



# Test Instruction, Mechanical

Applicable for K770

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# 1 General

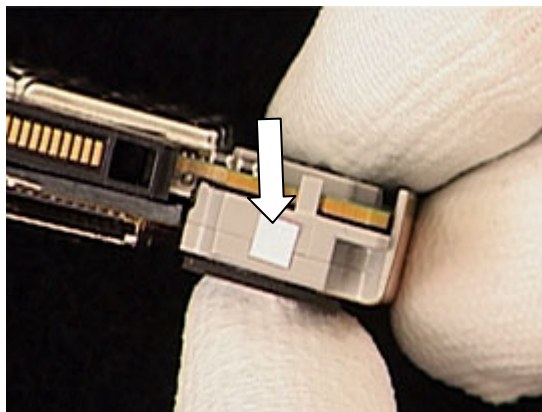
- This document describes the process used for software upgrades and how to functionally test the mobile phone at a Mechanical Repair Level.
- These activities can be performed at the Mechanical Repair level and higher.
- All tests must be performed.
- If the mobile passes these tests without any failures, it is OK to return it to the customer.
- If there are any failures, the mobile must be repaired according to the troubleshooting guide or sent to a higher repair level.
- A Battery Eliminator may be used in place of a standard fully charged battery for all tests at the mechanical level with the exception of the Battery Charger test.

## 2 Pre-Test Preparations

### 2.1 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 Indicator.



## **2.2 Software Update**

Update the handset with the latest signalling software using EMMA III.

### **2.2.1 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.

### **2.2.2 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 III application and log in.
3. Ensure the mobile is powered off.
4. While holding the "C" button connect the mobile to the USB Flash Cable.
5. Select the appropriate protocol and follow the instructions.

## **2.3 Phone Lock Reset**

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

1. Attach a fully charged battery to the mobile.
2. Open the EMMA III application and log in.
3. Ensure the mobile is powered off.
4. While holding the "C" button, connect the mobile to the USB Flash Cable.  
(Once the USB Icon appears in the EMMA III window you may release the "C" button.).
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".

## 3 Service Tests

**NOTE!** It is **not** necessary to have a SIM card inserted for the Service Tests unless specifically noted.

1. Press the "On/Off" button to start the mobile.
2. Select "Normal mode", otherwise the radio-test doesn't work.
3. The Service Tests menu is entered using the following Navigation key and keypad sequence: → \* ← ← \* ← \* .
4. Select "Service Tests" then press the "Select" key.

### 3.1 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 to return to the Service Tests menu.

### 3.2 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 LCD backlight/LED's under the keypad fades on and off and the red charging LED in the IR window toggles on and off.
4. Press the "OK" key to end the test and return to the Service Tests menu.



### 3.3 Keyboard Test

To verify that the keyboard, Navigation key, side keys and camera lens cover 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, the side volume 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.

### 3.4 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.

### 3.5 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.

### 3.6 Microphone Test

This test is intended to test the 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.



### 3.7 Vibrator Test

To verify that the vibrator functions:

1. Select "Vibrator" from the "Service Tests" menu and press the "Select" key.
2. The words "Vibrator test. 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.

### 3.8 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. Focus on an object as to take a picture. Check that the image quality is OK.

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

3. Press the "Back" key to return to the Service Tests menu.

### 3.9 Video Call Camera

**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 Video Call Camera is OK:

1. Select "Video Call camera" from the "Service Tests" menu and press the "Select" key.
2. While viewing the display verify that you can see yourself on the display and check that the image quality is OK.
3. Press the "Back" key to return to the Service Menu.

### 3.10 Flash Led

To verify that the Flash Led is OK:

4. Select "Flash Led" from the "Service Tests" menu and press the "Select" key.
5. Verify that the Flash Led is flashing at the back of the phone and.
6. Press the "OK key to return to the Service Menu.



### 3.11 Memory Stick Test

**NOTE!** A memory stick should be inserted in handset before the start of this test.

To verify if the communications to the memory stick is working:

1. Select "Memory Stick" from the "Service Test" menu and press the "Select" key.
2. Verify the handset detects the memory stick.
3. Press the "OK" key to end the test and return to the Service Tests menu.

### 3.12 FM Radio Test

To verify the function of the FM radio:

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. Remove the PHF and press the "OK" key to end the test.

### 3.13 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.

### 3.14 Total call time

This test will check the total call time for the phone.

1. Select "Total call time" from the "Service Tests" menu and press the "Select" key.
2. The Total call time is displayed.
3. Press the "OK" key to end the test.

## 4 Manual Tests

### 4.1 SIM Test

To verify that the phone can detect a SIM:

1. Insert a SIM card, connect a battery and start the unit.
2. After the Start-up Menu appears, select "Normal mode".
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".

### 4.2 Infrared Test

To verify that the Infrared (IR) communication is working:

1. Insert a SIM card, connect a battery and start the unit.
2. Activate the IR function by entering the menu and selecting:  
**Settings/Connectivity/Infrared port/10 Minutes.**
3. Set up an infrared link between an IR test device and the mobile. If a link can be established, the IR module is considered functional.
4. Press and hold the "⏏" key to get back to the main screen.

### 4.3 Bluetooth

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/hold the “⏮” to return to the main screen.

## **4.4 System Connector**

### **4.4.1 Battery Charger and Charging LED**

To verify if the charging function is properly working:

1. Connect a battery.
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.

### **4.4.2 Portable Hands Free (PHF)**

1. Insert a SIM card, connect a battery and start phone.
2. Enter the Service menu using the following Navigation key and keypad sequence: → \* ← ← \* ← \*
3. Select “Service Tests” then press the “Select” key.
4. Install the PHF to the system connector.
5. Select “Microphone” from the “Service Tests” menu and press the “Select” key.
6. The phrase “Microphone Recording.” Will be displayed on the screen. Speak into the PHF and then wait until the phrase “Microphone Playing” is displayed. The message that you just recorded will be played back through the PHF earpiece. Ensure that the recorded sound is clear.
7. Press and hold the “Back” key to get out of the “Service Tests” menu and remove the PHF from the system connector.

## **4.5 On The Air Call to Mobile**



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

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

1. Insert an operator SIM card and start phone.
2. Set up a call from a landline phone (PSTN) to the mobile.
3. Answer the phone call.
4. Check that the ringer is working and that the backlight switches on OK.
5. Check that the quality of sound both in the mobile and the landline phone (PSTN) are OK.
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 Revision History

Rev.	Date	Changes / Comments
A	2007-09-24	Initial Release