CHAPTER 4 - TESTS AND CHECKS

4.1 ABOUT TESTS

Tests and checks are made after the troubleshooting procedures (chapter 3) and before the maintenance procedures (chapter 5).

They are broken down into modules and are sorted by types of confirmed faults. The user must be equipped with special test tools in order to carry out the tests.

4.2 TEST TOOLS

The references of SAGEM tools, listed hereafter, are given in Appendix 1 : Composition table.

The following test tools are necessary :

- a PC type computer,
- the SMT maintenance software for the myX 2-2
- the **ARC downloading kit**, including the test case provided with:
  - the data cable (to PC),
  - the "SMK" cable,
  - the mains power supply module.
- the **radio test bench**, provided with:
  - SIM card of test.
  - myX 2-2 radio interface
  - Adjustable regulate power supply 0-15V / 4A
  - Wavetek 4107
- **CADEX C7000 / C7200 / ASTRATEK** with myX 2-2 adapter
  - Charger test kit
  - Ammeter interface myX 2-2
  - Voltmeter (minimum impedance : 20 KΩ per Volt in DC)
  - Ammeter
- an **IMEI labels printing station**,inclunding :
  - Printer,
  - Roll of labels,
  - Connecting cable for PC (parallel printer cable),
  - Printing software,

4.3 INSTALLING ON A WORKSTATION

4.3.1 Minimum required configuration

The minimum configuration of the workstation is :

- Processor 1Ghz,
- 128 Mbytes of RAM,
- Windows (S.R2), Windows NT (SP 4), Windows 2000, Windows XP,
- 2.1 Gbytes hard disk (1 Gbytes available),
- 1 parallel port and 2 serials ports.
- network card, sound card.
- 1 internet access,

4.3.2 Installing the ARC downloading kit

The ARC downloading kit interfaces the SMT software with the phone to be repaired.

- Connect the 9-pin SUB-D connector to the PC serial port (COM1).
- Connect the power supply module to the mains power outlet.
- Connect the phone to be repaired to the SMK connector.

4.3.3 SMT functions

The SMT maintenance software can :

- Download new software if needed
- Configure default values and checks them.
- Unblocked the " POST CODE "
- Delete the customer directory and SMS
- Print identification labels.
- Make a electronic board exchange
- Adjust the display contrast
- Read the STD
- Select a test sequence

The procedures for using these functions are described in **TEST Sheet 01**.

TEST SHEET

To run the functions described below, run the SMT application from the desktop icon.

<u>Notice:</u> The active connection with SMT (via the serial port), validate in itself the data functionality of the handset.

Download the latest software

1. Click on the READ popup menu and then on INFORMATIONS.
2. Follow the procedures on the screen.
3. Make sure that the mobile phone is not in the sleep mode (press the Start key)

Configure and check default values

1. Click on the CONFIGURE popup menu and then VERIFY (Verfab).
2. Follow the procedures on the screen.

Release the " POST CODE"

1. Click on the CONFIGURE popup menu and then on RELEASE
2. Follow the procedures on the screen.

Delete the customer directory and SMS

1. Click on the CUSTOMER DATA popup menu and then ERASE DIRECTORY OR ERASE SMS.
2. Follow the procedures on the screen.

Note : There is possibility to save the directory when the ARC signed a confidential agreement.

Print identification labels

1. Click on the on LABEL popup menu and then PRINT LABEL .
2. Follow the procedures on the screen

- **Audio parameters setting**

1. Click on the AUDIO popup menu
2. Follow the procedures on the screen

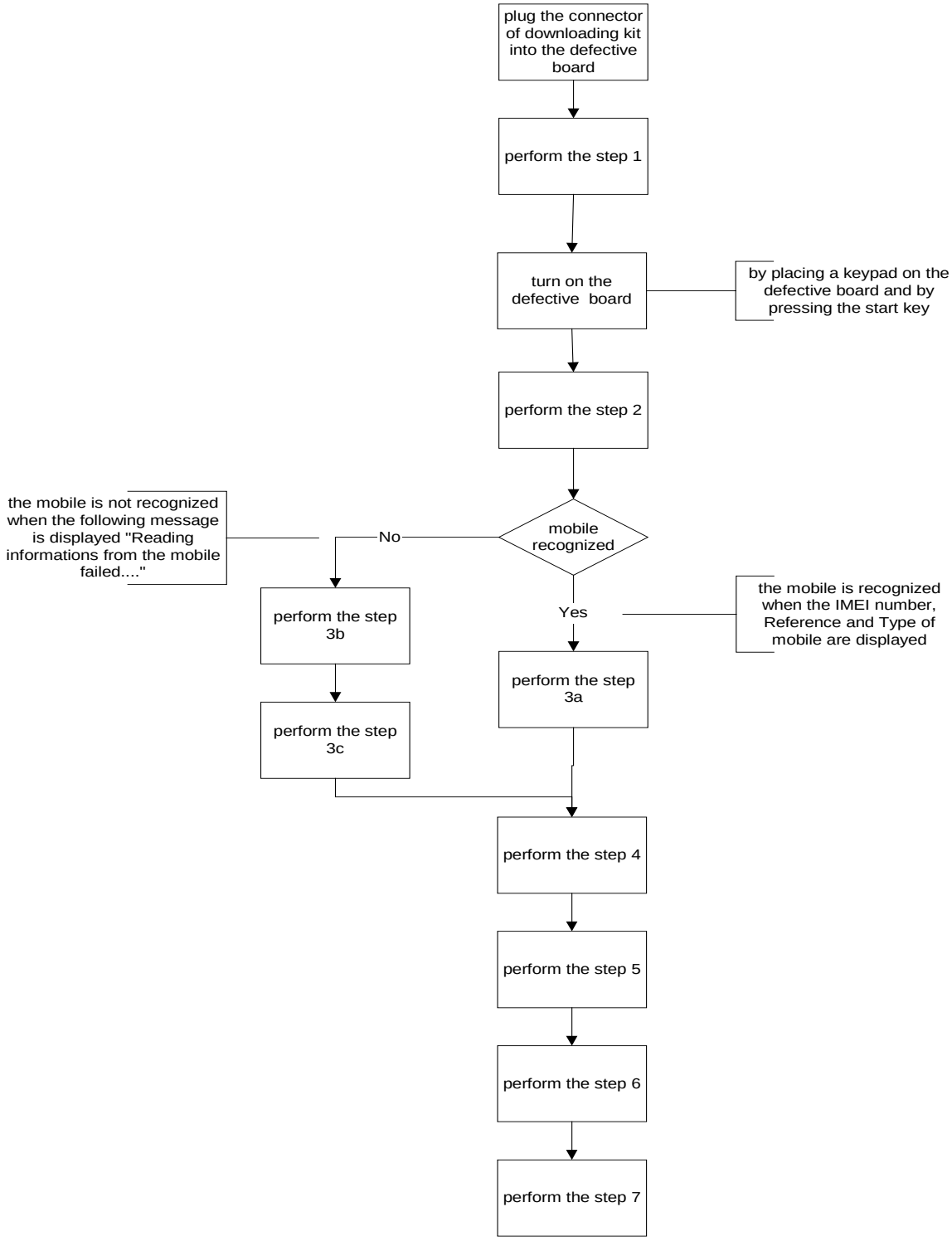
SMT SEQUENCE : Series of the different functions under SMT (sequence of tests)

1. Click on SMT SEQUENCE popup menu.
2. Select the different functions you want to carry out then click on LAUNCH button.

- **Electronic board exchange**

1. Click on the SWAP popup menu , then SWAP
2. Follow the procedures on the screen

SWAP : Electronic board Configuration

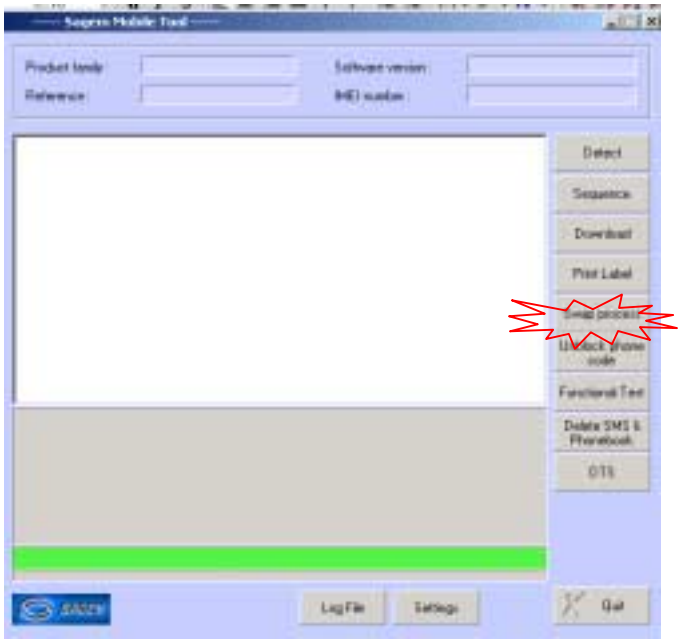


Step 1

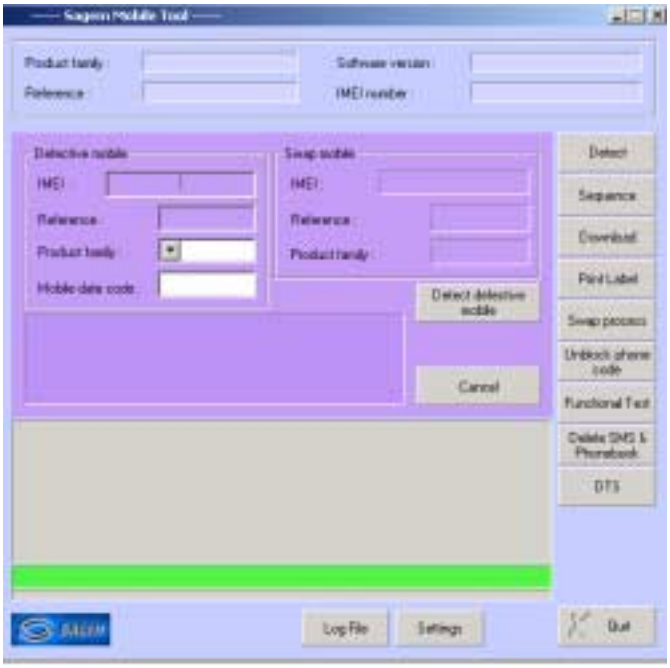
SMT Front page

Click on the « SWAP Process » menu.

Example

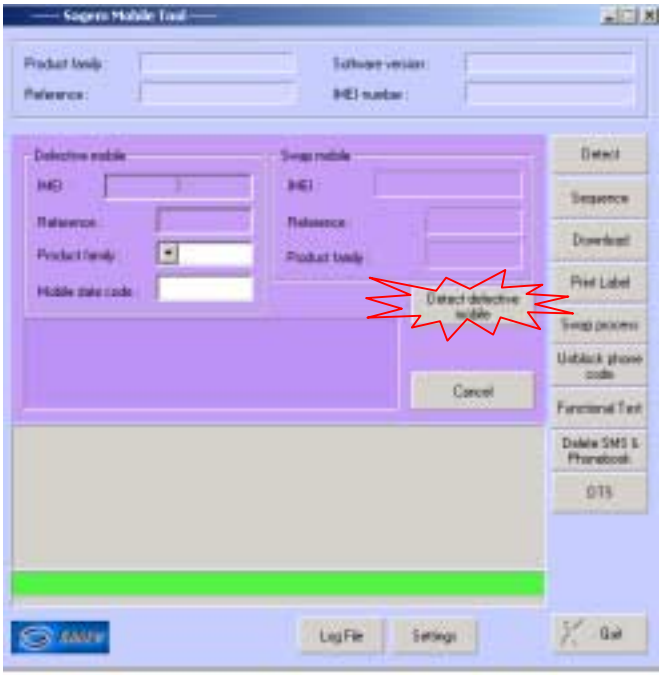


The following screen appears :



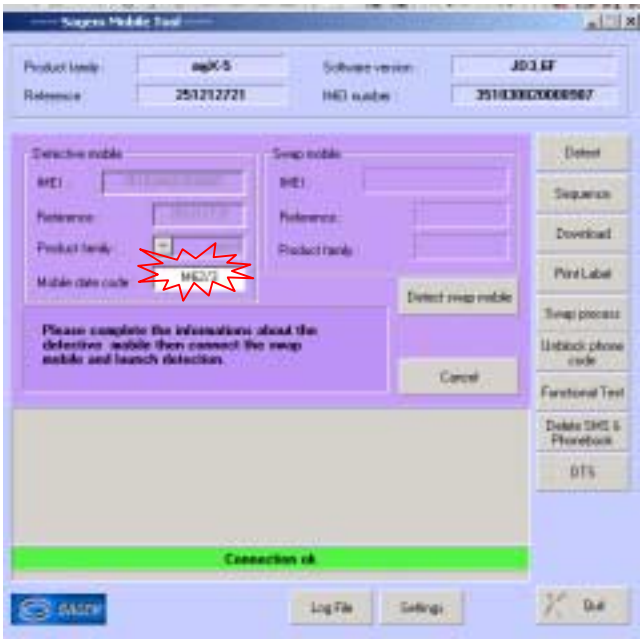
Step 2

Please click on « Detect defective mobile » button



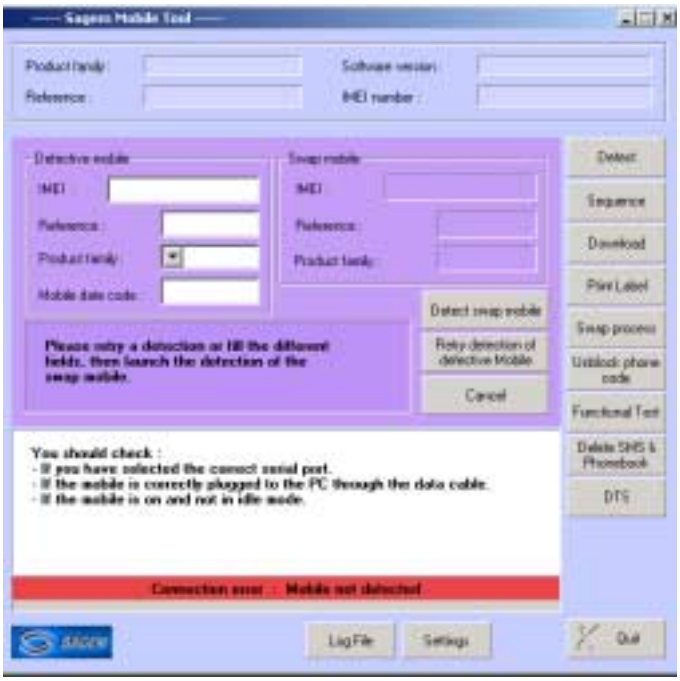
Step 3a

The following screen appears : the mobile is recognized. Then, enter the mobile date code



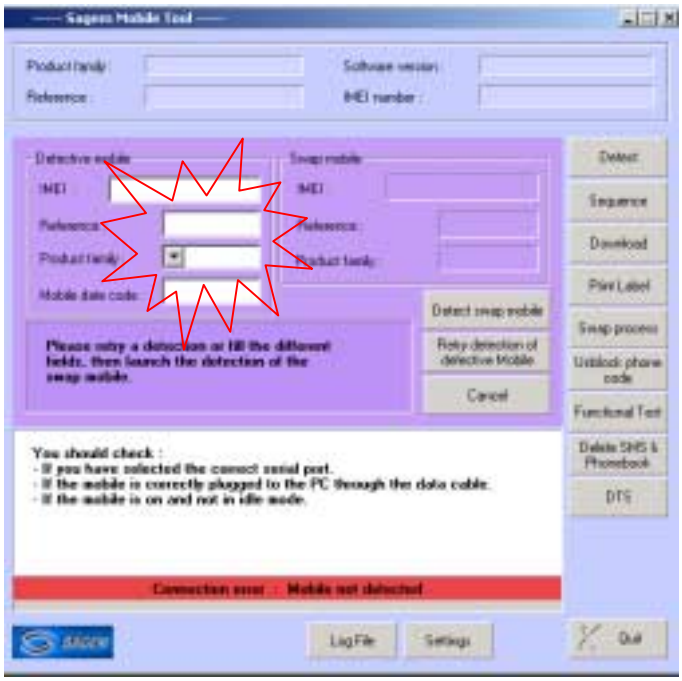
Step 3b

If this screen appears, the mobile is not recognized.



Step 3c

You must fill in the empty blanks requested according to the information written on the production label



Step 4

Plug and switch on the new mobile, then push on the "Detect Swap mobile" button

Step 5

After clicking on "OK", SMT prints the label which will be used to close the ESD bag of the defective board.

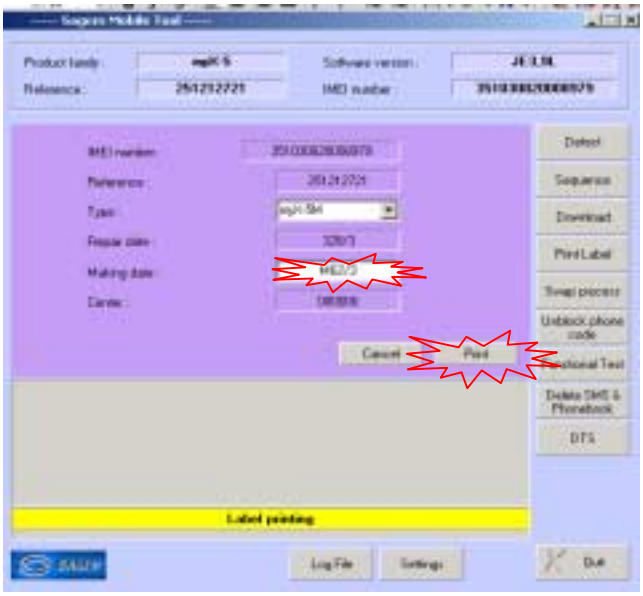
Step 6

The downloading is starting if the mobile need to be updated

Etape 7

SMT opens the following screen to print the new label : please dial the "MAKING DATE" (Production date) written on the label of the defective mobile.

Then stick the new label on the functional mobile



The swap board sequence is completed.

RESULTS

When old mobile is recognized, the audio parameters from the defective mobile have been sent to the functional mobile.

When old mobile is not recognized, the DEFAULTS audio parameters are sent to the functional mobile

Test description

This test checks the various battery chargers.

Required tools

- a voltmeter (minimum impedance 20 kΩ per Volt in DC),
- two sockets for banana connectors for connection to the voltmeter,
- a charger test kit.

Test procedure

Two terminals are used for measurements on the charger test kit

- red (+),
- black (-).

- A pushbutton selects the measurement :
- at no load (released position),
- under load (pushed in position).

1. Check visually the charger connector.
2. Connect the charger to be tested to the back of the tester.
3. Connect the voltmeter using the two banana connectors.
4. Before starting any other measurement, check that the charger is correctly powered (mains voltage conform with the charger specifications).
5. Make the two measurements.
6. Check the recorded values using the following table.

	At no load		**Under load**	
Charger	Min.	Max.	Min.	Max.
Travel 500 mA	5,5 V	7,5 V	2 V	4 V
Simple 300 mA	9 V	15 V	1,5 V	4 V
cigar lighter	5,5 V	7,5 V	2 V	4 V

Test description

This test allows to test the various batteries.

Required tools

- CADEX C7000 / C7200 / ASTRATEK
- myX 2-2 adapters,
- myX 2-2 Ammeter interface
- a voltmeter (minimum impedance 20 kΩ per Volt in DC).

Test procedure

7. Insert battery on ammeter interface
8. Measure the identification resistor between the Z poles :
9. Li-Ion batteries : **120kΩ (tolérance = 117kΩ - 123kΩ,** according to the surrounding temperature**)**
10. Measure the battery voltage between the V poles, **the voltage shown must be between 2.5V and 4.5V**.

- If the voltage < 4v ,load the battery for 30 minutes with a travel charger and follow the instructions below
- If the voltage > 4V Measure the internal resistance with a CADEX or ASTRATEK batteries testers
- **Notice:** Choose on the batteries tester ,the battery type (Li-ion) ,the nominal battery voltage (3,6V) and the battery capacity (720 mA)
- Read the result :If the internal resistance < 300 mOhms the battery is **OK**
- If the internal resistance = 300 mOhms the battery is **defective**

Test description

This test tests the battery consumption.

Required tools

- myX 2-2 Ammeter interface
- An Ammeter.

Test procedure

Measurement when switched off

11. Insert the mobile (switched off) onto the tool (customer phone and battery).
12. Connect the ammeter to the tool between A poles:
    - Red tool terminal on the ammeter "**COM**" or "**GND**" terminal.
    - Black tool terminal on the ammeter "**+**" terminal.

NOTE: The ammeter rating must be set to DC (DC or =), range 100 mA.

13. The value shown must be less than 1 mA.
14. Disconnect the ammeter from the tool and remove the mobile from the tool, with the battery.

Measuring the charge

15. Insert the mobile (switched off) onto the tool (customer phone and battery).
16. Connect the ammeter to the tool between A poles:
    - Black tool terminal on the ammeter "**COM**" or "**GND**" terminal.

Connect the customer's charger when energised (after connecting the charger to the mains power supply).

17. The recorded value must be greater than 150 mA.

NOTE: When changing the ammeter rating (manual or automatic), the mobile can be disconnected.

Access to the "HOTLINE" menu

Access to the "HOTLINE" menu is possible with a powered up mobile.

The "HOTLINE" menu is accessed by pressing on the ∇ key and then the ***** key.

Enter the corresponding code (bold) to choose the menu to be viewed.

To go out the "HOTLINE" menu, press successively on the **C** key to return at the operational screen of the mobile.

Description of the myX 2-2 "HOTLINE" menu

1 APPLICATION

- BATTERY : gives the value of the battery voltage.
- VERSION : reads the installed software version and the IMEI code.

2 PROM : Not used

3 SIM LOCK : accesses the "SIM LOCK" menu (password required).

4 TESTS LCD

- BLACK DISPLAY : displays the screen in black.
- WHITE DISPLAY.
- RED DISPLAY
- GREEN DISPLAY
- BLUE DISPLAY
- WHITE CHECKERBOARD
- PHOTO DISPLAY : functions on the screen to showing a picture.
- VIBRATE: tests the vibrating device.

NOTE : The "HOTLINE" menu is only accessible with a valid SIM card.

Test description

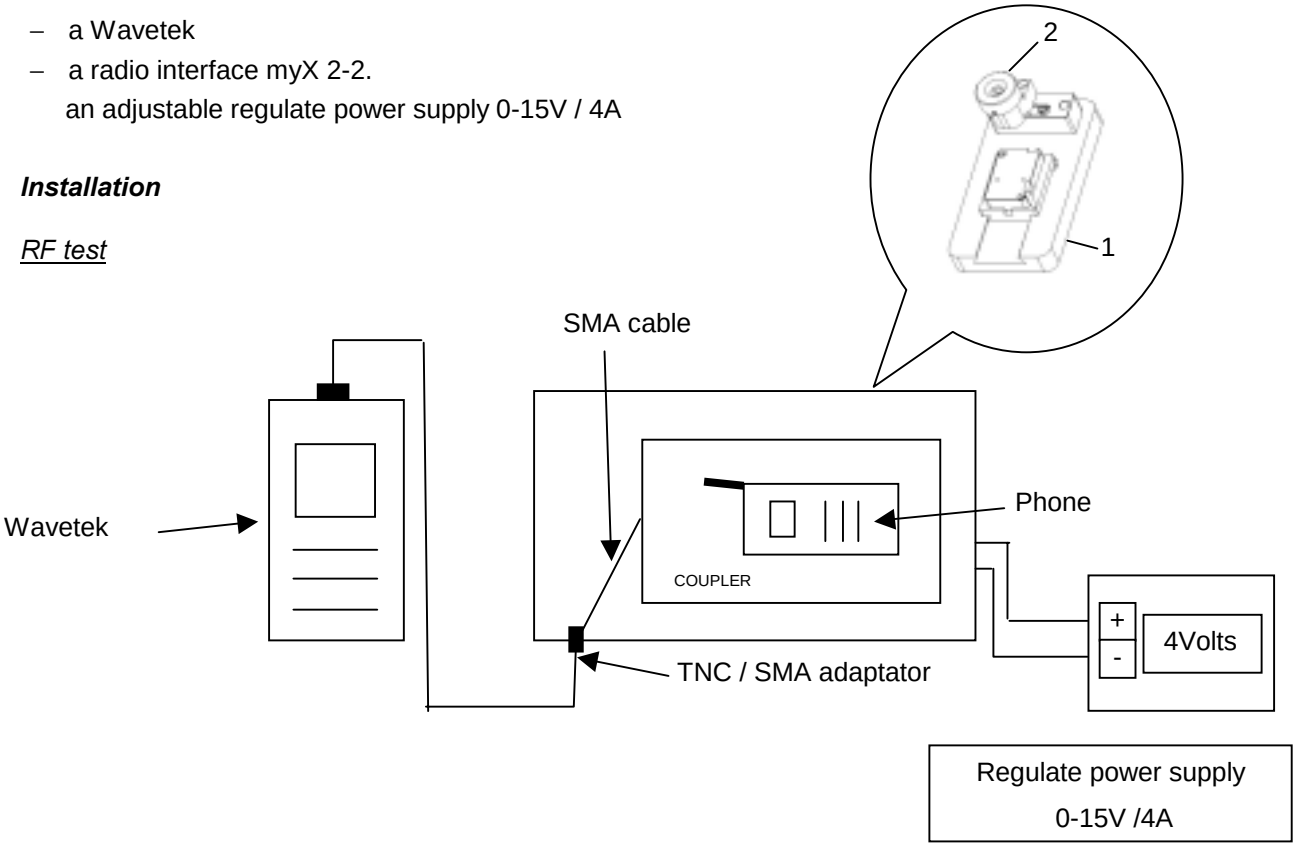
This test tests myX 2-2 phones during a call.

Required tools

- a Wavetek
- a radio interface myX 2-2.
  an adjustable regulate power supply 0-15V / 4A

Installation

RF test



Test procedure

18. Position the myX 2-2 module on the radio interface (1) (provided with a SIM test card)
19. Press and lock the button (2) , press the start key
20. Switch the Wavetek on and press on "AUTOTEST".
21. Choose the corresponding program using the "UP" et "DOWN" arrows.

1. Mobile :**myX 2-2**
2. Frequency range : **GSM, DCS or GSM/DCS**,
3. Coupling type : **CABLE**.

22. Press on "ENTER" and wait until the end of the calibration.

Follow the instructions shown on the Wavetek.