BE INSPIRED

# CF62 Leopard

## Clean & distinctive design

# Table of Content

# 1 Cellular Communication

## 1.1 Coverage Concept

The cellular systems is made up of numerous transmitting and receiving sites, whose individual coverage areas partially overlap. The concept of frequency re-use, same frequency is used by several sites, allows a high traffic density in a wide area. Due to the limited transmission range of the terminals, cellular systems are based on a large number of base stations on the infrastructure side, scattered over the area to cover, with each covering a fairly small geographical zone called cell. Cells are often represented by hexagons (see figure 1.1.).

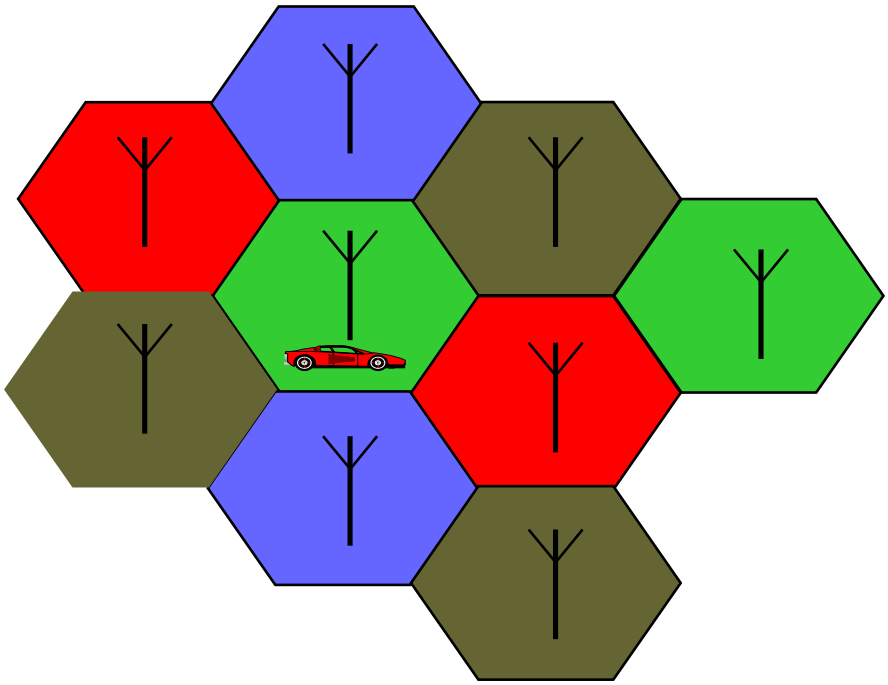


**Figure 1.1 CELLULAR COVERAGE REPRESENTATION**

## 1.2 GSM Network Architecture

GSM network can be broadly divided into three broad parts, namely:

1. Mobile Station(MS) carried by the subscriber
2. Base Station Sub-system(BSS) which controls the radio link with the mobile station.
3. Mobile Switching Center(MSC) which performs the switching of calls between the mobile users, and between mobile and fixed network users.

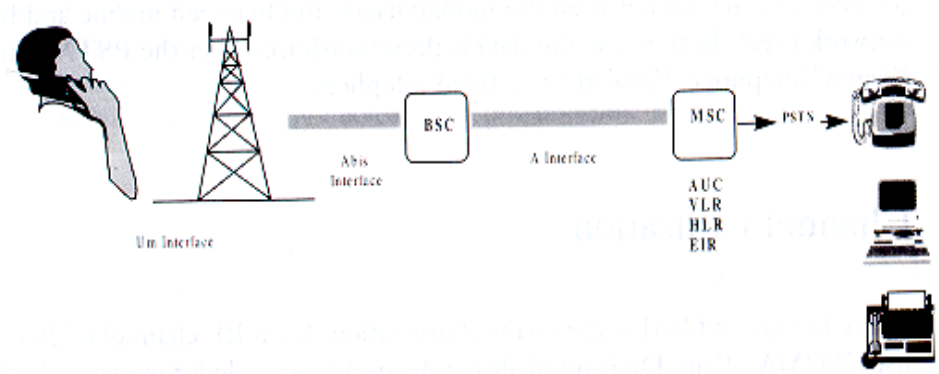



**FIGURE 1.2 GSM ARCHITECTURE**

Each mobile station is given a unique identity. As soon as the mobile phone is turned on, it registers with the network and is authenticated, as such the network could always find the mobile phone. Larger amount of data is being exchanged to and from the following functional blocks in the MSC:

**Visitor Location Register, VLR**
Contain relevant data of all mobiles located in the serving MSC, but not belong to the area.

**Home Location Register, HLR**
Stores identity and user data of all the mobile users belonging to the area.

**Authentication Center, AUC**
Provides the HLR with different sets of parameters to complete the authentication of the mobile station.

**Equipment Identity Register, EIR**
An option the network operator can use to enforce security. With this feature the network can identify defective or stolen mobile that may not be used in the network.

## 1.3 Subscriber Identity Module (SIM)

SIM is a smart card which has a computer and memory chip that is permanently installed in the mobile equipment. It comes in either the size of a credit card or smaller version known as the plug-in SIM.

**SIM card using 5V technology is not supported.**

The subscriber information, which includes a unique number called the International Mobile Subscriber Identity (IMSI) is stored in the SIM card. SIM card identifies the subscriber to the network.

To protect the SIM card from improper use, a security feature, a four digits personal identification number (**PIN**), is built in. The PIN is stored in the card and can be changed by the subscriber. **PIN2** Is required for additional functions available with a special SIM card (Consult the operator for more Information about the **PIN 2**).

A code (PUK) is provided for unlocking the SIM card if the SIM card is blocked

To deactivated SIM locked, due to wrong PIN entry,
Get the unblock code from the operator.

.

## 1.4 WAP ( Wireless Application Protocol )

Wireless Application Protocol takes a client-server approach that uses the in-built micro-browser to make a request, in wireless markup language (**WML**), for information or service. The request is passed to a WAP Gateway, which then retrieves the information from a Internet server, in HTML format, and translate it into **WML**. The requested information is then sent to from the **WAP** Gateway to **WAP** client (mobile) using the available and most appropriate mobile network bearer services.

Wireless Protocol Stack.

| |
|---|
| Wireless Application Environment (WAE) |
| Wireless Session Protocol (WSP) |
| Wireless Transaction Protocol (WTP) |
| Wireless Transport Layer Security (WTLS) |
| Wireless Datagram Protocol (WDP) |
| Bearers e.g. Data, SMS, USSD |

TABLE 1.1 WAP PROTOCOL STACK

1. **Wireless Application Environment**
   Defines the user interface on the phone. **WAE** contains the **WML**,**WML,**script and the wireless telephony application (**WTA**).

2. **Wireless Session Protocol**
   Link the **WAE** to two session services – one connection oriented operating above the WTP and a connectionless service operating above **WDP**.

3. **Wireless Transaction Protocol**
   Runs on top of the datagram service and part of the standard suite of **TCP/IP** protocols, to provide a simplified protocol suitable for low bandwidth mobile station.

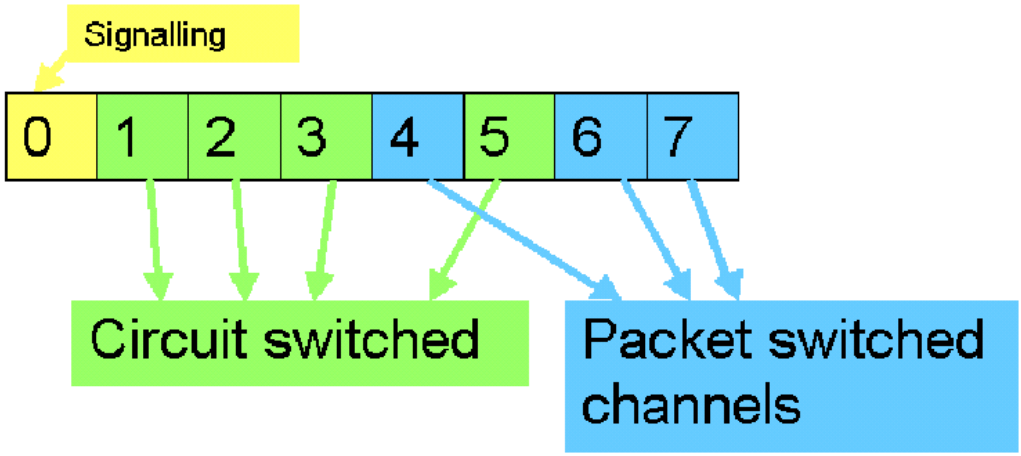
4. **Wireless Transport Layer Security**
   **WTLS** incorporates security features that are based upon the established Transport layer Security (**TLS**) protocol standard, that include data integrity checks, privacy on the WAP Gateway to client leg and authentication.

5. **Wireless Datagram Protocol**
   Allows **WAP** to be bearer independent by adapting the transport layer of the under-laying bearer. **WDP** presents a consistent data format to the higher layer on the WAP stack.

**WAP** Internet access via the CF62 is possible with the inclusion of Wireless Application Protocol (**WAP**) browser 1.2.1.

# 1.5 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.




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

# 1.6 K-JAVA APPLICATION

| **Java-based game system** | | |
|---|---|---|
| Java Application Manager (JAM) | Application launcher and download manager.<br>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:<br><br>Minimum 100 Kbytes (Has to be taken as working assumption for application development).<br><br>Goal: 145 Kbytes as SL45i (not committed). | 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 | Sl45i: only CSD | yes |

# 2 CF62 Technical Information

## 2.1 Key Features

| | |
|---|---|
| System/Standards: | • Triple-band<br>• GSM900/1800/1900<br>• US:850/1800/1900 |
| Volume: | • 78cm3 |
| Weight: | • 85g |
| Antenna: | • External Loop |
| General: | • SMS, EMS & MMS<br>• Java MIDP 1.0<br>• GPRS Multislot Class 10<br>• WAP 1.2.1, parts of 2.0<br>• Hands free operation |
| Battery: | • Lilon Battery Pack 600mAh<br>• Power Input:2A(0.6ms)/0.25A(4ms)<br>• Cut-off Threshold 3.2V |
| Stand-by Time: | • Up to 220 h |
| Talk Time: | • Up to 5 h |
| SIM Card: | • Small (=”Plug in”) 1.8V or 3V-SIM card(Phase II). |
| Speech Coder: | • Half Rate ,Full Rate, Enhanced Full Rate and Adaptive Multi Rate speech coders are available as standard. |
| Main Display: | • Type: Full Graphic<br>• Resolution: 130 X 130 Pixel<br>• Technology: CSTN<br>• No of Colours: 64K<br>• Frame Rate: 15 frames/sec<br>• Pixel size /mm: 0.21mm X 0.21mm<br>• Active area /mm: 27.3mm X 27.3mm<br>• Illumination: White (3 LEDs integrated) |
| Sub Display: | • Type: Full Graphic<br>• Resolution: 64 X 96 Pixel<br>• Technology: STN<br>• No of Colours: Black & White<br>• Frame Rate: 15 frames/sec<br>• Pixel size / mm: 0.21mm x 0.21mm<br>• Active area / mm: 20.2mm x 13.4mm<br>• Illumination: Blue (2 LEDs integrated) |
| Keypad: | • backside-printed-foil-technology<br>• 12-key-block (0-9, #, *)<br>• two function keys (SEND, END)<br>• ON/OFF key combined with the END key; the symbol ⏻ (I inside O) is used as a symbol for ON/OFF. |

| | |
|---|---|
| | • 4 way-navikey<br>• 2 soft-keys for different SW-enabled functions<br>• tactile finder on key "5"<br>• 11 amber LEDs for keypad |
| Night Design: | • 7 amber LEDs for magic ring |
| Acoustics: | • Three-in-one-earpiece for handset, handsfree and ringing tones<br>• Omnidirectional microphone<br>• Loud signal emitter (soundringer) (>100dB(A) SPL @5cm, 'Hongkong-Spec.') only for rectangular sound signals (NOT POSSIBLE for Soundringer melodies)<br>• Polyphonic ringer tones 16 voices<br>• different selectable volume levels for handsfree, handset and ringer mode (for the amount see SW product description) |

## 2.2 Comparison With Previous Products

| **Feature** | **A60 Lion** | **AE65/A66 Leopard** |
|---|---|---|
| Supported Systems | Triple Band<br>EGSM900/GSM1800/GSM1900 | Triple Band<br>EGSM 900/GSM1800/<br>GSM1900 (EMEA, APAC)<br>GSM 850/GSM1800/<br>GSM1900 (NAFTA) |
| Stand-by Time | Up to 250 h | Up to 220 h |
| Talk Time | Up to 5 h | Up to 5 h |
| Battery Technology<br>Battery Capacity | Li-Ion Battery Pack<br>NOMINAL CAP:700 MAH | Li-Ion Battery Pack<br>NOMINAL CAP:600 MAH |
| Weight | Approx. 85 g | Approx. 85 g |
| Volume | Approx. 91 $cm^3$ | Approx. 78 $cm^3$ |
| Length | 110 mm | 81.5 mm (w/o Antenna) |
| Width | 47 mm | 45.2 mm (max.) |
| Thickness | 23 mm | 21.9 mm (max.) |
| SIM | Plug-In 3V | Plug-In 1.8V/3V |
| Antenna | Integrated | Internal within the handle |
| Antenna Performance in comparison to S35: | -0,8 dB @ 900 MHz<br>-0,5 dB @ 1800 MHz | -0,8 dB @ 900 MHz<br>-0,5 dB @ 1800 MHz |
| Antenna Performance in comparison to C56 | 0 dB @ 1900 MHz | -1,5 dB @ 1900MHz |
| Half Rate | Yes | Yes |
| Enhanced Full Rate | Yes | Yes |

| Feature | A60 Lion | AE65/A66 Leopard |
|---|---|---|
| AMR | Yes | Yes |
| Fax/Data | No | Yes |
| GPRS | Yes (Class 8) | Yes (Class 10) |
| Keypad Illumination | Yes (amber) | Yes (amber) |
| Display /<br><br>Display Illumination | CSTN 4k colours (101x80 dots) | Main: CSTN 64k colours (13x130);<br>Subdisplay: STN B/W (96x64) |
| Ringer volume level | Min. 100 dB(A) @ 5cm<br>Typ. >103 dB(A) @ 5cm | Min. 95 dB(A) @ 5cm<br>Typ. ≥98dB(A) @ 5cm<br>(for dedicated Siemens-standard melodies)Min. 100dB(A) @ 5cm<br>(only for rectangular sound signals) |

# 3 Accessories

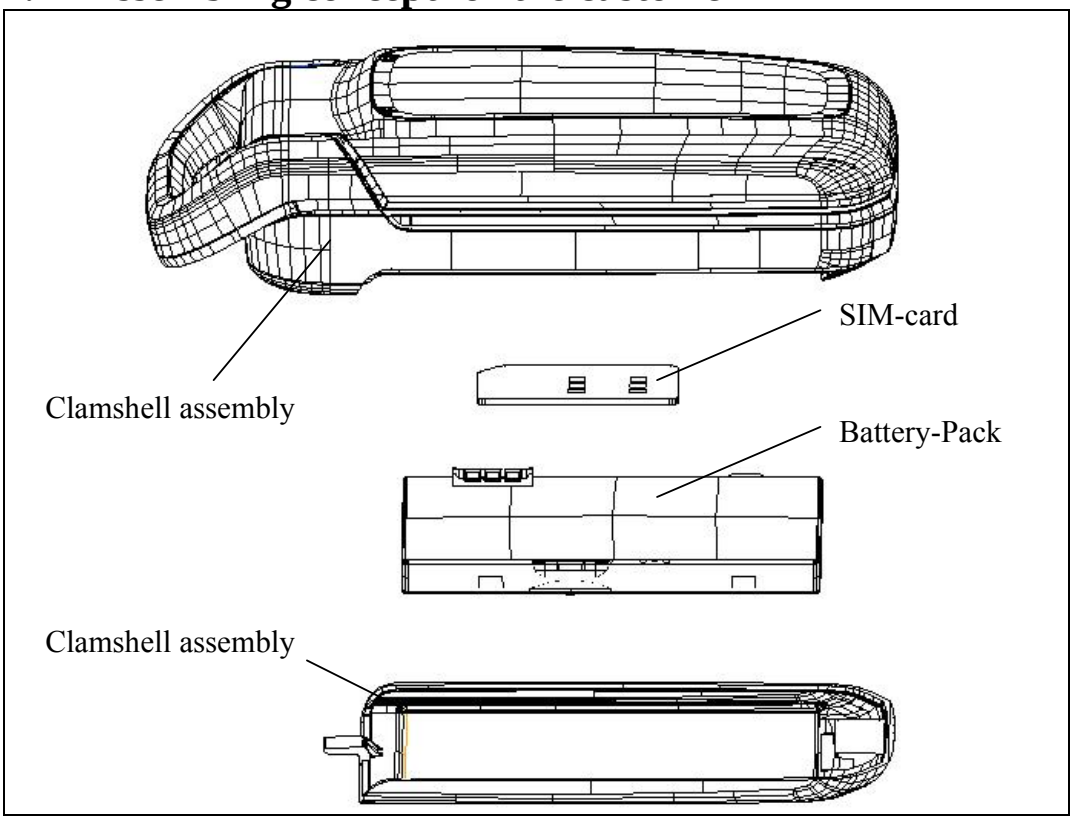
## Accessories Parts

| | |
|---|---|
| L36104-F3090-X903 | Handsfree Loudspeaker |
| L36146-A2053-D | Con.Cable Battery Install. Comfort GPS/rat |
| L36158-A91-C16 | Mounting plate for Basemodule KFZ-Cradle C55/M55/S |
| L36254-Z6-C95 | Handsfree Micro CarKit Comf. aktiv S45/ME45/C45/M5 |
| L36280-Z4-C404 | Power Supply EU |
| L36880-N5601-A103 | SyncStation DSC-500 C55/S55/S57/SL55/M55/MC60/SX1/ |
| L36880-N5601-A104 | Travel Charger EU ETC-500 |
| L36880-N5601-A105 | Travel Charger UK ETC-510 |
| L36880-N5601-A108 | Headset PTT HHS-510 |
| L36880-N5601-A109 | Car Kit Portable HKP-500 |
| L36880-N5601-A111 | Data Cable USB DCA-510 |
| L36880-N5601-A149 | Tour Case FCT-650 C60/A60/CF62/CX65/CXT65 |
| L36880-N6501-A102 | Data Cable USB DCA-540 SX1/CX65/CXT65/CXV65/CF62 |
| L36880-S5601-A800 | Data Cable Serial without Blister Packaging |

# 4. Unit Description CF62 Leopard

The CF62 Leopard is designed as a clamshell with non-exchangeable housing. The lift cover,base lower and battery cover are lacquered parts (1shot-molding;1color). Base upper assembly is composed of base upper and light loop by ultra-sonic welding (The base upper is lacquered 1shot-molding part.The light loop is a 2shot-molding part by light loop and galvanized ribs).

## 4.1 Assembling concept for the customer

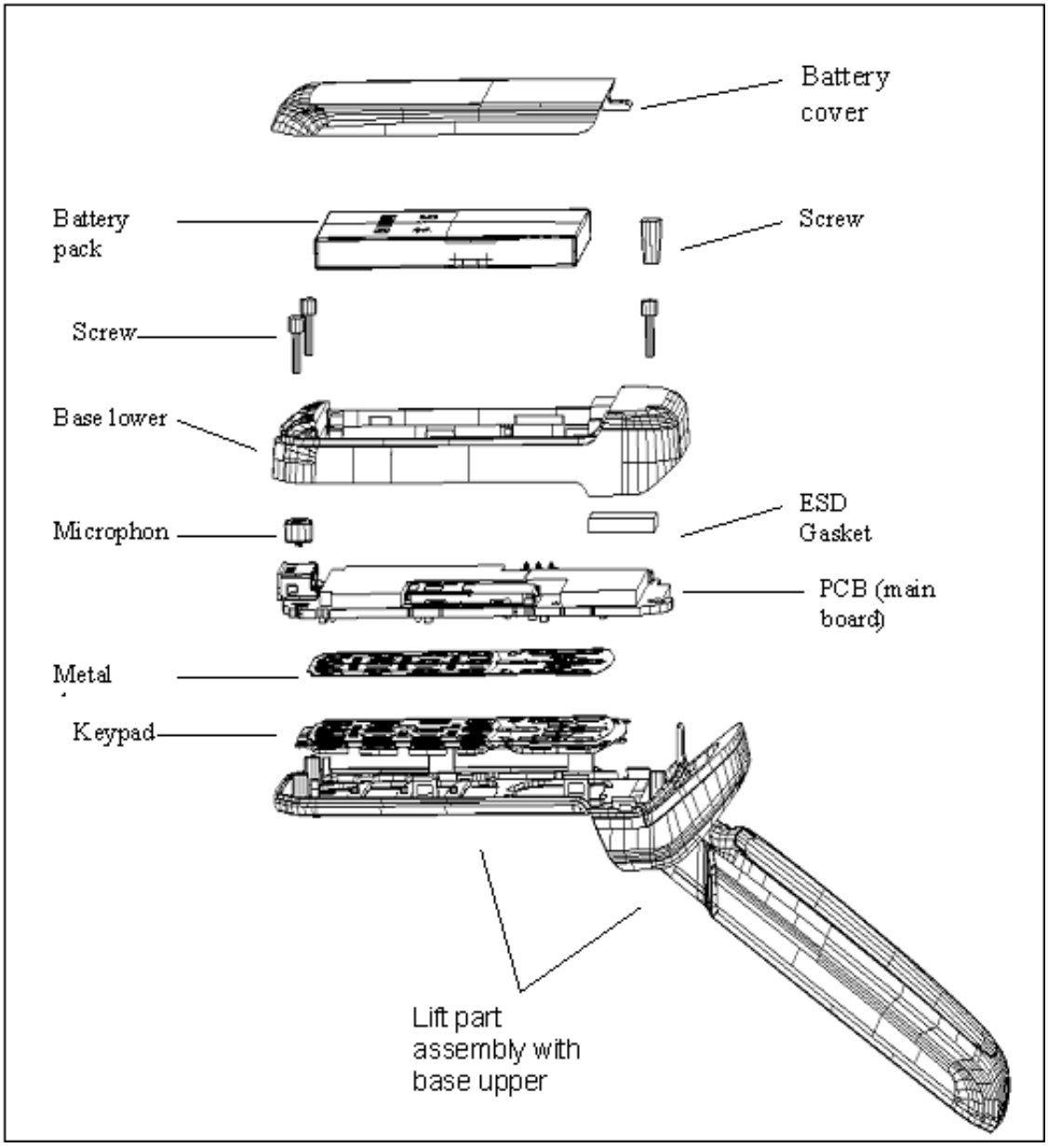



## 4.2 Interface CF62 Leopard to accessories

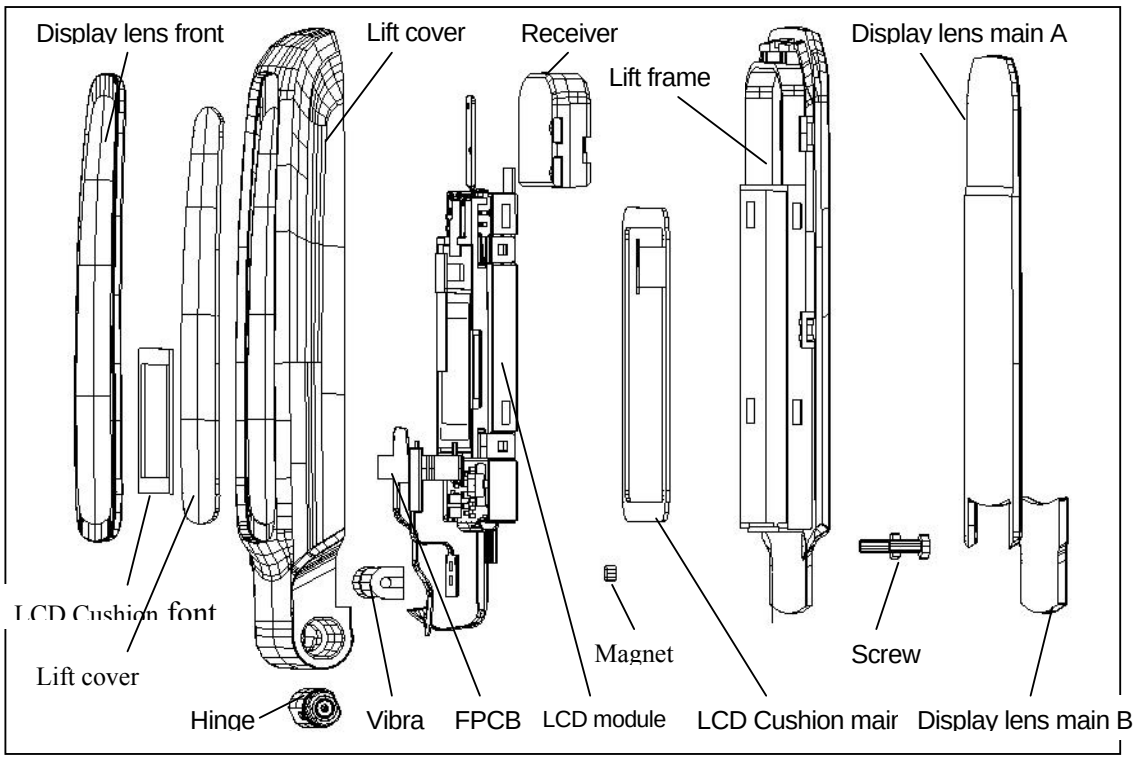
There are no specific mechanical interfaces to the car cradle. The car cradle is designed to fit the existing design. The I/O-Connector (Lumberg-slim-connector) is in use. The compatible interface is suitable to use the travel charger.

# 4.3 exploded view of CF62 Leopard

- **Assembly in total with lift assembly**



- **Lift part assembly**

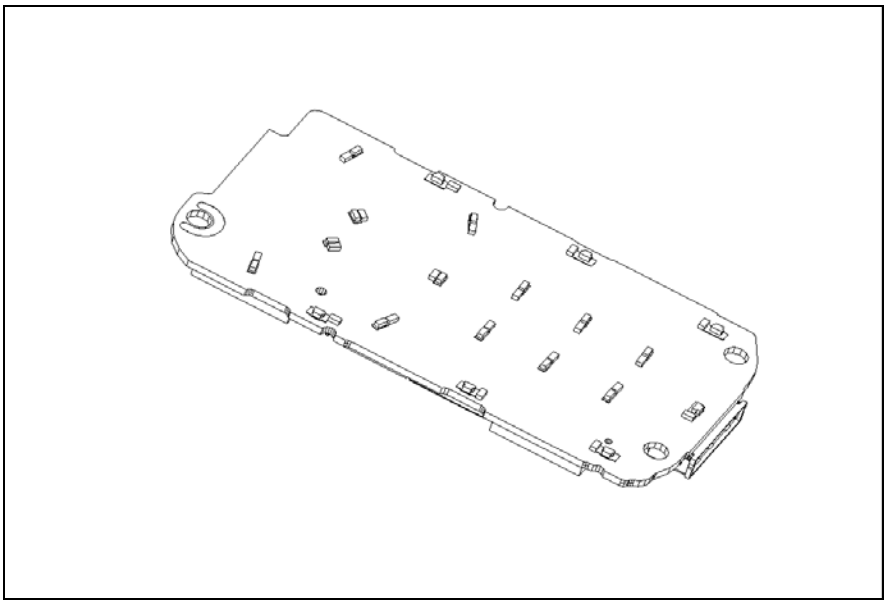


## 4.4 handset parts and defined service parts

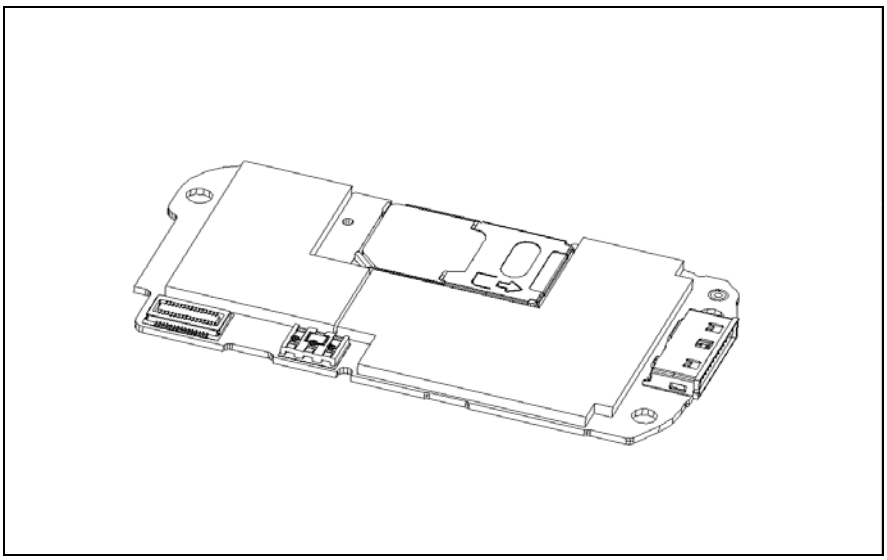
| Description | Qty. | Part-Name | Part-number (C-market) | Repair Lever |
|---|---|---|---|---|
| Battery pack CF62 | 1 | Battery Li-Ion 750 mAh USA<br>Battery Li-Ion 600mAh<br>Battery Li-Ion 600mAh CHN | L36145-K1310-X277<br>L36145-K1310-X289<br>L36145-K1310-X290 | Level0 |
| Screw cover CF62 | 1 | Screw Cover CF62 | L36158-A120-C400 | Level1 |
| Battery cover CF62 | 1 | Battery Cover CF62 cool gray<br>Battery Cover CF62 cool cashmere<br>Battery Cover CF62 T-Mobile USA cool blue | L36158-A120-B501<br>L36158-A120-B502<br>L36158-A120-B503 | Level0 |
| Base upper assembly CF62 | 1 | Base Upper Case Shell with Antenna, without Keypad | L36158-A120-A201 | Level1 |
| Keypad CF62 | 1 | Keypad CF62 latin cool gray | L36158-A120-B600 | Level1 |
| Metal dome CF62 | 1 | Metal Dome Foil for Keypad CF62 | L36158-A120-C60 | Level1 |
| Base lower | 1 | Lower Mounting Frame with Micro CF62 | L36158-A120-A251 | Level1 |
| Screw 1,6x5,8 L55 | 1 | Screw Torx 1,6 x 5,8 | L36158-A84-C94 | Level1 |
| Microphone CF62 | 1 | Microphone CF62/Cx65/S65/M65/C66/CT66/S66/SP65 | L36254-Z6-C104 | Level1 |
| Lift cover assembly CF62 | 1 | Flap Upper Case Shell CF62 cool gray<br>Flap Upper Case Shell CF62 cool cashmere<br>Flap Upper Case Shell CF62 caribic blue | L50658-A120-A90<br>L50658-A120-A91<br>L50658-A120-A92 | Level1 |
| Hinge CF62 | 1 | Hinge CF62 connection between lower case shell and | L50658-A120-C350 | Level1 |
| Vibra CF62 | 1 | Vibra-Alert CF62/Cx65/C66/CT66 | L36453-Z5-C277 | Level1 |
| LCD module CF62 | 1 | Display Module with flexible line CF62 | L36197-F5102-F402 | Level1 |
| FPCB CF62 | 1 | Line-Flex for Display Module CF62 | L36880-Q6050-F3 | Level1 |
| Receiver assembly CF62 | 1 | Earphone CF62/SK65 | L36104-F3090-X909 | Level1 |
| LCD Cushion main | 1 | Display Cushion CF62 | L36158-A120-C40 | Level1 |
| Lift frame assembly | 1 | Lift Frame Displaycover assembled CF62 cool gray<br>Lift Frame Displaycover assembled CF62 cool cashme<br>Lift Frame Displaycover assembled CF62 caribic blu | L50658-A120-A150<br>L50658-A120-A151<br>L50658-A120-A152 | Level1 |
| Display lens main B | 1 | Cover (Mounting screw) for Display Cover CF62 cool | L36158-A120-B321 | Level1 |
| Screw 1,6x4,5 CF62 | 6 | Screw for Cover with Display | L36158-A120-C90 | Level1 |
| PCB (Main board) | 1 | | | Level2 |

**Note: Visit the Communication Market to order components:**
https://communication-market.siemens.de/

## 4.5 PCB top-side



## 4.6 PCB bottom-side



# 5 Disassembly of CF62 Leopard

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 and the metal dome 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 IC pins.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the CF62.

**Disassembly tools:**

**Step 1:**

Front view of the CF62.

**Step 2:**

Back View of the CF62.

**Step 3:**

Release the battery cover by placing your thumb in the top centre and press downwards.

**Step 4:**

Release the battery pack by pressing upwards

**Step 5:**

Release the screw cover.

**Step 6:**

Remove the three Base lower screws in the corners with the screwdriver.

**Step 7:**

**Step 8:**

The lower edge of the Base lower has now been detached from the phone as shown.

Remove the Base lower by carefully lifting it up. Note: Be careful not to break or bend the top plastic pin.

**Step** 9:

Remove the Microphone from the Base upper assembly.

**Step** 10:

Detach the FPCB-cable connector from the PCB (Main board) Assembly.

**Step** 11:

Remove the PCB Assembly by holding it of both in the middle and lifting it straight up.

## Step 12:Detach the PCB Assembly:

**A:**

Remove the Keypad from the PCB (main board) with the tweezers.

**B:**

Remove the Metal dome from the PCB (main board) with the tweezers.

**C:**

Fully disassembled the PCB Assembly.

**Step 13:**

To separate the Lift part assembly from the Base upper assembly, push the hinge catch inwards with a pair of special driver.

**Step 14:**

Lift part assembly and Base upper assembly can be seen after disassembled.

## Step 15:Detach the Lift part assembly:

**A:**

Remove the Display lens main B from the Lift part assembly by using the driver.

**B:**

Lift part assembly and Display lens main B can be seen after disassembled.

**C:**

Remove the two screws from the Lift part assembly by using the screwdriver.

**D:**

To separate the Lift cover assembly from the Lift part assembly.

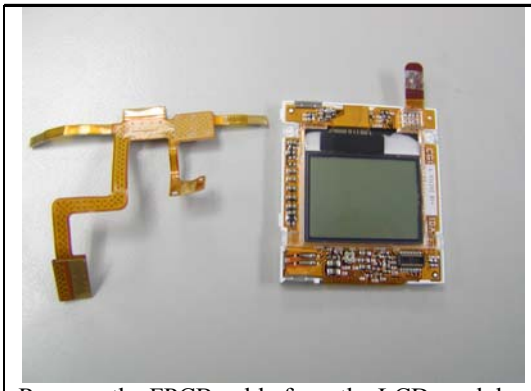
**E:**

Remove the Hinge and the Vibra from the Lift cover assembly.

**F:**

Remove the LCD module from the Lift frame assembly.

| G: | H: |
|---|---|



Remove the FPCB-cable from the LCD module by using the tweezers.

Remove the Receiver assembly from the Lift frame assembly.

**I:**

Remove the LCD Cushion main from the Lift frame assembly.

**J:**

Fully disassembled the Lift part assembly.

**Step** 16:

Fully disassembled CF62

# 6 Assembly of CF62 Leopard

**Step 1:**

**For the reassembly of the CF62 Lift part assembly, reverse the disassembly procedures Step 14 from J to A. Reassembled Lift part assembly as shown. Set  torque to 16 Ncm.**

## Step 2:

To fix the Lift part assembly to the Base upper assembly, push the hinge catch inwards with a pair of special driver.

## Step 3:Reassemble the PCB Assembly

**A:**

Take a new Metal dome.

**B:**

Take a PCB (Main board) and detach the protection foil from the new Metal dome with the tweezers. Take care its two hole (marked with arrows) position.

**C:**

Press the Metal dome to ensure it is properly glued on the PCB (main board), then prepare a new Keypad**.**

**D:**

Place the new Keypad in the assembled Base upper assembly with the glue surface upwards, Detach the protection foil from the new Keypad with the tweezers.

**E:**

Place the assembled PCB (main board) onto the assembled Base upper assembly with the Keypad through the three pins(marked with arrows), which align the PCB on the correct position.

**F:**

Remove the PCB Assembly by holding it alongside the center and lifting it straight up, Press the Keypad to make it glued properly.

**Step 4:**

Place the PCB Assembly onto the Base upper assembly. The three pins (marked with arrows) align the PCB Assembly in its correct place.

**Step 5:**

Push the FPCB-cable connector downwards until locked in the junction.

**Step 6:**

Take a new microphone and mount it in its place of the Base lower.

**Step 7:**

Put the Base lower assembly into the top of the Base upper assembly and align the Base lower assembly to the Base upper assembly. Check that the Base lower assembly is ok and all the components are in their places.

**Step 8:**

Place the three screws in the holes tightly then install screw cover.

**Step 9:**


Put the battery into the Base lower as shown.

**Step 10:**


Slide the Battery cover upwards until the cover locked.

**Step 11:**


Unfold the Lift part press ON/OFF key as shown.

# 7 Mobile Software Programming

## 7.1 Introduction

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, short dial list etc., required by the operator(s) or service provider(s). Therefore, it is not uncommon 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 fulfill 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. Include mapping and FFS.

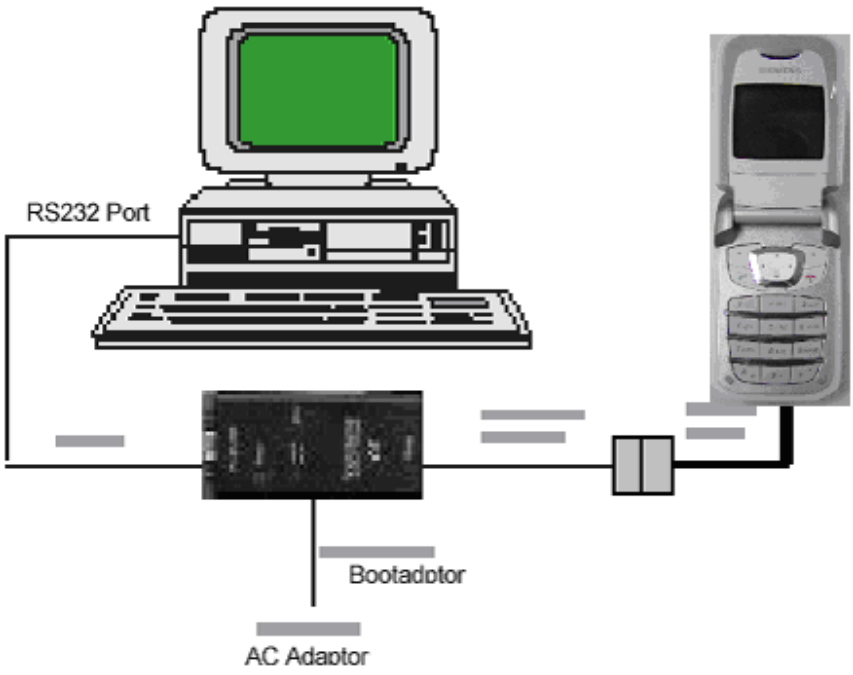



**FIGURE 7.1 CF62 SERIES SOFTWARE PROGRAMMING SETUP**

## 7.2 Mobile Software Updating

The software of the mobile, CF62 series, is loaded from a PC directly. Hardware interconnection between the mobile and the PC is shown in Figure 7.1

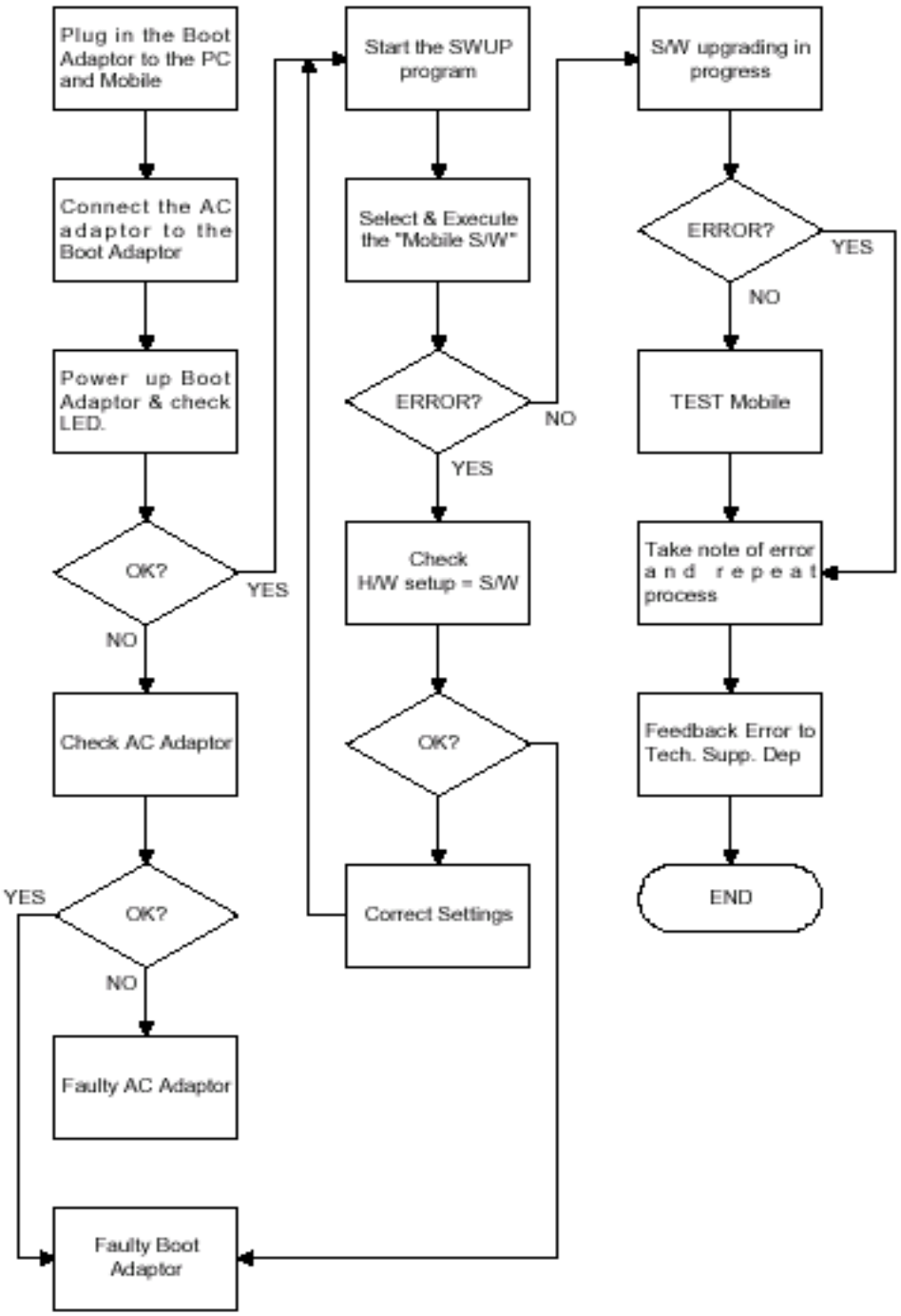
Because of the new type of external connector used in L55 (Slim-Lumberg type) an additional adaptor cable between mobile and boot adaptor is required if the "black boot adaptor" is used. Table 7.1 listed all the hardware requirements

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 | - |

TABLE 7.1 EQUIPMENT LIST FOR SOFTWARE PROGRAMMING.

## 7.3 Flow chart for S/W upgrading




**FLOW CHART FOR S/W PROGRAMMING PROCESS**

# 8. 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

Using this system vastly simplifies the repair of the phones and will make sure that:

1. All possible faults are detected
2. Sets, which pass the test, will be good enough to return to customer.

Starting from the P35 Series, Siemens will introduce a simpler and faster testing platform for testing a repaired Siemens mobile phone. The testing platforms are either base on R&S CMD 53/55 , CTS30/55 or CMU200GSM test set.

There is also test software under development for testing with the Wavetek 4201S / 44xx and the 4107 GSM test set.

# 9. JPICS (*Java* based Product Information Controlling System)


Figure 1. JPICS log-in page

**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


**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.

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

- **Master phone codes**
- **Simlock Unlock – Codes**

**Master phone codes**

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.

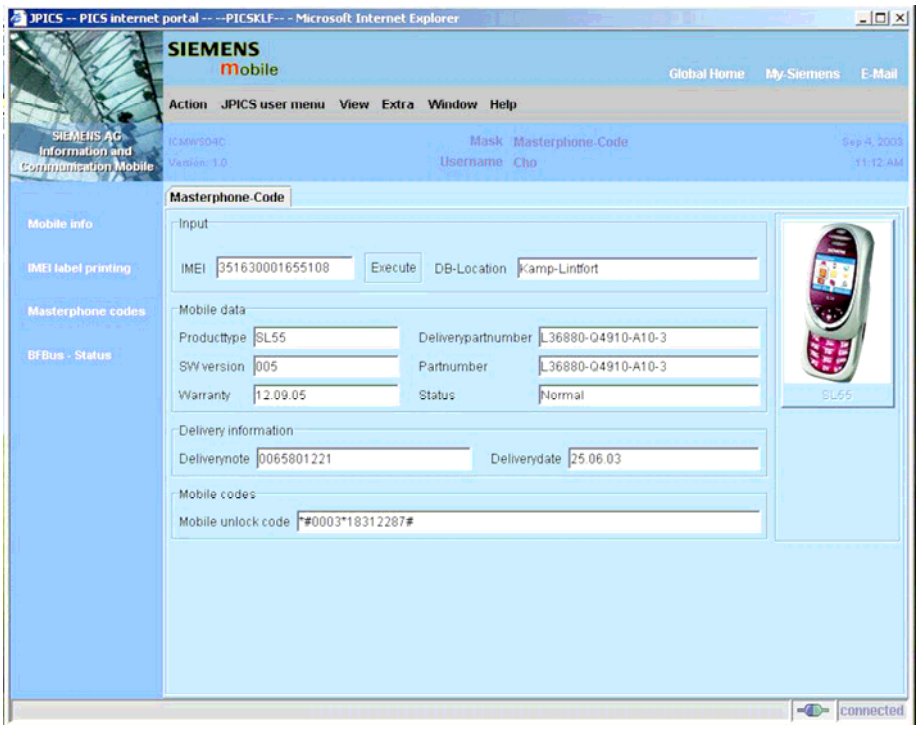
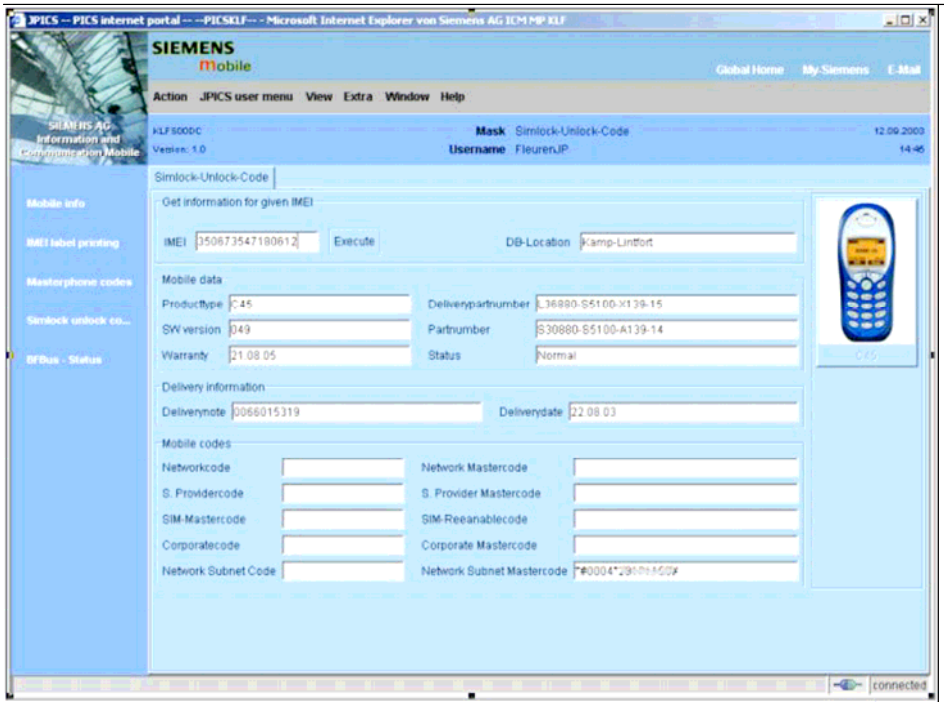


Figure 3. Master phone code page

**Simlock Unlock - Code**

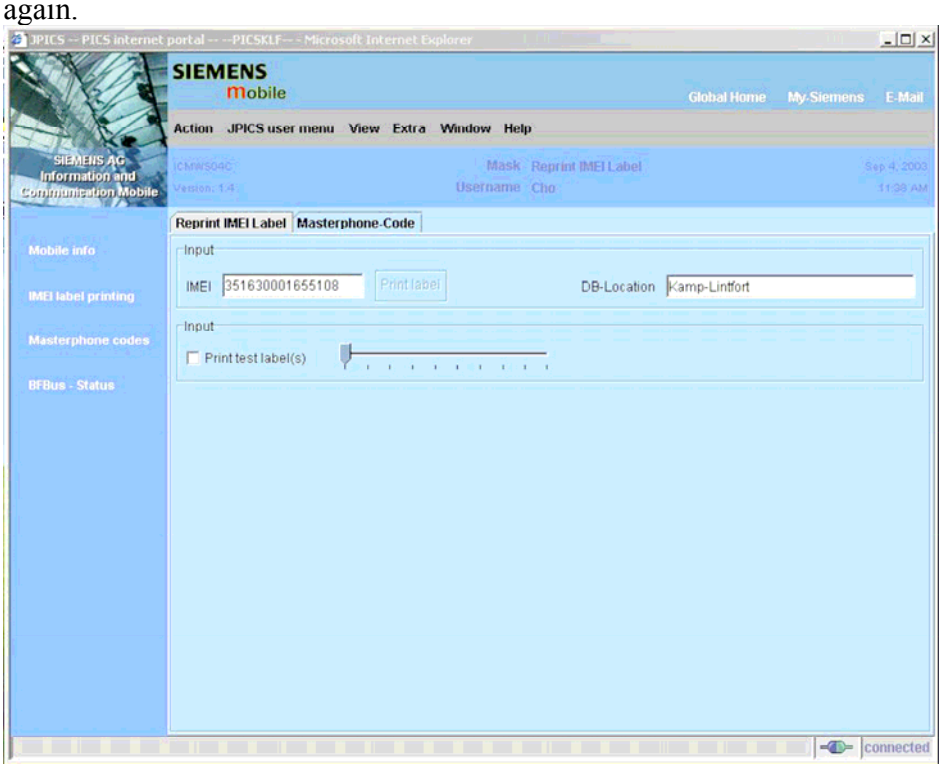
The **Simlock-Unlock-Codes** can only be generated if the following conditions are given:

- 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 "test printer = Yes" is activated as default. After having printed a well-aligned test label you can switch setting to "No" 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.

# 10. 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 CF62 is S30880-S6050-Axxx where the last 4 letters specify the housing and software variant.

CF62 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, the IMEI above show date code **RD.**

| Year | Date Code | Month | Date Code |
|---|---|---|---|
| **2003** | **R** | June | 6 |
| 2004 | S | July | 7 |
| 2005 | T | August | 8 |
| 2006 | U | September | 9 |
| 2007 | V | October | O |
| 2008 | W | November | N |
| 2009 | X | **December** | **D** |

**TABLE 8.1 DIN EN 60062 DATE CODE**

# 11. 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.**

- 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 56.

**Check the charging 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.

GSM Test:

- Connect the mobile/board via internal antenna (antenna coupler) 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<br>• BS Power = -55 dBm<br>• middle BCCH | • Display check | • individual check |
| 2 Call from BS | • low TCH<br>• PCL 5<br>• BS Power = -55 dBm<br>• middle BCCH | • Ringer/Loudspeaker check | • individual check |
| 3 TX GSM900 | • low TCH<br>• PCL 5<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 4 Handover to GSM1800<br>Including Handover Check | | | |
| 5 TX GSM1800 | • low TCH<br>• PCL 0<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 6 Handover to GSM1900<br>Including Handover Check | | | |
| 7 TX GSM1900 | • low TCH<br>• PCL 0<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 8 Call relaese from BS | | | |

| External Antenna | | | |
|---|---|---|---|
| **Test case** | **Parameter** | **Measurements** | **Limits** |
| 9 Call from MS | • GSM900<br>• high TCH<br>• PCL 6<br>• BS Power = -55 dBm<br>• middle BCCH | • Keyboard check | • individual check |
| 10 TX GSM900 | • high TCH<br>• PCL 6<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 11 RX GSM900 | • high TCH<br>• BS Power = -102 dBm<br>• 50 Frames<br>• middle BCCH | • RX Level<br>• RX Qual<br>• BER Class Ib<br>• BER Class II<br>• BER Erased Frames | • GSM Spec. |
| 12 Handover to GSM1800<br>Including Handover Check | | | |
| 13 TX GSM1800 | • high TCH<br>• PCL 1<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 14 RX GSM1800 | • high TCH<br>• BS Power = -102 dBm<br>• 50 Frames<br>• middle BCCH | • RX Level<br>• RX Qual<br>• BER Class Ib<br>• BER Class II<br>• BER Erased Frames | • GSM Spec. |
| 15 Call relaese from MS | | | |
| 16 Handover to GSM1900<br>Including Handover Check | | | |
| 17 TX GSM1900 | • high TCH<br>• PCL 1<br>• BS Power = -55 dBm<br>• middle BCCH | • Frequency Error<br>• Phase Error RMS<br>• Phase Error Peak<br>• Average Power<br>• Power Time Template | • GSM Spec. |
| 18 RX GSM1900 | • high TCH<br>• BS Power = -102 dBm<br>• 50 Frames<br>• middle BCCH | • RX Level<br>• RX Qual<br>• BER Class Ib<br>• BER Class II<br>• BER Erased Frames | • GSM Spec. |
| 19 Echo Test | • high TCH<br>• PCL 1<br>• BS Power = -70 dBm<br>• middle BCCH | | • individual check |

**Final Inspection:**

The final inspection contains:

1. A 100% network test (location update, and set up call).
2. A random sample checks of:
   - data reset (if required)
   - optical appearance
   - complete function
3. Check if PIN-Code is activated (delete the PIN-Code if necessary).

**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
   PUK1 : 76543210
   Pin 2 number: 5678
   PUK 2 : 98765432

# Annex 2

**Battery Date Code overview**

## Date Code overview