

## Test Instructions

- mechanical -



*Xperia™ E5*  
**F3311, F3313**

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

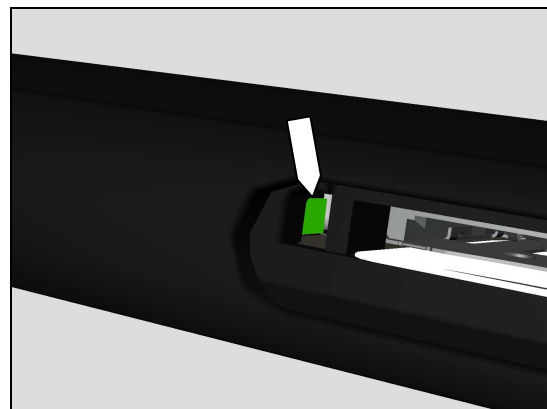
## Pre-Test Preparation

### 1.1 Hardware

#### 1.1.1 Water indicator inspection

Before starting any tests the Water indicator has to be checked.

The indicator is located as shown in picture after Cap SIM/SD is opened.

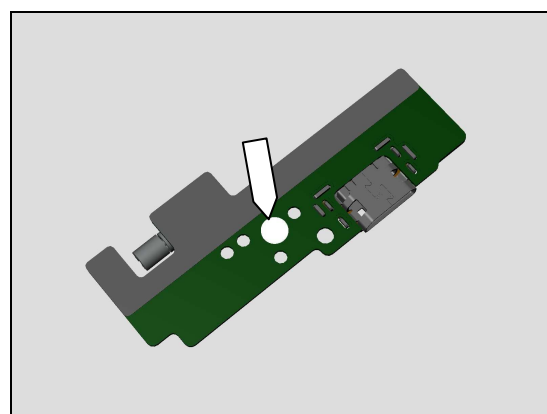


**As for white color unit, use Flashlight function to illuminate the position as shown in picture while checking the indicator.**



The other indicator is located as shown in picture after Sub PBA Assy is disassembled (following Working Instruction).

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



## Pre-Test Preparations

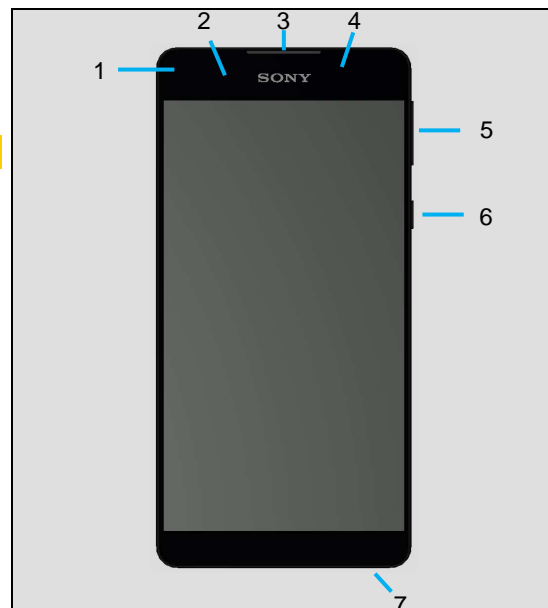
### 1.2 Test Enablers

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

**Note! The product supports only Nano SIM!**

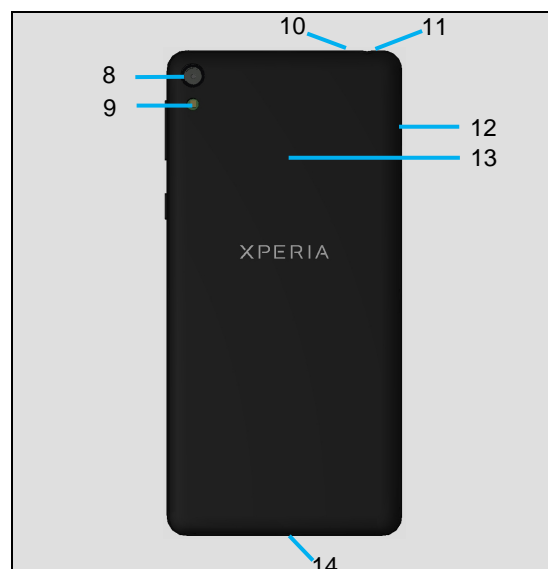
#### Front:

1. Notification LED
2. Light Sensor, Proximity Switch
3. Earphone(Receiver) port
4. Secondary Camera
5. Volume up/down Key
6. Power Key
7. Speaker bottom&Microphone port

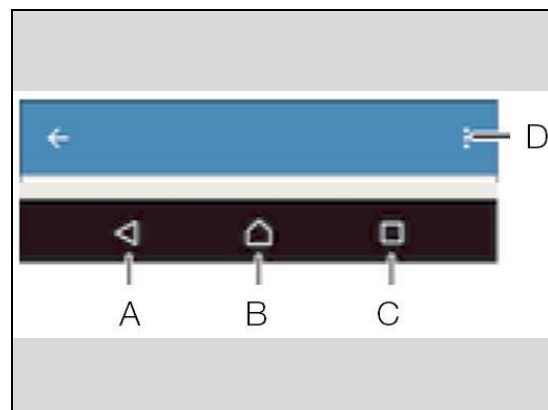


#### Back:

8. Camera
9. LED Flash
10. Secondary Microphone
11. Audio jack
12. Nano SIM and Memory card slot
13. NFC area
14. USB slot



- A. Back key
- B. Home key
- C. Task navigation key
- D. Menu key



## 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. The latest improvements are found on the support pages under the support news: <http://www.sonymobile.com/global-en/support/>.

- Start up the phone
- Make sure the phone is in call setup.
- Press the following keypad combination: \*##7378423##\* (i.e. \*##service##\*)
- 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 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:

- Open the Emma application and log in.
- Press and hold 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.

**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://software.sonymobile.com/emma/documents/emma\\_user\\_guide.pdf](http://software.sonymobile.com/emma/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.**

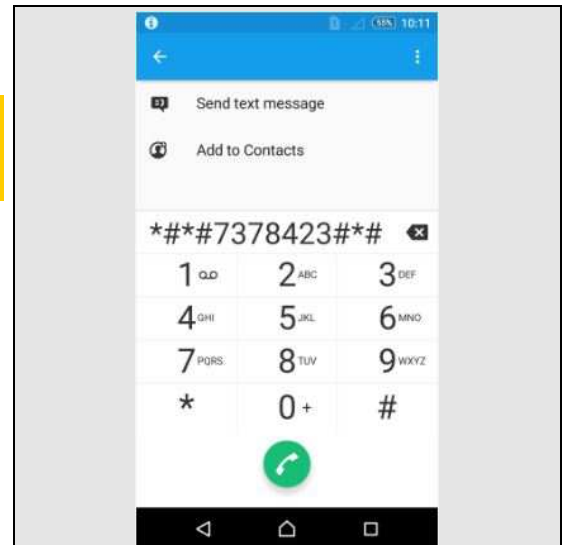
## 2 Tests

### 2.1 Service Test Mode

**Stamina mode needs to be turned off before entering Service Test Mode**

**Settings -> Power management -> STAMINA mode**

- Start up the phone, go to call setup.
- Press the following keypad combination: **\*##7378423##** (i.e. **\*##service##**)



**Service info:**

**Information about Model, Software, Simlock, Configuration (IMEI, bands, codec's, Firmware), WLAN Mac address etc.**

**Service settings: Do not use**

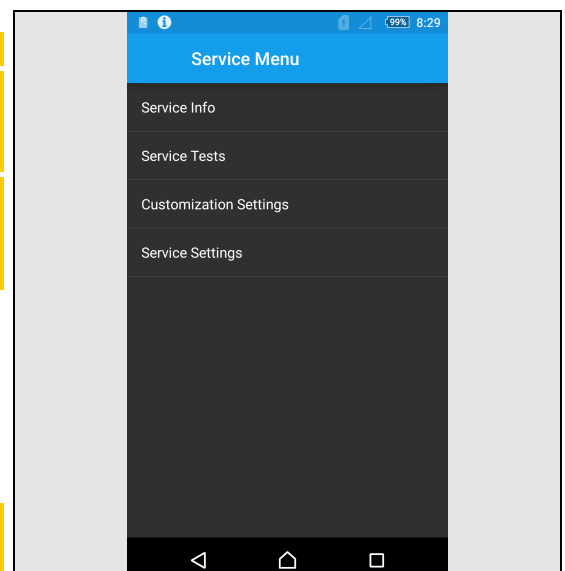
**Service test: Follow instruction below**

**Customization Settings: Do not use.**

- 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

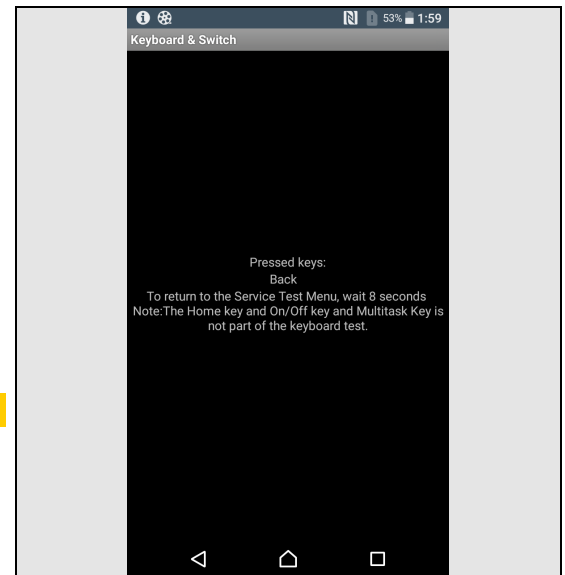
## 2.2 Service Tests

### 2.2.1 Keyboard & Switch

Press below keys:

- **Back key:** notification on screen.
- **Volume up key:** notification on screen.
- **Volume down key:** notification on screen.

**To return to the Service Test Menu, wait for 8 seconds.**

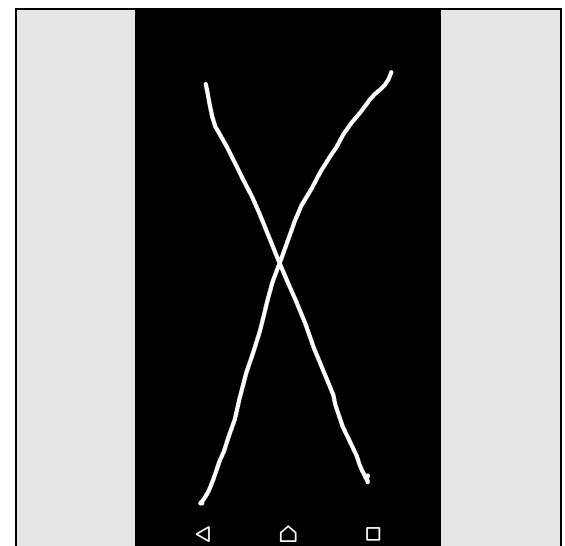


### 2.2.1 Touch Screen

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

Check all area of the touch screen as indicated by the two lines.

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



### 2.2.2 Display

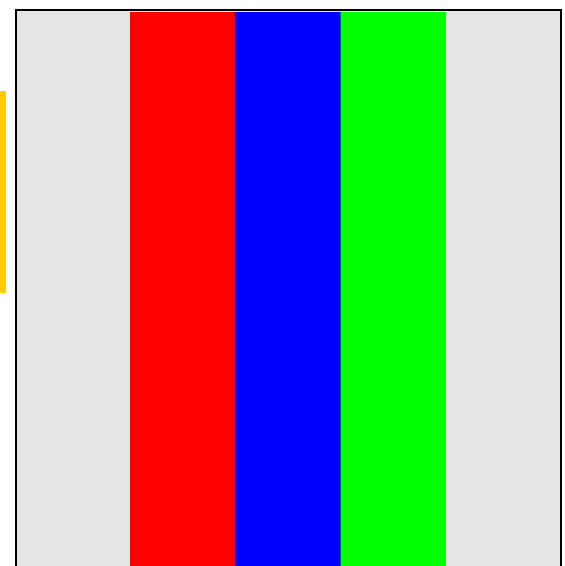
**Minor variations in the display's brightness and color may occur between phones.**

**If any tiny bright dots on the display are found, this indicates defective pixels which occur when individual dots have malfunctioned and cannot be adjusted.**

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

Touch the display using a finger. With every touch, the display will show six test patterns of Black, Red, Green, Blue, Grey and Rainbow Colors and in sequence on the 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

### 2.2.3 LED/Illumination

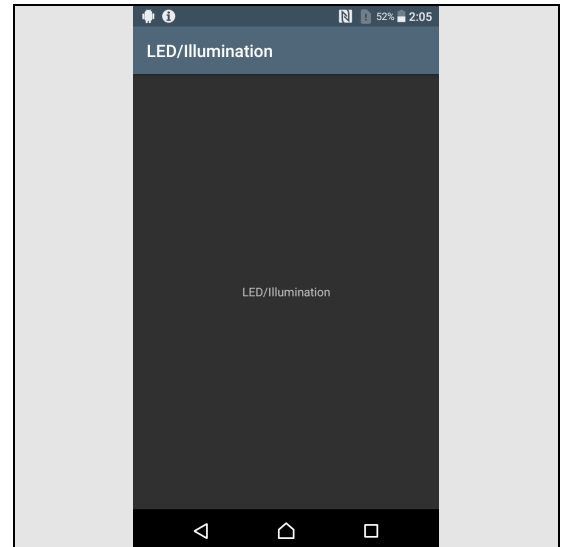
Check that the:

- Notification LED changes, showing four colors in the following sequence: red, green, blue and off.

Check that the:

- Display Backlight illumination goes from low to high strength back to low again.

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



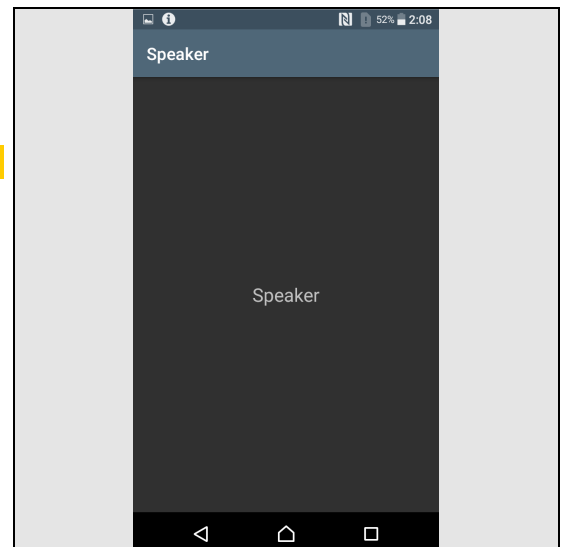
### 2.2.4 Speaker

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

Make sure that the sound from the Loudspeaker port is emitted loud and clear and that the test includes maximum volume.

Press the volume up/volume down key to adjust the Loudspeaker volume.

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

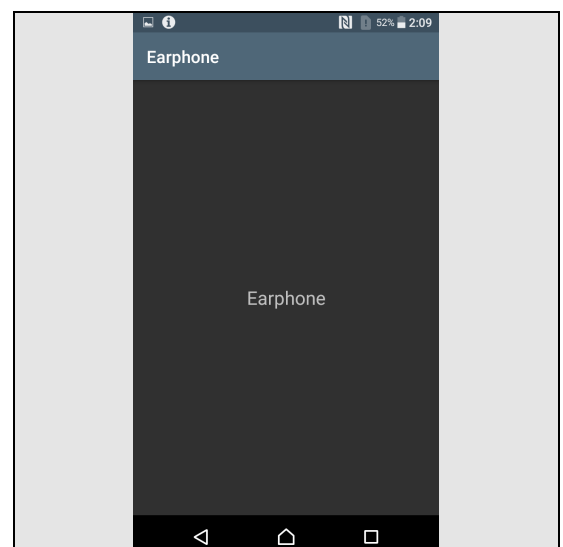


### 2.2.5 Earphone

Make sure that the sound from the Earphone(Receiver) port is emitted loud and clear and the test includes maximum volume.

Press the volume up/volume down key to adjust the Earphone(Receiver) volume.

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



## Tests: Service Tests

### 2.2.6 Microphone

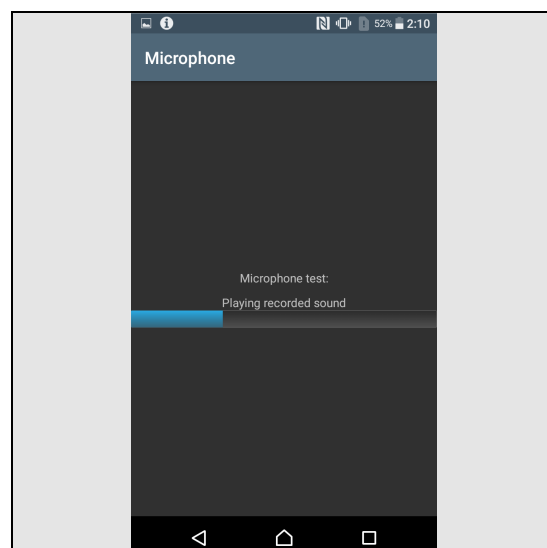
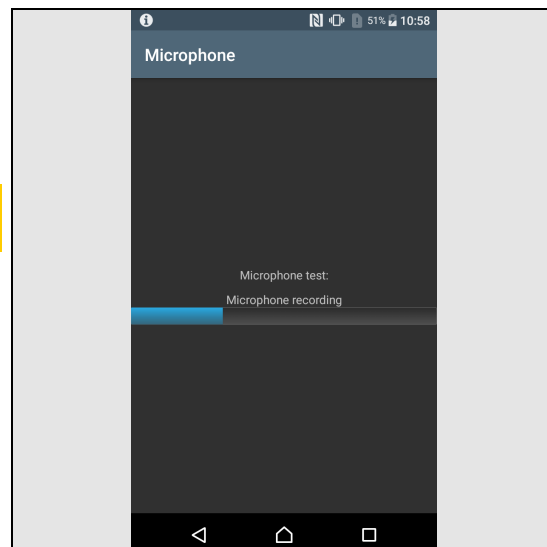
**The previous 'Speaker' test must have been successfully carried out before doing this test!**

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

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

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

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

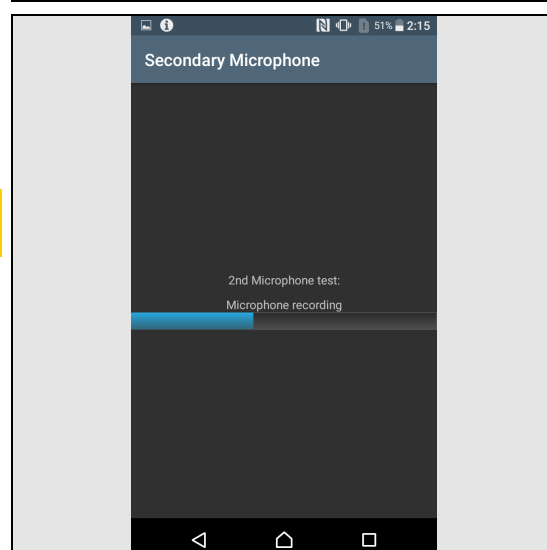


### 2.2.7 Secondary Microphone

**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 loudspeaker.

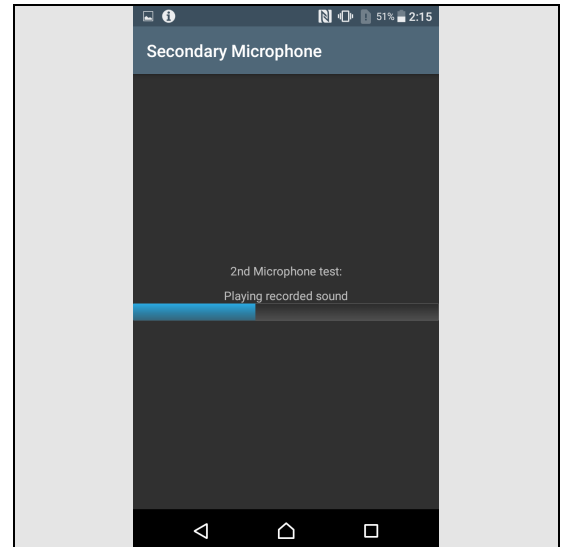
Step 1: Speak into the secondary microphone during the 'Microphone Recording' phase;



## Tests: Service Tests

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

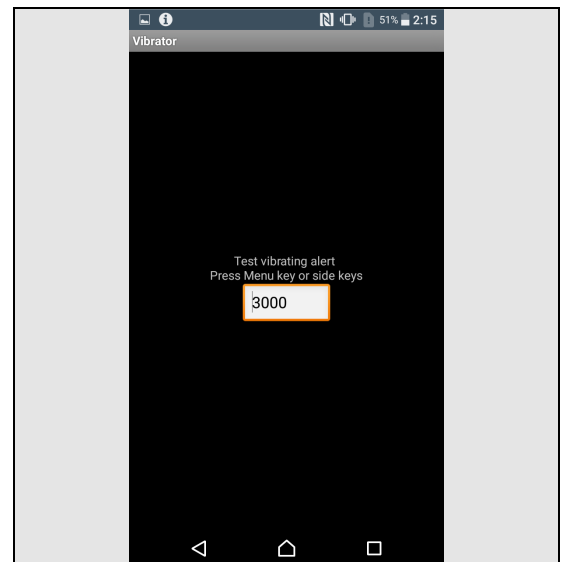
Press the Back key to return to the Service Test Menu.



### 2.2.8 Vibrator

Press the side keys to start the vibrator test.  
It is possible to modify the duration of this test.

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



### 2.2.9 Camera

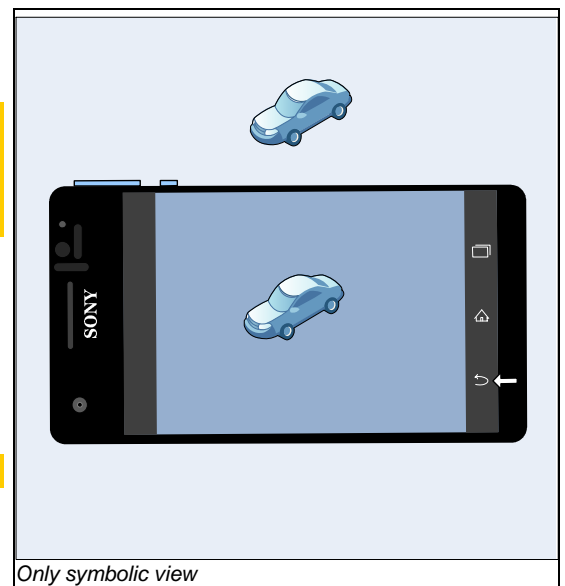
**Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!**

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

Touch the screen to take picture and preview the photo's auto focus quality.

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

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



Only symbolic view

## Tests: Service Tests

### 2.2.10 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.

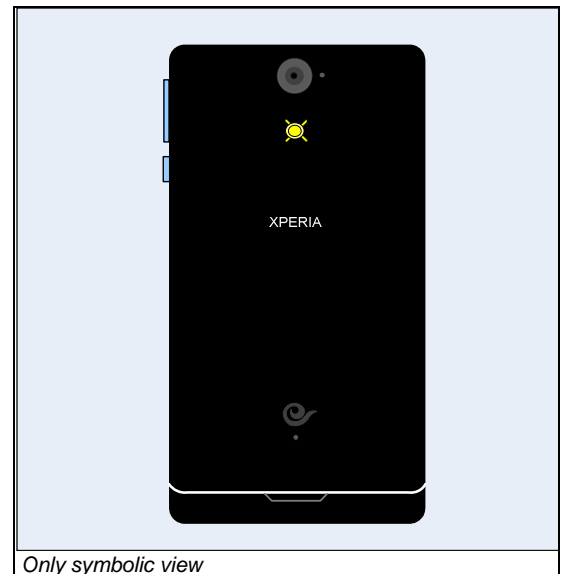
Press the Back key to return to the Service Test Menu.



### 2.2.11 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.

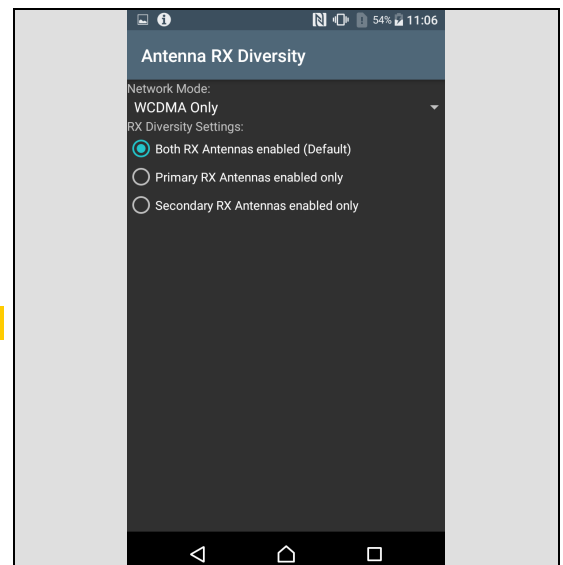


### 2.2.12 Antenna RX Diversity

N/A.

**Do not use this test!**

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



## Tests: Service Tests

### 2.2.13 Bluetooth

**During this test, the distance between the phone and the target Bluetooth device must be 1.5 to 5 meters! Make sure the target Bluetooth device is enabled and visible always!**

The Bluetooth test will be done in following sequences:

Step 1: Enable Bluetooth; wait 4-5 seconds;

**There is a permission request, select 'Allow'.**

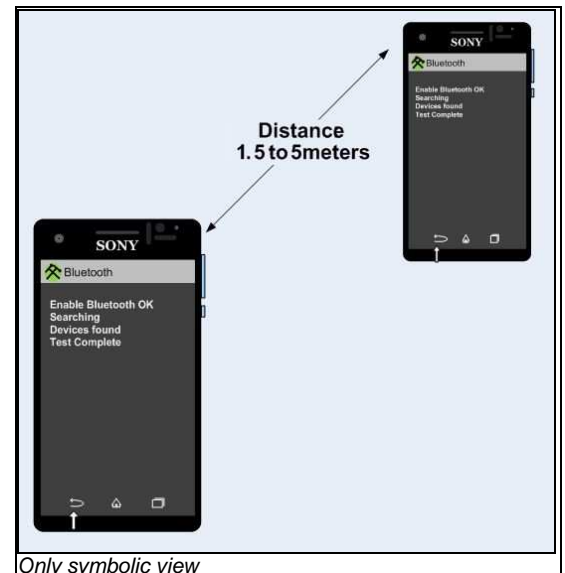
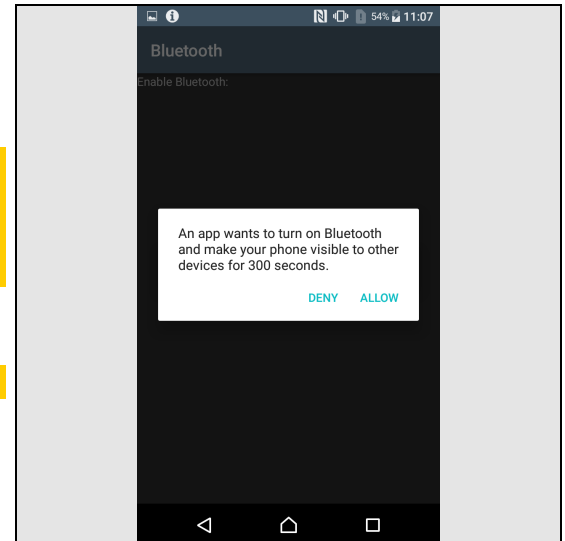
Step 2: Searching;

Step 3: Show the Device Found list;

Step 4: Select the Target Bluetooth Device, and type the PIN code to pair;

Step 5: Type the Pairing PIN code on the Target Bluetooth Device also, when successful, it shows 'Test Complete'.

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



### 2.2.14 WLAN

**Make sure there's a 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;

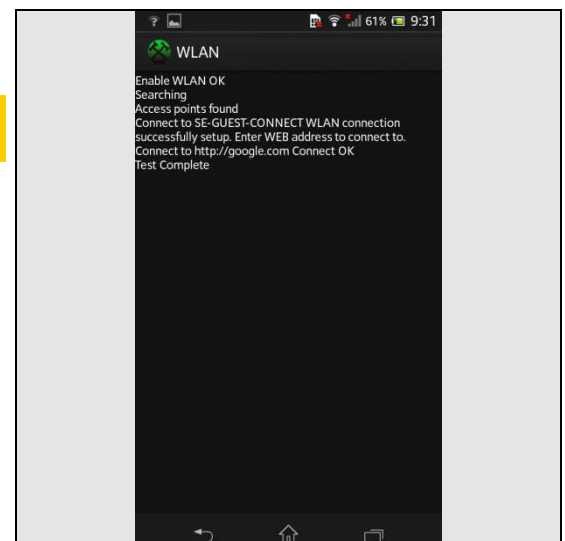
Step 3: Access points found list;

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

Step 5: Enter a web address (e.g. Google.com);

Step 6: When connection succeeded, it shows 'Test Complete'.

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



## Tests: Service Tests

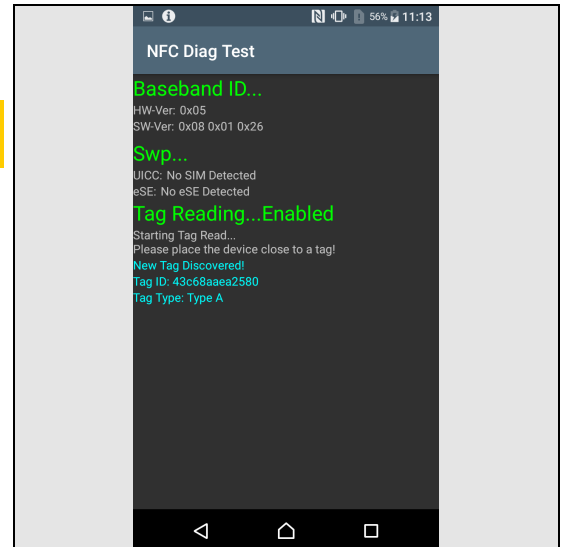
### 2.2.15 NFC

**A NFC SIM card 4FF should be inserted in the phone before the start of this test!**

The NFC test will be done in following sequences:

- Step 1: Select 'NFC';
- Step 2: Select 'NFC Diag Test';
- Step 3: After 'Tag Reading...Enabled' can be seen on the display, bring a NFC Tag close to NFC icon on the Battery Cover Assy.
- Step 4: When Tag is identified, a sound will be made and an OK message will be displayed.

Press the Back key to return to Service Test Menu.

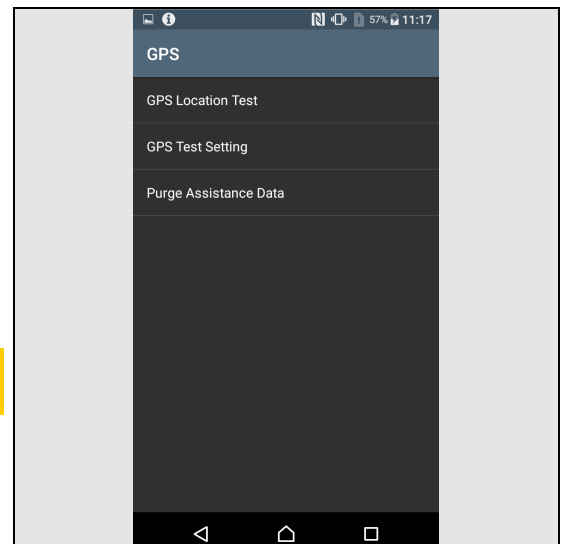


### 2.2.16 GPS

Enter the GPS Location Test and wait for the GPS location data.

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

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

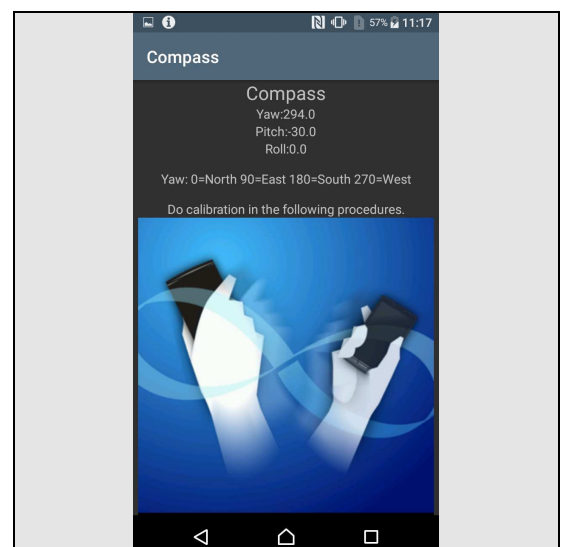


### 2.2.17 Compass

Do the test with hand movements as shown in the phone, and then check the actual direction with measured Yaw value.

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

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

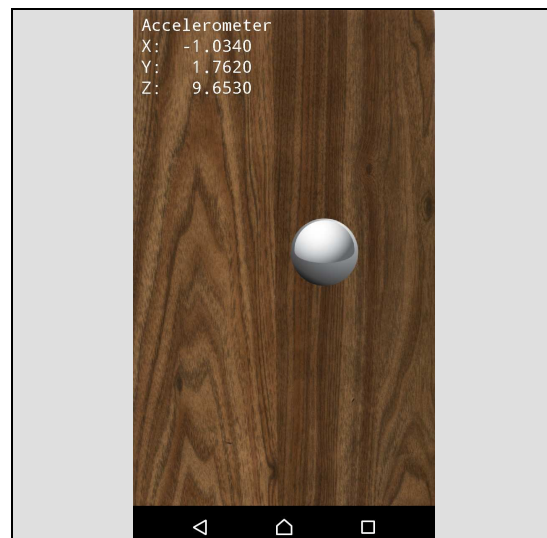


## Tests: Service Tests

### 2.2.18 Accelerometer

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

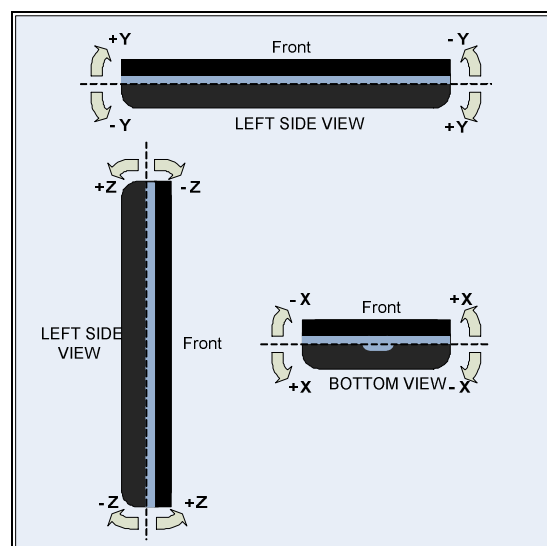
Press the Back key to return to the Service Test Menu.



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.

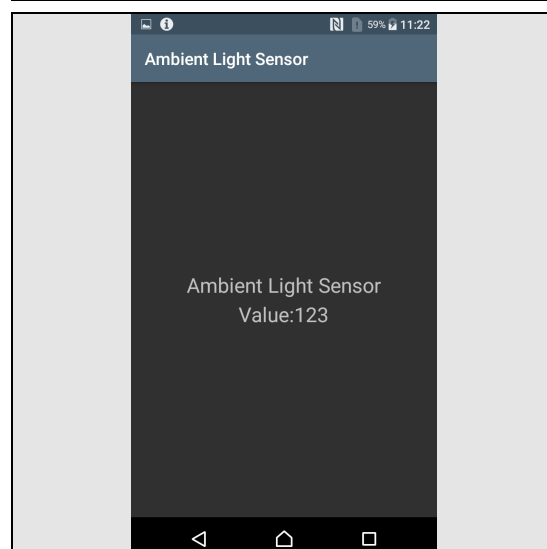
Press the Back key to return to the Service Test Menu.



### 2.2.19 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 to return to the Service Test Menu.



## Tests: Service Tests

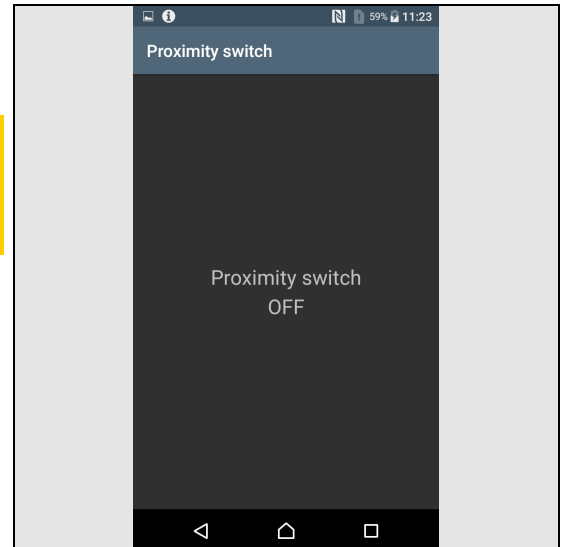
### 2.2.20 Proximity switch

**The previous 'Speaker' test 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.

When covering the proximity switch area, the screen will show 'Proximity switch ON' with a different type of tone.

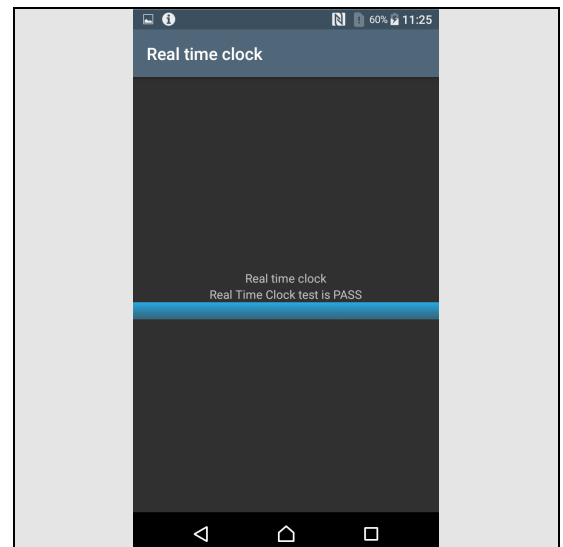
Press the Back key to return to the Service Test Menu.



### 2.2.21 Real time clock

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

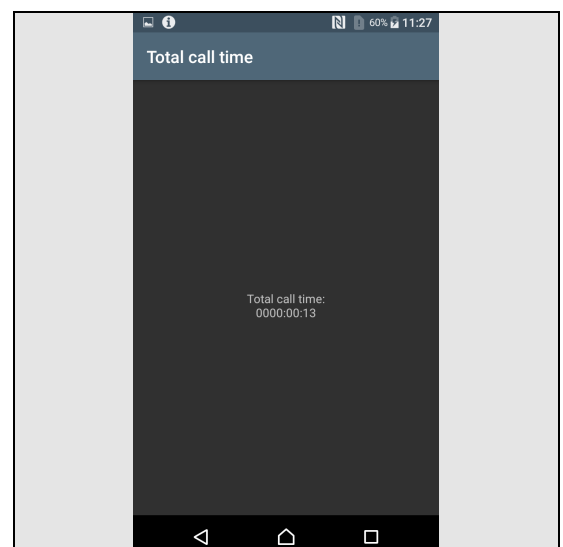
Press the Back key to return to the Service Test Menu.



### 2.2.22 Total call time

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

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





## Tests: Service Tests

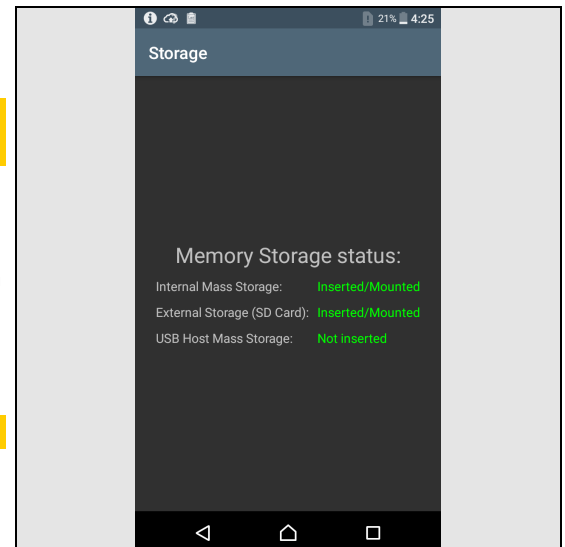
### 2.2.23 Storage

**A memory card should be inserted in the phone before starting this test.**

- Internal Mass Storage is 'Inserted/Mounted' as shown on the screen.
- External Storage (SD Card) is 'Inserted/Mounted' as shown on the screen.
- The USB Host Mass Storage is 'Not inserted' as shown on the screen.

**F3311 and F3313 do not support OTG function.**

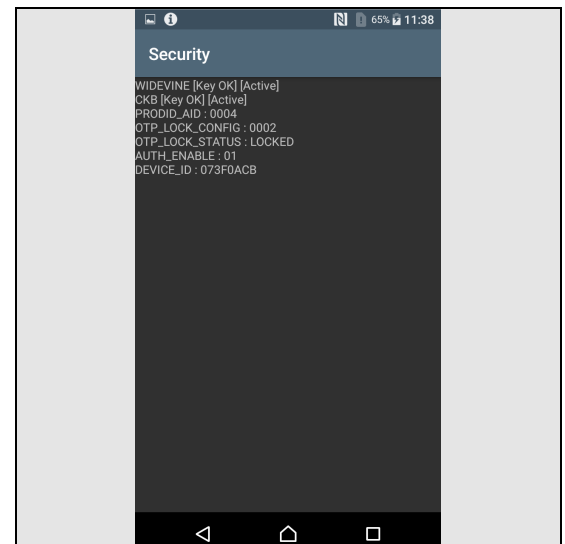
Press the Back key to return to the Service Test Menu.



### 2.2.24 Security

The DRM keys are shown in the display.  
There may be different content shown based on different market software versions.

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

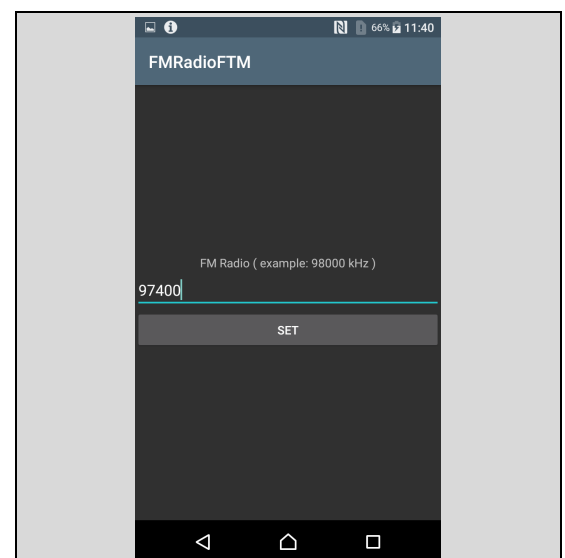


### 2.2.25 FM Radio

Verify that the phone can detect a radio station:  
Connect a headset and then set your local radio station in Hz.

Verify that the reception and sound quality is normal.

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



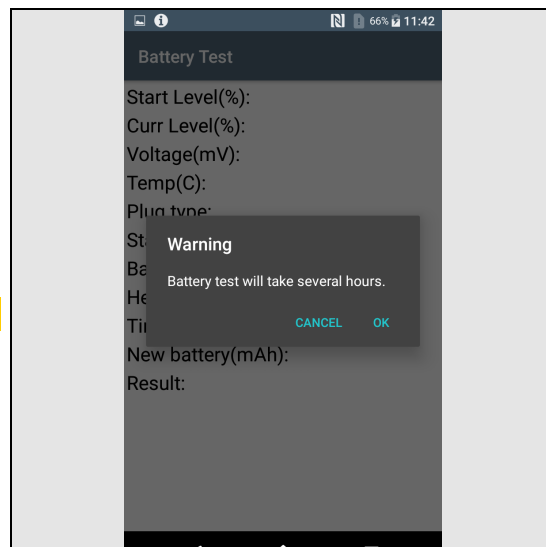
## Tests: Service Tests

### 2.2.26 Battery Test

N/A

**Do not use this test!**

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

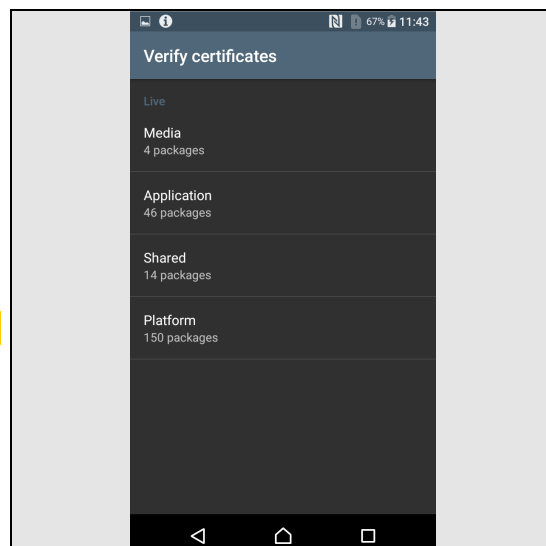


### 2.2.27 Verify certificates

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

**Do not use this test!**

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



## Tests: Manual Tests

### 2.3 Manual Tests

#### 2.3.1 SIM test

Verify that the phone can detect a SIM card:

Step 1: Insert a SIM card, and start the phone;

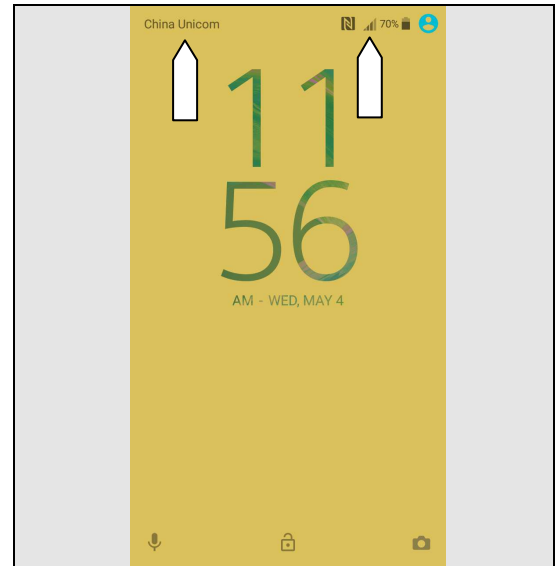
If the SIM card is detected by the phone, the start-up procedure will continue.

Step 2: The operator's name is displayed at the top left corner of the locked screen.

If not detected, the message 'No SIM card-Emergency call only' will be displayed instead.

If operator is not detected, the message 'No service' will be displayed instead.

Press Back key to return to Standby Menu.



#### 2.3.2 Power key test

Press the Power key for a long time to turn the phone on or off.

Press the Power 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 Standby screen.



## Tests: Manual Tests

### 2.3.4 Task navigation key test

Whatever the phone shows now during operation, press the Task navigation key to show the programs used recently.

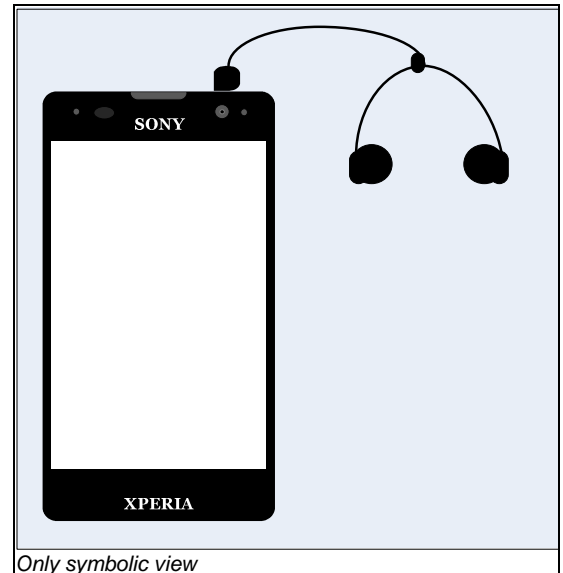


### 2.3.5 Audio Jack test

Connect a Sony CTIA headset (with microphone).  
(see [www.sonymobile.com](http://www.sonymobile.com) go to the product and then Accessories)

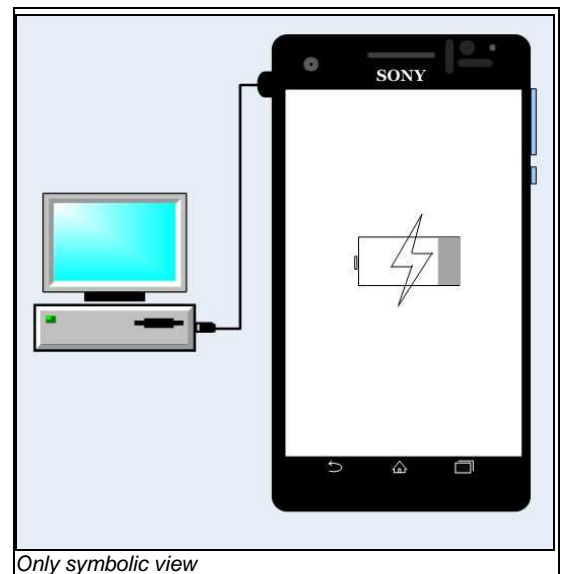
Repeat the test of “Speaker”, “Earphone” and “Microphone”.

Make sure that the sound to and from Headset is emitted loud and clear.



### 2.3.6 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



## Tests: Manual Tests

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

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

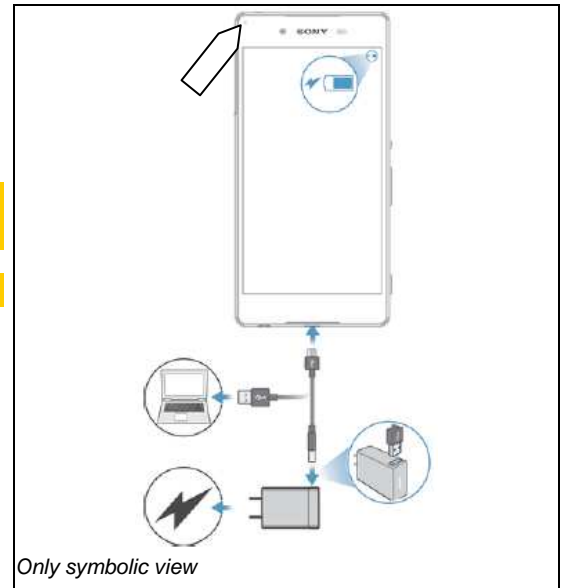
**Ensure that no computer application, such as PC Suite or Emma, is active!**

**Do not start the phone.**

Connect a USB cable from a computer or charger to the phone.

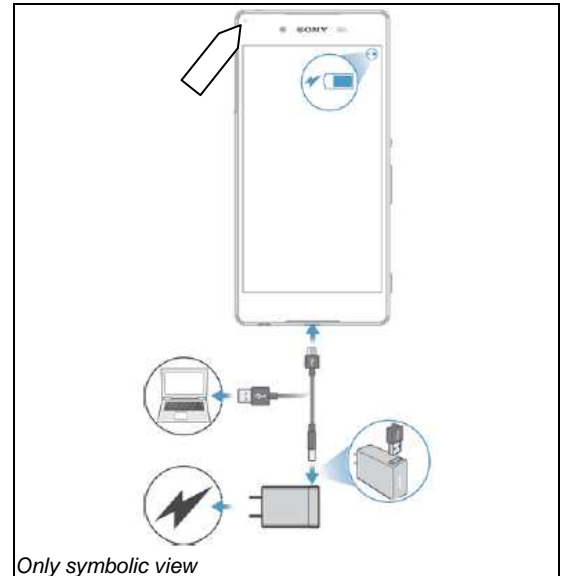
Verify that the phone is being charged by the notification LED and Battery icon in the display.

Remove the USB cable from the connector and verify that the Notification LED (see 1.2 Test Enablers) and Battery icon no longer indicates charging.



The Notification LED (see 1.2 Test Enablers) colour status is depended on battery remaining capacity:

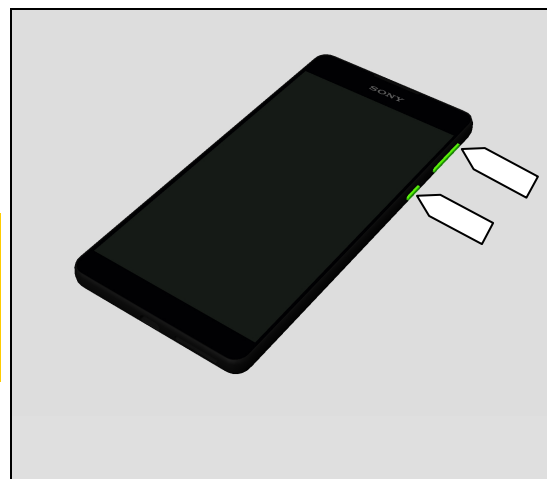
- Red: Battery level is between 1% and 10%;
- Orange: Battery level is between 11% and 89%;
- Green: Battery is between 90% and 100%;



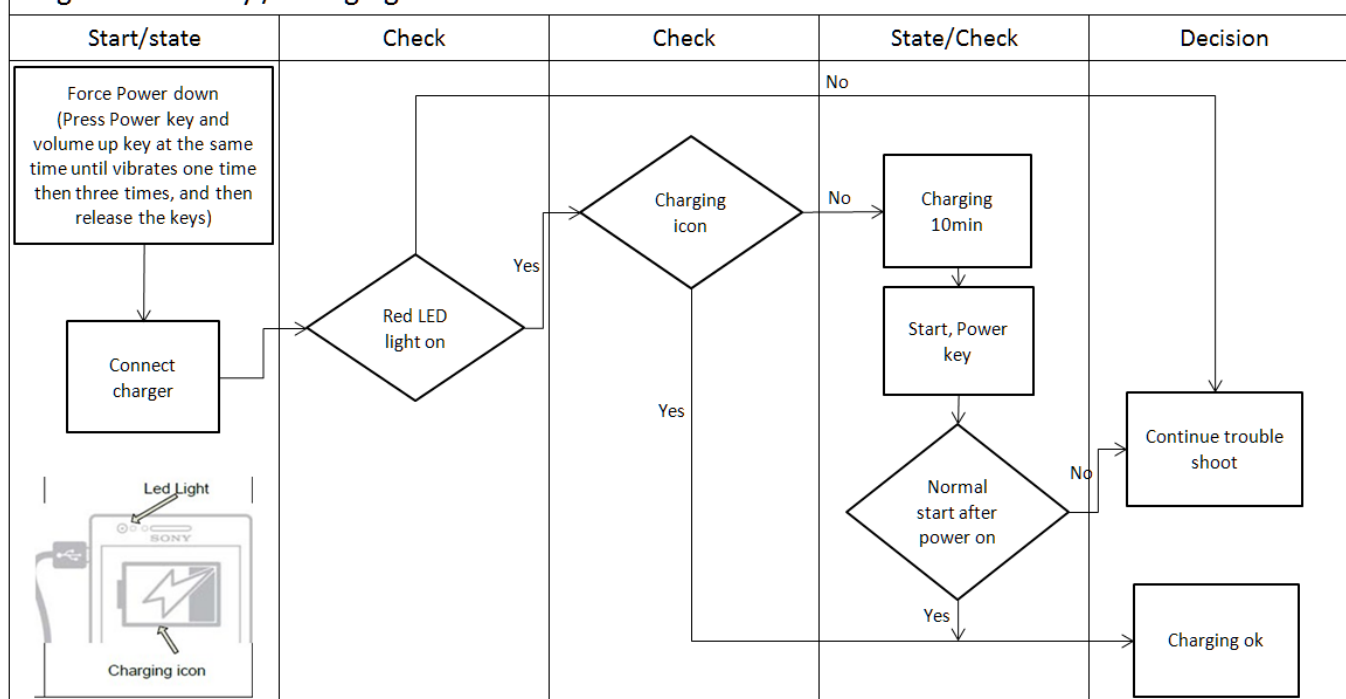
## Tests: Manual Tests

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

**Perform a force shut down by pressing the Power key and volume up key at the same time (for 15 seconds), as shown in picture, until the unit vibrates one time then three times, and then release the button. Then the phone will shut down.**



### Diagnostic Battery / Charging Status



The picture in above flow chart is only symbolic view.

## Tests

### 2.3.8 Battery Test

If bad battery performance or capacity problem is claimed, the battery and charging function can be tested by using an application designed for this purpose.

By using this application the battery is tested in a fast and controlled environment.

This is especially convenient when units with embedded batteries should be checked, to avoid unnecessary work to disassembly the unit to access the battery.

This test is designed to identify a faulty battery or a hardware issue in the unit or with the charger. The guide will describe different procedures depending on the battery level when the battery test is initiated.

The test is downloaded to the unit using cable and executed.

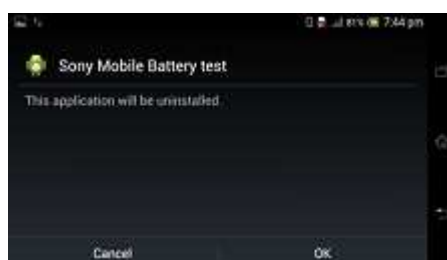
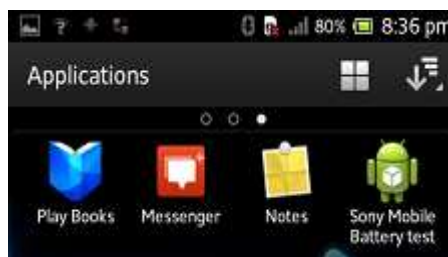
The test is available in Repair Info at Level: Mechanical,

Title: **Sony Mobile Repair Application 1289-2983**

Unzip this file, where you find the application, installation and user guide content.

Installation / un-installation and log reading are now included in Sony Mobile Repair Application 1289-2983.

Error messages are described in the user guide for the Sony Mobile Battery test.



# Tests

## 2.4 Network Test

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

***There are different versions of the test depending on whether a LTE, UMTS network is available or not!***

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

### 2.4.1 Procedure (GSM & UMTS)

Step 1: Set up a call from a landline phone (PSTN).

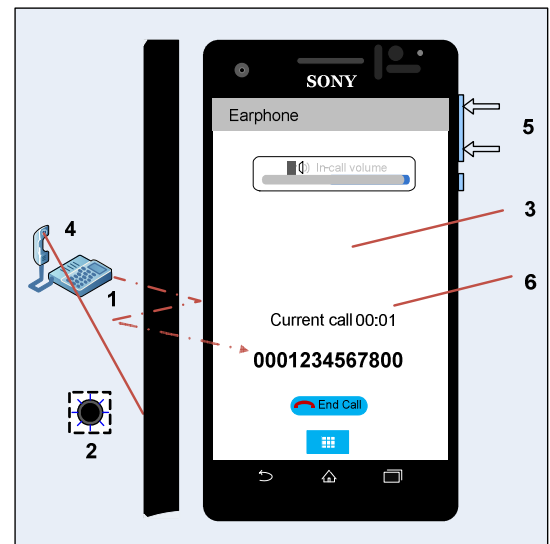
Step 2: Check that there is a ring signal.

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

#### **GSM**

Go to the Setting app:

Settings ⇒ More ⇒ Mobile Networks ⇒ Preferred network type ⇒ GSM only

Ensure that the Network Status icon show signal strength and show no symbol or E at the top of the display.

To verify the radio functions (GSM) of the phone, follow the '2.4.1 Procedure (GSM & UMTS)' above.

#### **UMTS**

Go to the Setting app:

Settings ⇒ More ⇒ Mobile Networks ⇒ Preferred network type ⇒ WCDMA only

Ensure that the Network Status icon show signal strength and show 3G or H+ (HSPA) at the top of the display.

To verify the radio functions (UMTS) of the phone, follow the '2.4.1 Procedure (GSM & UMTS)' above.

#### **LTE (if available)**

Go to the Setting app:

Settings ⇒ More ⇒ Mobile Networks ⇒ Preferred network type ⇒ LTE(preferred)/WCDMA/GSM

Ensure that the Network Status icon show signal strength and show LTE at the top of the display.

To verify the radio functions (LTE) of the phone, download data package by for ex. Accessing the web.

Network Type can be checked in ⇒ settings⇒ about phone⇒status⇒ SIM status⇒ Mobile Network Type

## 3 Revision History

Rev.	Date	Changes / Comments
1	2016-Jun-08	Initial Release
2	2016-Jul-25	1. Updated chapter 2.2.1 since F33 has no camera key. 2. Updated chapter 2.2.23 since F33 do not support OTG. 3. Updated chapter 2.3.7.