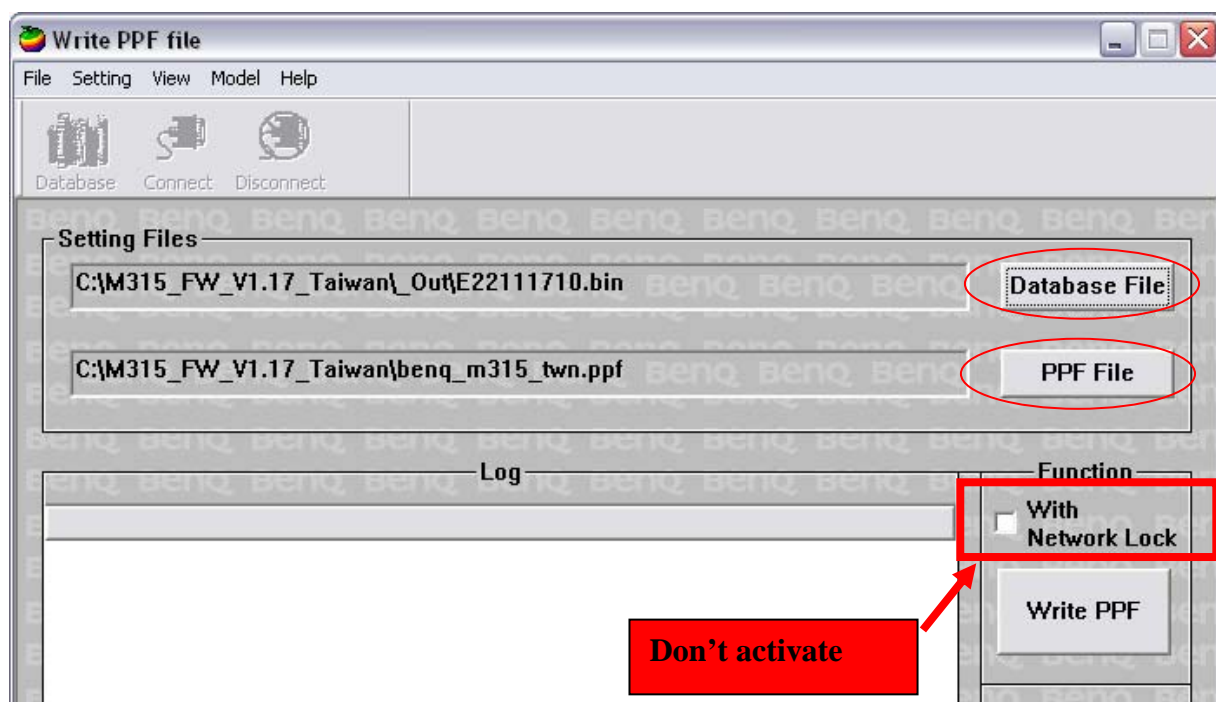
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5. Download PPF (Handset configuration)

- Select write PPF option (View – Write PPF):



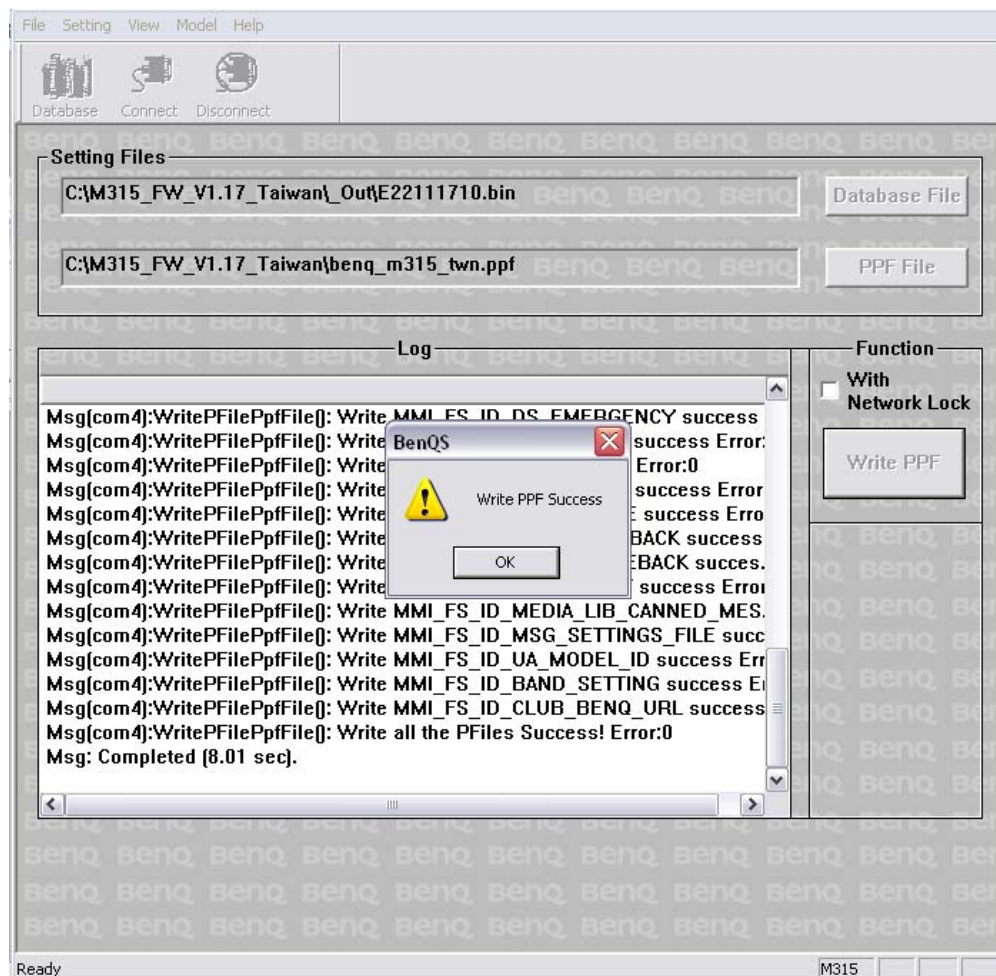
- Select Database File (example: E2211710.bin) and PPF File (example: benq_m315_twn.ppf)



- Connect mobile phone with data cable. Phone must be switched on. Click to “Write PPF” button to start the process.

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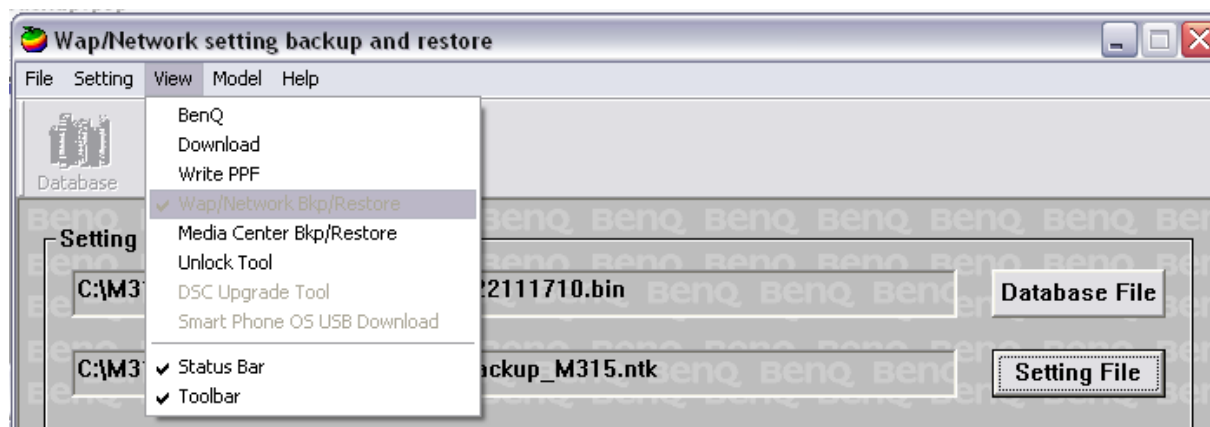
- Confirmation about successful write of PPF appears after process is completed.



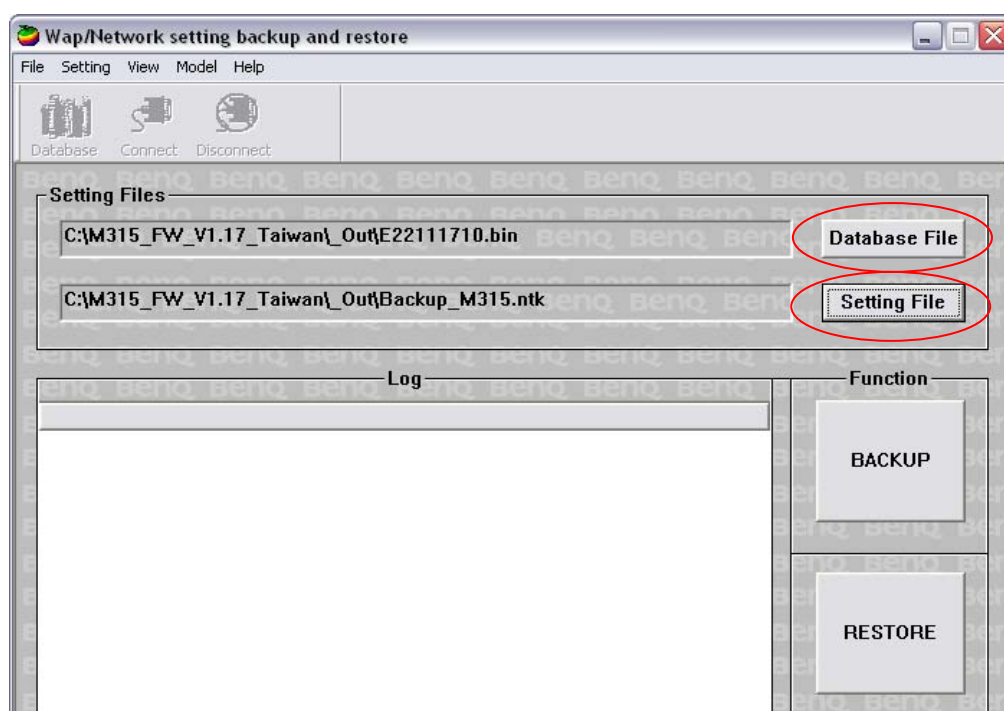
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6. Backup and Restore of Wap and Network Setting

- Select Back and Restore of Wap and Network Settings option (View – Wap/Network Bkp/Restore):



- Select Database File (example: E22111710.bin) and
- Setting File (create new txt file and rename it to ntk file for settings backup)



- Connect mobile phone with data cable. Phone must be switched off.
- Click to “Backup” button to start the transfer the settings into the selected file.
- Click to “Restore” button to start the transfer from selected file into handset.

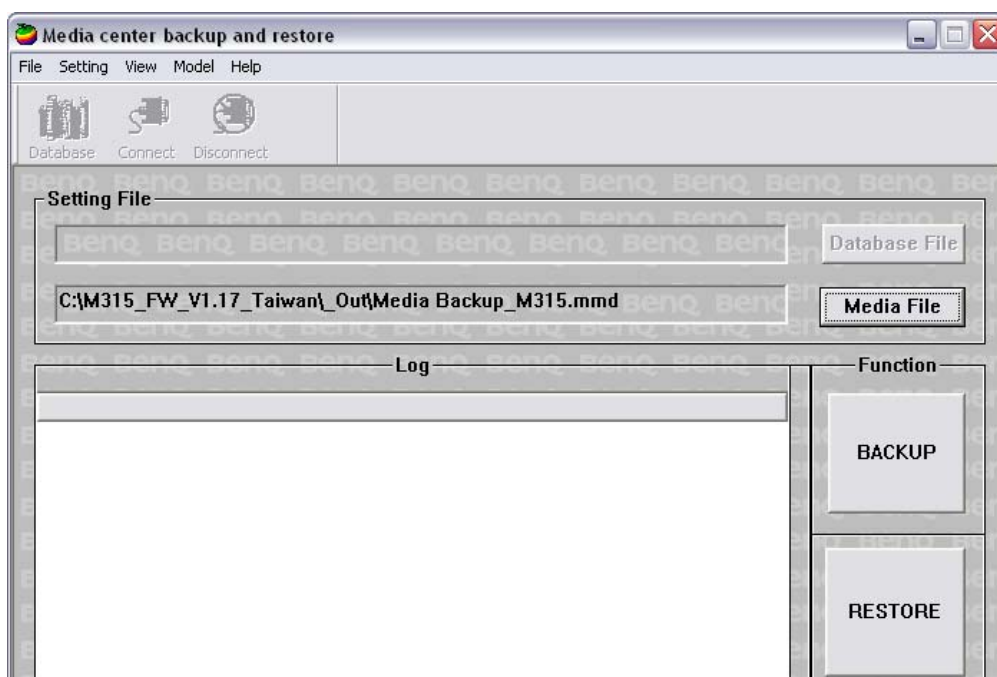
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7. Backup and Restore of Media Center content

- Select Back and Restore of Media center (View – Media center Bkp/Restore):



- Select Media File (create new txt file and rename it to mmd file)



- Connect mobile phone with data cable. Phone must be switched on.
- Click to "Backup" button to start the transfer the settings into the selected file.
- Click to "Restore" button to start the transfer from selected file into handset.

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8. Unlock Tool

- Select Unlock tool function (View – Unlock Tool):

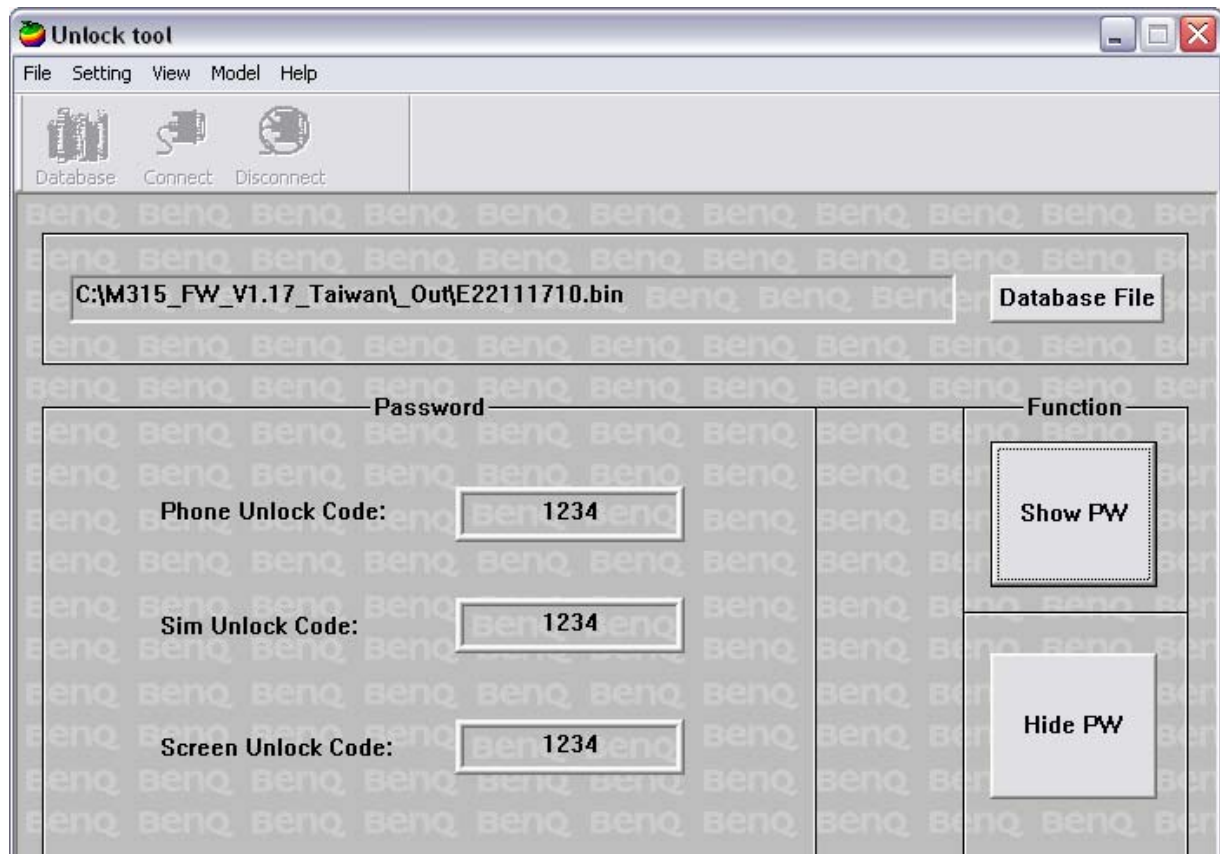


Select Database File (example: E22111710.bin)



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- Click to “Show PW” button to get the codes.
- Unlock the codes in the mobile phone menu.
- Click to “Hide PW” button to hide the codes.



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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.

E61 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.

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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.

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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

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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			

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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.

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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

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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.



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