

## Test Instructions

- mechanical -



*Xperia™ tipo*

*ST21i, ST21a, ST21i2, ST21a2*

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# SONY

make.believe

*Test Instructions (mech)*

***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 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. The latest improvements are found on the support pages under the support news

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

- Start up the phone
  - Note: Make sure the phone is in call setup.
- Press the following 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 connector to connect the 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 hold 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

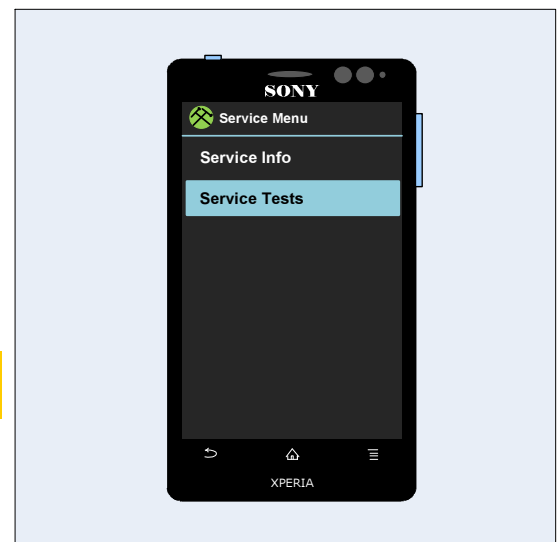
**Note: Make sure the phone is in call setup when pressing the touching keypads to get into the Service menu!**

Start up the phone and enter the service menus:

- Press the following 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 following pictures will show a simplified basic phone for a general visualization of the service tests!**

## Tests

## 2.2 Service Tests

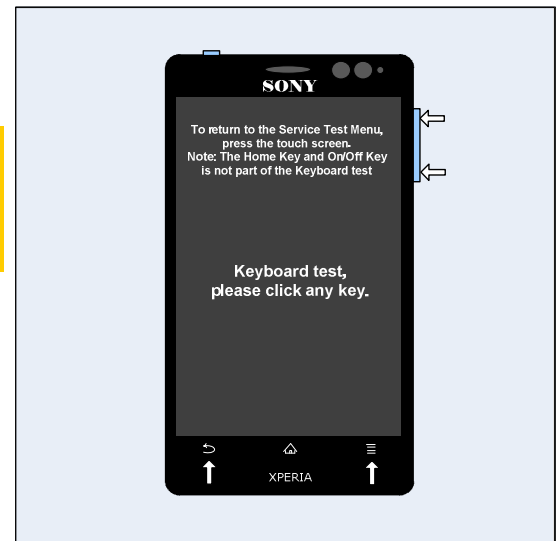
### 2.2.1 Keyboard & Switch

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

**To return to the Service Test Menu, press the touch screen.**

Press the following keys:

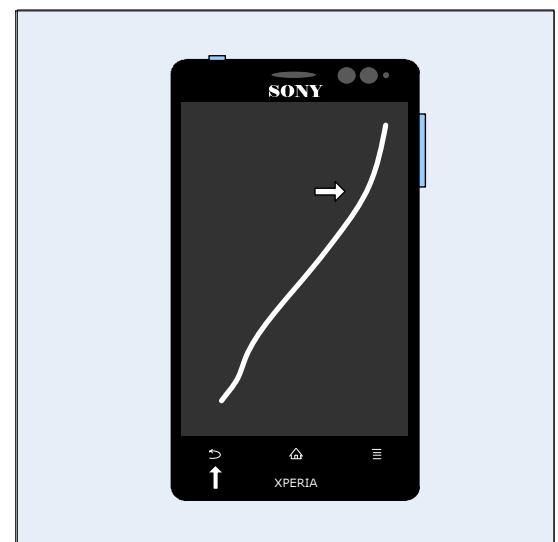
- Back key
- Menu key
- Volume Up key
- Volume Down key



### 2.2.2 Touch Screen

Move a finger across the touch screen, a line will be drawn as it touches.

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



### 2.2.3 Display

**Minor variations in the display's brightness and color may occur between phones.**

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

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

Touch the display using finger, the display will show the test patterns of White, Gray, Black, Blue, Green, Red, White/Black/Red, Black/Red/Blue, Red/Blue/Green, Blue/Green/White, then sequence of block colors continued by Rainbow colors on full screen.

Make sure that there are no missing segments and that the colors and contrast are OK.

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



## Tests: Service Tests

### 2.2.4 LED

**Note: Please un-plug USB connection during this test.**

Check that the:

- Notification LED on top right corner is changed, showing three colors in the sequence; Red, Green, Blue.
- Menu, Home and Back Key Backlight illuminations turn on and off.

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



### 2.2.5 Illumination

Check that the Display Backlight illumination changes with the value of the brightness.

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



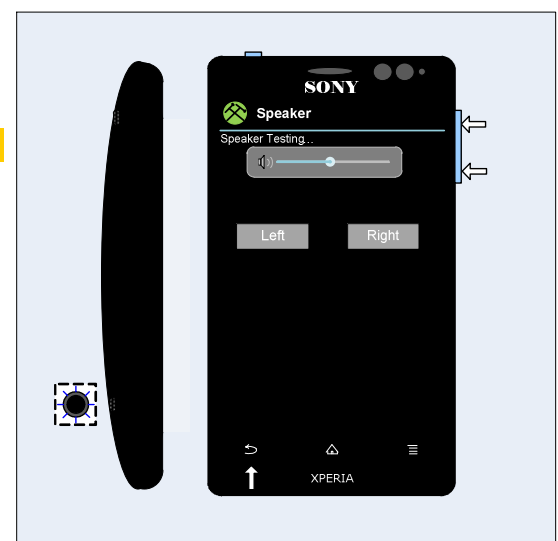
### 2.2.6 Speaker

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

Press the 'Left' or 'Right' on the screen and make sure that the sound from the speaker port of the right bottom back side of the phone is emitted loud and clear and that the test include maximum volume.

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

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





## Tests: Service Tests

### 2.2.7 Earphone

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/Volume down key to adjust the earphone volume.

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



### 2.2.8 Microphone

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

Step 1: Touch screen to record sound for test at most ten seconds and speak into the microphone during the 'Microphone Recording' phase

Step 2: Touch screen to stop recording

Step 3: Touch screen to play this recorded sound, and the sound is played back through the Speaker

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

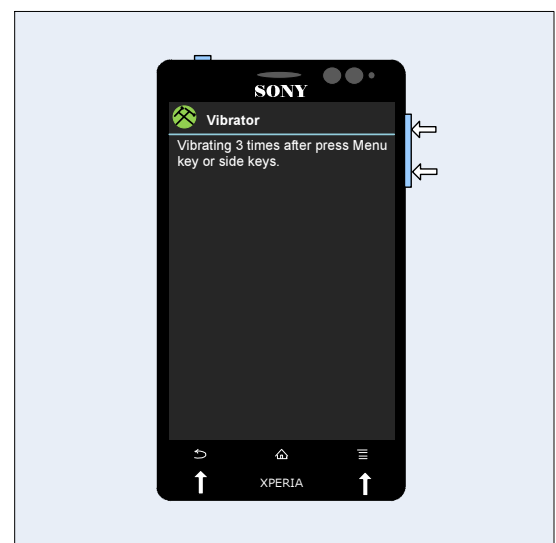
Press the Back key to return to the Service Test Menu.



### 2.2.9 Vibrator

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

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



## Tests: Service Tests

### 2.2.10 Camera

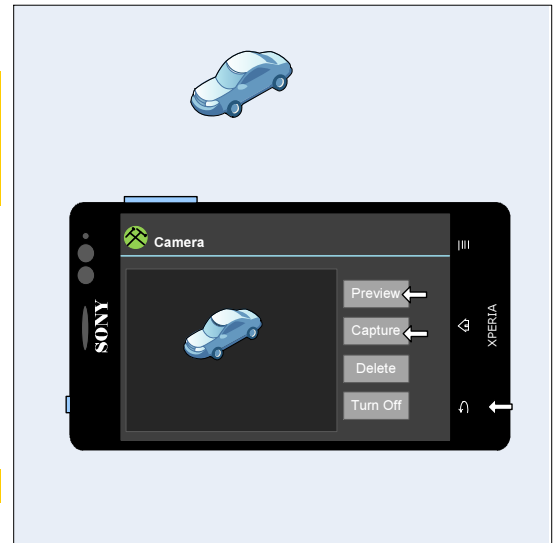
**Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!**

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

- Press 'Preview' on the touch screen to preview the photo's quality.
- Press 'Capture' on the touch screen to take picture.
- Press 'Delete' on the screen to delete the picture.

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

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



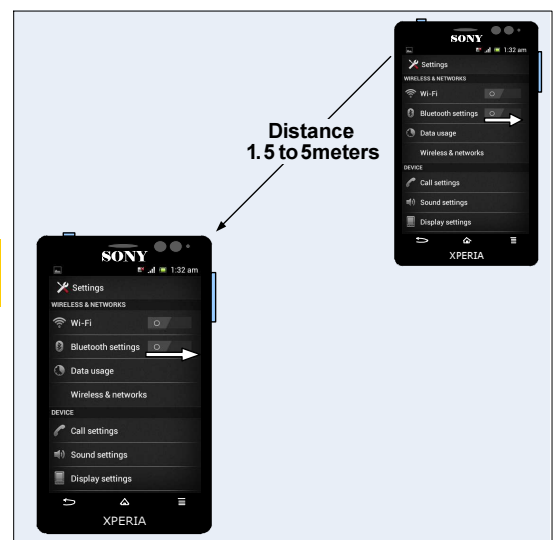
### 2.2.11 Bluetooth

Verify that the Bluetooth communication functions properly:

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

Step 1: Activate the Bluetooth function:

Select *Bluetooth* and slide the button on the right side to turn on Bluetooth.



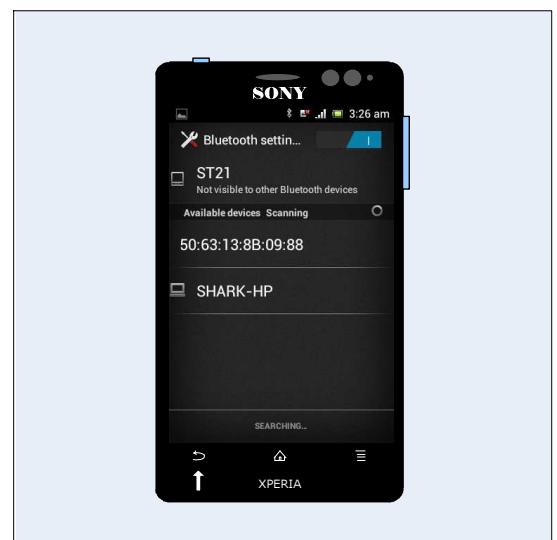
Step 2: Setup a Bluetooth link between the phone and the other Bluetooth device:

Select *Bluetooth settings* and search other Bluetooth device;

A list of Bluetooth device is shown up, choose a device to link;

If a link can be established, the Bluetooth function is regarded to be fully functional.

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



## Tests: Service Tests

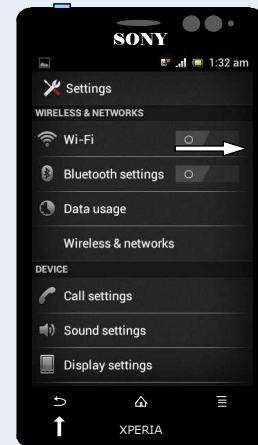
### 2.2.12 WLAN

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

The WLAN test will be done in following sequences:

Step 1: Activate the Wireless function:

Select *WLAN* ⇒ *Wi-Fi* ⇒ Slide the button on the right side to turn on *Wi-Fi*;

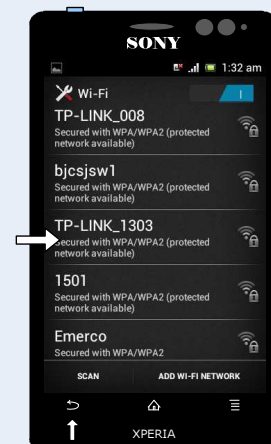


Step 2: Setup the connection of WLAN:

Go to *Wi-Fi* and search for any available *Wi-Fi*;

Step 3: Access points Found list;

Step 4: Select the target *Wi-Fi* network;



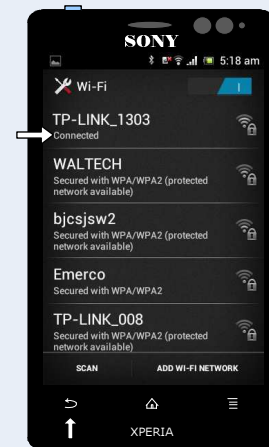
Step 5: Input the password to get connection with the available *Wi-Fi*;



## Tests: Service Tests

Step 6: Select the target Wi-Fi to check the status of connection.  
If the phone is able to scan, detect and connect to a network, the Wi-Fi function is regarded to be fully functional.

Press Back key to return to Service Test Menu.



### 2.2.13 GPS

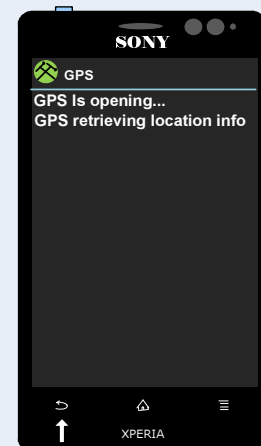
Verify that the GPS function properly:

- Go to *GPS test*.
- The phone will be searching for available *satellites and in 'Position Getting' status in 5 minutes*.
- The GPS Data (Longitude, Latitude, Altitude, Acquired Time, Satellites Used, Pseudorandom Noise(PRN) code and Signal to Noise Ratio(SNR)) could be shown if GPS test works successfully.

If the positioning time is over 5 minutes and does not get location info, the test is failed.

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

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



### 2.2.14 Accelerometer

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

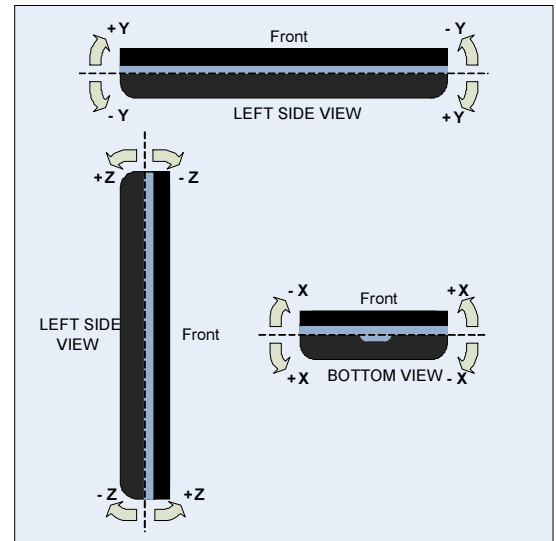


## Tests: Service Tests

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.



### 2.2.15 Proximity Sensor

When entering into the test, the screen shows “Not detected”.

When covering the proximity switch area (on the right side of the receiver), the screen will show “Detected”.

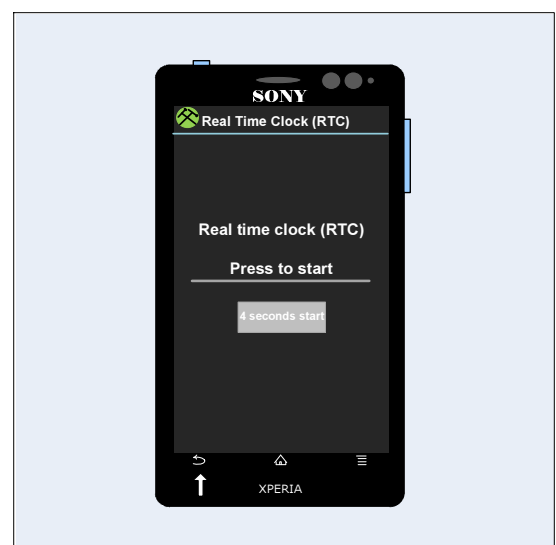
Press the Back key to return to the Service Test Menu.



### 2.2.16 Real time clock (RTC)

During the actual test the text 'Real time clock (RTL)' is displayed, press the button of '4 seconds start' and then a message stating whether the test was OK or not.

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

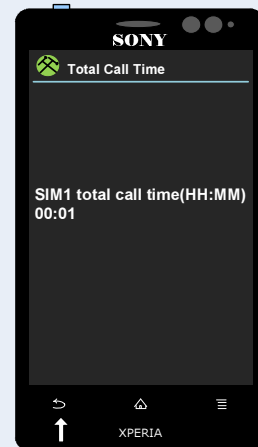


## Tests: Service Tests

### 2.2.17 Total call time

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

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

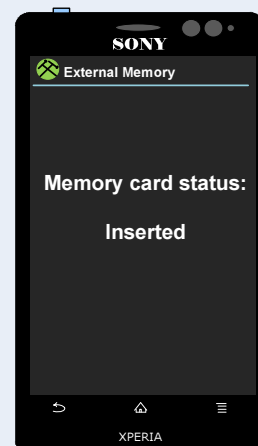


### 2.2.18 External Memory

***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.

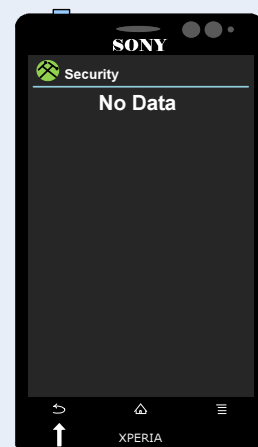
Press the Back key to return to the Service Test Menu.



### 2.2.19 Security

No data.

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



## Tests: Service Tests

### 2.2.20 FM radio

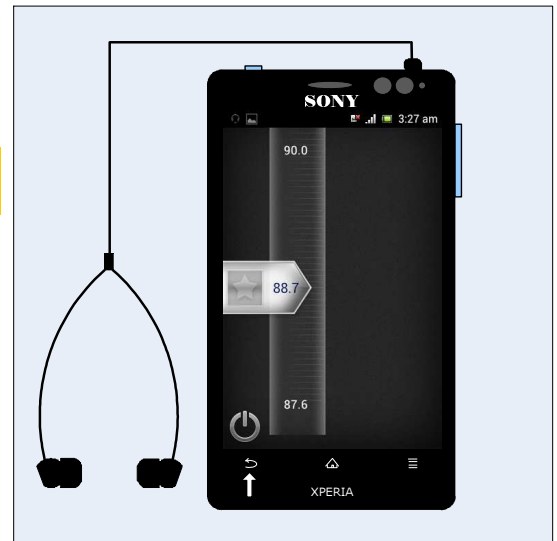
**Use CTIA type headset to do this test! Other versions not supported with this phone!**

Verify that the phone can detect a radio station:

Connect a headset and then select the frequency of FM station.

Secure that the reception and sound quality is normal.

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



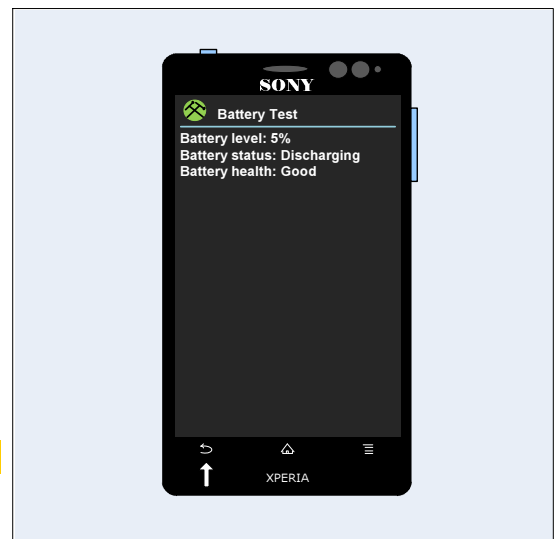
### 2.2.21 Battery Status check

Verify that charging of the battery functions properly:

- Go to *Battery Status check*;
- Connect a wall charger or via USB to the system connector. Verify that the display shows the phone is charging and also the info about battery health and battery level;
- Remove the charger from the system connector and certify that the display shows the phone is discharged and also the info about the battery health and battery level.

**Connect a Sony charger (to secure correct result)**

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

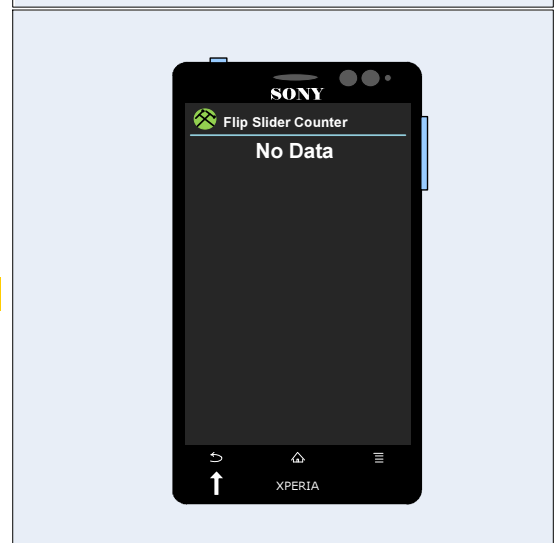


### 2.2.22 Flip Slider Counter

N/A.

**This test is not available for this product!**

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

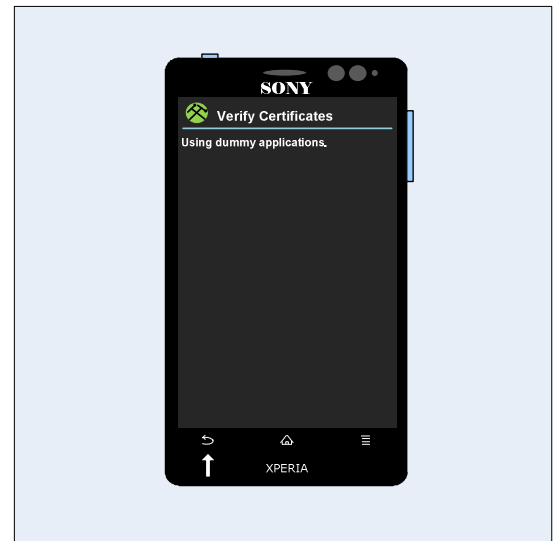


## Tests: Service Tests

### 2.2.23 Verify certificates

When entering the test, four information categories will be shown: Media, Shared, Platform and Application.

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



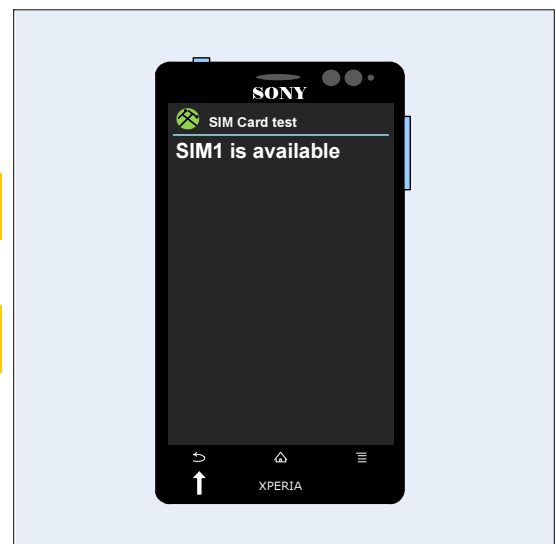
### 2.2.24 SIM Card Test

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

The phone should detect that the SIM card is inserted.

**Note; for ST212 Dual SIM product it will show SIM1 & SIM2 status!**

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

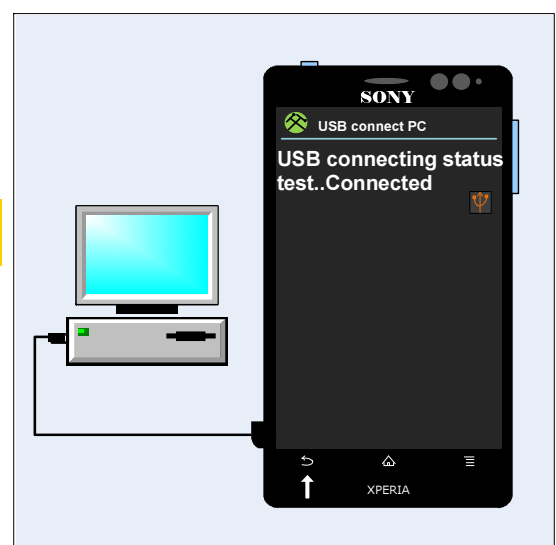


### 2.2.25 USB Test

**A USB cable should be connected with the phone before the start of this test!**

The phone should detect that the USB connecting status is connected.

Press the Back key to return to the 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 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 be displayed under unlock slide bar when phone is in Lock status.
- If not detected, the message 'No SIM Card. | Emergency calls only.' will be displayed under unlock slide bar when phone is in Lock status.
- Press Back key to return to Standby Menu.



#### 2.3.2 On/Off key test

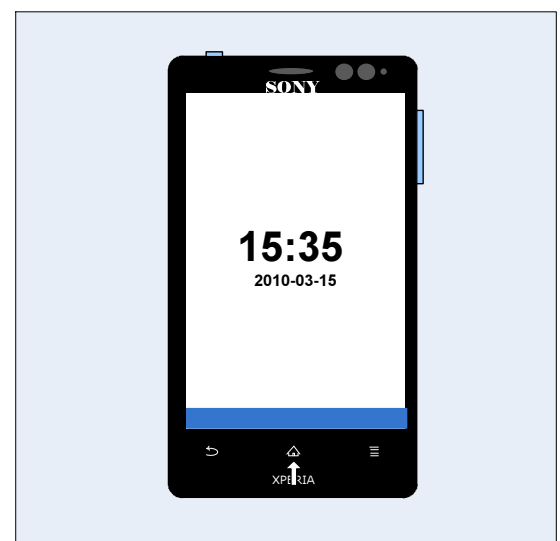
Press the On/Off key for a long time to turn the phone on or off.

Press the On/Off key for 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 the Home key for the phone go directly back to the Stand by screen.



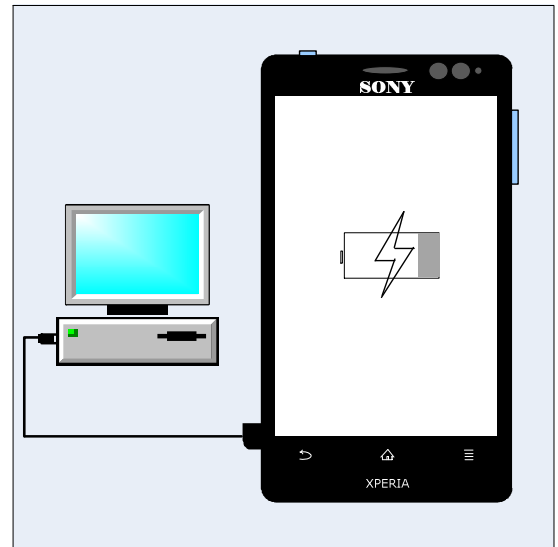
## Tests: Manual Tests

### 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 phone.
- Verify that the phone is being charged by the notification LED and the 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!**

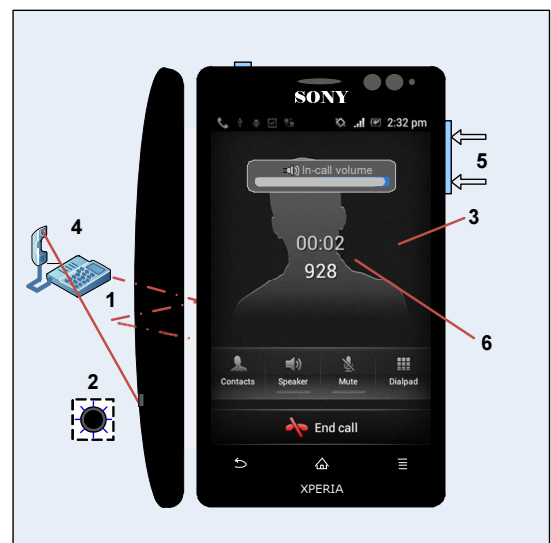
**If a UMTS network is available, the network test has to be done separately for GSM and UMTS!**

#### 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 properly.



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

##### GSM

Go to the phone menu and set:

Press Menu key → Settings ⇒ More... ⇒ 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 ⇒ More... ⇒ 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	2012-Jul-23	Released
2	2012-Jul-24	2.2.20 Text update
3	2012-Aug-24	ST21i2 & ST21a2 Added
4	2012-Sep-7	Chapter 2.2.24 updated