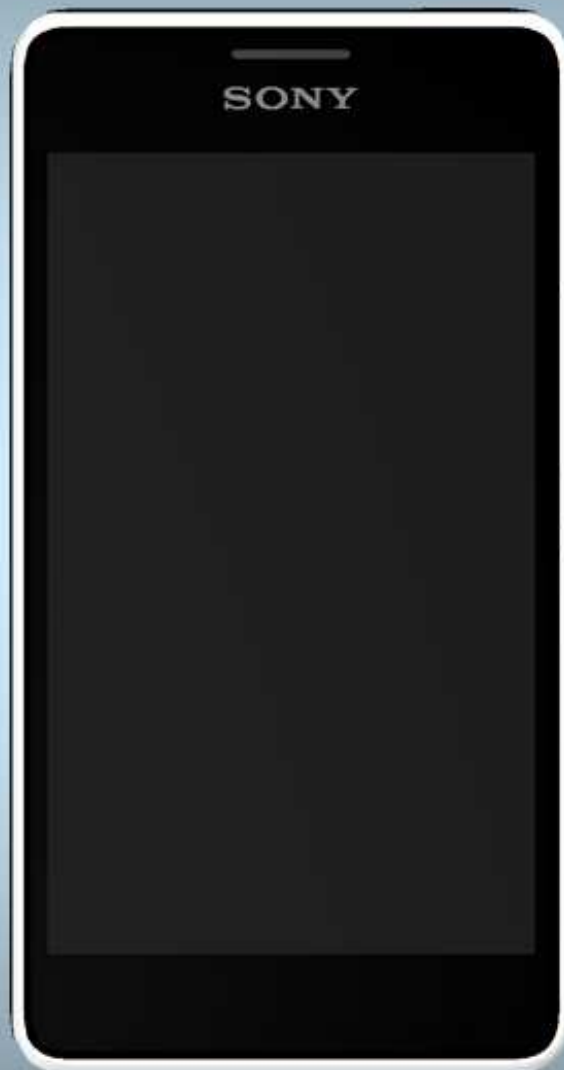


## Test Instructions

- mechanical -



*Xperia E1: D2005, D2004,  
Xperia E1 dual: D2105, D2104, D2114*

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

## 1 Pre-Test Preparations

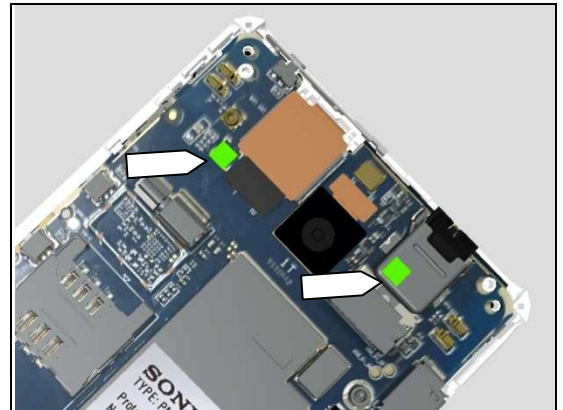
### 1.1 Hardware

#### 1.1.1 Water indicator inspection

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

There are two Water indicators on Main PBA:

- If affected (red color) - handle the phone according to the local directives.
- If not affected by liquid, proceed to the 'Pre-Test Preparation' below.

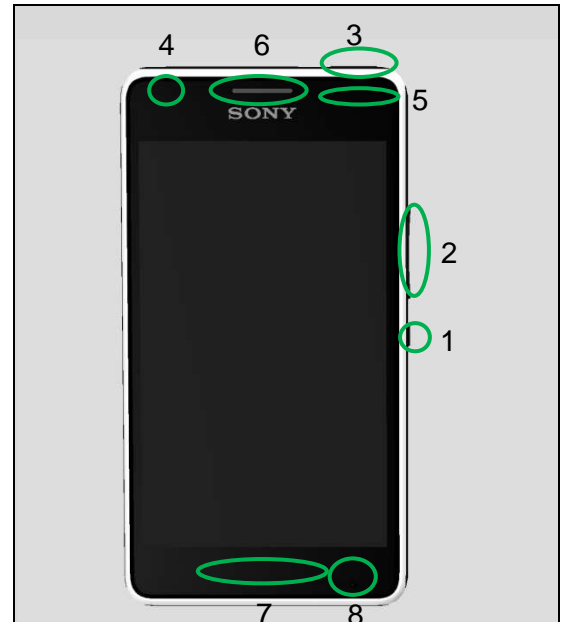


#### 1.1.2 Test Enablers

These are items on the phone that are used during the test of the unit.

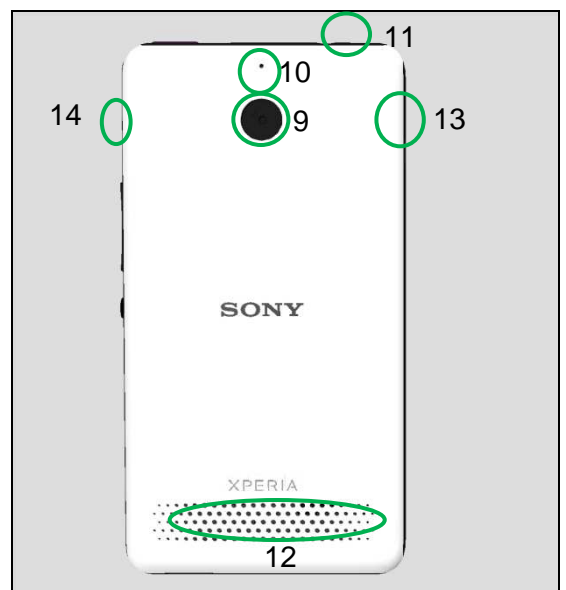
##### Front:

1. On/Off Key
2. Volume up/down Key
3. Walkman Key
4. Charger LED
5. Ambient Light Sensor& Proximity Switch
6. Earphone
7. Notification Led
8. Main MIC hole



##### Back:

9. Camera
10. Second MIC hole
11. Audio Jack
12. Speaker
13. USB connector
14. Mobile TV antenna (D2114 only)



## 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>

Step 1: Start up the phone;

Note: Make sure the phone is in call setup.

Step 2: Press the following keypad combination: **\*##7378423#\*##**;

Step 3: Select 'Service info';

Step 4: Select 'Software info';

Step 5: 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 USB cable to connect with the Micro USB connector of the phone for this purpose!**

Ensure the phone is powered off and proceed as follows.

Step 1: Open the Emma application and log in;

Step 2: Press and hold the Volume Down key on the phone, connect the phone to the USB cable and then release the Volume Down key.

Step 3: Select the appropriate service and follow the on-screen instructions.

**Note: For phones with eMMC flash memory (built in "SD card" memory), the only service which erase this eMMC memory is Service's "Refurbish" and "Customize". See also emma User Guide info. [http://emma.extranet.sonyericsson.com/documents/emma\\_user\\_guide.pdf](http://emma.extranet.sonyericsson.com/documents/emma_user_guide.pdf) (see "Service Types" and "Aspects of large files").**

In Swap flow, when change a phone from Customer A to Customer B, always use the service Customization script.

## 2 Tests

### 2.1 Service Test Mode

**Note: 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 Menu.

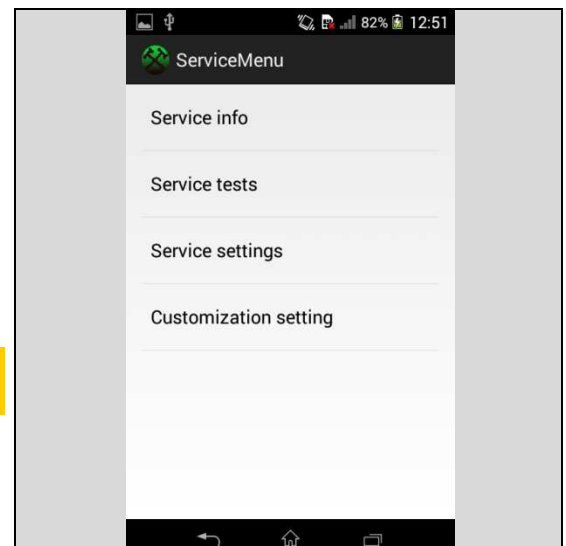
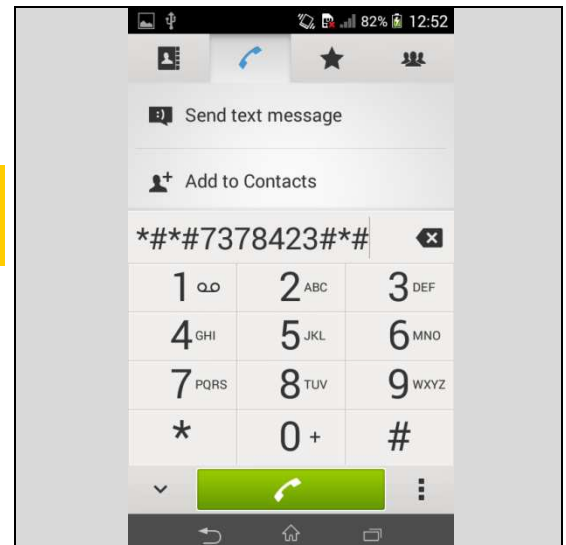
Step 1: Press the following keypad combination:  
\*##7378423##\*;

Step 2: Select 'Service Tests';

Step 3: 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

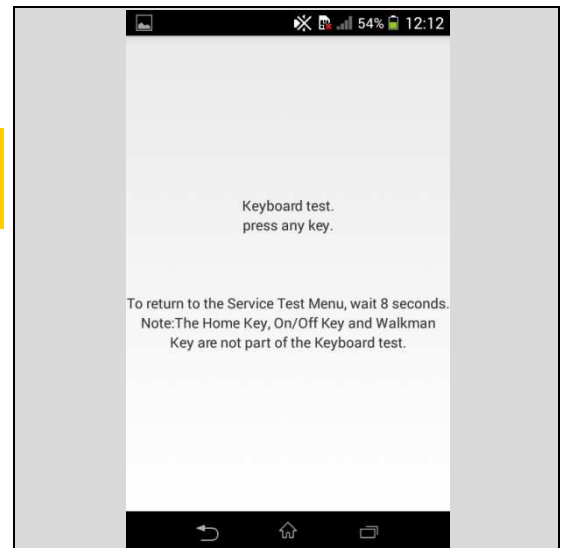
### 2.2.1 Keyboard & Switch

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

Press the following keys:

- Back Key
- Volume Up Key
- Volume Down Key

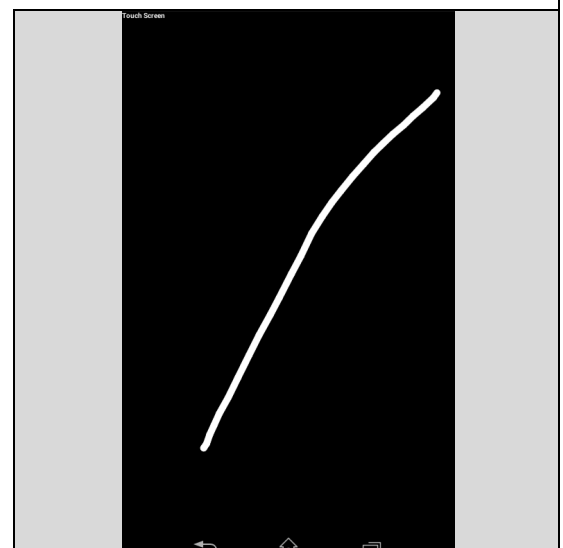
Wait 8 seconds to return to the Service Test Menu.



### 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.**

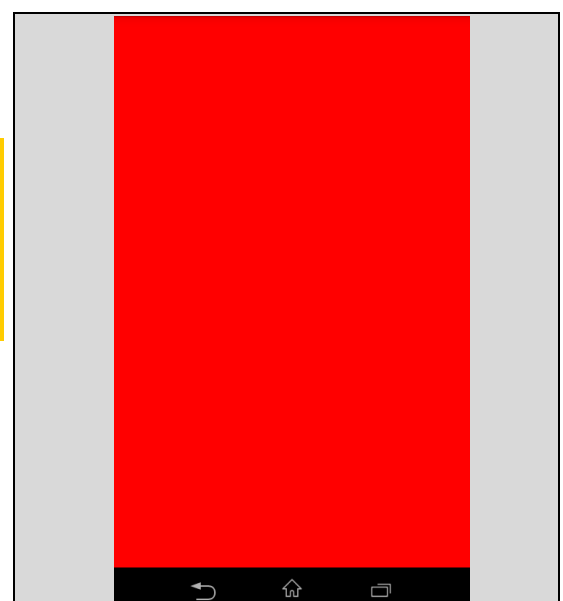
**There may be tiny bright dots on the display, called defective pixels and which occur when individual dots have malfunctioned and cannot be adjusted.**

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

The display will show the test patterns of Black, Red, Green, Blue, White and 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

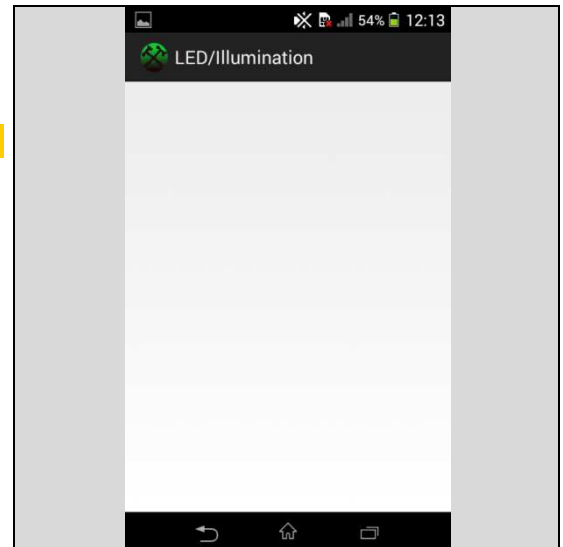
### 2.2.4 LED/Illumination

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

Check that the:

- Display Backlight illumination changes.
- Notification LED on bottom side changes.
- Charger LED on top left corner changes.

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

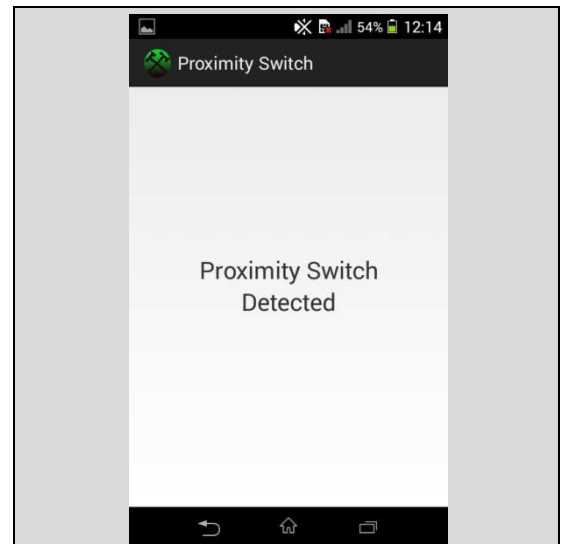


### 2.2.1 Proximity Switch

When entering into the test, the screen shows "Proximity Switch Not detected";

When covering the proximity switch area (on the right side of the earphone), the screen will show "Proximity Switch Detected";

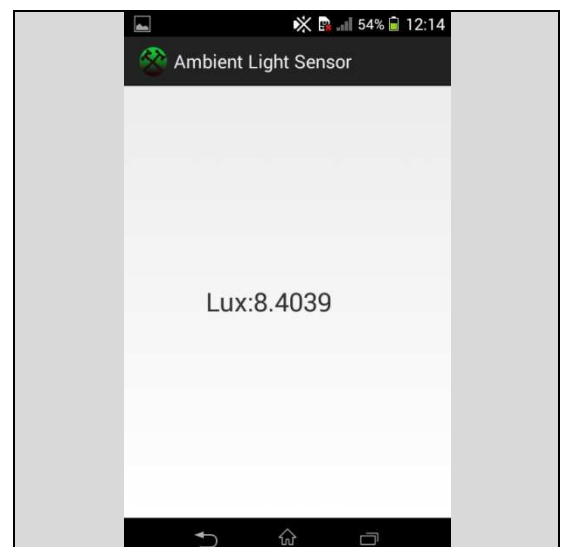
Press the Back key to return to the Service Test Menu.



### 2.2.2 Ambient Light Sensor

The Ambient light test states a value. The value should increase when the window gets more light and decrease when the window gets less light.

Press the Back key





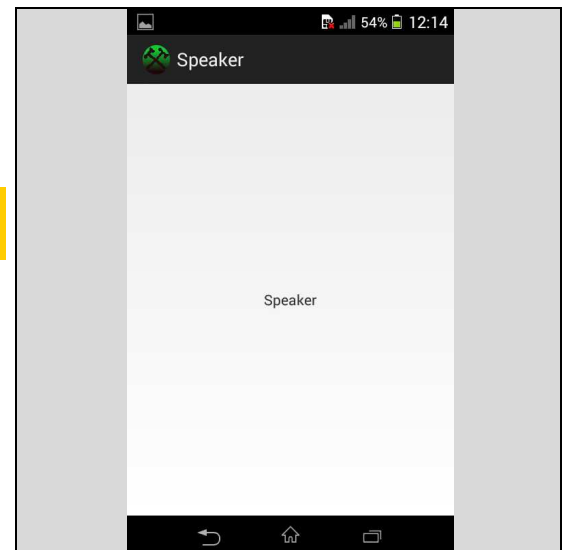
## Tests: Service Tests

### 2.2.3 Speaker

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

Make sure that the sound from the speaker port of the bottom back side of the phone is emitted loud and clear. The test includes maximum volume.

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

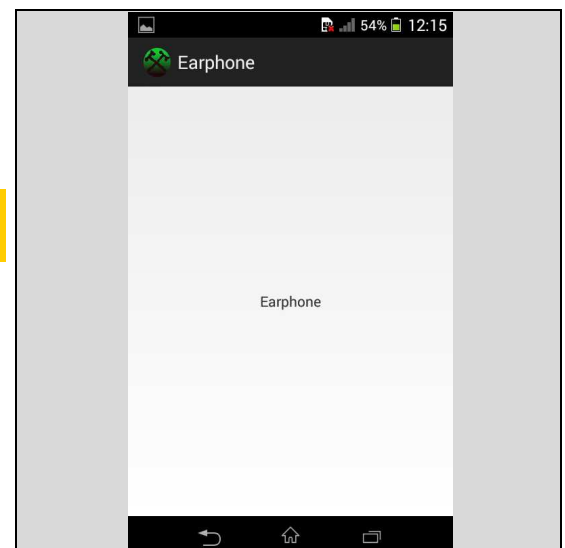


### 2.2.4 Earphone

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

Make sure that the sound from the speaker port of the bottom back side of the phone is emitted loud and clear. The test includes maximum volume.

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

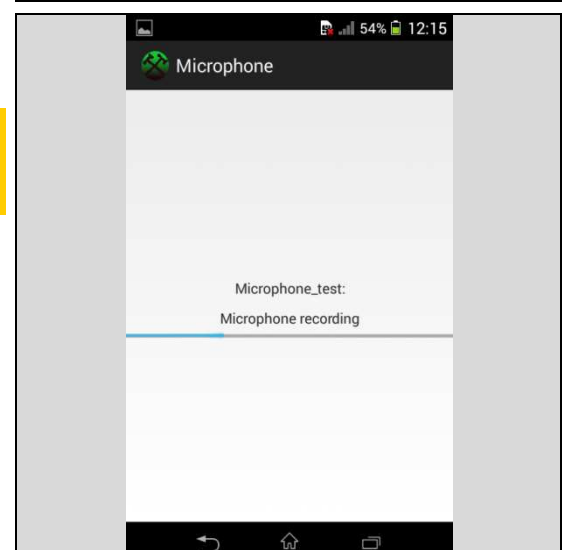


### 2.2.5 Microphone

***The previous 'Speaker' test must have been successfully carried out before doing this test!***  
***Do not insert a headset during this test!***

- Step 1: speak into the microphone during the recording phase;
- Step 2: Check the quality by listening to the recording from the speaker during the playing phase at maximum volume.

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



## Tests: Service Tests

### 2.2.6 Secondary Microphone

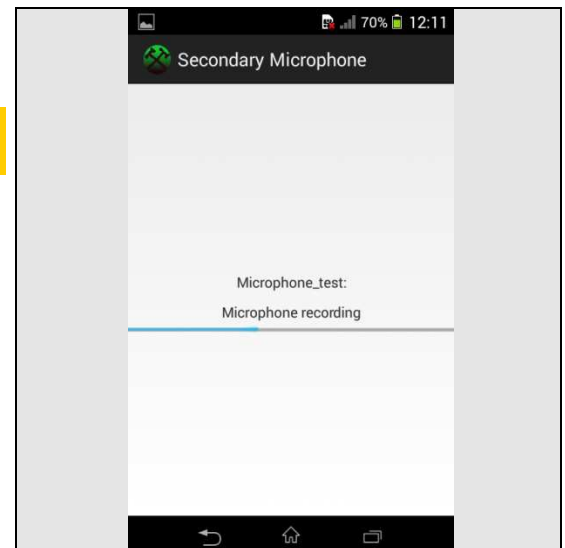
***The previous 'Speaker' test must have been successfully carried out before doing this test!***

The phone will start to record and after approximately ten seconds the sound is played back through the speaker.

Step 1: Speak into the secondary microphone during the 'Microphone Recording' phase;

Step 2: Check the quality by listening to the recording from the speaker during the 'Playing recorded sound' phase at maximum volume.

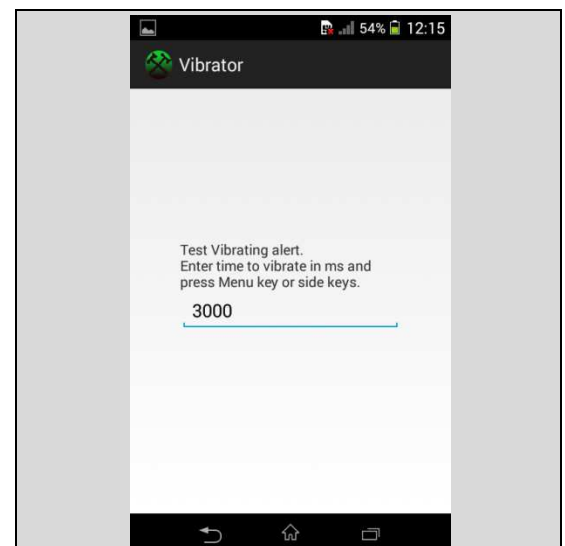
Press the Back key to return to the Service Test Menu.



### 2.2.7 Vibrator

Press Volume keys to start the vibrator test.

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



### 2.2.8 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!***

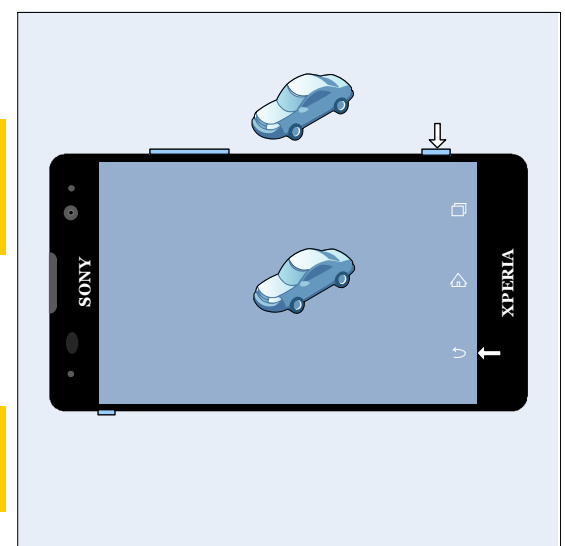
Aim the camera (located back of the phone) at an object and check the quality of the image shown in the display.

Press the screen to preview the photo's quality about autofocus.

***Do the same thing at an object on a different distance to secure that autofocus works!***

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

Press Back key to return to Service Test Menu.



## Tests: Service Tests

### 2.2.9 Bluetooth

Verify that the Bluetooth communication function properly:  
During this test, the distance between the phone and the target Bluetooth device must be 1.5 to 5 meters!

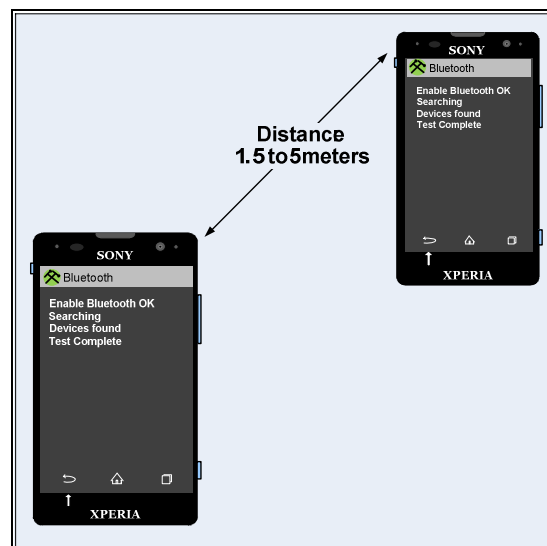
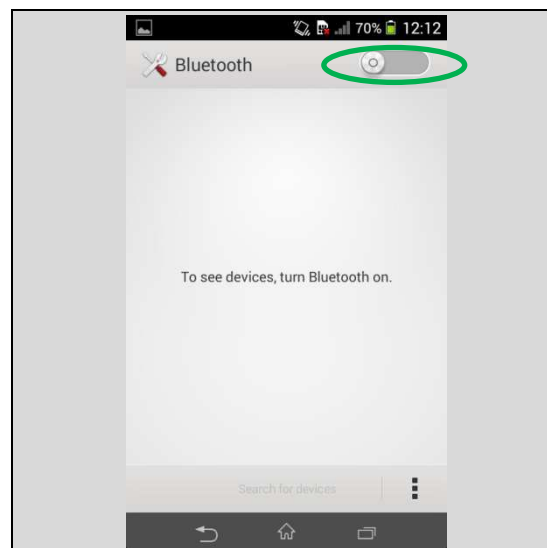
Step 1: Push the Bluetooth button to right side as shown to turn on Bluetooth;

Step 2: Select 'Bluetooth' and search other Bluetooth device;

Step 3: Choose a device to link after a list of Bluetooth devices is shown up.

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

Step 4: Turn off Bluetooth button after Bluetooth test.  
Press the Back key to return to the Service Tests Menu.



### 2.2.10 WLAN

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

**Make sure turn on WLAN first (Menu->Setting->WLAN)!**

The WLAN test will be done in following sequences:

Step 1: Push the Wi-Fi button to right side as shown to turn on WLAN;

Step 2: Select 'Wi-Fi' and search other WLAN device;

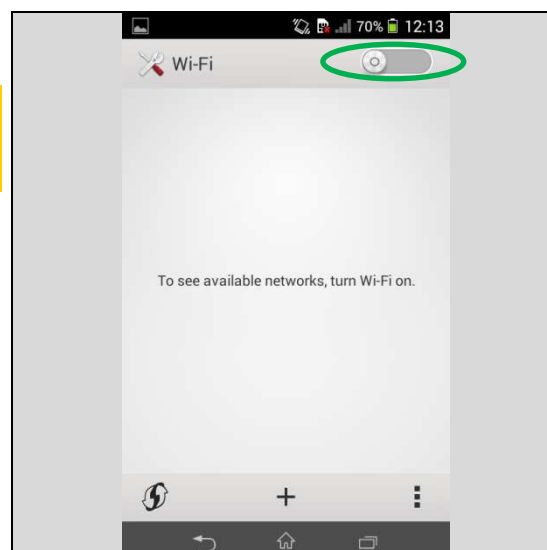
Step 3: Access points Found list;

Step 4: Select the Target WLAN network, and type the password to get connected;

Step 5: Enter a web address (ex. Google.com) to check.

Step 6: Turn off Wi-Fi function button after WLAN test.

Press Back key to return to Service Test Menu.



## Tests: Service Tests

### 2.2.11 GPS

**Make sure turn on GPS first (Menu->Setting->Location service)!**

Verify that the GPS function properly:

Step 1: Go to *GPS Location test to turn on GPS first*;

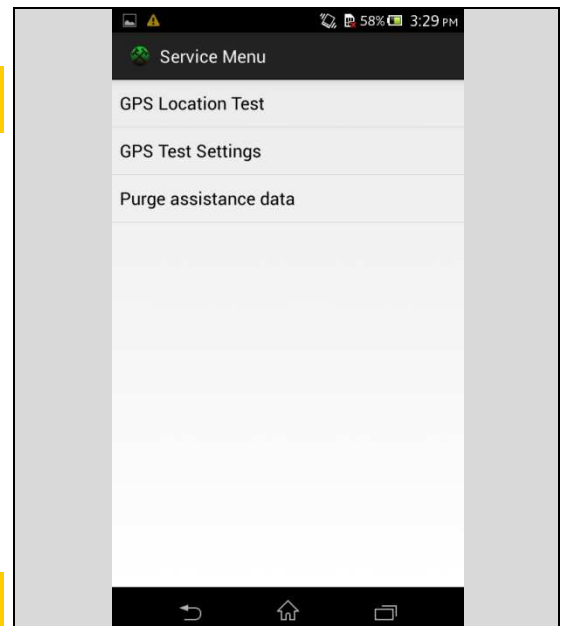
Step 2: Go to *GPS Location test* again to search for available *satellites* and in 'Position Getting' status in 5 minutes;

Step 3: 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.**

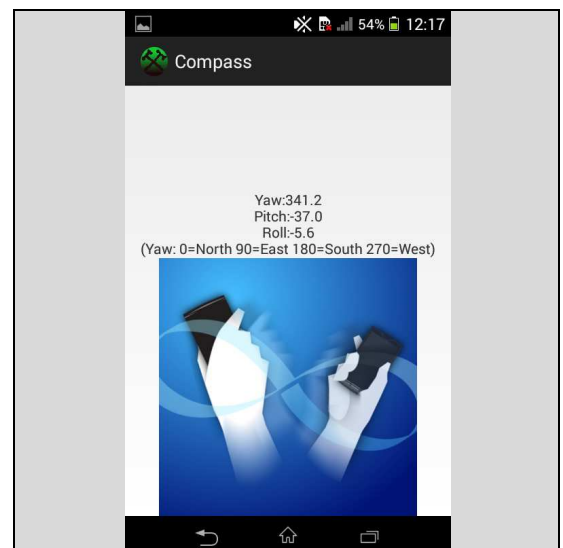


### 2.2.12 Compass

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)

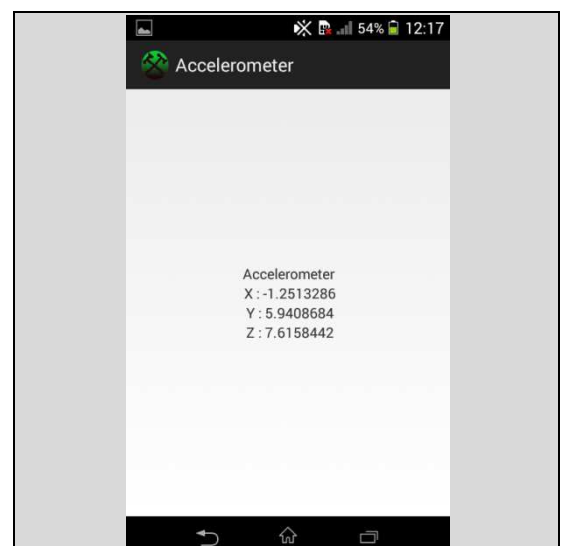
Press the Back key to return to the Service Test Menu.



### 2.2.13 Accelerometer

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

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

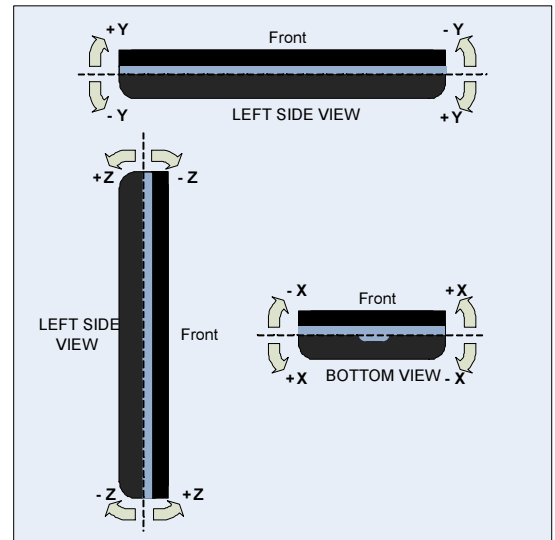


## Tests: Service Tests

By tilting the phone in various directions, the X: Y: Z values will change in size and polarity depending on the 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.

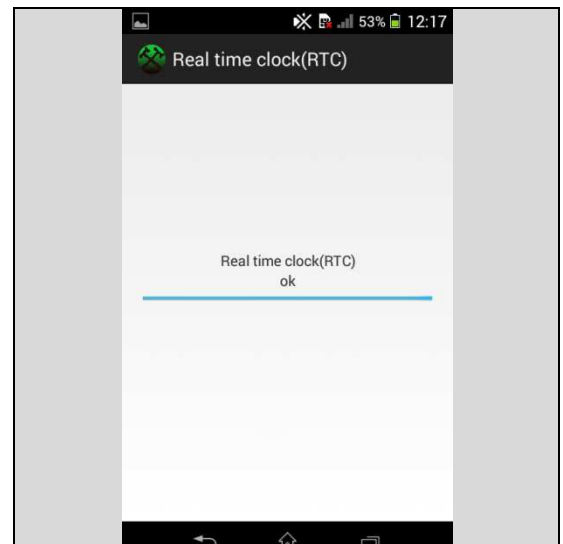
Press the Back key to return to the Service Test Menu.



### 2.2.14 Real time clock (RTC)

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

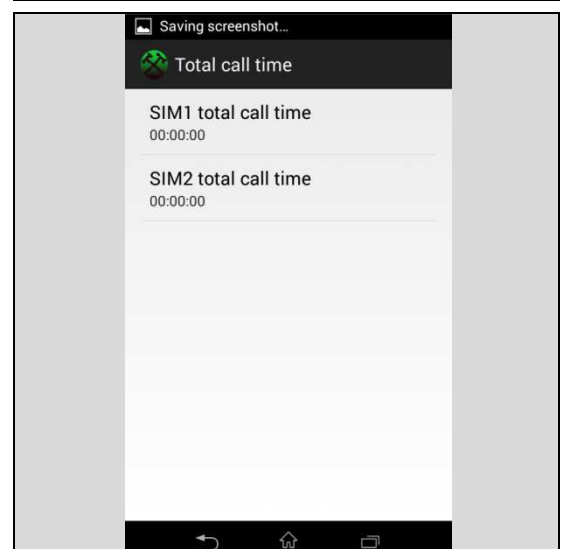
Press Back key to return to Service Test Menu.



### 2.2.15 Total call time

The total call time for SIM1 and SIM2 are displayed in the format HH:MM (hours: minutes).

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



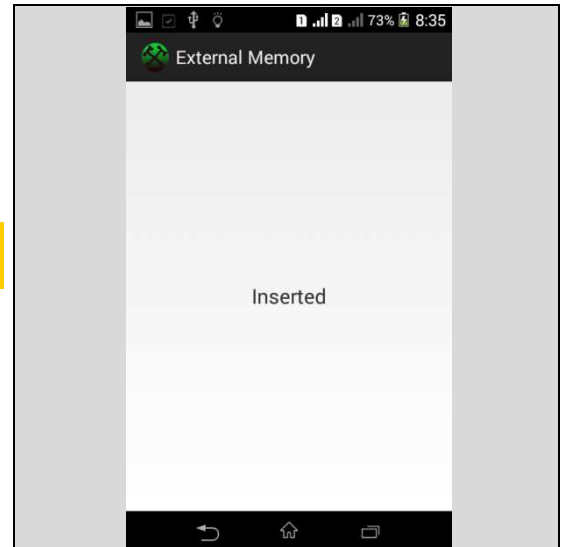
## Tests: Service Tests

### 2.2.16 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.

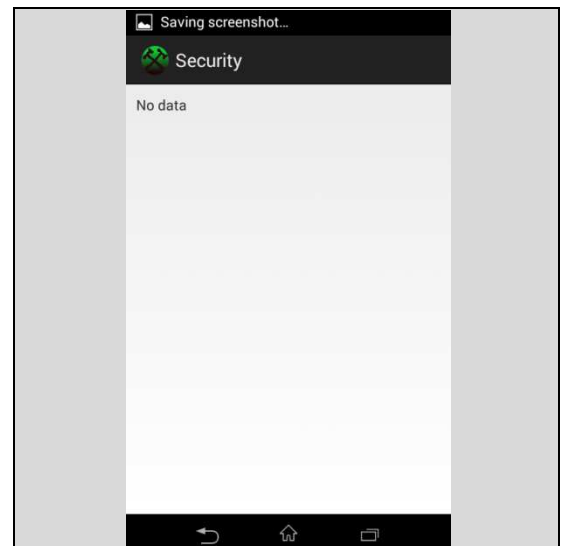
Press the Back key to return to the Service Test Menu.



### 2.2.1 Security

Not Applicable, do not use.

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



### 2.2.2 FM radio

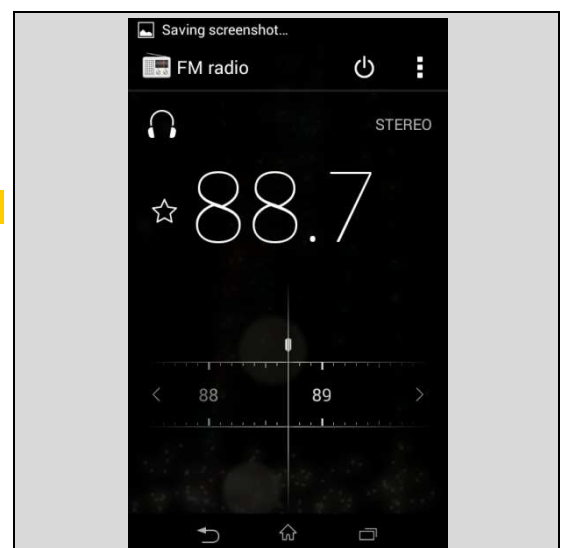
**Use a CTIA type headset to do this test!**

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

Verify that the phone can detect a radio station.

Secure that the reception and sound quality is normal.

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



## Tests: Service Tests

### 2.2.3 Battery Status Check

Verify that charging of the battery functions properly:

Step 1: Go to *Battery Status check*;

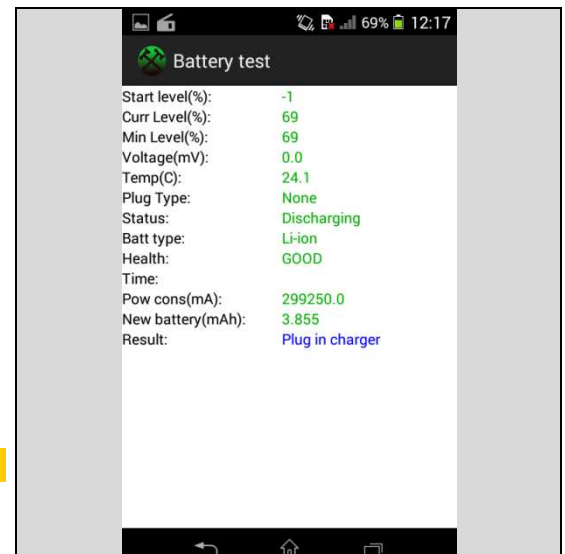
Step 2: Connect a wall charger or via USB to the system connector;

Verify that the display shows the phone is charging and also the info about battery health and battery level.

Step 3: 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).**

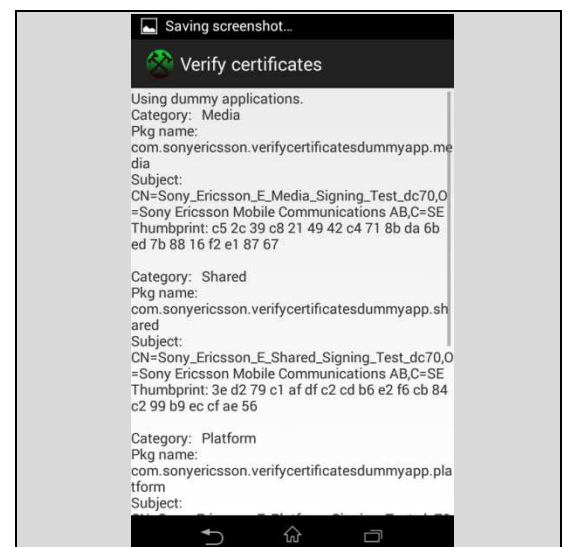
Press the Back key to return to the Service Test Menu.



### 2.2.1 Verify Certificates

Not Applicable, do not use.

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



### 2.2.2 SIM Card Test

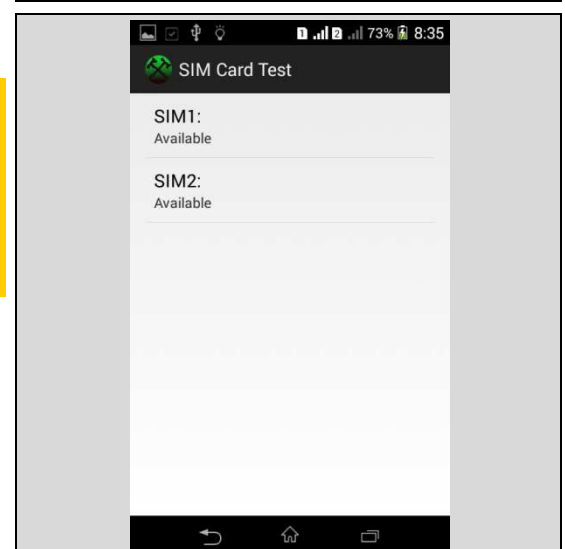
***SIM1 and SIM2 should be inserted in the phone before the start of this test for Dual SIM Card Phone!***

***SIM1 should be inserted in the phone before the start of this test for Single SIM Card Phone!***

SIM1 should shows "Available";

SIM2 should shows "Available"(Only for Dual SIM card Phone);

Press the Back key to return to Service Test Menu.



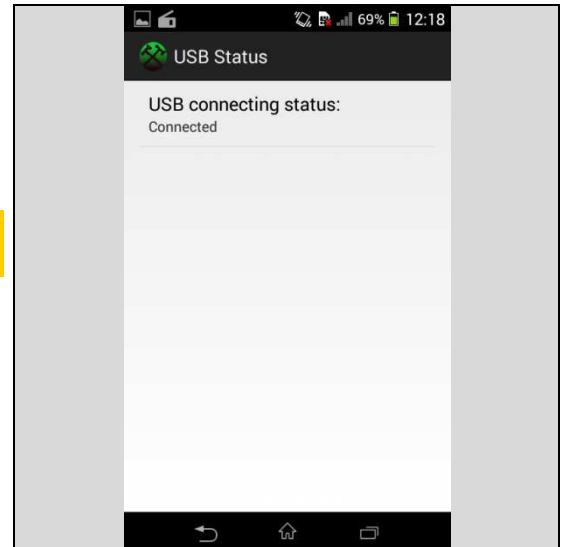
## Tests: Service Tests

### 2.2.3 USB Test

***Micro USB cable should be inserted in the phone with PC or charger before the start of this test!***

USB connecting status should shows “Connected”;

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



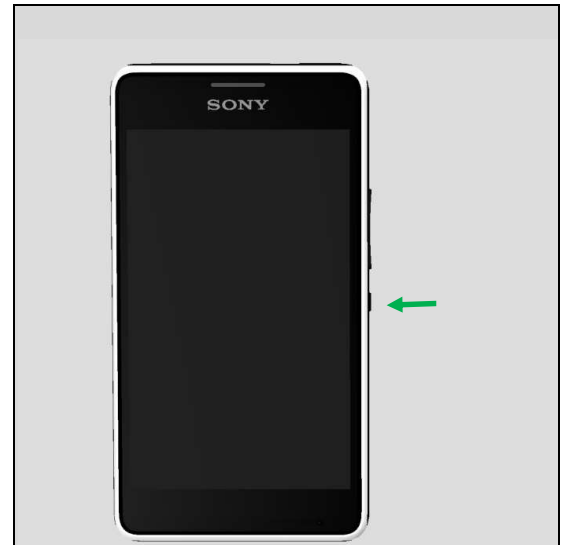


## Tests

### 2.3 Manual Tests

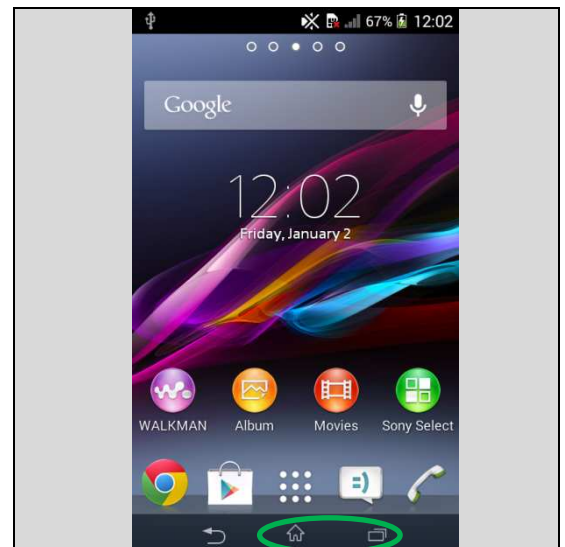
#### 2.3.1 On/Off Key test

- 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.



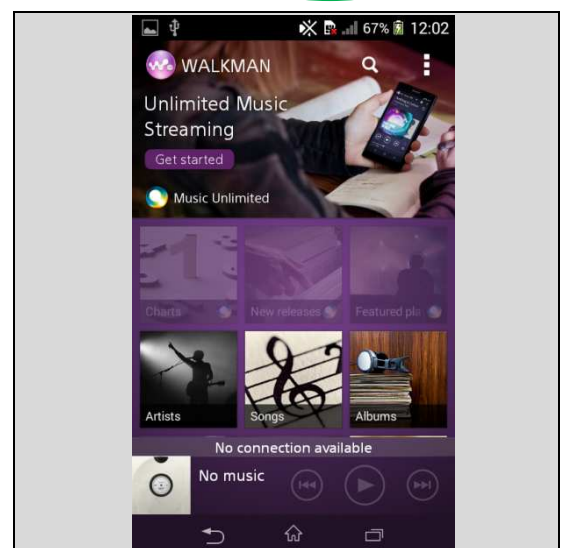
#### 2.3.2 Home/Multitask keys test

During operation, press each key and the phone will go back to the relative screen directly.



#### 2.3.3 Walkman key test

Press Walkman key and the phone will go back to Walkman screen directly.



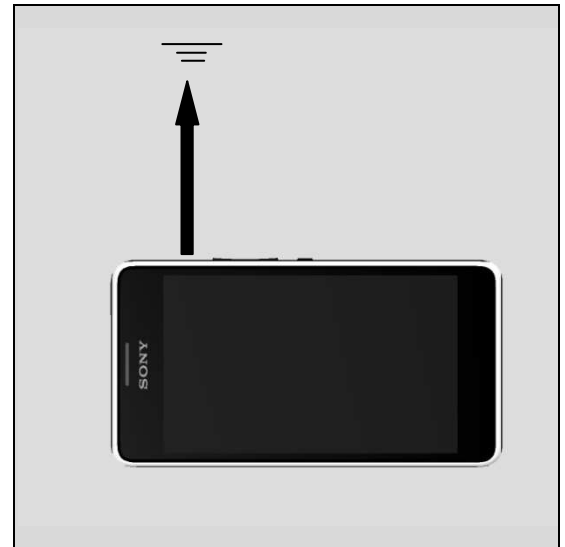
## Tests

### 2.3.4 Mobile TV test (D2114 only)

This function test can only be used for D2114.  
Start the phone.

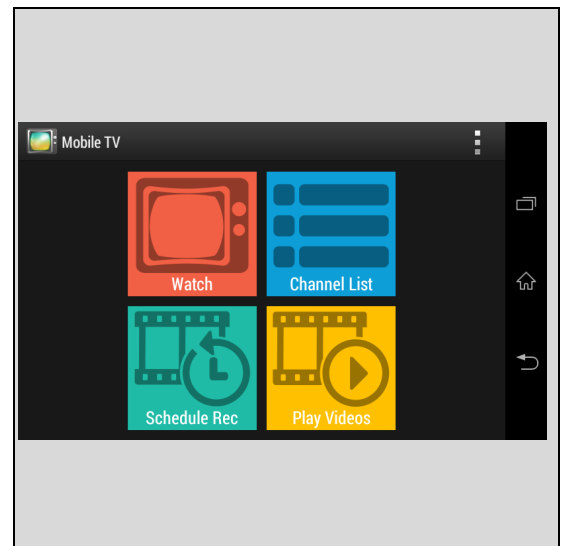
Verify that the phone can detect Mobile TV channels:  
Pull out the Mobile TV antenna.

From the Home screen, tap , and then tap [Mobile TV].

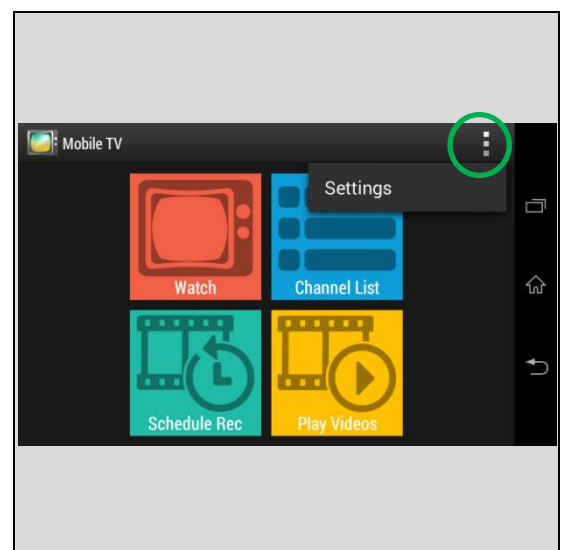


Mobile TV screen as shown in picture:

- Watch: it will search available channels first and then Play.
- Channel List: it will search available channels list;
- Schedule Rec: it will record Mobile TV program;
- Play Videos: it will play the recorded Mobile TV program.

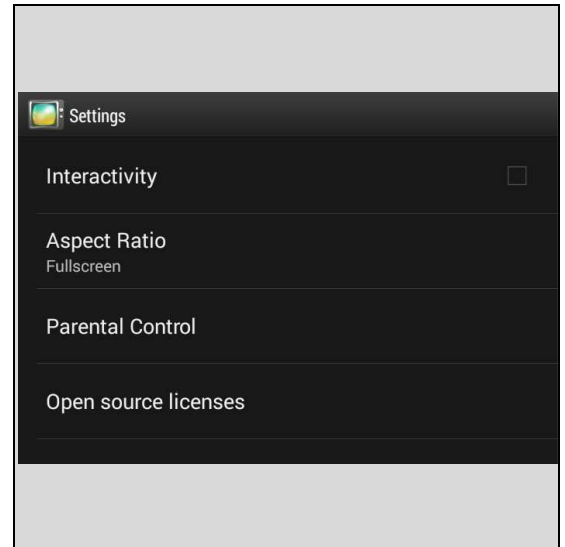


Select button at right-top corner, it will enter settings menu.



## Tests: Manual Tests

Settings menu as shown in picture.



## Tests: Manual Tests

### 2.3.5 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!**

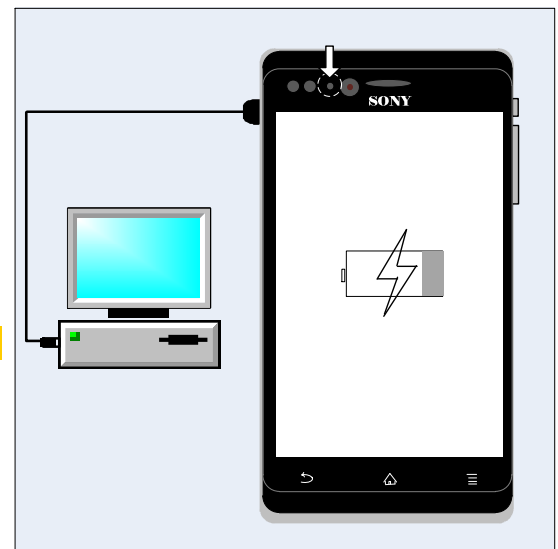
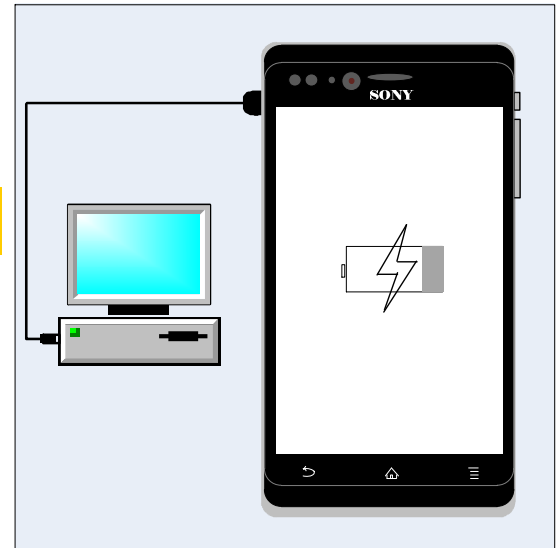
- Step 1: Insert a battery, but do not start the phone;
- Step 2: Connect a USB cable from a computer or charger to the phone;
- Step 3: Verify that the phone is being charged by the notification LED and the Battery icon in the display;
- Step 4: Remove the USB cable from the connector and verify that the notification LED and Battery icon no longer indicates charging.

The Notification LED color status is depended on battery remaining capacity:

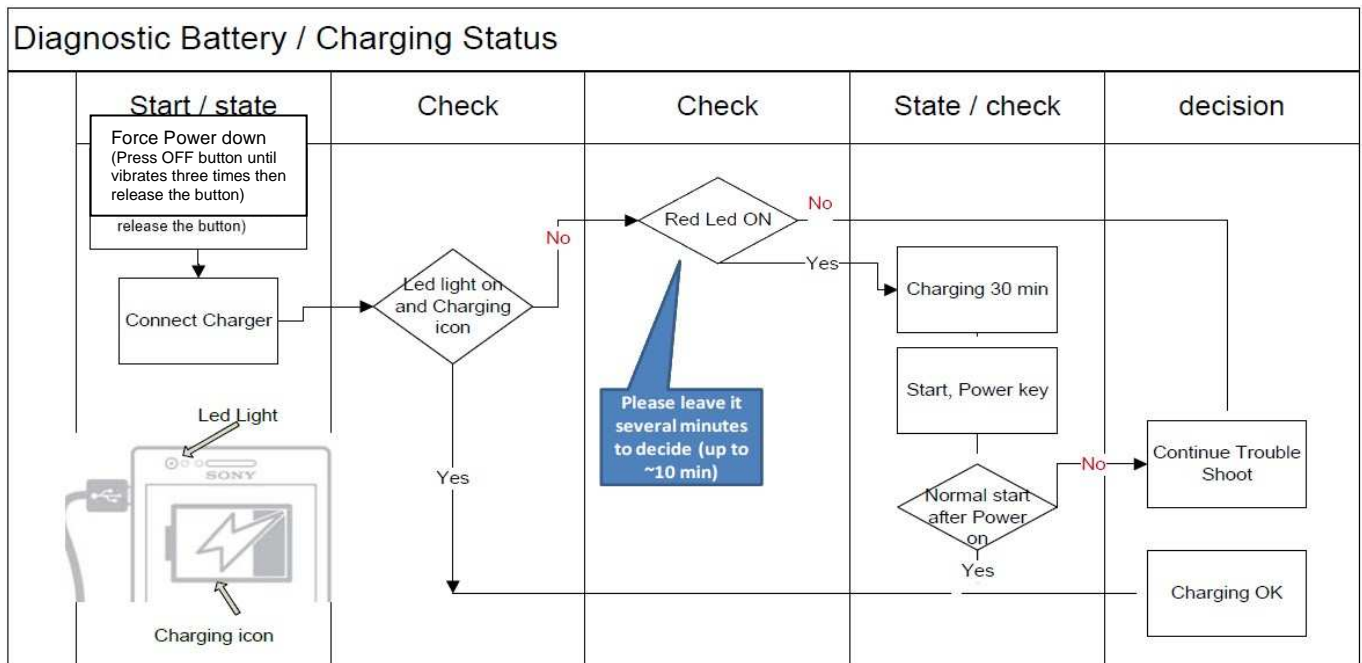
- Red: Battery level is between 1% and 14%;
- Orange: Battery level is between 15% and 89%;
- Green: Battery level is between 90% and 100%.

**Sample phone are used in picture as reference only.**

If above fails, perform below Diagnostic battery / Charging Status check.



## Tests: Manual Tests



The picture in above flow chart is only symbolic view.

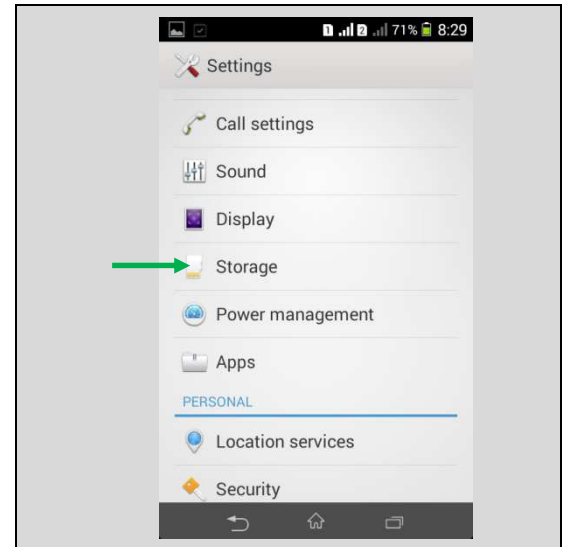
## Tests: Manual Tests

### 2.3.6 Internal Memory Test

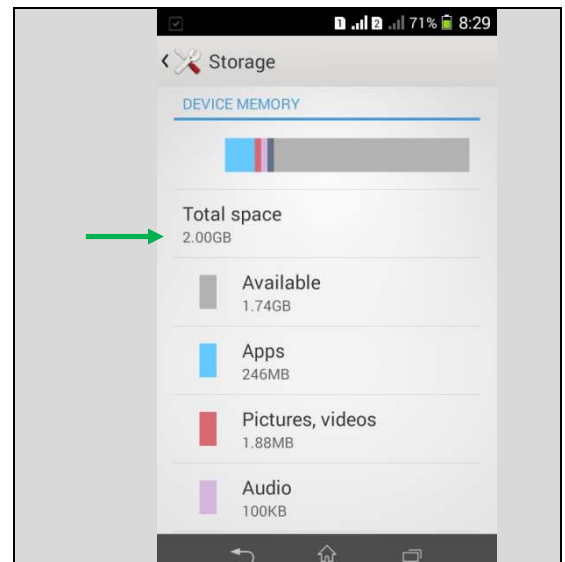
Verify that the internal memory performs properly:

Step 1: Press Menu key and go to *Settings*;

Step 2: Press *Storage* and check the storage information;



Verify that the display shows the total Space is about 2GB.

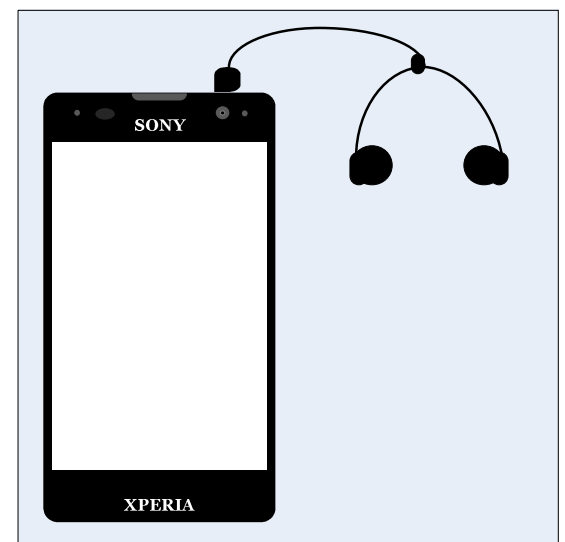


### 2.3.7 Audio Jack test

Connect a Sony CTIA headset.

Repeat the test of "2.2.3 Speaker", "2.2.4 Earphone" and "2.2.5 Microphone".

Make sure that the sound from Headset earphone ports are emitted loud and clear.

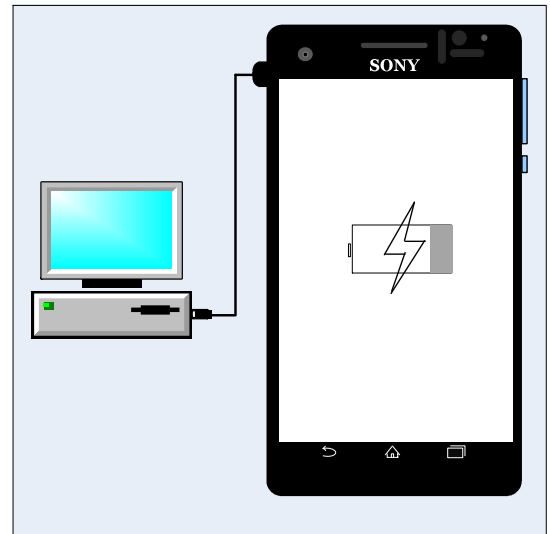


Only symbolic view

## Tests: Manual Tests

### 2.3.8 Data Communication test

- Connect a USB cable from a computer to the started phone.
- Verify that Data Communication works by transferring a file from Computer to phone
- Erase the file



*Only symbolic view*

## Tests

### 2.4 Network Test

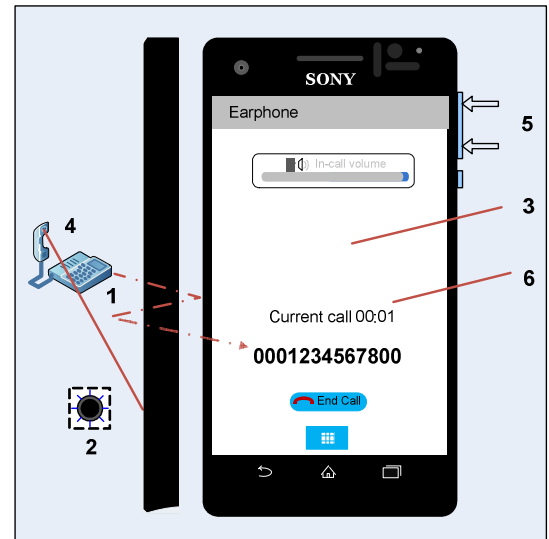
**This test can only be performed if the phone has an activated SIM/USIM card (no Test SIM/USIM/UIM) and an available network signal!**

**There are different versions of the test depending on whether GSM / UMTS network is available or not!**

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

#### 2.4.1 Procedure (GSM & UMTS)

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



Only symbolic view



## Tests: Network Test

### 2.4.2 On-the-air call to mobile (Dual SIM Card)

#### GSM

Go to the Setting app:

Step1: Settings ⇒ *Dual SIM settings* ⇒ *SIM CARDS ENABLE* ⇒ *select Slot 1 only or Slot 2 only*

Ensure that the Network Status icon show SIM1 or SIM2 signal strength at the top of the display.

Step2: Settings ⇒ *More...* ⇒ *Mobile Networks settings* ⇒ Network mode ⇒ GSM only

To verify the radio functions (GSM) of the phone, follow the '2.5.1 Procedure (GSM & UMTS)' above.

#### WCDMA

Go to the Setting app:

Step1: Settings ⇒ *Dual SIM settings* ⇒ *SIM CARDS ENABLE* ⇒ *select Slot 1 only or Slot 2 only*

Ensure that the Network Status icon show SIM1 or SIM2 signal strength at the top of the display.

Step2: Settings ⇒ *More...* ⇒ *Mobile Networks settings* ⇒ Network mode ⇒ WCDMA only

To verify the radio functions (WCDMA) of the phone, follow the '2.5.1 Procedure (GSM & UMTS)' above.

## Tests: Network Test

## 2.4.3 On-the-air call to mobile (Single SIM Card)

### **GSM**

Go to the Setting app:

Step: Settings ⇒ *More...* ⇒ *Mobile* Networks settings ⇒ Network mode ⇒ GSM only

To verify the radio functions (GSM) of the phone, follow the '2.5.1 Procedure (GSM & UMTS)' above.

### **WCDMA**

Go to the Setting app:

Step: Settings ⇒ *More...* ⇒ *Mobile* Networks settings ⇒ Network mode ⇒ WCDMA only

To verify the radio functions (WCDMA) of the phone, follow the '2.5.1 Procedure (GSM & UMTS)' above.

### 3 Revision History

Rev.	Date	Changes / Comments
1	2014-02-17	Initial release