

Service Manual Level 1-2 for **BENQ**mobile CF61



Release	Date	Department	Notes to change
R 1.0	12.07.2006	BenQ Mobile CC S CES	New document

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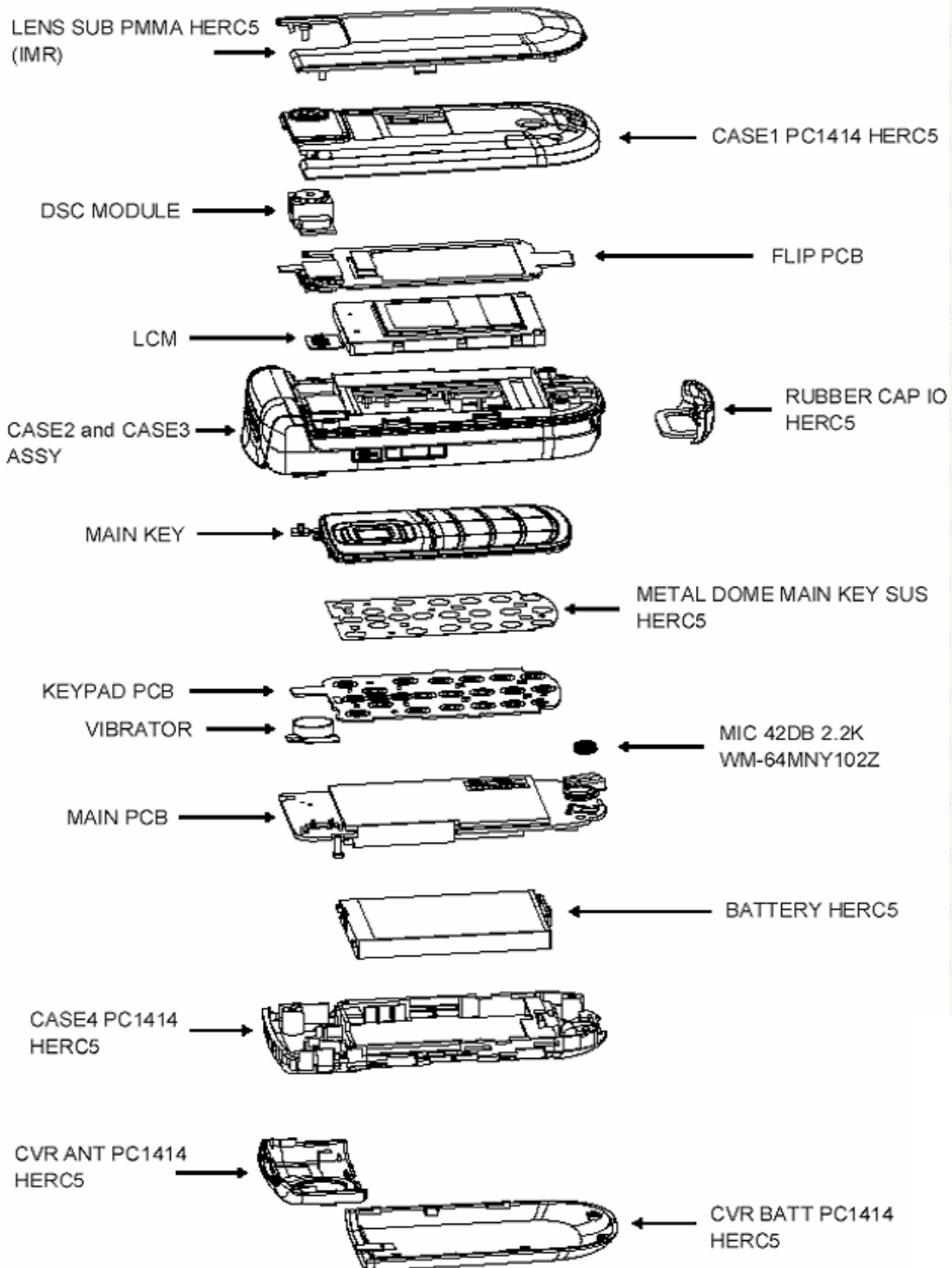
1 Key Feature

System	<ul style="list-style-type: none"> • Tri-Band GSM 900/1800/1900
Battery	<ul style="list-style-type: none"> • Li-Ion 750 mAh
Stand – by Time	<ul style="list-style-type: none"> • Up to 225h
Talking Time	<ul style="list-style-type: none"> • Up to 3 h
Antenna	<ul style="list-style-type: none"> • Integrated
Main Display	<ul style="list-style-type: none"> • 262, 144 TFT, 128x160 pixels, 1.8 inches
Sub - Display	<ul style="list-style-type: none"> • 4,096 CSTN, 96x64 pixels
Storage	<ul style="list-style-type: none"> • 1.5 MB
Camera	<ul style="list-style-type: none"> • 1.3 megapixel, 4x linear digital zoom
Connectivity	<ul style="list-style-type: none"> • USB 1.1, Bluetooth: Object Push Profile, Object Exchange, Handsfree Profile, Headset Profile
Memory Slot	<ul style="list-style-type: none"> • MicroSD
Processor	<ul style="list-style-type: none"> • TI



2 Spare Part Overview of CF61

Exploded View



Order Number (can be different by Variant specific parts)

Location	E-commerce number:
BATTERY	V30145-K1310-X457
MIC	L50654-Z6-C146
VIBRATOR	
METAL DOME MAIN KEY	L50658-A220-A18-1
CVR BATTERY	L50658-A220-A19-1
MAIN KEY	L50658-A220-A2-1
RUBBER CAP I/O	L50658-A220-A23-1
Flip PCB	L50658-A220-A33-1
MAIN PCB	S30880-Q3180-A1
KEYPAD PCB	S30880-Q3183-A1
LCM	L50658-A220-A24-1
DSC Module	
Assy. CASE1	L50658-A220-A26-1
Assy. CASE2+3	L50658-A220-A27-1
Assy. CASE4	L50658-A220-A28-1
LENS SUB PMMA	L50658-A220-A29-1
CVR ANT	L50658-A220-A31-1

3 Disassembly of CF61

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> 	<p>Remove Battery.</p>



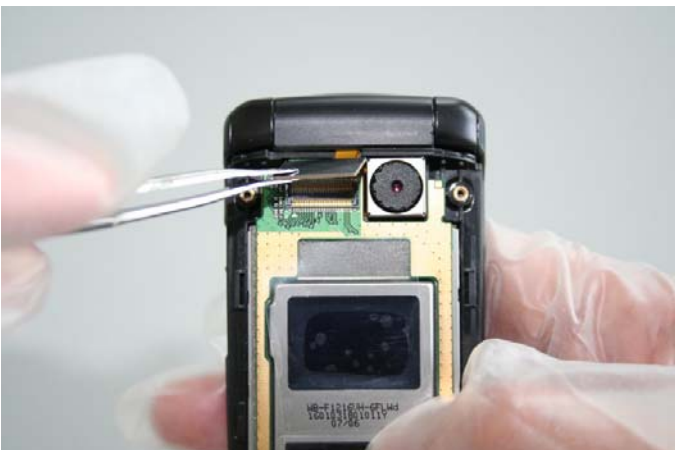
<p>Step 3</p> 	<p>Remove Rear Cover by using the Alternative Opening Tool carefully.</p>
<p>Step 4</p> 	<p>Remove screws by using the Torque – Screwdriver. T5+.</p>
<p>Step 5</p> 	<p>Remove Lower Base Case Shell by using the Alternative Opening Tool.</p>


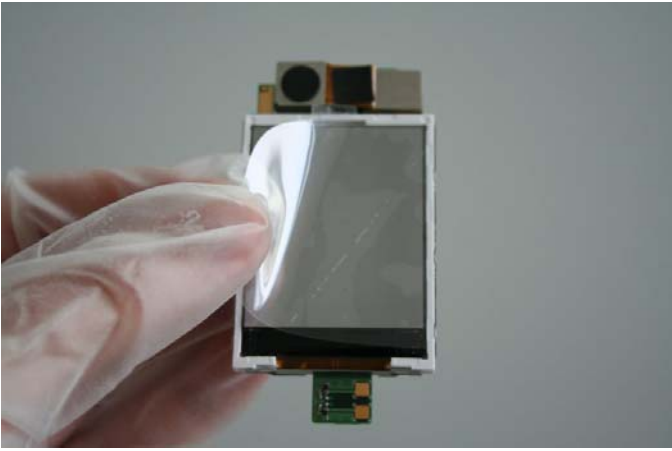
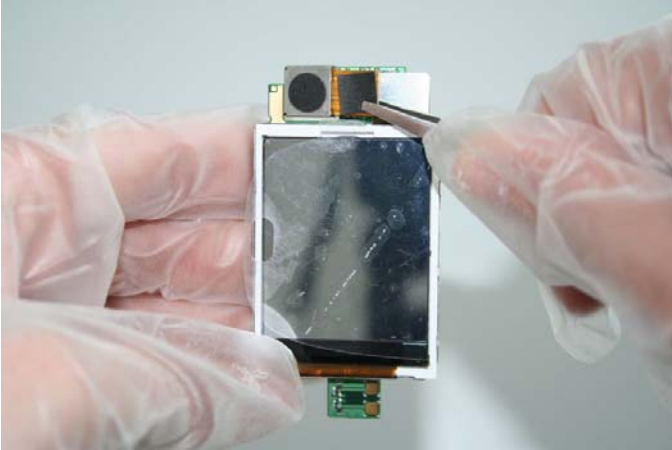
<p>Step 6</p> 	<p>Remove MMI Slot Cap.</p>
<p>Step 7</p> 	
<p>Step 8</p> 	<p>Disconnect the Flex Cable by using Tweezers.</p>

<p>Step 9</p> 	<p>Remove the RF Control Board by using the Alternative Opening Tool carefully.</p>
<p>Step 10</p> 	<p>Remove the Vibra-Alert by using Tweezers.</p>
<p>Step 11</p> 	<p>Remove the Microphone by using Tweezers. Take care of the spring contact.</p>

<p>Step 12</p> 	<p>Remove the Side Key PCB.</p>
<p>Step 13</p> 	<p>Remove the Side Key Left.</p>
<p>Step 14</p> 	<p>Remove the Keypad PCB.</p>

<p>Step 15</p> 	<p>Remove the Keypad by using the Alternative Opening Tool.</p>
<p>Step 16</p> 	<p>Remove Lower Lift Case Cap by using the Alternative Opening Tool carefully.</p>
<p>Step 17</p> 	<p>Remove Screws by using the Torque – Screwdriver. T5+.</p>

<p>Step 18</p> 	<p>Remove Upper Lift Case Shell by using the Alternative Opening Tool carefully.</p>
<p>Step 19</p> 	<p>It is mandatory to place a Protection Foil onto the Display to avoid scratches.</p>
<p>Step 20</p> 	<p>Disconnect the Flex Cable.</p>

<p>Step 21</p> 	
<p>Step 22</p> 	<p>It is mandatory to place a Protection Foil onto the Display to avoid scratches.</p>
<p>Step 23</p> 	<p>Remove the Camera Module by disconnecting it from the socket.</p>

Step 24



Remove the Earpiece.




Step 25



Use the Hinge Tool very carefully to remove the Upper Base Case Shell from the Lower Lift Case Shell.

Step 26



<p>Step 27</p> 	<p>Take care of the Flex Cable, it easily rips.</p>
<p>Step 28</p> 	<p>Remove the Flex Cable carefully.</p>
<p>Step 29</p> 	<p>Remove the Hinge by using the Hinge Tool.</p>

Step 30



Remove the Ringer by using Tweezers carefully.

4 Assembly of CF61

Step 1



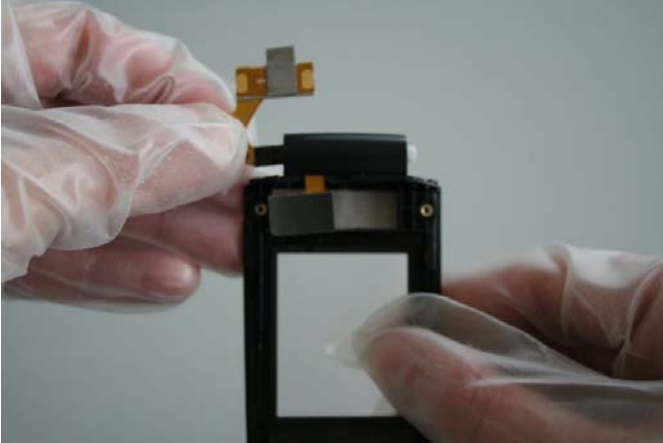
Assemble the Ringer.

Step 2



Assemble the Hinge.

Step 3



Assemble the Flex Cable. Take care of it!

Step 4


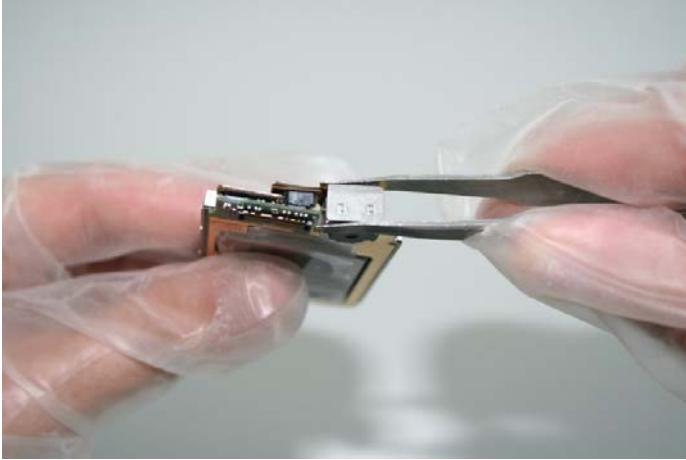
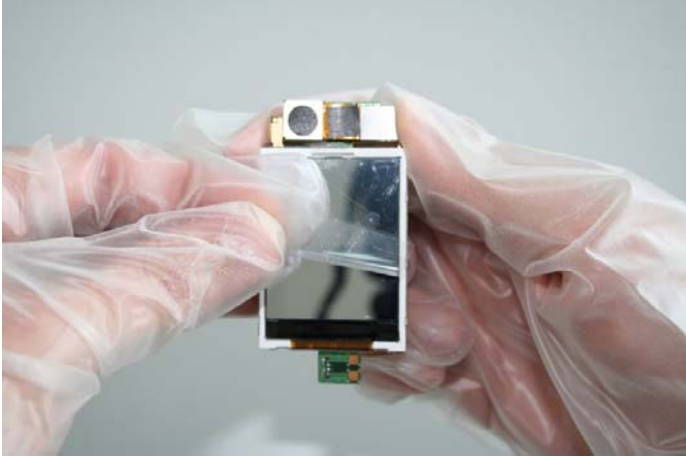





Insert the Flex Cable into the Lower Lift Case Shell.

Step 5






Assemble the Lower Lift Case Shell and the Upper Base Case Shell by using the Hinge Tool.

<p>Step 6</p> 	<p>Assemble the Earpiece by using the Tweezers.</p>
<p>Step 7</p> 	<p>Assemble the Camera Module by connecting it with the socket.</p>
<p>Step 8</p> 	<p>Remove Display Foil.</p>

<p>Step 9</p> 	<p>Assemble the Display Module.</p>
<p>Step 10</p> 	<p>Connect the Flex Cable with the socket.</p>
<p>Step 11</p> 	<p>Remove Display Foil.</p>

<p>Step 12</p> 	<p>Assemble Upper Lift Case and Lower Lift Case.</p>
<p>Step 13</p> 	<p>Place screws by using the Torque – Screwdriver T5+.</p>
<p>Step 14</p> 	<p>Assemble the Lower Lift Case Cap.</p>

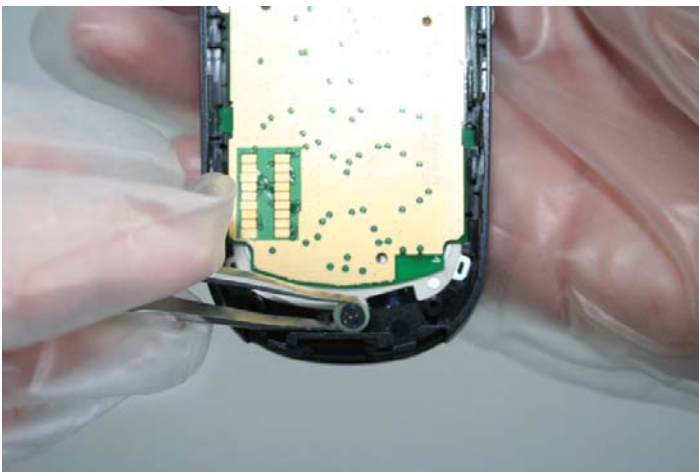
<p>Step 15</p> 	<p>Assemble Keypad.</p>
<p>Step 16</p> 	<p>Assemble Keypad PCB.</p>
<p>Step 17</p> 	<p>Assemble the Side Key Left by using Tweezers.</p>

Step 18



Assemble the Side Key PCB by using Tweezers.

Step 19



Assemble the Microphone by using Tweezers.

Step 20



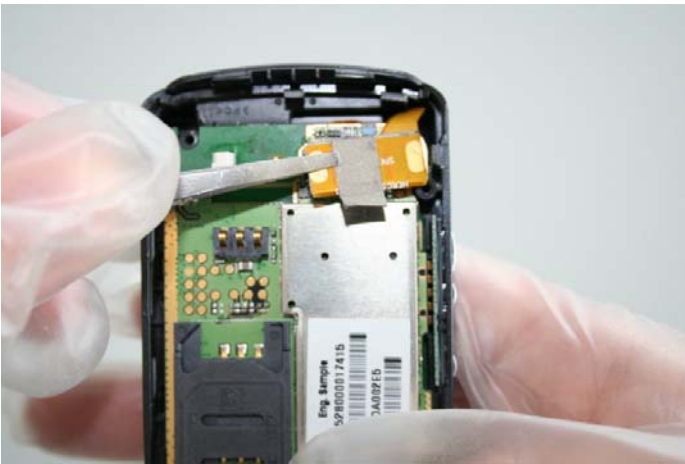
Assemble the Vibra-Alert by using Tweezers.

Step 21



Assemble the RF Control Board.

Step 22






Connect the Flex Cable with the socket.

Step 23



Assemble the MMI Slot Cap.

<p>Step 24</p> 	<p>Assemble the Lower Base Case Shell.</p>
<p>Step 25</p> 	<p>Place screws by using the Torque – Screwdriver T5+.</p>
<p>Step 26</p> 	<p>Assemble the Rear Cover.</p>

Step 27



Assemble Battery.

Step 28



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

	<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.

6 Setup of the Software

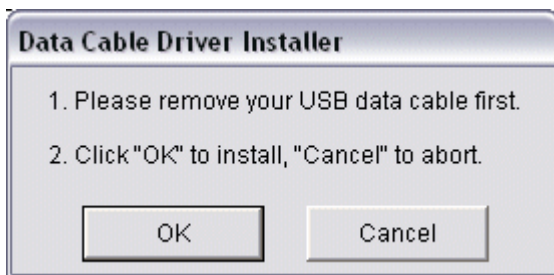
Download of the required software:

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.



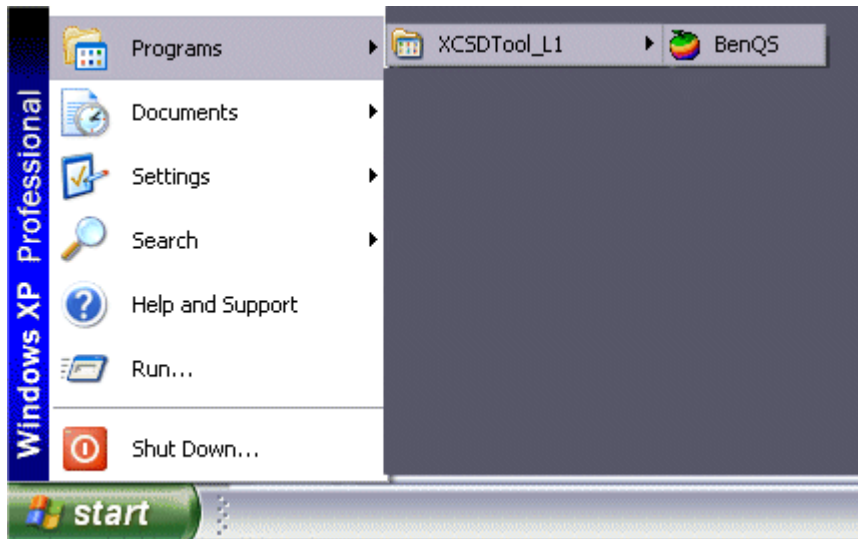
Plug in the Data cable and follow the installation instructions to complete the process.

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

Installation of XCSD tool:

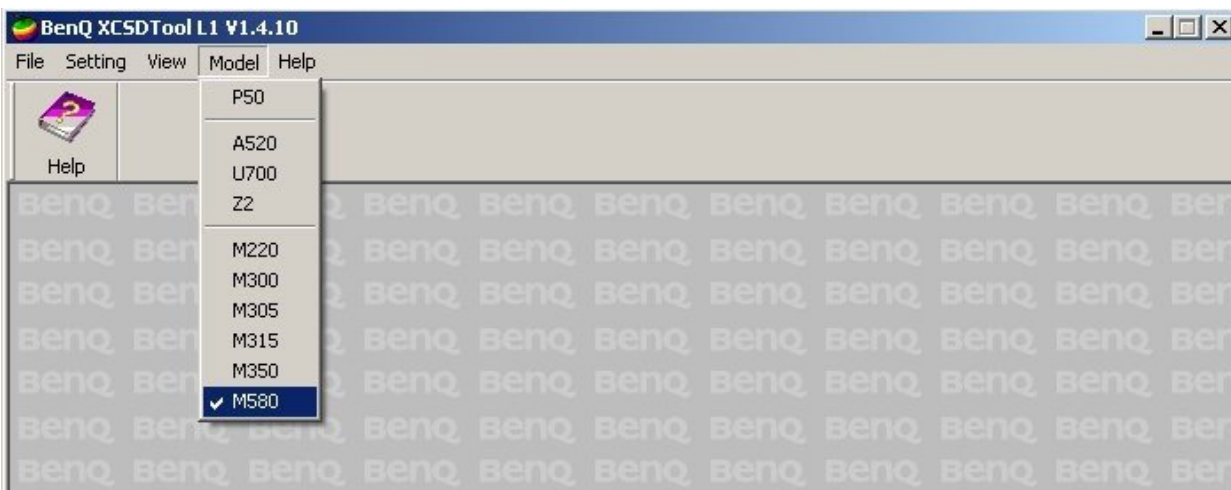
Start “setup.exe” file and follow the instructions.

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

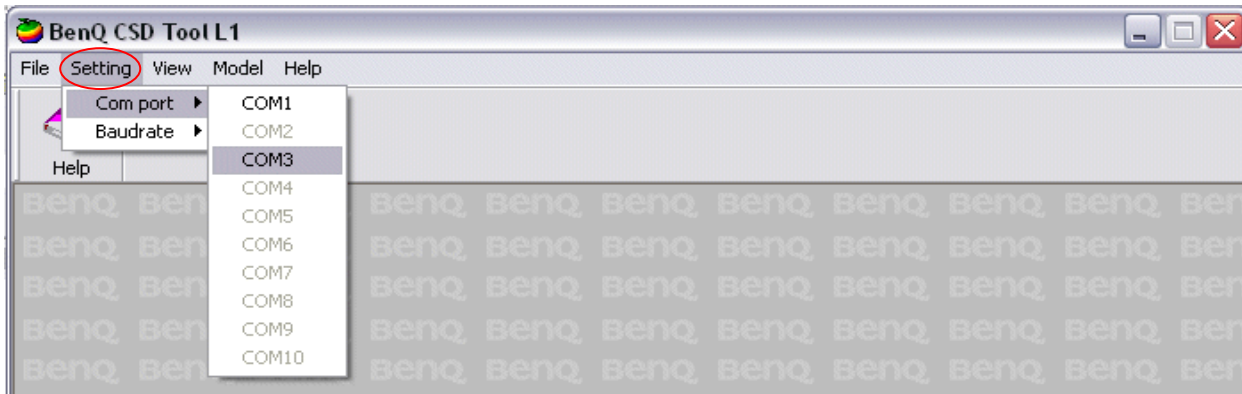


7 Software basic settings

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

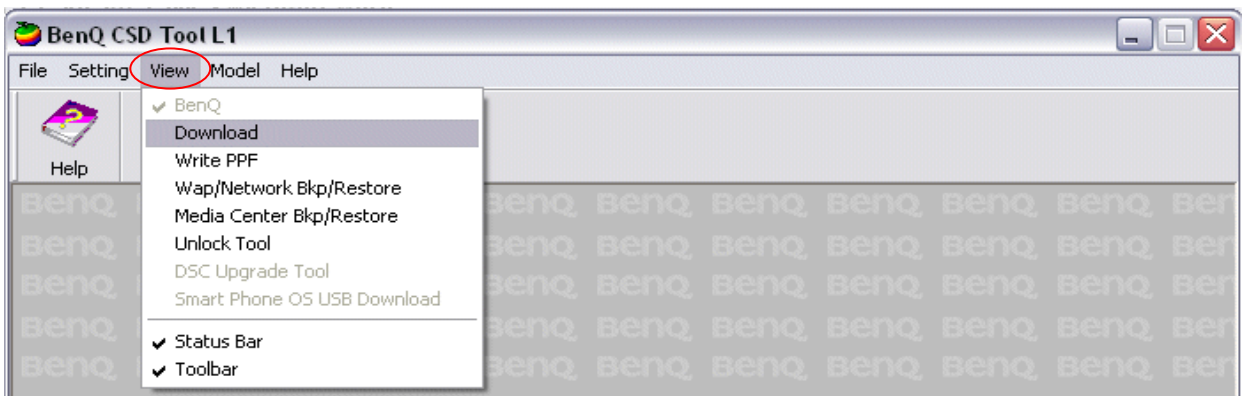


- Select Com port (Setting – Com port):

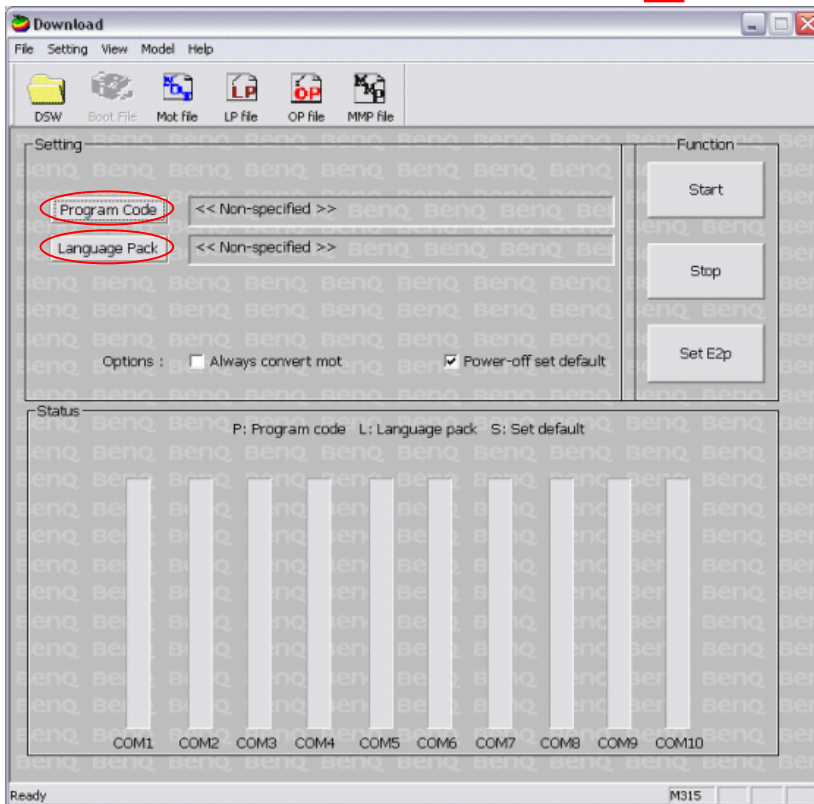


8 Software Download procedure

- Select Download Option (View – Download):



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

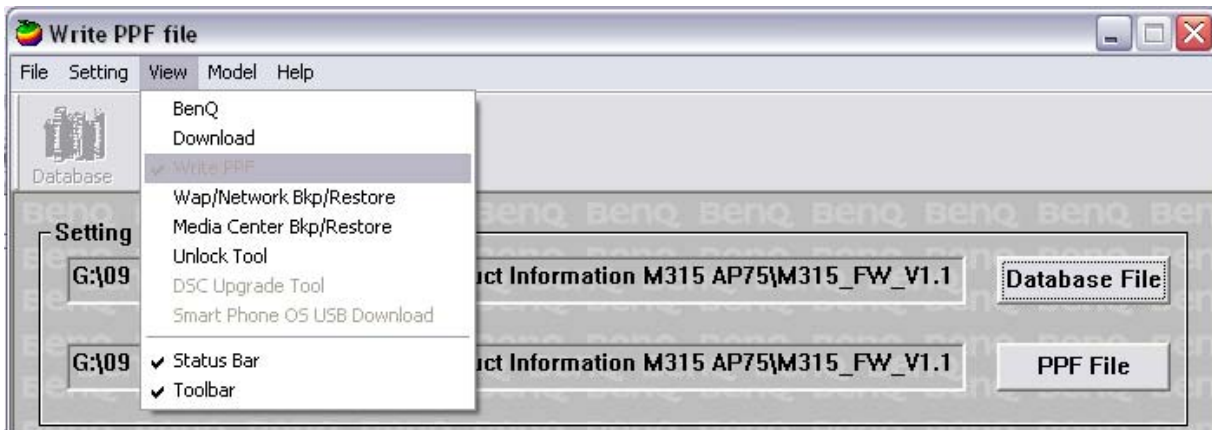
SW files naming rules:

Program Code **E2211710**
Language Pack **E22L11711**

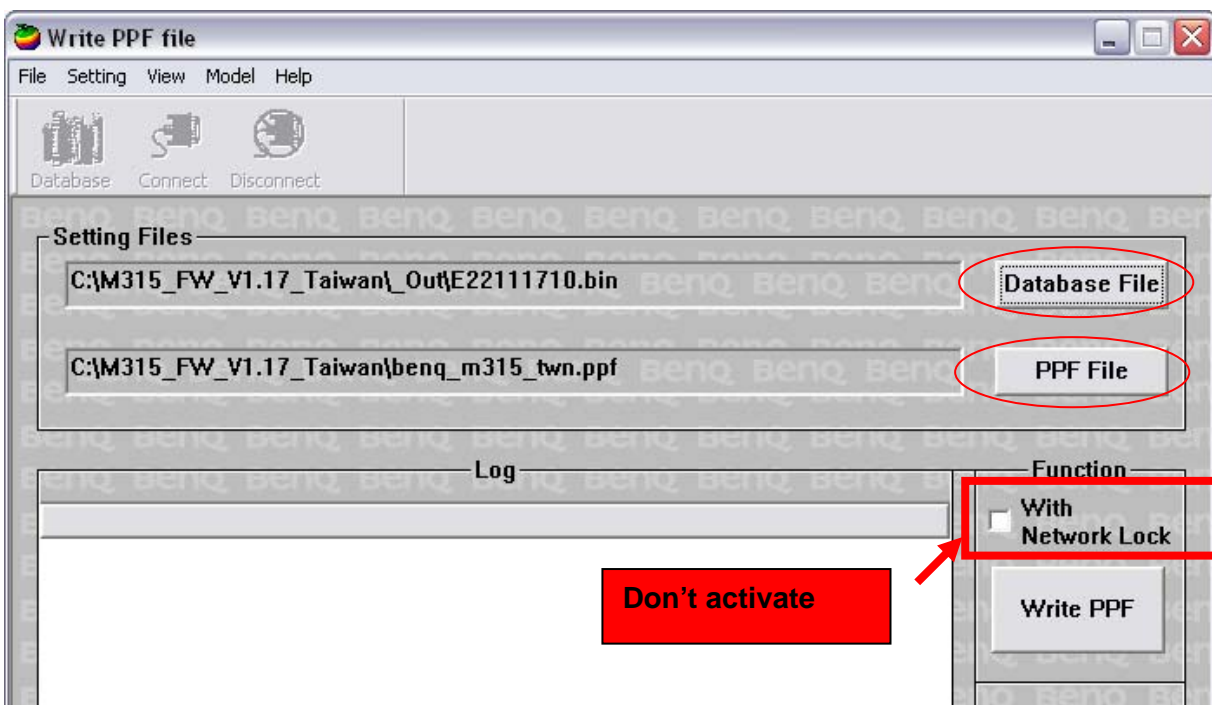
E22 Project name
117 Program Code
L Language Pack
117 Version 1.17
10/11 Program Code ID

9 Download PPF (Handset configuration)

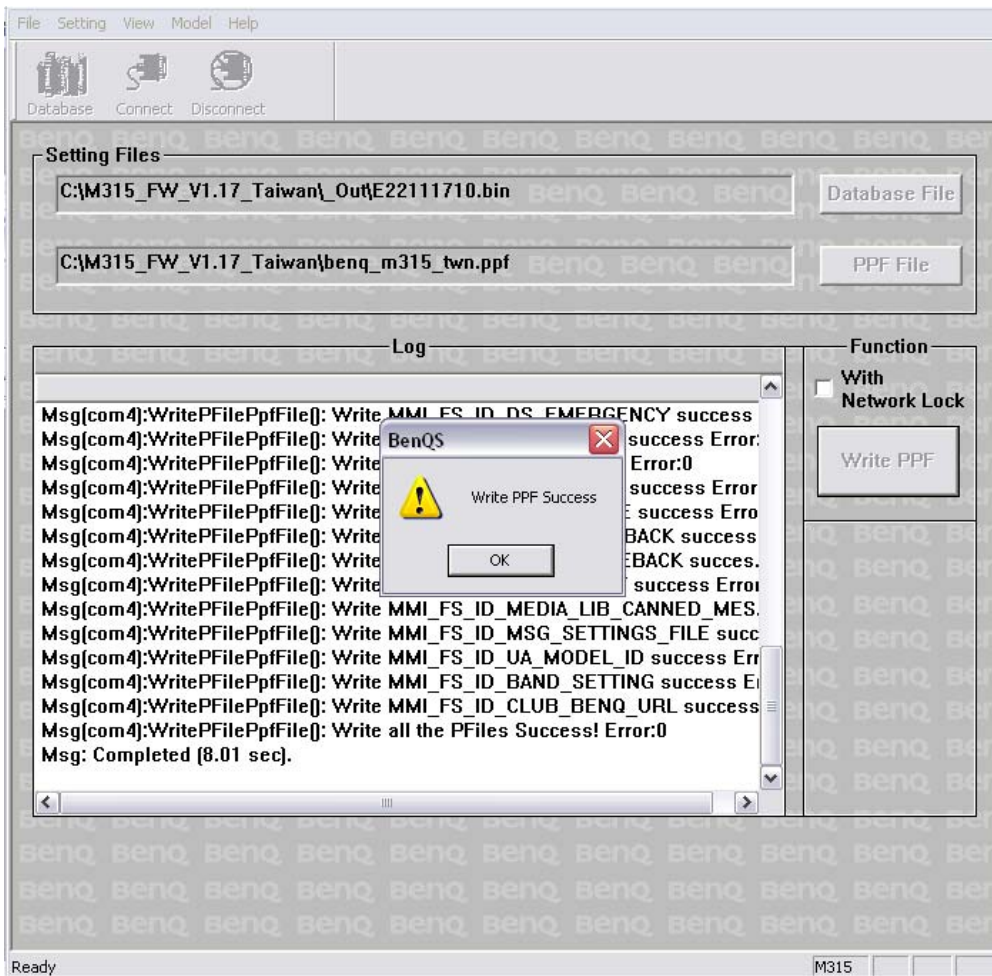
- Select write PPF option (View – Write PPF):



- Select Database File (example: E22111710.bin) and PPF File (example: benq_m315_twn.ppf)

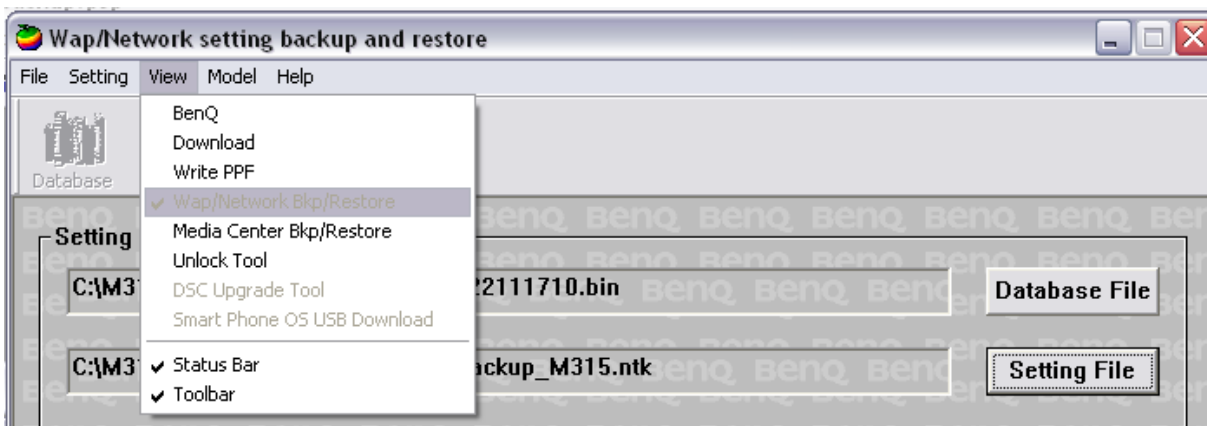


- Connect mobile phone with data cable. Phone must be switched on. Click to “Write PPF” button to start the process.
- Confirmation about successful write of PPF appears after process is completed.

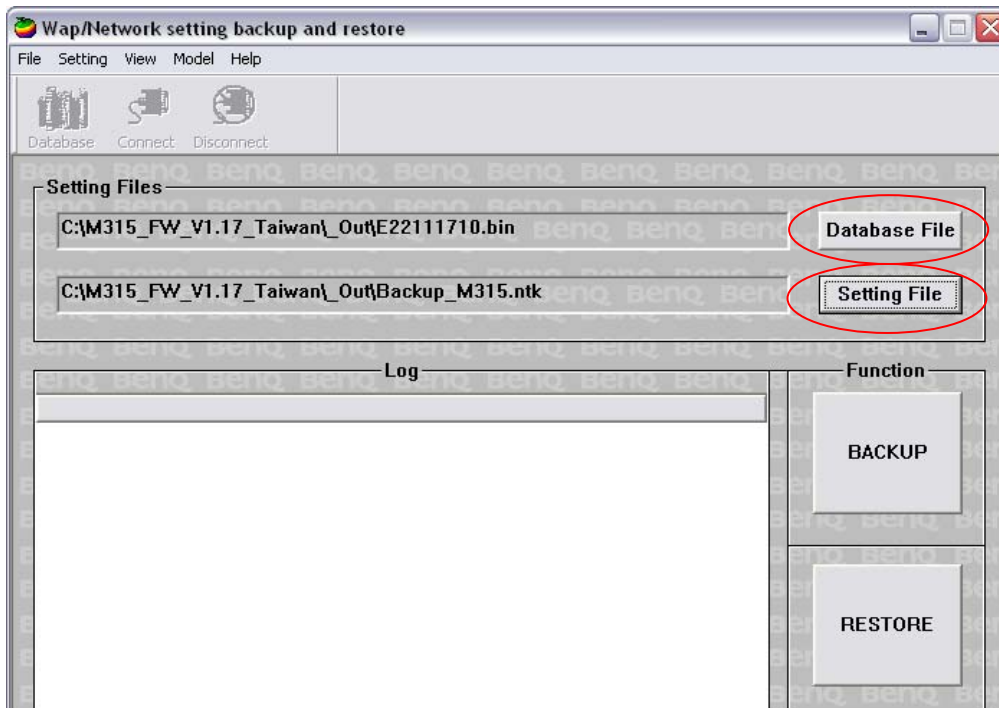


10 Backup and Restore of Wap and Network Setting

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



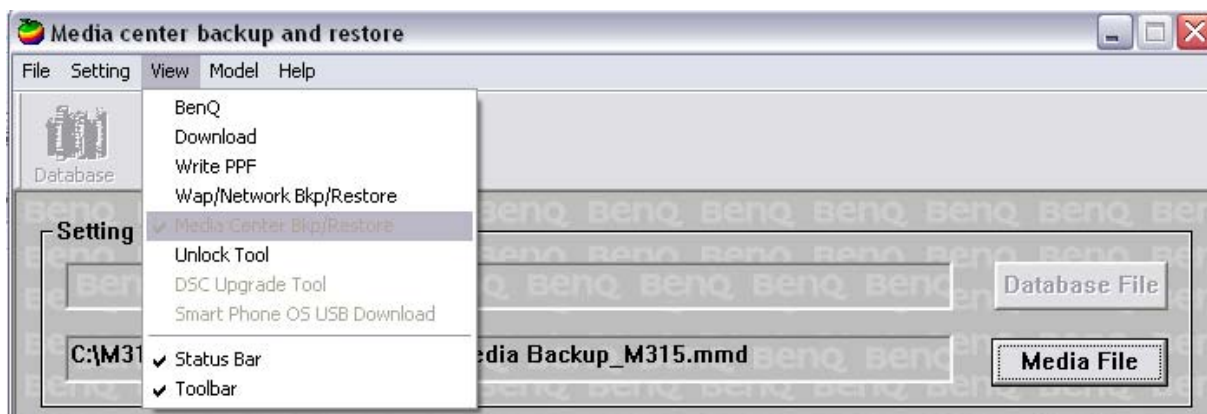
- Select Database File (example: E22111710.bin) and Setting File (create new txt file and rename it to ntk file for settings backup)



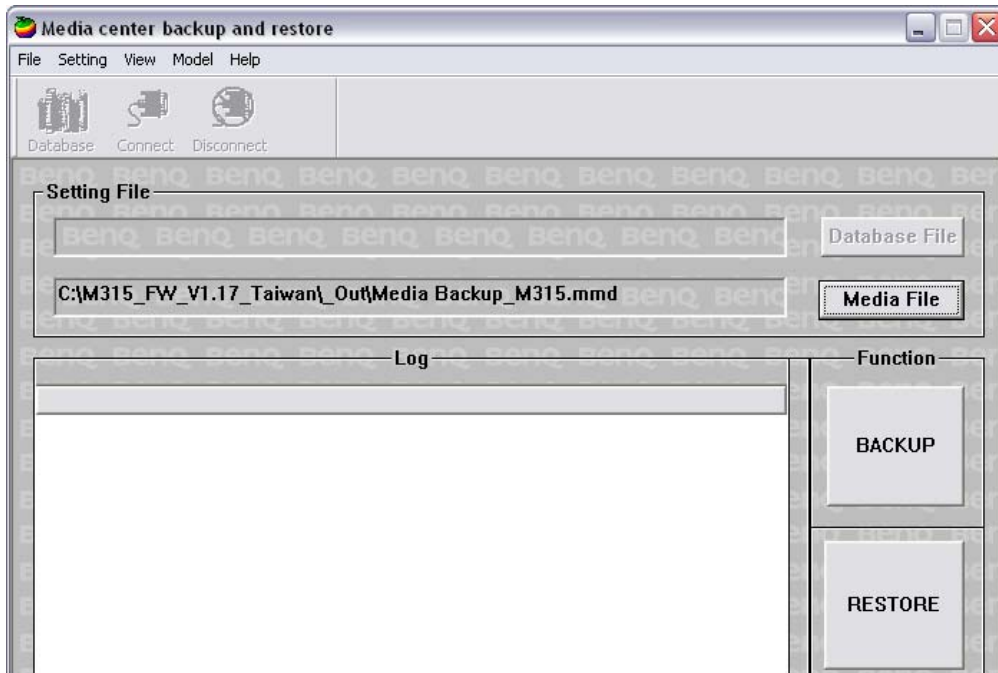
- Connect mobile phone with data cable. Phone must be switched off.
- Click to “Backup” button to start the transfer the settings into the selected file.
- Click to “Restore” button to start the transfer from selected file into handset.

11 Backup and Restore of Media Center content

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



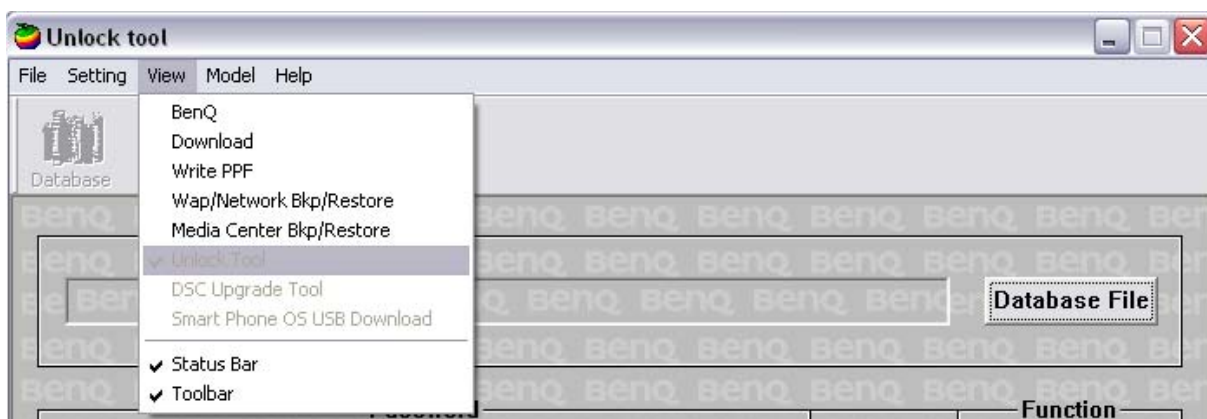
- Select Media File (create new txt file and rename it to mmd file)



- 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.

12 Unlock Tool

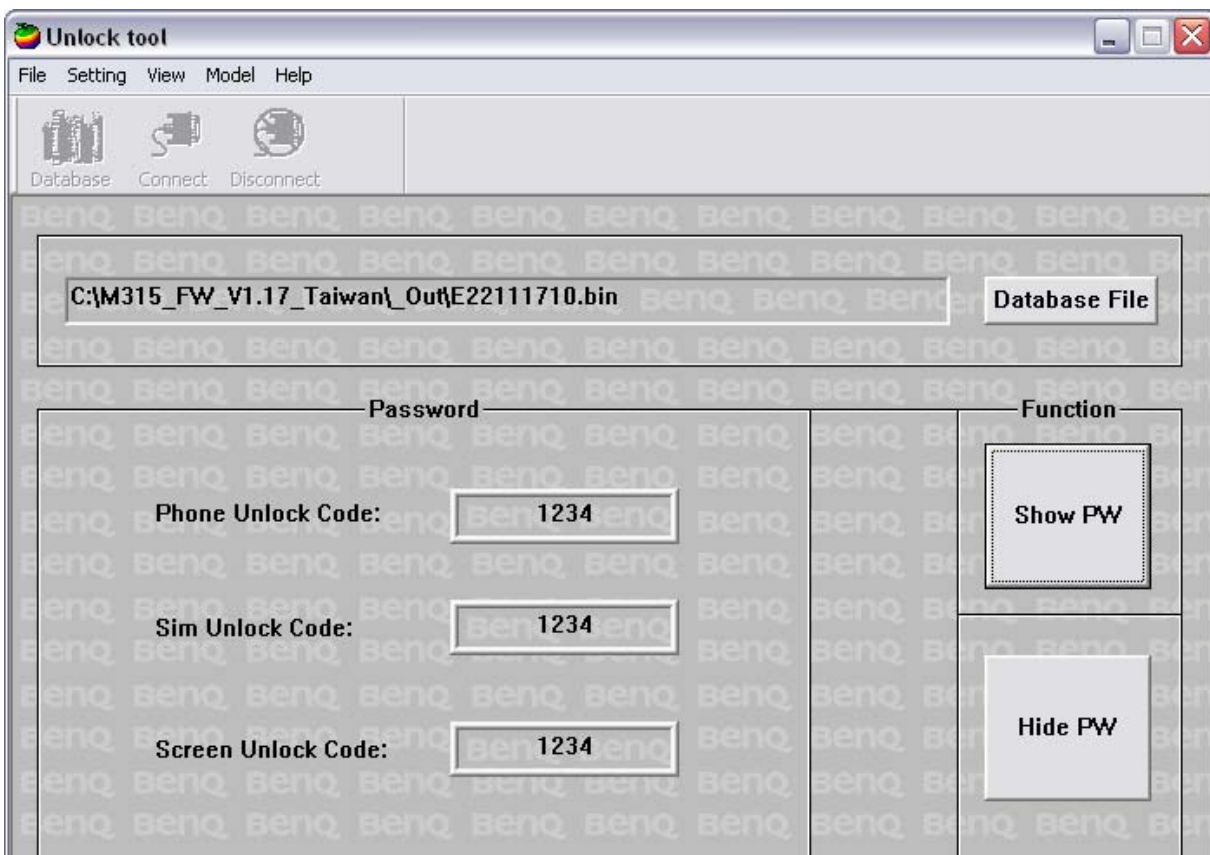
- Select Unlock tool function (View – Unlock Tool):



Select Database File (example: E22111710.bin)



- 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.



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.

CF61 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 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	08/2006
TD_Repair_L1-L2_CF61_R1.0.pdf	Page 40 of 42

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 <i>(Don't use: 0, I, O, Q, U)</i>
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.

