



Test Instructions

- mechanical -



ELM
J10, J10i2



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*For general information about test procedures, refer to
1220-1333: Generic Repair Manual - mechanical*



1 Pre-Test Preparations

1.1 Hardware

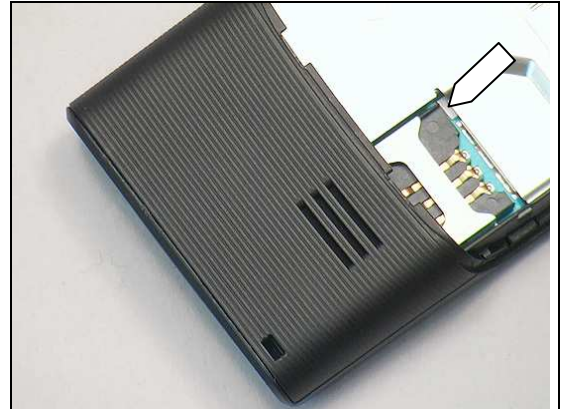
1.1.1 Water indicator inspection

Before starting any tests the water indicator has to be checked.

The indicator is located as shown in this picture after having the battery cover removed.

If not affected by liquid, proceed to the 'Slider performance test' below.

If affected (red colour) - handle the phone according to your local directives.





Pre-Test Preparations

1.2 Software

1.2.1 Software update

1.2.1.1 Software version verification

Check the software versions of the phone to establish whether a software version update is needed:

- start up the phone and press the Navigation Keypad and Keyboard keys as follows:

⇒ * ⇐ ⇐ * ⇐ *

- select 'Service info'
- select 'Software info'
- check the software file revisions and, if needed, update as described below

For more information, refer to 1220-1333: Generic Repair Manual - mechanical

1.2.1.2 Software version update

Use the DCU-65 USB cable for this purpose!

Do not use the SEPI equipment!

- install a fully charged battery and ensure the phone is powered off
- open the Emma application and log in
- press and keep the "C" key down on the phone, connect the phone to the USB cable and when the USB icon appears in the Emma window, release the "C"-key
- select the appropriate protocol and follow the on-screen instructions

1.2.2 Phone lock reset

- install a fully charged battery and ensure the phone is powered off
- open the Emma application and log in
- press and keep the "C" key down on the phone, connect the phone to the USB cable and when the USB icon appears in the Emma window, release the "C"-key
- when prompted, select 'Phone Lock Reset'
- 'Success' will be displayed on the USB icon when the phone lock code has been reset to '0000'

2 Tests

2.1 Service Test Mode

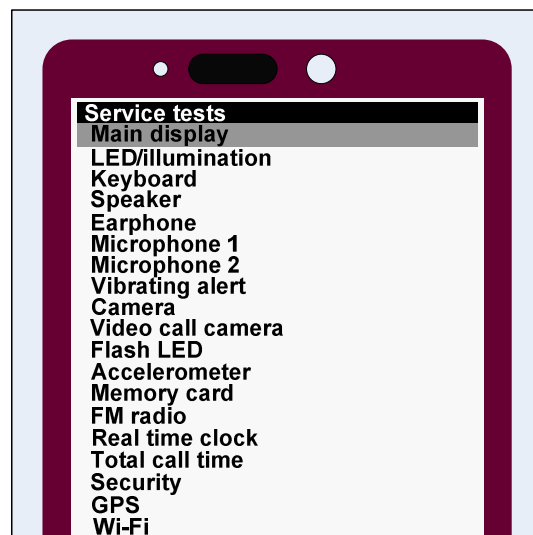
All service tests can be carried out without a SIM card!

Start up the phone and enter the service menus:

- press the Navigation Keypad and Keyboard keys as follows: $\Rightarrow * \Leftarrow \Leftarrow * \Leftarrow *$
- select 'Service tests'
- select one of the tests and follow the test instructions as described below
- to stop the test and return to the 'Service tests' menu, press the Back key

For more information, refer to

1220-1333: Generic Repair Manual - mechanical



The pictures to follow will show a simplified basic phone for a general visualization of the service tests!

Tests

2.2 Service Tests

2.2.1 Main display

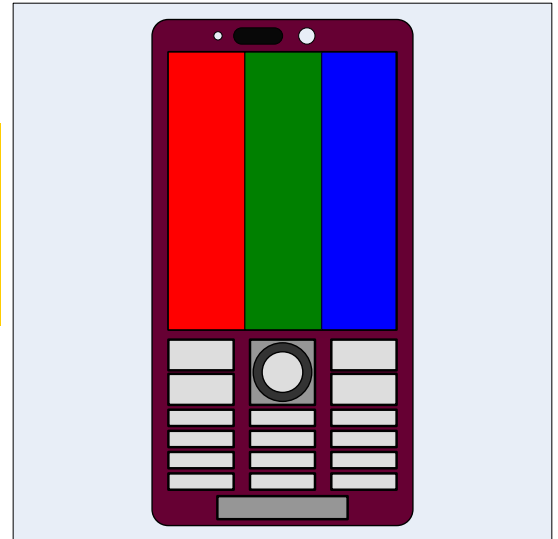
Minor variations in display brightness and colour may occur between phones.

There may be tiny bright dots on the display, so called defective pixels and occur when individual dots have malfunctioned and can not be adjusted.

Two defective pixels are considered to be acceptable.

The display will show five test patterns.

Make sure that there are no missing segments and that the colours and contrast are OK.



2.2.2 LED/illumination

Check that the:

Open/Close clip:

- LEDs under the Navigation Keypad are turned on and off
- LEDs under the Keyboard are turned on and off
- LEDs at circular light and pulsating light are turned on and off
- LED besides main camera is turned on and off
- Main/sub display backlight is switched off for a short time.

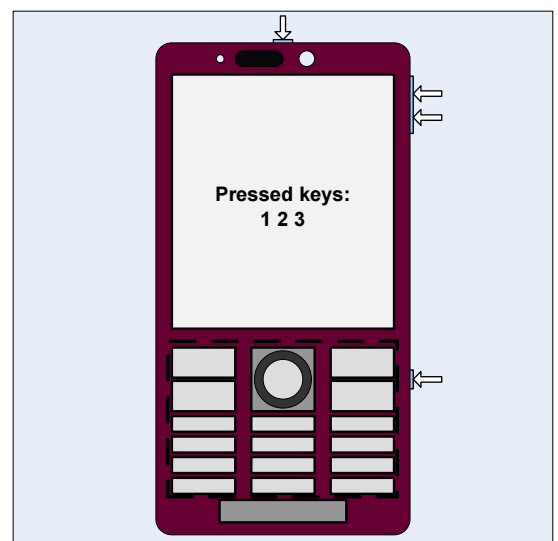


2.2.3 Keyboard

Press all keys on the:

- Navigation Keypad
- Keyboard
- side of the phone

Check that each pressure is confirmed in the display.



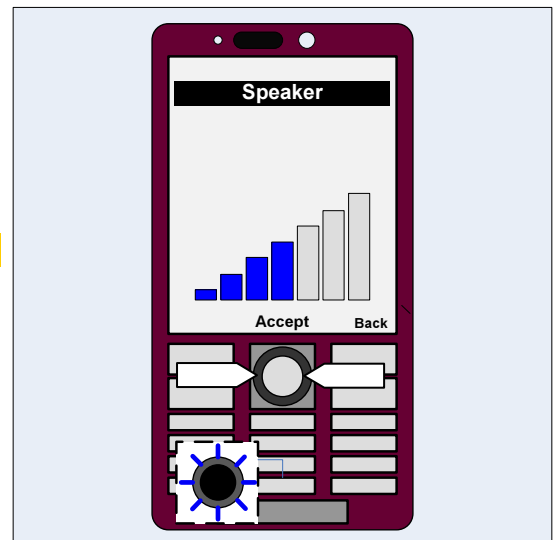


Tests: Service Tests

2.2.4 Speaker

Do not hold the phone close to your ear during this test!

Adjust the volume and make sure that the sound from the speaker port on the back of the phone is emitted loud and clear.



2.2.5 Earphone

Adjust the volume and make sure that the sound from the earphone port on top of the phone is emitted loud and clear.

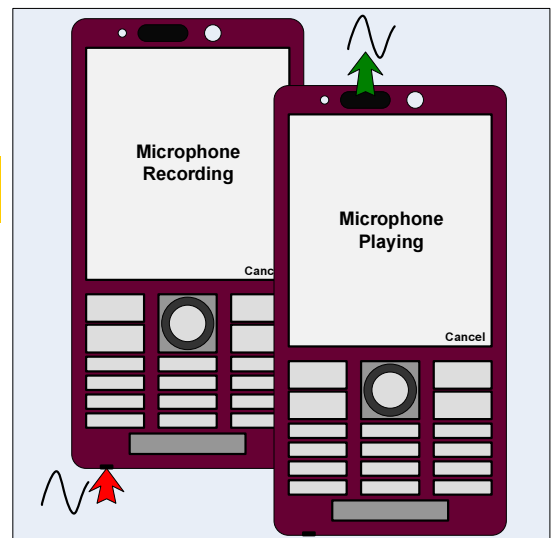


2.2.6 Microphone 1

The previous test, 'Earphone*', should have been successfully carried out before doing this test!

The phone will start to record and after approximately seven seconds the sound is played back in the earphone. Speak into the microphone during the 'Microphone Recording' phase.

Check the quality by listening to the recording from the earphone during the 'Microphone Playback' phase.





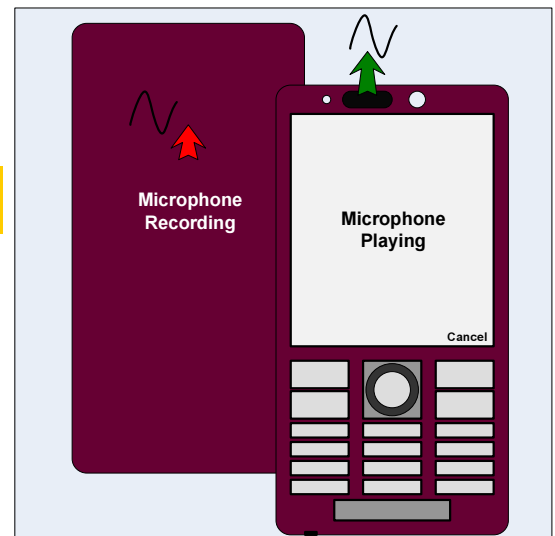
Tests: Service Tests

2.2.7 Microphone 2

The previous test, 'Earphone*', should have been successfully carried out before doing this test!

The phone will start to record and after approximately seven seconds the sound is played back in the earphone. Microphone 2's external port is on the back on the battery Cover. Speak into the microphone 2 during the 'Microphone Recording' phase.

Check the quality by listening to the recording from the earphone during the 'Microphone Playback' phase.



2.2.8 Vibrating alert

Press any key and the vibrator gets activated three times.

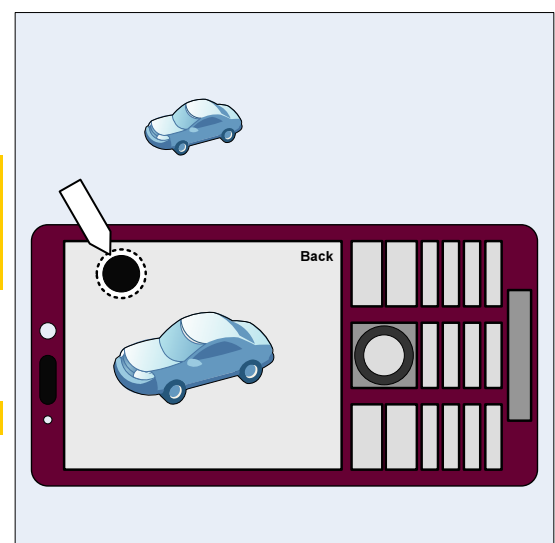


2.2.9 Camera

Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!

Aim the camera (located back of the phone) at an object and check the quality of the image shown in the display.

Photos cannot be taken during this test!





Tests: Service Tests

2.2.10 Video call camera

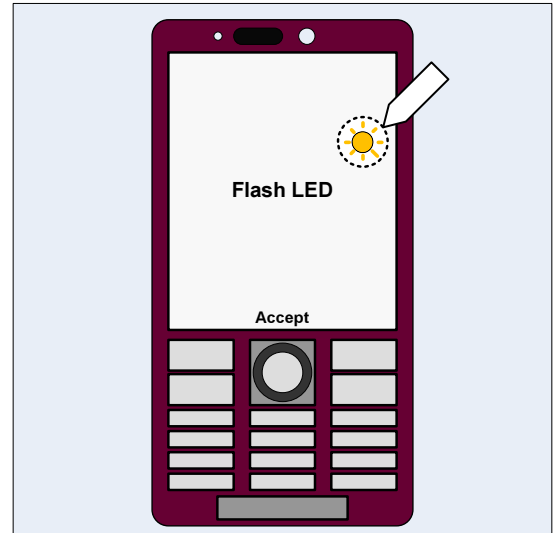
Minor variations in image appearance may occur between phones, but is not uncommon and should not be regarded as an indication of a defective camera module!

Aim the camera at yourself and check the quality of the image shown in the display.



2.2.11 Flash LED

Check that the camera light (located back of the phone) is flashing.



2.2.12 Accelerometer

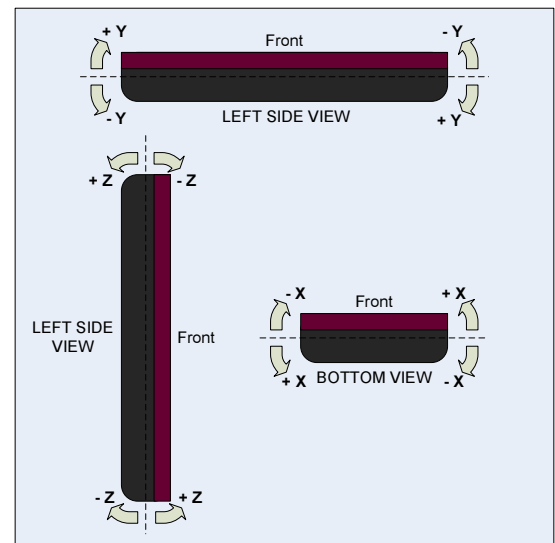
The accelerometer test displays the actual position of the phone as a 3D coordinate X:Y:Z



Tests: Service Tests

By tilting the phone in various directions, the X:Y:Z values will change in size and polarity depending on angle and direction as shown in the adjacent picture.

Check by tilting the phone that the X:Y:Z values shown in the display are in accordance with the tilting shown in the picture.



2.2.13 Memory card

A memory card should be inserted in the phone before the start of this test!

The memory card holder is accessible after having the battery cover removed!

The phone should detect that the memory card is inserted.

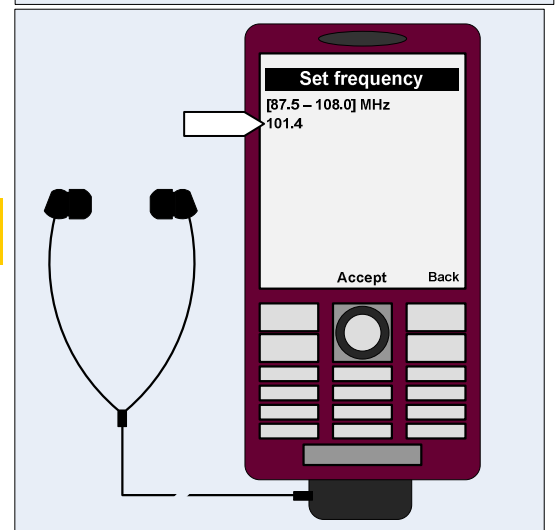


2.2.14 FM radio

A Portable Hands-Free (PHF) has to be connected to the system connector prior to this test!

Use the keyboard to enter the frequency of an FM station known to be good regarding reception.

Listen to the FM station and verify that the sound quality is as good as can be expected.



Tests: Service Tests

2.2.15 Real time clock

During the actual test the text 'Please wait' is displayed, then followed by a message stating whether the test was OK or not.



2.2.16 Total call time

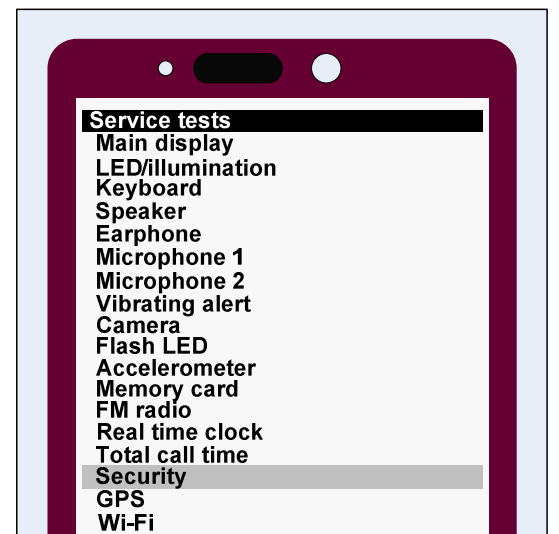
The total call time is displayed in the format HH:MM:SS (hours:minutes:seconds).



2.2.17 Security

To verify that the Device Key test is working:

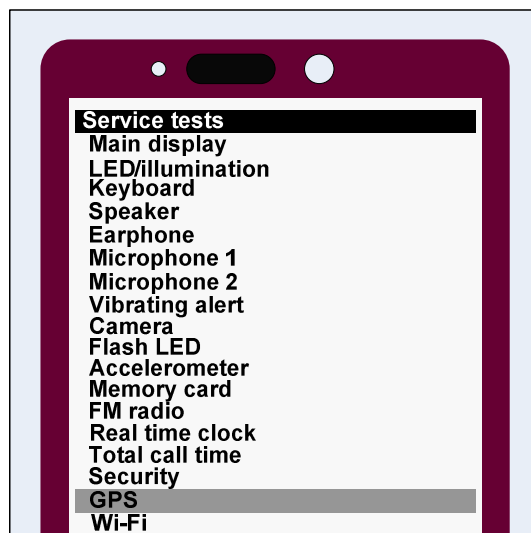
- Select "Security" from the "Service Tests" menu.
- Select "DRM Key test" from the menu, and you will get information regarding DRM Key test, make sure the status is "Key ok".
- Press the "central navi" OK key and then press "right soft-back" key to go back to the service tests menu.



Tests: Service Tests

2.2.18 GPS

**For GPS testing, refer to
1220-1333: Generic Repair Manual - mechanical**





Tests

2.3 Manual Tests

2.3.1 SIM

Verify that the phone can detect a SIM card:

- insert a SIM card, install a battery and start the phone
- if the SIM card is detected by the phone, the start-up procedure will continue
- if not detected, the message 'Insert SIM card' will be displayed

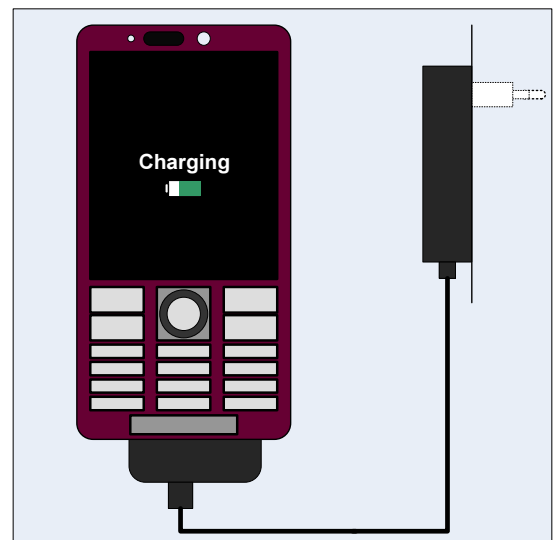


2.3.2 Battery charging

2.3.2.1 Charging by wall charger

Verify that charging of the phone functions properly:

- install a battery but do not start the phone
- connect a wall charger to the system connector
- verify that the display shows that the phone is being charged
- remove the charger from the system connector and verify that the display no longer indicates charging

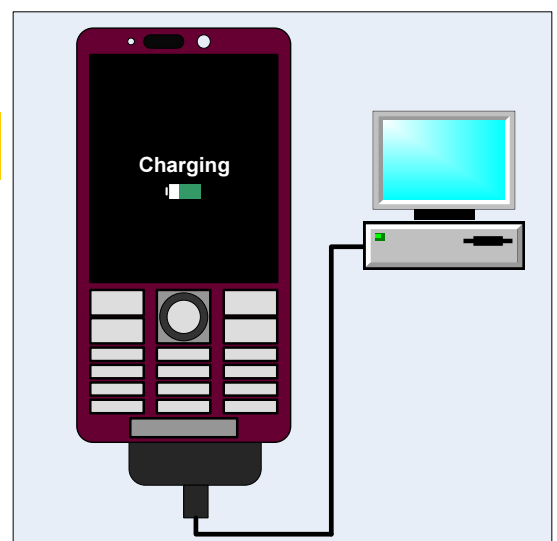


2.3.2.2 Charging via USB

Verify that the phone can charge the battery via a USB port:

Ensure that no computer application, such as PC Suite or Emma, is active!

- check and, if necessary, activate the USB charging by entering the Service menu: Service settings ⇒ Charging on
- install a battery but do not start the phone
- connect a USB cable from a computer to the system connector
- verify that the display shows that the phone is being charged
- remove the USB cable from the system connector and verify that the display no longer indicates charging





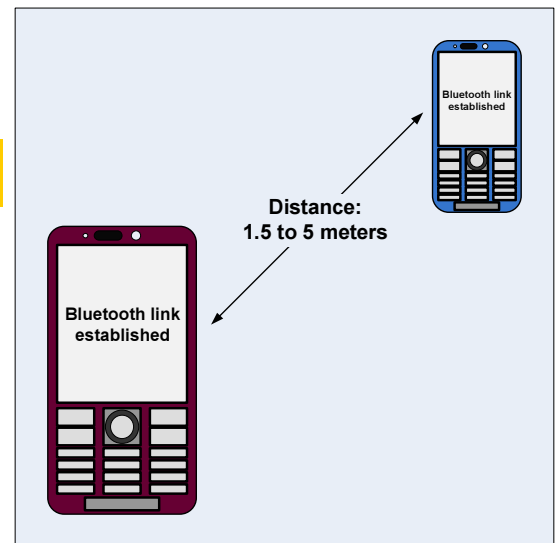
Tests: Manual Tests

2.3.3 Bluetooth

Verify that the Bluetooth communication functions properly:

During this test, the distance between the phone and the other Bluetooth device must be 1.5 to 5 meters!

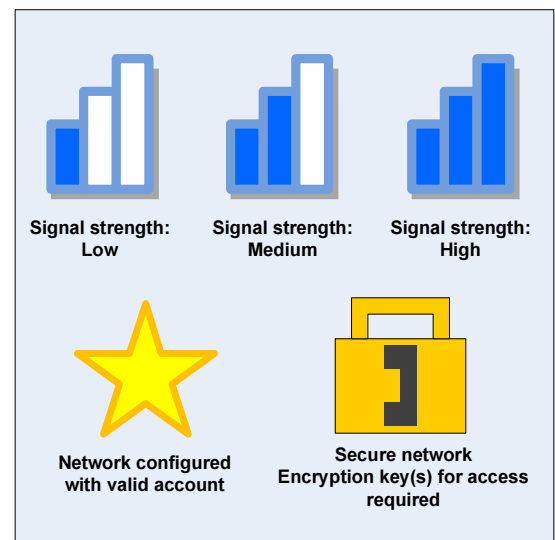
- insert a SIM card, install a battery and start the phone
- activate the Bluetooth function via the phone menu:
Settings ⇒ *Connectivity* ⇒ *Bluetooth* ⇒ select *Turn on*
- set up a Bluetooth link between the phone and the other Bluetooth device.
- if a link can be established, the Bluetooth function is regarded to be fully functional



2.3.4 Wi-Fi

Verify that the Wi-Fi communication functions properly:

- insert a SIM card, install a battery and start the phone
- activate the Wi-Fi function via the phone menu:
Settings ⇒ *Connectivity* ⇒ *Wi-Fi* ⇒ select *Turn on*
- the phone will be searching for any available Wi-Fi, a.k.a. WLAN (Wireless Local Area Network)
- the networks found are listed in alphabetical order, with icons indicating network quality and type as described in the adjacent picture
- select the desired network and press '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 passphrase and select OK (passphrases are not required for unprotected networks)

If the phone is able to scan, detect and connect to a network, the Wi-Fi function is regarded to be fully functional.

To obtain the phone's MAC address via the phone menu:

Settings ⇒ *Connectivity* ⇒ *Wi-Fi* ⇒ *Options* ⇒ *Advanced* ⇒ *My MAC address*, and the address will be displayed.

Tests

2.4 Network Test

This test can only be performed if the phone has got an activated SIM/USIM card (no Test SIM/USIM) and an available network signal!

There are two versions of the test depending on whether a UMTS network is available or not!

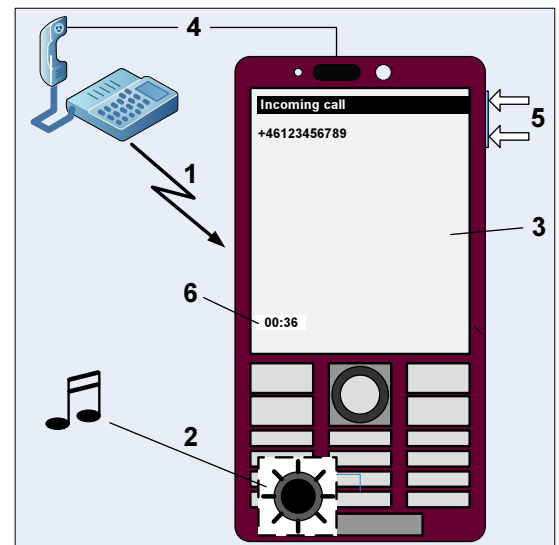
If a UMTS network is available, the network test has to be done separately for GSM and UMTS!

2.4.1 On-the-air call to mobile (no UMTS network available)

To verify the radio functions (GSM) of the phone, follow the '2.4.1.1 Procedure' below

2.4.1.1 Procedure

1. Set up a call from a landline phone (PSTN)
2. Check that the ring signal goes on
3. Check that the display backlight illuminates
4. Answer the call and check the sound quality in both phones
5. Adjust the volume up and down with the side key and verify that the sound level is altered
6. End the call and check that the elapsed time is displayed and that the termination is done in a proper way



2.4.2 On-the-air call to mobile (UMTS network available)

GSM

Go to the phone menu and set:

Settings ⇒ *Connectivity* ⇒ *Mobile networks* ⇒ *GSM/3G networks* ⇒ *GSM only*

To verify the radio functions (GSM) of the phone, follow the '2.4.1.1 Procedure' above.

UMTS

Go to the phone menu and set:

Settings ⇒ *Connectivity* ⇒ *Mobile networks* ⇒ *GSM/3G networks* ⇒ *GSM and 3G*

Switch off the phone and then start it up again to enable search for an available UMTS signal. Ensure that the UMTS/3G icon now is visible at the top of the display.

To verify the radio functions (UMTS) of the phone, follow the '2.4.1.1 Procedure' above.



3 Revision History

Rev.	Date	Changes / Comments
1	2010-02-10	Initial release
2	2010-12-07	Update with Video Camera for J10 only