



Test Instruction - Electrical

Applicable for R306

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1 Abstract

This document describes the test procedure for the Electrical repair package.

2 Test Procedure

To verify all components within the Electrical repair package, all tests must be performed.

3 Test flow

If the phone passes these tests without any failures, it is OK to return it to the customer.

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

3.1 Software Update

Update to latest signalling software and run the service activities software from EMMA

3.1.1 Verify Software Version

NOTE! Remove the SIM-card before testing.

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

1. Start up the phone.
2. Enter the Service Tests Menu by pressing the sequence **►*◄◄*◄*** with the navigate buttons and the ***** on the keypad.
3. Select Service info.
4. Select SW Information.
5. Check the file revisions on the display.
6. Press "back" key to return to the Service info menu.

3.1.2 Update Software Version

Update the software in the phone by doing the following steps:

1. Make sure that the phone's battery is fully charged or use a battery eliminator. Connect correct flash cable and interface according to the Installation instruction.
2. Logon to the EMMA server, and follow the instructions



3.2 Go/No-Go Test

This test verifies that the radio parameters of a mobile fulfil the GSM / WCDMA specifications. A mobile is considered good if all measurements pass. All results will be presented on the screen and can be printed out if a printer is available.

3.2.1 RF Test Fixture (Conducted Test Method)

1. Remove the SE cover according to Working Instructions, Mechanical.
2. Insert a test SIM and install a fully charged standard battery to the mobile.

NOTE! A Battery Eliminator (Dummy Battery) may be used in place of a standard fully charged battery if you use a power supply that meets the requirements that are documented in the Electrical Equipment List.

3.2.2 RF Coupler (Radiated Test Method)

1. Insert a test SIM and a fully charged standard battery. It is very important that a standard fully charged battery is used; otherwise, there is a risk for wrong test results.

3.2.3 SERP GNG

NOTE! For complete and detailed user instructions, see the SERP Users Manual located in the SERPINFO.htm that gets placed on the Desktop after SERP is installed.

1. On a PC with SERP installed, start the SERP program by double clicking on the "**RepairManager.exe**" icon on the desktop.
2. Click on "**Settings**" in the SERP Window and verify that the test instrument and the GPIB address correspond.
3. Click on the "**Station Setup**" tab and verify that the "**cable**" (or the **coupler**) settings are selected under the "**RF Connection-GoNogo**" Drop down window. Click on "**Apply**" and then the "**OK**" button.
4. Enter (or scan) the IMEI number of the mobile to be tested into the "**Enter IMEI**" box in the SERP Window and click on the "**Load**" button. The appropriate phone model will be displayed.
5. In the SERP window, check the "**Final GoNogo Test**" box only. Click on the "**Start Test**" button and follow the instructions. (Power on the phone when the "**Call Connection**" dialog box appears.)

3.3 Service Tests

3.3.1 Required Phone Setup for Service Tests

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

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.

3.3.2 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 that the display functions:

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 “Select” key to return to the Service Tests menu.

3.3.3 LED/Illumination Test

To verify that the backlighting of the display and the keypad functions:

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. Press the “OK” key to end the test and return to the Service Tests menu.

3.3.4 Keyboard Test

To verify that the keyboard and the navigation keypad functions:

1. Select "Keyboard" from the "Service Tests" menu and press the "Select" key.
2. The phrase "Keyboard Test" will be splashed on the screen.
3. Press all keys on the keypad and navigation keypad. 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.

3.3.5 Speaker Test

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

To verify that the speaker functions:

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

3.3.6 Earphone Test

To verify that the earphone functions:

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

3.3.7 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.

3.3.8 Vibrating Alert Test

To verify that the vibrator functions:

1. Select "Vibrating" 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.

3.3.9 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 functions:

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.

3.3.10 FM Radio Test

This test will verify 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" or "Back" key to end the test.

3.3.11 Real Time Clock Test

This test will verify that 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.

3.3.12 Total Call Time Test

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 and return to the Service Tests menu.

3.4 Manual Tests

3.4.1 SIM Test

To verify that the phone can detect a SIM:

1. Insert a SIM card, connect a battery and start the unit.
2. 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".

3.4.2 Bluetooth

To verify that the Bluetooth is working:

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, connect a battery and start the unit.
2. Activate the Bluetooth function by entering the menu and selecting: **Settings/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.

3.4.3 System Connector

3.4.3.1 Battery Charger

To verify if the charging of the phone is 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 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.



3.4.3.2 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, but do not power on the phone.
2. Connect a USB Cable from a Computer to the system connector.
3. Verify that a charging icon appears in the display.
4. Remove the USB Cable and verify that the charging icon is no longer displayed.

3.4.3.3 Portable Hands Free (PHF)

To verify that the portable hands free is working:

1. Insert an operator SIM card, connect a battery and start phone.
2. Insert a PHF that is compatible to the system connector.
3. Make a "On the Air Call Test" according to chapter 5.4 to verify the function of the hands free microphone and the hands free earphone.
4. To verify to volume of the phone adjust the volume up and down with the navigation keys.

3.4.4 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:

1. Insert an operator SIM card, connect a battery 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.
6. Adjust the volume up and down using the side volume key and check that the volume in the mobile is altered.

End the call. Check that the ending procedure is OK and that the talk time is displayed.

4 Revision History

Rev.	Date	Changes / Comments
1	2008-08-15	1 st version