



Sony Ericsson

# Test Instructions

- mechanical -



*ST18i, ST18a, SO-03C,  
Xperia™ Ray*



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



# 1 Pre-Test Preparations

## 1.1 Hardware

### 1.1.1 Water 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 cover battery 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>

- Start up the phone
  - Note: Please make sure the phone is in call setup.
- Pressing 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 Micro USB to USB cable for this purpose!**

Insert 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 volume down key on the phone, connect the phone to the USB cable and then release the volume down key.
- Select the appropriate service and follow the on-screen instructions.

## 2 Tests

### 2.1 Service Test Mode

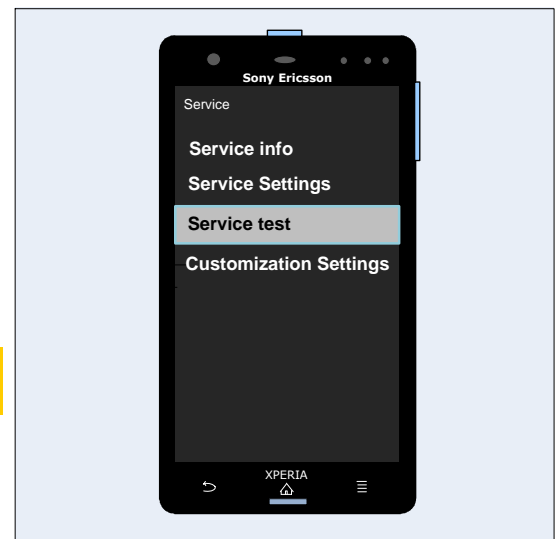
**Note: Please make sure the phone is in call setup when pressing these touching keypads to get into the Service menu!**

Start up the phone and enter the service menus:

- press the keypad combination with the following order:  
\*##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**



**The pictures to follow will show a simplified basic phone for a general visualization of the service tests!**

## Tests

## 2.2 Service Tests

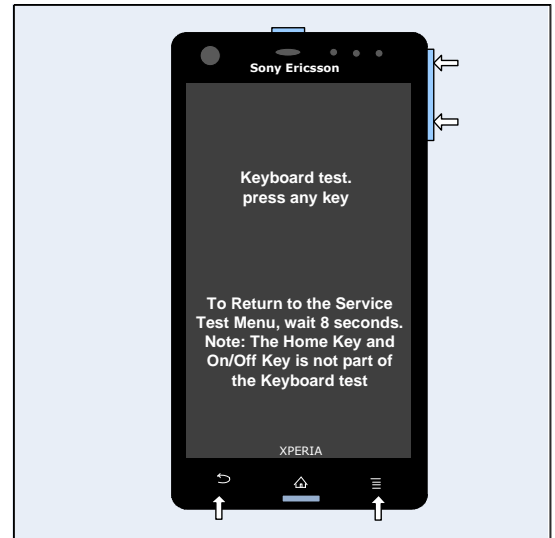
### 2.2.1 Keyboard & Switch

**Text 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 8 seconds.**

Press all keys on the:

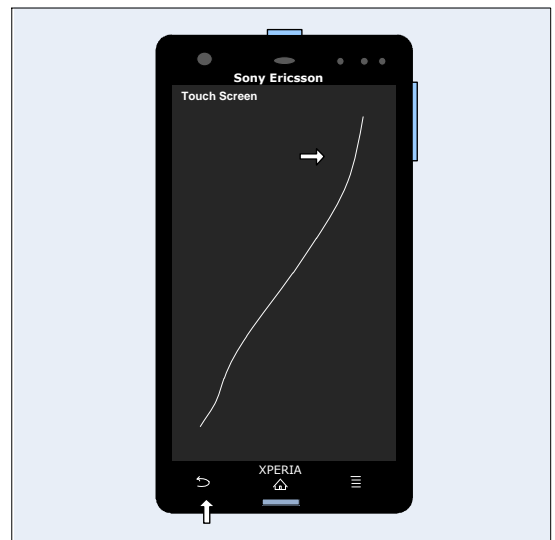
- Back key
- Menu key
- Volume up/down key



### 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 color may occur between phones.**

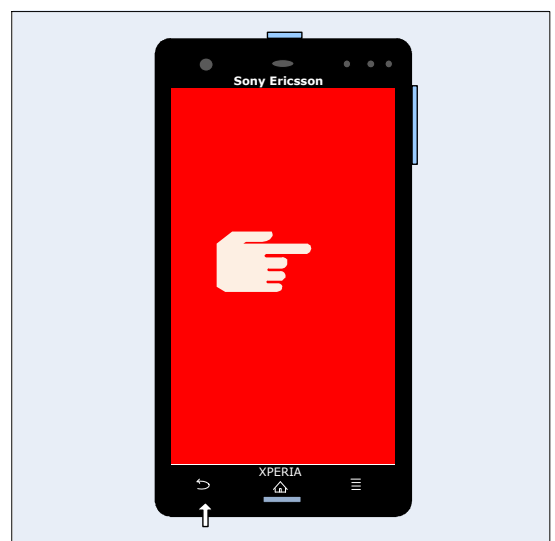
**There may be tiny bright dots on the display, so called defective pixels and occur when individual dots have malfunctioned and cannot be adjusted.**

**Two defective pixels are considered to be acceptable.**

Touch display using finger, the display will show five 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.



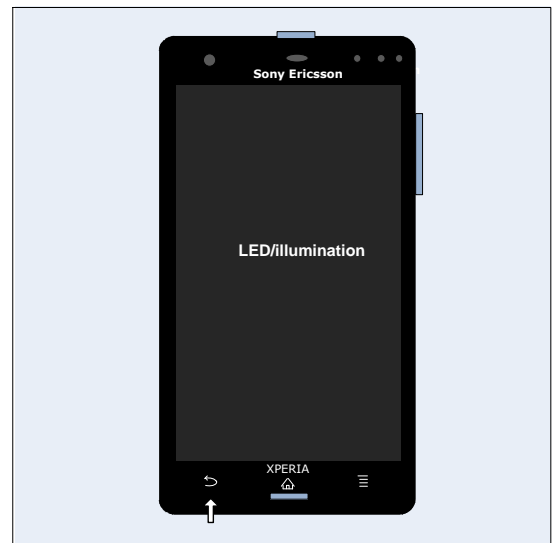
## Tests: Service Tests

### 2.2.4 LED/Illumination

Check that the:

- Display Backlight illumination goes from low to high strength back to low again.
- Notification LED on Home Key is changed, showing four colors in the sequence; Red, Green, Blue, and Off.

Press Back key to return to Service Test Menu.



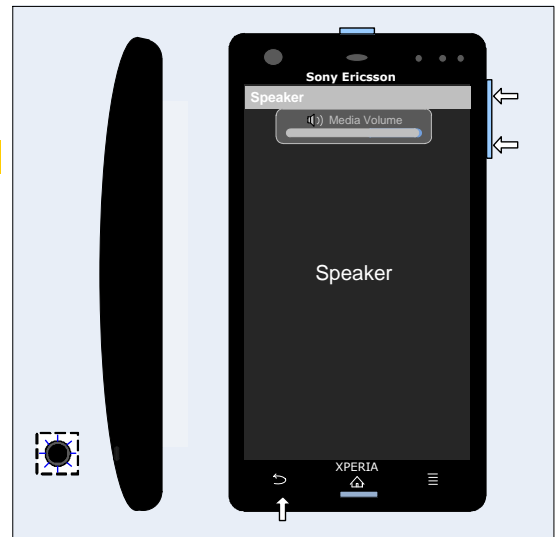
### 2.2.5 Speaker

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

Make sure that the sound from the speaker port at the bottom of the phone is emitted loud and clear and that the test include maximum volume.

Press Volume up/Volume down key to adjust speaker volume.

Press Back key to return to Service Test Menu.



### 2.2.6 Stereo speaker

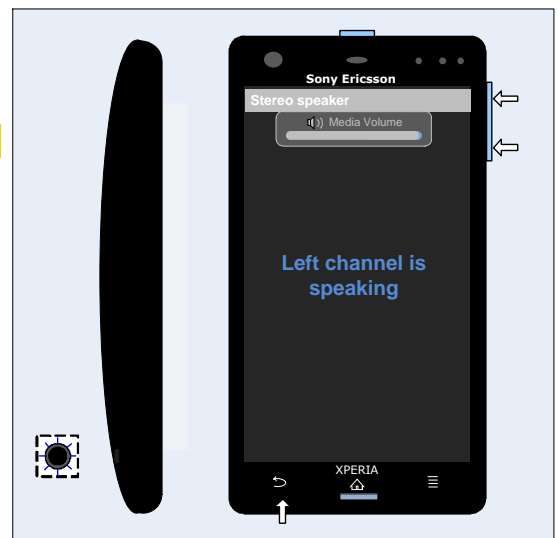
**Do not hold the phone close to your ear during this test!**

Make sure that the sound from the speaker port at the bottom of the phone is emitted loud and clear and that the test include maximum volume.

Left channel and Right channel will be tested.

Press Volume up/Volume down key to adjust speaker volume.

Press Back key to return to Service Test Menu.





## Tests: Service Tests

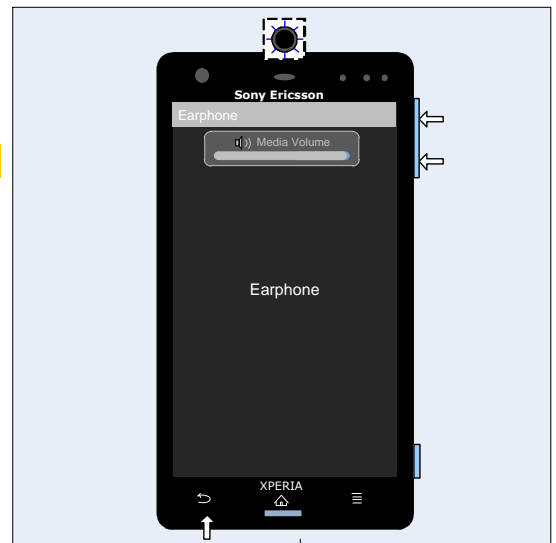
### 2.2.7 Earphone

***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 and that the test include maximum volume.

Press Volume up/Volume down key to adjust earphone volume.

Press Back key to return to Service Test Menu.



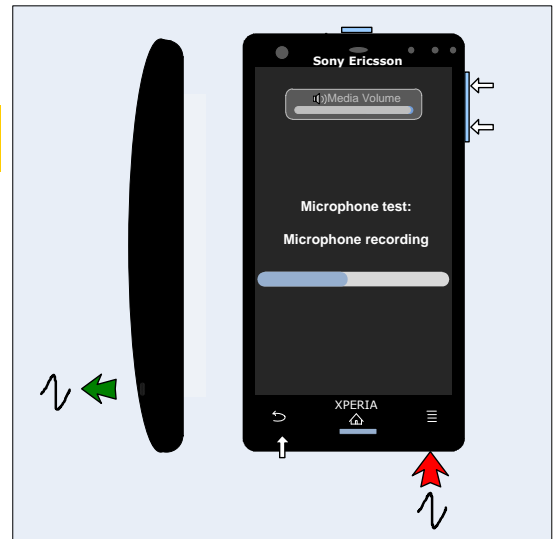
### 2.2.8 Microphone

***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 at maximum volume.

Press Back key to return to Service Test Menu.



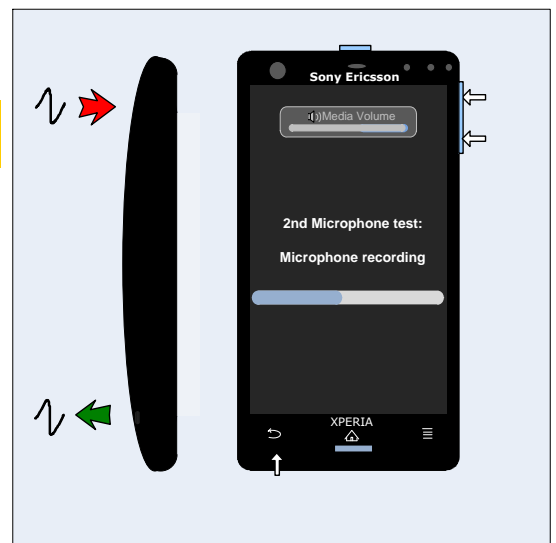
### 2.2.9 Secondary Microphone

***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 at maximum volume.

Press Back key to return to Service Test Menu.

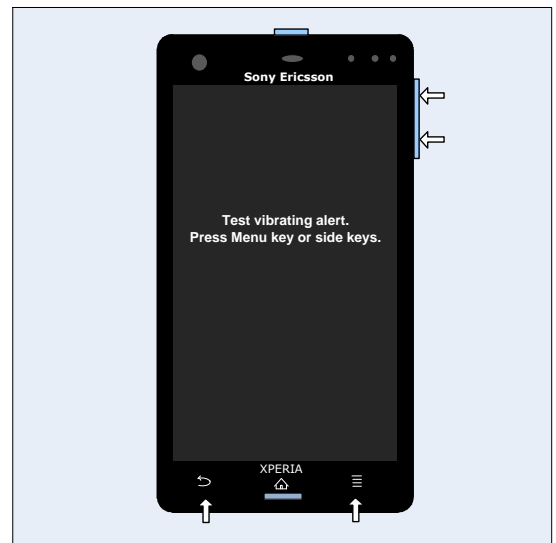


## Tests: Service Tests

### 2.2.10 Vibrator

Press the Menu key or Side keys to start the vibrator test.

Press Back key to return to Service Test Menu.



### 2.2.11 Camera

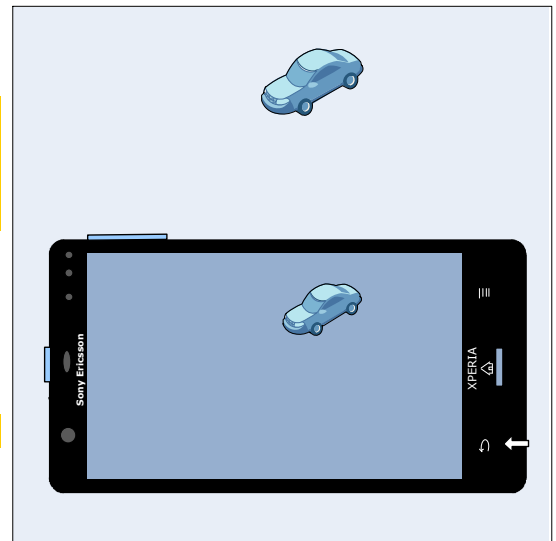
**Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!**

Aim the camera (located back of the phone) at an object and check the quality of the image shown in the display.

Touch screen to take a photo and preview the photo's quality.

**Photos is taken but not saved during this test!**

Press Back key to return to Service Test Menu.

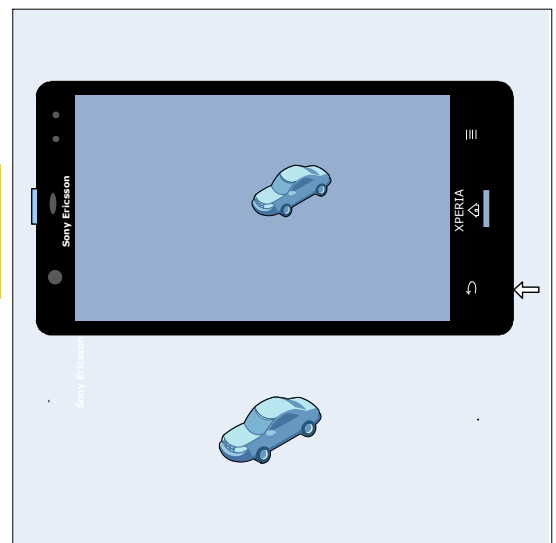


### 2.2.12 Secondary Camera

**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 in front of the phone) at an object and check the quality of the image shown in the display.

Press Back key to return to Service Test Menu.

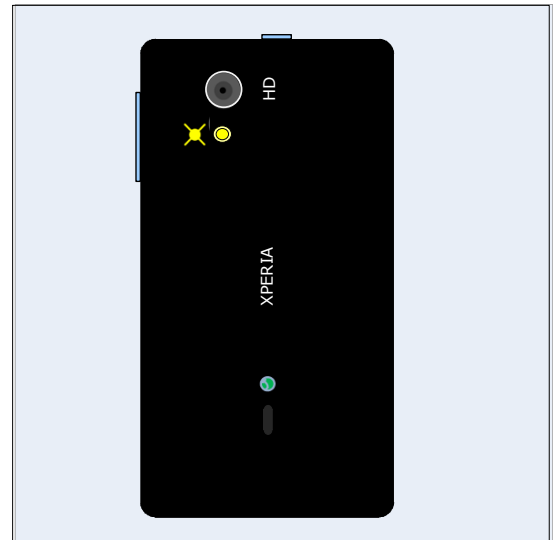


## Tests: Service Tests

### 2.2.13 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.

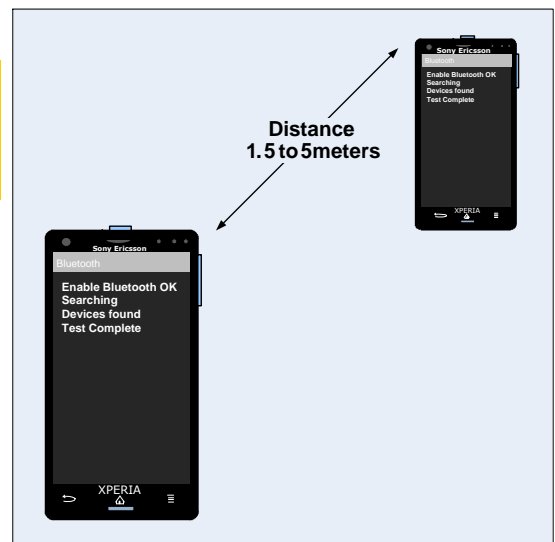


### 2.2.14 Bluetooth

**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.

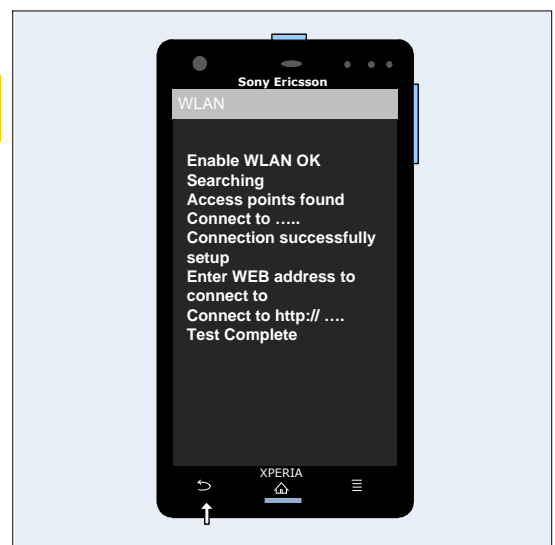


### 2.2.15 WLAN

**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: Enter a web address (ex. google.com)  
 Step 6: When Connection succeeded, it shows "Test Complete".

Press Back key to return to Service Test Menu.



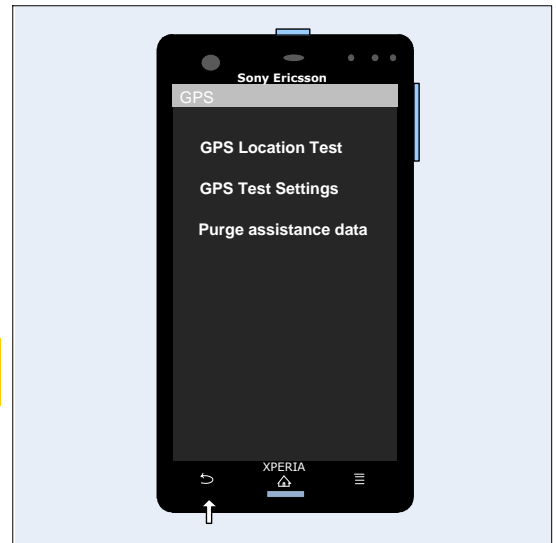
## Tests: Service Tests

### 2.2.16 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**



### 2.2.17 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.



### 2.2.18 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.

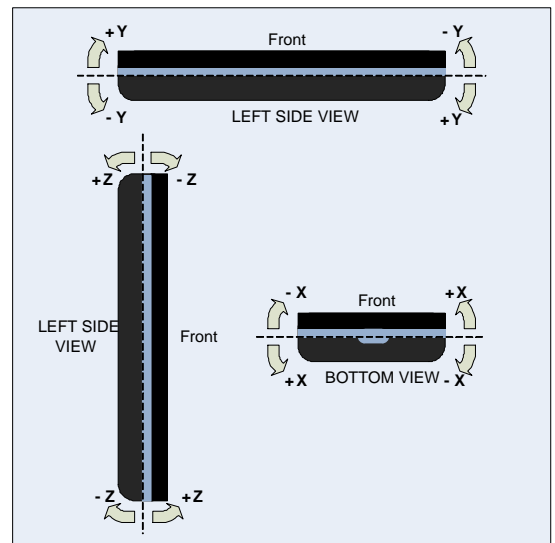


## Tests: Service Tests

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.

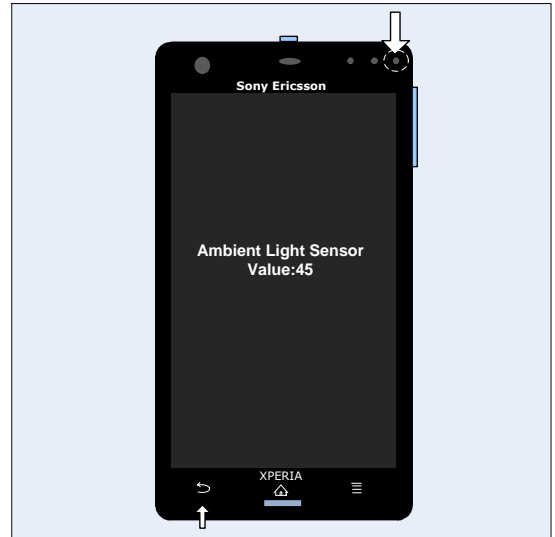
Check by tilting the phone that the X: Y: Z values shown in the display are in accordance with the tilting shown in the picture.

Press Back key to return to Service Test Menu.



### 2.2.19 Ambient Light Sensor

The Ambient light test states a value. Look that the value should be higher when the Window get lighter and should decrease when the window gets less light.



### 2.2.20 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, the screen shows "Proximity switch OFF" and a tone is emitted.

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

Press Back key to return to Service Test Menu.

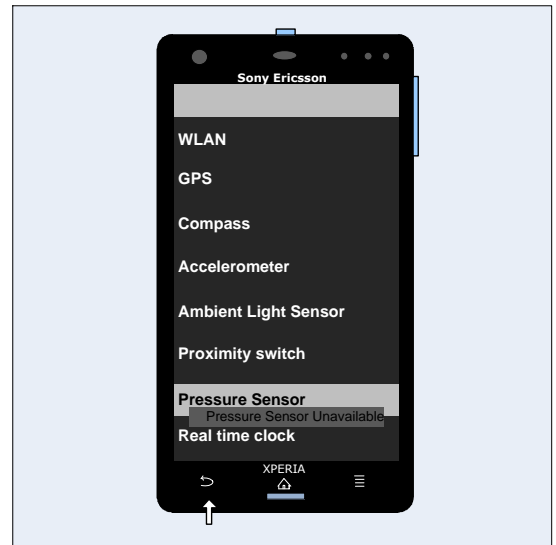


## Tests: Service Tests

### 2.2.21 Pressure Sensor

N/A

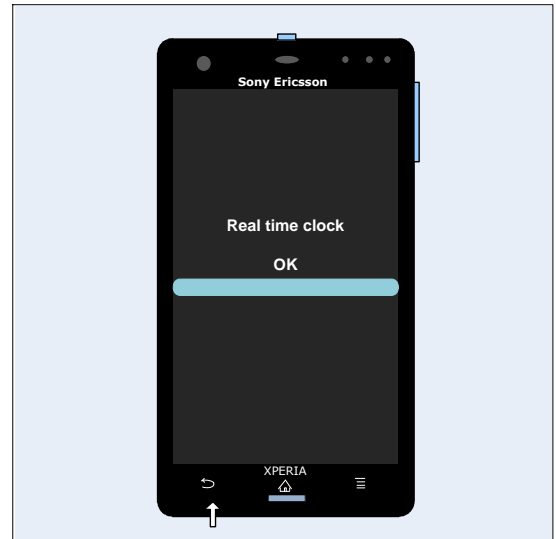
Press Back key to return to Service Test Menu.



### 2.2.22 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.

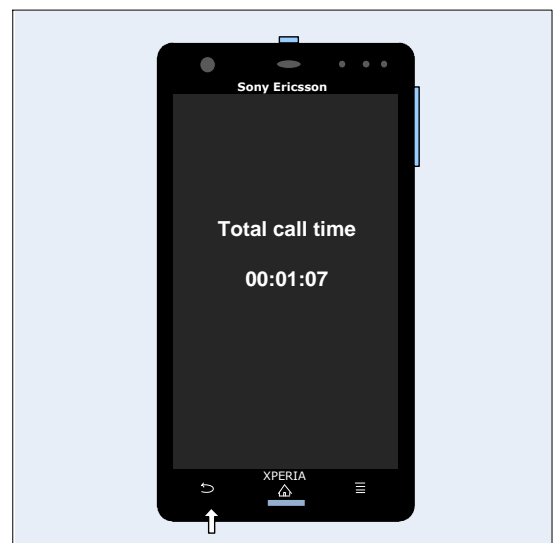
Press Back key to return to Service Test Menu.



### 2.2.23 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.



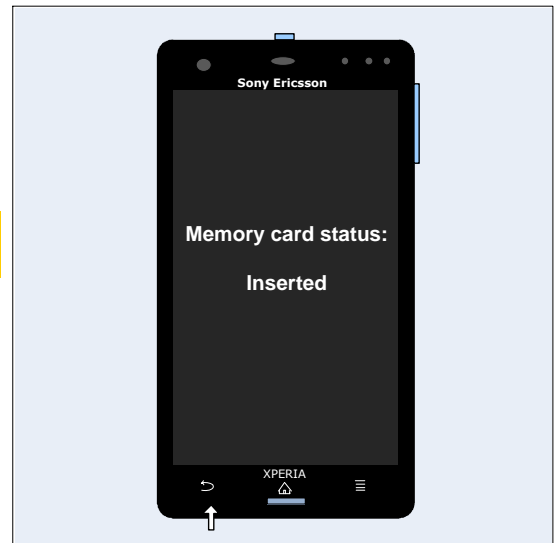
## Tests: Service Tests

### 2.2.24 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.

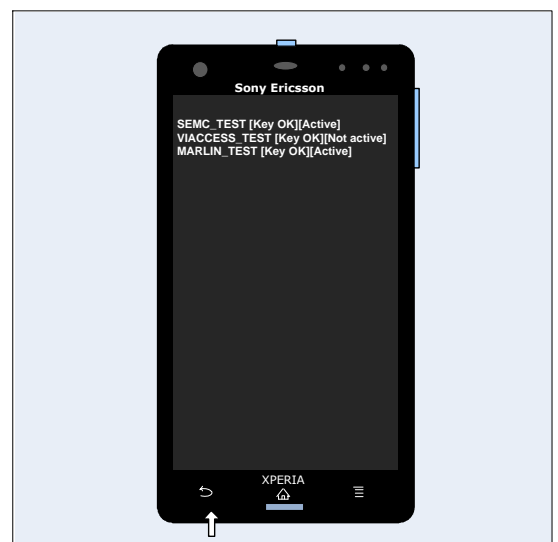


### 2.2.25 Security

The DRM keys are shown in the display.

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

Press Back key to return to Service Test Menu.



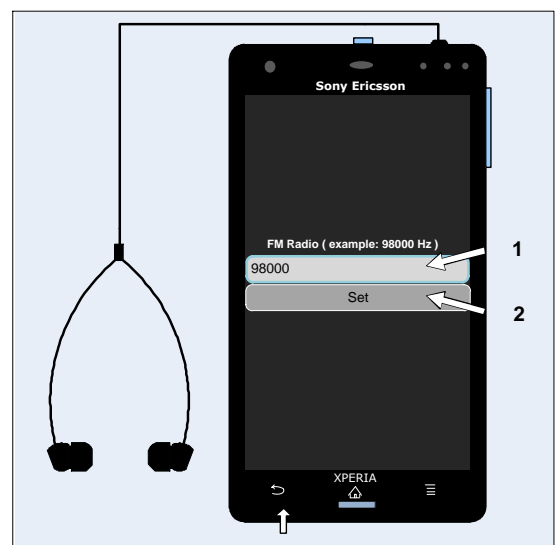
### 2.2.26 FM radio

Verify that the phone can detect a radio station:

Connect a headset and then set your local radio station in Hz!

Secure that the reception and sound quality is normal.

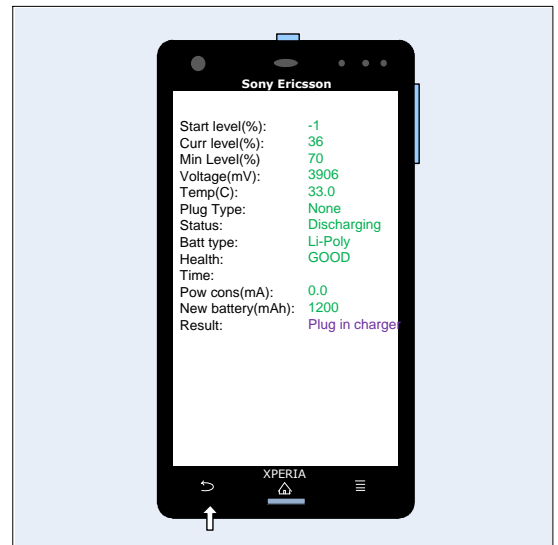
Press Back key to return to Service Test Menu.



## Tests: Service Tests

### 2.2.27 Battery test

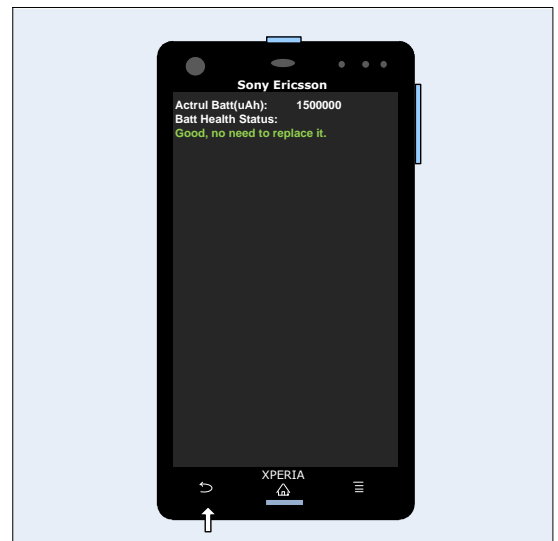
Do not use.



### 2.2.28 Battery Health test

Do not use.

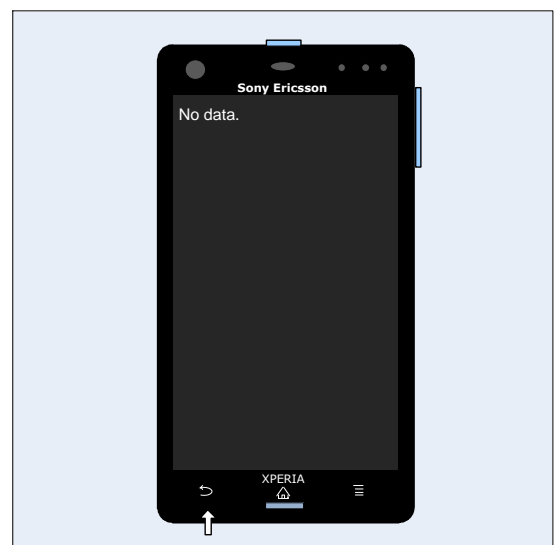
Press the Back key to return to the Service Test Menu.



### 2.2.29 Flip slider counter

N/A

Press Back key to return to Service Test Menu.



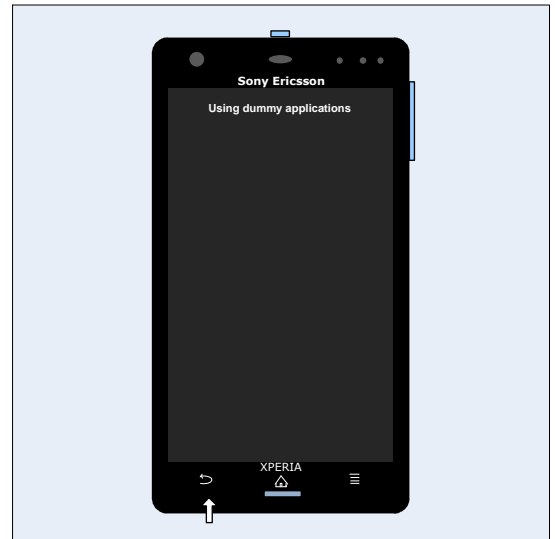


## Tests: Service Tests

### 2.2.30 Verify certificates

N/A

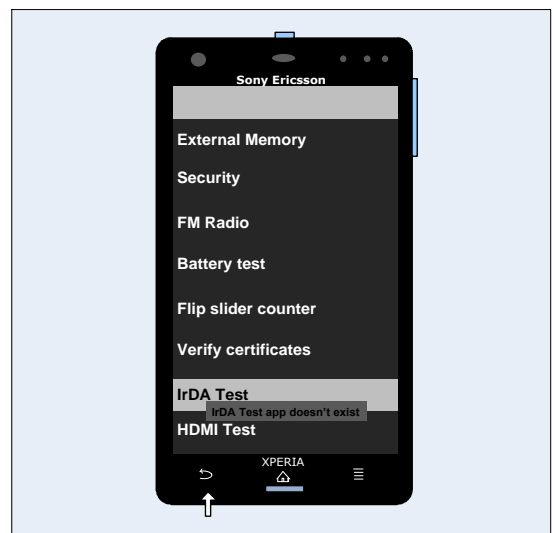
Press Back key to return to Service Test Menu.



### 2.2.31 IrDA Test

N/A

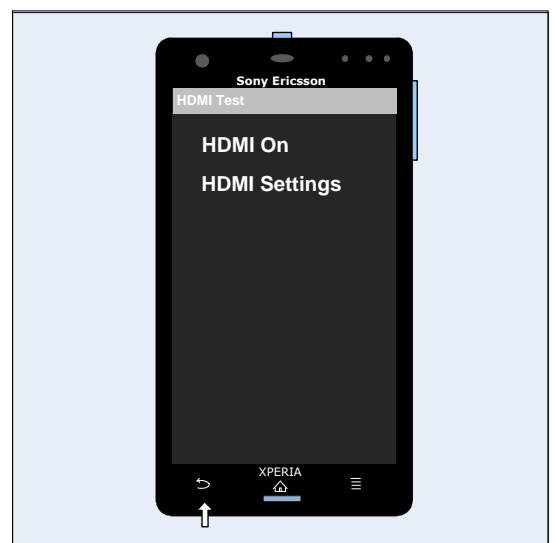
Press Back key to return to Service Test Menu.



### 2.2.32 HDMI Test

N/A

Press Back key to return to Service Test Menu.

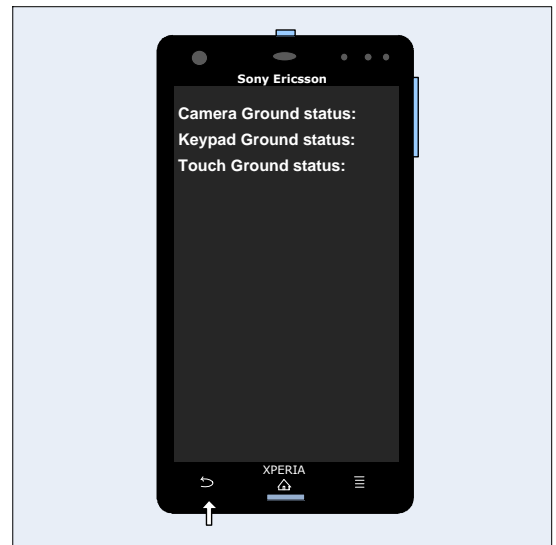


## Tests: Service Tests

### 2.2.33 Connector Ground Test

N/A

Press Back key to return to Service Test Menu.





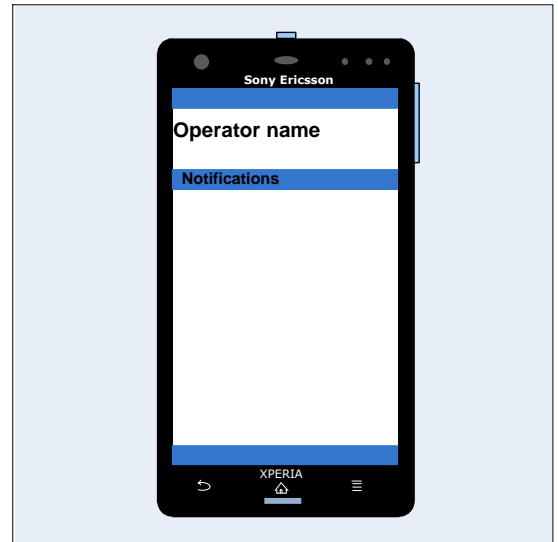
## Tests

### 2.3 Manual Tests

#### 2.3.1 SIM

Verify that the phone can detect a SIM card:

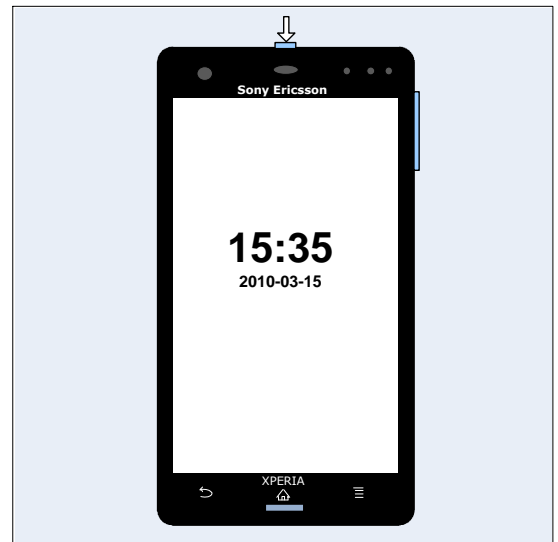
- Insert a SIM card, install a battery and start the phone.
- If the SIM card is detected by the phone, the start-up procedure will continue.
- Pull down the Status Bar (put your finger next to the receiver and drag down the menu from the Status Bar)
- to see SIM card operator name.
- The SIM card operator 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.
- Press Back key to return to Standby Menu



#### 2.3.2 On/Off key test

Press the On/Off key long time to turn phone On or Off.

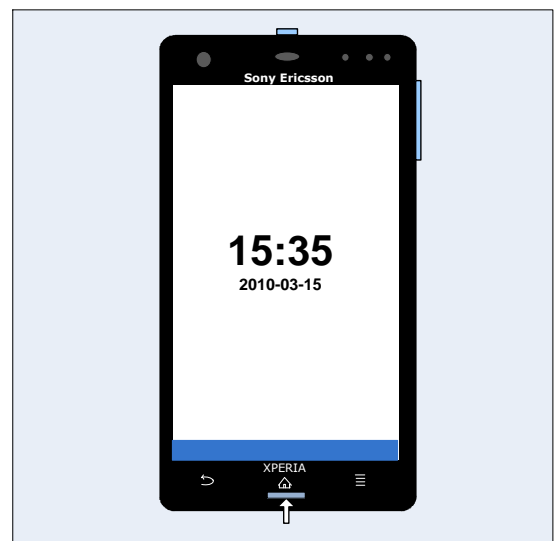
Press the On/Off key a short time to enter Sleep mode or to wake it up from Sleep mode.



#### 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 light up.





## Tests: Manual Tests

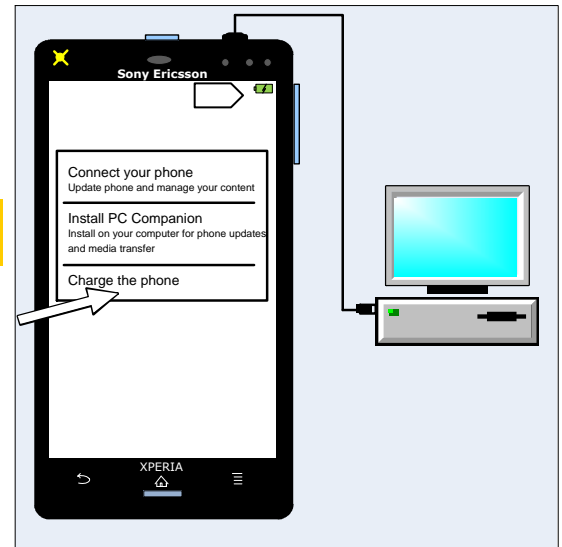
### 2.3.4 Charging via USB (Charger or Computer)

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!**

- Insert a battery but do not start the phone
- Connect a USB cable from a computer (or charger) to the system connector. The phone will turn on automatically;
- Verify that the phone is being charged by orange Notification LED and Battery icon;

Remove the USB cable from the system connector and verify that Notification LED and Battery icon no longer



## 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!**

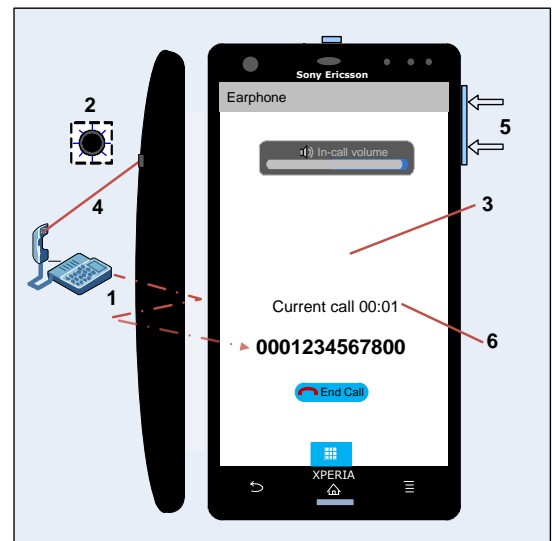
**There are two versions of the test depending on whether a UMTS network is available or not!  
If a UMTS network is available, the network test has to be done separately for GSM and UMTS!**

#### 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.



### 3 Revision History

Rev.	Date	Changes / Comments
1	2011-Aug-10	Released
2	2011-Oct-26	Chapter 1.2.1.2 text updated
3	2011-Nov-03	Add the chapter "Battery Health test"
4	2012-Mar-09	Update the chapter 2.2.27 and 2.2.28