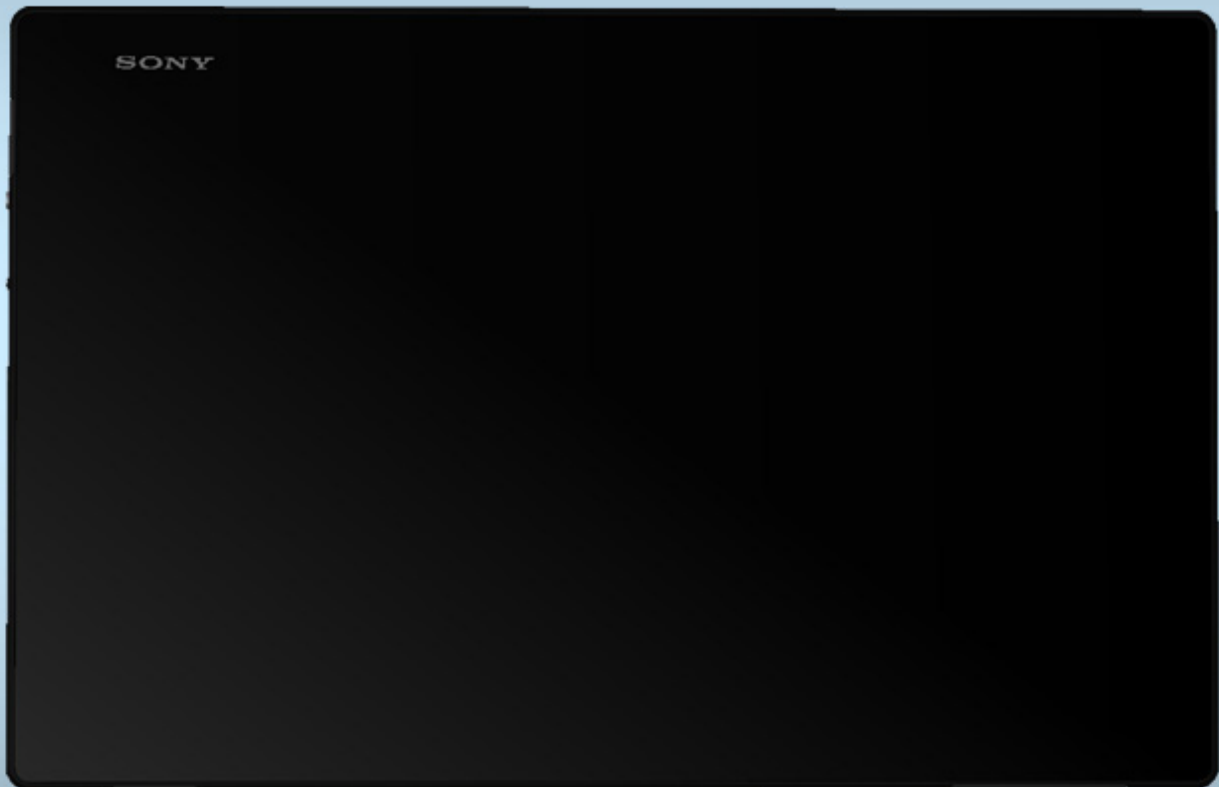


## Test Instructions

- mechanical -



*Xperia™ Tablet Z*  
**SGP311, SGP312, SGP321, SGP341  
& SGP351**

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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

Seal along the whole top side with tape and 1cm down on each short side before starting the test and make sure all caps are closed except for the Cap Audio Jack Assy

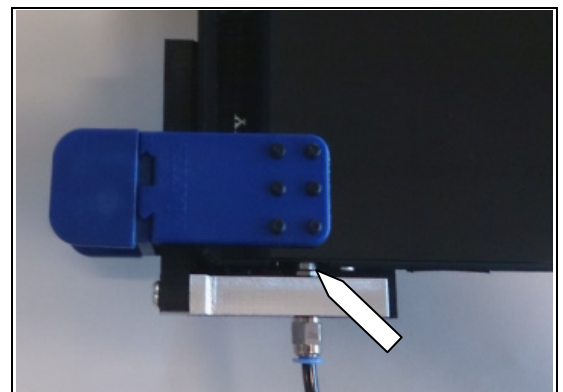
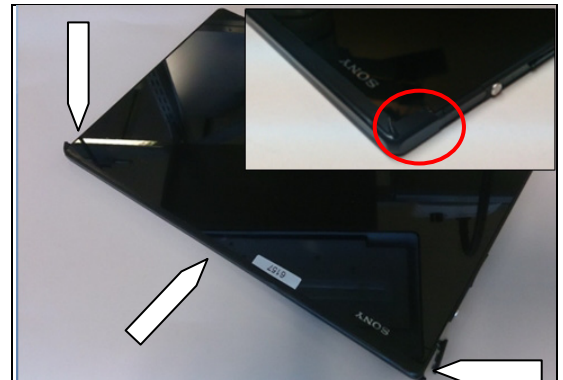
**Make sure the tape covering the topside also cover the corners!**

Install the “O-Ring 1,30x1,10” and “WRT Inlay plate” into the generic “WRT Generic Side Inlay” and attach the “Generic Clamp”.

Insert the assembled fixture into the Audio Jack according picture.

**For tablet there is a need to use syringe two times and between close the valve to provide enough air pressure!**

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

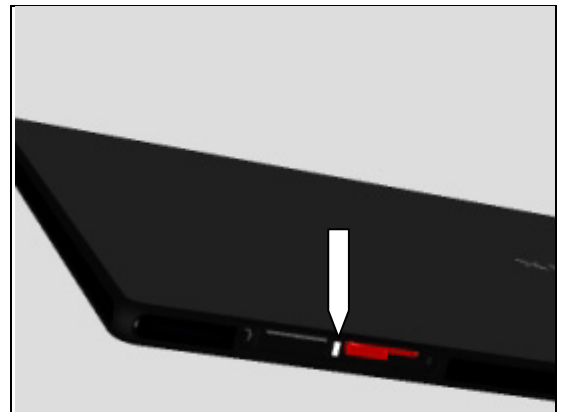
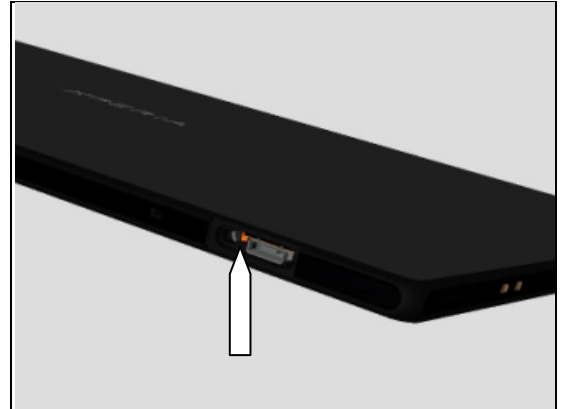
#### 1.2.1 Water indicator inspection

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.

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

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



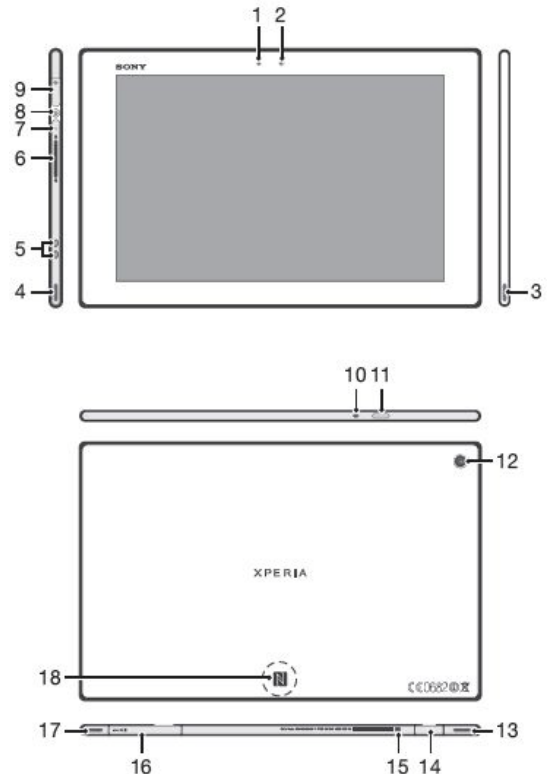
## Pre-Test Preparations

### 1.2.1 Test Enablers

#### 1.2.1.1

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

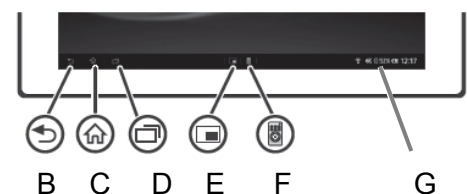
1. Ambient Light sensor
2. Secondary camera
3. Speaker
4. Speaker
5. Charging dock connector
6. Volume key
7. Notification LED
8. On/Off key (Power key)
9. Audio Jack
10. Microphone
11. IR LED
12. Camera
13. Speaker
14. Port USB
15. Hole to attach the charger port cover
16. Memory card slot
17. Speaker
18. NFC (detection area)



A. Application Screen



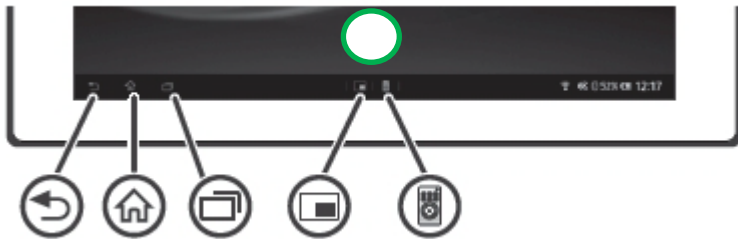
- B. Back key
- C. Home key
- D. Task key
- E. Small app launcher
- F. Small app shortcut
- G. Notification panel  
(Icon order may vary)



## Pre-Test Preparations

### 1.3 Service Menu

- Start up the tablet, 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 above the Small Apps Launcher and Small Apps Shortcut icons 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

#### 1.4.1.1 Software version verification

Check the software version of the tablet 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’
- check the software file revisions and update as described below

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

#### 1.4.1.2 Software version update

**Mandatory first repair action!**

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

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

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

**NOTE:** For tablets 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://emma.extranet.sonvericsson.com/documents/emma\\_user\\_guide.pdf](http://emma.extranet.sonvericsson.com/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**

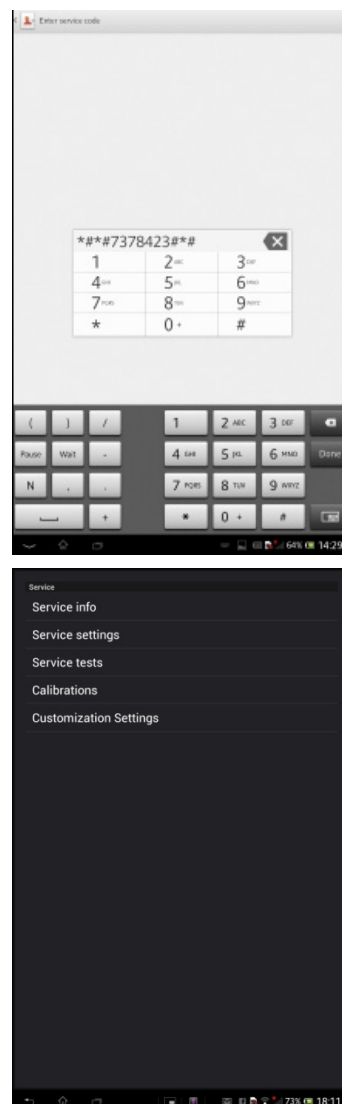
**Settings -> Power management -> STAMINA**

- Enter Service menu according 1.3 Service Menu.

- 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 tablet for a general visualization of the service tests!**



## Tests

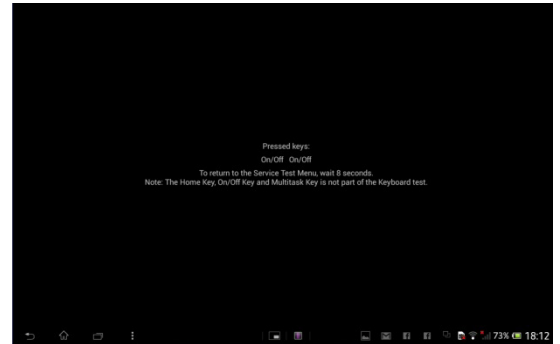
## 2.2 Service Tests

### 2.2.1 Keyboard & Switch

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

Press all keys:

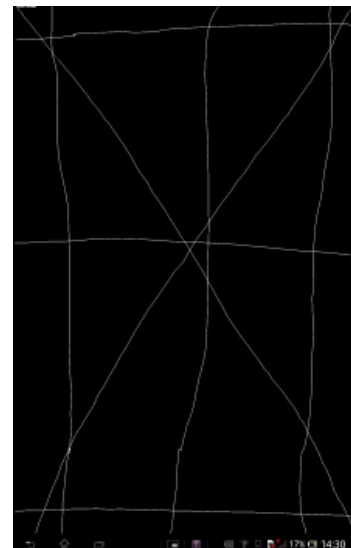
- Back key: notification on screen
- Volume Up key: notification on screen
- Volume Down key: notification on screen
- On/Off key: screen will go black, press Power key again
- Home key: Leaving Test menu for Screen lock /Unlock/
- Task key: Taskbar is shown, select Service Menu
- Menu key (3 dots after the Task key): notification on screen
- Small app launcher, press Back key again
- Small app shortcut, press X in upper right corner in pop up window



### 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

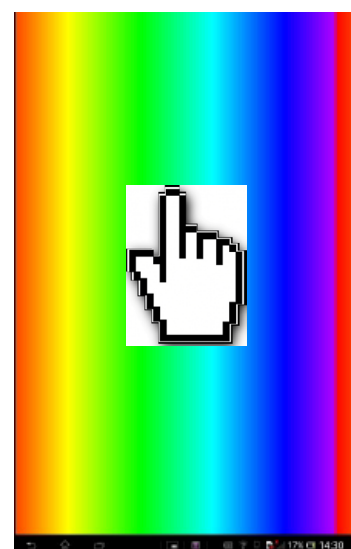
**Minor variations in display brightness and color may occur between tablets.**

**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, Black, Red, Green, Blue, White and moving Rainbow colors on the full screen.

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



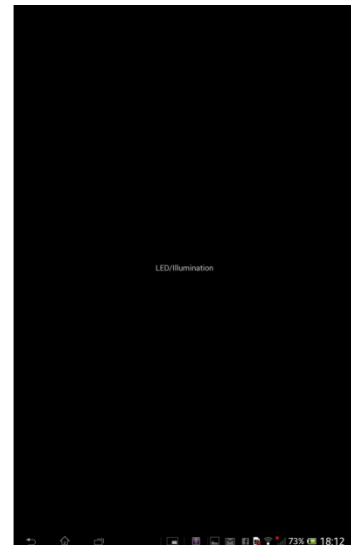
## Tests: Service Tests

### 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, orange, red, and off.
- The illumination of Notification panel, Task, Home and Back keys goes from low to high strength back to low again.

Press Back key to return to the Service Test Menu.



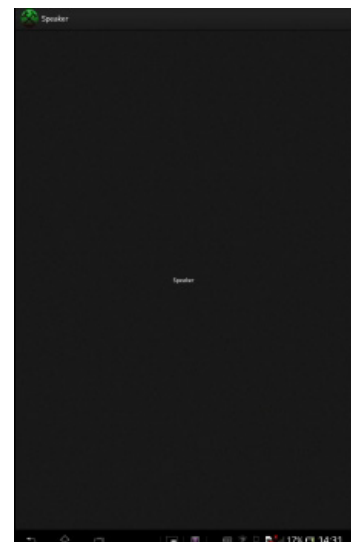
### 2.2.5 Speaker

**Do not hold the tablet 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.



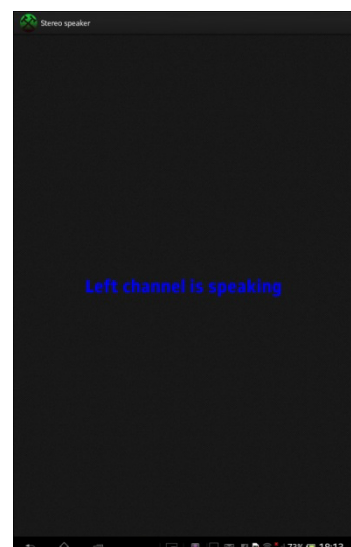
### 2.2.6 Stereo speaker

**Do not hold the tablet 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 Earphone

N/A.

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

### 2.2.8 Microphone

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

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

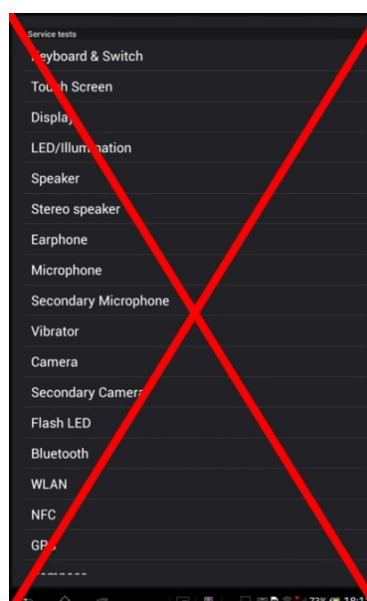
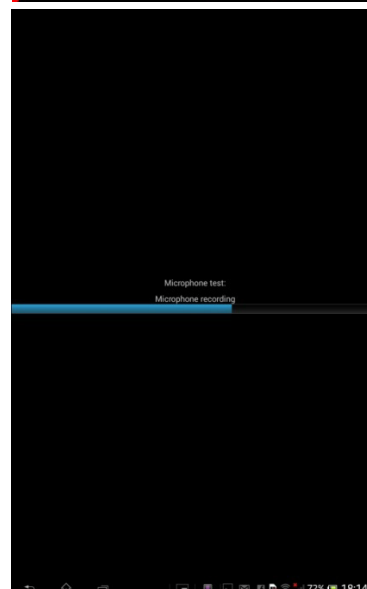
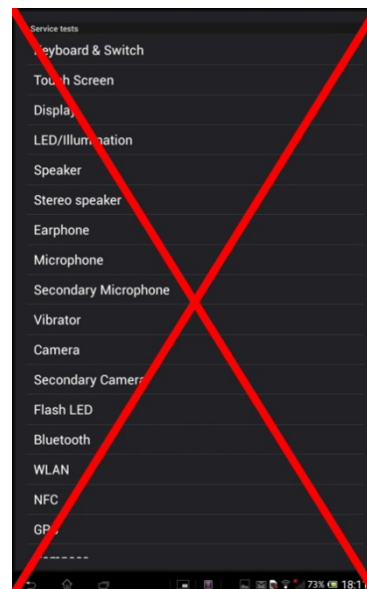
- Speak into the microphone during the 'Microphone Recording' phase.
- Check the quality by listening to the recording from the Speaker during the 'Playing recorded sound' phase at maximum volume.

Press Back key to return to Service Test Menu.

### 2.2.9 Secondary Microphone

N/A.

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

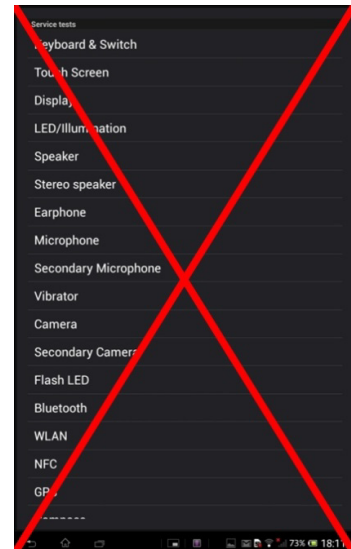


## Tests: Service Tests

### 2.2.10 Vibrator

N/A.

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



### 2.2.11 Camera

***Minor variations in image appearance may occur between tablets, 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.



Only symbolic view

### 2.2.12 Secondary Camera

***Minor variations in image appearance may occur between tablets, 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.



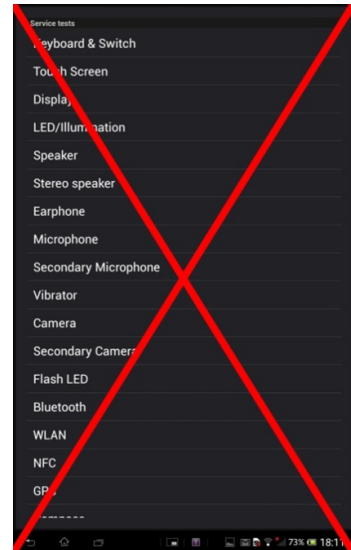
Only symbolic view

## Tests: Service Tests

### 2.2.13 Flash LED

N/A.

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



### 2.2.14 Bluetooth

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

***Make sure the target Bluetooth device is enabled and visible always!***

The Bluetooth test will be done in following sequences:

Step 1: Enable Bluetooth; wait 4-5 seconds, shows OK;

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

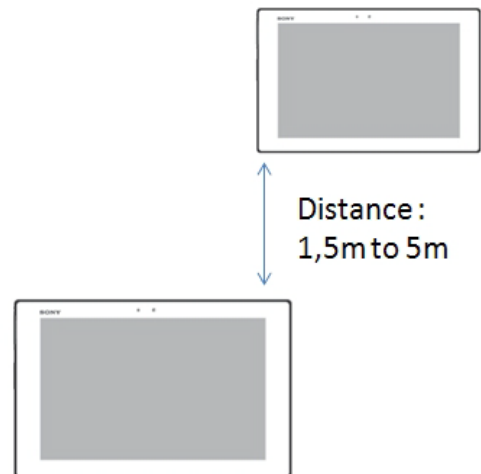
Step 2: Search;

Step 3: Show the Device Found list;

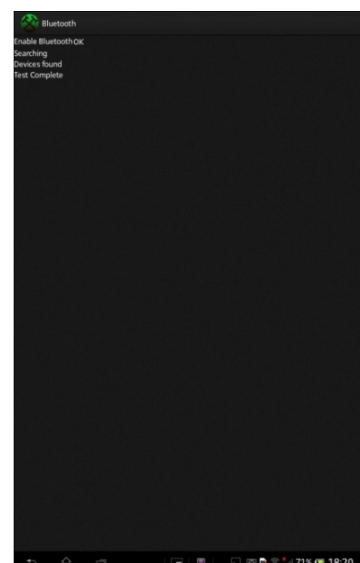
Step 4: Select the Target Bluetooth Device,

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

Press Back key to return to Service Test Menu.



*Only symbolic view*



## Tests: Service Tests

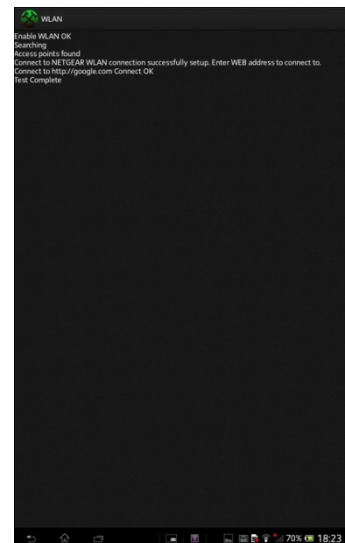
### 2.2.15 WLAN

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

The WLAN test will be done in following sequences:

- Step 1: Enable WLAN; wait 4-5 seconds, shows OK;
- Step 2: 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.



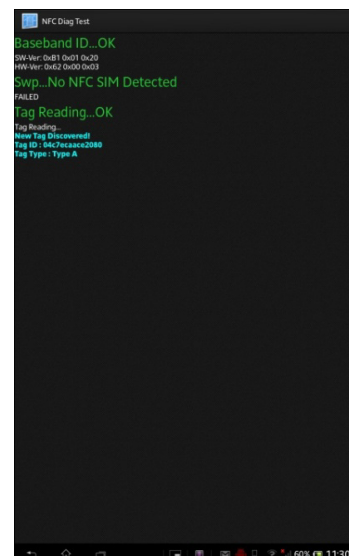
### 2.2.16 NFC

**A NFC SIM card 3FF should be inserted in the tablet before the start of this test!**

The NFC test will be done in following sequences:

- Step 1: Select 'NFC';
- Step 2: NFC Diag Test;
- Step 3: After 'Tag Reading...Enabled' can be seen on the display, bring a NT1/Smart Tag/Exchange Unit/Black/Red (NFC Tag) close to the Label NFC on the Cover Battery Assy.
- Step 4: When Tag is identified, a sound will be made and an OK message will be displayed.

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



## Tests: Service Tests

### 2.2.17 GPS

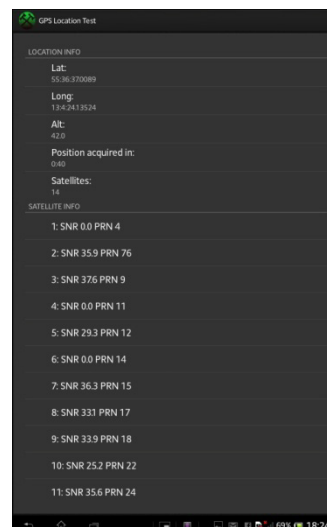
Enter GPS Location Test, wait some time to get GPS location data.

**If permission is requested, select 'Agree'!**

Note: You may have to tap the screen the first time to prevent the screen to go in off mode, since turning screen on with On/Off key will end the test.

Press Back key to return to Service Test Menu.

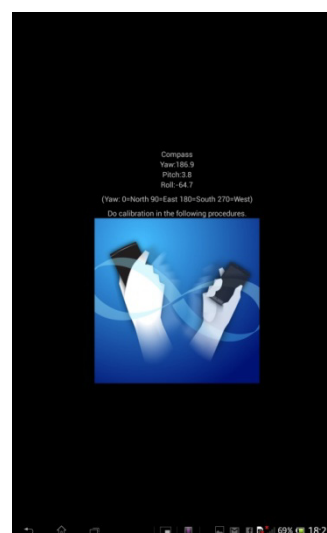
**For GPS testing, refer to  
1220-1333: Generic Repair Manual – mechanical**



### 2.2.18 Compass

Do calibration with hand movements as shown in the tablet, and then check the actual direction with measured value. (Yaw:0=North, 90=East, 180=South, 270=West)

Press Back key to return to Service Test Menu.



## Tests: Service Tests

### 2.2.19 Accelerometer

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

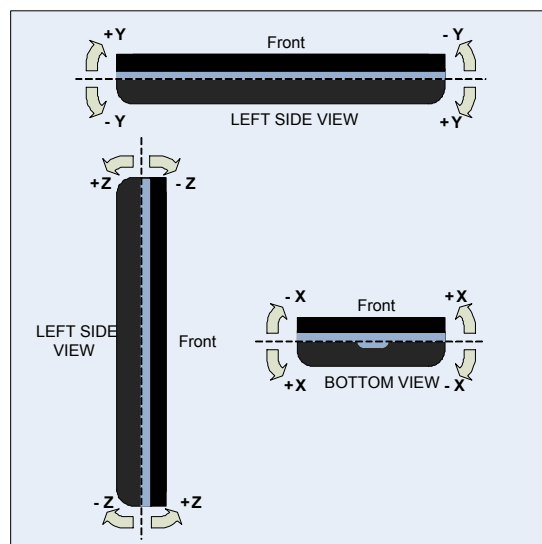
Press Back key to return to Service Test Menu.



By tilting the tablet 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 tablet 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

### 2.2.20 Gyroscope

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

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

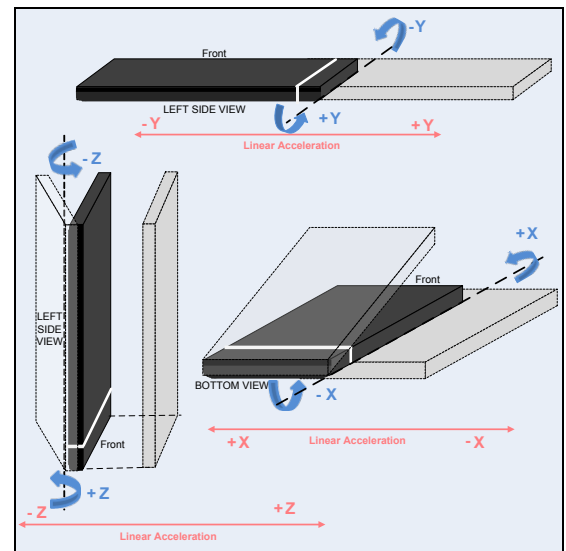
Press Back key to return to Service Test Menu.



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

“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 tablet.

Press Back key to return to Service Test Menu.

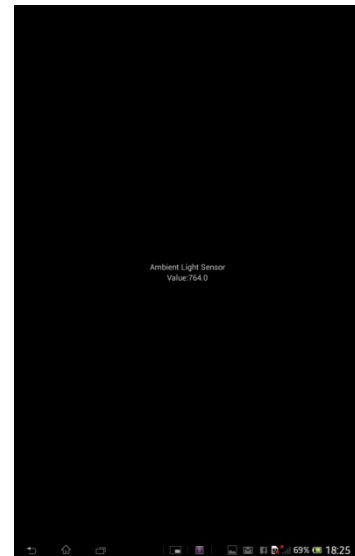


Only symbolic view

## Tests: Service Tests

### 2.2.21 Ambient Light Sensor

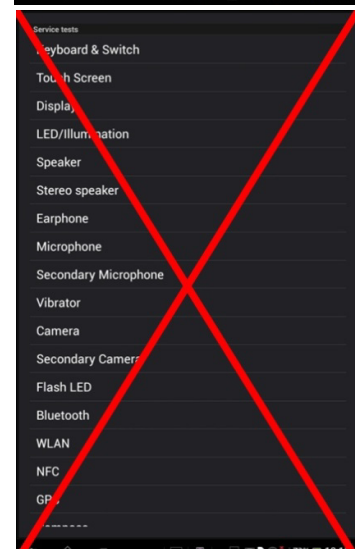
The Ambient light test states a value, validate when, covering the Ambient Light Sensor (to the left of the Secondary camera), that the value decrease.



### 2.2.22 Proximity switch

N/A.

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



### 2.2.23 Hall Element

Place a magnet close to the Ambient light Sensor (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.

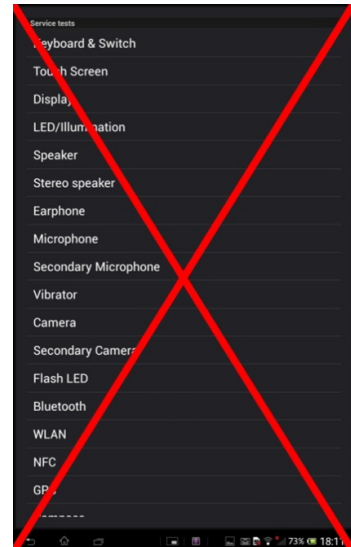


## Tests: Service Tests

### 2.2.24 Pressure Sensor

N/A.

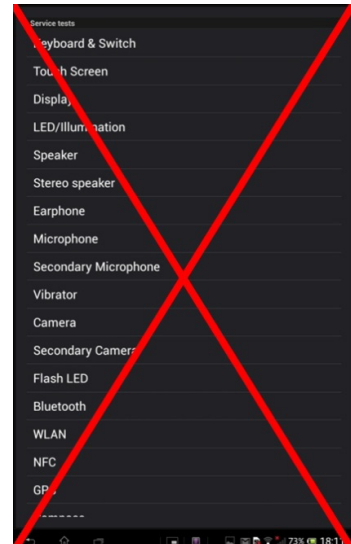
***This test is not available for this tablet!***



### 2.2.25 Water Proof

N/A.

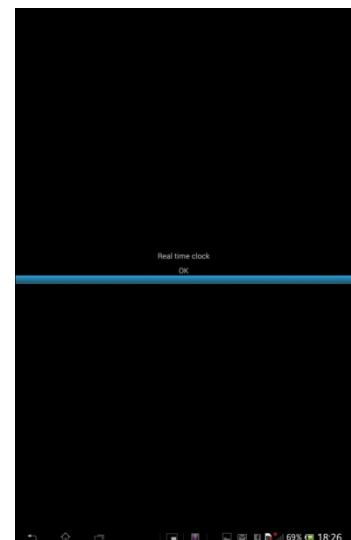
***This test is not available for this tablet!***



### 2.2.26 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.



## Tests: Service Tests

### 2.2.27 Storage

Memory Storage status:

**A memory card should be inserted in the tablet and attach USB Adaptor between tablet 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.



### 2.2.28 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.



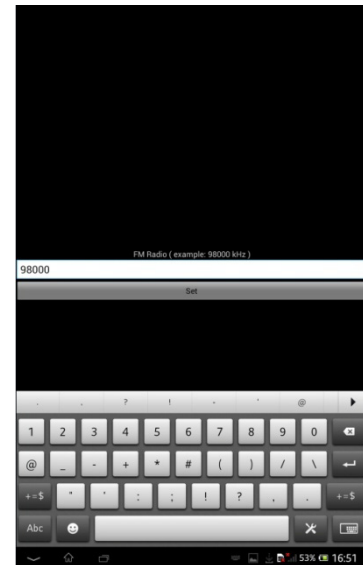
## Tests: Service Tests

### 2.2.29 FM Radio

Verify that the tablet 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.

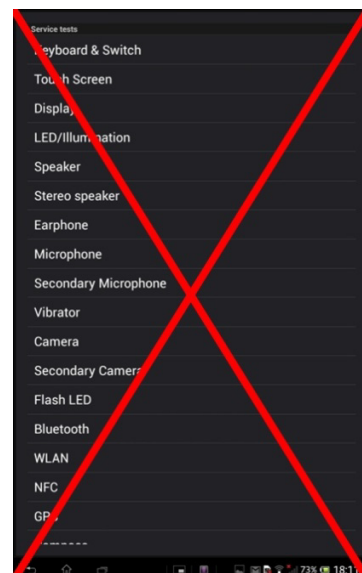
Press the Back key to return to the Service Test Menu.



### 2.2.30 Battery Health test

N/A.

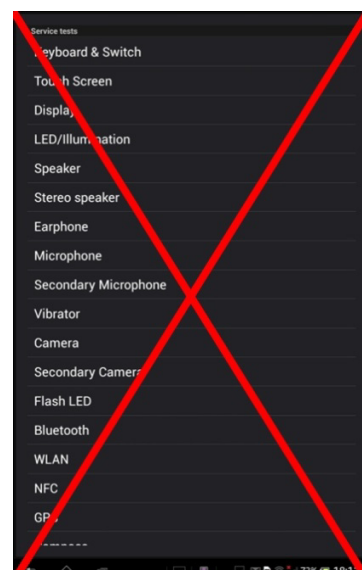
***This test is not available for this tablet!***



### 2.2.31 Flip slider counter

N/A.

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



## Tests: Service Tests

### 2.2.32 Verify certificates

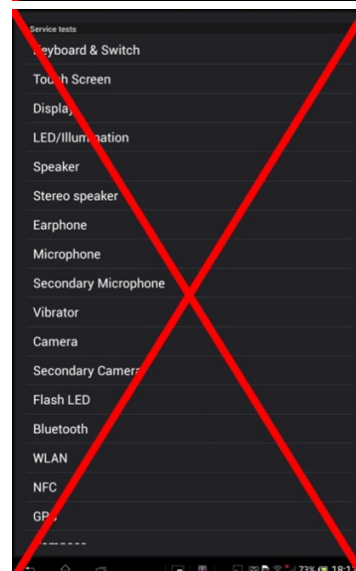
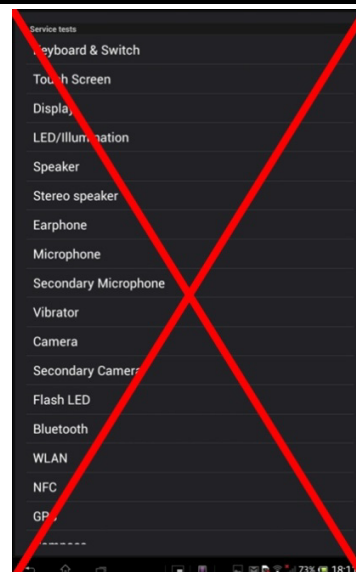
N/A.

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

### 2.2.33 IrDA Test

N/A.

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



## Tests: Service Tests

### 2.2.34 TV-Out Test

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

Press 'TV-Out On'.

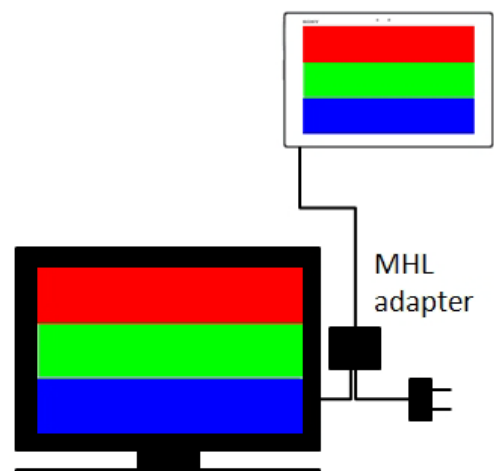
(TV-Out Settings is usually not needed since the unit should be in automatic resolution and the TV-Out monitor should set the resolution automatic. If you get no picture on the TV-Out monitor you can try different resolutions under TV-Out Settings.)

Step 1: Attach cable between tablet 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 tablet.

**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.**



Only symbolic view

## Tests: Service Tests

Press 'Get TV-Out Status':

You should now get:

Power Status: Active

HPD Status: H

RSEN Status: L or H (Might differ between TVs)

TDMS Status: On

HDCP Status: On

CEC Status: Active

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

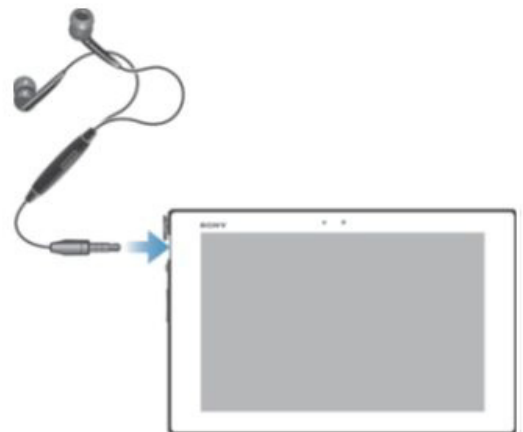


### 2.2.35 Audio Jack test

Connect a Sony CTIA headset.

Repeat the test of "2.2.5 Speaker" and "2.2.8 Microphone".

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





## Tests

### 2.3 Manual Tests

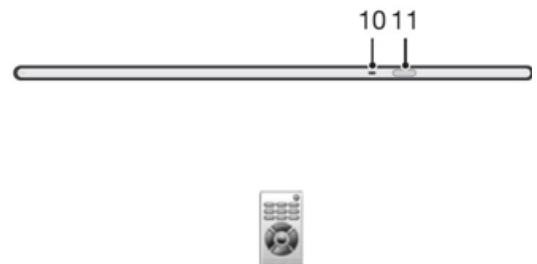
#### 2.3.1 IR test

The IR LED position (11) is beside the Microphone on the Top panel side.

Test of the IR function can be done using the “remote control app” available in the tablet’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 and perform a function check of IR LED.



#### 2.3.2 SIM

**Note: Not applicable for SGP311 & SGP312**

Verify that the tablet can detect a SIM card:

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

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

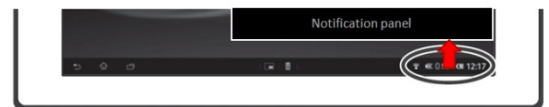
Step 2: Pull up the Status Bar (put finger over the clock and drag the menu up from the Status Bar);

Step 3: See SIM card operator name.

The SIM card operator name will be displayed at the top in the Status Bar

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

Press Back key to return to Standby Menu.



## Tests: Manual Tests

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

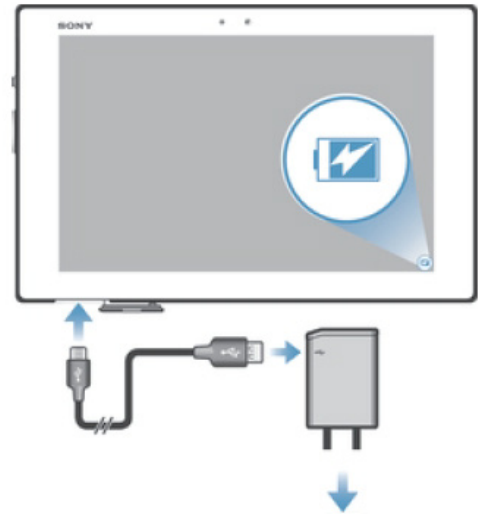
Verify that the tablet can charge the battery by the Port USB:

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

**Do not start the tablet.**

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

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

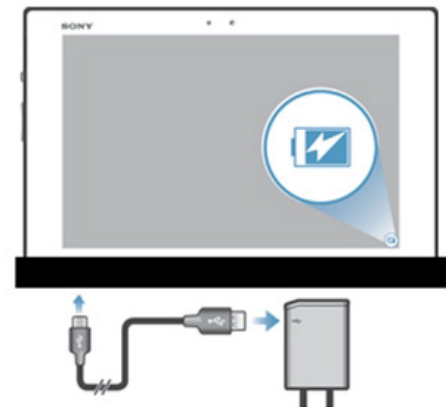


Only symbolic view

**Do not start the tablet.**

Attach the tablet to Charging Dock.

- Verify that the tablet is being charged by the Notification LED and Battery icon (shown for 5s) in the display.
- Remove the charger and verify that the Notification LED and Battery icon no longer indicates charging.



Only symbolic view

The Notification light (LED) (7) 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.

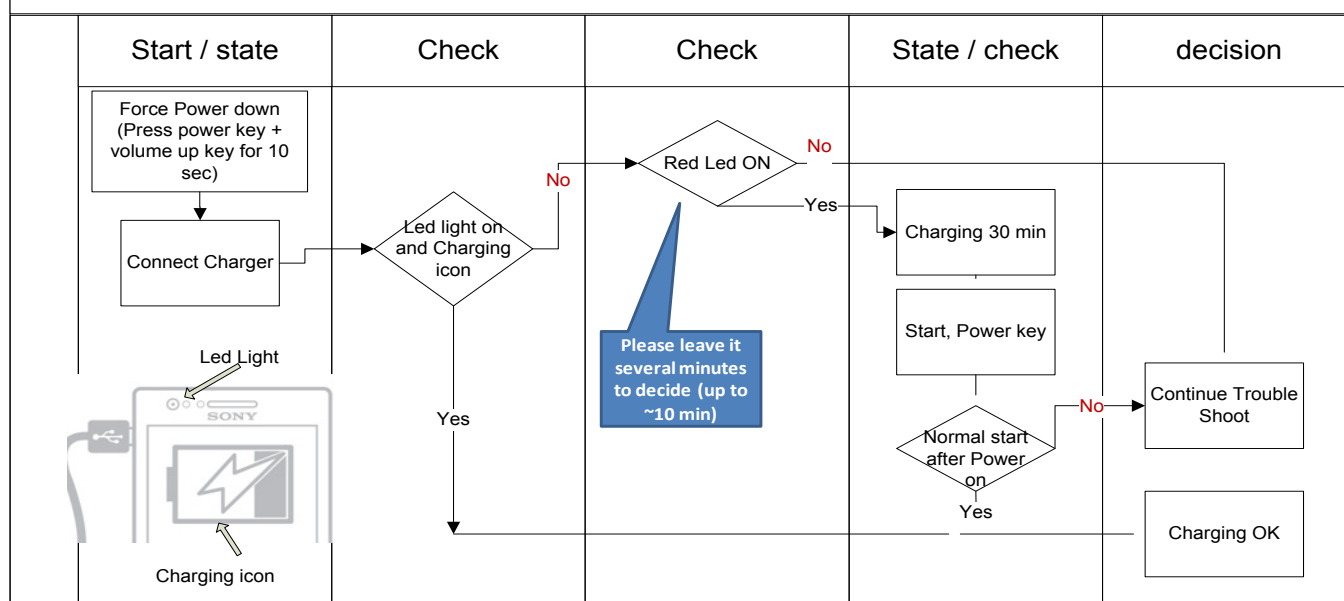
**Perform a force shut down (Press Power key + Volume Up for 10sec).**



Only symbolic view

## Tests: Manual Tests

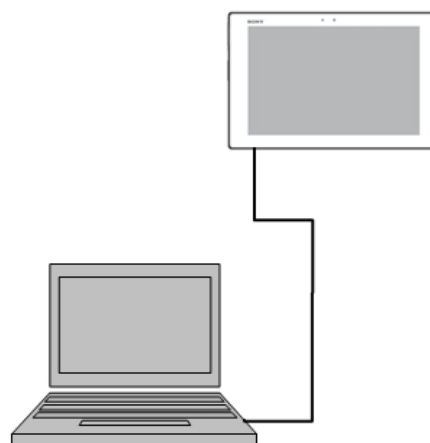
### Diagnostic Battery / Charging Status



Only symbolic view

### 2.3.4 Data Communication test

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



Only symbolic view

## Tests: Manual Tests

### 2.3.5 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 tablets with embedded batteries should be checked, to avoid unnecessary work to disassembly the tablet to access the battery.

This test is designed to identify a faulty battery or a hardware issue in the tablet 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 tablet, using cable or Bluetooth, and executed.

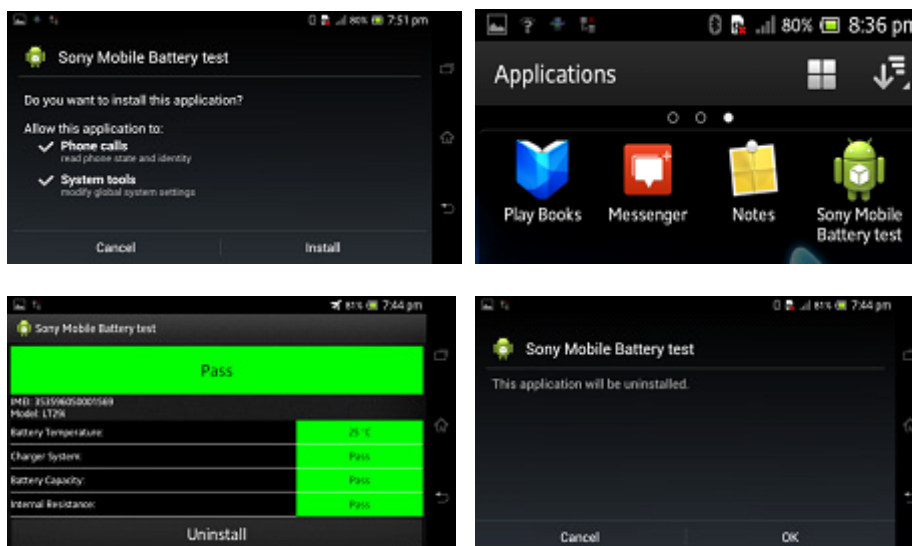
The test is available in CSPN at Level: Mechanical,

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: Manual Tests

### 2.3.6 Network Test

**Note: Not applicable for SGP311 & SGP312**

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

#### 2.3.6.1 On-the-air data to mobile

##### **GSM (if available)**

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 tablet, download data package by for ex. accessing the web google.com etc.

##### **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 tablet, download data package by for ex. accessing the web google.com etc.

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

**Note: Only applicable for SGP321**

Go to the Setting app:

Settings ⇒ *More* ⇒ *Mobile Networks* ⇒ Network mode ⇒ LTE (preferred)/WCDMA/GSM

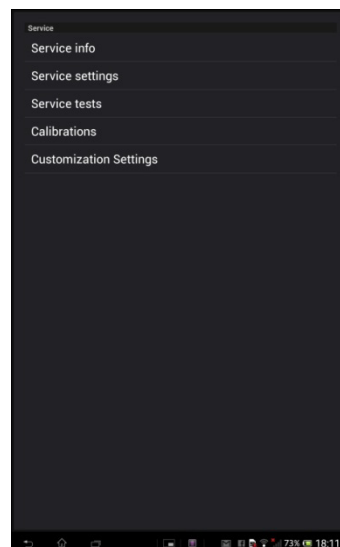
Ensure that the Network Status icon show signal strength and show LTE at the top of the display.

To verify the radio functions (LTE) of the tablet, download data package by for ex. accessing the web google.com etc.

Network Type can be checked in ⇒ *Settings app* ⇒ *About tablet* ⇒ *Status* ⇒ *Mobile network type*

## 3 Calibrations

**Calibrations have to be done if Exchange Board or PBA complete Sub (with Accelerometer and Gyroscope components) is replaced.**

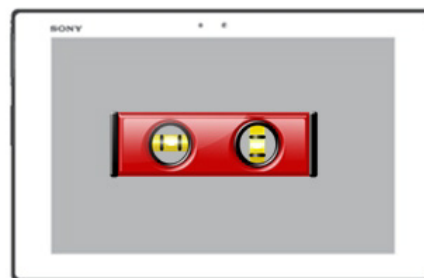


### 3.1 Gyroscope

**Make sure you place the tablet on a level surface by putting an air level on the window.**

- In the Service menu, press Calibrations
- Press Gyroscope

Press Back key to return to Service Test Menu.



Only symbolic view

### 3.2 Accelerometer

**Make sure you place it on a level surface by putting an air level on the window.**

- In the Service menu, press Calibrations
- Press Accelerometer

Press Back key to return to Service Test Menu.



## 4 Revision History

Rev.	Date	Changes / Comments
1	2013-05-10	Initial release
2	2013-10-04	Water Resistance Test (WRT) for incoming units updated