

BE INSPIRED

A65 Puma

]



Simply Colourful

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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.).

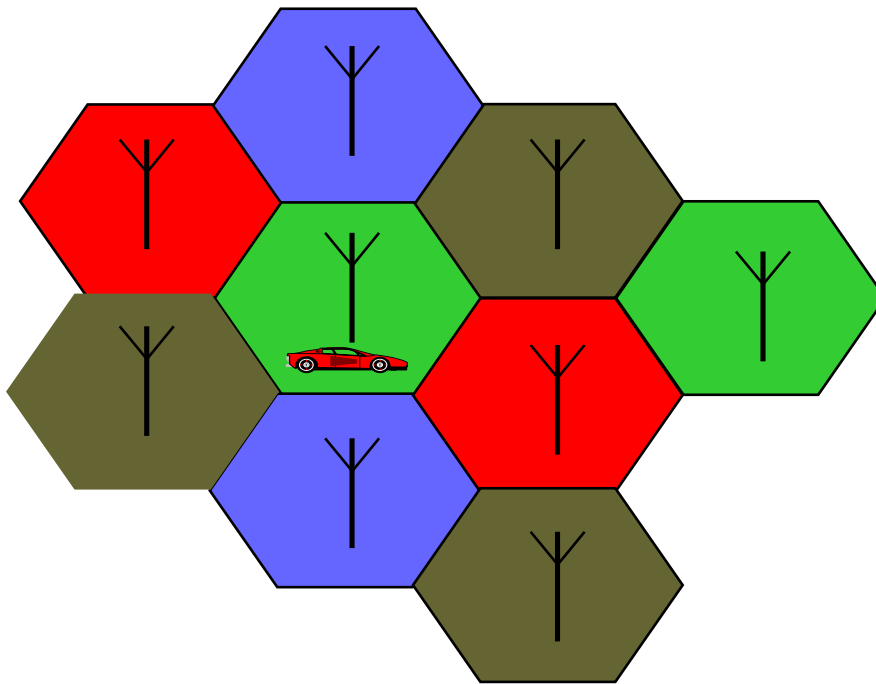


Figure 1.1 CELLULAR COVERAGE REPRESENTATION

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.

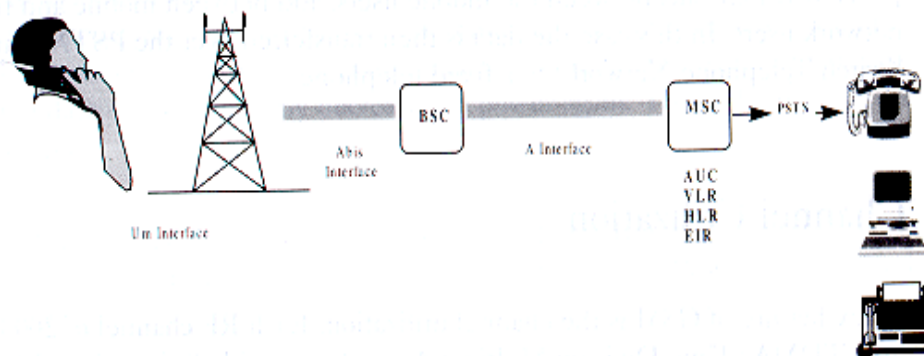


FIGURE 1.2 GSM ARCHITECTURE

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.

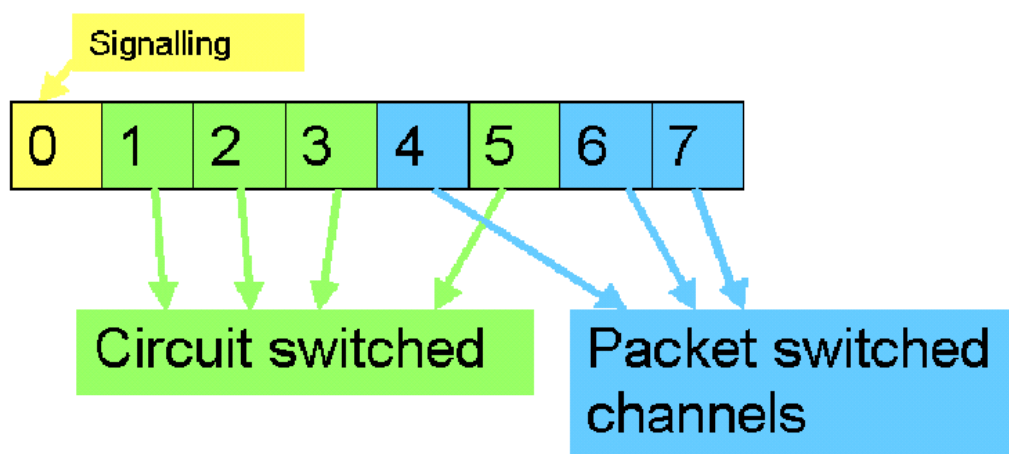
5. Wireless Datagram Protocol

Allows **WAP** to be bearer independent by adapting the transport layer of the underlying 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. 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 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 A65 Technical Information

2.1 Key Features


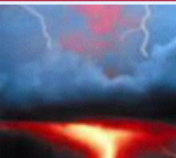
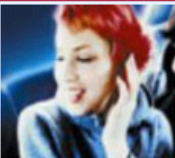



System/Standards:	<ul style="list-style-type: none"> • Triple-band • EGSM900/GSM1800/GSM1900
Volume:	<ul style="list-style-type: none"> • 86.6cm³
Weight:	<ul style="list-style-type: none"> • 85g
Dimensions:	<ul style="list-style-type: none"> • 100 x 44 x 19mm (L x W x H)
General:	<ul style="list-style-type: none"> • SMS, EMS & MMS • Java MIDP 1.0 • GPRS Multislot Class 8 • WAP 1.2.1,
Battery:	<ul style="list-style-type: none"> • Li-Ion Battery Pack 700mAh • Nominal Voltage: 3.7V • Power Input : 1.8A(0.6ms)/(4ms) • Cut-off Threshold 3.2V
Stand-by Time:	<ul style="list-style-type: none"> • Up to 250 h (measured at BSPAMFRMS=9; number of neighbouring cells=0)
Talk Time:	<ul style="list-style-type: none"> • Up to 5 h
SIM Card:	<ul style="list-style-type: none"> • Small (= "Plug in") 1.8V or 3V-SIM card(Phase II).
Speech Coder:	<ul style="list-style-type: none"> • Half Rate ,Full Rate, Enhanced Full Rate and Adaptive Multi Rate speech coders are available as standard.
Display:	<ul style="list-style-type: none"> • Type: Full Graphic • Resolution: 101 X 80 Pixel • Technology: Color STN • Color depth: 4096 • Illumination: White (3 LEDs integrated)
Temperature Range:	<ul style="list-style-type: none"> • -10°C to +55°C (Normal operation) • -30°C to +85°C (Storage capability)
Keypad:	<ul style="list-style-type: none"> • 2 keys (call, on/off/end) • 2Soft-Keys and 4-way Navi-key • 4rows*3cols numpad with '0' to '9' and '*' and '#'
Antenna:	<ul style="list-style-type: none"> • A triple band PIFA antenna will be an integral part of the mobile phone.
Acoustics:	<ul style="list-style-type: none"> • 16 chord polyphonic sound for ring tone and games




2.2 Comparison With Previous Products

Feature	A60 Lion	A65 Puma
Supported Systems	Triple Band EGSM900/GSM1800/GSM1900	Triple Band EGSM 900/GSM1800/ GSM1900 (EMEA, APAC) .For US Dual Band EGSM 900 / GSM1900 (as C61)
Stand-by Time	Up to 250 h	Up to 250 h
Talk Time	Up to 5 h	Up to 5 h
Battery Technology Battery Capacity	Li-Ion Battery Pack NOMINAL CAP:700 MAH	Li-Ion Battery Pack NOMINAL CAP:700 MAH
Weight	Approx. 85 g	Approx. 85 g
Volume	Approx. 91 cm ³	Approx. 86.6 cm ³
Length	110 mm	100 mm
Width	47 mm	44 mm
Thickness	23 mm	19 mm
SIM	Plug-In 3V	Plug-In 1.8V/3V
Antenna	Integrated	Integrated
Antenna Performance in comparison to S35:	-0,8 dB @ 900 MHz -0,5 dB @ 1800 MHz	-0,8 dB @ 900 MHz -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
AMR	Yes	Yes
Fax/Data	No	Yes
GPRS	Yes (Class 8)	Yes (Class 8)
Keypad Illumination	Yes (amber)	Yes (amber)
Display / Display Illumination	CSTN 4k colours (101x80 dots)	CSTN 4k colours (101x80 dots)
Ringer volume level	Min. 100 dB(A) @ 5cm Typ. >103 dB(A) @ 5cm	Min. 100 dB(A) @ 5cm Typ. >103 dB(A) @ 5cm

3 Accessories

Accessories –for all regions (Puma)

Fashion & Carry	Energy	Handsfree Portable	Car Solutions	Multi-tainment	Office
					
Tour Case FCT-650	Desk Top Stand	Headset HHS-500	Car Kit Portable HKP-500	Quick Pic Camera IQP-500	Data Cable DCA-500
Belt Case FCL-600	Travel Charger ETC-500/510	Headset PTT HHS-510	Car Kit Easy HKP-700		
Loop Case FCT-500	Car Charger Plus ECC -600	Headset Purestyle HHS-610			
	Li-Ion Battery EBA-510				

 Existing product
 New Platform product, backward compatible
 For bulk only

Accessories Parts

L36880-N5601-A104	Travel Charger EU ETC-500
L36880-N5601-A105	Travel Charger UK ETC-510
L36880-N7101-A109	Car Charger Plus ECC-600
L36880-N5601-A107	Headset HHS-500
L36880-N7101-A500	Headset Purestyle HHS-610
L36880-N5601-A108	Headset PTT HHS-510
L36880-N5601-A109	Car Kit Portable HKP-500
L36880-N5601-A110	Data Cable DCA-500
L36880-N5601-A111	Data Cable USB DCA-510
L36880-N5601-A149	Tour Case FCT-650 C60/A60/CF62/CX65/CXT65
L36880-N7101-A120	Belt Case FCL-600
L36880-S5601-A800	Serial Data Cable
L36880-S5701-A410	QuickPic Camera IQP-500
L36880-N5601-A100	Li-Ion Battery EBA-510

Note: Visit the Communication Market for updated accessories:

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

4 Unit Description of A65

The Puma Phone is part of the L55 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 electromechanic components are overtaken from Lion and Barracuda, The RF chamber and shielding is the same as in Maguro.

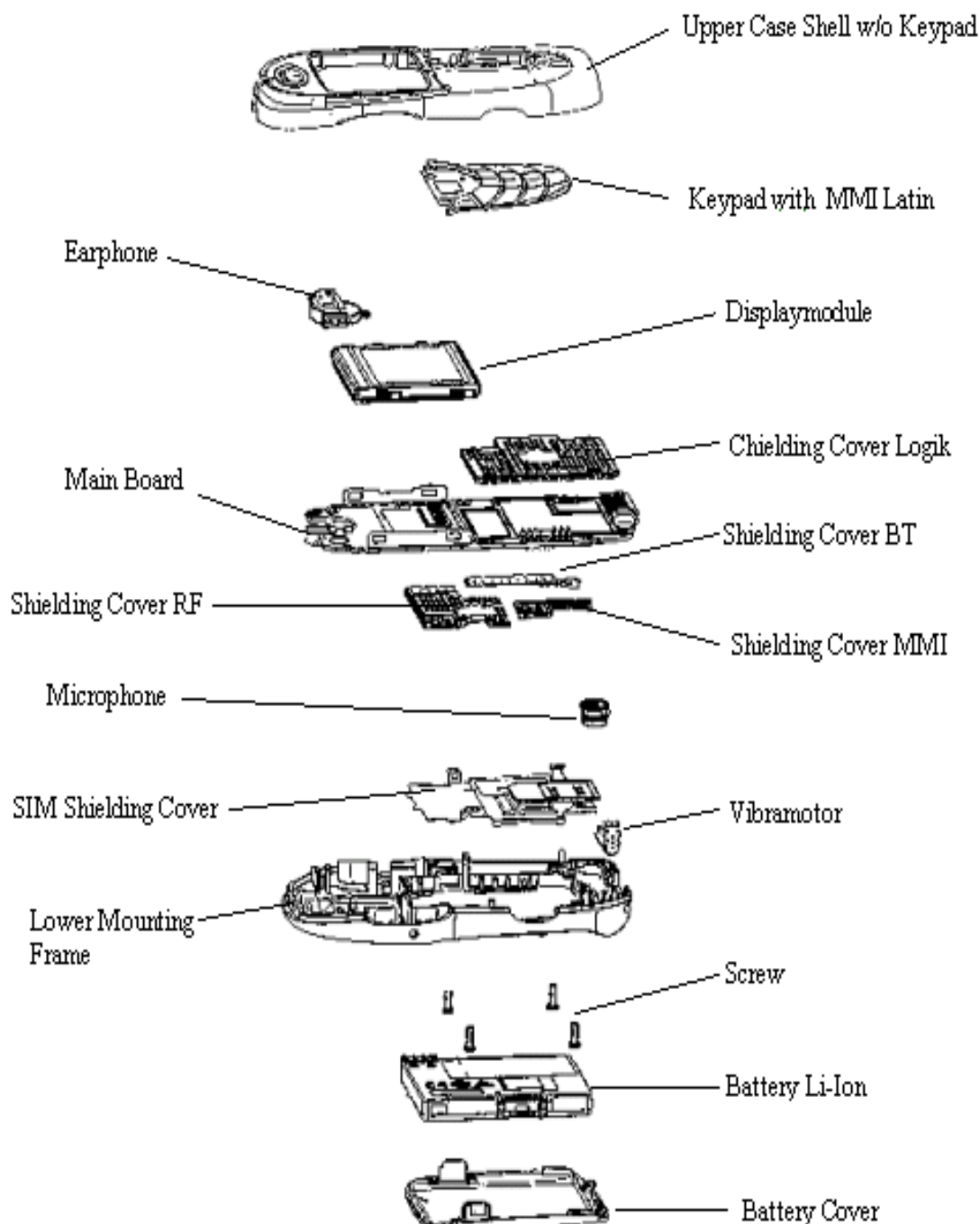
4.1 A65 Interface to accessories



The phone has a fully compatible interface to accessories. The connectors (I/O and RF) are identical to the L55 Family (C55, S55, A55/52, SL55, M55, and MC60).

Mechanical interfaces are defined on the mobile phone to make sure that the accessories are compatible across the whole L55 platform.

4.2 Exploded view of A65



4.3 Handset parts and defined service parts

Description	Part-Nr	Repair Level	Qty.	Comments
Upper Case Shell w/o Keypad	C39158-A130-A1	Level	1	
Keypad with MMI Latin	C39158-A130-B600	Level	1	
Earphone	C39212-Z3-C51	Level	1	
Display module	V24851-Z1508-A101	Level	1	
Shielding Cover Logic	C39158-A84-C208	Level	1	
Main Board	S30880-Q5810-A10	Level	1	
Shielding Cover BT	C39158-A84-C206	Level	1	
Shielding Cover RF	C39158-A84-C204	Level	1	
Shielding Cover MMI	C39158-A84-C202	Level	1	
Microphone	C39254-Z6-C101	Level	1	
SIM Shielding Cover	C39158-A84-C90	Level	1	
Vibramotor	C39453-Z5-C205	Level	1	
Lower Mounting Frame	C39158-A130-A201	Level	1	
Screw	C39158-A93-C302	Level	4	
Battery Li-Ion	V30145-K1310-X250	Level	1	
Battery Cover	C39158-A130-B501	Level	1	

5 Disassembly of A65

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 E-GOLD pins.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the A65.

Tools used for Disassembly & Assembly:

GRM provide special Domesheet Jig and screwdriver, please to order via E-commerce.



Step 1:



Front view of the A65.

Step 2:



Back View of the A65.

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 with the screwdriver, set torque to 18 Ncm..

Step 6:



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

Step 7:

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

Step 8:

Remove the Base lower by carefully lifting it up.

Step 9:

Remove the Microphone from the Base upper assembly.

Step 10:

Remove the Vibrator from the Base upper 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 Display from the PCB (main board) with the tweezers. Place a foil on the display.

B:

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

C:



Remove the Keypad from the PCB (main board).

D:



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

E:



Fully disassembled the PCB Assembly.

Step 13:

Fully disassembled A65

6 Assembly of A65

Step 1: Reassemble the PCB Assembly

A:



Take a new Metal dome, Detach the protection foil with the tweezer.

B:



Place the Domesheet on the special Domesheet jig with the glue surface upwards. Take care its holes' position.

C:



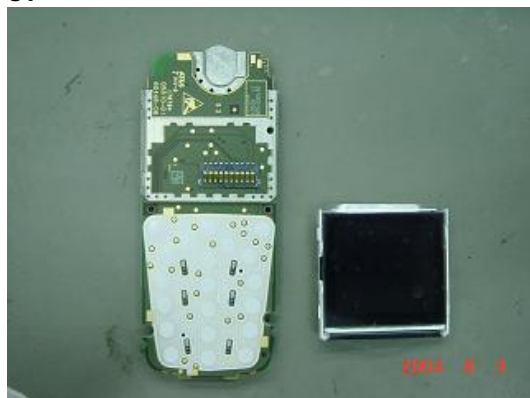
Place the PCB on the jig through the two pins, which align the PCB on the correct position.

D:



The Domesheet is now glued to the PCB.

C:



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

D:



Detach the protection foil from the new Display. Put the Display on PCB and press it to ensure it's properly.

E:



Prepare a new earphone.

F:



Push earphone into the position as shown.

Step 2:



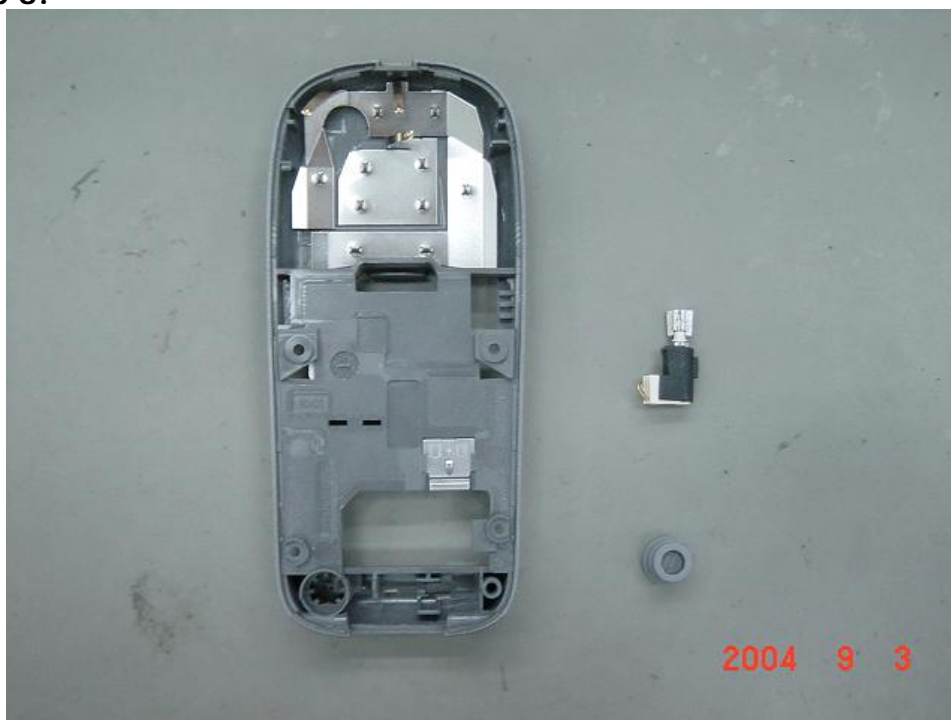
In addition, prepare a new Keypad and a Uppercase.

Step 3:

Place new Keypad onto the Uppercase.

Step 4:

Place the PCB Assembly onto the Uppercase.

Step 5:

Prepare Microphone and Vibrator.

Step 6:

Take a new microphone and mount it in its place of the bottom-case.

Step 7:

Take vibrator and mount it in its place of the bottom-case.

Step 8:

Put the PCB Assembly into the Uppercase and align the Bottom-case to the Uppercase. Check that the Bottom-case assembly is ok and all the components are in their places.

Step 9:

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

Step 10:



Prepare Battery and Battery cover.

Step 11:



Put the battery into the Base lower as shown.

Step 12:



Slide the Battery cover upwards until the cover locked.

Step 13:



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



FIGURE 7.1 A65 SERIES SOFTWARE PROGRAMMING SETUP

7.2 Mobile Software Updating

The software of the mobile, R65 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 X55 series (Slim-Lumberg type) an additional adaptor cable between mobile and boot adaptor is required.

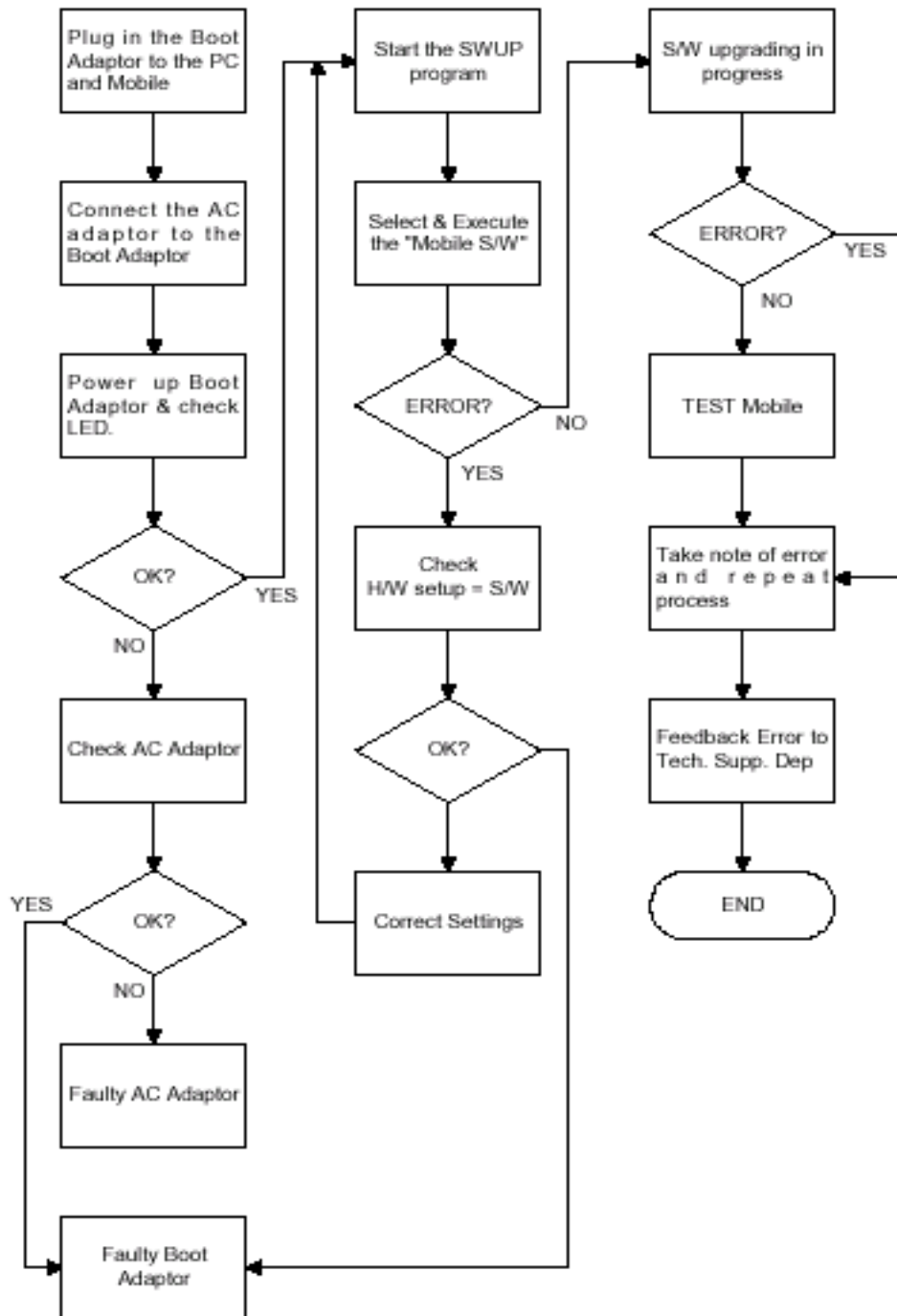
Table 7.1 listed all the hardware requirements

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

**All mobile Phones have to be tested with the GRT-Software.
The Service Partner is responsible to ensure that every required hardware is available.**

For questions, please check the service information form Jan.04 or ask you Service Manager

Make sure that your CTS firmware is Version 3.01 or higher. For CMD 55 it must be Version 4.03 and higher. Please check with the Service Info SB_0500 for the CTS/CMD Hardware Options.

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



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 Phonocodes can only be supplied for mobiles which have been delivered in a regular manner.

The screenshot shows the 'Masterphone-Code' page in the JPICS internet portal. The page has a blue header with the SIEMENS mobile logo and navigation links. The main content area is divided into sections for input, mobile data, delivery information, and mobile codes. The 'Input' section contains an IMEI field with the value '351630001655108' and an 'Execute' button. The 'Mobile data' section contains fields for Producttype (SL55), Delivernpartnumber (L36880-Q4910-A10-3), SW version (005), Partnumber (L36880-Q4910-A10-3), Warranty (12.09.05), and Status (Normal). The 'Delivery information' section contains fields for Deliverynote (0065801221) and Deliverydate (25.06.03). The 'Mobile codes' section contains a field for Mobile unlock code with the value '#0003*18312287#'. A small image of a Siemens SL55 mobile phone is shown on the right side of the page.

Figure 3. Master phone code page

Simlock Unlock - Code

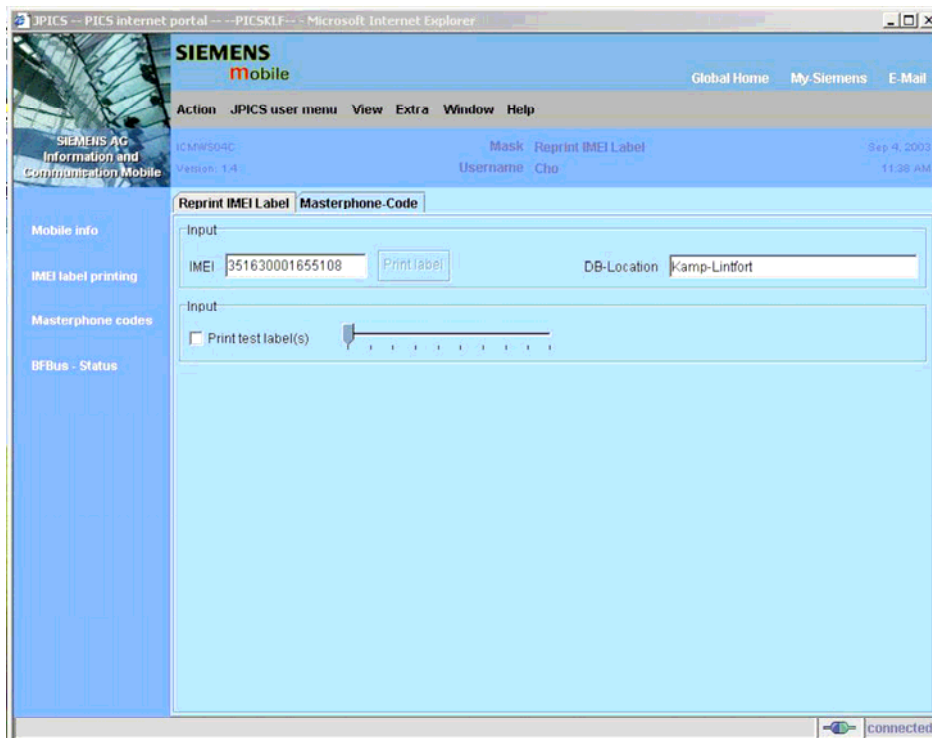
The **Simlock-Unlock-Codes** can only be generated if the following conditions are given:

- 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.

The screenshot displays the 'Simlock-Unlock-Code' interface within the JPCS internet portal. The page is titled 'Simlock-Unlock-Code' and includes a navigation menu on the left with options like 'Mobile info', 'IMEI label printing', 'Masterphone codes', 'Simlock unlock co...', and 'BIFBus - Status'. The main content area contains several sections: 'Get information for given IMEI' with an IMEI input field (350673547190612) and an 'Execute' button; 'Mobile data' with fields for Product type (C45), SW version (049), Warranty (21.08.05), Delivery part number (36880-S5100-X139-15), Part number (S30880-S5100-A139-14), and Status (Normal); 'Delivery information' with fields for Delivery note (0066015319) and Delivery date (22.08.03); and 'Mobile codes' with fields for Network code, S. Provider code, SIM-Mastercode, Corporate code, Network Subnet Code, Network Mastercode, S. Provider Mastercode, SIM-Reenablecode, Corporate Mastercode, and Network Subnet Mastercode. A small image of a Siemens mobile phone is visible on the right side of the interface.

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 A65 is S30880-S5810-Axxx where the last 4 letters specify the housing and software variant.

A65 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

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

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 41.

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	<ul style="list-style-type: none"> GSM900 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Display check 	<ul style="list-style-type: none"> individual check
2 Call from BS	<ul style="list-style-type: none"> low TCH PCL 5 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Ringer/Loudspeaker check 	<ul style="list-style-type: none"> individual check
3 TX GSM900	<ul style="list-style-type: none"> low TCH PCL 5 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
4 Handover to GSM1800 Including Handover Check			
5 TX GSM1800	<ul style="list-style-type: none"> low TCH PCL 0 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
6 Handover to GSM1900 Including Handover Check			
7 TX GSM1900	<ul style="list-style-type: none"> low TCH PCL 0 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
8 Call release from BS			

External Antenna			
Test case	Parameter	Measurements	Limits
9 Call from MS	<ul style="list-style-type: none"> GSM900 high TCH PCL 6 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Keyboard check 	<ul style="list-style-type: none"> individual check
10 TX GSM900	<ul style="list-style-type: none"> high TCH PCL 6 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
11 RX GSM900	<ul style="list-style-type: none"> high TCH BS Power = -102 dBm 50 Frames middle BCCH 	<ul style="list-style-type: none"> RX Level RX Qual BER Class Ib BER Class II BER Erased Frames 	<ul style="list-style-type: none"> GSM Spec.
12 Handover to GSM1800 Including Handover Check			
13 TX GSM1800	<ul style="list-style-type: none"> high TCH PCL 1 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
14 RX GSM1800	<ul style="list-style-type: none"> high TCH BS Power = -102 dBm 50 Frames middle BCCH 	<ul style="list-style-type: none"> RX Level RX Qual BER Class Ib BER Class II BER Erased Frames 	<ul style="list-style-type: none"> GSM Spec.
15 Call release from MS			
16 Handover to GSM1900 Including Handover Check			
17 TX GSM1900	<ul style="list-style-type: none"> high TCH PCL 1 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
18 RX GSM1900	<ul style="list-style-type: none"> high TCH BS Power = -102 dBm 50 Frames middle BCCH 	<ul style="list-style-type: none"> RX Level RX Qual BER Class Ib BER Class II BER Erased Frames 	<ul style="list-style-type: none"> GSM Spec.
19 Echo Test	<ul style="list-style-type: none"> high TCH PCL 1 BS Power = -70 dBm middle BCCH 		<ul style="list-style-type: none"> 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

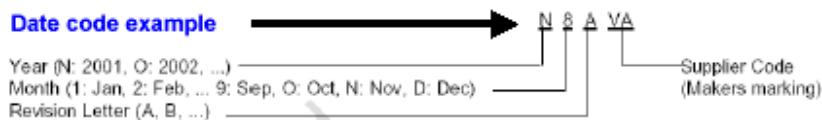
Annex 2

Battery Date Code overview

Date Code overview

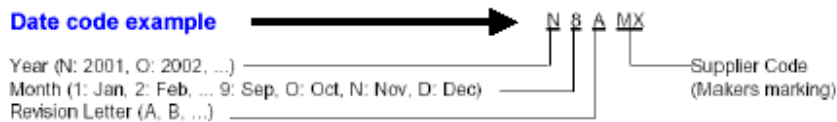
Varta

Date code example



Hitachi / Maxell

Date code example



Sanyo

Date code example



NEC

Date code example



Panasonic

Date code example



Sony

Date code example

