

# Local Service Organization Service Manual

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## **XELIBRI X5**

SIEMENS COMMUNICATIONS UNLIMITED

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Somebody is waiting for you to call!

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## 1 Cellular Communication

The cellular systems are made up of numerous transmitting and receiving sites, whose individual coverage areas partially overlap. The concepts 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.).

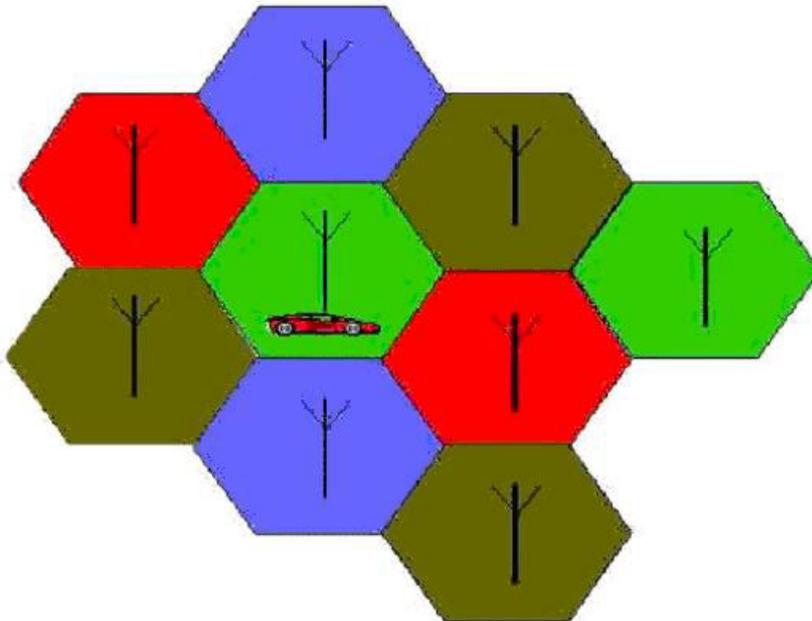
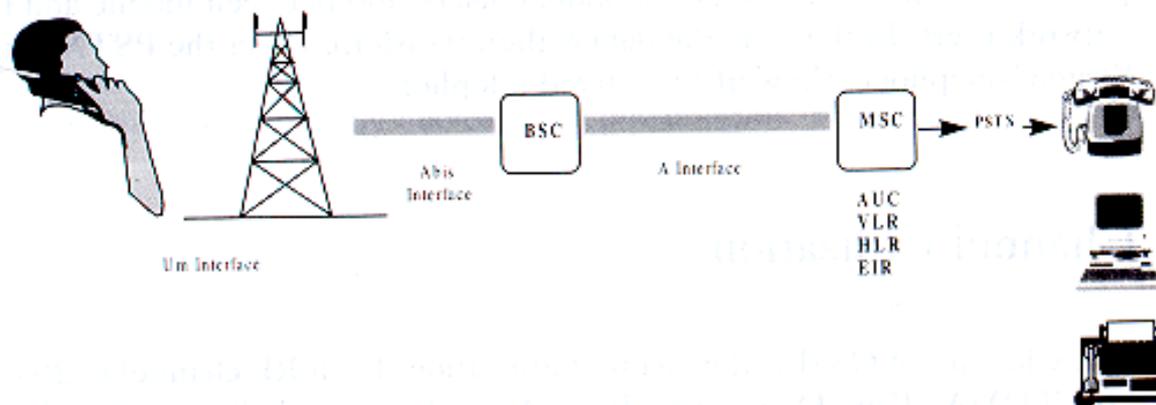


FIGURE 1.1 CELLULAR COVERAGE REPRESENTATION.

### *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 Centre (MSC) which performs the switching of calls between the mobile users, and between mobile and fixed network users.



#### *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**

Stores information about mobile subscribers that enter its coverage area, which is associated with the geographical area where the mobile is currently roaming. When there is an incoming call for the mobile, the HLR is interrogated about the present address of the VLR.

#### **Home Location Register, HLR**

A database that contains all data concerning the subscription of the mobile subscriber, i.e. their access capabilities, subscribed services, and supplementary services. It also contains information about the VLR that is handling the mobile station currently. When the mobile changes location, the HLR is updated accordingly. It also provides the MSC with information about the MSC area where the mobile is actually located to allow incoming calls to be routed immediately to the called party.

#### **Authentication Center, AUC**

Stores information that is necessary to protect communication through the air interface against any intrusions. The legitimacy of the subscriber is established through authentication and ciphering, which protects the user information against unwanted disclosure.

#### **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.

## 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 SIM 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 locked SIM-card, due to wrong PIN entry,  
Get the unblock code from the operator.**

## SIM Application Toolkit

This is a new GSM feature that has been integrated into the GSM standards in Release 96, with further enhancements added as part of the Release 97 feature set. This feature came about because of a desire by Network Operators to offer differentiated services, without the need for the Mobile Manufacturers having to build different variant for different customers. The unique service offered by the Operator is placed as an application on the SIM and that could work on any mobile that supports the Toolkit feature.

There is a distinct set of commands between the mobile and the SIM specifically for the Toolkit that allows the SIM application and the mobile to communicate independently of the GSM communication between the SIM and the mobile. Henceforth, the SIM Application Toolkit and GSM functionality on the SIM are separated logically. The Toolkit can interact directly with the mobile itself and adding itself to the mobile menu.

“Proactive SIM” is a mechanism whereby the SIM can initiate actions to be taken by the mobile.

These actions include:

- Send short message
- Set up a voice call to a number held by the SIM
- Send a Supplementary Service (SS) control or Unstructured Supplementary Services Data (USSD) string
- Play a tone in the mobile’s ear piece or ringer
- Initiate a dialogue with the user
- Provide local information from the mobile to the SIM
- Data download to the SIM from network

SIM Applications Toolkit (SAT) allows the flexibility to update the SIM, to change the services and download new services over the air. In the SAT specification, the short message service is a key mechanism for personalizing the SIM in each user’s GSM phone. It is designed as a client-server application. The X6 supports the SAT specification.

## Extended GSM 900, E-GSM

This is a new standard that allows Network Operators to increase their capacity through an extended frequency. The frequency range of E-GSM is as follows:

- Mobile Transmit: 880,2 - 914,8 MHz
- Mobile Receive: 925,2 - 959,8 MHz

Xelibri X5 is a GSM Phase 2 / Phase 2+ Dualband E-GSM 900 / GSM 1800 mobile phone.

The following is the link to the support information regarding the mobile phone.

<http://www.xelibri.com>

## 2 Key Features

ITEM	Specification
Frequency Band:	E-GSM 900 / GSM 1800
Screen:	108 X 80 Pixels FSTN;4096 colour
Battery:	680 mAh Li-ION
Weight	73.5g
Talk time	340 minutes.
Standby time	350 hours(standard battery)
Colour	Mercury ,Ultra Blue
Antenna	Integrated
Ringtones	23 item music with 16 chord
Game	2 kinds
EMS/MMS	Support
Language	English, German, France, Spanish, Portuguese, Italian, Dutch, Chinese traditional / simplified
Power Classes	E-GSM 900: Class 4 (2W) E-GSM 1800: Class 1 (1W)
Receiving sensitivity for all channels without fading:	E-GSM900: <-106 dBm GSM1800: < - 105 dBm
SIM card	1.8/3.0V
Temperature ranges	Normal operation: -10 ~ +55 centigrade
SAR (Absorption Rate)	0.76 W/kg

### 3 Accessories

Basic	Li-ION Battery (680mah)	
	Travel Charger (100~240V)	)
Basic Car Pack	Allows hands-free talking and simultaneously charges your Xelibri in the car. Features a car charger and headset with special connector.	
Car Charger	Charger for the cigarette lighter socket in your car	
Car Kit Portable	Handsfree kit with integrated loudspeaker and microphone and auto-answer feature. Also charges your Xelibri	
Headset PTT	Enable convenient and safe hands-free use. It concludes a button in the microphone for handling calls.	

**4 Exploded View of X5**

BILL OF MATERIAL			DESIGN CHANGE NOTES	
No.	Component Name	Qty.	NO.	DESCRIPTION
23	CLIP COVER	1	DATE	CONF.
22	BATTERY COVER	1		
21	BATTERY PACK	1		
20	RUBBER FOR ANTENNA CAP	1		
19	MACHINE SCREW (M1.6X7.5)	4		
18	LOWER CASE	1		
17	CLIP ARMS-R	1		
16	CLIP ARMS-L	1		
15	BATTERY CONNECTOR	1		
14	SPEAKER	1		
13	VIBRATOR & COIN TYPE (LG)	2		
12	MODULE SPONGE	1		
11	CU SHEET	1		
10	ID DOOR	1		
9	PCB ASSY CMOS MODULE FOR PACO	1		
8	MACHINE SCREW (M1.6X5)	2		
7	ANTENNA PACO-ANT	1		
6	LCM BRACKET ASM	1		
5	PCB ASSY FPCB PACO MHISMT	1		
4	LCM MODULE	1		
3	KEY PAD P+R	1		
2	RECEIVER	1		
1	UPPER CASE ASM	1		

APPROVED	FINISH	SCALE	DATE	VERSION
CHECKED	MATERIAL			
DESIGNER	SHEET			
DRAWING	VERSION			

PROJECT	UNITS	DATE	REV
EXPLODE	MM	2003/03/10	1 OF 1
FILENAME			
PARTNAME			
PART NO.			

TOL.	SIZE	DATE
±0.10		
±0.20		
±0.30		

DTM.	PROJECT	EXPLODE	DATE
1-6			
6-30			
30-100			

**SIEMENS PTE LTD**  
**XELIBRI X5 LEVEL 2 SERVICE MANUAL**

4.1 Spare Parts List

Ref-Nr	Part Description	L-Number	Level
1	Upper case black	L36197-F5144-F744	1
1	Upper case white	L36197-F5144-F745	1
2	Receiver	L36197-F5144-F762	1
3	Keypad EMEA black	L36197-F5144-F763	1
3	Keypad EMEA white	L36197-F5144-F764	1
3	Keypad China black	L36197-F5144-F766	1
3	Keypad China white	L36197-F5144-F767	1
4	LCD Module	L36197-F5144-F769	1
5	MMI Board incl Micro	L36197-F5144-F770	1
6	Bracket	L36197-F5144-F771	1
7	Antenna	L36197-F5144-F782	1
8	Screw 1,6x5	L36197-F5144-F783	1
9	Swapboard	L36880-Q9250-A10	2
10	I O Door black	L36197-F5144-F785	0
10	I O Door White	L36197-F5144-F786	0
11	CU Sheet Max	L36197-F5144-F788	1
12	Module Sponge	L36197-F5144-F791	1
13	Vibra	L36197-F5144-F806	1
14	Speaker	L36197-F5144-F807	1
15	Battery connector	L36197-F5144-F835	1
16	Clip arm L black	L36197-F5144-F837	1
16	Clip arm L white	L36197-F5144-F855	1
17	Clip arm R black	L36197-F5144-F858	1
17	Clip arm R white	L36197-F5144-F869	1
18	Lower case black	L36197-F5145-F2	1
18	Lower case white	L36197-F5145-F228	1
19	Screw 1,6x7,5	L36197-F5145-F230	1
20	Rubber for Ant black	L36197-F5145-F231	0
20	Rubber for Ant white	L36197-F5145-F262	0
21	Battery pack	L36145-K1310-X287	0
22	Battery cover black	L36197-F5145-F263	0
22	Battery cover white	L36197-F5145-F282	0
23	Clip cover black	L36197-F5145-F285	0
23	Clip cover white	L36197-F5145-F286	0
Acc	Lanyard black short and long	L36197-F5100-F576	0
Acc	Lanyard blue short and long	L36197-F5120-F699	0
	Water contact indicator	L36197-F5118-F284	1

## 5 Disassembly of X5

**Note:** It is a requirement for the service personnel to observe ESD protection rules while servicing the X5.

Instruction

Keep all contact surfaces and the display clean of skin oil. Use gloves or finger clove!

### Step 1



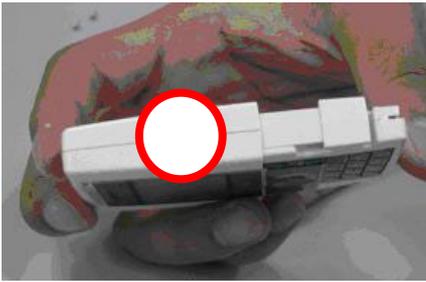
Remove the battery connector, clip cover and battery.

### Step 2



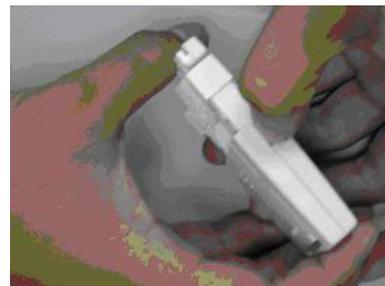
Remove the 4 screws (size 1,6 \* 7,5mm) on the back cover.

### Step 3



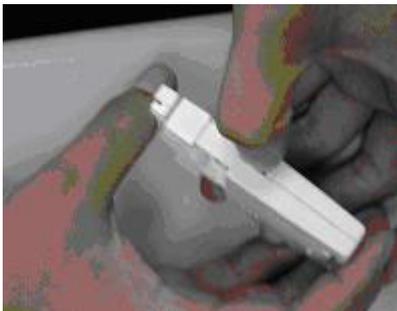
Open the case: to pry open the case. There is a catch in the case as shown in the circle.

### Step 4a



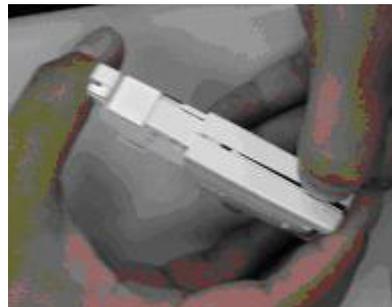
Use the fingernail to press open the catch

### Step 4b



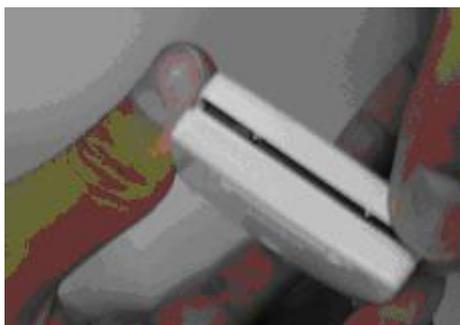
The sides

### Step 4c



The sides

Step 4d



The top.

Step 5a



Take out the keypad from the front cover. (The spare part: front cover, contains a lens and sponge; Never remove the lens from the front cover.) Speaker on the front cover. (Do not remove speaker if not damaged)

Step 5b



The phone with front cover and keypad removed

Step 6



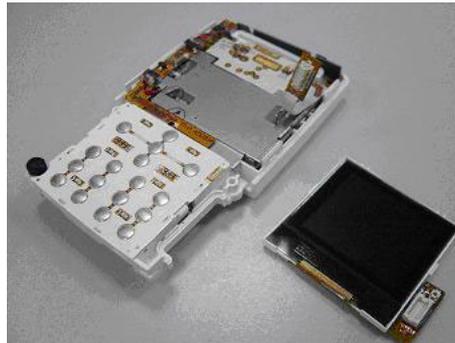
Use a tweezers to release the LCM connector (see the red circle) carefully.

Step 7a



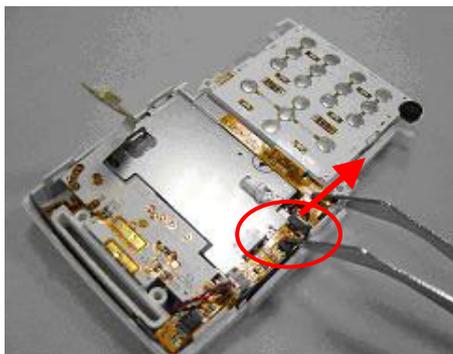
Open the LCM positioning tab (see the red circle) Push the LCM bracket positioning tab slowly and carefully. Use some strength upward

Step 7b



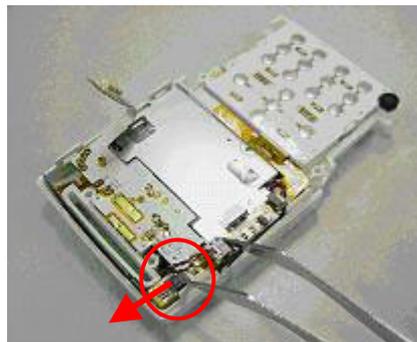
Display module removed.

Step 8



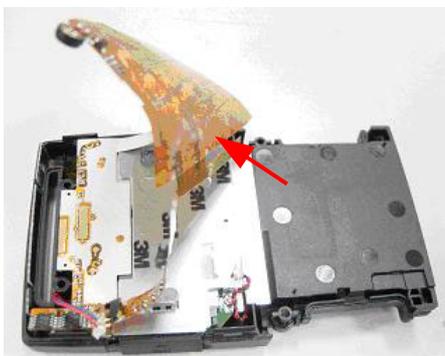
Pull the buzzer line out from the MMI board

Step 9



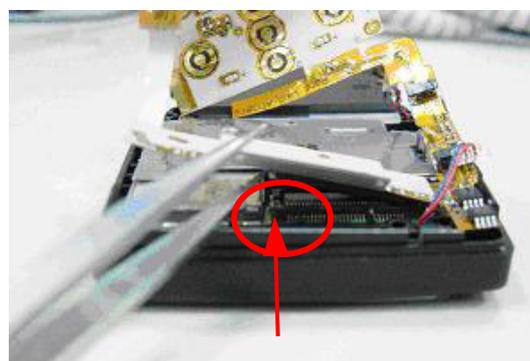
Pull the vibrator line out from the MMI board

Step 10



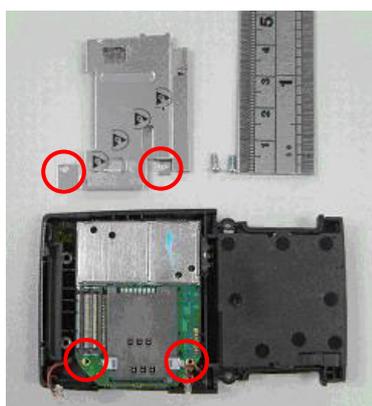
Remove the MMI Board

Step 11



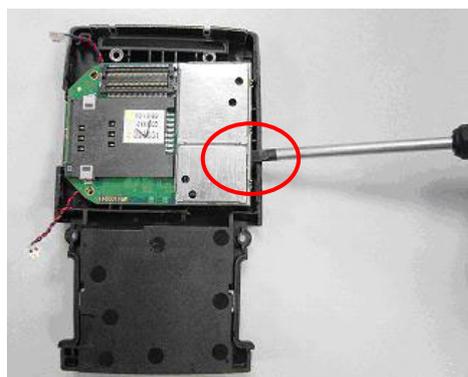
There is a fixing position in the MMI connector. Check the Connector is good. Use a pair of tweezers to pry off the fixing position.

Step 12



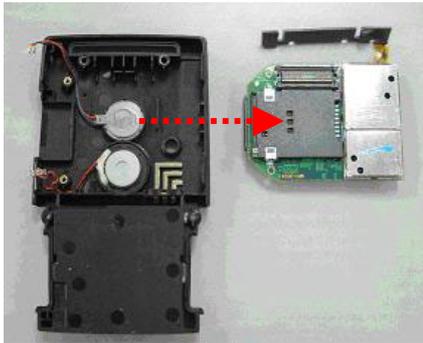
Remove the 2 screws short 1,6 \* 5 mm 16 cNm on the bracket.

Step 13a

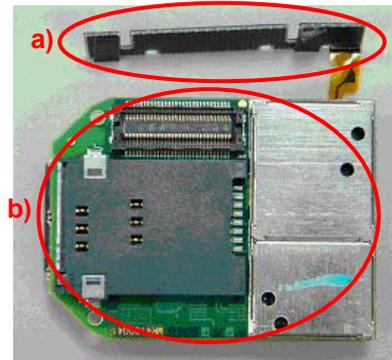


Remove the PCBA Module from the back cover.

Step 13b



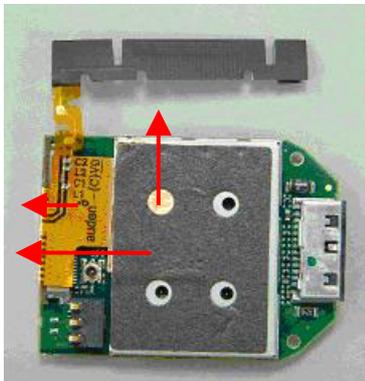
Step 14a



Remove the RF antenna from the PCBA module.

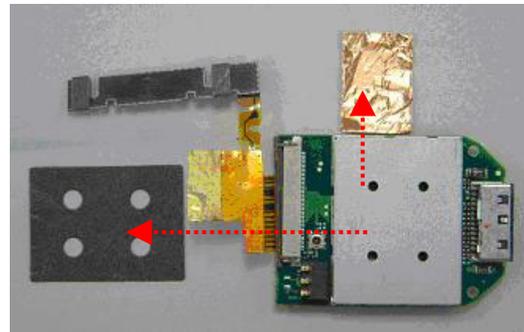
a) RF antenna; b) Module

Step 14b



Turn over the Module (The red arrows show the direction of the movements)

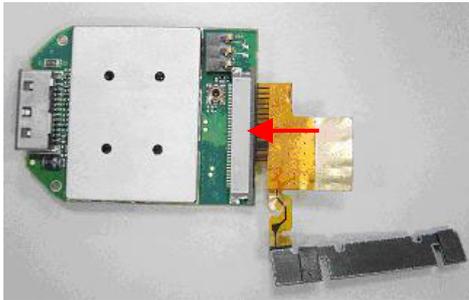
Step 15



Remove the sponge and the RF Antenna.

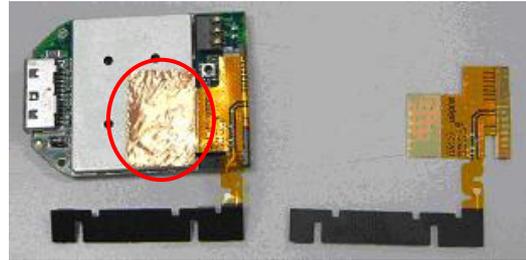
## 6 Assembly of X5

### Step 1



Assemble the Module with Antenna.

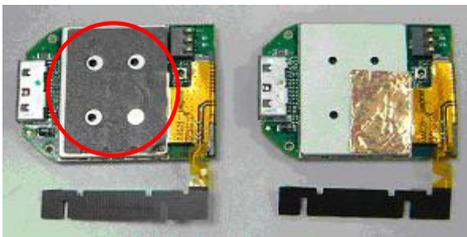
### Step 2



Stick the foil on the Module.

Note: In order to fix the antenna, apply adhesive force on the Module. If it is not done properly, the antenna may not work properly because of the bad connection with Module.

### Step 3



Stick the Sponge.

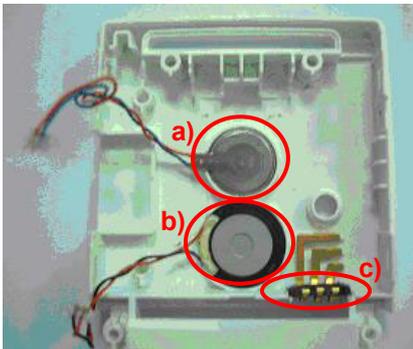
Note: The sponge is designed to enhance the adhesive force to make antenna connection.

### Step 4



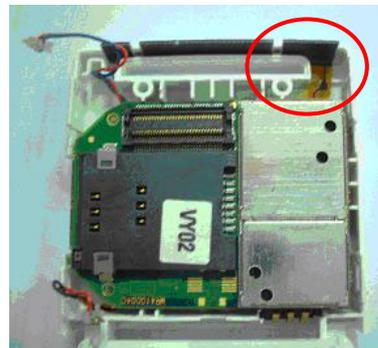
Assemble the I-O Door on the Back cover.

### Step 5



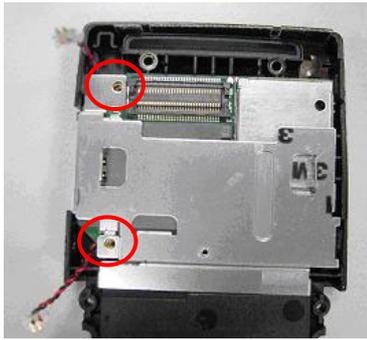
Assemble the **a)** Vibrator, **b)** Buzzer and **c)** Battery Connector on the Back cover.

### Step 6



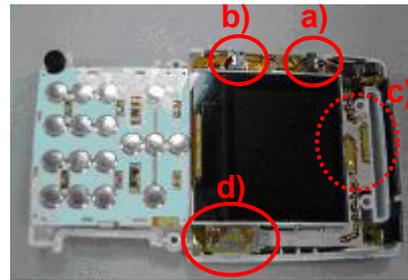
Place the Module into the Back cover and secure it to the casing. Note: Make sure that the antenna is turned and mounted correctly.

**Step 7**



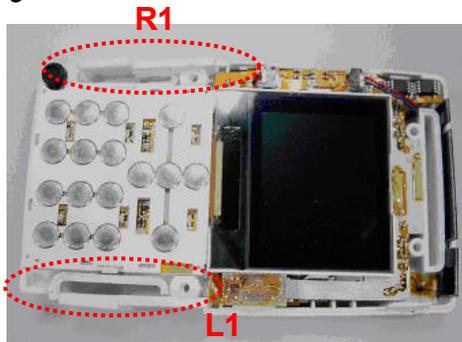
Put the metal plate on the module and back cover. Secure two 1.6 \* 5 mm screws located as shown in the red circles. Set the torque to 16 cNm.

**Step 8**



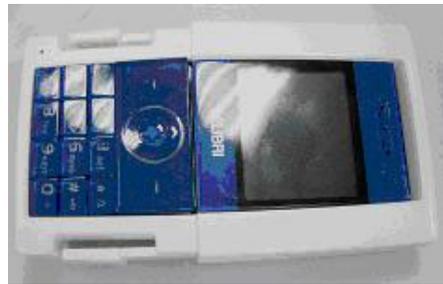
Place the MMI Board on the metal plate, and connect the **a)** vibrator and **b)** buzzer lines to the MMI board connector. **c)** Connect the MMI board to the Module and **d)** Mount the display and connect it to the connector.

**Step 9**



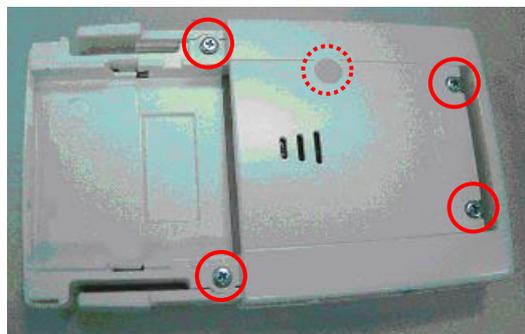
Mount the clips R1 and L1 as shown.

**Step 10**



Assemble the Front and Back covers.

**Step 11**



Secure the four 1.6 \* 7.5 mm screws as shown in the bold circles. Set the torque to 16cNm. Place the cap as shown in the dotted circle.

## 7 Mobile Software Programming

### EQUIPMENT

Before the installation of the Download/configuration program check your equipment :

- Standard desktop PC. Pentium III / 128 Mo (with standard serial com)
- Windows NT environment

For the connection between PC and mobile use:

- Serial adapter (BootAdapter 2002 – see photo) L36880-N9241-A200.
- Connect the BootAdapter to power
- Connect the PC and BootAdapter with standard serial cable
- Use specific cable to connect mobile and BootAdapter F30032-P226-A1

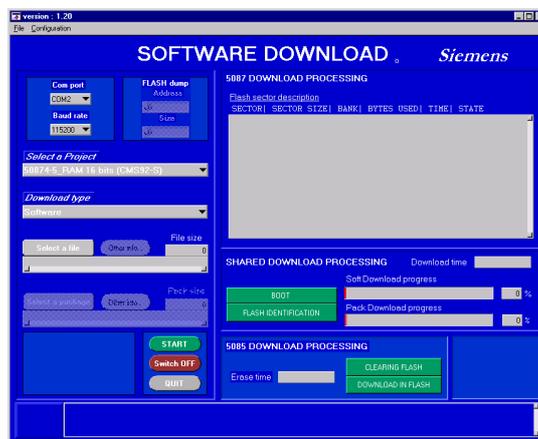


### PROGRAM INSTALLATION

To install the soft, execute: **setup\_dw\pc.exe** and follow instructions...

To launch the program: C:\Download\_Siemens\dw\Dev.exe

Following window appears:



PROGRAM USE

a/ In Download type, choose :Software ( it's the default value )



b/ In *Select a Project* choose :  
5087-5\_RAM 16bits (CMS92-S) (it's **not** the default value)



The other choice is 5087\_RAM 16bits (S128)

c/ Then click on **Select a file** :



To update product with new software, you need to know what is exactly its configuration.  
For example:

- Twiggy with EMEA configuration or
- Emma with APAC configuration etc ...

With this information you can select the **file.cla** you want to download

**X6 - Twiggy**

- EMEA = Vxxxx\_twigggy\_emea.cla
- APAC = Vxxxx\_twigggy\_apac.cla

**X7 - Emma**

- EMEA = Vxxxx\_emma\_emea.cla
- APAC = Vxxxx\_emma\_apac.cla

**X5 - Paco**

- EMEA = Vxxxx\_paco\_emea.cla
- APAC = Vxxxx\_paco\_apac.cla

Select the good file and click on OK (wait few minutes during loading)

d/ Select the Serial Port where your « Bootadapter 2002 » is plugged



e/ Put a battery in your mobile and plug in mobile with serial connector.

f/ Press Start



Message **TURN THE MOBILE ON** appears, then press the OnKey of the mobile.  
Wait the end of the download (4 – 10 minutes) then click OK.

### Configuration

The program « Service\_Tool » allows to do a complete configuration of mobile without Imei modification. This application permits to re-use mobile by deleting previous parameter and writing new parameters in product. This program is simple, operator plugs in product to serial connector, select a part number and launch the personalization.

### Program Installation

To install “Service\_Tool” program on your PC use the install kit delivery

Install Kit contents: setup.exe / service\_.001 / service\_.002

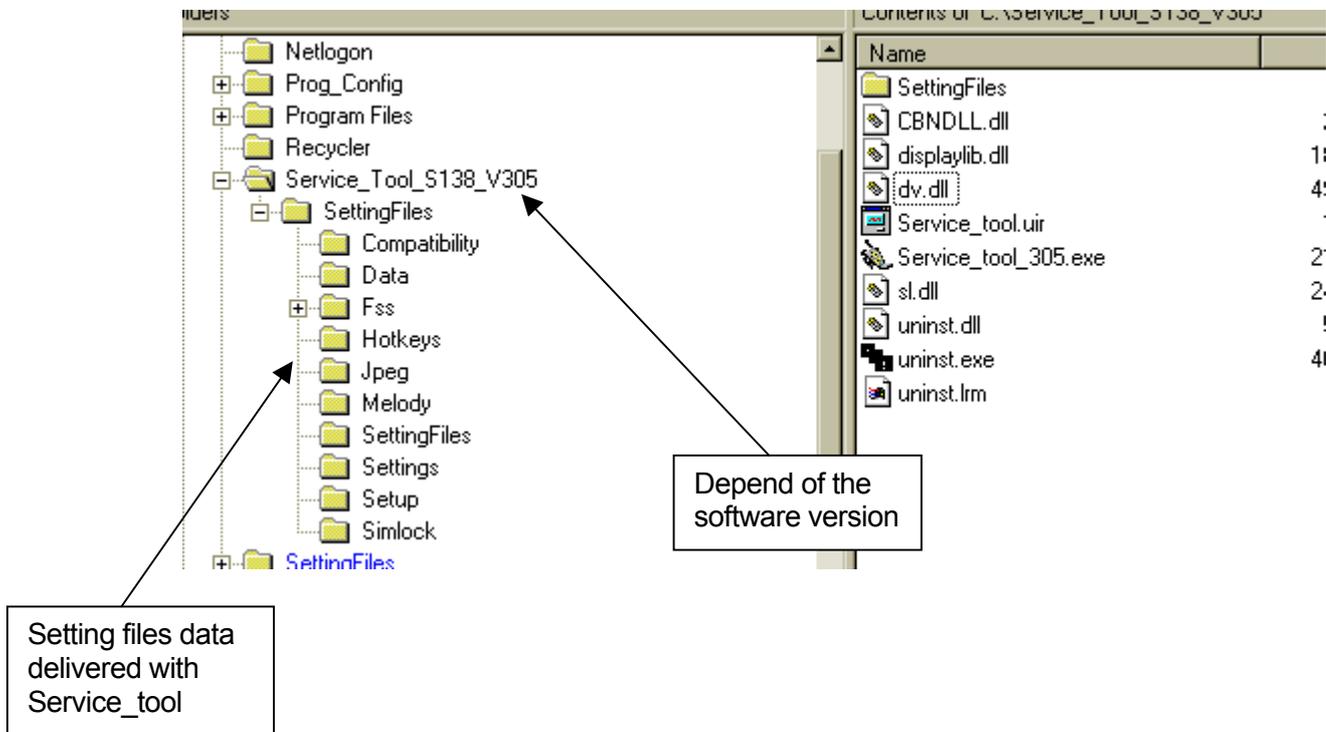
Installation:

Run the Setup.exe file supply with the install kit.

Default installation path is "C:\service\_tool\_S138\_vx\|” (“vx” is the release version)

- Unzip and copy Setting Files data on the same directory

After installation you should have in the install directory the following things: (see image)



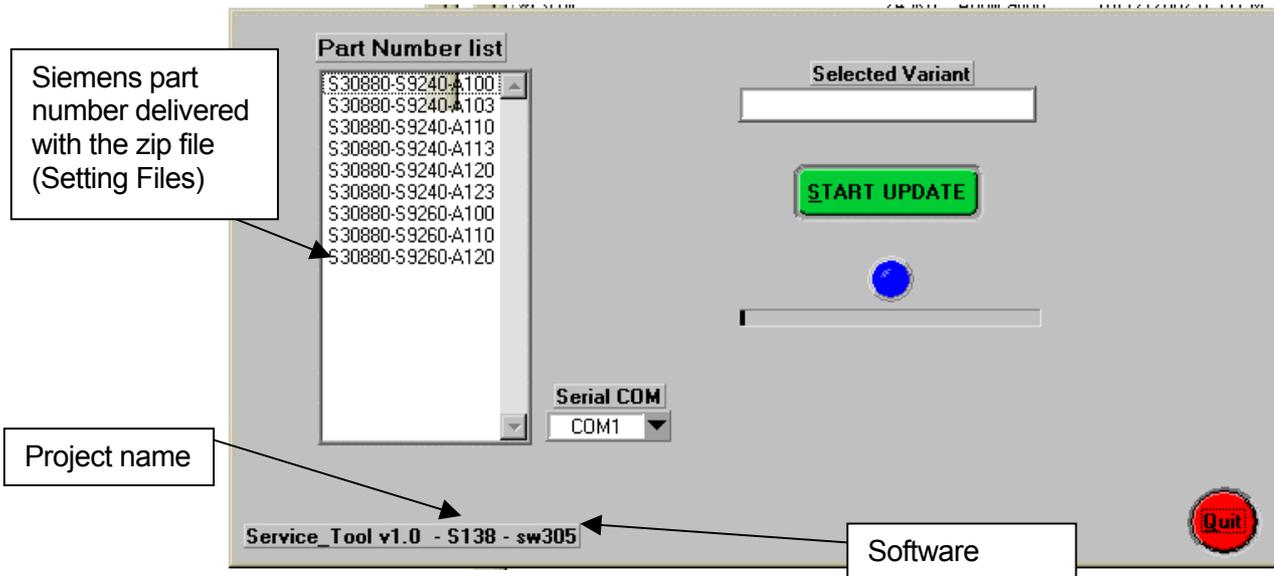
**SIEMENS PTE LTD**  
**XELIBRI X5 LEVEL 2 SERVICE MANUAL**

Program Use

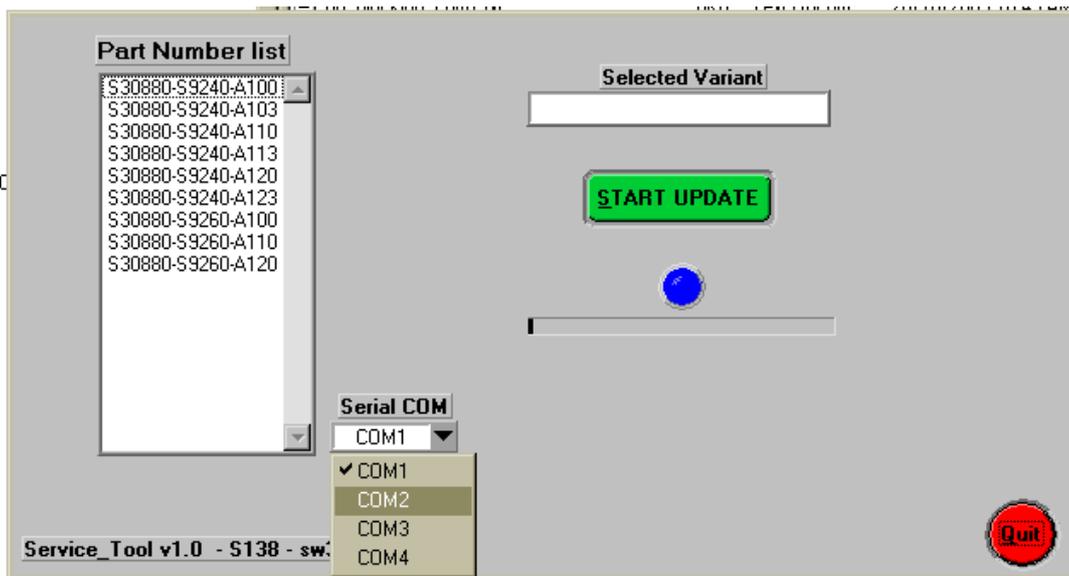
Because of software compatibility, a new “service\_tool” program version is necessary for each new product software!

a/ Run the file « Service\_Tool.exe », the program displays window on screen.  
The program updates automatically the part number list you can use for the configuration.

In the bottom of the window you can see the program version and product software compatibility.

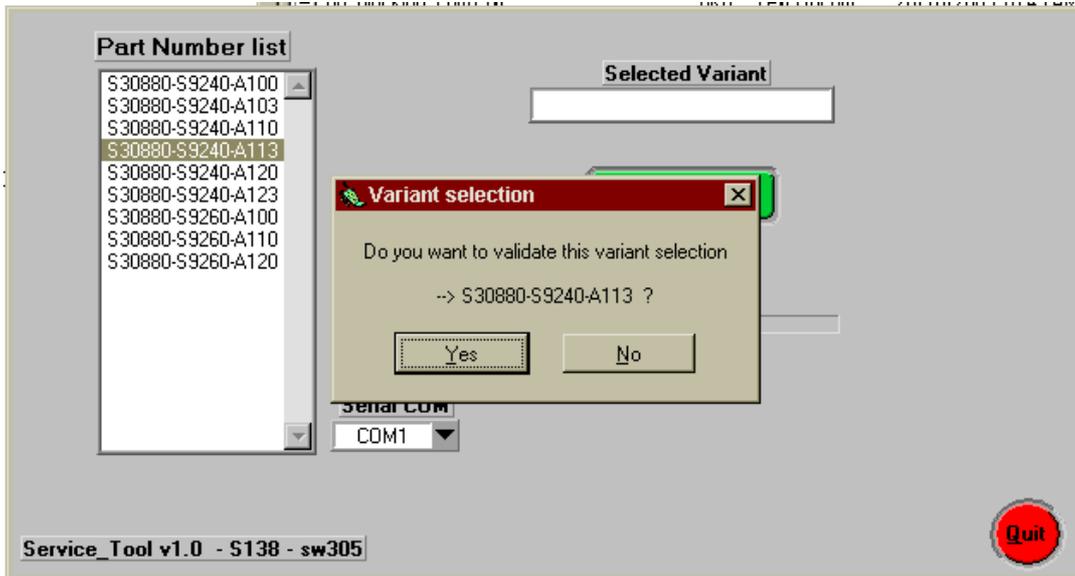


b/ Select the serial com number where BootAdapter is connected.

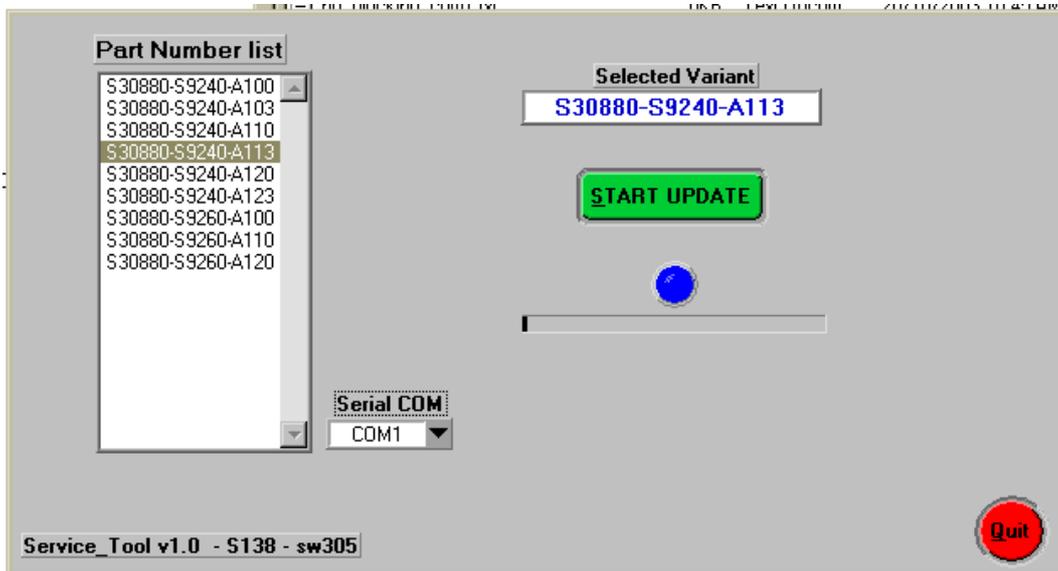


c/ Select the Siemens part number corresponding to your product configuration.  
(Part number value depends of the project)

The program ask you to confirm the selection



After the validation, “Selected Variant” box, displays the part number selected.  
The program is on the waiting mode (you can plug a product)

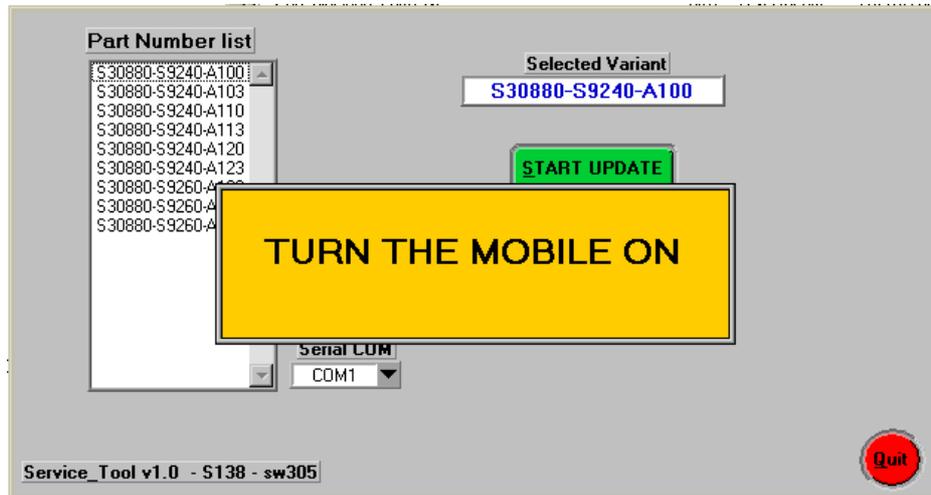


d/ Put a battery in your mobile and plug in mobile with serial connector.

e/ Start the test by pressing the "START TEST" button.

A window "Turn the mobile On" appears: The switch on mobile.

(With the BootAdapter 2002 the mobile start automatically).



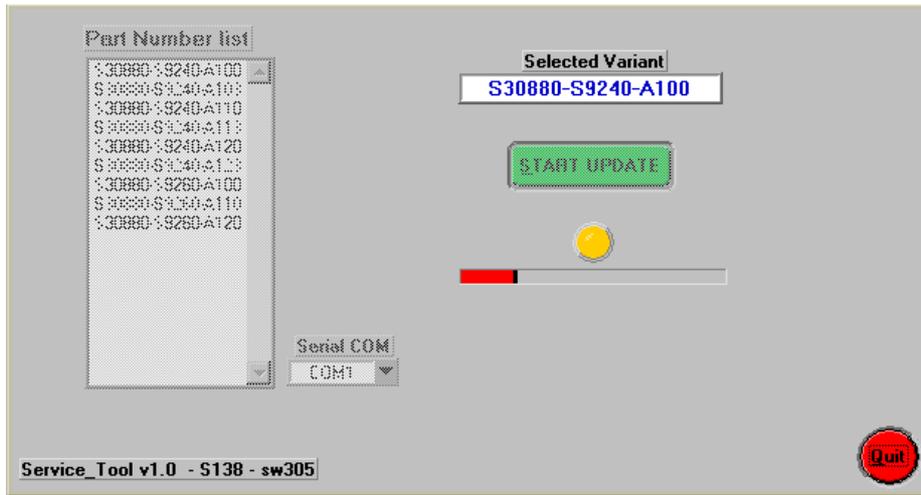
In case of start problem a new window is displaying.



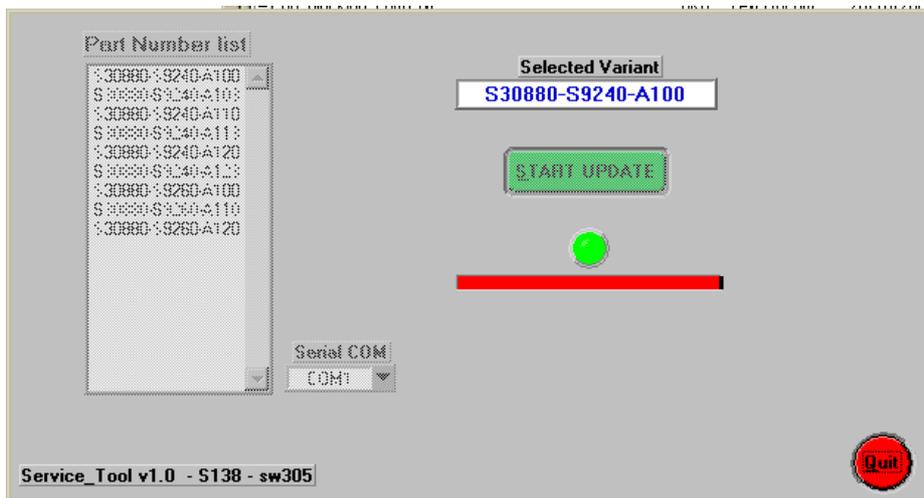
Press OK, remove the battery and serial connector and do the test again. If you meet the same problem

- check the battery charge
- check the mobile connector

If it is no problem, the Configuration test runs.



When test is finished, a message is displayed.



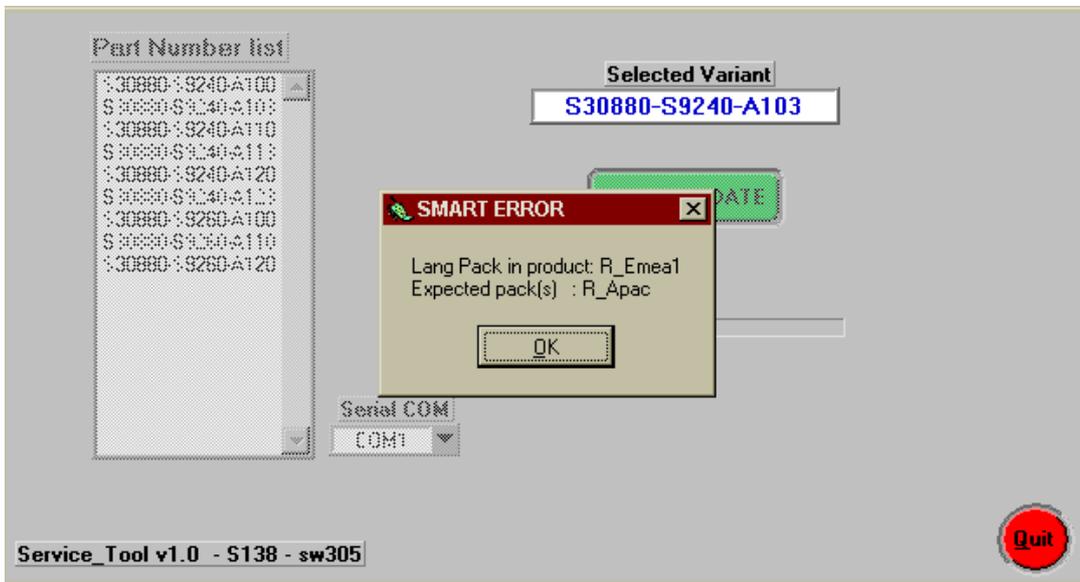
f/ Test is OK, remove the battery and unplug the serial connector.  
After some seconds the program come back to the waiting mode.

### Troubleshooting

During customization you could meet some error

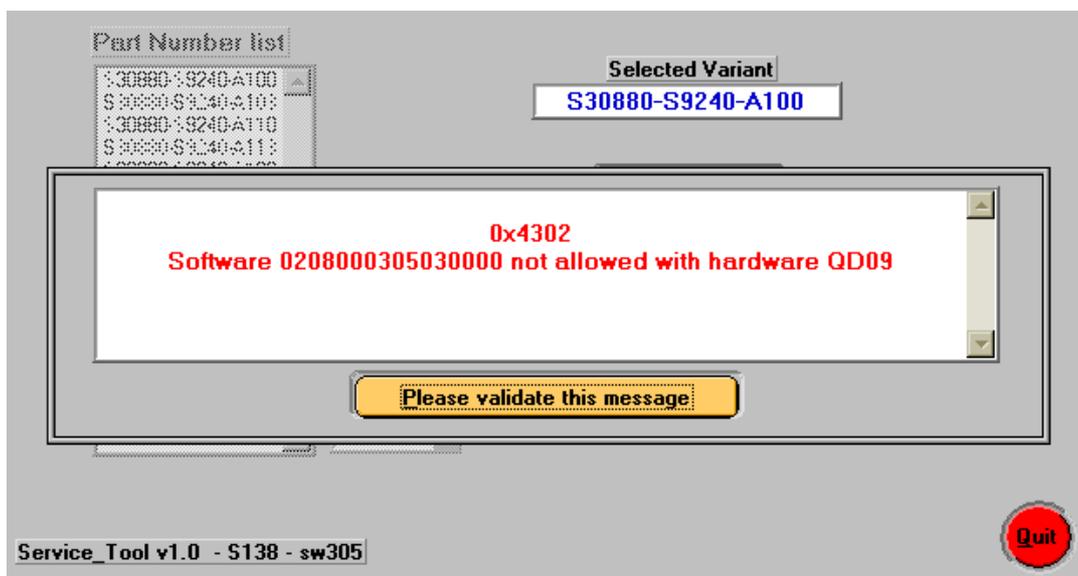
The following error message appears when pack data on the product is not in accordance with parameters specified by the part number selected.

Solution: download the good file.cla or change the selected variant.



The following error message appears when:

- Software version on product is wrong
- PN compatibility is wrong (PN number is not allowed with this software version)



## 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 or CTS55 GSM test set or CMD200 with a software called (CTS, CMD, or CMU-GO).

There is also test software available for testing with the Willtek 4201S the 4107 and the 4400 GSM test set called (CATS 4200 or CATS4400).



**THE LSO WILL HAVE TO PURCHASE THE SYSTEM, CHOOSING BETWEEN THE COMPLETE PACKAGE OR SUB-SET OF IT.**

**A FULLY AUTOMATIC TEST PROCEDURE IS ONLY POSSIBLE IF THE COMPLETE SYSTEM IS INSTALLED.**

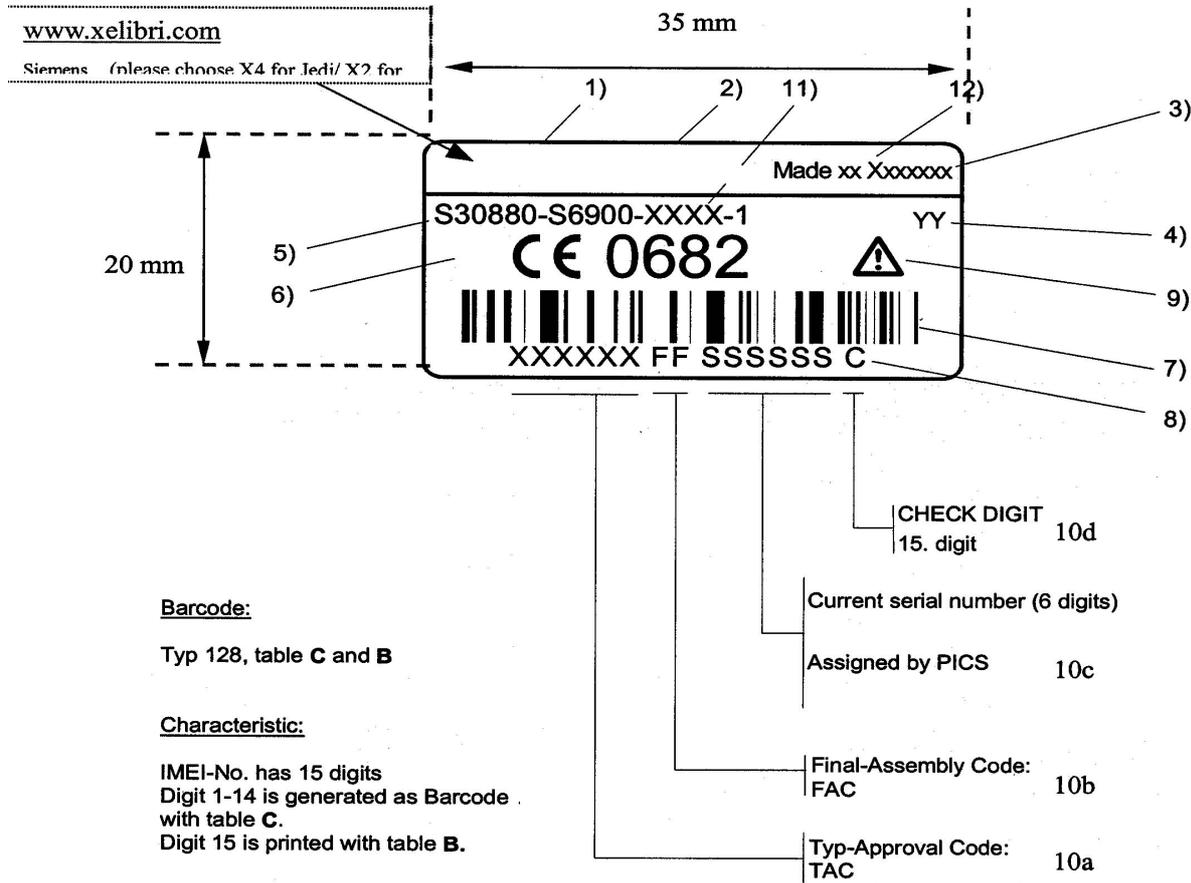


**Make sure that your CTS firmware is Version 3.01 or higher. For CMD 55 it must be Version 4.03 and higher. Please check with the Service Info SB\_0500 for the CTS/CMD Hardware Options.**

**9 International Mobile Equipment Identity, IMEI**

IMEI Access: \*#06#

**II. Main unit (IMEI Label)**  
**2.0 Main unit Regulatory label**



#	Description of Details	Comment/Specifications
1	Brand Name (web address) with Siemens name below in small print	Internal font D, size 6 Xelibri and product name, size 4 for Siemens underneath
2	Product Number (specific to phone)	Internal font D, size 4
3	Make in China	Bit map
4	Production year	Internal font D, size 4
5	Code number	Internal font D, size 4
6	CE-identification number	Height 5mm
7	Barcode IMEI-No.:	Code 128 Siye 2 Ratio 3.0 Height 3mm
8	IMEI-No. (plain writing)	Internal font D, siye 4, space between TAC, FAC, Serial no. and 15 digit
9	Triangle	Height of 4mm
10a	Type-Approval Code (Cellon)	Cellon to specify based on internal process
10b	Final Assembly Code	Cellon manufacturing batch indication
10c	Pick number	Cellon manufacturing pick number optional
10d	Check digit	Cellon optional field
11	Product code number	Siemens unique identification number (Siemens) (see variant list for specific numbers Jedi/Lunar)
12	Make in China	Indicated production location

## 10 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 29.

Check the storage capability:

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ICM MP CCQ SLI RHQ

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Internal Use Only

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- 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

**SIEMENS PTE LTD**  
**XELIBRI X5 LEVEL 2 SERVICE MANUAL**

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

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

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16	Handover to GSM1900 Including Handover Check			
17	TX GSM1900	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• PCL 1</li> <li>• BS Power = -55 dBm</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency Error</li> <li>• Phase Error RMS</li> <li>• Phase Error Peak</li> <li>• Average Power</li> <li>• Power Time Template</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
18	RX GSM1900	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• BS Power = -102 dBm</li> <li>• 50 Frames</li> <li>• middle BCCH</li> </ul>	<ul style="list-style-type: none"> <li>• RX Level</li> <li>• RX Qual</li> <li>• BER Class Ib</li> <li>• BER Class II</li> <li>• BER Erased Frames</li> </ul>	<ul style="list-style-type: none"> <li>• GSM Spec.</li> </ul>
19	Echo Test	<ul style="list-style-type: none"> <li>• high TCH</li> <li>• PCL 1</li> <li>• BS Power = -70 dBm</li> <li>• middle BCCH</li> </ul>		<ul style="list-style-type: none"> <li>• individual check</li> </ul>

**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).

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 2 different “Test-SIM-Cards” in use

a) Test SIM from the company “**ORGA**”

Pin 1 No: 0000  
PUK 1: 12345678

Pin 2 No: 0000  
PUK 2: 23456789

b) Test SIM from the company “**T-D1**”

Pin 1 No: 1234  
PUK 1: 76543210

Pin 2 No: 5678  
PUK 2: 98765432

## Annex 2

### Battery – Date – Code overview

#### Varta

Date code example → N 9 A VA

Year (N:2001, O:2002...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Hitachi / Maxwell

Date code example → N 9 A MX

Year (N:2001, O:2002...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Sanyo

Date code example → N 9 A SY

Year (N:2001, O:2002...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### NEC

Date code example → N 8 A NT

Year (N:2001, O:2002...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Panasonic

Date code example → O N A PAN

Year (N:2001, O:2002...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)

#### Sony

Date code example → P N A SO

Year (O:2002, P:2003...) →  
Month (1:Jan, 2:Feb,...9:Sep, O:Oct, N:Nov, D:Dec) →  
Revision Letter (A, B,...) →

Supplier Code  
(Maker's marking)