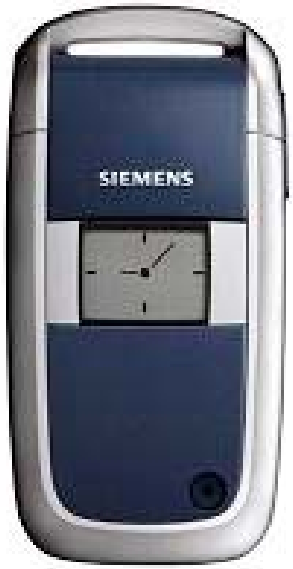
Local Service Organization Service Manual

BE INSPIRED

CF75/CF76



V 1.0

Version	Date	Department	Notes to change
R 1.0	02.08.2005	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.

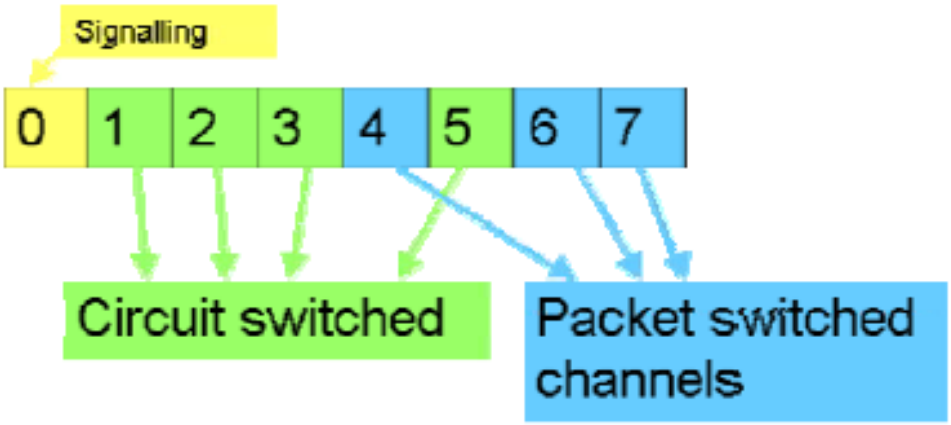


Figure1. Example of GPRS data transmission

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 K-Java Application

Java-based game system		
Java Application Manager (JAM)	Application launcher and download manager. Supports HTTP-based OTA download of applications over GPRS and CSD.	yes
RAM for Java applications	Available RAM for Java applications (i.e. Program code and data) during application runtime: Minimum 100 Kbytes (Has to be taken as working assumption for application development). Goal: 145 Kbytes	yes
MIDP 1.0, CLDC 1.0	As SL45i, including performance optimizations from SL45i-Infusio.	yes
'OEM extensions'	Proprietary API extension as SL45i. Including 'Siemens Game API'	yes
HTTP API over GPRS	only CSD	yes

3 Key Features

Bands	• Triple Band E-GSM 900 / GSM 1800 / GSM 1900 • GPRS Multi Class 10
Battery	• Li-Ion Battery Pack • Nominal Voltage : 3.7V • Nominal Capacity : 630 mAh • GSM Capacity : 600 mAh • Power Input : 2.0A (0.6 ms) / 0.25A (4 ms) • Cut-off Threshold : 3.2V
Stand-by Time	≥ Approx. 220 hrs (Best Case)
Talk Time	≥ 5 hrs (Best Case)
SIM Card	• Small (”Plug In”) 1.8 or 3V SIM card (Phase II) • To insert the SIM card, the battery pack must be removed.
Speech Codec	• Triple Rate (HR/FR/EFR) and Adaptive Multi Rate 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 Graphic • Resolution: 128 x 160 Pixel • Color depth: 65K • Technology: CSTN • Frame Rate: 15 frames/sec • Active area / mm: 27.3 x 27.3 mm • Pixel size per mm: 0.21mm x 0.21mm (1 pixel consist of 3 sub pixels in red, green and blue) • Illumination: White (3 LEDs integrated)
Sub Dislpay	• Type: Full Graphic • Resolution: 96 x 64 Pixel • Color depth: 4096 • Technology: CSTN • Frame Rate: 15 frames/sec
Keypad	• 12-key-block (0-9, #, *) • two function keys (SEND, END) • ON/OFF key combined with the END key; the symbol ⏻ (I inside O) is used as a symbol for ON/OFF. • 5 way-navikey • 2 soft-keys for different SW-enabled functions • 8 or 10 white or blue LEDs for keypad • tactile finder on key “5“ • Operator key

Acoustics	• Three-in-one-earpiece for handset, handsfree and ringing tones • Omni-directional microphone • Loud signal emitter (soundringer) (>100dB(A) SPL @5cm, 'Hongkong-Spec.') only for rectangular sound signals (NOT POSSIBLE for all Soundringer melodies) • Polyphonic ringer tones 40 voices (16 voices parallel to a GPRS data transfer, 40 voices in all other use cases) • Hands free mode • different selectable volume levels for handsfree, handset and ringer mode (for the amount see SW product description)
Memory	• Approx 4MB
Connectivity	• IRDA • Serial
Ring tones	• Polyphonic ringer tones 40 voices (16 voices parallel to a GPRS data transfer, 40 voices in all other use cases)
Multimedia	• Video recording / playback
Camera	• Integrated VGA Camera,5x digital zoom, video functionality (attachable Flash accessory)

4 Comparison with Previous Product

Feature	R65/R66 Ulysses Ulysses Refresh	CF75 Adonis	Improvement
Supported Systems	Triple Band EGSM 900/GSM1800/ GSM1900 (EMEA, APAC) GSM 850/GSM1800/ GSM1900 (NAFTA)	Triple Band EGSM 900/GSM1800/ GSM1900 (EMEA, APAC)	
Stand-by Time	≥ 250h (approx. 3mA quiescent current)	Up to 220h	
Talk Time	≥ 5 h (approx. 150mA average current for lowest TX-power level)	Up to 5h	
Battery Technology Battery Capacity	Li-Ion Battery Pack Nominal Cap.: 780 mAh	Li-Ion Battery Pack Nominal Cap.: mAh	
Weight	Approx. 90 g	Approx. 91.5g	
Volume	Approx. 78 cm^3	Approx. 80cc	
Length	108 mm	94 mm	
Width	44…47 mm	47.2mm	
Thickness	17…18 mm	22.17mm	
SIM	Plug-In 1.8V/3V	Plug-In 3V	
Antenna	Integrated	Integrated	
Half Rate	Yes	Yes	
Enhanced Full Rate	Yes	Yes	
AMR	Yes	Yes	
Fax/Data	Yes	Yes	
GPRS	Yes (Class 10)	Yes (Class 10)	
Keypad Illumination	Yes (white)	Yes (should be blue or white)	
Main Display / Display Illumination	TFT/TFD 65k colour	Main: CSTN 64k colours (128x160)	
2nd Display / Display Illumination		4k colours, C-STN	
Camera	Yes (integrated camera)	Yes, VGA, 2xDigital Zoom	
Connectivity	Min. 95 dB(A) @ 5cm Typ. ≥98dB(A) @ 5cm (for dedicated Siemens-standard melodies) Min. 100dB(A) @ 5cm (only for rectangular sound signals)	Serial, IRDA	
Ringer volume level		Min. 100dB(A) @ 5cm (only for rectangular sound signals)	

5 Accessories

For CF75, the following accessories will be available.

Description	Part number
Textile Case FCT-600	L36880-N6051-A700
Li-Ion Battery 600mAh EBA-670	L36880-N6051-A103
Travel Charger EU ETC-500	L36880-N5601-A104
Travel Charger UK ETC-510	L36880-N5601-A105
Car Charger Plus ECC-600	L36880-N7101-A109
Desk Top Stand EDS-600	L36880-N6881-A100
Car Charger ECC-500	L36880-N7101-A109
Headset Purestyle HHS-610	L36880-N7101-A500
Headset HHS-510	L36880-N5601-A108
Headset Basic HHS-500	L36880-N5601-A107
Flash IFL-600	L36880-N7101-A400
Car Kit Portable HKP-500	L36880-N5601-A109
Data Cable USB – serial DCA-510	L36880-N5601-A111
Data Cable USB – USB DCA-540	L36880-N6501-A102
SyncStation DSC-510	L36880-N6501-A103

Note: Visit the Communication Market for updated accessories:

https://communication-market.siemens.de/

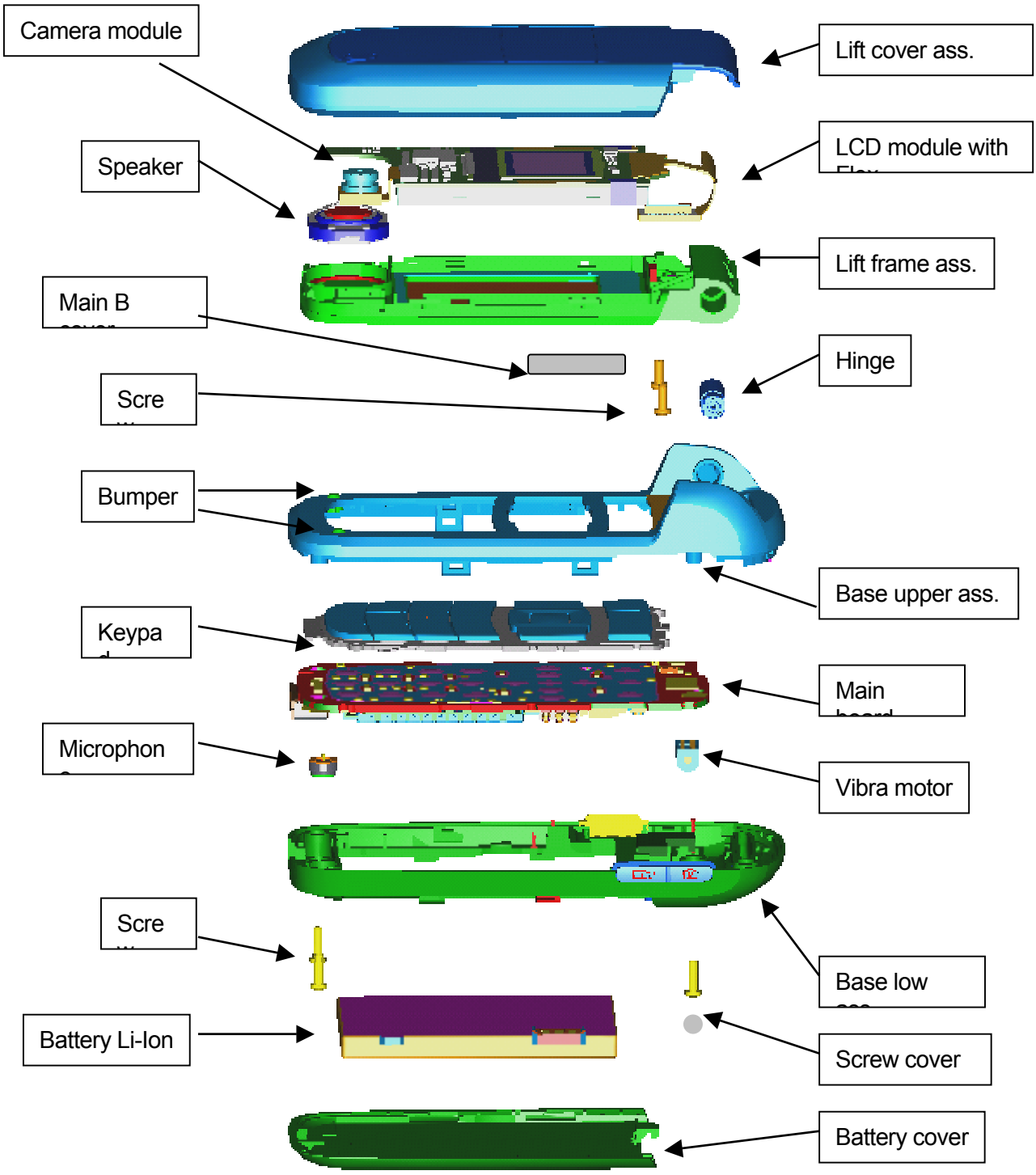
5.1 CF75 Interface to Accessories

There are no specific mechanical interfaces to the car cradle. The car cradle is designed to fit the existing design. The I/O-Connector (Lumberg-slim-connector) is in use. The compatible interface is suitable to use the travel charger.

6 Unit Description of CF75

The CF75 Adonis is designed as a clamshell with non-exchangeable housing. The lift cover, lift frame, base lower, base upper and battery cover are lacquered parts (1shot-molding).

6.1 Exploded View of CF75



7 Disassembly of CF75

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 S-Goldlite pins.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the CF75.

Step 1

Front view of the CF75

Step 2

Back View of the CF75

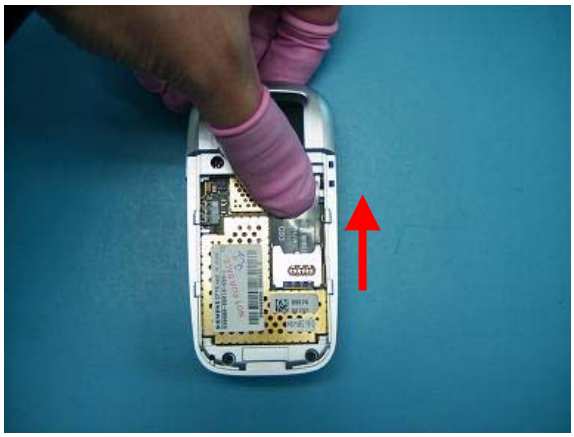
Step 3

Remove Battery cover.

Step 4

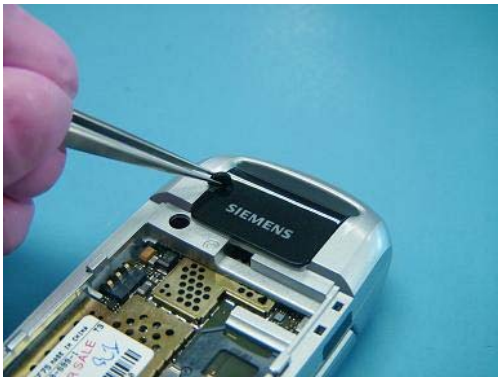

Remove Battery.

Step 5



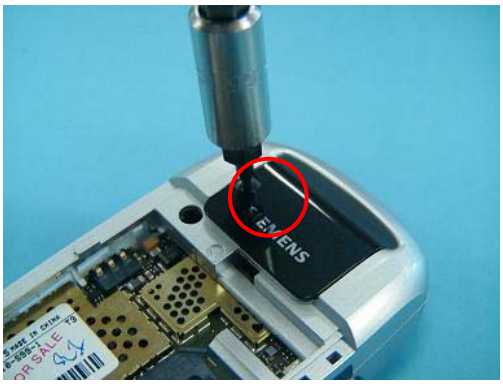

Remove SIM card.

Step 6




Remove Screw cover using tweezer.

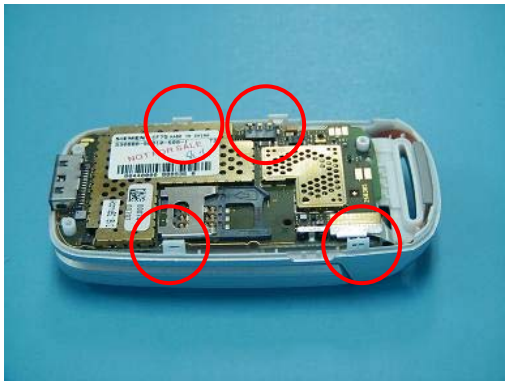
Step 7

Unscrew the 3 T5 plus screws using a Torque screw driver.

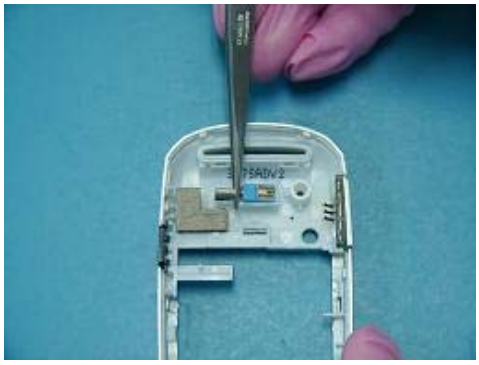
Step 8





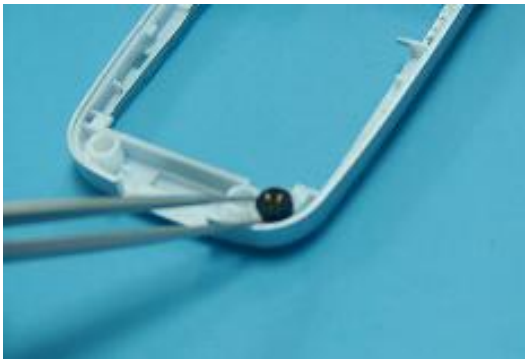

Remove Base lower assembly using Opening tool F30032-P38-A1.

Step 9




Remove Vibramotor using Tweezer.

Step 10




Remove Microphone using Tweezer.

Step 11


Remove the LCD module flex cable from Main board using Opening tool F30032-P38-A1. Take out the Main board from Base upper assembly.

Step 12

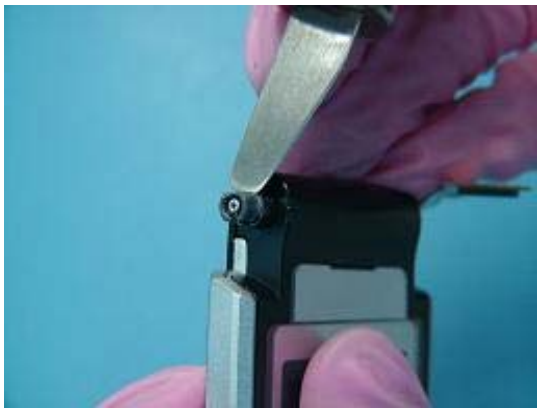

Remove Keypad from Base upper assembly.

Step 13



Remove Life frame assembly from the Base upper assembly using Hinge tool F30032-P371-A1.

Step 14

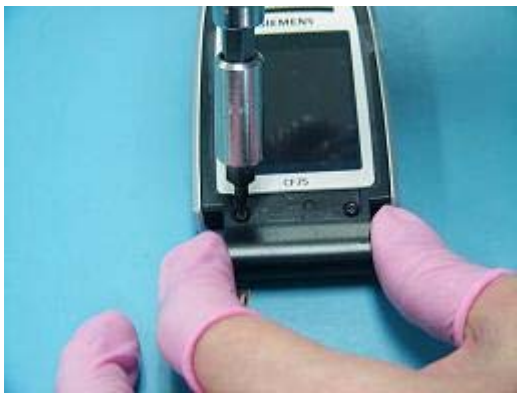



Remove hinge using opening tool F30032-P38-A1.

Step 15


Remove Main B cover using opening tool F30032-P38-A1.

Step 16

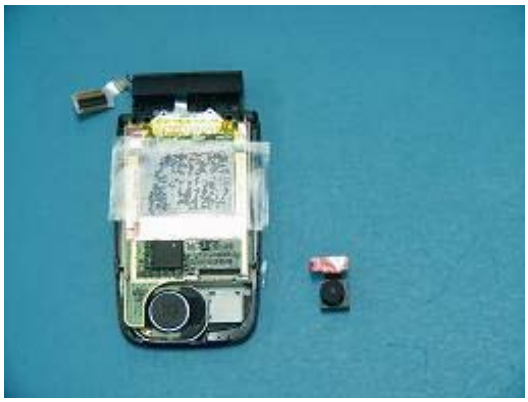



Remove 2 screw using Torque screw driver F30032-P228-A1.

Step 17

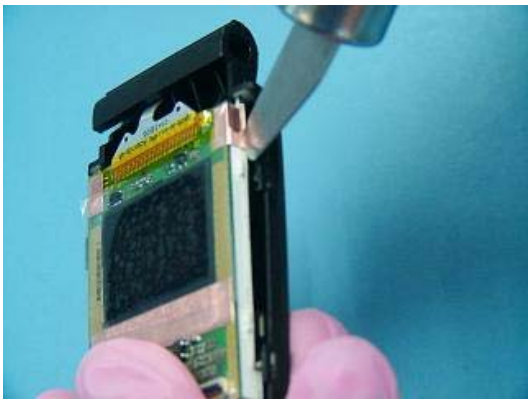

Remove Lift cover assembly from Lift frame assembly using opening tool F30032-P38-A1.
Place protective foil over on the Sub Display Module.

Step 18

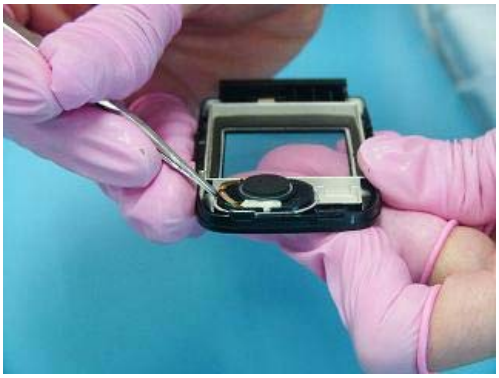
Remove Camera module using opening tool F30032-P38-A1.

Step 19




Remove LCD module from Lift frame assembly using opening tool F30032-P38-A1.
Place protective foil over on the Display Module.

Step 20



Remove Speaker from Lift frame assembly using Tweezer.

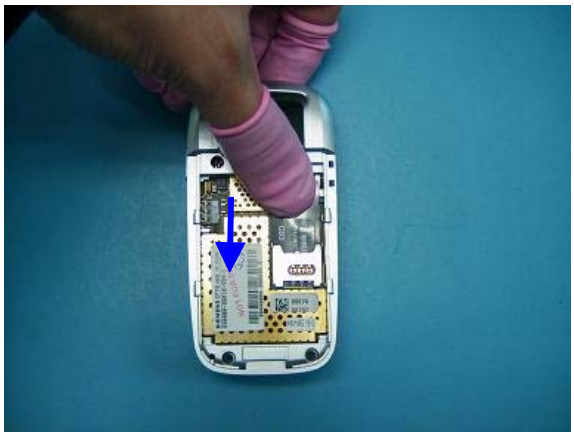
Fully disassembled CF75 - Upper parts

Fully disassembled CF75 - Lower parts

8 Reassembly of CF75

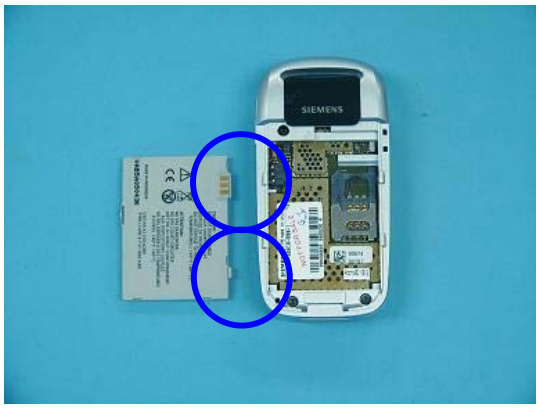
For the reassembly of the CF75, reverse the disassembly procedures from Step 20 to Step 1. However there are some areas to be taken note of during reassembling of the phone.

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 downwards to lock the SIM card into position.

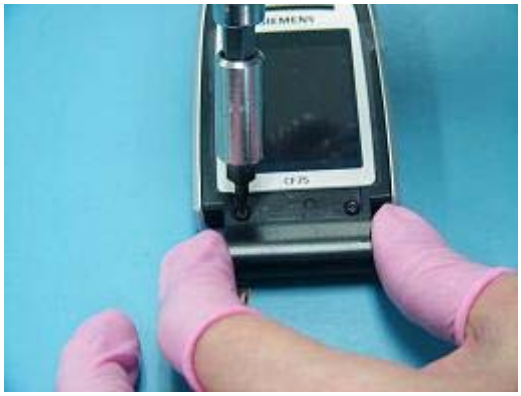


Installation of the SIM card

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 according to **TI_Info_All_Torque Overview_Rxx.pdf**



Consider Different Torque for base and display

9 Mobile Software Programming

Software update for CF75 has to be performed through GRT. **Usage of GRT is mandatory!!**

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

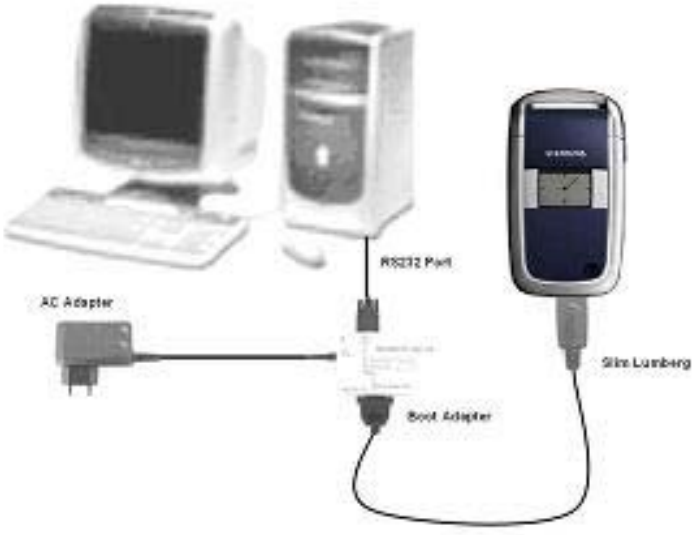


Figure 1. CF75 Software Programming Setup

9.1 Mobile Software Updating

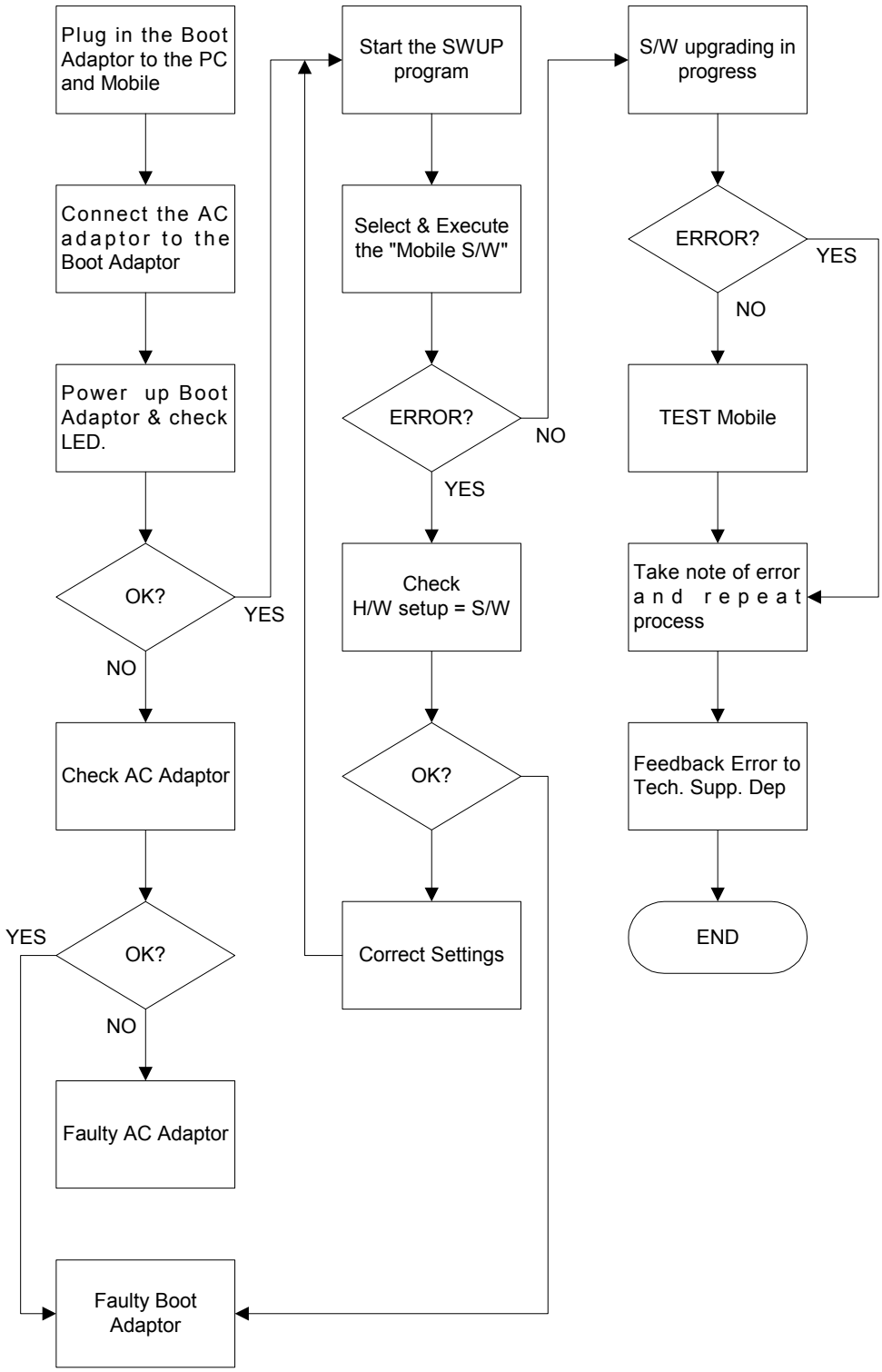
The software of the mobile, 75 series is loaded from a PC directly. Hardware interconnection between the mobile and the PC is shown in Figure 1. Because of the new type of external connector used in X55 series (Slim-Lumberg type) an additional adaptor cable between mobile and boot adaptor is required. 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

9.2 Flow Chart for Software Upgrading



FLOW CHART FOR S/W PROGRAMMING PROCESS

10 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

11 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:

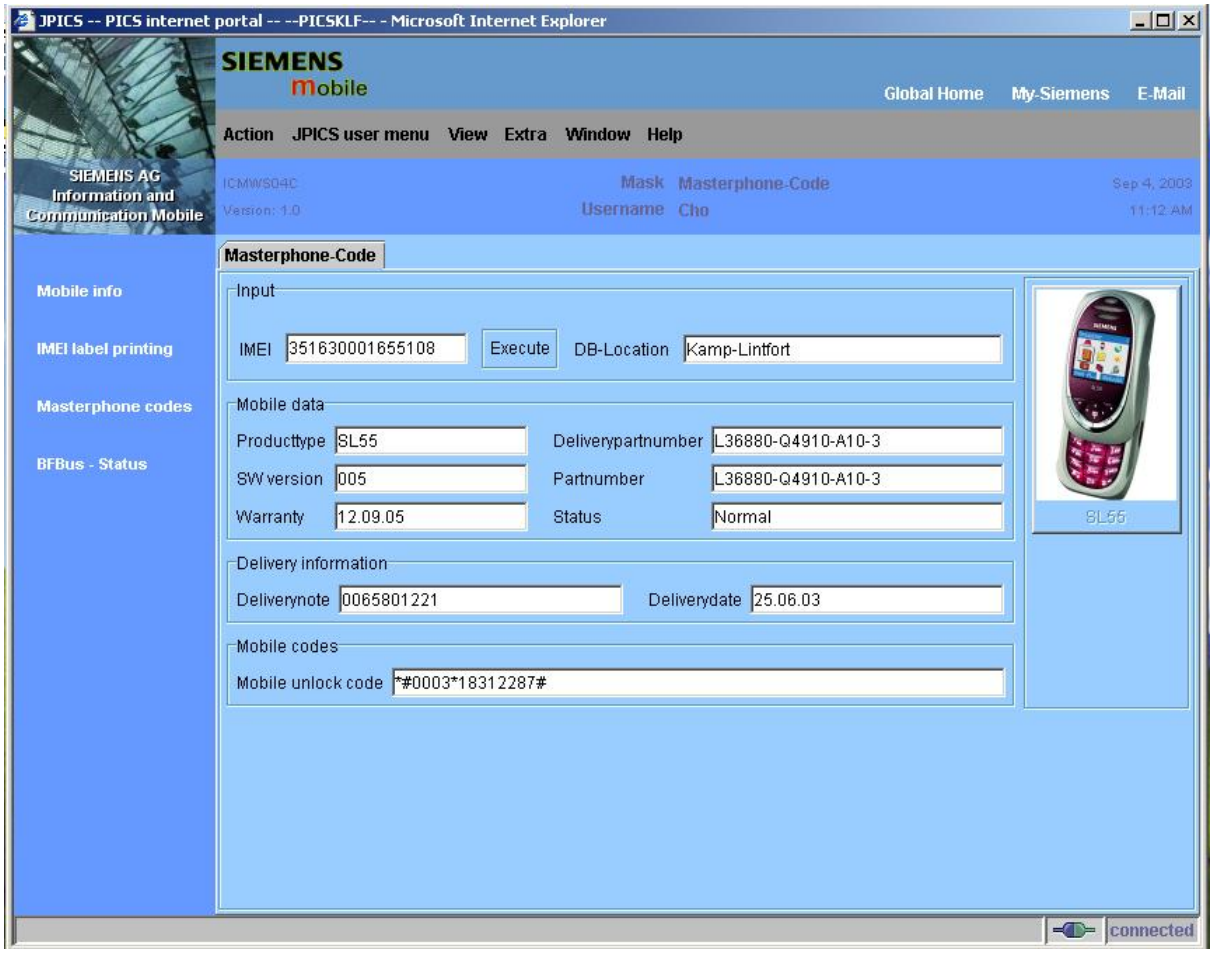
- Master – Phonecodes

- 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.

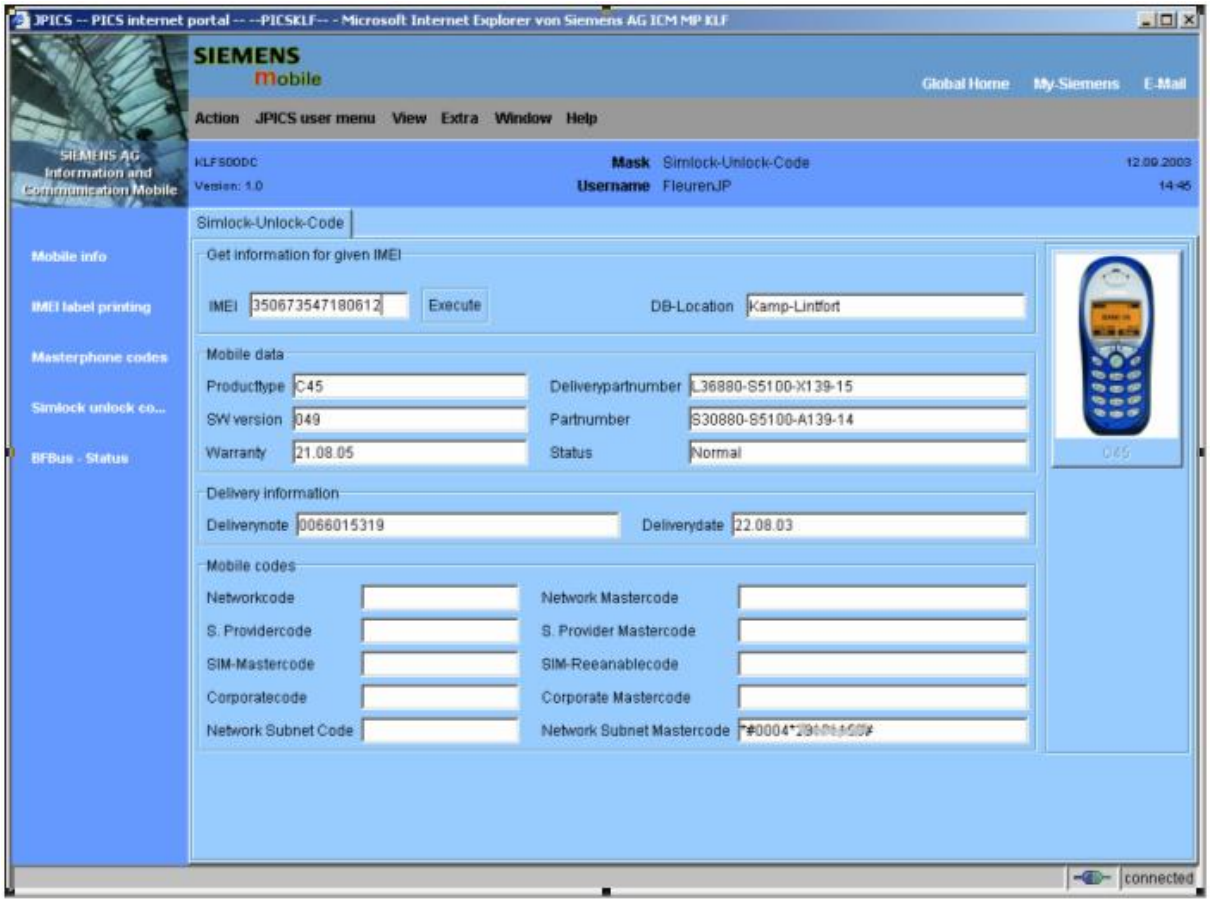


Simlock Unlock - Code

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

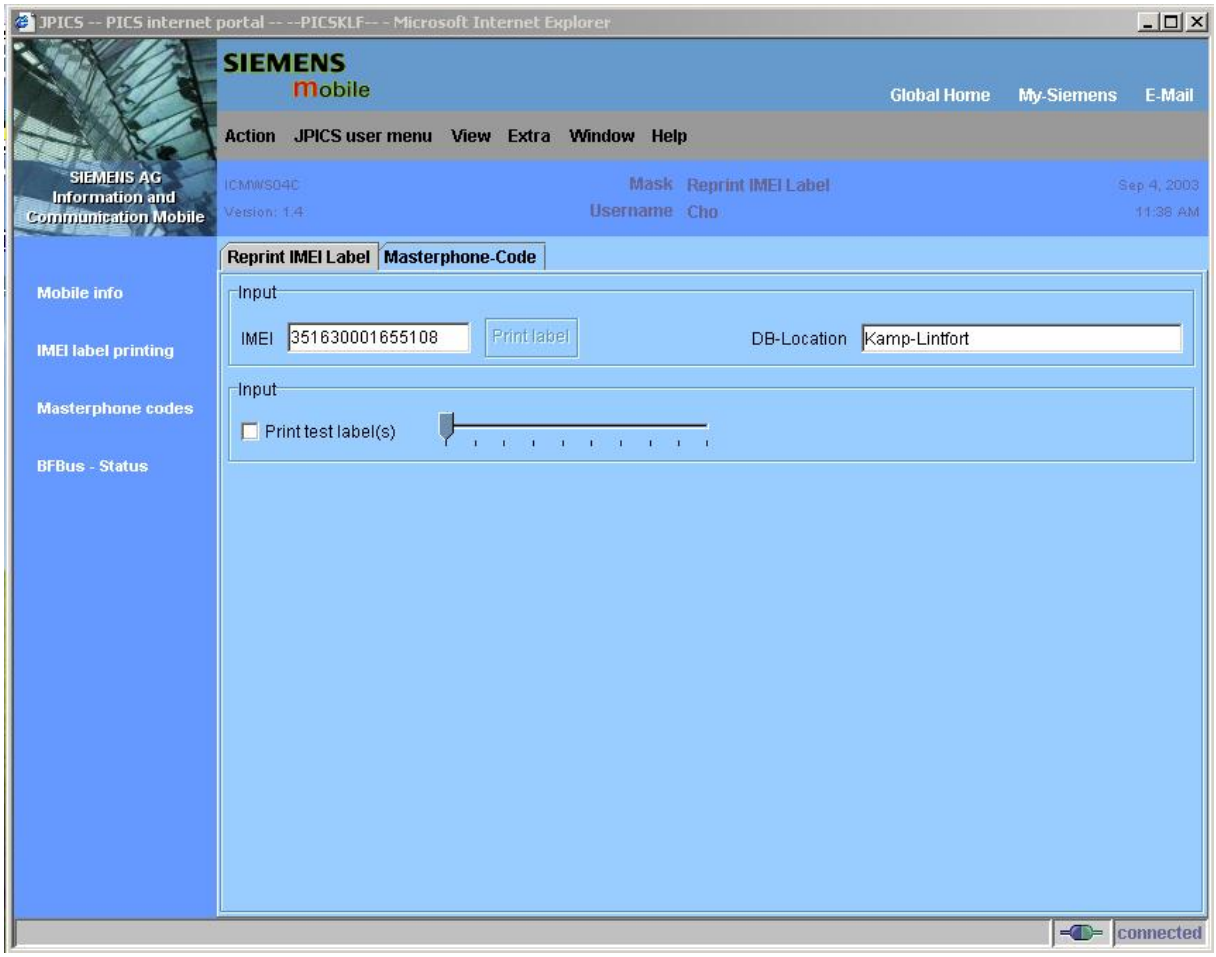
- Mobile must have an active **Simlock** inside.

- 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.

12 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 C65 is S30880-S7800-Axx-x where the last 4 letters specify the housing and software variant.

C65 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.

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#.

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 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 34.

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”**

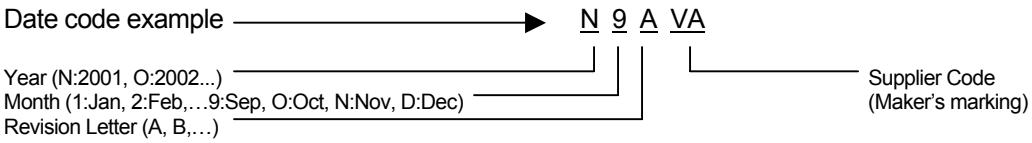
   Pin 1 number: 1234
   PUK : 76543210

   Pin 2 number: 5678
   PUK 2 : 98765432

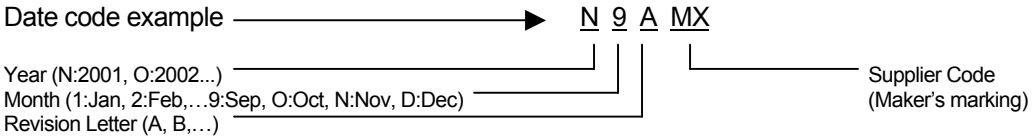
Annex 2

Battery Date Code overview

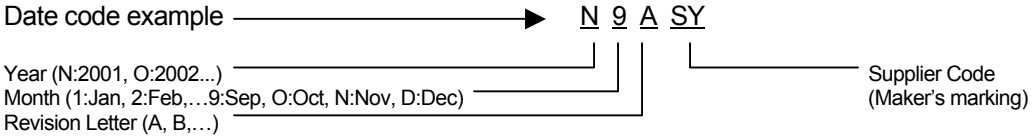
Varta



Hitachi / Maxwell



Sanyo



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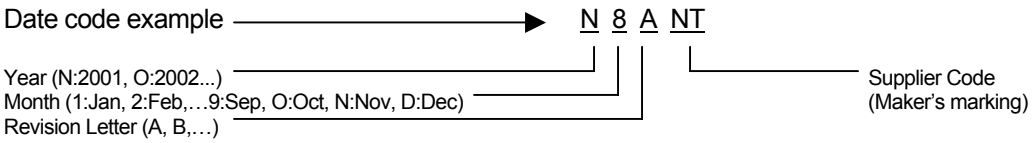
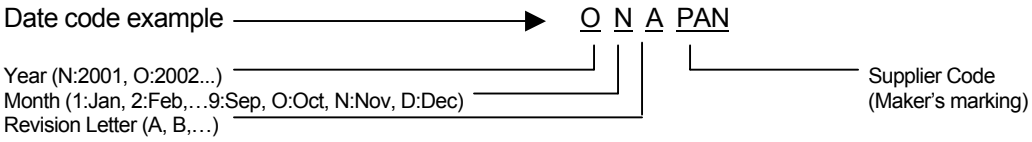


Panasonic



Sony