



Sony Ericsson

Test Instructions

- mechanical -



X10i, X10a, SO-01B

**CONTENTS**

1	0BPre-Test Preparations	4
1.1	3BHardware	4
1.1.1	9BLiquid Intrusion indicator inspection.....	4
1.2	4BSoftware.....	5
1.2.1	Software update	5
1.2.2	X10/SO-01B Gesture Lock Reset	6
2	1BTests	7
2.1	5BService Test Mode	7
2.2	6BService Tests.....	8
2.2.1	Keyboard & Switch	8
2.2.2	Touch Screen	8
2.2.3	Display	8
2.2.4	LED/Illumination.....	9
2.2.5	Speaker	9
2.2.6	Earphone	9
2.2.7	Microphone.....	10
2.2.8	Secondary Microphone (N/A)	10
2.2.9	Vibrator	10
2.2.10	Camera.....	11
2.2.11	Secondary Camera (N/A)	11
2.2.12	Flash LED	11
2.2.13	Bluetooth	12
2.2.14	WLAN	12
2.2.15	GPS	12
2.2.16	Compass.....	13
2.2.17	Accelerometer	13
2.2.18	Ambient Light Sensor (N/A)	14
2.2.19	Proximity switch	14
2.2.20	Real time clock.....	14
2.2.21	Total call time	15
2.2.22	External Memory	15
2.2.23	Security.....	15
2.2.24	FM Radio (N/A)	16
2.2.25	Battery test	16
2.2.26	Flip slider counter (N/A)	16
2.2.27	Verify certificates (N/A).....	16
2.2.28	IrDA Test (N/A)	16
2.2.29	HDMI Test (N/A).....	16
2.3	7BManual Tests	17
2.3.1	31BSIM.....	17
2.3.2	On/Off key test	17
2.3.3	Home key test.....	17
2.3.4	Light sensor/Brightness.....	18
2.3.5	32BBattery charging.....	18
2.4	Network Test	19
2.4.1	34BOn-the-air call to mobile (no UMTS network available)	19

2.4.2	35B	On-the-air call to mobile (UMTS network available).....	19
3	2B	Revision History	20

***For general information about test procedures, refer to
1220-1333: Generic Repair Manual - mechanical***



1 Pre-Test Preparations

1.1 Hardware

1.1.1 Liquid Intrusion indicator inspection

Before starting any tests the liquid intrusion indicator has to be checked.

The indicator is located as shown in this picture after the battery cover is removed.

If affected (red color) - handle the phone according to your local directives.

If not affected by liquid, proceed to the 'Pre-Test Preparation' below.





Pre-Test Preparations

1.2 Software

1.2.1 Software update

1.2.1.1 Software version verification











Check the software version of the phone for fault verification, you find latest improvements on the support pages under the support news

<http://www.sonyericsson.com/cws/marketingurlportal?pageid=key.SupportZone.Overview>

Following below key sequence to check Phone Firmware/Android Version:











Start up→Press Home key→Settings→About phone→Check Firmware/Android version (1.6, 2.0/2.1 or 2.3).

If the Firmware Version is 1.6:

- Start up the phone and press the Menu key () and Back key () as follows:
- Pressing Key Sequences: Menu Back Back Menu Back Menu Menu Back
(       )

Note: Please make sure the phone is in LOCK status when pressing these keys to get into the Service menu.

If the Firmware Version is 2.0/2.1:

- Start up the phone and press the Home key () and Back key () as follows:
- Pressing Key Sequences: Home Back Back Home Back Home Home Back
(       )

Note: Please make sure the phone is in LOCK status when pressing these keys to get into the Service menu.

If the Android Version is 2.3:

- Start up the phone and Press keypad combination: *##7378423##*

- select 'Service info'
- select 'Software info'
- check the software file revisions and, if needed, update as described below

For more information, refer to 1220-1333: Generic Repair Manual - mechanical



1.2.1.2 Software version update

Mandatory first repair action!

Use the EC700 Micro USB to USB cable for this purpose!

Do not use the SEPI equipment!

Install a fully charged battery, ensure the phone is powered off and proceed as follows:

- Open the Emma application and log in
- Press and keep the Back key down on the phone, connect the phone to the USB cable and then release the Back key.
- Select the appropriate service and follow the on-screen instructions.

1.2.2 X10/SO-01B Gesture Lock Reset

Install a fully charged battery, ensure the phone is powered off and proceed as follows:

- Open the Emma application and log in
- Press and keep the Back key down on the phone, connect the phone to the USB cable and release the Back key.
- When prompted, select the 'X10/SO-01B Gesture Lock Reset' service and Flash.



2 Tests

2.1 Service Test Mode

Note: Please make sure the phone is in LOCK status when pressing these keys to get into the Service menu while firmware version is 1.6 or 2.0/2.1!

Start up the phone and enter the service menus:

- If the Firmware version is 1.6:

press the Menu key and Back key in the following order:
Menu Back Back Menu Back Menu Menu Back

(       )

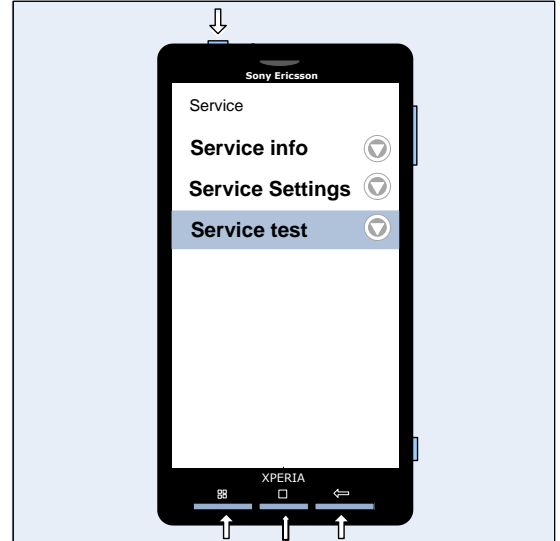
- If the Firmware version is 2.0/2.1:

press the Home key and Back key in the following order:
Home Back Back Home Back Home Home Back

(       )

- If the Android version is 2.3:

Press keypad combination: *##7378423#*#*



- select 'Service tests'
- select one of the tests and follow the test instructions as described below
- to stop the test and return to the 'Service tests' menu, press the Back key

For more information, refer to
1220-1333: Generic Repair Manual - mechanical



Tests

2.2 Service Tests

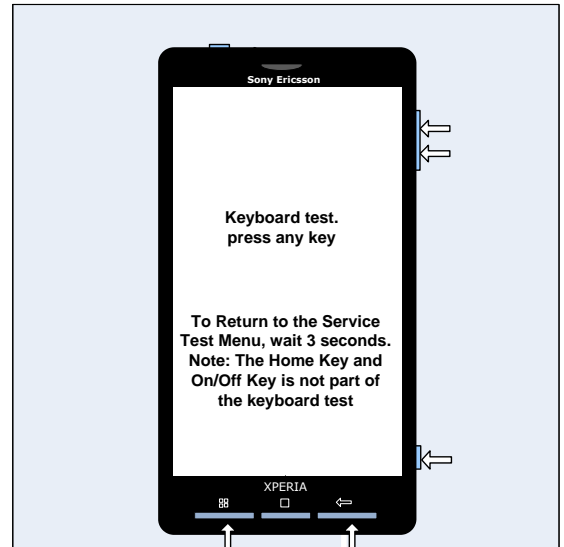
2.2.1 Keyboard & Switch

Note: The Home Key and On/Off key is not part of the keyboard test, which are in Manual tests.

To return to the Service Test Menu, wait 3 or 8 seconds.

Press all keys on the:

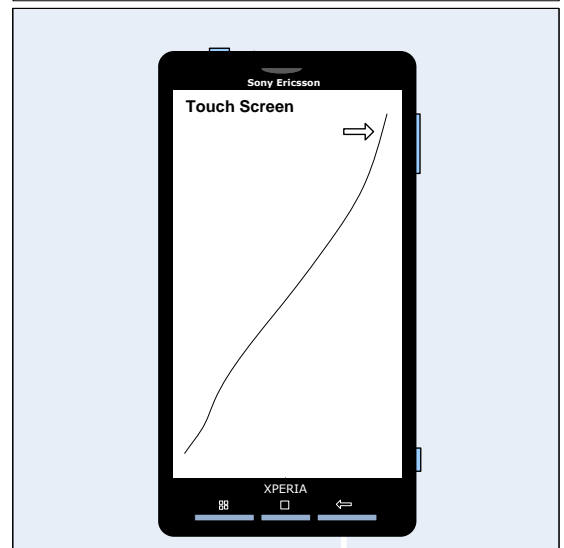
- Menu key
- Back key
- Auto focus & Camera key
- Volume up key
- Volume down key



2.2.2 Touch Screen

Move your finger across the display, a line will be drawn as you touch the display.

Press Back key to return to Service Test Menu.



2.2.3 Display

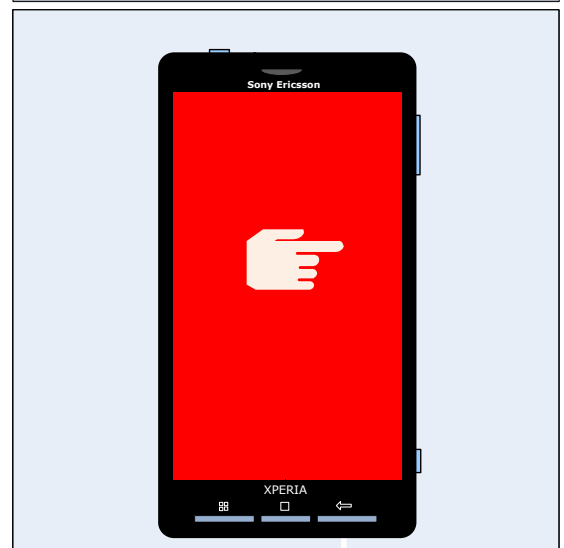
Minor variations in display brightness and colour may occur between phones.

There may be tiny bright dots on the display, so called defective pixels and occur when individual dots have malfunctioned and can not be adjusted.

Two defective pixels are considered to be acceptable.

Touch display using finger, the display will show test patterns of White, Black, Red, Green, Blue... colors on full screen. Make sure that there are no missing segments and that the colors and contrast are OK.

Press Back key to return to Service Test Menu.



2.2.4 LED/Illumination

Check that the:

- Display Backlight is changed in different sequences
Bright/Normal and Off
- Notification LED on top right corner is changed in four different sequences
Red, Green, Blue, and Off.
- Main key LED: two main key LEDs among main keys will turn on and turn off

Press Back key to return to Service Test Menu.

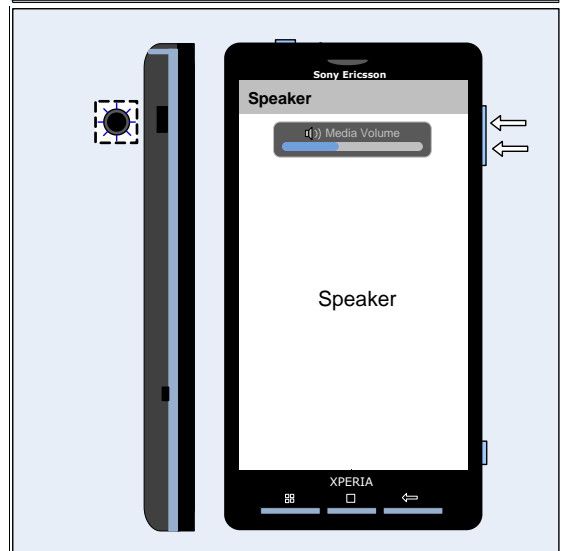


2.2.5 Speaker

Do not hold the phone close to your ear during this test!

Make sure that the sound from the speaker port on the left-top side of the phone is emitted loud and clear.
Press Volume up/Volume down key to adjust speaker volume.

Press Back key to return to Service Test Menu.

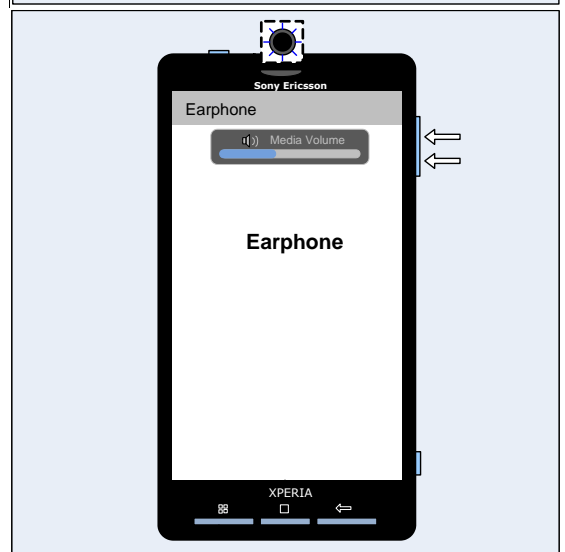


2.2.6 Earphone

Do not hold the phone close to your ear during this test!

Make sure that the sound from the Earphone port on the top of the phone is emitted loud and clear.
Press Volume up/Volume down key to adjust earphone volume.

Press Back key to return to Service Test Menu.



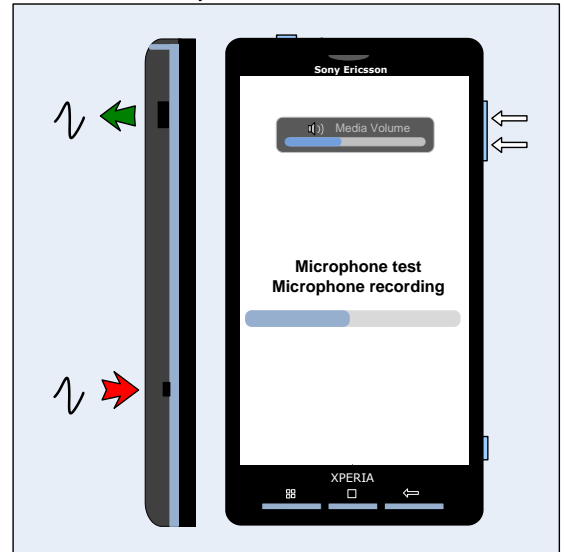
2.2.7 Microphone

The previous test 'Speaker' should have been successfully carried out before doing this test!

The phone will start to record and after approximately ten seconds the sound is played back through the Speaker. Speak into the microphone during the 'Microphone Recording' phase.

Check the quality by listening to the recording from the Speaker during the 'Playing recorded sound' phase.

Press Back key to return to Service Test Menu.



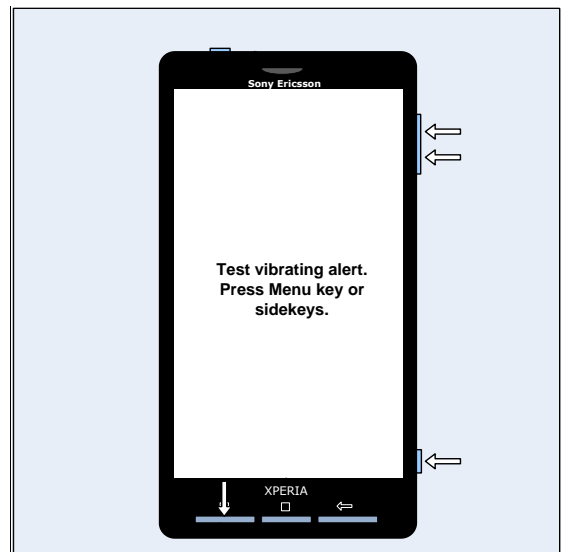
2.2.8 Secondary Microphone (N/A)

Not Applicable for X10i/X10a/SO-01B



2.2.9 Vibrator

Press the Menu key or Side keys to start the vibrator test. Press Back key to return to Service Test Menu.



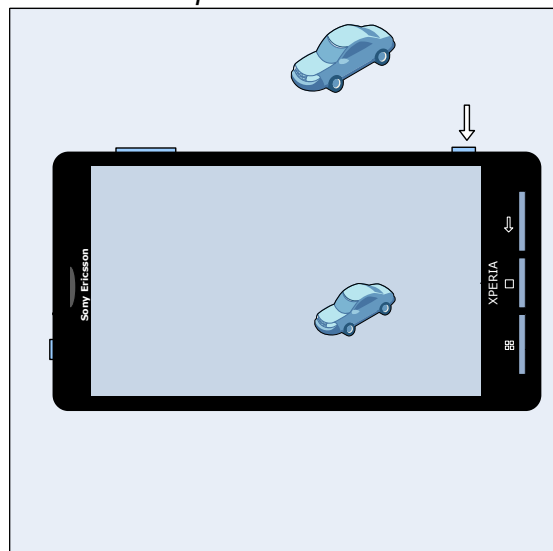
2.2.10 Camera

Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!

Aim the camera (located back of the phone) at an object and check the quality of the image shown in the display. Press the camera key to preview the photo's quality about auto focus.

Photos is taken but not saved during this test!

Press Back key to return to Service Test Menu.



2.2.11 Secondary Camera (N/A)

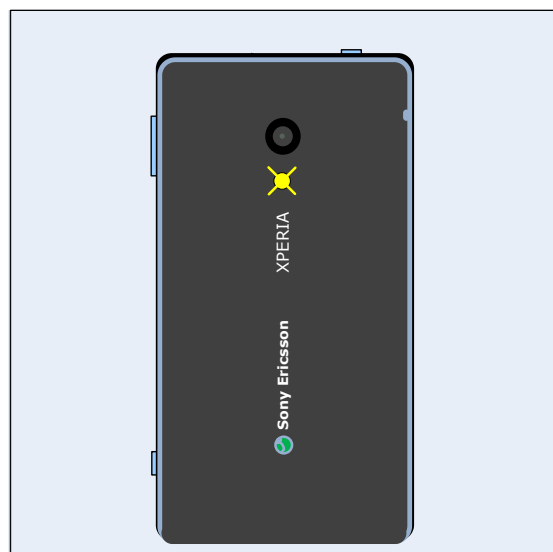
Not Applicable for X10i/X10a/SO-01B



2.2.12 Flash LED

Check the Flash LED at the back side of phone whether it's turned on.

Press Back key to return to Service Test Menu.



2.2.13 Bluetooth

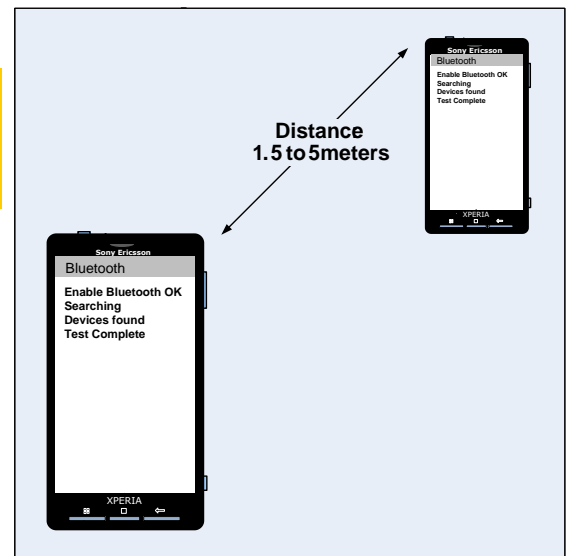
During this test, the distance between the phone and the target Bluetooth device must be 1.5 to 5 meters!

Make sure the target Bluetooth device is enabled and visible always!

The Bluetooth test will be done in following sequences:

- Step 1: Enable Bluetooth; wait 4-5 seconds, shows OK;
- Step 2: Searching;
- Step 3: Device Found list;
- Step 4: Select the Target Bluetooth Device, and Type PIN code to Pair;
- Step 5: Type the Pairing PIN code on Target Bluetooth Device also, when succeeded, it shows "Test Complete".

Press Back key to return to Service Test Menu.



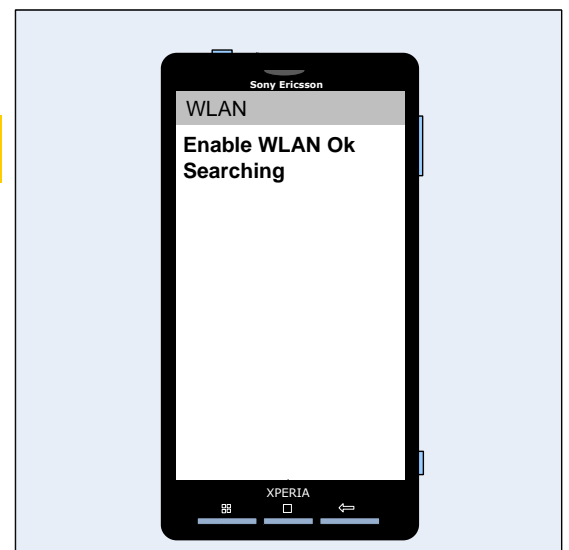
2.2.14 WLAN

Make sure there's WLAN network before performing this test.

The WLAN test will be done in following sequences:

- Step 1: Enable WLAN; wait 4-5 seconds, shows OK;
- Step 2: Searching;
- Step 3: Access points Found list;
- Step 4: Select the Target WLAN network, and Type Password to get connection;
- Step 5: when Connection succeeded, it shows "Test Complete".

Press Back key to return to Service Test Menu.

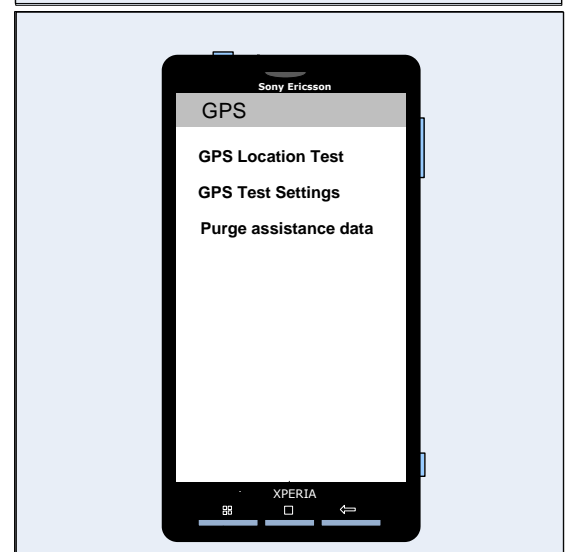


2.2.15 GPS

Enter GPS Location Test, wait some time to get GPS location data.

Press Back key to return to Service Test Menu.

**For GPS testing, refer to
1220-1333: Generic Repair Manual – mechanical**



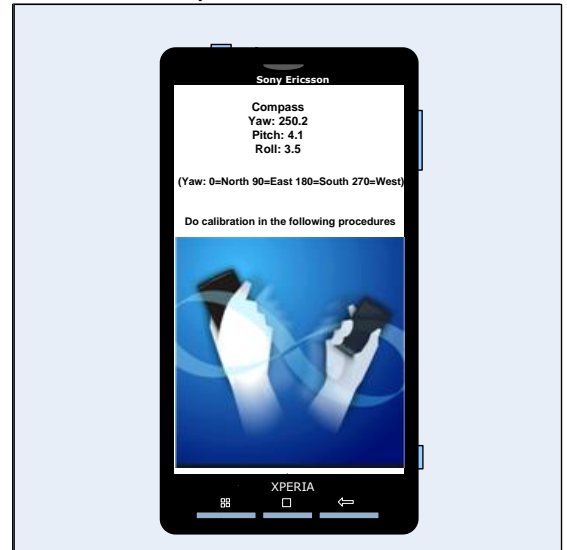
2.2.16 Compass

Do calibration with hand movements as shown in the phone, and then check

The actual direction with measured value.

(Yaw:0=North, 90=East, 180=South, 270=West)

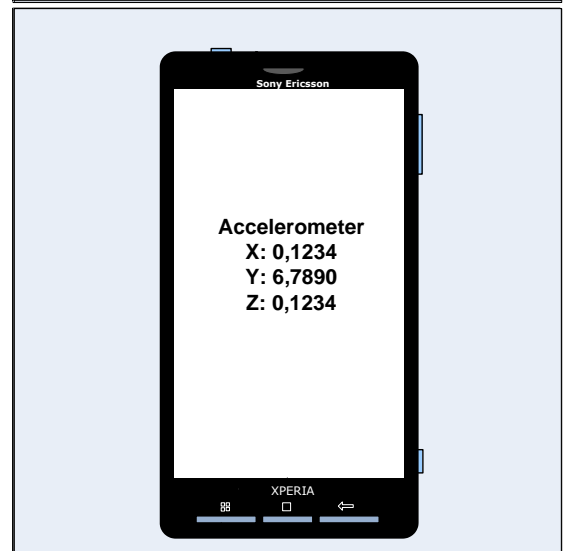
Press Back key to return to Service Test Menu.



2.2.17 Accelerometer

The accelerometer test displays the actual position of the phone as a 3D coordinate X:Y:Z

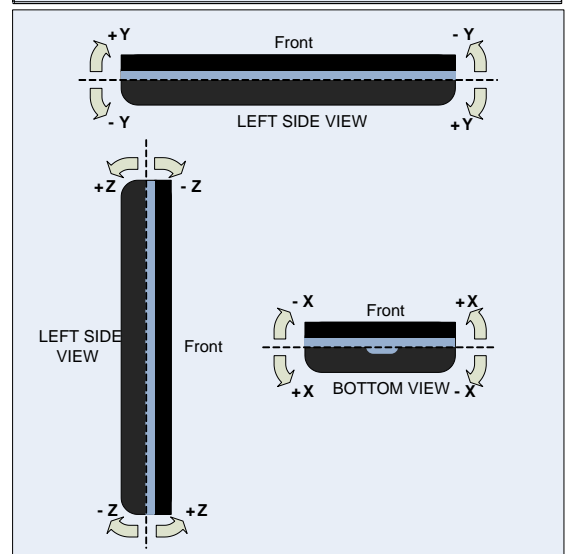
Press Back key to return to Service Test Menu.



By tilting the phone in various directions, the X:Y:Z values will change in size and polarity depending on angle and direction as shown in the adjacent picture.

Check by tilting the phone that the X:Y:Z values shown in the display are in accordance with the tilting shown in the picture.

Press Back key to return to Service Test Menu.



2.2.18 Ambient Light Sensor (N/A)

Not Applicable for X10i/X10a/SO-01B

2.2.19 Proximity switch

The previous test 'Speaker' should have been successfully carried out before doing this test!

Make sure the phone is not in 'silent mode ' before performing this test.

When entering into the test, it shows "Proximity switch OFF".

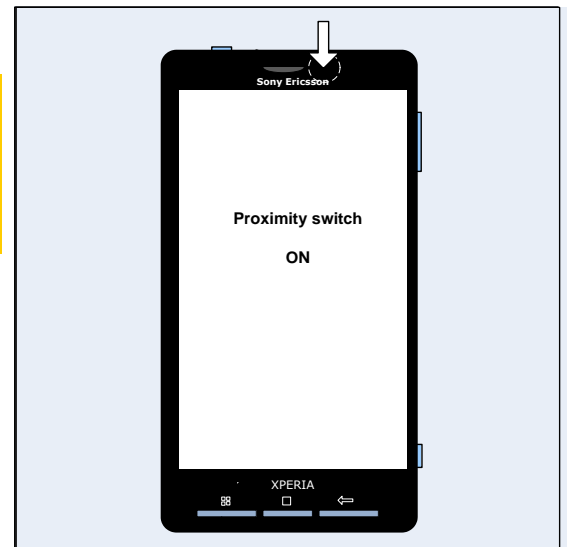
Once your finger cover the proximity switch area (on the right side of the receiver), it will show "Proximity switch ON" with a clear loud tone.

Press Back key to return to Service Test Menu.

2.2.20 Real time clock

During the actual test the text 'Real time clock test' is displayed, then followed by a message stating whether the test was OK or not.

Press Back key to return to Service Test Menu.



2.2.21 Total call time

The total call time is displayed in the format HH:MM:SS (hours:minutes:seconds).

Press Back key to return to Service Test Menu.

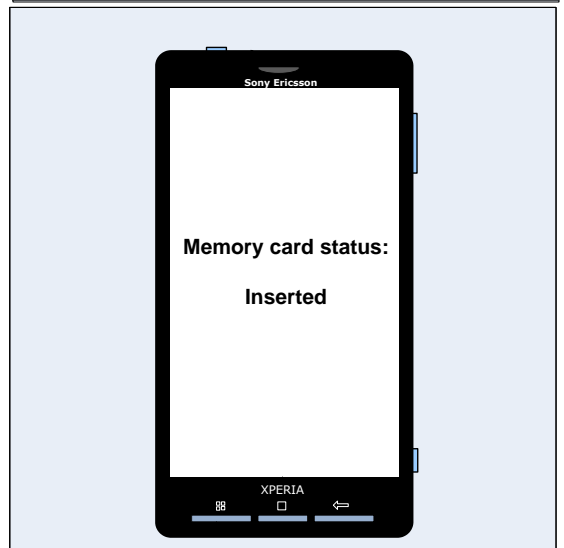


2.2.22 External Memory

A memory card should be inserted in the phone before the start of this test!

The phone should detect that the memory card is inserted.

Press Back key to return to Service Test Menu.

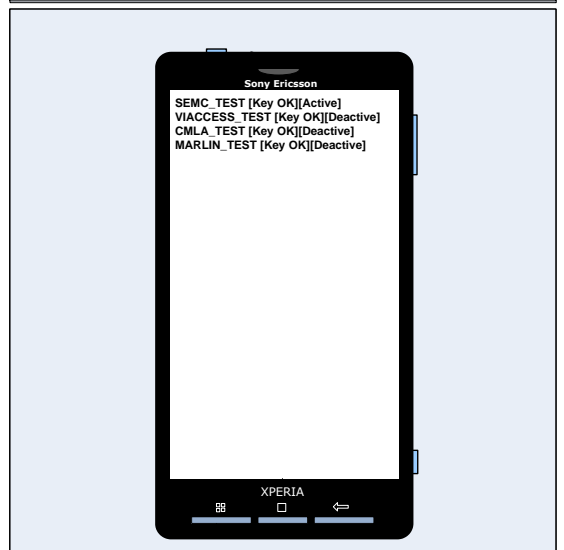


2.2.23 Security

The DRM keys are shown in the display.

There're may be some different content showed based on the different market software versions.

Press Back key to return to Service Test Menu.



2.2.24 FM Radio (N/A)

Not Applicable for X10i/X10a/SO-01B

2.2.25 Battery test

Do Not Use for X10i/X10a/SO-01B

Press Back key to return to Service Test Menu.

2.2.26 Flip slider counter (N/A)

Not Applicable for X10i/X10a/SO-01B

2.2.27 Verify certificates (N/A)**2.2.28 IrDA Test (N/A)**

Not Applicable for X10i/X10a/SO-01B

2.2.29 HDMI Test (N/A)

Not Applicable for X10i/X10a/SO-01B

Tests: Service Tests

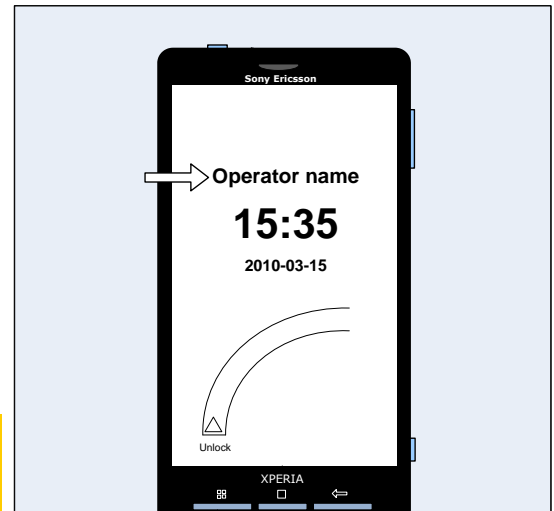
2.3 Manual Tests

2.3.1 SIM

Verify that the phone can detect a SIM card:

- insert a SIM card, install a battery and start the phone
- If the SIM card is detected by the phone, the start-up procedure will continue.
Pull down the Status Bar to see SIM card operator name.
The **SIM card operator** name will displayed above Time clock when phone is in Lock status.
- If not detected, the message 'No SIM Card in phone' will be displayed above Time clock when phone is in Lock status.

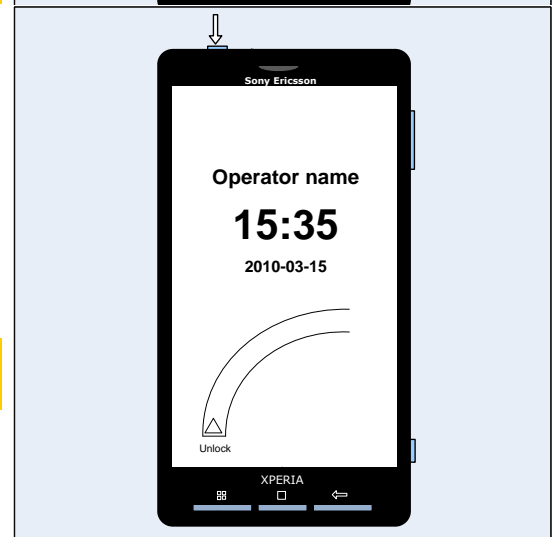
**Lock/Unlock icon: ¼ circle icon in Firmware 1.6;
Horizontal line icon in Firmware/Android 2.0/2.1/2.3**



2.3.2 On/Off key test

Push On/Off key long time to turn On/Off Phone;
Push On/Off key a short time to enter Sleep mode
or to wake it up from Sleep mode.

**Lock/Unlock icon: ¼ circle icon in Firmware 1.6;
Horizontal line icon in Firmware/Android 2.0/2.1/2.3**



2.3.3 Home key test

Whatever the phone shows now during operation, Press Home key and then phone will go back to the Stand by screen directly.

When phone is in Sleep mode, Press Home key and the Phone will be waked up.





2.3.4 Light sensor/Brightness

- If the Firmware version is 1.6 or 2.0/2.1

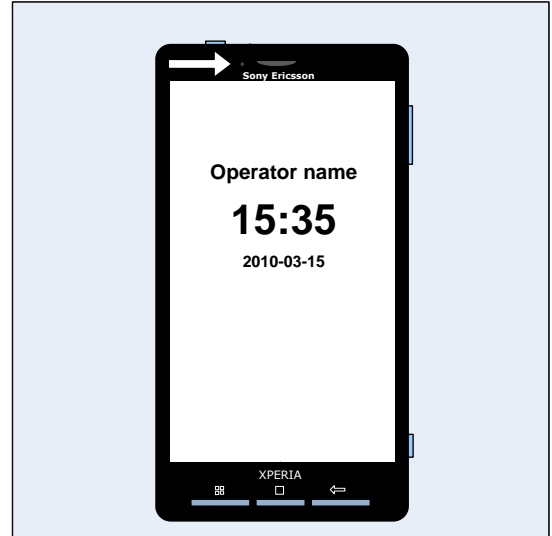
Press Menu key->settings->Sound&Display->Brightness->"Adjust automatically" is selected if have.

Cover Light sensor using finger or change phone position between bright and dark environment to see whether the Display backlight changes automatically.
Adjust brightness button position to see whether the Display backlight/brightness changes accordingly.

- If the Android version is 2.3:

Press Menu key->settings->Display->Brightness

Adjust brightness button position to see whether the Display backlight/brightness changes accordingly.

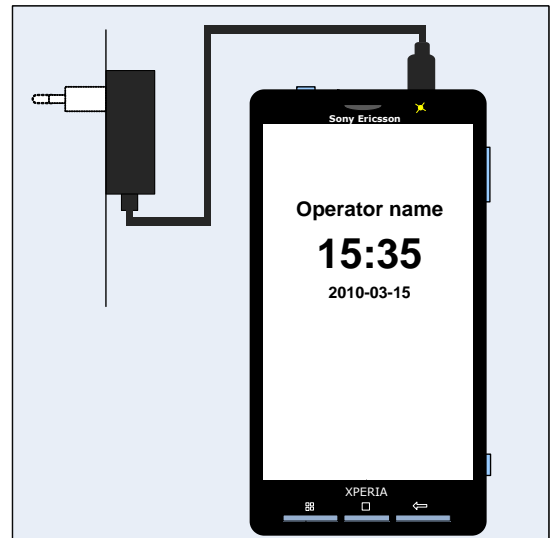


2.3.5 Battery charging

2.3.5.1 Charging by wall charger

Verify that the charging of the phone functions properly:

- Install a battery but do not start the phone
- Connect a wall charger to the Micro USB connector.
The phone will turn on automatically(In Firmware 1.6 only);
- Verify that the Notification LED shows that the phone is being charged, and that the Battery icon shows charging also.
- Remove the charger from the Micro USB connector and verify that the Notification LED no longer indicates charging, and that the Battery icon no longer shows charging.



2.3.5.2 Charging via USB

Verify that the phone can charge the battery via a USB port:

Ensure that no computer application, such as PC Suite or Emma, is active!

- install a battery but do not start the phone
- Connect a USB cable from a computer to the system connector.
The phone will turn on automatically(In Firmware 1.6 only);
- Verify that the phone is being charged by Notification LED and Battery icon;
- Remove the USB cable from the system connector and verify that Notification LED and Battery icon no longer indicates charging.



Tests

2.4 Network Test

This test can only be performed if the phone has got an activated SIM/USIM card (no Test SIM/USIM) and an available network signal!

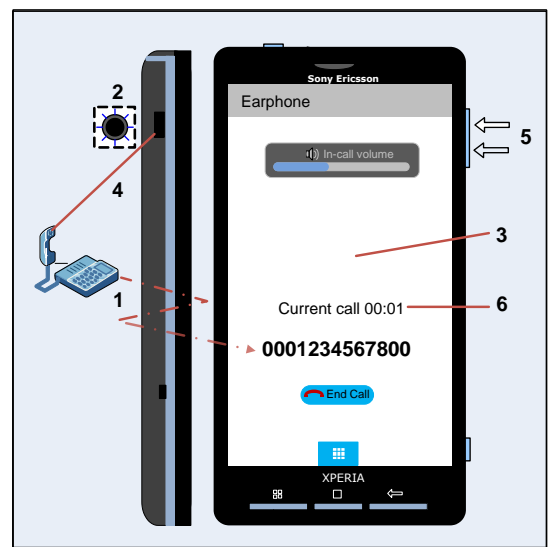
**There are two versions of the test depending on whether a UMTS network is available or not!
If a UMTS network is available, the network test has to be done separately for GSM and UMTS!**

2.4.1 On-the-air call to mobile (no UMTS network available)

To verify the radio functions (GSM) of the phone, follow the '2.4.1.1 Procedure' below

2.4.1.1 Procedure

1. Set up a call from a landline phone (PSTN)
2. Check that there is a ring signal.
3. Check that the display backlight illuminates.
4. Answer the call and check the sound quality in both phones.
5. Adjust the volume up and down with the side keys and verify that the sound level is altered.
6. End the call and check that the elapsed time is displayed and that the termination is done in a proper way.



2.4.2 On-the-air call to mobile (UMTS network available)

GSM

Go to the phone menu and set:

Press Menu key → *Settings* ⇒ *Wireless controls* ⇒ *Mobile Networks* ⇒ *Network mode* ⇒ *GSM only*

To verify the radio functions (GSM) of the phone, follow the '2.4.1.1 Procedure' above.

UMTS

Go to the phone menu and set:

Press Menu key → *Settings* ⇒ *Wireless controls* ⇒ *Mobile Networks* ⇒ *Network mode* ⇒ *WCDMA only*

Switch off the phone and then start it up again to enable search for an available UMTS signal.

Ensure that the UMTS/3G icon now is visible at the top of the display.

To verify the radio functions (UMTS) of the phone, follow the '2.4.1.1 Procedure' above.



Revision History

Rev.	Date	Changes / Comments
1	2010-03-24	Initial version of Firmware 1.6
2	2010-11-01	Update due to Software updated to Firmware 2.0/2.1
3	2011-08-01	Update due to Software updated to Android 2.3
4	2012-03-02	Update the chapter 2.2.25