



# Test Instruction, Electrical

Applicable for Z300

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# **1 Abstract**

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



## 2 Current Consumption Problems

### 2.1 Action

#### Use Dummy Battery                      Power Supply 3.8volt                      Current Limiter 2A

Transmitter 900 MHz power level 5 (highest):                      Max current 400mA (RMS) 1.8A (peak)

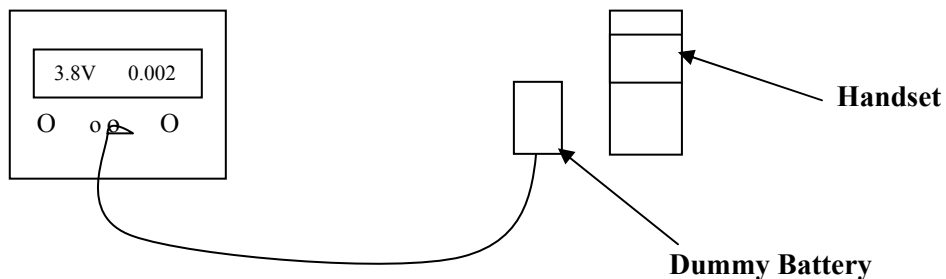
Transmitter 1800-1900 MHz power level 0 (highest):                      Max current 300mA (RMS) 1.5A (peak)

Receiver (deep sleep mode, after 3-5 minutes on network):                      Max current 0-6mA (RMS)

Standby time receiver:

Battery capacity / Receiver current  
typical

Example: Standby time J210:                      700mAh    /    2mA    :                      350 hours.



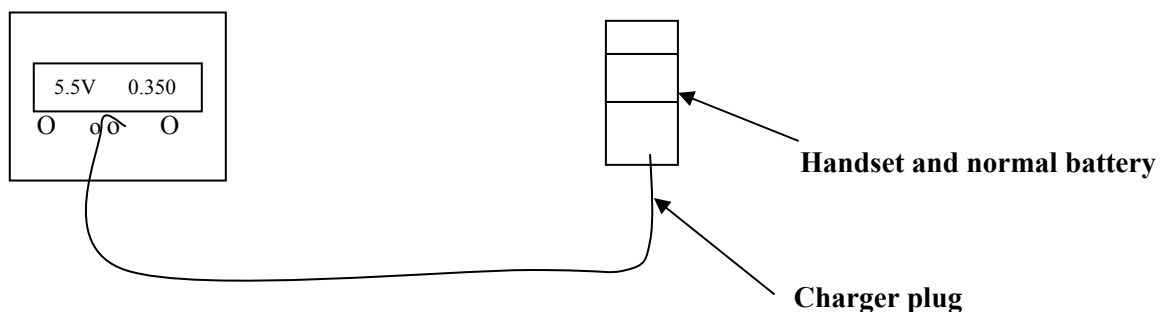
#### Use normal battery                      Power supply 5.5volt                      Current limiter 1A

Charger current (Battery half charged):                      Approximate 300-500mA.

If battery is complete discharged it could take 10 minutes before charger current increase to 300-500mA.

A small current (3-30mA) starts to charge the battery .This is called Trickle Charge.

The battery has an extra connector (middle).This is for Data to processor called B Data.





## 2.2 Dummy Battery

Connect the Dummy Battery (3.8 Volt, limiter 2A)

Measure the current in off mode, less than 1mA. If more, it could be a PA module fault.

Powering up the phone with a live SIM. Measure the deep sleep current

(After 5 minutes max 6mA). Typical between 0-3mA.

If the phone uses more than 6mA, make a reset. Make sure that the operator is running with deep sleep (can switch off by operator).

Measure the Transmitter current 900 MHz power level 5. Max 400mA (RMS) 1.8A (peak)

Measure the Transmitter current 1800 MHz power level 0. Max 300mA (RMS) 1.5A (peak)

If the phone uses more the fault could be in the PA module, front end module or Vincenne.

## 2.3 Battery

Measure the capacity of the battery in a Battery tester. Must be over 80% of labeling.

Measure the internal resistor. Max 400mOhm

If more the phone will turn off to soon in transmit mode.

Check the charger current (300-500mA). The battery half charged.

If the current is less test another battery to decide if the battery or the phone is bad.



## **3 Test Procedure**

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

## **4 Test flow**

If the phone is passing these steps of testing without any failures, it is OK to return to the customer.

If there are any failures, repair the phone according to the Troubleshooting Guide.

### **4.1 Software Update**

Update the latest signalling software and run on the service software from EMMA III.

#### **4.1.1 Verify Software Version**

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

1. Turn on the phone.
2. Press the following navigation-key and keyboard sequence: ⇒ \* ⇐ ⇐ \* ⇐ \*
3. Select Service info.
4. Select SW Information.
5. Check the file revisions on the display.
6. Press YES to return to the Service info menu.

#### **4.1.2 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 Dummy battery. Connect correct flash cable and interface according to the Installation instruction.
2. Connect to the EMMA III server, choose application "GSM" and follow the instructions.



## 4.2 Go/No-Go Test

This test verifies that the radio parameters of the phone fulfil the GSM/GPRS 900/1800, GSM/GPRS 850/1900 specification. If all measurements are approved, it will be confirmed. If any faults are discovered, it will be presented either on the screen or printed out.

It's very important that a fully charged battery is used otherwise there is a risk for wrong test results.

### Antenna Coupler

- Insert a test-SIM and a fully charged standard battery. Position the phone in the coupler according to the pictures (Fig 1).

### RF Test Cable

- Insert a test-SIM and the battery eliminator or a fully charged standard battery. Connect the flexible RF test cable to the external antenna connector under the battery cover according to Fig 2. Connect the RF cable between the Test set and the RF test cable.



Fig. 1



Fig. 2

1. Start the instrument, and run the correct script for Z300, depending how the measurement will be performed, with coupler or with RF Test Cable (Hard line).
2. Follow the instructions on the Test instrument during the test.



## 4.3 Service Tests

### NOTE!

**It is not necessary to have a SIM card inserted.**

Turn on the phone.

The Service Tests menu is entered using the following navigation-key and key sequence:  
⇒ \* ⇐ ⇐ \* ⇐ \* and select "Service tests".

### 4.3.1 Display Test

To verify the display:

1. Select "Display" from the "Service Tests" menu.
2. The display toggles between four different test patterns.  
Make sure that there are no dots missing and that the colours and contrast is OK.
3. Press the "YES" or "NO" key to go back to the service tests menu.

### 4.3.2 LED/Illumination Test

To verify that the backlight and the Top LED are OK:

1. Select "LED/illumination" from the "Service Tests" menu.
2. Check that the backlight on the LCD and the keyboard are toggling between on and off.
3. Press the "YES" or "NO" key to go back to the service tests menu.

### 4.3.3 Keyboard Test

To verify the keyboard, the navigation-key and the volume key are OK:

1. Select "Keyboard" from the "Service Tests".
2. Press all keys on the keypad. If all test Ok, a text feedback is displayed showing the information which key was pressed. All keys should be tested.
3. If you stop pressing keys the phone will return to the service test menu after 3 seconds.

### 4.3.4 Buzzer Test

To verify the Loudspeaker function:

1. Select "Buzzer" from the "Service Tests" menu.
2. Adjust the joystick and make sure that the Loudspeaker (back side) is working properly.
3. Press the "YES" or "NO" key to go back to the service tests menu.



### **4.3.5 Earphone Test**

To verify the Earphone function:

1. Select “Earphone” from the “Service Tests” menu.
2. Press any key and make sure that the Earphone (front side) is working properly.
3. Press the “YES” or “NO” key to go back to the service tests menu.

### **4.3.6 Microphone Test**

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

1. Select “Microphone” from the “Service Tests” menu.
2. Check that every sound that is going into the microphone can be instantly heard in the earphone.
3. Press the “YES” or “NO” key to go back to the service tests menu.

### **4.3.7 Vibrator Test**

To verify the vibrator function:

1. Select “Vibrator” from the “Service Tests” menu.
2. Press any key and the vibrator will start vibrating.
3. Press the “YES” or “NO” key to go back to the service tests menu.

### **4.3.8 Flip Counter Test**

This function will show you the total number of flips of the phone when it is turned on.

1. Select “Flip Counter” from the “Service Tests” menu and you will get information of the flip count.
2. Press the “YES” or “NO” key to go back to the service tests menu.

### **4.3.9 Total Call Time test**

This test will show you the Total Call Time of the phone.

1. Select “Total Call Time” from the “Service Tests” menu and you will get information regarding the “Total Call Time” of this phone.
2. The phone will return to service menu after a second.





## **4.4 Manual Tests**

### **4.4.1 “On the Air Call” to the mobile**

To verify the function of the earphone, microphone, polyphonic ring signal, joystick button and GSM radio:

1. Insert an operator SIM card and start the phone.
2. Set up a call from another phone to the mobile phone.
3. Answer the phone call.
4. Check that the polyphonic ring signal is working and that the backlight switches on OK.
5. Also check that the quality of the sound both in the mobile phone and the other phone are OK.
6. Adjust the joystick up and down and check that the volume in the phone is altered.
7. End the call.
8. Check that the ending procedure is OK and that the speech time is displayed.

### **4.4.2 System Connector Test**

Hands free equipment and a charger are used in this test, to check the functionality of the System Connector.

1. Insert a SIM card, connect a battery and start the unit.
2. Connect the Hands free equipment to the system connector and set up a call and listen if you can speak/hear in the hands free set.
3. Connect the charger to the system connector and see if the phone starts to charge and if the charging is indicated in the display.



## 5 Revision History

Rev.	Date	Changes / Comments
A	2005-12-12	First release
B	2005-12-14	Added information in 4.2 Go/No Go test
C	2005-12-15	Due to system problem. No changes in content
D	2006-08-30	Changed information for R&S coupler settings for Z300