



# Test Instruction, Mechanical

Applicable for C905

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# 1 General

This document describes the process used for software upgrades and how to functionally test the mobile phone.

If there are any failures, the mobile must be repaired according to the troubleshooting guide or sent to a higher repair level.

# 2 Test Procedure

To verify all components within the Mechanical repair package all tests must be performed

## 2.1 Test flow

It's OK to return the phone to the customer if the unit passes these tests. If there are any failures, the phone must be repaired according to the troubleshooting guide or sent to a higher repair level.

# 3 Pre-Test Preparations

## 3.1 Liquid Damage Inspection

Before any tests are performed, an inspection of the liquid intrusion indicator should be made at the location shown. If the liquid intrusion indicator is red this is an indication of possible liquid exposure. If the liquid intrusion indicator suggests liquid exposure please consult your local company for additional handling instructions.

The following image shows the location of the liquid intrusion indicator.



Location of the Liquid Intrusion Indicator  
(Remove battery cover and battery)

## 3.2 Software Update

Update the handset with the latest signalling software using EMMA.

### 3.2.1 Verify Software Version

To verify if the mobile needs new software, you have to check the Software Version in the mobile. Current Software Versions are checked using the following steps:

1. Start the phone.
2. Press the following Navigation key and keypad sequence: → \* ← ← \* ← \*
3. Select "Service Info".
4. Select "Software info".
5. Check the software file revisions on the display. (Contact your line supervisor to determine what the latest SW revision is.)
6. Press "OK" to return to the "Service Info" menu.

### 3.2.2 Update Software Version

Update the software in the mobile by doing the following:

1. Attach a fully charged battery to the mobile.
2. Open the EMMA application and log in.
3. Ensure the mobile is powered off.
4. While holding the "c" key, connect the mobile to the USB Flash Cable. (Once the USB Icon appears in the EMMA window you may release the "c" key.)
5. Select the appropriate protocol and follow the instructions.

**NOTE!** *If the protocol has not been previously downloaded (Available locally) select "Server search" for a complete list of script's available.*

## 3.3 Phone Lock Reset

If the phone lock is on for this model, you must use the Phone Lock Reset tool in EMMA to automatically reset the 4 digit phone lock code to "0000".

1. Attach a fully charged battery to the mobile.
2. Open the EMMA application and log in.
3. Ensure the mobile is powered off.
4. While holding the "c" Key, connect the mobile to the USB Flash Cable. (Once the USB Icon appears in the EMMA window you may release the "c" key.).
5. When prompted, select "Phone Lock Reset".
6. The program will display "Success" on the USB Icon when the Phone lock code has been reset to 4 zeros "0000"

## 4 Service Tests

**NOTE!** *It is not necessary to have a SIM card inserted for the Service Test.*

1. Connect a battery then press the "On/Off" button to start the mobile.
2. The Service menu is entered using the following Navigation key and keypad sequence: → \* ← ← \* ← \*
3. Select "Service tests" then press the "Select" key.

### 4.1 Main Display Test

**NOTE!** *Minor variations in display brightness and color may occur between phones. There may be tiny bright dots on the display. These are called defective pixels and occur when individual dots have malfunctioned and can not be adjusted. Two defective pixels are deemed acceptable.*

To verify the display:

1. Select "Main display" from the "Service tests" menu and press the "Select" key.
2. The words "Main display" will be splashed in the center of the screen and then the display toggles between different test patterns. Make sure that there are no missing segments and the colors/contrast are OK.
3. Press the "Back" key (upper right soft select key) to return to the Service Tests menu.

### 4.2 LED/Illumination Test

To verify that the backlighting of the display and the keypad are OK:

1. Select "LED/illumination" from the "Service tests" menu and press the "Select" key.
2. The words "LED/illumination" will be splashed on the screen.
3. Check that the backlight turns on and off, the LED's under the keypad light up and the Red LED located on the front of the flip under the camera turns on and off.
4. Press the "OK" key to end the test and return to the Service Tests menu.

### 4.3 Keyboard Test

To verify that the keyboard, the Navigation keys and side keys are OK:

1. Select "Keyboard" from the "Service tests" menu and press the "Select" key.
2. The phrase "Keyboard test. Press any key." will be splashed on the screen.
3. Press all keys on the keypad and the side keys. If they are ok a text message will be displayed corresponding to the key pressed. All keys should be tested.
4. If you stop pressing keys the phone will return to the Service Tests menu after a few seconds.

## 4.4 Speaker Test

**WARNING! DO NOT HOLD THE PHONE TO YOUR EAR WHILE PERFORMING THIS TEST.**

To verify the Speaker functions:

1. Select "Speaker" from the "Service tests" menu and press the "Select" key.
2. Adjust the volume with the navigation or side volume keys and make sure that the speaker is working properly.
3. Press the "OK" key to go back to the Service Tests menu.

## 4.5 Earphone Test

To verify the Earphone functions:

1. Select "Earphone" from the "Service tests" menu and press the "Select" key.
2. Adjust the volume with the navigation or side volume keys and make sure that the speaker is working properly.
3. Press the "OK" key to go back to the Service Tests menu.

## 4.6 Microphone Test (secondary microphone)

**Primary Microphone test** shall be performed during the **Network Test** (On the Air Call to Mobile) see chapter 5.4

This test is intended to test the secondary microphone. Therefore, the speaker should be tested before this test is entered.

1. Select "Microphone" from the "Service tests" menu and press the "Select" key.
2. The phrase "Microphone Recording." will be displayed on the screen. Speak into the phone and then wait until the phrase "Microphone Playing" is displayed. The message that you just recorded will be played back. Ensure that the recorded sound is clear.
3. After playing the recording the phone will return to the Service Tests menu.



## 4.7 Vibrating alert Test

To verify that the vibrator functions:

1. Select "Vibrating alert" from the "Service tests" menu and press the "Select" key.
2. The words "Test vibrating alert Press any key." will be displayed on the screen.
3. Press any key and verify that the mobile vibrates multiple times.
4. Press the "OK" key to end the test and return to the Service Tests menu.

## 4.8 Camera Test

**NOTE!** *Minor variations in image appearance may occur between phones. This is nothing uncommon and is not regarded as a defective camera module.*

To verify that the camera is OK:

1. Select "Camera" from the "Service tests" menu and press the "Select" key.
2. Open the Lens Cover
3. Focus on an object as to take a picture. Check that the image quality is OK.

**NOTE!** *Picture cannot be taken during this test.*

4. Press the "Back" key (upper right soft select) to return to the Service Tests menu.

## 4.9 Accelerometer Test

To verify that the Accelerometer is OK:

1. Select "Accelerometer" from the "Service Tests" menu and press the "Select" key.
2. Tilt the phone from side to side. When tilting to the left, the X-coordinate should decrement. When tilting to the right, the X-coordinate should increment.

**NOTE! The X-coordinate should be 125 +/- 25**

5. Tilt the display of the phone down and the Y-coordinate should decrement. Tilting the display of the phone up and the Y-coordinate should increment.

**NOTE! The Y-coordinate should be 125 +/- 25**

6. Tilt the display of the phone down and the Y-coordinate should decrement. Tilting the display of the phone up and the Y-coordinate should increment.

**NOTE! The Z-coordinate should be 125 +/- 25**



7. Press the "OK" key to return to the Service Tests menu.

## 4.10 Memory card Test

**NOTE!** *A memory card should be inserted in the handset before the start of this test. The memory card holder is located on the side of the phone.*

To verify the communication between the phone and memory card is working:

1. Select "Memory card" from the "Service tests" menu and press the "Select" key.
2. Verify the handset detects the memory card is inserted.
3. Press the "OK" key to end the test and return to the Service Tests menu.

## 4.11 FM Radio Test

This test will check that the FM Radio is working.

1. Install a Portable Hands-Free (PHF) to the system connector.
2. Select "FM radio" from the "Service tests" menu and press the "Select" key.
3. Using the keypad set the frequency to a known good FM station.
4. While listening to the FM station with the PHF ensure that the sound quality compares to a known good handset.
5. Press the "OK" key to end the test.

## 4.12 Real Time Clock Test

This test will check if the built-in real time clock works.

1. Select "Real time clock" from the "Service tests" menu and press the "Select" key.
2. The words "Real time clock Please wait" will be displayed on the screen. After a few seconds you will get information whether the clock is ok or not.
3. After the test results are displayed the test will end and return to the Service Tests menu.

## 4.13 Total Call Time

This test will check if the Total Call time function is working

1. Select "Total call time" from the "Service tests" menu and press the "Select" key.
2. The words "Total clock time" and the time of the total call time in numbers will be displayed on the display if the function is working
3. Press the "OK" to end the test.

## 4.14 Security

To verify that the Device Key test is working:

1. Select "Security" from the "Service Tests" menu.
2. Select "Device Key test" from the menu, and you will get information regarding Device Key test, make sure the status is "Key ok".
3. Press the "central navi" OK key and then press "right soft-back" key to go back to the service tests menu.

## 4.15 GPS Test

To verify the function of the GPS:

1. Select "GPS" from the "Service Tests" menu and press the "centre navi" key.
2. Select "Request Position" and press the "centre navi" key, then it shows "Request sent", wait several time, then it shows the location parameters;
3. Press "right soft" key, go back to form menu;
4. Select "Reset NVRAM", press "centre navi" key, then it shows "Receiver NVRAM was reset successfully";
5. Press "centre navi" key and "right soft" key to go back to the service tests menu.

## 5 Manual Tests

### 5.1 SIM Test

To verify that the phone can detect a SIM:

1. Insert a SIM card, connect a battery and start the unit.
2. Press the "Select" key at the "Start phone" menu. If this menu does not appear proceed to step 3.
3. If the SIM is detected the phone will start "Searching" for a signal. If the SIM is not detected the phone will ask you to "Insert SIM Card".

### 5.2 Bluetooth

**NOTE!**      *When testing, the distance between the phone being tested and the other Bluetooth device must be 1.5 to 5 meters.*

To verify that the Bluetooth communication is functioning properly:

1. Insert a SIM card, connect a battery and start the unit.
2. Activate the Bluetooth function by entering the menu and selecting: **Settings/Connectivity/Bluetooth/Turn On.**
3. Set up a Bluetooth link between the mobile and another device. If a link can be established, the Bluetooth module is considered functional.
4. When test is completed, turn off the Bluetooth function and press the "Back" key to exit the Bluetooth menu.

### 5.3 Xenon Flash

To verify that the Xenon Flash is functioning properly:

1. Insert a SIM card, connect a battery and start the unit.
2. Slide down the lens cover and the camera starts.
3. Go in to settings, go to Flash and select Auto.
4. Go back to camera mode.
5. Take a photo against a dark background and see if the flash works.



## 5.4 System Connector

### 5.4.1 Battery Charger

To verify if the charging of the phone is properly working:

1. Install a battery into the phone, but do not power on the phone.
2. Connect the Wall Charger to the system connector.
3. Verify that the main display shows that the phone is being charged.
4. Remove the Wall Charger from the system connector and verify that the main display no longer shows the phone being charged.

### 5.4.2 USB Charging

**NOTE!** *Ensure that no USB application is active on the Computer such as PC Suite or EMMA. Install a battery into the phone, but do not power on the phone.*

To verify if the phone can charge the battery via a USB Port:

1. Connect a USB Cable from a Computer to the system connector.
2. Verify that a charging icon appears in the upper right corner of the main display.
3. Remove the USB Cable and verify that the charging icon is no longer displayed.

**NOTE!** *If the charging icon is not displayed, check to make sure the USB Charging option is turned on. To turn on the USB Charging, go to the Service Menu and select Service Settings, the status of the USB Charging will be displayed, if the charging is turned off press the select key.*

## 5.5 Network Test (On The Air Call to Mobile)

Use an On the Air Call to the mobile to test its network functionality. The call is separated into two different sections depending upon whether a UMTS Network is available in the area. If there is no UMTS Network then section 5.4.1 "On the Air Call to mobile (UMTS Network unavailable)" is applicable. If there is a UMTS Network then section 5.4.2 "On the Air Call to Mobile (UMTS Network available)" is applicable.

### 5.5.1 On The Air Call to Mobile (UMTS Network unavailable)

**NOTE!** *An "On the Air" test can only be performed if the mobile has an activated SIM or USIM card properly installed in the mobile and a network signal is available. This test cannot be performed with a Test SIM or Test USIM.*

To verify the radio functions in the phone do the following:

1. Insert an operator SIM or USIM card and start phone.
2. Set up a call from a landline phone (PSTN) to the mobile.
3. Check that the ringer is working and that the backlight switches on OK.
4. Answer the phone call.
5. Check that the quality of sound both in the mobile and the landline phone (PSTN) are OK. (Primary Microphone test)
6. Adjust the volume up and down using the side volume key and check that the volume in the mobile is altered.
7. End the call. Check that the ending procedure is OK and that the talk time is displayed.

### 5.5.2 On The Air Call to Mobile (UMTS Network available)

**NOTE!** *An “On the Air” test can only be performed if the mobile has an activated USIM card properly installed in the mobile and a UMTS network signal is available. This test cannot be performed with a Test USIM.*

**To verify the GSM radio functions in the phone, do the following:**

1. Insert an operator USIM card and start the phone.
2. Go to the Phone Menu and Select Settings – Connectivity – Mobile networks- GSM/3G networks and record the User's current setting before changing to “GSM only”. It is necessary to save the User's setting in order to restore this to the original setting after the call.
3. Set up a call from a landline phone (PSTN) to the mobile.
4. Check that the ringer is working and that the backlight switches on OK.
5. Answer the phone call.
6. Check that the quality of sound both in the mobile and the landline phone (PSTN) are OK. (Primary Microphone test)
7. Adjust the volume up and down using the side volume key and check that the volume in the mobile is altered.
8. End the call. Check that the ending procedure is OK and that the talk time is displayed.

**To Verify the UMTS radio functions in the Phone, do the following:**

9. Go to the Phone Menu and Select Settings – Connectivity – Mobile networks- GSM/3G networks and change to “GSM and 3G”.
10. Power the Phone off and then Power the Phone on. This will cause the Phone to scan for an available UMTS signal.
11. Check that the UMTS Icon “3G” is displayed on the phone to the right of the signal bars. If the UMTS Icon is not displayed the Phone is to be considered defective.
12. Set up a call from a landline phone (PSTN) to the mobile.
13. Check that the ringer is working and that the backlight switches on OK.
14. Answer the phone call.
15. Check that the quality of sound both in the mobile and the landline phone (PSTN) are OK.
16. Adjust the volume up and down using the side volume key and check that the volume in the mobile is altered.
17. End the call. Check that the ending procedure is OK and that the talk time is displayed.
18. Restore the User's original GSM/3G network setting.



## 5.6 Wi-Fi test

To verify that the Wi-Fi communication is functioning properly:

Insert a SIM card, connect a battery and start the unit.

Select **Main menu > Settings > Connectivity > Wi-Fi**

Select **Turn on**

The phone is searching for available Wireless LAN (Wi-Fi) networks

The networks found are listed in alphabetical order, with icons indicating network quality and type:



Good connection quality



Medium connection quality



Low connection quality



The network is configured and the phone has an account for it



A secure network, requiring encryption key(s) for access.

To use a specific network, select it and tap connect.

For protected networks the following message will be displayed:

“This network is protected. You must obtain the correct passphrase from the owner”

Insert the password and select OK

For unprotected networks no password is required.

**NOTE!** If you are successful in scan and connect, the Phone is considered functional.

Find the MAC address: Select **Wi-Fi** menu, > **Options >Advanced >My MAC address**, the address will be displayed on the screen

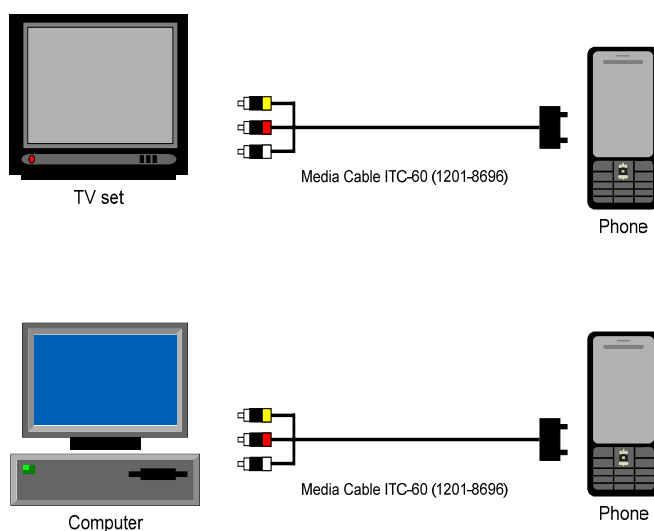
## 5.7 TV-out test

To verify that the TV-out communication is functioning properly:

Insert a SIM card, connect a battery and start the unit.

### 5.7.1 Installation

Connect the Phone to the TV set and choose the correct TV Sub Format according to the Installation Instruction, Mechanical (1218-1728)



### 5.7.2 Test

1. Enter media player, either by pressing the left soft key or navigating to the Media player icon in the main menu, using the rocker keypad.
2. Enter Photo album menu by pressing rocker keypad.
3. Enter either Latest photo, Camera album or Pictures by pressing the rocker keypad. The first picture in folder should now appear on TV set.
4. Press right on rocker keypad to display next image on display and TV set. Press left on rocker keypad to display previous image on display and TV set
5. In the phone, go to Menu > Media > Music.
6. Find the track you want to listen to and select "Play".

## 6 Revision History

Rev.	Date	Changes / Comments
1	2008-10-24	First release