Local Service Organization Service Manual

BE INSPIRED

A75

Release	Date	Department	Notes to changes
V1.0	06.06.2005	COM D CCQ SLI APAC	New Document

Our innovation shapes the future

Table of Contents

1 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.

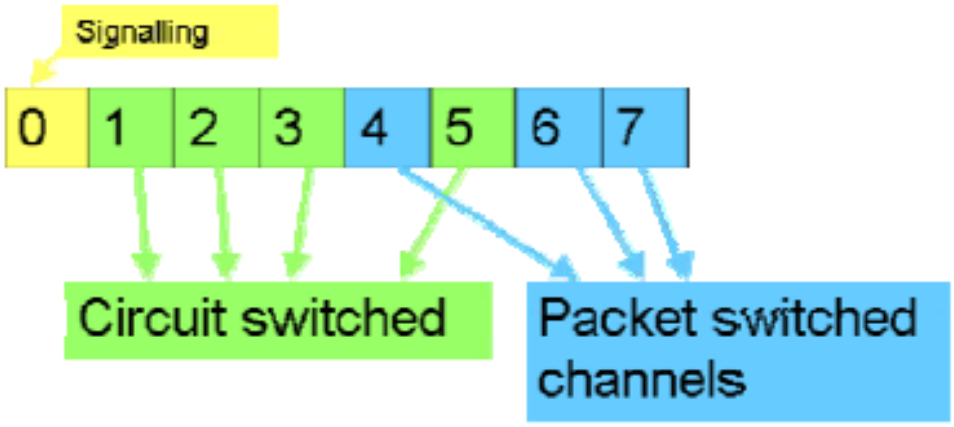


Figure1. Example of GPRS data transmission

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

2 Key Features

Bands	• Triple Band E-GSM 900 / GSM 1800 / GSM 1900 • EGSM Phase 2 / phase 2+ • GPRS Multi Class 8
Battery	• Li-Ion Battery Pack • Nominal Voltage : 3.7V • Nominal Capacity : 650 mAh
Stand-by Time	• up to 250 h (standard battery)
Talk Time	• up to 300 min (standard battery)
SIM Card	• Small (”Plug In”) 1.8 V or 3V SIM card (Phase II) • To insert the SIM card, the battery pack must be removed.
GSM Antenna	• Integrated triple band antenna for EMEA/APAC.
Dimensions	• 101 x 44 x 20 mm (L x W x H)
Weight	• 78 g
Charging time	• < 2 h for 100%
Receiver Sensitivity	• GSM 900: -102dBm (Specification, static & with fading) • GSM 1800/1900: -102 dBm (Specification, static & with fading) Receiver sensitivity must comply with the corresponding GSM recommendations in all operating conditions (temperature, battery level, etc)

Transmitter Power	• GSM 900: nominal 2W (Specification: Class 4 Mobile phone) • GSM 1800/1900: nominal 1W (Specification: Class 1 Mobile phone) Transmitter output characteristics is according to GSM 11.10 specification implying all specified operating conditions (Temperature, battery level ...). Transmitter set points will be specified for GSM and PCN when typical values and statistical values become available.
Speech Codec	• Half Rate, Full Rate, Enhanced Full Rate and Adaptive Multi Rate speech coders are available as standard.
Temperature Range	• -10^0C to $+55^0$C (Normal operation) • -30^0C to $+85^0$C (Storage capability)

Display	• Type: Full Dot Matrix • Resolution: 101 x 80 Pixel • No. of colours: 4K • Technology: C-STN (Epson) • Active area: 29.279mm x 25.265mm • Visible area: 32.4mm x 28.9mm • Pixel size: 0.85mm x 0.301mm. (1 Pixel consists of 3 sub-pixels in red, green and blue) • Illumination: Min 20cd/mm • Operating Temp.: -20^0C to $+55^0$C
12-Block Keypad	• 12-digit block (0-9, #, *) small letters • two function keys (SEND, END) • ON/OFF key combined with the END key • 4 way navi key • 2 softkeys on left & right position
Acoustics	• comfortable earpiece with optimal acoustics • unidirectional microphone (same as Puma) • different call melodies (for the amount see SW product description). All melodies with increasing volume because of the danger of acoustic shock. Additional measures to protect from acoustic shock, see SW product description. • different selectable volume levels for handset and ringer mode (for the amount see SW product description) • mount see SW product description)

3 Comparison with Previous Product

Feature	A75	A65
Frequency bands/int'l	900/1800/1900MHz	900/1800/1900MHz
Product Class	Class A	Class A
Form factor	Bar phone	Bar phone
PCB thickness	1.106mm	0.97mm
PCB outline	Same as A65	A65
BB chipset	EGOLDlite	EGOLD V3
RF solutions	B6E/SD2	B5E/B6E
PMU ASIC	Salzburg 75/Twigo 3+ 75	Salzburg/Twigo 3
Flash	64Mbit	128Mbit
RAM	16Mbit P-SRAM	16Mbit P-SRAM
Display	101X80, 4k, C-STN	101X80, 4k, C-STN
Battery	Same as A65	A65
Feature set	A60	C60
USB/IrDA/Bluetooth	None	None
MMS	None	Yes
Java	None	Yes
Exchangable housing	No	No
Speaker	S65	A65
Lead free technology	Yes	No
Clip on camera	No	Yes
No ID concept	Same as A65	A65
Navi key	4-way	4-way

4 Accessories

For A75, the following accessories will be available.

Description	Part number
Belt Case FCL-600	L36880-N7101-A120
Tour Case FCT-650	L36880-N5601-A149
Headset Purestyle HHS-610	L36880-N7101-A500
Headset HHS-510	L36880-N5601-A108
Headset Basic HHS-500	L36880-N5601-A107
Li-Ion Battery 700mAh EBA-510	L36880-N5601-A100
Travel Charger ETC-500	L36880-N5601-A104
Travel Charger ETC-510	L36880-N5601-A105
Car Charger Plus ECC-600	L36880-N7101-A109
Desk Top Stand EDS-600	TBC
Car Charger ECC-500	TBC
Car Kit Easy HKP-700	TBC
Car Kit Portable HKP-500	L36880-N5601-A109
Car Kit Easy Upgrade HKO-700	TBC

Note: Visit the Communication Market for updated accessories:
https://communication-market.siemens.de/

4.1 A75 Interface to accessories

The phone has a fully compatible interface to accessories. The connectors (I/O) are identical to the L55 Family.
Mechanical interfaces are defined on the mobile phone to make sure that the accessories are compatible across the whole L55 platform.
The design is released by AD regarding compatibility to Accessory Devices.

Slim Lumberg I/O Connector

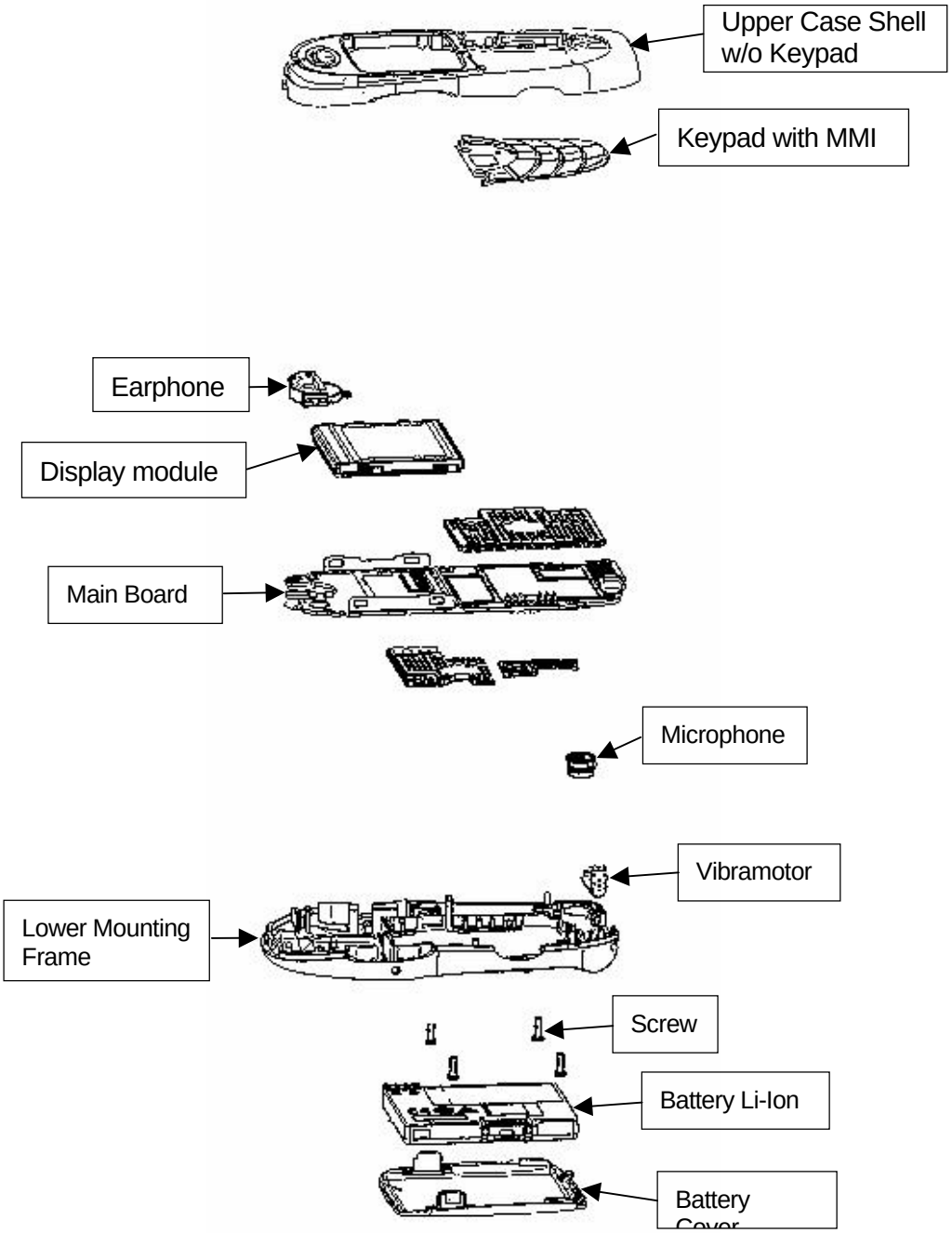
5 Unit Description of A75

The Phone is part of the 75 platform with the following specific features:

- Integrated triband antenna
- Colour Display
- The concept of the device is optimized regarding design-to-cost and easy-to-assemble.

The phone consists of equipped upper case, keypad, equipped PCB, equipped lower case and battery cover.
The PCB is based on the L55 Platform.
All electro mechanic components are overtaken from Lion and Barracuda,
The RF chamber and shielding is new for 75 platform.
Each of the preassemblies, upper and lower cases are designed to be automatically mounted and checked.
These preassemblies are designed to be easily assembled.
The strategy of use of similar components is completely realised.

5.1 Exploded View of A75



6 Disassembly of A75

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. This could lead to damage or destruction of the E-Goldlite pins.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the A75.

Step 1

Front view of the A75

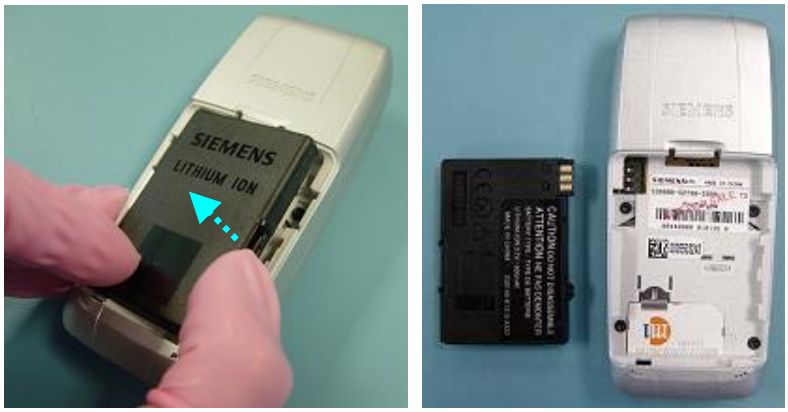
Step 2

Back View of the A75

Step 3

Remove Battery cover.

Step 4

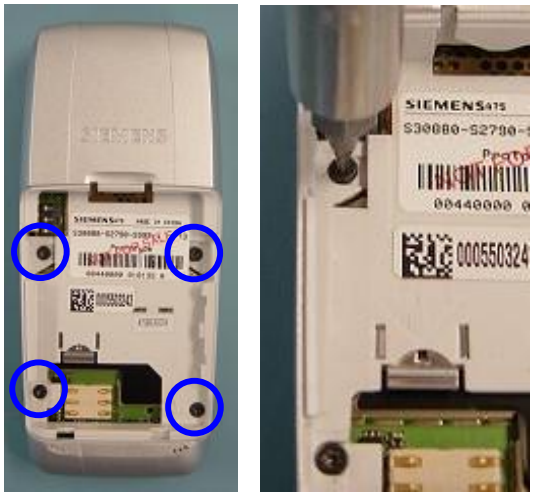


Remove Battery

Step 5

Remove SIM Card: 1) move latch upwards; 2) SIM Card will eject from holder

Step 6



Remove the 4 screws (as indicated) with T5 Plus screw driver.

Step7

Remove Upper case shell

Step 8

Remove Main board from Lower mounting frame.

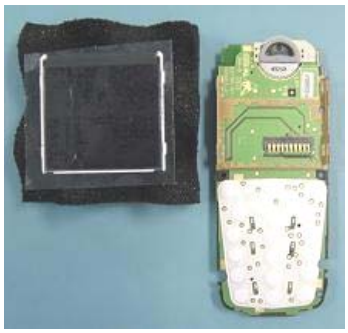
Step 9

Remove Virbamotor.

Remove Microphone.

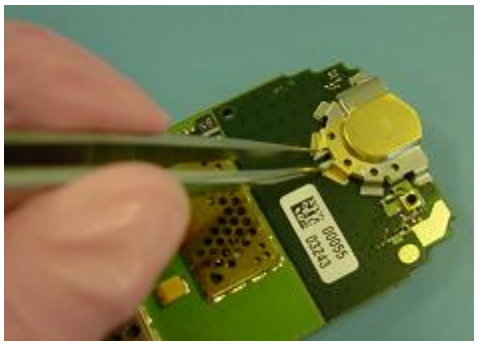
Step 10

Remove Display module.



Place foil over display module for protection.

Step 11



Remove Earphone

Step 12

Remove Keypad.

Step 13

Fully disassembled A75

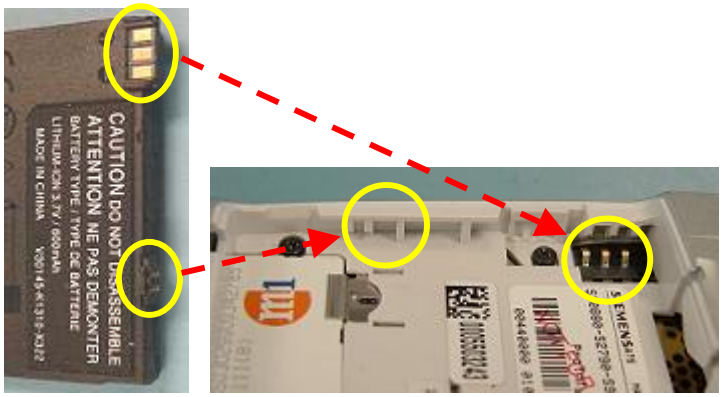
7 Reassembly of A75

For the reassembly of the A75, reverse the disassembly procedures from Step 12 to Step1. However there are some areas to be taken note of during reassembling of the phone.

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 and push the latch downwards to lock the SIM card into position.

Installation of the SIM card

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



When placing the screws, set Torque to 17cNm.

8 Mobile Software Programming

The common mobile software available is divided into language groups. However, this software does not contain the specific settings, such as ringing tones, greeting text, and short dial list etc., required by the operator or service provider. Therefore, it is common to have some menu item(s) differ in different variants or are not visible at all. These settings are stored in different memory area of the mobile and will be activated depending on the customer specific model or variant of the phone by a separate test step during the production process.

Due to this separation of common mobile software and customer specific initialization, it is possible to fulfil the demands of the market requiring customization and flexibility. As a consequence the software programming process in the LSO is divided into two different steps as followed:

- Software update to actual version and appropriate language group
- Programming of CUSTOMER SPECIFIC INITIALIZATION

Usage of GRT is mandatory!! For more detail check GRT User manual

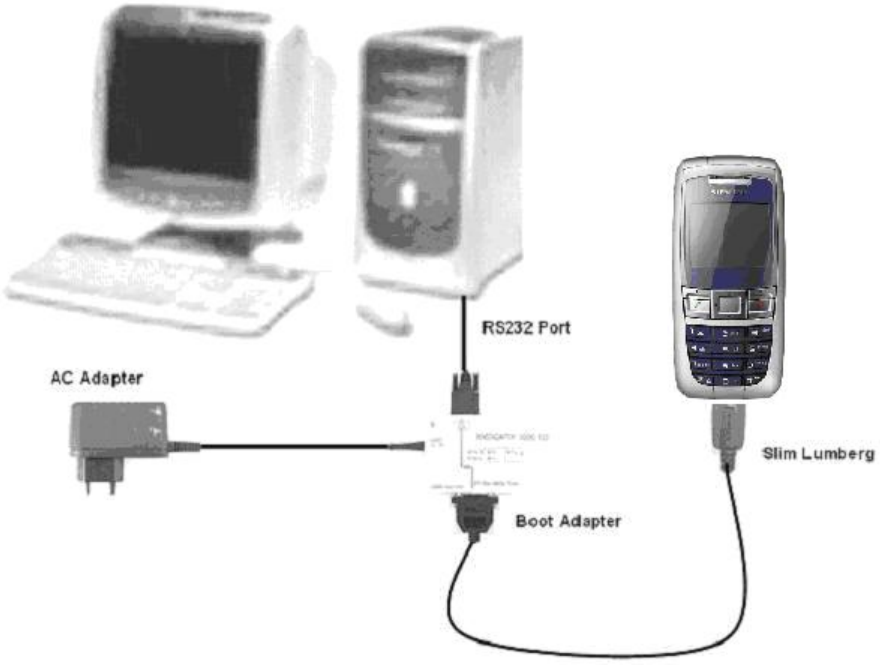


Figure 1. A75 Software Programming Setup

8.1 Mobile Software Updating

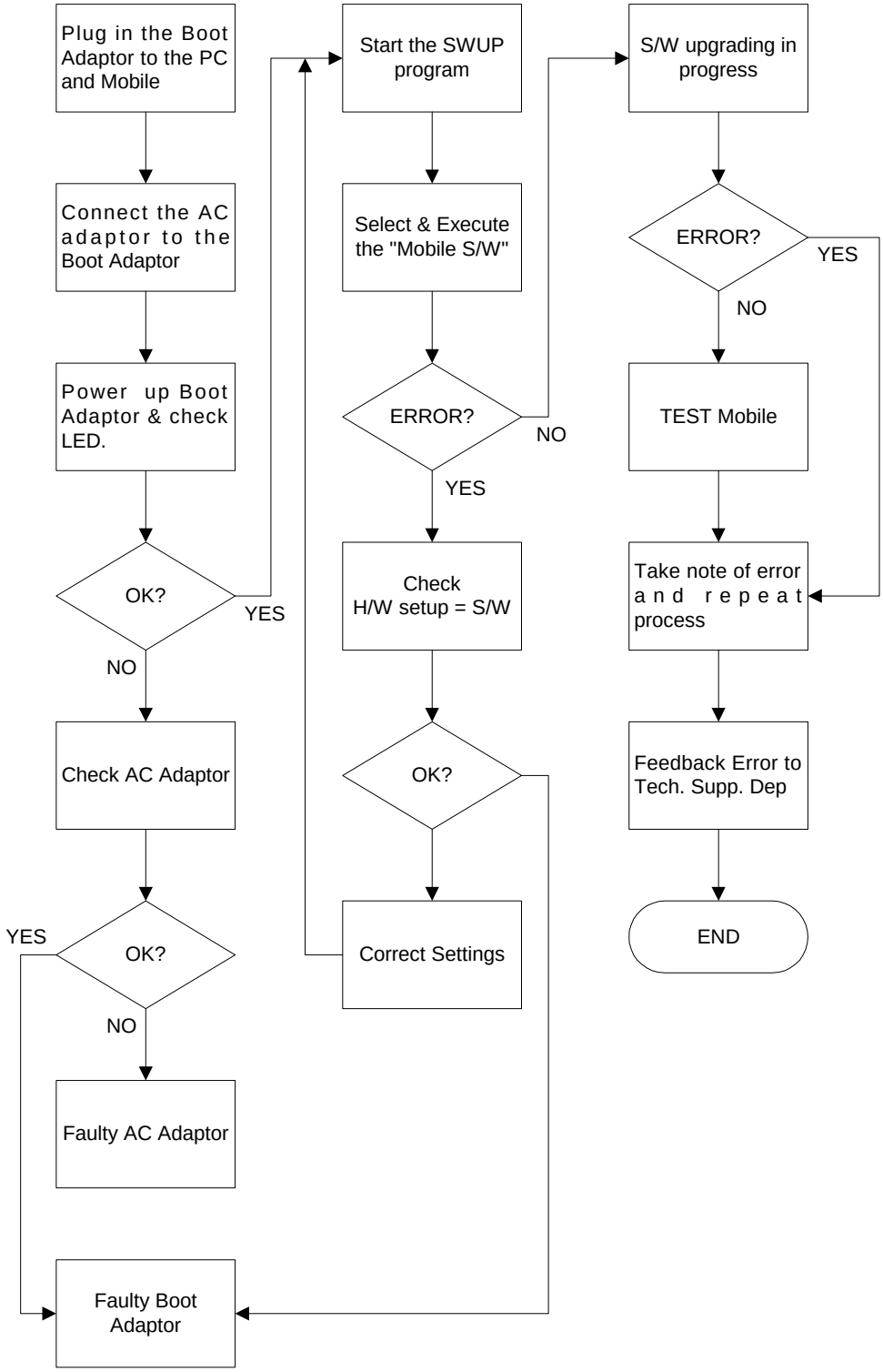
The software of the 75 series mobiles, is loaded from a PC directly. Hardware interconnection between the mobile and the PC is shown in Figure 1. Because of the new type of external connector used since 55 series (Slim-Lumberg type) an additional adaptor cable between mobile and boot adaptor is required. Table 1 listed all the hardware requirements

If you use the battery dummy, make sure that the power supply voltage is correctly adjusted.

Description	Part No.
Bootadapter 2000 incl. AC-Adapter, serial cable and mobile connection cable	L36880-N9241-A200
IBM Compatible PC – Pentium	-
Adapter cable – Slim Lumberg to Old	F30032-P226-A1

TABLE 1. EQUIPMENT LIST FOR SOFTWARE PROGRAMMING

8.2 Flow Chart for Software Upgrading



FLOW CHART FOR S/W PROGRAMMING PROCESS

9 Siemens Service Equipment User Manual

Introduction

Every LSO repairing Siemens handset must ensure that the quality standards are observed. Siemens has developed an automatic testing system that will perform all necessary measurements. This testing system is known as:

Siemens Mobile Service Equipment

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

10 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
- Lock, Unlock and Test the BF-Bus

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 chip card. These chip 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 chip cards or administration of the databases please ask your responsible Siemens 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. Card reader (Omnikey)
2. CardOS interface (Siemens)
3. JPICS Certificates
4. Java Plugin JVM/JRE (Sun)
5. 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. A chip card. Chip cards can be ordered via your responsible Customer Care Manager within Siemens.

3. A supported chip card reader (Smarty or Siemens B1) in order to access your chip card.

Remark:

We recommend using Siemens B1 reader. Similar device to B1 is Cardman 9010.

Generate Codes

In the module "**Generate Codes**"you can choose to generate:

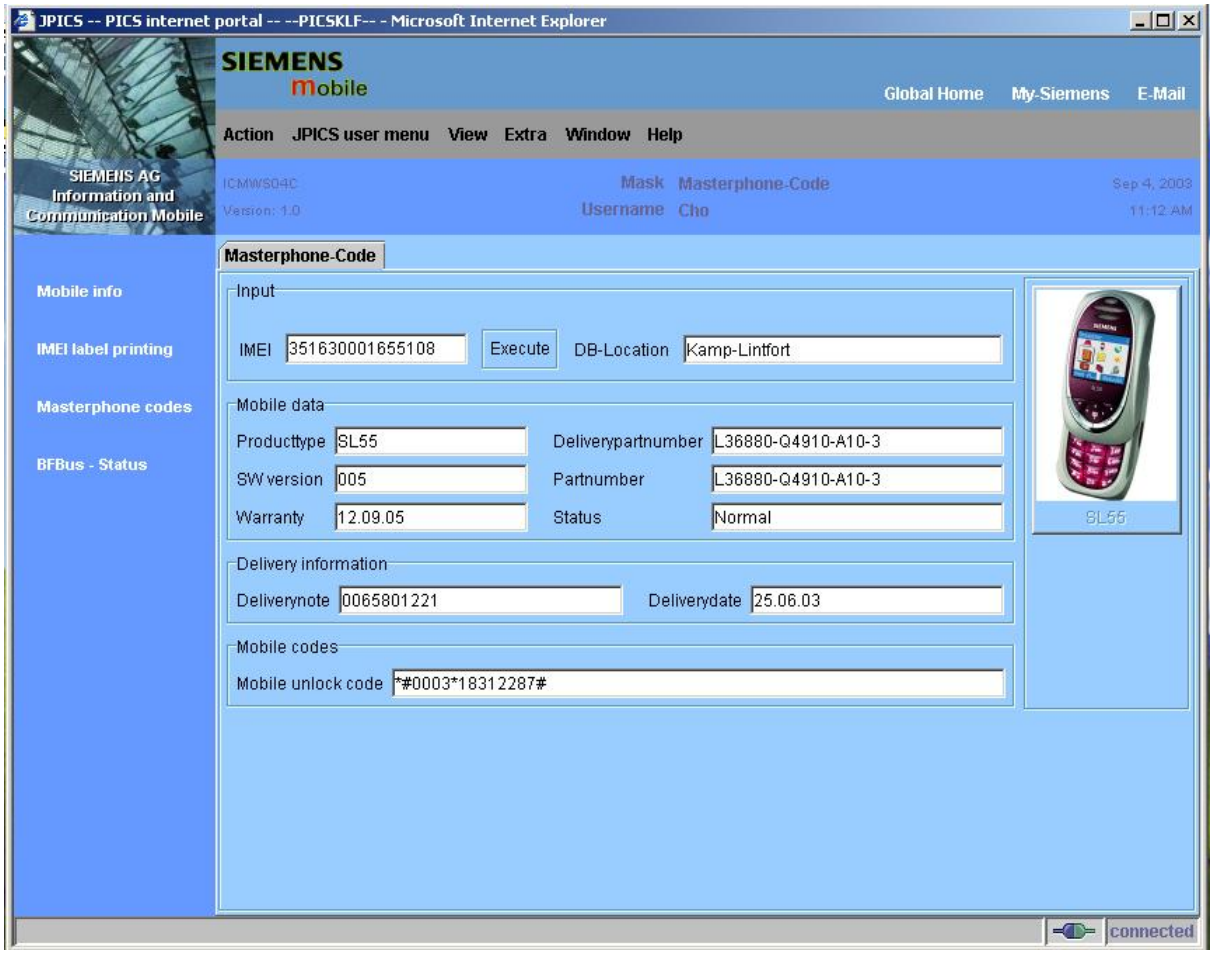
- Master – Phonecodes

- Simlock Unlock – Codes

Master - Phonecodes

The **Master – Phonecode** is used to unlock blocked mobiles.

Master – Phonecodes can only be supplied for mobiles which have been delivered in a regular manner.

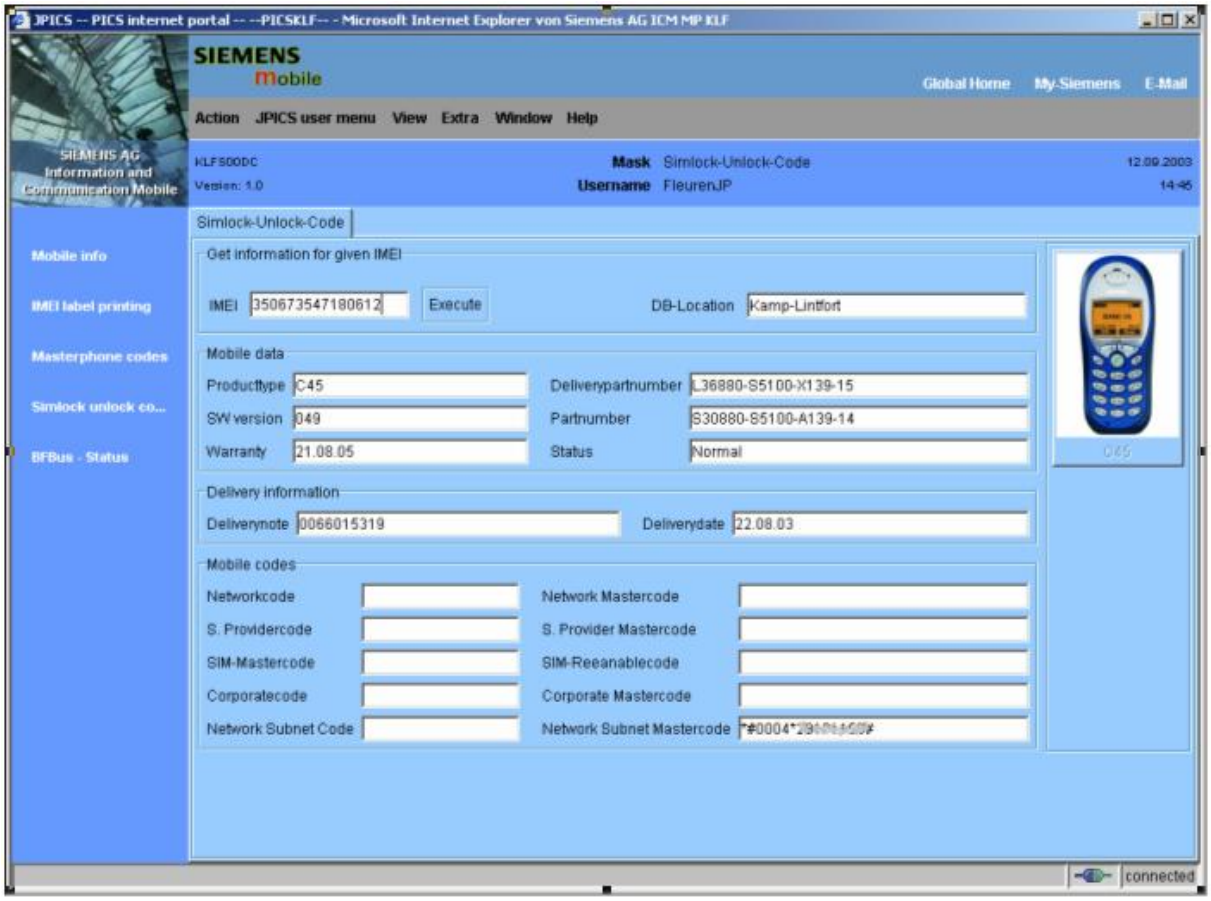


Simlock Unlock - Code

The **Simlock-Unlock-Codes** can only be generated if the following conditions are given:

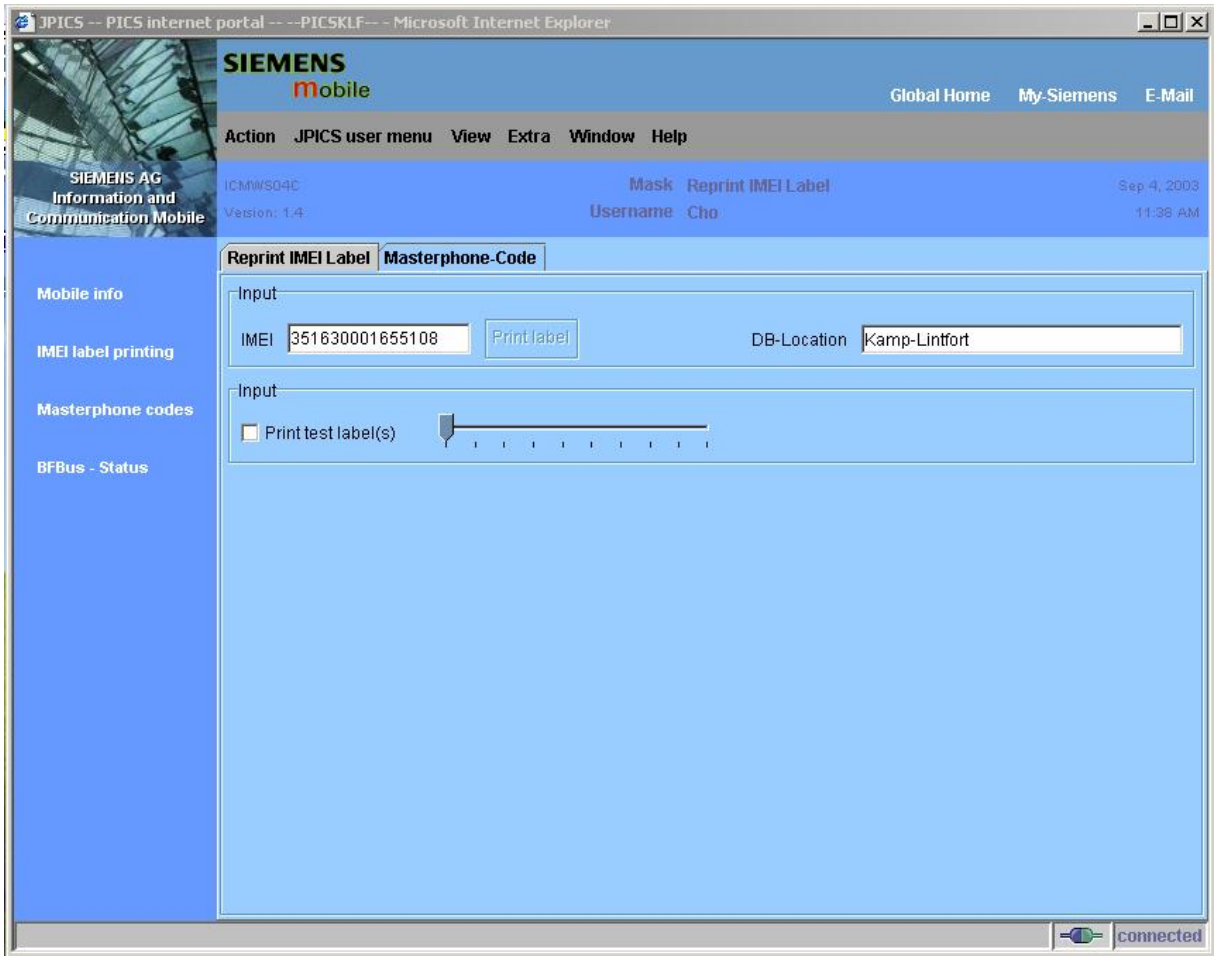
- Mobile must have an active **Simlock** inside.

- 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.



Printing IMEI label

The module "**Print 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 as 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.

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.

The part number for the SL65 is L36880-N7700-Axx-x where the last 4 letters specify the housing and software variant.

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

On this IMEI label, Siemens has also includes the date code for production or service, which conforms to the industrial standard DIN EN 60062. The date code comprises of 2 characters: first character denotes the Year and the second character denotes the Month.

For example: **M3**

CODE	YEAR	MONTH	CODE
M	2000	MARCH	**3**
N	2001	APRIL	4
P	2002	MAY	5
R	2003	JUNE	6
S	2004	JULY	7

TABLE 2 DIN EN 60062 DATE CODE

To display the IMEI number, exit code and SW/HW version, key: *#06#.

12 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 30.

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:

- Connect the mobile/board via internal antenna (antenna coupler) and external antenna (car cradle) to a GSM tester.
- Use a Test SIM.
- Skip GSM 900/GSM1800 or GSM1900 test cases if not performed by the mobile phone.

Internal Antenna			
Test case	**Parameter**	**Measurements**	**Limits**
1 Location Update	• GSM900 • BS Power = -55 dBm • middle BCCH	• Display check	• individual check
2 Call from BS	• low TCH • PCL 5 • BS Power = -55 dBm • middle BCCH	• Ringer/Loudspeaker check	• individual check
3 TX GSM900	• low TCH • PCL 5 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
4 Handover to GSM1800 Including Handover Check			
5 TX GSM1800	• low TCH • PCL 0 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
6 Handover to GSM1900 Including Handover Check			
7 TX GSM1900	• low TCH • PCL 0 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
8 Call relaese from BS			

External Antenna			
Test case	**Parameter**	**Measurements**	**Limits**
9 Call from MS	• GSM900 • high TCH • PCL 6 • BS Power = -55 dBm • middle BCCH	• Keyboard check	• individual check
10 TX GSM900	• high TCH • PCL 6 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
11 RX GSM900	• 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.
12 Handover to GSM1800 Including Handover Check			
13 TX GSM1800	• high TCH • PCL 1 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
14 RX GSM1800	• 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.
15 Call relaese from MS			

16	Handover to GSM1900 Including Handover Check			
17	TX GSM1900	• high TCH • PCL 1 • BS Power = -55 dBm • middle BCCH	• Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template	• GSM Spec.
18	RX GSM1900	• 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.
19	Echo Test	• high TCH • PCL 1 • BS Power = -70 dBm • middle BCCH		• individual check

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”**

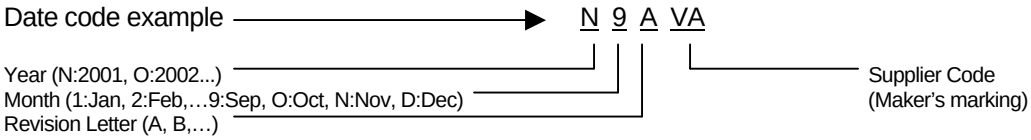
   Pin 1 number: 1234
   PUK : 76543210

   Pin 2 number: 5678
   PUK 2 : 98765432

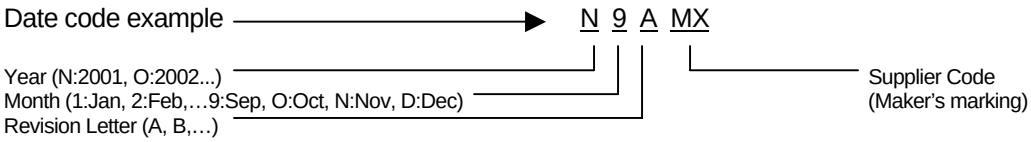
Annex 2

Battery Date Code overview

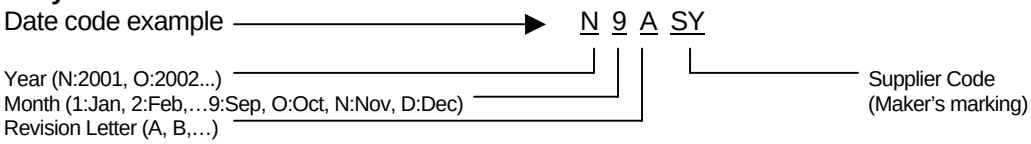
Varta



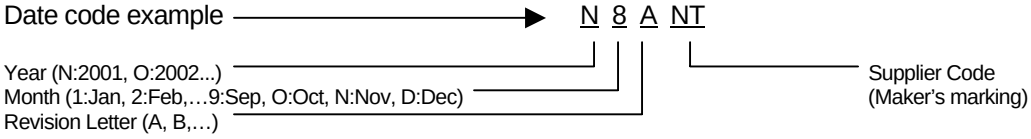
Hitachi / Maxwell



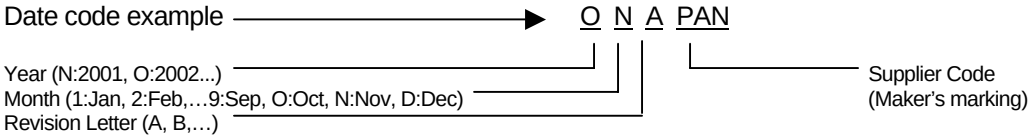
Sanyo



NEC



Panasonic



Sony