BE INSPIRED

P50

Release	Date	Department	Notes to change
R 1.1	12.12.2005	COM D CCQ PS APAC	New Document

Table of Content

1 Introduction

This document describes the process and procedure regarding the assembling and disassembling as well as the handling of the P50 Mobile phone

1.1 Purpose

Purpose of the instruction is to avoid unnecessary repairs and to optimise repairs. Beside this, the instruction is made to give the Service Partners a general orientation where to find and where to get required documents.

1.2 Scope

This document is the reference document for all BenQ Mobile authorised Service Partners. It has to be used from the Level 0 onwards up to the maximum repair Level.

1.3 Terms and Abbreviations

Terms

Abbreviations

RTC	-	Real time clock
LCD	-	Liquid crystal display
DSC	-	Digital still camera
CSD	-	Customer Service Department

2 Remark

All instructions given in this document are valid for P50.

3 GPRS (General Packet Radio Service)

GPRS is a new non-voice value added services that allows information to be sent and received across a GSM mobile telephone network. It supplements today's Circuit Switched Data (CSD) and Short Message Services (SMS). GPRS involves overlaying a packet based air interface on the existing circuit switched GSM network. This gives the option to use a packet-based data service. The information is split into separated but related "packets" before being transmitted and reassembled at the receiving end. Theoretically, maximum speeds of up to 171.2 kilobits per second (kbps) are achievable with GPRS using all eight timeslots at the same time. This is about 3 times as fast as the data transmission speed possible over today's fixed telecommunications networks and 10 times as fast as current Circuit Switched Data services on GSM networks.

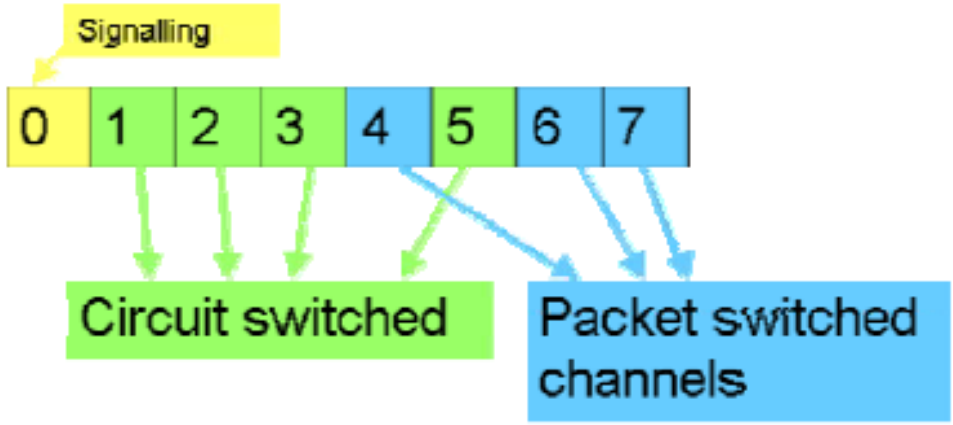


Figure1. Example of GPRS data transmission

Example: Cell with 1 Frequency channel:
1 physical channel for signaling, 4 physical channels for Circuit switched and 3 physical channels for Packet switched.

4 Product description of P50

P50 is a PDA phone with a SD/MMC slot for memory storage or extended functionality upgrade in future. A powerful processor, Intel PXA 272 is used to handle all possible software application at outstanding performance. It uses a 2.83 inch TFT LCD with 240 x 320 resolution panel from Samsung for its system display, and touch panel for digitizer input. High-density replaceable/rechargeable Lithium battery is used for longer operating time. It comes with a backup battery to prevent data lost while you replace the battery pack. Built-in Quad-band GSM/GPRS module is provided for advanced voice and data services, as well as roaming all GSM networks around the world. A built-in WLAN and Bluetooth can also provide short and middle range wireless connectivity. P50 also adopts Microsoft Pocket PC 2003 Phone Edition OS for its operation system.

5 Key Features

Bands	• Quad Band 850/900 /1800 / 1900 • GPRS Multi Class 10
Battery	• Li-Ion 1240mAh
Stand-by Time	124h
Talk Time	240min
Display	• Resolution: 240x320 Pixel • Display 262,144 colours • Technology: TFT • Size: 2.83 inch • Touch screen
Browser	HTTP WAP 2.0
Processor/OS	Intel PXA272 416MHz / Windows Mobile™ 2003 PPC SE
WAP Push	Yes
PIM/sync	MS-Outlook e-mail, calendar, contacts, tasks
Synchronisation	Complete Outlook synchronisation with ActiveSync
Memory	64MB SDRAM
Java	JTWI (CLDC 1.1, MIDP 2.0, JSR 120-WMA, JSR 135-MMAPI)
Video record/play	Yes (QVGA) / Yes
Video telephony	No
Camera	• OV9640 1.3M CMOS with flash • 4x digital zoom
Messaging	Basic organiser: event reminder, address book and calendar
Interfaces	WLAN (802.11b), Bluetooth®, IrDA, USB 1.1, SDIO
Ring tones	• 64 chords polyphonic ringtones • Support MP3, midi, mmf, wav, karaoke, smaf
Dimensions	122 x 60 x 20 (mm)
Weight	170g
Messaging	SMS, MMS, e-mail

6 Accessories

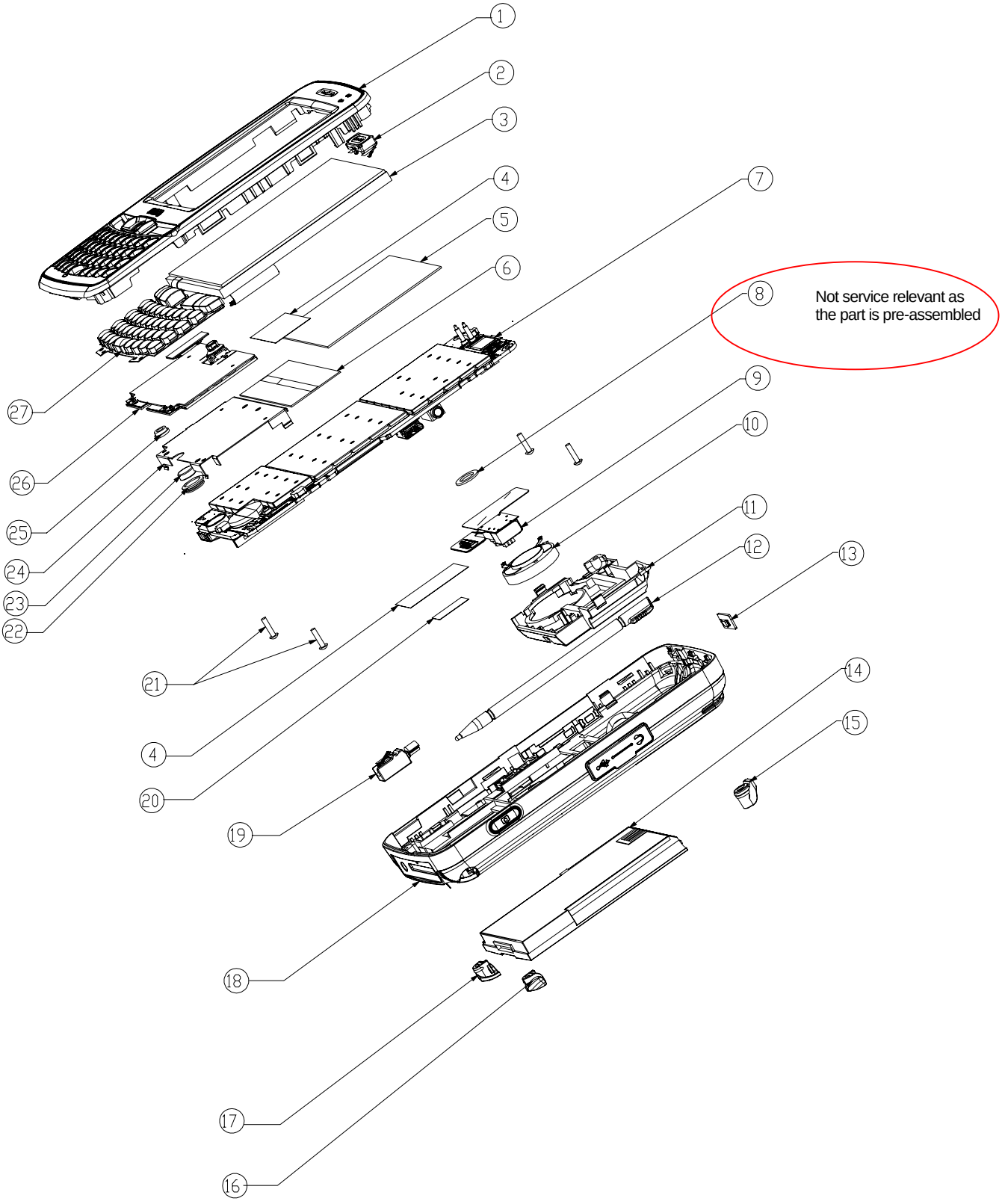
For P50, the following accessories will be available.

Description	Part number
Li-ion battery 1240mAh	Check Com-Market
Earphone EMC147-007	Check Com-Market
Film LCM PET ENG 57P50	Check Com-Market
Film_touch PNL_Liner PET	Check Com-Market
ADT SW 90-264V 5V1A UK	Check Com-Market
Data cable USB 10PIN I/O	Check Com-Market
Cable USB with core 1500MM	Check Com-Market
Leather case	Check Com-Market
Stylus PC	Check Com-Market
Lens wiper 90*90mm 56D92	Check Com-Market

Note: Visit the Communication Market for updated accessories:

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

7 Exploded View of P50



Item #	Location	BenQ item Description	BenQ order number
1	Exploded view: 1	ASSY_FRONT_CASE_KAISER	60.G7205.003
2	Exploded view: 2	RECEIVER SDRP0615AJ01	23.45017.001
3	Exploded view: 3	LCDM 2.83 LTP280QV-E01 57P50	56.07G72.001
4	Exploded view: 4	MYLAR_SIM PET BLACK 57P50	40.G7201.002
5	Exploded view: 5	CUSHION_LCM_REAR 57P50	47.G7207.002
6	Exploded view: 6	CUSHION_2_LCM_REAR PORON 57P5	47.G7220.001
7	Exploded view: 7	PCBA Main Board P50	55.G7201.002
8	Exploded view: 9	CAMERA MODULE BBENH0142 57P50	56.18G72.011
9	Exploded view: 10	SPK 0.5W 8OHM DMS2008GJ01	23.4G720.001
10	Exploded view: 11	ASSY ANTENNA 57P50	60.G7209.002
11	Exploded view: 12	STYLUS PC 57P50	42.G7212.001
12	Exploded view: 13	KEY_PWR P+R 57P50	42.G7211.002
13	Exploded view: 14	BAT LI-I 3.7V 1240MA 57P50 BEN	23.20115.102
14	Exploded view: 15	CAP_RF_SWITCH 57P50	47.G7214.001
15	Exploded view: 16	CAP1_SCREW_KAISER 57P50	47.G7211.001
16	Exploded view: 17	CAP2_SCREW_KAISER 57P50	47.G7210.001
17	Exploded view: 18	ASSY REAR CASE 57P50	60.G7206.006
18	Exploded view: 19	VIBRATOR KHN4NX1AD 1.3V 57P50	23.46009.004
19	Exploded view: 20	MYLAR_LCDFPC_PET_KAISER 57P50	40.G7210.001
20	Exploded view: 21	SCRW MACH PHM1.6*7L B-ZN T5	86.00T03.2P2
21	Exploded view: 22	CAP MIC 56F16	47.G4901.001
22	Exploded view: 23	MIC -58DB 2.2K WY-64MNU139	23.42021.001
23	Exploded view: 24	HOLDER KEYPAD SUS304+MYLAR PE	33.G7201.002
24	Exploded view: 25	HOLDER_MIC RUBBER 57P50	47.G7202.001
25	Exploded view: 26	ASSY KEYPAD 57P50	60.G7207.002
26	Exploded view: 27	ASSY KEYPAD ESD 57P50	60.G7210.002

8 Disassembly of P50

Note: ESD concept; the internal circuits will be more susceptible to ESD because of the use of exchangeable housing. The construction of the internal block must be/is designed, in the best possible way, to protect the circuit against sparks.

The keypad must be completely closed to prevent any occurrence of an ESD disruptive discharge.

The SIM contacts may be open, thus reachable for ESD contact discharge.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the P50.

Name	Part number
Tweezer	xxxxxxxx
Opening tool	F30032-P583-A1
Torque screw driver, T5 type, torque set to 1.5kg-cm	F30032-P228-A1

Step 1

Front view

Step 2

Rear view

Step 3

Remove the stylus pen.

Step 4

Slide the battery lock to the unlock position.

Step 5

Press down to release the latch for the battery.

Step 6

Remove the 2 screws.

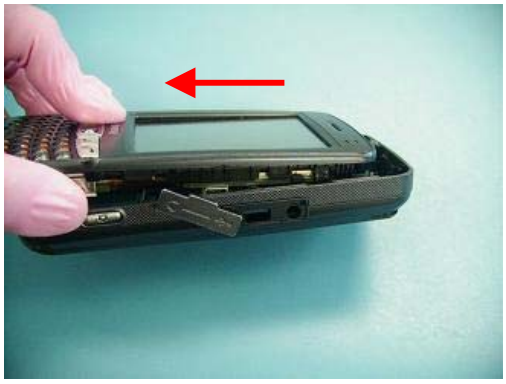
Step 7

Release the USB cap.

Step 8

Use the opening tool to release the latch at the SDIO/MMC slot to separate the front and rear case first.

Step 9

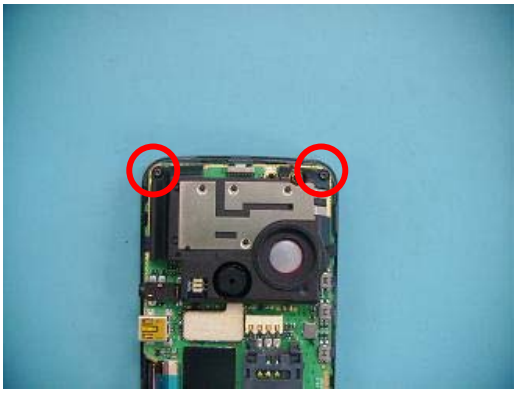


Slowly ply open the rest of the 2 sides and slide the front case down to separate the case.

Step 10

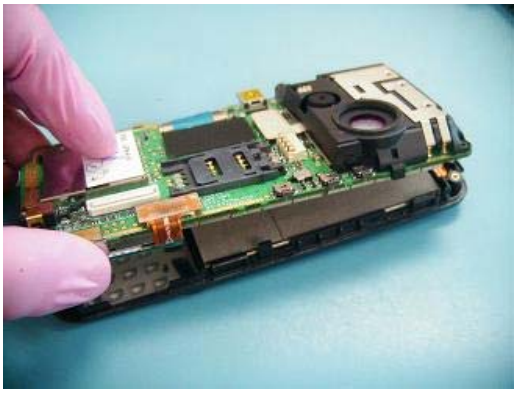
Remove the vibrator.

Step 11



Release the 2 screws.

Step 12

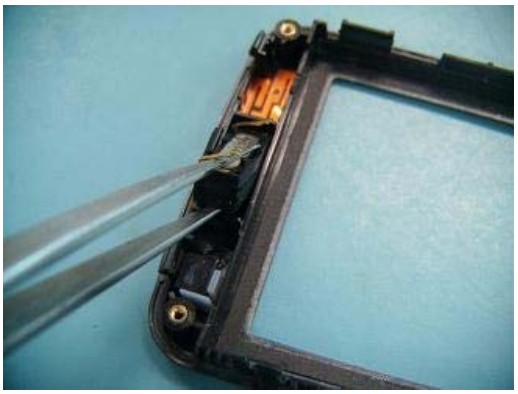


Separate the RF board and the front case.

Step 13

Separate the keypad from the front case.

Step 14



Separate the receiver.

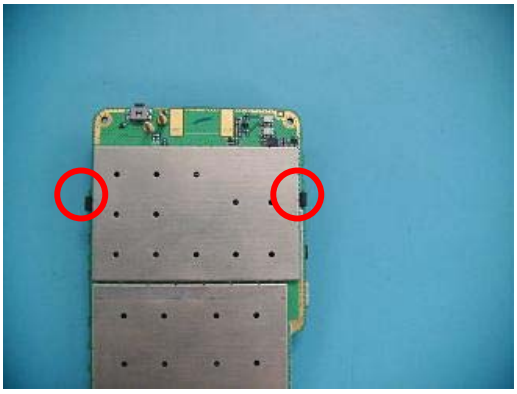
Step 15

Lift up the connector latch and slowly pull out the LCDM FPC.

Step 16

Release the MMI FPC to separate the MMI board.

Step 17

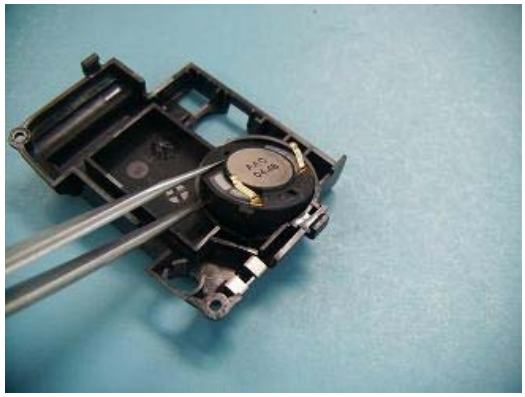


Unlatch the 2 hooks to separate the antenna assy.

Step 18

Remove the rubber holder.

Step 19



Remove the speaker

Step 20

Release the camera FPC and remove the camera module.

Step 21

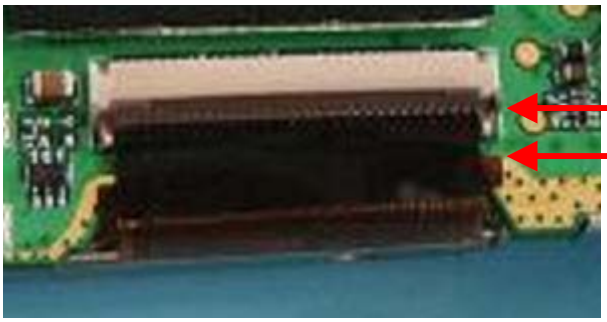
Fully disassembled parts.

9 Assembly of P50

For the reassembly of the P50, reverse the disassembly procedures from Step 20 to Step 1.

Please take note the following during assembly.

1) When inserting the flex cable of the LCDM into the connector, make sure that the notch on the cable sits at the connector edge.



2) During assembly of the front and rear housing, ensure that the two latches on the front casing is hooked onto the latch on the rear casing.

3) During the installation of the SIM card, make sure that the SIM card is inserted properly and that the golden contact area is facing downwards. Insert the SIM card downwards to lock the SIM card into position.

4).During the installation of the battery, make sure that the hinges are properly in place. Otherwise the battery will not be able to fit into the phone properly.

10 Mobile Software Programming

SW-Update is described detailed in a separate manual.
This manual is available via BenQ C-Market

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

Section Software > benq software > documents

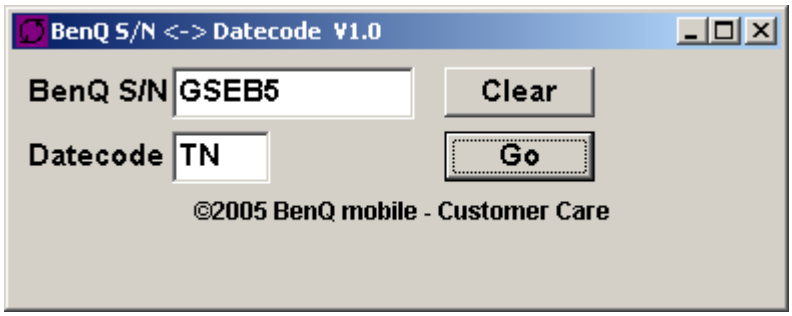
11 International Mobile Equipment Identity, IMEI

The mobile equipment is uniquely identified by the International Mobile Equipment Identity, IMEI, which consists of 15 digits. Type approval granted to a type of mobile is allocated 6 digits. The final assembly code is used to identify the final assembly plant and is assigned with 2 digits. 6 digits have been allocated for the equipment serial number for manufacturer and the last digit is spare.

Re-use of IMEI label is possible by using a hair-dryer to remove the IMEI label.

For example: **R3 – March 2003**

Code	Year	Month	Code
R	2003	March	**3**
S	2004	April	4
T	2005	Oct	O
U	2006	Nov	N
V	2007	Dec	D



Use Date code calculator to find out the date code.
Date code calculator is available via BenQ C-Market
https://market.benqmobile.com/SO/welcome.lookup.asp

12 Water Indicator

To identify if the mobile is moistened, a water indicator is pasted by the side of the contacts to the battery. Once in contact with moisture, the label will turn from white to pink and the spots pattern will become blurred.

13 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 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	• 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 relaese 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 relaese 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.