



Test Instruction, Mechanical

Applicable for K850

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1 General

This document describes the process used to perform software upgrades and functional tests.

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

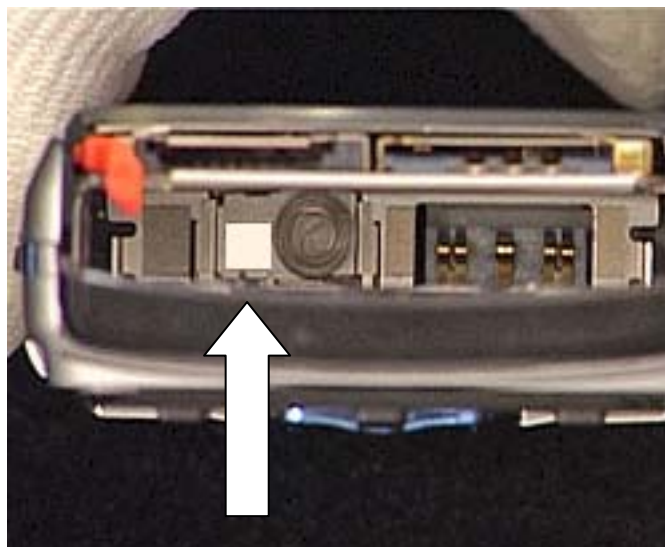
It's OK to return the phone to the customer if the unit passes these tests. If there are any failures, the phone must be repaired according to the troubleshooting guide or sent to a higher repair level.

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 images show 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 III.

3.2.1 Verify Software Version

To verify if the mobile needs new software, you have to check the Software Version. 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 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. 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 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".

4 Service Tests

4.1 Required Phone Setup for Service Tests

NOTE! *It is not necessary to have a SIM card inserted for the K850 Service Tests.*

1. 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.

4.2 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.

4.3 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 and the LED's under the keypad and navigation keypad toggle on and off.
4. Check that the LED close to the camera toggle on and off.
5. Press the "OK" key to end the test and return to the Service Tests menu.

4.4 Keyboard Test

To verify that the keyboard, the Navigation keypad 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, navigation keypad and 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. Slide the top of the phone closed and then open, a "↓" and a "↑" should be displayed, and this verifies that the Slider Sensor is functioning.
5. If you stop pressing keys the phone will return to the Service Tests menu after a few seconds.

4.5 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.

4.6 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.

4.7 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.

4.8 Vibrating Alert

To verify that the vibrator functions:

1. Select "Vibrating alert" 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.

4.9 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.

4.10 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 camera is OK:

4. Select "Camera" from the "Service Tests" menu and press the "Select" key.
5. Focus on an object as to take a picture. Check that the image quality is OK.

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

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



4.11 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

3. 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

4. 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

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

4.12 Memory Card Test

NOTE! A memory stick should be inserted in handset before the start of this test. The memory stick is inserted on the right side of the phone below the volume buttons.

To verify the communication between the phone and 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 is inserted.
3. Press the "OK" key to end the test and return to the Service Tests menu.

4.13 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.

4.14 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.

4.15 Total Call Time Test

This test will check to 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.

4.16 Security Test

The "Security" option in Service Tests is not applicable.

4.17 Portable Hands Free (PHF)

This test will check that the PHF is working.

1. Install a Portable Hands-Free (PHF) to the system connector.
2. Select "Microphone" from the "Service Tests" menu and press the "Select" key.
3. 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.
4. After playing the recording the phone will return 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. It may be necessary to use a nylon pointer for the SIM card to latch. Connect a battery and start the unit.
2. After the Start-up Menu appears, select "Normal".
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

To verify that the Bluetooth communication is functioning properly:

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

1. Insert a SIM card. It may be necessary to use a nylon pointer for the SIM card to latch. 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 "↵" key to return to the main screen.

5.3 System Connector

5.3.1 Battery Charger

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

1. Connect a battery.
2. Connect the Wall Charger to the system connector.
3. Verify that the 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.



5.3.2 USB Charging

To verify the phone can charge the battery via a USB Port.

NOTE! *Ensure that no USB application is active on the Computer such as PC Suite or EMMA III*

1. Install a battery into the phone.
2. To ensure proper functioning of the test power on and power off the phone.
3. Connect a USB Cable from a Computer to the system connector.
4. Verify that a charging icon appears in the upper right corner of the main display.
5. 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.*

5.4 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.

6 Revision History

Rev.	Date	Changes / Comments
A	2007-10-09	Initial Release
B	2007-11-02	Chapter 4.1 Updated