

## Test Instructions

- mechanical -



*Xperia™ Z2 Tablet*

SGP511, SGP512, SGP521, SGP541,SGP551,SGP561

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

## 1 Pre-Test Preparations

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

Follow the process according the 1269-3536 Water Resistant Test for PC - mechanical in the including document Test Instruction WRT

Remove the Panel Top Right that covers IR and Microphone according to the 1280-3186 Working Instruction - mechanical, secure that no glue remains in the areas where the gaskets in the WRT fixture connects.

Install the “WRT Inlay plate” (Part “A” in picture) into the generic “WRT Generic Side Inlay”

Attach part “A” with “WRT Generic Side Inlay” in the picture and make sure the unit is aligned against the side without gaskets (arrow) and also that it's arm is aligned to this side.

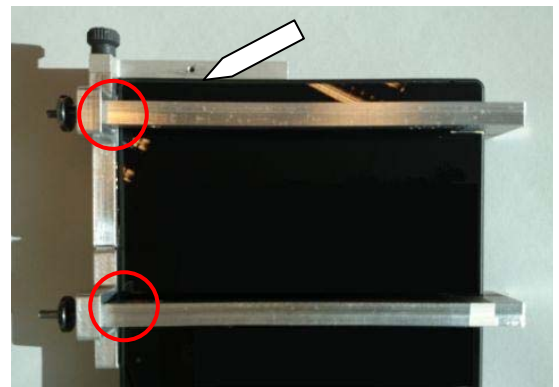
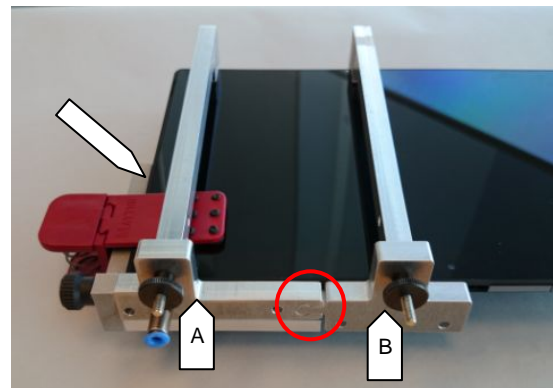
Attach “WRT Inlay plate” Part “B” in picture to seal the microphone and align its arm along part A's arm.

**Be careful so you don't remove the silicon gasket on part “B”. Attach the arm first and then carefully attach the part with silicon gasket and then tighten the nut.**

The upper red ring indicate the gasket that seals the connection to the Water resistance test

The lower red ring indicate the gasket that seals the Microphone opening

Connect it according to 1269-3536 Water Resistant Test for PC - mechanical in the including document Test Instruction WRT



## Pre-Test Preparations

### 1.2 Hardware

#### 1.2.1 Water indicator inspection

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

The Water Indicators are located in the Memory card slot and in the Port USB. They are placed inwards in the unit with the Water indicators edge facing the opening.

If affected (red color) - handle the unit according to the local directives.

If not affected by liquid, proceed to the 'Pre-Test Preparation' below.

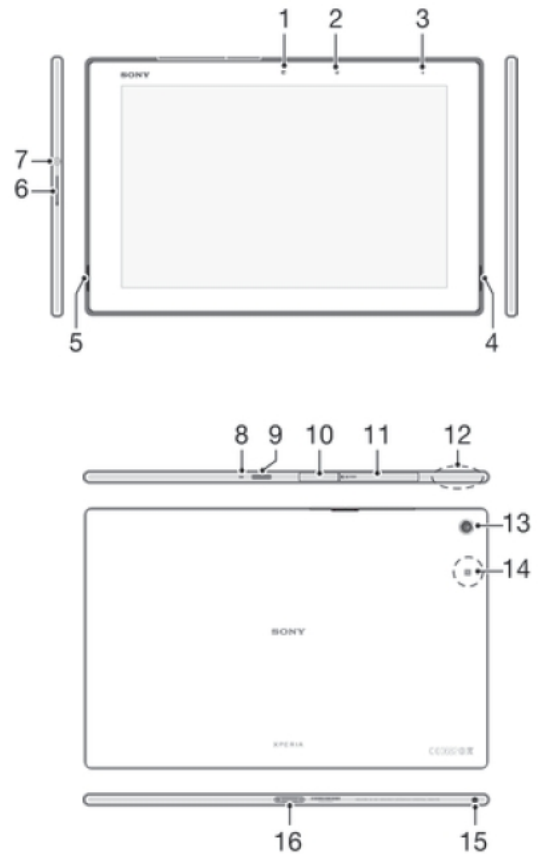


## Pre-Test Preparations

### 1.2.1 Test Enablers

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

1. Secondary camera
2. Ambient Light sensor
3. Notification LED
4. Speaker
5. Speaker
6. Volume key
7. On/Off key (Power key)
8. Microphone
9. IR LED
10. Port USB
11. Memory card/Micro SIM card slot
12. Wi-Fi/GPS/Bluetooth antenna area
13. Camera
14. NFC (detection area)
15. Audio Jack
16. Magnetic connector (to dock)



- A. Application Screen
- B. Back key
- C. Home key
- D. Task key
- E. Notification panel
- F. Menu key  
(Icon order may vary)



## Pre-Test Preparations

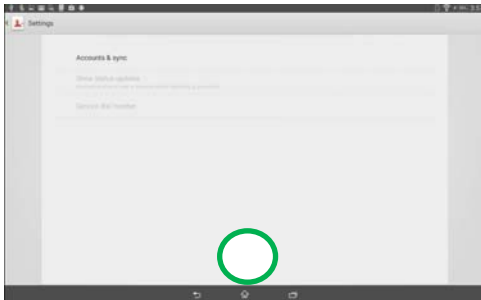
### 1.3 Service Menu

#### 1.3.1 Service menu (N/A SGP511 and SGP512)

- Start up the unit, Open the "Phone app" and its dial pad.
- Press keypad combination: **\*\*\*#7378423#\*\*** (i.e. **\*\*\*#service#\*\***) to enter the Service menu

#### 1.3.2 Service menu (N/A SGP521, SGP541, SGP551 and SGP561)

- Start up the unit, Open the Contacts app and go to Settings (3 dots icon in the upper right corner)
- In Settings for the Contacts app, press in the area marked with a green ring, above the Home key at the bottom of screen (3-5s), until you get "Enter service code" box, tap it to get a dial pad.



- Press keypad combination: **\*\*\*#7378423#\*\*** (i.e. **\*\*\*#service#\*\***) to enter the Service menu

### 1.4 Software

#### 1.4.1 Software version verification

Check the software version of the unit for fault verification, you find latest improvements on the support pages under the support news <http://www.sonymobile.com/global-en/support/>

- Enter Service menu according 1.3 Service Menu.
- Select 'Service info'
- Select 'Software info' and check the software file revisions and update as described below

**For more information, refer to 1220-1333: Generic Repair Manual – mechanical**

#### 1.4.2 Software version update

**Mandatory first repair action!**

**Use the Micro USB to USB cable for this purpose!**

Fully charged battery first, ensure the unit is powered off and proceed as follows:

- Open the Emma application and log in.
- Press and keep the Volume down key on the unit, connect the unit to the USB cable and then release the Volume down key.
- Select the appropriate service and follow the on-screen instructions.

**NOTE: For units with internal storage (built in "SD card" user memory), the only services which erase all user data in the internal memory and update the customization in the internal storage (MS CDF) are the Services "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")**

## 2 Tests

### 2.1 Service Test Mode

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

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

- Enter Service menu according 1.3 Service Menu.

**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**

**Calibration: Do not use**

**Customization Settings: Do not use.**

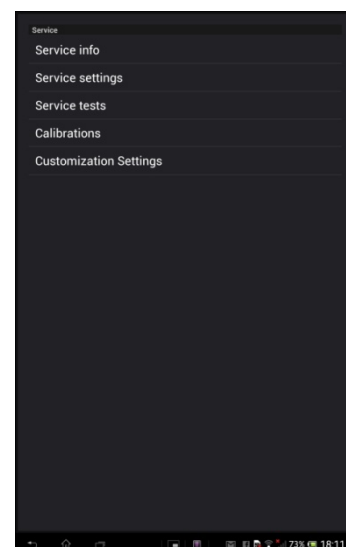
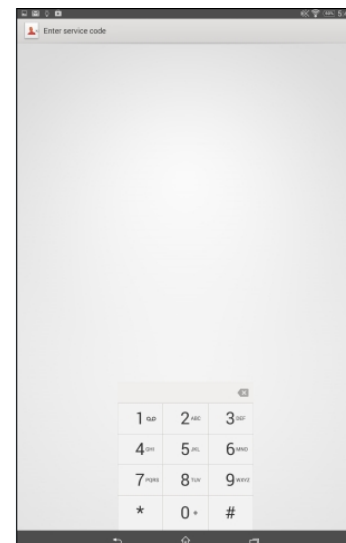
- select 'Service tests'
- select one of the tests and follow the test instructions as described below

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





## Tests

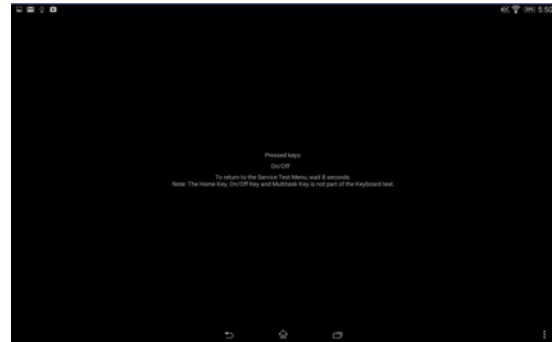
### 2.2 Service Tests

#### 2.2.1 Keyboard & Switch

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

Press all keys:

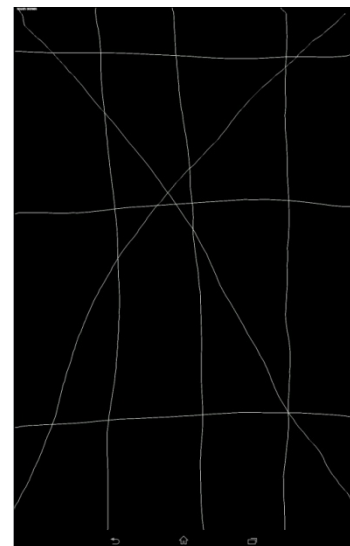
- Back key: notification on screen
- Volume Up key: notification on screen
- Volume Down key: notification on screen
- On/Off key: screen will go black, press Power key again
- Home key: Leaving Test menu for home screen
- Task key: Taskbar is shown, select Service Menu
- Menu key (3 dots after the Task key): notification on screen



#### 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.



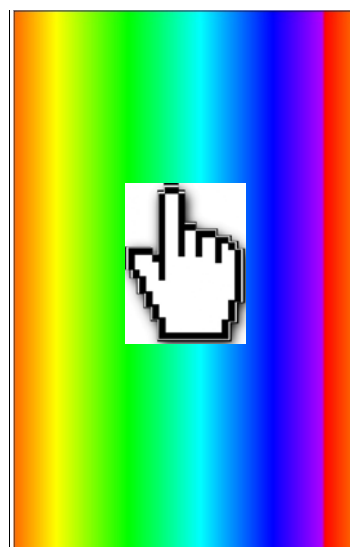
#### 2.2.3 Display

**Minor variations in display brightness and color may occur between units.**

**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 the display using a finger. With every touch, the display will show six test patterns of White, Grey, Black, Red, Green, Blue, moving Rainbow colors, Cross-Line, TV Pattern on the full screen on the full screen. Make sure that there are no missing segments and that the colors and contrast are OK.



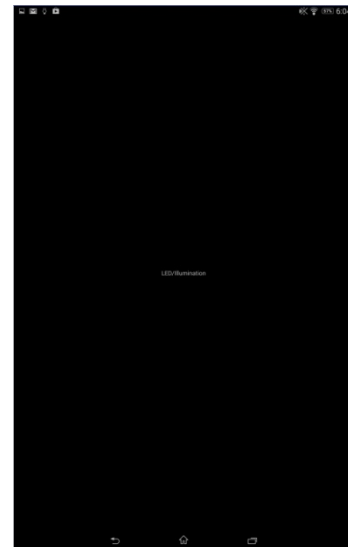
## Tests: Service Tests

### 2.2.4 LED/Illumination

Check that the:

- Display Backlight illumination goes from low to high strength back to low again.
- Notification LED above the volume keys, showing colors in the following sequence: green, blue, red, and off.

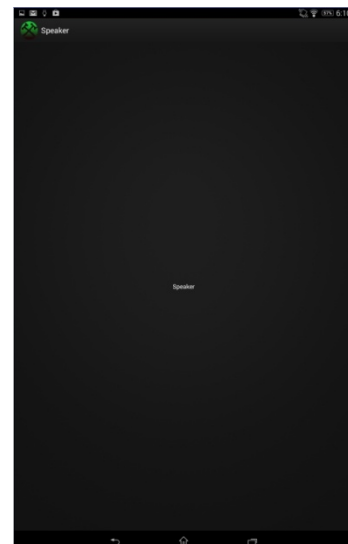
Press Back key to return to the Service Test Menu.



### 2.2.5 Speaker

**Do not use this test!**

N/A, use Stereo speaker test below.



### 2.2.6 Stereo speaker

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

Make sure that the sound from the speaker port at the lower right and left corner is emitted loud and clear and that the test include maximum volume.

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

Press Back key to return to Service Test Menu.



## Tests: Service Tests

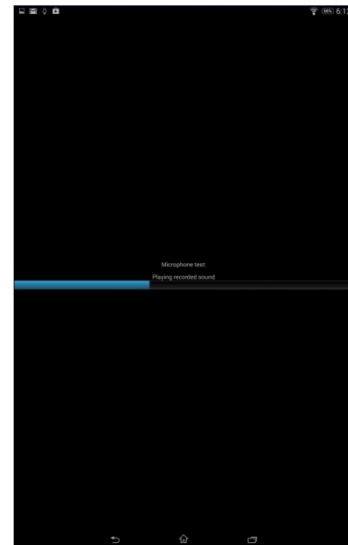
### 2.2.7 Microphone

***The previous test "Stereo speaker" should have been successfully carried out before doing this test!***

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

- Speak into the microphone during the 'Microphone Recording' phase.
- Check the quality by listening to the recording from the Speaker during the 'Playing recorded sound' phase at maximum volume.

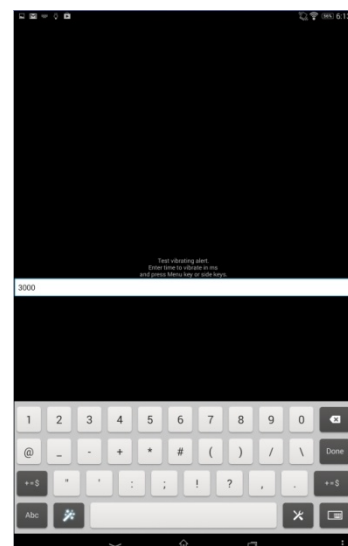
Press Back key to return to Service Test Menu.



### 2.2.8 Vibrator

Press the Menu key or 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.



## Tests: Service Tests

### 2.2.9 Camera

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

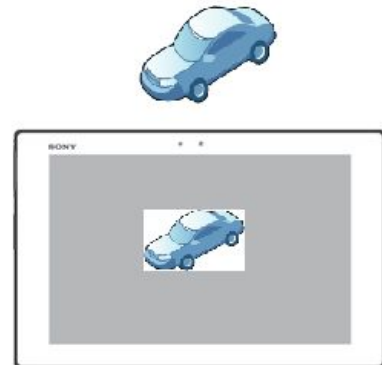
Aim the camera (located at the back) at an object and check the quality of the image shown in the display.

Tap 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.



### 2.2.10 Secondary Camera

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

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

Press Back key to return to Service Test Menu.



Only symbolic view

### 2.2.11 Antenna Switching (N/A SGP511 and SGP512)

**Do not use this test!**



## Tests: Service Tests

### 2.2.12 Bluetooth

**During this test, the distance between the unit 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 in both units; wait 4-5 seconds, shows OK;

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

Step 2: Search;

Step 3: Show the Device Found list;

Step 4: Select the Target Bluetooth Device,

Step 5: Check the Pairing PIN code on both Target Bluetooth Device and unit, press Pair on both, when succeeded, it shows "Test Complete".

Press Back key to return to Service Test Menu.



Only symbolic view



### 2.2.13 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: Search;

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)

Step 6: When Connection succeeded, it shows "Test Complete".

Press Back key to return to Service Test Menu.



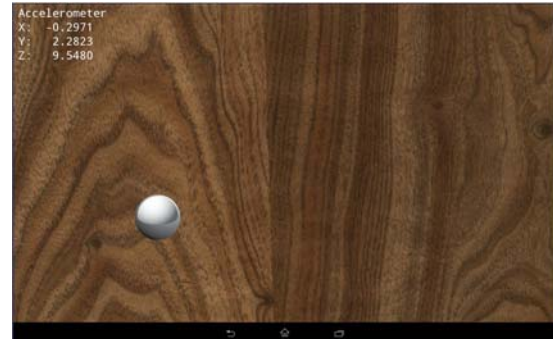


## Tests: Service Tests

### 2.2.17 Accelerometer

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

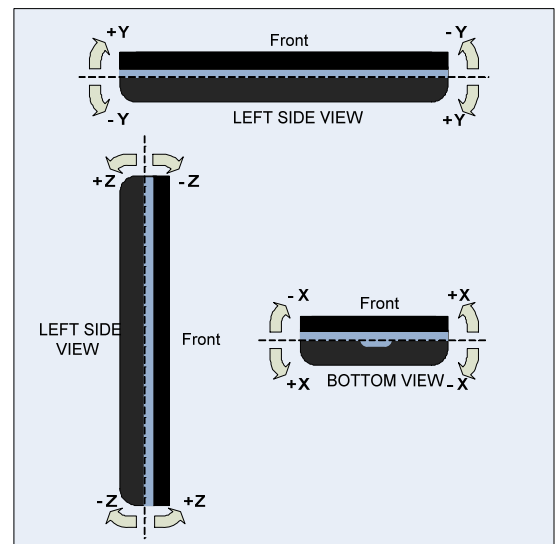
Press Back key to return to Service Test Menu.



By tilting the unit 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 unit 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.



Only symbolic view

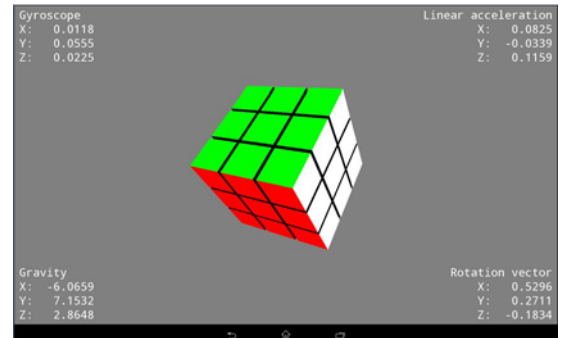
## Tests: Service Tests

### 2.2.18 Gyroscope

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

Check by moving the unit that the X: Y: Z values shown in the display are in accordance with the moving.

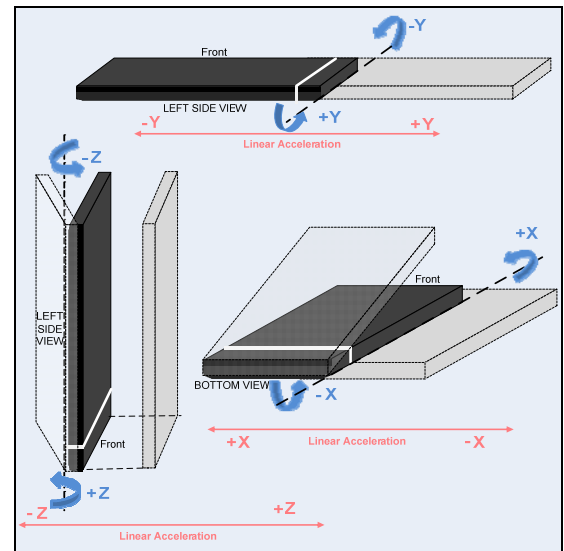
Press Back key to return to Service Test Menu.



Check “Gravity Values” “Linear Acceleration Values” “Rotation Vector Values” and “Gyroscope Values” by moving the unit:

“Gravity Values” can be refer to Accelerometer;  
 “Linear Acceleration Values” and “Rotation Vector Values” are in accordance with the action shown in the picture.  
 “Gyroscope Values” are updated while moving the unit.

Press Back key to return to Service Test Menu.



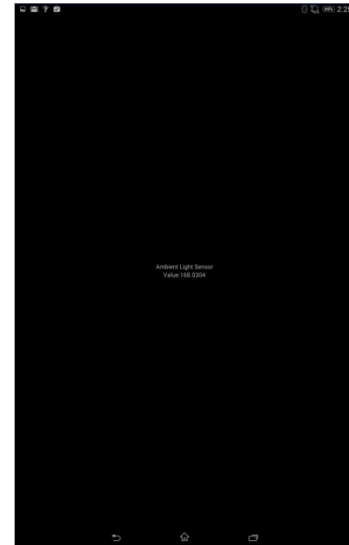
Only symbolic view



## Tests: Service Tests

### 2.2.19 Ambient Light Sensor

The Ambient light test states a value, validate when, covering the Ambient Light Sensor (to the left of the Secondary camera), that the value decrease.



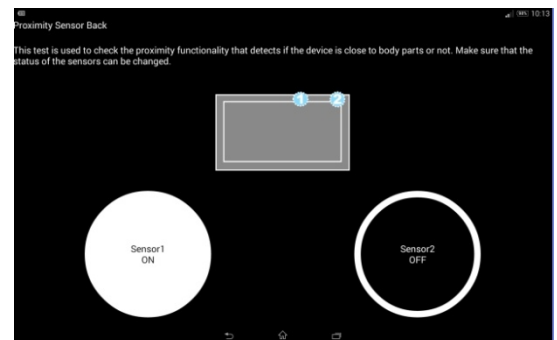
### 2.2.20 Proximity Sensor Back (N/A SGP511 and SGP512)

When entering into the test, the screen shows 2 test circles, Sensor1 and Sensor2, it also show where on the backside the sensors are located.

Place unit on a flat table. Both should now show on and be filled white circles.

Lift the unit 50cm, by holding it along the edge so you do not cover the sensors. Both should now show off and just a white ring.

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



### 2.2.21 Hall Element

Place a magnet to the right of the Secondary camera (the hall element is placed next to it). The screen should go into "sleep" and the Hall Element test instruction on screen should reappear when the magnet is removed.

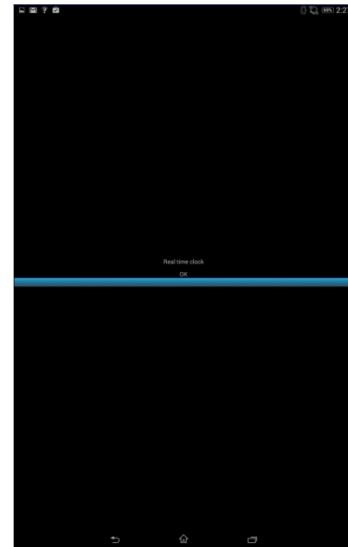


## Tests: Service Tests

### 2.2.22 Real time clock

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.

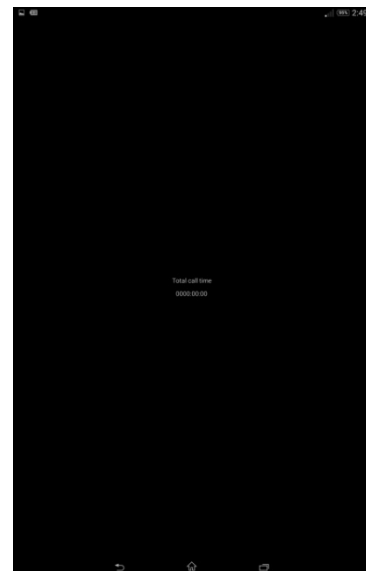
Press Back key to return to Service Test Menu.



### 2.2.23 Total call time (N/A SGP511 and SGP512)

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

Press Back key to return to Service Test Menu.



## Tests: Service Tests

## 2.2.24 Storage

Memory Storage status:

***A memory card should be inserted in the unit and attach USB Adaptor between unit and a USB disk 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 'Inserted/Mounted' as shown on the screen.

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



### 2.2.25 Security

The DRM keys are shown in the display.

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

Press Back key to return to Service Test Menu.



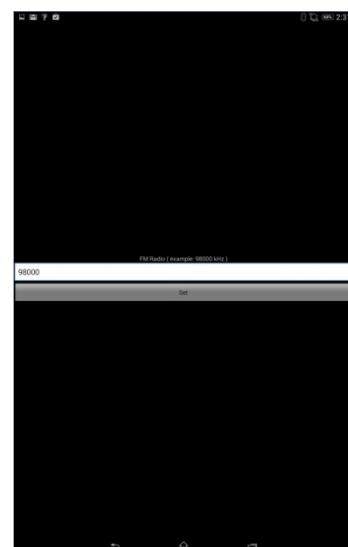
### 2.2.26 FM Radio

Verify that the unit can detect a radio station:

Connect a headset and then set your local radio station in kHz.

Verify that the reception and sound quality is normal.

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

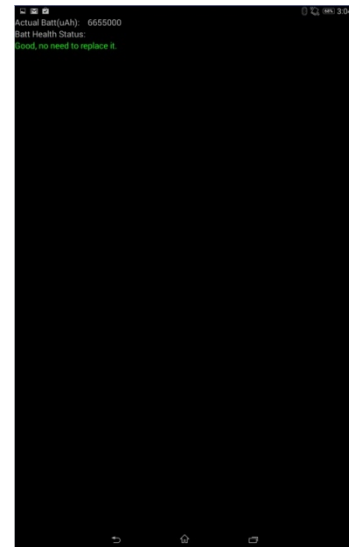


## Tests: Service Tests

### 2.2.27 Battery Health test

N/A.

***Do not use this test!***

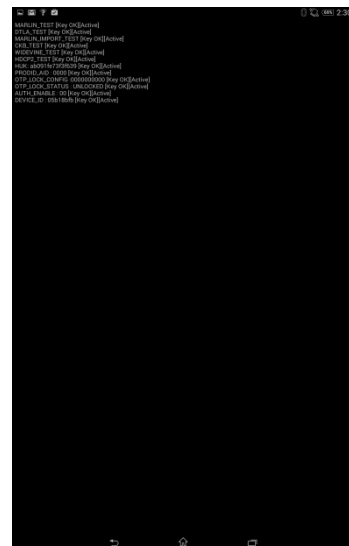


### 2.2.28 Verify certificates

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

***Do not use this test!***

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

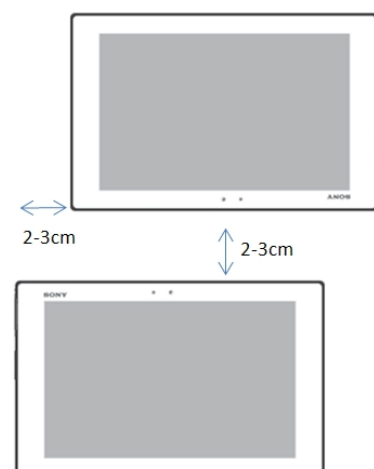


### 2.2.29 IrRemote Test

***If you have another Tablet Z2 available with the same service test, it replaces the Manual Test / IR test below. If an extra Tablet Z2 is not available perform the manual test instead.***

Place both units on a flat surface, aligned according picture.  
Press Send button on one unit and Receive on the other,  
the later will provide "Pass:" and the data sent.  
Repeat the opposite test.  
If test fail ("Time out, .."), check alignment of units and if it  
don't help then do the manual test also

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



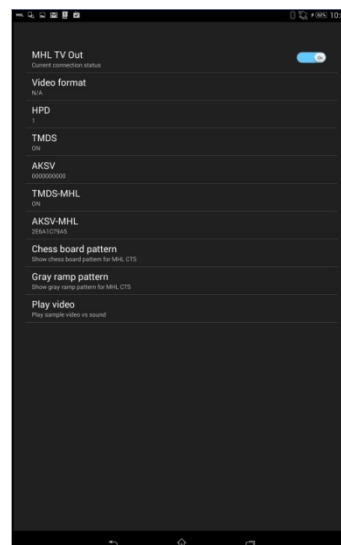
## Tests: Service Tests

### 2.2.30 TV-Out Test

**MHL adapter, HDMI Type A Cable, charger and TV should be connected with the unit before the start of this test!**

MHL TV Out is turned on after connection.

(The TV-Out Settings is usually not needed since the unit should be in automatic resolution and the TV-Out monitor should set the resolution automatic. If you get no picture on the TV-Out monitor you can try different resolutions under TV-Out Settings.)



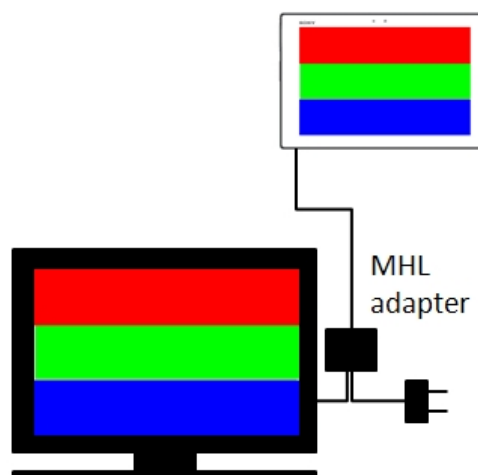
Step 1: Attach cable between unit and TV-Out;

Step 2: Press 'Play Video'.

Receive a test tone and a red-green-blue test picture in the TV-Out Monitor and unit.

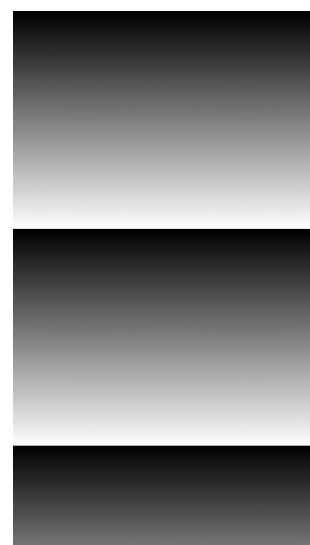
Press the Back key to return to the Service Test Menu.

**Note: If the TV-Out Monitor doesn't automatically identify the picture, the Monitor may require to set the TV-Out port chosen as source manually in the Monitors menus.**



Step3: Press 'Gray ramp pattern' to do the same test as the 'Play video'.

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



## Tests

### 2.3 Manual Tests

#### 2.3.1 IR test

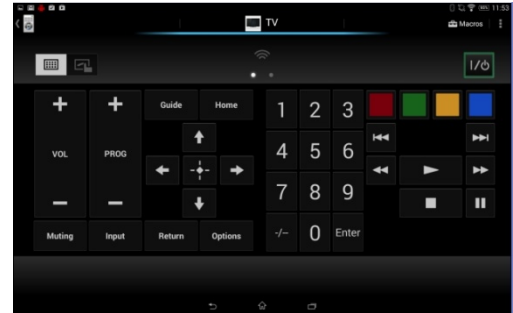
**Use only if IR Remote test above cannot be performed.**

Test of the IR function, IR LED (9) in Test Enablers chapter, can be done using the “remote control app” available in the unit’s software or similar.

The light of the IR LED can be seen in a digital camera, phone cameras or tested directed towards a TV.

Start the “Remote control” app, press: add Device / Next / Next / Finish / press the Device icon: perform the function check of IR LED, go to setting (3 dots upper right) and press Delete device.

(Note: If you add a device via manual setup, sending and receiving can be tested by learning from a device’s remote control and then testing the button on the remote’s device)



#### 2.3.2 SIM (N/A SGP511 and SGP512)

Verify that the unit can detect a SIM card:

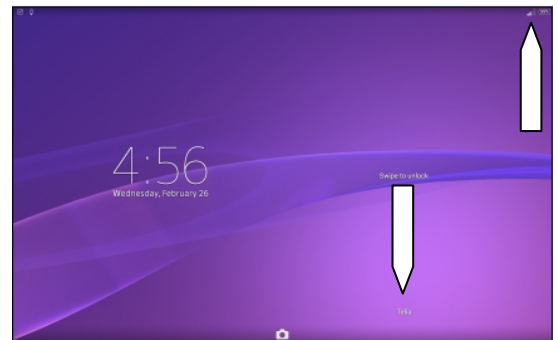
Step 1: Insert a Micro SIM card, and start the unit;

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

Step 2: In the Screen lock you will see the SIM card operator name in the lower right corner.

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

If SIM card is not detected, the message ‘No SIM card – Emergency calls only’ will be displayed instead

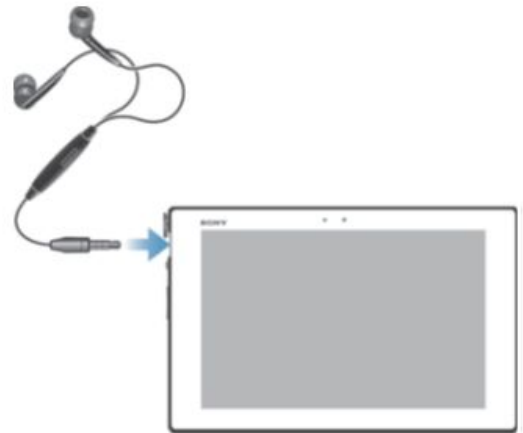


## Tests: Service Tests

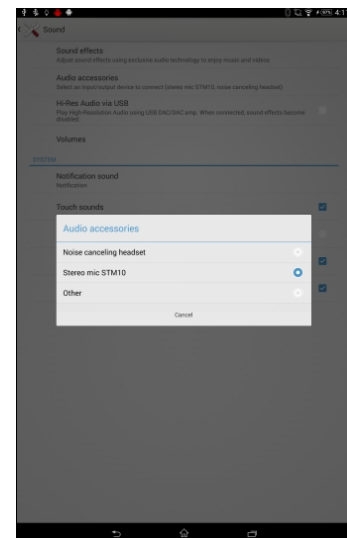
### 2.3.1 Audio Jack test

Connect a Sony Noise canceling headset  
(see [www.sonymobile.com](http://www.sonymobile.com) go to the product and then  
Accessories for applicable headset)  
Repeat the test of "2.2.6 Stereo Speaker"

Make sure that the sound to and from Headset is emitted  
loud and clear and that the units Notification panel at the top  
show "5-pin audio accessory connected" briefly when you  
attach the headset.

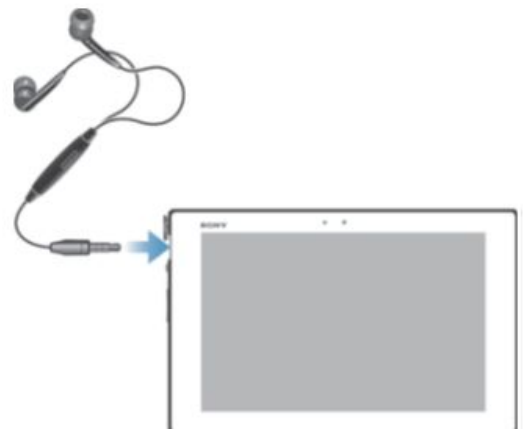


Go to Setting app, Sound / Audio Accessories  
Tic the Stereo mic STM10, the faint white noise in the  
Headset should disappear.  
Remove the Sony Noise canceling headset and press task  
key and chose the Service test again.



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 "2.2.7 Microphone".

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



## Tests: Manual Tests

### 2.3.2 Charging via USB and Easy Charger (Charger or Computer)

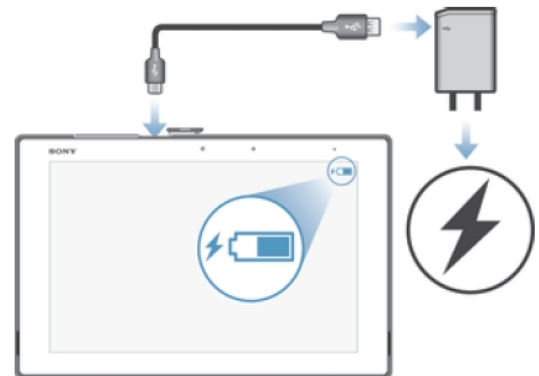
Verify that the unit can charge the battery by the Port USB:

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

**Do not start the unit.**

- Connect a USB cable from a computer or charger to the Unit.
- Verify that the unit being charged by the Notification LED and Battery icon (shown for 5s) in the display after the SONY logo.

Remove the USB cable from the connector and verify that the Notification LED and Battery icon no longer indicates charging.



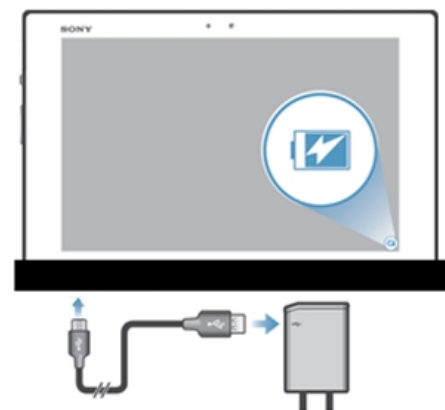
Only symbolic view

**Do not start the unit.**

Attach the unit to Charging Docks Magnetic connector.

- Verify that the unit is being charged by the Notification LED and Battery icon (shown for 5s) in the display after the SONY logo.

Remove the charger and verify that the Notification LED and Battery icon no longer indicates charging.



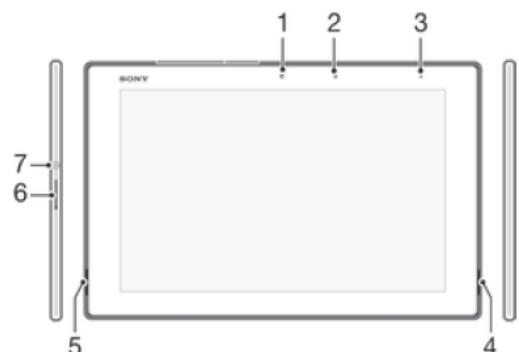
Only symbolic view

The Notification LED (3) color status is depending on battery remaining capacity:

- Red: Battery level is between 0% and 10%;
- Orange: Battery level is between 11% and 89%;
- Green: Battery is between 90% and 100%;

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

**Perform a force shut down (Press the small off button next to the SIM card holder for 10sec).**

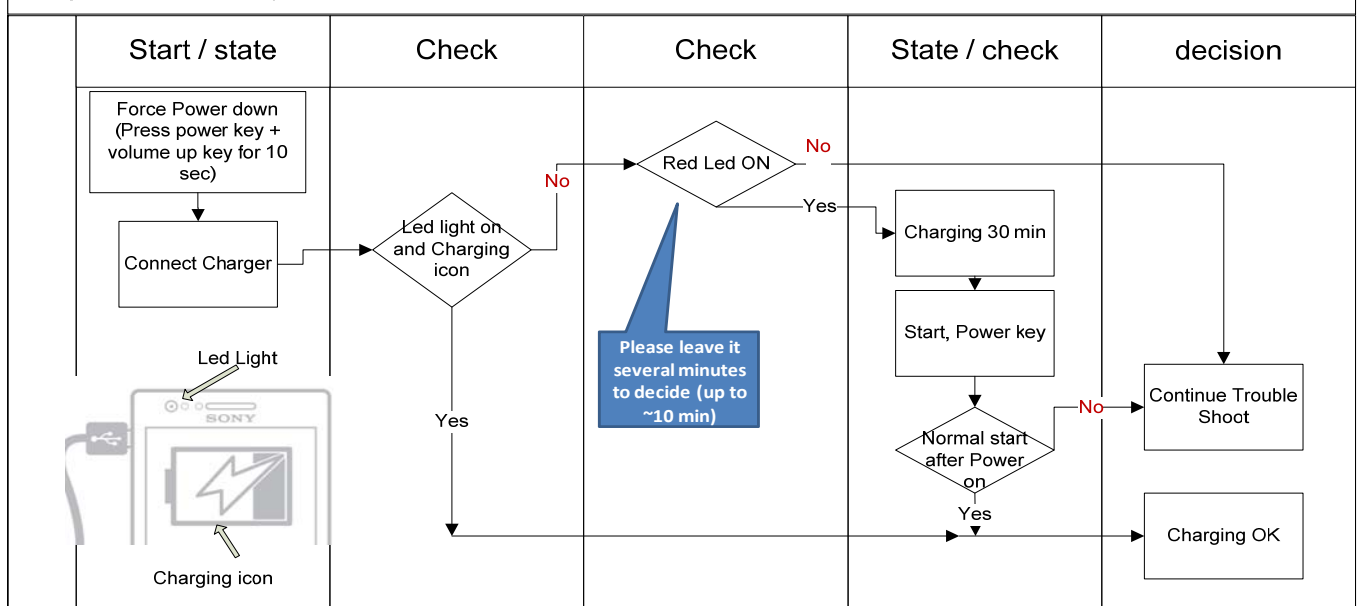


Only symbolic view



## Tests: Manual Tests

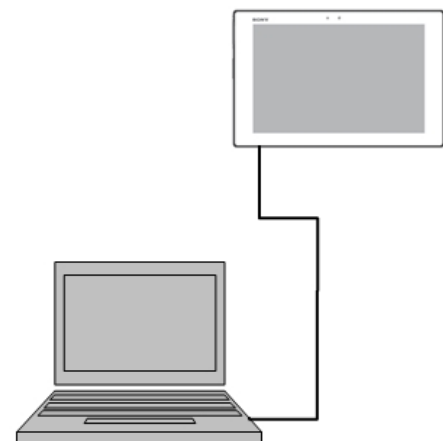
### Diagnostic Battery / Charging Status



Only symbolic view

### 2.3.3 Data Communication test

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



Only symbolic view

## Tests: Manual Tests

### 2.3.4 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 or Bluetooth, and executed.

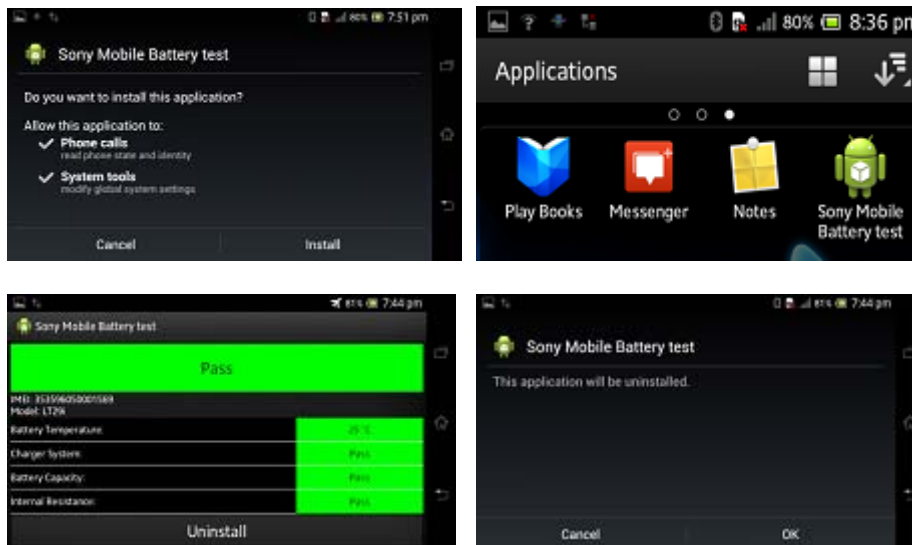
The test is available in CSPN at Level: Mechanical,

Title: **Sony Mobile Battery test Application 1266-2711.**

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

After the test the Sony Mobile Battery test.apk shall be removed by tap "Uninstall" "OK" in the application.

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



## Tests

### 2.3.5 Network Test (N/A SGP511 and SGP512)

**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!**

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

#### 2.3.5.1 On-the-air call to mobile

##### GSM

Go to the Setting app:

*Settings* ⇒ *More..* ⇒ *Mobile networks* ⇒ *Network Mode* ⇒ *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 '2.3.6.2 Procedure (GSM & UMTS)' below.

##### UMTS (if available)

Go to the Setting app:

*Settings* ⇒ *More..* ⇒ *Mobile networks* ⇒ *Network Mode* ⇒ *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 '2.3.6.2 Procedure (GSM & UMTS)'.

##### LTE (if available)

Go to the Setting app:

*Settings* ⇒ *More..* ⇒ *Mobile networks* ⇒ *Network Mode* ⇒ *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* ⇒ *Mobile network type*

#### 2.3.5.2 Procedure (GSM & UMTS)

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

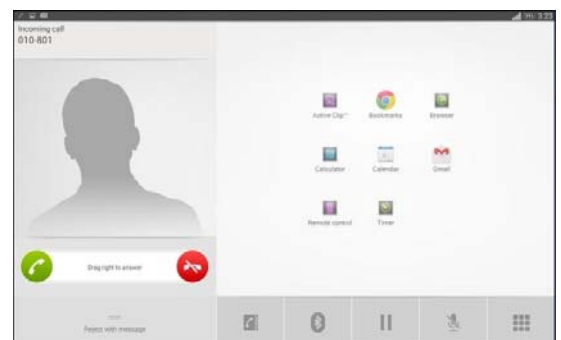
Step 2: Check that there is a ring signal.

Step 3: Check that the display backlight illuminates.

Step 4: Answer the call and check the sound quality in both unit and landline phone.

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.



## 3 Calibrations

***Do not use Calibrations under the Service Menu!***

***See 1280-3186 Working Instruction – mechanical for Calibration instruction.***

## 4 Revision History

Rev.	Date	Changes / Comments
1	2014-Mars-18	Initial release
2	2014-April-11	Update with SGP551
3	2014-July-01	Update with SGP561