



Sony Ericsson

Test Instructions

- mechanical -



Xperia™ active

ST17i, ST17a



CONTENTS

1	Pre-Test Preparations	4
1.1	Process flow – Water Resistant Test (WRT) for incoming units.....	4
1.2	Hardware.....	5
1.2.1	Water indicator inspection.....	5
1.3	Software.....	6
1.3.1	Software update.....	6
2	Tests	7
2.1	Service Test Mode.....	7
2.2	Service 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	Stereo speaker	9
2.2.7	Earphone	10
2.2.8	Microphone	10
2.2.9	Secondary Microphone	10
2.2.10	Vibrator	11
2.2.11	Camera	11
2.2.12	Secondary Camera	11
2.2.13	Flash LED	12
2.2.14	Bluetooth.....	12
2.2.15	WLAN.....	12
2.2.16	GPS.....	13
2.2.17	Compass	13
2.2.18	Accelerometer.....	14
2.2.19	Ambient Light Sensor	15
2.2.20	Proximity switch	15
2.2.21	Pressure Sensor	15
2.2.22	Water Proof test.....	16
2.2.23	Real time clock	19
2.2.24	Total call time.....	19
2.2.25	External Memory.....	19
2.2.26	Security	20
2.2.27	FM radio.....	20
2.2.28	Battery test.....	20
2.2.29	Battery Health test.....	21
2.2.30	Flip slider counter	21
2.2.31	Verify certificates.....	21
2.2.32	IrDA Test.....	22
2.2.33	HDMI Test	22
2.2.34	Connector Ground Test	22



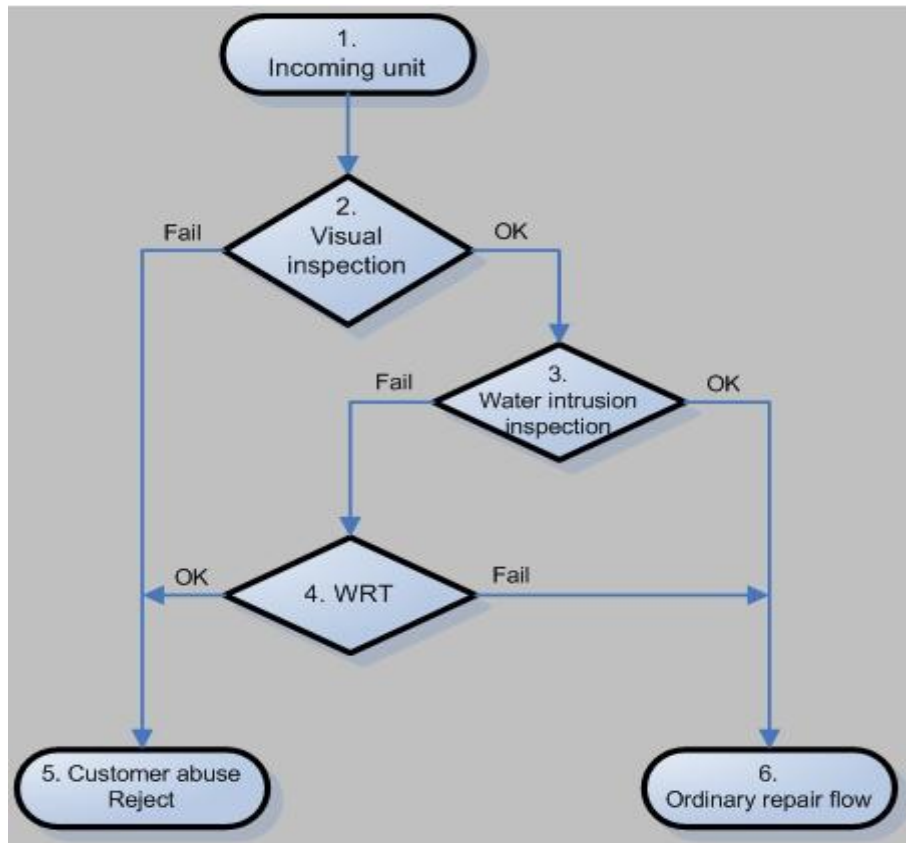
2.3	Manual Tests	23
2.3.1	SIM	23
2.3.2	On/Off key test	23
2.3.3	Home key test	23
2.3.4	Charging via USB (Charger or Computer).....	24
2.4	Network Test.....	25
2.4.1	On-the-air call to mobile (no UMTS network available).....	25
2.4.2	On-the-air call to mobile (UMTS network available)	25
3	Revision History	26

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



1 Pre-Test Preparations

1.1 Process flow – Water Resistant Test (WRT) for incoming units



This process flow is a complement to the process flow in the *1220-1333 Generic Repair Manual*.

1. Unpack and handle the unit according to your local instruction and check of warranty.
2. Try to determine whether the unit has been exposed to abuse by doing a close general visual inspection, according to chapter 4 *1220-1333 Generic Repair Manual*.
3. General condition inspection of the red sealings at the Cap Audio, Cap USB and Cover Battery. Check the water indicator. This check up will give you an indication whether the unit has been in contact with liquid.
4. Perform a water resistant test to verify if the unit is water resistant or not.
5. The unit must be rejected if the visual inspection or the water resistant test shows any kind of abuse of the unit.
6. Otherwise shall the unit be handled in the ordinary repair flow.

Pre-Test Preparations

1.2 Hardware

1.2.1 Water indicator inspection

Before starting any tests, make a general inspection of the unit. If the water indicators has been affected or the unit indicates any kind of water damaged, perform the WRT test to confirm if the unit still is water resistant, see chapter 1.1

The indicators are located as shown in these pictures after the Battery Cover and the Inner Frame is removed.

If the water indicators are affected (red color) **and** the WRT test proves that the unit is water resistant then handle the phone according to your local directives.

If the water indicators isn't affected or the WRT test prove that the unit **isn't** water resistant, proceed to the 'Pre-Test Preparation' below.





Pre-Test Preparations

1.3 Software

1.3.1 Software update

1.3.1.1 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
- Make sure the phone is in call setup.
- 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

1.3.1.2 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 down 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

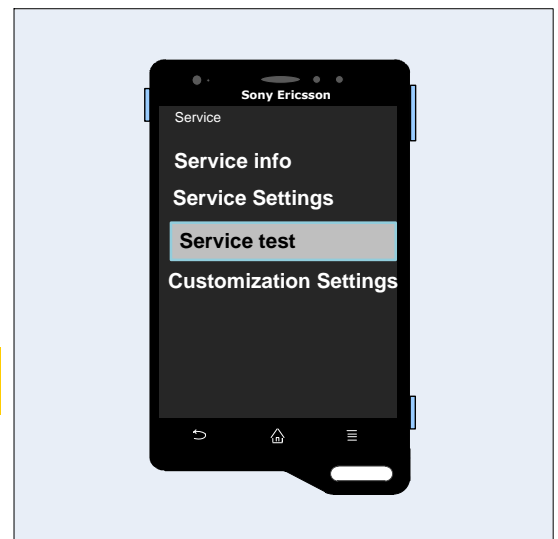
Note: Please make sure the phone is in call setup when pressing these touching keypads to get into the Service menu.

Start up the phone and enter the service menus:

- press the keypad combination: ***##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

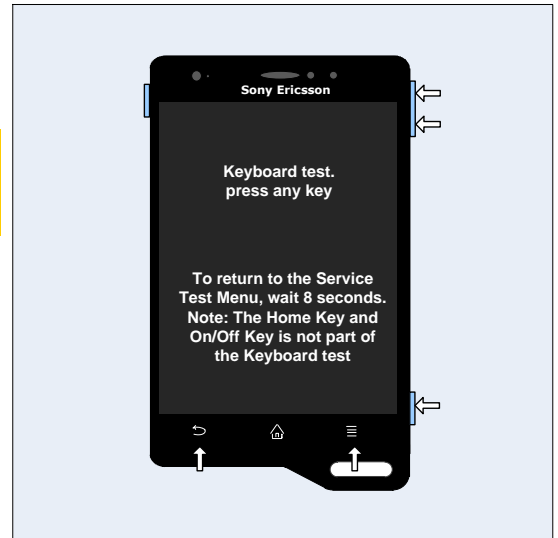
2.2.1 Keyboard & Switch

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 for 8 seconds.

Press all keys on the:

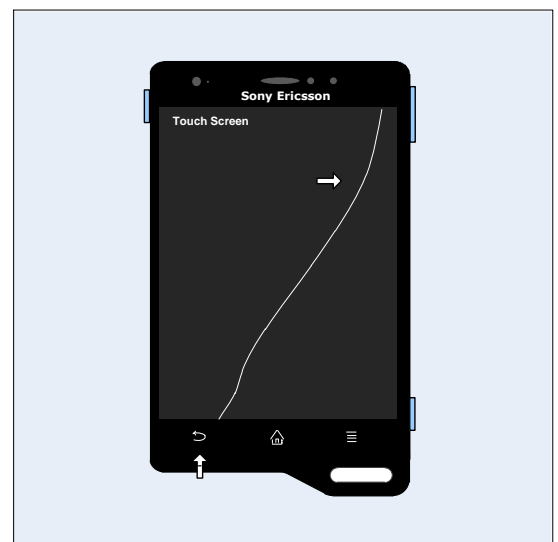
- Back key
- Menu key
- Auto Focus key
- Volume Down key
- Volume Up key



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.

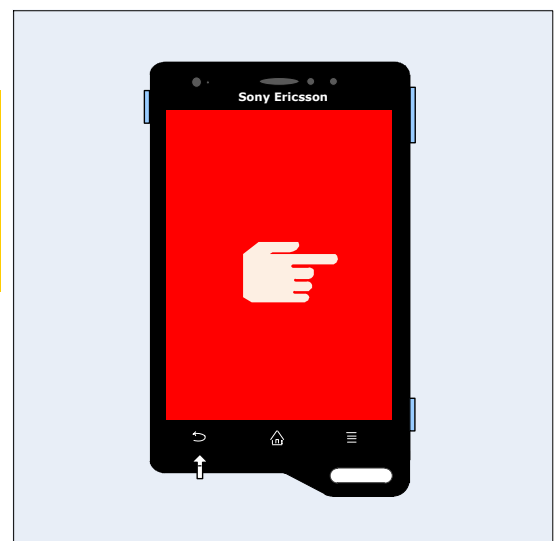
There may be tiny bright dots on the display, so called defective pixels and occur when individual dots have malfunctioned and cannot be adjusted.

Two defective pixels are considered to be acceptable.

Touch display using finger, the display will show six test patterns of White, Black, Red, Green, Blue and Rainbow 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.



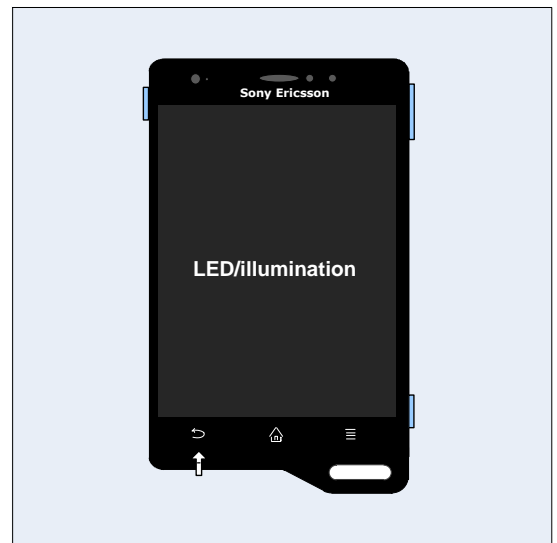
Tests: Service Tests

2.2.4 LED/Illumination

Check that the:

- Display backlight illumination goes from low to high strength back to low again.
- Notification LED on top left corner is changed, showing four colors in the sequence; Red, Green, Blue, and Off.
- Back, Home and Menu key backlight illuminations.

Press Back key to return to Service Test Menu.



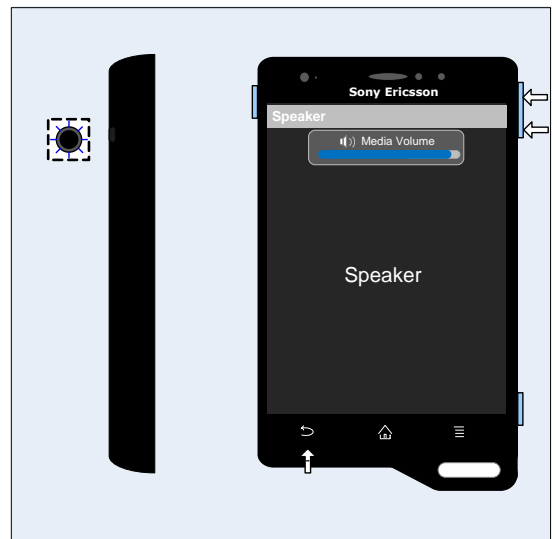
2.2.5 Speaker

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

Make sure that the sound from the Speaker port on the middle top of the phone is emitted loud and clear and that the test include maximum volume.

Press the volume up and down key to adjust the volume.

Press Back key to return to Service Test Menu.

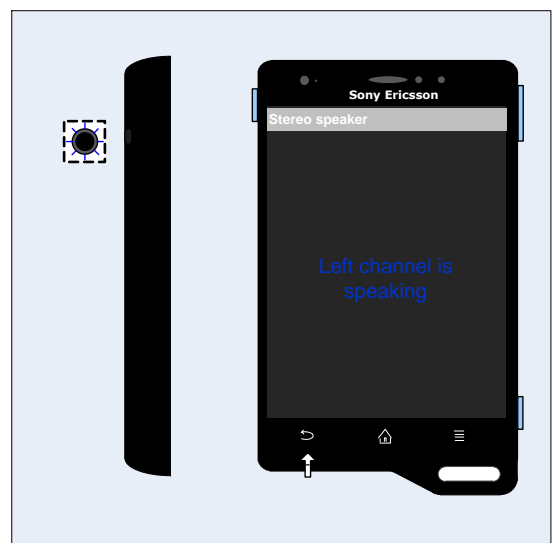


2.2.6 Stereo speaker

Not applicable.

This product does only have one speaker.

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 the volume up and down key to adjust the volume.

Press Back key to return to Service Test Menu.



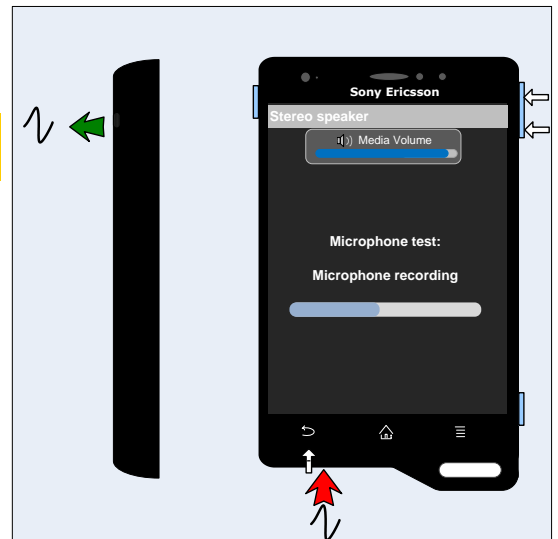
2.2.8 Microphone

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 main 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.



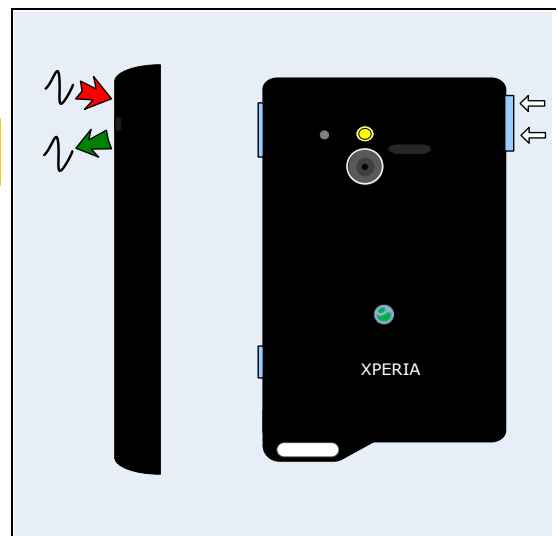
2.2.9 Secondary Microphone

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 Secondary 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.

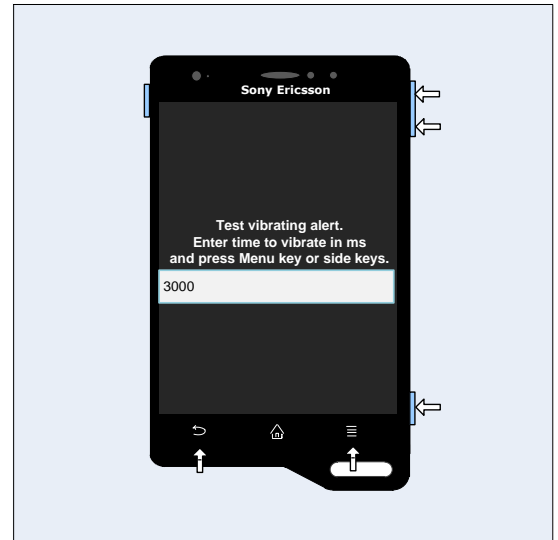
Press Back key to return to Service Test Menu.



Tests: Service Tests

2.2.10 Vibrator

It is possible to modify the duration of this test.
 Press the Menu key or Side keys to start the vibrator test.
 Press Back key to return to Service Test Menu.



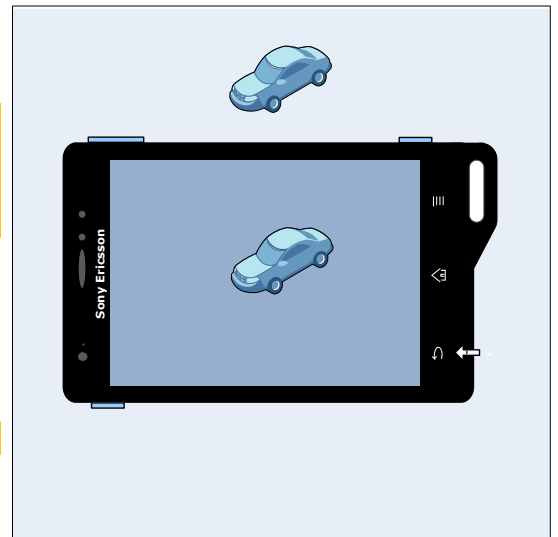
2.2.11 Camera

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.
 Press the 'Camera' key to preview the photo's quality about auto focus.

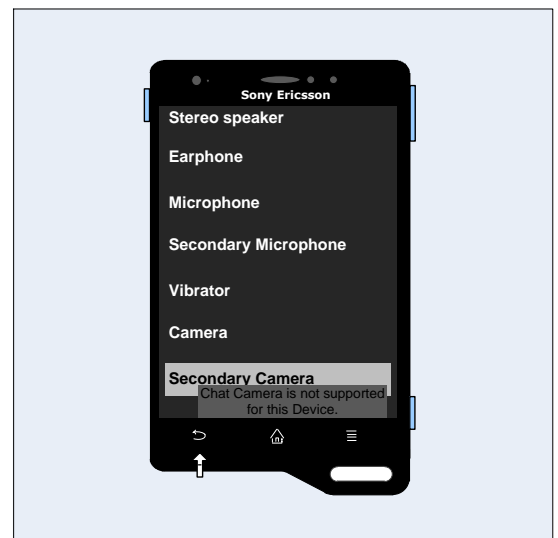
Photos is taken but not saved during this test.

Press Back key to return to Service Test Menu.



2.2.12 Secondary Camera

Not applicable.



Tests: Service Tests

2.2.13 Flash LED

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

Press Back key to return to Service Test Menu.

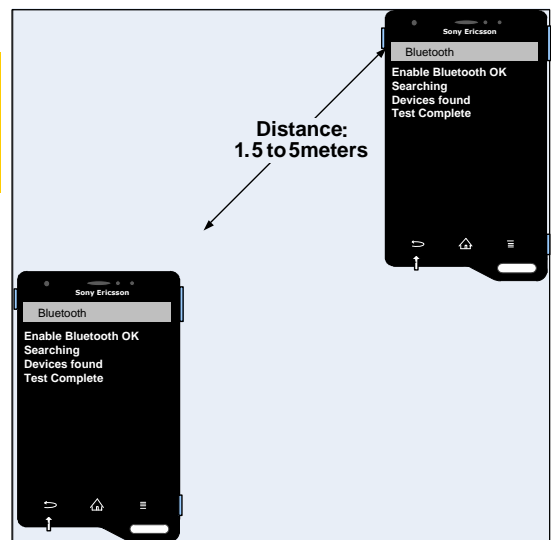


2.2.14 Bluetooth

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.

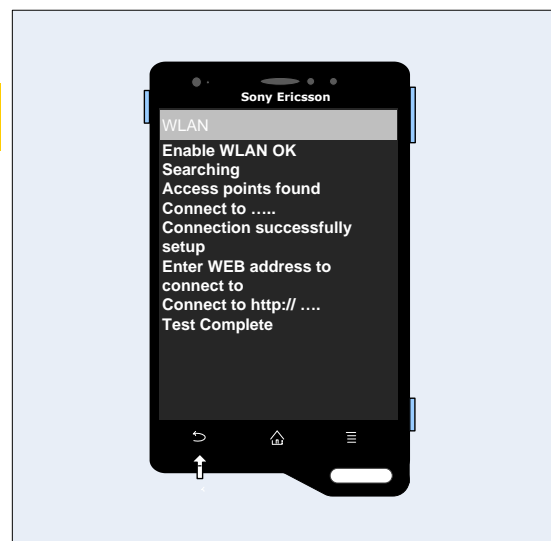


2.2.15 WLAN

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.



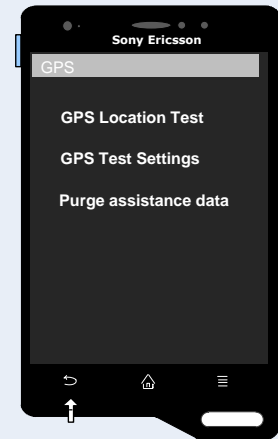
Tests: Service Tests

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.



Tests: Service Tests

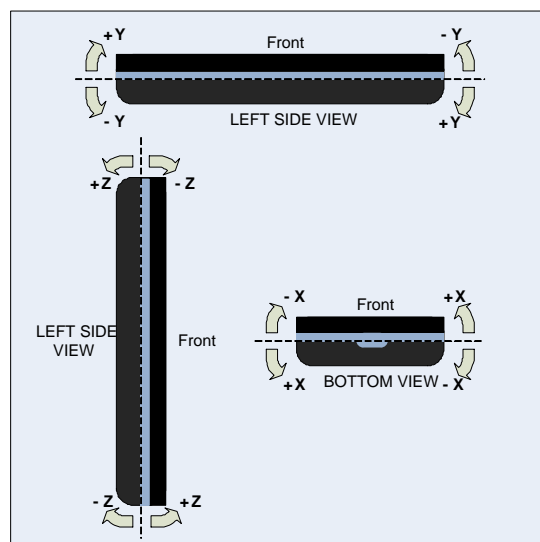
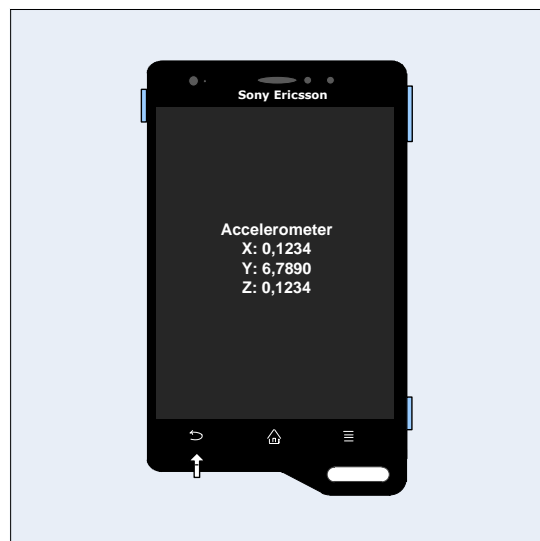
2.2.18 Accelerometer

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

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.

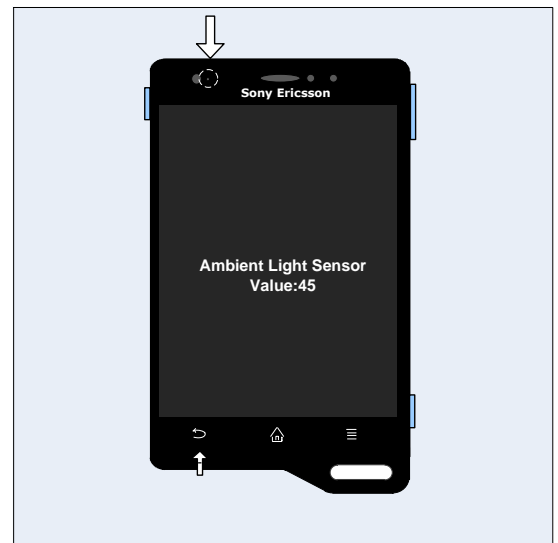


Tests: Service Tests

2.2.19 Ambient Light Sensor

The Ambient light test states a value. Check that the value is higher when the Window gets more light and decrease when the Window gets less light.

Press Back key to return to Service Test Menu.



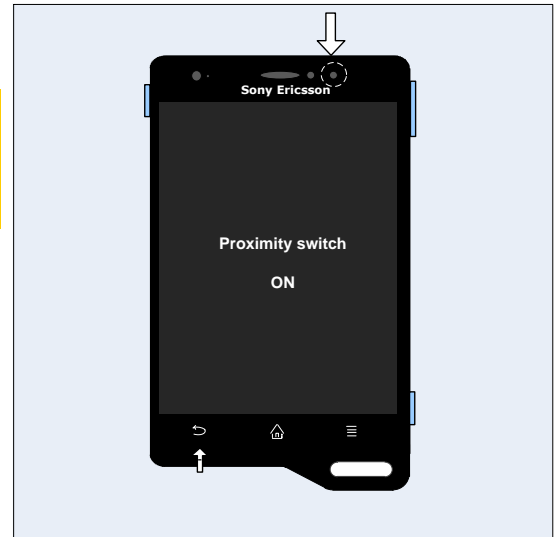
2.2.20 Proximity switch

***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.***

The screen shows "Proximity switch OFF" when the test is entered. Move your hand over the proximity switch area, the screen will show "Proximity switch ON" and a tone is emitted. A different type of tone will be emitted when you remove your hand.

The test has **failed** if you have to be closer than 3 cm to get the tone.

Press Back key to return to Service Test Menu.



2.2.21 Pressure Sensor

The Pressure Sensor test will check the atmospheric pressure around the phone and states a value. When you put the phone on the floor, read the value. When you raise the phone up as high as you can, the value should decrease about 0.2Millibars.

If the value shouldn't be static.

Press Back key to return to Service Test Menu.





Tests: Service Tests

2.2.22 Water Proof test

The previous test 'Pressure Sensor' should have been successfully carried out before doing this test.

It is mandatory to verify that the unit is water resistant if you disassemble the unit or suspect abuse, (i.e. not for No Trouble found or Software problems).

This test is done with air, therefore do you have to seal the two microphones, USB Connector and Audio Jack.

Seal the primary microphone with tack-it. Disassemble Cap USB and Cap Audio from the Cover Back and use the Caps to seal respective opening.

(It will not work to seal the primary microphone with tape due the shape of the anti shatter foil on the Cover Front.)

Seal the secondary microphone with tape.



How to assemble the Water Resistance Test equipment?

How to
assemble the
Water
Resistance Test
equipment?



How to run the Water Resistance Test - WRT

Water
Resistance
Test
(WRT)

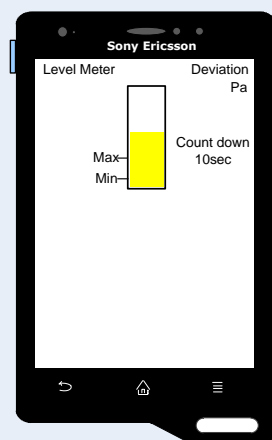


Tests: Service Tests

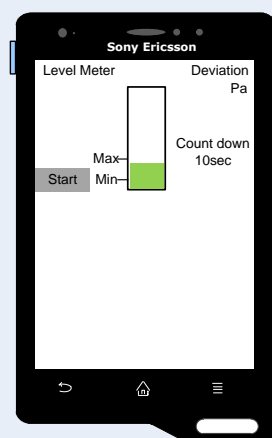
Enter the Water proof test after sealing openings of the primary microphone and the secondary microphone.

The *Water Proof test* initial status is a yellow bar graph with a 10 seconds countdown.

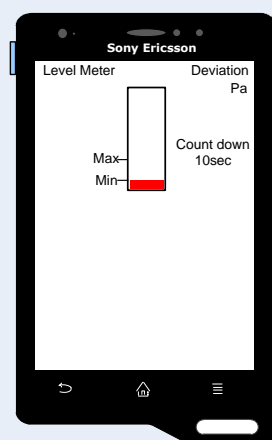
Assembly the Generic Clamp over the ventilation hole as shown in the instruction movie *How to run the Water Resistance Test – WRT*.



It should take minimum 10 seconds to generate the underpressure with the syringe. When you hit the area between *Max* & *Min* value, the bar graph will turn to green and the Start button will appear on the left hand side.



If you produce too much underpressure, the bar graph turns to red and is below the Min level.



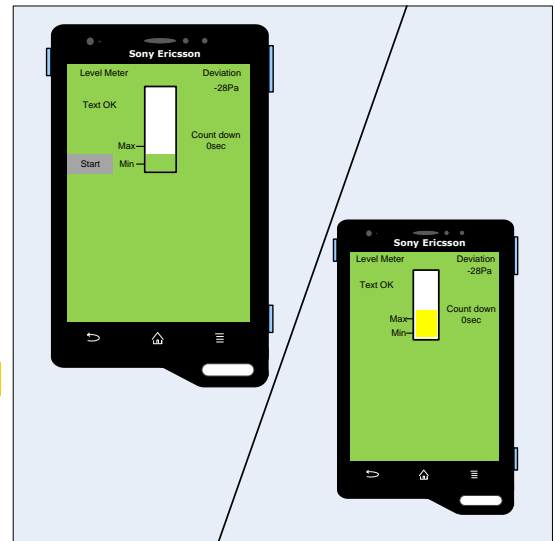


Tests: Service Tests

After a 10 second count down the test result is shown on phone's screen.

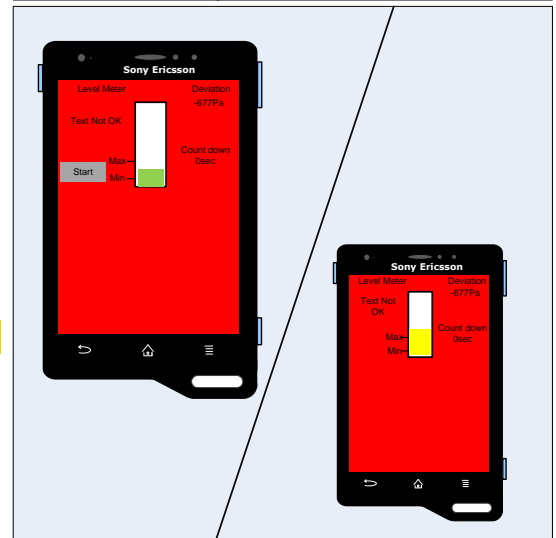
If the phone passed the *Water Proof test*, the display will show a yellow or green bar graph. The background turns to green and shows **Test OK** on the left top of the display.

A green background indicates that the test has passed.

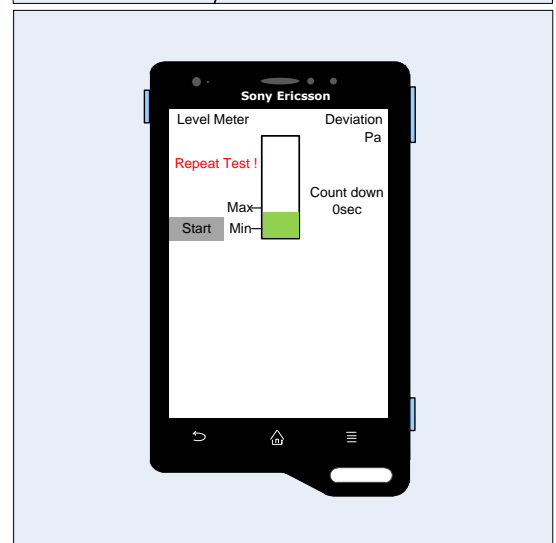


If the phone failed the *Water Proof test*, the display will show a yellow or green bar graph. The background turns to red and shows **Test Not OK** on the left top of the display.

A red background indicates that the test has failed.



If the pressure isn't stable enough during the test, the display will show a red text **Repeat Test!** on the top left of the bar graph.

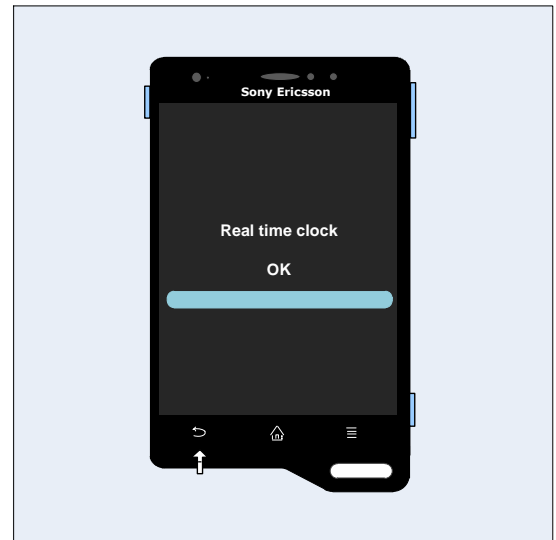


Tests: Service Tests

2.2.23 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.

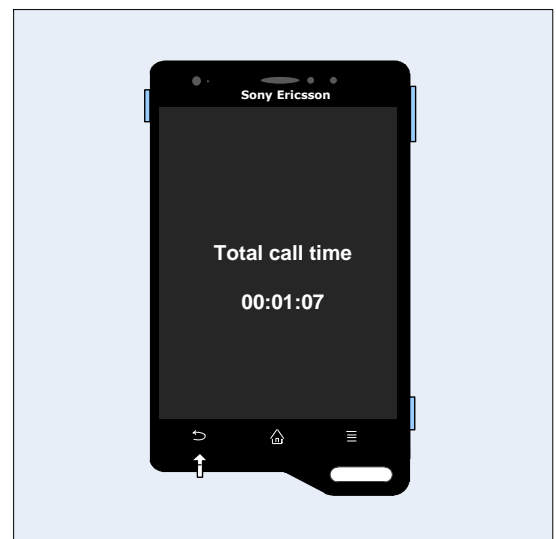
Press Back key to return to Service Test Menu.



2.2.24 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.

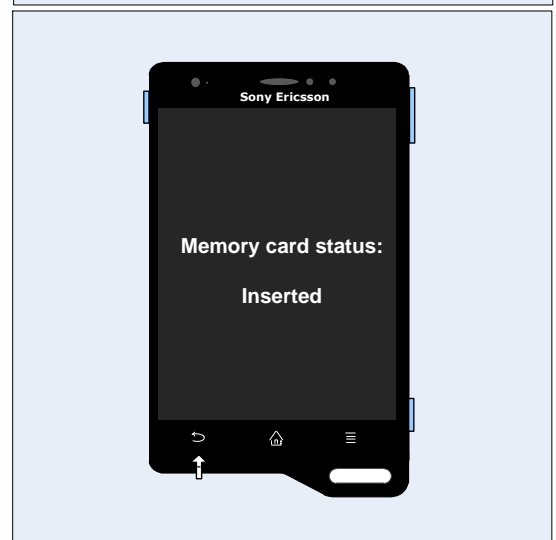


2.2.25 External Memory

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.



Tests: Service Tests

2.2.26 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.



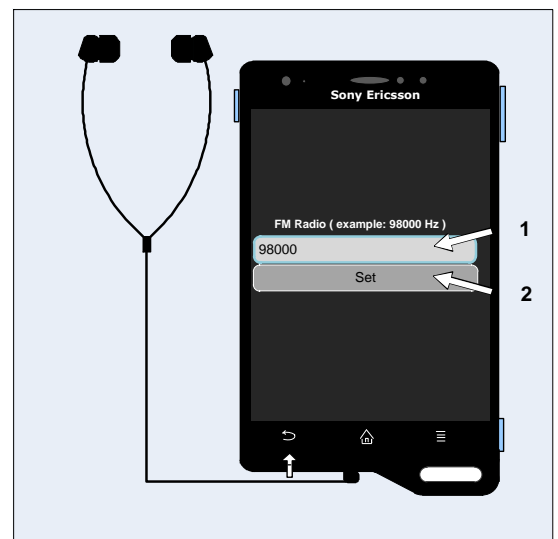
2.2.27 FM radio

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.



2.2.28 Battery test

Do not use.

Press Cancel to return to Service Test Menu.

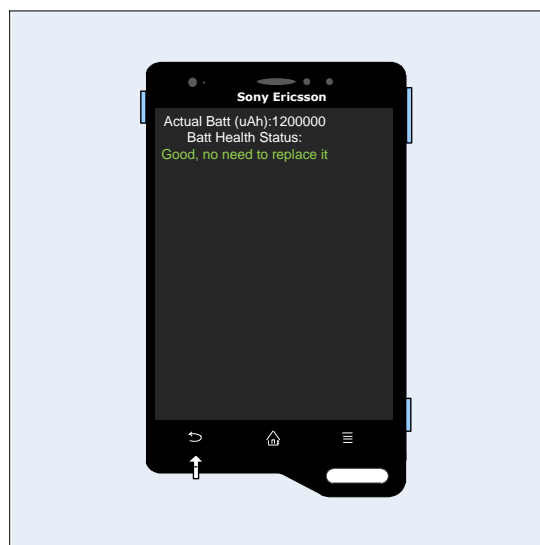


Tests: Service Tests

2.2.29 Battery Health test

Do not use.

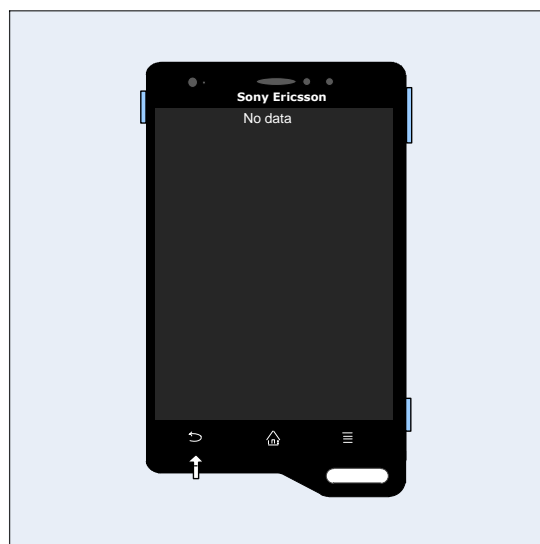
Press Back key to return to Service Test Menu.



2.2.30 Flip slider counter

Not applicable.

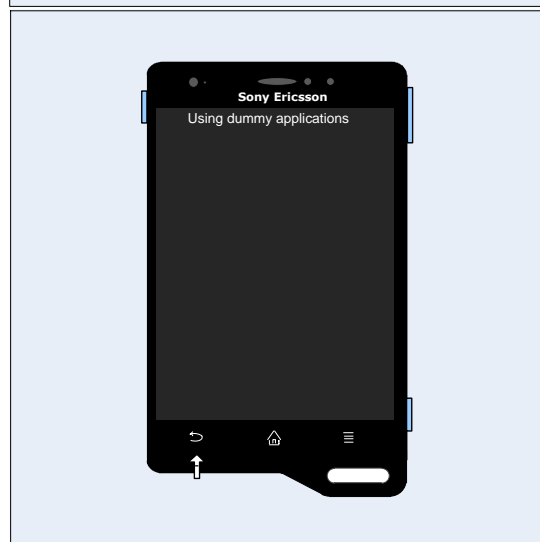
Press Back key to return to Service Test Menu.



2.2.31 Verify certificates

Not applicable.

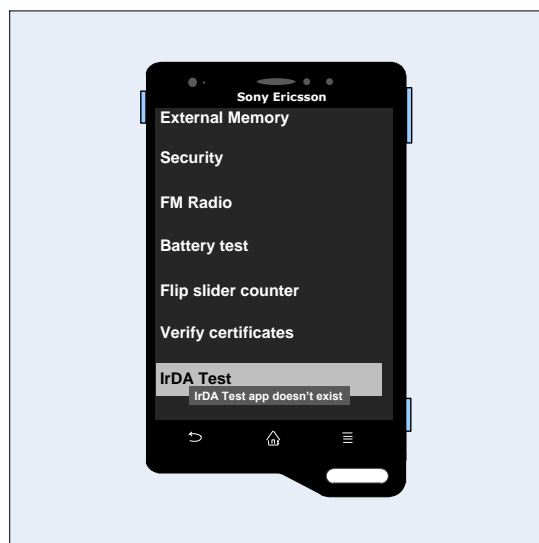
Press Back key to return to Service Test Menu.



Tests: Service Tests

2.2.32 IrDA Test

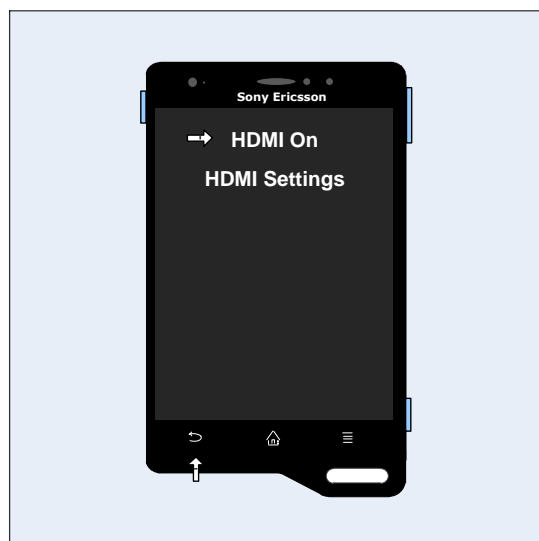
Not applicable.



2.2.33 HDMI Test

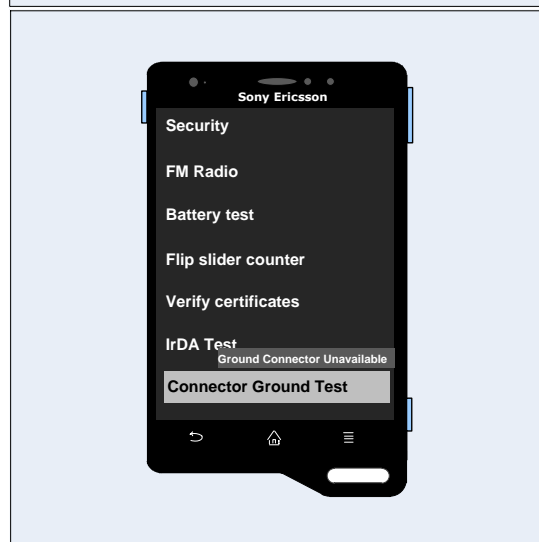
Not applicable.

Press Back key to return to Service Test Menu.



2.2.34 Connector Ground Test

Not applicable.





Test

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.

- If not detected, the message 'No Service' will be displayed instead in the pull down Status Bar.
- Press Back key to return to Standby Menu.



2.3.2 On/Off key test

Press the On/Off key for a while to turn the 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 On/Off key and the Phone will light up.





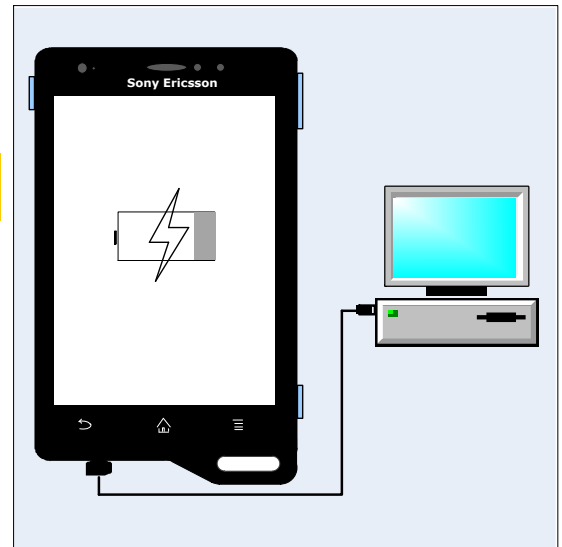
Test

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 phone.
- Verify that the phone is being charged by the notification LED and Battery icon in the display.
- Remove the USB cable from the connector and verify that the 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.

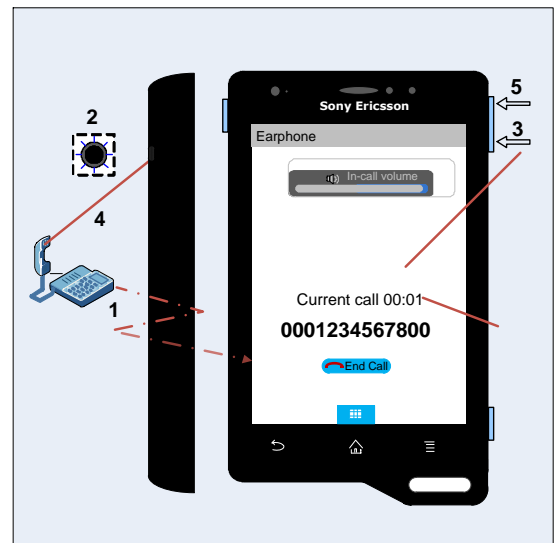
There are two versions of the test depending on whether a UMTS network is available or not. If a UMTS network is available, the network test has to be done separately for GSM and UMTS.

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 & networks* ⇒ *Mobile networks* ⇒ *Network Mode* ⇒ *GSM only*

The phone will automatically search for available networks. If not press *Network operator* for a search.

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 & networks* ⇒ *Mobile networks* ⇒ *Network Mode* ⇒ *WCDMA only*

The phone will automatically search for available networks. If not press *Network operator* for a search.

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-Sep-26	Initial release
2	2011-Sep-30	Moved WRT process flow from the Test Instruction. Updated the chapter about Water Proof test.
3	2011-Oct-13	Added comments in WRT chapter
4	2011-Dec-29	Water proof test updated, only to be used for disassembly and abuse.
5	2011-03-13	Updated the chapter 2.2.28 and 2.2.29
6	2011-Apr-17	Update the chapter 2.2.22